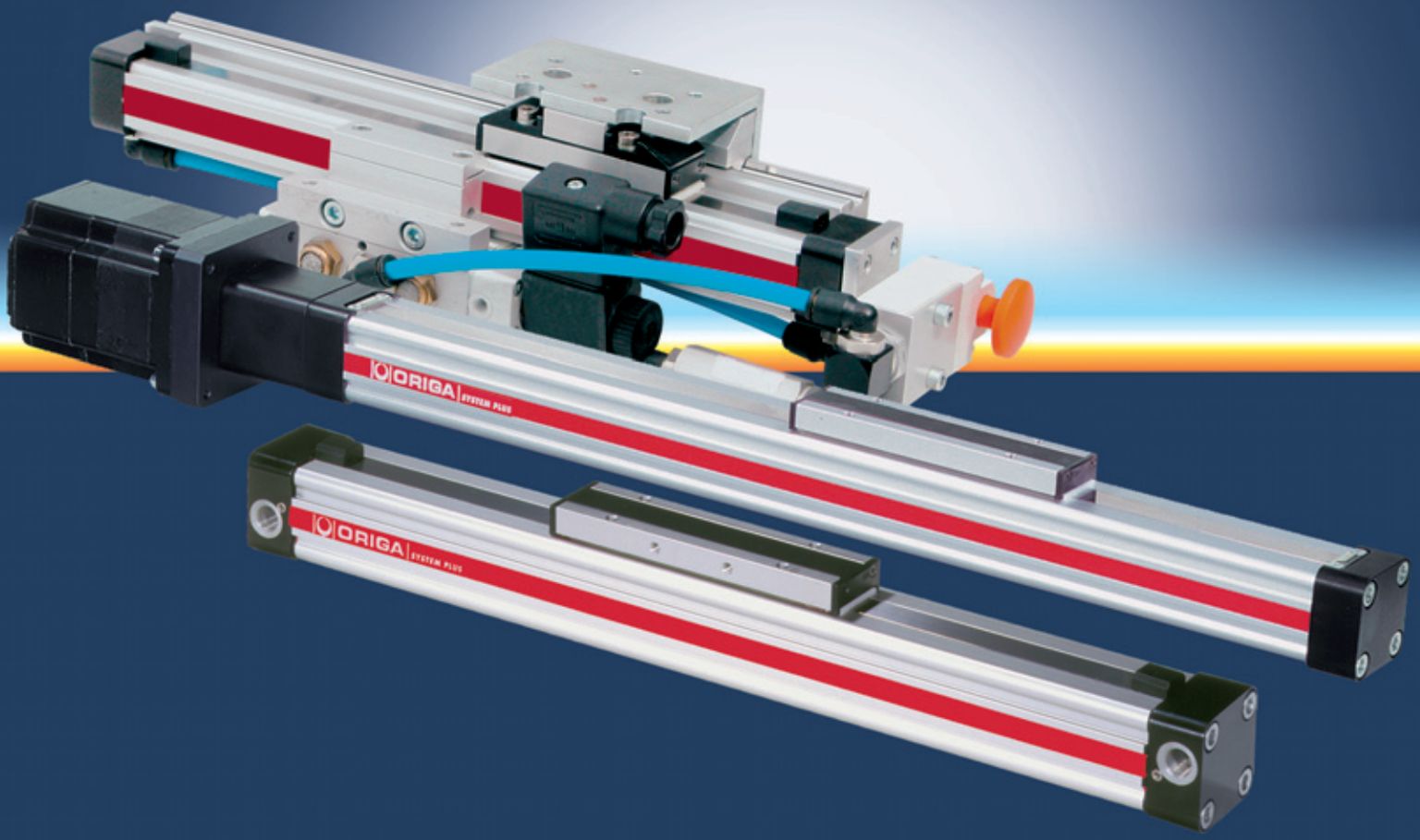
AUTOMATION TECHNOLOGY

Intelligent automation



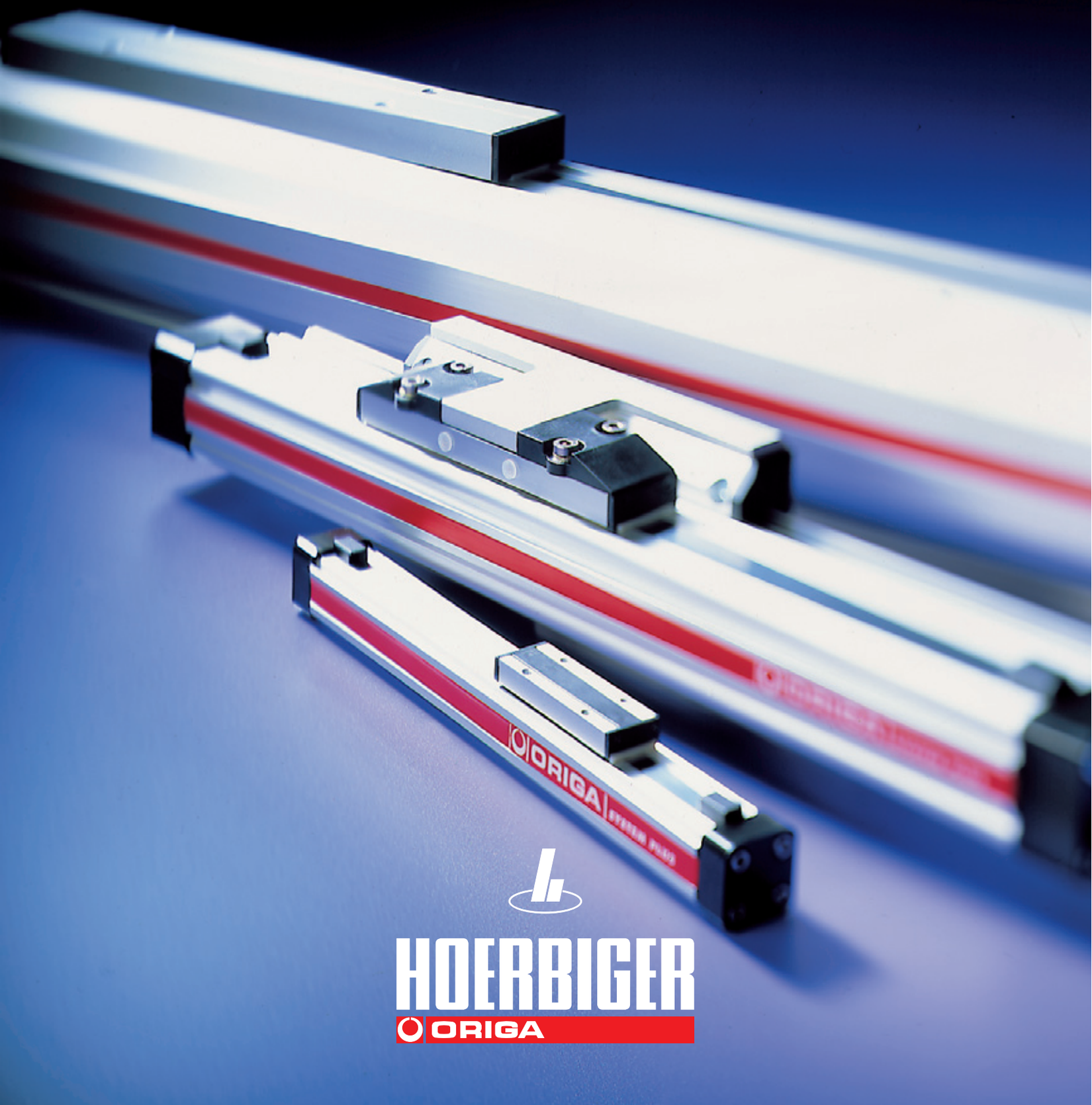


HOERBIGER

ORIGA

ORIGA SYSTEM PLUS

Modular Pneumatic Linear Drive Systems

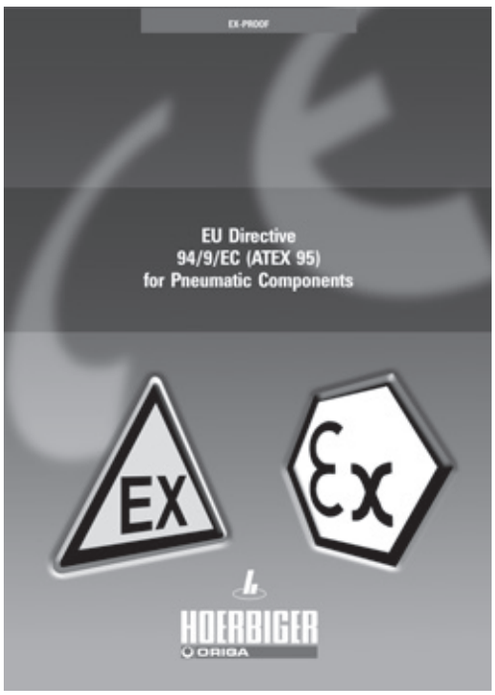


HOERBIGER

ORIGA

The HOERBIGER-ORIGA Rodless Cylinders are also available for use in potentially explosive atmospheres. The Cylinders are to the ATEX Certification 94/9/EG (ATEX 95) for Pneumatic Components.

For the different classifications and details please see data sheet 1.10.020E and 1.45.105E



You will find further information on the ATEX Directives in our brochure A5P060E.

Special Versions



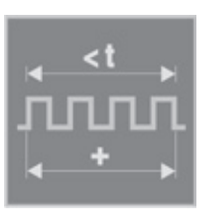
for use in Ex-Areas



for Clean Room Applications certified to DIN EN ISO 14644-1



Stainless steel version for special applications



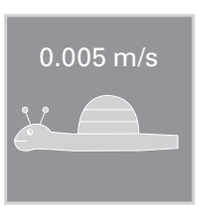
with special pneumatic cushioning system for cycle time optimization, for Ø 16 to 50 mm – on request



High Temperature Version for temperatures up to +120°C



Low Temperature Version for temperatures up to -40°C



Slow Speed Version v = 0.005 – 0.2 m/s



High Speed Version $v_{max.}$ = 30 m/s

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Linear Drives

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ORIGA
SYSTEM
PLUS

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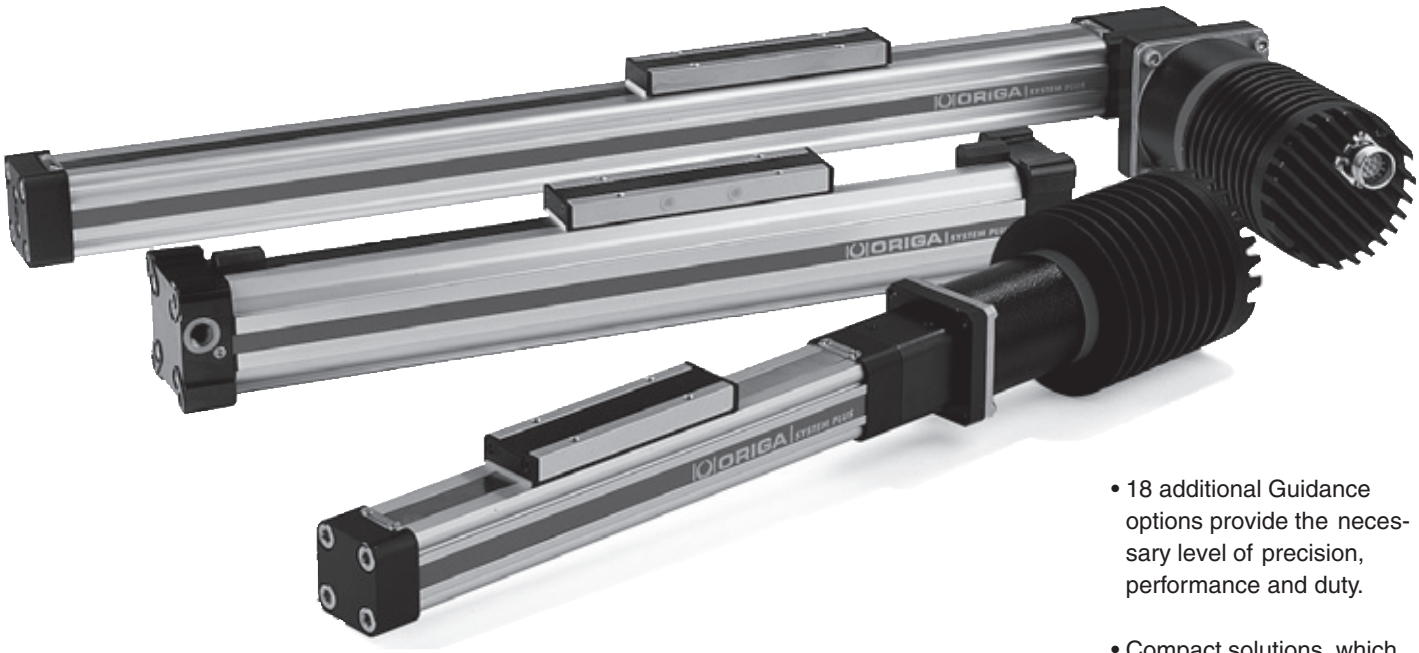
ONE CONCEPT
– THREE DRIVE OPTIONS

Based on the ORIGA rodless cylinder, proven in world wide markets, HOERBIGER-ORIGA now offers the complete solution for linear drive systems. Designed for absolute reliability, high performance, ease of use and optimised engineering the ORIGA SYSTEM PLUS satisfies even the most demanding applications.

ORIGA SYSTEM PLUS

is a totally modular concept which offers the choice of pneumatic or electric actuation, with guidance and control modules to suit the exact needs of individual installations.

The actuators at the core of the system all have a common aluminium extruded profile, with double dovetail mounting rails on three sides, these are the principle building blocks of the system to which all modular options are directly attached.



SYSTEM MODULARITY

- **Pneumatic Drive**
  – For all round versatility and convenience, combining ease of control and broad performance capability. Ideally suited for point-to point operations, reciprocating movements and simple traverse / transfer applications.
- **Electric Screw Drive**
  – For high force capability and accurate path and position control.

For additional informations on electrical linear drives, please refer to catalogue A4 P017E.

- **Electric Belt Drive**
  – For high speed applications, accurate path and position control and longer strokes.

For additional informations on electrical linear drives, please refer to catalogue A4 P017E.

- 18 additional Guidance options provide the necessary level of precision, performance and duty.
- Compact solutions, which are simple to install and can be easily retrofitted.
- Valves and control options can be directly mounted to the actuator system.
- Diverse mounting options to provide total installation flexibility.

ONE CONCEPT – THREE DRIVE OPTIONS

*** Information on electrical linear drives series OSP-E, please refer to catalogue A4 P017E**

Basic Linear Drive Standard Version

- Series OSP-P
- Series OSP-E*
  Belt, Belt Bi-parting,
  Belt with integrated Guides
- Series OSP-E*
  Screw (Ball Screw, Trapezoidal Screw)



Air Connection on the End-face or both at One End

- Series OSP-P



Clean Room Cylinder certified to DIN EN ISO 146644-1

- Series OSP-P



Basic Linear Drive ATEX-Version

- Series OSP-P



Integrated 3/2 Way Valves

- Series OSP-P



Clevis Mounting

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



End Cap Mounting

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



Mid-Section Support

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



Inversion Mounting

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



Duplex Connection

- Series OSP-P



Multiplex Connection

- Series OSP-P



Linear Guides – SLIDELINE

- Series OSP-P
- Series OSP-E Screw*



Linear Guides – POWERSLIDE

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



Linear Guides – GUIDELINE

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



Linear Guides – PROLINE

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



Linear Guides – STARLINE

- Series OSP-P



Linear Guides – KF

- Series OSP-P



Brakes

- Active Brakes
- Passive Brakes



Magnetic Switches

- Series OSP-P
- Series OSP-E Belt*
- Series OSP-E Screw*



SENSOFLEX

Displacement Measuring System

- Series SFI-plus
- Series SFA



SERVOTEC – Servo Pneumatic Positioning System

- Series OSP-P



OSP
ORIGA SYSTEM PLUS

Modular Components Overview – Rodless Cylinders Series OSP-P

Linear Drives	OSP-P10	OSP-P16	OSP-P25	OSP-P32	OSP-P40	OSP-P50	OSP-P63	OSP-P80
Theoretical force at 6bar [N]	47	120	295	483	754	1178	1870	3010
Effective force at 6bar [N]	32	78	250	420	640	1000	1550	2600
Velocity v [m/s]	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005
Magnetic piston (three sides)	×	❑	❑	❑	❑	❑	❑	❑
Lubrication - Prelubricated	❑	❑	❑	❑	❑	❑	❑	❑
Multiple air ports (4 x 90°)	×	❑	❑	❑	❑	❑	❑	❑
Both Air Connections at End-face	×	❍	❍	❍	❍	❍	❍	❍
Air Connection on the End-face	×	❍	❍	❍	❍	❍	❍	❍
Cushioning	❑	❑	❑	❑	❑	❑	❑	❑
Cushioning length[mm]	2,50	11	17	20	27	30	32	39
Stroke length [mm] ▲	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000
Pressure range pmax [bar]	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Temperature range [°C] ✳	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80
Viton / chemical resistance	❍	❍	❍	❍	❍	❍	❍	❍
Stainless steel parts	❍	❍	❍	❍	❍	❍	❍	❍
Clevis Mounting	❍	❍	❍	❍	❍	❍	❍	❍
Slow speed lubrication	❍	❍	❍	❍	❍	❍	❍	❍
Duplex Connection / Multiplex Connection	×	on request	❍	❍	❍	❍	on request	on request
Tandem piston	❍	❍	❍	❍	❍	❍	❍	❍
Self Guidance								
L [N]	20	120	300	450	750	1200	1650	2400
M [Nm]	1	4	15	30	60	115	200	360
Ms [Nm]	0.2	0.45	1.5	3	6	10	12	24
Mv [Nm]	0.3	0.5	3	5	8	15	24	48
Slideline								
L [N]	×	325	675	925	1500	2000	2500	2500
M [Nm]	×	11	34	60	110	180	260	260
Ms [Nm]	×	6	14	29	50	77	120	120
Mv [Nm]	×	11	34	60	110	180	260	260
Proline								
L [N]	×	542	857	1171	2074	3111	×	×
M [Nm]	×	12	39	73	158	249	×	×
Ms [Nm]	×	8	16	29	57	111	×	×
Mv [Nm]	×	12	39	73	158	249	×	×
Powerslide								
L [N]	×	1400	1400 - 3000	1400 - 3000	3000	3000 - 4000	×	×
M [Nm]	×	45	63 - 175	70 - 175	175 - 250	250 - 350	×	×
Ms [Nm]	×	14	14 - 65	20 - 65	65 - 90	90 - 140	×	×
Mv [Nm]	×	45	63 - 175	70 - 175	175 - 250	250 - 350	×	×
Guideline								
L [N]	×	×	1650 - 2500	1650 - 2500	4400 - 8000	4400 - 8000	×	×
M [Nm]	×	×	115	145	440	500	×	×
Ms [Nm]	×	×	75	90	330	375	×	×
Mv [Nm]	×	×	90	115	310	355	×	×
Guideline with shock absorber for cushioning	×	×	❍	❍	❍	❍	×	×
Starline								
L [N]	×	1000	3100	3100	4000-7500	4000-7500	×	×
M [Nm]	×	30	110	160	400	580	×	×
Ms [Nm]	×	15	50	62	150	210	×	×
Mv [Nm]	×	30	110	160	400	580	×	×
– variable Stop	×	❍	❍	❍	❍	❍	×	×

Linear Drives	OSP-P10	OSP-P16	OSP-P25	OSP-P32	OSP-P40	OSP-P50	OSP-P63	OSP-P80
KF Guide								
L [N]	X	1000	3100	3100	4000-7100	4000-7500	X	X
M [Nm]	X	25	90	133	346	480	X	X
Ms [Nm]	X	12	35	44	119	170	X	X
Mv [Nm]	X	25	90	133	346	480	X	X
– variable Stop	X	❍	❍	❍	❍	❍	X	X
Active Brake								
Braking force at 6 bar (brake surface dry) [N]	X	X	350	590	900	1400	2170	4000
Slideline SL / Proline PL with Brakes								
Active Brake								
SL Braking force at 6 bar (brake surface dry) [N]	X	X	325	545	835	1200	X	X
PL Braking force at 6 bar (brake surface dry) [N]	X	X	on request	on request	on request	on request	X	X
Passive Brake Multibrake								
SL Braking force at 6 bar (brake surface dry) [N]	X	X	470	790	1200	1870	2900	2900
PL Braking force at 6 bar (brake surface dry) [N]	X	X	315	490	715	1100	–	–
Magnetic Switches								
Standard Version	❍	❍	❍	❍	❍	❍	❍	❍
T-Nut Version	❍	❍	❍	❍	❍	❍	❍	❍
ATEX Version for EX- Areas ⟨Ex⟩	❍	❍	❍	❍	❍	❍	❍	❍
Displacement measuring systems								
SFI-plus incremental	X	X	❍	❍	❍	❍	❍	❍
SFA - absolute	X	X	❍	❍	X	X	X	X
integrated valves 3/2 WV NO VOE	X	X	❍	❍	❍	❍	on request	on request
Postioning System Servotec	X	X	❍	❍	X	X	X	X
Mountings								
End Cap Mounting / Mid-Section Support	❍	❍	❍	❍	❍	❍	❍	❍
Inversion Mounting	X	❍	❍	❍	❍	❍	❍	❍
Shock absorber for intermediate positioning	X	X	on request	on request	on request	on request	X	X
Adaptor Profile / T-Nut Profile	X	❍	❍	❍	❍	❍	X	X
Special Cylinders								
Special Pneumatical Cushioning System	X		on request	on request	on request	on request	X	X
Clean Room Cylinders to DIN EN ISO 14644-1	X	❍	❍	❍	X	X	X	X
ATEX Version for EX-Areas ⟨Ex⟩	❍	❍	❍	❍	❍	❍	❍	❍
High-Speed up to 30 m/s	X	on request	on request	on request	X	X	X	X

❑ = Standard version

▲ = other strokes on request

❊ = other temperature ranges on request

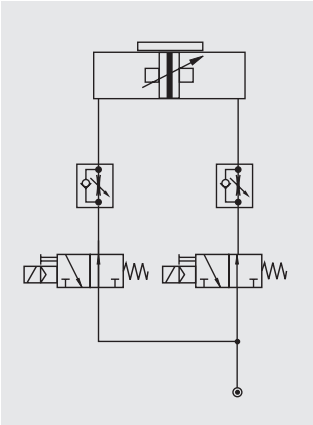
❍ = Option

X = not applicable

For Electric Linear Drives, Series OSP-E, see catalogue A4 P017E

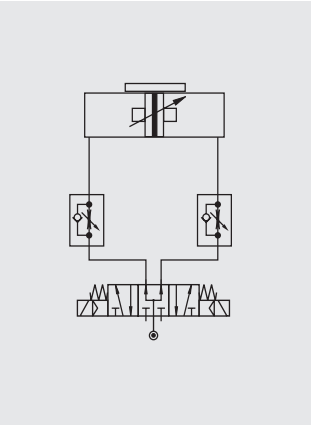
Examples

CONTROL EXAMPLES FOR OSP-P



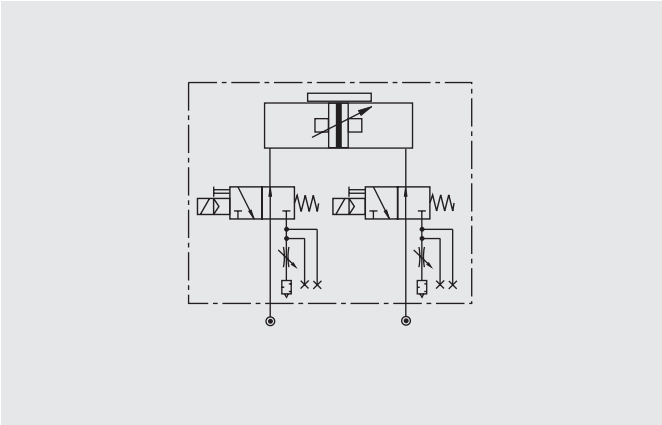
Circuit diagram for end of stroke application. Intermediate positioning is also possible.

The cylinder is controlled by two 3/2-way valves (normally open).
The speed can be adjusted independantly for both directions.

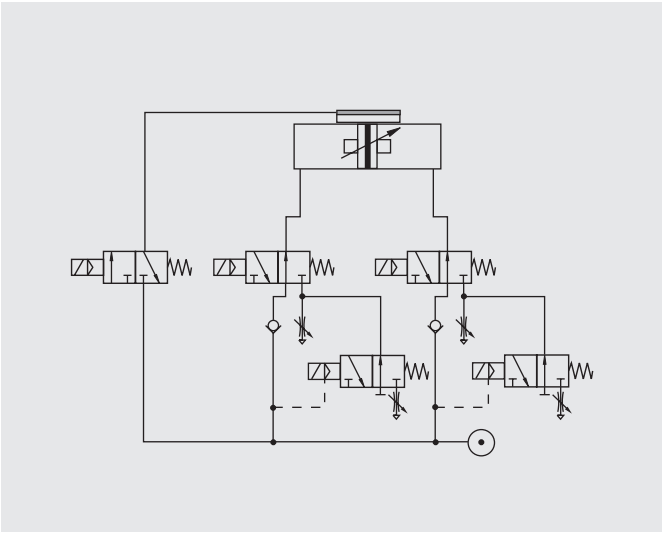


Circuit diagram for end of stroke application. Intermediate positioning is also possible.

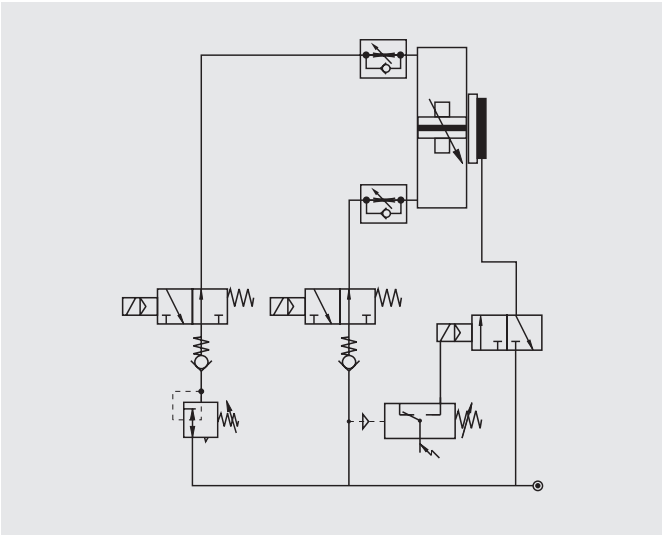
The cylinder is controlled by a 5/3-way valve (middle position pressurized).
The speed can be adjusted independantly for both directions.



The optional integrated VOE Valves offer optimal control, and allow accurate positioning of intermediate positions and the lowest possible speeds.



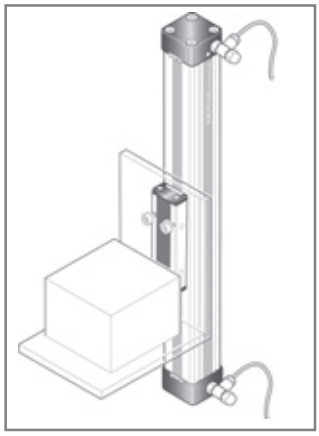
Fast/Slow speed cycle control with pneumatic brake for accurate positioning at high velocities.
Additional 3/2-way valves with adjustable throttle valves at the exhaust of the standard directional control valves for two displacement speeds in each direction of the piston‘s travel.
The valve controlling the brake is activated after the slow speed cycle is activated



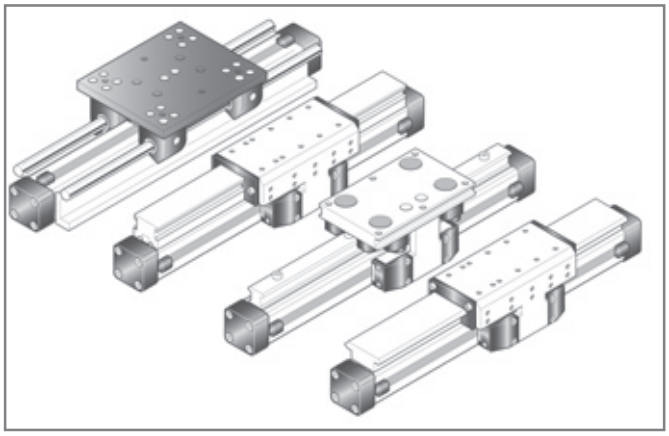
The combination of an OSP cylinder with the passive MULTIBRAKE as shown here, allows accurate positioning and safety in case of loss of pneumatic air pressure.

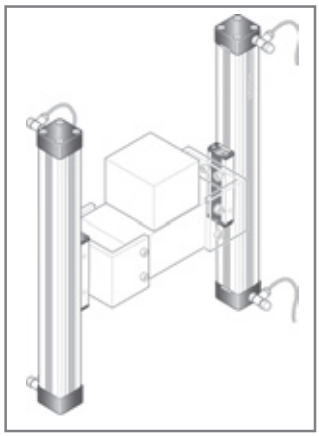
OSP-P APPLICATION EXAMPLES

ORIGA SYSTEM PLUS – rodless linear drives offer maximum flexibility for any application.



The high load capacity of the piston can cope with high bending moments without additional guides.



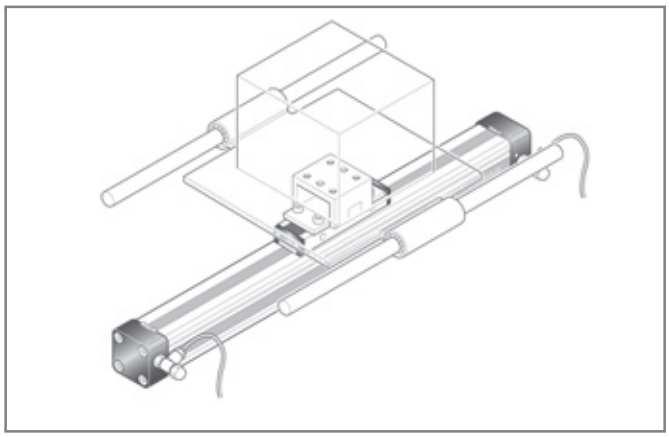


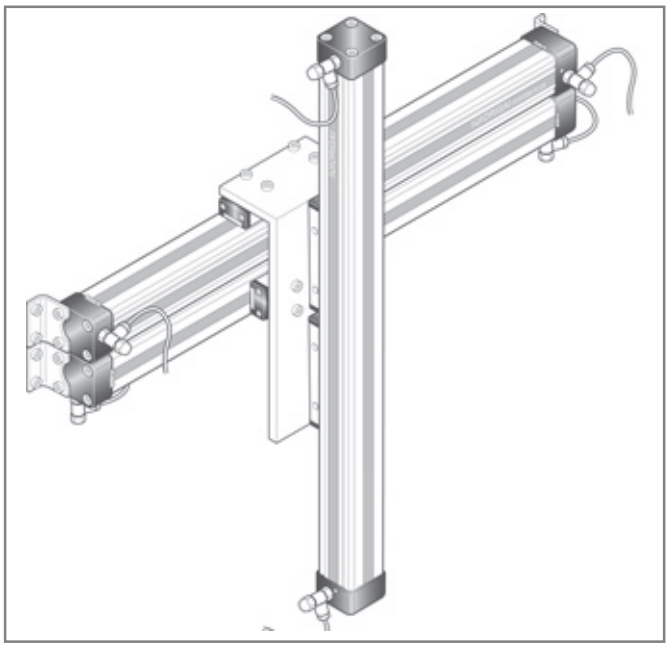
The mechanical design of the OSP-P allows synchronised movement of two cylinders.

Integrated guides offer optimal guidance for applications requiring high performance, easy assembly and maintenance free operation.

Optimal system performance by combining multi-axis cylinder combinations.

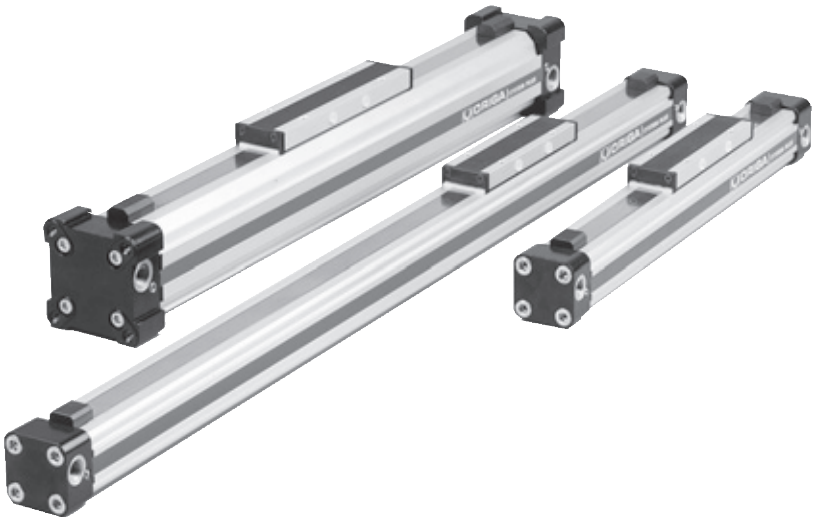
When using external guides, the clevis mounting is used to compensate for deviations in parallelism.





For further information and assembly instructions, please contact your local HOERBIGER-ORIGA dealer.

Rodless Pneumatic Cylinders
Series OSP-P



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HOERBIGER
ORIGA

The System Concept

ORIGA SYSTEM PLUS – INNOVATION FROM A PROVEN DESIGN

A completely new generation of linear drives which can be simply and neatly integrated into any machine layout.

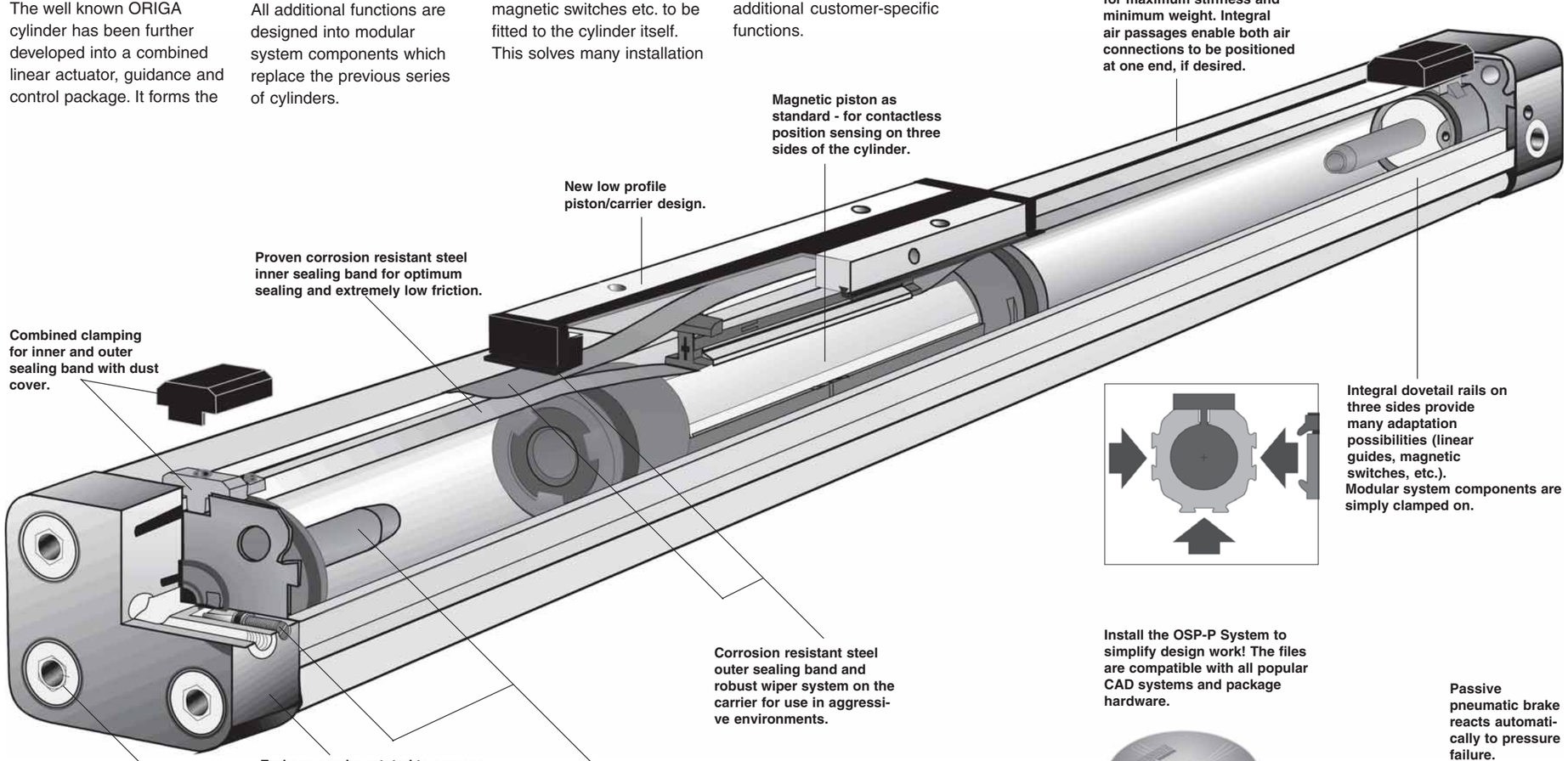
A NEW MODULAR LINEAR DRIVE SYSTEM

With this second generation linear drive HOERBIGER-ORIGA offers design engineers complete flexibility. The well known ORIGA cylinder has been further developed into a combined linear actuator, guidance and control package. It forms the basis for the new, versatile ORIGA SYSTEM PLUS linear drive system.

All additional functions are designed into modular system components which replace the previous series of cylinders.

MOUNTING RAILS ON 3 SIDES

Mounting rails on 3 sides of the cylinder enable modular components such as linear guides, brakes, valves, magnetic switches etc. to be fitted to the cylinder itself. This solves many installation problems, especially where space is limited.
The modular system concept forms an ideal basis for additional customer-specific functions.



The Components

PNEUMATIC LINEAR ACTUATOR WITH NEW MODULAR SYSTEM

STARLINE
Recirculating ball bearing guide for highest loads and precision



KF GUIDE
Recirculating ball bearing guide – the mounting dimensions correspond to FESTO Type: DGPL-KF



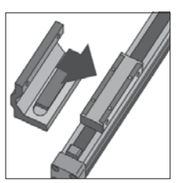
Optimized cylinder profile for maximum stiffness and minimum weight. Integral air passages enable both air connections to be positioned at one end, if desired.

Integral dovetail rails on three sides provide many adaptation possibilities (linear guides, magnetic switches, etc.). Modular system components are simply clamped on.

Install the OSP-P System to simplify design work! The files are compatible with all popular CAD systems and package hardware.



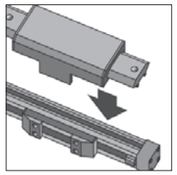
Passive pneumatic brake reacts automatically to pressure failure.



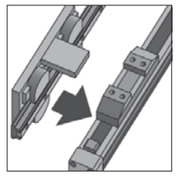
PROLINE
The compact aluminium roller guide for high loads and velocities.



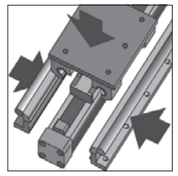
SLIDELINE
Combination with linear guides provides for heavier loads.



POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



GUIDELINE
linear guides for heavy duty applications.



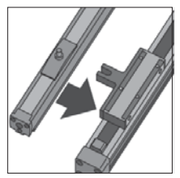
INTEGRATED VOE VALVES
The complete compact solution for optimal cylinder control.



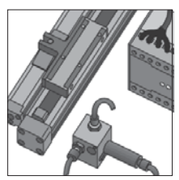
SENSOFLEX
SFI-plus incremental measuring system with 0,1 (1,0) mm resolution



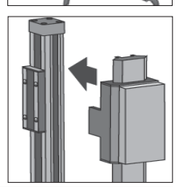
SENSOFLEX SFA
analogue measuring system. Simple and robust for high accuracy applications.



SERVOTEC
electro/pneumatic positioning system.



Active pneumatic brake for secure, positive stopping at any position.



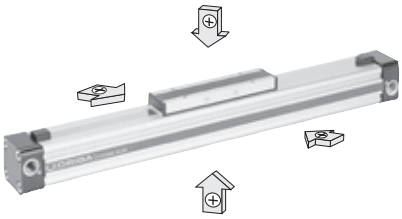
OPTIONS AND ACCESSORIES FOR SYSTEM VERSATILITY

SERIES OSP-P

STANDARD VERSIONS OSP-P10 to P80

Data Sheet 1.10.002E-1, -2, -3

Standard carrier with integral guidance. End cap can be rotated 4x90° to position air connection on any side.
Magnetic piston as standard.
Dovetail profile for mounting of accessories and the cylinder itself.



BASIC CYLINDER OPTIONS

CLEAN ROOM CYLINDERS
Data Sheet 1.10.003E

For use in clean room applications, certified with the IPA-Certificate (to DIN EN ISO 14644-1).
The special design of the linear drive enables all emissions to be led away.

ATEX-Version
Data Sheet 1.10.004E

For use in Ex-Areas

STAINLESS VERSION

For use in constantly damp or wet environments. All screws are A2 quality stainless steel (material no.1.4301 / 1.4303)

SLOW SPEED OPTIONS

Specially formulated grease lubrication facilitates slow, smooth and uniform piston travel in the speed range from 0.005 to 0.2 m/s.
Minimum achievable speeds are dependent on several factors. Please consult our technical department.
Slow speed lubrication in combination with Viton® on demand.
Oil free operation preferred.

VITON® VERSION

For use in an environment with high temperatures or in chemically aggressive areas. All seals are made of Viton®. Sealing bands: Stainless steel

END-FACE AIR CONNECTION

Data Sheet 1.10.002E-6

To solve special installation problems.
.



BOTH AIR CONNECTIONS AT ONE END

Data Sheet 1.10.002E-7

For simplified tubing connections and space saving.



INTEGRATED VOE VALVES

Data Sheet 1.10.002E-8

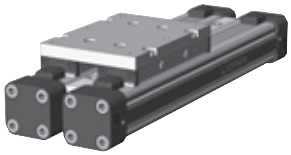
The complete compact solution for optimal cylinder control.



DUPLEX CONNECTION

Data Sheet 1.45.011E

The duplex connection combines two OSP-P cylinders of the same size into a compact unit with high performance.



MULTIPLEX CONNECTION

Data Sheet 1.45.012E

The multiplex connection combines two or more OSP-P cylinders of the same size into one unit.
The orientation of the carriers can be freely selected.



ACCESSORIES

MAGNETIC SWITCHES
TYPE RS, ES, RST, EST

Data Sheet 1.45.100E, 1.45.004E, 1.45.005E

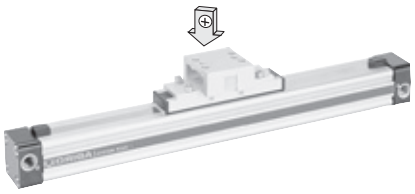
For electrical sensing of end and intermediate piston positions, also in EX-Areas.



CLEVIS MOUNTING

Data Sheet 1.45.002E

Carrier with tolerance and parallelism compensation for driving loads supported by external linear guides.



END CAP MOUNTING

Data Sheet 1.45.003E

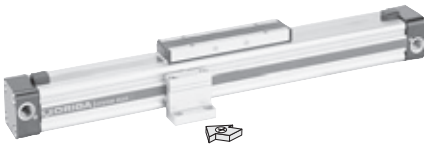
For end-mounting of the cylinder.



MID-SECTION SUPPORT

Data Sheet 1.45.004E

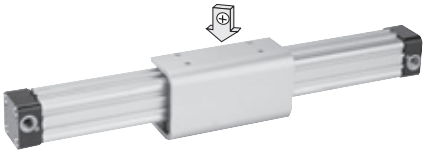
For supporting long cylinders or mounting the cylinder by its dovetail rails.



INVERSION MOUNTING

Data Sheet 1.45.006E

The inversion mounting transfers the driving force to the opposite side, e. g. for dirty environments.

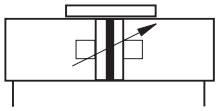


Rodless Pneumatic Cylinder

ø 10-80 mm

OSP
ORIGA SYSTEM PLUS

Series OSP-P..

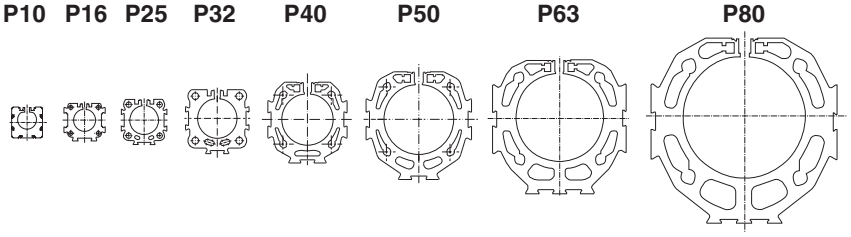


Characteristics				Pressures quoted as gauge pressure
Characteristics		Symbol	Unit	Description
General Features				
Type				Rodless cylinder
Series				OSP-P
System				Double-acting, with cushioning, position sensing capability
Mounting				See drawings
Air Connection				Threaded
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-10 +80 Other temperature ranges on request
Weight (mass)			kg	See table below
Installation				In any position
Medium				Filtered, unlubricated compressed air (other media on request)
Lubrication				Permanent grease lubrication (additional oil mist lubrication not required) Option: special slow speed grease
Material	Cylinder Profile			Anodized aluminium
	Carrier (piston)			Anodized aluminium
	End caps			Aluminium, lacquered
	Sealing bands			Corrosion resistant steel
	Seals			NBR (Option: Viton®)
	Screws			Galvanized steel Option: stainless steel
	Dust covers, wipers			Plastic
Max. operating pressure		p_{max}	bar	8

Weight (mass) kg

Cylinder series (Basic cylinder)	Weight (Mass) kg	
	At 0 mm stroke	per 100 mm stroke
OSP-P10	0.087	0.052
OSP-P16	0.22	0.1
OSP-P25	0.65	0.197
OSP-P32	1.44	0.354
OSP-P40	1.95	0.415
OSP-P50	3.53	0.566
OSP-P63	6.41	0.925
OSP-P80	12.46	1.262

Size Comparison



For **linear guides** see 1.40.001E to 006E
For **magnetic switches** see 1.45.100E, 1.45.004E, 1.45.005E
For **mountings** and **accessories** see 1.45.001E to 009E

Standard Versions:
- Double-acting with adjustable end cushioning
- With magnetic piston for position sensing

Special Versions:
- with special pneumatical cushioning system (on request)
- Clean room cylinders (see data sheet 1.10.003E)
- ATEX-Version ⟨Ex⟩ (see data sheet 1.10.020E)
- Stainless steel screws
- Slow speed lubrication
- Viton® seals
- Both air connections on one end
- Air connection on the end-face
- Integrated Valves



- End cap can be rotated 4 x 90° to position air connection as desired
- Free choice of stroke length up to 6000 mm (longer strokes on request)

HOERBIGER
ORIGA

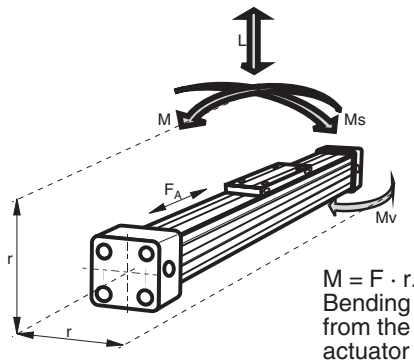
A1P537E00HAA00X
The right to introduce technical modifications is reserved

Loads, Forces and Moments

Choice of cylinder is decided by:
- Permissible loads, forces and moments
- Performance of the pneumatic end cushions. The main factors here are the mass to be cushioned and the piston speed at start of cushioning
  (unless external cushioning is used, e. g. hydraulic shock absorbers).

The adjacent table shows the maximum values for light, shock-free operation, which must not be exceeded even in dynamic operation. **Load and moment data are based on speeds v ≤ 0.5 m/s.**

When working out the action force required, it is essential to take into account the friction forces generated by the specific application or load.



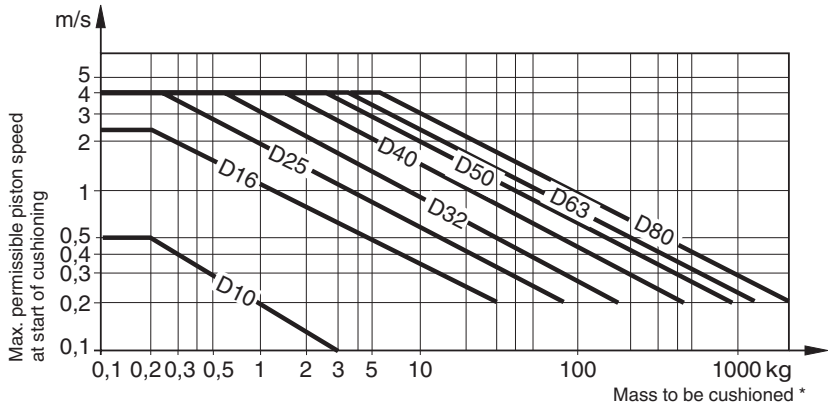
M = F · r.
Bending moments are calculated from the centre of the linear actuator and F indicates actual force.

Cylinder-Series [mm Ø]	Theoretical Action Force at 6 bar [N]	effektive Action Force F_A at 6 bar [N]	max. Moments M [Nm]	Ms [Nm]	Mv [Nm]	max. Load L [N]	Cushion Length [mm]
OSP-P10	47	32	1	0.2	0.3	20	2.5 *
OSP-P16	120	78	4	0.45	0.5	120	11
OSP-P25	295	250	15	1.5	3	300	17
OSP-P32	483	420	30	3	5	450	20
OSP-P40	754	640	60	6	8	750	27
OSP-P50	1178	1000	115	10	15	1200	30
OSP-P63	1870	1550	200	12	24	1650	32
OSP-P80	3016	2600	360	24	48	2400	39

* A rubber element (non-adjustable) is used for end cushioning.
To deform the rubber element enough to reach the absolute end position would require a Δp of 4 bar!

Cushioning Diagram

Work out your expected moving mass and read off the maximum permissible speed at start of cushioning.
Alternatively, take your desired speed and expected mass and find the cylinder size required.
Please note that piston speed at start of cushioning is typically ca. 50 % higher than the average speed, and that it is this higher speed which determines the choice of cylinder. If these maximum permissible values are exceeded, additional shock absorbers must be used.



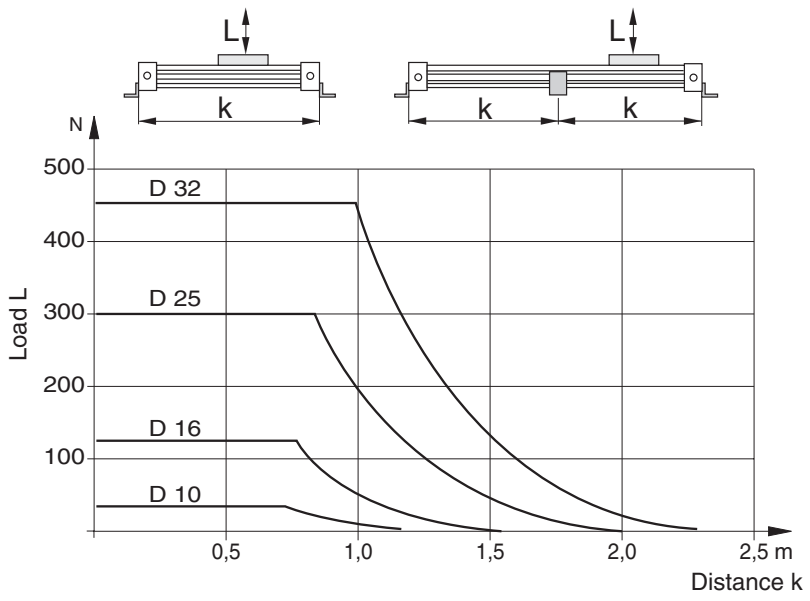
* For cylinders with linear guides or brakes, please be sure to take the mass of the carriage or the brake housing into account.

If the permitted limit values are exceeded, either additional shock absorbers should be fitted in the area of the centre of gravity or you can consult us about our special cushioning system – we shall be happy to advise you on your specific application.

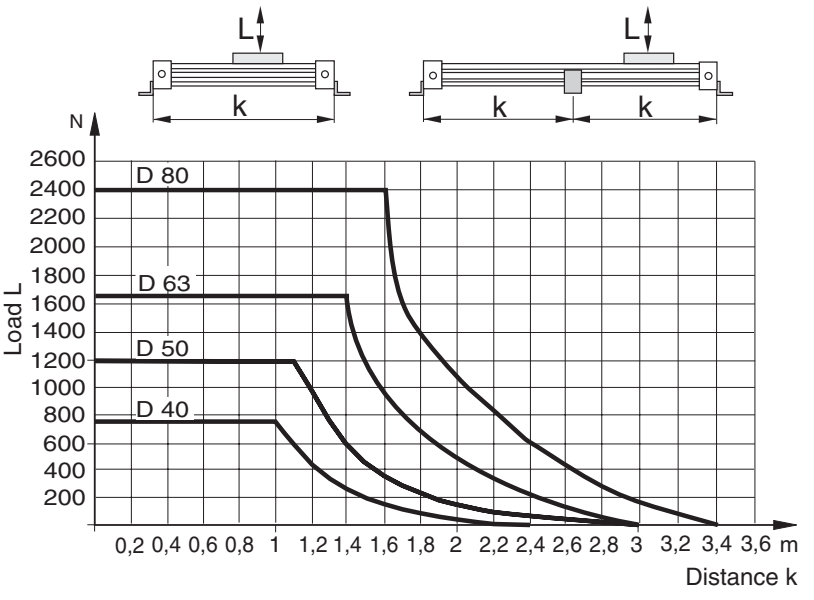
Mid-Section Supports

To avoid excessive bending and oscillation of the cylinder, mid-section supports are required dependent on specified stroke lengths and applied loads. The diagrams show the maximum possible support spacings depending on the load.
Bending up to max. 0.5 mm is permissible between supports. The mid-section supports are clamped onto the dovetail profile of the cylinder tube. They are also able to take the axial forces.
For types and dimensions see 1.45.004E.

Permissible Support Spacings: OSP - P10 - P32



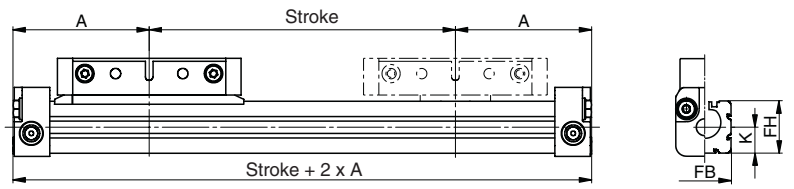
Permissible Support Spacings: OSP - P40 - P80



Cylinder
Stroke and Dead Length A

- Free choice of stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.

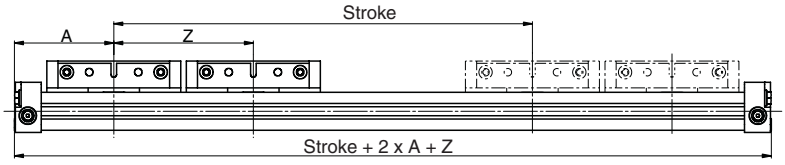
Dimensions of Basic Cylinder OSP-P10



Tandem Cylinder

Two pistons are fitted: dimension "Z" is optional. (Please note minimum distance "Zmin").

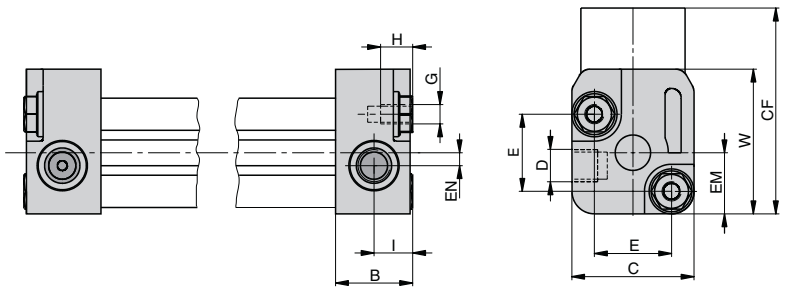
- Free choice of stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.
- **Stroke length to order is stroke + dimension "Z"**



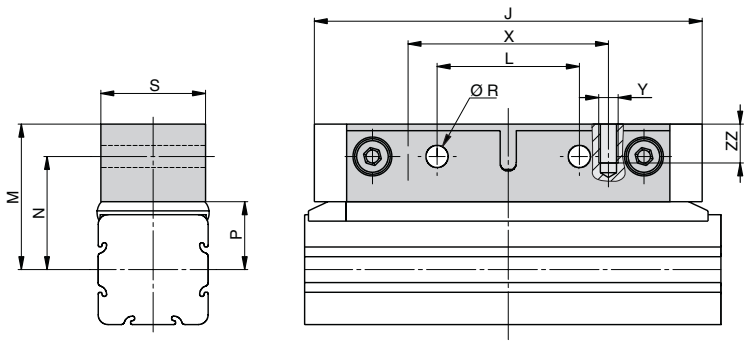
Please note:

To avoid multiple actuation of magnetic switches, the second piston is not equipped with magnets.

End Cap/Air Connection Series OSP -P10



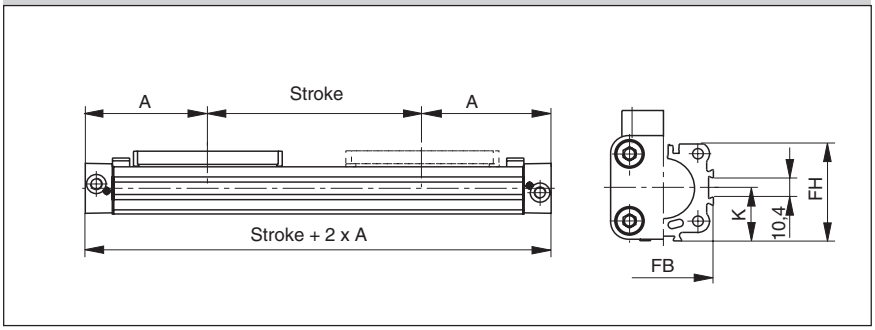
Carrier Series OSP-P10

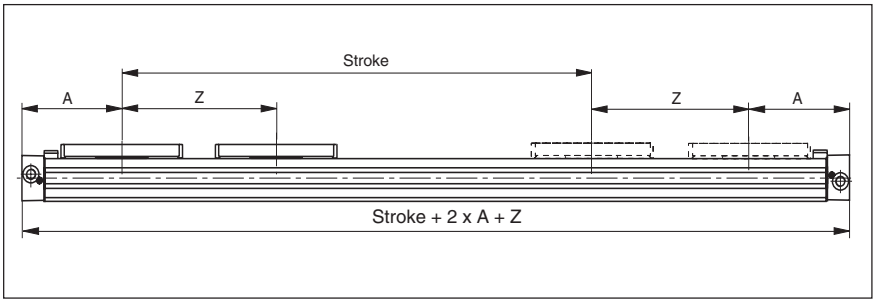


Dimension Table (mm)

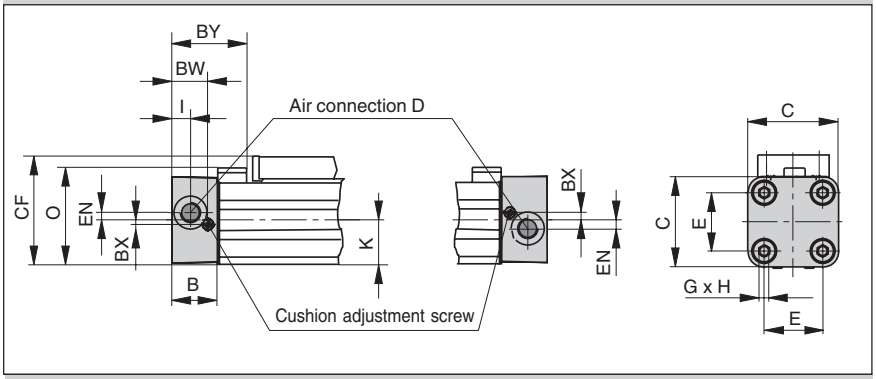
Cylinder Series	A	B	C	D	E	G	H	I	J	K	L	M	N	P	R	S	W	X	Y	Z min	CF	EM	EN	FB	FH	ZZ
OSP-P10	44,5	12	19	M5	12	M3	5	6	60	8.5	22	22.5	17.5	22.5	3.4	16	22.5	31	M3	64	32	9.5	2	17	17	6

Dimensions of Basic Cylinder OSP - P16-P80

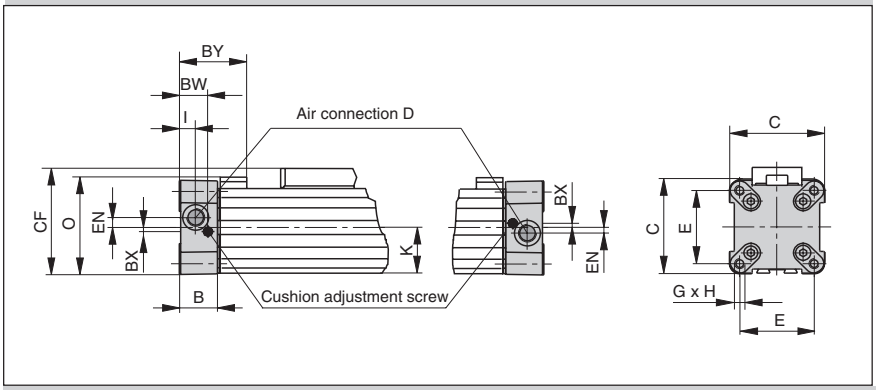




End Cap/Air Connection can be rotated 4 x 90°
Series OSP-P16 to P32



End Cap/Air Connection can be rotated 4 x 90°
Series OSP-P40 to P80



Cylinder
Stroke and Dead Length A

- Free choice of stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.

Tandem Cylinder

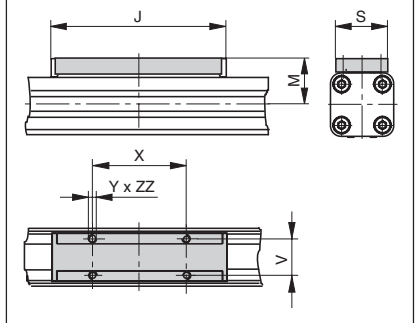
Two pistons are fitted: dimension "Z" is optional. (Please note minimum distance "Zmin").

- Free choice of stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.
- **Stroke length to order is stroke + dimension "Z"**

Please note:

To avoid multiple actuation of magnetic switches, the second piston is not equipped with magnets.

Carrier
Series OSP-P16 to P80

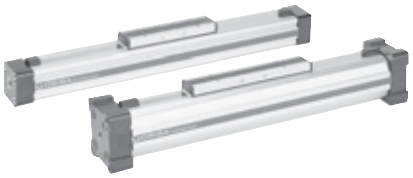


Dimension Table (mm)

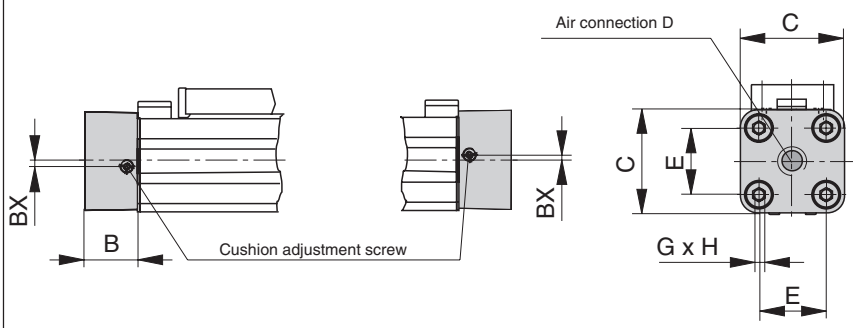
Cylinder Series	A	B	C	D	E	G	H	I	J	K	M	O	S	V	X	Y	Z min	BW	BX	BY	CF	EN	FB	FH	ZZ
OSP-P16	65	14	30	M5	18	M3	9	5.5	69	15	23	33.2	22	16.5	36	M4	81	10.8	1.8	28.4	38	3	30	27.2	7
OSP-P25	100	22	41	G1/8	27	M5	15	9	117	21.5	31	47	33	25	65	M5	128	17.5	2.2	40	52.5	3.6	40	39.5	8
OSP-P32	125	25.5	52	G1/4	36	M6	15	11.5	152	28.5	38	59	36	27	90	M6	170	20.5	2.5	44	66.5	5.5	52	51.7	10
OSP-P40	150	28	69	G1/4	54	M6	15	12	152	34	44	72	36	27	90	M6	212	21	3	54	78.5	7.5	62	63	10
OSP-P50	175	33	87	G1/4	70	M6	15	14.5	200	43	49	86	36	27	110	M6	251	27	–	59	92.5	11	76	77	10
OSP-P63	215	38	106	G3/8	78	M8	21	14.5	256	54	63	107	50	34	140	M8	313	30	–	64	117	12	96	96	16
OSP-P80	260	47	132	G1/2	96	M10	25	22	348	67	80	133	52	36	190	M10	384	37.5	–	73	147	16.5	122	122	20

Air Connection on the End-face

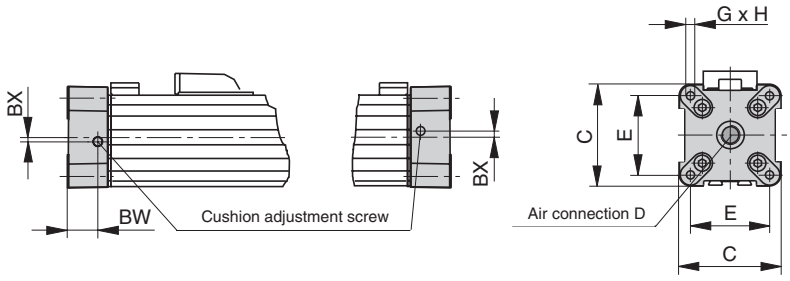
In some situations it is necessary or desirable to fit a special end cap with the air connection on the end-face instead of the standard end cap with the air connection on the side. The special end cap can also be rotated 4 x 90° to locate the cushion adjustment screw as desired. Supplied in pairs.



Series OSP-P16 to P32



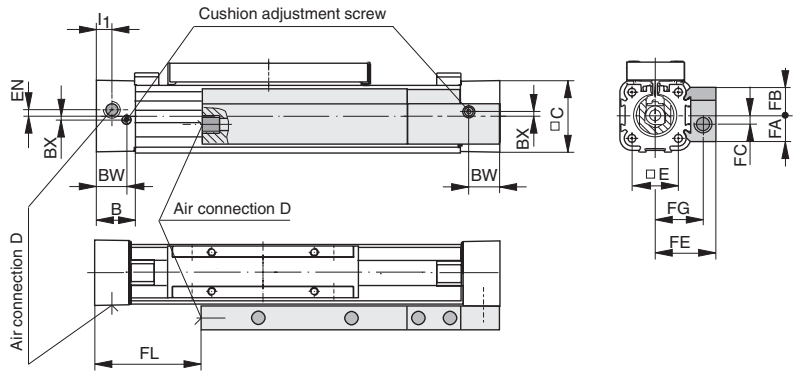
Series OSP-P40 to P80



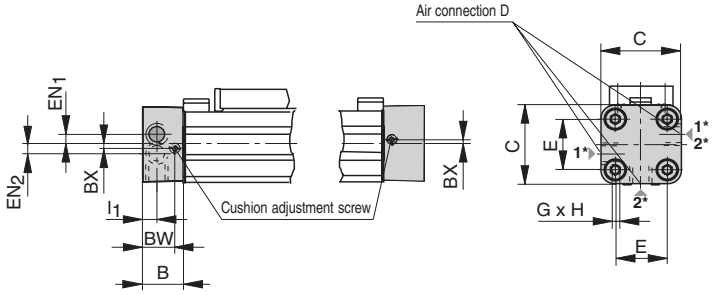
Dimension Table (mm)

Cylinder Series	B	C	D	E	G	H	BX	BW
OSP-P16	14	30	M5	18	M3	9	1.8	10.8
OSP-P25	22	41	G1/8	27	M5	15	2.2	17.5
OSP-P32	25.5	52	G1/4	36	M6	15	2.5	20.5
OSP-P40	28	69	G1/4	54	M6	15	3	21
OSP-P50	33	87	G1/4	70	M6	15	–	27
OSP-P63	38	106	G3/8	78	M8	21	–	30
OSP-P80	47	132	G1/2	96	M10	25	–	37.5

Series OSP-P16

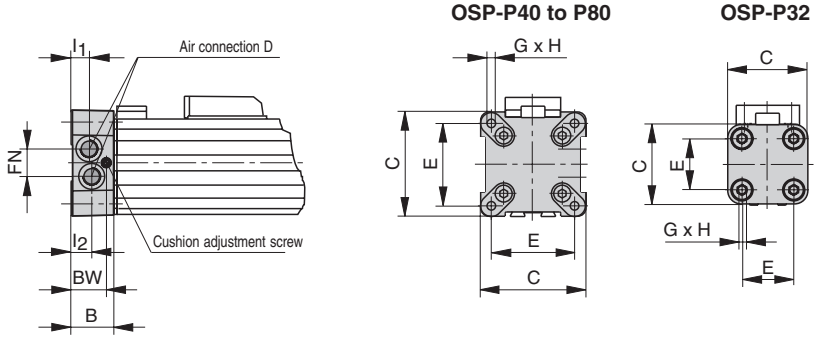


Series OSP-P25



* Versions of Air Connection Positions: 1→1or 2→2

Series OSP-P32 to P80



Both Air Connections at One End

A special end cap with both air connections on one side is available for situations where shortage of space, simplicity of installation or the nature of the process make it desirable.
Air supply to the other end is via internal air passages (OSP-P25 to P80) or via a hollow aluminium profile fitted externally (OSP-P16).
In this case the end caps cannot be rotated.



Please note:

When combining the OSP-P16 single end porting with inversion mountings, RS magnetic switches can only be mounted directly opposite to the external air-supply profile.

Dimension Table (mm)

Cylinder Series	B	C	D	E	G	H	l_1	l_2	BX	BW	EN	EN_1	EN_2	FA	FB	FC	FE	FG	FL	FN
OSP-P16	14	30	M5	18	M3	9	5.5	–	1.8	10.8	3	–	–	12.6	12.6	4	27	21	36	–
OSP-P25	22	41	G1/8	27	M5	15	9	–	2.2	17.5	–	3.6	3.9	–	–	–	–	–	–	–
OSP-P32	25.5	52	G1/8	36	M6	15	12.2	10.5	–	20.5	–	–	–	–	–	–	–	–	–	15.2
OSP-P40	28	69	G1/8	54	M6	15	12	12	–	21	–	–	–	–	–	–	–	–	–	17
OSP-P50	33	87	G1/4	70	M6	15	14.5	14.5	–	27	–	–	–	–	–	–	–	–	–	22
OSP-P63	38	106	G3/8	78	M8	21	16.5	13.5	–	30	–	–	–	–	–	–	–	–	–	25
OSP-P80	47	132	G1/2	96	M10	25	22	17	–	37.5	–	–	–	–	–	–	–	–	–	34.5

Integrated 3/2 Way Valves VOE

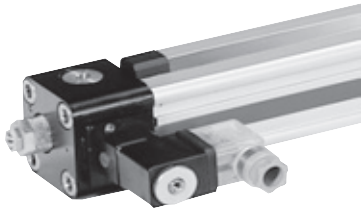
For optimal control of the OSP-P cylinder, 3/2 way valves integrated into the cylinder's end caps can be used as a compact and complete solution.
They allow for easy positioning of the cylinder, smooth operation at the lowest speeds and fast response, making them ideally suited for the direct control of production and automation processes.

Integrated 3/2 Way Valves VOE Series OSP-P25, P32, P40 and P50

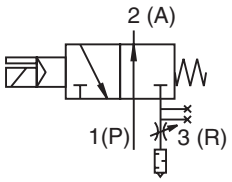
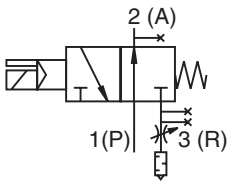


Characteristics:

- Complete compact solution
- Various connection possibilities: Free choice of air connection with rotating end caps with VOE valves, Air connection can be rotated 4x90°, Solenoid can be rotated 4x90°, Pilot valve can be rotated 180°
- High piston velocities can be achieved with max. 3 exhaust ports
- Minimal installation requirements
- Requires just one air connection per valve
- Optimal control of the OSP-P cylinder
- Excellent positioning characteristics
- Integrated operation indicator.
- Integrated exhaust throttle valve
- Manual override - indexed
- Adjustable end cushioning
- Easily retrofitted – please note the increase in the overall length of the cylinder!

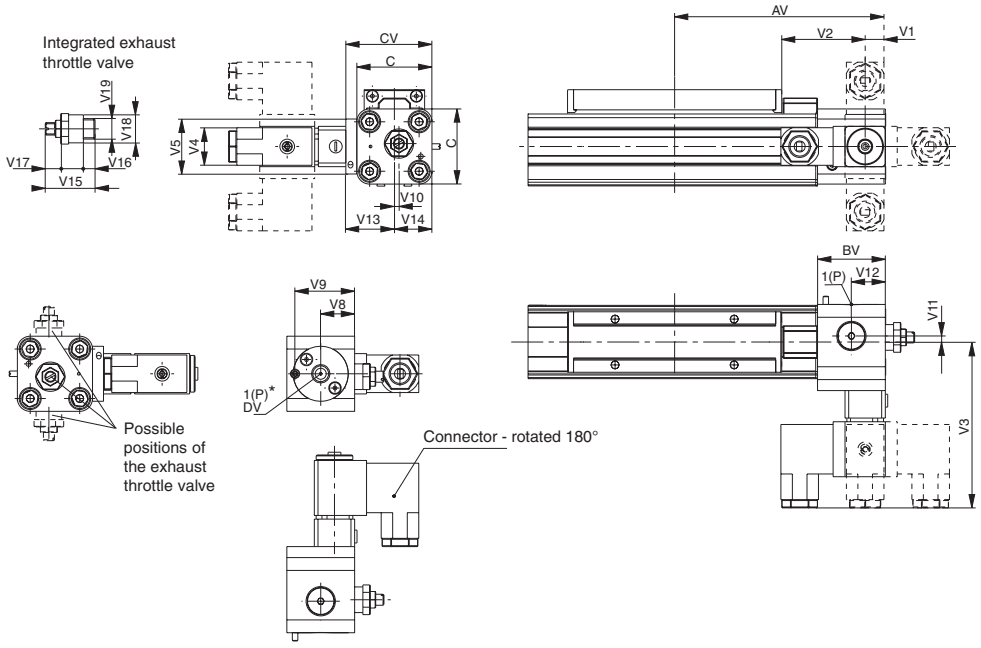


Characteristics 3/2 Way Valves VOE

Characteristics	3/2 Way Valves with spring return			
Pneumatic diagram				
Type	VOE-25	VOE-32	VOE-40	VOE-50
Actuation	electrical			
Basic position	P → A open, R closed			
Type	Poppet valve, non overlapping			
Mounting	integrated in end cap			
Installation	in any position			
Port size	G 1/8	G 1/4	G 3/8	G 3/8
Temperature	-10°C to +50°C *			
Operating pressure	2-8 bar			
Nominal voltage	24 V DC / 230 V AC, 50 Hz			
Power consumption	2,5 W / 6 VA			
Duty cycle	100%			
Electrical Protection	IP 65 DIN 40050			

* other temperature ranges on request

Dimensions VOE Valves OSP-P25 and P32

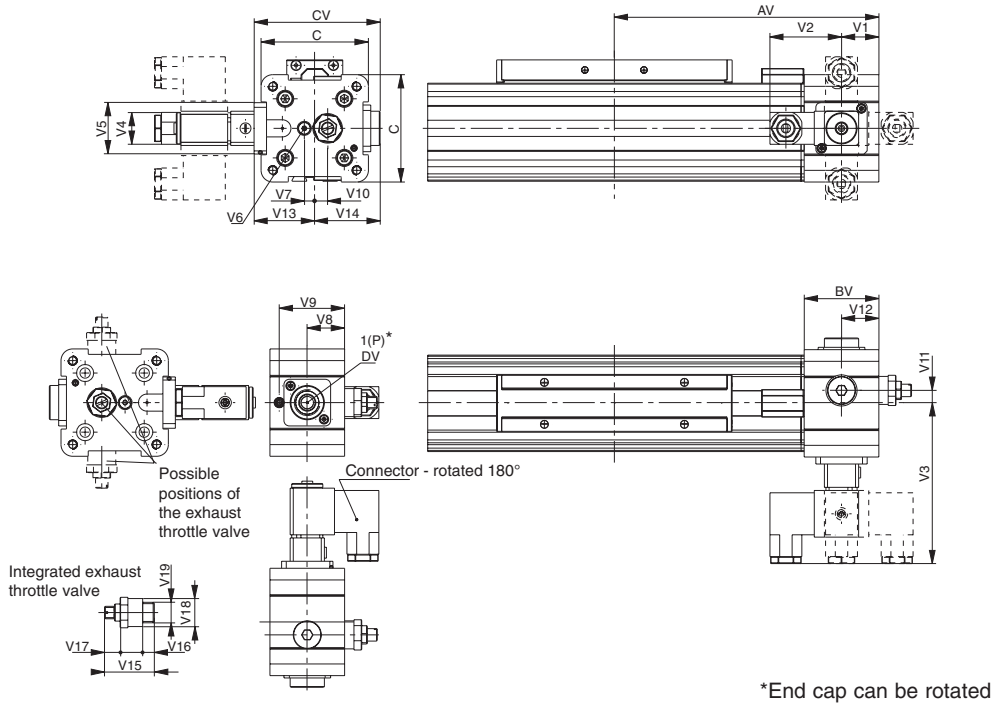


* End cap can be rotated 4x90°

Dimension Table (mm)

Cylinder Series	AV	BV	C	CV	DV	V1	V2	V3	V4	V5	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19
OSP-P25	115	37	41	47	G1/8	11	46	90.5	22	30	18.5	32.5	2.5	3.3	18.5	26.5	20.5	24	5	4	14	G1/8
OSP-P32	139	39.5	52	58	G1/4	20.5	46	96	22	32	20.5	34.7	6	5	20.5	32	26	32	7.5	6	18	G1/4

Dimensions VOE Valves OSP-P40 and P50



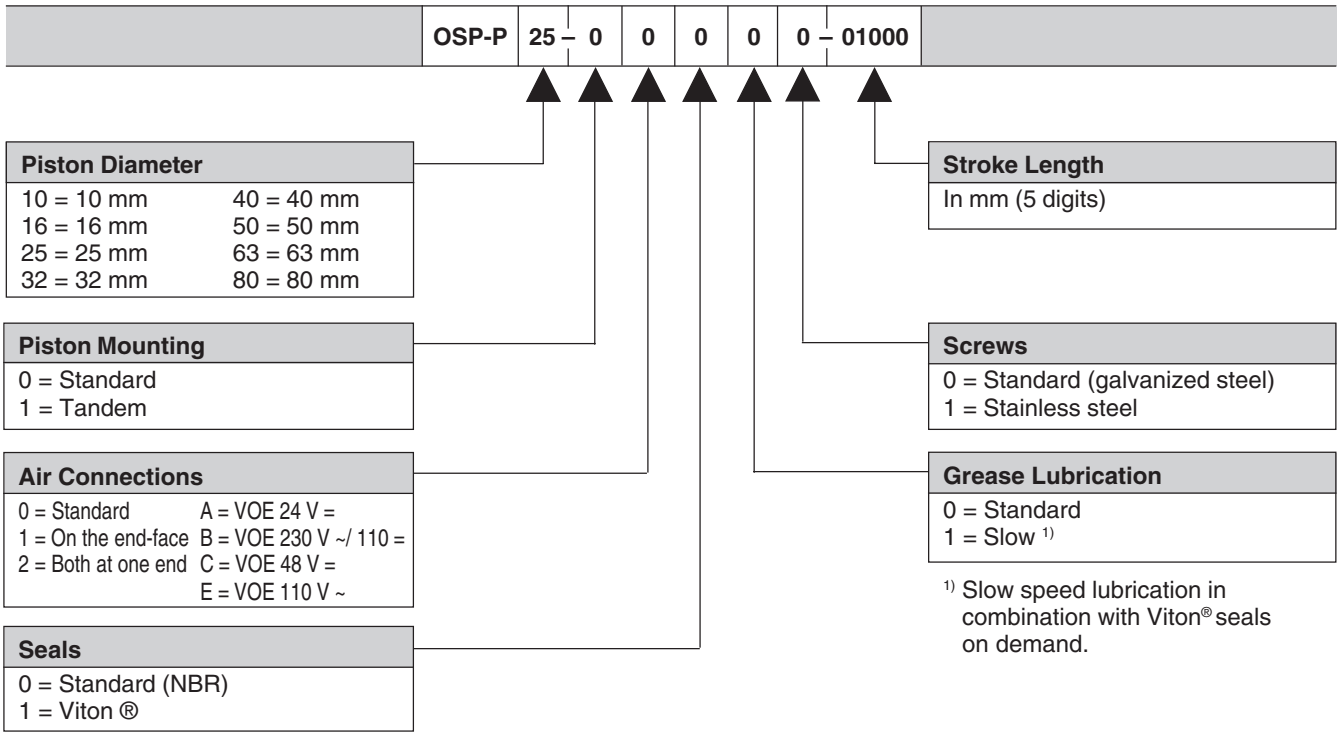
*End cap can be rotated 4x90°

Dimension Table (mm)

Cylinder Series	AV	BV	C	CV	DV	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19
OSP-P40	170	48	69	81	G3/8	24	46	103	22	33	M5	6.7	24	42	8.3	8.3	24	39	42	32	7.5	6	18	G1/4
OSP-P50	190	48	87	82	G3/8	24	46	102	22	33	M5	4.5	24	42	12.2	12.2	24	38	44	32	7.5	6	18	G1/4

Order Instructions – Basic Cylinder

Basic Cylinder



1) Slow speed lubrication in combination with Viton® seals on demand.

Accessories - please order separately

Description	Further information see Data Sheet No.
Clevis Mounting	**1.45.002E**
End Cap Mountings	**1.45.003E**
Mid-Section Support	**1.45.004E**
Inversion Mounting	**1.45.006E**
Adaptor Profile	**1.45.007E**
T-Nut Profile	**1.45.008E**
Adaptor Profile	**1.45.009E**
Duplex Connection	**1.45.011E**
Multiplex Connection	**1.45.012E**
Magnetic Switches	**1.45.100E, 1.45.104E, 1.45.105E**
Cable Cover	**1.45.102E**

Clean Room Cylinder

ø 16 – 32 mm

Rodless Cylinder

certified to DIN EN ISO 14644-1

OSP
ORIGA SYSTEM PLUS

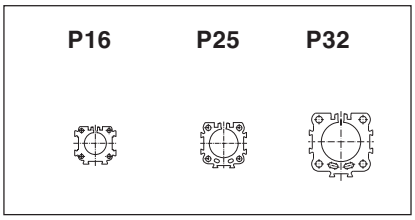
Characteristics				Pressure quoted as gauge pressure
Characteristics		Symbol	Unit	Description
General Features				
Type				Rodless Cylinder
Series				OSP-P
System				Double-acting, with cushioning, position sensing capability
Mounting				see drawings
Air connection				Threaded
Ambient and medium temperature range		ϑ_{min} ϑ_{max}	°C °C	-10 – other temperature ranges +80 on request
Weight (Mass)			kg	See table below
Installation				In any positon
Medium				Filtered, unlubricated compressed air (other media on request)
Lubrication				Permanent grease lubrication (additional oil mist lubrication not required) Option: special slow speed grease
Material	Cylinder profile			Anodized aluminium
	Carrier (piston)			Anodized aluminium
	End caps			Aluminium, lacquered
	Sealing bands			Corrosion resistant steel
	Seals			NBR (Option: Viton®)
	Screws			Stainless steel
	Covers			Anodized aluminium
	Guide plate			Plastic
Max. operating pressure*		p_{max}	bar	8

* Pressure quoted as gauge pressure

Weight (Mass) kg

Cylinder series (basic cylinder)	Weight (Mass) kg	
	at 0 mm stroke	per 100 mm stroke
OSP-P16	0.22	0.1
OSP-P25	0.65	0.197
OSP-P32	1.44	0.354

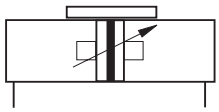
Size Comparison



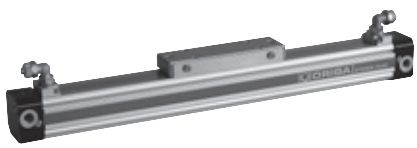
Standard Versions:
- Double-acting with adjustable end cushioning
- With magnetic piston for position sensing
- Stainless steel screws

Special Versions:
- Slow speed lubrication
- Viton® seals

Series OSP-P..



Features:
- Clean room classification ISO Class 4 at v_m = 0.14 m/s ISO Class 5 at v_m = 0.5 m/s
- suitable for smooth slow speed operation up to v_{min} = 0.005 m/s
- optional stroke length up to 1200 mm (longer strokes on request)
- Low maintenance
- Compact design with equal force and velocity in both directions
- Aluminium piston with bearing rings to support high direct and cantilever loads



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For **magnetic switches** see 1.45.100E, 1.45.004E, 1.45.005E
For **mountings** and **accessories** see 1.45.001E to 009E

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The right to introduce technical modifications is reserved

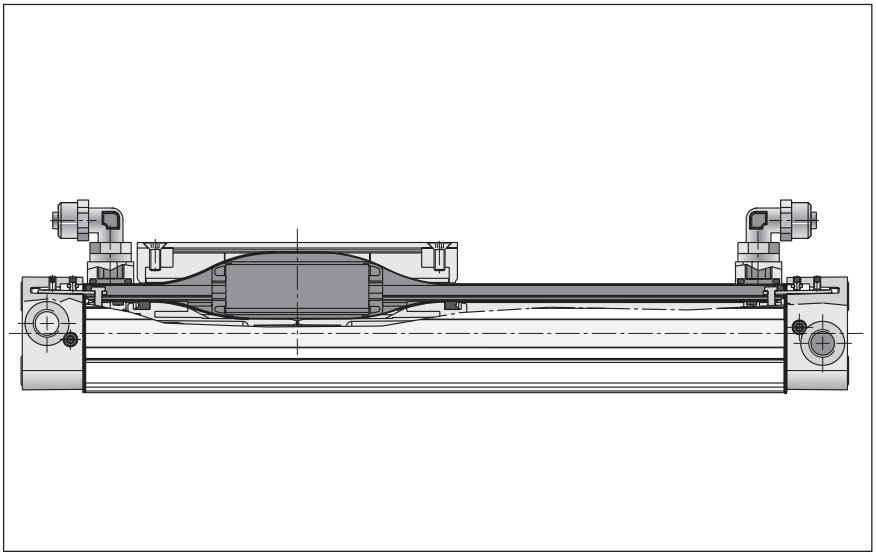
Zertifizierung

Based on the HOERBIGER-ORIGA rodless cylinder, proven in world wide markets, HOERBIGER-ORIGA now offers the only rodless cylinder on the market with a certification from IPA Institute for the cleanroom specification according to DIN EN ISO 14644-1.

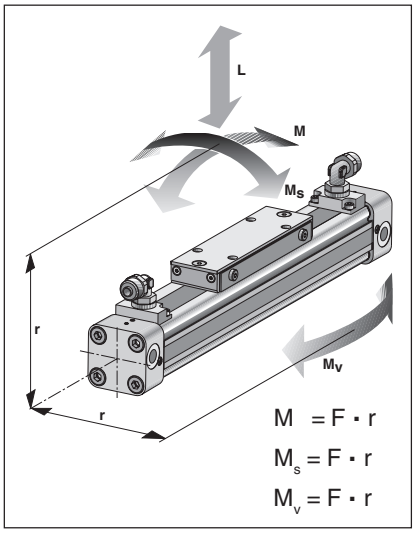


Function:

The clean room cylinders of the ORIGA SYSTEM PLUS (OSP-P) combines the efficiency of the HOERBIGER-ORIGA slot seal system with vacuum protection against progressive wear and contamination from the sliding components. A partial vacuum drawn between inner and outer sealing bands prevents emission into the clean room.
To achieve the necessary vacuum a suction flow of ca. 4 m^3/h is required.



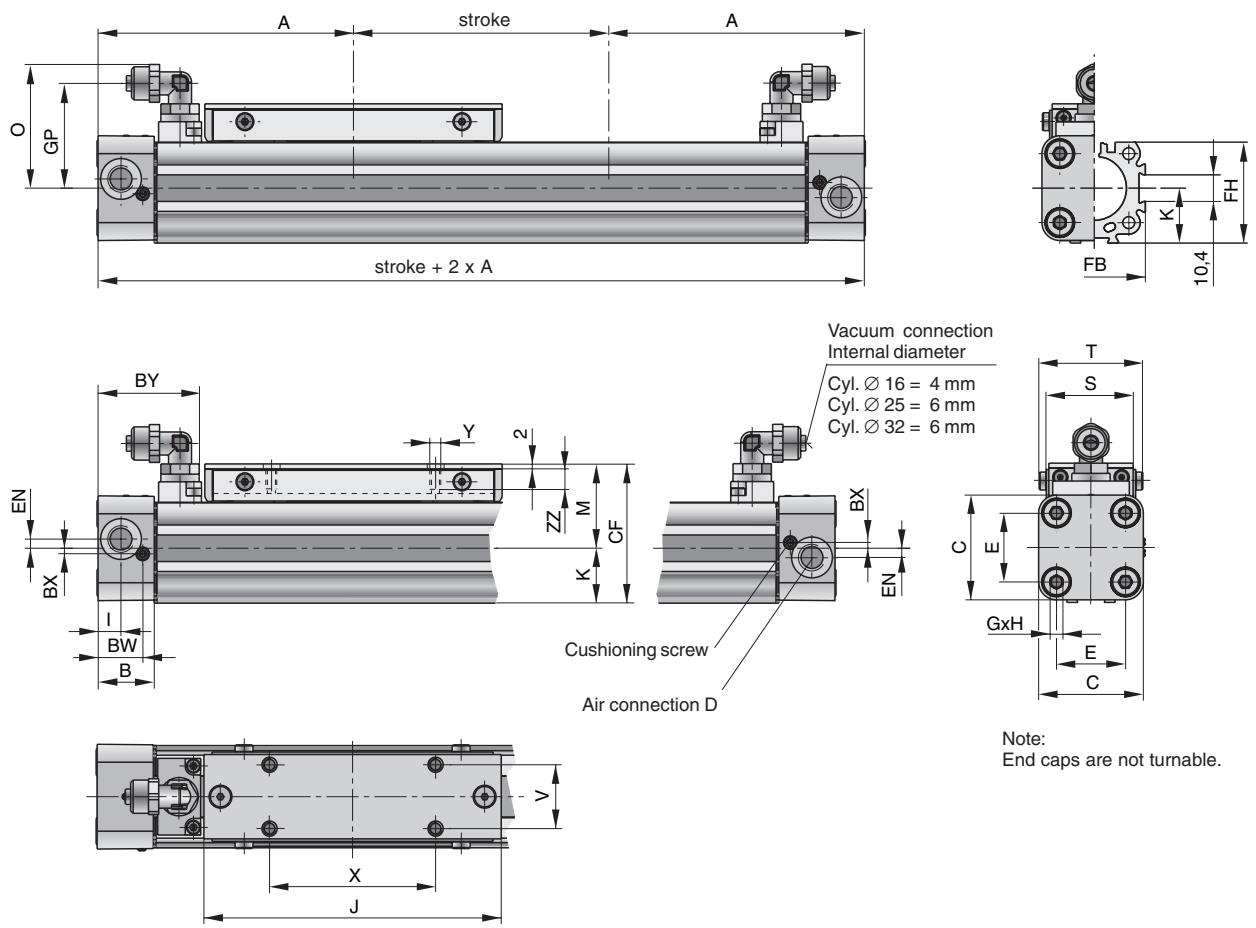
Loads, Forces and Moments



Cylinder Series [mmØ]	Force at 6 bar [N]	Cushion length [mm]	max. allowed Load L [N]	max. allowed Bending M [Nm]	Moment M_s [Nm]	max. allowed Torque M_v [Nm]
OSP-P16	78	11	120	4	0.45	0.5
OSP-P25	250	17	300	15	1.5	3.0
OSP-P32	420	20	450	30	3.0	5.0

Load and moment data are based on speeds v ≤ 0.2 m/s.
The adjacent table shows the maximum values for light, shock-free operation which must not be exceeded even in dynamic operation.

Dimensions (mm)



Dimension Table (mm)

Cylinder Series		A	B	C	D	E	G	H	I	J	K	M	O S
OSP-P16	65	14	30	M5	18	M3	9	5.5	69	15	25	31	24
OSP-P25	100	22	41	G1/8	27	M5	15	9	117	21.5	33	48.5	35
OSP-P32	125	25.5	52	G1/4	36	M6	15	11.5	152	28.5	40	53.6	38

Cylinder Series	T	V	X	Y	BW	BX	BY	CF	EN	FB	FH	GP	ZZ
OSP-P16	29.6	16.5	36	M4	10.8	1.8	28.5	40	3	30	27.2	25.7	7
OSP-P25	40.6	25	65	M5	17.5	2.2	40.5	54.5	3.6	40	39.5	41	8
OSP-P32	45	27	90	M6	20.5	2.5	47.1	68.5	5.5	52	51.7	46.2	10

Order Instructions Basic Cylinders – Clean Room Cylinders

OSP-P	25	-	4	7	0	0	1	-	01000

Piston Diameter

16 = 16 mm
25 = 25 mm
32 = 32 mm

Piston Mounting

4 = Cleanroom

Air Connection

7 = Cleanroom end cap

Seals

0 = Standard (NBR)
1 = Viton®

Stroke

Input (five digits) in mm
max. stroke lengths 1200 mm,
longer strokes on request

Screws

1 = Stainless Steel

Grease Lubrication

0 = Standard
1 = Slow speed lubrication [1)]

[1)] The combination „Slow speedlubrication“ and „Viton® sealings“ are available on request

Accessories – please order separately

Benennung	Further information see Data sheet No.
End Cap Mountings	**1.45.003E**
Mid-Section Support	**1.45.004E**
Adaptor Profile	**1.45.007E**
T-Nut Profile	**1.45.008E**
Connection Profile	**1.45.009E**
Magnetic Switches	**1.45.100E, 1.45.104E, 1.45.105E**
Cable Cover	**1.45.102E**

Informations for ATEX-Directives

Detail informations for use pneumatic components in Ex-Areas see leaflet A5P060E "EU Directive 94/9/EG (ATEX 95) for Pneumatic Components".

OSP
ORIGA SYSTEM PLUS

Components for EX-Areas

Technical Data (deviant to the Standard Cylinder)

Pressure quoted as gauge pressure

Characteristics	Symbol	Unit	Description
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +60
Max. switching frequency		Hz	1 (double stroke/s) Basic cylinder 0.5 (1stroke/s) Cylinder with guide
Operating pressure range	p_{max}	bar	Max. 8
Max. speed	v_{max}	m/s	3 Basic cylinder 2 Cylinder with guide
Medium			Filtered, unlibricated compressed air – free from water and dirt to ISO 8573-1 Solids: Class 7 particle size < 40 µm for Gas Water content: pressure dew point +3 °C, class 4, but at least 5 °C below minimum operating temperature
Noise level		dB (A)	70
Information for materials			Aluminium: see data sheet "Material" Lubrication: see security data sheet "Grease for use in Cylinder with guides" Sealing bands: Corrosion resistant steel

For all other details for dimensions, weights, allowable loads, cushioning diagrams and accessories see data sheets in this catalogue.

Equipment Group II Categorie 2G

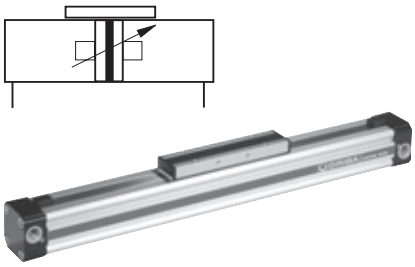
Rodless cylinder: Ⓔx II 2G c T4 -10°C≤Ta≤+60°C

Series	Size	Stroke range	Accessories
OSP-P	Ø 10 to 80	1– 6000 mm	Mountings programme
SLIDELINE	Ø 16 to 80	1– 6000 mm	Mountings programme

Rodless Cylinder ø 10 – 80 mm

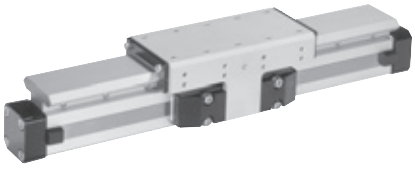
Basic Cylinder

Series: OSP-P ....ATEX



Plain Bearing Guide SLIDELINE ø 16 – 80 mm

Series: SL -..ATEX



For **basic cylinder** see 1.10.002E
For **plain bearing guide SLIDELINE** see 1.40.002E
For **mountings and accessories** see 1.45.001E to 009E

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The right to introduce technical modifications is reserved

Order Instructions – Basic Cylinder – Series OSP-P..... ATEX

OSP-P	25	–	0	0	0	0	0	–	01000	ATEX



Piston diameter

10 = 10 mm	40 = 40 mm
16 = 16 mm	50 = 50 mm
25 = 25 mm	63 = 63 mm
32 = 32 mm	80 = 80 mm

Piston Mounting

0 = Standard
1 = Tandem

Air Connection

0 = Standard
1 = On the end-face
2 = both at one end

Dichtungen

0 = Standard (NBR)
1 = Viton ®

Stroke length

in mm (5 digits)

Screws

0 = Standard (galvanized steel)
1 = Stainless steel

Grease Lubrication

0 = Standard
1 = Slow [1)]

[1)] Slow speed lubrication in combination with Viton® seals on demand

Plain bearing guide SLIDELINE – Series SL..ATEX
– the order its only possible in combination with the basic cylinder OSP-P..ATEX!

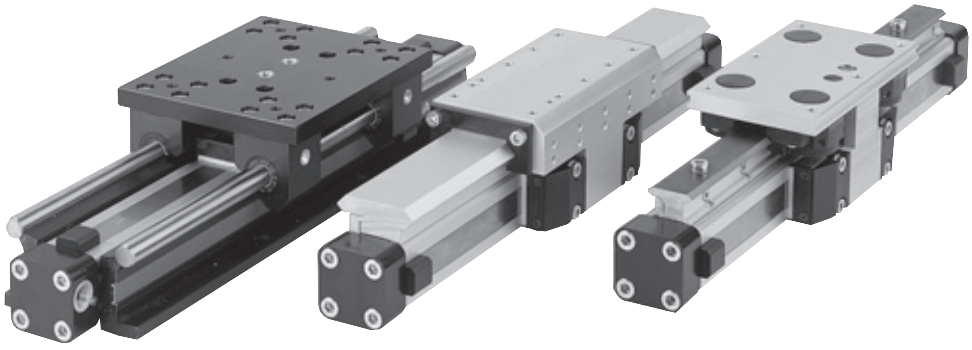
for Linear Drive	Order instruction *	
	Type	Order No.
OSP-P16....ATEX	**SL-16ATEX**	**20341**
OSP-P25....ATEX	**SL-25ATEX**	**20342**
OSP-P32....ATEX	**SL-32ATEX**	**20196**
OSP-P40....ATEX	**SL-40ATEX**	**20343**
OSP-P50....ATEX	**SL-50ATEX**	**20195**
OSP-P63....ATEX	**SL-63ATEX**	**20853**
OSP-P80....ATEX	**SL-80ATEX**	**21000**

* corrosion resistant version on request

Accessories – please order separately

Description	Further information see Data Sheet No.
Clevis Mounting Ø 16 to Ø 80 mm	**1.45.002E-2**
End Cap Mounting for OSP-P Basic Cylinder	**1.45.003E**
End Cap Mounting for OSP-P Basic Cylinder with SLIDELINE	**1.45.00E-2**
Mid-Section Support for OSP-P Basic Cylinder	**1.45.004E**
Mid-Section Support for OSP-P Basic Cylinder with SLIDELINE	**1.45.005E-3**
Inversion Mounting	**1.45.006E**
Adaptor Profile	**1.45.007E**
T-Nut Profile	**1.45.008E**
Adaptor Profile	**1.45.009E**
Magnetic Switches ATEX-Version	**1.45.105E**
Cable Cover	**1.45.102E**

Linear Guides
Series OSP-P



Contents

	Description	Data Sheet No.	Page
	Overview	1.40.001E	31-32
	Plain bearing guide SLIDELINE	1.40.002E	33-34
	Roller guide POWERSLIDE	1.40.003E	35-38
	Ball bushing guide GUIDELINE	1.40.004E	39-42
	Aluminium roller guide PROLINE	1.40.005E	43-44
NEW	Recirculating ball bearing guide STARLINE	1.40.006E	45-50
NEW	Recirculating ball bearing guide KF	1.40.007E	51-56

HOERBIGER ORIGA

OSP

ORIGA SYSTEM PLUS

Adaptive modular system

The Origa system plus – OSP – provides a comprehensive range of linear guides for the pneumatic and electric linear drives.

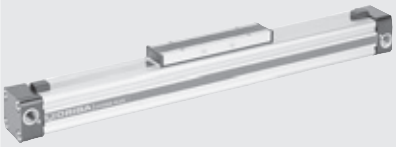
Advantages:

- Takes high loads and forces
- High precision
- Smooth operation
- Can be retrofitted
- Can be installed in any position

Rodless Pneumatic Cylinder Series OSP - P

Piston diameters 10 – 80 mm

See data sheet
1.10.002E (Standard)
1.10.020E (ATEX-Version)



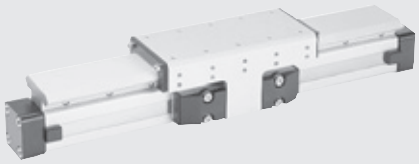
Linear Guides

SLIDELINE

The cost-effective plain bearing guide for medium loads.
Brake optional.

Piston diameters 16 – 80 mm

See data sheet
1.40.00E (Standard)
1.10.020E (ATEX-Version)



POWERSLIDE

The roller guide for heavy loads and hard application conditions

Piston diameters 16 – 50 mm

See data sheet
1.40.003E

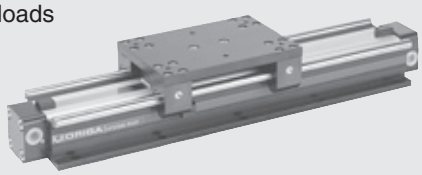


GUIDELINE

The ball bushing guide for the heavy loads and greatest accuracy.

Piston diameters 25 – 50 mm

See data sheet
1.40.004E

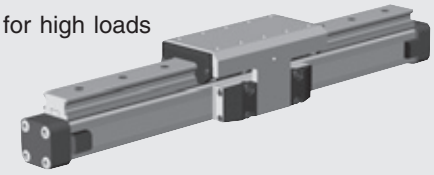


PROLINE

The compact aluminium roller guide for high loads and velocities.
Optional with brake.

Piston diameters 16 – 50 mm

See data sheet
1.40.005E

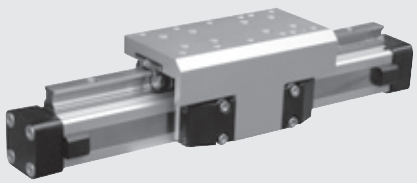


STARLINE

Recirculating ball bearing guide for highest loads and precision

Piston diameters 16 – 50 mm

See data sheet
1.40.006E

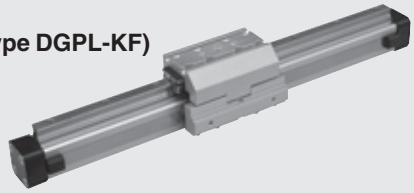


KF GUIDE

Recirculating ball bearing guide for high loads and precision.
Correspond to FESTO dimensions (Type DGPL-KF)

Piston diameters 16 – 50 mm

See data sheet
1.40.007E



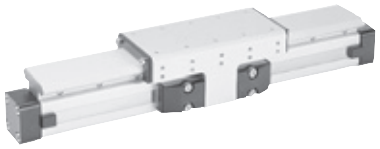
Plain Bearing Guide SLIDELINE

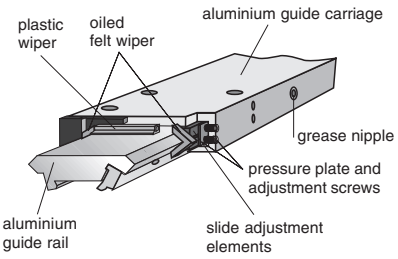
OSP
ORIGA SYSTEM PLUS

Series SL 16 to 80
for Linear-drive
• Series OSP-P

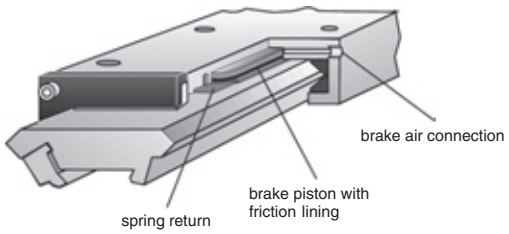
Versions

for pneumatic linear drive:
Series OSP-P

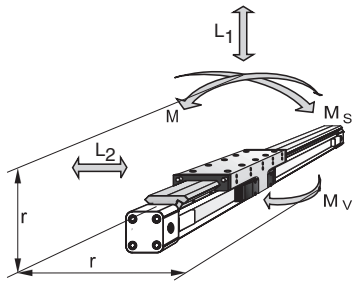




Option – Integrated Brake



Loads, Forces and Moments



Technical Data

The table shows the maximum permissable values for smooth operation, which should not be exceeded even under dynamic conditions.

The load and moment figures apply to speeds v < 0.2 m/s.

*** Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

Features:

- ATEX-version (without brake) is also available (see data sheet no. 1.10.020E)
- Anodised aluminium guide rail with prism-shaped slideway arrangement
- Adjustable plastic slide elements – optional with integral brake
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideways.
- Corrosion resistant version available on request.
- Any length of stroke up to 5500 mm (longer strokes on request)

Integrated Brake (optional)
for series OSP-P25 to OSP-P50:
- Actuated by pressure
- Released by exhausting and spring return

For further technical data see also linear drives OSP-P (1.10.002E)

Series	For linear drive	Max. moments [Nm]			Max. loads [N]	Maximum braking force at 6 bar [N] [1]	Mass of linear drive with guide [kg]		Mass * of guide carriage [kg]	Order No. SLIDELINE [2] for	
		M	Ms	Mv	L_1, L_2		with 0 mm stroke	increase per 100 mm stroke		OSP-P without brake	OSP-P with brake
SL16	OSP-P16	11	6	11	325	–	0.57	0.22	0.23	**20341**	**–**
SL 25	OSP-P25	34	14	34	675	325	1.55	0.39	0.61	**20342**	**20409**
SL 32	OSP-P32	60	29	60	925	545	2.98	0.65	0.95	**20196**	**20410**
SL 40	OSP-P40	110	50	110	1500	835	4.05	0.78	1.22	**20343**	**20411**
SL50	OSP-P50	180	77	180	2000	1200	6.72	0.97	2.06	**20195**	**20412**
SL63	OSP-P63	260	120	260	2500	–	11.66	1.47	3.32	**20853**	**–**
SL80	OSP-P80	260	120	260	2500	–	15.71	1.81	3.32	**21000**	**–**

[1] Only with integrated brake: Braking force on dry oil-free surface
Values are decreased for lubricated slideways
[2] Corrosion resistant fixtures available on request

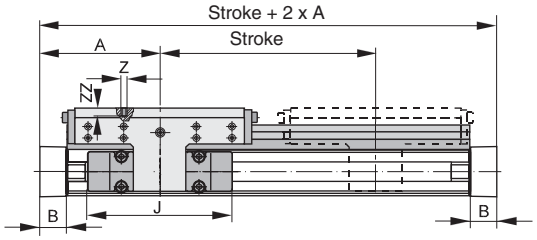
For **linear drives** see 1.10.002E, for **ATEX-version** see 1.10.020E
For **mountings** see 1.45.005E

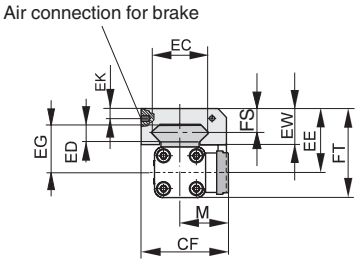
HOERBIGER ORIGA

A1P539E00HAA00X
The right to introduce technical modifications is reserved

Dimensions

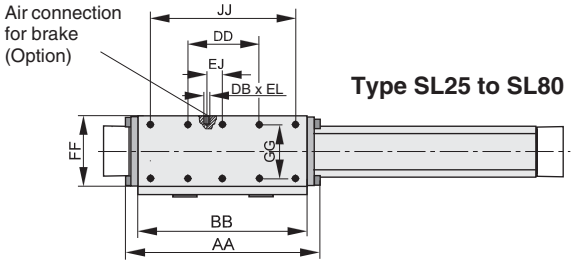
Series OSP-P



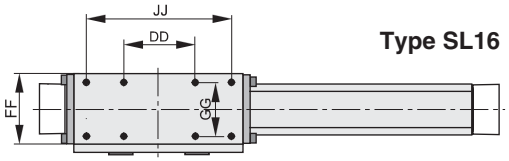


For further mounting elements and options see accessories.

For further information and technical data see data sheets for linear drives OSP-P (1.10.002E)



Type SL25 to SL80



Type SL16

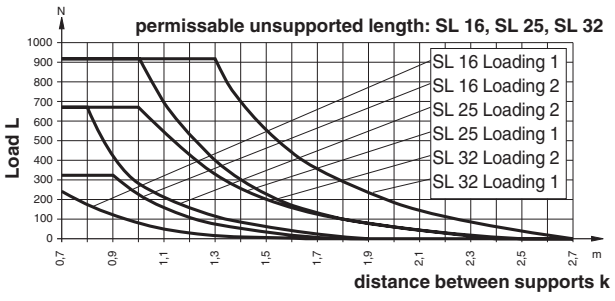
Dimension Table (mm)

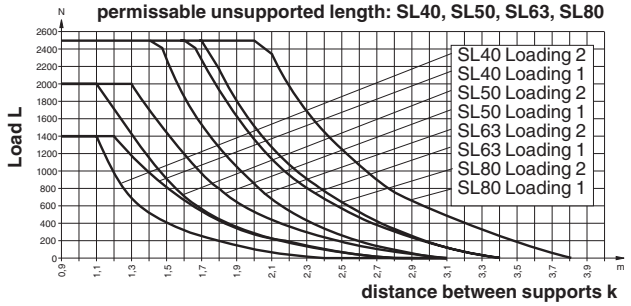
Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	ED	EE	EG	EJ	EK	EL	EW	FF	FT	FS	GG	JJ	ZZ
SL16	65	14	69	31	M4	106	88	–	30	55	36	8	40	30	–	–	–	22	48	55	14	36	70	8
SL25	100	22	117	40,5	M6	162	142	M5	60	72,5	47	12	53	39	22	6	6	30	64	73,5	20	50	120	12
SL32	125	25,5	152	49	M6	205	185	M5	80	91	67	14	62	48	32	6	6	33	84	88	21	64	160	12
SL40	150	28	152	55	M6	240	220	M5	100	102	77	14	64	50	58	6	6	34	94	98,5	21.5	78	200	12
SL50	175	33	200	62	M6	284	264	M5	120	117	94	14	75	56	81	6	6	39	110	118,5	26	90	240	16
SL63	215	38	256	79	M8	312	292	–	130	152	116	18	86	66	–	–	–	46	152	139	29	120	260	14
SL80	260	47	348	96	M8	312	292	–	130	169	116	18	99	79	–	–	–	46	152	165	29	120	260	14

Mid-Section Support

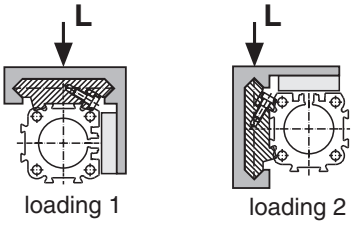
(for versions see 1.45.005E)

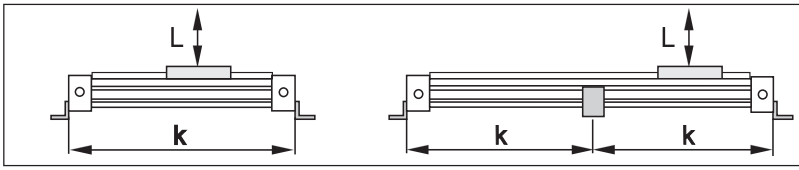
Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissable unsupported length in relation to loading.
A distinction must be drawn between loading 1 and loading 2.
Deflection of 0.5 mm max. between supports is permissable.





Note:
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.





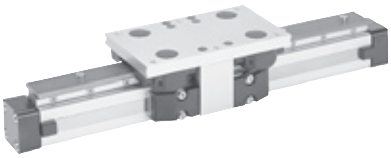
Roller Guide POWERSLIDE

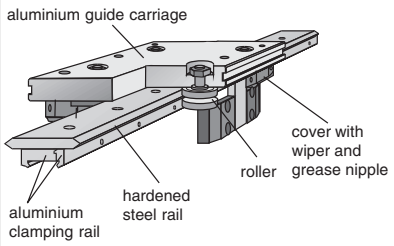
OSP
ORIGA SYSTEM PLUS

Series PS 16 to 50
for Linear-drive
• Series OSP-P

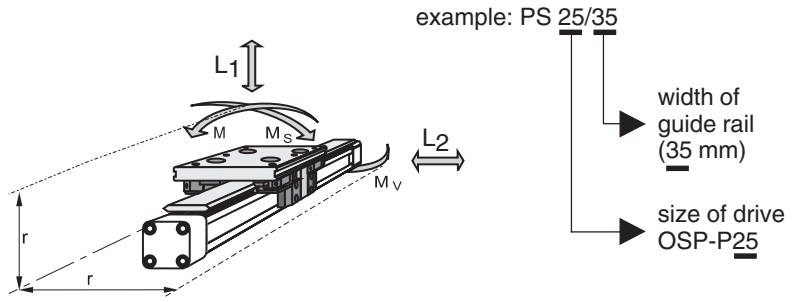
Versions

for pneumatic linear drive:
Series OSP-P





Loads, Forces and Moments



Technical Data

The Table shows the maximum permissable values for smooth operation, which should not be exceeded even under dynamic conditions.
For further information and technical data see data sheets for linear drives OSP-P (1.10.002E)

*** Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

Features:

- Anodised aluminium guide carriage with vee rollers having 2 rows of ball bearings
- Hardened steel guide rail
- Several guide sizes can be used on the same drive
- Corrosion resistance version available on request
- Max. speed v = 3 m/s,
- Tough roller cover with wiper and grease nipple
- Any length of stroke up to 3500 mm, (longer strokes on request)

Series	For linear drive	Max. moments [Nm]			Max. load [N]	Mass of linear drive with guide [kg]		Mass * of guide carriage	Order-No. Powerslide for OSP-P[1)] [kg]
		M	Ms	Mv	L_1, L_2	with 0 mm stroke	increase per 100 mm stroke		
PS 16/25	OSP-P16	45	14	45	1400	0.93	0.24	0.7	**20285**
PS 25/25	OSP-P25	63	14	63	1400	1.5	0.4	0.7	**20015**
PS 25/35	OSP-P25	70	20	70	1400	1.7	0.4	0.8	**20016**
PS 25/44	OSP-P25	175	65	175	3000	2.6	0.5	1.5	**20017**
PS 32/35	OSP-P32	70	20	70	1400	2.6	0.6	0.8	**20286**
PS 32/44	OSP-P32	175	65	175	3000	3.4	0.7	1.5	**20287**
PS 40/44	OSP-P40	175	65	175	3000	4.6	1.1	1.5	**20033**
PS 40/60	OSP-P40	250	90	250	3000	6	1.3	2.2	**20034**
PS 50/60	OSP-P50	250	90	250	3000	7.6	1.4	2.3	**20288**
PS 50/76	OSP-P50	350	140	350	4000	11.5	1.8	4.9	**20289**

[1)] corrosion resistance version available on request (max. loads and moments are 25% lower)

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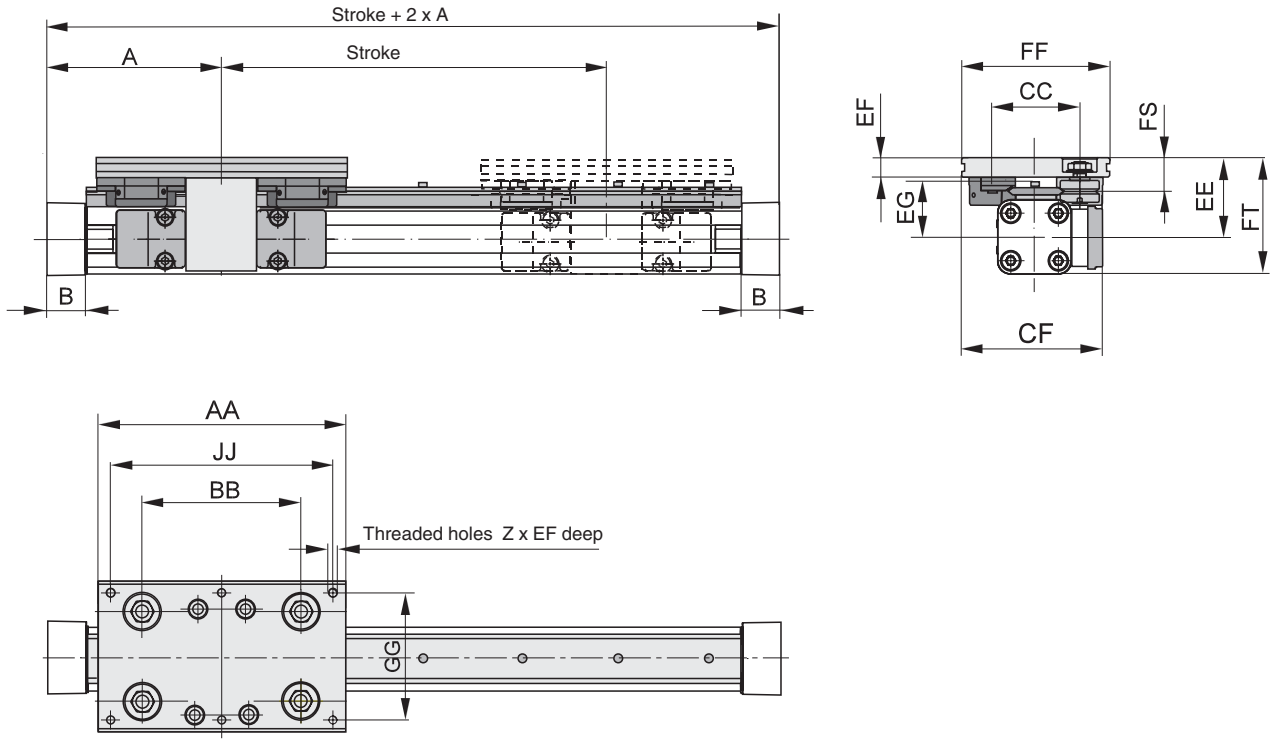
The right to introduce technical modifications is reserved

For **linear drives** see 1.10.002E
For **mountings** see 1.45.005E

HOERBIGER ORIGA

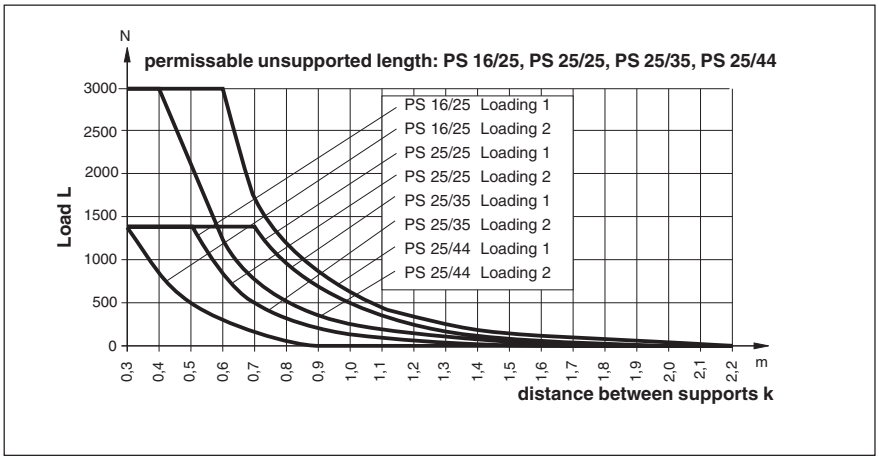
Dimensions

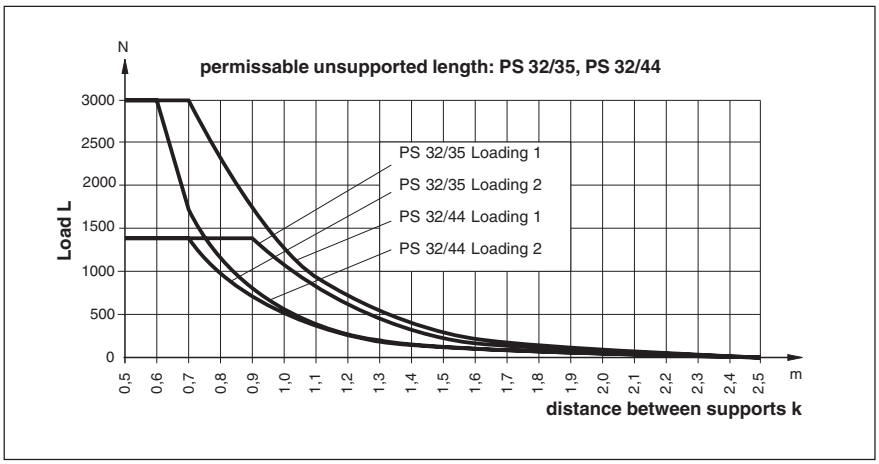
Series OSP-P

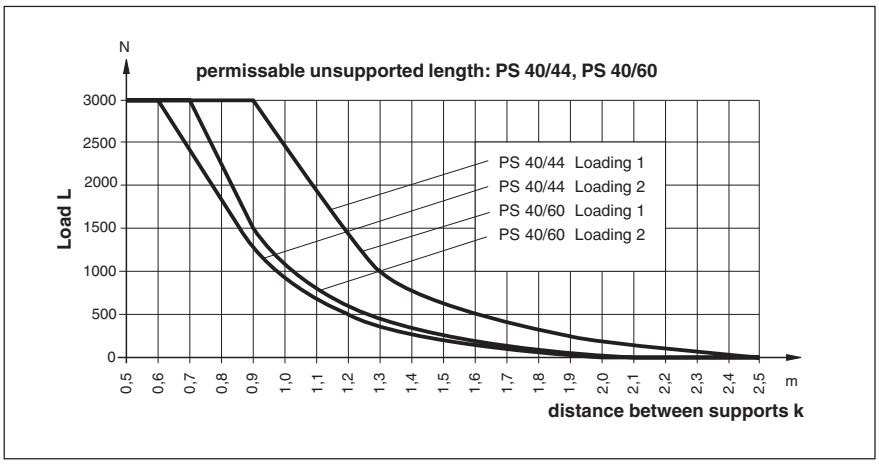


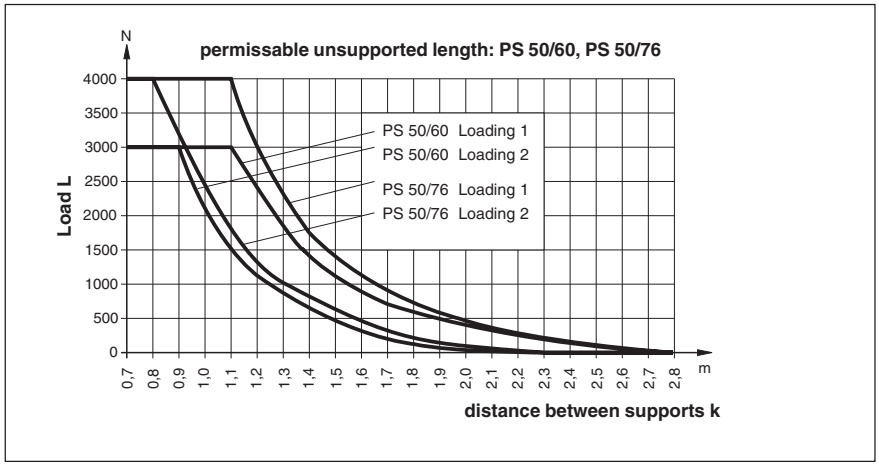
Dimension Table (mm)

Series	A	B	Z	AA	BB	CC	CF	EE	EF	EG	FF	FS	FT	GG	JJ
PS16/25	65	14	4xM6	120	65	47	80	49	12	35	80	21	64	64	100
PS 25/25	100	22	6xM6	145	90	47	79.5	53	11	39	80	20	73.5	64	125
PS 25/35	100	22	6xM6	156	100	57	89.5	52.5	12.5	37.5	95	21.5	73	80	140
PS 25/44	100	22	6xM8	190	118	73	100	58	15	39	116	26	78.5	96	164
PS 32/35	125	25.5	6xM6	156	100	57	95.5	58.5	12.5	43.5	95	21.5	84.5	80	140
PS 32/44	125	25.5	6xM8	190	118	73	107	64	15	45	116	26	90	96	164
PS 40/44	150	28	6xM8	190	118	73	112.5	75	15	56	116	26	109.5	96	164
PS 40/60	150	28	6xM8	240	167	89	122.5	74	17	54	135	28.5	108.5	115	216
PS 50/60	175	33	6xM8	240	167	89	130.5	81	17	61	135	28.5	123.5	115	216
PS 50/76	175	33	6xM10	280	178	119	155.5	93	20	64	185	39	135.5	160	250







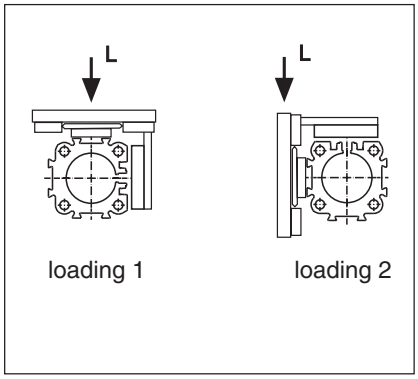


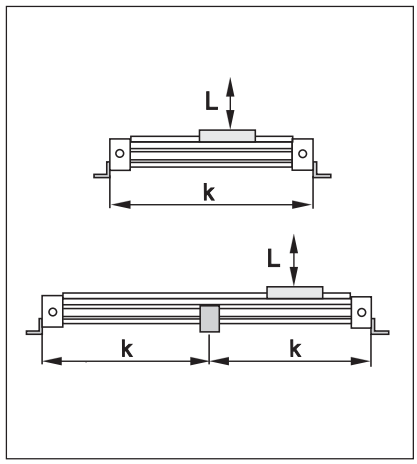
Mid-Section Support

(for versions, see accessories)

Mid section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissable unsupported length in relation to loading.
A distinction must be drawn between loading 1 and loading 2.
Deflection of 0.5 mm max. between supports is permissable.

Note
For speeds v > 0.5 m/s the distance between supports should not exceed 1m.





For further mounting elements and options see 1.45.001E.

Service life

Calculation of service life is achieved in two stages:

- Determination of load factor L_F from the loads to be carried
- Calculation of service life in km

1. Calculation of load factor L_F

$$L_F = \frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}}$$

with combined loads, L_F should not exceed the value 1.

Lubrication

For maximum system life, lubrication of the rollers must be maintained at all times.

Only high quality Lithium based greases should be used.

Lubrication intervals are dependant on environmental conditions (temperature, running speed, grease quality etc.) therefore the installation should be regularly inspected.

2. Service life calculation

- **For PS 16/25, PS 25/25, PS 25/35, and PS 32/35**

  Service life [km] = $\dfrac{106}{(L_F + 0{,}02)^3}$

- **For PS 25/44, PS 32/44, PS 40/44, PS 40/60 and PS 50/60:**

  Service life [km] = $\dfrac{314}{(L_F + 0{,}015)^3}$

- **For PS 50/76:**

  Service life [km] = $\dfrac{680}{(L_F + 0{,}015)^3}$

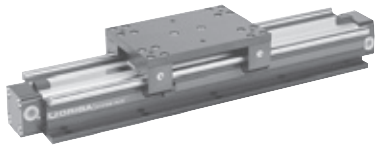
Ball bushing guide GUIDELINE

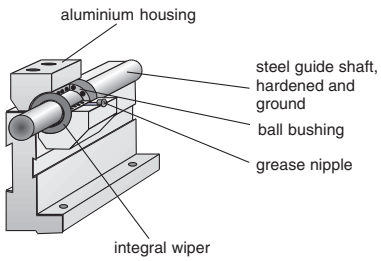
OSP
ORIGA SYSTEM PLUS

Series GDL 25 to 50
for Linear-drive
• Series OSP-P

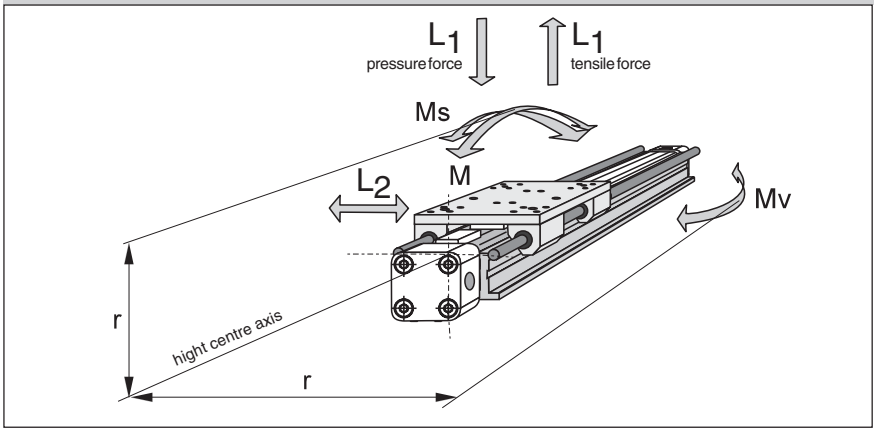
Versions

for pneumatic linear drive:
Series OSP-P





Loads, Forces and Moments



Technical Data

The Table shows the maximum permissable values for smooth operation, which should not be exceeded even under dynamic conditions.

For further information and technical data see data sheets for linear drives OSP-P (1.10.002E)

*** Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

Features

- Anodised aluminium guide rail with four ball bushings
- Hardened and ground steel guide shafts
- Stainless steel guide shafts available on request
- Max. speed v = 3 m/s
- OSP-P: smooth slow speed operation
  $v_{min} \leq 0.02$ m/s.
- Any length of stroke up to 6000 mm (longer strokes on request)

Series	For linear drive	Max. moments [Nm]			Max. load [N]			Mass of linear drive with guide [kg]		Mass * of guide carriage [kg]	Order No. GUIDELINE for OSP-P[1)]
		M	Ms	Mv	L_1 pressure force	L_2 tensile force	L_3	with 0 mm stroke	increase per 100 mm stroke		
GDL 25	OSP-P25	115	75	90	2500	2100	1650	2.5	0.7	1.1	**20175**
GDL 32	OSP-P32	145	90	115	2500	2100	1650	3.6	0.9	1.2	**20180**
GDL 40	OSP-P40	440	330	310	8000	6250	4400	6.3	1.4	2.0	**20177**
GDL 50	OSP-P50	500	375	355	8000	6250	4400	8.6	1.6	2.2	**20183**

[1)] corrosion resistance version available on request (max. loads and moments are 30% lower)

For **linear drives** see 1.10.002E

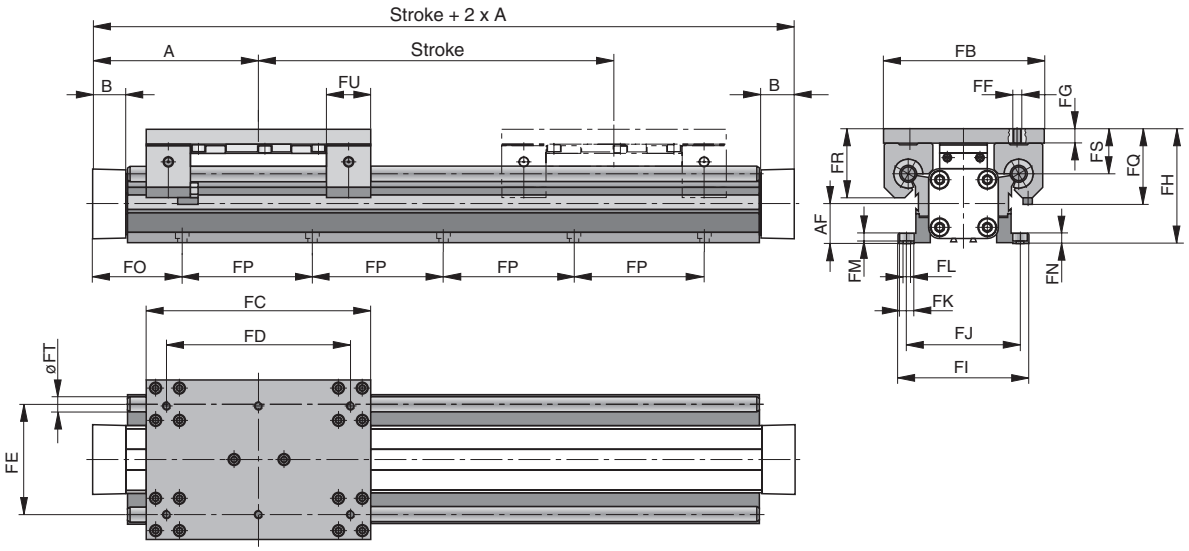
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The right to introduce technical modifications is reserved

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Dimensions

Series OSP-P



For further options see 1.45.001E.

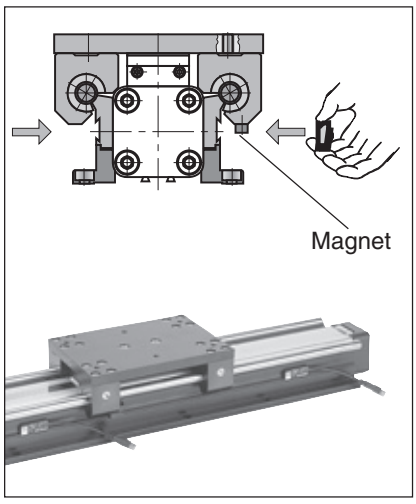
Note:

The guideline linear guide must be mounted on a flat surface along its entire length.

Arrangement of magnetic switches:

Magnetic switches can be fitted anywhere on either side.
The magnet can be screwed on to one of the four ball bushing housings from underneath.

Magnetic switches
– see accessories 1.45.100E, 1.45.104E
Linear Drives
OSP-P see data sheet 1.10.002E



Dimension Table (mm)																						
Series	**A**	**B**	**AF**	**FB**	**FC**	**FD**	**FE**	**FF**	**FG**	**FH**	**FI**	**FJ**	**øFK**	**øFL**	**FM**	**FN**	**FP**	**FQ**	**FR**	**FS**	**øFT**	**FU**
GDL 25	100	22	22	120	145	110	70	M6	11	78	86	73	10.5	6.0	5.7	8	100	56.5	51.5	33.5	12	32
GDL 32	125	25.5	30	120	170	140	80	M6	11	86	98	85	10.5	6.0	5.7	8	100	56.5	51.5	33.5	12	32
GDL 40	150	28	38	160	180	140	110	M8	14	108	120	104	12	7.5	6.8	10	100	73	61	38	16	36
GDL 50	175	33	48	180	200	160	120	M8	14	118	134	118	12	7.5	6.8	10	100	73	61	38	16	36

FO				
OSP-P				
x	P25	P32	P40	P50
00	50.0	75.0	50.0	75.0
01	50.5	75.5	50.5	75.5
02	51.0	76.0	51.0	76.0
03	51.5	76.5	51.5	76.5
04	52.0	77.0	52.0	77.0
05	52.5	77.5	52.5	77.5
06	53.0	78.0	53.0	78.0
07	53.5	78.5	53.5	78.5
08	54.0	79.0	54.0	79.0
09	54.5	79.5	54.5	79.5
10	55.0	80.0	55.0	80.0
11	55.5	80.5	55.5	80.5
12	56.0	81.0	56.0	81.0
13	56.5	81.5	56.5	81.5
14	57.0	82.0	57.0	82.0
15	57.5	82.5	57.5	82.5
16	58.0	83.0	58.0	83.0
17	58.5	83.5	58.5	83.5
18	59.0	84.0	59.0	84.0
19	59.5	84.5	59.5	84.5
20	60.0	85.0	60.0	85.0
21	60.5	85.5	60.5	85.5
22	61.0	36.0	61.0	86.0
23	61.5	36.5	61.5	86.5
24	62.0	37.0	62.0	87.0
25	62.5	37.5	62.5	87.5
26	63.0	38.0	63.0	88.0
27	63.5	38.5	63.5	88.5
28	64.0	39.0	64.0	89.0
29	64.5	39.5	64.5	89.5
30	65.0	40.0	65.0	90.0
31	65.5	40.5	65.5	90.5
32	66.0	41.0	66.0	91.0
33	66.5	41.5	66.5	91.5
34	67.0	42.0	67.0	92.0
35	67.5	42.5	67.5	92.5
36	68.0	43.0	68.0	93.0
37	68.5	43.5	68.5	43.5
38	69.0	44.0	69.0	44.0
39	69.5	44.5	69.5	44.5
40	70.0	45.0	70.0	45.0
41	70.5	45.5	70.5	45.5
42	71.0	46.0	71.0	46.0
43	71.5	46.5	71.5	46.5
44	72.0	47.0	72.0	47.0
45	72.5	47.5	72.5	47.5
46	73.0	48.0	73.0	48.0
47	73.5	48.5	73.5	48.5
48	74.0	49.0	74.0	49.0
49	74.5	49.5	74.5	49.5

FO				
OSP-P				
x	P25	P32	P40	P50
50	75.0	50.0	75.0	50.0
51	75.5	50.5	75.5	50.5
52	76.0	51.0	76.0	51.0
53	76.5	51.5	76.5	51.5
54	77.0	52.0	77.0	52.0
55	77.5	52.5	77.5	52.5
56	78.0	53.0	78.0	53.0
57	78.5	53.5	78.5	53.5
58	79.0	54.0	79.0	54.0
59	79.5	54.5	79.5	54.5
60	80.0	55.0	80.5	55.0
61	80.5	55.5	80.5	55.5
62	81.0	56.0	81.0	56.0
63	81.5	56.5	81.5	56.5
64	82.0	57.0	82.0	57.0
65	32.5	57.5	82.5	57.5
66	33.0	58.0	83.0	58.0
67	33.5	58.5	83.5	58.5
68	34.0	59.0	84.0	59.0
69	34.5	59.5	84.5	59.5
70	35.0	60.0	85.0	60.0
71	35.5	60.5	85.5	60.5
72	36.0	61.0	86.0	61.0
73	36.5	61.5	86.5	61.5
74	37.0	62.0	87.0	62.0
75	37.5	62.5	87.5	62.5
76	38.0	63.0	88.0	63.0
77	38.5	63.5	38.5	63.5
78	39.0	64.0	39.0	64.0
79	39.5	64.5	39.5	64.5
80	40.0	65.0	40.0	65.0
81	40.5	65.5	40.5	65.5
82	41.0	66.0	41.0	66.0
83	41.5	66.5	41.5	66.5
84	42.0	67.0	42.0	67.0
85	42.5	67.5	42.5	67.5
86	43.0	68.0	43.0	68.0
87	43.5	68.5	43.5	68.5
88	44.0	69.0	44.0	69.0
89	44.5	69.5	44.5	69.5
90	45.0	70.0	45.0	70.0
91	45.5	70.5	45.5	70.5
92	46.0	71.0	46.0	71.0
93	46.5	71.5	46.5	71.5
94	47.0	72.0	47.0	72.0
95	47.5	72.5	47.5	72.5
96	48.0	73.0	48.0	73.0
97	48.5	73.5	48.5	73.5
98	49.0	74.0	49.0	74.0
99	49.5	74.5	49.5	74.5

Note:

The dimension FO is derived from the last two digits of the stroke:

Example:

Stroke 15 ***25*** mm

X

For a cylinder OSP-P25 the adjacent table indicates that for x=25mm:
FO = 62.5 mm

System Life

The calculation for expected service life is achieved in three steps:

- Determination of the load factor L_F, inserting actual values into the adjacent equation
- Determination of guidance constant K_F
- Calculation of the service life in km

Lubrication

For maximum system life, lubrication of the ball bushings must be maintained at all times.

Only high quality Lithium based greases should be used.

Lubrication intervals are dependant on environmental conditions (temperature, running speed, grease quality etc.) therefore the installation should be regularly inspected.

1. Calculation of load factor L_F

$$L_F = \frac{M}{M_{max}} + \frac{M_S}{M_{S\ max}} + \frac{M_V}{M_{V\ max}} + \frac{L_{1pressure\ force}}{L_{1pressure\ force\ max}} + \frac{L_{1tensile\ force}}{L_{1\ tensile\ force\ max}} + \frac{L_2}{L_{2\ max}}$$

with combined loads, L_F should not exceed the value 1.

2. Guidance constant K_F

Installation	guidance constant K_F	
	GDL 25, GDL 32	GDL 40, GDL 50
Horizontal	200	210
Sideways	250	320
Vertical	90	120

3. Service life calculation

Approximate service life is calculated using the following equation:

$$\text{Service life [km]} = \frac{K_F}{L_F^{\ 3}}$$

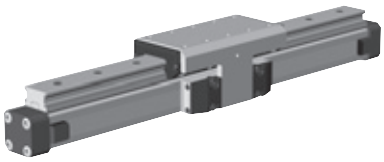
Aluminium Roller Guide PROLINE

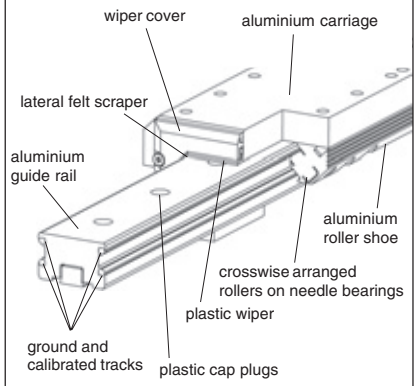
OSP
ORIGA SYSTEM PLUS

Series PL 16 to 50
for Linear-drive
• Series OSP-P

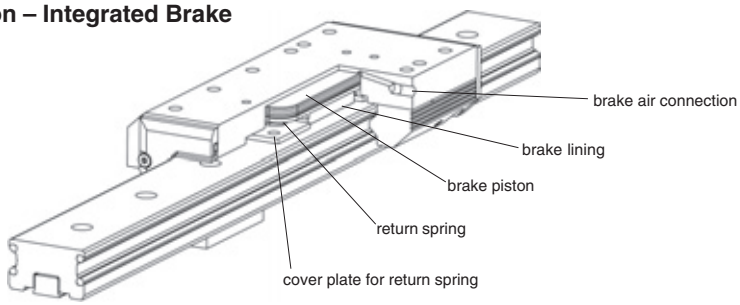
Versions

for pneumatic linear drive:
Series OSP-P





Option – Integrated Brake



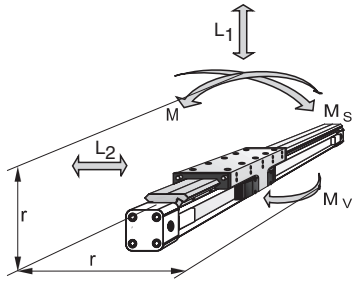
Features:

- High precision
- High velocities (10 m/s)
- Smooth operation - low noise
- Integated wiper system
- Long life lubrication
- Compact dimensions - compatible to Slideline plain bearing guide
- Any length of stroke up to 3750 mm

Integrated Brake (optional)
for Series OSP-P25 to OSP-P50:

- Actuated by pressurisation
- Release by depressurisation and spring actuation

Loads, Forces and Moments



Technical Data

The table shows the maximal permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{M}{M_{max}} + \frac{M_s}{M_{s\,max}} + \frac{M_v}{M_{v\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}} \leq 1$$

The sum of the loads should not exceed >1. With a load factor of less than 1, service life is 8000 km

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

*** Please note:**
The mass of the carriage has to be added to the total moving mass when using the cushioning diagram.

Series	For linear drive	Max. moments [Nm]			Max. loads [N]	Maximum braking force at 6 bar [N] [1]	Mass of linear drive with guide [kg]		Mass * guide carriage [kg]	Order No. PROLINE for OSP-P	
		M	Ms	Mv	L_1, L_2		with 0 mm stroke	increase per 100 mm stroke		without brake	with brake
PL 16	OSP-P16	12	8	12	542	–	0.55	0.19	0.24	**20855**	**-**
PL 25	OSP-P25	39	16	39	857	on request	1.65	0.40	0.75	**20856**	**20860**
PL 32	OSP-P32	73	29	73	1171	on request	3.24	0.62	1.18	**20857**	**20861**
PL 40	OSP-P40	158	57	158	2074	on request	4.35	0.70	1.70	**20858**	**20862**
PL 50	OSP-P50	249	111	249	3111	on request	7.03	0.95	2.50	**20859**	**20863**

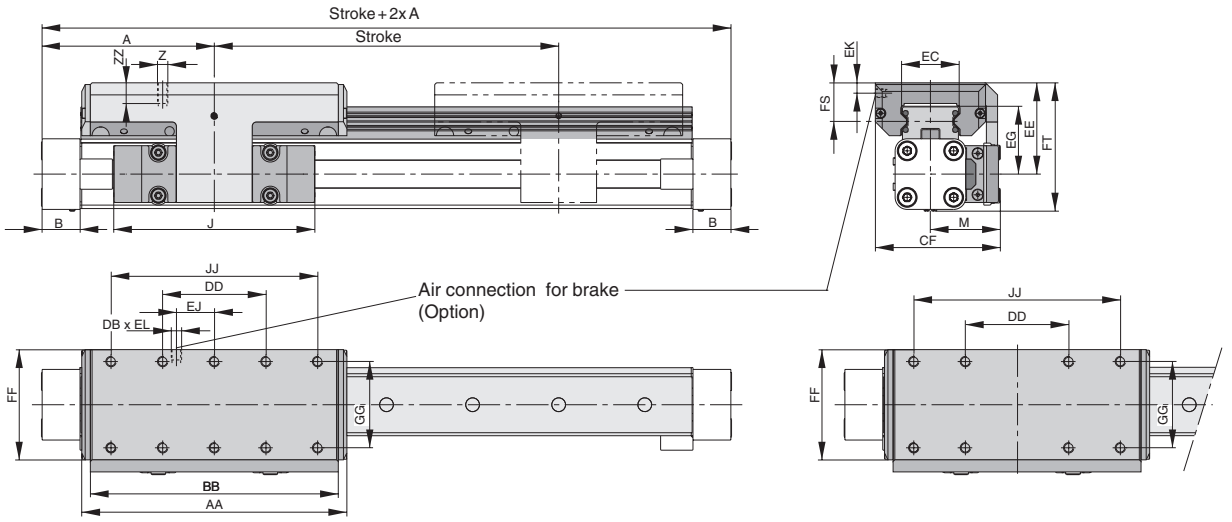
[1] Only for version with brake:
Braking surface dry – oiled surface reduces the effective braking force.

For **linear drives** see 1.10.002E
For **mountings** see 1.45.005E

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Dimension Table (mm) Series OSP-P PL16, PL25, PL32, PL40, PL50



Type PL25 to PL50 **Type PL16**

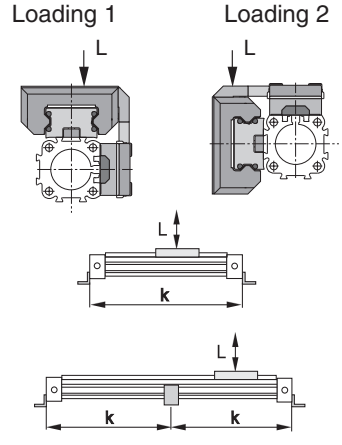
Dimension Table (mm) Series OSP-P PL16, PL25, PL32, PL40, PL50

Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	EE	EG	EJ	EK	EL	FF	FS	FT	GG	JJ	ZZ
PL16	65	14	69	31	M4	98	88	-	30	55	23	40	30	-	-	-	48	17	55	36	70	8
PL25	100	22	117	40.5	M6	154	144	M5	60	72.5	32.5	53	39	22	6	6	64	23	73.5	50	120	12
PL32	125	25.5	152	49	M6	197	187	M5	80	91	42	62	48	32	6	6	84	25	88	64	160	12
PL40	150	28	152	55	M6	232	222	M5	100	102	47	64	50.5	58	6	6	94	23.5	98.5	78	200	12
PL50	175	33	200	62	M6	276	266	M5	120	117	63	75	57	81	6	6	110	29	118.5	90	240	16

Mid-Section Support

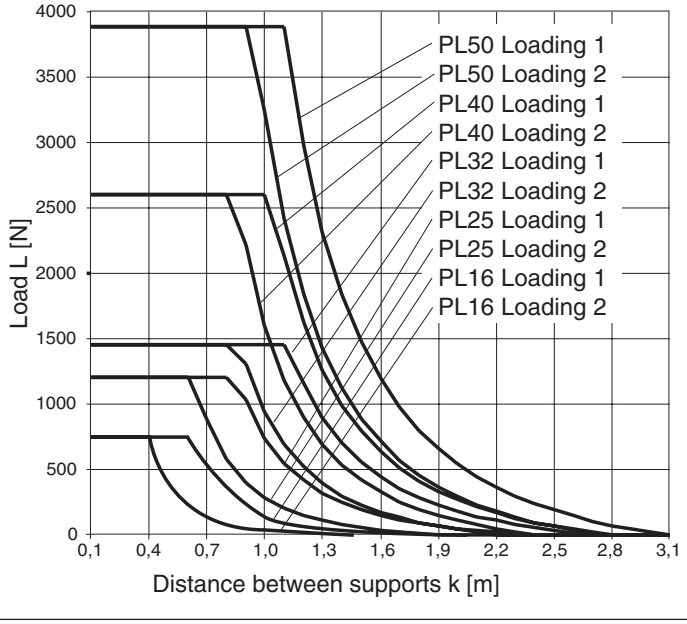
(For versions, see 1.45.005E)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

Permissible Unsupported Length PL16, PL25, PL32, PL40 und PL50

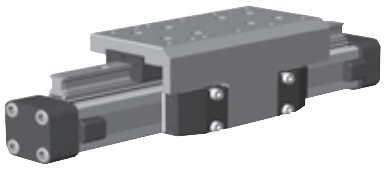


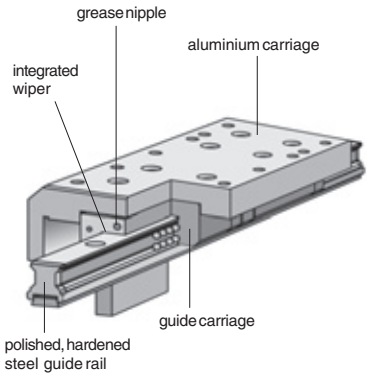
Recirculating Ball Bearing Guide STARLINE

OSP
ORIGA SYSTEM PLUS

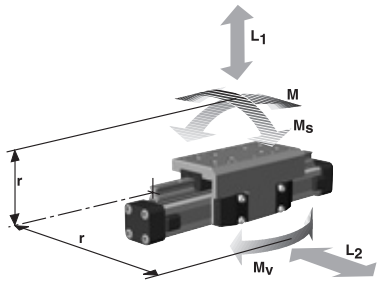
Versions

for pneumatic linear drive:
Series OSP-P





Loads, Forces and Moments



Technical Data
The table shows the maximum permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}} \leq 1$$

The sum of the loads should not exceed >1

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

**** Please note:**
The mass of the carriage has to be added to the total moving mass when using the cushioning diagram.

Series STL 16 to 50
for Linear Drive Series OSP-P

Features:
- Polished and hardened steel guide rail
- For very high loads in all directions
- High precision
- Integrated wiper system
- Integrated grease nipples
- Any length of stroke up to 3700 mm (longer strokes on request)
- Anodized aluminium guide carriage – dimensions compatible with OSP guides SLIDELINE and PROLINE
- Installation height (STL16 - 32) compatible with OSP guides SLIDELINE and PROLINE
- Maximum speed
  STL16: v = 3 m/s
  STL25 to 50: v = 5 m/s

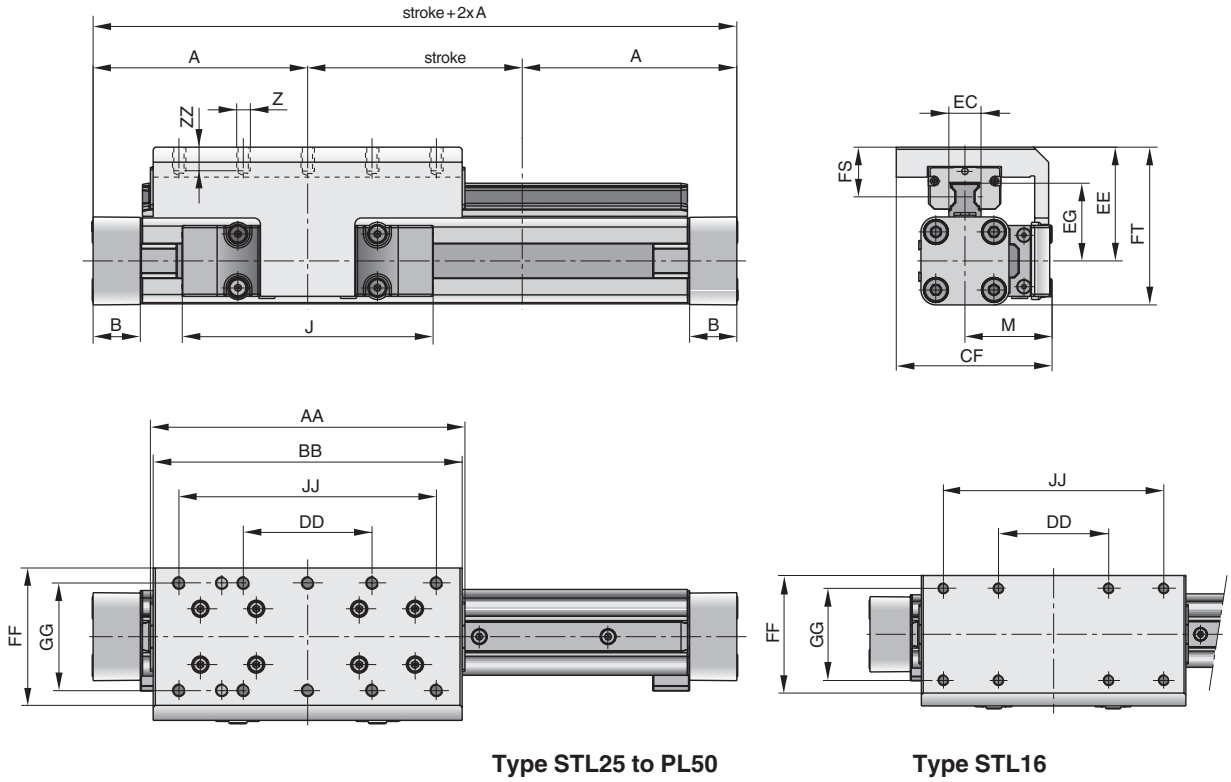
Series	For linear drive	Max. moments [Nm]			Max. loads [N]		Mass of linear drive with guide [kg]		Mass ** guide carriage [kg]	**Order No. STARLINE** for OSP-P
		M	Ms	Mv	L1	L2	with 0 mm stroke	increase per 100 mm stroke		
STL16	OSP-P16	30	15	30	1000	1000	0.598	0.210	0.268	**21111**
STL25	OSP-P25	110	50	110	3100	3100	1.733	0.369	0.835	**21112**
STL32	OSP-P32	160	62	160	3100	3100	2.934	0.526	1.181	**21113**
STL40	OSP-P40	400	150	400	7500	4000	4.452	0.701	1.901	**21114**
STL50	OSP-P50	580	210	580	7500	4000	7.361	0.936	2.880	**21115**

For **linear drives** see 1.10.002E
For **mountings** see 1.45.005E

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Dimensions Series OSP-P STL16 to STL 50



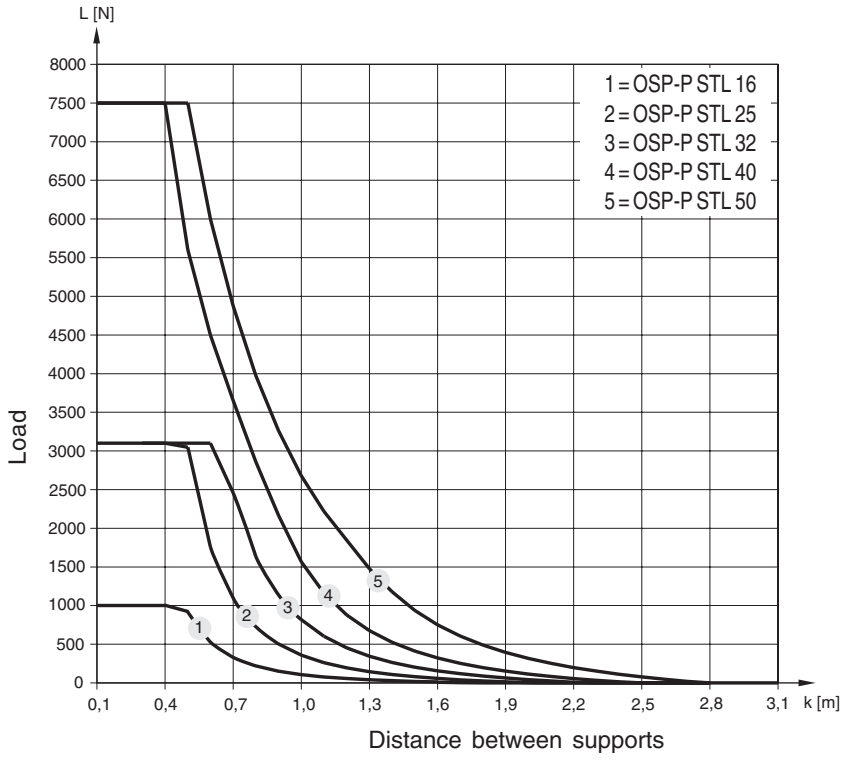
Type STL25 to PL50 **Type STL16**

Dimension Table (mm) Series OSP-P STL16 to STL50

Series	A	B	J	M	Z	AA	BB	CF	DD	EC	EE	EG	FF	FS	FT	GG	JJ	ZZ
STL16	65	14	69	31	M4	93	90	55	30	15	40	24.6	48	18	55	36	70	8
STL25	100	22	117	40.5	M6	146.6	144	72.5	60	15	53	36.2	64	23.2	73.5	50	120	12
STL32	125	25.5	152	49	M6	186.6	184	91	80	15	62	42.2	84	26.2	88	64	160	12
STL40	150	28	152	55	M6	231	226	102	100	20	72	51.6	94	28.5	106.5	78	200	12
STL50	175	33	200	62	M6	270.9	266	117	120	23	85	62.3	110	32.5	128.5	90	240	16

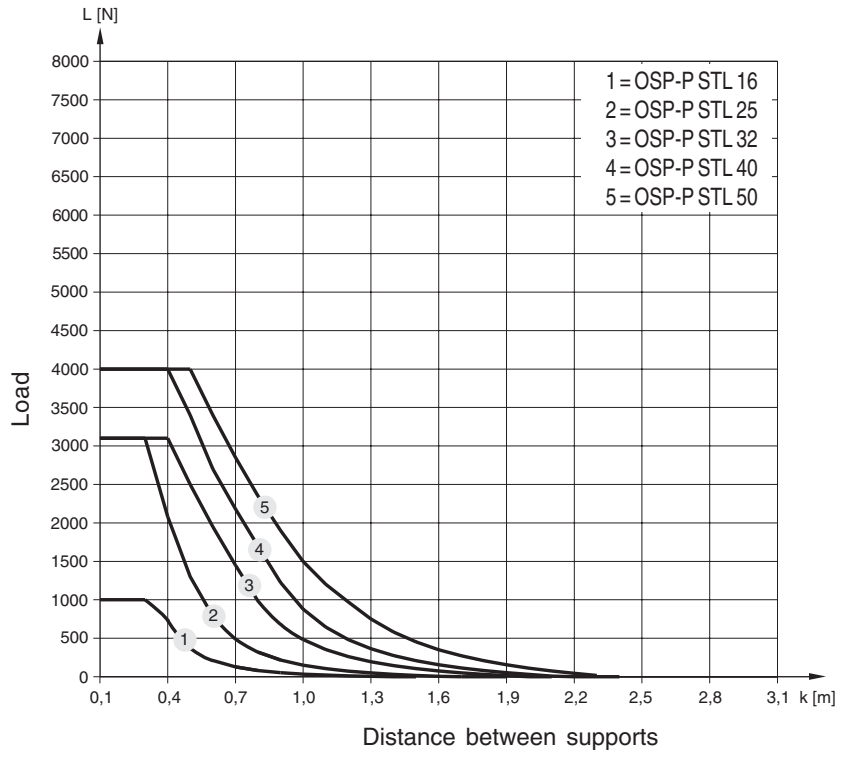
Permissible Unsupported Length STL16 to STL50

Loading 1 – Top carrier



Permissible Unsupported Length STL16 to STL50

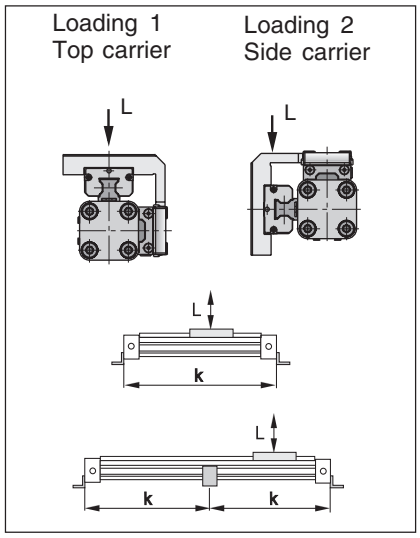
Loading 2 – Side carrier



Mid-Section Support

(For versions, see 1.45.005E-8, 1.45.005E-9)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

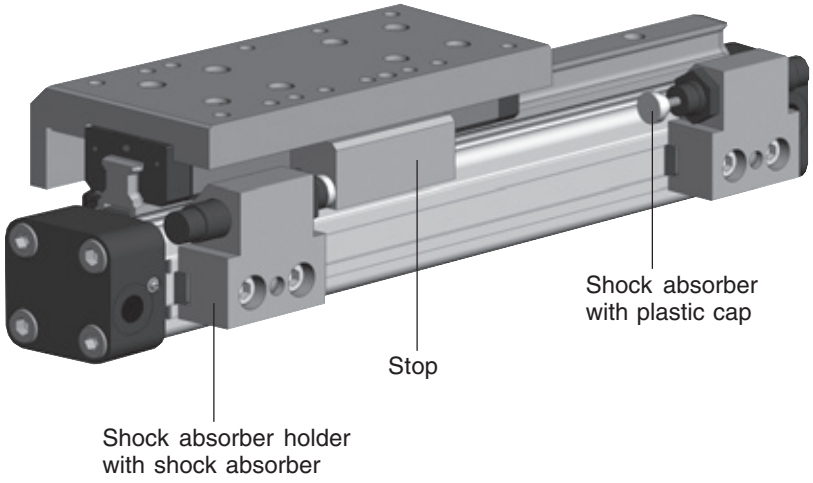
Variable Stop

The variable stop Type VS is used to provide intermediate stopping positions.
It can be retrofitted and positioned anywhere along the stroke length.
For every cylinder diameter two types of shock absorber are available – see „Shock Absorber Selection“ below.
Mid-section supports and magnetic switches can still be fitted on the same side as the variable stop.

Depending on the application, two variable stops can be fitted if required.

Variable Stop Type VS16 to VS50

Arrangement with two variable stops

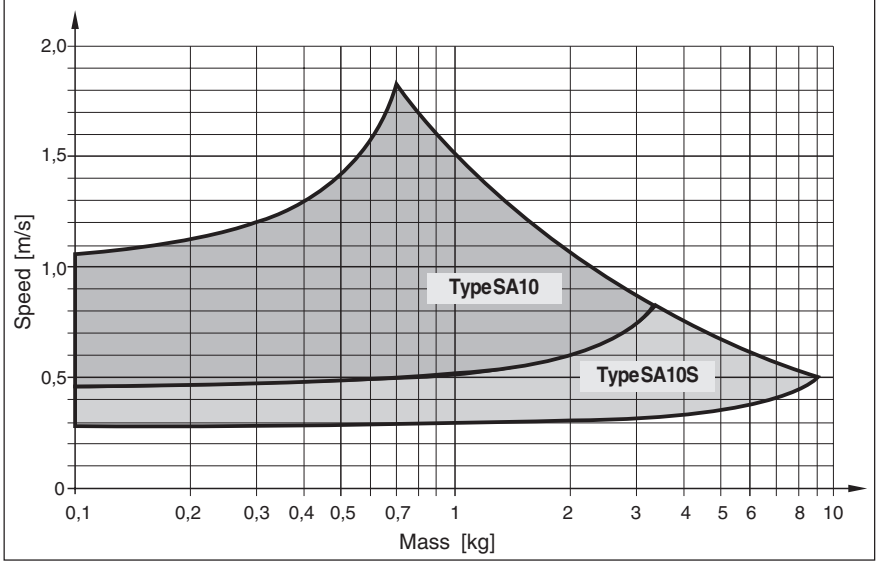


Shock Absorber Selection

The shock absorber is selected in dependence on the mass and speed.

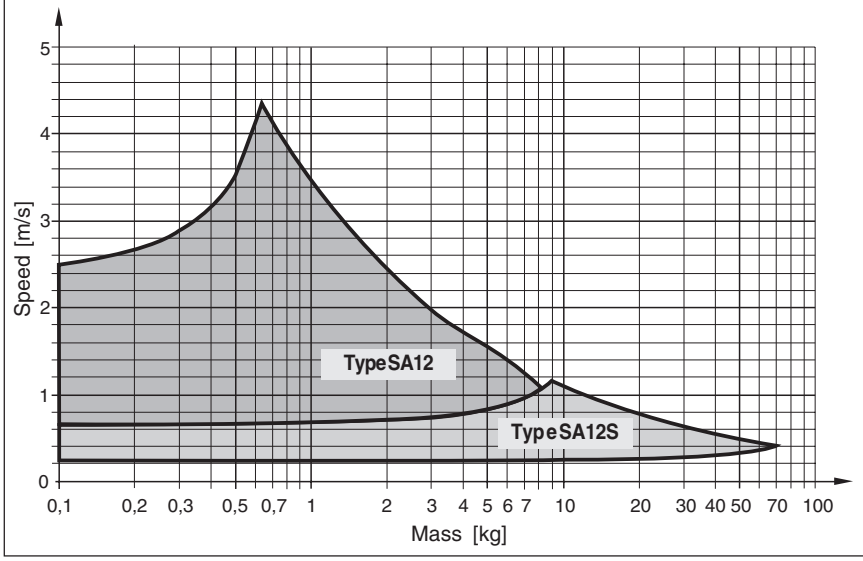
The mass of the carrier itself must be taken into account.

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL16



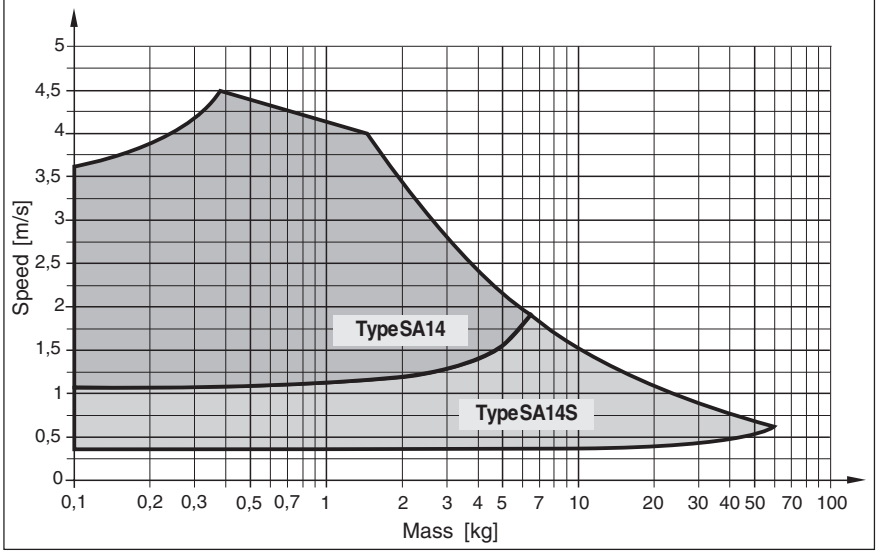
The values relate to an effective driving force of 78 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL25



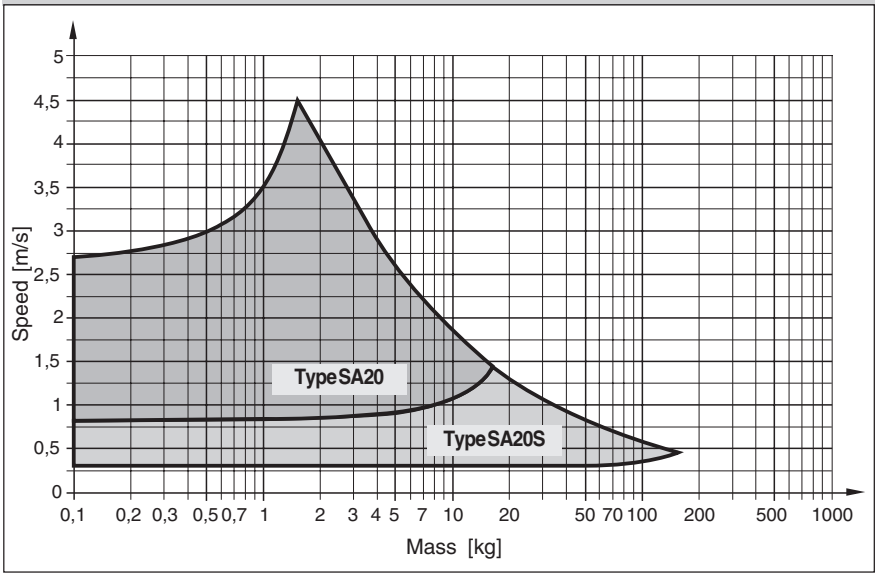
The values relate to an effective driving force of 250 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL32



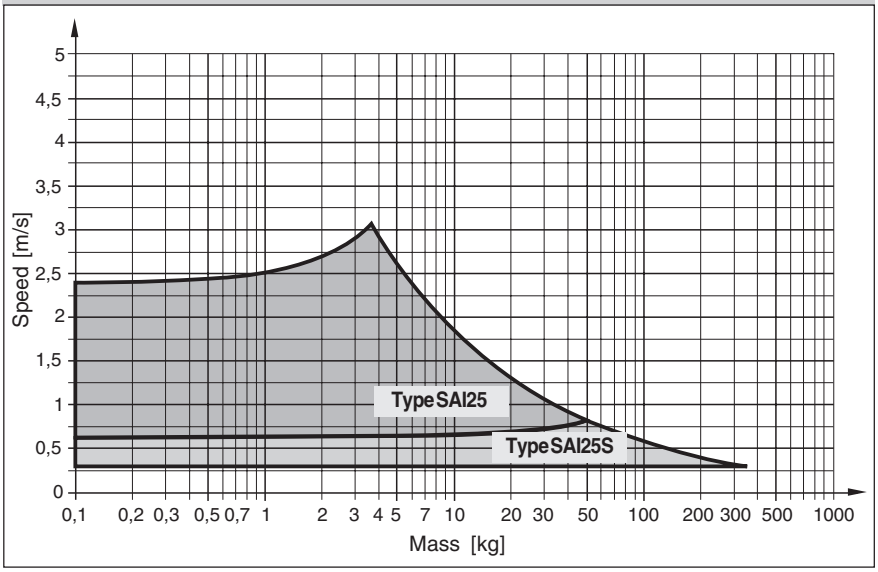
The values relate to an effective driving force of 420 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL40



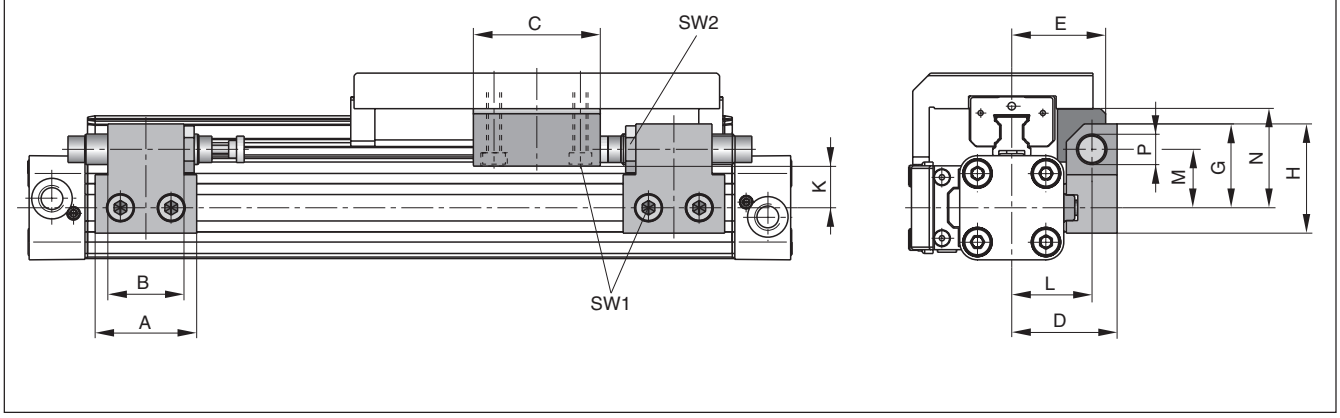
The values relate to an effective driving force of 640 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL50



The values relate to an effective

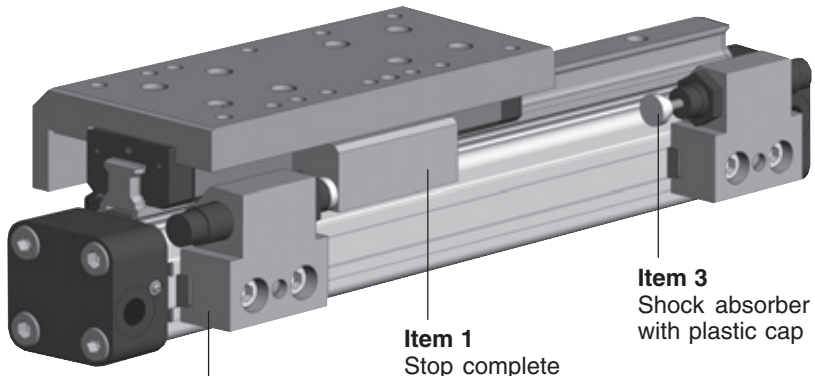
Dimensions – Variable Stop Type VS16 to VS50



Dimension Table (mm) – Variable Stop Type VS16 to VS50

Series	Type	A	B	C	D	E	G	H	K	L	M	N	P	SW1	SW2
OSP-STL16	**VS16**	30	14	25	33	30	28	38	16.2	25.5	20.5	30	M10x1	4	12.5
OSP-STL25	**VS25**	40	30	50	41.5	37	33	43	18	31.5	23	39	M12x1	5	16
OSP-STL32	**VS32**	60	40	50	45.5	42	35	45	19	35.5	25	48	M14x1.5	5	17
OSP-STL40	**VS40**	84	52	60	64	59	48	63	25.6	50	34	58.6	M20x1.5	5	24
OSP-STL50	**VS50**	84	-	60	75	69	55	70	26.9	57	38	66.9	M25x1.5	5	30

Order Information – Variable Stop Type VS16 to VS50



Item 3
Shock absorber
with plastic cap

Item 1
Stop complete
with fittings

Item 2
Shock absorber holder
complete with fittings
– without shock absorber

Order Instructions – Variable Stop Type VS16 to VS50

Item	Description	Size VS16		VS25		VS32		VS40		VS50	
		Type	Order No.	Type	Order No.	Type	Order No.	Type	Order No.	Type	Order No.
1	Stop, complete	–	**21196**	–	**21197**	–	**21198**	–	**21199**	–	**21200**
2	Shock absorber holder, complete	–	**21201**	–	**21202**	–	**21203**	–	**21204**	–	**21205**
3 *	Shock absorber, standard	**SA10**	**7900**	**SA12**	**7706**	**SA14**	**7708**	**SA20**	**7710**	**SAI25**	**7712**
	Shock absorber, version S	**SA10S**	**7907**	**SA12S**	**7707**	**SA14S**	**7709**	**SA20S**	**7711**	**SAI25S**	**7713**
	* Shock absorber with plastic cap										

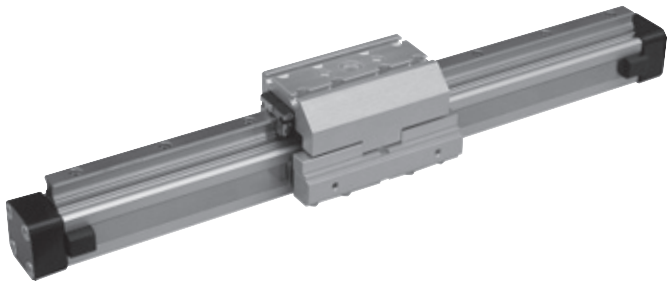
Recirculating Ball Bearing Guide KF

OSP
ORIGA SYSTEM PLUS

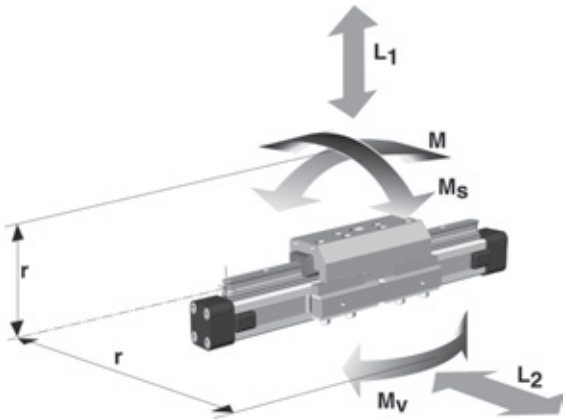
Series KF16 to KF50
For Linear Drives Series OSP-P

Versions

for Pneumatic Linear Drive:
Series OSP-P KF



Loads, Forces and Moments



Technical Data

The table shows the maximum permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}} \leq 1$$

The sum of the loads should not exceed >1

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

*** Please note:**
the mass of the carriage has to be added to the total moving mass when using the cushioning diagram.

Features:

- Anodized aluminium guide carriage, the mounting dimensions correspond to FESTO Type: DGPL-KF
- Polished and hardened steel guide rail
- For high loads in all directions
- High precision
- Integrated wiper system
- Integrated grease nipples
- Any length of stroke up to 3700 mm (longer strokes on request)
- Maximum speed
  KF16, KF40: v = 3 m/s
  KF25, KF32, KF50: v = 5 m/s

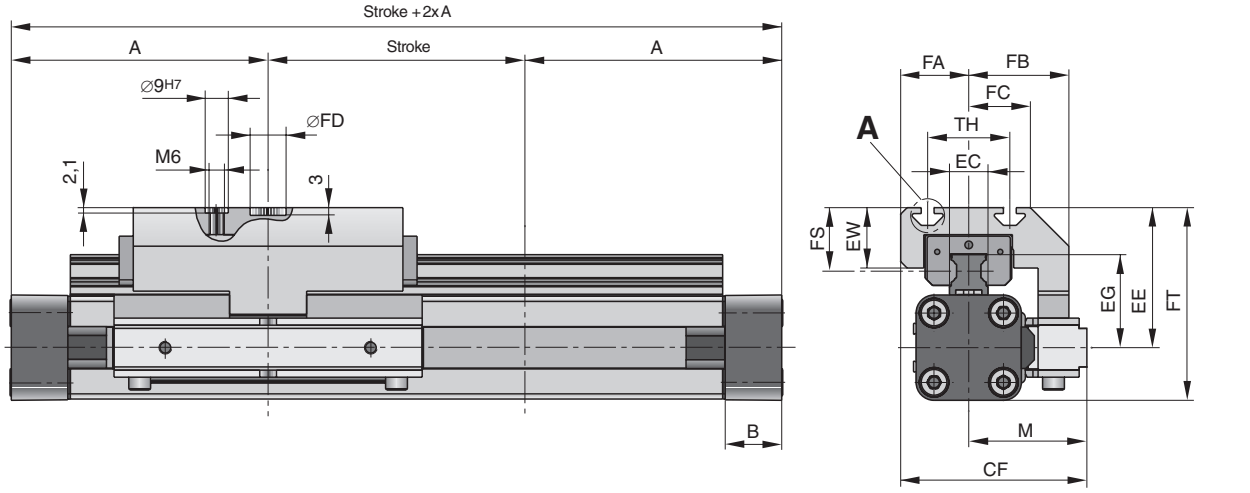
Series	for Linear Drive	Max. Moments [Nm]			Max. Load [N]		Mass of drive with guide [kg]		Mass * guide carriage [kg]	Groove stone Thread Size	Order No.	
		M	Ms	Mv	L1	L2	with 0 mm stroke	increase per 100 mm stroke			Groove Stone	KF for OSP-P
KF16	OSP-P16	25	12	25	1000	1000	0.558	0.21	0.228	–	**–**	**21101**
KF25	OSP-P25	90	35	90	3100	3100	1.522	0.369	0.607	M5	**13508**	**21102**
KF32	OSP-P32	133	44	133	3100	3100	2.673	0.526	0.896	M5	**13508**	**21103**
KF40	OSP-P40	346	119	346	7100	4000	4.167	0.701	1.531	M6	**13509**	**21104**
KF50	OSP-P50	480	170	480	7500	4000	7.328	0.936	2.760	M8	**13510**	**21105**

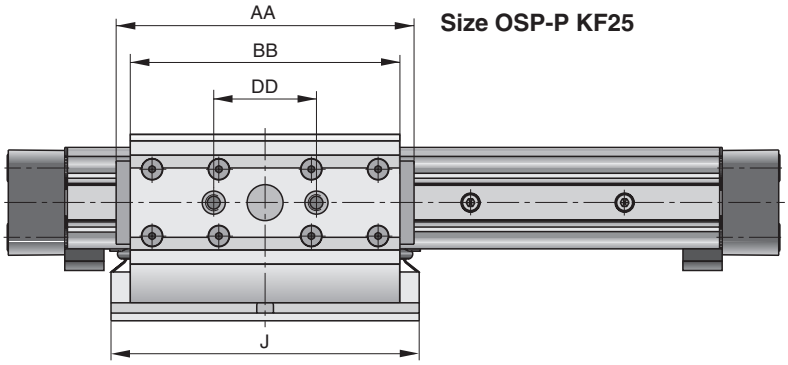
For **linaer drives** see 1.10.002E
For **mountings** see 1.45.005E

HOERBIGER ORIGA

A1P720E00HAE00X
The right to introduce technical modifications is reserved

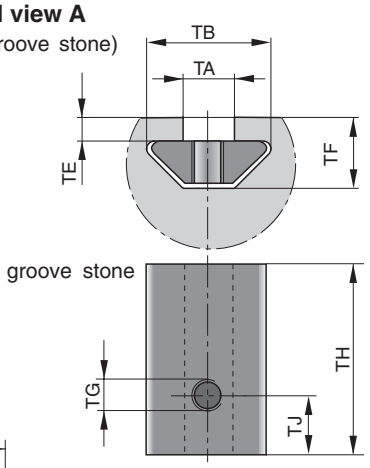
Dimensions Series OSP-P KF16 to KF50



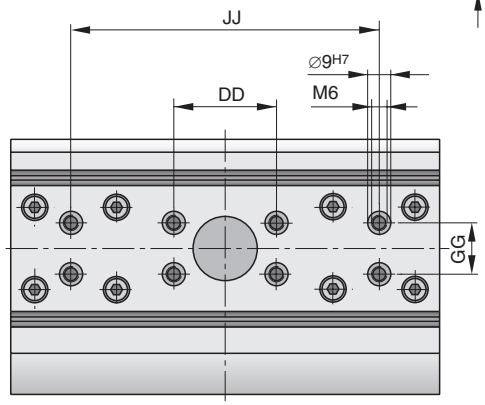


Size OSP-P KF25

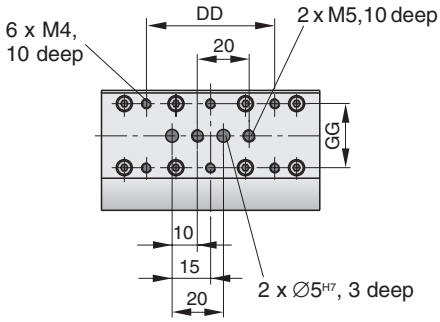
Partial view A
(with groove stone)



Size OSP-P KF32 to KF50



Size OSP-P KF16



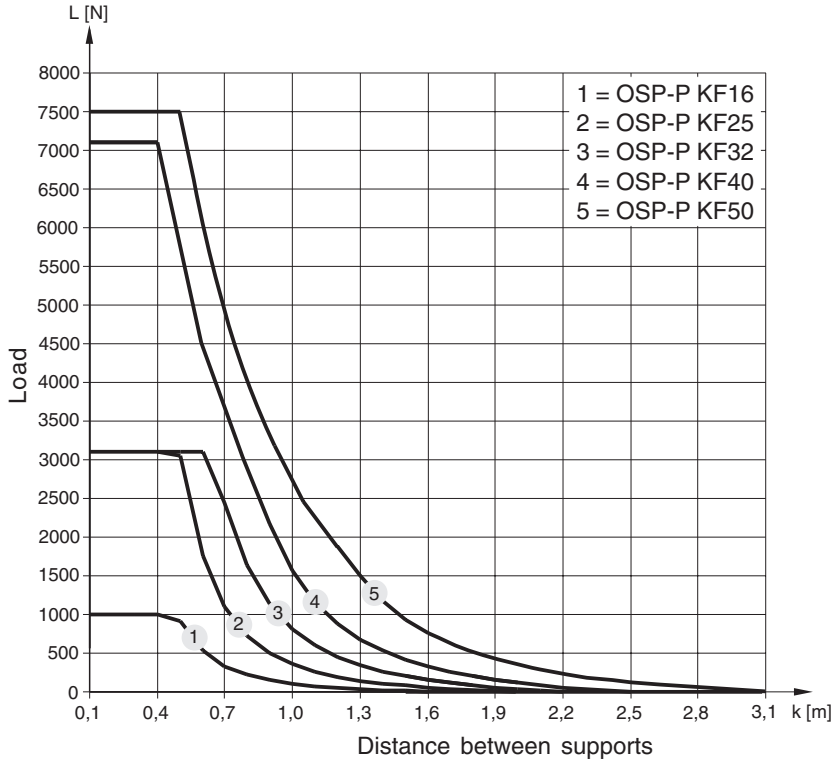
Dimension Table (mm) Series OSP-P KF16, KF25, KF32, KF40, KF50

Series	A	B	J	AA	BB	CF	DD	EC	EE	EG	EW	JJ	GG	M
KF16	65	14	76	93	85	48	50	15	41	24.6	10	–	25	30
KF25	100	22	120	120.2	105	72.5	40	15	54.5	36.2	23.5	–	–	46
KF32	125	25.5	160	146.2	131	93.8	40	15	60.5	42.2	23.5	–	20	59.8
KF40	150	28	150	188.5	167	103.3	40	20	69.5	51.6	26.5	120	20	60.8
KF50	175	33	180	220.2	202	121	40	23	90.5	62.3	32.5	120	40	69

Series	FA	FB	FC	FD	FT	FS	TA	TB	TE	TF	TG	TH	TJ
KF16	17.7	29	16.5	–	56	19	–	–	–	–	–	–	–
KF25	26.5	39	24	14 G7	75	24.7	5	12.1	2.3	6.9	M5	11.5	4
KF32	34	53.8	34	25 G7	86.5	24.7	5	12.1	1.8	6.4	M5	11.5	4
KF40	42.5	56.8	41	25 G7	104	26	6	12.8	1.8	8.4	M6	17	5.5
KF50	52	65	50	25 G7	134	38	8	21.1	4.5	12.5	M8	23	7.5

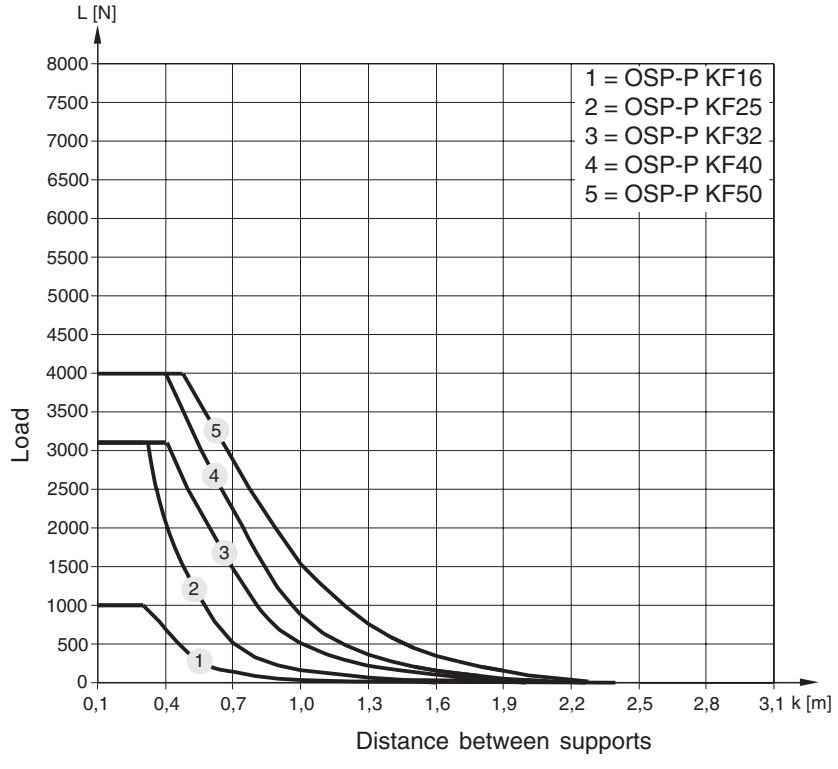
Permissible Unsupported Length OSP-P KF16 to KF50

Loading 1 – Top carrier



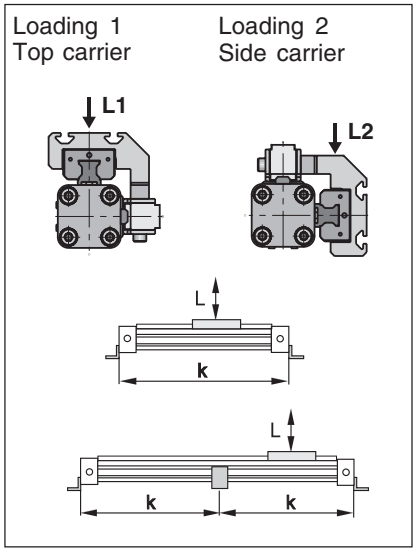
Permissible Unsupported Length OSP-P KF16 to KF50

Loading 2 – Side carrier



Mid-Section Support

(For versions, see 1.45.005-5E, 1.45.005E-8, 1.45.005E-9)
Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:

For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

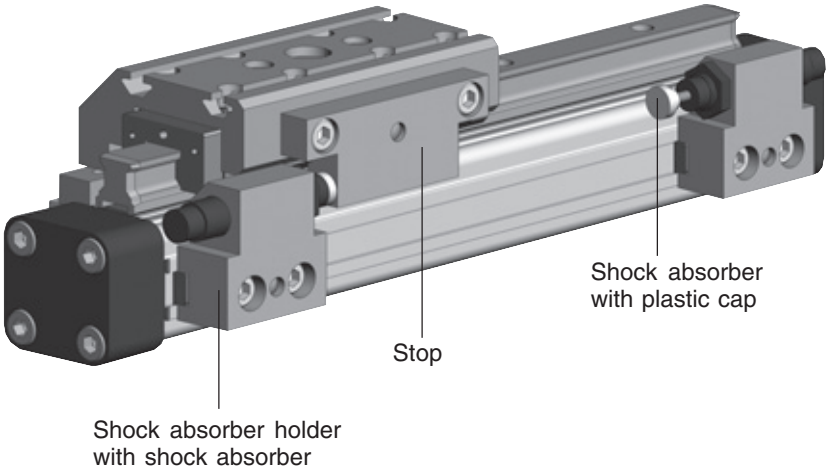
Variable Stop

The variable stop Type VS is used to provide intermediate stopping positions.
It can be retrofitted and positioned anywhere along the stroke length.
For every cylinder diameter two types of shock absorber are available – see „Shock Absorber Selection“ below.
Mid-section supports and magnetic switches can still be fitted on the same side as the variable stop.

Depending on the application, two variable stops can be fitted if required.

Variable Stop Type VS16 to VS50

Arrangement with two variable stops

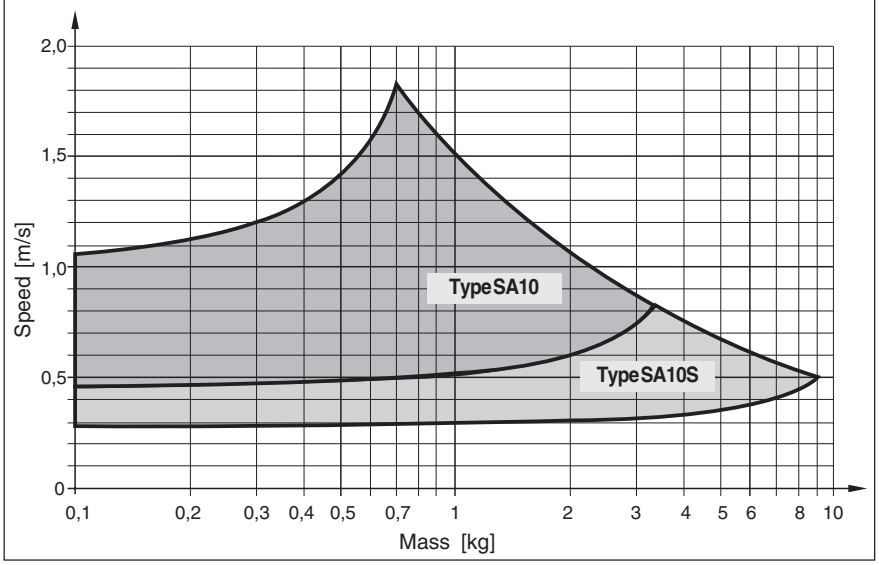


Shock Absorber Selection

The shock absorber is selected in dependence on the mass and speed.

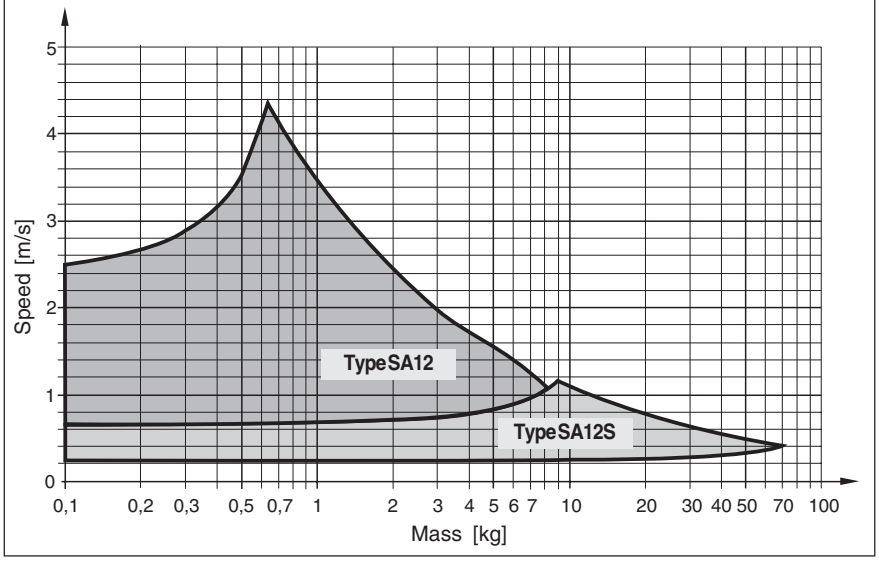
The mass of the carrier itself must be taken into account.

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF16



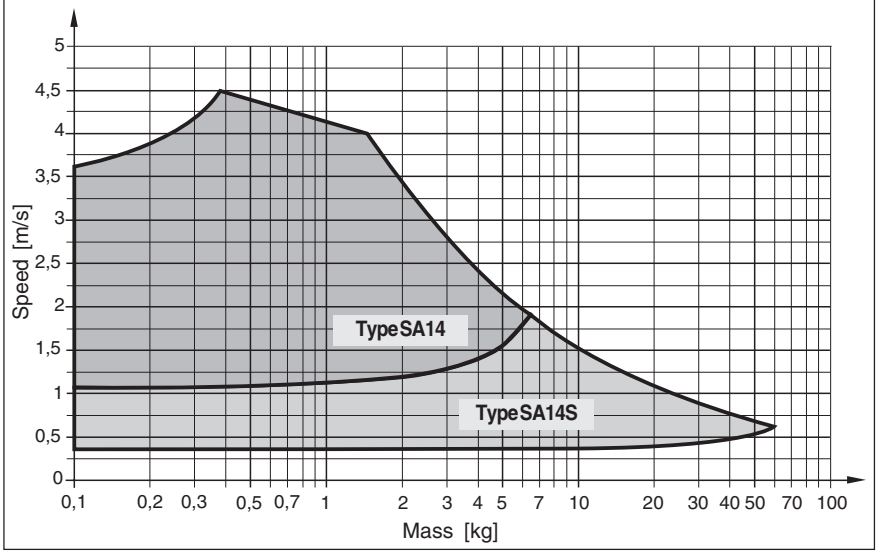
The values relate to an effective driving force of 78 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF25



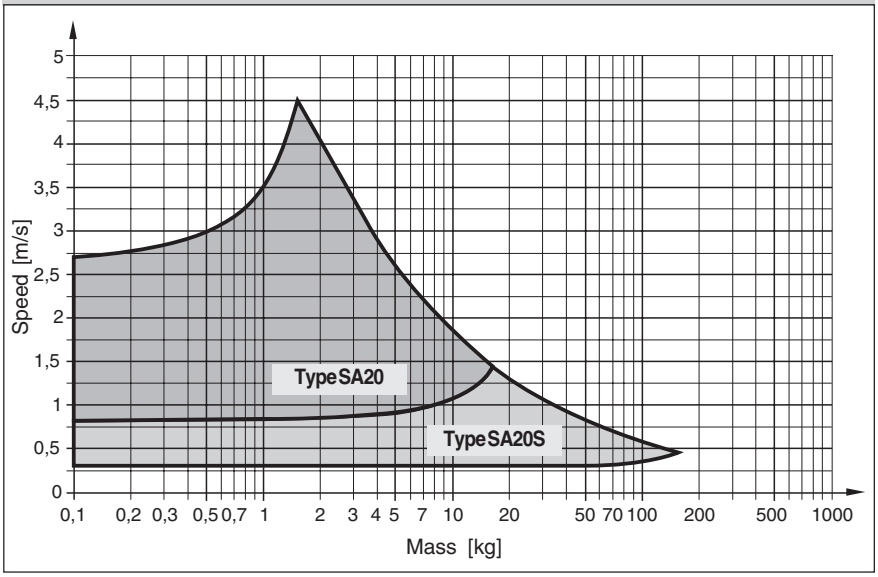
The values relate to an effective driving force of 250 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF32



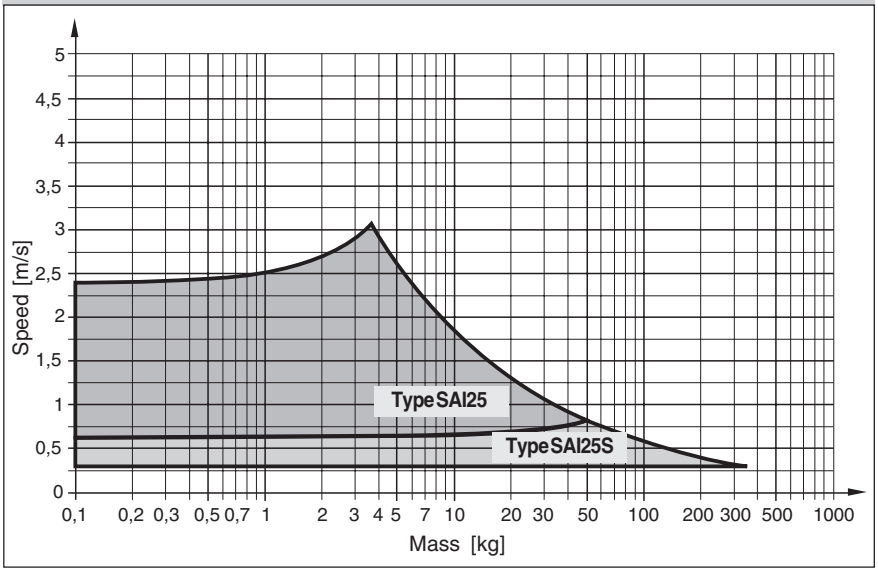
The values relate to an effective driving force of 420 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF40



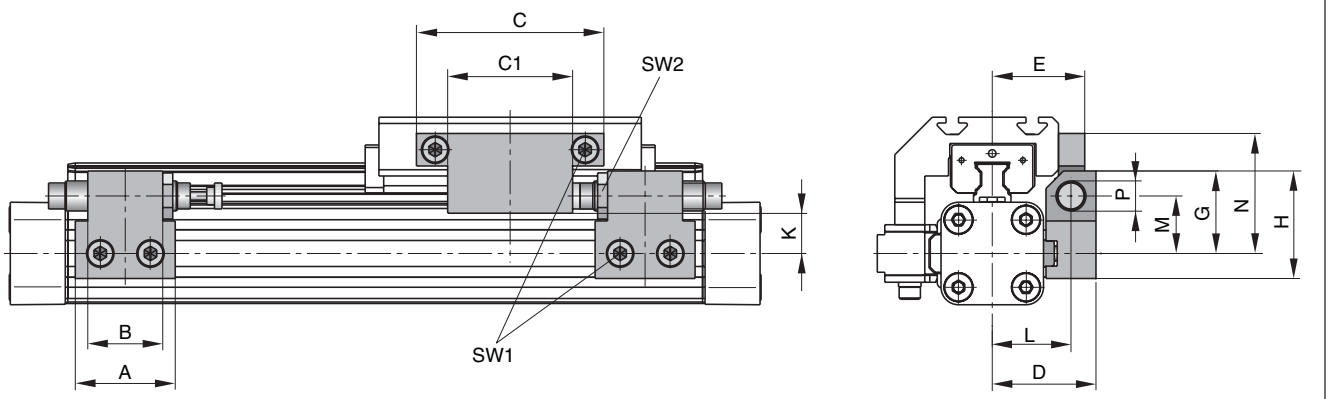
The values relate to an effective driving force of 640 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF50



The values relate to an effective driving force of 1000 N (6 bar)

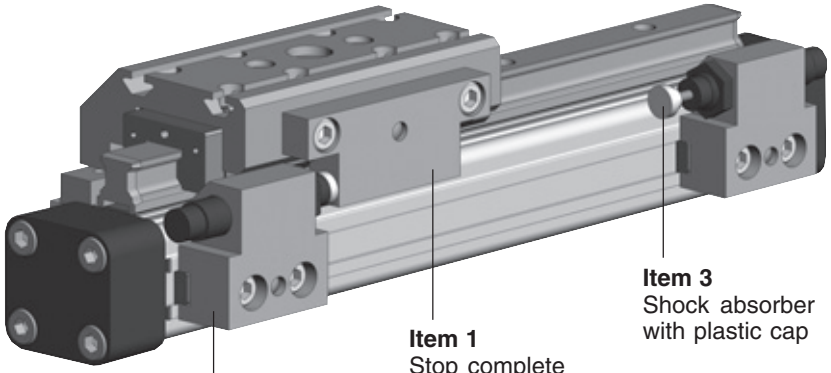
Dimensions – Variable Stop Type VS16 to VS50



Dimension Table (mm) – Variable Stop Type VS16 to VS50

Series	Type	A	B	C	C1	D	E	G	H	K	L	M	N	P	SW1	SW2
OSP-KF16	**VS16**	30	14	50	25	33	29.7	28	38	16.2	25.5	20.5	40.5	M10 x 1	4	12.5
OSP-KF25	**VS25**	40	30	75	50	41.5	37	33	43	18	31.5	23	48	M12 x 1	5	16
OSP-KF32	**VS32**	60	40	50	-	45.5	41.5	35	45	19	35.5	25	37	M14 x 1.5	5	17
OSP-KF40	**VS40**	84	52	60	-	64	59	48	63	25.5	50	34	43	M20 x 1.5	5	24
OSP-KF50	**VS50**	84	-	60	-	75	69	55	70	26.9	57	38	58	M25 x 1.5	5	30

Order Information – Variable Stop Type VS16 to VS50



Item 3
Shock absorber
with plastic cap

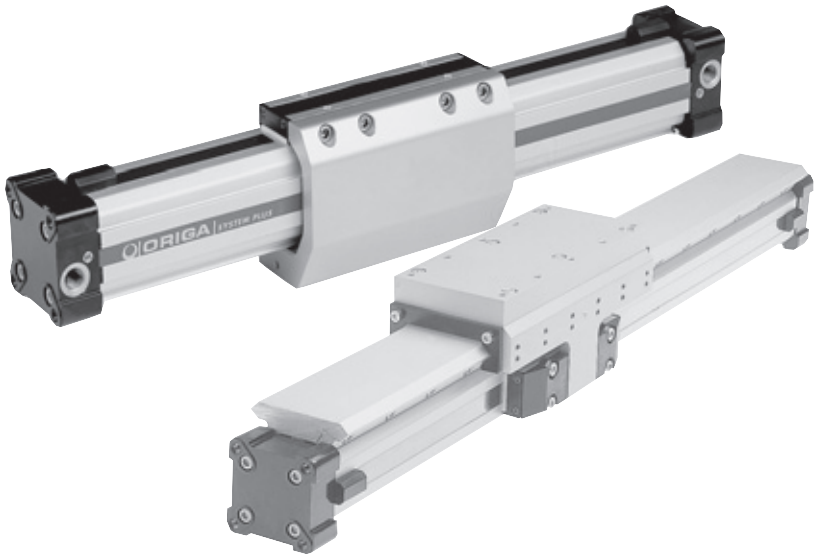
Item 1
Stop complete
with fittings

Item 2
Shock absorber holder
complete with fittings
– without shock absorber

Order Instructions – Variable Stop Type VS16 to VS50

Item	Description	Size VS16		VS25		VS32		VS40		VS50	
		Type	Order No.	Type	Order No.	Type	Order No.	Type	Order No.	Type	Order No.
1	Stop, complete	–	**21186**	–	**21187**	–	**21188**	–	**21189**	–	**21190**
2	Shock absorber holder, complete	–	**21201**	–	**21202**	–	**21203**	–	**21204**	–	**21205**
3 *	Shock absorber, standard	**SA10**	**7900**	**SA12**	**7706**	**SA14**	**7708**	**SA20**	**7710**	**SAI25**	**7712**
	Shock absorber, version S	**SA10S**	**7907**	**SA12S**	**7707**	**SA14S**	**7709**	**SA20S**	**7711**	**SAI25S**	**7713**
	* Shock absorber with plastic cap										

Active and Passive Brakes
Series OSP-P



Contents

Description	Data Sheet No.	Page
Overview	1.42.001E	57-58
Standard cylinder with Active brake	1.42.002E	59-62
Plain bearing SLIDELINE with Active brake	1.40.002E	33-34
Aluminium roller guide PROLINE with Active brake	1.40.005E	43-44
Plain bearing SLIDELINE with Passive brake Multibrake	1.42.003E	63-66
Aluminium roller guide PROLINE with Passive brake Multibrake	1.42.004E	67-70

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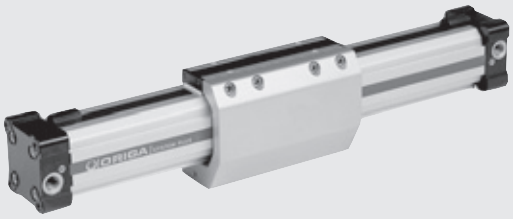
Active Brakes and Passive Brakes

Versions:

- ACTIVE Brake
- Plain bearing guide with integrated ACTIVE Brake
- Aluminium roller guide with integrated ACTIVE Brake
- Plain bearing guide with PASSIVE Brake
- Aluminium roller guide with PASSIVE Brake

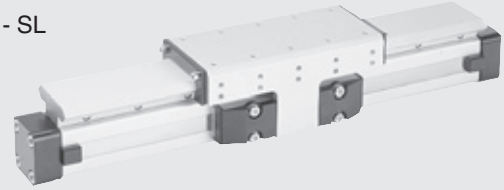
Active Brake
for pneumatic linear drive
Series OSP-P
Piston diameters 25 - 80 mm.

See data sheet 1.42.002E



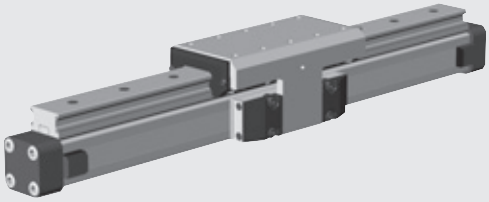
Slideline with Active Brake
Plain bearing guide SLIDELINE - SL
with integrated ACTIVE Brake
Piston diameters 25 - 50 mm.

See data sheet 1.40.002E



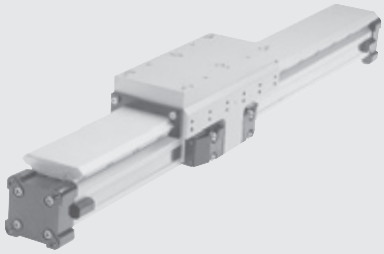
Proline with Active Brake
Aluminium roller guide
PROLINE - PL with
integrated ACTIVE Brake
Piston diameters 25 - 50 mm.

See data sheet 1.40.005E



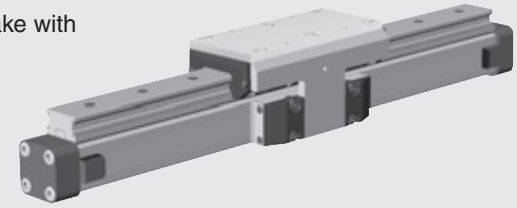
Multibrake with Slideline
MULTI BRAKE – PASSIVE Brake
with plainbearing guide
SLIDELINE - SL
Piston diameter 25 - 80 mm.

See data sheet 1.42.003E



Multibrake with Proline
MULTI BRAKE – PASSIVE Brake with
aluminium roller guide
PROLINE - PL
Piston diameters 25 - 50 mm.

See data sheets 1.42.004E

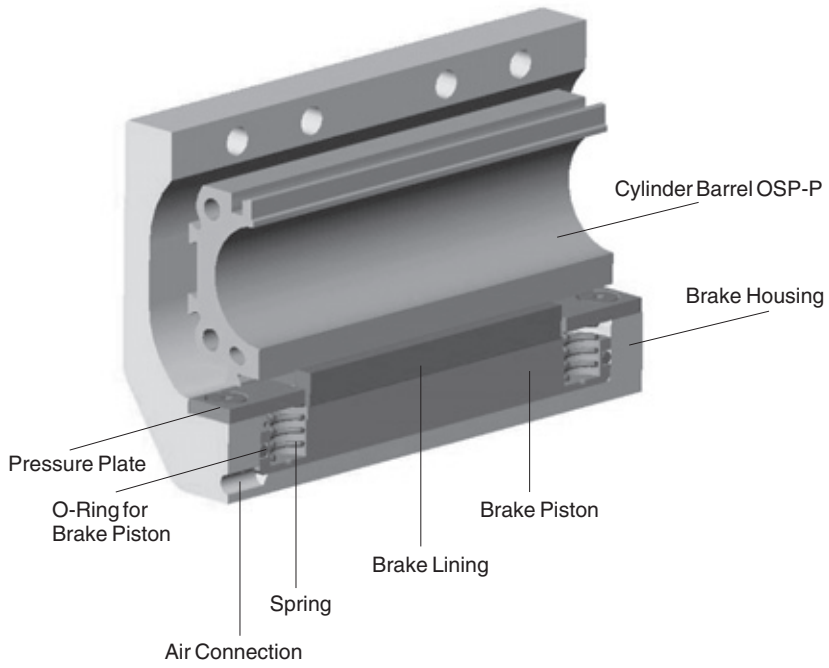


Active Brake

OSP
ORIGA SYSTEM PLUS

Series AB 25 to 80
for linear drive
• Series OSP-P

Function



Features:

- Actuated by pressurisation
- Released by spring actuation
- Completely stainless version
- Holds position, even under changing load conditions

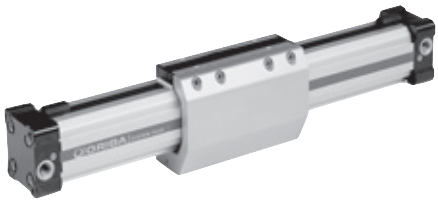
For further technical data, please refer to the data sheets for linear drives OSP-P (1.10.002E)

Forces and Weights

Series	For linear drive	Max. braking force [N] (1	Brake pad way [mm]	Mass [kg] Linear drive with brake 0 mm stroke	Mass [kg] Linear drive with brake increase per 100mm stroke	Mass [kg] brake*	Order No. Active brake
AB 25	OSP-P25	350	2.5	1.0	0.197	0.35	**20806**
AB 32	OSP-P32	590	2.5	2.02	0.354	0.58	**20807**
AB 40	OSP-P40	900	2.5	2.83	0.415	0.88	**20808**
AB 50	OSP-P50	1400	2.5	5.03	0.566	1.50	**20809**
AB 63	OSP-P63	2170	3.0	9.45	0.925	3.04	**20810**
AB 80	OSP-P80	4000	3.0	18.28	1.262	5.82	**20811**

(1 – at 6 bar
both chambers pressurised with 6 bar
Braking surface dry
– oil on the braking surface will reduce the braking force

*** Please Note:**
The mass of the brake has to be added to the total moving mass when using the cushioning diagram.



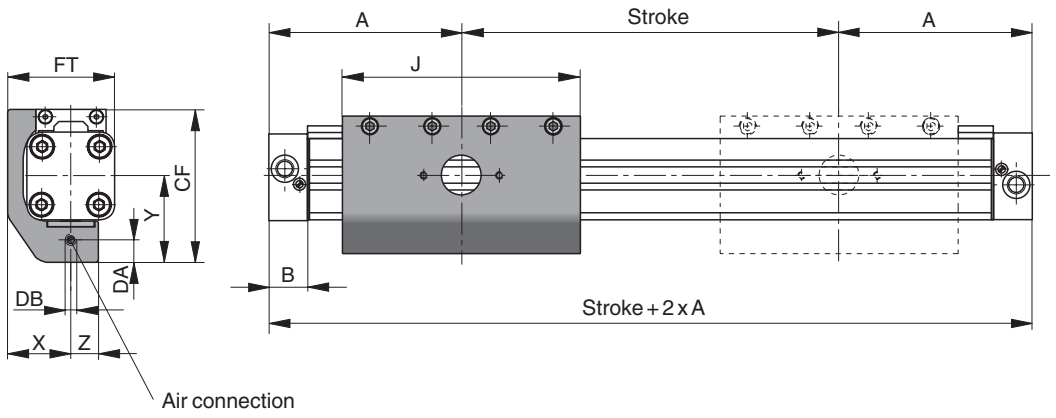
For additional information on loads, forces and moment, please refer to data sheet no. 1.10.002E

HOERBIGER ORIGA

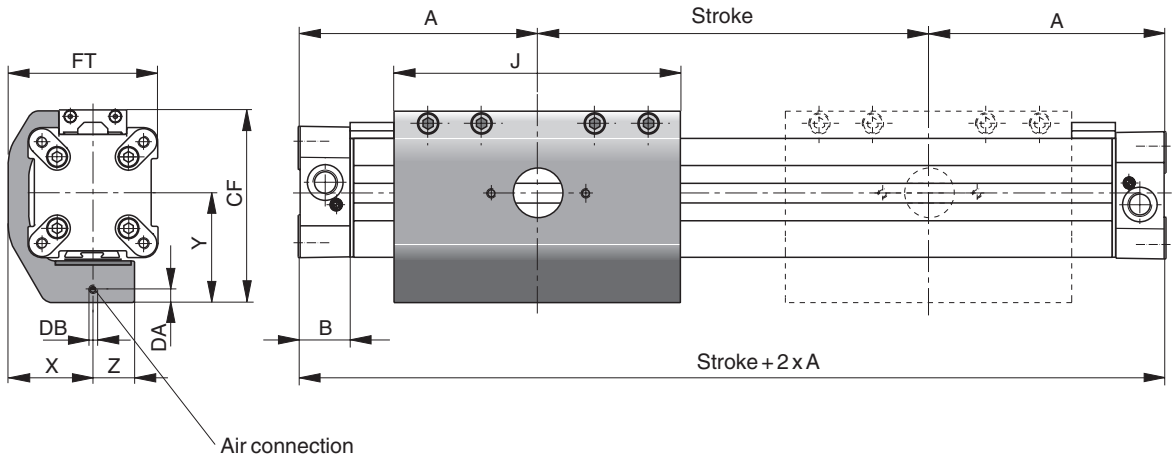
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The right to introduce technical modifications is reserved

Series OSP-P25 and P32 with Active Brake AB



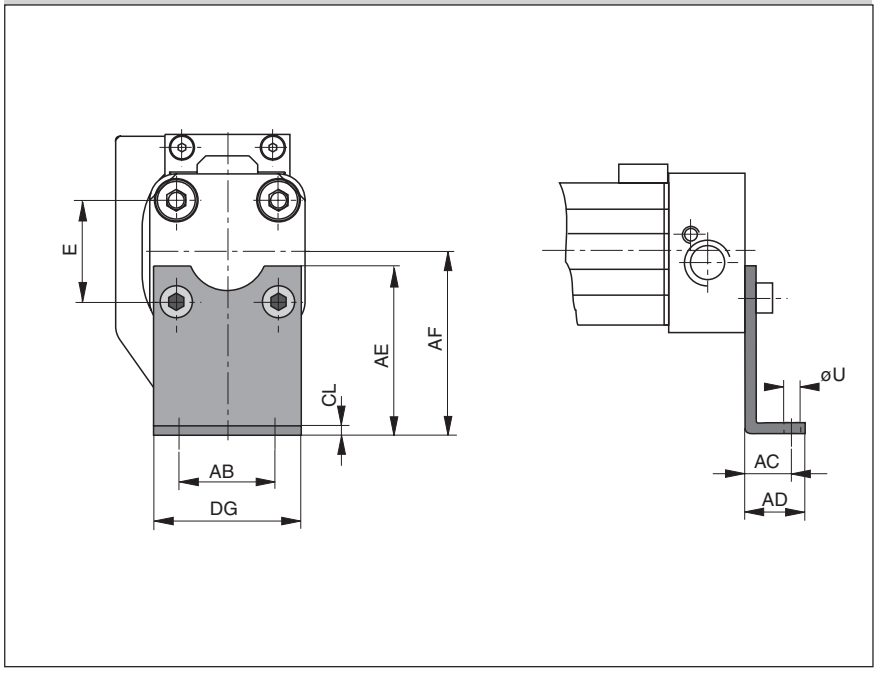
Series OSP-P40, P50, P63, P80 with Active Brake AB



Dimension Table (mm)

Series	A	B	J	X	Y	Z	CF	DA	DB	FT
AB 25	100	22	117	29.5	43	13	74	4	M5	50
AB 32	125	25.5	151.4	36	50	15	88	4	M5	62
AB 40	150	28	151.4	45	58	22	102	7	M5	79.5
AB 50	175	33	200	54	69.5	23	118.5	7.5	M5	97.5
AB 63	215	38	256	67	88	28	151	9	G1/8	120
AB 80	260	47	348	83	105	32	185	10	G1/8	149

Series OSP – P25 and P32 with Active Brake AB: Type A3



End Cap Mountings

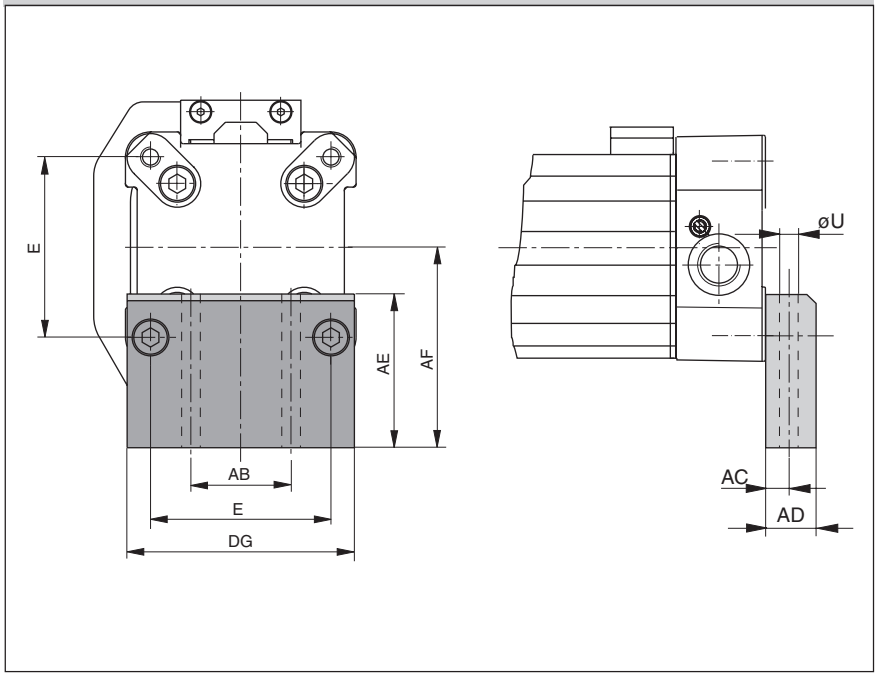
On the end-face of each cylinder end cap there are four threaded holes for mounting the cylinder. The hole layout is square, so that the mounting can be fitted to the bottom, top or either side.

Material: Series OSP-P25, P32: Galvanised steel

The mountings are supplied in pairs.



Series OSP – P40 , P50, P63, P80 with Active Brake AB: Type C3



Material: Series OSP-P40,P50, P63, P80: Anodised aluminium

The mountings are supplied in pairs.

Stainless steel version on request.



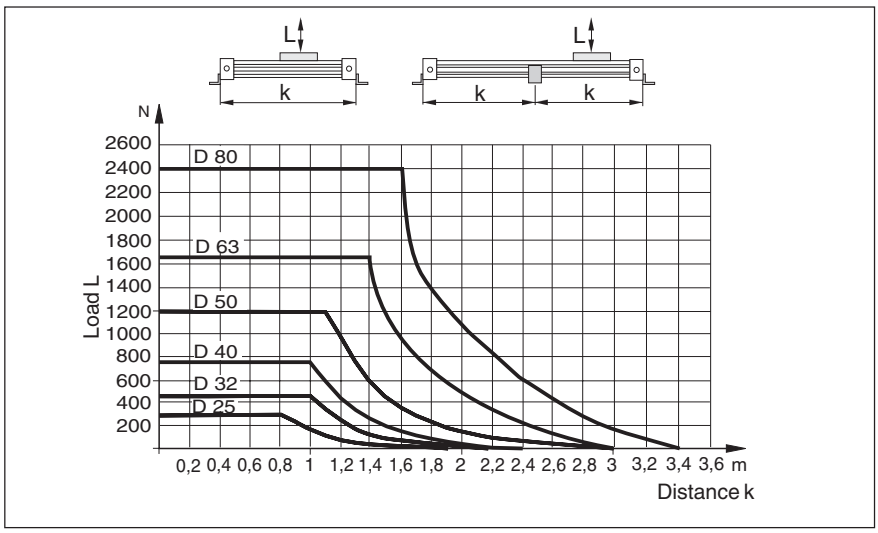
Dimension Table (mm)

Series	E	øU	AB	AC	AD	AE	AF	CL	DG	Order No. Type A3	Type C3
AB 25	27	5.8	27	16	22	45	49	2.5	39	**2060**	**–**
AB 32	36	6.6	36	18	26	42	52	3	50	**3060**	**–**
AB 40	54	9	30	12.5	24	46	60	–	68	**–**	**20339**
AB 50	70	9	40	12.5	24	54	72	–	86	**–**	**20350**
AB 63	78	11	48	15	30	76	93	–	104	**–**	**20821**
AB 80	96	14	60	17.5	35	88	110	–	130	**–**	**20822**

Mid Section Support

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive.

The diagrams show the maximum permissible unsupported length in relation to loading. Deflection of 0.5mm max. between supports is permissible.
The mid section supports are attached to the dovetail rails, and can take axial loads.



Mid Section Supports

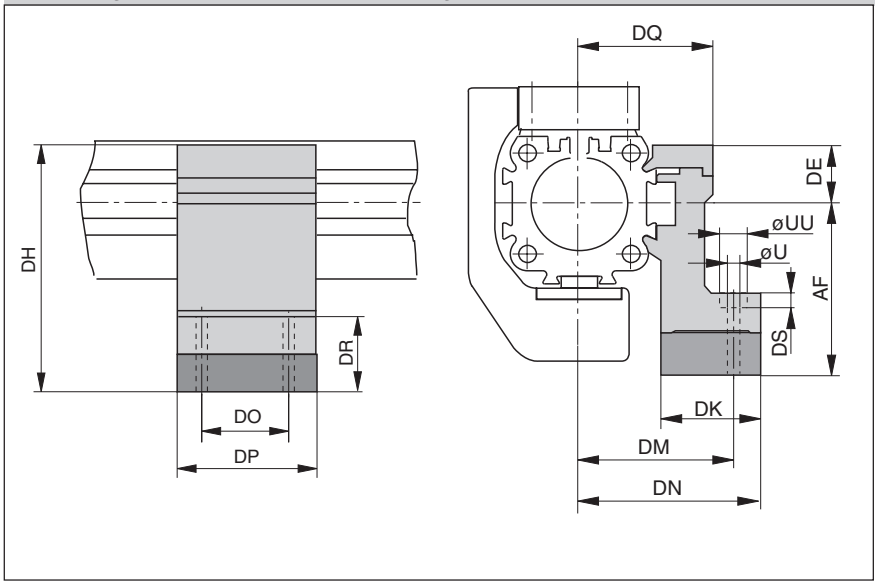
Note to Type E3:

Mid section supports can only be mounted opposite of the brake housing.

Stainless steel version available on request.



Series OSP-P25 to P80 with Active Brake AB: Type E3
(Mounting from above / below with through-bolt)



Dimension Table (mm)

Series	U	UU	AF	DE	DH	DK	DM	DN	DO	DP	DQ	DR	DS	Order No. Type E3
AB 25	5.5	10	49	16	65	26	40	47.5	36	50	34.5	35	5.7	**20353**
AB 32	5.5	10	52	16	68	27	46	54.5	36	50	40.5	32	5.7	**20356**
AB 40	7	–	60	23	83	34	53	60	45	60	45	32	–	**20359**
AB 50	7	–	72	23	95	34	59	67	45	60	52	31	–	**20362**
AB 63	9	–	93	34	127	44	73	83	45	65	63	48	–	**20453**
AB 80	11	–	110	39.5	149.5	63	97	112	55	80	81	53	–	**20819**

Accessories for linear drives with Active Brakes – please order separately

Description	For details information, see data sheet no.
Clevis mounting	**1.45.002E**
Adaptor profile	**1.45.007E**
T-Nut profile	**1.45.008E**
Connection profile	**1.45.009E**
Magnetic switch (can **only** be mounted opposite of the brake housing)	**1.45.100E, 1.45.104E**

Multi-Brake Passive Brake

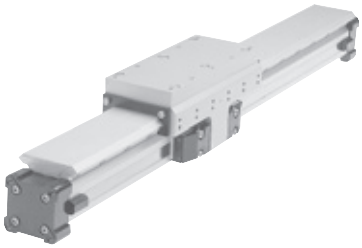
with plain bearing guide Slideline SL

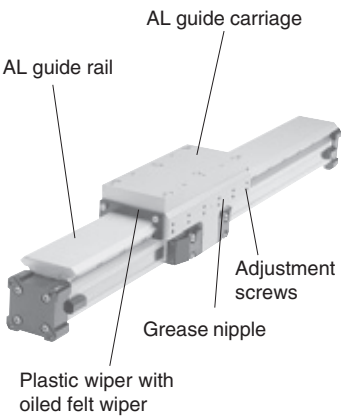
OSP
ORIGA SYSTEM PLUS

Series MB-SL 25 to 80
for Linear-drive
• Series OSP-P

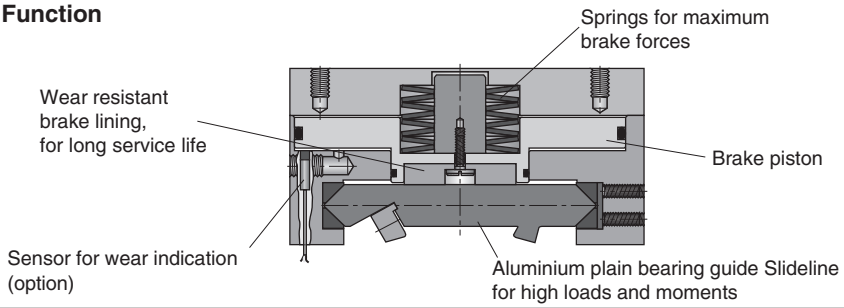
Versions

for pneumatic linear drive:
Series OSP-P

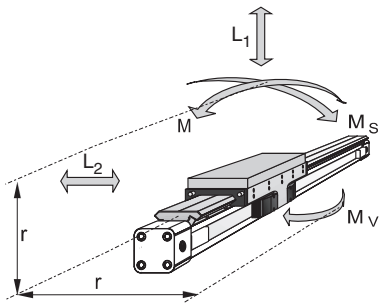




Function



Loads, Forces and Moments



Technical Data:

The table shows the maximum values for light, shock-free operation, which must not be exceeded even in dynamic operation.

Load and moment data are based on speeds v < 0.2 m/s.

Operating pressure 4.5 - 8 bar
A pressure of 4.5 bar is required to release the brake.

For further technical information, please refer to the data sheets for linear drives OSP-P (1.10.002E)

Features:

- Brake operated by spring actuation
- Brake release by pressurisation
- Optional sensor to indicate brake lining wear
- Anodised aluminium rail, with prism shaped slide elements
- Adjustable plastic slide elements
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Replenishable guide lubrication by integrated grease nipples
- Blocking function in case of pressure loss
- Intermediate stops possible

Function:

The Multi-Brake is a passive device. When the air pressure is removed the brake is actuated and movement of the cylinder is blocked. The brake is released by pressurisation.
The high friction, wear resistant brake linings allow the Multi-Brake to be used as a dynamic brake to stop cylinder movement in the shortest possible time. The powerful springs also allow the Multi-Brake to be used effectively in positioning applications.

Series	For linear drive	Max. moments [Nm] M	Ms	Mv	Max. loads [N] L_1, L_2	Max. brake force [N] [1]	Mass of linear drive with guide [kg] with 0 mm stroke	increase per 100 mm stroke	Mass* guide carriage [kg]	Order No. – MB-SL without sensor	with sensor for wear indication
MB-SL 25	OSP-P25	34	14	34	675	470	2.04	0.39	1.10	**20796**	**on request**
MB-SL 32	OSP-P32	60	29	60	925	790	3.82	0.65	1.79	**20797**	**on request**
MB-SL 40	OSP-P40	110	50	110	1500	1200	5.16	0.78	2.34	**20798**	**on request**
MB-SL 50	OSP-P50	180	77	180	2000	1870	8.29	0.97	3.63	**20799**	**on request**
MB-SL 63	OSP-P63	260	120	260	2500	2900	13.31	1.47	4.97	**20800**	**on request**
MB-SL 80	OSP-P80	260	120	260	2500	2900	17.36	1.81	4.97	**20846**	**on request**

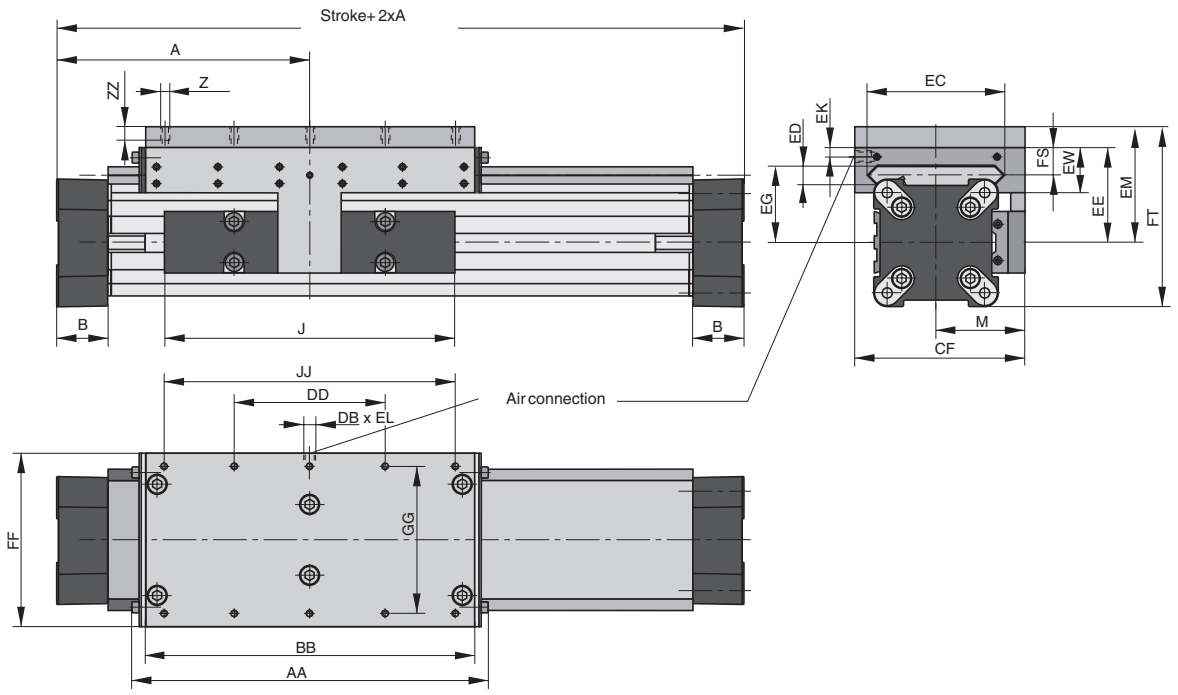
[1] Braking surface dry – oil on the braking surface will reduce the braking force
* **Please note:**
in the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

For **linear drives** see 1.10.002E
For **mountings** see 1.45.005E

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

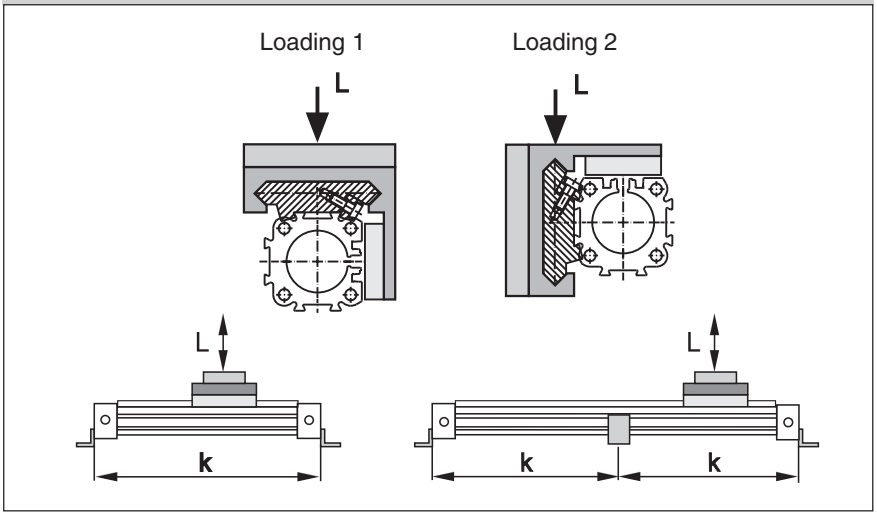
Series OSP-P with Passive Brake MB-SL



Dimension Table (mm)

Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	ED	EE	EG	EK	EL	EM	EW	FF	FT	FS	GG	JJ	ZZ
MB-SL25	100	22	117	40,5	M6	162	142	M5	60	72.5	47	12	53	39	9	5	73	30	64	93.5	20	50	120	12
MB-SL32	125	25.5	152	49	M6	205	185	G1/8	80	91	67	14	62	48	7	10	82	33	84	108	21	64	160	12
MB-SL40	150	28	152	55	M6	240	220	G1/8	100	102	77	14	64	50	6.5	10	84	34	94	118.5	21.5	78	200	12
MB-SL50	175	33	200	62	M6	284	264	G1/8	120	117	94	14	75	56	10	12	95	39	110	138.5	26	90	240	12
MB-SL63	215	38	256	79	M8	312	292	G1/8	130	152	116	18	86	66	11	12	106	46	152	159	29	120	260	13
MB-SL80	260	47	348	96	M8	312	292	G1/8	130	169	116	18	99	79	11	12	119	46	152	185	29	120	260	13

Loading



Mid Section Support

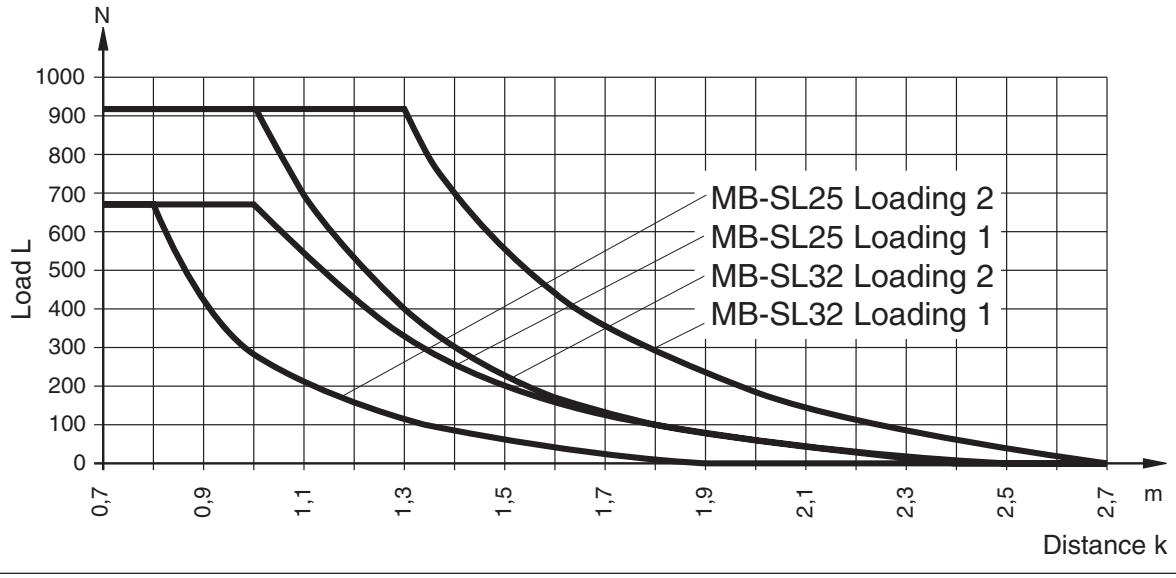
(for versions see 1.45.005E)

Mid section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissable unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissable.

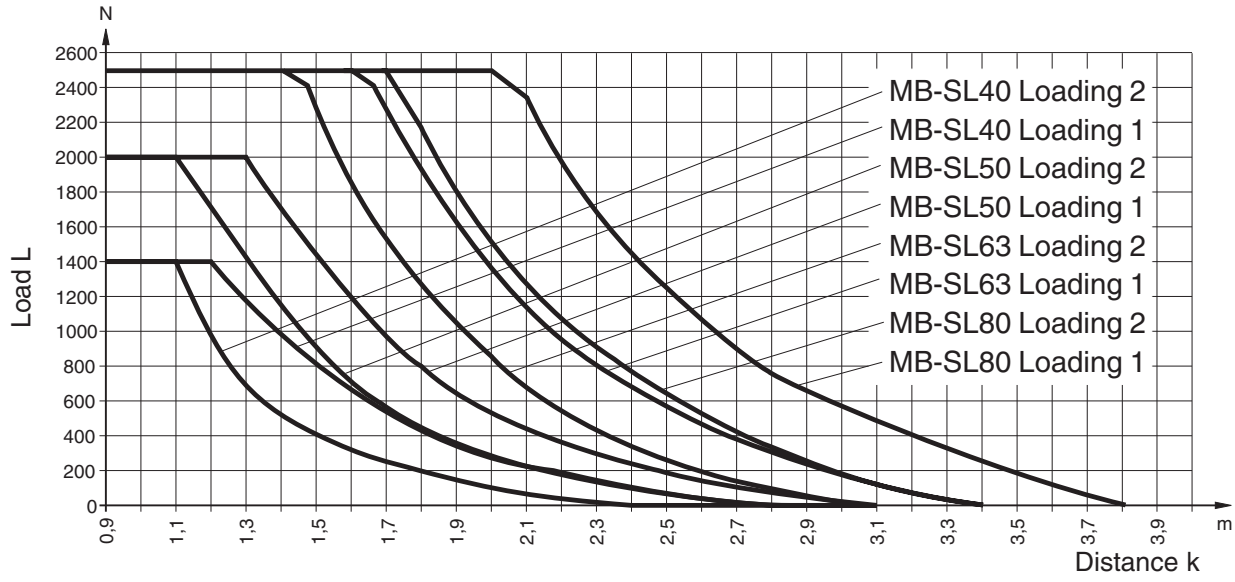
Note:

For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

Permissible Unsupported Length MB-SL25, MB-SL32

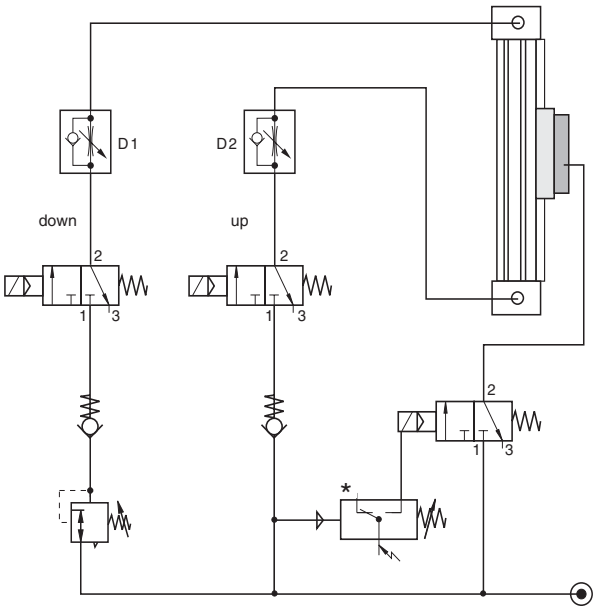


Permissible Unsupported Length MB-SL40, MB-SL50, MB-SL63 and MB-SL80

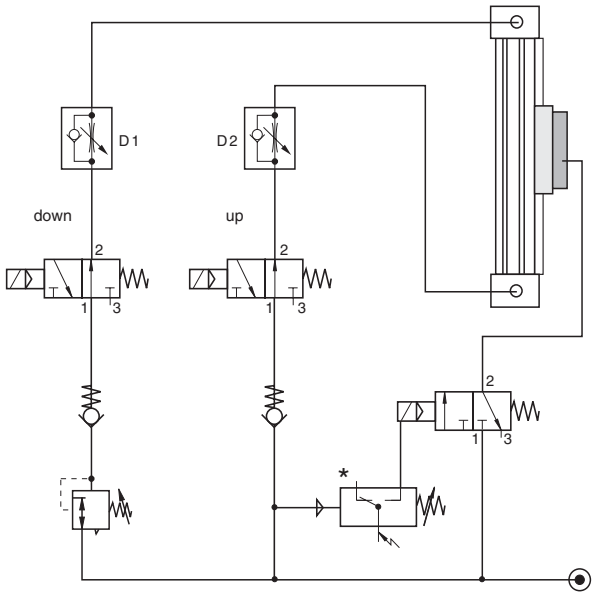


Application Example - Vertical Application

Control of a cylinder with
3/2 way valves. Basic position – **exhausted**



Control of a cylinder with
3/2 way valves. Basic position – **pressurised**



Control Examples

Under normal operating circumstances the pressure switch is closed and the air flows through the 3/2 way solenoid valves from port 1 to 2, thus lifting the brake from the rail (operating condition).
The brake is pressurised by means of a 3/2 way valve in combination with a pressure switch. When there is a pressure loss, the brake is actuated by the pressure switch.
When the air pressure is restored to both cylinder chambers, the brake is lifted and the linear drive can be moved again.

The speed regulating valves D1 and D2 control the speed of the linear drive, and have no influence on the brake. The two non-return valves give the system a higher stability.
The pressure regulating valve is used to compensate for the downward force in this vertical application.

Please note:
Before the brake is lifted, make sure that both air chambers of the linear drive are pressurised. Small diameter tubing, fittings and valves with a
nominal diameter, and tubing that is too long all change the reaction time of the brake!

*__Tip:__
The pressure switch actuates the brake when the pressure drops below the set value.

For accessories, such as tubing and fittings, please refer to our separate catalogue.

Required Components

Way Valves	
Port size	see catalogue
M5, G1/8 G1/4, G1/2	Valves A4P026E
Pressure Regulating Valves	
G1/8 - G3/8	see catalogue Air Preparation A4P006E Data sheet no. 5.12.006E
Pneumatic Accessories	
P/E-Switch	see catalogue
Non-Return Valves G1/8 - G3/8	Pneumatic Accessories A4P021E
Screw-in Speed Regulating Valves M5 - G1/4	

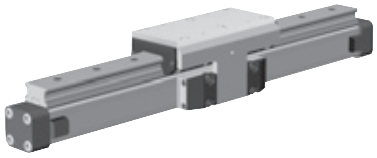
Multi-Brake Passive Brake

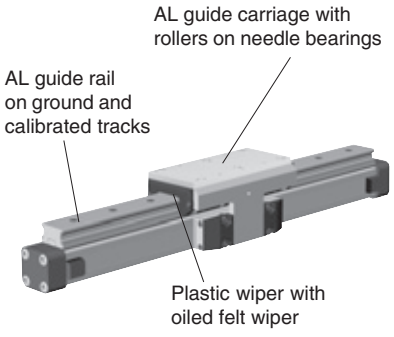
with Aluminium Roller Guide Proline PL

Series MB-PL 25 to 50
for Linear-drive
· Series OSP-P

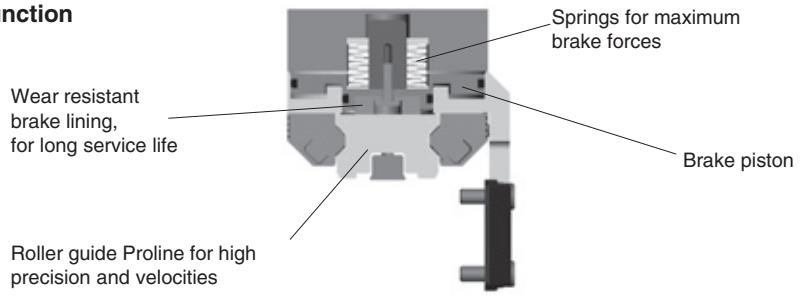
Versions

for pneumatic linear drive:
Series OSP-P

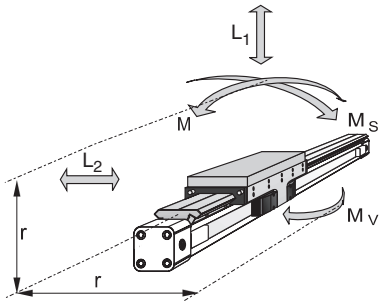




Function



Loads, Forces and Moments



Technical Data

The table shows the maximal permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equasion applies:

$$\frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}} \leq 1$$

The sum of the loads should not exceed >1. With a load factor of less than 1, service life is 8000 km

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.
Operating Pressure 4.5 - 8 bar.
A pressure of min. 4.5 bar release the brake.

Features:

- Brake operated by spring actuation
- Brake release by pressurisation
- Optional sensor to indicate brake lining wear
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Blocking function in case of pressure loss
- Intermediate stops possible

Function:

The Multi-Brake is a passive device. When the air pressure is removed the brake is actuated and movement of the cylinder is blocked. The brake is released by pressurisation.
The high friction, wear resistant brake linings allow the Multi-Brake to be used as a dynamic brake to stop cylinder movement in the shortest possible time. The powerful springs also allow the Multi-Brake to be used effectively in positioning applications.

Series	For linear drive	Max. moments [Nm] M	Ms	Mv	Max. loads [N] L1, L2	Max. brake force [N] 1)	Mass of linear drive with guide [kg] with 0 mm stroke	increase per 100 mm stroke	Mass* guide carriage [kg]	Order No.. – MB-PL without sensor	with sensor for wear indication
MB-PL25	OSP-P25	39	16	39	857	315	2.14	0.40	1.24	**20864**	**on request**
MB-PL32	OSP-P32	73	29	73	1171	490	4.08	0.62	2.02	**20865**	**on request**
MB-PL40	OSP-P40	158	57	158	2074	715	5.46	0.70	2.82	**20866**	**on request**
MB-PL50	OSP-P50	249	111	249	3111	1100	8.60	0.95	4.07	**20867**	**on request**

1) Braking surface dry – oil on the braking surface will reduce the braking force

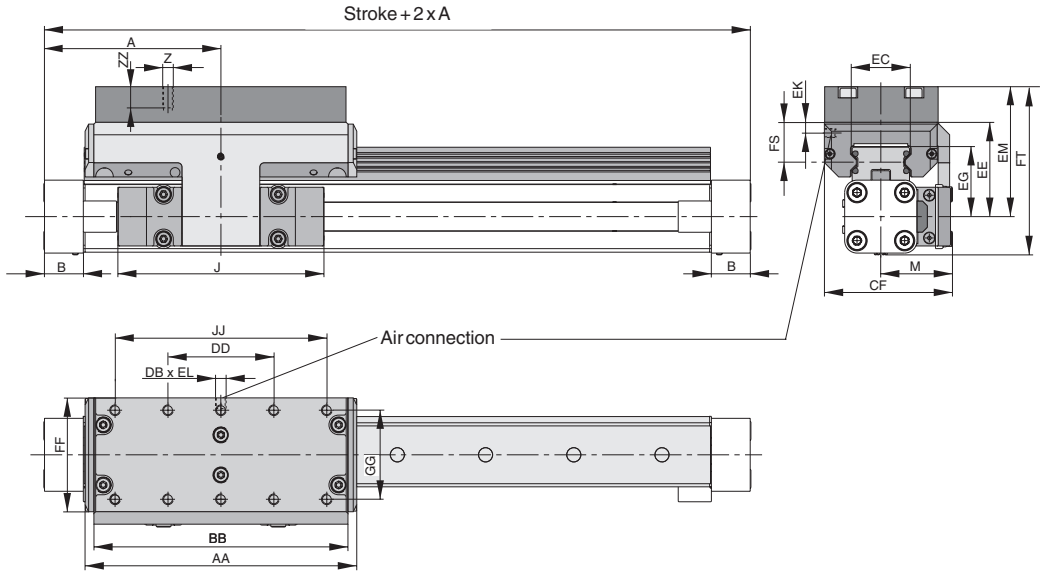
* **Please note:**
In the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

For **linear drives** see 1.10.002E
For **mountings** see 1.45.005E

A1P616E00JY00X

The right to introduce technical modifications is reserved

Series OSP-P with Passive Brake MB-PL



Dimension Table (mm) Series OSP-P MB-PL25, MB-PL32, MB-PL40, MB-PL50

Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	EE	EG	EK	EL	EM	FF	FS	FT	GG	JJ	ZZ
MB-PL25	100	22	117	40.5	M6	154	144	M5	60	72.5	32.5	53	39	9	5	73	64	23	93.5	50	120	12
MB-PL32	125	25.5	152	49	M6	197	187	G1/8	80	91	42	62	48	7	10	82	84	25	108	64	160	12
MB-PL40	150	28	152	55	M6	232	222	G1/8	100	102	47	64	50.5	6.5	10	84	94	23.5	118.5	78	200	12
MB-PL50	175	33	200	62	M6	276	266	G1/8	120	117	63	75	57	10	12	95	110	29	138.5	90	240	16

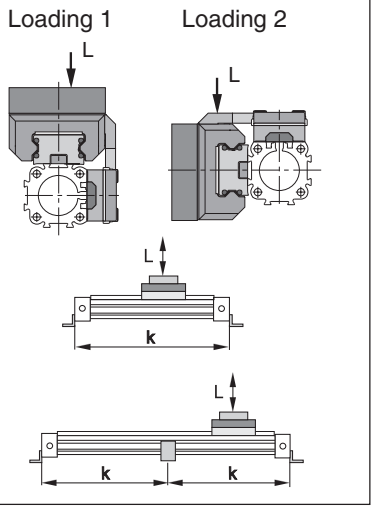
Mid Section Support

(for versions see 1.45.005E)

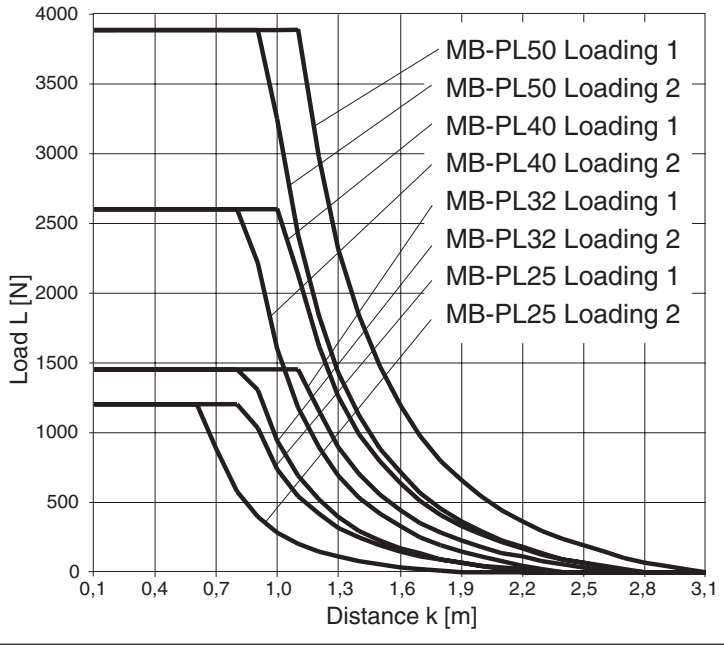
Mid section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissable unsupported length in relation to loading.
A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissable.

Note:

For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

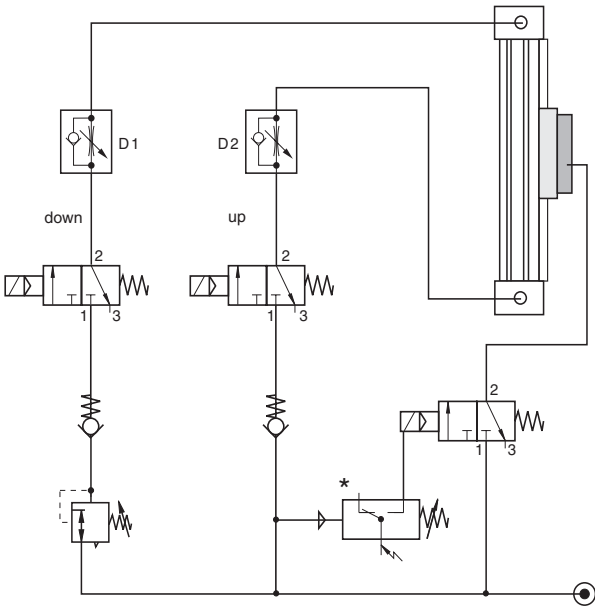


Permissible Unsupported Length OSP-P MB-PL25, MB-PL32, MB-PL40, MB-PL50

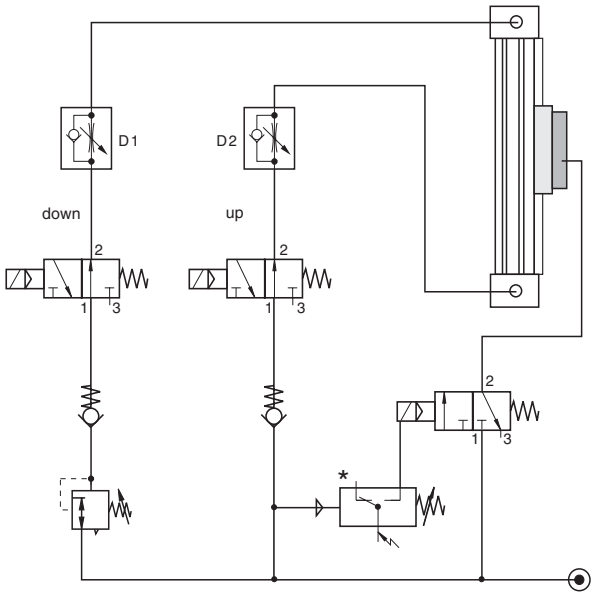


Application Example - Vertical Application

Control of a cylinder with
3/2 way valves. Basic position – **exhausted**



Control of a cylinder with
3/2 way valves. Basic position – **pressurised**



Control Examples

Under normal operating circumstances the pressure switch is closed and the air flows through the 3/2 way solenoid valves from port 1 to 2, thus lifting the brake from the rail (operating condition).
The brake is pressurised by means of a 3/2 way valve in combination with a pressure switch. When there is a pressure loss, the brake is actuated by the pressure switch.
When the air pressure is restored to both cylinder chambers, the brake is lifted and the linear drive can be moved again.

The speed regulating valves D1 and D2 control the speed of the linear drive, and have no influence on the brake. The two non-return valves give the system a higher stability.
The pressure regulating valve is used to compensate for the downward force in this vertical application.

Please note:
Before the brake is lifted, make sure that both air chambers of the linear drive are pressurised. Small diameter tubing, fittings and valves with a
nominal diameter, and tubing that is too long all change the reaction time of the brake!

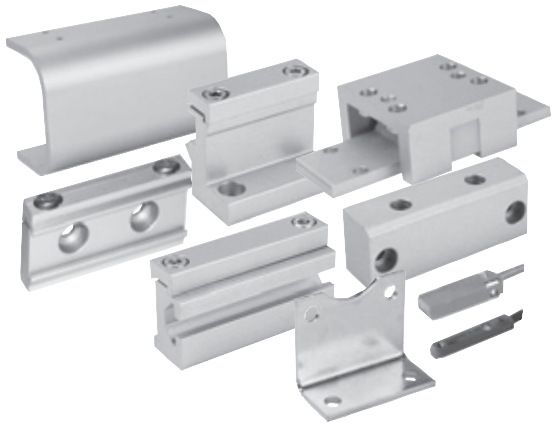
***Tip:**
The pressure switch actuates the brake when the pressure drops below the set value.

For accessories, such as tubing and fittings, please refer to our separate catalogue.

Required Components

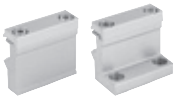
Way Valves	
Port size	see catalogue
M5, G1/8 G1/4, G1/2	Valves A4P026E
Pressure Regulating Valves	
G1/8 - G3/8	see catalogue Air Preparation A4P006E Data sheet no. 5.12.006E
Pneumatic Accessories	
P/E-Switch	see catalogue
Non-Return Valves G1/8 - G3/8	Pneumatic Accessories A4P021E
Screw-in Speed Regulating Valves M5 - G1/4	

Linear Drive-Accessories (Mountings and Magnetic Switches) Series OSP-P



Contents

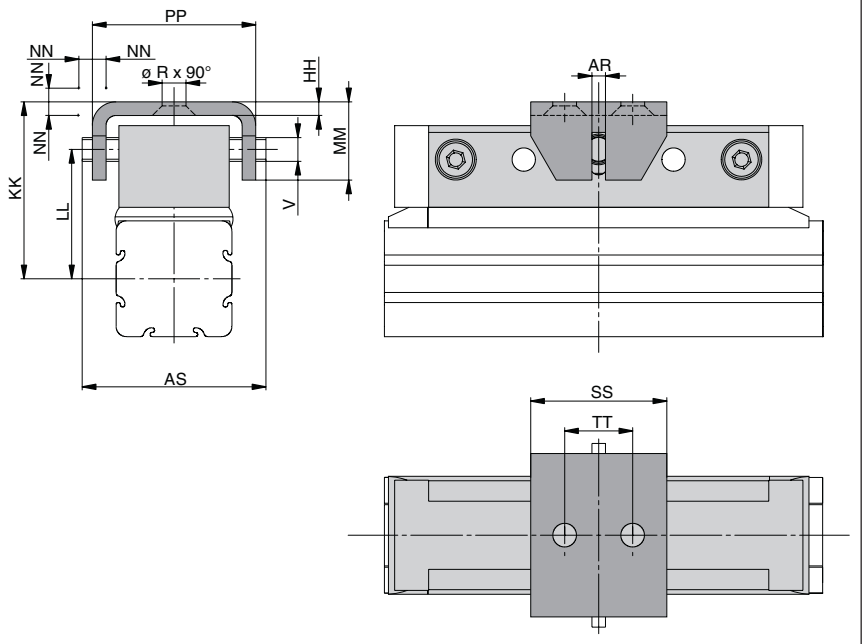
Description	Data Sheet No.	Page
Overview	1.45.001E	71-72
Clevis Mounting	1.45.002E	73-74
End Cap Mountings	1.45.003E	75
End Cap Mountings (for Linear Drives with guides)	1.45.00E-2,-6,-7	78, 80, 82
Mid-Section Support	1.45.004E	76
Mid-Section Support (for Linear Drives with guides)	1.45.005E-3,-5,-8,-9	79, 81, 84-85
Inversion Mounting	1.45.006E	87
Adaptor Profile	1.45.007E	88
T-Nut Profile	1.45.008E	89
Connection Profile	1.45.009E	90
Duplex Connection	1.45.011E	91
Multiplex Connection	1.45.012E	92
Magnetic Switch, standard version	1.45.100E	93-95
Magnetic Switch for T-Nut mounting	1.45.104E	97-100
Magnetic Switch ATEX-version ⟨Ex⟩	1.45.105E	101-103
Cable Cover	1.45.102E	96

Linear Drive Acccessories for Series OSP-P	
Description	Data Sheet No.
Clevis Mounting 	1.45.002E
End Cap Mountings 	1.45.003E
End Cap Mountings (for Linear Drives with guides) 	1.45.005E
Mid-Section Support 	1.45.004E
Mid-Section Support (for Linear Drives with guides) 	1.45.005E
Inversion Mounting 	1.45.006E
Adaptor Profile 	1.45.007E
T-Nut Profile 	1.45.008E
Connection Profile 	1.45.009E
Dulex Connection 	1.45.011E
Multiplex Connection 	1.45.012E
Magnetic Switch, standard version  Magnetic Switch, ATEX-version ⟨Ex⟩ Magnetic Switch for T-Nut mounting 	1.45.100E 1.45.105E 1.45.104E
Cable cover 	1.45.102E

A3P111E00HAA00X

The right to introduce technical modifications is reserved

Series OSP-P10



Linear Drive Accessories

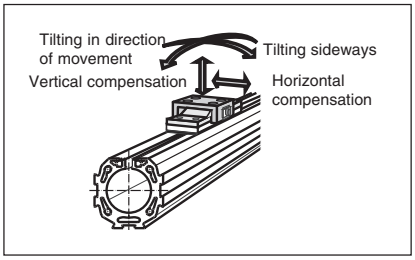
ø 10 mm
Clevis Mounting

OSP
ORIGA SYSTEM PLUS

For Linear-drive
• Series OSP-P

When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.
In the drive direction, the mounting has very little play.
Freedom of movement is provided as follows:

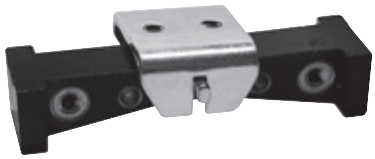
- **Tilting in direction of movement**
- **Vertical compensation**
- **Tilting sideways**
- **Horizontal compensation**



Dimension Table (mm)

Series	øR	V	AR	AS	HH	KK	LL	MM	NN*	PP	SS	TT	Order No. Standard	Order No. Stainless
OSP-P10	3.4	3.5	2	27	2	26	19	11.5	1	24	20	10	**20971**	–

* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.



For **rodless pneumatic cylinder OSP-P** see 1.10.002E

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A1P578D00HAA00X
The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 16-80 mm

Clevis Mounting

OSP
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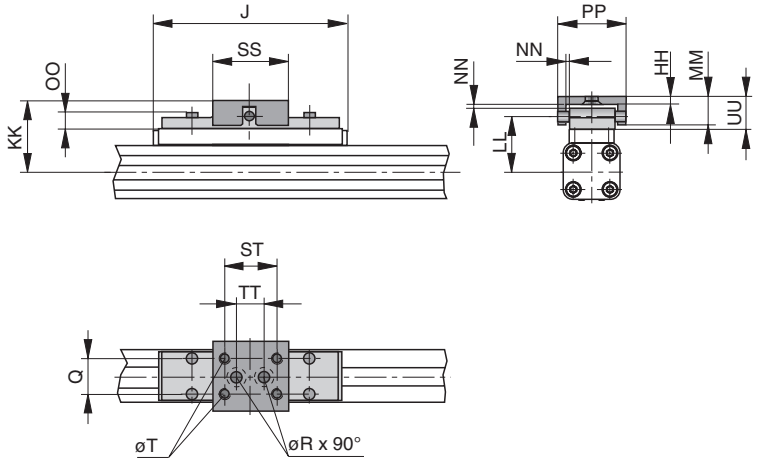
For Linear-drive
• Series OSP-P

When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.
In the drive direction, the mounting has very little play.
Freedom of movement is provided as follows:

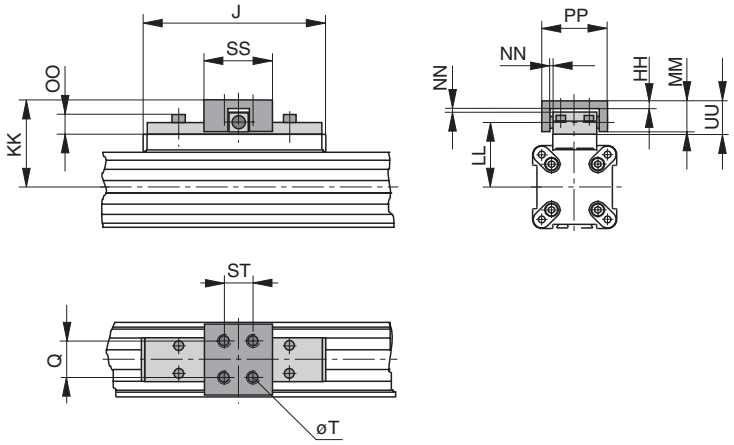
- **Tilting in direction of movement**
- **Vertical compensation**
- **Tilting sideways**
- **Horizontal compensation**

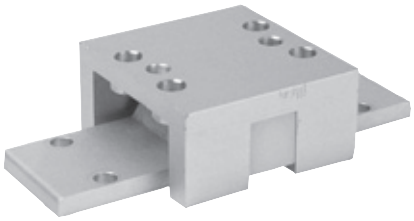
A stainless steel version is also available.

Series OSP-P16 to 32

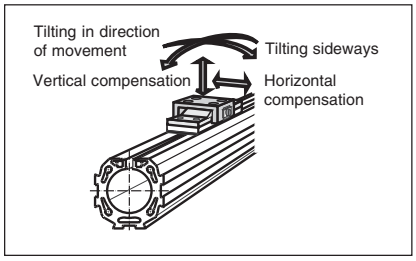


Series OSP-P40 to 80





Please note:
When using additional inversion mountings, take into account the dimensions in data sheet 1.45.006E.



Dimension Table (mm)

Series	J	Q	T	øR	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU	Order No. Standard	Order No. Stainless
OSP-P16	69	10	M4	4.5	3	34	26.6	10	1	8.5	26	28	20	10	11	**20462**	**20463**
OSP-P25	117	16	M5	5.5	3.5	52	39	19	2	9	38	40	30	16	21	**20005**	**20092**
OSP-P32	152	25	M6	6.6	6	68	50	28	2	13	62	60	46	40	30	**20096**	**20094**
OSP-P40	152	25	M6	–	6	74	56	28	2	13	62	60	46	–	30	**20024**	**20093**
OSP-P50	200	25	M6	–	6	79	61	28	2	13	62	60	46	–	30	**20097**	**20095**
OSP-P63	256	37	M8	–	8	100	76	34	3	17	80	80	65	–	37	**20466**	**20467**
OSP-P80	348	38	M10	–	8	122	96	42	3	16	88	90	70	–	42	**20477**	**20478**

* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.

For **rodless pneumatic cylinder OSP-P** see 1.10.002E

Linear Drive Accessories

ø 10-80 mm

End Cap Mountings

OSP
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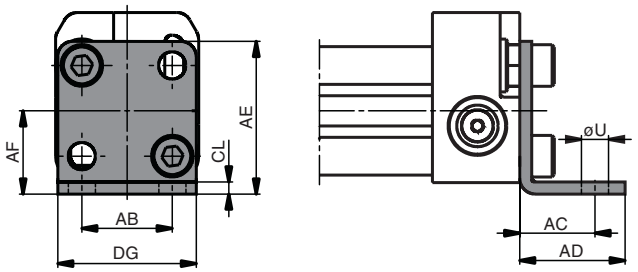
For Linear-drive
• Series OSP-P

On the end-face of each end cap there are four threaded holes for mounting the actuator. The hole layout is square, so that the mounting can be fitted to the bottom, top or either side, regardless of the position chosen for the air connection.

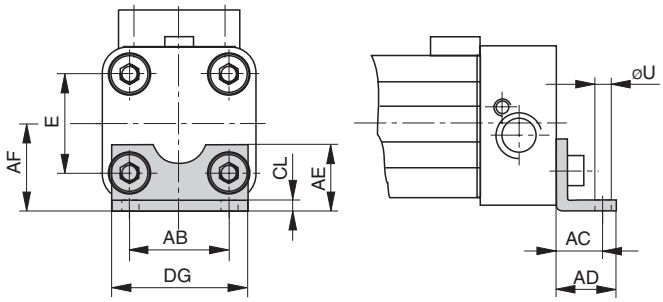
Material:
Series OSP-P10 – P32:
Galvanised steel.
Series OSP-P40 – P80:
Anodized aluminium.

The mountings are supplied in pairs.

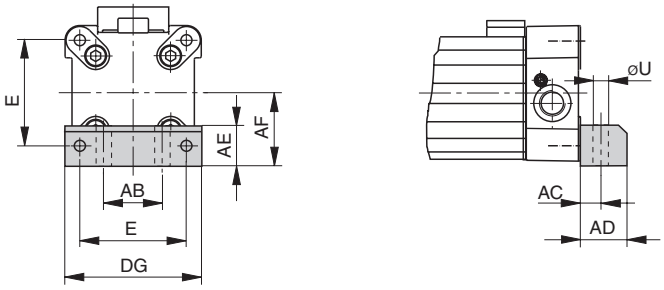
Series OSP-P10 : Type A1

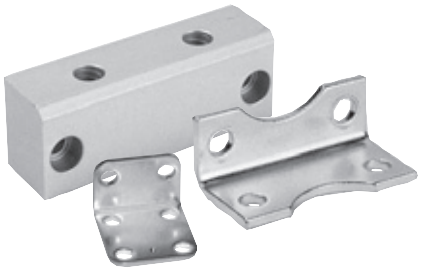


Series OSP-P16 to 32: Type A1



Series OSP-P40 to 80: Type C1





Dimension Table (mm)

Series	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. (* Type A1	Order No. (* Type C1
OSP-P10	-	3.6	12	10	14	20.2	11	1.6	18.4	**0 240**	**–**
OSP-P16	18	3.6	18	10	14	12.5	15	1.6	26	**20408**	**–**
OSP-P25	27	5.8	27	16	22	18	22	2.5	39	**2010**	**–**
OSP-P32	36	6.6	36	18	26	20	30	3	50	**3010**	**–**
OSP-P40	54	9	30	12.5	24	24	38	–	68	**–**	**4010**
OSP-P50	70	9	40	12.5	24	30	48	–	86	**–**	**5010**
OSP-P63	78	11	48	15	30	40	57	–	104	**–**	**6010**
OSP-P80	96	14	60	17.5	35	50	72	–	130	**–**	**8010**

(*= Pair

For **rodless pneumatic cylinder OSP-P** see 1.10.002E

A1P579E00HAA00X

The right to introduce technical modifications is reserved

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Linear Drive Accessories

ø 10-80 mm
Mid-Section Support

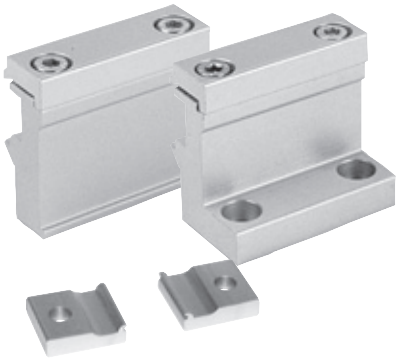
OSP
ORIGA SYSTEM PLUS

For Linear-drive
• Series OSP-P

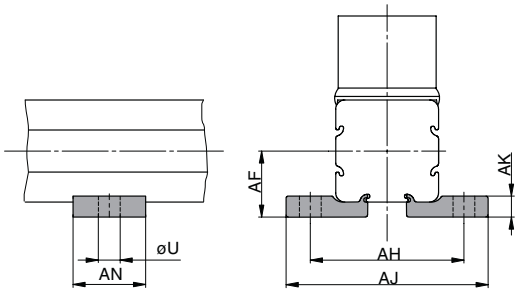
Note on Types E1 and D1 (P16 – P80): The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the centre of the actuator is different.

For design notes, see data sheet 1.10.002E-2

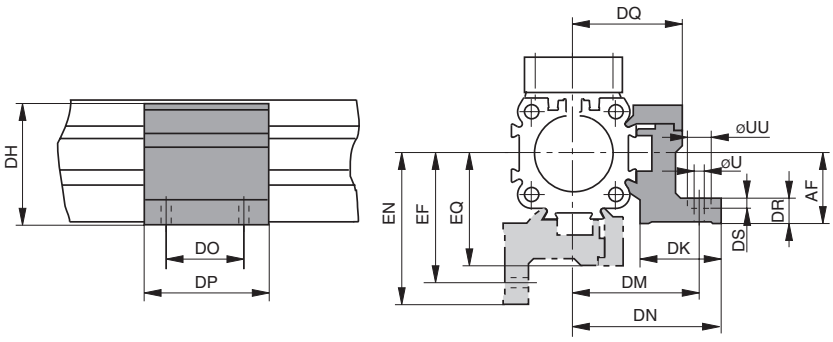
Stainless steel version on demand.



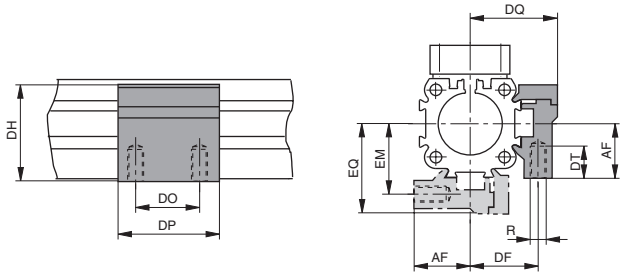
Series OSP-10, Type E1
(Mounting from above / below using a cap screw)



Series OSP-P16 to P80: Type E1
(Mounting from above / below using a cap screw)



Series OSP-16 to 80, Type D1
(Mountings from below with 2 screws)



Dimension Table (mm) Series OSP-P10

Series	U	AF	AH	AJ	AK	AN	Order No. Type E1	Order No. Type D1
OSP-P10	3.6	11	25.4	33.4	3.5	12	**0250**	**-**

Dimension Table (mm) – Series OSP-P16 to P80

Series	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	Order No. Type E1	Order No. Type D1
OSP-P16	M3	3.4	6	15	20	29.2	24	32	36.4	18	30	27	6	3.4	6.5	32	20	36.4	27	**20435**	**20434**
OSP-P25	M5	5.5	10	22	27	38	26	40	47.5	36	50	34.5	8	5.7	10	41.5	28.5	49	36	**20009**	**20008**
OSP-P32	M5	5.5	10	30	33	46	27	46	54.5	36	50	40.5	10	5.7	10	48.5	35.5	57	43	**20158**	**20157**
OSP-P40	M6	7	–	38	35	61	34	53	60	45	60	45	10	–	11	56	38	63	48	**20028**	**20027**
OSP-P50	M6	7	–	48	40	71	34	59	67	45	60	52	10	–	11	64	45	72	57	**20163**	**20162**
OSP-P63	M8	9	–	57	47.5	91	44	73	83	45	65	63	12	–	16	79	53.5	89	69	**20452**	**20451**
OSP-P80	M10	11	–	72	60	111.5	63	97	112	55	80	81	15	–	25	103	66	118	87	**20482**	**20480**

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For **rodless pneumatic cylinder OSP-P** see 1.10.002E

A1P580E00HAA00X

The right to introduce technical modifications is reserved

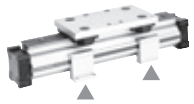
Linear Drive Accessories

Mountings for Linear Drives fitted with OSP-Guides

OSP
ORIGA SYSTEM PLUS

For Linear-drives
• Series OSP-P

Overview

Mounting Type	Type	Type – OSP Guides SLIDELINE PROLINE MULTIBRAKE 16 [1]	25	32	40	50	63 [1]	80 [1]	POWERSLIDE 16/25	25/25	25/35	25/44	32/35	32/44	40/44	40/60	50/60	50/76
End cap mounting 	Type A1	X							X									
	Type A2	O	O	O														
	Type A3									O	O		O					
End cap mounting, reinforced 	Type B1		X	X						X	X	X	X	X				
	Type B3								O									
	Type B4											O		O				
	Type B5																	
End cap mounting 	Type C1				X	X	X	X							X	X	X	X
	Type C2				O	O												
	Type C3						O	O							O		O	
	Type C4															O		O
Mid section support, small	Type D1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mid section support, wide 	Type E1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Type E2	O	O	O	O	O												
	Type E3						O	O	O	O	O		O		O		O	
	Type E4											O		O		O		O
	Type E5																	

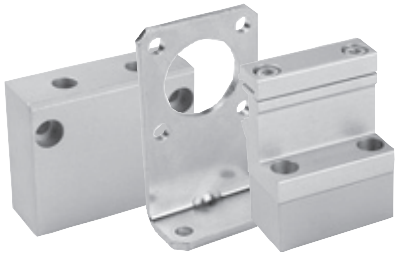
X = carriage mounted in top (12 o'clock position)

O = carriage mounted in lateral (3 or 9 o'clock position)

= available components

1) = not available for all sizes

Note:
For mountings and mid-section supports for linear drives with recirculating ball bearing guide STARLINE see data sheet 1.45.005E-6 to 1.45.005E-9, for recirculating ball bearing guide KF see data sheet 1.45.005E-4 to 1.45.005E-9



For **rodless pneumatic cylinder OSP-P** see 1.10.002E

Data Sheet No. 1.45.005E-1

A1P542E00HAA00X

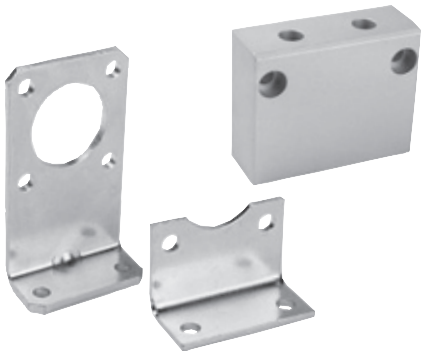
The right to introduce technical modifications is reserved

End cap mountings *

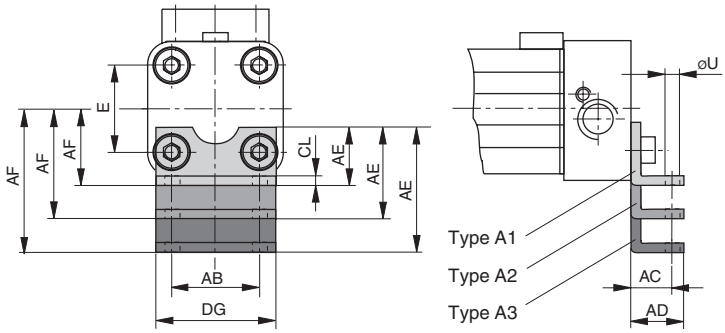
Four internal screw threads are located in the end faces of all OSP actuators for mounting the drive unit. End cap mountings may be secured across any two adjacent screws.

Material: Series OSP-16, 25, 32:
Galvanised steel
Series OSP-40,50, 63, 80:
Anodized aluminium

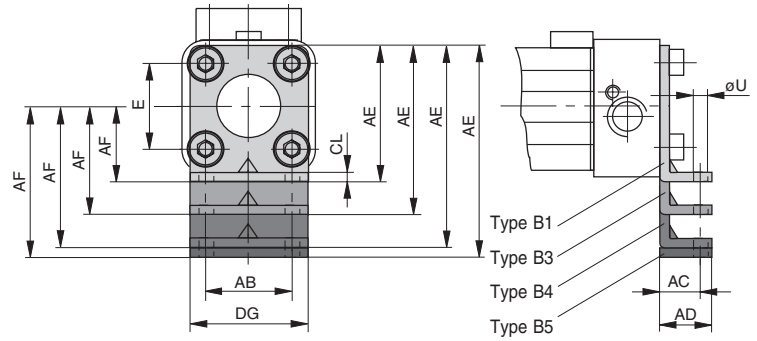
The mountings are supplied in pairs.



Series OSP-P16, 25, 32: Type A



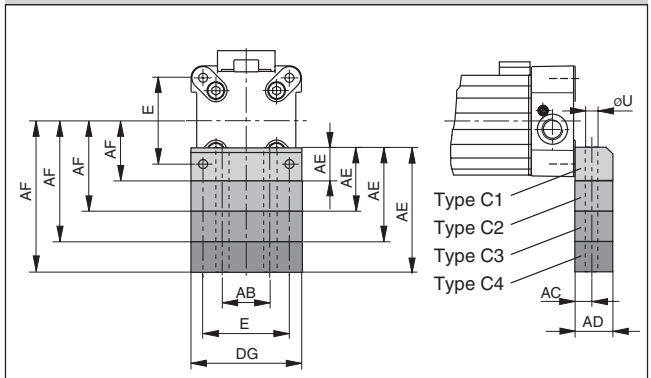
Series OSP-P16, 25, 32: Type B



Dimension Table (mm)
– **Dimensions AE and AF** (Dependant on the mounting type)

Mount. type	Dimensions AE for size							AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
A1	12.5	18	20	–	–	–	–	15	22	30	–	–	–	–
A2	27.5	33	34	–	–	–	–	30	37	44	–	–	–	–
A3	–	45	42	–	–	–	–	–	49	52	–	–	–	–
B1	–	42	55	–	–	–	–	–	22	30	–	–	–	–
B3	55	–	–	–	–	–	–	42	–	–	–	–	–	–
B4	–	80	85	–	–	–	–	–	60	60	–	–	–	–
B5	–	–	90	–	–	–	–	–	–	65	–	–	–	–
C1	–	–	–	24	30	40	50	–	–	–	38	48	57	72
C2	–	–	–	37	39	–	–	–	–	–	51	57	–	–
C3	–	–	–	46	54	76	88	–	–	–	60	72	93	110
C4	–	–	–	56	77	–	–	–	–	–	70	95	–	–

Series OSP-P40, 50, 63, 80: Type C

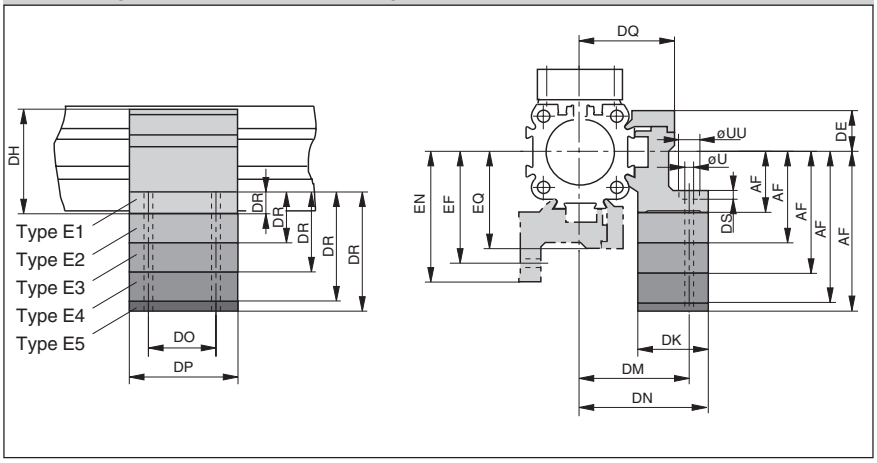


Dimension Table (mm)

Series	E	øU	AB	AC	AD	CL	DG
OSP-P16	18	3.6	18	10	14	1.6	26
OSP-P25	27	5.8	27	16	22	2.5	39
OSP-P32	36	6.6	36	18	26	3	50
OSP-P40	54	9	30	12.5	24	-	68
OSP-P50	70	9	40	12.5	24	-	86
OSP-P63	78	11	48	15	30	-	104
OSP-P80	96	14	60	17.5	35	-	130

* see mounting instructions on page 1.45.005E-1

Series OSP-P16 to 80: Type E.
(Mounting from above / below using a cap screw)



Mid-Section Support

Information regarding type E1 and D1:

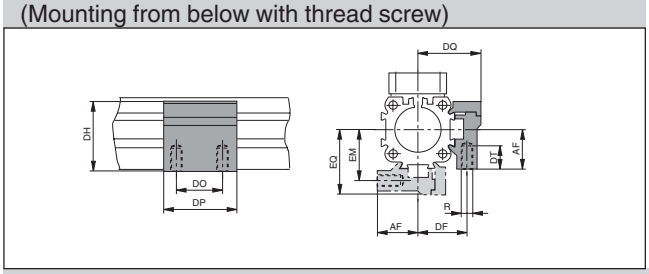
Mounting of the mid section supports is also possible on the lower side of the drive. In this case, please note the new centre line dimensions.

See layout information on data sheet no. 1.40.002E-2, 1.40.003E-3, 1.40.005E-3, 1.42.003E-3 and 1.42.004E-3

Stainless steel version on request.



Series OSP-P16 to 80: Type D1
(Mounting from below with thread screw)



Dimension Table (mm)
– **Dimensions AF and DR** (Dependant on the mounting type)

Mount. type	Dimensions DR for size							Dimensions AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
D1	–	–	–	–	–	–	–	15	22	30	38	48	57	72
E1	6	8	10	10	10	12	15	15	22	30	38	48	57	72
E2	21	23	24	23	19	–	–	30	37	44	51	57	–	–
E3	33	35	32	32	34	48	53	42	49	52	60	72	93	110
E4	–	46	40	42	57	–	–	–	60	60	70	95	–	–
E5	–	–	45	–	–	–	–	–	–	65	–	–	–	–

Dimension Table (mm)

Series	R	U	UU	DE	DF	DH	DK	DM	DN	DO	DP	DQ	DS	DT	EF	EM	EN	EQ
OSP-P16	M3	3.4	6	14.2	20	29.2	24	32	36.4	18	30	27	3.4	6.5	32	20	36.4	27
OSP-P25	M5	5.5	10	16	27	38	26	40	47.5	36	50	34.5	5.7	10	41.5	28.5	49	36
OSP-P32	M5	5.5	10	16	33	46	27	46	54.5	36	50	40.5	5.7	10	48.5	35.5	57	43
OSP-P40	M6	7	–	23	35	61	34	53	60	45	60	45	–	11	56	38	63	48
OSP-P50	M6	7	–	23	40	71	34	59	67	45	60	52	–	11	64	45	72	57
OSP-P63	M8	9	–	34	47.5	91	44	73	83	45	65	63	–	16	79	53.5	89	69
OSP-P80	M10	11	–	39.5	60	111.5	63	97	112	55	80	81	–	25	103	66	118	87

Ordering information for mountings Type A – Type B – Type C – Type D – Type E

Mounting type (versions)	Order No. size						
	16	25	32	40	50	63	80
A1 *)	**20408**	**2010**	**3010**	**–**	**–**	**–**	**–**
A2 *)	**20464**	**2040**	**3040**	**–**	**–**	**–**	**–**
A3 *)	**–**	**2060**	**3060**	**–**	**–**	**–**	**–**
B1 *)	**–**	**20311**	**20313**	**–**	**–**	**–**	**–**
B3 *)	**20465**	**–**	**–**	**–**	**–**	**–**	**–**
B4 *)	**–**	**20312**	**20314**	**–**	**–**	**–**	**–**
B5 *)	**–**	**–**	**20976**	**–**	**–**	**–**	**–**
C1 *)	**–**	**–**	**–**	**4010**	**5010**	**6010**	**8010**
C2 *)	**–**	**–**	**–**	**20338**	**20349**	**–**	**–**
C3 *)	**–**	**–**	**–**	**20339**	**20350**	**20821**	**20822**
C4 *)	**–**	**–**	**–**	**20340**	**20351**	**–**	**–**
D1	**20434**	**20008**	**20157**	**20027**	**20162**	**20451**	**20480**
E1	**20435**	**20009**	**20158**	**20028**	**20163**	**20452**	**20482**
E2	**20436**	**20352**	**20355**	**20358**	**20361**	**–**	**–**
E3	**20437**	**20353**	**20356**	**20359**	**20362**	**20453**	**20819**
E4	**–**	**20354**	**20357**	**20360**	**20363**	**–**	**–**
E5	**–**	**–**	**20977**	**–**	**–**	**–**	**–**

(* Pair)

Linear Drive Accessories

Ø 25-50 mm
End Cap Mounting
correspond to FESTO dimensions HP25 – 50

for Linear Drives with Recirculating Ball Bearing Guide

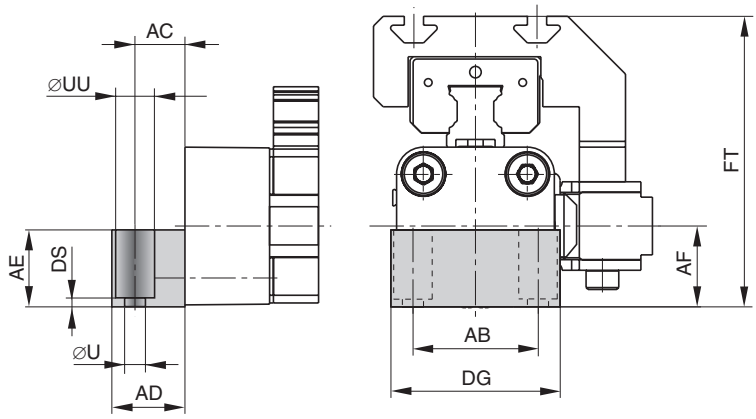
• Series OSP-P KF

On the end-face of each end cap there are four threaded holes for mounting the actuator.

Material:
Series OSP-P KF25 – 50:
Anodized aluminium.

The mountings are supplied in pairs.

Series OSP-P KF25 to KF50: Type HP (Correspond to FESTO dimensions)

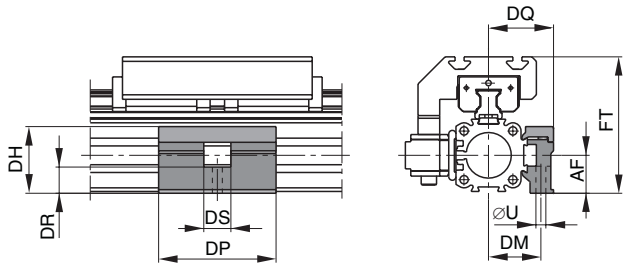


Note:
Correspond to FESTO DGPL-KF,
when the End Cap Mountings HP are mounted on the opposite side to the carriage (see drawing)

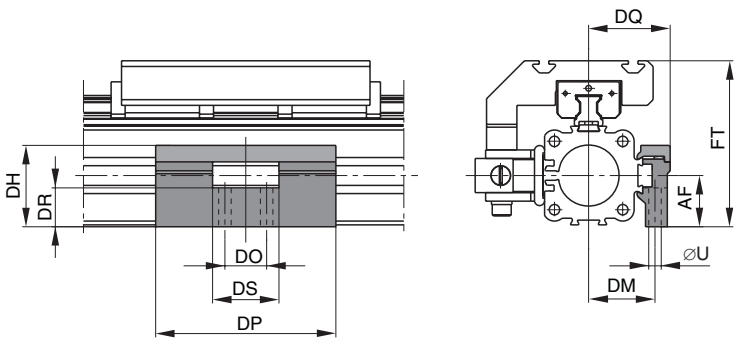
Dimension Table (mm)

Series	ØU	AB	AC	AD	AE	AF	DG	DS	FT	ØUU	Order No.
HP25	5.5	32.5	13	19	20	21	44	2	75.5	10	**21107**
HP32	6.6	38	17	24	24	27	52	3	87.5	11	**21108**
HP40	6.6	45	17.5	24	24	35	68	2	104.5	11	**21109**
HP50	9	65	25	35	35	48	86	6	138.5	15	**21110**

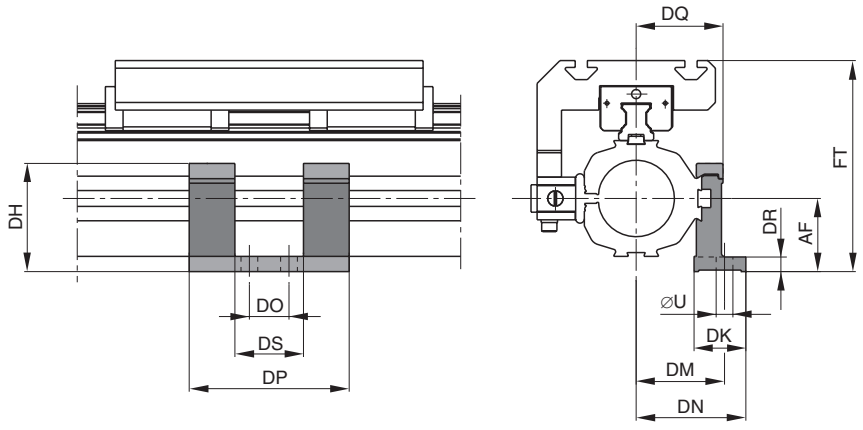
Series OSP-P KF25: Type MUP
(Mounting over through holes)



Series OSP-P KF32 to KF40: Type MUP
(Mounting over through holes)



Series OSP-P KF50: Type MUP
(Mounting over through holes)



Linear Drive Accessories

Ø 25-50 mm

Mid-Section Support

correspond to FESTO dimensions MUP25 – 50

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P KF**

For design notes, see data sheet 1.40.007E-3

Note:
Correspond to FESTO DGPL-KF, when the Mid-Section Support MUP are mounted on the 90° side to the carriage (see drawings).

Dimension Table (mm)

Series	ØU	AF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	FT	Order No.
MUP25	5.5	21	36.9	–	29	–	–	65	36	14.5	15	75.5	**21119**
MUP32	6.6	27	42.9	–	35	–	22	95	43	20.5	35	87.5	**21120**
MUP40	6.6	35	58	–	40	–	22	95	48	28.5	35	104.5	**21121**
MUP50	11	48	71	34	58	72	26	105	57	10	45	138.5	**21122**

Linear Drive Accessories

Ø 16 to 32 mm
End Cap Mounting
Type: B

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Material:
Galvanised steel
Anodized aluminium

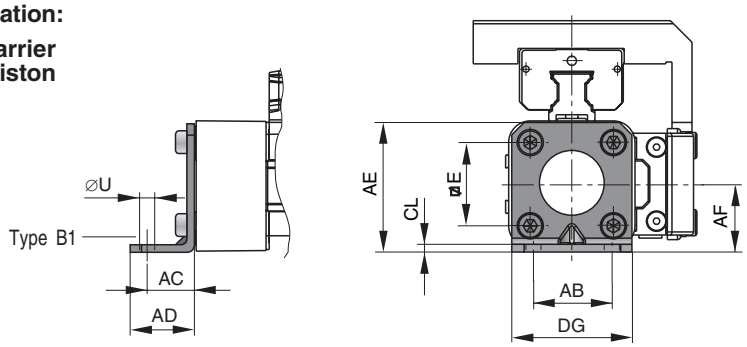
The mountings are supplied in pairs.



Series OSP-P STL16, STL25, STL32 : Type B1
Series OSP-P KF16, KF25, KF32 : Type B1

Installation:

Top carrier
Side piston

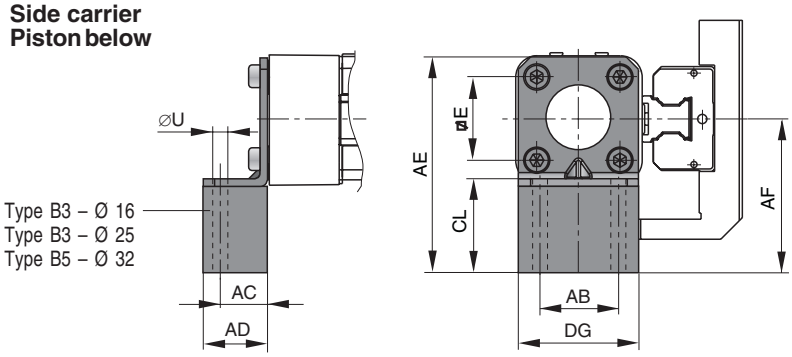


Drawing showes: Mounting with Guide Type STL

Series OSP-P STL16, STL25, STL32: Type B3 (Ø 32:B5)
Series OSP-P KF16, KF25, KF32: Type B3 (Ø 32:B5)

Installation:

Side carrier
Piston below

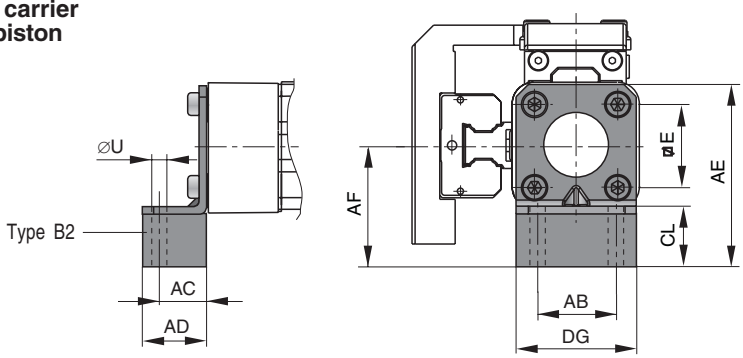


Drawing showes: Mounting with Guide Type STL

Series OSP-P STL16, STL25, STL32: Type B2
Series OSP-P KF16, KF25, KF32: Type B2

Installation:

Side carrier
Top piston



Drawing showes: Mounting with Guide Type STL

Dimension Table (mm) for End Cap Mounting Type: B1 to B5

Series	Mounting Type	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. (pair)
OSP-P STL16	B1	18	3.6	18	10	14	28	15	2	26	21135
OSP-P KF16	B2	18	3.6	18	10	14	43	30	17	26	21136
	B3	18	3.6	18	10	14	55	42	29	26	21137
OSP-P STL25	B1	27	5.8	27	16	22	42	22	2.5	39	20311
OSP-P KF25	B2	27	5.8	27	16	22	57	37	17.5	39	21138
	B3	27	5.8	27	16	22	69	49	29.5	39	21139
OSP-P STL32	B1	36	6.6	36	18	26	55	30	3	50	20313
OSP-P KF32	B2	36	6.6	36	18	26	69	44	17	50	21140
	B5	36	6.6	36	18	26	90	65	9	50	21141

Ø 40 to 50 mm
End Cap Mounting
Type: C

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

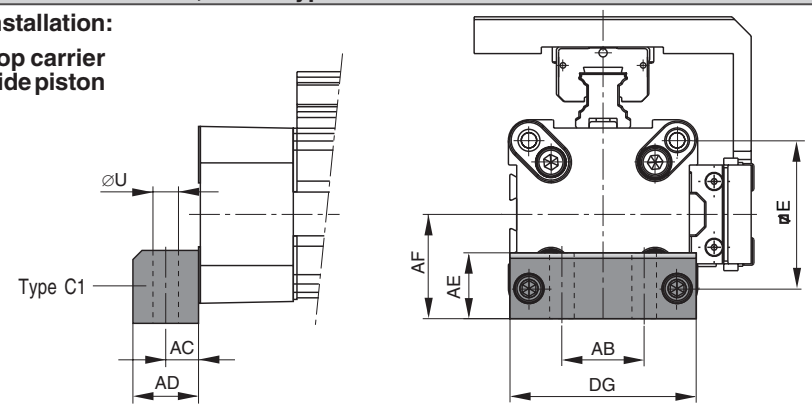
Material:
Anodized aluminium

The mountings are supplied in pairs.

Series OSP-P STL40, STL50: Type C1
Series OSP-P KF40, KF50: Type C1

Installation:

Top carrier
Side piston

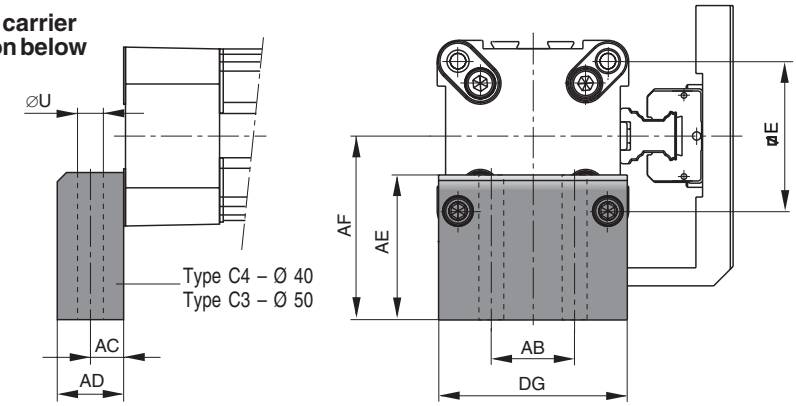


Drawing showes: Mounting with Guide Type STL

Series OSP-P STL40, STL50: Type C4 (Ø 50: C3)
Series OSP-P KF40, KF50: Type C4 (Ø 50: C3)

Installation:

Side carrier
Piston below

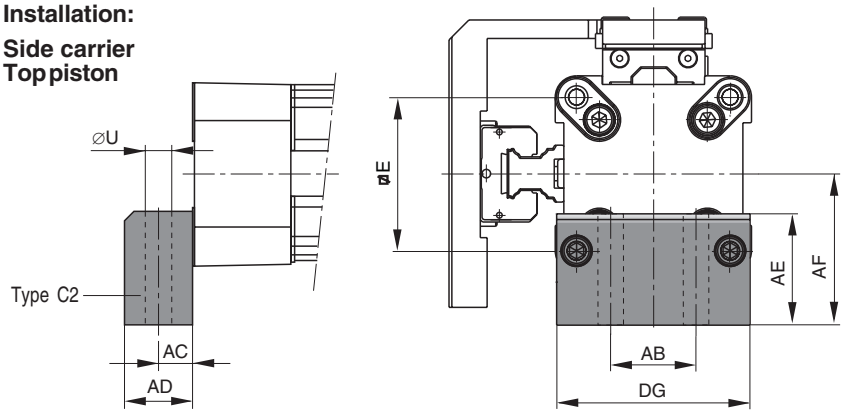


Drawing showes: Mounting with Guide Type STL

Series OSP-P STL40, STL50: Type C2
Series OSP-P KF40, KF50: Type C2

Installation:

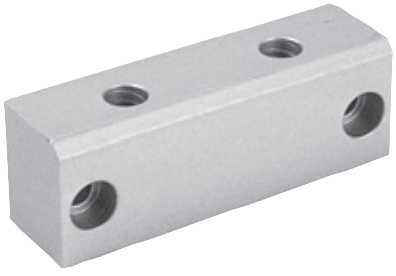
Side carrier
Top piston



Drawing showes: Mounting with Guide Type STL

Dimension Table (mm) for End Cap Mounting Type: C1 to C4

Series	Mounting Type	E	ØU	AB	AC	AD	AE	AF	DG	Order No. (pair)
OSP-P STL40	C1	54	9	30	12.5	24	24	38	68	4010
OSP-P KF40	C2	54	9	30	12.5	24	37	51	68	20338
	C4	54	9	30	12.5	24	56	70	68	20340
OSP-P STL50	C1	70	9	40	12.5	24	30	48	86	5010
OSP-P KF50	C2	70	9	40	12.5	24	39	57	86	20349
	C3	70	9	40	12.5	24	54	72	86	20350



Linear Drive Accessories

Ø 16 to 50
Mid-Section Support
Type: D1ST

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

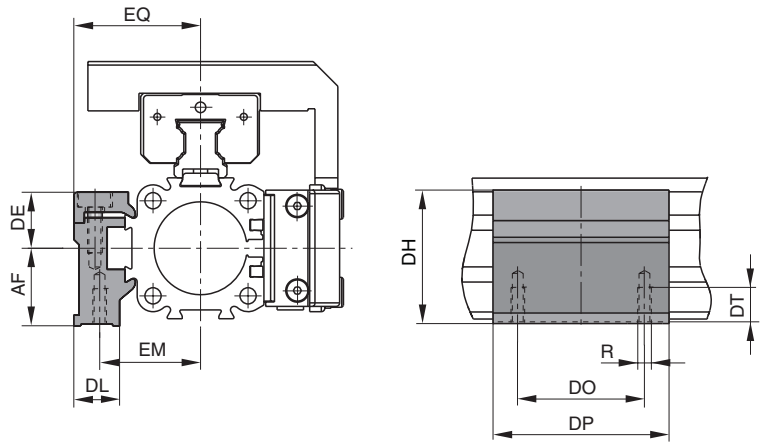
Note on Types D1ST
The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the centre of the actuator is different.

For design notes, see page
1.40.006E-3 (Serie OSP-P STL)
1.40.007E-3 (Serie OSP-P KF)



Series OSP-P STL16 to STL50: Type D1ST
Series OSP-P KF16 to KF50: Type D1ST

Mountings from below with 2 screws



Drawing showes: Mounting with Guide Type STL

Dimension Table (mm) Mid-Section Support D1ST

Series OSP-P	Mounting Type	R	AF	DE	DH	DL	DO	DP	DT	EM	EQ	Order No.
STL/KF16	**D1ST**	M3	15	14.2	29.2	14.6	18	30	6.5	20	27	**21125**
STL/KF25	**D1ST**	M5	22	16	38	13	36	50	10	28.5	36	**21126**
STL/KF32	**D1ST**	M5	30	16	46	13	36	60	10	35.5	43	**21127**
STL/KF40	**D1ST**	M6	38	23	61	19	45	60	11	38	48	**21128**
STL/KF50	**D1ST**	M6	48	23	71	19	45	60	11	45	57	**21129**

Order example: Type D1ST16 Order No. 21125

Mid-Section Support
Type: E1ST bis E5ST

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

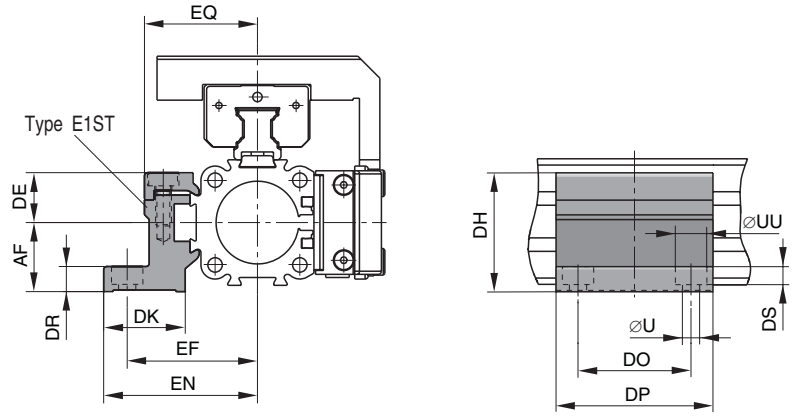


Series OSP-P STL16 to STL50: Type E1ST
Series OSP-P KF16 to KF50: Type E1ST

Installation:

Top carrier
Side position

Mounting from above / below using a cap screw



Drawing showes: Mounting with Guide Type STL

Mid-Section Support Type: E1ST to E5ST

for Linear Drives with Recirculating Ball Bearing Guide

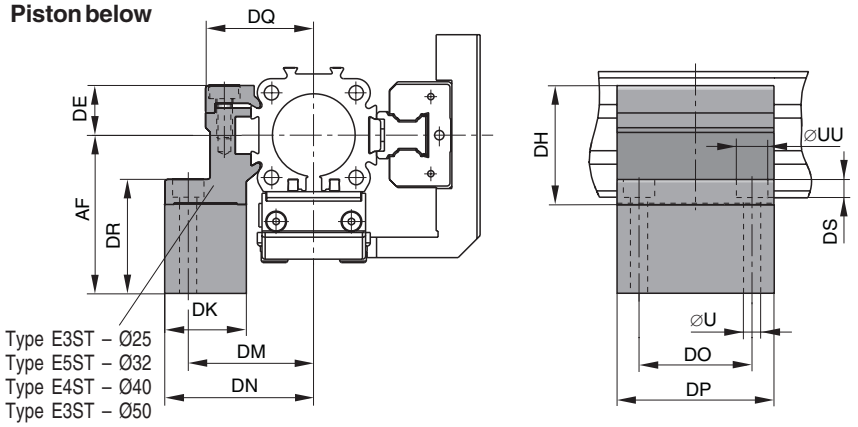
- **Series OSP-P STL**
- **Series OSP-P KF**

Series OSP-P STL25 to STL50: Type E3ST, E4ST, E5ST
Series OSP-P STL25 to STL50: Type E3ST, E4ST, E5ST

Installation:

Side carrier
Piston below

Mounting from above / below using a cap screw



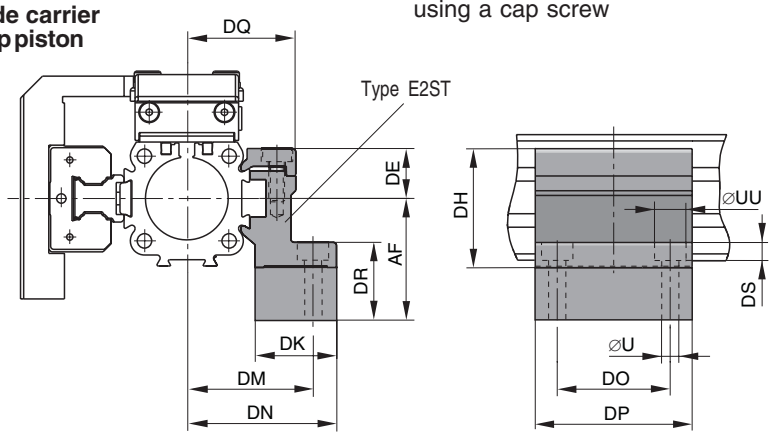
Drawing showes: Mounting with Guide Type STL

Series OSP-P STL16 to STL50: Type E2ST
Series OSP-P KF16 to KFL50: Type E2ST

Installation:

Side carrier
Top piston

Mounting from above / below using a cap screw



Drawing showes: Mounting with Guide Type STL



Dimension Table (mm) for Mid-Section Support E1ST to E5ST

Series OSP-P	Mounting Type	ØU	ØUU	AF	DE	DH	DK	DM	DN	DO	DP	DR	DQ	DS	EF	EN	EQ	Order No.
STL/KF16	**E1ST**	3.4	6	15	14.2	29.2	24	32	36.4	18	30	6	27	3.4	32	36.4	27	**21130**
STL/KF16	**E2ST**	3.4	6	30	14.2	29.2	24	32	36.4	18	30	21	27	3.4	32	36.4	27	**21142**
STL/KF25	**E1ST**	5.5	10	22	16	38	26	40	47.5	36	50	8	34.5	5.7	41.5	49	36	**21131**
STL/KF25	**E2ST**	5.5	10	37	16	38	26	40	47.5	36	50	23	34.5	5.7	41.5	49	36	**21143**
STL/KF25	**E3ST**	5.5	10	49	16	38	26	40	47.5	36	50	35	34.5	5.7	41.5	49	36	**21148**
STL/KF32	**E1ST**	5.5	10	30	16	46	27	46	54.5	36	60	10	40.5	5.7	48.5	57	43	**21132**
STL/KF32	**E2ST**	5.5	10	44	16	46	27	46	54.5	36	60	24	40.5	5.7	48.5	57	43	**21144**
STL/KF32	**E5ST**	5.5	10	65	16	46	27	46	54.5	36	60	45	40.5	5.7	48.5	57	43	**21151**
STL/KF40	**E1ST**	7	-	38	23	61	34	53	60	45	60	10	45	-	56	63	48	**21133**
STL/KF40	**E2ST**	7	-	51	23	61	34	53	60	45	60	23	45	-	56	63	48	**21145**
STL/KF40	**E4ST**	7	-	70	23	61	34	53	60	45	60	42	45	-	56	63	48	**21150**
STL/KF50	**E1ST**	7	-	48	23	71	34	59	67	45	60	10	52	-	64	72	57	**21134**
STL/KF50	**E2ST**	7	-	57	23	71	34	59	67	45	60	19	52	-	64	72	57	**21146**
STL/KF50	**E3ST**	7	-	72	23	71	34	59	67	45	60	34	52	-	64	72	57	**21149**

Order example: Type E1ST16 Order No. 21130

Linear Drive Accessories

ø 16-80 mm

Inversion Mounting

OSP
ORIGA SYSTEM PLUS

For Linear-drive
• Series OSP-P

In dirty environments, or where there are special space problems, inversion of the cylinder is recommended.
The inversion bracket transfers the driving force to the opposite side of the cylinder. The size and position of the mounting holes are the same as on the standard cylinder.

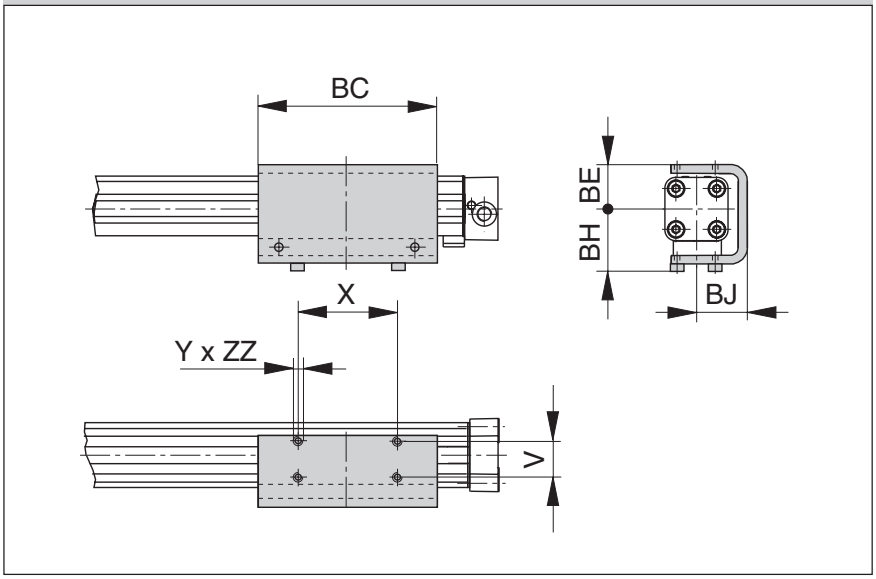
Stainless steel version on demand.

Please note:
Other components of the OSP system such as **mid-section supports, magnetic switches** and **the external air passage for the P16,** can still be mounted on the free side of the cylinder.

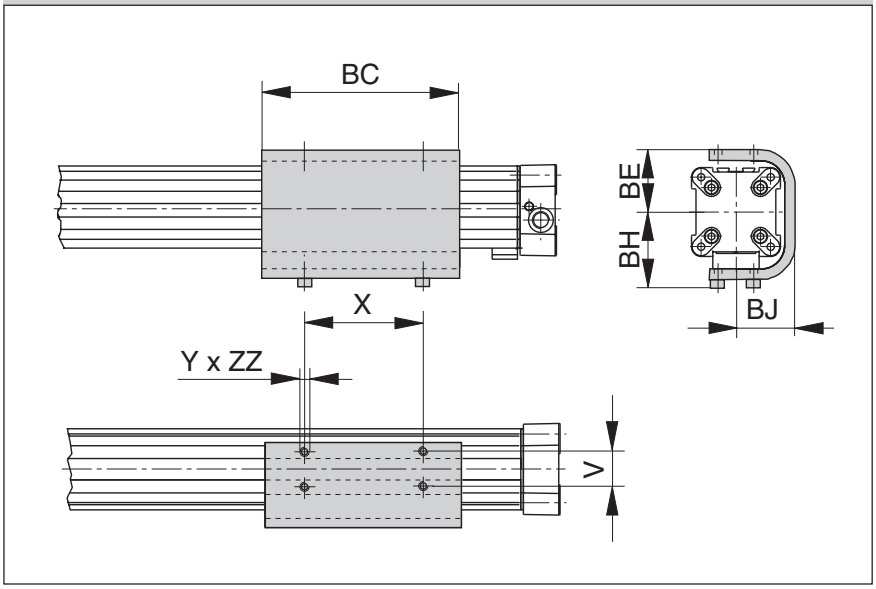
When combining single end porting with inversion mountings, RS magnetic switches can only be mounted directly opposite to the external air-supply profile.

Important Note:
May be used in combination with Clevis Mounting, ref. dimensions in data sheet 1.45.002E

Series OSP-P16 to 32



Series OSP-P40 to 80



Dimension Table (mm)

Series	V	X	Y	BC	BE	BH	BJ	ZZ	Order No.
OSP-P16	16.5	36	M4	69	23	33	25	4	**20446**
OSP-P25	25	65	M5	117	31	44	33.5	6	**20037**
OSP-P32	27	90	M6	150	38	52	39.5	6	**20161**
OSP-P40	27	90	M6	150	46	60	45	8	**20039**
OSP-P50	27	110	M6	200	55	65	52	8	**20166**
OSP-P63	34	140	M8	255	68	83.5	64	10	**20459**
OSP-P80	36	190	M10	347	88	107.5	82	15	**20490**



For **rodless pneumatic cylinder OSP-P** see 1.10.002E

HOERBIGER ORIGA

A1P581E00HAA00X

The right to introduce technical modifications is reserved

Linear Drive Accessories

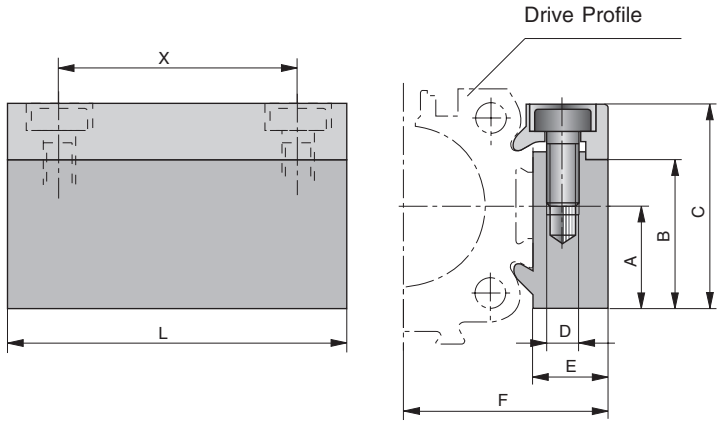
ø 16-50 mm
Adaptor Profile

OSP
ORIGA SYSTEM PLUS

For Linear-drive
• Series OSP-P

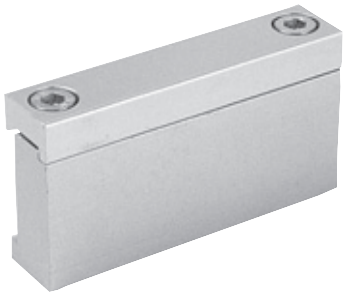
Adaptor Profile OSP
- A universal attachment for mounting of valves etc.
- Solid material

Dimensions



Dimension Table (mm)

Series	A	B	C	D	E	F	L	X	Order No. Standard	Order No. Stainless
OSP-P16	14	20.5	28	M3	12	27	50	38	**20432**	**20438**
OSP-P25	16	23	32	M5	10.5	30.5	50	36	**20006**	**20186**
OSP-P32	16	23	32	M5	10.5	36.5	50	36	**20006**	**20186**
OSP-P40	20	33	43	M6	14	45	80	65	**20025**	**20267**
OSP-P50	20	33	43	M6	14	52	80	65	**20025**	**20267**



HOERBIGER ORIGA

For **rodless pneumatic cylinder OSP-P** see 1.10.002E

A1P582E00AHH00X

The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 16-50 mm

T-Nut Profile

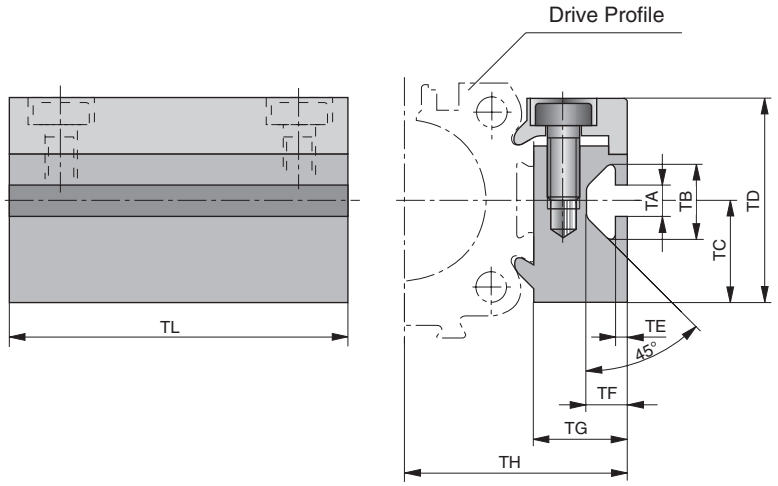
OSP
ORIGA SYSTEM PLUS

For Linear-drive
• Series OSP-P

T-Nut Profile OSP

• A universal attachment for mounting with standard T-Nuts

Dimensions



Dimension Table (mm)

Series	TA	TB	TC	TD	TE	TF	TG	TH	TL	Order No. Standard	Order No. Stainless
OSP-P16	5	11.5	14	28	1.8	6.4	12	27	50	**20433**	**20439**
OSP-P25	5	11.5	16	32	1.8	6.4	14.5	34.5	50	**20007**	**20187**
OSP-P32	5	11.5	16	32	1.8	6.4	14.5	40.5	50	**20007**	**20187**
OSP-P40	8.2	20	20	43	4.5	12.3	20	51	80	**20026**	**20268**
OSP-P50	8.2	20	20	43	4.5	12.3	20	58	80	**20026**	**20268**

Following T-Nuts from the company ITEM could be used:

Cyl.-Series	T-Nut St 5	T-Nut St 8
OSP-P16-32	●	
OSP-P40-50	●	



For **rodless pneumatic cylinder OSP-P** see 1.10.002E

A1P583E00AHH00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

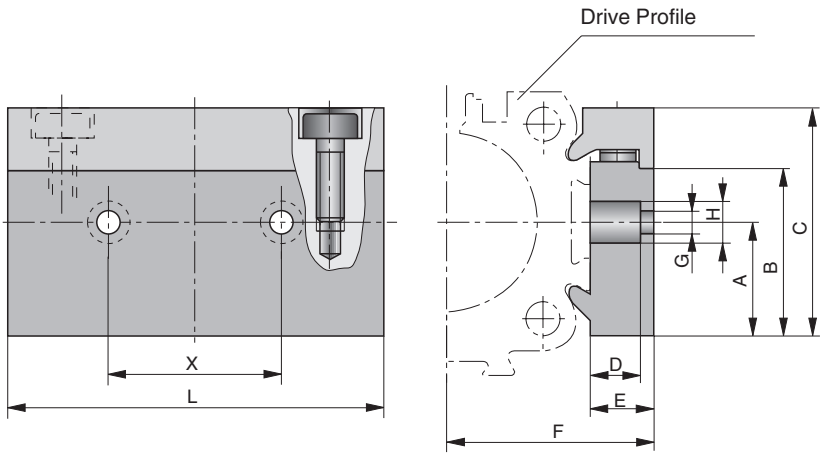
Linear Drive Accessories

ø 16-50 mm
Connection Profile

OSP
ORIGA SYSTEM PLUS

For combining
- **Series OSP-P with system profiles**
- **Series OSP-P with Series OSP-P**

Dimensions

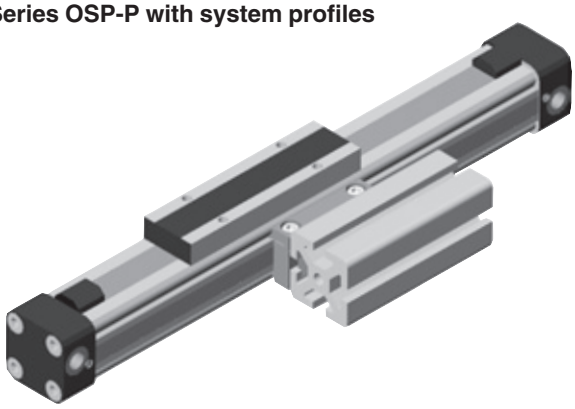


Dimension Table (mm)

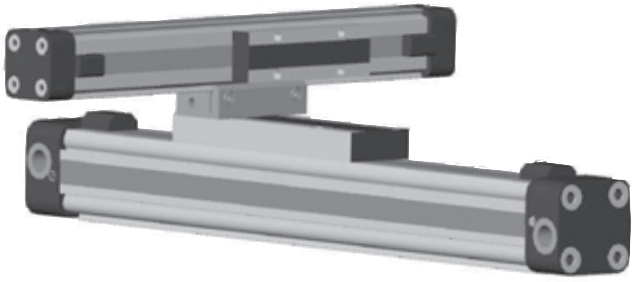
Cyinder Series	for mounting on the carrier of	A	B	C	D	E	F	G	H	L	X	Order No.
OSP-P16	OSP25	14	20.5	28	8.5	12	27	5.5	10	50	25	**20849**
OSP-P25	OSP32-50	16	23	32	8.5	10.5	30.5	6.6	11	60	27	**20850**
OSP-P32	OSP32-50	16	23	32	8.5	10.5	36.5	6.6	11	60	27	**20850**
OSP-P40	OSP32-50	20	33	43	8	14	45	6.6	11	60	27	**20851**
OSP-P50	OSP32-50	20	33	43	8	14	52	6.6	11	60	27	**20851**

Possible Combinations

Combination of Series OSP-P with system profiles



Combination of Series OSP-P with Series OSP-P





For **rodless pneumatic cylinder OSP-P** see 1.10.002E

HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 25-50 mm
Duplex Connection

OSP
ORIGA SYSTEM PLUS

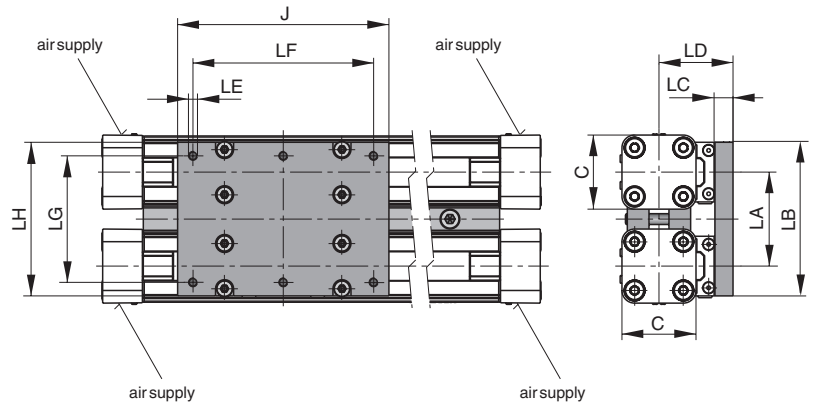
For connection of cylinders of the Series OSP-P

The duplex connection combines two OSP-P cylinders of the same size into a compact unit with high performance.

Features
- increased load and torque capacity
- higher driving forces

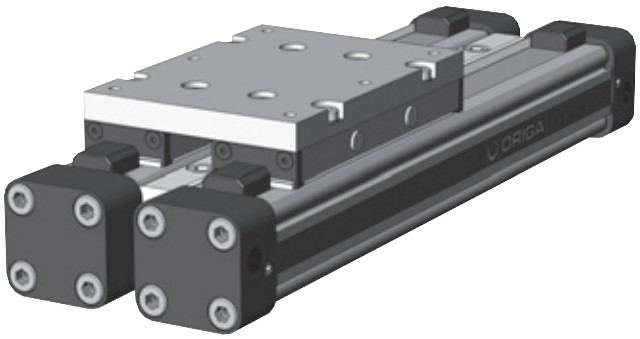
Included in delivery:
2 clamping profiles with screws
1 mounting plate with fixings

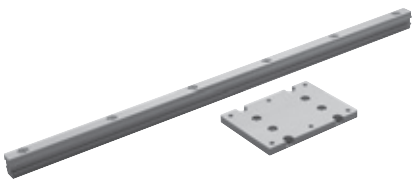
Dimensions



Dimension Table (mm)

Cylinder Series	C	J	LA	LB	LC	LD	LE	LF	LG	LH	Order No. Standard	Stainless
OSP-P25	41	117	52	86	10	41	M5	100	70	85	**20153**	**20194**
OSP-P32	52	152	64	101	12	50	M6	130	80	100	**20290**	**20291**
OSP-P40	69	152	74	111	12	56	M6	130	90	110	**20156**	**20276**
OSP-P50	87	200	88	125	12	61	M6	180	100	124	**20292**	**20293**





For **rodless cylinders OSP-P** see 1.10.002E

A1P705E00HAD00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Linear Drive Accessories

ø 25-50 mm
Multiplex Connection

OSP
ORIGA SYSTEM PLUS

For connection of cylinders of the Series OSP-P

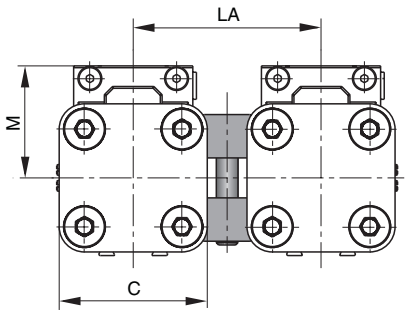
The multiplex connection combines two or more OSP-P cylinders of the same size into on unit.

Features
- The orientation of the carriers can be freely selected

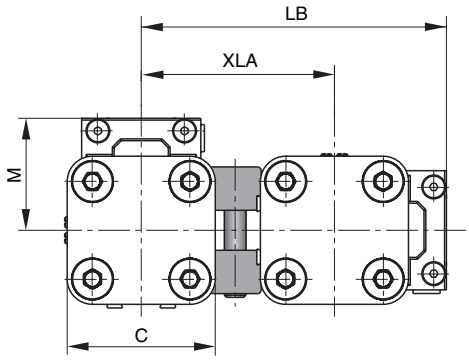
Included in delivery:
2 clamping profiles with clamping screws

Dimensions

Installation:
Top carrier/Top carrier

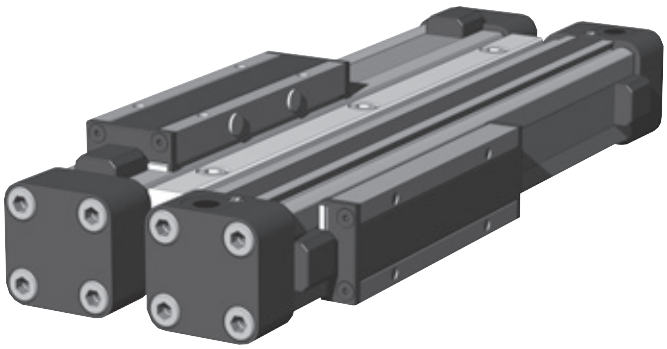


Installation:
Top carrier/Side carrier



Dimension Table (mm)

Cylinder Series	C	M	LA	LE	XLA	Order No. Standard	Order No. Stainless
OSP-P25	41	31	52	84.5	53.5	**20035**	**20193**
OSP-P32	52	38	64	104.5	66.5	**20167**	**20265**
OSP-P40	69	44	74	121.5	77.5	**20036**	**20275**
OSP-P50	87	49	88	142.5	93.5	**20168**	**20283**





For **rodless cylinders OSP-P** see 1.10.002E

HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 10-80 mm
Magnetic Switches

OSP
ORIGA SYSTEM PLUS

For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted. Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all HOERBIGER-ORIGA OSP-Actuators and aluminum profile rod type cylinders.

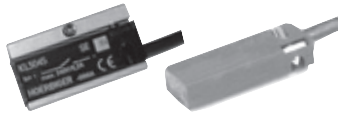
Piston, speed and switching distance affect signal duration and should be considered in conjunction with the minimum reaction time of ancillary control equipment.

$$\text{Min. reaction time} = \frac{\text{Switching distance}}{\text{Piston speed}}$$

Characteristics

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			**Type RS**	**Type ES**
Switching ouput			Reed	PNP, NPN
Operating voltage	U_B	V	10-240 AC/DC (NO) 10-150 AC/DC (NC)	10-30 DC
Residual voltage		V	< 3	< 3
Connection			Two wire	Three wire
Output function			normally open normally closed	normally open
Permanent current	I_{Dmax}	mA	200	200
Max. switching capacity		VA (W)	10 VA	—
Power consumption without load		mA	—	< 20
Function indicator			LED, yellow	
Typical switching time		ms	On: < 2	On: < 2
Switch-off delay		ms	—	ca. 25
Pole reversal			LED does not work	—
Pole reversal protection			—	Built in
Short-circuit protection			—	Built in
Switchable capacity load		µF	0.1 at 100 Ω, 24 VDC	
Switching point accuracy		mm	± 0,2	
Switching distance		mm	ca. 15	ca. 15
Hysteresis for OSP		mm	ca. 8	ca. 3
Lifetime			3×10^6, up to 6×10^6 cycles	Theoretically unlimited
Mechanical Characteristics				
Housing			Makrolon, smoke color	
Cable cross section		mm^2	2 x 0.14	3 x 0.14
Cable type *)			PVC	PUR, black
Bending radius fixed		mm	≥ 20	
moving		mm	≥ 70	
Weight (Mass)		kg	0.012	
Degree of protection		IP	67 to DIN EN 60529	
Ambient temperature range *)[1)]	ϑ_{min} ϑ_{max}	°C °C	-25 other temperature ranges +80 on request	
Shock resistance		m/s^2	100 (contact switches)	500

*) other versions on request
[1)] for the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.



For **linear drives** see 1.10.002E

A1P537E00HAE00X
The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Type RS

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.
Direct connection with 2-pole cable, 5 m long, open ended **(Type RS-K).**

Type ES

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector. A 5 m cable with connector and open end can be ordered separatly, or use the Order No. for the complete Type ES with 5 m cable.

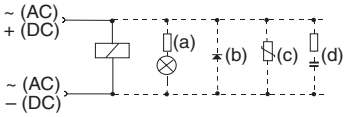
Magnetic Switches RS and ES

Electrical Service Life Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

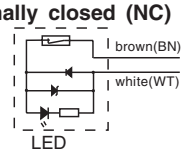
Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



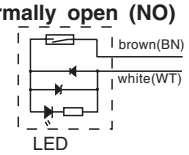
For the type ES, external protective circuits are not normally needed.

Electrical Connection, Type RS

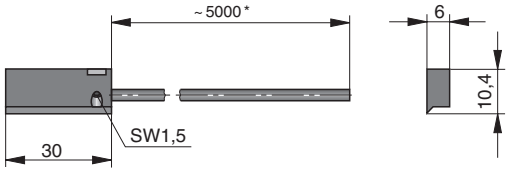
Normally closed (NC)



Normally open (NO)



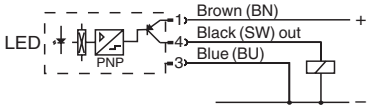
Dimensions (mm) – Type RS-K



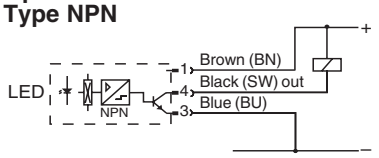
* Length with possible minus tolerance, see chart below

Electrical Connection, Type ES

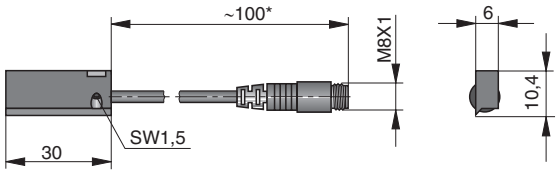
Standard Version: Type PNP

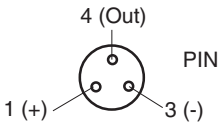


Optional Version Type NPN



Dimensions (mm) – Type ES-S





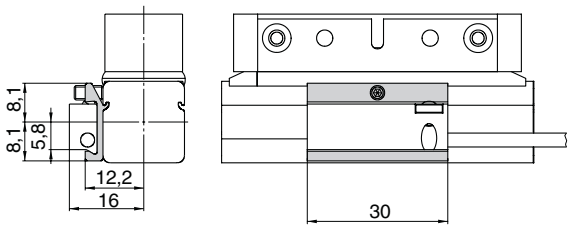
PIN assignment (view of pins) according to DIN EN 50044

* Length with possible minus tolerance, see chart below

Length of connection cable with length tolerance

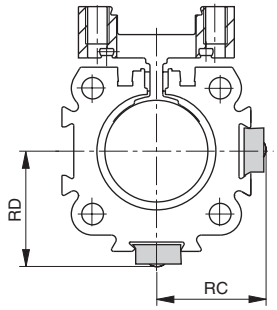
Magnetic Switch Order No.	Nominal cable length	Length tolerance
KL3045	5000 mm	– 50 mm
KL3048	5000 mm	– 50 mm
KL3054	100 mm	– 20 mm
KL3060	145 mm	± 5 mm

Dimensions Series OSP-P10



Note:
Sensors can not be mounted directly opposite of the carrier

Dimensions Series OSP-P16 to 80



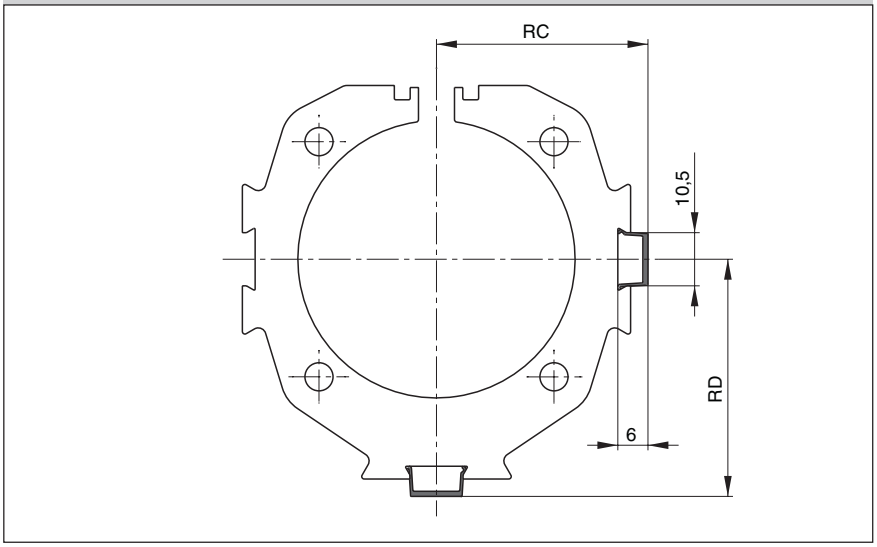
Dimension Table (mm) and Order Instructions

Series	Dimensions		Order No..						
	RC	RD	RS closer Normally open	RS opener Normaly closed	ES PNP	ES NPN	ES compl. with 5 m cable PNP	ES compl. with 5 m cable NPN	Adapter only for OSP-P10)
OSP-P10	–	–	Type:	Type:	Type:	Type:	Type:	Type:	20968
OSP-P16	20	20.5	RS-K	RS-K	ES-S	ES-S	ES-S	ES-S	please order separately
OSP-P25	25	27	KL3045	KL 3048	KL 3054	KL 3060	10750	10751	
OSP-P32	31	34							
OSP-P40	36	39							
OSP-P50	43	48							
OSP-P63	53	59							
OSP-P80	66	72							
Cable 5 m with connector and with open end for magnetic switches Type ES-S					4041				

Linear Drive Accessories

ø 16-80 mm
Cable Cover

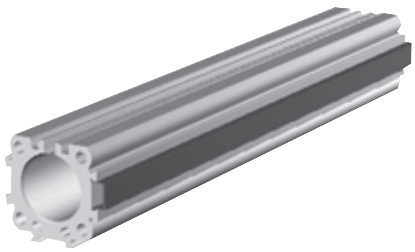
Dimensions (mm)



For clean guidance of magnetic switch cables along the cylinder body.
Contains a maximum of 3 cables with diameter 3 mm.
Material: Plastic
Colour: Red
Temperature Range: –10 to +80°C

Dimension Table (mm) and Order Instructions

Series	Dimensions (mm) RC	RD	Order No.
OSP-P16	18.5	19	**13039** Minimal length: 1m Max. profile length: 2m Multiple profiles can be used.
OSP-P25	23.5	25.5	
OSP-P32	29.5	32	
OSP-P40	34.5	37.5	
OSP-P50	41.5	46.5	
OSP-P63	51.5	57.5	
OSP-P80	64.5	70.5	



HOERBIGER ORIGA

A1P687E00HAE00X

The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 10-80 mm
Magnetic Switches

OSP
ORIGA SYSTEM PLUS

Series RST
EST

Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as standard. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all HOERBIGER-ORIGA OSP-Actuators and aluminum profile rod type cylinders.

Characteristics

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			**Type RST**	**Type EST**
Switching output			Reed	PNP
Operating voltage	U_B	V	10-30 AC/DC	10-30 DC
Ripple	U_b		-	≤ 10%
Voltage drop		V	≤ 3	≤ 2
Electrical configuration			2 wire	3 wire
Output function			normally open normally closed	normally open
Permanent current	I_{Dmax}	mA	≤ 100	≤ 100
Breaking capacity		W	≤ 6 peak	-
Power consumption, at U_B=24V, switched on, without load		mA	-	≤ 10
Function indicator			LED, yellow (not for normally closed)	
Response time		ms	≤ 2	≤ 0.5
Sensitivity		mT	2 – 4	2 – 4
Time delay before availability		ms	-	≤ 2
Reverse polarity prot.			yes	yes
Short-circuit protection			no	yes (pulsed)
Switchable capacity load		µF	0.1 at 100 Ω, 24 VDC	
Switching frequency		Hz	≤ 400	≤ 5 k
Repeatability		mm	≤ 0.2	≤ 0.2
Hysteresis		mm	≤ 1.5	≤ 1.5
EMC		EN	60947-5-2	
Lifetime			≥ 35 Mio. cycles wit PLC load	unlimited
Power-up pulse suppression			-	yes
Protection for inductive load			-	yes
Mechanical Characteristics				
Housing			Plastic / PA66 + PA6I red	
Cable cross section		mm^2	2 x 0.14	3 x 0.14
Cable type			PUR, black	PUR, black
Bending radius		mm	≥ 36	≥ 30
Weight		kg	ca. 0.030 RST-K ca. 0.010 RST-S	ca. 0.030 EST-K ca. 0.010 EST-S
Degree of protection		IP	67 to EN 60529	
Ambient temperature range [1]		°C	-25 to +80	-25 to +75 at U_B=10 – 30 V -25 to +80 at U_B=10 – 28 V
– with adapter		°C	-25 to +60	
Adapter tightening torque		Nm	0.15 (tightening torque of screwing adapter onto magnetic switch)	
Shock resistance				
Vibration to EN 60068-2-6		G	15, 11ms, 10 to 55 Hz, 1 mm	
Shock to EN 60068-2-27		G	50, 11 ms	
Bump to EN 60068-2-29		G	30, 11 ms, 1000 bumps each axis	

[1] for the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.



For **linear drives** see 1.10.002E

A1P699E00AAE15X

The right to introduce technical modifications is reserved.

HOERBIGER ORIGA

Type RST

In the type RST contact is made by a mechanical **reed switch** encapsulated in glass.

Type EST

In the type EST contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector.
A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

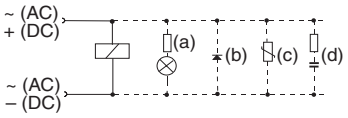
Magnetic Switches RST and EST

Electrical Service Life Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

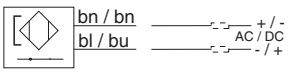
Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



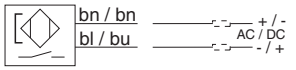
For the type EST, external protective circuits are not normally needed.

Electrical Connection Type RST-K

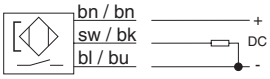
Normally closed



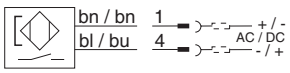
Normally open



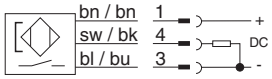
Electrical Connection Type EST-K



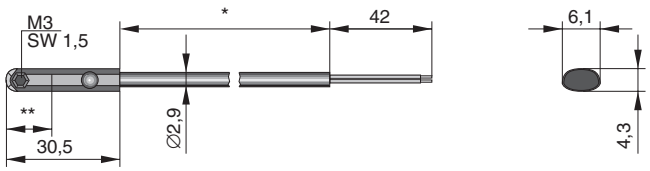
Electrical Connection Type RST-S



Electrical Connection Type EST-S



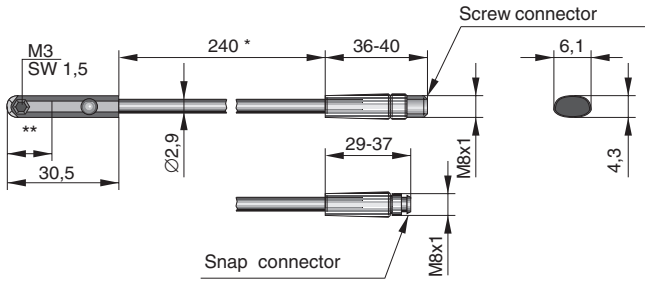
Dimensions (mm) – Type RST-K, EST-K



* Cable lengths available: 5000 mm ± 75 mm
2000 mm ± 40 mm

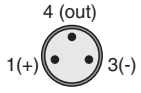
** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

Dimensions (mm) – Type RST-S, EST-S



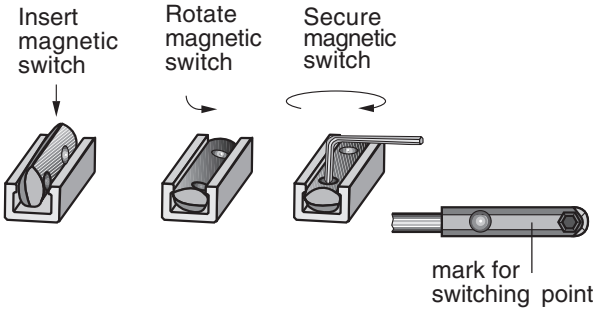
* ± 6 mm

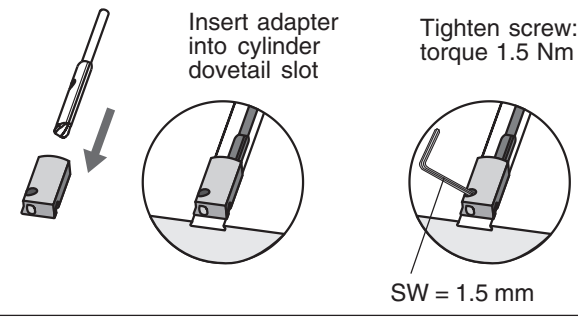
** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm



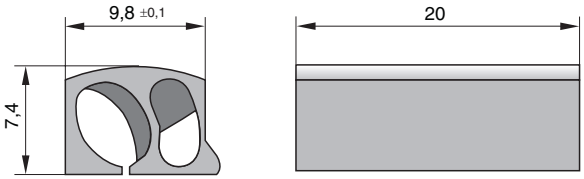
PIN assignment
(view of pins)
to DIN EN 50044

Installation





Dimensions of Adapter for Magnetic Switch



Order Instructions

Version	Voltage	Order Instructions Type	Order No.
Magnetic switch, reed contact, normally open, LED indicator, cable 2 m	10-30 V AC / DC	**RST-K**	**KL 3301**
Magnetic switch, reed contact, normally open, LED indicator, cable 5 m	10-30 V AC / DC	**RST-K**	**KL 3300**
Magnetic switch, reed contact, normally open, snap connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL 3302**
Magnetic switch, reed contact, normally open, screw connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL 3303**
Magnetic switch, reed contact, normally closed, cable 5 m	10-30 V AC / DC	**RST-K**	**KL 3305**
Magnetic switch, electronic, PNP LED indicator, cable 2 m	10-30 V DC	**EST-K**	**KL 3308**
Magnetic switch, electronic, PNP LED indicator, cable 5 m	10-30 V DC	**EST-K**	**KL 3309**
Magnetic switch, electronic, PNP snap connector M8, LED indicator	10-30 V DC	**EST-S**	**KL 3312**
Magnetic switch, electronic, PNP screw connector M8, LED indicator	10-30 V DC	**EST-S**	**KL 3306**

Included in delivery: 1 magnetic switch
1 adapter for dovetail groove mounting

Accessories

Description	Order Instruction Type	Order No.
Cable M8, 2.5 m without lock nut	**KS 25**	**KY 3240**
Cable M8, 5.0 m without lock nut	**KS 50**	**KY 3241**
Cable M8, 10.0 m without lock nut	**KS 100**	**KY 3140**
Cable M8, 2.5 m with lock nut	**KSG 25**	**KC 3102**
Cable M8, 5.0 m with lock nut	**KSG 50**	**KC 3104**
Adapter for dovetail groove (pack of 10)		**KL 3333**

Characteristics

Characteristics	Symbol	Unit	Description	
Elektrical Characteristics			**Type RS-K ATEX**	**Type ES-K ATEX**
ATEX Certification			yes	yes
Category Type: RS-K			⟨Ex⟩ II 3GD EEX nC IIC T3 146°C	
Category Type: ES-K			⟨Ex⟩ II 2GD EEX ib IIC T5 100°C	
Switching output			Reed	NAMUR
Operating voltage	U_B	V	10-240 AC/DC	7-10 DC
Voltage drop		V	≤ 3	–
Electrical configuration			Two wire	Two wire
Output function			normally open	normally open
Permanent current	I_{Dmax}	mA	≤ 200	≤ 3
Power consumption		W/VA	≤10/10 peak	–
Peak current		mA	≤ 500	–
Power consumption without load		mA	–	≤ 1
Function indicator			LED, yellow	
Response time On/Out		ms	≤ 2	≤ 0.5
Sensitivity		mT	2-4	2-4
Reverse polarity prot.			yes	yes
Short-circuit protection			no	yes
Repeatability		mm	≤ 0.2	≤ 0.2
Hysteresis		mm	≤ 1.5	≤ 1.5
EMC		EN	60947-5-2	
Lifetime			≥ 10 Mio. Cycles with PLC load	
Mechanical Characteristics				
Housing			Makrolon, smoke color	
Cable cross section		mm^2	2 x 0.14	2 x 0.14
Cable type			PVC, blau	PVC, blue
Weight		kg	ca. 0.075	
Degree of protection		IP	67 to EN 60529	
Ambient temperature range [1]		°C °C	-25 +80	-20 +75
Surface temperature		°C	The maximum surface temperature T=146°C is reffered to the max. ambiente temperature of 80°C	
Shock resistance				
Vibration and Shock			50G at 50Hz and 1mm	

[1] for the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.

For **Linear Drives in ATEX-Version** see 1.10.020E

Data Sheet No. 1.45.105E-1

OSP
ORIGA SYSTEM PLUS

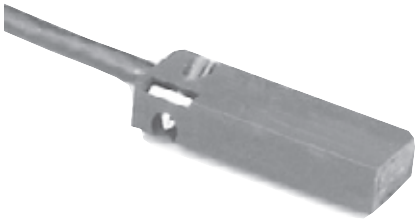
Components for EX-Areas

Magnetic Switches ø 10 – 80 mm

Series: RS-K..ATEX
ES-K..ATEX

For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted. Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all HOERBIGER-ORIGA OSP-Actuators and aluminum profile rod type cylinders.



HOERBIGER ORIGA

A1P710E00HAE15X
The right to introduce technical modifications is reserved.

Magnetic Switches Type RS-K ATEX-Version

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.

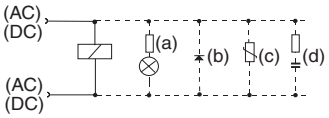
ATEX-Category Type: RS-K
Ⓔx II 3GD EEX nC IIC T3 146°C

Electrical Service Life Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



Magnetic Switches Type ES-K ATEX-Version

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations.

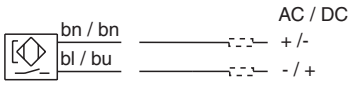
ATEX-Category Type: ES-K
Ⓔx II 2GD EEX ib IIC T5 100°C

Note!

The connection of the magnetic switch Type ES-K ATEX must be realised by means of an EEX i switching amplifier (see Accessories).

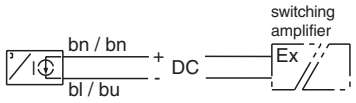
Electrical Connection Type RS-K ATEX

Normally open (Reed)

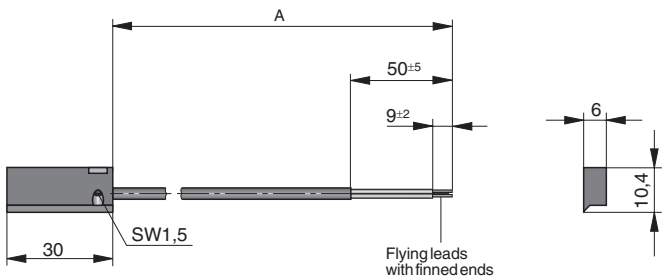


Electrical Connection Type ES-K ATEX

Normally open (NAMUR)



Dimensions (mm)



Dimension Table (mm)

Magnetic switch Order No.	Nominal cable length A	Lenghts tolerance
KL3240	5000	- 50
KL3241	10000	- 50
KL3250	5000	- 50
KL3251	10000	- 50

Order Instructions

Version	Valotage	Order Instruction	
		Type	**Order No.**
Magnetic switch, reed contact, normally open LED indicator, cable 5 m	10-240 V AC/DC	**RS-K ATEX**	**KL3240**
Magnetic switch, reed contact, normally open LED indicator, cable 10 m	10-240 V AC/DC	**RS-K ATEX**	**KL3241**
Magnetic switch, electronic, NAMUR, normally open LED indicator, cable 5 m	7-10 V DC	**ES-K ATEX**	**KL3250**
Magnetic switch, electronic, NAMUR, normally open LED indicator, cable 10 m	7-10 V DC	**ES-K ATEX**	**KL3251**

Accessories

Description	**for magnetic switch**	**Order No.**
2 channel switching amplifier 24 V DC	**ES-K ATEX**	**2876**
2 channel switching amplifier 220 V AC	**ES-K ATEX**	**1546**

Note: 2 magnetic switches can be connected to each switching amplifier.

ORIGA-SENSOFLEX
Displacement Measuring Systems for Cylinder Series OSP-P



Contents

Description	Data Sheet No.	Page
Overview	1.50.001E	105, 106
Technical Data SFI-plus	1.50.002E-1, 2	107, 108
Dimensions SFI-plus	1.50.002E-2	108
Order Instructions SFI-plus	1.50.002E-3	109
Technical Data SFA	1.50.003E-1, 2	111,112
Dimensions SFA	1.50.003E-2	112
Order Instructions SFA	1.50.003E-2	112

HOERBIGER ORIGA

ORIGA-Sensoflex

Displacement measuring systems for automated movement

Series SFI-plus

(incremental measuring system)

for cylinder series

• OSP-P...

Characteristics

• Contactless magnetic displacement measurement system
• Displacement length up to 32 m
• Resolution 0.1 mm (option: 1 mm)
• Displacement speed up to 10 m/s
• For linear and non-linear rotary motion
• Suitable for almost any control or display unit with a counter input

For further specifications, see 1.50.002E



The SFI-plus magnetic displacement measuring system consists of 2 main components.

• **Measuring Scale**
Self-adhesive magnetic measuring scale

• **Sensing Head**
Converts the magnetic poles into electrical signals which are then processed by counter inputs downstream (e.g. PLC, PC, digital counter)

Series SFA
(analogue displacement measuring system)

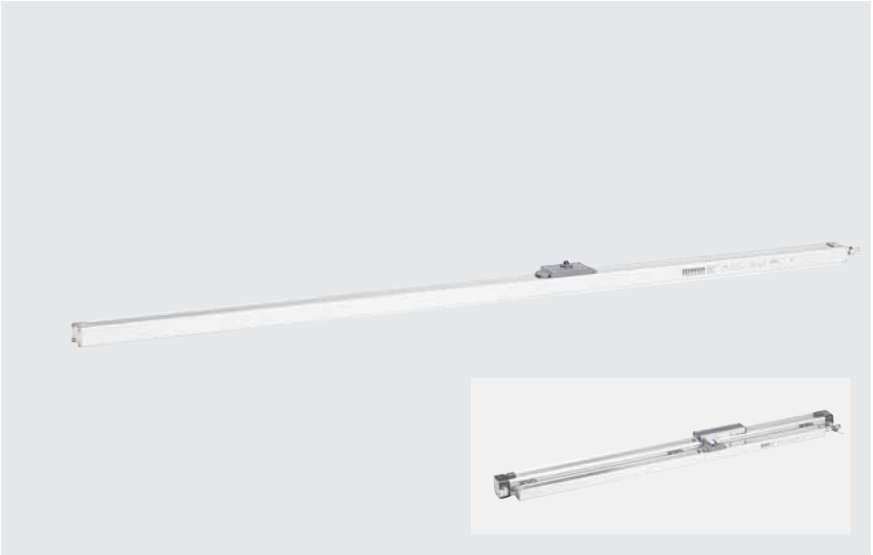
for cylinder series

• OSP-P...

Characteristics

• Measurement up to 4000 mm (stepless)
• Resolution infinitely accurate, typically 0.01 mm
• No moving energy supply
• Preservation of measuring value in case of loss of power.

For further specifications, see 1.50.003E



This analogue displacement measuring system is based on a conductive plastic potentiometer for the direct and absolute measurement of displacement in control, monitoring and measurement applications.
The system is simple, robust and insensitive to electrical or magnetic interference.

A3P108E00HAA00X

The right to introduce technical modifications is reserved

Displacement measuring system

for automated movement

ORIGA-Sensoflex

(incremental displacement measuring system)

Series SFI-plus

for cylinder series

• OSP-P...

Characteristics			
Characteristics	Unit	Description	
Type		**21210**	**21211**
Output Function			
Resolution	mm	0.1	1
Pole lengths magnetic scale		mm	5
Maximum speed	m/s	> 5	
Repeat accuracy		± 1 Increment	
Distance between sensor and scale	mm	≤ 4	
Tangential deviation		≤ 5°	
Lateral deviation	mm	≤ ± 1.5	
Switching output		PNP	
Electrical Characteristics			
Operating voltage U_b	V DC	18 – 30	
Voltage drop	V	≤ 2	
Continuous current for each output	mA	≤ 20	
Power consumption at U_b = 24V, switched on, without load	mA	≤ 50	
Short-circuit protection		yes	
Reverse polarity protection		yes	
Protection from inductive load		yes	
Power-up pulse suppression		yes	
EMC			
Electrostatic discharge immunity	kV	6, B, to EN 61000-4-2	
Electromagnetic field immunity	V/m	10, A, to EN61000-4-3	
Electrical fast transient/burst immunity (for signal connections)	kV	1, B, to EN 61000-4-4	
Electrical fast transient/burst immunity (for DC connections)	kV	2, B, to EN 61000-4-4	
Surge immunity (for signal connections)	kV	1, B, to EN 61000-4-5	
Surge immunity (for DC connections)	kV	0,5, B, to EN 61000-4-5	
Immunity to conducted disturbances	V	10, A, to EN 61000-4-6	
Power frequency magnetic field immunity at 50 Hz	A/m	30, A, to EN 61000-4-8	
Emission standard for residential		to EN 61000-6-4	
Radio disturbance characteristics		to EN 55011, Group 1, A	
Mechanical Characteristics			
Housing		Aluminium	
Cable length	m	5,0 – fixed, open end	
Cable cross section	mm^2	4 x 0.14	
Cable type		PUR, black	
Bending radius	mm	≥ 36	
Weigth (mass)	kg	ca. 0.165	
Environmental Conditions / Shock Resistance			
Degree of protection	IP	67 to EN60529	
Ambient temperature range	°C	-25 to +80	
Broad-band random vibration to EN 60068-2-64	g	5, 5 Hz to 2 kHz, 0.5 h each axis	
Vibration stress to EN 60068-2-6	g	12, 10 Hz to 2 kHz, 2 mm, 5 h each axis	
Shock to EN 60068-2-27	g	100, 6 ms, 50 bumps each axis	
Bump to EN 60068-2-29	g	5, 2 ms, 8000 bumps each axis	



For **Overview** see 1.50.001

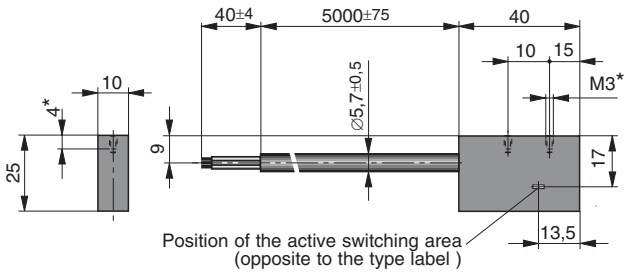
A1P577EHAA00X

The right to introduce technical modifications is reserved

Sensing Head

The sensing head provides two pulsating, 90° out of phase counter signals (phase A/B) with a 0.4 mm resolution (option 4 mm).
External processing can improve the resolution to 0.1 mm (option 1 mm).
The counting direction can be determined automatically from the phase variance of the counter signals.

Dimensions (mm) – Sensing Head



* Maximum thread depth 4mm

Electrical Connection

Colour	Description
bn = brown	+ DC
bl = blue	– DC
sw = black	Phase A
ws = white	Phase B

Output signal – Sensing Head

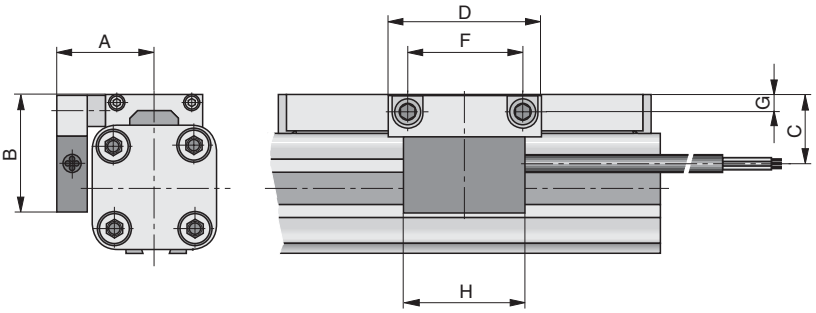
$U_a = U_e$	Phase B	U_{a1}	0°	0.1 mm (option 1 mm)
	Phase A	U_{a2}	90°	0.4 mm (option 4 mm)

SFI-plus mounted on a rodless cylinder series OSP-P

The SFI-plus system can be mounted directly on a rodless
OSP-P cylinder with the special mounting kit.
The position of the sensing head is generally 90° to the carrier.



Dimensions – in combination with OSP-P cylinders



Dimension Table (mm)

Series	A	B	C	D	F	G	H
OSP-P25	32	39	23	50	38	5.5	40
OSP-P32	37.5	46	30	50	38	6.5	40
OSP-P40	42.5	50	34	50	38	6.5	40
OSP-P50	49.5	55	39	50	38	6.5	40
OSP-P63	59.5	65	49	50	38	10	40
OSP-P80	72.5	80	64	50	38	12	40

Combinations consisting of SFI-plus and OSP-P Cylinders with guides are available on request.

Order instructions	
Description	**Order No.**
Sensing head with measuring scale – Resolution 0.1 mm (please provide displacement length)	**21240**
Option: Sensing head with measuring scale – Resolution 1 mm (please provide displacement length)	**21241**
Sensing head – Resolution 0.1 mm (spare part)	**21210**
Option: Sensing head – Resolution 1 mm (spare part)	**21211**
Measuring scale per meter (spare part)	**21235**
Mounting kit for OSP-P25	**21213**
Mounting kit for OSP-P32	**21214**
Mounting kit for OSP-P40	**21215**
Mounting kit for OSP-P50	**21216**
Mounting kit for OSP-P63	**21217**
Mounting kit for OSP-P80	**21218**

Displacement measuring system

for automated movements

ORIGA-Sensoflex

(analogue displacement measuring system)

Series SFA

for cylinder series

OSP-P...

General

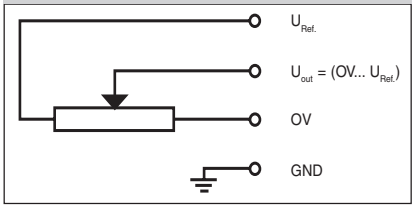
Characteristics

- Displacement measuring system without propulsion rod
- Minimal space requirements through compact design and minimal dead stroke
- Pin for easy connection
- Assembly with mounting brackets

In spite of its high resolution, this analogue displacement measuring system is inexpensive and ideally suited for rough industrial use because of its robust design.
Easy handling and very low energy consumption make this system ideally suited for measuring, control and automation technology.
Basically, the SFA displacement measuring system functions as a voltage divider. A wiper is moved over a resistor, which in this modern system is a high-quality and robust conductive plastic layer.

This allows a high velocity and provides a very high resolution and a long life span.

Electrical connection



Assembly instructions

To achieve the linearity and life-span values specified in the technical data sheets, it is imperative that the wiper-voltage is read at a very low current (I < 10 µA). A higher current (I >10mA) would destroy the measuring system.

Characteristics

- Stepless displacement length of up to 4000 mm
- Resolution infinitely accurate, typically 0.01 mm
- No moving power supply
- Preservation of measuring values in case of powerloss

This analogue displacement measuring system is based on a conductive plastic potentiometer for the direct and absolute measurement of displacement in control, monitoring and measurement applications.
The system is simple, robust and insensitive to electrical or magnetic interference.



Characteristics

Characteristics	Unit	Description
General Features		
Measuring length		1-3000 mm stepless on request to 4000 mm
Life span		6000 km or 15 Million movements over ± 2 mm
Velocity	m/s	max. 1.5 *
Acceleration	m/s^2	max. 200
Actuating force	N	typ. 2
Repeatability	mm	± 0.02 (from one direction)
Reproducibility	mm	± 0.05 (from both directions)
Housing		anodized Aluminium
Weight (Mass)	kg/m	ca. 1.2
Temperature range	°C	-20 to +80
Relative humidity	%	10 to 95 (non condensating)
Electrical features		
Recommended wiper current	µA	0,1 – maximum wiper current 10 mA
Potentiometer voltage	V (DC)	max. 42
Recommended power	V (DC)	6.8 to 30
Connector		plastic elbow connector, cable 5mtr insulated, with open end
Temperature coefficient of the voltage divider ratio	ppm/°C	5
Enclosure class	IP	40
Signal output		potentiometric (voltage divider)
Insulation resistance	MΩ	10
Dielectric strength	V	500 eff

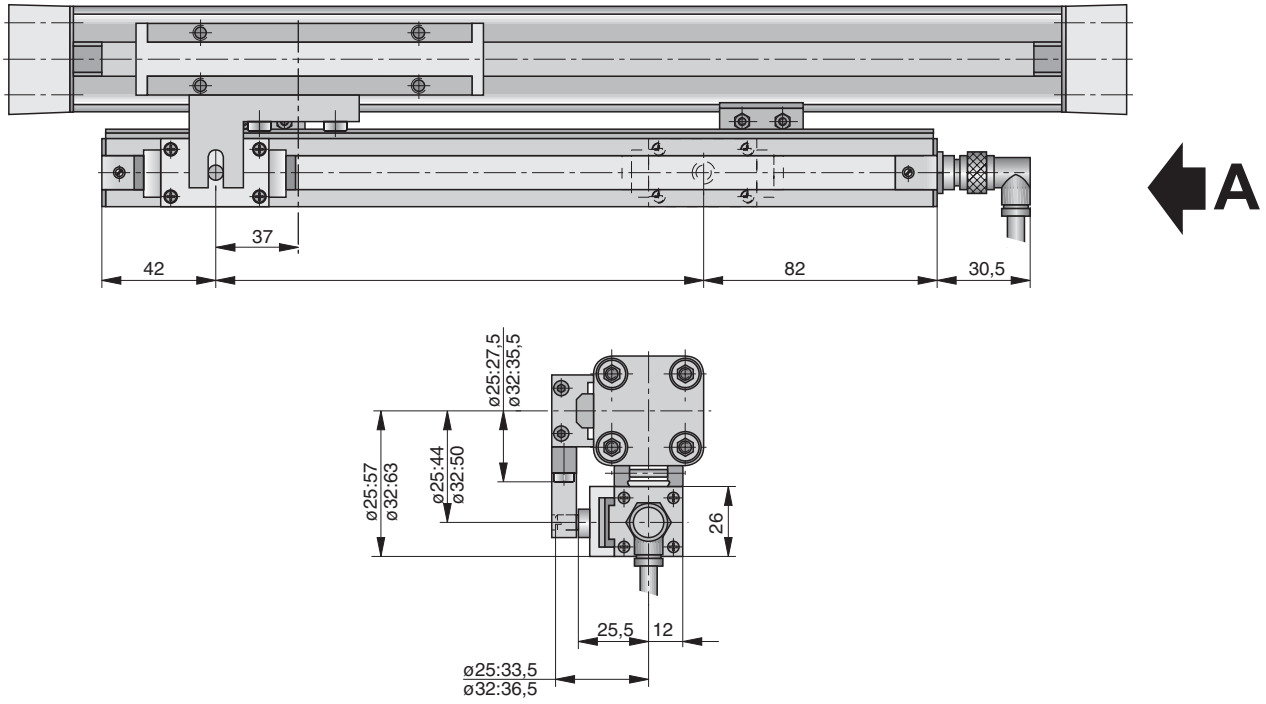
* higher speed decreases the life span

A1P562E00HAA00X

The right to introduce technical modifications is reserved

Electrical Measuring Range								
Description	Measuring distance (mm) 125	150	300	600	1000	1500	1800	3000
Resistor value (kΩ) typical	2	5	5	5	10	10	20	20
Resistor tolerance (%)	± 40							
Independent linearity (%)	±0.09	±0.08	±0.07	±0.05	±0.04	±0.03	±0.03	±0.02

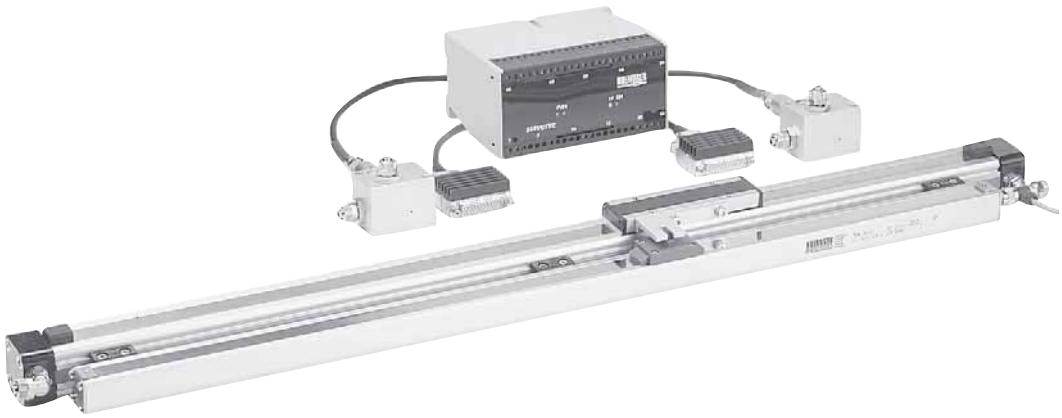
Dimensions (mm) – SFA with cylinder OSP-P



Order instructions	
Description	**Order-No.**
SFA with measuring length of 1-3000 mm*, without Cable, for OSP-P25	**4650A**
SFA with measuring length of 1-3000 mm*, without Cable, for OSP-P32	**4650**
Mounting for OSP-P ø 25 mm (Coupling, mounting, cable)	**20430**
Mounting for OSP-P ø 32 mm (Coupling, mounting, cable)	**20431**
Cable 5 m	**4618**

***** (longer lengths on request)

ORIGA-SERVOTEC
Servo-Pneumatic Positioningsystem
Series OSP-P



Contents

Description	Data Sheet No.	Page
Overview	1.55.001E	113-114
Technical data	1.55.002E-1	115,116
Dimensions	1.55.002E-2	116

HOERBIGER ORIGA

ORIGA-Servotec

Servo-pneumatic positioning system

Note:
Please do not use this measuring system for new constructions.

Measuring systems on request
– please contact your local HOERBIGER-ORIGA company

Series SERVOTEC-

For cylinder series

OSP-P...

Characteristics

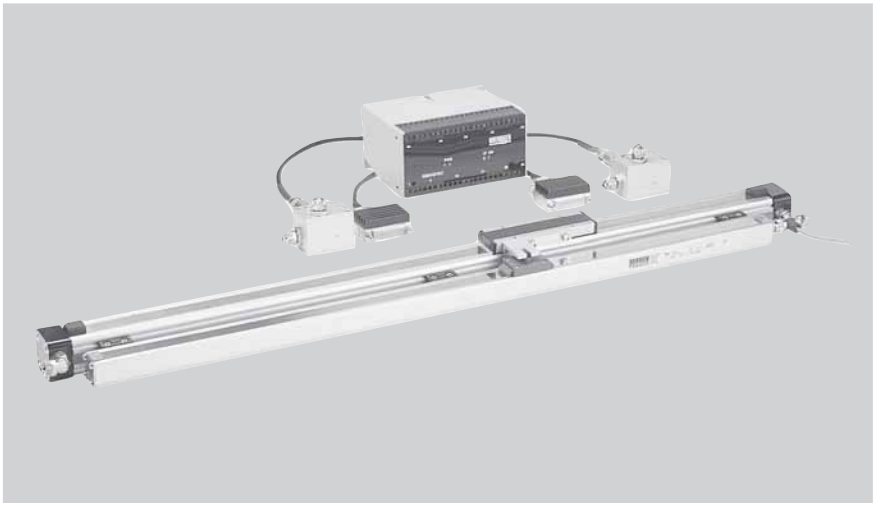
- Stepless stroke lengths up to 3000 mm
- Reproducibility up to 0.1 mm/m
- Displacement speed up to 2.5 m/s
- Absolute measuring system

Modern positioning systems are expected to be exact and yet dynamic. The ORIGA SERVOTEC positioning system is an inexpensive alternative to electric positioning drives. In combination with commercially available industrial control systems, SERVOTEC enables the increasing number of positioning problems in the handling industry to be solved with servo-pneumatics at low cost.

For further specifications, see 1.55.002E



Controller in compact housing



Actuator system (Cylinder, Measuring System, Servo Valves)

A3P109E00HAA00X

The right to introduce technical modifications is reserved

Positioning system

Servo-pneumatic

ORIGA-Servotec

Series SERVOTEC-

for Cylinder Series OSP-P...

Characteristics

- Stepless stroke lengths to 3000 mm
- Reproducibility up to 0.1 mm/m
- Displacement velocity up to 2.5 m/s
- Absolute measuring system

Pneumatic linear drives fitted with the SERVOTEC positioning system are compact and overload-proof and can be built into new or existing installations.
The SERVOTEC positioning controller can communicate with digital and analogue signals with almost any commercially available control system (PLC or PC).

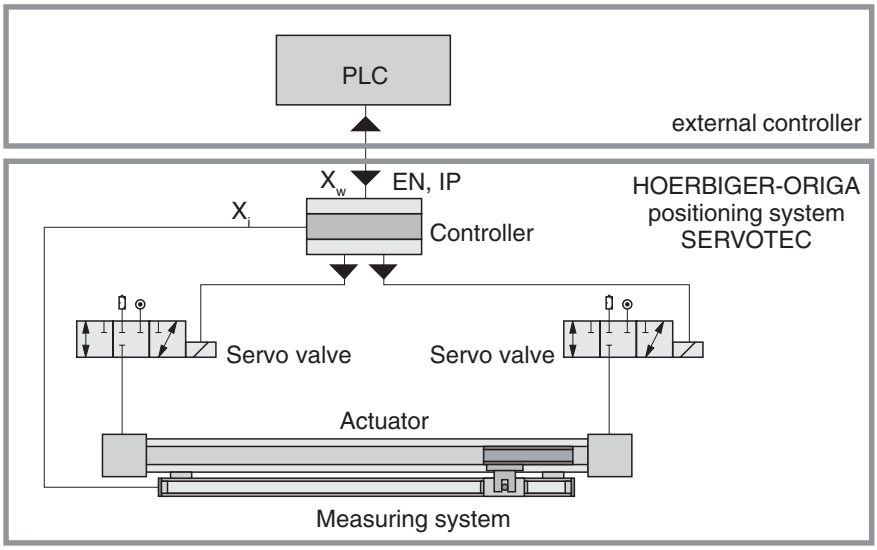
General

Characteristics

- Binary and analogue control
- Positioning controller in compact housing
- For wall and rail mounting (35 mm DIN-rail)

Function

The constantly working, absolute measuring system senses the exact position of the cylinder piston. This signal is fed back to the position monitor of the controller, where the actual value is compared with a preset value. The deviations found are eliminated by the extremely fast servo-valves. With this constant electronic monitoring the cylinder piston is positioned within a very close range of tolerance.



Characteristics

Characteristics	Unit	Description
General Features		
Cylinder diameter	mm	25, 32
Positionable stroke length	mm	0 – 3000
Velocity	mm/s	5 – 2500
Reproducibility max.	mm/m	± 0.1
Mounting		wall- or rail mounting (35 mm DIN-rail)
Temperature range	°C	0 – 50
Relative humidity	%	10 – 80 (non condensating)
Pneumatic		
Operating pressure range	bar	1 – 8
Electric		
Voltage – Controller	V (DC) V (AC)	24 (max. 50 W) 230 (10 VA)
Voltage – Control signals	V(DC)	analogue: 0–10/0 – 20mA (set value) binary: PLC-level (24 V DC) for Enable and In Position
Power consumption – Controller – Servo valves	VA W	10 2 x 25
Connection		terminal screws
Electrical protection	IP	42 (Controller IP 20)

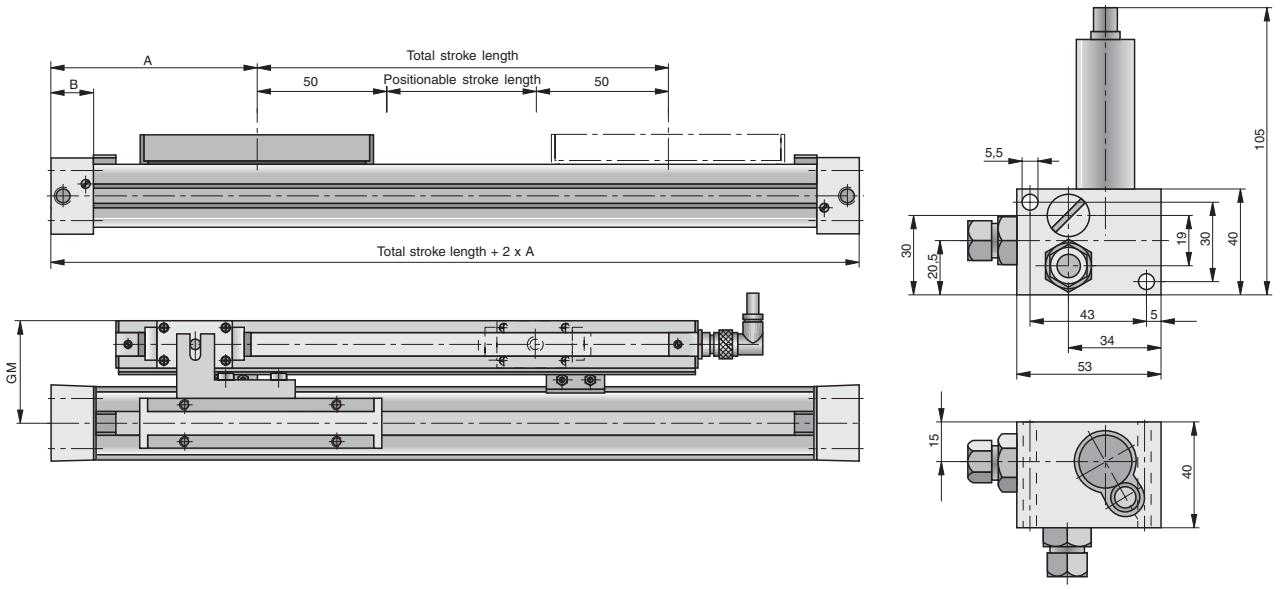


HOERBIGER ORIGA

A1P562E00DZ00X

The right to introduce technical modifications is reserved

Dimensions
– Cylinder with external servo valves



Note

- For physical reasons the first and last 50 mm of stroke shouldn‘t be positioned.
- Piston force, loads and dimensions are the same as those of the standard cylinders OSP-P (data sheet 1.10.002E) or with Linear Guides SL (data sheet 1.40.002E) and PS (data sheet 1.40.003E) and PL (data sheet 1.40.005E)

Dimensions (mm)

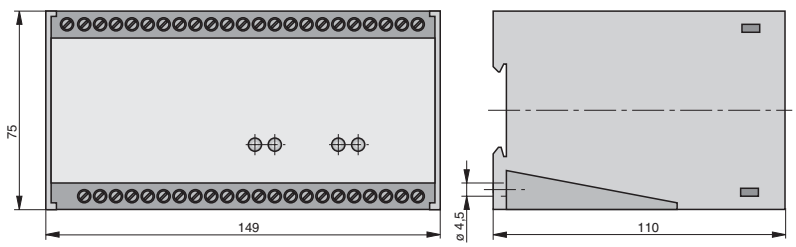
Cyl.ø	A	B	GM
25	100	22	57
32	125	25.5	63

Note:
To choose the rigth positioning actuator for your application, please contact your local sales engineer.

Assembly

- Suited for wall and rail mounting (35 mm DIN rail to EN 50022)
- Terminal screws (for 2 mm^2 diameter cable) are provided for the connection of the valves, the measuring system, and PLC.

Dimensions (mm)
– Positioning controller



Delivery includes

The SERVOTEC system is delivered with the following components fully assembled:

Standard version

- Rodless cylinder for actuation
- Electronic controller
- Measuring system with cable
- Servovalves with cables and silencers
- Manual

ORIGA SYSTEM PLUS

Modular Electric Linear Drive Systems



HOERBIGER

ORIGA

Contents
Electric Linear Drive Systems

OSP
ORIGA
SYSTEM
PLUS

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HOERBIGER
ORIGA

The System Concept

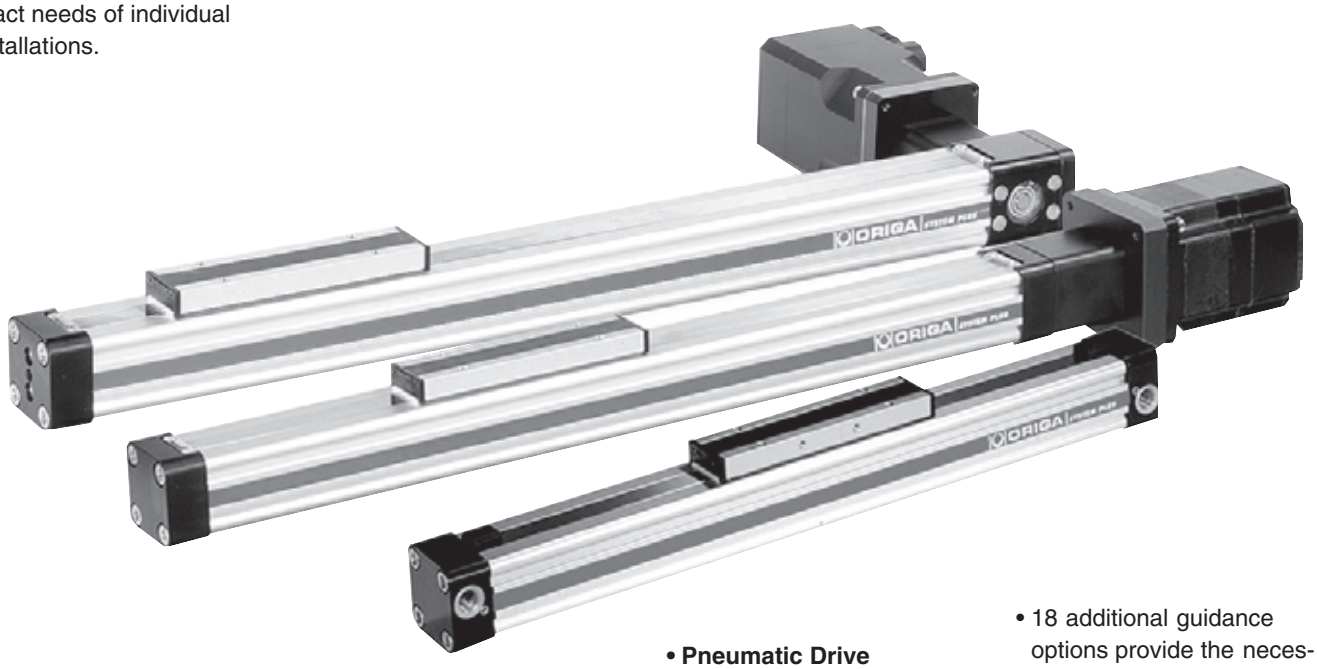
ORIGA SYSTEM PLUS
– ONE CONCEPT
– THREE DRIVE OPTIONS

Based on the ORIGA rodless cylinder, proven in world wide markets, HOERBIGER-ORIGA now offers the complete solution for linear drive systems. Designed for absolute reliability, high performance, ease of use and optimized engineering the ORIGA SYSTEM PLUS satisfies even the most demanding applications.

ORIGA SYSTEM PLUS

is a totally modular concept which offers the choice of pneumatic or electric actuation, with guidance and control modules to suit the exact needs of individual installations.

The actuators at the core of the system all have a common aluminium extruded profile, with double dovetail mounting rails on three sides, these are the principal building blocks of the system to which all modular options are directly attached.



SYSTEM MODULARITY

- **Electric Screw Drive**
  – For high force capability and accurate path and position control.
- **Electric Belt Drive**
  – For high speed applications, accurate path and position control and longer strokes.
- **Pneumatic Drive**
  – For all round versatility and convenience, combining ease of control and broad performance capability. Ideally suited for point-to point operations, reciprocating movements and simple traverse / transfer applications.

For additional information on pneumatic linear drives, please refer to catalogue A4 P011

- 18 additional guidance options provide the necessary level of precision, performance and duty.
- Compact solutions, which are simple to install and can be easily retrofitted.
- Valves and control options can be directly mounted on the pneumatic actuator system.
- Various mounting options to provide total installation flexibility.

ORIGA SYSTEM PLUS
– ONE CONCEPT
– THREE DRIVE OPTIONS

*** Information on Pneumatic Linear Drives, see Catalogue A4 P011E**

Basic Linear Drive – Standard Version
- Series OSP-P (pneumatic)*
- Series OSP-E Belt, Belt Bi-parting, Belt with integrated Guides
- Series OSP-E Screw (Ball Screw, Trapezoidal Screw)



Air Connection on the End-face or both at One End
- Series OSP-P (pneumatic)*



Clean Room Cylinders certified to DIN EN ISO 146644-1
- Series OSP-P*



Basic Cylinders ATEX- Version
- Series OSP-P*



Integrated 3/2-Way Valves
- Series OSP-P (pneumatic)*



Clevis Mounting
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



End Cap Mounting
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



Mid-Section Support
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



Inversion Mounting
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



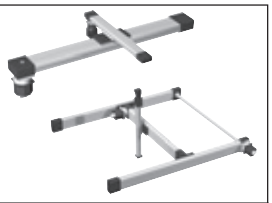
Duplex Connection
- Series OSP-P*



Multiplex Connection
- Series OSP-P*



Multi-Axis Connection System
- Adapter Plates
- Intermediate Drive Shafts



Linear Guides – SLIDELINE
- Series OSP-P (pneumatic)*
- Series OSP-E Screw



Linear Guides – POWERSLIDE
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



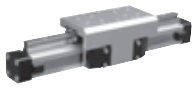
Linear Guides – GUIDELINE
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



Linear Guides – PROLINE
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



Linear Guides – STARLINE
- Series OSP-P*



Linear Guides – KF
- Series OSP-P*



Brakes
- Active Brakes*
- Passive Brakes*



Magnetic Switches
- Series OSP-P (pneumatic)*
- Series OSP-E Belt
- Series OSP-E Screw



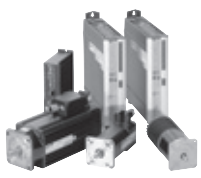
SENSOFLEX
- Displacement Measuring System*



SERVOTEC
- Servo Pneumatic Positioning System*



Electric Motors and Control Packages
- Stepper Motor and Controller
- Servo Motor and Controller



OSP
ORIGA SYSTEM PLUS

Electric Linear Drive Systems, Modular Components - Overview

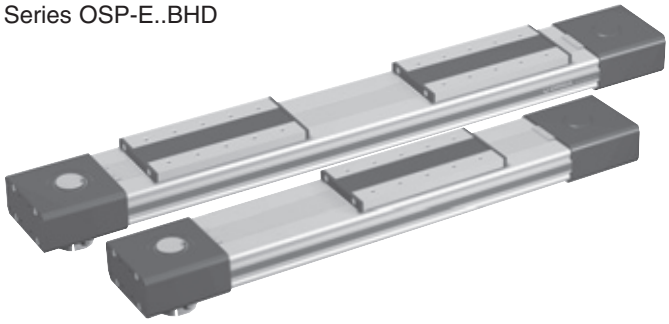
Linear Drives	**OSP-E25 -BHD** [1]	**OSP-E32 -BHD** [1]	**OSP-E50 -BHD** [1]	**OSP-E25 -B** [2]	**OSP-E32 -B** [2]	**OSP-E50 -B** [2]	**OSP-E25 -BP** [3]	**OSP-E32 -BP** [3]	**OSP-E50 -BP** [3]		**OSP-E25 -S** [4]	**OSP-E32 -S** [4]	**OSP-E50 -S** [4]	**OSP-E25 -ST** [5]	**OSP-E32 -ST** [5]	**OSP-E50 -ST**[5]	**OSP-E25 -SR** [6]	**OSP-E32 -SR** [6]	**OSP-E50 -SR** [6]	**OSP-E25 -SBR** [7]	**OSP-E32 -SBR** [7]	**OSP-E50 -SBR** [7]
Effective action force [N]	550-1070	1030-1870	1940-3120	50	100 - 150	300 - 425	50	100 - 150	300 - 425		250	600	1500	600	1300	2500	800	1600	3300	260	550 – 1090	750 – 1680
Velocity v [m/s]	10,0/5	10,0/5	10,0/5	2,0	3,0	5,0	2,0	3,0	5,0		0,25	0,5	1,25	0,1	0,1	0,15	0,075	0,1	0,125	0,25	0,25 – 0,5	0,25 – 1,25
Magnetic piston (three sides)	❑	❑	❑	❑	❑	❑	❑	❑	❑		❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Free choice of stroke length [mm] ※※	1 - 7000	1 - 7000	1 - 7000	1 - 3000	1 - 5000	1 - 5000	1 - 1500 x 2	1 - 2500 x 2	1 - 2500 x 2		1 - 1100	1 - 2000	1 - 3200	1 - 1100	1 - 2000	1 - 2500	1 - 500	1 - 500	1 - 500	1 – 500	1 – 500	1 – 500
Temperature range [°C] ※	- 30 – + 80	- 30 – + 80	- 30 – + 80	- 30 – + 80	- 30 – + 80	- 30 – + 80	- 30 – + 80	- 30 – + 80	- 30 – + 80		- 20 – + 80	- 20 – + 80	- 20 – + 80	- 20 – + 70	- 20 – + 70	- 20 – + 70	- 20 – + 70	- 20 – + 70	- 20 – + 70	-20 – +80	-20 – +80	-20 – +80
Stainless steel parts	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Tandem piston	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Self-Guidance																						
L [N]	986/3000	1348/1000	3704/15000	160	300	850	160	300	850		500	1200	3000	500	1000	1500	–	–	–	–	–	–
M [Nm]	64/500	115/1000	365/1800	12	25	80	12	25	80		12	25	80	24	65	155	–	–	–			
Ms [Nm]	11/50	19/120	87/180	2	8	16	2	8	16		2	8	16	2	6	13	–	–	–	–	–	–
Mv [Nm]	64/500	115/1400	365/2500	8	16	32	8	16	32		8	16	32	7	12	26	–	–	–	–	–	–
Slideline																						
L [N]	–	–	–	X	X	X	X	X	X		675	925	2000	675	925	2000	–	–	–	–	–	–
M [Nm)]	–	–	–	X	X	X	X	X	X		34	60	180	34	60	180	–	–	–			
Ms [Nm]	–	–	–	X	X	X	X	X	X		14	29	77	14	29	77	–	–	–	–	–	–
Mv [Nm]	–	–	–	X	X	X	X	X	X		34	60	180	34	60	180	–	–	–	–	–	–
Proline																						
L [N]	–	–	–	986	1348	3582	986	1348	3582		986	1348	3582	986	1348	3582	–	–	–	–	–	–
M [Nm)]	–	–	–	44	84	287	44	84	287		44	84	287	44	84	287	–	–	–	–	–	–
Ms [Nm]	–	–	–	19	33	128	19	33	128		19	33	128	19	33	128	–	–	–	–	–	–
Mv [Nm]	–	–	–	44	84	287	44	84	287		44	84	287	44	84	287	–	–	–	–	–	–
Powerslide																						
L [N]	–	–	–	910 - 1190	1400 - 2300	3000 - 4000	910 - 1190	1400 - 2300	3000 - 4000		910 - 1190	1400 - 2300	3000 - 4000	900 - 1190	1400 - 2300	3000 - 4000	–	–	–	–	–	–
M [Nm]	–	–	–	63 - 175	70 - 175	250 - 350	63 - 175	70 - 175	250 - 350		63 - 175	70 - 175	250 - 350	63 - 175	70 - 175	250 -350	–	–	–	–	–	–
Ms [Nm]	–	–	–	14 - 20	20 - 50	90 - 140	14 - 20	20 - 50	90 - 140		14 - 20	20 - 50	90 - 140	14 - 20	20 - 50	90 - 140	–	–	–	–	–	–
Mv [Nm]	–	–	–	63 - 175	70 - 175	250 - 350	63 - 175	70 - 175	250 - 350		63 - 175	70 - 175	250 - 350	63 - 175	70 - 175	250 - 350	–	–	–	–	–	–
Guideline																						
L [N]	❍	❍	❍	1650 - 2500	1650 - 2500	4400 - 8000	1650 - 2500	1650 - 2500	4400 - 8000		1650 - 2500	1650 - 2500	4400 - 8000	1650 - 2500	1650 - 2500	4400 - 8000	–	–	–	–	–	–
M [Nm]	❍	❍	❍	115	145	500	115	145	500		115	145	500	115	145	500	–	–	–			
Ms [Nm]	❍	❍	❍	75	90	375	75	90	375		75	90	375	75	90	375	–	–	–	–	–	–
Mv [Nm]	❍	❍	❍	90	115	355	90	115	355		90	115	355	90	115	355	–	–	–			
Guideline with shock absorber for cushioning	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Aktiv brake																						
Braking force at 6 bar (brake surface dry) [N]	X	X	X	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Slideline SL / Proline PL with brakes																						
Aktiv brake																						
Braking force (no pressure,brake surface dry) [N]	X	X	X	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Passiv brake Multibrake																						
Braking force (no pressure,brake surface dry) [N]	X	X	X	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Accessories																						
Magnetic switches																						
RS (closer, opener)	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Elektronic switches ES (PNP, NPN)	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Displacement measuring systems																						
SFI - incremental	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
SFA - absolute	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Motor package (stepper/servo)	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Gearbox (integrated planetary gearbox)	❍	❍	❍	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–
Mountings																						
Clevis Mounting	X	X	X	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
End Cap Mounting / Mid-section Support	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Inversion Mounting	X	X	X	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	–	–	–	–	–	–
Adapter Profile / T-Nut Profile	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Multi-Axis Connection System																						
Adapter Plates	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Intermediate Drive Shafts	❍	❍	❍	❍	❍	❍	❍	❍	❍		❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Special Drives																						
Clean Room Cylinders	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X

❑ = Standard version
❍ = Option
X = Currently not available
※ = other temperature ranges on request
※※ = **exc. safety clearance from mechanical end position**
other stroke lengths on request

[1]) = Electric Linear Drive (Belt, with integrated Roller Guide / or Recirculating Ball Bearing Guide – Option: Bi-parting
[2]) = Electric Linear Drive (Belt)
[3]) = Electric Linear Drive (Belt Bi-parting)
[4]) = Electric Linear Drive (Ball screw)
[5]) = Electric Linear Drive (Trapezoidal Screw)
[6]) = Electric Linear Drive (Trapezoidal Screw with extending Rod)
[7]) = Electric Linear Drive (Ball screw with extending Rod)

A COMPLETE SYSTEM – SIX DRIVE OPTIONS FOR ALL REQUIREMENTS

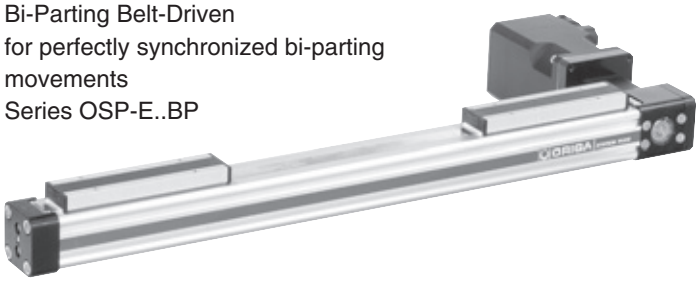
Belt-Driven with Integrated Roller Guide or integrated Recirculating Ball Bearing Guide
Series OSP-E..BHD



Belt-Driven with Integral Guidance
Series OSP-E..B



Bi-Parting Belt-Driven
for perfectly synchronized bi-parting movements
Series OSP-E..BP



Ball Screw-Driven
Series OSP-E..S



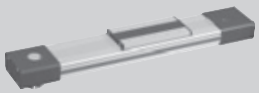
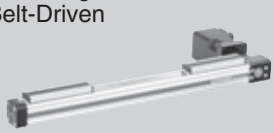
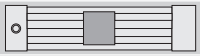
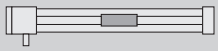
Screw-Driven with extending rod
Series OSP-E..SR (with Trapzoidal Screw)
Series OSP-E..SBR (with Ball Screw)

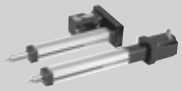


Trapezoidal Screw-Driven
Series OSP-E..ST



STANDARD VERSIONS, OPTIONS AND ACCESSORIES

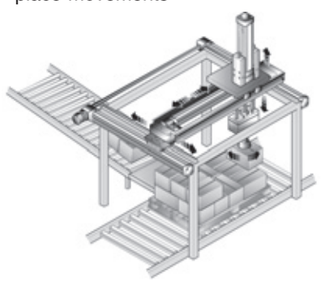
Description	Belt-Driven – Basic Versions		
	Belt-Driven with Integrated Guides 	Belt-Driven 	Bi-Parting Belt-Driven 
Standard Versions			
Options	– Bi-Parting – Integrated Planetary Gearbox – Actuating Direction – Drive Shaft Options	– Drive Shaft Options	– Drive Shaft Options
Mountings			
Clevis Mounting	–	O	O
End Cap Mounting	O	O	O
Mid-Section Support	O	O	O
Inversion Mounting	–	O	O
Accessories			
Magnetic Switches	O	O	O
Motor Mountings	O	O	O
Linear Guides	O	O	O
Multi-Axis Connection System	O	O	O

Description	Screw-Driven – Basic Versions		
	Ball Screw -Driven 	Trapezoidal Screw- Driven 	Screw-Driven with extending Rod – with Trapezoidal Screw – with Ball Screw 
Standard Versions			
Options	– Pitch options	–	– Flange Mounting – Trunnion Mounting – Piston Rod Mountings
Mountings			
Clevis Mounting	O	O	–
End Cap Mounting	O	O	O
Mid-Section Support	O	O	O
Inversion Mounting	O	O	–
Accessories			
Magnetic Switches	O	O	O
Motor Mountings	O	O	O
Linear Guides	O	O	–
Multi-Axis Connection System	O	O	O

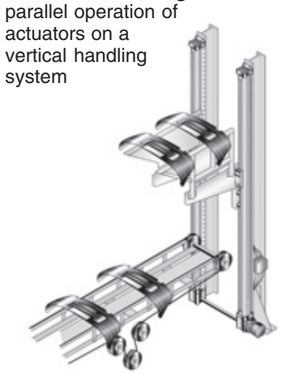
Examples

APPLICATION EXAMPLES FOR ELECTRIC LINEAR DRIVE SYSTEMS

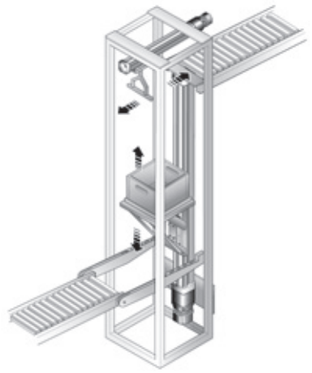
Auto Handling
- high speed pick and place movements



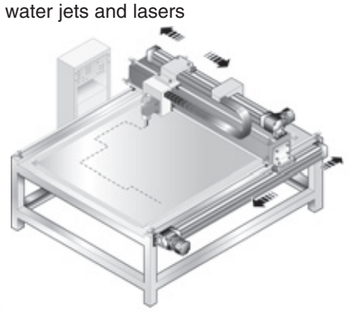
Mechanical Handling
- parallel operation of actuators on a vertical handling system



Material Handling Systems
- vertical and horizontal transfer movements



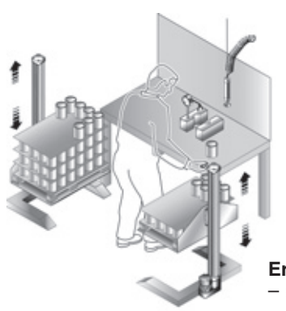
Profile Cutting Machines
- intricate profile movements of water jets and lasers



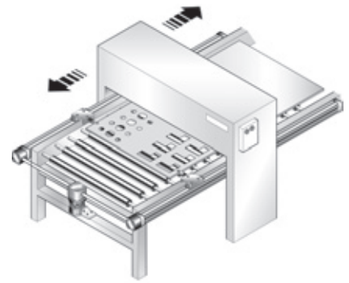
Spray Coating
- synchronized high speed bi-parting movements



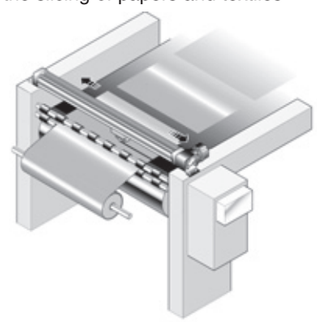
Ergonomic Workstations
– adjustment of working levels



Punching Machines
– accurate feeding and postioning



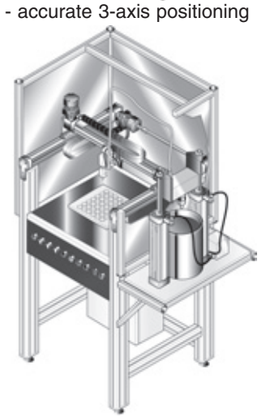
Slitting Machines
- high speed traverse applications for the slicing of papers and textiles



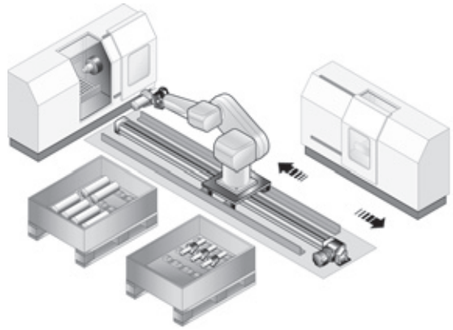
Automatic Doors and Guards
- simple bi-parting operation



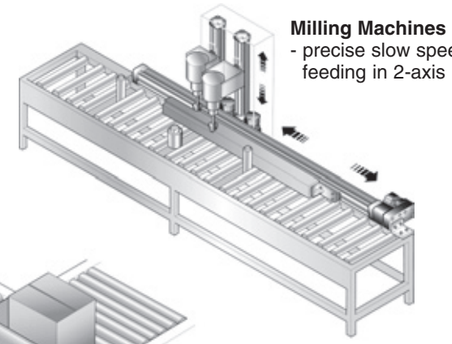
Automated Filling Machines
- accurate 3-axis positioning



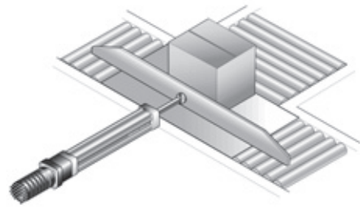
Robotic Installations
- traverse of robots between work stations



Milling Machines
- precise slow speed feeding in 2-axis



Conveyor Systems
- simple cross-transfer actuators



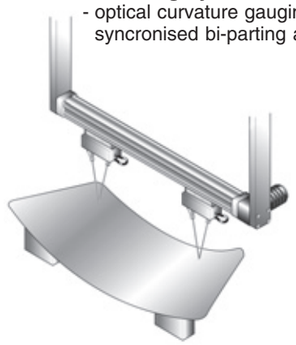
Spraying Equipment
- precision reciprocating action



Mobile Lifting Systems
- lifting devices for industrial safety



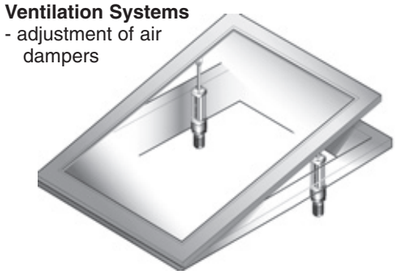
Measuring Systems
- optical curvature gauging using syncronised bi-parting actuation



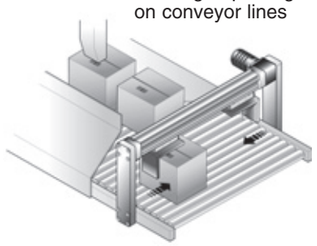
Medical Equipment
- adjustment of orthopaedic beds



Ventilation Systems
- adjustment of air dampers



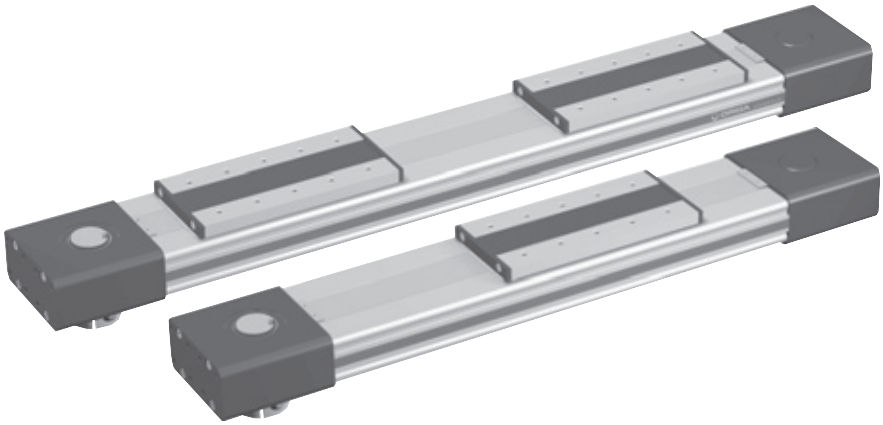
Conveyor Systems
- centring of packages on conveyor lines



Linear Actuator with Toothed Belt and Integrated Guide

– with Roller Guide
– with Recirculating Ball Bearing Guide

Series OSP-E..BHD



Contents

Description	Data Sheet No.	Page
Overview	1.15.001E	11-14
Version with Roller Guide		
Technical Data	1.15.002E-1 to 3	15-17
Dimensions	1.15.002E-4, 9	18, 23
Order Instructions	1.15.002E-10	24
Version with Recirculating Ball Bearing Guide		
Technical Data	1.15.002E-5 to 7	19-21
Dimensions	1.15.002E-8, 9	22, 23
Order Instructions	1.15.002E-6	24

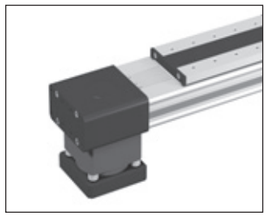
HOERBIGER ORIGA

The System Concept

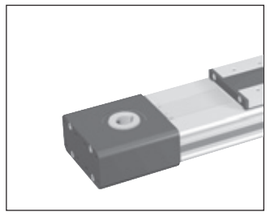
ELECTRIC LINEAR ACTUATOR FOR HEAVY DUTY APPLICATIONS

Optional Integrated PLANETARY GEARBOX

- Highly compact and rigid solution fully integrated in the drive end housing
- Purpose designed for the BHD series
- Available with three standard ratios (3, 5 and 10)
- Very low backlash
- A wide range of available motor flanges



OPTION
Hollow shaft with keyway

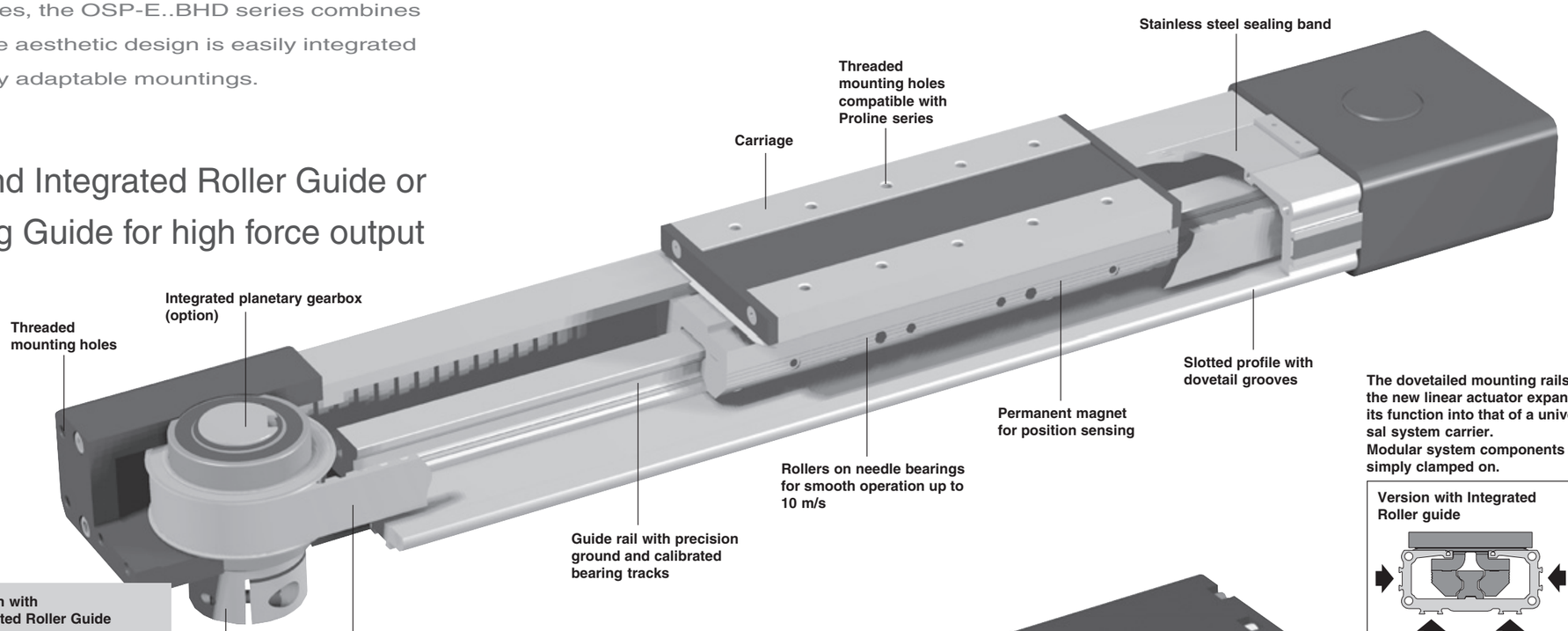


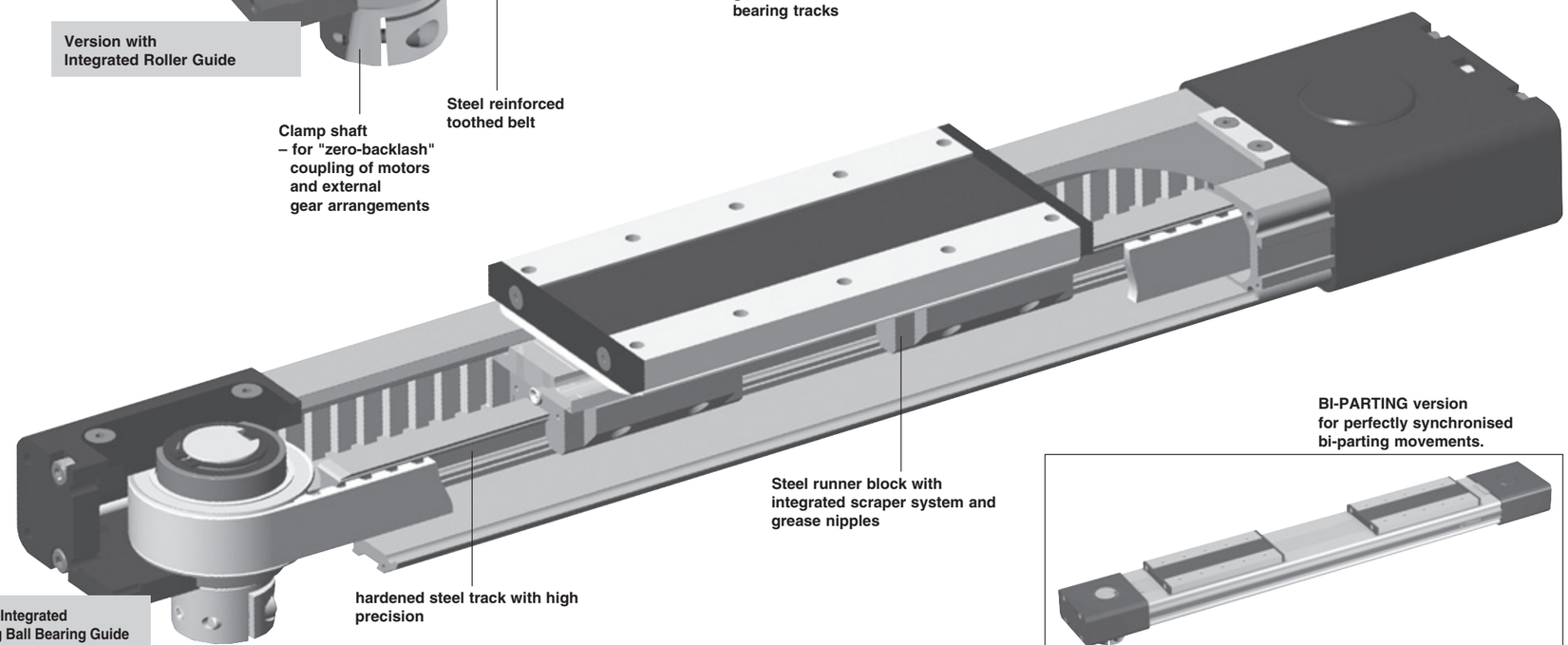
The latest generation of high capacity linear drives, the OSP-E..BHD series combines robustness, precision and high performance. The aesthetic design is easily integrated into machine constructions by virtue of extremely adaptable mountings.

Linear Actuator with Toothed Belt and Integrated Roller Guide or Integrated Recirculating Ball Bearing Guide for high force output

Advantages:
- Accurate path and position control
- High force output
- High speed operation
- High load capacity
- Easy installation
- Low maintenance
- Ideal for multi-axis applications

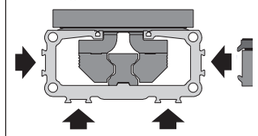
Features:
- Integrated roller guide or integrated recirculating ball bearing guide
- Complete motor and control packages
- Optional integrated planetary gearbox
- Diverse range of multi-axis connection parts
- Diverse range of accessories and mountings
- Special options available



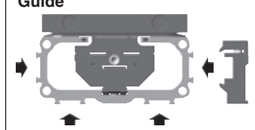


The dovetailed mounting rails of the new linear actuator expand its function into that of a universal system carrier.
Modular system components are simply clamped on.

Version with Integrated Roller guide



Version with Integrated Recirculating Ball Bearing Guide



To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems.



BI-PARTING version for perfectly synchronised bi-parting movements.

MULTI-AXIS
A wide range of adapter plates and intermediate drive shafts simplify engineering and installation



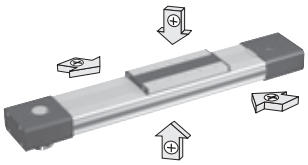
OPTIONS AND ACCESSORIES

SERIES OSP-E, BELT DRIVES WITH INTEGRATED GUIDE

STANDARD VERSIONS OSP-E..BHD

Version with Roller Guide
Data sheets 1.15.002E-1to 4, 9, 10
Version with Recirculating Ball Bearing Guide
Data sheets 1.15.002-5 to 8, 9, 10

Standard carrier with integrated roller guide. Dovetail profile for mounting of accessories and the actuator itself.

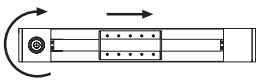


BASIC ACTUATOR OPTIONS

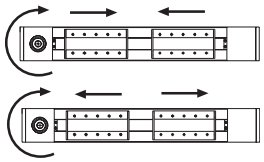
BI-PARTING VERSION
Data sheet 1.15.002E
For perfectly synchronised bi-parting movements.



DRIVE SHAFT OPTIONS
ACTUATING DIRECTION
Data sheet 1.15.002E-10
Important in parallel operations, e.g. with intermediate drive shaft



(Standard)



(Standard – Bi-Parting Version)

INTEGRATED PLANETARY GEARBOX

Data sheet 1.15.002E-9
For required torque and speed reduction



CLAMP SHAFT WITH CONNECTION SHAFT
For connection to connecting shaft (Data sheet 1.38.004E)

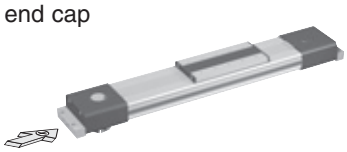


HOLLOW SHAFT WITH KEYWAY
For close coupling of motors and external gears



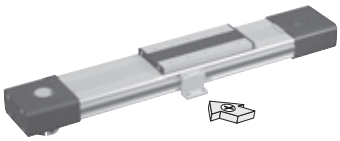
ACCESSORIES

END CAP MOUNTING
Data sheet 1.45.022E
For mounting the drives on the end cap



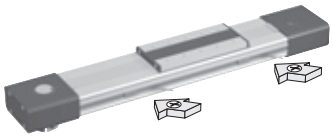
MID-SECTION SUPPORT

Data sheet 1.45.023E
For supporting long actuators or mounting the actuator on dovetail grooves.



MAGNETIC SWITCHES SERIES RS AND ES

Data sheet 1.45.101E
For electrical sensing of end of stroke and intermediate carrier positions. Schlittens.



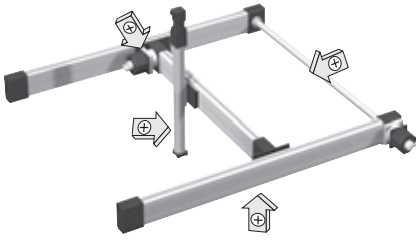
MOTOR MOUNTINGS

Data sheet 1.45.028E-2
For linear drive with clamp shaft



Data sheet 1.38.001E

For connection of linear drives in multi-axis systems. Carrier to carrier or carrier to profile and connecting shaft for parallel drive arrangements are available.



A3P106E00DZ50X

The right to introduce technical modifications is reserved

Linear Actuator with Toothed Belt

and Integrated Roller Guide

Series OSP-E..BHD
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Characteristics

Characteristics		Symbol	Unit	Description
General Features				
Type				Belt-Driven Linear Actuator with integrated roller guide
Series				OSP-E..BHD / OSP-E..BHD-BP
Mounting				See drawings
Ambient Temperature range		ϑ_{min} ϑ_{max}	°C °C	-30 +80
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Toothed belt			Steel-corded polyurethane
	Belt wheels			Aluminium
	Rails			Aluminium
	Tracks			High alloy spring steel
	Roller cassettes			Roller bearing steel in aluminium casing
	Sealing band			Hardened stainless steel
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (mass) kg and Inertia

Series	Weight (mass) [kg]			Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre
OSP-E25BHD	3.8	4.3	1.0	984	197
OSP-E32BHD	7.7	6.7	1.9	3498	438
OSP-E50BHD	22.6	15.2	4.7	19690	1489
OSP-E25BHD-BP	5.7	4.3	2.0	1805	197
OSP-E32BHD-BP	11.3	6.7	3.8	6358	438
OSP-E50BHD-BP	31.7	15.2	9.4	34274	1489

Standard Versions:

- Standard carrier with integrated roller guide
- Dovetail profile for mounting of accessories and the actuator itself
- Clamp shaft

Special Versions:

- Bi-parting version for synchronised movements (OSP-E..BHD -BP).
- Integrated planetary gearbox.
- Drive shaft / Actuating direction
- Clamp shaft with connection shaft (for use in Multi-Axis systems with connecting shaft)
- Hollow shaft with keyway

Installation Instructions

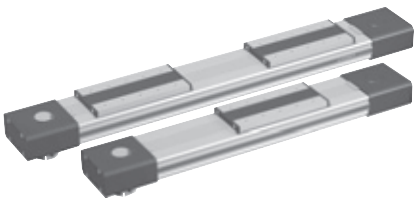
Use the threaded holes in the end cap for mounting the linear actuator. Check if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.15.002E-3.
At least one end cap must be secured to prevent axial sliding when mid-section support is used.

Maintenance

All moving parts are lifetime-lubricated. We recommend a check of the linear actuator after an opera-tion time of 12 months of operation or 3000 km, depending on the type of application. Please see separate instructions.

Commissioning

The products in this data sheet should not be operated until the machine/application in which they are used has passed necessary inspection.



For **Magnetic Switches** see 1.45.101E
For **Mountings and Accessories** see 1.45.020E to 028E
For **Multi-Axis Connections** see 1.38.001E

HOERBIGER
ORIGA

A1P559E00DZ00X

The right to introduce technical modifications is reserved

Sizing Performance Overview Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended:

1. Calculate the static and the dynamic moments [Nm] created by the load **L** [N], the distance **r** [m] and the acceleration **a** [m/s^2] in all directions (M, M_s and M_v) according to the diagram below.
2. Make a preliminary choice and get the calculation factors from the table.
3. Check maximum allowable torque on the drive shaft (pay attention to the note under the table). If the value is lower than required, overview the moving profile or select if possible a bigger unit.
4. Before sizing and specifying the motor, the rms torque must be calculated using the cycle time of the application.
5. Check that maximum allowable unsupported length is not exceeded (see data sheet 1.15.002E-3).

Performance Overview

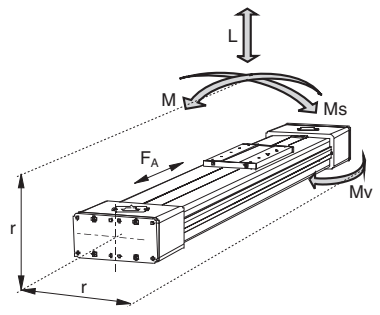
Characteristics		Unit	Description		
Series			**OSP-E25BHD**	**OSP-E32BHD**	**OSP-E50BHD**
Max. speed		[m/s]	10	10	10
Linear motion per revolution, drive shaft		[mm]	180	240	350
Max. rpm. drive shaft		[min^{-1}]	3000	2500	1700
Max. effective	< 1 m/s:	[N]	1070	1870	3120
action force	1-3 m/s:	[N]	890	1560	2660
F_A at speed	> 3-10 m/s:	[N]	550	1030	1940
No-load torque		[Nm]	1.2	2.2	3.2
Max. acceleration/deceleration		[m/s^2]	40	40	40
Repeatability		[mm/m]	±0.05	±0.05	±0.05
Max. standard stroke length		[mm]	7000	7000	7000

Maximum Allowable Torque on Drive Shaft Speed and Stroke

T2

OSP-E25BHD				OSP-E32BHD				OSP-E50BHD			
Speed [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]
1	31	1	31	1	71	1	71	1	174	1	174
2	28	2	31	2	65	2	71	2	159	2	174
3	(25)	3	31	3	59	3	60	3	153	3	138
4	23	4	25	4	56	4	47	4	143	4	108
5	22	5	(21)	5	52	5	38	5	135	5	89
6	21	6	17	6	50	6	32	6	132	6	76
7	19	7	15	7	47	7	28	7	126	7	66
8	18			8	46			8	120		
9	17			9	44			9	116		
10	16			10	39			10	108		

Important:
The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.
Example above: OSP-E25BHD-stroke 5 m, required speed 3 m/s from table T2;
speed 3 m/s gives 25 Nm and stroke 5 m gives 21 Nm.
Max. torque for this application is 21 Nm.
When sizing Bi-parting units the stroke is the ordering stroke, see data sheet 1.15.002E-4.



$M = F \cdot r$
Bending moments are calculated from the centre of the linear actuator and F indicates actual force

$M = M_{stat} + M_{dyn}$
$M_s = M_{s,\,stat} + M_{s,\,dyn}$
$M_v = M_{v,\,stat} + M_{v,\,dyn}$

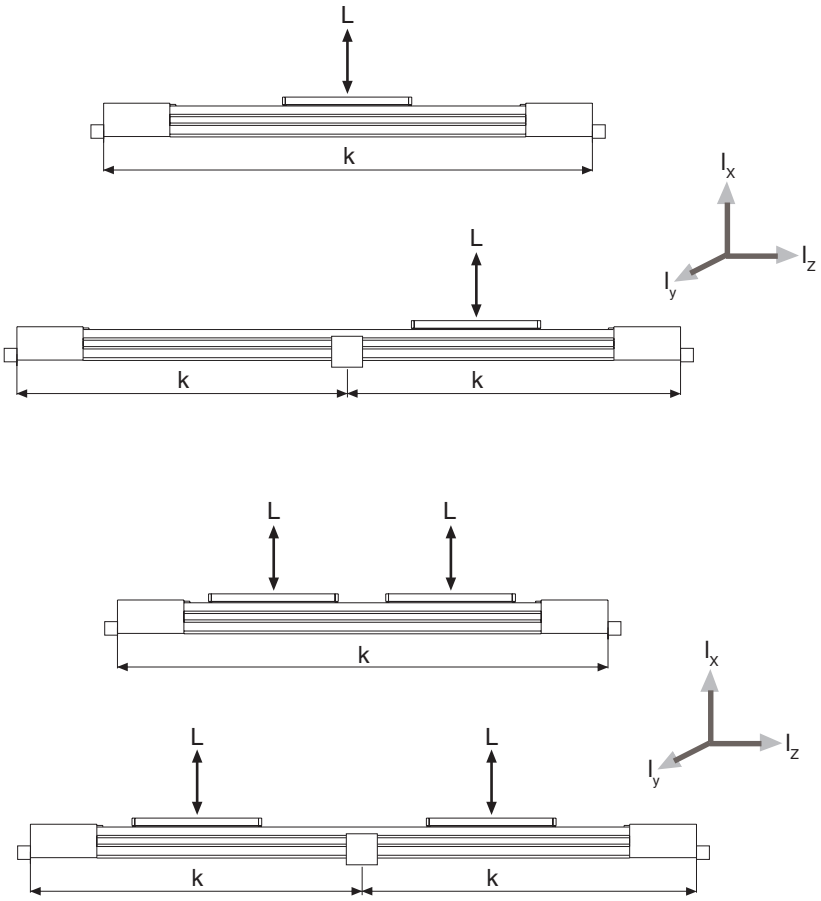
Maximum Allowable Loadings

Series	Max. applied load L[N]	Max. moments [Nm] M	M_s	M_v
OSP-E25BHD	986	64	11	84
OSP-E32BHD	1348	115	19	115
OSP-E50BHD	3704	365	87	365

$$\frac{L}{L\,(max)} + \frac{M}{M\,(max)} + \frac{M_s}{M_s\,(max)} + \frac{M_v}{M_v\,(max)} \leq 1$$

The total of the loads must not exceed 1 under any circumstances.

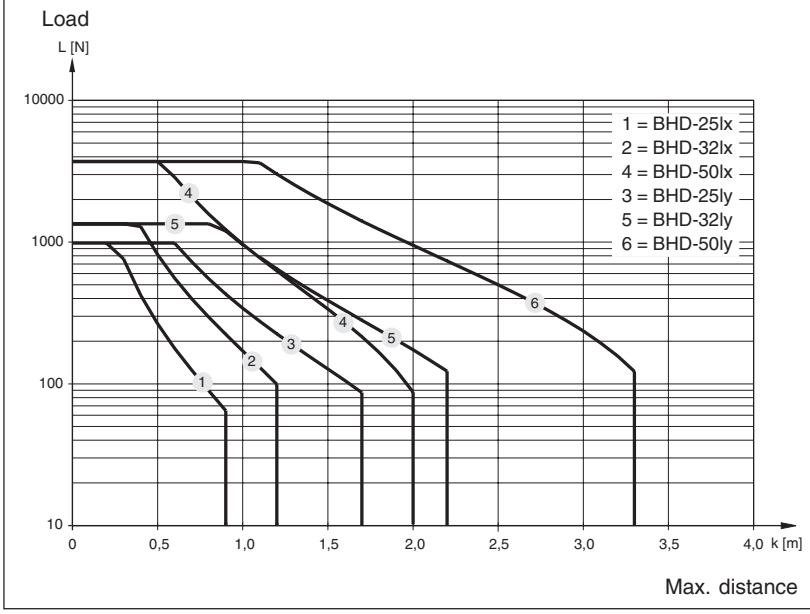
Maximum Allowable Unsupported Length – Placing of Mid-Section Support



* For Bi-parting version the max. load (L) is the total load of both carriers
$L = L_{carrier\ 1} + L_{carrier\ 2}$

k = Max. allowable distance between mountings/mid-section support for a given load L

When loadings are below or up to the curve in the graph below the deflection will be max. 0.01 % of distance k



Maximum Allowable Unsupported Length

Stroke Length

Stroke Length

The stroke lengths of the linear actuators are available in multiples of 1 mm up to 7000 mm

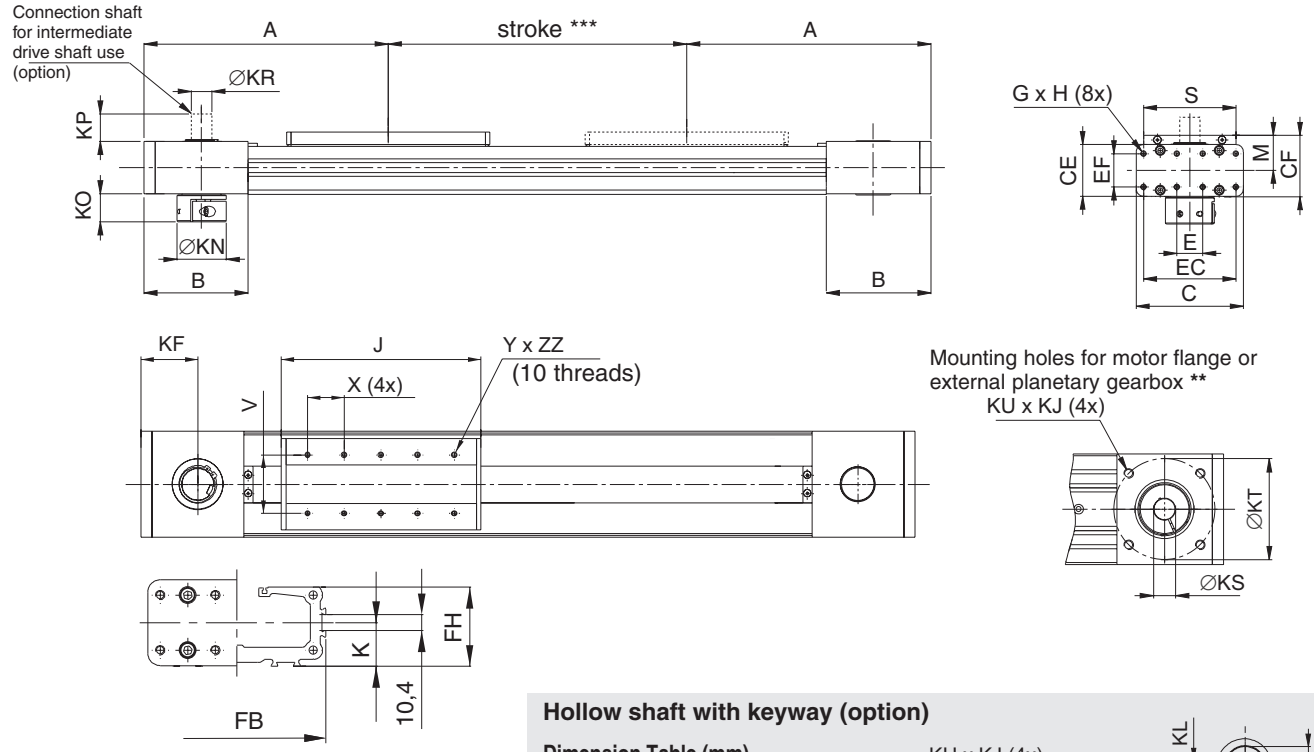
Other stroke lengths are available on request.

The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.

The use of an AC motor with frequency converter normally requires a larger clearance than that required for servo systems.

For advice, please contact your local HOERBIGER-ORIGA technical support department.

Belt Driven Linear Actuator with Roller Guide – Basic Unit
Series OSP-E25BHD, -E32BHD, -E50BHD

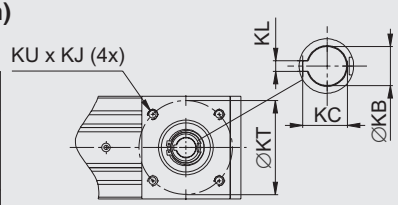


**** Note:**
The mounting holes for the coupling housing/motor flange/gearbox are located on the opposite side to the carrier as standard. As an option they can be located on the same side as the carrier.
(For additional drive shaft/actuating direction options see the Order Instructions on Data Sheet 1.15.002E-6).

Hollow shaft with keyway (option)

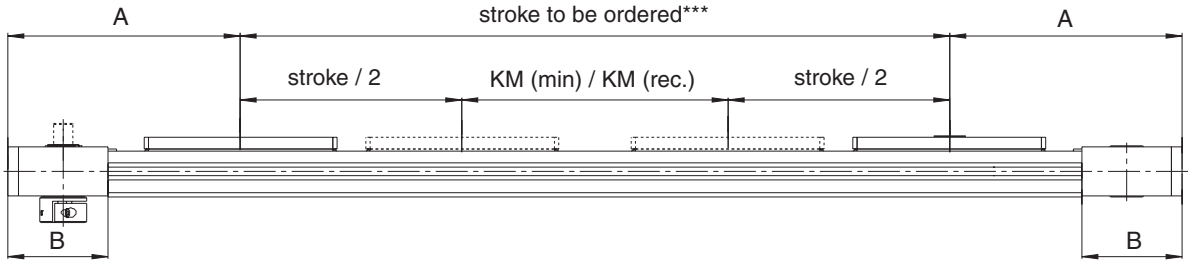
Dimension Table (mm)

Serie	KB*	KC	KJ	KL	KT	KU
OSP-E25BHD	16^{H7}	18.3	8	5	82	M8
OSP-E32BHD	22^{H7}	24.8	12	6	106	M10
OSP-E50BHD	32^{H7}	35.3	19	10	144	M12



*Other dimensions for KB on request, see ordering information on data sheet 1.15.002E-6

Options – Bi-Parting Version
Series OSP-E25BHD-BP, -E32BHD-BP, -E50BHD-BP



***** Note**:
The mechanical end position must not be used as a mechancial end stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For further information please contact you local HOERBIGER-ORIGA representative.

Dimension Table (mm)

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CE	CF	EC	EF	FB	FH	KF	KJ	KM_{min}	$KM_{rec.}$	KN	KO	KP	KR	KS*	KT	KU	ZZ
OSP-E25BHD	218	88	93	25	M5	10	178	21.5	31	85	64	40	M6	42	52.5	79	27	92	39.5	49	8	210	250	34	21.7	30	16^{h7}	16^{H7}	82	M8	8
OSP-E32BHD	262	112	116	28	M6	12	218	28.5	38	100	64	40	M6	56	66.5	100	36	116	51.7	62	12	250	300	53	30	30	22^{h7}	22^{H7}	106	M10	10
OSP-E50BHD	347	147	175	18	M6	12	263	43	49	124	90	60	M6	87	92.5	158	70	164	77	79.5	19	295	350	75	41	35	32^{h7}	32^{H7}	144	M12	10

*Other dimensions for KS on request, see ordering information on data sheet 1.15.002E-10

Linear Actuator with Toothed Belt

and Integrated Recirculating Ball Bearing Guide

Series OSP-E..BHD
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Standard Versions:

- Standard carrier with integrated recirculating ball bearing guide
- Dovetail profile for mounting of accessories and the actuator itself
- Clamp shaft

Special Versions:

- Bi-parting version for synchronised movements (OSP-E..BHD -BP).
- Integrated planetary gearbox.
- Drive shaft / Actuating direction
- Clamp shaft with connection shaft (for use in Multi-Axis systems with connecting shaft)
- Hollow shaft with keyway

Characteristics

Characteristics		Symbol	Unit	Description
General Features				
Type				Belt-Driven Linear Actuator with integrated Recirculating Ball Bearing Guide
Series				OSP-E..BHD / OSP-E..BHD-BP
Mounting				See drawings
Ambient Temperature range		ϑ_{min} ϑ_{max}	°C °C	-30 +80
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Toothed belt			Steel-corded polyurethane
	Belt wheels			Aluminium
	Rail			Steel
	Track			hardened steel track with high precision, accuracy class H
	Runner block			Steel runner block with integrated scraper system, grease nipples, pre-loaded 0.02xC, accuracy H (N for ∅25)
	Sealing band			Hardened stainless steel
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (mass) kg and Inertia

Series	Weight (mass) [kg]			Inertia [x 10^{-6} kgm^2]		
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre stroke	Add per kg Mass
OSP-E25BHD	4.3	3.7	1.5	1229	227	821
OSP-E32BHD	8.8	7.8	2.6	3945	496	1459
OSP-E50BHD	26	17	7.8	25678	1738	3103
OSP-E25BHD-BP	6.7	3.7	2.8	2353	227	821
OSP-E32BHD-BP	13.5	7.8	5.2	7733	496	1459
OSP-E50BHD-BP	40	17	15	49180	1738	3103

Installation Instructions

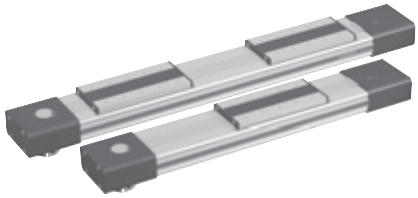
Use the threaded holes in the end cap for mounting the linear actuator. Check if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.15.002E-7.
At least one end cap must be secured to prevent axial sliding when mid-section support is used.

Maintenance

All moving parts are lifetime-lubricated. We recommend a check of the linear actuator after an opera-tion time of 12 months of operation or 3000 km, depending on the type of application. Please see separate instructions.

Commissioning

The products in this data sheet should not be operated until the machine/application in which they are used has passed necessary inspection.



For **Proximity Sensors** see 1.45.101E
For **Mountings and Accessories** see 1.45.020E to 028E
For **Multi-Axis Connections** see 1.38.001E

Sizing Performance Overview Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended:

1. Calculate the static and the dynamic moments [Nm] created by the load **L** [N], the distance **r** [m] and the acceleration **a** [m/s^2] in all directions (M, M_s and M_v) according to the diagram below.
2. Make a preliminary choice and get the calculation factors from the table.
3. Check maximum allowable torque on the drive shaft (pay attention to the note under the table). If the value is lower than required, overview the moving profile or select if possible a bigger unit.
4. Before sizing and specifying the motor, the rms torque must be calculated using the cycle time of the application.
5. Check that maximum allowable unsupported length is not exceeded (see data sheet 1.15.002E-7).

Performance Overview

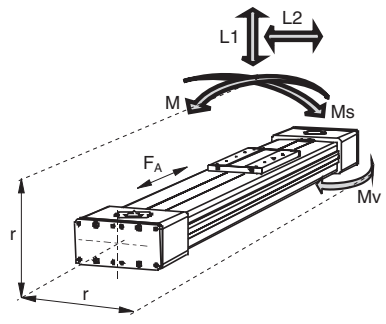
Characteristics		Unit	Description		
Series			**OSP-E25BHD**	**OSP-E32BHD**	**OSP-E50BHD**
Max. speed		[m/s]	5[1)]	5[1)]	5[1)]
Linear motion per revolution, drive shaft		[mm]	180	240	350
Max. rpm. drive shaft		[min^{-1}]	1700	1250	860
Max. effektive	< 1 m/s:	[N]	1070	1870	3120
action force F_A	1-3 m/s:	[N]	890	1560	2660
at speed	> 3 m/s:	[N]	550	1030	1940
No-load torque		[Nm]	1.2	2.2	3.2
Max. acceleration/deceleration		[m/s^2]	50	50	50
Repeatability		[mm/m]	±0.05	±0.05	±0.05
Max. standard stroke length		[mm]	5700[2)]	5600[2)]	5500[2)]

[1)] up to 10 m/s on request
[2)] longer strokes on request

Maximum Allowable Torque on Drive Shaft Speed and Stroke **T2**

OSP-E25BHD				OSP-E32BHD				OSP-E50BHD			
Speed [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]
1	31	1	31	1	71	1	71	1	174	1	174
2	28	2	31	2	65	2	71	2	159	2	174
3	(25)	3	31	3	59	3	60	3	153	3	138
4	23	4	25	4	56	4	47	4	143	4	108
5	22	5	(21)	5	52	5	38	5	135	5	89

Important:
The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.
Example above: OSP-E25BHD-stroke 5 m, required speed 3 m/s from table T2;
speed 3 m/s gives 25 Nm and stroke 5 m gives 21 Nm.
Max. torque for this application is 21 Nm.
When sizing Bi-parting units the stroke is the ordering stroke, see data sheet 1.15.002E-8.



M = F · r
Bending moments are calculated from the centre of the linear actuator and F indicates actual force

$M = M_{stat} + M_{dyn}$
$M_s = M_{s,\,stat} + M_{s,\,dyn}$
$M_v = M_{v,\,stat} + M_{v,\,dyn}$

Maximum Allowable Loadings

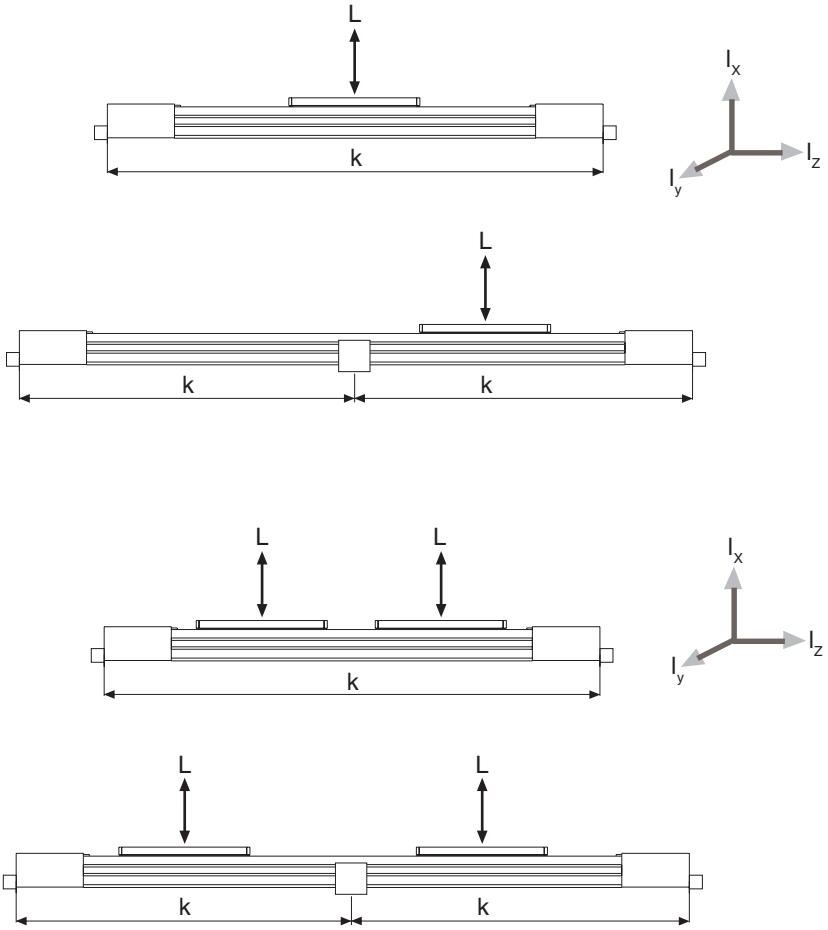
Series	Max. applied load L1[N]	L2[N]	Max. moments [Nm] M	M_s	M_v
OSP-E25BHD	3000	2000	500	50	500
OSP-E32BHD	10000	5000	1000	120	1400
OSP-E50BHD	15000	12000	1800	180	2500

If multiple forces and moments act upon the actuator simultaneously, the following equation applies.

$$\frac{L1}{L1\,(max)} + \frac{L2}{L2\,(max)} + \frac{M}{M\,(max)} + \frac{M_s}{M_s\,(max)} + \frac{M_v}{M_v\,(max)} \leq 1$$

The total of the loads must not exceed 1 under any circumstances.

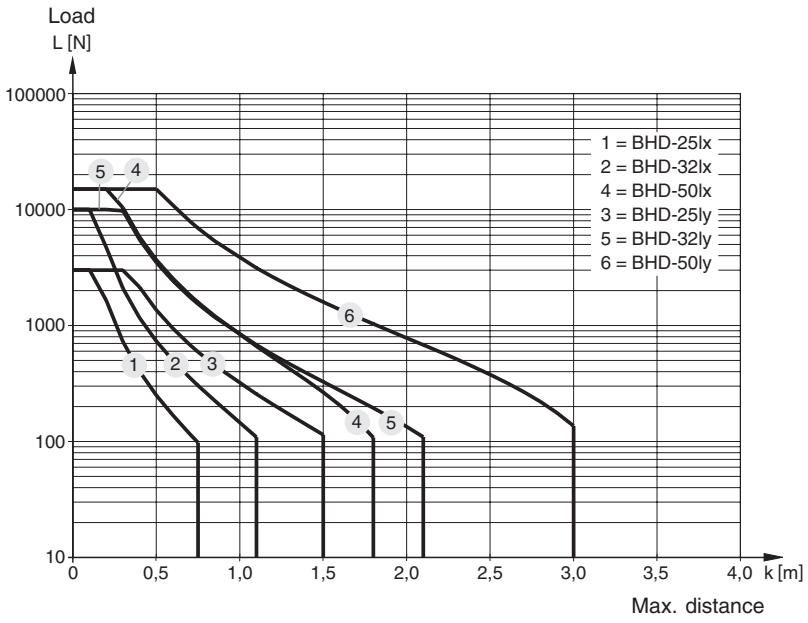
Maximum Allowable Unsupported Length – Placing of Mid-Section Support



* For Bi-parting version the max. load (L) is the total load of both carriers
$L = L_{carrier\ 1} + L_{carrier\ 2}$

k = Max. allowable distance between mountings/mid-section support for a given load L

When loadings are below or up to the curve in the graph below the deflection will be max. 0.01 % of distance k



Maximum Allowable Unsupported Length

Stroke Length

Stroke Length

The stroke lengths of the linear actuators are available in multiples of 1 mm up to 5700 mm

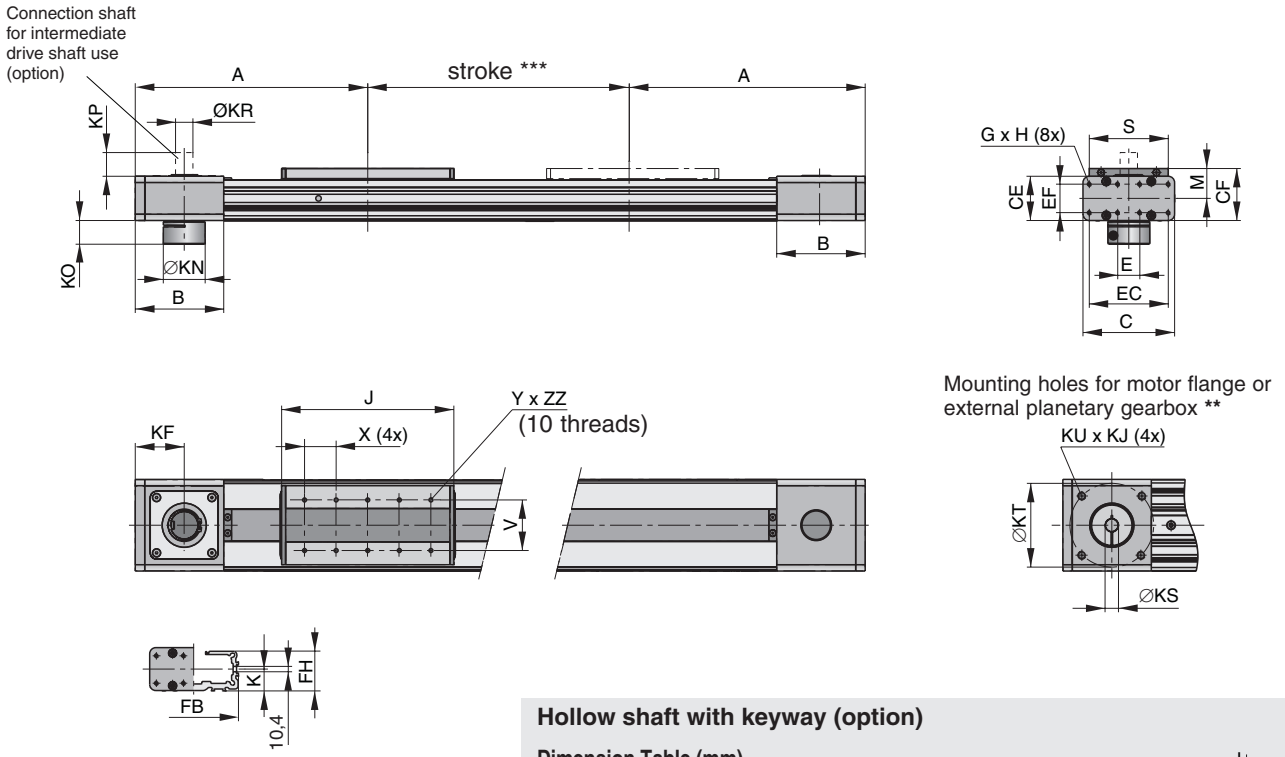
Other stroke lengths are available on request.

The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.

The use of an AC motor with frequency converter normally requires a larger clearance than that required for servo systems.

For advice, please contact your local HOERBIGER-ORIGA technical support department.

Belt Driven Linear Actuator with Recirculating Ball Bearing Guide – Basic Unit
Series OSP-E25BHD, -E32BHD, -E50BHD

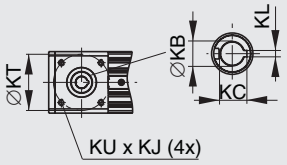


**** Note:**
The mounting holes for the coupling housing/motor flange/gearbox are located on the opposite side to the carrier as standard. As an option they can be located on the same side as the carrier.
(For additional drive shaft/actuating direction options see the Order Instructions on Data Sheet 1.15.002E-10).

Hollow shaft with keyway (option)

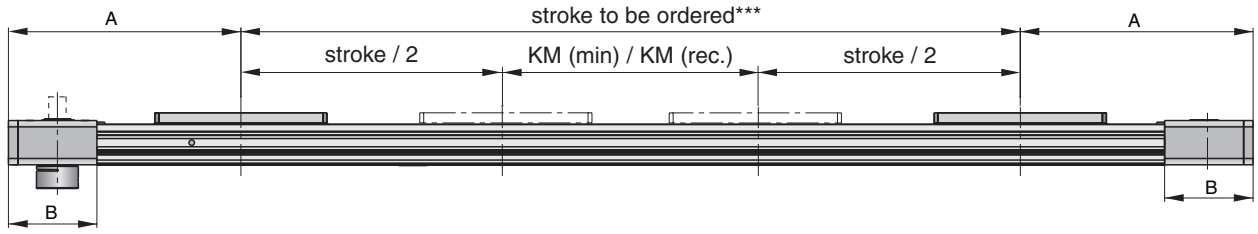
Dimension Table (mm)

Series	KB*	KC	KJ	KL	KT	KU
OSP-E25BHD	16^{H7}	18.3	8	5	82	M8
OSP-E32BHD	22^{H7}	24.8	12	6	106	M10
OSP-E50BHD	32^{H7}	35.3	19	10	144	M12



*Other dimensions for KB on request, see ordering information on data sheet 1.15.002E-10

Options – Bi-Parting Version
Series OSP-E25BHD-BP, -E32BHD-BP, -E50BHD-BP



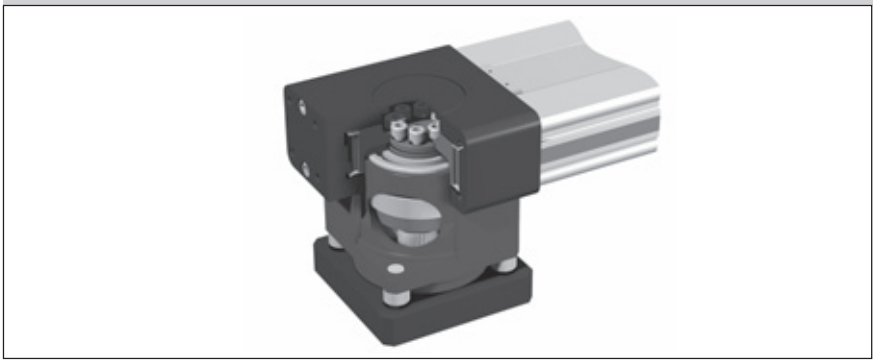
***** Note**:
The mechanical end position must not be used as a mechancial end stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For further information please contact you local HOERBIGER-ORIGA representative.

Dimension Table (mm)

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CE	CF	EC	EF	FB	FH	KF	KJ	KM_{min}	$KM_{rec.}$	KN	KO	KP	KR	KS*	KT	KU	ZZ
OSP-E25BHD	218	88	93	25	M5	10	178	21.5	31	85	64	40	M6	42	52.5	79	27	92	39.5	49	8	210	250	34	21.7	30	16_{h7}	16^{H7}	82	M8	8
OSP-E32BHD	262	112	116	28	M6	12	218	28.5	38	100	64	40	M6	56	66.5	100	36	116	51.7	62	12	250	300	53	30	30	22_{h7}	22^{H7}	106	M10	10
OSP-E50BHD	347	147	175	18	M6	12	288	43	49	124	90	60	M6	87	92.5	158	70	164	77	79.5	19	354	400	75	41	35	32_{h7}	32^{H7}	144	M12	10

*Other dimensions for KS on request, see ordering information on data sheet 1.15.002E-10

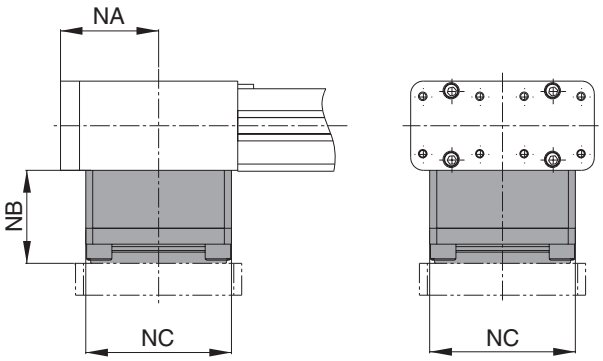
Series OSP-E..BHD – with optional Integrated Planetary Gearbox



Performance Overview

Characteristics		Unit	Description		
			OSP-E25BHD	**OSP-E32BHD**	**OSP-E50BHD**
Ratio (1-stage)	i		3/5/10	3/5/10	3/5/10
Max axial load	F_{amax}	[N]	1550	1900	4000
Torsional rigidity (i=5)	$C_{t.21}$	[Nm/arcmin]	3.3	9	24
Torsional rigidity (i=3/10)	$C_{t.21}$	[Nm/arcmin]	2.8	7.5	20.5
Torsional backlash	J_t	[arcmin]	<12	<12	<12
Linear movement per rotation of drive shaft		[mm]	220	280	360
Nominal input speed	n_{nom}	[min^{-1}]	3700	3400	2600
Max input speed	n_{1max}	[min^{-1}]	6000	6000	6000
No-load running torque at Nominal input speed	T_{012}	[Nm]	<0.14	<0.51	<1.5
Lifetime		[h]	20 000	20 000	20 000
Efficiency (1-stage)	η	[%]	>97	>97	>97
Noise level (n_1=3000 min^{-1})	L_{PA}	[db]	<70	<72	<74

Dimensions



(For drive shaft/actuating direction options, see information on data sheet 1.15.002E-6).

Dimension Table (mm) and additional Weight (kg)

Series	NA	NB	NC	Weight (mass) [kg]
OSP-E25BHD	49	43	76	2.6
OSP-E32BHD	62	47	92	4.9
OSP-E50BHD	79.5	49.5	121	9.6

Integrated Planetary Gearbox

Features
- Highly compact and rigid solution fully integrated in the drive end housing
- Purpose designed for the BHD series
- Available with three standard ratios (3, 5 and 10)
- Very low backlash
- A wide range of available motor flanges

Please contact your local HOERBIGER-ORIGA technical support for available motor flanges.

For motors and controllers, see separate catalogue.

Material:
Aluminium (AL-H) / Steel (St-H)

Standard Version:
- Gearbox on opposite side to carrier

Special Version:
- Gearbox on same side as carrier

Note:
When ordering, specify type of motor and model for correct motor flange.

Electric Linear Actuator

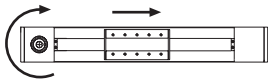
OSP-E	25 – 5	0	0	0	2 – 00500

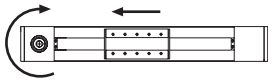
Size
25 = Size 25
32 = Size 32
50 = Size 50

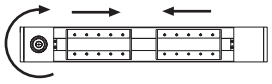
Actuator
5 = Belt-driven with roller guide
6 = Belt-driven with recirculating ball bearing guide

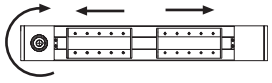
Carrier Mounting
0 = Standard
1 = Tandem
(Option, please contact customer support)
2 = Bi-Parting

Actuating Direction Options
Important in parallel operations, e.g. with connection shaft

0 =  (Standard)

1 = 

2 =  (Standard, Bi-Parting Version)

3 = 

Integrated Gearbox

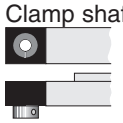
0 =	Without integrated gearbox
1 =	Integrated gearbox, Ratio i = 3 Gearbox on opposite side to carrier
2 =	Integrated gearbox, Ratio i = 5 Gearbox on opposite side to carrier
3 =	Integrated gearbox, Ratio i = 10 Gearbox on opposite side to carrier
4 =	Integrated gearbox, Ratio i = 3 Gearbox on same side as carrier
5 =	Integrated gearbox, Ratio i = 5 Gearbox on same side as carrier
6 =	Integrated gearbox, Ratio i = 10 Gearbox on same side as carrier

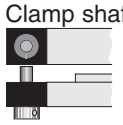
Specify type of motor and model for correct motor flange

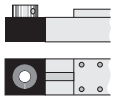
Stroke
Input (five digits) in mm

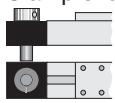
Drive Shaft Options

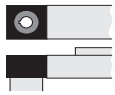
X = No option (Integrated gearbox)

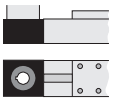
2 = Clamp shaft, Standard

Motor on opposite side to carrier

3 = Clamp shaft + connection shaft

Motor on opposite side to carrier

4 = Clamp shaft, Standard

Motor on the same side as carrier

5 = Clamp shaft + connection shaft

Motor on the same side as carrier

6 = Hollow shaft with keyway (Option)

Motor on opposite side to carrier

7 = Hollow shaft with keyway (Option)

Motor on the same side as carrier

8 = Non-standard drive shaft
Motor on the same side as carrier

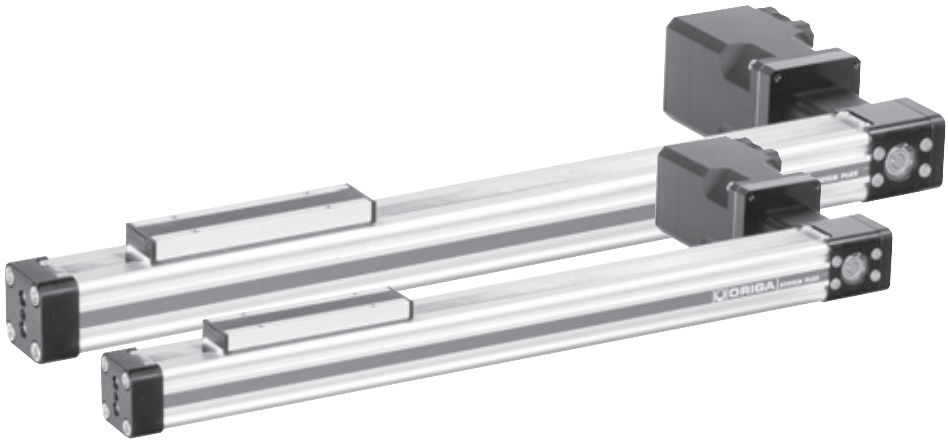
9 = Non-standard drive shaft
Motor on opposite side to carrier

Please contact customer support for specification of drive shaft type, location placing and KB/KS dimension

Accessories - please order separately

Description	Data Sheet No.
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Adaptor Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Coupling Housing (for motor, Clamp Shaft version only)	**1.45.028E-2**
Flange for Planetary Gearbox LP	**1.45.028E-3**
Magnetic Switches	**1.45.101E**
Multi-Axis Connection Systems for linear drives	**1.38.001E**
Stepper Motor and Controller	**A4P019E**
AC-Servo Motor and Controller	**A4P019E**

Linear Actuator with Toothed Belt
Series OSP-E..B



Contents

Description	Data Sheet No.	Page
Overview	1.20.001E	25-28
Technical Data	1.20.002E-1 to 5	29-33
Dimensions	1.20.002E-6	34
Order Instructions	1.20.002E-7	35

HOERBIGER ORIGA

The System Concept

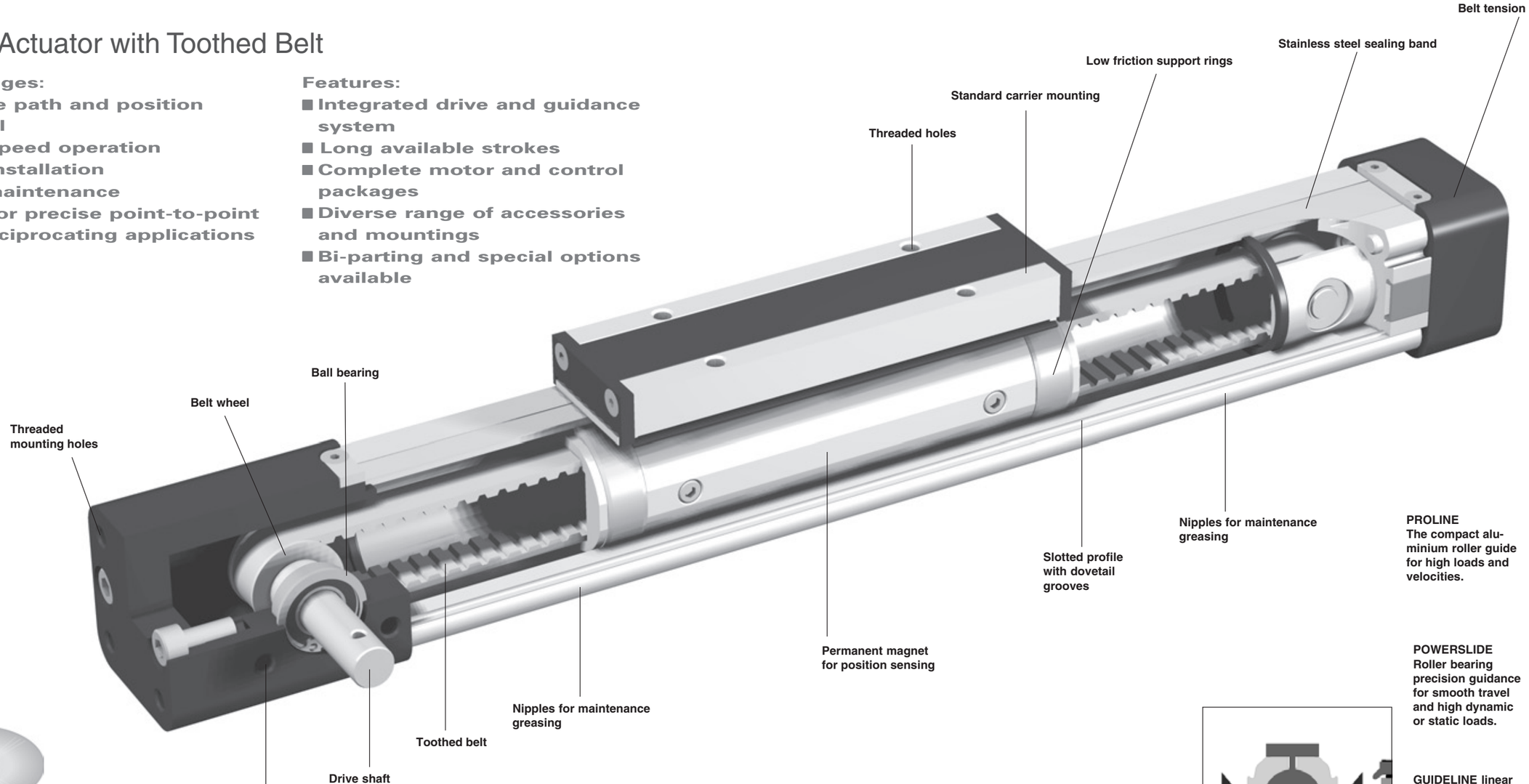
ELECTRIC LINEAR ACTUATOR FOR POINT-TO-POINT APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

Linear Actuator with Toothed Belt

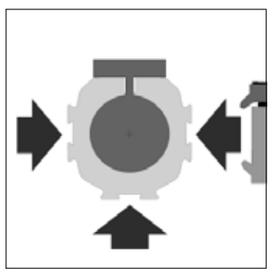
Advantages:
- Precise path and position control
- High speed operation
- Easy installation
- Low maintenance
- Ideal for precise point-to-point and reciprocating applications

Features:
- Integrated drive and guidance system
- Long available strokes
- Complete motor and control packages
- Diverse range of accessories and mountings
- Bi-parting and special options available





Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.

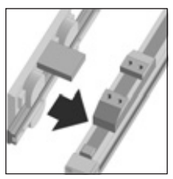


The dovetailed mounting rails of the new linear actuator expand its function into that of a universal system carrier.
Modular system components are simply clamped on.

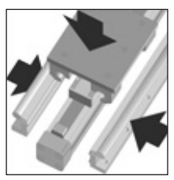
PROLINE
The compact aluminium roller guide for high loads and velocities.



POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



GUIDELINE linear guides for heavy duty applications.



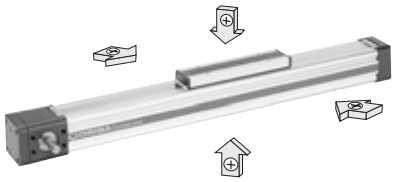
OPTIONS AND ACCESSORIES

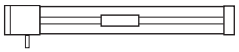
SERIES OSP-E, BELT DRIVEN

STANDARD VERSIONS OSP-E..B

Data sheets 1.20.002E-1, -2

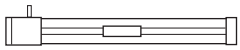
Standard carrier with integral guidance.
Dovetail profile for mounting of accessories and the actuator itself.

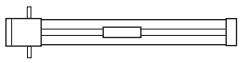




BASIC ACTUATOR OPTIONS

DRIVE SHAFT OPTIONS

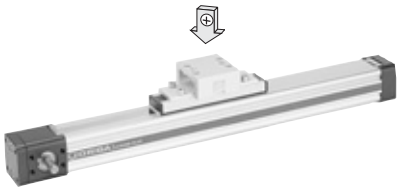




MOUNTINGS FOR OSP-E25 TO E50

CLEVIS MOUNTING

Data sheet 1.45.021E
Carrier mounting for driving loads supported by external linear guides.

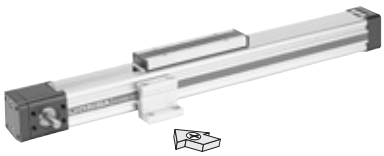


END CAP MOUNTING
Data sheet 1.45.022E
For end-mounting of the actuator



MID-SECTION SUPPORT

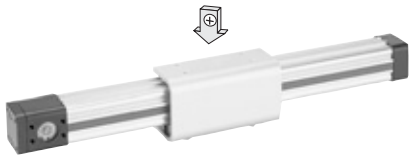
Data sheet 1.45.023E
For supporting long actuators or mounting the actuator on the dovetail grooves.



INVERSION MOUNTING

Data sheet 1.45.025E

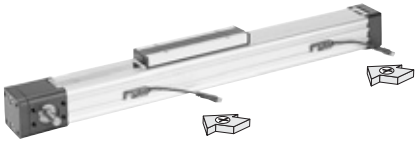
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments.



ACCESSORIES

MAGNETIC SWITCHES
SERIES RS AND ES

Data sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS

Data sheet 1.45.028E



A3P106E00DZ50X

The right to introduce technical modifications is reserved

Linear Actuator with Toothed Belt

Series OSP-E..B
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

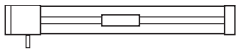
Characteristics				
Characteristics		Symbol	Unit	Description
General Features				
Type				Linear Actuator with Toothed Belt
Series				OSP-E..B
Mounting				See drawings
Ambient Temperature range		ϑ_{min} ϑ_{max}	°C °C	-30 +80
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Toothed belt			Steel-corded polyurethane
	Belt wheels			Aluminium
	Sealing band			Hardened stainless steel
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (mass) kg and Inertia

Series	Weight (mass)[kg]			Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre
OSP-E25	0.9	1.6	0.2	25.3	6.6
OSP-E32	1.9	3.2	0.40	43.3	10
OSP-E50	5.2	6.2	1.0	312.2	45

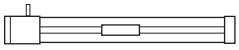
Standard Versions:

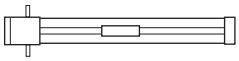
- Standard carrier with integral guidance.
- Dovetail profile for mounting of accessories and the actuator itself.



Special Versions:

- Position of Drive Shafts





Installation Instructions

Use the threaded holes in the end cap for mounting the linear actuator. See if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.20.002E-3
At least one end cap must be secured to prevent axial sliding when mid-section support is used.
When the linear actuator is moving an externally guided load, the clevis mounting should be used (see on data sheet 1.45.021E).

The linear actuators can be fitted with the standard carrier mounting facing in any direction.
To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.
The inversion mounting can be fitted to transfer the driving force to the opposite side (see on data sheet 1.45.025E).

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of the toothed belt and wear parts, after an operation time of 12 months of operation or 3 000 km, depending on the type of application.
Additional greasing is easily done by using nipples in the slotted profile.
Please see separate instructions.

Commissioning

The products in this datasheet should not be operated until the machine/ application in which they are used has passed necessary inspection.



HOERBIGER
ORIGA

For **linear guides** see 1.40.020E to 024E
For **magnetic switches** see 1.45.101E,
For **mountings** and **accessories** see 1.45.020E to 028E

A1P559E00DZ00X
The right to introduce technical modifications is reserved

Sizing Performance Overview Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended for selection :

1. Required acceleration is shown in graphs on data sheet 1.20.002E-4.
2. Required torque is shown on data sheet 1.20.002E-5.
3. Check that maximum values in the adjacent charts are not exceeded.
4. Check max. allowable torque on drive shaft by using table T2. (Pay attention to note under table) If value is lower than required, overview the moving profile or select if possible a bigger unit.
5. Before sizing and specifying the motor, the average torque must be calculated using the cycle time of the application.
6. Check that the maximum allowable unsupported length is not exceeded (see on data sheet 1.20.002E-3).

Combined Loadings

If several forces and moments are applied to the linear actuator simultaneously, then the following equation must be fulfilled in addition to the maximum loadings stated beside.

Performance Overview

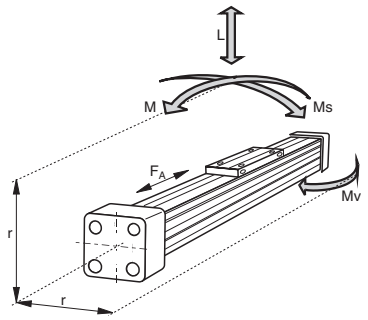
Characteristics		Unit	Description		
Size			**OSP-E25B**	**OSP-E32B**	**OSP-E50B**
Max. speed		[m/s]	2	3	5
Linear motion per revolution, drive shaft		[mm]	60	60	100
Max. rpm. drive shaft		[min^{-1}]	2 000	3 000	3 000
Max. effective	< 1 m/s:	[N]	50	150	425
action force	1- 2 m/s:	[N]	50	120	375
F_A at speed	> 2 m/s:	[N]	–	100	300
No-load torque		[Nm]	0.4	0.5	0.6
Max. acceleration/deceleration		[m/s^2]	10	10	10
Repeatability		[mm/m]	±0.05	±0.05	±0.05
Max. standard stroke length		[mm]	3000	5000	5000

Maximum Allowable Torque on Drive Shaft Speed and Stroke (T2)

OSP-E25B				OSP-E32B				OSP-E50B			
Speed [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke** [m]	Torque [Nm]
1	0.9	1	0.9	1	2.3	1	2.3	1	10.0	1	10.0
2	0.9	2	0.9	2	2.0	2	(2.3)	2	9.5	2	10.0
		3	0.9	3	(1.8)	3	2.3	3	9.0	3	9.0
						4	2.3	4	8.0	4	7.0
						5	1.8	5	7.5	5	6.0

Important:
The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.
Example above: OSP-E32B-stroke 2 m, required speed 3 m/s;
From table T2: speed 3 m/s gives 1.8 Nm and stroke 2 m gives 2.3 Nm.
Max. torque for this application is 1.8 Nm.

Maximum Allowable Static Loadings

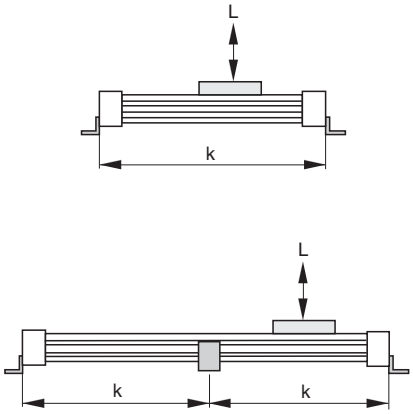


M = F · r.
Bending moments are calculated from the centre of the linear actuator

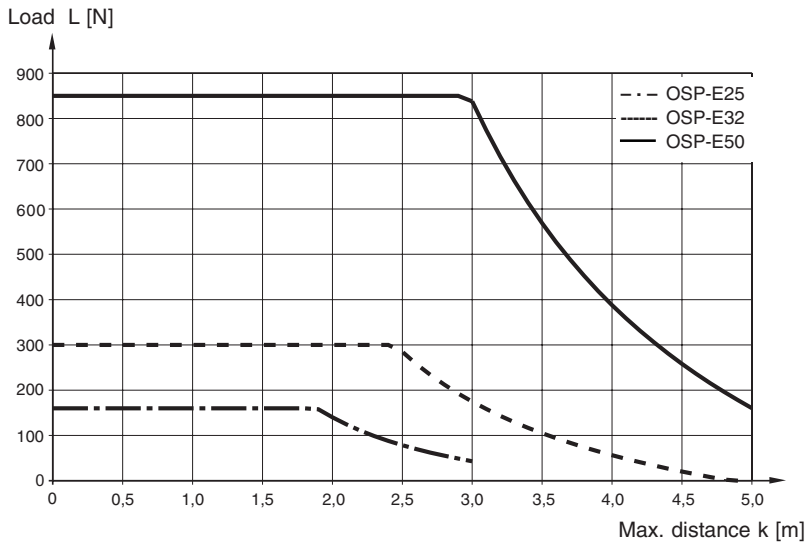
Size	Max. applied load L [N]	Max. moments [Nm] M	M_s	M_v
OSP-E25B	160	12	2	8
OSP-E32B	300	25	8	16
OSP-E50B	850	80	16	32

$$\frac{L}{L\,(max)} + \frac{M}{M\,(max)} + \frac{M_s}{M_s\,(max)} + \frac{M_v}{M_v\,(max)} \leq 1$$

Maximum Allowable Unsupported Length – Placing of Mid-Section Support



k = Maximum allowable distance between mountings/mid-section support for a given load (L)



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

Maximum Allowable Unsupported Length

Stroke Length

Stroke Lengths

The stroke lengths of the linear actuators are available in multiples of 1 mm up to 5 m.
(OSP-E25: max. 3 m)

Other stroke lengths are available on request.

The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

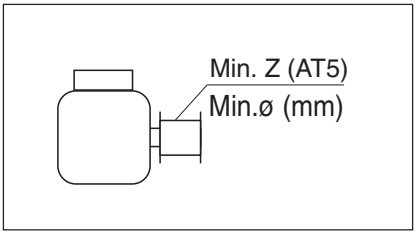
When mechanical stops are required, external shock absorbers should be used (see separate catalogue).
Align the centre line of the shock absorber as closely as possible with the object's centre of gravity.

Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupler or belt wheel, a steadying block should be used.

Belt wheels

Minimum allowable number of teeth Z (AT5) at maximum applied torque.



Size	Min. Z	Min. ø
OSP-E25B	24	38
OSP-E32B	24	38
OSP-E50B	36	57

Required Acceleration

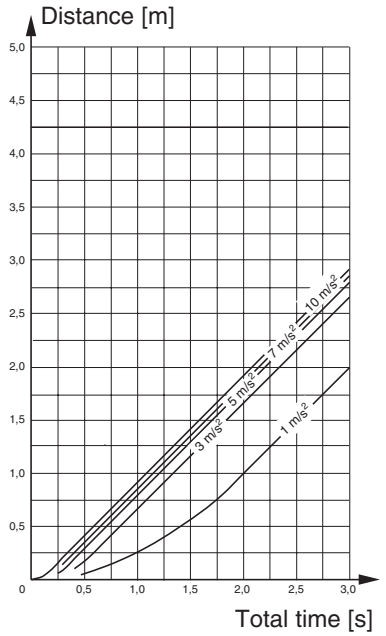
Distance-Time Graph

Using the required travel distance and total time, the adjacent graphs show the required acceleration based on maximum speed.

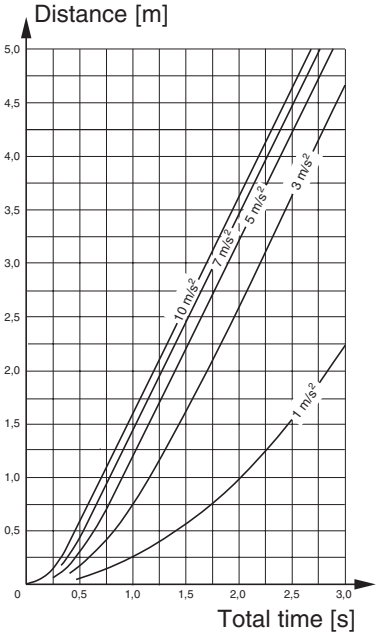
The graphs assume that acceleration and deceleration are equal.

Please note that specifying non-essential high acceleration or short cycle time will result in an oversized motor.

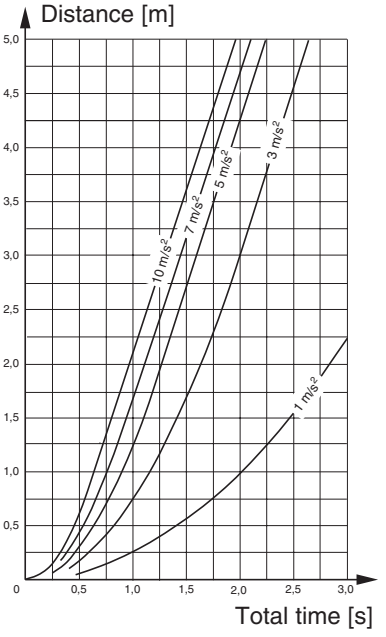
Max. speed 1 m/s



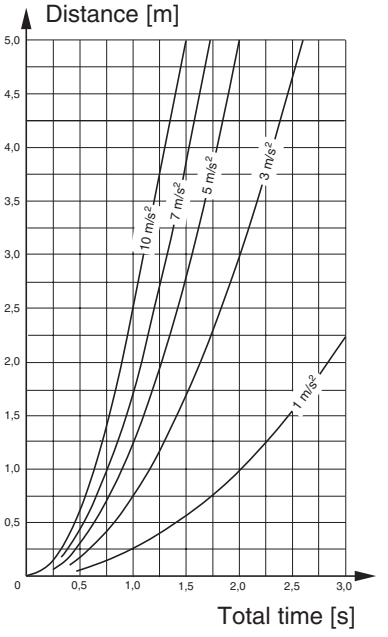
Max. speed 2 m/s



Max. speed 3 m/s



Max. speed 5 m/s

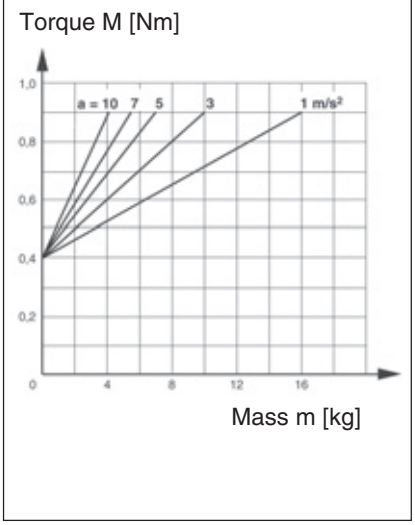


Required Torque

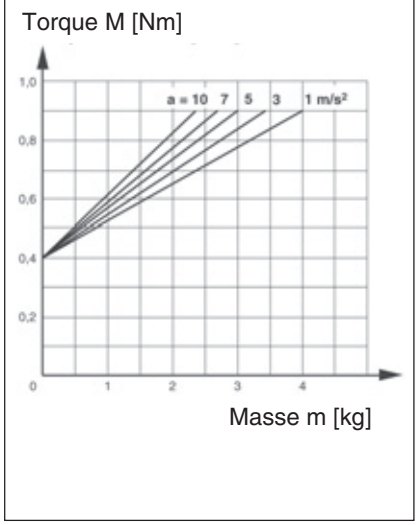
Using the known mass, the direction of the application and the required acceleration from the distance-time graphs, the linear actuator can be sized and the required torque is shown in the adjacent graphs.
Mass in graphs = Load + moving mass of the linear actuator (according to the weight chart on data sheet 1.20.002E-1).

Please note:
When using an additional guide, please add the mass of the carriage to the total moving mass.

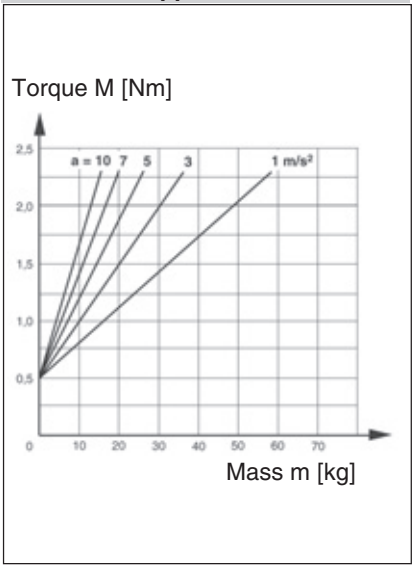
Size OSP-E25, Horizontal Application



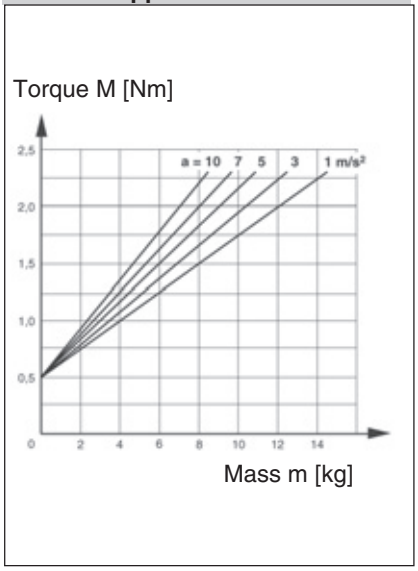
Size OSP-E25, Vertical Application



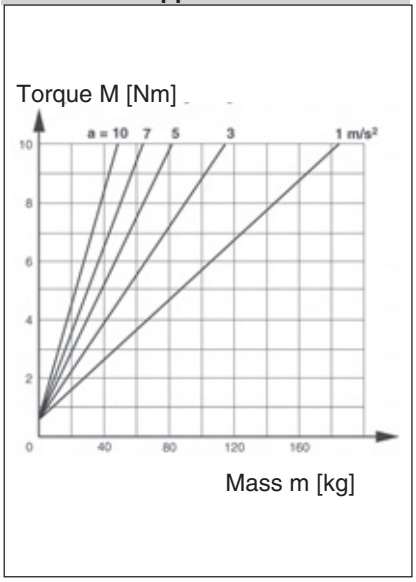
Size OSP-E32, Horizontal Application



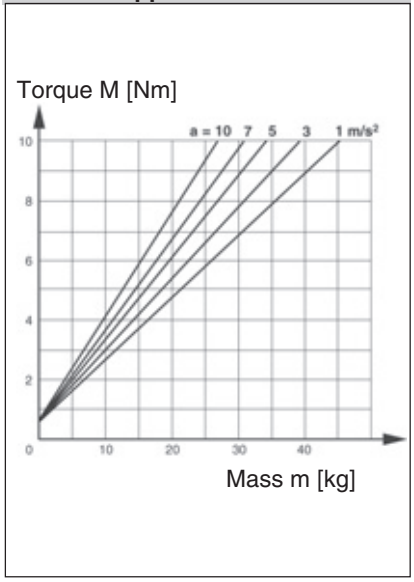
Size OSP-E32, Vertical Application



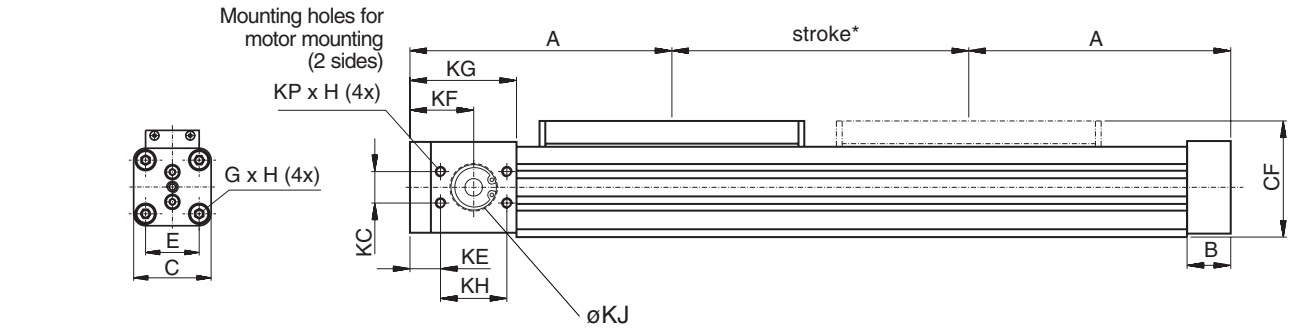
Size OSP-E50, Horizontal Application

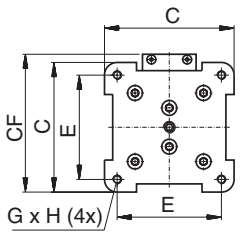


Size OSP-E50, Vertical Application

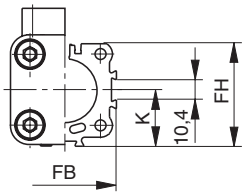


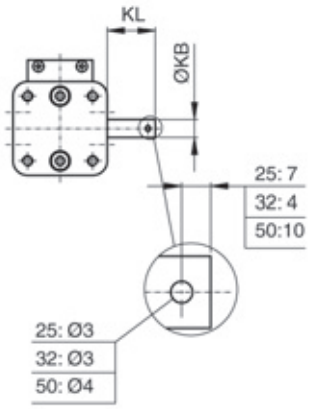
Belt Driven Linear Actuator - Basic Unit
Series OSP-E25B, -E32B, -E50B





End Cap Size OSP-E50



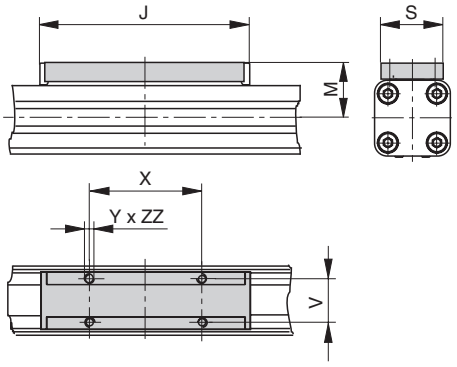


(For options on drive shaft, see ordering information on data sheet 1.20.002E-7)

*** The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft. The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For advise, please contact your local HOERBIGER-ORIGA technical support department.**

When mechanical stops are required, external shock absorbers should be used (see separate catalogue). Align the centre line of the shock absorber as closely as possible with the object's centre of gravity.

Standard Carrier Mounting
Series OSP-E25B, -E32B, -E50B



Dimension Table (mm)

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KC	KE	KF	KG	KH	KJ	KL	KP	ZZ
OSP-E25B	125	22	41	27	M5	10	117	21.5	31	33	25	65	M5	52.5	40	39.5	10_{j6}	15	22	37	57	30	19^{H7}	24	M5	8
OSP-E32B	150	25	52	36	M6	12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10_{j6}	18	17.5	36.5	61	38	26^{H7}	26	M6	10
OSP-E50B	200	25	87	70	M6	12	200	43	49	36	27	110	M6	92.5	76	77	16_{h8}	32	23.5	48.5	85	50	40^{H7}	34	M8	10

Order Instructions – Basic Electric Linear Actuator Series OSP-E..B

Electric Linear Actuator

	OSP-E	25 – 0	0	0	0	0 – 00500	

Size

25 = Size 25
32 = Size 32
50 = Size 50

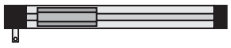
Actuator

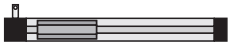
0 = Belt-driven (B)

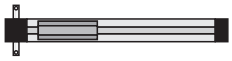
Carrier Mounting

0 = Standard
1 = Tandem
(Option, please contact customer support)

Drive Shaft Options

0 =  (Standard)

1 = 

2 = 

Stroke

Input (five digits) in mm

Open Option

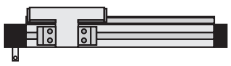
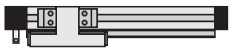
0 = Not defined

Gearbox

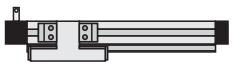
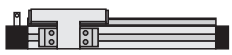
0 = Without gearbox

If combined with a linear guide, please also state position of linear guide

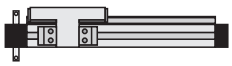
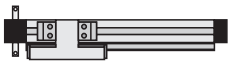
Position of Drive Shaft
Standard = 0

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Position of Drive Shaft
Opposite to Standard = 1

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

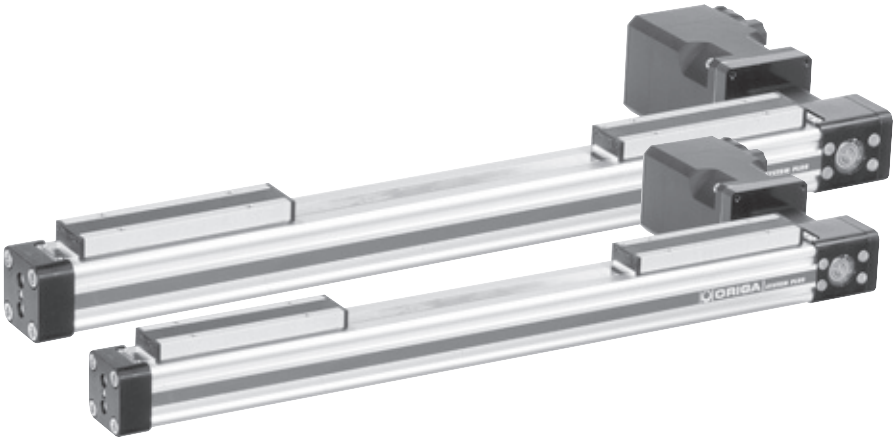
Position of Drive Shaft
Both Sides = 2

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Accessories - please order separately

Description	Data Sheet No.
Clevis Mounting	**1.45.021E**
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Inversion Mounting	**1.45.025E**
Adaptor Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Coupling Housing (for motor)	**1.45.028E**
Magnetic Switches	**1.45.101E**
Stepper Motor and Controller	**A4P019E**
AC-Servo Motor and Controller	**A4P019E**

Linear Actuator with Toothed Belt and Bi-Parting Carriers Series OSP-E..BP



Contents

Description	Data Sheet No.	Page
Overview	1.25.001E	37-40
Technical Data	1.25.002E-1 to 5	41-45
Dimensions	1.25.002E-6	46
Order Instructions	1.25.002E-7	47

HOERBIGER ORIGA

The System Concept

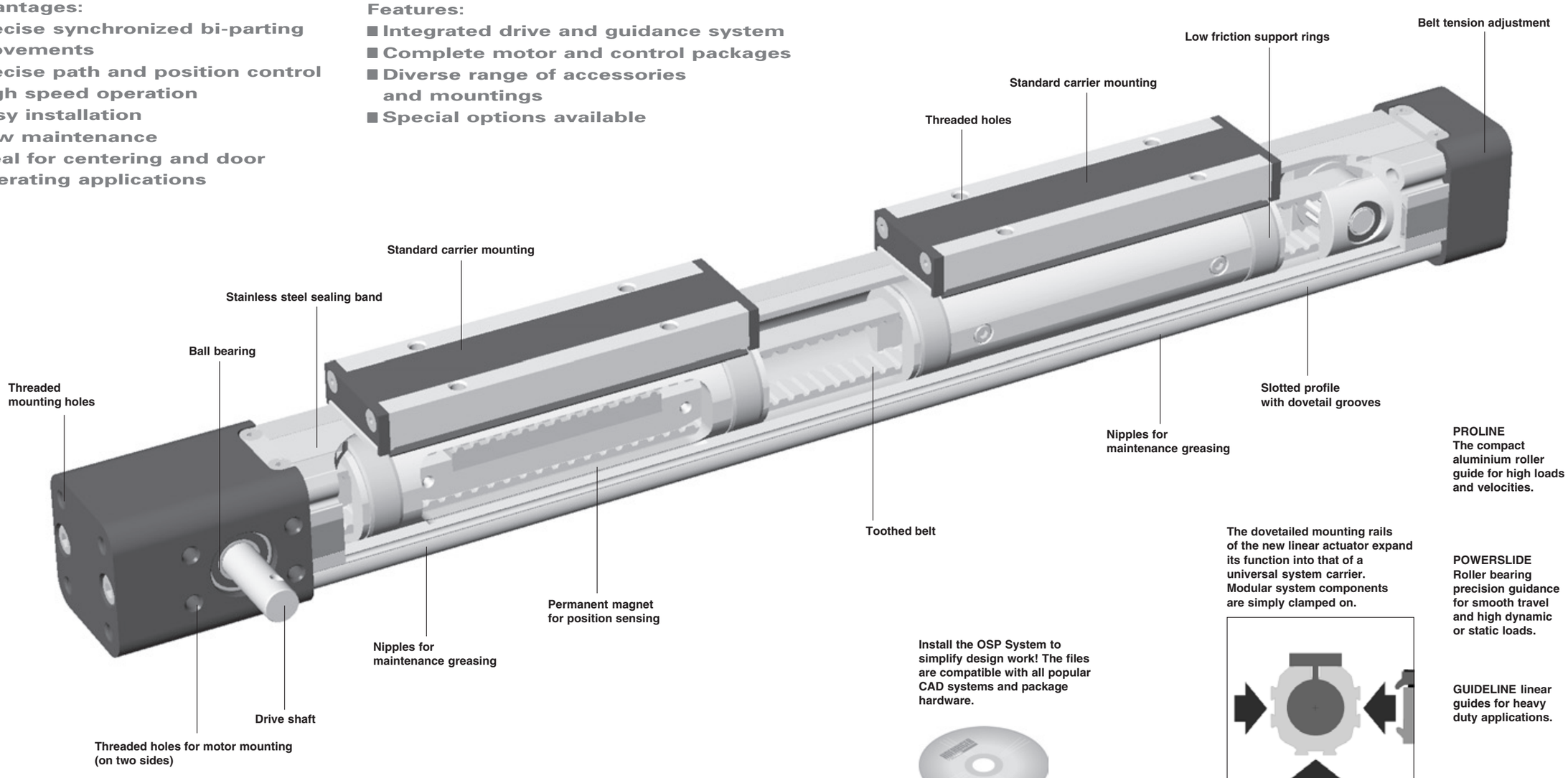
ELECTRIC LINEAR ACTUATOR FOR SYNCHRONIZED BI-PARTING APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

Linear Actuator with Toothed Belt and Bi-Parting Carriers

Advantages:
- Precise synchronized bi-parting movements
- Precise path and position control
- High speed operation
- Easy installation
- Low maintenance
- Ideal for centering and door operating applications

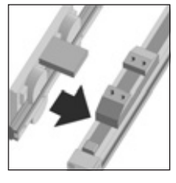
Features:
- Integrated drive and guidance system
- Complete motor and control packages
- Diverse range of accessories and mountings
- Special options available



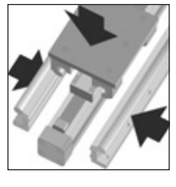
PROLINE
The compact aluminium roller guide for high loads and velocities.



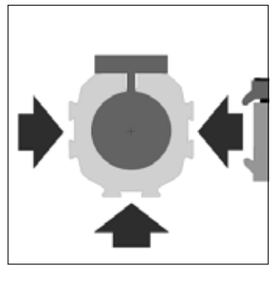
POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



GUIDELINE linear guides for heavy duty applications.



The dovetailed mounting rails of the new linear actuator expand its function into that of a universal system carrier. Modular system components are simply clamped on.



Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.



Data Sheet No. 1.25.001E-2

Data Sheet No. 1.25.001E-3

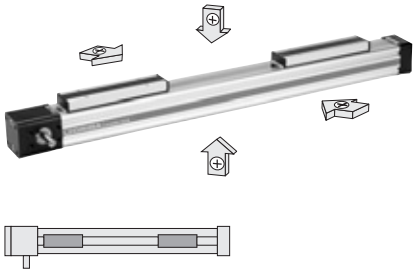
OPTIONS AND ACCESSORIES

SERIES OSP-E, BI-PARTING BELT DRIVEN

STANDARD VERSIONS OSP-E..BP

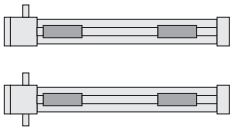
Data sheets 1.25.002E-1, -2

Standard carrier with integral guidance.
Dovetail profile for mounting of accessories and the actuator itself.



BASIC ACTUATOR OPTIONS

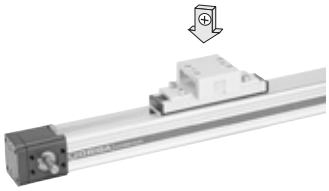
DRIVE SHAFT OPTIONS



MOUNTINGS FOR OSP-E25 TO E50

CLEVIS MOUNTING

Data sheet 1.45.021E
Carrier mounting for driving loads supported by external linear guides.



END CAP MOUNTING
Data sheet 1.45.022E
For end-mounting of the actuator



MID-SECTION SUPPORT

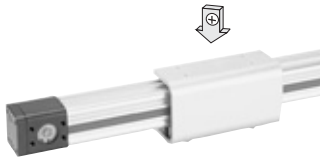
Data sheet 1.45.023E
For supporting long actuators or mounting the actuator on the dovetail grooves.



INVERSION MOUNTING

Data sheet 1.45.025E

The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments..



ACCESSORIES

MAGNETIC SWITCHES
SERIES RS AND ES

Data sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS

Data sheet 1.45.028E



A3P153E00IZ50X

Technische Änderungen vorbehalten

Linear Actuator with Toothed Belt and Bi-Parting Carriers

Series OSP-E..BP
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Characteristics

Characteristics		Symbol	Unit	Description
General Features				
Type				Bi-Parting Belt-Driven for synchronized bi-parting movements
Series				OSP-E..BP
Mounting				See drawings
Ambient Temperature range		ϑ_{min} ϑ_{max}	°C °C	-30 +80
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Toothed belt			Steel-corded polyurethane
	Belt wheels			Aluminium
	Sealing band			Hardened stainless steel
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (mass) kg and Inertia

Series	Weight (mass)[kg]			Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre
OSP-E25BP	1.2	1.6	0.5	48	6.6
OSP-E32BP	2.3	3.2	0.8	83	10
OSP-E50BP	6.3	6.2	2.1	585	45

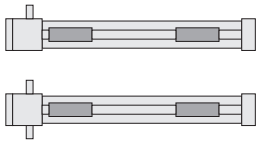
Standard Versions:

- Standard carrier with integral guidance.
- Dovetail profile for mounting of accessories and the actuator itself.



Special Versions:

- Position of Drive Shafts



Installation Instructions

Use the threaded holes in the end cap for mounting the linear actuator. See if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.25.002-E-3
At least one end cap must be secured to prevent axial sliding when mid-section support is used.
When the linear actuator is moving an externally guided load, the clevis mounting should be used (see on data sheet 1.45.021E).

The linear actuators can be fitted with the standard carrier mounting facing in any direction.
To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.
The inversion mounting can be fitted to transfer the driving force to the opposite side (see on data sheet 1.45.025E).

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of the toothed belt and wear parts, after an operation time of 12 months of operation or 3 000 km, depending on the type of application.
Additional greasing is easily done by using nipples in the slotted profile. Please see separate instructions.

Commissioning

The products in this datasheet should not be operated until the machine/ application in which they are used has passed necessary inspection.



HOERBIGER
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For **linear guides** see 1.40.020E to 024E
For **magnetic switches** see 1.45.101E,
For **mountings** and **accessories** see 1.45.020E to 028E

A1P638E00IZ00X
The right to introduce technical modifications is reserved

Sizing Performance Overview Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended for selection:

1. Required acceleration is shown in graphs on data sheet 1.25.002E-4.
2. Required torque is shown on data sheet 1.25.002E-5.
3. Check that maximum values in the adjacent charts are not exceeded.
4. Check max. allowable torque on drive shaft by using table T2. (Pay attention to note under table) If value is lower than required, overview the moving profile or select if possible a bigger unit.
5. Before sizing and specifying the motor, the average torque must be calculated using the cycle time of the application.
6. Check that the maximum allowable unsupported length is not exceeded (see on data sheet 1.25.002E-3).

Performance Overview

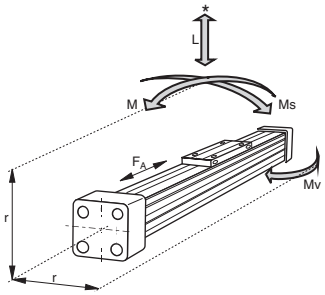
Characteristics		Unit	Description		
Size			**OSP-E25BP**	**OSP-E32BP**	**OSP-E50BP**
Max. speed		[m/s]	2	3	5
Linear motion per revolution, drive shaft		[mm]	60	60	100
Max. rpm, drive shaft		[min^{-1}]	2 000	3 000	3 000
Max. effective	< 1 m/s:	[N]	50	150	425
action force	1- 2 m/s:	[N]	50	120	375
F_A at speed	> 2 m/s:	[N]	–	100	300
No-load torque		[Nm]	0.4	0.5	0.6
Max. acceleration/deceleration		[m/s^2]	10	10	10
Repeatability		[mm/m]	±0.05	±0.05	±0.05
Max. standard stroke length		[mm]	2 x 1500	2 x 2500	2 x 2500

Maximum Allowable Torque on Drive Shaft Speed and Stroke* (T2)

OSP-E25BP				OSP-E32BP				OSP-E50BP			
Speed [m/s]	Torque [Nm]	**Stroke*** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke*** [m]	Torque [Nm]	**Speed** [m/s]	Torque [Nm]	**Stroke*** [m]	Torque [Nm]
1	0.9	1	0.9	1	2.3	1	2.3	1	10.0	1	10.0
2	0.9	2	0.9	2	2.0	2	(2.3)	2	9.5	2	10.0
		3	0.9	3	(1.8)	3	2.3	3	9.0	3	9.0
						4	2.3	4	8.0	4	7.0
						5	1.8	5	7.5	5	6.0

Important:
The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.
Example above: OSP-E32B-stroke 2 m, required speed 3 m/s;
From table T2: speed 3 m/s gives 1.8 Nm and stroke 2 m gives 2.3 Nm.
Max. torque for this application is 1.8 Nm.
* The stroke is the ordering stroke, see data sheet 1.25.002E-6.

Maximum Allowable Static Loadings



M = F · r.
Bending moments are calculated from the centre of the linear actuator

Size	*Max. applied load L [N]	Max. moments [Nm] M*	M_s	M_v
OSP-E25BP	160	12	2	8
OSP-E32BP	300	25	8	16
OSP-E50BP	850	80	16	32

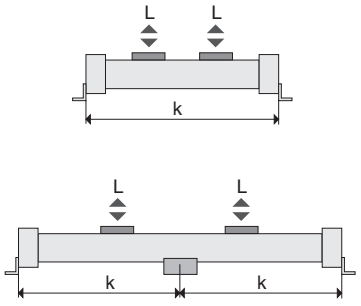
*The max. load and the max. moments is the total values of both carriers.

Combined Loadings

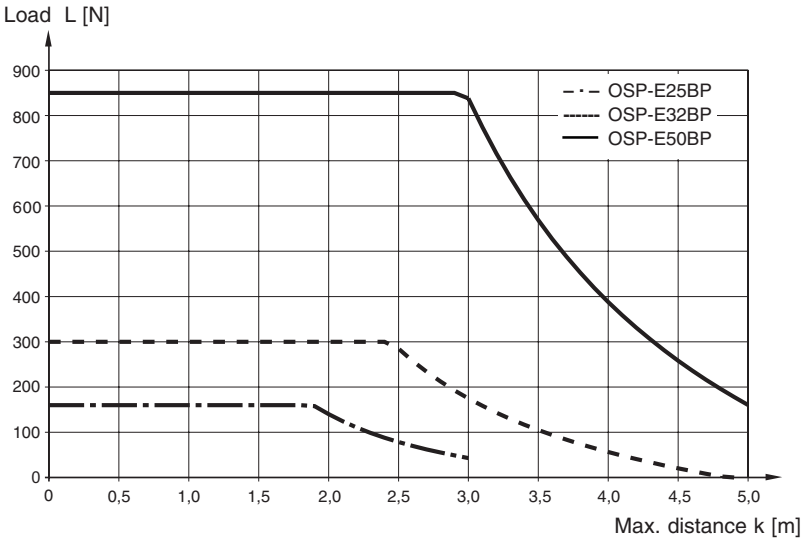
If several forces and moments are applied to the linear actuator simultaneously, then the following equation must be fulfilled in addition to the maximum loadings stated beside.

$$\frac{L}{L\,(max)} + \frac{M}{M\,(max)} + \frac{M_s}{M_s\,(max)} + \frac{M_v}{M_v\,(max)} \leq 1$$

Maximum Allowable Unsupported Length – Placing of Mid-Section Support



k = maximum allowable distance between end cap mounting and mid-section support for a given loading L.
The maximum force L must be distributed equally on the two carriers.



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

Maximum Allowable Unsupported Length

Stroke Length

Stroke Lengths

The stroke lengths of linear actuators are available in multiples of 1 mm up max. 2 x 2500 mm
(OSP-E25BP: max. 2 x 1500 mm).

Other stroke lengths are available on request.

The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

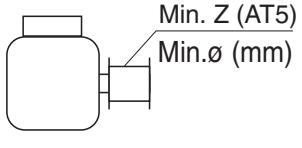
When mechanical stops are required, external shock absorbers should be used (see separate catalogue).
Align the centre line of the shock absorber as closely as possible with the object's centre of gravity.

Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupler or belt wheel, a steadying block should be used.

Belt wheels

Minimum allowable number of teeth Z (AT5) at maximum applied torque.



Size	Min. Z	Min. ø
OSP-E25BP	24	38
OSP-E32BP	24	38
OSP-E50BP	36	57

Required Acceleration

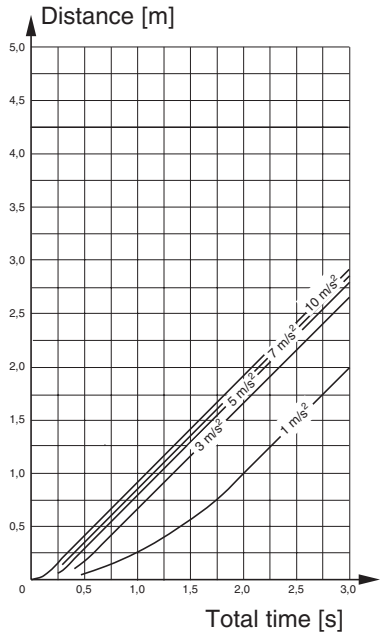
Distance-Time Graph

Using the required travel distance and total time, the adjacent graphs show the required acceleration based on maximum speed.

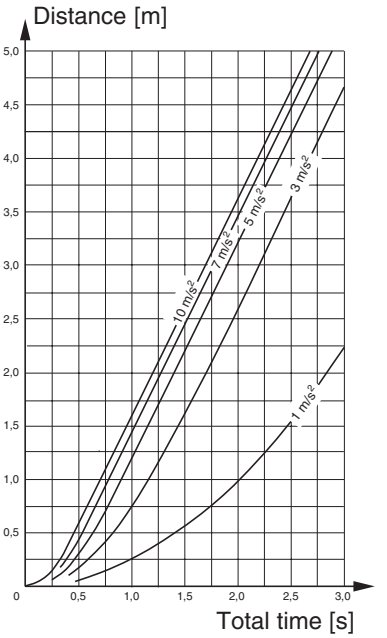
The graphs assume that acceleration and deceleration are equal.

Please note that specifying non-essential high acceleration or short cycle time will result in an oversized motor.

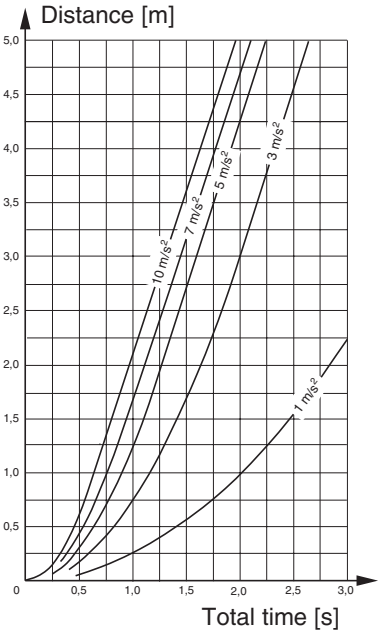
Max. speed 1 m/s



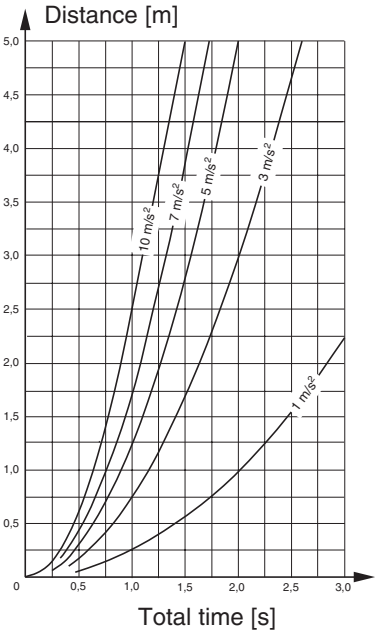
Max. speed 2 m/s



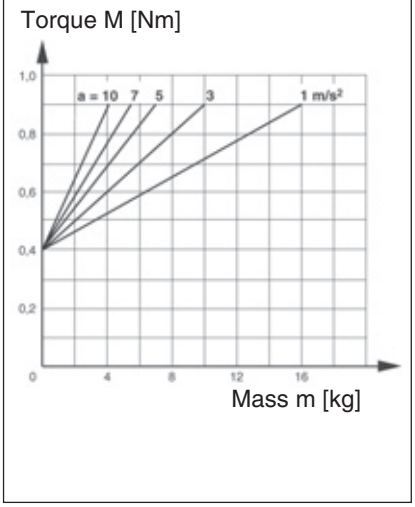
Max. speed 3 m/s



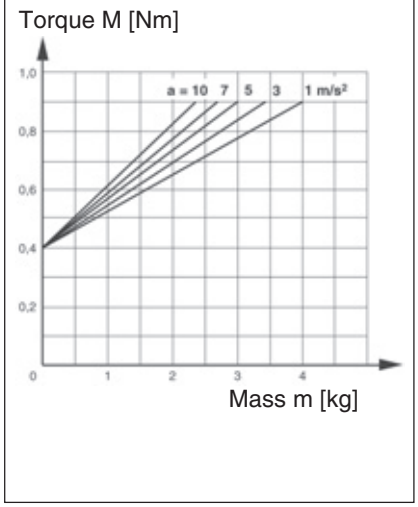
Max. speed 5 m/s



Size OSP-E25, Horizontal Application



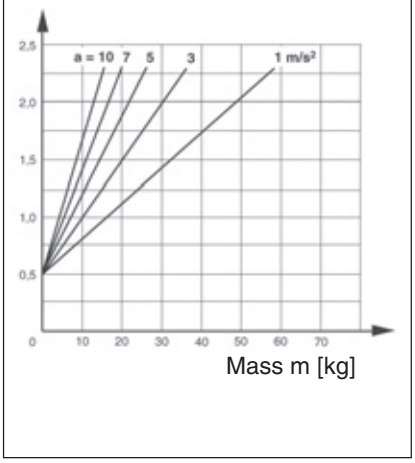
Size OSP-E25, Vertical Application



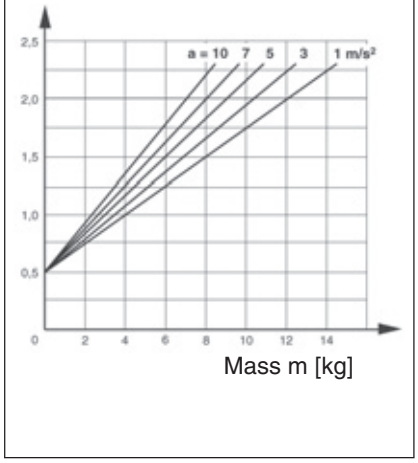
Required Torque

Using the known mass, the direction of the application and the required acceleration from the distance-time graphs, the linear actuator can be sized and the required torque is shown in the adjacent graphs.
Mass in graphs = Load + moving mass of the linear actuator (according to the weight chart on data sheet 1.25.002E-1).

Size OSP-E32, Horizontal Application

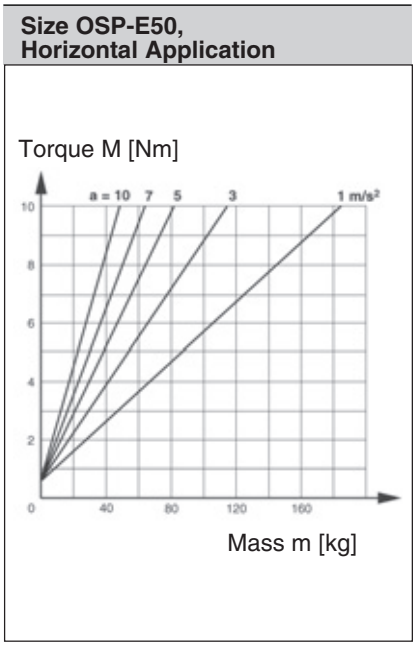


Size OSP-E32, Vertical Application

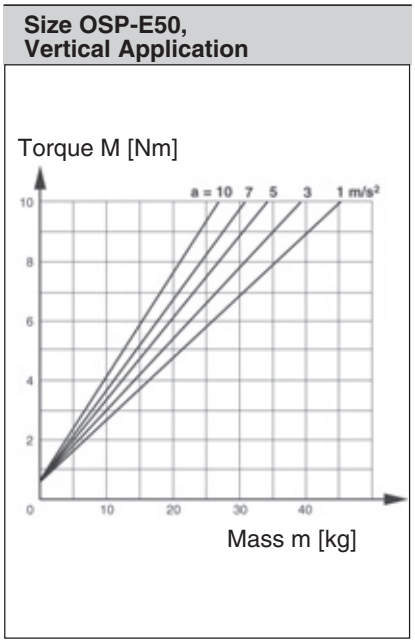


Please note:
When using an additional guide, please add the mass of the carriage to the total moving mass.

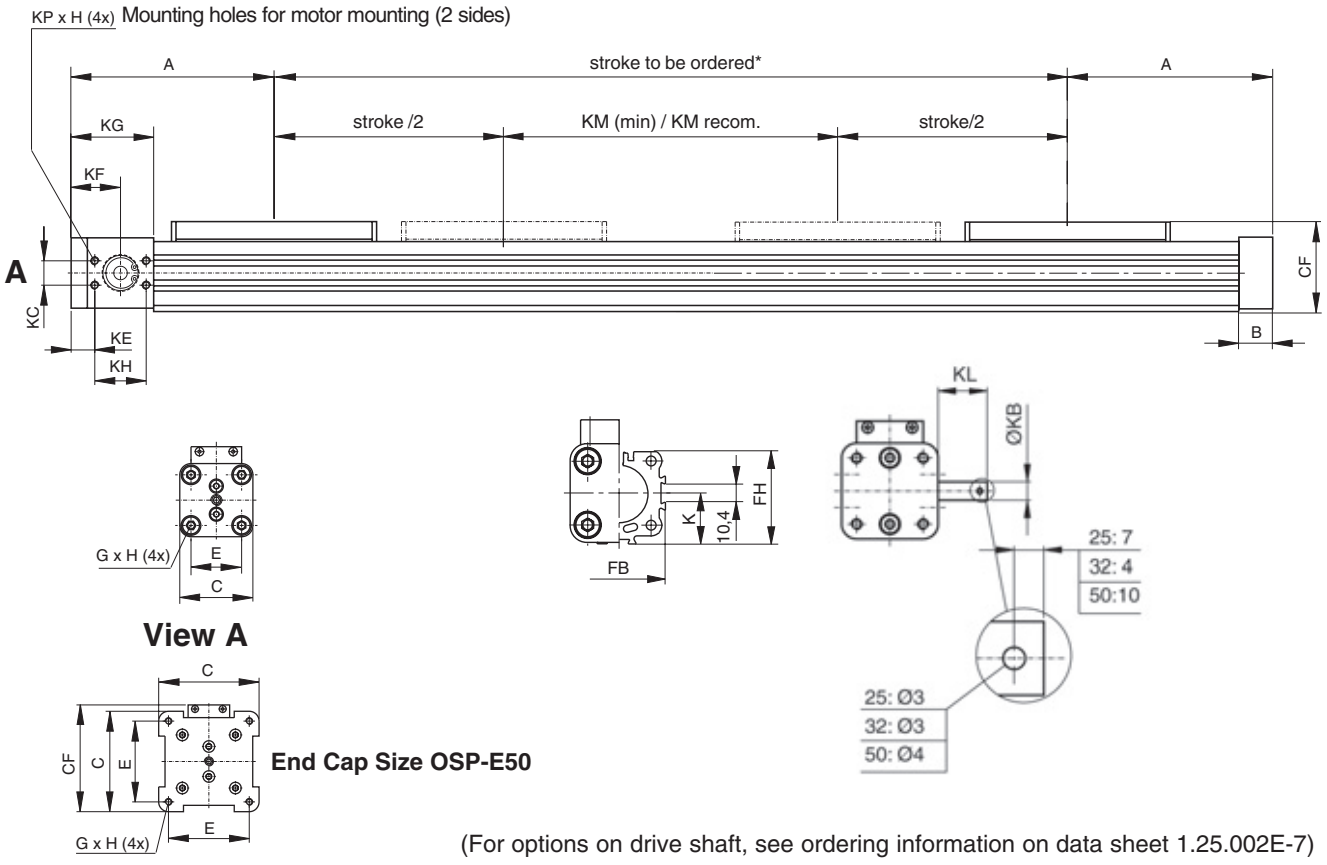
Size OSP-E50, Horizontal Application



Size OSP-E50, Vertical Application



Belt Driven Linear Actuator - Basic Unit
Series OSP-E25BP, -E32BP, -E50BP



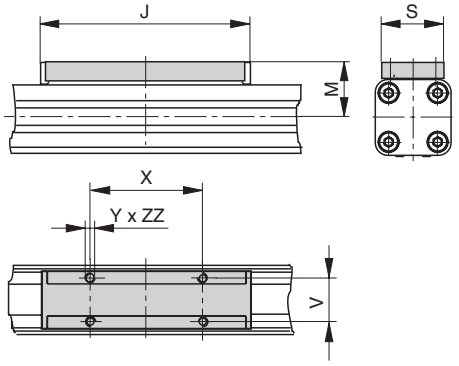
(For options on drive shaft, see ordering information on data sheet 1.25.002E-7)

*** The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft. The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For advise, please contact your local HOERBIGER-ORIGA technical support department.**

Dimension KM (mm)

Size	KM_{min}	$KM_{rec.}$
25	130	190
32	170	230
50	220	320

Standard Carrier Mounting
Series OSP-E25, -E32, -E50



Dimension Table (mm)

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KC	KE	KF	KG	KH	KJ	KL	KM_{min}	KP	ZZ
OSP-E25BP	125	22	41	27	M5	10	117	21.5	31	33	25	65	M5	52.5	40	39.5	10_{j6}	15	22	37	57	30	19^{H7}	24	130	M5	8
OSP-E32BP	150	25	52	36	M6	12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10_{j6}	18	17.5	36.5	61	38	26^{H7}	26	170	M6	10
OSP-E50BP	200	25	87	70	M6	12	200	43	49	36	27	110	M6	92.5	76	77	16_{h8}	32	23.5	48.5	85	50	40^{H7}	34	220	M8	10

Order Instructions – Basic Electric Linear Actuator Series OSP-E..BP

Electric Linear Actuator

OSP-E	25 – 0	0	0	0	2 – 00500

Size

25 = Size 25
32 = Size 32
50 = Size 50

Stroke

Input (five digits) in mm

Actuator

0 = Belt-driven

Option

2 = Bi-parting (BP)

Carrier Mounting

0 = Standard
1 = Tandem
(Option, please contact customer support)

Gearbox

0 = Without gearbox

Drive Shaft Options

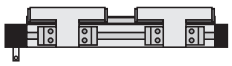
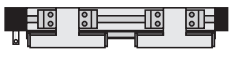
0 =  (Standard)

1 = 

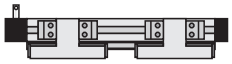
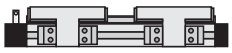
2 = 

If combined with a linear guide, please also state position of linear guide

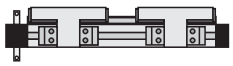
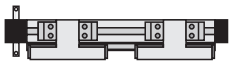
Position of Drive Shaft
Standard = 0

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Position of Drive Shaft
Opposite to Standard = 1

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

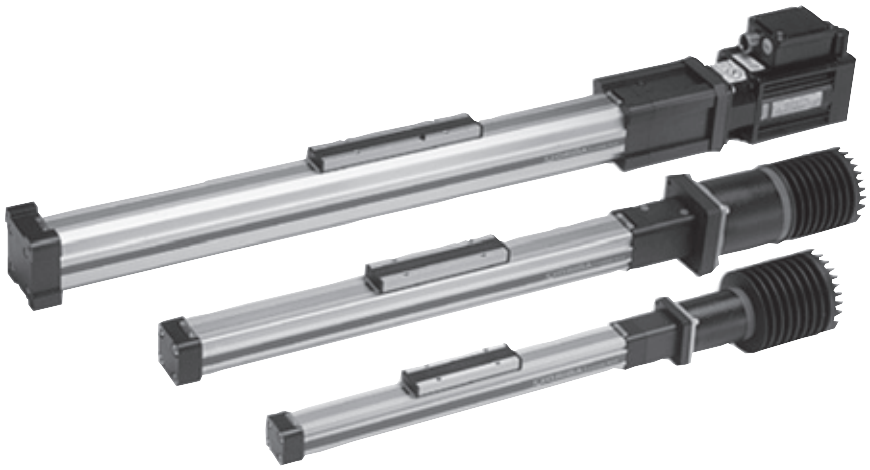
Position of Drive Shaft
Both Sides = 2

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Accessories - please order separately

Description	Data Sheet No.
Clevis Mounting	**1.45.021E**
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Inversion Mounting	**1.45.025E**
Adaptor Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Coupling Housing (for motor)	**1.45.028E**
Magnetic Switches	**1.45.101E**
Stepper Motor and Controller	**A4P019E**
Servo Motor and Controller	**A4P019E**

Linear Actuator with Ball Screw
Series OSP-E..S



Contents

Description	Data Sheet No.	Page
Overview	1.30.001E	49-52
Technical Data	1.30.002E-1 to 5	53-57
Dimensions	1.30.002E-6	58
Order Instructions	1.30.002E-7	59

HOERBIGER ORIGA

The
System Concept

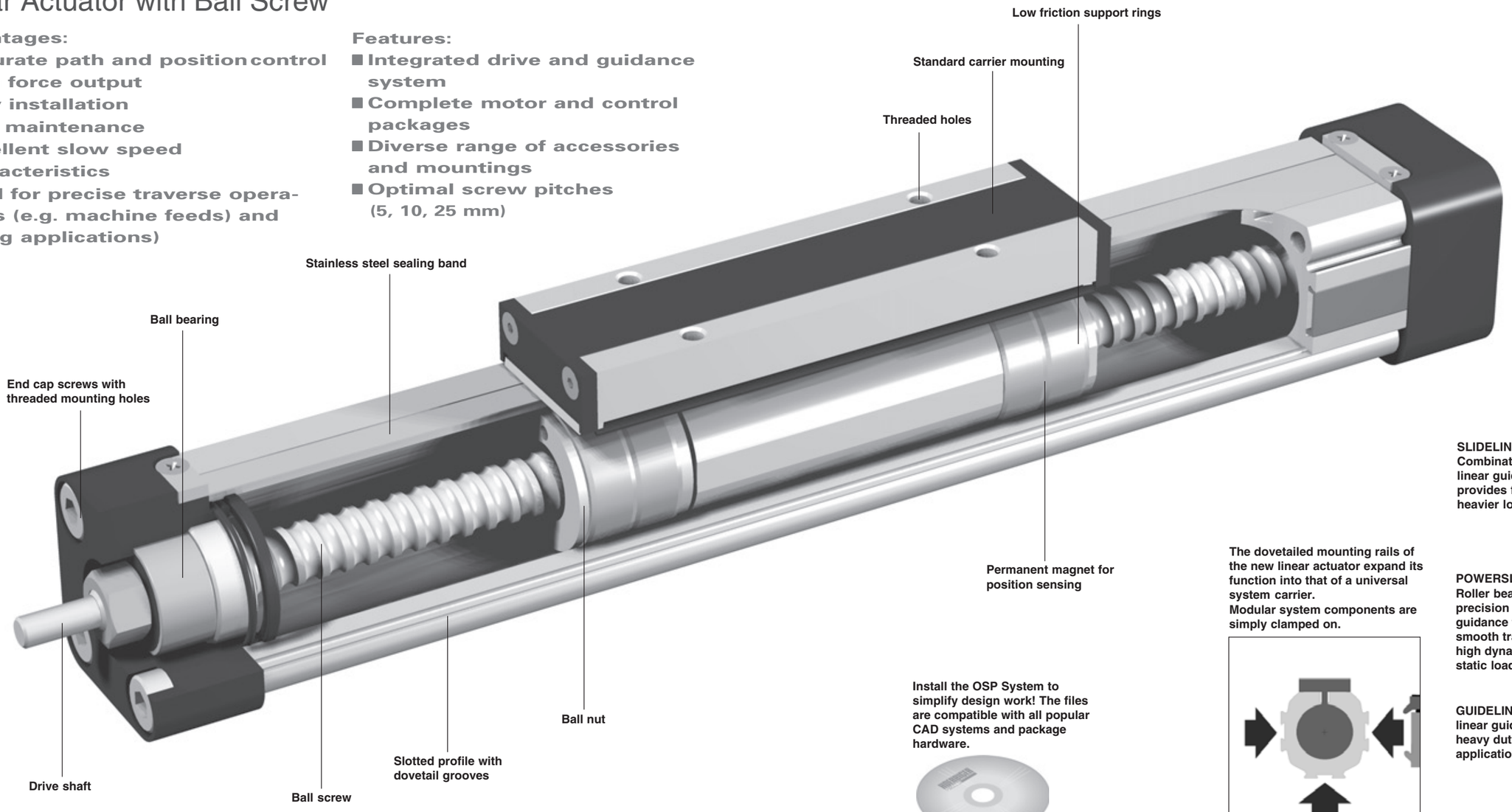
ELECTRIC LINEAR ACTUATOR
FOR HIGH ACCURACY APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

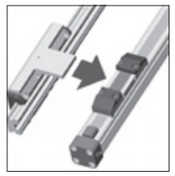
Linear Actuator with Ball Screw

Advantages:
- Accurate path and position control
- High force output
- Easy installation
- Low maintenance
- Excellent slow speed characteristics
- Ideal for precise traverse operations (e.g. machine feeds) and lifting applications)

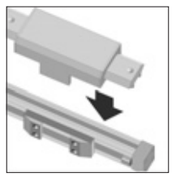
Features:
- Integrated drive and guidance system
- Complete motor and control packages
- Diverse range of accessories and mountings
- Optimal screw pitches (5, 10, 25 mm)



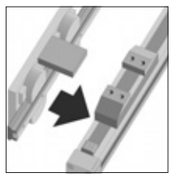
PROLINE
The compact aluminium roller guide for high loads and velocities.



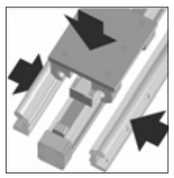
SLIDELINE
Combination with linear guides provides for heavier loads.



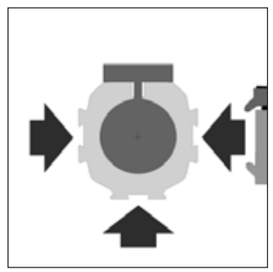
POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



GUIDELINE
linear guides for heavy duty applications



The dovetailed mounting rails of the new linear actuator expand its function into that of a universal system carrier.
Modular system components are simply clamped on.



Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.



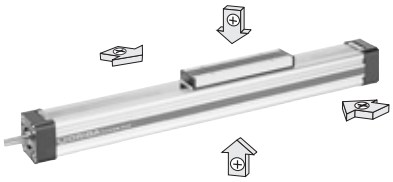
OPTIONS AND ACCESSORIES

SERIES OSP-E, SCREW-DRIVEN

STANDARD VERSIONS OSP-E..S

Data Sheet 1.30.002E

Standard carrier with integral guidance. Dovetail profile for mounting of accessories and the actuator itself.



BASIC ACTUATOR OPTIONS

BALL SCREW PITCH

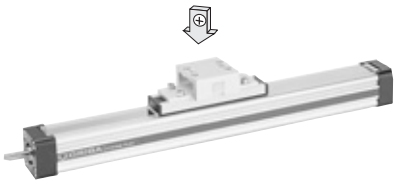
The ball screws are available in various pitches. OSP-E25 in 5 mm, OSP-E32 in 5 or 10 mm and OSP-E50 in 5, 10, 25 mm pitch.

MOUNTINGS FOR OSP-E25 TO E50

CLEVIS MOUNTING

Data Sheet 1.45.021E

Carrier mounting for driving loads supported by external linear guides.



END CAP MOUNTING
Data Sheet 1.45.022E

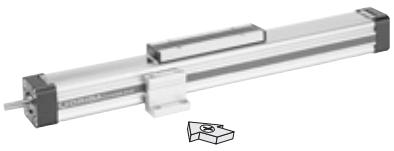
For end-mounting of the actuator



MID-SECTION SUPPORT

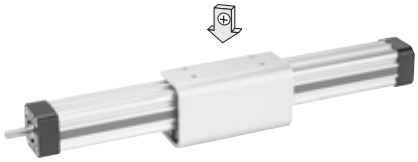
Data Sheet 1.45.023E

For supporting long actuators or mounting the actuator on the dovetail grooves.



INVERSION MOUNTING

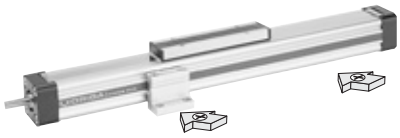
Data Sheet 1.45.025E
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments.



ACCESSORIES

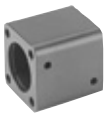
MAGNETIC SWITCHES
SERIES RS AND ES

Data Sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS

Data Sheet 1.45.029E



A3P107E00DZ00X

TThe right to introduce technical modifications is reserved

Linear Actuator with Ball Screw

Series OSP-E..S

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Characteristics				
Characteristics		Symbol	Unit	Description
General Features				
Type				Linear Actuator with Ball Screw
Series				OSP-E..S
Mounting				See drawings
Operating temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Ball screw			Hardened steel
	Ball nut			Hardened steel
	Sealing band			Hardened stainless steel
	Guide bearings			Low friction plastic
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Standard Version:

- Standard carrier with own internal guidance
- Dovetail grooves for mounting accessories and the drive itself
- Travel per rotation of threaded spindle:
  Type OSP-E25 : 5 mm
  Type OSP-E32: 5 ,10 mm
  Type OSP-E50: 5 ,10, 25 mm

Weight (mass) kg and Inertia

Series	Weight (mass)[kg]			Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre
OSP-E25S	0.8	2.3	0.2	2.2	11.3
OSP-E32S	2.0	4.4	0.4	8.4	32
OSP-E50S	5.2	9.4	1.2	84	225

Installation Instructions

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear actuator.
See if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.30.002E-3. At least one end cap must be secured to prevent axial sliding when mid-section support is used (see data sheet 1.45.023E).
When the linear actuator is moving an externally guided load, the clevis mounting should be used.
The linear actuators can be fitted with the standard carrier mounting facing in any direction.
To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.
The inversion mounting can be fitted to transfer the driving force to the opposite side (see data sheet 1.45.025E).

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of worn parts, after every 12 months or 3000 km travel of distance, depending on the type of application. Please see separate instructions.

Commissioning

The products in this datasheet should not be operated until the machine/ application in which they are used has passed necessary inspection.



For **linear guides** see 1.40.020E to 024E
For **magnetic switches** see 1.45.101E,
For **mountings** and **accessories** see 1.45.020E to 029E

HOERBIGER ORIGA

A1P560E00DZ00X

The right to introduce technical modifications is reserved

Sizing
Performance Overview
Maximum Loadings

Sizing of Linear Actuator

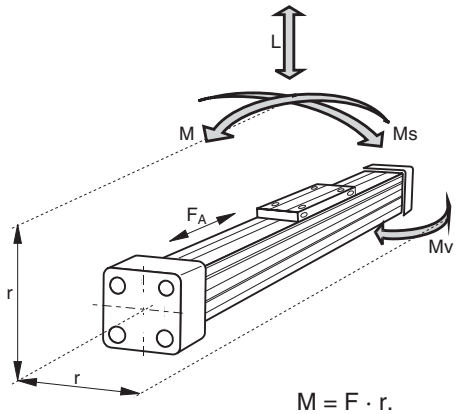
The following steps are recommended for selection :

1. Recommended maximum acceleration is shown in graphs on data sheet 1.30.002E-4.
2. Required torque is shown in graphs on data sheet 1.30.002E-5.
3. Check that maximum values in the adjacent charts are not exceeded.
4. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time of the application.
5. Check that the maximum allowable unsupported length is not exceeded (see on data sheet 1.30.002E-3).

Performance Overview

Characteristics	Unit	Description					
Series		**OSP-E25S**	**OSP-E32S**		**OSP-E50S**		
Pitch	[mm]	5	5	10	5	10	25
Max. speed	[m/s]	0.25	0.25	0.5	0.25	0.5	1.25
Linear motion per revolution, drive shaft	[mm]	5	5	10	5	10	25
Max. rpm, drive shaft	[min^{-1}]	3 000	3 000		3 000		
Max. effective action force F_A	[N]	250	600		1 500		
Corresponding torque on drive shaft	[Nm]	0.35	0.75	1.3	1.7	3.1	7.3
No-load torque	[Nm]	0,2	0,2	0,3	0,3	0,4	0,5
Max. allowable torque on drive shaft	[Nm]	0.6	1.5	2.8	4.2	7.5	20
Typical repeatability	[mm/m]	±0.05	±0.05		±0.05		
Max. Standard stroke length	[mm]	1100	2000		3200		

Maximum Allowable Loadings



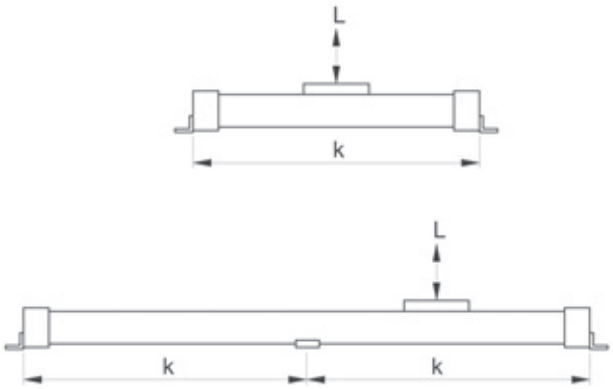
M = F · r.
Bending moments are calculated from the centre of the linear actuator and F indicates actual force.

Size	Max. applied load [N] L	Max. moments [Nm] M	M_s	M_v
OSP-E25	500	12	2	8
OSP-E32	1 200	25	8	16
OSP-E50	3 000	80	16	32

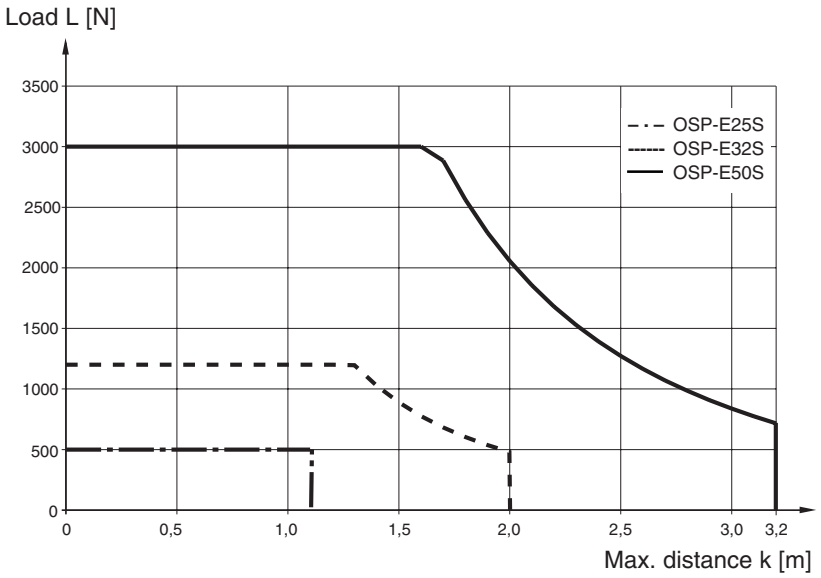
Combined Loadings.
If several forces and moments are applied to the linear actuator simultaneously, then the following equation must be fulfilled in addition to the above stated maximum loadings.

$$\frac{L}{L\,(max)} + \frac{M}{M\,(max)} + \frac{M_s}{M_s\,(max)} + \frac{M_v}{M_v\,(max)} \leq 1$$

Maximum Allowable Unsupported Length – Placing of Mid-Section Support



k = Maximum allowable distance between mountings/mid-section support for a given load (L)



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

Maximum Allowable Unsupported Length

Stroke Length

Stroke Lengths

The stroke lengths of the linear actuators are available in multiples of 1 mm up to above maximum stroke lengths.
OSP-E25: max. 1100 mm
OSP-E32: max. 2000 mm
OSP-E50: max. 3200 mm
Other stroke lengths are available on request.

The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance of minimum 25 mm at both ends.
The use of an AC motor with frequency converter normally requires a larder safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

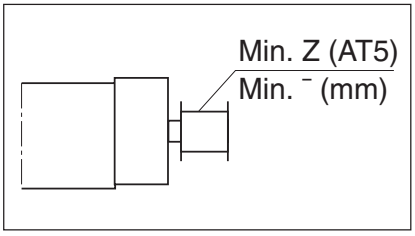
When mechanical stops are required, external shock absorbers should be used (see separate catalogue).
Align the centreline of the shock absorber as closely as possible with the object's centre of gravity.

Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupling or belt wheel, a steadying block should be used.

Belt wheels

Minimum allowable number of teeth (AT5) and diameter of belt wheel at maximum applied torque.

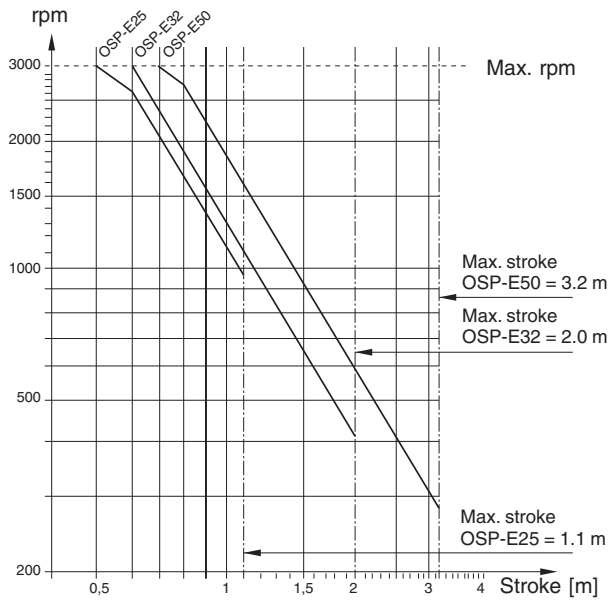


Size	Min. Z	Min. Ø
OSP-E25S	24	38
OSP-E32S	24	38
OSP-E50S	36	57

Maximum rpm – Stroke

At longer strokes the speed has to be reduced according to the adjacent graphs.

Maximum rpm – Stroke

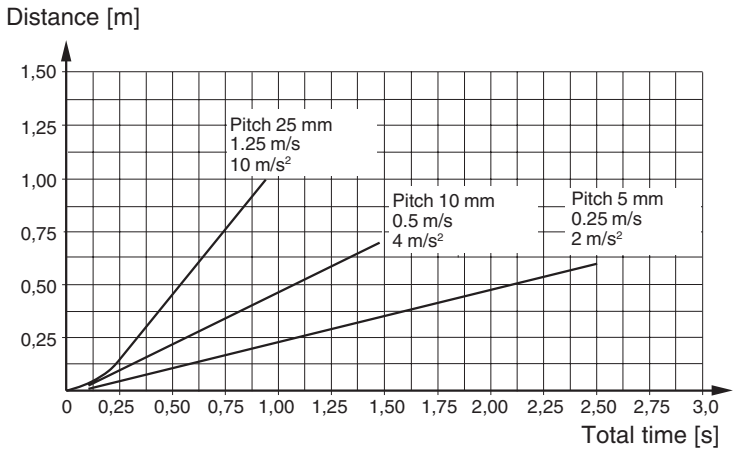


The maximum rpm shown in the graph, is 80% of the critical rpm.

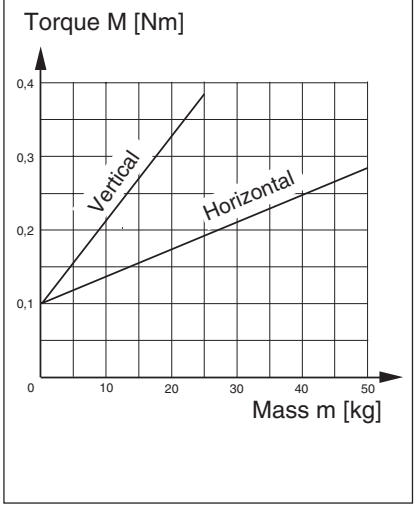
Distance-Time Graph

The adjacent graphs show travel distance and total time at maximum speed and recommended maximum acceleration. The graph assumes that acceleration and deceleration are equal.

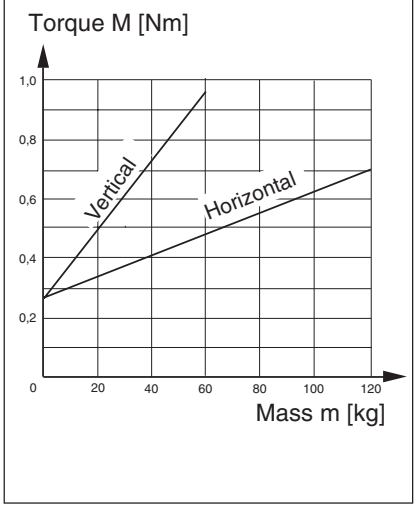
Distance-Time Graph



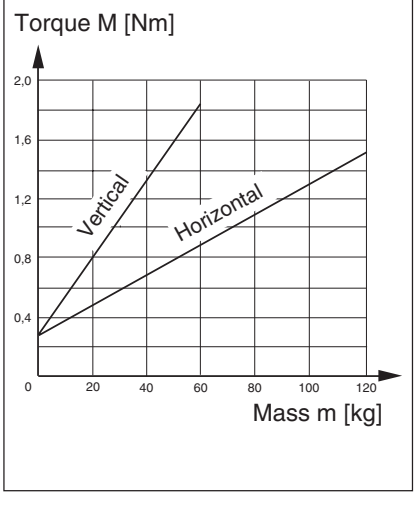
Size OSP-E25, Pitch 5 mm
Acceleration 2 m/s²



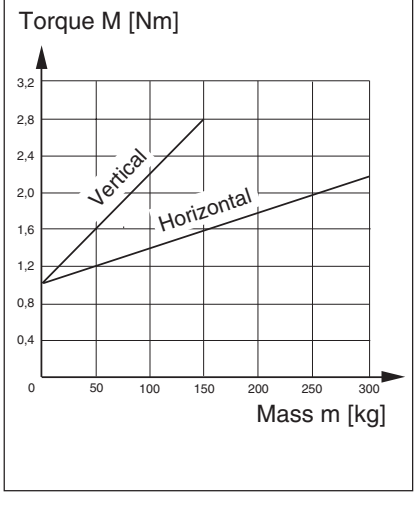
Size OSP-E32, Pitch 5 mm
Acceleration 2 m/s²



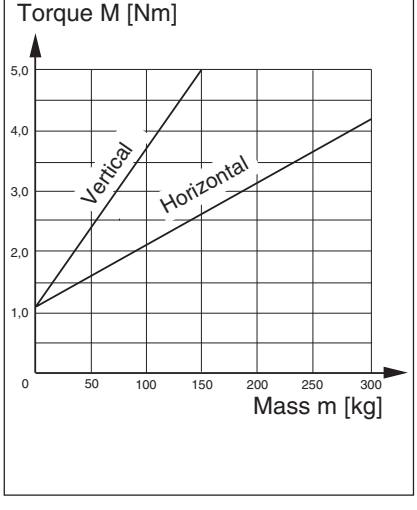
Size OSP-E32, Pitch 10 mm
Acceleration 4 m/s²



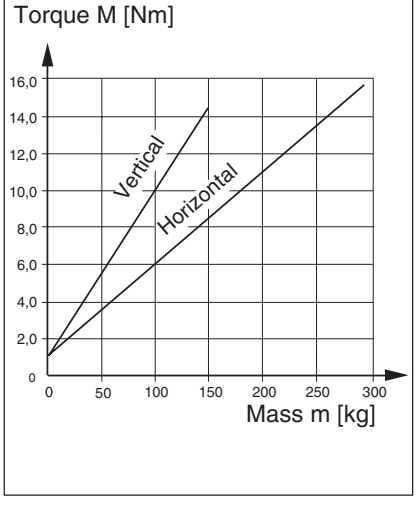
Size OSP-E50, Pitch 5 mm
Acceleration 2 m/s²



Size OSP-E50, Pitch 10 mm
Acceleration 4 m/s²



Size OSP-E50, Pitch 25 mm
Acceleration 10 m/s²

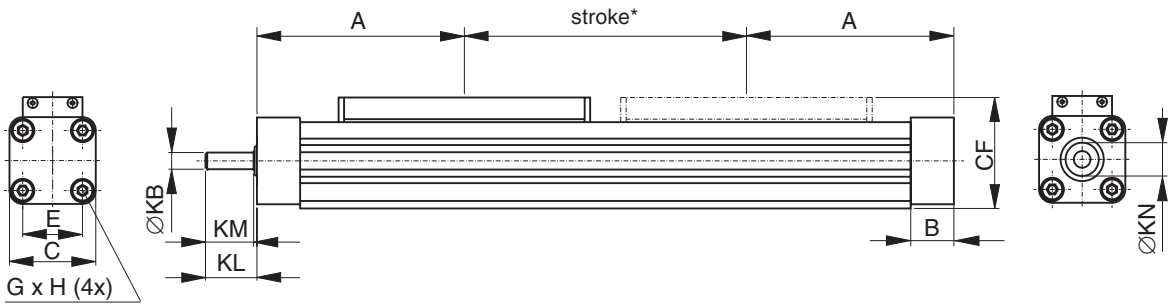


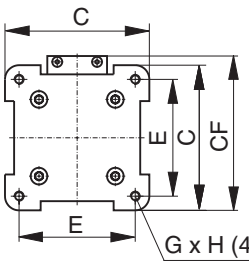
Required Torque

Using the known mass, the direction of the application and the recommended acceleration, the linear actuator can be sized and the required torque is shown in the adjacent graphs.
Mass in graphs = Load + moving mass of the linear actuator according to the weight chart (see on data sheet 1.30.002E-1).

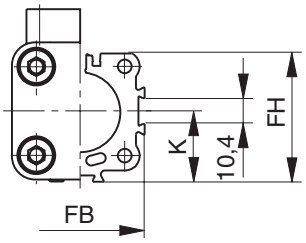
Please note:
When using an additional guide, please add the mass of carriage to the total moving mass.

Screw-Driven Linear Actuator – Basic Unit
Series OSP-E25S, -E32S, -E50S

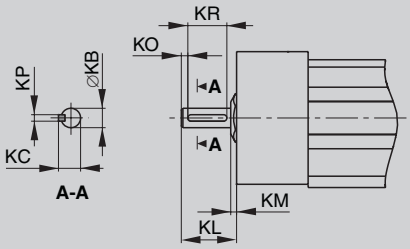




End Cap Size OSP-E50



Hollow shaft with keyway (option)



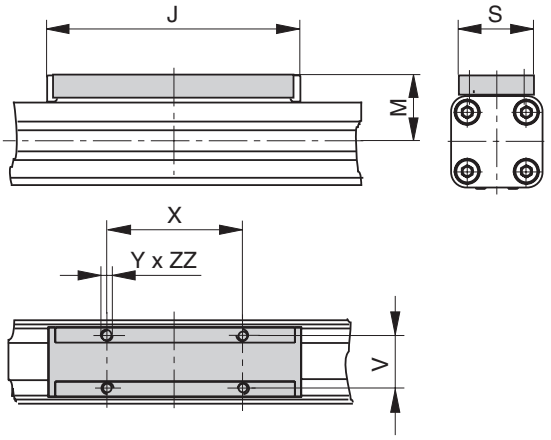
Dimension Table (mm)

Series	ØKB_{h7}	KC	KL Opt.3	KL Opt.4	KM	KO	KP^{P9}	KR
OSP-E25S	6	6.8	17	24	2	2	2	12
OSP-E32S	10	11.2	31	41	2	5	3	16
OSP-E50S	15	17	43	58	3	6	5	28

Option 3: Keyway
Option 4: Keyway, long version

*** The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance of minimum 25 mm at both ends.**
The use of an AC motor with frequency converter normally requires a larder safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

Standard Carrier Mounting
Series OSP-E25S, -E32S, -E50S

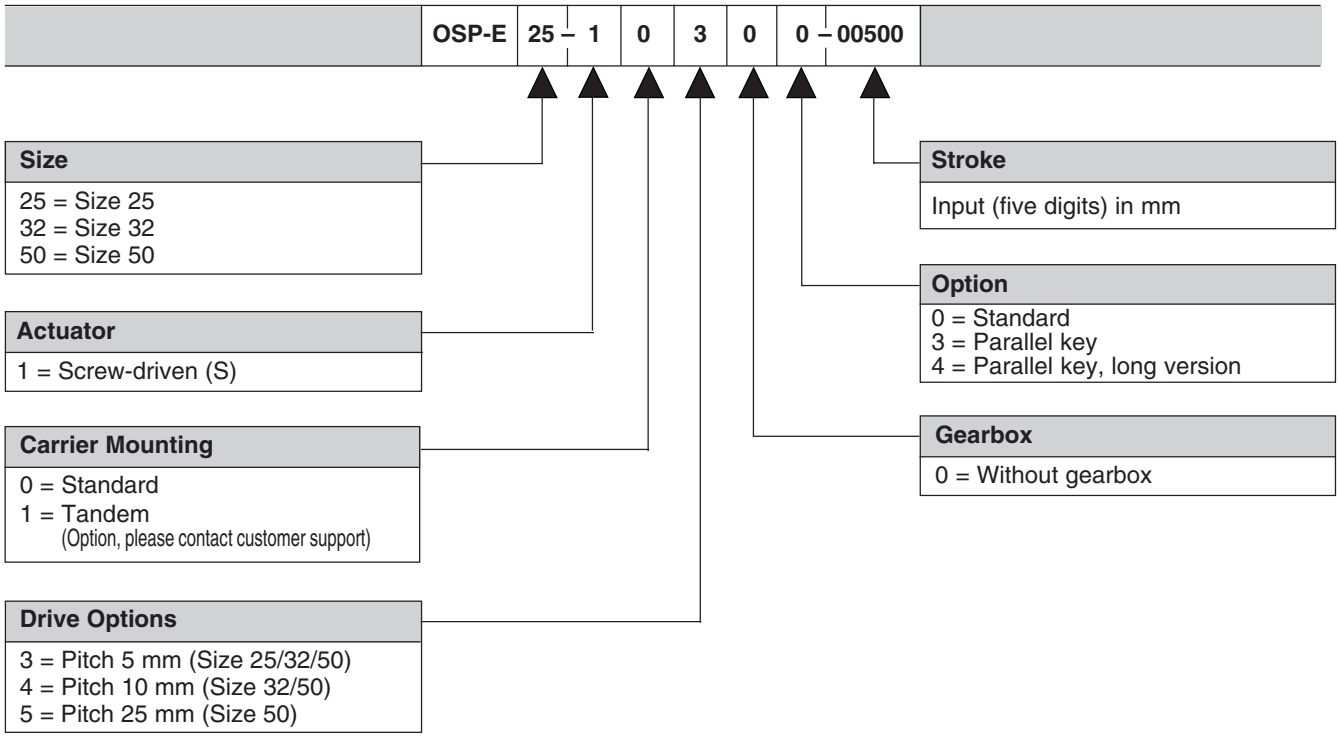


Dimension Table (mm)

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KL	KM	KN	ZZ
OSP-E25S	100	22	41	27	M5	10	117	21.5	31	33	25	65	M5	52.5	40	39.5	6_{h7}	17	2	13	8
OSP-E32S	125	25.5	52	36	M6	12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10_{h7}	31	2	20	10
OSP-E50S	175	33	87	70	M6	12	200	43	49	36	27	110	M6	92.5	76	77	15_{h7}	43	3	28	10

Order Instruction – Basic Electric Linear Actuator OSP-E..S

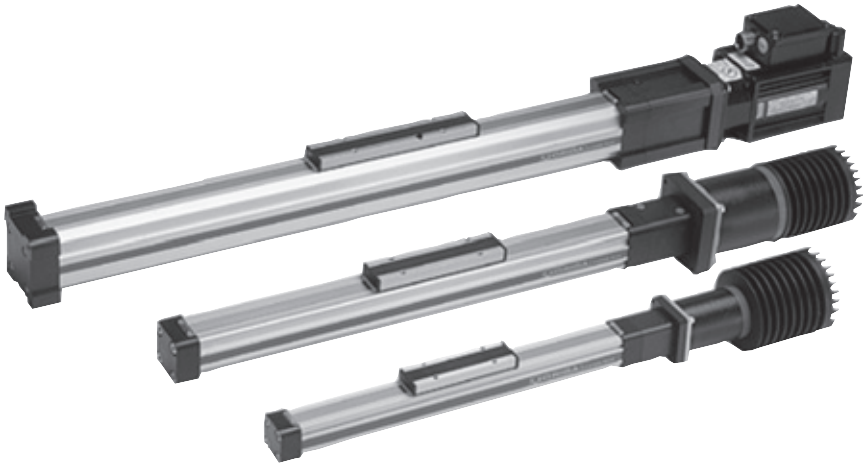
Electric Linear Actuator



Accessories - please order separately

Description	Data Sheet No.
Clevis Mounting	**1.45.021E**
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Inversion Mounting	**1.45.025E**
Adapter Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Coupling Housing (for motor)	**1.45.029E**
Proximity Sensors	**1.45.101E**
Stepper Motor and Controller	**A4P019E**
Servo Motor and Controller	**A4P019E**

Linear Actuator with Trapezoidal Screw Series OSP-E..ST



Contents

Description	Data Sheet No.	Page
Overview	1.35.001E	61-64
Technical Data	1.35.002E-1 to 4	65-68
Dimensions	1.35.002E-5	69
Order Instructions	1.35.002E-6	70

HOERBIGER ORIGA

The
System Concept

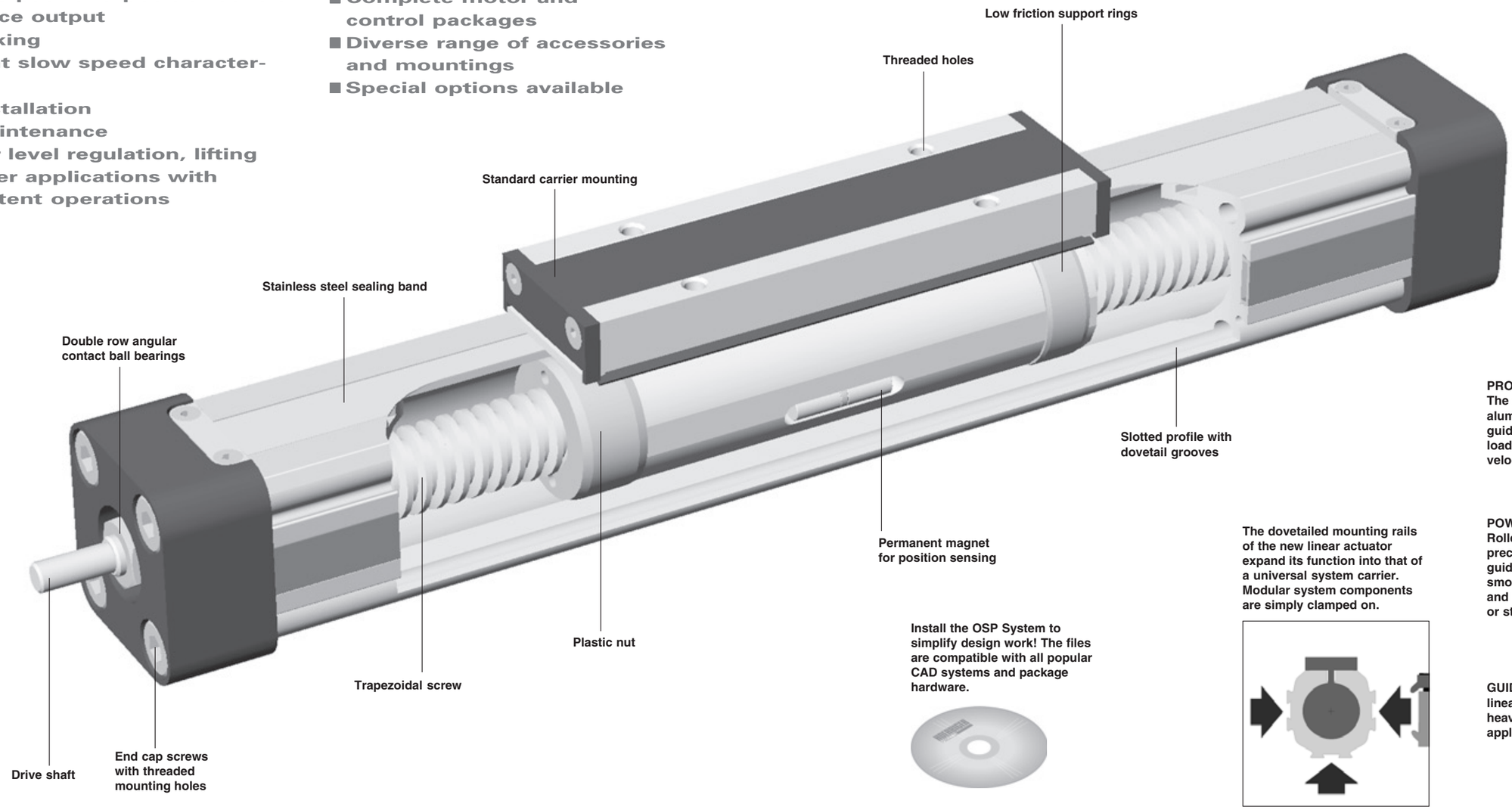
ELECTRIC LINEAR ACTUATOR
FOR INTERMITTENT APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

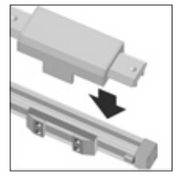
Linear Actuator with Trapezoidal Screw

Advantages:
- Accurate path and position control
- High force output
- Self-locking
- Excellent slow speed characteristics
- Easy installation
- Low maintenance
- Ideal for level regulation, lifting and other applications with intermittent operations

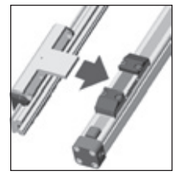
Features:
- Complete motor and control packages
- Diverse range of accessories and mountings
- Special options available



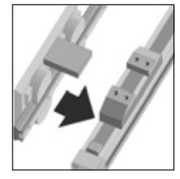
SLIDELINE
Combination with linear guides provides for heavier loads.



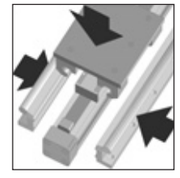
PROLINE
The compact aluminium roller guide for high loads and velocities.



POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



GUIDELINE
linear guides for heavy duty applications



Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.

The dovetailed mounting rails of the new linear actuator expand its function into that of a universal system carrier. Modular system components are simply clamped on.

Data Sheet No. 1.35.001E-2

Data Sheet No. 1.35.001E-3

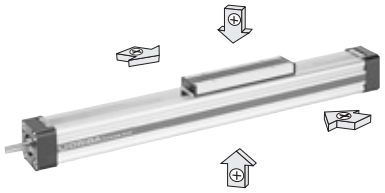
OPTIONS AND ACCESSORIES

SERIES OSP-E, TRAPEZOIDAL SCREW DRIVEN

STANDARD VERSIONS OSP-E..S

Data Sheet 1.35.002E-1, -2

Standard carrier with integral guidance. Dovetail profile for mounting of accessories and the actuator itself.

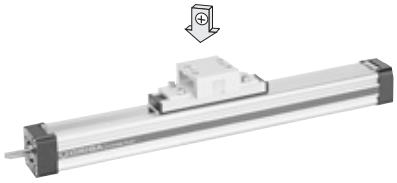


MOUNTINGS FOR OSP-E25 TO E50

CLEVIS MOUNTING

Data Sheet 1.45.021E

Carrier mounting for driving loads supported by external linear guides.



END CAP MOUNTING
Data Sheet 1.45.022E

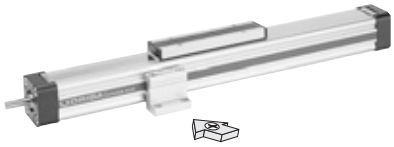
For end-mounting of the actuator



MID-SECTION SUPPORT

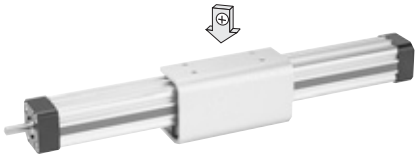
Data Sheet 1.45.023E

For supporting long actuators or mounting the actuator on the dovetail grooves.



INVERSION MOUNTING

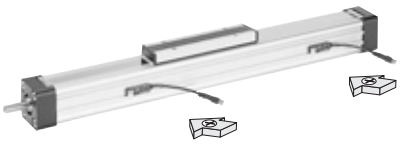
Data Sheet 1.45.025E
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments.



ACCESSORIES

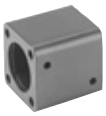
MAGNETIC SWITCHES
SERIES RS AND ES

Data Sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS

Data Sheet 1.45.029E



A3P154E00IZ50X

The right to introduce technical modifications is reserved

Linear Actuator with Trapezoidal Screw

Series OSP-E..ST
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Characteristics

Characteristics		Symbol	Unit	Description
General Features				
Type				Linear Actuator with Trapezoidal Screw
Series				OSP-E..ST
Mounting				See drawings
Operating temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +70
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Trapezoidal screw			Cold rolled steel
	Drive nut			Thermoplastic polyester
	Sealing band			Hardened stainless steel
	Guide bearings			Low friction plastic
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (mass) kg and Inertia

Series	Weight (mass)[kg]			Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre
OSP-E25ST	0.9	2.8	0.2	6	29.6
OSP-E32ST	2.1	5.0	0.5	21.7	81
OSP-E50ST	5.1	10.6	1.3	152	400

Standard Version:

- Standard carrier with own internal guidance
- Dovetail grooves for mounting accessories and the drive itself
- Travel per rotation of threaded spindle:
  Type OSP-E25ST : 4 mm
  Type OSP-E32ST: 4 mm
  Type OSP-E50ST: 6 mm

Installation Instructions

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear actuator.
See if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.35.002E-3. At least one end cap must be secured to prevent axial sliding when mid-section support is used (see data sheet 1.45.023E).
When the linear actuator is moving an externally guided load, the clevis mounting should be used.
The linear actuators can be fitted with the standard carrier mounting facing in any direction.
To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.
The inversion mounting can be fitted to transfer the driving force to the opposite side (see data sheet 1.45.025E).

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of worn parts, after every 24th month or 300 km travel of distance, depending on the type of application.
Please see separate instructions.

Commissioning

The products in this data sheet should not be operated until the machine/application in which they are used has passed necessary inspection.



HOERBIGER ORIGA

For **linear guides** see 1.40.020E to 024E
For **magnetic switches** see 1.45.101E,
For **mountings** and **accessories** see 1.45.020E to 029E

A1P639E00IZ00X
The right to introduce technical modifications is reserved

Sizing
Performance Overview
Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended for selection :

1. Check that maximum values in the adjacent charts are not exceeded.
2. Check the maximum values in graph on data sheet 1.35.002E-4 are not exceeded.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time of the application.
4. Check that the maximum allowable unsupported length is not exceeded (see on data sheet 1.35.002E-3).

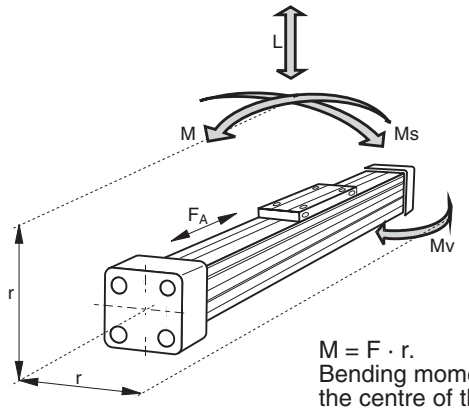
Performance Overview

Characteristics	Unit	Description		
Series		**OSP-E25ST**	**OSP-E32ST**	**OSP-E50ST**
Pitch	[mm]	4	4	6
Max. speed	[m/s]	0.1	0.1	0.15
Linear motion per revolution, drive shaft	[mm]	4	4	6
Max. rpm, drive shaft	[min^{-1}]	1500	1500	1500
Max. effective action force F_A Corresponding torque on drive shaft	[N] [Nm]	600 1.35	1300 3.2	2 500 8.8
No-load torque	[Nm]	0,3	0,4	0,5
Max. allowable torque on drive shaft	[Nm]	1.55	4.0	9.4
Self-locking force F_L [1)]	[N]	600	1300	2500
Typical repeatability	[mm/m]	±0.5	±0.5	±0.5
Max. Standard stroke length	[mm]	1100	2000	2500*

[1)] Related to screw types Tr 16x4, Tr 20x4, TR 30x6
see data sheet 1.35.002E-1 – for inertia

* For strokes longer than 2000 mm in horizontal apllications, please contact our customer support

Maximum Allowable Loadings



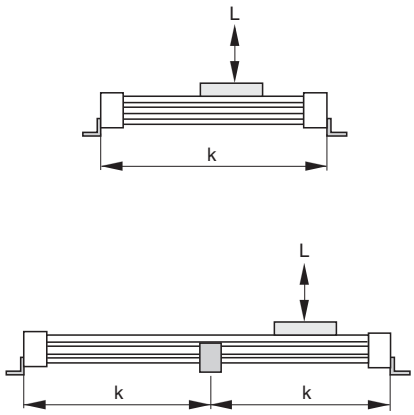
M = F · r.
Bending moments are calculated from the centre of the linear actuator and F indicates actual force.

Size	Max. applied load [N] L	Max. moments [Nm] M	M_s	M_v
OSP-E25ST	500	24	2	7
OSP-E32ST	1000	65	6	12
OSP-E50ST	1500	155	13	26

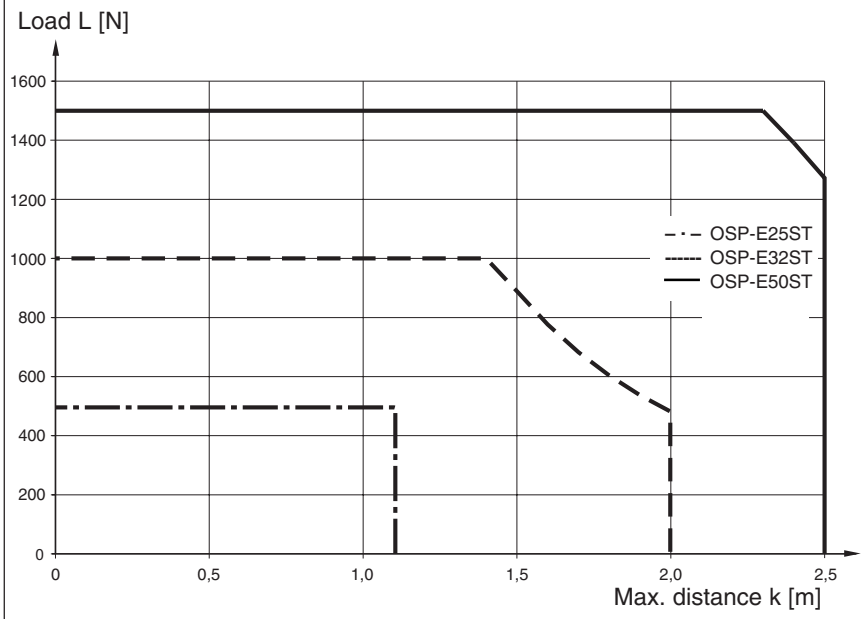
Combined Loadings.
If several forces and moments are applied to the linear actuator simultaneously, then the following equation must be fulfilled in addition to the above stated maximum loadings.

$$\frac{L}{L\,(max)} + \frac{M}{M\,(max)} + \frac{M_s}{M_s\,(max)} + \frac{M_v}{M_v\,(max)} \leq 1$$

Maximum Allowable Unsupported Length – Placing of Mid-Section Support



k = Maximum allowable distance between mountings/mid-section support for a given load (L)



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

Maximum Allowable Unsupported Length

Stroke Length

Stroke Lengths

The stroke lengths of the linear actuators are available in multiples of 1 mm up to the following maximum stroke lengths.
OSP-E25ST: max. 1100 mm
OSP-E32ST: max. 2000 mm
OSP-E50ST: max. 2500 mm *
Other stroke lengths are available on request.

* For strokes longer than 2000 mm in horizontal applications, please contact our customer support

The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance of minimum 25 mm at both ends.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For advise, please contact your local HOERBIGER-ORIGA technical support department.

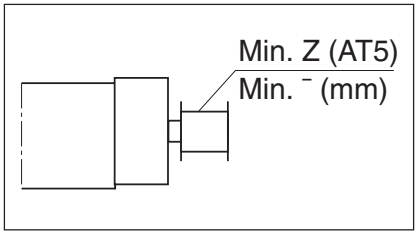
When mechanical stops are required, external shock absorbers should be used (see separate catalogue).
Align the centreline of the shock absorber as closely as possible with the object's centre of gravity.

Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupling or belt wheel, a steadying block should be used.

Belt wheels

Minimum allowable number of teeth (AT5) and diameter of belt wheel at maximum applied torque.

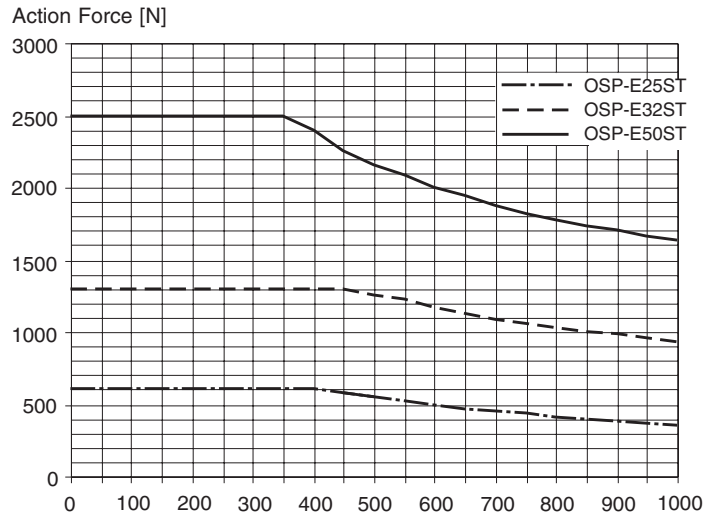


Size	Min. Z	Min. ø
OSP-E25ST	24	38
OSP-E32ST	24	38
OSP-E50ST	36	57

Action Force v. Intermittent Travel Distance

The actuators are designed for a 10% intermittent usage.
A more frequent usage will decrease lifetime depending on load and internal temperature conditions.

Action Force v. Intermittent Travel Distance

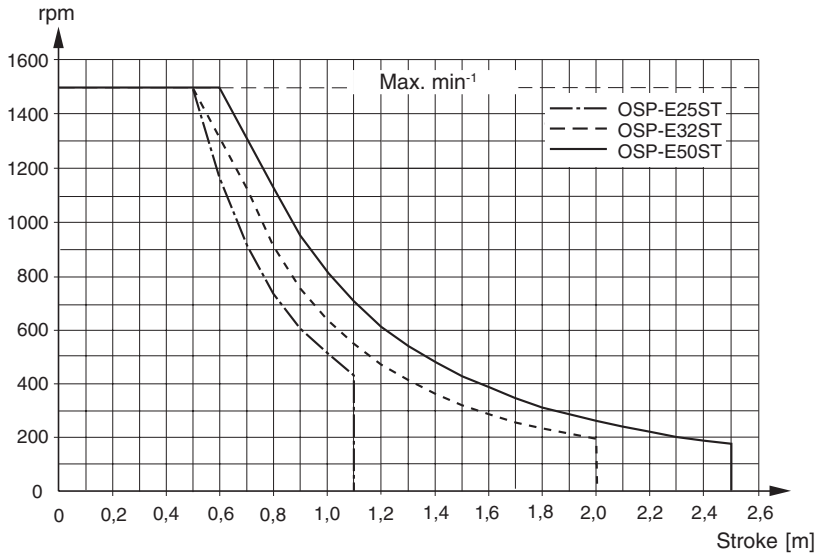


Note: Graph above is based upon 10% intermittent usage

Maximum rpm – Stroke

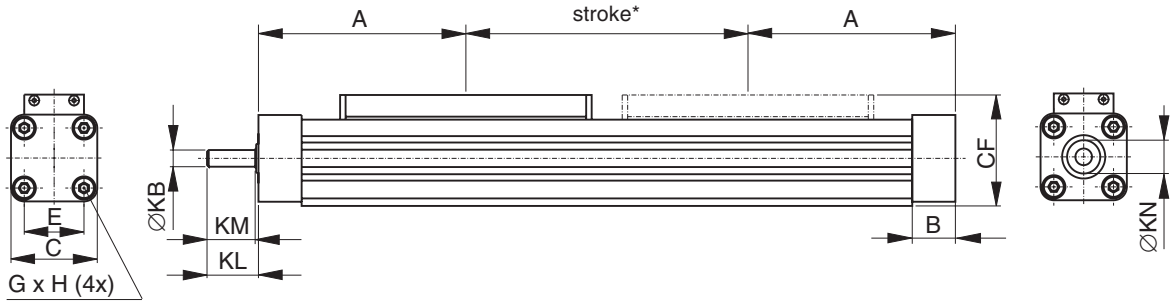
At longer strokes the speed has to be reduced according to the adjacent graphs.

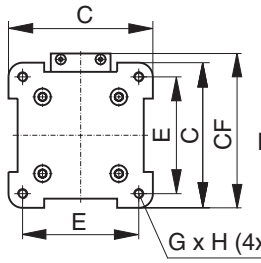
Maximum rpm – Stroke



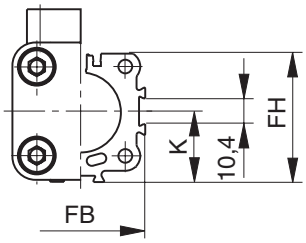
The maximum rpm shown in the graph, is 80% of the critical rpm.

Trapezoidal Screw Driven – Basic Unit
Series OSP-E25ST, -E32ST, -E50ST

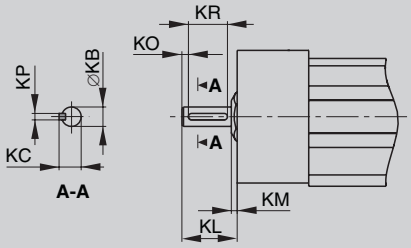




End Cap Size OSP-EST50



Hollow shaft with keyway (option)



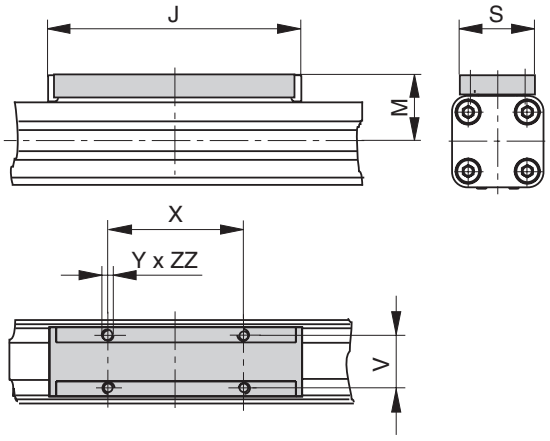
Dimension Table (mm)

Series	ØKB_{h7}	KC	KL Opt.3	KL Opt.4	KM	KO	KP^{P9}	KR
OSP-E25S	6	6.8	17	24	2	2	2	12
OSP-E32S	10	11.2	31	41	2	5	3	16
OSP-E50S	15	17	43	58	3	6	5	28

Option 3: Keyway
Option 4: Keyway, long version

* **The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance of minimum 25 mm at both ends.**
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

Standard Carrier Mounting
Series OSP-E25ST, -E32ST, -E50ST

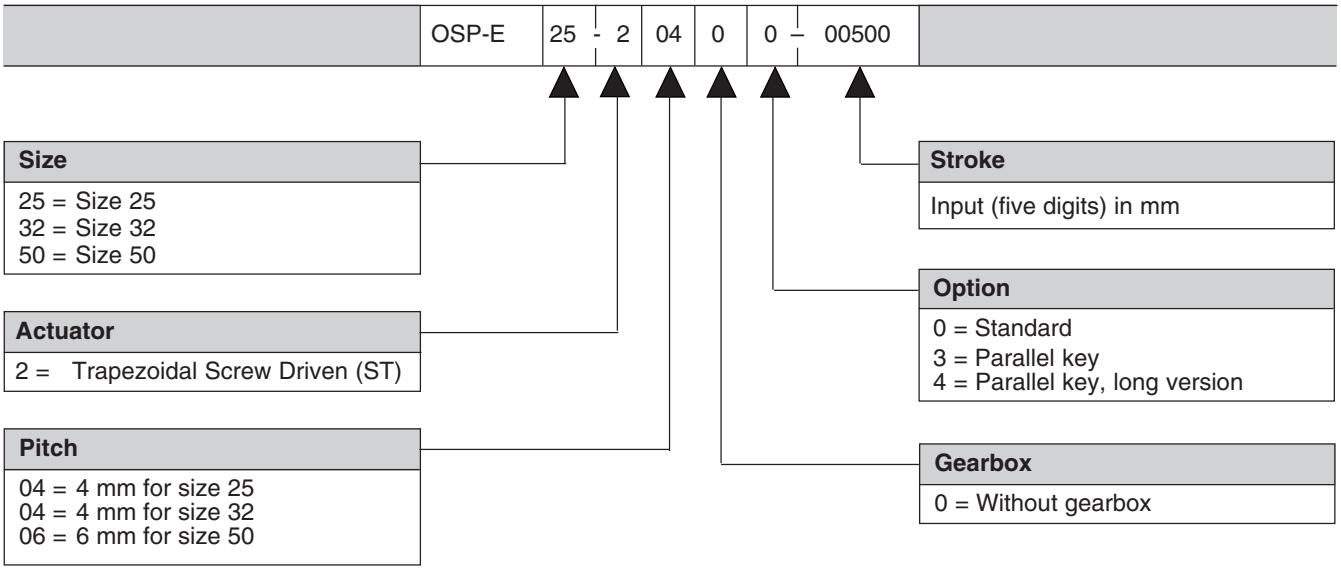


Dimension Table (mm)

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KL	KM	KN	ZZ
OSP-E25ST	100	22	41	27	M5	10	117	21.5	31	33	25	65	M5	52.5	40	39.5	6_{h7}	17	2	13	8
OSP-E32ST	125	25.5	52	36	M6	12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10_{h7}	31	2	20	10
OSP-E50ST	175	33	87	70	M6	12	200	43	49	36	27	110	M6	92.5	76	77	15_{h7}	43	3	28	10

Order Instructions – Basic Electric Linear Actuator OSP-E..ST

Electric Linear Actuator



Accessories - please order separately

Description	Data Sheet No.
Clevis Mounting	**1.45.021E**
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Inversion Mounting	**1.45.025E**
Adapter Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Coupling Housing (for motor)	**1.45.029E**
Proximity Sensors	**1.45.101E**
Stepper Motor and Controller	**A4P019E**
Servo Motor and Controller	**A4P019E**

Linear Actuator with Trapezoidal Screw and Extending Rod Series OSP-E..SR



Contents

Description	Data Sheet No.	Page
Overview	1.35.010E	71-74
Technical Data	1.35.011E-1 to 2	75-76
Dimensions	1.35.011E-3	77
Order Instructions	1.35.011E-4	78

HOERBIGER ORIGA

The
System Concept

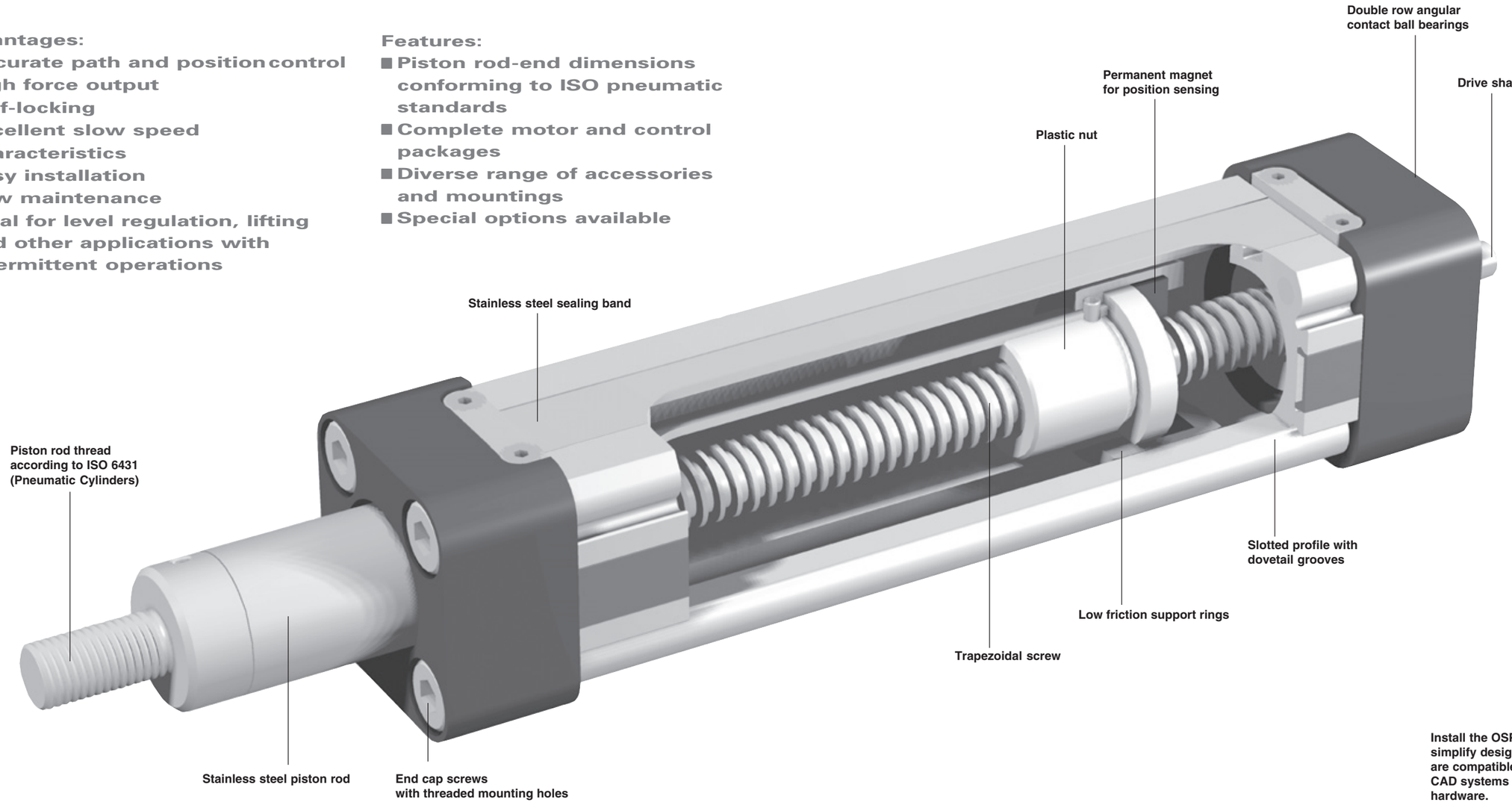
ELECTRIC LINEAR ACTUATOR
FOR INTERMITTENT APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

Linear Actuator with Trapezoidal Screw and Extending Rod

Advantages:
- Accurate path and position control
- High force output
- Self-locking
- Excellent slow speed characteristics
- Easy installation
- Low maintenance
- Ideal for level regulation, lifting and other applications with intermittent operations

Features:
- Piston rod-end dimensions conforming to ISO pneumatic standards
- Complete motor and control packages
- Diverse range of accessories and mountings
- Special options available



Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.



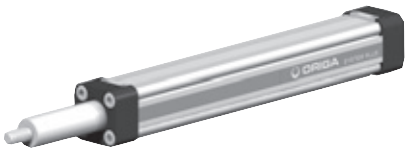
OPTIONS AND ACCESSORIES

SERIES OSP-E, TRAPEZOIDAL SCREW DRIVEN AND EXTENDING ROD

STANDARD VERSIONS OSP-E..SR

Data Sheet 1.35.011E-1,-2,-3,-4

Standard carrier with integral guidance. Dovetail profile for mounting of accessories and the actuator itself.



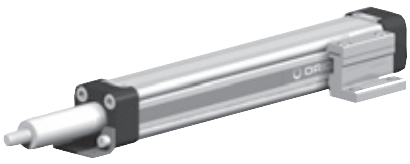
MOUNTINGS FOR OSP-E25SR BIS E50SR

END CAP MOUNTING
Data Sheet 1.45.022E

For end-mounting the actuator on the extending rod side

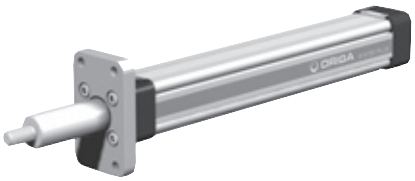
Data Sheet 1.45.023E

For mounting the actuator on the dovetail grooves and on the motor end



FLANGE MOUNTING C

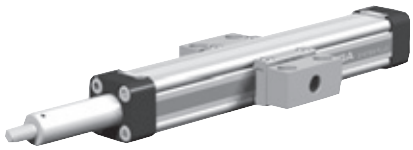
Data Sheet 1.45.022E
For end-mounting the actuator on the extending rod side



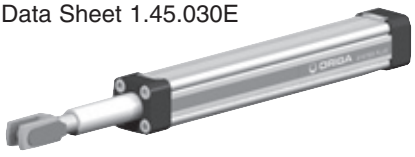
TRUNNION MOUNTING EN

Data Sheet 1.45.022E

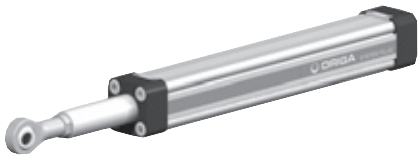
For pivoted support
Trunnion mounting with pivot
– steplessly adjustable in axial direction.
For supporting long drives or for mounting the drive on its dovetail slots.



PISTON ROD CLEVIS
Data Sheet 1.45.030E

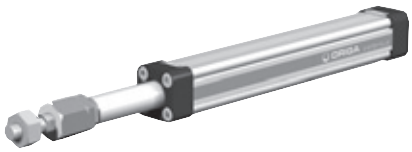


PISTON ROD EYE
Data Sheet 1.45.030E



PISTON ROD COMPENSATING COUPLING
Data Sheet 1.45.030E

For compensating of radial and angular misaligments



ACCESSORIES

MAGNETIC SWITCHES
SERIES RS AND ES

Data Sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS
Data Sheet 1.45.029E



A3P154E00I250X

The right to introduce technical modifications is reserved

Linear Actuator with Trapezoidal Screw and Extending Rod

Series OSP-E..SR
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Characteristics

Characteristics		Symbol	Unit	Description
General Features				
Type				Linear Actuator with Trapezoidal Screw with extended Rod
Series				OSP-E..SR
Mounting				See drawings
Operating temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +70
Weight (mass)			kg	See table
Installation				In any position
Material	Slotted profile			Extruded anodized aluminium
	Trapezoidal screw			Cold rolled steel
	Drive nut			Thermoplastic polyester
	Piston rod			Stainless steel
	Sealing band			Hardened stainless steel
	Guide bearings			Low friction plastic
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (mass) kg and Inertia

Series	Weight (mass)[kg]		Moving mass [kg]		Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre
OSP-E25SR	0.4	2.9	0.1	0.7	1.1	10.3
OSP-E32SR	0.9	5.4	0.2	1.2	3.9	29.6
OSP-E50SR	2.4	10.6	0.8	1.6	24.6	150

Standard Version:

- Dovetail grooves for mounting accessories and the drive itself
- Travel per rotation of threaded spindle:
  Type OSP-E25SR : 3 mm
  Type OSP-E32SR: 4 mm
  Type OSP-E50SR: 5 mm

Installation Instructions

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear actuator.
The linear actuator can be fitted in any position. To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of worn parts, after every 24th month or 300 km travel of distance, depending on the type of application.
Please see separate instructions.

Commissioning

The products in this datasheet should not be operated until the machine/ application in which they are used has passed necessary inspection.



HOERBIGER
ORIGA

For **magnetic switches** see 1.45.101E
For **mountings** and **accessories** see 1.45.020E to 030E

A1P640E00IZ00X

The right to introduce technical modifications is reserved

Sizing
Performance Overview
Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended for selection :

1. Check that the maximum values in the adjacent chart and transverse force/stroke graph below are not exceeded.
2. Check the lifetime/travel distance in graph below.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time in application

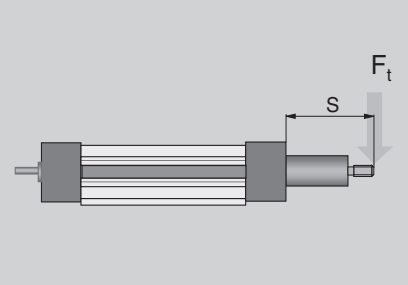
Performance Overview

Characteristics	Unit	Description		
Series		**OSP-E25SR**	**OSP-E32SR**	**OSP-E50SR**
Pitch	[mm]	3	4	5
Max. speed	[m/s]	0.075	0.1	0.125
Linear motion per revolution, drive shaft	[mm]	3	4	5
Max. rpm, drive shaft	[min^{-1}]	1500 [2)]	1500	1500
Max. effective action force F_A Corresponding torque on drive shaft	[N] [Nm]	800 1.35	1600 3.4	3300 9.25
No-load torque	[Nm]	0.3	0.4	0.5
Max. allowable torque on drive shaft	[Nm]	1.7	4.4	12
Self-locking force F_L [1)]	[N]	800	1600	3300
Typical repeatability	[mm/m]	±0.5	±0.5	±0.5
Max. Standard stroke length	[mm]	500	500	500

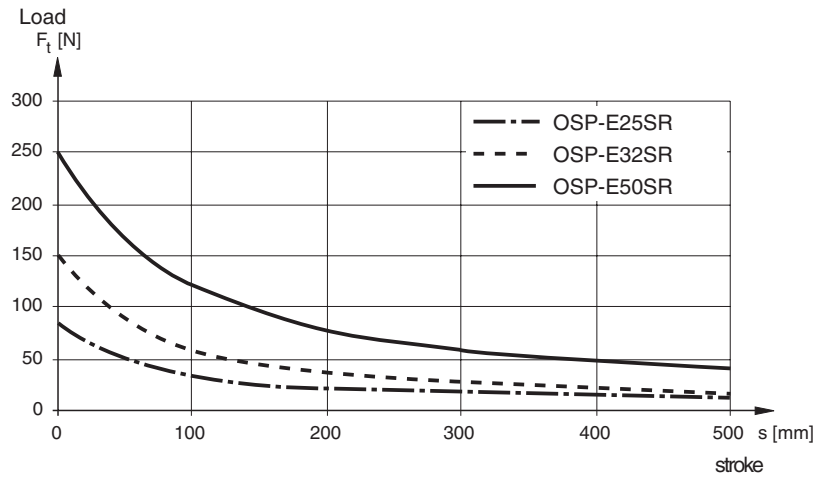
[1)] Related to screw types Tr 12x3, Tr 16x4, TR 24x5
see data sheet 1.35.011E-1 – for inertia

[2)] from 0,4 m stroke max. 1200 min^{-1} permissible

Transverse Force/stroke



Transverse Force/Stroke

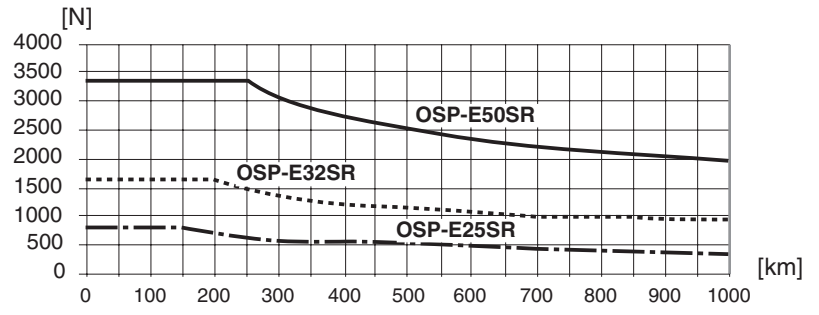


The graph is based upon 10% intermittent usage

Action Force v. Intermittent Travel Distance

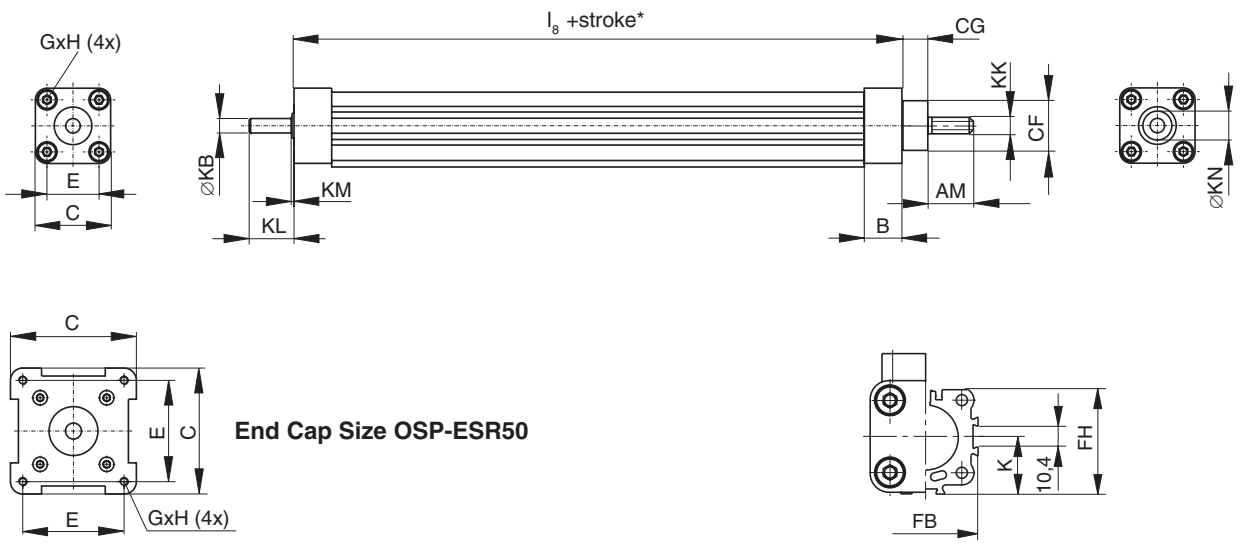
The actuators are designed for a 10% intermittent usage.
A more frequent usage will decrease lifetime depending on load and internal temperature conditions.

Action Force v. Intermittent Travel Distance

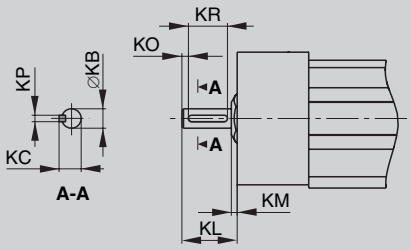


The graph is based upon 10% intermittent usage

Linear Actuator with Trapezoidal Screw and Extending Rod – Basic Unit
Series OSP-E25SR, OSP-E32SR, OSP-E50SR



Hollow shaft with keyway (option)



Dimension Table (mm)

Series	ØKB_{h7}	KC	KL Opt.3	KL Opt.4	KM	KO	KP^{P9}	KR
OSP-E25S	6	6.8	17	24	2	2	2	12
OSP-E32S	10	11.2	31	41	2	5	3	16
OSP-E50S	15	17	43	58	3	6	5	28

Option 3: Keyway
Option 4: Keyway, long version

* **The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance of minimum 25 mm at both ends.**
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

Stroke Length:
The stroke lengths of the linear actuators are as standard available in multiples of 1 mm up to 500 mm. Other stroke lengths on request.

Dimension Table (mm)

Series	B	C	E	G	H	K	l_8	AM	CF	CG	FB	FH	KB	KK	KL	KM	KN
OSP-E25SR	22	41	27	M5	10	21.5	83	20	22	26	40	39.5	6_{h7}	M10x1.25	17	2	13
OSP-E32SR	25.5	52	36	M6	12	28.5	94	20	28	26	52	51.7	10_{h7}	M10x1.25	31	2	20
OSP-E50SR	33	87	70	M6	12	43	120	32	38	37	76	77	15_{h7}	M16x1.5	43	3	28

Order Instructions – Basic Electric Linear Actuator OSP-E..SR

Electric Linear Actuator

	OSP-E	25 – 3	03	0	0 – 00500	

Size
25 = Size 25
32 = Size 32
50 = Size 50

Actuator
3 = Trapezoidal Screw Driven(SR)

Pitch
03 = 3 mm for size 25
04 = 4 mm for size 32
05 = 5 mm for size 50

Stroke
Input (five digits) in mm

Option
0 = Standard 3 = Parallel key 4 = Parallel key, long version

Gearbox
0 = Without gearbox

Accessories - please order separately

Description	Data Sheet No.
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Adaptor Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Coupling Housing (for motor)	**1.45.029E**
Flange Mounting C	**1.45.022E**
Trunnion Mounting	**1.45.022E**
Piston Rod Clevis according to ISO 8140	**1.45.022E**
Piston Rod Eye according to ISO 8139	**1.45.022E**
Piston Rod Compensating Coupling	**1.45.022E**
Proximity Sensors	**1.45.101E**
Stepper Motor and Controller	**A4P019E**
Servo Motor and Controller	**A4P019E**

Linear Actuator with Ball Screw and Extending Rod Series OSP-E..SBR



Contents

Description	Data Sheet No.	Page
Overview	1.35.020E	79-82
Technical Data	1.35.021E-1 to 2	83-84
Dimensions	1.35.021E-3	85
Order Instructions	1.35.021E-4	86

HOERBIGER ORIGA

The
System Concept

ELECTRIC LINEAR ACTUATOR
FOR PRECISE AND HIGH SPEED POSITIONING
OF HIGH MASSES

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

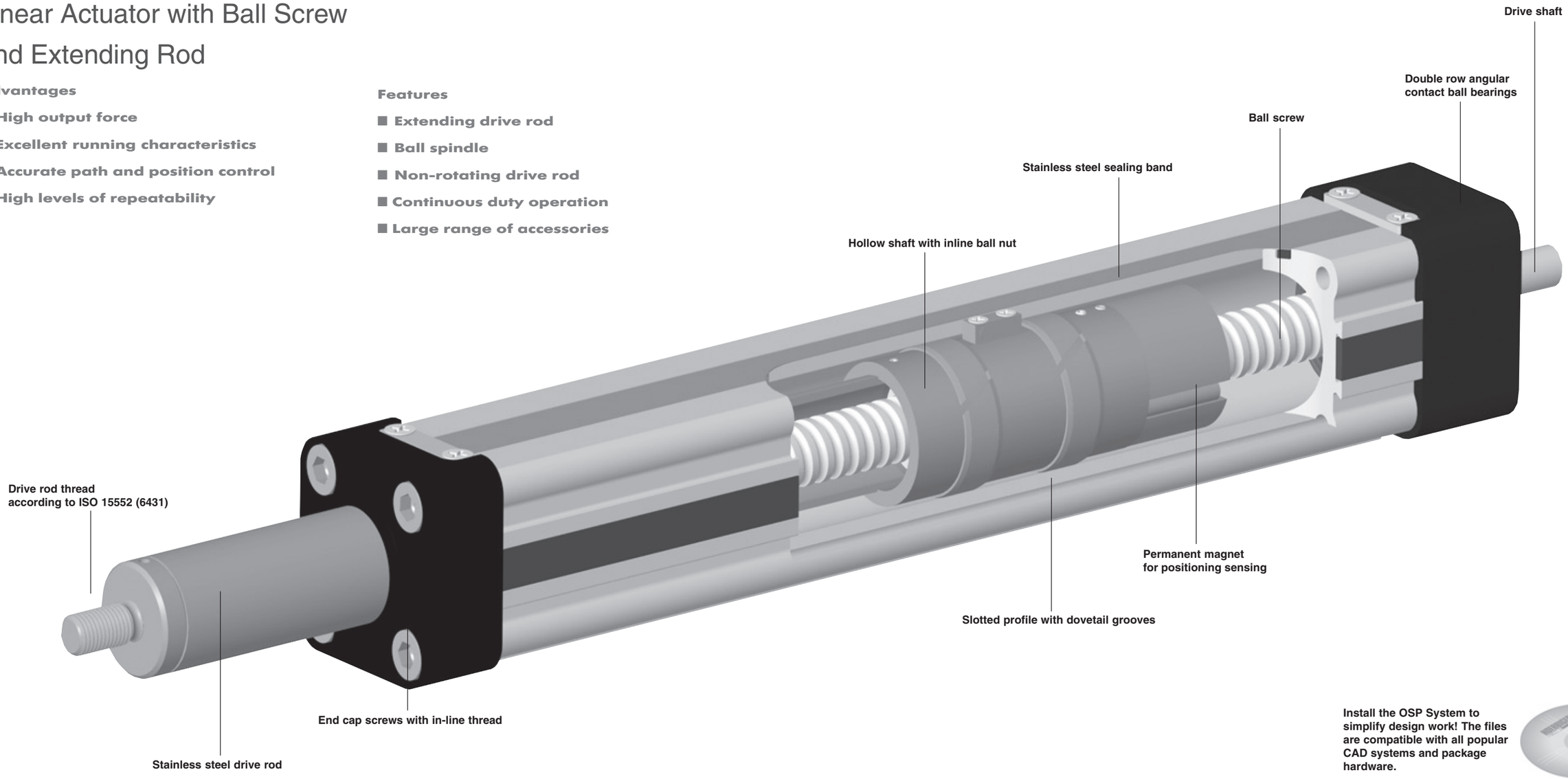
Linear Actuator with Ball Screw and Extending Rod

Advantages

- High output force
- Excellent running characteristics
- Accurate path and position control
- High levels of repeatability

Features

- Extending drive rod
- Ball spindle
- Non-rotating drive rod
- Continuous duty operation
- Large range of accessories



Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.



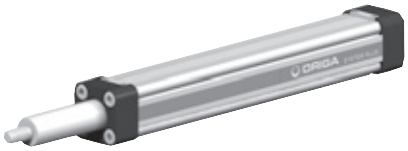
OPTIONS AND ACCESSORIES

SERIES OSP-E, BALL SCREW DRIVEN WITH EXTENDING ROD

STANDARD VERSIONS OSP-E..SBR

Data Sheet 1.35.021E-1,-2,-3,-4

Standard carrier with integral guidance. Dovetail profile for mounting of accessories and the actuator itself.



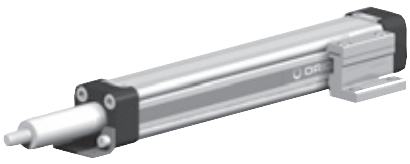
MOUNTINGS FOR OSP-E25SBR BIS E50SBR

END CAP MOUNTING
Data Sheet 1.45.022E

For end-mounting the actuator on the extending rod side

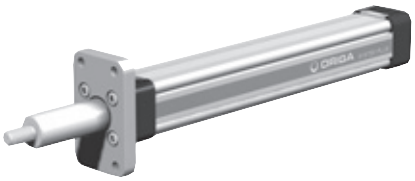
Data Sheet 1.45.023E

For mounting the actuator on the dovetail grooves and on the motor end



FLANGE MOUNTING C

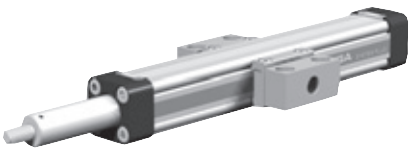
Data Sheet 1.45.022E
For end-mounting the actuator on the extending rod side



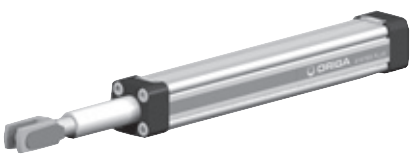
TRUNNION MOUNTING – EN

Data Sheet 1.45.022E

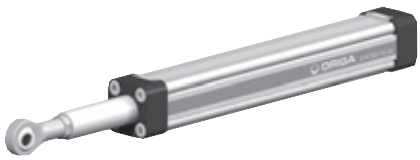
For pivoted support
Trunnion mounting with pivot
– steplessly adjustable in axial direction.



DRIVE ROD CLEVIS
Data Sheet 1.45.030E

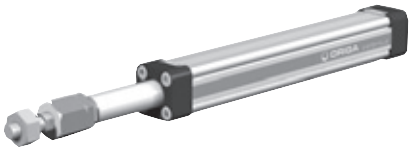


DRIVE ROD EYE
Data Sheet 1.45.030E



DRIVE ROD COMPENSATING COUPLING
Data Sheet 1.45.030E

For compensating of radial and angular misaligments



ACCESSORIES

MAGNETIC SWITCHES
SERIES RS AND ES

Data Sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS
Data Sheet 1.45.029E



A1P702D00EAE50X

The right to introduce technical modifications is reserved

Linear Actuator with Ball Screw and Extending Rod

Series OSP-E..SBR
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

Standard Version:

- Dovetail grooves for mounting accessories and the drive itself
- Travel per rotation of threaded spindle:
  Type OSP-E25SBR : 5 mm
  Type OSP-E32SBR: 5, 10 mm
  Type OSP-E50SBR: 5, 10, 25 mm

Characteristics

Characteristics		Symbol	Unit	Description
General Features				
Type				Linear drive with ball screw and piston rod
Series				OSP-E..SBR
Mounting				see drawings
Operating temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80
Weight (Mass)			kg	see table
Installation				In any position
Material	Slotted profile			Al anodized
	Ball screw			Steel
	Ball nut			Steel
	Piston rod			Stainless steel
	Sealing band			Hardened stainless steel
	Guide bearings			Low friction plastic
	Screws, nuts			Zinc plated steel
	Mountings			Zinc plated steel and aluminium
Encapsulation class			IP	54

Weight (Mass) kg and Inertia

Series	Weight (Mass) [kg]		Moving Mass [kg]		Inertia[x 10^{-6} kgm^2]	
	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre stroke
OSP-E25SBR	0.7	3.0	0.2	0.9	1.2	11.3
OSP-E32SBR	1.7	5.6	0.6	1.8	5.9	32.0
OSP-E50SBR	4.5	10.8	1.1	2.6	50.0	225.0

Installation Instructions

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear actuator.
The linear actuator can be fitted in any position. To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of worn parts, after every 12th month or 3000 km travel of distance, depending on the type of application. Please see separate instructions.

Commissioning

The products in this datasheet should not be operated until the machine/ application in which they are used has passed necessary inspection.



For **magnetic switches** see 1.45.101E
For **mountings** and **accessories** see 1.45.020E to 030E

HOERBIGER
ORIGA

A1P703E00EAEs00X

The right to introduce technical modifications is reserved

Sizing
Performance Overview
Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended for selection :

1. Check that the maximum values in the adjacent chart and transverse force/stroke graph below are not exceeded.
2. Check the lifetime/travel distance in graph below.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time in application

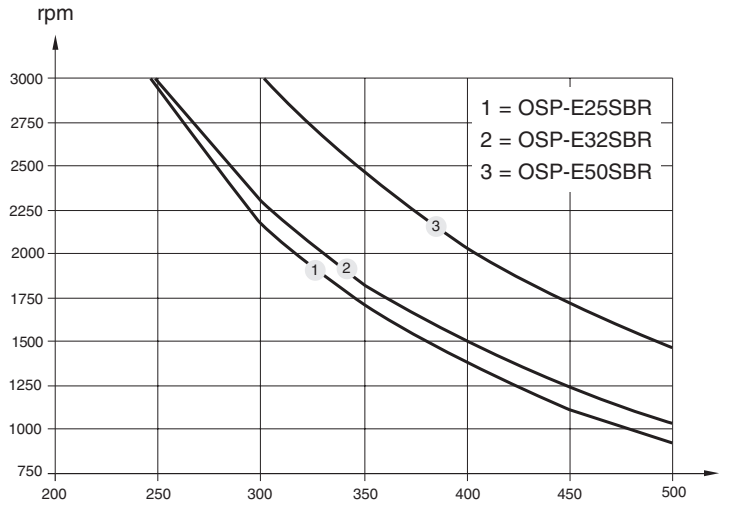
Performance overview

Characteristics	Unit	Description					
Series		**OSP-E25SBR**	**OSP-E32SBR**		**OSP-E50SBR**		
Pitch	[mm]	5	5	10	5	10	25
Max. speed	[m/s]	0.25	0.25	0.5	0.25	0.5	1.25
Linear motion per revolution, drive shaft	[mm]	5	5	10	5	10	25
Max. rpm drive shaft	[min^{-1}]	3000	3000		3000		
Max. effective action force F_A	[N]	260	550	1090	750	990	1680
Corresponding torque drive shaft	[Nm]	0.3	0.65	2.6	0.9	2.4	10
No-load torque	[Nm]	0.2	0.2	0.3	0.3	0.4	0.5
Max. allowable torque on drive shaft	[Nm]	0.6	1.5	2.8	4.2	7.5	20
Max. allowable acceleration	[m/s^2]	5	5		5		
Typical repeatability	[mm/m]	±0.05	±0.05		±0.05		
Max. Standard stroke length	[mm]	500	500		500		

Maximum rpm – Stroke

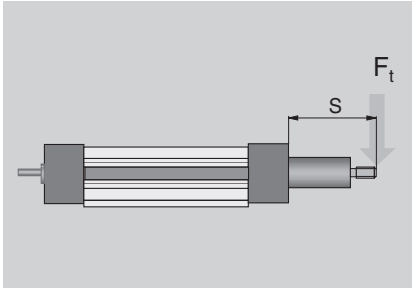
At longer stokes the speed has to be reduced according to the adjacent graphs.

Maximum rpm – Stroke

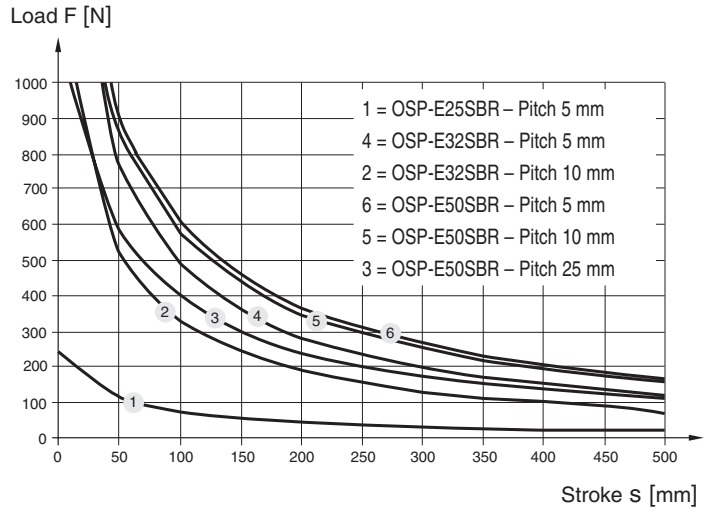


Transverse Force/stroke

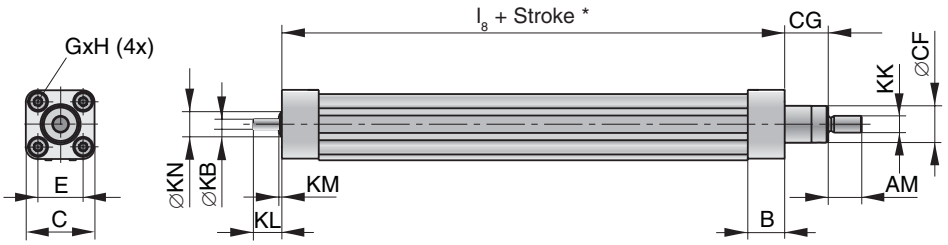
The permissible transverse force is reduced with increasing stroke length.

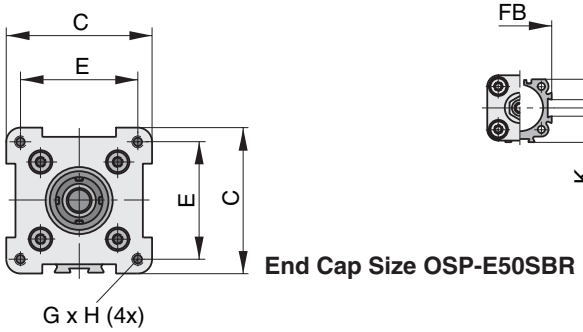


Transverse Force / Stroke



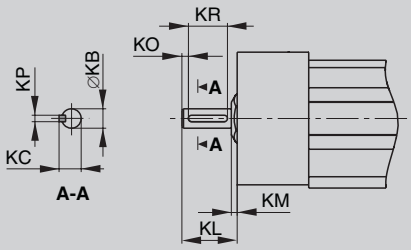
Linear Actuator with Ball Screw and Extending Rod – Basic Unit
Series OSP-E25SBR, OSP-E32SBR, OSP-E50SBR





End Cap Size OSP-E50SBR

Hollow shaft with keyway (Option)



Dimension Table (mm)

Series	ØKB_{h7}	KC	KL Opt.3	KL Opt.4	KM	KO	KP^{P9}	KR
OSP-E25SBR	6	6,8	17	24	2	2	2	12
OSP-E32SBR	10	11.2	31	41	2	5	3	16
OSP-E50SBR	15	17	43	58	3	6	5	28

Option 3: Keyway
Option 4: Keyway, long version

* **The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance of minimum 25 mm at both ends.**
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local HOERBIGER-ORIGA technical support department.

Stroke Length:
The stroke lengths of the linear actuators are as standard available in multiples of 1 mm up to 500 mm. Other stroke lengths on request.

Dimension Table (mm)

Series	B	C	E	G	H	K	l_8	AM	ØCF	CG	FB	FH	ØKB_{h7}	KK	KL	KM	ØKN	ØKS	KT
OSP-E25SBR	22	41	27	M5	10	21.5	110	20	22	26	40	39.5	6_{h7}	M10x1.25	17	2	13	–	–
OSP-E32SBR	25.5	52	36	M6	12	28.5	175.5	20	28	26	52	51.7	10_{h7}	M10x1.25	31	2	20	33	2
OSP-E50SBR	33	87	70	M6	12	43	206	32	38	37	76	77	15_{h7}	M16x1.5	43	3	28	44	3

Order instructions – Basic Electric Linear Actuator – Series OSP-E..SBR

Electric Linear Actuator

	OSP-E	32	–	4	05	0	0	–	00500	

Size
25 = Size 25
32 = Size 32
50 = Size 50

Actuator
4 = Ball Screw (SBR)

Pitch
05 = 5 mm for size 25, 32, 50
07 = 10 mm for size 32, 50
08 = 25 mm for size 50

Stroke
Input (five digits) in mm

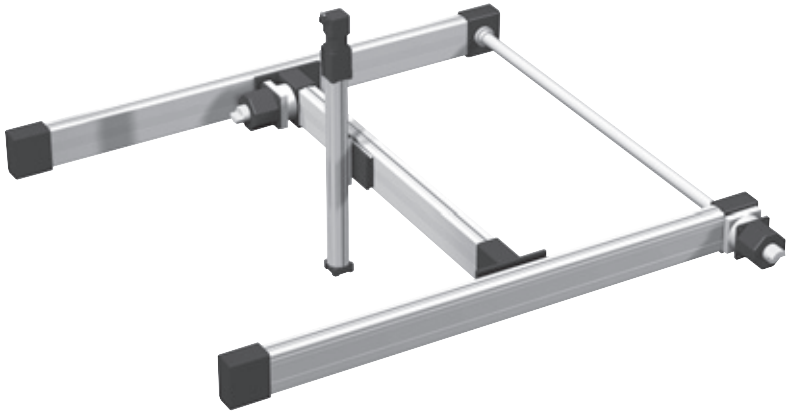
Option
0 = Standard 3 = Keyway 4 = Keyway, long version

Gearbox
0 = Without gearbox

Accessories - please order separately

Description	Data Sheet No.
End Cap Mountings	**1.45.022E**
Mid-Section Support	**1.45.023E**
Adaptor Profile	**1.45.026E-1**
T-Nut Profile	**1.45.026E-2**
Motor Muntings	**1.45.029E**
Flange Mounting C	**1.45.022E**
Trunnion Mounting	**1.45.022E**
Drive Rod Clevis according to ISO 8140	**1.45.022E**
Drive Rod Eye according to ISO 8139	**1.45.022E**
Drive Rod Compensating Coupling	**1.45.022E**
Proximity Sensors	**1.45.101E**
Stepper Motor and Controller	**A4P019E**
Servo Motor and Controller	**A4P019E**

Multi-Axis Connection System for Linear Drive Systems Series OSP-E



Contents

Description	Data Sheet No.	Page
Overview	1.38.001E	87-90
Adapter plates – Dimensions/Order Instructions	1.38.002E-1 to 9	91-99
Profile Mountings – Dimensions/Order Instructions	1.45.023E	133
Intermediate Drive Shafts – Dimensions/Order Instructions	1.38.004E	101

HOERBIGER ORIGA

MULTI-AXIS CONNECTION SYSTEM – SIMPLIFIES ENGINEERING AND INSTALLATION

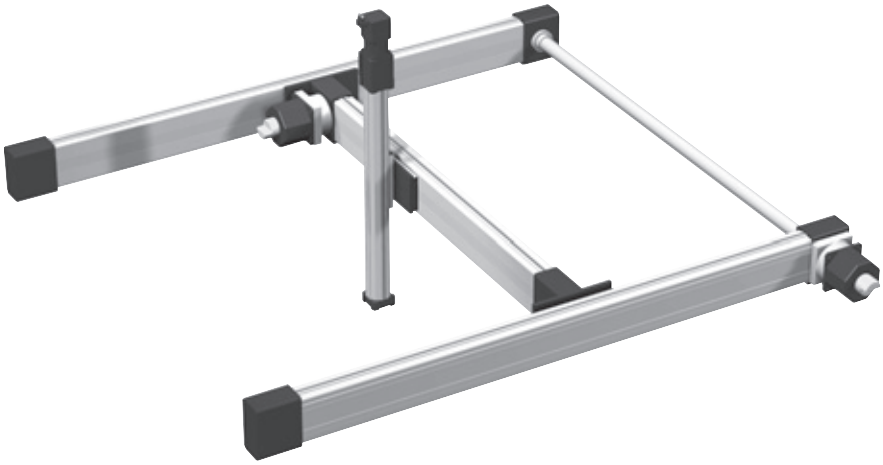
A completely new system for easy connection of OSP-E linear drives in multi-axis systems.

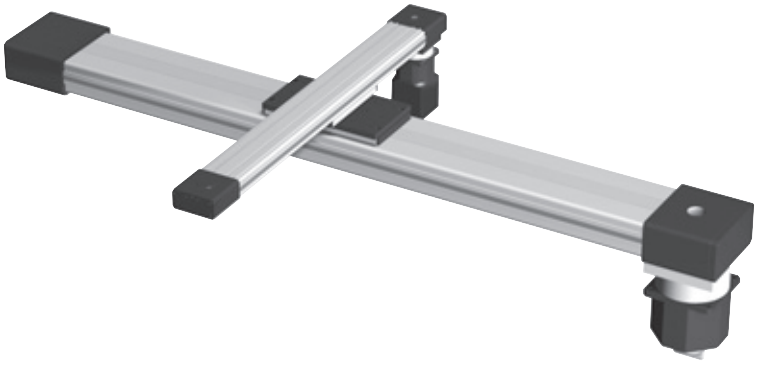
MULTI-AXIS CONNECTIONS

With this highly adaptable system for connection of linear drives in multi-axis arrangements, HOERBIGER-ORIGA offers design engineers complete flexibility.

A wide range of adapter plates, profile mountings and intermediate drive shafts simplify engineering and installation.
The connection system enables actuators to be mounted in carrier to carrier; carrier to profile; carrier to end cap mounting; and carrier to end cap configurations.

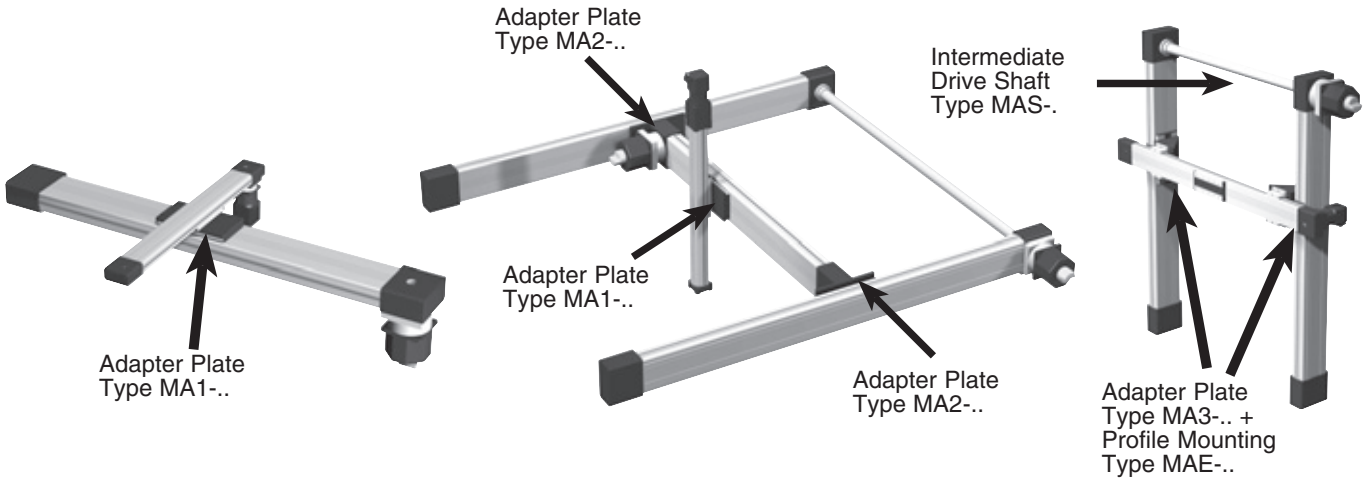
Developed for the heavy-duty belt drive series OSP-E..BHD, the system provides cross-connection with the same series and also other linear drive series in the ORIGA SYSTEM PLUS range.



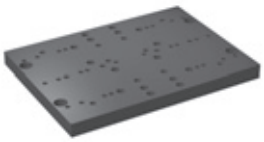
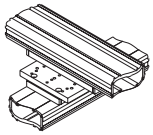
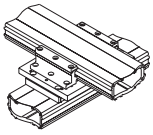
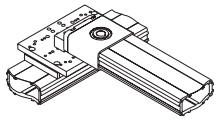
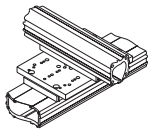
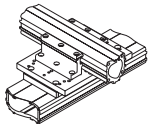
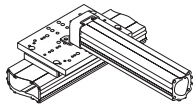
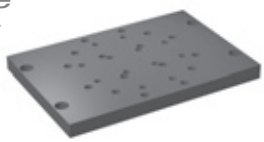
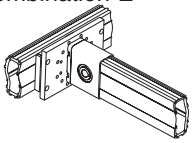
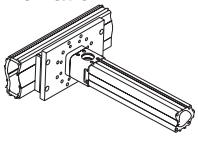
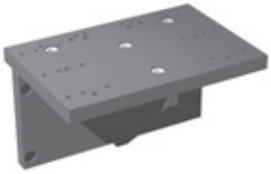
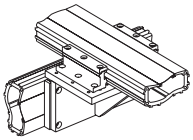
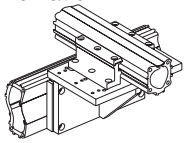
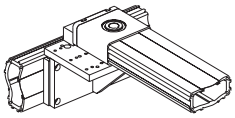
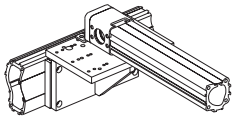
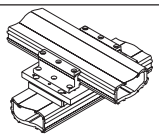
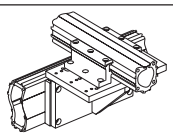
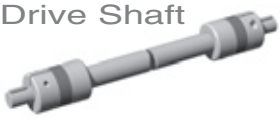




MULTI-AXIS CONNECTION SYSTEM



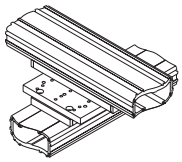
* For available standard combinations, see data sheet 1.38.001E-4

Adapter Plate Type MA1-..* For connecting carrier to carrier, carrier to profile mounting or carrier to end cap mounting. 	Combination C* 	Combination P* 	Combination EM* 
	Combination C* 	Combination P* 	Combination EM* 
Adapter Plate Type MA2-..* For connecting carrier to end cap. 	Combination E* 	Combination E* 	
Adapter Plate Type MA3-..* For connecting 90° carrier to profile mounting or carrier to end cap mounting. 	Combination P* 	Combination P* 	
	Combination EM* 	Combination EM* 	
Profile Mounting Type MAE-.. 			
Intermediate Drive Shaft Type MAS-. 			

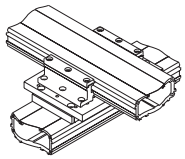
AVAILABLE MOUNTING COMBINATIONS

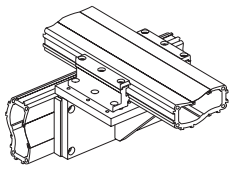
Available Mounting Combinations

Combination C*

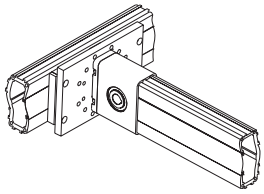


Combination P

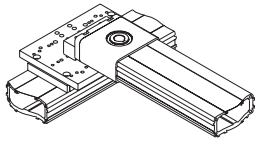


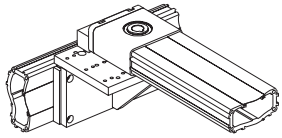


Combination E*



Combination EM*





Illustrations just show OSP-E..BHD examples

		OSP-E..BHD/BHD-BP												OSP-E..B/S/ST/SR*/BP											
		-25				-32				-50				-25				-32				-50			
Series	**Type**	C[1]	P[2]	E[3]	EM[4]	C[5]	P[6]	E[7]	EM[8]	C[9]	P[10]	E[11]	EM[12]	C[13]	P[14]	E[15]	EM[16]	C[17]	P[18]	E[19]	EM[20]	C[21]	P[22]	E[23]	EM[24]
OSP-E25BHD	**MA1-25**	X	X		X	X	X		X					X	X		X	X	X		X	X	X		X
OSP-E32BHD	**MA1-32**	X	X		X	X	X		X	X	X		X					X	X		X	X	X		X
OSP-E50BHD	**MA1-50**	X	X		X	X	X		X	X	X		X					X				X	X		X
OSP-E25BHD	**MA2-25**			X				X								X				X				X	
OSP-E32BHD	**MA2-32**			X				X				X								X				X	
OSP-E50BHD	**MA2-50**			X				X				X												X	
OSP-EBHD25	**MA3-25**		X		X		X		X						X		X		X		X		X		X
OSP-EBHD32	**MA3-32**		X		X		X		X		X		X						X		X		X		X
OSP-EBHD50	**MA3-50**		X		X		X		X		X		X										X		X

Abbreviations:
C = MAn to Carrier,
P = MAn to Profile mounting,
E = MAn to End cap,
EM = MAn to End cap mounting (n=1,2,3)
*For type OSP-ESR is only combination **P** available.

Values in superscript refer to corresponding adapter plate dimensions on data sheets 1.38.002E-1 to 1.38.002E-9.
e.g. Dimensions corresponding to combination option „C“ for adapter plate MA1-50 connected to an OSP-E32BHD carrier are shown with Superscript number [5] on the MA1-50 adapter plate data sheet 1.38.002E-3

Other combinations on request.

A3P154E00IZ50X

The right to introduce technical modifications is reserved

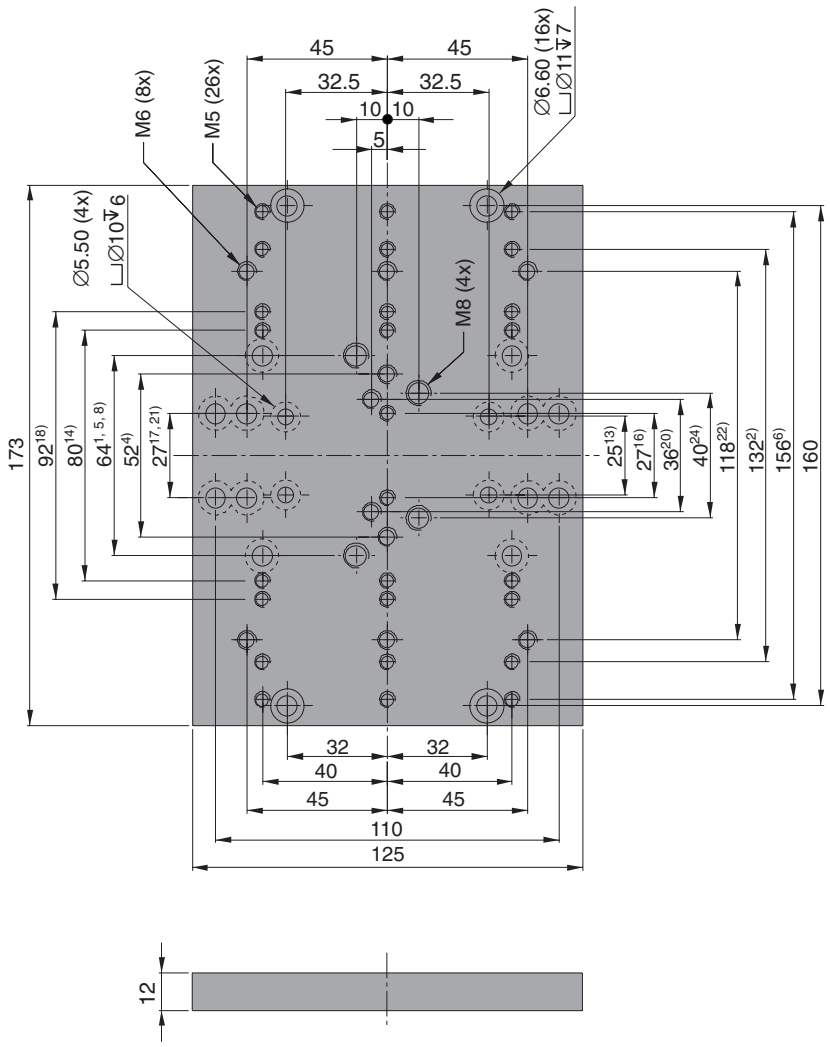
Linear Drives see 1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E25

OSP
ORIGA
SYSTEM
PLUS

Type: MA1-25

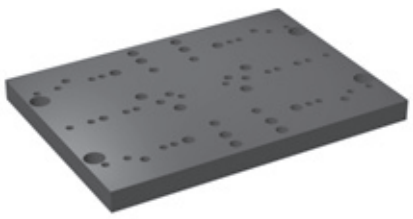
Dimensions (mm) Adapter Plate Type MA1-25



Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [5] correspond to the option ”C” for OSP-E32BHD actuator.

Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA1-25	0.7	**12269**



Linear Drives see 1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

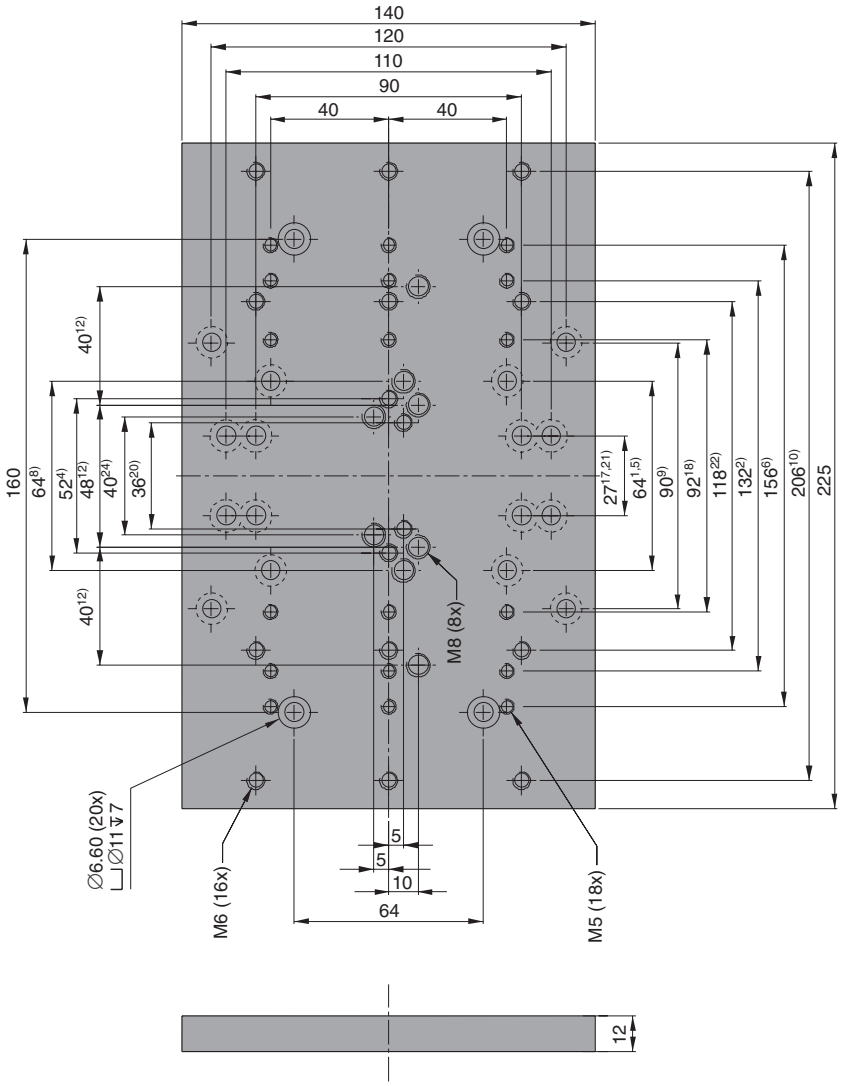
HOERBIGER
ORIGA

A1P559E00DZ00X
The right to introduce technical modifications is reserved

Adapter Plate
for OSP-E32

Type: MA1-32

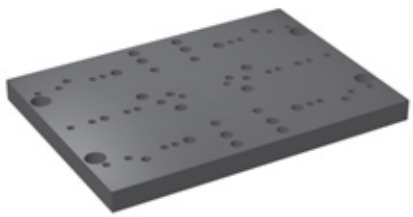
Dimensions (mm) Adapter Plate Type MA1-32



Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [5] correspond to the option ”C” for OSP-E32BHD actuator.

Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA1-32	1.0	**12272**



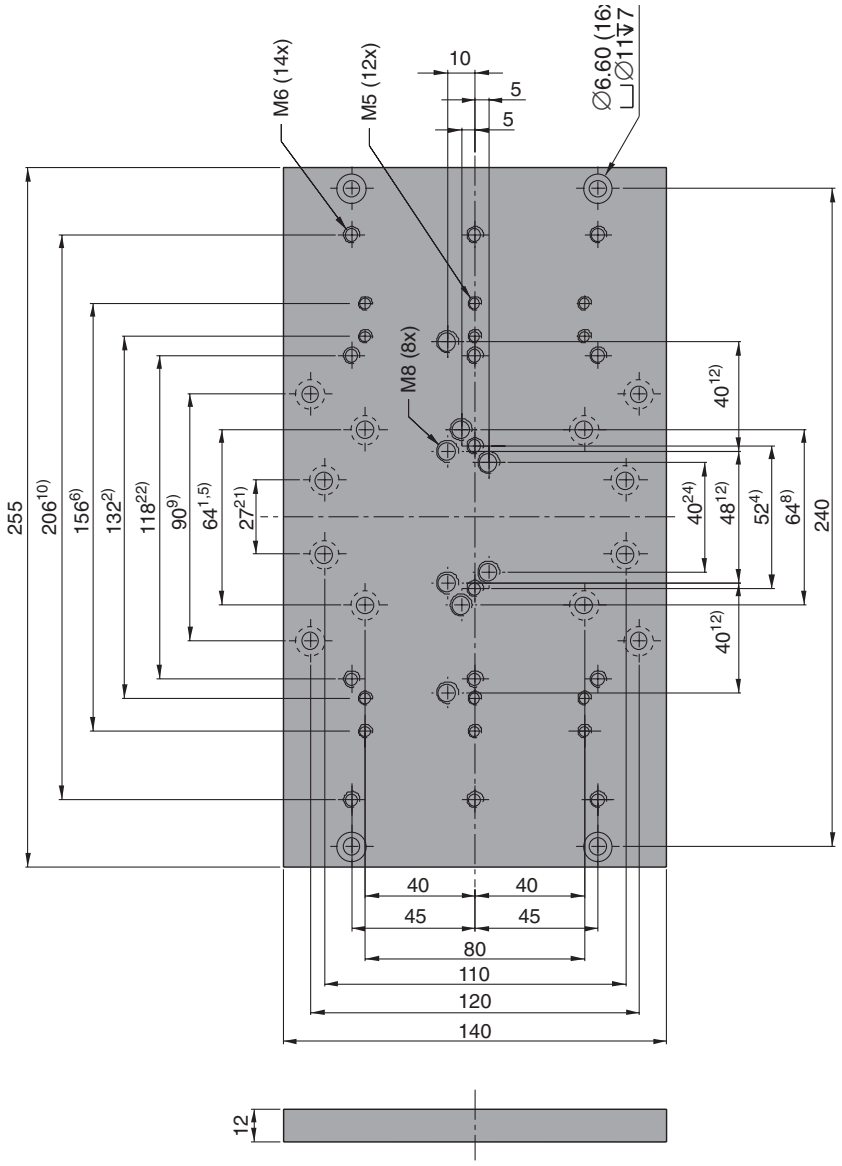
Linear Drives see	1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E50

OSP
ORIGA SYSTEM PLUS

Type: MA1-50

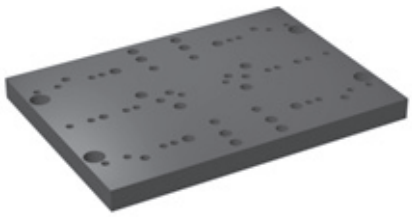
Dimensions (mm) Adapter Plate Type MA1-50



Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [5] correspond to the option ”C” for OSP-E32BHD actuator.

Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA1-50	1.1	**12275**

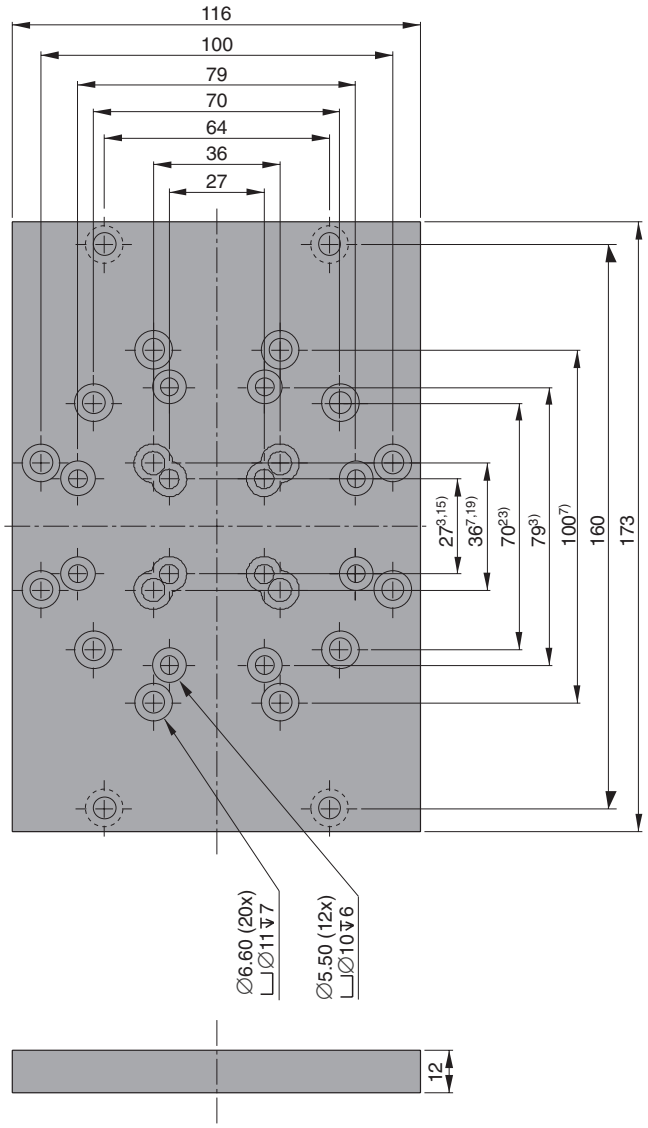


Linear Drives see 1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E25

Type: MA2-25

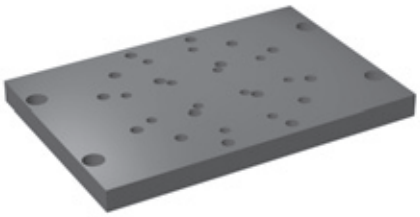
Dimensions (mm) Adapter Plate Type MA2-25



Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [3] correspond to the option ”E” for OSP-E25BHD actuator.

Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA2-25	0.6	**12270**

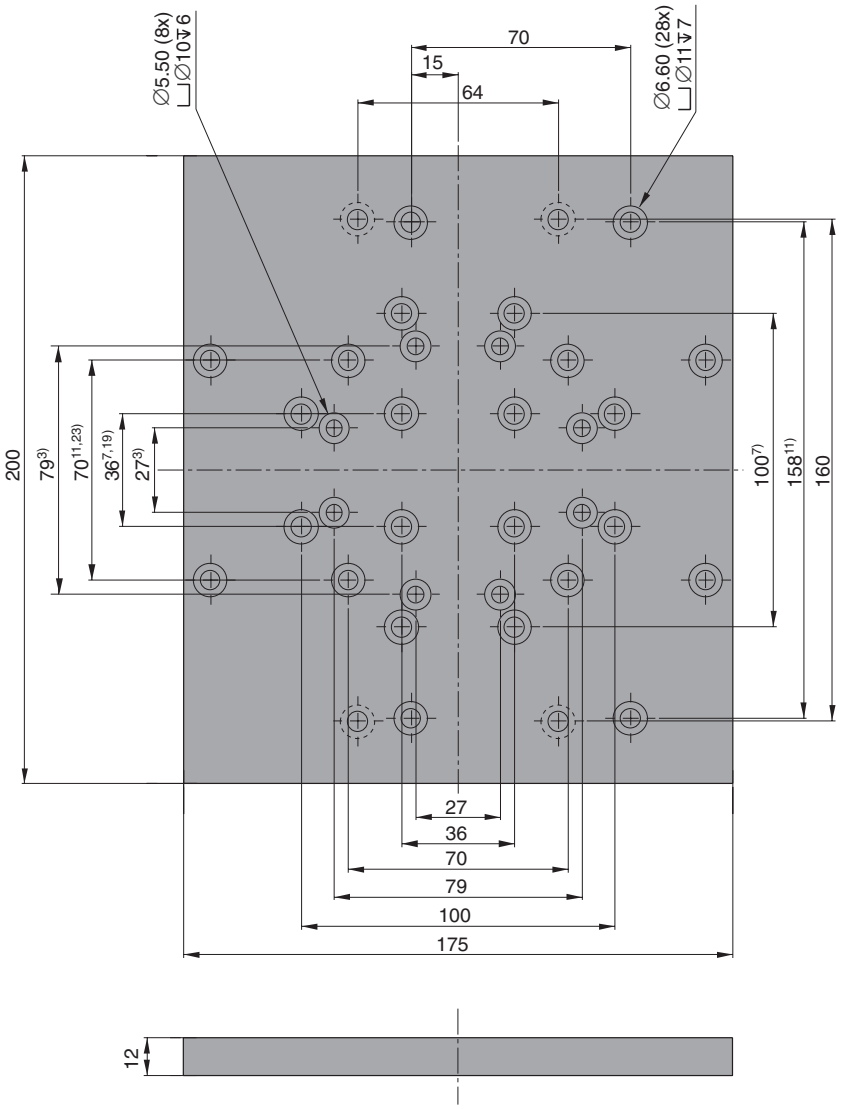


Linear Drives see 1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E32

Type: MA2-32

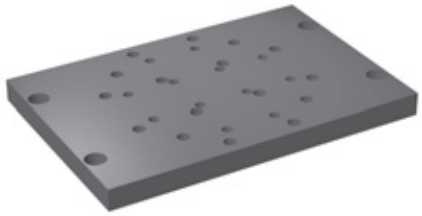
Dimensions (mm) Adapter Plate Type MA2-32



Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [3] correspond to the option ”E” for OSP-E25BHD actuator.

Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA2-32	1.1	**12273**



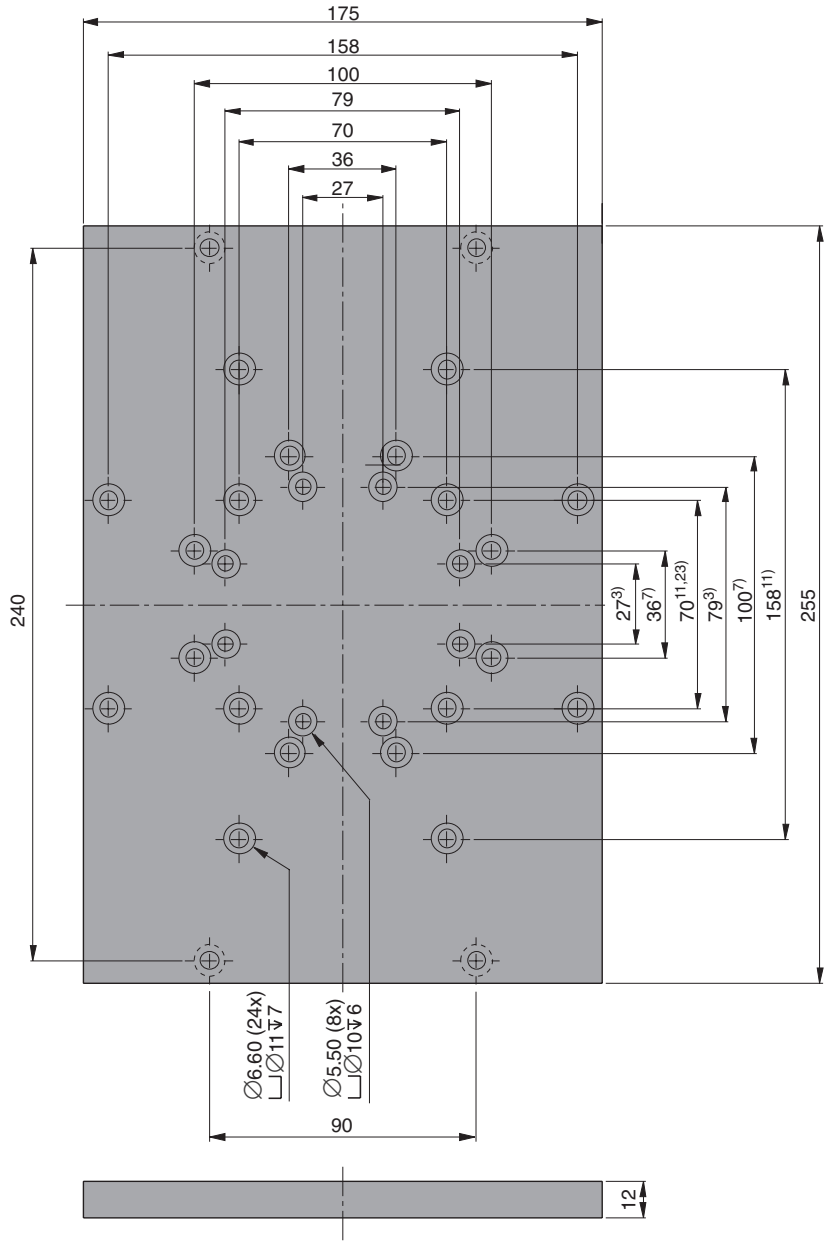
Linear Drives see 1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E50

OSP
ORIGA SYSTEM PLUS

Typ: MA2-50

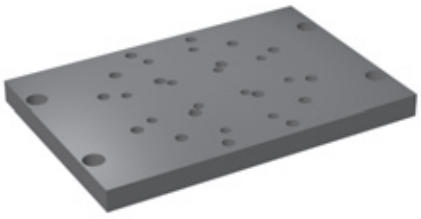
Dimensions (mm) Adapter Plate Type MA2-50



Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [3] correspond to the option ”E” for OSP-E25BHD actuator.

Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA2-50	1.4	**12276**

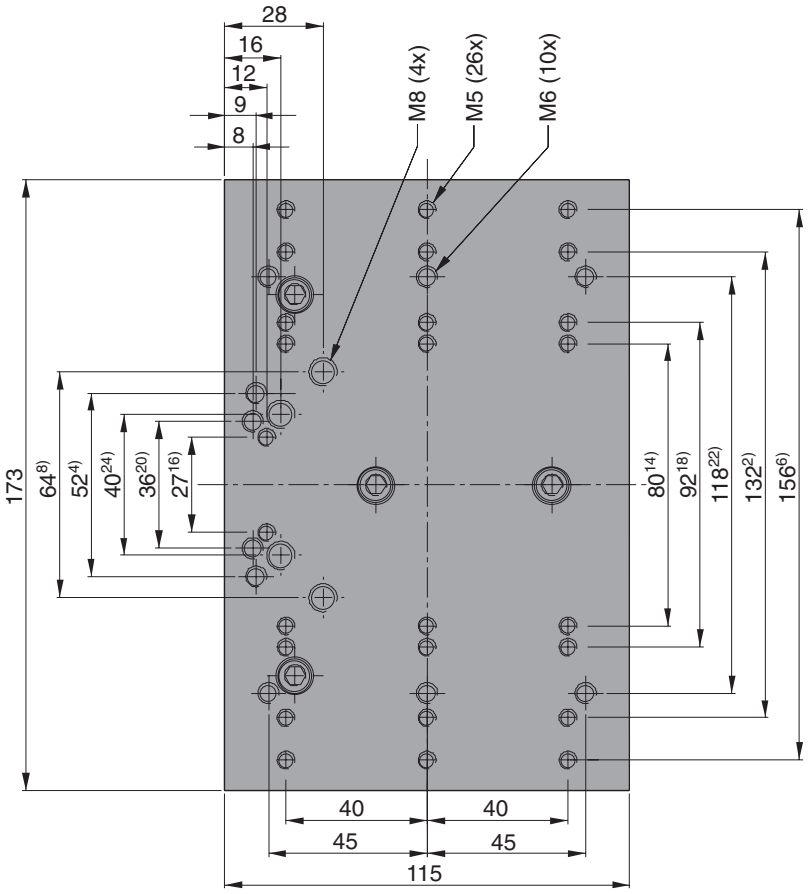


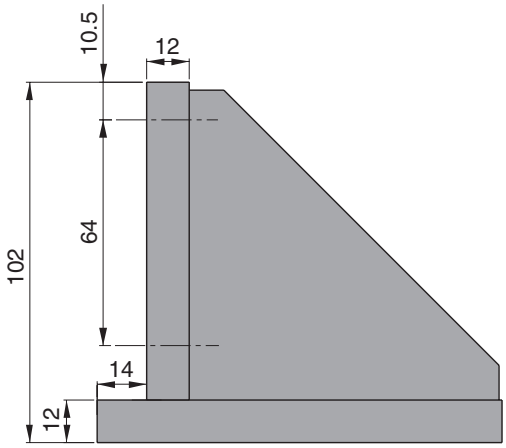
Linear Drives see 1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E25

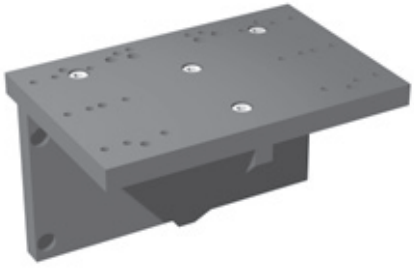
Type: MA3-25

Dimensions (mm) Adapter Plate Type MA3-25





Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [4] correspond to the option ”EM” for OSP-E25BHD actuator.



Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA3-25	1.3	**12271**

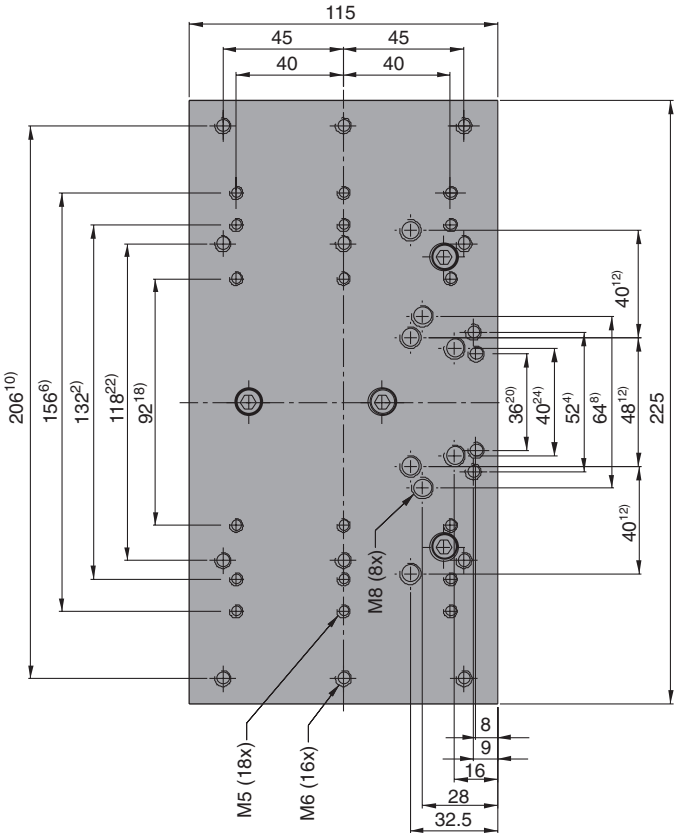
Linear Drives see	1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

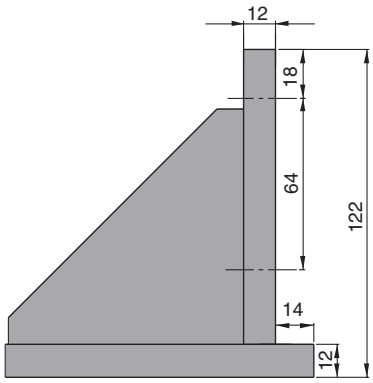
Adapter Plate
for OSP-E32

OSP
ORIGA
SYSTEM
PLUS

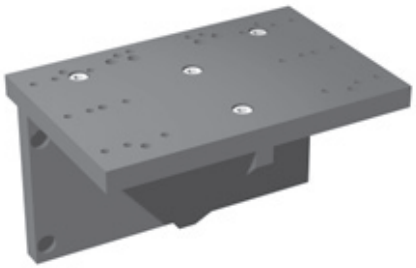
Type: MA3-32

Dimensions (mm) Adapter Plate Type MA3-32





Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [4] correspond to the option ”EM” for OSP-E25BHD actuator.



Order Instructions and Weight

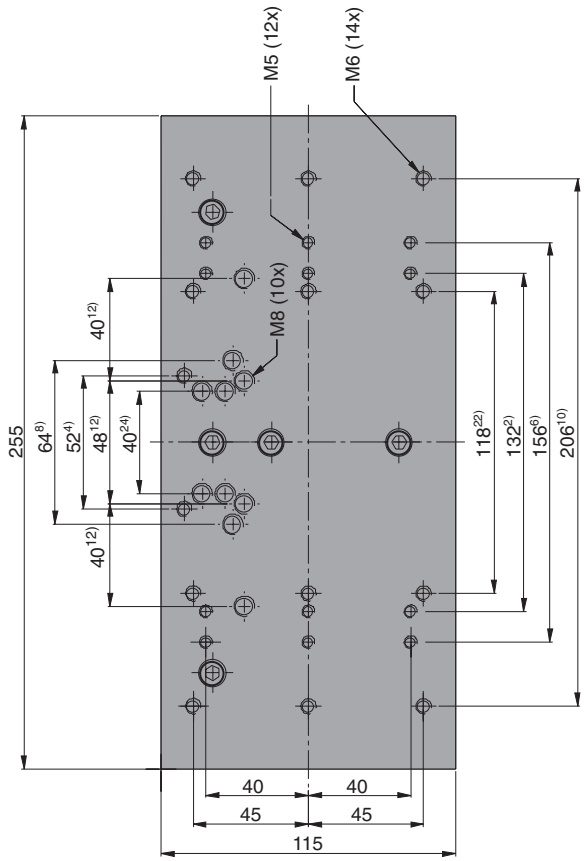
Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA3-32	1.8	**12274**

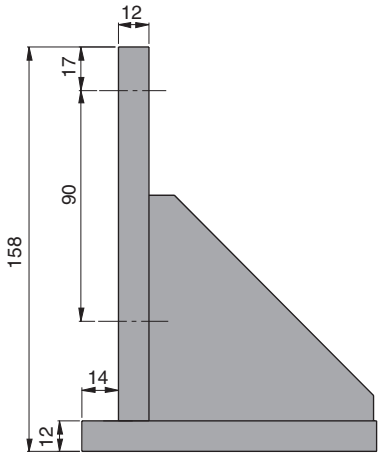
Linear Drives see	1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Adapter Plate
for OSP-E50

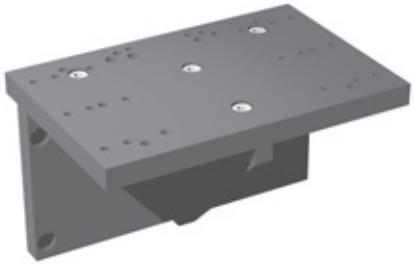
Type: MA3-50

Dimensions (mm) Adapter Plate Type MA3-50





Dimensions with superscript values refer to the corresponding available options detailed on data sheet 1.38.001E-4.
e.g. Dimensions with superscript number [4] correspond to the option ”EM” for OSP-E25BHD actuator.



Order Instructions and Weight

Description	Weight(mass) [kg]	**Order No.**
Adapter Plate Type MA3-50	2.3	**12277**

Linear Drives see	1.15.002E, 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E, 1.35.011E

Multi-Axis Accessories

Complete Intermediate Drive Shaft

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

For Linear Drive
• Series OSP-E..BHD

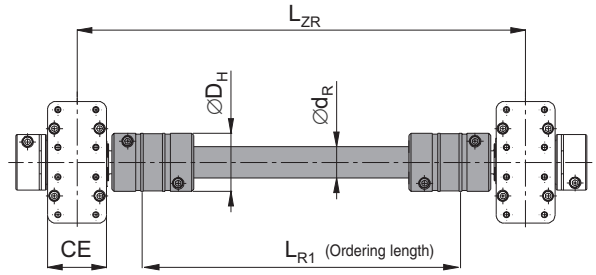
Note:
For Series OSP-E..BHD with integrated gearbox, please contact your local HOERBIGER-ORIGA technical support.

For other series on request.

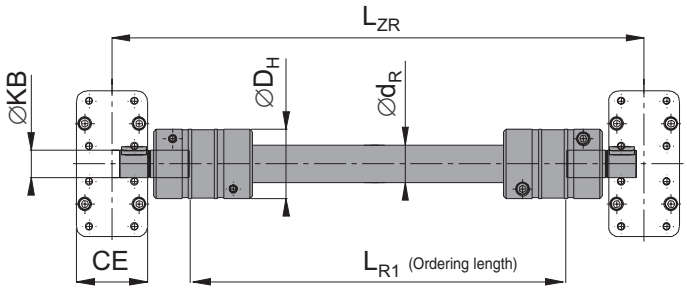
Features
Backlash-free shaft connection under pre-stress
Design up to speed 1500 rpm
Double cardan connection for larger displacements
Easy to mount

Material:
Aluminium (AL-H) / Steel (St-H)
Polyurethane/Hytrel

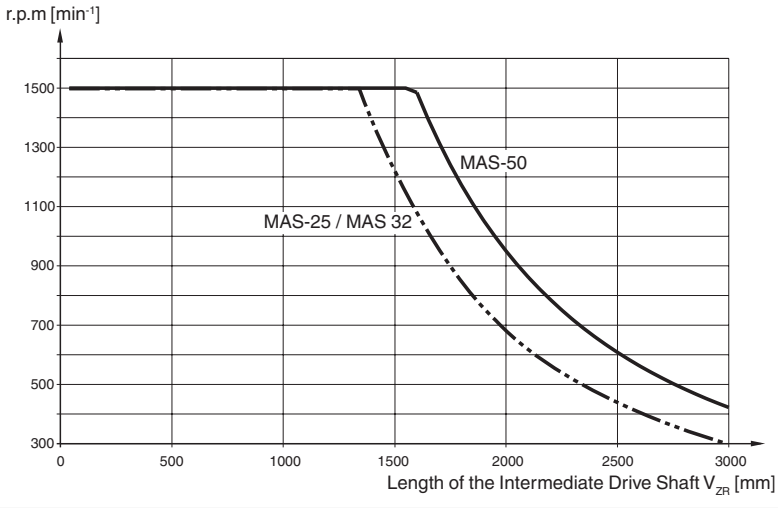
For Clamp Shaft with Connection Shaft Series OSP-E25BHD to E50BHD, Type MAS-

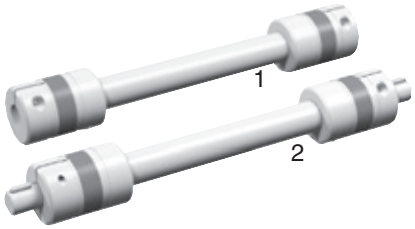


For Hollow Shaft with Keyway Series OSP-E25BHD to E50BHD, Type MAS-



Critical Speed v. for Coupling Length





1 = For Clamp Shaft with Connection Shaft
2 = For Hollow Shaft with Keyway

Characteristics / Dimension Table (mm)

Series	Type	Max Torque [Nm] **	CE	D_H	KB***	L_{ZR}	L_{R1}	d_R	Order No. *	
									For Clamp shaft	For Hollow shaft
OSP-E25BHD	**MAS-25**	39	42	55	16_{h7}	< 3000	L_{ZR} - 112	25 x 2.5	**12305-....**	**12281 - ....**
OSP-E32BHD	**MAS-32**	42	56	55	22_{h7}	< 3000	L_{ZR} - 126	25 x 2.5	**12306-....**	**12282 - ....**
OSP-E50BHD	**MAS-50**	102	87	65	32_{h7}	< 3000	L_{ZR} - 167	35 x 4.0	**12307-....**	**12283 - ....**

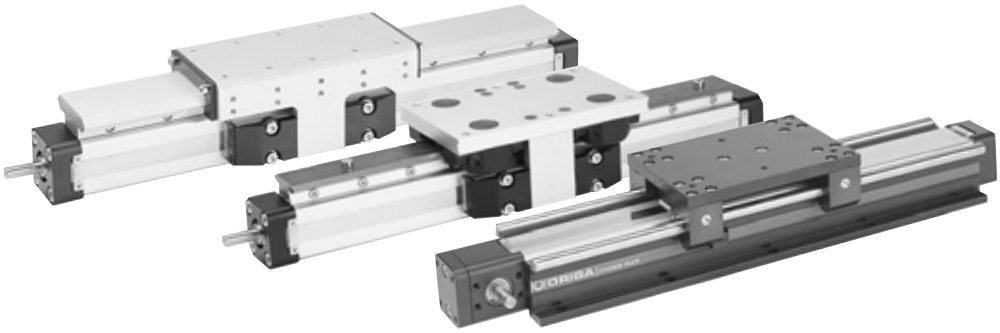
* **Complete with L_{R1} length in mm. Example: 12305 - 1200 (L_{R1} length = 1200 mm)**
** For higher torque requirement, please contact your local HOERBIGER-ORIGA technical support.
*** Other dimensions for KB on request. See OSP-E..BHD basic unit, data sheet 1.15.002E-4.

Linear Drives see 1.15.002E

HOERBIGER ORIGA

A1P679E00AAH00X
The right to introduce technical modifications is reserved

Linear Guides
Series OSP-E



Contents

Description	Data Sheet No.	Page
Overview	1.40.020E	103-104
Plain Bearing SLIDELINE	1.40.021E	105-106
Roller Guide POWERSLIDE	1.40.022E	107-109
Ball Bushing Guide GUIDELINE	1.40.023E	111-114
Aluminium Roller Guide PROLINE	1.40.024E	115-117

HOERBIGER ORIGA

OSP
ORIGA
SYSTEM
PLUS

Linear Guides

Electric linear drive
– **Series OSP-E..B** (Belt Driven)
– **Series OSP-E..S** (Screw Driven)
– **Series OSP-E..ST** (Screw Driven)



Adaptive modular system

The Origa system plus – OSP – provides a comprehensive range of linear guides for the pneumatic and electric linear drives.

SLIDELINE
The cost-effective plain bearing guide for medium loads.
Not available for OSP-E – Belt Drive series
See data sheet no. 1.40.021E

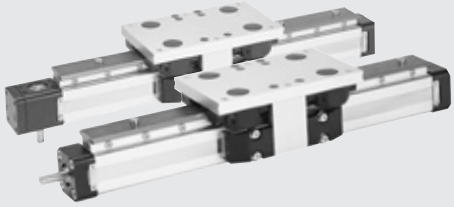


Versions:

Electric linear drive
Series:
- **OSP-E..B**
- **OSP-E..BP** on request
- **OSP-E..S**
- **OSP-E..ST**

Sizes:
25 - 32 - 50

POWERSLIDE
The roller guide for heavy loads.
See data sheet no. 1.40.022E



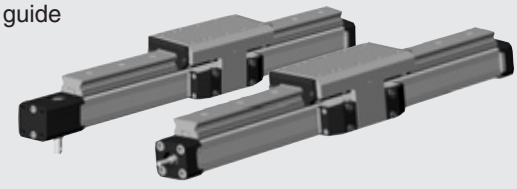
Advantages:

- Takes high loads and forces
- High precision
- Smooth operation
- Can be retrofitted
- Can be installed in any position

GUIDELINE
The ball bushing guide for the heaviest loads and greatest accuracy.
See data sheet no. 1.40.023E



PROLINE
The compact aluminium roller guide for high loads and velocities.
See data sheet no. 1.40.024E



Plain Bearing Guide SLIDELINE

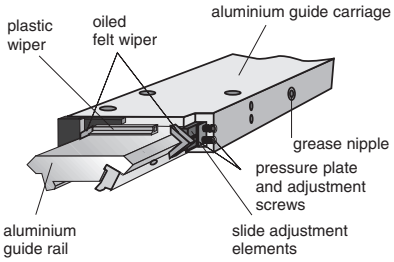
OSP
ORIGA SYSTEM PLUS

Series SL 25 bis 50
for Linear Drive
• Serie OSP-E Screw

Versions

Standard version
– for electric linear drive: Series OSP-E Screw





Technical Data

The table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

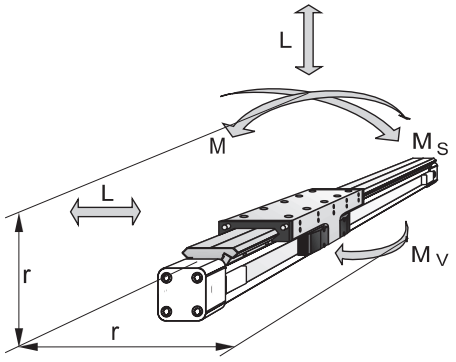
The load and moment figures apply to speeds v < 0.2 m/s.

Features:

- Anodised aluminium guide rail with prism-shaped slideway arrangement
- Adjustable plastic slide elements – optional with integral brake
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideways.
- Corrosion-resistant version available on request.

For further technical data see also linear drives OSP-E (1.30.002, 1.35.002).

Loads, forces and moments



Series	Max. Moments [Nm]			Max. Load [N]	Mass of drive with guide [kg] with 0 mm Stroke OSP-E Screw	Mass of drive with guide [kg] inrease per 100 mm Stroke OSP-E Screw	Mass * of guide carriage [kg]	Order-No. SLIDELINE [1] for OSP-E Screw without brake
	M	Ms	Mv	L				
SL 25	34	14	34	675	1.8	0.42	0.61	**20342**
SL 32	60	29	60	925	3.6	0.73	0.95	**20196**
SL50	180	77	180	2000	8.7	1.44	2.06	**20195**

[1] Corrosion resistant fixtures available on request

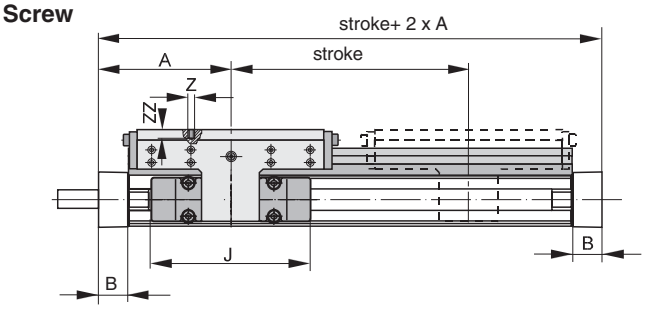
Linear drives see data sheet 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E
Mountings see data sheet 1.45.020E

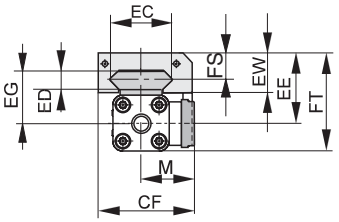
A1P641E00DZ00X
The right to introduce technical modifications is reserved

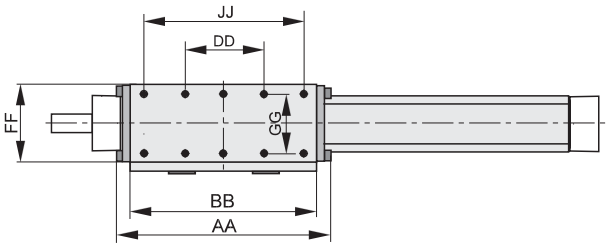
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Dimensions

Series OSP-E Screw







For further mounting elements and options see accessories.
For further information and technical data see data sheets for linear drives OSP-E (1.30.002E,1.35.002E)

Dimension Table (mm)

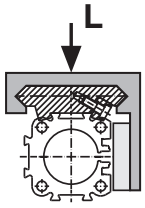
Series	A OSP-E Screw	B OSP-E Screw	J	M	Z	AA	BB	DD	CF	EC	ED	EE	EG	EW	FF	FT	FS	GG	JJ	ZZ
SL 25	100	22	117	40.5	M6	162	142	60	72.5	47	12	53	39	30	64	73.5	20	50	120	12
SL 32	125	25.5	152	49	M6	205	185	80	91	67	14	62	48	33	84	88	21	64	160	12
SL 50	175	33	200	62	M6	284	264	120	117	94	14	75	56	39	110	118.5	26	90	240	16

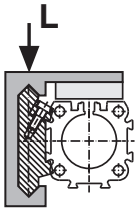
Mid-Section Support

(for versions see 1.45.023E)

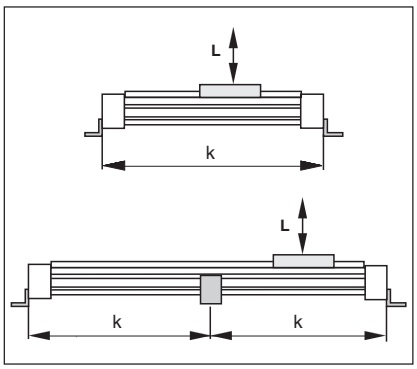
Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.

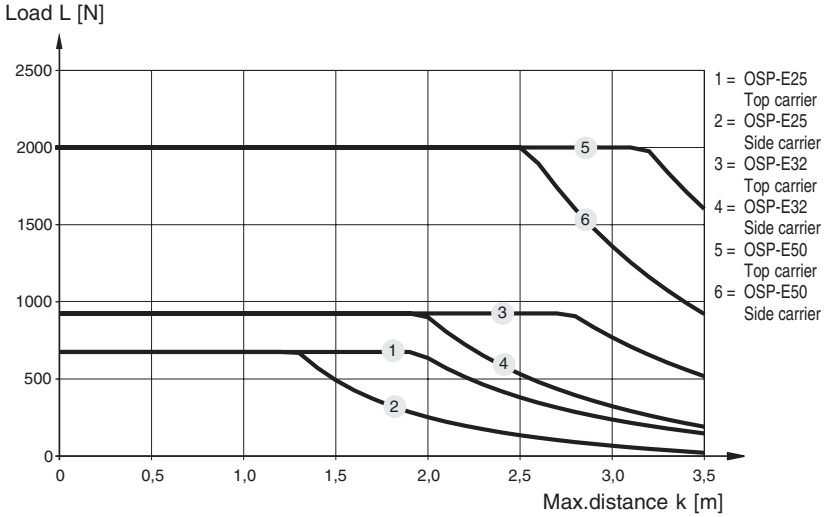
Load case 1
Top carrier





Load case 2
Side carrier





(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

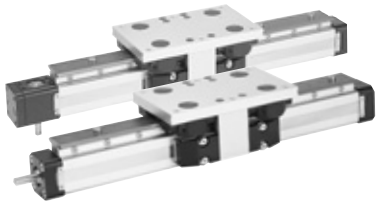
Roller Guide POWERSLIDE

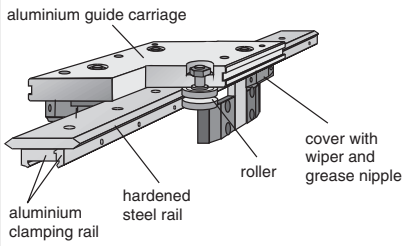
OSP
ORIGA SYSTEM PLUS

Series PS 25 to 50
for Linear Drive
- **Serie OSP-E Belt***
- **Serie OSP-E Screw**

Versions

– for electric linear drive:
Series OSP-E Belt
Series OSP-E Screw





Technical Data

The Table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

For further information and technical data see data sheets for linear drives OSP-E Belt (1.20.002E,1.25.002E) and OSP-E Ball Screw (1.30.002E,1.35.002E)

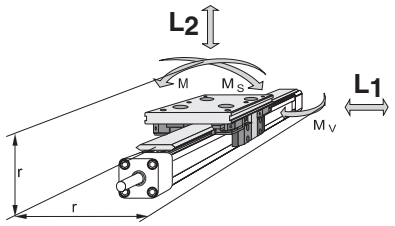
Features:

- Anodised aluminium guide carriage with vee rollers having 2 rows of ball bearings
- Hardened steel guide rail
- Several guide sizes can be used on the same drive
- Corrosion-resistance version available on request (only for Series OSP-P)
- Max. speed v = 3 m/s,
- Tough roller cover with wiper and grease nipple
- Any length of stroke up to 3500 mm, (longer strokes on request)
  The maximum stroke lengths of drives OSP-E..B and OSP-E..S must be observed.

OSP-E Belt:
For position of guides see page 1.40.022E-2

*** Series PS for OSP-E Bi-parting version on request**

Loads, forces and moments



Example: PS 25/35

- 25 → size of drive OSP-E25)
- 35 → width of guide rail (35 mm)

Series	Max. Moments [Nm]			Max. Load [N]	Mass of drive with guide [kg] with 0 mm stroke		increase per 100 mm stroke		Mass * of guide carriage	Order No. Powerslide for [kg]	
	M	Ms	Mv	L_1, L_2	OSP-E Belt	OSP-E Screw	OSP-E Belt	OSP-E Screw		OSP-E* Belt	OSP-E Screw
PS 25/25	63	14	63	910	1.9	1.8	0.30	0.37	0.7	**20304**	**20015**
PS 25/35	70	17	70	1010	2.1	1.9	0.34	0.41	0.8	**20305**	**20016**
PS 25/44	175	20	175	1190	3.0	2.7	0.42	0.49	1.5	**20306**	**20017**
PS 32/35	70	20	70	1400	3.1	3.2	0.51	0.63	0.8	**20307**	**20286**
PS 32/44	175	50	175	2300	4.0	4.1	0.59	0.70	1.5	**20308**	**20287**
PS 50/60	250	90	250	3000	8.8	8.7	1.04	1.36	2.3	**20309**	**20288**
PS 50/76	350	140	350	4000	12.2	12.0	1.28	1.6	4.9	**20310**	**20289**

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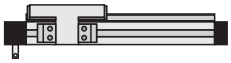
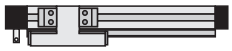
The right to introduce technical modifications is reserved

Linear drives see data sheet 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E
Mountings see data sheet 1.45.020E

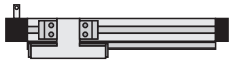
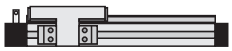
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OSP-E Belt – If combined with a linear guide, please also state position of linear guide

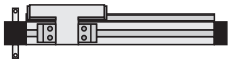
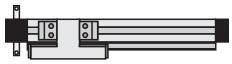
Position of Drive Shaft
Standard = 0

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Position of Drive Shaft
Opposite to Standard = 1

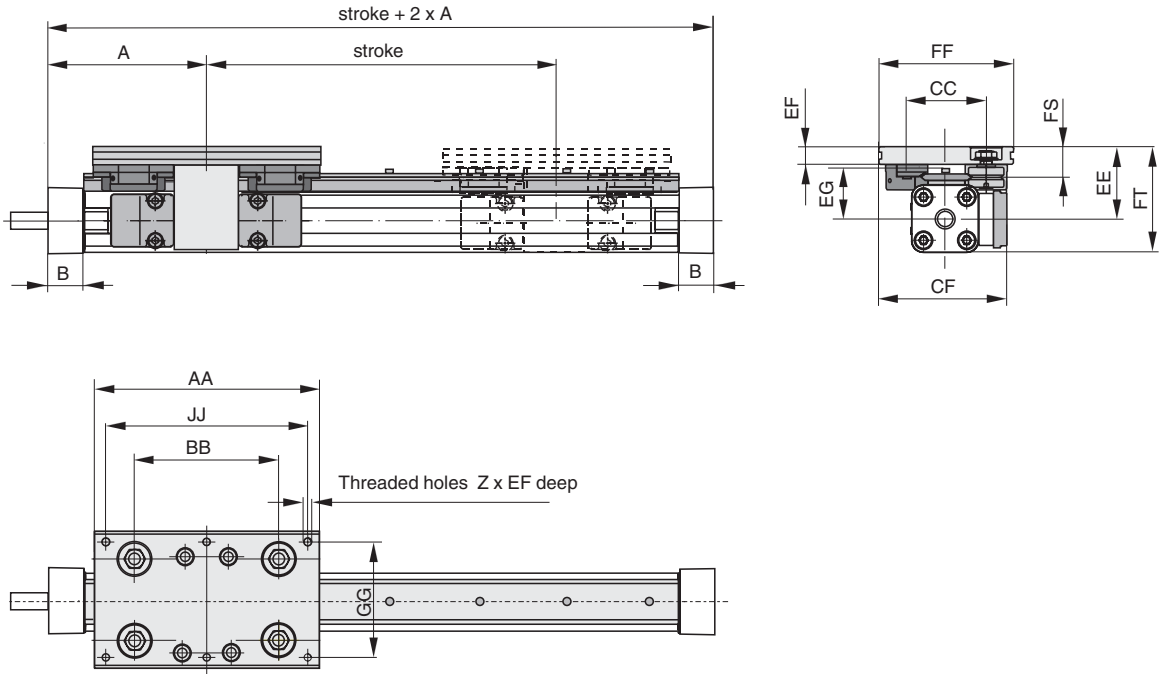
Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Position of Drive Shaft
Both Sides = 2

Position of Linear Guide
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

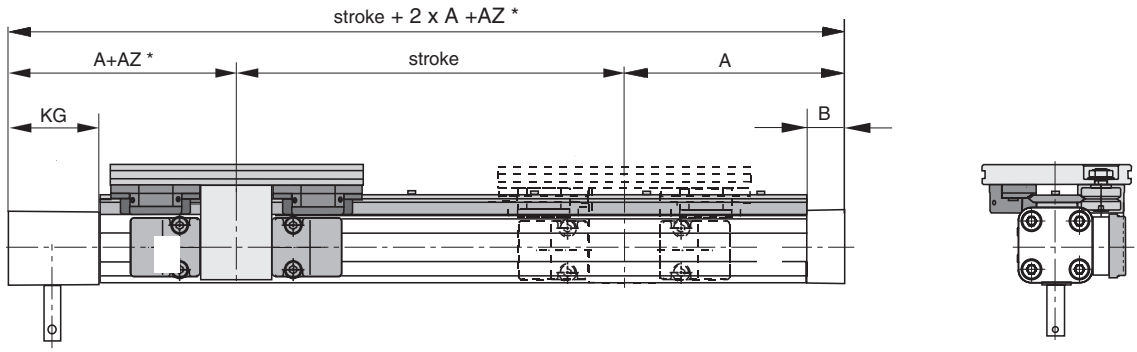
Dimensions

Series OSP-E Screw



Dimensions

Series OSP-E Belt

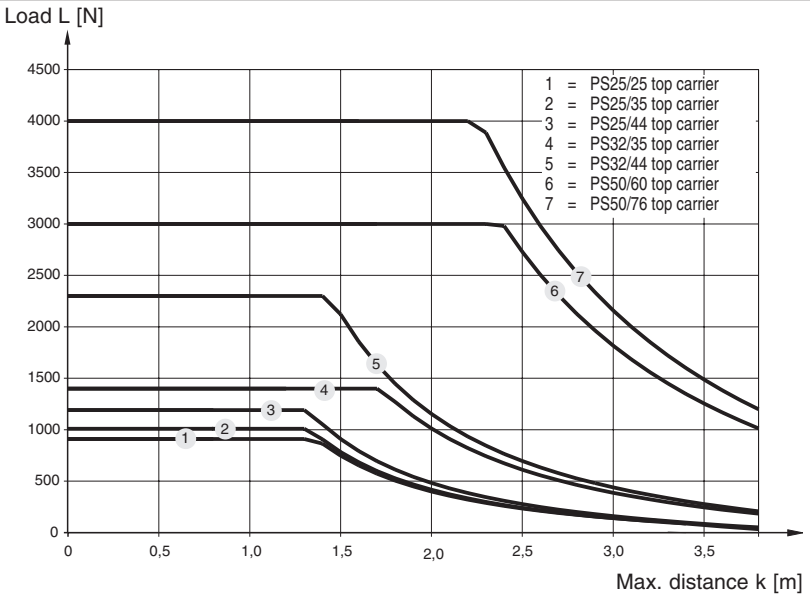


*** Please note:**
The dimension "AZ" must be added to "A". Stroke length to order is stroke + dimension "AZ" + safety clearance
Please also note the effect of dimension "AZ" when retrofitting a guide – contact your local HOERBIGER-ORIGA technical support department.

Dimension Table (mm)

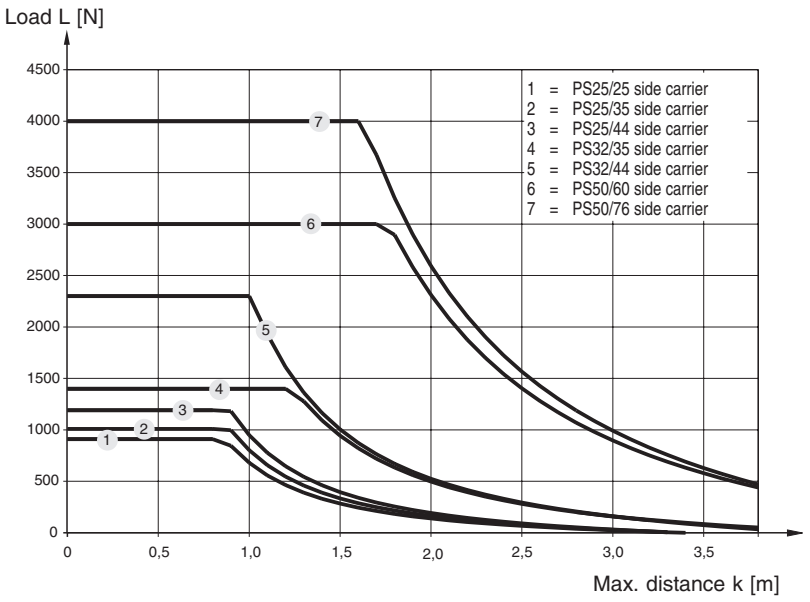
Series	A OSP-E Belt	A OSP-E Screw	B OSP-E Belt	B OSP-E Screw	Z	AA	AZ	BB	CC	CF	EE	EF	EG	FF	FS	FT	GG	JJ	KG
PS 25/25	125	100	22	22	6xM6	145	5	90	47	79.5	53	11	39	80	20	73.5	64	125	57
PS 25/35	125	100	22	22	6xM6	156	10	100	57	89.5	52.5	12.5	37.5	95	21.5	73	80	140	57
PS 25/44	125	100	22	22	6xM8	190	27	118	73	100	58	15	39	116	26	78.5	96	164	57
PS 32/35	150	125	25	25.5	6xM6	156	–	100	57	95.5	58.5	12.5	43.5	95	21.5	84.5	80	140	61
PS 32/44	150	125	25	25.5	6xM8	190	6	118	73	107	64	15	45	116	26	90	96	164	61
PS 50/60	200	175	25	33	6xM8	240	5	167	89	130.5	81	17	61	135	28.5	123.5	115	216	85
PS 50/76	200	175	25	33	6xM10	280	25	178	119	155.5	93	20	64	185	39	135.5	160	250	85

Load Case 1 – Top Carrier



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

Load Case 2 – Side Carrier

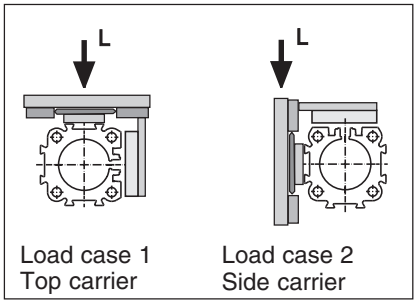


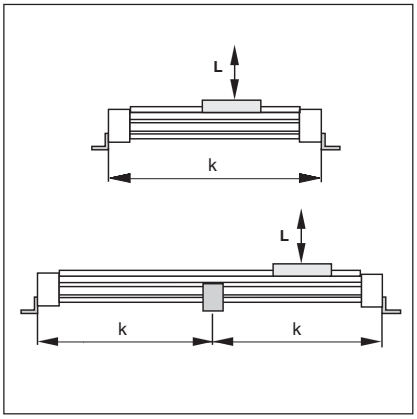
(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

Mid-Section Support

(for versions see 1.45.023E,1.25.024E)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.





Other Mountings and Options see data sheet 1.45.024.

Service life

Calculation of service life is achieved in two stages:

- Determination of load factor L_F from the loads to be carried
- Calculation of service life in km

1. Calculation of load factor L_F

$$L_F = \frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}}$$

with combined loads, L_F should not exceed the value 1.

Lubrication

For maximum system life, lubrication of the rollers must be maintained at all times.

Only high quality lithium-based greases should be used.

Lubrication intervals are dependent on environmental conditions (temperature, running speed, grease quality etc.) therefore the installation should be regularly inspected.

2. Calculation of service life

- **For PS 25/25, PS 25/35 and PS 32/35**

$$\text{Service life [km]} = \frac{106}{(L_F + 0.02)^3}$$

- **For PS 25/44, PS 32/44 and PS 50/60:**

$$\text{Service life [km]} = \frac{314}{(L_F + 0.015)^3}$$

- **For PS 50/76:**

$$\text{Service life [km]} = \frac{680}{(L_F + 0.015)^3}$$

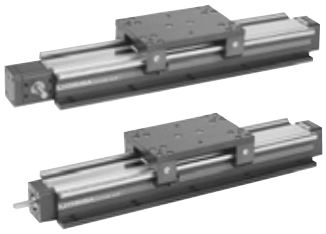
Ball bushing guide GUIDELINE

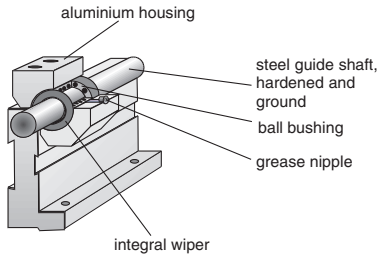
OSP
ORIGA SYSTEM PLUS

Series GDL 25 to 50
for Linear Drive
- **Series OSP-E Belt ***
- **Series OSP-E Screw**

Versions

– Versions for linear drive
Series OSP-E Belt
Series OSP-E Screw



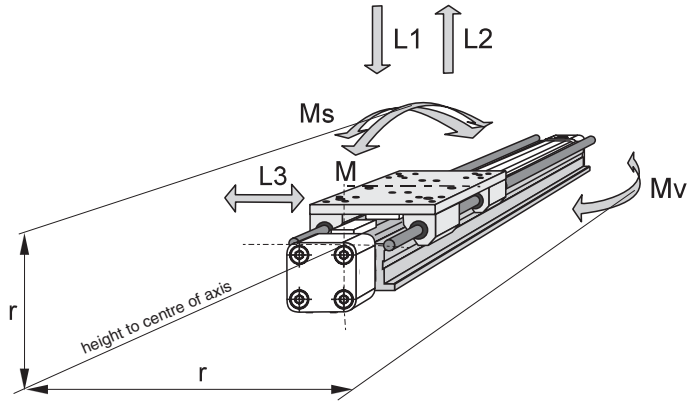


Technical Data

The Table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

For further information and technical data see data sheets for linear drives OSP-E (1.20.002E,1.25.002E, 1.30.002E, 1.35.002E).

Loads, forces and moments



Features

- Anodised aluminium guide rail with four ball bushings
- Hardened and ground steel guide shafts
- Stainless steel guide shafts available on request
- Max. speed v = 3 m/s
- Any length of stroke up to 6000 mm (longer strokes on request)
  The maximum stroke lengths of drives OSP-E..B and OSP-E..S must be observed.

*** Series GDL for OSP-E Bi-parting version on request**

Series	Max. Moments [Nm]			Max. Load [N]			Mass of drive with guide carriage [kg] with 0 mm stroke		increase per 100 mm stroke		Mass of guide carriage [kg]	Order No. GUIDELINE for	
	M	Ms	Mv	L_1	L_2	L_3	OSP-E Belt	OSP-E Screw	OSP-E Belt	OSP-E Screw		OSP-E* Belt	OSP-E Screw
GDL 25	115	75	90	2500	2100	1650	2.8	2.7	0.62	0.69	1.1	**20315**	**20175**
GDL 32	145	90	115	2500	2100	1650	4.1	4.2	0.82	0.94	1.2	**20182**	**20180**
GDL 50	500	375	355	8000	6250	4400	10.5	10.5	1.70	2.01	2.2	**20316**	**20183**

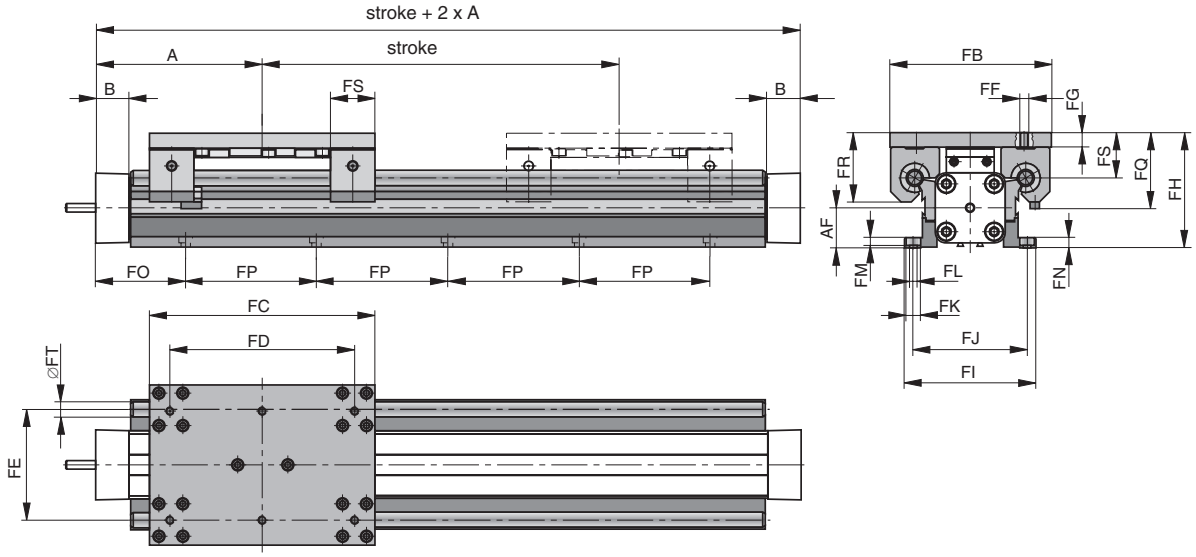
Linear drives see data sheets 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E
Mountings see data sheet 1.45.020E

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

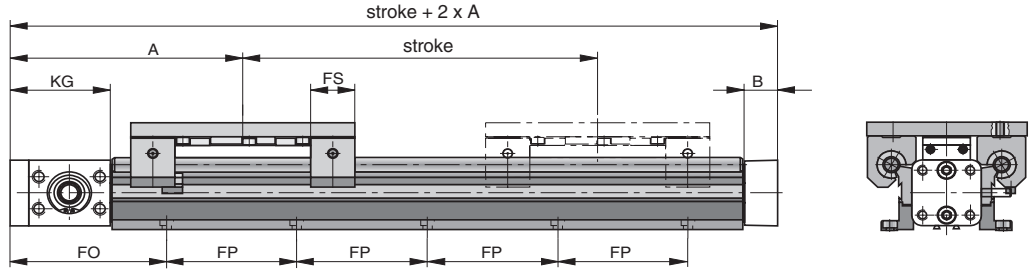
Dimensions

Series OSP-E Screw



Dimensions

Series OSP-E Belt



For further options see 1.45.024E

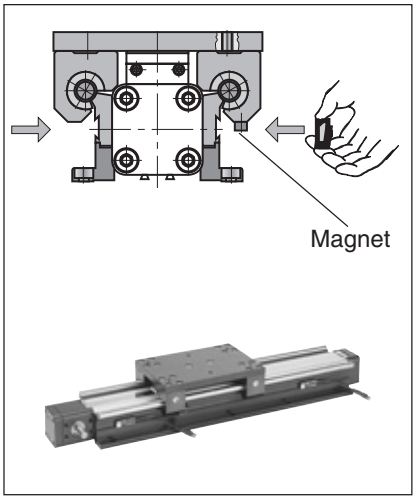
Note:

The Guideline linear guide must be mounted on a flat surface along its entire length. For the OSP-E linear drive, the motor dimensions must be checked relative to the flat surface.

Arrangement of magnetic switches:

Magnetic switches can be fitted anywhere on either side.
The magnet can be screwed on to one of the four ball bushing housings from underneath.

Magnetic Switches
– see accessories 1.45.101E
Linear Drives
OSP-E see data sheet 1.20.002E, 1.25.002E, 1.30.002E and 1.35.002E



Dimension Table (mm)

Series	A		B		AF	FB	FC	FD	FE	FF	FG	FH	FI	FJ	øFK	øFL	FM	FN	FP	FQ	FR	FS	øFT	FU	KG
	OSP-E Belt	OSP-E Screw	OSP-E Belt	OSP-E Screw																					
GDL 25	125	100	22	22	22	120	145	110	70	M6	11	78	86	73	10.5	6.0	5.7	8	100	56.5	51.5	33.5	12	32	57
GDL 32	150	125	25	25.5	30	120	170	140	80	M6	11	86	98	85	10.5	6.0	5.7	8	100	56.5	51.5	33.5	12	32	61
GDL 50	200	175	25	33	48	180	200	160	120	M8	14	118	134	118	12	7.5	6.8	10	100	73	61	38	16	36	85

FO						
	OSP-E Screw			OSP-E Belt		
X	E25	E32	E50	E25	E32	E50
00	50.0	75.0	75.0	92.0	117.5	129.5
01	50.5	75.5	75.5	92.5	118.0	130.0
02	51.0	76.0	76.0	93.0	118.5	130.5
03	51.5	76.5	76.5	93.5	119.0	131.0
04	52.0	77.0	77.0	94.0	119.5	131.5
05	52.5	77.5	77.5	94.5	120.0	132.0
06	53.0	78.0	78.0	95.0	120.5	132.5
07	53.5	78.5	78.5	95.5	71.0	133.0
08	54.0	79.0	79.0	96.0	71.5	133.5
09	54.5	79.5	79.5	96.5	72.0	134.0
10	55.0	80.0	80.0	97.0	72.5	134.5
11	55.5	80.5	80.5	97.5	73.0	135.0
12	56.0	81.0	81.0	98.0	73.5	135.5
13	56.5	81.5	81.5	98.5	74.0	136.0
14	57.0	82.0	82.0	99.0	74.5	136.5
15	57.5	82.5	82.5	99.5	75.0	137.0
16	58.0	83.0	83.0	100.0	75.5	137.5
17	58.5	83.5	83.5	100.5	76.0	138.0
18	59.0	84.0	84.0	101.0	76.5	138.5
19	59.5	84.5	84.5	101.5	77.0	139.0
20	60.0	85.0	85.0	102.0	77.5	139.5
21	60.5	85.5	85.5	102.5	78.0	140.0
22	61.0	36.0	86.0	103.0	78.5	140.5
23	61.5	36.5	86.5	103.5	79.0	141.0
24	62.0	37.0	87.0	104.0	79.5	141.5
25	62.5	37.5	87.5	104.5	80.0	142.0
26	63.0	38.0	88.0	105.0	80.5	142.5
27	63.5	38.5	88.5	105.5	81.0	143.0
28	64.0	39.0	89.0	106.0	81.5	143.5
29	64.5	39.5	89.5	106.5	82.0	144.0
30	65.0	40.0	90.0	107.0	82.5	144.5
31	65.5	40.5	90.5	107.5	83.0	95.0
32	66.0	41.0	91.0	108.0	83.5	95.5
33	66.5	41.5	91.5	108.5	84.0	96.0
34	67.0	42.0	92.0	109.0	84.5	96.5
35	67.5	42.5	92.5	109.5	85.0	97.0
36	68.0	43.0	93.0	110.0	85.5	97.5
37	68.5	43.5	43.5	110.5	86.0	98.0
38	69.0	44.0	44.0	111.0	86.5	98.5
39	69.5	44.5	44.5	111.5	87.0	99.0
40	70.0	45.0	45.0	112.0	87.5	99.5
41	70.5	45.5	45.5	112.5	88.0	100.0
42	71.0	46.0	46.0	113.0	88.5	100.5
43	71.5	46.5	46.5	113.5	89.0	101.0
44	72.0	47.0	47.0	114.0	89.5	101.5
45	72.5	47.5	47.5	114.5	90.0	102.0
46	73.0	48.0	48.0	115.0	90.5	102.5
47	73.5	48.5	48.5	115.5	91.0	103.0
48	74.0	49.0	49.0	116.0	91.5	103.5
49	74.5	49.5	49.5	116.5	92.0	104.0

FO						
	OSP-E Screw			OSP-E Belt		
X	E25	E32	E50	E25	E32	E50
50	75.0	50.0	50.0	67.0	92.5	104.5
51	75.5	50.5	50.5	67.5	93.0	105.0
52	76.0	51.0	51.0	68.0	93.5	105.5
53	76.5	51.5	51.5	68.5	94.0	106.0
54	77.0	52.0	52.0	69.0	94.5	106.5
55	77.5	52.5	52.5	69.5	95.0	107.0
56	78.0	53.0	53.0	70.0	95.5	107.5
57	78.5	53.5	53.5	70.5	96.0	108.0
58	79.0	54.0	54.0	71.0	96.5	108.5
59	79.5	54.5	54.5	71.5	97.0	109.0
60	80.0	55.0	55.0	72.0	97.5	109.5
61	80.5	55.5	55.5	72.5	98.0	110.0
62	81.0	56.0	56.0	73.0	98.5	110.5
63	81.5	56.5	56.5	73.5	99.0	111.0
64	82.0	57.0	57.0	74.0	99.5	111.5
65	32.5	57.5	57.5	74.5	100.0	112.0
66	33.0	58.0	58.0	75.0	100.5	112.5
67	33.5	58.5	58.5	75.5	101.0	113.0
68	34.0	59.0	59.0	76.0	101.5	113.5
69	34.5	59.5	59.5	76.5	102.0	114.0
70	35.0	60.0	60.0	77.0	102.5	114.5
71	35.5	60.5	60.5	77.5	103.0	115.0
72	36.0	61.0	61.0	78.0	103.5	115.5
73	36.5	61.5	61.5	78.5	104.0	116.0
74	37.0	62.0	62.0	79.0	104.5	116.5
75	37.5	62.5	62.5	79.5	105.0	117.0
76	38.0	63.0	63.0	80.0	105.5	117.5
77	38.5	63.5	63.5	80.5	106.0	118.0
78	39.0	64.0	64.0	81.0	106.5	118.5
79	39.5	64.5	64.5	81.5	107.0	119.0
80	40.0	65.0	65.0	82.0	107.5	119.5
81	40.5	65.5	65.5	82.5	108.0	120.0
82	41.0	66.0	66.0	83.0	108.5	120.5
83	41.5	66.5	66.5	83.5	109.0	121.0
84	42.0	67.0	67.0	84.0	109.5	121.5
85	42.5	67.5	67.5	84.5	110.0	122.0
86	43.0	68.0	68.0	85.0	110.5	122.5
87	43.5	68.5	68.5	85.5	111.0	123.0
88	44.0	69.0	69.0	86.0	111.5	123.5
89	44.5	69.5	69.5	86.5	112.0	124.0
90	45.0	70.0	70.0	87.0	112.5	124.5
91	45.5	70.5	70.5	87.5	113.0	125.0
92	46.0	71.0	71.0	88.0	113.5	125.5
93	46.5	71.5	71.5	88.5	114.0	126.0
94	47.0	72.0	72.0	89.0	114.5	126.5
95	47.5	72.5	72.5	89.5	115.0	127.0
96	48.0	73.0	73.0	90.0	115.5	127.5
97	48.5	73.5	73.5	90.5	116.0	128.0
98	49.0	74.0	74.0	91.0	116.5	128.5
99	49.5	74.5	74.5	91.5	117.0	129.0

Note:

The dimension FO is derived from the last two digits of the stroke:

Example:

Stroke 15 ***25*** mm



For a cylinder OSP-E25 the adjacent table indicates that for x=25mm:

FO = 62.5 mm

System Life

The calculation for expected service life is achieved in three steps:

- Determination of the load factor L_F, inserting actual values into the adjacent equation
- Determination of guidance constant K_F
- Calculation of the service life in km

Lubrication

For maximum system life, lubrication of the ball bushings must be maintained at all times.

Only high quality lithium-based greases should be used.

Lubrication intervals are dependent on environmental conditions (temperature, running speed, grease quality etc.) therefore the installation should be regularly inspected.

1. Calculation of load factor L_F

$$L_F = \frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}} + \frac{L_3}{L_{3max}}$$

with combined loads, L_F should not exceed the value 1.

2. Guidance constant K_F

Installation	guidance constant K_F	
	GDL 25, GDL 32	GDL 50
Horizontal	200	210
Sideways	250	320
Vertical	90	120

3. Service life calculation

Approximate service life is calculated using the following equation:

$$\text{Service life [km]} = \frac{K_F}{L_F{}^3}$$

Aluminium Roller Guide PROLINE

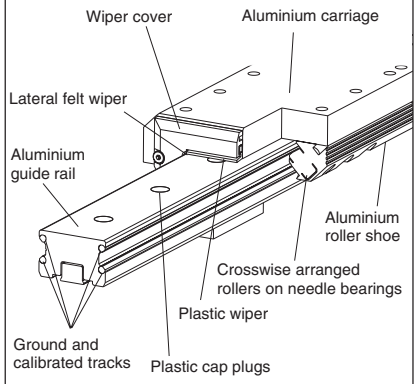
OSP
ORIGA SYSTEM PLUS

Series PL 25 to 50
for Linear Drive
- **Series OSP-E Belt ***
- **Series OSP-E Screw**

Versions

Standard versions
– for electric Linear Drive:
Series OSP-E Belt
Series OSP-E Screw





Technical Data

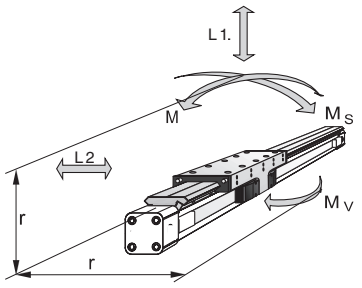
The table shows the maximum permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{M}{M_{max}} + \frac{M_S}{M_{S\,max}} + \frac{M_V}{M_{V\,max}} + \frac{L_1}{L_{1max}} + \frac{L_2}{L_{2max}} \leq 1$$

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

With a load factor of ≤ 1, the service life is 5000 km.
The sum of the loads should not exceed >1

Loads, Forces and Moments



Series	Max. Moments [Nm]			Max. Load [N]	Mass of drive with guide [kg] with 0 mm stroke		inrease per 100 mm stroke		Mass guide-carriage [kg]	Order No. PROLINE 1) for	
	M	Ms	Mv	L1, L2	OSP-E Belt	OSP-E Screw	OSP-E Belt	OSP-E Screw		OSP-E Belt*	OSP-E Screw
PL 25	44	19	44	986	1.9	1.8	0.33	0.40	0.75	**20874**	**20856**
PL 32	84	33	84	1348	3.6	3.7	0.58	0.70	1.18	**20875**	**20857**
PL 50	287	128	287	3582	8.9	8.8	1.00	1.32	2.50	**20876**	**20859**

1) Stainless steel version on request

Features:

- High precision
- High velocities (10 m/s)
- Smooth operation - low noise
- Integated wiper system
- Long life lubrication
- Compact dimensions - compatible to Slideline plain bearing guide
- Stainless steel version available on request
- Any length of stroke up to 3750 mm The maximum stroke lengths of drives OSP-E..B and OSP-E..S must be observed.

OSP-E Belt:
for position of guides see page 1.40.024E-2

For further information and technical data see data sheets for linear drives OSP-E Belt (1.20.002E,1.25.002E) and OSP-E Ball Screw (1.30.002E,1.35.002E)

*** Series PL for OSP-E Bi-parting version on request**

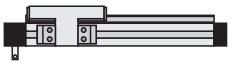
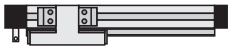
For Linear Drives see 1.20.002E, 1.25.002E, 1.30.002E, 1.35.002E
For Mountings see 1.45.020E

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The right to introduce technical modifications is reserved

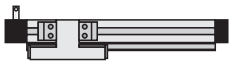
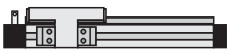
HOERBIGER ORIGA

OSP-E Belt – If combined with a linear guide, please also state position of linear guide

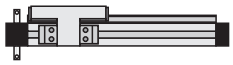
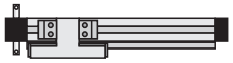
Position of Drive Shaft
Standard = 0

Position of Linear Guidde
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

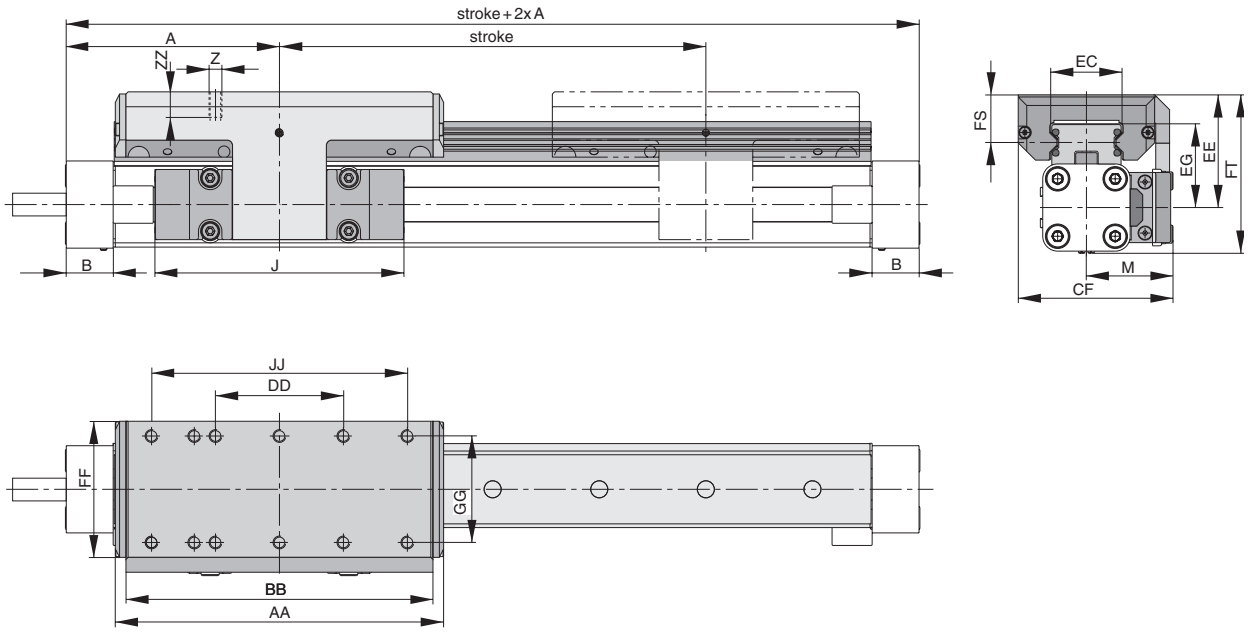
Position of Drive Shaft
Opposite to Standard = 1

Position of Linear Guidde
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

Position of Drive Shaft
Both Sides = 2

Position of Linear Guidde
Standard Guide opposite the drive shaft 
Opposite to Standard Guide on same side as drive shaft 

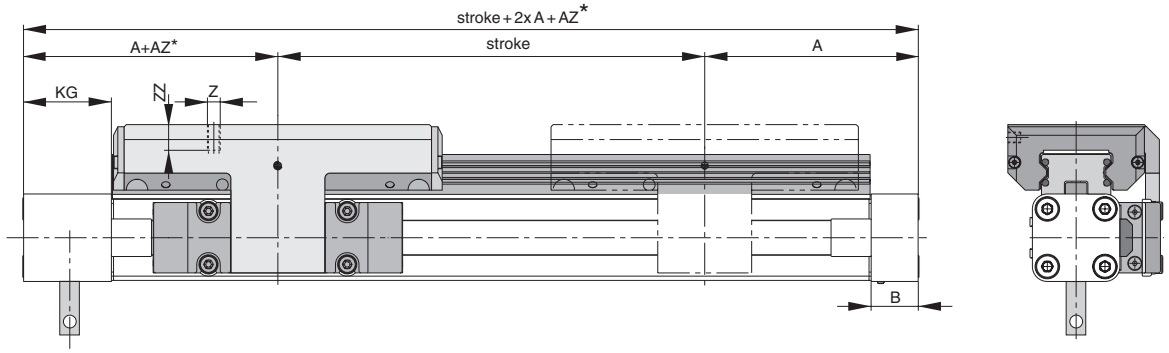
Dimensions Series OSP-E-Screw PL25, PL32, PL50



Dimension Table (mm) OSP-E-Screw PL25, PL32, PL50

Series	A	B	J	M	Z	AA	BB	DD	CF	EC	EE	EG	FF	FS	FT	GG	JJ	ZZ
PL25	100	22	117	40.5	M6	154	144	60	72.5	32.5	53	39	64	23	73.5	50	120	12
PL32	125	25.5	152	49	M6	197	187	80	91	42	62	48	84	25	88	64	160	12
PL50	175	33	200	62	M6	276	266	120	117	63	75	57	110	29	118.5	90	240	16

Dimensions Series OSP-E-Belt PL25, PL32, PL50



*** Please note:**
The dimension "AZ" must be added to "A". Stroke length to order is stroke + dimension "AZ" + safety clearance (See data sheet 1.20.002E-6, 1.25.002E-6)
Please also note the effect of dimension "AZ" when retrofitting a guide – contact your local HOERBIGER-ORIGA technical support department.

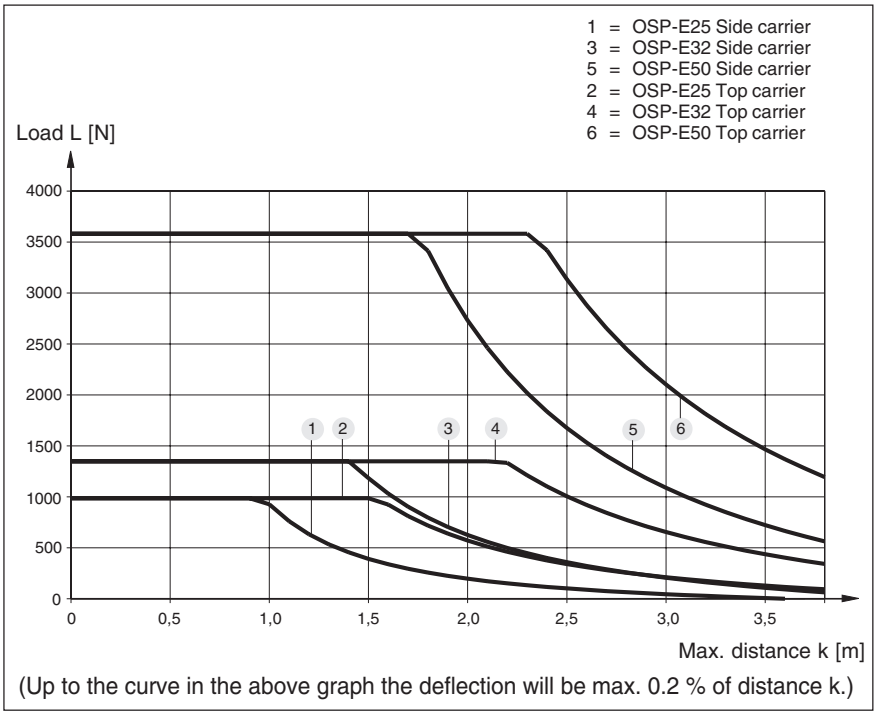
Dimension Table (mm) Series OSP-E-Belt PL25, PL32, PL50

Serie	A	B	J	M	Z	AA	AZ	BB	DD	CF	EC	EE	EG	FF	FS	FT	GG	JJ	KG	ZZ
PL25	125	22	117	40.5	M6	154	10	144	60	72.5	32.5	53	39	64	23	73.5	50	120	57	12
PL32	150	25	152	49	M6	197	11	187	80	91	42	62	48	84	25	88	64	160	61	12
PL50	200	25	200	62	M6	276	24	266	120	117	63	75	57	110	29	118.5	90	240	85	16

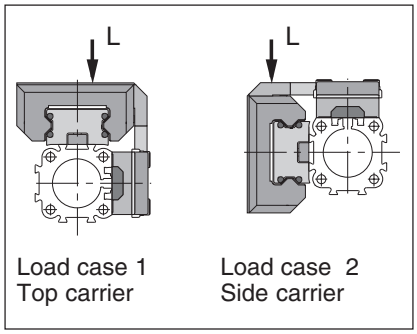
Mid-Section Support

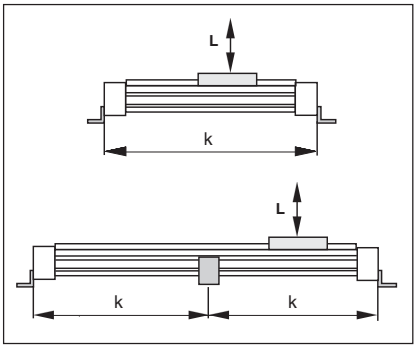
(for versions see 1.45.023E,1.25.024E)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)





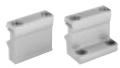
Accessories for Linear Drive Systems (Mountings, Sensors) Series OSP-E



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Linear Drive Acccessories		
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Magnetic Switches		1.45.101E
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Cable Cover		1.45.103E

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The right to introduce technical modifications is reserved

Linear Drive Accessories

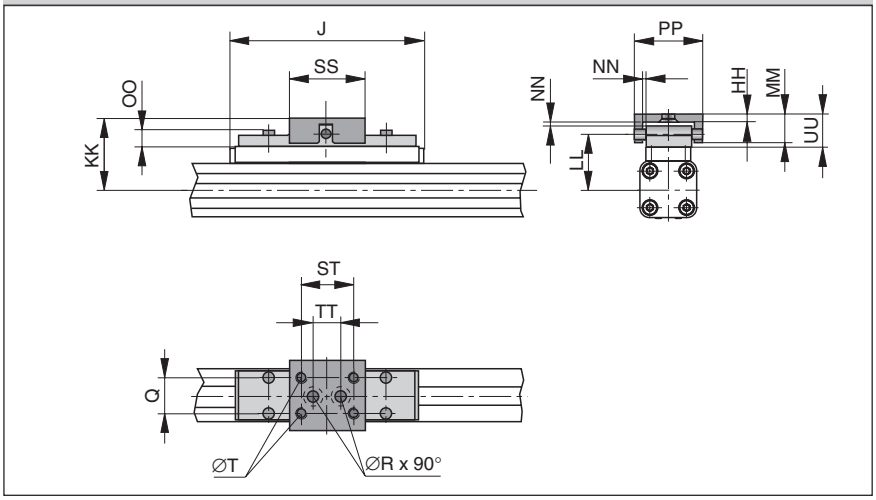
Clevis Mounting

Size 25, 32, 50

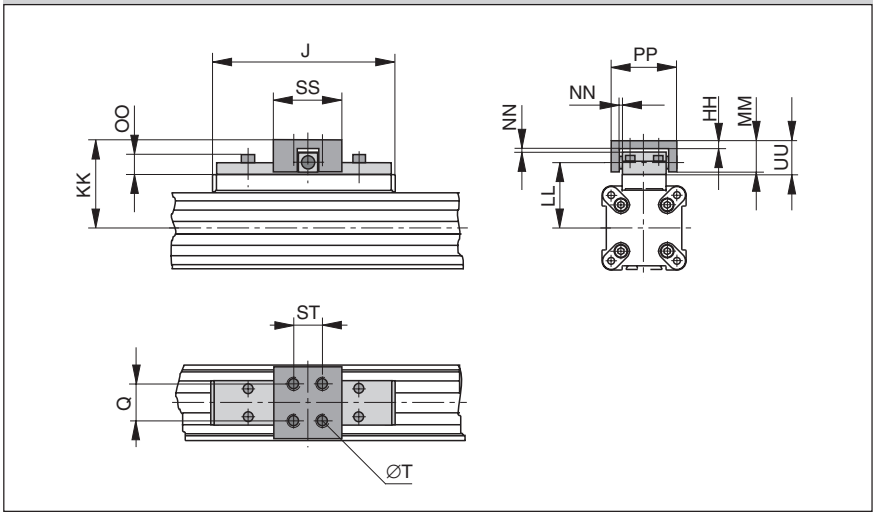
OSP
ORIGA SYSTEM PLUS

For Linear Drives
- **Series OSP-E Belt**
- **Series OSP-E Screw**

Series OSP-E25 to E32



Series OSP-E50



When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.

Freedom of movement is provided as follows:

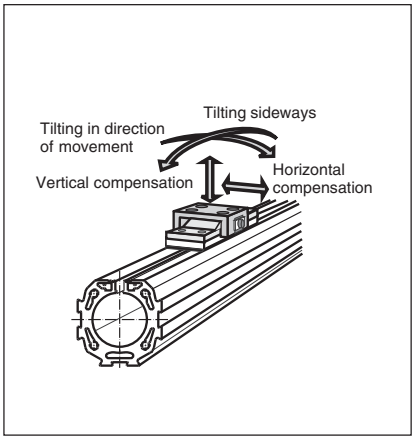
- **Tilting in direction of movement**
- **Vertical compensation**
- **Tilting sideways**
- **Horizontal compensation**

A stainless steel version is also available.

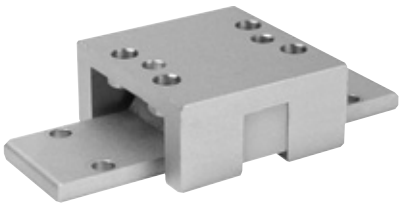
Dimension Table (mm)

Series	J	Q	T	øR	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU	Order No. Standard	Order No. Stainless
OSP-E25	117	16	M5	5.5	3.5	52	39	19	2	9	38	40	30	16	21	**20005**	**20092**
OSP-E32	152	25	M6	6.6	6	68	50	28	2	13	62	60	46	40	30	**20096**	**20094**
OSP-E50	200	25	M6	–	6	79	61	28	2	13	62	60	46	–	30	**20097**	**20095**

* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.



Please note:
When using additional inversion mountings, take into account the dimensions in data sheet 1.45.025E.



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Linear Drive Accessories

Clevis Mounting, play-free

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

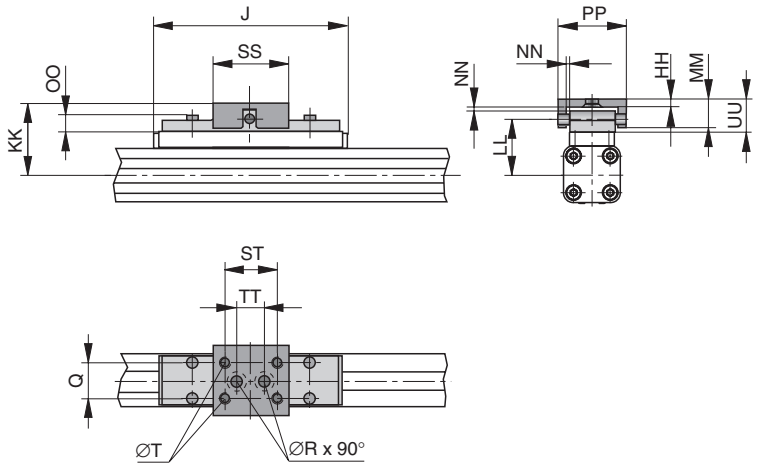
For Linear Drives
- **Series OSP-E Belt**
- **Series OSP-E Screw**

When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.
In the drive direction the clevis mounting has a play-free fit.

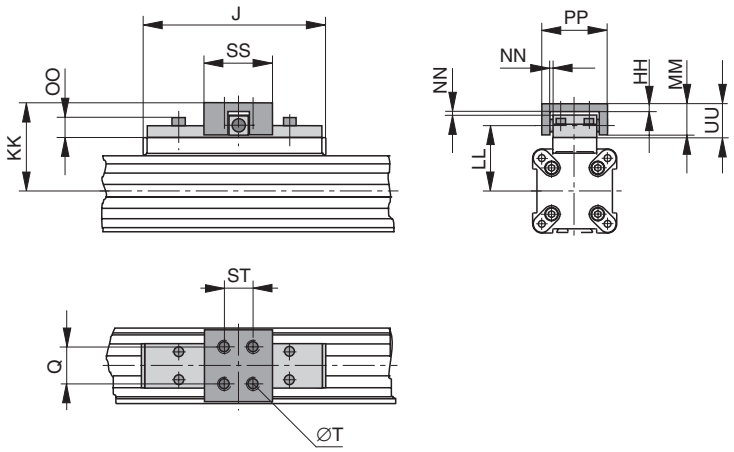
Freedom of movement is provided as follows:
- **Tilting in direction of movement**
- **Vertical compensation**
- **Tilting sideways**
- **Horizontal compensation**

A stainless steel version is also available.

Series OSP-E25 to E32



Series OSP-E50

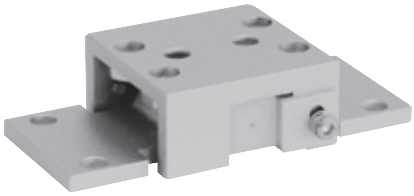


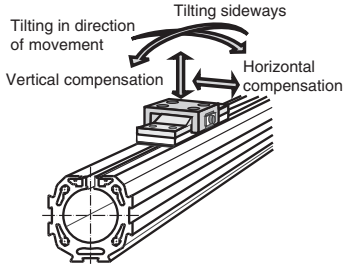
Dimension Table (mm)

Series	J	Q	T	øR	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU	Order No. Standard	Order No. Stainless
OSP-E25	117	16	M5	5.5	3.5	52	39	19	2	9	49	40	30	16	21	**20496**	**20498**
OSP-E32	152	25	M6	6.6	6	68	50	28	2	13	69	60	46	40	30	**20497**	**20499**
OSP-E50	200	25	M6	–	6	79	61	28	2	13	69	60	46	–	30	**20812**	**20818**

* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.

Please note:
When using additional inversion mountings, take into account the dimensions in data sheet 1.45.025E.





Linear Drive Accessories

End Cap Mountings

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

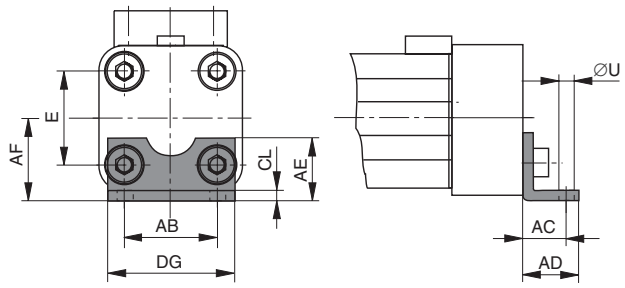
For Linear Drive
- **Series OSP-E Belt**
- **Series OSP-E Screw ***

On the end-face of each end cap there are four threaded holes for mounting the actuator.
The hole layout is square, so that the mounting can be fitted to the bottom, top or either side.

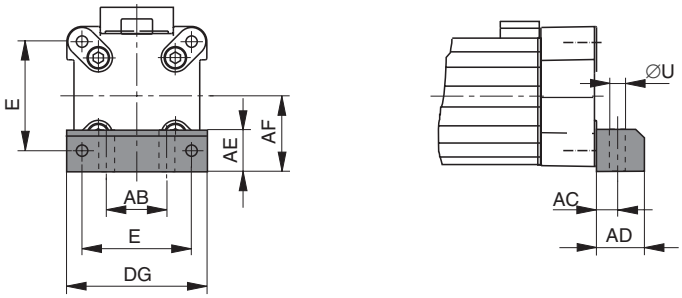
Material:
Series OSP-25 to 32:
Galvanised steel.
Series OSP-50:
Anodized aluminium.

The mountings are supplied in pairs.

Series OSP-E25 to E32: Type A1



Series OSP-E50: Type C1



Dimension Table (mm)

Series	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. (* Type A1	Order No. (* Type C1
OSP-E25	27	5.8	27	16	22	18	22	2.5	39	**2010**	**–**
OSP-E32	36	6.6	36	18	26	20	30	3	50	**3010**	**–**
OSP-E50	70	9	40	12.5	24	30	48	–	86	**–**	**5010**

(*= Pair

*** Important:**
With the OSP-E Screw series, the end cap mounting can only be used at the end opposite to the drive shaft.

We recommend the application of two mid section supports (data sheet 1.45.023E) at the drive shaft end of the actuator.



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Linear Drive Accessories

End Cap Mountings

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

For Linear Drive with integrated Guides

- **Series OSP-E..BHD**

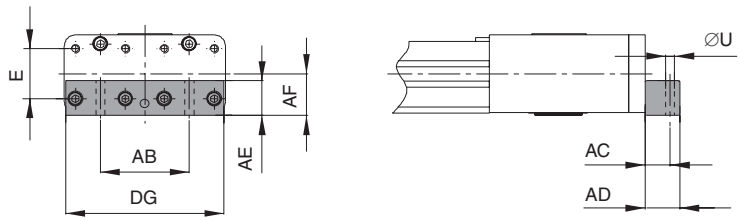
On the end-face of each end cap there are eight threaded holes for mounting the actuator.

Material:
Anodized aluminium.

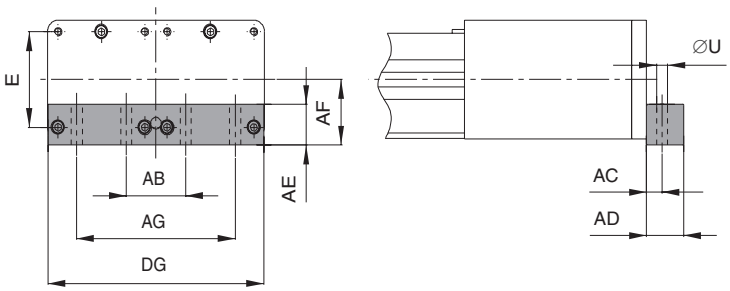
The mountings are supplied in pairs.



Series OSP-E25BHD to E32BHD: Type C25, C32



Series OSP-E50BHD: Type C50



Dimension Table (mm)

Series	Typ	E	ØU	AB	AC	AD	AE	AF	AG	DG	Order No. *
OSP-E25BHD	C25	27	6.6	52	16	25	25	22	–	91	**12266**
OSP-E32BHD	C32	36	9	64	18	25	25	30	–	114	**12267**
OSP-E50BHD	C50	70	9	48	12.5	30	30	48	128	174	**12268**

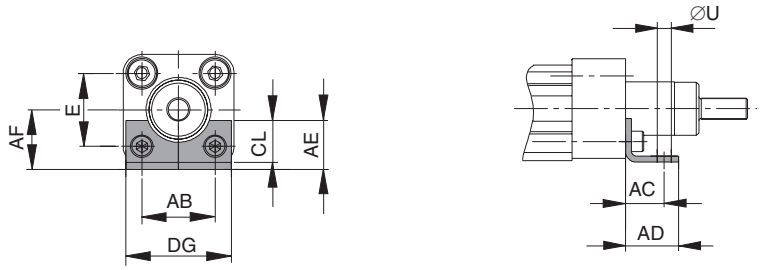
(*= Pair

Linear Drive Accessories

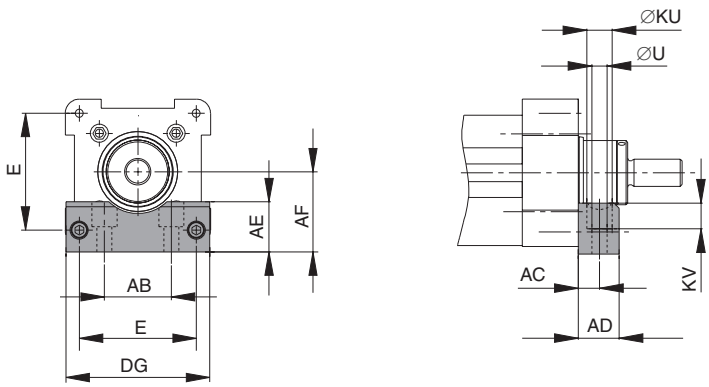
End Cap Mountings

Size 25, 32, 50

Series OSP-E25SR (SBR) to E32SR (SBR): Type A1SR



Series OSP-E50SR, (SBR): Type C1SR



For Linear Drive with Trapezoidal Screw and extending rod

- **Series OSP-E..SR**
- **Series OSP-E..SBR**

On the end-face of each end cap there are four threaded holes for mounting the actuator.
The hole layout is square, so that the mounting can be fitted to the bottom, top or either side.

Material:
Series OSP-25 to 32:
Galvanised steel.
Series OSP-50:
Anodized aluminium.

The mountings are supplied singly

Dimension Table (mm)

Series	E	øU	AB	AC	AD	AE	AF	CL	DG	øKU	KV	Order No. * Type A1SR	Type C1SR
OSP-E25SR (SBR)	27	5.8	27	16	22	18	22	2.5	39	–	–	**12263**	**–**
OSP-E32SR (SBR)	36	6.6	36	18	26	20	30	3	50	–	–	**12264**	**–**
OSP-E50SR (SBR)	70	9	40	12.5	24	30	48	–	86	15	15	**–**	**12265**

(*= single mounting

*** Important:**
With the OSP-E Screw series, the end cap mounting can only be used at the end opposite to the drive shaft.

We recommend the application of two mid section supports (data sheet 1.45.023E) at the drive shaft end of the actuator.



Linear Drive Accessories

Flange Mounting C

Size 25, 32, 50

For Linear Drive with Trapezoidal Screw and extending rod

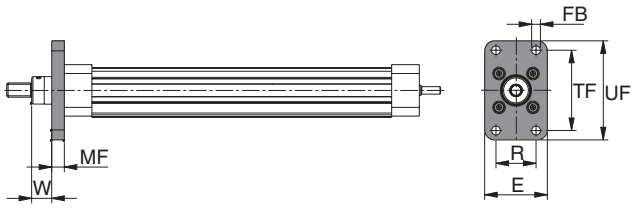
- **Series OSP-E..SR**
- **Series OSP-E..SBR**

The flange mounting C-E can only be mounted at the piston rod end of the linear drive.

Material:
Aluminium



Series OSP-E25SR (SBR) to E50SR (SBR): Type C-E..



Dimension Table (mm) for Flange Mounting C-E..

Series	Type	ø FB	E	MF	R	TF	UF	W	Order No.
OSP-E25SR (SBR)	**C-E25**	7	50	10	32	64	79	16	**12232**
OSP-E32SR (SBR)	**C-E32**	9	56	10	36	72	90	16	**12233**
OSP-E50SR (SBR)	**C-E50**	12	100	16	63	126	153	21	**12234**

Linear Drive Accessories

Trunnion Mounting EN

Size 25, 32, 50

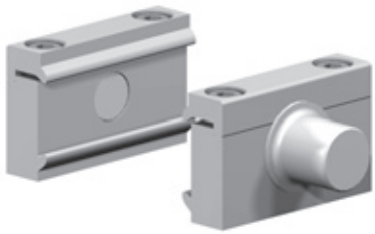
OSP ORIGA SYSTEM PLUS

For Linear Drive with Trapezoidal Screw and extending rod

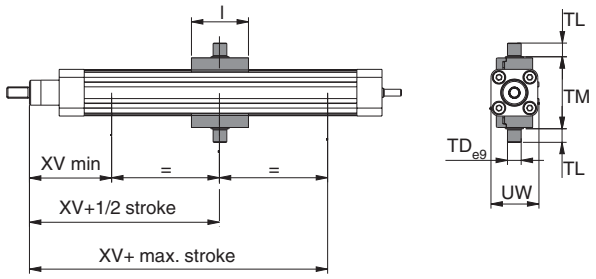
- **Series OSP-E..SR**
- **Series OSP-E..SBR**

The trunnion mounting is fitted to the dovetail rails of the actuator profile

The mountings are supplied in pairs.



Series OSP-E25SR (SBR) to E50SR (SBR): Type EN-..



Material: Aluminium

Dimension Table (mm) for Trunnion Mounting EN

Series	Type	l	ø TD e9	TL	TM	UW	XV min	XV+ 1/2stroke	XV+ max. stroke	Order No.
OSP-E25SR (SBR)	EN-E25	50	12	12	63	42	73	83	62	12235
OSP-E32SR (SBR)	EN-E32	50	16	16	75	52	76.5	90	69.5	12236
OSP-E50SR (SBR)	EN-E50	80	20	20	108	87	110	110	84	12237

Pivot EL for Trunnion Mounting EN

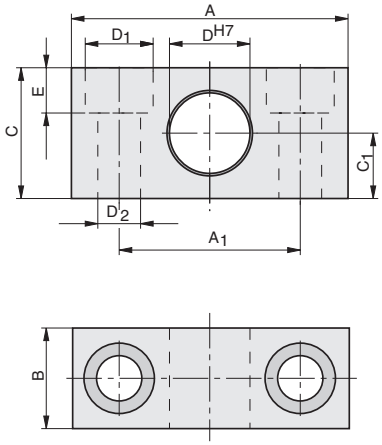
Size 25, 32, 50

For Linear Drive with Trapezoidal Screw and extending rod

- **Series OSP-E..SR**
- **Series OSP-E..SBR**

The mountings are supplied in pairs.

Series OSP-E25SR (SBR) to E50SR (SBR): Type EL



Material: Aluminium



Dimension Table (mm) for Pivot EL

Series	Type	A	A_1	B	C	C_1	$øD^{H7}$	$øD_1$	$øD_2$	E	Weight (Mass) (kg)	Order No.
OSP-E25SR (SBR)	EL-032	55	36	20	26	13	12	13.5	8.4	9	0.06	PD 23381
OSP-E32SR (SBR)	EL-040/050	55	36	20	26	13	16	13.5	8.4	9	0.06	PD 23382
OSP-E50SR (SBR)	EL-063/080	65	42	25	30	15	20	16.5	10.5	11	0.10	PD 23383

Linear Drive Accessories

Piston Rod Elements

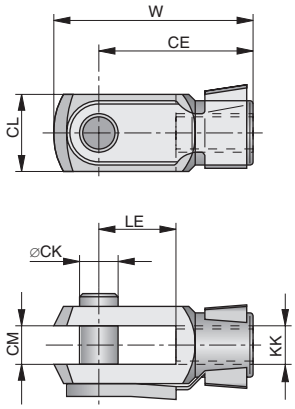
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

- **Piston Rod Clevis according to ISO 8140**
- **Piston Rod Eye according to ISO 8139**
- **Piston Rod Compensating Coupling**

- **Series OSP-E..SR**
- **Series OSP-E..SBR**

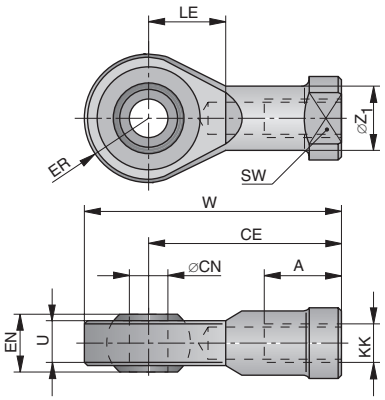
Piston Rod Clevis according to ISO 8140 (CETOP RP102P) Type: GK-..



Order Instructions, Dimension Table (mm), Weigth

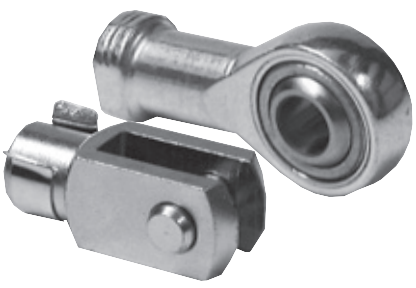
Series	Type	øCK	CE	CL	CM	KK	LE	W	Mass (kg)	Order No.
OSP-E25SR (SBR)	GK-M10x1.25	10	40	20	10	M10x1.25	20	52	0.08	KY6135
OSP-E32SR (SBR)	GK-M10x1.25	10	40	20	10	M10x1.25	20	52	0.08	KY6135
OSP-E50SR (SBR)	GK-M16x1.5	16	64	32	16	M16x1.5	32	83	0.30	KY6139

Piston Rod Eye according to ISO 8139 (CETOP RP103 P) Type: GA-..

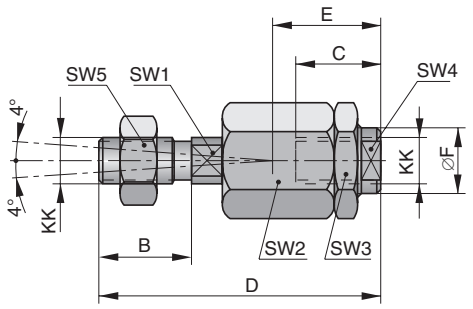


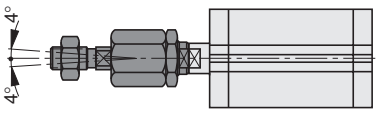
Order Instructions, Dimension Table (mm), Weigth

Series	Type	A	CE	øCN	EN	ER	KK	LE	SW	U	W	øZ1	Mass (kg)	Order No.
OSP-E25SR (SBR)	GA-M10 x 1.25	20	43	10	14	14	M10x1.25	15	17	10.5	57	15	0.072	KY 6147
OSP-E32SR (SBR)	GA-M10 x 1.25	20	43	10	14	14	M10x1.25	15	17	10.5	57	15	0.072	KY 6147
OSP-E50SR (SBR)	GA-M16 x 1.5	28	64	16	21	21	M16x1.5	22	22	15	85	22	0.21	KY 6150

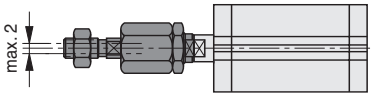


Piston Rod Compensating Coupling
Type: AK-..





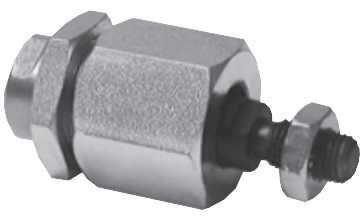
Angular compensation



Radial compensation of
the centre axis

Order Instructions, Dimension Table (mm), Weigth

Series	Type	B	C	D	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Mass (kg)	Order No.
OSP-E25SR (SBR)	**AK-M 10x1.25**	20	23	70	31	21.5	M10x1.25	12	30	30	19	17	0.218	**KY 1129**
OSP-E32SR (SBR)	**AK-M 10x1.25**	20	23	70	31	21.5	M10x1.25	12	30	30	19	17	0.218	**KY 1129**
OSP-E50SR (SBR)	**AK -M16x1.5**	40	32	112	45	33.5	M16x1.5	19	41	41	30	30	0.637	**KY 1133**



Linear Drive Accessories

Mid-Section Support

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

For Linear Drive

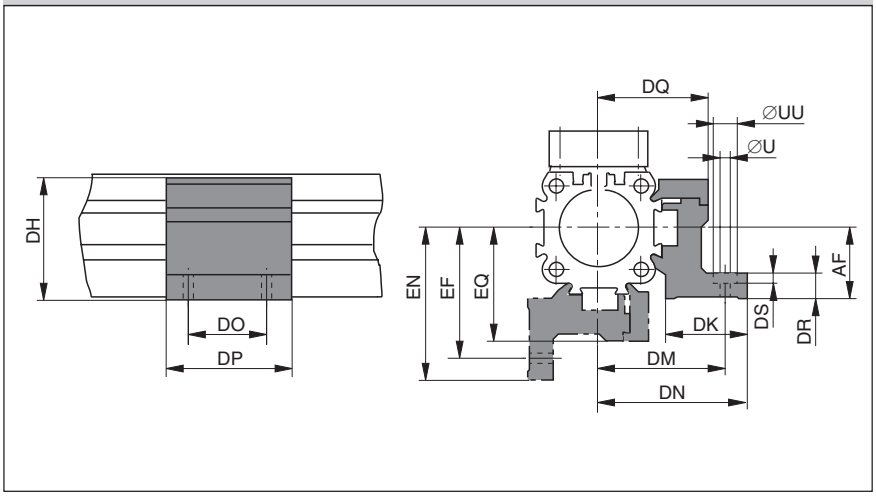
- **Series OSP-E Belt**
- **Series OSP-E Screw**

Note on Types E1 and D1:
The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the centre of the actuator is different.

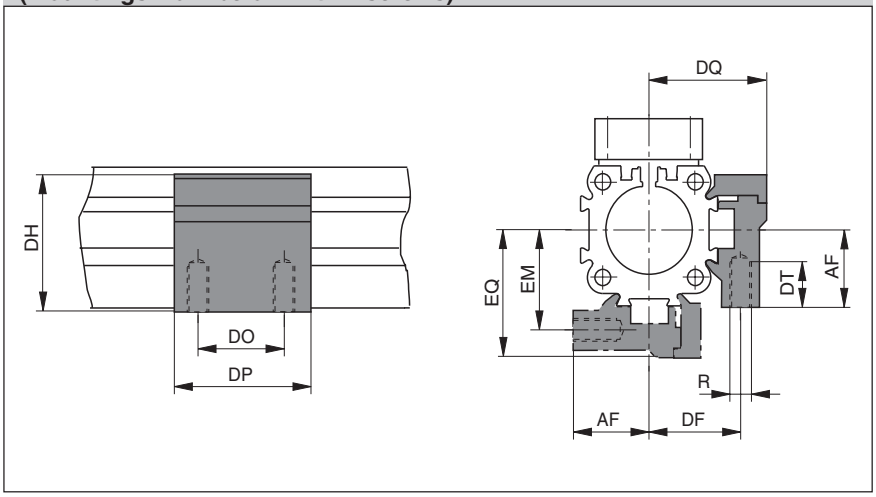
For design notes, see data sheet 1.20.002E-3,1.25.002E-3, 1.30.002E-3,1.35.002E-3

Stainless steel version on request

Series OSP-E25, E32, E50, Type E1
(Mounting from above / below with 2 through holes)



Series OSP-E25, E32, E50, Type D1
(Mountings from below with 2 screws)



Dimension Table (mm)

Serie	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	Order No. Type E1	Order No. Type D1
OSP-E25	M5	5.5	10	22	27	38	26	40	47.5	36	50	34.5	8	5.7	10	41.5	28.5	49	36	**20009**	**20008**
OSP-E32	M5	5.5	10	30	33	46	27	46	54.5	36	50	40.5	10	5.7	10	48.5	35.5	57	43	**20158**	**20157**
OSP-E50	M6	7	–	48	40	71	34	59	67	45	60	52	10	–	11	64	45	72	57	**20163**	**20162**



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Linear Drive Accessories

Mid-Section Support

Size 25, 32, 50

OSP ORIGA SYSTEM PLUS

For Linear Drive with intergrated Guides

• Series OSP-E ..BHD

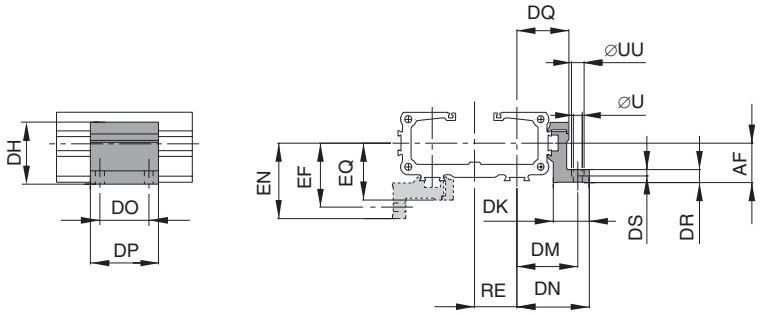
Note on Types E1 and D1:
The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the centre of the actuator is different.

For design notes, see data sheet 1.15.002E-3

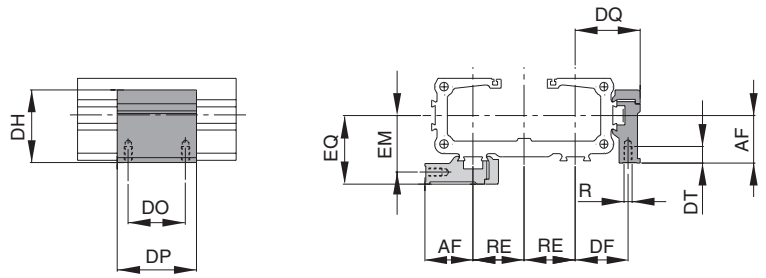
Stainless steel version on request



Series OSP-E25BHD to E50BHD: Type E1
(Mounting from above / below with 2 through holes)



Series OSP-E25BHD to E50BHD: Type D1
(Mountings from below with 2 screws)



Dimension Table (mm)

Series	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	RE	Order No. Type E1	Order No. Type D1
OSP-E25	M5	5.5	10	22	27	38	26	40	47.5	36	50	34.5	8	5.7	10	41.5	28.5	49	36	26	**20009**	**20008**
OSP-E32	M5	5.5	10	30	33	46	27	46	54.5	36	50	40.5	10	5.7	10	48.5	35.5	57	43	32	**20158**	**20157**
OSP-E50	M6	7	–	48	40	71	34	59	67	45	60	52	10	–	11	64	45	72	57	44	**15536**	**15534**

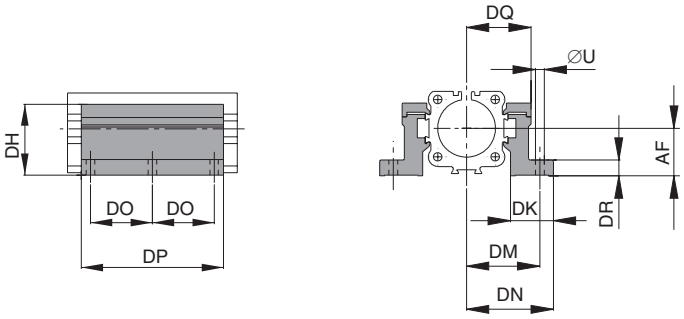
Multi-Axis Accessories

Profile Mountings

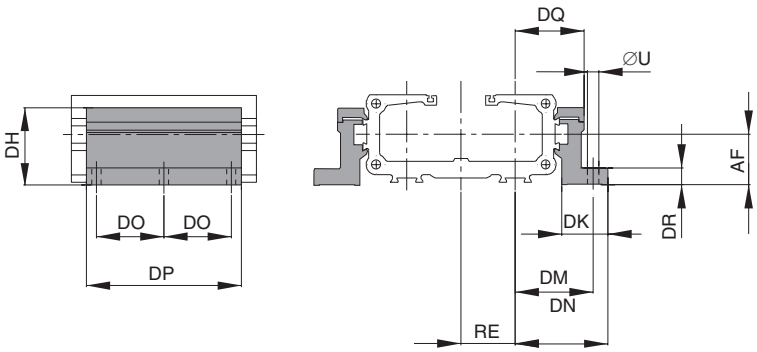
Size 25, 32, 50

Series OSP-E25 to E50, Type MAE-..

Series OSP-E..



Series OSP-E..BHD



OSP
ORIGA SYSTEM PLUS

For Linear Drive
• Series OSP-E

Material:
Anodized aluminum

Stainless steel version on demand.

The mountings are supplied in pairs.

Weight (mass) [kg]

Type	Weight (mass) [kg] (pair)
MAE-25	0.3
MAE-32	0.4
MAE-50	0.8



Dimension Table (mm)

Series	Typ	R	U	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DT	EF	EM	EN	EQ	RE	Order No.
OSP-E25	MAE-25	M5	5.5	22	27	38	26	40	47.5	40	92	34.5	8	10	41.5	28.5	49	36	26	**12278**
OSP-E32	MAE-32	M5	5.5	30	33	46	27	46	54.5	40	92	40.5	10	10	48.5	35.5	57	43	32	**12279**
OSP-E50	MAE-50	M6	7	48	40	71	34	59	67	45	112	52	10	11	64	45	72	57	44	**12280**

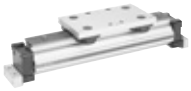
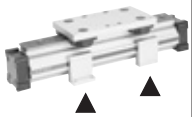
Linear Drive Accessories

Mountings for Linear Drives fitted with OSP Guides

OSP
ORIGA SYSTEM PLUS

For Linear Drive
- **Series OSP-E Belt**
- **Series OSP-E Screw ***

Overview

Mounting Type	Type	Type – OSP Guides SLIDELINE PROLINE MULTIBRAKE 25	32	50	POWERSLIDE 25/25	25/35	25/44	32/35	32/44	50/60	50/76
End cap mounting 	Type A1										
	Type A2	O	O								
	Type A3				O	O		O			
End cap mounting, reinforced 	Type B1	X	X		X	X	X	X	X		
	Type B3										
	Type B4						O		O		
End cap mounting 	Type C1			X						X	X
	Type C2			O							
	Type C3									O	
	Type C4										O
Mid section support, small	Type D1	X	X	X	X	X	X	X	X	X	X
Mid section support, wide 	Type E1	X	X	X	X	X	X	X	X	X	X
	Type E2	O	O	O							
	Type E3				O	O		O		O	
	Type E4						O		O		O

X = carriage mounted on top (12 o'clock position)

O = carriage mounted on side (3 or 9 o'clock position)

= available components

*** Important:**
With the OSP-E Screw series, end cap mountings type A, B and C can only be used at the end opposite to the drive shaft.
Please use mid-section supports (data sheet 1.45.024E-3).



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The right to introduce technical modifications is reserved

End cap mountings *

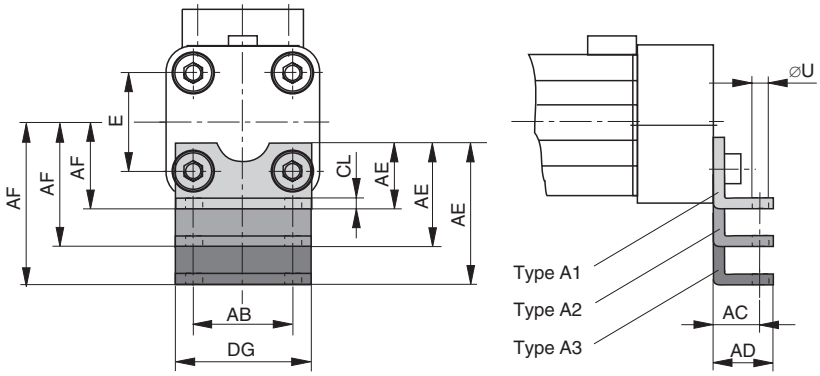
Four internal screw threads are located in the end faces of all OSP actuators for mounting the drive unit. End cap mountings may be secured across any two adjacent screws.

Material: Series OSP-25, 32: zinc plated steel
Series OSP-50: anodized aluminium

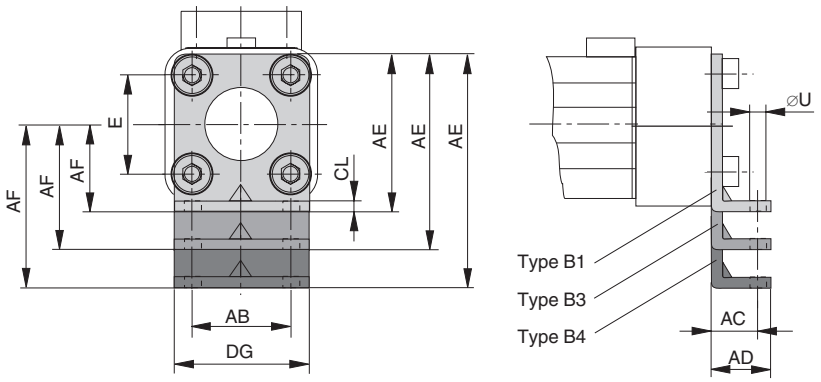
Supplied in pairs.



Series OSP – E25, E32: Type A



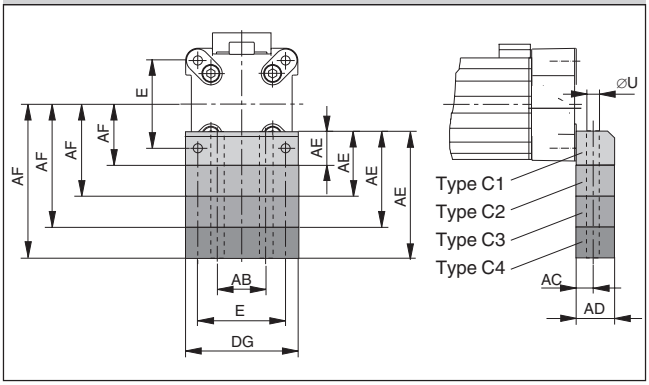
Series OSP – E25, E32: Type B



Dimension Table (mm)
– Dimensions AE and AF (dependent on the mounting type)

Mount type	Dimensions AE for size			AF for size		
	25	32	50	25	32	50
A1	18	20	–	22	30	–
A2	33	34	–	37	44	–
A3	45	42	–	49	52	–
B1	42	55	–	22	30	–
B3	–	–	–	–	–	–
B4	80	85	–	60	60	–
C1	–	–	30	–	–	48
C2	–	–	39	–	–	57
C3	–	–	54	–	–	72
C4	–	–	77	–	–	95

Series OSP – E50: Type C



Dimension Table (mm)

Series	E	øU	AB	AC	AD	CL	D
OSP-E25	27	5.8	27	16	22	2.5	39
OSP-E32	36	6.6	36	18	26	3	50
OSP-E50	70	9	40	12.5	24	-	86

* see mounting instructions on page 1.45.024E-1

Mid-section supports

Information regarding type E1 and D1:

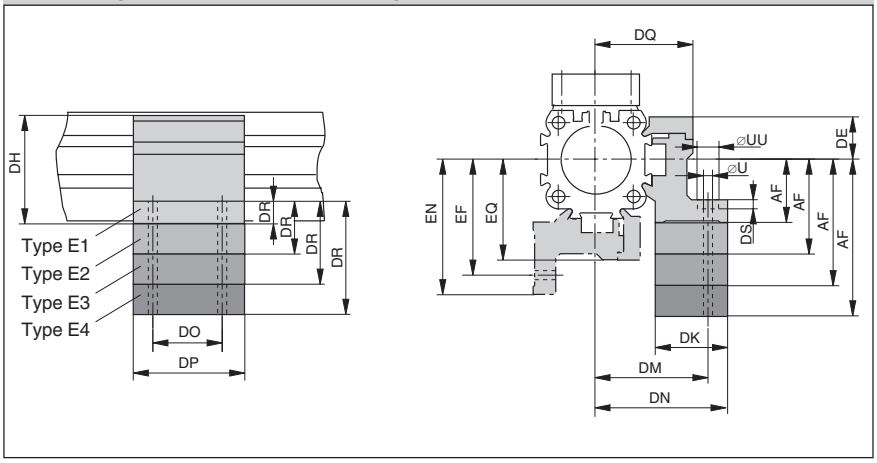
Mounting of the mid-section supports is also possible on the lower side of the drive. In this case, please note the new centre line dimensions.

See layout information on data sheet 1.40.021E-2, 1.40.022E-3, 1.40.024E-3,

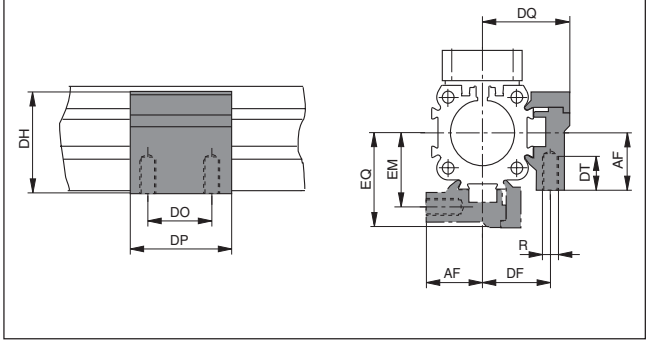
Stainless steel version on request.



Series OSP-E25, E32, E50: Type E.
(Mounting from above / below using a cap screw)



Series OSP-E25, E32, E50: Type D1
(Mounting from below with thread screw)



Dimension Table (mm)
– Dimensions DR und AF (dependent on the mounting type)

Mount. type	Dimensions DR for size			AF for size		
	25	32	50	25	32	50
D1	–	–	–	22	30	48
E1	8	10	10	22	30	48
E2	23	24	19	37	44	57
E3	35	32	31	49	52	72
E4	46	40	57	60	60	95

Dimension Table (mm)

Series	R	U	UU	DE	DF	DH	DK	DM	DN	DO	DP	DQ	DS	DT	EF	EM	EN	EQ
OSP-E25	M5	5.5	10	16	27	38	26	40	47.5	36	50	34.5	5.7	10	41.5	28.5	49	36
OSP-E32	M5	5.5	10	16	33	46	27	46	54.5	36	50	40.5	5.7	10	48.5	35.5	57	43
OSP-E50	M6	7	–	23	40	71	34	59	67	45	60	52	–	11	64	45	72	57

Order Instructions for Mountings Type A – Type B – Type C – Type D – Type E

Mounting type (versions)	Order No. Size		
	25	32	50
A1 *)	2010	3010	–
A2 *)	2040	3040	–
A3 *)	2060	3060	–
B1 *)	20311	20313	–
B3 *)	–	–	–
B4 *)	20312	20314	–
C1 *)	–	–	5010
C2 *)	–	–	20349
C3 *)	–	–	20350
C4 *)	–	–	20351
D1	20008	20157	20162
E1	20009	20158	20163
E2	20352	20355	20361
E3	20353	20356	20362
E4	20354	20357	20363

(* pair)

Linear Drive Accessories

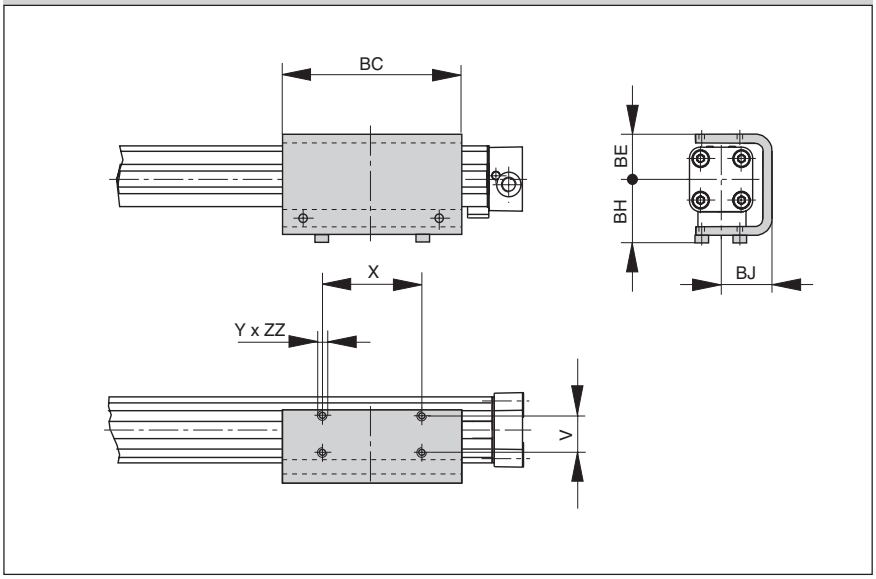
Inversion Mounting

Size 25, 32, 50

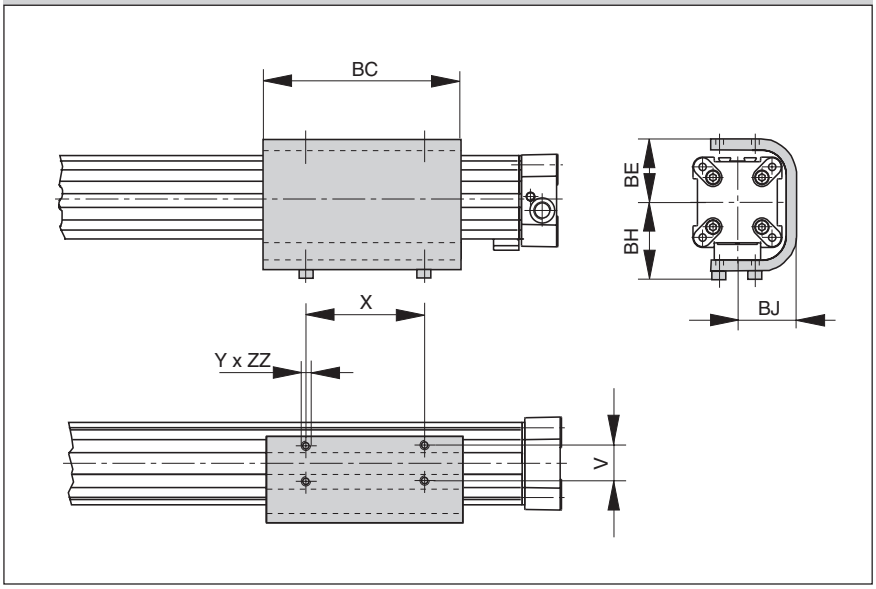
OSP
ORIGA SYSTEM PLUS

For Linear Drive
- **Series OSP-E Belt**
- **Series OSP-E Screw**

Series OSP-E25, E32



Series OSP-E50



In dirty environments, or where there are special space problems, inversion of the cylinder is recommended. The inversion bracket transfers the driving force to the opposite side of the cylinder. The size and position of the mounting holes are the same as on the standard cylinder.

Stainless steel version on request.

Please note:
Other components of the OSP system such as **mid-section supports, magnetic switches** can still be mounted on the free side of the cylinder.

Important Note:
May be used in combination with Clevis Mounting, ref. dimensions in data sheet 1.45.021E

Dimension Table (mm)

Series	V	X	Y	BC	BE	BH	BJ	ZZ	Order No.
OSP-E25	25	65	M5	117	31	43	33.5	6	**20037**
OSP-E32	27	90	M6	150	38	51	39.5	6	**20161**
OSP-E50	27	110	M6	200	55	65	52	8	**20166**



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Linear Drive Accessories

Adaptor Profile

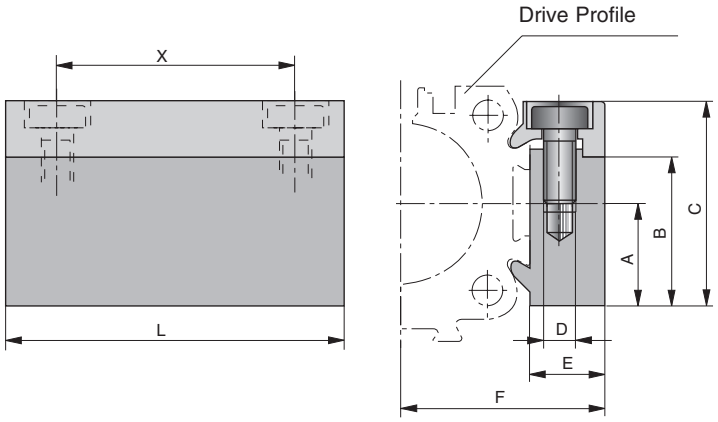
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

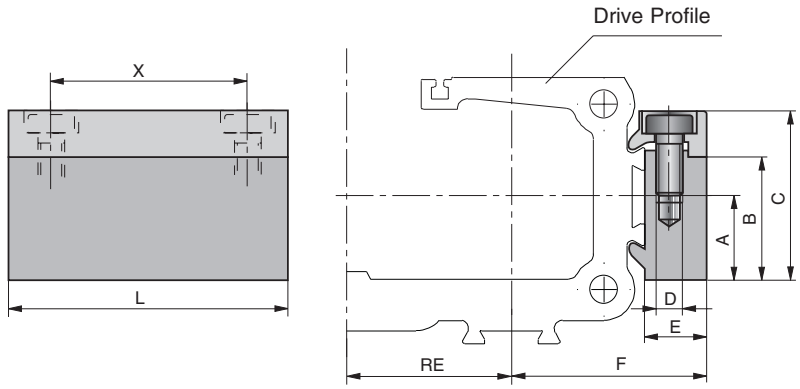
For Linear Drive
- **Series OSP-E Belt**
- **Series OSP-E Screw**

Adaptor Profile OSP
- A universal attachment for mounting of additional items
- Solid material

Series OSP-E



Series OSP-E..BHD



Dimension Table (mm)

Series	A	B	C	D	E	F	L	X	RE	Order No. Standard	Order No. Stainless
OSP-E25	16	23	32	M5	10.5	30.5	50	36	26	**20006**	**20186**
OSP-E32	16	23	32	M5	10.5	36.5	50	36	32	**20006**	**20186**
OSP-E50	20	33	43	M6	14	52	80	65	44	**20025**	**20267**



HOERBIGER ORIGA

A1P650E00DZ00X

The right to introduce technical modifications is reserved

Linear Drive Accessories

T-Nut Profile

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

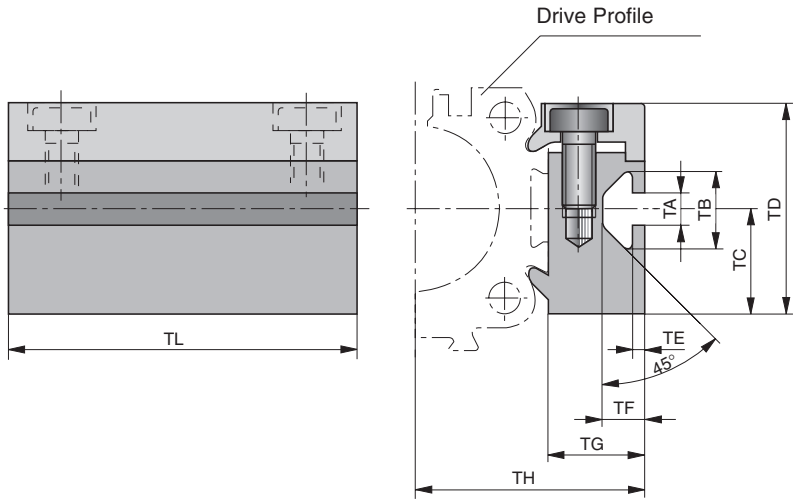
For Linear Drive
- **Series OSP-E Belt**
- **Series OSP-E Screw**

T-Nut Profile OSP

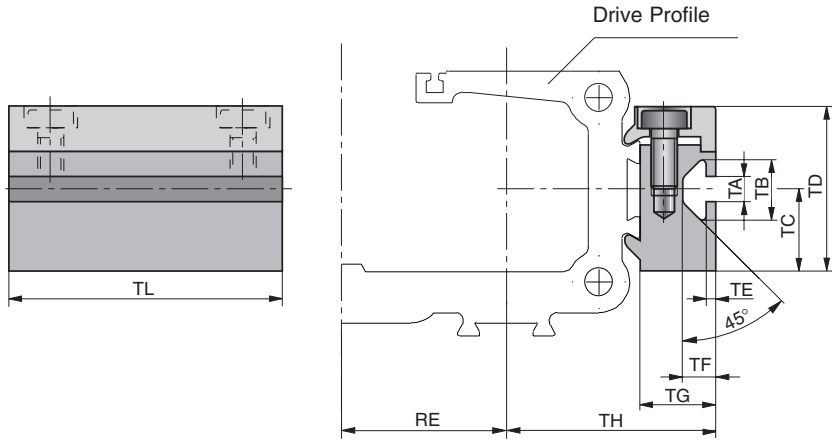
- A universal attachment for mounting with standard T-nuts



Series OSP-E



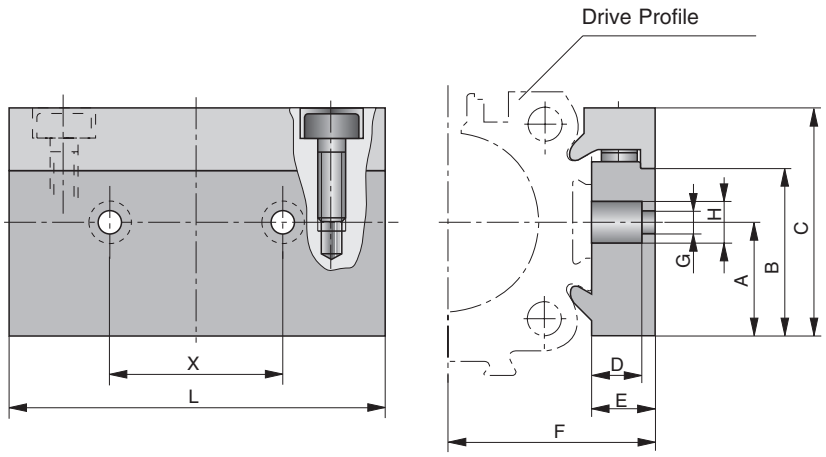
Series OSP-E..BHD



Dimension Table (mm)

Series	RE	TA	TB	TC	TD	TE	TF	TG	TH	TL	Order No. Standard	Order No. Stainless
OSP-E25	26	5	11.5	16	32	1.8	6.4	14.5	34.5	50	**20007**	**20187**
OSP-E32	32	5	11.5	16	32	1.8	6.4	14.5	40.5	50	**20007**	**20187**
OSP-E50	44	8.2	20	20	43	4.5	12.3	20	58	80	**20026**	**20268**

Dimensions



Linear Drive Accessories

Connection Profile

Size 25, 32, 50

OSP
ORIGA
SYSTEM
PLUS

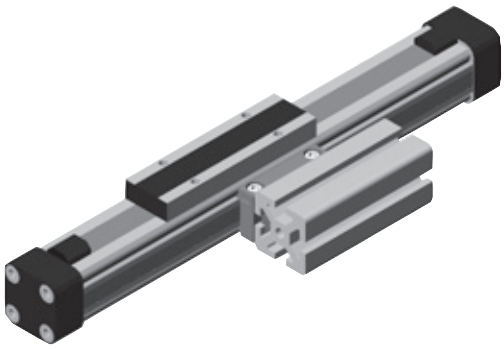
For combining
- **Series OSP-E with system profiles**
- **Series OSP-E with Series OSP-E or Series OSP-P**

Dimension Table (mm)

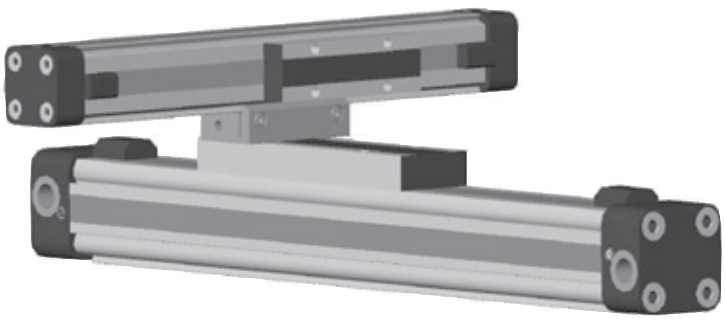
Cylinder Series	for mounting on the carrier of	A	B	C	D	E	F	G	H	L	X	Order No.
OSP-E25	OSP32-50	16	23	32	8.5	10.5	30.5	6.6	11	60	27	**20850**
OSP-E32	OSP32-50	16	23	32	8.5	10.5	36.5	6.6	11	60	27	**20850**
OSP-E50	OSP32-50	20	33	43	8	14	52	6.6	11	60	27	**20851**

Possible Combinations

Combination of Series OSP-E with system profiles



Combination of Series OSP-E with Series OSP-E/OSP-P





Linear Drive Accessories

Coupling Housing
Motor Flange
Motor Coupling

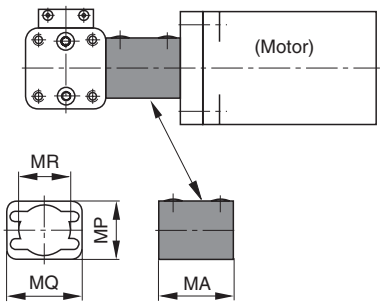
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

• For Series OSP-E Belt

The coupling housing is the mounting base for the motor.

Dimensions – Coupling Housing (for motor)

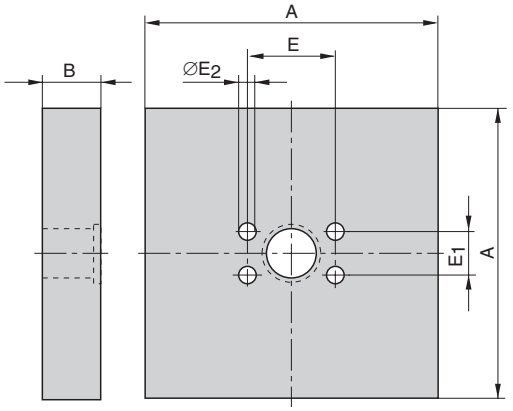


Dimension Table (mm)

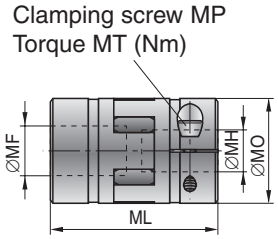
Series	Typ	MA	MP	MQ	MR	Order No.
OSP-E25	**250**	47	30	40	25	**20606**
OSP-E32	**320**	49	38	49	33	**20607**
OSP-E50	**500**	76	54	65	48	**20608**

Dimensions – Universal Motor Flange and Motor Coupling

Universal Motor Flange



Universal Motor Coupling



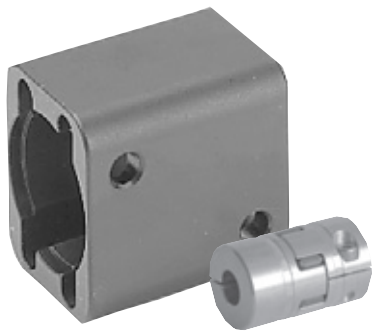
Dimension Table (mm) and Order Instructions for Universal Motor Flange

Series	A	B	E	E_1	E_2	Order No.
OSP-E25B	100	20	30	15	5.5	**12050**
OSP-E32B	100	20	38	18	6.6	**12053**
OSP-E50B	120	15	50	32	9.0	**12056**

Dimension Table (mm) and Order Instructions for Universal Motor Coupling

Series	MF^{H7}	ML	MH^{H7} *	MO	MT (Nm)	Order No.
OSP-E25B	10	30	4	20	0.76	**15231**
OSP-E32B	10	35	6	30	1.34	**15197**
OSP-E50B	16	66	9.5	40	10.5	**10845**

* can be bored out to motor shaft diameter by customer.
Other dimensions on request.



Linear Drives see data sheet 1.20.002E, 1.25.002E

A1P652E00DZ00X

The right to introduce technical modifications is reserved

Linear Drive Accessories

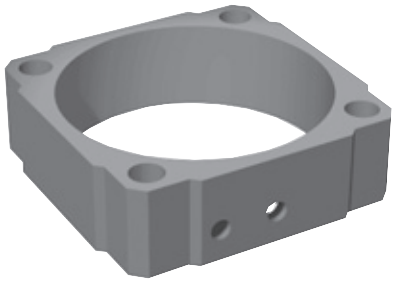
Coupling Housing
Motor Mounting

Size 25, 32, 50

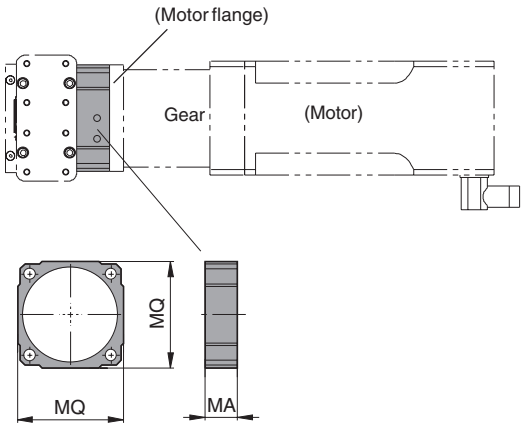
OSP
ORIGA SYSTEM PLUS

• For Series OSP-E..BHD

The coupling housing is the mounting base for the gear or for the motor.



Coupling Housing (for motor)



Dimension Table (mm)

Series	MA	MQ	Order No.
OSP-E25BHD	22	76	**12300**
OSP-E32BHD	30	98	**12301**
OSP-E50BHD	41	128	**12302**

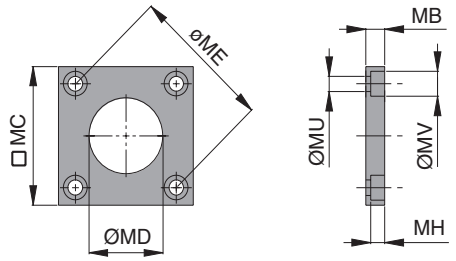
Motor Flange
(Semi-finished)

Size 25, 32, 50

• For Series OSP-E..BHD
The semi-finished motor flange matches the coupling housing above and has to be machined to fit actual gear or motor type.

Motor flanges suitable for the available range of gears, servo and stepper motors will be found together with technical data and dimensions on gears, motors and drives, see separate catalogues.

Motor Flange (Semi-finished)



Dimension Table (mm)

Series	MB	MC	MD	ME	MH	MU	MV	Order No.
OSP-E25BHD	14	90	36	82	8.5	9	15	12308
OSP-E32BHD	14	100	55	106	10.5	11	18	12309
OSP-E50BHD	18	125	77	144	12.5	13.5	20	12310

Linear Drives see data sheet 1.15.002E

Linear Drive Accessories

Planetary Gearbox Flange for Gearbox

Size 25, 32, 50

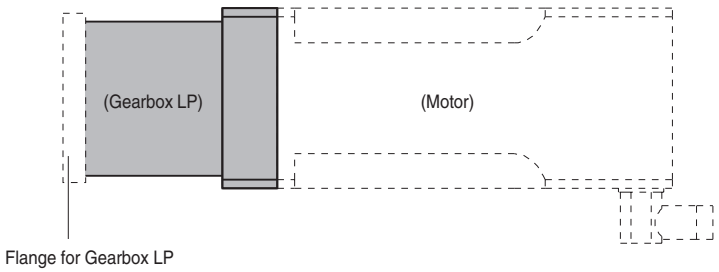
OSP
ORIGA SYSTEM PLUS

- **For Series OSP-E..BHD, B, S, ST, SR, SBR**

The coupling housing is the base for mounting the gearbox on the motor.

Note:
For Series OSP-E..BHD, use gearbox LP only in conjunction with connecting shaft or clamping hub with shaft. Otherwise use integrated gearbox (Data Sheet 1.15.002E-5)

Flange for Gearbox LP



Order Instructions for Planetary Geaboxes and Flanges

For Drive	Gearbox Type	Gear Ratio i=	Order No. Gearbox	Order No. Flange*
OSP-E25BHD	LP070 1-stage	5:1	**12940**	**12311**
	LP070 1-stage	10:1	**12941**	**12311**
	LP070 2-stage	25:1	**12942**	**12311**
	LP070 2-stage	50:1	**12943**	**12311**
	LP070 2-stage	100:1	**12944**	**12311**
OSP-E32BHD	LP090 1-stage	5:1	**12945**	**12312**
	LP090 1-stage	10:1	**12946**	**12312**
	LP090 2-stage	25:1	**12947**	**12312**
	LP090 2-stage	50:1	**12948**	**12312**
	LP090 2-stage	100:1	**12949**	**12312**
OSP-E50BHD	LP120 1-stage	5:1	**12950**	**12313**
	LP120 1-stage	10:1	**12951**	**12313**
	LP120 2-stage	25:1	**12952**	**12313**
	LP120 2-stage	50:1	**12953**	**12313**
	LP120 2-stage	100:1	**12954**	**12313**

*** The Order No.'s shown for the flange apply only to the OSP-E..BHD Series – flanges for other series on request.**



Linear Drive Accessories

Belt Gear

Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

• For Series OSP-E..S, ST, SR, SBR

Belt Gear with freely selectable dimensions for Motor Mounting
– see dimension table with min.- and max. dimensions.

Note:
This gearbox is, as standard, designed for OSP-E-shaft with keyway.

Option:
With plain shaft (with clamping sleeve on the drive side).

Please note the corresponding OSP-E-shaft.

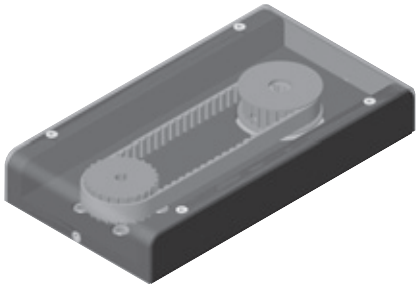
OSP-E Shaft for Belt Drive Unit (standard)

Size	Option	Description
25	4	with keyway long version
32	3	with keyway
50	3	with keyway

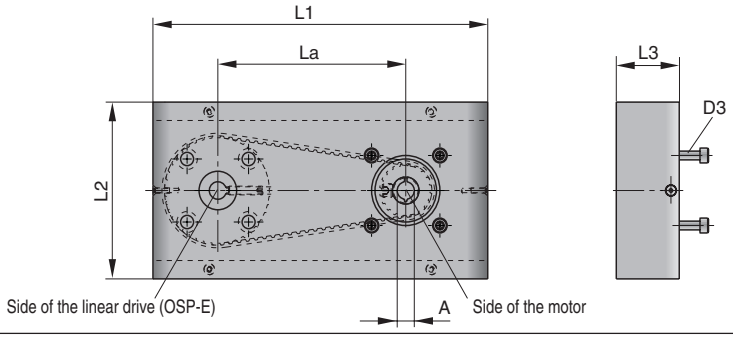
Max. allowed Moments M [Nm] for Belt Gear

Size	Transmission ratio 1:1	2:1
25	5	5
32	10	10
50	20	20

Beware of the max. allowed moments of the corresponding linear drive.



Dimensions

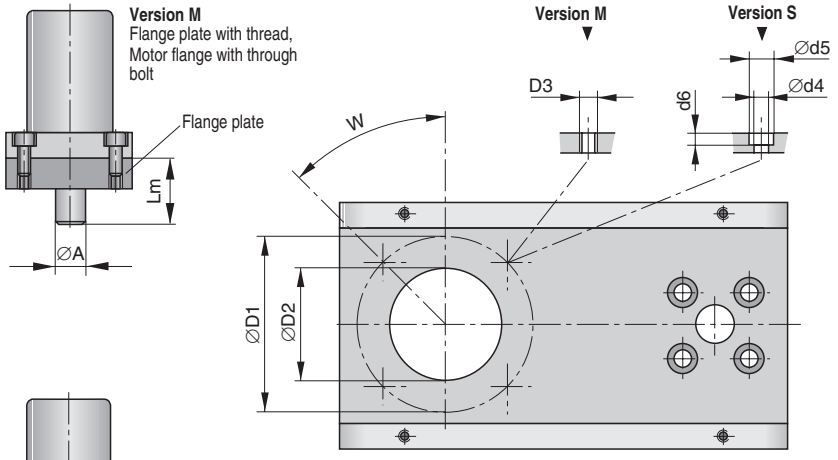


Dimension Table (mm)

Series	L1	L2	L3	La 1:1	La 2:1	D3	Ø A*	Order-No.
OSP-E25	186	101	30	110	109.3		6, 7, 8, 9, 10, 11	**15576**
OSP-E32	196	101	37	110	111.4	M4 – M10	8, 9, 10, 11, 12, 14	**15576**
OSP-E50	234	101	50	135	133.7		12, 14, 16, 19	**15576**

* other diameters on request

Variable Dimensions for Motor Mounting



Counterbore Dimensions (mm)

Screw Size	Ø d4	Ø d5	d6
M4	4.5	8	4.5
M5	5.5	10	5.3
M6	6.6	11	6.3
M8	9	15	5.5
M10	11	18	6.7

Dimension Table for motor mounting dimensions (mm)

Dimension		Size 25S		32S		50S	
		W=45°	W=90°	W=45°	W=90°	W=45°	W=90°
Ø D1	min.	40		40		40	
	max. „M“	100	85	110	85	115	85
	max. „S“	106 – Ød5	80 – Ød5	106 – Ød5	80 – Ød5	106 – Ød5	80– Ød5
Ø D2	min.	25		25		25	
	max.	80		80		80	
Ø D3	max.	M10		M10		M10	
Ø A		6, 7, 8, 9, 10, 11		8, 9, 10, 11, 12, 14		12, 14, 16, 19	
Lm	min.	16		20		30	
Lm	max.	23		30		40	

Linear Drive Accessories

Coupling Housing
Motor Flange
Motor Coupling

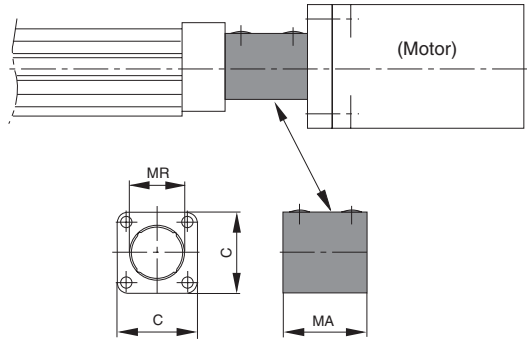
Size 25, 32, 50

OSP
ORIGA SYSTEM PLUS

- **For Series OSP-E Screw**

The coupling housing is the mounting base for the motor.

Dimensions – Coupling Housing (for motor)

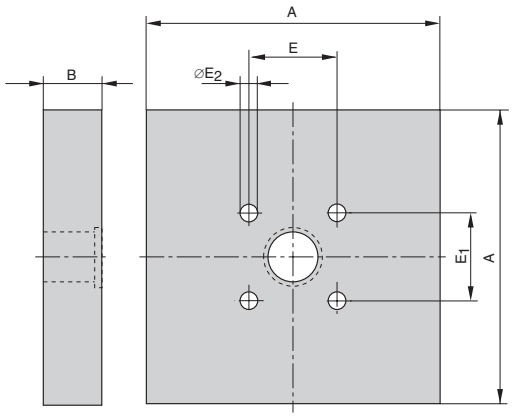


Dimension Table (mm)

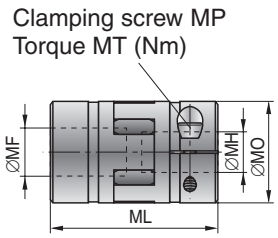
Series	Type	MA	C	MR	Order No.
OSP-E25	**251**	38	41	25	**20137**
OSP-E32	**321**	54	52	33	**20138**
OSP-E50	**501**	84	87	48	**20139**

Dimensions – Universal Motor Flange and Motor Coupling

Universal Motor Flange



Universal Motor Coupling



Dimension Table (mm) and Order Instructions for Universal Motor Flange

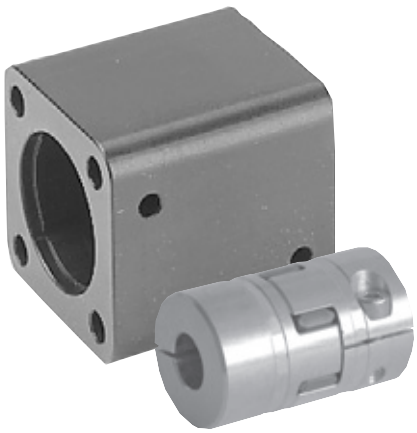
Series	A	B	E	E_1	E_2	Order No.
OSP-E25S	100	20	27	27	5.5	**12060**
OSP-E32S	100	20	36	36	6.6	**12064**
OSP-E50S	120	15	46	46	6.6	**12069**

Dimension Table (mm) and Order Instructions for Universal Motor Coupling

Series	MF^{H7}	ML	MH^{H7} *	MO	MT (Nm)	Order No.
OSP-E25S	6	30	6	20	0.76	**12073**
OSP-E32S	10	35	6	30	1.34	**15197**
OSP-E50S	15	66	9.5	40	10.5	**12079**

* can be bored out to motor shaft diameter by customer.
Other dimensions on request.

For **Linear Drives** see 1.30.002E, 1.35.002E, 1.35.011E



HOERBIGER ORIGA

A1P653E00DZ00X

The right to introduce technical modifications is reserved

Linear Drive Accessories

Magnetic Switches

Type RS-.
Type ES-.

OSP — ORIGA SYSTEM PLUS

For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted.

Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all HOERBIGER-ORIGA OSP-Actuators and aluminum profile rod type cylinders.

Piston speed and switching distance affect signal duration and should be considered in conjunction with the minimum reaction time of ancillary control equipment.

$$\text{Min. reaction time} = \frac{\text{Switching distance}}{\text{Piston speed}}$$



Characteristics

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			**Type RS**	**Type ES**
Operating voltage	U_B	V	10-240 AC/DC (NO) 10-150 AC/DC (NC) 10-70 AC/DC (NO/NC)**	10-30 DC
Connection			Two wire	Three wire
Switching function			Normally open (NO) closing Normally closed (NC) opening	PNP / NPN — closing
Max. permanent switching current	I_{Dmax}	mA	200	200
Max. switching capacity		VA (W)	10 VA	—
Residual voltage at I_{Lmax}		V	< 3	< 3
Max. current consumption		mA	—	< 20
Status indicator			LED, yellow	
Typical switching time		ms	on: < 2	on: < 2
Switch-off delay		ms	—	ca. 25
Pole reversal			LED does not work	—
Pole reversal protection			—	Built in
Short circuit protection			—	Built in
Switchable capacity		µF	0.1 at 100 Ω, 24 VDC	
Switching distance		mm	ca. 15	ca. 15
Hysteresis for OSP		mm	ca. 8	ca. 3
Mechanical Characteristics				
Housing			Macrolon, grey	
Insulation class			F to VDE 0580	
Connection *) Type RS-K			Cable, 5 m long	
Type RS-S			3-pole Connector M8, Cable length ca. 100mm**	3-pole Connector M8, Cable length ca. 100mm
Cable cross section (highly flexible)		mm^2	2 x 0.14	3 x 0.14
Cable (highly flexible)*)			PVC	PUR, black
Wire colours			brown AC/DC+ blue or white signal output	Pin 1 = +, brown Pin 3 = 0V, blue Pin 4 = Signal black or white
Minimum permissible bending radius of cable — fixed		mm	≥ 20	
Minimum permissible bending radius of cable — moving		mm	≥ 70	
Switching point accuracy		mm	± 0.2	
Temperature range *) [1]	ϑ_{min} ϑ_{max}	°C °C	-25 other temperature ranges +80 on request	
Service life, switching cycles			3 x 10^6 up to 6 x 10^6	Theoretically unlimited
Electrical protection		IP	67 according to DIN EN 60529	
Shock resistance		m/s^2	100 (contact switches)	500
Weight (mass)		kg	0.12	

*) other versions on request
**) RS with connector (RS-S)
[1] for the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.

A1P673E00DX00X
The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Type RS

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.
Direct connection with 2-pole cable, 5m long, open ended (**Type RS-K**).
With 3-pole connector M8, cable length ca. 100 mm (**Type RS-S**).

Type ES

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal.
The output is short circuit proof and insensitive to shocks and vibrations.
Connection is by 3-pole connector for easy disconnection.
Fitted with connection cable 100 mm long with connector.
A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES-S or RS-S with 5 m cable.

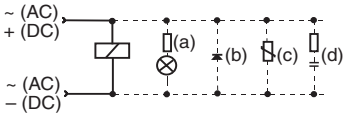
Magnetic Switches RS and ES

Electrical Service Life Protective Measures
Type RS magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

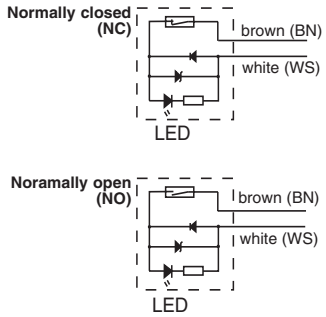
In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity

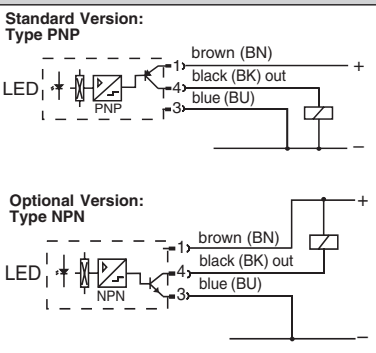


For the type ES, external protective circuits are not normally needed.

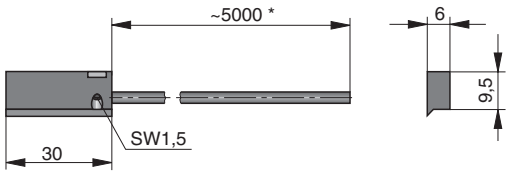
Electrical Connection, Type RS



Electrical Connection, Type ES

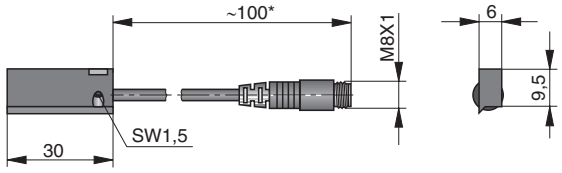


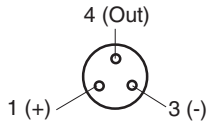
Dimensions (mm) – Type RS-K



* Length with possible minus tolerance, see chart below

Dimensions (mm) – Type ES-S / RS-S**





PIN assignment
(view of pins)
according to DIN EN 50044

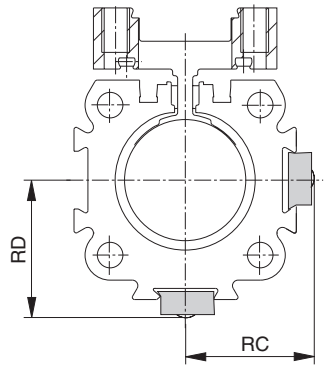
* Length with possible minus tolerance, see table below

** Operating voltage max. 70 V

Length of connection cable with length tolerance

Sensor Order-No.	Nominal cable length	Length tolerance
KL3045	5000 mm	–50 mm
KL3047	100 mm	–20 mm
KL3048	5000 mm	–50 mm
KL3054	100 mm	–20 mm
KL3060	145 mm	±5 mm
KL3087	100 mm	–20 mm

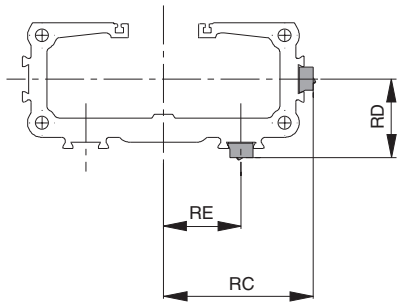
Dimensions – Series OSP-E



Dimension Table (mm) and Order Instructions

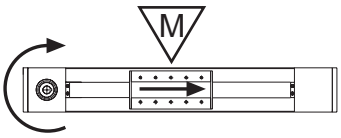
Series	Dimension			Order No.			
				RS closer	RS opener	ES	
	RC	RD	RE	Normally open	Normally closed	PNP	NPN
OSP-E25	25	27	–	Type:	Type:	Type:	Type:
OSP-E32	31	34	–	RS-K	RS-K	ES-S	ES-S
OSP-E50	43	48	–	KL3045	KL 3048	KL 3054	KL 3060
OSP-E25BHD	51	27	26	Type:	Type:		
OSP-E32BHD	63	34	32	RS-S	RS-S		
OSP-E50BHD	87	48	34	KL3047	KL 3087		
Cable 5 m with connector and with open end for magnetic switch Typ ES-S / RS-S				4041			

Dimensions – Series OSP-E..BHD

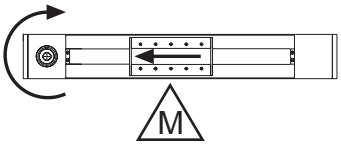


Positioning of Sensors/Permanent Magnets — OSP-E..BHD

Standard Version

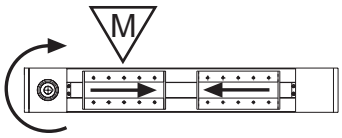


Drive Shaft Option = 0 (standard)

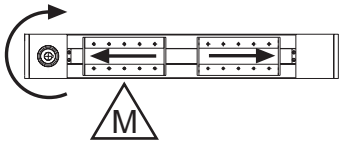


Drive Shaft Option = 1 (optional)

Bi-Parting Version



Drive Shaft Option = 2 (standard)



Drive Shaft Option = 3 (optional)

"M" indicates where magnet is fitted in carrier and in which two of the dovetail grooves magnetic switched can be placed. See also the adjacent dimension drawing.

Linear Drive Accessories

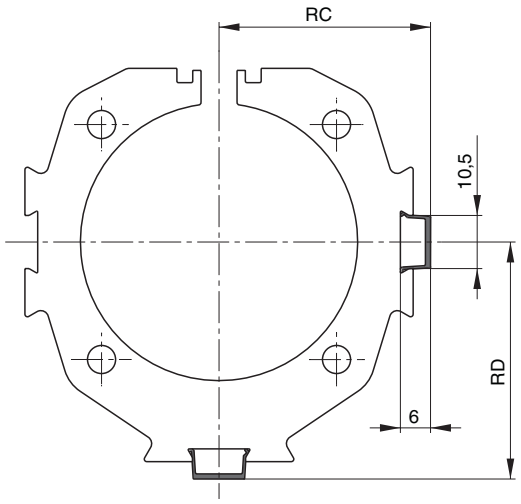
ø 25, 32, 50 mm
Cable Cover

OSP
ORIGA SYSTEM PLUS

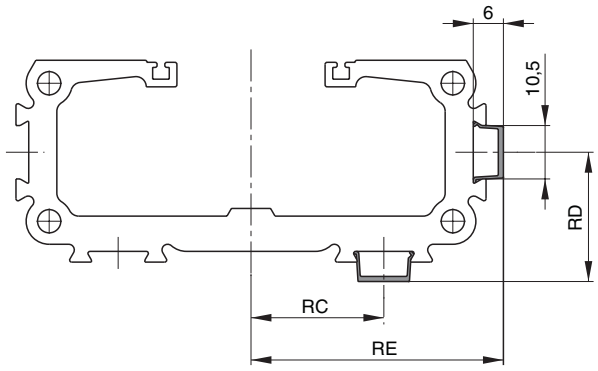
For clean guidance of magnetic switch cables along the cylinder body. Contains a maximum of 3 cables with diameter 3 mm.

Material: Plastic
Colour: Red
Temperature Range: –10 to +80°C

Series OSP-E – Dimensions (mm)

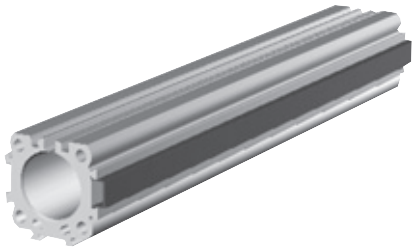


Series OSP-E..BHD – Dimensions (mm)



Dimension Table (mm) and Order Instructions

for series	Dimension (mm) RC	RD	RE	Order No.
OSP-E25	23.5	25.5	–	**13039** Minimum length: 1m Max. profile length: 2m Multiple profiles can be used.
OSP-E32	29.5	32	–	
OSP-E50	41.5	46.5	–	
OSP-E25BHD	26	25.5	49.5	
OSP-E32BHD	32	32	61.5	
OSP-E50BHD	44	46.5	85.5	



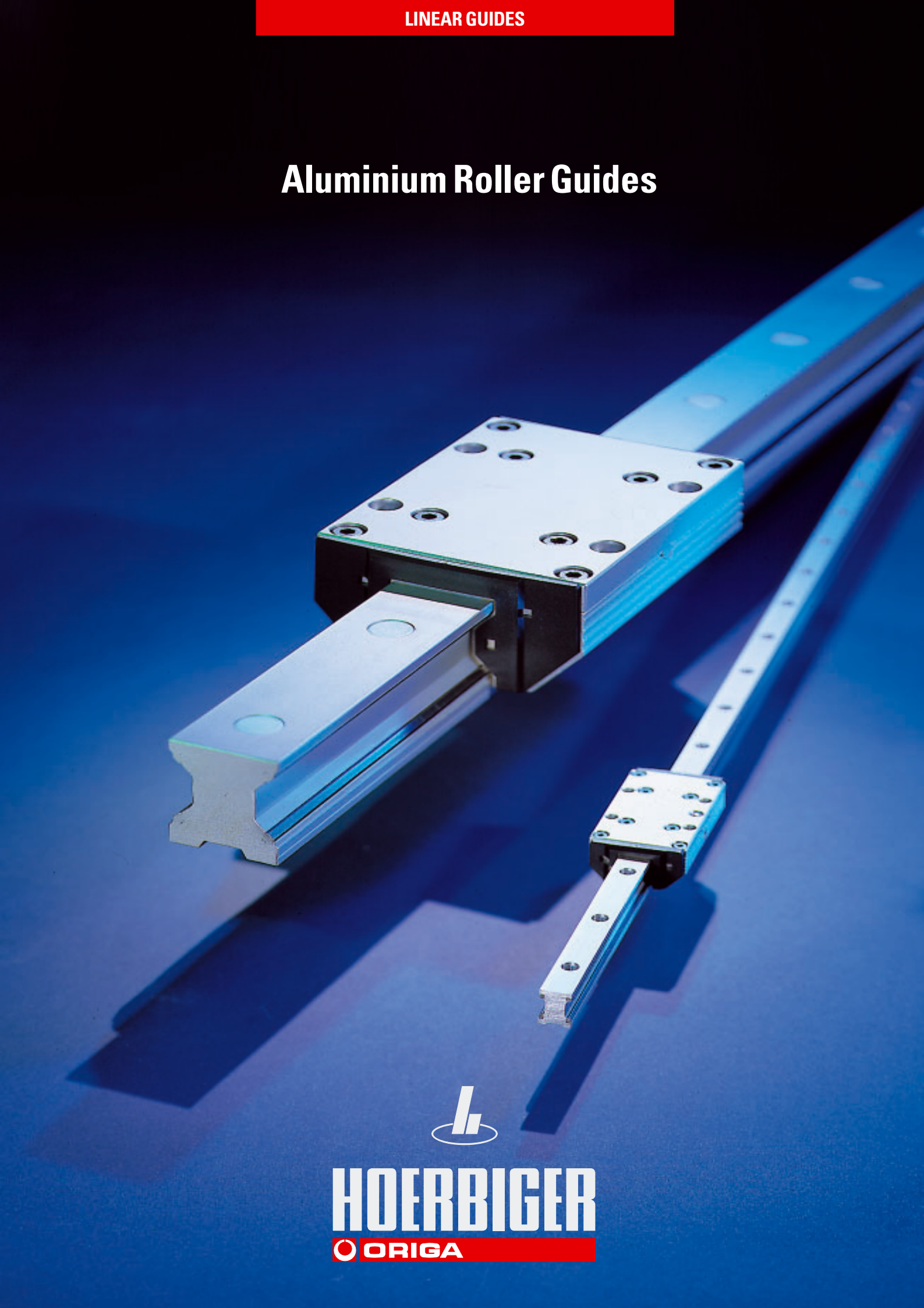
HOERBIGER ORIGA

A1P693E00HAA00X

The right to introduce technical modifications is reserved

LINEAR GUIDES

Aluminium Roller Guides



HOERBIGER

ORIGA

Aluminium Roller Guides

The characteristics of HOERBIGER-ORIGA aluminium roller guides are very high performance and low weight. They are quiet and precise in operation.

Application

Aluminium roller guides provide smooth operation and high load carrying capacity for industrial automation.

By the use of lightweight aluminium components the moving masses are minimised, travel speeds are increased and actuation energy is saved.

Their smooth action and speeds up to 10 m/s make them ideal for widespread use in many areas of application.

Product

- Light weight (aluminium)
- Smooth operation
- Speeds up to 10 m/s
- Loading from any direction
- Virtually grease-free guidance system
- Flexible mounting dimensions
- High load capability

Designs

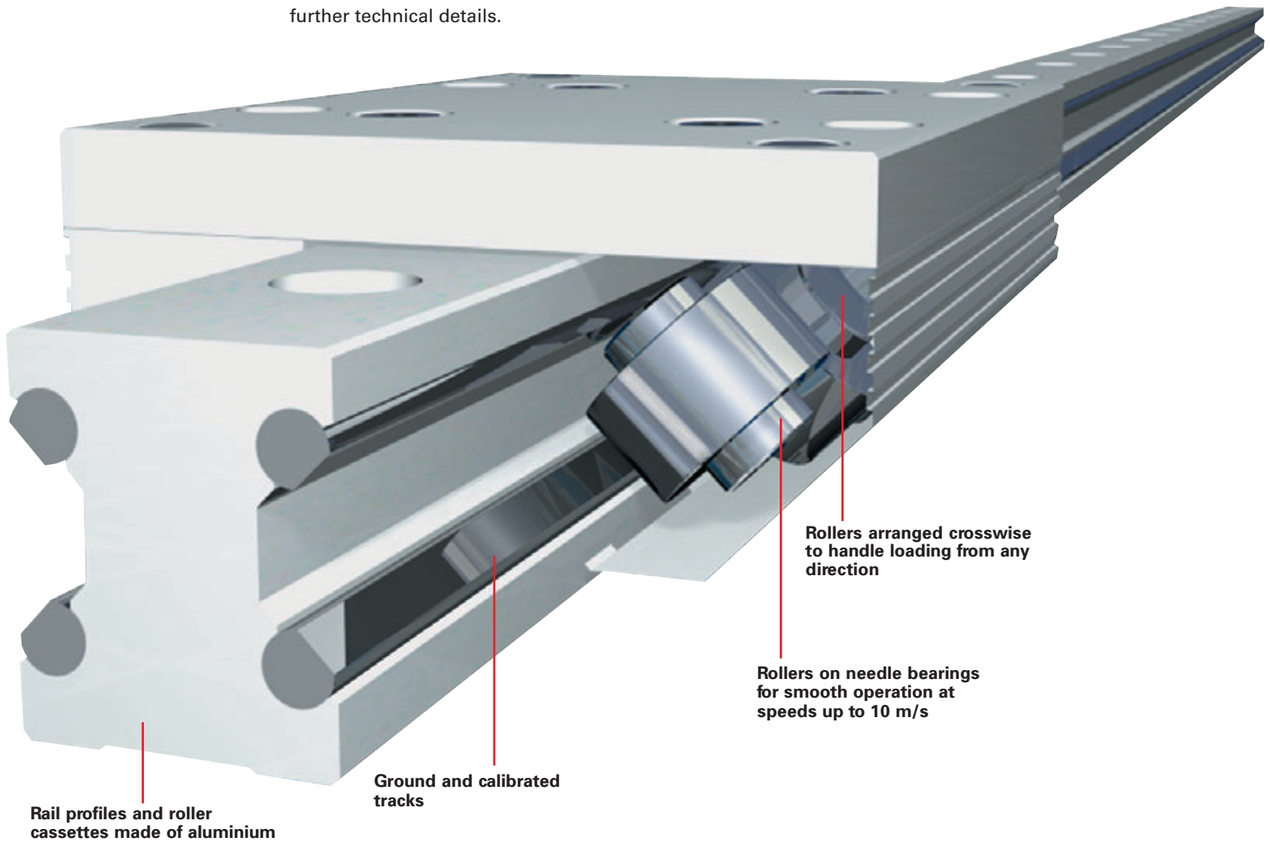
- Double rail
- Single rail

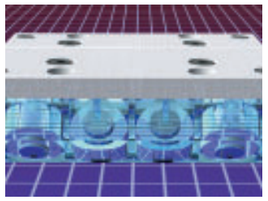
available in a standard version, a rustproof version and a LOW COST version

Technical data

- Sizes 12, 15, 20, 25, 35 and 45
- Rail lengths 300 mm to 4000 mm (other lengths on request).
  For longer travel the guide rails can be joined together.

See technical section for further technical details.





Rollers of standard roller cassette

Application examples



Aluminium roller guides in a cutting machine for spectacle lenses. Both the work piece carriers and the motorised X - Y table axis are equipped with roller guides. The smooth operation and precision of the equipment ensures a fine cutting action. (Kasch company photo)



Aluminium roller guides in an automatic vibrator for flattening printed sheets of paper. To guarantee even pressure on the sheets of paper, the roller bridge is supported by precision roller guides. (Baumann company photo)



Handling units for medical equipment. Smooth, easy movement with guideline roller guide. (Dräger company photo)



Aluminium roller guides in the sliding carriage of a machine for producing cables. The projecting arm of the carriage is guided by two double rails each with two roller cassettes and can be moved manually with minimal force because of the low friction properties. (Kabelmat company photo)



Single rail and roller shoe versions of the aluminium roller guide in a handling arrangement for stacks of paper. Various fittings and limit stops for stacking are moved on two axes horizontally and vertically. The robustness and reliability of the roller guides allows for continous operation under high load conditions. (Solms company photo)

Aluminium Roller Guides

Characteristics for Double Rail GDL-FD and Single Rail GDL-FE

Characteristics

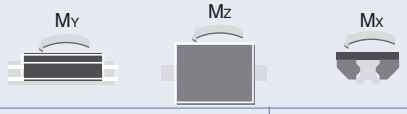
Characteristic	Unit	Description
Sealing		The roller shoe and cassettes are fitted with felt wiper rings, in a clip-on housing. See page 8 for spare wipers
Mounting		Rails and roller shoes with screw-quality 8.8, washer to DIN 433
Loads		See load data in the table. We are happy to calculate loads and service life for you on request
Acceleration, Decelleration	m/s^2	max. 40
Installation		In any position
Adjustment		The roller shoes can be adjusted/readjusted by the customer
Lengths		L = 300 mm to 4000 mm, (in double rail standard version sizes 25 and 35 also in 6000 mm) – For the stainless steel version size 15 L 300 mm to 3000 mm – Other lengths on request – For longer travel the guide rails can be joined together
Lubrication		Lifetime lubrication with roller bearing grease
Speed	m/s	up to 10
Materials – Standard version		Rails: Aluminium, anodized Tracks: High alloy spring steel Roller cassettes: Aluminium, anodized Rollers: Roller bearing steel
Materials – Stainless steel version		Rails: Aluminium, anodized Tracks: Stainless spring steel Roller cassettes: Aluminium, anodized Rollers: Stainless roller bearing steel
Operating temperature	°C	-10 to +80

Double Rails GDL-FD and Roller Cassettes RK-FD



Loads, Moments and Weights

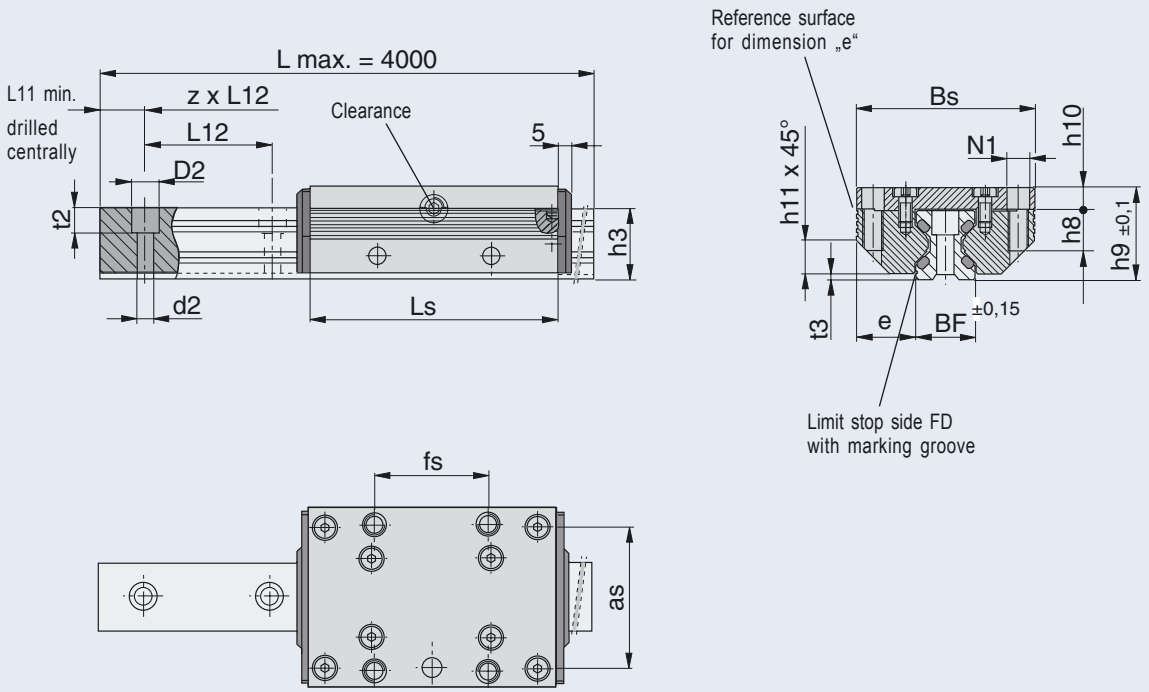
*) Recommended safety factors: Condition – Screw 8.8
Compression load – S>1.2
Tensile load – S>2.5
Torque load – S>4.0



Size	Version	Load C [N]	Load Co [N]	M_Y / M_Z [Nm] * stat.	M_Y / M_Z [Nm] * dyn.	M_X [Nm] * stat.	M_X [Nm] * dyn.	Weight (Mass) [kg] Cassette	Weight (Mass) [kg] Double rail / m
12	Standard	2800	3000	43	40	27	25	0.1	0.4
	Stainless	–	–	–	–	–	–	–	–
15	Standard	4200	3400	58	72	37	45	0.3	0.8
	Stainless	1800	2200	37	30	23	19	0.3	0.8
20	Standard	5400	5400	111	111	76	76	0.4	0.9
	Stainless	2000	2500	52	41	35	28	0.4	0.9
25	Standard	9000	10100	222	198	158	142	0.6	1.8
	Stainless	3400	4700	105	75	75	53	0.6	1.8
35	Standard	12500	18000	559	388	423	294	1.5	3.2
	Stainless	5600	7400	229	174	173	131	1.5	3.2
45	Standard	21200	25900	983	806	827	678	2.9	5.5
	Stainless	13100	16500	626	500	526	420	2.9	5.5
12	Low Cost	620	170	2.4	8.9	1.6	5.7	0.1	0.4
15	Low Cost	700	230	4	12	2.5	7.5	0.3	0.8
20	Low Cost	940	300	6	19	4	13	0.4	0.9
25	Low Cost	1500	700	15	32	11	23	0.6	1.8
35	Low Cost	3100	1400	42	95	32	72	1.5	3.2
45	Low Cost	6300	2700	103	238	86	200	2.9	5.5

Double Rails GDL-FD and Roller Cassettes RK-FD

Dimensions (mm)



Dimension Table (mm)

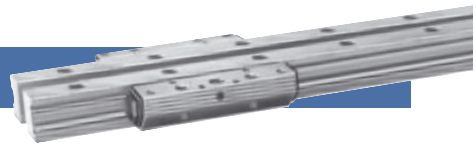
Size	Ls	BF	Bs	h3	h9	as	fs	d2	D2	e	h8	h10	h11	L11	L12	t2	t3	N1
12	64	12	37	14.7	19	30	25	3.4	6	12.50	8	4.0	6	min.10	40	5.5	1.4	M4
15	78	15.5	47	18.7	24	38	30	4.5	8	15.75	10	5.0	8	min.10	60	6	2.0	M5
20	92	21.0	63	22.6	30	53	40	5.5	10	21.00	12	7.0	11	min.10	60	7	2.0	M6
25	98	23.0	70	27.0	36	57	45	6.6	11	23.50	16	8.5	13	min.10	60	10	2.5	M8
35	135	32.0	100	37.0	48	82	62	9.0	15	34.00	20	10.5	20	min.12	80	11.5	3.5	M10
45	165	45.0	120	46.0	60	100	80	11.0	18	37.50	24	13.5	22	min.16	105	14.5	4.0	M12

Order Instructions

Size	Version	Order-No.	
		Double rail GDL-FD	**Cassette RK-FD**
12	Standard	**20929**	**20931**
	Stainless	**–**	**–**
15	Standard	**20506**	**20518**
	Stainless	**20897**	**20882**
20	Standard	**20507**	**20519**
	Stainless	**20898**	**20883**
25	Standard	**20508**	**20520**
	Stainless	**20899**	**20884**
35	Standard	**20829**	**20837**
	Stainless	**20900**	**20885**
45	Standard	**20830**	**20838**
	Stainless	**20901**	**20886**
12	Low Cost	**–**	**20993**
15	Low Cost	**–**	**20521**
20	Low Cost	**–**	**20522**
25	Low Cost	**–**	**20523**
35	Low Cost	**–**	**20839**
45	Low Cost	**–**	**20840**

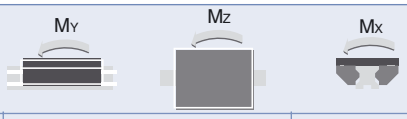
Aluminium Roller Guides

Pair of Single Rail GDL-FE and Pair of Roller Shoes RS-FE



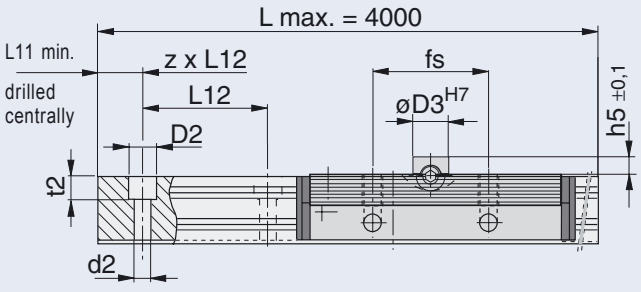
Loads, Moments and Weights

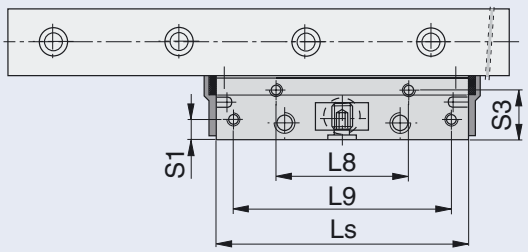
*) Recommended safety factors: Condition – Screw 8.8
Compression load – S>1.2
Tensile load – S>2.5
Torque load – S>4.0

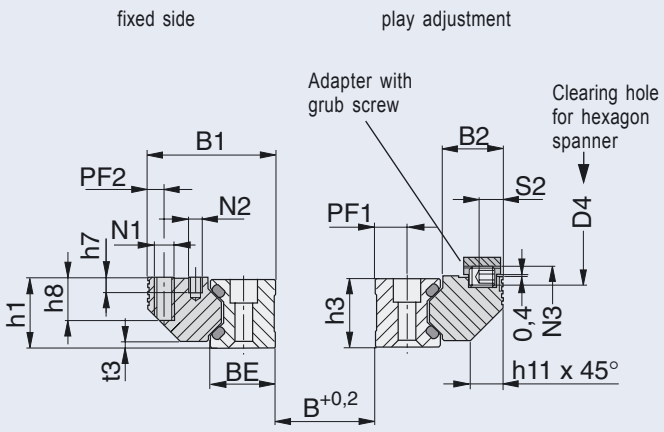


Size	Version	Load C [N]	Load Co [N]	M_Y / M_Z [Nm] * stat.	M_Y / M_Z [Nm] * dyn.	M_X [Nm] * stat.	M_X [Nm] * dyn.	Weight (Mass) [kg] Pair Roller-shoes	Weight (Mass) [kg] Single Rail pair / m
12	Standard	2800	3000	43	40	1.5 (B+30.3)	1.4 (B+30.3)	0.06	0.8
	Stainless	–	–	–	–	–	–	–	–
15	Standard	4200	3400	58	72	1.7 (B+36.5)	2.1 (B+36.5)	0.2	1.6
	Stainless	1800	2200	37	30	1.1 (B+36.5)	0.9 (B+36.5)	0.2	1.6
20	Standard	5400	5400	111	111	2.72 (B+47)	2.7 (B+47)	0.3	2.0
	Stainless	2000	2500	52	41	1.3 (B+47)	1.0 (B+47)	0.3	2.0
25	Standard	9000	10100	222	198	5.0 (B+58.4)	4.5 (B+58.4)	0.5	3.8
	Stainless	3400	4700	105	76	2.4 (B+58.4)	1.7 (B+58.4)	0.5	3.8
35	Standard	12500	18000	559	388	9.0 (B+85)	6.3 (B+85)	1.4	7.0
	Stainless	5600	7400	229	174	3.7 (B+85)	2.8 (B+85)	1.4	7.0
45	Standard	21200	25900	983	806	12.9 (B+109)	10.6 (B+109)	2.8	11.2
	Stainless	13100	16500	626	500	8.2 (B+109)	6.6 (B+109)	2.8	11.2
12	Low Cost	620	170	2.4	8.9	0.08 (B+30.3)	0.3 (B+30.3)	0.06	0.8
15	Low Cost	700	230	4	12	0.1 (B+36.5)	0.35 (B+36.5)	0.2	1.6
20	Low Cost	940	300	6	19	0.15 (B+47)	0.5 (B+47)	0.3	2.0
25	Low Cost	1500	700	15	32	0.35 (B+58.4)	0.7 (B+58.4)	0.5	3.8
35	Low Cost	3100	1400	42	95	0.7 (B+85)	1.5 (B+85)	1.4	7.0
45	Low Cost	6300	2700	103	238	1.4 (B+109)	3.1 (B+109)	2.8	11.2

Dimensions (mm)







Pair of Single Rail GDL-FE and Pair of Roller Shoes RS-FE

Dimension Table (mm)

Size	Ls	BE	B1	B2	d2	D2	$D3^{H7}$	D4	fs	h1	h3	h5	h7	h8
12	64	12.00	24.5	11.9	3.4	6	8	3	25	15.0	14.7	4	6.0	8
15	78	15.25	30.9	15.2	4.5	8	10	4	30	19.0	18.7	5	7.5	10
20	92	20.00	40.9	20.4	5.5	10	10	4	40	23.0	22.6	5	8.0	12
25	98	25.00	48.4	22.9	6.6	11	14	6	45	27.5	27.0	7	5.0	16
35	135	35.00	68.9	32.9	9.0	15	14	6	62	37.5	37.0	7	7.5	20
45	165	45.00	82.4	36.4	11.0	18	14	6	80	46.5	46.0	7	9.5	24

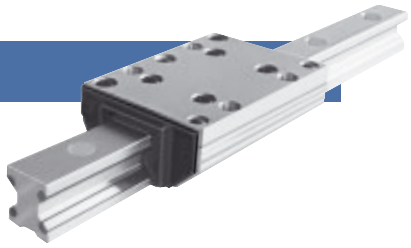
Size	h11	L8	L9	L11	L12	t2	t3	N1	N2	N3	PF1	PF2	S1	S2	S3
12	6	29	57	min.10	40	5.5	1.4	M4	M3	M4	5.5	3.4	3.4	4.9	9.7
15	8	34	68	min.10	60	6	2.0	M5	M4	M6	7.0	4.4	4.9	5.9	12.4
20	11	42	80	min.10	60	7	2.0	M6	M5	M6	9.5	4.9	5.9	5.9	16.9
25	13	48	84	min.10	60	10	2.5	M8	M5	M8	12.0	6.4	7.4	8.9	19.4
35	20	67	117	min.12	80	11.5	3.5	M10	M6	M8	17.0	8.9	8.9	8.9	28.4
45	22	83	146	min.16	105	14.5	4.0	M12	M8	M8	22.0	9.9	9.9	8.9	30.9

Order Instructions

Size	Version	Order No.	
		Pair of Roller Shoes RS-FE	**Pair of Single Rails GDL-FE**
12	Standard	**20930**	**20928**
	Stainless	**–**	**–**
15	Standard	**20512**	**20500**
	Stainless	**20877**	**20892**
20	Standard	**20513**	**20501**
	Stainless	**20878**	**20893**
25	Standard	**20514**	**20502**
	Stainless	**20879**	**20894**
35	Standard	**20833**	**20825**
	Stainless	**20880**	**20895**
45	Standard	**20834**	**20826**
	Stainless	**20881**	**20896**
12	Low Cost	**20995**	**–**
15	Low Cost	**20515**	**–**
20	Low Cost	**20516**	**–**
25	Low Cost	**20517**	**–**
35	Low Cost	**20835**	**–**
45	Low Cost	**20836**	**–**

Accessories

Standard Version with Wiper



Standard Version with wiper

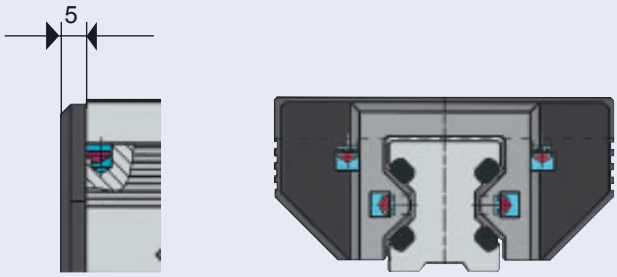
Integrated into an additional cover, the felt wiper is impregnated with oil. Depending on the degree of contamination, these wipers last for some 6000 km, after which the felt wipers can either be washed or replaced.
For optimal functionality, all holes in the guide rails should be filled with the plastic plugs.

Order Instructions Wiper-Spares

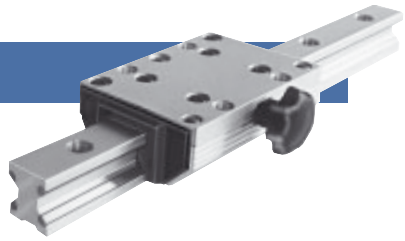
for size	for version – Standard – Low Cost – Stainless
12	**20996**
15	**20813**
20	**20814**
25	**20815**
35	**20816**
45	**20817**

Delivery information:

- Scope of supply – 1 pair
- with your order, please indicate whether a bonded, screwed or clipped version is required

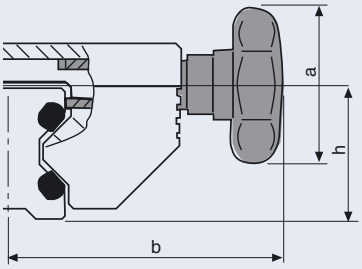


Version with Position Lock



Version with Position Lock

This version features a rotating knob, which locks the carriage into position at any desired point of the track.
The mechanism does not exert any force on the guide system.
The position lock is used in applications where the carriage is moved manually, clamping applications and tooling stations.



Dimensions (mm),
Order Instructions for cassettes with Position Lock

for size	Dimension (mm) øa	b	h	Holding torque (N)		Order No.
12	–	–	–	–	by normally holding torque	–
15	25	41	19.0	200		**20923**
20	25	49	23.0	250		**20924**
25	32	56	28.0	250		**20925**
35	50	83	38.5	350		**20926**
45	63	101	48.0	750		**20927**

Cap Plugs

Cap Plugs

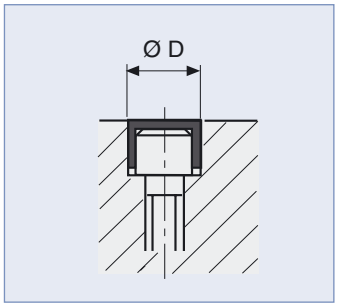
Material:
wear-free plastic, oil- and ageing resistant

Installation:
– place cap plug in screw recesses.
– position plastic plate on top and drive caps in evenly.
– remove any protruding burr.

Ordering information:
When ordering single or double rails, the required number of caps will be included in the scope of supply.

Dimensions (mm),
Order Instructions for Cap Plugs

for size	Dimension (mm) cyl. Scr. DIN 912	øD	Order No.
12	M3	6	**20997**
15	M4	8	**20524**
20	M5	10	**20525**
25	M6	11	**20526**
35	M8	15	**20841**
45	M10	18	**20842**



Limit Stop Screw

Limit Stop Screw

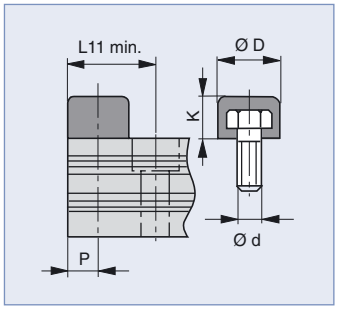
The sole purpose of the limit stop screws is to prevent removal of the cassette. They are screwed in to the thread (option) of the guide rails, a rubber cap placed on top dampens the stop in each case but is unable to absorb the energy produced (resulting damage to the plastic wiper can occur).

For rail lengths where the initial mounting distance of the limit stop screw is less the L11min, the drill pattern will move up one half of the standard bore length.

Material:
Chlorbutadien Rubber (Cr), black

Dimension (mm),
Order Instructions for Limit Stop Screws

for size	Dimension(mm) d	D	K	L11 min.	P	Order No. Standard	Stainless
12	M5	12	8	15	6	**20998**	**20999**
15	M5	12	8	16	6	**20527**	**20902**
20	M5	12	8	17	6	**20527**	**20902**
25	M6	15	10	20.5	7.5	**20528**	**20903**
35	M8	19	13	26.5	9.5	**20529**	**20904**
45	M10	24	16	33	12	**20844**	**20905**



General information

1. Features of the guide system

Aluminium roller guides consist of double rail and roller cassettes resp. individual rail and roller shoe.

Their special features are: light weight, small dimensions, and high speed of displacement. Aluminium roller guides are economical and universal handling components, which are corrosion-resistant and cost effective.

With aluminium roller guides the guide rails and cassettes are made of aluminium. The rollers are running in an antifrictional way on ground or drawn raceways from high alloy spring steel. The special O-arrangement of the running rollers guarantees high load capacity from whatever direction.

2. Size of the guide system

To select the right size, first the moments and forces acting on the bearing have to be determined.

Recommended safety (with screws quality 8.8):

Thrust load:	S > 1.2
Tensile load:	S > 2.5
Moment load:	S > 4.0

Generally the first decision has to be whether the guide system should be built with double rails and cassettes, or whether individual rails with roller shoes, are to be used. Hereby there are a number of variants.

3. Material

The basic body of HOERBIGER-ORIGA aluminium roller guides is made of aluminium. The races consist of tough, high alloy spring or of non-corrosive steel.

By using an aluminium construction the moving mass is reduced, enabling light weight construction with low moving forces and reduced energy consumption.
Nevertheless the integrated HOERBIGER-ORIGA system sustains high load rating and moment loads.

4. Operating temperature

HOERBIGER-ORIGA bearing elements can be operated within a temperature range from -10° up to +80°C.

For other temperatures please consult us.

5. Screwed connections

The units are fixed to the mating structure by the bore holes in the rails and the guides. Hereby the screw quality should be 8.8, washers DIN 433.
To secure the screwed connections we recommend you to use suitable locking means.

Tightening moments

Quality 8.8	Weight	Mom. [Nm]
	M3	1.1
	M4	2.5
	M5	5.0
	M6	8.5
	M8	21.0
	M10	41.0
	M12	71.0

6. Wipers

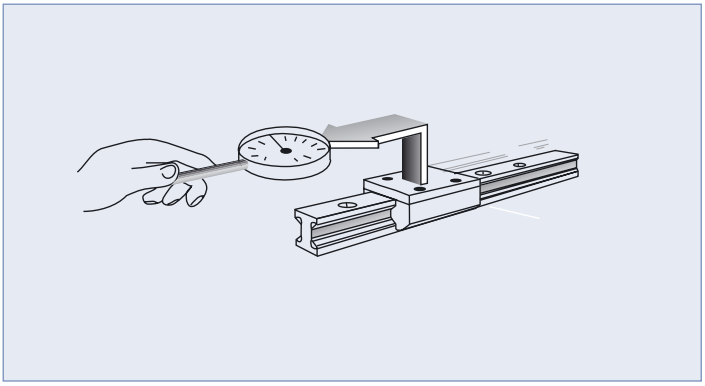
The races of aluminium roller guides and linear guides are equipped with wipers against coarse environmental contamination. For rail recess covers see page 9.

7. Slide resistance, adjustment

7.1 Double rail and cassette

Aluminium roller guides are adjusted in such a way that the required stiffness under load is obtained. We recommend that you measure the slide resistance as shown below. However, before doing so the mating structure should be checked for dimensional accuracy and flatness.

The cassettes which are mounted on the rails are adjusted clearance- free ex works. This adjusting mode refers to the point on the rail where the cassette moves most smoothly. Adjustment is effected in the non-loaded condition. The indications on the table are referred to this condition.



Settings for the standard and rustproof versions

Description	Slide resistance [N]					
Size	12	15	20	25	35	45
Adjust. value	0.2	1.0	1.5	1.5	3.0	3.5
Max. value	0.5	3.0	4.5	3.0	9.0	10.5

Settings for the LOW COST version

Description	Slide resistance[N]					
Size	12	15	20	25	35	45
Adjust. value	0.2	0.5	1.0	1.5	2.0	2.5
Max. value	0.4	1.0	2.0	3.0	4.0	5.0

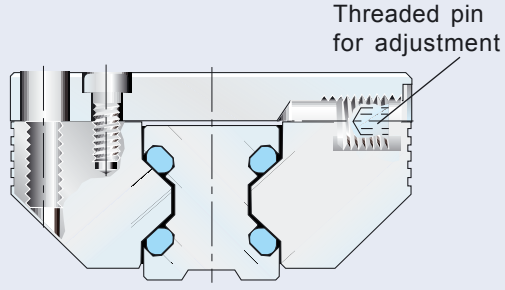
Tolerances in the guide system and internal friction may cause an increase of the slide resistance when the adjusted cassette is moved along the stroke path.

All values without wipers

7.2 Double rail and roller cassette

For clearance setting first the screws of the cassette plate are slightly released, afterwards the threaded pin which is integrated in the logitudinal side of the cassette is set. Turning the threaded pin effects a displacement of the roller shoe in relation to the cassette plate.

After tightening of the cassette plate the slide resistance can be checked. Afterwards the mating structure is fixed.



7.3 Single rail and roller shoes

When adjusting the assembly, first indentify the stationary and the adjustable roller shoes.
(see drawing 10.2)
The roller shoes of the stationary side are aligned to the mating structure and fastened by all screws.

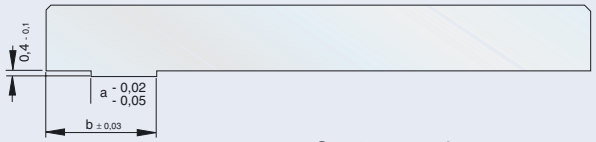
With the roller shoes of the stationary side, all fastening screws are slightly tightened. Clearance setting is effected in the same way as with the cassette.

Principally clearance setting is effected in unloaded condition.

7.4 Centering groove on the stationary side

The roller shoes are provided with centering grooves for better alignment during mounting.To use these, centering shoulders according to the data given below, are required.

Size	Mass (mm)	
	a	b
12	4.5	9.6
15	5.0	12.6
20	7.5	16.1
25	10.5	17.6
35	12.5	26.1
45	15.5	31.1



8. Running accuracy

The running accuracy is measured from the screw-on-surface of the cassette to the ideal straight line of stroke. It is 0.06 mm.

9. Contact and support surfaces

The contact and support surfaces exert a substantial influence on the function and precision of linear guides. Depending on the functional requirements of the system the mating structure must be machined with the corresponding degree of precision.

Machining errors on the mating structure are added to the running errors of the guide system. In order to guarantee troublefree operation we recommend to a max. accumulated deviation of < 0.1 mm per running meter of the guide distance on the mating structure.

General information

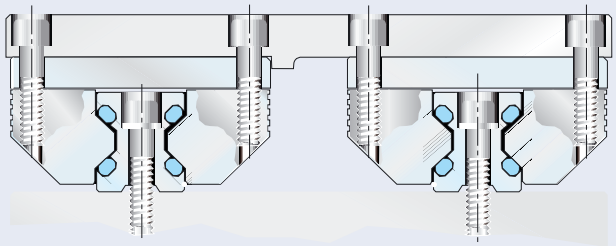
10. Design hints

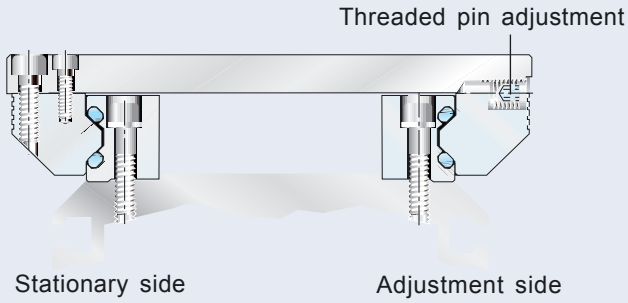
10.1 Double rail and cassette

With the double track arrangement, precise alignment in terms of parallelism and height is necessary.

10.2 Single rail and roller shoes

Aluminium roller guides consisting of single rails and roller shoes can be varied in the guide width. They are particularly suitable for assembly on profiled aluminium carriers, as their corrosion and temperature behaviour is homogenous.





Mounting instructions

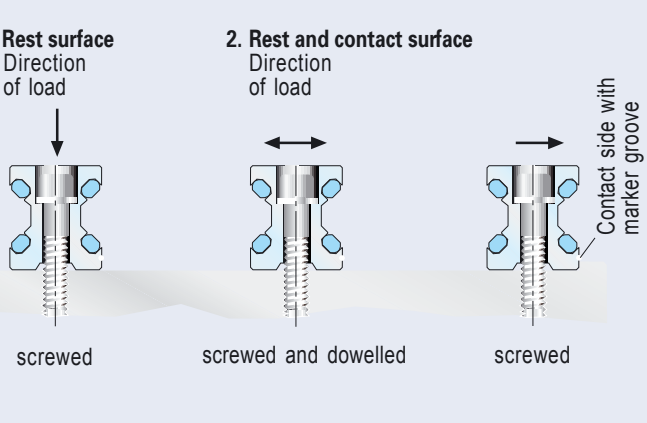
11. Mounting instructions

The usable load capacity is influenced by the connection between the guide elements and the mating structure.

11.1 Double rails and cassettes

Depending on the load situation double rails should either be screwed or screwed and dowelled, and placed in grooves or against a shoulder.
The rails rest against shoulders and are screwed or screwed and dowelled to the mating structure.

After final checking of the linearity resp. parallelism the screws are tightened alternately from the center outwards to the given torque.
Afterwards, the cassette should be moved over the total stroke distance, if the motion is uniform then the mounting process may be continued



Mounting instructions

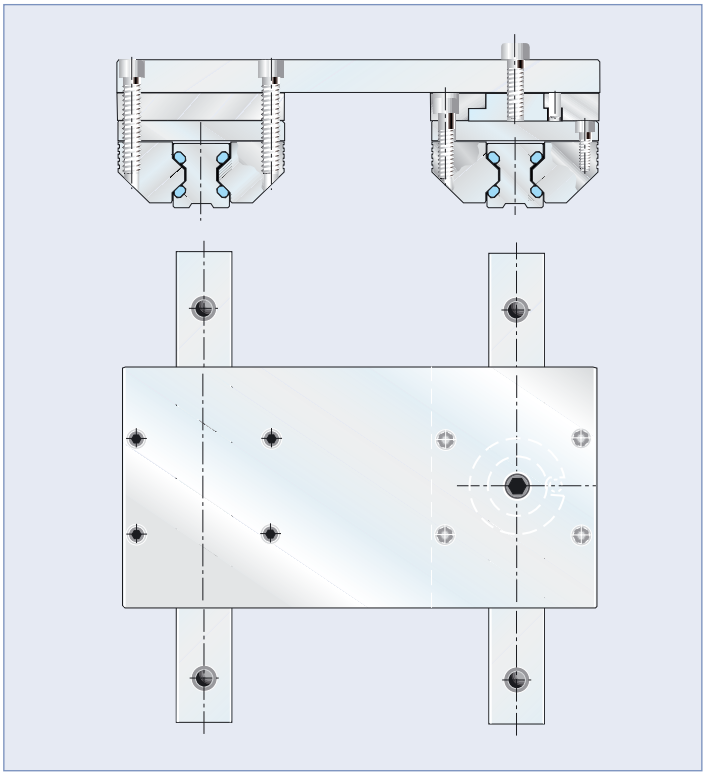
11.2 Stationary and movable rest side

With multitrack arrangement first define the a stationary and movable side of the guide. This way tolerances in parallelism can be best compensated.

With multitrack arrangements the movable side of the bearing is equipped with driver and locking device. The floating slider plate has a stationary and a movable side.

The stationary sideprovides the guiding function, the movable side compensates tolerances in parallelism and height.

We recommend that the drive be placed at the stationary side ase this side sustains the driving torque.



11.3 Single rails and roller shoes

Where single rails and roller shoes are used the mating structure takes the function of the slider.

The guide rails are put against the contact shoulder and screwed resp. screwed and dowelled. After final adjustment of linearity resp. parallelism the screws are tightened alternately starting from the center outwards.

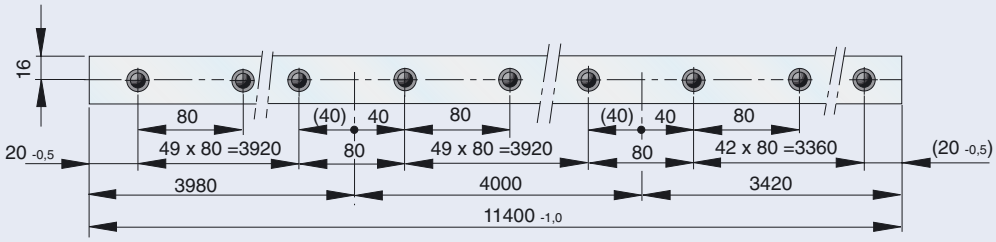
Afterwards the slider is moved along the guide path. When the movement is uniform you can procede with mounting.

12. Coupling of guide rails

12.1 Spacing

Coupled rails with a length over L= 4000 mm are pieced together according to the HOERBIGER-ORIGA standard. Spacing according to the HOERBIGER-ORIGA standard guarantees a uniform bore shape over the whole guide and an optimum utilisation of the guide length.
For further mounting procede as described under point 11.

Pitch according to HOERBIGER-ORIGA standard: e.g. GDL-FD35-11400



Mounting instructions

12.2 Mounting

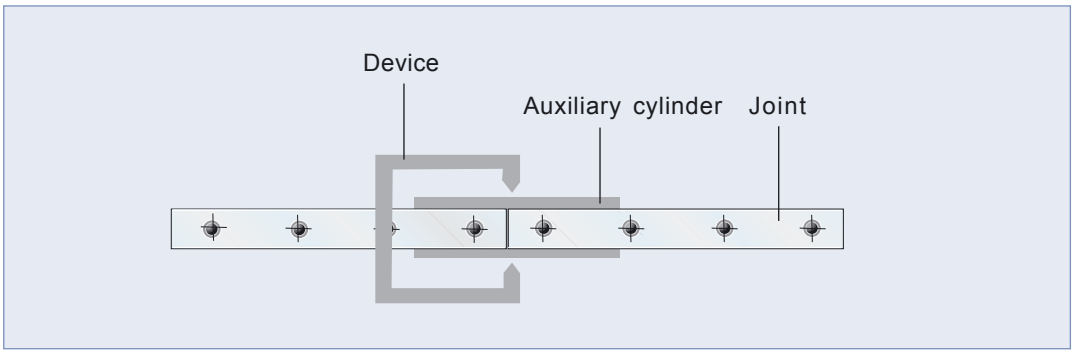
Clean contact and mounting surfaces, then place the rails loosely on the guide path one behind the other one. With this the correct sequence of the production numbers has to be kept. (e.g. ...1...2...3...4 etc.).
The marking groove on the lower surface of the rail must always be on the same side.

The complete guide path should be aligned without gaps and lightly fastened, ensuring that joints are precisely aligned.

The joints are to be aligned exactly. This is effected best by means of two auxiliary cylinders (length 200 mm). They are inserted into the raceway at the joints and clamped with a device.

For further mounting procede as described under point 11.

Size	Auxiliary cyl. ø (mm)
12	11
15	11
20	14
25	16
35	27
45	35



Size Calculation for Aluminium Roller Guides

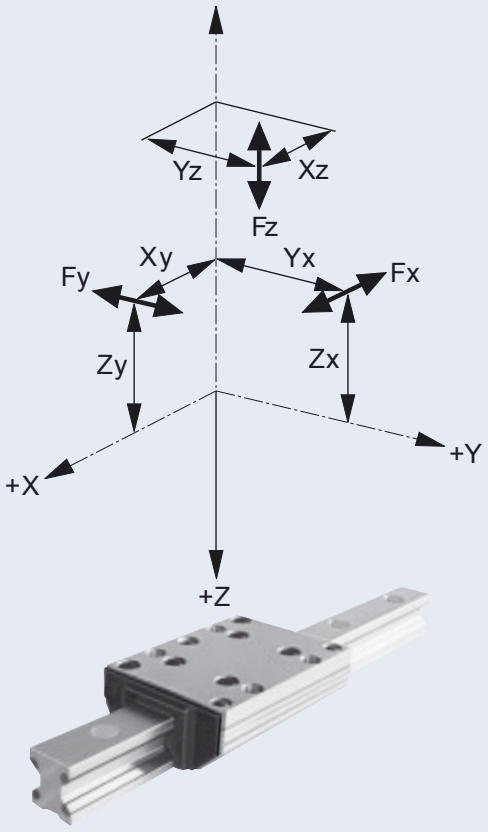
We will be pleased to calculate the size of aluminium roller guide you require.

Copy this page, enter the requested technical data and send this page to your local technical adviser or to one of the contact addresses on the last page of this brochure.

Company: .....
.....
.....

Telefon: .....
Telefax: .....
E-mail: .....

Branch: .....
Department: .....
Name: .....
Date: .....



Loads
Forces Lever arms

F_x [N] =	Y_x [mm] =	Z_x [mm] =
F_Y [N] =	X_Y [mm] =	Z_Y [mm] =
F_Z [N] =	X_Z [mm] =	Y_Z [mm] =

Order number: .....
Technical data
Stroke [mm] .....
Mounting position Vertical ❑ at an ❑
Horizontal ❑ angle.....
Speed [m/s] .....
Acceleration [m/s²] .....
Lifetime (desired) L [km]
.....
Carrying length A [mm] .....
Carrying width B [mm] .....
Carrying length = The distance from centre to centre of two cassettes / pairs of roller shoes on a rail

Carrying width = With multi-track arrangement distance of the rails

Sketch:

Environment:
(Dirt. Humidity ...)
.....
.....
.....
.....
.....
.....
.....
.....

Shock Absorbers



HOERBIGER
ORIGA

Table of Contents
Industrial
Shock Absorber

	Data Sheet No.
Technical informations	1.70.001E
Survey	1.70.001-13E

Non-Adjustable Shock Absorber

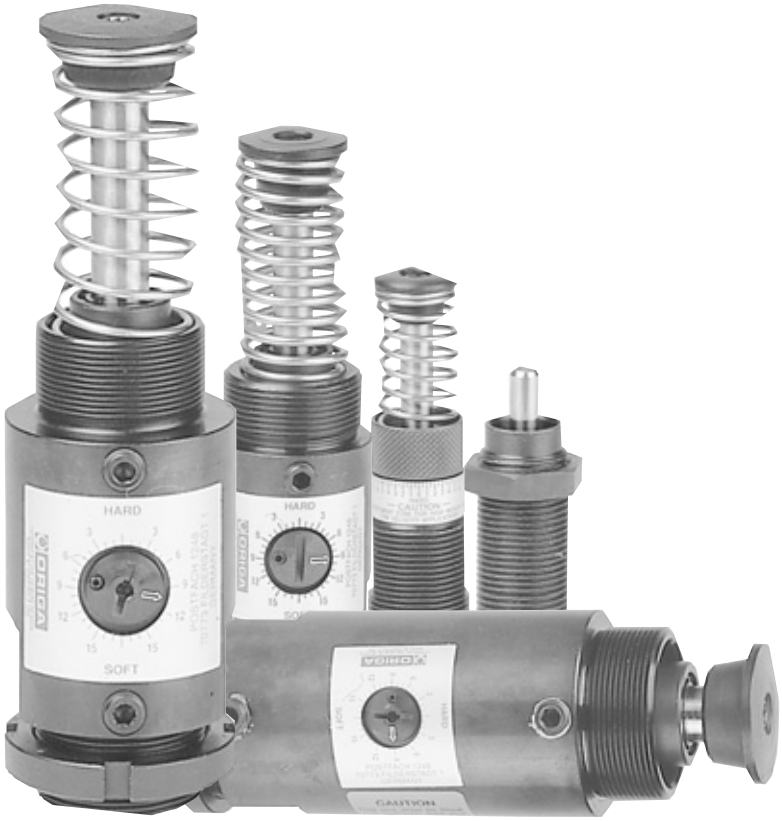
Type SA 10, SA 10S	1.70.002E
Type SA 12	1.70.003E
Type SA 14, SA 14S, SA 14S2	1.70.004E
Type SA 20, SA 20S, SA 20S2	1.70.005E
Type SA 20x25, SA 20Sx25, SA 20S2x25	1.70.005E
Type SAI 25, SAI 25S,	1.70.006E
Type SA 33, SA 33S, SA 33S2, SA 33S3	1.70.007E
Type SA 45, SA 45S, SA 45S2, SA 45S3	1.70.008E
Type SA 64, SA 64S, SA 64 S2, SA64S3	1.70.009E

Adjustable Shock Absorber

Type SA 1/4 x 1/2	1.70.100E
Type SA 3/8 x 1D	1.70.101E
Type SA 1/2 x 1M, SA 1/2 x 2M	1.70.102E
Type SA 1/4 x 1, SA 1/4 x 2	1.70.103E
Type SA 3/4 x 1, SA 3/4 x 2, SA 3/4 x 3	1.70.104E
Type SA 1 1/8 x 2, SA 1 1/8 x 4	1.70.105E
Type SA -A 3/4 x 1, SA 3/4 x 2, SA 3/4 x 3	1.70.106E
Type SA-A 1 1/8 x 2, SA -A 1 1/8 x 4 SA -A 1 1/8 x 6	1.70.107E

HOERBIGER ORIGA

Industrial Shock Absorbers
Adjustable
Non-adjustable



HOERBIGER
ORIGA

The System Concept

SMOOTH, CONTROLLED STOPPING OF MOVING LOADS

HOERBIGER-ORIGA shock absorbers prevent damage to moving parts and to machines and plant:
destructive impact forces are absorbed by controlled linear deceleration.

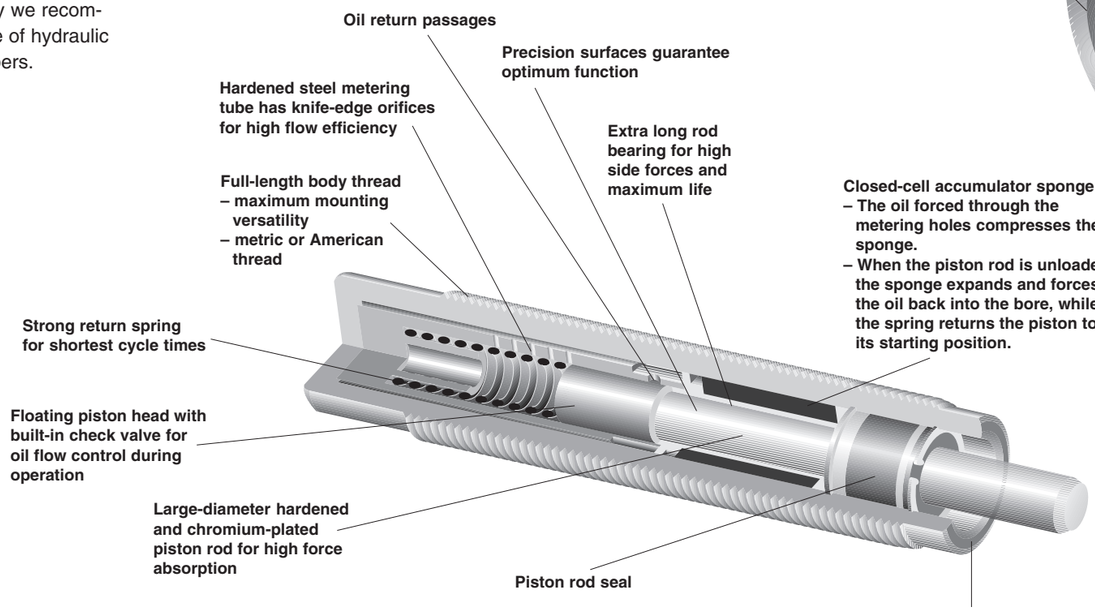
HOERBIGER-ORIGA SHOCK ABSORBERS LET YOU

- increase operating speeds
- increase operating loads
- increase system performance
- increase operating reliability
- reduce stresses on equipment
- reduce production costs
- reduce noise levels

All moving parts in a production process have to be stopped without damage to themselves or to the stopping devices of the machines and plant.
The high impact forces have to be reduced in a controlled manner: to bring a moving load to a standstill, the kinetic energy generated by the movement has to be dissipated.
The heavier the moving load and the faster it moves, the higher the kinetic energy.
In automation especially, shorter and shorter cycle times are demanded, so that stopping times are greatly reduced while kinetic energy levels are dramatically increased. These again have to be dissipated in a controlled manner.

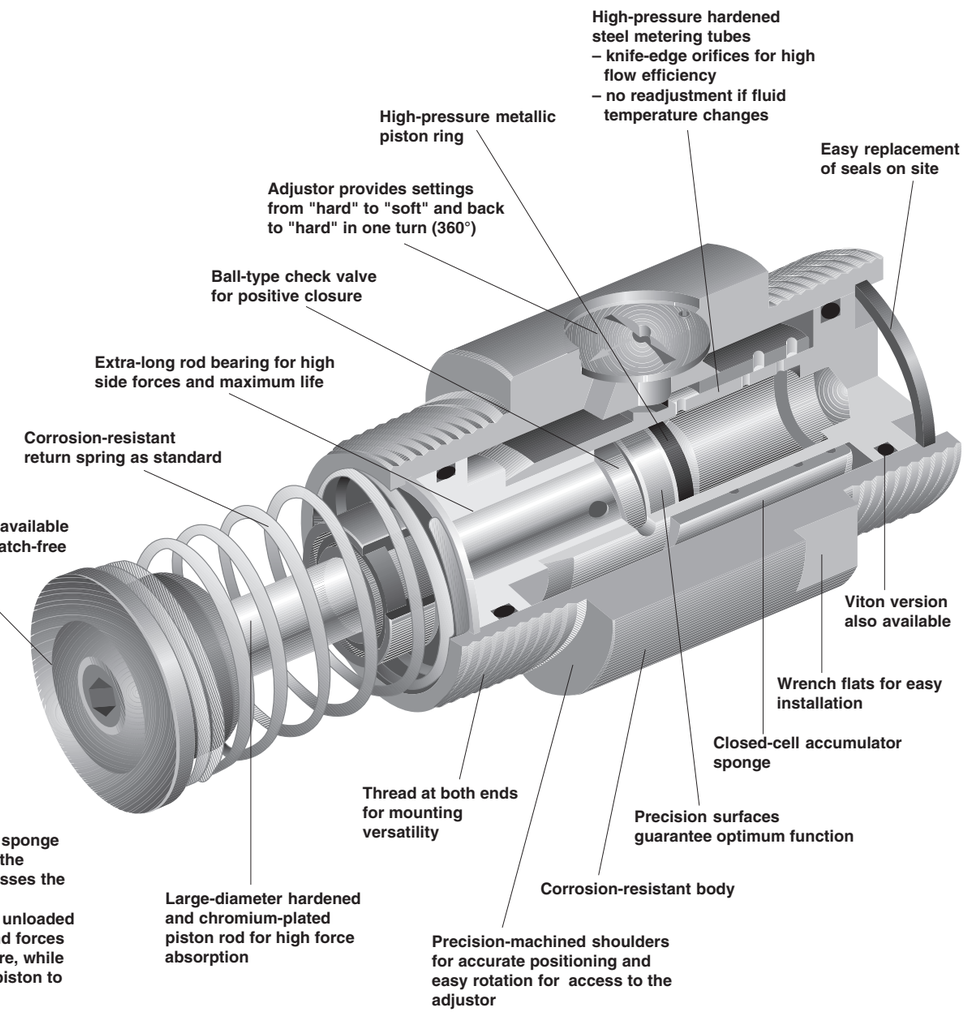
Some commonly used stopping devices such as springs, rubber buffers or dashpots actually increase shock loading instead of reducing it – they do not dissipate energy at a uniform rate.
For smooth dissipation of the kinetic energy we recommend the use of hydraulic shock absorbers.

HOERBIGER-ORIGA shock absorbers convert the kinetic energy generated by the deceleration of the load into thermal energy.
Optimum operating conditions are achieved if the energy is dissipated almost uniformly, i.e. if the moving mass is brought to a halt in the shortest distance, in the shortest time and without sudden peak loads during the stroke.



Operation

A WIDE RANGE OF APPLICATIONS





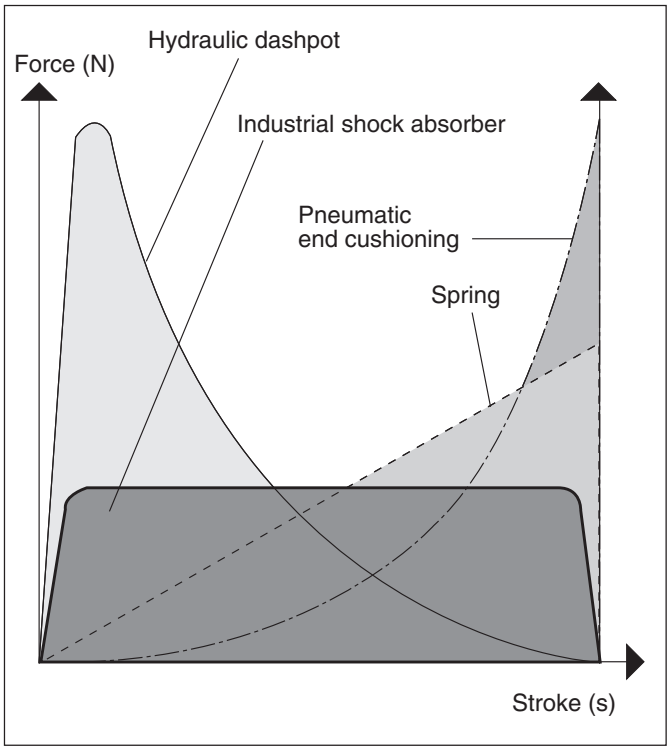
Simplify your design work by installing our shock absorber dimensions on your system. The file is compatible with all popular CAD systems.

ABSORBING SHOCKS

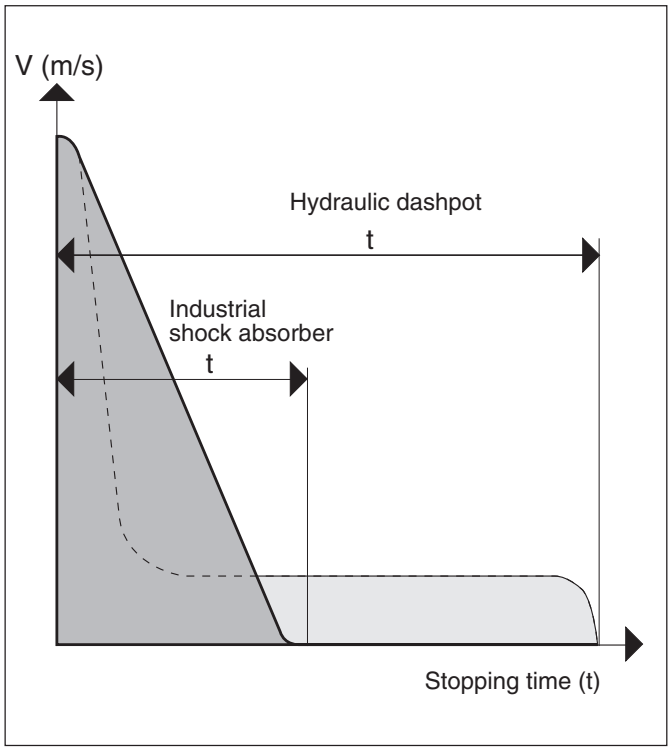
Ordinary shock absorbers, springs, buffers and pneumatic cushioning cannot match the performance of HOERBIGER-ORIGA shock absorbers.
These shock absorbers match the speed and mass of the moving object and bring it smoothly and uniformly to rest.
Springs and buffers, on the other hand, store energy rather than dissipate it.
Although the moving object is stopped, it bounces back and this leads to fatigue in materials and components which can cause premature breakdown of the machine.
Pneumatic cushioning provides a better solution because the energy is actually converted, but because of the compressibility of air the maximum braking force is generated at the end of the stroke, which can lead to excessive loads on components.

Hydraulic dashpots also cause excessive loads because peak resistance comes at the beginning of the stroke and then quickly falls away. This generates unnecessarily high braking forces.

The Force/Stroke Diagram clearly shows these effects. The shock absorber curve is ideal because all the energy is dissipated by linear deceleration without initial impact or final rebound.



Stopping Time
Both damping units stop the same mass from the same speed with the same stroke. Therefore they do the same work but the industrial shock absorber reduces the stopping time by 60 to 70 %.



SELECTION OF SHOCK ABSORBER TYPE

HOERBIGER-ORIGA shock absorbers are available in two main types, to suit different applications and installation requirements. After selection of the appropriate type, sizing is determined by calculation.

COMPACT SERIES WITH FULL-LENGTH BODY THREAD

This compact, space-saving series is available in adjustable and non-adjustable versions and can be installed in many different ways, e.g. in a tapped blind hole, in a tapped through-hole, in a clearance hole in a flange or bracket, etc.



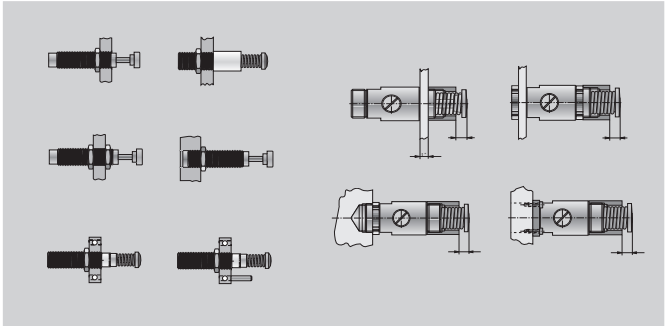
UNIVERSAL SERIES

This versatile, adjustable series with various mounting accessories is designed to stop heavier loads. It is especially suited to applications which require several of the same shock absorbers with the same stroke length.



MOUNTING METHODS

HOERBIGER-ORIGA shock absorbers are designed for a variety of mountings, which can be either built into machines or supplied as accessories.



ACCUMULATORS

Normally shock absorbers with internal accumulators are used. This simplifies installation by eliminating external piping and oil storage.
However, in applications with short cycle times and high kinetic energy the oil can become overheated. In this case an external accumulator should be used so that the oil can be cooled in the external circuit.

SHOCK ABSORBER RETURN STROKE

- Piston rod with return spring combined with internal accumulator
- Return stroke actuated by compressed air or mechanically, combined with external accumulator. With this version a delayed return stroke is also possible.

OPTIONS

- Stop collars for front or rear mounting – these provide a positive stop to prevent damage caused by the piston "bottoming out".
  They also allow precise setting of the stroke length.
- Soft pad for the hardened steel button – to avoid surface damage and reduce noise levels.

THE SELECTION OF SHOCK ABSORBERS

CORRECT CHOICE OF SHOCK ABSORBER

The type of shock absorber and its mounting method are mainly determined by the application.
In most applications, shock absorbers with internal accumulators are preferred to those with external accumulators.
Shock absorbers with internal accumulators are supplied prefilled with oil and therefore ready for immediate use, where as shock absorbers with external accumulators require additional equipment, resulting in higher installation costs.

SELECTION CRITERIA

- Type of shock absorber
  - with internal accumulator
  - with external accumulator including air/oil tank
- Type of piston rod return
  - return spring
  - air or mechanical
- Stroke length
  Use the longest stroke possible taking any side loads into account.
  - maximum impact force reduction

ACCUMULATORS

- Internal accumulator
  The fluid displaced by the piston compresses a nitrogen-filled, closed-cell sponge.
  When the piston is unloaded the return spring pushes the piston back to its rest position. At the same time the compressed sponge expands and forces the fluid back into the high pressure chamber.
- External accumulator
  The use of external accumulators is recommended where high energy conversion is needed or excess heat dissipation is required, e.g. in applications with short cycle times or in high temperature areas.

  The external accumulator, consisting of an open or closed tank, is connected to the shock absorber by pipework.
  The oil heated in the shock absorber circulates between the tank and the shock absorber and is therefore continuously cooled during operation.

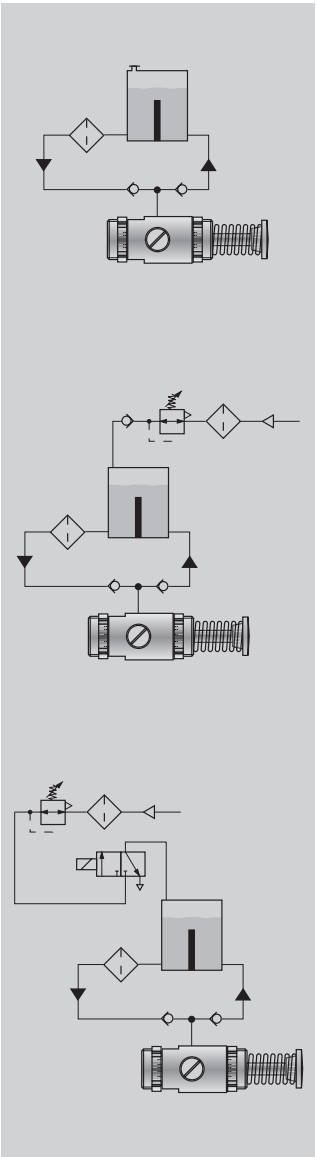
Note:
The tank should always be installed higher than the shock absorber and the connecting pipework should be as short as possible.
If possible there should also be a 10 µm filter between the two units.
If the tank is installed further away from the shock absorber there must be a positive oil circulation system (see diagram) to ensure that the oil actually flows through the tank and is cooled down.

PISTON ROD RETURN

Piston rod return is actuated by

- Return springs
  In the self-contained units, a built-in spring returns the piston rod to its rest position when it is unloaded.
- Air/Oil
  In units with external accumulators an air/oil system or a mechanical device is used for piston rod return.
- Mechanical units
  Mechanical rod return is mostly used in types with a clevis mounting, with actuation by another unit via levers.

HOERBIGER-ORIGA SA-A Series shock absorbers feature steplessly adjustable stroke, time-delay damping and adjustable rod return forces.
The SA Series is fitted with return springs as standard. If these types are used with an external accumulator for better heat dissipation, this does not need to be pressurized because the spring returns the rod.



CALCULATIONS FOR SHOCK ABSORBER SELECTION

SELECTION FACTORS

- How much energy has to be dissipated during each deceleration stroke (cycle)
- How much energy has to be dissipated during one hour of operation
- The Effective Mass

EFFECTIVE MASS

Effective Mass is a very important factor in correctly sizing a shock absorber. It indicates whether the shock absorber can be adjusted to perform properly. It also prevents under- or over-sizing where propelling forces are involved or velocities are very high or very low.

As a general rule, the next larger size of shock absorber is selected if the impact velocity is under 0.3 m/s and/ or the propelling force energy (F x S) exceeds 50 % of the calculated E3 value.

The higher the Effective Mass, the higher the impact force at the end of the shock absorber stroke, whereas low Effective Mass generates very high impact forces at the beginning of the stroke.
These two points have to be considered in the calculation as they can lead to serious damage over a longer period of time..
Minimum/ maximum Effective Mass is laid down for all HOERBIGER-ORIGA shock absorbers (see Table 1.70.001-13).
Effective Mass is calculated using the following formula.

$$\mathbf{M.eff} = \frac{\mathbf{2 \cdot W_3}}{\mathbf{V^2}}$$

SYMBOLS

C	= Cycles per hour
t	= Time in seconds
s	= Shock abs. stroke [m]
V, Vi	= Impact velocity [m/s]
Vt	= Velocity of rotating table [m/s]
g	= Gravitational acceleration [m/s²]
d	= Cylinder diameter [mm]
b	= Radius to centre of gravity [m]
m	= Mass [kg]
ma	= Additional mass [kg]
H	= Height [m]
Fp	= Propelling force [N]
$\mathbf{W_1}$	= Inertial energy [Nm]
$\mathbf{W_2}$	= Propelling force energy [Nm]
$\mathbf{W_3}$	= Total energy per cycle [Nm]
$\mathbf{W_4}$	= Total energy to be dissipated per hour [Nm/h]
P	= Pressure [bar]
M	= Torque [Nm]
$\mathbf{P_m}$	= Motor power [kW]
$\mathbf{R_c}$	= Radius to cylinder [m]
ω	= Angular velocity [rad/s]
M.eff	= Effective Mass
μ	= Coefficient of friction
I	= Moment of inertia [Nm/s]
r	= Radius of table [m]
D	= Distance to shock absorber [m]
2r	= Diameter of table [m]
α	= Slope angle [°]

FORMULAE

$$\mathbf{W_1} = \frac{\mathbf{m \cdot V^2}}{\mathbf{2}} = [\text{Nm}] = \mathbf{m \cdot g \cdot h}\ [\text{Nm}] \quad \textit{inertia and free fall}$$

$$= \frac{1 \cdot \omega^2}{2} = [\text{Nm}] \quad \textit{rotating mass}$$

$$= \frac{m \cdot V_i^2}{4} = [\text{Nm}] \quad \textit{rotating table}$$

$\mathbf{W_2 = Fp \cdot s}$ = [Nm] oder m x g x h *for free-falling mass*

$\mathbf{W_3 = W_1 + W_2}$ [Nm]

$\mathbf{W_4 = W_3 \cdot C}$ [Nm/h]

$\mathbf{Fp} = 0{,}078 \cdot \mathbf{d^2 \cdot P}$ = [N] *determines the cylinder force*

$$\mathbf{Fp} = \frac{2500 \cdot \mathbf{Pm}}{\mathbf{V}} = [\text{N}]$$ *etermines the working force of an electric motor*

$\mathbf{Vt = \omega \cdot a}$ = [m/s] *determines the velocity at distance a from pivot*

$$\mathbf{V} = \sqrt{\mathbf{2 \cdot g \cdot H}} = [\text{m/s}]$$ *determines the impact velocity of a free-falling mass*

$$\mathbf{V_i} = \frac{\mathbf{V \cdot b}}{\mathbf{a}} = [\text{m/s}]$$ *determines the impact velocity of a rotating mass*

$\mathbf{I = m \cdot a^2}$ [Nm/s²]

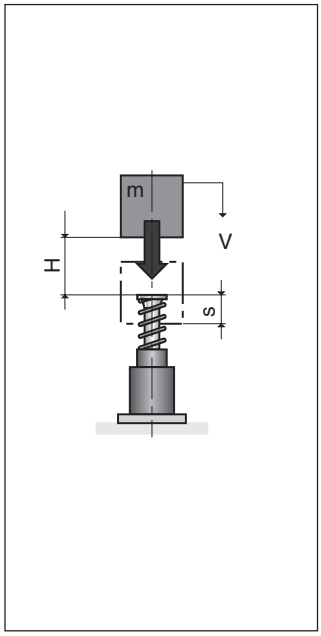
$$\mathbf{t} = \frac{\mathbf{2{,}6 \cdot s}}{\mathbf{V}} = [\text{s}]$$ *determines the stopping time in the course of a stroke*

$$\mathbf{M.eff} = \frac{\mathbf{2 \cdot W_3}}{\mathbf{V^2}} = [\text{kg}]$$ *determines the Effective Mass*

EXAMPLES OF CALCULATIONS FOR SHOCK ABSORBER SELECTION

Example 1 – *Vertical Free-Falling Load*

m = 25 kg
H = 0.4 m
C = 140/h
s = 0.05 m



Calculation

$W_1 = m \cdot g \cdot H$
$= 25 \cdot 9.81 \cdot 0.4$
$= 98$ Nm

$W_2 = m \cdot g \cdot s$
$= 25 \cdot 9.81 \cdot 0.05$
$= 13$ Nm

$W_3 = W_1 + W_2$
$= 98 + 13$
$= 111$ Nm

$W_4 = W_3 \cdot C$
$= 111 \cdot 140$
$= 15540$ Nm/h

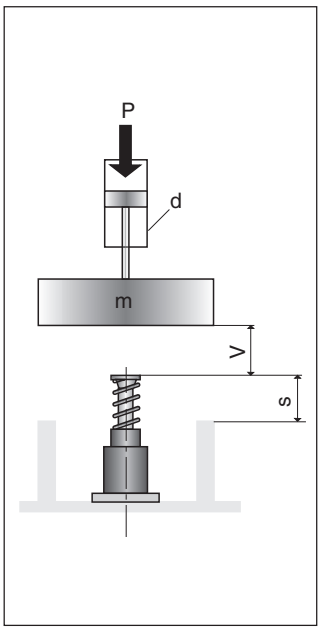
$V = \sqrt{2 \cdot g \cdot H}$
$= \sqrt{2 \cdot 9.81 \cdot 0.4}$
$= 2.8$ m/s

$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 111}{2.8^2}$$
$$= \frac{222}{7.84} = 28 \text{ kg}$$

Select Type: SA1/2 x 2

Example 2 – *Vertical Load Propelled Downwards*

m = 450 kg
V = 1.2 m/s
d = 50 mm
P = 6 bar
C = 100/h
s = 0.1 m



Calculation

$$W_1 = \frac{m \cdot V^2}{2} = \frac{450 \cdot 1.2^2}{2}$$
$= 324$ Nm

$F_p = (0{,}078 \cdot d^2 \cdot P) + (g \cdot m)$
$= (0.078 \cdot 50^2 \cdot 6) + (9.81 \cdot 450)$
$= 5585$ N

$W_2 = F_p \cdot s$
$= 5585 \cdot 0.1$
$= 558$ Nm

$W_3 = W_1 + W_2$
$= 324 + 558$
$= 882$ Nm

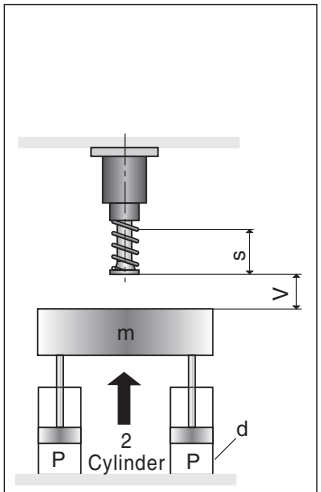
$W_4 = W_3 \cdot C$
$= 882 \cdot 100$
$= 88200$ Nm/h

$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 882}{1.2^2}$$
$= 1225$ kg

Select Type: SA 1 1/8x4

Example 3 – *Vertical Load Propelled Upwards*

m = 450 kg
V = 1.2 m/s
P = 6 bar
d = 100 mm (2 Cylinders)
s = 0.1 m
C = 200/h



Calculation

$$W_1 = \frac{m \cdot V^2}{2} = \frac{450 \cdot 1.2^2}{2}$$
$= 324$ Nm

$F_p = 2(0{,}078 \cdot d^2 \cdot P) - (g \cdot m)$
$= 2(0.078 \cdot 100^2 \cdot 6) - (9.81 \cdot 450)$
$= 4950$ N

$W_2 = F_p \cdot s$
$= 4950 \cdot 0.1$
$= 495$ Nm

$W_3 = W_1 + W_2$
$= 324 + 495$
$= 819$ Nm

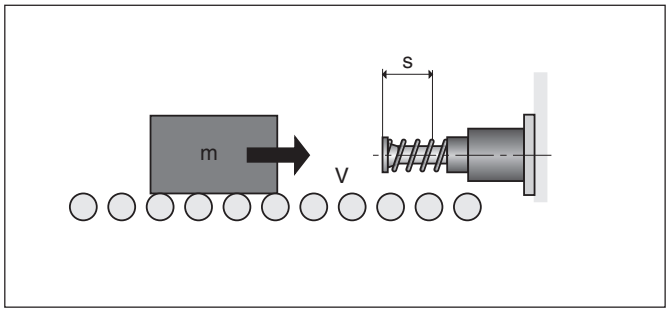
$W_4 = W_3 \cdot C$
$= 819 \cdot 100$
$= 81900$ Nm/h

$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 819}{1.2^2}$$
$= 1137$ kg

Select Type: SA11/8x4

Example 4 – *Moving Load Without Propelling Force*

m = 900 kg
V = 1.5 m/s
F_p = 0
C = 200/h



Calculation

$$W_1 = \frac{m \cdot V^2}{2} = \frac{900 \cdot 1.5^2}{2}$$
$= 1012$ Nm

$W_2 = 0$

$W_3 = W_1 + W_2$
$= 1012$

$W_4 = W_3 \cdot C$
$= 1012 \cdot 200$
$= 202400$ Nm/h

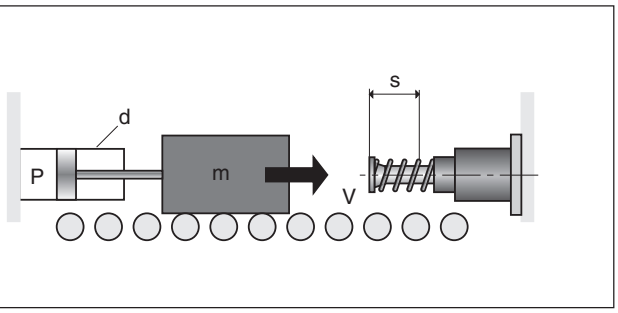
$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 1012}{1.5^2}$$
$= 900$ kg

Select Type: SA 1 1/8x4

EXAMPLES OF CALCULATIONS FOR SHOCK ABSORBER SELECTION

Example 5 – *Moving Load With Propelling Force*

m = 900 kg
V = 1.5 m/s
d = 50 mm
P = 6 bar
C = 100/h
s = 0.05 m



Calculation

$W_1 = \frac{m \cdot V^2}{2} = \frac{900 \cdot 1.5^2}{2}$

= 1012 Nm

$F_p = 0{,}078 \cdot d^2 \cdot P$
= 0,078•50²•6
= 1170 N

$W_2 = F_p \cdot s$
= 1170•0,05
= 58.5 Nm

$W_3 = W_1 + W_2$
=1012+58.5
=1070.5 Nm

$W_4 = E_3 \cdot C$
= 1070.5•100
= 107050 Nm/h

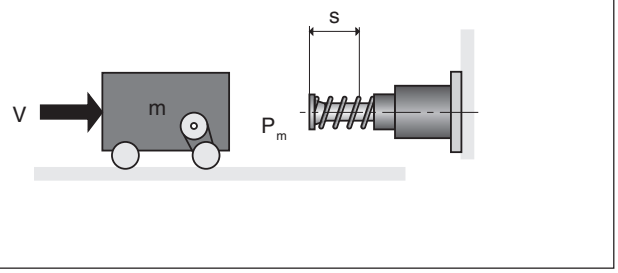
$M.eff = \frac{2 \cdot E_3}{V^2} = \frac{2 \cdot 1070.5}{1.5^2}$

= 951 kg

Select Type: SA 1 1/8x2

Example 6 – *Moving Load Propelled by Motor*

m = 900 kg
V = 1.5 m/s
P_m = 1 kW
C = 100/h
s = 0.05 m



Calculation

$W_1 = \frac{m \cdot V^2}{2} = \frac{900 \cdot 1.5^2}{2}$

= 1012 Nm

$F_p = \frac{2500 \cdot P_m}{V} = \frac{2500 \cdot 1}{1.5}$

= 1666 N

$W_2 = F_p \cdot s$
= 1666•0.05
= 83 Nm

$W_3 = W_1 + W_2$
=1012+83
=1095 Nm

$W_4 = W_3 \cdot C$
= 1095•100
= 109500 Nm/h

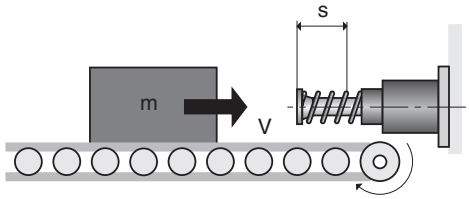
$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 1095}{1.5^2}$

= 973 kg

Select Type: SA1 1/8x2

Example 7 – *Moving Load Propelled by Rollers (Conveyor with Chain/Belt Drive)*

m = 80 kg
V = 1.0 m/s
μ = 0.3
C = 300/h
s = 0.025 m



Calculation

$W_1 = \frac{m \cdot V^2}{2} = \frac{80 \cdot 1.0^2}{2}$

= 40 Nm

$W_2 = F_p \cdot s$
= 80•0.3•9.81•0.025
= 5.9 Nm

$W_3 = W_1 + W_2$
=40+5.9
=45.9 Nm

$W_4 = W_3 \cdot C$
= 45.9•300
= 13770 Nm/h

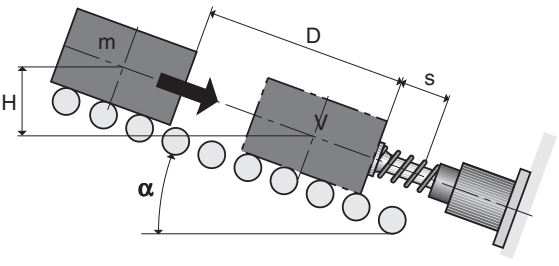
$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 45.9}{1}$

= 91.8 kg

Select Type: SAI 25

Example 8 – *Load Moving Down a Slope*

m = 200 kg
α = 15°
H = 0.2 m
C = 100/h
s = 0.05 m



Calculation

$W_1 = m \cdot g \cdot H$
= 200•9.81•0.2
= 392.4 Nm

$W_2 = m \cdot g \cdot \sin\alpha \cdot s$
= 200•9.81•0.26•0.05
= 25.51 Nm

$W_3 = W_1 + W_2$
= 392,4+25.51
= 417.91 Nm

$W_4 = W_3 \cdot C$
= 417.91•100
= 41791 Nm/h

$V = \sqrt{2 \cdot g \cdot H}$
$= \sqrt{2 \cdot 9.81 \cdot 0.2}$
= 1.98 m/s

$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 417.91}{1.98^2}$

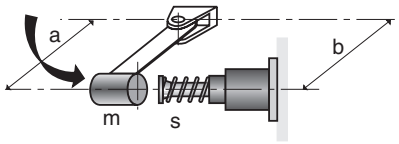
= 213 kg

Select Type: SA 3/4x2

EXAMPLES OF CALCULATIONS FOR SHOCK ABSORBER SELECTION

Example 9 – *Horizontally Moving Load, Rotating*

m = 400 kg
V = 0.4 m/s
a = 0.76 m
b = 0.74 m
F_p = 0
C = 100/h
s = 0.025 m



Calculation

$$W_1 = \frac{m \cdot V^2}{2} = \frac{400 \cdot 0.4^2}{2}$$

= 32 Nm

$$W_2 = F_p \cdot s$$
= 0•0.025
= 0 Nm

$$W_3 = W_1 + W_2$$
= 32 Nm

$$W_4 = W_3 \cdot C$$
= 32•100
= 3200 Nm/h

$$V_i = \frac{V \cdot b}{a} = \frac{0.4 \cdot 0.74}{0.76}$$

= 0.39 m/s

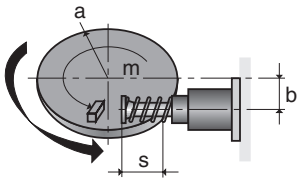
$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 32}{0.4^2}$$

= 400 kg

Select Type: SA 1/2x1

Example 11 – *Horizontal, Rotary Index Table*

m = 60 kg
V = 0,5 m/s
M = 0
C = 100/h
b = 0.75 m
a = 0.92 m
s = 0.05 m



Calculation

$$W_1 = \frac{m \cdot V^2}{4} = \frac{60 \cdot 0.5^2}{4}$$

= 3.75 Nm

$$W_2 = F_p \cdot s = \frac{M}{b} \cdot s$$
$$= \frac{0}{0.3} \cdot 0.012 = 0$$

$$W_3 = W_1 + W_2$$
= 3.75 Nm

$$W_4 = W_3 \cdot C$$
= 3.75•100
= 375 Nm/h

$$V_i = \frac{V \cdot b}{a} = \frac{0.5 \cdot 0.3}{0.6}$$

= 0.25 m/s

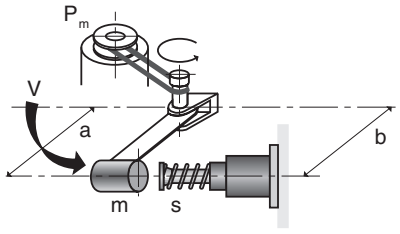
$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 3.75}{0.5^2}$$

= 30 kg

Select Type: SA 1/4 x 1/2

Example 10 – *Horizontally Propelled Load, Rotating*

m = 400 kg
V = 1.2 m/s
a = 0.76 m
b = 0.74 m
C = 100/h
s = 0.05 m
P_m = **I_{cv}** = 0.735 kW



Calculation

$$W_1 = \frac{m \cdot V^2}{2} = \frac{400 \cdot 1.2^2}{2}$$

= 288 Nm

$$F_p = \frac{2500 \cdot P_m}{V} = \frac{2500 \cdot 0.735}{1.2}$$

= 1531 N

$$W_2 = F_p \cdot s$$
= 1531•0.05 = 77 Nm

$$W_3 = W_1 + W_2$$
= 288+77 = 365 Nm

$$W_4 = W_3 \cdot C$$
= 365•100
= 36500 Nm/h

$$V_i = \frac{V \cdot b}{a} = \frac{1.2 \cdot 0.74}{0,76}$$

= 1.17 m/s

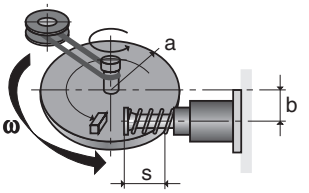
$$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 365}{1.2^2}$$

= 506 kg

Select Type: SA 3/4x2

Example 12 – *Horizontal, Rotary Index Table, Propelled*

m = 400 kg
ω = 2 rad/s
M = 150 Nm
s = 0.05 m
b = 0.75 m
a = 0.92 m
C = 100/h



Calculation

$$V_t = \omega \cdot a$$
= 2•0.92 = 1.84 m/s

$$W_1 = \frac{m \cdot V^2}{4} = \frac{400 \cdot 1.84^2}{4}$$

= 339 Nm

$$W_2 = \frac{M}{b} \cdot s$$
$$= \frac{150}{0.75} \cdot 0.05 = 10 \text{ Nm}$$

$$W_3 = W_1 + W_2$$
=339+10 = 349 Nm

$$W_4 = W_3 \cdot C$$
= 349•100 = 34900 Nm/h

$$V_i = \frac{V \cdot b}{a} = \frac{1.84 \cdot 0.75}{0.92}$$

= 1.5 m/s

$$M.eff = \frac{2 \cdot W_3}{V_i^2} = \frac{2 \cdot 349}{1.5^2}$$

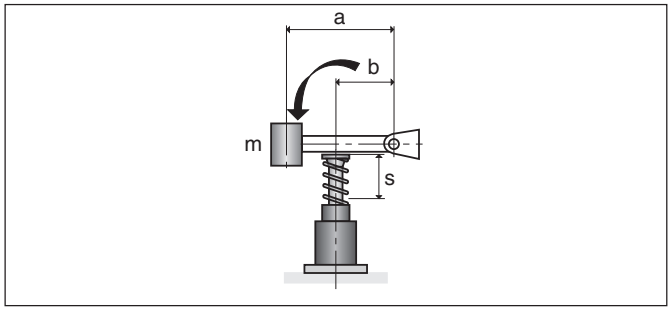
= 310 kg

Select Type: SA 3/4x2

EXAMPLES OF CALCULATIONS FOR SHOCK ABSORBER SELECTION

Example 13 – *Vertical, Rotary*

m = 250 kg
V = 1.2 m/s
a = 0.85 m
b = 0.80 m
C = 100/h
s = 0.05 m



Calculation

$W_1 = \frac{m \cdot V^2}{2} = \frac{250 \cdot 1.2^2}{2}$
= 180 Nm

$F_p = \frac{m \cdot g \cdot a}{b} = \frac{250 \cdot 9.81 \cdot 0.85}{0.80}$
= 2606 N

$W_2 = F_p \cdot s$
= 2606•0.05 = 130 Nm

$W_3 = W_1 + W_2$
=180+130 = 310 Nm

$W_4 = W_3 \cdot C$
= 310•100 = 31000 Nm/h

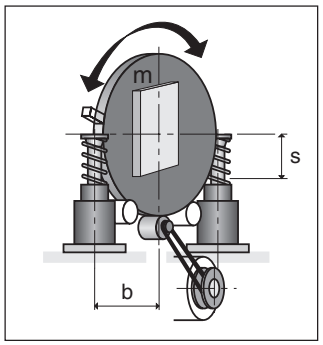
$V_i = \frac{V \cdot b}{a} = \frac{1,2 \cdot 0.8}{0.85}$
= 1.13 m/s

$M.eff = \frac{2 \cdot W_3}{V_i^2} = \frac{2 \cdot 310}{1.13^2}$
= 484 kg

Select Type: SA 3/4x2

Example 14 – *Vertical, Rollover*

m = 340 kg
r = a = 0.8 m
C = 100/h
ω = 1 rad/s
M = 1000 Nm
s = 0.05 m
b = 0.87 m



Calculation

$V = \omega \cdot a$
= 0.8 m/s

$W_1 = \frac{m \cdot V^2}{4} = \frac{340 \cdot 0.8^2}{4}$
= 54.4 Nm

$W_2 = \frac{M \cdot s}{b} = \frac{1000 \cdot 0.05}{0.87}$
= 57.47 Nm

$W_3 = W_1 + W_2$
= 54.4+57.47 = 111.87 Nm

$W_4 = W_3 \cdot C$
= 111.87•100 = 11187 Nm/h

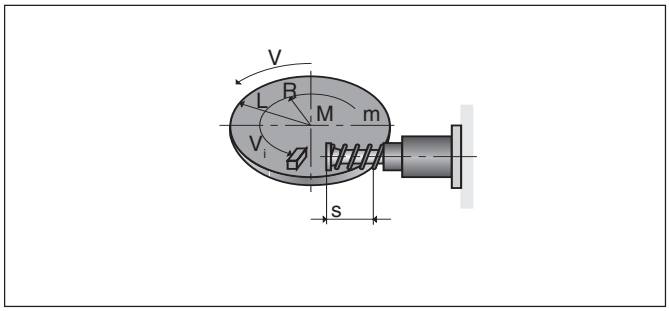
$V_i = \frac{V \cdot b}{a} = \frac{0.8 \cdot 0.87}{0.8}$
= 0.87 m/s

$M.eff = \frac{2 \cdot W_3}{V_i^2} = \frac{2 \cdot 111.87}{0.87^2}$
= 295.6 kg

Select Type: SALD 1/1x2M

Example 15 – *Horizontal, Rotary Movement. Rotary index table, with propelling torque (supplied by pneumatic rotary actuator)*

m = 50 kg
L = 800 mm
V = 0,5 ms $^{-1}$ (average)
R = 500 mm
M = 30 Nm
C = 100/h



Calculation

$W_1 = m \cdot V^2 \cdot 0.25$
= 50•0.5•0.25
= 3.125 Nm

$W_2 = \frac{M \cdot s}{R} = \frac{30 \cdot 0.012}{0.5}$
= 0.72 Nm

$W_3 = W_1 + W_2$
= 3.125+0.72 = 3.845 Nm

$W_4 = W_3 \cdot C$
= 3.845•100 = 384.5 Nm

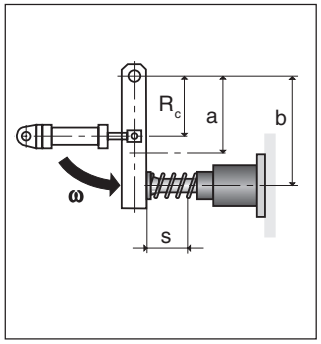
$V_i = \frac{V \cdot R}{L} = \frac{0.5 \cdot 0.225}{0.2}$
= 0,3125 m/s

$M.eff = \frac{2 \cdot W_3}{V_i^2} = \frac{2 \cdot 3.845}{0.3125^2}$
= 78.75 kg

Select Type: SA 20x1

Example 16 – *Vertical, Rotating Beam Propelled by Pneumatic Cylinder*

M = 0.50 kg
d = 0.75 mm
P = 5 bar
ω = 3 rad/s
C = 100/h
a = 0.5 m
b = 0.8 m
s = 0.05 m
R_c = 0.45 m



Calculation

$I = m \cdot a^2$
= 850•0.5^2 = 212 Nm/s^2

$W_1 = \frac{I \cdot \omega^2}{2} = \frac{212 \cdot 3^2}{2}$
= 954 Nm

$F_p = \frac{0.078 \cdot d^2 \cdot P \cdot R_c}{b} = \frac{0.078 \cdot 752 \cdot 5 \cdot 0.45}{0.8}$
= 1234 Nm

$W_2 = F_p \cdot s$
= 1234•0.05 = 62 Nm

$W_3 = W_1 + W_2$
=954+62 =1016 Nm

$W_4 = W_3 \cdot C$
= 1880.46•100 = 188046 Nm/h

$V = \omega \cdot b$
= 3•0.8
= 2.4 Nm/s

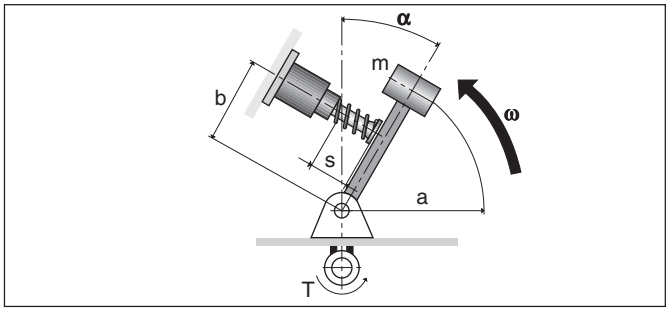
$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 1016}{2.4^2}$
= 353 kg

Select Type: SA 1 1/8x2

EXAMPLES OF CALCULATIONS FOR SHOCK ABSORBER SELECTION

Example 17 – *Vertical, Motor-Driven, Rotating Arm with Load, Against Gravity*

m = 70 kg **ω** = 3 rad/s **C** = 100/h
a = 0.9 m **α** = 30° **s** = 0.05 m
b = 0.7 m **M** = 300 Nm



Calculation

$I = m \cdot a^2$
$= 70 \cdot 0.9 = 57\ Nm/s^2$

$W_1 = \frac{I \cdot \omega^2}{2} = \frac{57 \cdot 3^2}{2}$
$= 256\ Nm$

$F_p = \frac{M-(m \cdot g \cdot a \cdot \sin 30°)}{b}$
$= \frac{345-(70 \cdot 9.81 \cdot 0.9 \cdot 0.5)}{0.7} = \frac{36}{0.7}$
$= 51\ Nm$

$W_2 = F_p \cdot s$
$= 51 \cdot 0.05 = 2.5\ Nm$

$W_3 = W_1 + W_2$
$= 256 + 2.5 = 258.5\ Nm$

$W_4 = W_3 \cdot C$
$= 258.5 \cdot 17 = 45237\ Nm/h$

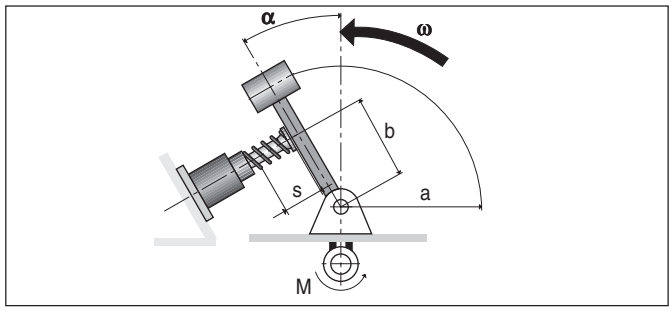
$V = \omega \cdot b$
$= 3 \cdot 0.7$
$= 2.1\ Nm/s$

$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 258.5}{2.1^2}$
$= \frac{517}{4.41}$
$= 117\ kg$

Select Type: SA 3/4x2

Example 18 – *Vertical, Motor-Driven Rotating Arm with Load, Aided by Gravity*

m = 160 kg **b** = 0.7 m **α** = 40° **C** = 175/h
a = 0.9 m **ω** = 3 rad/s **M** = 300 Nm **s** = 0.05 m



Calculation

$I = m \cdot a^2$
$= 160 \cdot 0.9 = 130\ Nm/s^2$

$W_1 = \frac{I \cdot \omega^2}{2} = \frac{130 \cdot 3^2}{2}$
$= 585\ Nm$

$F_p = \frac{M+(m \cdot g \cdot a \cdot \sin \alpha\ 40°)}{b}$
$= \frac{300+(160 \cdot 9.81 \cdot 0.9 \cdot 0.5)}{0.7} = \frac{1147}{0.7}$
$= 1638\ Nm$

$W_2 = F_p \cdot s$
$= 1638 \cdot 0.05 = 82\ Nm$

$W_3 = W_1 + W_2$
$= 585 + 82 = 667\ Nm$

$W_4 = W_3 \cdot C$
$= 667 \cdot 175 = 116725\ Nm$

$V_i = \omega \cdot b = 3 \cdot 0.7$
$= 2.1\ m/s$

$M.eff = \frac{2 \cdot W_3}{V^2} = \frac{2 \cdot 667}{2.1^2}$
$= \frac{1334}{4.41}$
$= 302\ kg$

Select Type: SA 1 1/8x2

OVERVIEW OF ADJUSTABLE AND NON-ADJUSTABLE SHOCK ABSORBERS

Non-Adjustable Shock Absorbers

Type	Stroke (mm)	Effective Mass m_e (kg)		Max. Energy Absorption (Nm)		Thread Size	Data Sheet No.
		Min.	Max.	per stroke W_3	per hour W_4		
SA 10	6.5	1	7	3	22050	M10x1	1.70.002
SA 10S	6.5	3.2	13	3	22050	M10x1	1.70.002
SA 12	10	0.9	16	8.5	28250	M12x1	1.70.003
SA 14	12.5	0.9	10	17	34000	M14x1.5 [1)]	1.70.004
SA 14S	12.5	8.6	86	17	34000	M14x1.5 [1)]	1.70.004
SA 14S2	12.5	68	205	17	34000	M14x1.5 [1)]	1.70.004
SA 20	12.5	2.3	25	25	45000	M20x1.5	1.70.005
SA 20x25	24.6	2.3	16	50.8	68000	M20x1.5	1.70.005
SA 20S	12.5	23	230	25	45000	M20x1.5	1.70.005
SA 20Sx25	24.6	9	59	50.8	68000	M20x1.5	1.70.005
SA 20S2	12.5	182	910	25	45000	M20x1.5	1.70.005
SA 20S2x25	24.6	36	227	50.8	68000	M20x1.5	1.70.005
SAI 25	25.4	9	136	68	68000	M25x1.5	1.70.006
SAI 25S	25.4	113	1130	68	68000	M25x1.5	1.70.006
SAI 25S2	25.4	400	2273	68	68000	M25x1.5	1.70.006
SA 33x25	25.4	9	36	153	84739	M33x1.5	1.70.007
SA 33Sx25	25.4	30	124	153	84739	M33x1.5	1.70.007
SA 33S2x25	25.4	104	418	153	84739	M33x1.5	1.70.007
SA 33S3x25	25.4	354	1418	153	84739	M33x1.5	1.70.007
SA 33x50	50.8	18	73	305	98297	M33x1.5	1.70.007
SA 33Sx50	50.8	61	247	305	98297	M33x1.5	1.70.007
SA 33S2x50	50.8	209	836	305	98297	M33x1.5	1.70.007
SA 33S3x50	50.8	709	2836	305	98297	M33x1.5	1.70.007
SA 45x25	25.4	22	91	339	124284	M45x1.5	1.70.008
SA 45Sx25	25.4	77	309	339	124284	M45x1.5	1.70.008
SA 45S2x25	25.4	261	1045	339	124284	M45x1.5	1.70.008
SA 45S3x25	25.4	886	3545	339	124284	M45x1.5	1.70.008
SA 45x50	50.8	45	182	678	146881	M45x1.5	1.70.008
SA 45Sx50	50.8	154	618	678	146881	M45x1.5	1.70.008
SA 45S2x50	50.8	522	2091	678	146881	M45x1.5	1.70.008
SA 45S3x50	50.8	1772	7091	678	146881	M45x1.5	1.70.008
SA 45x75	76.2	68	273	1017	180776	M45x1.5	1.70.008
SA 45Sx75	76.2	231	927	1017	180776	M45x1.5	1.70.008
SA 45S2x75	76.2	786	3145	1017	180776	M45x1.5	1.70.008
SA 45S3x75	76.2	2659	10636	1017	180776	M45x1.5	1.70.008
SA 64x50	50.8	136	545	1695	169478	M64x2	1.70.009
SA 64Sx50	50.8	463	1855	1695	169478	M64x2	1.70.009
SA 64S2x50	50.8	1572	6291	1695	169478	M64x2	1.70.009
SA 64S3x50	50.8	5318	21273	1695	169478	M64x2	1.70.009
SA 64x100	101.6	272	1091	3390	225970	M64x2	1.70.009
SA 64Sx100	101.6	927	3709	3390	225970	M64x2	1.70.009
SA 64S2x100	101.6	3145	12582	3390	225970	M64x2	1.70.009
SA 64S3x100	101.6	10636	42545	3390	225970	M64x2	1.70.009
SA 64x150	152.4	409	1636	5084	282463	M64x2	1.70.009
SA 64Sx150	152.4	1390	5564	5084	282463	M64x2	1.70.009
SA 64S2x150	152.4	4718	18873	5084	282463	M64x2	1.70.009
SA 64S3x150	152.4	15954	63818	5084	282463	M64x2	1.70.009

[1)] Option: Gewinde M14x1

OVERVIEW OF ADJUSTABLE AND NON-ADJUSTABLE SHOCK ABSORBERS

Adjustable Shock Absorbers

Type	Stroke (mm)	Effective Mass m_e (kg)		Max. Energy Absorption (Nm)		Thread Size	Data Sheet No.
		Min.	Max.	per stroke W_3	per hour W_4		
SA 1/4 x 1/2	12.7	2.3	182	17	23000	M20x1.5	1.70.100
SA 3/8 x 1D	25.4	4.5	546	70	46000	M25x1.5 [2]	1.70.101
SALD 1/2 x 1M	25.4	4.5	1134	136	85000	M36x1.5	1.70.102
SALD 1/2 x 2M	50.8	9.5	2268	271	98000	M36x1.5	1.70.102
SA 1/2 x 1	25.4	4.5	545	130	86000	M33x1.5	1.70.103
SA 1/2 x 2	50.8	9.5	950	270	100000	M33x1.5	1.70.103
SA 3/4 x 1	25.4	27	3600	290	126500	M42x1.5	1.70.104
SA 3/4 x 2	50.8	43	6350	600	150000	M42x1.5	1.70.104
SA 3/4 x 3	76	55	9500	890	184000	M42x1.5	1.70.104
SA 1-1/8 x 2	50.8	72	13000	1380	172600	M64x2.0	1.70.105
SA 1-1/8 x 4	102	118	18200	2700	230000	M64x2.0	1.70.105
SA 1-1/8 x 6	152	200	32000	4150	288000	M64x2.0	1.70.105
SA-A 3/4 x 1	25.4	27	3600	290	184000 [3]	M42x1.5	1.70.106
SA-A 3/4 x 2	50.8	43	6350	600	230000 [3]	M42x1.5	1.70.106
SA-A 3/4 x 3	76	55	9500	890	276000 [3]	M42x1.5	1.70.106
SA-A 1-1/8 x 2	50.8	72	13000	1380	345000 [3]	M64x2.0	1.70.107
SA-A 1-1/8 x 4	102	118	18200	2700	460000 [3]	M64x2.0	1.70.107
SA-A 1-1/8 x 6	152	200	32000	4150	575000 [3]	M64x2.0	1.70.107

[1] Option: M14x1 thread [2] Option: M27x3 thread [3] Operation with external air-oil tank

Further shock absorber sizes (1-1/2", 2", 2-1/4", 3", 4") in various stroke lengths are also available on request

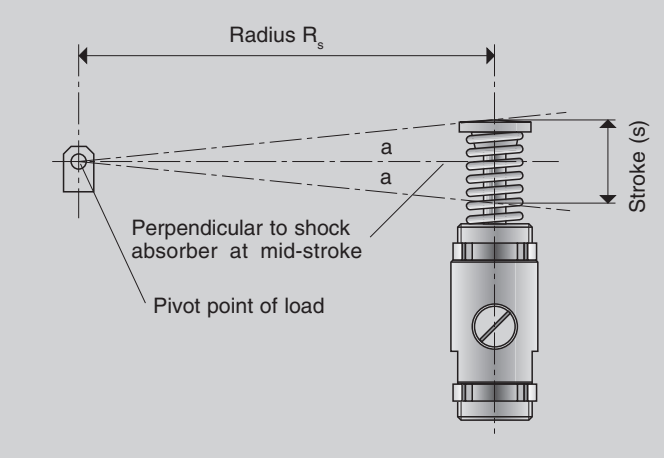
INSTALLATION TIPS

Mounting

HOERBIGER-ORIGA shock absorbers should generally be mounted on a rigid structure with adequate strength. The strength required should be calculated by the following formula:

$$\frac{2{,}5 \bullet W_3 \text{ (max)}}{S}$$

Avoid sideloads of more than 5° and align the centreline of the piston as closely as possible with the centre of gravity of the impacting load (see diagram).



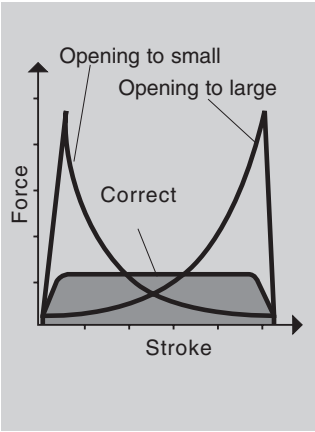
Installation Angle (a)	$\frac{S}{R_S}$	a	$\frac{S}{R_S}$	a
The installation angle (a) is found by dividing the shock absorber stroke (S) by the radius of the shock absorber from the pivot point (R). The installation angle should never exceed 5°. If it does, a shorter stroke or a longer radius must be used.	.0175	1/2°	.1051	3°
	.0349	1°	.1228	31/2°
	.0524	11/2°	.1405	4°
	.0699	2°	.1584	41/2°
	.0875	21/2°	.1763	5°

Positive Stops

External positive stops are always required to produce a firm work-positioning and prevent the shock absorber from "bottoming out". This is achieved either with external dead stops or a stop collar. These are located to stop the piston no more than 1.6 mm short of the end of stroke.

Oil Filling

HOERBIGER-ORIGA shock absorbers with return springs are supplied prefilled with oil and ready for immediate use without any additional pipework etc..
For shock absorbers without return springs an external accumulator or air/oil tank is required.
The air/oil tank is filled with the correct oil up to the "Full" mark (do not overfill), then the shock absorber can be operated at low speed while it is being finally adjusted.



Adjustment

All HOERBIGER-ORIGA shock absorbers are supplied with their adjustment preset at 90°, which is midway between the "hard" and "soft" settings.
To adjust the shock absorber, first loosen the adjustor's lock screw with an Allan key.
Then impact the load slowly on the shock absorber. If the initial impact is too hard, use a screwdriver or coin to rotate the adjustor towards "soft" (18) on the dial. If the initial impact is too soft, rotate the adjustor in the opposite direction towards "hard" (0). When the setting is correct, retighten the adjustor's lock screw with the Allan key.
The shock absorber is properly adjusted when there is no initial impact at the start of the stroke and no hard set-down at the end of the stroke.
If hard set-down persists despite proper adjustment, check whether the positive stop is set correctly to keep the shock absorber piston no more than 1.6 mm off the bottom at end of stroke.

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 10	6.5	1	7	3	22050
SA 10 S	6.5	3.2	13	3	22050

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.15 - 2.2
Operating temperature range		°C	-10 to +70
Installation			In any position
Force of internal return spring		N	3 - 6
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	0.015
Min. mounting strength required		N	1200 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No.1.70.002E-1

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA
SA 10
- For smaller effective masses

SA 10 S
- For larger effective masses

Basic Version with:
• Integral stop collar
• 1 mounting nut
• Soft pad

Accessories:
• Universal flange



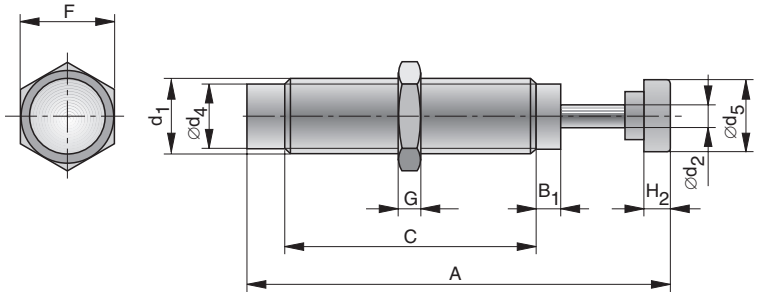
HOERBIGER ORIGA

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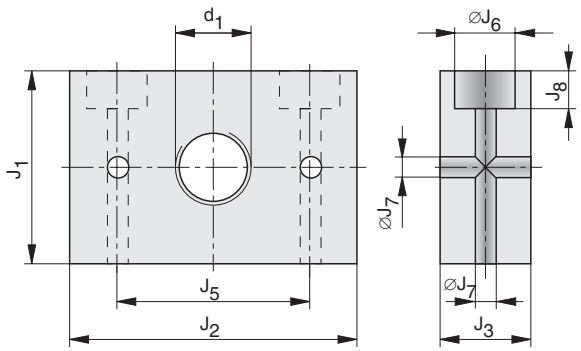
The right to make technical modifications is reserved

Dimensions (mm)

Type: SA 10, SA 10 S



Dimensions (mm)
Universal Flange



Dimensions Table (mm)

A	B_1	C	d_1	ød_2	ød_4	ød_5	F	G	H_2	J_1	J_2	J_3	J_5	øJ_6	øJ_7	J_8
50.8	3.3	33.3	M10x1	3	8.6	8.6	12.5	3	3.6	25.4	38	12	25.4	8	4.5	5

Order Instructions

Product	Order Instructions	
	Type	**Order No.**
Shock absorber for smaller effective masses	**SA 10**	**7900**
Shock absorber for larger effective masses	**SA 10 S**	**7907**
Additional mounting nut	**LN 10**	**7909**
Universal flange	**UM 10**	**7902**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA
SA 12

Basic Version with :
• Integral stop collar
• 1 mounting nut

Accessories:
• Soft pad
• Universal flange

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 12	10	0.9	16	8.5	28250

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	4.5 - 11
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	0.040
Min. mounting strength required		N	2200 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$



For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.003E-1

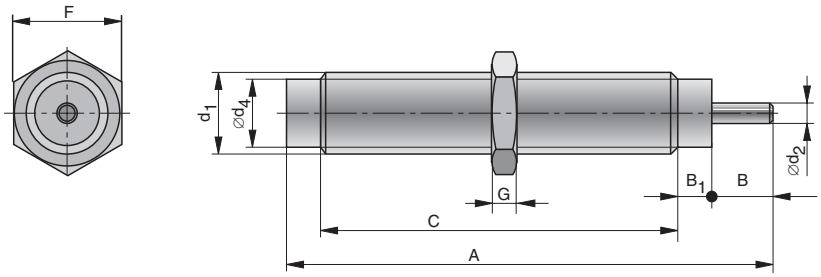
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The right to make technical modifications is reserved

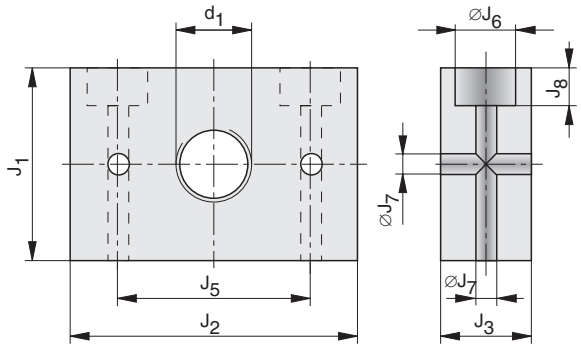
HOERBIGER ORIGA

Dimensions (mm)

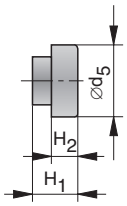
Type: SA 12



Dimensions (mm)
Universal Flange



Dimensions (mm)
Soft Pad



Dimensions Table (mm)

A	B	B_1	C	d_1	ød_2	ød_4	ød_5	F	G	H_1	H_2	J_1	J_2	J_3	J_5	øJ_6	øJ_7	J_8
66.4	9.7	5.1	45	M12x1	3.3	10.4	10.4	16	4	6.1s	3	25.4	38	12	25.4	8	4.5	5

Order Instructions

Product	Order Instructions	
	Type	**Order No.**
Shock absorber	**SA 12**	**7910**
Soft pad	**SP 12**	**7914**
Additional mounting nut	**LN 12**	**7919**
Universal flange	**UM 12**	**7912**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA
SA 14
- For smaller effective masses

SA 14 S
- For intermediate effective masses

SA 14 S2
- For larger effective masses

Basic Version with:
• Integral stop collar
• 1 mounting nut

Accessories:
• Soft pad
• Universal Flange



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 14	12.5	0.9	10	17	34000
SA 14 S	12.5	8.6	86	17	34000
SA 14 S2	12.5	68	205	17	34000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	4 - 7
Max. deviation of impacting force from centre axis of shock absorber		±3°	
Weight (mass)		kg	0.125
Min. mounting strength required		N	3400 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.004E-1

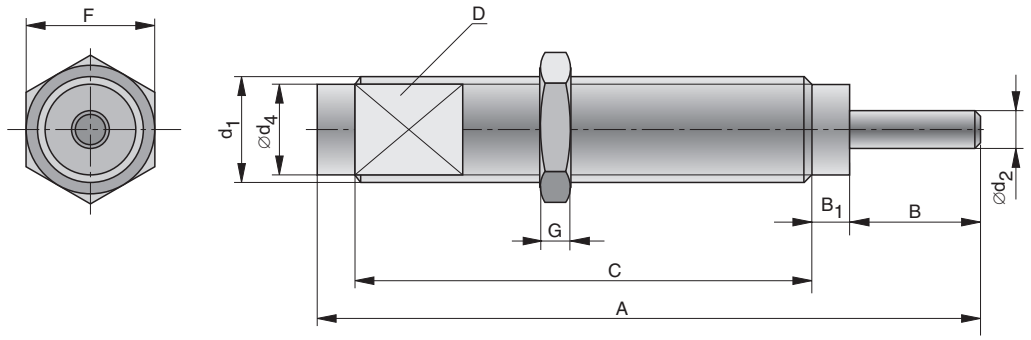
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The right to make technical modifications is reserved

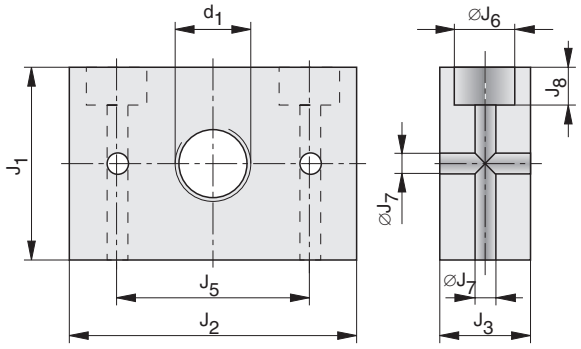
HOERBIGER ORIGA

Dimensions (mm)

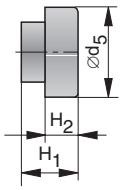
Type: SA 14, SA 14 S, SA 14 S2



Dimensions (mm)
Universal Flange



Dimensions (mm)
Soft Pad



Dimensions table (mm)

A	B	B_1	C	D	d_1	ød_2	ød_4	ød_5	F	G	H_1	H_2	J_1	J_2	J_3	J_5	øJ_6	øJ_7	J_8
87	12	4	61	12	M14x1.5 [1]	4.8	12	11.9	17	5	10.9	6.9	29	45	16	35	8	4.5	5

[1] Option: M14x1 thread (d_1)

Order Instructions

Product	Order Instructions	
	Type	Order No.
Shock absorber for smaller effective masses	**SA 14**	**7920**
Shock absorber for intermediate effective masses	**SA 14 S**	**7927**
Shock absorber for larger effective masses	**SA 14 S2**	**7928**
Soft pad	**SP 14**	**7924**
Additional mounting nut	**LN 14**	**7929**
Universal flange	**UM 14**	**7922**

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 20	12.5	2.3	25	25	45000
SA 20 S	12.5	23	230	25	45000
SA 20 S2	12.5	182	910	25	45000
SA 20x25	24.6	2.3	16	50.8	68000
SA 20 Sx25	24.6	9	59	50.8	68000
SA 20 S2x25	24.6	36	227	50.8	68000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	6 - 10
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	0.176 (Type SA20), 0.207 (Type SA20x25)
Min. mounting strength required		N	5000 [1]
Materials	Body		Steel, black oxid e finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.005E-1

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA

– For smaller effective masses
SA 20 – Stroke 12,5 mm
SA 20x25 – Stroke 24,6 mm

– For intermediate effective masses
SA 20 S – Stroke 12,5 mm
SA 20 Sx25 – Stroke 24,6 mm

– For larger effective masses
SA 20 S2 – Stroke 12,5 mm
SA 20 S2x25 – Stroke 24,6 mm

Basic Version with:
• Integral stop collar
• 1 mounting nut

Accessories:
• Soft pad
• Universal flange



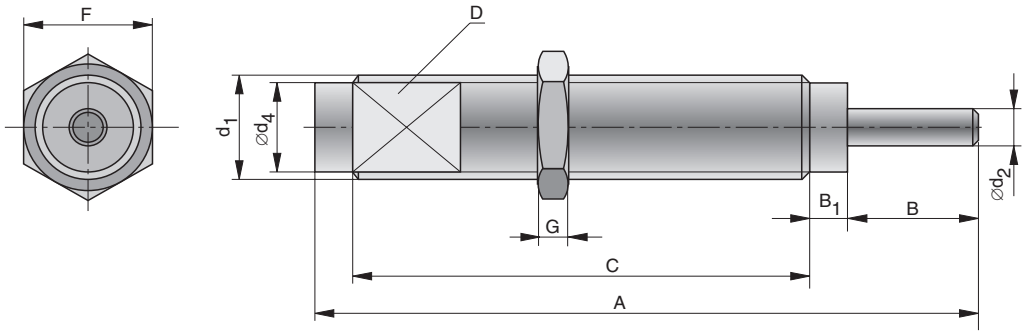
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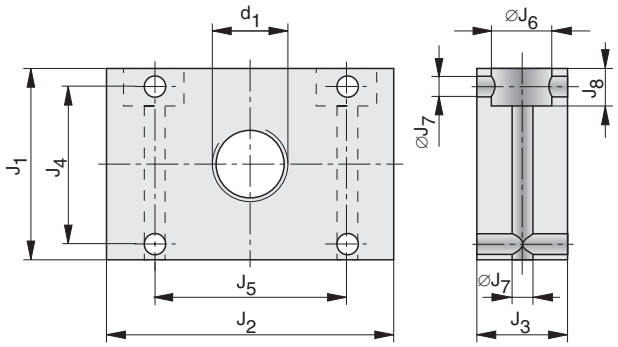
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Dimensions (mm)

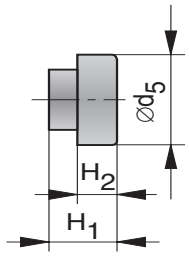
Type: SA 20, SA 20 S, SA 20 S2



Dimensions (mm)
Universal Flange



Dimensions (mm)
Soft Pad



Dimensions Table (mm)

Type	A	B	B_1	C	D	d_1	ød_2	ød_4	ød_5	F
SA 20	89	12	5.6	61.7	17	M20x1.5	6.4	17	17	23.9
SA 20x25	140.5	24.6	5.6	100.3	17	M20x1.5	6.4	17	17	25.4

Type	G	H_1	H_2	J_1	J_2	J_3	J_4	J_5	øJ_6	øJ_7	J_8
SA 20	6	10.7	4.7	35	46	16	25.4	35	10.4	5.5	10.4
SA 20x25	6	10.7	4.7	35	46	16	25.4	35	10.4	5.5	10.4

Order Instructions

Product		Order Instructions Type	Order No.
Shock absorber	– stroke 12.5 mm	**SA 20**	**7930**
– for smaller effective masses	– stroke 24.6 mm	**SA 20x25**	**7700**
Shock absorber	– stroke 12.5 mm	**SA 20 S**	**7937**
– for intermediate effective masses	– stroke 24.6 mm	**SA 20 Sx25**	**7701**
Shock absorber	– stroke 12.5 mm	**SA 20 S2**	**7938**
– for larger effective masses	– strokeb 24.6 mm	**SA 20 S2x25**	**7702**
Soft pad		**SP 20**	**7934**
Additional mounting nut		**LN 20**	**7939**
Universal flange		**UM 20**	**7932**

ORIGA Shock Absorbers

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SAI 25	25.4	9	136	68	68000
SAI 25 S	25.4	113	1130	68	68000
SAI 25 S2	25.4	400	2273	68	68000

Technical Data

		Unit	Comments
Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	19 - 37
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	0.327
Min. mounting strength required		N	6700 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.006E-1

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SAI

SAI 25
- For smaller effective masses

SAI 25 S
- For intermediate effective masses

SAI 25 S2
- For larger effective masses

Basic Version with:
• Integral stop collar
• 1 mounting nut

Accessories:
• Soft pad
• Universal flange



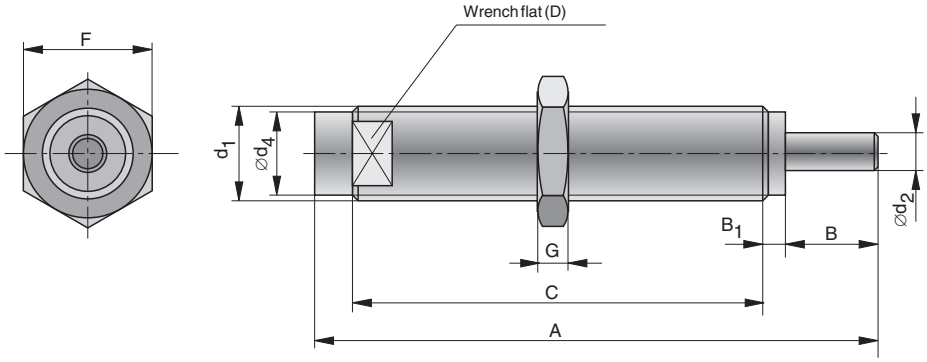
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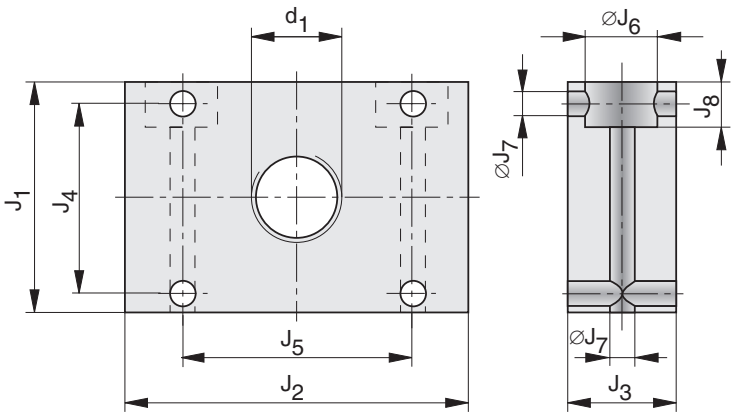
The right to make technical modifications is reserved

Dimensions (mm)

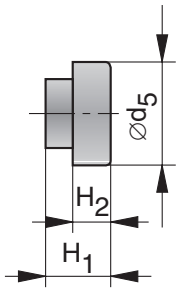
Type: SAI 25, SAI 25 S, SAI 25 S2



Dimensions (mm)
Universal Flange



Dimensions (mm)
Soft Pad



Dimensions Table (mm)

A	B	B_1	C	D	d_1 *	ød_2	ød_4	ød_5	F	G	H_1	H_2	J_1	J_2	J_3	J_4	J_5	øJ_6	øJ_7	J_8
149.1	24.6	4.6	107.2	22	M25x1.5	7.9	22.4	22.3	30	8	11	4.7	35	47	16	25.5	35	10.4	5.5	10.4

* Option M27x3 on request

Order Instructions

Product	Order Instructions	
	Type	**Order No.**
Shock absorber for smaller effective masses	**SAI 25**	**7834**
Shock absorber for intermediate effective masses	**SAI 25 S**	**7835**
Shock absorber for larger effective masses	**SAI 25 S2**	**7836**
Soft pad	**SP-25**	**7837**
Additional mounting nut	**LN-25**	**7959**
Universal flange	**UM-25**	**7952**

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 33x25	25.4	9	36	153	84739
SA 33Sx25	25.4	30	124	153	84739
SA 33S2x25	25.4	104	418	153	84739
SA 33S3x25	25.4	354	1418	153	84739
SA 33x50	50.8	18	73	305	98297
SA 33Sx50	50.8	61	247	305	98297
SA 33S2x50	50.8	209	836	305	98297
SA 33S3x50	50.8	709	2836	305	98297

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 to 4.6
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	on request
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	Type SA33..-25 – on request Type SA33..-50 – on request
Min. mounting strength required		N	on request [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA

- For smaller effective masses
  SA 33x25 – Stroke 25.4 mm
  SA 33x50 – Stroke 50.8 mm

- For intermediate effective masses
  SA 33Sx25 – Stroke 25.4 mm
  SA 33Sx50 – Stroke 50.8 mm

- For larger effective masses
  SA 33S2x25 – Stroke 25.4 mm
  SA 33S2x50 – Stroke 50.8 mm

- For high effective masses
  SA 33S3x25 – Stroke 25.4 mm
  SA 33S3x50 – Stroke 50.8 mm

Basic Version with:
• 1 mounting nut

Accessories:
• Soft pad
• Rectangular flange
• Foot mounting
• Stop collar



For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

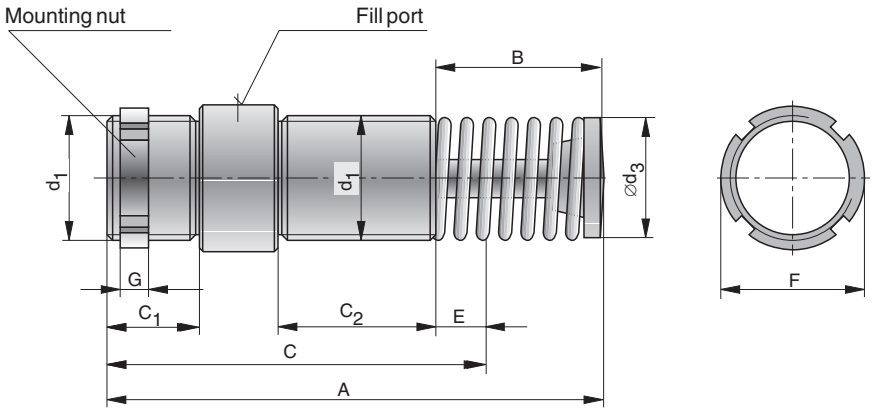
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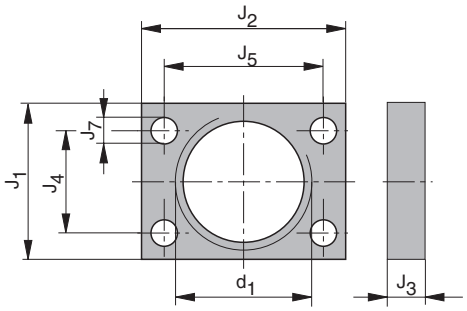
The right to make technical modifications is reserved

Dimensions (mm)

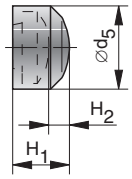
Type: SA 33..x25, SA 33..x50



Dimensions (mm)
Rectangular Flange

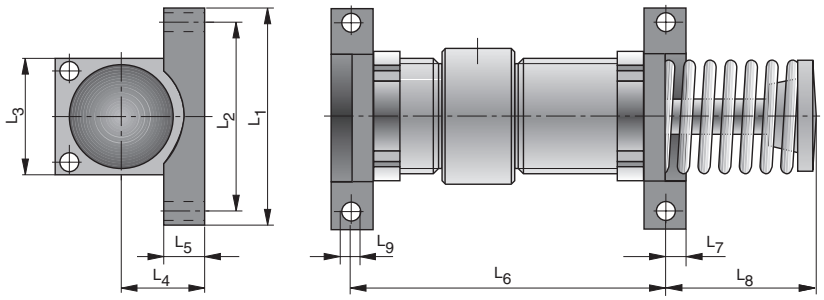


Dimensions (mm)
Soft Pad

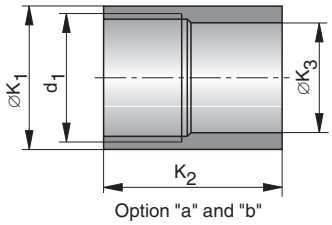


Note:
Cannot be used with stop collar

Dimensions (mm)
Foot Mounting



Dimensions (mm)
Stop collar



Option "a" - for rear mounting
Option "b" - for front mounting

Dimension Table (mm)

Type	A	B	C	C_1	C_2	d_1	$Ød_3$	$Ød_5$	E	ØF	G	H_1	H_2	J_1
SA 33..x25	138.1	55.6	112.7	25.4	38.1	M33x1.5	25.4	31.8	30.2	38	6.4	19.1	11.2	38.1
SA 33..x50	188.9	81	138.1	25.4	53.8	M33x1.5	25.4	31.8	30.2	38	6.4	19.1	11.2	38.1

Type	J_2	J_3	J_4	J_5	$ØK_1$	K_2a	K_2b	$ØK_3$	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA 33..x25	50.8	9.7	28.7	41.4	38.1	47.6	41.3	28.6	69.9	60.3	50.8	22.2	12.7	95.3	6.4	49.2	5.6
SA 33..x50	50.8	9.7	28.7	41.4	38.1	47.6	41.3	28.6	69.9	60.3	50.8	22.2	12.7	121	6.4	74.6	5.6

Order Instructions

Product		Order Instructions Type	Order No.
Shock absorber for smaller effective masses	– stroke 25.4 mm	**SA 33x25**	**8041**
	– stroke 50.8 mm	**SA 33x50**	**8045**
Shock absorber for intermediate masses	– stroke 25.4 mm	**SA 33Sx25**	**8042**
	– stroke 50.8 mm	**SA 33Sx50**	**8046**
Shock absorber for larger masses	– stroke 25.4 mm	**SA 33S2x25**	**8043**
	– stroke 50.8 mm	**SA 33S2x50**	**8047**
Shock absorber for high masses	– stroke 25.4 mm	**SA 33S3x25**	**8044**
	– stroke 50.8 mm	**SA 33S3x50**	**8048**
Stop collar Option "a"	for rear mounting	**SC1/2A**	**7971**
Stop collar Option "b"	for front mounting	**SC1/2B**	**7977**
Soft pad		**SP1/2**	**7974**
Additional mounting nut		**LN1/2**	**7979**
Rectangular flange		**RF1/2**	**7972**
Foot mounting		**FM1/2**	**7973**

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 45x25	25.4	22	91	339	124284
SA 45Sx25	25.4	77	309	339	124284
SA 45S2x25	25.4	261	1045	339	124284
SA 45S3x25	25.4	886	3545	339	124284
SA 45x50	50.8	45	182	678	146881
SA 45Sx50	50.8	154	618	678	146881
SA 45S2x50	50.8	522	2091	678	146881
SA 45S3x50	50.8	1772	7091	678	146881
SA 45x75	76.2	68	273	1017	180776
SA 45Sx75	76.2	231	927	1017	180776
SA 45S2x75	76.2	786	3145	1017	180776
SA 45S3x75	76.2	2659	10636	1017	180776

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 to 4.6
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	on request
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	Type SA45..-25 – on request Type SA45..-50 – on request Type SA45..-75 – on request
Min. mounting strength required		N	on request [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA

- For smaller effective masses
  SA 45x25 – Stroke 25.4 mm
  SA 45x50 – Stroke 50.8 mm
  SA 45x75 – Stroke 76.2 mm

- For intermediate effective masses
  SA 45Sx25 – Stroke 25.4 mm
  SA 45Sx50 – Stroke 50.8 mm
  SA 45Sx75 – Stroke 76.2 mm

- For larger effective masses
  SA 45S2x25 – Stroke 25.4 mm
  SA 45S2x50 – Stroke 50.8 mm
  SA 45S2x75 – Stroke 76.2 mm

- For high effective masses
  SA 45S3x25 – Stroke 25.4 mm
  SA 45S3x50 – Stroke 50.8 mm
  SA 45S3x75 – Stroke 76.2 mm

Basic Version with:
• 1 mounting nut

Accessories:
• Soft pad
• Rectangular flange
• Foot mounting
• Stop collar



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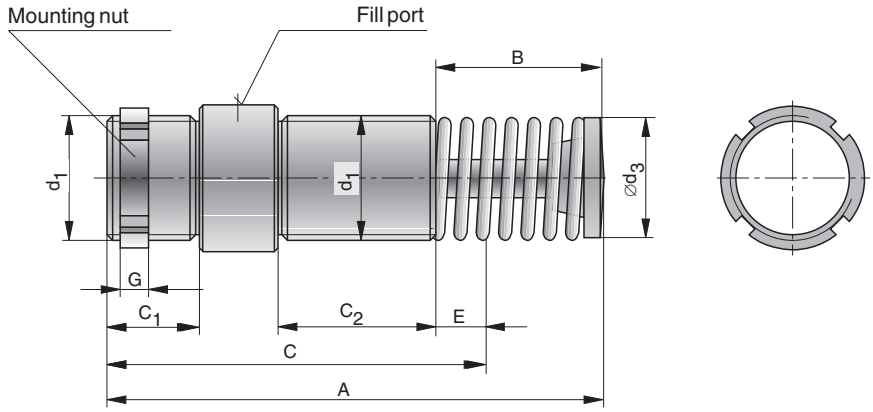
For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.008E-1

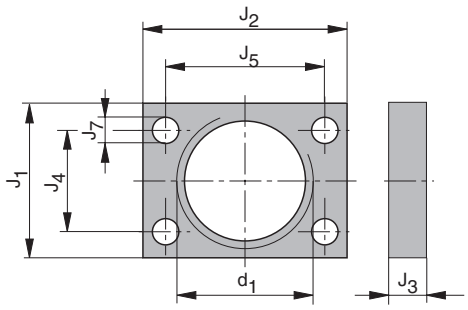
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The right to make technical modifications is reserved

Dimensions (mm)

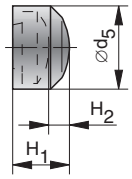
Type: SA 45..x25, SA 45..x50, SA45..x75



Dimensions (mm)
Rectangular Flange

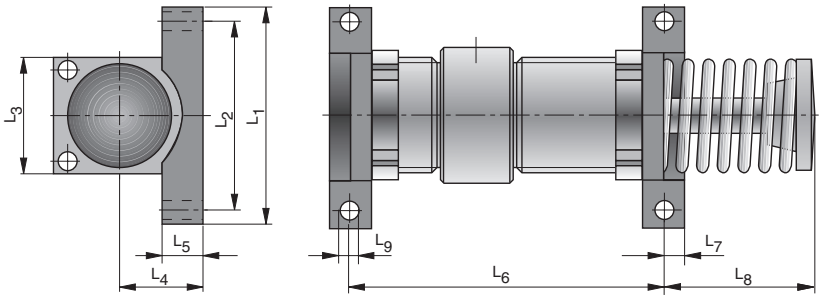


Dimensions (mm)
Soft Pad

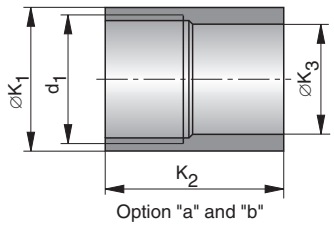


Note:
Cannot be used with stop collar

Dimensions (mm)
Foot Mounting



Dimensions (mm)
Stop collar



Option "a" - for rear mounting
Option "b" - for front mounting

Dimension Table (mm)

Type	A	B	C	C_1	C_2	d_1	Ød_3	Ød_5	E	G	H_1	H_2	J_1
SA 45..x25	144.5	50	119.1	34.8	40.4	M45x1.5	38.1	44.5	24.6	9.7	25.4	17.5	57.2
SA 45..x50	195.3	75.4	144.5	34.8	60.2	M45x1.5	38.1	44.5	24.6	9.7	25.4	17.5	57.2
SA 45..x75	246.1	100.8	169.9	34.8	72.9	M45x1.5	38.1	44.5	24.6	9.7	25.4	17.5	57.2

Type	J_2	J_3	J_4	J_5	ØK_1	K_2a	K_2b	ØK_3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA 45..x25	76.2	12.7	41.4	60.5	on request				95.3	72.2	57.2	29.4	14.2	85.5	9.5	52.3	8.7
SA 45..x50	76.2	12.7	41.4	60.5	on request				95.3	72.2	57.2	29.4	14.2	111	9.5	77.7	8.7
SA 45..x75	76.2	12.7	41.4	60.5	on request				95.3	72.2	57.2	29.4	14.2	111	9.5	103	8.7

Order Instructions

Product		Order Instructions Type	Order No.
Shock absorber for smaller effective masses	– stroke 25.4 mm	**SA 45x25**	**8049**
	– stroke 50.8 mm	**SA 45x50**	**8053**
	– stroke 76.2 mm	**SA 45x75**	**8057**
Shock absorber for intermediate masses	– stroke 25.4 mm	**SA 45Sx25**	**8050**
	– stroke 50.8 mm	**SA 45Sx50**	**8054**
	– stroke 76.2 mm	**SA 45Sx75**	**8058**
Shock absorber for larger masses	– stroke 25.4 mm	**SA 45S2x25**	**8051**
	– stroke 50.8 mm	**SA 45S2x50**	**8055**
	– stroke 76.2 mm	**SA 45S2x75**	**8059**
Shock absorber for high masses	– stroke 25.4 mm	**SA 45S3x25**	**8052**
	– stroke 50.8 mm	**SA 45S3x50**	**8056**
	– stroke 76.2 mm	**SA 45S3x75**	**8060**
Stop collar Option "a"	for rear mounting	**on request**	**on request**
Stop collar Option "b"	for front mounting	**on request**	**on request**
Soft pad		**on request**	**on request**
Additional mounting nut		**on request**	**on request**
Rectangular flange		**on request**	**on request**
Foot mounting		**on request**	**on request**

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 64x50	50.8	136	545	1695	169478
SA 64Sx50	50.8	463	1855	1695	169478
SA 64S2x50	50.8	1572	6291	1695	169478
SA 64S3x50	50.8	5318	21273	1695	169478
SA 64x100	101.6	272	1091	3390	225970
SA 64Sx100	101.6	927	3709	3390	225970
SA 64S2x100	101.6	3145	12582	3390	225970
SA 64S3x100	101.6	10636	42545	3390	225970
SA 64x150	152.4	409	1636	5084	282463
SA 64Sx150	152.4	1390	5564	5084	282463
SA 64S2x150	152.4	4718	18873	5084	282463
SA 64S3x150	152.4	15954	63818	5084	282463

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0,3 to 4,6
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	on request
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	Type SA64..-50 – on request Type SA64..-100 – on request Type SA64..-150 – on request
Min. mounting strength required		N	on request [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.009E-1

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Non-adjustable

Series SA

- For smaller effective masses
  SA 64x50 – Stroke 50.8 mm
  SA 64x100 – Stroke 101.6 mm
  SA 64x150 – Stroke 152.4 mm

- For intermediate effective masses
  SA 64Sx50 – Stroke 50.8 mm
  SA 64Sx100 – Stroke 101.6 mm
  SA 64Sx150 – Stroke 152.4 mm

- For larger effective masses
  SA 64S2x50 – Stroke 50.8 mm
  SA 64S2x100 – Stroke 101.6 mm
  SA 64S2x150 – Stroke 152.4 mm

- For high effective masses
  SA 64S3x50 – Stroke 50.8 mm
  SA 64S3x100 – Stroke 101.6 mm
  SA 64S3x150 – Stroke 152.4 mm

Basic Version with:
• 1 mounting nut

Accessories:
• Soft pad
• Square flange
• Foot mounting
• Stop collar



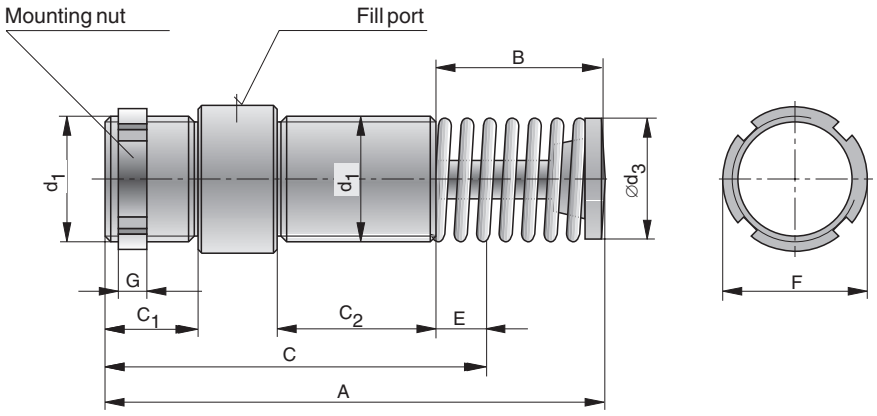
HOERBIGER ORIGA

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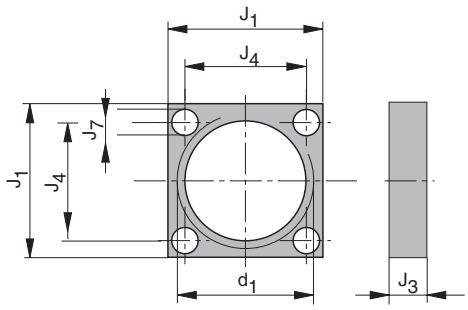
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Dimensions (mm)

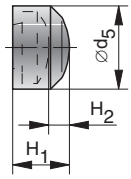
Type: SA 64..x50, SA 64..x100, SA 64..x150



Dimensions (mm)
Square Flange

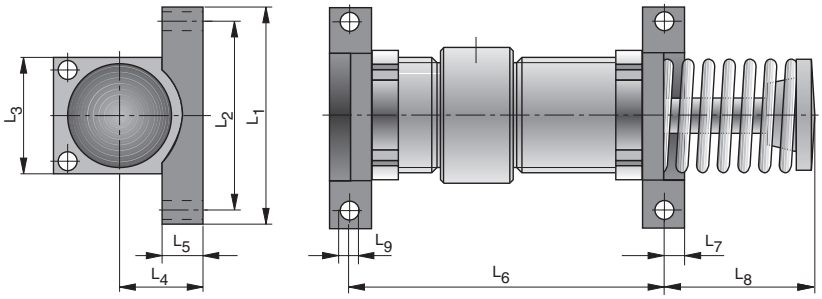


Dimensions (mm)
Soft Pad

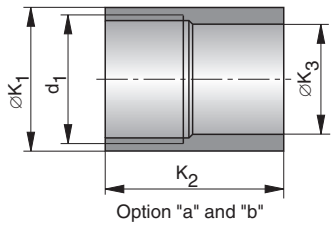


Note:
Cannot be used with stop collar

Dimensions (mm)
Foot Mounting



Dimensions (mm)
Stop collar



Option "a" - for rear mounting
Option "b" - for front mounting

Dimension Table (mm)

Type	A	B	C	C_1	C_2	d_1	Ød_3	Ød_5	E	ØF	G	H_1	H_2	J_1
SA 64..x50	225.4	85.7	174.6	38.1	69.8	M64x2	50.8	57.2	34.9	76.2	9.7	25.4	17.5	88.9
SA 64..x100	327	136.5	225.4	38.1	95.2	M64x2	50.8	57.2	39.4	76.2	9.7	25.4	17.5	88.9
SA 64..x150	509	200.6	298.5	38.1	120.6	M64x2	50.8	57.2	57.2	76.2	9.7	25.4	17.5	88.9

Type	J_3	J_4	ØK_1	K_2a	K_2b	ØK_3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA 64..x50	16	69.9	76.2	62.7	50	60.3	143	124	88.9	44.5	19.1	127	14.2	90	10.3
SA 64..x100	16	69.9	76.2	62.7	50	60.3	143	124	88.9	44.5	19.1	178	14.2	141	10.3
SA 64..x150	16	69.9	76.2	62.7	50	60.3	143	124	88.9	44.5	19.1	229	14.2	214	10.3

Order Instructions

Product		Order Instructions Type	Order No.
Shock absorber for smaller effective masses	– stroke 50.8 mm	**SA 64x50**	**8061**
	– stroke 101.6 mm	**SA 64x100**	**8065**
	– stroke 152.4 mm	**SA 64x150**	**8069**
Shock absorber for intermediate masses	– stroke 50.8 mm	**SA 64Sx50**	**8062**
	– stroke101.6 mm	**SA 64Sx100**	**8066**
	– stroke 152.4 mm	**SA 64Sx150**	**8070**
Shock absorber for larger masses	– stroke 50.8 mm	**SA 64S2x50**	**8063**
	– stroke 101.6 mm	**SA 64S2x100**	**8067**
	– stroke 152.4 mm	**SA 64S2x150**	**8071**
Shock absorber for high masses	– stroke 50.8 mm	**SA 64S3x50**	**8064**
	– stroke 101.6 mm	**SA 64S3x100**	**8068**
	– stroke 152.4 mm	**SA 64S3x150**	**8072**
Stop collar Option "a" for Type SA 64..x50 and SA 64..x100	for rear mounting	**SC 1-1/8A**	**7991**
Stop collar Option "a" for Type SA 64..x150	for rear mounting	**SC 1-1/8A**	**7891**
Stop collar Option "b" for Type SA 64..x50 and SA 64..x100	for front mounting	**SC 1-1/8B**	**7997**
Stop collar Option "b" for Type SA 64..x150	for front mounting	**SC 1-1/8B**	**7897**
Soft pad		**SP 1-1/8**	**7994**
Additional mounting nut		**LN 1-1/8**	**7999**
Square flange		**SF 1-1/8**	**7998**
Foot mounting		**FM 1-1/8**	**7993**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
- Adjustable

Series SA
SA 1/4 x 1/2

Basic Version with:
- Integral stop collar
- 1 mounting nut

Accessories:
- Soft pad
- Universal flange



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 1/4 x 1/2	12.7	2.3	182	17	23000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	6 - 9
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	0.176
Min. mounting strength required		N	3400 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.100E-1

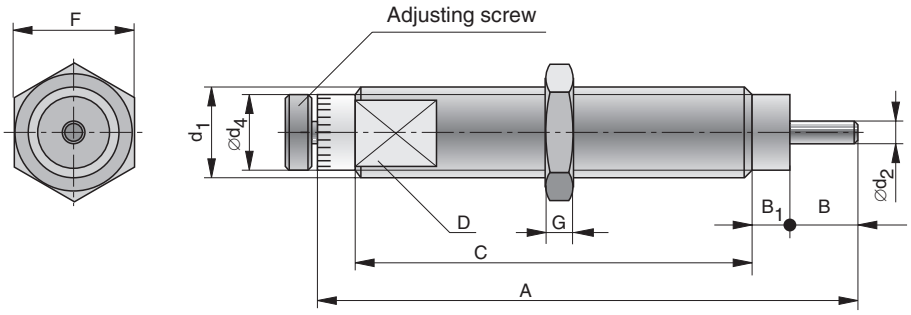
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The right to make technical modifications is reserved

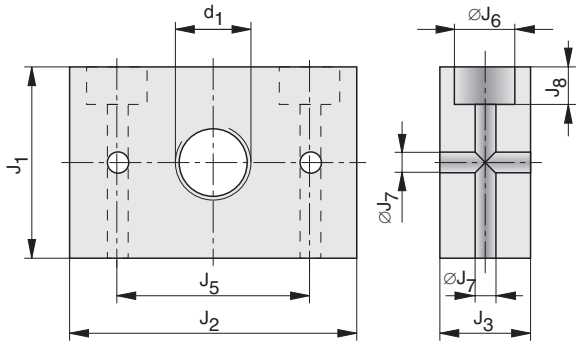
HOERBIGER ORIGA

Dimensions (mm)

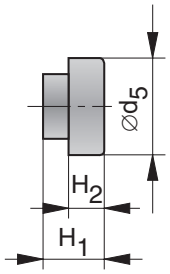
Type: SA 1/4 x 1/2



Dimensions (mm)
Universal Flange



Dimensions (mm)
Soft Pad



Dimensions Table (mm)

A	B	B_1	C	D	d_1	ød_2	ød_4	ød_5	E	F	G	H_1	H_2	J_1	J_2	J_3	J_4	J_5	øJ_6	øJ_7	J_8
98.9	12	5.6	61.7	17	M20x1.5	6.4	16.9	17	6.4	24	6	10.7	4.8	35	47	16	25.5	35	10	5.5	10

Order Instructions

Product	Order Instructions	
	Type	**Order No.**
Shock absorber	**SA 1/4 x 1/2**	**7940**
Soft pad	**SP 20**	**7934**
Additional mounting nut	**LN 20**	**7939**
Universal flange	**UM 20**	**7932**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
- Adjustable

Series SA
SA 3/8 x 1D

Basic Version with:
- 1 mounting nut
- Front and rear adjustment

Accessories:
- Stop collar
- Soft pad
- Universal flange



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 3/8 x 1D	25.4	4.5	546	70	46000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of internal return spring		N	19 - 37
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass)		kg	0.243
Min. mounting strength required		N	6900 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No.1.70.101E-1

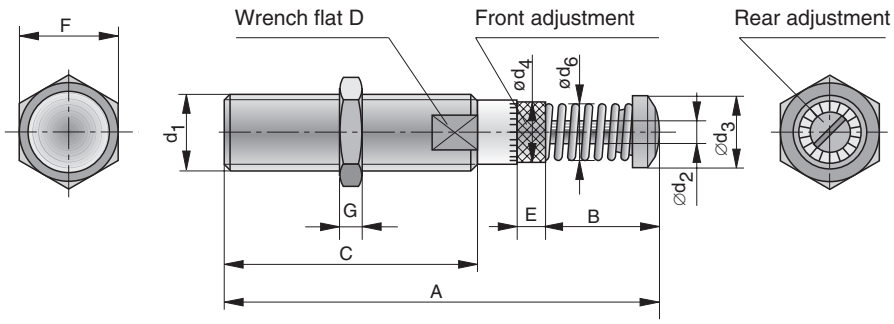
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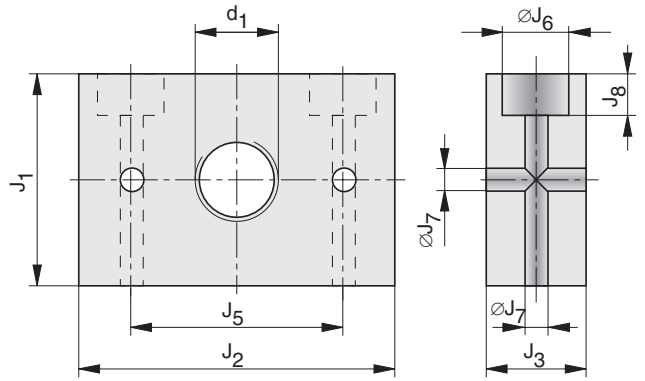
HOERBIGER ORIGA

Dimensions (mm)

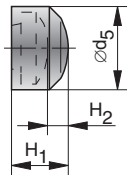
Type: SA 3/8 x 1D



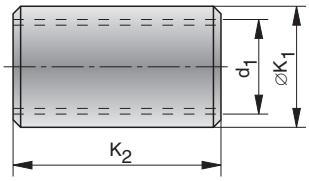
Dimensions (mm) Universal Flange



Dimensions (mm) Soft Pad



Dimensions (mm) Stop Collar



Dimensions Table (mm)

A	B	C	D	d_1	ød_2	ød_3	ød_4	ød_5	ød_6	E	F	G	H_1	H_2	J_1	J_2	J_3	J_4	J_5	øJ_6	øJ_7	J_8	øK_1	K_2
121.2	35.5	61.5	22	M25x1.5 [2]	7.9	19.9	22.7	22.1	18.5	12.7	30	8	12.2	6.4	35	47	16	25.5	35	10	5.5	10	31.8	55.6

[2] Option: M27x3 thread (d_1)

Order Instructions

Product	Order Instructions	
	Type	Order No.
Shock absorber	**SA 3/8 x 1D**	**7840**
Stop collar	**SC 25 B**	**7951**
Soft pad	**SP 25**	**7954**
Additional mounting nut	**LN 25**	**7959**
Universal flange	**UM 25**	**7952**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Adjustable

Series SALD
SALD 1/2 x 1M
- Stroke: 25.4 mm

SALD 1/2 x 2M
- Stroke 50.8 mm

Basic Version with:
• Integral stop collar
• 1 mounting nut

Accessories:
• Rectangular flange



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SALD 1/2 x 1M	25.4	4.5	1134	136	85000
SALD 1/2 x 2M	50.8	9.5	2268	271	98000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Arbeitstemperatur		°C	-40 bis +82
Installation			In any position
Force of return spring Type: SALD 1/2 x 1M Type: SALD 1/2 x 2M		 N N	 36 - 82 36 - 128
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass) Type: SALD 1/2 x 1M Type: SALD 1/2 x 2M		 kg kg	 0.751 0.922
Min. mounting strength required		N	13400 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.102E-1

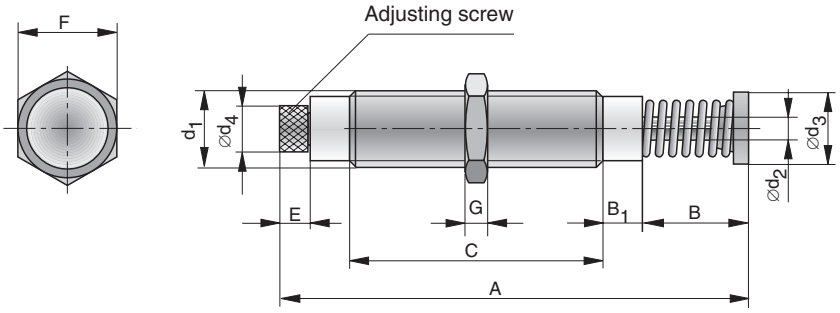
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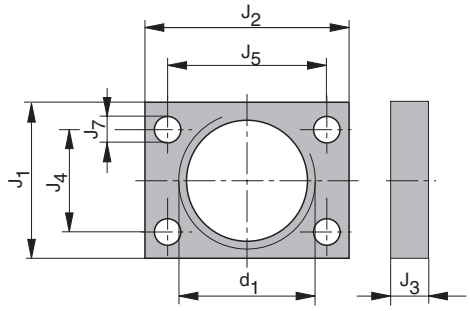
HOERBIGER ORIGA

Dimensions (mm)

Type: SALD 1/2 x 1M, SALD 1/2 x 2M



Dimensions (mm)
Rectangular Flange



Dimensions Table (mm)

Type	A	B	B_1	C	d_1	ød_2	ød_3	ød_4	E	F	G	J_1	J_2	J_3	J_4	J_5	J_7
SALD 1/2 x 1M	165.1	23.8	6	110	M36x1.5	9.5	25.4	22.5	14.7	41.3	6.7	41	54	9.5	28	42	7
SALD 1/2 x 2M	215.9	49.2	6	134	M36x1.5	9.5	25.4	22.5	14.7	41.3	6.7	41	54	9.5	28	42	7

Order Instructions

Product	Order Instructions	
	Type	**Order No.**
Shock absorber, stroke 25.4 mm	**SALD 1/2 x 1M**	**7841**
Shock absorber, stroke 50.8 mm	**SALD 1/2 x 2M**	**7842**
Rectangular flange	**RF 1/2-M**	**7843**
Additional mounting nut	**LN 1/2-M**	**7838**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Adjustable

Series SA
SA 1/2 x 1
- Stroke: 25.4 mm

SA 1/2 x 2
- Stroke 50.8 mm

Basic Version with:
• 1 mounting nut

Accessories:
• Stop collar
• Rectangular flange
• Soft pad
• Foot mounting



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 1/2 x 1	25.4	4.5	545	130	86000
SA 1/2 x 2	50.8	9.5	950	270	100000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of return spring		N N	36 - 82 (Type SA 1/2x1) 36 - 128 (Type SA 1/2x2)
Max. deviation of impacting force from centre axis of shock absorber			±5°
Weight (mass)		kg kg	0.627 (Type SA 1/2x1) 0.8 (Type SA 1/2x2)
Min. mounting strength required		N	13300 [1]
Materials	Body		Steel, black oxide finished
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

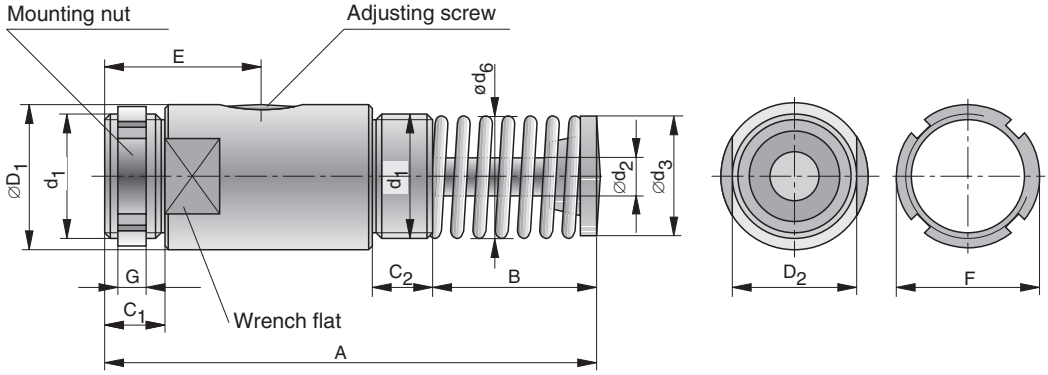
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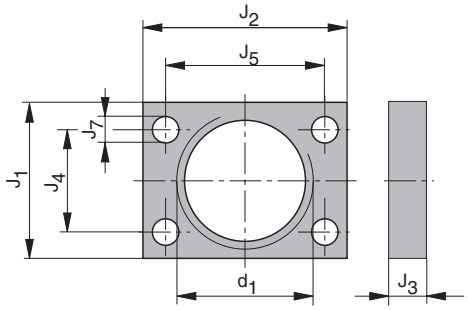
HOERBIGER ORIGA

Dimensions (mm)

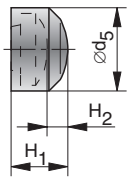
Type: SA 1/2 x 1, SA 1/2 x 2



Dimensions (mm)
Rectangular Flange

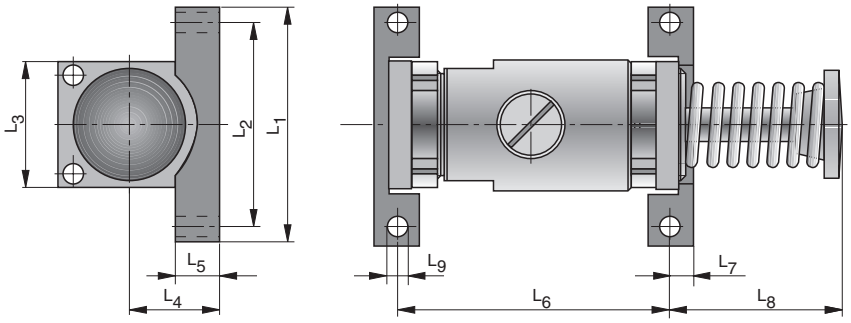


Dimensions (mm)
Soft Pad

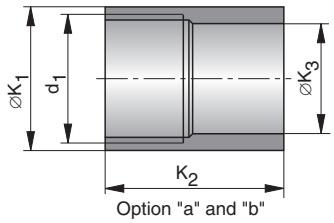


Note:
Cannot be used with stop collar

Dimensions (mm)
Foot mounting



Dimensions (mm)
Stop collar



Option "a" - for rear mounting
Option "b" - for front mounting

Dimensions Table (mm)

Type	A	B	C_1	C_2	øD_1	D_2	d_1	ød_2	ød_3	ød_5	ød_6	E	F	G	H_1	H_2	J_1	J_2
SA 1/2 x 1	138.1	55.5	16	16	38	35	M33x1.5	9.5	25.4	31.8	25.4	41.3	38	6.4	19.1	11.2	41	54
SA 1/2 x 2	189	81	16	16	38	35	M33x1.5	9.5	25.4	31.8	25.4	41.3	38	6.4	19.1	11.2	41	54

Type	J_3	J_4	J_5	J_7	øK_1	K_2a	K_2b	øK_3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA 1/2 x 1	9.5	28	42	7	38.1	47.6	41.3	28.6	69.9	60.3	54	27	12.7	95.3	6.4	49.2	6
SA 1/2 x 2	9.5	28	42	7	38.1	47.6	41.3	28.6	69.9	60.3	54	27	12.7	120.7	6.4	74.6	6

Order Instructions

Product	Order Instructions	
	Type	Order No.
Shock absorber, stroke 25.4 mm	**SA 1/2 x 1**	**7970**
Shock absorber, stroke 50.8 mm	**SA 1/2 x 2**	**7975**
Soft Pad	**SP 1/2**	**7974**
Stop collar option a – for rear mounting	**SC 1/2A**	**7971**
Stop collar option b – for front mounting	**SC 1/2B**	**7977**
Rectangular flange	**RF 1/2**	**7972**
Foot mounting	**FM 1/2**	**7973**
Additional mounting nut	**LN 1/2**	**7979**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Adjustable

Series SA
SA 3/4 x 1
- Stroke: 25.4 mm

SA 3/4 x 2
- Stroke: 50.8 mm

SA 3/4 x 3
-Stroke: 76 mm

Basic Version with:
• 1 mounting nut

Accessories:
• Stop collar
• Rectangular flange
• Square flange
• Soft pad
• Foot mounting



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 3/4 x 1	25.4	27	3600	290	126500
SA 3/4 x 2	50.8	43	6350	600	150000
SA 3/4 x 3	76	55	9500	890	184000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of return spring Type: SA 3/4 x 1 Type: SA 3/4 x 2 Type: SA 3/4 x 3		 N N N	 68 - 92 44 - 92 33 - 105
Max. deviation of impacting force from centre axis of shock absorber			±3°
Weight (mass) Type: SA 3/4 x 1 Type: SA 3/4 x 2 Type: SA 3/4 x 3		 kg kg kg	 1.44 1.8 2.24
Min. mounting strength required		N	29600 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2{,}5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.104E-1

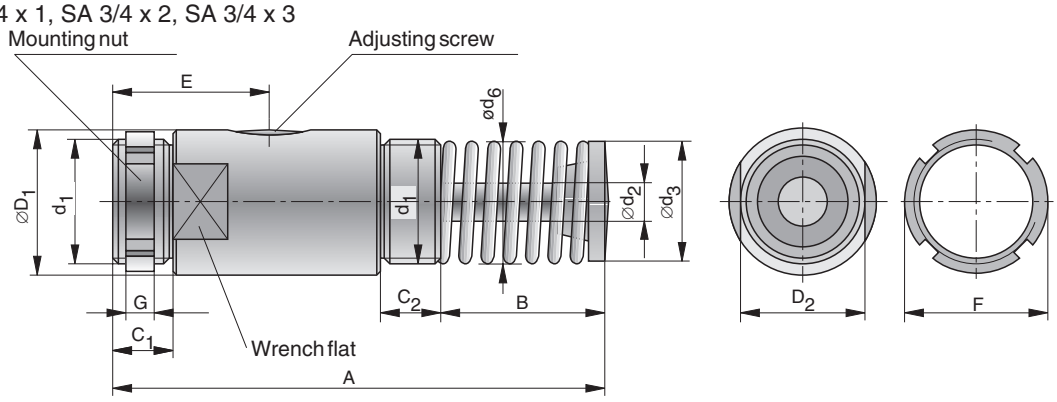
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The right to make technical modifications is reserved

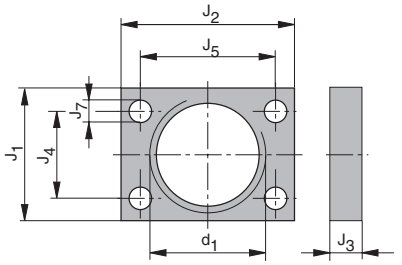
HOERBIGER ORIGA

Dimensions (mm)

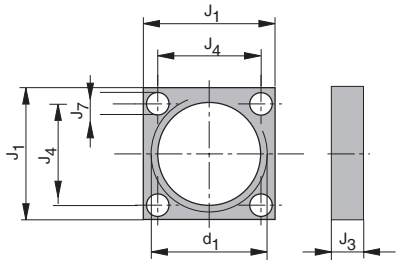
Type: SA 3/4 x 1, SA 3/4 x 2, SA 3/4 x 3



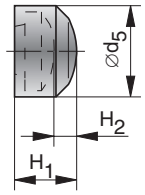
Dimensions (mm) Rectangular flange



Dimensions (mm) Square Flange

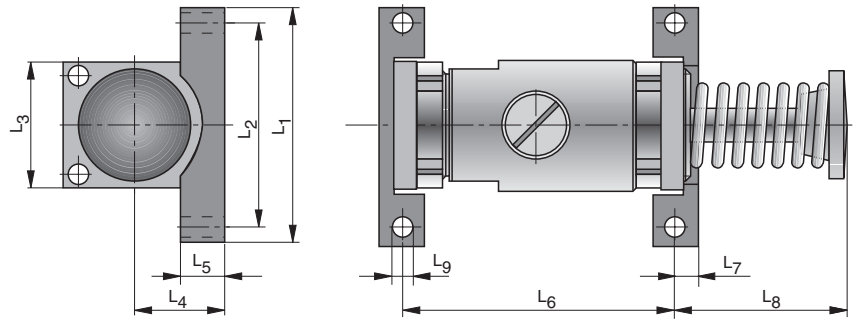


Dimensions (mm) Soft Pad

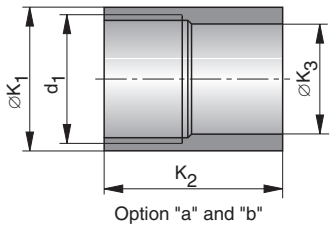


Note:
Cannot be used with stop collar

Dimensions (mm) Foot Mounting



Dimensions (mm) Stop Collar



Option "a" and "b"

Option "a" - for rear mounting
Option "b" - for front mounting

Dimensions Table (mm)

Type	A	B	C_1	C_2	øD_1	D_2	d_1	ød_2	ød_3	ød_5	ød_6	E	F	G	H_1	H_2	J_1	J_2
SA 3/4 x 1	144.4	50	22.9	23	57.2	50	M42x1.5	14.3	38	44.5	34.7	47.2	57.2	9.5	25.4	17.5	57.2	76.2
SA 3/4 x 2	195.2	75.4	22.9	23	57.2	50	M42x1.5	14.3	38	44.5	34.7	59.5	57.2	9.5	25.4	17.5	57.2	76.2
SA 3/4 x 3	246	100.8	22.9	23	57.2	50	M42x1.5	14.3	38	44.5	38.1	72.6	57.2	9.5	25.4	17.5	57.2	76.2

Type	J_3	J_4	J_5	J_7	øK_1	K_2a	K_2b	øK_3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA 3/4 x 1	12.7	41.3	60.3	8.7	57.2	49.2	39.7	41.2	95.3	76.2	57.2	28.6	14.3	85.7	9.5	52.3	8.7
SA 3/4 x 2	12.7	41.3	60.3	8.7	57.2	49.2	39.7	41.2	95.3	76.2	57.2	28.6	14.3	111.1	9.5	77.6	8.7
SA 3/4 x 3	12.7	41.3	60.3	8.7	57.2	49.2	39.7	41.2	95.3	76.2	57.2	28.6	14.3	136.5	9.5	103.2	8.7

Order Instructions

Product	Order Instructions	
	Type	Order No.
Shock absorber, stroke 25.4 mm	**SA 3/4 x 1**	**7980**
Shock absorber, stroke 50.8 mm	**SA 3/4 x 2**	**7985**
Shock absorber, stroke 76 mm	**SA 3/4 x 3**	**7986**
Soft pad	**SP 3/4**	**7984**
Stop collar option a – for rear mounting	**SC 3/4 A**	**7981**
Stop collar option b – for front mounting	**SA 3/4 B**	**7987**
Rectangular flange	**RF 3/4**	**7982**
Square flange	**SF 3/4**	**7988**
Foot mounting	**FM 3/4**	**7983**
Additional mounting nut	**LN 3/4**	**7989**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
• Adjustable

Series SA
SA 1-1/8 x 2
- Stroke: 50.8 mm

SA 1-1/8 x 4
- Stroke: 102 mm

SA 1-1/8 x 6
- Stroke: 152 mm

Basic Version with:
• 1 mounting nut

Accessories:
• Stop collar
• Square flange
• Soft pad
• Foot mounting



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA 1-1/8 x 2	50.8	72	13000	1380	172600
SA 1-1/8 x 4	102	118	18200	2700	230000
SA 1-1/8 x 6	152	200	32000	4150	288000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Force of return spring Type: SA 1-1/8 x 2 Type: SA 1-1/8 x 4 Type: SA 1-1/8 x 6		 N N N	 80 - 151 80 - 200 80 - 187
Max. deviation of impacting force from centre axis of shock absorber		±5°	
Weight (mass) Type: SA 1-1/8 x 2 Type: SA 1-1/8 x 4 Type: SA 1-1/8 x 6		 kg kg kg	 3.719 5.035 6.622
Min.mounting strength required		N	68000 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No.1.70.105E-1

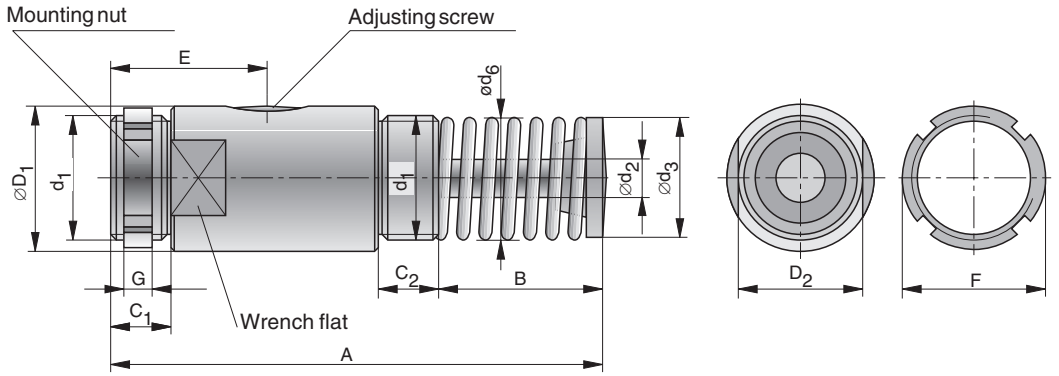
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The right to make technical modifications is reserved

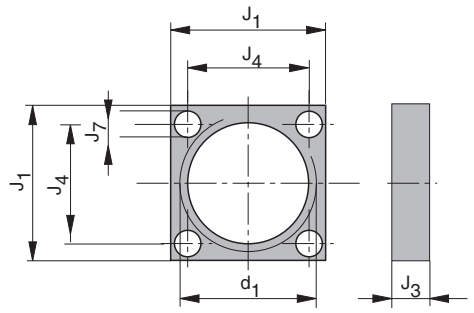
HOERBIGER ORIGA

Dimensions (mm)

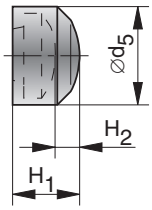
Type: SA 1-1/8 x 2, SA 1-1/8 x 4, SA 1-1/8 x 6



Dimensions (mm)
Square Flange

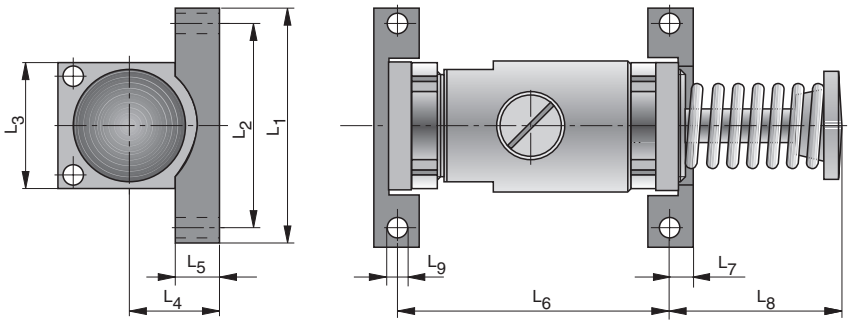


Dimensions (mm)
Soft Pad

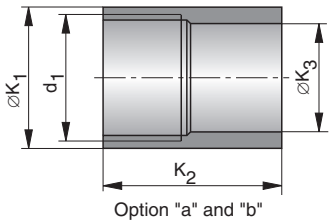


Note:
Cannot be used with stop collar

Dimensions (mm)
Foot Mounting



Dimensions (mm)
Stop Collar



Option "a" and "b"

Option "a" - for rear mounting
Option "b" - for front mounting

Dimensions Table (mm)

Type	A	B	C_1	C_2	øD_1	D_2	d_1	ød_2	ød_3	ød_5	ød_6	E	F	G	H_1	H_2	J_1
SA 1-1/8 x 2	225.6	85.9	26.2	26.2	76.2	69.9	M64x2	20.6	50.8	57.2	47.9	69.9	76.2	9.5	25.4	17.5	88.9
SA 1-1/8 x 4	327.2	136.7	26.2	26.2	76.2	69.9	M64x2	20.6	50.8	57.2	50.8	95.3	76.2	9.5	25.4	17.5	88.9
SA 1-1/8 x 6	450.9	209.6	26.2	26.2	76.2	69.9	M64x2	20.6	50.8	57.2	48.3	120.7	76.2	9.5	25.4	17.5	88.9

Type	J_3	J_4	J_7	øK_1	K_2a	K_2b	øK_3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA 1-1/8 x 2	15.9	69.9	10.3	76.2	62.7	50	60.3	142.9	123.8	88.9	44.5	19	127	14.3	90.5	10.3
SA 1-1/8 x 4	15.9	69.9	10.3	76.2	62.7	50	60.3	142.9	123.8	88.9	44.5	19	177.8	14.3	141.3	10.3
SA 1-1/8 x 6	15.9	69.9	10.3	76.2	84.9	72.2	60.3	142.9	123.8	88.9	44.5	19	228.5	14.3	214.3	10.3

Order Instructions

Product	Order Instructions	
	Type	**Order No.**
Shock absorber, stroke 50.8 mm	**SA 1-1/8 x 2**	**7990**
Shock absorber, stroke 102 mm	**SA 1-1/8 x 4**	**7995**
Shock absorber, stroke 152 mm	**SA 1-1/8 x 6**	**7996**
Soft pad	**SP 1-1/8**	**7994**
Square flange	**SF 1-1/8**	**7998**
Foot mounting	**FM 1-1/8**	**7993**
Additional mounting nut	**LN 1-1/8**	**7999**
Stop collar option a – for SA 1-1/8 x 2, SA 1-1/8 x 4	**SC 1-1/8 A**	**7991**
Stop collar option b – für SA 1-1/8 x 2, SA 1-1/8 x 4	**SC 1-1/8 B**	**7997**
Stop collar option a – for SA 1-1/8 x 6	**SC 1-1/8 A**	**7891**
Stop collar option b – for SA 1-1/8 x 6	**SC 1-1/8 B**	**7897**

ORIGA Shock Absorbers

Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA-A 3/4 x 1	25.4	27	3600	290	184000
SA-A 3/4 x 2	50.8	43	6350	600	230000
SA-A 3/4 x 3	76	55	9500	890	276000

Technical Data

Characteristic		Unit	Comments
Impact velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Max. deviation of impacting force from centre axis of shock absorber			±5°
Weight (mass) Type: SA-A 3/4 x 1 Type: SA-A 3/4 x 2 Type: SA-A 3/4 x 3		 kg kg kg	 1.43 1.79 2.23
Min. mounting strength required		N	29600 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized Air-oil tank: Acrylic, aluminium

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

Hydraulic Industrial Shock Absorbers

Type:
- Adjustable, without return spring, for use with external air-oil tank

Series SA-A
SA-A 3/4 x 1
- Stroke: 25.4 mm

SA-A 3/4 x 2
- Stroke: 50.8 mm

SA-A 3/4 x 3
- Stroke: 76 mm

Basic Version with:
- 1 mounting nut

Accessories:
- Air-oil tank, Type AOT-1
- Stop collar
- Rectangular flange
- Square flange
- Soft pad
- Foot mounting



For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.106E-1

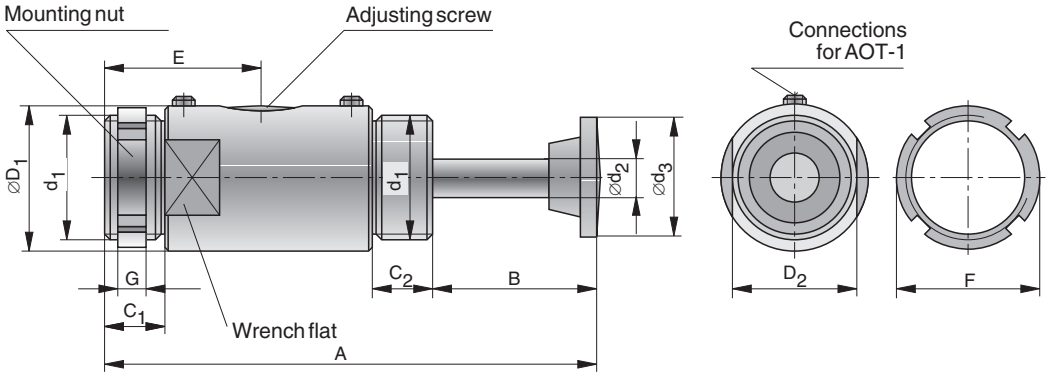
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The right to make technical modifications is reserved

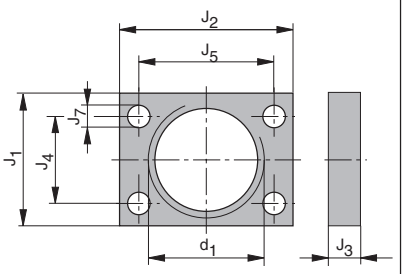
HOERBIGER ORIGA

Dimensions (mm) – Shock Absorber for Connection to Air-Oil Tank

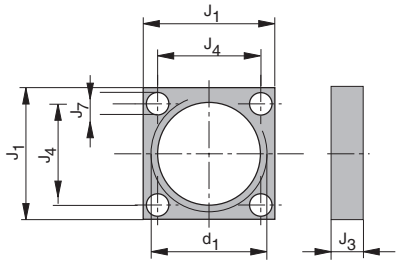
Type: SA-A 3/4 x 1, SA-A 3/4 x 2, SA-A 3/4 x 3



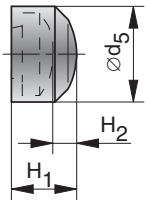
Dimensions (mm) Rectangular flange



Dimensions (mm) Square flange

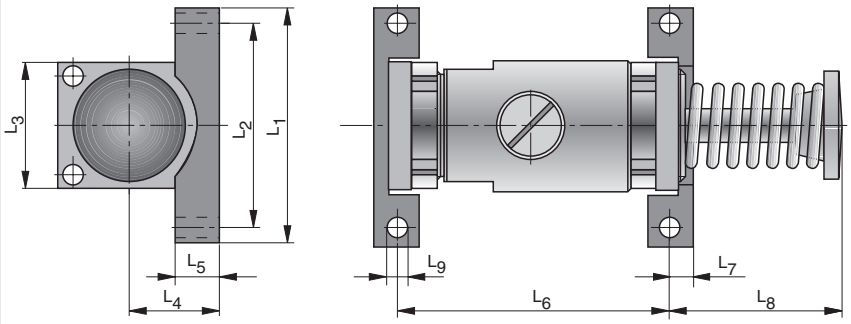


Dimensions (mm) Soft Pad

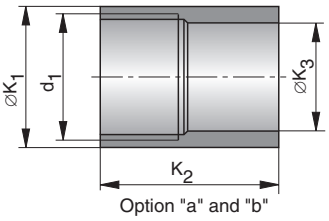


Note:
Cannot be used with stop collar

Dimensions (mm) Foot Mounting



Dimensions (mm) Stop Collar



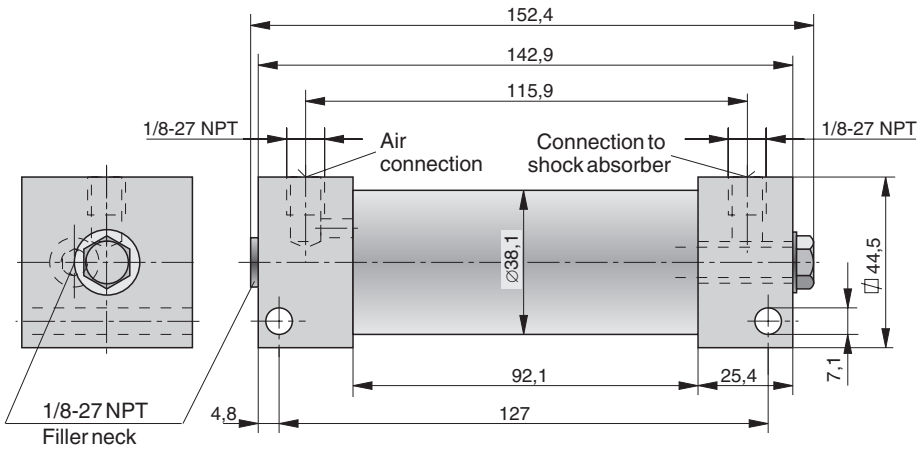
Option "a" - for rear mounting
Option "b" - for front mounting

Dimensions Table (mm)

Type	A	B	C_1	C_2	ØD1	D_2	d_1	Ød2	Ød3	Ød5	E	F	G	H_1	H_2	J_1	J_2
SA-A 3/4 x 1	144.4	50	22.9	23	57.2	50	M42x1.5	14.3	38	44.5	47.2	57.2	9.5	25.4	17.5	57.2	76.2
SA-A 3/4 x 2	195.2	75.4	22.9	23	57.2	50	M42x1.5	14.3	38	44.5	59.5	57.2	9.5	25.4	17.5	57.2	76.2
SA-A 3/4 x 3	246	100.8	22.9	23	57.2	50	M42x1.5	14.3	38	44.5	72.6	57.2	9.5	25.4	17.5	57.2	76.2

Type	J_3	J_4	J_5	J_7	ØK1	K_2a	K_2b	ØK3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA-A 3/4 x 1	12.7	41.3	60.3	8.7	57.2	49.2	39.7	41.2	95.3	76.2	57.2	28.6	14.3	85.7	9.5	52.3	8.7
SA-A 3/4 x 2	12.7	41.3	60.3	8.7	57.2	49.2	39.7	41.2	95.3	76.2	57.2	28.6	14.3	111.1	9.5	77.6	8.7
SA-A 3/4 x 3	12.7	41.3	60.3	8.7	57.2	49.2	39.7	41.2	95.3	76.2	57.2	28.6	14.3	136.5	9.5	103.2	8.7

Dimensions (mm) – Air-Oil Tank Type AOT-1



Order Instructions

Product	Order Instructions	
	Type	Order No.
Shock absorber, stroke 25.4 mm	**SA-A 3/4 x 1**	**7887**
Shock absorber, stroke 50.8 mm	**SA-A 3/4 x 2**	**7888**
Shock absorber, stroke 76 mm	**SA-A 3/4 x 3**	**7889**
Soft pad	**SP-3/4**	**7984**
Square flange	**SF-3/4**	**7988**
Rectangular flange	**RF-3/4**	**7982**
Foot mounting	**FM-3/4**	**7983**
Additional mounting nut	**LN-3/4**	**7989**
Stop collar option a – for SA-A 3/4 x 1, SA-A 3/4 x 2, SA-A 3/4 x 3	**SC-A 3/4**	**7981**
Stop collar option b – for SA-A 3/4 x 1, SA-A 3/4 x 2, SA-A 3/4 x 3	**SC-B 3/4**	**7987**
Air-oil tank	**AOT-1**	**7898**

ORIGA Shock Absorbers

Hydraulic Industrial Shock Absorbers

Type:
- Adjustable, without return spring, for use with external air-oil tank

Series SA-A
SA-A 1-1/8 x 2
- Stroke: 50.8 mm

SA-A 1-1/8 x 4
- Stroke: 102 mm

SA-A 1-1/8 x 6
- Stroke: 152 mm

Basic Version with:
- 1 mounting nut

Accessories:
- Air-oil tank, Type AOT-3
- Stop collar
- Square flange
- Soft pad
- Foot mounting



Energy Capacity

Type	Stroke (mm)	Effective Mass (kg)		Max. Energy Capacity (Nm)	
		Min.	Max.	per stroke W_3	per hour W_4
SA-A 1-1/8 x 2	50.8	72	13000	1380	345000
SA-A 1-1/8 x 4	102	118	18200	2700	460000
SA-A 1-1/8 x 6	152	200	32000	4150	575000

Technical Data

Characteristic		Unit	Comments
Impact Velocity		m/s	0.3 - 4.5
Operating temperature range		°C	-40 to +82
Installation			In any position
Max. deviation of impacting force from centre axis of shock absorber			±5°
Weight (mass) Type: SA-A 1-1/8 x 2 Type: SA-A 1-1/8 x 4 Type: SA-A 1-1/8 x 6		 kg kg kg	 3.709 5.025 6.612
Min. mounting strength required		N	68000 [1]
Materials	Body		Steel, black oxide finish
	Piston rod		Steel, hardened, ground, hard-chrome plated
	Accessories		Steel, black oxide finish or aluminium, anodized Air-oil tank: high-tensile steel

[1] based on $\frac{2.5 \cdot W_3}{\text{stroke}}$

For product group overview see 1.70.001E
For design and installation notes see 1.70.001E

Data Sheet No. 1.70.107E-1

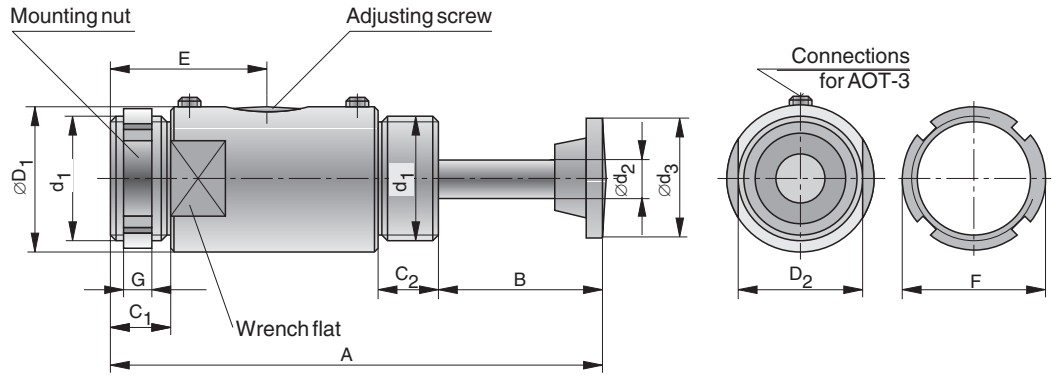
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The right to make technical modifications is reserved

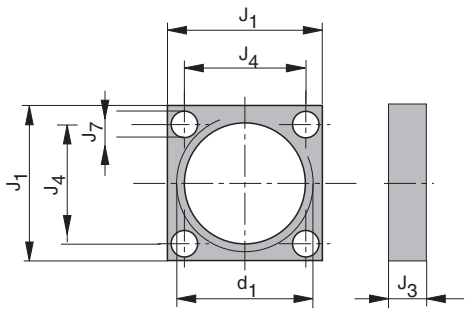
HOERBIGER ORIGA

Dimensions (mm) – Shock Absorber

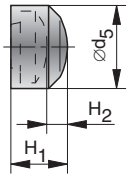
Type: SA-A 1-1/8 x 2, SA-A 1-1/8 x 4, SA-A 1-1/8 x 6



Dimensions (mm) Square Flange

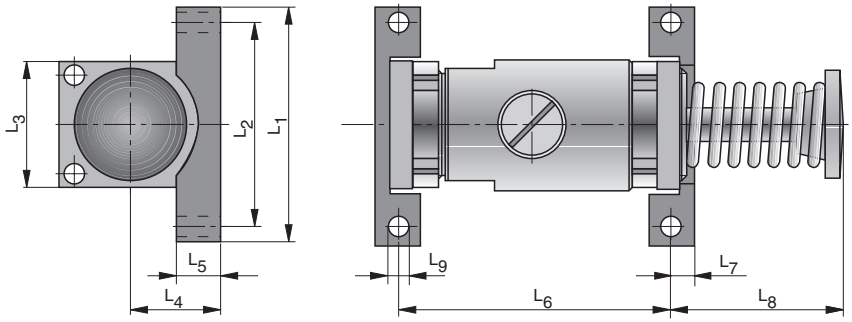


Dimensions (mm) Soft Pad

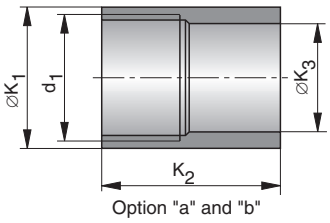


Note:
Cannot be used with stop collar

Dimensions (mm) Foot Mounting



Dimensions (mm) Stop Collar



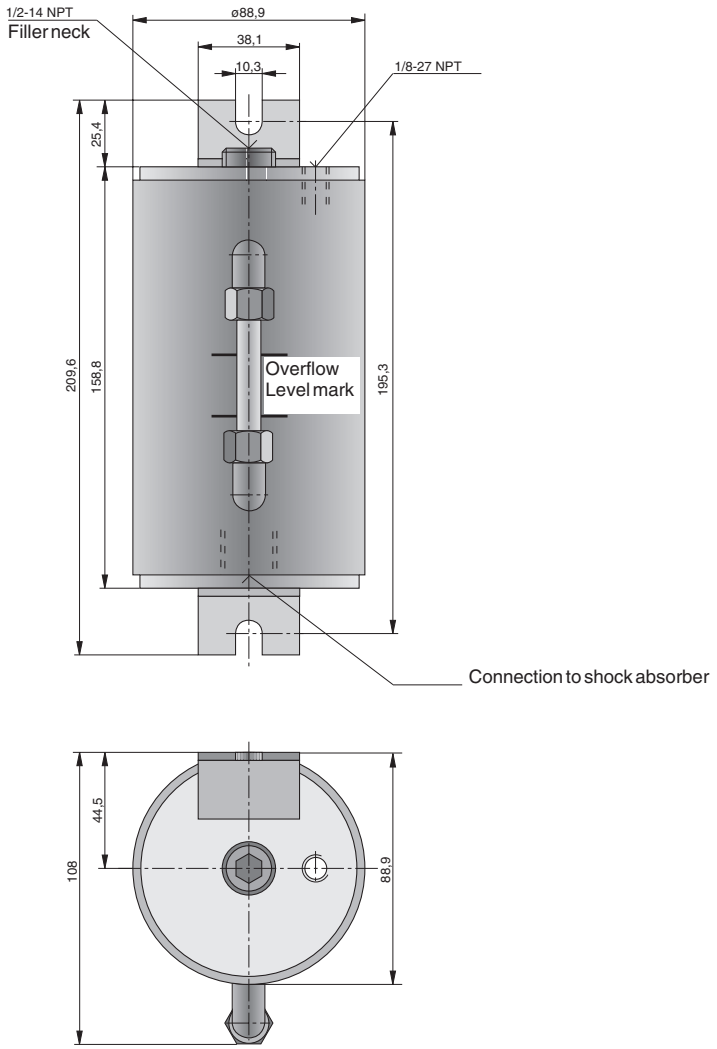
Option "a" - for rear mounting
Option "b" - for front mounting

Dimensions Table (mm)

Type	A	B	C_1	C_2	øD_1	D_2	d_1	ød_2	ød_3	ød_5	E	F	G	H_1	H_2	J_1
SA-A 1-1/8 x 2	225.6	85.9	26.2	26.2	76.2	69.9	M64x2	20.6	50.8	57.2	69.9	76.2	9.5	25.4	17.5	88.9
SA-A 1-1/8 x 4	327.2	136.7	26.2	26.2	76.2	69.9	M64x2	20.6	50.8	57.2	95.3	76.2	9.5	25.4	17.5	88.9
SA-A 1-1/8 x 6	450.9	209.6	26.2	26.2	76.2	69.9	M64x2	20.6	50.8	57.2	120.7	76.2	9.5	25.4	17.5	88.9

Type	J_3	J_4	J_7	øK_1	K_2a	K_2b	øK_3	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
SA-A 1-1/8 x 2	15.9	69.9	10.3	76.2	62.7	50	60.3	142.9	123.8	88.9	44.5	19	127	14.3	90.5	10.3
SA-A 1-1/8 x 4	15.9	69.9	10.3	76.2	62.7	50	60.3	142.9	123.8	88.9	44.5	19	177.8	14.3	141.3	10.3
SA-A 1-1/8 x 6	15.9	69.9	10.3	76.2	84.9	72.2	60.3	142.9	123.8	88.9	44.5	19	228.5	14.3	214.3	10.3

Dimensions (mm) – Air-Oil Tank AOT3



Order Instructions

Product	Order Instructions	
	Type	Order No.
Shock absorber, stroke 50.8 mm	**SA-A 1-1/8 x 2**	**7880**
Shock absorber, stroke 102 mm	**SA-A 1-1/8 x 4**	**7885**
Shock absorber, stroke 152 mm	**SA-A 1-1/8 x 6**	**7886**
Soft pad	**SP 1-1/8**	**7994**
Square flange	**SF 1-1/8**	**7998**
Foot mounting	**FM 1-1/8**	**7993**
Additional mounting nut	**LN 1-1/8**	**7999**
Stop collar option a – SA-A 1-1/8 x 2, SA-A 1-1/8 x 4	**SC 1-1/8 A**	**7991**
Stop collar option b – SA-A 1-1/8 x 2, SA-A 1-1/8 x 4	**SC 1-1/8 B**	**7997**
Stop collar option a – SA-A 1-1/8 x 6	**SC 1-1/8 A**	**7891**
Stop collar option b – SA-A 1-1/8 x 6	**SC 1-1/8 B**	**77897**
Air-oil tank	**AOT-3**	**7899**

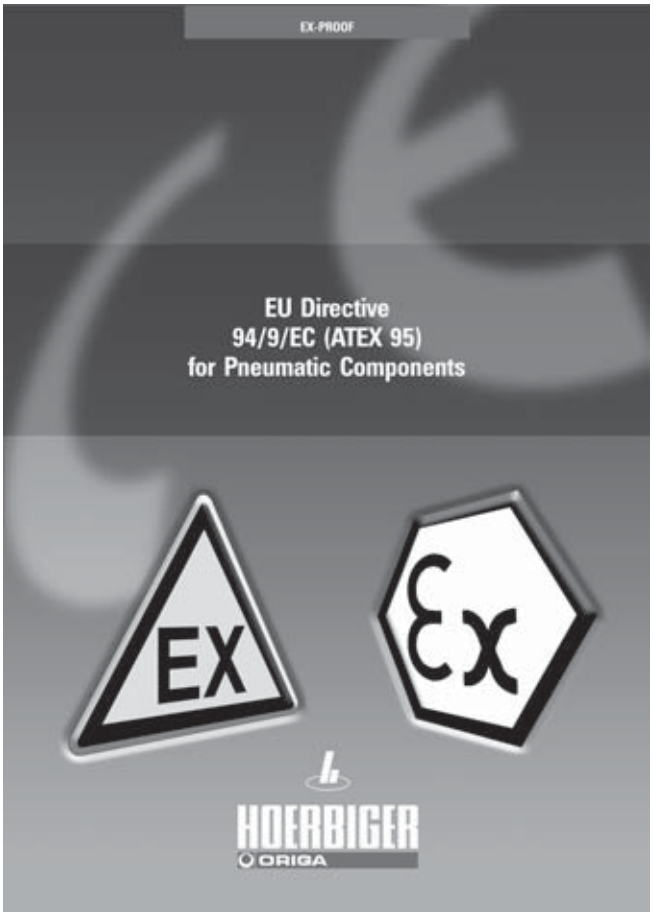
Piston Rod Cylinders
Bellows Cylinders



HOERBIGER
ORIGA

Pneumatic cylinders for Ex-Atmospheres

HOERBIGER-ORIGA pneumatic cylinders are also available for use in EX-areas.
The cylinders are according to the ATEX Certification 94/9/EG (ATEX 95) for Pneumatic Components.
For the different classifications and details please see the technical data in data sheet no. 2.01.001E-5,6.



You will find further information on the ATEX directives in our brochure A5P060E.

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Survey	2.01.001E
Recommended standard stroke ranges	2.04.001E
Piston force and air consumption	2.05.001E
Piston rod load diagram	2.05.002E

Single Acting Cylinders

Series R 3... to ISO 6432	2.11.002E
Series SZK 3...	2.14.009E
Series SZ 7...	2.14.010E
Series DZS 3...	2.15.001E
Series NZK7..., NZK8...	2.28.001E

Double Acting Cylinders without Cushioning

for contactless position sensing:	
Series SZ 6...	2.14.011E
Series R 6... to ISO 6432	2.11.002E, 2.21.002E
Series NZ....	2.27.001E
Series NZK6...	2.28.001E

Double Acting Cylinders with Cushioning

Series DZ1... to ISO 15552 (6431)	2.30.050E
for contactless position sensing:	
Series R5... to ISO 6432	2.11.002E, 2.21.002E
Series AZ 5... to ISO 15552 (6431)	2.29.001E
Series DZ5... to ISO 15552 (6431)	2.30.050E

Multiple Position Cylinders

Series AZZ5.../.../...-	2.34.010E

Cylinders with through Piston Rod

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Series RDU6... without cushioning	2.21.025E
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Twin Rod Cylinders without Cushioning

Series NZV2...	2.46.001E
SeriesAZV 2...	2.51.001E
for contactless position sensing:	
Series SZV 6...	2.13.004E
Series NZV6...	2.46.001E
Series NZKV 6...	2.47.001E
Series AZV 6...	2.51.001E

Twin Rod Cylinders with Cushioning

Series AZV 1...	2.51.001E
for contactless position sensing:	
Series RDV 5...	2.49.001E
Series AZV 5...	2.51.001E

Twin Rod Cylinders with through Piston Rod

for contactless position sensing:	
Series AZV3D 6... without cushioning	2.54.002E
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Locking Unit

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Linear guide, H-form for cylinders Ø32-100mm to ISO 6431	2.78.005E

Bellows Cylinders

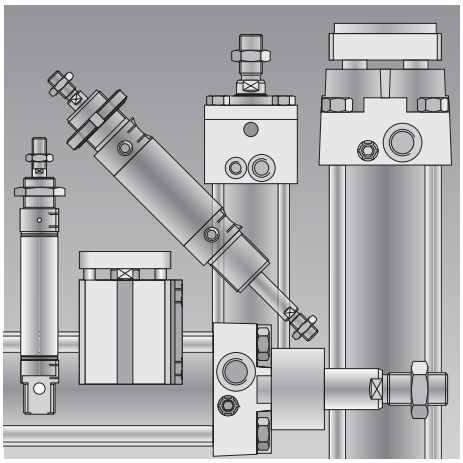
Port size G1/4, G3/4	
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Bellows cylinder - single convolution type	2.80.008E
Bellows cylinder - double convolution type	2.80.059E

Cylinder Accessories

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Piston rod eye to CETOP RP 103 P	2.90.001E
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Magnetic switch Type DZPV	2.90.033E
Magnetic switch Type DZMK0600, DZMS0600	2.90.036E
Magnetic switch, welding proofType UMS7	2.90.039E
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Magnetic switch Type RST, EST	2.90.042E
Magnetic switch Type RS-K,ES-K ATEX Ⓔx	2.90.043E

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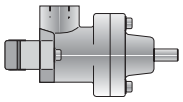
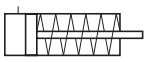
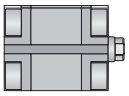
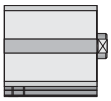
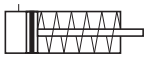
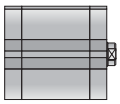
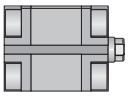
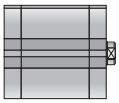
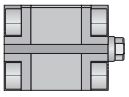
Standard Cylinders
Guided Cylinders
Accessories



New:
Series to ATEX
Standard

HOERBIGER
ORIGA

Cylinder single acting - standard version

Fig.	Standard	System	Symbol	Series	Piston-Ø mm	Data Sheet No.
	-	Single acting without cushioning		**DZS3...**	25, 35	2.15.001E
	ISO 6432 CETOP RP 52 P			**R3...**	10-25	2.11.002E
	-			**SZK3...**	32-63	2.14.009E
	ISO 21287			**NZ3...**	12-25	2.27.001E
				**NZ4...**	12-25	2.27.001E
	-	Single acting without cushioning for contactless position sensing		**SZ7...**	12-100	2.14.010E
	-			**NZK7...**	32-100	2.28.001E
	ISO 21287			**NZ7...**	12-25	2.27.001E
	-			**NZK8...**	32-100	2.28.001E
	ISO 21287			**NZ8...**	12-25	2.27.001E

Cylinder double acting without cushioning - standard version, Guided Cylinders

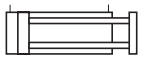
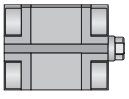
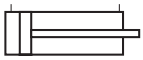
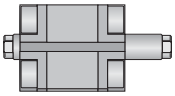
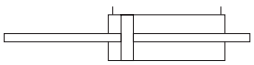
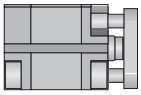
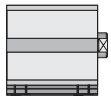
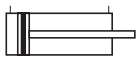
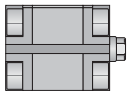
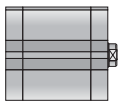
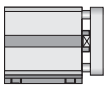
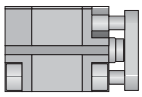
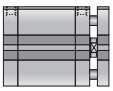
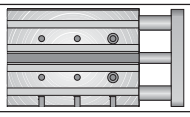
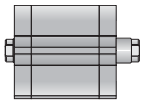
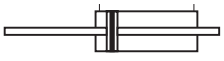
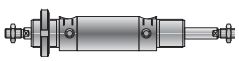
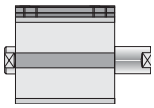
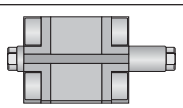
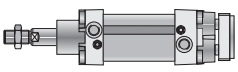
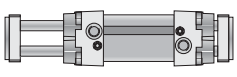
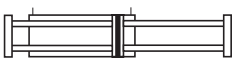
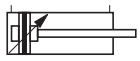
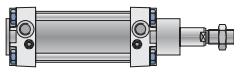
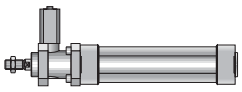
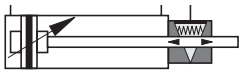
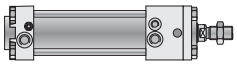
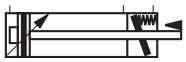
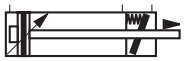
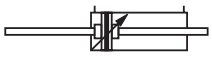
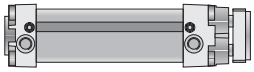
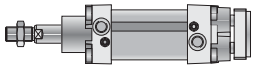
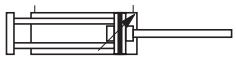
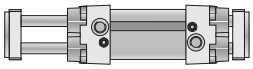
Fig.	Standard	System	Symbol	Series	Piston-Ø mm	Data Sheet No.
	-	Twin rod cylinder double acting without cushioning		**AZV2...**	32-100	2.51.001E
	ISO 21287	Double acting without cushioning		**NZ2...**	12-25	2.27.001E
	-			**NZD2...**	12-25	2.33.001E
	-			**NZV2...**	12-25	2.46.001E

Fig.	Standard	System	Symbol	Series	Piston-Ø mm	Data Sheet No.
	-	Double acting without cushioning for contactless position sensing		**SZ6...**	12-100	2.14.011E
	ISO 6432 CETOP RP 52 P			**R6...**	10-25	2.11.002E
	-			**R6...**	32-63	2.21.002E
	-			**RK6...**	32-63	2.21.002E
	ISO 21287			**NZ6...**	12-25	2.27.001E
	-			**NZK6...**	32-100	2.28.001E
	-	Double acting without cushioning non rotating for contactless position sensing		**SZV6...**	20-100	2.13.004E
	-			**NZV6...**	12-25	2.46.001E
	-			**NZKV6...**	32-100	2.47.001E
	-			**AZV6...**	32-100	2.51.001E
	-	Guided Cylinders double acting for contactless position sensing		**FZG6...**	20-50	2.76.002E
				FZK6...	20-50	2.76.002E
	-	Double acting without cushioing with through piston rods for contactless position sensing		**NZKD6...**	32-100	2.28.025E
	-			**RDU6...**	12-25	2.11.025E
	-			**RDU6...**	32-63	2.21.025E
	-			**SZD6...**	12-100	2.14.025E
	-			**NZD6...**	12-25	2.33.001E
	-	Twin rod cylinder double acting without cushioning with through piston rods for contactless position sensing		**AZV3D6...**	32-100	2.54.002E
	-			**AZV4D6...**	32-100	2.54.001E

Cylinder double acting with cushioning - standard version

Fig.	Standard	System	Symbol	Series	Piston-Ø mm	Data Sheet No.
	ISO 15552 (ISO 6431)	Cylinder double acting with cushioning		**DZ1...**	125-320	2.30.050E
	-	Twin rod cylinder double acting with cushioning		**AZV1...**	32-100	2.51.001E
	ISO 6432	Double acting with cushioning for contactless position sensing		**R5...**	20-25	2.11.002E
	-			**R5...**	32-63	2.21.002E
	ISO 15552 (ISO 6431)			**AZ5...**	32-100	2.29.001E
				**DZ5...**	125-320	2.30.050E
	-	Double acting with cushioning for contactless position sensing with Locking unit (blocking on forward - and reverse stroke)		**AZ5.../...-FSE**	32-100	2.75.003E
				DZ5.../...-FSE	125	2.75.003E
	-	Double acting with cushioning at rear end		**DZB5...**	32-125	2.75.002E
	-	Blocking on forward - and reverse stroke		**DZBA5...**	32-125	2.75.002E
	-	Double acting with cushioning with through piston road		**AZD5...**	32-100	2.34.001E
	-	Multi-position cylinder double acting with cushioning, for contactless position sensing		**AZZ5.../.../...**	32-100	2.34.010E
	-	Twin rod cylinder double acting with cushioning for contactless position sensing		**RDV5...**	25	2.49.001E
	-			**AZV5...**	32-100	2.51.001E
	-			**AZV3D5...**	32-100	2.54.002E
	-			**AZV4D5...**	32-100	2.54.001E

Bellows cylinder see 2.80.001
Special cylinder on request

Pneumatic cylinders

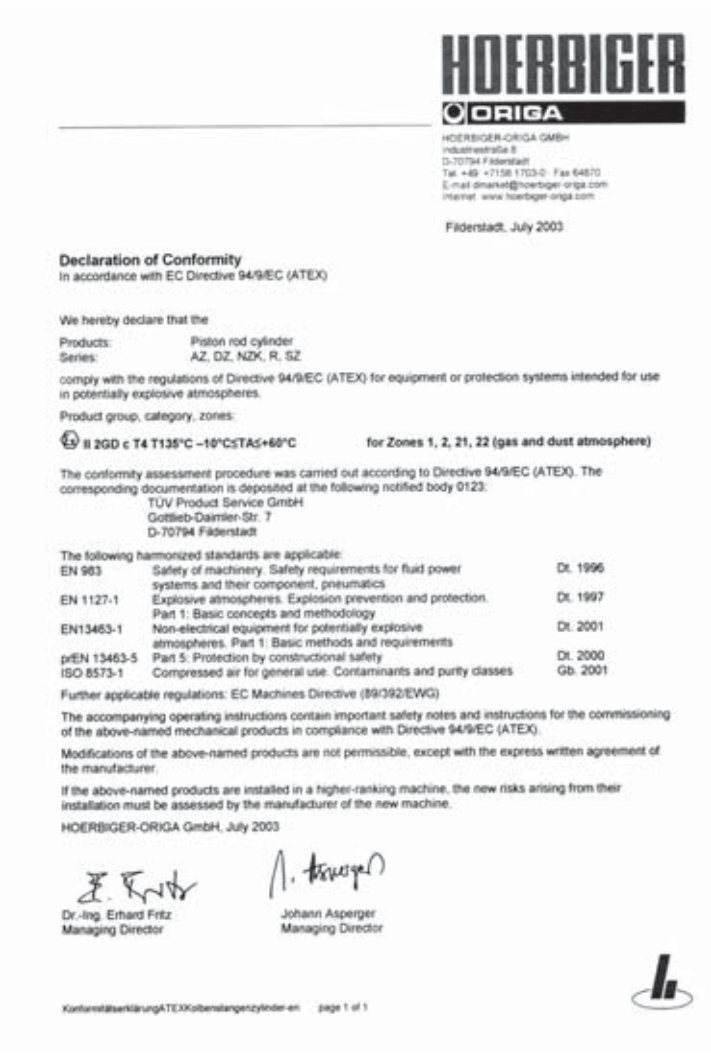
for EX-Areas

Technical Data

Characteristics	Symbol	Unit	Description
General			
Type			Piston rod cylinders
Series			AZ, DZ, NZK, R, SZ
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 Note: +60 For Use below freezing point (0°C),please consult us
Max. switching frequency		Hz	1
Max. operating pressure	p_{max}	bar	8
Maximum Speed		m/sec.	0.5
Medium		 µm µm	Compressed air unlubricated and free of water and dirt to ISO 8573-1 Solids Class 6, particle size ≤ 5 for dust Class 7, particle size ≤ 40 für gas Water content class 4, pressure dew point +3°C, but min. 5°C below min. operating temperature
Geräusch		dB (A)	70

For further technical data, see the Characteristics Table for the individual cylinder series

EC Declaration of Conformity



HOERBIGER
ORIGA

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Internet: www.hoerbiger-origa.com

Filderstadt, July 2003

Declaration of Conformity
In accordance with EC Directive 94/9/EC (ATEX)

We hereby declare that the

Products: Piston rod cylinder
Series: AZ, DZ, NZK, R, SZ

comply with the regulations of Directive 94/9/EC (ATEX) for equipment or protection systems intended for use in potentially explosive atmospheres.

Product group, category, zones:

⟨Ex⟩ II 2GD c T4 T135°C –10°C≤TA≤+60°C for Zones 1, 2, 21, 22 (gas and dust atmosphere)

The conformity assessment procedure was carried out according to Directive 94/9/EC (ATEX). The corresponding documentation is deposited at the following notified body 0123:
TÜV Product Service GmbH
Gottlieb-Daimler-Str. 7
D-70794 Filderstadt

The following harmonized standards are applicable:

EN 983	Safety of machinery. Safety requirements for fluid power systems and their component, pneumatics	Dt. 1996
EN 1127-1	Explosive atmospheres. Explosion prevention and protection. Part 1: Basic concepts and methodology	Dt. 1997
EN13463-1	Non-electrical equipment for potentially explosive atmospheres. Part 1: Basic methods and requirements	Dt. 2001
prEN 13463-5	Part 5: Protection by constructional safety	Dt. 2000
ISO 8573-1	Compressed air for general use. Contaminants and purity classes	Gb. 2001

Further applicable regulations: EC Machines Directive (89/392/EWG)

The accompanying operating instructions contain important safety notes and instructions for the commissioning of the above-named mechanical products in compliance with Directive 94/9/EC (ATEX).

Modifications of the above-named products are not permissible, except with the express written agreement of the manufacturer.

If the above-named products are installed in a higher-ranking machine, the new risks arising from their installation must be assessed by the manufacturer of the new machine.

HOERBIGER-ORIGA GmbH, July 2003

Dr.-Ing. Erhard Fritz
Managing Director

Johann Asperger
Managing Director

KonformitätserklärungATEXKolbenstangenzylinder-en page 1 of 1

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Cylinder series in ATEX versions

HOERBIGER-ORIGA-Products for ⟨Ex⟩-Atmospheres				
Equipment Group II Category 2GD				
Piston Rod Cylinders: ⟨Ex⟩ II 2GD c T4 T135°C				
Series	**Size**	**Stroke Range**	**Accessories**	**Illustration**
AZ Series 5000	Ø 32-100	1-2000mm	Mountings programme, FEUG/FEHG,FEHK	
DZ Series 5000	Ø 125-250	10-2000mm	Mountings programme	
NZK Series 6000	Ø 32-100	1-500mm	Mountings programme, FEUG/FEHG,FEHK	
NZK Series 7000	Ø 32-100	1-25mm	Mountings programme, FEUG/FEHG,FEHK	
R6 Series 6000	Ø 10-25	1-500mm	Mountings programme, FEUG	
R5 Series 5000	Ø 20-25	1-500mm	Mountings programme, FEUG	
SZ Series 6000	Ø 12-100	1-80mm	Mountings programme	
SZ Series 7000	Ø 32-100	1-25mm	Mountings programme	
Sensors: Magnetic Switches				
ES-K-ATEX 5m Cable lenght	**⟨Ex⟩ II 2GD EEx ib IIc T5 T100°C**			
ES-K-ATEX 10m Cable lenght	**⟨Ex⟩ II 2GD EEx ib IIc T5 T100°C**			
RS-K ATEX 5m Cable lenght	**⟨Ex⟩ II 3GD EEx nC IIC T3 146°C**			
RS-K ATEX 10m Cable lenght	**⟨Ex⟩ II 3GD EEx nC IIC T3 146°C**			

Note on ordering:
When ordering the ATEX version of a cylinder, please add "ATEX" to the type designation and order no.
Example:
AZ 5032-0100 ATEX
P 58300-0100-ATEX

A3P042E71AAE00X

The right to introduce technical modifications is reserved

Recommended Standard Stroke Ranges
for Cylinders

	Piston diameter Ø															
	10	12	16	20	25	32	40	50	63	80	100	125	160	200	250	320
AZ/AZV/AZD + Viton Type 1000 5000/6000	-	-	-	-	-	1-2000	1-2000	1-2000	1-2000	1-2000	1-2000	-	-	-	-	-
AZZ (Tie rod)	-	-	-	-	-	1-2000	1-2000	1-2000	1-2000	1-2000	1-2000	-	-	-	-	-
AZZ (Multiposition)	-	-	-	-	-	1-500/ 500	1-500/ 500	1-500/ 500	1-500/ 500	1-500/ 500	1-500/ 500	-	-	-	-	-
DZ	-	-	-	-	-	-	-	-	-	-	-	10- 2000	10- 2000	10- 2000	10- 2000	10- 2000
DZB/A 5000	-	-	-	-	-	1-1000	1-1000	1-1000	1-1000	1-1000	1-1000	1-1000	-	-	-	-
NZ + NZK + Viton Type 2000 6000	-	1-200	1-200	1-200	1-200	1-320	1-320	1-400	1-400	1-500	1-500	-	-	-	-	-
NZ + NZK + Viton Type 2000 7000/8000	-	1-10	1-25	1-25	1-25	1-25	1-25	1-25	1-25	1-25	1-25	-	-	-	-	-
NZ + NZKD/V	-	1-50	1-50	1-50	1-50	1-100	1-100	1-100	1-100	1-100	1-100	-	-	-	-	-
SZ 6000	-	1-50	1-50	1-50	1-50	1-80	1-80	1-80	1-80	1-80	1-80	-	-	-	-	-
SZ 7000	-	1-10	1-25	1-25	1-25	1-25	1-25	1-25	1-25	1-25	1-25	-	-	-	-	-
SZV 6000	-	-	-	1-50	1-50	1-80	1-80	1-80	1-80	-	-	-	-	-	-	-
SZD 6000	-	1-10	1-25	1-50	1-50	1-80	1-80	1-80	1-80	1-80	1-80	-	-	-	-	-
SZK 3000	-	-	-	-	-	1-10	-	1-10	1-10	-	-	-	-	-	-	-
R/RK 3000	1-25	1-50	1-50	1-50	1-50	-	-	-	-	-	-	-	-	-	-	-
R/RK 5000/6000	1-100	1-200	1-200	1-320	1-500	1-500	1-500	1-500	1-500	-	-	-	-	-	-	-
RDU 6000	-	1-200	1-320	1-500	1-500	-	-	-	-	-	-	-	-	-	-	-
FEUG	1-100	1-200	1-200	1-250	1-250	10-500	10-500	10-500	10-500	10-500	10-500	-	-	-	-	-
FEHG/FEHK	-	-	-	-	-	10-500	10-500	10-500	10-500	10-500	10-500	-	-	-	-	-

Note: For cylinders with position sensing a minimum stroke length must be observed!
(i.e. length required for fitting of magnetic sensors.)
The stroke lengths shown above do not take the load into account!
(i.e. observe maximum permissible lateral force, if there is no external guidance, and maximum permissible bending force)

* For other stroke lengths please contact our Customer Service.

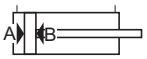
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Piston Force and Air Consumption
for Standard Cylinders

		Piston diameter (mm) 8	10	12	16	20	25	32	40	50	63	80	100	125	160	200	250	320
Piston area* (cm^2)	A	0.5	0.8	1.1	2.0	3.1	4.9	8.0	12.6	19.6	31.2	50.0	78.0	122.7	201.0	314.1	490.8	804
	B	0.38	0.65	0.85	1.7	2.6	4.1	6.9	10.6	16.5	28.0	45.4	73.6	114.7	188.5	301.5	471.2	773
Approx. piston force (kN) at ... bar	1	0.0045	0.007	0.010	0.018	0.028	0.044	0.072	0.113	0.176	0.281	0.452	0.706	1.104	1.809	2.827	4.417	7.236
	2	0.0090	0.014	0.020	0.036	0.056	0.088	0.144	0.226	0.353	0.561	0.905	1.413	2.209	3.619	5.654	8.835	14.476
	3	0.0135	0.021	0.030	0.054	0.084	0.132	0.217	0.339	0.530	0.842	1.357	2.120	3.313	5.428	8.482	13.253	21.715
	4	0.0180	0.028	0.040	0.072	0.113	0.176	0.289	0.452	0.707	1.122	1.809	2.827	4.417	7.238	11.309	17.671	28.953
	5	0.0225	0.035	0.050	0.090	0.141	0.220	0.362	0.565	0.884	1.402	2.262	3.534	5.522	9.407	14.137	22.089	36.191
	6	0.0270	0.042	0.060	0.108	0.169	0.265	0.434	0.678	1.060	1.683	2.714	4.241	6.626	10.857	16.964	26.507	43.429
	7	0.0315	0.049	0.070	0.126	0.197	0.309	0.506	0.792	1.237	1.963	3.167	4.948	7.731	12.666	19.792	30.952	50.652
	8	0.0360	0.056	0.080	0.144	0.226	0.353	0.579	0.905	1.414	2.244	3.619	5.654	8.835	14.476	22.619	35.342	57.788
	9	0.0405	0.063	0.090	0.162	0.254	0.397	0.651	1.018	1.590	2.524	4.071	6.361	9.940	16.286	25.447	39.760	65.124
	10	0.0450	0.070	0.100	0.180	0.282	0.441	0.723	1.131	1.767	2.805	4.523	7.068	11.044	18.095	28.274	44.178	72.360
Approx. air consumption (dm^3/100 mm stroke at ... bar[1]) Figures are valid for piston area A (see symbol)	1	0.010	0.016	0.02	0.04	0.06	0.09	0.18	0.30	0.46	0.71	1.20	1.90	2.65	4.60	6.90	10.80	16.50
	2	0.015	0.024	0.03	0.06	0.09	0.14	0.27	0.43	0.69	1.00	1.85	2.85	4.10	6.90	10.40	16.30	24.50
	3	0.020	0.032	0.04	0.08	0.12	0.19	0.36	0.58	0.92	1.40	2.45	3.80	5.50	9.20	13.90	21.80	32.50
	4	0.025	0.040	0.05	0.10	0.15	0.24	0.45	0.72	1.15	1.75	3.00	4.75	6.95	11.50	17.40	27.20	40.50
	5	0.030	0.048	0.06	0.12	0.18	0.29	0.55	0.86	1.40	2.10	3.65	5.70	8.40	13.80	20.90	32.70	48.00
	6	0.035	0.056	0.07	0.14	0.21	0.34	0,65	1.00	1.60	2.50	4.25	6.60	9.70	16.00	24.40	38.20	56.50
	7	0.040	0.064	0.08	0.16	0.25	0.39	0,73	1.15	1.80	2.85	4.85	7.60	11.15	18.30	27.90	43.70	64.50
	8	0.045	0.072	0.09	0.18	0.28	0.41	0,82	1.30	2.00	3.20	5.45	8.50	12.55	20.60	31.50	49.20	72.50
	9	0.050	0.080	0.10	0.20	0.31	0.49	0,90	1.45	2.30	3.55	6.10	9.50	14.00	22.90	35.00	54.60	80.50
	10	0.055	0.088	0.11	0.22	0.34	0.53	1,00	1.60	2.50	3.90	6.40	10.40	15.40	25.20	38.50	60.10	89.00



* A = Piston area - piston side
B = Piston area - piston rod side

[1] Air consumption when charging in dm^3/100 mm stroke. The tube volume must also be taken into consideration.

The given figures relate to piston area A.
The figures for piston area B change proportionally with the piston areas A to B.

Formula:

F = p * A - R

A = Piston area
P = Pressure in bar
R = Friction ca. 10%

For piston rod load diagram see 2.05.002E

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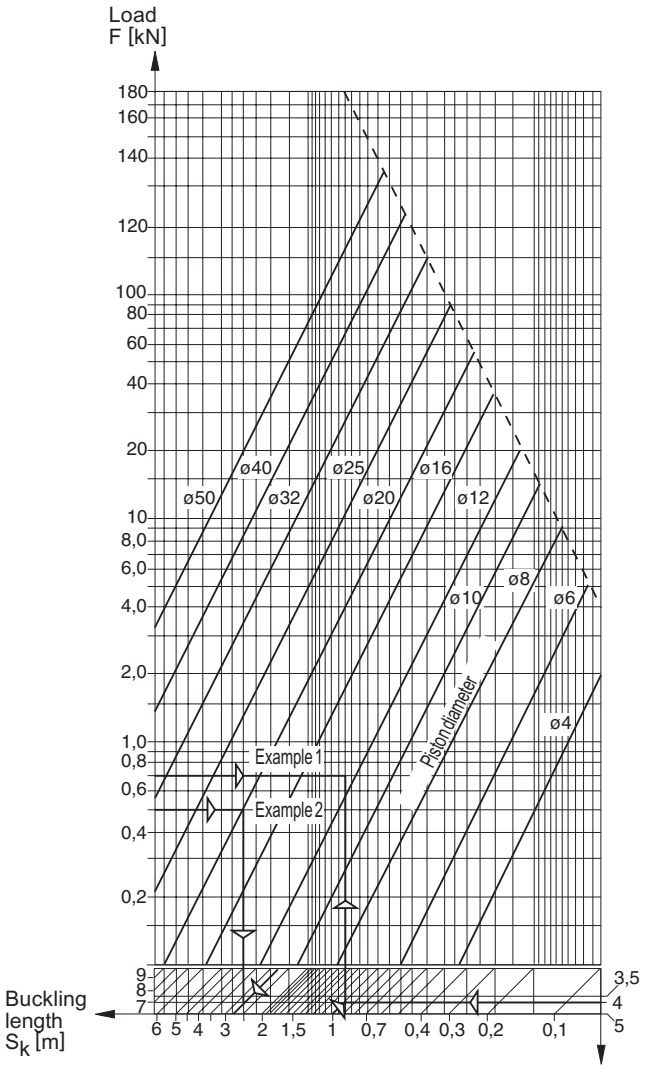
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Piston Rod Load Diagram

- **for standard cylinder types**
- **for twin rod cylinders**

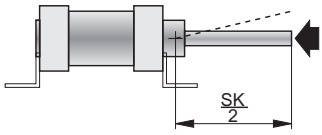
Piston Rod Load Diagram
Cylinder Diameter 8-250 mm



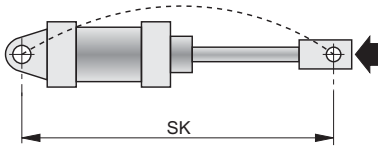
For example see page 4

Buckling Possibilities of Piston Rods

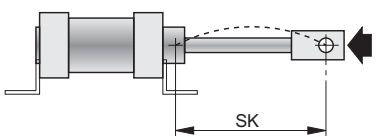
Mounting:
A, C, D



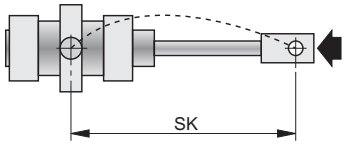
Mounting:
B



Mounting:
A, C, D



Mounting:
E



By means of this diagram the necessary piston rod diameter has to be determined to prevent the rod from buckling.

Always take the maximum piston thrust attainable at the specified operating pressure with the cylinder in question
(see 2.05.001E).

Loads resulting from longer strokes (as indicated in the diagram) on request.

In cases of special mounting conditions and transverse forces please consult us.

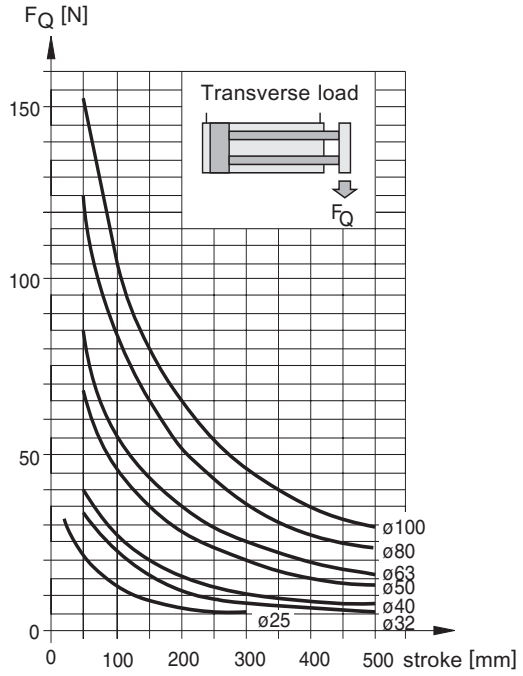
Recommended security against buckling: 3.5 to 5.

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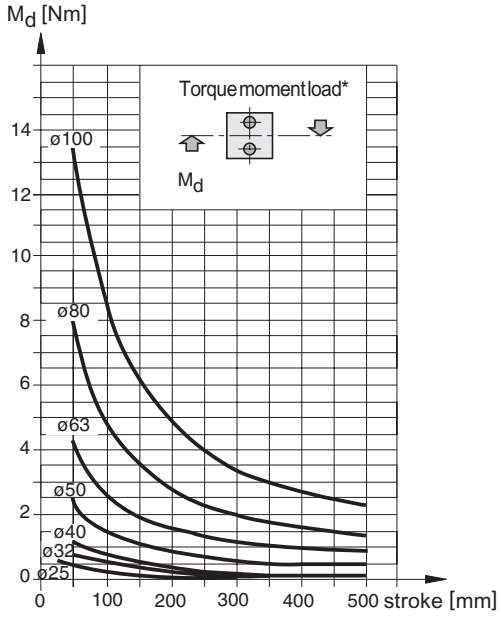
A1P348E00LW00X

The right to introduce technical modifications is reserved

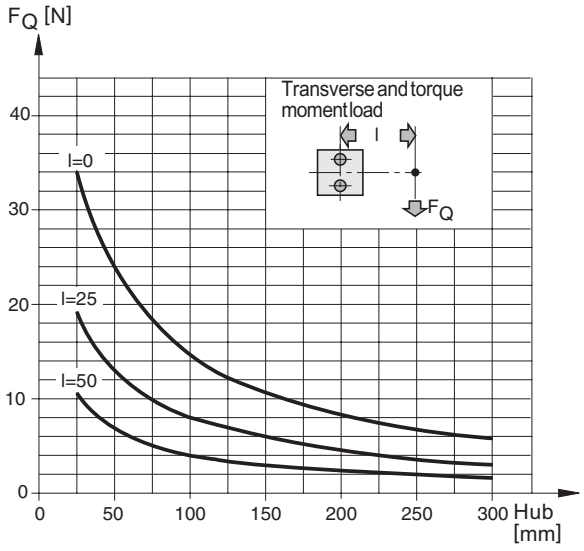
Twin Rod Cylinder [1)]
Transverse Load - Ø 25-100 mm



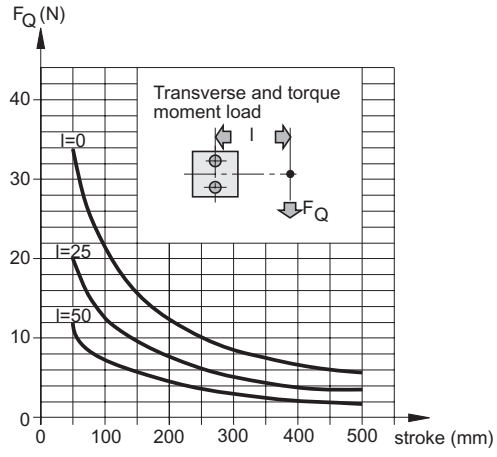
Twin Rod Cylinder [1)]
Transverse Load - Ø 25-100 mm



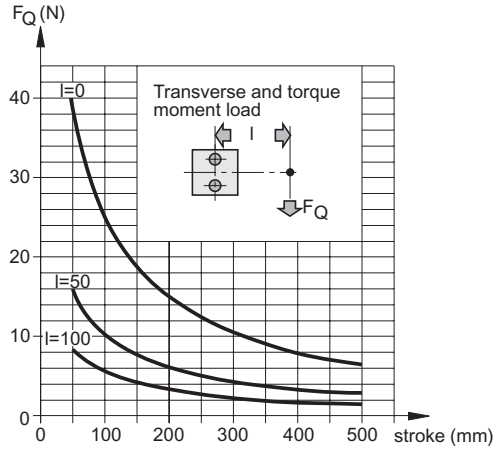
Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 25 mm



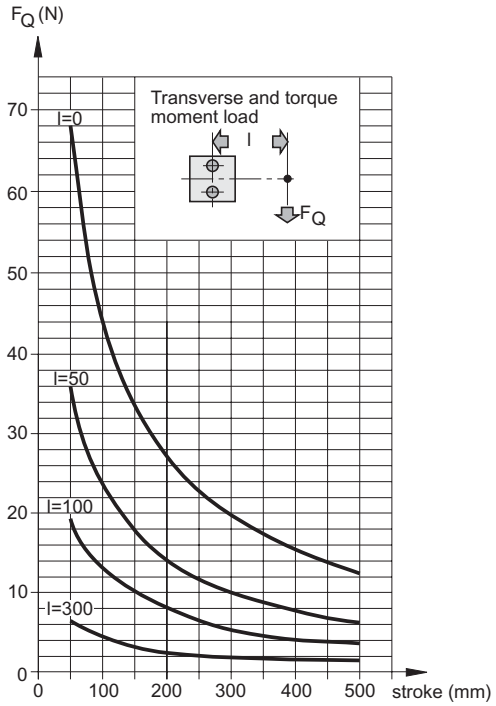
Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 32 mm



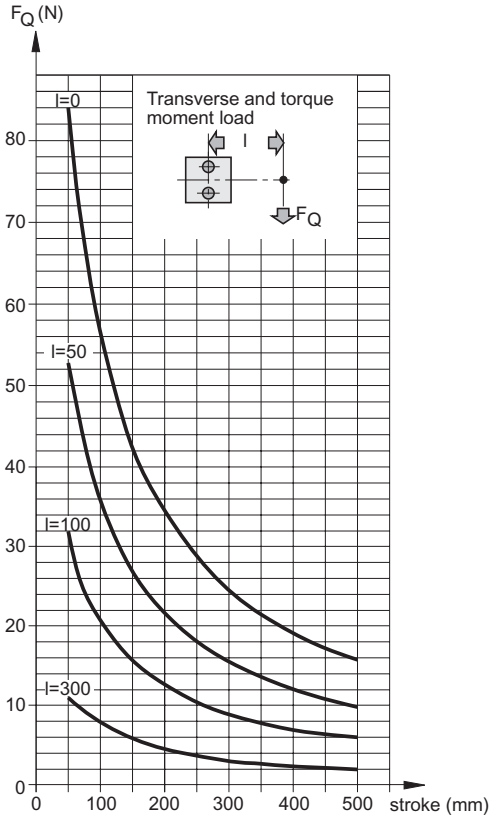
Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 40 m



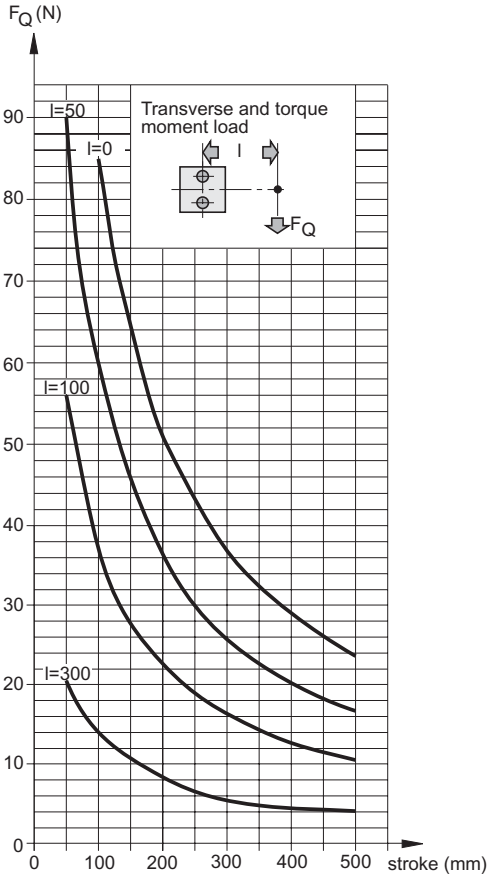
Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 50 mm



Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 63 mm



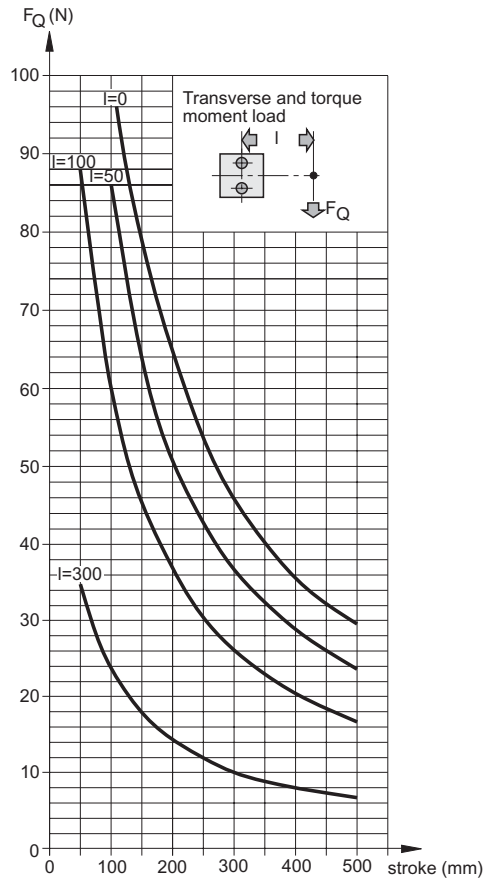
Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 80 mm



Data Sheet No. 2.05.002E-3

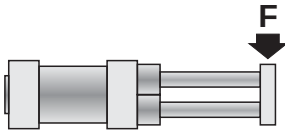
[1)] for installation instructions see page 4

Twin Rod Cylinder [1)]
Transverse and Torque Moment Load - Ø 100 mm



Installation Instructions for Twin Rod Cylinders

For maximum reliability and service life, transverse loads should be applied as shown.



Examples

Example 1:

Given	Piston thrust: 0.7 kN Stroke length: 1000 mm Operating pressure: approx. 6 bar Mounting type C
Wanted	Piston rod diameter with 4-fold security against buckling; Check the piston thrust of the cylinder diameter resulting from the piston rod diameter
Solution	see example 2 in piston rod load diagram The piston rod diameter lies between 12 and 16 mm - a cylinder with a piston rod of 16 mm diameter therefore has to be chosen. According to the diagram referring to piston force and air consumption a cylinder 05 40 mm diameter is required

Example 2:

Given	Cylinder: 50 mm Piston rod: Ø 20 mm Mounting type: B Stroke length: 1000 mm Piston thrust: 0.5 kN at 6 bar
Wanted	max. stroke with 4-fold security against buckling
Solution	see example 1 in piston rod load diagram. S_K = 2900 mm max. stroke = 1450 mm

For piston force and air consumption see 2.05.001E

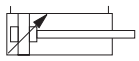
Cylinder

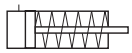
ø 10-25 mm

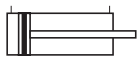
to ISO 6432,
CETOP RP 52 P

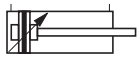
Versions:
Single acting
Double acting without cushioning
Double acting with adjustable cushioning for contactless position sensing

Series R ....

R 1 ... 

R 3 ... 

R 6 ...* 

R 5 ...* 

***ATEX-Version also available (see also 2.01.001E-5,6)** ⟨Ex⟩

Characteristics according to VDI 3292			Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description					
General Features								
Type			Piston rod cylinder					
Series			R....					
System: R 6...			Double acting without cushioning					
System: R 1..., R 5...			Double acting with cushioning					
System: R 3...			Single acting					
Mounting			See drawing					
Tube connection			Thread					
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing point (°C), please contact us for advice.				
Medium temperature range	ϑ_{max}	°C	+70					
Weight (mass)		kg	See table					
Installation			In any position					
Medium			Filtered and lubricated or filtered unlubricated compressed air					
Lubrication			Oil mist lubrication compatible with Buna N					
Material: Cylinder barrel			Steel, high-alloy					
Material: Front/rear covers			Aluminium, anodised					
Material: Piston rod			Steel, high-alloy					
Pneumatic Characteristics								
Nominal pressure	p_n	bar	6					
Operating pressure range	p_{min} p_{max}	bar bar	Cyl.-Ø 8,10 1.5 10			Cyl.-Ø 12-25 1 10		
Piston diameter		mm	10	12	16	20	25	
Port size			M5	M 5	M 5	G 1/8	G 1/8	
Piston rod diameter		mm	4	6	6	8	10	
Stroke length			For standard stroke lengths see order instructions, max. 50 (R 3...), max. 500 (R 5..., R 6...) longer strokes on request					
Piston force and air consumption			See data sheet 2.05.001E					
Cushioning adjustable (only Ø 16, 20, 25)			to both sides, progressively (Series R 51, R5)					
Cushioned stroke		Cyl.-Ø	10	12	16	20	25	
		mm	-	-	-	17	17	

Weight (mass) kg

Mounting	Cylinder diameter 10		12		16		20		25	
	1	2	1	2	1	2	1	2	1	2
Basic cylinder	0.065	0.025	0.120	0.040	0.135	0.050	0.260	0.070	0.350	0.110
RA (1 bracket)	0.022		0.043		0.043		0.100		0.100	
RC	0.013		0.028		0.028		0.050		0.050	
RB	0.023		0.036		0.036		0.080		0.080	

*1 = Weight for cylinder with 100 mm stroke
2 = Weight for every additional 100 mm stroke length

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E, 2.90.043 E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E



Universal cylinder mountable to the front and rear cylinder covers by means of a thread. Pivot mounted on the rear cylinder covers.

The delivery includes:
1 Cylinder
1 Hexagon nut for piston rod thread and cylinder mounting

Versions without contactless position sensing on request.

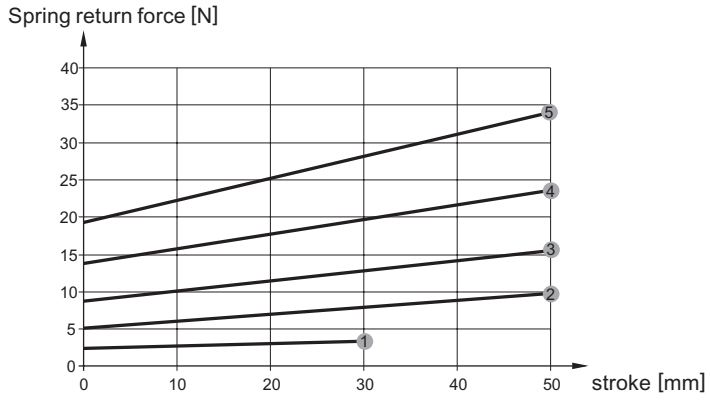
HOERBIGER
ORIGA

Data Sheet No. 2.11.002E-1

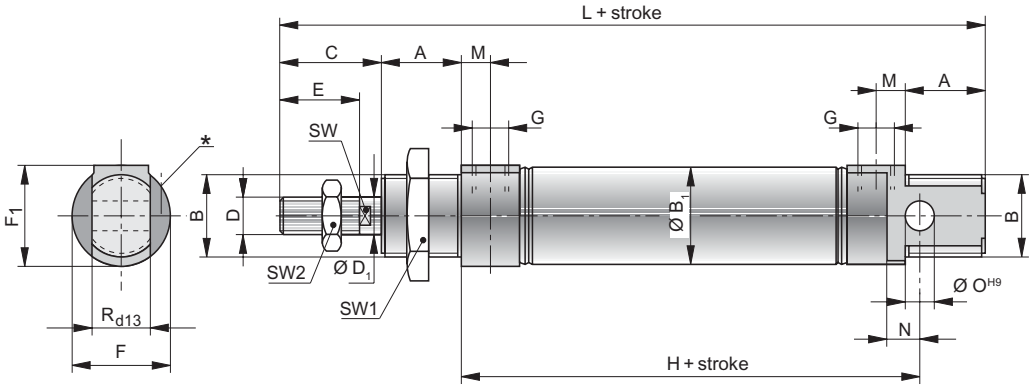
A1P400E00LW00X
The right to introduce technical modifications is reserved

Theoretical Spring Return Forces in relation to Stroke Length
Series R 3000, R 5000, R 6000

1 = Cyl.ø 10
2 = Cyl.ø 12
3 = Cyl.ø 16
4 = Cyl.ø 20
5 = Cyl.ø 25

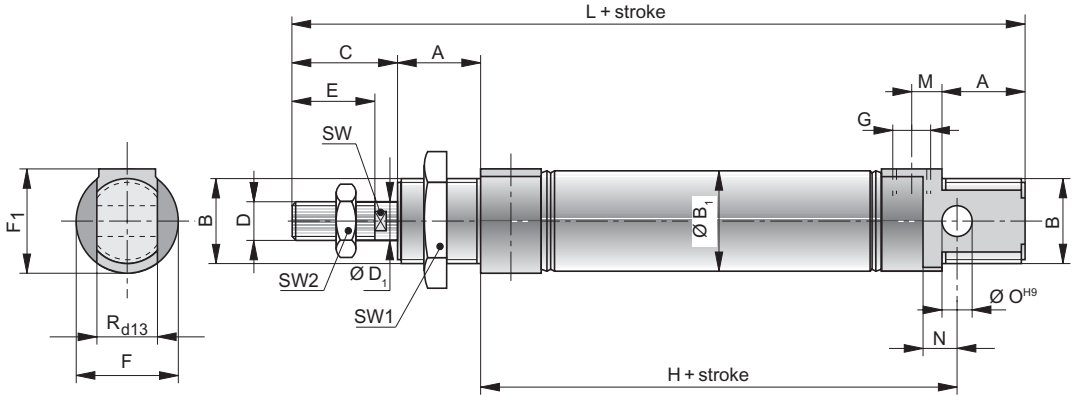


Dimensions - Double Acting



* From the connection side: adjustable end cushioning only for types R 5016, R 5020, R 5025

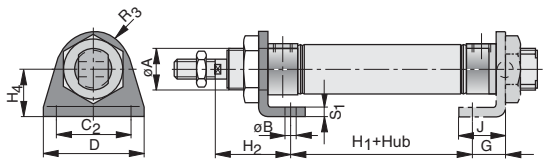
Dimensions - Single Acting



Dimension Table (mm) for Basic Cylinder

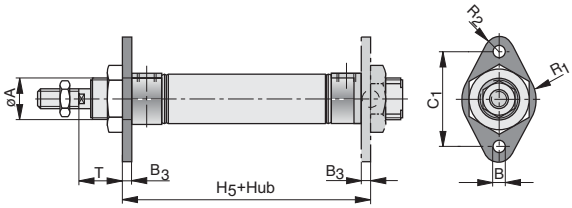
Cyl. Ø	A	B	ØB$_1$	C	D	ØD$_1$	E	F	F$_1$	G	H+ stroke	L+ stroke	M	N	Ø O^{H9}	R$_{d13}$	SW	SW$_1$	SW$_2$
10	12	M12x1.25	11.3	16	M4	4	12	15	15	M5	48	84	5	6	4	8	-	19	7
12	17	M16x1.5	13.3	21	M6	6	16	20	20	M5	53	101	5	9	6	12	5	24	10
16	17	M16x1.5	17.3	21	M6	6	16	20	20	M5	60	111	5	9	6	12	5	24	10
20	20	M22x1.5	21.3	24	M8	8	20	27	27	G1/8	71	130	8	12	8	16	7	32	13
25	22	M22x1.5	26.5	28	M10x1.25	10	22	27	27	G1/8	76	141	8	12	8	16	9	32	17

Dimensions Mounting RA



Material: steel, passivated

Dimensions Mounting RC



Material: steel, passivated

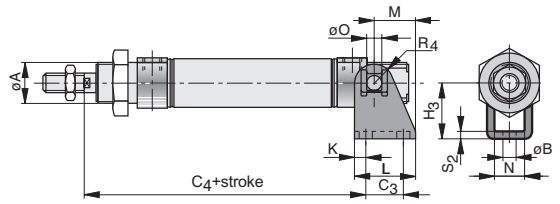
Dimension Table (mm) for Mounting RA

Cyl.-Ø	ØA	ØB	C_2	D	G	H_1+ stroke	H_2	H_4	J	R_3	S_1
10	12	4.5	25	35	11	30	24	16	16	10	3
12	16	5.5	32	42	14	29	32	20	20	13.5	4
16	16	5.5	32	42	14	36	32	20	20	13.5	4
20	22	6.6	40	54	17	44	36	25	25	18	5
25	22	6.6	40	54	17	45	40	25	25	18	5

Dimension Table (mm) for Mounting RC

Cyl.-Ø	ØA	ØB	B_3	C_1	H_5+ stroke	R_1	R_2	T
10	12	4.5	3	30	52	12.5	5	13
12	16	5.5	4	40	58	15	6	18
16	16	5.5	4	40	64	15	6	18
20	22	6.6	5	50	78	20	8	19
25	22	6.6	5	50	79	20	8	23

Rear Trunnion Mounting RB

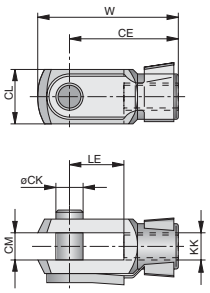


Material: steel, passivated

Dimension Table (mm)

Cyl. Ø	ØB	C_3	C_4+ stroke	H_3	K	L	M	N	ØO	R_4	S_2
10	4.5	12.5	65	24	6.5	23	18	8.1	4	5	2.5
12	5.5	15	73	27	5	25	18	12.1	6	7	3
16	5.5	15	80	27	5	25	18	12.1	6	7	3
20	6.6	20	91	30	6	32	22	16.1	8	10	4
25	6.6	20	100	30	6	32	22	16.1	8	10	4

Piston Rod Clevis to CETOP RP 102 P

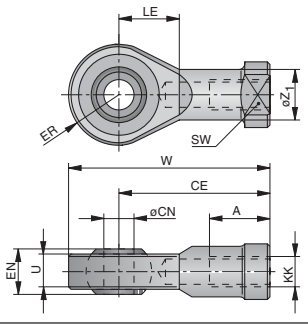


Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	CE	CK Ø	CL	CM	LE	KK	W	Weight (kg)
GK-M4	**KZ 1413**	10	16	4	8	4	8	M4	22	0.008
GK-M6	**KY 6132**	12, 16	24	6	12	6	12	M6	31	0.016
GK-M8	**KY 6133**	20	32	8	16	8	16	M8	42	0.038
GK-M10x1,25	**KY 6135**	25	40	10	20	10	20	M10x1.25	52	0.080

Material: galvanized steel

Piston Rod Eye to CETOP RP 103 P

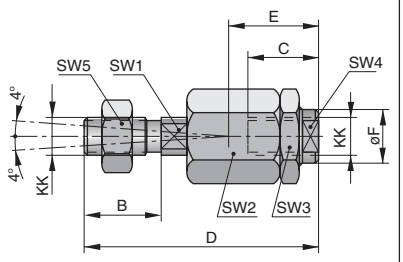


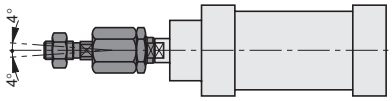
Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	A	CE	CN^{H7} Ø	EN	ER max	KK	LE	U	SW	W	Z_1 Ø	Weight (kg)
GA-M4	**KX 6023**	10	12	27	5	8	9	M4	9	6	8	35	9	0.021
GA-M6	**KY 6144**	12, 16	12	30	6	9	10	M6	11	6.75	11	40	10	0.025
GA-M8	**KY 6145**	20	16	36	8	12	12	M8	13	9	14	48	12.5	0.043
GA-M10 x 1,25	**KY 6147**	25	20	43	10	14	28	M10 x1.25	15	10.5	17	57	15	0.072

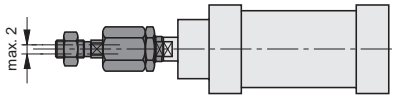
Material: galvanized steel

Compensating Coupling for Piston Rod





Angular compensation



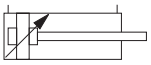
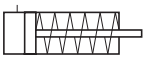
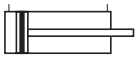
Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	A	B	C	D	E	ØF	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M4	**KY 1152**	M4	8	14	34	20	12	3	12	12	12	7	0.018
AK-M6	**KY 1126**	M6	12	11	36	14	8.5	5	13	13	7	10	0.021
AK-M8	**KY 1127**	M8	13	14	46	20	12.5	7	17	17	10	13	0.049
AK-M10x1,25	**KY 1129**	M10x1.25	20	23	70	31	21.5	12	30	30	19	17	0.218

Order Instructions

Basic Cylinder (without mountings)

Series	Symbol	Piston-Ø	Stroke Length	Order Instructions Type	Order No.
Double acting with adjustable end cushioning		16	max. 50**	**R 1016/..**	**PA 68400**
		20	max. 50**	**R 1020/..**	**PA 67570**
		25	max. 50**	**R 1025/..**	**PA 67590**
Single acting without adjustable end cushioning		10	max. 25*	**R 3010/..**	**PA 67410-....**
		12	max. 50**	**R 3012/..**	**PA 67430-....**
		16	max. 50**	**R 3016/..**	**PA 67450-....**
		20	max. 50**	**R 3020/..**	**PA 67470-....**
		25	max. 50**	**R 3025/..**	**PA 67500-....**
Double acting with adjustable end cushioning for contactless position sensing		16	***	**R 5016/..**	**PA 68410**
		20	***	**R 5020/..**	**PA 67480-....**
		25	***	**R 5025/..**	**PA 67510-....**
Double acting without adjustable end cushioning for contactless position sensing		10	***	**R 6010/..**	**PA 67420-....**
		12	***	**R 6012/..**	**PA 67440-....**
		16	***	**R 6016/..**	**PA 67460-....**
		20	***	**R 6020/..**	**PA 67490-....**
		25	***	**R 6025/..**	**PA 67520-....**

Complete type designation and order no. with stroke length (in mm) (in mm 4-digit)

Standard stroke length:* 0010, 0025
** 0010, 0025, 0050
*** 00,25, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320

Mountings - Accessories

Description	Type	Bestell-Nr. Ø10	Ø12	Ø16	Ø20	Ø25
Foot mounting (1 mounting bracket)	**RA 1-..**	**KX 9271**	**KK 26302**	**KK 26302**	**KK 28302**	**KK28302**
Foot mounting (standard version)	**RA 2-..***	**PD 31522**	**PD 25771**	**PD 25771**	**PD 25772**	**PD 25772**
Flange mounting (1 flange)	**RC- ..**	**KX 9272**	**KK 26305**	**KK 26305**	**KK 28305**	**KK28305**
Rear trunnion mounting	**RB- ..****	**KZ 1412**	**KZ 1419**	**KZ 1419**	**KZ 1420**	**KZ 1420**

Complete type designation with piston-Ø

Rear trunnion mounting: RA 1-25 KK 28302

* consisting of 2 mounting brackets and 1 hexagonal nut
** consisting of 1 pivot with bolt and circlip

Cylinder

ø12-25mm

with through piston rod

Versions:
Double acting without cushioning
for contactless position sensing

Series RDU ....

RDU 6...



Characteristics according to VDI 3292			Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description					
General Features								
Type			Round cylinder with through piston rod					
Series			RDU 6...					
System			Double acting without cushioning					
Mounting			See drawing					
Tube connection			Thread					
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing				
Medium temperature range	ϑ_{max}	°C	+70	point (°C), please contact us for advice.				
Weight (mass)		kg	See table					
Installation			In any position					
Medium			Filtered and lubricated or filtered unlubricated compressed air					
Lubrication			Oil mist lubrication compatible with Buna N					
Material: Cylinder barrel			Steel, high-alloy					
Material: Front			Aluminium, anodised					
Material: Piston rod			Steel, high-alloy					
Pneumatic Characteristics								
Nominal pressure	p_n	bar	6					
Operating pressure range	p_{min} p_{max}	bar bar	1 (1.5 bei Ø12) 10					
Piston diameter		mm	10	12	16	20	25	
Port size			M5	M5	M5	G1/8	G1/8	
Piston rod diameter		mm	4	6	6	8	10	
Stroke length			For standard stroke lengths see order instructions, max. 500, longer strokes on request					
Piston force and air consumption			See data sheet 2.05.001E					

Weight (mass) kg

Typ	Weight (kg) *	Weight for every additional 100 mm stroke length
RDU 6010/100	0.100	0.045
RDU 6012/100	0.155	0.060
RDU 6016/100	0.170	0.070
RDU 6020/100	0.330	0.110
RDU 6025/100	0.460	0.170

* Weight for cylinder with 100 mm stroke



- Universal cylinder with screw thread mounting on front and rear covers
- Reed switch mounting by band

Comprises:
1 cylinder
2 hexagonal nuts for piston rod thread
1 hexagonal nut for cylinder mounting

Versions without contactless position sensing on request.

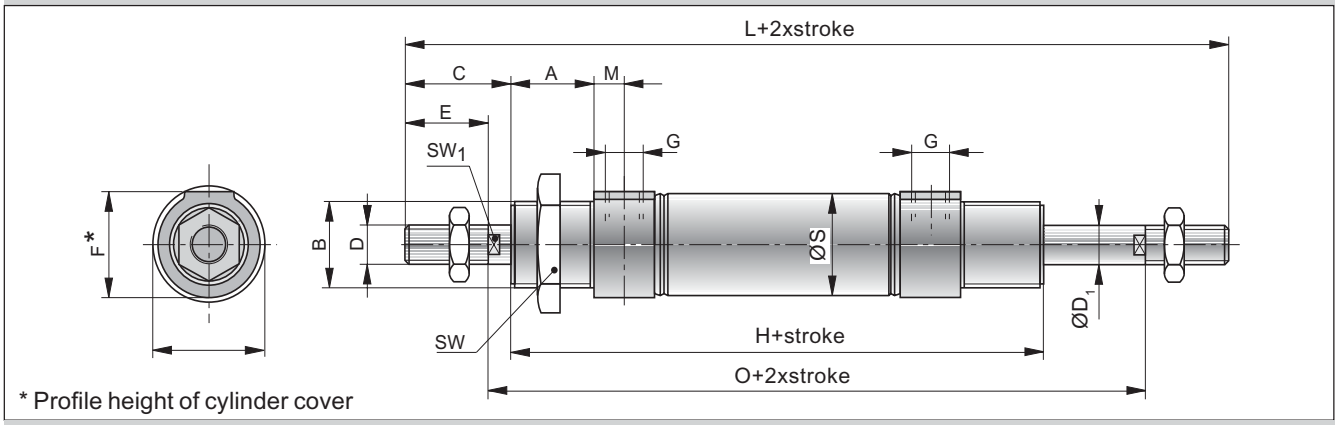
For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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HOERBIGER ORIGA

Dimensions



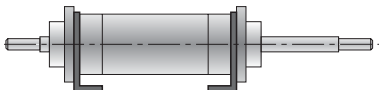
* Profile height of cylinder cover

Dimension Table (mm)

Cyl.-Ø	A	B	C	D	ØD1	E	F	ØF1	G	H+ stroke	O+2x stroke	L+2x stroke	M	ØS	SW	SW1
10	12	M12x1.25	16	M4	4	12	15	15	M5	68.5	76.5	100	5	11.3	19	-
12	17	M16x1.5	21	M6	6	16	20	20	M5	80	90.5	122.5	5	13.3	24	5
16	17	M16x1.5	21	M6	6	16	20	20	M5	90	98	130	5	17.3	24	5
20	20	M22x1.5	24	M8	8	20	27	27	G1/8	106	115	155	8	21.3	32	7
25	22	M22x1.5	28	M10x1.25	10	22	27	27	G1/8	113	125	169	8	26.5	32	9

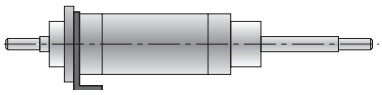
Mounting options

Foot mounting
(2 mounting brackets)



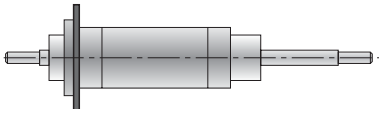
Material: steel, passivated

Foot mounting



steel, passivated

Flange mounting



steel, passivated

Order Instructions

Basic Cylinder (without mountings)

Series	Symbol	Piston Ø	Stroke max.	Order Instructions Type	Order No.
Double acting without adjustable end cushioning for contactless position sensing		10	-	**RDU 6010/...**	**PA 68420-....**
		12	200	**RDU 6012/...**	**PA 67690-....**
		16	320	**RDU 6016/...**	**PA 67700-....**
		20	500	**RDU 6020/...**	**PA 67710-....**
		25	500	**RDU 6025/...**	**PA 67720-....**

Complete type designation and order no. with stroke length (in mm) (in mm 4-digit)

Standard stroke length: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320 delivered preferably

Mountings - Accessories

Description	Type	Order No. Ø12	Ø16	Ø20	Ø25
Foot mounting (1 mounting bracket)	**RA 1-..**	**KK 26302**	**KK 26302**	**KK 28302**	**KK 28302**
Foot mounting (standard version)	**RA 2-..**	**PD 25771**	**PD 25771**	**PD 25772**	**PD 25772**
Flange mounting (1 flange)	**RC- ..**	**KK 26305**	**KK 26305**	**KK 28305**	**KK 28305**

Complete type designation with piston-Ø

Ordering example: RA 1-25 KK 28302

Compact Cylinder

ø 20-63 mm

Non-Rotating

Double acting without cushioning for contactless position sensing

Series SZV ....

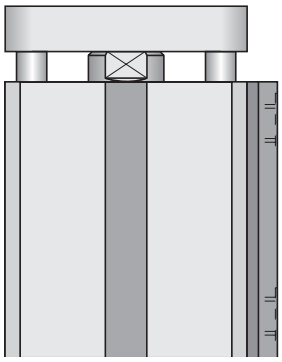
SZV 6...



Characteristics according to VDI 3294			Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description					
General Features								
Type			Compact cylinder, non-rotating					
Series			SZV 6000					
System			Double acting for contactless position sensing					
Mounting			2 mounting screws for size see drawings					
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing				
Medium temperature range	ϑ_{max}	°C	+70	point (°C), please contact us for advice.				
Weight (mass)		kg	See table					
Installation			In any position					
Medium			Filtered, lubricated or unlubricated compressed air					
Lubrication			Oil mist lubrication compatible with Buna N					
Material – Housing			Anodized aluminium profile					
Material – Front cover			Ø20 - Ø40 brass, Ø50, 63 Aluminium					
Material – Rear cover			Aluminium					
Material – Piston rod			Steel, high-alloy					
Material – Seal			Oil resistant rubber					
Pneumatic Characteristics								
Nominal pressure	p_n	bar	6					
Operating pressure range	p_{min} p_{max}	bar bar	1 10					
Piston diameter		mm	20	25	32	40	50	63
Port size			M5	G1/8	G1/8	G1/8	G1/8	G1/8
Piston rod diameter		mm	10	12	12	16	20	20
Stroke length		mm	For standard stroke lengths see order instructions, max. 80, longer strokes on request					

Weight (mass) kg		
Type	Weight (kg)	Weight per further 100 mm stroke length
SZV 6020/10	0.22	0.024
SZV 6025/10	0.28	0.036
SZV 6032/10	0.35	0.046
SZV 6040/10	0.48	0.065
SZV 6050/10	0.65	0.090
SZV 6063/10	1.20	0.115

Special versions:
- with non-standard stroke lengths
- with through piston rod



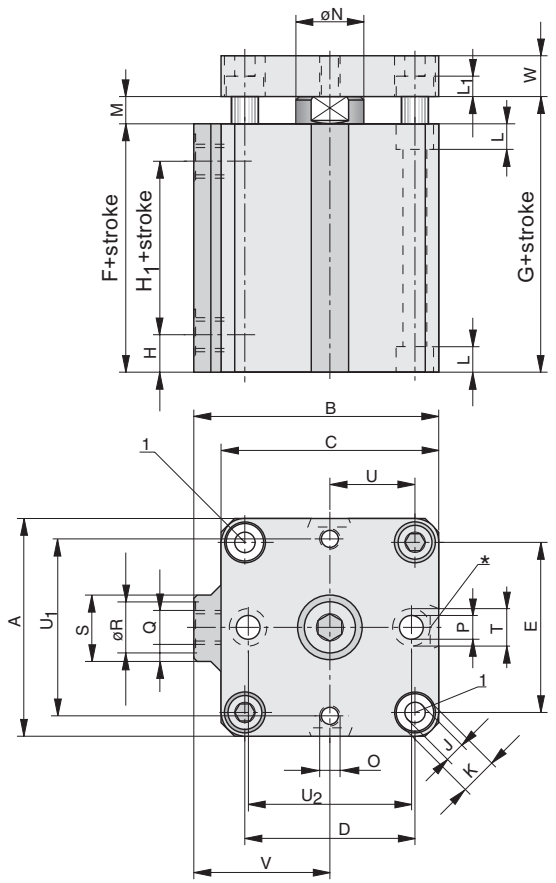
For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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HOERBIGER ORIGA

Dimensions



* are omitted for cyl. Ø 20 mm
[1)] Mounting holes cylinders

Order Instructions

Cyl.Ø	Order Instructions	
	Type	Order No.
20	**SZV 6020/..**	**PA 67370-....**
25	**SZV 6025/..**	**PA 67380-....**
32	**SZV 6032/..**	**PA 58190-....**
40	**SZV 6040/..**	**PA 59100-....**
50	**SZV 6050/..**	**PA 60130-....**
63	**SZV 6063/..**	**PA 61080-....**

Complete stroke (mm)
length

Complete stroke length (4-digit)
z.B. 0025

Standard Stroke Lengths

Cyl.Ø	Stroke length (mm)
20, 25	5, 10, 25, 50
32, 40	5, 10, 25, 50, 80
50, 63	10, 25, 50, 80
Further stroke lengths on request	

Dimension Table (mm)

Cyl.Ø	A	B	C	D	E	$F_{+stroke}$	$G_{+stroke}$	H	$H_{1+stroke}$	ØJ	ØK	L	L_1
20	32	34	32	22	22	36	42	11	14	4.5	7.5	4.8	5
25	37	44	39	28	26	38.5	45	11.5	15.5	4.5	7.5	4.8	5
32	45	52	48	36	32	39	45.5	9	20.5	5.5	10	5.8	6
40	55	59	55	41	41	42	48	9	24	6.7	11	6.8	6
50	64	72	64	50	50	45	53	11	23	6.7	11.5	6.8	7
63	80	88	80	62	62	52.5	60.5	12	28.5	8.5	13.5	8.3	9

Cyl.Ø	M	ØN	ØO	P	Q	ØR	S	ØT	U	U_1	U_2	V	W
20	6	10	M4	4.5	M5	8	11	7.5	11	22	22	18	8
25	6.5	12	M4	4.5	G1/8	15	19	8	14	26	28	24.5	8
32	6.5	12	M5	5.5	G1/8	15	19	10	18	32	36	28	10
40	6	16	M5	5.5	G1/8	15	19	10	20.5	40	40	31.5	10
50	8	20	M6	6.8	G1/8	15	19	11	25	50	50	40	12
63	8	20	M6	9	G1/8	15	23	15	31	62	62	48	12

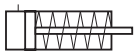
Compact Cylinder

ø 32-63 mm

Single acting

Series SZK ....

SZK 3...



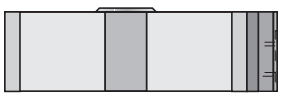
Characteristics according to VDI 3294			Pressures quoted as gauge pressure		
Characteristics	Symbol	Unit	Description		
General Features					
Type			Compact cylinder		
Series			SZK		
System			Single acting		
Mounting			Piston-Ø 32: 2 screws Piston-Ø 50-63: 4 screws see drawing for size dimensions		
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing	
Medium temperature range	ϑ_{max}	°C	+70	point (°C), please contact us for advice.	
Weight (mass)		kg	See table for details		
Installation			In any position		
Medium			Filtered and lubricated or filtered and unlubricated compressed air		
Lubrication			Oil mist lubrication compatible with Buna N		
Material: Housing			Aluminium profile, anodised		
Material: Cover, top			Aluminium, brass		
Material: Piston rod			Steel, high-alloy		
Material: Seal			Oil resistant rubber		
Pneumatic Characteristics					
Nominal pressure	p_n	bar	6		
Operating pressure range	p_{max}	bar	10		
Piston diameter		mm	32	50	63
Port size			G1/8	G1/8	G1/8
Piston rod diameter		mm	12	16	16
Stroke length*)		mm	5, 10	10	10
Spring return force	max	N	53	173	254

*) Further stroke lengths on request

Weight (mass) kg	
Type	Weight (kg)
SZK 3032/5	0.170
SZK 3032/10	0.200
SZK 3050/10	0.450
SZK 3063/10	0.800

Compact cylinders are especially suitable for short stroke clamping tasks

- minimum space requirements
- high clamping forces
- fast response times

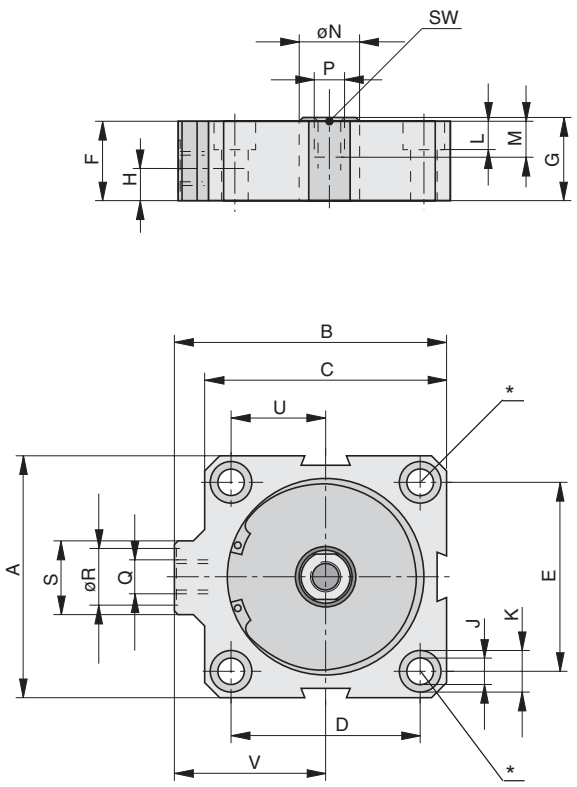


For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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Dimensions
Piston rod diameter 32-63 mm



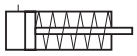
* are omitted for cyl. Ø 32 mm

Dimension Table

Type	A	B	C	D	E	F	G	H	J	K
SZK 3032/5	45	52	48	-	32	27	28	8.5	5.5	10
SZK 3032/10	45	52	48	-	32	32	33	8.5	5.5	10
SZK 3050/10	64	72	64	50	50	30	31	8.5	6.7	11
SZK 3063/10	80	88	80	62	62	35	36	8.5	8.5	14

Type	L	M	ØN	Q	P	ØR	S	U	V	SW
SZK 3032/5	5.7	12	12	G1/8	M6	15	19	18	28	10
SZK 3032/10	5.7	12	12	G1/8	M6	15	19	18	28	10
SZK 3050/10	6.8	12	16	G1/8	M8	15	19	25	40	13
SZK 3063/10	8.3	12	16	G1/8	M8	15	23	31	48	13

Order Instructions

System	Symbol	Piston-Ø	Stroke	Order Instructions Type	Order No.
Single acting		32	5	**SZK 3032/5**	**PD 35344-0005**
		32	10	**SZK 3032/10**	**PD 35344-0010**
		50	10	**SZK 3050/10**	**PD 35331-0010**
		63	10	**SZK 3063/10**	**PD 35346-0010**

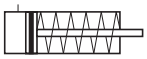
Compact Cylinder

ø 12-100 mm

Single acting without cushioning for contactless position sensing

Series SZ ....

SZ 7...



ATEX-Version is also available (see also 2.01.001E-5,6) ⟨Ex⟩

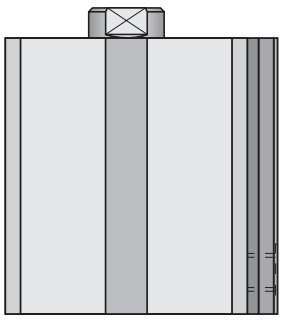
Characteristics according to VDI 3294 Pressures quoted as gauge pressure

Characteristics		Symbol	Unit	Description				
General Features								
Type				Compact cylinder				
Series				SZ 7000				
System				Single acting for contactless position sensing				
Mounting				4 Mounting screws (see drawing for size dimensions)				
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing			
Medium temperature range		ϑ_{max}	°C	+70	point (°C), please contact us for advice.			
Weight (mass)			kg	See table for details				
Installation				In any position				
Medium				Filtered and lubricated or filtered and unlubricated compressed air				
Lubrication				Oil mist lubrication compatible with Buna N				
Material	Housing			Aluminium profile, anodised				
	Cover, top			Ø12-Ø40 brass, Ø50-Ø100 Aluminium				
	Cover, bottom			Aluminium				
	Piston rod			Steel, high-alloy				
	Seal			Oil resistant rubber				
Pneumatic Characteristics								
Nominal pressure		p_n	bar	6				
Operating pressure range		p_{max}	bar	10				
Piston diameter			**mm**	**12**	**16**	**20**	**25**	**32**
Port size				M5	M5	M5	G1/8	G1/8
Piston rod diameter			mm	6	8	10	12	12
Piston diameter			**mm**	**40**	**50**	**63**	**80**	**100**
Port size				G1/8	G1/8	G1/8	G1/4	G1/4
Piston rod diameter				16	20	20	25	32
Standard stroke length			mm	For standard stroke lengths see order instructions, max. 25, longer strokes on request				

Weight (mass) kg

Type	Weight (kg)	Weight per additional 10mm stroke length
SZ 7012/10	0.05	0.013
SZ 7016/10	0.08	0.018
SZ 7020/10	0.11	0.022
SZ 7025/10	0.16	0.033
SZ 7032/10	0.23	0.042
SZ 7040/10	0.35	0.059
SZ 7050/10	0.50	0.080
SZ 7063/10	0.90	0.108
SZ 7080/10	1.30	0.138
SZ 7100/10	2.10	0.213

For product group overview see 2.01.001E
For double acting compact cylinder see 2.14.011E
For magnetic switches see 2.90.040E, 2.90.043E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E



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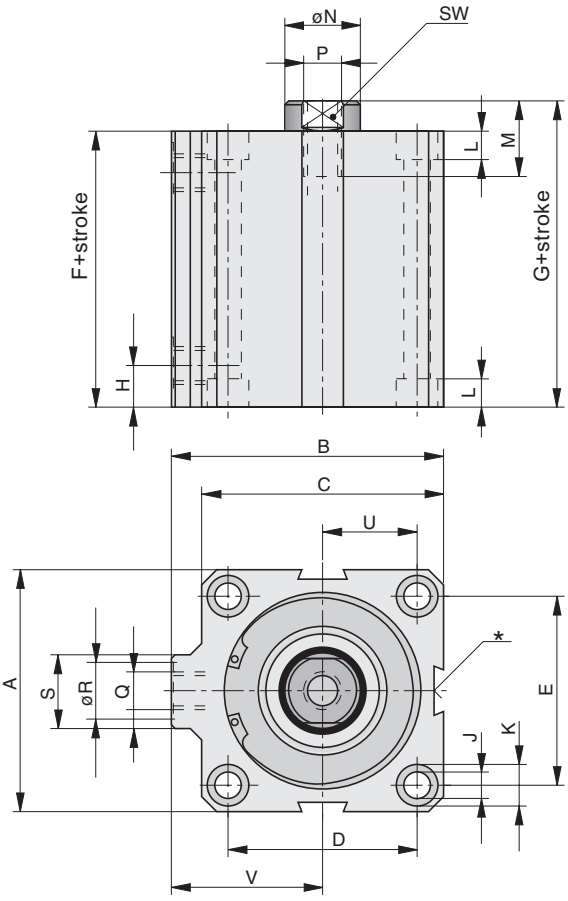
The right to introduce technical modifications is reserved

Spring Return Force in N*

Stroke length (mm)	Fmin (N) Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
5	8	15	23	26	38	48	-	-	-	-
10	6	12	19	21	28	38	70	90	114	138
25	-	11	19	20	28	38	48	67	90	120

* theoretical value

Dimensions



* is omitted for cyl. Ø12 to 20 mm

Order Instructions

Cyl.Ø	Order Instructions Type	Order No.
12	**SZ 7012/..**	**PA 67330-....**
16	**SZ 7016/..**	**PA 67340-....**
20	**SZ 7020/..**	**PA 67350-....**
25	**SZ 7025/..**	**PA 67360-....**
32	**SZ 7032/..**	**PA 58160-....**
40	**SZ 7040/..**	**PA 59070-....**
50	**SZ 7050/..**	**PA 60140-....**
63	**SZ 7063/..**	**PA 61090-....**
80	**SZ 7080/..**	**PA 62100-....**
100	**SZ 7100/..**	**PA 63010-....**

Complete stroke length (mm)

Complete stroke length (4 digit) e.g. 0025

Standard Stroke Lengths

Cyl.Ø	Stroke lengths (mm)
12	5, 10
16, 20, 25, 32, 40	5, 10, 25
50, 63, 80, 100	10, 25

Dimensions (mm)

Cylinder Ø	Stroke (mm)	A	B	C	D	E	F +stroke	G +stroke	H	ØJ	ØK
12		23	27	25	17.2	13	34	38.5	10	4	6
16	5, 10	28	30	28	20	20	34.5	40	10	4	6
	25						44.5	50			
20	5, 10	32	34	32	22	22	36	42	11	4.5	7.5
	25						46	52			
25	5, 10	37	44	39	28	26	38.5	45	11.5	4.5	7.5
	25						48.5	55			
32	5, 10, 25	45	52	48	36	32	39	45.5	11.5	5.5	10
40	5, 10, 25	55	59	55	41	41	42	48	12.5	6.7	11
50	10, 25	64	72	64	50	50	45	53	13.5	6.7	11
63	10, 25	80	88	80	62	62	52.5	60.5	15.5	8.5	14
80	10, 25	94	104	94	73	73	57	66	16	8.5	14
100	10, 25	117	125.5	117	90.5	90.5	58.5	68.5	15.5	10.5	18

Cylinder Ø	L	M	ØN	P	Q	ØR	S	U	V	SW
12	3.4	6	6	M3	M5	8	11	8.6	14.5	5
16	3.4	8	8	M4	M5	8	11	10	16	6
20	4.8	8	10	M5	M5	8	11	11	18	8
25	4.8	12	12	M6	G1/8	15	19	14	24.5	10
32	5.8	12	12	M8	G1/8	15	19	18	28	10
40	6.8	12	16	M8	G1/8	15	19	20.5	31.5	13
50	6.8	17.5	20	M10	G1/8	15	19	25	40	17
63	8.3	17.5	20	M12	G1/8	15	23	31	48	17
80	8.3	25	25	M16	G1/4	19	23	36.5	57	22
100	11	28	32	M20	G1/4	19	23	45.25	67	27

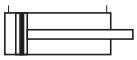
Compact Cylinder

ø 12-100 mm

Double acting without cushioning for contactless position sensing

Series SZ ....

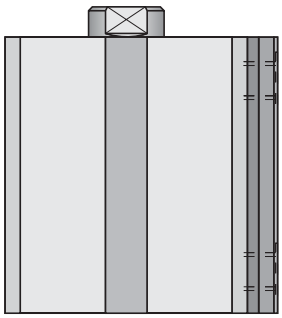
SZ 6...



ATEX-Version is also availabe (see also 2.01.001E-5, 6) ⟨Ex⟩

Characteristics according to VDI 3294			Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description				
General Features							
Type			Compact cylinder				
Series			SZ 6000				
System			Double acting for contactless position sensing				
Mounting			4 Mounting screws (see drawing for size dimensions)				
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing			
Medium temperature range	ϑ_{max}	°C	+70	point (°C), please contact us for advice.			
Weight (mass)		kg	See table for details				
Installation			In any position				
Medium			Filtered and lubricated or filtered and unlubricated compressed air				
Lubrication			Oil mist lubrication compatible with Buna N				
Material: Housing			Aluminium profile, anodised				
Material: Cover, top			Ø12-Ø40 brass, Ø50-Ø100 Aluminium				
Material: Cover, bottom			Aluminium				
Material: Piston rod			Steel, high-alloy				
Material: Seal			Oil resistant rubber				
Pneumatic Characteristics							
Nominal pressure	p_n	bar	6				
Operating pressure range	p_{min} p_{max}	bar bar	1 10				
Piston diameter		**mm**	**12**	**16**	**20**	**25**	**32**
Port size			M5	M5	M5	G1/8	G1/8
Piston rod diameter		mm	6	8	10	12	12
Piston diameter		**mm**	**40**	**50**	**63**	**80**	**100**
Port size			G1/8	G1/8	G1/8	G1/4	G1/4
Piston rod diameter			16	20	20	25	32
Standard stroke length		mm	For standard stroke lengths see order instructions, max. 80, longer strokes on request				

Special versions:
- with non-standard stroke lengths
- with through piston rod
- non-rotating version available on request



Weight (mass) kg

Type	Weight (kg)	Weight per additional 10mm stroke length
SZ 6012/10	0.05	0.013
SZ 6016/10	0.08	0.018
SZ 6020/10	0.11	0.022
SZ 6025/10	0.16	0.033
SZ 6032/10	0.23	0.042
SZ 6040/10	0.35	0.059
SZ 6050/10	0.50	0.080
SZ 6063/10	0.90	0.108
SZ 6080/10	1.30	0.138
SZ 6100/10	2.10	0.213

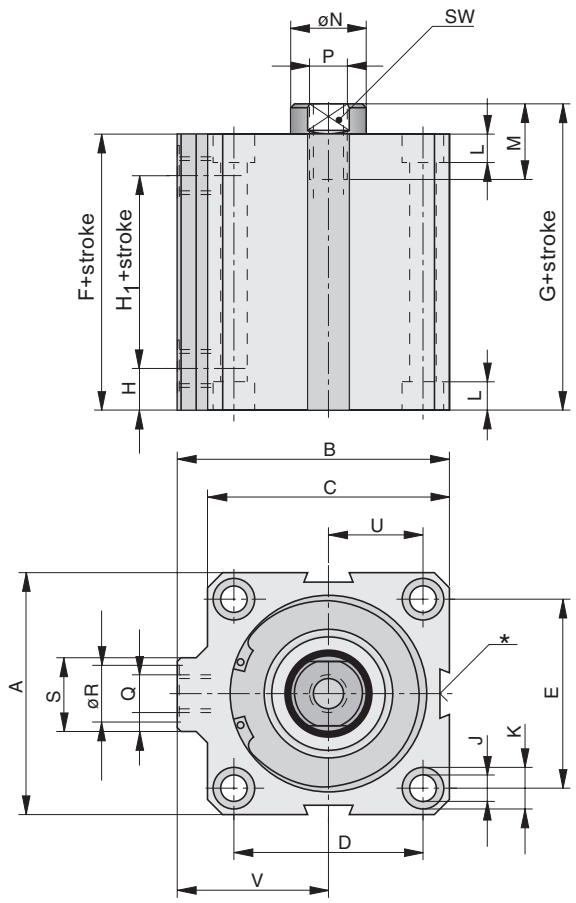
For product group overview see 2.01.001E
For double acting compact cylinder see 2.14.010E
For magnetic switches see 2.90.040E, 2.90.043E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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Dimensions



* is omitted for cyl. Ø12 to 20 mm

Order Instructions

Cyl.Ø	Order Instructions Type	Order No.
12	**SZ 6012/..**	**PA 67290-....**
16	**SZ 6016/..**	**PA 67300-....**
20	**SZ 6020/..**	**PA 67310-....**
25	**SZ 6025/..**	**PA 67320-....**
32	**SZ 6032/..**	**PA 58150-....**
40	**SZ 6040/..**	**PA 59060-....**
50	**SZ 6050/..**	**PA 60150-....**
63	**SZ 6063/..**	**PA 61100-....**
80	**SZ 6080/..**	**PA 62090-....**
100	**SZ 6100/..**	**PA 63000-....**

Complete stroke length (mm)

Complete stroke length (4digit) e.g. 0025

Standard Stroke Lengths

Cyl.Ø	Stroke lengths (mm)
12	5, 10
16	5, 10, 25
20,25	5, 10, 25, 50
32, 40	5, 10, 25, 50, 80
50-100	10, 25, 50, 80
Further stroke lengths available upon request	

Dimension Table (mm)

Cylinder Ø	A	B	C	D	E	F +stroke	G +stroke	H	H_1 +stroke	ØJ	ØK
12	23	27	25	17.2	13	34	38.5	10	14	3.4	6
16	28	30	28	20	20	34.5	40	10	14	3.4	6
20	32	34	32	22	22	36	42	11	14	4.5	7.5
25	37	44	39	28	26	38.5	45	11.5	15.5	4.5	7.5
32	45	52	48	36	32	39	45.5	11.5	16	5.5	10
40	55	59	55	41	41	42	48	12.4	17	6.7	11
50	64	72	64	50	50	45	53	13.5	18	6.7	11
63	80	88	80	62	62	52.5	60.5	15.5	21.5	8.5	14
80	94	104	94	73	73	57	66	16	25	8.5	14
100	117	125.5	117	90.5	90.5	58.5	68.5	15.6	27.5	10.5	18

Cylinder Ø	L	M	ØN	P	Q	ØR	S	U	V	SW
12	3.4	6	6	M3	M5	8	11	8.6	14.5	5
16	3.4	8	8	M4	M5	8	11	10	16	6
20	4.8	8	10	M5	M5	8	11	11	18	8
25	4.8	12	12	M6	G1/8	15	19	14	24.5	10
32	5.8	12	12	M8	G1/8	15	19	18	28	10
40	6.8	12	16	M8	G1/8	15	19	20.5	31.5	13
50	6.8	17.5	20	M10	G1/8	15	19	25	40	17
63	8.3	17.5	20	M12	G1/8	15	23	31	48	17
80	8.3	25	25	M16	G1/4	19	23	36.5	57	22
100	11	28	32	M20	G1/4	19	23	45.25	67	27

Compact Cylinder

ø 12-100 mm

with through piston rod

Double acting without cushioning for contactless position sensing

Series SZD ....

SZD 6...



Characteristics according to VDI 3294 Pressures quoted as gauge pressure

Characteristics		Symbol	Unit	Description
General Features				
Type				Compact cylinder
Series				SZD 6...
System				Double acting with through piston rod, for contactless position sensing
Mounting				4 Mounting screws (see drawing for dimensions)
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-10 +70 — Note: When using below freezing
Medium temperature range		ϑ_{max}	°C	+70 — point (°C), please contact us for advice.
Weight (mass)			kg	See table for details
Installation				In any position
Medium				Filtered and lubricated or filtered and unlubricated compressed air
Lubrication				Oil mist lubrication compatible with Buna N
Material	Housing			Aluminium profile, anodised
	Cover, top			Ø12-Ø40 brass, Ø50-Ø100 Aluminium
	Piston rod			Steel, high-alloy
	Seal			Oil resistant rubber

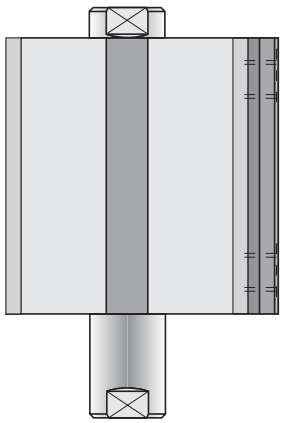
Pneumatic Characteristics							
Nominal pressure	p_n	bar	6				
Operating pressure range at Piston diameter	**Ø**	**mm**	**12**	**16, 20**	**25-40**	**50-100**	
	p_{min}	bar	2.5	2	1.5	1	
	p_{max}	bar	10				
Piston diameter		**mm**	**12**	**16**	**20**	**25**	**32**
Port size			M5	M5	M5	G1/8	G1/8
Piston rod diameter		mm	6	8	10	12	12
Piston diameter		**mm**	**40**	**50**	**63**	**80**	**100**
Port size			G1/8	G1/8	G1/8	G1/4	G1/4
Piston rod diameter			16	20	20	25	32
Standard stroke length		mm	For standard stroke lengths see order instructions, max. 80, longer strokes on request				

Weight (mass) kg

Type	Weight (kg)	Weight per additional 10mm stroke length
SZD 6012/10	0.06	0.015
SZD 6016/10	0.10	0.022
SZD 6020/10	0.14	0.028
SZD 6025/10	0.20	0.042
SZD 6032/10	0.28	0.051
SZD 6040/10	0.43	0.075
SZD 6050/10	0.64	0.104
SZD 6063/10	1.06	0.133
SZD 6080/10	1.56	0.176
SZD 6100/10	2.54	0.276

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

Special version:
- with non-standard stroke lengths

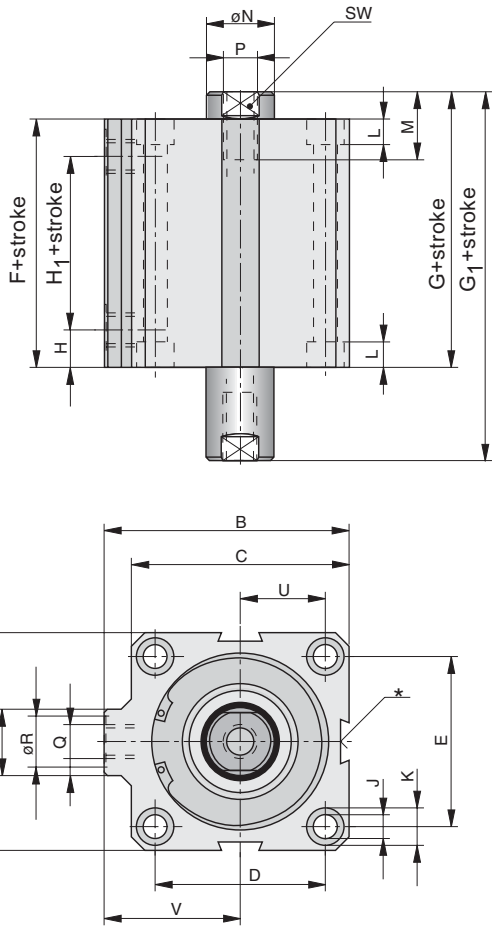


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Dimensions



* is omitted for cyl. Ø12 to 20 mm

Order Instructions

Cyl.Ø	Order Instructions Type	Order No.
12	**SZD 6012/..**	**PA 67610-....**
16	**SZD 6016/..**	**PA 67620-....**
20	**SZD 6020/..**	**PA 67630-....**
25	**SZD 6025/..**	**PA 67640-....**
32	**SZD 6032/..**	**PA 58230-....**
40	**SZD 6040/..**	**PA 59150-....**
50	**SZD 6050/..**	**PA 60220-....**
63	**SZD 6063/..**	**PA 61160-....**
80	**SZD 6080/..**	**PA 62120-....**
100	**SZD 6100/..**	**PA 63030-....**

Complete stroke length (mm)

Complete stroke length (4digit) e.g. 0025

Standard Stroke Lengths

Cyl.Ø	Stroke lengths (mm)
12	5, 10
16	5, 10, 25
20,25	5, 10, 25, 50
32, 40	5, 10, 25, 50, 80
50-100	10, 25, 50, 80
Further stroke lengths available upon request	

Dimension Table (mm)

Cylinder Ø	A	B	C	D	E	F +stroke	G +stroke	G_1 +2xstroke	H	H_1 +stroke	ØJ
12	23	27	25	17.2	13	34	38.5	43	10	14	3.4
16	28	30	28	20	20	34.5	40	45.5	10	14	3.4
20	32	34	32	22	22	36	42	48	11	14	4.5
25	37	44	39	28	26	38.5	45	51.5	11.5	15.5	4.5
32	45	52	48	36	32	39	45.5	52	11.5	16	5.5
40	55	59	55	41	41	42	48	55	12.5	17	6.7
50	64	72	64	50	50	45	53	61	13.5	18	6.7
63	80	88	80	62	62	52.5	60.5	68.5	15.5	21.5	8.5
80	94	104	94	73	73	57	66	75	16	25	8.5
100	117	125.5	117	90.5	90.5	58.5	68.5	78.5	15.5	27.5	10.5

Cylinder Ø	ØK	L	M	ØN	P	Q	ØR	S	U	V	SW
12	6	3.4	6	6	M3	M5	8	11	8.6	14.5	5
16	6	3.4	6	8	M4	M5	8	11	10	16	6
20	7.5	4.6	8	10	M5	M5	8	11	11	18	8
25	7.5	4.6	12	12	M6	G1/8	15	19	14	24.5	10
32	10	5.8	12	12	M8	G1/8	15	19	18	28	10
40	11	6.8	12	16	M8	G1/8	15	19	20.5	31.5	13
50	11	6.8	17.5	20	M10	G1/8	15	19	25	40	17
63	14	8.3	17.5	20	M12	G1/8	15	23	31	48	17
80	14	8.3	25	25	M16	G1/4	19	23	36.5	57	22
100	18	11	28	32	M20	G1/4	19	23	45.25	67	27

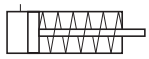
Clamping Cylinder

ø 25 and 35 mm

Single acting without cushioning

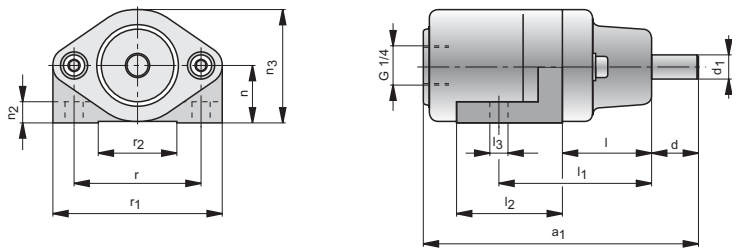
Series DZS....

DZS3...



Characteristics according to VDI 3294 Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description	
General Features				
Type			Clamping cylinder	
Series			DZS	
System			Single acting with spring return	
Mounting			See drawing	
Tube connection			Thread	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-25 +80	Note: When using below freezing
Medium temperature range	ϑ_{max}	°C	+80	point (°C) it is necessary to consult us
Weight (mass)		kg	DZS3025: 0.2; DZS3035: 0.4	
Installation			In any position	
Medium			Filtered and lubricated air	
Lubrication			Oil mist lubrication compatible with Buna N	
Material – Tube			Aluminium	
Material – Piston			Steel, high-alloy	
Material – Housing			Special pressed material, with a high degree of resistance to impact, water and oil resistant	
Material – Seals			Oil resistant rubber	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	1 8	
Piston diameter		mm	25	35
Port size			G 1/4	
Piston rod diameter		mm	Ø8	Ø10
Stroke length		mm	25	50
Thrust at 6 bar		N	240	520

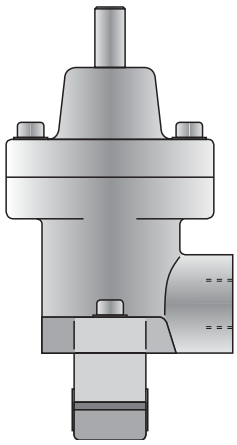
Dimensions for Mounting A



Dimension Table (mm) for Mounting A

Type	a_1	d	Ød_1	l	l_1	l_2	Øl_3	n	n_2	n_3	r	r_1	r_2
DZS3025A/25	91	16	8	29	50	35	5.2	19	7	37	42	56	26
DZS3035A/50	125	18	10	34	58	40	5.2	25	8	49.5	55	70	36

Order Instructions: **DZS3025A/25 KY 9523**
DZS3035A/50 KY 9526



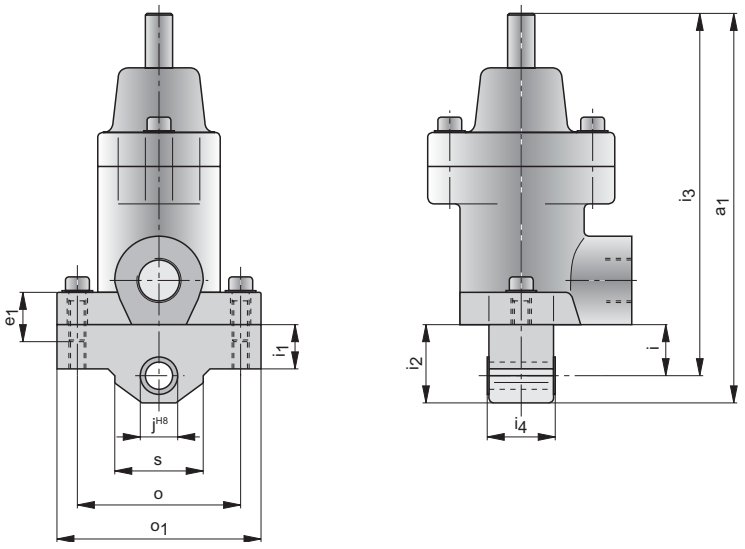
For product group overview see 2.01.001E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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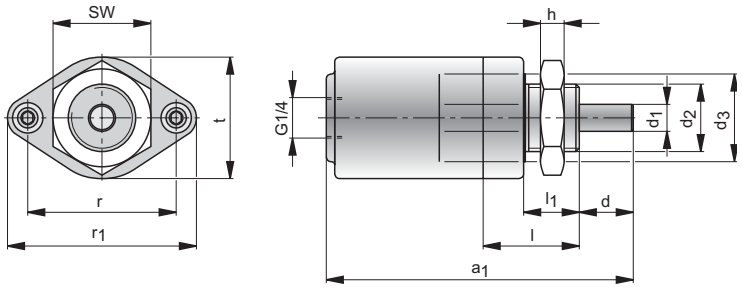
Dimensions for Mounting B (pivot block for mounting D)



Dimension Table (mm) for Mounting B

Order Instructions Type	Order No.	a_1	e	e_1	i	i_1	i_2	i_3	i_4	Øj^{H8}	o	o_1	s
DZS3025B/25	PD 24145	115	M 5	15	11,5	13	23	104	19	8	48	60	26
DZS3035B/50	PD 24146	157	M 5	18	14	15	28	143	20	10	60	74	30

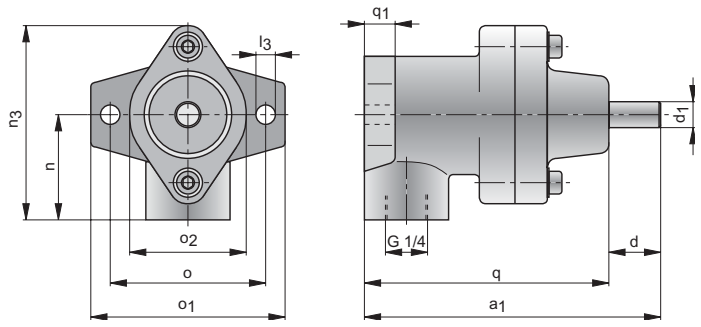
Dimensions for Mounting C



Dimension Table (mm) for Mounting C

Order Instructions Type	Order No.	a_1	d	Ød_1	d_2	d_3	h	l	l_1	r	r_1	t	SW
DZS3025C/25	KY 9524	91	16	8	M20x1.5	24	7	29	16	42	56	36	30
DZS3035C/50	KY 9527	125	18	18	M26x1.5	30	8	34	19	55	70	49	36

Dimensions for Mounting D



Dimension Table (mm) for Mounting D

Order Instructions Type	Order No.	a_1	d	Ød_1	l_3	n	n_3	o	o_1	o_2	q	q_1
DZS3025D/25	KY 9525	92	16	8	5.2	32	60	48	60	36	76	9
DZS3035D/50	KY 9281	129	18	10	5.2	37.5	72.5	60	74	49	111	11

Cylinder
ø 32-63 mm

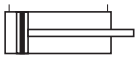
Versions:
Double acting without cushioning
Double acting with adjustable cushioning for contactless position sensing

Series **R....-...**
RK....-...

R 5000



R (RK) 6000



Characteristics according to VDI 3292				Pressures quoted as gauge pressure			
Characteristics		Symbol	Unit	Description			
General Features							
Type				Round cylinder			
Series				R, RK			
System	R (RK) 6...			Double acting without cushioning			
	R 5...			Double acting with cushioning			
Mounting				See drawings			
Tube connection				Thread			
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing		
Medium temperature range		ϑ_{max}	°C	+70	point (°C), please contact us for advice.		
Weight (mass)			kg	See table			
Installation				In any position			
Medium				Filtered and lubricated or filtered and unlubricated compressed air			
Lubrication				Oil mist lubrication compatible with NBR and PU			
Material	Cylinder barrel			Aluminium, anodised			
	Front/rear covers			Aluminium			
	Piston rod			Steel, high-alloy			
Pneumatic Characteristics							
Nominal pressure		p_n	bar	6			
Operating pressure range		p_{min} p_{max}	bar bar	1 10			
Piston diameter			mm	32	40	50	63
Port size				G 1/8	G1/4	G1/4	G 3/8
Piston rod diameter			mm	12	16	20	20
Stroke length				For standard stroke lengths see order instructions, max. 500, longer strokes on request			
Piston force and air consumption				See data sheet 2.05.001E			
Cushioning (only for series R 5000)				At both ends, progressively adjustable			
Cushioned stroke			Cyl.-Ø	32	40	50	63
(series R 5000)			mm	22	27	28	28

Weight (mass) kg

Mounting	Cylinder diameter 32		40		50		63	
	*1	*2	1	2	1	2	1	2
Basic cylinder	0.55	0.15	0.94	0.25	1.40	0.30	1.90	0.40
RA (1 bracket)	0.10		0.19		0.29		0.36	
RC	0.10		0.19		0.29		0.36	
RB	0.17		0.29		0.48		0.70	
RE	0.15		0.26		0.38		0.59	

*1 = Weight for cylinder with 100 mm stroke
2 = Weight for every additional 100 mm stroke length

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E



Universal cylinder for mounting by a thread on the cylinder covers. Pivot mounted on the front and rear cylinder covers.

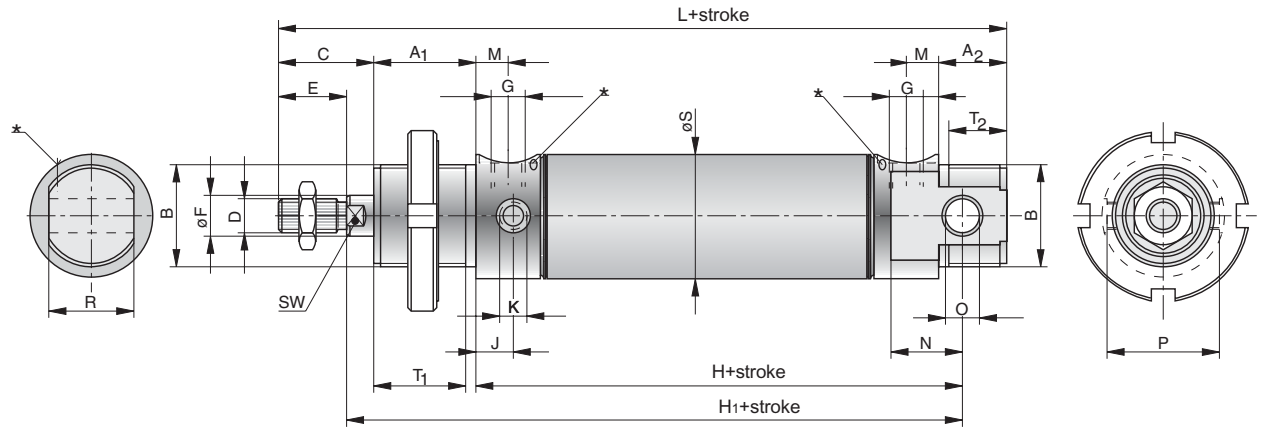
The delivery includes:
1 Cylinder
1 Hexagon nut for piston rod thread
1 Grooved nut for cylinder mountings

Versions without contactless position sensing on request.

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Dimensions for Cylinder Series R

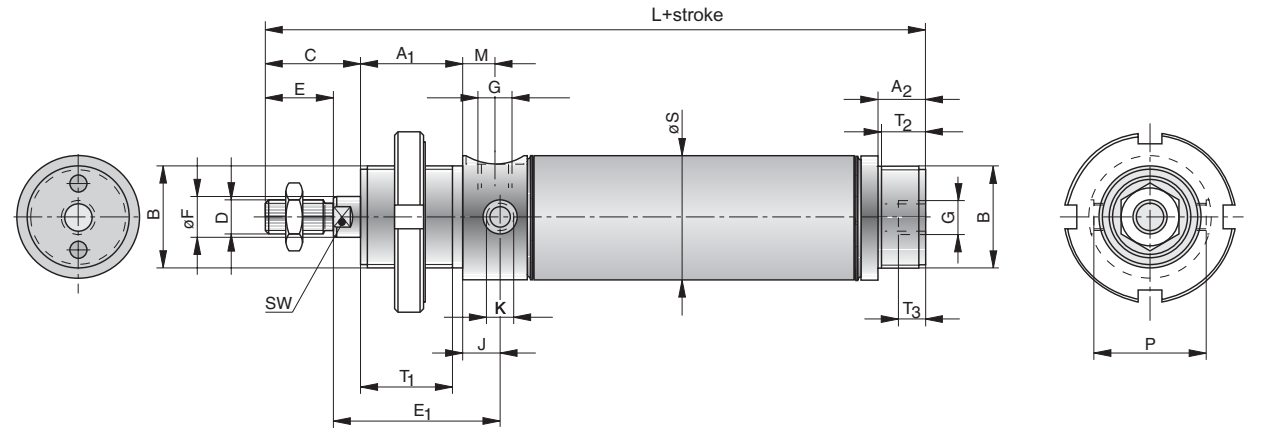


* adjustable end cushioning only for series R 5000

Dimension Table (mm) for Cylinder Series R

Cyl.-Ø	A_1	A_2	B	C	D	E	F	G	H+ stroke	H_1	J	K	L+ stroke	M	N	O	P	R_{h12}	ØS	T_1	T_2	SW
32	30	19.5	M30x1.5	28	M10	20	12	G1/8	90.5	128.5	11	M8x1	160.5	9,5	21	10	33	25	35	27	16.5	10
40	35	21.5	M38x1.5	34	M12	24	16	G1/4	99.5	144.5	12	M10x1	181.5	11	24	12	42	30	43	32	17.5	14
50	38	25	M45x1.5	44	M16	32	20	G1/4	109.5	159.5	13	M12x1.5	205.5	11	27	14	52	35	54	35	21	17
63	38	24.5	M45x1.5	45	M16	32	20	G3/8	116.5	167.5	13.5	M14x1.5	215.5	12.5	28	16	62	35	67	35	20.5	17

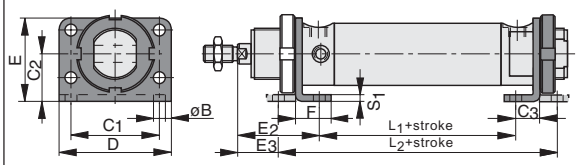
Dimensions for Cylinder Series RK



Dimension Table (mm) for Cylinder Series RK

Cyl.-Ø	A_1	A_2	B	C	D	E	E_1	ØF	G	J	K	L+ stroke	M	P	ØS	T_1	T_2	T_3	SW
32	30	14	M30x1.5	28	M10	20	49	12	G1/8	11	M8x1	138.5	9,5	33	35	27	11	8	10
40	35	16	M38x1.5	34	M12	24	57	16	G1/4	12	M10x1	156.5	11	42	43	32	12	12	14
50	38	18	M45x1.5	44	M16	32	63	20	G1/4	13	M12x1.5	179.5	11	52	54	35	14	12	17
63	38	18	M45x1.5	45	M16	32	64.5	20	G3/8	13.5	M14x1.5	186.5	12.5	62	67	35	14	12	17

Foot Mounting Type RA-..



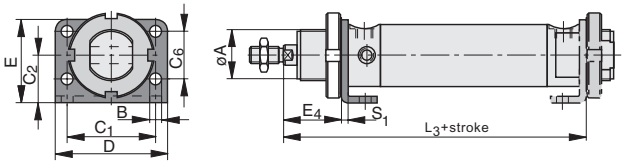
Material: steel, passivated

Dimension Table (mm)

Cyl. Ø	ØB	C_1	C_2	C_3	D	E	E_2	E_3	F	L_1*+ stroke	L_2*+ stroke	S_1
32	6.6	52	28	14	66	49	48	24	21	63	111	4
	6.6	52	28	14	66	49	48	24	21	46.5	94.5	4
40	9	60	33	20	80	58	60	25	30	61	131	5
	9	60	33	20	80	58	60	25	30	41.5	111.5	5
50	9	70	40	20	90	70	64	30	30	70.5	138.5	6
	9	70	40	20	90	70	64	30	30	51.5	119.5	6
63	9	76	45	20	96	80	65	31	30	80	148	6
	9	76	45	20	96	80	65	31	30	57.5	125.5	6

* Dimensions in the grey fields are valid for series RK

Flange Mounting Type RC-..

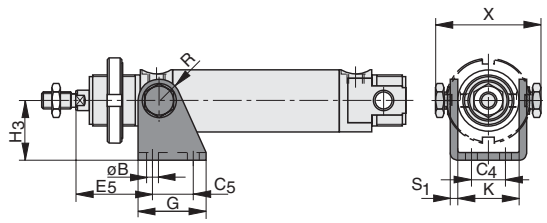


Material: steel, passivated

Dimension Table (mm) for Mounting RC

Cyl. Ø	ØA	B	C_1	C_2	C_6	D	E	E_4	L_3+ stroke	S_1
32	30.1	6.6	52	28	28	66	49	34	125	4
	30.1	6.6	52	28	28	66	49	34	108.5	4
40	38.1	9	60	33	30	80	58	40	141	5
	38.1	9	60	33	30	80	58	40	121.5	5
50	45.1	9	70	40	40	90	70	44	154.5	6
	45.1	9	70	40	40	90	70	44	135.5	6
63	45.1	9	76	45	50	96	80	45	165	6
	45.1	9	76	45	50	96	80	45	142.5	6

Front Trunnion Mounting Type RE-..

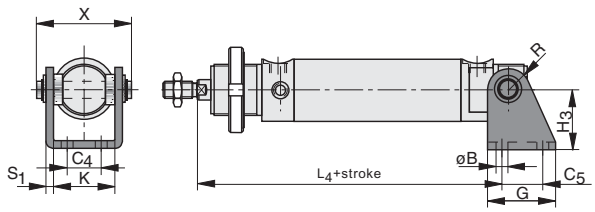


Material: steel, passivated

Dimension Table (mm)

Cyl.-Ø	ØB	C_4	C_5	E_5	G	H_3	K	R	S_1	X
32	6.6	20	24	45	40	35	36.1	12	4	60
40	9	28	30	54	50	40	45.1	13	5	75
50	9	36	34	59	54	45	55.1	14	6	89
63	9	42	35	63.5	65	50	70.1	16	6	109

Rear Trunnion Mounting Type RB-..

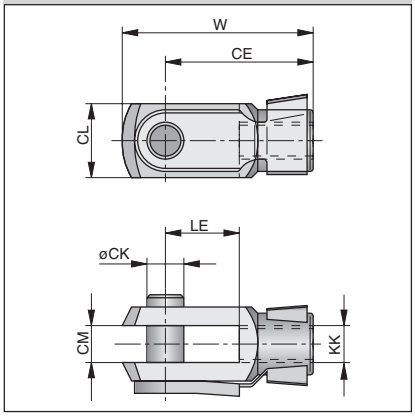


Material: steel, passivated

Dimension Table (mm)

Cyl.-Ø	ØB	C_4	C_5	G	H_3	H	K	L_4+ stroke	R	S_1	X
32	6.6	20	24	40	35	8	36.1	124.5	12	4	58
40	9	28	30	50	40	10	45.1	141.5	13	5	70
50	9	36	34	54	45	10	55.1	155.5	14	6	86
63	9	42	35	65	50	15	70.1	166.5	16	6	100

Piston Rod Clevis to CETOP RP 102 P

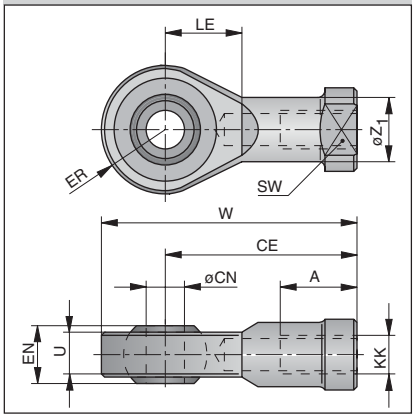


Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.-Ø	CE	ØCK	CL	CM	KK	LE	W	Weight (kg)
GK-M10	**KY 6134**	32	40	10	20	10	M10	20	52	0.08
GK-M12	**KY 6138**	40	48	12	24	12	M12	24	62	0.125
GK-M16	**KY 6140**	50, 63	64	16	32	16	M16	32	83	0.30

Material: galvanized steel

Piston Rod Eye to CETOP RP 103 P

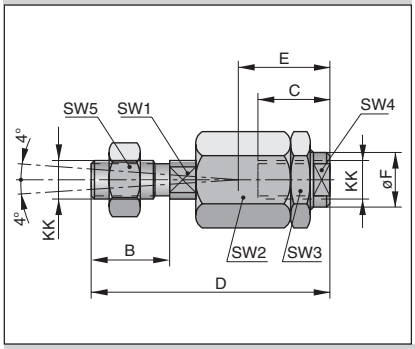


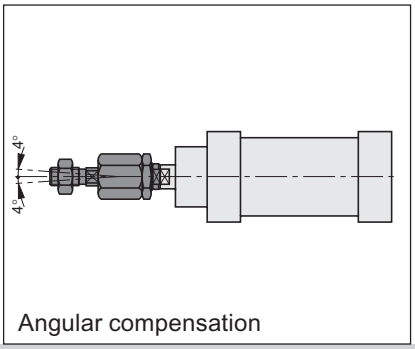
Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	A	CE	CN^{H7} Ø	EN	ER	KK	LE	SW	U	W	ØZ$_1$	Weight (kg)
GA-M10	**KY 6146**	32	20	43	10	14	28	M10	15	17	10.5	57	15	0.072
GA-M12	**KY 6185**	40	22	50	12	16	32	M12	17	19	12	66	17.5	0.107
GA-M16	**KY 6149**	50, 63	28	64	16	21	42	M16	22	22	15	85	22	0.21

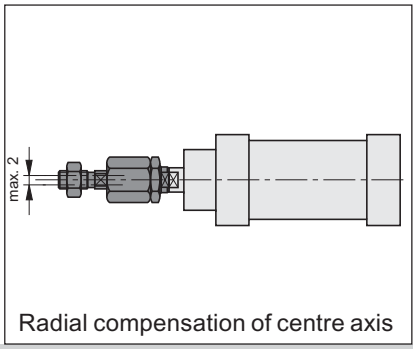
Material: galvanized steel

Compensating Coupling for Piston Rods





Angular compensation



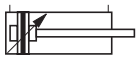
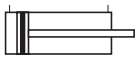
Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	KK	B	C	D	E	ØF	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M10	**KY 1128**	M10	20	23	70	31	21.5	12	30	30	19	17	0.218
AK-M12	**KY 1130**	M12	23	23	67	31	21.5	12	30	30	19	19	0.207
AK-M16	**KY 1132**	M16	40	32	112	45	33.5	19	41	41	30	30	0.634

Order Instructions

Basic Cylinder (without mountings)

Series	Symbol	Piston-Ø	Order Instructions Type	Order No.
Double acting with adjustable end cushioning for contactless position sensing		32	**R 5032/....***	**PD 46443-...**
		40	**R 5040/....**	**PD 46445-....**
		50	**R 5050/....**	**PD 46447-....**
		63	**R 5063/....**	**PD 46449-....**
Double acting without adjustable end cushioning for contactless position sensing		32	**R 6032/....**	**PD 46444-....**
			RK 6032/....	**PA 58220-....**
		40	**R 6040/....**	**PD 46446-....**
			RK 6040/....	**PA 59140-....**
		50	**R 6050/....**	**PD 46448-....**
			RK 6050/....	**PA 60210-....**
		63	**R 6063/....**	**PD 46450-....**
			RK 6063/....	**PA 61150-....**

Complete type designation and order no. with stroke length in mm (4-digits)

Standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320, 0400, 0500 delivered preferably

* Magnetic switch mounting by band

Mountings - Accessories

Description	Type	Order No. Ø32	Ø40	Ø50	Ø63
Foot mounting (1 mounting bracket)	**RA 1-..**	**KK 29.302**	**KK 30.302**	**KK 31.302**	**KK 32.302**
Foot mounting (standard version)	**RA 2-..***	**PD 25712**	**PD 25713**	**PD 25714**	**PD 25715**
Flange mounting (1 mounting bracket)	**RC- ..**	**KK 29.302**	**KK 30.302**	**KK 31.302**	**KK 32.302**
Rear trunnion mounting	**RB- ..**	**PD 40390**	**PD 40391**	**PD 40392**	**PD 40393**
Front trunnion mounting	**RE-..**	**PD 40394**	**PD 40395**	**PD 40396**	**PD 40397**

Complete type designation with piston-Ø

Ordering example RA-32 KK 29.302

* consists of 2 mounting brackets and 1 hexagon nut

Cylinder

ø 32-63 mm

with through piston rod

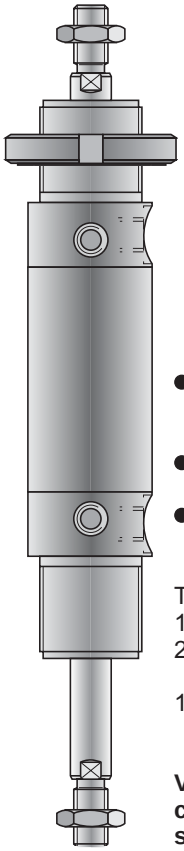
Version:
Double acting without cushioning
for contactless position sensing

Series RDU ....

RDU 6...



Characteristics according to VDI 3292			Pressures quoted as gauge pressure			
Characteristics	Symbol	Unit	Description			
General Features						
Type			Round cylinder with through piston rod			
Series			RDU 6...			
System			Double acting without cushioning			
Mounting			See drawings			
Tube connection			Thread			
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing		
Medium temperature range	ϑ_{max}	°C	+70	point (°C), please contact us for advice.		
Weight (mass)		kg	See table			
Installation			In any position			
Medium			Filtered and lubricated or filtered and unlubricated compressed air			
Lubrication			Oil mist lubrication compatible with Buna N			
Material: Cylinder barrel			Aluminium, anodised			
Material: Front			Aluminium, anodised			
Material: Piston rod			Steel, high-alloy			
Pneumatic Characteristics						
Nominal pressure	p_n	bar	6			
Operating pressure range	p_{min} p_{max}	bar bar	1 10			
Piston diameter		mm	32	40	50	63
Port size			G 1/8	G1/4	G1/4	G 3/8
Piston rod diameter		mm	12	16	20	20
Stroke length			For standard stroke lengths see order instructions, max. 500, longer strokes on request			
Piston force and air consumption			See data sheet 2.05.001E			



- Universal cylinder for mounting by a thread on the cylinder cover
- Pivot mounting on the cylinder cover
- Reed switch mounting by band

The delivery includes:
1 Cylinder
2 Hexagon nuts for piston rod thread
1 Grooved nut for cylinder mountings

Versions without contactless position sensing on request.

Weight (mass) kg		
Type	Weight (kg) *	Weight for every additional 100 mm stroke length
RDU 6032/100	1.10	0.34
RDU 6040/100	1.48	0.56
RDU 6050/100	2.56	0.85
RDU 6063/100	3.26	0.95

* Weight for cylinder with 100 mm stroke

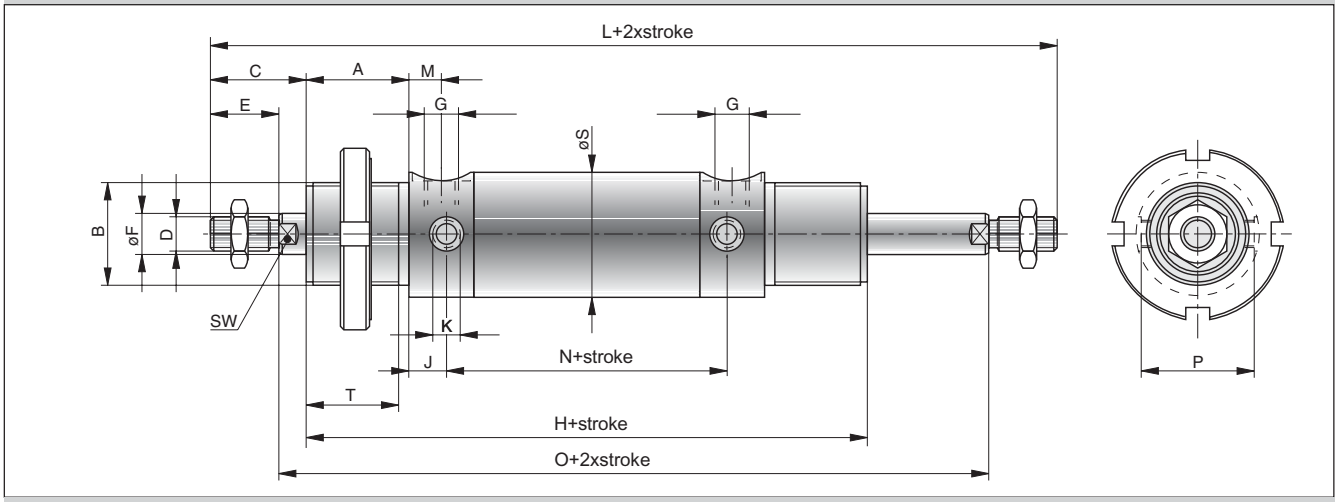
For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

A1P460E00LW00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Dimensions



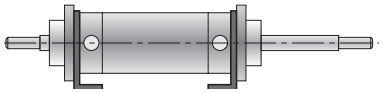
Dimension Table (mm)

Cyl.-Ø	A	B	C	D	E	ØF	G	H+ stroke	J	K	L+2x stroke	M	N+ stroke	O+2x stroke	P	ØS	T	SW
32	30	M30x1.5	28	M10	20	12	G1/8	143.5	11	M8x1	199.5	9.5	61.5	159.5	33	35	27	10
40	35	M38x1.5	34	M12	24	16	G1/4	159	12	M10x1	228	11	65	180	42	43	32	14
50	38	M45x1.5	44	M16	32	20	G1/4	169.5	13	M12x1.5	257.5	11	67.5	193.5	52	54	35	17
63	38	M45x1.5	45	M16	32	20	G3/8	177	13.5	M14x1.5	267	12.5	74	203	62	67*	35	17

* Front cylinder cover Ø 70 mm

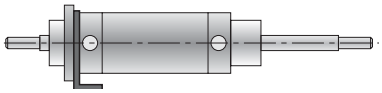
Mounting options

Foot mounting
(2 mounting brackets)



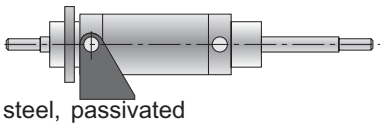
Material: steel, passivated

Foot mounting
Flange mounting



steel, passivated

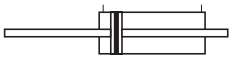
Trunnion
Mounting



steel, passivated

Order Instructions

Basic Cylinder (without mountings)

Series	Symbol	Piston-Ø	Order Instructions Type	Order No.
Double acting without adjustable end cushioning for contactless position sensing		32	**RDU 6032/...**	**PA 58270-....**
		40	**RDU 6040/...**	**PA 59200-....**
		50	**RDU 6050/...**	**PA 60270-....**
		63	**RDU 6063/...**	**PA 61200-....**

Complete type designation and order no. with stroke length (in mm) (in mm 4-digit)

Standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320, 0400, 0500 delivered preferably

Mountings - Accessories

Description	Type	Bestell-Nr. Ø32	Ø40	Ø50	Ø63
Foot mounting (1 mounting bracket)	**RA 1-..**	**KK 29.302**	**KK 30.302**	**KK 31.302**	**KK 32.302**
Foot mounting (standard version)	**RA 2-..***	**PD 25712**	**PD 25713**	**PD 25714**	**PD 25715**
Flange mounting (1 mounting bracket)	**RC- ..**	**KK 29.302**	**KK 30.302**	**KK 31.302**	**KK 32.302**
Front trunnion mounting	**RE-..**	**PD 40394**	**PD 40395**	**PD 40396**	**PD 40397**

Complete type designation with piston-Ø

Ordering example: RA 1-32 KK 29.302

* consists of 2 mounting brackets and 1 hexagon nut

Cylinder

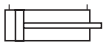
ø 12-25 mm

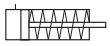
to ISO 21287

Versions :

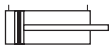
- **Optional with/without contactless position sensing**
- **Single acting without adjustable end cushioning**
- **Double acting without adjustable end cushioning**
- **Option of internal or external mounting on piston rod**

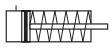
Series NZ ....

NZ 2...(-AG)* 

NZ 3...(-AG)* 

NZ 4...(-AG)* 

NZ 6...(-AG) 

NZ 7...(-AG) 

NZ 8...(-AG) 

*** on request**

Characteristics according to VDI 3294			Pressures quoted as gauge pressure			
Characteristics	Symbol	Unit	Description			
General Features						
Type			Piston rod cylinder			
Series			NZ 2, NZ 3, NZ 4, NZ 6, NZ 7, NZ 8			
Series NZ 2...			Double acting without cushioning			
Series NZ 6...			Double acting without cushioning for contactless position sensing			
Series NZ 3..., NZ 4...			Single acting without cushioning			
Series NZ 7..., NZ 8...			Single acting without cushioning for contactless position sensing			
Mounting			See drawing			
Tube connection			Thread			
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing		
Mediums-temperature range	ϑ_{max}	°C	+80	point (°C) it is necessary to consult us		
Weight (mass)		kg	See table			
Installation			In any position			
Medium			Filtered and lubricated or filtered and unlubricated compressed air			
Lubrication			Oil mist lubrication compatible with polyurethane			
Material: Cylinder tube			Aluminium, anodised			
Material: Front/Rear covers			Aluminium, laquered			
Material: Piston rod			Steel, high-alloy			
Pneumatic Characteristics						
Nominal pressure	p_n	bar	6			
Operating pressure	p_{min} p_{max}	bar bar	1.0 (Single acting version: 1.5) 10			
Piston diameter		mm	12	16	20	25
Port size			M5	M5	M5	M5
Piston rod diameter		mm	6	8	10	10
Piston rod thread		Inside	M3	M4	M6	M6
		Outside	M5	M6	M8	M8
Stroke length		mm	Standard stroke lengths see order instructions, max. 200			
Piston force and air consumption			see Data-Sheet 2.05.001E			
Cushioning			Elastomer cushioning at both ends			
Spring return force	max	N	see diagram			

Weight (mass) kg

Mounting gungsart	Cylinder-Ø 12		16		20		25	
	*1	*2	1	2	1	2	1	2
Basic Cyl.	0.095		0.105		0.162		0.199	
A	0.047		0.047		0.086		0.100	
BA	0.021	0.015	0.021	0.019	0.038	0.024	0.042	0.027
C	0.110		0.110		0.180		0.220	
D	0.110		0.110		0.180		0.220	

*1 = Cylinder weight (10 mm stroke)
*2 = Weight per further 10 mm stroke length

For product group overview see 2.01.001E
For magnetic switches see 2.90.042E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

Special versions:
●High temperature version (+150°)

The cylinder profile has grooves in which, depending on stroke length, one more magnetic switches can be mounted for sensing the end positions or intermediate positions of the magnetic piston.

The delivery includes:
1 Cylinder

Magnetic switches are not included - please order these separately.



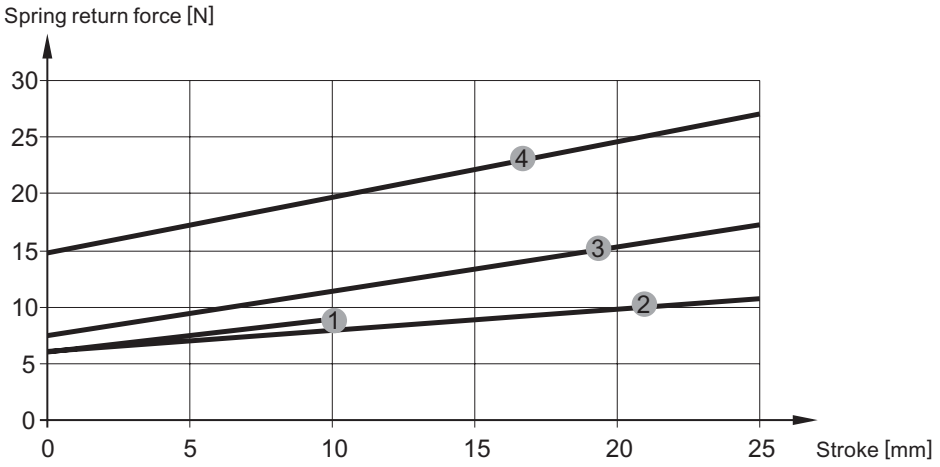
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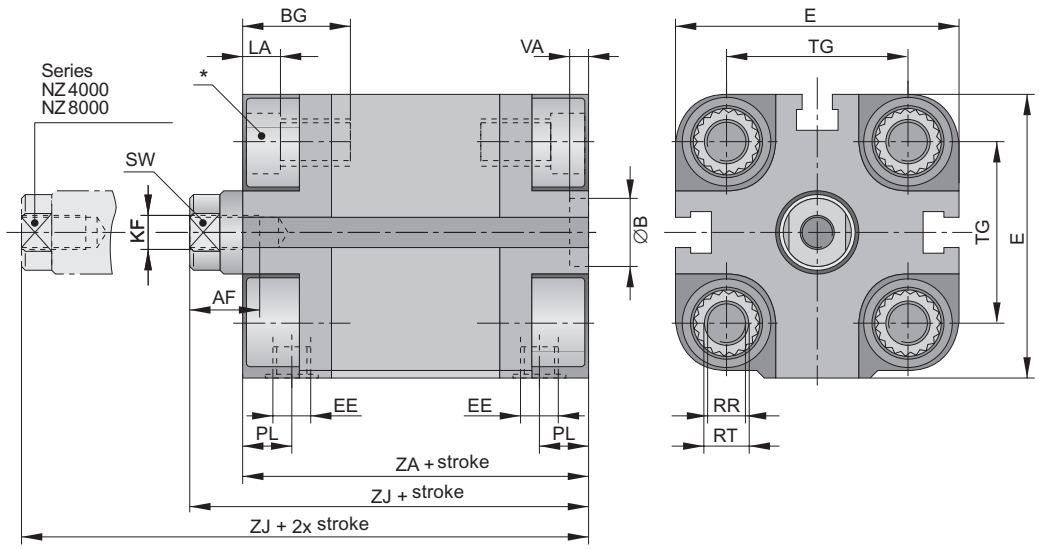
The right to introduce technical modifications is reserved

Theoretical Spring Return Forces in relation to Stroke Length
Series NZ 3000, NZ 4000, NZ 7000, NZ 8000

1 = Cyl.ø 12
2 = Cyl.ø 16
3 = Cyl.ø 20
4 = Cyl.ø 25



Dimensions for Basic Cylinder
Version: Piston Rod with Internal Thread (Series NZ..../...)

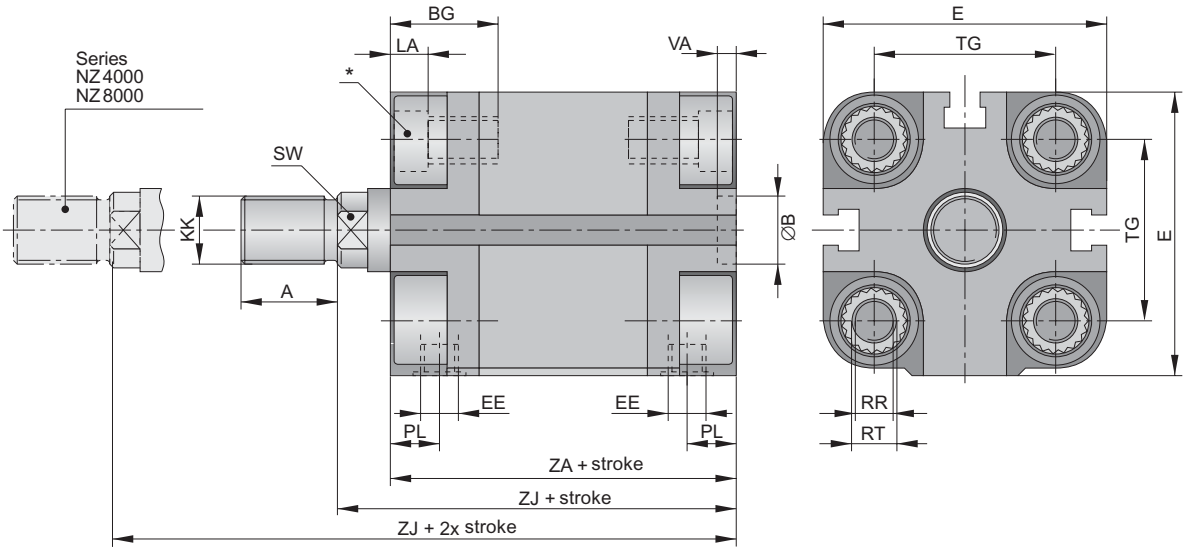


* Mounting screws to DIN 912 can be flush-countersunk.

Dimension Table (mm) for Basic Cylinder

Cyl. ø	AF	B	BG	E	EE	KF	LA	PL	RR	RT	TG	VA	ZA +stroke	ZJ +stroke	ZJ +2xstroke	SW
12	8	6	8	29	M5	M3	5	5	3.2	M4	18	4	37	42.5	42.5	5
16	10	6	10	29	M5	M4	5	5	3.2	M4	18	4	37	42.5	42.5	7
20	10	6	15	38	M5	M6	5	5	4.1	M5	22	4	37	43	43	8
25	10	6	15	41	M5	M6	5	5	4.1	M5	26	4	39	45	45	8

Dimensions for Basic Cylinder
Version: Piston Rod wtih External Thread (Series NZ..../...-AG)

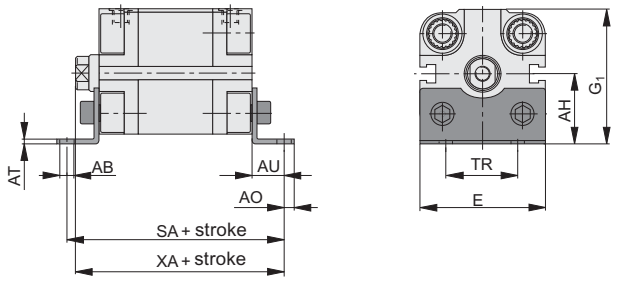


* Mounting screws to DIN 912 can be flush-countersunk.

Dimension Table (mm) for Basic Cylinder

Cyl. ø	A	B	BG	E	EE	KK	LA	PL	RR	RT	TG	VA	ZA +stroke	ZJ +stroke	ZJ +2xstroke	SW
12	12	6	8	29	M5	M5	5	5	3.2	M4	18	4	37	42.5	42.5	5
16	16	6	10	29	M5	M6	5	5	3.2	M4	18	4	37	42.5	42.5	7
20	16	6	15	38	M5	M8	5	5	4.1	M5	22	4	37	43	43	8
25	16	6	15	41	M5	M8	5	5	4.1	M5	26	4	39	45	45	8

Dimensions for Mounting A



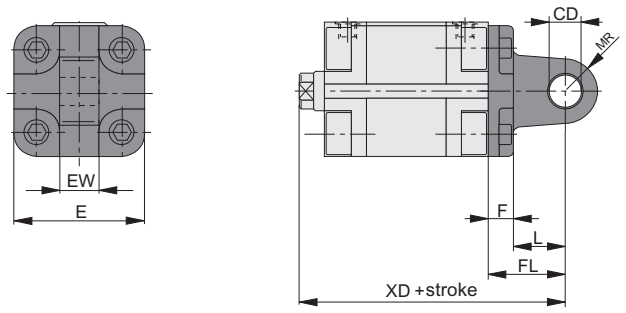
Material: steel, passivated

Dimension Table (mm) for Mounting A

Cyl.-Ø	AB Ø	AH	AO	AT	AU	E	G_1	TR	SA +stroke	XA +stroke
12	5.8	22	4.5	3	13	28	36.5	18	63	55.5
16	5.8	22	4.5	3	13	28	36.5	18	63	55.5
20	7	27	7	4	16	36	46	22	69	59
25	7	29	7	4	16	40	49.5	26	71	61

Included in delivery: 2 x foot brackets
4 x screws

Dimensions for Mounting BA



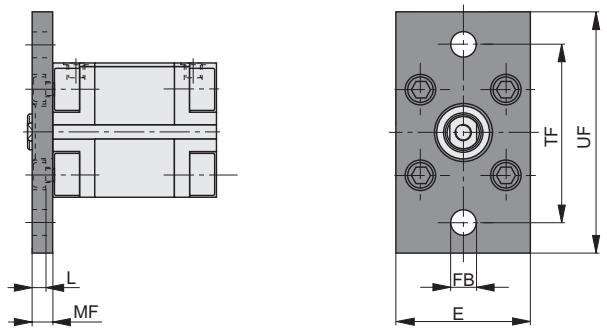
Material: cast aluminium

Dimension Table (mm) for Mounting BA

Cyl.-	ØCD	E	EW	F	FL	L	MR	XD +stroke
12	6	27	12	6	16	10	6	53
16	6	27	12	6	16	10	6	53
20	8	34	16	6	20	14	8	57
25	8	38	16	6	20	14	8	59

Included in delivery: 1 x mounting eyelets
4 x screws

Dimensions for Mounting C



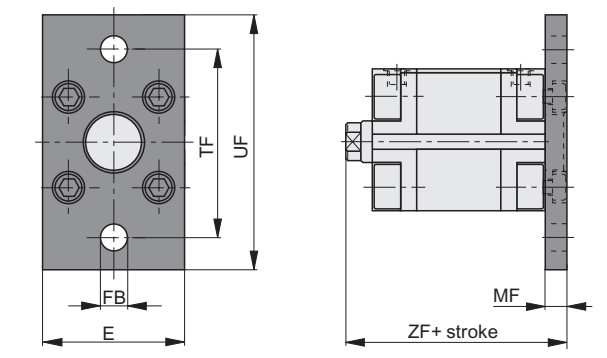
Material: steel, zinc-plated

Dimension Table (mm) for Mounting C

Cyl.-Ø	øFB	E	L	MF	TF	UF
12	5.5	29	5	8	43	55
16	5.5	29	5	8	43	55
20	6.6	36	5	8	55	70
25	6.6	40	5	8	60	76

Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting D



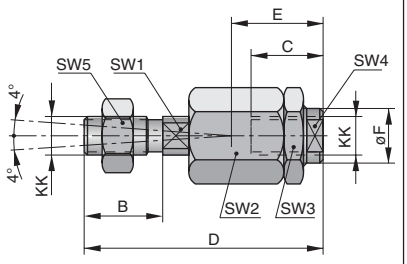
Material: steel, zinc-plated

Dimension Table (mm) for Mounting D

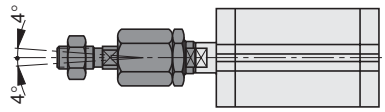
Cyl.-Ø	øFB	E	MF	TF	UF	ZF +stroke
12	5.5	29	8	43	55	50.5
16	5.5	29	8	43	55	50.5
20	6.6	36	8	55	70	51
25	6.6	40	8	60	76	53

Included in delivery: 1 x flange
4 x screws

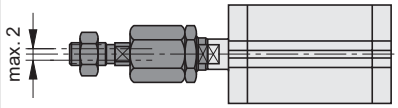
Compensating Coupling for Piston Rod



Material:steel



Angle compensation

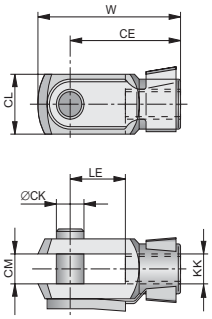


Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.Ø	B	C	D	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M5	**KL1026**	12	12	11	38	14	6.5	M5	5	13	13	7	8	0.021
AK-M6	**KY1126**	16	12	11	36	14	8.5	M6	5	13	13	7	10	0.021
AK-M8	**KY1127**	20	13	14	46	20	12.2	M8	7	17	17	10	13	0.049
AK-M8	**KY1127**	25	13	14	46	20	12.2	M8	7	17	17	10	13	0.049

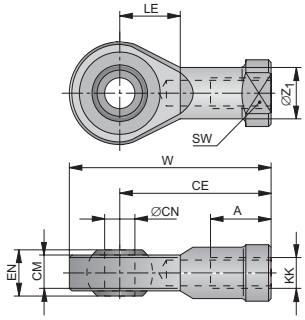
Piston Rod Clevis to ISO 8140 (CETOP RP102P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	ØCK	CE	CL	CM	KK	LE	W	Weight (kg)
GK-M5	**KL6020**	12	5	20	10	5	M5	10	26	0.009
GK-M6	**KY6132**	16	6	24	12	6	M6	12	31	0.016
GK-M8	**KY6133**	20	8	32	16	8	M8	16	42	0.038
GK-M8	**KY6133**	25	8	32	16	8	M8	16	42	0.038

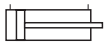
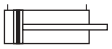
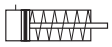
Piston Rod Eye to ISO 8139 (CETOP RP103 P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	A	CE	øCN	EN	KK	LE	SW	CM	W	øZ1	Weight (kg)
GA-M5	**KL6022**	12	8	27	5	8	M5	11	11	6	36.5	9	0.017
GA-M6	**KY6144**	16	12	30	6	9	M6	11	11	6.75	40	10	0.025
GA-M8	**KY6145**	20	16	36	8	12	M8	13	14	9	48	12.5	0.043
GA-M8	**KY6145**	25	16	36	8	12	M8	13	14	9	48	12.5	0.043

Order Instructions for Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Order Instructions Type	Order-No.
Double acting without adjustable end cushioning		12	**NZ 2012/.. NZ 2012/..-AG**	**PA 68040-.... on request**
		16	**NZ 2016/.. NZ 2016/..-AG**	**PA 68050-.... on request**
		20	**NZ 2020/.. NZ 2020/..-AG**	**PA 68060-.... on request**
		25	**NZ 2025/.. NZ 2025/..-AG**	**PA 68070-.... on request**
Single acting without adjustable end cushioning		12	**NZ 3012/.. NZ 3012/..-AG**	**PA 68080-.... on request**
		16	**NZ 3016/.. NZ 3016/..-AG**	**PA 68090-.... on request**
		20	**NZ 3020/.. NZ 3020/..-AG**	**PA 68100-.... on request**
		25	**NZ 3025/.. NZ 3025/..-AG**	**PA 68110-.... on request**
Single acting without adjustable end cushioning		12	**NZ 4012/.. NZ 4012/..-AG**	**PA 68120-.... on request**
		16	**NZ 4016/.. NZ 4016/..-AG**	**PA 68130-.... on request**
		20	**NZ 4020/.. NZ 4020/..-AG**	**PA 68140-.... on request**
		25	**NZ 4025/.. NZ 4025/..-AG**	**PA 68150-.... on request**
Double acting without adjustable end cushioning, for contactless position sensing		12	**NZ 6012/.. NZ 6012/..-AG**	**PA 67920-.... PA 67280-....**
		16	**NZ 6016/.. NZ 6016/..-AG**	**PA 67930-.... PA 68290-....**
		20	**NZ 6020/.. NZ 6020/..-AG**	**PA 67940-.... PA 68300-....**
		25	**NZ 6025/.. NZ 6025/..-AG**	**PA 67950-.... PA 68130-....**
Single acting without adjustable end cushioning, for contactless position sensing		12	**NZ 7012/.. NZ 7012/..-AG**	**PA 67960-.... PA 68320-....**
		16	**NZ 7016/.. NZ 7016/..-AG**	**PA 67970-.... PA 68330-....**
		20	**NZ 7020/.. NZ 7020/..-AG**	**PA 67980-.... PA 68340-....**
		25	**NZ 7025/.. NZ 7025/..-AG**	**PA 67990-.... PA 68350-....**
Single acting without adjustable end cushioning, for contactless position sensing		12	**NZ 8012/.. NZ 8012/..-AG**	**PA 68000-.... PA 68360-....**
		16	**NZ 8016/.. NZ 8016/..-AG**	**PA 68010-.... PA 68370-....**
		20	**NZ 8020/.. NZ 8020/..-AG**	**PA 68020-.... PA 68380-....**
		25	**NZ 8025/.. NZ 8025/..-AG**	**PA 86030-.... PA 68390-....**

Complete type designation and order no. with stroke length in mm (in mm 4-digits)

Standard stroke length:
Double acting Version: 0005, 0010, 0015, 0020, 0025, 0030, 0040, 0050 delivered preferably
Single acting Version: 0005, 0010, 0015, 0020, 0025 (Ø12: 0005, 0010)

Order Instructions for Cylinder Mountings

Description	Order No. Ø12	Ø16	Ø20	Ø25
Foot mounting A-..	**KL5510**	**KL5510**	**KL5511**	**KL5512**
Rear trunnion mounting BA-..	**KL5513**	**KL5513**	**KL5514**	**KL5515**
Front flange mounting C-..	**KL5516**	**KL5516**	**KL5517**	**KL5518**
Rear flange mounting D-..	**KL5516**	**KL5516**	**KL5517**	**KL5518**

Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled

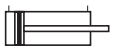
Ordering Example: Basic Cylinder: NZ 6025/25 PA 67950-0025 Foot Mounting: A-25 KL5512

Cylinder
ø 32-100 mm

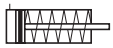
Versions:
- **For contactless position sensing as standard**
- **Single acting without adjustable end cushioning – normally retracted**
- **Single acting without adjustable end cushioning – normally extended**
- **Double acting without adjustable end cushioning**
- **Option of internal or external mounting on piston rod**

Series NZK ....

NZK 6...*



NZK 7...*



NZK 8...



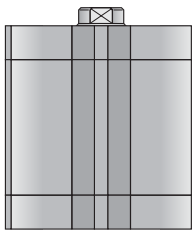
*** ATEX-Version aslo available (see also 2.01.001E-5, 6)** ⟨Ex⟩

Special versions:
- High temperature version (+150°), not for contactless position sensing

The cylinder profile has grooves in which, depending on stroke length, one more magnetic swtiches can be mounted for sensing the end positions or intermediate positions of the magnetic piston.

The delivery includes:
1 Cylinder

Magnetic switches are not included - please order these separately.



Characteristics according to VDI 3294 Pressures quoted as gauge pressure

Characteristics		Symbol	Unit	Description					
General Features									
Type				Piston rod cylinder					
Series				NZK 6, NZK 7, NZK 8					
Series NZK 6...				Double acting without cushioning for contactless position sensing					
Series NZK 7..., NZK 8...				Single acting without cushioning for contactless position sensing					
Mounting				See drawing					
Tube connection				Thread					
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing				
Mediums-temperature range		ϑ_{max}	°C	+8	point (°C) it is necessary to consult us				
Weight (mass)			kg	See table					
Installation				In any position					
Medium				Filtered and lubricated or filtered and unlubricated compressed air					
Lubrication				Oil mist lubrication compatible with polyurethane					
Material	Cylinder tube			Aluminium, anodised					
	Front/Rear covers			Aluminium, anodised					
	Piston rod			Steel, high-alloy					
Pneumatic Characteristics									
Nominal pressure		p_n	bar	6					
Operating pressure		p_{min} p_{max}	bar bar	0.5 (Single acting version : 1.0) 10					
Piston diameter			mm	32	40	50	63	80	100
Port size				G1/8	G1/8	G1/8	G1/8	G1/8	G1/4
Piston rod diameter			mm	12	16	20	20	25	25
Piston rod thread			[1]	M6 M10x1.25	M6 M12x1.25	M8 M16x1.5	M8 M16x1.5	M10 M20x1.5	M12 M20x1.5
Stroke length			mm	Double acting version: see order instructions Single acting versin: 5, 10, 15, 20, 25					
Piston force and air consumption				see Data-Sheet 2.05.001E					
Cushioning				Elastomer cushioning at both ends					
Spring return force		max.	N	see diagramm					

[1]) Piston rod thread on series NZK..../....-AG

Weight (mass) kg

Mounting gungsart	Cylinder-Ø 32		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic Cyl.	0.35		0.48		0.68		1.17		1.68		2.61	
A	0.55		0.73		0.88		1.57		2.48		3.51	
B	0.45		0.58		0.83		1.37		2.08		3.21	
BA	0.55	0.042	0.68	0.057	0.78	0.079	1.57	0.096	2.48	0.130	3.61	0.175
BAS	0.50		0.68		0.78		1.47		2.18		3.51	
C	0.50		0.58		0.73		1.52		2.18		3.51	
D	0.50		0.58		0.73		1.52		2.18		3.51	

*1 = Cylinder weight (10 mm stroke)
*2 = Weight per further 10 mm stroke length

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

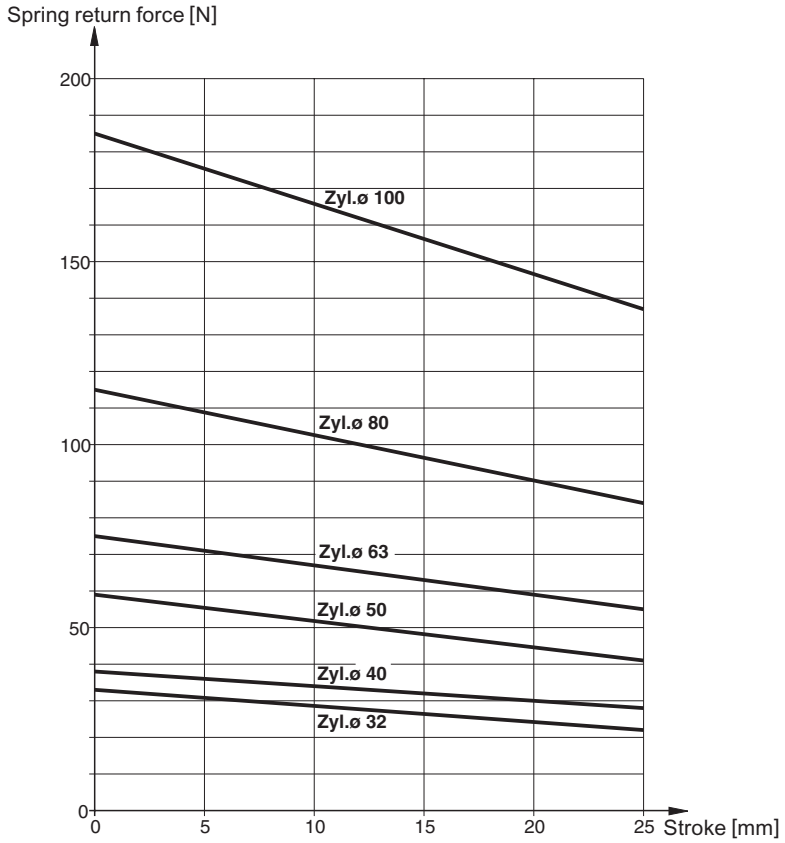
Data Sheet No. 2.28.001E-1

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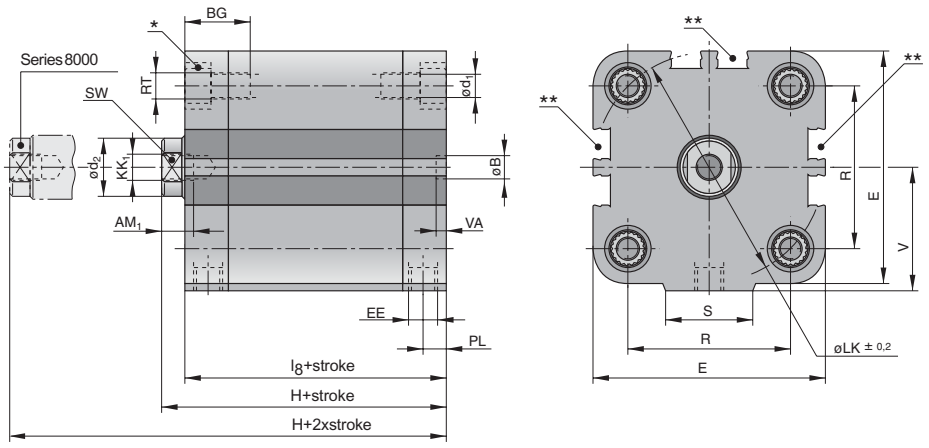
The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Theoretical Spring Return Forces in relation to Stroke Length
Series NZK 7000, NZK 8000



Dimensions for Basic Cylinder
Version: Piston Rod with Internal Thread (Series NZK..../...)



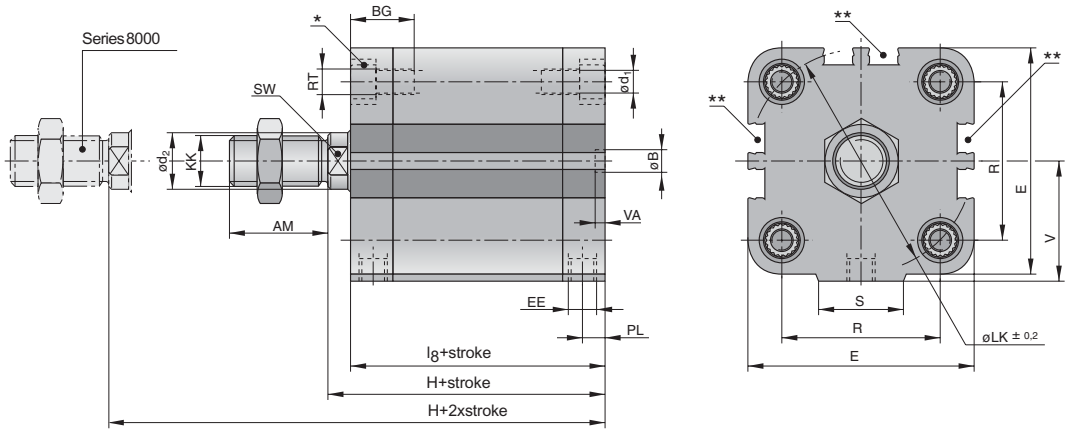
* Mounting screws to DIN 912 can be flush-countersunk
** Cylinder diameters 32, 40, 50 mm: only 1 groove in the middle

Dimension Table (mm) for Basic Cylinder

Cyl. ø	AM_1	øB H9	BG	$ød_1$	$ød_2$	E	EE	H (* +stroke	KK_1	l_8 +stroke	øLK	PL	R	RT	S	SW	V	VA
32	12	6	21	5.5	12	50	G1/8	50.5	M6	44.5	46	8	32.5	M6	21	10	26.5	4
40	12	6	21	5.5	16	57	G1/8	52	M6	45.5	54	8	38	M6	22	13	30	4
50	12	6	22.5	6.5	20	67.5	G1/8	53	M8	45.5	66	8	46.5	M8	25	17	35.75	4
63	12	8	22.5	6.5	20	81	G1/8	57.5	M8	50	80	8	56.5	M8	30	17	43.5	4
80	16	8	27.5	8.5	25	98	G1/8	64	M10	56	102	8.5	72	M10	40	19	53	4
100	20	8	32.5	8.5	25	119	G1/4	76.5	M12	66.5	126	10.5	89	M10	50	22	62.5	4

(* Series NZK 8000: H + 2x stroke

Dimensions for Basic Cylinder
Version: Piston Rod wtih External Thread (Series NZK..../...-AG)



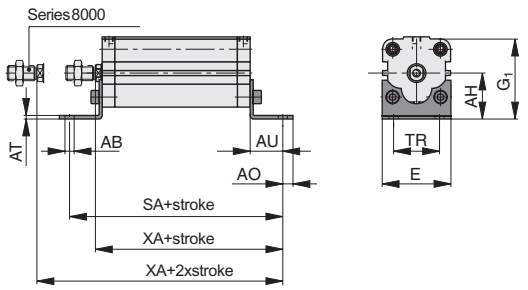
* Mounting screws to DIN 912 can be flush-countersunk
** Cylinder diameters 32, 40, 50 mm: only 1 groove in the middle

Dimension Table (mm) for Basic Cylinder

Cyl. ø	AM	øB H9	BG	$ød_1$	$ød_2$	E	EE	H (* +stroke	KK	l_8 +stroke	øLK	PL	R	RT	S	SW	V	VA
32	20	6	21	5.5	12	50	G1/8	50.5	M10x1.25	44.5	46	8	32.5	M6	21	10	26.5	4
40	24	6	21	5.5	16	57	G1/8	52	M12x1.25	45.5	54	8	38	M6	22	13	30	4
50	32	6	22.5	6.5	20	67.5	G1/8	53	M16x1.5	45.5	66	8	46.5	M8	25	17	35.75	4
63	32	8	22.5	6.5	20	81	G1/8	57.5	M16x1.5	50	80	8	56.5	M8	30	17	43.5	4
80	40	8	27.5	8.5	25	98	G1/8	64	M20x1.5	56	102	8.5	72	M10	40	19	53	4
100	40	8	32.5	8.5	25	119	G1/4	76.5	M20x1.5	66.5	126	10.5	89	M10	50	22	62.5	4

(* Baureihe NZK 8000: H + 2x Hub

Dimensions for Mounting A



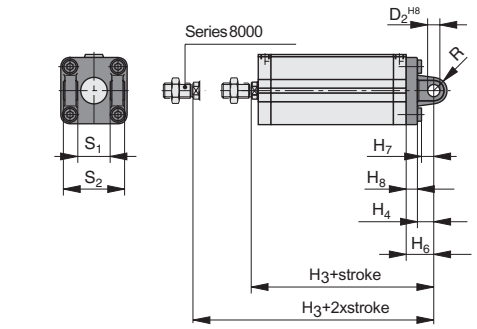
Material: steel, passivated

Dimension Table (mm) for Mounting A

Cyl.-Ø	AB Ø	AH	AO	AT	AU	E	G_1	TR	SA+ stroke	XA+ stroke(*
32	7	32	8	4	24	47	58.5	32	92.5	74.5
40	9	36	10	4	28	53	66	36	101.5	80
50	9	45	10	5	32	65	81	45	109.5	85
63	9	50	10	5	32	75	93.5	50	114	89.5
80	12	63	14	6	41	95	116	63	138	105
100	14	71	15	6	41	115	133.5	75	148,5	117.5

Included in delivery: 2 x foot brackets
4 x screws
(* Series NZK 8000: XA + 2x stroke

Dimensions for Mounting B



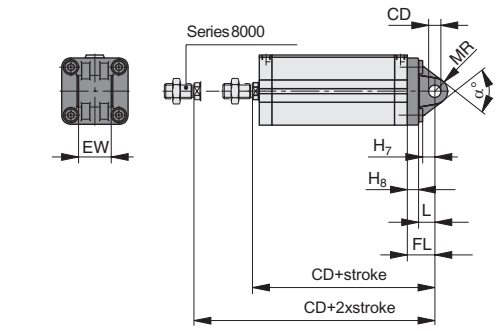
Material: cast aluminium

Dimension Table (mm) for Mounting B

Cyl.-Ø	ØD H8	H_3+ stroke(*	H_4	H_6	H_7	H_8	R	S_1	S_2
32	10	72.5	12	22	11	10	9	26	45
40	12	77	15	25	14	10	11	28	52
50	12	80	16	27	15	11	12	32	60
63	16	89.5	21	32	20	11	15	40	70
80	16	100	22	36	21	14	16	50	90
100	20	117.5	25	41	24	16	20	60	110

Included in delivery: 1 x rear trunnion mounting
4 x screws
(* Series NZK 8000: H_3 + 2x stroke

Dimensions for Mounting BA



Material: cast aluminium

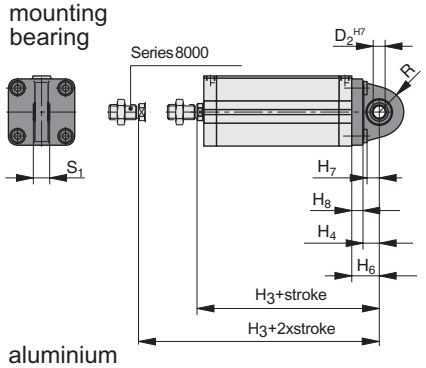
Dimension Table (mm) for Mounting BA

Cyl.-Ø	øCD H8	EW	FL	H_7	H_8	L	MR	XD (* +stroke	α°
32	10	26	22	11	10	12	10.5	72.5	60
40	12	28	25	14	10	15	13	77	60
50	12	32	27	15	11	16	13	80	70
63	16	40	32	20	11	21	17	89.5	60
80	16	50	36	20	15	21	17	100	70
100	20	60	41	24	16	25	21	117.5	70

Included in delivery: 1 x rear trunnion mounting
4 x screws
(* Series NZK 8000: XD + 2x stroke

Dimensions for Mounting BAS

Rear trunnion mounting
with spherical bearing



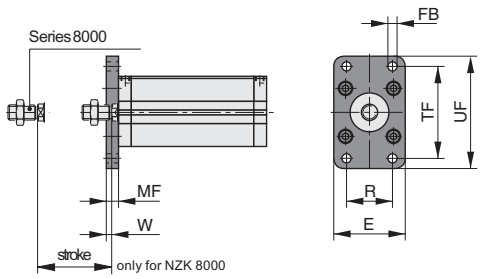
Material: cast aluminium

Dimension Table (mm) for Mounting BAS

Zyl.-Ø	$ØD_2$ H7	H_3+ stroke(*	H_4	H_6	H_7	H_8	R	S_1
32	10	72.5	12	22	11	10	18	14
40	12	77	15	25	14	10	21	16
50	12	80	16	27	15	11	23	16
63	16	89.5	21	32	20	11	27	21
80	16	100	21	36	20	15	29	21
100	20	117.5	25	41	24	16	34	25

Included in delivery: 1 x rear trunnion mounting
with spherical bearing
4 x screws
(* Series NZK 8000: H_3 + 2x stroke

Dimensions for Mounting C



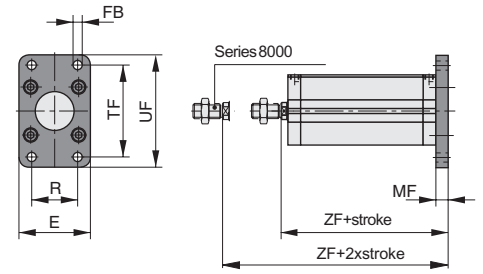
Material: cast aluminium

Dimension Table (mm) for Mounting C

Cyl.-Ø	øFB	E	MF	R	TF	UF	W
32	7	50	10	32	64	79	4
40	9	56	10	36	72	90	3.5
50	9	70	12	45	90	110	4.5
63	9	77	12	50	100	120	4.5
80	12	100	16	63	126	153	8
100	14	120	16	75	150	178	6

Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting D



Material: cast aluminium

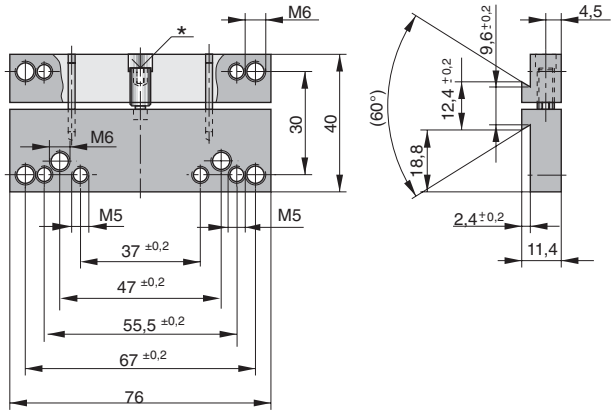
Dimension Table (mm) for Mounting D

Cyl.-Ø	øFB	E	MF	R	TF	UF	ZF +stroke (1
32	7	50	10	32	64	79	60.5
40	9	56	10	36	72	90	62
50	9	70	12	45	90	110	65
63	9	77	12	50	100	120	69.5
80	12	100	16	63	126	153	80
100	14	120	16	75	150	178	92.5

Included in delivery: 1 x flange
4 x screws

(1 NZK 8000 : ZF+2 x stroke

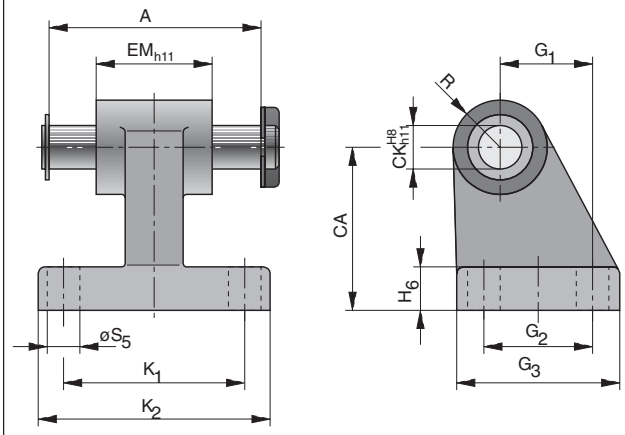
Adapter plate for Mounting S9-Valves G1/8 and G1/4



Order No.:PD 40372 * Allan screw SW 2.5

Pivot (series GLN) for Mounting B to VDMA 24562

for 90° angle

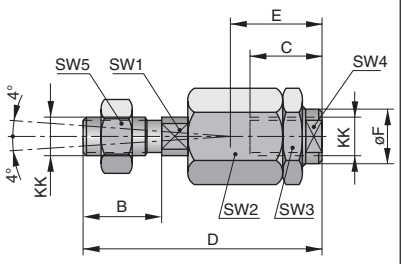


Material: cast aluminium

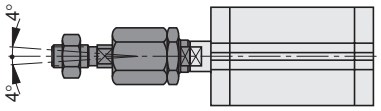
Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.-Ø	A	CA	CK^{H8}_{h11}	EM_{h11}	G_1	G_2	G_3	H_6	K_1	K_2	R_1	$øS_5$	Weight (kg)
GLN-032	**PD 40844**	32	46	32	10	26	21	18	31	8	38	50	10	6,6	0.092
GLN-040	**PD 40845**	40	53	36	12	28	24	22	35	10	41	53	11	6,6	0.131
GLN-050	**PD 40846**	50	61	45	12	32	33	30	45	12	50	64	13	9	0.193
GLN-063	**PD 40847**	63	71	50	16	40	37	35	50	12	52	66	15	9	0.305
GLN-080	**PD 40848**	80	91	60	16	50	47	40	60	14	66	84	15	11	0.460
GLN-100	**PD 40849**	100	111	70	20	60	55	50	70	15	76	94	19	11	0.840

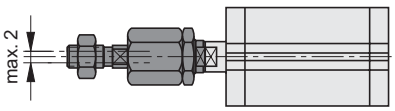
Compensating Coupling for Piston Rod



Material:steel



Angle compensation

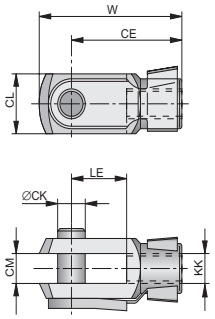


Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	B	C	D	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M10x1.25	KY 1129	32	20	23	70	31	21.5	M10x1.25	12	30	30	19	17	0.218
AK -M12x1.25	KY 1131	40	23	23	67	31	21.5	M12x1.25	12	30	30	19	19	0.207
AK -M16x1.5	KY 1133	50,63	40	32	112	45	33.5	M16x1.5	19	41	41	30	30	0.637
AK -M20x1.5	KY 1134	80,100	40	42	122	56	33.5	M20x1.5	19	41	41	30	30	0.711

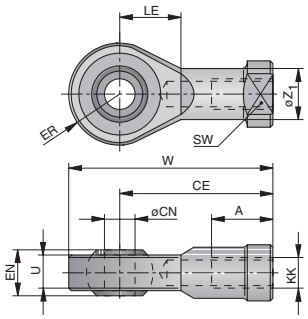
Piston Rod Clevis to ISO 8140 (CETOP RP102P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	ØCK	CE	CL	CM	KK	LE	W	Weight (kg)
GK-M10 x 1.25	KY 6135	32	10	40	20	10	M10x1.25	20	52	0.08
GK-M12 x 1.25	KY 6136	40	12	48	24	12	M12x1.25	24	62	0.125
GK-M16 x 1.5	KY 6139	50,63	16	64	32	16	M16x1.5	32	83	0.30
GK-M20 x 1.5	KY 6141	80,100	20	80	40	20	M20x1.5	40	105	0.52

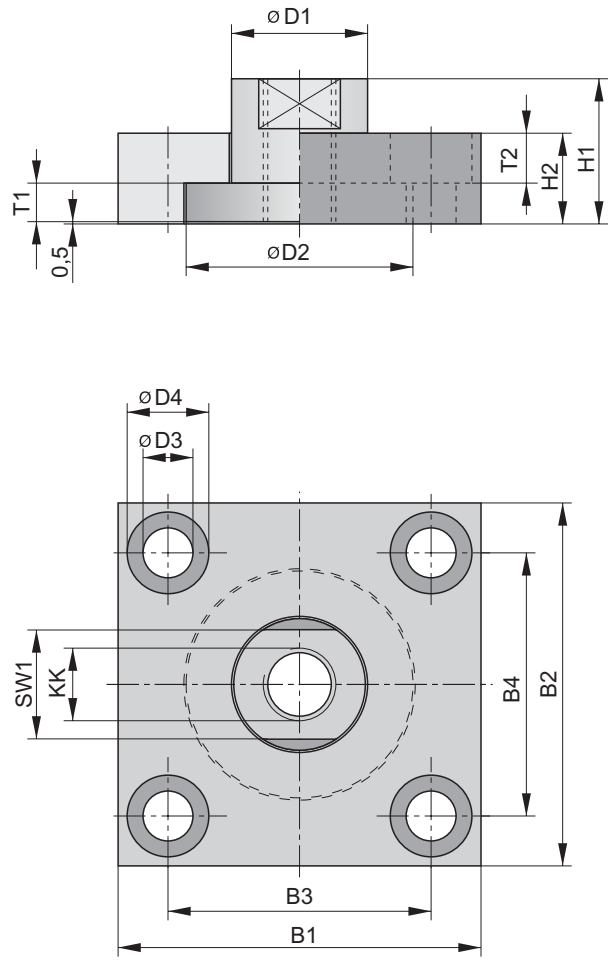
Piston Rod Eye to ISO 8139 (CETOP RP103 P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	A	CE	øCN	EN	ER	KK	LE	SW	U	W	$øZ_1$	Weight (kg)
GA-M10 x 1.25	KY 6147	32	20	43	10	14	14	M10x1.25	15	17	10.5	57	15	0.072
GA-M12 x 1.25	KY 6148	40	22	50	12	16	16	M12x1.25	17	19	12	66	17.5	0.107
GA-M16 x 1.5	KY 6150	50,63	28	64	16	21	21	M16x1.5	22	22	15	85	22	0.21
GA-M20 x 1.5	KY 6151	80,100	33	77	20	25	25	M20x1.5	26	32	18	102	27.5	0.38

Dimensions for Coupling



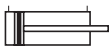
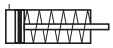
Material: steel, zinc-plated

Order Instructions, Dimension Table (mm), Weight

Order Instructions		Cyl.Ø	B_1	B_2	B_3	B_4	$ØD_1$ H11	$ØD_2$	$ØD_3$ H13	$ØD_4$ H13	H_1	H_2	T_1	T_2	KK	SW1	Weight (kg)
Type	**Order No.**																
KSG-32	**KC 5224**	32	60	37	36	23	20	30	6.6	11	24	15	7	7	M10x1.25	17	0.225
KSG-40	**KC 5225**	40	60	56	42	38	25	40	9	15	30	20	8	9	M12x1.25	19	0.445
KSG-50/63	**KC 5226**	50,63	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24	0.900
KSG-80/100	**KC 5227**	80,100	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36	1.060

Included in delivery: 1 x flange
1 x threaded part

Order Instructions for Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Stroke max.	Order Instructions Type	Order-No.
Double acting without adjustable end cushioning, for contactless position sensing		32	320	**NZK 6032/... NZK 6032/...-AG**	**PA 58390-.... PA 58470-....**
		40	320	**NZK 6040/... NZK 6040/...-AG**	**PA 59310-.... PA 59390-....**
		50	400	**NZK 6050/... NZK 6050/...-AG**	**PA 60390-.... PA 60470-....**
		63	400	**NZK 6063/... NZK 6063/...-AG**	**PA 61330-.... PA 61410-....**
		80	500	**NZK 6080/... NZK 6080/...-AG**	**PA 62230-.... PA 62310-....**
		100	500	**NZK 6100/... NZK 6100/...-AG**	**PA 63130-.... PA 63210-....**
Single acting, normally retracted, without adjustable end cushioning for contactless position sensing		32	25	**NZK 7032/... NZK 7032/...-AG**	**PA 58400-.... PA 58480-....**
		40	25	**NZK 7040/... NZK 7040/...-AG**	**PA 59320-.... PA 59400-....**
		50	25	**NZK 7050/... NZK 7050/...-AG**	**PA 60400-.... PA 60480-....**
		63	25	**NZK 7063/... NZK 7063/...-AG**	**PA 61340-.... PA 61420-....**
		80	25	**NZK 7080/... NZK 7080/...-AG**	**PA 62240-.... PA 62320-....**
		100	25	**NZK 7100/... NZK 7100/...-AG**	**PA 63140-.... PA 63220-....**
Single acting, normally extended, without adjustable end cushioning for contactless position sensing		32	25	**NZK 8032/... NZK 8032/...-AG**	**PA 58460-.... PA 58490-....**
		40	25	**NZK 8040/... NZK 8040/...-AG**	**PA 59380-.... PA 59410-....**
		50	25	**NZK 8050/... NZK 8050/...-AG**	**PA 60460-.... PA 60490-....**
		63	25	**NZK 8063/... NZK 8063/...-AG**	**PA 61400-.... PA 61430-....**
		80	25	**NZK 8080/... NZK 8080/...-AG**	**PA 62300-.... PA 62330-....**
		100	25	**NZK 8100/... NZK 8100/...-AG**	**PA 63200-.... PA 63230-....**

Complete type designation and order no. with stroke length in mm (4- digits)

Standard stroke length:
Double acting Version: 0005, 0010, 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320, 0400, 0500
Single acting Version:0005, 0010, 0015, 0020, 0025

Order Instructions for Cylinder Mountings

Description	Bestell-Nr. Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Foot mounting A-..	**PD 27917**	**PD 27918**	**PD 28072**	**PD 28073**	**PD 28074**	**PD 28075**
Rear trunnion mounting B-..	**PD 22704**	**PD 22705**	**PD 22706**	**PD 22707**	**PD 22708**	**PD 22709**
Rear trunnion mounting BA-..	**PD 23412**	**PD 23413**	**PD 23414**	**PD 23415**	**PD 23416**	**PD 23417**
Rear trunnion mounting BAS-..	**PD 23843**	**PD 23844**	**PD 23845**	**PD 23846**	**PD 23847**	**PD 23848**
Front flange mounting C-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Rear flange mounting D-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Security bolt for mountings B,BA,BAS	**KY 6153**	**KY 6154**	**KY 6157**	**KY 6156**	**KY 6158**	**KY 6159**

Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled

Ordering Example: Basic Cylinder: NZK 6032/100 PA 58390-0100 Foot Mounting: A-32 PD 27917

Cylinder

ø 32-100 mm

with through piston rod

Versions:
Double acting without adjustable end cushioning for contactless position sensing

Series NZKD....

NZKD6...*



*** Version with external thread on request**

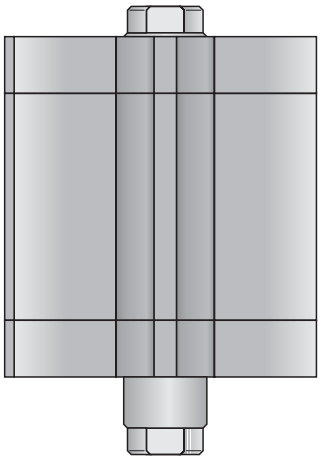
Characteristics according to VDI 3294			Pressures quoted as gauge pressure						
Characteristics	Symbol	Unit	Description						
General Features									
Type			Piston rod cylinder with through piston rod						
Series			NZKD6						
System			Double acting without cushioning for contactless position sensing						
Mounting			See dimensions						
Tube connection			Thread						
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing					
Medium temperature range	ϑ_{max}	°C	+80	point it is necessary to consult us					
Weight (mass)		kg	see table						
Installation			In any position						
Medium			Filtered and lubricated or filtered and unlubricated compressed air						
Lubrication			Oil mist lubrication compatible with Buna N						
Material: Cylinder tube			Aluminium, anodised						
Material: Front/Rear covers			Aluminium, anodised						
Material: Piston rod			Steel, high-alloy						
Pneumatic Characteristics									
Nominal pressure	p_n	bar	6						
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10						
Piston diameter		mm	32	40	50	63	80	100	
Port size			G1/8	G1/8	G1/8	G1/8	G1/4	G1/4	
Piston rod diameter		mm	12	16	20	20	25	25	
Piston rod thread		Inside	M6	M6	M8	M8	M10	M12	
		Outside	M10 x1.25	M12 x1.25	M16 x1.5	M16 x1.5	M20 x1.5	M20 x1.5	
Stroke length			For standard stroke lengths see order instructions max. 80 (at Ø32 max. 50)						
Piston force and air consumption			See data sheet no. 2.05.001E						
Cushioning			Elastomer cushioning at both ends						

Application examples
- if loads have to be moved on both sides with the through piston rod
- if adjustable limit stops have to mounted outside the cylinder
- if exactly the same force is needed for the forward and reverse stroke (in normal double acting cylinders the piston areas differ)

All the assembly parts belong to HOERBIGER's tried and tested DIN cylinders series.

Delivery includes:
1 cylinder
2 hexagon nuts for piston rod thread

The magnetic switches are not included - please order separately.



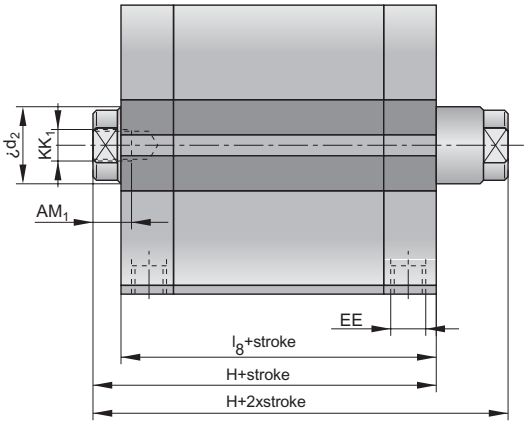
A1P700E00LW00X

The right to introduce technical modifications is reserved

For product group overview see 2.01.001E
For cylinder series NZK see 2.28.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

HOERBIGER ORIGA

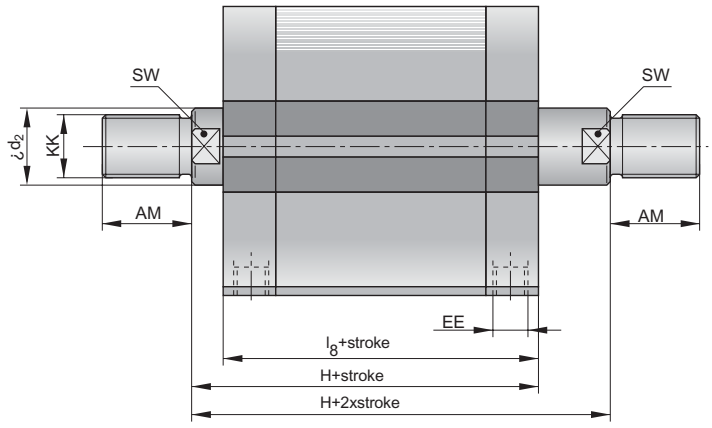
Dimensions for Basic Cylinder
Version: Piston Rod with Internal Thread (Series NZKD..../...)



Dimensions (mm)

Cyl.-Ø	AM_1	$l_{8+stroke}$	$H_{+stroke}$	$H_{+2xstroke}$	KK_1	Ød$_2$	EE	SW
32	12	44.6	50.5	56.5	M6	12	G1/8	10
40	12	45.5	52.0	58.5	M6	16	G1/8	13
50	12	45.5	53.3	60.8	M8	20	G1/8	17
63	12	50.0	57.8	65.3	M8	20	G1/8	17
80	16	56.0	64.0	72.0	M10	25	G1/8	19
100	20	66.5	77.3	87.3	M12	25	G1/4	22
For all further dimensions see 2.28.001E								

Dimensions for Basic Cylinder
Version: Piston Rod wtih External Thread (Series NZKD..../...-AG)

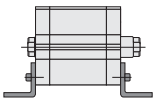


Dimensions (mm)

Cyl.-Ø	AM	$l_{8+stroke}$	$H_{+stroke}$	$H_{+2xstroke}$	KK	Ød$_2$	EE	SW
32	20	44.6	50.5	56.5	M10x1.25	12	G1/8	10
40	24	45.5	52.0	58.5	M12x1.25	16	G1/8	13
50	32	45.5	53.3	60.8	M16x1.5	20	G1/8	17
63	32	50.0	57.8	65.3	M16x1.5	20	G1/8	17
80	40	56.0	64.0	72.0	M20x1.5	25	G1/8	19
100	40	66.5	77.3	87.3	M20x1.5	25	G1/4	22
alle anderen Abmessungen siehe 2.28.00E								

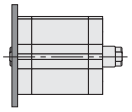
Mounting

Foot Mounting A



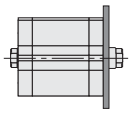
Material: steel, passivated

Foot Flange Mounting C



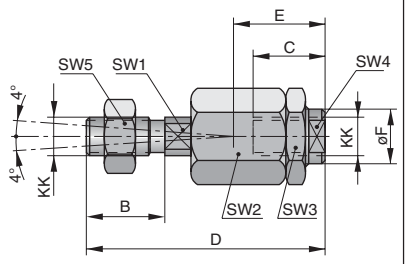
Material: cast aluminium

Rear flange mounting D

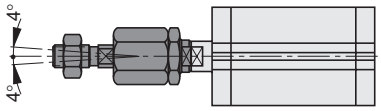


Material: cast aluminium

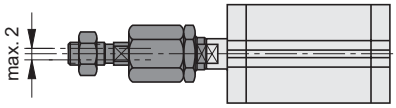
Compensating Coupling for Piston Rod



Material:steel



Angle compensation

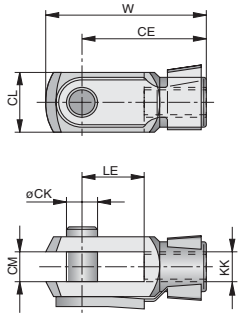


Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	B	C	D	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M10x1.25	**KY 1129**	32	20	23	70	31	21.5	M10x1.25	12	30	30	19	17	0.218
AK -M12x1.25	**KY 1131**	40	23	23	67	31	21.5	M12x1.25	12	30	30	19	19	0.207
AK -M16x1.5	**KY 1133**	50,63	40	32	112	45	33.5	M16x1.5	19	41	41	30	30	0.637
AK -M20x1.5	**KY 1134**	80,100	40	42	122	56	33.5	M20x1.5	19	41	41	30	30	0.711

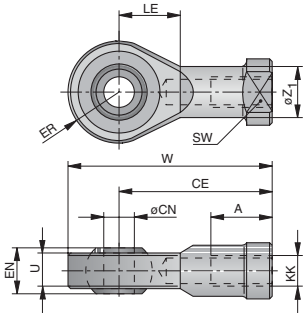
Piston Rod Clevis to ISO 8140 (CETOP RP102P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	ØCK	CE	CL	CM	KK	LE	W	Weight (kg)
GK-M10 x 1.25	**KY 6135**	32	10	40	20	10	M10x1.25	20	52	0.08
GK-M12 x 1.25	**KY 6136**	40	12	48	24	12	M12x1.25	24	62	0.125
GK-M16 x 1.5	**KY 6139**	50,63	16	64	32	16	M16x1.5	32	83	0.30
GK-M20 x 1.5	**KY 6141**	80,100	20	80	40	20	M20x1.5	40	105	0.52

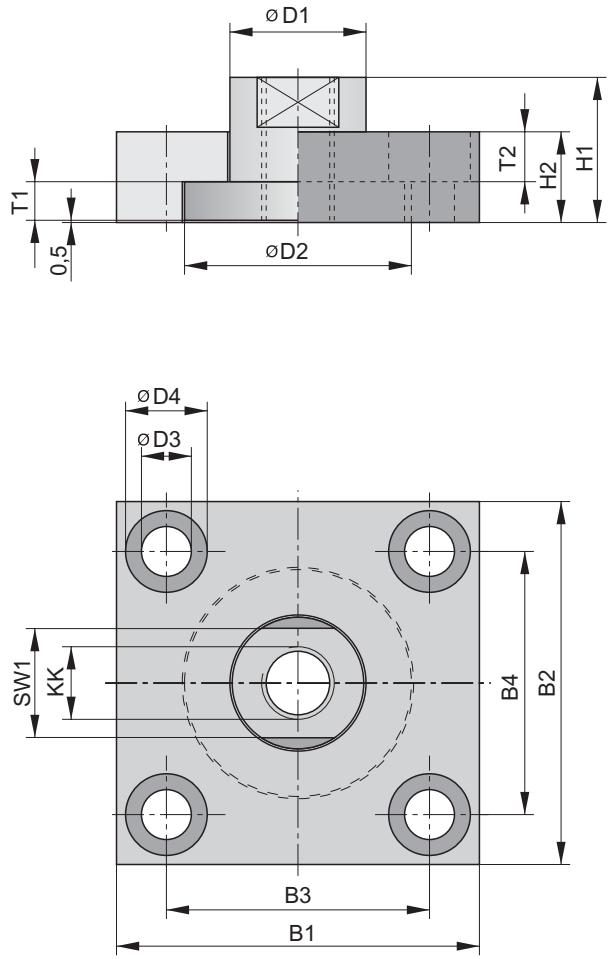
Piston Rod Eye to ISO 8139 (CETOP RP103 P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	A	CE	øCN	EN	ER	KK	LE	SW	U	W	$øZ_1$	Weight (kg)
GA-M10 x 1.25	**KY 6147**	32	20	43	10	14	14	M10x1.25	15	17	10.5	57	15	0.072
GA-M12 x 1.25	**KY 6148**	40	22	50	12	16	16	M12x1.25	17	19	12	66	17.5	0.107
GA-M16 x 1.5	**KY 6150**	50,63	28	64	16	21	21	M16x1.5	22	22	15	85	22	0.21
GA-M20 x 1.5	**KY 6151**	80,100	33	77	20	25	25	M20x1.5	26	32	18	102	27.5	0.38

Dimensions for Coupling



Material: steel, zinc-plated

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	B_1	B_2	B_3	B_4	$ØD_1$ H11	$ØD_2$	$ØD_3$ H13	$ØD_4$ H13	H_1	H_2	T_1	T_2	KK	SW1	Weight (kg)
KSG-32	**KC 5224**	32	60	37	36	23	20	30	6.6	11	24	15	7	7	M10x1.25	17	0.225
KSG-40	**KC 5225**	40	60	56	42	38	25	40	9	15	30	20	8	9	M12x1.25	19	0.445
KSG-50/63	**KC 5226**	50,63	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24	0.900
KSG-80/100	**KC 5227**	80,100	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36	1.060

Included in delivery: 1 x flange
1 x threaded part

Order Instructions

Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Order Instructions Type	Order No.
Double acting without adjustable end cushioning for contactless position sensing		32	**NZKD6032/....**	**PA 58540-....**
		32	**NZKD6032/....AG**	**on request**
		40	**NZKD6040/....**	**PA 59450-....**
		40	**NZKD6040/....AG**	**on request**
		50	**NZKD6050/....**	**PA 60530-....**
		50	**NZKD6050/....AG**	**on request**
		63	**NZKD6063/....**	**PA 61470-....**
		63	**NZKD6063/....AG**	**on request**
		80	**NZKD6080/....**	**PA 62370-....**
		80	**NZKD6080/....AG**	**on request**
		100	**NZKD6100/....**	**PA 63270-....**
		100	**NZKD6100/....AG**	**on request**

Complete type designation and order no. with stroke length in mm (4 digits)

Standard stroke lengths
Version: 0005, 0010, 0015, 0020, 0025, 0030, 0040, 0050 delivered preferably

Cylinder Mountings

Description	Bestell-Nr. Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Foot mounting A-..	**PD 27917**	**PD 27918**	**PD 28072**	**PD 28073**	**PD 28074**	**PD 28075**
Front flange mounting C-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Rear flange mounting D-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled.						

Ordering Example: Basic Cylinder: NZKD6063-0050 PA 61470-0050
Foot Mounting: A-63 PD 28073

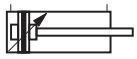
Cylinder

ø 32-100 mm

to ISO 15552 (ISO 6431)
VDMA 24562
and CETOP RP43P

Versions:
Double acting with cushioning for contactless position sensing

Series AZ ....

AZ5... 

ATEX-Version is also available (see also 2.01.001E-5, 6) ⟨Ex⟩

Characteristics according to VDI 3294			Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description					
General Features								
Type			Piston rod cylinder					
Series			AZ5					
System			Double acting with cushioning for contactless position sensing					
Mounting			See drawing					
Tube connection			Thread					
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing				
Medium temperature range	ϑ_{max}	°C	+80	point (0°C) it is necessary to consult us				
Weight (mass)		kg	See table					
Installation			In any position					
Medium			Filtered and lubricated or filtered and unlubricated compressed air					
Lubrication			Oil mist lubrication compatible with Buna N					
Material: Cylinder tube			Aluminium, anodized					
Material: Front/Rear covers			Aluminium diecasting, chromated					
Material: Piston rod			Steel, high-alloy					
Pneumatic Characteristics								
Nominal pressure	p_n	bar	6					
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10					
Piston diameter		mm	32	40	50	63	80	100
Port size			G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
Piston rod diameter		mm	12	16	20	20	25	25
Piston rod thread			M10 x1.25	M12 x1.25	M16 x1.5	M16 x1.5	M20 x1.5	M20 x1.5
Stroke length			For standard stroke lengths see order instructions max. 2000mm, longer strokes on request					
Piston force and air consumption			See data sheet no. 2.05.001E					
Cushioning			at both ends, infinitely variable					
Cushioned stroke		Cyl.-Ø	32	40	50	63	80	100
Basic AZ cylinder		mm	21	25	28	30	30	37
AZ with through piston rod			20	25	25	25	28	30

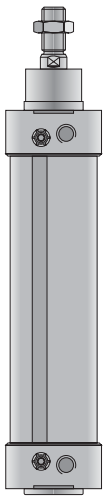
One or more magnetic proximity sensors (depending on stroke length) can be mounted in the grooves in the cylinder profile, for sensing the end positions or intermediate positions of the piston.

The delivery includes:
1 Cylinder
1 Hexagon nut for piston rod thread

Magnetic switches are not included - please order these separately.

Special Versions:

- Version H for hydraulic operation (for p_{max} see Characteristics Table)
- Version for high temperature range (+150°)
  - not for contactless position sensing
- Tie rod version
- With adaptor plate for valve mounting
- With metal wiper
- With through piston rod
- Various piston rod extensions
- Various piston rod materials



For product group overview see 2.01.001E
For magnetic switches see 2.90.040E, 2.90.042E, 2.90.043E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

A1P507E00LW00X

The right to introduce technical modifications is reserved

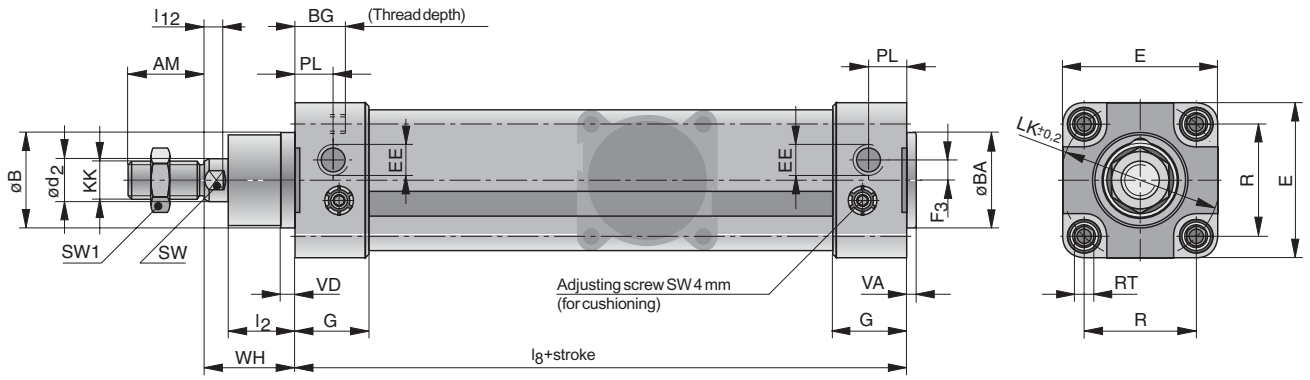
HOERBIGER ORIGA

Weight (mass) kg
AZ-Basic Cylinder

Mounting	Cylinder-Ø 32		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic cylinder	0.65	0.20	1.20	0.312	1.60	0.422	2.40	0.532	3.50	0.78	5.10	1.03
A	0.85		1.35		1.80		2.55		4.25		5.50	
B	0.75		1.20		1.65		2.35		3.85		5.20	
BA	0.85		1.30		1.70		2.55		4.25		5.60	
BAS	0.80		1.30		1.70		2.45		4.15		5.50	
C	0.80		1.20		1.65		2.40		3.95		5.50	
D	0.80		1.20		1.65		2.40		3.95		5.50	
EN	1.05		1.80		2.40		4.50		5.20		7.10	

*1 = Cylinder weight (100 mm stroke)
*2 = Weight per further 100 mm stroke length

Dimensions for Basic AZ Cylinder



ø 50 shown, tie rod version on request

Dimension Table (mm) for Basic AZ Cylinder

Cyl. ø	AM	øB d11	øBA d11	BG	ød$_2$	E	EE	F$_3$	G	KK	l$_2$	l$_8$ +stroke	l$_{12}$	øLK	PL	R	RT	SW	SW1	VA	VD	WH
32	20	30	30	16	12	47	G1/8	4.5	30.5	M10 x1.25	20	94	6	46	9.8	32.5	M6	10	17	4	5	26
40	24	35	35	16	16	55	G1/4	5.3	34	M12 x1.25	20.5	105	6.5	54	14.5	38	M6	13	19	4	4.5	30
50	32	40	40	16	20	65	G1/4	8.5	31	M16 x1.5	28	106	8	66	16	46.5	M8	17	24	4	6	37
63	32	45	45	16	20	78	G3/8	8	33	M16 x1.5	26	121	8	80	16	56.5	M8	17	24	4	6	37
80	40	45	45	16	25	95	G3/8	9	35.5	M20 x1.5	32.5	128	10	102	20.5	72	M10	22	30	4	6	46
100	40	55	55	16	25	115	G1/2	13	37	M20 x1.5	37.5	138	10	126	19	89	M10	22	30	4	6	51

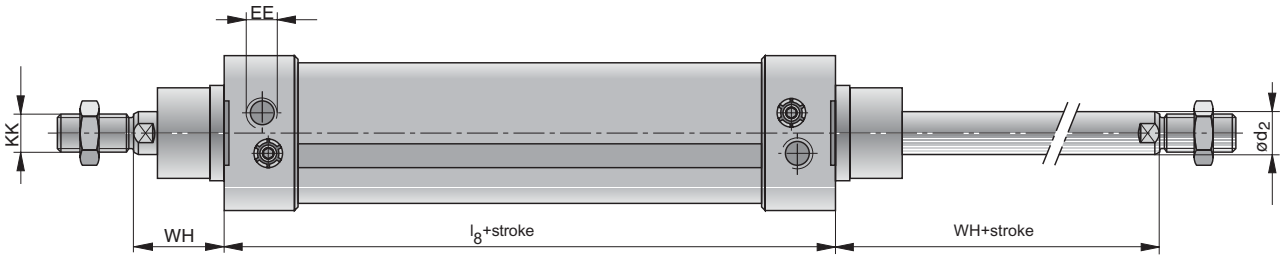
For dimensions for mountings see 2.29.001E-4

Weight (mass) kg
AZ cylinder with through piston rod

Mounting	Cylinder-Ø 32		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic cylinder	0.80	0.25	1.50	0.45	2.10	0.65	2.90	0.83	4.20	1.00	6.10	1.40
A	0.85		1.35		1.80		2.55		4.25		5.50	
B	0.75		1.20		1.65		2.35		3.85		5.20	
BA	0.85		1.30		1.70		2.55		4.25		5.60	
BAS	0.80		1.30		1.70		2.45				5.50	
C	0.80		1.20		1.65		2.40		3.95		5.50	
D	0.80		1.20		1.65		2.40		3.95		5.50	
EN	1.05		1.80		2.40		4.50		5.20		7.10	

*1 = Cylinder weight (100 mm stroke)
*2 = Weight per further 100 mm stroke length

Dimensions for Basic AZ Cylinder with through piston rod

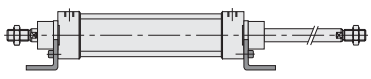


Dimension Table (mm) for Basic AZ Cylinder with through piston rod

Cyl.-Ø	$l_{8+stroke}$	$WH_{+stroke}$	WH	KK	Ød_2	EE
32	94	26	26	M10x1.25	12	G1/8
40	105	30	30	M12x1.25	16	G1/4
50	106	37	37	M16x1.5	20	G1/4
63	121	37	37	M16x1.5	20	G3/8
80	128	46	46	M20x1.5	25	G3/8
100	138	52	52	M20x1.5	25	G1/2

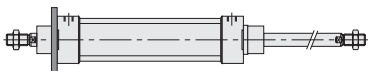
Mountings for AZ Cylinder with through piston rod

Foot Mounting A



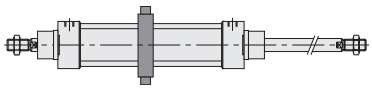
Material: steel, passivated

Foot Flange Mounting C



Material: diecast aluminium

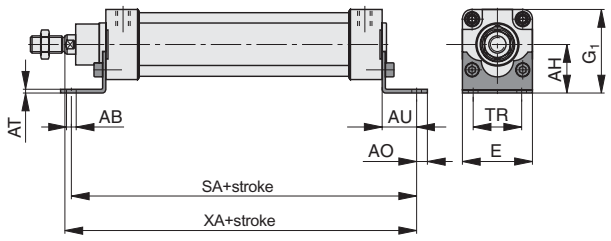
Centre trunnion mountingEN to ISO 15552 (ISO 6431)



Material: SG iron, passivated

For dimensions for mountings see 2.29.001E-4

Dimensions for Mounting A



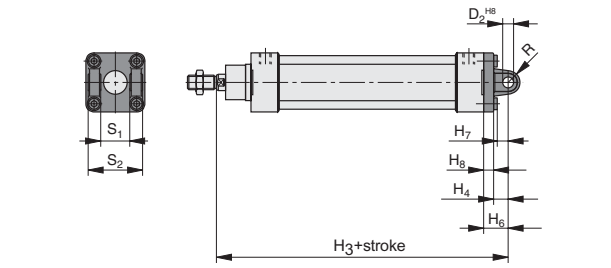
Material: steel, passivated

Dimension Table (mm) for Mounting A

Cyl.-Ø	AB	AH	AO	AT	AU	E	G1	TR	SA+ stroke	XA+ stroke
32	7	32	8	4	24	47	55.5	32	142	144
40	9	36	10	4	28	53	62.5	36	161	163
50	9	45	10	5	32	65	77.5	45	170	175
63	9	50	10	5	32	75	87.5	50	185	190
80	12	63	14	6	41	95	110.5	63	210	215
100	14	71	15	6	41	115	128.5	75	220	230

Included in delivery: 2 x foot brackets
4 x screws

Dimensions for Mounting B



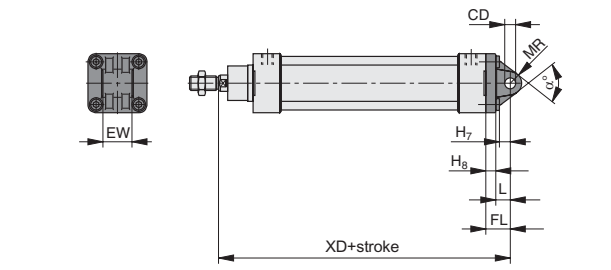
Material: diecast aluminium

Dimension Table (mm) for Mounting B

Cyl.-Ø	ØD H8	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	S_2
32	10	142	12	22	11	10	9	26	45
40	12	160	15	25	14	10	11	28	52
50	12	170	16	27	15	11	12	32	60
63	16	190	21	32	20	11	15	40	70
80	16	210	22	36	21	14	16	50	90
100	20	230	25	41	24	16	20	60	110

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BA



Material: cast aluminium

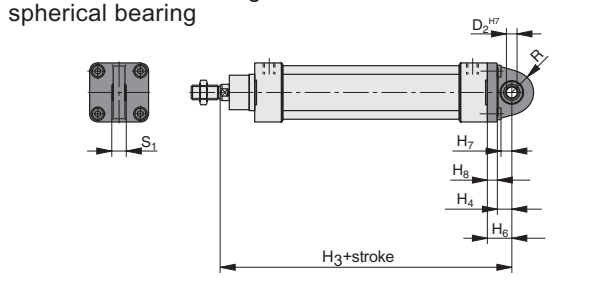
Dimension Table (mm) for Mounting BA

Cyl.-Ø	øCD H8	EW	FL	H_7	H_8	L	MR	XD +stroke	α°
32	10	26	22	11	10	12	10,5	142	60
40	12	28	25	14	10	15	13	160	60
50	12	32	27	15	11	16	13	170	70
63	16	40	32	20	11	21	17	190	60
80	16	50	36	20	15	21	17	210	70
100	20	60	41	24	16	25	21	230	70

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BAS

Rear trunnion mounting with spherical bearing



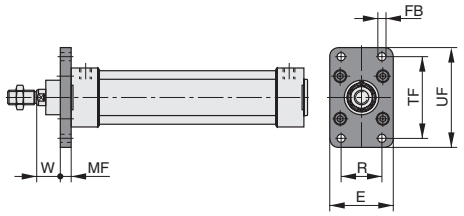
Material: cast aluminium

Dimension Table (mm) for Mounting BAS

Cyl.-Ø	ØD$_2$ H7	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1
32	10	142	12	22	11	10	18	14
40	12	160	15	25	14	10	21	16
50	12	170	16	27	15	11	23	16
63	16	190	21	32	20	11	27	21
80	16	210	21	36	20	15	29	21
100	20	230	25	41	24	16	34	25

Included in delivery: 1 x rear trunnion mounting with spherical bearing
4 x screws

Dimensions for Mounting C



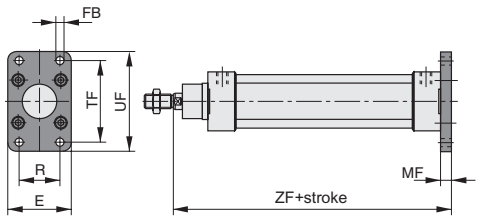
Material: cast aluminium

Dimension Table (mm) for Mounting C

Cyl.-Ø	øFB	E	MF	R	TF	UF	W
32	7	50	10	32	64	79	16
40	9	56	10	36	72	90	20
50	9	70	12	45	90	110	25
63	9	77	12	50	100	120	25
80	12	100	16	63	126	153	30
100	14	120	160	75	150	178	35

Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting D



Material: cast aluminium

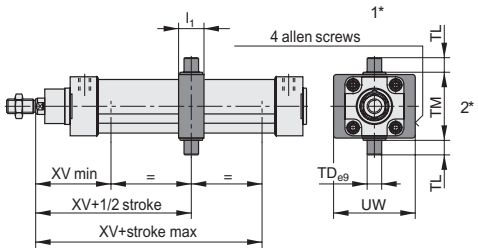
Dimension Table (mm) for Mounting D

Cyl.-Ø	øFB	E	MF	R	TF	UF	ZF +stroke
32	7	50	10	32	64	79	130
40	9	56	10	36	72	90	145
50	9	70	12	45	90	110	155
63	9	77	12	50	100	120	170
80	12	100	16	63	126	153	190
100	14	120	16	75	150	178	205

Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting EN, ISO 15552 (ISO 6431) only for Series AZ (with profile cylinder barrel)

Flange dimensions to ISO 15552 (ISO 6431)



Material: anodized aluminium
1* Mounting lugs in same direction as air connection (standard version)
2* Mounting lugs offset 90° to air connection

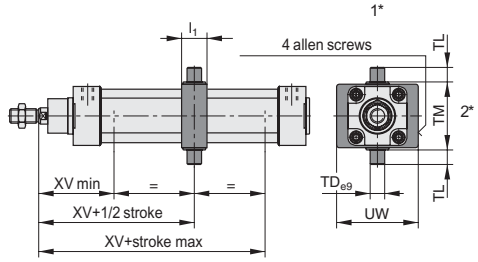
Dimension Table (mm) for Mounting EN

Cyl.-Ø	l_1	øTD_{e9}	TL	TM	UW	XV min	XV+ 1/2 stroke	XV+ stroke max
32	25	12	12	50	65	69	73	77
40	28	16	16	63	75	78	82.5	87
50	28	16	16	75	85	82	90	98
63	36	20	20	90	100	88	97.5	107
80	36	20	20	110	120	99.5	110	120.5
100	48	25	25	132	135	112	120	128

Included in delivery: 1 x rear trunnion mounting
After loosening the locking screws, the trunnion mounting is infinitely variable between XV_{min} and XV_{max}.

Dimensions for Mounting EN, ISO 15552 (ISO 6431) only for Series AZZ (tie rod version)

Flange dimensions to ISO 15552 (ISO 6431)



Material: nodular graphite cast iron, passivated
1* Mounting lugs in same direction as air connection (standard version)
2* Mounting lugs offset 90° to air connection

With the EN mounting, the position of the mounting groove for the proximity sensors is offset 90° to the tube connections.

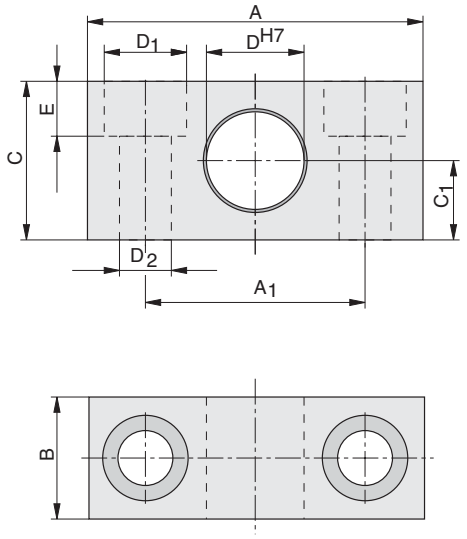
Dimension Table (mm) for Mounting EN

Cyl.-Ø	l_1	øTD_{e9}	TL	TM	UW	XV min	XV+ 1/2 stroke	XV+ stroke max
32	22	12	12	50	65	69	73	77
40	28	16	16	63	75	78	82.5	87
50	28	16	16	75	85	82	90	98
63	35	20	20	90	100	88	97.5	107
80	35	20	20	110	120	99.5	110	120.5
100	40	25	25	132	135	112	120	128

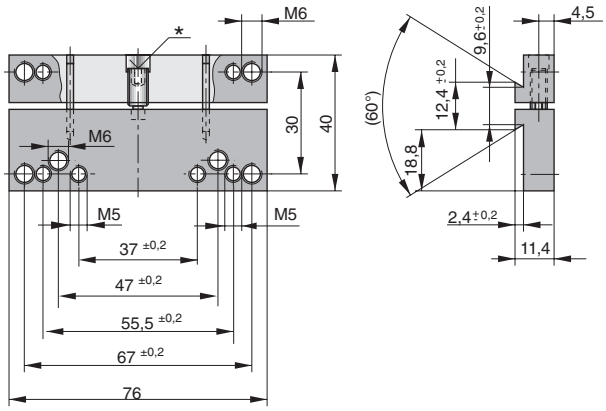
Included in delivery: 1 x rear trunnion mounting
After loosening the locking screws, the trunnion mounting is infinitely variable between XV_{min} and XV_{max}.

Instructions for mounting EN: In order to avoid faulty operation of the magnetic switches, a min. distance of 10 to 20 mm must be kept between switch and EN-mounting.

Pivot for Mounting EN



Adaptor plate for Mounting of S9 Valves G1/8 and G1/4



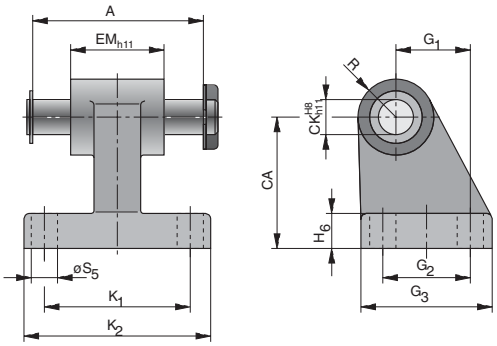
Order No.: PD 40372 * Socket head screw SW 2.5

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	A	A_1	B	C	C_1	ØD^{H7}	ØD_1	ØD_2	E	Weight (kg)
EL-032	**PD 23381**	32	55	36	20	26	13	12	13.5	8.4	9	0.06
EL-040/050	**PD 23382**	40,50	55	36	20	26	13	16	13.5	8.4	9	0.06
EL-063/080	**PD 23383**	63,80	65	42	25	30	15	20	16.5	10.5	11	0.10
EL-100	**PD 23384**	100	75	50	28	40	20	25	19	13	13	0.175

Pivot for Mounting B to VDMA 24562

For 90° angle

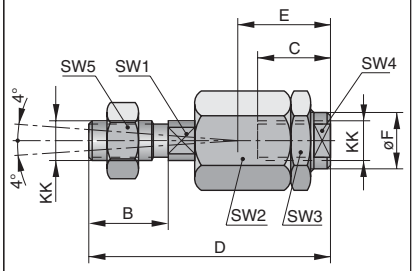


Material: cast aluminium

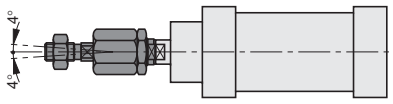
Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	A	CA	CK^{H8}_{h11}	EM_{h11}	G_1	G_2	G_3	H_6	K_1	K_2	R_1	øS_5	Weight (kg)
GLN-032	**PD 40844**	32	46	32	10	26	21	18	31	8	38	50	10	6.6	0.092
GLN-040	**PD 40845**	40	53	36	12	28	24	22	35	10	41	53	11	6.6	0.131
GLN-050	**PD 40846**	50	61	45	12	32	33	30	45	12	50	64	13	9	0.193
GLN-063	**PD 40847**	63	71	50	16	40	37	35	50	12	52	66	15	9	0.305
GLN-080	**PD 40848**	80	91	60	16	50	47	40	60	14	66	84	15	11	0.460
GLN-100	**PD 40849**	100	111	70	20	60	55	50	70	15	76	94	19	11	0.840

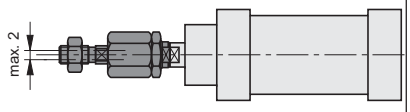
Compensating Coupling for Piston Rod



Material: steel



Angle compensation

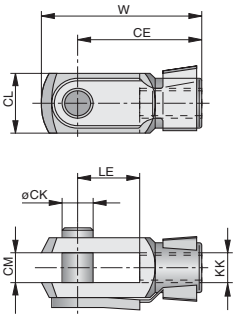


Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Typ	Bestell-Nr.	zu Zyl.Ø	B	C	D	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Gewicht (kg)
AK-M10x1.25	**KY 1129**	32	20	23	70	31	21.5	M10x1.25	12	30	30	19	17	0.218
AK -M12x1.25	**KY 1131**	40	23	23	67	31	21.5	M12x1.25	12	30	30	19	19	0.207
AK -M16x1.5	**KY 1133**	50,63	40	32	112	45	33.5	M16x1.5	19	41	41	30	30	0.637
AK -M20x1.5	**KY 1134**	80,100	40	42	122	56	33.5	M20x1.5	19	41	41	30	30	0.711

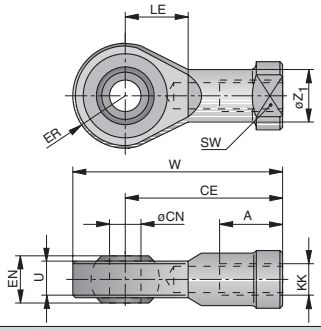
Piston Rod Clevis to ISO 8140 (CETOP RP102P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	ØCK	CE	CL	CM	KK	LE	W	Weight (kg)
GK-M10 x 1.25	**KY 6135**	32	10	40	20	10	M10x1.25	20	52	0.08
GK-M12 x 1.25	**KY 6136**	40	12	48	24	12	M12x1.25	24	62	0.125
GK-M16 x 1.5	**KY 6139**	50,63	16	64	32	16	M16x1.5	32	83	0.30
GK-M20 x 1.5	**KY 6141**	80,100	20	80	40	20	M20x1.5	40	105	0.52

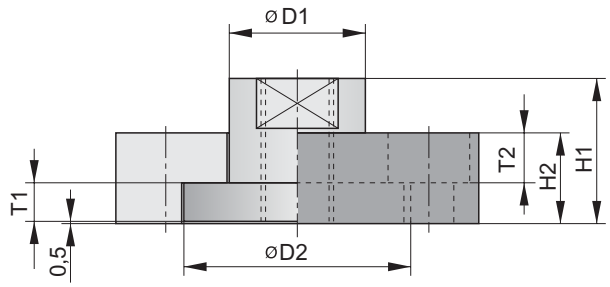
Piston Rod Eye to ISO 8139 (CETOP RP103 P)

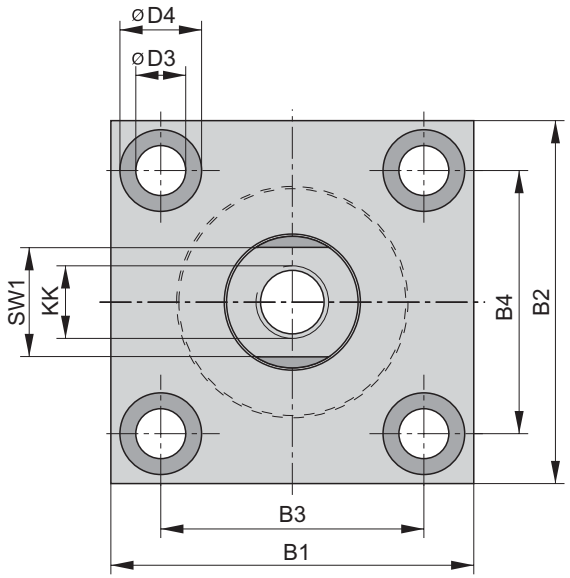


Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	A	CE	øCN	EN	ER	KK	LE	SW	U	W	$øZ_1$	Weight (kg)
GA-M10 x 1.25	**KY 6147**	32	20	43	10	14	14	M10x1.25	15	17	10,5	57	15	0.072
GA-M12 x 1.25	**KY 6148**	40	22	50	12	16	16	M12x1.25	17	19	12	66	17.5	0.107
GA-M16 x 1.5	**KY 6150**	50,63	28	64	16	21	21	M16x1.5	22	22	15	85	22	0.21
GA-M20 x 1.5	**KY 6151**	80,100	33	77	20	25	25	M20x1.5	26	32	18	102	27.5	0.38

Dimensions for Coupling





Material: steel, zinc-plated

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	B_1	B_2	B_3	B_4	$ØD_1$ H11	$ØD_2$	$ØD_3$ H13	$ØD_4$ H13	H_1	H_2	T_1	T_2	KK	SW1	Weight (kg)
KSG-32	**KC 5224**	32	60	37	36	23	20	30	6.6	11	24	15	7	7	M10x1.25	17	0.225
KSG-40	**KC 5225**	40	60	56	42	38	25	40	9	15	30	20	8	9	M12x1.25	19	0.445
KSG-50/63	**KC 5226**	50,63	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24	0.900
KSG-80/100	**KC 5227**	80,100	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36	1.060

Included in delivery: 1 x flange
1 x threaded part

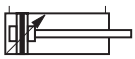
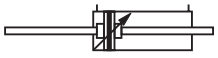
Order Instructions for Basic Cylinder (without mounting type)

Type	**AZ 5032**	**-0100**									
Order No.	**PA**	**-0100-**		**-**							

Cylinder Diameter		
Type	**AZ5032**	032
Order No.	**PA 58300**	
Type	**AZ5040**	040
Order No.	**PA 59220**	
Type	**AZ5050**	050
Order No.	**PA 60300**	
Type	**AZ5063**	063
Order No.	**PA 61240**	
Type	**AZ5080**	080
Order No.	**PA 62140**	
Type	**AZ5100**	100
Order No.	**PA 63040**	

Stroke Length
Length in mm (4-digit) standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320

Piston Rod Extension
Length in mm (3-digit

Version	
0	Standard 
K2	With through piston rod 

Seals	
0	Standard (NBR)
V	Viton ®

ATEX Class	
ATEX	For classification see Cylinders Overview 2.01.001E-6

Position of Air Connections	
0	Standard
S	Both connections at rear end
T	Both connection at front end

Piston Rod Thread	
0	Male thread (standard)
KA	Male thread (special thread)
KI	Female thread

Cyl.Ø	Female Thread	Male Thread
032	M6	M10
040	M8	M12
050	M10	M16
063	M10	M16
080	M12	M20
100	M12	M20

Piston Rod Material	
0	Steel, high-alloy (standard)
X	Steel, high-alloy (V2A)
Y	Steel, high-alloy (V4A)
Z	Steel, unalloyed, hard-chrome plated (CK45)

Order Instructions for Cylinder Mountings

Description	Order No.					
	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Foot mounting A-..	**PD 27917**	**PD 27918**	**PD 28072**	**PD 28073**	**PD 28074**	**PD 28075**
Rear trunnion mounting B-..	**PD 22704**	**PD 22705**	**PD 22706**	**PD 22707**	**PD 22708**	**PD 22709**
Rear trunnion mounting BA-..	**PD 23412**	**PD 23413**	**PD 23414**	**PD 23415**	**PD 23416**	**PD 23417**
Rear trunnion mounting BAS-..	**PD 23843**	**PD 23844**	**PD 23845**	**PD 23846**	**PD 23847**	**PD 23848**
Front flange mounting C-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Rear flange mounting D-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Centre trunnion mounting EN-.. (for the tie rod version AZZ)	**KL9234**	**KL9235**	**KL9236**	**KL9237**	**KL9238**	**KL9239**
Centre trunnion mounting EN-.. (for profile cylinder barrel version AZ)	**PD 39195**	**PD 39196**	**PD 39197**	**PD 39198**	**PD 39199**	**PD 39200**
Security bolt for mountings B,BA,BAS	**KY 6153**	**KY 6154**	**KY 6157**	**KY 6156**	**KY 6158**	**KY 6159**
Delivery information: on delivery all cylinder mountings, except the trunnion mountings, are not fitted.						

Cylinder

ø 125-320 mm

to ISO 15552 (ISO 6431) and CETOP RP53P**

Versions:
Double acting with cushioning
Double acting with cushioning for contactless position sensing

Series DZ....

DZ1...

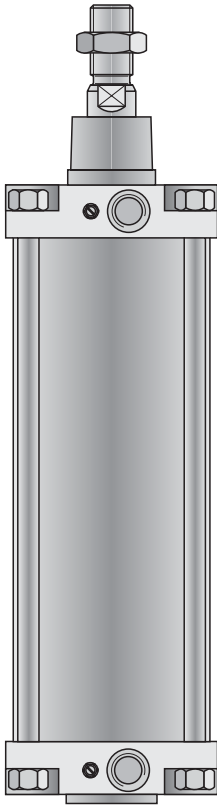


DZ5...*



*** ATEX-Version is also available (see also 2.01.001E-5,6)** ⟨Ex⟩

** Standard piston rod thread M27x2 - on request M24x2 to CETOP RP 53 P can also be delivered.



Special versions:
- to CETOP RP53P (piston rod thread M24x2)
- with through piston rod
- longer cushion strokes - on request
- ohne einstellbare Endlagendämpfung - on request
- versions for application at approx. +80° to150°C - on request

Delivery includes:
1 Cylinder
1 Hexagon nut for piston rod thread

Characteristics according to VDI 3294 Pressures quoted as gauge pressure

Characteristics		Symbol	Unit	Description				
General Features								
Type				Piston rod cylinder				
Series				DZ1, DZ5				
System				Double acting with cushioning				
Mounting				See drawing				
Tube connection				Thread				
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing			
Mediums-temperature range		ϑ_{max}	°C	+80	point (°C) it is necessary to consult us			
Weight (mass)			kg	See table				
Installation				In any position				
Medium				Filtered and lubricated or filtered and unlubricated compressed air				
Lubrication				Oil mist lubrication compatible with Buna N				
Material	Cylinder tube			Aluminium, anodized				
	Front/Rear covers			Aluminium, anodized				
	Piston rod			Steel, hard-chrome plated				
Pneumatic Characteristics								
Nominal pressure		p_n	bar	6				
Operating pressure range		p_{min} p_{max}	bar bar	1 10				
Piston diameter			mm	125	160	200	250	320
Port size				G 1/2	G 3/4	G 3/4	G 1	G1
Piston rod diameter			mm	32	40	40	50	63
Piston rod thread				M27x2**	M36x2	M36x2	M42x2	M48x2
Stroke length			mm	For standard stroke lengths see order instructions max. 2000mm, longer strokes on request				
Piston force and air consumption				See data sheet 2.05.001E				
Cushioning				At both ends, infinitely variable				
Cushioning stroke			Cyl. Ø	125	160	200	250	320
			mm	42	52	52	52	50

Weight (mass) kg

Mounting	Cylinder-Ø 125		160		200		250		320	
	*1	*2	1	2	1	2	1	2	1	2
Basic cylinder	7.2	1.3	12.5	2.05	20	2.2	35	4	66	6
A	9.3		16.1		25					
B	8.5		14.9		24					
BA	8.7		15.0		24					
BAS	8.6		14.9		24					
C	8.7		15.0		30					
D	8.7		15.0		30					
EN	10.5		18.3		32					

on request (250) / on request (320)

* 1 = Weight for cylinder with 100 mm stroke
* 2 = Weight for every additional 100 mm stroke length

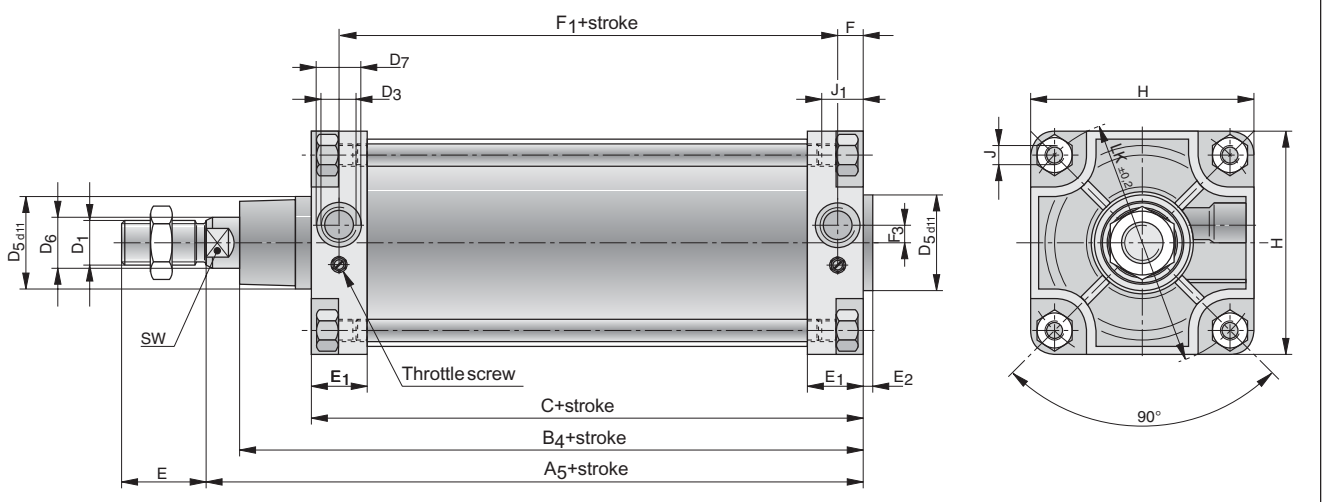
For product group overview see 2.01.001E
For magnetic switches see 2.90.031E, 2.90.032E, 2.90.036E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

A1P186E00LW00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Dimensions of Basic Cylinder

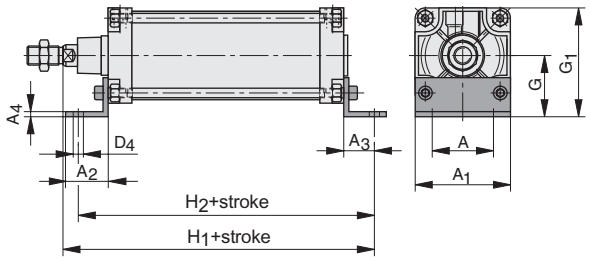


Dimension Table (mm) for Basic Cylinder

Cyl. Ø	A_5+ stroke	B_4+ stroke	C+ stroke	D_1	D_3	ØD_5	ØD_6	ØD_7	E	E_1	E_2	F	F_1+ stroke	F_3	J	J_1 max.	H	ØLK	SW
125	225	205	160	M27x2*	G1/2	60	32	28	54	35	6	19	122	11	M12	18	140	156	27
160	260	230	180	M36x2	G3/4	65	40	33	72	45	6	25	130	11	M16	23	180	198	36
200	275	240	180	M36x2	G3/4	75	40	33	72	45	6	25	130	11	M16	23	220	248	36
250	305	270	200	M42x2	G 1	90	50	40	84	53	10	32	136	21	M20	27	280	311	46
320	340	310	220	M48x2	G1	110	63	40	96	55	10	31	158	–	M24	28	340	382	55

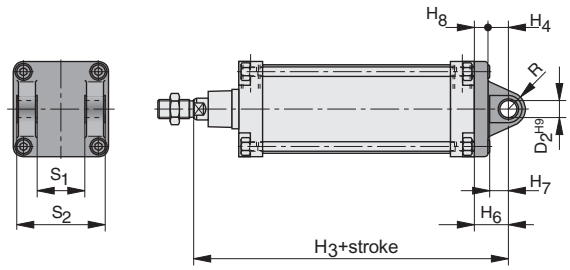
* Standard piston rod thread M27x2 - on request M24x2 to CETOP RP 53 P can also be deliverd.

Dimensions for Mounting A



Material: steel, passivated

Dimensions for Mounting B



Material: cast aluminium

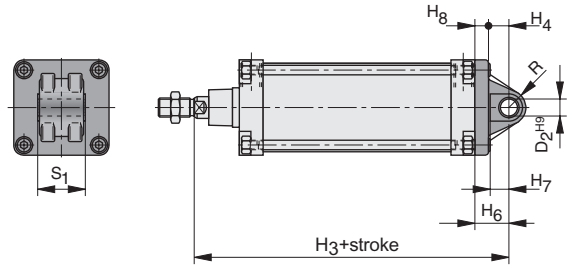
Dimension Table (mm) for Mounting A

Cyl. Ø	A	A_1	A_2	A_3	A_4	ØD_4	G	G_1	H_1+ stroke	H_2+ stroke
125	90	140	60	45	8	16	90	160	270	250
160	115	180	80	60	8	18	115	205	320	300
200	135	220	100	70	9	22	135	245	345	320
250	165	280	110	75	12	26	165	305	380	350
320	200	353	130	85	23	35	200	370	425	390

Dimension Table (mm) for Mounting B

Cyl. Ø	D_2^{H9}	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	S_2
125	25	275	30	50	29	20	25	70	130
160	30	315	35	55	34	20	30	90	170
200	30	335	35	60	35	25	31	90	170
250	40	375	45	70	44	25	41	110	200
320	45	420	50	80	50	30	46	120	220

Dimensions for Mounting BA

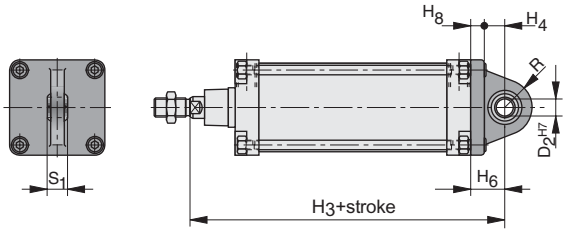


Material: cast aluminium

Dimension Table (mm) for Mounting BA

Cyl. Ø	ØD2 H9	H3 + stroke	H4	H6	H7	H8	R	S1
125	25	275	30	50	29	20	25	70
160	30	315	35	55	34	20	30	90
200	30	335	35	60	35	25	31	90
250	40	375	45	70	44	25	41	110
320	45	420	50	80	50	30	46	120

Dimensions for Mounting BAS

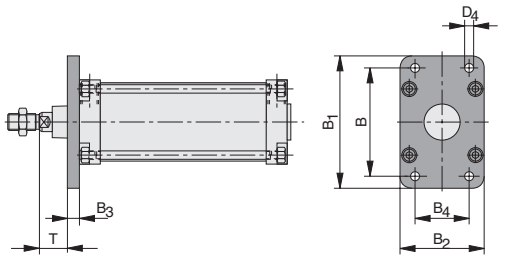


Material: cast aluminium

Dimension Table (mm) for Mounting BAS

Cyl. Ø	ØD2 H7	H3 + stroke	H4	H6	H8	R	S1
125	25	275	30	50	20	40	31
160	30	315	35	55	20	48	37
200	35	335	35	60	25	47	43
250	40	375	45	70	25	53	49
320	50	420	50	80	30	63	60

Dimensions for Mounting C

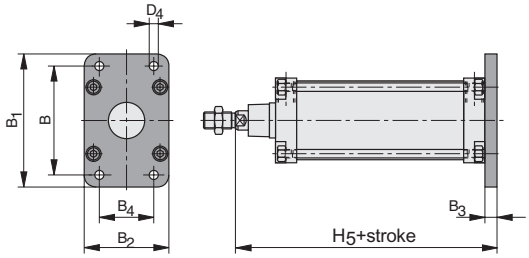


Material: Ø125 cast aluminium
Ø160 - Ø3200 steel, passivated

Dimension Table (mm) for Mounting C

Cyl. Ø	B	B1	B2	B3	B4	ØD4	T
125	180	220	140	20	90	16	45
160	230	280	180	20	115	18	60
200	270	315	220	25	135	22	70
250	330	380	280	25	165	26	80
320	400	475	353	30	200	33	90

Dimensions for Mounting D

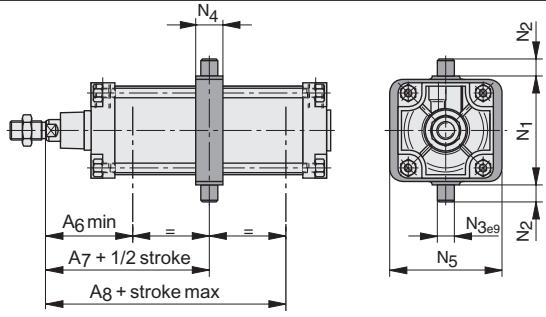


Material: Ø125 cast aluminium
Ø160 - Ø320 steel, passivated

Dimension Table (mm) for Mounting D

Cyl. Ø	B	B1	B2	B3	B4	ØD4	H5 + stroke
125	180	220	140	20	90	16	245
160	230	280	180	20	115	18	280
200	270	315	220	25	135	22	300
250	330	380	280	25	165	26	330
320	400	475	353	30	200	33	370

Dimensions for Mounting EN



Material: nodular graphite cast iron, passivated

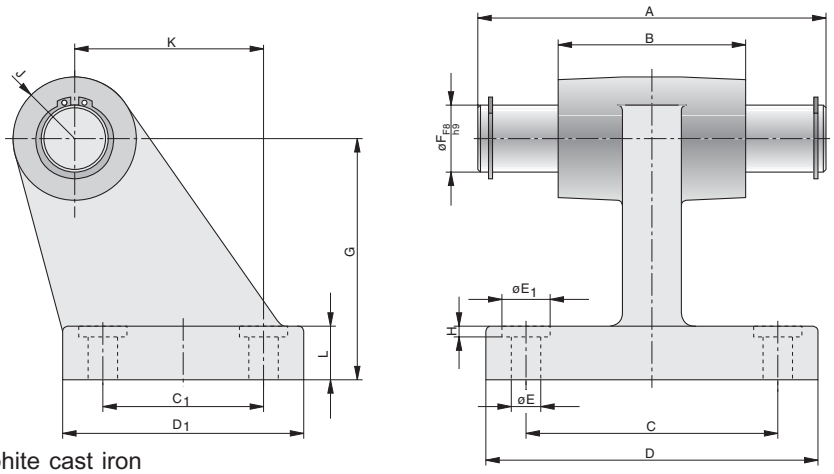
Dimension Table (mm) for Mounting EN

Cyl. Ø	A6 min	A7 + 1/2 stroke	A8+ stroke	N1	N2	N3eg	N4	N5
125	125	145	165	160	25	25	40	165
160	150	170	190	200	32	32	45	210
200	165	185	205	250	32	32	50	245
250	195	205	210	320	40	40	55	320
320	210	230	250	400	50	50	70	400

Note:
When ordering please give exact dimension A_7.
Mounting is assembled when delivered.

Instructions for mounting EN:
In order to avoid faulty operation of the magnetic switches, a min. distance of 10 to 20 mm has to be kept between switch and EN-mounting when fastening them to the cylinder.

Pivot for Mounting B to CETOP RP 107 P



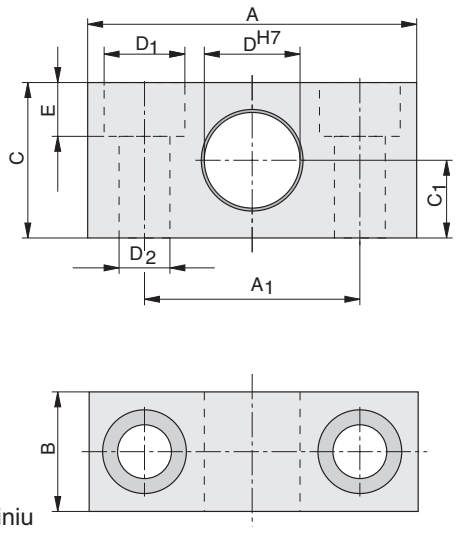
Material: nodular graphite cast iron

Order Instructions, Dimension Table (mm), Weight

Order Instruction Type	Order No.	Cyl. Ø	A	B	C	C_1	D	D_1	ØE	$ØE_1$	$ØF^{F8}_{h9}$	G	H_{max}	J	K	L	Weight (kg)
GLN-125	**PD 24027**	125	130	70	94	60	124	90	11	18	25	90	4	23	70	20	3.0
GLN-160	**PD 24028**	160	170	90	118	88	156	126	14	20	30	115	4	36	97	25	6.5
GLN-200	**PD 39193**	200	170	90	122	90	162	130	16	24	30	135	4	36	105	30	8.0
GLN-250	**PD 39194**	250	200	110	150	110	200	160	20	30	40	165	4	40	128	35	13.5
GLN-320	**KL 9129**	320	222	120	170	122	234	186	26	40	45	200	4.5	45	150	40	21.9

Note: Security bolt included in delivery

Pivot for Mounting EN

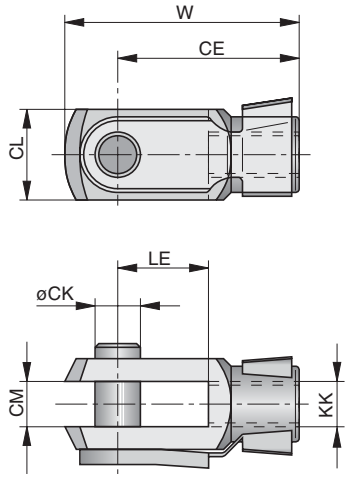


Material: Ø125 cast aluminium
Ø160 / Ø200 anodized aluminiu

Order Instructions, Dimension Table (mm), Weight

Order Instruction Type	Order No.	Cyl. Ø	A	A_1	B	C	C_1	$ØD^{H7}$	$ØD_1$	$ØD_2$	E	Weight (kg)
EL-125	**PD 23384**	125	75	50	28	40	20	25	19	13	13	0.175
EL-160/200	**PD 24425**	160/200	92	60	35	60	30	32	26	18	17	0.350
EL-250	**PD 25763**	250	140	90	40	70	35	40	33	22	21.5	0.500
EL-320	**KL 9130**	320	150	100	60	80	40	50	40	26	25.5	6.6 (steel)

Piston Rod Clevis to CETOP RP 102

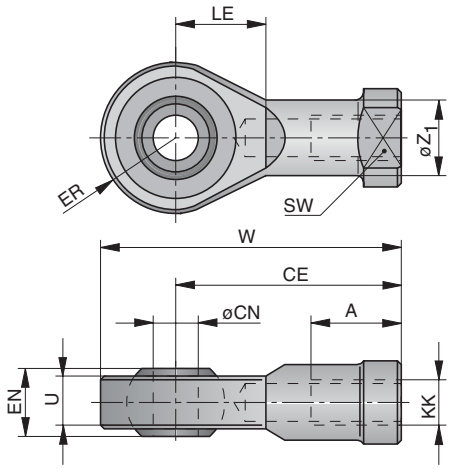


Material: Galvanized steel

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.-Ø	CE	ØCK	CM	CL	KK	LE	W	Weight (kg)
GKN-M24x2	**KY 6142**	125	100	25	25	50	M24x2	50	132max.	1.08
GKN-M27x2	**KY 6866**	125	112	30	30	55	M27x2	54	148max.	1.5
GKN-M36x2	**KY 6867**	160, 200	144	35	36	70	M36x2	72	188max.	2.9
GKN-M42x2	**KY 6868**	250	168	40	40	85	M42x2	84	245max.	6.0
GKN-M48x2	**KL9131**	320	192	50	50	96	M48x2	96	277max.	9.7

Piston Rod Eye to CETOP RP 103 P

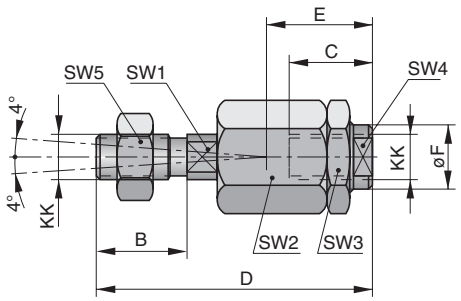


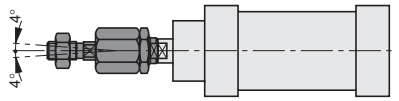
Material: Galvanized steel

Order Instructions, Dimension Table (mm), Weight

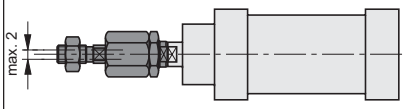
Order Instructions Type	Order No.	Cyl.-Ø	A_{min}	CE	ØCN^{H7}	EN	ER_{max}	KK	LE	SW	U	W	$ØZ_1$	Weight (kg)
GAN-M24x2	**KY 6152**	125	42	94	25	31	30	M24x2	31	36	22	124	33.5	0.65
GAN-M27x2	**KY 6862**	125	51	110	30	37	35	M27x2	36	41	25	145	40	1.0
GAN-M36x2	**KY 6863**	160, 200	56	125	35	43	40	M36x2	41	50	28	165	46	1.6
GAN-M42x2	**KY 6864**	250	60	142	40	49	45	M42x2	46	55	33	187	53	3.5
GAN-M48x2	**KL9132**	320	65	160	50	60	58	M48x2	59	65	45	218	65	5.2

Compensating Coupling for Piston Rod





Angle compensation



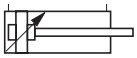
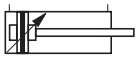
Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	KK	B	C	D	E	ØF	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M24x2	**KC5035**	M24x2	48	48	147	51	39	22	55	55	32	36	1.65
AK-M27x2	**KY5036**	M27x2	48	48	147	51	39	24	55	55	32	41	1.66
AK-M36x2	**KY1139**	M36x2	95	50	251	110	80	32	75	75	50	55	5.4
AK-M42x2	**KY1140**	M42x2	101	88	271	120	90	36	80	80	60	65	7.9
AK-M48x2	**KL9133**	M48x2	101	88	271	120	90	36	80	80	60	65	7.9

Order Instructions

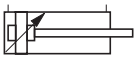
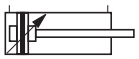
Basic Cylinder (Without Mounting)

Series	Symbol	Standard	Piston-Ø	Order Instructions Type	Order No.
Double acting with adjustable end cushioning		ISO	125	**DZ1125/....**	**PA 53530-....**
		CETOP	125	**DZ1125/....**	**PA 53500-....**
		ISO	160	**DZ1160/....**	**PA 54000-....**
		ISO	200	**DZ1200/....**	**PA 54500-....**
		ISO	250	**DZ1250/....**	**PA 55000-....**
		ISO	320	**DZ1320/....**	**PA 55500-....**
Double acting with adjustable end cushioning, for contactless position sensing		ISO	125	**DZ5125/....**	**PA 53540-....**
		CETOP	125	**DZ5125/....**	**PA 53510-....**
		ISO	160	**DZ5160/....**	**PA 54010-....**
		ISO	200	**DZ5200/....**	**PA 54510-....**
		ISO	250	**DZ5250/....**	**PA 55010-....**
		ISO	320	**DZ5320/....**	**PA 55520-....**

Complete type designation and order no. with stroke length in mm (4-digits)

Standard stroke length: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320, 0400, 0500 delivered preferably

Cylinder with Mounting EN

Series	Symbol	Standard	Piston-Ø	Order Instructions Type	Order No.
Double acting with adjustable end cushioning		ISO	125	**DZ1125EN/.../....**	**PA 53536-....**
		CETOP	125	**DZ1125EN/.../....**	**PA 53506-....**
		ISO	160	**DZ1160EN/.../...**	**PA 54006-.../...**
		ISO	200	**DZ1200EN/.../...**	**PA 54506-.../...**
		ISO	250	**DZ1250EN/.../...**	**PA 55006-.../...**
Double acting with adjustable end cushioning, for contactless position sensing		ISO	125	**DZ5125EN/.../...**	**PA 53546-.../...**
		CETOP	125	**DZ5125EN/.../...**	**PA 53516-.../...**
		ISO	160	**DZ5160EN/.../...**	**PA 54016-.../...**
		ISO	200	**DZ5200EN/.../...**	**PA 54516-.../...**
		ISO	250	**DZ5250EN/.../...**	**PA 55016-.../...**

Complete type designation and order no. with stroke length in mm (3-digits)

Give dimension A_7 with type designation and order no.

Cylinder-Ø 320 mm on request

Zylinderbefestigungen

Description	Order No. Ø125	Ø160	Ø200	Ø250	Ø320
Foot mounting A-...	**PD 22026**	**PD 22027**	**PD 24792**	**PD 25758**	**KL3139**
Rear trunnion mounting B-...	**PD 22034**	**PD 22035**	**PD 24990**	**PD 25710**	**KL3137**
Rear trunnion mounting BA-...	**PD 23418**	**PD 22628**	**PD 24999**	**PD 25759**	**KL9135**
Rear trunnion mounting BAS-...	**PD 23849**	**PD 23850**	**PD 25766**	**PD 25760**	**KL9136**
Front flange mounting C-...	**PD 23409**	**PD 23410**	**PD 24924**	**PD 25761**	**KL9140**
Rear flange mounting D-...	**PD 23409**	**PD 23410**	**PD 24924**	**PD 25761**	**KL9140**
Centre trunnion mounting EN-...	**PD 23591**	**PD 23592**	**PD 24923**	**PD 25762**	**KL9138**
Security bolt for mountings B,BA,BAS	**PD 22598**	**PD 22599**	**PD 22599**	**KY 8658**	**KL9141**

Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled.

Ordering Example: **Basic Cylinder: DZ5125/0500 PA 53510-0500**
Fußbefestigung: A-125 PD 22026

Cylinder

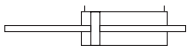
ø 12-25 mm

with through piston rod

Versions :
- **Option with/without contactless position sensing**
- **Double acting without adjustable end cushioning**
- **Option of internal or external mounting on piston rod**

Series NZD ....

NZD 2...(-AG)*



NZD 6...(-AG*)



*** on request**

Characteristics according to VDI 3294 Pressures quoted as gauge pressure							
Characteristics		Symbol	Unit	Description			
General Features							
Type				Piston rod cylinder			
Series				NZD 2, NZD 6			
Series NZD 2...				Double acting without cushioning			
Series NZD 6...				Double acting without cushioning for contactless position sensing			
Mounting				See drawing			
Tube connection				Thread			
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing		
Mediums-temperature range		ϑ_{max}	°C	+80	point (°C) it is necessary to consult us		
Weight (mass)			kg	See table			
Installation				In any position			
Medium				Filtered and lubricated or filtered and unlubricated compressed air			
Lubrication				Oil mist lubrication compatible with polyurethane			
Material	Cylinder tube			Aluminium, anodised			
	Front/Rear covers			Aluminium, laquered			
	Piston rod			Steel, high-alloy			
Pneumatic Characteristics							
Nominal pressure		p_n	bar	6			
Operating pressure		p_{min} p_{max}	bar bar	1.0 10			
Piston diameter			mm	12	16	20	25
Port size				M5	M5	M5	M5
Piston rod diameter			mm	6	8	10	10
Piston rod thread			Inside	M3	M4	M6	M6
			Outside	M5	M6	M8	M8
Stroke length			mm	Standard stroke lengths see order instructions max. 50			
Piston force and air consumption				see Data-Sheet 2.05.001E			
Cushioning				Elastomer cushioning at both ends			

Special versions:
- High temperature version (+150°)

The cylinder profile has grooves in which, depending on stroke length, one more magnetic switches can be mounted for sensing the end positions or intermediate positions of the magnetic piston.

The delivery includes:
1 Cylinder

Magnetic switches are not included - please order these separately.



Weight (mass) kg

Mounting gungsart	Cylinder-Ø 12		16		20		25	
	*1	*2	1	2	1	2	1	2
Basic Cyl.	0.103	0.016	0.115	0.020	0.177	0.026	0.215	0.028
A	0.047		0.047		0.086		0.100	
C	0.110		0.110		0.180		0.220	
D	0.110		0.110		0.180		0.220	

*1 = Cylinder weight (10 mm stroke)
*2 = Weight per further 10 mm stroke length

For product group overview see 2.01.001E
For magnetic switches see 2.90.042E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

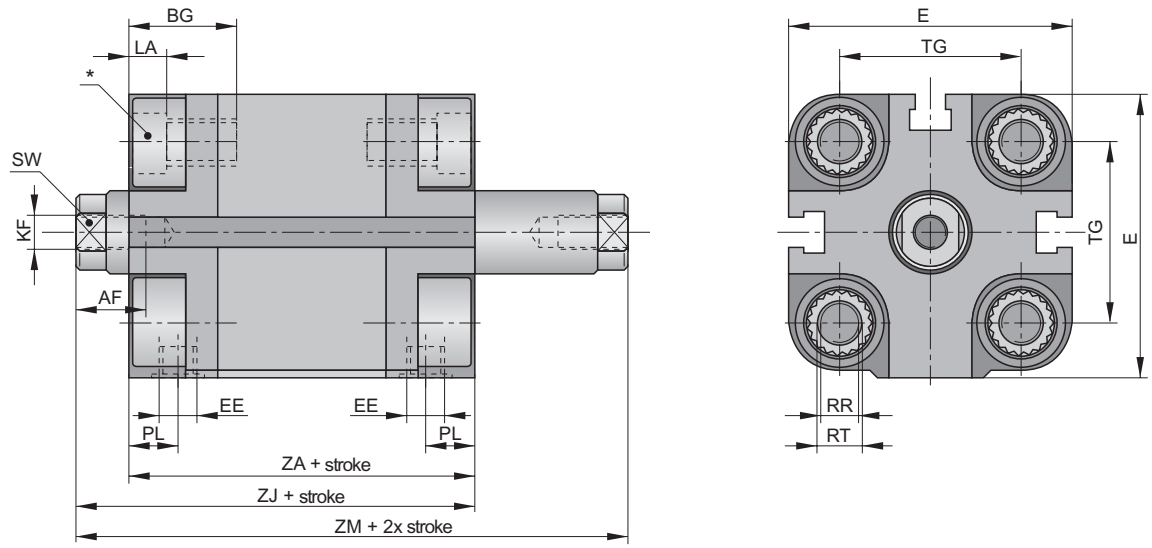
Data Sheet No. 2.33.001E-1

HOERBIGER
ORIGA

A1P696E00AAE00X

The right to introduce technical modifications is reserved

Dimensions for Basic Cylinder
Version: Piston Rod with Internal Thread (Series NZD..../...)

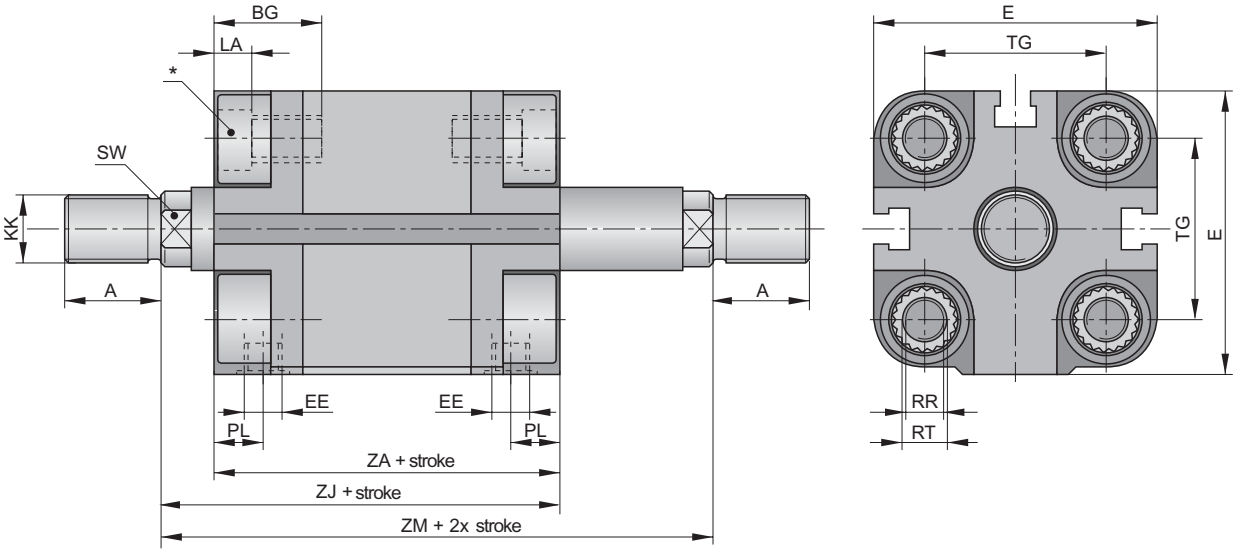


* Mounting screws to DIN 912 can be flush-countersunk.

Dimension Table (mm) for Basic Cylinder

Cyl. ø	AF	BG	E	EE	KF	LA	PL	RR	RT	TG	ZA +stroke	ZJ +stroke	ZM +2xstroke	SW
12	8	8	29	M5	M3	5	5	3.2	M4	18	37	42.5	48	5
16	10	10	29	M5	M4	5	5	3.2	M4	18	37	42.5	48	7
20	10	15	38	M5	M6	5	5	4.1	M5	22	37	43	49	8
25	10	15	41	M5	M6	5	5	4.1	M5	26	39	45	51	8

Dimensions for Basic Cylinder
Version: Piston Rod wtih External Thread (Series NZD..../...-AG)

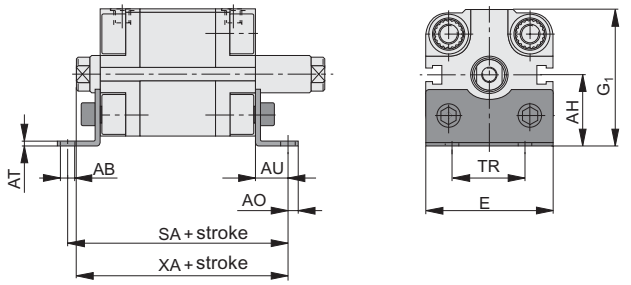


* Mounting screws to DIN 912 can be flush-countersunk.

Dimension Table (mm) for Basic Cylinder

Cyl. ø	A	BG	E	EE	KK	LA	PL	RR	RT	TG	ZA +stroke	ZJ +stroke	ZM +2xstroke	SW
12	12	8	29	M5	M5	5	5	3.2	M4	18	37	42.5	48	5
16	16	10	29	M5	M6	5	5	3.2	M4	18	37	42.5	48	7
20	16	15	38	M5	M8	5	5	4.1	M5	22	37	43	49	8
25	16	15	41	M5	M8	5	5	4.1	M5	26	39	45	51	8

Dimensions for Mounting A



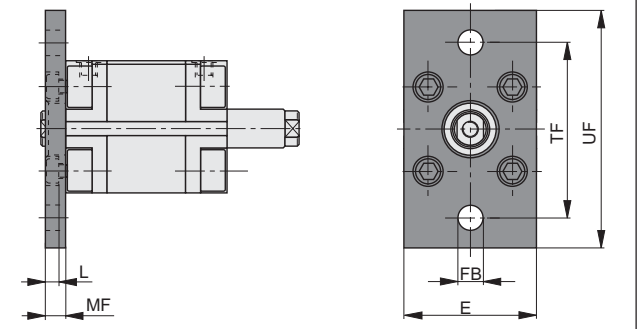
Material: steel, passivated

Dimension Table (mm) for Mounting A

Cyl.-Ø	AB Ø	AH	AO	AT	AU	E	G_1	TR	SA+ stroke	XA+ stroke
12	5.8	22	4.5	3	13	28	36.5	18	63	55.5
16	5.8	22	4.5	3	13	28	36.5	18	63	55.5
20	7	27	7	4	16	36	46	22	69	59
25	7	29	7	4	16	40	49.5	26	71	61

Included in delivery: 2 x foot brackets
4 x screws

Dimensions for Mounting C



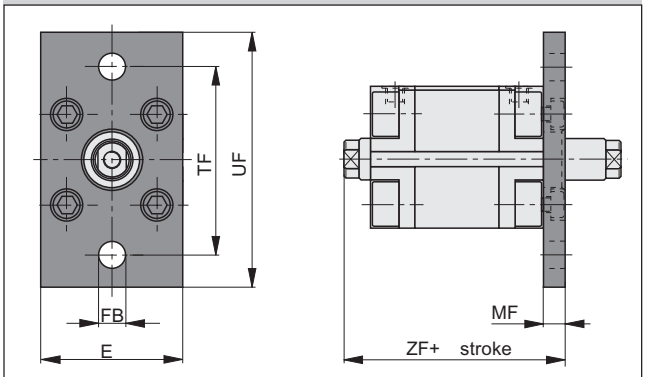
Material: steel, zinc-plated

Dimension Table (mm) for Mounting C

Cyl.-Ø	øFB	E	L	MF	TF	UF
12	5.5	29	5	8	43	55
16	5.5	29	5	8	43	55
20	6.6	36	5	8	55	70
25	6.6	40	5	8	60	76

Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting D



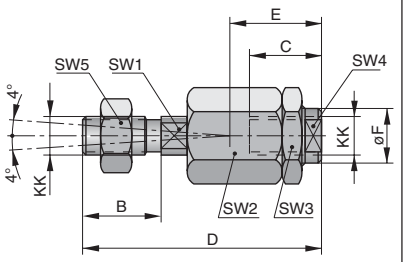
Material: steel, zinc-plated

Dimension Table (mm) for Mounting D

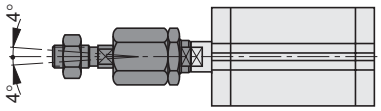
Cyl.-Ø	øFB	E	MF	TF	UF	ZF +stroke
12	5.5	29	8	43	55	50.5
16	5.5	29	8	43	55	50.5
20	6.6	36	8	55	70	51
25	6.6	40	8	60	76	53

Included in delivery: 1 x flange
4 x screws

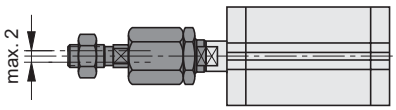
Compensating Coupling for Piston Rod



Material:steel



Angle compensation

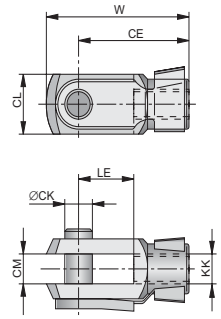


Radial compensation of centre axis

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.Ø	B	C	D	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M5	**KL1026**	12	12	11	38	14	6.5	M5	5	13	13	7	8	0.021
AK-M6	**KY1126**	16	12	11	36	14	8.5	M6	5	13	13	7	10	0.021
AK-M8	**KY1127**	20	13	14	46	20	12.2	M8	7	17	17	10	13	0.049
AK-M8	**KY1127**	25	13	14	46	20	12.2	M8	7	17	17	10	13	0.049

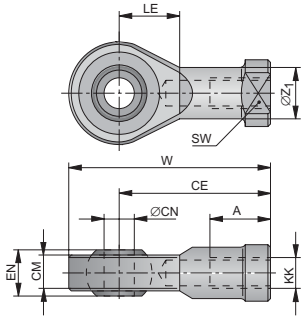
Piston Rod Clevis to ISO 8140 (CETOP RP102P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	ØCK	CE	CL	CM	KK	LE	W	Weight (kg)
GK-M5	**KL6020**	12	5	20	10	5	M5	10	26	0.009
GK-M6	**KY6132**	16	6	24	12	6	M6	12	31	0.016
GK-M8	**KY6133**	20	8	32	16	8	M8	16	42	0.038
GK-M8	**KY6133**	25	8	32	16	8	M8	16	42	0.038

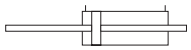
Piston Rod Eye to ISO 8139 (CETOP RP103 P)



Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.-Ø	A	CE	øCN	EN	KK	LE	SW	CM	W	øZ$_1$	Weight (kg)
GA-M5	**KL6022**	12	8	27	5	8	M5	11	11	6	36.5	9	0.017
GA-M6	**KY6144**	16	12	30	6	9	M6	11	11	6.75	40	10	0.025
GA-M8	**KY6145**	20	16	36	8	12	M8	13	14	9	48	12.5	0.043
GA-M8	**KY6145**	25	16	36	8	12	M8	13	14	9	48	12.5	0.043

Order Instructions for Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Order Instructions Type	Order-No.
Double acting without adjustable end cushioning		12	**NZD 2012/..**	**on request**
			NZD 2012/..-AG	**on request**
		16	**NZD 2016/..**	**on request**
			NZD 2016/..-AG	**on request**
		20	**NZD 2020/..**	**on request**
			NZD 2020/..-AG	**on request**
		25	**NZD 2025/..**	**on request**
			NZD 2025/..-AG	**on request**
Double acting without adjustable end cushioning, for contactless position sensing		12	**NZD 6012/..**	**PA 68200-....**
			NZD 6012/..-AG	**on request**
		16	**NZD 6016/..**	**PA 68210-....**
			NZD 6016/..-AG	**on request**
		20	**NZD 6020/..**	**PA 68220-....**
			NZD 6020/..-AG	**on request**
		25	**NZD 6025/..**	**PA 68230-....**
			NZD 6025/..-AG	**on request**

Complete type designation and order no. with stroke length in mm (in mm 4-digits)

Standard stroke length:
Double acting Version 0005, 0010, 0015, 0020, 0025, 0030, 0040, 0050 delivered preferably

Order Instructions for Cylinder Mountings

Description	Order No. Ø12	Ø16	Ø20	Ø25
Foot mounting A-..	**KL5510**	**KL5510**	**KL5511**	**KL5512**
Front flange mounting C-..	**KL5516**	**KL5516**	**KL5517**	**KL5518**
Rear flange mounting D-..	**KL5516**	**KL5516**	**KL5517**	**KL5518**

Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled

Ordering Example: Basic Cylinder: NZD 6025/25 PA 68230-0025 Foot Mounting: A-25 KL5512

Multiple Position Cylinder

ø 32-100 mm

Versions:
Double acting wih cushioning for contactless position sensing

Series AZZ..../.../...

AZZ5.../.../...

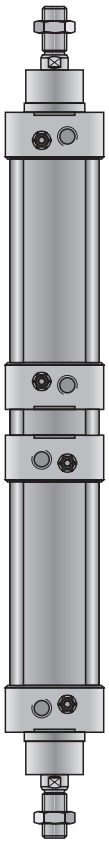


Characteristics according to VDI 3294 Pressures quoted as gauge pressure										
Characteristics		Symbol	Unit	Description						
General Features										
Type				Piston rod cylinder						
Series				AZZ5						
System				Double acting with cushioning for contactless position sensing						
Mounting				see basic cylinder						
Tube connection				Thread						
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing point (°C) it is necessary to consult us					
Medium temperature range		ϑ_{max}	°C	+80						
Weight (mass)			kg	See table						
Installation				In any position						
Medium				Filtered and lubricated or filtered and unlubricated compressed air						
Lubrication				Oil mist lubrication compatible with Buna N						
Material	Cylinder tube			Aluminium, anodised						
	Front/Rear covers			Aluminium, anodised						
	Piston rod			Steel, high-alloy						
Pneumatic Characteristics										
Nominal pressure		p_n	bar	6						
Operating pressure range		p_{min} p_{max}	bar bar	0.5 10						
Piston diameter			mm	32	40	50	63	80	100	
Port size				G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	
Piston rod diameter			mm	12	16	20	20	25	25	
Piston rod thread				M10 x1.25	M12 x1.25	M16 x1.5	M16 x1.5	M20 x1.5	M20 x1.5	
Stroke length			mm	For standard stroke lengths see order instructions max. 500mm, longer strokes on request						
Piston force and air consumption				See data sheet no. 2.05.001E						
Cushioning				Infinitely variable at both ends						
Cushioning stroke length			Cyl.Ø	32	40	50	63	80	100	
			mm	21	25	28	30	30	37	

Weight (mass) kg

Mounting	Cylinder-Ø 30		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic cylinder	0.95	0.25	1.30	0.55	2.20	0.65	2.80	0.75	4.60	1.15	6.70	1.40

* 1 = Weight for cylinder with 100 mm stroke
* 2 = Weight for every additional 100 mm stroke length



A normal double acting cylinder has two end positions.
Frequently three or more positions are required. For this purpose two HOERBIGER-DIN-cylinders are assembled to form multiple position cylinders. The strokes of the individual cylinders are optional. Multiple position cylinders usually consist of two cylinders with the same diameter.

Delivery includes:
1 Cylinder
2 Hexagon nuts for piston rod thread

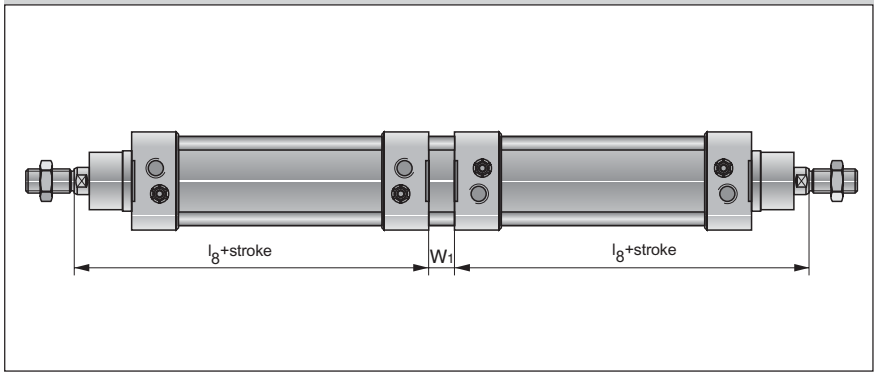
The magnetic switches are not included - please order separately.

For product group overview see 2.01.001E
For cylinder series AZ5 see 2.29.001E
For magnetic switches (Reed-contact and magneto-resistiv) see 2.90.031E, 2.90.032E, 2.90.036E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

Data Sheet No. 2.34.010E-1

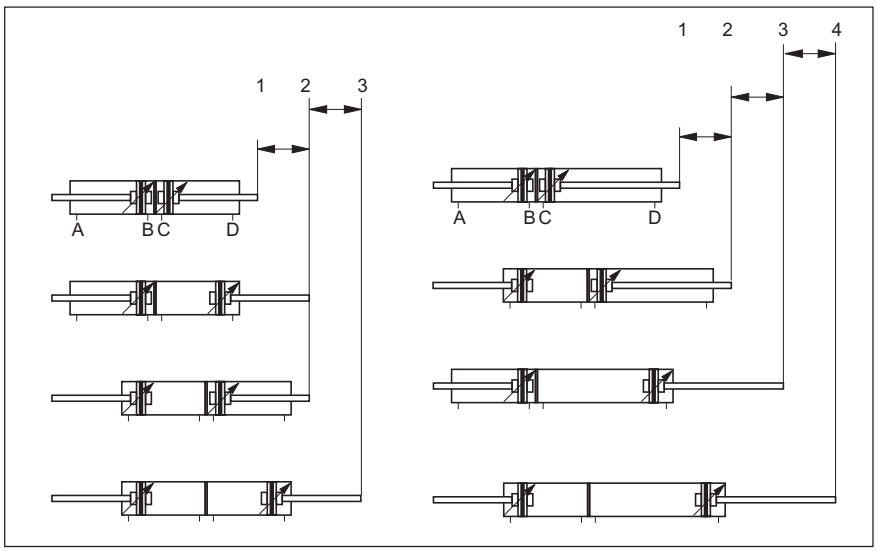
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The right to introduce technical modifications is reserved

Dimensions (mm)



Dimensions (mm)

Cyl.-Ø	W_1	$l_{8+stroke}$	Port size
32	12	120	G1/8
40	12	135	G1/4
50	15	143	G1/4
63	14	158	G3/8
80	18	174	G3/8
100	18	189	G1/2
for all further dimensions see 2.29.001E			



Arrangement for 3 positions
Two DNC cylinders of the same stroke length are connected together.

Arrangement for 4 positions
Two DNC cylinders of different stroke lengths are connected together.

A three- or four-position cylinder consists of two separate cylinders whose piston rods extend in opposite directions. Depending on the control system and the division of the stroke length, this type of cylinder can provide up to four positions, with each position defined exactly by a stop. Note that when a piston rod end is fixed, the cylinder tube itself carries out the movement and therefore requires flexible air connections.

Ordering Instructions

AZZ5	PD...	/	100	/	200
			1		2

Ordering Example

Series

AZZ5	

Piston Diameter (mm), Order No.

032	PD 40351
040	PD 40354
050	PD 40249
063	PD 40357
080	PD 40216
100	PD 40360

Stroke length of cylinder 1 and 2

Specified in mm
Standard strokes 25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500

Cylinder

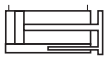
ø 12-25 mm

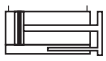
Non-Rotating

Versions :

- **Option with/without contactless position sensing**
- **Double acting without adjustable end cushioning**

Series NZV ....

NZV 2...* 

NZV 6... 

*** on request**

Characteristics according to VDI 3294 Pressures quoted as gauge pressure							
Characteristics		Symbol	Unit	Description			
General Features							
Type				Piston rod cylinder			
Series				NZV 2, NZV 6			
Series NZV 2...				Double acting without cushioning			
Series NZV 6...				Double acting without cushioning for contactless position sensing			
Mounting				See drawing			
Tube connection				Thread			
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing		
Mediums-temperature range		ϑ_{max}	°C	+80	point (°C) it is necessary to consult us		
Weight (mass)			kg	See table			
Installation				In any position			
Medium				Filtered and lubricated or filtered and unlubricated compressed air			
Lubrication				Oil mist lubrication compatible with polyurethane			
Material	Cylinder tube			Aluminium, anodised			
	Front/Rear covers			Aluminium, laquered			
	Piston rod			Steel, high-alloy			
Pneumatic Characteristics							
Nominal pressure		p_n	bar	6			
Operating pressure		p_{min} p_{max}	bar bar	1.0 10			
Piston diameter			mm	12	16	20	25
Port size				M5	M5	M5	M5
Piston rod diameter			mm	6	8	10	10
Piston rod thread			Inside	M3	M4	M6	M6
			Outside	M5	M6	M8	M8
Stroke length			mm	Standard stroke lengths see order instructions max. 50			
Piston force and air consumption				see Data-Sheet 2.05.001E			
Torque			Nm	see diagram page 2.46.001E-2			
Cushioning				Elastomer cushioning at both ends			

Weight (mass) kg

Mounting gungsart	Cylinder-Ø 12		16		20		25	
	*1	*2	1	2	1	2	1	2
Basic Cyl.	0.112		0.122		0.188		0.233	
BA	0.021	0.018	0.021	0.022	0.038	0.028	0.042	0.031
D	0.110		0.110		0.180		0.220	

*1 = Cylinder weight (10 mm stroke)
*2 = Weight per further 10 mm stroke length

Special versions:
●High temperature version (+150°)

The cylinder profile has grooves in which, depending on stroke length, one more magnetic switches can be mounted for sensing the end positions or intermediate positions of the magnetic piston.

The delivery includes:
1 Cylinder

Magnetic switches are not included - please order these separately.



For product group overview see 2.01.001E
For magnetic switches see 2.90.042E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

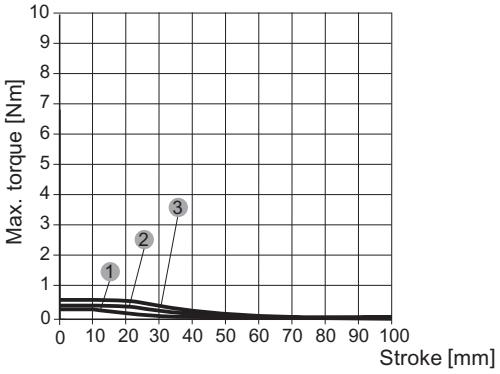
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The right to introduce technical modifications is reserved

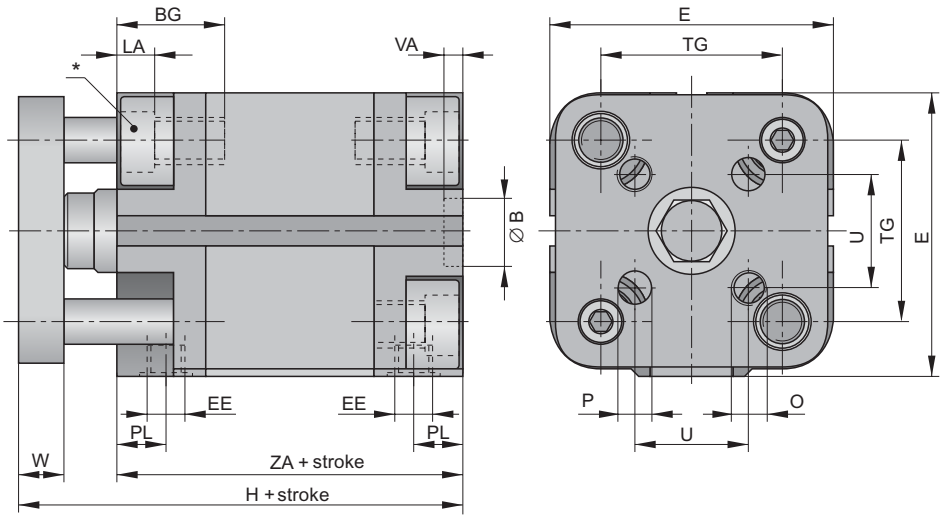
HOERBIGER ORIGA

Torque diagram (Nm) in dependence upon stroke length

1 = Cyl.ø 12/16
2 = Cyl.ø 20
3 = Cyl.ø 25



Dimensions for Basic Cylinder
Version: Piston Rod with non-rotation (Series NZV..../...)

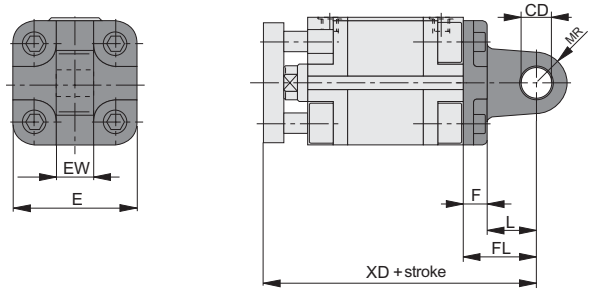


* Mounting screws to DIN 912 can be flush-countersunk.

Dimension Table (mm) for Basic Cylinder

Cyl. ø	øB	BG	E	EE	H	LA	O	P	PL	U	TG	VA	W	ZA +stroke
12	6	8	29	M5	48.5	5	M3	3	5	9.9	18	4	6	37
16	6	10	29	M5	48.5	5	M3	3	5	9.9	18	4	6	37
20	6	15	38	M5	51	5	M4	4	5	12	22	4	8	37
25	6	15	41	M5	53	5	M5	5	5	15.6	26	4	8	39

Dimension Table (mm) for Mounting BA



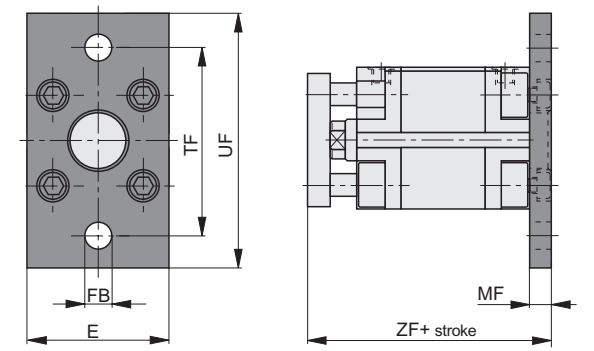
Material: cast aluminium

Dimension Table (mm) for Mounting BA

Cyl.-Ø	ØCD	E	EW	F	FL	L	MR	XD +stroke
12	6	27	12	6	16	10	6	53
16	6	27	12	6	16	10	6	53
20	8	34	16	6	20	14	8	57
25	8	38	16	6	20	14	8	59

Included in delivery: 1 x mounting eyelets
4 x screws

Dimension Table (mm) for Mounting D



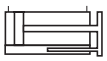
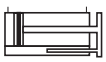
Material: steel, zinc-plated

Dimension Table (mm) for Mounting D

Cyl.-Ø	øFB	E	MF	TF	UF	ZF +stroke
12	5.5	29	8	43	55	50.5
16	5.5	29	8	43	55	50.5
20	6.6	36	8	55	70	51
25	6.6	40	8	60	76	53

Included in delivery: 1 x flange
4 x screws

Order Instructions for Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Order Instructions Type	Order-No.
Double acting without adjustable end cushioning		12	**NZV 2012/..**	**on request**
		16	**NZV 2016/..**	**on request**
		20	**NZV 2020/..**	**on request**
		25	**NZV 2025/..**	**on request**
Double acting without adjustable end cushioning, for contactless position sensing		12	**NZV 6012/..**	**PA 68160-....**
		16	**NZV 6016/..**	**PA 68170-....**
		20	**NZV 6020/..**	**PA 68180-....**
		25	**NZV 6025/..**	**PA 68190-....**

Complete type designation and order no. with stroke length in mm (in mm 4-digits)

Standard stroke length:
Double acting Version 0005, 0010, 0015, 0020, 0025, 0030, 0040, 0050 delivered preferably

Order Instructions for Cylinder Mountings

Description	Order No. Ø12	Ø16	Ø20	Ø25
Rear trunnion mounting BA-..	**KL5513**	**KL5513**	**KL5514**	**KL5515**
Rear flange mounting D-..	**KL5516**	**KL5516**	**KL5517**	**KL5518**

Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled

Ordering Example: Basic Cylinder: NZV 6025/25 PA 68190-0025 Foot Mounting: A-25 KL5512

Cylinder

ø 32-100 mm

Non-Rotating

Version:

- **for contactless position sensing as standard**

Series NZKV ....

NZKV 6... 

Characteristics according to VDI 3294			Pressures quoted as gauge pressure						
Characteristics	Symbol	Unit	Description						
General Features									
Type			Piston rod cylinder						
Series			NZKV 6						
Series NZKV 6...			Double acting without cushioning for contactless position sensing						
Mounting			See drawing						
Tube connection			Thread						
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing					
Mediums-temperature range	ϑ_{max}	°C	+80	point (°C) it is necessary consult us					
Weight (mass)		kg	See table						
Installation			In any position						
Medium			Filtered and lubricated or filtered and unlubricated compressed air						
Lubrication			Oil mist lubrication compatible with polyurethane						
Material: Cylinder tube			Aluminium, anodised						
Material: Front/Rear covers			Aluminium, anodised						
Material: Piston rod			Steel, high-alloy						
Pneumatic Characteristics									
Nominal pressure	p_n	bar	6						
Operating pressure	p_{min} p_{max}	bar bar	0.5 10						
Piston diameter		mm	32	40	50	63	80	100	
Port size			G1/8	G1/8	G1/8	G1/8	G1/8	G1/4	
Piston rod diameter		mm	12	16	20	20	25	25	
Stroke length		mm	For standard stroke lengths see order instructions max. 100mm, longer strokes on request						
Piston force and air consumption			see Data-Sheet 2.05.001						
Cushioning			Elastomer cushioning at both ends						
Transverse/Torque load	max.	N/Nm	see diagramm						

Weight (mass) kg

Mounting	Cylinder -Ø 32		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic Cyl.	0.42		0.57		0.83		1.38		2.00		3.20	
B	0.52		0.67		0.98		1.58		2.40		3.80	
BA	0.62	0.050	0.77	0.065	0.93	0.091	1.78	0.108	2.80	0.147	4.20	0.192
BAS	0.57		0.77		0.93		1.68		2.50		4.10	
D	0.57		0.67		0.88		1.73		2.50		4.10	

*1 = Cylinder weight (10 mm stroke)
*2 = Weight per further 10 mm stroke length

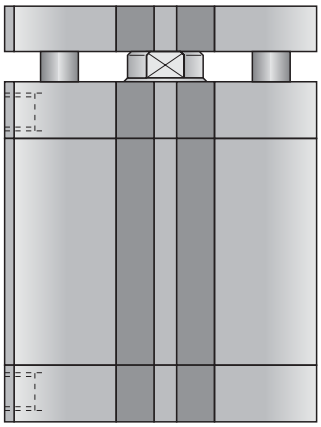
Special versions:

- High temperature version (+150°), not for contactless position sensing

The cylinder profile has grooves in which, depending on stroke length, one more magnetic switches can be mounted for sensing the end positions or intermediate positions of the magnetic piston.

Delivery includes:
1 Cylinder

The magnetic switches are not included - please order separately.



For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

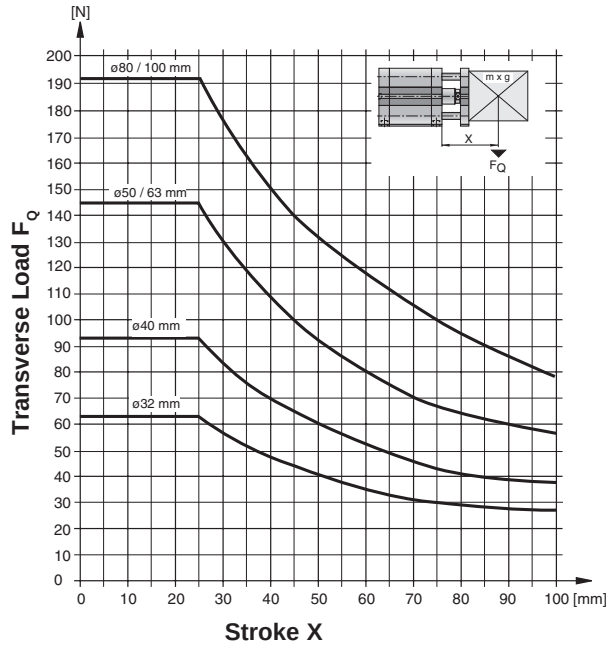
Data Sheet No. 2.47.001E-1

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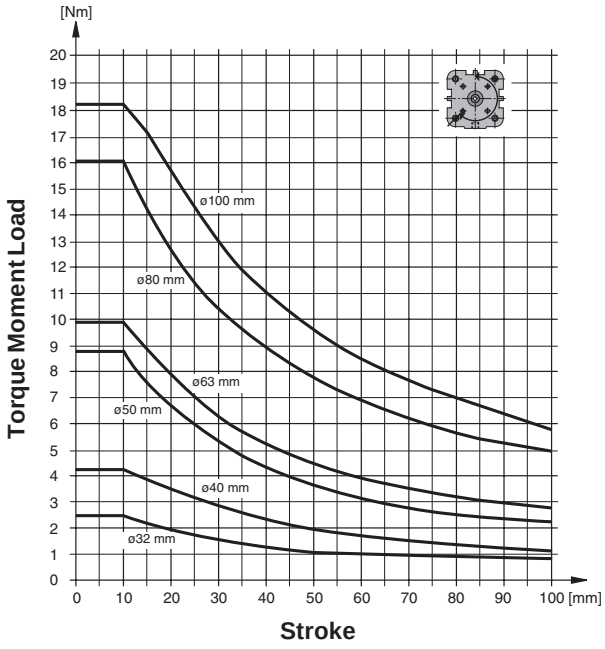
The right to introduce technical modifications is reserved

Transverse Moment Load (N) in relation to the stroke

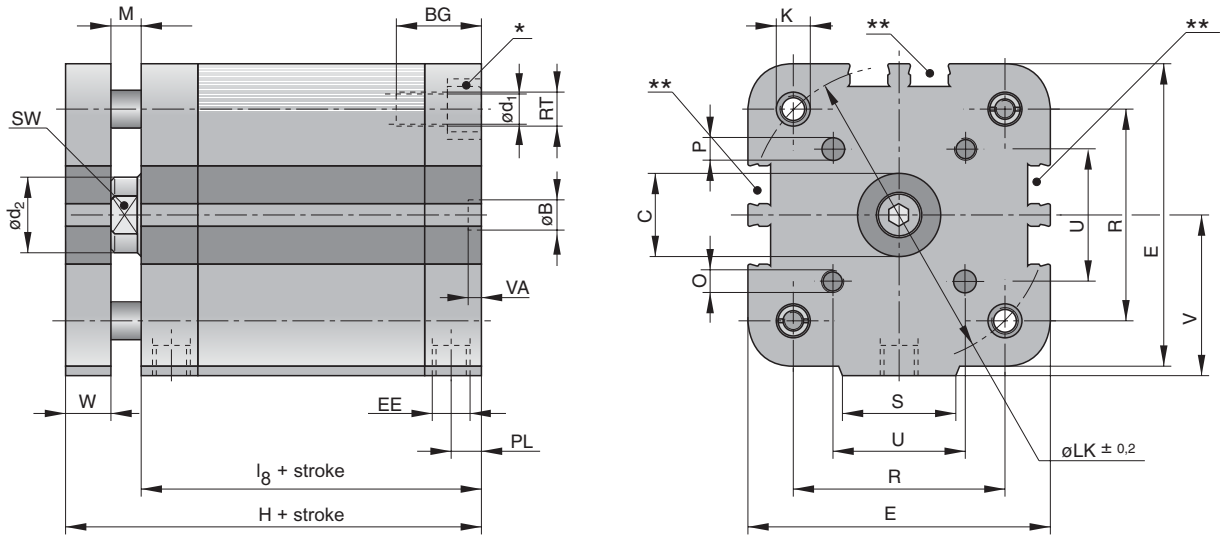


Note: In combination with attached masses, we recommend the use of external stops

Torque Moment Load (Nm) in relation to the stroke



Dimensions for Basic Cylinder

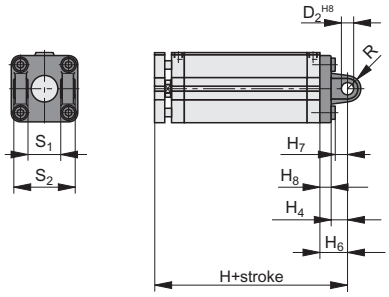


* Mounting screws to DIN 912 can be flush-countersunk
** Cylinder diameters 32, 40, 50 mm: only 1 groove in the middle

Dimension Table (mm) for Basic Cylinder

Cyl. ø	øB H9	BG	øC H9	ød1	ød2	E	EE	H +stroke	K	l8 +stroke	øLK	M	O	øP H8	PL	R	RT	S	SW	U	V	VA	W
32	6	21	17	5.5	12	50	G1/8	60.5	9	44.5	46	5.9	M5	5	8	32.5	M6	21	10	19.8	26.5	4	10
40	6	21	17	5.5	16	57	G1/8	62	9	45.5	54	6.5	M5	5	8	38	M6	22	13	23.3	30	4	10
50	6	22.5	22	6.5	20	67.5	G1/8	65	9	45.5	66	7.5	M6	6	8	46.5	M8	25	17	29.7	35.75	4	12
63	8	22.5	22	6.5	20	81	G1/8	70	9	50	80	8	M6	6	8	56.5	M8	30	17	35.4	43.5	4	12
80	8	27.5	28	8.5	25	98	G1/8	78.5	12	56	102	8,5	M8	8	8.5	72	M10	40	19	46	53	4	14
100	8	32.5	30	8.5	25	119	G1/4	90.5	12	66.5	126	10	M10	10	10.5	89	M10	50	22	56.6	62.5	4	14

Dimensions for Mounting B



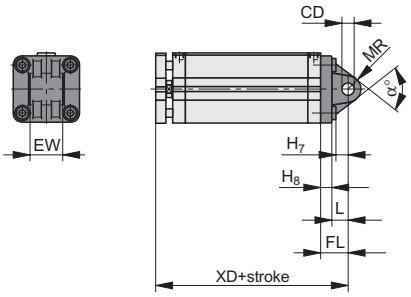
Material: cast aluminium

Dimension Table (mm) for Mounting B

Cyl.-Ø	ØD H8	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	S_2
32	10	82.5	12	22	11	10	9	26	45
40	12	87	15	25	14	10	11	28	52
50	12	92	16	27	15	11	12	32	60
63	16	101	21	32	20	11	15	40	70
80	16	114.5	22	36	21	14	16	50	90
100	20	131.5	25	41	24	16	20	60	110

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BA



Material: cast aluminium

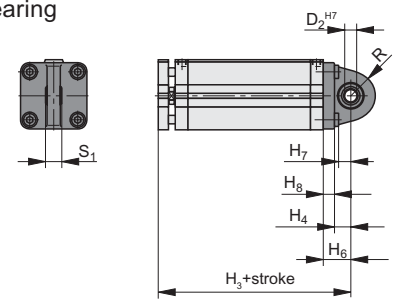
Dimension Table (mm) for Mounting BA

Cyl.-Ø	øCD H8	EW	FL	H_7	H_8	L	MR	XD +stroke	α°
32	10	26	22	11	10	12	10.5	82.5	60
40	12	28	25	14	10	15	13	87	60
50	12	32	27	15	11	16	13	92	70
63	16	40	32	20	11	21	17	101	60
80	16	50	36	20	15	21	17	114.5	70
100	20	60	41	24	16	25	21	131.5	70

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BAS

Rear trunnion mounting with spherical bearing



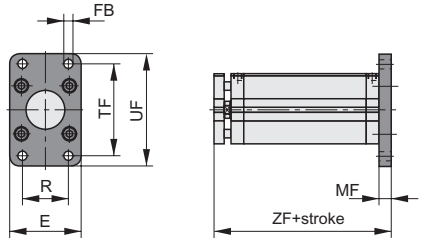
Material: cast aluminium

Dimension Table (mm) for Mounting BAS

Cyl.-Ø	ØD2 H7	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1
32	10	82.5	12	22	11	10	18	14
40	12	87	15	25	14	10	21	16
50	12	92	16	27	15	11	23	16
63	16	101	21	32	20	11	27	21
80	16	114.5	21	36	20	15	29	21
100	20	131.5	25	41	24	16	34	25

Included in delivery: 1 x rear trunnion mounting with spherical bearing
4 x screws

Dimensions for Mounting D



Material: cast aluminium

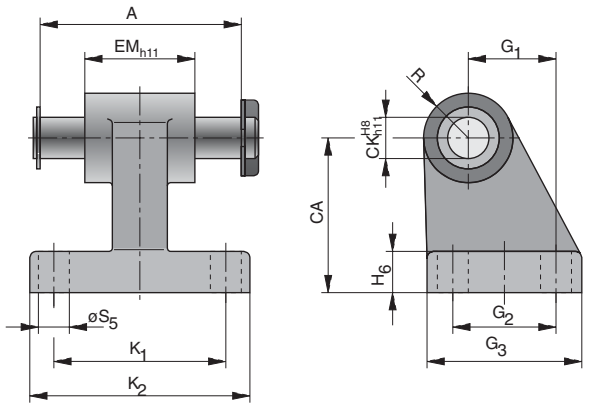
Dimension Table (mm) for Mounting D

Cyl.-Ø	øFB	E	MF	R	TF	UF	ZF +stroke
32	7	50	10	32	64	79	70.5
40	9	56	10	36	72	90	72
50	9	70	12	45	90	110	77
63	9	77	12	50	100	120	81
80	12	100	16	63	126	153	94.5
100	14	120	16	75	150	178	106.5

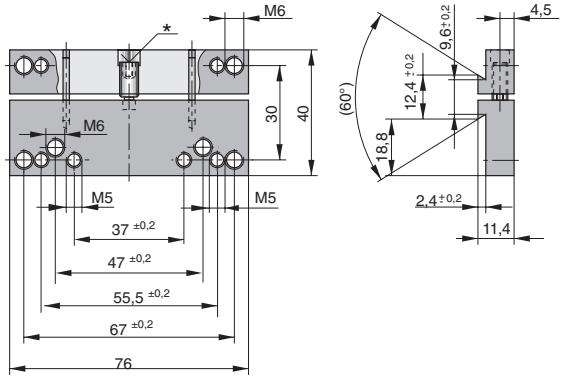
Included in delivery: 1 x flange
4 x screws

Pivot (series GLN) for Mounting B to VDMA 24562

for 90° angle



Adapter plate for Mounting S9-Valves G1/8 and G1/4



Order No.: PD 40372 * Allan screw SW 2.5

Order Instructions, Dimension Table (mm), Weight – Pivot Series GLN

Order Instructions Type	Order No.	Cyl.-Ø	A	CA	CK^{H8}_{h11}	EM_{h11}	G_1	G_2	G_3	H_6	K_1	K_2	R_1	$øS_5$	Weight (kg)
GLN-032	**PD 40844**	32	46	32	10	26	21	18	31	8	38	50	10	6.6	0.092
GLN-040	**PD 40845**	40	53	36	12	28	24	22	35	10	41	53	11	6.6	0.131
GLN-050	**PD 40846**	50	61	45	12	32	33	30	45	12	50	64	13	9	0.193
GLN-063	**PD 40847**	63	71	50	16	40	37	35	50	12	52	66	15	9	0.305
GLN-080	**PD 40848**	80	91	60	16	50	47	40	60	14	66	84	15	11	0.460
GLN-100	**PD 40849**	100	111	70	20	60	55	50	70	15	76	94	19	11	0.840

Order Instructions for Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Order Instructions Type	Order-No.
Double acting without adjustable end cushioning, for contactless position sensing		32	**NZKV 6032/...**	**PA 58450-....**
		40	**NZKV 6040/...**	**PA 59370-....**
		50	**NZKV 6050/...**	**PA 60450-....**
		63	**NZKV 6063/...**	**PA 61390-....**
		80	**NZKV 6080/...**	**PA 62290-....**
		100	**NZKV 6100/...**	**PA 63190-....**

Complete type designation and order no. with stroke length in mm (4- digits)

Standard stroke length: 0005, 0010,0015,0020, 0025, 0030, 0040, 0050, 0060, 0080

Order Instructions for Cylinder Mountings

Description	Bestell-Nr. Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Rear trunnion mounting B-..	**PD 22704**	**PD 22705**	**PD 22706**	**PD 22707**	**PD 22708**	**PD 22709**
Rear trunnion mounting BA-..	**PD 23412**	**PD 23413**	**PD 23414**	**PD 23415**	**PD 23416**	**PD 23417**
Rear trunnion mounting BAS-..	**PD 23843**	**PD 23844**	**PD 23845**	**PD 23846**	**PD 23847**	**PD 23848**
Rear flange mounting D-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**
Security bolt for mountings B,BA,BAS	**KY 6153**	**KY 6154**	**KY 6157**	**KY 6156**	**KY 6158**	**KY 6159**
Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled						

Ordering Example:
Basic Cylinder: NZKV 6032/50 PA 58450-0050 Rear trunnion mounting B: B-32 PD 22704

Twin Rod Cylinder

ø 25 mm

Version:
Double acting with cushioning for contactless position sensing

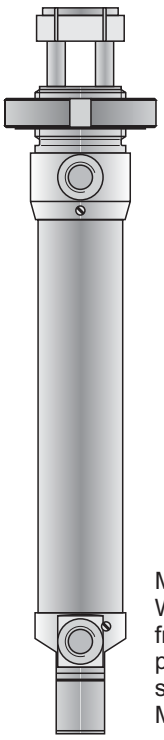
Series RDV....

RDV5...



Characteristics according to VDI 3294			Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description	
General Features				
Type			Twin rod cylinder	
Series			RDV	
System			Double acting with cushioning for contactless position sensing	
Mounting			See drawing	
Tube connection			Thread	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing
Medium temperature range	ϑ_{max}	°C	+70	point (°C) ist is necessary to consult us
Weight (mass)		kg	See table	
Installation			In any position	
Medium			Filtered and lubricated or filtered and unlubricated compressed air	
Lubrication			Oil mist lubrication compatible with Buna N	
Material – Cylinder tube			Aluminium, anodised	
Material – Front/Rear cover			Aluminium, anodised	
Material – Piston rod			Steel, high-alloy	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	1 10	
Piston diameter		mm	25	
Port size			G1/8	
Piston rod diameter		mm	6	
Stroke length			Max. strokes on request	
Pressure force at 6 bar		N	265	
Tensile force at 6 bar		N	235	
Air consumption			See data sheet	
Cushioning			At both ends, infinitely variable	
Cushioned stroke		mm	17	

Weight (mass) kg		
Mounting	Cylinder diameter 25 mm	
	*1	*2
Basic cylinder	0.46	0.08
RA (1 bracket)	0.10	
*1 = Weight for cylinder with 100 mm stroke *2 = Weight for every additional 100 mm stroke length		



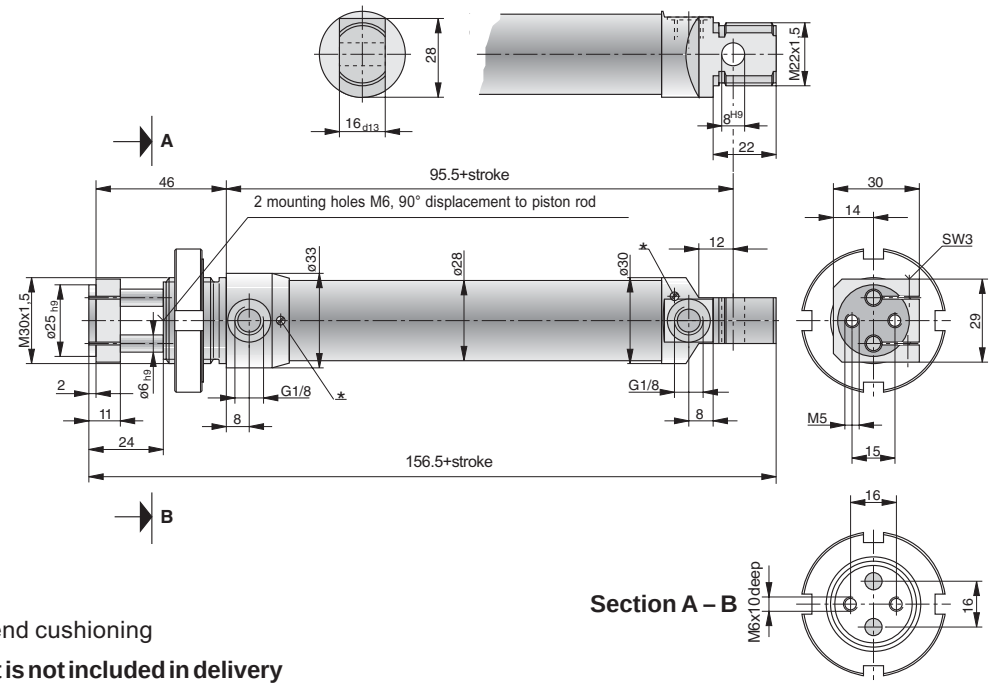
Mounting instruction:
When mounting the front plate onto the piston rods tighten the screws with a torque M_a = 4 Nm

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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The right to introduce technical modifications is reserved

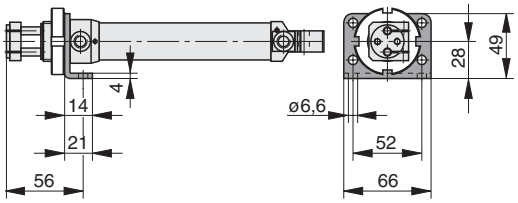
Dimensions (mm)



* adjustable end cushioning

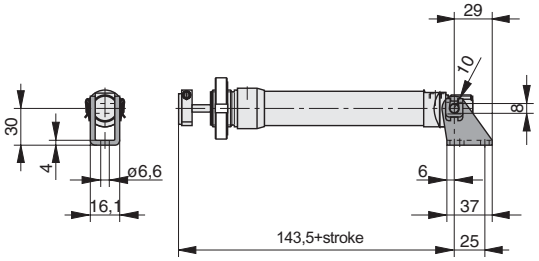
Mounting nut is not included in delivery

Foot Mounting (mm)



Material: steel, passivated

Rear Trunnion Mounting (mm)



Material: steel, passivated

Order Instructions

Basic Cylinder (Without Mounting)

Description	Symbol	Piston-Ø	Order Instructions	
			Type	**Order No.**
Double acting with adjustable end cushioning for contactless position sensing		25	**RDV 5025/...**	**PA 50470-....**

Complete type designation and order no. with stroke length (mm) (mm 4-digit)

Standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320, 0400, 0500 delivered preferably

Cylinder Mountings - Accessories

Description	**Order No.**
Foot mounting (1 bracket) Type RA 1-32	**KK 29.302**
Rear trunnion mounting Type RB-25	**KZ 1420**
Grooved nut	**ZP 2125**
Ordering Example: Foot mounting RA 1-32 KK 29.302	

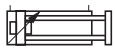
Twin Rod Cylinder

ø 32-100 mm

Versions:
Double acting with/without cushioning
for contactless position sensing

Series AZV....

AZV1...



AZV2...

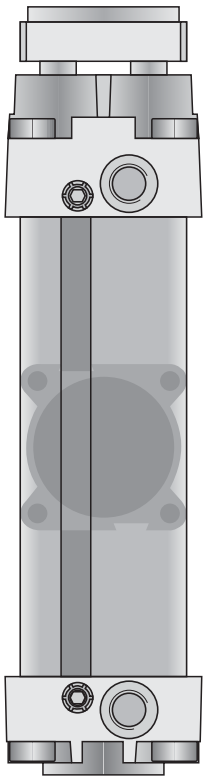


AZV5...



AZV6...





Characteristics according to VDI 3294 Pressures quoted as gauge pressure									
Characteristics	Symbol	Unit	Description						
General Features									
Type			Twin rod cylinder						
Series			AZV						
System AZV1...			Double acting with cushioning						
System AZV2...			Double acting without cushioning						
System AZV5...			Double acting with cushioning for contactless position sensing						
System AZV6...			Double acting without cushioning for contactless position sensing						
Mounting			See drawing						
Tube connection			Thread						
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing					
Medium temperature range	ϑ_{max}	°C	+80	point (°C) it is necessary to consult us					
Installation			In any position						
Medium			Filtered and lubricated or filtered and unlubricated compressed air						
Lubrication			Oil mist lubrication compatible with Buna N						
Material: Cylinder tube			Aluminium, anodised						
Material: Front/Rear covers			Aluminium						
Material: Piston rod			Steel, hard-chrome plated						
Pneumatic Characteristics									
Nominal pressure	p_n	bar	6						
Operating pressure range	p_{min} p_{max}	bar bar	1 10						
Piston diameter		mm	32	40	50	63	80	100	
Port size			G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	
Piston rod diameter		mm	8	10	12	16	20	20	
Stroke length			For standard stroke lengths see order instructions max. 2000mm, longer strokes on request						
Air consumption			See data sheet no. 2.05.001E						
Cushioning series AZV1, AZV5			At both ends Fully adjustable						
Cushioned stroke length		mm	32	40	50	63	80	100	
only for series AZV1, AZV5		mm	20	25	25	25	28	30	

Piston Force (N)		
Piston-Ø	Pressure force at 6 bar	Tensile force at 6 bar
32	430	380
40	680	590
50	1060	940
63	1680	1466
80	2714	2375
100	4240	3900

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E, 2.90.042E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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The right to introduce technical modifications is reserved

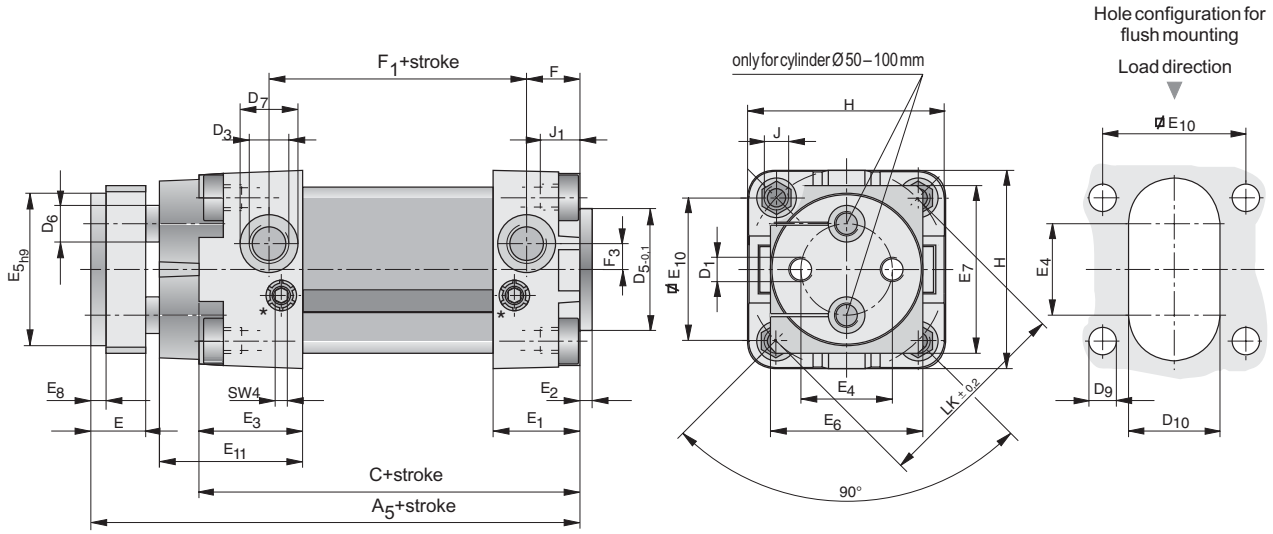
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Weight (mass) kg

Mounting	Ø32		Ø40		Ø50		Ø63		Ø80		Ø100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic Cylinder	0.8	0.25	1.0	0.35	1.7	0.5	2.6	0.6	4.2	0.9	6.2	1.0
A	1.0		1.25		2.0		3.0		5.0		7.1	
B	0.9		1.1		1.85		2.8		4.6		6.8	
BA	1.0		1.2		1.9		3.0		5.0		7.3	
BAS	0.95		1.2		1.9		2.9		4.7		7.0	
D	0.9		1.1		1.85		2.85		4.7		7.0	
EN	1.2		1.7		2.6		3.9		6.0		8.7	

*1 = Weight for cylinder with 100 mm stroke
*2 = Weight for every additional 100 mm stroke length

Dimensions



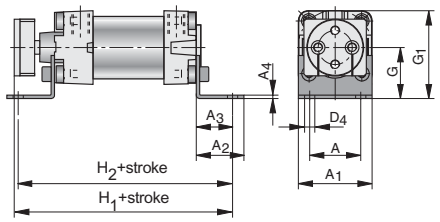
* throttle screw for cushioning (only for series AZV1..., AZV5...)

Dimension Table (mm)

Cyl. Ø	A_5+ stroke	C+ stroke	D_1	D_3	ØD_5	ØD_6	ØD_7	ØD_9	D_{10}	E	E_1	E_2	E_3	ØE_4
32	128	102	M 6	G 1/8	30	8	15	7	23	15	29	4	26	19
40	142	112	M 8	G 1/4	35	10	19	7	25	15	27	4	30	22.5
50	151	117	M 8	G 1/4	40	12	19	9	30	18	29	4	34	30
63	161	125	M 10	G 3/8	45	16	23	9	34	22	30	4	34	38
80	174	136	M 12	G 3/8	45	20	23	10	38	22	34	4	39	50
100	181	143	M 12	G 1/2	55	20	28	10	38	22	35	4	40	70

Cyl. Ø	E_{5h9}	E_6	E_7	E_8	E_{10}	E_{11}	F	F_1+ stroke	F_3	J	J_{1max}	H	ØLK
32	32	32	40	4	32.5	34	14.5	74	6	M 6	16	47	46
40	40	40	45	4	38	42	16	77.5	7	M 6	16	53	54
50	50	50	55	5	46.5	47	17.5	77	9.5	M 8	16	65	66
63	63	63	70	5	56.5	45	17.5	87	10	M 8	16	75	80
80	80	80	95	5	72	52	20.5	90	9	M 10	16	95	102
100	100	100	115	5	89	53	19	100	13	M 10	16	115	126

Dimensions for Mounting A



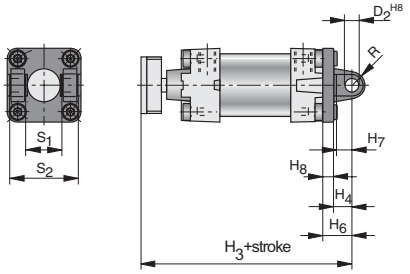
Material: steel, passivated

Dimension Table (mm) for Mounting A

Cyl. Ø	A	A_1	A_2	A_3	A_4	ØD_4	G	G_1	H_1+ stroke	H_2+ stroke
32	32	47	32	24	4	7	32	55.5	152	150
40	36	53	38	28	4	9	36	62.5	170	168
50	45	65	42	32	5	9	45	77.5	183	181
63	50	75	42	32	5	9	50	87.5	193	189
80	63	95	55	41	6	12	63	110.5	215	218
100	75	115	56	41	6	14	71	128.5	222	225

Included in delivery: 2 x foot brackets
4 x screws

Dimensions for Mounting B



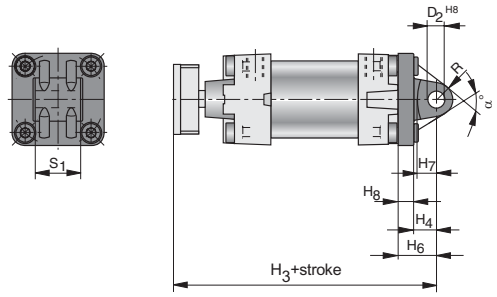
Material: cast aluminium

Dimension Table (mm) for Mounting B

Cyl. Ø	ØD_2^{H8}	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	S_2
32	10	150	12	22	11	10	9	26	45
40	12	167	15	25	14	10	11	28	52
50	12	178	16	27	15	11	12	32	60
63	16	193	21	32	20	11	15	40	70
80	16	210	22	36	21	14	16	50	90
100	20	222	25	41	24	16	20	60	110

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BA



Material: cast aluminium

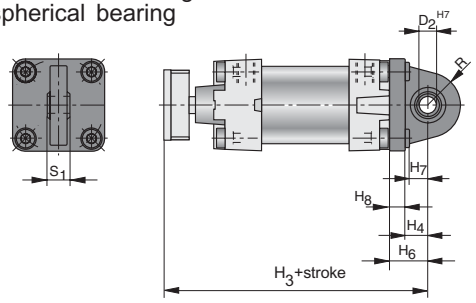
Dimension Table (mm) for Mounting BA

Cyl. Ø	ØD_2^{H8}	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	α°
32	10	150	12	22	11	10	10.5	26	60
40	12	167	15	25	14	10	13	28	60
50	12	178	16	27	15	11	13	32	70
63	16	193	21	32	20	11	17	40	60
80	16	210	21	36	20	15	17	50	70
100	20	222	25	41	24	16	21	60	70

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BAS

Rear trunnion mounting
with spherical bearing



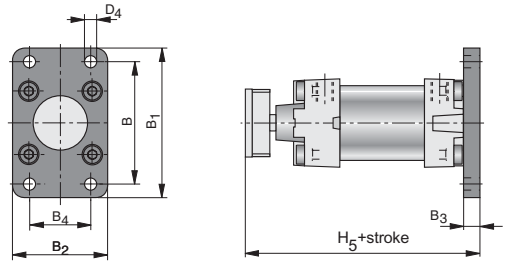
Material: cast aluminium

Dimension Table (mm) for Mounting BAS

Cyl. Ø	ØD_2^{H7}	H_3+	H_4 stroke	H_6	H_7	H_8	R	S_1
32	10	150	12	22	11	10	18	14
40	12	167	15	25	14	10	21	16
50	12	178	16	27	15	11	23	16
63	16	193	21	32	20	11	27	21
80	16	210	21	36	21	15	29	21
100	20	222	25	41	24	16	34	25

Included in delivery: 1 x rear trunnion mounting
with spherical bearing
4 x screws

Dimensions for Mounting D



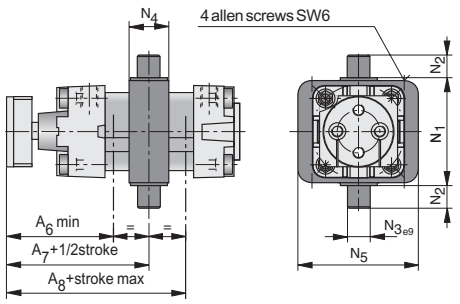
Material: cast aluminium

Dimension Table (mm) for Mounting D

Cyl. Ø	B	B_1	B_2	B_3	B_4	$ØD_4$	H_5+ stroke
32	64	79	50	10	32	7	138
40	72	90	56	10	36	9	152
50	90	110	70	12	45	9	163
63	100	120	77	12	50	9	173
80	126	153	100	16	63	12	190
100	150	178	120	16	75	14	197

Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting EN
Flange dimensions to ISO 6431



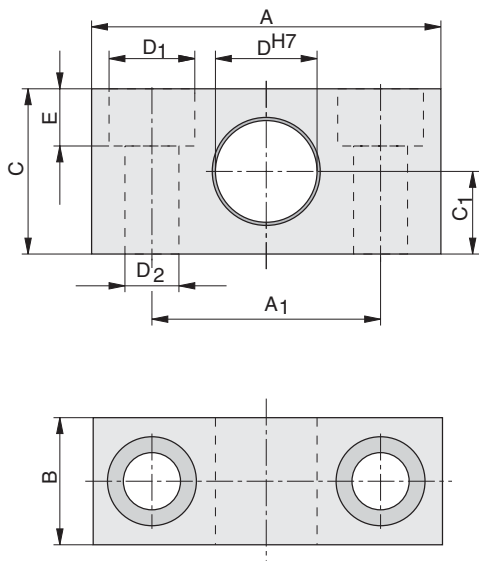
Material: nodular graphite cast iron, passivated

Dimension Table (mm) for Mounting EN

Cyl. Ø	A_{6min}	A_7+ 1/2 stroke	A_{8max} +stroke	N_1	N_2	N_{3e9}	N_4	N_5
32	64	76	87	50	12	12	25	65
40	75	87	99	63	16	16	28	75
50	84	95	106	75	16	16	28	85
63	89	101	112	90	20	20	36	100
80	96	109	121	110	20	20	36	120
100	99	112	125	132	25	25	48	135

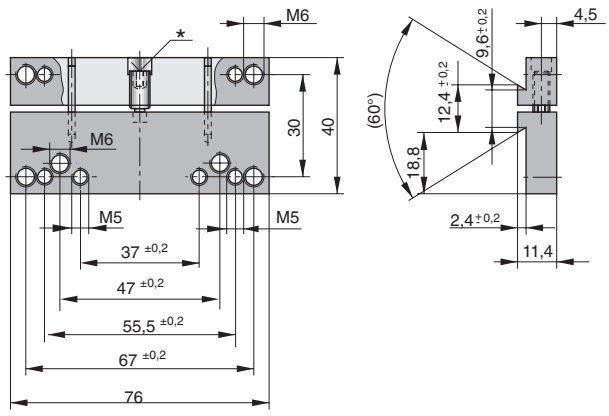
Included in delivery: 1 x rear trunnion mounting
After loosening the locking screws, the trunnion mounting is infinitely variable between XV_{min} and XV_{max}.

Pivot for Mounting EN



Material: cast aluminium

Adaptor plate for mounting of S9 Ventilen G1/8 and G1/4



Order No.: PD 40372

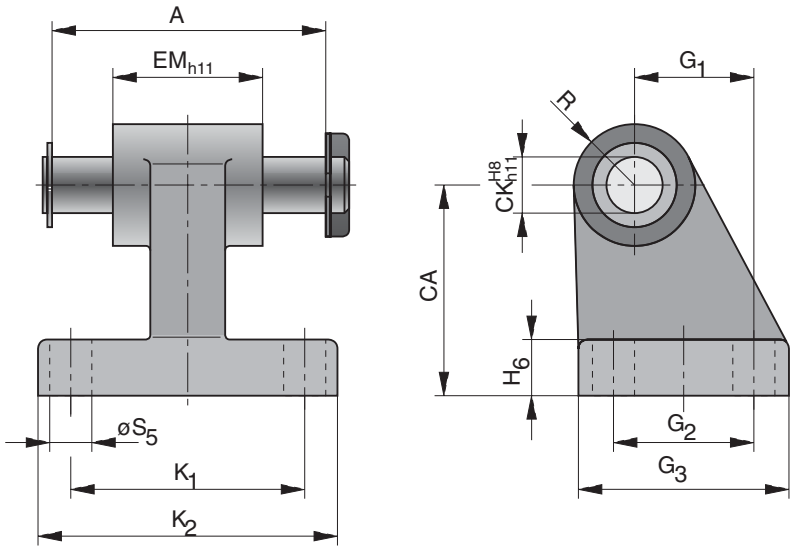
* Allen screw SW 2.5

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	to Cyl.Ø	A	A_1	B	C	C_1	$ØD^{H7}$	$ØD_1$	$ØD_2$	E	Weight (kg)
EL-032	**PD 23381**	32	55	36	20	26	13	12	13.5	8.4	9	0.06
EL-040/050	**PD 23382**	40,50	55	36	20	26	13	16	13.5	8.4	9	0.06
EL-063/080	**PD 23383**	63,80	65	42	25	30	15	20	16.5	10.5	11	0.10
EL-100	**PD 23384**	100	75	50	28	40	20	25	19	13	13	0.175

Pivot for Mounting B to VDMA 24562

for 90°angle



Material: cast aluminium

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.-Ø	A	CA	CK^{H8}_{h11}	EM_{h11}	G_1	G_2	G_3	H_6	K_1	K_2	R_1	$øS_5$	Weight (kg)
GLN-032	**PD 40844**	32	46	32	10	26	21	18	31	8	38	50	10	6.6	0.092
GLN-040	**PD 40845**	40	53	36	12	28	24	22	35	10	41	53	11	6.6	0.131
GLN-050	**PD 40846**	50	61	45	12	32	33	30	45	12	50	64	13	9	0.193
GLN-063	**PD 40847**	63	71	50	16	40	37	35	50	12	52	66	15	9	0.305
GLN-080	**PD 40848**	80	91	60	16	50	47	40	60	14	66	84	15	11	0.460
GLN-100	**PD 40849**	100	111	70	20	60	55	50	70	15	76	94	19	11	0.840

Order Instructions

Series	Symbol	Piston-Ø	Order Instructions Type	Order No.
Double acting without adjustable end cushioning		32	AZV 2032/....	PA 58360-....
		40	AZV 2040/....	PA 59280-....
		50	AZV 2050/....	PA 60360-....
		63	AZV 2063/....	PA 61300-....
		80	AZV 2080/....	PA 62200-....
		100	AZV 2100/....	PA 63100-....
Double acting with adjustable end cushioning		32	AZV 1032/....	PA 58350-....
		40	AZV 1040/....	PA 59270-....
		50	AZV 1050/....	PA 60350-....
		63	AZV 1063/....	PA61290-....
		80	AZV 1080/....	PA 62190-....
		100	AZV 1100/....	PA 63090-....
Double acting without adjustable end cushioning, for contactless position sensing		32	AZV 6032/....	PA 58380-....
		40	AZV 6040/....	PA 59300-....
		50	AZV 6050/....	PA 60380-....
		63	AZV 6063/....	PA 61320-....
		80	AZV 6080/....	PA 62220-....
		100	AZV 6100/....	PA 63120-....
Double acting with adjustable end cushioning, for contactless position sensing		32	AZV 5032/....	PA 58370-....
		40	AZV 5040/....	PA 59290-....
		50	AZV 5050/....	PA 60370-....
		63	AZV 5063/....	PA 61310-....
		80	AZV 5080/....	PA 62210-....
		100	AZV 5100/....	PA 63110-....

Complete type designation and order no. with stroke length in mm (4 digits)

Standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0250, 0320 delivered preferably

Cylinder Mountings

Description	Order No. Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Foot mounting A-..	PD 27917	PD 27918	PD 28072	PD 28073	PD 28074	PD 28075
Rear trunnion mounting B-..	PD 22704	PD 22705	PD 22706	PD 22707	PD 22708	PD 22709
Rear trunnion mounting BA-..	PD 23412	PD 23413	PD 23414	PD 23415	PD 23416	PD 23417
Rear trunnion mounting BAS-..	PD 23843	PD 23844	PD 23845	PD 23846	PD 23847	PD 23848
Rear flange mounting D-..	PD 23403	PD 23404	PD 23405	PD 23406	PD 23407	PD 23408
Centre trunnion mounting EN-..	PD 39195	PD 39196	PD 39197	PD 39198	PD 39199	PD 39200
Pin with security washer for B, BA, BAS	KY 6153	KY 6154	KY 6157	KY 6156	KY 6158	KY 6159

Delivery information: on delivery all cylinder mountings, except the centre trunnion mounting EN are not assembled.

Ordering Example: **Basic Cylinder:** **AZV5100/500** **PA 63110-0500**
Foot Mounting: **A-100** **PD 28075**

Double Twin Rod Cylinder

ø 32-100 mm

with additional piston rod

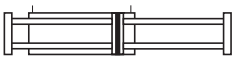
Versions:
Double acting with/without cushioning
for contactless position sensing

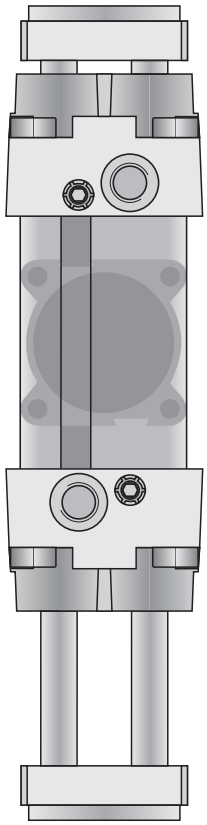
Series AZV4D....

AZV4D5...



AZV4D6...





Characteristics according to VDI 3294 Pressures quoted as gauge pressure									
Characteristics	Symbol	Unit	Description						
General Features									
Type			Double twin rod cylinder with additional piston rod						
Series			AZV4D						
System AZV4D5...			Double acting with cushioning for contactless position sensing						
System AZV4D6...			Double acting without cushioning for contactless position sensing						
Mounting			See drawing						
Tube connection			Thread						
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing					
Medium temperature range	ϑ_{max}	°C	+80	point (°C) it is necessary to consult us					
Installation			In any position						
Medium			Filtered and lubricated or filtered and unlubricated compressed air						
Lubrication			Oil mist lubrication compatible with Buna N						
Material: Cylinder tube			Aluminium, anodised						
Material: Front/Rear covers			Aluminium						
Material: Piston rod			Steel, hard-chrome plated						
Pneumatic Characteristics									
Nominal pressure	p_n	bar	6						
Operating pressure range	p_{min} p_{max}	bar bar	1 10						
Piston diameter		mm	32	40	50	63	80	100	
Port size			G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	
Piston rod diameter		mm	8	10	12	16	20	20	
Stroke length		mm	For standard stroke lengths see order instructions max. 2000mm, longer strokes on request						
Air consumption			See data sheet no 2.05.001E						
Cushioning (AZV4 D5 only)			To both sides, infinitely variable						
Cushioned stroke length		mm	32	40	50	63	80	100	
(AZV4 D5 only)		mm	20	25	25	25	28	30	

Piston Force (N)		
Piston-Ø	Pressure force at 6 bar	Tensile force at 6 bar
32	380	380
40	590	590
50	940	940
63	1466	1466
80	2375	2375
100	3900	3900

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E, 2.90.042E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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The right to introduce technical modifications is reserved

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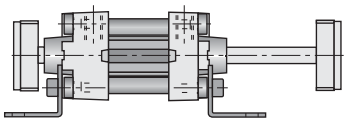
Weight (mass) kg

Mounting	Cylinder ø											
	32		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic Cyl.	1.0	0.3	1.4	0.4	2.3	0.6	3.2	0.9	5.6	1.4	7.4	1.5
A	1.2		1.7		2.6		3.6		6.3		8.3	
EN	1.44		2.1		3.2		4.5		7.5		10.0	

*1 = Weight for cylinder with 100 mm stroke
*2 = Weight for every additional 100 mm stroke length

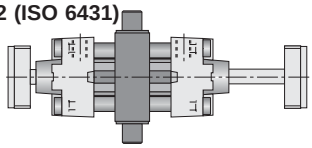
Mountings

Foot mounting A



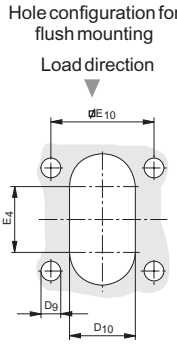
Material: steel, passivated

Centre trunnion mounting EN to ISO 15552 (ISO 6431)



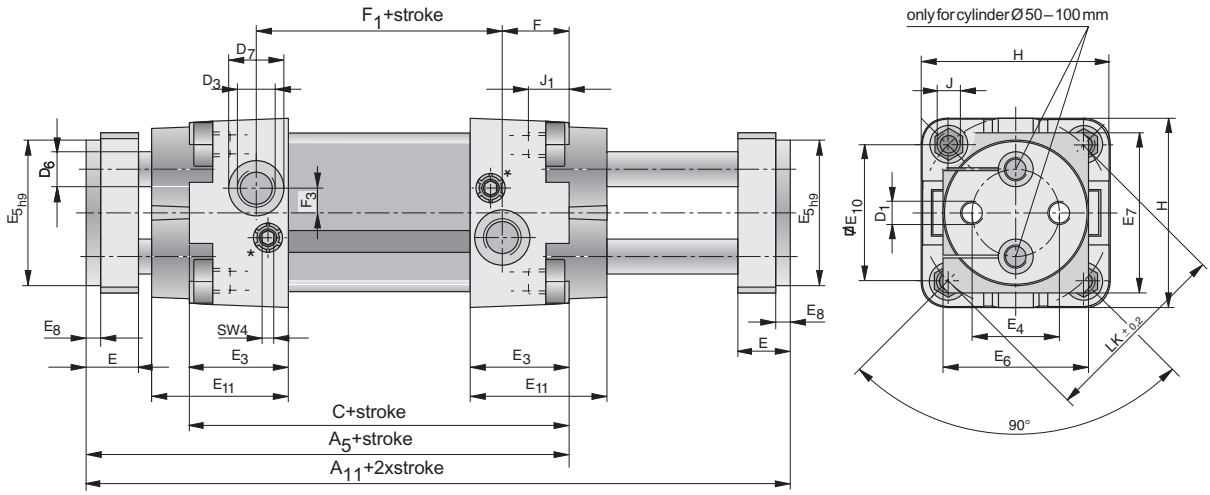
Material: aluminium, anodized

Direct Mounting on Cylinder Front End Cap - Mounting Cut-Out



Note on ordering:
Further technical information, order instructions and prices will be supplied on request.

Dimensions



* throttle screw for cushioning (only for series AZV4D 5...)

Dimension Table (mm)

Cyl. Ø	A_5+ stroke	A_{11}+ 2xstroke	C+ stroke	D_1	D_3	D_6 Ø	D_7 Ø	D_9 Ø	D_{10}	E	E_3	E_4 Ø	E_5 Ø h9
32	128	154	102	M6	G1/8	8	15	7	23	15	26	19	32
40	142	172	112	M8	G1/4	10	19	7	25	15	30	22.5	40
50	151	185	117	M 8	G 1/4	12	19	9	30	18	34	30	50
63	161	197	125	M 10	G 3/8	16	23	9	34	22	34	38	63
80	174	212	136	M 12	G 3/8	20	23	10	38	22	39	50	80
100	181	219	143	M 12	G 1/2	20	28	10	38	22	40	70	100

Cyl. Ø	E_6	E_7	E_8	E_{10}	E_{11}	F	F_1+ stroke	F_3	J	J_{1max}	H	ØLK
32	32	40	4	32.5	34	17.5	75	6	M 6	16	47	46
40	40	45	4	38	42	19	75	7	M 6	16	53	54
50	50	55	5	46.5	47	23	72	9.5	M 8	16	65	66
63	63	70	5	56.5	45	21.5	83	10	M 8	16	75	80
80	80	95	5	72	52	26	85	9	M 10	16	95	102
100	100	115	5	89	53	24.5	95	13	M 10	16	115	126

Twin Rod Cylinder

ø 32-100 mm

with additional piston rod

Versions:
Double acting with/without cushioning
for contactless position sensing

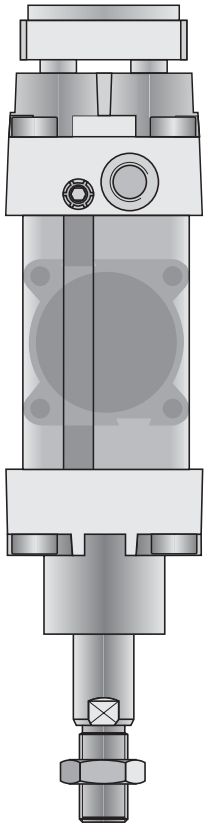
Series AZV3D....

AZV3D5...



AZV3D6...





Characteristics according to VDI 3294 Pressures quoted as gauge pressure									
Characteristics	Symbol	Unit	Description						
General Features									
Type			Twin rod cylinder with additional piston rod						
Series			AZV3D						
System AZV3D5...			Double acting with cushioning for contactless position sensing						
System AZV3D6...			Double acting without cushioning for contactless position sensing						
Mounting			See drawing						
Tube connection			Thread						
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing					
Medium temperature range	ϑ_{max}	°C	+80	point (°C) it is necessary to consult us					
Installation			In any position						
Medium			Filtered and lubricated or filtered and unlubricated compressed air						
Lubrication			Oil mist lubrication compatible with Buna N						
Material: Cylinder tube			Aluminium, anodised						
Material: Front/Rear covers			Aluminium						
Material: Piston rod			Steel, hard-chrome plated						
Pneumatic Characteristics									
Nominal pressure	p_n	bar	6						
Operating pressure range	p_{min} p_{max}	bar bar	1 10						
Piston diameter		mm	32	40	50	63	80	100	
Port size			G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	
Piston rod diameter		mm	8	10	12	16	20	20	
Stroke length			For standard stroke lengths see order instructions max. 2000mm, longer strokes on request						
Air consumption			See data sheet no. 2.05.001E						
Cushioning (AZV3D5 only)			At both ends, fully adjustable						
Cushioned stroke length		mm	32	40	50	63	80	100	
(AZV3D5 only)		mm	20	25	25	25	28	30	

Piston Force (N)		
Piston-Ø	Pressure force at 6 bar	Tensile force at 6 bar*
32	374	380
40	570	590
50	890	940
63	1510	1466
80	2464	2375
100	4002	3900

* Figures apply to the piston area with 2 piston rods.

For product group overview see 2.01.001E
For magnetic switches see 2.90.040E, 2.90.042E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

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The right to introduce technical modifications is reserved

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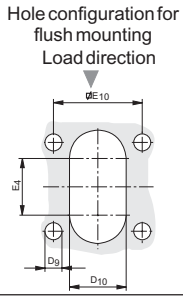
Weight (mass) kg

Mounting	Cylinder ø											
	32		40		50		63		80		100	
	*1	*2	1	2	1	2	1	2	1	2	1	2
Basic cyl.	0.8	0.25	1.0	0.35	1.7	0.5	2.6	0.6	4.2	0.9	6.2	1.0
A	1.0		1.25		2.0		3.0		5.0		7.1	
D	0.9		1.1		1.85		2.8		4.6		6.8	
EN	1.2		1.7		2.6		3.9		6.0		8.7	

*1 = Weight for cylinder with 100 mm stroke
*2 = Weight for every additional 100 mm stroke length

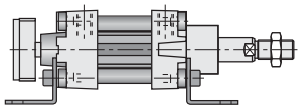
Note on ordering:
Further technical information, order instructions and prices will be supplied on request.

Direct Mounting on Cylinder Front End Cap - Mounting Cut-Out



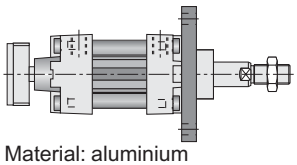
Mountings

Foot mounting A



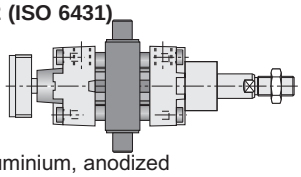
Material: steel, passivated

Rear flange mounting D



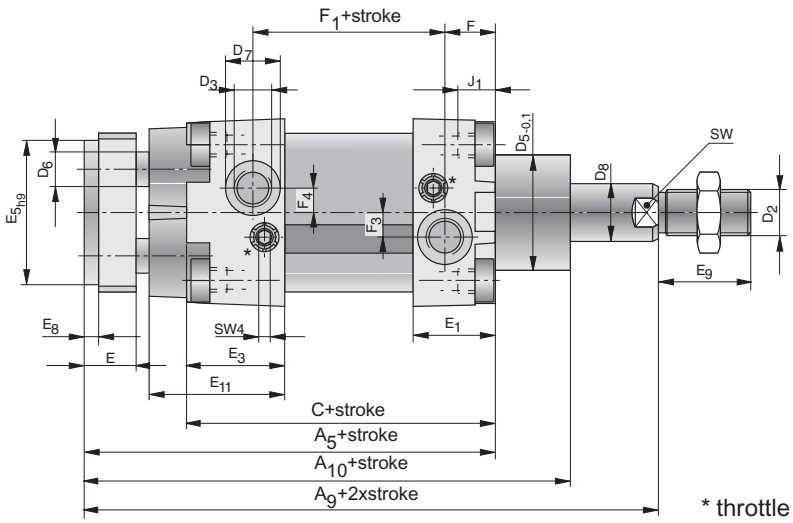
Material: aluminium

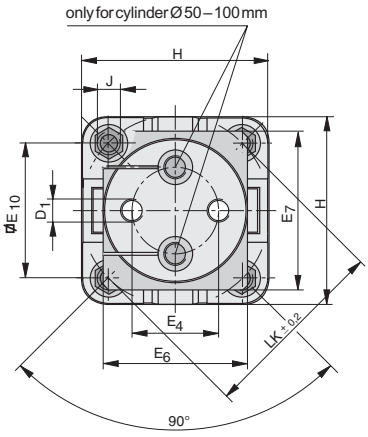
Centre trunnion mounting EN to ISO 15552 (ISO 6431)



Material: aluminium, anodized

Dimensions





* throttle screw for cushioning (only for series AZV3D5...)

Dimension Table (mm)

Cyl. Ø	A_5+ stroke	A_9+2x stroke	A_{10}+ stroke	C+ stroke	D_1	D_2	D_3	ØD_5	ØD_6	ØD_7	ØD_8	ØD_9	D_{10}	E	E_1	E_3	ØE_4
32	128	154	146	102	M6	M10x1.25	G1/8	30	8	15	12	7	23	15	23	26	19
40	142	172	163	112	M8	M12x1.25	G1/4	35	10	19	16	7	25	15	27	30	22.5
50	151	188	177	117	M8	M16x1.5	G1/4	40	12	19	20	9	30	18	29	34	30
63	161	198	187	125	M10	M16x1.5	G3/8	45	16	23	20	9	34	22	30	34	38
80	174	220	206	136	M12	M20x1.5	G3/8	45	20	23	25	10	38	22	34	39	50
100	181	232	218	143	M12	M20x1.5	G1/8	55	20	28	25	10	38	22	35	40	70

Cyl. Ø	ØE_{5h9}	E_6	E_7	E_8	E_9	E_{10}	E_{11}	F	F_1+ stroke	F_3	F_4	J	J_{1max}	H	ØLK	SW
32	32	32	40	4	20	32.5	34	14.5	74	5.5	6	M 6	16	47	46	10
40	40	40	45	4	24	38	42	16	77,5	6.5	7	M 6	16	53	54	14
50	50	50	55	5	32	46.5	47	17.5	77	8.5	9.5	M 8	16	65	66	17
63	63	63	70	5	32	56.5	45	17	87	8	10	M 8	16	75	80	17
80	80	80	95	5	40	72	52	20.5	90	9	9	M 10	16	95	102	22
100	100	100	115	5	40	89	53	19	100	13	13	M 10	16	115	126	22

Blocking Cylinder

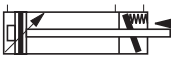
ø 32-125 mm

Mountings to ISO 15552 (ISO 6431)

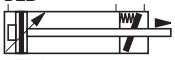
Versions:
Double acting
for contactless position sensing
- with end cushioning
- blocking reverse stroke
- blocking forward stroke

Series DZB, DZBA

DZB



DZBA



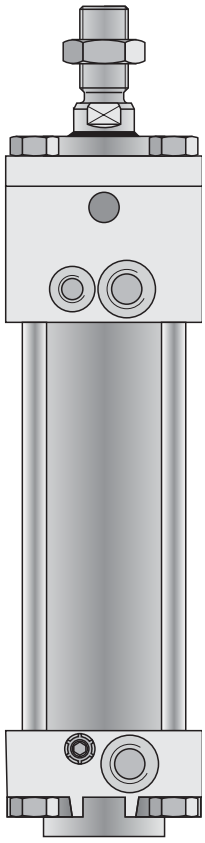
Characteristics according to VDI 3294 Pressures quoted as gauge pressure

Characteristics		Symbol	Unit	Description						
General Features										
Type				Piston rod cylinder with blocking device						
Series				DZB - reverse stroke blocked DZBA - forward stroke blocked						
System				Double acting with cushioning at one end						
Mounting				See drawing						
Tube connection				Thread						
Ambient temperature range		ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing					
Medium temperature range		ϑ_{max}	°C	+80	point (°C) it is necessary to consult us					
Weight (mass)			kg	See table						
Installation				In any position						
Medium				Filtered and lubricated or filtered and unlubricated air						
Lubrication				Oil mist lubrication compatible with Buna N						
Material	Cylinder tube			Aluminium, anodised						
	Front/Rear covers			Aluminium, anodised						
	Piston rod			Inductively hardened steel hard-chrome plated						
Pneumatic Characteristics										
Nominal pressure		p_n	bar	6						
Operating pressure range		p_{min} p_{max}	bar bar	2 8						
Releasing pressure			bar	≥ 4						
Piston diameter			mm	32	40	50	63	80	100	125
Port size				G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
Port size control signal				M5	G1/8	G1/8	G1/4	G1/4	G1/4	G1/4
Piston rod diameter			mm	12	16	20	20	25	25	32
Piston rod thread			mm	M10 x1.25	M12 x1.25	M16 x1.5	M16 x1.5	M20 x1.5	M20 x1.5	M27 x2*)
Stroke length				For standard stroke lengths see order instructions max. 1000mm, longer strokes on request						
Piston force and air consumption				See data sheet no 2.05.001E						
Static holding force **)				Corresponds to the respective cylinder force - see 2.05.001E						
Cushioning				At one end, fully adjustable						
Cushioned stroke length			Cyl.-Ø	32	40	50	63	80	100	125
			mm	20	25	25	25	28	30	42

*) Standard piston rod thread M 27x2 - on request also piston rod thread M 24x2 to CETOP RP 53 P can be delivered.

) **Note: The holding force quoted relates to a static load. If this load is exceeded, slippage can occur. Any dynamic forces occurring in operation must not exceed the static holding force.
In clamped operating mode, if the load is fluctuatung, the clamping unit is not free from play. The cylinder is not suitable for positioning tasks.

Actuation:
The clamping unit must only be released when both cylinder chambers are pressurized, otherwise there is danger of an accident from the jerky movement of the piston rod. Shutting off the compressed air supply at both ends with a 5/3 way valve provides adequate safety only for a short time.



Special versions:
- according to CETOP RP 53 P (Piston rod thread M24x2)
- versions for special applications on request

Delivery includes:
1 Cylinder
1 Hexagon nut for piston rod thread

For product group overview see 2.01.001E
For magnetic switches see 2.90.031E. 2.90.032E, 2.90. 036E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

Data Sheet No. 2.75.002E-1

A1P263E00JZ00X

The right to introduce technical modifications is reserved

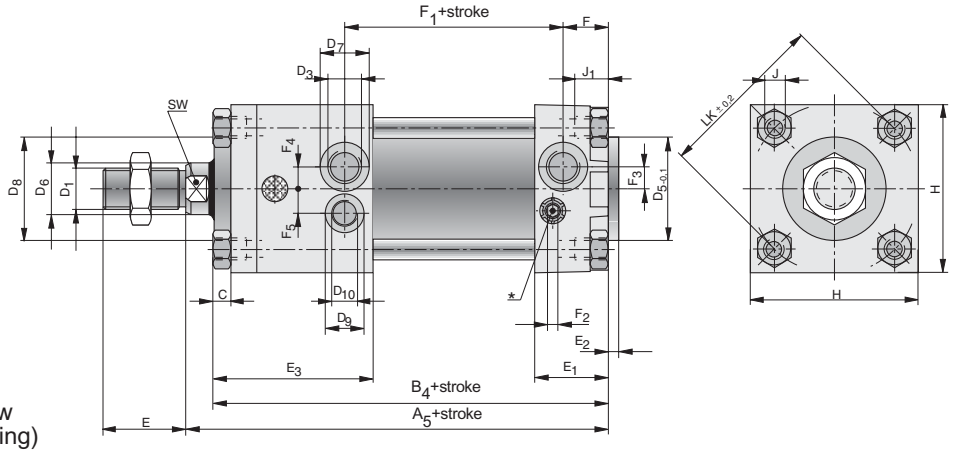
HOERBIGER ORIGA

Weight (mass) kg

Mounting	Cylinder-Ø 32		40		50		63		80		100		125	
	*1	*2	1	2	1	2	1	2	1	2	1	2	1	2
Basic Cylinder	1.06	0.26	1.45	0.56	2.45	0.67	3.70	0.75	6.00	1.15	9.50	1.40	11.90	1.30
B	1.16		1.55		2.50		3.90		6.40		10.10		13.20	
BA	1.26		1.65		2.55		4.10		6.80		10.60		13.40	
BAS	1.21		1.65		2.55		4.00		6.50		10.30		13.30	
D	1.21		1.55		2.50		3.95		6.50		10.30		13.40	
EN	1.46		2.15		3.25		5.00		7,80		12.10		15.20	

*1 = Weight for cylinder with 100 mm stroke
*2 = Weight for every additional 100 mm stroke length

Dimensions Basic Cylinder - series DZB 5...



* throttle screw
(for cushioning)

Dimension Table (mm) for Basic Cylinder - series DZB 5...

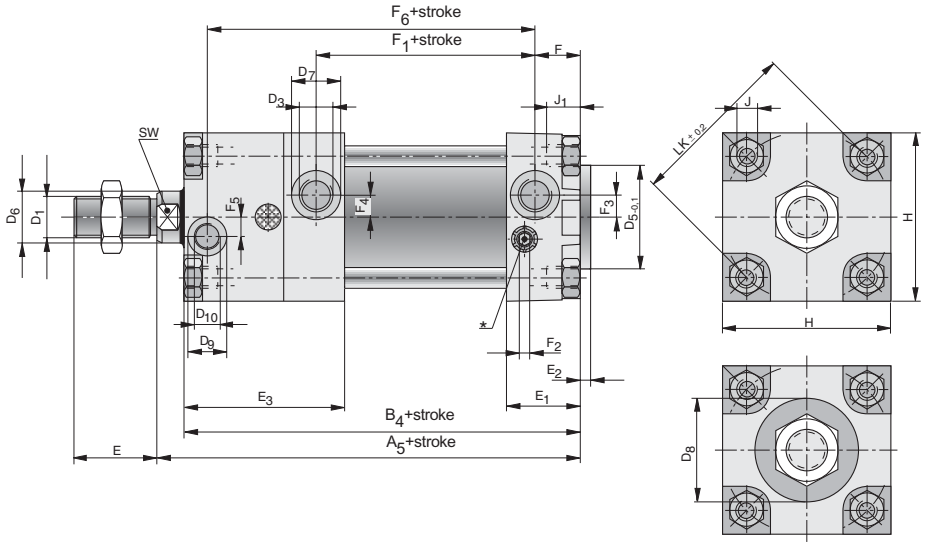
Cylinder-Ø		A_5+ stroke	B_4+ stroke	C	D_1	D_3	Ø D_5	Ø D_6	Ø D_7	Ø D_8	Ø D_9	D_{10}	E
32	ISO	120	112	5	M10x1.25	G1/8	30	12	15	30	8	M 5	20
40	ISO	135	126	6	M12x1.25	G1/4	35	16	19	35	15	G1/8	24
50	ISO	143	132	6.5	M16x1.5	G1/4	40	20	19	40	15	G1/8	32
63	*)	170	159	6.5	M16x1.5	G3/8	45	20	23	57	19	G1/4	32
80	*)	188	174	8.5	M20x1.5	G3/8	45	25	23	78	19	G1/4	40
100	*)	203	189	8.5	M20x1.5	G1/2	55	25	28	100	19	G1/4	40
125	ISO	255	209	15	M27x2	G1/2	60	32	28	121	19	G1/4	54
125	CETOP	255	209	15	M24x2	G1/2	60	32	28	121	19	G1/4	54

*) Dimensions not to ISO norm

Cylinder-Ø		E_1	E_2	E_3	F	F_1+ stroke	F_2	F_3	F_4	F_5	J	J_1 max	H	LK Ø	SW
32	ISO	29	4	46	14	60	SW4	5.5	6	7	M6	16	47	46	10
40	ISO	27	4	56.5	16	63.5	SW4	7	8	9.5	M6	16	53	54	14
50	ISO	29	4	61	17.5	64.5	SW4	8.5	8	9.5	M8	16	65	66	17
63	*)	30	4	81	17	73	SW4	8	12	11	M8	16	75	80	17
80	*)	34	4	84	20.5	82.5	SW4	9	12.5	15	M10	16	95	102	22
100	*)	35	4	92.5	19	93	SW4	13	15	15	M10	16	115	126	22
125	ISO	40	4	104	19	100	-	11	15	15	M12	18	140	156	27
125	CETOP	40	4	104	19	100	-	11	15	15	M12	18	140	156	27

*) Dimensions not to ISO norm

Dimensions Basic Cylinder - series DZBA5...



view by cylinder Ø 125 mm

* throttle screw
(for cushioning)

Dimensions Table (mm) for Basic Cylinder - series DZBA5...

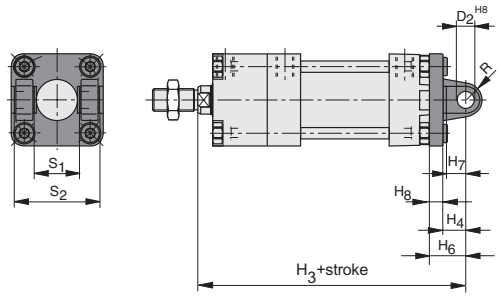
Cylinder-Ø		A_5+ stroke	B_4+ stroke	D_1	D_3	Ø D_5	Ø D_6	Ø D_7	Ø D_8	Ø D_9	D_{10}	E	E_1	E_2
32	ISO	120	112	M10x1.25	G1/8	30	12	15	–	8	M 5	20	29	5
40	ISO	135	126	M12x1.25	G1/4	35	16	19	–	15	G1/8	24	27	5
50	ISO	143	132	M16x1.5	G1/4	40	20	19	–	15	G1/8	32	29	6.5
63	*)	170	159	M16x1.5	G3/8	45	20	23	–	19	G1/4	32	30	6
80	*)	188	174	M20x1.5	G3/8	45	25	23	–	19	G1/4	40	34	8
100	*)	203	189	M20x1.5	G1/2	55	25	28	–	19	G1/4	40	35	8
125	ISO	225	209	M27x2	G1/2	60	32	28	100	19	G1/4	54	40	10
125	CETOP	225	209	M24x2	G1/2	60	32	28	100	19	G1/4	54	40	10

*) Dimensions not to ISO norm

Cylinder-Ø		E_3	F	F_1+ stroke	F_2	F_3	F_4	F_5	F_6+ stroke	J	J_1 max	H	LK Ø	SW
32	ISO	46	14	60	SW4	5.5	6	7	94	M6	11	47	46	10
40	ISO	56.5	16	63.5	SW4	7	8	7.5	103.5	M6	11	53	54	14
50	ISO	61	17.5	64.5	SW4	8.5	8	7.5	107	M8	12	65	66	17
63	*)	81	17	73	SW4	8	12	8.5	118	M8	12	75	80	17
80	*)	84	20.5	82.5	SW4	9	12.5	9	129.5	M10	16	95	102	22
100	ISO	92.5	19	93	SW4	13	15	16.5	145.5	M10	16	115	126	22
125	ISO	104	19	100	-	11	15	28	179	M12	18	140	156	27
125	CETOP	104	19	100	-	11	15	28	179	M12	18	140	156	27

*) Dimensions not to ISO norm

Dimensions for Mounting B



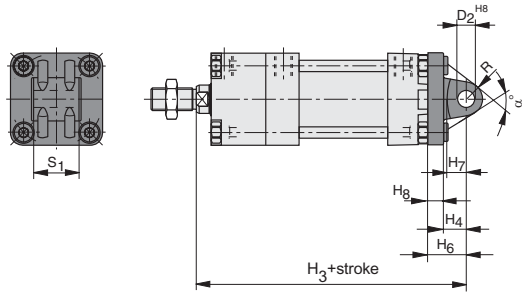
Material: cast aluminium

Dimension Table (mm) for Mounting B

Cyl. Ø	D_2 H8 Ø	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	S_2
32	10	142	12	22	11	10	9	26	45
40	12	160	15	25	14	10	11	28	52
50	12	170	16	27	15	11	12	32	60
63	16	202	21	32	20	11	15	40	70
80	16	224	22	36	21	14	16	50	90
100	20	244	25	41	24	16	20	60	110
125	25 H9	275	30	50	29	20	25	70	130

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BA



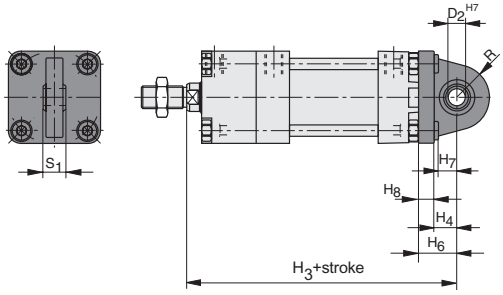
Material: cast aluminium

Dimension Table (mm) for Mounting BA

Cyl. Ø	D_2 H8 Ø	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1	α°
32	10	142	12	22	11	10	10.5	26	60
40	12	160	15	25	14	10	13	28	60
50	12	170	16	27	15	11	13	32	70
63	16	202	21	32	20	11	17	40	60
80	16	224	21	36	20	15	17	50	70
100	20	244	25	41	24	16	21	50	70
125	25 H9	275	30	50	29	20	25	70	60

Included in delivery: 1 x rear trunnion mounting
4 x screws

Dimensions for Mounting BAS



Material: cast aluminium

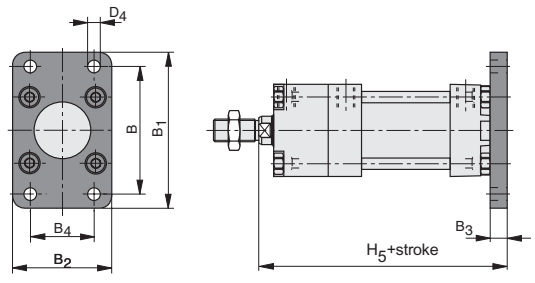
Dimension Table (mm) for Mounting BAS

Cyl. Ø	D_2 H7 Ø	H_3+ stroke	H_4	H_6	H_7	H_8	R	S_1
32	10*	142	12	22	11	10	18	14
40	12*	160	15	25	14	10	21	16
50	12*	170	16	27	15	11	23	16
63	16	202	21	32	20	11	27	21
80	16	224	21	36	20	15	29	21
100	20	244	25	41	24	16	34	25
125	25	275	30	50	29	20	40	31

Included in delivery: 1 x rear trunnion mounting with spherical bearing
4 x screws

* Ø D_2 H8

Dimensions for Mounting D



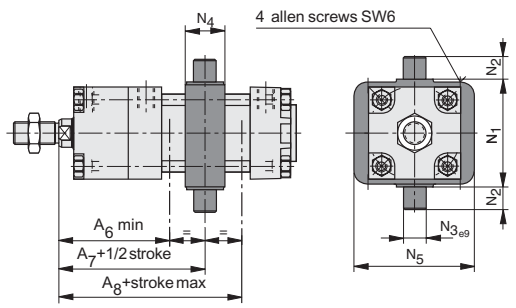
Material: cast aluminium

Dimension Table (mm) for Mounting D

Cyl. Ø	B	B_1	B_2	B_3	B_4	ØD_4	H_5+ stroke
32	64	79	50	10	32	7	130
40	72	90	56	10	36	9	145
50	90	110	70	12	45	9	155
63	100	120	77	12	50	9	182
80	126	153	100	16	63	12	204
100	150	178	120	16	75	14	219
125	180	220	140	20	90	16	245

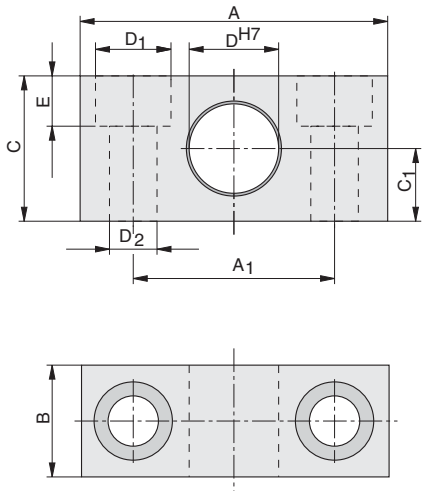
Included in delivery: 1 x flange
4 x screws

Dimensions for Mounting EN



Material: nodular graphite cast iron, passivated

Pivot for Mounting EN



Material: cast aluminium

Dimension Table (mm) for Mounting EN

Cyl. Ø	A_6	A_{7+} 1/2stroke	A_{8max} +stroke	N_1 stroke	N_2	ØN_{3e9}	N_4	N_5
32	67	73	79	50	12	12	22	65
40	79.5	83	94	63	16	16	28	75
50	81	90	99	75	16	16	28	85
63	114.5	115	115.5	90	20	20	35	100
80	122	126	130	110	20	20	35	120
100	133	137	141	132	25	25	40	135
125	140	152	164	160	25	25	40	165

Included in delivery: 1 x rear trunnion mounting

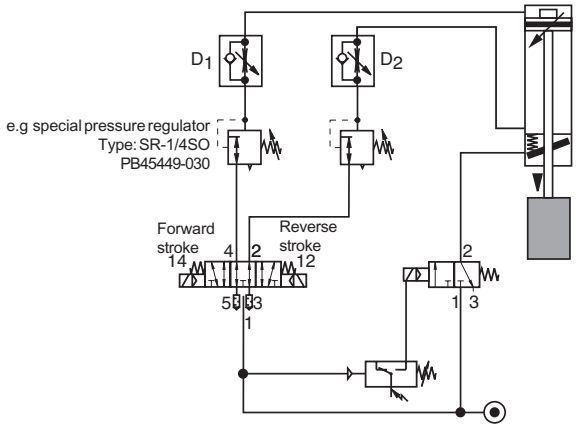
Cyl.-Ø 32-100 mm: The trunnion mounting can be moved to any position between A_6 and A_8 after loosening the clamping screws.

Cyl.-Ø 125 mm: When ordering please give exact dimension A_7. Mounting is assembled when delivered.

Order Instructions, Dimension Table (mm), Weight

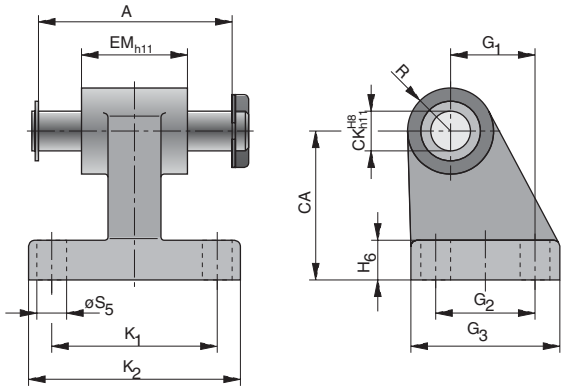
Order Instructions Type	Order No.	for Cyl.-Ø	A	A_1	B	C	C_1	ØD^{H7}	ØD_1	ØD_2	E	Weight (kg)
EL-032	**PD 23381**	32	55	36	20	26	13	12	13.5	8.4	9	0.06
EL-040/050	**PD 23382**	40,50	55	36	20	26	13	16	13.5	8.4	9	0.06
EL-063/080	**PD 23383**	63,80	65	42	25	30	15	20	16.5	10.5	11	0.10
EL-100/125	**PD 23384**	100,125	75	50	28	40	20	25	19	13	13	0.175

Control Example for Blocking Cylinder



Pivot for Mounting B to VDMA 24562
Cylinder Diameter Ø32 – 100 mm

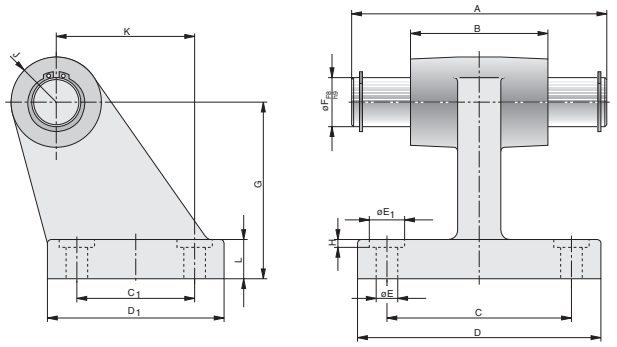
for 90° rotation



Material: cast aluminium

Pivot for Mounting B to CETOP RP 107 P
Cylinder Diameter Ø125 mm

for 90° rotation



Material: nodular graphite cast iron

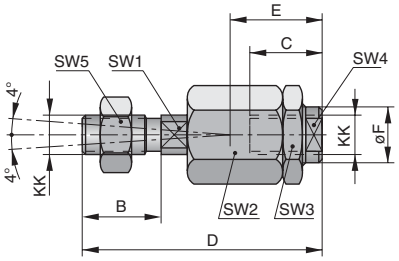
Order Instructions, Dimension Table (mm), Weight for Cylinder Diameter 32 – 100 mm

Order Instructions Type	Order No.	Cyl.-Ø	A	CA	CK^{H8}_{h11}	EM_{h11}	G_1	G_2	G_3	H_6	K_1	K_2	R_1	$øS_5$	Weight (kg)
GLN-032	**PD 40844**	32	46	32	10	26	21	18	31	8	38	50	10	6.6	0.092
GLN-040	**PD 40845**	40	53	36	12	28	24	22	35	10	41	53	11	6.6	0.131
GLN-050	**PD 40846**	50	61	45	12	32	33	30	45	12	50	64	13	9	0.193
GLN-063	**PD 40847**	63	71	50	16	40	37	35	50	12	52	66	15	9	0.305
GLN-080	**PD 40848**	80	91	60	16	50	47	40	60	14	66	84	15	11	0.460
GLN-100	**PD 40849**	100	111	70	20	60	55	50	70	15	76	94	19	11	0.840

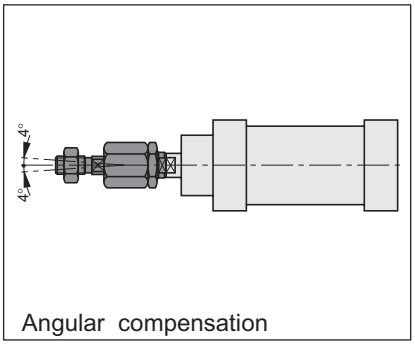
Order Instructions, Dimension Table (mm), Weight for Cylinder Diameter 125 mm

Order Instructions Type	Order No.	for Cyl.Ø	A	B	C	C_1	D	D_1	Ø E	Ø E_1	ØF^{F8}_{h9}	G	H_{max}	J	K	L	Weight (kg)
GLN-125	**PD 24027**	125	130	70	94	60	124	90	11	18	25	90	4	23	70	20	3.00

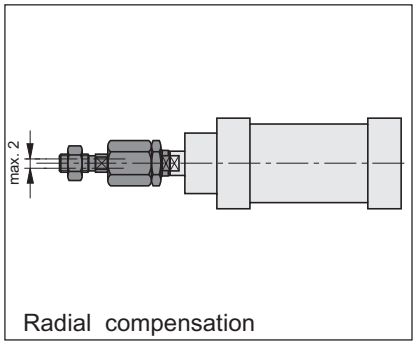
Compensating Coupling for Piston Rods



Material: steel



Angular compensation

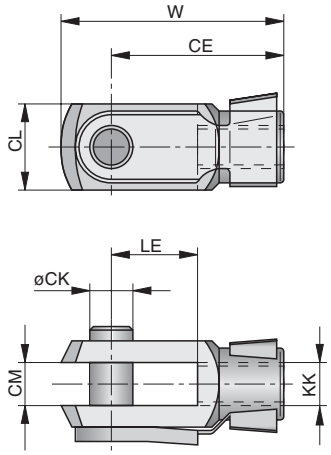


Radial compensation

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	KK	B	C	D	E	Ø F	SW1	SW2	SW3	SW4	SW5	Weight (kg)
AK-M10x1.25	**KY 1129**	M10x1.25	20	23	70	31	21.5	12	30	30	19	17	0.218
AK-M12x1.25	**KY 1131**	M12x1.25	23	23	67	31	21.5	12	30	30	19	19	0.207
AK-M16x1.5	**KY 1133**	M16x1.5	40	32	112	45	33.5	19	41	41	30	30	0.637
AK-M20x1.5	**KY 1134**	M20x1.5	40	42	122	56	33.5	19	41	41	30	30	0.711
AK-M24x2	**KC5035**	M24x2	48	48	147	51	39	22	55	55	32	36	1.65
AK-M27x2	**KY 5036**	M27x2	48	48	147	51	39	24	55	55	32	41	1.66

Piston Rod Clevis to CETOP RP 102 P

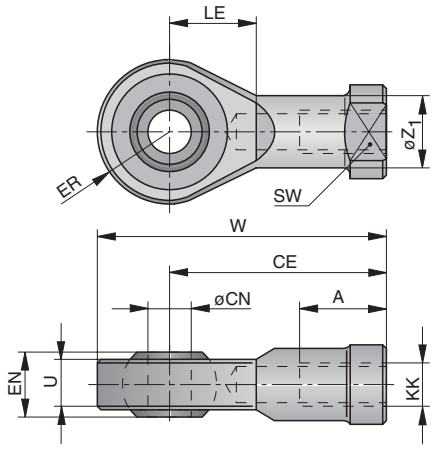


Material: galvanized steel

Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	for Cyl.-Ø	CE	Ø CK	CL	CM	KK	LE	W	Weight (kg)
GK-M10x1.25	**KY 6135**	32	40	10	20	10	M10x1.25	20	52	0.08
GK-M12x1.25	**KY 6136**	40	48	12	24	12	M12x1.25	24	62	0.125
GK-M16x1.5	**KY 6139**	50, 63	64	16	32	16	M16x1.5	32	83	0.30
GK-M20x1,5	**KY 6141**	80, 100	80	20	40	20	M20x1.5	40	105	0.52
GKN-M24x2	**KY 6142**	125	100	25	50	25	M24x2	50	132 max.	1.08
GKN-M27x2	**KY 6866**	125	112	30	55	30	M27x2	54	148 max.	1.50

Piston Rod Eye to CETOP RP 103 P



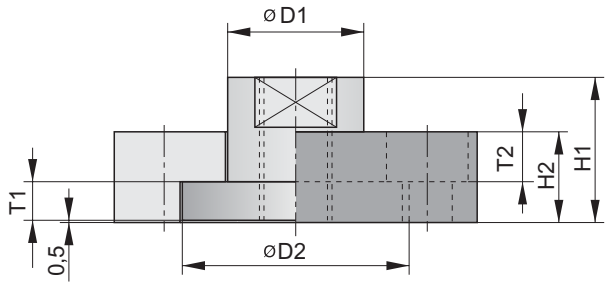
Material: galvanized steel

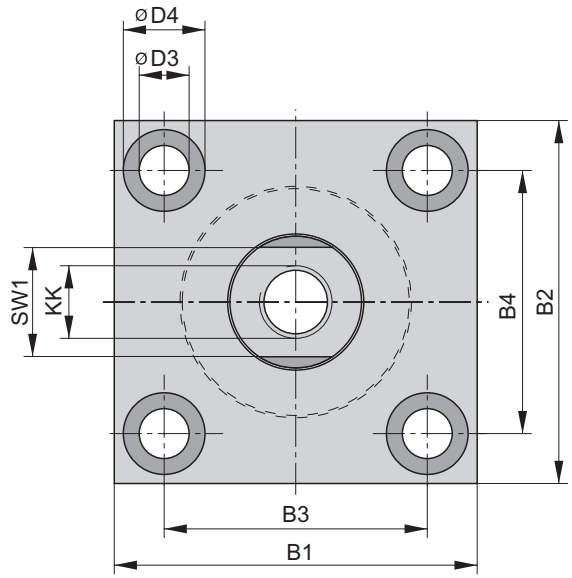
Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	for Cyl.-Ø	A	CE	CN H7 Ø	EN	ER max	KK	LE	SW	U	W	Ø Z_1	Weight (kg)
GA-M10x1.25	**KY 6147**	32	20	43	10	14	14	M10x1.25	15	17	10,5	57	15	0.072
GA-M12x1.25	**KY 6148**	40	22	50	12	16	16	M12x1.25	17	19	12	66	17.5	0.107
GA-M16x1.5	**KY 6150**	50, 63	28	64	16	21	21	M16x1.5	22	22	15	85	22	0.21
GA-M20x1.5	**KY 6151**	80, 100	33	77	20	25	25	M20x1.5	26	32	18	102	27.5	0.38
GAN-M 24x2	**KY 6152**	125	42 [2])	94	25	31	30	M24x2	31	36	22	124 [1])	33.5	0.65
GAN-M 27x2	**KY 6862**	125	51 [2])	110	30	37	35	M27x2	36	41	25	145 [1])	40	1.00

[1]) Maximum Dimension
[2]) Minimum Dimension

Dimensions for Coupling





Material: steel, zinc-plated

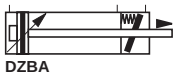
Order Instructions, Dimension Table (mm), Weight

Order Instructions Type	Order No.	Cyl.Ø	B_1	B_2	B_3	B_4	$ØD_1$ H11	$ØD_2$	$ØD_3$ H13	$ØD_4$ H13	H_1	H_2	T_1	T_2	KK	SW1	Weight (kg)
KSG-32	**KC 5224**	32	60	37	36	23	20	30	6.6	11	24	15	7	7	M10x1.25	17	0.225
KSG-40	**KC 5225**	40	60	56	42	38	25	40	9	15	30	20	8	9	M12x1.25	19	0.445
KSG-50/63	**KC 5226**	50,63	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24	0.900
KSG-80/100	**KC 5227**	80,100	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36	1.060

Included in delivery: 1 x flange
1 x threaded part

Order Instructions

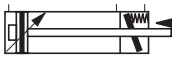
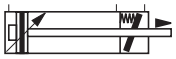
Basic Cylinder (Without Mounting)

Series	Symbol	Piston-Ø	Order Instructions Type	Order No.
For contactless position sensing Double acting with adjustable end cushioning in one direction Reverse stroke blocked	 DZB	32	**DZB 5032/....**	**PD 29546-....**
		40	**DZB 5040/....**	**PD 29547-....**
		50	**DZB 5050/....**	**PD 29548-....**
		63	**DZB 5063/....**	**PD 27063-....**
		80	**DZB 5080/....**	**PD 27064-....**
		100	**DZB 5100/....**	**PD 22605-....**
		125*	**DZB 5125/....**	**PD 26273-....**
		125**	**DZB 5125/....**	**PD 27066-....**
For contactless position sensing Double acting with adjustable end cushioning in one direction Forward stroke blocked	 DZBA	32	**DZBA 5032/....**	**PD 29549-....**
		40	**DZBA 5040/....**	**PD 29550-....**
		50	**DZBA 5050/....**	**PD 29551-....**
		63	**DZBA 5063/....**	**PD 27059-....**
		80	**DZBA 5080/....**	**PD 27060-....**
		100	**DZBA 5100/....**	**PD 27061-....**
		125*	**DZBA 5125/....**	**PD 26243-....**
		125**	**DZBA 5125/....**	**PD 26209-....**

Complete type designation and order no. with stroke length in mm (4 digits)

Standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0320, 0400, 0500 delivered preferably

Cylinder with Mounting EN

Series	Symbol	Piston-Ø	Order Instructions Type	Order No.
Double acting with adjustable end cushioning in one direction, reverse stroke blocked	 DZB	125*	**DZB 5125 EN-..../...**	**PD 29578-..../...**
		125**	**DZB 5125 EN-..../...**	**PD 29579-..../...**
Double acting with adjustable end cushioning in one direction, forward stroke blocked	 DZBA	125*	**DZBA 5125 EN-..../...**	**PD 29580-..../...**
		125**	**DZBA 5125 EN-..../...**	**PD 29581-..../...**

Complete type designation and order no. with stroke length in mm (4 digits)

Add exact A_7 dimension in mm (3 digits)

* Piston rod thread = M 27x2 = ISO
** Piston rod thread = M 24x2 = CETOP

Cylinder Mountings

Description	Order No. Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
Swivel mounting B-	**PD 22704**	**PD 22705**	**PD 22706**	**PD 22707**	**PD 22708**	**PD 22709**	**PD 22034**
Rear trunnion mounting BA-..	**PD 23412**	**PD 23413**	**PD 23414**	**PD 23415**	**PD 23416**	**PD 23417**	**PD 23418**
Rear trunnion mounting BAS-..	**PD 23843**	**PD 23844**	**PD 23845**	**PD 23846**	**PD 23847**	**PD 23848**	**PD 23849**
Rear flange mounting D-..	**PD 23403**	**PD 23404**	**PD 23405**	**PD 23406**	**PD 23407**	**PD 23408**	**PD 23409**
Centre trunniom mounting EN-..	**PD 24039**	**PD 24040**	**PD 24041**	**PD 24042**	**PD 24043**	**PD24044**	**-**

Delivery information: on delivery all cylinder mountings, except the centre trunnion mounting EN are not assembled.

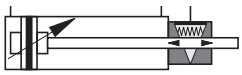
Ordering Example: **Basic Cylinder:** **DZB 5063-0500** **PD 27063-0500**
Mounting: **BAS-63** **PD 23846**

For pivots for mountings B, EN see 2.90.002E-2.90.004E

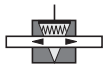
Locking Unit
for Cylinders ø 32-125 mm

Version:
locks if pressure drops
- **Unit with cylinder**
- **Unit without cylinder**

Series
AZ50../...-FSE
DZ5125/...FSE



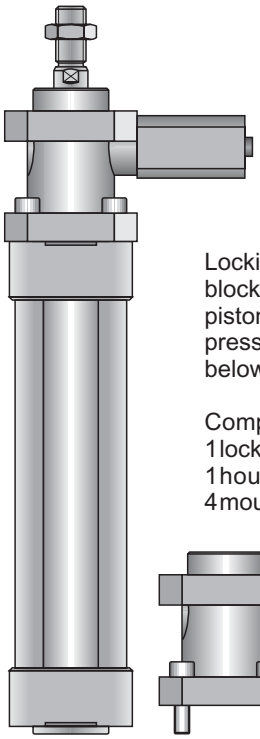
FSE ..



Characteristics to VDI 3294			Pressures quoted as gauge pressure							
Characteristic	Symbol	Unit	Description							
General										
Description			Locking Unit							
Series			FSE- locks if pressure drops							
Mounting			See dimensional drawing							
Connection			Thread							
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	+80 -20	Note: When using below freezing point (°C) it is necessary to consult us						
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	+80 -20							
Weight (mass)		kg	See table							
Installation position			In any position							
Medium			Filtered and lubricated or filtered and unlubricated air							
Lubrication			Oil mist lubrication compatible with Perbunan							
Material: Cartridge			Aluminium, anodised							
Material: Housing			Aluminium, anodised							
Material: Clamping Jaw			Ms							
Material: Cyl. piston rod			Steel, high-alloy							
Pneumatic Characteristics										
Nominal pressure	p_n	bar	6							
Cylinder operating pressure	p_{min} p_{max}	bar bar	See Data Sheets 2.29.001E, 2.30.050E							
FSE unlocking pressure		bar	≥ 4 - 10							
Cylinder diameter		mm	32	40	50	63	80	100	125	
Connection size			G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2	
Pilot air connection			M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	
Piston rod diameter		mm	12	16	20	20	25	25	32	
Stroke length			For standard stroke lengths see order instructions max. 1000mm, longer strokes on request							
Locking force, static **)		N	600	1000	1500	2200	3000	5000	7000	

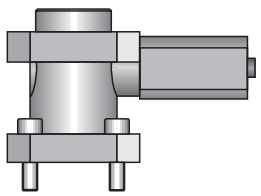
) **Note: The holding force quoted relates to a static load. If this load is exceeded, slippage can occur. Any dynamic forces occurring in operation must not exceed the static holding force.
In clamped operating mode, if the load is fluctuatung, the clamping unit is not free from play. The cylinder is not suitable for positioning tasks.

Actuation:
The clamping unit must only be released when both cylinder chambers are pressurized, otherwise there is danger of an accident from the jerky movement of the piston rod. Shutting off the compressed air supply at both ends with a 5/3 way valve provides adequate safety only for a short time.



Locking unit to block the cylinder piston rod if pressure drops below 4 bar

Comprises:
1 locking cartridge
1 housing
4 mounting screws



Weight (mass) kg							
Description	Cylinder diameter (mm) 32	40	50	63	80	100	125
Locking unit	0.60	0.80	1.00	1.20	1.40	1.60	1.80
Basic cylinder with 100 mm stroke and longer piston rod	0.70	1.20	1.75	2.32	3.75	4.90	7.87

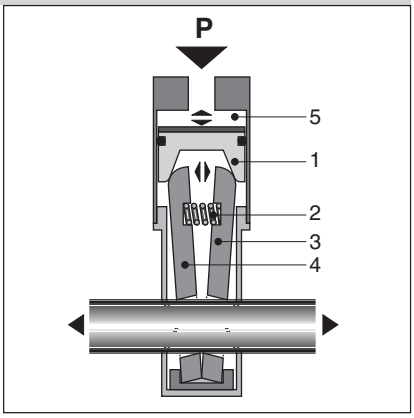
For product group overview see 2.01.001E
For cylinder series see 2.29.001E, 2.30.050E
For magnetic switches see 2.90.032, 2.90.033E
For piston rod load diagram see 2.05.002E
For piston force and air consumption see 2.05.001E

Data Sheet No. 2.75.003E-1

A1P514E00JZ00X
The right to introduce technical modifications is reserved

Function

If the pressure drops the piston rod is locked by two tilting plates.
When the piston (1) is put under pressure it is pushed downwards, pressing the two tilting plates (3) and (4) together. The piston rod is then free to move.
If the pressure drops in piston chamber (5), a spring pushes the two plates (3) and (4) apart, so that the wedge effect pushes the piston (1) upwards and the tilting plates lock the piston rod.

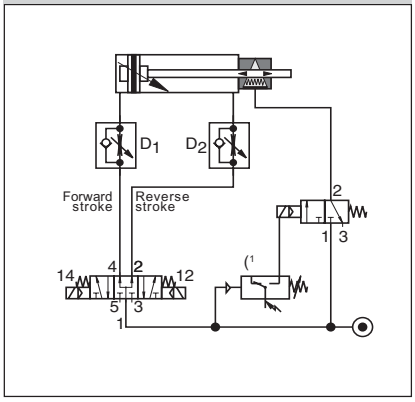


Important

- The locking unit can only be mounted on the cylinder if it is held in its unlocked position either by air pressure or by a suitable screw.
- When the cylinder piston rod is locked it must not be rotated or subjected to external force.

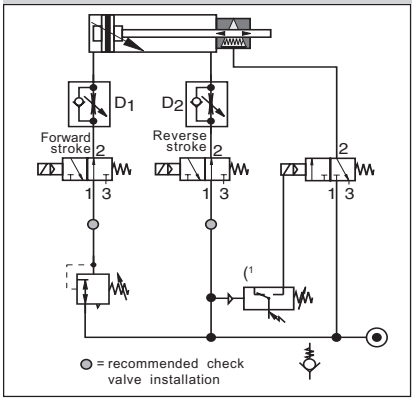
Circuit Diagrams for a Cylinder with the FSE Locking Unit

Example 1: Horizontal Application with 5/3 Way Valve - RFB



Example 1
When operating pressure is applied the P/E converter is closed and the 3/2 way valve is on through-flow, i.e. the locking unit is unlocked (working position).
The locking unit is actuated with a 3/2 way solenoid valve via a pressure switch, whereby if the pressure drops, the pressure switch reacts and the locking unit exhausts via the 3/2 way valve so that the piston rod is locked.
The use of the 5/3 way valve ensures that both sides of the cylinder piston are under pressure, so that the piston rod remains wherever it stops. This "standstill" however is only enough for the function of the FSE locking unit: without the FSE, the piston rod would continue its forward stroke because of the different piston areas.
After the pressure is equalized on both sides of the cylinder piston the locking unit can be actuated and the piston rod locked. The sequence of operations must therefore be correct: the two throttle/ check valves D1 and D2 only control piston speed and have no influence on the actuation of the locking unit.
The fitting of a check valve increases safety because it prevents any movement of the piston before the FSE locks.

Example 2: Horizontal Application with 5/3 Way Valve - RFE

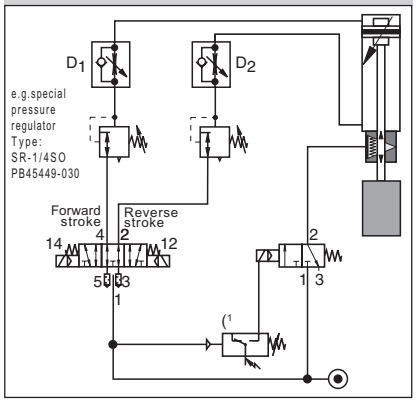


Example 2
In contrast to example1, here the 5/3 way valve is replaced by two 3/2 way valves. The choice will depend on the customer.

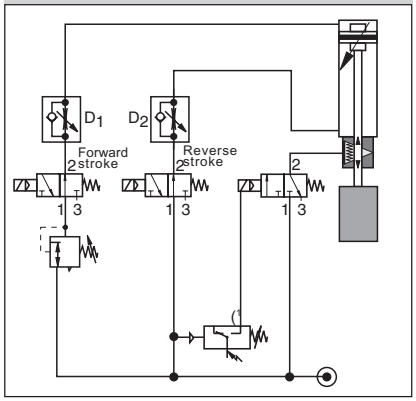
Example 3
Example 3 is designed for a load acting downwards. The installation of the special pressure regulators between valve and cylinder makes regulation of the stroke direction possible. Venting is carried out via the main valve of the pressure regulator, so that there is no limitation of the stroke times.

Example 4
This example is basically similar to example 2 but it is designed for a load acting downwards. A regulator on port 5 of the 5/3 way valve or on port 1 of the 3/2 way valve connected to the top end of the cylinder equalizes the forces resulting from the difference in piston areas and the load acting downwards.

Example 3: Horizontal Application with Two 3/2 Way Valves - RFE

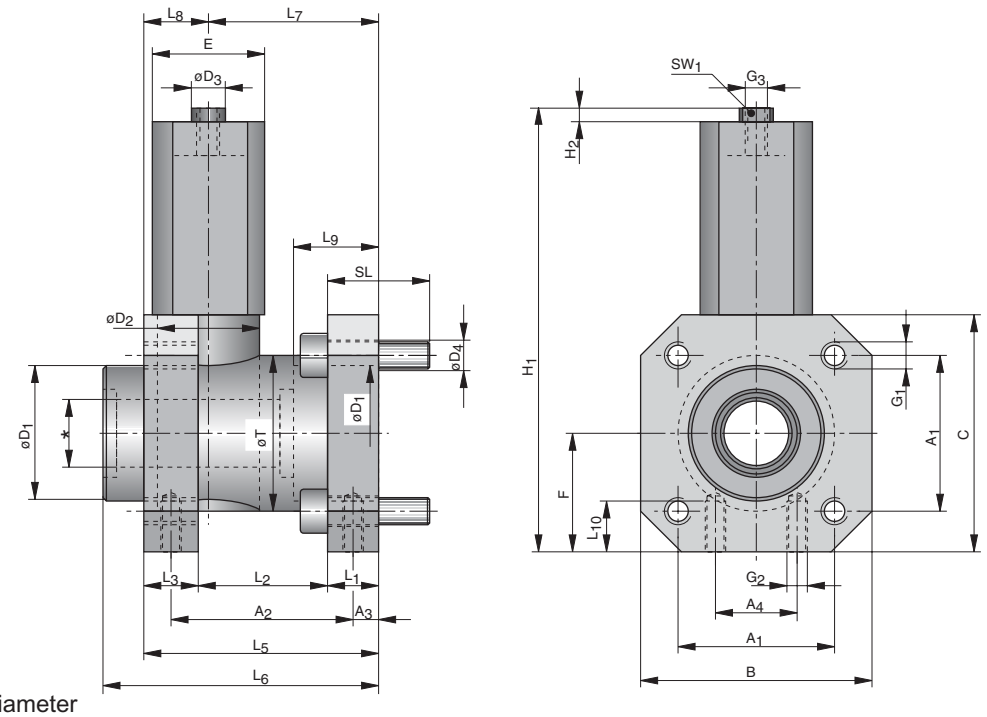


Example 4: Vertical Application with 5/3 Way Valve - RFE



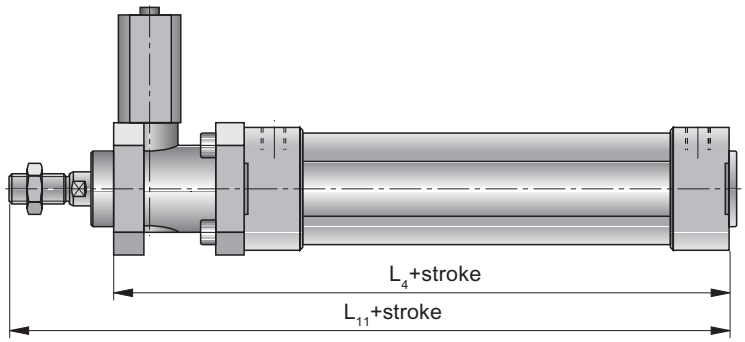
(1 **Note:**
without P/E converter: only if the pressure drops
with P/E converter: if the pressure drops or the power fails.

Dimensions of Locking Unit FSE-...



* Piston rod diameter

Dimensions of Cylinder with Locking Unit FSE-...



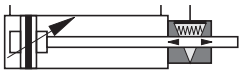
For all other dimensions for cylinders and cylinder mountings see Data Sheets 2.29.001E-1 to 6 and 2.30.050E-1 to 6

Dimensions Table (mm) for Locking Unit FSE-... and Dimensions including Cylinder

Cyl. ø	A_1	A_2	A_3	A_4	B	C	øD_1	øD_2	øD_3	øD_4	E	F	G_1	G_2	G_3
32	32.5	40	4.2	16	48	50	30	20	10	6.6	22.5	25	M6	M5	M5
40	38	46	4.5	21	56	58	35	24	10	6.6	27.5	29	M6	M5	G1/8
50	46.5	54	11.5	24	68	70	40	30	15	8.5	32.5	35	M8	M6	G1/8
63	56.5	55	7.5	32	82	85	45	38	15	8.5	41	42.5	M8	M8	G1/8
80	72	70	10	44	100	105	45	40	19	11	49	52.5	M10	M8	G1/8
100	89	70	10	60	120	130	55	48	19	11	53	65	M10	M8	G1/8
125	110	95	11	75	140	150	60	65	19	13	65	75	M12	M10	G1/8

Cyl. ø	H_1	H_2	L_1	L_2	L_3	L_4 + stroke	L_5	L_6	L_7	L_8	L_9	L_{10}	L_{11} + stroke	SL	SW1	øT
32	94	4	8	28	12	142	48	58	32	16	20.5	8	183	20	8	34
40	102.5	4	10	33	12	160	55	65	35.5	19.5	22.5	10	205	25	8	42
50	119.5	4	15	39	16	176	70	82	49	21	29.5	12	231	30	13	50
63	138	4	15	40	15	203	70	82	49	21	29.5	12	246	30	13	50
80	152	4	16	58	16	218	90	110	62	28	35.5	16	292	30	17	60
100	193.5	4	16	58	18	230	92	115	65	27	38.5	16	307	30	17	60
125	223.5	4	25	70	27	314	122	154	85	37	45.5	20	384	45	17	80

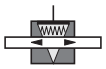
Ordering Details for Basic Cylinders (without Type of Mounting)

Descripiton	Symbol	Piston Ø	Order Instructions Type	Order No.
Double acting, with adjustable end cushioning, for contactless position sensing		32	**AZ5032/....-FSE**	**PA 58347-....**
		40	**AZ5040/....-FSE**	**PA 59267-....**
		50	**AZ5050/....-FSE**	**PA 60347-....**
		63	**AZ5063/....-FSE**	**PA 61287-....**
		80	**AZ5080/....-FSE**	**PA 62187-....**
		100	**AZ5100/....-FSE**	**PA 63087-....**
		125	**DZ 5125/....-FSE (M24x2)**	**PA 64017-....**
		125	**DZ 5125/....-FSE (M27x2)**	**PA 64027-....**

Complete type designation and order no. with stroke length in mm (4 digits)

Standard stroke lengths: 0025, 0050, 0080, 0100, 0125, 0160, 0200, 0320, 0400, 0500 delivered preferably

Ordering Details for Locking Unit FSE-... (without Cylinder)

Descripiton	Symbol	For Cyl. Ø	Order Instructions Type	Order No.
Locking unit, locks if pressure drops		32	**FSE 032**	**KC 8227**
		40	**FSE 040**	**KC 8228**
		50	**FSE 050**	**KC 8229**
		63	**FSE 063**	**KC 8230**
		80	**FSE 080**	**KC 8231**
		100	**FSE 100**	**KC 8232**
		125	**FSE 125**	**KC 8233**

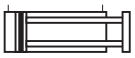
Guided Cylinders

ø 20, 25, 32, 40, 50 mm

Series FZG
Guided Cylinders
with Sliding Guidance



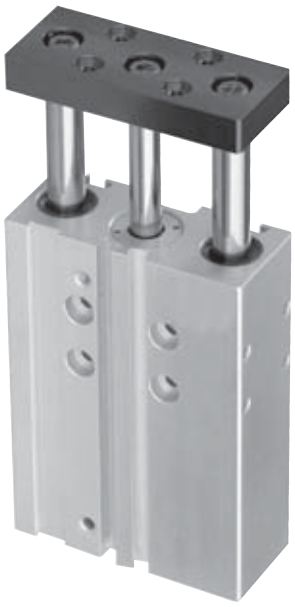
Series FZK
Guided Cylinders
with Recirculating Ball Bearing Guidance



Depending on stroke length, one or more magnetic switches can be mounted in the slots in the cylinder profile for contactless position sensing of the end and intermediate piston positions.
Especially recommended are RST or EST magnetic switches which can be directly fitted in the T-slots in the cylinder.

Included in delivery:
1 guided cylinder
4 centring bushes (see table)
2 screw plugs, replaceable, preassembled

Cylinder switches are not included - please order separately.



Characteristics				Pressures quoted as gauge pressure				
Characteristics		Symbol	Unit	Description				
General								
Designation				Guided cylinder				
Series				FZG / FZK				
System FZG6..., FZK6...				Double-acting without end cushioning for contactless position sensing				
Mounting				See dimensional drawings				
Connection				Thread				
Ambient temperature range*		ϑ_{min} ϑ_{max}	°C °C	FZG -20 +80		FZK -5 +60		
Medium temperature range		ϑ_{max}	°C	+60				
Weight (Mass)			kg	See Table 2				
Installation				In any position				
Medium				Filtered and lubricated or filtered, unlubricated compressed air				
Lubrication				Initial lubrication with grease during assembly				
Materials	Housing			Aluminium, anodized				
	Front/rear end cap			Aluminium, anodized				
	Piston rod			Steel, high-alloy				
	Carrier plate			Aluminium, high-strength, anodized				
	Guide rod			FZK: steel, brushed FZG: steel, high-alloy				
Pneumatic Characteristics								
Nominal pressure		p_n	bar	6				
Operating pressure range	ø20	$p_{min/max}$	bar	2 - 10 bar				
	ø25-40	$p_{min/max}$	bar	1.5 - 10 bar				
	ø50	$p_{min/max}$	bar	1 - 10 bar				
Piston diameter			mm	20	25	32	40	50
Port size				M5	G 1/8	G 1/8	G 1/8	G 1/4
Piston rod diameter			mm	10	12	12	16	20
Guide rod diameter, FZK			mm	12	14	16	16	20
Guide rod diameter FZG			mm	14	16	20	20	25
Stroke lengths			mm	see Table Order Instructions 2.76.002E-13				
Net force and air consumption				See Data Sheet 2.05.001E				
Cushioning				Elastomer cushioning at both ends				
Lateral force / torque		max.	N/Nm	See diagrams				

* Note: For use below freezing point, please consult us

Number of Centring Bushes FZG / FZK

Type	FZ-020	FZ-025	FZ-032	FZ-040	FZ-050
AH-7	2	2	-	-	-
AH-9	2	2	2	2	-
AH-12	-	-	2	2	4

For product groups overview see 2.01.001E
For cylinder switches see 2.90.042E

A1P701E00EAE00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Weight (Mass) kg

Guided Cylinders with Sliding Guidance - Series FZG

Weight (Mass) [kg]

Stroke [mm]	Size [mm] Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
10	-	-	-	-	-
20	0.570	1.250	1.770	-	-
25	0.615	1.270	1.835	2.145	2.670
30	0.655	1.340	1.915	-	-
40	0.850	1.420	2.120	-	-
50	0.940	1.630	2.230	2.520	3.030
80	1.780	2.795	2.980	4.960	4.690
100	1.385	2.230	2.600	3.020	4.470
125	-	-	3.915	6.300	7.730
160	-	-	4.520	7.230	8.010
200	-	-	5.390	8.250	9.110

Moving Mass [kg]

Stroke [mm]	Size [mm] Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
10	-	-	-	-	-
20	0.251	0.433	0.710	-	-
25	0.420	0.670	1.070	0.784	1.316
30	0.440	0.690	1.090	-	-
40	0.401	0.543	0.820	-	-
50	0.431	0.583	0.880	0.924	1.546
80	0.429	0.477	0.770	1.194	2.720
100	0.320	0.320	0.520	1.314	2.910
125	-	-	0.750	1.176	2.566
160	-	-	1.220	1.764	2.896
200	-	-	1.400	1.994	3.266

Guided Cylinders with Recirculating Ball Bearing Guidance - Series FZK

Weight (Mass) [kg]

Stroke [mm]	Size [mm] Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
10	-	-	-	-	-
20	0.530	1.185	1.585	-	-
25	0.550	1.160	1.640	1.955	2.370
30	0.600	1.290	1.715	-	-
40	0.760	1.425	1.850	-	-
50	0.840	1.535	1.995	2.345	2.850
80	1.080	1.875	2.425	2.870	3.635
100	1.120	2.090	2.290	2.680	4.075
125	-	-	3.620	5.580	6.575
160	-	-	4.165	6.365	7.325
200	-	-	4.800	7.340	8.435

Moving Mass [kg]

Stroke [mm]	Size [mm] Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
10	-	-	-	-	-
20	0.211	0.373	0.530	-	-
25	0.380	0.600	0.880	0.594	0.986
30	0.390	0.620	0.900	-	-
40	0.331	0.453	0.630	-	-
50	0.351	0.483	0.650	0.694	1.146
80	0.319	0.357	0.450	1.280	2.180
100	0.200	0.180	0.170	1.360	2.310
125	-	-	0.310	1.124	1.846
160	-	-	0.720	1.264	2.076
200	-	-	0.830	1.424	2.336

Speeds

Piston diameter [mm]	**Ø 20**	**Ø 25**	**Ø 32**	**Ø 40**	**Ø 50**
Stroke [mm]	100	100	200	200	200
Extension speed max. (v_{maxA}) [m/s]	0.8	0.8	0.8	0.8	0.6
Retraction speed max. (v_{maxL}) [m/s]	0.8	0.8	0.8	0.8	0.6

End Cushioning

Drives with end cushioning designation "2000/6000" are fitted with an elastomer end cushioning system. The permissible impact and residual forces shown below must not be exceeded; they are valid for specific mass/speed combinations (for calculation principles, see below).

Shock-Absorbing Capability of the Elastomer End Cushioning

The permissible kinetic impact or residual energy at the end stop must not be exceeded, otherwise mechanical failure of the cylinder can occur (deformation, breakage, change in running characteristics). The permissible kinetic impact energy is calculated with the following formula:

$$E_{per} = \frac{1}{2}(m_{own} + m_{load}) \times v^2$$

E_{per} = permissible kinetic impact energy [Nm]
m_{own} = moving own mass [kg]
m_{load} = moving load mass [kg]
v = impact speed [m/s]

From this value the permissible operating conditions can be calculated with the following forms of the equation:

Permissible impact speed:

$$v_{per} = \sqrt{\frac{2 \times E_{per}}{m_{own} + m_{load}}}$$

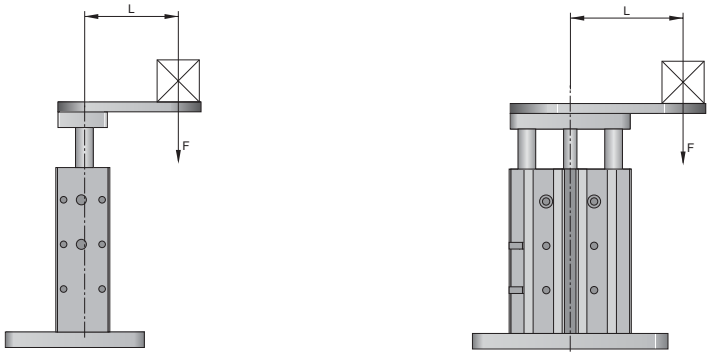
Maximum permissible mass:

$$m_{load} = \frac{2 \times E_{per}}{v^2} - m_{own}$$

Piston diameter (mm)	**Ø 20**	**Ø 25**	**Ø 32**	**Ø 40**	**Ø 50**
E_{per}(Nm)	0.14	0.35	0.40	0.52	0.64

Permissible Lateral Load for Series FZG (Guided Cylinder with Sliding Guidance)

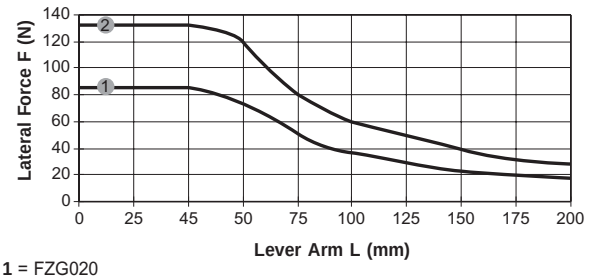
Permissible Loading in dependence on Lever Arm/Net Load
Application Example: Lifting Cylinder



F = lateral force (N)
L = lever arm (mm)

Series FZG6020 / 6025 (Stroke 30 mm)

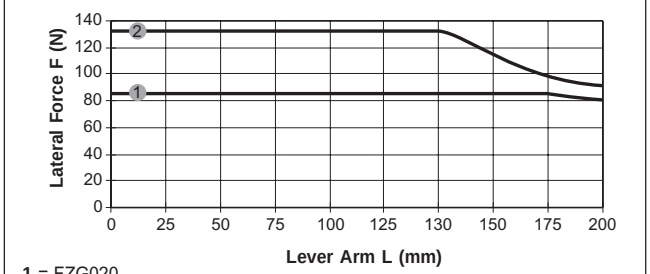
Series	Lever Arm L (mm)									
	0	25	45	50	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZG6020	85	85	85	70	49	37	30	23	20	18
2 FZG6025	132	132	132	120	80	60	49	40	33	30



1 = FZG020
2 = FZG025

Series FZG6020 / 6025 (Stroke 40 - 100 mm)

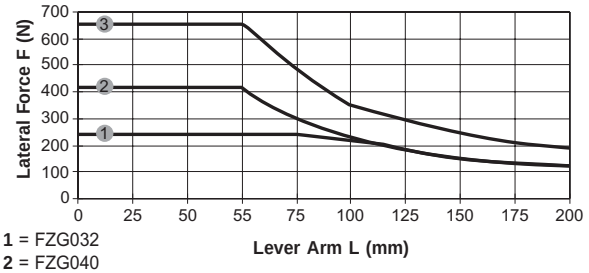
Series	Lever Arm L (mm)									
	0	25	50	75	100	125	130	150	175	200
	Lateral Force F (N)									
1 FZG6020	85	85	85	85	85	85	85	85	85	79
2 FZG6025	132	132	132	132	132	132	132	112	98	88



1 = FZG020
2 = FZG025

Series FZG6032, 6040, 6050 (Stroke 50 mm)

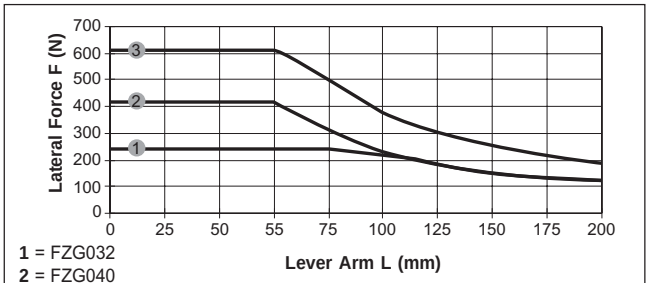
Series	Lever Arm L (mm)									
	0	25	50	55	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZG6032	240	240	240	240	240	220	180	150	130	120
2 FZG6040	410	410	410	410	300	220	180	150	130	120
3 FZG6050	650	650	650	650	500	350	300	250	210	190



1 = FZG032
2 = FZG040
3 = FZG050

Series FZG6032, 6040, 6050 (Stroke 80 - 100 mm)

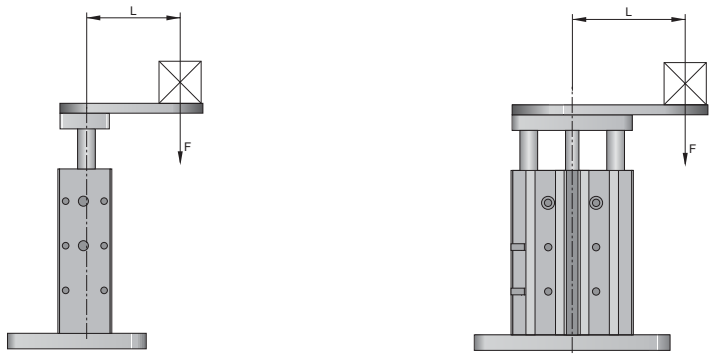
Series	Lever Arm L (mm)									
	0	25	50	55	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZG6032	240	240	240	240	240	220	180	150	130	120
2 FZG6040	410	410	410	410	300	220	180	150	130	120
3 FZG6050	610	610	610	610	500	370	300	250	210	190



1 = FZG032
2 = FZG040
3 = FZG050

Permissible Lateral Load for Series FZK (Guided Cylinder with Recirculating Ball Bearing Guidance)

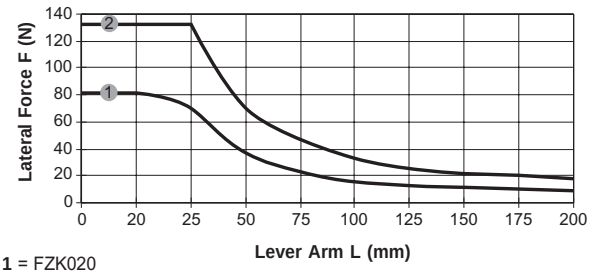
Permissible Loading in dependence on Lever Arm/Net Load
Application Example: Lifting Cylinder



F = lateral force (N)
L = lever arm (mm)

Series FZK6020 / 6025 (Stroke 30 mm)

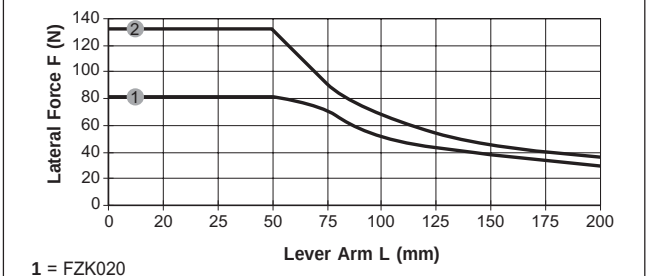
Series	Lever Arm L (mm)									
	0	20	25	50	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZK6020	82	82	70	37	23	18	13	11	10	9
2 FZK6025	132	132	132	70	47	33	28	22	20	18



1 = FZK020
2 = FZK025

Series FZK6020 / 6025 (Stroke 40 - 100 mm)

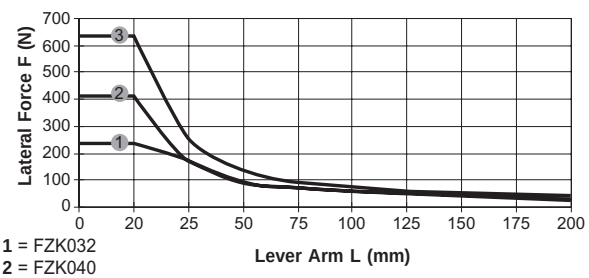
Series	Lever Arm L (mm)									
	0	20	25	50	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZK6020	82	82	82	82	70	50	40	37	30	27
2 FZK6025	132	132	132	132	90	66	52	45	38	35



1 = FZK020
2 = FZK025

Series FZK6032, 6040, 6050 (Stroke 50 mm)

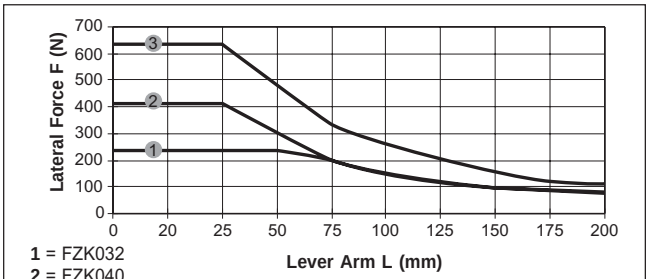
Series	Lever Arm L (mm)									
	0	20	25	50	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZK6032	240	240	175	85	75	65	50	48	40	25
2 FZK6040	420	420	160	85	75	65	50	48	40	25
3 FZK6050	650	650	250	125	90	80	60	52	50	48



1 = FZK032
2 = FZK040
3 = FZK050

Series FZK6032, 6040, 6050 (Stroke 80 - 100 mm)

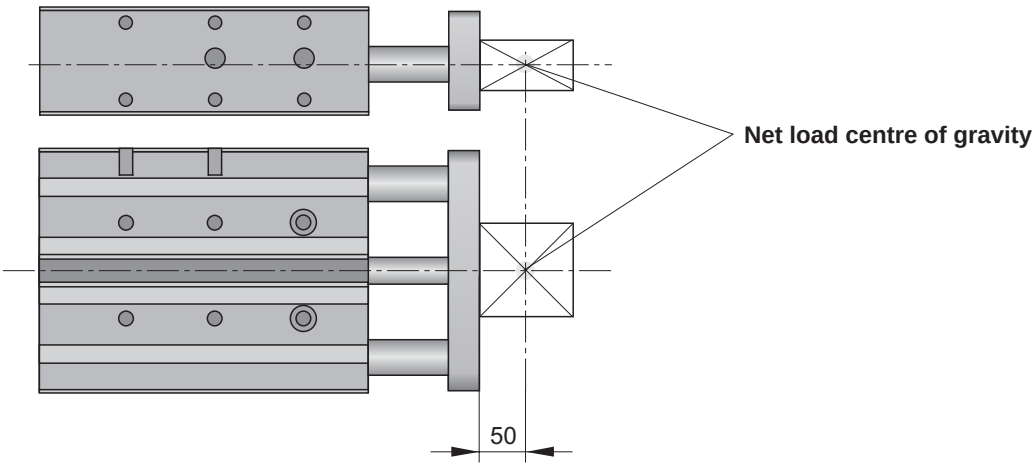
Series	Lever Arm L (mm)									
	0	20	25	50	75	100	125	150	175	200
	Lateral Force F (N)									
1 FZK6032	240	240	240	240	200	150	120	100	85	80
2 FZK6040	420	420	420	310	200	150	120	100	85	80
3 FZK6050	650	650	650	500	340	265	205	160	130	125



1 = FZK032
2 = FZK040
3 = FZK050

Maximum Net Load and Torsion Load for Series FZK and FZG

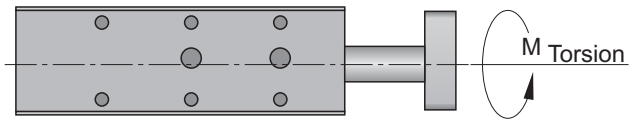
Maximum Net Load F [N] for Sliding and Recirculating Ball Bearing Guidance (Fig. 1)



Maximum Net Load F [N] for Sliding and Recirculating Ball Bearing Guidance (Fig. 1)

Series	Piston	Stroke (mm)										
	Ø	10	20	25	30	40	50	80	100	125	160	200
FZG6020	20	-	67	64	61	110	103	86	77	-	-	-
FZK6020	20	-	45	39	35	91	88	80	75	-	-	-
FZG6025	25	-	121	116	112	123	115	96	86	-	-	-
FZK6025	25	-	88	86	84	100	97	89	85	-	-	-
FZG6032	32	-	188	180	173	161	150	166	150	168	146	127
FZK6032	32	-	120	118	116	112	109	134	128	144	135	126
FZG6040	40	-	-	180	-	-	150	166	150	168	146	127
FZK6040	40	-	-	118	-	-	109	134	128	144	135	126
FZG6050	50	-	-	257	-	-	216	234	212	229	200	174
FZK6050	50	-	-	182	-	-	168	201	193	211	199	188

Maximum Torsion Load M [Nm] for Sliding and Recirculating Ball Bearing Guidance (Fig. 2)



Maximum Torsion Load M [Nm] for Sliding and Recirculating Ball Bearing Guidance (Fig. 2)

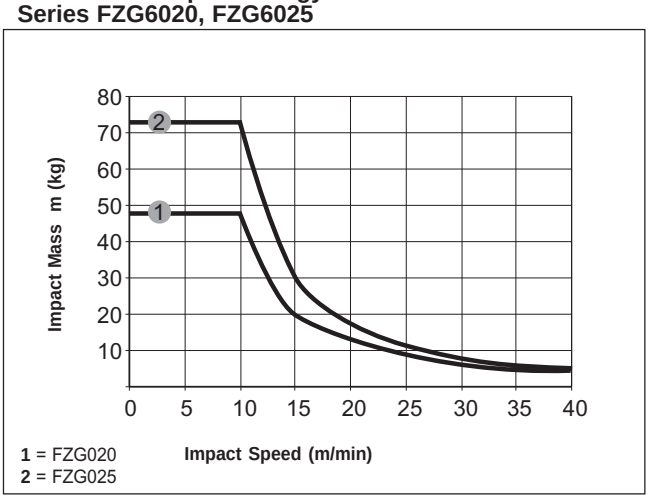
Series	Piston	Stroke (mm)										
	Ø	10	20	25	30	40	50	80	100	125	160	200
FZG6020	20	-	1.85	1.75	1.70	3.00	2.80	2.35	2.10	-	-	-
FZK6020	20	-	1.30	1.13	1.01	2.64	2.56	2.34	2.23	-	-	-
FZG6025	25	-	4.15	3.95	3.80	4.20	3.90	3.25	2.90	-	-	-
FZK6025	25	-	3.00	2.92	2.85	3.40	3.30	3.02	2.89	-	-	-
FZG6032	32	-	7.30	7.00	6.70	6.20	5.80	6.40	5.80	6.50	5.70	5.00
FZK6032	32	-	4.70	4.60	4.55	4.40	4.25	5.25	5.00	5.60	5.25	4.90
FZG6040	40	-	-	7.90	-	-	6.55	7.25	6.55	7.35	6.40	5.55
FZK6040	40	-	-	5.20	-	-	4.80	5.90	5.65	6.35	5.95	5.55
FZG6050	50	-	-	14.15	-	-	11.85	12.85	11.65	12.55	11.00	9.60
FZK6050	50	-	-	10.00	-	-	9.30	11.00	10.60	11.60	11.00	10.30

Permissible Impact Energy for FZG (Guided Cylinder with Sliding Guidance)

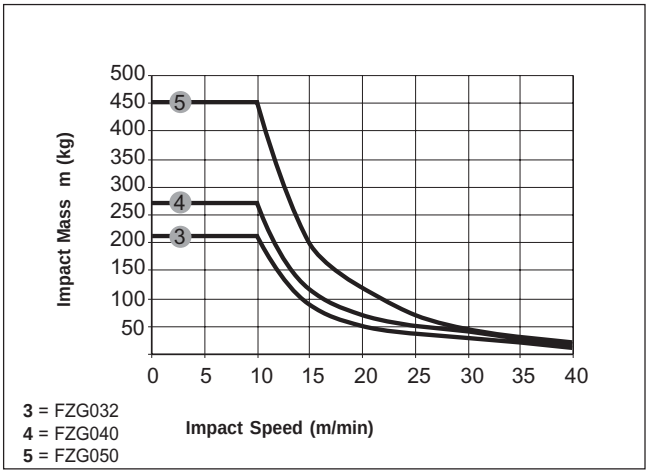
Application as Stop Cylinder / Only Sliding Guidance

Series	Impact Speed v [m/min]								
	0	5	10	15	20	25	30	35	40
	Impact Mass m [kg]								
1 FZG020	47	47	47	21	12	8	5	4	3
2 FZG025	75	75	75	31	18	12	8	6	4
3 FZG032	210	210	210	90	50	40	30	20	10
4 FZG040	270	270	270	110	70	50	40	25	15
5 FZG050	450	450	450	200	120	70	50	30	20

Permissible Impact Energy - Series FZG6020, FZG6025



Permissible Impact Energy - Series FZG6032, FZG6040, FZG6050

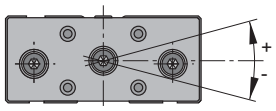


Torsion / Play for Series FZK and FZG

For accuracy of guidance, apart from torsion play, the torsion of the rod itself must be taken into account

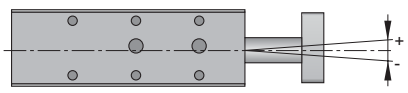
Torsion Play of Recirculating Ball Bearing Guidance and Sliding Guidance (retracted mode, unloaded)

Series	Torsion Play [°]				
	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
FZG6000	0.09	0.09	0.07	0.06	0.05
FZK6000	0.08	0.08	0.07	0.05	0.05



Deflection of Piston Rod with Sliding Guidance FZG and Recirculating Ball Bearing Guidance FZK (bearing play)

Series	Stroke [mm]	Deflection of Piston Rod				
		Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
FZG6000	50	0.11	0.10	0.13	0.13	0.12
FZK6000	50	0.08	0.08	0.08	0.08	0.08



Deflection of Piston Rod through Bearing Play + Lateral Force

General formula for the deflection of the piston rod under load is:

$$f = \frac{F_{load} \times L^3_{rod}}{6 \times E_{rod} \times I_{rod}}$$

F_{load} = lateral force applied

L_{rod} = free bending length of rod

E_{rod} = modulus of elasticity of piston rod material

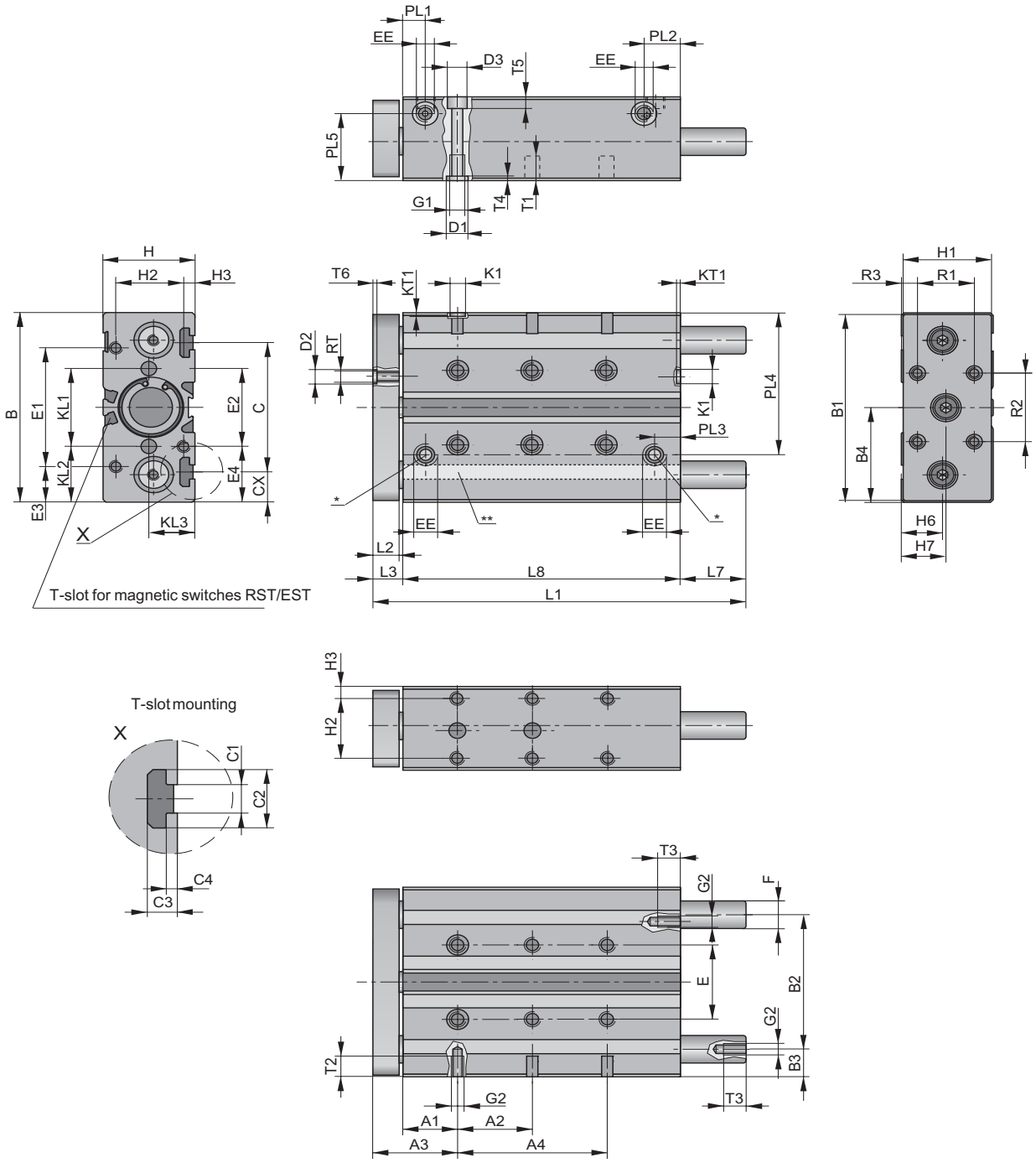
I_{rod} = surface torque of piston rod

The total deflection of the piston rod is made up of the sum of:

– the deflection caused by bearing play and

– the deflection caused by rod distortion under load.

Dimensions - Series FZG6020 to 6032 and Series FZK6020 to 6032



* Screw plugs

Dimensions Table [mm] - Series FZK(G) 6020 to 6032

Stroke	External Dimensions																							
	L1			L2			L3			L7			L8			B			B1			B2		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20	75	93	101	12	12	14	14	14	16	-	13.4	17	61	65.6	68	83	95	110	81	93	108	58	68	78
25	80	98	106							-	13.4	17	66	70.6	73									
30	85	103	111							-	13.4	17	71	75.6	78									
40	121	123	121							26		17	81	85.6	88									
50	131	133	131							26		17	91	95.6	98									
80	161	163	179							26		35	121	125.6	128									
100	181	183	199							26		35	141	145.6	148									
125			244									55			173									
160			279									55			208									
200			319									55			248									

Stroke	External Dimensions																							
	B3			B4			H			H1			H6			H7			F FZK h6			FZG h8		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20 - 200	12.5	13.5	16	41.5	47.5	55	36	44	49	34	42	47	17	20	22	18.5	24	23.5	12	14	16	14	16	20

Stroke	Mounting Dimensions																							
	E ±0,1			E1 ±0,1			E2 ±0,1			E3			E4			A1 ±0,1			A2 ±0,1			A3		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20	30	35	43	-	64	70	74	35	45	-	15.5	20	4.5	30	32.5	26	26	29	-	-	-	40	40	45
25																			20	20	20			
30																			20	20	20			
40																			20	20	20			
50																			40	40	40			
80																			40	40	40			
100																			40	40	40			
125																					40			
160																					40			
200																					40			

Stroke	Mounting Dimensions																							
	A4 ±0,1			H2 ±0,1			H3			R1 ±0,1			R2 ±0,1			R3			RT			G1		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20	-	-	-	-	33.5	37	4.5	4.5	6	20	20	30	30	40	40	7	12	8.5	M5	M6	M6	M6	M6	M8
25	-	-	-																					30
30	-	-																						
40	-	-	-																					
50	-	-	-																					
80	-	-	-																					
100	80	80	80																					
125			80																					
160			120																					
200			160																					

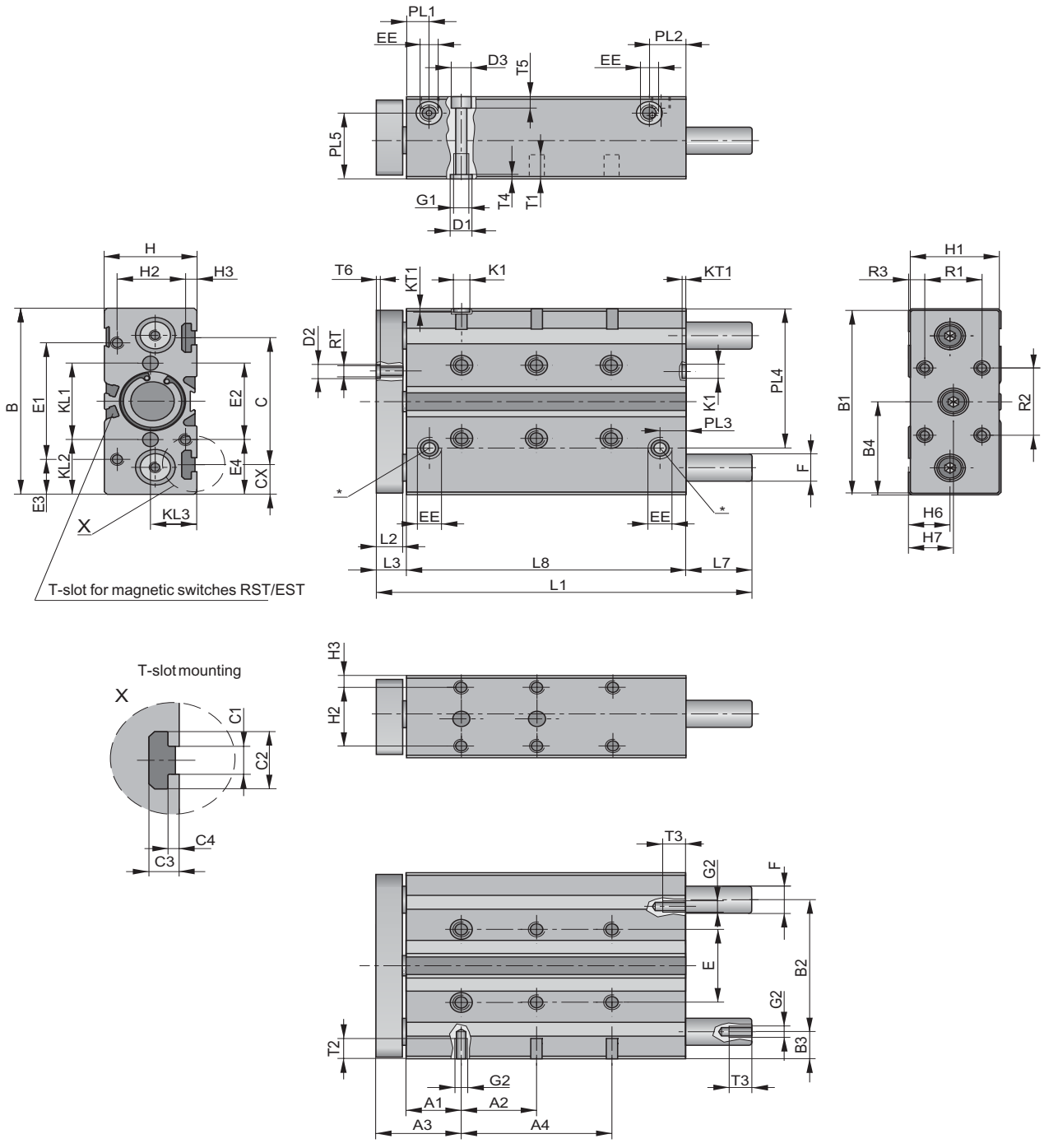
Stroke	Mounting Dimensions																				
	G2			T1			T2			T3			T5			Ø D3					
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32			
20 - 200	M5	M6	M6	12	14	15	10	12	10	10	12	12	5.7	5.7	6.8	9	9	11			

Stroke	Air Connection																	
	EE			PL1			PL2			PL3			PL4			PL5		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20 - 200	M5	G1/8	G1/8	15.3	13.5	12.2	12	17	19.5	12	13	13.5	55	70	81	29	35	39

Stroke	T-Slot Mounting																	
	C			C1			C2			C3			C4			CX		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20 - 200	55	66	75	6.15	8.2	8.2	12	16.7	16.7	5.5	8	8	1.2	3	3	17.5	14.5	17.5

Stroke	Centring Bush Holes																										
	$D1^{H7}$ Ø			$D2^{H7}$ Ø			$K1^{H7}$ Ø			KL1			KL2			KL3			KT1			T4			T6		
	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32	Ø20	Ø25	Ø32
20 - 200	9	9	12	9	9	9	7	7	9	31	37	45	26	29	32.5	18	22	24.5	1.6	1.6	2.1	2.1	2.1	2.6	2.1	2.1	2.1

Dimensions - Series FZG6040 / 6050 and Series FZK6040 / 6050



* Screw plugs

Dimensions Table [mm] - Series FZK(K) 6040 and 6050

Stroke	External Dimensions															
	L1		L2		L3		L7		L8		B		B1		B2	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25	106	118	14	16	16	18	14	23	76	77	120	148	118	146	88	110
50	131	143					14	23	101	102						
80	179	194					32	44	131	132						
100	199	214					32	44	151	152						
125	244	259					52	64	176	177						
160	279	294					52	64	211	212						
200	319	334					52	64	251	252						

Stroke	External Dimensions															
	B3		B4		H		H1		H6		H7		F FZK h6		FZG h8	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25 - 200	16	19	60	74	54	64	52	62	24	29.5	26	29.7	16	20	20	25

Stroke	Mounting Dimensions															
	E ±0,1		E1 ±0,1		E2 ±0,1		E3		E4		A1 ±0,1		A2 ±0,1		A3	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25	51	64	48	110	48	130	36	19	32.5	9	29	32	20	20	45	50
50													40	40		
80													40	40		
100													40	40		
125													40	40		
160													40	40		
200													40	40		

Stroke	Mounting Dimensions															
	A4 ±0,1		H2 ±0,1		H3		R1 ±0,1		R2 ±0,1		R3		RT		G1	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25	-	-	42	50	6	7	30	40	50	60	16	12	M6	M8	M8	M8
50	-	-														
80	-	-														
100	80	80														
125	80	80														
160	120	120														
200	160	160														

Stroke	Mounting Dimensions											
	G2		T1		T2		T3		T5		Ø D3	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25 - 200	M8	M8	15	15	14	16	14	16	6.8	6.8	11	11

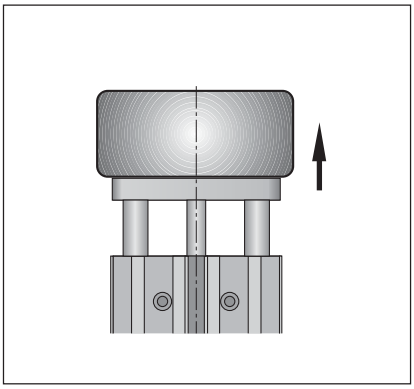
Stroke	Air Connection											
	EE		PL1		PL2		PL3		PL4		PL5	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25 - 200	G1/8	G1/4	15.3	14	19.5	18.9	18.7	15	96	116.5	42	50.5

Stroke	T-Slot Mounting											
	C		C1		C2		C3		C4		CX	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25 - 200	82	97	8.2	8.2	16.7	16.7	8	8	3	3	19	25.5

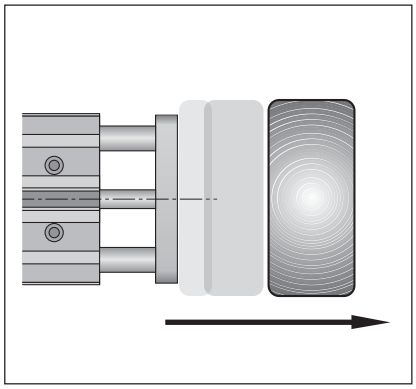
Stroke	Centring Bush Holes																	
	$D1^{H7}$ Ø		$D2^{H7}$ Ø		$K1^{H7}$ Ø		KL1		KL2		KL3		KT1		T4		T6	
	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50	Ø40	Ø50
25 - 200	12	12	9	12	9	12	55	68	32.5	40	27	32	2.1	2.6	2.6	2.6	2.1	2.6

Applications

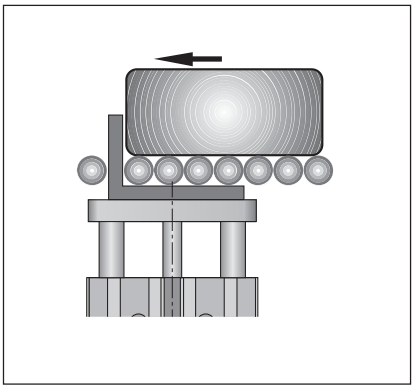
Lifting



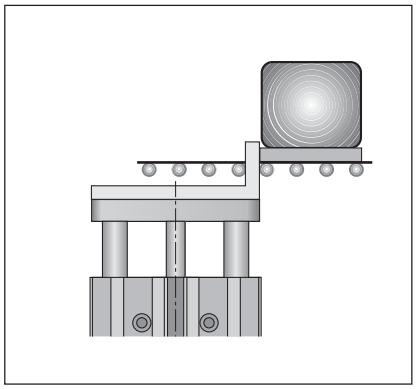
Pushing



Stopping

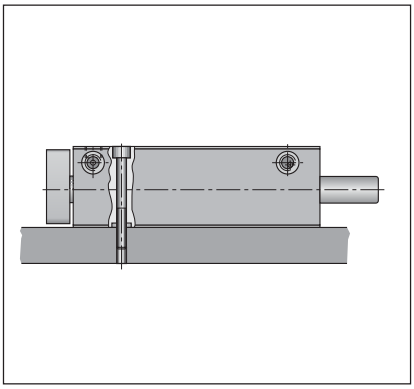


Stopping with Stop Bracket

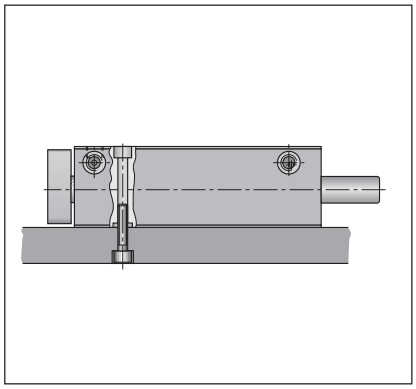


Mounting Possibilities

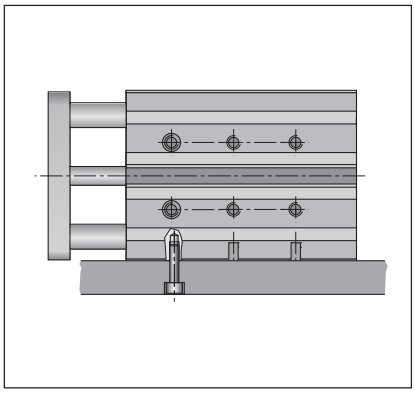
Flat mounting from above



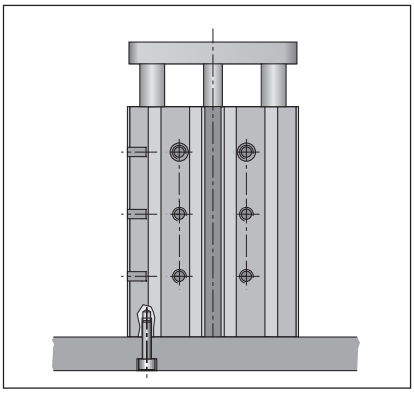
Flat mounting from below



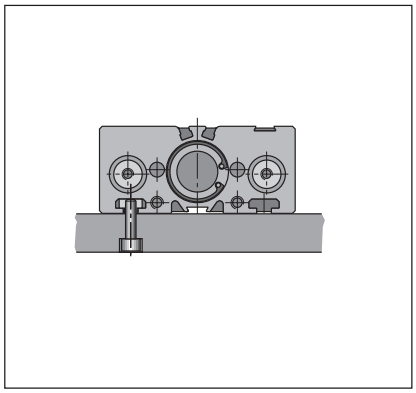
Side mounting



End face mounting

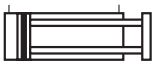
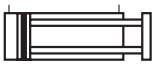


T-slot mounting



Order Instructions

Guided Cylinder FZK / FZG

Cyl. Ø (mm)	Stroke *	Symbol	Order Instructions			
			with Sliding Guidance		with Ball Bearing Guidance	
			Type	Order No.	Type	Order No.
20	20		FZG6020/20	PA68240-0020	FZK6020/20	PA68250-0020
	25		FZG6020/25	PA68240-0025	FZK6020/25	PA68250-0025
	30		FZG6020/30	PA68240-0030	FZK6020/30	PA68250-0030
	40		FZG6020/40	PA68240-0040	FZK6020/40	PA68250-0040
	50		FZG6020/50	PA68240-0050	FZK6020/50	PA68250-0050
	80		FZG6020/80	PA68240-0080	FZK6020/80	PA68250-0080
	100		FZG6020/100	PA68240-0100	FZK6020/100	PA68250-0100
25	20		FZG6025/20	PA68260-0020	FZK6025/20	PA68270-0020
	25		FZG6025/25	PA68260-0025	FZK6025/25	PA68270-0025
	30		FZG6025/30	PA68260-0030	FZK6025/30	PA68270-0030
	40		FZG6025/40	PA68260-0040	FZK6025/40	PA68270-0040
	50		FZG6025/50	PA68260-0050	FZK6025/50	PA68270-0050
	80		FZG6025/80	PA68260-0080	FZK6025/80	PA68270-0080
	100		FZG6025/100	PA68260-0100	FZK6025/100	PA68270-0100
32	20		FZG6032/20	PA58640-0020	FZK6032/20	PA58650-0020
	25		FZG6032/25	PA58640-0025	FZK6032/25	PA58650-0025
	30		FZG6032/30	PA58640-0030	FZK6032/30	PA58650-0030
	40		FZG6032/40	PA58640-0040	FZK6032/40	PA58650-0040
	50		FZG6032/50	PA58640-0050	FZK6032/50	PA58650-0050
	80		FZG6032/80	PA58640-0080	FZK6032/80	PA58650-0080
	100		FZG6032/100	PA58640-0100	FZK6032/100	PA58650-0100
	125		FZG6032/125	PA58640-0125	FZK6032/125	PA58650-0125
	160		FZG6032/160	PA58640-0160	FZK6032/160	PA58650-0160
	200		FZG6032/200	PA58640-0200	FZK6032/200	PA58650-0200
40	25		FZG6040/25	PA59570-0025	FZK6040/25	PA59580-0025
	50		FZG6040/50	PA59570-0050	FZK6040/50	PA59580-0050
	80		FZG6040/80	PA59570-0080	FZK6040/80	PA59580-0080
	100		FZG6040/100	PA59570-0100	FZK6040/100	PA59580-0100
	125		FZG6040/125	PA59570-0125	FZK6040/125	PA59580-0125
	160		FZG6040/160	PA59570-0160	FZK6040/160	PA59580-0160
	200		FZG6040/200	PA59570-0200	FZK6040/200	PA59580-0200
50	25		FZG6050/25	PA60650-0025	FZK6050/25	PA60660-0025
	50		FZG6050/50	PA60650-0050	FZK6050/50	PA60660-0050
	80		FZG6050/80	PA60650-0080	FZK6050/80	PA60660-0080
	100		FZG6050/100	PA60650-0100	FZK6050/100	PA60660-0100
	125		FZG6050/125	PA60650-0125	FZK6050/125	PA60660-0125
	160		FZG6050/160	PA60650-0160	FZK6050/160	PA60660-0160
	200		FZG6050/200	PA60650-0200	FZK6050/200	PA60660-0200

*other strokes on request

Linear Guide, U-Form,

for cylinders to ISO15552(ISO6431), ISO6432 ø8-100mm

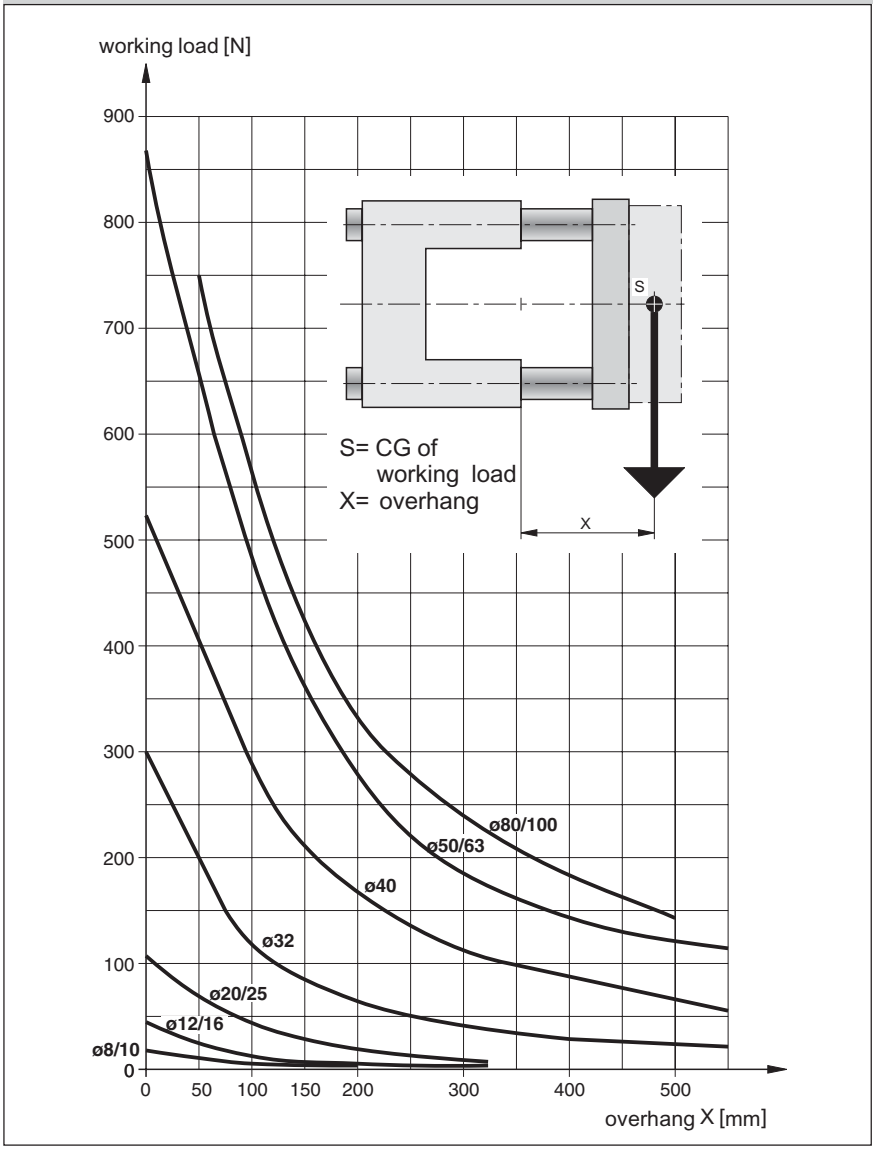
- **With plain bearings**

Series FEU....

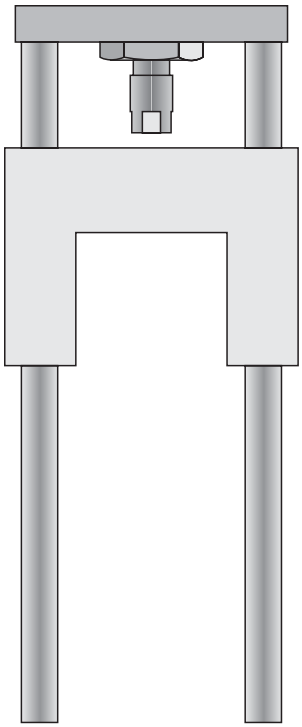
FEUG.../... (with plain bearings)

Characteristics			Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description					
General Features								
Installation			In any position					
Temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80					
Material								
Guide body			Aluminium, anodized					
Guide rods			Steel, rust-resistant					
Guide bushes			Sintered bronze					
Mounting plate			Aluminium, anodized					
Piston rod mounting			Steel, rust-resistant					
Weight (mass)		for cyl.	**ø8/10**		**ø12/16**		**20/25**	
With 100mm stroke		kg	0.20		0.38		0.68	
Per further 100mm stroke		kg	0.05		0.08		0.13	
Weight (mass)		for cyl.	**ø32**	**ø40**	**ø50**	**ø63**	**ø80**	**ø100**
With 100mm stroke		kg	1.32	1.98	3.35	4.60	8.30	10.85
Per further 100mm stroke		kg	0.18	0.32	0.50	0.50	0.77	0.77

Maximum working load in relation to overhang - FEUG version with plain bearings

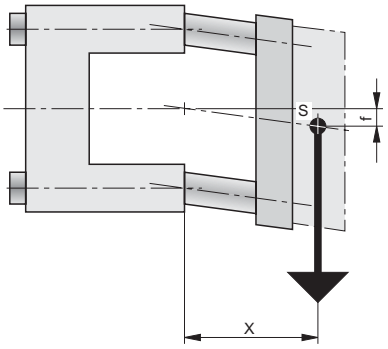


Supplied as follows:
ø8 - 25mm:
– 1 guide, 1 mounting nut for cylinders to ISO 6432
ø32 - 100mm:
– 1 guide, 4 mounting nuts for cylinders to ISO 15552 (ISO 6431)



HOERBIGER
ORIGA

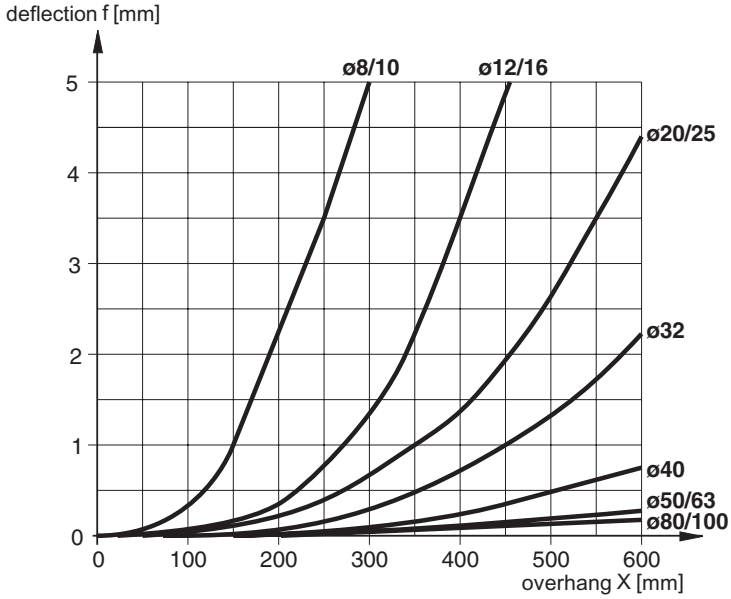
A1P480E00LW00X
The right to introduce technical modifications is reserved



S = CG of working load
X = overhang
f = deflection

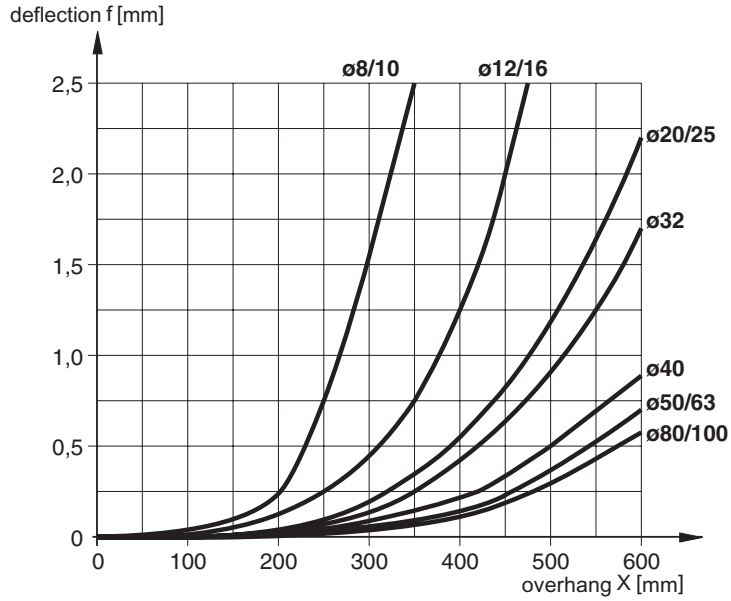
Deflection
- FEUG version with plain bearings

Diagram 1 - Deflection with a working load of 10N

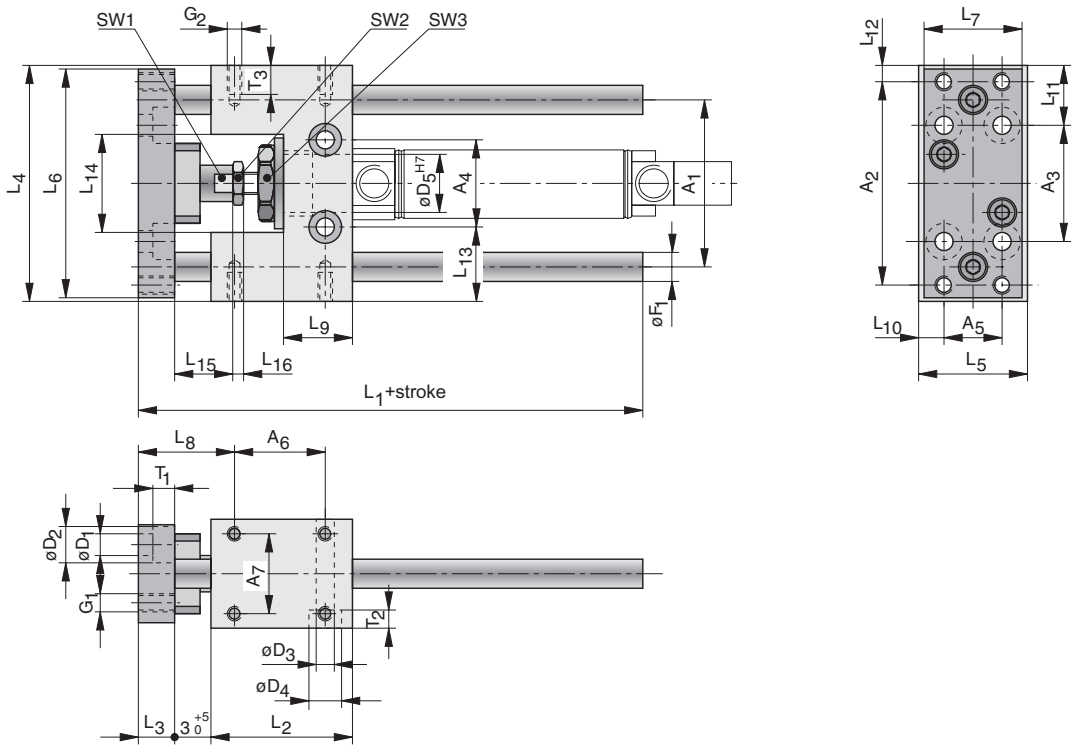


The total deflection is the sum of the deflection under own weight (Diagram 2) and the deflection under load (Diagram 1).
The deflection for every 10N load is shown in Diagram 1.

Diagram 2 - Deflection under own weight



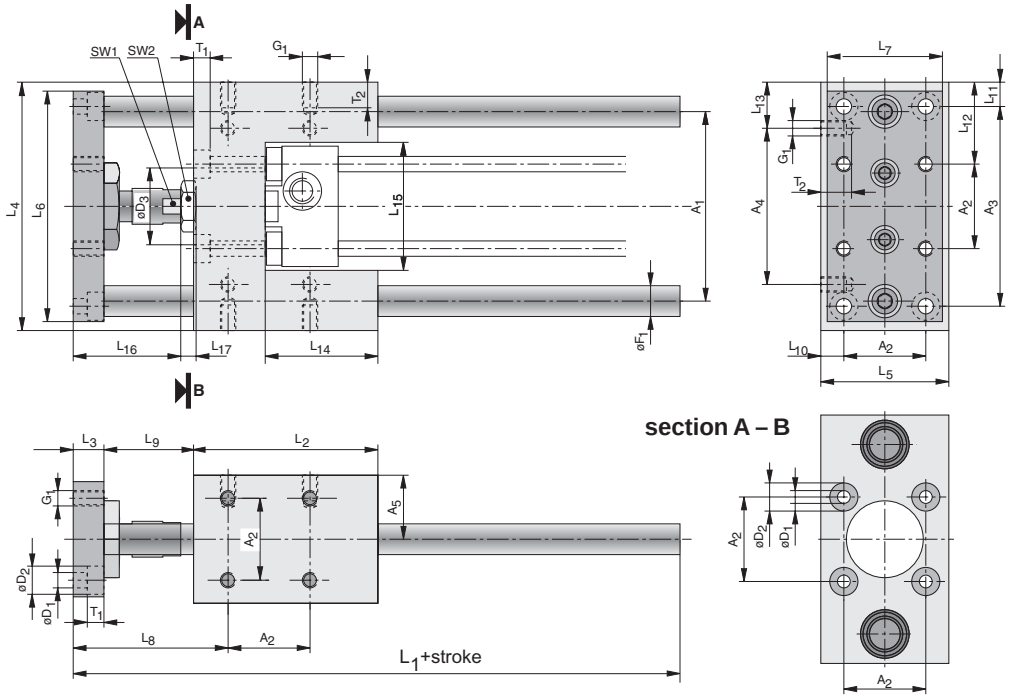
Dimensions of linear guides - for round cylinders ø8 bis 25mm



Dimensions table (mm) for linear guides - for round cylinders ø 8 - 25mm

Type	Cylinder diameter					
	8	10	12	16	20	25
A_1	40	40	46	46	58	58
A_2	44	44	54	54	68	68
A_3	25	25	32	32	40	40
A_4	24	24	24	24	38	38
A_5	16	16	16	16	20	20
A_6	19	19	25	25	32,5	32.5
A_7	19	19	22	22	23	23
$øD_1$	4.5	4.5	4.5	4.5	5,5	5.5
$øD_2$	7.5	7.5	8	8	10	10
$øD_3$	4.5	4.5	5.5	5.5	6.6	6.6
$øD_4$	-	-	-	-	11	11
$øD_5^{H7}$	12	12	16	16	22	22
$øF_1$	6	6	8	8	10	10
G_1	M4	M4	M4	M4	M5	M5
G_2	M4	M4	M4	M4	M6	M6
L_1+stroke	60	60	69	69	85	85
L_2	35	35	39	39	55	55
L_3	10	10	10	10	12	12
L_4	56	56	65	65	79	79
L_5	26	26	30	30	34	34
L_6	54	54	63	63	76	76
L_7	25	25	27	27	32	32
L_8	21^{+5}_{0}	21^{+5}_{0}	19.5^{+5}_{0}	19.5^{+5}_{0}	24^{+5}_{0}	24
L_9	17	17	19	19	25	25
L_{10}	5.5	5.5	7.5	7.5	7	7
L_{11}	16	16	16.5	16.5	19.5	19.5
L_{12}	6	6	5.5	5,5	5.5	5,5
L_{13}	16	16	20.5	20.5	20.5	20.5
L_{14}	24	24	27	27	37	37
L_{15}	19	19	16	16	29	23
L_{16}	2.2	2.2	3.2	3.2	4	6
SW1	9	9	9	9	13	13
SW2	a	a	a	a	a	a
SW3	15	15	19	19	27	27
T_1	4.6	4.6	4.6	4.6	5.7	5.7
T_2	-	-	-	-	-	7
T_3	8	8	8	8	14	14

Dimensions of linear guides - for standard cylinders ø32 - 100 mm



Dimensions table (mm) for linear guides - for standard cylinders ø32 - 100 mm

Type	Cylinder diameter					
	32	40	50	63	80	100
A_1	74	87	104	119	148	172
A_2	32.5	38	46.5	56.5	72	89
A_3	78	84	100	105	130	150
A_4	61	69	85	100	130	150
A_5	25	29	35	42.5	52.5	65
øD_1	6.6	6.6	9	9	11	11
øD_2	11	11	15	15	18	18
øD_3	30	35	40	45	45	55
øF_1	12	16	20	20	25	25
G_1	M6	M6	M8	M8	M10	M10
L_1+stroke	133	149	175	190	238	249
L_2	72	84	100	115	162	167
L_3	12	12	15	15	20	20
L_4	97	115	137	152	189	213
L_5	50	58	70	85	105	130
L_6	90	110	130	145	180	200
L_7	45	54	63	80	100	120
L_8	60.5^{+5}_{0}	63.5^{+5}_{0}	76^{+5}_{0}	76^{+5}_{0}	93^{+6}_{0}	95.5^{+6}_{0}
L_9	35^{+5}_{0}	41^{+5}_{0}	48^{+5}_{0}	48^{+5}_{0}	56^{+6}_{0}	56^{+6}_{0}
L_{10}	8.75	10.0	11.75	14.25	16.5	20.5
L_{11}	9.5	15.5	18.5	23.5	29.5	31.5
L_{12}	32.25	38.5	45.25	47.75	58.5	62
L_{13}	18	23	26	26	29.5	31.5
L_{14}	44	51	60	75	112	112
L_{15}	50.2	58.2	70.2	85.2	105.4	130.4
L_{16}	30	36	42	42	49	49
L_{17}	6	7	8	8	10	10
SW1	13	15	22	22	27	27
SW2	17	19	24	24	30	30
T_1	6.5	6.5	9	9	11	11
T_2	10	10	13	13	16	16

Order Instructions

For Cyl.ø (mm)	Stroke (mm)	Order Instructions Type	Order No.
8, 10	25	**FEUG8-10/25**	**PD38013-0025**
	50	**FEUG8-10/50**	**PD38013-0050**
	100	**FEUG8-10/100**	**PD38013-0100**
12, 16	50	**FEUG12-16/50**	**PD38014-0050**
	100	**FEUG12-16/100**	**PD38014-0100**
	200	**FEUG12-16/200**	**PD38014-0200**
20	50	**FEUG20/50**	**PD38015-0050**
	100	**FEUG20/100**	**PD38015-0100**
	160	**FEUG20/160**	**PD38015-0160**
	200	**FEUG20/200**	**PD38015-0200**
	250	**FEUG20/250**	**PD38015-0250**
	400	**FEUG20/400**	**PD38015-0400**
25	50	**FEUG25/50**	**PD38016-0050**
	100	**FEUG25/100**	**PD38016-0100**
	160	**FEUG25/160**	**PD38016-0160**
	200	**FEUG25/200**	**PD38016-0200**
	250	**FEUG25/250**	**PD38016-0250**
	400	**FEUG25/400**	**PD38016-0400**
32	50	**FEUG32/50**	**PD38017-0050**
	100	**FEUG32/100**	**PD38017-0100**
	160	**FEUG32/160**	**PD38017-0160**
	200	**FEUG32/200**	**PD38017-0200**
	250	**FEUG32/250**	**PD38017-0250**
	320	**FEUG32/320**	**PD38017-0320**
40	50	**FEUG40/50**	**PD38018-0050**
	100	**FEUG40/100**	**PD38018-0100**
	160	**FEUG40/160**	**PD38018-0160**
	200	**FEUG40/200**	**PD38018-0200**
	250	**FEUG40/250**	**PD38018-0250**
	320	**FEUG40/320**	**PD38018-0320**
50	50	**FEUG50/50**	**PD38019-0050**
	100	**FEUG50/100**	**PD38019-0100**
	160	**FEUG50/160**	**PD38019-0160**
	200	**FEUG50/200**	**PD38019-0200**
	250	**FEUG50/250**	**PD38019-0250**
	320	**FEUG50/320**	**PD38019-0320**
63	50	**FEUG63/50**	**PD38020-0050**
	100	**FEUG63/100**	**PD38020-0100**
	160	**FEUG63/160**	**PD38020-0160**
	200	**FEUG63/200**	**PD38020-0200**
	250	**FEUG63/250**	**PD38020-0250**
	320	**FEUG63/320**	**PD38020-0320**
80	50	**FEUG80/50**	**PD38021-0050**
	100	**FEUG80/100**	**PD38021-0100**
	160	**FEUG80/160**	**PD38021-0160**
	200	**FEUG80/200**	**PD38021-0200**
	250	**FEUG80/250**	**PD38021-0250**
	320	**FEUG80/320**	**PD38021-0320**
100	50	**FEUG100/50**	**PD38022-0050**
	100	**FEUG100/100**	**PD38022-0100**
	160	**FEUG100/160**	**PD38022-0160**
	200	**FEUG100/200**	**PD38022-0200**
	250	**FEUG100/250**	**PD38022-0250**
	320	**FEUG100/320**	**PD38022-0320**

Linear Guide, H-Form,

for cylinders to ISO 15552 (ISO 6431) ø32-100mm

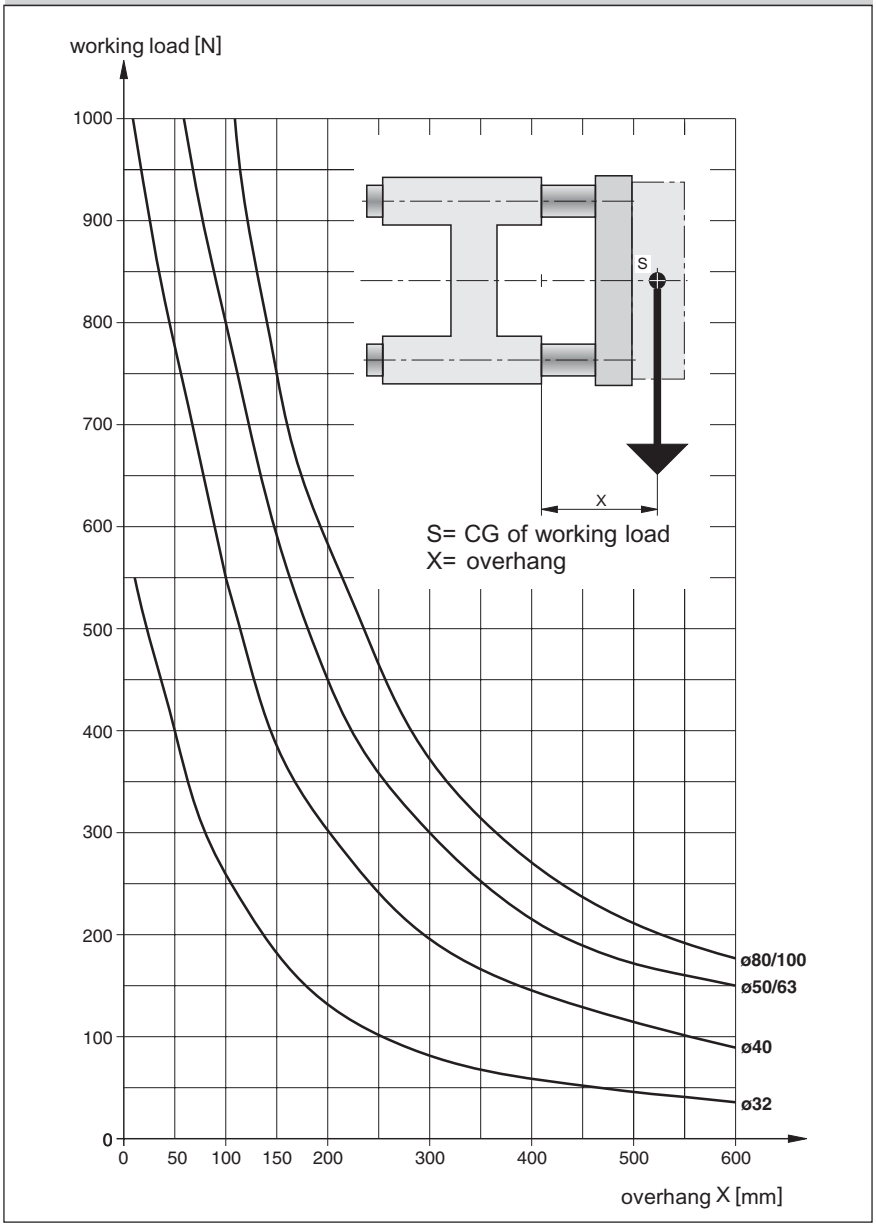
- **With plain bearings**
- **With ball bearings**

Series FEH....

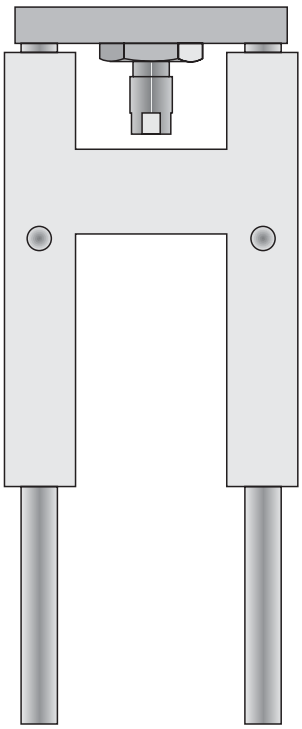
FEHG.../... (with plain bearings)
FEHK.../... (with ball bearings)

Characteristics			Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description					
General Features								
Installation			In any position					
Temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80					
Material								
Guide body			Aluminium, anodized					
Guide rods			Steel, rust-resistant for FEHG version Steel, hardened for FEHK version					
Guide bushes			Sintered bronze for FEHG version Linear ball bearings for FEHK version					
Mounting plate			Aluminium, anodized					
Piston rod mounting			Steel, rust-resistant					
Weight (mass)		for Cyl.	**ø32**	**ø40**	**ø50**	**ø63**	**ø80**	**ø100**
With 100mm stroke		kg	1.42	2.25	3.80	5.05	9.18	11.80
Per further 100mm stroke		kg	0.18	0.28	0.55	0.55	0.77	0.77

Maximum working load in relation to overhang
- FEHG version with plain bearings



Supplied as follows:
ø32 - 100mm:
– 1 guide, 4 mounting nuts for cylinders to ISO 15552 (ISO 6431)

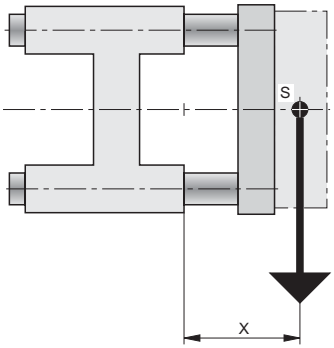


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Data Sheet No. 2.78.005E-1

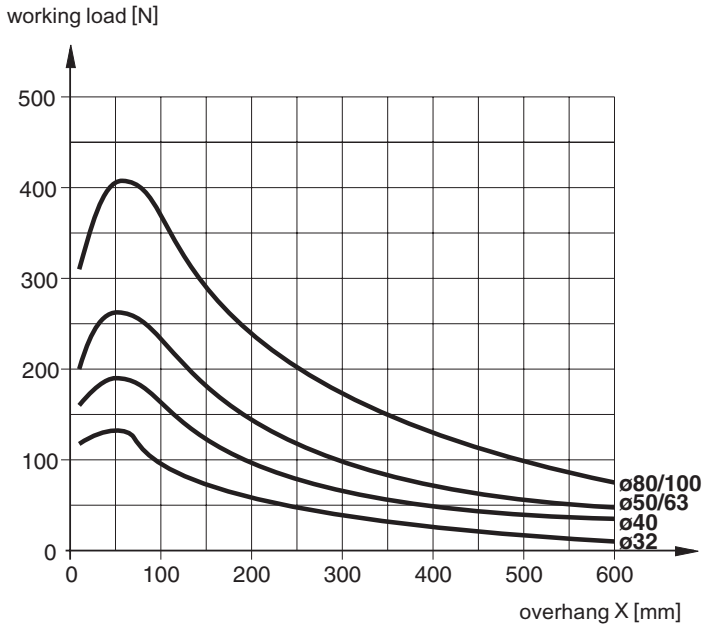
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The right to introduce technical modifications is reserved



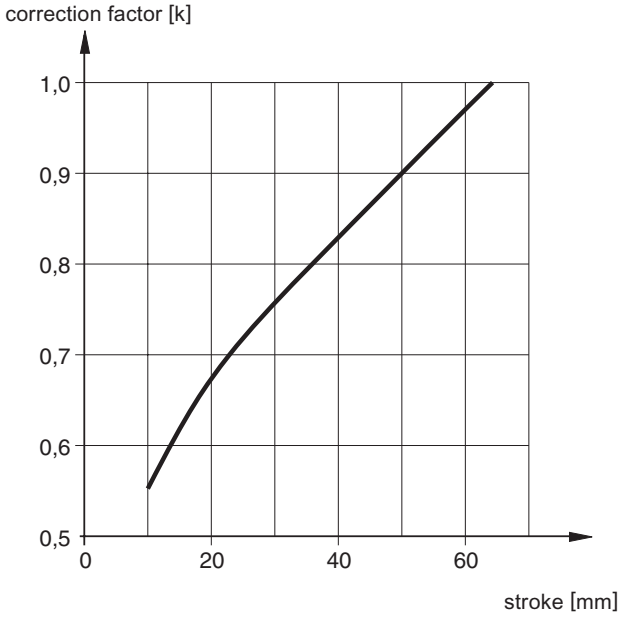
S = CG of working load
X = overhang

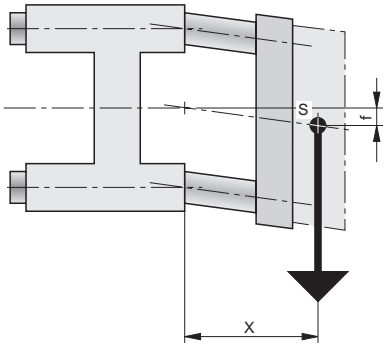
Maximum working load in relation to overhang
- FEHK version with ball bearings



For short strokes, the working load figures obtained from the diagrams must be multiplied by a correction factor (k) (see Diagram).
In the working load curves for overhangs up to 60 mm these short stroke corrections are already included.
In the case of impact loads, the maximum permissible working load must be halved.
Factor 1 for normal applications
Factor 2 for impact loads

Reduction of working load with short strokes
- FEHK version with ball bearings

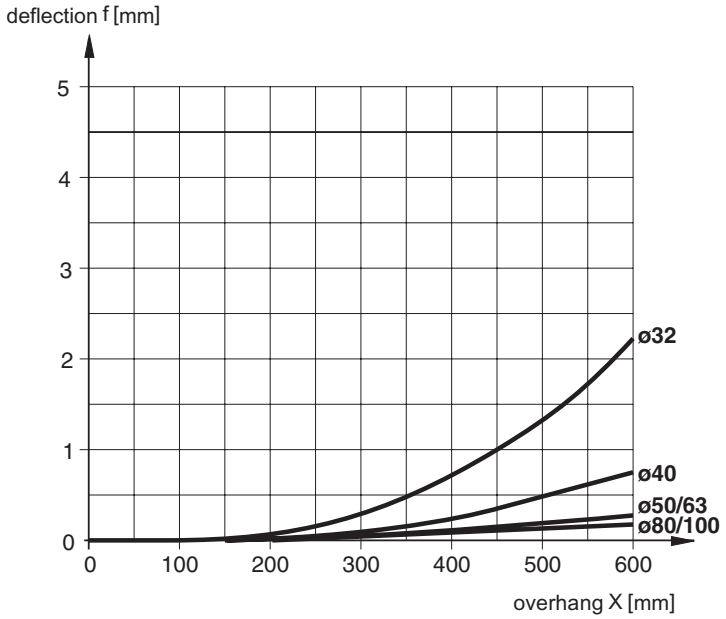




S = CG of working load
X = overhang
f = deflection

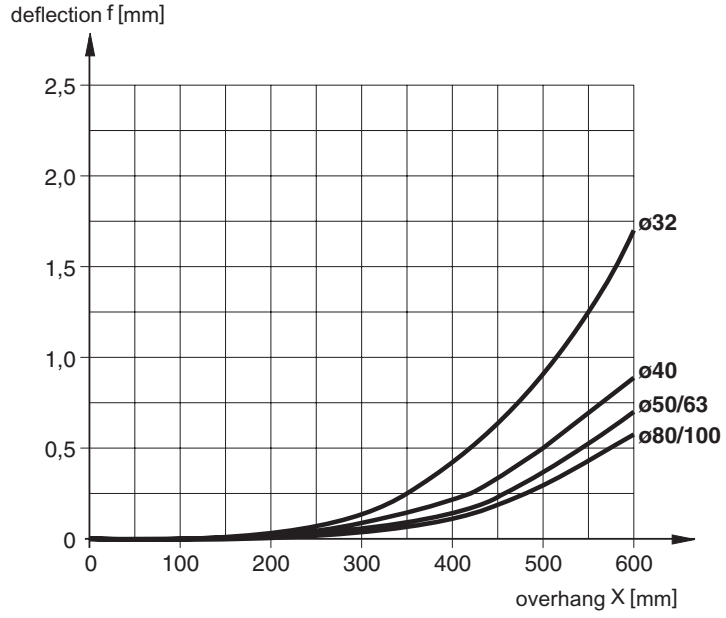
Deflection
- FEHG version with plain bearings and FEHK version with ball bearings

Diagram 1 - Deflection with a working load of 10N

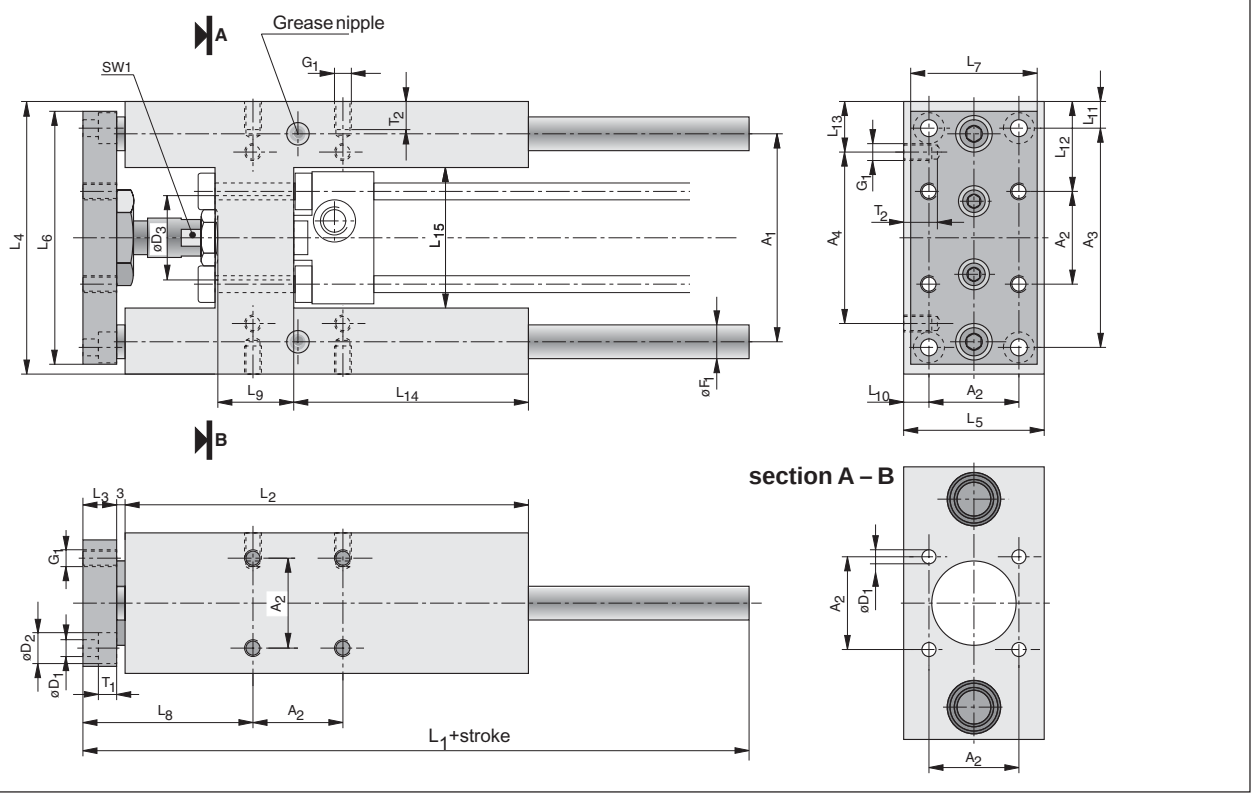


The total deflection is the sum of the deflection under own weight (Diagram 2) and the deflection under load (Diagram 1).
The deflection for every 10N load is shown in Diagram 1.

Diagram 2 - Deflection under own weight



Dimensions



Dimension Table (mm), FEHG version with plain bearings

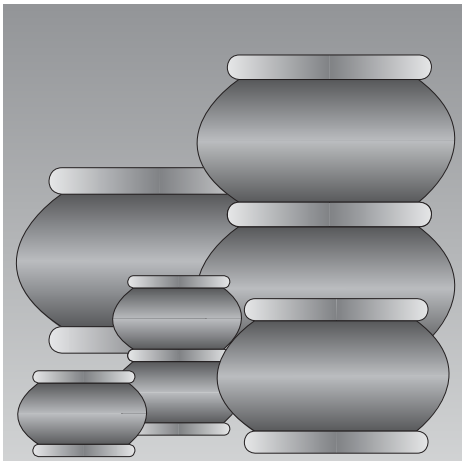
Type	Cylinder diameter					
	32	40	50	63	80	100
A_1	74	87	104	119	148	172
A_2	32.5	38	46.5	56.5	72	89
A_3	78	84	100	105	130	150
A_4	61	69	85	100	130	150
$øD_1$	6.6	6.6	9	9	11	11
$øD_2$	11	11	15	15	18	18
$øD_3$	30	35	40	45	45	55
$øF_1$	14 (12*)	18 (16*)	22 (20*)	22 (20*)	25	25
G_1	M6	M6	M8	M8	M10	M10
L_1+stroke	177	192	237	237	280	280
L_2	125	140	150	182	215	220
L_3	12	12	15	15	20	20
L_4	97	115	137	152	189	213
L_5	50	58	70	85	105	130
L_6	90	110	130	145	180	200
L_7	45	54	63	80	100	120
L_8	59.70^{+5}_{0}	63^{+5}_{0}	70.2^{+10}_{0}	73.5^{+10}_{0}	89^{+10}_{0}	90.5^{+10}_{0}
L_9	28	33	40	40	50	50
L_{10}	8.75	10.0	11.75	14.25	16.5	20.5
L_{11}	9.5	15.5	18.5	23.5	29.5	31.5
L_{12}	32.25	38.5	45.25	47.75	58.5	62
L_{13}	18	23	26	26	29.5	31.5
L_{14}	65	69	65	97	112	112
L_{15}	50.5	58.5	70.5	85.5	105.4	130.4
SW1	13	15	22	22	27	27
SW2	–	–	–	–	30	30
T_1	6.5	6.5	9	9	11	11
T_2	10	10	13	13	16	16

* FEHK version with ball bearings

Order Instructions

For Cyl.ø (mm)	Stroke (mm)	Order Instructions for plain bearing version Type	Order No.	Order Instructions for ball bearing version Type	Order No.
32	50	FEHG32/50	PD38001-0050	FEHK32/50	PD38007-0050
	100	FEHG32/100	PD38001-0100	FEHK32/100	PD38007-0100
	160	FEHG32/160	PD38001-0160	FEHK32/160	PD38007-0160
	200	FEHG32/200	PD38001-0200	FEHK32/200	PD38007-0200
	250	FEHG32/250	PD38001-0250	FEHK32/250	PD38007-0250
	320	FEHG32/320	PD38001-0320	FEHK32/320	PD38007-0320
40	50	FEHG40/50	PD38002-0050	FEHK40/50	PD38008-0050
	100	FEHG40/100	PD38002-0100	FEHK40/100	PD38008-0100
	160	FEHG40/160	PD38002-0160	FEHK40/160	PD38008-0160
	200	FEHG40/200	PD38002-0200	FEHK40/200	PD38008-0200
	250	FEHG40/250	PD38002-0250	FEHK40/250	PD38008-0250
	320	FEHG40/320	PD38002-0320	FEHK40/320	PD38008-0320
50	50	FEHG50/50	PD38003-0050	FEHK50/50	PD38009-0050
	100	FEHG50/100	PD38003-0100	FEHK50/100	PD38009-0100
	160	FEHG50/160	PD38003-0160	FEHK50/160	PD38009-0160
	200	FEHG50/200	PD38003-0200	FEHK50/200	PD38009-0200
	250	FEHG50/250	PD38003-0250	FEHK50/250	PD38009-0250
	320	FEHG50/320	PD38003-0320	FEHK50/320	PD38009-0320
63	50	FEHG63/50	PD38004-0050	FEHK63/50	PD38010-0050
	100	FEHG63/100	PD38004-0100	FEHK63/100	PD38010-0100
	160	FEHG63/160	PD38004-0160	FEHK63/160	PD38010-0160
	200	FEHG63/200	PD38004-0200	FEHK63/200	PD38010-0200
	250	FEHG63/250	PD38004-0250	FEHK63/250	PD38010-0250
	320	FEHG63/320	PD38004-0320	FEHK63/320	PD38010-0320
80	50	FEHG80/50	PD38005-0050	FEHK80/50	PD38011-0050
	100	FEHG80/100	PD38005-0100	FEHK80/100	PD38011-0100
	160	FEHG80/160	PD38005-0160	FEHK80/160	PD38011-0160
	200	FEHG80/200	PD38005-0200	FEHK80/200	PD38011-0200
	250	FEHG80/250	PD38005-0250	FEHK80/250	PD38011-0250
	320	FEHG80/320	PD38005-0320	FEHK80/320	PD38011-0320
100	50	FEHG100/50	PD38006-0050	FEHK100/50	PD38012-0050
	100	FEHG100/100	PD38006-0100	FEHK100/100	PD38012-0100
	160	FEHG100/160	PD38006-0160	FEHK100/160	PD38012-0160
	200	FEHG100/200	PD38006-0200	FEHK100/200	PD38012-0200
	250	FEHG100/250	PD38006-0250	FEHK100/250	PD38012-0250
	320	FEHG100/320	PD38006-0320	FEHK100/320	PD38012-0320

Bellows Cylinders



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Bellows cylinders are single acting. They are made of neoprene rubber reinforced by 2 layers of nylon cord. The external diameter of the bellows is largest when the cylinder is compressed. When air is introduced, they cylinder extends and the bellows diameter decreases. The longer the stroke, the more the force decreases.

There are two basic types:
Single convolution: maximum stroke length 110 mm.
Double convolution: maximum stroke length 240 mm.

Standard delivery includes fitted end plates for the particular type.

Technical Notes

Force
The force available depends on the stroke length: see the force diagrams in the data sheets.

Maximum permissible length
Depends on the operating pressure and is shown in the force diagrams: it must not be exceeded, to avoid damage to the cylinder. The stroke must therefore be limited by an external stop.
See E max. in Fig. 1 below.

Minimum permissible length
Is shown in the dimension tables and must be observed: be sure to provide an external limit stop.
See E min. in Fig. 1 below.

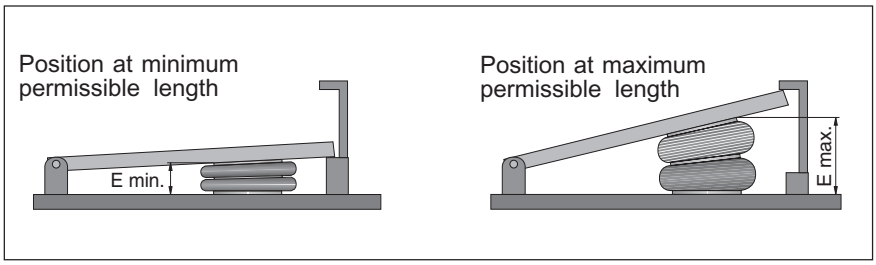
Medium
Air, Water (with glycol additives) and brake fluid. (No hydraulic fluids)

Oil resistance
The amount of oil necessary for lubricating pneumatic systems and moderate external oil contamination are harmless.

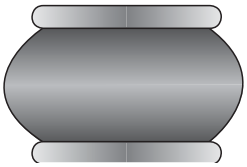
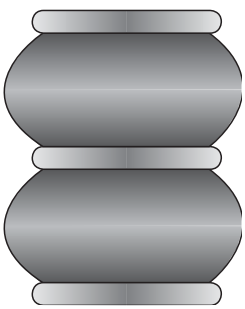
Operating pressure range
Is 2-8 bar for the standard 2 ply cylinder.

Temperature range
-40 to 70 C.

Special versions
Are available on request, e.g. larger diameters, higher temperature ranges, open ended with mounting rings, etc..



Maximum permissible pitch
The pitch of the end plates must not exceed 30°.
Minimum permissible length (E_{min}) and maximum permissible length (E_{max}) must be observed (see Fig. 1)

Fig. 2	Port size	**Type**	Force	Data Sheet No.
	G1/4	**SP-1B04**	See force diagrams in data sheets	2.80.008E
	G1/4	**SP-1B05**		
	G1/4	**SP-1B07**		
	G3/4	**SP-1B12**		
	G3/4	**SP-1B22**		
	G3/4	**SP-1B34**		
	G1/4	**SP-2B04**		2.80.059E
	G1/4	**SP-2B05**		
	G1/4	**SP-2B05A**		
	G1/4	**SP-2B07**		
	G3/4	**SP-2B12**		
	G3/4	**SP-2B22**		
	G3/4	**SP-2B34**		

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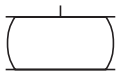
The right to introduce technical modifications is reserved

Bellows Cylinder

Single convolution

Series SP-....

SP-1B..



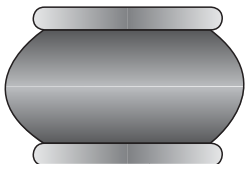
Characteristics

Characteristics	Symbol	Unit	Description
System			Single acting
Mounting			See drawing
Tube connection			Thread
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-40 higher temperature ranges +70 on request
Installation			Max. pitch of end plates 30°, max. deviation of axes to one another must be less than 10 mm. Both limits of stroke have to be limited by external stops. Return has to be effected by external force.
Medium			Filtered and unlubricated compressed air
Material			End plates of steel, galvanized and chromium anodized; Mounting rings of aluminium. Bellows-neoprene with nylon cord lining
Operating pressure range	p_{max}	bar	8 (for cushioning duty = 7 bar)

Stroke, Weight, Frequency

Type	Stroke max. (mm)	Weight (mass) (kg)	Frequency[1] (Hz)
SP-1B04	55	0.85	3 (when E = 80)
SP-1B05	45	1.0	4 (when E = 75)
SP-1B07	90	2.1	2.8 (when E = 90)
SP-1B12	100	2.7	2.4 (when E = 100)
SP-1B22	110	4.5	2.1 (when E = 120)
SP-1B34	110	5.5	2.1 (when E = 120)

[1] Nominal values at p_{max}



For product group overview see 2.80.001E

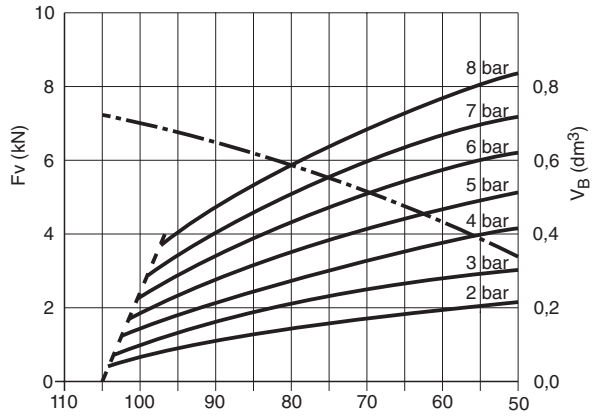
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The right to introduce technical modifications is reserved

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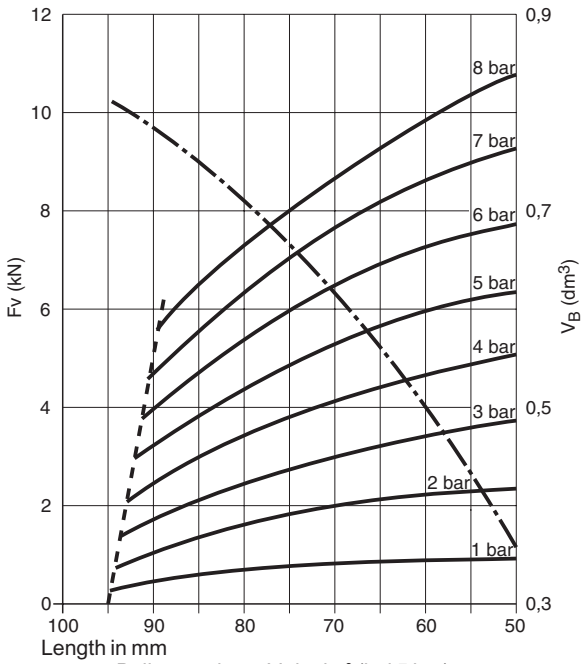
Force Diagrams

Type: SP-1B04, Stroke: max. 55 mm



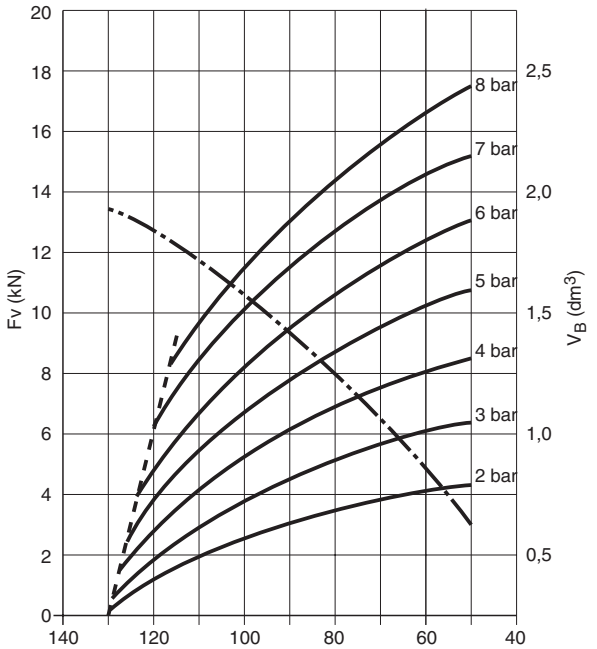
Bellows volume V_B in dm³ (bei 5 bar)
Force Fv in kN
Maximum permissible length
(depends on operating pressure)

Type: SP-1B05, Stroke: max. 45 mm



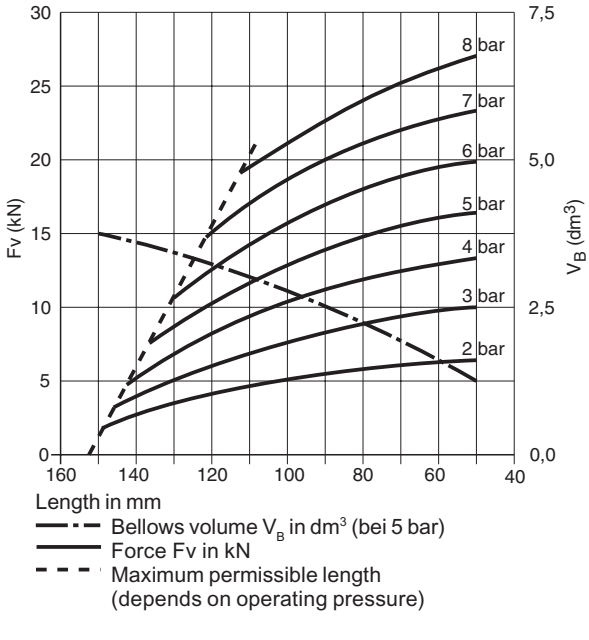
Bellows volume V_B in dm³ (bei 5 bar)
Force Fv in kN
Maximum permissible length
(depends on operating pressure)

Type: SP-1B07, Stroke: max. 90 mm



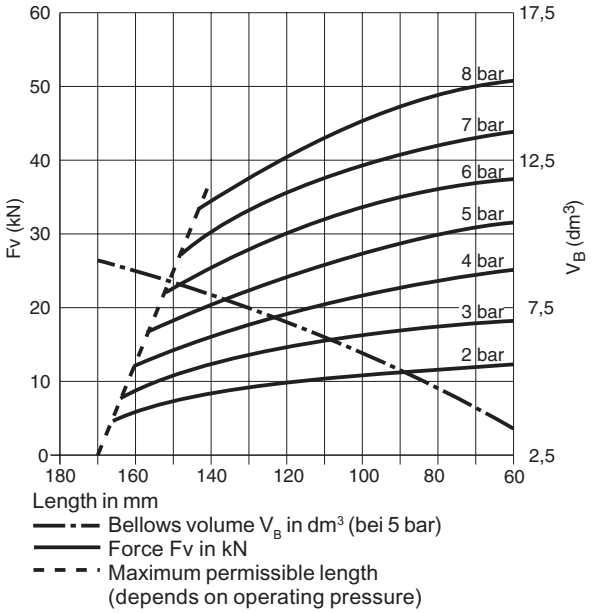
Bellows volume V_B in dm³ (bei 5 bar)
Force Fv in kN
Maximum permissible length
(depends on operating pressure)

Type: SP-1B12, Stroke: max. 100 mm

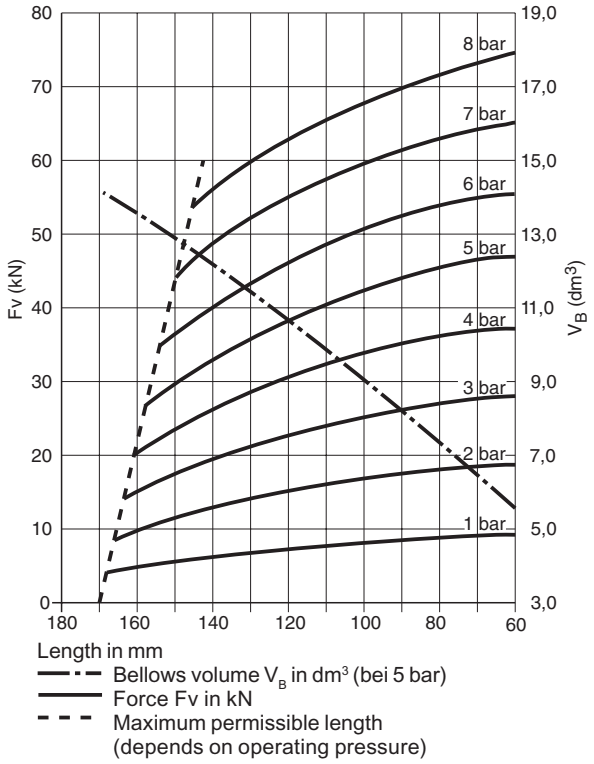


Bellows volume V_B in dm³ (bei 5 bar)
Force Fv in kN
Maximum permissible length
(depends on operating pressure)

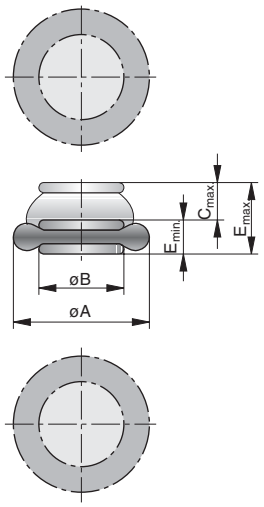
Type: SP-1B22, Stroke: max. 110 mm



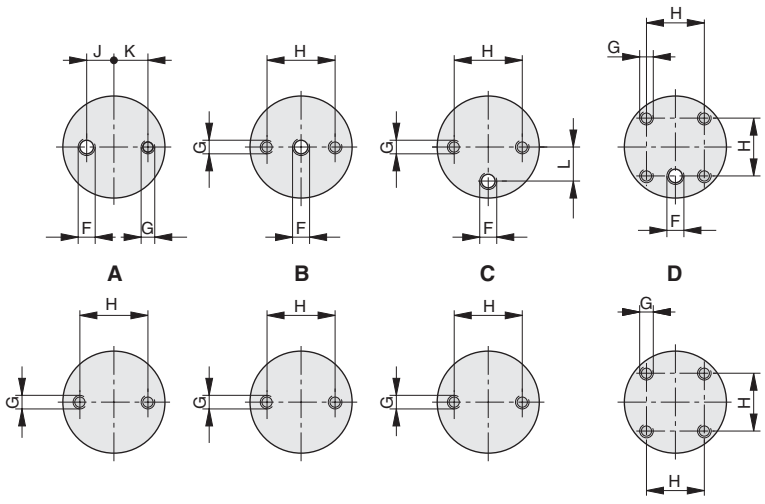
Type: SP-1B34, Stroke: max. 110 mm



Dimensions



Dimensions of Mounting Plates



Order Instructions, Dimension Table (mm)

Order Instructions Type	Order No.	Mounting plate	at 8 bar ØA	ØB	C_{max} **	E_{max} **	E_{min}	F	G*	H	J	K	L
SP-1B04	**KY 9500**	A	150	88	55	105	50	G1/4	M8	22	9	11	-
SP-1B05	**KY 8401**	B	165	110	45	95	50	G1/4	M8	44.5	-	-	-
SP-1B07	**KY 9501**	C	205	135	80	130	50	G1/4	M8	54	-	-	27
SP-1B12	**KY 9502**	C	250	160	100	150	50	G3/4	M8	89	-	-	38
SP-1B22	**KY 9590**	C	350	229	110	170	60	G3/4	M12	157.5	-	-	73
SP-1B34	**KY 8010**	D	420	288	110	170	60	G3/4	M8	158.8	-	-	-

* 15 deep

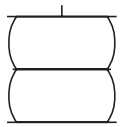
** These dimensions depend on the operating pressure: see force diagrams.

Bellows Cylinder

Double convolution

Series SP-....

SP-2B..

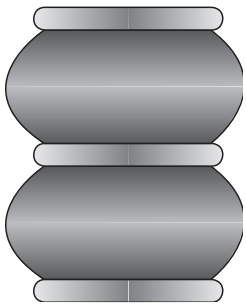


Characteristics			
Characteristics	Symbol	Unit	Description
System			Single acting
Mounting			See drawing
Tube connection			Thread
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-40 higher temperature ranges +70 on request
Installation			Max. pitch of end plates 30°, max. deviation of axes to one another must be less than 10 mm. Both limits of stroke have to be limited by external stops. Return has to be effected by external force.
Medium			Filtered and unlubricated compressed air
Material			End plates of steel, galvanized and chromium anodized; Mounting rings of aluminium. Bellows - neoprene with nylon cord lining
Operating pressure range	p_{max}	bar	8 (for cushioning duty = 7 bar)

Stroke, Weight, Frequency

Type	Stroke max. (mm)	Weight (mass) (kg)	Frequency[1] (Hz)
SP-2B04	110	1.1	2.3 (when E = 80)
SP-2B05	80	1.2	2.5 (when E = 120)
SP-2B05A	105	1.25	2.3 (when E = 140)
SP-2B07	125	2.6	1.9 (when E = 160)
SP-2B12	150	3.5	1.8 (when E = 180)
SP-2B22	170	4.9	1.7 (when E = 190)
SP-2B34	170	6.8	1.7 (when E = 190)

[1] Nominal values at p_{max}



For product group overview see 2.80.001E

Data Sheet No. 2.80.059E-1

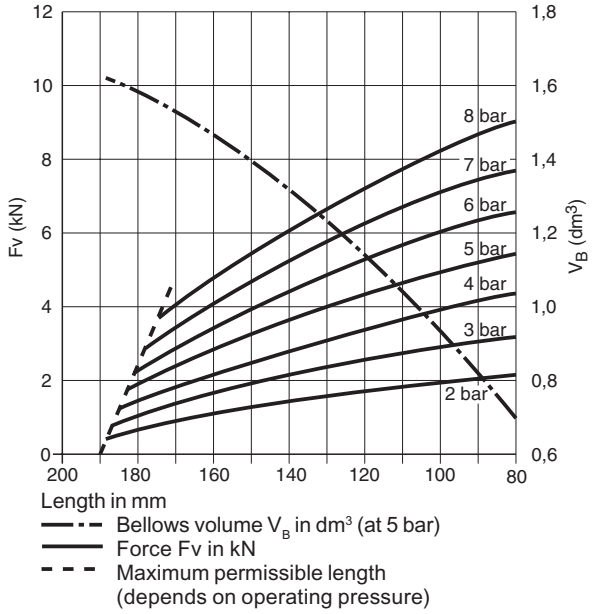
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The right to introduce technical modifications is reserved

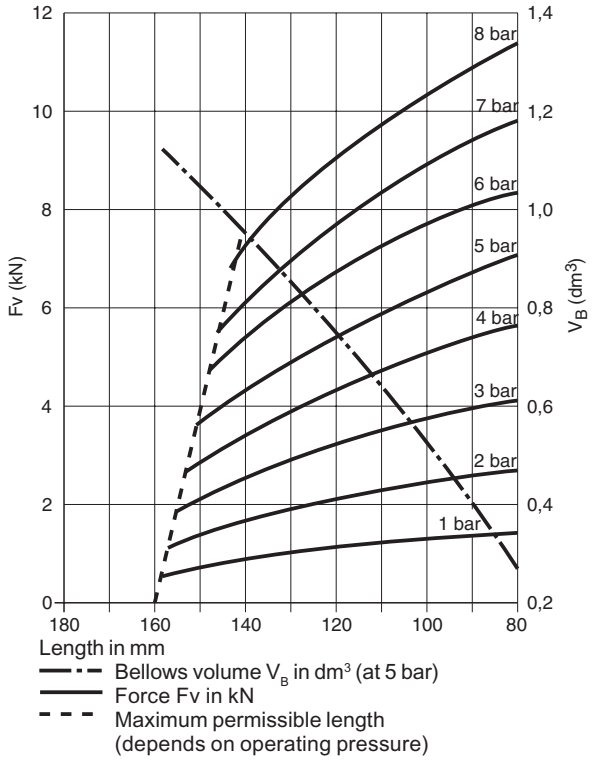
HOERBIGER ORIGA

Force Diagrams

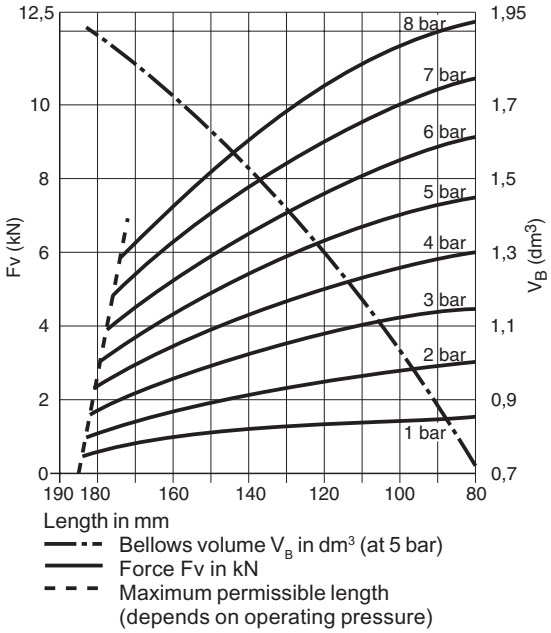
Type: SP-2B04, Hub: max. 110 mm



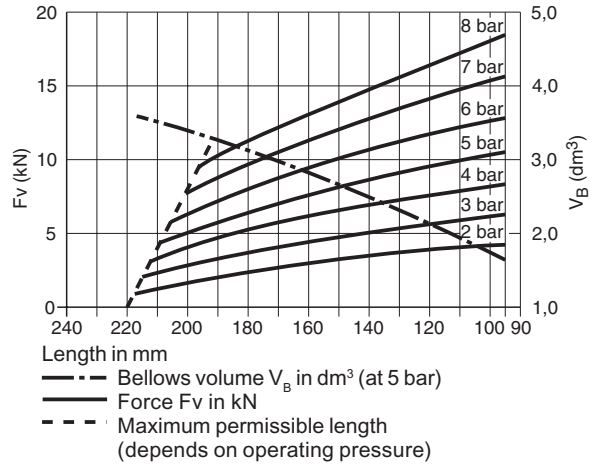
Type: SP-2B05, Hub: max. 80 mm



Type: SP-2B05A, Hub: max. 105 mm

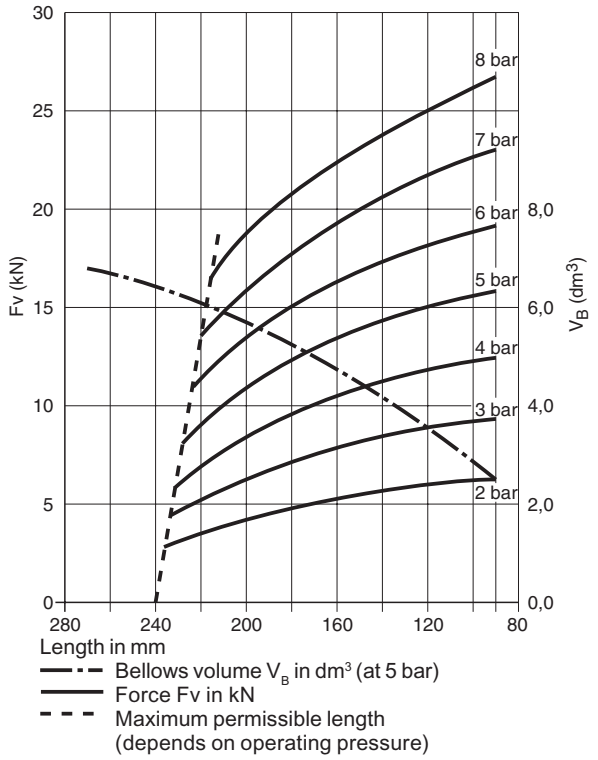


Type: SP-2B07, Hub: max. 125 mm

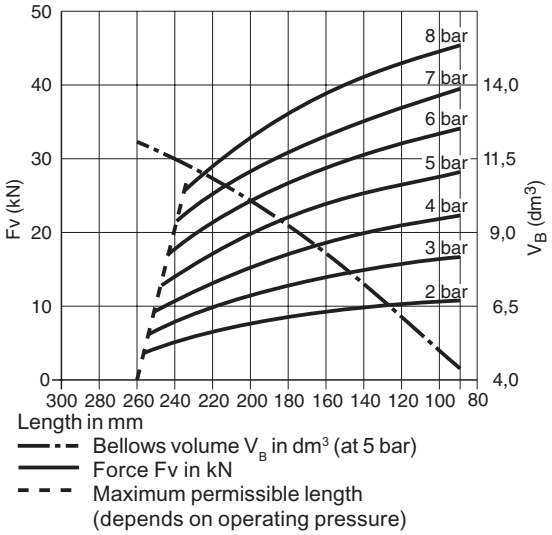


Force Diagrams

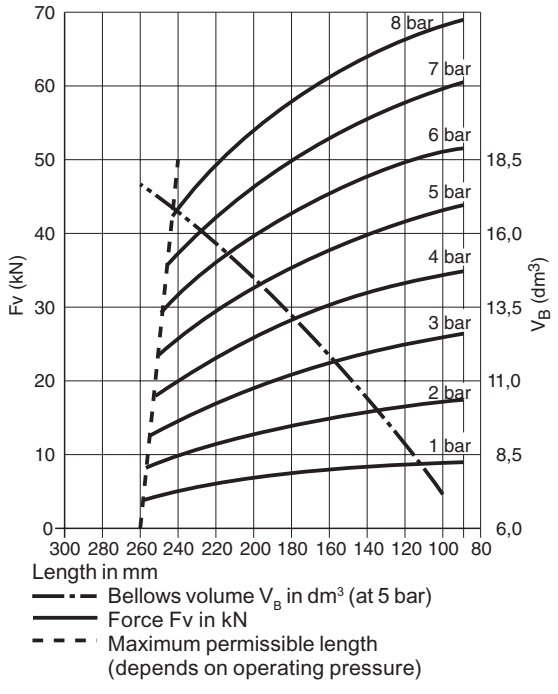
Type: SP-2B12, Hub: max. 150 mm



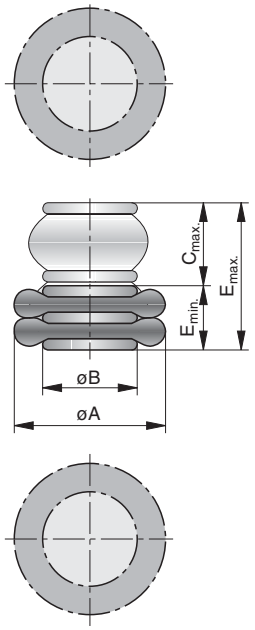
Type: SP-2B22, Hub: max. 170 mm



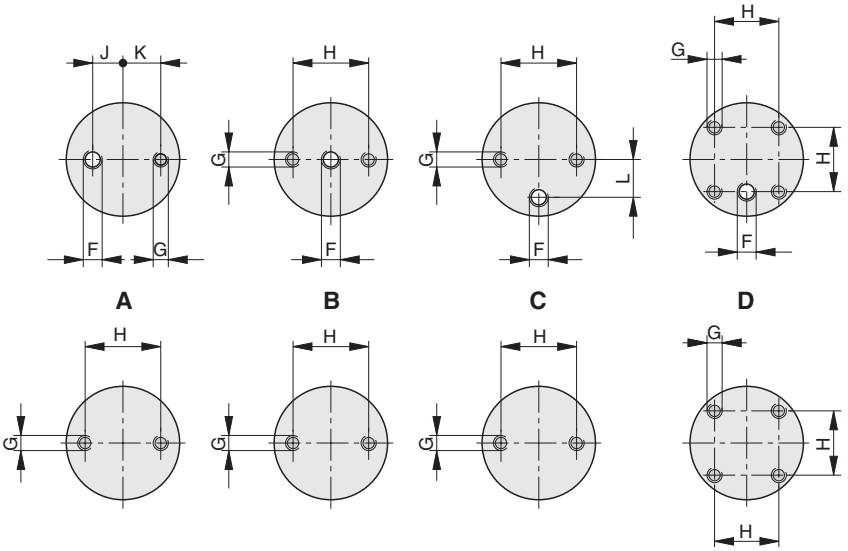
Type: SP-2B34, Hub: max. 170 mm



Dimensions



Dimensions of Mounting Plates

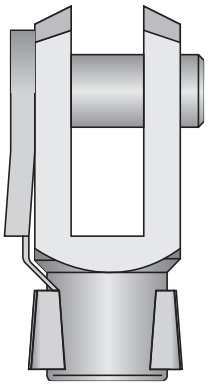


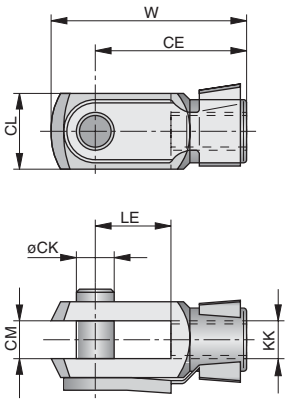
Order Instructions, Dimension Table (mm)

Order Instructions Type	Order No.	Mounting plate	at 8 bar ØA	ØB	C_{max} **	E_{max} **	E_{min}	F	G*	H	J	K	L
SP-2B04	**KY 9612**	A	165	82	110	190	80	G1/4	M8	22	9	11	-
SP-2B05	**KY 8011**	B	165	110	80	160	80	G1/4	M8	44.5	-	-	-
SP-2B05A	**KY 8012**	B	170	110	105	185	80	G1/4	M8	44.5	-	-	-
SP-2B07	**KY 9589**	C	215	135	125	220	95	G1/4	M8	54	-	-	27
SP-2B12	**KY 9611**	C	250	160	150	240	90	G3/4	M8	89	-	-	38
SP-2B22	**KY 9591**	C	320	229	170	260	90	G3/4	M12	157.5	-	-	73
SP-2B34	**KY 8007**	D	390	288	170	260	90	G3/4	M8	158.8	-	-	-

* 15 deep
** These dimensions depend on the operating pressure: see force diagrams.

Piston Rod Clevis to CETOP RP 102P for Cylinder Diameter 10 – 320 mm





Material: galvanized steel

Cylinder Accessories

Piston rod clevis to CETOP RP 102 P
Piston rod eyes to CETOP RF 103 P
for cylinder diameter 10 – 320 mm

Series

GK.-.... (Piston rod clevis)
GA.-.... (Piston rod eyes)

Dimension Table (mm)

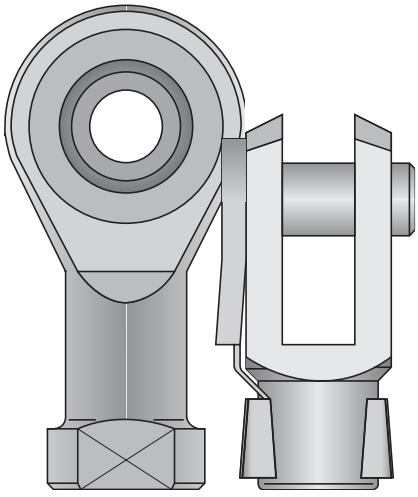
for Cyl.-Ø	ØCK	LE	CM	CL	W	CE	KK
10	4	8	4	8	22	16	M4
12, 16	6	12	6	12	31	24	M6
20	8	16	8	16	42	32	M8
32	10	20	10	20	52	40	M10
25, 32	10	20	10	20	52	40	M10x1.25
40	12	24	12	24	62	48	M12
40	12	24	12	24	62	48	M12x1.25
50, 63	16	32	16	32	83	64	M16
50, 63	16	32	16	32	83	64	M16x1.5
80, 100	20	40	20	40	105	80	M20x1.5
125	25	50	25	50	132 max.	100	M24x2
125	30	54	30	55	148 max.	112	M27x2
160, 200	35	72	36	70	188 max.	144	M36x2
250	40	84	40	85	245 max.	168	M42x2
320	50	96	50	96	277 max.	192	M48x2

Order Instructions and Weight

Order Instructions Type	Order No.	for Cyl.-Ø	Weight (mass) (kg)
GK-M4	**KZ 1413**	10	0.008
GK-M6	**KY 6132**	12, 16	0.016
GK-M8	**KY 6133**	20	0.038
GK-M10	**KY 6134**	32	0.08
GK-M10x1.25	**KY 6135**	25, 32	0.08
GK-M12	**KY 6138**	40	0.125
GK-M12x1.25	**KY 6136**	40	0.125
GK-M16	**KY 6140**	50, 63	0.3
GK-M16x1.5	**KY 6139**	50, 63	0.3
GK-M20x1.5	**KY 6141**	80, 100	0.52
GKN-M24x2	**KY 6142**	125	1.08
GKN-M27x2	**KY 6866**	125	1.5
GKN-M36x2	**KY 6867**	160, 200	2.9
GKN-M42x2	**KY 6868**	250	6.0
GKN-M48x2	**KL9131**	320	7.9

Assembly instructions:
When mounting the load avoid lateral forces on the piston rod.

Delivery includes:
Spherical clevis and hexagon nut. From Ø 125 upward, the safety clamp and the pin held with two circlips are omitted.

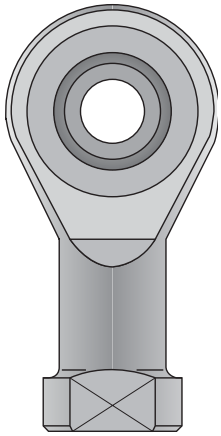


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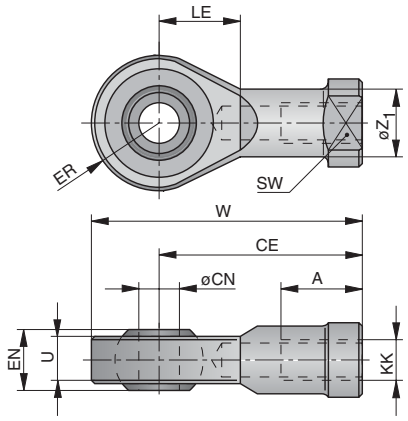
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The right to introduce technical modifications is reserved

Piston Rod Eye to CETOP RP 103 P for Cylinder Diameter 10 – 320 mm



Dimensions



Material:
galvanized steel

Dimension Table (mm)

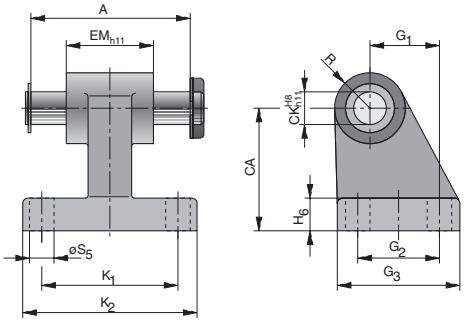
for Cyl.-Ø	ØCN^{H7}	LE	U	EN	ER	W	A	CE	KK	ØZ$_1$	SW
10	5	9	6	8	9	35	12	27	M4	9	8
12, 16	6	11	6.75	9	10	40	12	30	M6	10	11
20, 25	8	13	9	12	12	48	16	36	M8	12.5	14
32	10	15	10.5	14	14	57	20	43	M10	15	17
25, 32	10	15	10.5	14	14	57	20	43	M10x1.25	15	17
40	12	17	12	16	16	66	22	50	M12	17.5	19
40	12	17	12	16	16	66	22	50	M12x1.25	17.5	19
50, 63	16	22	15	21	21	85	28	64	M16	22	22
50, 63	16	22	15	21	21	85	28	64	M16x1.5	22	22
80, 100	20	26	18	25	25	102	33	77	M20x1.5	27.5	32
125	25	31	22	31	30 max.	124 max.	42 min.	94	M24x2	33.5	36
125	30	36	25	37	35 max.	145 max.	51 min.	110	M27x2	40	41
160, 200	35	41	28	43	40 max.	165 max.	56 min.	125	M36x2	46	50
250	40	46	33	49	45 max.	187 max.	60 min.	142	M42x2	53	55
320	50	59	45	60	58 max.	218 max.	65 min.	160	M48x2	65	65

Order Instructions and Weight

Order Instructions		for Cylinder-Ø	Weight (mass) (kg)
Type	**Order No.**		
GA-M4	**KX 6023**	10	0.021
GA-M6	**KY 6144**	12, 16	0.025
GA-M8	**KY 6145**	20, 25	0.043
GA-M10	**KY 6146**	32	0.072
GA-M10x1.25	**KY 6147**	25, 32	0.072
GA-M12	**KY 6185**	40	0.107
GA-M12x1.25	**KY 6148**	40	0.107
GA-M16	**KY 6149**	50, 63	0.21
GA-M16x1.5	**KY 6150**	50, 63	0.21
GA-M20x1.5	**KY 6151**	80, 100	0.38
GAN-M24x2	**KY 6152**	125	0.65
GAN-M27x2	**KY 6862**	125	1.0
GAN-M36x2	**KY 6863**	160, 200	1.6
GAN-M42x2	**KY 6864**	250	3.5
GAN-M48x2	**KL 9132**	320	5.2

Pivot for Mounting B to VDMA 24562

for 90° rotation

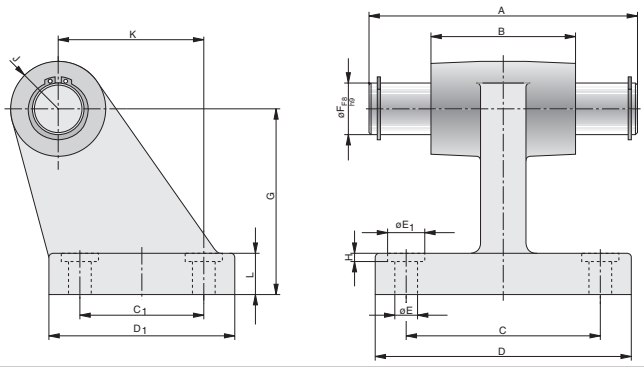


Material:
cast aluminium

Dimension Table (mm)

Cyl.Ø	A	CA	CK H8	EM	G_1	G_2	G_3	$H_{6\ h11}$	K_1	$K_{2\ h11}$	R_1	øS_5
32	46	32	10	26	21	18	31	8	38	50	10	6.6
40	53	36	12	28	24	22	35	10	41	53	11	6.6
50	61	45	12	32	33	30	45	12	50	64	13	9
63	71	50	16	40	37	35	50	12	52	66	15	9
80	91	60	16	50	47	40	60	14	66	84	15	11
100	111	70	20	60	55	50	70	15	76	94	19	11

Pivot to CETOP RP 107 P for Cylinder Diameter 125-250 mm



Material: nodular
graphite cast iron

Dimension Table (mm)

Cyl.Ø	A	B	C	C_1	D	D_1	ØE	$ØE_1$	ØF F8 h9	G	H_{max}	J	K	L
125	130	70	94	60	124	90	11	18	25	90	4	23	70	20
160	170	90	118	88	156	126	14	20	30	115	4	32	97	25
200	170	90	122	90	162	130	16	24	30	135	4	32	105	30
250	200	110	150	110	200	160	20	30	40	165	4	40	128	35
320	222	120	170	122	234	186	26	40	45	200	4.5	45	150	40

Order Instructions and Weight

Type	Order No.	for Cylinder Ø	Weight (kg)
GLN-032	**PD 40844**	32	0.092
GLN-040	**PD 40845**	40	0.131
GLN-050	**PD 40846**	50	0.193
GLN-063	**PD 40847**	63	0.305
GLN-080	**PD 40848**	80	0.460
GLN-100	**PD 40849**	100	0.840
GLN-125	**PD 24027**	125	3.0
GLN-160	**PD 24028**	160	6.5
GLN-200	**PD 39193**	200	8.0
GLN-250	**PD 39194**	250	13.5
GLN-320	**KL9129**	320	21.90

For cylinders see 2.29.001E, 2.30.050E, 2.51.001E, 2.75.002E

Cylinder Accessories

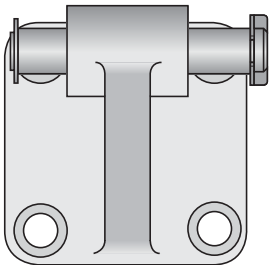
Pivot for mounting B
- **for cylinder diameter 32-100 mm to VDMA 24562**
- **for cylinder diameter 125-320 mm to CETOP RP 107 P**

For 90° rotation

Series GLN-...

Pivot consisting of:

Bracket
Pin
Circlip



A1P340E00JZ00X

The right to introduce technical modifications is reserved

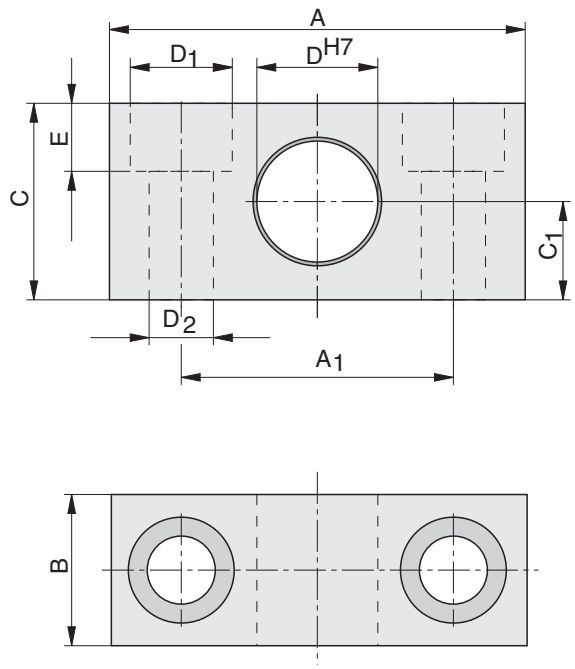
HOERBIGER ORIGA

Cylinder Accessories

Pivot for mounting EN for cylinder diameter 32 – 320 mm

Series EL-..

Dimensions



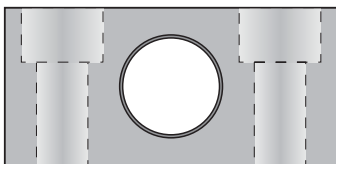
Material: Ø32 – 125 cast aluminium
Ø160 – 320 aluminium

Dimension Table (mm)

for Cyl.-Ø	A	A_1	B	C	C_1	ØD^{H7}	$ØD_1$	$ØD_2$	E
32	55	36	20	26	13	12	13.5	8.4	9
40, 50	55	36	20	26	13	16	13.5	8.4	9
63, 80	65	42	25	30	15	20	16.5	10.5	11
100, 125	75	50	28	40	20	25	19	13	13
160, 200	92	60	35	60	30	32	26	18	17
250	140	90	40	70	35	40	33	22	21.5
320	150	100	60	80	40	50	40	26	25.5

Order Instructions and Weight

Order Instructions Type	Order No.	for Cylinder-Ø	Weight (mass) (kg)
EL-032	**PD 23381**	32	0.06
EL-040/050	**PD 23382**	40, 50	0.06
EL-063/080	**PD 23383**	63, 80	0.10
EL-100/125	**PD 23384**	100, 125	0.175
EL-160/200	**PD 24425**	160, 200	0.35
EL-250	**PD 25763**	250	0.50
EL-320	**KL 9130**	320	6.7 (steel)



For cylinder see 2.29.001E, 2.30.050E, 2.34.001E, 2.34.010E, 2.51.001E, 2.54.001E, 2.54.002E, 2.75.002E, 2.75.003E

A1P197E00LW00X

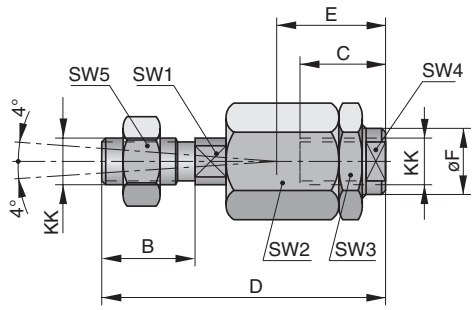
The right to introduce technical modifications is reserved

Cylinder Accessories

Compensating Coupling for Piston Rods

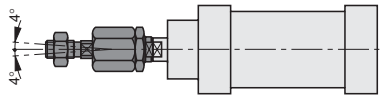
Series AK....

Dimensions

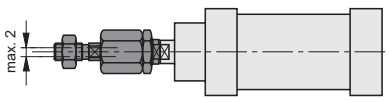


Dimension Table (mm)

Type	KK	B	C	D	E	ØF	SW1	SW2	SW3	SW4	SW5
AK-M4	M4	8	14	34	20	12.0	3	12	12	12	7
AK-M6	M6	12	11	36	14	8.5	5	13	13	7	10
AK-M8	M8	13	14	46	20	12.5	7	17	17	10	13
AK-M10	M10	20	23	70	31	21.5	12	30	30	19	17
AK-M10x1.25	M10x1.25	20	23	70	31	21.5	12	30	30	19	17
AK-M12	M12	23	23	67	31	21.5	12	30	30	19	19
AK-M12x1.25	M12x1.25	23	23	67	31	21.5	12	30	30	19	19
AK-M16	M16	40	32	112	45	33.5	19	41	41	30	30
AK-16x1.5	M16x1.5	40	32	112	45	33.5	19	41	41	30	30
AK-M20x1.5	M20x1.5	40	42	122	56	33.5	19	41	41	30	30
AK-M24x2	M24x2	48	48	147	51	39	22	55	55	32	36
AK-M27x2	M27x2	48	48	147	51	39	24	55	55	32	41
AK-M36x2	M36x2	95	50	251	110	80	32	75	75	50	55
AK-M42x2	M42x2	101	88	271	120	90	36	80	80	60	65
AK-M48x2	M48x2	101	88	271	120	90	36	80	80	60	65



Angular compensation

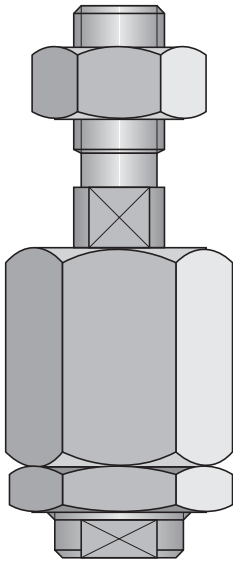


Radial compensation of the centre axis

Order Instructions and Weight

Order Instructions		Weight (mass) (kg)
Type	**Order No.**	
AK-M4	**KY1152**	0.018
AK-M6	**KY1126**	0.021
AK-M8	**KY1127**	0.049
AK-M10	**KY1128**	0.218
AK-M10x1.25	**KY1129**	0.218
AK-M12	**KY1130**	0.207
AK-M12x1.25	**KY1131**	0.207
AK-M16	**KY1132**	0.634
AK-M16x1.5	**KY1133**	0.637
AK-M20x1.5	**KY1134**	0.711
AK-M24x2	**KC5035**	1.65
AK-M27x2	**KC5036**	1.66
AK-M36x2	**KY1139**	5.4
AK-M42x2	**KY1140**	7.9
AK-M48x2	**KL9133**	7.9

Material: Steel
Tensile strength: 500-600 N/mm^2



The compensating coupling is used to connect the piston rod end of all types of cylinders to the machine parts which are to be moved.
It compensates for radial and angular misalignments.

HOERBIGER ORIGA

Data Sheet No. 2.90.005E-1

A1P280E00LLW00X

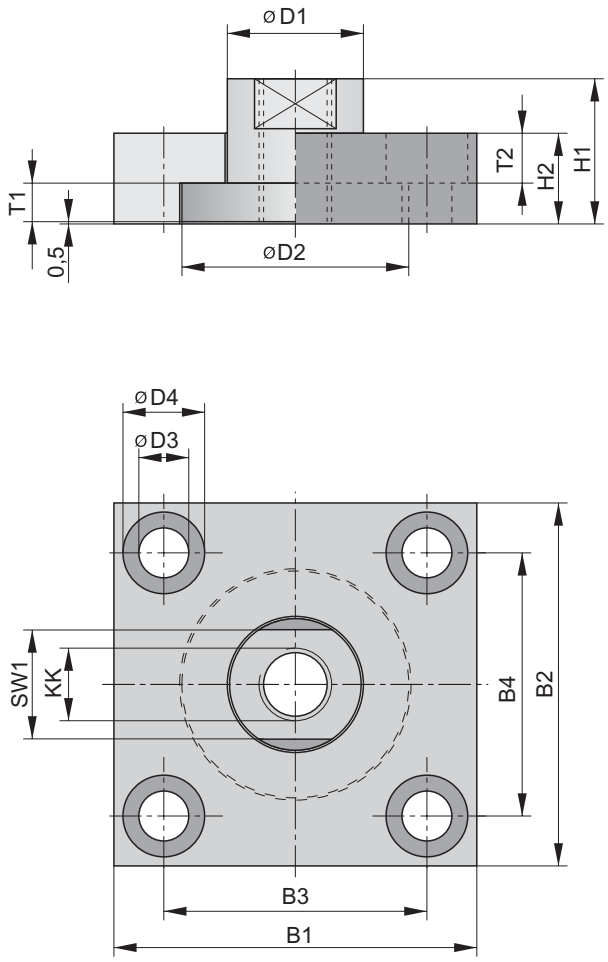
The right to introduce technical modifications is reserved

Cylinder Accessories

Coupling for piston rods

Series KS-..

Dimensions for Coupling



Material: steel, zinc-plated

Dimension Table (mm)

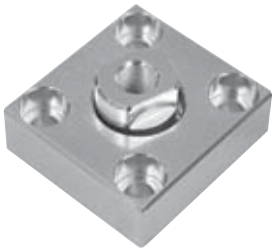
Cyl. Ø	B_1	B_2	B_3	B_4	$ØD_1$ H11	$ØD_2$	$ØD_3$ H13	$ØD_4$ H13	H_1	H_2	T_1	T_2	KK	SW1
32	60	37	36	23	20	30	6.6	11	24	15	7	7	M10x1.25	17
40	60	56	42	38	25	40	9	15	30	20	8	9	M12x1.25	19
50	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24
63	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24
80	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36
100	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36

Order Instructions and Weight

Type	Order No.	for Cylinder Ø	Weight (kg)
KSG-32	**KC 5224**	32	0.225
KSG-40	**KC 5225**	40	0.445
KSG-50/63	**KC 5226**	50, 63	0.900
KSG-80/100	**KC 5227**	80, 100	1.060

For cylinders see 2.28.001E, 2.28.025E, 2.29.001E, 2.34.010E, 2.75.002E

Included in delivery:
1 Flange
1 Threaded part



Data Sheet No. 2.90.019E-1

A1P735E00JZ00X

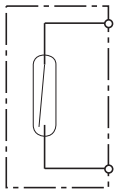
The right to introduce technical modifications is reserved

Cylinder Accessories

Magnetic Switches (Reed Contact)

Two wire technology
Universal voltage version
with LED-display
max. switching capacity: 20 W/30 VA

Series DZRK / DZRS



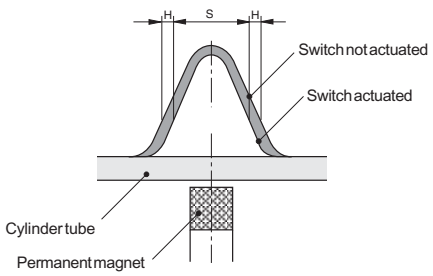
Characteristics

Characteristics	Symbol	Unit	Description	
Installation			In any position	
Material			Housing: Macrolon PI Mounting: Aluminium	
Ambient temperature range *)	ϑ_{min} ϑ_{max}	°C °C	-25 +75	
Service life			10 x 10^6 switching cycles	
Switching point accuracy			± 0.1 mm	
Max. impulse acceleration		m/s^2	50 g (contact closed)	
Voltage type			Universal: AC and DC	
Voltage			10-230 V 10-70 V for version with connector	
Contact type			1 make contact	
Switching capacity			20 W, 30 VA max.	
Max. switching current	$I_{S\ max}$	A	0.5	
Switching frequency		1/min	2200	
Degree of protection		IP	67 to EN60529	
Connection			PVC cable 2.5 m long, or with connector **)	
Weight (mass)		kg	0.052 (DZRK)	0.006 (DZRS)
with mounting			0.070 (DZRK)	0.025 (DZRS)

*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.
**) Cable 5 m long on request
PUR cable (oil resistant) on request

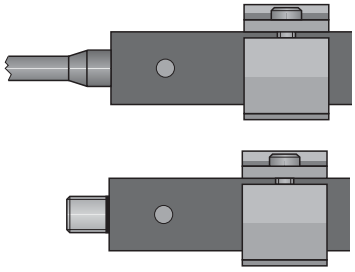
Switching Characteristics

H = Hysteresis
S = Response range



discontinued

The magnetic switches are mounted on the cylinder tie rods.
One or more switches can be fitted, depending on the stroke length.
For cylinders for contactless position sensing see Series DZ, AZZ.



Response Range, Overrun Speed

Cylinder Ø (mm)	Response range s	Overrun speed $V_{max.}$
32	11	$V_{max.} = \frac{s}{ta}$ ta = response time of following device
40	11	
50	13	
63	13	
80	15	
100	16	

Notes: other Cylinder Ø on request.

For cylinder data sheet see 2.30.050E, 2.34.010E, 2.75.002E
For installation instructions see A6P047E

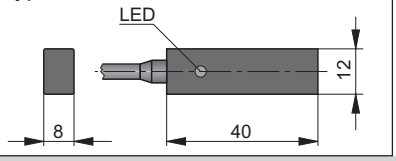
Data Sheet No. 2.90.031E-1

A1P468E00LW00X

The right to introduce technical modifications is reserved

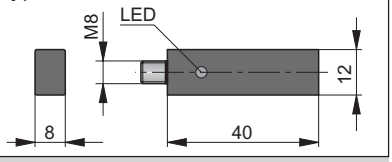
Dimensions (mm) Version with Cable

Type: DZRK



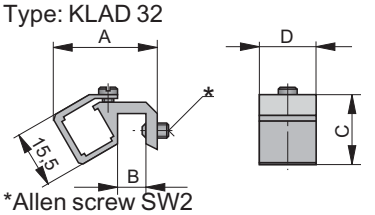
Dimensions (mm) Version with Connector

Type: DZRS



Mounting for Tie Rod Cylinder ø32-63mm

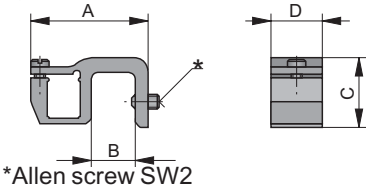
Type: KLAD 32



*Allen screw SW2

Mounting for Tie Rod Cylinder ø80-320mm

Type: KLAD 80 to KLAD 320

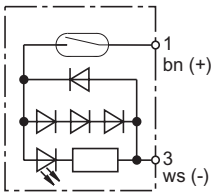


*Allen screw SW2

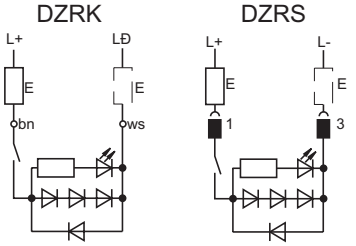
Dimension Table (mm) for Mounting

Type	for Cylinder ø	A	B	C	D
KLAD 32	32-63	27.5	8	18.5	15
KLAD 80	80-125	32.5	12.1	17.5	15
KLAD 160	160-200	41.5	17	18.5	14
KLAD 250	250	46.7	21	33	14
KLAD 320	320	48.2	24	40	15

Internal Construction



Examples of Connections

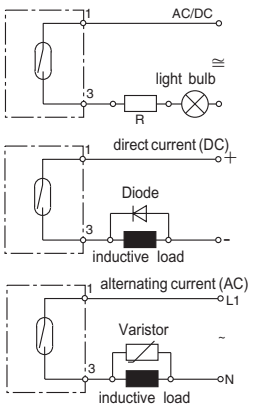


Connection Instructions

Referring to the "Examples of connections":

- The magnetic switches are not short circuitproof and must only be operated with their working resistance and never connected direct to mains supply.
- In DC operation, the switching function still works if polarity is reversed, but the function indicator (LED) is switched off (pole-safe).
- The switches can be used in positive or negative switching mode.
- Magnetic switches with connectors have 3 connections but only connections (1) and (3) are used. With the cable set, only the brown wire (+) and the blue wire (-) are used.

Examples of Additional Protective Measures



With large capacitive loads (long cable) or light bulbs, current limitation should be provided by a resistor R.

With large inductive loads (magnetic coils of higher capacity, relays, etc.) voltage peaks should be suppressed by a diode (with DC) or by a varistor (with AC).

discontinued

Order Instructions

Version			Order Instructions Type	Order No.
With cable 2.5 m long			**DZRK**	**KY 3235**
With connector			**DZRS**	**KY 3236**
Mounting element	32-63	(AZZ)	**KLAD32**	**KY 3217**
Mounting element	80-125	(AZZ, DZ)	**KLAD80**	**KY 3218**
Mounting element	160-200	(DZ)	**KLAD160**	**KY 3219**
Mounting element	250	(DZ)	**KLAD 250**	**KC 3146**
Mounting element	320	(DZ)	**KLAD 320**	**KL 5496**
Cable with connector for Type DZRS		2.5 m	**KS25**	**KY 3240**
		5 m	**KS50**	**KY 3241**
Cable Set with straight plug		2.5 m	**KSG**	**KC 3102**
		5 m	**KSG**	**KC 3104**
Cable Set with bent plug (90°)		5 m	**KSW**	**KC 3106**

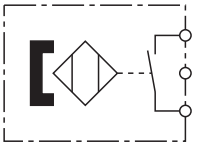
Cylinder Accessories

Magnetic Switches
PNP-switching
(magneto-resistiv)

CE

Three wire technology
DC Version
with LED indicator

Series DZMK / DZMS



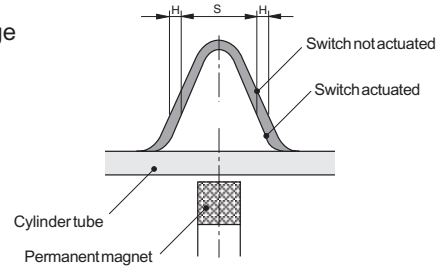
Characteristics

Characteristics	Symbol	Unit	Description	
Installation			In any position	
Material			Housing: Macrolon PI Mounting: Aluminium	
Ambient temperature range *)	ϑ_{min} ϑ_{max}	°C °C	-25 +75	
Service life			10 x 10^6 switching cycles	
Switching point accuracy			± 0.1 mm	
Max. impulse acceleration		m/s^2	50 g (contact closed)	
Voltage type			DC	
Voltage			10-30 V	
Contact type			1 make contact	
Max. continuous current	$I_{D\ max}$	A	0.2	
Max. switching frequency		1/s	10000	
Degree of protection		IP	67 to EN60529	
Connection			PVC cable 2.5 m long, or with connector **)	
Weight (mass)		kg	0.052 (DZMK)	0.006 (DZMS)
with mounting			0.070 (DZMK)	0.025 (DZMS)

*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.
**) Cable 5 m long on request
PUR cable (oil resistant) on request

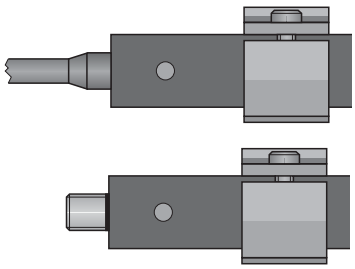
Switching Characteristics

H = Hysteresis
S = Response range



Note: Electromagnetic compatibility (EMV) to EN 50082-2/ individual specification to IEC 801

The magnetic switches are mounted on the cylinder tie rods.
One or more switches can be fitted, depending on the stroke length (offset to each other on the circumference, if desired).
For cylinders for contactless position, sensing see Series DZ, AZZ.



Response Range, Overrun Speed

Cylinder Ø (mm)	Response range s	Overrun speed $V_{max.}$
32	10	$V_{max.} = \frac{s}{ta}$ ta = response time of following device
40	10	
50	11	
63	11	
80	12	
100	13	

Notes: other Cylinder Ø on request.

For cylinder data sheet see 2.30.050E, 2.34.010E, 2.75.002E, 2.75.003E
For installation instructions see A6P047E

Data Sheet No. 2.90.032E-1

discontinued

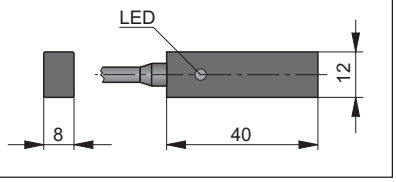
A1P469E00LW00X

The right to introduce technical modifications is reserved

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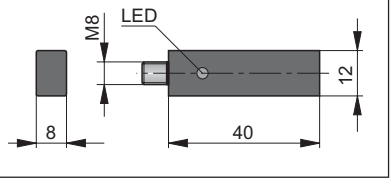
Dimensions (mm) Version with Cable

Type: DZMK



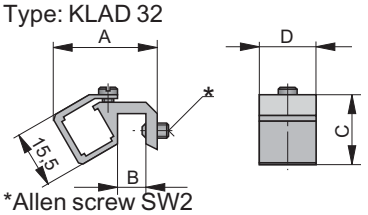
Dimensions (mm) Version with Connector

Type: DZMS



Mounting for Tie Rod Cylinders ø32-63mm

Type: KLAD 32



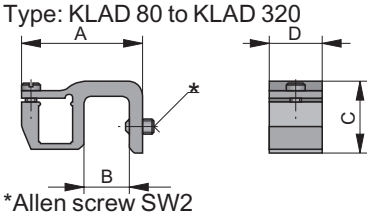
*Allen screw SW2

Dimensions Table (mm) for Mountings

Type	for Cylinder ø	A	B	C	D
KLAD 32	32-63	27.5	8	18.5	15
KLAD 80	80-125	32.5	12.1	17.5	15
KLAD 160	160-200	41.5	17	18.5	14
KLAD 250	250	46.7	21	33	14
KLAD 320	320	48.2	24	40	15

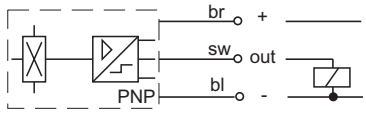
Mounting for Tie Rod Cylinders ø80-320mm

Type: KLAD 80 to KLAD 320

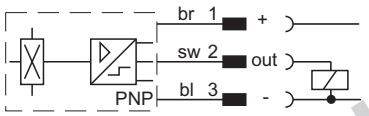


*Allen screw SW2

Example of DZMK Connections



Example of DZMK Connections



Connection Instructions

Referring to the "Examples of connections":

- The magnetic switches are not short circuit-proof.
- If connection polarity is reversed, the switching function still works (pole-safe).
- The switches are to be used in positive switching mode.

discontinued

Order Instructions

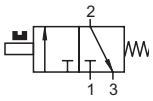
Version	Order Instructions Type	Order No.
With cable 2.5 m long	**DZMK**	**KY 3237**
With connector	**DZMS**	**KY 3238**
Mounting element 32-63 (AZZ)	**KLAD 32**	**KY 3217**
Mounting element 80-125 (AZZ, DZ)	**KLAD 80**	**KY 3218**
Mounting element 160-200 (DZ)	**KLAD 160**	**KY 3219**
Mounting element 250 (DZ)	**KLAD 250**	**KC 3146**
Mounting element 320 (DZ)	**KLAD 320**	**KL 5496**
Cable with connector for Type DZMS 2.5 m	**KS 25**	**KY 3240**
5 m	**KS 50**	**KY 3241**
Cable Set with straight plug 2.5 m	**KSG**	**KC 3102**
5 m	**KSG**	**KC 3104**
Cable Set with bent plug (90°) 5 m	**KSW**	**KC 3106**

Cylinder Accessories

Magnetic Switches (pneumatic)

with output indicator (pin)

Series DZPV



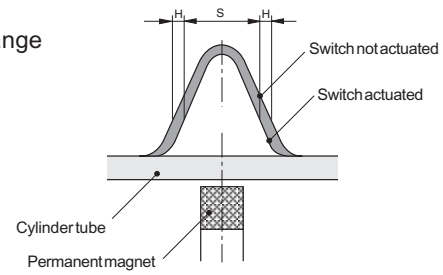
Characteristics

Characteristics	Symbol	Unit	Description
Installation			In any position
Material			Housing: Macrolon
Ambient temperature range *)	ϑ_{min} ϑ_{max}	°C °C	-10 +60
Service life			10 x 10^6 switching cycles
Switching point accuracy		mm	± 0.2
Max. impulse acceleration		m/s^2	50 g
Nominal diameter		mm	2
Medium			Filtered compressed air
Filter fineness	max.	µm	40
Lubrication			None required
Nominal pressure		bar	6
Operating pressure range	p_{min} p_{max}	bar bar	2 6
Nominal flow		l/min	40
Switching frequency		Hz	40 (without switching volume)
Connection			Push-on nipples for NW3 tubing
Weight (mass)		kg	0.014
with mounting			0.020

*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.

Switching Characteristics

H = Hysteresis
S = Response range

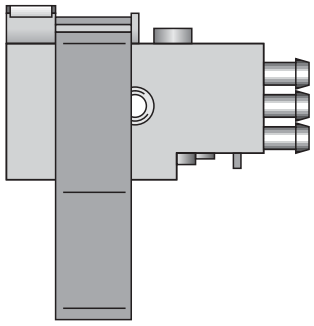


Response Range, Overrun Speed

Cylinder Ø (mm)	Response range s	Overrun speed $V_{max.}$
32	12	$V_{max.} = \frac{s}{ta}$ ta = response time of following device
40	12	
50	12	
63	13	
80	13	
100	13	

For cylinder data sheet see 2.29.001E, 2.34.001E, 2.51.001E, 2.54.001E-002E, 2.75.003E
For installation instructions see A6P047E

The magnetic switches are mounted on the cylinder tube profile.
One or more switches can be fitted, depending on the stroke length.
For cylinders for contactless position sensing see Series AZ,AZV.



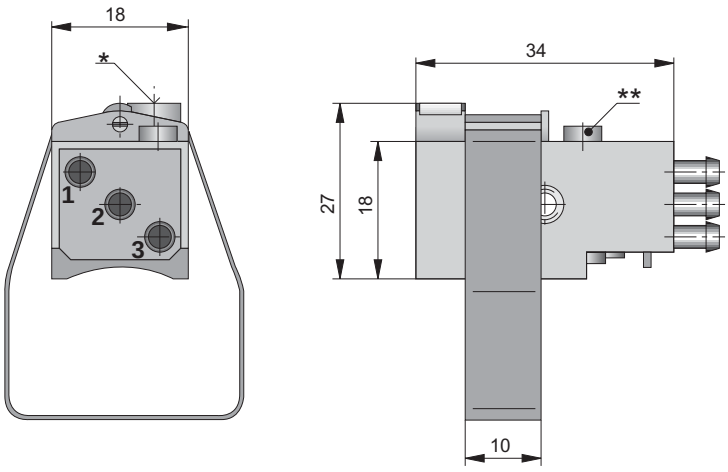
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A1P470E00BU40X

TThe right to introduce technical modifications is reserved

Dimensions (mm) for Tube Connection NW3

Type: DZPV

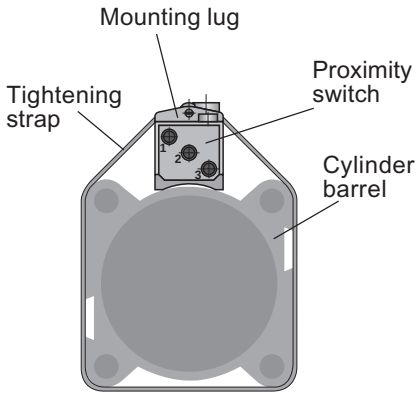


* Tightening screw
** Indicator

Assembly Instructions

- The mounting is designed only for AZ cylinders. The switch must be mounted on a radiussed side of the cylinder barrel (not on a side with a dovetail groove).
- When fitting the DZPV, ensure that the tightening screw between strap and switch is tightened with a torque not exceeding 1.5 Nm.
- To avoid interference from other magnetic fields, pneumatic cylinders installed close together should be at least 20 mm apart.
- To avoid interference from other ferromagnetic components with the function of the DZPV, a minimum spacing of 15 mm should be maintained.
- When fitting the DZPV, ensure that port 3 (exhaust) is never closed.

  The DZPV pneumatic proximity switch requires the following operating conditions:
  - filtered and moderately lubricated compressed air
  - compressed air without aggressive constituents
  - operating pressure from 2 to 8 bar



Order Instructions

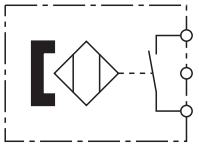
Version	Cylinder ø	Order Instructions	
		Type	**Order No.**
Switch		**DZPV**	**KZ 2364**
Mounting element	32-100	**KLAZ 32**	**KC 8255**

Cylinder Accessories

Magnetic Switches
NPN-switching
(magneto-resistiv)

Three wire technology
DC Version
with LED indicator

Series DZMK0600
DZMS0600



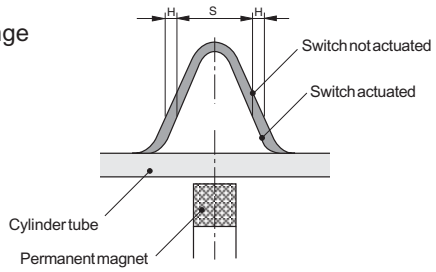
Characteristics

Characteristics	Symbol	Unit	Description	
Installation			In any position	
Material			Housing: Macrolon PI Mounting: Aluminium	
Ambient temperature range *)	ϑ_{min} ϑ_{max}	°C °C	-25 +75	
Service life			10 x 10^6 switching cycles	
Switching point accuracy			± 0.1 mm	
Max. impulse acceleration		m/s^2	50 g (contact closed)	
Voltage type			DC	
Voltage			10-30 V	
Contact type			1 make contact	
Max. continuous current	$I_{D\ max}$	A	0.2	
Max. switching frequency		1/s	10000	
Degree of protection		IP	67 to EN60529	
Connection			PVC cable 2.5 m long, or with connector **)	
Weight (mass)		kg	0.052 (DZMK)	0.006 (DZMS)
with mounting			0.070 (DZMK)	0.025 (DZMS)

*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.
**) PUR cable (oil resistant) on request

Switching Characteristics

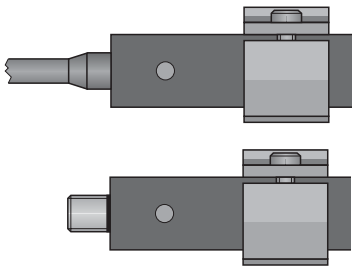
H = Hysteresis
S = Response range



discontinued

Note: Electromagnetic compatibility (EMV) to EN 50082-2/ individual specification to IEC 801

The magnetic switches are mounted on the cylinder tie rods.
One or more switches can be fitted, depending on the stroke length (offset to each other on the circumference, if desired).
For cylinders for contactless position sensing see Series DZ, AZZ.



Response Range, Overrun Speed

Cylinder Ø (mm)	Response range s	Overrun speed $V_{max.}$
32	10	$V_{max.} = \frac{s}{ta}$ ta = response time of following device
40	10	
50	11	
63	11	
80	12	
100	13	

Notes: other Cylinder Ø on request.

For cylinder data sheet see 2.30.050E, 2.34.010E, 2.75.002E
For installation instructions see A6P047E

Data Sheet No. 2.90.036E-1

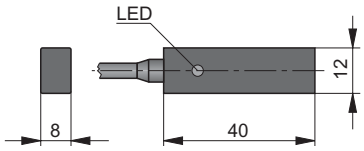
A1P495E00LW00X

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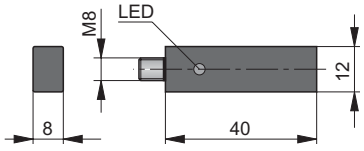
Dimensions (mm) Version with Cable

Type: DZMK0600



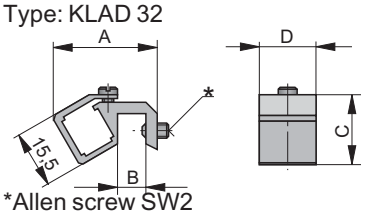
Dimensions (mm) Version with Connector

Type: DZMS0600



Mounting for Tie Rod Cylinder ø32-63mm

Type: KLAD 32



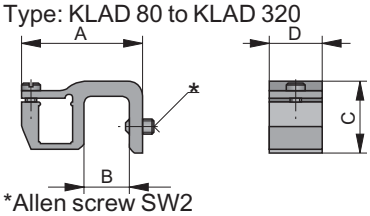
*Allen screw SW2

Dimensions Table (mm) for Mountings

Type	for Cylinder ø	A	B	C	D
KLAD 32	32-63	27.5	8	18.5	15
KLAD 80	80-125	32.5	12.1	17.5	15
KLAD 160	160-200	41.5	17	18.5	14
KLAD 250	250	46.7	21	33	14
KLAD 320	320	48.2	24	40	15

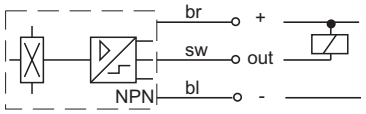
Mounting for Tie Rod Cylinder ø80-320mm

Type: KLAD 80 to KLAD 320

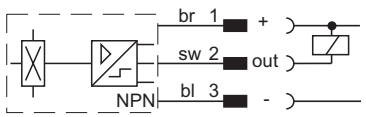


*Allen screw SW2

Example of DZMK0600 Connections



Example of DZMS0600 Connections



Connection Instructions

Referring to the "Examples of connections":

- The magnetic switches are not short circuit-proof.
- If connection polarity is reversed, the switching function still works (pole-safe).
- The switches are to be used in negative switching mode.

discontinued

Order Instructions

Version			Order Instructions Type	Order No.
With cable 2.5 m long			**DZMK0600**	**KC 3048**
With connector			**DZMS0600**	**KC 3049**
Mounting element	32-63	(AZZ)	**KLAD32**	**KY 3217**
Mounting element	80-125	(AZZ, DZ)	**KLAD80**	**KY 3218**
Mounting element	160-200	(DZ)	**KLAD160**	**KY 3219**
Mounting element	250	(DZ)	**KLAD 250**	**KC 3146**
Mounting element	320	(DZ)	**KLAD 320**	**KL 5496**
Cable with connector for Typ DZMS0600		2.5 m	**KS25**	**KY 3240**
		5 m	**KS50**	**KY 3241**
Cable Set with straight plug		2.5 m	**KSG**	**KC 3102**
		5 m	**KSG**	**KC 3104**
Cable Set with bent plug (90°)		5 m	**KSW**	**KC 3106**

Cylinder Accessories

Magnetic Switches
– welding proof –

Version:
- **inductive**
  pnp and npn switching
- **LED indication**

Series UMS 7000 (pnp)
UMS 7600 (npn)

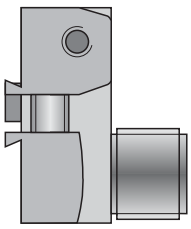
Characteristics			
Characteristics	Symbol	Unit	Description
Installation			In any position
Material			Housing: PA12-GF30 Metal housing Mounting: Aluminium anodised
Ambient temperature range *)	ϑ_{min} ϑ_{max}	°C °C	-25 +70
Service life			10 x 10^6 switching cycles
Hysteresis		mm	≤1.0
Repeatability		mm	≤ 0.1
Shock resistance		m/s^2	Max. 50 g
Switching impulse			Positive (pnp) or negative (npn)
Operating voltage			Direct current (DC)
Voltage		V	10-30
Current drop		V	Max.1.8
Contact function			Make contact
All. residual ripple		%	10
Current consumption		mA	Max. 2.0
Switching current		A	Max. 0.2
Switching frequency		Hz	40
Degree of protection		IP	67 to EN60529
Short circuit protection			Built in
Pole reversal protection			Built in
Connection			3-pole connector M12x1
Operation indicator			LED

*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.

discontinued

The magnetic switches are fitted into the dovetail rails of the AZ, SZ or OSP-P cyllinders and fixed into their position with the mounting element.

Note:
Not suited for cylinder series NZK

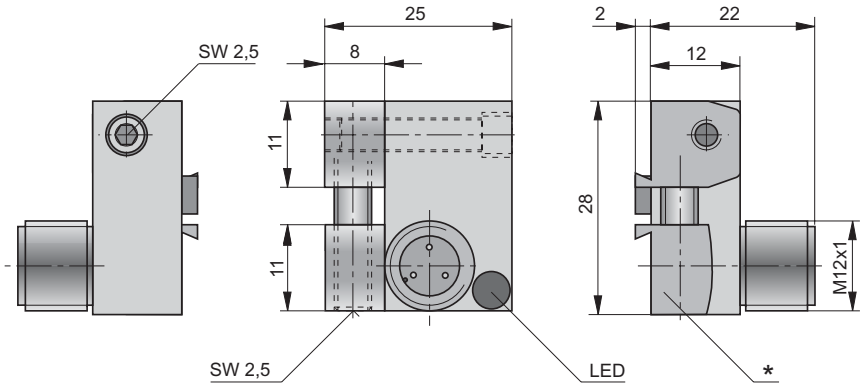


For cylinder data sheet see 2.29.001E, 2.34.001E, 2.51.001E, 2.54.001E, 2.54.002E

A1P537E00IX00X

The right to introduce technical modifications is reserved

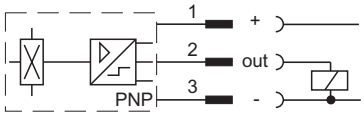
Dimensions (mm)



* Note:
Please order the mounting separately, it is not included with the sensor.

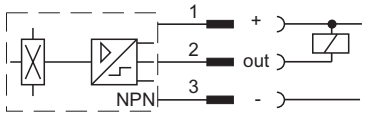
Electrical Connection Type UMS 7000

positive switching (pnp)



Electrical Connection Type UMS 7600

positive switching (pnp)

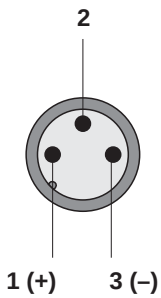


Assembly Instructions

Electrical connection:

- The magnetic switches are short circuit proof.
- Pole reversal does not lead to failure of switching function or loss of LED indication (pole safe).

Pin Assignment



discontinued

Order Instructions

Version	Order Instructions Type	Order No.
Magnetic switches – welding proof, pnp-switching	**UMS7000**	**KC 3372**
Magnetic switches – welding proof, npn-switching	**UMS 7600**	**KC 3375**
Mounting	**KLU**	**KC 8293**

Cylinder Accessories

Magnetic Switches

CE

Characteristics

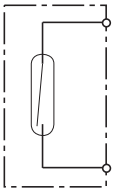
Characteristics	Symbol	Unit	Description	
Electrical Characteristics			**Type RS**	**Type ES**
Switching output			Reed	PNP/NPN
Operating voltage	U_B	V	10-240 AC/DC (NO) 10-150 AC/DC (NC)	10-30 DC
Voltage drop		V	≤ 3	≤ 2
Connection technology			2-wire	3-wire
Switching function			Normally open/closed	Normally open
Permanent current	I_{Dmax}	mA	< 200	
Breaking capacity		W	< 100	
Power consumption		mA	-	< 20
Function indicator			LED, yellow	
Response time		ms	< 2	< 2 (on)
Sensitivity		mT	2...4	2...4
Switch-off delay		ms	None	25
Short circuit proof			No	Yes
Pole reversal proof			No	Yes
Switchable capacity		µF	0.1 at 100 Ω, 24 VDC	
Switching point accuracy		mm	± 0.2 *	
Hysteresis		mm	1.5 for series OSP < 8 *	≤ 3 *)
EMC		EN	To 60947	
Service life			≥ 10 x 10^8 switching cycles	Theoretically unlimited
Mechanical Characteristics				
Housing			Macrolon, smoke colour	
Cable diameter		mm^2	2 x 0.14	3 x 0.14
Cable type			PVC highly flexible	
Cable length		m	Connector with 2.5 and 5.0 10 cm cable	
Bending radius		mm	Fixed ≥ 20, moving ≥ 70	
Weight		g	45 (RS-K); 10 (RS-S)	
Degree of protection		IP	67 to EN60529	
Ambient temperature range **)		°C	-25 to +80	
Shock resistance		G	< 50 at 50 Hz and 1mm stroke	

*) These values depend on the type and diameter of cylinder used.
– please consult us

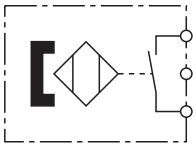
**) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.

Series

RS



ES



Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as standard. A yellow LED indicates operating status.

The magnetic switches are fitted in the dovetail slot in the profiles of **AZ-**, **SZ-, NZ-** and **NZK**-cylinders or with a strap mounting on **R**-type cylinders.



For cylinder data sheet see 2.13.004E, 2.14.010E, 011,025E, 2.28.001E, 2.29.001E, 2.34.001E, 2.47.001E, 2.51.001E, 2.54.001E, 002E

Data Sheet No. 2.90.040E-1

HOERBIGER ORIGA

A1P618E00BZ80X

The right to introduce technical modifications is reserved.

Type RS

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.
Direct connection with 2-pole cable, 5 m long, open ended **(Type RS-K).**

Type ES

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector. A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

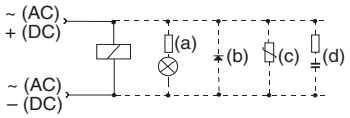
Magnetic Switches RS and ES

Electrical Service Life
Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

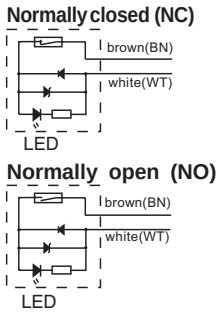
In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity

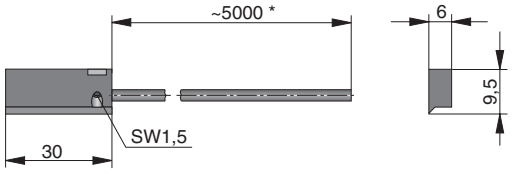


For the type ES, external protective circuits are not normally needed.

Electrical Connection, Type RS



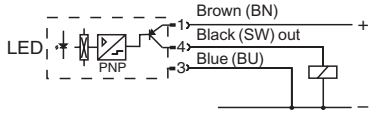
Dimensions (mm) – Type RS-K



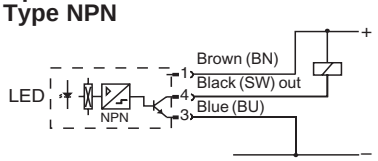
* Length with possible minus tolerance, see chart below

Electrical Connection, Type ES

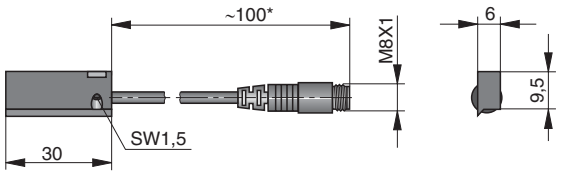
Standard Version:
Type PNP

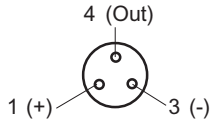


Optional Version
Type NPN



Dimensions (mm) – Type ES-S





PIN assignment
(view of pins) according to DIN EN 50044

* Length with possible minus tolerance, see chart below

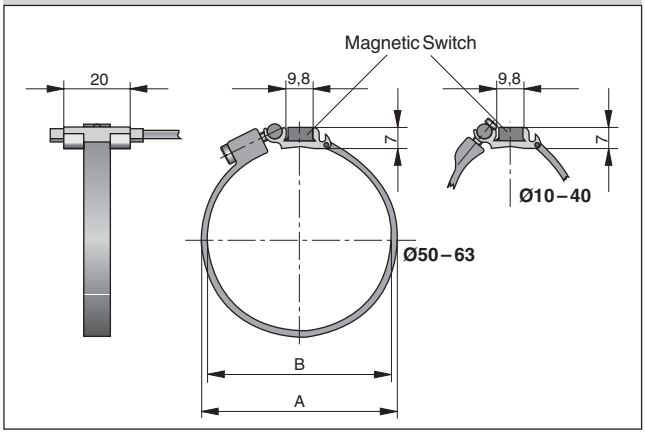
Length of connection cable with length tolerance

Sensor Order No.	Nominal cable length	Length tolerance
KL3043, KL3055, KL3059	2500 mm	– 50 mm
KL3045, KL3048, KL3056	5000 mm	– 50 mm
KL3054	100 mm	– 20 mm
KL3060	145 mm	± 5 mm

Order Instructions

Version	Imprint	Order Instructions Type	Order No.
Magnetic switch, reed contact, normally open, screw connector M8, Pin 4 neutral (not suitable for standard Bus nodes or valve islands)	1+ — 3, max. 70 V/0,2 A	**RS-S**	**KL3046**
Magnetic switch, reed contact, normally open, screw connector M8, Pin 3 neutral (ES-S compatible connector; preferred type)	1+ — 4, max. 70 V/0,2 A	**RS-S**	**KL3047**
Magnetic switch, reed contact, normally closed, screw connector M8, Pin 3 neutral	1+ — 4, max. 70 V/0,2 A	**RS-S**	**KL3087**
Magnetic switch, reed contact, normally closed with 5.0 m cable	bn+, max. 150 V/0,2 A	**RS-K**	**KL3048**
Magnetic switch, reed contact, normally open with 2.5 m cable	bn+, max. 240 V/0,2 A	**RS-K**	**KL3043**
Magnetic switch, reed contact, normally open with 5.0 m cable	bn+, max. 240 V/0,2 A	**RS-K**	**KL3045**
Magnetic switch, electronic, PNP-Switching with screw connector M8,	PNP	**ES-S**	**KL3054**
Magnetic switch, electronic, NPN-Switching with screw connector M8,	NPN	**ES-S**	**KL3060**
Magnetic switch, electronic, PNP-Switching with 2.5 m cable	PNP	**ES-K**	**KL3055**
Magnetic switch, electronic, NPN-Switching with 2.5 m cable	NPN	**ES-K**	**KL3059**
Magnetic switch, electronic, PNP-Switching with 5.0 m cable	PNP	**ES-K**	**KL3056**
Cable set 2.5 m and connector M8 with union nut		**KSG25**	**KC3102**
Cable set 5.0 m and connector M8 with union nut		**KSG50**	**KC3104**
Connector M8 without cable for custom made cables		**STG8**	**KC3152**

Mountings for Round Cylinders Series R, RDV



Dimension Table and Order Instructions for Mounting

Cyl.-ø	Dimension (mm) A	B	Type	Order No.
10	14.2	11.2	**SCHR10**	**PD45854**
12	16.2	13.2	**SCHR12**	**PD45855**
16	17.2	20.2	**SCHR16**	**PD45856**
20	24.2	21.2	**SCHR20**	**PD45857**
25	29.6	26.6	**SCHR25**	**PD45858**
32	38	35	**SCHR32**	**PD45705**
40	46.4	43	**SCHR40**	**PD45859**
50	57.8	54	**SCHR50**	**PD45860**
63	71	67	**SCHR63**	**PD45861**

Cylinder Accessories

Magnetic Switches

Series RST
EST

Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as standard. A yellow LED indicates operating status.

The magnetic switches are mounted directly in the T-slot of **NZ** and **FZ** cylinders or, with the adapter, in the dovetail slot in the profiles of **AZ**, **SZ**, **OSP** and **NZK** cylinders.
For **R**-type cylinders a special strap mounting is used.

Characteristics

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			**Type RST**	**Type EST**
Switching output			Reed	PNP
Operating voltage	U_B	V	10-30 AC/DC	10-30 DC
Ripple	U_b		-	≤ 10%
Voltage drop		V	≤ 3	≤ 2
Electrical configuration			2 wire	3 wire
Output function			Normally open/closed	Normally open
Permanent current	I_{Dmax}	mA	≤ 100	≤ 100
Breaking capacity		W	≤ 6 peak	-
Power consumption, at U_B=24V, switched on, without load		mA	-	≤ 10
Function indicator			LED, yellow (not for normally closed)	
Response time		ms	≤ 2	≤ 0.5
Sensitivity		mT	2...4	2...4
Time delay before availability		ms	-	≤ 2
Reverse polarity prot.			yes	yes
Short-circuit protection			no	yes (pulsed)
Switchable capacity load		µF	0.1 at 100 Ω, 24 VDC	
Switching frequency		Hz	≤ 400	≤ 5 k
Repeatability		mm	≤ 0.2	≤ 0.2
Hysteresis		mm	≤ 1.5	≤ 1.5
EMC		EN	60947-5-2	
Lifetime			≥ 35 Mio. cycles wit PLC load	unlimited
Power-up pulse suppression			-	yes
Protection for inductive load			-	yes
Mechanical Characteristics				
Housing			Plastic / PA66 + PA6I red	
Cable cross section		mm^2	2 x 0.14	3 x 0.14
Cable type			PUR, black	PUR, black
Bending radius		mm	≥ 36	≥ 30
Weight		kg	ca. 0.030 RST-K ca. 0.010 RST-S	ca. 0.030 EST-K ca. 0.010 EST-S
Degree of protection		IP	67 to EN 60529	
Ambient temperature range [1]		°C	-25...+80	-25 to +75 at U_B=10-30 V -25 to +80 at U_B=10-28 V
– with adapter		°C	-25...+60	
Adapter tightening torque		Nm	0.15 (tightening torque for screwing adapter onto magnetic switch)	
Shock resistance				
Vibration stress to EN 60068-2-6		G	15, 11ms, 10 to 55 Hz, 1 mm	
Shock to EN 60068-2-27		G	50, 11 ms	
Bump to EN 60068-2-29		G	30, 11 ms, 1000 bumps each axis	

For product group overview see 2.01.001E

[1] For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.



HOERBIGER ORIGA

A1P699E00AAE15X

The right to introduce technical modifications is reserved.

Type RST

In the type RST contact is made by a mechanical **reed switch** encapsulated in glass.

Type EST

In the type EST contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection.Fitted with connection cable 100 mm long with connector. A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

Magnetic Switches RST and EST

Electrical Service Life
Protective Measures

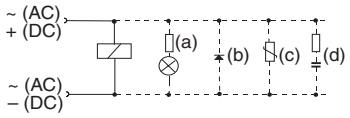
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Connection Examples

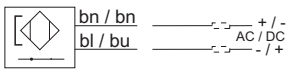
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



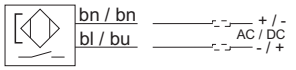
For the type EST, external protective circuits are not normally needed.

Electrical Connection Type RST-K

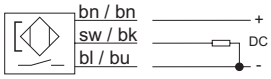
Normally closed



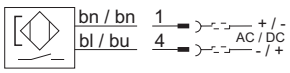
Normally open



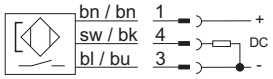
Electrical Connection Type EST-K



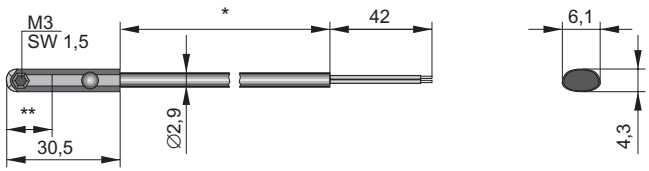
Electrical Connection Type RST-S



Electrical Connection Type EST-S



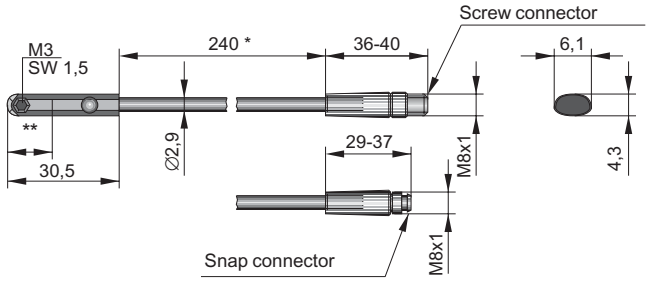
Dimensions (mm) – Type RST-K, EST-K



* Cable lengths available: 5000 mm ± 75 mm
2000 mm ± 40 mm

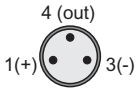
** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

Dimensions (mm) – Type RST-S, EST-S



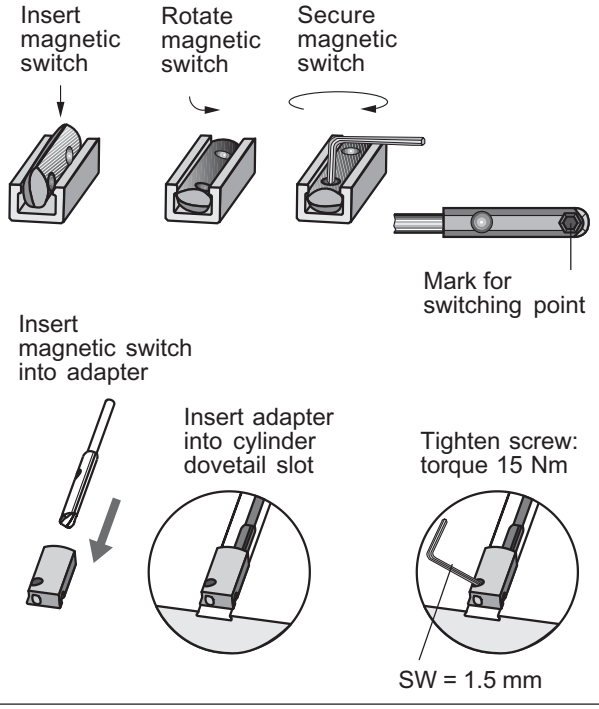
* ± 6 mm

** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

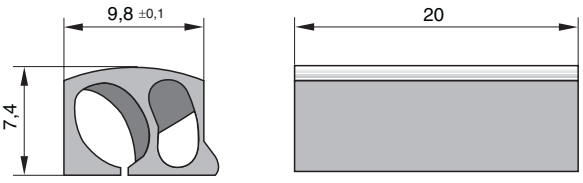


PIN assignment
(view of pins)
to DIN EN 50044

Installation



Dimensions of Adapter for Magnetic Switch



Order Instructions

Version	Voltage	Order Instructions Type	Order No.
Magnetic switch, reed contact, normally open, LED indicator, cable 2 m	10-30 V AC / DC	**RST-K**	**KL 3301**
Magnetic switch, reed contact, normally open, LED indicator, cable 5 m	10-30 V AC / DC	**RST-K**	**KL 3300**
Magnetic switch, reed contact, normally open, snap connector M8, LED indicator cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL 3302**
Magnetic switch, reed contact, normally open, screw connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL 3303**
Magnetic switch, reed contact, normally closed, cable 5 m	10-30 V AC / DC	**RST-K**	**KL 3305**
Magnetic switch, electronic, PNP, LED indicator, cable 2 m	10-30 V DC	**EST-K**	**KL 3308**
Magnetic switch, electronic, PNP, LED indicator, cable 5 m	10-30 V DC	**EST-K**	**KL 3309**
Magnetic switch, electronic, PNP snap connector M8, LED indicator	10-30 V DC	**EST-S**	**KL 3312**
Magnetic switch, electronic, PNP screw connector M8, LED indicator	10-30 V DC	**EST-S**	**KL 3306**

Included in delivery: 1 magnetic switch
1 adapter for dovetail slot mounting

Accessories

Description	Order Instructions Type	Order No.
Cable M8, 2.5 m without lock nut	**KS 25**	**KY 3240**
Cable M8, 5.0 m without lock nut	**KS 50**	**KY 3241**
Cable M8. 10.0 m without lock nut	**KS 100**	**KY 3140**
Cable M8, 2.5 m with lock nut	**KSG 25**	**KC 3102**
Cable M8, 5.0 m with lock nut	**KSG 50**	**KC 3104**
Adapter for dovetail slot (pack of 10)		**KL 3333**

Components for EX-Areas

Magnetic Switches ø 10 – 80 mm

Series: RS-K..ATEX
ES-K..ATEX

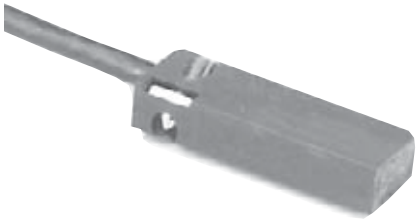
For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted. Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all HOERBIGER-ORIGA aluminum profile rod type cylinders.

Characteristics

Characteristics	Symbol	Unit	Description	
Elektrical Characteristics			**Type RS-K ATEX**	**Type ES-K ATEX**
ATEX Certification			yes	yes
Category Type: RS-K			⟨Ex⟩ II 3GD EEX nC IIC T3 146°C	
Category Type: ES-K			⟨Ex⟩ II 2GD EEX ib IIC T5 100°C	
Switching output			Reed	NAMUR
Operating voltage	U_B	V	10-240 AC/DC	7-10 DC
Voltage drop		V	≤ 3	–
Electrical configuration			Two wire	Two wire
Output function			Normally open	Normally open
Permanent current	I_{Dmax}	mA	≤ 200	≤ 3
Power consumption		W/VA	≤10/10 peak	–
Peak current		mA	≤ 500	–
Power consumption without load		mA	–	≤ 1
Function indicator			LED, yellow	
Response time On/Out		ms	≤ 2	≤ 0.5
Sensitivity		mT	2-4	2-4
Reverse polarity prot.			yes	yes
Short-circuit protection			no	yes
Repeatability		mm	≤ 0.2	≤ 0.2
Hysteresis		mm	≤ 1.5	≤ 1.5
EMV		EN	60947-5-2	
Lifetime			≥ 10 Mio. Cycles with PLC load	
Mechanical Characteristics				
Housing			Makrolon, smoke color	
Cable cross section		mm^2	2 x 0.14	2 x 0.14
Cable type			PVC, blau	PVC, blue
Weight		kg	ca. 0.075	
Degree of protection		IP	67 to EN 60529	
Ambient temperature range *)		°C °C	-25 +80	-20 +75
Surface temperature		°C	The maximum surface temperature T=146°C is reffered to the max. ambiente temperature of 80°C	
Shock resistance				
Vibration and Shock			50G at 50Hz and 1mm	

*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.



For Cylinders in ATEX-Version see 2.01.001E-5, 6

Data Sheet No. 2.90.043E-1

A1P710E00HAE15X

The right to introduce technical modifications is reserved.

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Magnetic Switches Type RS-K ATEX-Version

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.

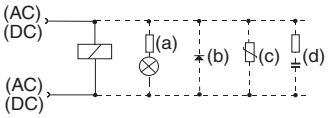
ATEX-Kategorie Type: RS-K
⟨Ex⟩ II 3GD EEX nC IIC T3 146°C

Electrical Service Life Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



Magnetic Switches Type ES-K ATEX-Version

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations.

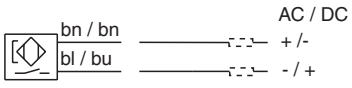
ATEX-Category Type: ES-K
⟨Ex⟩ II 2GD EEX ib IIC T5 100°C

Note!

The connection of the magnetic switch Type ES-K ATEX must be realised my means of an EEX i switching amplifier (see Accessories).

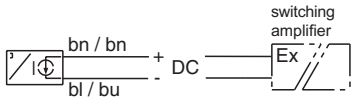
Electrical Connection Type RS-K ATEX

Make contact (Reed)

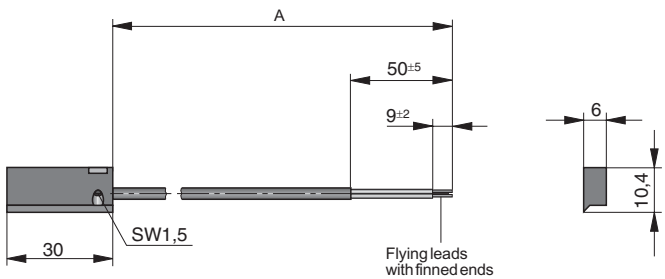


Electrical Connection Type ES-K ATEX

Make contact (NAMUR)



Dimensions (mm)



Dimension Table (mm)

Magnetic switch Order No.	Nominal cable length A	Lenghts tolerance
KL3240	5000	- 50
KL3241	10000	- 50
KL3250	5000	- 50
KL3251	10000	- 50

Order Instructions

Version	Voltage	Order Instructions	
		Type	**Order No.**
Magnetic switch, reed contact, normally open, LED indicator, cable 5 m	10-240 V AC/DC	**RS-K ATEX**	**KL3240**
Magnetic switch, reed contact, normally open, LED indicator, cable 10 m	10-240 V AC/DC	**RS-K ATEX**	**KL3241**
Magnetic switch, elektronic, NAMUR, normally open, LED indicator, cable 5 m	7-10 V DC	**ES-K ATEX**	**KL3250**
Magnetic switch, elektronic, NAMUR, normally open, LED indicator, cable 10 m	7-10 V DC	**ES-K ATEX**	**KL3251**

Accessories

Description	**for magnetic switch**	**Order No.**
2 channel switching amplifier 24 V DC	**ES-K ATEX**	**2876**
2 channel switching amplifier 220 V AC	**ES-K ATEX**	**1546**

Note: 2 magnetic switches can be connected to each switching amplifier.

CONTROL ELEMENTS

Valves and Valve Islands



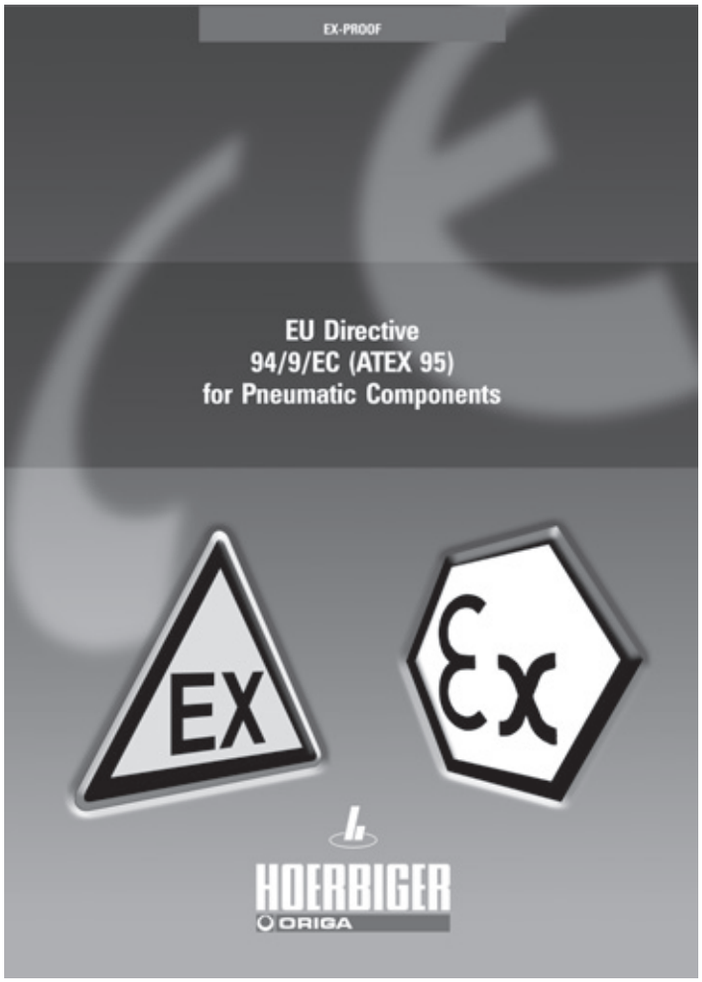
HOERBIGER

ORIGA

Valves for Ex Areas

The HOERBIGER-ORIGA Valves S9-G1/8 to G1/2 are also available for use in potentially explosive atmospheres. The valves are to the ATEX Certification 94/9/EG (ATEX 95) for Pneumatic Components.

For the different classifications and details please see the tables of characteristics and data for the specific series.



You will find further information on the ATEX Directives in our brochure A3P060E

Table of Contents

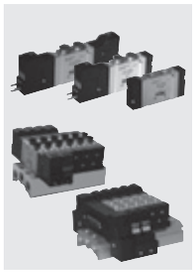
Page



Small Valves 5-11
3/2 Way Valves,
manually and mechanically actuated
Series K9-G1/8
Version for Panel Mounting
to DIN 43696



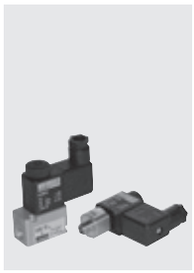
Flat Slide Valves 13-15
4/3 Way Valves, manually actuated
Series DRS-G1/8



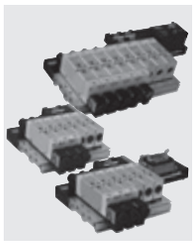
Compact Valves with Threaded Ports or Push-in Connections 17-36
Series S10-G1/8
3/2, 5/2, 5/3 Way Valves,
pneumatically and electrically actuated
RPS Manifolds and Valve Islands,
Accessories



Valves with Threaded Ports 37-67
Series S9-G1/8 to G1/2
3/2, 5/2, 5/3 Way Valves,
manually, pneumatically and
electrically actuated
Version with Logic Elements
Version for Panel Mounting
to DIN 43696 (only for series S9-G1/8)

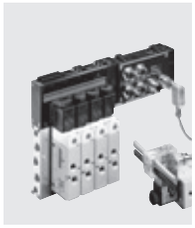


Solenoid-Poppet Valves directly actuated 69-74
Series EV-M5/G1/8
3/2 Way Solenoid Poppet Valves
Screw-in Version
Series V9-G1/8
3/2 Way Solenoid Poppet Valves
with Threaded Ports



Valve Islands * 75-83
Series IM-20, G1/8, G1/4
Version with Multipole Connection
Version with Bus Connection
* Neutral purchase order form
for valve islands see page 129

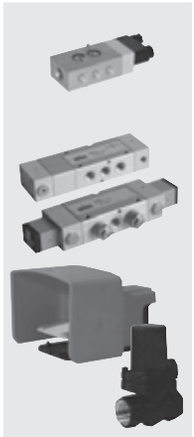
Page



Valve Islands and Valves with AS-Interface Connection 85-89
Series IM-20, G1/8, G1/4



P-Supply / RPS-Manifolds 61-65
for Directional Valves
Series S9-G1/8, S9-G1/4, S9-G1/2
P-Supply Manifolds
Series PL-G1/8, G1/4, G1/2
PLK-G1/8, G1/4
RPS Manifolds
Series PL-G1/8, G1/4



Special Valves 97-110
Series S9-G1/8, S9-G1/4
3/2, 5/2, 5/3 Way Valves
with NAMUR Connections
Series S9-G1/8, S9-G1/4
5/2 Way Valves for Two Hand Operation
5/2 Way Oscillating Valves
Series F-G1/4
3/2 Way and 5/2 Way Valves with pedal actuation
Series ARKV-G1/2 to G2
2/2 Way Valve pneumatically actuated



Directional Valves for Base Plate Mounting 111-118
5/2 Way and 5/3 Way Valves to
VDMA 24563 Size 01
5/2 Way and 5/3 Way Valves to
ISO 5599 Size 1, 2, 3
pneumatically and electrically
actuated

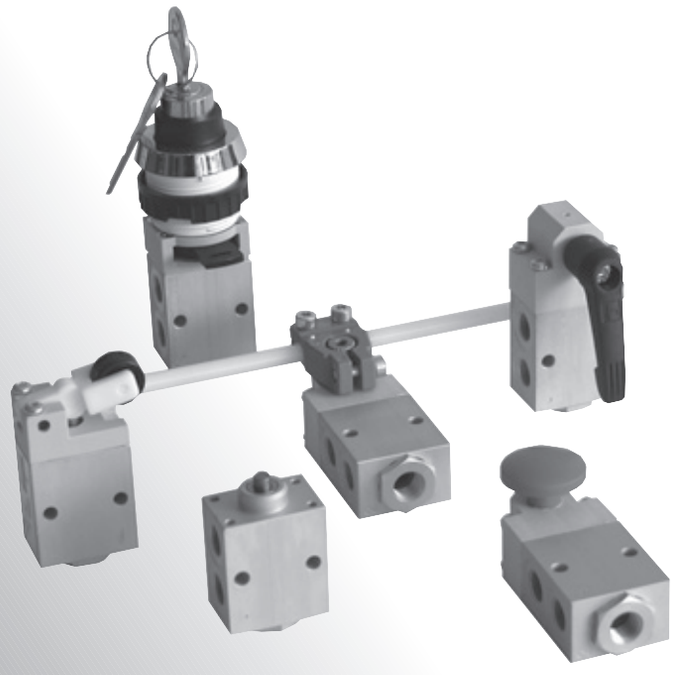


Base Plates 119-127
Single Base Plates and Base plate
Combinations to
– VDMA 24563 Size 01
– ISO 5599 Size 1, 2, 3

Directional Control Valves – Series K9-G1/8

Contents

Version	Actuation	Page		
		Characteristics	Dimensions	Order Instructions Overview
3/2 Way Valves	Manual Control	6	7	11
	Mechanical	6	7, 8	11
	Pedal	6	8	11
for panel mounting to DIN 43696	Manual Control	6	8-10	11



Characteristics

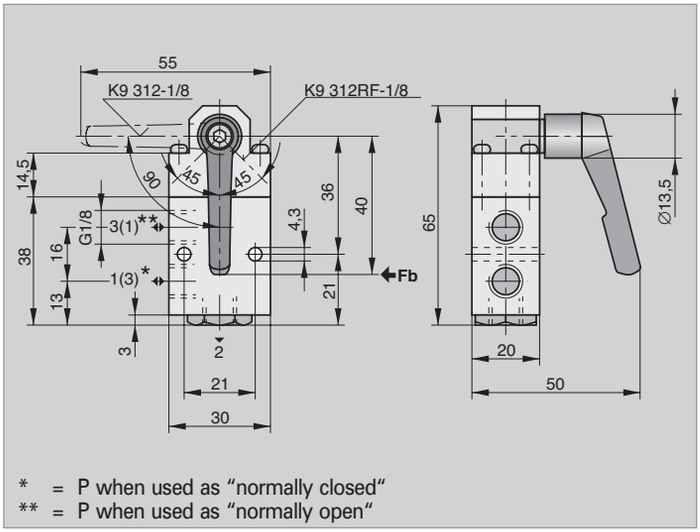
Characteristics – Series K9

Characteristics	Symbol	Unit	Description	
General Features				
System			Poppet Valve	
Mounting			2 Screws M4	
Tube connection			Thread	
Port size			G1/8	
Weight (mass)		kg	see page 7	
Installation			in any position	
Ambient temperature range	$\vartheta_{min/max}$	°C	-10 to +55	Note: Please consult us for operating temperatures below 0° C
Medium temperature range	$\vartheta_{min/max}$	°C	+5* to +60	
Medium			filtered and lubricated or filtered and unlubricated air	
Lubrication			none or oil mist lubrication	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	$p_{min/max}$	bar	0 – 10	
Nominal flow	Q_N	l/min	350	
Flow direction			1 → 2 normally closed 3 → 2 normally open	
Actuation				
Actuation			manual and mechanical actuated (see page 7-10)	
Stroke		mm	1,5 – 3	
Actuation force	F_b	N	(see page 7)	

* -10°C when using dry compressed air

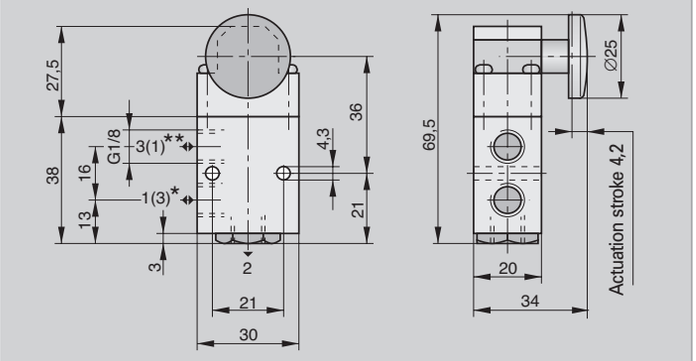
Dimensions

Rotary Lever
Type: K9 312..-1/8



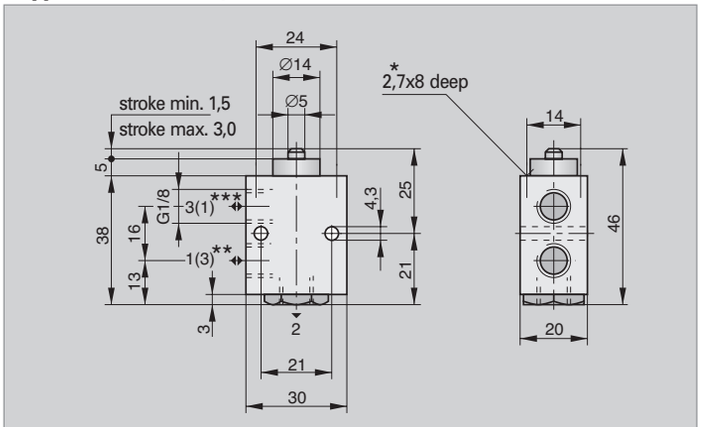
* = P when used as "normally closed"
** = P when used as "normally open"

Pushbutton
Type: K9 314RF-1/8

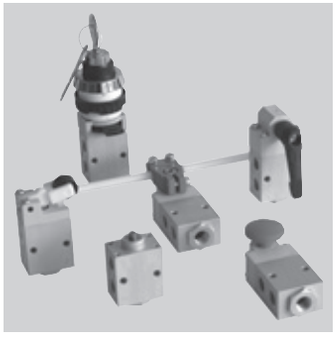


* = P when used as "normally closed"
** = P when used as "normally open"

Plunger
Type: K9 323RF-1/8



* Use self-tapping screw CM 3x.. DIN 7500
** = P when used as "normally closed"
*** = P when used as "normally open"



Versions:
For panel mounting, actuators correspond to internationally standardized mounting dimensions to DIN 43696 (ø22, ø30 mm)

3/2 Way Valves Series K9 G1/8

Actuation:
- Rotary lever, indexed
- Rotary lever, spring return
- Rotary lever, indexed, secured in two positons
- Pushbutton
- Cam operation
- Toggle cam operation
- Plunger operated
- Cam operated, free cam left or free cam right
- Pivoted lever
- Pedal
- Actuators for panel mounting

Non-overlapping poppet valve with low actuating force and short response time. Applicable as normally closed or normally open valve (see drawing).

Actuation Forces, Rotation Angles and Weight

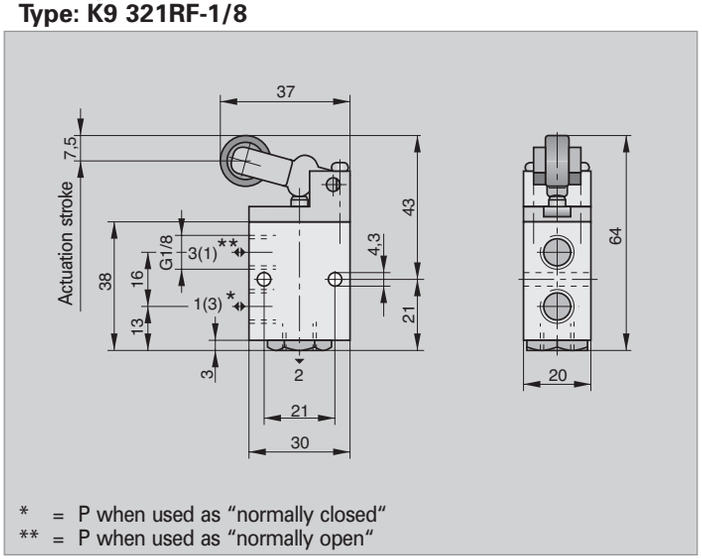
Description	Type	Actuation force (N)	Rotation angle	Weight mass (kg)
Rotary lever, indexed	K9 312-1/8	4.5	±45°, 90°	0.110
Rotary lever, spring return	K9 312RF-1/8	4.5	±45°, 90°	0.110
Rotary lever, indexed secured in both psitions	K9 312S-1/8	4.5	±45°, 90°	0.110
Pushbutton	K9 314RF-1/8	25	–	0.075
Cam operation	K9 321RF-1/8	11	–	0.070
Toggle cam operation	K9 324RF-1/8	5	±40°	0.120
Plunger operated	K9 323RF-1/8	32	–	0.050
Cam operated free cam left	K9 325RF-1/8	5	±40°	0.120
Cam operated free cam right	K9 326RF-1/8	5	±40°	0.120
Pivoted lever	K9 329RF-1/8	2*	±40°	0.115
Pedal	K9 331RF-1/8	12	–	0.800
Basic valve for panel mounting actuators	K9 390RF-1/8	35	–	0.060

* at a distance of 100 mm from fulcrum

Order Instructions see page 11, Characteristics see page 6

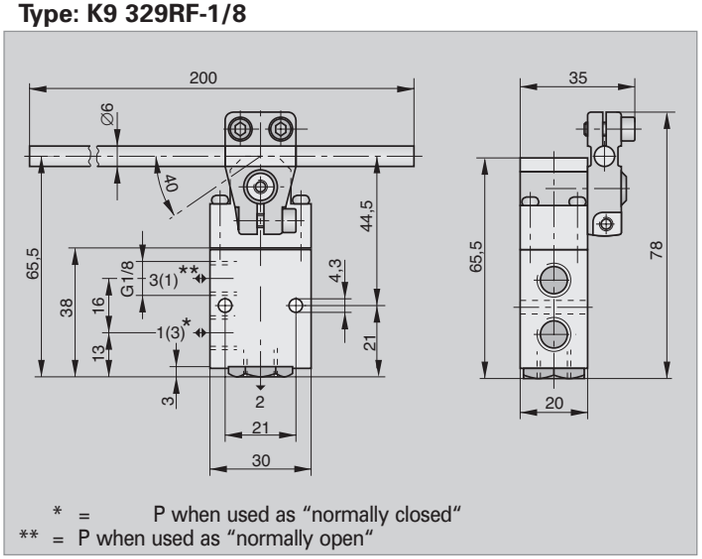
Dimensions

Cam operation
Type: K9 321RF-1/8



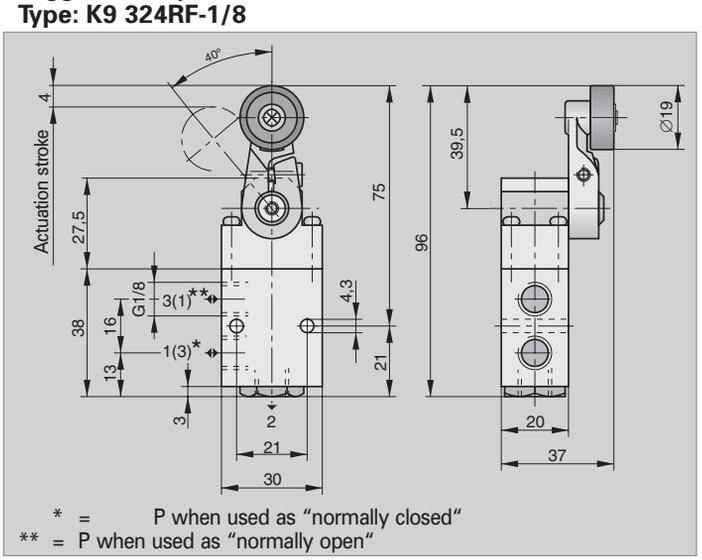
* = P when used as “normally closed“
** = P when used as “normally open“

Pivoted lever
Type: K9 329RF-1/8



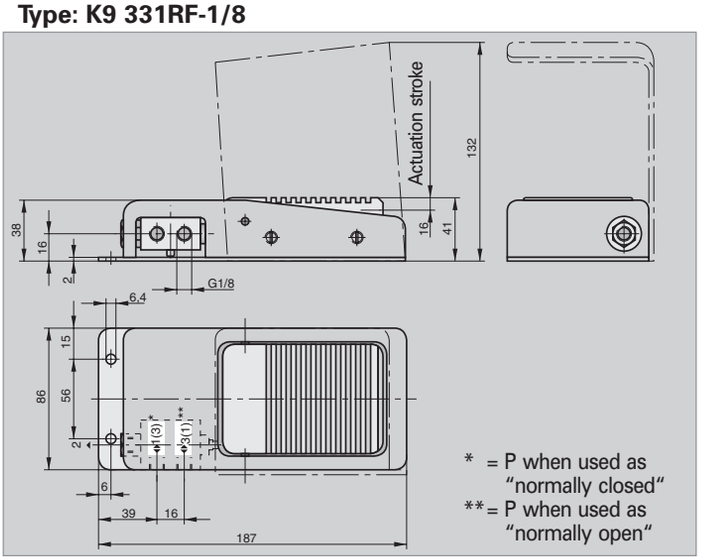
* = P when used as “normally closed“
** = P when used as “normally open“

Toggle cam operated
Type: K9 324RF-1/8



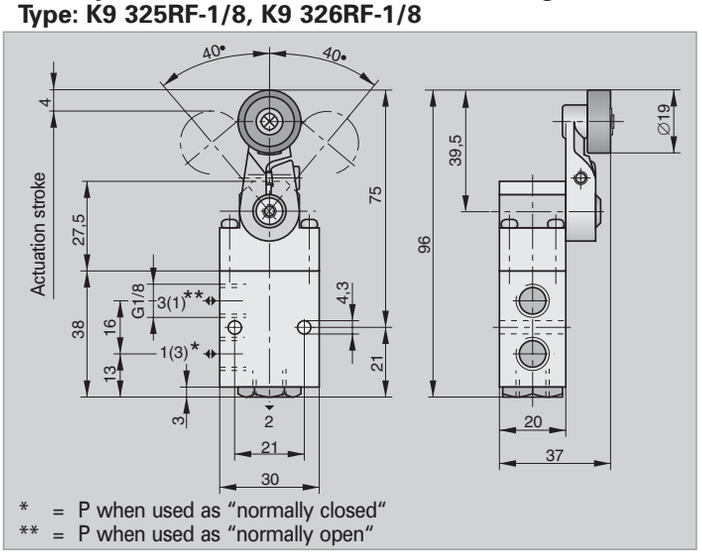
* = P when used as “normally closed“
** = P when used as “normally open“

Pedal
Type: K9 331RF-1/8



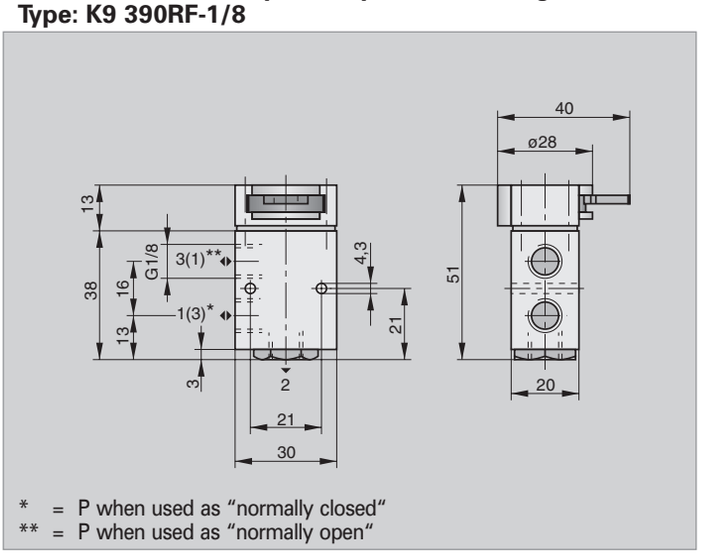
* = P when used as “normally closed“
** = P when used as “normally open“

Cam operated, free cam left and free cam right
Type: K9 325RF-1/8, K9 326RF-1/8



* = P when used as “normally closed“
** = P when used as “normally open“

Basic valve with adaptor for panel mounting
Type: K9 390RF-1/8

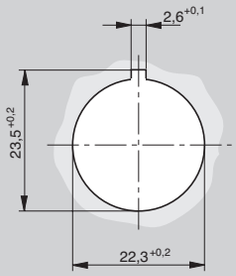


* = P when used as “normally closed“
** = P when used as “normally open“

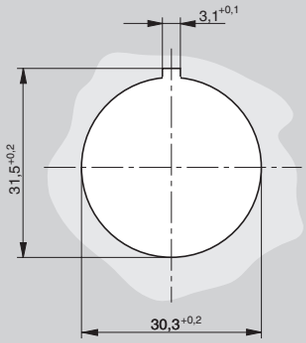
Order Instructions see page 11, Characteristics see page 6

Mounting holes
for mounting diameters 22 and 30 mm

Mounting diameter 22 mm

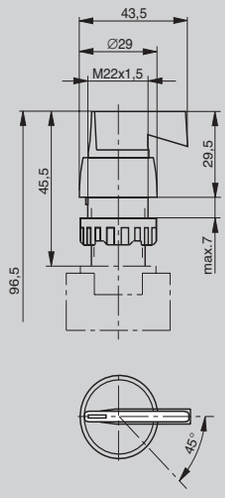


Mounting diameter 30 mm

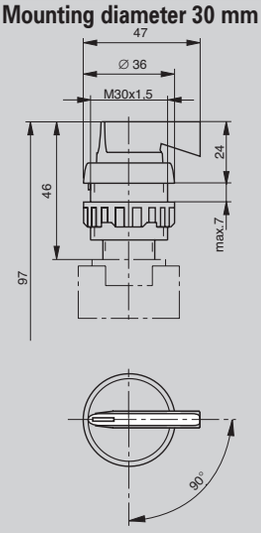


Rotary lever, indexed
Type: 12T-22, 12T-30

Mounting diameter 22 mm

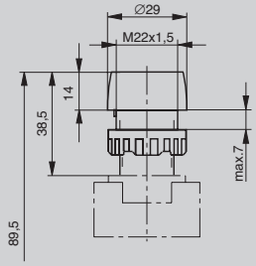


Mounting diameter 30 mm

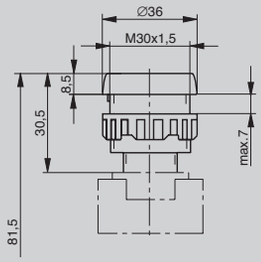


Pushbutton
Type: 13T-RF-22, 13T-RF-30

Mounting diameter 22 mm

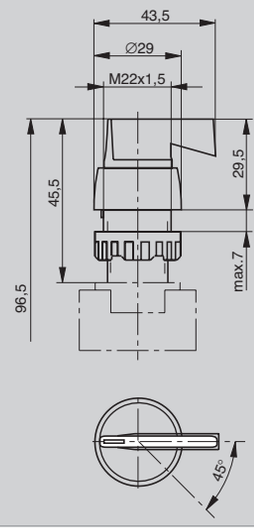


Mounting diameter 30 mm

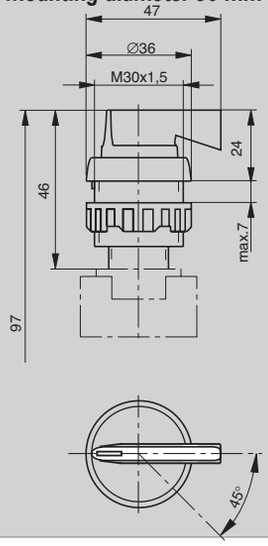


Rotary lever with spring return
Type: 12T-RF-22, 12T-RF-30

Mounting diameter 22 mm

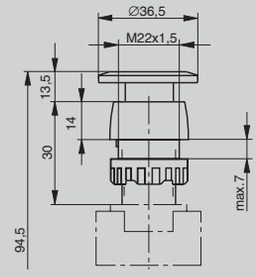


Mounting diameter 30 mm

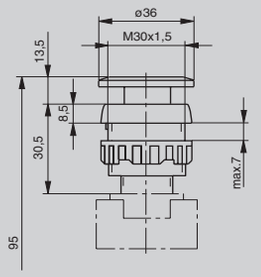


Mushroom pushbutton
Type: 15T-RF-22, 15T-RF-30

Mounting diameter 22 mm



Mounting diameter 30 mm

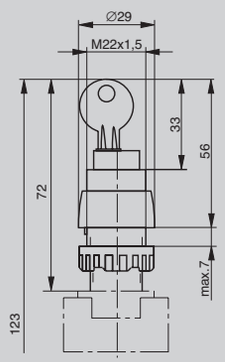


Order Instructions see page 11, Characteristics see page 6

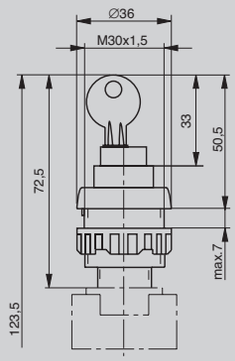
Dimensions

Locking switch
Type: 16T-22, 16T-30

Mounting diameter 22 mm

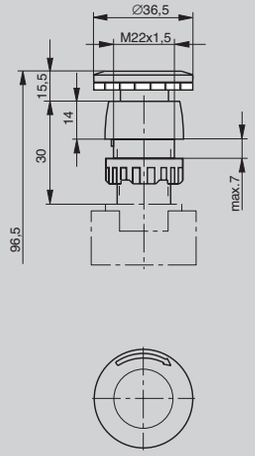


Mounting diameter 30 mm

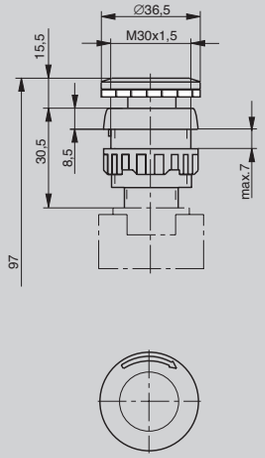


Mushroom switch (EMERGENCY SHUTDOWN)
Type: 18T-22, 18T-30

Mounting diameter 22 mm

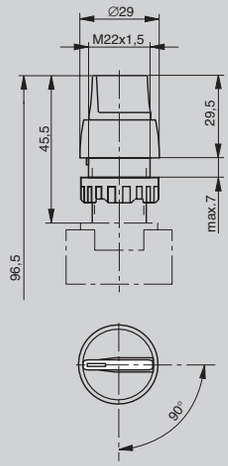


Mounting diameter 30 mm

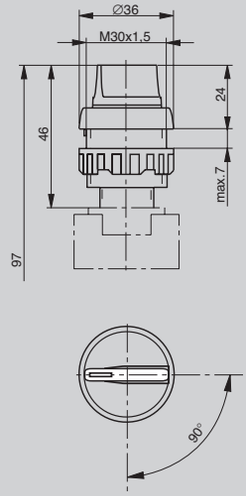


Rotary switch
Type: 17T-22, 17T-30

Mounting diameter 22 mm



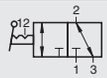
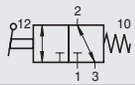
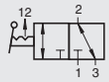
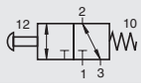
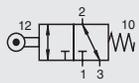
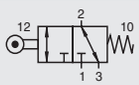
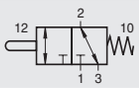
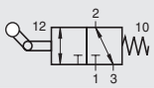
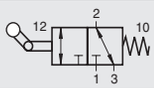
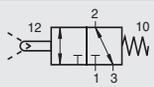
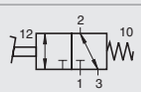
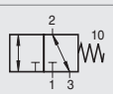
Mounting diameter 30 mm



Order Instructions see page 11, Characteristics see page 6

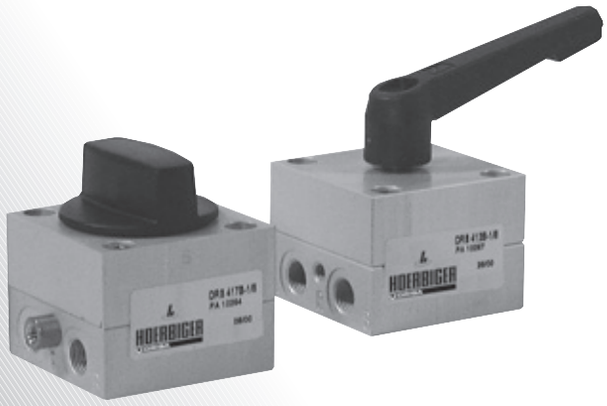
Overview and Order Instructions

3/2 Way Poppet Valves – Series K9

Actuation	Symbol	Mounting ø (mm)	Order Instructions Type	Order No.	Page
Rotary lever, indexed			**K9 312-1/8**	**PA 10269**	7
Rotary lever, spring return			**K9 312RF-1/8**	**PA 10270**	7
Rotary lever, indexed secured in both positions			**K9 312S-1/8**	**PA 10349**	7
Pushbutton			**K9 314RF-1/8**	**PA 10271**	7
Cam operation			**K9 321RF-1/8**	**PA 10272**	8
Toggle cam operation			**K9 324RF-1/8**	**PA 10273**	8
Plunger operated			**K9 323RF-1/8**	**PA 10235**	7
Cam operated free cam left			**K9 325RF-1/8**	**PA 10274**	8
Cam operated free cam right			**K9 326RF-1/8**	**PA 10275**	8
Pivoted lever			**K9 329RF-1/8**	**PA 10276**	8
Pedal			**K9 331RF-1/8**	**PA 10277**	8
Panel mounting valve with adaptor, interchangeable actuation as follows:			**K9 390RF-1/8**	**PA 10278**	8
Rotary lever, indexed for panel mounting		22 30	**12T-22** **12T-30**	**KX 9355** **KX 9314**	9
Rotary lever, spring return for panel mounting		22 30	**12T-RF-22** **12T-RF-30**	**KX 9356** **KX 9315**	9
Pushbutton for panel mounting		22 30	**13T-RF-22** **13T-RF-30**	**KX 9357** **KX 9316**	9
Mushroom pushbutton for panel mounting		22 30	**15T-RF-22** **15T-RF-30**	**KX 9358** **KX 9317**	9
Locking switch for panel mounting		22 30	**16T-22** **16T-30**	**KX 9359** **KX 9318**	10
Rotary switch for panel mounting		22 30	**17T-22** **17T-30**	**KX 9360** **KX 9319**	10
Mushroom switch EMERGENCY SHUTDOWN for panel mounting		22 30	**18T-22** **18T-30**	**KX 9361** **KX 9320**	10

Contents

Version	Actuation	Page		
		Characteristics	Dimensions	Order Instructions Overview
4/3 Way Valves	Rotary lever	14	14	15
	Rotary switch	14	14	15



4/3 Way Flat Slide Valves Series DRS G1/8

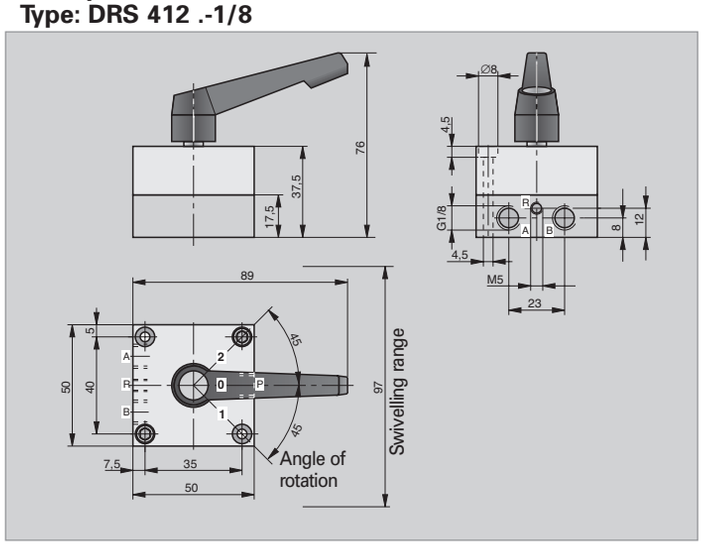
Actuation:
– Rotary lever
– Rotary switch



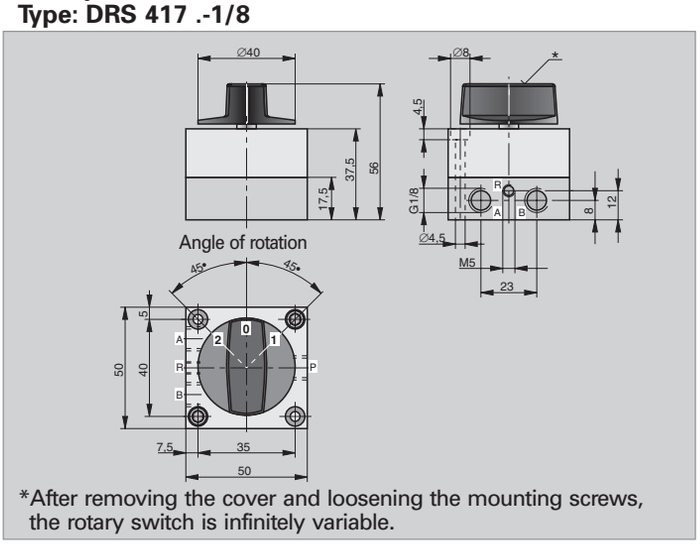
Characteristics – Series DRS

Characteristics	Symbol	Unit	Description	
General Features				
System			Flat slide valve without automatic return to neutral position	
Mounting			2 screws M4	
Tube connection			Thread	
Port size			Port P, A, B: G1/8	Port R: M5
Weight (mass)		kg	0.500	
Installation			in any position	
Ambient temperature range	$\vartheta_{min/max}$	°C	-10 to +55	Note: Please consult us for operating temperatures below 0° C
Medium temperature range	$\vartheta_{min/max}$	°C	-10 to +60	
Medium			filtered compressed air	
Lubrication			Oil mist lubrication compatible with Buna N	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	$p_{min/max}$	bar	0 – 10	
Nominal flow	Q_N	l/min	350	
Actuation				
Manual control			direct	
Actuation force	F_b	N	ca. 6	

Rotary lever
Type: DRS 412 .-1/8



Rotary switch
Type: DRS 417 .-1/8

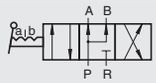
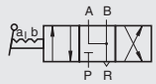
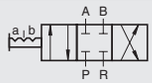
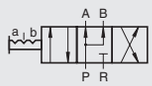
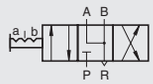
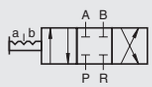


*After removing the cover and loosening the mounting screws, the rotary switch is infinitely variable.

Port identification:
A = 4 Outlet
B = 2 Outlet
R = 5 Exhaust
P = 1 Pressure supply

Order Instructions

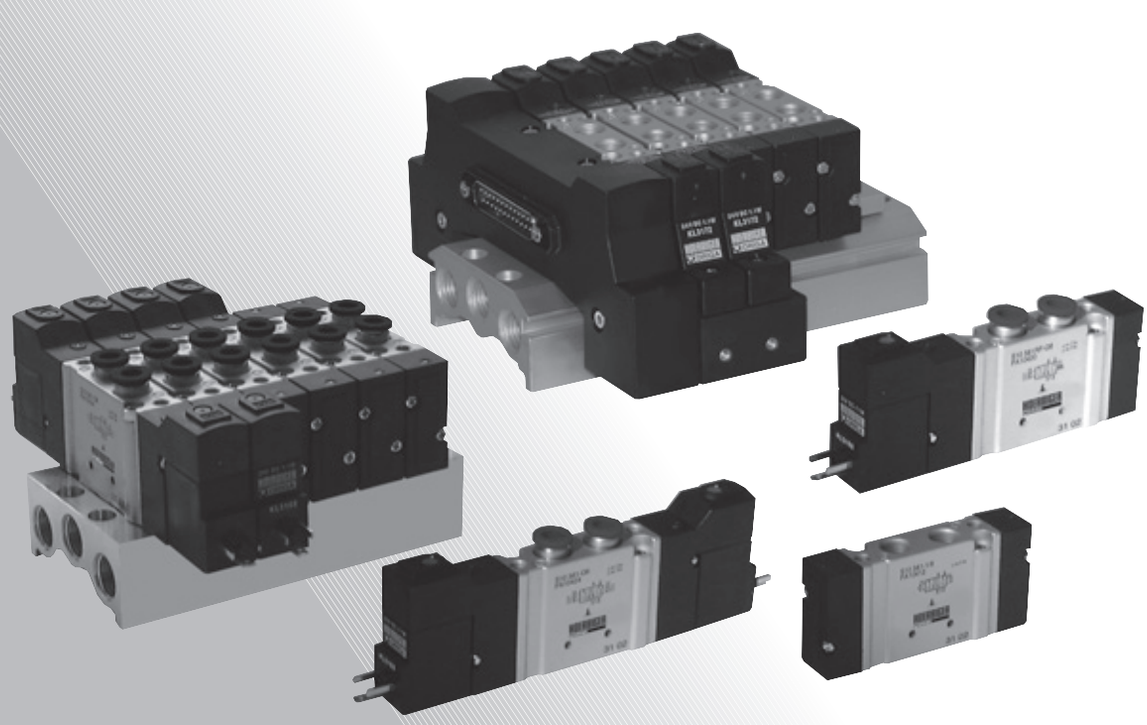
4/3 Way Flat Slide Valves – Series DRS

Actuation	Symbol	Order Instructions Type	Order No.
Rotary lever Middle position pressurized		**DRS 412 B-1/8**	**PA 10267**
Rotary lever Middle position vented		**DRS 412 E-1/8**	**PA 10266**
Rotary lever **Middle position closed**		**DRS 412G-1/8**	**PA 10268**
Rotary switch Middle position pressurized		**DRS 417 B-1/8**	**PA 10264**
Rotary switch Middle position vented		**DRS 417 E-1/8**	**PA 10263**
Rotary switch Middle position closed		**DRS 417 G-1/8**	**PA 10265**

Compact Valves Series S10..-1/8 and S10..-Q6

Contents

Version	Actuation	Page		
		Characteristics	Dimensions	Order Instructions Overview
2 x 3/2 Way Valves	pneumatic	19	20	25
	electric	19	21	25
5/2 Way Valves	pneumatic	19	22	26
	electric	19	23, 24	26
5/3 Way Valves	pneumatic	19	22	27
	electric	19	23, 24	27
Valve Manifold Assemblies		19	28, 29	30
Valve Islands		19	31, 32	33
RPS Manifolds			34	34
Accessories			35, 36	35, 36



Series S10 – Overview

Overview

Description	Actuation	Versions					
		Standard	With biased position	With external pilot air	Middle Position Functions closed	Vented	Pressurized
2x3/2 Way Valves normally closed normally open	pneumatic permanent signal (1	■	–	–	–	–	–
	pneumatic permanent signal (1	■	–	■	–	–	–
5/2 Way Valves	pneumatic permanent signal (2	■	–	–	–	–	–
	pneumatic impulse	■	■	–	–	–	–
	electric permanent signal (2	■	–	■	–	–	–
	electric impulse	■	■	■	–	–	–
5/3 Way Valves	pneumatic permanent signal	■	–	–	■	■	■
	electric permanent signal	■	–	■	■	■	■

(1 air spring return
(2 return by either mechanical spring or air spring (see Order Instructions, page 26, 27

Note:

S10 Series valves are normally supplied without connector – please include in Order Code or order separately (see Order Instructions)

Characteristics for Single Valves and Valve Islands

Characteristics – Series S10 (Single Valves) and IM10 (Valve Islands)

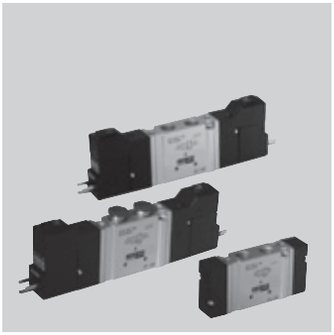
Characteristics	Symbol	Unit	Description			
Version			**With threaded ports**		**With push-in connections (version Q6)**	
General						
Actuation			**Pneumatic**	**electrically pilot actuated**	**Pneumatic**	**electrically pilot actuated**
Type			Spool valve			
Mounting			2 screws M3			
Port connections			Threaded ports		Threaded ports and push-in connections	
Size			G1/8		Port 5, 1, 3: G1/8, Port 4, 2: push-in connection OD 6 mm	
Nominal diameter		mm	6			
Weight (mass)		kg	See page 20, 22			
Installation			In any position			
Ambient temperature range	$\vartheta_{min./max.}$	°C	-5 to +50	Note: for use below freezing point please consult us		
Medium temperature range	$\vartheta_{min./max.}$	°C	0 to +50			
Vibration restistance/Vibration		G	max. 5			
Impact strength/Shock		G	max. 30			
Medium			Filtered compressed air (5µm)			
Lubrication			With or without oil mist lubrication (we recommend mineral oil type VG 32 to ISO 3448)			
Pneumatic Characteristics						
Nominal pressure	$p_{min./max.}$	bar	6			
Operating pressure range						
– Permanent signal version	$p_{min./max.}$	bar	2 – 8 (5/2 way version), 3 – 8 (5/3 and 2x3/2 way version)			
– Impulse version	$p_{min./max.}$	bar	1.5 – 8 (5/2 way version)			
– with external pilot air	$p_{min./max.}$	bar	-0.9 – 8 (5/2 way version), -0.9 – 8 (5/3 and 2x3/2 way version)			
Nominal flow	Q_N	l/min	5/2 way version 650, 5/3 way version 550, 2x3/2 way version 400			
Actuation						
Pneumatic			Direct			
Actuation pressure range						
– Permanent signal version	$p_{st\ min./max.}$	bar	2 – 8 (5/2 way version), 3 – 8 (5/3- and 2x 3/2 way version)			
– Impulse version	$p_{st\ min./max.}$	bar	1.5 – 8 (5/2 way version)			
Electrical – Single Valves S10			Pilot actuated			
Voltage types			Alternating current (50/60Hz)		Direct current	
Nominal voltage						
– standard version	U_n	V	230, 110, 48 ±10%		24, 12 ±10%	other voltages available on request
Power consumption, switching						
– standard version		VA (W)	ca. 2.8		1.1	
Power consumption, holding						
– standard version		VA (W)	ca. 2		1.1	
Duty cycle	ED	%	100			
Electrical protection		IP	IP 65 to DIN 40050 (applise only to solenoid with plug)			
Connection			Connector to DIN EN 175301-803 form C (1			
Electrical – Valve Islands IM10			Pilot actuated			
Voltage types			Direct current			
Nominal voltage	U_n	V	24, 12			
Power consumption, switching		VA (W)	1.1			
Power consumption, holding		VA (W)	1.1			
Duty cycle	ED	%	100			
Electrical protection		IP	IP 65 to DIN 40050 (applise only to the electrically part in combination with sub-D connector, IP 65)			
Connection			D-Sub connector 25pin			
Switching indicator			LED			
Number of outputs			max. 22, max. 18 (monostable)			

(1 Solenoid also available with cable (length 1m) – see Order Instructions

2 x 3/2 Way Valves Series S10

G1/8 and Push-In Connections OD Ø 6 mm

Actuation systems:
– pneumatic
– electrical, pilot actuated

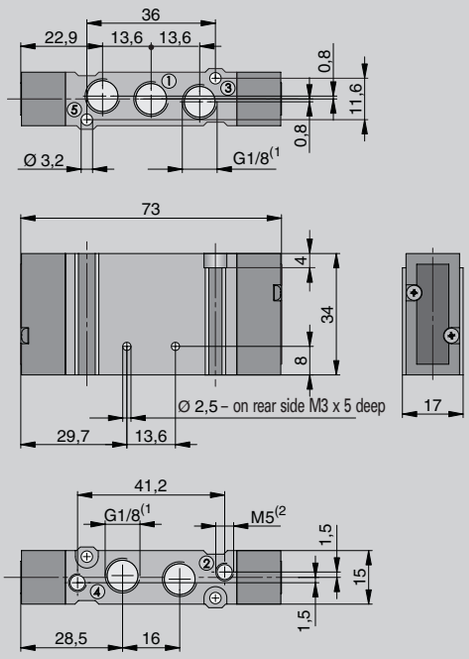


Versions:
– 2x normally closed
– 2x normally open
– 1x normally closed and 1x normally open
– with external pilot air

Accessories:
– adapter plate for direct mounting on HOERBIGER-ORIGA profile-type cylinders
– mounting bracket

For further information see page 19

2x 3/2 way valve, pneumatically actuated, threaded version, Type: S10 361..-1/8

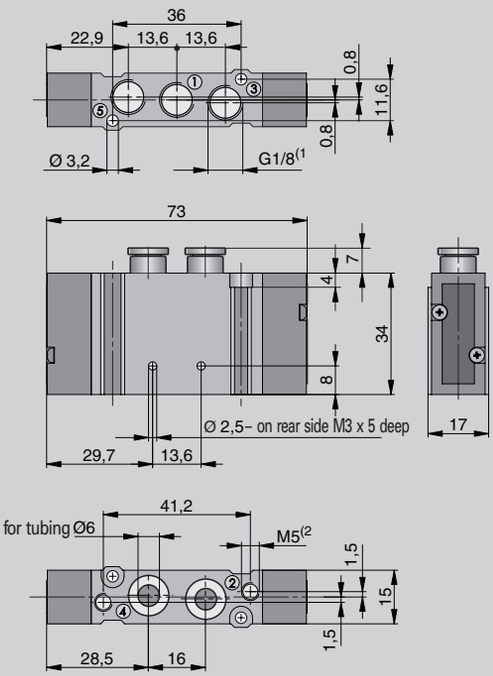


(1 thread depth 7.5 mm
(2 thread depth 5 mm

Weight (mass) kg

Description	Type	Weight (mass)
Pneumatic, permanent signal	S10 361R..-1/8	0,063 kg
Electrical, permanent signal	S10 381R..-1/8	0,089 kg
Pneumatic, permanent signal	S10 361R..-Q6	0,070 kg
Electrical, permanent signal	S10 381R..-Q6	0,097 kg

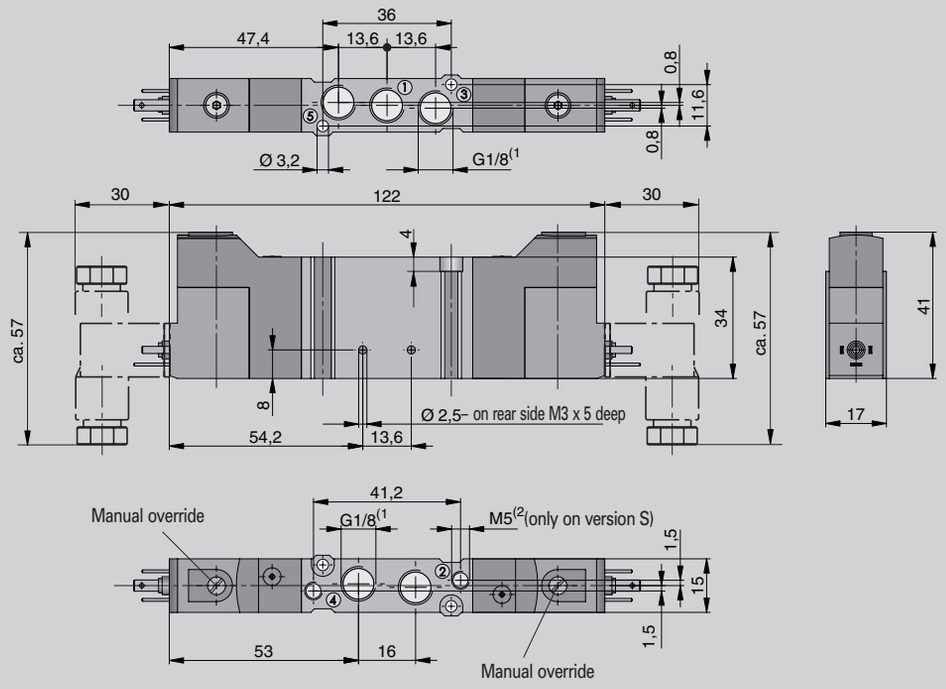
2x 3/2 way valve, pneumatically actuated, version with push-in connection, Type: S10 361..-Q6



(1 thread depth 7.5 mm
(2 thread depth 5 mm

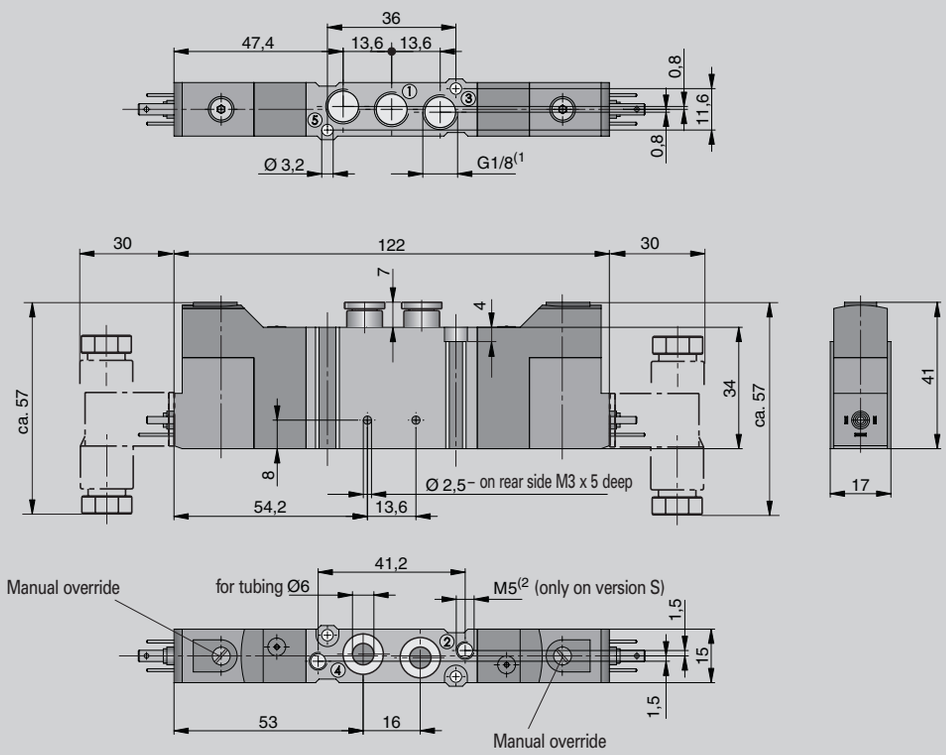
For valve manifolds see page 28-30; for RPS manifolds see page 34,35; for mounting bracket see page 36; for adapter plate see page 36.

2x 3/2 way valve, electrically actuated (permanent signal) – threaded version,
Type: S10 381R..-1/8



(1 thread depth 7.5 mm
(2 thread depth 5 mm

2x 3/2 way valve, electrically actuated (permanent signal) – version with push-in connections
Type: S10 381R..-Q6



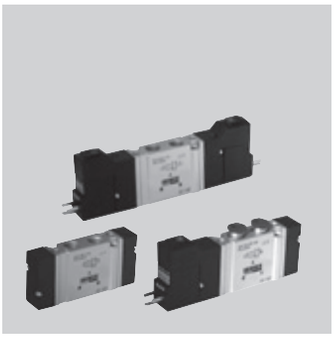
(1 thread depth 7.5 mm
(2 thread depth 5 mm

For valve manifolds see page 28-30; for RPS manifolds see page 34,35; for mounting bracket see page 36; for adapter plate see page 36.

5/2 and 5/3 Way Valves Series S10

G1/8 and Push-In Connections OD Ø 6 mm

Actuation systems:
– pneumatic
– electrical, pilot operated

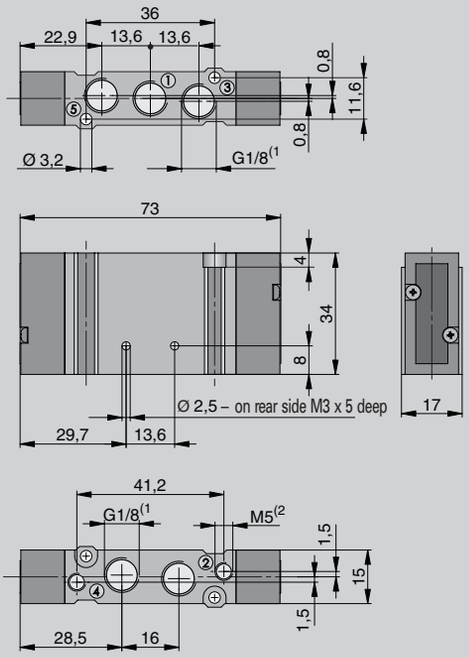


Versions:
– with biased position
– with external pilot air

Accessories:
– adapter plate for direct mounting on HOERBIGER-ORIGA profile-type cylinders
– mounting brackets

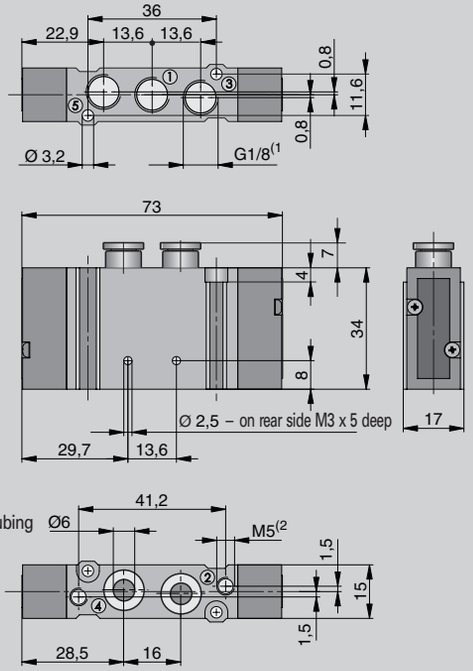
For further information see page 35, 36

5/2 and 5/3 way valve, pneumatically actuated, threaded version
Type: S10 561..-1/8, S10 562..-1/8, S10 561RF-1/8



(1 thread depth 7.5 mm
(2 thread depth 5 mm

5/2 and 5/3way valve, pneumatically actuated, version with push-in connections
Type: S10 561..-Q6, S10 562..-Q6, S10 561RF-Q6



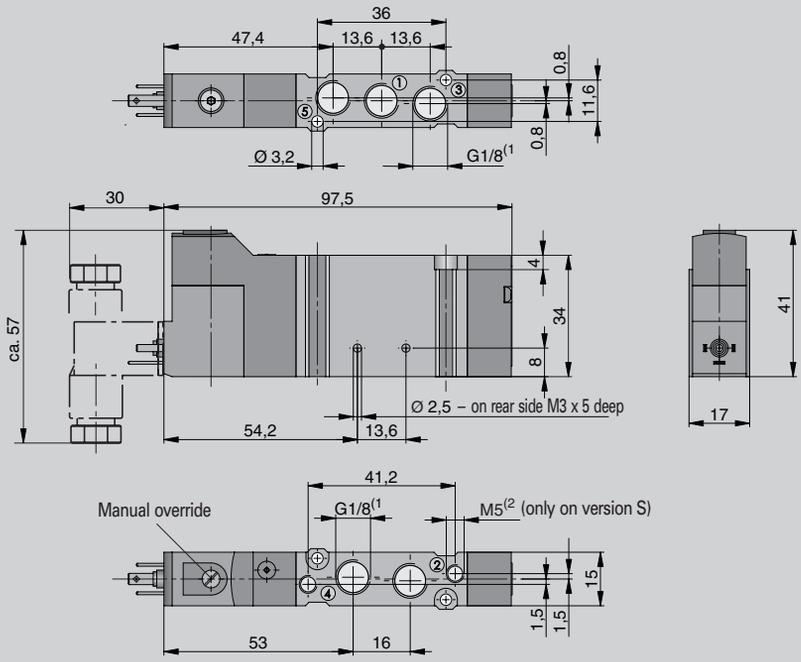
(1 thread depth 7.5 mm
(2 thread depth 5 mm

Weight (mass) kg

Description	Type	Weight (mass)
Pneumatic, permanent signal	S10 561R..-1/8	0.063 kg
Pneumatic, impulse	S10 561(562)-1/8	0.063 kg
Electrical, permanent signal	S10 581R..-1/8	0.076 kg
Electrical, impulse	S10 581(582)-1/8	0.089 kg
Pneumatic, permanent signal	S10 561R..-Q6	0.070 kg
Pneumatic, impulse	S10 561(562)-Q6	0.070 kg
Electrical, permanent signal	S10 581R..-Q6	0.083 kg
Electrical, impulse	S10 581(582)-Q6	0.097 kg

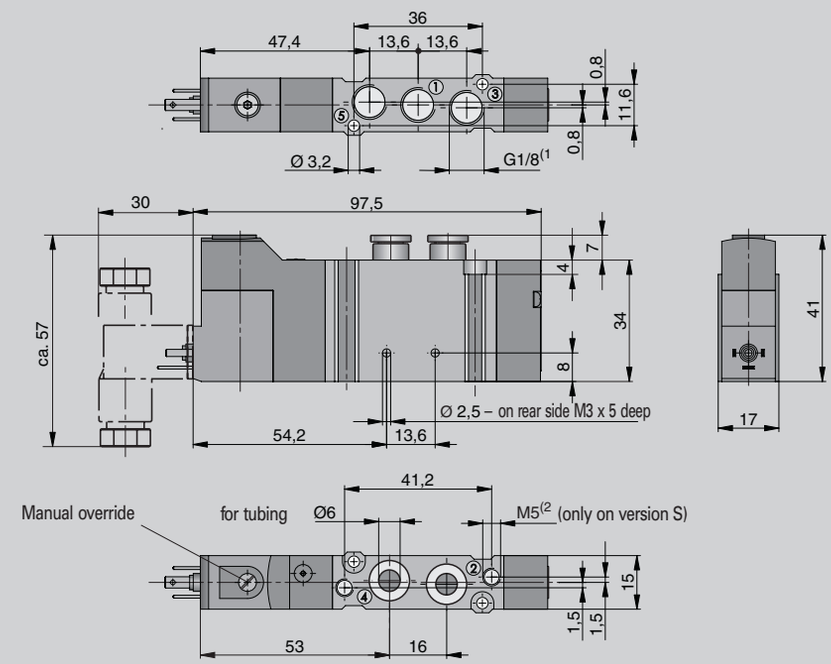
For valve manifolds see page 28-30; for RPS manifolds see page 34,35; for mounting bracket see page 36; for adapter plate see page 36.

5/2 way valve, electrically actuated (permanent signal) – threaded version
Type: S10 581..-1/8



(1 thread depth 7.5 mm
(2 thread depth 5 mm

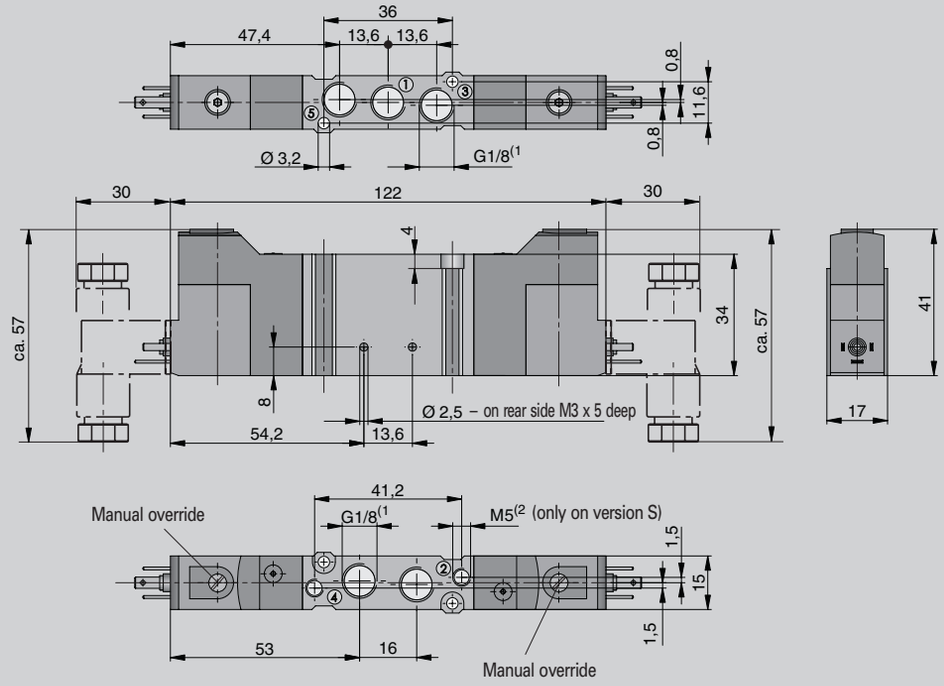
5/2 way valve, electrically actuated (permanent signal) – version with push-in connections
Type: S10 581..-Q6



(1 thread depth 7.5 mm
(2 thread depth 5 mm

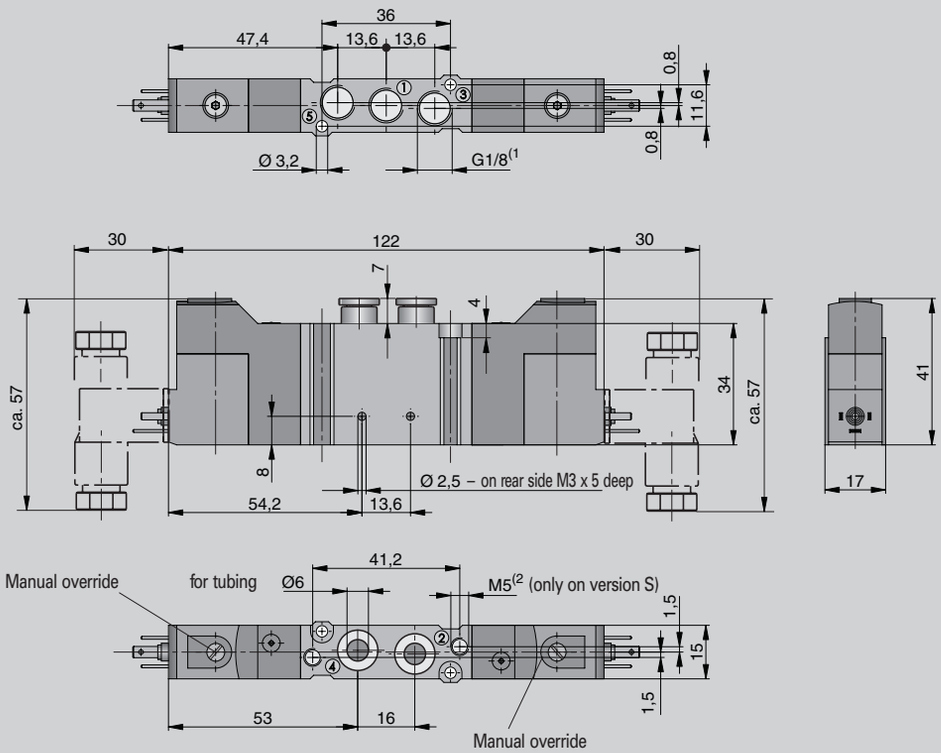
For valve manifolds see page 28-30; for RPS manifolds see page 34,35; for mounting bracket see page 36; for adapter plate see page 36.

5/2 way valve, electrically actuated (impulse) – threaded version, Type: S10 581-1/8, S10 582-1/8
5/3 way valve, electrically actuated (permanent signal) – threaded version, Type: S10 581RF-1/8



(1 thread depth 7.5 mm
(2 thread depth 5 mm

5/2 way valve, electrically actuated (impulse) – version with push-in connections, Type: S10 581-Q6, S10 582-Q6
5/3 way valve, electrically actuated (permanent signal) – version with push-in connections, Type: S10 581RF-Q6

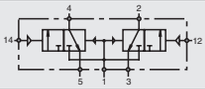
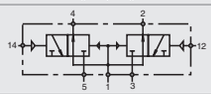
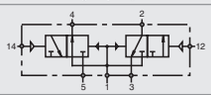
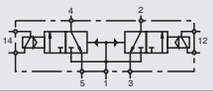
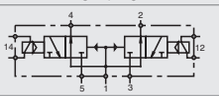
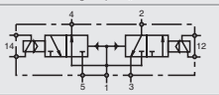
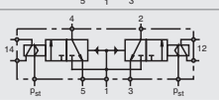
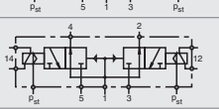


(1 thread depth 7.5 mm
(2 thread depth 5 mm

For valve manifolds see page 28-30; for RPS manifolds see page 34,35; for mounting bracket see page 36; for adapter plate see page 36.

Order Instructions

2x 3/2 way valves – Series S10..-1/8 and S10..-Q6

Actuation System	Symbol	Connection Thread	Connection Push-In	Order Instructions Type	Order No.	Page
Pneumatic permanent signal		G1/8	–	**S10 361R2G-1/8**	**PA 10417**	20
		–	ODØ 6mm	**S10 361R2G-Q6**	**PA 10447**	
		G1/8	–	**S10 361R2O-1/8**	**PA 10418**	20
		–	ODØ 6mm	**S10 361R2O-Q6**	**PA 10448**	
		G1/8	–	**S10 361RGO-1/8**	**PA 10419**	20
		–	ODØ 6mm	**S10 361RGO-Q6**	**PA 10449**	
Electrical permanent signal		G1/8	–	**S10 381R2G-1/8-□33-□**	**PA 10404-□33-□**	21
		–	ODØ 6mm	**S10 381R2G-Q6-□33-□**	**PA 10434-□33-□**	
		G1/8	–	**S10 381R2O-1/8-□33-□**	**PA 10406-□33-□**	21
		–	ODØ 6mm	**S10 381R2O-Q6-□33-□**	**PA 10436-□33-□**	
		G1/8	–	**S10 381RGO-1/8-□33-□**	**PA 10408-□33-□**	21
		–	ODØ 6mm	**S10 381RGO-Q6-□33-□**	**PA 10438-□33-□**	
Electrical permanent signal with external pilot air		G1/8	–	**S10 381S-R2G-1/8-□33-□**	**PA 10405-□33-□**	21
		–	ODØ 6mm	**S10 381S-R2G-Q6-□33-□**	**PA 10435-□33-□**	
		G1/8	–	**S10 381S-R2O-1/8-□33-□**	**PA 10407-□33-□**	21
		–	ODØ 6mm	**S10 381S-R2O-Q6-□33-□**	**PA 10437-□33-□**	
		G1/8	–	**S10 381S-RGO-1/8-□33-□**	**PA 10409-□33-□**	21
		–	ODØ 6mm	**S10 381S-RGO-Q6-□33-□**	**PA 10439-□33-□**	

Solenoid version/ voltage	
– for connector	
00	without solenoid
01	12 V DC
02	24 V DC
04	48 V DC
07	110 V DC
50	12 V AC
51	24 V AC
55	48 V AC
57	110 V AC
61	230 V AC
– with cable (length 1m)	
41	12 V DC
42	24 V DC
71	12 V AC
72	24 V AC

Other voltages available on request

Notes on ordering
all electrically actuated valves are supplied without connector as standard
–please include this in Order No. or order it separately (see Order Instructions).
For electrically actuated valves please complete the Type Designation and Order No. with the order codes.

Example:
3/2 way valve, threaded version, electrically actuated, with spring return, normally closed, voltage 12 V DC, with standard connector

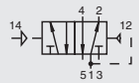
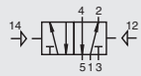
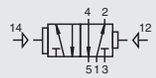
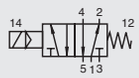
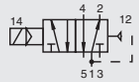
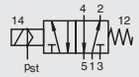
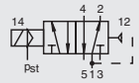
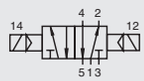
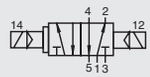
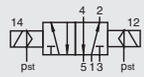
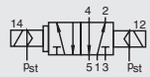
Order data:
S10 381R2G-1/8-0133-88 **PA 10404-0133-88**

Connector Types	
00	without connector *
88	standard connector 15mm
89	230 V AC with LED and protective circuit
92	24 V DC with LED and protective circuit

* Standard version

Overview and Order Instructions

5/2 way valves – Series S10..-1/8 and S10..-Q6

Actuation System	Symbol	Connections Thread	Push-In	Order Instructions Type	Order No.	Page
Pneumatic permanent signal		G1/8	–	**S10 561RF-1/8**	**PA 10410**	22
		–	ODØ 6mm	**S10 561RF-Q6**	**PA 10440**	
		G1/8	–	**S10 561R-1/8**	**PA 10411**	22
		–	ODØ 6mm	**S10 561R-Q6**	**PA 10441**	
Pneumatic impulse		G1/8	–	**S10 561-1/8**	**PA 10412**	22
		–	ODØ 6mm	**S10 561-Q6**	**PA 10442**	
– biased position bistable valve		G1/8	–	**S10 562-1/8**	**PA 10413**	22
		–	ODØ 6mm	**S10 562-Q6**	**PA 10443**	
Electrical permanent signal		G1/8	–	**S10 581RF-1/8-□33-□**	**PA 10390-□33-□**	23
		–	ODØ 6mm	**S10 581RF-Q6-□33-□**	**PA 10420-□33-□**	
		G1/8	–	**S10 581R-1/8-□33-□**	**PA 10392-□33-□**	23
		–	ODØ 6mm	**S10 581R-Q6-□33-□**	**PA 10422-□33-□**	
Electrical permanent signal with external pilot air		G1/8	–	**S10 581S-RF-1/8-□33-□**	**PA 10391-□33-□**	23
		–	ODØ 6mm	**S10 581S-RF-Q6-□33-□**	**PA 10421-□33-□**	
		G1/8	–	**S10 581S-R-1/8-□33-□**	**PA 10393-□33-□**	23
		–	ODØ 6mm	**S10 581S-R-Q6-□33-□**	**PA 10423-□33-□**	
Electrical impulse		G1/8	–	**S10 581-1/8-□33-□**	**PA 10394-□33-□**	24
		–	ODØ 6mm	**S10 581-Q6-□33-□**	**PA 10424-□33-□**	
– biased position bistable valve		G1/8	–	**S10 582-1/8-□33-□**	**PA 10396-□33-□**	24
		–	ODØ 6mm	**S10 582-Q6-□33-□**	**PA 10426-□33-□**	
Electrical impulse with external pilot air		G1/8	–	**S10 581S-1/8-□33-□**	**PA 10395-□33-□**	24
		–	ODØ 6mm	**S10 581S-Q6-□33-□**	**PA 10425-□33-□**	
– biased position bistable valve		G1/8	–	**S10 582S-1/8-□33-□**	**PA 10397-□33-□**	24
		–	ODØ 6mm	**S10 582S-Q6-□33-□**	**PA 10427-□33-□**	

Solenoid version/ voltage

– for connector

00	without solenoid
01	12 V DC
02	24 V DC
04	48 V DC
07	110 V DC
50	12 V AC
51	24 V AC
55	48 V AC
57	110 V AC
61	230 V AC

– with cable (length 1m)

41	12 V DC
42	24 V DC
71	12 V AC
72	24 V AC

Other voltages available on request

Connector Types

00	without connector *
88	standard connector 15mm
89	230 V AC with LED and protective circuit
92	24 V DC with LED and protective circuit

* Standard version

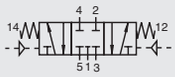
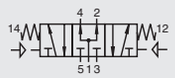
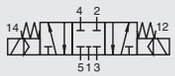
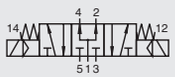
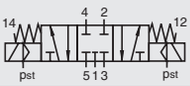
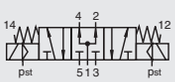
Notes on ordering:
All electrically actuated valves are supplied without connector as standard
– **please include this in Order No. or order it separately (see Order Instructions).**

For electrically actuated valves please complete the Type Designation and Order No. with the order codes.

Example:
5/2 way valve, push-in connections, electrically actuated, with spring return, voltage 12 V DC, with standard connector:

Order data:
S10 581RF-Q6-0133-88 **PA 10420-0133-88**

5/3 way valves – Series S10..-1/8 and S10..-Q6

Actuation System	Symbol	Connections Thread	Push-In	Order Data Type	Order No.	Page
Pneumatic permanent signal		G1/8 –	– ODØ 6mm	**S10 561RFG-1/8 S10 561RFG-Q6**	**PA 10414 PA 10444**	22
		G1/8 –	– ODØ 6mm	**S10 561RFE-1/8 S10 561RFE-Q6**	**PA 10415 PA 10445**	22
		G1/8 –	– ODØ 6mm	**S10 561RFB-1/8 S10 561RFB-Q6**	**PA 10416 PA 10446**	22
Electrical permanent signal		G1/8 –	– ODØ 6mm	**S10 581RFG-1/8-□33-□ S10 581RFG-Q6-□33-□**	**PA 10398-□33-□ PA 10428-□33-□**	24
		G1/8 –	– ODØ 6mm	**S10 581RFE-1/8-□33-□ S10 581RFE-Q6-□33-□**	**PA 10400-□33-□ PA 10430-□33-□**	24
		G1/8 –	– ODØ 6mm	**S10 581RFB-1/8-□33-□ S10 581RFB-Q6-□33-□**	**PA 10402-□33-□ PA 10432-□33-□**	24
Electrical permanent signal with external pilot air		G1/8 –	– ODØ 6mm	**S10 581S-RFG-1/8-□33-□ S10 581S-RFG-Q6-□33-□**	**PA 10399-□33-□ PA 10429-□33-□**	24
		G1/8 –	– ODØ 6mm	**S10 581S-RFE-1/8-□33-□ S10 581S-RFE-Q6-□33-□**	**PA 10401-□33-□ PA 10431-□33-□**	24
		G1/8 –	– ODØ 6mm	**S10 581S-RFB-1/8-□33-□ S10 581S-RFB-Q6-□33-□**	**PA 10403-□33-□ PA 10433-□33-□**	24

Solenoid version/ voltage	
– for connector	
00	without solenoid
01	12 V DC
02	24 V DC
04	48 V DC
07	110 V DC
50	12 V AC
51	24 V AC
55	48 V AC
57	110 V AC
61	230 V AC
– with cable (length 1m)	
41	12 V DC
42	24 V DC
71	12 V AC
72	24 V AC

Other voltages available on request

Notes on ordering:
All electrically actuated valves are supplied without connector as standard
– **please include this in Order in No. or order itseparately (see Order Instructions).**

For electrically actuated valves please complete the Type Designation and Order No. with the order codes.

Example:
5/3 way valve, push-in connections, middle position closed, electrically actuated, with spring return, voltage 230 V AC, without standard connector:

Order data:
S10 581RFG-Q6-6133-00 PA 10428-6133-00

Connector Types	
00	without connector *
88	standard connector 15mm
89	230 V AC with LED and protective circuit
92	24 V DC with LED and protective circuit

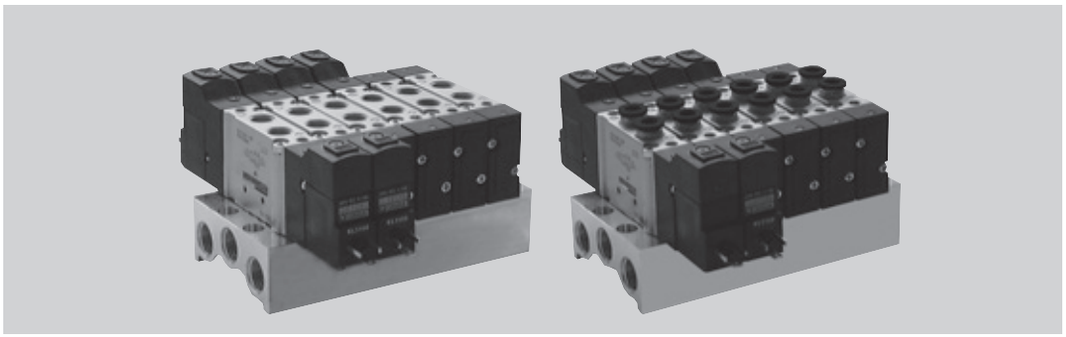
* Standard version

Dimensions in mm

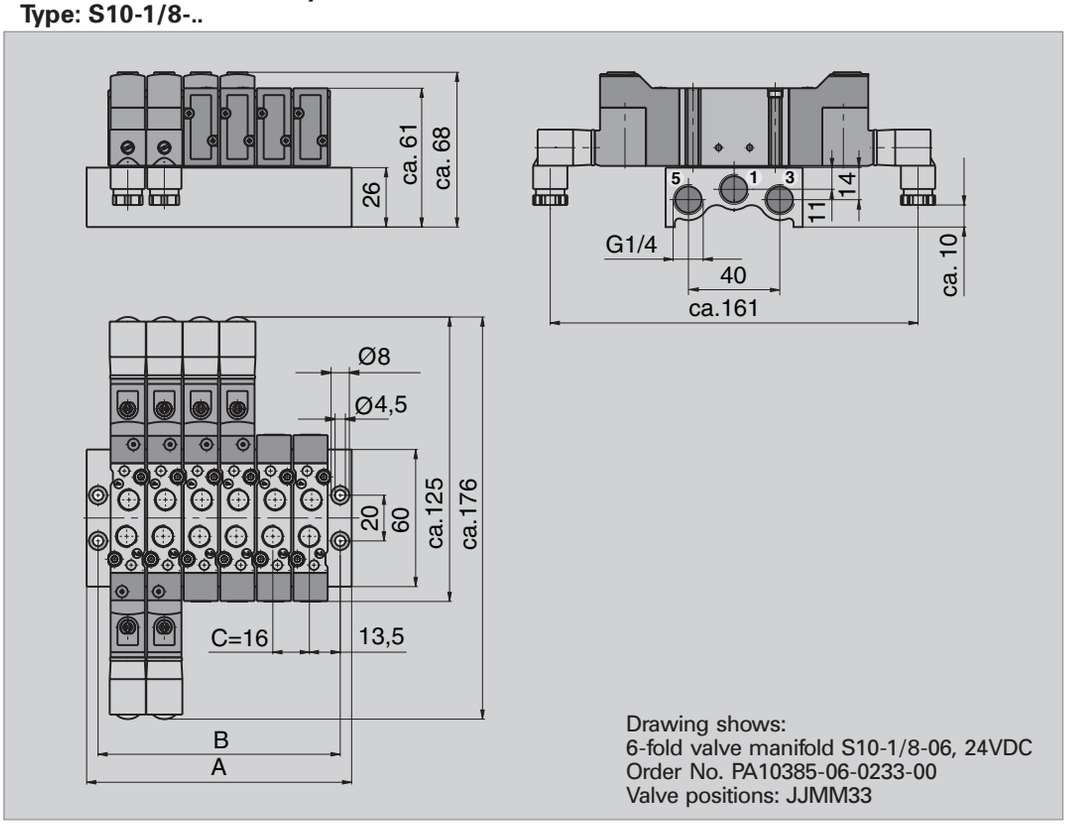
Valve Manifold Assemblies G1/8 or with Push-In Connections OD Ø 6 mm

fully assembled

Actuation systems:
– pneumatic
– electrical, pilot actuated



Valve manifold assembly – threaded version
Type: S10-1/8-..



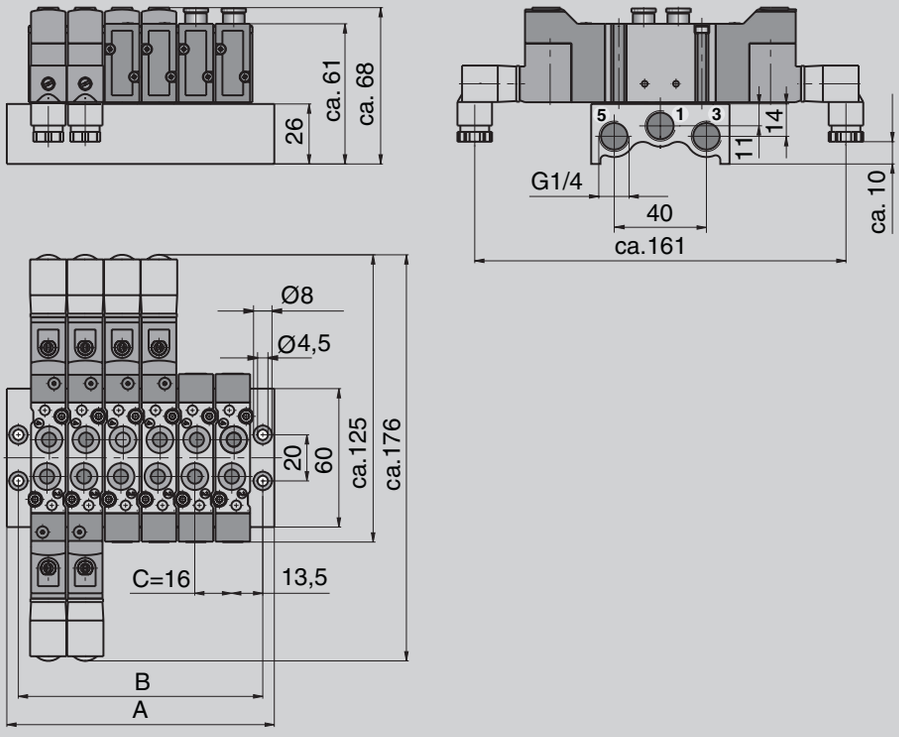
Drawing shows:
6-fold valve manifold S10-1/8-06, 24VDC
Order No. PA10385-06-0233-00
Valve positions: JJMM33

Dimension Table (mm)

Dimension	Number of valves							
	2	4	6	8	10	12	14	16
A	52	84	116	148	180	212	244	276
B	42	74	106	138	170	202	234	266

For single valves see page 20-24, for order instructions see page 30

Valve manifold assembly – version with Push-In Connections
Type: S10-Q6-..



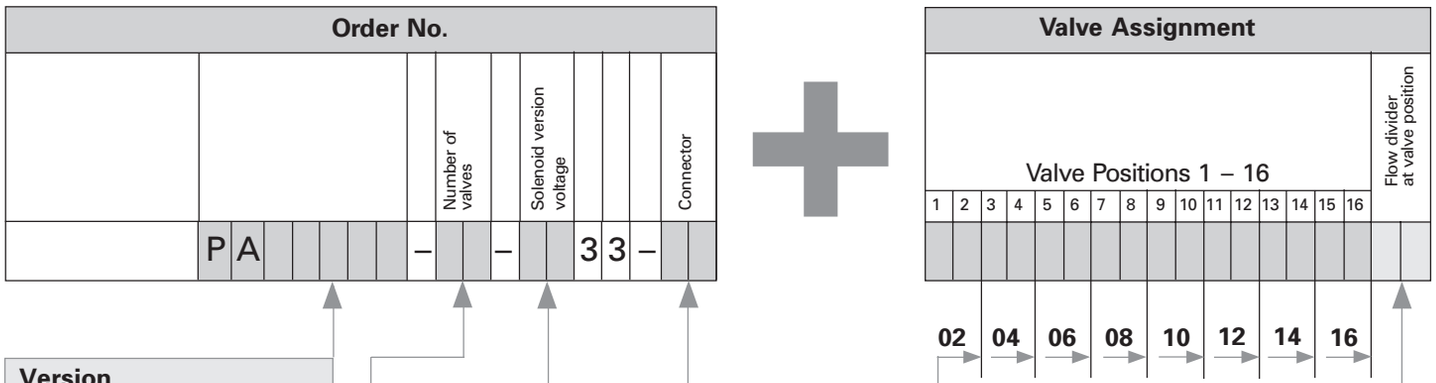
Drawing shows:
6-fold valve manifold S10-Q6-06, 24VDC
Order No. PA10386-06-0233-00
Valve positions: JJMM33

Dimension Table (mm)

Dimension	Number of valves							
	2	4	6	8	10	12	14	16
A	52	84	116	148	180	212	244	276
B	42	74	106	138	170	202	234	266

For single valves see page 20-24, for order instructions see page 30

Order Instructions for Valve Manifold Assemblies



Only even numbers of valves are possible!
Please enter the codes for the valve types required.

Version	
PA 10385	Valves with threaded ports G1/8 **Series: S10-1/8**
PA 10386	Valves with push-in ports OD Ø 6 **Series: S10-Q6**

Number of Valves	
02	1 – 2 valves
04	3 – 4 valves
06	5 – 6 valves
08	7 – 8 valves
10	9 – 10 valves
12	11 – 12 valves
14	13 – 14 valves
16	15 – 16 valves

Solenoid Version/ Voltage

– for connector

00	without solenoid
01	12 V DC
02	24 V DC
04	48 V DC
07	110 V DC
50	12 V AC
51	24 V AC
55	48 V AC
57	110 V AC
61	230 V AC

– with cable (length 1m)

41	12 V DC
42	24 V DC
71	12 V AC
72	24 V AC

Other solenoid versions (voltages) available on request

Connector Type	
00	without connector (standard version)
88	standard connector 15 mm wide
89	230 V AC with LED and protective circuit
92	24 V DC with LED and protective circuit

Order Codes for Valves and Cover Plates

Code	Description	Page
A	Cover plate for unused valve position	35
P	Intermediate air supply adapter G1/8	35
Pneumatically actuated		
8	2x3/2 way valve NC, air spring return	20
9	2x3/2 way valve NO, air spring return	20
0	2x3/2 way valve NC, NO, air spring return	20
1	5/2 way valve, spring return	22
2	5/2 way valve, air spring return	22
3	5/2 way valve, impulse	22
4	5/2 way valve, impulse, biased position	22
5	5/3 way valve, middle position closed, spring return to middle position	22
7	5/3 way valve, middle position exhausted, spring return to middle position	22
6	5/3 way valve, middle position pressurized, spring return to middle position	22

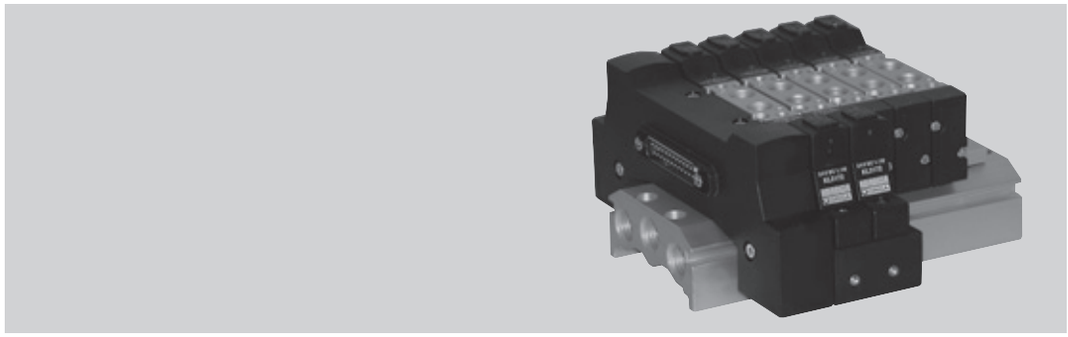
Order Codes for Valves and Cover Plates

Code	Description	Page
Electrically actuated		
K	2x3/2 way valve NC, air spring return	21
N	2x3/2 way valve NO, air spring return	21
H	2x3/2 way valve NC, NO, air spring return	21
M	5/2 way valve, spring return	23
L	5/2 way valve, air spring return	23
J	5/2 way valve, impulse	24
D	5/2 way valve, impulse, biased position	24
G	5/3 way valve, middle position closed, spring return to middle position	24
E	5/3 way valve, middle position exhausted, spring return to middle position	24
B	5/3 way valve, middle position pressurized, spring return to middle position	24

Order Codes for Valves and Cover Plates

Code	Description	Page
Electrically actuated, with external pilot air		
X	2x3/2 way valve NC, air spring return	21
Y	2x3/2 way valve NO, air spring return	21
Z	2x3/2 way valve NC, NO, air spring return	21
F	5/2 way valve, spring return	23
R	5/2 way valve, air spring return	23
S	5/2 way valve, impulse	24
T	5/2 way valve, impulse, biased position	24
U	5/3 way valve, middle position closed, spring return to middle position	24
W	5/3 way valve, middle position exhausted, spring return to middle position	24
V	5/3 way valve, middle position pressurized, spring return to middle position	24

Flow divider (for dual-pressure operating)	
	none (standard)
–	at valve position

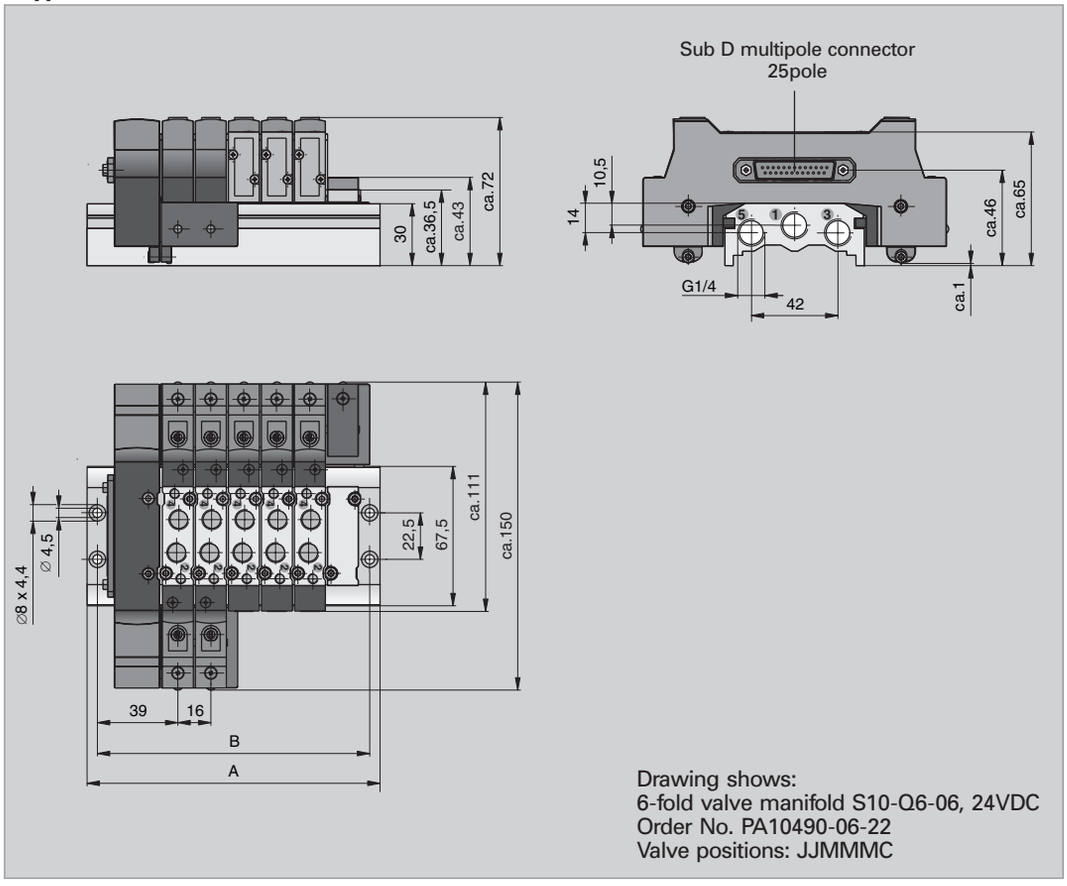


Valve Islands G1/8 or with Push-In Connections OD Ø 6 mm

fully assembled

Actuation systems:
– electrical, pilot actuated

Valve Islands, fully assembled – threaded version
Type: IM10-1/8-..



Drawing shows:
6-fold valve manifold S10-Q6-06, 24VDC
Order No. PA10490-06-22
Valve positions: JJMMMC

Version
Multipole version with Sub D connector, 25 pole.

Can be equipped with:
– max. 18 monostable valves
– max. 11 bistable valves
– Combination mono-/ bistable valves:
Outputs: max. 22
max. 18 (monostable)

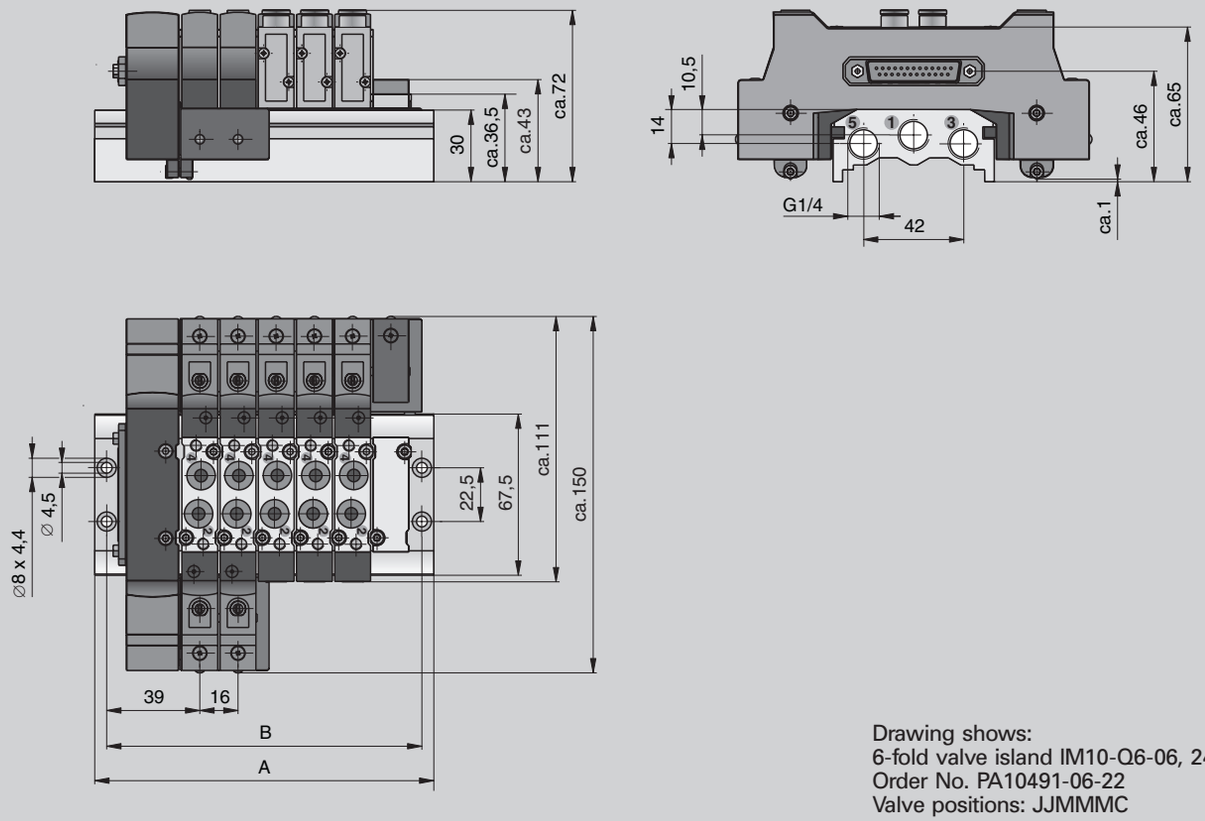
On Request:
Expandable with external field bus components (Profi Bus DP, Inter Bus S, CAN Device net, AS-Interface)

Dimension Table (mm)

Dimension	Number of Valves																
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	78	94	110	126	142	158	174	190	206	222	238	254	270	286	302	318	334
B	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324

For single valves see page 20-24, for order instructions see page 33

Valve Islands, fully assembled – version with Push-In Connections
Type: IM10-Q6-..



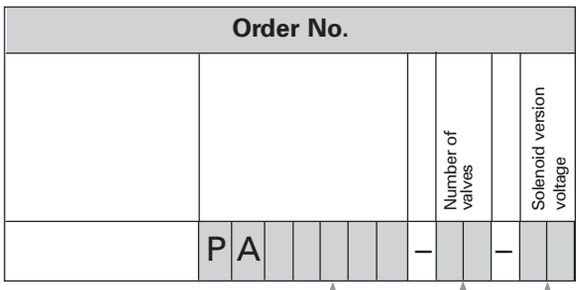
Drawing shows:
6-fold valve island IM10-Q6-06, 24VDC
Order No. PA10491-06-22
Valve positions: JJMMMC

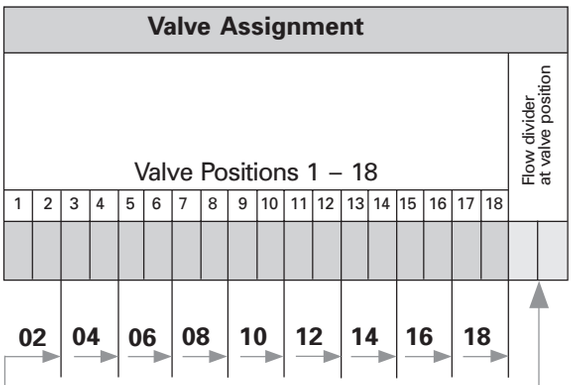
Dimension Table (mm)

Dimension	Number of Valves																
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	78	94	110	126	142	158	174	190	206	222	238	254	270	286	302	318	334
B	68	84	100	116	132	148	164	180	196	212	228	244	260	276	292	308	324

For single valves see page 20-24, for order instructions see page 33

Order Instructions





02 **04** **06** **08** **10** **12** **14** **16** **18**

Version	
PA 10490	Valve islands with threaded ports G1/8 **Series: IM10-1/8**
PA 10491	Valve islands with push-in connections OD Ø6 **Series: IM10-Q6**

Flow divider (for dual-pressure operating)	
	none (Standard)
..	at valve position

Number of Valves	
02	2 valves
03	3 valves *
04	4 valves
05	5 valves
▼	
18	18 valves

* uneven number of valve positions on request

Even and uneven numbers of valves are possible!
Please enter the codes for the valve types required.

Solenoid Version/ Voltage	
21	12 V DC
22	24 V DC

Order Codes for Valves and Cover Plates

Code	Description	Page
A	Cover plate for unused valve position	21
C	Cover plate (monostable) *	21
O	Cover plate (bistable) *	21
P	Intermediate air supply adapter G1/8	21

* including electrical socket

Order Codes for Valves and Cover Plates

Code	Description	Page
Electrically actuated, with external pilot air		
X	2x3/2 way valve NC, air spring return	21
Y	2x3/2 way valve NO, air spring return	21
Z	2x3/2 way valve NC, NO, air spring return	21
F	5/2 way valve, spring return	23
R	5/2 way valve, air spring return	23
S	5/2 way valve, impulse	24
T	5/2 way valve, impulse, biased position	24
U	5/3 way valve, middle position closed, spring return to middle position	24
W	5/3 way valve, middle position exhausted, spring return to middle position	24
V	5/3 way valve, middle position pressurized, spring return to middle position	24

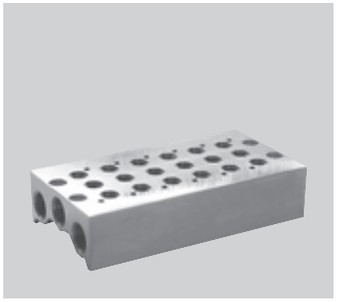
Order Codes for Valves and Cover Plates

Code	Description	Page
Electrically actuated		
K	2x3/2 way valve NC, air spring return	21
N	2x3/2 way valve NO, air spring return	21
H	2x3/2 way valve NC, NO, air spring return	21
M	5/2 way valve, spring return	23
L	5/2 way valve, air spring return	23
J	5/2 way valve, impulse	24
D	5/2 way valve, impulse, biased position	24
G	5/3 way valve, middle position closed, spring return to middle position	24
E	5/3 way valve, middle position exhausted, spring return to middle position	24
B	5/3 way valve, middle position pressurized, spring return to middle position	24

RPS Manifolds

for Directional Valves
– Series S10-1/8
– Series S10-Q6

RPS manifolds reduce and simplify the tubing layout. They provide a space-saving, clear and simple, compact solution.
RPS manifolds have a common compressed air supply port (P) and common exhaust ports (R, S).
From 2 to 16 valves can be mounted on them.
(Other sizes available on request)

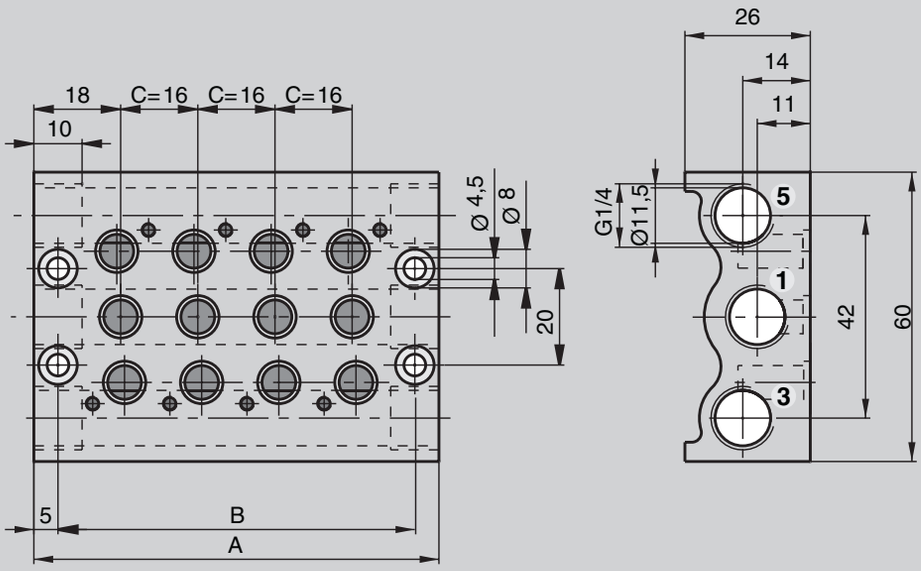


Materials:
RPS manifold – aluminium
Screws – galvanized steel
Gasket – oil-resistant rubber

Dimension Table (mm)

Type	Number of Valves	Dimension A	B
RPSL-S10-1/8-02	02	52	42
RPSL-S10-1/8-04	04	84	74
RPSL-S10-1/8-06	06	116	106
RPSL-S10-1/8-08	08	148	138
RPSL-S10-1/8-10	10	180	170
RPSL-S10-1/8-12	12	212	202
RPSL-S10-1/8-14	14	244	234
RPSL-S10-1/8-16	16	276	266

Dimensions (mm)
Type: RPSL-S10-1/8-..



Drawing shows: 4-fold manifold

Order Instructions and Weight

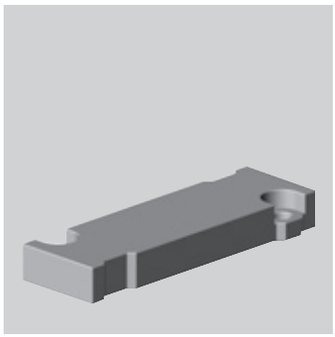
Order Instruction* Type	Order No.	consisting of manifold	screws	seals	Weight (mass)[kg]
RPSL-S10-1/8-02	**PD47254-0002**	1	4	2	0.116
RPSL-S10-1/8-04	**PD47254-0004**	1	8	4	0.190
RPSL-S10-1/8-06	**PD47254-0006**	1	12	6	0.264
RPSL-S10-1/8-08	**PD47254-0008**	1	16	8	0.337
RPSL-S10-1/8-10	**PD47254-0010**	1	20	10	0.410
RPSL-S10-1/8-12	**PD47254-0012**	1	24	12	0.484
RPSL-S10-1/8-14	**PD47254-0014**	1	28	14	0.557
RPSL-S10-1/8-16	**PD47254-0016**	1	32	16	0.630

* other versions on request

For single valves see page 20-24, for accessories see page 35

Accessories for Valve Manifold Assemblies

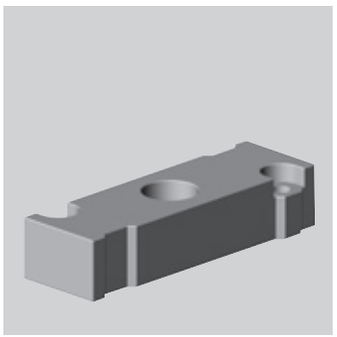
Cover Plate for Unused Valve Positions



Material:
Aluminium

Order No. KL 9114

Intermediate Air Supply Adapter

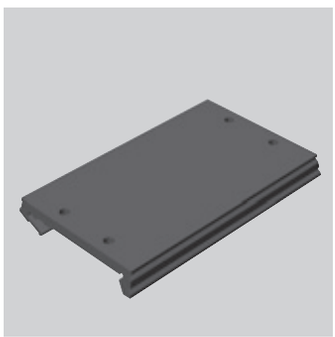


Material:
Aluminium

Order No. KL 9115

Clamp Mounting for DIN Rail 35 mm

Versions
– for Valve Manifolds S10
– for Valve Islands IM10



Material:
Aluminium

Clamp mounting Number of valves	Order No. for valve manifolds Type: S10	for valve islands Type: IM10
2	**PD47393-0002**	**PD47949-0002**
4	**PD47393-0004**	**PD47949-0004**
6	**PD47393-0006**	**PD47949-0006**
8	**PD47393-0008**	**PD47949-0008**
10	**PD47393-0010**	**PD47949-0010**
11 – 18	**on request**	**PD48270**

Flow Divider

Order No. PD47353

Material:
Aluminium

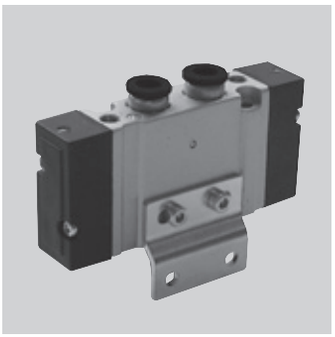
Cable with Sub-D Connector 25 pin



Cable length	Electrical protection	Order No.
2 m	IP40	**KL3355**
5 m	IP40	**KL3356**
5 m	IP65	**KL3357**

Dimensions in mm

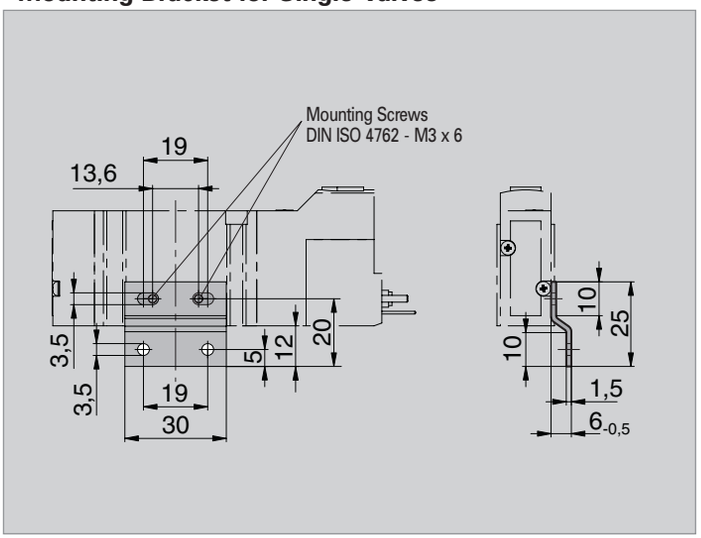
Mounting Bracket for Single Valves Series S10



Material:
Steel, passivated

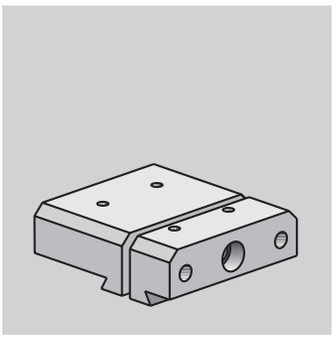
Order No. KL9112

Mounting Bracket for Single Valves



Adapter Plate for Single Valves Series S10

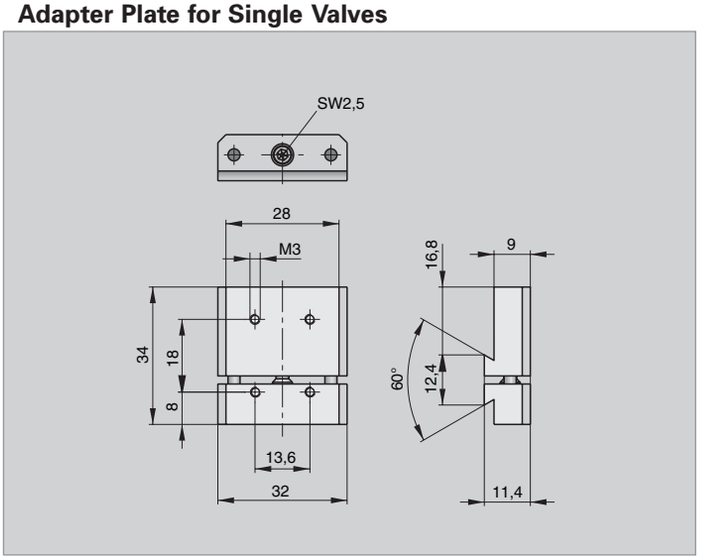
Adapter plate for direct mounting on HOERBIGER-ORIGA profile cylinders



Material:
Aluminium

Order No. PD47420

Adapter Plate for Single Valves



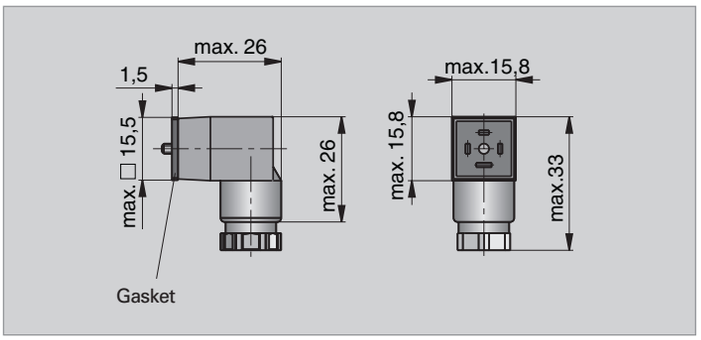
Connectors for Series S10

- Standard version
- with LED and protective circuit



Material:
Plastic

Connectors



Versions and Order Instructions

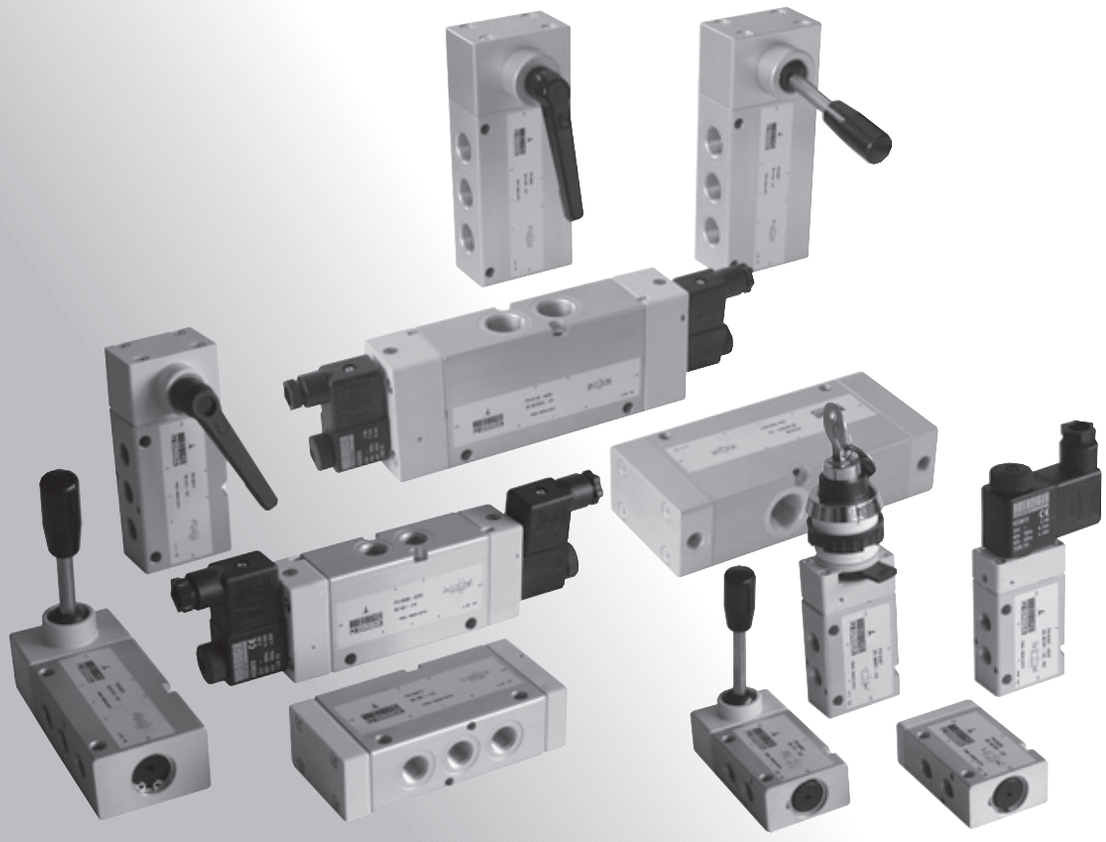
Version	Voltage	Colour	Order No.
Standard version	230 V AC/DC	black	**KL9052**
Bipolar LED and VDR	230 V AC	transparent	**KL9056**
to protect supply and switch	24 V DC	transparent	**KL9118**

Dimensions in mm

Directional Control Valves – Series S9-G1/8 to G1/2

Contents

Version	Actuation	Page		
		Characteristics	Dimensions	Order Instructions Overview
3/2 Way Valves Series S9-G1/8, G1/4, G1/2 for panel mounting to DIN 43696 (only for G1/8)	Manual Control Pneumatic Electric Manual Control	38, 39	40, 46	60, 61
5/2 Way Valves Series S9-G1/8, G1/4, G1/2 for panel mounting to DIN 43696 (only for G1/8)	Manual Control Pneumatic Electric Manual Control	38, 39	47-53	62, 63
5/3 Way Valves Series S9-G1/8, G1/4, G1/2	Manual Control Pneumatic Electric	38, 39	54, 59	64, 65
3/2, 5/2 and 5/3 Way Valve combinations with Logic Elements Series S9-G1/8, G1/4	Pneumatic AND OR TIMER	38, 39	66	67



Characteristics for Standard Valves

Series S9 – G1/8 to G1/2

Characteristics	Symbol	Unit	Series S9 G1/8			G1/4			G1/2		
Actuation			**Manual Control**	**pneu-matic**	**electrical**	**Manual Control**	**pneu-matic**	**electrical**	**Manual Control**	**pneu-matic**	**electrical**
General Features											
Type			Spool valve			Spool valve			Spool valve		
Mounting			2 screws M5			2 screws M6			2 screws M6		
Tube connection			Thread			Thread			Thread		
Port size			G1/8 – 7.4 deep			G1/4 – 11 deep			G1/2 – 16 deep		
Weight		kg	See page 40, 47, 54			See page 43, 50, 56			See page 45, 52, 58		
Installation			In any position			In any position			In any position		
Ambient temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60			-10 to +60			-10 to +60		
Medium temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60			-10 to +60			-10 to +60		
Medium			Filtered compressed air								
Lubrication			With or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)								
Pneumatic Characteristics											
Nominal pressure	$p_{min./max.}$	bar	6			6			6		
Operating pressure range	$p_{min./max.}$	bar	0–10 (10	–	–	0–10	–	–	0–10	–	–
– permanent signal version	$p_{min./max.}$	bar	–	0–10	2–10	–	0–10	2–10	–	0–10	2,2–10
– impulse version	$p_{min./max.}$	bar	–	0–10	1.5–10(4	–	0–10	1.5–10(4	–	0–10	1.5–10(5
– with external pilot air	$p_{min./max.}$	bar	–	–	0–10	–	–	0–10	–	–	0–10
Nominal flow	Q_N	l/min	500 (450 – 3/2 way valve)			1300(7			3500(8		
Actuation											
Manual control			direct			direct			direct		
Stroke		mm	4.5			6.5			9.4		
Actuation force	F_b	N	7 (2			10 (2			15 (2		
			10 (3			15 (3			40 (3		
Actuation force for panel mounting actuators			see page 40			–			–		
Pneumatic			direct			direct			direct		
Actuation pressure range											
permanent signal version	$p_{min./max.}$	bar	–	2–10	2–10	2–10	2–10	2–10	–	2.2–10(9	2.2–10
– impulse version	$p_{min./max.}$	bar	–	1.5–10	1.5–10	1.5–10	1.5–10(4	1.5–10(4	–	1.5–10(5	1.5–10(4
Electrical			Pilot operated								
Voltage type			Alternating current (50/60Hz)			Direct current					
Nominal voltage											
– Standard version	U_n	V	230 ±10%			24 ±10%			other voltages on request		
– Low wattage version	U_n	V	230 ±10%			24 ±10%					
Initial power consumption			G1/8	G1/4	G1/2	G1/8	G1/4	G1/2			
– Standard version		VA (W)	8.5	8.5	11.0	2.5	2.5	4.8			
– Low wattage version		VA (W)	6.6	6.6	7.8	2.1	2.1	2.7			
Continuous consumption											
– Standard version		VA (W)	6.0	6.0	8.5	2.5	2.5	4.8			
– Low wattage version		VA (W)	3.9	4.9	4.9	2.1	2.1	2.7			
Duty cycle	ED	%	100								
Electrical protection		IP	IP65 to DIN 40050 (applise only to solenoid with plug)								
Connection			Plug to DIN EN 175301-803 form B – industrial norm (6								

(1 Note: for use below freezing point please contact us
(2 Action force for valves with spring return, Actuation with rotary lever: 5N
(3 Action force for valves with spring return, Actuation with rotary lever: 15N
(4 only for version with biased position pneumatically actuated 2 – 10 bar, electrically actuated 2.5 – 10 bar
(5 version with biased position 2.5 – 10 bar
(6 Low wattage version: Plug to DIN EN 175301-803 form A
(7 Version "middle position vented" 1000 l/min
(8 Version "middle position vented" 3300 l/min
Version "middle position pressured" 3600 l/min
(9 5/3 way valve 2,5 – 10 bar
(10 valves with panel mounting actuators 2 – 10 bar

Characteristics for Valves in EX Areas

Series S9 – G1/8 to G1/2

Characteristics	Symbol	Unit	Series S9								
			G1/8			G1/4			G1/2		
Actuation			**Manual Control**	**pneu-matic**	**electrical**	**Manual Control**	**pneu-matic**	**electrical**	**Manual Control**	**pneu-matic**	**electrical**
General Features											
Type			Spool valve			Spool valve			Spool valve		
Mounting			2 screws M5			2 screws M6			2 screws M6		
Tube connection			Thread			Thread			Thread		
Port size			G1/8 – 7,4 deep			G1/4 – 11 deep			G1/2 – 16 deep		
Weight		kg	See page 40, 47, 54			See page 43, 50, 56			See page 45, 52, 58		
Installation			In any position			In any position			In any position		
Ambient temperature range ([1	$\vartheta_{min./max.}$	°C	-10 to +60			-10 to +60			-10 to +60		
Medium temperature range ([1	$\vartheta_{min./max.}$	°C	-10 to +60			-10 to +60			-10 to +60		
Medium			filtered, unlibricated compressed air – free from water and dirt to ISO 8573-1 Solids: Class 7 particle size <40 µm for gas. Water content: pressure dew point +3°C, Class 4, but at least 5°C below minimum operating temperature								
Pneumatic Characteristics											
Nominal pressure	$p_{min./max.}$	bar	6			6			6		
Operating pressure range	$p_{min./max.}$	bar	0–8 ([10	–	–	0–8	–	–	0–8	–	–
– permanent signal version	$p_{min./max.}$	bar	–	0–8	2–8	–	0–8	2–8	–	0–8	2.2–8
– impulse version	$p_{min./max.}$	bar	–	0–8	1.5–8([4	–	0–8	1.5–8([4	–	0–8	1.5–8([5
– with external pilot air	$p_{min./max.}$	bar	–	–	0–8	–	–	0–8	–	–	0–8
Nominal flow	Q_N	l/min	500 (450 at 3/2 way valve)			1300([7			3500([8		
Actuation											
Manual control			direct			direct			direct		
Stroke		mm	4.5			6.5			94		
Actuation force	F_b	N	7 ([2			10 ([2			15 ([2		
			10 ([3			15 ([3			40 ([3		
Actuation force for panel mounting actuators			see page 40			–			–		
Pneumatic			direct			direct			direct		
Actuation pressure range											
– permanent signal version	$p_{min./max.}$	bar	–	2–8	2–8	2–8	2–8	2–8	–	2.2–8([9	2.2–8
– impulse version	$p_{min./max.}$	bar	–	1.5–8	1.5–8	1.5–8	1.5–8([4	1.5–8([4	–	1.5–8([5	1.5–8([4
Electrical			pilot operated								
Certification			EC Type Test Certificate for single valve: not required for mechanical units in II 2G EC Type Test Certificate for solenoid coil: PTB-No. 03 Ex IEC 2019X and PTB 03 ATEX 2018X to T5								
Category, type of ignition protection			Single valve: Ⓔx II 2G c T4 T135°C -10°C≤Ta≤+60°C Solenoid/individual use: Ⓔx II 2G EEx m II T5 -20°C≤Ta≤+50°C Solenoid/manifold mounting: Ⓔx II 2G EEx m II T5 -20°C≤Ta≤+40°C								
Voltage type			Alternating current (50/60Hz)			Direct current					
Nominal voltage	U_N	V	230 ±10% 110 ±10% 24 ±10%			24 ±10%			other voltages on request		
Max. switching frequency		Hz	1 (independently of actuation type)								
Power rating at U_N		VA (W)	G1/8, G1/4, G1/2			G1/8, G1/4, G1/2					
			3.1 (230V)			3.3 (24V)					
			3.0 (110V)								
			2.5 (24V)								
Power limit at U_N ([6		VA (W)	2.9 (230V)			3.0 (24V)					
			2.8 (110V)								
			2.4 (24V)								
Electrical protection		IP	IP65 (applise only to solenoid with cable)								
Connection			Cable – cable lengths see Order Instructions								

([1 Note: for use below freezing point please contact us
([2 Action force for valves with spring return, Actuation with rotary lever: 5N
([3 Action force for valves with spring return, Actuation with rotary lever: 15N
([4 only for version with biased position pneumatically actuated 2 – 8 bar, electrically actuated 2.5 – 8 bar
([5 version with biased position 2.5 – 8 bar
([6 maximum power if warmed up to termal load limit
([7 Version "middle position vented" 1000 l/min
([8 Version "middle position vented" 3300 l/min
Version "middle position pressured" 3600 l/min
([9 5/3 way valve 2.5 – 8 bar
([10 valves with panel mounting actuators 2 – 8 bar

Dimensions

3/2 Way Valves Series S9 G1/8

Actuation:
– Hand lever
– Pneumatic
– Electrical pilot operated
– Electrical pilot operated with external pilot air
– Panel mounting actuators for mounting diameter to DIN 43696

Note:
The "normally open" version cannot be used on a P-supply manifold



Versions
– normally closed
– normally open
– with external pilot air
– version to ATEX Standard

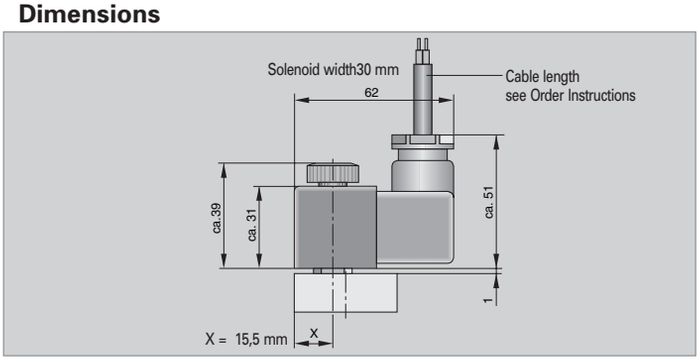
Weight (mass) kg

Description	Type	Weight (mass)
Hand lever, indexed	S9 311-1/8	0.162
– with spring return	S9 311RF-1/8	0.162
Pneumatic by permanent signal	S9 361RF-1/8	0.137
Pneumatic by impulse	S9 361-1/8	0.147
Electrical by permanent signal	S9 381(S)RF-1/8	0.247
Electrical by impulse	S9 381(S)-1/8	0.382

Weight (mass) kg and action forces for valves with panel mounting actuators

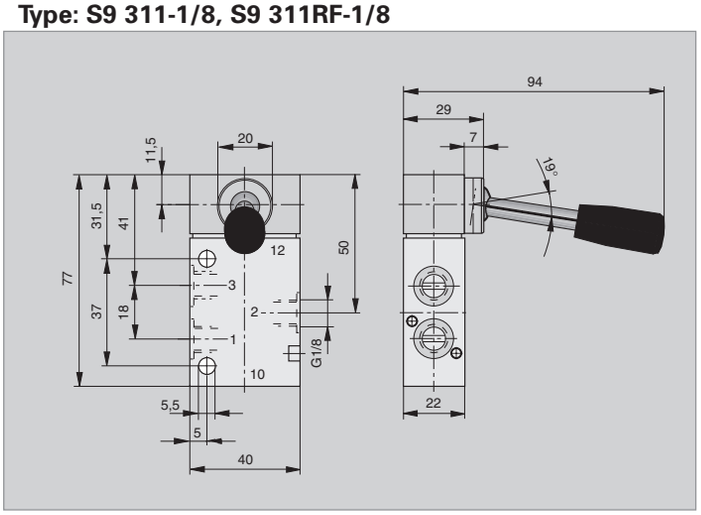
Description	Type	Actuation force (N, Nm)	Weight (mass)
Rotary lever	S9 312T-1/8	0.3	0.137
	S9 312T-RF-1/8	0.3	0.137
Pushbutton	S9 313T-RF-1/8	8.0	0.137
Mushroom pushbutton	S9 315T-RF-1/8	8.0	0.137
Locking switch	S9 316T-1/8	9.0	0.202
Rotary switch	S9 317T-1/8	0.3	0.127
Mushroom pushbutton EMERGENCY-OFF	S9 318T-1/8	10.0	0.137

Solenoid for use in EX areas Dimensions

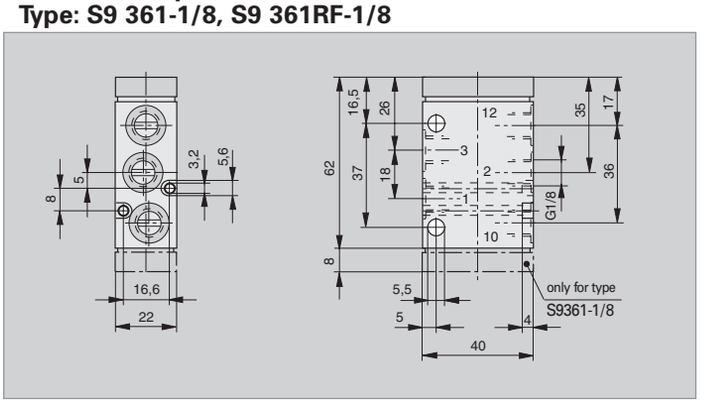


For more information on valves to ATEX standards see page 39, 61

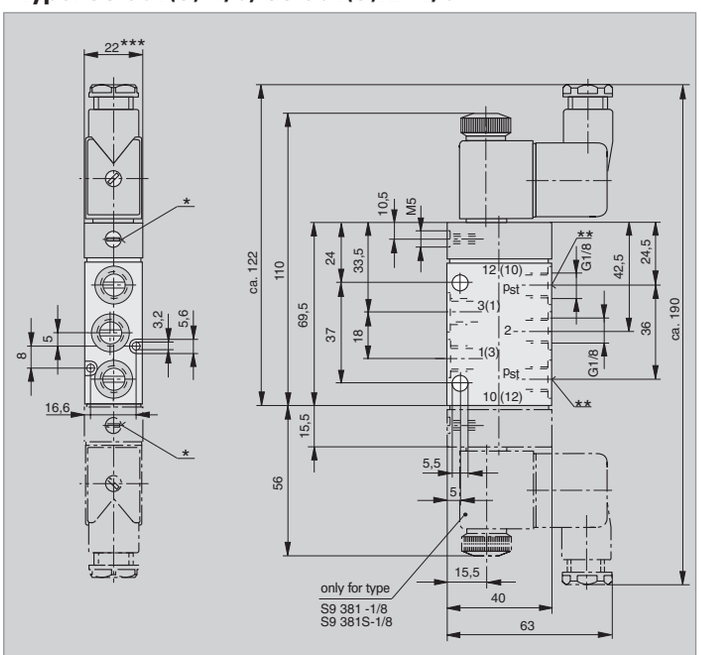
Hand lever actuated
Type: S9 311-1/8, S9 311RF-1/8



Pneumatically actuated
Type: S9 361-1/8, S9 361RF-1/8



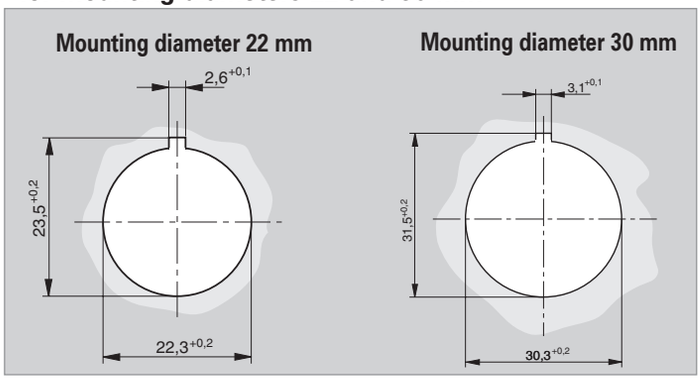
Electrically actuated
Type: S9 381(S)-1/8, S9 381(S)RF-1/8



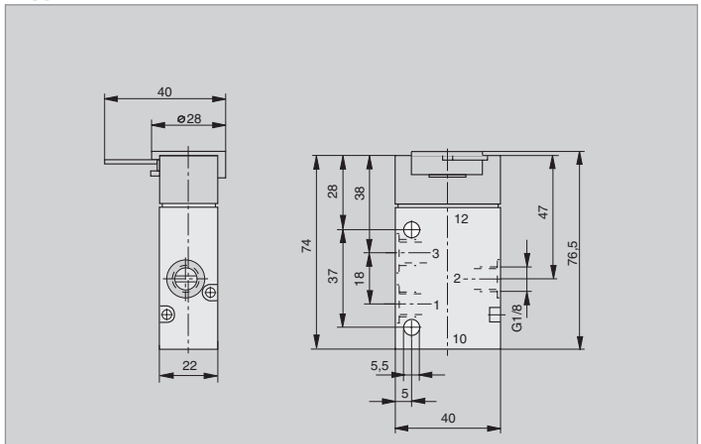
* Manual override
** Operating pressure supply p_{st} only for type S9 381S
*** Solenoid width is 30 mm on low wattage coil version

Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 92, 95, valve islands see page 75-83

Mounting holes
for mounting diameters 22 and 30 mm

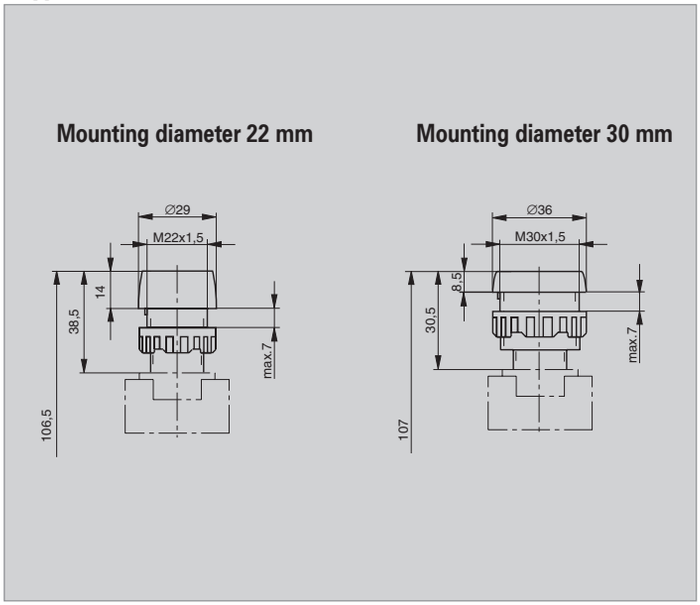


Basic valve for panel mounting actuatos
Type: S9 390RF-1/8

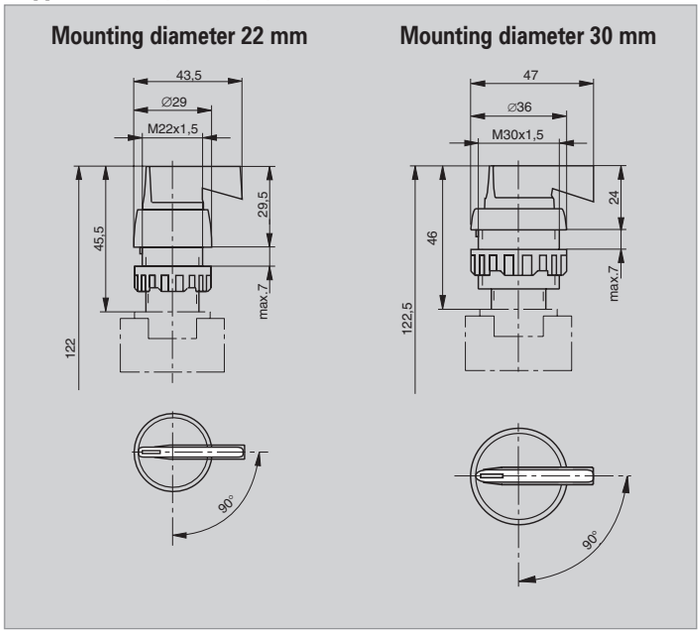


The actuators for these valves are interchangeable and can be mounted with 180° displacement on the basic valve.
The actuators are not mounted upon delivery.

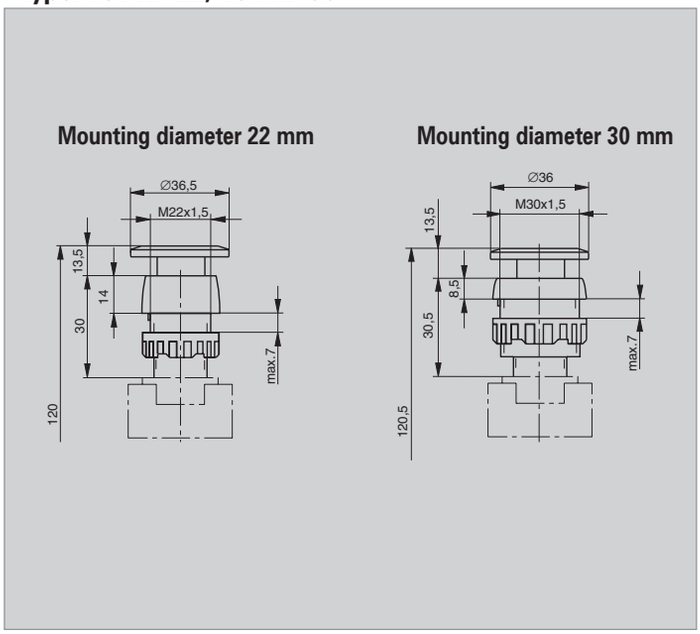
Pushbutton
Type: 13T-RF-22, 13T-RF-30



Rotary lever, indexed
Type: 12T-22, 12T-30,



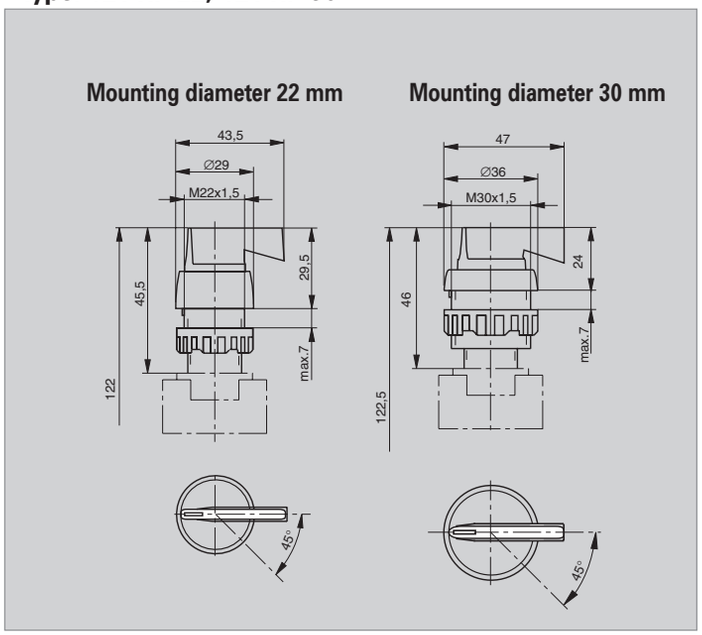
Mushroom pushbutton
Type: 15T-RF-22, 15T-RF-30



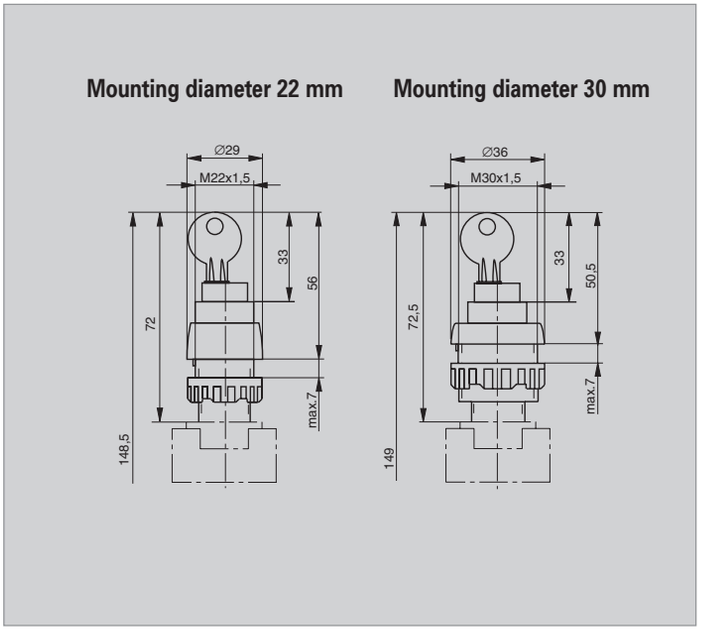
Order Instructions see page 60, 61, characteristics see page 38, 39

Dimensions

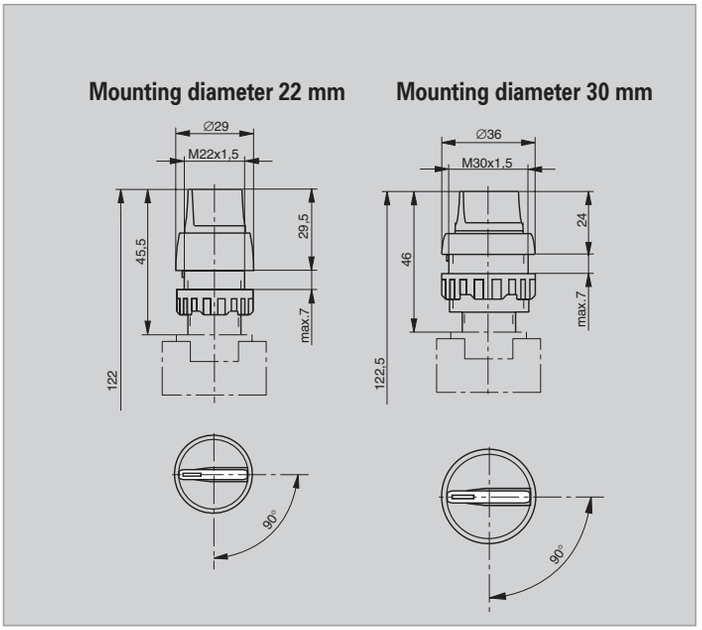
Rotary lever with spring return
Type: 12T-RF-22, 12T-RF-30



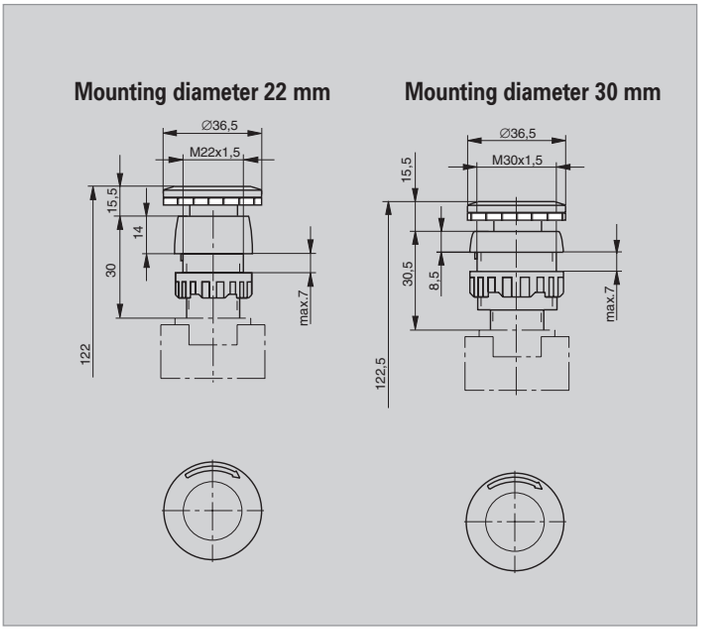
Locking switch
Type: 16T-22, 16T-30



Rotary switch
Type: 17T-22, 17T-30



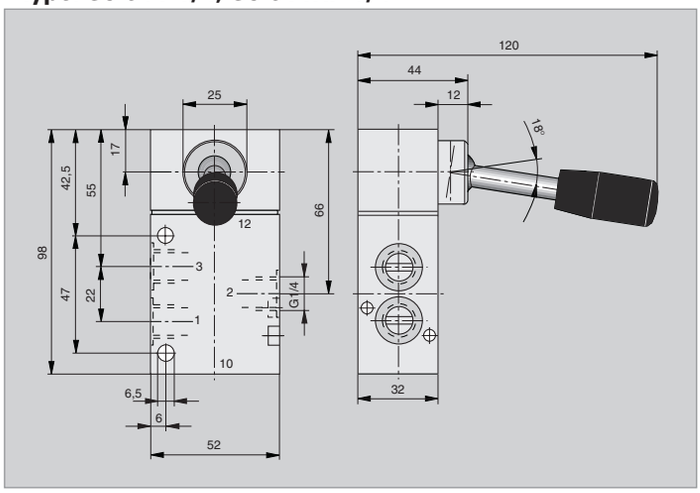
Mushroom switch (EMERGENCY SHUTDOWN)
Type: 18T-22, 18T-30



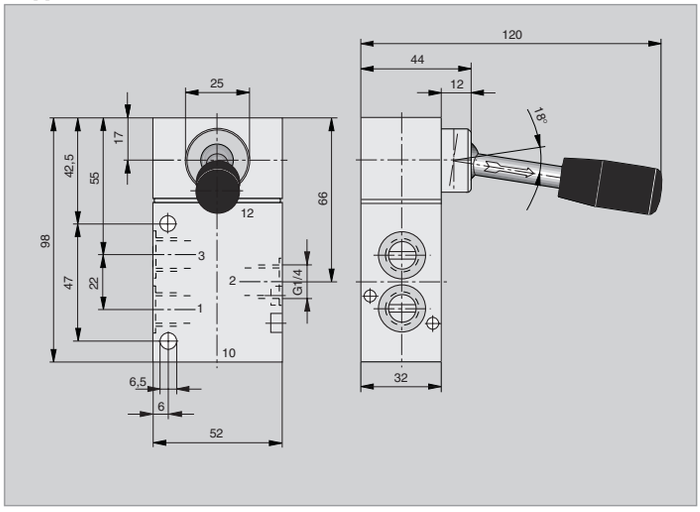
Order Instructions see page 60, 61, characteristics see page 38, 39

Dimensions

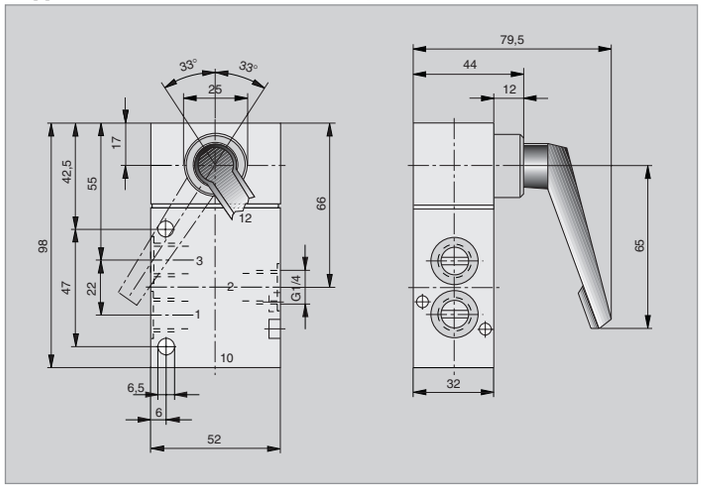
Hand lever actuated
Type: S9 311-1/4, S9 311RF-1/4

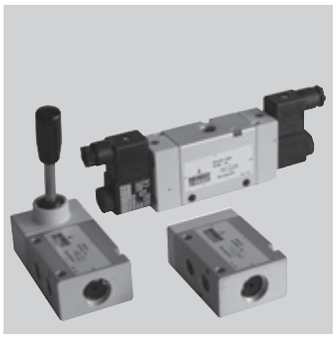


Safety hand lever actuated
Type: S9 311S-1/4



Rotary lever actuated
Type: S9 312-1/4, S9 312RF-1/4





3/2 Way Valves Series S9 G1/4

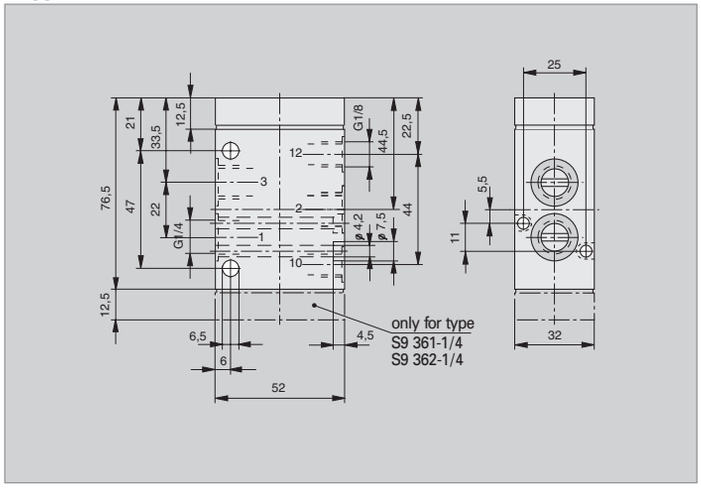
Actuation:
– Hand lever
– Pneumatic
– Electrical pilot operated
– Electrical pilot operated with external pilot air

Versions
– normally closed
– normally open
– with external pilot air
– with biased position
– version to ATEX Standard

Weight (mass) kg

Description	Type	Weight (mass)
Hand lever, indexed	S9 311-1/4	0.370
– with spring return	S9 311RF-1/4	0.370
Safety hand lever	S9 311S-1/4	0.370
Rotary lever, indexed	S9 312-1/4	0.370
– with spring return	S9 312RF-1/4	0.370
Pneumatic by permanent signal	S9 361RF-1/4	0.370
Pneumatic by impulse	S9 361-1/4	0.430
– with biased position	S9 362-1/4	0.430
Electrical by permanent signal	S9 381(S) RF-1/4	0.500
Electrical by impulse	S9 381(S)-1/4	0.600
– with biased position	S9 382(S)-1/4	0.600

Pneumatically actuated
Type: S9 361-1/4, S9 362-1/4, S9 361RF-1/4

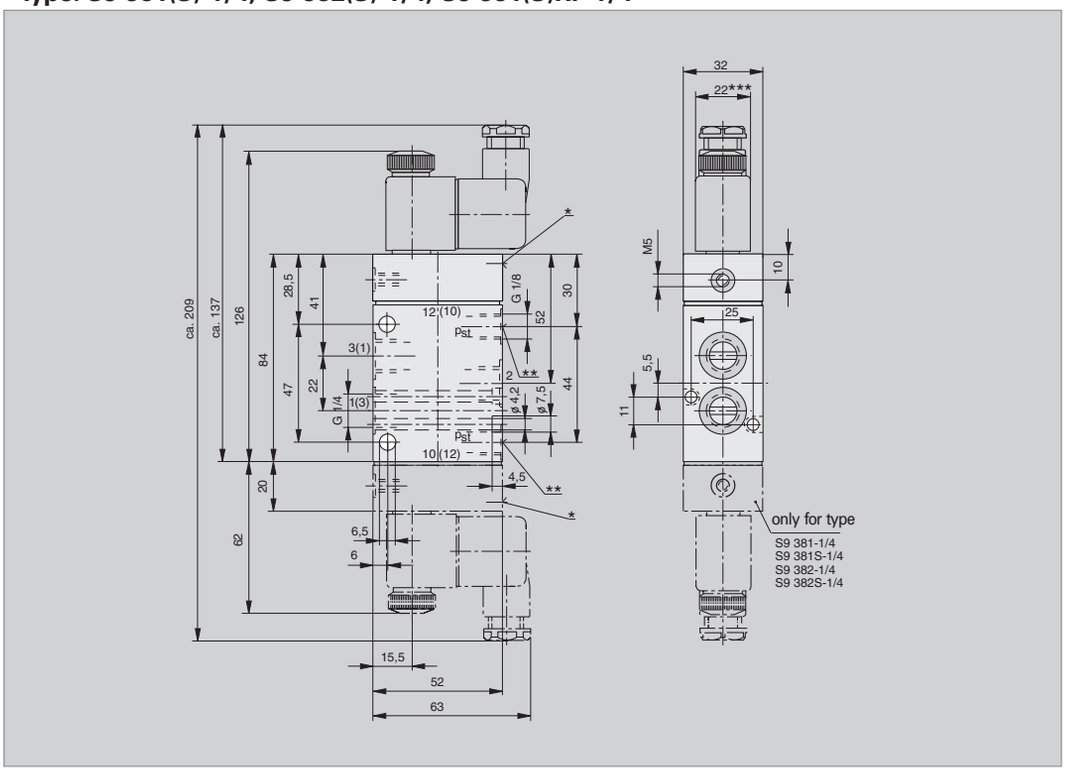


Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 92, 95

Dimensions

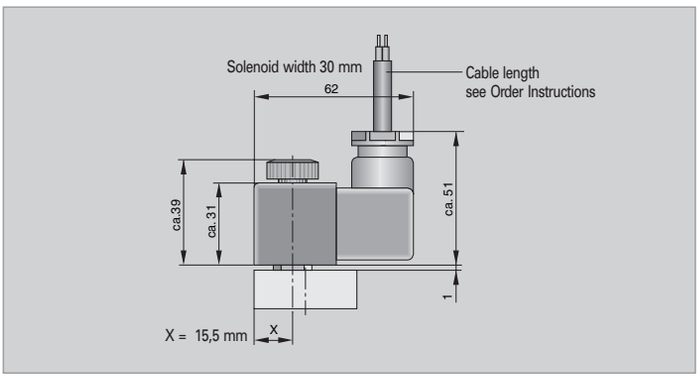
Note:
The "normally open" version cannot be used on a P-supply manifold

Electrically actuated
Type: S9 381(S)-1/4, S9 382(S)-1/4, S9 381(S)RF-1/4



* Manual override
** Operating pressure supply p_{st} only for type S9 381S
*** Solenoid width is 30 mm on low wattage coil version

Solenoid for use in EX areas
Dimensions

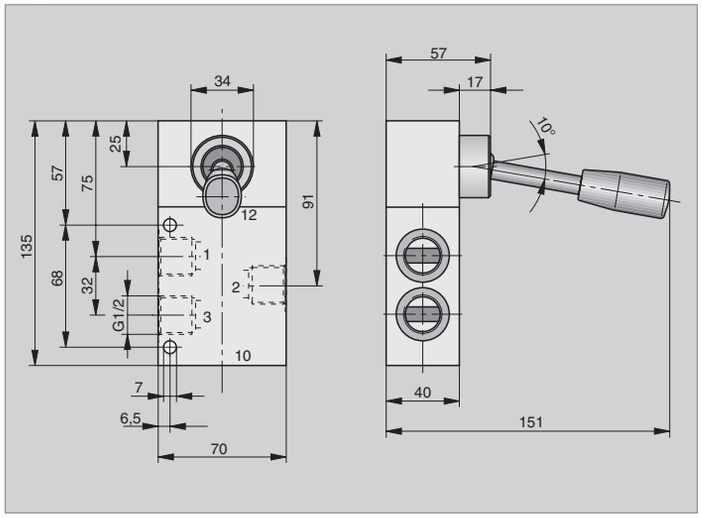


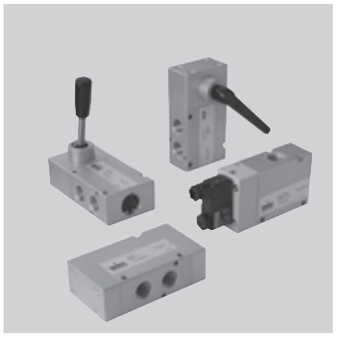
For more information on valves to ATEX standards see page 39, 61

Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Dimensions

Hand lever actuated
Type: S9 311-1/2, S9 311RF-1/2



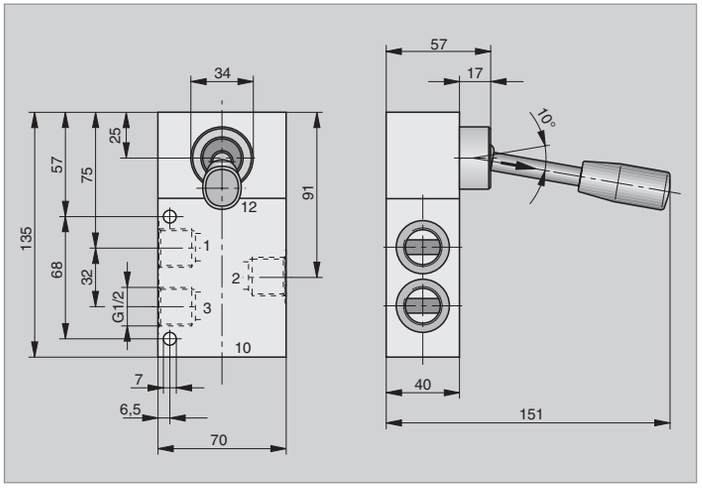


3/2 Way Valves Series S9 G1/2

Actuation:
– Hand lever
– Pneumatic
– Electrical pilot operated
– Electrical pilot operated with external pilot air

Versions
– normally closed
– normally open
– with external pilot air
– with biased position
– version to ATEX Standard

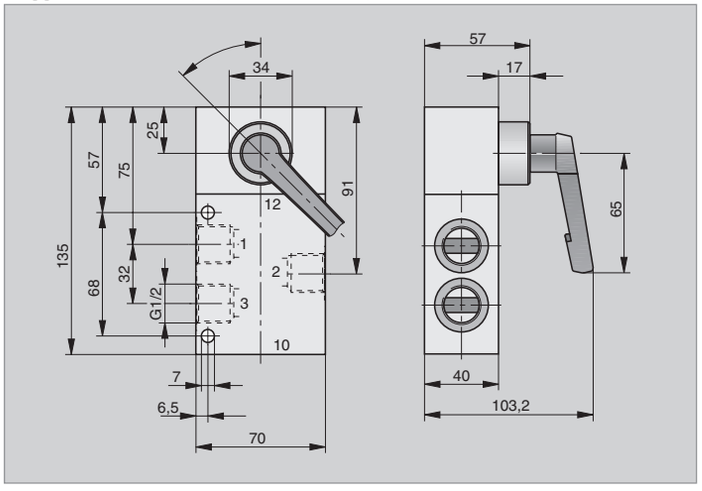
Safety hand lever actuated
Type: S9 311S-1/2



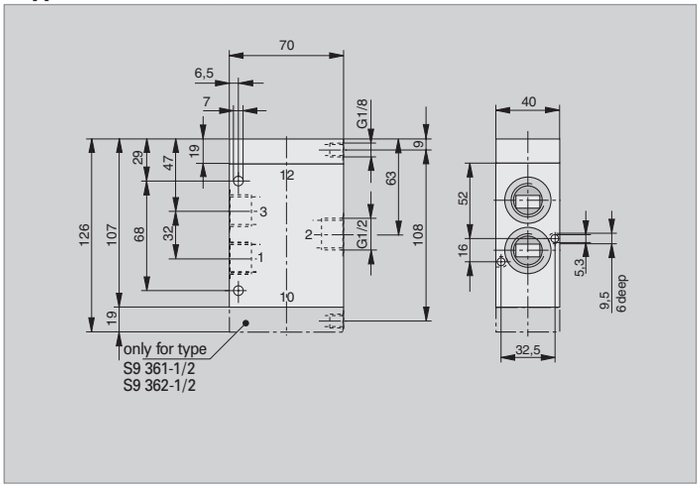
Weight (mass) kg

Description	Type	Weight (mass)
Hand lever, indexed	S9 311-1/2	0.900
– with spring return	S9 311RF-1/2	0.900
Safety hand lever	S9 311S-1/2	0.900
Rotary lever, indexed	S9 312-1/2	0.950
– with spring return	S9 312RF-1/2	0.950
Pneumatic by permanent signal	S9 361RF-1/2	0.700
Pneumatic by impulse	S9 361-1/2	0.650
– with biased position	S9 362-1/2	0.650
Electrical by permanent signal	S9 381(S) RF-1/2	0.770
Electrical by impulse	S9 381(S)-1/2	1.008
– with biased position	S9 382(S)-1/2	1.008

Rotary lever actuated
Type: S9 312-1/2, S9 312RF-1/2



Pneumatically actuated
Type: S9 361-1/2, S9 361RF-1/2

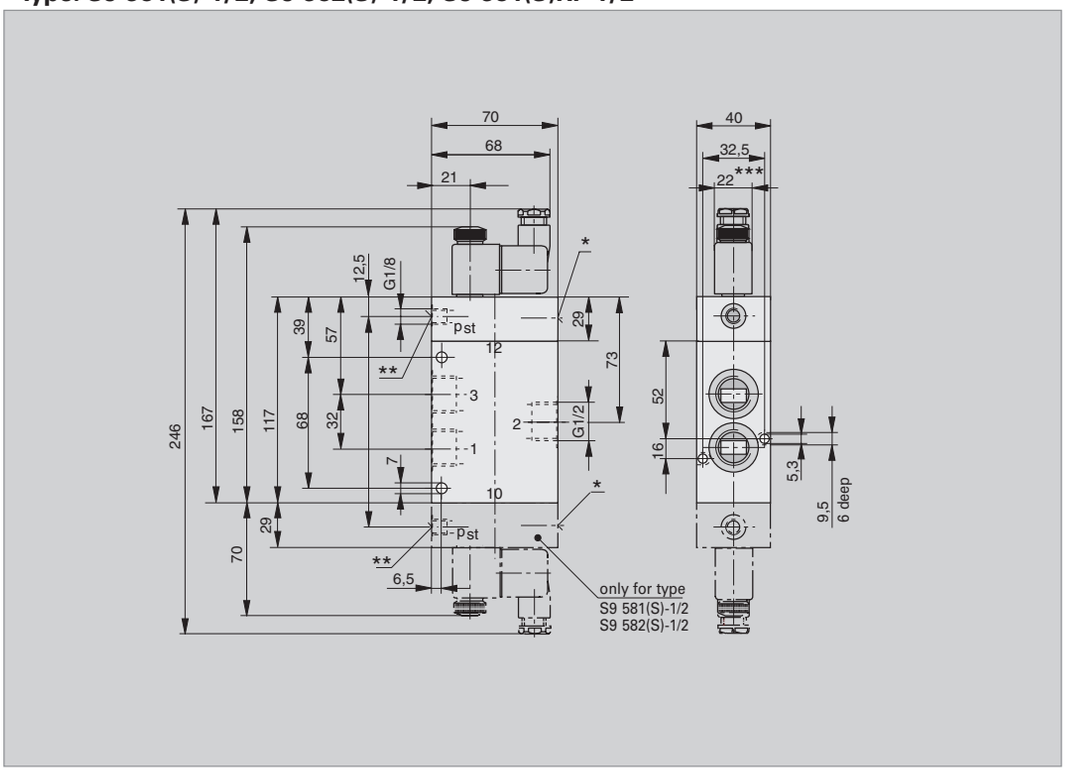


Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Dimensions

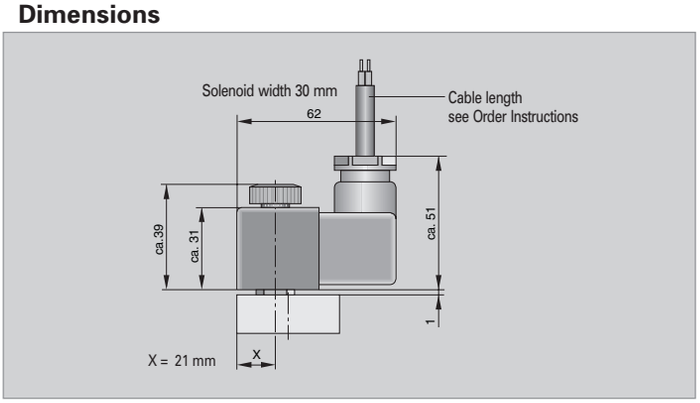
Note:
The "normally open" version cannot be used on a P-supply manifold

Electrically actuated
Type: S9 381(S)-1/2, S9 382(S)-1/2, S9 381(S)RF-1/2



* Manual override
** Operating pressure supply p_{st} only for type S9 581S
*** Solenoid width is 30 mm on low wattage coil version

Solenoid for use in EX areas
Dimensions

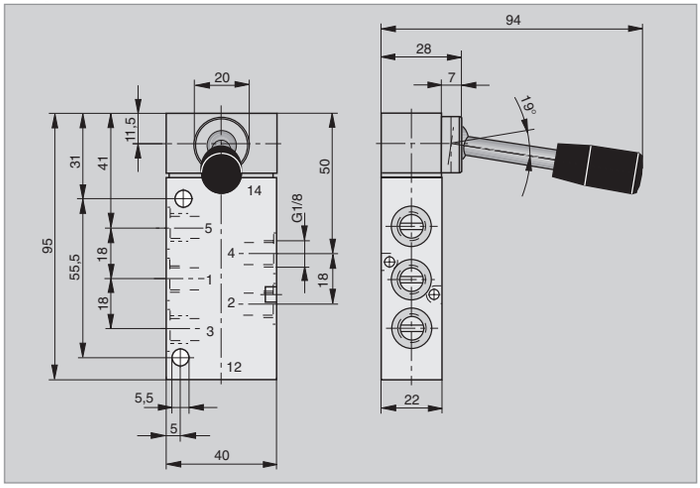


For more information on valves to ATEX standards see page 39, 61

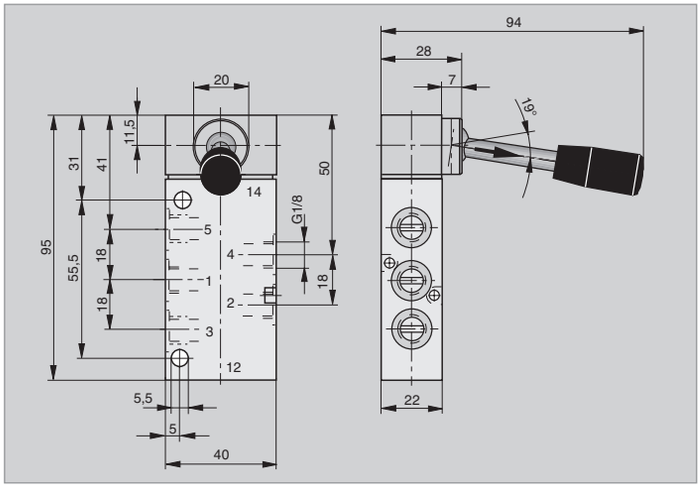
Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Dimensions

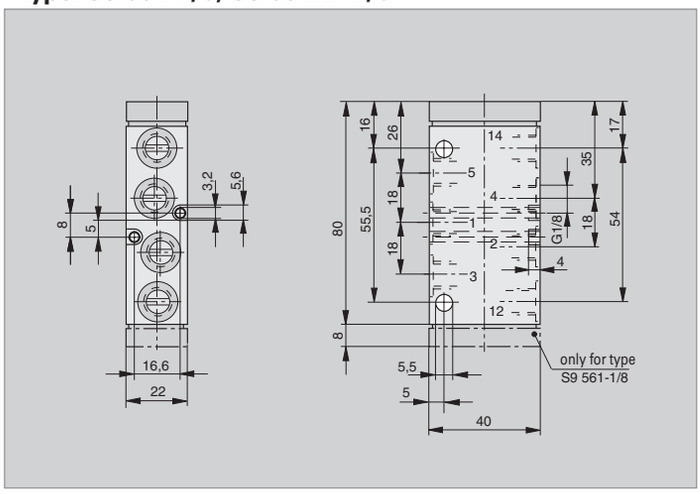
Hand lever actuated
Type: S9 511-1/8, S9 511RF-1/8



Safety hand lever actuated
Type: S9 511S-1/8



Pneumatically actuated
Type: S9 561-1/8, S9 561RF-1/8





5/2 Way Valves Series S9 G1/8

Actuation:
– Hand lever
– Safety hand lever
– Pneumatic
– Electrical pilot operated
– Electrical pilot operated with external pilot air
– Panel mounting actuators for mounting diameter to DIN 43696

Versions
– with external pilot air
– with biased position
– version to ATEX Standard

Weight (mass) kg

Description	Type	Weight (mass)
Hand lever, indexed	S9 511-1/8	0.195
– with spring return	S9 511RF-1/8	0.195
Safety hand lever	S9 511S-1/8	0.195
Pneumatic by permanent signal	S9 561RF-1/8	0.160
Pneumatic by impulse	S9 561-1/8	0.170
Electrical by permanent signal	S9 581(S)RF-1/8	0.280
Electrical by impulse	S9 581(S)-1/8	0.415
– with biased position	S9 582-1/8	0.415

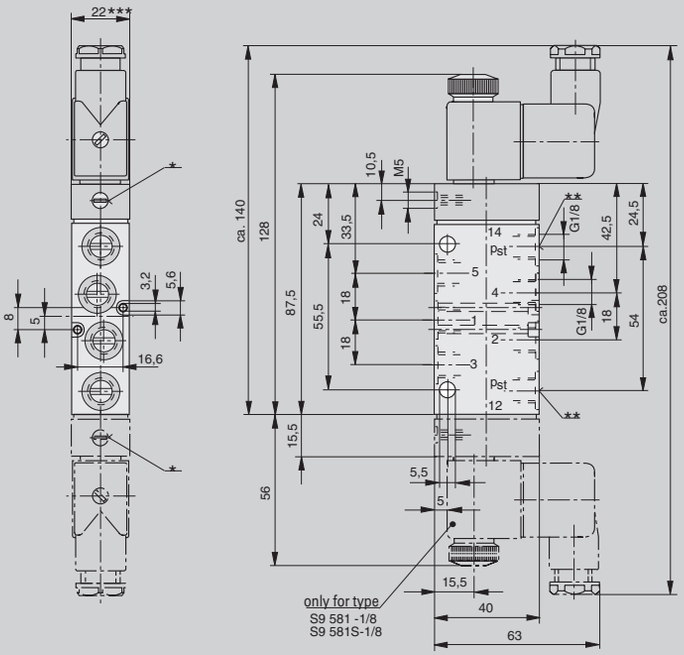
Weight (mass) kg and actuation forces for valves with panel mounting actuators

Description	Type	Actuation force (N, Nm)	Weight (mass)
Rotary lever	S9 512T-1/8	0.3	0.160
	S9 512T-RF-1/8	0.3	0.160
Pushbutton	S9 513T-RF-1/8	8.0	0.150
Mushroom pushbutton	S9 515T-RF-1/8	8.0	0.160
Locking switch	S9 516T-1/8	9.0	0.225
Rotary switch	S9 517T-1/8	0.3	0.150
Mushroom pushbutton EMERGENCY-0FF	S9 518T-1/8	10.0	0.160

Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

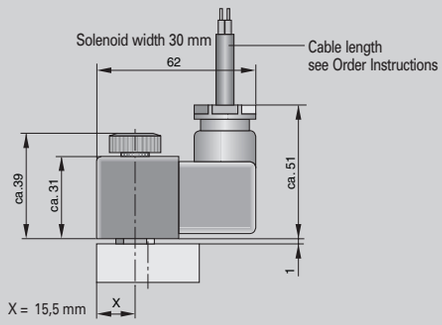
Dimensions

Electrically actuated
Type: S9 581(S)-1/8, S9 581(S)RF-1/8, S9 582-1/8



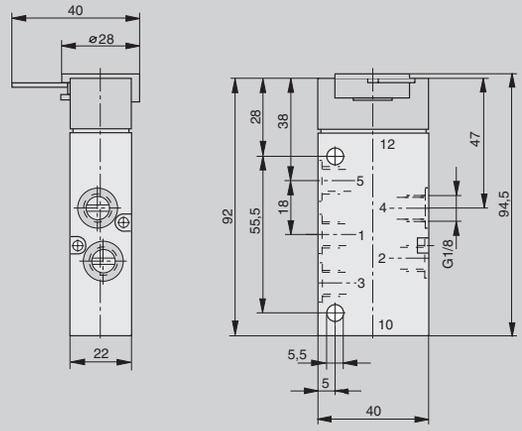
* Manual override
** Operating pressure supply p_{st} only for type S9 581S
*** Solenoid width is 30 mm on low wattage coil version

Solenoid for use in EX areas
Dimensions



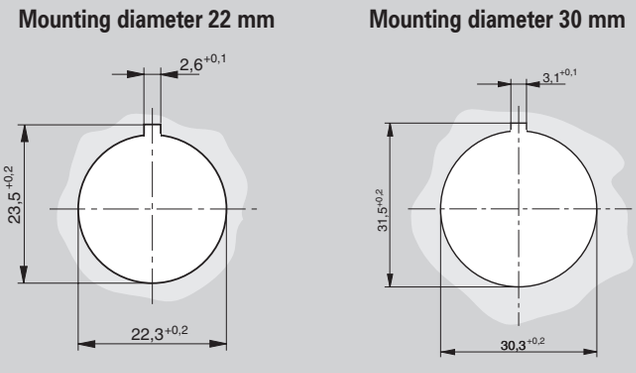
For more information on valves to ATEX standards
see page 39, 63

Basic valve for panel mounting actuatos
Type: S9 390RF-1/8

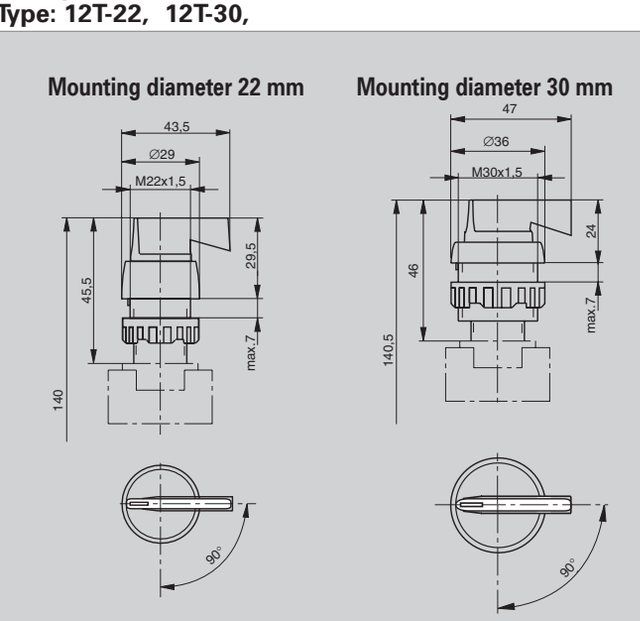


The actuators for these valves are interchangeable and can be mounted with 180° displacement on the basic valve.
The actuators are not mounted upon delivery.

Mounting holes
for mounting diameters 22 and 30 mm



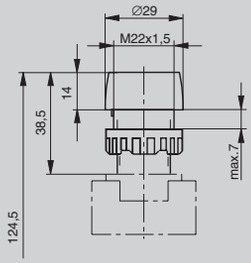
Rotary lever, indexed
Type: 12T-22, 12T-30,



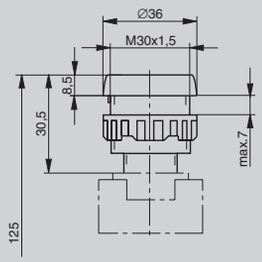
Order Instructions see page 62, 63, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Pushbutton
Type: 13T-RF-22, 13T-RF-30

Mounting diameter 22 mm

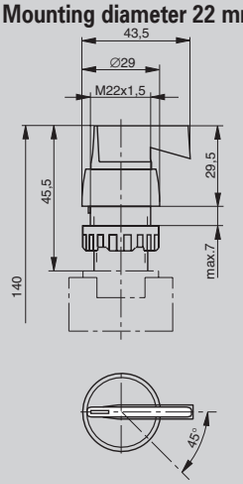


Mounting diameter 30 mm

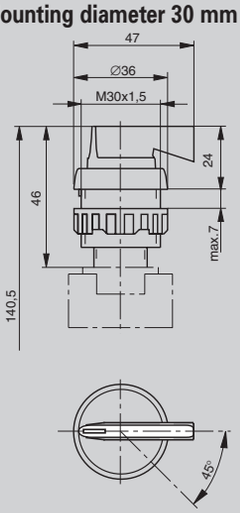


Rotary lever with spring return
Type: 12T-RF-22, 12T-RF-30

Mounting diameter 22 mm

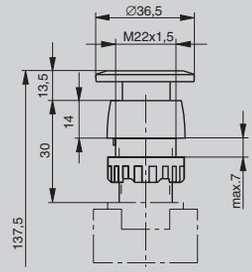


Mounting diameter 30 mm

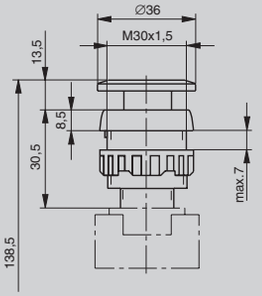


Mushroom pushbutton
Type: 15T-RF-22, 15T-RF-30

Mounting diameter 22 mm

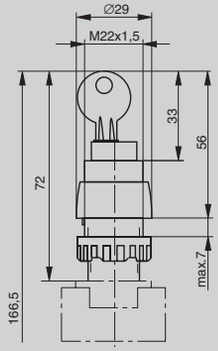


Mounting diameter 30 mm

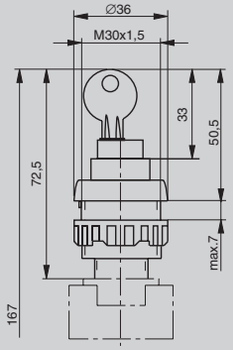


Locking switch
Type: 16T-22, 16T-30

Mounting diameter 22 mm

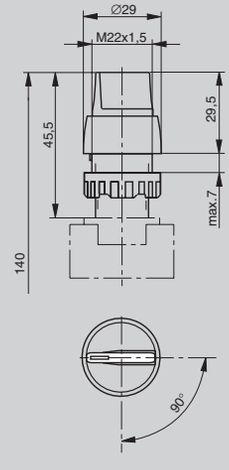


Mounting diameter 30 mm

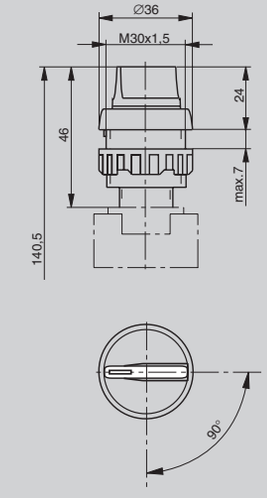


Rotary switch
Type: 17T-22, 17T-30

Mounting diameter 22 mm

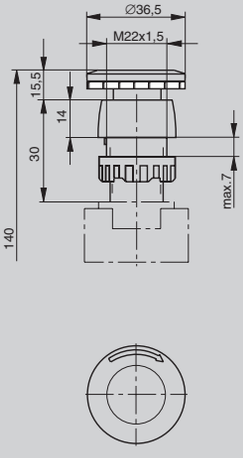


Mounting diameter 30 mm

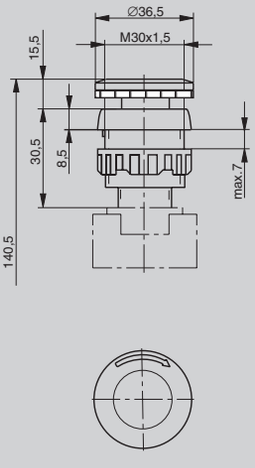


Mushroom switch (EMERGENCY SHUTDOWN)
Type: 18T-22, 18T-30

Mounting diameter 22 mm



Mounting diameter 30 mm

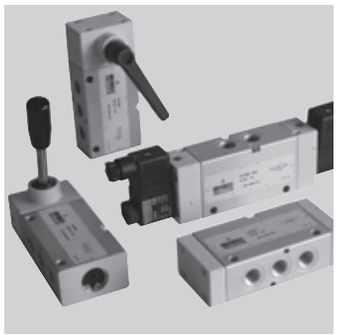


Order Instructions see page 60, 61, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Dimensions

5/2 Way Valves Series S9 G1/4

Actuation:
– Hand lever
– Safety hand lever
– Pneumatic
– Electrical pilot operated
– Electrical pilot operated with external pilot air

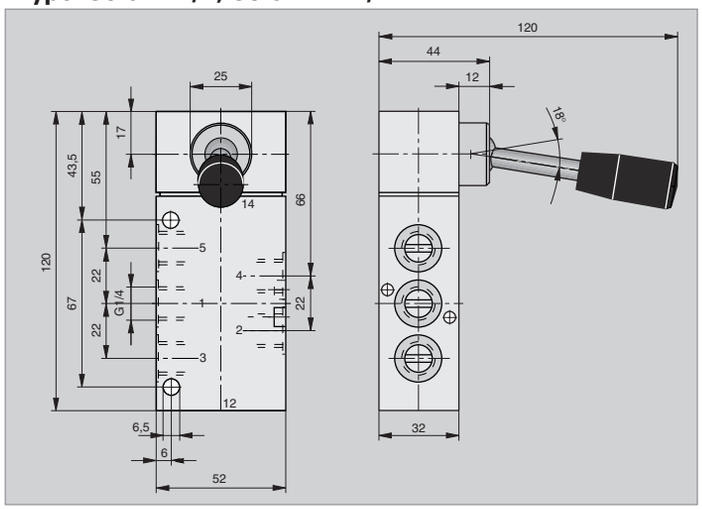


Versions
– with external pilot air
– with biased position
– version to ATEX Standard

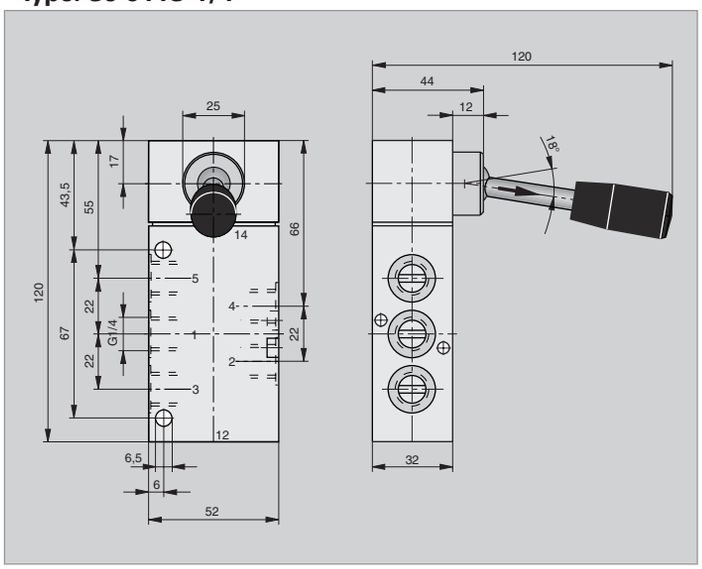
Weight (mass) kg

Description	Type	Weight (mass)
Hand lever, indexed	S9 511-1/4	0.520
– with spring return	S9 511RF-1/4	0.520
Safety hand lever	S9 511S-1/4	0.520
Rotary lever, indexed	S9 512-1/4	0.520
– with spring return	S9 512RF-1/4	0.520
Pneumatic by permanent signal	S9 561RF-1/4	0.490
Pneumatic by impulse	S9 561-1/4	0.510
– with biased position	S9 562-1/4	0.510
Electrical by permanent signal	S9 581(S) RF-1/4	0.600
Electrical by impulse	S9 581(S)-1/4	0.700
– with biased position	S9 582(S)-1/4	0.700

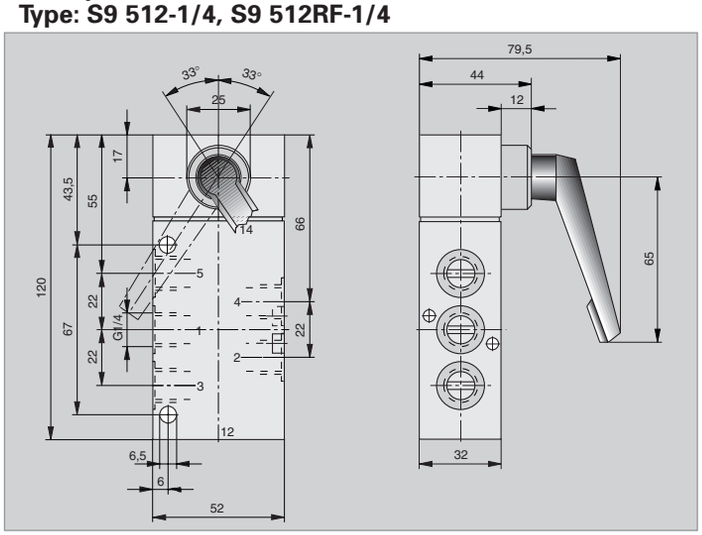
Hand lever actuated
Type: S9 511-1/4, S9 511RF-1/4



Safety hand lever actuated
Type: S9 511S-1/4

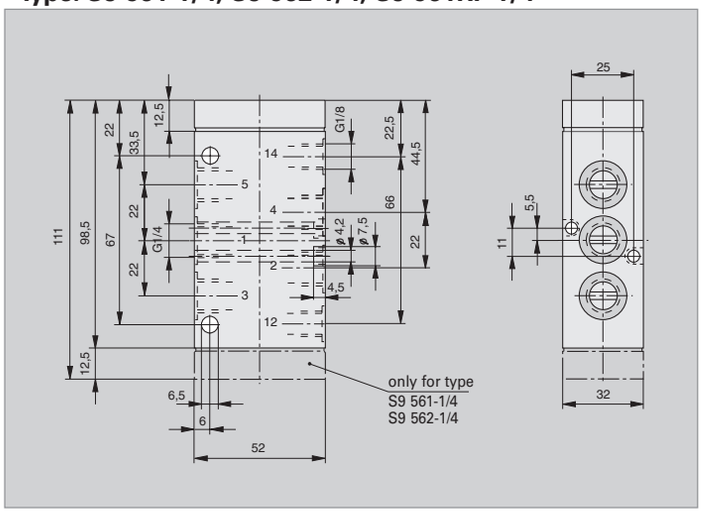


Rotary lever actuated
Type: S9 512-1/4, S9 512RF-1/4

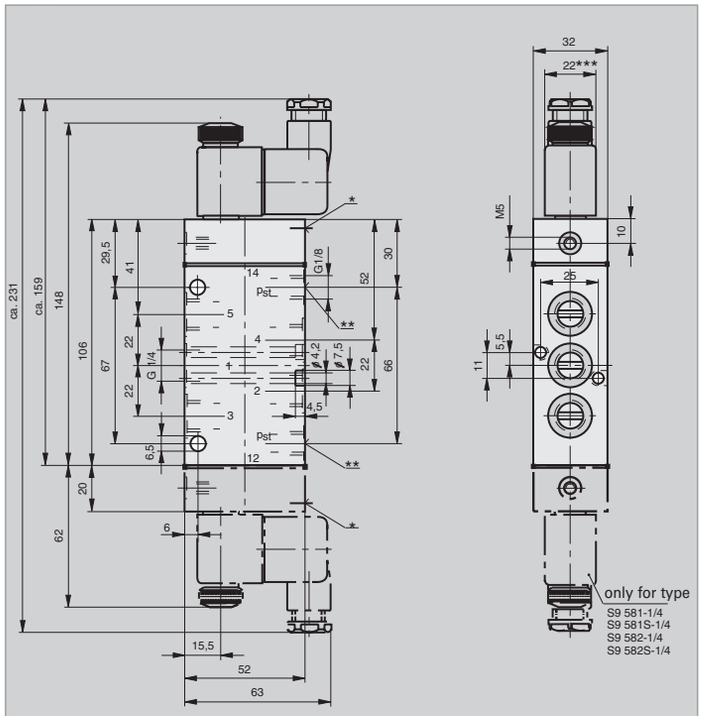


Order Instructions see page 62, 63, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Pneumatically actuated
Type: S9 561-1/4, S9 562-1/4, S9 561RF-1/4

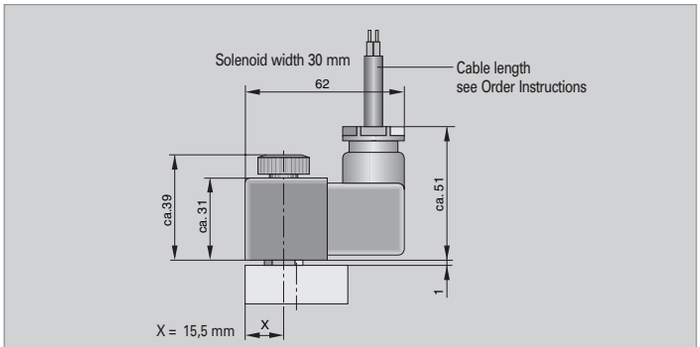


Electrically actuated
Type: S9 581(S)-1/4, S9 582(S)-1/4, S9 581(S)RF-1/4



* Manual override
** Operating pressure supply p_{st} only for type S9 581S
*** Solenoid width is 30 mm on low wattage coil version

Solenoid for use in EX areas
Dimensions



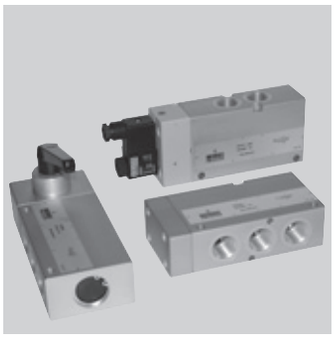
For more information on valves to ATEX standards
see page 39, 63

Order Instructions see page 62, 63, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Dimensions

5/2 Way Valves Series S9 G1/2

Actuation:
– Hand lever
– Safety hand lever
– Pneumatic
– Electrical pilot operated

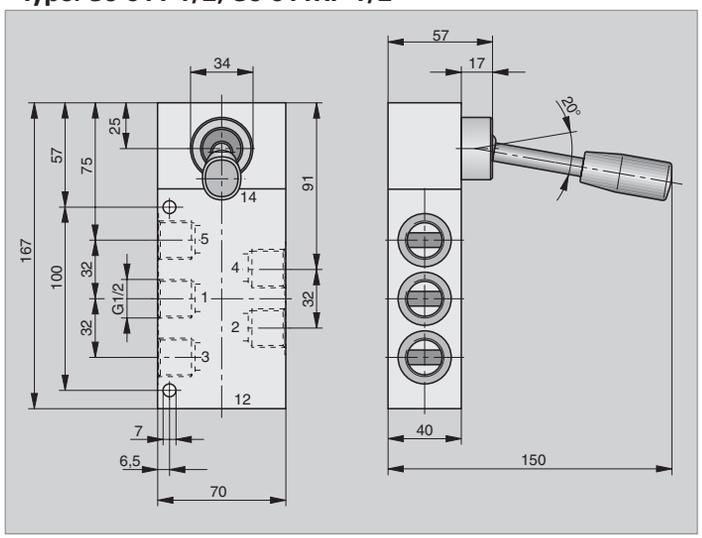


Versions
– with external pilot air
– with biased position
– version to ATEX Standard

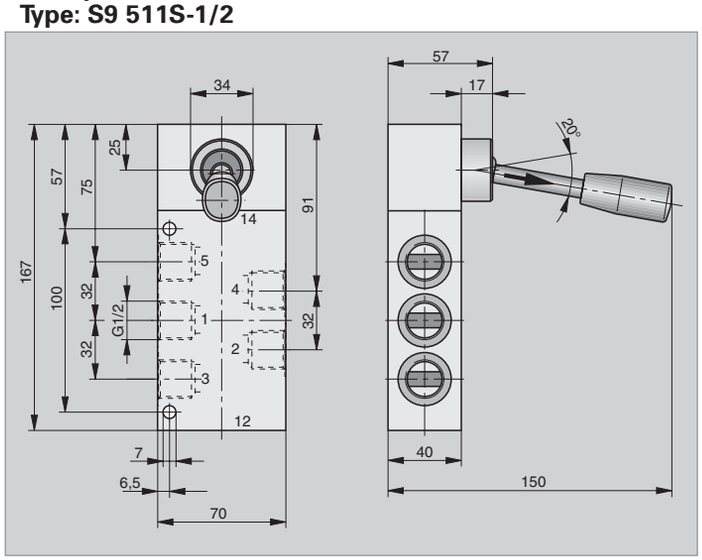
Weight (mass) kg

Description	Type	Weight (mass)
Hand lever, indexed	S9 511-1/2	0.120
– with spring return	S9 511RF-1/2	0.120
Safety hand lever	S9 511S-1/2	0.120
Rotary lever, indexed	S9 512-1/2	0.120
– with spring return	S9 512RF-1/2	0.120
Pneumatic by permanent signal	S9 561RF-1/2	0.800
Pneumatic by impulse	S9 561-1/2	0.900
– with biased position	S9 562-1/2	0.900
Electrical by permanent signal	S9 581(S) RF-1/2	1.000
Electrical by impulse	S9 581(S)-1/2	1.045
– with biased position	S9 582-1/2	1.045

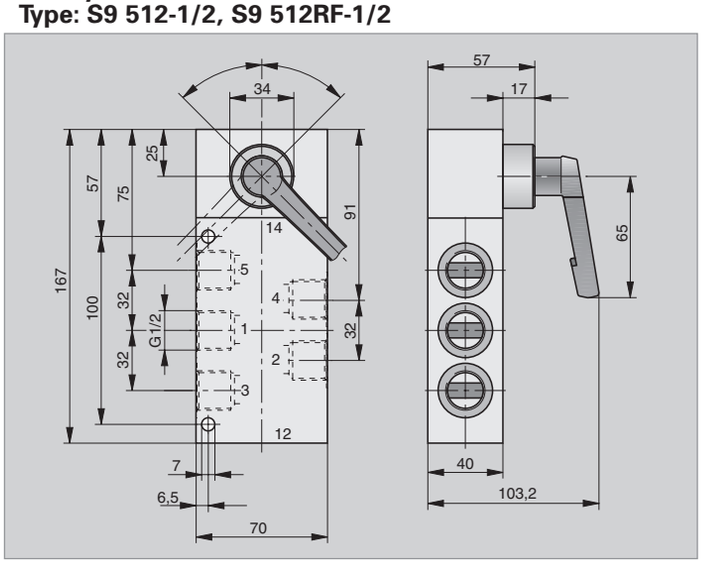
Hand lever actuated
Type: S9 511-1/2, S9 511RF-1/2



Safety hand lever actuated
Type: S9 511S-1/2

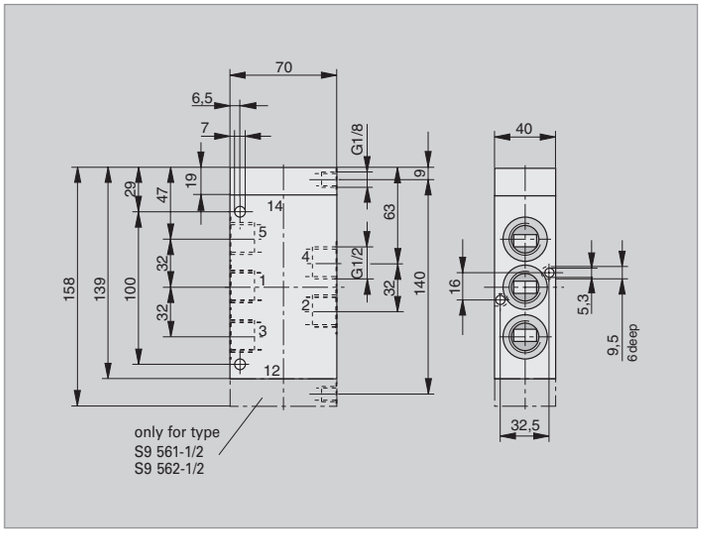


Rotary lever actuated
Type: S9 512-1/2, S9 512RF-1/2

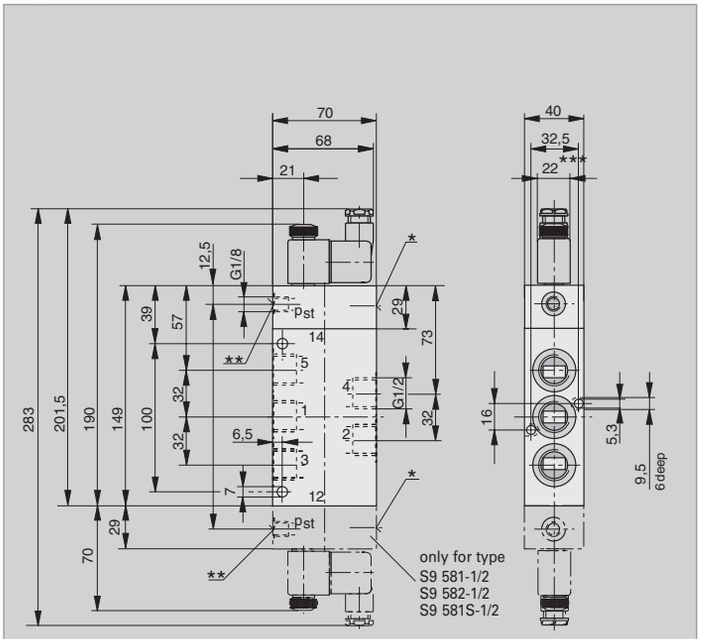


Order Instructions see page 62, 63, characteristics see page 38, 39
P-supply manifolds see page 94

Pneumatically actuated
Type: S9 561-1/2, S9 561RF-1/2, S9 562-1/2

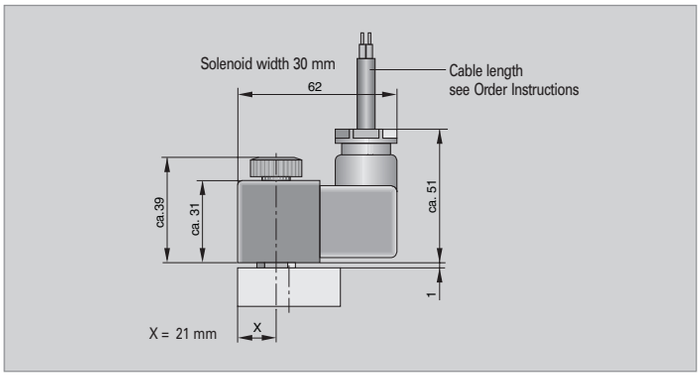


Electrically actuated
Type: S9 581(S)-1/2, S9 582-1/2, S9 581(S)RF-1/2



* Manual override
** Operating pressure supply p_{st} only for type S9 581S
*** Solenoid width is 30 mm on low wattage coil version

Solenoid for use in EX areas
Dimensions



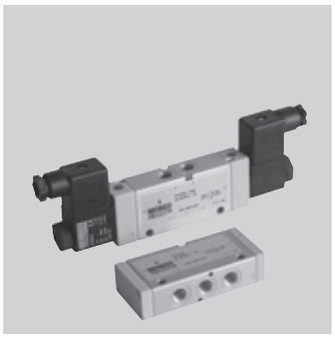
For more information on valves to ATEX standards
see page 39, 63

Order Instructions see page 62, 63, characteristics see page 38, 39
P-supply manifolds see page 94

Dimensions

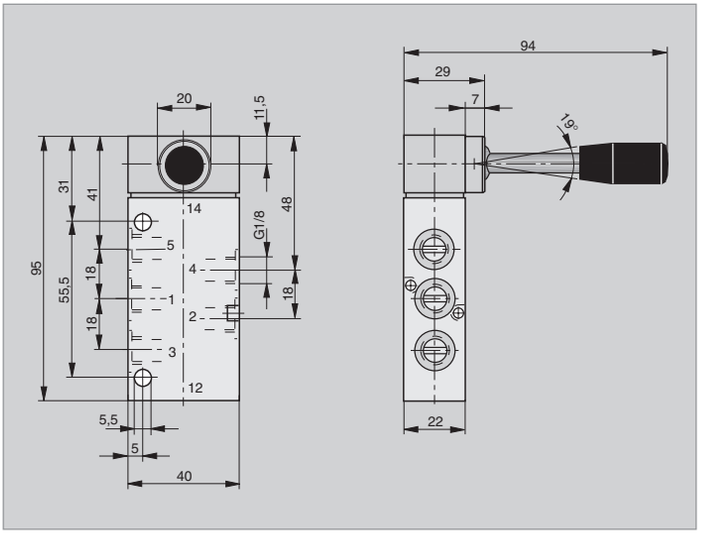
5/3 Way Valves
Series S9
G1/8

Actuation:
– Hand lever
– Safety hand lever
– Pneumatic
– Electrical pilot operated



Versions
– with external pilot air
– version to ATEX Standard

Hand lever actuated
Type: S9 511.-1/8, S9 511RF.-1/8

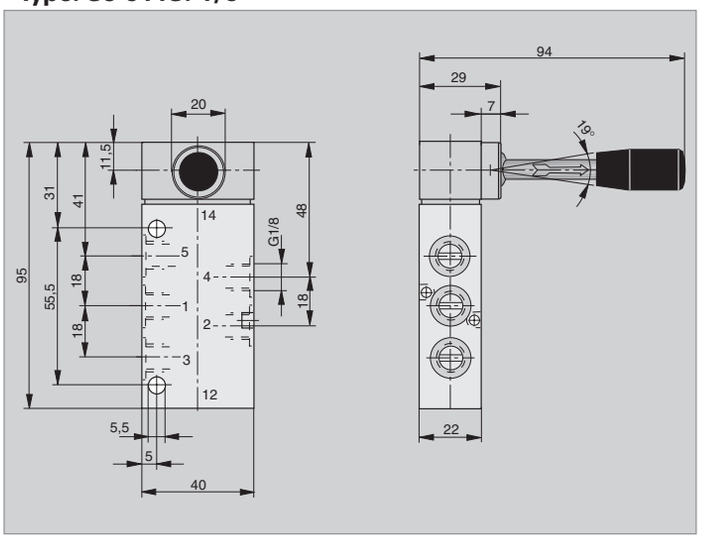


Weight (mass) kg

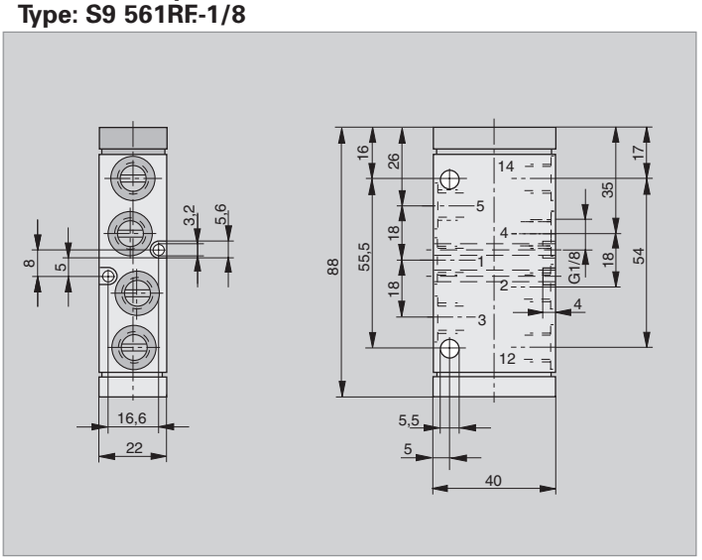
Description	Type *	Weight (mass)
Hand lever, indexed	S9 511.-1/8	0.195
– with spring return	S9 511RF.-1/8	0.195
Safety hand lever	S9 511S.-1/8	0.195
Pneumatic by permanent signal	S9 561RF.-1/8	0.180
Electrical by permanent signal	S9 581RF.-1/8	0.425
Electrical by permanent signal	S9 581S-RF.-1/8	0.425

* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

Safety hand lever actuated
Type: S9 511S.-1/8

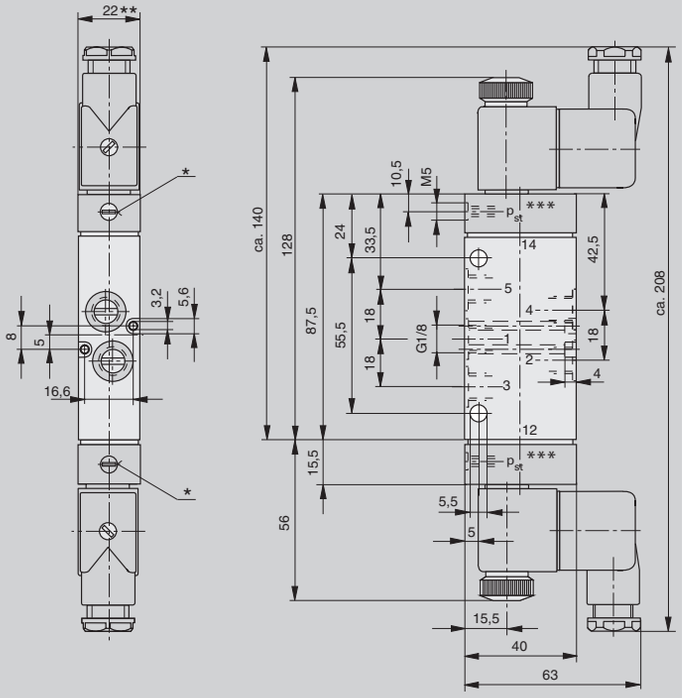


Pneumatically actuated
Type: S9 561RF.-1/8



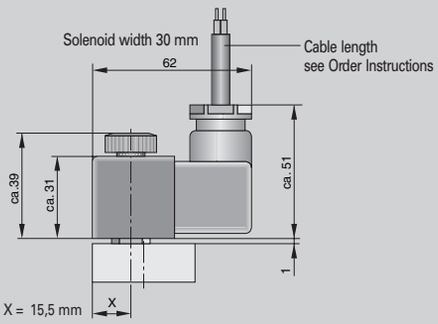
Order Instructions see page 64, 65, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Electrically actuated
Type: S9 561(S-)RF-1/8



* Manual override
** Solenoid width is 30 mm on low wattage coil version
*** Operating pressure supply p_{st} only for type S9 581S

Solenoid for use in EX areas
Dimensions



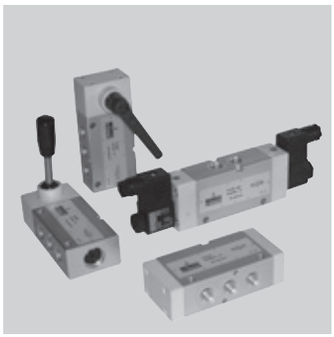
For more information on valves to ATEX standards
see page 39, 65

Order Instructions see page 64, 65, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Dimensions

5/3 Way Valves Series S9 G1/4

Actuation:
– Hand lever
– Safety hand lever
– Pneumatic
– Electrical pilot operated



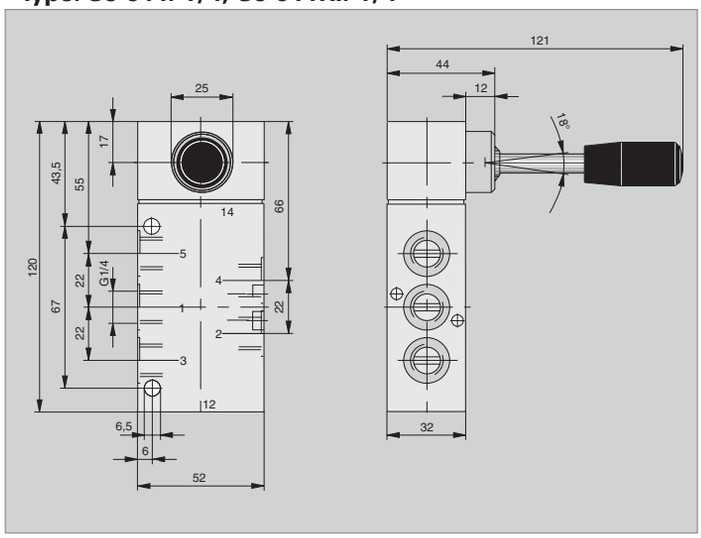
Versions
– version to ATEX Standard

Weight (mass) kg

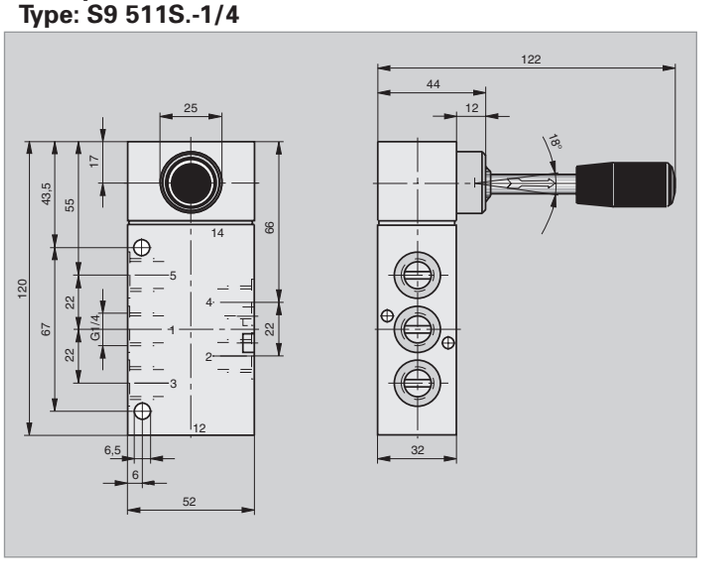
Description	Type *	Weight (mass)
Hand lever, indexed	S9 511.-1/4	0.520
– with spring return	S9 511RF.-1/4	0.530
Safety hand lever	S9 511S.-1/4	0.520
Rotary lever, indexed	S9 512.-1/4	0.520
– with spring return	S9 512RF.-1/4	0.530
Pneumatic by permanent signal	S9 561RF.-1/4	0.530
Electrical by permanent signal	S9 581RF.-1/4	0.700

* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

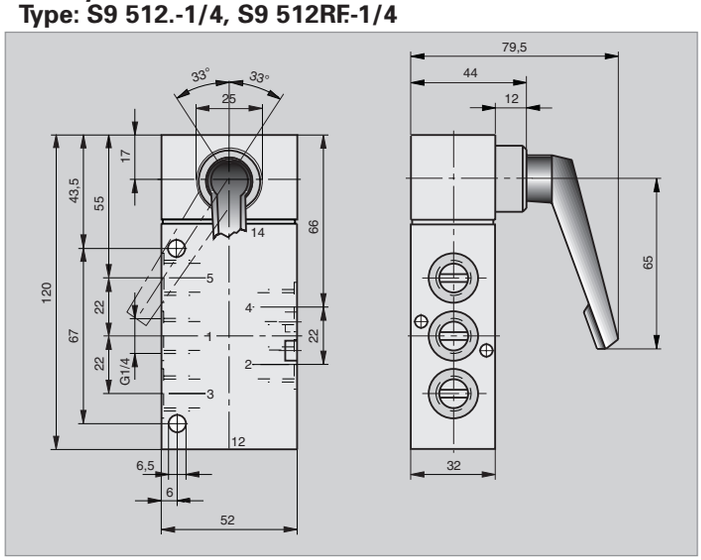
Hand lever actuated
Type: S9 511.-1/4, S9 511RF.-1/4



Safety hand lever actuated
Type: S9 511S.-1/4

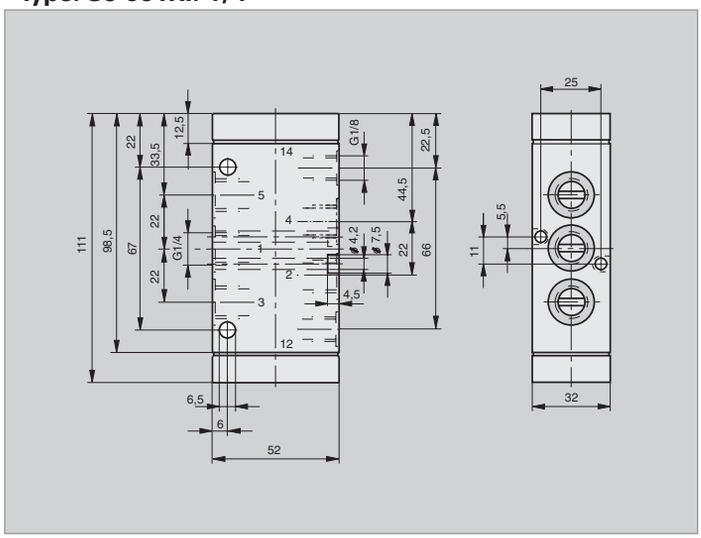


Rotary lever actuated
Type: S9 512.-1/4, S9 512RF.-1/4

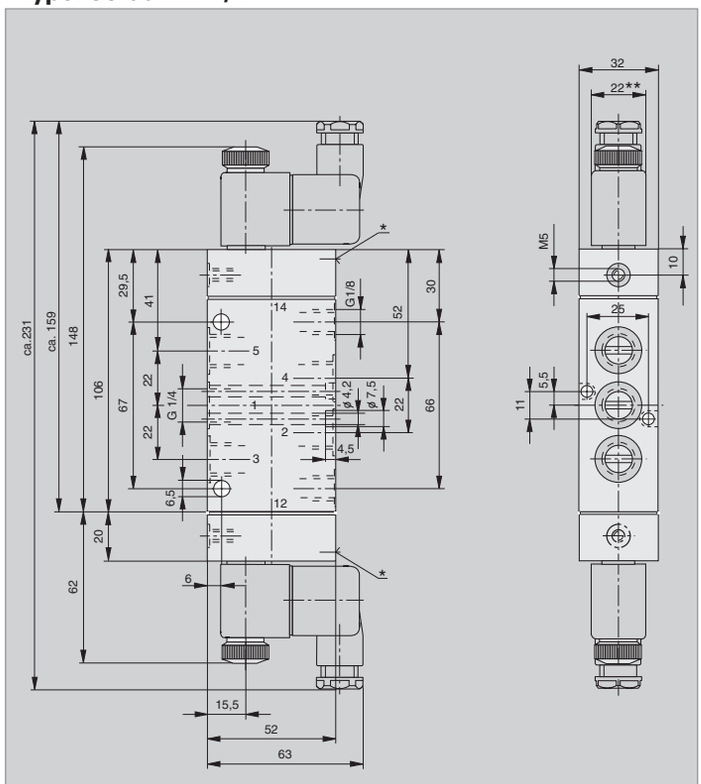


Order Instructions see page 64, 65, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-83

Pneumatically actuated
Type: S9 561RF-1/4

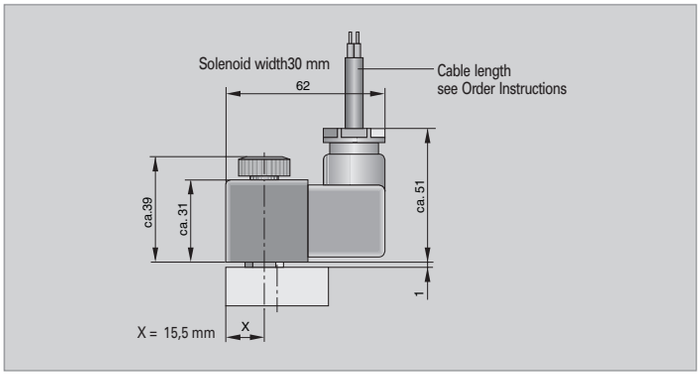


Electrically actuated
Type: S9 581RF-1/4



* Manual override
** Solenoid width is 30 mm on low wattage coil version

Solenoid for using in EX Areas
Dimensions



For more informations about valves to ATEX standards
see page 39, 65

Order Instructions see page 64, 65, characteristics see page 38, 39
P-supply manifolds and RPS-supply manifolds see page 93, 95, valve islands see page 75-833

Dimensions

5/3 Way Valves Series S9 G1/2

Actuation:
– Hand lever
– Safety hand lever
– Pneumatic
– Electrical pilot operated



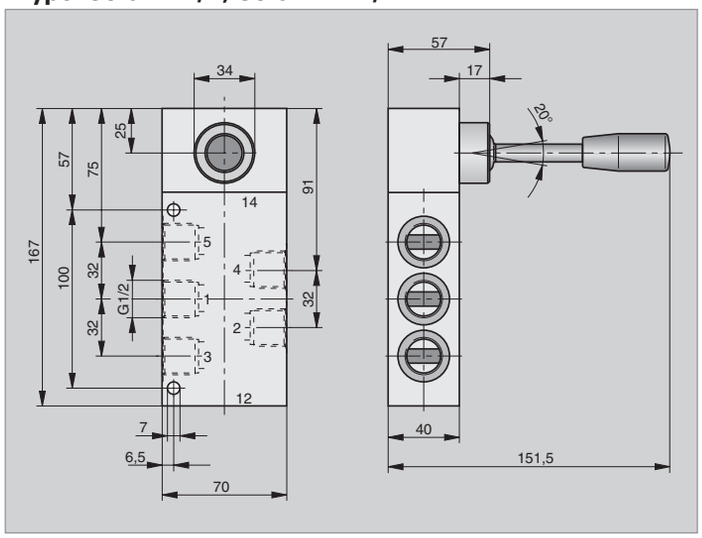
Versions
– version to ATEX Standard

Weight (mass) kg

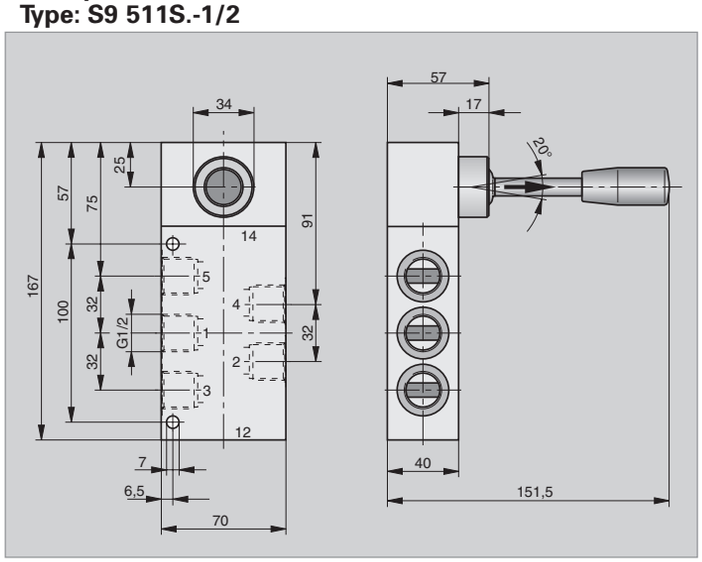
Description	Type *	Weight (mass)
Hand lever, indexed	S9 511.-1/2	1.200
– with spring return	S9 511RF.-1/2	1.200
Safety hand lever	S9 511S.-1/2	1.200
Rotary lever, indexed	S9 512.-1/2	1.200
– with spring return	S9 512RF.-1/2	1.200
Pneumatic by permanent signal	S9 561RF.-1/2	0.900
Electrical by permanent signal	S9 581RF.-1/2	1.045

* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

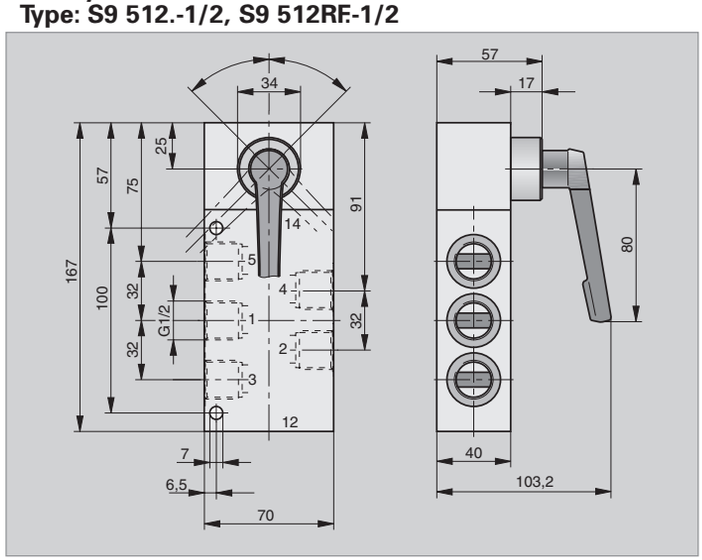
Hand lever actuated
Type: S9 511.-1/2, S9 511RF.-1/2



Safety hand lever actuated
Type: S9 511S.-1/2

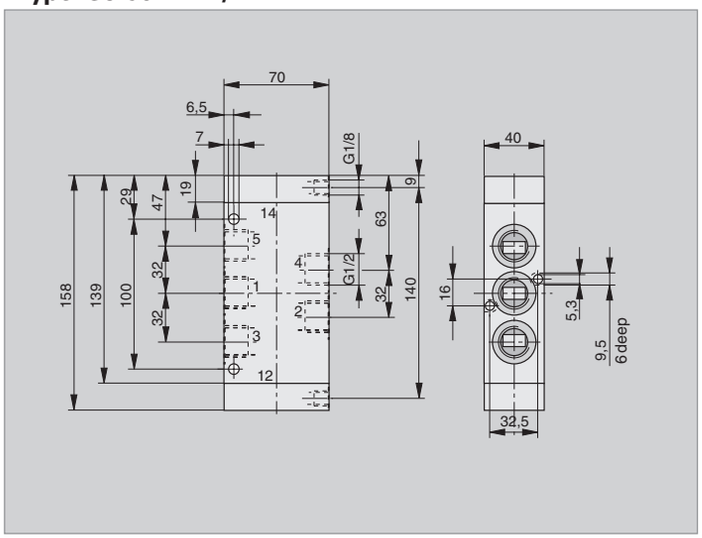


Rotary lever actuated
Type: S9 512.-1/2, S9 512RF.-1/2

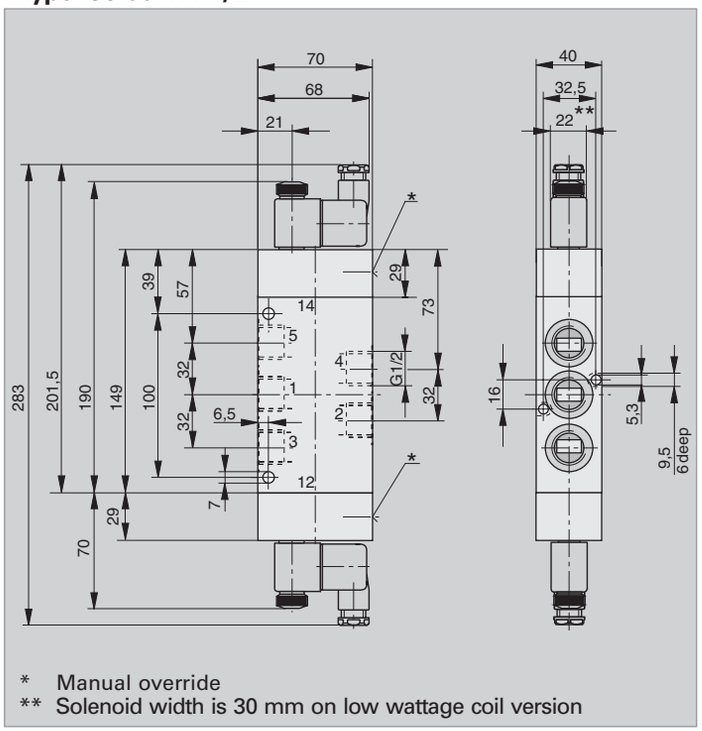


Order Instructions see page 64, 65, characteristics see page 38, 39
P-supply manifolds see page 94

Pneumatically actuated
Type: S9 561RF-1/2

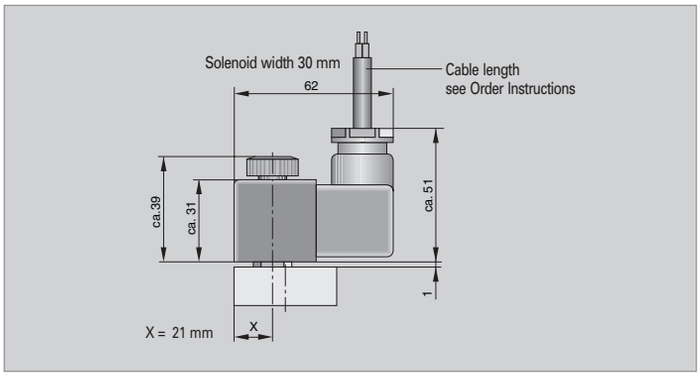


Electrically actuated
Type: S9 581RF-1/2



* Manual override
** Solenoid width is 30 mm on low wattage coil version

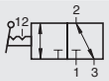
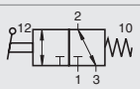
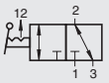
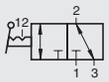
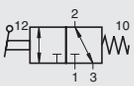
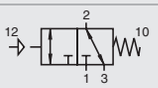
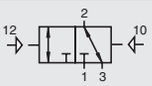
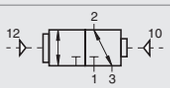
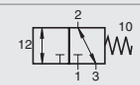
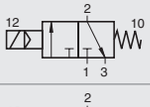
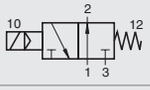
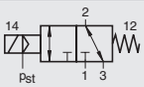
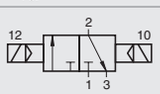
Solenoid for use in EX areas
Dimensions



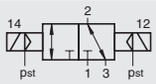
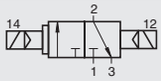
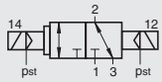
For more information on valves to ATEX standards
see page 39, 65

Order Instructions see page 64, 65, characteristics see page 38, 39
P-supply manifolds see page 94

3/2 Way Valves – Standard versions

Actuation	Symbol	Mounting ø (mm)	Order Instructions Type	Order No.	Page
Hand lever, indexed			**S9 311-1/8** **S9 311-1/4** **S9 311-1/2**	**PA 10293** **PA 12708** **PA 16404**	40 43 45
Hand lever, spring return			**S9 311RF-1/8** **S9 311RF-1/4** **S9 311RF-1/2**	**PA 10294** **PA 12709** **PA 16405**	40 43 45
Hand lever, secured in 2 switching positions			**S9 311S-1/4** **S9 311S-1/2**	**PA 12710** **PA 16406**	43 45
Rotary lever, indexed			**S9 312-1/4** **S9 312-1/2**	**PA 12711** **PA 16407**	43 45
Rotary lever, spring return			**S9 312RF-1/4** **S9 312RF-1/2**	**PA 12712** **PA 16408**	43 45
Pneumatic by permanent signal			**S9 361RF-1/8** **S9 361RF-1/4** **S9 361RF-1/2**	**PA 10295** **PA 12713** **PA 16409**	40 43 45
Pneumatic by impulse			**S9 361-1/8** **S9 361-1/4** **S9 361-1/2**	**PA 10296** **PA 12714** **PA 16410**	40 43 45
Pneumatic by impulse, with biased position			**S9 362-1/4** **S9 362-1/2**	**PA 12715** **PA 16411**	43 45
Basic valve with adaptor for panel mounting			**S9 390RF-1/8**	**PA 10307**	41
Rotary lever, indexed		22 30	**12T-22** **12T-30**	**KX 9355** **KX 9314**	41
Rotary lever, spring return		22 30	**12T-RF-22** **12T-RF-30**	**KX 9356** **KX 9315**	41
Pushbutton		22 30	**13T-RF-22** **13T-RF-30**	**KX 9357** **KX 9316**	41
Mushroom pushbutton		22 30	**15T-RF-22** **15T-RF-30**	**KX 9358** **KX 9317**	42
Locking switch		22 30	**16T-22** **16T-30**	**KX 9359** **KX 9318**	42
Rotary switch		22 30	**17T-22** **17T-30**	**KX 9360** **KX 9319**	42
Mushroom pushbutton EMERGENCY-OFF		22 30	**18T-22** **18T-30**	**KX 9361** **KX 9320**	42
Electrical, by permanent signal			**S9 381RF-1/8-NG-..** **S9 381RF-1/4-NG-..** **S9 381RF-1/2-NG-..**	**PA 10297-..33** **PA 12716-..33** **PA 16412-..33**	40 44 46
			**S9 381RF-1/8-NO-..** **S9 381RF-1/4-NO-..** **S9 381RF-1/2-NO-..**	**PA 10298-..33** **PA 12717-..33** **PA 16413-..33**	40 44 46
with external pilot air			**S9 381S-RF-1/8-..** **S9 381S-RF-1/4-..** **S9 381S-RF-1/2-..**	**PA 10300-..33** **PA 12719-..33** **PA 16415-..33**	40 44 46
Electrical, by impulse			**S9 381-1/8-..** **S9 381-1/4-..** **S9 381-1/2-..**	**PA 10299-..33** **PA 12718-..33** **PA 16414-..33**	40 44 46

3/2 Way Valves – Standard versions

Actuation	Symbol	Mounting ø (mm)	Order Instructions Type	Order No.	Page
Electrical by impulse with external pilot air			**S9 381S-1/8-..** **S9 381S-1/4-..** **S9 381S-1/2-..**	**PA 10301-..33** **PA 12720-..33** **PA 16417-..33**	40 44 46
Electrical by impulse with biased position			**S9 382-1/4-..** **S9 382-1/2-..**	**PA 12721-..33** **PA 16418-..33**	44 46
with external pilot air			**S9 382S-1/4-..** **S9 382S-1/2-..**	**PA 12722-..33** **PA 16419-..33**	44 46

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02	– –
Low wattage version	24V = 230V 50/60Hz		13 69	– –

EX Area versions to ATEX Standard
Category, type of ignition protection
Single valve: ⟨Ex⟩ II 2G c T4 T135°C -10°C≤Ta≤+60°C
Solenoid/individual use: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C
Solenoid/manifold mounting: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+40°C

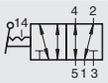
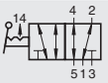
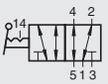
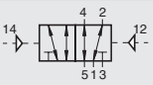
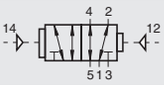
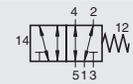
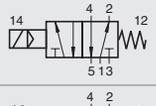
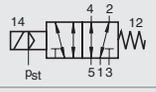
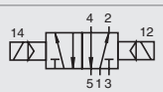
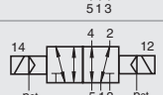
Solenoid	with cable 1,2 m	24V =		48	ATEX
	with cable 3 m	24V =		45	ATEX
	with cable 5 m	24V =		46	ATEX
	with cable 10 m	24V =		47	ATEX
	with cable 1,2 m	24V 50/60Hz		99	ATEX
	with cable 1,2 m	110V 50/60Hz		97	ATEX
	with cable 1,2 m	230V 50/60Hz		98	ATEX

Example for valves to ATEX standard:
– for valves Series S9-G1/8, S9-G1/4, S9-G1/2

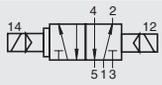
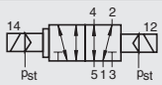
Please add behind the Standard Order No. "ATEX"

Type: **S9 581RF-1/8-4633**
Order No. **PA10312-4633ATEX**

5/2 Way Valves – Standard versions

Actuation	Symbol	Mounting ø (mm)	Order Instructions Type	Order No.	Page
Hand lever, indexed			**S9 511-1/8** **S9 511-1/4** **S9 511-1/2**	**PA 10308** **PA 12671** **PA 16367**	47 50 52
Hand lever, spring return			**S9 511RF-1/8** **S9 511RF-1/4** **S9 511RF-1/2**	**PA 10309** **PA 12672** **PA 16366**	47 50 52
Hand lever, secured in 2 switching positions			**S9 511S-1/8** **S9 511S-1/4** **S9 511S-1/2**	**PA 10368** **PA 12673** **PA 16368**	47 50 52
Rotary lever, indexed			**S9 512-1/4** **S9 512-1/2**	**PA 12674** **PA 16378**	50 52
Rotary lever, spring return			**S9 512RF-1/4** **S9 512RF-1/2**	**PA 12675** **PA 16379**	50 52
Pneumatic by permanent signal			**S9 561RF-1/8** **S9 561RF-1/4** **S9 561RF-1/2**	**PA 10310** **PA 12676** **PA 16165**	47 51 53
Pneumatic by impulse			**S9 561-1/8** **S9 561-1/4** **S9 561-1/2**	**PA 10311** **PA 12677** **PA 16166**	47 51 53
Pneumatic by impulse, with biased position			**S9 562-1/4** **S9 562-1/2**	**PA 12678** **PA 16167**	51 53
Basic valve with adaptor for panel mounting			**S9 590RF-1/8**	**PA 10320**	48
Rotary lever, indexed		22 30	**12T-22** **12T-30**	**KX 9355** **KX 9314**	48
Rotary lever, spring return		22 30	**12T-RF-22** **12T-RF-30**	**KX 9356** **KX 9315**	48
Pushbutton		22 30	**13T-RF-22** **13T-RF-30**	**KX 9357** **KX 9316**	48
Mushroom pushbutton		22 30	**15T-RF-22** **15T-RF-30**	**KX 9358** **KX 9317**	48
Locking switch		22 30	**16T-22** **16T-30**	**KX 9359** **KX 9318**	49
Rotary switch		22 30	**17T-22** **17T-30**	**KX 9360** **KX 9319**	49
Mushroom pushbutton EMERGENCY-OFF		22 30	**18T-22** **18T-30**	**KX 9361** **KX 9320**	49
Electrical, by permanent signal			**S9 581RF-1/8-..** **S9 581RF-1/4-..** **S9 581RF-1/2-..**	**PA 10312-..33** **PA 12679-..33** **PA 16171-..33**	47 51 53
with external pilot air			**S9 581S-RF-1/8-..** **S9 581S-RF-1/4-..** **S9 581S-RF-1/2-..**	**PA 10314-..33** **PA 12681-..33** **PA 16174-..33**	47 51 53
Electrical, by impulse			**S9 581-1/8-..** **S9 581-1/4-..** **S9 581-1/2-..**	**PA 10313-..33** **PA 12680-..33** **PA 16172-..33**	47 51 53
with external pilot air			**S9 581S-1/8-..** **S9 581S-1/4-..** **S9 581S-1/2-..**	**PA 10315-..33** **PA 12682-..33** **PA 16175-..33**	47 51 53

5/2 Way Valves – Standard versions

Actuation	Symbol	Order Instructions Type	Order No.	Page
Electrical by impulse with biased position		**S9 582-1/8-..** **S9 582-1/4-..** **S9 582-1/2-..**	**PA 10364-..33** **PA 12683-..33** **PA 16173-..33**	47 51 53
with external pilot air		**S9 582S-1/4-..**	**PA 12684-..33**	51

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02	– –
Low wattage version	24V = 230V 50/60Hz		13 69	– –

EX Area versions to ATEX Standard
Category, type of ignition protection
Single valve: ⟨Ex⟩ II 2G c T4 T135°C -10°C≤Ta≤+60°C
Solenoid/individual use: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C
Solenoid/manifold mounting: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+40°C

Solenoid	with cable 1,2 m	24V =		48	ATEX
	with cable 3 m	24V =		45	ATEX
	with cable 5 m	24V =		46	ATEX
	with cable 10 m	24V =		47	ATEX
	with cable 1,2 m	24V 50/60Hz		99	ATEX
	with cable 1,2 m	110V 50/60Hz		97	ATEX
	with cable 1,2 m	230V 50/60Hz		98	ATEX

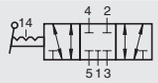
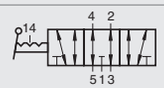
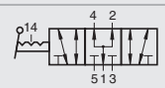
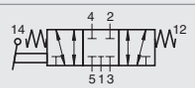
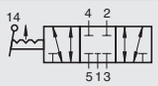
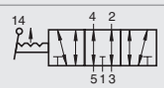
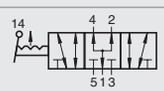
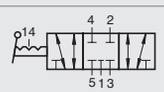
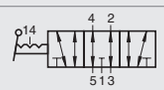
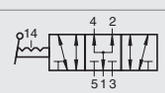
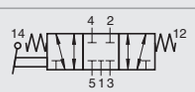
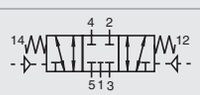
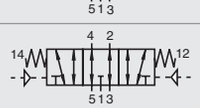
Example for valves to ATEX standard:
– for valves Series S9-G1/8, S9-G1/4, S9-G1/2

Please add behind the Standard Order No. "ATEX"

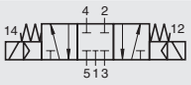
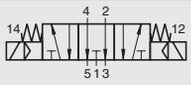
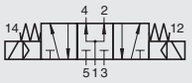
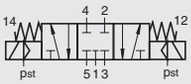
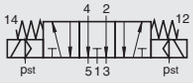
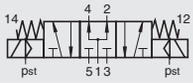
Type: **S9 581RF-1/8-4633**
Order No. **PA10312-4633ATEX**

5/3 Way Valves – Overview and Order Instructions

5/3 Way Valves – Standard versions

Actuation	Symbol	Order Instructions Type	Order No.	Page
Hand lever, indexed in 3 operating positions		**S9 511G-1/8** **S9 511G-1/4** **S9 511G-1/2**	**PA 10321** **PA 12687** **PA 16369**	54 56 58
		**S9 511E-1/8** **S9 511E-1/4** **S9 511E-1/2**	**PA 10322** **PA 12688** **PA 16370**	54 56 58
		**S9 511B-1/8** **S9 511B-1/4** **S9 511B-1/2**	**PA 10323** **PA 12689** **PA 16371**	54 56 58
Hand lever, spring return to middle position		**S9 511RFG-1/8** **S9 511RFG-1/4** **S9 511RFG-1/2**	**PA 10324** **PA 12690** **PA 16372**	54 56 58
		**S9 511RFE-1/8** **S9 511RFE-1/4** **S9 511RFE-1/2**	**PA 10325** **PA 12691** **PA 16373**	54 56 58
		**S9 511RFB-1/8** **S9 511RFB-1/4** **S9 511RFB-1/2**	**PA 10326** **PA 12692** **PA 16374**	54 56 58
Hand lever, secured in 3 operating positions		**S9 511SG-1/8** **S9 511SG-1/4** **S9 511SG-1/2**	**PA 10327** **PA 12693** **PA 16375**	54 56 58
		**S9 511SE-1/8** **S9 511SE-1/4** **S9 511SE-1/2**	**PA 10328** **PA 12694** **PA 16376**	54 56 58
		**S9 511SB-1/8** **S9 511SB-1/4** **S9 511SB-1/2**	**PA 10329** **PA 12695** **PA 16377**	54 56 58
Rotary lever, indexed in 3 operating positions		**S9 512G-1/4** **S9 512G-1/2**	**PA 12696** **PA 16380**	56 58
		**S9 512E-1/4** **S9 512E-1/2**	**PA 12697** **PA 16381**	56 58
		**S9 512B-1/4** **S9 512B-1/2**	**PA 12698** **PA 16382**	56 58
Rotary lever, spring return to middle position		**S9 512RFG-1/4** **S9 512RFG-1/2**	**PA 12699** **PA 16383**	56 58
		**S9 512RFE-1/4** **S9 512RFE-1/2**	**PA 12700** **PA 16384**	56 58
		**S9 512RFB-1/4** **S9 512RFB-1/2**	**PA 12701** **PA 16385**	56 58
Pneumatic by permanent signal spring return to middle position		**S9 561RFG-1/8** **S9 561RFG-1/4** **S9 561RFG-1/2**	**PA 10330** **PA 12702** **PA 16168**	54 56 58
		**S9 561RFE-1/8** **S9 561RFE-1/4** **S9 561RFE-1/2**	**PA 10331** **PA 12703** **PA 16169**	54 56 58
		**S9 561RFB-1/8** **S9 561RFB-1/4** **S9 561RFB-1/2**	**PA 10332** **PA 12704** **PA 16170**	54 56 58

5/3 Way Valves – Standard versions

Actuation	Symbol	Order Instructions Type	Order No.	Page
Electrical by permanent signal spring return to middle position		**S9 581RFG-1/8-..** **S9 581RFG-1/4-..** **S9 581RFG-1/2-..**	**PA 10333-..33** **PA 12705-..33** **PA 16176-..33**	54 57 59
		**S9 581RFE-1/8-..** **S9 581RFE-1/4-..** **S9 581RFE-1/2-..**	**PA 10334-..33** **PA 12706-..33** **PA 16177-..33**	54 57 59
		**S9 581RFB-1/8-..** **S9 581RFB-1/4-..** **S9 581RFB-1/2-..**	**PA 10335-..33** **PA 12707-..33** **PA 16178-..33**	54 57 59
Electrical by permanent signal spring return to middle position with external pilot air		**S9 581RFG-1/8-..**	**PA 10377-..33**	54
		**S9 581RFE-1/8-..**	**PA 10379-..33**	54
		**S9 581RFB-1/8-..**	**PA 10378-..33**	54

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02	– –
Low wattage version	24V = 230V 50/60Hz		13 69	– –

EX Area versions to ATEX Standard
Category, type of ignition protection
Single valve: ⟨Ex⟩ II 2G c T4 T135°C -10°C≤Ta≤+60°C
Solenoid/individual use: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C
Solenoid/manifold mounting: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+40°C

Solenoid	with cable 1,2 m	24V =		48	ATEX
	with cable 3 m	24V =		45	ATEX
	with cable 5 m	24V =		46	ATEX
	with cable 10 m	24V =		47	ATEX
	with cable 1,2 m	24V 50/60Hz		99	ATEX
	with cable 1,2 m	110V 50/60Hz		97	ATEX
	with cable 1,2 m	230V 50/60Hz		98	ATEX

Example for valves to ATEX standard:
– for valves Series S9-G1/8, S9-G1/4, S9-G1/2

Please add behind the Standard Order No. “ATEX“

Type: S9 581RF-1/8-4633
Order No. PA10312-4633ATEX

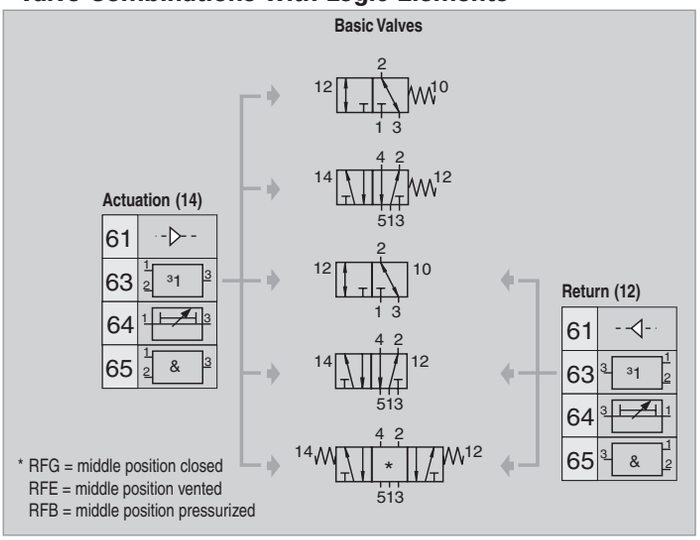
3/2, 5/2 and 5/3 Way Valves Series S9 G1/8, G1/4

Actuation:
Pneumatic
– AND
– OR
– TIMER



Versions
freely selectable types – see Order information

Valve Combinations with Logic Elements

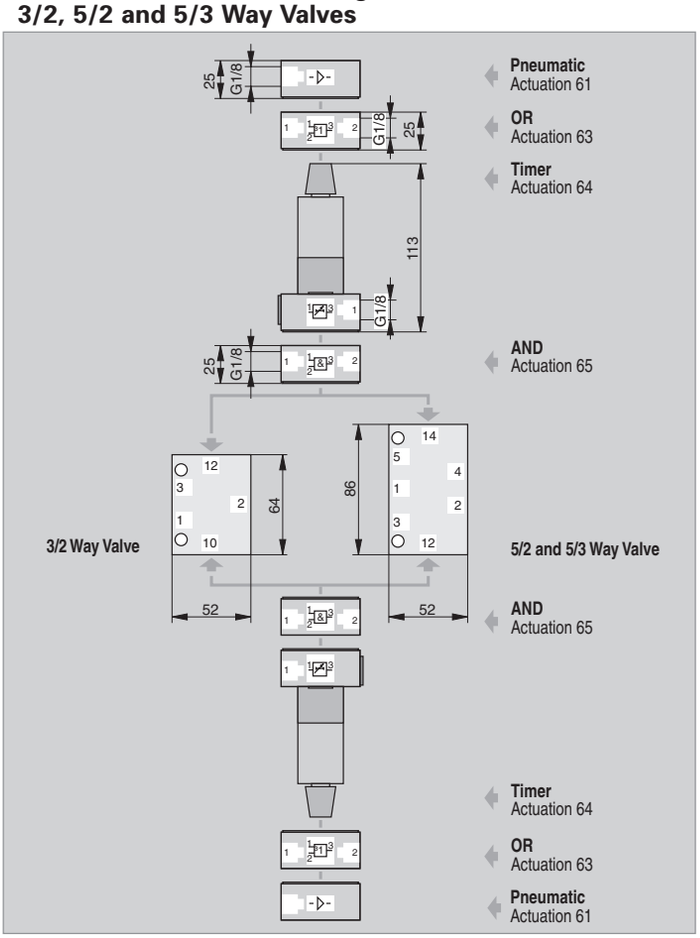


Weight (mass) kg

Description	Weight (mass) – Port size	
	G1/8	G1/4
3/2 Way Valve, by permanent signal	0.137	0.370
3/2 Way Valve, by impulse	0.147	0.430
5/2 Way Valve, by permanent signal	0.160	0.490
5/2 Way Valve, by impulse	0.170	0.510
5/3 Way Valve, by permanent signal	0.180	0.530

For more information on standard valves see data sheets on page 38 to 57

Valve Combinations with Logic Elements 3/2, 5/2 and 5/3 Way Valves



Order Instructions see page 67, Characteristics see page 38, 39
P-Supply Manifolds and RPS-Supply Manifolds see page 93, 95

Order Instructions

Order Instructions	S9	5	63 / 65	RFG	1/4	Ordering Example

Version	
3	3 way valve
5	5 way valve

Actuation (14)	
61	pneumatic
63	OR
64	Timer *
65	AND

* only for size G1/4

middle position function (only with 5/3 way valve)	
RFG	closed
RFE	vented
RFB	pressurized

Return (12)	
RF	spring return
61	pneumatic
63	OR
64	Timer *
65	AND

* only for size G1/4

Solenoid Poppet Valves, directly actuated – Series EV-M5 and V9

Contents

Description	Actuation	Page		
		Characteristics	Dimensions	Order Instructions Overview
3/2 Way Valves Series EV-M5 (G1/8)	Electrical	70	71	71
3/2 Way Valves Series V9-G1/8	Electrical	72	73	74



3/2 Way Screw-In Valves Series EV G1/8-M5

Actuation:
– Electrical, directly operated

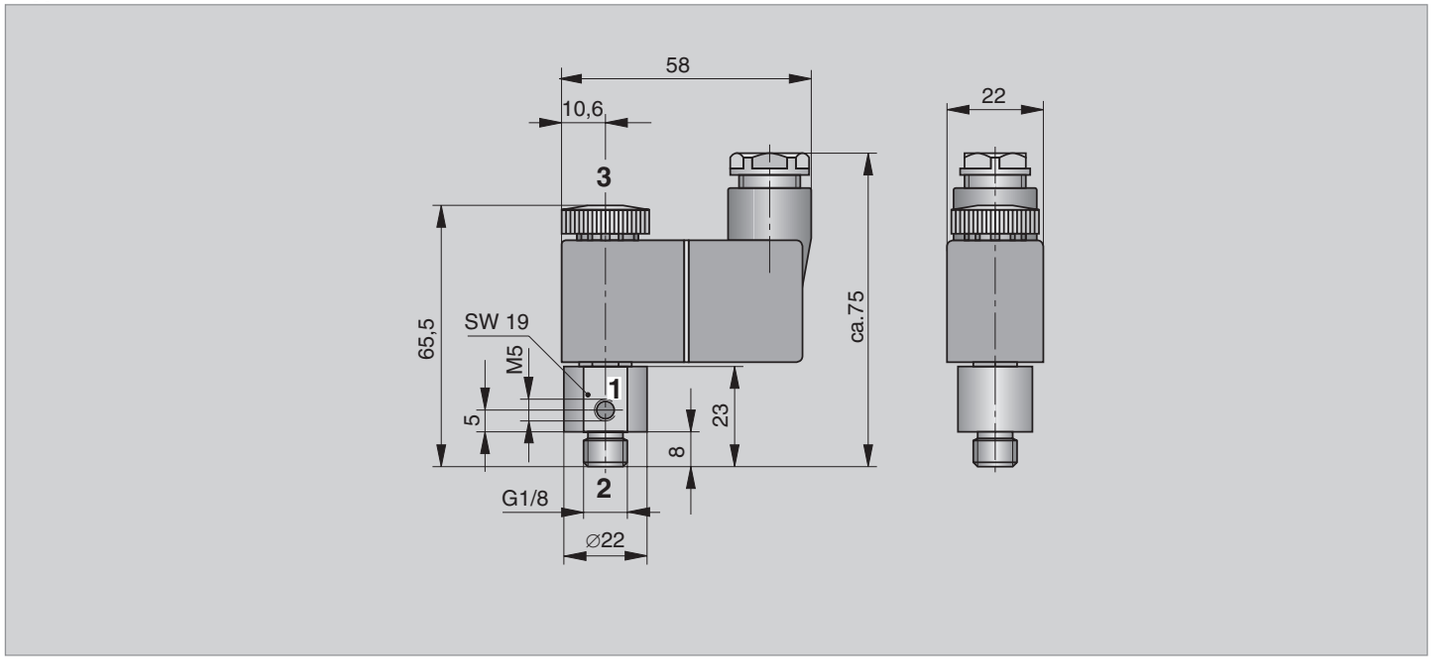


Characteristics – Series EV

Characteristics	Symbol	Unit	Description		
General Features					
Actuation			directly operated		
Type			Poppet valve, normally closed		
Mounting			Screws into G1/8 thread		
Tube connection			Thread		
Port size			Port 1: M5, Port 2: G1/8		
Weight		kg	0.1		
Nominal diameter		mm	1		
Installation			in any position		
Ambient temperature range	$\vartheta_{min. / max.}$	°C	-10 bis +60	Note: Please consult us for operating temperatures below 0° C	
Medium temperature range	$\vartheta_{min. / max.}$	°C	-10 bis +60		
Medium			filtered compressed air (30µ)		
Lubrication			with or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)		
Pneumatic Characteristics					
Nominal pressure	$p_{min. / max.}$	bar	6		
Operating pressure range	$p_{min. / max.}$	bar	0 – 10		
Nominal flow	Q_N	l/min	30		
Actuation					
Electrical			direct		
Voltage types			Alternating current (50/60Hz)	Direct current	
Nominal voltage[1]					
– Standard version	U_n	V	230 ±10%	24 ±10%	other voltages on request
– Low wattage version	U_n	V	230 ±10%	24 ±10%	
Initial power consumption					
– Standard version		VA (W)	11	4.8	
– Low wattage version		VA (W)	7.8	2.7	
Contiuous consumption					
– Standard version		VA (W)	8.5	4.8	
– Low wattage version		VA (W)	4.9	2.7	
Duty cycle	ED	%	100		
Electrical protection		IP	IP65 to DIN 40050 (applise only to solenoid with plug)		
Connection			Plug to DIN EN 175301-803 form B – industrial norm, low wattage version form A		

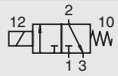
([1] see Order Instructions

3/2 Way Valve
Type: EV 381RF-M5



Overview and Order Instructions

3/2 Way Screw-In Valve – Series EV

Actuation	Symbol	Order Instructions Type	Order No.
Electrical, by permanent signal		**EV 381RF-M5-..**	**PD25076-..33**

Version	Nominal Voltage	Key code
Standard version	24V = 230V 50/60Hz	02 61
	other voltages on request	

Dimensions in mm

3/2 Way Valves
Series V9
NW 1.3 and 2.5

Actuation:
– Electrical, directly operated



Versions
– normally closed
– normally open
– with manual override

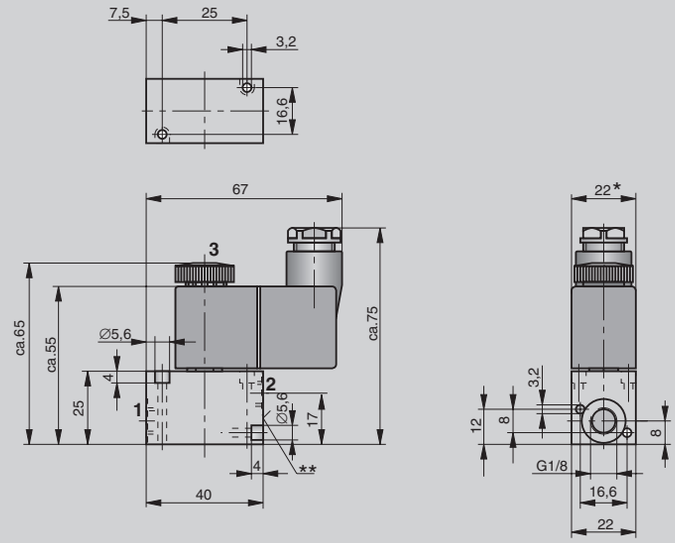
Characteristics – Series V9-G1/8

Characteristics	Symbol	Unit	Description		
General Features					
Type			Poppet valve		
Mounting			2 Screws M3 (NW 2.5: 2 x M4)		
Tube connection			Thread		
Port size			G1/8 – 8 deep		
Weight		kg	NW 1.3: 0.140 NW 2.5: 0.320		
Installation			in any position		
Ambient temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60	Note: Please consult us for operating temperatures below 0° C	
Medium temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +70		
Medium			filtered compressed air		
Lubrication			with or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)		
Pneumatic Characteristics					
Nominal pressure	$p_{min./max.}$	bar	6		
Operating pressure range	$p_{min./max.}$	bar	NW 1.3: 0–10 NW 2.5: 0-7		
Nominal flow	Q_N	l/min	NW 1.3: 37 NW 2.5: 150		
Actuation					
Electrical			direct		
Voltage types			Alternating current (50/60Hz)	Direct current	
Nominal voltage					
– Standard version	U_n	V	230 ±10%	24 ±10%	other voltages on request
– Low wattage version	U_n	V	230 ±10% (only for V9-NW 1.3)	24 ±10% only for V9-NW 1.3)	
Initial power consumption					
– Standard version		VA (W)	NW 1.3: 11 NW 2.5: 11.5	NW 1.3: 4.8 NW 2.5: 10	
– Low wattage version		VA (W)	7.8	2.7	
Contiuous consumption					
– Standard version		VA (W)	NW 1.3: 8.5 NW 2.5: 7.5	NW 1.3: 4.8 NW 2.5: 7.5	
– Low wattage version		VA (W)	4.9	2.7	
Duty cycle	ED	%	100		
Electrical protection		IP	IP 65 to DIN 40050 (applise only to solenoid with plug)		
Connection			NW 1.3: Plug to DIN EN 175301-803 form B – industrial norm NW 2.5: Plug to DIN EN 175301-803 form A – industrial norm		

Order Instructions see page 73
P-supply manifolds see page 90-92

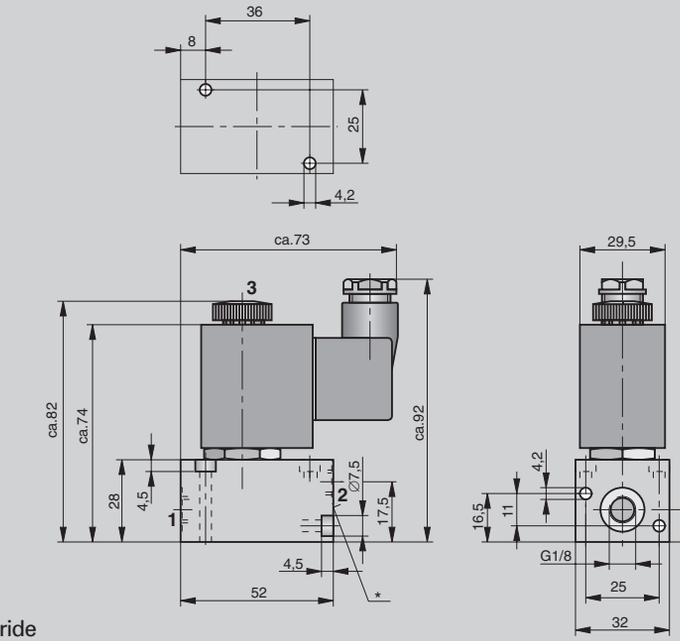
Type: V9 381RF-1/8NG (NO[1])– NW 1.3
Type: V9 381H-RF-1/8NG (NO[1])– NW 1.3

[1] not suitable for P-supply manifold mounting



* Low wattage version is 30 mm wide:
therefore to mount these on a P-Supply Manifold, special measures are needed – please consult us.
** Manual override

Type: V9 381RF-1/8NG – NW 2.5
Type: V9 381H-RF-1/8NG – NW 2.5



* Manual override

Accessories for P-Supply Manifold Mounting

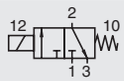
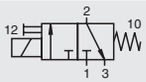
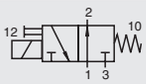
Description	Nominal size	**Order No.**
P-Supply manifold PL-1/8-..	1.3	**PD32763-....***
P-Supply manifold PLK-1/8-..	1.3	**PD37174-....***
P-Supply manifold PL-1/4-..	2.5	**PD32765-....***
P-Supply manifold PLK-1/4-..	2.5	**PD32175-....***

* Please complete the Order No. with the number of valves

The delivery includes:
P-Supply Manifold complete, Mounting Kit included.

Order Instructions

3/2 Way Valves – Series V9

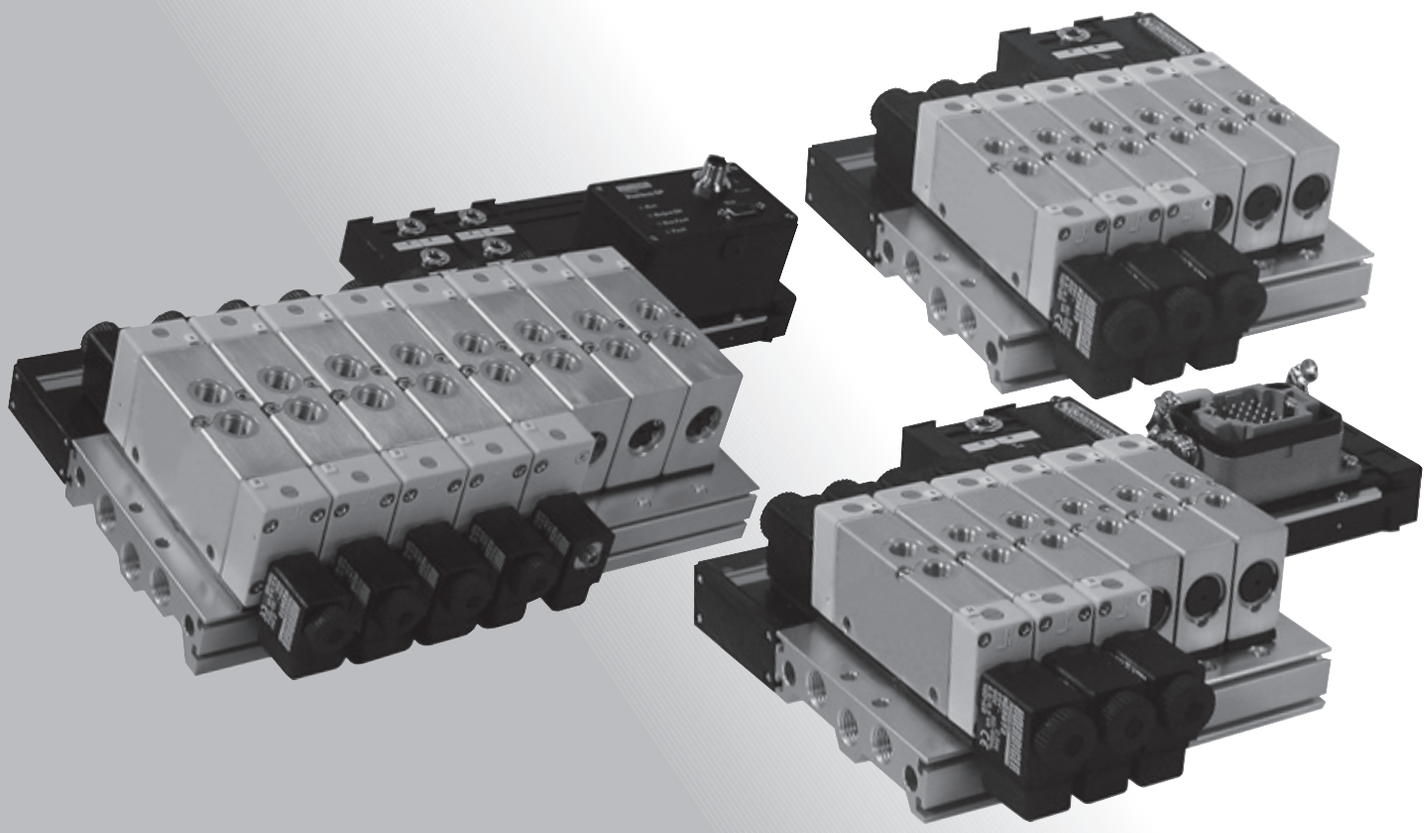
Actuation	Symbol	Nominal Size (mm)	**Order Instructions Type**	**Order No.**	Page
Electrical, by permanent signal		1.3 2.5	**V9 381RF-1/8-NG-..** **V9 381RF-1/8-NG-..**	**PA 10362-..33** **PA 10369-..33**	72, 73
		1.3 2.5	**V9 381H-RF-1/8-NG-..** **V9 381H-RF-1/8-NG-..**	**PA 10363-..33** **PA 10370-..33**	72, 73
		1.3	**V9 381H-RF-1/8-NO-..**	**PA 10367-..33**	72, 73

Version	Nominal voltage	Applicable for	Key code
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02
Low wattage version	24V = 230V 50/60Hz		13 69
	other voltages on request		

Valve Islands Series IM 20-G1/8, G1/4

Contents

Description	Electrically actuated Connection	Page		
		Characteristics	Dimensions	Order Instructions Overview
Valve Island with Multipole Connection	Sub-D, heavy duty industrial connector	76	78, 79	82
Valve Island with Bus connection	Profibus DP Inter Bus S CAN Open Internal bus	77	80, 81	82
Accessories		83	–	83



Valve Islands – Series IM 20-G1/8, G1/4
... with Multipole Connection – Characteristics

Characteristics Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
Type			**IM20-1/8**	**IM20-1/4**
Mounting			4 screws – see drawing	4 screws – see drawing
Port size				
air supply and exhaust			G1/4 both sides	G3/8 both sides
valve outlets			G1/8	G1/4
Grid size for valve positions			22	33
Installation			In any position	
Ambient and	ϑ min	°C	–10	Note: Please consult us for operating temperatures below 0° C
Medium temperature range	ϑ max	°C	+60	
Medium			Filtered compressed air (5µm)	
Lubrication			With or without oil mist lubrication (we recommend mineral oil type VG 32 to ISO 3448)	
Material				
Base plate			Aluminium	
Valve housing			Aluminium	
Seals			NBR	
Valve service life			10 x 10^6 switching cycles	
No. of valve positions			4 – 6 – 8 – 10 – 12 –14–16 [1]	
No. of switching outputs			max. 24	
No. of sensor inputs			max. 32	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min}	bar	2.5	
	p_{max}	bar	10	
Nominal flow	Q_n	l/min	500	1300 [2]
Actuation				
Electrical			By control system	
Voltage type			Direct current	
Nominal voltage	U_n	V	24 ±10%	
Power consumption		W	2.5	
Mass/ground			Minus pole	
Electrical protection		IP	IP65 (applise only to the electrically part)	
of input clamps		IP	IP20	
of input connectors		IP	IP65	
Connection				
Multipole connection			25-pin sub-D connector or 24-pin industrial connector	
Sensor inputs			Ladder clamps or M8 x 14-pin connectors	
Switching indicator			LED	
Protective circuit			integrated	

[1] other numbers of valves can be fitted via the use of blanking plates
[2] Version "middle position vented" 1000 l/min

Valve Islands see page 80, 81, Order Instructions see page 82
Accessories see page 83

... with Bus Connection – Characteristics

Characteristics Pressures quoted as gauge pressure

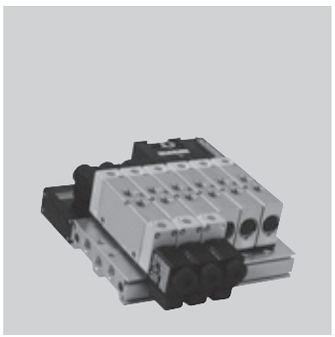
Characteristics	Symbol	Unit	Description	
General Features				
Type			**IM20-1/8**	**IM20-1/4**
Mounting			4 screws – see drawing	4 screws – see drawing
Port size				
air supply and exhaust			G1/4 both sides	G3/8 both sides
valve outlets			G1/8	G1/4
Grid size for valve positions			22	33
Installation			In any position	
Ambient and Medium temperature range	ϑ min ϑ max	°C °C	–10 +60	Note: Please consult us for operating temperatures below 0° C
Medium			Filtered compressed air (5µm)	
Lubrication			With or without oil mist lubrication (we recommend mineral oil type VG 32 to ISO 3448)	
Material				
Base plate			Aluminium	
Valve housing			Aluminium	
Seals			NBR	
Valve service life			10 x 10^6 switching cycles	
No. of valve positions			4 – 6 – 8 – 10 – 12 –14–16 [1]	
No. of switching outputs			max. 24	
No. of sensor inputs			max. 32	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min}	bar	2.5	
	p_{max}	bar	10	
Nominal flow	Q_n	l/min	500	1300 [2]
Actuation				
Electrical			By control system	
Voltage type			Direct current	
Nominal voltage	U_n	V	24 ±10%	
Power consumption		W	2.5	
Mass/ground			Minus pole	
Electrical protection		IP	IP65 (applise only to the electrically part)	
of input clamps		IP	IP20	
of input connectors		IP	IP65	
Connection				
Field bus connection			According to field bus accessories	
Sensor inputs			Ladder clamps or M8 x 14-pin connectors	
Switching indicator			LED	
Protective circuit			integrated	

[1] other numbers of valves can be fitted via the use of blanking plates

[2] Version "middle position vented" 1000 l/min

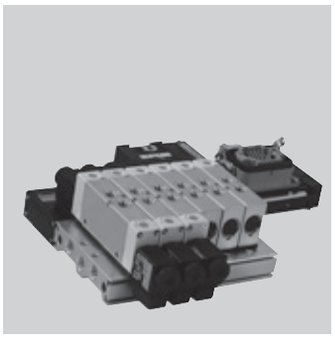
Valve Islands see page 80, 81, Order Instructions see page 82
Accessories see page 83

Valve Islands with Multipole Connection Series IM 20 G1/8

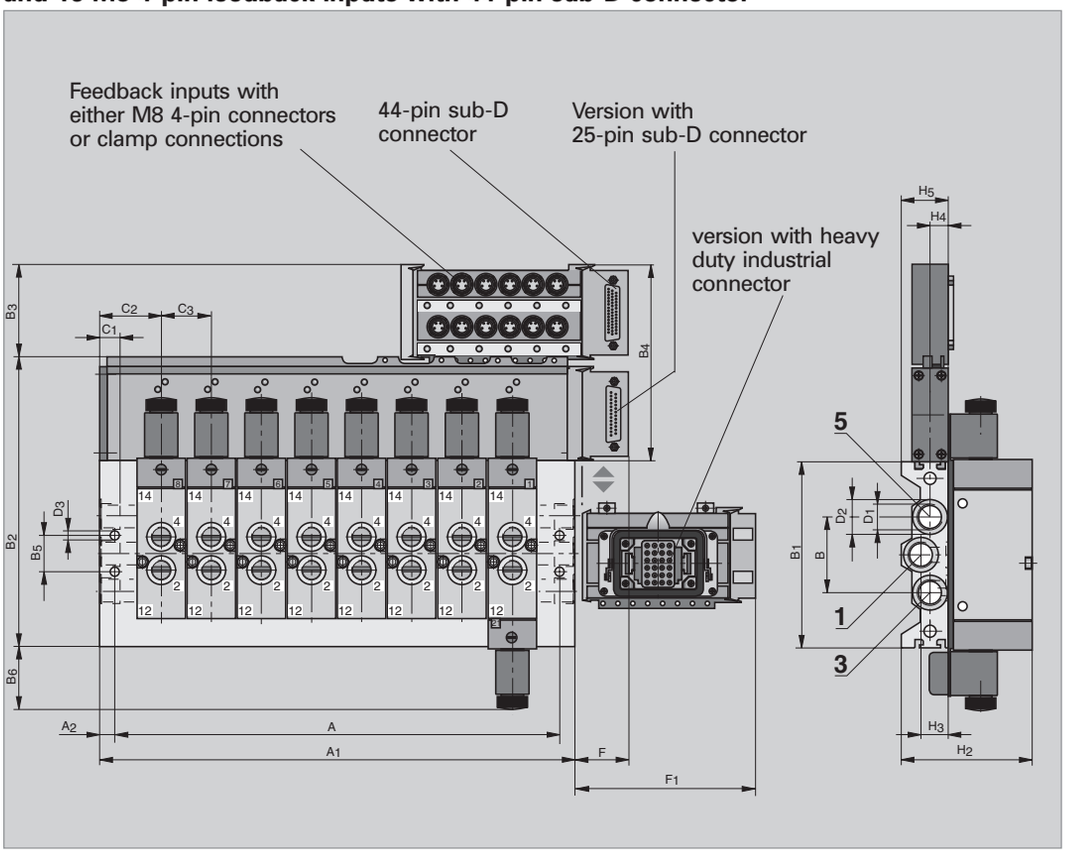


with sub-D connector

with heavy duty industrial connector



Multipole Island with 25-pin sub-D connector (or heavy duty industrial connector) and 16 M8 4-pin feedback inputs with 44-pin sub-D connector



Multipole islands can be equipped with following valves:

- 5/2 way valves with spring return
- 5/2 way impulse valves
- 5/3 way valves with spring return to middle position
  - middle position closed
  - middle position vented
  - middle position pressurized

Versions:
- Connection with sub-D connector
- Connection with heavy duty industrial connector
- with or without sensor inputs
- with multi-connection for sensor inputs (via 44-pin sub-D connector)

Accessories see page 83
- Cable with sub-D connector
- Heavy duty industrial connector
- Straight M8 4-pin connector

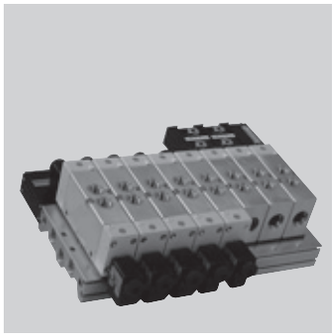
Dimension Table

Valve Island	Dimension A	A_1	A_2	B	B_1	B_2	B_3	B_4	B_5	B_6	B_7	C_1
IM20-1/8	17+ x C_3	30+ x C_3	6	43	99	166	62.5	132	20.5	42.5	60	11

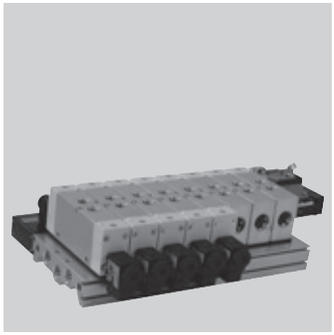
Valve Island	Dimension C_2	C_3	D_1	øD_2	øD_3	F	F_1	H_2	H_3	H_4	H_5
IM20-1/8	26	23	G1/4	19x0.2	5.5	40	126	68	12	9	25

x C_3= dimension C_3 multiplied by number of valves

Order Instructions see page 82, Characteristics see page 76
Accessories see page 83



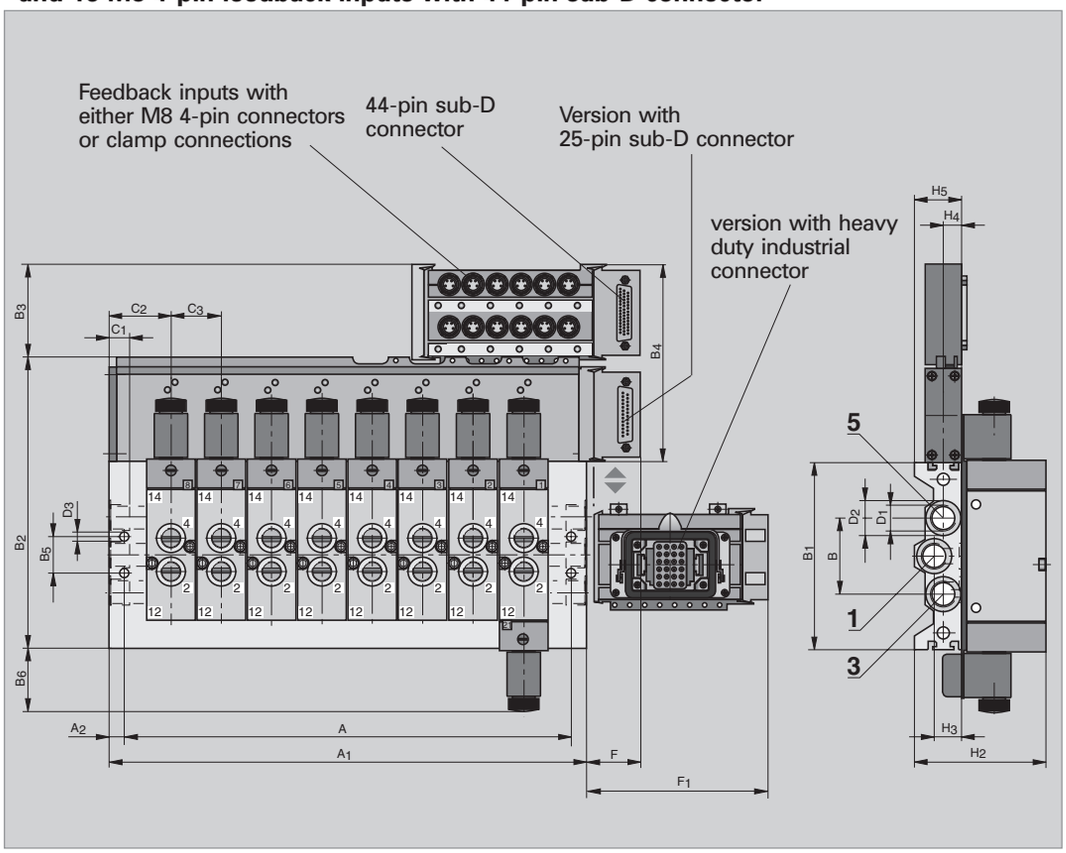
with sub-D connector



with heavy duty industrial connector

Valve Islands with Multipole Connection Series IM 20 G1/4

Multipole Island with 25-pin sub-D connector (or heavy duty industrial connector) and 16 M8 4-pin feedback inputs with 44-pin sub-D connector



Multipole islands can be equipped with following valves:

- 5/2 way valves with spring return
- 5/2 way impulse valves
- 5/3 way valves with spring return to midddle position
  - middle position closed
  - middle position vented
  - middle position pressurized

Versions:
- Connection with sub-D connector
- Connection with heavy duty industrial connector
- with or without sensor inputs
- with multi-connection for sensor inputs (via 44-pin sub-D connector)

Accessories see page 83
- Cable with sub-D connector
- Heavy duty industrial connector
- Straight M8 4-pin connector

Dimension Table

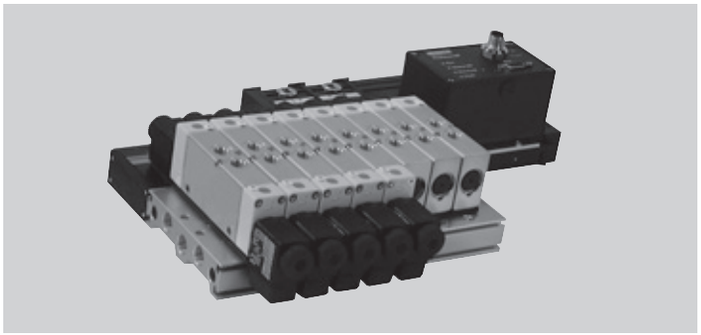
Valve Island	Dimension A	A_1	A_2	B	B_1	B_2	B_3	B_4	B_5	B_6	B_7	C_1
IM20-1/4	17+ x C_3	30+ x C_3	6	50	123	190	62.5	132	24	42.5	73.5	12

Valve Island	Dimension C_2	C_3	D_1	øD_2	øD_3	F	F_1	H_2	H_3	H_4	H_5
IM20-1/4	31	33	G3/8	23x0.5	6.2	40	126	86	18.5	12	31

x C_3= dimension C_3 multiplied by number of valves

Order Instructions see page 82, Characteristics see page 76
Accessories see page 83

Valve Islands with Bus Connection Series IM 20 G1/8



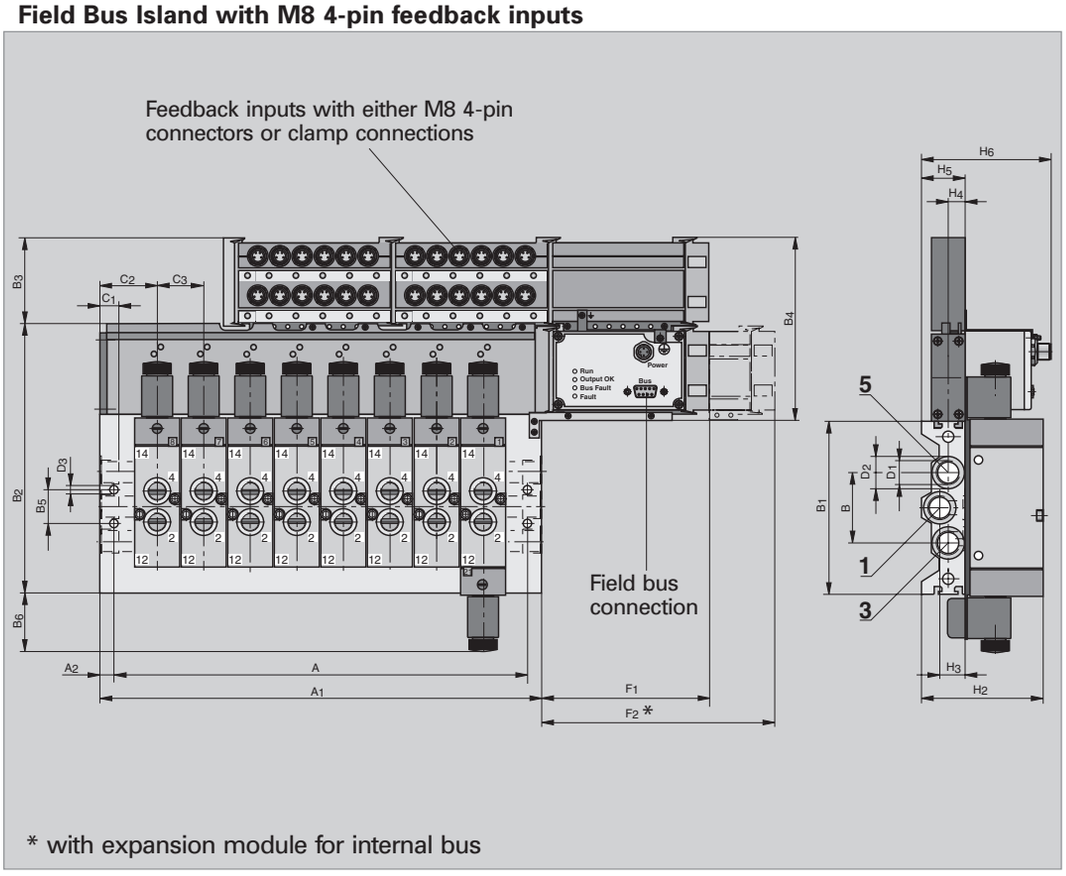
Field bus islands can be equipped with following valves:

- 5/2 way valves with spring return
- 5/2 way impulse valves
- 5/3 way valves with spring return to middle position
  - middle position closed
  - middle position vented
  - middle position pressurized

Versions:
- Profibus DP
- Interbus S
- CAN Open
- internal Bus
- with or without sensor inputs
- with or without integrated modules for sensor inputs

Accessories see page 83
- Cable with connector
- Straight M8 4-pin connector
- Straight M12 4-pin connector
- Elbow M12 4-pin connector

Field Bus Island with M8 4-pin feedback inputs



* with expansion module for internal bus

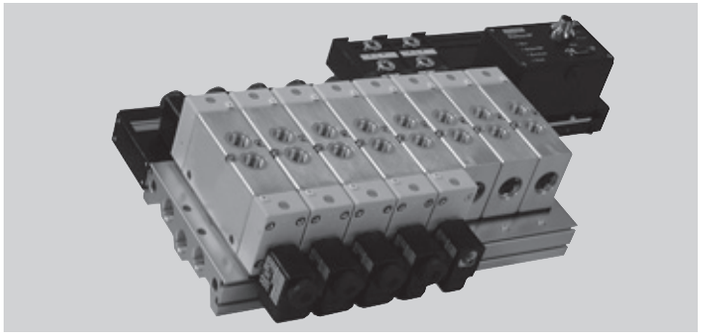
Dimension Table

Valve Island	Dimension A	A_1	A_2	B	B_1	B_2	B_3	B_4	B_5	B_6	B_7	C_1
IM20-1/8	17+ x C_3	30+ x C_3	6	43	99	166	62.5	132	20.5	42.5	60	11

Valve Island	Dimension C_2	C_3	D_1	øD_2	øD_3	F_1	F_2	H_2	H_3	H_4	H_5	H_6
IM20-1/8	26	23	G1/4	19x0.2	5.5	126	164	68	12	9	25	88.5

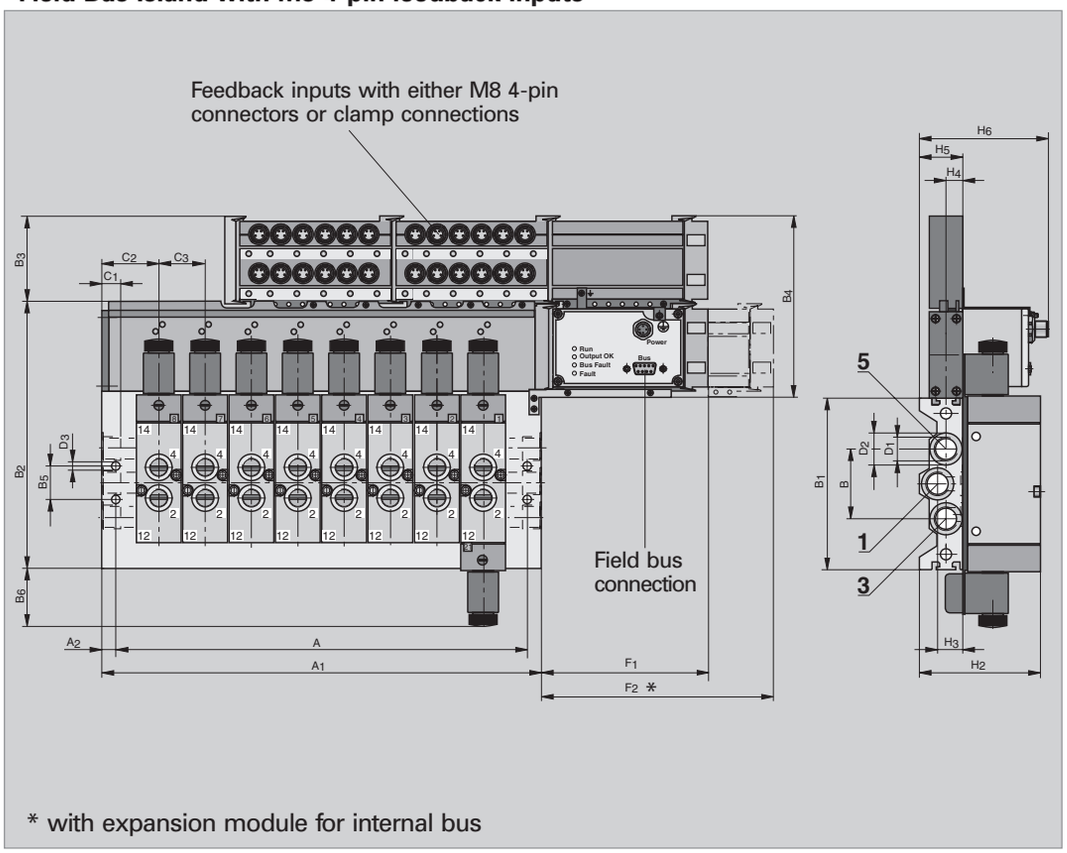
x C_3= dimension C_3 multiplied by number of valves

Order Instructions see page 82, Characteristics see page 77
Accessories see page 83



Valve Islands with Bus Connection Series IM 20 G1/4

Field Bus Island with M8 4-pin feedback inputs



* with expansion module for internal bus

Field bus islands can be equipped with following valves:
- 5/2 way valves with spring return
- 5/2 way impulse valves
- 5/3 way valves with spring return to middle position
  - middle position closed
  - middle position vented
  - middle position pressurized

Versions:
- Profibus DP
- Interbus S
- CAN Open
- internal bus
- with or without sensor inputs
- with or without integrated modules for sensor inputs

Accessories see page 83
- Cable with connector
- Straight M8 4-pin connector
- Straight M12 4-pin connector
- Elbow M12 4-pin connector

Dimension Table

Valve Island	Dimension A	A_1	A_2	B	B_1	B_2	B_3	B_4	B_5	B_6	B_7	C_1
IM20-1/4	17+ x C_3	30+ x C_3	6	50	123	190	62.5	132	24	42.5	73.5	12

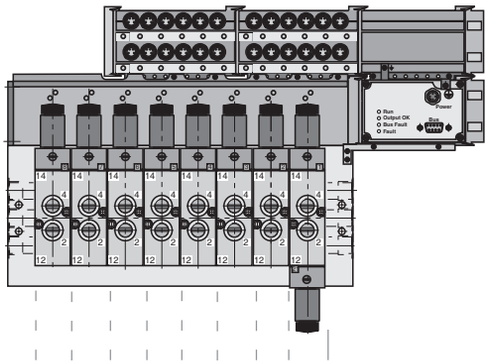
Valve Island	Dimension C_2	C_3	D_1	øD_2	øD_3	F_1	F_2	H_2	H_3	H_4	H_5	H_6
IM20-1/4	31	33	G3/8	23x0.5	6.2	126	164	86	18.5	12	31	88.5

x C_3= dimension C_3 multiplied by number of valves

Order Instructions see page 82, Characteristics see page 77
Accessories see page 83

Dimensions in mm

Order Instructions



Ordering Example:
Valve island with field bus connection,
8 fold, equipped with:
1 bistable 5/2 way valve S9 581-1/8
7 monostable 5/2 way valves S9 581RF-1/8

	Order No.							Electrical connection		Internal Bus expansion	No. of Valves		Valve position												Input module	Number of inputs		Channel divider	Position of channel divider	
													1	2	3	4	5	6	7	8	9	10	11	12						
Ordering example	P	A	1	0	3	8	1	D	P		0	8	M	M	M	M	M	M	M	J										

4 6 8 10 12
even number of valve positions only

Important: Please specify the code for the desired valve types

For order, please use the neutral order form on page 129

Valve Islands – Sizes	
PA 10381	Type: IM20-1/8 Connections: G1/8 –valve ports G1/4 –base plate
PA12867	Type: IM20-1/4 Connections: G1/4 –valve ports G3/8 –base plate

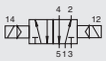
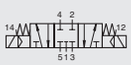
Input Modules	
K	Pins IP20
S	M8 IP65 connector
04-08-12 **16-20-24** **28-32**	Number of inputs

Dual Pressure Operation	
J	with channel divider in port 1 (P)
01 – 11	Position of channel divider to valve position

Electrical Connection	
Multipole Version	
DS	with sub-D connector
HI	with industrial connector
Fieldbus Version	
DP	Profibus DP
IS	Interbus S
CO	CAN Open
IB	Internal bus

Internal Bus Expansion	
J	RIO-IF Module

Valve Positions	
04	up to 4 valves
06	5 and 6 valves
08	7 and 8 valves
10	9 and 10 valves
12	11 and 12 valves
14	13 and 14 valves
16	15 and 16 valves

Ordering Code for Valves and Blanking Plates		
Code	Symbol	Description
A	–	Blanking plate on valve position
M		5/2 way solenoid valve, permanent signal with spring return Type: S9 581RF-..
J		5/2 way solenoid valve, Impulse version Type: S9 581-..
G		5/3 way solenoid valve, spring return to middle position, middle position closed Type: S9 581RFG-..
B		5/3 way solenoid valve, spring return to middle position, middle position pressurized Type: S9 581RFB-..
E		5/3 way solenoid valve, spring return to middle position, middle position vented Type: S9 581RFE-...

Characteristics see page 76, 77
Valve Islands see page 78-81

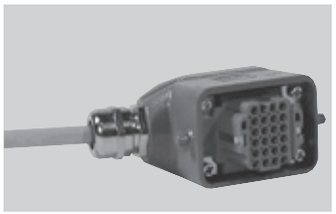
Cable with Sub-D Connector

Number of Pins	Cable length	Order Instructions Type	Order No.
25	1.0 m	**GSK-25-1**	**KL9012**
25	3.0 m	**GSK-25-3**	**KL9013**
25	5.0 m	**GSK-25-5**	**KL9014**
44	5.0 m	**GSK-44-5**	**KL9005**



Heavy duty industrial connector (without cable)

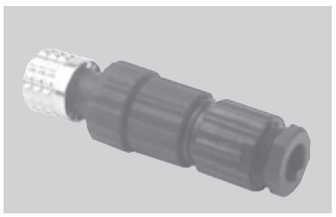
Number of Pins	Cable length	Order Instructions Type	Order No.
24	5.0 m	**K-IST-24**	**KL9003**



Straight M8 Connector *

Number of Pins	Use	Order Instructions Type	Order No.
4	for custom made cable	**K-M8-4**	**KL9011**

* the connector can be used for Multipole Version and Field Bus Version



Cable with M8 connector – for internal bus expansion

Cable length	Order Instructions Type	Order No.
1.0 m	**K-M8-41**	**KL9008**
2.0 m	**K-M8-42**	**KL9010**



Straight M12 connector (without cable)

Number of Pins	Use	Order Instructions Type	Order No.
4	for power supply of the bus system	**K-M12-4**	**KL9007**



Elbow M12 connector (without cable)

Number of Pins	Use	Order Instructions Type	Order No.
4	for power supply of the bus system	**K-M12W-4**	**KL9004**



Accessories for Valve Islands IM 20

- **with Multipole Connection**
- **with Bus Connection**

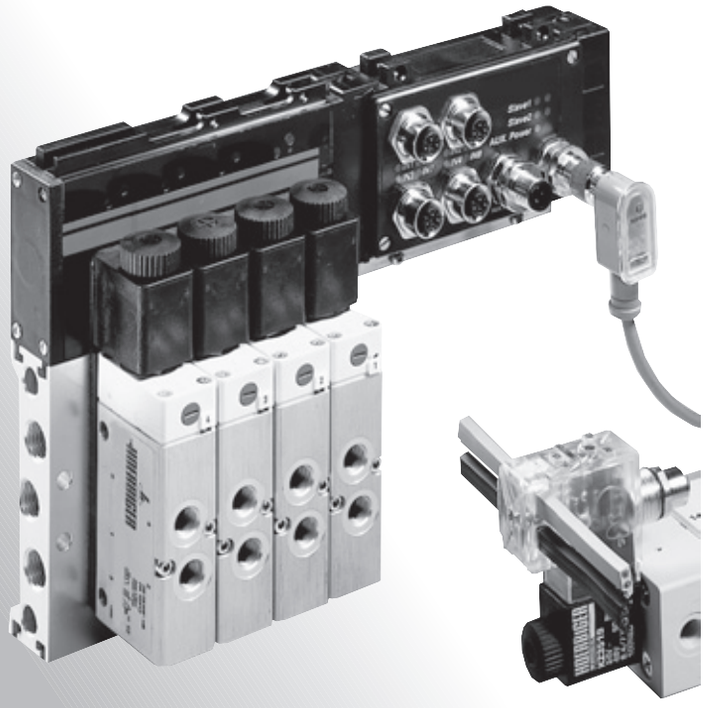
– Cable with sub-D connector
– Heavy duty industrial connector
– Straight M8 4-pin connector
– Straight M12 4-pin connector
– Elbow M12 4-pin connector
– Cable with M8 connector

Characteristics see page 76, 77
Valve Islands see page 78-81

Valves and Valve Islands with AS-Interface Connection

Contents

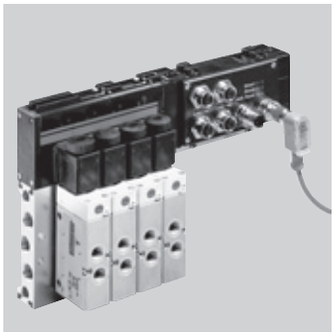
Description	Electrically actuated Connection	Page		
		Characteristics	Dimensions	Order Instructions Overview
Valve Island with AS-Interface	AS-Interface	86	87	87
Valve Connector for single valve actuation	AS-Interface	88	89	89



Characteristics

Valve Island G1/8, G1/4

Valve actuation via AS-Interface



Series:
IM20-..ASI-.J-8S
IM20-..ASI-.M-8S

The valve islands are available with G1/8 and G1/4 valves. They have 8 sensor inputs and are equipped with max. 8 monostable or 4 bistable valves.

Application:
The valve islands are especially suitable for centralized applications.
The control system is connected via the yellow AS-interface cable and the energy is supplied through the black AS-interface cable by means of an M12 connector (4-pin) on the AS-interface slave

Characteristics Pressures quoted as gauge pressure

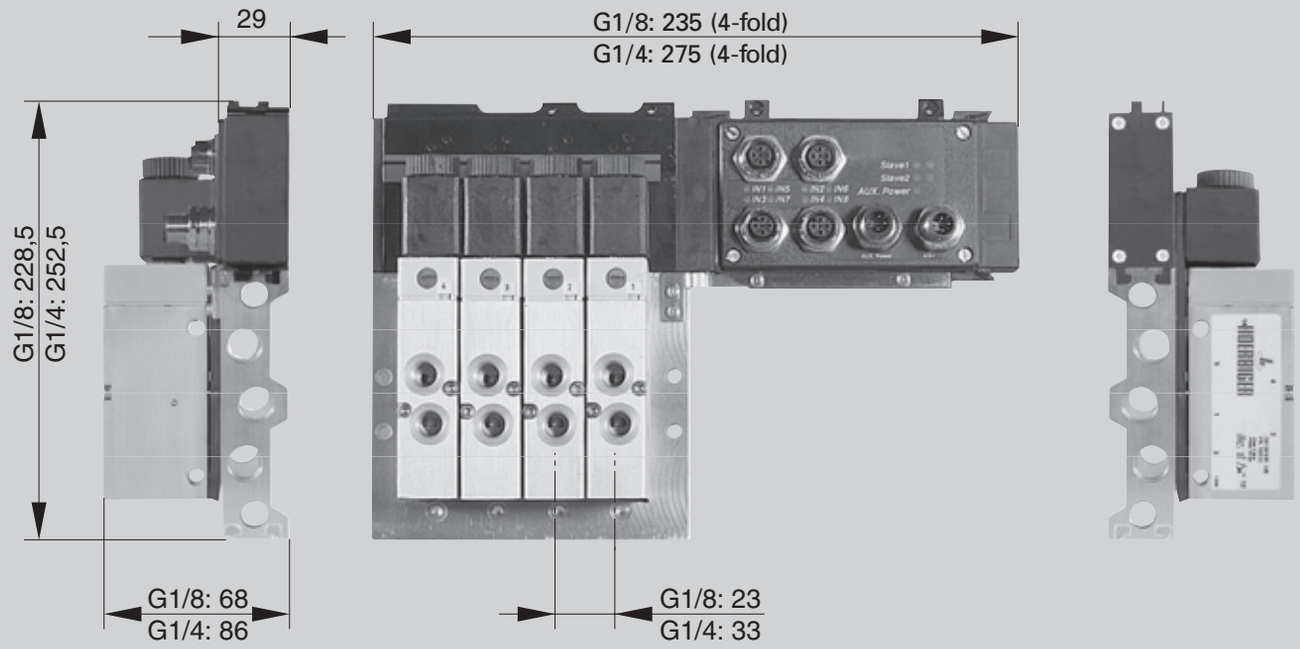
Characteristics	Symbol	Unit	Description	
General Features				
Description			Valve island G1/8 and G1/4 with AS-Interface	
Mounting			Wall mounting 4 screws	
Type			IM20-1/8	IM20-1/4
Port size				
air supply and exhaust			G1/4 both sides	G3/8 both sides
valve outlets			G1/8	G1/4
Grid width of valves			23	33
Ambient and Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +50	Note: Please consult us for operating temperatures below 0° C
Material				
Base plate			Al	
Valve housing			Al	
Seals			NBR	
AS-Interface module housing			Plastic	
Medium			Filtered compressed air (5µm)	
Lubrication			With or without oil mist lubrication (we recommend mineral oil type VG 32 to ISO 3448)	
Installation			In any position	
No. of switching outputs			max. 8	
No. of sensor inputs			max. 8	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	2.5 10	
Nominal flow	Q_N	l/min	500	1300 (1
Electrical Characteristics				
Actuation			electrically pilot operated (valves)	
Connections				
Bus connection			M12 connector 5-pin	
Inputs			M12 connector 5-pin (Y-adaptor needed)	
Working principle			Via AS-interface, comprising 2 Slaves	
Operating voltage	U	V/DC	AS-interface: 26.5 to 31.6 Extern: 24 ±10%	
Data I/O configuration			7F	
AS-interface specification ID code			Fh	
Total power usage		mA	< 280 AS-Int. Bus)	
External power supply		mA	< 900	
Addressability			max. 15	
Sensor voltage		V	Via AS-Interface	
Sensor power rating		mA	max. 200, Sensor short circuit proof	
Input voltage		V	for signal "0": < 5 for signal "1": > 10	
Status indication			Via LED	
Electrical protection		IP	IP65 (applise only to the electrically part)	

(1 version "middle position vented" 1000 l/min

Note:
The power supply must be isolated according to IEC 3644-41!

Dimensions, Order Instructions

Dimensions



for further dimensions see page 76-79

Order Instructions for Standard Valve Islands

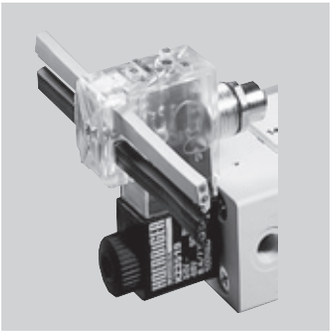
Valves	Port size	Order Instructions Type	Order No.
4 monostable valves 8 input connections for sensors	G1/8 – Outlet G1/4 – Inlet	**IM20-1/8-ASI-4M-8S**	**PA10383-0400-04**
4 bistable valves 8 input connections for sensors	G1/8 – Outlet G1/4 – Inlet	**IM20-1/8-ASI-4J-8S**	**PA10383-0004-04**
8 monostable valves 8 input connections for sensors	G1/8 – Outlet G1/4 – Inlet	**IM20-1/8-ASI-8M-8S**	**PA10383-0800-08**
4 monostable valves 8 input connections for sensors	G1/4 – Outlet G3/8 – Inlet	**IM20-1/4-ASI-4M-8S**	**PA12921-0400-04**
4 bistable valves 8 input connections for sensors	G1/4 – Outlet G3/8 – Inlet	**IM20-1/4-ASI-4J-8S**	**PA12921-0004-04**
8 monostable valves 8 input connections for sensors	G1/4 – Outlet G3/8 – Inlet	**IM20-1/4-ASI-8M-8S**	**PA12921-0800-08**
for additional valve configurations see page 80			

Order Instructions for Valve Island Connection Accessories

Description	Item	Order Instructions Type	Order No.
AS-Interface connection set – comprising items 2 to 5	**1**		**PD45849**
4 Y-cables for sensor connection M12/2xM8	2	**KS-Y-M12-8-8**	**KL9092**
1 right angle socket for M12 4-pin connector **(for customer's own arrangement)**	4	**K-M12W-4**	**KL9004**
2 AS-Interface connection modules M12	5	**AM-AS-M12**	**KL3129**
1 M12 connector with blank wire ends ca. 1,5 m	3	**KS-M12-0-15**	**KL3141**

Characteristics

Valve Connector for valve actuation via AS-Interface



– for directional valve series S9-1/8, S9-1/4, S9-1/2
– for stop valve series airfit swing G1/4, G3/8 series airfit comfort G3/8, G1/2

Valve connector Form B (industry standard) with status indicators and gasket for S9 valves
– with slave function for AS-Interface

Characteristics

Characteristics	Symbol	Unit	Description
General Features			
Description			AS-Interface Connector
Mounting			Plug-type connection with integrated fixing screw
Ambient temperature range	ϑ min ϑ max	°C °C	-10 +60
Material – housing			transparent plastic
Installation			in any position
Contact distance		mm	11
No. of outputs			1
No. of inputs			2 (Sensors)
Electrical Characteristics			
Output voltage		V	24 DC
Output current		A	< 0.5 from external supply
Total sensor current		A	< 0.2 from AS-Interface
Sensor connections			via M12x1 connector (4-pin)
Data I/O configuration			Bh
AS-Int. specification, ID code			Fh
Addressability			(0), 1 ... 31
Status indicator			LED
Meaning: – AS-Interface – Out			 AS-Interface operating voltage on Valve output active
Electrical protection		IP	IP65 (applise only to solenoid with plug)

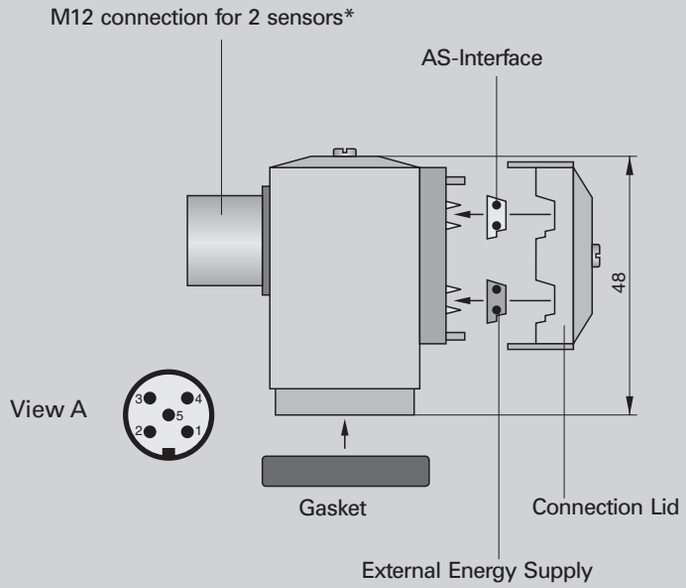
Connections

1. Black profile cable (= energy supply) in connection lid “POWER“.
2. Yellow profile cable (= AS-Interface signal line) in connection lid “AS-Interface“.
3. Secure connection lids with second fixing screw.
   This completes the contact.

Note:
the power supply must be isolated according to IEC 3644-41!

Dimensions, Order Instructions

Dimensions and PIN Assignment



1 = + Sensor power
2 = Input 1
3 = – Sensor power
4 = Input 2
5 = Spare

*When required, please order Y-cable separately

Order Instructions

Description	Order Instructions Type	Order No.
AS-interface valve connector	**GSD-AS-22**	**KL3104**
Y-cable M12 / 2 x M8 (accessories)	**KS-Y-M12-8-8**	**KL9092**

Please note:
Please order the S9 series valve (**without connector**) or the shut-off valve separately

Valves recommended for use with the AS-Interface valve connector are shown in the following table:

Order Instructions

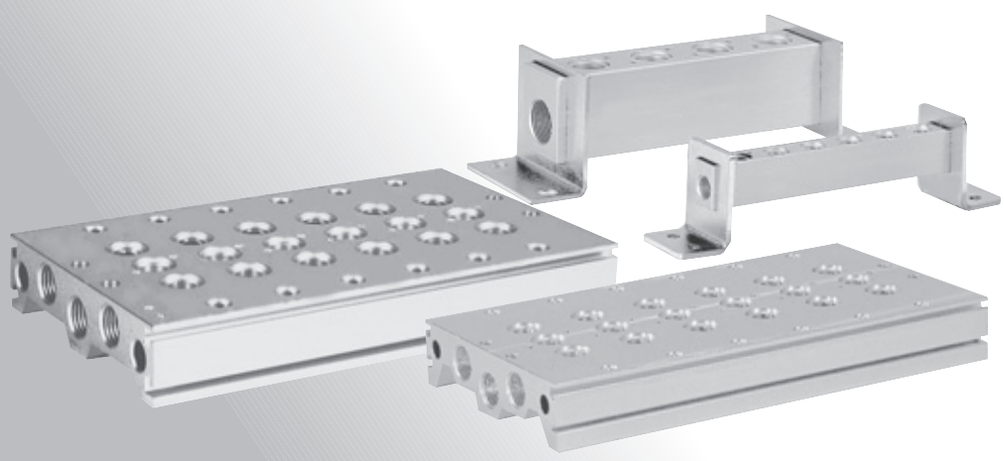
Description	Order Instructions Type	Order No.
5/2 way valve, G1/8, monostable	**S9581RF-1/8-OD**	**PA10312-0233-00**
5/2 way valve, G1/4, monostable	**S9581RF-1/4-OD**	**PA12679-0233-00**
5/2 way valve, G1/2, monostable	**S9581RF-1/2-OD**	**PA16171-0233-00**
Stop valve, airfit swing, G1/4	**SDR-1/4E**	**PB47149-201**
Stop valve, airfit swing, G3/8	**SDR-3/8E**	**PB47249-201**
Stop valve, airfit comfort, G3/8	**SDR-3/8E**	**PB57149-201**
Stop valve, airfit comfort, G1/2	**SDR-1/2E**	**PB57349-201**

For additional valve types see page 37-65
For shut-off valves see air preparation catalogue A4P006E

P- and RPS-Supply Manifolds for Series S9-G1/8, G1/4, G1/2

Contents

Description	Port size	Page		
		Characteristics	Dimensions	Order Instructions Overview
P-Supply Manifolds	G1/8 G1/4 G1/2	92 93 94	92 93 94	92 93 94
RPS-Supply Manifolds	G1/8 G1/4	95	95	95



P-Supply Manifold Series PLK, PL

for directional valves Series S9-G1/8

P-supply manifolds reduce and simplify tubing. They allow a clear, space-saving design.
3/2, 5/2 and 5/3 directional valves with different types of actuation can be mounted in groups of 2-10.

The delivery includes:
P-supply manifold
Mounting bracket
Mounting screws
O-rings



Accessories

Description	Order No.
Complete cover plate	PD 34694
Flow divider	PD 42483

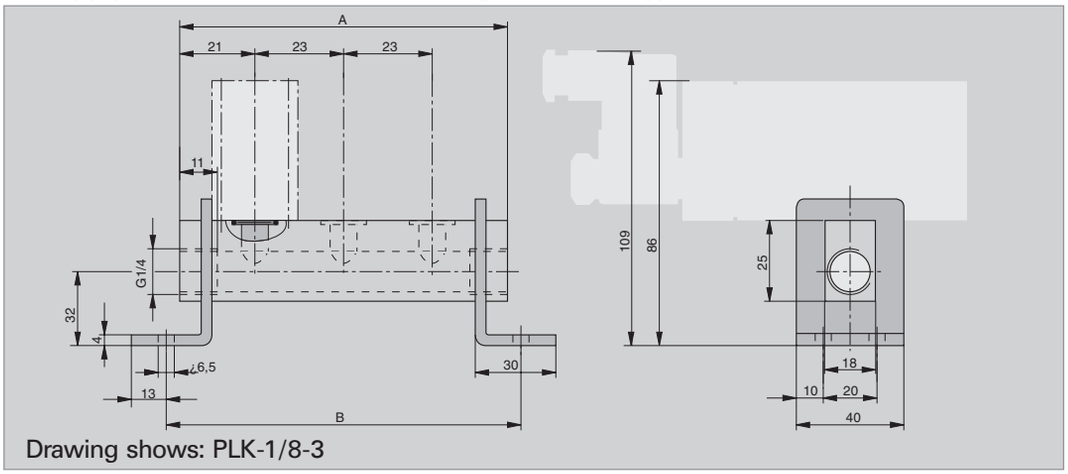
Material

Description	Material
P-supply manifold	Al, anodized
Mounting bracket	Steel passivated
Screws	Galvanized steel
O-ring	Oil-res. rubber

Order Instructions and Weight

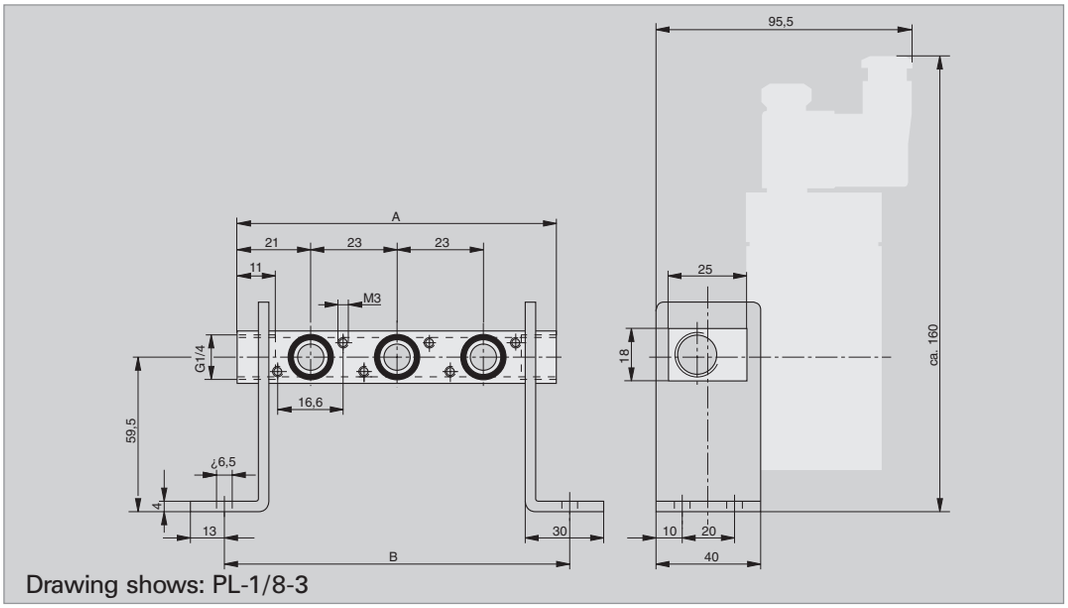
Order Instructions		No. of	Consisting of				Weight
Type	Order No.	Valves	Manifold	Bracket	Screws	O-ring	(kg)
PLK-1/8-2	PD 37174-0002	2	1	2	4	2	0.28
PL-1/8-2	PD 32763-0002	2	1	2	4	2	0.28
PLK-1/8-3	PD 37174-0003	3	1	2	6	3	0.31
PL-1/8-3	PD 32763-0003	3	1	2	6	3	0.31
PLK-1/8-4	PD 37174-0004	4	1	2	8	4	0.34
PL-1/8-4	PD 32763-0004	4	1	2	8	4	0.34
PLK-1/8-5	PD 37174-0005	5	1	2	10	5	0.37
PL-1/8-5	PD 32763-0005	5	1	2	10	5	0.37
PLK-1/8-6	PD 37174-0006	6	1	2	12	6	0.40
PL-1/8-6	PD 32763-0006	6	1	2	12	6	0.40
PLK-1/8-7	PD 37174-0007	7	1	2	14	7	0.43
PL-1/8-7	PD 32763-0007	7	1	2	14	7	0.43
PLK-1/8-8	PD 37174-0008	8	1	2	16	8	0.47
PL-1/8-8	PD 32763-0008	8	1	2	16	8	0.47
PLK-1/8-9	PD 37174-0009	9	1	2	18	9	0.50
PL-1/8-9	PD 32763-0009	9	1	2	18	9	0.50
PLK-1/8-10	PD 37174-0010	10	1	2	20	10	0.53
PL-1/8-10	PD 32763-0010	10	1	2	20	10	0.53

P-Supply Manifold with short mounting brackets – Type: PLK-1/8-..



Drawing shows: PLK-1/8-3

P-Supply Manifold with long mounting brackets – Type: PL-1/8-..



Drawing shows: PL-1/8-3

Dimension Table

Type	No. of Valves	A	B
PLK-1/8-2	2	65	79
PL-1/8-2	2	65	79
PLK-1/8-3	3	88	102
PL-1/8-3	3	88	102
PLK-1/8-4	4	111	125
PL-1/8-4	4	111	125
PLK-1/8-5	5	134	148
PL-1/8-5	5	134	148
PLK-1/8-6	6	157	171
PL-1/8-6	6	157	171
PLK-1/8-7	7	180	194
PL-1/8-7	7	180	194
PLK-1/8-8	8	203	217
PL-1/8-8	8	203	217
PLK-1/8-9	9	226	240
PL-1/8-9	9	226	240
PLK-1/8-10	10	249	263
PL-1/8-10	10	249	263

Overview for directional valves see page 60-65

P-Supply Manifold Series PLK, PL

for directional valves Series S9-G1/4

P-supply manifolds reduce and simplify tubing. They allow a clear, space-saving design.
3/2, 5/2 and 5/3 directional valves with different types of actuation can be mounted in groups of 2-10.

The delivery includes:
P-supply manifold
Mounting bracket
Mounting screws
O-rings



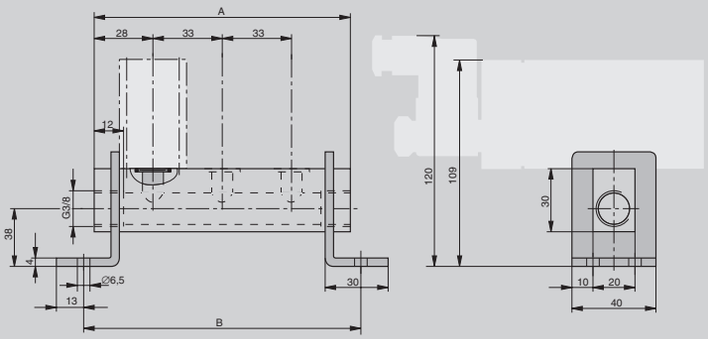
Order Instructions and Weight

Order Instructions		No. of	Consisting of				Weight
Type	Order No.	Valves	Manifold	Bracket	Screws	O-ring	(kg)
PLK-1/4-2	PD 37175-0002	2	1	2	4	2	0.31
PL-1/4-2	PD 32765-0002	2	1	2	4	2	0.31
PLK-1/4-3	PD 37175-0003	3	1	2	6	3	0.35
PL-1/4-3	PD 32765-0003	3	1	2	6	3	0.35
PLK-1/4-4	PD 37175-0004	4	1	2	8	4	0.39
PL-1/4-4	PD 32765-0004	4	1	2	8	4	0.39
PLK-1/4-5	PD 37175-0005	5	1	2	10	5	0.43
PL-1/4-5	PD 32765-0005	5	1	2	10	5	0.43
PLK-1/4-6	PD 37175-0006	6	1	2	12	6	0.47
PL-1/4-6	PD 32765-0006	6	1	2	12	6	0.47
PLK-1/4-7	PD 37174-0007	7	1	2	14	7	0.51
PL-1/4-7	PD 32765-0007	7	1	2	14	7	0.51
PLK-1/4-8	PD 37175-0008	8	1	2	16	8	0.55
PL-1/4-8	PD 32765-0008	8	1	2	16	8	0.55
PLK-1/8-9	PD 37175-0009	9	1	2	18	9	0.59
PL-1/4-9	PD 32765-0009	9	1	2	18	9	0.59
PLK-1/4-10	PD 37175-0010	10	1	2	20	10	0.63
PL-1/4-10	PD 32765-0010	10	1	2	20	10	0.63

Accessories

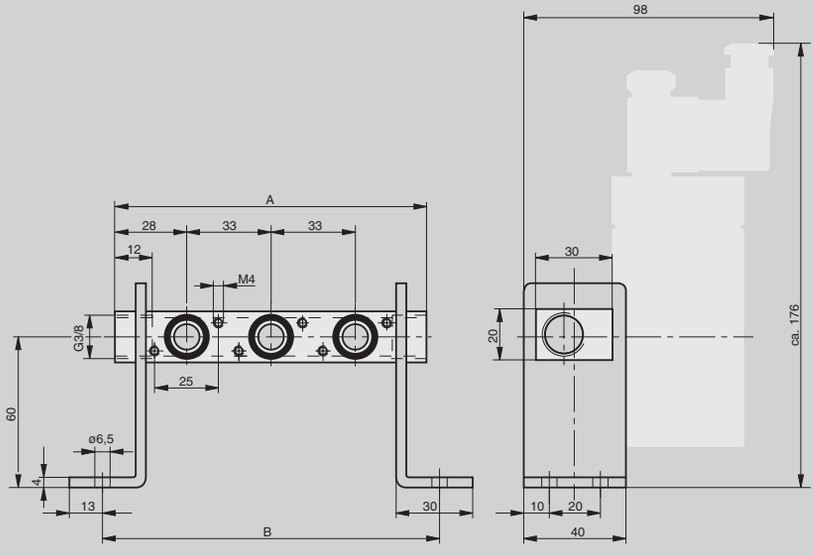
Description	Order No.
Complete cover plate	PD 34695
Flow divider	PD 42516

P-Supply Manifold with short mounting brackets – Type: PLK-1/4-..



Drawing shows: PLK-1/4-3

P-Supply Manifold with long mounting brackets – Type: PL-1/4-..



Drawing shows: PL-1/4-3

Material

Description	Material
P-supply manifold	Al, anodized
Mounting bracket	Steel passivated
Screws	Galvanized steel
O-ring	Oil-res. rubber

Dimension Table

Type	No. of Valves	A	B
PLK-1/4-2	2	89	99
PL-1/4-2	2	89	99
PLK-1/4-3	3	122	132
PL-1/4-3	3	122	132
PLK-1/4-4	4	155	165
PL-1/4-4	4	155	165
PLK-1/4-5	5	188	198
PL-1/4-5	5	188	198
PLK-1/4-6	6	221	231
PL-1/4-6	6	221	231
PLK-1/4-7	7	254	264
PL-1/4-7	7	254	264
PLK-1/4-8	8	287	297
PL-1/4-8	8	287	297
PLK-1/4-9	9	320	330
PL-1/4-9	9	320	330
PLK-1/4-10	10	353	363
PL-1/4-10	10	353	363

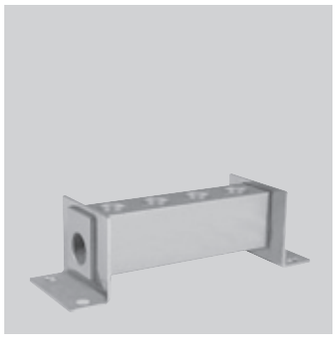
Overview for directional valves see page 60-65

P-Supply Manifold Series PL

for directional valves Series S9-G1/2

P-supply manifolds reduce and simplify tubing. They allow a clear, space-saving design.
3/2, 5/2 and 5/3 directional valves with different types of actuation can be mounted in groups of 2-4.

The delivery includes:
P-supply manifold
Mounting bracket
Mounting screws
O-rings



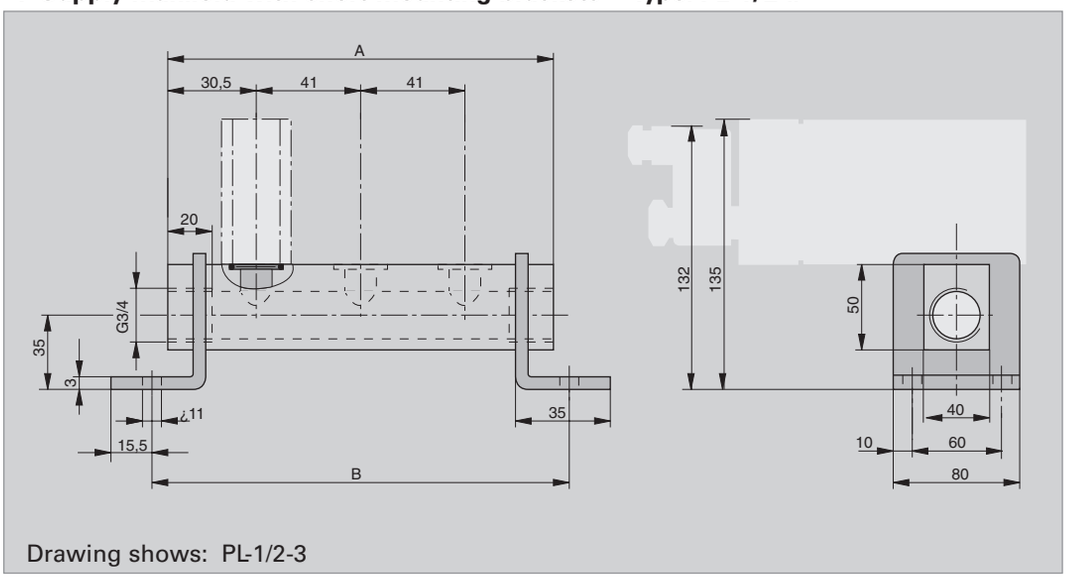
Material

Description	Material
P-supply manifold	Al, anodized
Mounting bracket	Steel passivated
Screws	Galvanized steel
O-ring	Oil-res. rubber

Dimension Table

Type	No. of Valves	A	B
PL-1/2-2	2	102	122
PL-1/2-3	3	143	163
PL-1/2-4	4	184	204

P-Supply Manifold with short mounting brackets – Type: PL-1/2-..



Drawing shows: PL-1/2-3

Order Instructions and Weight

Order Instructions		No. of	Consisting of				Weight
Type	Order No.	Valves	Manifold	Bracket	Screws	O-ring	(kg)
PL-1/2-2	**PD 39016-0002**	2	1	2	4	2	0.45
PL-1/2-3	**PD 39016-0003**	3	1	2	6	3	0.60
PL-1/2-4	**PD 39016-0004**	4	1	2	8	4	0.80

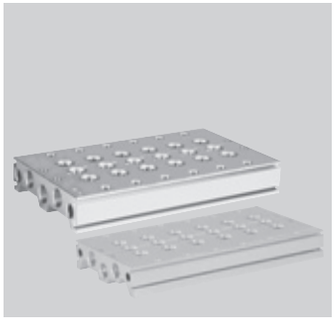
Accessories

Description	Order No.
Complete cover plate	**PD 39138**

Overview for directional valves see page 60-65

Order Instructions and Weight

Order Instructions Type	Order No.	No. of Valves	Consisting of Manifold	Screws	O-ring	Weight (kg)
RPSL-S9-1/8-2	PD 44813-0002	2	1	4	6	0.470
RPSL-S9-1/4-2	PD 44814-0002	2	1	4	6	0.845
RPSL-S9-1/8-3	PD 44813-0003	3	1	6	9	0.570
RPSL-S9-1/4-3	PD 44814-0003	3	1	6	9	1.045
RPSL-S9-1/8-4	PD 44813-0004	4	1	8	12	0.670
RPSL-S9-1/4-4	PD 44814-0004	4	1	8	12	1.245
RPSL-S9-1/8-5	PD 44813-0005	5	1	10	15	0.770
RPSL-S9-1/4-5	PD 44814-0005	5	1	10	15	1.445
RPSL-S9-1/8-6	PD 44813-0006	6	1	12	18	0.870
RPSL-S9-1/4-6	PD 44814-0006	6	1	12	18	1.645
RPSL-S9-1/8-7	PD 44813-0007	7	1	14	21	0.970
RPSL-S9-1/4-7	PD 44814-0007	7	1	14	21	1.845
RPSL-S9-1/8-8	PD 44813-0008	8	1	16	24	1.070
RPSL-S9-1/4-8	PD 44814-0008	8	1	16	24	2.045
RPSL-S9-1/8-9	PD 44813-0009	9	1	18	27	1.170
RPSL-S9-1/4-9	PD 44814-0009	9	1	18	27	2.245
RPSL-S9-1/8-10	PD 44813-0010	10	1	20	30	1.270
RPSL-S9-1/4-10	PD 44814-0010	10	1	20	30	2.445



Accessories

Description	Order No.
Cover strip kit complete G1/8	PD 32956
Cover strip kit complete G1/4	PD 32957
Flow divider G1/8	PD 42483
Flow divider G1/4	PD 42483

RPS-Supply Manifold Series RPSL

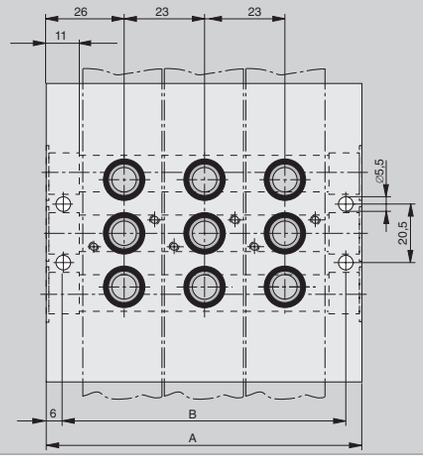
for directional valves Series S9-G1/8, G1/4

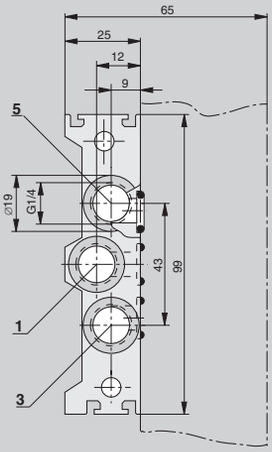
P-supply manifolds reduce and simplify tubing. They allow a clear, space-saving design.
The RPS manifolds have a common compressed air supply (P) and common vent lines (R,S).
Valves can be mounted in groups of 2-10.

The delivery includes:
RPS-supply manifold
Mounting screws
O-rings

RPS-Supply Manifold Type: RPSL-S9-1/8-.

for dimensions A and B see dimension table

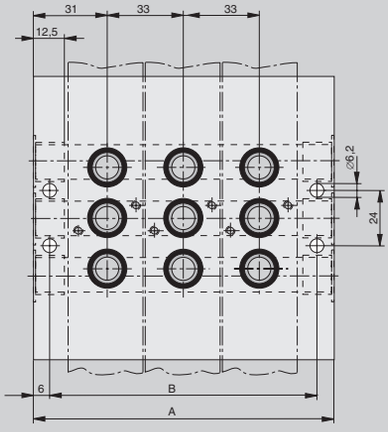


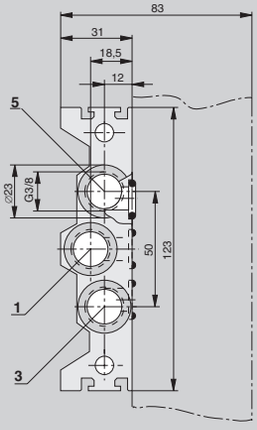


Drawing shows: RPSL-S9-1/8-3

RPS-Supply Manifold Type: RPSL-S9-1/4-..

for dimensions A and B see dimension table





Drawing shows: RPSL-S9-1/4-3

Material

Description	Material
P-supply manifold	Al, anodized
Screws	Galvanized steel
O-ring	Oil-res. rubber

Dimension Table

Type	No. of Valves	A	B
RPSL-S9-1/8-2	2	75	63
RPSL-S9-1/4-2	2	95	83
RPSL-S9-1/8-3	3	98	86
RPSL-S9-1/4-3	3	128	116
RPSL-S9-1/8-4	4	121	109
RPSL-S9-1/4-4	4	161	149
RPSL-S9-1/8-5	5	144	132
RPSL-S9-1/4-5	5	194	182
RPSL-S9-1/8-6	6	167	155
RPSL-S9-1/4-6	6	227	215
RPSL-S9-1/8-7	7	190	178
RPSL-S9-1/4-7	7	260	248
RPSL-S9-1/8-8	8	213	201
RPSL-S9-1/4-8	8	293	281
RPSL-S9-1/8-9	9	236	224
RPSL-S9-1/4-9	9	326	314
RPSL-S9-1/8-10	10	259	247
RPSL-S9-1/4-10	10	359	347

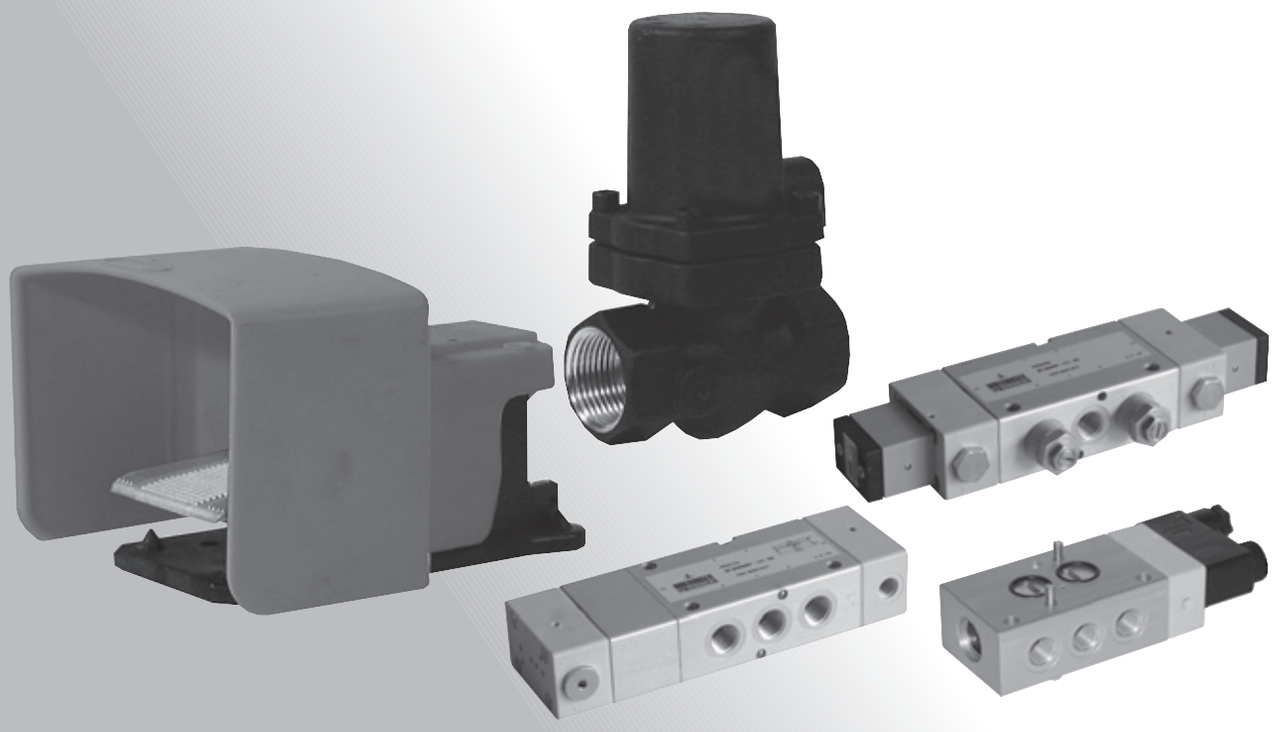
Overview for directional valves see page 60-65

Dimensions in mm

Special Valves G1/8, G1/4

Contents

Description	Actuation	Port size	Page		
			Characteristics	Dimensions	Order Instructions Overview
3/2, 5/2 and 5/3 Way Valves with NAMUR connections Series S9	Electrical	G1/8 G1/4	98, 99	100-102	103
5/2 Way Valves for Two Hand Operation Series S9	Manual cnntrol	G1/8 G1/4	104	104, 105	105
5/2 Way Oscillating Valves Series S9	Pneumatic	G1/4	107	107	107
3/2 and 5/2 Way Valve Series F	Pedal	G1/4	108	108	109
2/2 Way Valve Series ARKV	Pneumatic	G1/2 G3/4 G1 G11/2 G2	110	110	110



Characteristics for Standard Valves

Characteristics Series S9 – G1/8, G1/4 NAMUR Connections

Characteristics	Symbol	Unit	Series S9 G1/8	G1/4	
Actuation			**electrically actuated**	**electrically actuated**	
General Features					
Type			Spool valve	Spool valve	
Mounting			2 Screws M5	2 Screws M6	
Tube connection			Thread/NAMUR connections	Thread/NAMUR connections	
Port size			G1/8 – 7.4 deep	G1/4 – 11 deep	
Weight		kg	0.245 permanent signal version 0.340 impulse version	0.600 permanent signal version 0.700 impulse version	
Installation			In any position	In any position	
Ambient temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60	-10 to +60	
Medium temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60	-10 to +60	
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)		
Pneumatic Characteristics					
Nominal pressure	$p_{min./max.}$	bar	6		
Operating pressure range					
– permanent signal version	$p_{min./max.}$	bar	2–10		
– impulse version	$p_{min./max.}$	bar	1.5–10		
Nominal flow	Q_N	l/min	500	1300 (3	
Actuation					
Electrical			pilot operated		
Voltage type			Alternating current (50/60Hz)	Direct current	
Nominal voltage					
– Standard version	U_n	V	230 ±10%	24 ±10%	other voltages on request
– Low wattage version	U_n	V	230 ±10%	24 ±10%	
Initial power consumption					
– Standard version		VA (W)	8.5	2.5	
– Low wattage version		VA (W)	6.6	2.1	
Continuous consumption					
– Standard version		VA (W)	6.0	2.5	
– Low wattage version		VA (W)	3.9	2.1	
Duty cycle	ED	%	100		
Electrical protection		IP	IP65 to DIN 40050 (applise only to solenoid with plug)		
Connection			Plug to DIN EN 175301-803 form B – industrial standard (2		

(1 Note: Please consult us for operating temperatures below 0° C
(2 Low wattage version: Plug to DIN EN 175301-803 form A
(3 Version "middle position vented" 1000 l/min

Overview for directional valves see page 103, 60-65

Characteristics for Valves in EX Areas

Characteristics Series S9 – G1/8, G1/4 NAMUR Connections

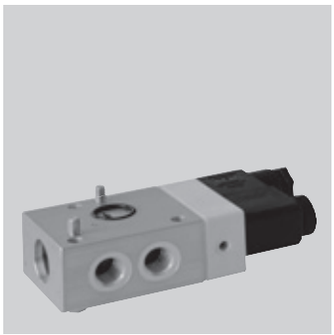
Characteristics	Symbol	Unit	Series S9 G1/8	G1/4
Actuation			**electrically actuated**	**electrically actuated**
General Features				
Type			Spool valve	Spool valve
Mounting			2 Screws M5	2 Screws M6
Tube connection			Thread/NAMUR connections	Thread/NAMUR connections
Port size			G1/8 – 7.4 deep	G1/4 – 11 deep
Weight		kg	0.245 permanent signal version 0.340 impulse version	0.600 permanent signal version 0.700 impulse version
Installation			In any position	In any position
Ambient temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60	-10 to +60
Medium temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60	-10 to +60
Medium			filtered, unlubricated compressed air – free from water and dirt to ISO 8573-1 Solids: Class 7 particle < 40 µm for gas. Water content:pressure dew point +3 °C, Class 4, but at least 5 °C below minimum operating temperature	
Pneumatic Characteristics				
Nominal pressure	$p_{min./max.}$	bar	6	
Operating pressure range				
– permanent signal version	$p_{min./max.}$	bar	2–10	
– impulse version	$p_{min./max.}$	bar	1.5–10	
Nominal flow	Q_N	l/min	500	1300 (3
Actuation				
Electrical			pilot operated	
Zulassung			EC Type Test Certificate for single valve: not required for mechanical units EC Type Test Certificate for solenoid coil: PTB-No. 03 Ex IEC 2019X and PTB 03 ATEX 2018X to T5	
Category, type of ignition protection			Single valve: Ⓔx II 2G c T4 T135°C -10°C≤Ta≤+60°C Solenoid/individual use: Ⓔx II 2G EEx m II T5 -20°C≤Ta≤+50°C Solenoid/manifold mounting: Ⓔx II 2G EEx m II T5 -20°C≤Ta≤+40°C	
Voltage type			Alternating current (50/60Hz)	Direct current
Nominal voltage	U_N	V	230 ±10% 110 ±10% 24 ±10%	24 ±10% (other voltages on request)
Max. switching frequency		Hz	1	
Power rating at U_N		VA (W)	G1/8, G1/4 3.1 (230V) 3.0 (110V) 2.5 (24V)	G1/8, G1/4 3.3 (24V)
Power limit at U_N (2		VA (W)	2.9 (230V) 2.8 (110V) 2.4 (24V)	3.0 (24V)
Electrical protection		IP	IP65 (applise only to solenoid with cable)	
Connection			Cable – cable lengths see Order Instructions	

(1 Note: Please consult us for operating temperatures below 0° C
(2 maximum power if warmed up to thermal load limit
(3 Version "middle position vented" 1000 l/min

Dimensions

3/2 Way Valves Series S9 G1/4

Acuation:
– Electrical, pilot operated

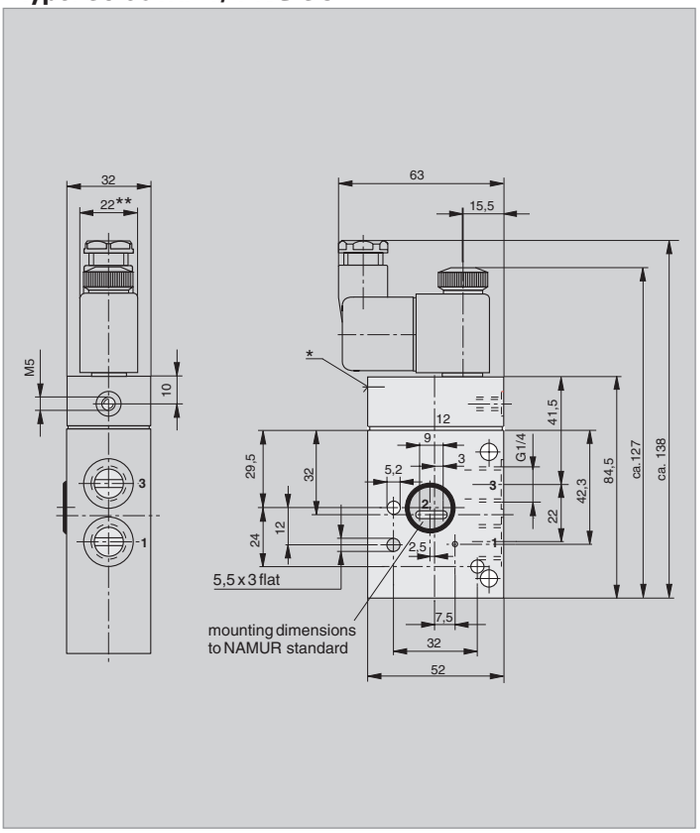


The delivery includes:
1 Valve
2 Mounting screws
1 Coding pin
2 O-rings

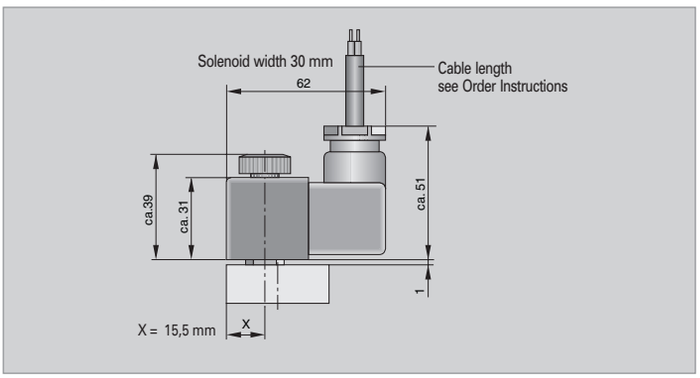
Versions
– with NAMUR connections
– version to ATEX Standard

* Manual override
** Solenoid width is 30 mm on low wattage coil version

Electrically actuated
Type: S9 381RF-1/4-NG SO



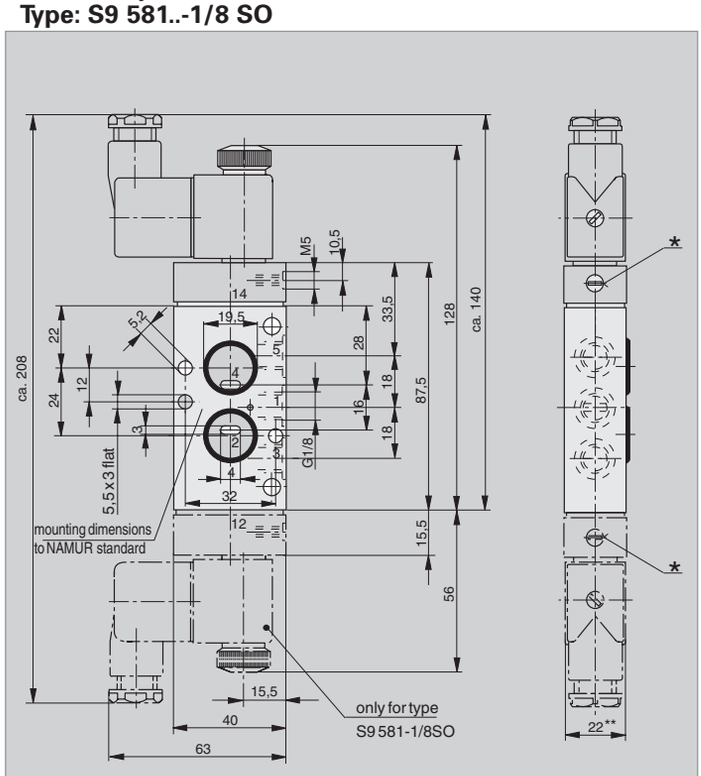
Solenoid for use in EX areas
Dimensions



For more information on valves to ATEX standards see page 39, 103

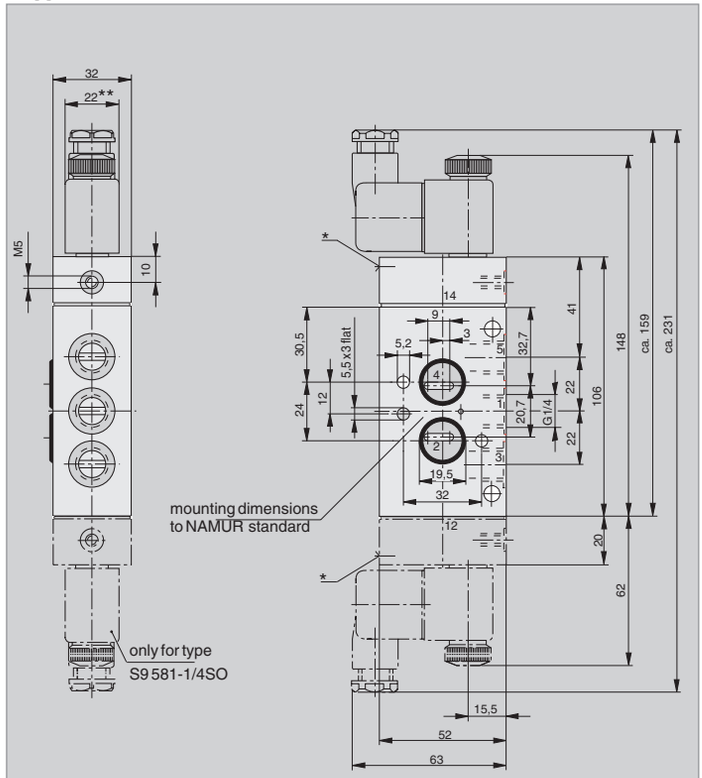
Dimensions

Electrically actuated
Type: S9 581..-1/8 SO

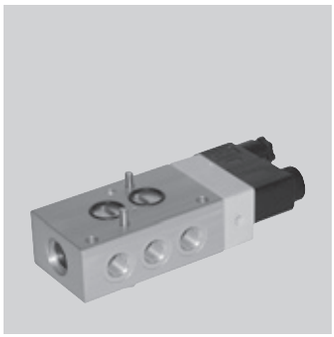


* Manual override
**Solenoid width is 30 mm on low wattage coil version

Electrically actuated
Type: S9 581..-1/4 SO



* Manual override
**Solenoid width is 30 mm on low wattage coil version



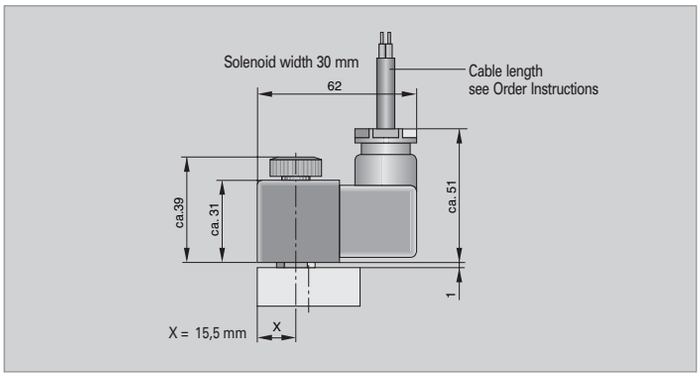
5/2 Way Valves Series S9 G1/8, G1/4

Acuation:
– Electrical, pilot operated

Versions
– with NAMUR connections
– version to ATEX Standard

The delivery includes:
1 Valve
2 Mounting screws
1 Coding pin
2 O-rings

Solenoid for use in EX areas
Dimensions

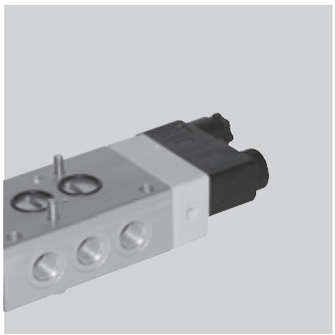


For more information on valves to ATEX standards
see page 39, 103

Dimensions

5/3 Way Valves Series S9 G1/8, G1/4

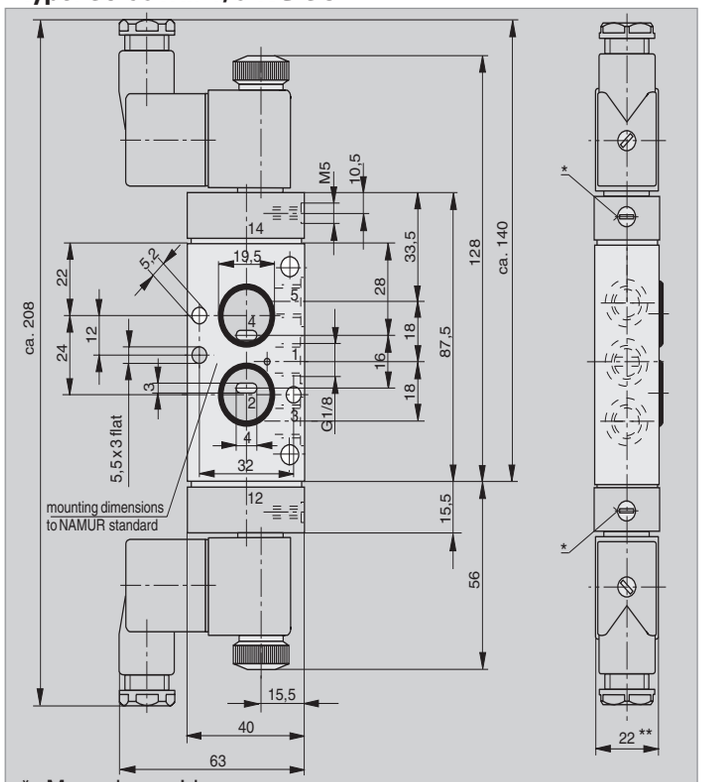
Acuation:
– Electrical, pilot operated



The delivery includes:
1 Valve
2 Mounting screws
1 Coding pin
2 O-rings

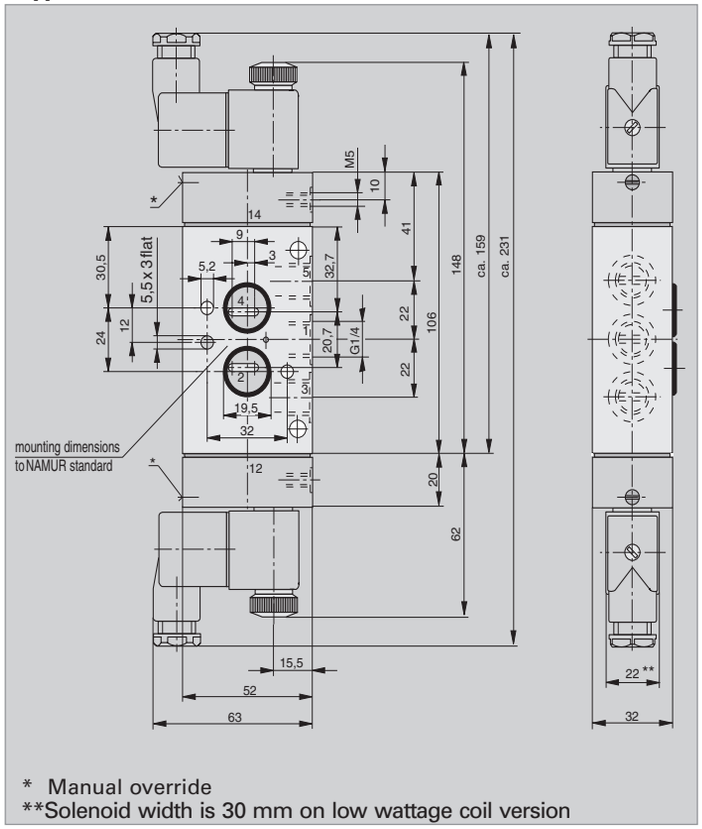
Versions
– with NAMUR connections
– version to ATEX Standard

Electrically actuated
Type: S9 581RF-1/8-NG SO



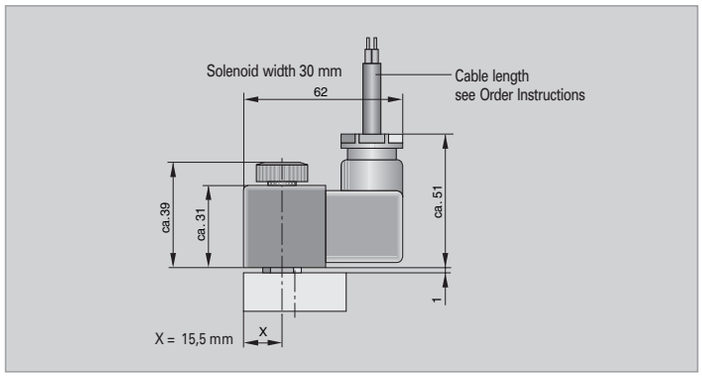
* Manual override
**Solenoid width is 30 mm on low wattage coil version

Electrically actuated
Type: S9 581RF-1/4-NG SO



* Manual override
**Solenoid width is 30 mm on low wattage coil version

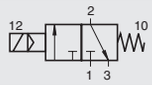
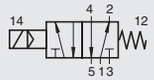
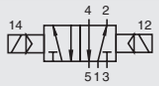
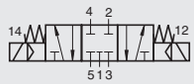
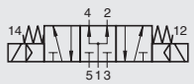
Solenoid for use in EX areas
Dimensions



For more information on valves to ATEX standards
see page 39, 103

Order Instructions

3/2, 5/2 and 5/3 Way Valves – with NAMUR connections

Actuation	Symbol	Order Instructions Type	Order No.	Page
Electrical, by permanent signal		**S9 381RF-1/4NG SO-..**	**PD 33854-..33**	100
Electrical, by permanent signal		**S9 581RF-1/8 SO-..** **S9 581RF-1/4 SO-..**	**PD 34143-..33** **PD 34985-..33**	101
Electrical, by impulse		**S9 581-1/8 SO-..** **S9 581-1/4 SO-..**	**PD 34984-..33** **PD 34986-..33**	101
Electrical, by permanent signal		**S9 581RFG-1/8 SO-..** **S9 581RFG-1/4 SO-..**	**PD 40813-..33** **PD 40808-..33**	102
spring return to middle position		**S9 581RFE-1/8 SO-..** **S9 581RFE-1/4 SO-..**	**PD 40814-..33** **PD 40618-..33**	102
		**S9 581RFB-1/8 SO-..** **S9 581RFB-1/4 SO-..**	**PD 40815-..33** **PD 40809-..33**	102

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type suffic
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02	– –
Low wattage version	24V = 230V 50/60Hz		13 69	– –

EX Area versions to ATEX Standard
Category, type of ignition protection
Single valve: ⟨Ex⟩ II 2G c T4 T135°C -10°C≤Ta≤+60°C
Solenoid/individual use: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C
Solenoid/manifold mounting: ⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+40°C

Solenoid	with cable 1,2 m	24V =		48	ATEX
	with cable 3 m	24V =		45	ATEX
	with cable 5 m	24V =		46	ATEX
	with cable 10 m	24V =		47	ATEX
	with cable 1,2 m	24V 50/60Hz		99	ATEX
	with cable 1,2 m	110V 50/60Hz		97	ATEX
	with cable 1,2 m	230V 50/60Hz		98	ATEX

Example for valves to ATEX standard:
– for valves Series S9-G1/8, S9-G1/4, S9-G1/2

Please add "ATEX" to the Standard Order No.

Type: **S9 581RF-1/8-4633**
Order No. **PA10312-4633ATEX**

Characteristics, Dimensions, Order Instructions

5/2 Way Valves Series S9 G1/8, G1/4

Actuation:
– Pneumatic
for two hand operation



Characteristics

Characteristics	Symbol	Unit	Description	
Type			**S9 563/65RF-1/8-SO**	**S9 563/65RF-1/4-SO**
General Features				
System			Spool Valve	Spool Valve
Mounting			2 screws M5	2 screws M6
Tube connection			Thread	Thread
Port size			G1/8	G1/4 (12.1 und 12.2: G1/8)
Weight (mass)		kg	0.27	0.64
Installation			In any position	
Ambient temperature range	$\vartheta_{min/max}$	°C	-10 to +60 **	
Medium temperature range	$\vartheta_{min/max}$	°C	-10 to +60 **	
Medium			Filtered compressed air	
Lubrication *			with or without oil mist lubrication	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	$p_{min/max}$	bar	0 – 10	
Nominal flow	Q_N	l/min	500	1300
Actuation				
Pneumatic			direct	
Control pressure range	$p_{st\,min/max}$		2 – 10	3 – 10

* We recommend the use of mineral oil type VG 32 to ISO 3448
** Note: Please consult us for operating temperatures below 0° C

2 hand operated valve for pneumatically controlled machines and equipment.

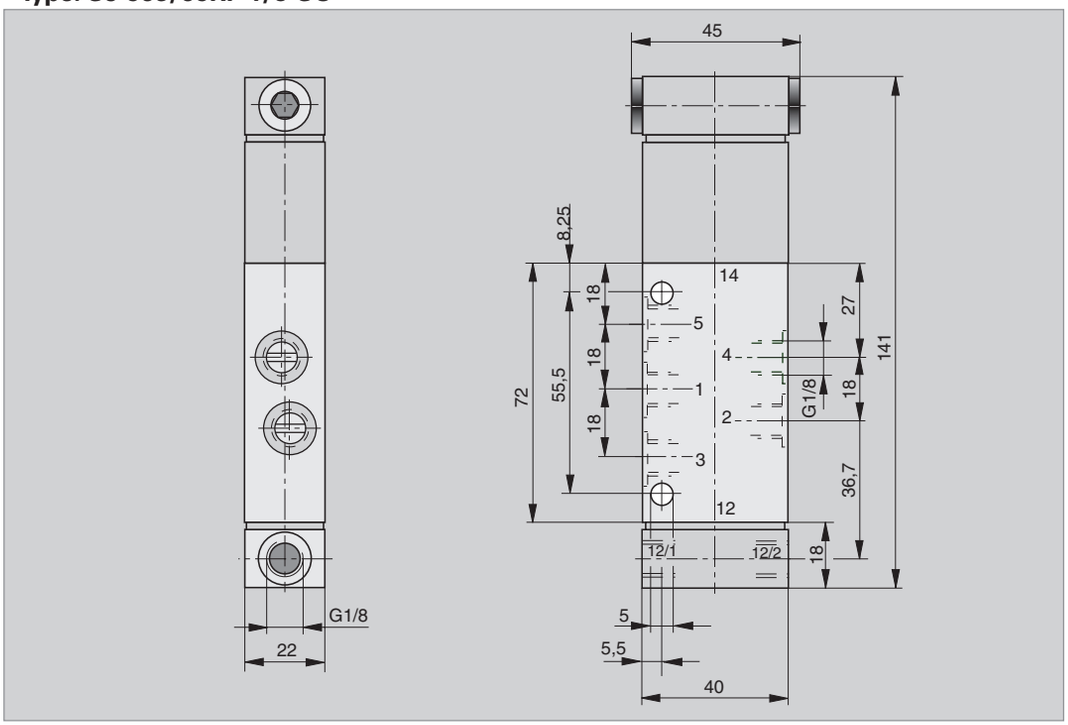
The valve only switches from outlet port 4 to outlet port 2 if both signal inlets are simultaneously actuated or are actuated within 0.5 s.

The valve cannot be switched again until both actuating signals are stopped.

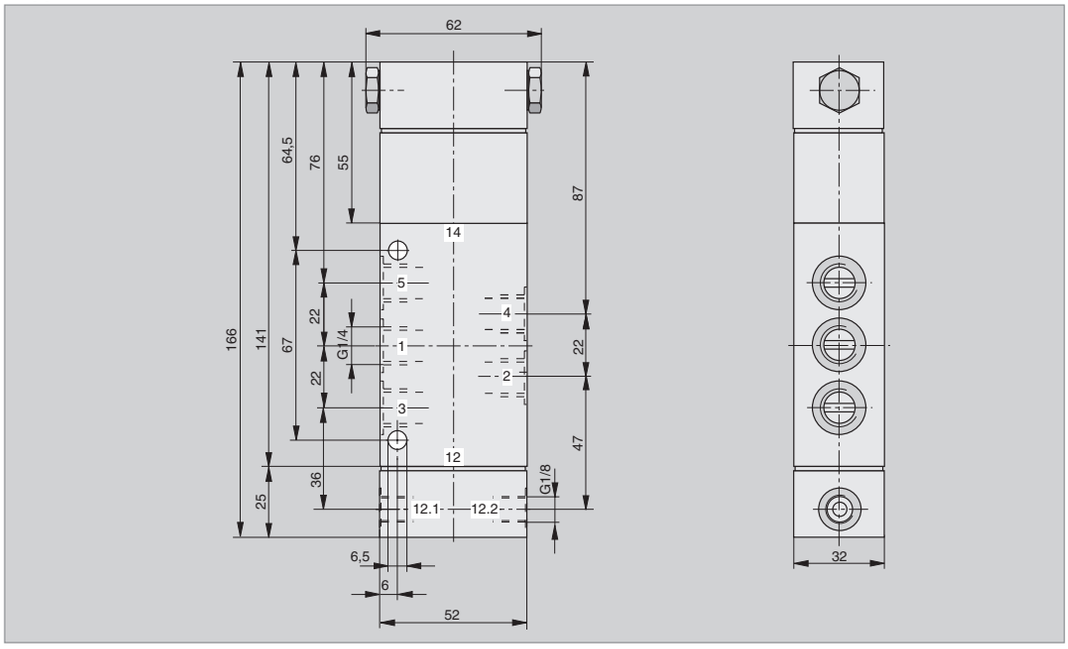
For protecting operating personnel during manufacturing processes such as engraving, bending, stamping, burring etc.

Note
Not applicable for operating eccentric presses and presses of similar design.

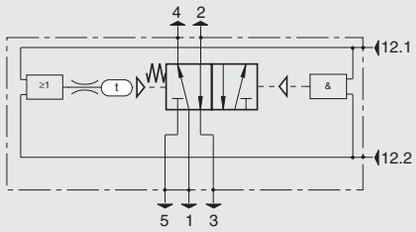
Pneumatically actuated with 2 hand operation
Type: S9 563/65RF-1/8-SO



Pneumatically actuated with 2 hand operation
Type: S9 563/65RF-1/4-SO



Order Instructions

Actuation	Symbol	Order Instructions Type	Order No.
Pneumatic, with 2 hand operation		**S9 563/65RF-1/8-SO** **S9 563/65RF-1/4-SO**	**PD37673** **PD37173**

5/2 Way Oscillating Valves – Series S9- G1/4
Characteristics, Dimensions, Order Instructions

Characteristics

Characteristics	Symbol	Unit	Description
General Features			
System			Spool valves
Mounting			2 Screws M6 (M4)
Tube connection			Thread
Port size			G1/4, 11 deep
Weight (mass)		kg	0.65
Installation			In any position
Ambient temperature range **	$\vartheta_{min/max}$	°C	-10 to +60
Medium temperature range **	$\vartheta_{min/max}$	°C	-10 to +60
Medium			filtered compressed air
Lubrication *			with or without oil mist lubrication
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	$p_{min/max}$	bar	2.5 – 8
Nominal flow	Q_N	l/min	1300
Actuation			
Pneumatic			direct
Control pressure range	$p_{st\,min/max}$		2.5 – 8

* We recommend the use of mineral oil type VG 32 to ISO 3448
** Note: Please consult us for operating temperatures below 0° C



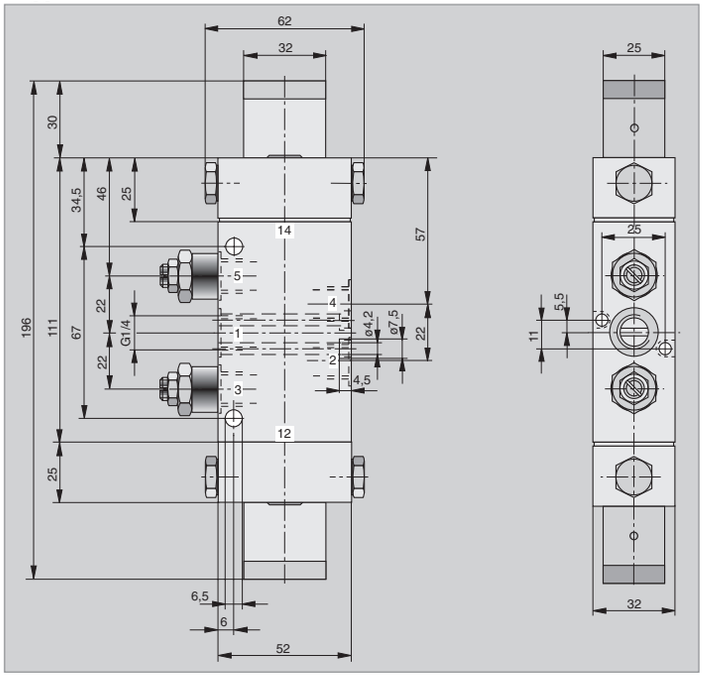
Function
If compressed air is introducesed into inlet port 1, the outlet ports 4 and 2 are alternately supplied with compressed air.
The speed of the operated cylinder and also the stroke frequency are adjusted with two exhaust air throttles.

5/2 Way Oscillating Valves Series S9 G1/4

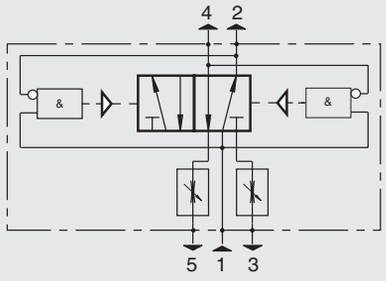
Actuation:
– Pneumatic

The oscillating valve generates oscillating movements such as e.g. shaking, hammering, plunging, feed motions etc.

Pneumatic oscillating
Type: S9 568/68-1/4-SO



Order Instructions

Actuation	Symbol	Order Instructions Type	Order No.
Pneumatic, oscillating		**S9 568/68-1/4-SO**	**PD 34796**

Dimensions in mm

Dimensions

3/2 and 5/2 Way Valves, Pedal actuated Series F G1/4

Actuation:
– Pedal



Mounting Instruction
Use only screw connections with max. wrench size across flats of 15

Charactistics

Characteristics	Symbol	Unit	Description
General Features			
System			Poppet valve
Mounting			4 Screws M8 (1
Tube connection			Thread
Port size			G1/4
Weight (mass)		kg	1.5
Installation			In any position
Ambient temperature range (3	$\vartheta_{min/max}$	°C	-10 to +55
Medium temperature range (3	$\vartheta_{min/max}$	°C	-10 to +60
Medium			filtered compressed air
Lubrication (2			Oil mist lubrication compatible with Buna N
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	$p_{min/max}$	bar	0 – 10
Nominal flow	Q_N	l/min	1400
Actuation			
Manual control			direct
Stroke		mm	2
Actuating force	Fb	N	ca. 30

(1 After removing the rubber footing
(2 We recommend the use of mineral oil type VG 32 to ISO 3448
(3 Note: Please consult us for operating temperatures below 0° C

Connections for 3/2 way version :

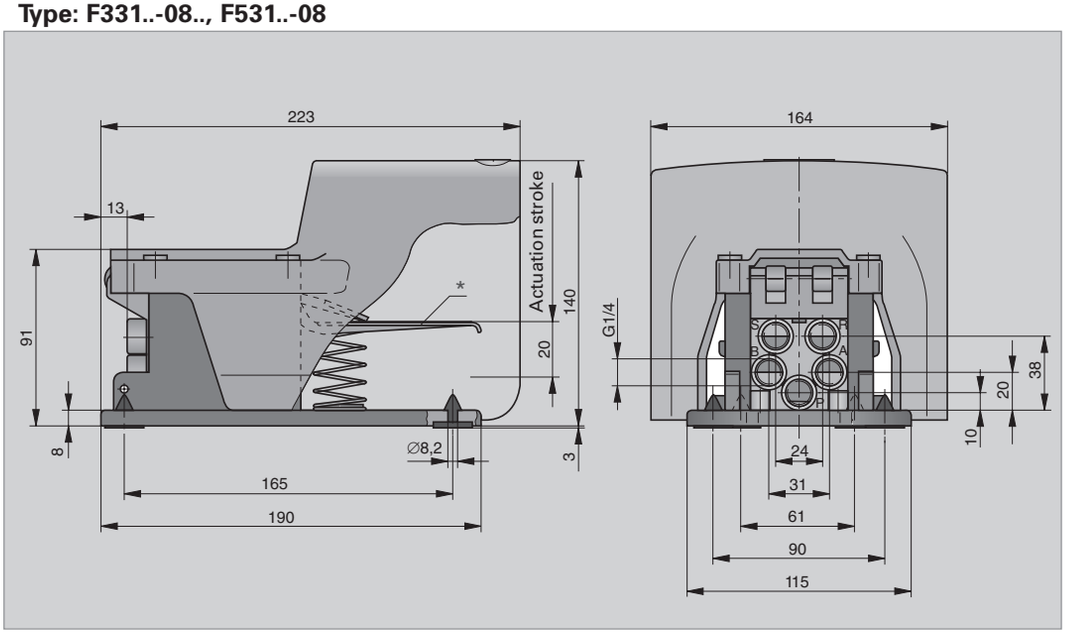
Version
"Normally closed": P, B, S
"Normally open": P, A, R

*Only for version "both switch positions indexed" – return is only effected after actuating the locking pedal.

Connection designation:

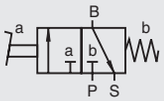
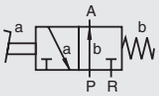
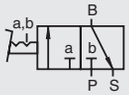
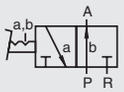
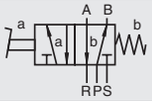
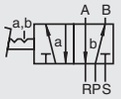
A =	4	Outlet
B =	2	Outlet
R =	5	Exhaust
P =	1	Air supply
S =	3	Exhaust

Pedal actuated
Type: F331..-08.., F531..-08



Order Instructions

3/2 and 5/2 Way Valves

Actuation	Symbol	Order Instructions Type	Order No.
Pedal with spring return		**F 331RF-08NG***	**KZ 4410**
		**F 331RF-08NO***	**KZ 4411**
Pedal both switch positions indexed		**F 331-08NG***	**KZ 4408**
		**F 331-08NO***	**KZ 4409**
Pedal with spring return		**F 531RF-08**	**KZ 4413**
Pedal both switch positions indexed		**F 531-08**	**KZ 4412**

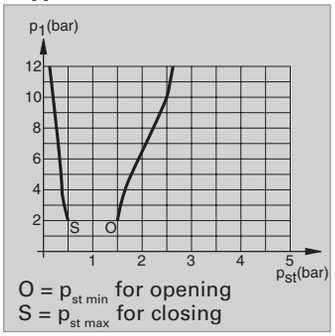
* NG – normally closed
NO – normally open

2/2 Way Valves Series ARKV G1/2 to G2

Actuation:
– Pneumatic

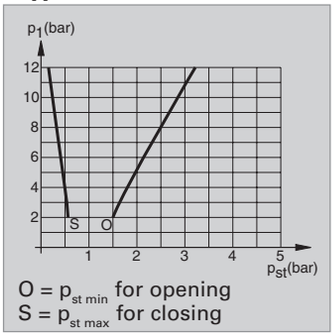


Actuating Pressure Type: ARKV-15



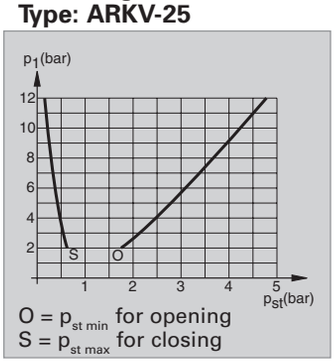
O = $p_{st\ min}$ for opening
S = $p_{st\ max}$ for closing

Actuating Pressure Type: ARKV-20



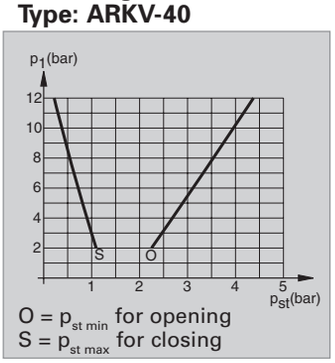
O = $p_{st\ min}$ for opening
S = $p_{st\ max}$ for closing

Actuating Pressure Type: ARKV-25



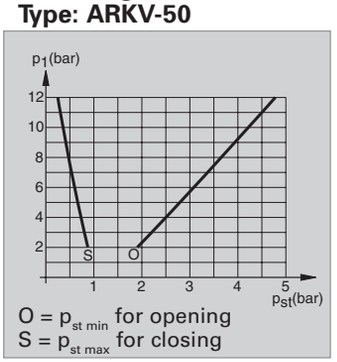
O = $p_{st\ min}$ for opening
S = $p_{st\ max}$ for closing

Actuating Pressure Type: ARKV-40



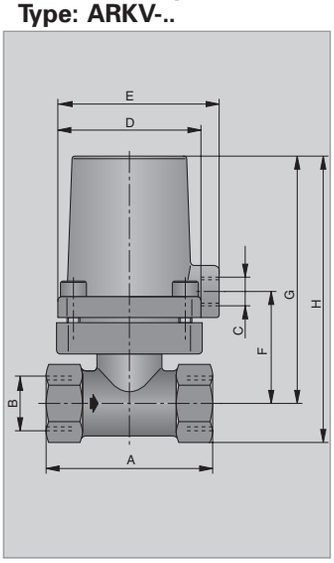
O = $p_{st\ min}$ for opening
S = $p_{st\ max}$ for closing

Actuating Pressure Type: ARKV-50



O = $p_{st\ min}$ for opening
S = $p_{st\ max}$ for closing

Pneumatically actuated Type: ARKV-..



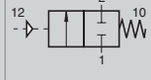
Characteristics

Characteristics	Symbol	Unit	Description				
General Features							
Designation			2/2 way valve				
System			Poppet valve normally closed				
Mounting			in-line				
Tube connection			Thread				
Port size			G1/2	G3/4	G1	G1 1/2	G2
Weight (mass)		kg	0.745	1.115	1.365	2.695	4.290
Installation			In any position				
Ambient temperature range	$\vartheta_{min/max}$	°C	-20 to +80	Note: Please consult us for operating			
Medium temperature range	$\vartheta_{min/max}$	°C	0 to +80	temperatures below 0° C			
Operating medium			Compressed air, neutral gases, hydraulic fluid (only in cases of low flow rate and slow valve closing speeds)				
Actuating medium			Filtered compressed air				
Pneumatic Characteristics							
Nominal pressure	p_n	bar	6.3				
Operating pressure range	$p_{min/max}$	bar	0 – 10				
Nominal flow	Q_N	l/min	2200	5000	6900	22000	40000
Actuation							
Pneumatic			Direct				

Dimension Table

Type	A	B	C	D	E	F	G	H
ARKV-15 NG	65	G1/2	G1/8	55	61	41.5	95	109.5
ARKV-20 NG	76	G3/4	G1/4	65	75	50	112	129
ARKV-25 NG	91	G1	G1/4	65	75	57	119	139
ARKV-40 NG	123	G11/2	G1/4	110	112	67	137	167.5
ARKV-50 NG	150	G2	G1/4	130	134	75	153	190

Order Instructions

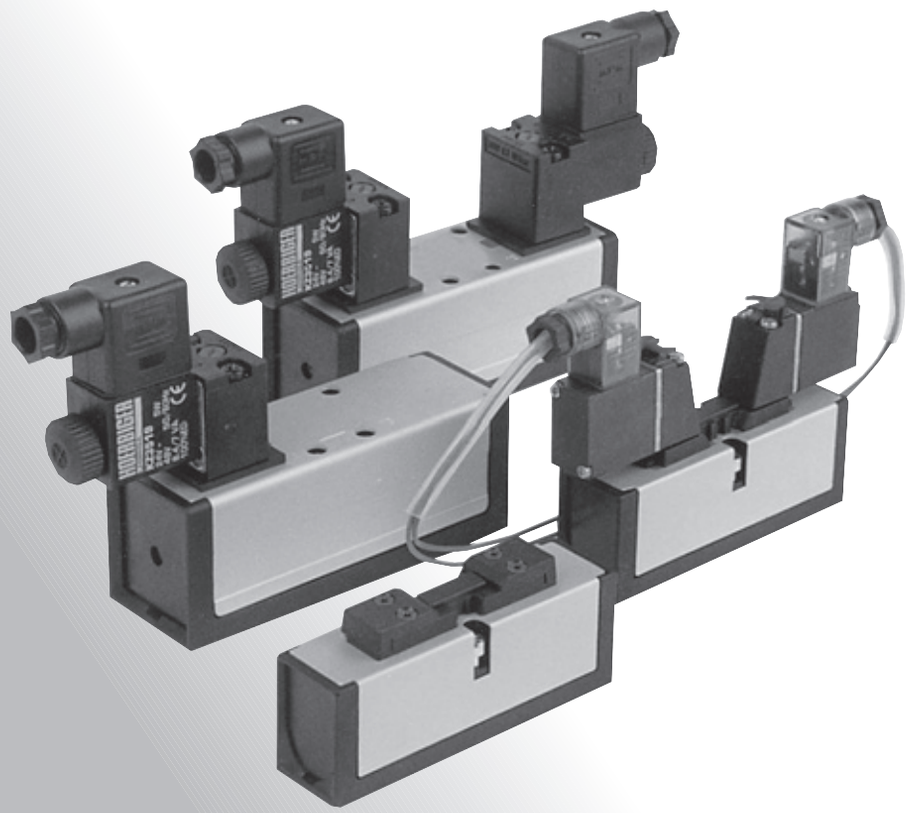
Actuation	Symbol	Order Instructions	
		Type	**Order No.**
Pneumatic		**ARKV-15 NG**	**PD 07334**
		ARKV-20 NG	**PD 07580**
		ARKV-25 NG	**PD 07581**
		ARKV-40 NG	**PD 07757**
		ARKV-50 NG	**PD 07765**

Dimensions in mm

Directional Valves to VDMA 24563 and ISO 5599 – Series S20

Contents

Description	Actuation	Norm	Page		
			Characteristics	Dimensions	Order Instructions Overview
5/2 and 5/3 Way Valves Series S20	Pneumatic Electrical	VDMA 24563 Size 01	112	113	117, 118
5/2 and 5/3 Way Valves Series S20	Pneumatic Electrical	ISO 5599 Size 1	112	114	117, 118
5/2 and 5/3 Way Valves Series S20	Pneumatic Electrical	ISO 5599 Size 2	112	115	117, 118
5/2 and 5/3 Way Valves Series S20	Pneumatic Electrical	ISO 5599 Size 3	112	116	117, 118



Characteristics

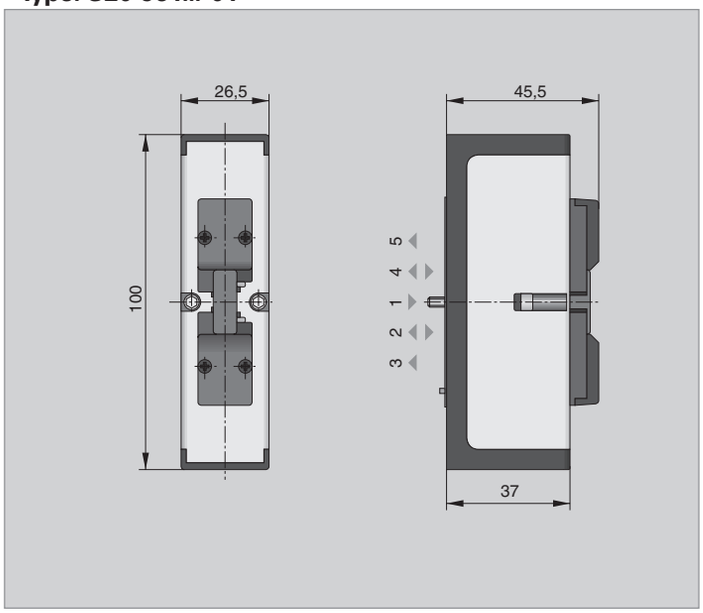
Characteristics

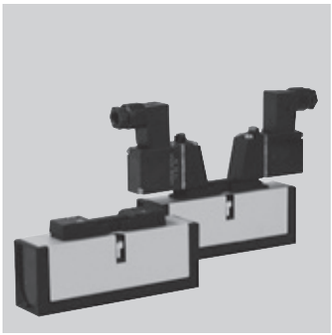
Characteristics	Symbol	Unit	Series S20 to VDMA 24563 Size 01		Series S20 to ISO 5599 Size 1		Size 2		Size 3	
Actuation			**pneumatic**	**electrical**	**pneumatic**	**electrical**	**pneumatic**	**electrical**	**pneumatic**	**electrical**
General Features										
System			Ceramic spool valve		Ceramic spool valve		Ceramic spool valve		Ceramic spool valve	
Mounting			On base plate to VDMA 24563		On base plate to ISO5599		On base plate to ISO5599		On base plate to ISO5599	
Tube connection			Base plate		Base plate		Base plate		Base plate	
Port size			G1/8 or G1/4 (Base plate)		G1/4 (Base plate)		G3/8 (Base plate)		G1/2 (Base plate)	
Weight										
– permanent signal version		kg	0.130	0.170	0.350	0.410	0.600	0.650	1.100	1.150
– impulse version		kg	0.130	0.210	0.350	0.450	0.600	0.700	1.100	1.200
Installation			In any position	In any position	In any position	In any position	In any position	In any position	In any position	In any position
Ambient temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +60	-10 to +60	-10 to +60	-10 to +60	-10 to +60	-10 to +60	-10 to +60	-10 to +60
Medium temperature range (1	$\vartheta_{min./max.}$	°C	-10 to +55	-10 to +55	-10 to +55	-10 to +55	-10 to +55	-10 to +55	-10 to +55	-10 to +55
Medium			Filtered compressed air							
Lubrication			With or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)							
Pneumatic Characteristics										
Nominal pressure	$p_{min./max.}$	bar	6	6	6	6	6	6	6	6
Operating pressure range (2										
– permanent signal version	$p_{min./max.}$	bar	-0.9 – 10	2 – 10	-0.9 – 12	2 – 12	-0.9 – 12	2 – 12	-0.9 – 12	2 – 12
– impulse version	$p_{min./max.}$	bar	-0.9 – 10	2 – 10	-0.9 – 12	2 – 12	-0.9 – 12	2 – 12	-0.9 – 12	2 – 12
– with external pilot air	$p_{min./max.}$	bar	–	-0.9 – 10	–	-1 – 12	–	-1 – 12	–	-1 – 12
Maximum flow	$Q_{max.}$	l/min	1050	1050	1680	1680	4320	4320	6540	6540
Actuation										
Pneumatic			direct	–	direct	–	direct	–	direct	–
Actuation pressure range										
permanent signal version	$p_{min./max.}$	bar	2 – 10	2 – 10	2 – 12	2 – 10	2 – 12	2 – 10	2 – 12	2 – 10
impulse version	$p_{min./max.}$	bar	2 – 10	2 – 10	2 – 12	2 – 10	2 – 12	2 – 10	2 – 12	2 – 10
Electrical			pilot operated							
Voltage type			Alternating current 50/60Hz	Direct current	Alternating current 50/60Hz		Direct current			
Nominal voltage										
– Standard version	U_n	V	230 ±10%	24 ±10%	230 ±10%		24 ±10%	other voltages on request		
– Low wattage version	U_n	V	–	–	230 ±10%		24 ±10%			
Initial power consumption										
– Standard version		VA (W)	2	2	11		4,8			
– Low wattage version		VA (W)	(Nominal power)		7.8		2.7			
Continuous consumption										
– Standard version		VA (W)	–	–	8.5		4.8			
– Low wattage version		VA (W)	–	–	4.9		2.7			
Duty cycle	ED	%	100							
Electrical protection		IP	IP65 to DIN 40050 (applise only to solenoid with plug)							
Connection			Plug to DIN EN 175301-803 form C		Plug to DIN EN 175301-8030 form B – industrial standard (4					

(1 Note: Please consult us for operating temperatures below 0° C
(2 On request: 16 bar version for valves to ISO 5599 size 1, 2, 3
(4 Low wattage version: Plug to DIN EN 175301-803 form A

Dimensions

Pneumatically actuated
Type: S20 561...-01





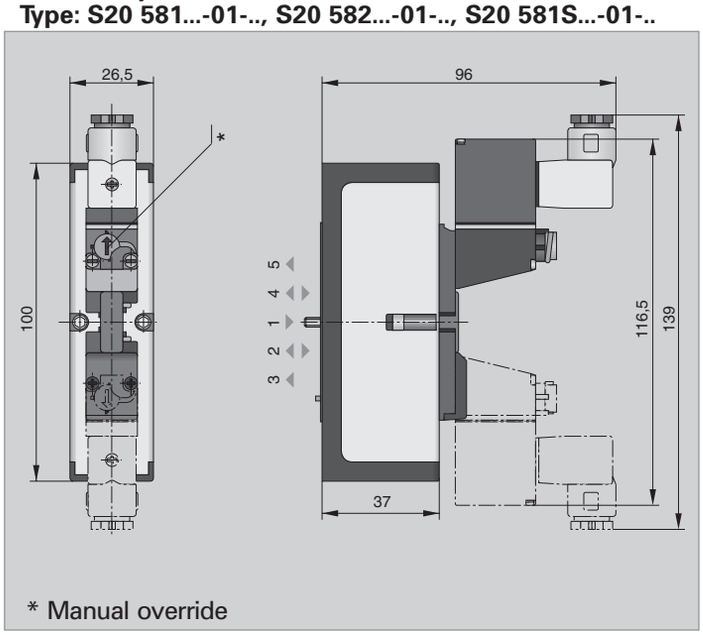
5/2 and 5/3 Way Valves Series S20 to VDMA 24563 Size 01

Actuation:
– Pneumatic
– Electrical, pilot operated

Versions
– with external pilot air
– with biased position

The delivery includes:
1 Valve with mounting screws
1 Gasket

Elektrically actuated
Type: S20 581...-01-.., S20 582...-01-.., S20 581S...-01-..



* Manual override

Weight (mass) kg

Description	Type	Weight (mass)
Pneumatic by permanent signal	S20 561R..-01*	0.130
Pneumatic by impulse	S20 561-01	0.130
Electrical by permanent signal	S20 581R..-01*	0.170
Electrical by permanent signal	S20 581S-R..-01*	0.170
Electrical by impulse	S20 581-01	0.210
– with biased position	S20 582-01	0.210
Electrical by impulse	S20 581S-01	0.210

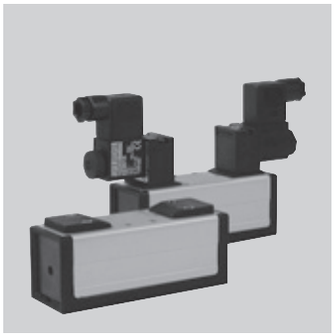
* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

Order Instructions see page 117, 118, Base Plates see page 119-123

Dimensions

5/2 and 5/3 Way Valves Series S20 to ISO 5599 Size 1

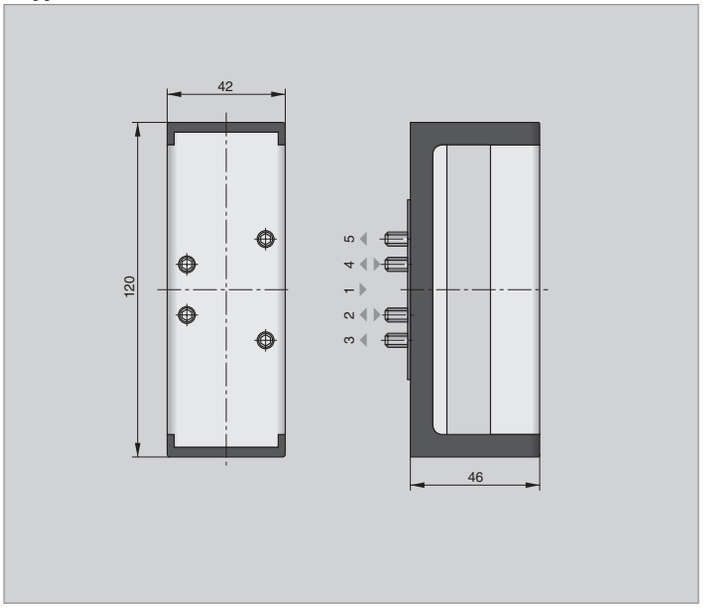
Actuation:
– Pneumatic
– Electrical, pilot operated



The delivery includes:
1 Valve with mounting screws
1 Gasket

Versions
– with external pilot air
– with biased position
– low wattage version

Pneumatically actuated
Type: S20 561...-1

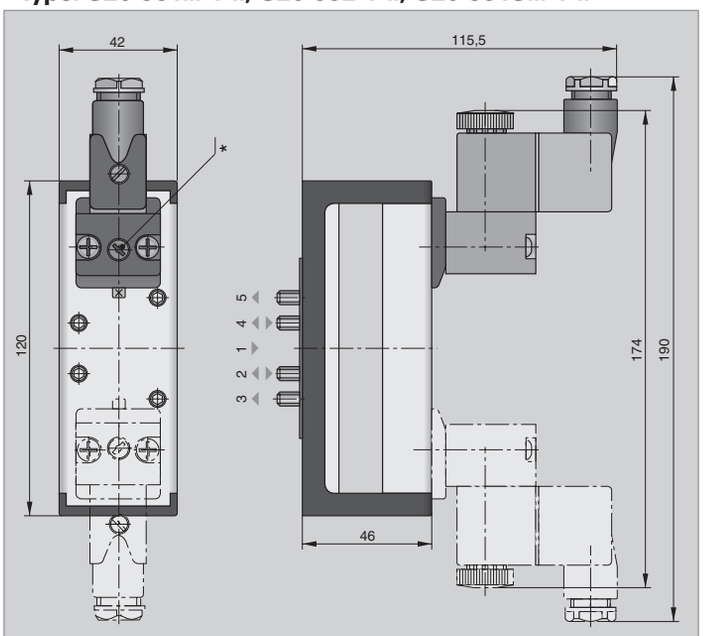


Weight (mass) kg

Description	Type	Weight (mass)
Pneumatic by permanent signal	S20 561R..-1*	0.350
Pneumatic by impulse	S20 561-1	0.350
Electrical by permanent signal	S20 581R..-1*	0.410
Electrical by permanent signal	S20 581S-R..-1*	0.410
Electrical by impulse	S20 581-1	0.450
– with biased position	S20 582-1	0.450
Electrical by impulse	S20 581S-1	0.450

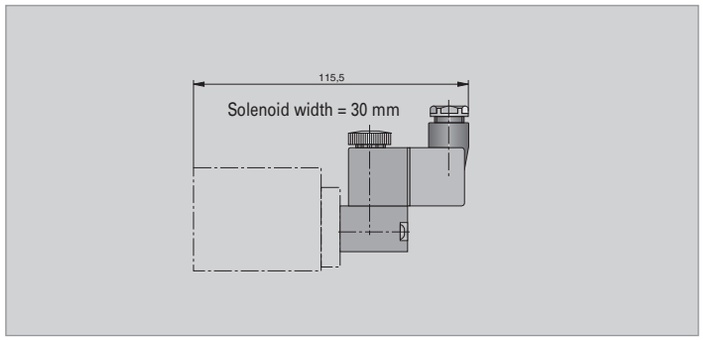
* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

Electrically actuated
Type: S20 581...-1-.., S20 582-1-.., S20 581S...-1-..



* Manual override

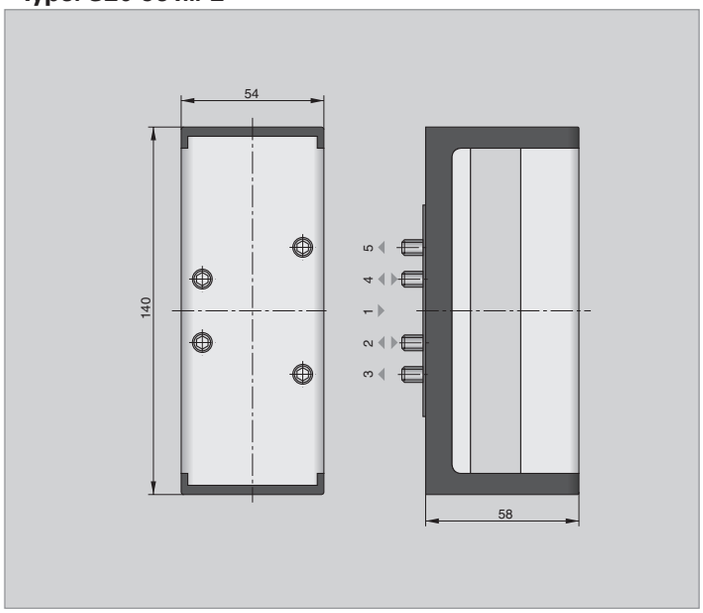
Solenoid for low wattage version

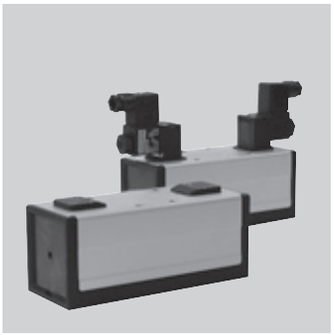


Order Instructions see page 117, 118, Base Plates see page 124-127

Dimensions

Pneumatically actuated
Type: S20 561...-2





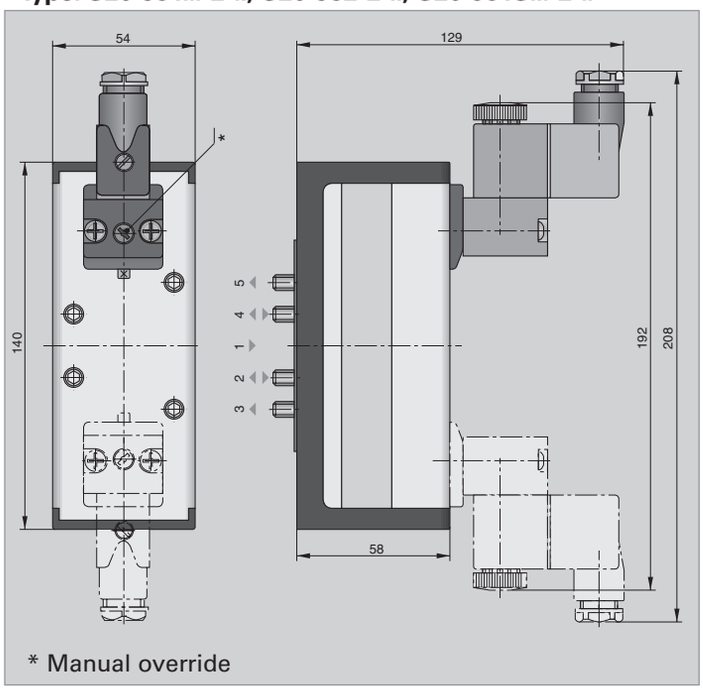
5/2 and 5/3 Way Valves Series S20 to ISO 5599 Size 2

Actuation:
– Pneumatic
– Electrical, pilot operated

Versions
– with external pilot air
– with biased position
– low wattage version

The delivery includes:
1 Valve with mounting screws
1 Gasket

Electrically actuated
Type: S20 581...-2-.., S20 582-2-.., S20 581S...-2-..



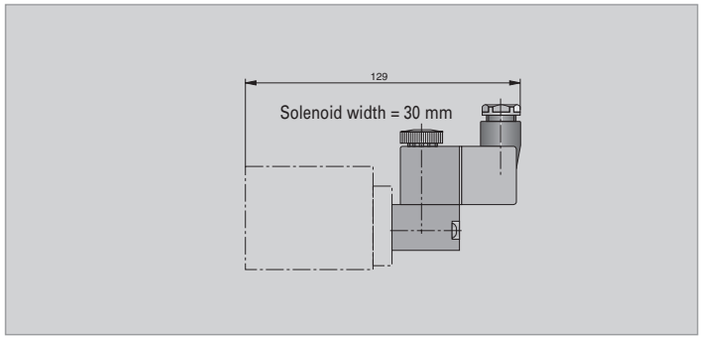
* Manual override

Weight (mass) kg

Description	Type	Weight (mass)
Pneumatic by permanent signal	S20 561R..-2*	0.600
Pneumatic by impulse	S20 561-2	0.600
Electrical by permanent signal	S20 581R..-2*	0.650
Electrical by permanent signal	S20 581S-R..-2*	0.650
Electrical by impulse	S20 581-2	0.700
– with biased position	S20 582-2	0.700
Electrical by impulse	S20 581S-2	0.700

* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

Solenoid for low wattage version

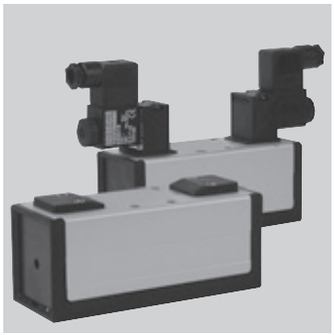


Order Instructions see page 117, 118, Base Plates see page 124-127

Dimensions

5/2 and 5/3 Way Valves Series S20 to ISO 5599 Size 3

Actuation:
– Pneumatic
– Electrical, pilot operated



The delivery includes
1 Valve with mounting screws
1 Gasket

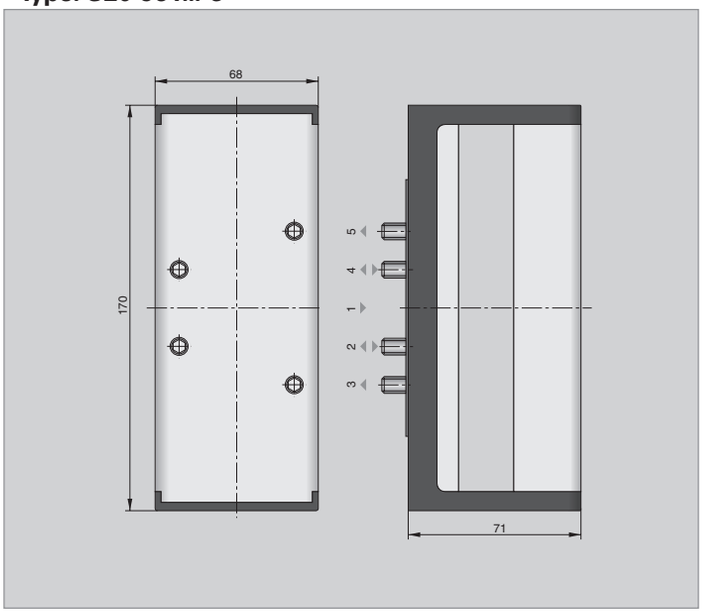
Versions
– with external pilot air
– with biased position
– low wattage version

Weight (mass) kg

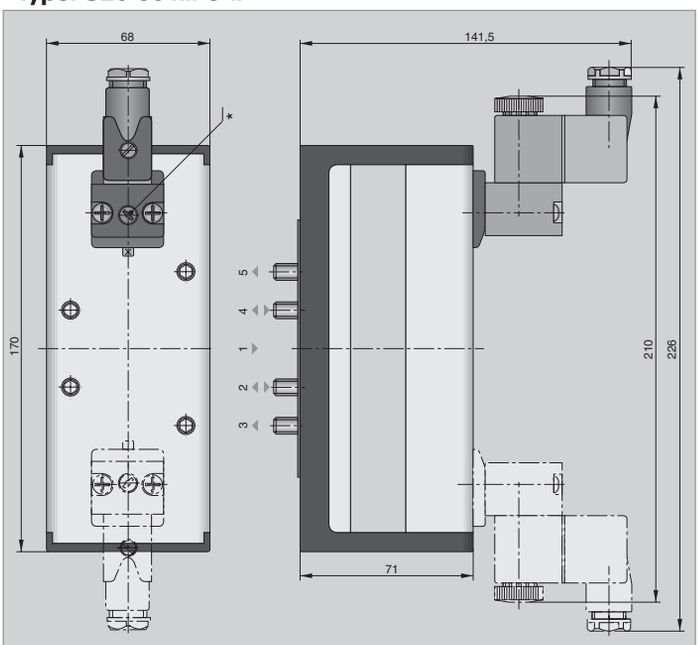
Description	Type	Weight (mass)
Pneumatic by permanent signal	S20 561R..-3*	1,100
Pneumatic by impulse	S20 561-3	1,100
Electrical by permanent signal	S20 581R..-3*	1,150
Electrical by permanent signal	S20 581S-R..-3*	1,150
Electrical by impulse	S20 581-3	1,200
– with biased position	S20 582-3	1,200
Electrical by impulse	S20 581S-3	1,200

* Type code for middle position functions
G = middle position closed
E = middle position vented
B = middle position pressurized

Pneumatically actuated
Type: S20 561...-3

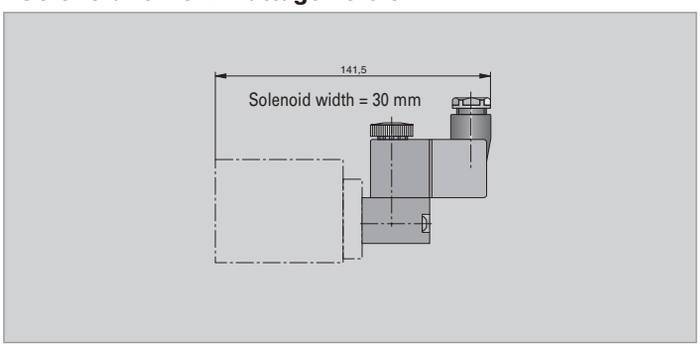


Electrically actuated
Type: S20 581...-3-..



* Manual override

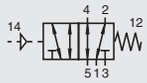
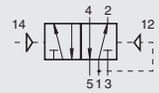
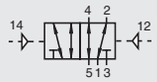
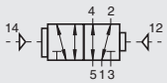
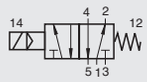
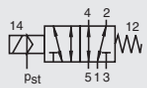
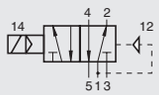
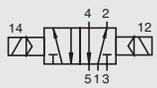
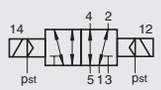
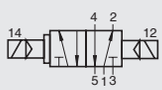
Solenoid for low wattage version



Order Instructions see page 117, 118, Base Plates see page 124-127

5/2 Way Valves to VDMA 24563 and ISO 5599 – Series S20
Overview and Order Instructions

5/2 Way Valves

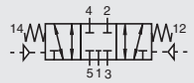
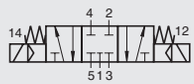
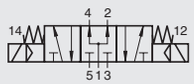
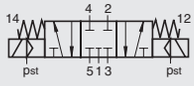
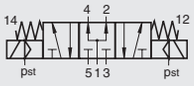
Actuation	Symbol	Standard/Size	Order Instructions Type	Order No.	Page
Pneumatic by permanent signal spring return		VDMA 24563 Size 01	**S20 561RF-01**	**PA 12891**	113
		ISO 5599 Size 1	**S20 561RF-1**	**PA 12869**	114
		ISO 5599 Size 2	**S20 561RF-2**	**PA 16425**	115
		ISO 5599 Size 3	**S20 561RF-3**	**PA 16426**	116
Pneumatic by permanent signal air spring return		VDMA 24563 Size 01	**S20 561R-01**	**PA 12892**	113
		ISO 5599 Size 1	**S20 561R-1**	**PA 12870**	114
		ISO 5599 Size 2	**S20 561R-2**	**PA 16428**	115
		ISO 5599 Size 3	**S20 561R-3**	**PA 16429**	116
Pneumatic by impulse		VDMA 24563 Size 01	**S20 561-01**	**PA 12893**	113
		ISO 5599 Size 1	**S20 561-1**	**PA 12868**	114
		ISO 5599 Size 2	**S20 561-2**	**PA 16422**	115
		ISO 5599 Size 3	**S20 561-3**	**PA 16423**	116
Pneumatic by impulse with biased position		VDMA 24563 Gr. 01	**S20 562-01**	**PA 12908**	113
		ISO 5599 Größe 1	**S20 562-1**	**PA 12905**	114
		ISO 5599 Größe 2	**S20 562-2**	**PA 12906**	115
		ISO 5599 Größe 3	**S20 562-3**	**PA 12907**	116
Electrical by permanent signal spring return		VDMA 24563 Size 01	**S20 581RF-01-..**	**PA 12886-..33**	113
		ISO 5599 Size 1	**S20 581RF-1-..**	**PA 12875-..33**	114
		ISO 5599 Size 2	**S20 581RF-2-..**	**PA 16441-..33**	115
		ISO 5599 Size 3	**S20 581RF-3-..**	**PA 16442-..33**	116
with external pilot air		VDMA 24563 Size 01	**S20 581S-RF-01-..**	**PA 12896-..33**	113
		ISO 5599 Size 1	**S20 581S-RF-1-..**	**PA 12882-..33**	114
		ISO 5599 Size 2	**S20 581S-RF-2-..**	**PA 16456-..33**	115
		ISO 5599 Size 3	**S20 581S-RF-3-..**	**PA 16462-..33**	116
Electrical by permanent signal air spring return		VDMA 24563 Size 01	**S20 581R-01-..**	**PA 12887-..33**	113
		ISO 5599 Size 1	**S20 581R-1-..**	**PA 12876-..33**	114
		ISO 5599 Size 2	**S20 581R-2-..**	**PA 16444-..33**	115
		ISO 5599 Size 3	**S20 581R-3-..**	**PA 16445-..33**	116
Electrical by impulse		VDMA 24563 Size 01	**S20 581-01-..**	**PA 12888-..33**	113
		ISO 5599 Size 1	**S20 581-1-..**	**PA 12874-..33**	114
		ISO 5599 Size 2	**S20 581-2-..**	**PA 16438-..33**	115
		ISO 5599 Size 3	**S20 581-3-..**	**PA 16439-..33**	116
with external pilot air		VDMA 24563 Size 01	**S20 581S-01-..**	**PA 12898-..33**	113
		ISO 5599 Size 1	**S20 581S-1-..**	**PA 12880-..33**	114
		ISO 5599 Size 2	**S20 581S-2-..**	**PA 16454-..33**	115
		ISO 5599 Size 3	**S20 581S-3-..**	**PA 16460-..33**	116
Electrical by impulse with biased position		VDMA 24563 Size 01	**S20 582-01-..**	**PA 12904-..33**	113
		ISO 5599 Size 1	**S20 582-1-..**	**PA 12901-..33**	114
		ISO 5599 Size 2	**S20 582-2-..**	**PA 12902-..33**	115
		ISO 5599 Size 3	**S20 582-3-..**	**PA 12903-..33**	116

Solenoid version	Nominal voltage	Applicable for	Key code
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02
Low wattage version	24V = 230V 50/60Hz		13 69
	other voltages on request		

Dimensions in mm

Overview and Order Instructions

5/3 Way Valves

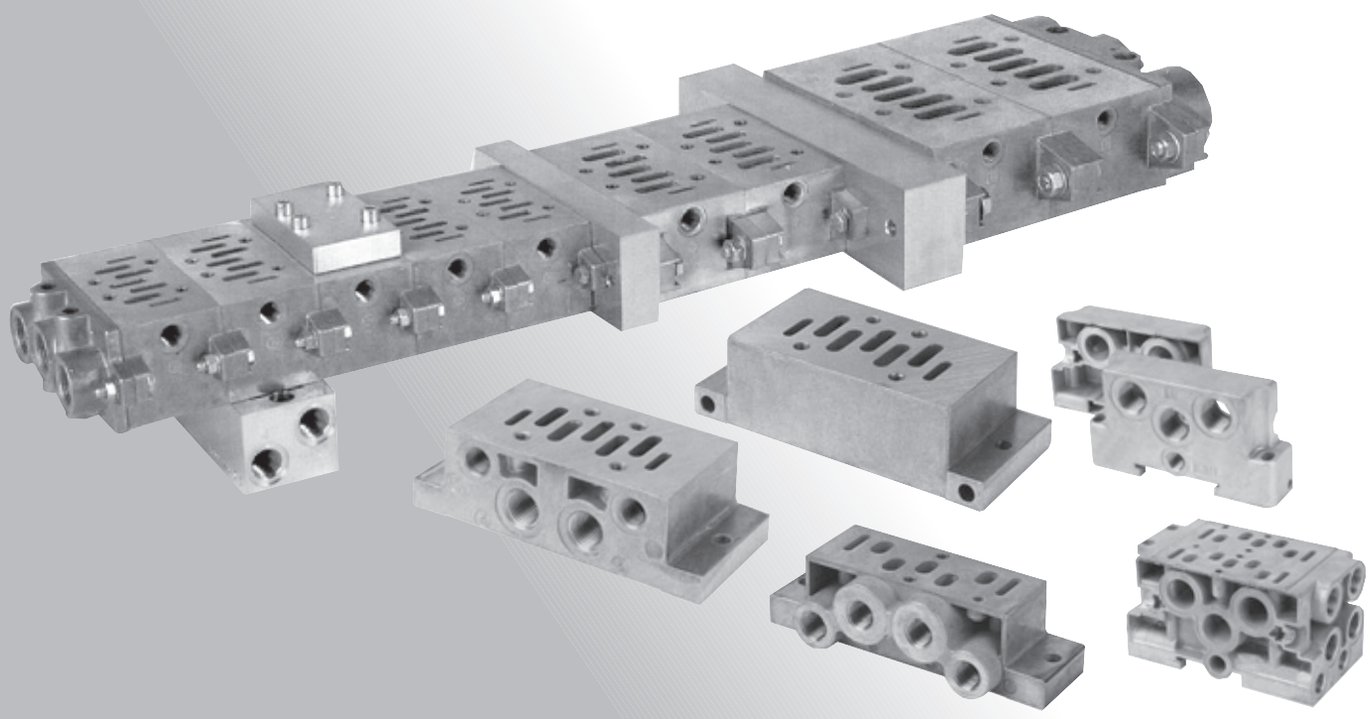
Actuation	Symbol	Standard/Size	Order Instructions Type	Order No.	Page
Pneumatic by permanent signal spring return to middle position		VDMA 24563 Size 01	**S20 561RFG-01**	**PA 12894**	113
		ISO 5599 Size 1	**S20 561RFG-1**	**PA 12871**	114
		ISO 5599 Size 2	**S20 561RFG-2**	**PA 16431**	115
		ISO 5599 Size 3	**S20 561RFG-3**	**PA 16432**	116
		ISO 5599 Size 1	**S20 561RFB-1**	**PA 12873**	114
		ISO 5599 Size 2	**S20 561RFB-2**	**PA 16437**	115
		VDMA 24563 Size 01	**S20 561RFE-01**	**PA 12895**	113
		ISO 5599 Size 1	**S20 561RFE-1**	**PA 12872**	114
		ISO 5599 Size 2	**S20 561RFE-2**	**PA 16434**	115
		ISO 5599 Sizee 3	**S20 561RFE-3**	**PA 16435**	116
Electrical by permanent signal spring return to middle position		VDMA 24563 Size 01	**S20 581RFG-01**	**PA 12889-..33**	113
		ISO 5599 Size 1	**S20 581RFG-1-..**	**PA 12877-..33**	114
		ISO 5599 Size 2	**S20 581RFG-2-..**	**PA 16447-..33**	115
		ISO 5599 Size 3	**S20 581RFG-3-..**	**PA 16448-..33**	116
		ISO 5599 Size 1	**S20 581RFB-1-..**	**PA 12879-..33**	114
		ISO 5599 Size 2	**S20 581RFB-2-..**	**PA 16453-..33**	115
		VDMA 24563 Size 01	**S20 581RFE-01**	**PA 12890-..33**	113
		ISO 5599 Size 1	**S20 581RFE-1-..**	**PA 12878-..33**	114
		ISO 5599 Size 2	**S20 581RFE-2-..**	**PA 16450-..33**	115
		ISO 5599 Size 3	**S20 581RFE-3-..**	**PA 16451-..33**	116
with external pilot air		VDMA 24563 Size 01	**S20 581S-RFG-01..**	**PA 12900-..33**	113
		ISO 5599 Size 1	**S20 581S-RFG-1-..**	**PA 12883-..33**	114
		ISO 5599 Size 2	**S20 581S-RFG-2-..**	**PA 16457-..33**	115
		ISO 5599 Size 3	**S20 581S-RFG-3-..**	**PA 16463-..33**	116
		ISO 5599 Size 1	**S20 581S-RFB-1-..**	**PA 12885-..33**	114
		ISO 5599 Size 2	**S20 581S-RFB-2-..**	**PA 16459-..33**	115
		VDMA 24563 Size 01	**S20 581S-RFE-01-..**	**PA 12899..33**	113
		ISO 5599 Size 1	**S20 581S-RFE-1-..**	**PA 12884..33**	114
		ISO 5599 Size 2	**S20 581S-RFE-2-..**	**PA 16458..33**	115
		ISO 5599 Size 3	**S20 581S-RFE-3-..**	**PA 16464..33**	116

Solenoid version	Nominal voltage	Applicable for	Key code
Standard version	230V 50/60Hz 24V =	110 V = 60V 50/60Hz	61 02
Low wattage version	24V = 230V 50/60Hz		13 69
	other voltages on request		

Base Plates to VDMA 24563 and ISO 5599

Contents

Description	Standard/Size	Page		
		Characteristics	Dimensions	Order Instructions Overview
Single Base Plates G1/8, G1/4	VDMA 24563 Size 01	120	120	120
Base Plate Combinations G1/8, G1/4	VDMA 24563 Size 01	121-123	121-123	121-123
Single Base Plates	ISO 5599 Size 1, 2, 3	124	124	124
Base Plate Combinations	ISO 5599 Size 1, 2, 3	125-127	125-127	125-127



Single Base Plates

Single Base Plates to VDMA 24563 Size 01, Form A

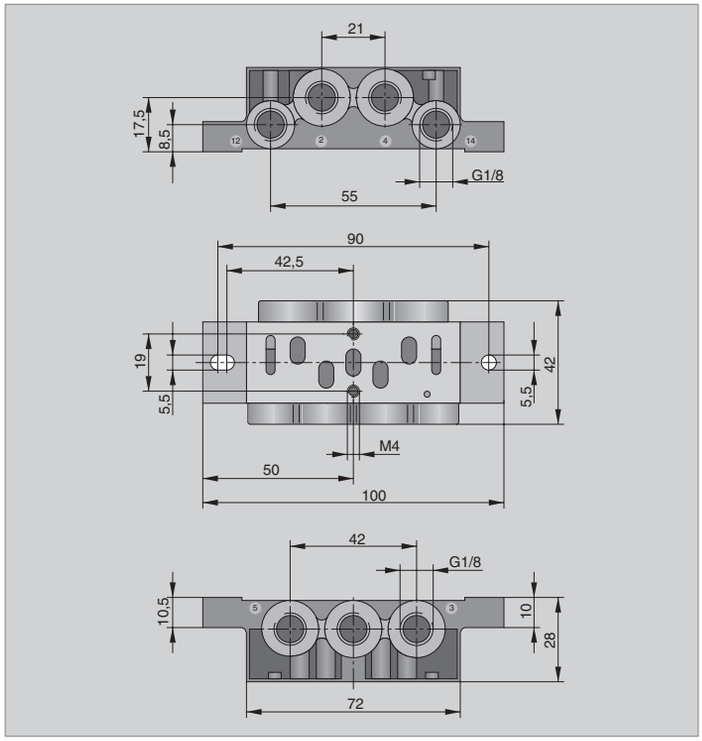
Port size
G1/8
G1/4



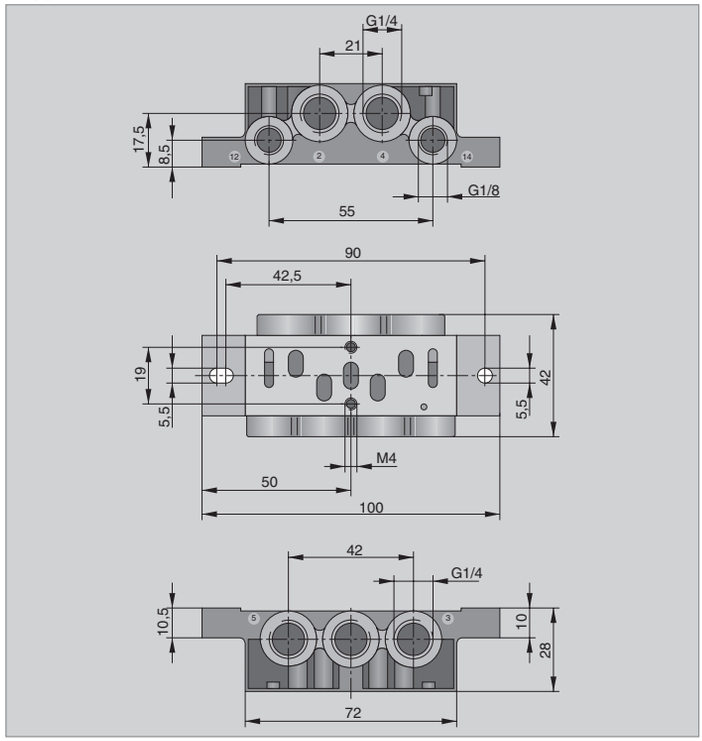
Order Instructions

Description	Port size	Weight (kg)	Order Instructions Type	Order No.
Single Base plate	G1/8	0.070	**S20-01-1/8-A**	**KL8004**
	G1/4	0.120	**S20-01-1/4-A**	**KL8005**

Single Base Plate, Form A – Port Size G1/8
Type: S20-01-1/8-A



Single Base Plate, Form A – Port Size G1/4
Type: S20-01-1/4-A



Base Plate Combinations

Order Instructions for End Plate Set, Form D

Description	Size	Weight (kg)	Order Instructions Type	Order No.
End Plate Set Form D	VDMA 01	0.220	**S20-01-D**	**KL8008**

The delivery includes:
End plate set, complete with screws

End Plate Set, Form D for intermediate Plate



Order Instructions for Intermediate Plate Form C

Description	Size (Port size)	Weight (kg)	Order Instructions Type	Order No.
Intermediate Plate Form C	VDMA 01 (G1/8)	0.080	**S20-01-C**	**KL8006**
Intermediate Plate Form C	VDMA 01 (G1/4)	0.100	**S20-01-C**	**KL8007**

The delivery includes:
Intermediate plate, complete with O-rings and screws

Intermediate Plate, Form C

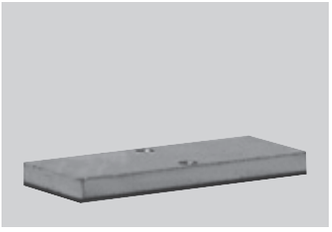


Order Instructions for Dummy Plate and Pressure Module

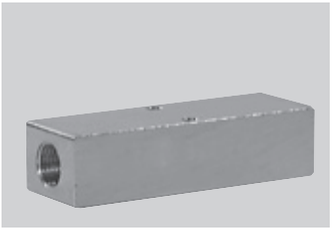
Description	Size	Weight (kg)	Order Instructions Type	Order No.
Dummy plate *	VDMA 01	0.050	**S20-01-BP**	**KL8009**
Pressure module **	VDMA 01	0.080	**S20-01-M**	**KL8010**

The delivery includes:
* Dummy plate with gasket and screws
** Pressure module with gasket

Dummy Plate



Pressure Module with Gasket



Modules for Base Plate Combinations to VDMA 24563 Size 01

Modules
– End plate set, Form D, for intermediate plate, Form C
– Angle base plate, Form E, for intermediate plate, Form C
– Accessories

Port size
G1/8
G1/4

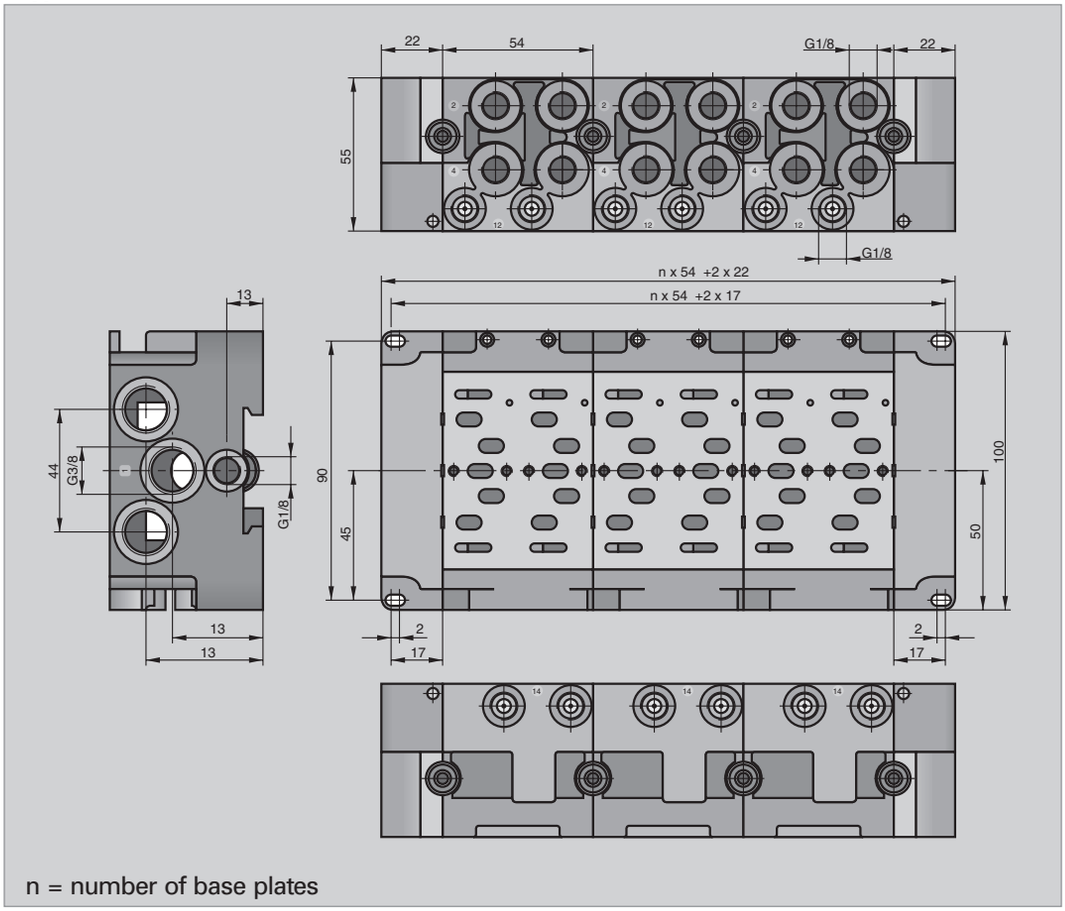
Base Plate Combinations

Base Plate Combinations to VDMA 24563 Size 01

Modules
- End plate set, Form D, for intermediate plate Form C
- Angle base plate, Form E, for intermediate plate Form C
- Accessories

Port size
G1/8

Base Plate Combinations of Form C and D – Port Size G1/8
Type: S20-1/8-...

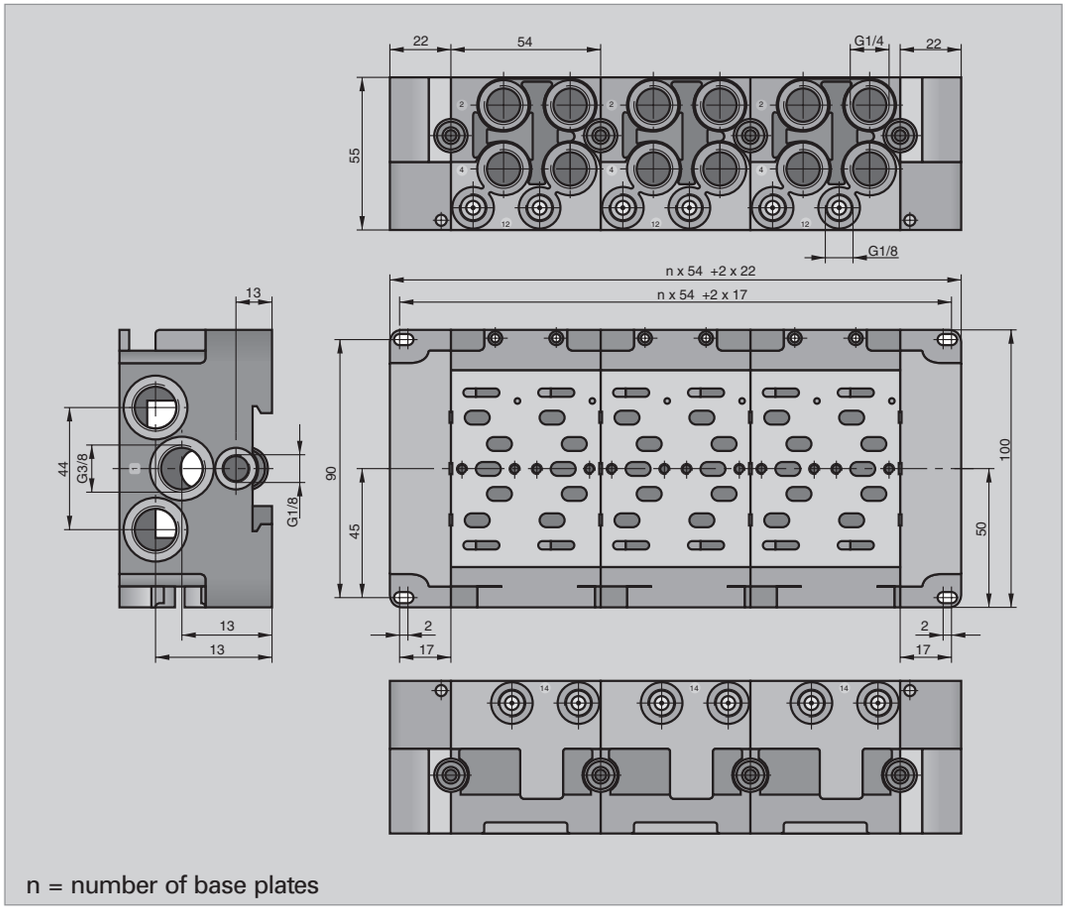


n = number of base plates

Order Instructions for Base Plate Combinations

Description	Port size	Number of Valves	Order Instructions Type	Order No.
2-fold plate	G1/8	2	**S20-1/8-002**	**PD 43963-0002**
4-fold plate	G1/8	4	**S20-1/8-004**	**PD 43963-0004**
6-fold plate	G1/8	6	**S20-1/8-006**	**PD 43963-0006**

Base Plate Combinations of Form C and D – Port Size G1/4
Type: S20-1/4-...



n = number of base plates

Base Plate Combinations to VDMA 24563 Size 01

Modules
- End plate set, Form D, for intermediate plate Form C
- Angle base plate, Form E, for intermediate plate Form C
- Accessories

Port size
G1/4

Order Instructions for Base Plate Combinations

Description	Port size	Number of Valves	**Order Instructions Type**	**Order No.**
2-fold plate	G1/4	2	**S20-1/4-002**	**PD 43964-0002**
4-fold plate	G1/4	4	**S20-1/4-004**	**PD 43964-0004**
6-fold plate	G1/4	6	**S20-1/4-006**	**PD 43964-0006**

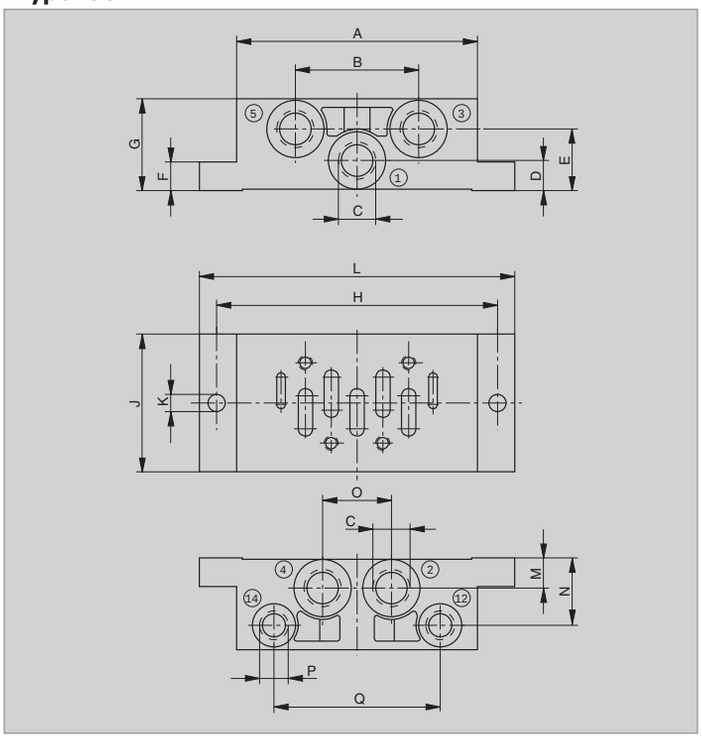
Single Base Plates

Base Plates to ISO 5599 Size 1, 2, 3

Versions
– Single Base Plates to VDMA 24345 Form A
– Single Base Plates to VDMA 24345 Form B



Single Base Plate, Form A
Type: S9-.-A



Dimension Table for Single Base Plate, Form A

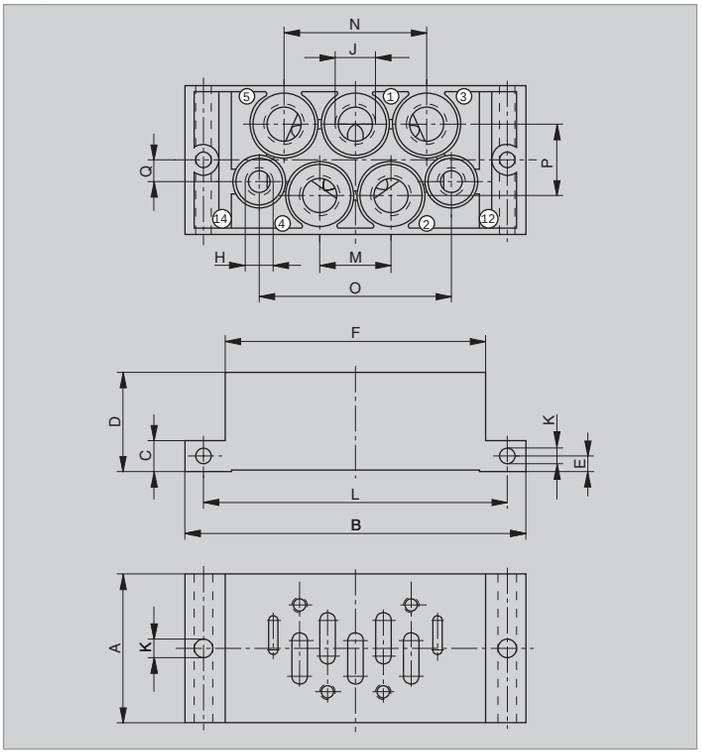
ISO Size	A	B	C	D	E	F	G	H
1	84	43	G1/4	10.5	21.5	10	32	98
2	95	56	G3/8	14	26	13	40	112
3	119	68	G1/2	17	17	18	32	136

ISO Size	J	K	L	M	N	O	P	Q
1	48	5.5	110	10.5	23.5	24	G1/8	58
2	57	6.6	124	14	30	30	G1/8	74
3	71	6.6	149	17	22	32	G1/8	90

Order Instructions for Single Base Plate, Form A

ISO Size	Weight (kg)	Order Instructions Type	Order No.
1	0.160	**S9-1-A**	**KX 9076**
2	0.280	**S9-2-A**	**KX 9433**
3	0.570	**S9-3-A**	**KX 9434**

Single Base Plate, Form B
Type: S9 -.-B



Dimension Table for Single Base Plate, Form B

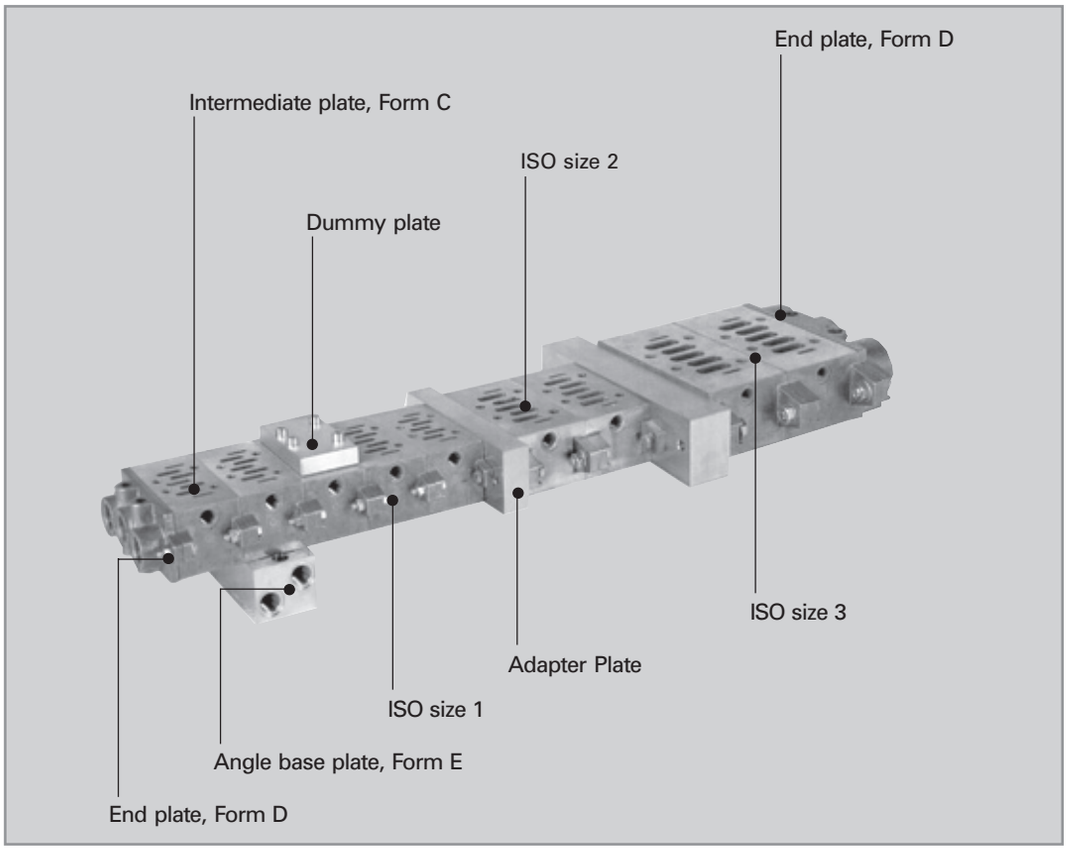
ISO Size	A	B	C	D	E	F	H	J
1	46	110	10	30	5	84	G1/8	G1/4
2	56	124	13	35	6.5	95	G1/8	G3/8
3	71	149	18	32	9	119	G1/8	G1/2

ISO Size	K	L	M	N	O	P	Q
1	5.5	98	23	46	62	23	7.5
2	6.6	112	28	56	73	27	7.5
3	6.6	136	34	68	90	35	10

Order Instructions for Single Base Plate, Form B

ISO Size	Weight (kg)	Order Instructions Type	Order No.
1	0.370	**S9-1-B**	**KX 9077**
2	0.590	**S9-2-B**	**KX 9436**
3	0.900	**S9-3-B**	**KX 9437**

Base Plate Combinations



Base Plates to ISO 5599 Size 1, 2, 3

Modules to VDMA 24345
- End plate set, Form D, for intermediate plate, Form C
- Intermediate plate, Form C
- Base plate combinations of Form C and D
- Angle base plate, Form E, for intermediate plate, Form C
- Accessories

End Plate Set, Form D for Intermediate Plate



Weight (kg)

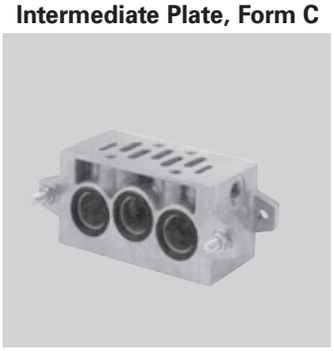
ISO Size	Weight
1	0.210
2	0.360
3	0.680

Order Instructions

ISO Size	Order Instructions Type	Order No.
1	**S9-1-D**	**KX 9078**
2	**S9-2-D**	**KX 9421**
3	**S9-3-D**	**KX 9422**

The delivery includes:
End plate set, complete with screws

Intermediate Plate, Form C



Weight (kg)

ISO Size	Weight
1	0.240
2	0.360
3	0.700

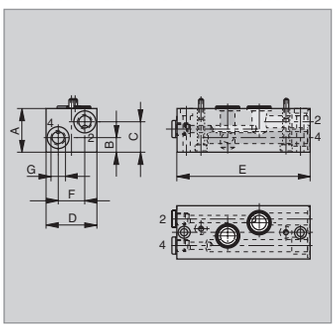
Order Instructions

ISO Size	Order Instructions Type	Order No.
1	**S9-1-C**	**KX 9079**
2	**S9-2-C**	**KX 9419**
3	**S9-3-C**	**KX 9420**

The delivery includes:
Intermediate plate, complete with O-rings and screws

Angle Base Plate, Form E for Intermediate Plate Form C





Order Instructions and Dimension Table

Order Instructions Type	Order No.	ISO Size	A	B	C	D	E	F	G
S9-1-E	**KX 9081**	1	37	12	25	42	110	22	G1/4
–	–	2	–	–	–	–	–	–	–
S9-3-E	**KX 9425**	3	45	17	29	70	190	36	G1/2

The delivery includes:
Angle base plate, complete with O-rings and screws

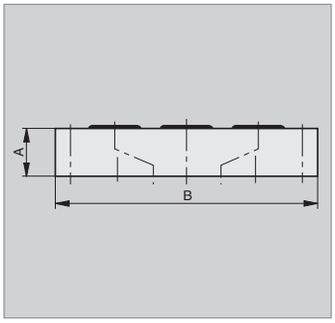
Dimensions in mm

Base Plate Combinations

Base Plates to ISO 5599 Size 1, 2, 3

Modules to VDMA 24345
- End plate set, Form D, for intermediate plate, Form C
- Intermediate plate, Form C
- Base plate combinations of Form C and D
- Angle base plate, Form E, for intermediate plate, Form C
- Accessories

Adapter plate for combining ISO Sizes 1, 2, 3

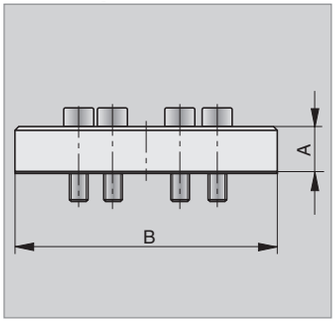


Order Instructions and Dimension Table

Order Instructions		for ISO	A	B	Width
Type	Order No.	Size			
S9-1-2-KP	KX 9430	1 to 2	20	135	45
S9-2-3-KP	KX 9431	2 to 3	25	190	55
S9-1-3-KP	KX 9432	1 to 3	35	190	50

The delivery includes:
Adapter plate with O-rings and screws

Dummy Plate

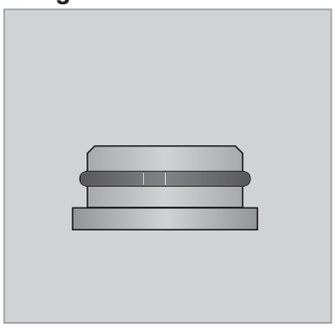


Order Instructions and Dimension Table

Order Instructions		for ISO	A	B	Width
Type	Order No.	Size			
S9-1-BP	KX 9082	1	12	70	40
S9-2-BP	KX 9423	2	12	90	55
S9-3-BP	KX 9424	3	12	110	70

The delivery includes:
Dummy plate with gasket and screws

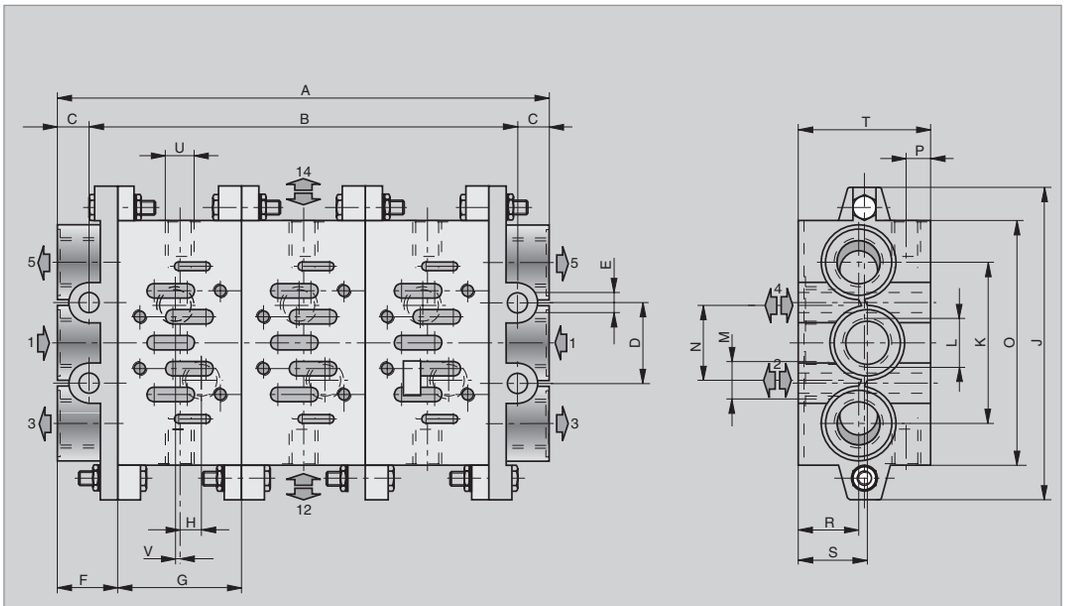
Plug



Order Instructions

Order Instructions		for ISO Size
Type	Order No.	
S9-1-VS	KX 5789	1
S9-2-VS	KX 9426	2
S9-3-VS	KX 9427	3

Base Plate Combinations of Form C and D



Drawing shows: 3-fold plate combinations

Dimension Table

ISO Size	Number of plates	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V
1	2	130	108	11	28	Ø7	22	43	7.5	110	56	G3/8	G1/4	26	85	8.5	21	24	46	G1/8	1.5
1	3	173	151	11	28	Ø7	22	43	7.5	110	56	G3/8	G1/4	26	85	8.5	21	24	46	G1/8	1.5
1	4	216	194	11	28	Ø7	22	43	7.5	110	56	G3/8	G1/4	26	85	8.5	21	24	46	G1/8	1.5
1	5	259	237	11	28	Ø7	22	43	7.5	110	56	G3/8	G1/4	26	85	8.5	21	24	46	G1/8	1.5
1	6	302	280	11	28	Ø7	22	43	7.5	110	56	G3/8	G1/4	26	85	8.5	21	24	46	G1/8	1.5
2	2	164	138	13	35	Ø9	26	56	6	135	68	G1/2	G3/8	30	100	9	22	24	47	G1/8	5
2	3	220	194	13	35	Ø9	26	56	6	135	68	G1/2	G3/8	30	100	9	22	24	47	G1/8	5
2	4	276	250	13	35	Ø9	26	56	6	135	68	G1/2	G3/8	30	100	9	22	24	47	G1/8	5
2	5	332	306	13	35	Ø9	26	56	6	135	68	G1/2	G3/8	30	100	9	22	24	47	G1/8	5
2	6	388	362	13	35	Ø9	26	56	6	135	68	G1/2	G3/8	30	100	9	22	24	47	G1/8	5
3	2	202	172	15	52	Ø12	30	71	8	190	104	G1	G1/2	38	140	10	31	34	56	G1/8	6
3	3	273	243	15	52	Ø12	30	71	8	190	104	G1	G1/2	38	140	10	31	34	56	G1/8	6
3	4	344	314	15	52	Ø12	30	71	8	190	104	G1	G1/2	38	140	10	31	34	56	G1/8	6
3	5	415	385	15	52	Ø12	30	71	8	190	104	G1	G1/2	38	140	10	31	34	56	G1/8	6
3	6	486	456	15	52	Ø12	30	71	8	190	104	G1	G1/2	38	140	10	31	34	56	G1/8	6

Order Instructions for Base Plate Combinations

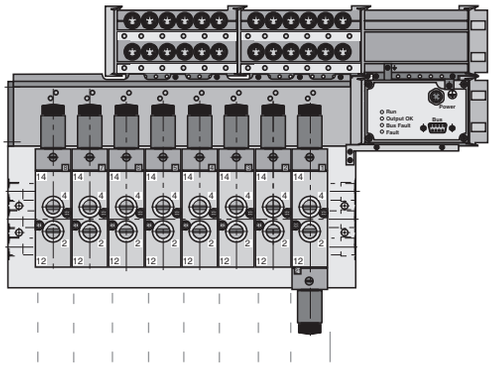
Description	ISO Size	**Order Instructions**	
		Type	**Order No.**
Plate combination for 2 valves	1	**S9-1-002**	**PD 30076-0002**
	2	**S9-2-002**	**PD 32951-0002**
	3	**S9-3-002**	**PD 32952-0002**
Plate combination for 3 valves	1	**S9-1-003**	**PD 30076-0003**
	2	**S9-2-003**	**PD 32951-0003**
	3	**S9-3-003**	**PD 32952-0003**
Plate combination for 4 valves	1	**S9-1-004**	**PD 30076-0004**
	2	**S9-2-004**	**PD 32951-0004**
	3	**S9-3-004**	**PD 32952-0004**
Plate combination for 5 valves	1	**S9-1-005**	**PD 30076-0005**
	2	**S9-2-005**	**PD 32951-0005**
	3	**S9-3-005**	**PD 32952-0005**
Plate combination for 6 valves	1	**S9-1-006**	**PD 30076-0006**
	2	**S9-2-006**	**PD 32951-0006**
	3	**S9-3-006**	**PD 32952-0006**

Plate combinations made up to customer's requirements on request

Accessories			
Adapter plate for Pressure switch *	1	**S9-1-DR**	**KX 9293**
	2	**S9-2-DR**	**KX 9428**
	3	**S9-3-DR**	**KX 9429**
Adapter plate with built-in pressure regulator	1	**S9-1-RE**	**PD 31826**
	3	**S9-3-RE**	**PD 33098**

* Pressure switch available on request

Order Form, neutral, for Valve Islands



	Order No.	Electrical connection	Internal Bus expansion	No. of Valves	Valve position 1 2 3 4 5 6 7 8 9 10 11 12	Input module	Number of inputs	Channel divider	Position of channel divider
Ordering example									

4 6 8 10 12

even number of valve positions only

Important: Please specify the code for the desired valve types

Valve Islands – Sizes	
PA 10381	Type: IM20-1/8 Connections: G1/8 –valve ports G1/4 –base plate
PA12867	Type: IM20-1/4 Connections: G1/4 –valve ports G3/8 –base plate

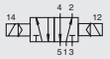
Input Modules	
K	Pins IP20
S	M8 IP65 connector
04-08-12 **16-20-24** **28-32**	Number of inputs

Dual Pressure Operation	
J	with channel divider in port 1 (P)
01 – 11	Position of channel divider to valve position

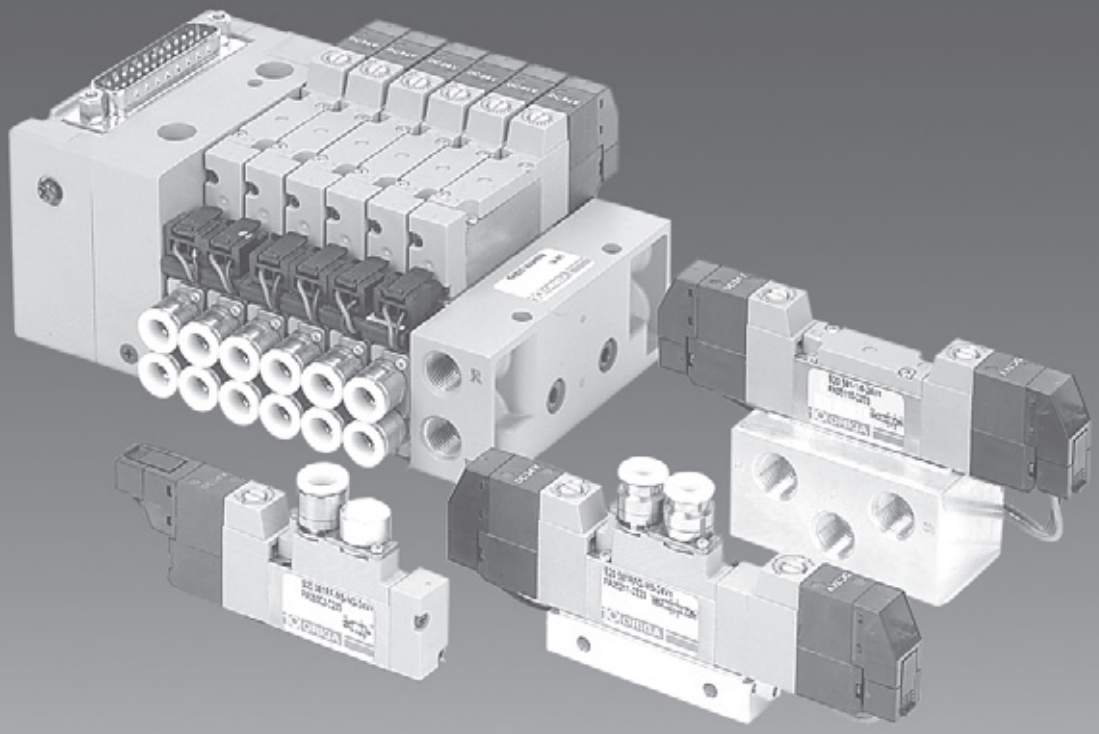
Electrical Connections	
Multipole Version	
DS	with sub-D connector
HI	with industrial connector
Field Bus Version	
DP	Profibus DP
IS	Interbus S
CO	CAN Open
IB	Internal Bus

Internal Bus Expansion	
J	RIO-IF Module

Valve Positions	
04	up to 4 valves
06	5 and 6 valves
08	7 and 8 valves
10	9 and 10 valves
12	11 and 12 valves
14	13 and 14 valves
16	15 and 16 valves

Ordering Code for Valves and Blanking Plates		
Code	Symbol	Description
A	–	Blanking plate on valve position
M		5/2 way solenoid valve, permanent signal with spring return Type: S9 581RF-..
J		5/2 way solenoid valve, Impulse version Type: S9 581-..
G		5/3 way solenoid valve, spring return to middle position, middle position closed Type: S9 581RFG-..
B		5/3 way solenoid valve, spring return to middle position, middle position pressurized Type: S9 581RFB-..
E		5/3 way solenoid valve, spring return to middle position, middle position vented Type: S9 581RFE-...

Miniature Pneumatics

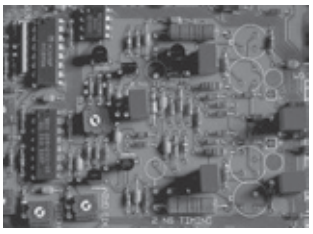


HOERBIGER

ORIGA

Components for special fields of application

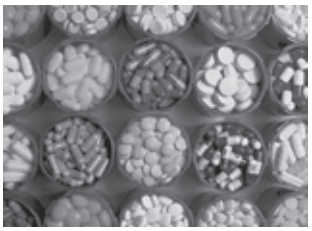
Special tasks demand special automation concepts. With the addition of miniature pneumatics to their product range, HOERBIGER-ORIGA have taken a further important step in the direction of flexibility and versatility. »Intelligent solutions for automated movement« – now also in mini-pneumatics.



… for automated assembly work in the electronics industry



... for test procedures in the chemical industry



… for sorting processes in the pharmaceutical industry



... for assembly work in the production of optical equipment

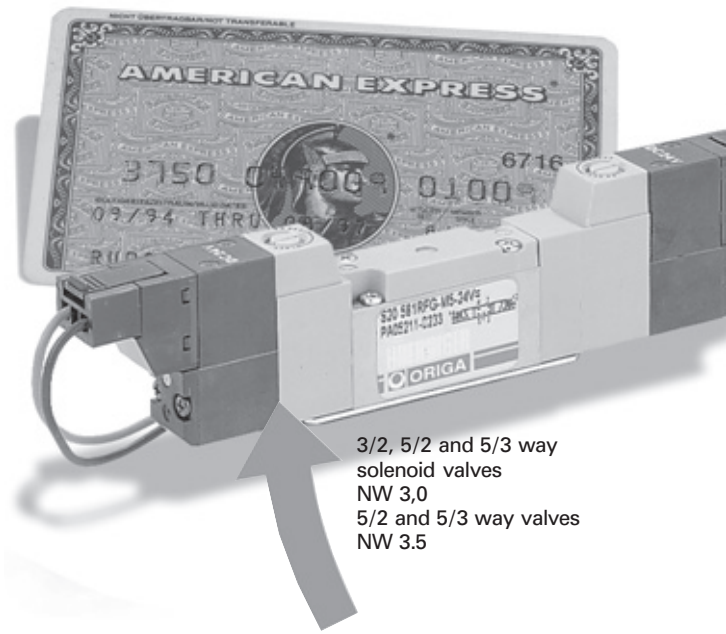
MINIATURE PNEUMATICS FOR SPECIAL APPLICATIONS

HOERBIGER-ORIGA miniature pneumatics are ideally suited for handling small, delicate components accurately and cost effectively. Providing for a high degree of automation for sensitive handling, positioning and assembly operations, applications are common place in the electronics, textile, and packaging industries, in the manufacture of clocks and spectacles, and in pharmaceutical, medical and dentistry production.

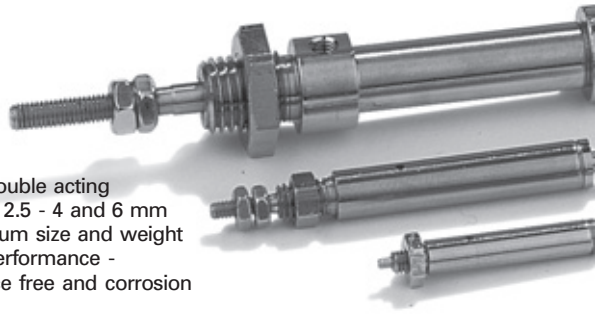
SOLUTIONS AS IN STANDARD PNEUMATICS

The basis for HOERBIGER-ORIGA's range is their wide experience from the standard pneumatic programme.

"Everything from one source" HOERBIGER-ORIGA offers customers a complete solution – simple space saving solutions for effective and economic automation.



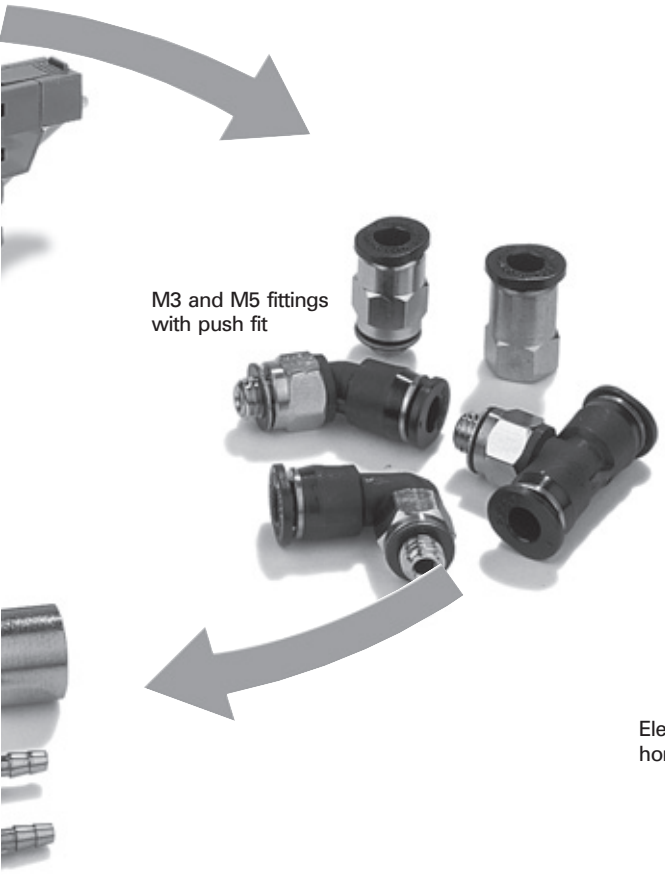
3/2, 5/2 and 5/3 way solenoid valves
NW 3,0
5/2 and 5/3 way valves
NW 3.5



Single or double acting cylinders Ø 2.5 - 4 and 6 mm with minimum size and weight and high performance - maintenance free and corrosion resistant.

Cylinders, valves and accessories are the basic components of any system. With a unified range, HOERBIGER-ORIGA offers the widest choice of options and combinations, opening the door for special system solutions.

. . . SIZE COMPARISON

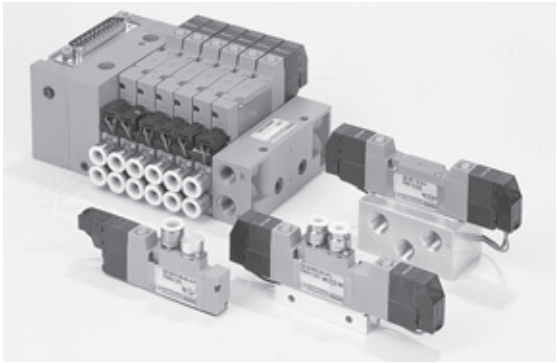


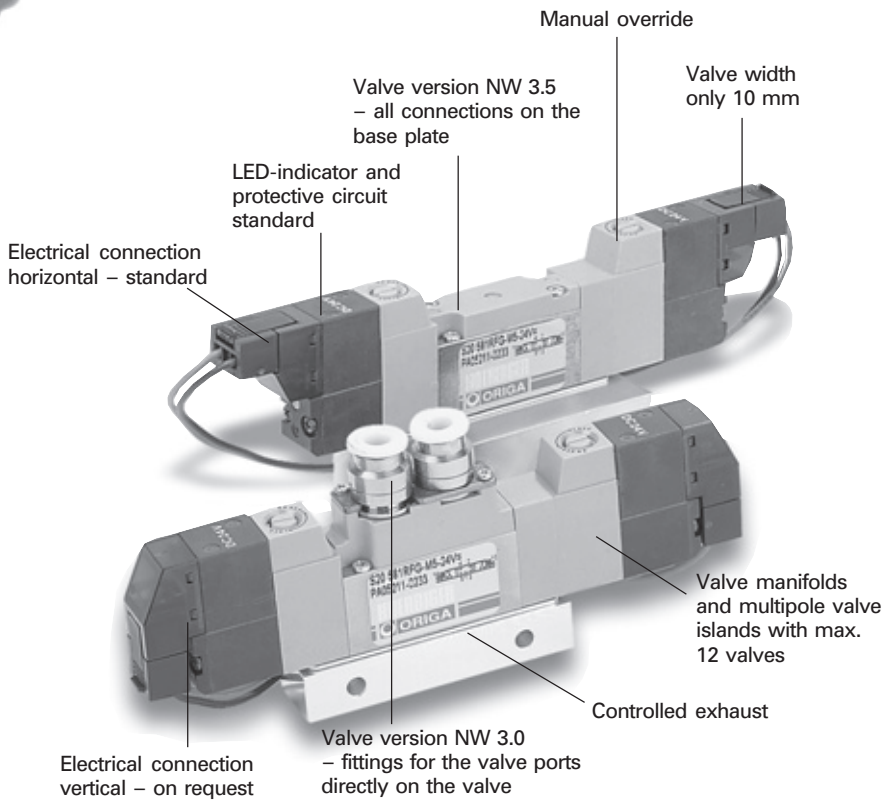
M3 and M5 fittings with push fit

VALVES WITH AN OPTIMAL SIZE / PERFORMANCE RATIO

i.e.

- High flow
- Low weight
- Compact size
- Fast switching times
- Low energy consumption
- Easy installation
- Multipole version with rotating connector

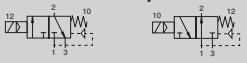




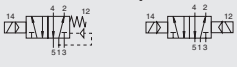
Valves NW 3.0 with fittings on ports 4 and 2

Valve versions

3/2 way valve



5/2 way valve



5/3 way valve

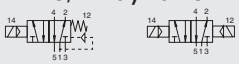


Version	Single valve without base plate	**Version** Single valve with base plate M5	Valve manifold	Valve island with multipole connector
electrical connection				
horizontal	O	O	X	X
vertical	X	X	X	X
Fittings				
Tube OD ø 4 mm	X	X	X	X
Tube OD ø 6 mm	O	O	X	X
Cable with connector				
Length 300 mm	–	O	X	integrated
Length 2000 mm	–	X	X	–
Voltage				
24 V DC	O	O	X	X
12 V DC	X	X	X	X

Valves NW 3.5 - all connections on baseplate

Valve versions

5/2 way valve



5/3 way valve

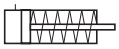
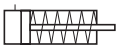
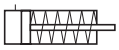
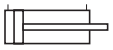


Version	Single valve without base plate	**Version** Single valve with baseplate G1/8	Valve manifold [1]	Valve island with multipole connector [1]
electrical connection				
horizontal	O	O	O	–
vertical	X	X	X	O
Fittings				
Tube OD ø 4 mm	–	–	X	X
Tube OD ø 6 mm	–	–	O	O
Cable with connector				
Length 300 mm	–	O	O	integrated
Length 2000 mm	–	X	X	–
Voltage				
24 V DC	O	O	O	O
12 V DC	X	X	X	X

O = Standard version
X = On request
– = not possible

[1] Valve ports (4 and 2) on the base plate with fittings, pressure supply (1) and exhausts (5 and 3) G1/8

Cylinder ø2.5 to 6 mm – single- and double acting

Symbol	Cylinder diameter (mm)	Stroke lengths (mm)	Connection	Page
	2.5	5, 10	Fitting for tubing ID 2 mm	24, 25
	4	5, 10, 15, 20	Fitting for tubing ID 2 mm	24, 25
	6	5,10, 15, 20, 25	M3 Internal thread	24, 25
	6	5,10, 15, 20, 25	M3 Internal thread	24, 25

Fittings – size M3 for tubing ODø 4 mm

Picture	Description	Page
	Tube fittings, straight - with parallel thread	26
	Threaded elbow tube fitting, short version	26
	Threaded elbow tube fitting, long version	26
	T-connector with parallel thread	26
	Y-connector, equal	27

3/2, 5/2 and 5/3 way valves NW 3.0

Base plate version

Actuation:
electrical, pilot operated
– by permanent signal
– by impulse

Series S 20

S20 381

S20 581

Versions

- Single valve without base plate
- Single valve with base plate
- Manifold version

Delivery includes:

Single valve without base plate:
1 Valve without connector
Gasket carrier with gasket
2 Mounting screws

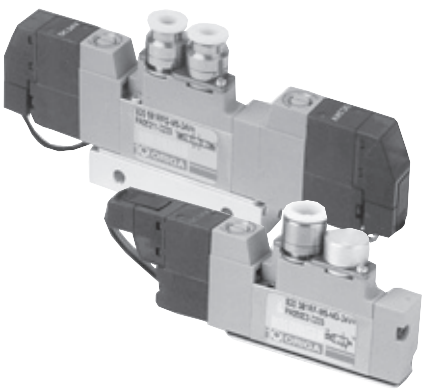
Please order the connector separately
– see order instructions on page 23

Single valve with base plate:
1 Valve on base plate,
cable (length 300 mm)
with connector

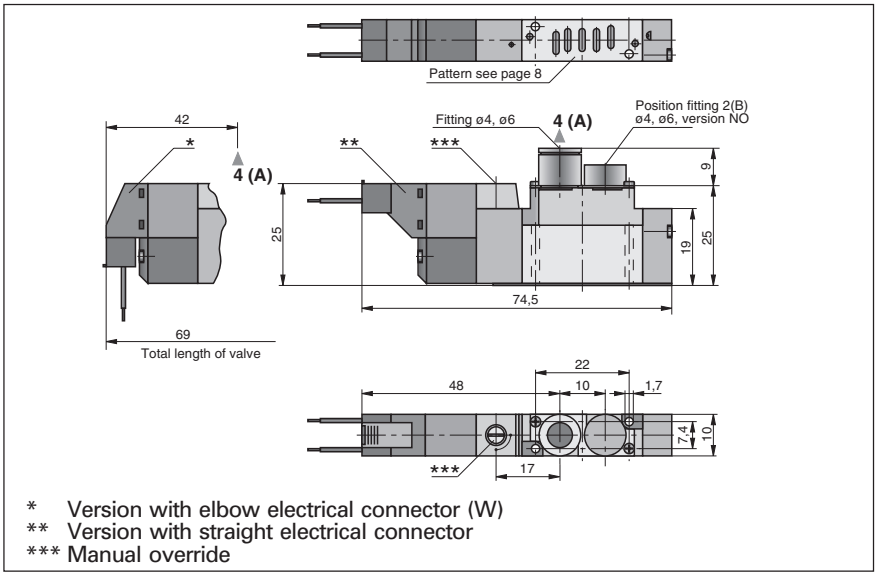
Characteristics to VDI 3290 Pressures quoted as gauge pressures

Characteristic	Symbol	Unit	Description
General			
Type			Spool valve
Mounting			On base plate
Tube connection – Air supply and exhaust			Through base plate – M5
– Valve ports:			Fitting for tube ODø 6 mm (ø 4 mm on request)
Weight		g	≤ 45
Nominal diameter		mm	3,0
Installation			In any position
Ambient and medium temperature range	ϑ_{min} ϑ_{max}	°C °C	+5 +50
Medium			Filtered (5µm) compressed air or inert gases, lubricated or unlubricated.
Materials			
Housing			Al
Seals			NBR
Pneumatic Characteristics			
Nominal pressre	p_n	bar	6
Operating pressure range	p_{min} p_{max}	bar bar	2 7
Nominal flow	Q_n	l/min	205
Actuation			
Electrical			Direct
Voltage type			Direct current
Nominal voltage	U_n	V	24 (12 V on request)
Power consumption		W	0.7
Relative operating factor	ED	%	100
Electrical protection			IP 40
Insulating class			F to VDE 0580
Connection			2-pole connector, – for cable, see order instructions
Indicator light			LED in each solenoid
Protective circuit			Integrated

For accessories see page 23



Dimensions (mm) – 3/2 way single valve without base plate



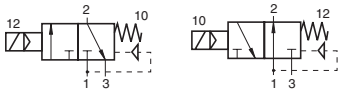
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

3/2 way solenoid valve NW 3.0

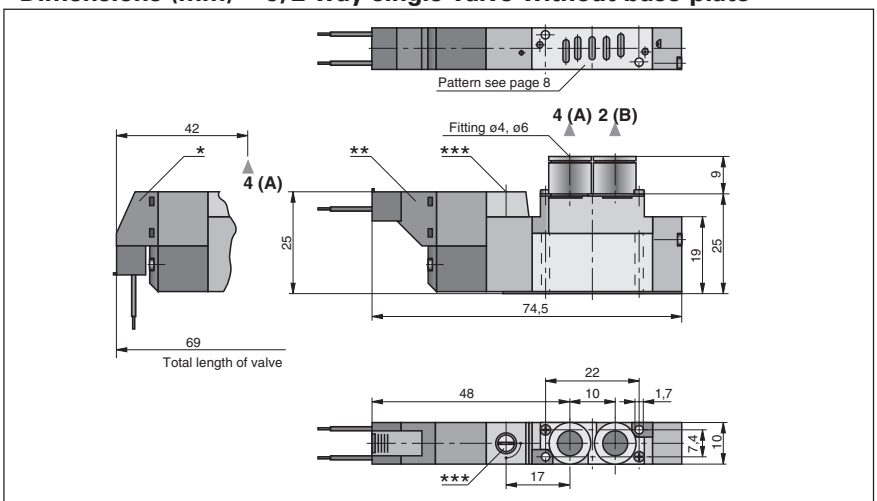
– Base plate version
- single valve without base plate
- "normally closed" and "normally open" versions.
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 381RRF-30NG (NO)
S20 381RRF-30NG (NO)-W *

For base plates see page 17
For RPL manifold see page 20, 21
For order instructions see page 11



Dimensions (mm) – 5/2 way single valve without base plate



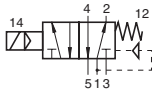
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (permanent signal version) NW 3.0

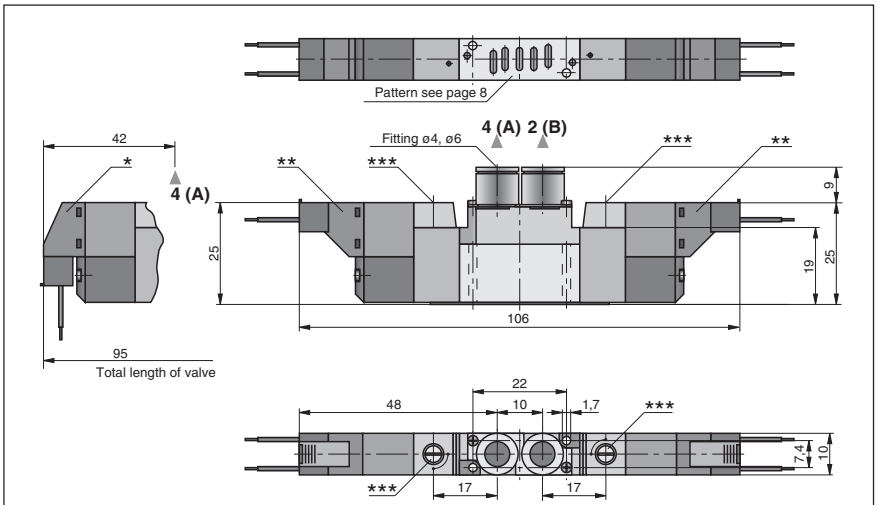
– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RRF-30
S20 581RRF-30-W *

For base plates see page 17
For RPL manifold see page 20, 21
For order instructions see page 11



Dimensions (mm) – 5/2 way single valve without base plate



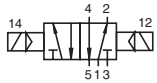
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (impulse version) NW 3.0

– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Typ: S20 581-30
S20 581-30-W *

For base plates see page 17
For RPL manifold see page 20, 21
For order instructions see page 11

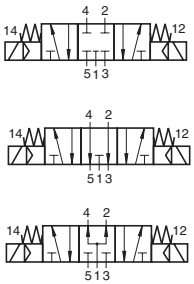


5/3 way solenoid valve (permanent signal version) NW 3.0

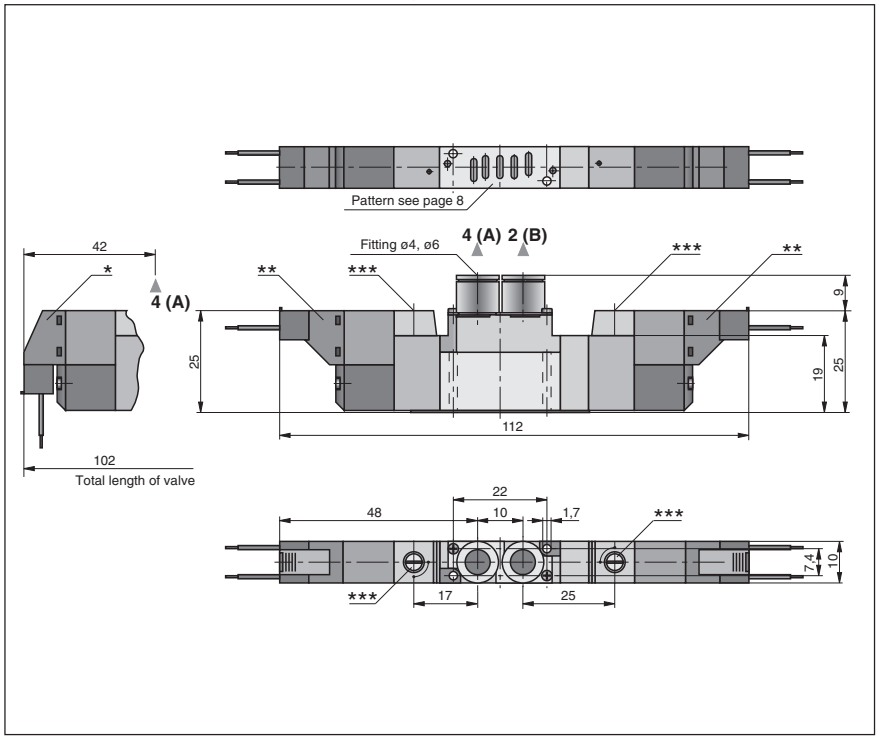
– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581 RF.-30
S20 581 RF.-30-W *

For base plates see page 17
For RPL manifold see page 20, 21
For order instructions see page 11



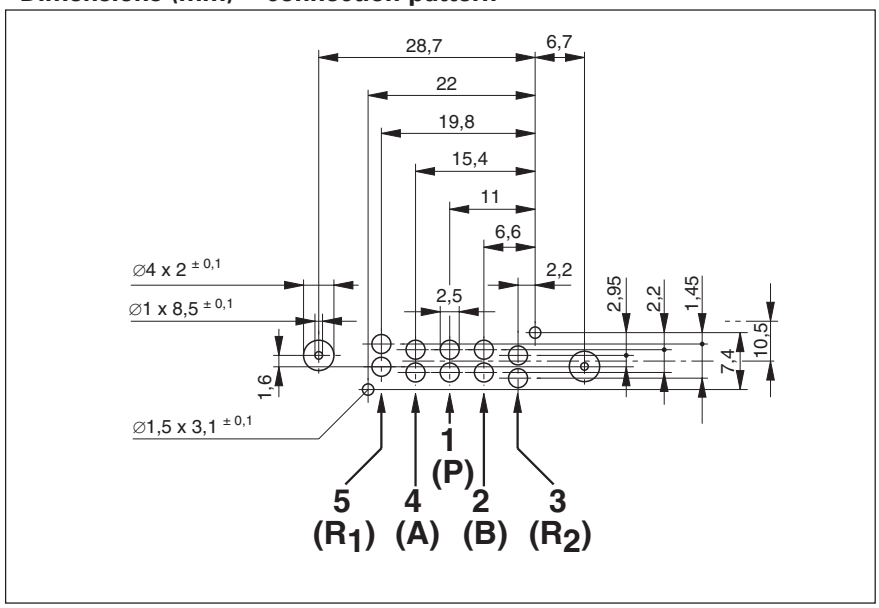
Dimensions (mm) – 5/3 way single valve without base plate



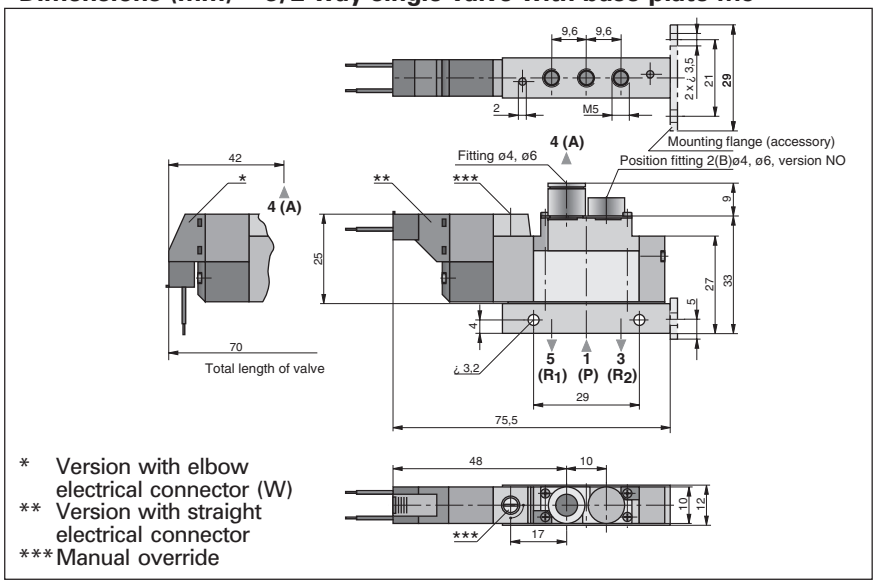
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

Connection pattern for 3/2, 5/2 and 5/3 way solenoid valves

Dimensions (mm) – connection pattern



Dimensions (mm) – 3/2 way single valve with base plate M5



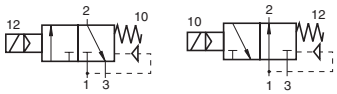
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

3/2 way solenoid valve NW 3.0

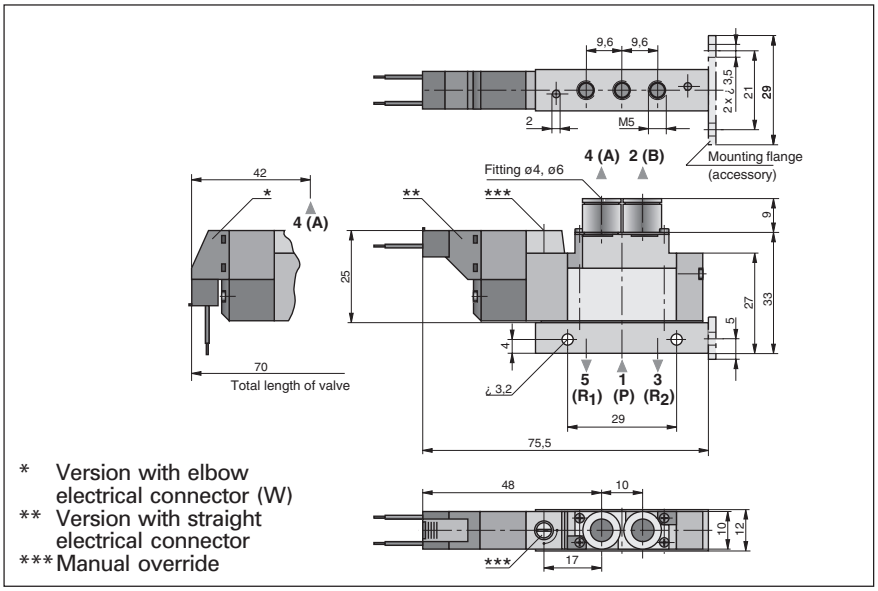
– Base plate version
- single valve with base plate M5
- "normally closed" and "normally open" versions
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 381RRF-30NG (NO)-G
S20 381RRF-30NG (NO)-G-W *

For order instructions see page 11



Dimensions (mm) – 5/2 way single valve with base plate M5



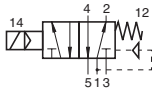
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (permanent signal version) NW 3.0

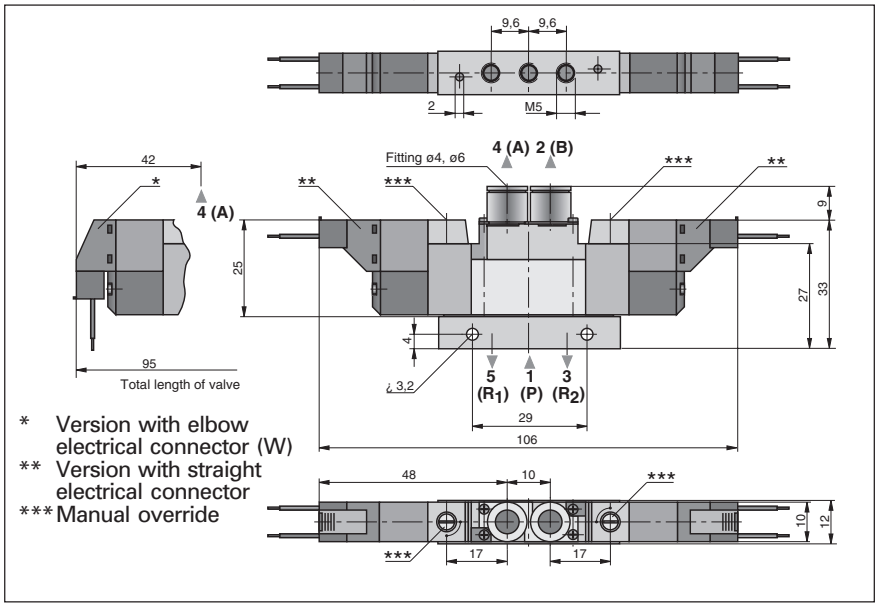
– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RRF-30-G
S20 581RRF-30-G-W *

For order instructions, see page 11



Dimensions (mm) – 5/2 way single valve with base plate M5



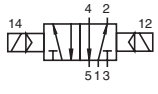
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (impulse version) NW 3.0

– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581-30-G
S20 581-30-G-W *

For order instructions, see page 11



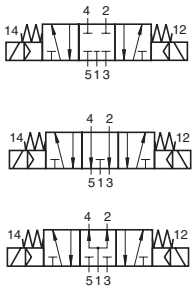
5/3 way solenoid valve (permanent signal version) NW 3.0

– Base plate version

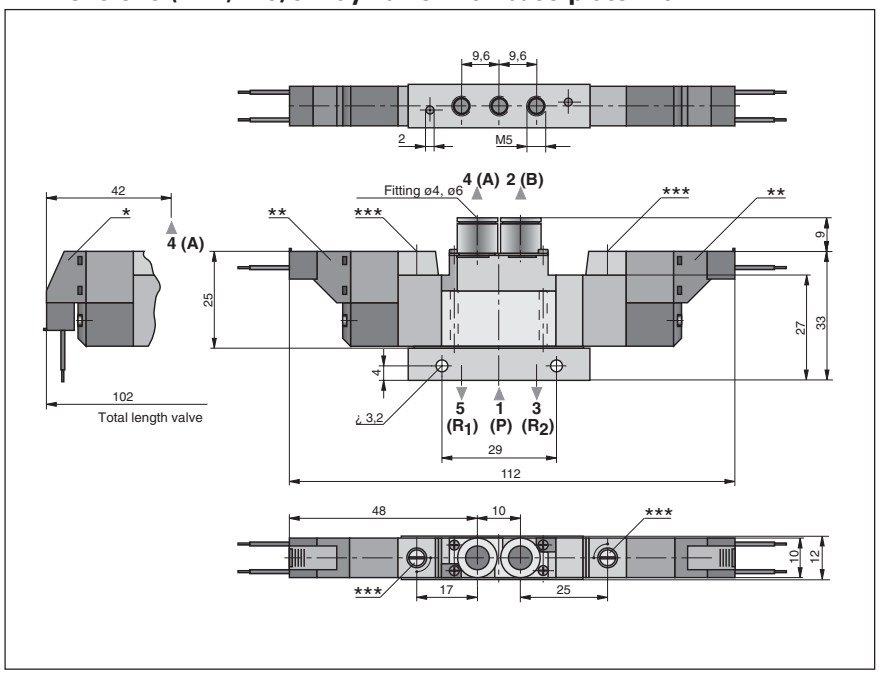
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RF.-G
S20 581RF.-G-W *

For order instructions, see page 11



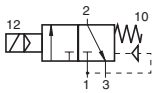
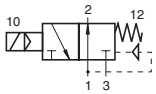
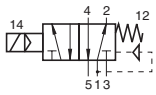
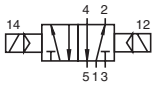
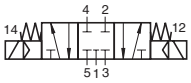
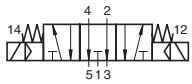
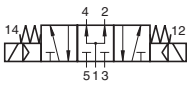
Dimensions (mm) – 5/3 way valve with base plate M5



* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

Order Instructions

Order Instructions

Actuation		Version	Symbol	Order Instructions Type	Order No.
electrical by permanent signal, spring return (air piloted)		- Normally closed - Without base plate - Valve ports with fittings		**S20 381RRF-30-NG**	**PA 05004-0233**
				S20 381RRF-30-NG-W*	**PA 05004-0293**
		- Normally closed - With base plate M5 - Valve ports with fittings		**S20 381RRF-30-NG-G**	**PA 05002-0233**
				S20 381RRF-30-NG-G-W*	**PA 05002-0293**
		- Normally open - Without base plate - Valve ports with fittings		**S20 381RRF-30-NO**	**PA 05005-0233**
				S20 381RRF-30-NO-W*	**PA 05005-0293**
		- Normally open - With base plate M5 - Valve ports with fittings		**S20 381RRF-30-NO-G**	**PA 05003-0233**
				S20 381RRF-30-NO-G-W*	**PA 05003-0293**
		- Without base plate - Valve ports with fittings		**S20 581RRF-30**	**PA 05113-0233**
				S20 581RRF-30-W*	**PA 05113-0293**
		- With base plate M5 - Valve ports with fittings		**S20 581RRF-30-G**	**PA 05109-0233**
				S20 581RRF-30-G-W*	**PA 05109-0293**
electrical, by impulse		- Without base plate - Valve ports with fittings		**S20 581-30**	**PA 05114-0233**
				S20 581-30-W*	**PA 05114-0293**
		- With base plate M5 - Valve ports with fittings		**S20 581-30-G**	**PA 05110-0233**
				S20 581-30-G-W*	**PA 05110-0293**
electrical, by permanent signal, spring return to middle position	Middle position closed	- Without base plate - Valve ports with fittings		**S20 581RFG-30**	**PA 05217-0233**
				S20 581RFG-30-W*	**PA 05217-0293**
		- With base plate M5 - Valve ports with fittings		**S20 581RFG-30-G**	**PA 05211-0233**
				S20 581RFG-30-G-W*	**PA 05211-0293**
	Middle position vented	- Without base plate - Valve ports with fittings		**S20 581RFE-30**	**PA 05218-0233**
				S20 581RFE-30-W*	**PA 05218-0293**
		- With base plate M5 - Valve ports with fittings		**S20 581RFE-30-G**	**PA 05212-0233**
				S20 581RFE-30-G-W*	**PA 05212-0293**
	Middle position pressurised	- Without base plate - Valve ports with fittings		**S20 581RFB-30**	**PA 05219-0233**
				S20 581RFB-30-W*	**PA 05219-0293**
		- With base plate M5 - Valve ports with fittings		**S20 581RFB-30-G**	**PA 05213-0233**
				S20 581RFB-30-G-W*	**PA 05213-0293**

* = version with vertical electrical connector

5/2 and 5/3 Way Valves NW 3.5

5/2 and 5/3 way valve NW 3.5

Base plate version

Actuation:
electrical, pilot operated
– by permanent signal
– by impulse

Series S 20

S20 381

S20 581

Versions
• Single valve without base plate
• Single valve with base plate
• Manifold version

Delivery includes:

Single valve without base plate:
1 Valve without connector
Gasket carrier with gasket
2 Mounting screws

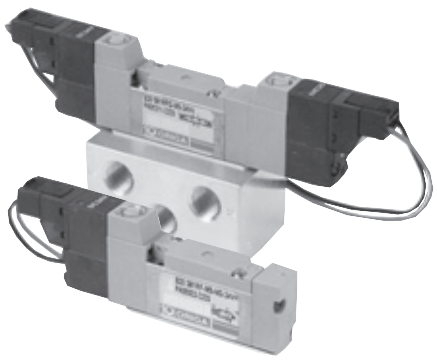
Please order the connector separately
– see order instructions on page 23

Single valve with base plate:
1 Valve on base plate,
cable (length 300 mm)
with connector

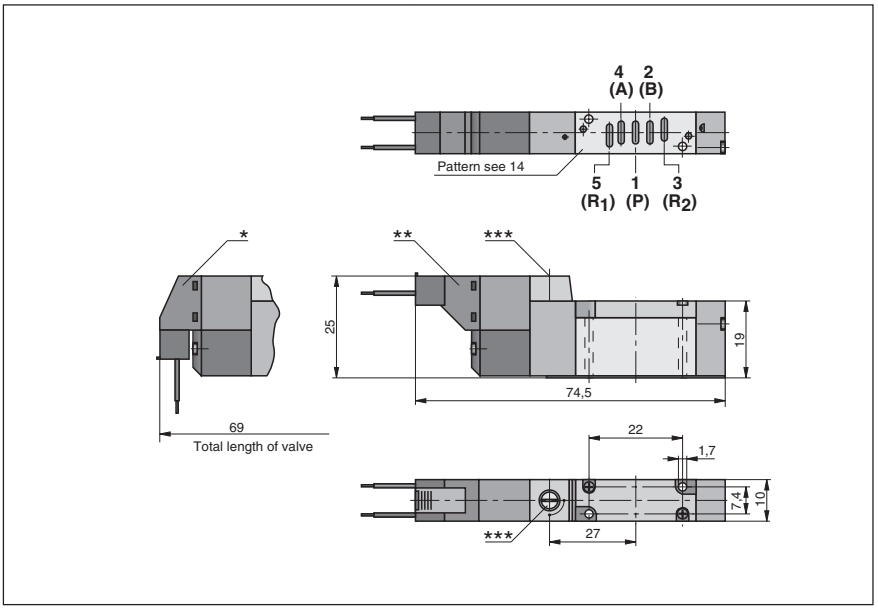
Characteristics to VDI 3290 Pressures quoted as gauge pressures

Characteristic	Symbol	Unit	Description
General			
Type			Spool valve
Mounting			On base plate
Tube connection – Air supply and exhaust			On base plate – G1/8
– Valve ports:			On base plate – G1/8
Weight		g	≤ 45
Nominal diameter		mm	3.5
Installation			In any position
Ambient and medium temperature range	ϑ_{min} ϑ_{max}	°C °C	+5 +50
Medium inert			Filtered (5µm) compressed air or gases, lubricated or unlubricated.
Materials			
Housing			Al
Seals			NBR
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	p_{min} p_{max}	bar bar	2 7
Nominal flow	Q_n	l/min	245
Actuation			
Electrical			Direct
Voltage type			Direct current
Nominal voltage	U_n	V	24 (12 V on request)
Power consumption		W	0.7
Relative operating factor	ED	%	100
Electrical protection			IP 40
Insulating class			F to VDE 0580
Connection			2-pole connector, – for cable, see order instructions
Indicator light			LED in each solenoid
Protective circuit			Integrated

For accessories see page 23



Dimensions (mm) – 5/2 way single valve without base plate

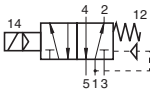


5/2 way solenoid valve (permanent signal version) NW 3.5

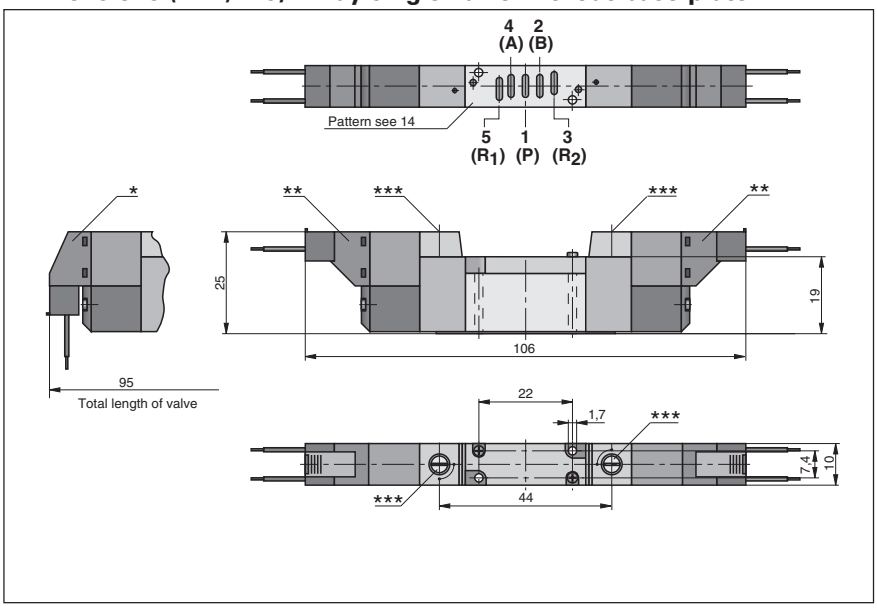
– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RRF-35F
S20 581RRF-35F-W *

For base plates see page 17
For RPL manifold see page 17
For order instructions see page 16



Dimensions (mm) – 5/2 way single valve without base plate



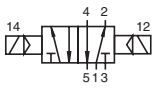
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (impulse version) NW 3.5

– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581-35F
S20 581-35F-W *

For base plates see page 17
For RPL manifold see page 17
For order instructions see page 16



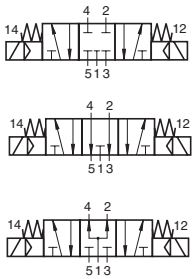
5/2 and 5/3 Way Valves NW 3.5

5/3 way solenoid valve (permanent signal version) NW 3.5

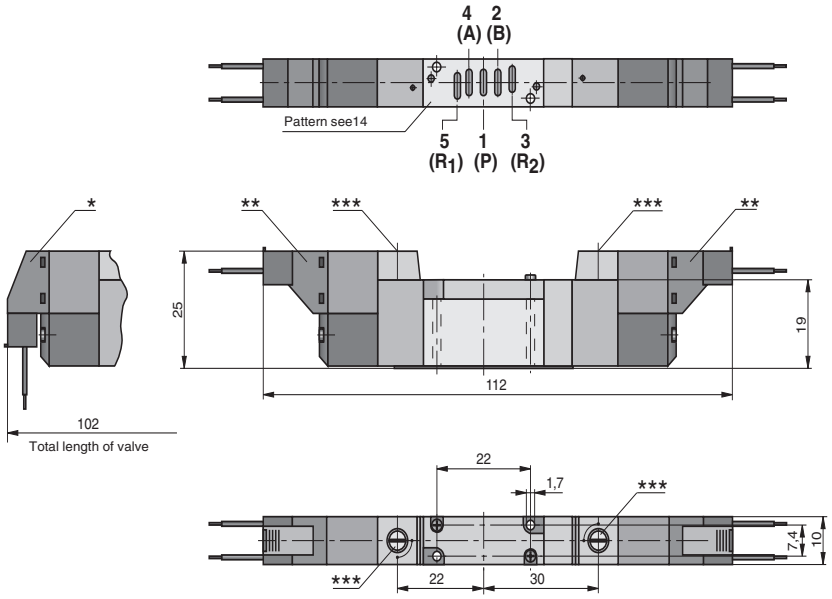
– Base plate version
- single valve without base plate
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RF.-35F
S20 581RF.-35F-W*

For base plates see page 17
For RPL manifold see page 20, 21
For order instructions see page 16



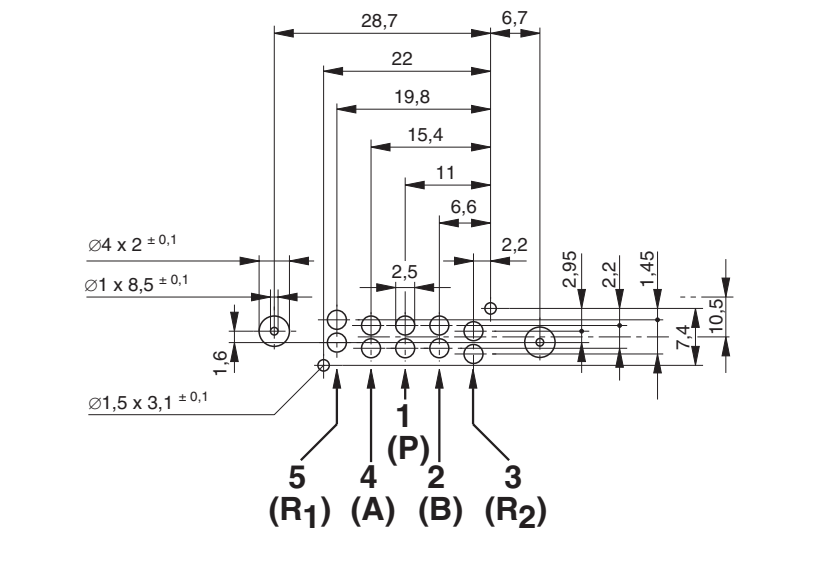
Dimensions (mm) – 5/3 way single valve without base plate



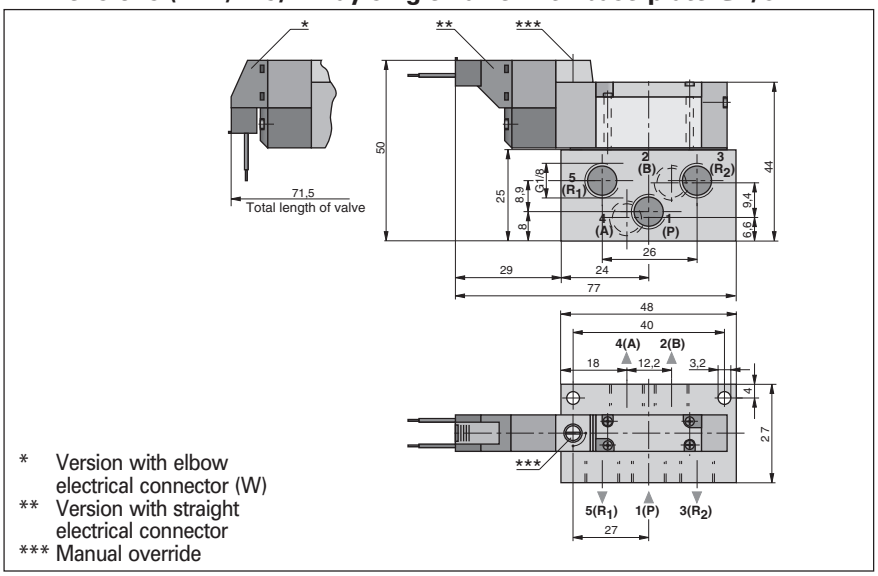
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

Connection pattern for 5/2 and 5/3 way solenoid valve

Dimensions (mm) – Connection pattern



Dimensions (mm) – 5/2 way single valve with base plate G1/8



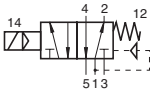
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (permanent signal version) NW 3.5

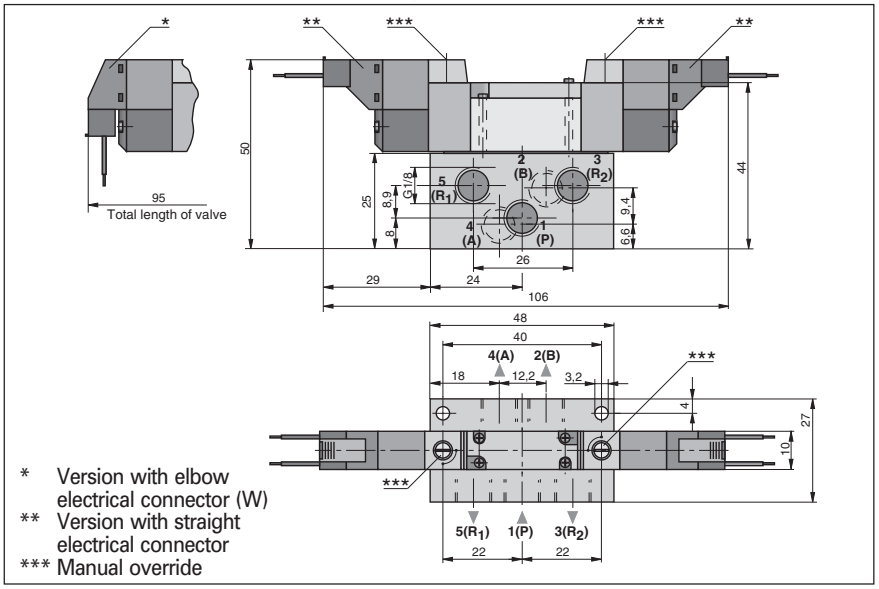
– **Base plate version**
- single valve with base plate G1/8
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RRF-35F-G
S20 581RRF-35F-G-W *

For order instuctions see page 16



Dimensions (mm) – 5/2 way single valve with base plate G1/8



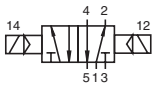
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/2 way solenoid valve (impulse version) NW 3.5

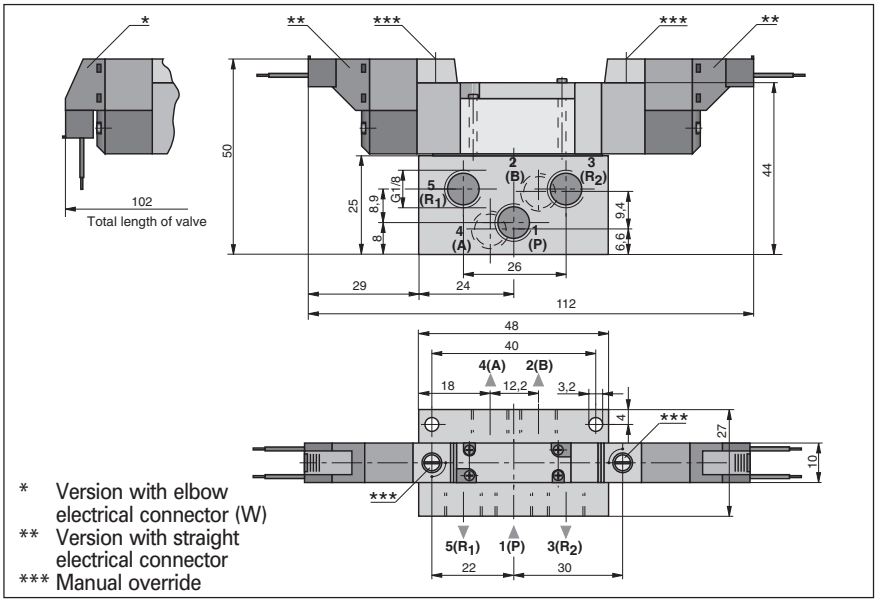
– **Base plate version**
- single valve with base plate G1/8
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581-35F-G
S20 581RRF-35F-G-W *

For order instructions see page 16



Dimensions (mm) – 5/3 way single valve with base plate G1/8



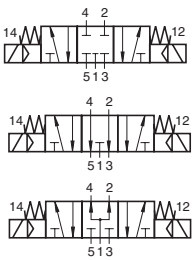
* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override

5/3 way solenoid valve (permanent signal version) NW 3.5

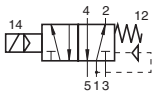
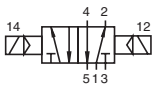
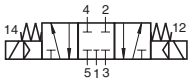
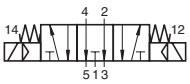
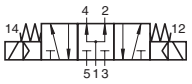
– **Base plate version**
- single valve with base plate G1/8
- with straight electrical connector
- with elbow electrical connector (W)*

Type: S20 581RF.-35F-G
S20 581RRF-35F-G-W *

For order instructions see page16



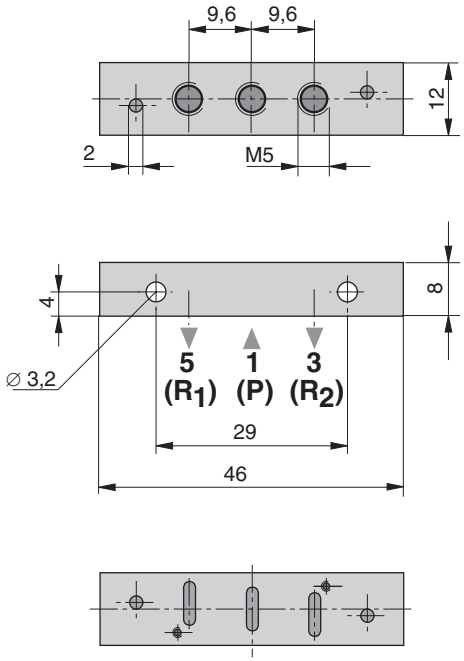
Order Instructions

Actuation		Version	Symbol	Order Instructions Type	Order No.
electrical by permanent signal, spring return (air piloted)		- Flange version without base plate		**S20 581RRF-35F**	**PA 05115-0233**
				S20 581RRF-35F-W*	**PA 05115-0293**
		- Flange version with base plate G1/8		**S20 581RRF-35F-G**	**PA 05111-0233**
				S20 581RRF-35F-G-W*	**PA 05111-0293**
electrical by impulse		- Flange version without base plate		**S20 581-35F**	**PA 05116-0233**
				S20 581-35F-W*	**PA 05116-0293**
		- Flange version with base plate G1/8		**S20 581-35F-G**	**PA 05112-0233**
				S20 581-35F-G-W*	**PA 05112-0293**
eelectrical by permanent signal, spring return to middle position	Middle position closed	- Flange version without base plate		**S20 581RFG-35F**	**PA 05220-0233**
				S20 581RFG-35F-W*	**PA 05220-0293**
		- Flange version with base plate G1/8		**S20 581RFG-35F-G**	**PA 05214-0233**
				S20 581RFG-35F-G-W*	**PA 05214-0293**
	Middle position vented	- Flange version without base plate		**S20 581RFE-35F**	**PA 05221-0233**
				S20 581RFE-35F-W*	**PA 05221-0293**
		- Flange version with base plate G1/8		**S20 581RFE-35F-G**	**PA 05215-0233**
				S20 581RFE-35F-G-W*	**PA 05215-0293**
	Middle position pressurised	- Flange version without base plate		**S20 581RFB-35F**	**PA 05222-0233**
				S20 581RFB-35F-W*	**PA 05222-0293**
		- Flange version with base plate G1/8		**S20 581RFB-35F-G**	**PA 05216-0233**
				S20 581RFB-35F-G-W*	**PA 05216-0293**

* = Version with vertical electrical connector

Single Base Plates

Dimensions (mm) – single base plate M5



Order Instruction: Type S20-30-S Order No. Nr. KL8017

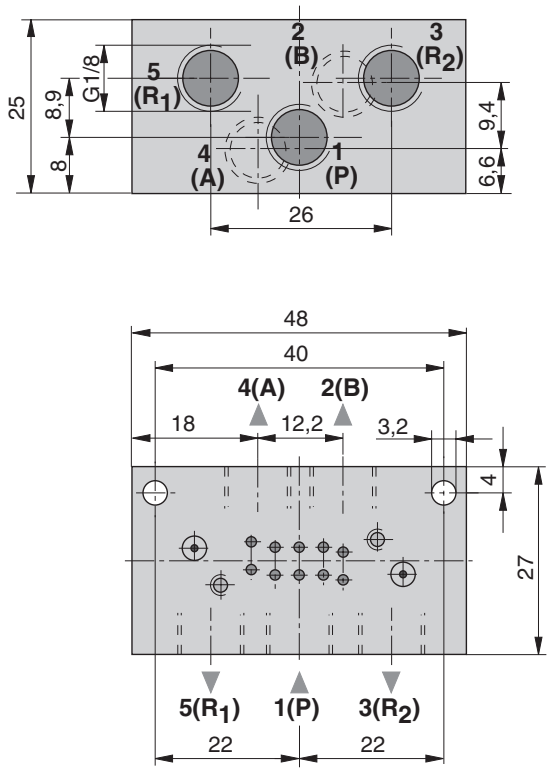
Single base plates for 3/2, 5/2 and 5/3 way solenoid valves NW 3.0

- Single base plate M5 – for valves NW 3.0

Type: S20-30-S



Dimensions (mm) – single base plate G1/8



Order Instruction: Type S20-35-S Order No. KL8018

Single base plates for 5/2 and 5/3 way solenoid valve NW 3.0 and 3.5

- Single base plate G1/8 – for valves NW 3.5

Type: S20-35-S



5/2 and 5/3 way solenoid valve NW 3,5

– Manifold version for individual wire operation, completely assembled

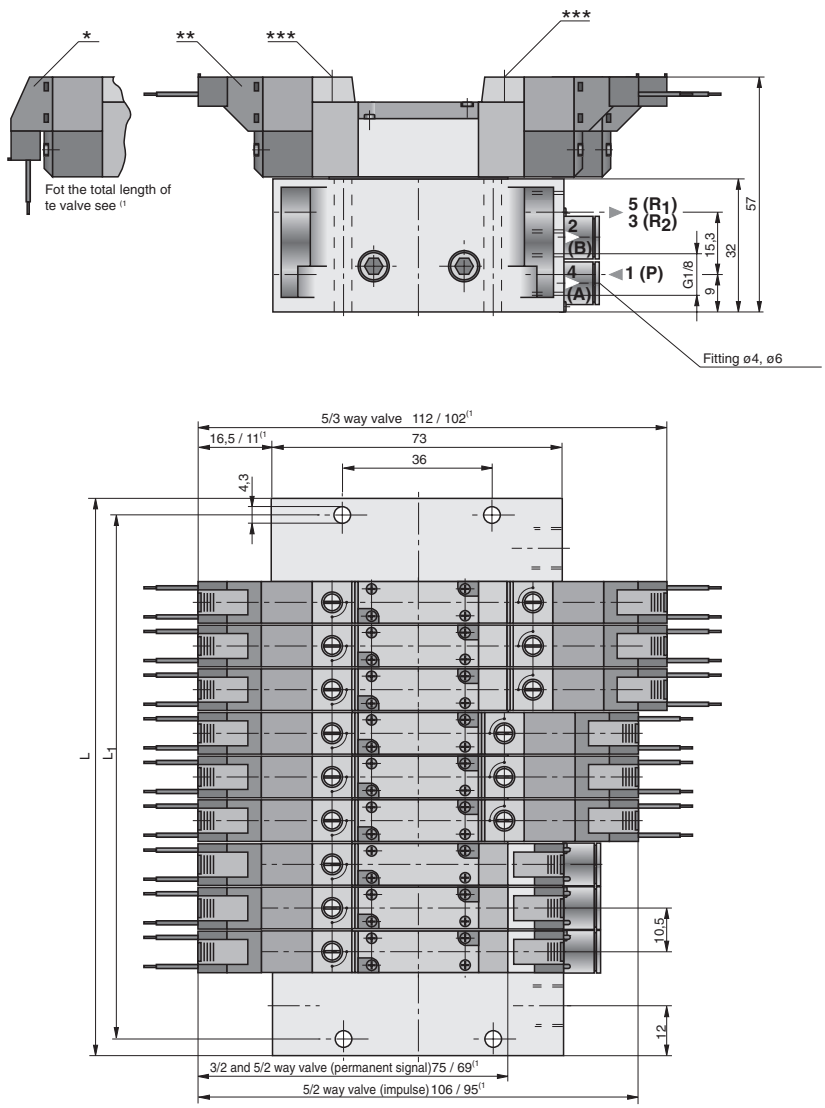
- valve ports on the base plate (fittings)
- with straight electrical connector
- with elbow electrical connector

Type: S20-35F

For order instructions see page 24

For further dimensions of the valve s see pages 13, 14

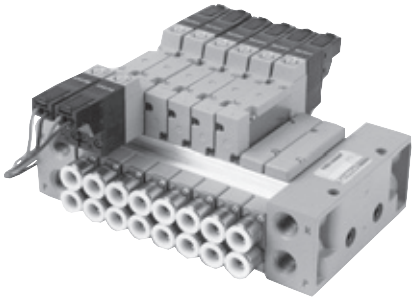
Dimensions (mm) – manifold version, completely assembled



* Version with elbow electrical connector (W)
** Version with straight electrical connector
*** Manual override
(1 Valve length for version with elbow electrical connector

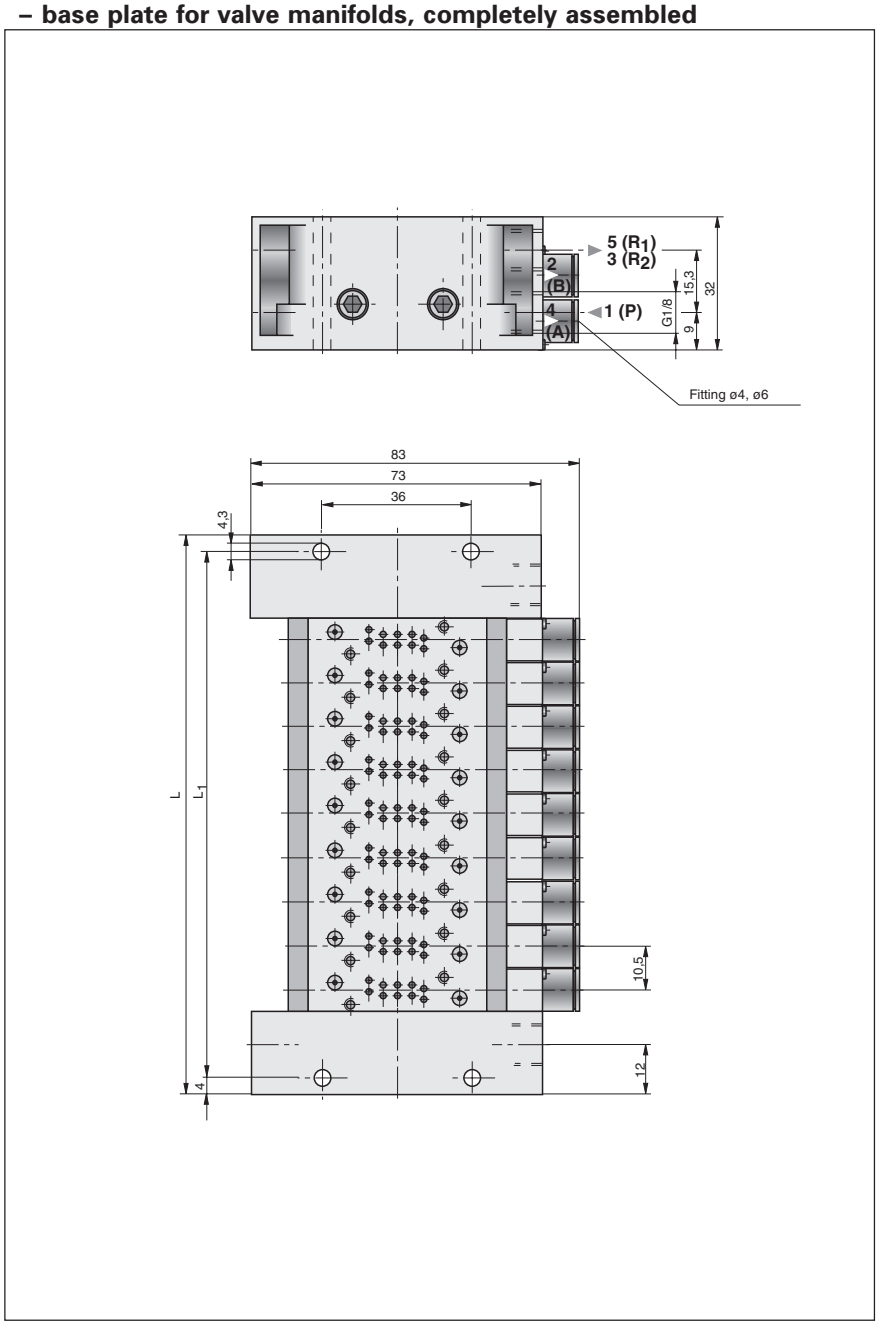
Dimension table (mm)

Number of Valves	Dimension L	L_1	L_2
2	61	53	36
3	71.5	63.5	46.5
4	82	74	57
5	92	84.5	67.5
6	103	95	78
7	113.5	105.5	88.5
8	124	116	99
9	134.5	126.5	109.5
10	145	137	120
11	155.5	147.5	130.5
12	166	158	141



Base Plate for Valve Manifolds

Dimensions (mm)
– base plate for valve manifolds, completely assembled



Base plate for valve manifolds

– **Base plate with fittings for valve ports**
- **for individual wire operation**
- **completely assembled**

- valve ports on the base plate (fittings)
- with straight electrical connector
- with elbow electrical connector

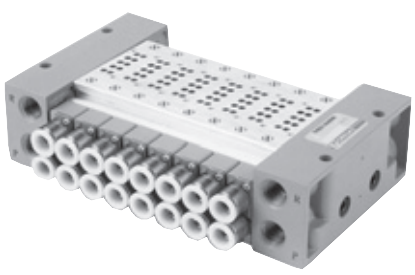
Type: S20-35F-G

For order instructrions see page 24

For further dimensions of the valve s see pages 13, 14

Dimension table (mm)

Number of Valves	Dimension L	L_1	L_2
2	61	53	36
3	71.5	63.5	46.5
4	82	74	57
5	92	84.5	67.5
6	103	95	78
7	113.5	105.5	88.5
8	124	116	99
9	134.5	126.5	109.5
10	145	137	120
11	155.5	147.5	130.5
12	166	158	141



5/2 and 5/3 way solenoid valve NW 3,5

– Manifold version with Sub-D multipole connector, completely assembled

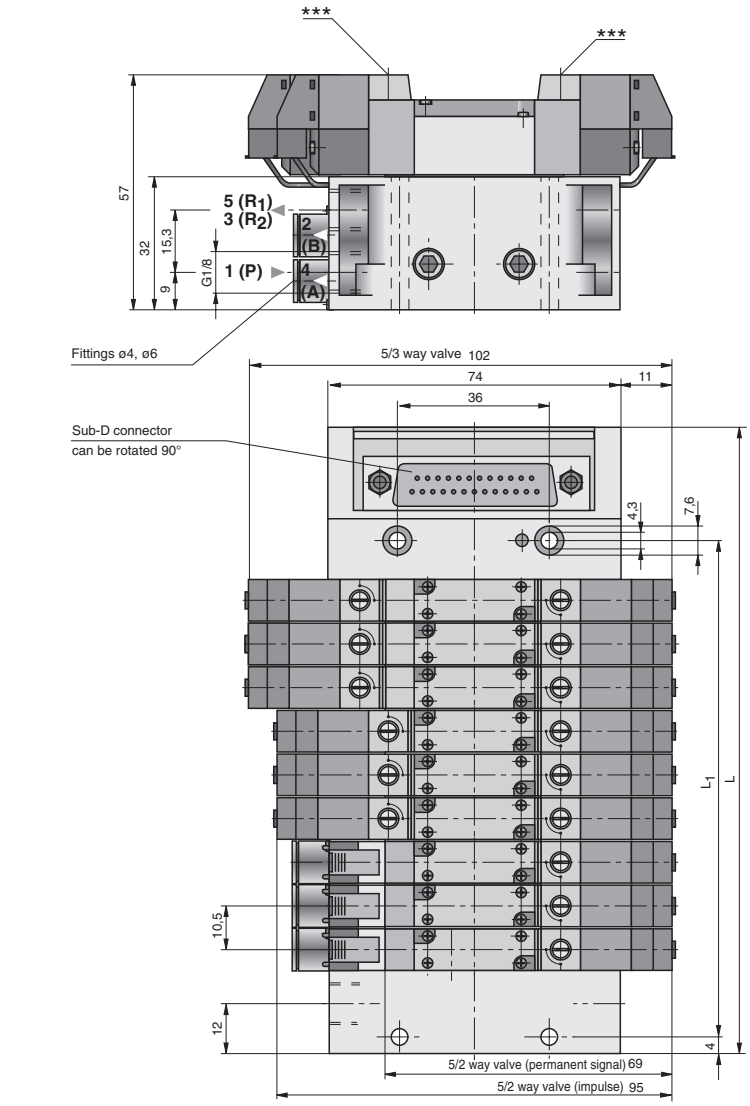
- valve ports on the base plate (fittings)
- with elbow electrical connector

Type: IM-35F-W

For order instructions see page 22

For further dimensions of the valve s see pages 13, 14

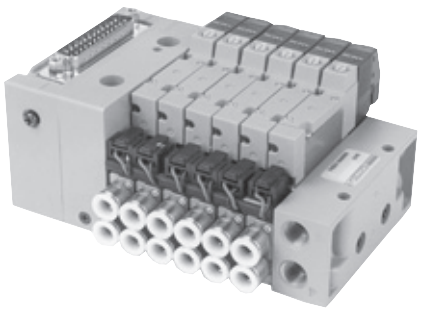
Dimensions (mm) – manifold version, completely assembled



*** Manual override

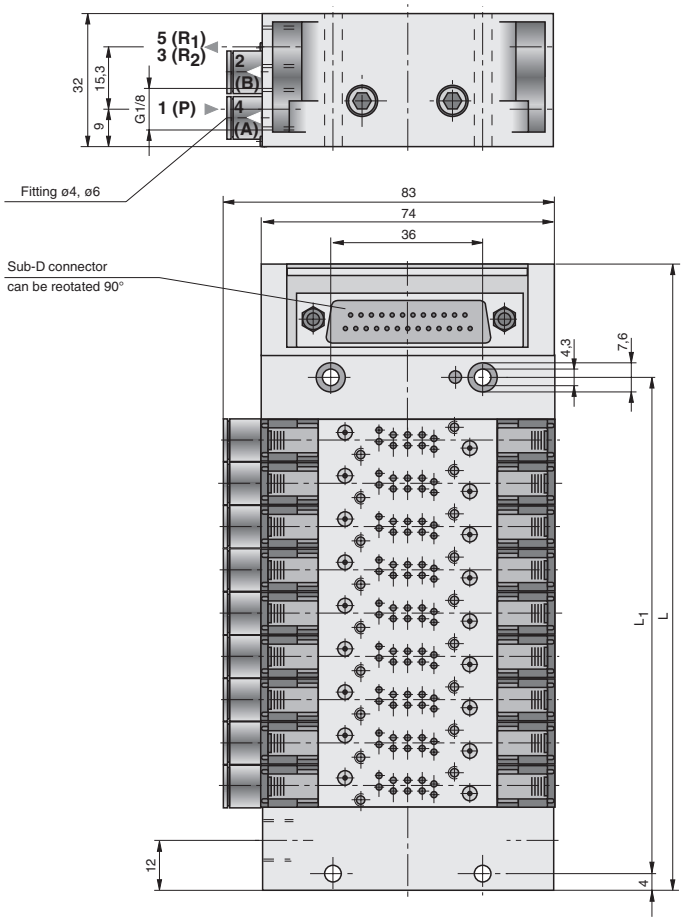
Dimension table (mm)

Number of Valves	Dimension L	L_1	L_2
2	82		46
3	92.5		56.5
4	103		67
5	113.5		77.5
6	124		88
7	134.5		98.5
8	145		109
9	155.5		119.5
10	166		130
11	176.5		140.5
12	187		151



Base Plate for Manifolds

Dimensions (mm) – base plate for manifolds, completely assembled



Base plate for manifolds

– Base plate with fittings for valve ports
- **with Sub-D Multipole connector**
- **completely assembled**

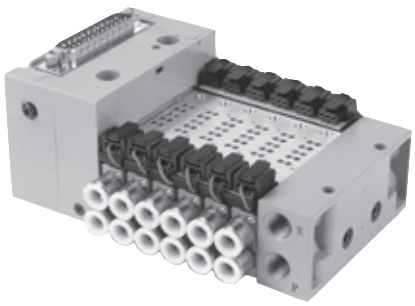
Type: IM-35F-G

For order instructions see 22

For further dimensions of the valve s see pages 13, 14

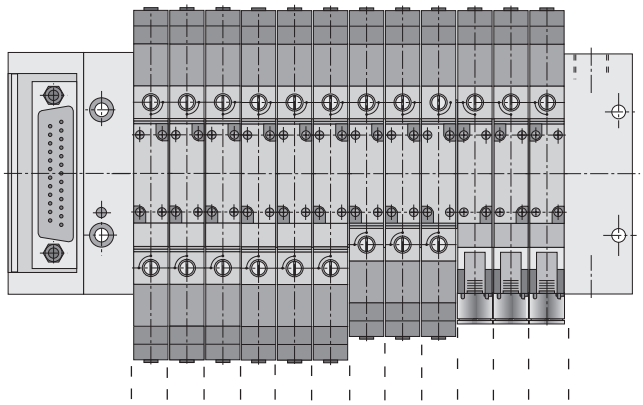
Dimension table (mm)

Number of Valves	Dimension L	L_1	L_2
2	82		46
3	92.5		56.5
4	103		67
5	113.5		77.5
6	124		88
7	134.5		98.5
8	145		109
9	155.5		119.5
10	166		130
11	176.5		140.5
12	187		151



Order Instructions

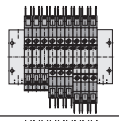
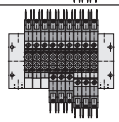
Order example:
Valve island with multipole connector, 12 fold
equipped with:
3 off 5/3 way valves S20 581RFG-35F
3 off 5/3 way valves S20 581RFB-35F
1 off 5/3 way valves S20 581RFE-35F
3 off 5/2 way valves S20 581-35F
3 off 5/2 way valves S20 581RRF-35F

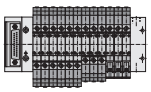
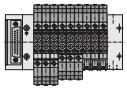


	Order no.							No. of valves		Valve position											
										1	2	3	4	5	6	7	8	9	10	11	12
Order example	P	A	0	5	3	0	2	1	2	G	G	G	B	B	E	J	J	J	G	G	G

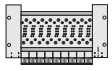
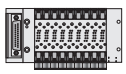
4 6 8 10 12
only equal number of valve positions possible.

For a neutral order key for your order, see page 29

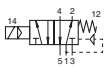
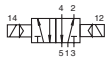
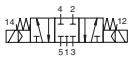
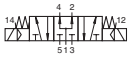
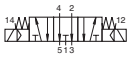
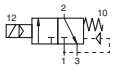
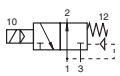
Valve manifolds (fittings for ODø 6mm)*		
PA 05303	Electrical connection: horizontally, fittings on the base plate (2+4), NW 3,5 Type: S20-35F	
PA 05302 (on request)	Electrical connection: horizontally, fittings directly on the valve (2+4), NW 3,0 Type: S20-30	

Valve islands with multipole connector (fittings for ODø 6mm)*		
PA 05306	Valve without ports 2+4 all connections in the base plate Type: IM-35F-W	
PA 05301 (on request)	Valve with fittings (ports 2+4) ports 1, 3, 5 in the base plate, Type: IM-30-W	

* Versions with fittings ODø 4 mm on request

Base plate complete, for valve manifold – without valves, type: S20-35F-G		
PD 44232	For valves without ports 2+4 all connections in the base plate with fittings ODø 6 mm –	
PD 44233 (on request)	with fittings ODø 4 mm	
PD 44231 (on request)	without fittings	
Base plate complete, for valve islands – without valves, type: IM-35F-G		
PD 44235	Multipole version all connections in the base plate with fittings ODø 6 mm	
PD 44236 (on request)	with fittings ODø 4 mm	
PD 44234 (on request)	without fittings	

Please make sure to specify the codes for the correct valve types.

Order code for valves and blanking plates			
Code	Symbol	Description	Data sh.
A	–	Blanking plate on valve position	Page 23
M		5/2 way solenoid valve, permanent signal with spring return (air piloted) Type: S20 581RRF-...	Page 7, 13
J		5/2 way solenoid valve, by impulse Type: S20 581-...	Page 7, 13
G		5/3 way solenoid valve, spring return to middle position, middle position closed Type: S20 581RFG-...	Page 8, 14
B		5/3 way solenoid valve, spring return to middle position, middle position pressurised Type: S20 581RFB-.../..	Page 8, 14
E		5/3 way solenoid valve, spring return to middle position, middle position vented Type: S20 581RFE-...	Page 8, 14
C		3/2 way solenoid valve, by permanent signal with spring return (air piloted), normally closed Type: S20 381RRF-..-NG	Page 7
O		3/2 way solenoid valve, by permanent signal with spring return (air piloted), normally open Type: S20 381RRF-..-NO	Page 7

Number of valves	
04	up to 4 valves
06	5 and 6 valves
08	7 and 8 valves
10	9 and 10 valves
12	11 and 12 valves

Cable with Sub-D Connector

Picture	Cable length	Order Instructions Type	Order No.
	1.0 m	GSK-25-1	KL9012
	3.0 m	GSK-25-3	KL9013
	5.0 m	GSK-25-5	KL9014

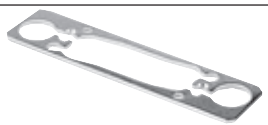
Cable with standard connector (packages of 10 pieces)

Picture	Cable length	Order Instructions Type	Order No.
	0.3 m	GSD-2-03	KL9015
	2.0 m	GSD-2-20	KL9016

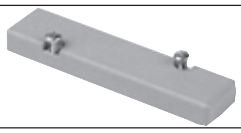
Special gasket (packages of 10 pieces)

Picture	Order Instructions Type	Order No.
	S20-30-D	KL8013

Gasket carrier (packages of 10 pieces)

Picture	Order Instructions Type	Order No.
	S20-30-M	KL8014

Blanking plate with mounting screws (packages of 5 pieces)

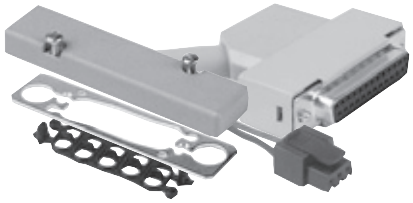
Picture	Order Instructions Type	Order No.
	S20-30-B	KL8015

Valve mounting screws (packages of 100 pieces)

Picture	Order Instructions Order No.
	KL8016

Accessories
– for solenoid valves NW3.0 and 3.5
– for valve manifolds
– for valve islands with multipole connector

- Cable with Sub-D connector
- Cable with standard connector
- Gasket
- Gasket carrier
- Blanking plate with mounting screws
- Valve mounting screws



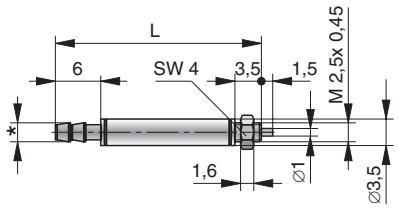
Cylinder ø 2.5 mm single acting

Type: MR3002

Dimension table (mm)

Type	Stroke (mm)	Dimension L
MR3002	5	27.5
	10	34

Dimensions (mm) – type MR3002



* Tubing nipple for tube DI ø 2 mm

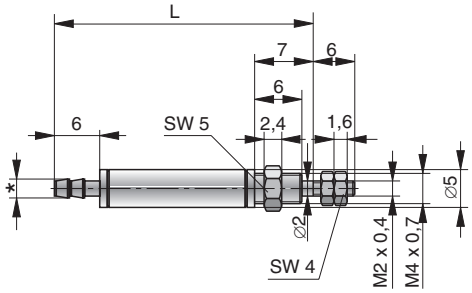
Cylinder ø 4 mm single acting

Type: MR3004

Dimension table (mm)

Type	Stroke (mm)	Dimension L
MR3004	5	34
	10	40
	15	47
	20	52

Dimensions (mm) – type MR3004



* Tubing nipple for tube DI ø 2 mm

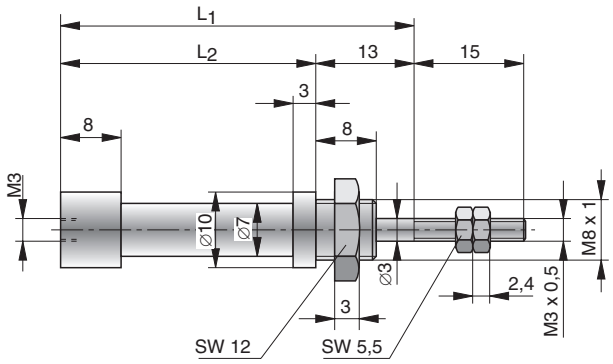
Cylinder ø 6 mm single acting

Type: MR3006

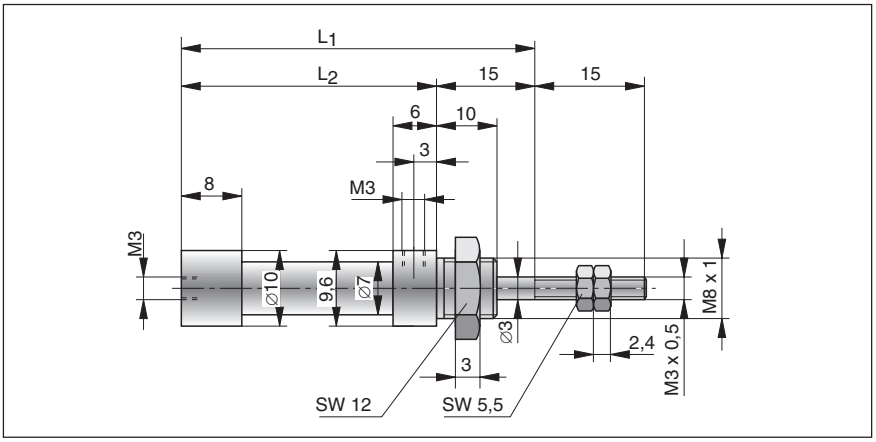
Dimension table (mm)

Type	Stroke (mm)	Dimension L_1	Dimension L_2
MR3006	5	47	34
	10	52	39
	15	58	45
	20	65	52
	25	73	60

Dimensions (mm) – type MR3006



Dimensions (mm) – type MR2006



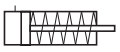
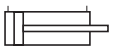
Cylinder ø 6 mm double acting

Type: MR2006

Dimension table (mm)

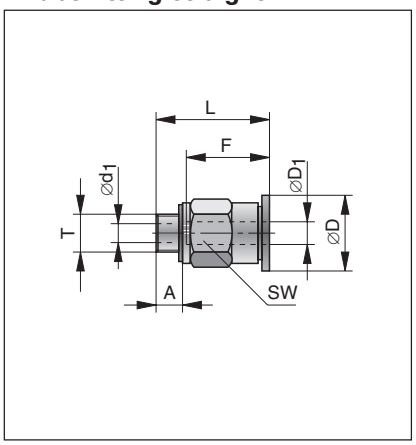
Type	Stroke (mm)	Dimension L_1	L_2
MR2006	5	49	34
	10	54	39
	15	59	44
	20	64	49
	25	69	54

Order Instructions

Series	Symbol	Piston ø (mm)	Stroke (mm)	Order Instructions Type	Order No.
single acting without cushioning		2.5	5	**MR3002/005**	**PA67770-0005**
			10	**MR3002/010**	**PA67770-0010**
		4	5	**MR3004/005**	**PA67780-0005**
			10	**MR3004/010**	**PA67780-0010**
			15	**MR3004/015**	**PA67780-0015**
			20	**MR3004/020**	**PA67780-0020**
		6	5	**MR3006/005**	**PA67790-0005**
			10	**MR3006/010**	**PA67790-0010**
			15	**MR3006/015**	**PA67790-0015**
			20	**MR3006/020**	**PA67790-0020**
			25	**MR3006/025**	**PA67790-0025**
double acting without cushioning		6	5	**MR2006/005**	**PA67800-0005**
			10	**MR2006/010**	**PA67800-0010**
			15	**MR2006/015**	**PA67800-0015**
			20	**MR2006/020**	**PA67800-0020**
			25	**MR2006/025**	**PA67800-0025**

Dimensions, Order Instructions

Tube fitting straight

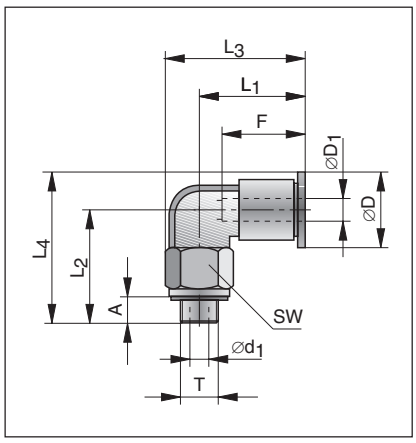


Dimension table (mm) – order instructions and weights

Order Instruction Type	Order No.	A	øD	øD1(*	F	L	T	SW	ød1	Wght. (g)
GS2-M3	**KL5059**	3	8	4	9.5	14	M3x0.5	8	1.5	4

* for tube outer diameter

Elbow tube fitting – short version

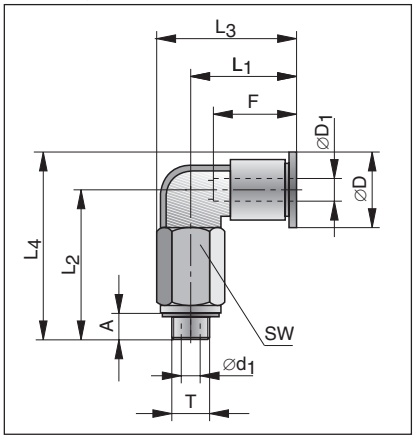


Dimension table (mm) – order instructions and weights

Order Instruction Type	Order No.	A	øD	øD1 (*	F	L1	L2	L3	L4	T	SW	ød1	Wght. (g)
LDS2-M3	**KL5060**	3	8	4	95	12.4	12.5	16.2	16.5	M3x0.5	8	1.5	2.3

* for tube outer diameter

Elbow tube fitting – long version



Dimension table (mm) – order instructions and weights

Order Instruction Type	Order No.	A	øD	øD1 (*	F	L1	L2	L3	L4	T	SW	ød1	Wght. (g)
LDSL2-M3	**KL5061**	3	8	4	9.5	12.4	24.5	16.2	28.5	M3x0.5	8	1.5	10

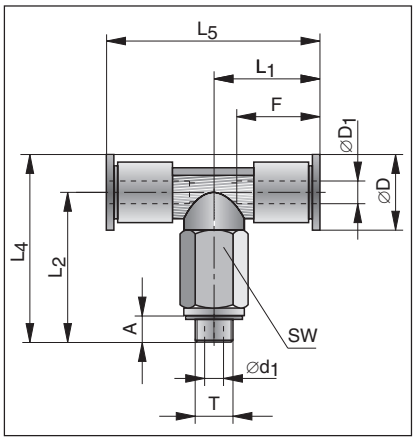
* for tube outer diameter

Dimension table (mm) – order instructions and weights

Order Instruction Type	Order No.	A	øD	øD$_1$ (*	F	L$_1$	L$_2$	L$_4$	L$_5$	T	SW	ød$_1$	Wght. (g)
TDS2-M3	**KL5062**	3	8	4	9.5	12.4	12.5	16.5	24.8	M3x0.5	8	1.5	2.8

* for tube outer diameter

T-connector with thread

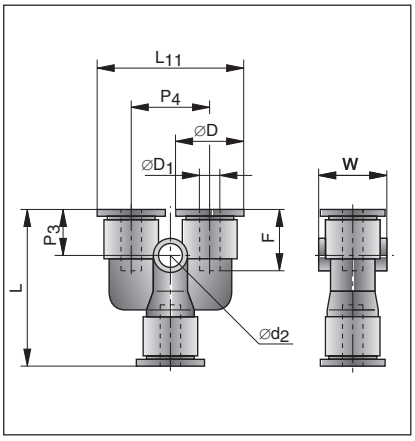


Dimension table (mm) – order instructions and weights

Order Instruction Type	Order No.	øD	øD$_1$ (*	F	L	L$_{11}$	P$_3$	P$_4$	W	ød$_2$	Wght. (g)
YS-4	**KL5058**	8	3	8.5	23.7	15.7	9.5	9	8	3.2	3.4

* for tube outer diameter

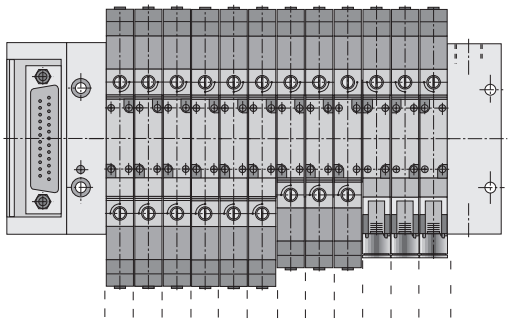
Y-connector



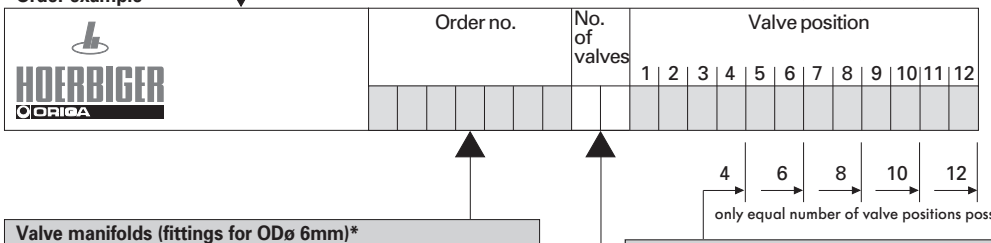
For additional fittings M5 and G1/8, please refer to the catalogue "Pneumatic Accessories" A4P021E

Order Key for your Order

Order example:
Valve island with multipole connector, 12 fold
equipped with:
3 off 5/3 way valves S20 581RFG-35F
3 off 5/3 way valves S20 581RFB-35F
1 off 5/3 way valves S20 581RFE-35F
3 off 5/2 way valves S20 581-35F
3 off 5/2 way valves S20 581RRF-35F



Order example



Valve manifolds (fittings for ODø 6mm)*		
PA 05303	Electrical connection: horizontally, fittings on the base plate (2+4), NW 3,5 Type: S20-35F	
PA 05302 (on request)	Electrical connection: horizontally, fittings directly on the valve (2+4), NW 3,0 Type: S20-30	

Valve islands with multipole connector (fittings for ODø 6mm)*		
PA 05306	Valve without ports 2+4 all connections in the base plate Type: IM-35F-W	
PA 05301 (on request)	Valve with fittings (ports 2+4) ports 1, 3, 5 in the base plate, Type: IM-30-W	

* Versions with fittings ODø 4 mm on request

Base plate complete, for valve manifold – without valves, type: S20-35F-G		
PD 44232	For valves without ports 2+4 all connections in the base plate with fittings ODø 6 mm –	
PD 44233 (on request)	with fittings ODø 4 mm	
PD 44231 (on request)	without fittings	
Base plate complete, for valve islands – without valves, type: IM-35F-G		
PD 44235	Multipole version all connections in the base plate with fittings ODø 6 mm	
PD 44236 (on request)	with fittings ODø 4 mm	
PD 44234 (on request)	without fittings	

Please make sure to specify the codes for the correct valve types.

Order code for valves and blanking plates

Code	Symbol	Description	Data sh.
A	–	Blanking plate on valve position	Page 23
M		5/2 way solenoid valve, permanent signal with spring return (air piloted) Type: S20 581RRF-...	Page 7, 13
J		5/2 way solenoid valve, by impulse Type: S20 581-...	Page 7, 13
G		5/3 way solenoid valve, spring return to middle position, middle position closed Type: S20 581RFG-...	Page 8, 14
B		5/3 way solenoid valve, spring return to middle position, middle position pressurised Type: S20 581RFB-.../..	Page 8, 14
E		5/3 way solenoid valve, spring return to middle position, middle position vented Type: S20 581RFE-...	Page 8, 14
C		3/2 way solenoid valve, by permanent signal with spring return (air piloted), normally closed Type: S20 381RRF-.-NG	Page 7
O		3/2 way solenoid valve, by permanent signal with spring return (air piloted), normally open Type: S20 381RRF-.-NO	Page 7

Number of valves	
04	up to 4 valves
06	5 and 6 valves
08	7 and 8 valves
10	9 and 10 valves
12	11 and 12 valves

Order key for order no.		
Company		
Street		
Postal code / City		
Person responsible	Tel.	Fax
Date		
Signature		

Air Preparation Units



HOERBIGER

ORIGA

Air Preparation Units for Ex-Atmospheres

HOERBIGER-ORIGA Air Preparation Units are also available for use in EX-areas.
The products are according to the ATEX Certification 94/9/EG (ATEX 95) for Pneumatic Components.
You will find further information on the ATEX directives in our brochure A5P060E or on our websites www.airfit.com and www.hoerbiger-origa.com

Order Informations:

Please add the type designation with "-EX" and the Order No. with "EX" (see example)
Type: MFRS-08-EX
Order No. PB40199-029EX

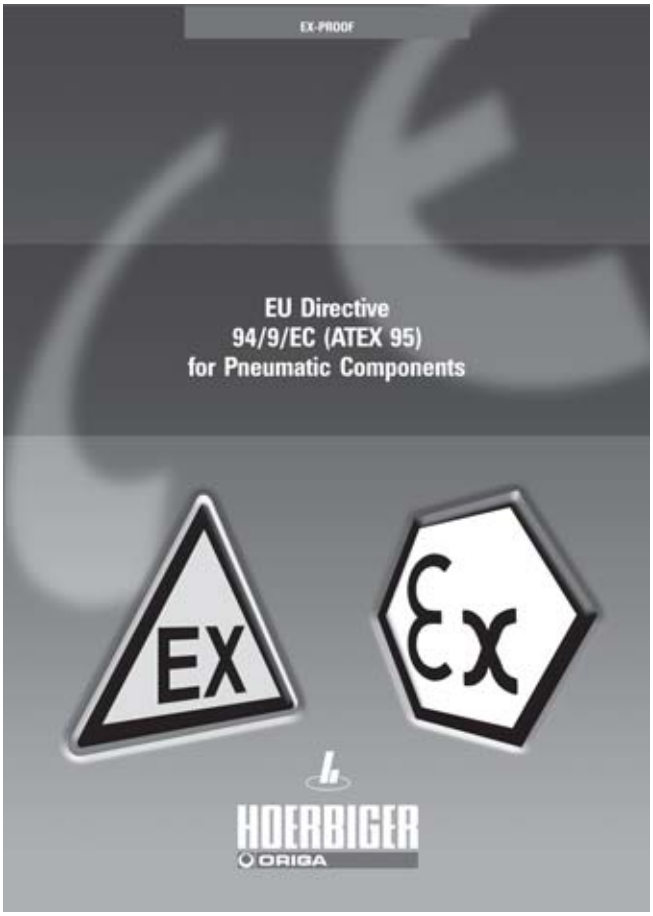


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Series airfit A25, G3/4-G1	5.23.001E
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Series airfit control	5.96.001E
– electronic pressure regulating valve	

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Series airfit swing, G1/8-G3/8	5.12.002E
	5.12.003E
Series airfit comfort, G3/8-G1/2	5.19.002E
	5.19.003E
Series airfit A25, G3/4-G1	5.23.002E
	5.23.003E

Filter-Regulators

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Series airfit swing, G1/8-G3/8	5.12.004E
Series airfit comfort, G3/8-G1/2	5.19.004E
Series airfit A25, G3/4-G1	5.23.004E

Filter-Water-Separator

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Series airfit swing, G1/8-G3/8	5.12.005E
Series airfit comfort, G3/8-G1/2	5.19.005E
Series airfit A25, G3/4-G1	5.23.005E
Series airfit A50, G1 1/2-G2	5.50.003E

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– with through p_1 supply	5.12.009E
– pilot operated pressure regulating valve	5.55.005E
Series airfit comfort, G3/8-G1/2	5.19.006E
– with through p_1 supply	5.19.007E
– pilot operated pressure regulating valve	5.55.006E
– with maximum pressure limiter "airfix"	5.19.008E
Series airfit X, G1/2	5.20.012E
Series airfit A25, G3/4-G1	5.23.006E
Series airfit A50, G1 1/2-G2	5.55.007E

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Series airfit comfort, G3/8-G1/2	5.96.005E

Injection Lubricator Systems oilfit

Combinations	5.90.002E, 5.90.003E, 5.90.004E, 5.90.008E
Single elements	5.90.005E, 5.90.006E

Injection Lubricator Accessories

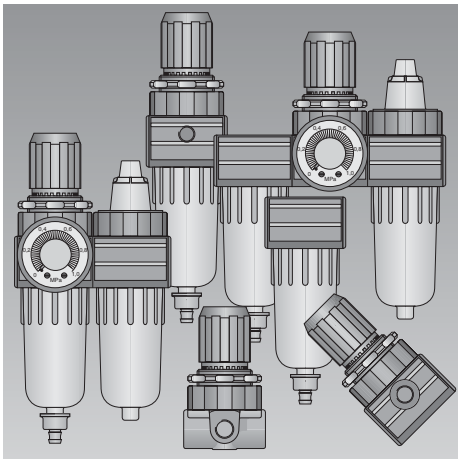
Air flow sensor	5.91.002E
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Connection kit	5.91.004E
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Discharge element	5.91.005E
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Centralized Lubrication System

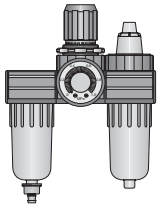
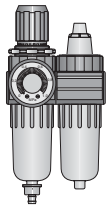
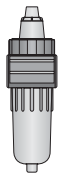
Series airfit A50, G1- G2	5.92.002E

HOERBIGER ORIGA

AIR PREPARATION UNITS
G1/8, G1/4
SERIES
airfit light



HOERBIGER
ORIGA

		Port size	Recommended flow (l/min)*	**Type**	Data Sheet No.
Air preparation units		G1/8	300	**MFRLS-06**	5.09.002E
		G1/4	550	**MFRLS-08**	
		G1/8	300	**MKLS-06**	5.09.003E
		G1/4	550	**MKLS-08**	
Filter-regulator		G1/8	300	**MKS-06**	5.09.004E
		G1/4	550	**MKS-08**	
Filter-water-separator		G1/8	300	**MFS-06**	5.09.005E
		G1/4	550	**MFS-08**	
Pressure regulating valve		G1/8	300	**MRP-06**	5.09.006E
		G1/4	550	**MRP-08**	
Oil mist lubricator		G1/8	300	**MLS-06**	5.09.007E
		G1/4	550	**MLS-08**	

* For max. flows see diagrams on single data sheet.
Max. flow is much higher than the given recommended flow.

A3P071E71EAA00X

The right to introduce technical modifications is reserved

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Air Preparation Unit

G1/8, G1/4

airfit light

MFRLS



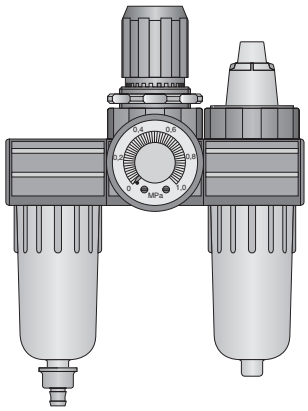
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Air preparation unit comprising filter-water-separator, pressure regulating valve and oil mist lubricator *)	
Type			**MFRLS-06**	**MFRLS-08**
Port size			**G1/8**	**G1/4**
Max. condensate capacity		cm^3	12	
Condensate drainage			Manual or semiautomatic with pressure relief	
Max. oil capacity		cm^3	35	
Oil refilling			Manual	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	
Weight (mass)		kg	0.40	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 10	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 0.5[3] 3 4
Recommended flow [1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**
Maximum flow [2]	Q_{max}	l/min m^3/h	316 19	440 27
Degree of moisture separation at recommended flow	η	%	>90	

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
For further characteristics see 5.09.005E, 5.09.006E, 5.09.007E
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

Air preparation unit comprising:
Filter-water-separator
Pressure regulating valve
Oil mist lubricator
Gauge
Mounting bracket
Mounting ring

- mounting ring included
- recyclable technical polymer
- impact resistant glassfibre reinforced polymer housing (UV resistant) with metal thread inserts
- version with NPTF thread



For single units see 5.09.004E-5.09.008E
For product group list see 5.09.001E

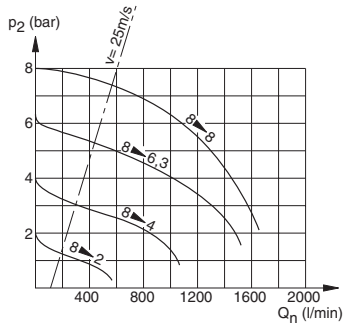
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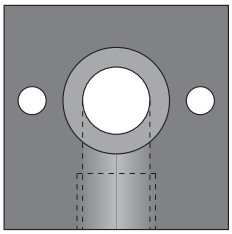
Flow Characteristics

Type: MFRLS-08



Accessories

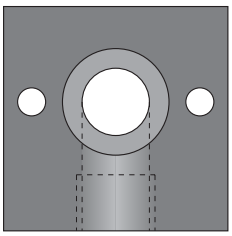
Porting block kit G1/4
to provide unlubricated air
e.g. for air gun
for ruther details see 5.21.002E



Order No.: PL 16031

Accessories

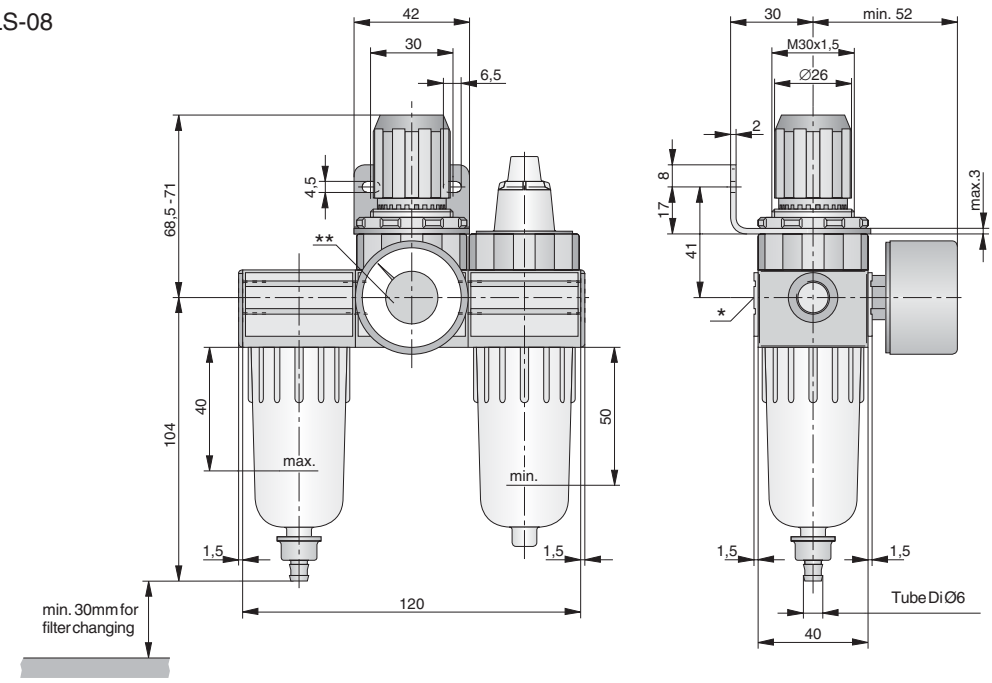
Porting block kit 1/4"-NPTF
to provide unlubricated air
e.g. for air gun
for ruther details see 5.21.002E



Order No.: PL 17766

Dimensions (mm)

Type: MFRLS-08



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**MFRLS-06**	**PB 40849-100**
Basic model	G1/4	**MFRLS-08**	**PB 40949-100**
With filter element 5 µm	G1/8	**MFRLS-06-5**	**PB 40849-110**
With filter element 5 µm	G1/4	**MFRLS-08-5**	**PB 40949-110**
With semiautomatic drainage	G1/8	**MFRLS-06-H**	**PB 40849-104**
With semiautomatic drainage	G1/4	**MFRLS-08-H**	**PB 40949-104**
With bowl guard	G1/8	**MFRLS-06-K**	**PB 40849-107**
With bowl guard	G1/4	**MFRLS-08-K**	**PB 40949-107**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Porting block kit G1/4	**PL 16031**
Porting block kit 1/4"-NPTF	**PL 17766**
Regulator spring for operating pressure 3 bar	**PL 15876**
Regulator spring for operating pressure 4 bar	**PL 16776**
Mounting ring for sheet thickness 6 mm (hole Ø 36.5 - 38 mm)	**PL 16198**
Mounting ring for sheet thickness 8 mm (hole Ø 36.5 - 38 mm)	**PL 15925**

Air Preparation Unit

G1/8, G1/4

airfit light

MKLS



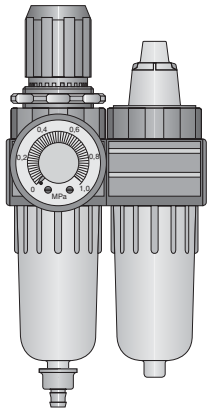
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Air preparation unit comprising filter-regulator and oil mist lubricator *)	
Type			**MKLS-06**	**MKLS-08**
Port size			**G1/8**	**G1/4**
Max. condensate capacity		cm^3	12	
Condensate drainage			Manual or semiautomatic (pressure relief)	
Max. oil capacity		cm^3	35	
Oil refilling			Manual	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	
Weight (mass)		kg	0.32	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 10	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 0.5 [3] 3 4
Recommended flow [1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**
Maximum flow [2]	Q_{max}	l/min m^3/h	400 24	580 35
Degree of moisture separation at recommended flow	η	%	>90	

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
For further characteristics see 5.09.004E, 5.09.007E
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

Air preparation unit comprising:
Filter-regulator
Oil mist lubricator
Gauge
Mounting bracket
Mounting ring

- mounting ring included
- recyclable technical polymer
- impact resistant glassfibre reinforced polymer housing (UV resistant) with metal thread inserts
- version with NPTF thread



For single units see 5.09.004E-5.09.008E
For product group list see 5.09.001E

Data Sheet No. 5.09.003E-1

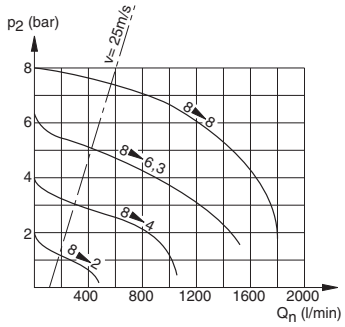
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

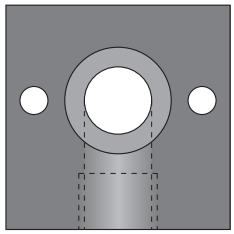
Flow Characteristics

Type: MKLS-08



Accessories

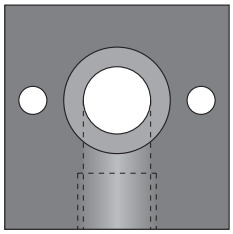
Porting block kit G1/4
to provide unlubricated air
e.g. for air gun
for ruther details see 5.21.002E



Order No.: PL 16031

Accessories

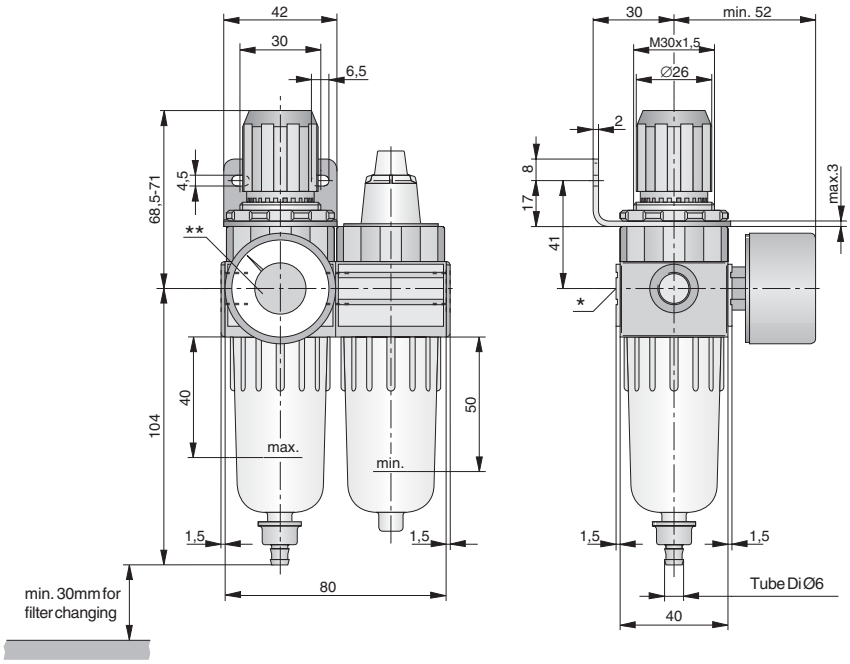
Porting block kit 1/4"-NPTF
to provide unlubricated air
e.g. for air gun
for ruther details see 5.21.002E



Order No.: PL 17766

Dimensions (mm)

Type: MKLS-06/08



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**MKLS-06**	**PB 40449-100**
Basic model	G1/4	**MKLS-08**	**PB 40549-100**
With filter element 5 µm	G1/8	**MKLS-06-5**	**PB 40449-109**
With filter element 5 µm	G1/4	**MKLS-08-5**	**PB 40549-109**
With semiautomatic drainage	G1/8	**MKLS-06-H**	**PB 40449-104**
With semiautomatic drainage	G1/4	**MKLS-08-H**	**PB 40549-104**
With bowl guard	G1/8	**MKLS-06-K**	**PB 40449-107**
With bowl guard	G1/4	**MKLS-08-K**	**PB 40549-107**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Porting block kit G1/4	**PL 16031**
Porting block kit 1/4"-NPTF	**PL 17766**
Regulator spring for operating pressure 3 bar	**PL 15876**
Regulator spring for operating pressure 4 bar	**PL 16776**
Mounting ring for sheet thickness 6 mm (hole Ø 36.5 - 38 mm)	**PL 16198**
Mounting ring for sheet thickness 8 mm (hole Ø 36.5 - 38 mm)	**PL 15925**

Filter-Regulator

G1/8, G1/4

Pressure regulating valve with filter-water-separator

airfit light

MKS



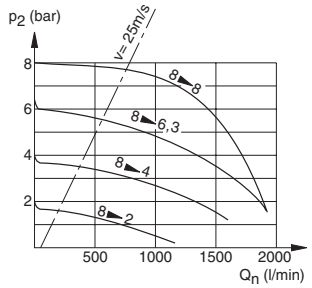
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Cyclone system with filter element, combined with piston-type pressure regulating valve (spring loaded) with secondary pressure relief	
Type			**MKS-06**	**MKS-08**
Port size			**G1/8**	**G1/4**
Pore size of filter element		µm	30 or 5	
Max. condensate capacity		cm^3	12	
Condensate drainage			Manual or semiautomatic (pressure relief)	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	
Weight (mass)		kg	0.12	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 10	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 0.5 [3] 3 4
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	1.6 0.6	
Recommended flow [1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**
Maximum flow [2]	Q_{max}	l/min m^3/h	550 33	550 33
Degree of moisture separation at recommended flow	η	%	>90	

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range

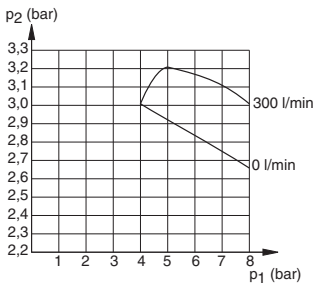
Flow Characteristics

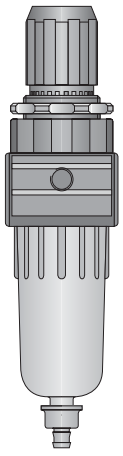
Type: MKS-08



Outlet Pressure Variation with Fluctuation Inlet Pressure

Type: MKS-08





Filter -regulator with secondary pressure relief, hand wheel lockable

- mounting ring included
- recyclable technical polymer
- impact resistant glassfibre reinforced polymer housing (UV resistant) with metal thread inserts
- version with NPTF thread

For single units see 5.09.004E-5.09.008E
For air preparation units see 5.09.002E, 5.09.003E
For product group list see 5.09.001E

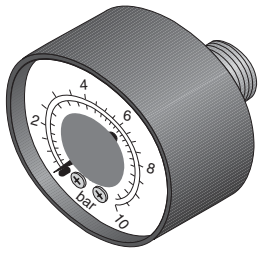
Data Sheet No. 5.09.004E-1

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Accessories

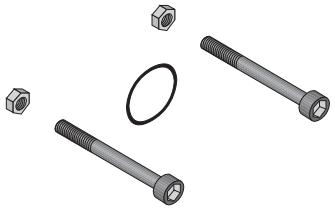
Gauge
Ø 40, 0-10 bar, G1/8



Order No.: KZ 8891

Accessories

Coupling kit



Order No.: PL 16030

Accessories

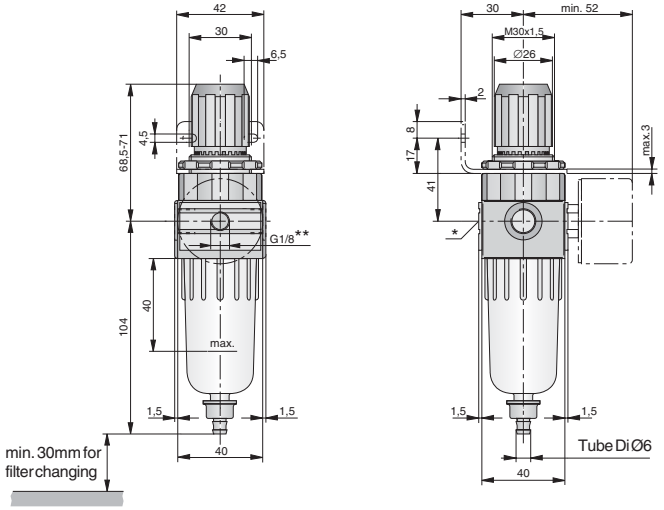
Mounting bracket



Order No.: PL 15531

Dimensions (mm)

Type: MKS-06/08



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**MKS-06**	**PB 40049-100**
Basic model	G1/4	**MKS-08**	**PB 40149-100**
With filter element 5 µm	G1/8	**MKS-06-5**	**PB 40049-116**
With filter element 5 µm	G1/4	**MKS-08-5**	**PB 40149-116**
With semiautomatic drainage	G1/8	**MKS-06-H**	**PB 40049-101**
With semiautomatic drainage	G1/4	**MKS-08-H**	**PB 40149-101**
With bowl guard	G1/8	**MKS-06-K**	**PB 40049-107**
With bowl guard	G1/4	**MKS-08-K**	**PB 40149-107**

For the version with NPTF thread, complete the Order No. as follows:
PB...49-... → PB...49-N...

Accessories

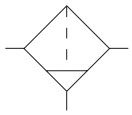
Description	Order No.
Gauge, Ø 40, 0-10 bar, G1/8	**KZ 8891 (airfit light design)** **KZ 8813 (neutral)**
Mounting bracket	**PL 15531**
Coupling kit	**PL 16030**
Coupling kit for 2 units to MKS/MRP (e.g. FF and FC)	**PL 16755**
Porting block kit G1/4	**PL 16031**
Porting block kit 1/4"-NPTF	**PL 17766**
Regulator spring for operating pressure 3 bar	**PL 15876**
Regulator spring for operating pressure 4 bar	**PL 16776**
Mounting ring for sheet thickness 6 mm (hole Ø 36.5 - 38 mm)	**PL 16198**
Mounting ring for sheet thickness 8 mm (hole Ø 36.5 - 38 mm)	**PL 15925**

Filter-Water-Separator

G1/8, G1/4

airfit light

MFS

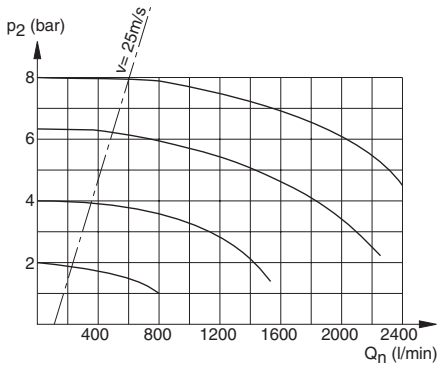


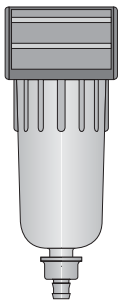
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Cyclone system and filter element	
Type			**MFS-06**	**MFS-08**
Port size			**G1/8**	**G1/4**
Pore size of filter element		µm	30 or 5	
Max. condensate capacity		cm^3	12	
Condensate drainage			Manual or semiautomatic (pressure relief)	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	
Weight (mass)		kg	0.1	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 10	
Recommended flow [1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**
Maximum flow [2]	Q_{max}	l/min m^3/h	1085 65	1830 110
Degree of moisture separation at recommended flow	η	%	>90	

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

Flow Characteristics





Filter-water-separator with cyclon system and filter element.

- recyclable technical polymer
- impact resistant glassfibre reinforced polymer housing (UV resistant) with metal thread inserts
- version with NPTF thread

For single units see 5.09.004E-5.09.008E
For air preparation units see 5.09.002E, 5.09.003E
For product group list see 5.09.001E

Data Sheet No. 5.09.005E-1

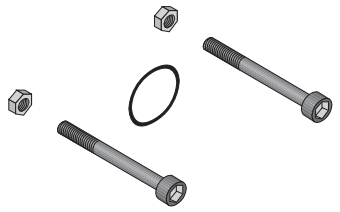
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Accessories

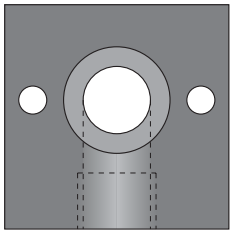
Coupling kit



Order No.: PL 16030

Accessories

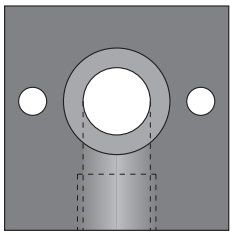
Porting block kit G1/4
to provide unlubricated air
e.g. for air gun
for ruther details see 5.21.002E



Order No.: PL 16031

Accessories

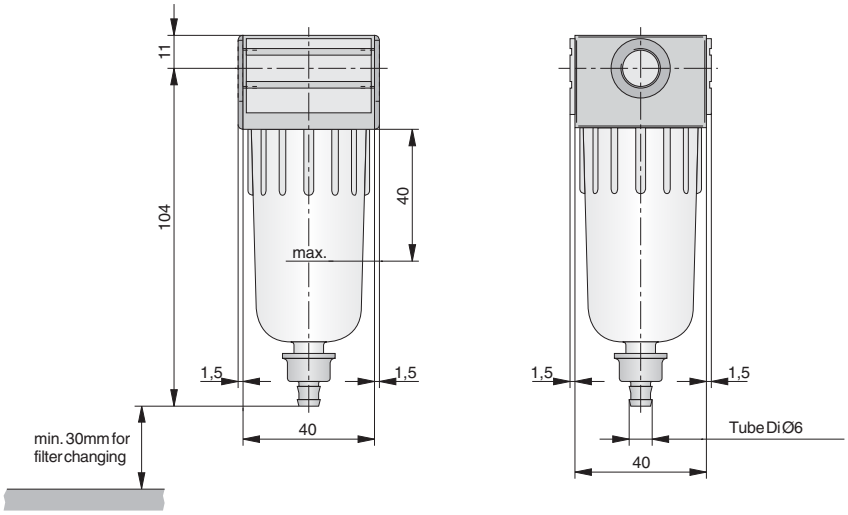
Porting block kit 1/4"-NPTF
to provide unlubricated air
e.g. for air gun
for ruther details see 5.21.002E



Order No.: PL 17766

Dimensions (mm)

Type: MFS-06/08



Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**MFS-06**	**PB 40649-100**
Basic model	G1/4	**MFS-08**	**PB 40749-100**
With filter element 5 µm	G1/8	**MFS-06-5**	**PB 40649-116**
With filter element 5 µm	G1/4	**MFS-08-5**	**PB 40749-116**
With semiautomatic drainage	G1/8	**MFS-06-H**	**PB 40649-101**
With semiautomatic drainage	G1/4	**MFS-08-H**	**PB 40749-101**
With bowl guard	G1/8	**MFS-06-K**	**PB 40649-107**
With bowl guard	G1/4	**MFS-08-K**	**PB 40749-107**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

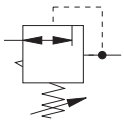
Description	Order No.
Mounting kit	**PL 16859**
Coupling kit	**PL 16030**
Coupling kit for 2 units to MKS/MRP (e.g. MFS and FF)	**PL 16755**
Coupling kit for FF+FC, MFS + FF, MFS + MLS	**PL 16669**
Porting block kit G1/4	**PL 16031**
Porting block kit 1/4"-NPTF	**PL 17766**

Pressure Regulating Valve

G1/8, G1/4

airfit light

MRP



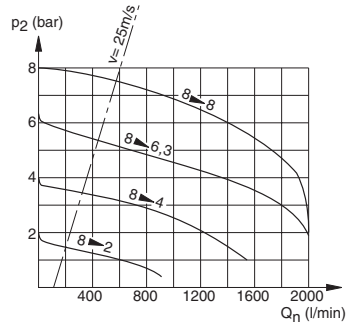
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Piston-type pressure regulating valve (spring loaded) with secondary pressure relief	
Type			**MRP-06**	**MRP-08**
Port size			**G1/8**	**G1/4**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50	
Weight (mass)		kg	0.11	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 10	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 0.5 [3] 3 4
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	1.6 0.6	
Recommended flow [1]	Q_n	l/min m³/h	**300** **18**	**550** **33**
Maximum flow [2]	Q_{max}	l/min m³/h	530 32	770 46

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range

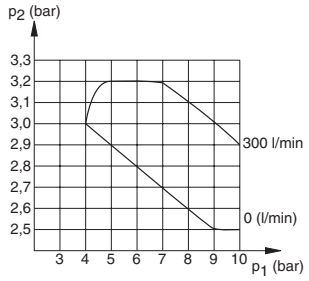
Flow Characteristics

Type: MRP-08

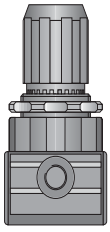


Outlet Pressure Variation with Fluctuacting Inlet Pressure

Type: MRP-08



Piston-type pressure regulating valve (spring loaded) with secondary pressure relief, handwheel lockable



- mounting ring included
- recyclable technical polymer
- impact resistant glassfibre reinforced polymer housing (UV resistant) with metal thread inserts
- version with NPTF thread

For single units see 5.09.004E-5.09.008E
For air preparation units see 5.09.002E, 5.09.003E
For product group list see 5.09.001E

Data Sheet No. 5.09.006E-1

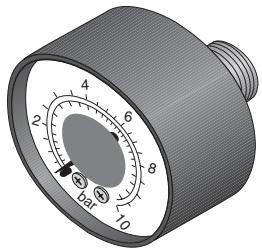
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Accessories

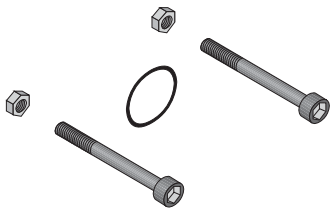
Gauge
Ø 40, 0-10 bar, G1/8



Order No.: KZ 8891

Accessories

Coupling kit



Order No.: PL 16030

Accessories

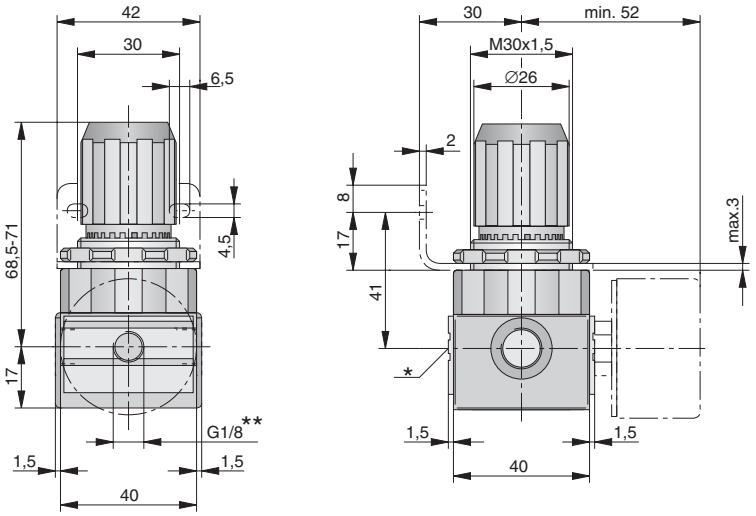
Mounting bracket



Order No.: PL 15531

Dimensions (mm)

Type: MRP-06/08



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**MRP-06**	**PB 21749-500**
Basic model	G1/4	**MRP-08**	**PB 21649-500**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

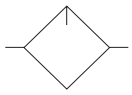
Description	Order No.
Gauge, Ø 40, 0-10 bar, G1/8	**KZ 8891 (airfit light design)** **KZ 8813 (neutral)**
Mounting bracket	**PL 15531**
Coupling kit	**PL 16030**
Coupling kit for 2 units to MKS/MRP (e.g. MFS and FF)	**PL 16755**
Porting block kit G1/4	**PL 16031**
Regulator spring for operating pressure 3 bar	**PL 15876**
Regulator spring for operating pressure 4 bar	**PL 16776**
Mounting ring for sheet thickness 6 mm (hole Ø 36.5 - 38 mm)	**PL 16198**
Mounting ring for sheet thickness 8 mm (hole Ø 36.5 - 38 mm)	**PL 15925**

Oil Mist Lubricator

G1/8, G1/4

airfit light

MLS



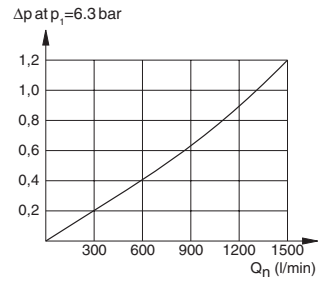
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Oil mist lubricator with flow compensation	
Type			**MLS-06**	**MLS-08**
Port size			**G1/8**	**G1/4**
Oil/air ratio			Degressive (number of drops per minute remains constant)	
Max. oil capacity		cm^3	35	
Oil refilling *)			Manual	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	
Weight (mass)		kg	0.09	
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	0 10	
Recommended flow [1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**
Maximum flow [2]	Q_{max}	l/min m^3/h	865 52	1400 84
Best operating range for constant oil/air ratio	Q_n	m^3/h	See diagram "min. operating conditons"	

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

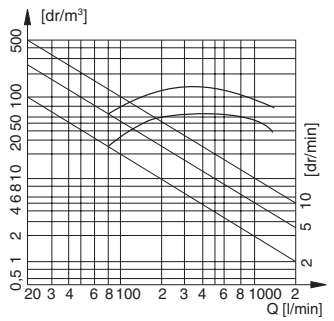
Flow Characteristics

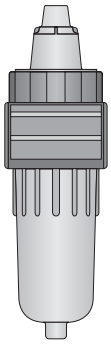
Type: MLS-08



Oil/Air Ratio

Type: MLS-08





Oil mist lubricator with flow compensation (number of drops per minute is constant)

- recyclable technical polymer
- impact resistant glassfibre reinforced polymer housing (UV resistant) with metal thread inserts
- version with NPTF thread

For single units see 5.09.004E-5.09.008E
For air preparation units see 5.09.002E, 5.09.003E
For product group list see 5.09.001E

HOERBIGER ORIGA

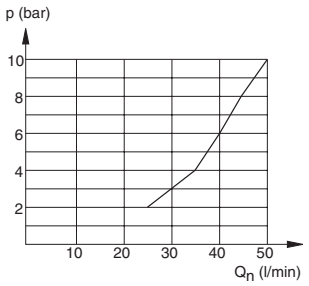
Data Sheet No. 5.09.007E-1

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The right to introduce technical modifications is reserved

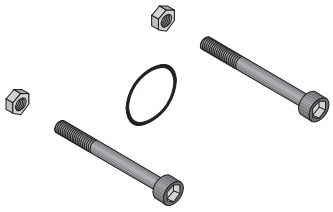
Min. Operating Conditions

Type: MLS-08



Accessories

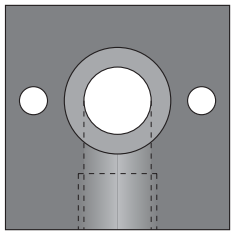
Coupling kit



Order No.: PL 16030

Accessories

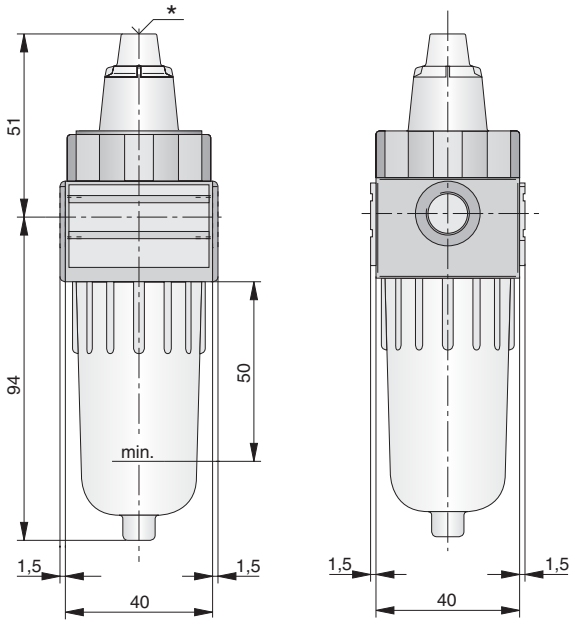
Porting block kit G1/4
for ruther details see 5.21.002E



Order No.: PL 16031

Dimensions (mm)

Type: MLS-06/08



* Oil adjusting screw

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**MLS-06**	**PB 40249-100**
Basic model	G1/4	**MLS-08**	**PB 40349-100**
With bowl guard	G1/8	**MLS-06-K**	**PB 40249-107**
With bowl guard	G1/4	**MLS-08-K**	**PB 40349-107**

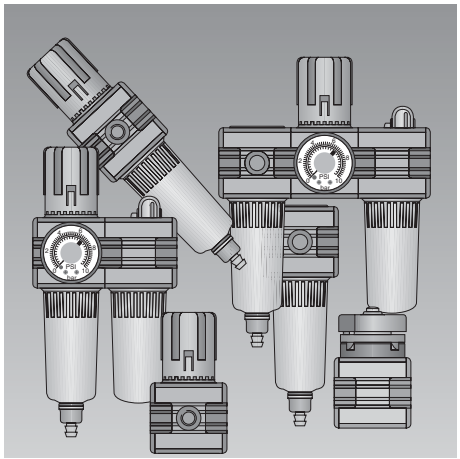
For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit	**PL 16859**
Coupling kit	**PL 16030**
Coupling kit for 2 units to MKS/MRP (e.g. MFS and MLS)	**PL 16755**
Coupling kit for FF+FC, MFS + FF, MFS + MLS	**PL 16669**
Porting block kit G1/4	**PL 16031**
Porting block kit 1/4"-NPTF	**PL 17766**

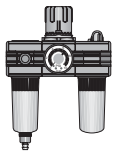
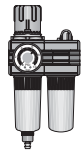
AIR PREPARATION UNITS
G1/8-G3/8
SERIES

airfit Swing



HOERBIGER

ORIGA

		Port size	Recommended flow (l/min)	Maximum flow (l/min)	**Type**	Data Sheet No.
Air preparation units		G1/8	300	610	**SFRL-1/8**	5.12.002E
		G1/4	550	825	**SFRL-1/4**	
		G3/8	680*	790	**SFRL-3/8**	
		G1/8	300	560	**SKL-1/8**	5.12.003E
		G1/4	550	890	**SKL-1/4**	
		G3/8	680*	790	**SKL-3/8**	
Filter-regulator		G1/8	300	790	**SK-1/8**	5.12.004E
		G1/4	550	2280	**SK-1/4**	
		G3/8	850	3200	**SK-3/8**	
Filter-water-separator		G1/8	300	990	**SF-1/8**	5.12.005E
		G1/4	550	1440	**SF-1/4**	
		G3/8	850	1520	**SF-3/8**	
Pressure regulating valve		G1/8	300	790	**SR-1/8**	5.12.006E
		G1/4	550	1050	**SR-1/4**	
		G3/8	850	3300	**SR-3/8**	
Oil mist lubricator		G1/8	300	1260	**SL-1/8**	5.12.007E
		G1/4	550	1830	**SL-1/4**	
		G3/8	850	1880	**SL-3/8**	
Economy lubricator		G1/4	250	500	**SEL-1/4-3**	5.12.008E
		G1/4	450	800	**SEL-1/4-4**	
		G1/4	550	1000	**SEL-1/4-5**	
3/2 Way shut-off valve		G1/4	550	2480	**SDV-1/4 SX**	5.21.015E
		G3/8	850	2600	**SDV-3/8 SX**	
Start valve		G1/4	550	1600	**SDA-1/4**	5.95.015E

* at 6.3 bar and 20 m/s, recommended because of size of unit.

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The right to introduce technical modifications is reserved

Table of Contents see 5.00.001E

Air Preparation Unit

G1/8, G1/4, G3/8

airfit Swing

SFRL



Special solutions
(e.g. temperature, pressure, medium ...) on request

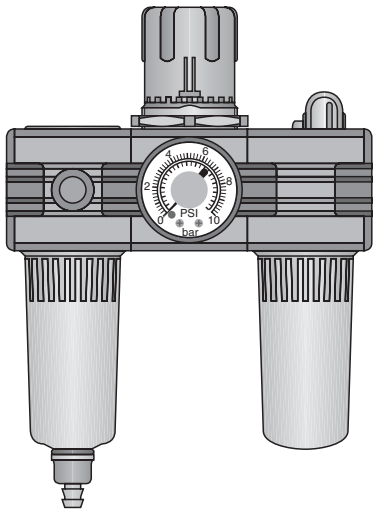
Characteristics			Pressures quoted as gauge pressure		
System			Air preparation unit comprising filter-water-separator, diaphragm-type pressure regulating valve and oil mist lubricator *)		
Type			**SFRL-1/8**	**SFRL-1/4**	**SFRL-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Max. condensate capacity		cm^3	22		
Pore size of filter element		µm	30 or 5		
Condensate drainage			Manual or semiautomatic (pressure relief)		
Max. oil capacity		cm^3	45		
Oil refilling			Manual - also during operation		
Installation			Vertical		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar		(further temperatures on request)
Weight (mass)		kg	0.95		
Pneumatic Characteristic[1]					
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16		
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 4	0.5[3] 15
Recommended flow[2]	Q_n	l/min m^3/h	**300** **18**	**550** **33**	**680** **41**
Maximum flow[4]	Q_{max}	l/min m^3/h	610 37	825 50	790 47

[1] For further characteristics see 5.12.005E, 5.12,006E, 5.12.007E
[2] at 6 bar and 25 m/s (at 6.3 bar and 20 m/s, recommended for G3/8)
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[4] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

Air preparation unit comprising:

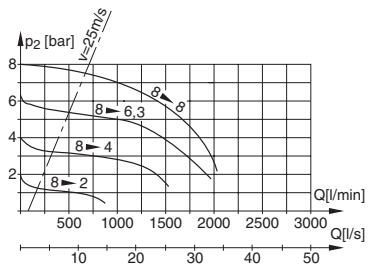
Filter-water-separator
Diaphragm-type pressure regulating valve
Oil mist lubricator
Gauge
Mounting bracket

- easily adaptable to customer's choice of colour and private labelling
- quick, easy filter change with new Quick-Snap system
- filter contains no non-ferrous metal
- inlet pressure and volume compensation
- version with NPTF thread



Flow Characteristics

Type: SFRL-1/4



For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.12.002E-1

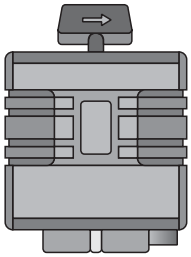
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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Accessories

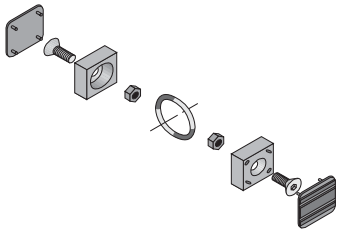
3/2 Way shut-off valve
Type: SDV-1/4X



Order No.: PB 46749-001

Accessories

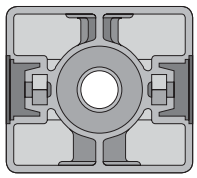
Coupling kit



Order No.: PL 16959

Accessories

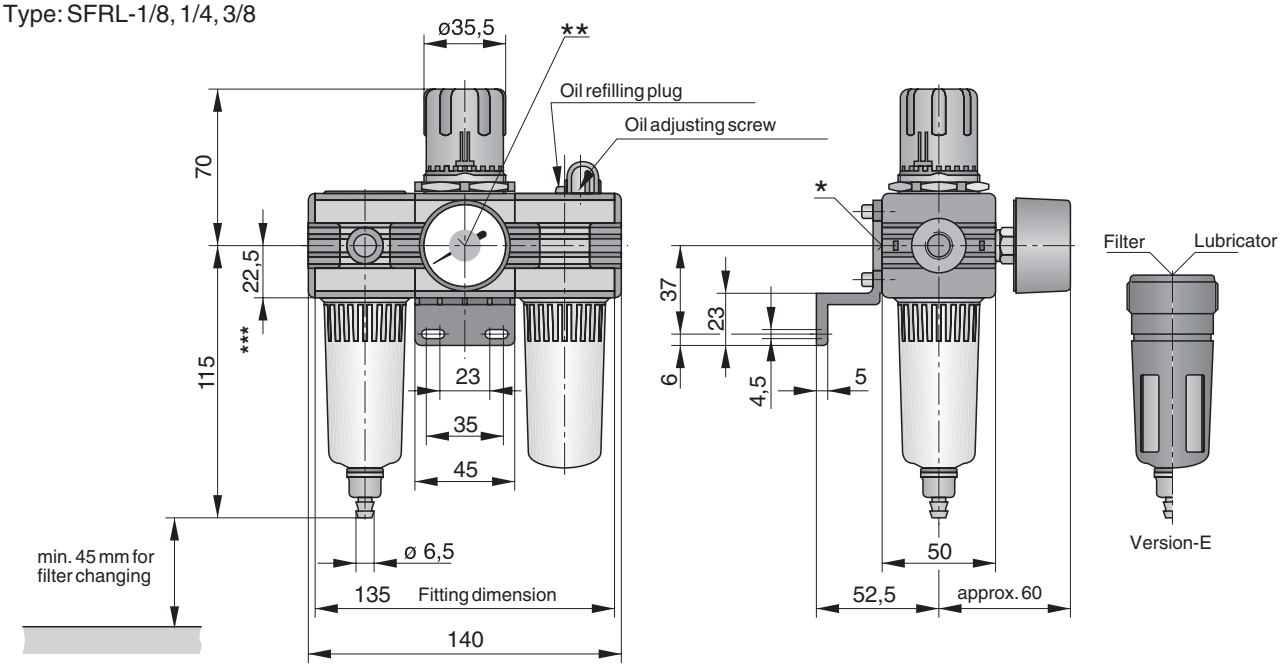
Porting block kit, Type: SX
to provide unlubricated air.
For further details see 5.21.010E



Order No.: PL 16969

Dimensions (mm)

Type: SFRL-1/8, 1/4, 3/8



* On delivery the plug screw is not assembled.
** Two opposite gaugeports G1/8
*** 130 mm on Version with automatic drainage

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SFRL-1/8**	**PB 48049-000**
Basic model	G1/4	**SFRL-1/4**	**PB 48149-000**
Basic model	G3/8	**SFRL-3/8**	**PB 48249-000**
With semiautomatic drainage	G1/8	**SFRL-1/8-H**	**PB 48049-001**
With semiautomatic drainage	G1/4	**SFRL-1/4-H**	**PB 48149-001**
With semiautomatic drainage	G3/8	**SFRL-3/8-H**	**PB 48249-001**
With automatic drainage	G1/8	**SFRL-1/8-A**	**PB 48049-002**
With automatic drainage	G1/4	**SFRL-1/4-A**	**PB 48149-002**
With automatic drainage	G3/8	**SFRL-3/8-A**	**PB 48249-002**
With metal bowl [1])	G1/8	**SFRL-1/8-D**	**PB 48049-003**
With metal bowl [1])	G1/4	**SFRL-1/4-D**	**PB 48149-003**
With metal bowl [1])	G3/8	**SFRL-3/8-D**	**PB 48249-003**
With metal bowl (sight glass) [1])	G1/8	**SFRL-1/8-E**	**PB 48049-004**
With metal bowl (sight glass) [1])	G1/4	**SFRL-1/4-E**	**PB 48149-004**
With metal bowl (sight glass) [1])	G3/8	**SFRL-3/8-E**	**PB 48249-004**

[1]) **Versions with metal bowl and automatic drainage on request.**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge , Ø 40, 0-10 bar, G1/8	**KZ 8891**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
Regulator spring for operating pressure 1.5 bar	**PL 16549**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 6 bar	**PL 17807**
Regulator spring for operating pressure 10 bar	**PL 17312**
Regulator spring for operating pressure 16 bar *)	**PL 16320**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-101**
3/2 Way shut-off valve SDV-3/8XS, 3-fold lockable, spool type	**PB 46849-101**
Coupling kit	**PL 16959**
Solvent resistant sight glass	**PL 07233**
Bowl guard kit	**PL 16970-00**
Bell disassembly tool	**PL 17638**

*) For conversion to 16 bar version, order adjusting screw PL 18975 as well.

Air Preparation Unit

G1/8, G1/4, G3/8

airfit Swing

SKL



Special solutions
(e.g. temperature, pressure, medium ...) on request

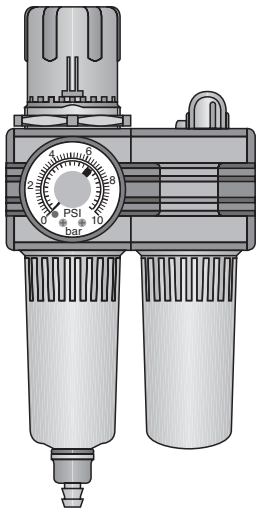
Characteristics			Pressures quoted as gauge pressure		
System			Air preparation unit comprising filter-regulator and oil mist lubricator *)		
Type			**SKL-1/8**	**SKL-1/4**	**SKL-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Max. condensate capacity		cm^3	22		
Pore size of filter element		µm	30 or 5		
Condensate drainage			Manual or semiautomatic (pressure relief)		
Max. oil capacity		cm^3	45		
Oil refilling			Manual - also during operation		
Installation			Vertical		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)	
Weight (mass)		kg	0.75		
Pneumatic Characteristic[1]					
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16		
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 4	0.5[3] 15
Recommended flow[2]	Q_n	l/min m^3/h	**300** **18**	**550** **33**	**680** **41**
Maximum flow[4]	Q_{max}	l/min m^3/h	560 34	890 53	790 47

[1] For further characteristics see 5.12.004E, 5.12,007E
[2] at 6 bar and 25 m/s (at 6.3 bar and 20 m/s, recommended for G3/8)
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[4] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

Air preparation unit comprising:

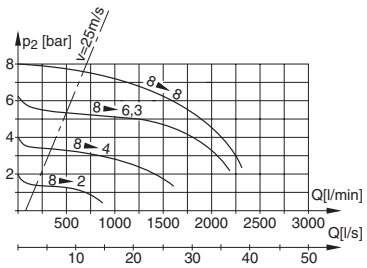
Filter-regulator
Oil mist lubricator
Gauge
Mounting bracket

- easily adaptable to customer's choice of colour and private labelling
- quick, easy filter change with new Quick-Snap system
- filter contains no non-ferrous metal
- inlet pressure and volume compensation
- version with NPTF thread



Flow Characteristics

Type: SKL-1/4



For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.12.003E-1

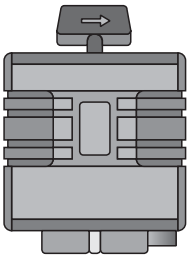
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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Accessories

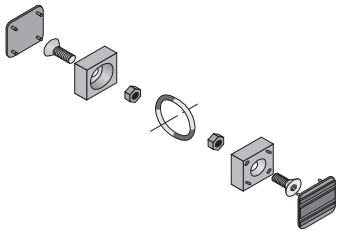
3/2 Way shut-off valve
Type: SDV-1/4X



Order No.: PB 46749-001

Accessories

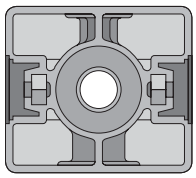
Coupling kit



Order No.: PL 16959

Accessories

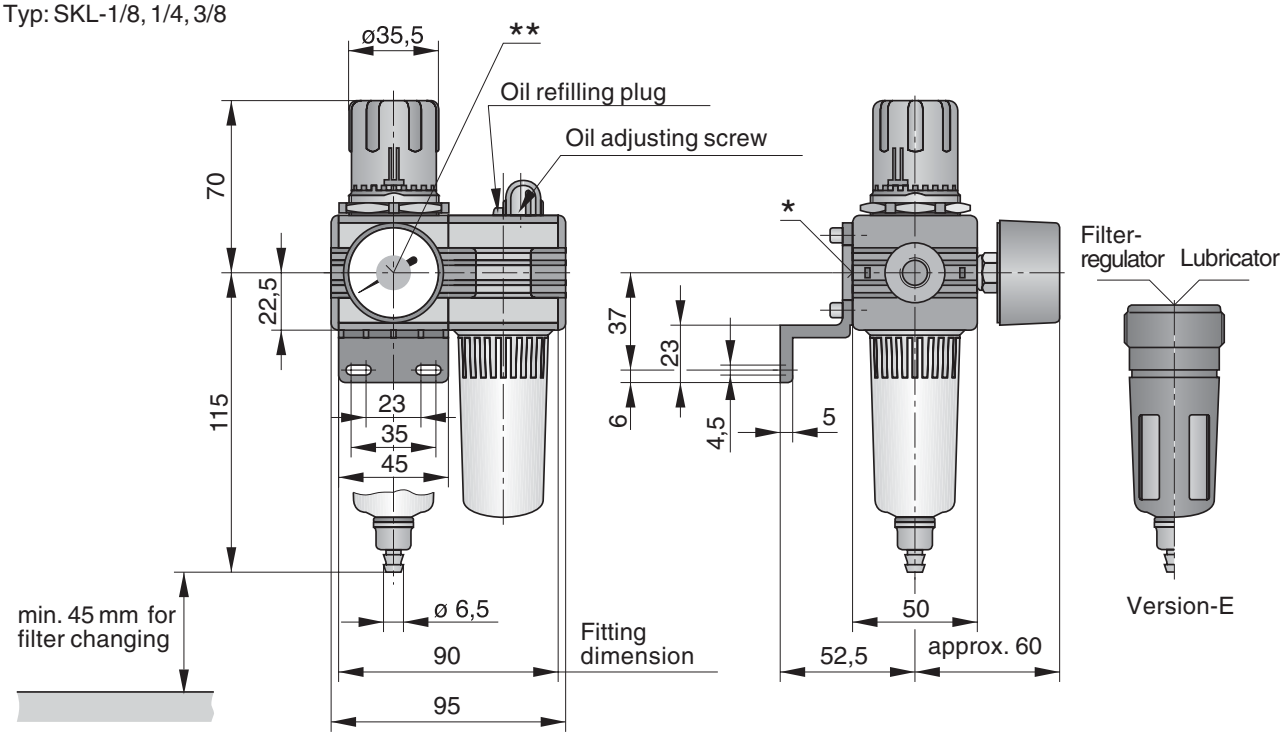
Porting block kit, Type: SX
to provide unlubricated air.
For further details see 5.21.010E



Order No.: PL 16969

Abmessungen (mm)

Typ: SKL-1/8, 1/4, 3/8



* On delivery the plug screw is not assembled.
** wo opposite gauge ports G1/8
*** 130 mm on Version with automatic drainage

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SKL-1/8**	**PB 48349-000**
Basic model	G1/4	**SKL-1/4**	**PB 48449-000**
Basic model	G3/8	**SKL-3/8**	**PB 48549-000**
With semiautomatic drainage	G1/8	**SKL-1/8-H**	**PB 48349-001**
With semiautomatic drainage	G1/4	**SKL-1/4-H**	**PB 48449-001**
With semiautomatic drainage	G3/8	**SKL-3/8-H**	**PB 48549-001**
With automatic drainage	G1/8	**SKL-1/8-A**	**PB 48349-002**
With automatic drainage	G1/4	**SKL-1/4-A**	**PB 48449-002**
With automatic drainage	G3/8	**SKL-3/8-A**	**PB 48549-002**
With metal bowl [1])	G1/8	**SKL-1/8-D**	**PB 48349-003**
With metal bowl [1])	G1/4	**SKL-1/4-D**	**PB 48449-003**
With metal bowl [1])	G3/8	**SKL-3/8-D**	**PB 48549-003**
With metal bowl (sight glass) [1])	G1/8	**SKL-1/8-E**	**PB 48349-004**
With metal bowl (sight glass) [1])	G1/4	**SKL-1/4-E**	**PB 48449-004**
With metal bowl (sight glass) [1])	G3/8	**SKL-3/8-E**	**PB 48549-004**

[1]) **Versions with metal bowl and automatic drainage on request**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge , Ø 40, 0-10 bar, G1/8	**KZ 8891**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
Regulator spring for operating pressure 1.5 bar	**PL 16549**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 6 bar	**PL 17807**
Regulator spring for operating pressure 10 bar	**PL 17312**
Regulator spring for operating pressure 16 bar *)	**PL 16320**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-101**
3/2 Way shut-off valve SDV-3/8XS, 3-fold lockable, spool type	**PB 46849-101**
Coupling kit	**PL 16959**
Solvent resistant sight glass	**PL 07233**
Bowl guard kit	**PL 16970-00**
Bell disassembly tool	**PL 17638**

*) For conversion to 16 bar version, order adjusting screw PL 18975 as well.

Filter-Regulator

G1/8, G1/4, G3/8

Pressure regulating valve with filter-water-separator

airfit Swing

SK



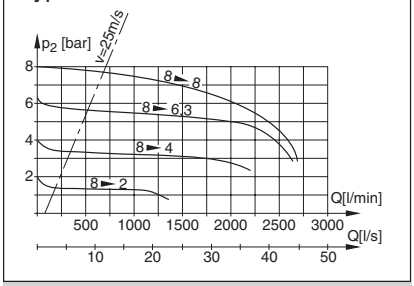
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure		
System			Cyclone system and filter element, combined with diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief		
Type			**SK-1/8**	**SK-1/4**	**SK-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Pore size of filter element		µm	30, 5		
Max. condensate capacity		cm^3	22		
Condensate drainage			Manual or semiautomatic (pressure relief)		
Installation			Vertical		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)	
Weight (mass)		kg	0.35		
Pneumatic Characteristic					
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16		
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 4	0.5[2] 15
Min. pressure difference	p_1-p_2	bar	0.2		
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.5 0.4		
Recommended flow[1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**	**850** **51**
Maximum flow[3]	Q_{max}	l/min m^3/h	790 47	2280 137	3200 192
Degree of moisture separation at recommended flow	η	%	95	95	90

[1] at p_2 = 6 bar and 25 m/s
[2] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[3] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

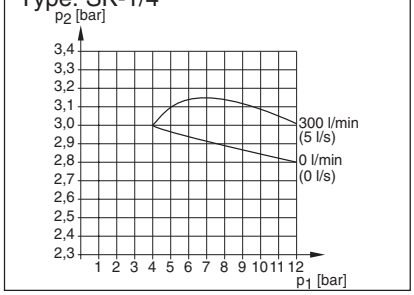
Flow Characteristics

Type: SK-1/4



Outlet Pressure Variation with Fluctuation Inlet Pressure

Type: SK-1/4

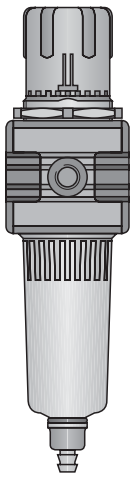


Accessories

Gauge
Ø40 mm, 0-10 bar, G1/8



Order No.: KZ 8891



Filter -regulator with secondary pressure relief, inlet pressure and volume compensation hand wheel lockable

- easily adaptable to customer's choice of colour and private labelling
- quick, easy filter change with new Quick-Snap system
- inlet pressure and volume compensation
- version with NPTF thread

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

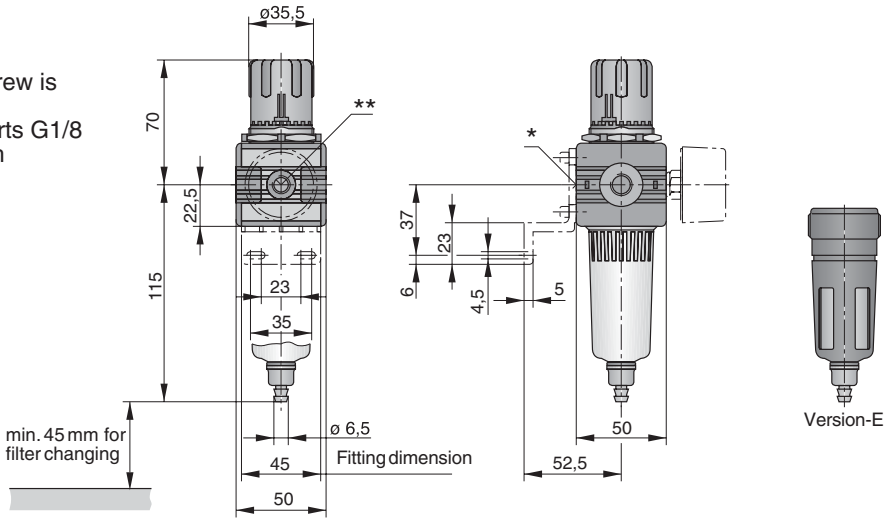
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The right to introduce technical modifications is reserved

Dimensions (mm)

Type: SK-1/8, 1/4, 3/8

* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8
*** 130 mm on Version with automatic drainage



Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SK-1/8**	**PB 45649-000**
Basic model	G1/4	**SK-1/4**	**PB 45749-000**
Basic model	G3/8	**SK-3/8**	**PB 45849-000**
With filter element 5 µm	G1/8	**SK-1/8-5**	**PB 45649-016**
With filter element 5 µm	G1/4	**SK-1/4-5**	**PB 45749-016**
With filter element 5 µm	G3/8	**SK-3/8-5**	**PB 45849-016**
With semiautomatic drainage	G1/8	**SK-1/8-H**	**PB 45649-001**
With semiautomatic drainage	G1/4	**SK-1/4-H**	**PB 45749-001**
With semiautomatic drainage	G3/8	**SK-3/8-H**	**PB 45849-001**
With automatic drainage	G1/8	**SK-1/8-A**	**PB 45649-002**
With automatic drainage	G1/4	**SK-1/4-A**	**PB 45749-002**
With automatic drainage	G3/8	**SK-3/8-A**	**PB 45849-002**
With metal bowl [1])	G1/8	**SK-1/8-D**	**PB 45649-031**
With metal bowl [1])	G1/4	**SK-1/4-D**	**PB 45749-031**
With metal bowl [1])	G3/8	**SK-3/8-D**	**PB 45849-031**
With metal bowl (sight glass) [1])	G1/8	**SK-1/8-E**	**PB 45649-004**
With metal bowl (sight glass) [1])	G1/4	**SK-1/4-E**	**PB 45749-004**
With metal bowl (sight glass) [1])	G3/8	**SK-3/8-E**	**PB 45849-004**

[1]) **Versions with metal bowl and automatic drainage on request**
For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge, Ø 40, 0-10 bar, G1/8	**KZ 8891**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
Regulator spring for operating pressure 1.5 bar	**PL 16549**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 6 bar	**PL 17807**
Regulator spring for operating pressure 10 bar	**PL 17312**
Regulator spring for operating pressure 16 bar *)	**PL 16320**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-101**
3/2 Way shut-off valve SDV-3/8XS, 3-fold lockable, spool type	**PB 46849-101**
Coupling kit	**PL 16959**
Solvent resistant sight glass	**PL 07233**
Bowl guard kit	**PL 16970-00**
Bell disassembly tool	**PL 17638**

*) For conversion to 16 bar version, order adjusting screw PL 18975 as well.

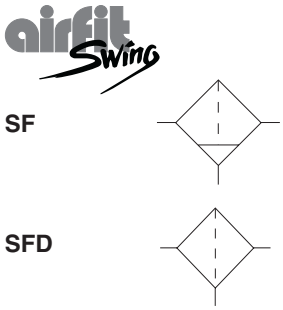
Filter-Water-Separator, Dust Filter

G1/8, G1/4, G3/8

Characteristics			Pressures quoted as gauge pressure					
System			Cyclone system and filter element					
Type			SF-1/8	SFD-1/8	SF-1/4	SFD-1/4	SF-3/8	SFD-3/8
Port size			G1/8		G1/4		G3/8	
Pore size of filter element		µm	Standard: 30 5 and 1(Type SFD)					
Max. condensate capacity		cm^3	22					
Condensate drainage			Manual or semiautomatic with pressure relief (Type SF)					
Installation			Vertical					
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)				
Weight (mass)		kg	0.25					
Pneumatic Characteristic								
Operating pressure range	p_{min} p_{max}	bar bar	0 16					
Recommended flow[1]	Q_n	l/min m^3/h	**300** **18**		**550** **33**		**850** **51**	
Maximum flow[2]	Q_{max}	l/min m^3/h	990 59	1030 62	1440 86	1340 80	1520 91	1620 97
Degree of moisture separation at recommended flow	η	%	95	*	95	*	90	*

[1] at p = 6 bar and 25 m/s
[2] at p_1 = 6.3 bar, Δp = 1 bar

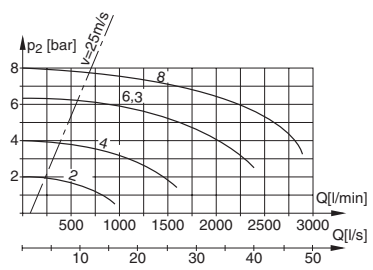
*only solid particles > 99 % related to 1µm



Special solutions
(e.g. temperature, pressure, medium ...) on request

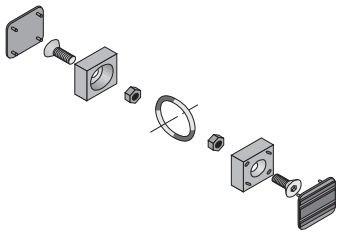
Flow Characteristics

Type: SF-1/4

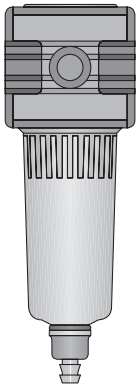


Accessories

Coupling kit
for filter-regulator-lubricator combination



Order No.: PL 16959



SF:
Filter-water-separator with cyclone system and filter element.

SFD:
For compressed air systems with air dryers.

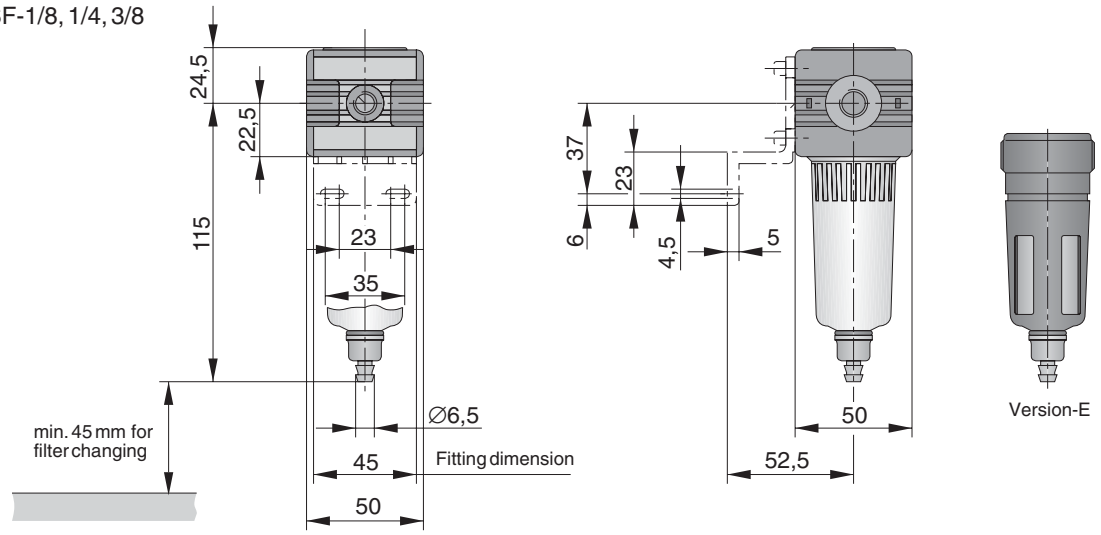
- easily adaptable to customer's choice of colour and private labelling
- quick, easy filter change with new Quick-Snap system
- no nonferrous metal
- version with NPTF thread

For single units see 5.12.004E-5.12.007E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

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The right to introduce technical modifications is reserved

Dimensions (mm)

Type: SF-1/8, 1/4, 3/8



*130 mm on Version with automatic drainage

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SF-1/8**	**PB 45049-000**
Basic model	G1/4	**SF-1/4**	**PB 45149-000**
Basic model	G3/8	**SF-3/8**	**PB 45249-000**
With filter element 5 µm	G1/8	**SF-1/8-5**	**PB 45049-016**
With filter element 5 µm	G1/4	**SF-1/4-5**	**PB 45149-016**
With filter element 5 µm	G3/8	**SF-3/8-5**	**PB 45249-016**
With filter element 5 µm	G1/8	**SFD-1/8-1**	**PB 45049-070**
With filter element 5 µm	G1/4	**SFD-1/4-1**	**PB 45149-070**
With filter element 5 µm	G3/8	**SFD-3/8-1**	**PB 45249-070**
With semiautomatic drainage	G1/8	**SF-1/8-H**	**PB 45049-001**
With semiautomatic drainage	G1/4	**SF-1/4-H**	**PB 45149-001**
With semiautomatic drainage	G3/8	**SF-3/8-H**	**PB 45249-001**
With automatic drainage	G1/8	**SF-1/8-A**	**PB 45049-002**
With automatic drainage	G1/4	**SF-1/4-A**	**PB 45149-002**
With automatic drainage	G3/8	**SF-3/8-A**	**PB 45249-002**
With metal bowl [1])	G1/8	**SF-1/8-D**	**PB 45049-003**
With metal bowl [1])	G1/4	**SF-1/4-D**	**PB 45149-003**
With metal bowl [1])	G3/8	**SF-3/8-D**	**PB 45249-003**
With metal bowl (sight glass) [1])	G1/8	**SF-1/8-E**	**PB 45049-004**
With metal bowl (sight glass) [1])	G1/4	**SF-1/4-E**	**PB 45149-004**
With metal bowl (sight glass)[1])	G3/8	**SF-3/8-E**	**PB 45249-004**

[1]) **Version with metal bowl and automatic drainage on request**
For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

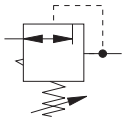
Description	Order No.
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Bowl guard kit	**PL 16970-00**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-101**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46849-101**

Pressure Regulating Valve

G1/8, G1/4, G3/8

airfit Swing

SR



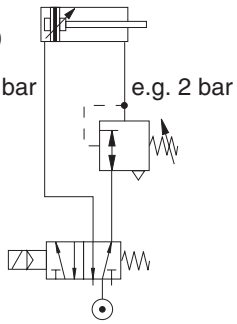
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure		
System			Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief		
Type			**SR-1/8**	**SR-1/4**	**SR-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Installation			In any position		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)	
Weight (mass)		kg	0.3		
Pneumatic Characteristic					
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16		
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 8	on request	0.5 4	0.5[2)] 15
Min. pressure difference	p_1-p_2	bar	0.2		
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.5 0.4		
Recommended flow[1)]	Q_n	l/min m³/h	**300** **18**	**550** **33**	**850** **51**
Maximum flow[3)]	Q_{max}	l/min m³/h	790 47	2850 171	3300 198

1) at p_2 = 6 bar and 25 m/s
2) By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
3) at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

Pressure Regulator with High Relief Capacity

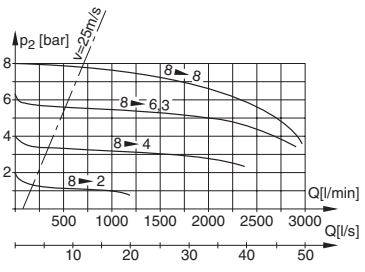
Type: SR-1/4SO
PB 45449-030



Example:
To regulate the pressure in the direction of the stroke, install the regulator as shown in the diagram. The pressure relief uses the full cross-section of the valve, allowing the cylinder to travel at full speed.

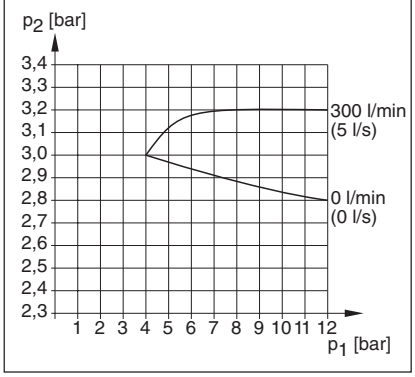
Flow Characteristics

Type: SR-1/4

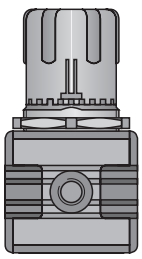


Outlet Pressure Variation with Fluctuacting Inlet Pressure

Type: SR-1/4



Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief, inlet pressure and volume compensation handwheel lockable



- easily adaptable to customer's choice of colour and private labelling
- inlet pressure and volume compensation
- version with NPTF thread
- specially developed roller diaphragm

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

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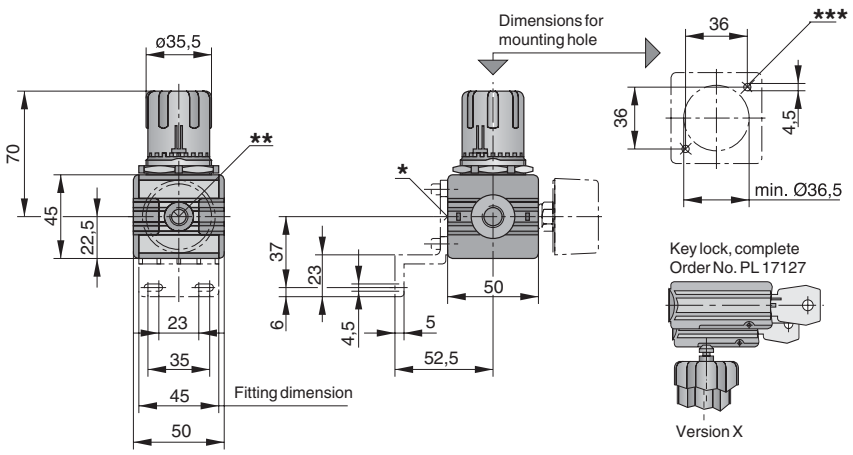
Data Sheet No. 5.12.006E-1

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The right to introduce technical modifications is reserved

Dimensions (mm)

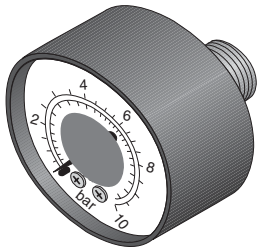
Type: SR-1/8, 1/4, 3/8



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8
*** For self-tapping screw M4, DIN 7500
maximum screw depth: 10 mm

Accessories

Gauge
Ø 40 mm, 0-10 bar, G1/8



Order No.: KZ 8891

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SR-1/8**	**PB 45349-000**
Basic model	G1/4	**SR-1/4**	**PB 45449-000**
Basic model	G3/8	**SR-3/8**	**PB 45549-000**
With adapter for keylock	G1/8	**SR-1/8-X**	**PB 45349-006**
With adapter for keylock	G1/4	**SR-1/4-X**	**PB 45449-006**
With adapter for keylock	G3/8	**SR-3/8-X**	**PB 45549-006**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge , Ø 40, 0-10 bar, G1/8	**KZ 8891**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
Regulator spring for operating pressure 1.5 bar	**PL 16549**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 6 bar	**PL 17807**
Regulator spring for operating pressure 10 bar	**PL 17312**
Regulator spring for operating pressure 16 bar *)	**PL 16320**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-101**
3/2 Way shut-off valve SDV-3/8XS, 3-fold lockable, spool type	**PB 46849-101**
Coupling kit	**PL 16959**
Solvent resistant sight glass	**PL 07233**
Bowl guard kit	**PL 16970-00**
Bell disassembly tool	**PL 17638**

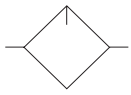
*) For conversion to 16 bar version, order adjusting screw PL 18975 as well.

Oil Mist Lubricator

G1/8, G1/4, G3/8

airfit Swing

SL



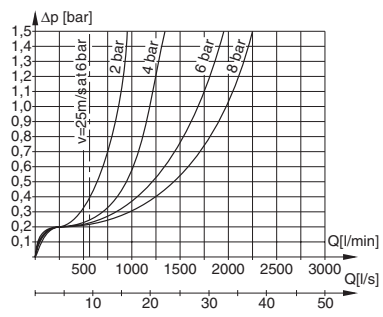
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure		
System			Oil mist lubricator with flow compensation*)		
Type			**SL-1/8**	**SL-1/4**	**SL-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Oil/air ratio			Degressive (number of drops per minute remains constant)		
Max. oil capacity		cm^3	45		
Oil refilling			Manual - also during operation		
Installation			Vertical		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)	
Weight (mass)		kg	0.25		
Pneumatic Characteristic					
Operating pressure range	p_{min} p_{max}	bar bar	0 16		
Recommended flow[1)]	Q_n	l/min m^3/h	**300** **18**	**550** **33**	**850** **51**
Maximum flow[2)]	Q_{max}	l/min m^3/h	1260 76	1830 110	1880 113
Recommended operating range	Q_n	m^3/h	0.2...30		0.2...54

1) at 6 bar and 25 m/s
2) at p_1 = 6.3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

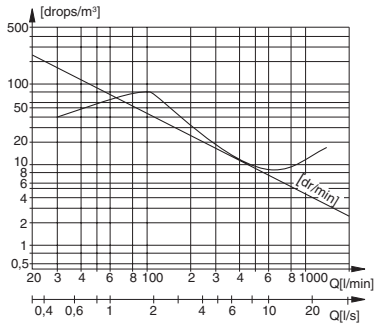
Flow Characteristics

Type: SL-1/4

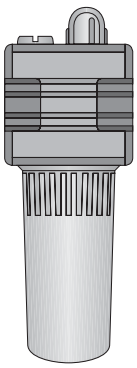


Oil/Air Ratio

Type: SL-1/4



* can also be adjusted for lower oil input.



Oil mist lubricator with flow compensation (number of drops per minute is constant)

- easily adaptable to customer's choice of colour and private labelling
- version with NPTF thread

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.12.007E-1

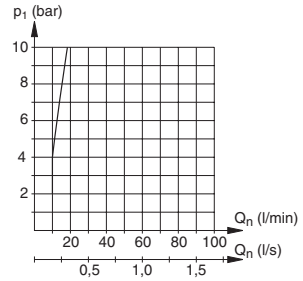
HOERBIGER ORIGA

A1P485E00KY00X

The right to introduce technical modifications is reserved

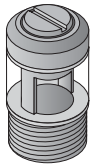
Min. Operating Conditions

Type: SL-1/4



Accessories

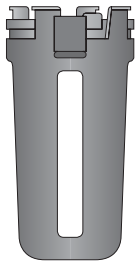
Solvent resistant sight glass



Order No.: PL 07233

Bowl Guard Kit

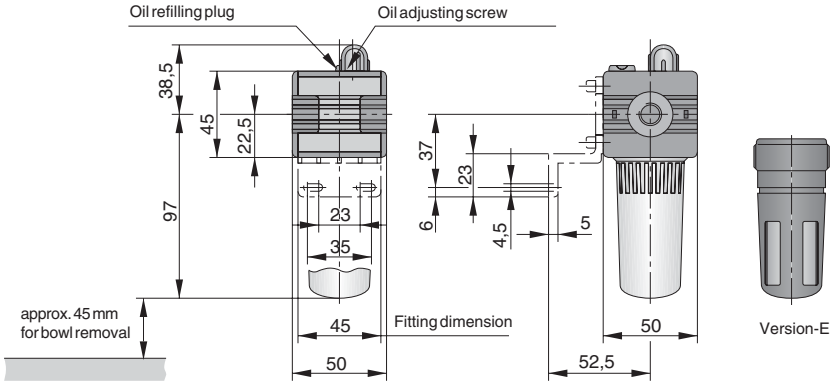
For further details see 5.21.009E



Order No.: PL 16970

Dimensions (mm)

Type: SL-1/8, 1/4, 3/8



Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SL-1/8**	**PB 46049-000**
Basic model	G1/4	**SL-1/4*)**	**PB 46149-000**
Basic model	G3/8	**SL-3/8**	**PB 46249-000**
With metal bowl	G1/8	**SL-1/8-D**	**PB 46049-003**
With metal bowl	G1/4	**SL-1/4-D**	**PB 46149-003**
With metal bowl	G3/8	**SL-3/8-D**	**PB 46249-003**
With metal bowl (sight glass)	G1/8	**SL-1/8-E**	**PB 46049-004**
With metal bowl (sight glass)	G1/4	**SL-1/4-E**	**PB 46149-004**
With metal bowl (sight glass)	G3/8	**SL-3/8-E**	**PB 46249-004**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Oil for compressed air 1litre (5.61.050E)	**KY 8766**
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Bowl guard kit	**PL 16970-00**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
Solvent resistant sight glass	**PL 07233**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-001**
3/2 Way shut-off valve SDV-3/8XS, 3-fold lockable, spool type	**PB 46849-001**

*) Alternative: economy lubricator SEL-1/4 on request (data sheet 5.12.008E)

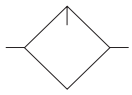
Economy Lubricator

G1/4

(Wick lubricator)

airfit Swing

SEL



Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure		
System			Wick-type micro-mist lubricator*)		
Type			**SEL-1/4-3**	**SEL-1/4-4**	**SEL-1/4-5**
Port size			**G1/4**	**G1/4**	**G1/4**
Flow diameter		mm	Ø3	Ø4	Ø5
Max. oil capacity		cm^3	45		
Oil refilling			Manual		
Installation			Vertical		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	-20 +50 at 10 bar	(further temperatures on request)	
Weight (mass)		kg	0.25		
Pneumatic Characteristics					
Operating pressure range	p_{min} p_{max}	bar bar	0 16		
Recommended flow[1)]	Q_n	l/min m^3/h	**250** **15**	**450** **27**	**550** **33**
Minimum flow	Q_{min}	l/min m^3/h	100 6	200 12	300 18
Maximum flow	Q_{max}	l/min m^3/h	500 30	800 48	1000 60
Minimum oil content for operation[1)]	V	cm^3	70	100	200
Oil output		mg/m^3	5-30 depending on application		

[1)] at 6.3 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

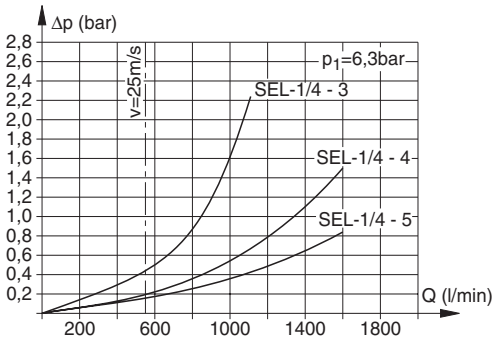
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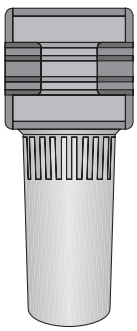
Function

The operation of the new Economy Lubricator is based on the ability of the air stream to pick up very small quartities of oil from the wick.

To ensure best results with different flow rates the lubricators are available with various flow diameters.
Please use the above table to select the best SEL lubricator for your application.

Diagram





Oil mist lubricator for very low oil output - has no adjustment and is therefore tamper-proof.

Oil mist output is strongly influenced by operating conditions - please consult us before ordering.

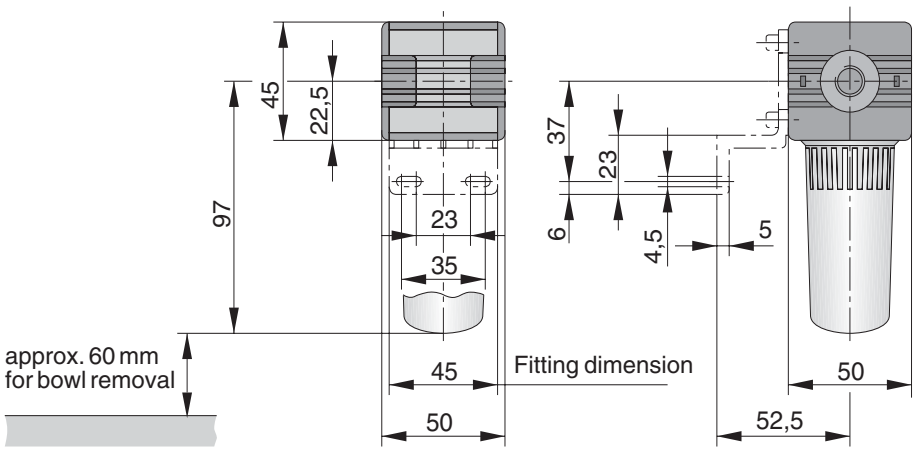
- easily adaptable to customer's choice of colour and private labelling
- version with NPTF thread

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Dimensions (mm)



Order Instructions

Description	Port size	**Type**	**Order No.**
With flow diameter 3 mm	G1/4	**SEL-1/4-3**	**PB 46449-300**
With flow diameter 4 mm	G1/4	**SEL-1/4-4**	**PB 46449-400**
With flow diameter 5 mm	G1/4	**SEL-1/4-5**	**PB 46449-500**
G1/8 and G3/8 on request			

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	**Order No.**
Oil for compressed air 1litre	**KY 8766**
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Bowl guard kit	**PL 16970-00**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**

Pressure Regulating Valve

with through p_1 supply port

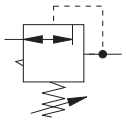
G1/4, G3/8

Characteristics			Pressures quoted as gauge pressure	
System			Diaphragm-type pressure regulating valve (spring loaded) with flow compensation and secondary pressure relief	
Type			**SR-1/4-T**	**SR-3/8-T**
Port size			**G1/4**	**G3/8**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.3	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 4	0.5 [1] 15
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.5 0.4	

[1] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range

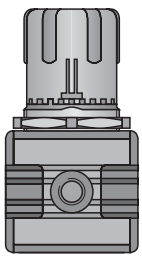
airfit Swing

SR-T



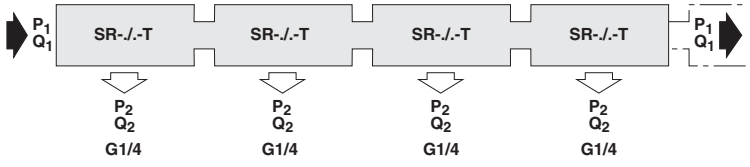
Special solutions
(e.g. temperature, pressure, medium ...) on request

Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief, inlet pressure and volume compensation handwheel lockable



- easily adaptable to customer's choice of colour and private labelling
- inlet pressure and volume compensation
- version with NPTF thread
- specially developed roller diaphragm

Installation Instructions for Battery Mounting



For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.12.009E-1

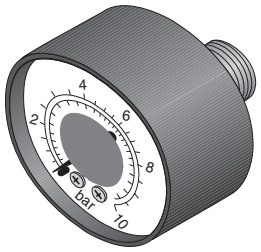
HOERBIGER ORIGA

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Accessories

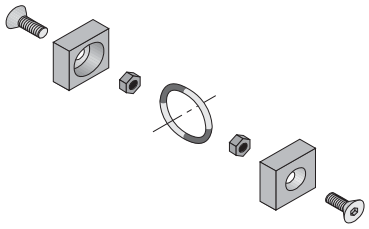
Gauge
Ø 40 mm, 0-10 bar, G1/8



Order No.: KZ 8891

Accessories

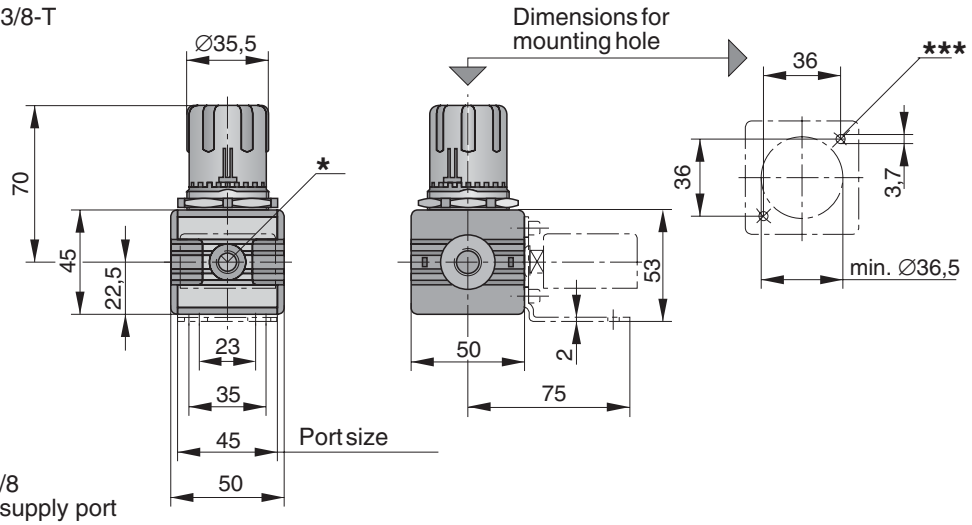
Coupling kit
for assembly of two single unit



Order No.: PL 16959

Dimensions (mm)

Type: SR-1/4-T, SR-3/8-T



* Gauge ports G1/8
** with through p1 supply port

Order Instructions

Description	Port size	Type	Order No.
Pressure regulating valve	p_1 - G1/4, through p_2 - G1/4, outlet	**SR-1/4-T-1/4**	**PB 45449-100**
Pressure regulating valve	p_1 - G3/8, through p_2 - G1/4, outlet	**SR-3/8-T-1/4**	**PB 45549-100**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge Ø 40, 0-10 bar, G1/8, bottom connection *)	**KZ 8820**
Mounting kit	**PL 17351**
Coupling kit	**PL 16959**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Porting block kit with integrated check valve	**PL 17316**
Keylock	**PL 17127**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 15 bar	**PL 16320**
3/2 Way shut-off valve SDV-1/4XS, 3-fold lockable, spool type	**PB 46749-101**
3/2 Way shut-off valve SDV-3/8XS, 3-fold lockable, spool type	**PB 46849-101**

*) For pressure ranges see 5.21.005E

AIR PREPARATION UNITS
G3/8-G1/2 (G3/4)
SERIES
airfit comfort



HOERBIGER
ORIGA

		Port size	max. Q* (l/min)	Recommended flow (l/min)*	**Type**	Order No.
Air preparation units		G3/8	1900	850	**CFRL-3/8**	5.19.002E
		G1/2	2000	1900	**CFRL-1/2**	
		G3/8	1900	850	**CKL-3/8**	5.19.003E
		G1/2	1950	1900	**CKL-1/2**	
Filter-regulator		G3/8	3000	850	**CK-3/8**	5.19.004E
		G1/2	3300	1900	**CK-1/2**	
Filter-water separator		G3/8	4500	850	**CF-3/8**	5.19.005E
		G1/2	5000	1900	**CF-1/2**	
Special filter for air dryers		G3/8	-	850	**CFD-3/8**	5.19.005E
		G1/2	-	1900	**CFD-1/2**	
Pressure regulating valve		G3/8	4200	850	**CR-3/8**	5.19.006E
		G1/2	5700	1900	**CR-1/2**	
		G1/2	-	1900	**XR-15** previous series	5.20.012E
pilot operated pressure regul. valve		G3/8	-	850	**CRV-3/8**	5.55.006E
		G1/2	-	1900	**CRV-1/2**	
Oil mist lubricator		G3/8	5000	850	**CL-3/8**	5.19.011E
		G1/2	5300	1900	**CL-1/2**	
3/2 Way shut-off valve		G3/8	-	850	**CDV-3/8**	5.21.014E
		G1/2	7500	1900	**CDV-1/2**	
Soft-start valve		G3/8	3500	850	**CDA-3/8**	5.95.020E
		G1/2	3700	1900	**CDA-1/2**	
Stop valve		G3/8	2500	850	**CDR-3/8P, CDR-3/8E**	5.95.019E
		G1/2	2900	1900	**CDR-1/2P, CDR-1/2E**	

* at p_1 = 6.3 bar and Δp = 1 bar bzw. at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
see individual data sheets.

Table of Contents see 5.00.001E

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The right to introduce technical modifications is reserved

Air Preparation Unit

G3/8,G1/2

airfit comfort

CFRL



Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Air preparation unit comprising filter-water-separator, diaphragm-type pressure regulating valve and oil mist lubricator *)	
Type			**CFRL-3/8**	**CFRL-1/2**
Port size			**G3/8**	**G1/2**
Max. condensate capacity		cm^3	57	
Condensate drainage			Standard: manual, semiautomatic with pressure relief fully automatic (float type)	
Max. oil capacity		cm^3	112	
Oil refilling			Standard: manual - also during operation	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)
Weight (mass)		kg	1.85	
Pneumatic Characteristic[1]				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 0.5[3] 4 10
Recommended flow[2]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**
Maximum flow[4]	Q_{max}	l/min m^3/h	1900 114	2000 120

[1] For further characteristics see 5.19.011E, 5.19.015E, 5.19.016E
[2] at 6 bar and 25 m/s
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[4] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

Air preparation unit comprising:

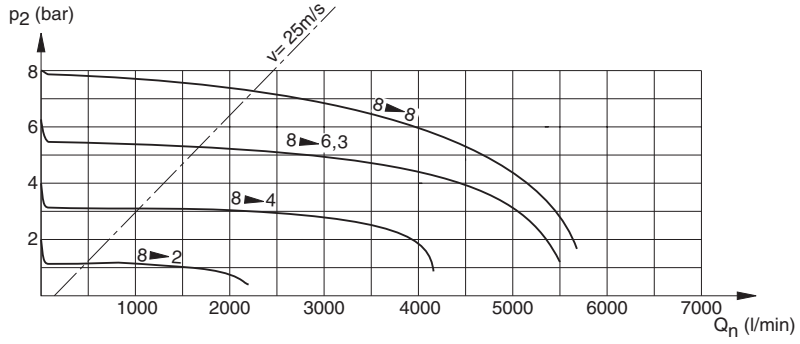
Filter-water-separator
Diaphragm-type pressure regulating valve
Oil mist lubricator
Gauge
Mounting bracket

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread



Flow Characteristics

Type: CFRL-1/2



For single units see 5.19.004E-5.19.011E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

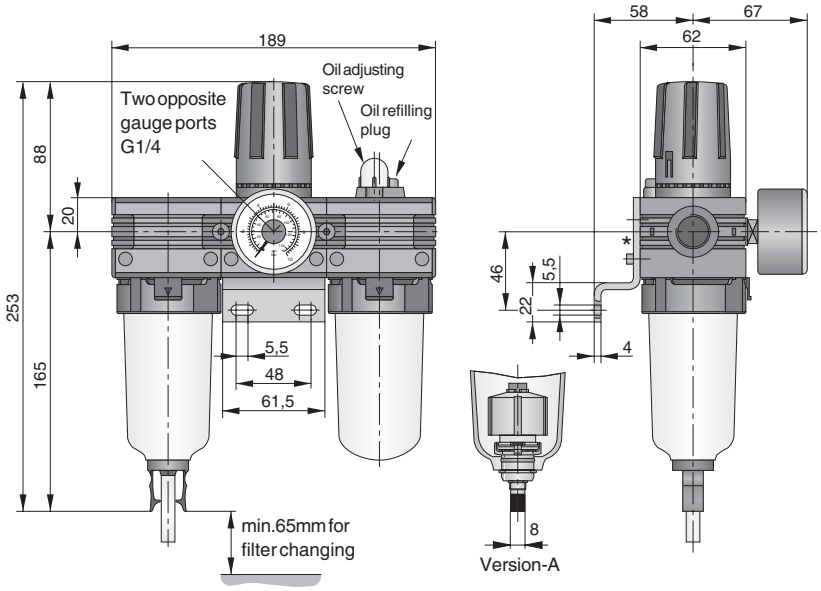
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Dimensions (mm)

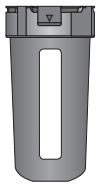
Type: CFRL-1/2



*) On delivery the plug screw is not assembled.

Accessories

Bowl guard kit
For further details see 5.21.013E



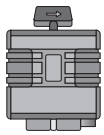
Order No.: PL 17680

Porting block kit
to provide unlubricated air.
For further details see 5.21.012E



Order No.: PL 17607

3/2 Way shut-off valve



Order No.: PB 56849-000
PB 56949-000

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/8	**CFRL-3/8**	**PB 58249-000**
Basic model	G1/2	**CFRL-1/2**	**PB 58349-000**
With semiautomatic drainage	G3/8	**CFRL-3/8-H**	**PB 58249-001**
With semiautomatic drainage	G1/2	**CFRL-1/2-H**	**PB 58349-001**
With automatic drainage	G3/8	**CFRL-3/8-A**	**PB 58249-002**
With automatic drainage	G1/2	**CFRL-1/2-A**	**PB 58349-002**
With metal bowl	G3/8	**CFRL -3/8-D**	**PB 58249-003**
With metal bowl	G1/2	**CFRL-1/2-D**	**PB 58349-003**
With metal bowl (sight glass)	G3/8	**CFRL-3/8-E**	**PB 58249-004**
With metal bowl (sight glass)	G1/2	**CFRL-1/2-E**	**PB 58349-004**
With metal bowl and automatic drainage	G3/8	**CFRL-3/8-AD**	**PB 58249-005**
With metal bowl and automatic drainage	G1/2	**CFRL-1/2-AD**	**PB 58349-005**
With metal bowl (sight glass) and automatic drainage	G3/8	**CFRL-3/8-AE**	**PB 58249-006**
With metal bowl (sight glass) and automatic drainage	G1/2	**CFRL-1/2-AE**	**PB 58349-006**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Bowl guard kit	**PL 17680**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Regulator spring for operating pressure 4 bar	**PL 17748**
Regulator spring for operating pressure 10 bar	**PL17705**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Coupling kit	**PL 17608**
Solvent resistant sight glass	**PL 07233**
Adapter kit G3/4	**PL 17682**

Air Preparation Unit

G3/8,G1/2

airfit comfort

CKL 

Special solutions
(e.g. temperature, pressure, medium ...) on request

Air preparation unit comprising:

Filter-water-separator
Oil mist lubricator
Gauge
Mounting bracket

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

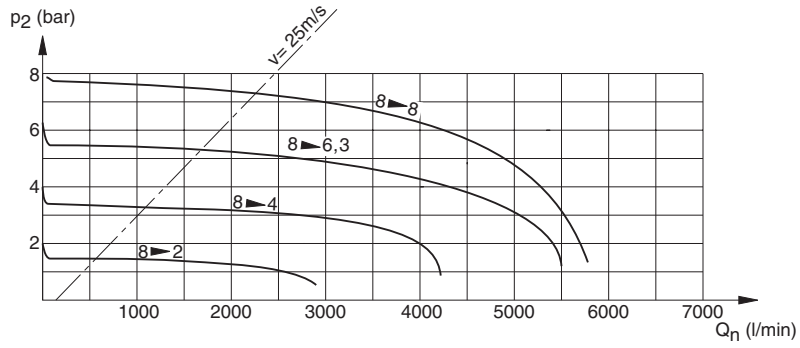


Characteristics			Pressures quoted as gauge pressure	
System			Air preparation unit comprising filter-regulator and oil mist lubricator *)	
Type			**CKL-3/8**	**CKL-1/2**
Port size			**G3/8**	**G1/2**
Max. condensate capacity		cm^3	57	
Condensate drainage			Standard: manual, semiautomatic with pressure relief fully automatic (float type)	
Max. oil capacity		cm^3	112	
Oil refilling			Standard: manual - also during operation	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)
Weight (mass)		kg	1.5	
Pneumatic Characteristic[1]				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 0.5[3] 4 10
Recommended flow[2]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**
Maximum flow[4]	Q_{max}	l/min m^3/h	1900 114	1950 117

[1] For further characteristics see 5.19.008E, 5.19.015E
[2] at 6 bar and 25 m/s
[3] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[4] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

Flow Characteristics

Type: CKL-1/2



For single units see 5.19.004E-5.19.011E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

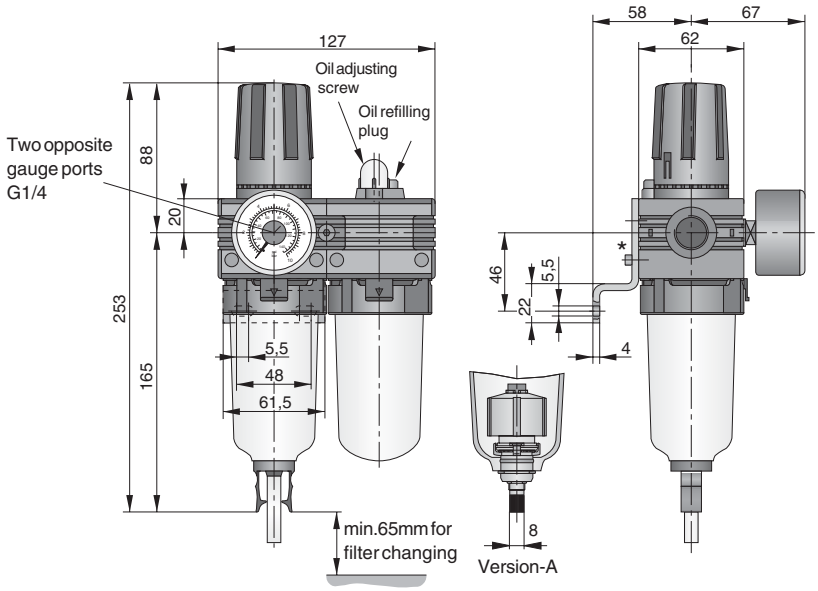
Data Sheet No. 5.19.003E-1

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Dimensions (mm)

Type: CKL-1/2



*) On delivery the plug screw is not assembled.

Accessories

Bowl guard kit
For further details see 5.21.013E



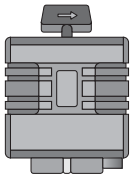
Order No.: PL 17680

Porting block kit
to provide unlubricated air.
For further details see 5.21.012E



Order No.: PL 17607

3/2 Way shut-off valve



Order No.: PB 56849-000
PB 56949-000

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/8	**CKL-3/8**	**PB 58549-000**
Basic model	G1/2	**CKL-1/2**	**PB 58649-000**
With semiautomatic drainage	G3/8	**CKL-3/8-H**	**PB 58549-001**
With semiautomatic drainage	G1/2	**CKL-1/2-H**	**PB58649-001**
With automatic drainage	G3/8	**CKL-3/8-A**	**PB 58549-002**
With automatic drainage	G1/2	**CKL-1/2-A**	**PB 58649-002**
With metal bowl	G3/8	**CKL -3/8-D**	**PB 58549-003**
With metal bowl	G1/2	**CKL-1/2-D**	**PB 58649-003**
With metal bowl (sight glass)	G3/8	**CKL-3/8-E**	**PB 58549-004**
With metal bowl (sight glass)	G1/2	**CKL-1/2-E**	**PB 58649-004**
With metal bowl and automatic drainage	G3/8	**CKL-3/8-AD**	**PB 58549-005**
With metal bowl and automatic drainage	G1/2	**CKL-1/2-AD**	**PB 58649-005**
With metal bowl (sight glass) and automatic drainage	G3/8	**CKL-3/8-AE**	**PB 58549-006**
With metal bowl (sight glass) and automatic drainage	G1/2	**CKL-1/2-AE**	**PB 58649-006**

For the version with NPTF thread, complete the Order No. as follows:
PB...49-... → PB...49-N...

Accessories

Description	Order No.
Bowl guard kit	**PL 17680**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Regulator spring for operating pressure 4 bar	**PL 17748**
Regulator spring for operating pressure 10 bar	**PL 17705**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Coupling kit	**PL 17608**
Solvent resistant sight glass	**PL 07233**
Adapter kit G3/4	**PL 17682**

Filter-Regulator

G3/8, G1/2

Pressure regulating valve with filter-water-separator

airfit comfort

CK



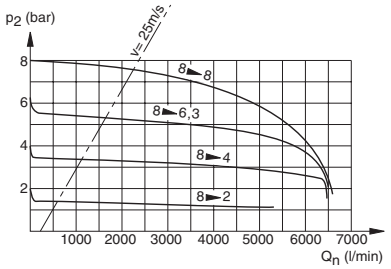
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Cyclone system with filter element, combined with diaphragm-type pressure regulating valve (spring loaded) with flow compensation and secondary pressure relief	
Type			**CK-3/8**	**CK-1/2**
Port size			**G3/8**	**G1/2**
Pore size of filter element		µm	Standard: 30 5	
Max. condensate capacity		cm^3	57	
Condensate drainage			Standard: manual semiautomatic with pressure relief or fully automatic (float-type)	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar (further temperatures on request)	
Weight (mass)		kg	0.75	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 0.5[2)] 4 10
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.9 0.7	
Recommended flow[1)]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**
Maximum flow[3)]	Q_{max}	l/min m^3/h	3000 180	3300 198
Degree of moisture separation at recommended flow	η	%	95	95

[1)] at p_2 = 6 bar and 25 m/s
[2)] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[3)] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

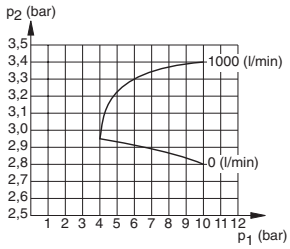
Flow Characteristics

Type: CK-1/2



Outlet Pressure Variation with Fluctuation Inlet Pressure

Type: CK-1/2





Filter -regulator with flow compensation and secondary pressure relief, hand wheel lockable

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

For single units see 5.19.004E-5.19.011E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

Data Sheet No. 5.19.004E-1

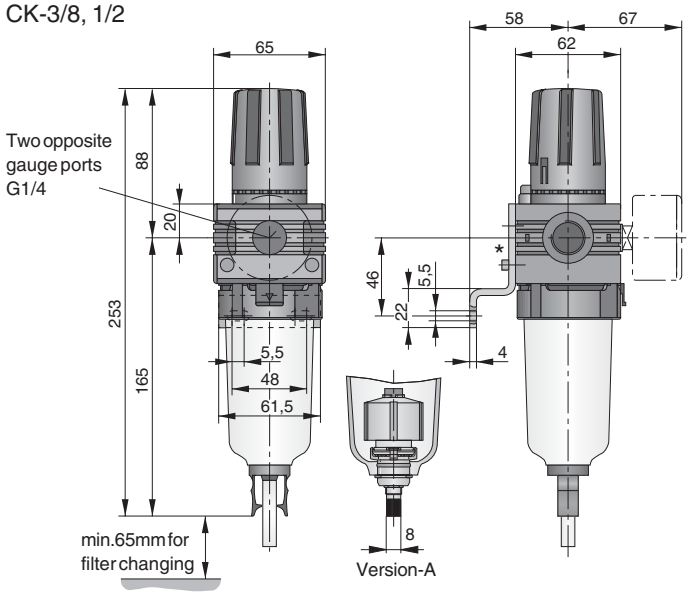
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Dimensions (mm)

Type: CK-3/8, 1/2



*) On delivery the plug screw is not assembled.

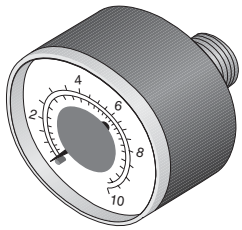
Accessories

Bowl guard kit
For further details see 5.21.013E



Order No.: PL 17680

Gauge



Order No.: KG 8011

Order Instructions

Description	Port size	Type	Order No.
Basic model (30 µm)	G3/8	**CK-3/8**	**PB 55849-000**
Basic model (30 µm)	G1/2	**CK-1/2**	**PB 55949-000**
With filter element 5 µm	G3/8	**CK-3/8-5**	**PB 55849-016**
With filter element 5 µm	G1/2	**CK-1/2-5**	**PB 55949-016**
With semiautomatic drainage	G3/8	**CK-3/8-H**	**PB 55849-001**
With semiautomatic drainage	G1/2	**CK-1/2-H**	**PB 55949-001**
With automatic drainage	G3/8	**CK-3/8-A**	**PB 55849-002**
With automatic drainage	G1/2	**CK-1/2-A**	**PB 55949-002**
With metal bowl	G3/8	**CK-3/8-D**	**PB 55849-003**
With metal bowl	G1/2	**CK-1/2-D**	**PB 55949-003**
With metal bowl (sight glass)	G3/8	**CK-3/8-E**	**PB 55849-004**
With metal bowl (sight glass)	G1/2	**CK-1/2-E**	**PB 55949-004**
With metal bowl and automatic drainage	G3/8	**CK-3/8-AD**	**PB 55849-005**
With metal bowl and automatic drainage	G1/2	**CK-1/2-AD**	**PB 55949-005**
With metal bowl (sight glass) and automatic drainage	G3/8	**CK-3/8-AE**	**PB 55849-006**
With metal bowl (sight glass) and automatic drainage	G1/2	**CK-1/2-AE**	**PB 55949-006**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Bowl guard kit	**PL 17680**
Gauge Ø 50, 0-10 bar, G1/4	**KG 8011**
Mounting kit	**PL 17518**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Regulator spring for operating pressure 4 bar	**PL 17748**
Regulator spring for operating pressure 10 bar	**PL17705**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Coupling kit	**PL 17608**
Solvent resistant sight glass	**PL 07233**
Adapter kit G3/4	**PL 17682**

Filter-Water-Separator, Dust Filter

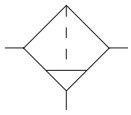
G3/8,G1/2

airfit comfort

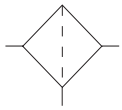
Characteristics			Pressures quoted as gauge pressure			
System			Cyclone system and filter element		Dust filter	
Type			**CF-3/8**	**CF-1/2**	**CFD-3/8**	**CFD-1/2**
Port size			**G3/8**	**G1/2**	**G3/8**	**G1/2**
Max. condensate capacity		cm^3	57			
Pore size of filter element		µm	Standard: 30: 5:		Standard: 1	
Condensate drainage			Standard: manual, semiautomatic with pressure relief or fully automatic		manual	
Installation			Vertical			
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)		
Weight (mass)		kg	0.55			
Pneumatic Characteristic						
Operating pressure range	p_{min} p_{max}	bar bar	0 16			
Recommended flow[1]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**	**850** **51**	**1900** **114**
Maximum Flow[2]	Q_{max}	l/min m^3/h	4500 270	5000 300	4130 248	4820 289
Degree of moisture separation at recommended flow	η	%	95		only solid particles >99% related to 1 µm	

[1] at 6 bar and 25 m/s
[2] at p_1 = 6.3 bar, Δp = 1 bar

CF



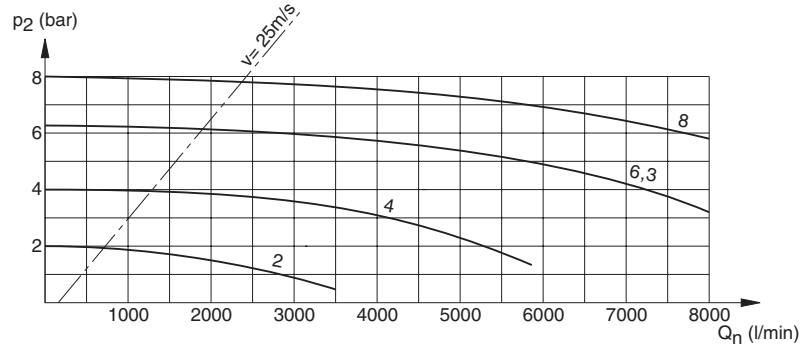
CFD



Special solutions
(e.g. temperature, pressure, medium ...) on request

Flow Characteristics

Type: CF-1/2





CF:
Filter-water-separator with cyclone system and filter element.

CFD:
Dust filter with large filter surface for long service life. For compressed air systems with air dryers.

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

For single units see 5.19.004E-5.19.011E
For accessories see 5.21.012E-5.21.013E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

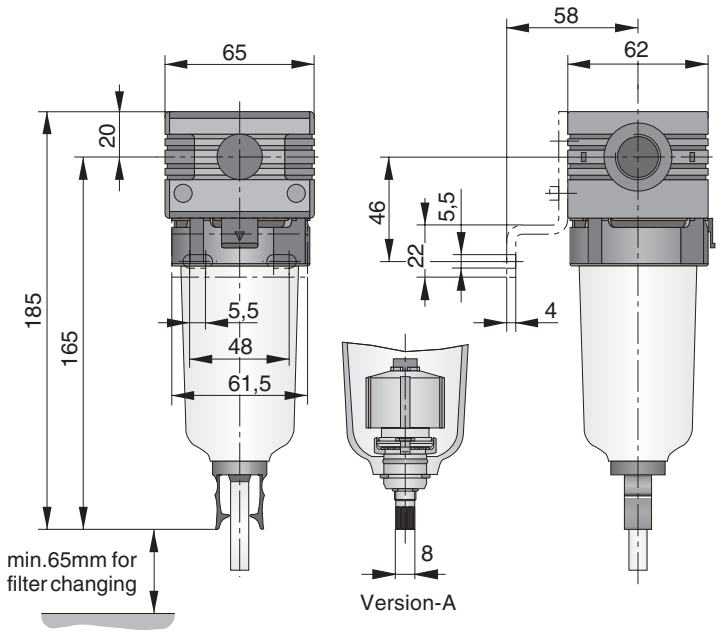
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The right to introduce technical modifications is reserved

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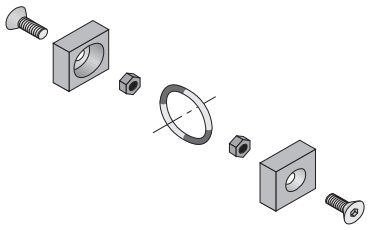
Dimensions (mm)

Type: CF-3/8, CF-1/2



Accessories

Coupling kit



Order No.: PL 17608

Bowl guard kit
For further details see 5.21.013E



Order No.: PL 17680

Order Instructions

Description	Port size	Type	Order No.
Basic model (30 µm)	G3/8	**CF-3/8**	**PB 55249-000**
Basic model (30 µm)	G1/2	**CF-1/2**	**PB 55349-000**
With filter element 5 µm	G3/8	**CF-3/8-5**	**PB 55249-016**
With filter element 5 µm	G1/2	**CF-1/2-5**	**PB 55349-016**
With semiautomatic drainage	G3/8	**CF-3/8-H**	**PB 55249-001**
With semiautomatic drainage	G1/2	**CF-1/2-H**	**PB 55349-001**
With automatic drainage	G3/8	**CF-3/8-A**	**PB 55249-002**
With automatic drainage	G1/2	**CF-1/2-A**	**PB 55349-002**
With metal bowl	G3/8	**CF-3/8-D**	**PB 55249-003**
With metal bowl	G1/2	**CF-1/2-D**	**PB 55349-003**
With metal bowl (sight glass)	G3/8	**CF-3/8-E**	**PB 55249-004**
With metal bowl (sight glass)	G1/2	**CF-1/2-E**	**PB 55349-004**
With metal bowl and automatic drainage	G3/8	**CF-3/8-AD**	**PB 55249-005**
With metal bowl and automatischer Kondensatentleerung	G1/2	**CF-1/2-AD**	**PB 55349-005**
With metal bowl (sight glass) and automatic drainage	G3/8	**CF-3/8-AE**	**PB 55249-006**
With metal bowl (sight glass) and automatic drainage	G1/2	**CF-1/2-AE**	**PB 55349-006**
With filter element 1 µm	G3/8	**CFD-3/8-1**	**PB 55249-070**
With filter element 1 µm	G1/2	**CFD-1/2-1**	**PB 55349-070**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

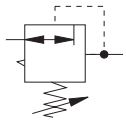
Description	Order No.
Bowl guard kit	**PL17680**
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Adapter kit G3/4	**PL 17682**

Pressure Regulating Valve

G3/8,G1/2

airfit comfort

CR



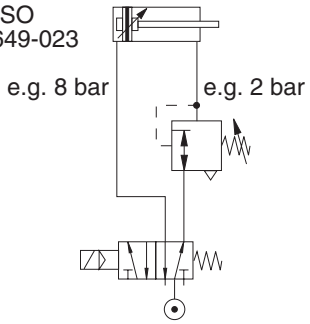
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Diaphragm-type pressure regulating valve (spring loaded) with flow compensation and secondary pressure relief	
Type			**CR-3/8**	**CR-1/2**
Port size			**G3/8**	**G1/2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.55	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 on request 8	0.5 0.5[2] 4 10
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.9 0.7	
Recommended flow[1]	Q_n	l/min m³/h	**850** **51**	**1900** **114**
Maximum flow[3]	Q_{max}	l/min m³/h	4200 252	5700 342

[1] at p_2 = 6 bar and 25 m/s
[2] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[3] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

Pressure Regulator with High Relief Capacity

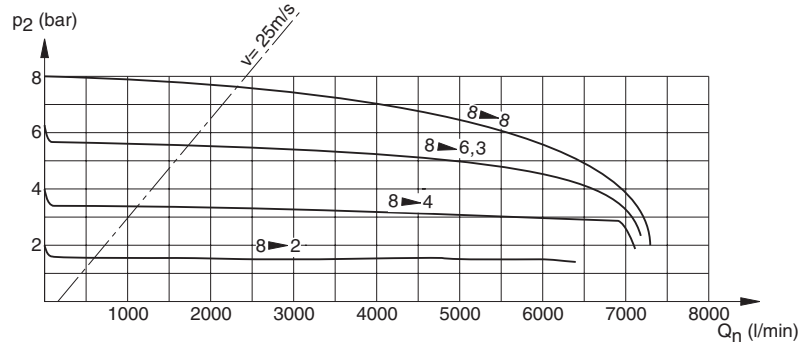
Type: CR-1/2SO
PB 55649-023



Example:
To regulate the pressure in the direction of the stroke, install the regulator as shown in the diagram. The pressure relief uses the full cross-section of the valve, allowing the cylinder to travel at full speed.

Flow Characteristics

Type: CR-1/2





Diaphragm-type pressure regulating valve (spring loaded) flow compensation and with secondary pressure relief, handwheel lockable

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

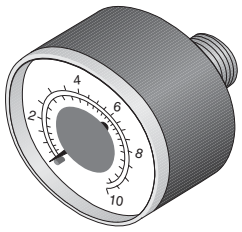
For single units see 5.19.004E-5.19.011E
For accessories see 5.21.012E-5.21.013E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Accessories

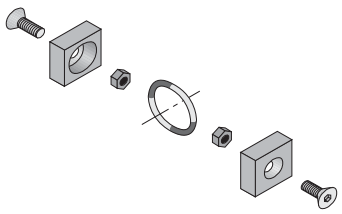
Gauge
Ø 50, 0-10 bar, G1/4



Order No.: KG 8011

Accessories

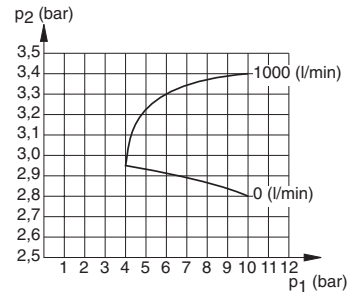
Coupling kit
for connecting 2 single units



Order No.: PL 17608

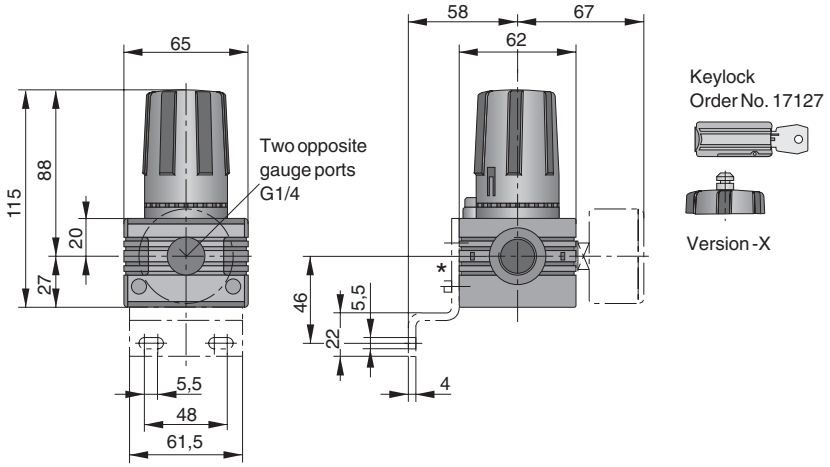
Outlet Pressure Variation with Fluctuacting Inlet Pressure

Type: CR-1/2



Dimensions (mm)

Type: CR-1/2



*) On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/8	**CR-3/8**	**PB 55549-000**
	G1/2	**CR-1/2**	**PB 55649-000**
With adapter for keylock	G3/8	**CR-3/8-X**	**PB 55549-006**
	G1/2	**CR-1/2-X**	**PB 55649-006**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

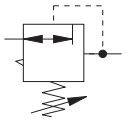
Description	Order No.
Gauge Ø 50, 0-10 bar, G1/4	**KG 8011**
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Keylock	**PL 17127**
Regulator spring for operating pressure 4 bar	**PL 17748**
Regulator spring for operating pressure 10bar	**PL 17705**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Adapter kit G3/4	**PL 17682**

Pressure Regulating Valve

with through p_1 supply port G1/2

airfit comfort

CR-T

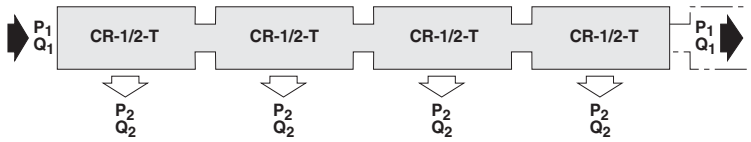


Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge
System pressure			Diaphragm-type pressure regulating valve (spring loaded) with flow compensation and secondary pressure relief
Type			**CR-1/2-T**
Port size			**G1/2**
Installation			In any position
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 (further temperatures +60 on request)
Weight (mass)		kg	0.55
Pneumatic Characteristic			
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 0.5 0.5[1)] 8 4 10
Min. pressure difference	p_1-p_2	bar	0.2
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.9 0.7

[1)] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range

Installation Instructions for Battery Mounting



Diaphragm-type pressure regulating valve (spring loaded) flow compensation and with secondary pressure relief, handwheel lockable



- With through p_1 supply port
- Infinitely expandable
- Controlled
- Eas and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

For single units see 5.19.004E-5.19.011E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

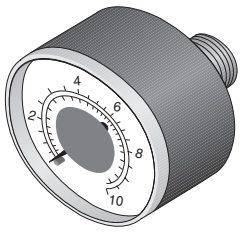
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Accessories

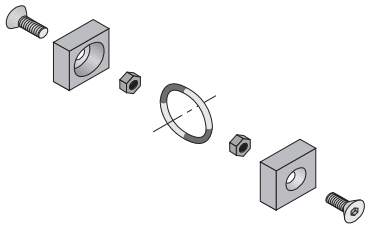
Gauge
Ø 50, 0-10 bar, G1/4



Order No.: KG 8011

Accessories

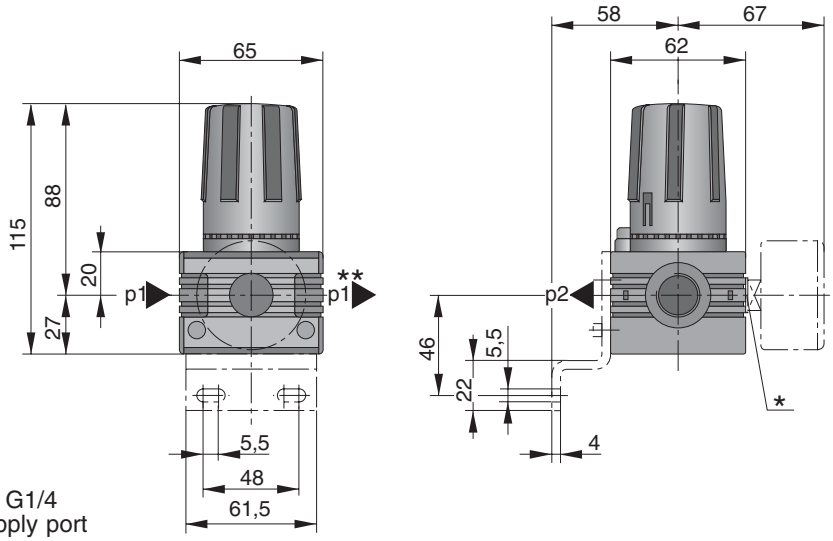
Coupling kit
for connecting 2 single units



Order No.: PL 17608

Dimensions (mm)

Type: CR-1/2-T



* Gauge connection G1/4
** with through p_1 supply port

Order Instructions

Description	Port size	Type	Order No.
Pressure regulating valve	p_1-G1/2, through p_2-G3/8, outlet	**CR-1/2-T 3/8**	**PB 55649-101**
	p_2-G1/2, outlet	**CR-1/2-T 1/2**	**PB 55649-100**

Accessories

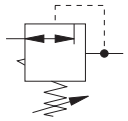
Description	Order No.
Gauge Ø 50, 0-10 bar, G1/4	**KG 8011**
Gauge , Ø 50, 0-10 bar, G1/4, bottom connection	**KZ 8821**
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Regulator spring for operating pressure 4 bar	**PL 17748**
Regulator spring for operating pressure 10bar	**PL 17705**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Adapter kit G3/4	**PL 17682**

Pressure Regulating Valve

with customer adjustable maximal pressure limiter "airfix" G3/8, G1/2

airfit comfort

CR-L



Patented

Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Specially designed pressure regulating valve with maximal pressure limiter, easily adjustable by customer.	
Regulator spring		bar	8 (standard)	4
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 2 – 7.5 (0.5 – 6.2)	0.5 1.5 – 4

For further technical data and information, please refer to the data sheet of the standard pressure regulator CR-.., data sheet no. 5.19.006E

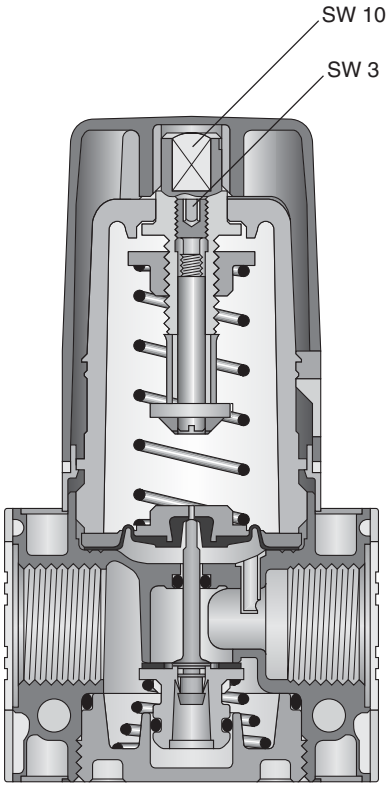
Installation Instructions

This pressure regulating valve was specially designed to allow the customer to limit the maximal pressure of his system.
the handwheel is not assembled on delivery, and can only be mounted after the pressure has been set and tested.
The pressure limit cannot be changed without disassembly of the handwheel.

Pressure adjustment:
After the unit is installed and air pressure is applied, maximum pressure can be set with a spanner size 10.
When the pressure is set correctly, keep the spanner in place and use an Allan key size 3 to turn the adjustment screw clockwise untill it is fixed.
Once the screw is fixed, do not tighten it unnecessarily.
Lower the pressure with the spanner, and then raise it to the set limit.
Once the maximal pressure is set ok, the handwheel can be snapped into position.
Push the handwheel over the bell and gently turn it left and right, so that the square part of the pressure adjustment system falls into place.
Next, push the wheel further down, untill it snaps into place.
The wheel is now locked in position and the pressure can be adjusted in the set range.

Please note the installation instructions that are included with delivery of each of out air preparation units.

Function



Order Instructions

Description	Port size	Type	Order No.
Pressure regulating valve with pressure limiter "AIRFIX" – Standard version	G3/8	**CR-3/8-L**	**PB 55549-005**
	G1/2	**CR-1/2-L**	**PB 55649-005**
– Option: p_2 0.5 – 6.2 bar	G3/8	**CR-3/8-L-SO**	**PB 55549-028**
	G1/2	**CR-1/2-L-SO**	**PB 55649-028**
Accessories			
Regulator spring 4 bar			**PL 17748**
Adapter kit G3/4			**PL 17682**



Diaphragm-type pressure regulating valve (spring loaded) flow compensation and with secondary pressure relief, handwheel lockable

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

For single units see 5.19.004E-5.19.011E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

Data Sheet No. 5.19.008E-1

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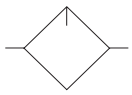
The right to introduce technical modifications is reserved

Oil Mist Lubricator

G3/8,G1/2

airfit comfort

CL



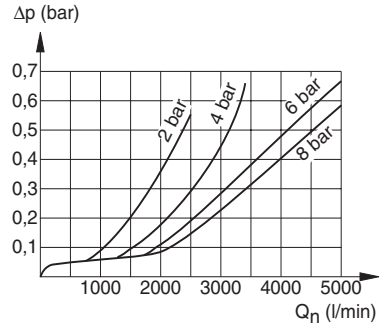
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Oil mist lubricator with flow compensatio	
Type			**CL-3/8**	**CL-1/2**
Port size			**G3/8**	**G1/2**
Oil/air ratio			Degressive (number of drops per minute remains constant)	
Max. oil capacity		cm^3	112	
Oil refilling*)			Standard: manual - also during operation	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar	(further temperatures on request)
Weight (mass)		kg	0.55	
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	0 16	
Recommended flow[1)]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**
Maximum flow[2)]	Q_{max}	l/min m^3/h	5000 300	5300 318
Recommended operating range	Q_n	l/min m^3/h	33-833 2-50	33-2000 2-120

1) at 6 bar and 25 m/s
2) at p_1 = 6,3 bar, Δp = 1 bar
*) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

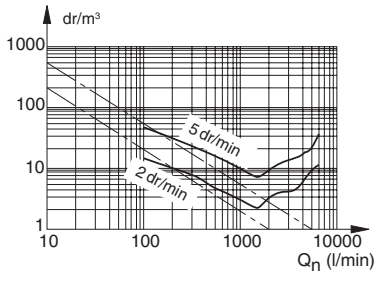
Flow Characteristics

Type: CL-1/2



Oil/Air Ratio

Type: CL-1/2





Oil mist lubricator with flow compensation (number of drops per minute is constant)

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

For single units see 5.19.004E-5.19.011E
For accessories see 5.21.012E-5.21.013E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

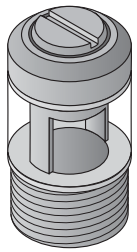
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

Accessories

Solvent resistant sight glass



Order No.: PL 07233

Accessories

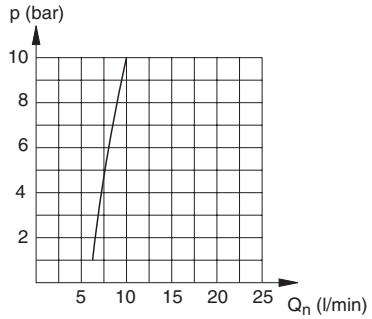
Bowl Guard Kit
For further details see 5.21.013E



Order No.: PL 17680

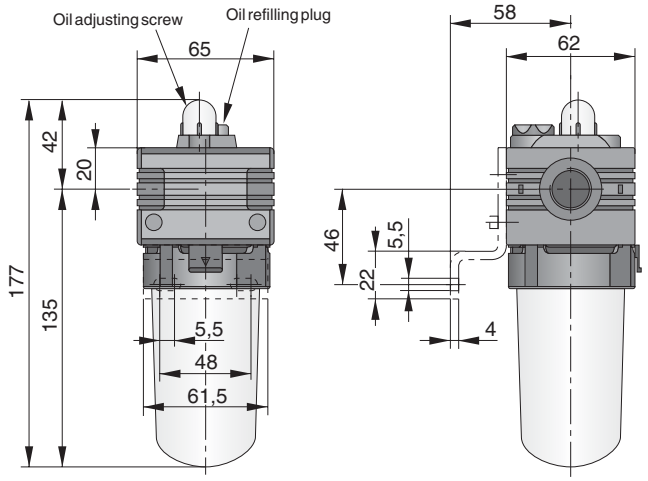
Min. Operating Conditions

Type: CL-1/2



Dimensions (mm)

Type: CL-1/2



Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/8	**CL-3/8**	**PB 56249-000**
Basic model	G1/2	**CL-1/2**	**PB 56349-000**
With metal bowl	G3/8	**CL-3/8-D**	**PB 56249-003**
With metal bowl	G1/2	**CL-1/2-D**	**PB 56349-003**
With metal bowl (sight glass)	G3/8	**CL-3/8-E**	**PB 56249-004**
With metal bowl (sight glass)	G1/2	**CL-1/2-E**	**PB 56349-004**

Accessories

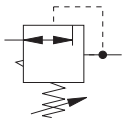
Description	Order No.
Bowl guard kit	**PL17680**
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Solvent resistant sight glass	**PL 07233**
3/2 Way shut-off valve (spool type) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type) CDV-1/2-XS	**PB 56949-000**
Adapter kit G3/4	**PL 17682**

Pressure Regulating Valve

G1/2

airfit

XR



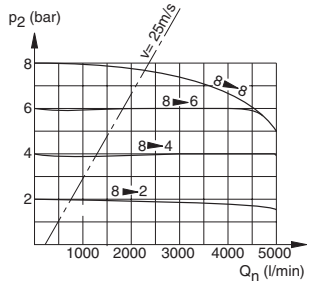
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Piston-type pressure regulating valve (pilot operated) with secondary pressure relief and flow compensation	
Type			**XR-15**	
Port size			**G1/2**	
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.75	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 10 (16)	
Min. pressure difference	p_1-p_2	bar	0.5	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=10		bar bar	0.6 0.3	
Recommended flow[1)]	Q_n	l/min m^3/h	**1900** **114**	

[1)] at p_2 = 6 bar and 25 m/s

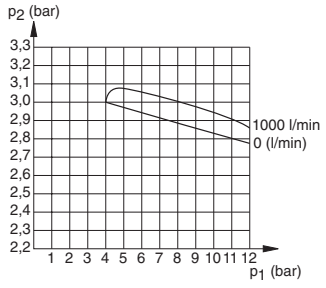
Flow Characteristics

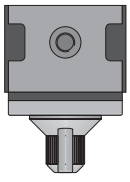
Type: XR-15



Outlet Pressure Variation with Fluctuating Inlet Pressure

Type: XR-15





Piston-type pressure regulating valve (pilot operated) with secondary pressure relief and flow compensation

For single units see 5.20.008E-5.20.015E
For accessories see 5.21.001E-5.21.003E
For air preparation units see 5.20.002E- 5.20.005E
For product group list and product range see 5.20.001E

Data Sheet No. 5.20.012E-1

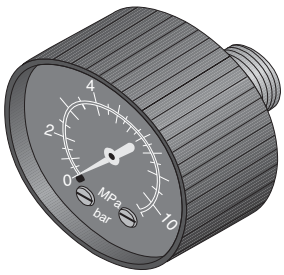
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The right to introduce technical modifications is reserved

Accessories

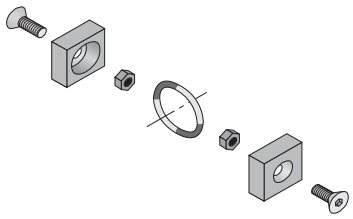
Gauge
Ø 50, 0-10 bar, G1/8



Order No.: KZ 8815

Accessories

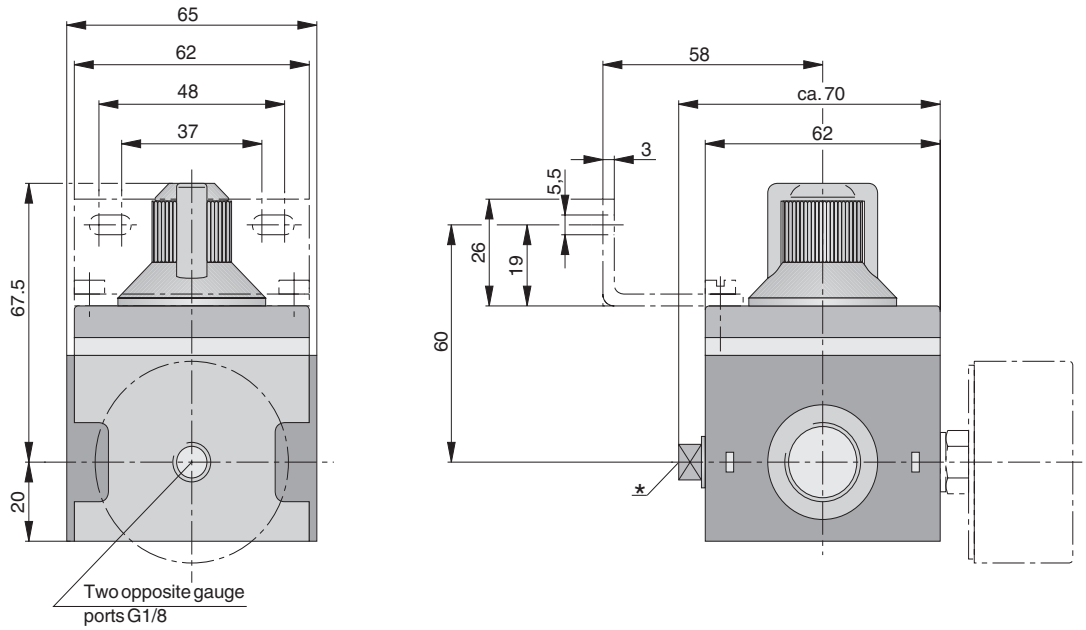
Coupling kit
for connecting 2 single units



Order No.: PL 08267

Dimensions (mm)

Type: XR-15



*) On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	**Type**	**Order No.**
Basic model	G1/2	**XR-15**	**PB 10549-000**

Accessories

Description	**Order No.**
Gauge, Ø 50, 0-10 bar, G1/8	**KZ 8815**
Mounting kit	**PL 15169**
Coupling kit	**PL 08267**
Porting block kit G1/2/G1/4	**PL 15003**
Regulator spring for operating pressure 16 bar	**PL 15758**

Porting Block Kit

G1/4

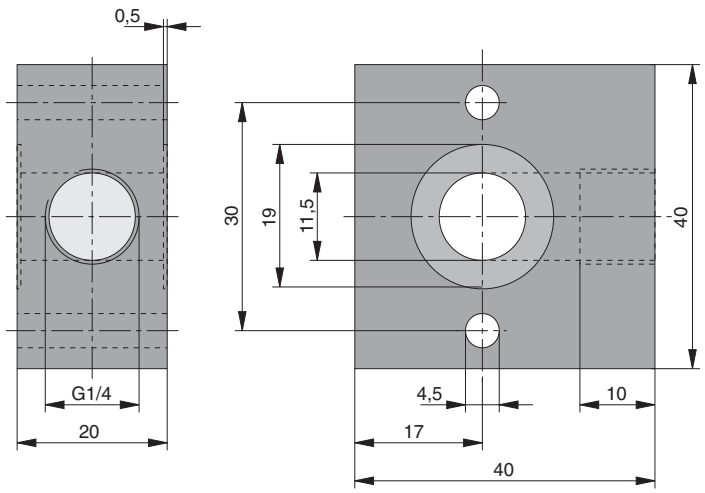
To provide unlubricated air e.g. for air gun

airfit light
Accessories

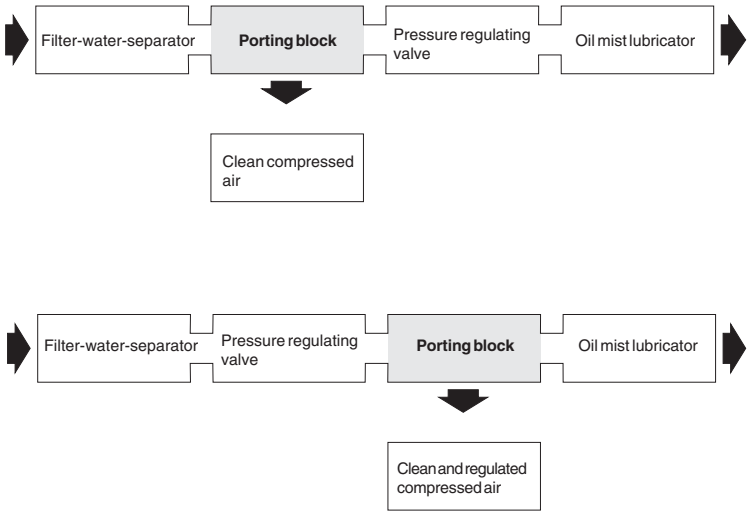
Characteristics

Installation	Between 2 units of the aifit light Series
Mounting	With coupling kit supplied
Material	Aluminium, enamelled black

Dimensions (mm)



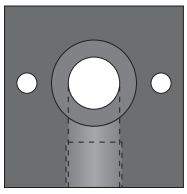
Installation Instructions



Order No.: G1/4-Standard PL 16031
1/4"-NPTF PL 17766

Porting block kit comprising:

Porting block
2 Sealing rings
2 Mounting screws



For single units see 5.09.004E-5.09.008E
For air preparation units see 5.09.002E, 5.09.003E
For product group list see 5.09.001E

HOERBIGER ORIGA

Data Sheet No. 5.21.002E-1

A1P288E00KY00X

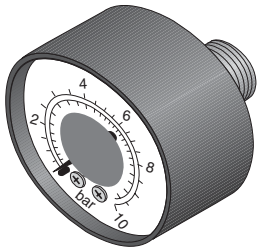
The right to introduce technical modifications is reserved

Gauge

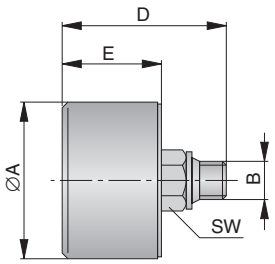
ø 40, 50, 63 mm

- centre rear connection (standard)

Gauge
centre rear connection



Dimensions

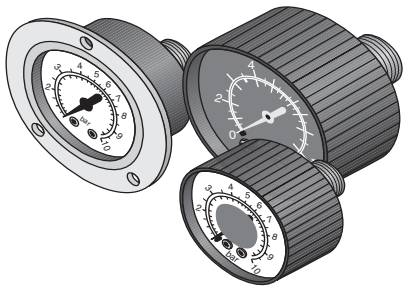


Order Instructions, Dimension Table (mm)

Order Instructions Type	Order No.	Dial range	ØA	B	D	E	SW
111.40.1,6	**KZ 8894**	0 - 1.6 bar	41	G1/8	44	26	14
111.40.2,5	**KZ 8810**	0 - 2.5 bar	41	G1/8	44	26	14
111.40.04	**KZ 8811**	0 - 4 bar	41	G1/8	44	26	14
111.40.06	**KZ 8812**	0 - 6 bar	41	G1/8	44	26	14
111.40.10	**KZ 8813**	0 - 10 bar	41	G1/8	44	26	14
111.40.10	**KZ 8891***	0 - 10 bar	41	G1/8	44	26	14
111.40.16	**KZ 8814**	0 - 16 bar	41	G1/8	44	26	14
111.50.10	**KZ 8815**	0 - 10 bar	49	G1/8	48	27	14
111.50.16	**KZ 8816**	0 - 16 bar	49	G1/8	48	27	14
111.50.10	**KG 8011***	0 - 10 bar	49	G1/4	48	27	14
111.50.10	**KG 8012**	0 - 10 bar	49	G1/4	48	27	14
111.50.16	**KG 8013**	0 - 16 bar	49	G1/4	48	27	14
111.63.10	**KG 8002***	0 - 10 bar	62	G1/4	49	28	14
111.63.10	**KZ 8817**	0 - 10 bar	62	G1/4	49	28	14
111.63.16	**KZ 8818**	0 - 16 bar	62	G1/4	49	28	14

* HOERBIGER design

Technical data: Class 1.6 (DIN 16005), double scale in bar/psi,
black polymer housing, acrylic glass face

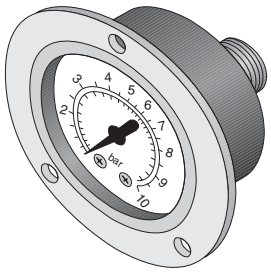


HOERBIGER
ORIGA

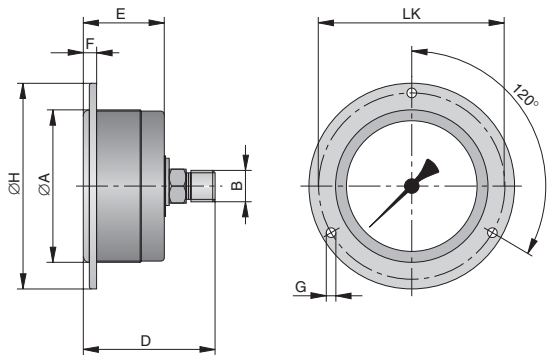
A1P284E00KY00X

The right to introduce technical modifications is reserved

Gauge with front ring for panel mounting



Dimensions



Order Instructions, Dimension Table (mm)

Order Instructions Type	Order No.	Dial range	ØA	B	D	E	F max.	ØG	ØH	ØLK	SW
111.40.10	**KZ 8822**	0 - 10 bar	40	G1/8	45	27	7	3.6	61	51	14
111.50.10	**KZ 8823**	0 - 10 bar	50	G1/8	48	27	7	3.6	71	60	14
111.50.16	**KZ 8824**	0 - 16 bar	50	G1/8	65	27	7	3.6	71	60	14
111.63.04	**KZ 8825**	0 - 4 bar	63	G1/4	48	30	7	3.6	85	75	14
111.63.10	**KZ 8826**	0 - 10 bar	63	G1/4	48	30	7	3.6	85	75	14
111.63.16	**KZ 8827**	0 - 16 bar	63	G1/4	48	30	7	3.6	85	75	14

Technical data: Class 2.5 (DIN 16005), scale in bar,
black polymer housing, acrylic glass face

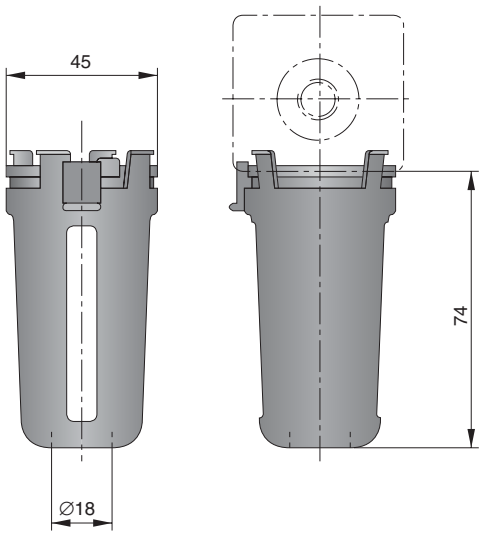
Bowl Guard Kit

for filter-water-separator oil mist lubricator combination units of series AIRFIT SWING

airfit Swing **Accessories**

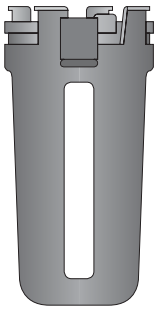
Characteristics	
Mounting	With snap mounting
Material	Zinc diecasting, polymer (POM)

Dimensions (mm)



Dimension Table and Order Instructions

Port size	Order No.
G1/8, G1/4, G3/8	**PL 16970-00**



The bowl guard protects the plastic bowl against external damage.

It comprises:
Bowl guard
(with snap mounting)

For single units see 5.12.004E-5.12.007E
For air preparation units see 5.12.002E-5.12.003E
For product group list see 5.12.001E

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Porting Block Kit

G1/4

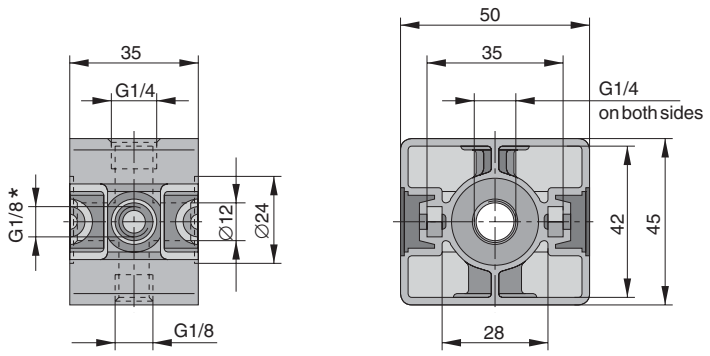
To provide unlubricated air e.g. for air gun

airfit swing Accessories

SX

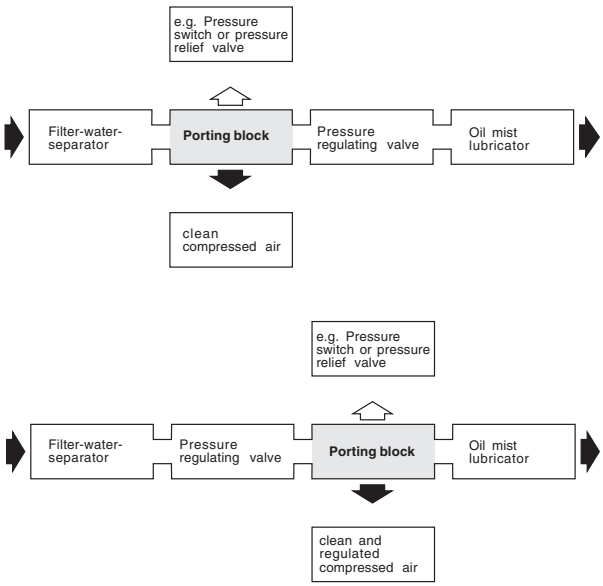
Characteristics	
Installation	Between 2 units of the aifit swing Series
Mounting	Directly flangeable with coupling kit supplied
Material	Zinc diecasting, black finish

Dimensions (mm)



* G1/8 thread on both sides

Installation Instructions

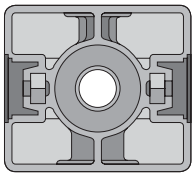


Order Instructions:	Type:	Order No.
G1/4 – G3/8 – standard	SX	PL 16969
G3/8 – with non-return function	SXV	PL 17316
1/4" – NPTF standard	SX-US	PL 17628

Porting block kit comprising:

1 Porting block
1 Coupling kit
Plug screw

Special versions:
Type SXV - Porting block kit with non-return function available on request



For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Porting Block Kit

G1/2

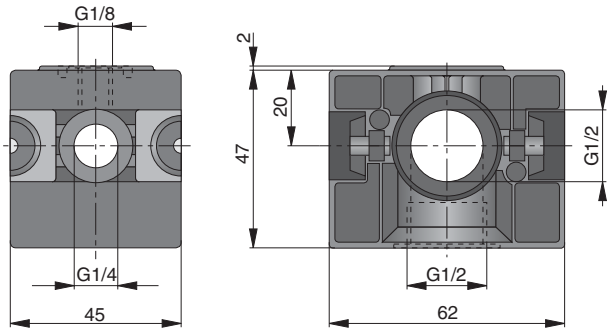
To provide unlubricated air e.g. for air gun

airfit comfort

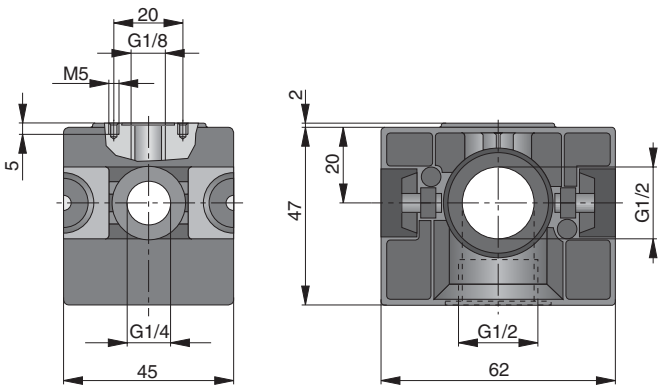
CX

Characteristics	
Installation	Between 2 units of the aifit comfort series
Mounting	Directly flangeable with coupling kit supplied
Material	Zinc - black lackiert

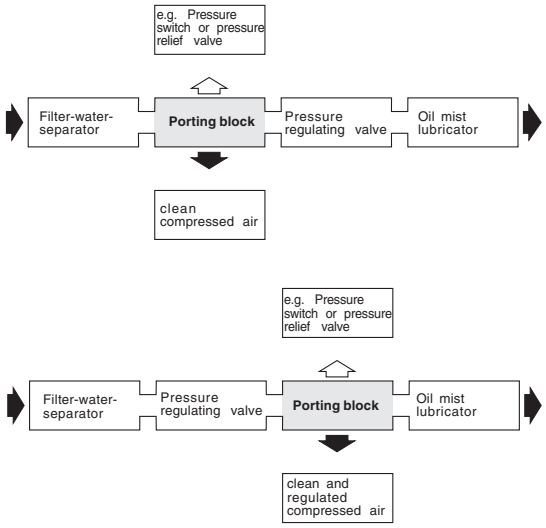
Dimensions (mm) Type PL 17607



Dimensions (mm) Type PL 17609



Installation Instructions



Order Instructions:

G1/2 – standard	**PL 17607**
G3/8 – standard	**PL 18370**
G1/2 – for mounting pressure switch	**PL 17609**
1/2" – NPTF-standard	**PL 17731**
3/8" – NPTF-standard	**PL 17746**

For single units see 5.19.008E-5.19.016E
For air preparation units see 5.19.004E, 5.19.005E
For product group list see 5.19.001E

Porting block kit comprising:

1 Porting block
2 Cones
1 O-Ring
2 Nuts
2 Screws
1 Plug screw G1/8

• Version see order instructions



HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

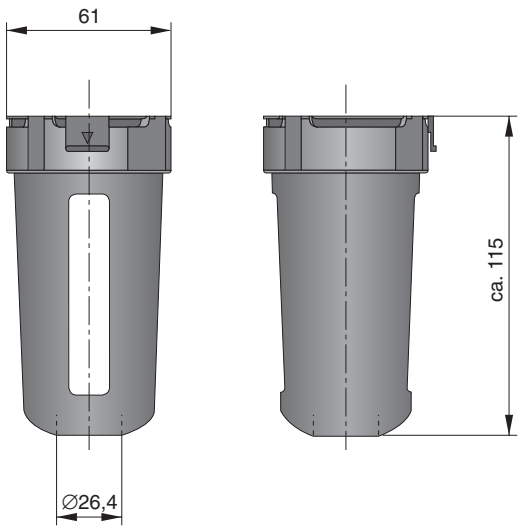
Bowl Guard Kit

airfit comfort

Characteristics

Mounting	With snap mounting
Material	Zinc diecasting, polymer (POM)

Dimensions (mm)



Dimension Table and Order Instructions

Port size	**Order No.**
G3/8, G1/2	**PL 17680**

Just click, easy assembly with bayonet fitting

The bowl guard protects the plastic bowl against external damage.

Assembly instructions:
The bowl guard kit consists of 3 parts. Please read the assembly instructions included with delivery.



For single units see 5.19.008E-5.19.016E
For air preparation units see 5.19.004E-5.19.005E
For product group list see 5.19.001E

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

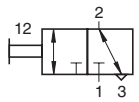
3/2 Way Shut-off Valve

G3/8-G1/2

Spool type

airfit comfort

CDV



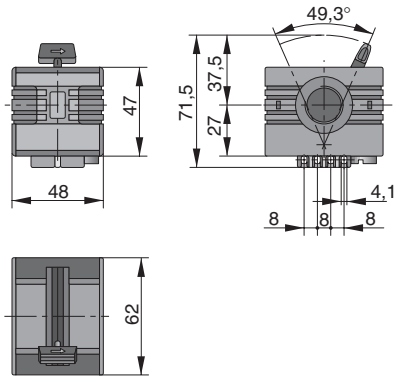
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			3/2 Way valve (spool type)	
Mounting			Direct assembly to any unit from the airfit comfort series, with coupling kit PL 17608	
Type			**CDV-3/8-XS**	**CDV-1/2-XS**
Port size			**G3/8**	**G1/2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60 at 10 bar	(further temperatures on request)
Weight (mass)		kg	0.4	
Pneumatic Characteristic				
Operating pressure range	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Recommended flow[1)]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**
Maximum flow[3)]	Q_{max}	l/min m^3/h	7500 450	7500 450

[1)] at p_2 = 6.3 bar and 25 m/s
[2)] at p_2 = 6.3 bar and Δp = 1 bar

Dimensions (mm)

Type: CDV-3/8, 1/2



Bestellangaben

Description	Port size	**Type**	**Order No.**
3/2 Way shut-off valve	G3/8	**CDV-3/8-XS**	**PB 56849-000**
3/2 Way shut-off valve	G1/2	**CDV-1/2-XS**	**PB 56949-000**

Accessories

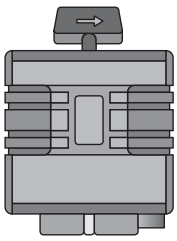
Description	**Order No.**
Coupling kit	**PL 17608**
Adaptor set G3/4	**PL 17682**

Accessories

Key, codeable by costomer



Order No.: KG 9017



- Spool type valve
- 4-fold lockable
- Colour coded optical position indicator
- Controlled exhaust
- Arrow symbol indicates flow direction
- Version NPTF thread

For single units see 5.19.008E-5.19.016E
For air preparation units see 5.19.004-5.19.005E
For product group list see 5.19.001E

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

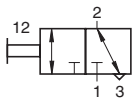
3/2 Way Shut-off Valve

G1/4,G3/8

Spool type

airfit Swing

SDV

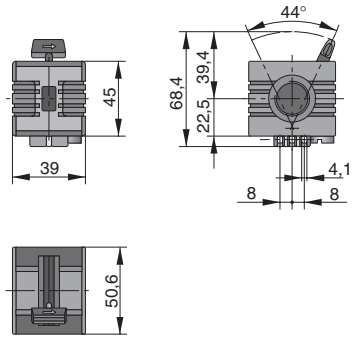


Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			3/2 Way valve (spool type)	
Mounting			Direct assembly to any unit from the airfit swing series, with coupling kit PL 16959	
Type			**SDV-1/4-XS**	**SDV-3/8-XS**
Port size			**G1/4**	**G3/8**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60 at 10 bar	(further temperatures on request)
Weight (mass)		kg	0.25	
Pneumatic Characteristic				
Operating pressure range	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16	
Recommended flow[1)]	Q_n	l/min m³/h	**550** **33**	**850** **51**
Maximum flow[3)]	Q_{max}	l/min m³/h	4100 246	5300 318

[1)] at p_2 = 6.3 bar and 25 m/s
[2)] at p_2 = 6.3 bar and Δp = 1 bar

Dimensions (mm)



Bestellangaben

Description	Port size	**Type**	**Order No.**
3/2 Way shut-off valve lockable	G1/4	**SDV-1/4-XS**	**PB 46749-101**
3/2 Way shut-off valve lockable	G3/8	**SDV-3/8-XS**	**PB 46849-101**

Accessories

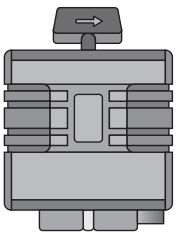
Description	**Order No.**
Coupling kit	**PL 16959**

Accessories

Key, codeable by costomer



Order No.: KG 9017



- Spool type valve
- 3-fold lockable
- Colour coded optical position indicator
- Controlled exhaust
- Arrow symbol indicates flow direction
- version with NPTF thread

For single units see 5.12.004E-5.12.007E
For air preparation units see 5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.21.015E-1

HOERBIGER ORIGA

A1P596E00KY00X

The right to introduce technical modifications is reserved

Porting Block Kit

G1 1/2,G2

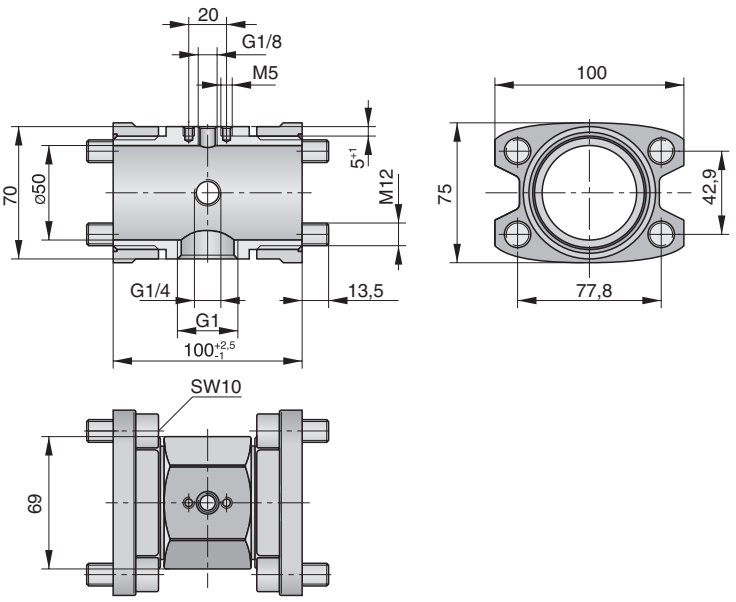
To provide unlubricated air e.g. for air gun

airfit **A50**

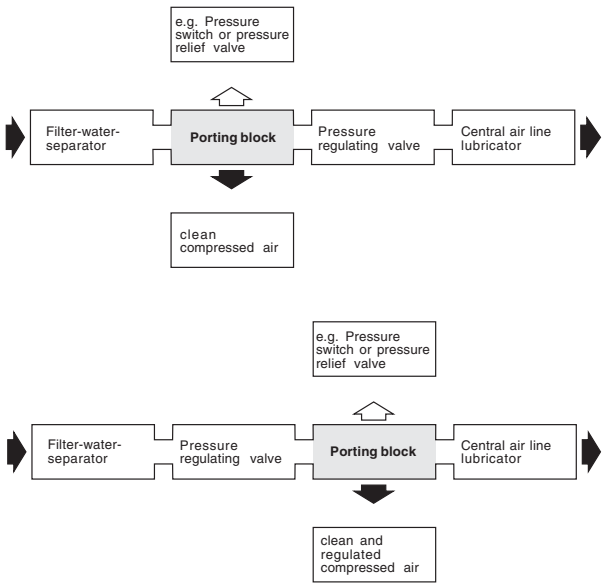
A50X

Characteristics	
Installation	Between 2 units of the AIRFIT A50 series
Mounting	Directly flangeable with coupling kit supplied
Material	Aluminium

Dimensions (mm) PL 18779



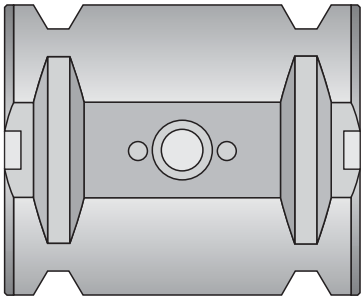
Installation Instructions



Order Instructions: PL 18779 (for mounting pressure switch)

Porting block kit comprising:

1 Tube
2 Flanges
2 O-Rings for Flanges
8 Screws
2 O-Rings
4 Plug screws



For single units see 5.50.003E-5.95.024E
For product group list see 5.50.001E

A1P737E00FY00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Porting Block Kit

G3/4,G1

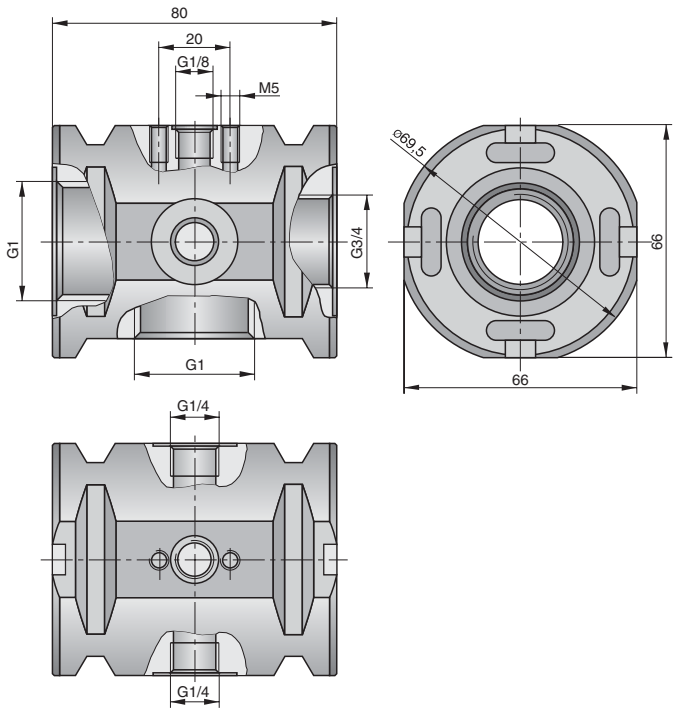
To provide unlubricated air e.g. for air gun

airfit **A25**

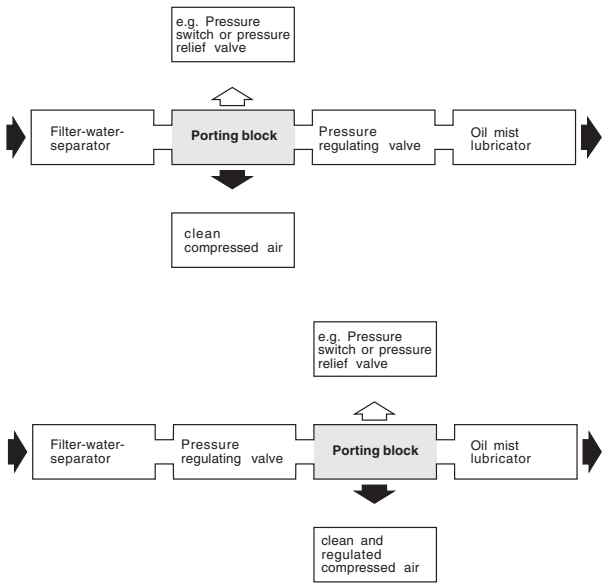
A25X

Characteristics	
Installation	Between 2 units of the AIRFIT A25 series
Mounting	Directly flangeable with coupling kit supplied
Material	Aluminium

Dimensions (mm)



Installation Instructions

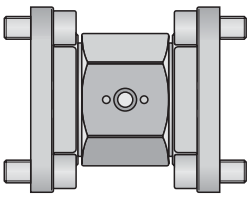


Order Instructions: PL 18986 (for mounting pressure switch)

Porting block kit comprising:

1 Porting block
2 Cones
1 O-Ring
2 Nuts
2 Screws
3 Plug screws

• Version with NPTF thread



For single units see 5.23.004E-5.23.007E
For air preparation units see 5.23.002E-5.23.003E
For product group list see 5.23.001E

HOERBIGER ORIGA

Data Sheet No. 5.21.017E-1

A1P738E00FY00X

The right to introduce technical modifications is reserved

3/2 Way Shut-off Valve

G3/4, G1

airfit A25

A25DV

Characteristics			Pressures quoted as gauge pressure	
System			3/2 Way shut-off valve	
Mounting			Direct assembly with any unit of series A25 – with coupling kit	
Type			**A25DV-3/4**	**A25DV-1**
Port size			**G3/4**	**G1**
Installation			In any position	
Medium and ambient temperatures [1]	T_{min} T_{max}	°C °C	0 +50 (+60°C to 12.5 bar)	
Weight (mass)		kg	1.2	
Pneumatic Characteristic				
Operating pressure range	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 17.5	
Maximum flow [2]	Q_{max}	l/min m³/h	> 20000 > 1200	> 20000 > 1200

[1] Ice formation must be avoided.
[2] at p_1 = 6.3 bar and Δp = 1 bar

- Rotary switch can be turned 90°
- Indication of positions

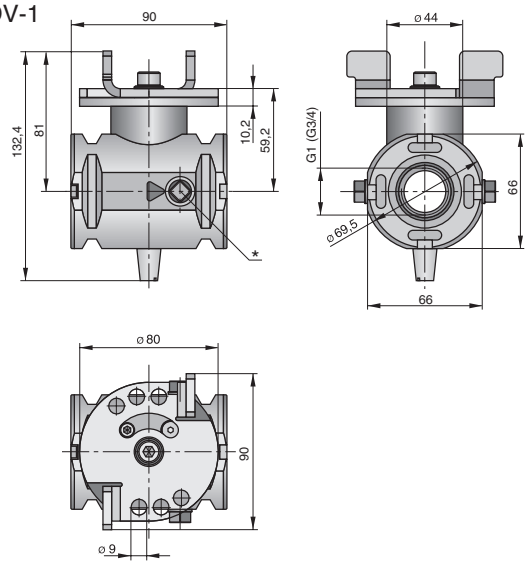
Flow open,
exhaust closed

Inlet closed
outlet exhausted

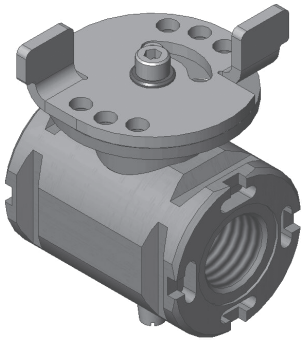
- can be shut off in 6 different modes
- Flow direction shown by arrow

Dimensions (mm)

Standard version
Type: A25DV-1



* two opposite gauge ports G1/8 on request



Order Instructions

Description	Port size	**Type**	**Order No.**
Standardversion	G3/4	**A25DV-3/4**	**PB 63249-000**
Standardversion	G1	**A25DV-1**	**PB 63349-000**

Accessories

Description	**Order No.**
Coupling kit	**PL 18987**
Mounting kit	**PL 18988**
Lock, codable by customer	**KG 9017**

Single units and air preparation units see 5.23.001E-5.23.007E

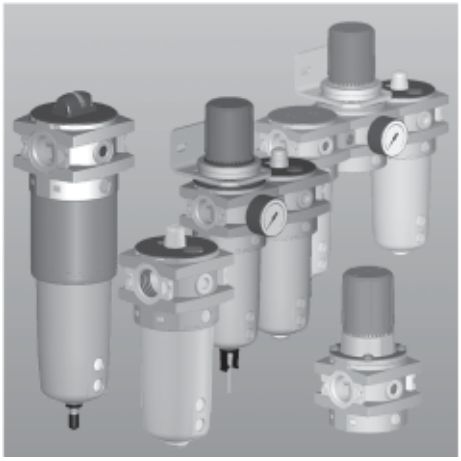
Data Sheet No. 5.21.033E-1

HOERBIGER ORIGA

A1P718E00FY00X

The right to introduce technical modifications is reserved

AIR PREPARATION UNITS
G3/4-G1
SERIES
airfit A25



HOERBIGER
ORIGA

		Port size	Recommended flow (l/min)	**Type**	Data Sheet No.
Air preparation units		G3/4	**7900**	**A25FRL-3/4-EMW**	5.23.002E
		G1	**12580**	**A25FRL-1-EMW**	
		G3/4	**8600**	**A25KL-3/4-EMW**	5.23.003E
		G1	**14650**	**A25KL-1-EMW**	
Filter-regulator		G3/4	**13200**	**A25K-3/4-E**	5.23.004E
		G1	**19000**	**A25K-1-E**	
Filter-water-separator		G3/4	**10400**	**A25F-3/4-E** **A25FD-3/4-E**	5.23.005E
		G1	**11400**	**A25F-1-E** **A25FD-1-E**	
Pressure regulating valve		G3/4	**14600**	**A25R-3/4**	5.23.006E
		G1	**>20000**	**A25R-1**	
Oil mist lubricator		G3/4	**16000**	**A25L-3/4-E**	5.23.007E
		G1	**17700**	**A25L-1-E**	
Submicrofilter		G3/4	**3850**	**A25MF230-3/4**	5.81.009E
		G1	**3850**	**A25MF230-1**	
Activated carbon filter		G3/4	**3850**	**A25MC230-3/4**	5.81.009E
		G1	**3850**	**A25MC230-1**	
Start-/ stop valve		G3/4	**10500**	**A25DS-3/4**	5.95.032E
		G1	**12000**	**A25DS-1**	
3/2 Way shut-off valve		G3/4	**>20000**	**A25DV-3/4**	5.21.033E
		G1	**>20000**	**A25DV-1**	

Table of Contents see 5.00.001E

A3P167E71EY00X

The right to introduce technical modifications is reserved

Air Preparation Unit

G3/4, G1

airfit A25

A25FRL



Version with NPTF thread

Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Air preparation unit comprising filter-water-separator, diaphragm-type pressure regulating valve and oil mist lubricator *)	
Type			**A25FRL-3/4-EMW**	**A25FRL-1-EMW**
Port size			**G3/4**	**G1**
Max. condensate capacity		cm^3	130	
Condensate drainage			Standard: manual semiautomatic with pressure relief or fully automatic	
Max. oil capacity		cm^3	500	
Oil refilling			Standard: manual - also during operation On request: bowl with automatic refilling	
Installation			Vertical	
Medium and [2] ambient temperatures	T_{min} T_{max}	°C °C	-10 +50 (+60°C to 12.5 bar)	
Weight (mass)		kg	3.3	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 17.5	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 0.5 12 17.5	
Maximum flow [1]	Q_n	l/min m^3/h	7900 474	12580 755

[1] at p_1=10 bar on p_2=6.3 bar and Δp=1 bar
[2] Ice formation must be avoided.

*) To achieve optimum atomization and long conveying distance of the oil mist, oil viscosities of ≤ 32 Cst to ISO 3448 (32 mm^2/s at 40°C) are recommended. See HOERBIGER-ORIGA special oil, Order No. KY 8766, Cat.-No. 5.61.050E.

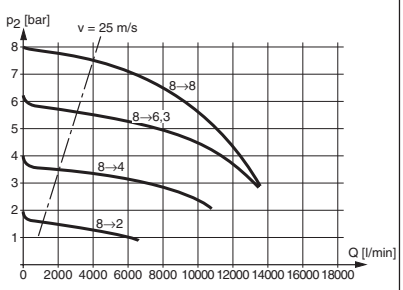
Air preparation unit comprising:

- Filter-water-separator
- Diaphragm-type pressure regulating valve
- Oil mist lubricator
- Gauge
- Mounting bracket



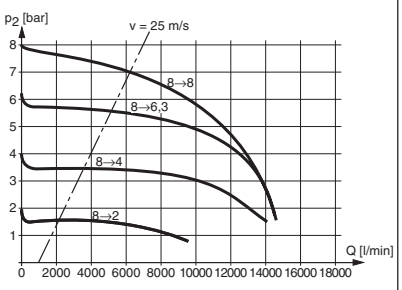
Flow Characteristics

Type: A25FRL-3/4-EMW



Flow Characteristics

Type: A25FRL-1-EMW



For single units see 5.23.004E - 5.23.007E
For product group list see 5.23.001E

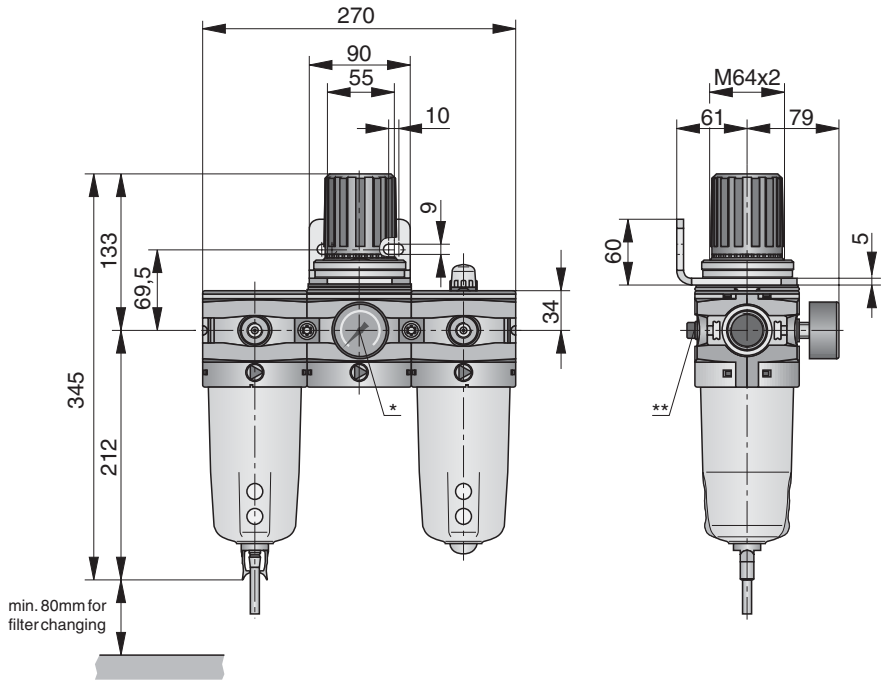
Data Sheet No. 5.23.002E-1

A1P711E00IAE00X

The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A25FRL-3/4-EMW
A25FRL-1-EMW



* Two opposite gauge ports G1/4
** On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/4	**A25FRL-3/4-EMW**	**PB 63449-000**
Basic model	G1	**A25FRL-1-EMW**	**PB 63549-000**
With semiautomatic drainage	G3/4	**A25FRL-3/4-EHMW**	**PB 63449-004**
With semiautomatic drainage	G1	**A25FRL-1-EHMW**	**PB 63549-004**
With automatic drainage	G3/4	**A25FRL-3/4-AEMW**	**PB 63449-005**
With automatic drainage	G1	**A25FRL-1-AEMW**	**PB 63549-005**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Mounting kit (bracket + mounting nut)	**PL 18990**
Gauge, Ø 50 mm, 0-16 bar, G1/4	**KG 8047**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**
Keylock complete	**PL 17127**
Regulator spring for operating pressure 17.5 bar	**PL 18984**

Air Preparation Unit

G3/4, G1

airfit A25

A25KL



Version with NPTF thread

Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Air preparation unit comprising filter-regulator and oil mist lubricator *)	
Type			**A25KL-3/4-EMW**	**A25KL-1-EMW**
Port size			**G3/4**	**G1**
Max. condensate capacity		cm^3	130	
Condensate drainage			Standard: manual semiautomatic with pressure relief fully automatic	
Max. oil capacity		cm^3	500	
Oil refilling			Standard: manual - also during operation On request: bowl with automatic refilling	
Installation			Vertical	
Medium and [2] ambient temperatures	T_{min} T_{max}	°C °C	-10 +50 (+60°C to 12.5 bar)	
Weight (mass)		kg	2.8	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 17.5	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 12	0.5 17.5
Maximum flow [1] Durchflussmenge	Q_n m^3/h	l/min 528	8600 879	14650

[1] at p_1=10 bar on p_2=6.3 bar and Δp=1 bar

[2] Ice formation must be avoided.

*) To achieve optimum atomization and long conveying distance of the oil mist, oil viscosities of ≤ 32 Cst to ISO 3448 (32 mm^2/s at 40°C) are recommended. See HOERBIGER-ORIGA special oil, Order No. KY 8766, Cat.-No. 5.61.050E.

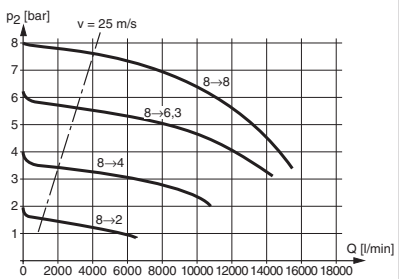
Air preparation unit comprising:

- Filter-regulator
- Oil mist lubricator
- Gauge
- Mounting bracket



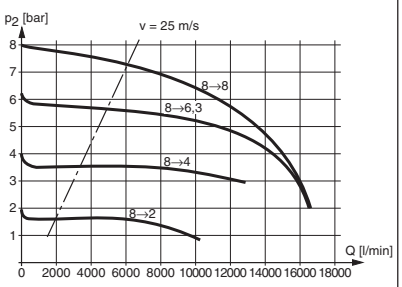
Flow Characteristics

Type: A25KL-3/4-EMW



Flow Characteristics

Type: A25KL-1-EMW



For single units see 5.23.004E - 5.23.007E
For product group list see 5.23.001E

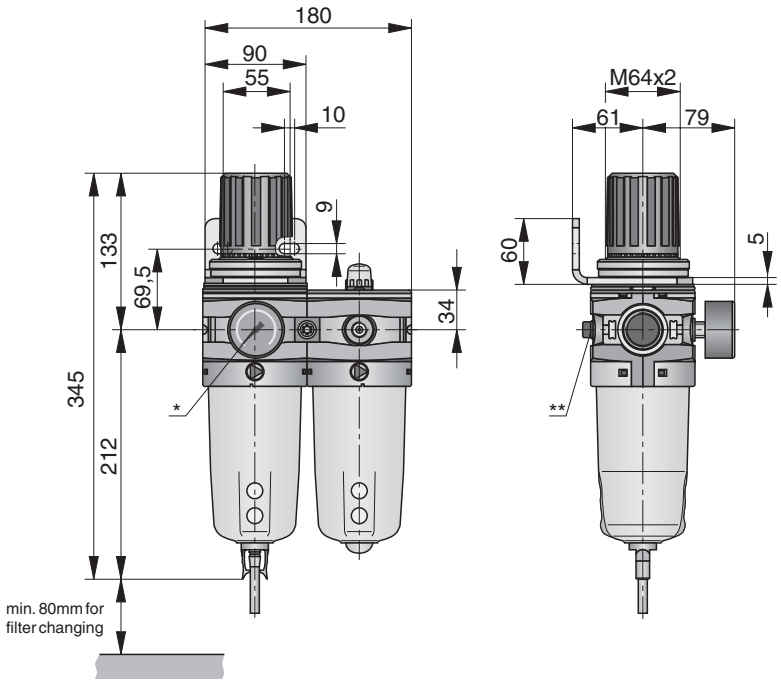
Data Sheet No. 5.23.003E-1

A1P712E00IAE00X

The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A25KL-3/4-EMW
A25KL-1-EMW



* Two opposite gauge ports G1/4
** On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/4	**A25KL-3/4-EMW**	**PB 63649-000**
Basic model	G1	**A25KL-1-EMW**	**PB 63749-000**
With semiautomatic drainage	G3/4	**A25KL-3/4-EHMW**	**PB 63649-004**
With semiautomatic drainage	G1	**A25KL-1-EHMW**	**PB 63749-004**
With automatic drainage	G3/4	**A25KL-3/4-AEMW**	**PB 63649-005**
With automatic drainage	G1	**A25KL-1-AEMW**	**PB 63749-005**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Mounting kit (bracket + mounting nut)	**PL 18990**
Gauge, Ø 50 mm, 0-16 bar, G1/4	**KG 8047**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**
Keylock complete	**PL 17127**
Regulator spring for operating pressure 17.5 bar	**PL 18984**

Filter-Regulator

G3/4, G1

airfit A25

A25K



Version with NPTF thread

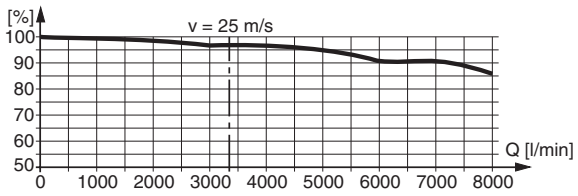
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Cyclone system with filter element, combined with a diaphragm-type pressure regulating valve (spring loaded) with flow compensation and secondary pressure relief	
Type			**A25K-3/4-E**	**A25K-1-E**
Port size			**G3/4**	**G1**
Pore size of filter element		µm	Standard: 30 On request: 5	
Max. condensate capacity		cm^3	130	
Condensate drainage			Standard: manual semiautomatic with pressure relief or fully automatic	
Installation			Vertical	
Medium and [2] ambient temperatures	T_{min} T_{max}	°C °C	-10 +50 (+60°C to 12.5 bar)	
Weight (mass)		kg	1.5	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 17.5	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 0.5 12 17.5	
Maximum flow [1]	Q_n	l/min m^3/h	13200 792	19000 1140

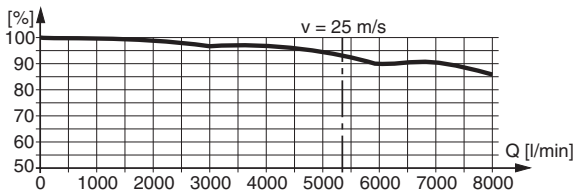
[1] at p_1=10 bar on p_2=6.3 bar and Δp=1 bar
[2] Ice formation must be avoided.

Water-Separator

Type: A25K-3/4-E

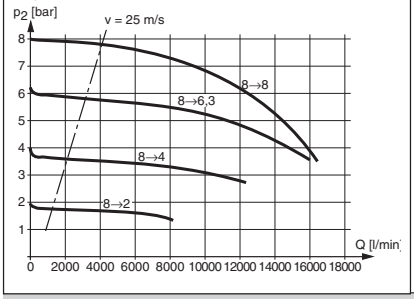


Type: A25K-1-E



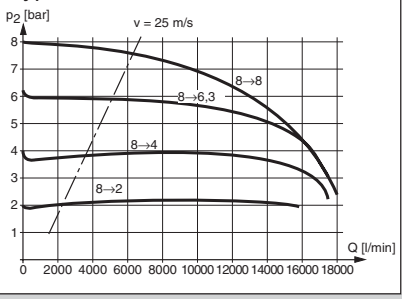
Flow Characteristics

Type: A25K-3/4-E



Flow Characteristics

Type: A25K-1-E





For single units see 5.23.004E - 5.23.007E
For air preparation units see 5.23.002E - 5.23.003E
For product group list see 5.23.001E

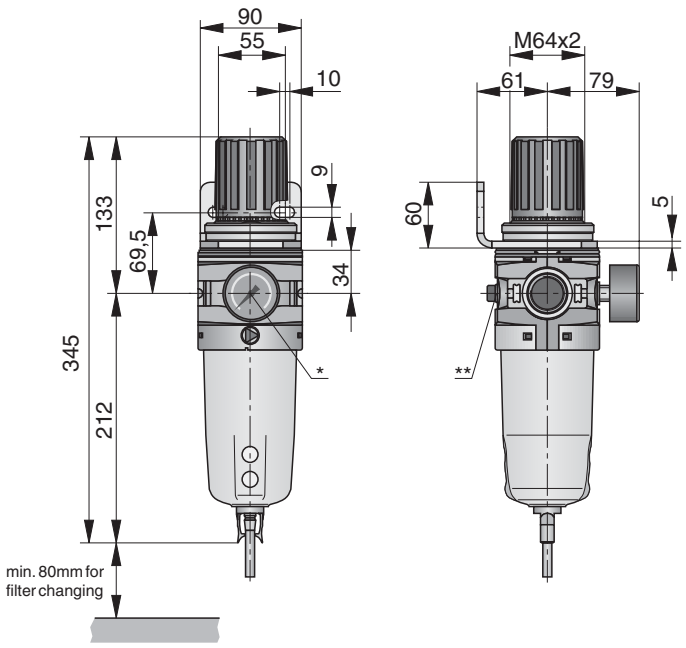
Data Sheet No. 5.23.004E-1

HOERBIGER ORIGA

A1P713E00IAE00X
The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A25K-3/4-E
A25K-1-E



* Two opposite gauge ports G1/4
** On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/4	**A25K-3/4-E**	**PB 62249-000**
Basic model	G1	**A25K-1-E**	**PB 62349-000**
With filter element 5 µm	G3/4	**A25K-3/4-5E**	**PB 62249-016**
With filter element 5 µm	G1	**A25K-1-5E**	**PB 62349-016**
With semiautomatic drainage	G3/4	**A25K-3/4-EH**	**PB 62249-001**
With semiautomatic drainage	G1	**A25K-1-EH**	**PB 62349-001**
With automatic drainage	G3/4	**A25K-3/4-AE**	**PB 62249-002**
With automatic drainage	G1	**A25K-1-AE**	**PB 62349-002**
With adapter for keylock	G3/4	**A25K-3/4-EX**	**PB 62249-010**
With adapter for keylock	G1	**A25K-1-EX**	**PB 62349-010**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

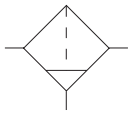
Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Mounting kit (bracket + mounting nut)	**PL 18990**
Gauge, Ø 50 mm, 0-16 bar, G1/4	**KG 8047**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**
Keylock complete	**PL 17127**
Regulator spring for operating pressure 17.5 bar	**PL 18984**

Filter-Water-Separator, Dust Filter

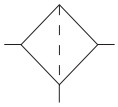
G3/4, G1

airfit A25

A25F



A25FD



Version with NPTF thread

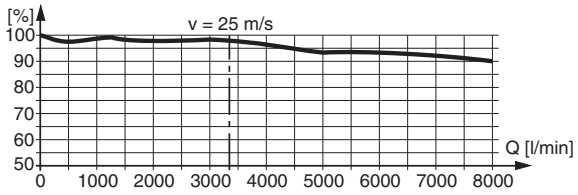
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Cyclone system and downstream filter element (A25F), Dust filter (A25FD)	
Type			**A25F-3/4-E, A25FD-3/4-E**	**A25F-1-E, A25FD-1-E**
Port size			**G3/4**	**G1**
Pore size of filter element		µm	Standard: 30 On request: 5 and 1 (Dust filter)	
Max. condensate capacity		cm^3	130	
Condensate drainage			Standard: manual semiautomatic (pressure relief) and fully automatic	
Installation			Vertical	
Medium and [2] ambient temperatures	T_{min} T_{max}	°C °C	-10 +50 (+60°C to 12.5 bar)	
Weight (mass)		kg	0.9	
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	0 17.5	
Maximum flow [1]	Q_n	l/min m^3/h	10400 624	11400 684

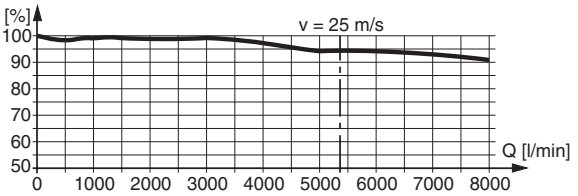
[1] at p_1=10 bar and Δp=1 bar, for A25F
[2] Ice formation must be avoided.

Water-Separator

Type: A25F-3/4-E

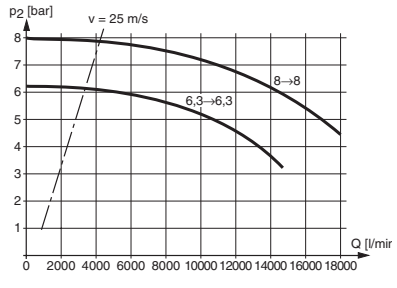


Type: A25F-1-E



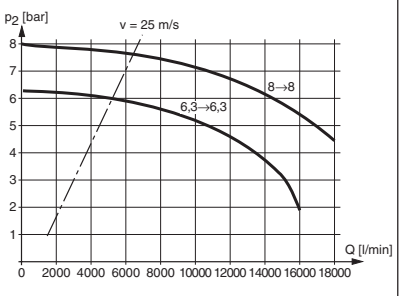
Flow Characteristics

Type: A25F-3/4-E



Flow Characteristics

Type: A25F-1-E





For single units see 5.23.004E - 5.23.007E
For air preparation units see 5.23.002E - 5.23.003E
For product group list see 5.23.001E

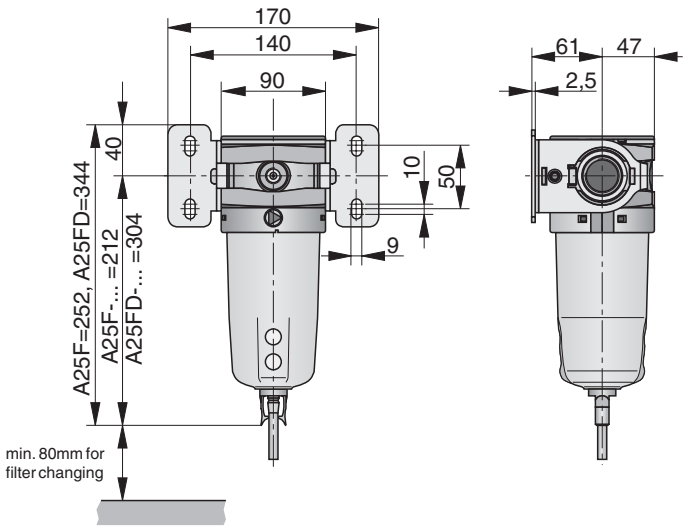
Data Sheet No. 5.23.005E-1

HOERBIGER ORIGA

A1P714E00IAE00X
The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A25F-1-E
A25FD-1-E



Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/4	**A25F-3/4-E**	**PB 61649-000**
Basic model	G1	**A25F-1-E**	**PB 61749-000**
With filter element 5 µm	G3/4	**A25F-3/4-5E**	**PB 61649-016**
With filter element 5 µm	G1	**A25F-1-5E**	**PB 61749-016**
With filter element 1 µm	G3/4	**A25FD-3/4-E**	**PB 61649-070**
With filter element 1 µm	G1	**A25FD-1-E**	**PB 61749-070**
With semiautomatic drainage	G3/4	**A25F-3/4-EH**	**PB 61649-001**
With semiautomatic drainage	G1	**A25F-1-EH**	**PB 61749-001**
With automatic drainage	G3/4	**A25F-3/4-AE**	**PB 61649-002**
With automatic drainage	G1	**A25F-1-AE**	**PB 61749-002**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

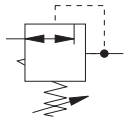
Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**

Pressure Regulating Valve

G3/4, G1

airfit A25

A25R



Version with NPTF thread

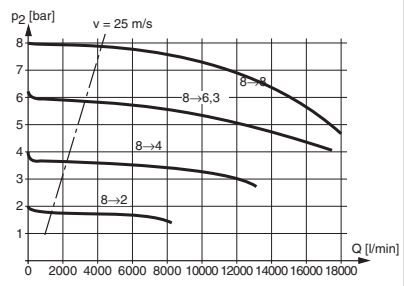
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Diaphragm-type pressure regulating (spring loaded) with flow compensation, primary pressure compensation and secondary pressure relief	
Type			**A25R-3/4**	**A25R-1**
Port size			**G3/4**	**G1**
Installation			In any position	
Medium and [2] ambient temperatures	T_{min} T_{max}	°C °C	-10 +60	
Weight (mass)		kg	1.2	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 17.5	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 12	0.5 17.5
Maximum flow [1]	Q_n	l/min m³/h	14600 876	> 20000 >1200

[1] at p_1=10 bar on p_2=6,3 bar and Δp=1 bar
[2] Ice formation must be avoided.

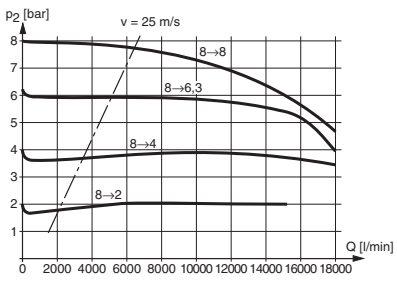
Flow Characteristics

Type: A25R-3/4



Flow Characteristics

Type: A25R-1





For single units see 5.23.004E - 5.23.007E
For air preparation units see 5.23.002E - 5.23.003E
For product group list see 5.23.001E

Data Sheet No. 5.23.006E-1

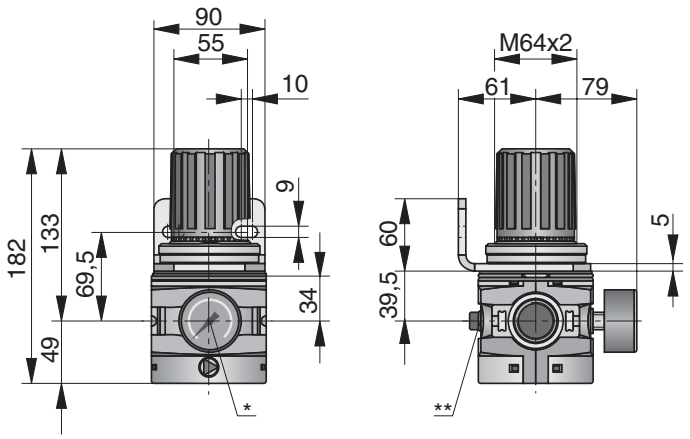
HOERBIGER ORIGA

A1P715E00IAE00X

The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A25R-3/4
A25R-1



* Two opposite gauge ports G1/4
** On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/4	**A25R-3/4**	**PB 61849-000**
Basic model	G1	**A25R-1**	**PB 61949-000**
With adapter for keylock	G3/4	**A25R-3/4-X**	**PB 61849-006**
With adapter for keylock	G1	**A25R-1-X**	**PB 61949-006**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

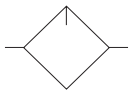
Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Mounting kit (bracket + mounting nut)	**PL 18990**
Gauge, Ø 50 mm, 0-16 bar, G1/4	**KG 8047**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**
Keylock complete	**PL 17127**
Regulator spring for operating pressure 17.5 bar	**PL 18984**

Oil mist lubricator

G3/4, G1

airfit A25

A25L



Version with NPTF thread

Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Oil mist lubricator with flow compensation *)	
Type			**A25L-3/4-E**	**A25L-1-E**
Port size			**G3/4**	**G1**
Oil/air ratio			Degressive (number of drops per minute remains constant)	
Max. oil capacity		cm^3	500	
Oil refilling			Standard: manual - also during operation	
Installation			Vertical	
Medium and [2] ambient temperatures	T_{min} T_{max}	°C °C	-10 +50 (+60°C to 12.5 bar)	
Gewicht (Masse)		kg	0.8	
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	0 17.5	
Maximum flow [1]	Q_n	l/min m^3/h	16000 960	17700 1062

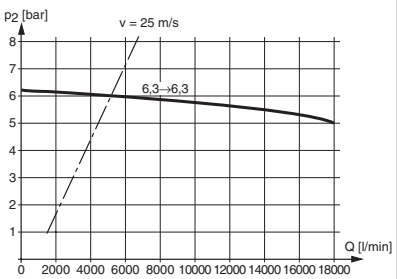
[1] at p_1=6.3 bar and Δp=1 bar

[2] Ice formation must be avoided.

*) To achieve optimum atomization and long conveying distance of the oil mist, oil viscosities of ≤ 32 Cst to ISO 3448 (32 mm^2/s at 40°C) are recommended. See HOERBIGER-ORIGA special oil, Order No. KY 8766, Cat.-No. 5.61.050E.

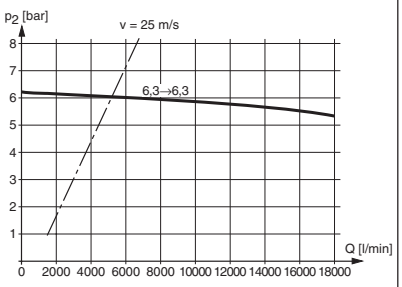
Flow Characteristics

Type: A25L-3/4-E



Flow Characteristics

Type: A25L-1 -E





For single units see 5.23.004E - 5.23.007E
For air preparation units see 5.23.002E - 5.23.003E
For product group list see 5.23.001E

Data Sheet No. 5.23.007E-1

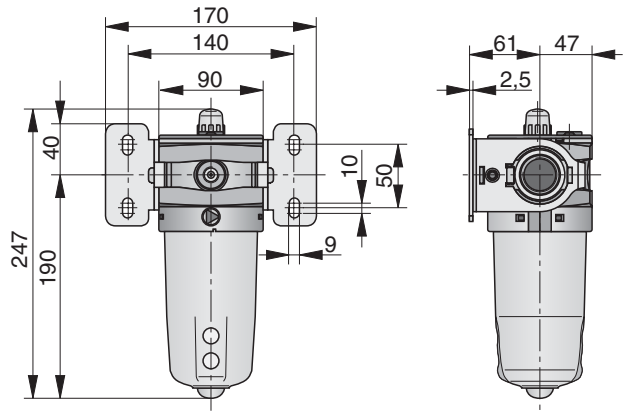
HOERBIGER ORIGA

A1P716E00IAE00X

The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A25L-3/4-E
A25L-1-E



Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/4	**A25L-3/4-E**	**PB 62049-000**
Basic model	G1	**A25L-1-E**	**PB 62149-000**
Basic model with level indicator	G3/4	**A25L-3/4-EI**	**PB 62049-002**
Basic model with level indicator	G1	**A25L-1-EI**	**PB 62149-002**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**

LARGE AIR PREPARATION UNITS G2 (G1 1/2) SERIES airfit A50



HOERBIGER ORIGA

		Port size	Recommended flow (l/min)*	**Type**	Data Sheet No.
Filter-water-separator		G2 (G1 1/2)	10000	**A50F-ADV**	5.50.003E
		G2 (G1 1/2)	10000	**A50FD-DV**	
Pressure regulating valve		G2 (G1 1/2)	10000	**A50R**	5.55.007E
		G2 (G1 1/2)	10000	**A50RV**	
Micro-mist lubricator		G1	Q_{min} = ca. 150 Q_{max} = 5500	**EL-25**	5.92.002E
		G2	$Q_{min^{\wedge}}$ = 200 Q_{max} = 16600	**EL-50**	
Submicrofilters activated carbon filter		G2 (G1 1/2)	10000	**A50MF1080**	5.81.008E
		G2 (G1 1/2)	10000	**A50MC1080**	
Soft start valve		G1 1/2	8000	**A50DA-1 1/2**	5.95.023E
		G2	10000	**A50DA-2**	
2/2 Way start-stop valve		G1 1/2	8000	**A50DS-1 1/2**	5.95.024E
		G2	10000	**A50DS-2**	
3/2 Way start-stop valve		G1 1/2	8000	**A50DS-1 1/2**	5.95.025E
		G2	10000	**A50DS-2**	

Table of Contents see 5.00.001E

* For max. flows see diagrams on single data sheet.
Max. flow is much higher than the given recommended flow.

A3P076E71EY00X

The right to introduce technical modifications is reserved

Filter-Water-Separator

Dust Filter

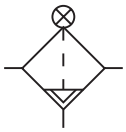
for SAE flange G2 (G1 1/2)

airfit A50

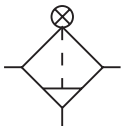
Characteristics			Pressures quoted as gauge pressure	
System			Cyclone system and filter element	Dust Filter
Type			**A50F-ADV**	**A50FD-DV**
Connection			SAE flange	SAE flange
Port size			G2 (G1 1/2)	G2 (G1 1/2)
Pore size of filter element		µm	Standard: 30 On request: 5	1
Max. condensate capacity		cm^3	600	
Condensate drainage			fully automatic (float-type)	manual
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 (further temperatures +60 on request)	
Weight (mass)		kg	6.3	6.4
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	0 17.5	
Recommended flow [1]	Q_n	l/min m^3/h	**10000** **600**	**10000** **600**
Maximum flow [2]	Q_{max}	l/min m^3/h	> 40000 > 2400	
Degree of moisture separation at recommended flow	η	%	90	only solid particles realated to 1µm

[1] at 6 bar, DN 50 and 12 m/s
[2] at p_1=6 bar, Δp=1 bar

A50F



A50FD



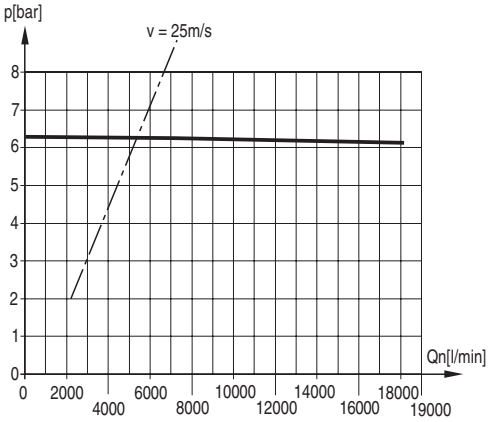
Versions
- Filter-Water-Separator with cyclone system, filter element and wear indicator
- Dust Filter with wear indicator

with mounting flange or without mounting flange



Flow Characteristics

Type: A50F-ADV



For product group list see 5.50.001E-2

Data Sheet No. 5.50.003E-1

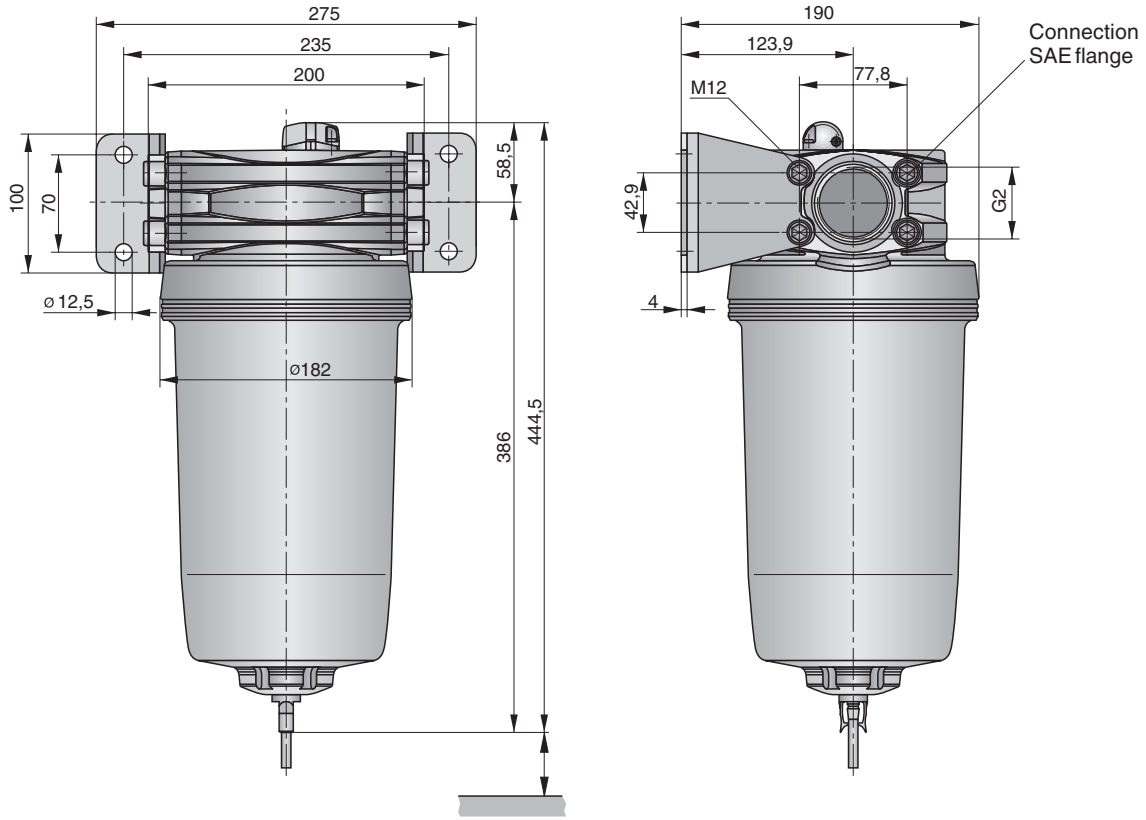
HOERBIGER ORIGA

A1P670E00CAD00X

The right to introduce technical modifications is reserved

Dimensions (mm)

Type: A50F-ADV



Order Instructions

Description	Port size	Type	Order No.
Basic model without mounting flange	for SAE flange	**A50F-ADV**	**PB60949-000**
Basic model with 5µm filter element without mounting flange	for SAE flange	**A50F-5ADV**	**PB 60949-016**
Version with mounted flange	G1 1/2	**A50F-1 1/2-ADV**	**PB 60849-050**
Version with mounted flange	G2	**A50F-2-ADV**	**PB 60949-050**
Version with mounted flange (5µm filter element)	G1 1/2	**A50F-1 1/2-ADV**	**PB 60849-066**
Version with mounted flange (5µm filter element)	G2	**A50F-2-5ADV**	**PB 60949-066**
Dust filter-basic model (1µm filter element) without mounted flange	for SAE flange	**A50FD-DV**	**PB 60949-120**
Dust filter with mounted flange(1µm filter element)	G1 1/2	**A50FD-1 1/2-DV**	**PB 60849-170**
Dust filter with mounted flange(1µm filter element)	G2	**A50FD-2-DV**	**PB 60949-170**

Accessories

Description	Order No.
Mounting kit (2 brackets + 4 screws)	**PL 18672**
Coupling kit	**PL 18735**
Connection kit G1 1/2	**PL18660**
Connection kit G2	**PL18662**
Porting block kit G1 with flange for pressure switch	**PL18779**

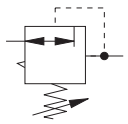
Pressure Regulating Valve

G1/4

Characteristics			Pressures quoted as gauge pressure
System			Pilot operated diaphragm-type pressure regulating valve with secondary pressure relief and flow compensation - suitable for remote control
Type			**SRV-1/4**
Port size			**G1/4**
Installation			In any position
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60 (further temperatures on request)
Weight (mass)		kg	0.4
Pneumatic Characteristic			
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 16
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 8
Min. pressure difference	p_1-p_2	bar	0.2
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=10		bar bar	0.5 0.4
Recommended flow[1]	Q_n	l/min m^3/h	**550** **33**
Maximum flow[2]	Q_n	l/min m^3/h	2200 132
Recommended pilot pressure regulating valve			SR-1/8

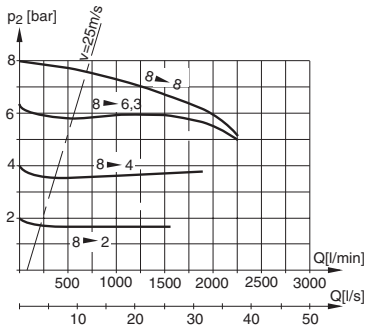
[1] at p_2 = 6 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

SRV

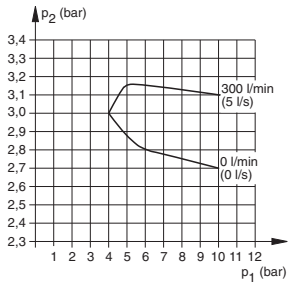


Special solutions
(e.g. temperature, pressure, medium ...) on request

Flow Characteristics



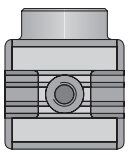
Outlet Pressure Variation with Fluctuating Inlet Pressure



Pilot operated diaphragm-type pressure regulating valve with secondary pressure relief and flow compensation - suitable for remote control.

Easily adaptable to customer's choice of colour and private labelling.

- Version with NPTF thread

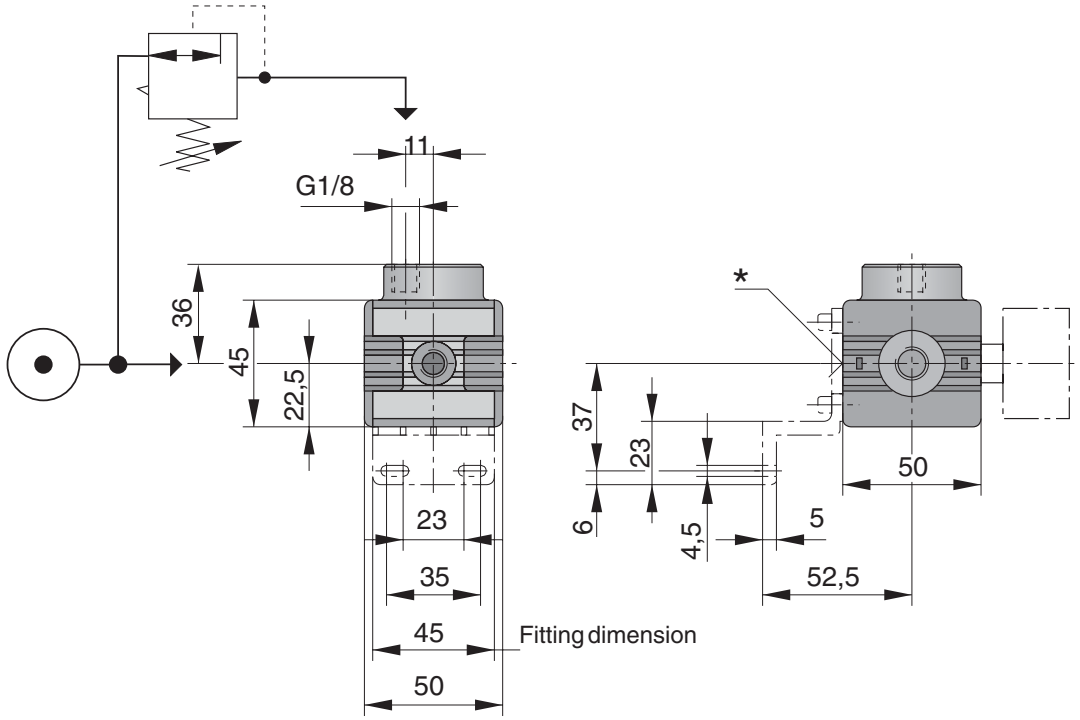


For filter-water-separator see 5.12.005E
For pilot pressure regulating valve see 5.12.006E

Data Sheet No. 5.55.005E-1

A1510E00KY00X
The right to introduce technical modifications is reserved

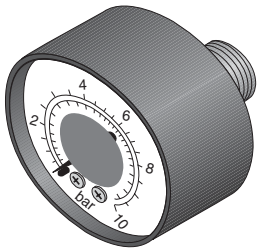
Dimensions (mm)
Type: SRV-1/4



*) Two opposilte gauge ports G1/8 – On delivery the plug screw is not assembled.

Accessories

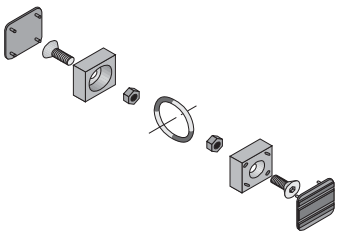
Gauge
Ø 40 mm, 0-10 bar, G1/8



Order No.: KZ 8891

Accessories

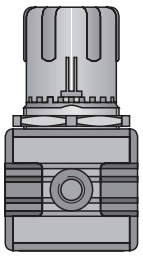
Coupling kit
for connecting 2 single units



Order No.: PL 16959

Accessories

Recommended pilot pressure regulating valve Type SR-1/8



Order No.: PB 45349-000

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/4	**SRV-1/4**	**PB 45449-070**

Accessories

Description	Order No.
Gauge , Ø 40 mm, 0-10 bar, G1/8	**KZ 8891**
Mounting kit SRV	**PL 16965**
Coupling kit SRV	**PL 16959**
Recommended pilot pressure regulating valve SR-1/8	**PB 45349-000**
Porting block kit G1/4 / 3 x G1/8 (incl. Coupling kit) *)	**PL 16969**

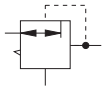
*)With built-in check valve type: SXV on request

Pressure Regulating Valve

G3/8, G1/2

airfit comfort

CRV

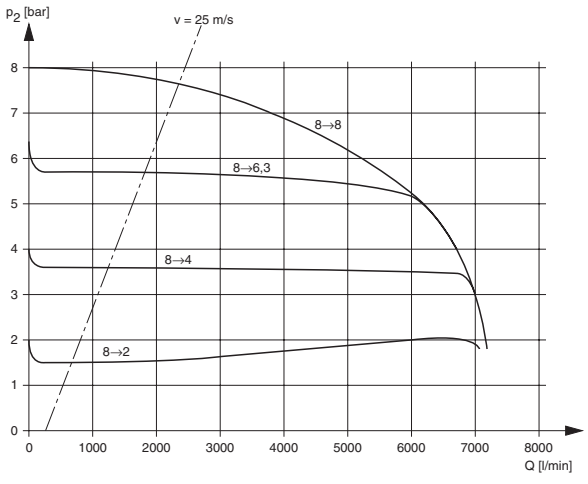


Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Pilot operated piston-type pressure regulator with secondary pressure relief and flow compensation -suitable for remote control	
Type			**CRV-3/8**	**CRV-1/2**
Port size			**G3/8**	**G1/2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.5	0.5
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 8	
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.3 0.3	
Recommended flow[1]	Q_n	l/min m³/h	**850** **51**	**1900** **114**
Maximum flow[2]	Q	l/min m³/h	5300 318	7200 432
Own air usage			Low	
Recommended pilot pressure regulating valve			SR-1/4	

[1] at p_2 = 6 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6,3 bar and Δp = 1 bar

Flow Characteristics Type: CRV-1/2



Pilot operated piston-type pressure regulator with secondary pressure relief and flow compensation -suitable for remote control.



- modern design
- bracket ready to fit
- ready for direct wall mounting
- variant with NPTF thread

For filter-water-separator see 5.19.005E
For pilot pressure regulating valve see 5.12.006E

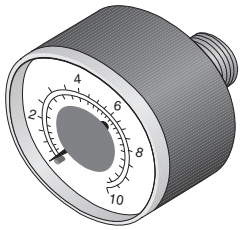
A1P630D00GY00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Accessories

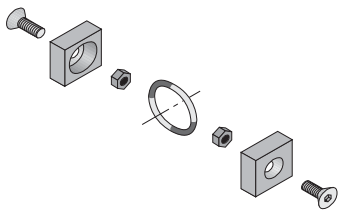
Gauge
Ø 50, 0-10 bar, G1/4



Order No.: KG 8011

Accessories

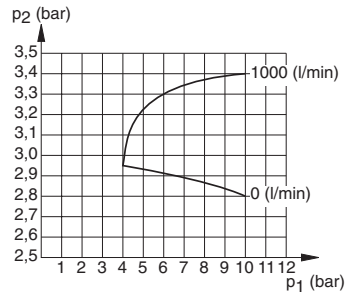
Coupling kit
for connecting 2 single units



Order No.: PL 17608

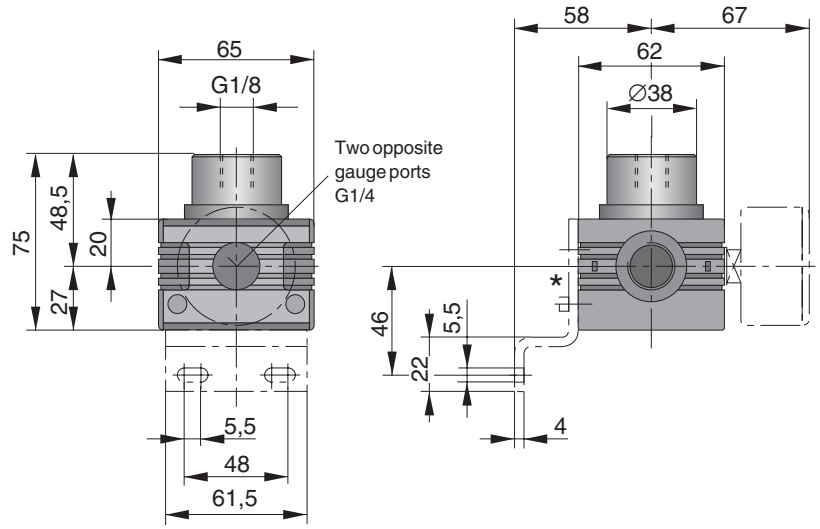
Outlet pressure variations with varying inlet pressure

CRV-1/2



Dimensions (mm)

Type: CRV-1/2



*) On delivery the plug is not asembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/8	**CRV-3/8**	**PB 55549-075**
	G1/2	**CRV-1/2**	**PB 55649-075**
Actuation without own air consumption - for actuation	G3/8	**CRV-3/8-SO**	**PB 55549-077**
by an electronic regulator (see data sheet 5.96.004E)	G1/2	**CRV-1/2-SO**	**PB 55649-077**

Accessories

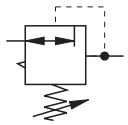
Description	Order No.
Gauge, Ø 50, 0-10 bar, G1/4	**KG 8011**
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 and hole pattern for pressure switch (6.00.003E)	**PL 17609**
Keylock complete	**PL 17127**
3/2 Way shut-off valve (spool type valve) CDV-3/8-XS	**PB 56849-000**
3/2 Way shut-off valve (spool type valve) CDV-1/2-XS	**PB 56949-000**
Adaptor set G3/4	**PL 17682**

Pressure Regulating Valve pilot operated

for SAE flange G2 (G1 1/2)

airfit A50

A50R



Characteristics			Pressures quoted as gauge pressure	
System			Pilot operated diaphragm-type pressure regulator with secondary venting and flow rate compensation automatic drain valve	
Type			**A50R**	**A50RV**
Connection			SAE flange	SAE flange
Port size			G2 (G1 1/2)	G2 (G1 1/2)
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 (further temperatures +60 on request)	
Weight (mass)		kg	3.5	3.4
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 17.5	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 8	0.5 16 (p_{st} > 10bar)
Min. pressure difference	p_1-p_2	bar	0.2	
Recommended flow [1]	Q_n	l/min m³/h	**10000** **600**	**10000** **600**
Maximum flow [2]	Q_{max}	l/min m³/h	> 40000 > 2400	
Own air usage			Low	
Recommended pilot pressure regulating valve			integrated	SR-1/4

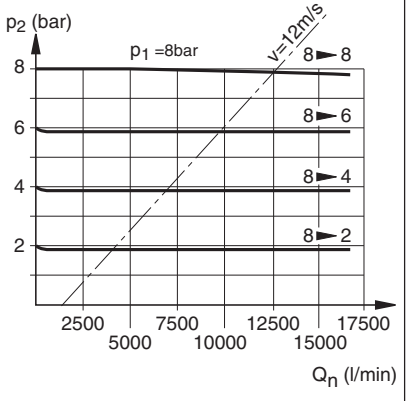
[1] at p_2 = 6 bar and 12 m/s
[2] at p_1 = 10 bar to p_2 = 6.3 bar and Δp = 1 bar

Versions
– with integrated Pilot Pressure Regulating Valve
– Suitable for remote control with external Pilot Pressure Regulating Valve

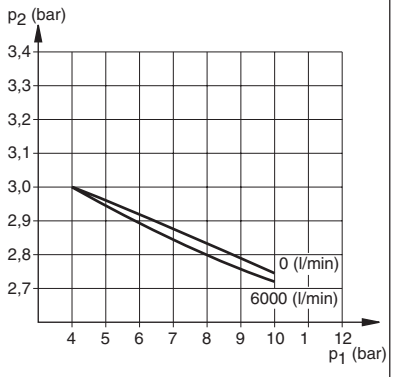
with mounting flange or
without mounting flange

Flow Characteristics

Type: A50R / A50RV



Outlet Pressure Variation with Fluctuating Inlet Pressure



Pilot operated diaphragm-type pressure regulating valve with secondary pressure relief and flow compensation -
suitable for remote control



For filter-water-separator see 5.50.003E
For pilot pressure regulating valve see 5.12.006E

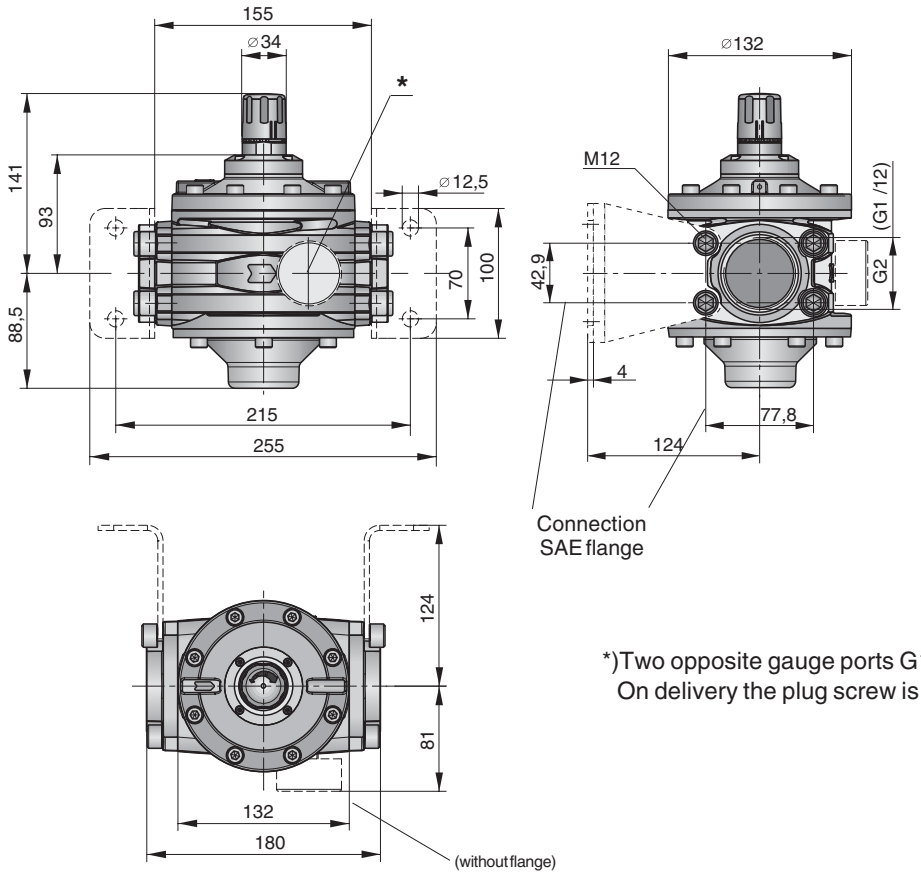
Data Sheet No. 5.55.007E-1

HOERBIGER ORIGA

A1P671E00GY00X
The right to introduce technical modifications is reserved

Dimnenions (mm)

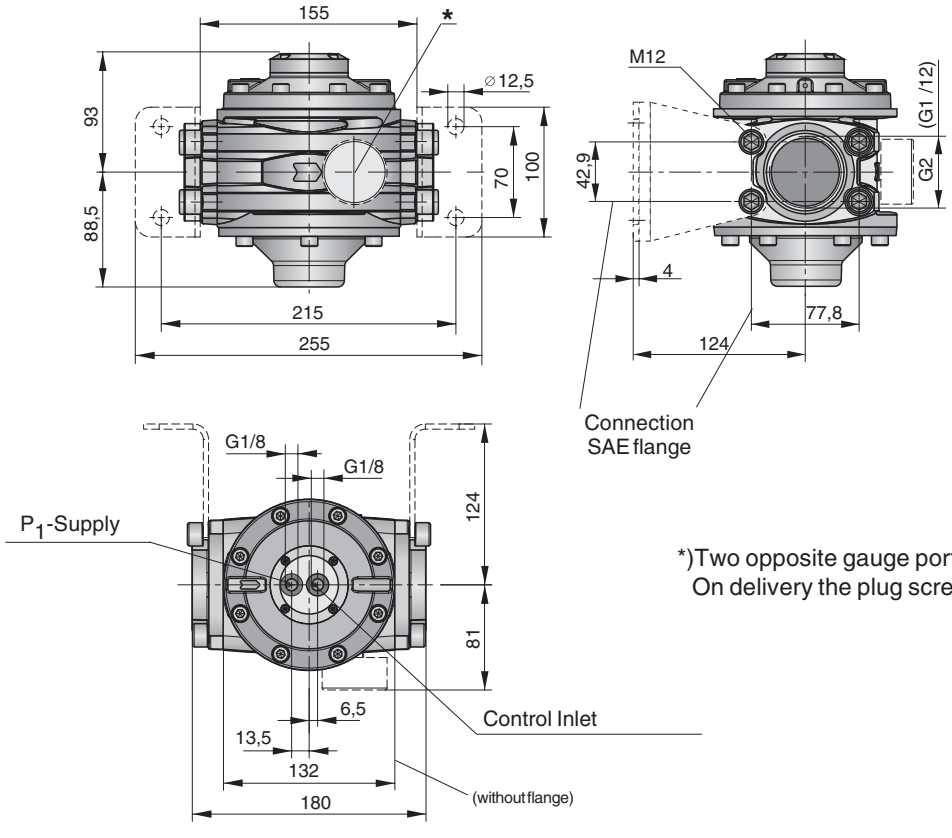
Type: A50R



*)Two opposite gauge ports G1/4
On delivery the plug screw is not assembled.

Dimnenions (mm)

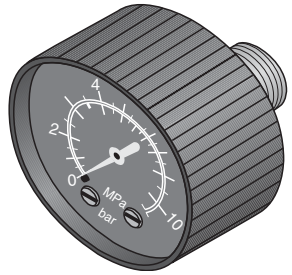
Type:A50RV



*)Two opposite gauge ports G1/4
On delivery the plug screw is not assembled.

Accessories

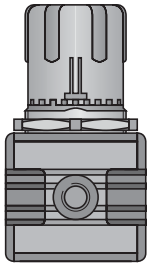
Gauge
Ø 63 mm, 0-10 bar, G1/4



Order No: KZ 8817

Accessories

Recommended pilot pressure regulating valve Type SR-1/4



Order No.: PB 45449-058

Order Instructions

Description	Port size	Type	Order No.
Basic model with integrated Pilot Pressure Regulating Valve	for SAE flange	**A50R**	**PB60649-020**
Basic model, pilot operated (without Pilot Pressure Regulating Valve)	for SAE flange	**A50RV**	**PB60649-000**
Version with mounted flange – with integrated Pilot Pressure Regulating Valve	G1 1/2	**A50R-1 1/2**	**PB60549-070**
Version with mounted flange – with integrated Pilot Pressure Regulating Valve	G2	**A50R-2**	**PB60649-070**
Version with mounted flange – pilot operated (without Pilot Pressure Regulating Valve)	G1 1/2	**A50RV-1 1/2**	**PB60549-050**
Version with mounted flange – pilot operated (without Pilot Pressure Regulating Valve)	G2	**A50RV-2**	**PB60649-050**

Accessories

Description	Order No.
Gauge, Ø 63 mm, 0-16 bar, G1/4	**KG8002**
Mounting kit (2 brackets + 4 screws)	**PL18672**
Recommended pilot pressure regulating valve SR-1/4 (with spring to 16 bar)	**PB45449-058**
Coupling kit	**PL18735**
Connection kit G1 1/2	**PL18660**
Connection kit G2	**PL18662**
Porting block G1 with adaptor flange for pressure switches	**PL18779**

Special Oil

for Pneumatic Lubricators

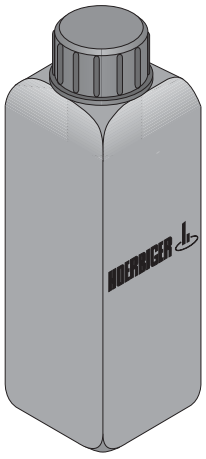
Viscosity VG32

A1P253E00KY00X

The right to introduce technical modifications is reserved

Technical Data	
Use	for all HOERBIGER lubricators systems Specially tried and tested for compatibility with valve and cylinder seals as well as polycarbonate plastic bowls.
Viscosity	ViscosityVG33 to ISO 3448 5° C 250 mm²/s (cst) 20° C 100 mm²/s (cst) 40° C 32 mm²/s (cst) when using below freezing point (0°C) it is necessary to consult us
Contents	1 litre

Order No.: KY 8766



Contents: 1 litre

HOERBIGER ORIGA

Data Sheet No. 5.61.050E-1

Drain Valve

Fully automatic for condensate drainage

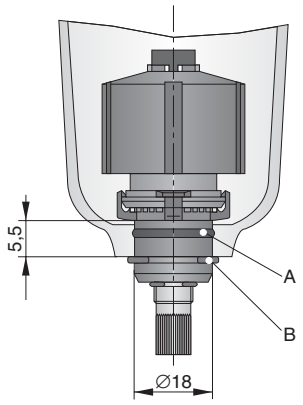
Assembly kit

airfit drain

DV-1/2i

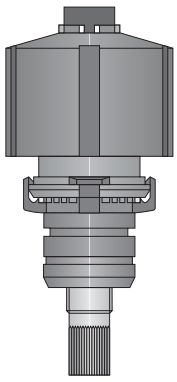
Characteristics				Pressures quoted as gauge pressure
System				Float controlled condensate drain valve (fully automatic)
Material	Float controller			Plastic (PP-black)
	Housing			Brass/plastic
	Seals			Oil resistant rubber
Condensate drainage				- during operation when reaching a certain condensate level - during pressure relief - manual (by turning the drain cock)
Installation				Vertical
Mounting				In the bowl with a circlip
Weight (mass)			kg	0.06
Operating pressure range		p_{min} p_{max}	bar bar	0 16
Temperature		ϑ_{min} ϑ_{max}	°C °C	2 70

Installation Drawing



Installation Procedure

1. Lightly grease seal ring A before assembly.
2. Insert the drain valve into the bowl from the top.
3. Secure the drain valve outside the bowl with circlip B.



Float controlled drain valve for automatic condensate drainage in filter-water-separators.

For assembly in al plastic and metal bowls of HOERBIGER's AIRFIT comfort and magnum series as well as in other pneumatic filters with suitable installation dimensions.

Comprises:
Drain valve with seal ring,
Circlip

Order Instruction: Type: DV-1/2i Order No.: PL16165

Data Sheet No. 5.62.002E-1

A1P170E00KY00X

The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Drain Valve

G1/2

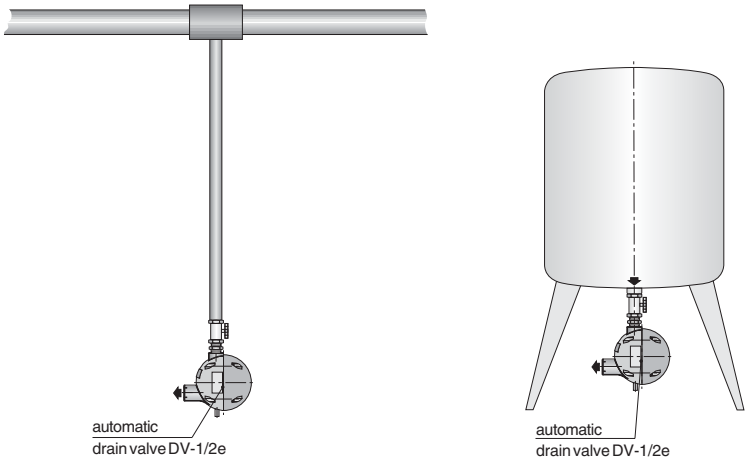
Fully automatic for condensate drainage

airfit drain

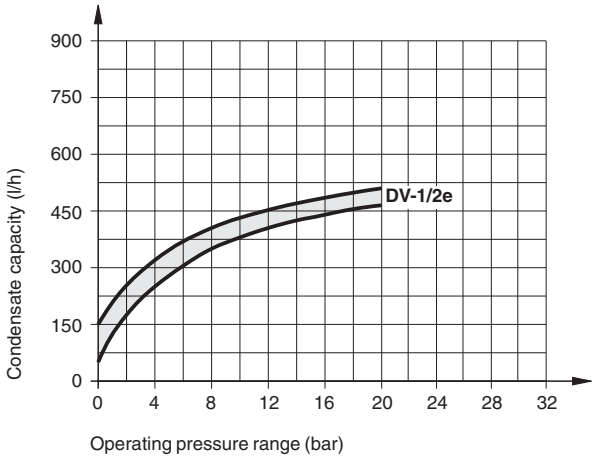
DV-1/2e

Characteristics				Pressures quoted as gauge pressure
System				Float controlled condensate drain valve (fully automatic)
Type				**DV-1/2e**
Port size				**G1/2**
Material	Float controller			Stainless steel
	Housing			Aluminium
	Seals			Oil resistant rubber
Condensate drainage				- During operation when reaching a certain condensate level - Manual
Installation				Horizontal (see sketch)
Mounting				Double nipple
Weight (mass)			kg	0.65
Operating pressure range		p_{min} p_{max}	bar bar	0 20
Medium and ambient temperatures		T_{min} T_{max}	°C °C	2 100

Installation Instructions



Condensate Capacity



Float-type drain valve for fully automatic drainage of condensate from compressed air lines and receivers.

Recommended location:
Normally at the lowest point, where condensate and oil collect.

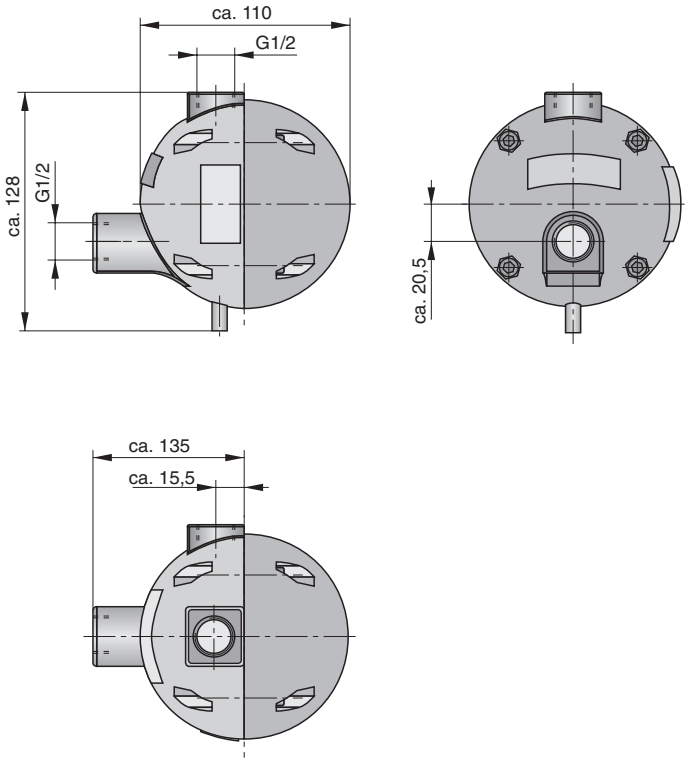
- Highly polluted condensate is no problem
- Float made of stainless steel
- Additonal manual drain
- Oil resistant seals

HOERBIGER ORIGA

A1P444E00KY00X

The right to introduce technical modifications is reserved

Dimensions (mm)
Type: DV-1/2e



Order Instructions: DV-1/2e PL 16705

Drain Valve

G1/2

Fully automatic for condensate drainage

airfit drain

DV-1/2e2

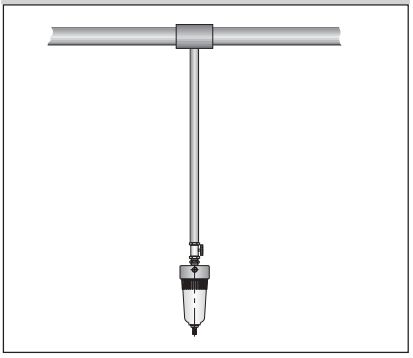


Characteristics				Pressures quoted as gauge pressure
System				Float controlled condensate drain valve (fully automatic)
Type				**DV-1/2e2**
Port size				**G1/2**
Material	Float controller			Brass, plastic
	Housing			Aluminium, PC
	Housing			Oil resistant rubber
Condensate drainage				- During operation when reaching a certain condensate level - during pressure relief - manual (by turning the drain cock)
Installation				Vertical (see picture)
Mounting				Double nipple or direct
Weight (mass)			kg	0.3
Operating pressure range		p_{min} p_{max}	bar bar	0 16
Medium and ambient temperatures		T_{min} T_{max}	°C °C	0 +50 at 10 bar, further temperatures on request

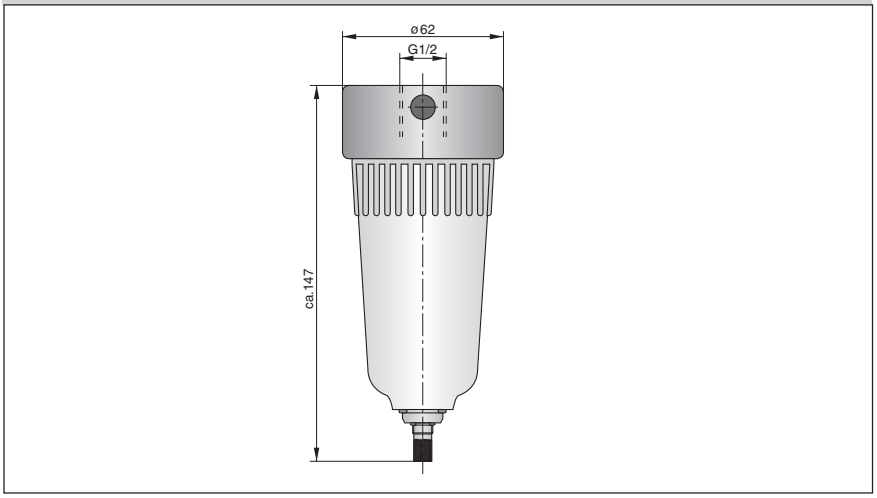
Order Instructions

Description	Port size	**Type**	**Order No.**
Basic model	G1/2	**DV-1/2e2**	**PL 18040**

Dimensions (mm)



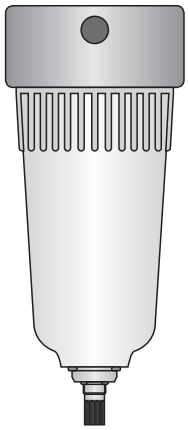
Dimensions (mm)



Float-type drain valve for fully automatic drainage of condensate from compressed air lines and receivers.

Recommended location:
Normally at the lowest point, where condensate and oil collect.

- with integrated prefilter
- with additional manual drain valve
- for external mounting



HOERBIGER ORIGA

Data Sheet No. 5.62.004E-1

A1P665E00CAA00X

The right to introduce technical modifications is reserved

Drain Valve

Fully automatic for condensate drainage

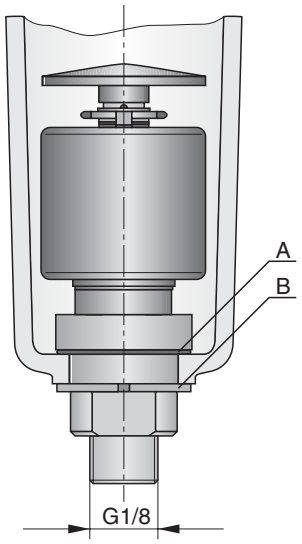
Assembly kit

airfit drain

DV-1/4 I

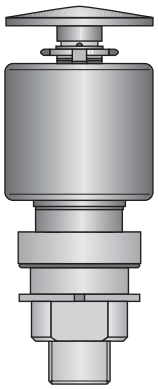
Characteristics				Pressures quoted as gauge pressure
System				Float controlled condensate drain valve (fully automatic)
Material	Float controller			Plastic
	Housing			Brass / plastic
	Seals			Oil resistant rubber
Condensate drainage				- during operation when reaching a certain condensate level - during pressure relief
Installation				Vertical
Mounting				In the bowl with a circlip
Weight (mass)			kg	0.06
Operating pressure range		p_{min} p_{max}	bar bar	1 12
Temperature		T_{min} T_{max}	°C °C	0 60

Installation Drawing



Installation Procedure

1. Lightly grease seal ring A before assembly.
2. Insert the drain valve into the bowl from the top.
3. Secure the drain valve outside the bowl with circlip B.



Float controlled drain valve for automatic condensate drainage in filter-water-separators.

For assembly in al plastic and metal bowls of HOERBIGER's AIRFIT swing series as well as in other pneumatic filters with suitable installation dimensions.

Comprises:
Drain valve with seal ring,
Circlip

Order Instruction: Type: DV-1/4I **Order No.: PL8497-00**

For filter-water-separator see 5.12.004E, 5.12.005E
For product group list see 5.12.001E

HOERBIGER ORIGA

Data Sheet No. 5.62.005E-1

A1P170E00GY00X

The right to introduce technical modifications is reserved

Characteristics			Pressures quoted as gauge pressure
System			Electronically controlled condensate drain valve without air consumption
Type			**DV-3/4e**
Port size			G3/4 BSP external thread or G1/2 NPTF with gasket
Suitable for max. compressor capacity max. dryer capacity		 m^3/min. m^3/min.	 5 10
Short term peak condensate volume		l/h	30 at 7 bar
Condensate temperature		°C	max. 60
Ambient temperature		°C	1-60
Pressure range		bar	0.8-16
Weight (mass)		kg	1
Electrical connection (self adjusting)			24-230 V DC, 80-230 V AC
Power consumption		VA	5
Connection		IP	65
Resistance free contact			max. 300 V AC/DC
Electronic relais (opens at failure)			max. 0.1 A

Condensate Management

G3/4

Electronic Drain Valve

airfit drain

DV

Installation instruction:
Please note the instruction manual.
Highly polluted condensate requires the uste of a strainer (particle separation).



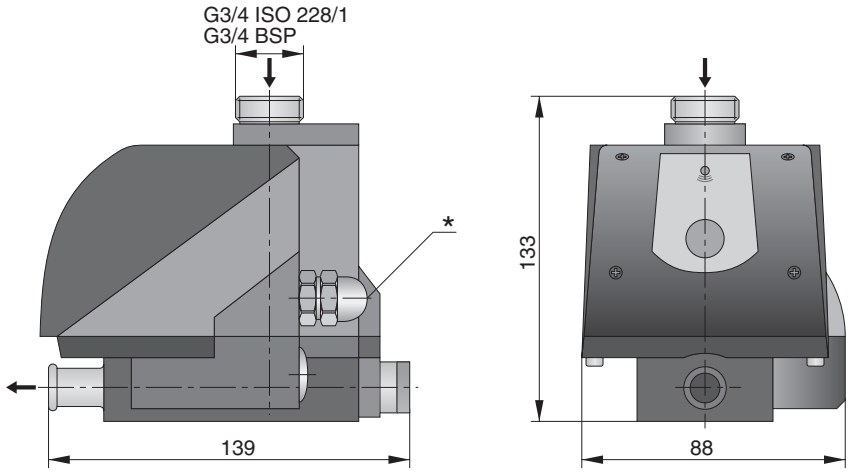
- For external application
- airfit design
- Level dependant control
- Universal voltage for international use
- Version for aggressive media

HOERBIGER ORIGA

A1P610E00KY00X

The right to introduce technical modifications is reserved

Dimensions (mm)



* Electronic connection Pg 9

Order Instructions

Description	Port size	**Type**	**Order No.**
Basic model	G3/4	**DV-3/4e**	**PBZ 5049-000**

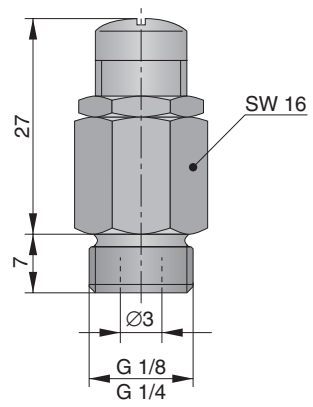
Pressure Relief Valve

Series USV

Special solutions
(e.g. temperature, pressure, medium ...) on request

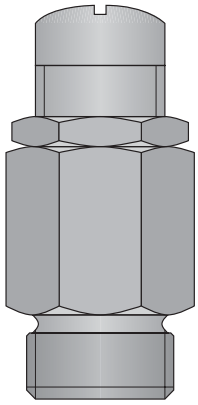
Characteristics			Pressures quoted as gauge pressure	
System			Spring loaded poppet valve with adjustable opening pressure	
Type			**USV-1/8**	**USV-1/4**
Port size			**G1/8**	**G1/4**
Installation			In any position	
Temperature	T_{min} T_{max}	°C °C	0 +90	
Medium			Compressed air	
Opening pressure		bar	1-4 or 3-7 (adjustable)	
Material			Brass, NBR	

Dimensions (mm)



Order Instructions

Description	Port size	**Type**	**Order No.**
Pressure relief valve	G1/8	**USV-1/8 (1-4 bar)**	**KY 4093**
Pressure relie valve	G1/8	**USV-1/8 (3-7 bar)**	**KY 4065**
Pressure relie valve	G1/4	**USV-1/4 (1-4 bar)**	**KY 4094**
Pressure relie valve	G1/4	**USV-1/4 (3-7 bar)**	**KY 4066**



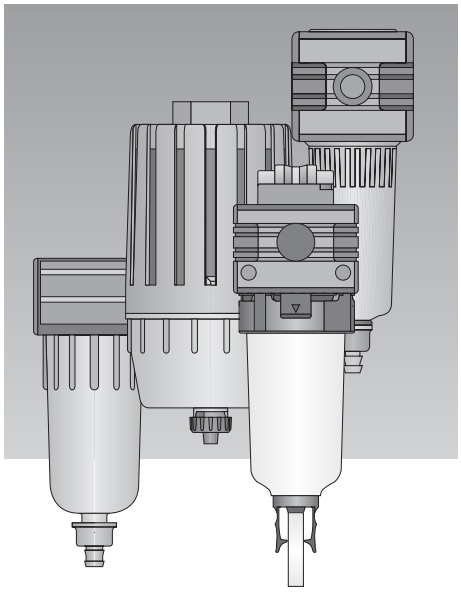
HOERBIGER ORIGA

A1P285E00KY00X

The right to introduce technical modifications is reserved

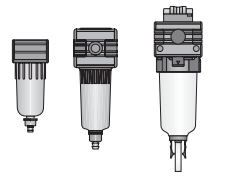
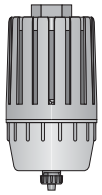
SUBMICROFILTER, ACTIVATED CARBON FILTER G1/8-G2 SERIES

airfit micro



HOERBIGER

ORIGA

Description		Port size	Recommended flow (l/min)	**Type**	Data Sheet No.
Submicrofilter		G1/8	350	**MF 007-1/8**	5.81.002E
		G1/4	350	**MF 007-1/4**	
		G1/8	580	**MF 012-1/8**	5.81.003E
		G1/4	580	**MF 012-1/4**	
		G3/8	580	**MF 012-3/8**	
		G3/8	1070	**MF 036-3/8**	5.81.004E
		G1/2	1070	**MF 036-1/2**	
		G3/4	3850	**A25MF230-3/4-E**	5.81.009E
		G1	3850	**A25MF230-1-E**	
		G1 1/2	10000	**A50MF1080-ADV**	5.81.008E
		G2	10000	**A50MF1080-ADV**	
Activated carbon filter		G1/8	350	**MC007-1/8**	5.81.002E
		G1/4	350	**MC 007-1/4**	
		G1/8	580	**MC 012-1/8**	5.81.003E
		G1/4	580	**MC 012-1/4**	
		G3/8	580	**MC 012-3/8**	
		G3/8	1070	**MC 036-3/8**	5.81.004E
		G1/2	1070	**MC 036-1/2**	
		G3/4	3850	**A25MC230-3/4-E**	5.81.009E
		G1	3850	**A25MC230-1-E**	
		G1 1/2	10000	**A50MC1080-DV**	5.81.008E
		G2	10000	**A50MC1080-DV**	
Exhaust-silencer		G1/4	Please see diagram on Data Sheet	**AF-08**	5.89.002E
		G3/8		**AF-10**	
		G1/2		**AF-15**	
		G3/4		**AF-20**	
		G1		**AF-25**	
		G1 1/4		**AF-32**	
		G2		**AF-50**	

A3P120E71EAA00X

The right to introduce technical modifications is reserved

Table of Contents see 5.00.001E

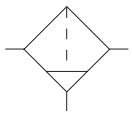
Submicro-filter and Activated Carbon Filter

G1/8-G1/4

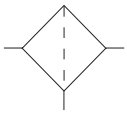
airfit micro
– for series AIRFIT light

Series

MF 007



MC 007

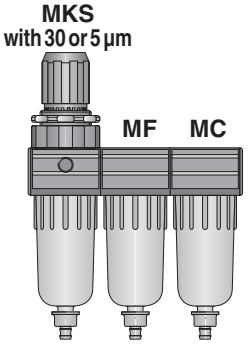


Special solutions
(e.g. temperature, pressure, medium ...) on request

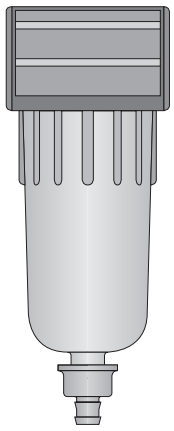
Characteristics			Pressures quoted as gauge pressure			
System			**Submicrofilter**		**Activated carbon filter**	
Type			**MF 007-1/8**	**MF 007-1/4**	**MC 007-1/8**	**MC 007-1/4**
Port size			G1/8	G1/4	G1/8	G1/4
Max. condensate capacity		cm^3	12		–	
Condensate drainage			Manual			
Installation			Vertical, bowl at the bottom			
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 (at 10 bar) +50		0 (at 10 bar) +40	
Weight (mass)			0.1		0.1	
Pneumatic Characteristic						
Operating pressure range	p_{min} p_{max}	bar bar	0 10		0 10	
Recommended flow at 6 bar	Q_{max}	l/min m^3/h	350 21		350 21	
Pressure drop at recommended flow	Δp	bar	ab 0.35 (new element)		0.25	0.2
Degree of filtration at recommended flow	η	%	Over 99.99999%, related to 0.01 µm			
Residual oil amount		mg/m^3	< 0.01 (input conc. $3mg/m^3$)		0.003 in combination MF	

Installation Procedure

To increase the life span of the filter elements, we recommend the following order.



Flow direction →



- Ultrafilter inside
- Airfit design
- Version with NPTF thread

For product group list see 5.81.001E
For filter-water-separators see 5.09.005E

Data Sheet No. 5.81.002E-1

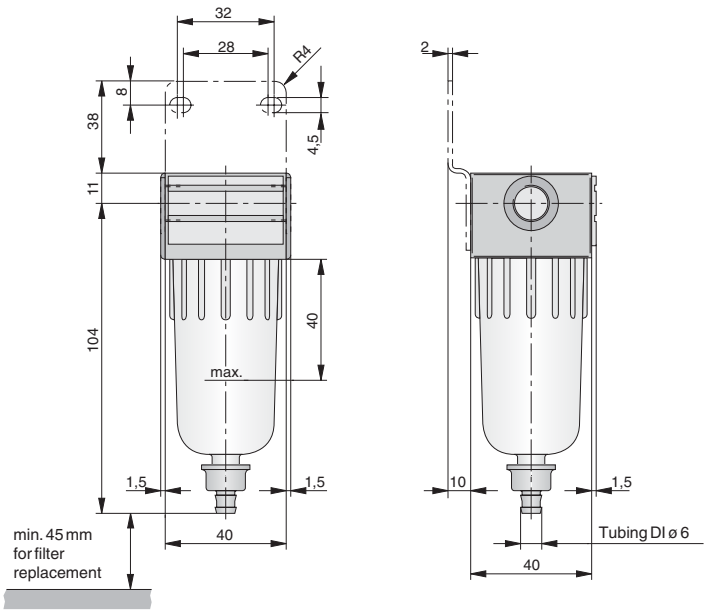
A1P591E00KY00X

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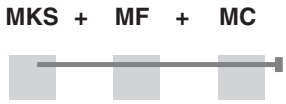
Dimensions (mm)

Type: MF 007-..
MC 007-..



Accessories

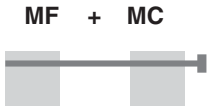
Coupling kit



Order No.: PL 16755

Accessories

Coupling kit



Order No.: PL 16669

Order Instructions

Description	Port size	Order Instructions Type	Order No.
Submicrofilter – basic model	G1/8	**MF 007-1/8**	**PB 37349-000**
	G1/4	**MF 007-1/4**	**PB 37449-000**
Activated carbon filter – basic model	G1/8	**MC 007-1/8**	**PB 37849-000**
	G1/4	**MC 007-1/4**	**PB 37949-000**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Mounting kit	**PL 16859**

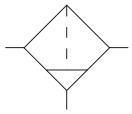
Submicro-filter and Activated Carbon Filter

G1/8, G1/4, G3/8

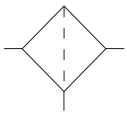
airfit micro
– for series AIRFIT swing

Series

MF 012



MC 012

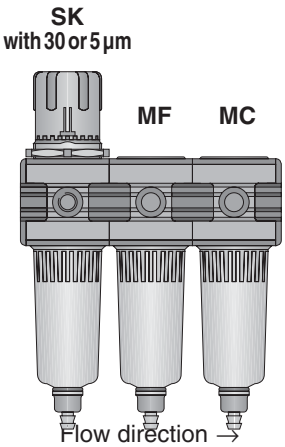


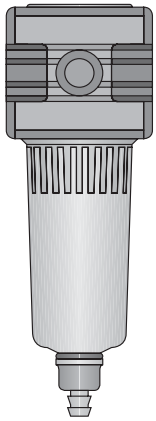
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure					
System			**Submicrofilter**			**Activated carbon filter**		
Type			**MF012-1/8**	**MF012-1/4**	**MF012-3/8**	**MC012-1/8**	**MC012-1/4**	**MC012-3/8**
Port size			G1/8	G1/4	G3/8	G1/8	G1/4	G3/8
Max. condensate capacity		cm^3	13			–		
Condensate drainage			Manual					
Installation			Vertical, bowl at the bottom					
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 (at 10 bar) +50			0 (at 10 bar) +40		
Weight (mass)			0.3			0.3		
Pneumatic Characteristic								
Operating pressure range	p_{min} p_{max}	bar bar	0 10			0 10		
Recommended flow at 6 bar	Q_{max}	l/min m^3/h	500 35			500 35		
Pressure drop at recommended flow	Δp	bar	ab 0.4 (new element)	ab 0.2	ab 0.1	0.4		
Degree of filtration at recommended flow	η	%	Over 99.99999%, related to 0.01 µm					
Residual oil amount		mg/m^3	< 0.01 (input conc. $3mg/m^3$)			0.003 in combination MF		

Installation Procedure

To increase the life span of the filter elements, we recommend the following order.





- Ultrafilter inside
- Airfit design
- Version with NPTF thread

For product group list see 5.81.001E
For filter-water-separators see 5.12.005E

Data Sheet No. 5.81.003E-1

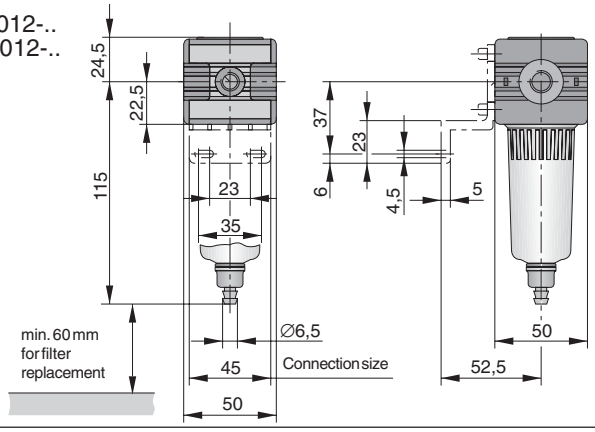
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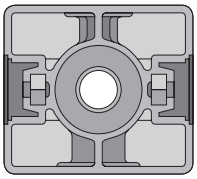
Dimensions (mm)

Type: MF 012-..
MC 012-..



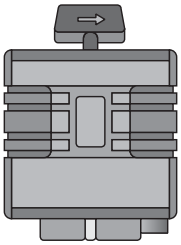
Accessories

Porting block kit



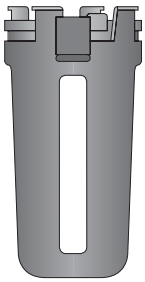
Order No.: PL 16969

3/2 Way shut-off valve



Order No.: **PB 46749-101** (G1/4)
PB 46849-101 (G3/8)

Bowl guard kit



Order No.: PL 16970-00

Order Instructions

Description	Port size	Order Instructions	
		Type	**Order No.**
Submicrofilter – basic model	G1/8	**MF 012-1/8**	**PB 49049-000**
	G1/4	**MF 012-1/4**	**PB 49149-000**
	G3/8	**MF 012-3/8**	**PB 49249-000**
Submicrofilter – basic model	G1/8	**MF 012-1/8-D**	**PB 49049-003**
	G1/4	**MF 012-1/4-D**	**PB 49149-003**
	G3/8	**MF 012-3/8-D**	**PB 49249-003**
Submicrofilter – with metal bowl (sight glass)	G1/8	**MF 012-1/8-E**	**PB 49049-004**
	G1/4	**MF 012-1/4-E**	**PB 49149-004**
	G3/8	**MF 012-3/8-E**	**PB 49249-004**
Activated carbon filter – basic model	G1/8	**MC 012-1/8**	**PB 49349-000**
	G1/4	**MC 012-1/4**	**PB 49449-000**
	G3/8	**MC 012-3/8**	**PB 49549-000**
Activated carbon filter – with metal bowl	G1/8	**MC 012-1/8-D**	**PB 49349-003**
	G1/4	**MC 012-1/4-D**	**PB 49449-003**
	G3/8	**MC 012-3/8-D**	**PB 49549-003**
Activated carbon filter – with metal bowl (sight glass)	G1/8	**MC 012-1/8-E**	**PB 49349-004**
	G1/4	**MC 012-1/4-E**	**PB 49449-004**
	G3/8	**MC 012-3/8-E**	**PB 49549-004**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Mounting kit	**PL 16965**
Coupling kit	**PL 16959**

Submicro-filter and Activated Carbon Filter

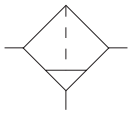
G3/8, G1/2(G3/4)

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– for series AIRFIT comfort

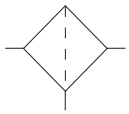
Characteristics			Pressures quoted as gauge pressure			
System			**Submicrofilter**		**Activated carbon filter**	
Type			**MF 036-3/8**	**MF 036-1/2**	**MC 036-3/8**	**MC 036-1/2**
Port size			G3/8	G1/2	G3/8	G1/2
Max. condensate capacity		cm^3	48		–	
Condensate drainage			Manual, automatic		manual	
Installation			Vertical, bowl at the bottom			
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 (at 10 bar) +50		0 (at 10 bar) +40	
Weight (mass)			0.6		0.6	
Pneumatic Characteristic						
Operating pressure range	p_{min} p_{max}	bar bar	0 10		0 10	
Recommended flow at 6 bar	Q_{max}	l/min m^3/h	1070 65		1070 65	
Pressure drop at recommended flow	Δp	bar	ab 0.1 (new element)		0.25	0.2
Degree of filtration at recommended flow	η	%	Over 99.99999%, related to 0.01 µm			
Residual oil amount		mg/m^3	< 0.01 (input conc. $3mg/m^3$)		0.003 in combination MF	

Series

MF 036



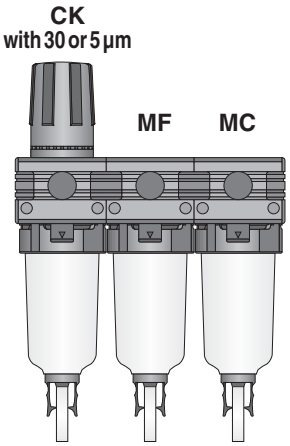
MC 036



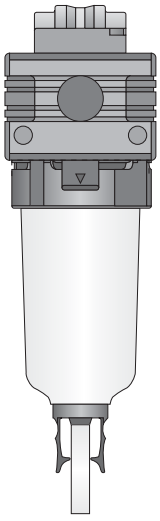
Special solutions
(e.g. temperature, pressure, medium ...) on request

Installation Procedure

To increase the life span of the filter elements, we recommend the following order.



Flow direction →



- Ultrafilter inside
- Airfit design
- Contamination indicator standard
- Version with NPTF thread

For product group list see 5.81.001E
For filter-water-separators see 5.19.011E

Data Sheet No. 5.81.004E-1

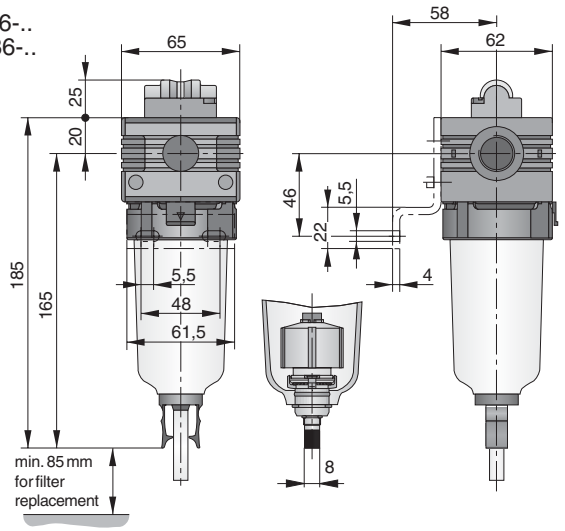
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Dimensions (mm)

Type: MF 036-..
MC 036-..



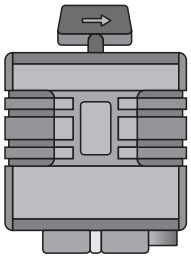
Accessories

Porting block kit



Order No.: PL 17607

3/2 Way shut-off valve



Order No.: **PB 56849-000** (G3/8)
PB 56949-000 (G1/2)

Bowl guard kit



Order No.: PL 17680

Order Instructions

Description	Port size	Order Instructions	
		Type	**Order No.**
Submicrofilter	G3/8	**MF 036-3/8-V**	**PB 59249-010**
– standard with service life indicator	G1/2	**MF 036-1/2-V**	**PB 59349-010**
Submicrofilter	G3/8	**MF 036-3/8-AV**	**PB 59249-012**
– additionally with automatic drain	G1/2	**MF 036-1/2-AV**	**PB 59349-012**
Submicrofilter	G3/8	**MF 036-3/8-DAV**	**PB 59249-015**
– additionally with metal bowl and automatic drain	G1/2	**MF 036-1/2-DAV**	**PB 59349-015**
Submicrofilter – additionally with metal bowl	G3/8	**MF 036-3/8-EAV**	**PB 59249-016**
(sight glass) and automatic drain	G1/2	**MF 036-1/2-EAV**	**PB 59349-016**
Activated carbon filter – basic model	G3/8	**MC 036-3/8**	**PB 59549-000**
	G1/2	**MC 036-1/2**	**PB 59649-000**
Activated carbon filter – with metal bowl	G3/8	**MC 036-3/8-D**	**PB 59549-003**
	G1/2	**MC 036-1/2-D**	**PB 59649-003**
Activated carbon filter	G3/8	**MC 036-3/8-E**	**PB 59549-004**
– with metal bowl (sight glass)	G1/2	**MC 036-1/2-E**	**PB 59649-004**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Mounting bracket	**PL 17518**
Coupling kit	**PL 17608**
Adapter kit G3/4	**PL 17682**

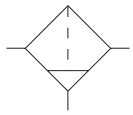
Submicro-filter and Activated Carbon Filter

for SAE flange G2,(G1 1/2)

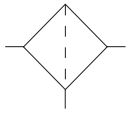
airfit A50

Characteristics			Pressures quoted as gauge pressure			
System			**Submicrofilter**		**Activated carbon filter**	
Type			**A50MF1080-ADV**		**A50MC1080-DV**	
Port size			G1 1/2	G2	G1 1/2	G2
Max. condensate capacity		cm^3	600			
Condensate drainage			automatic		manual	
Installation			Vertical, bowl at the bottom			
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)		
Weight (mass)			6.4		6.4	
Pneumatic Characteristic						
Operating pressure range	p_{min} p_{max}	bar bar	0 17.5		0 17.5	
Recommended flow at 6 bar	Q_{max}	l/min m^3/h	10000 600		10000 600	
Pressure drop at recommended flow	Δp	bar	ab 0.1 (new element)		0.1	
Degree of filtration at recommended flow	η	%	Over 99.99999%, related to 0.01 µm			
Residual oil amount		mg/m^3	< 0.01 (input conc. 3mg/m^3)		0.003 in combination MF	

A50MF



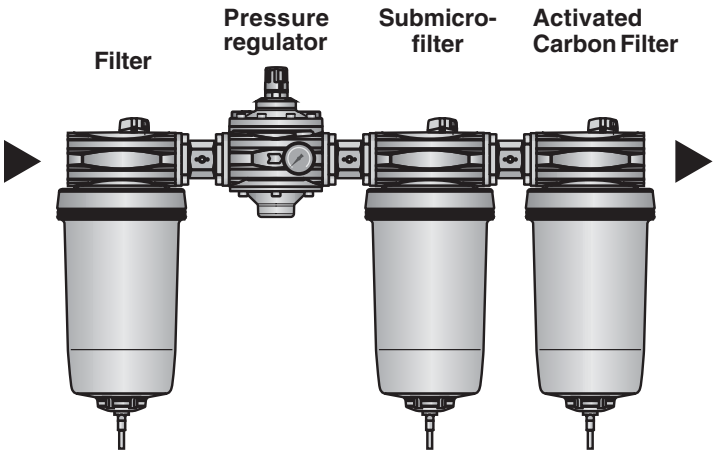
A50MC



Special solutions
(e.g. temperature, pressure, medium ...) on request

Installation Procedure

To increase the life span of the filter elements, we recommend the following order.





For single units see 5.50.003E, 5.55.007E, 5.92.002E, 5.95.023E and 5.95.024E

Data Sheet No. 5.81.008E-1

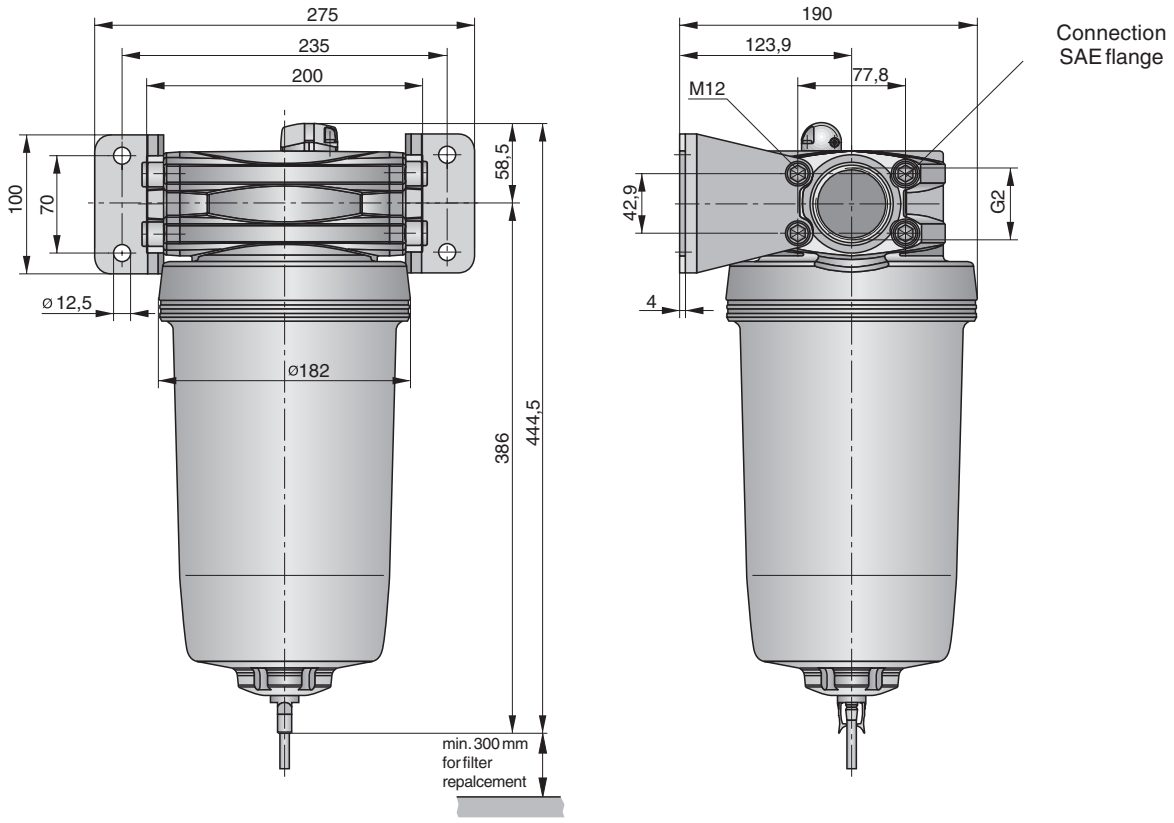
A1P734E00IAE00X

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HOERBIGER ORIGA

Dimensions (mm)

Type: A50MF1080-ADV
A50MC1080-DV



Order Instructions

Description	Port size	Type	Order No.
Submicrofilter	für SAE-Flansch	**A50MF1080-ADV**	**PB 61249-000**
with automatic drain	G1 1/2	**A50MF1080-11/2-ADV**	**PB 61149-050**
	G2	**A50MF1080-2-ADV**	**PB 61249-050**
Activated carbon filter	für SAE-Flansch	**A50MC1080-DV**	**PB 61549-000**
	G1 1/2	**A50MC1080-11/2-DV**	**PB 61449-050**
	G2	**A50MC1080-2-DV**	**PB 61549-050**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

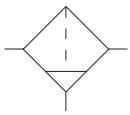
Description	Order No.
Mounting kit (2 brackets + 4 screws)	**PL 18672**
Coupling kit	**PL 18735**
Connection kit G1 1/2	**PL18660**
Connection kit G2	**PL18662**
Porting block G1 with adaptor flange for pressure switches	**PL18779**

Submicro-filter and Activated Carbon

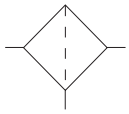
G3/4,G1

airfit micro

A25MF



A25MC

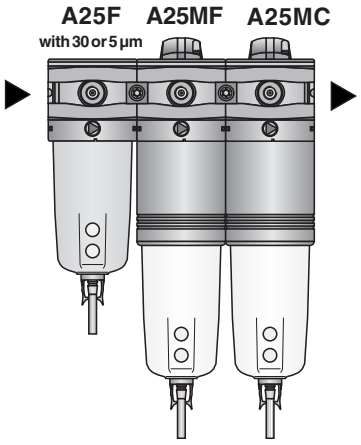


Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure			
System			**Submicrofilter**		**Activated carbon filter**	
Type			**A25MF 230-3/4-E**	**A25MF 230-1-E**	**A25MC 230-3/4-E**	**A25MC 230-1-E**
Port size			G3/4	G1	G3/4	G1
Max. condensate capacity		cm^3	130			
Condensate drainage			Manual, automatic		manual	
Installation			Vertical, bowl at the bottom			
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 (+60°C to 12.5 bar)			
Weight (mass)			1.5			
Pneumatic Characteristic						
Operating pressure range	p_{min} p_{max}	bar bar	0 17.5			
Recommended flow at 6 bar	Q_{max}	l/min m^3/h	3850 230			
Pressure drop at bei empfohlener Durchflussmenge	Δp	bar	from 0.1 (new element)		0.1	
Degree of filtration at recommended flow	η	%	Over 99.99999%, related to 0.01 µm			
Residual oil amount		mg/m^3	< 0.01 (input conc. $3mg/m^3$)		0.003 in combination MF	

Installation Procedure

To increase the life span of the filter elements, we recommend the following order.



Flow direction →



For product group list see 5.81.001E
For filter-water-separators see 5.23.005E

Data Sheet No. 5.81.009E-1

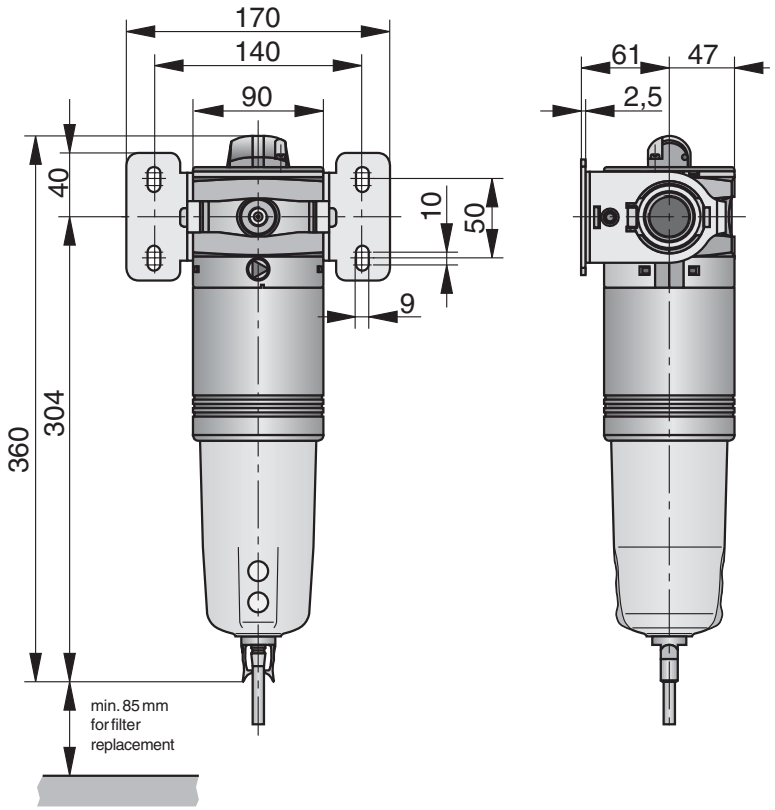
A1P719E00IAE00X

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HOERBIGER ORIGA

Dimensions (mm)

Type: A25MF230-E
A25MC230-E *



*) Aktivated carbon filter A25MC230-E without contamination indicator

Order Instructions

Description	Port size	Order Instructions	
		Type	**Order No.**
Submicrofilter	G3/4	**A25MF185-3/4-EV**	**PB 62549-010**
	G1	**A25MF185-1-EV**	**PB 62649-010**
Submicrofilter	G3/4	**A25MF185-3/4-AEV**	**PB 62549-012**
– additionally with automatic drain	G1	**A25MF185-1-AEV**	**PB 62649-012**
Activated carbon filter	G3/4	**A25MC185-3/4-E**	**PB 62849-000**
	G1	**A25MC185-1-E**	**PB 62949-000**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	**Order No.**
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**

MEMBRANE DRYERS

airfit dry



HOERBIGER

ORIGA

Membrane Dryers					
Description		Port Size	Nominal Flow at 7 bar and 35°C	**Type**	Data Sheet No.
Membrane dryers – fitting the airfit swing Series		G1/4	2.5	**SDM2-1/4-R**	5.82.004E
		G1/4	5	**SDM5-1/4-R**	
Membrane dryers – fitting the airfit comfort Series		G1/2	10	**CDM10-1/2-R**	5.82.005E
		G1/2	15	**CDM15-1/2-R**	
		G1/2	20	**CDM20-1/2-R**	
		G1/2	25	**CDM25-1/2-R**	
		G1/2	35	**CDM35-1/2-S**	
		G1/2	50	**CDM50-1/2-S**	

Description		Port Size	Nominal Flow at 7 bar and 35°C	**Type**	Data Sheet No.
Membrane dryers with patented purge air regulation – fitting the airfit comfort Series		G1/2	10	**CDM10-1/2-CR**	5.82.006E
		G1/2	15	**CDM15-1/2-CR**	
		G1/2	20	**CDM20-1/2-CR**	
		G1/2	25	**CDM25-1/2-CR**	
		G1/2	35	**CDM35-1/2-CS**	
		G1/2	50	**CDM50-1/2-CS**	
Membrane dryers with patented purge air regulation		G1	65	**XDM65-1-CPR**	5.82.010E
		G1	80	**XDM80-1-CPR**	
		G1	100	**XDM100-1-CPR**	
		G1	125	**XDM125-1-CPR**	
		G1	150	**XDM150-1-CPR**	

Example of calculation:
Flow rate: 60 m³/h
Pressure dewpoint reduction: 20 K
Operating pressure: 10 bar

$$Q_{korr.} = \frac{Q_{inlet}}{f_p} = \frac{60}{1.64} = 36.59\ m^3/h$$

Rough Guide to Choice of Membrane Dryers

Conversion factor for calculation of corrected flow rate

Operating pressure range p [bar]	5	6	7	8	9	10	11	12	13	14	15	16
Conversion factor f_p	0.57	0.78	1.0	1.21	1.42	1.64	1.85	2.06	2.28	2.49	2.70	2.92

Formula symbols
$Q_{corr.}$ = Corrected inlet flow rate
Q_{inlet} = Inlet flow rate
f_p = Conversion factor

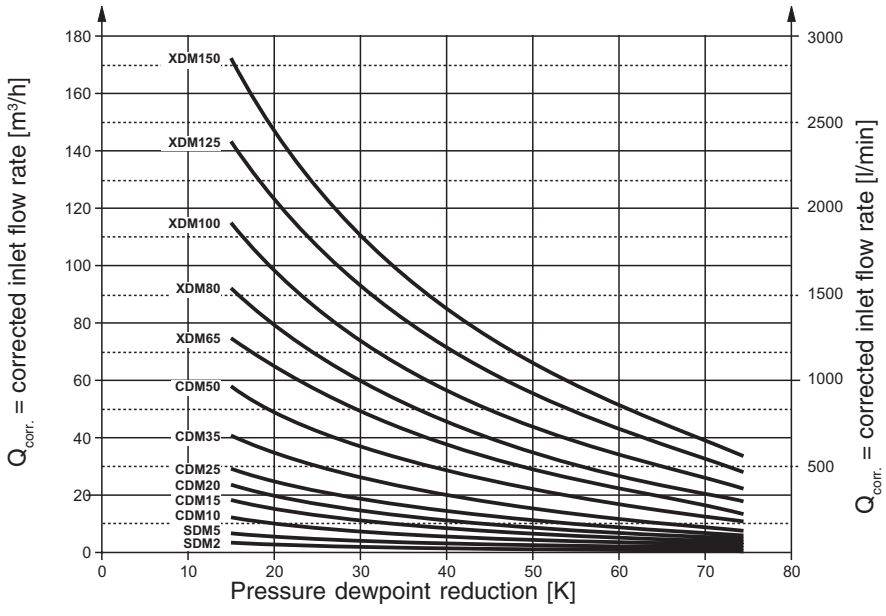
Formula for calculation of corrected inlet flow rate

$$Q_{korr.} = \frac{Q_{inlet}}{f_p}$$

The calculated values shown on the Selection Diagram are a rough guide to the choice of membrane dryers. The exact choice should however be based on the specific data sheet.

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Selection diagram for HOERBIGER-ORIGA membrane dryers – fitting the airfit swing and airfit comfort Series



Based on the calculated flow rate the diagram shows that a CDM35 or CDM50 Type membrane dryer can be used.
The exact choice should however be based on the specific data sheet.

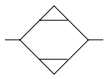
The right to make technical modifications is reserved

Membrane Dryers

G1/4

airfit dry
– fitting the airfit swing Series

SDM-1/4



Special solutions
(e.g. temperature, pressure, medium ...) on request

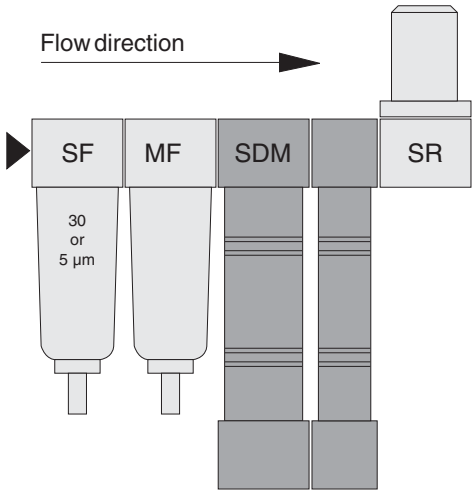
Characteristics			Pressures quoted as gauge pressure	
System			Drying by highly selective, water-permeable membrane (hollow fibres) based on partial pressure difference between inside and outside of membrane.	
Type			SDM2-1/4-R	SDM5-1/4-R
Port size			G 1/4	G 1/4
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	+2 +60	
Medium			Filtered air [3]	
Weight (mass)		kg	1.7	2.0
Pneumatic Characteristics				
Operating pressure range	p_{min} p_{max}	bar bar	5 16	
Flow rate at compressed air inlet [1]	Q_{inlet}	l/min m³/h	42 2.5	83 5
Max. flow rate at compressed air inlet [2]	$Q_{inlet\ max}$	l/min m³/h	140 8.4	280 16.8
Pressure dewpoint reduction [1]	Δt_{pd}	°C	20	
Purge air consumption		%	env. 10	
Pressure drop	Δp	bar	0.01 – 0.04	

For optimum product selection please contact our sales engineer.

[1] Inlet conditions according to DIN ISO 7183: $p_1 = 7$ bar, $t_1 = 35°C$, $t_{pd1} = 35°C$.
[2] See also the flow rate diagrams on the next page.
[3] According to ISO 8573-1, quality classes 1-1, see assembly instruction below.

Assembly Instruction

Recommended assembly order





- airfit design
- Compact
- Variant with NPTF thread
- Immediate dry air delivery
- No electric power supply required
- Low purge air consumption
- Low pressure drop
- No change in air composition

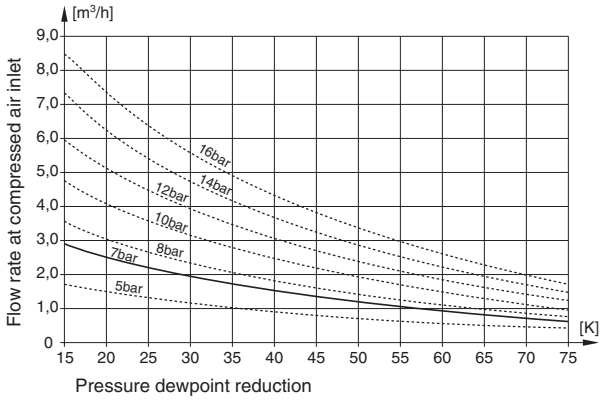
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

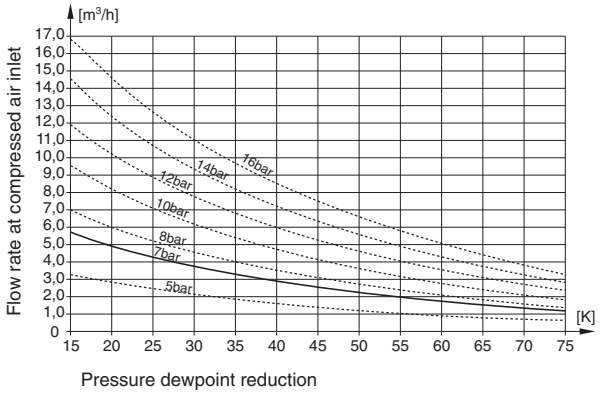
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type SDM2-1/4-R



Flow rate in relation to pressure dewpoint reduction and inlet pressure

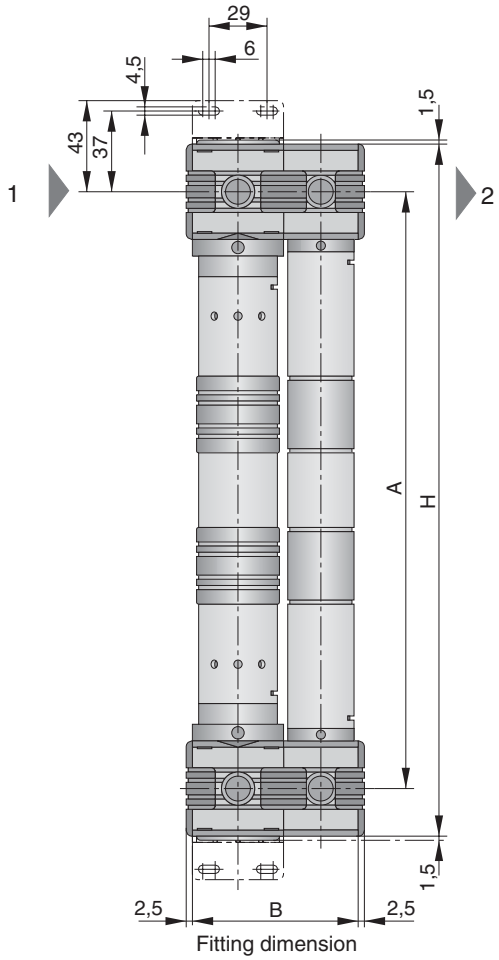
Type SDM5-1/4-R



Dimension Table (mm)

Type	A	B	H
SDM2-1/4-R	280	80	325
SDM5-1/4-R	450	80	495

Dimensions (mm)



1 = P-inlet
2 = P-outlet (on version with return pipe)

Order Instructions

Description	Port Size	**Type**	**Order No.**
Membrane dryer with return pipe	G1/4	**SDM2-1/4-R**	**PB 44149-030**
	G1/4	**SDM5-1/4-R**	**PB 44149-020**

Accessories

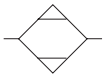
Description	**Order No.**
Mounting kit (2 kits per mounting recommended)	**PL 16965**
Coupling kit	**PL 16959**

Membrane Dryers

G1/2

airfit dry
– fitting the airfit comfort series

CDM-1/2



Special solutions
(e.g. temperature, pressure, medium ...) on request

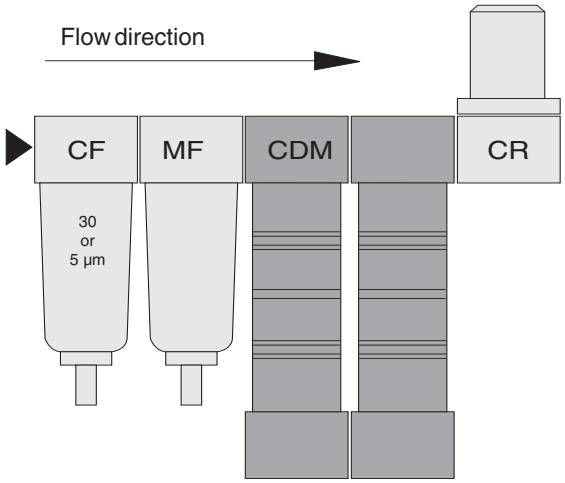
Characteristics			Pressures quoted as gauge pressure					
System			Drying by highly selective, water-permeable membrane (hollow fibres) based on partial pressure difference between inside and outside of membrane.					
Type			CDM 10-1/2-R	CDM 15-1/2-R	CDM 20-1/2-R	CDM 25-1/2-R	CDM 35-1/2-S	CDM 50-1/2-S
Port size			G 1/2					
Installation			In any position					
Medium and ambient temperatures	T_{min} T_{max}	°C °C	+2 +60					
Medium			Filtered air [3]					
Weight (mass)		kg	3.3				4.2	
Pneumatic Characteristics								
Operating pressure range	p_{min} p_{max}	bar bar	5 16					
Flow rate at compressed air inlet [1]	Q_{inlet}	l/min m³/h	166 10	250 15	333 20	416 25	583 35	833 50
Max. flow rate at compressed air inlet [2]	$Q_{inlet\,max}$	l/min m³/h	560 33.6	840 50.4	1120 67.2	1400 84.0	1960 117.5	2800 168
Pressure dewpoint reduction [1]	Δt_{pd}	°C	20					
Purge air consumption		%	env. 10					
Pressure drop	Δp	bar	0.02 - 0.05				0.06	0.12

For optimum product selection please contact our sales engineer.

[1] Inlet conditions according to DIN ISO 7183: $p_1 = 7$ bar, $t_1 = 35°C$, $t_{pd1} = 35°C$.
[2] See also the flow rate diagrams on the next page.
[3] According to ISO 8573-1, quality classes 1-1, see assembly instruction below.

Assembly Instruction

Recommended assembly order





- airfit design
- Compact
- Variant with NPTF thread
- Immediate dry air delivery
- No electric power supply required
- Low purge air consumption
- Low pressure drop
- No change in air composition

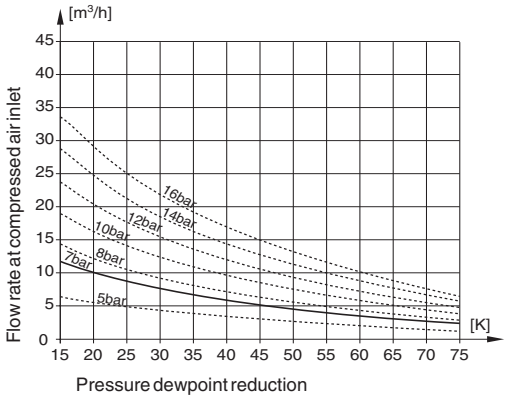
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

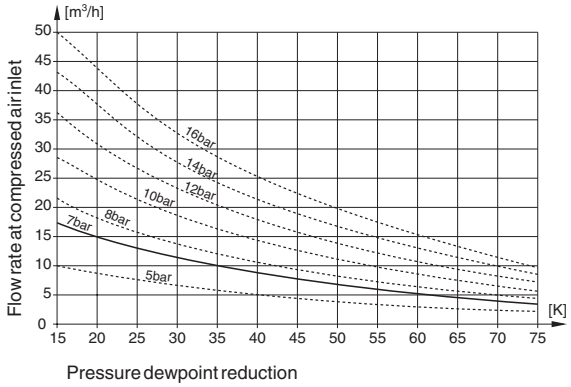
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM10-1/2-R



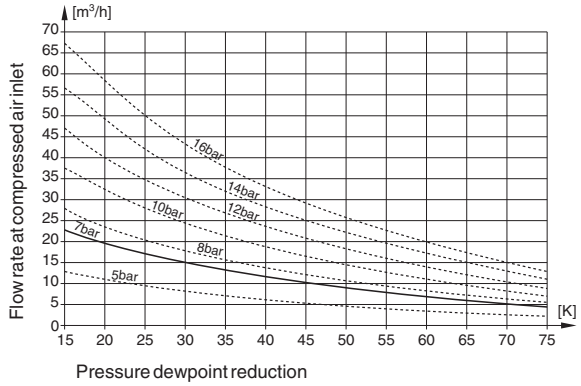
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM15-1/2-R



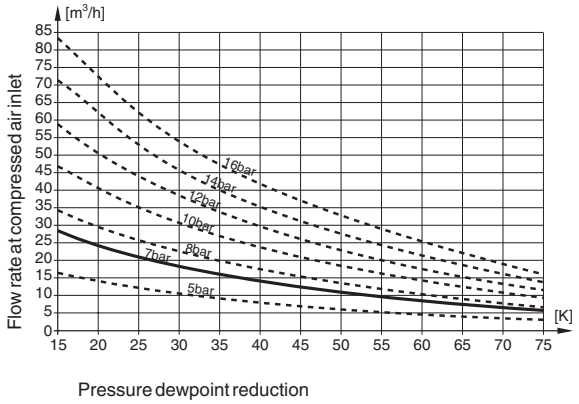
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM20-1/2-R



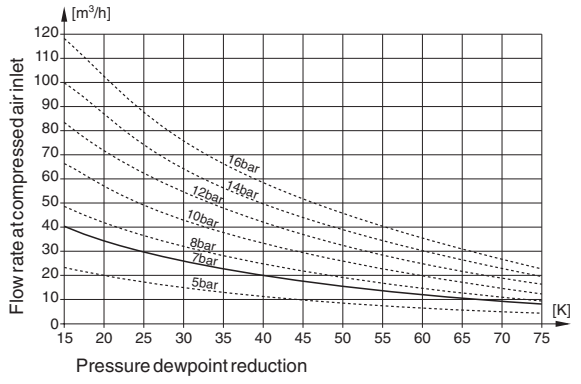
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM25-1/2-R



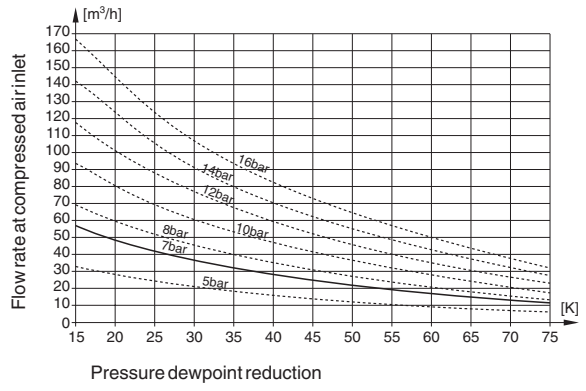
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM35-1/2-S

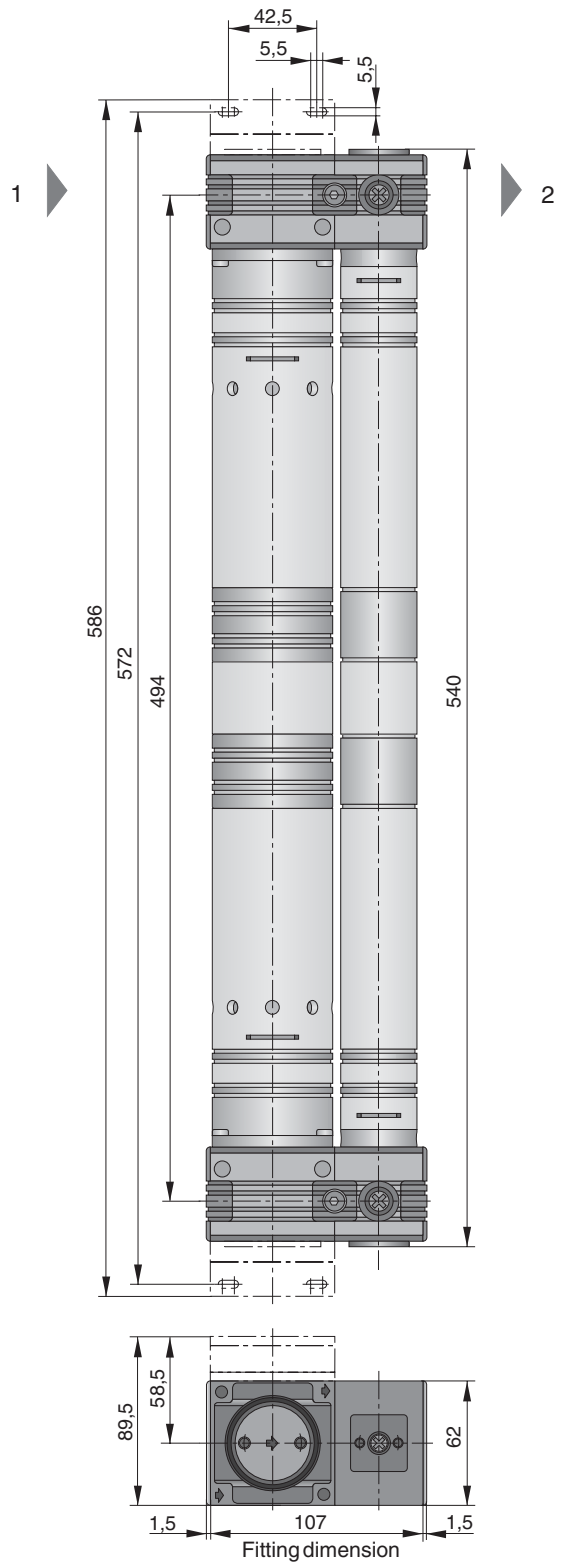


Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM50-1/2-S



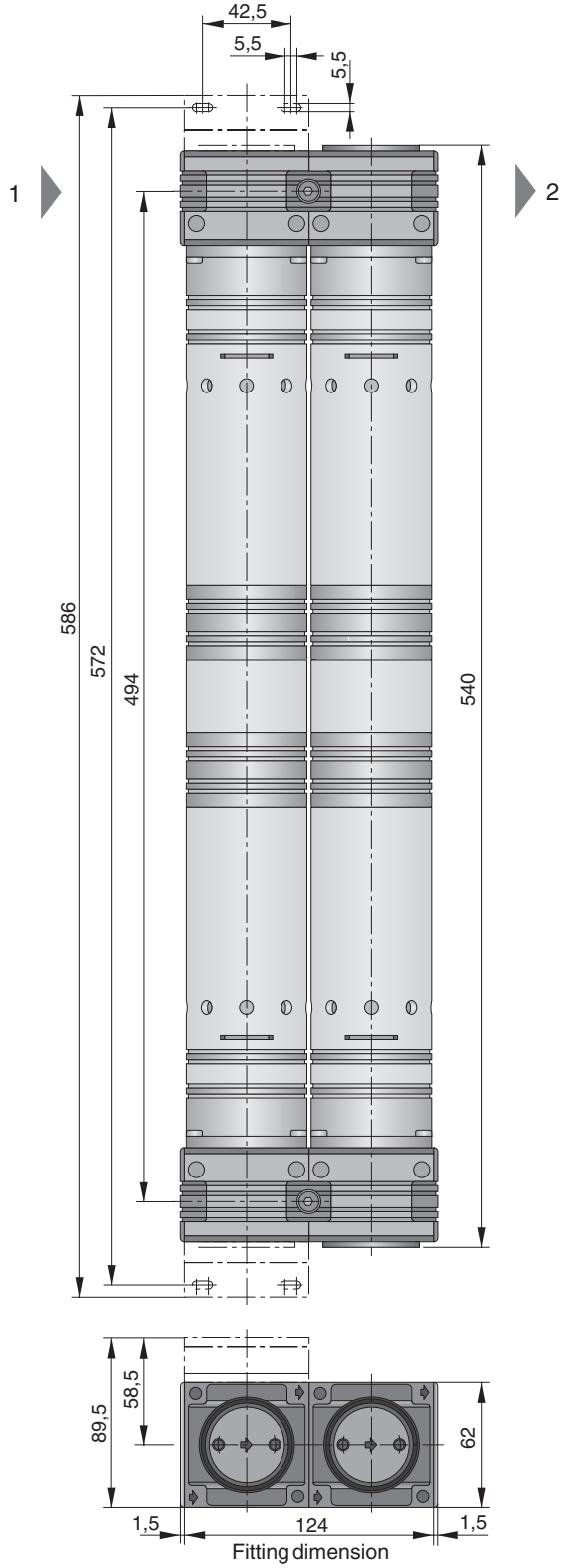
Dimensions (mm)
Type CDM 10/15/20/25-R



1 = P-inlet

2 = P-outlet (on version with return pipe)

Dimensions (mm)
Type CDM 35/50-S



1 = P-inlet

2 = P-outlet

Data Sheet No. 5.82.005E-3

Order Instructions

Description	Port Size	**Type**	**Order No.**
Membrane dryer	G1/2	**CDM10-1/2-R**	**PB 54349-020**
	G1/2	**CDM15-1/2-R**	**PB 54349-021**
	G1/2	**CDM20-1/2-R**	**PB 54349-022**
	G1/2	**CDM25-1/2-R**	**PB 54349-023**
	G1/2	**CDM35-1/2-S**	**PB 54349-030**
	G1/2	**CDM50-1/2-S**	**PB 54349-033**

Accessories

Description	**Order No.**
Mounting kit (2 kits per mounting recommended)	**PL 17518**
Coupling kit	**PL 17608**

Membrane Dryers

G1/2

With patented purge air regulation

airfit dry
– fitting the airfit comfort series

CDM-1/2-C

Special solutions
(e.g. temperature, pressure, medium ...) on request

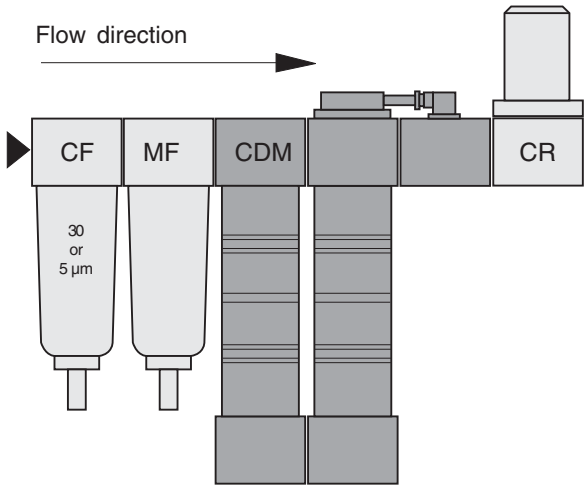
Characteristics			Pressures quoted as gauge pressure					
System			Drying by highly selective, water-permeable membrane (hollow fibres) based on partial pressure difference between inside and outside of membrane.					
Type			**CDM 10-1/2-CR**	**CDM 15-1/2-CR**	**CDM 20-1/2-CR**	**CDM 25-1/2-CR**	**CDM 35-1/2-CS**	**CDM 50-1/2-CS**
Port size			G 1/2					
Installation			In any position					
Medium and ambient temperatures	T_{min} T_{max}	°C °C	+2 +60					
Medium			Filtered air [3]					
Weight (mass)		kg	3.6				5.0	
Pneumatic Characteristics								
Operating pressure range	p_{min} p_{max}	bar bar	5 16					
Flow rate at compressed air inlet [1]	Q_{inlet}	l/min m³/h	**166** **10**	**250** **15**	**333** **20**	**416** **25**	**583** **35**	**833** **50**
Max. flow rate at compressed air inlet [2]	$Q_{in.\ max}$	l/min m³/h	550 33	840 50	1100 66	1400 84	2000 120	2800 170
Pressure dewpoint reduction [1]	Δt_{pd}	°C	20					
Purge air consumption		%	env. 10 (only at flow)					
Pressure drop	Δp	bar	0.15				0.30	0.40

For optimum product selection please contact our sales engineer.

[1] Inlet conditions according to DIN ISO 7183: p_1 = 7 bar, t_1 = 35°C, t_{pd1} = 35°C.
[2] See also the flow rate diagrams on the next page.
[3] According to ISO 8573-1, quality classes 1-1, see assembly instruction below.

Assembly Instruction

Recommended assembly order





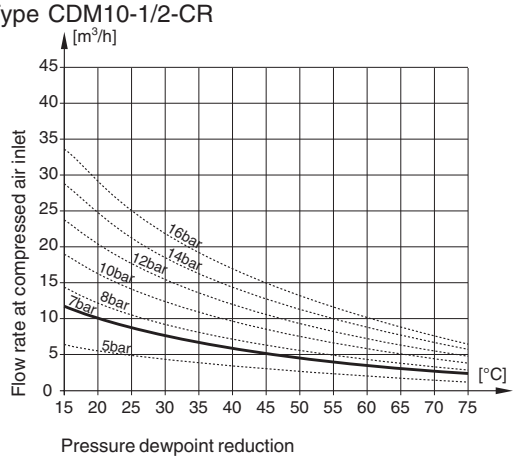
- With patented purge air regulation
- airfit Design
- Compact
- Variant with NPTF thread
- Immediate dry air delivery
- No electric power supply required
- Low pressure drop
- No change in air composition

HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

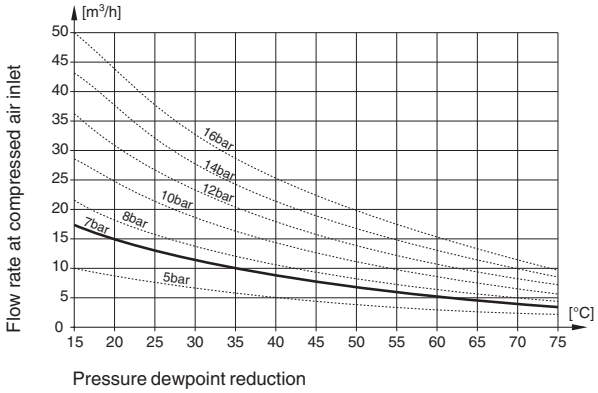
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM10-1/2-CR



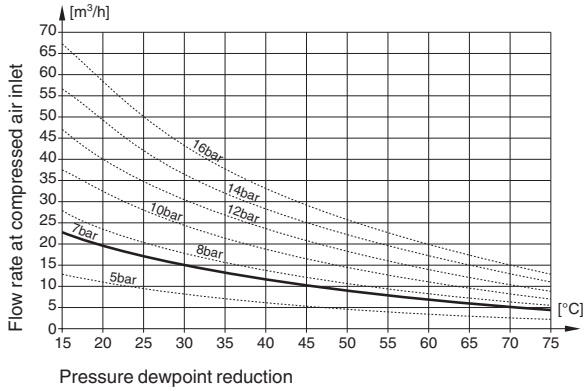
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM15-1/2-CR



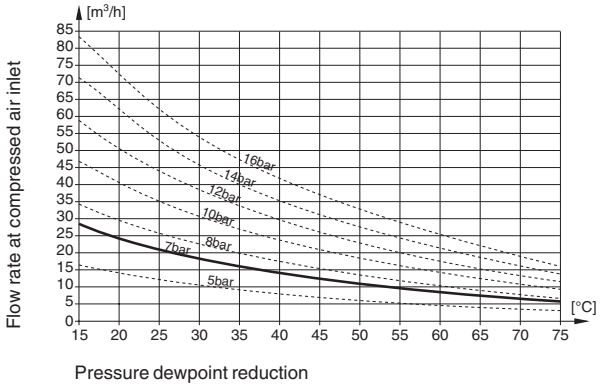
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM20-1/2-CR



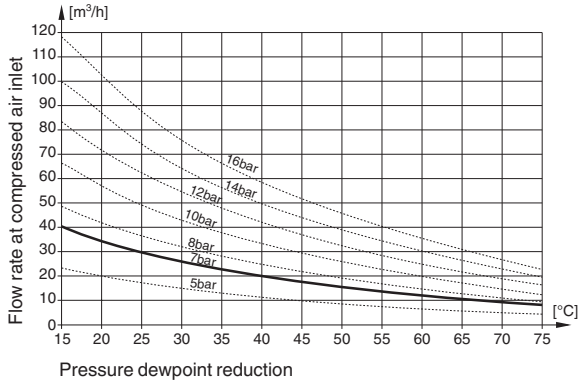
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM25-1/2-CR



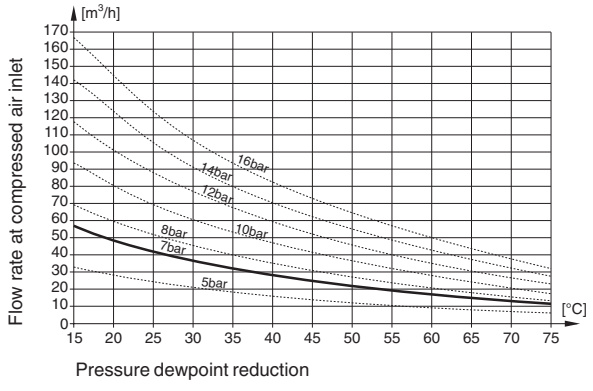
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type CDM35-1/2-CS

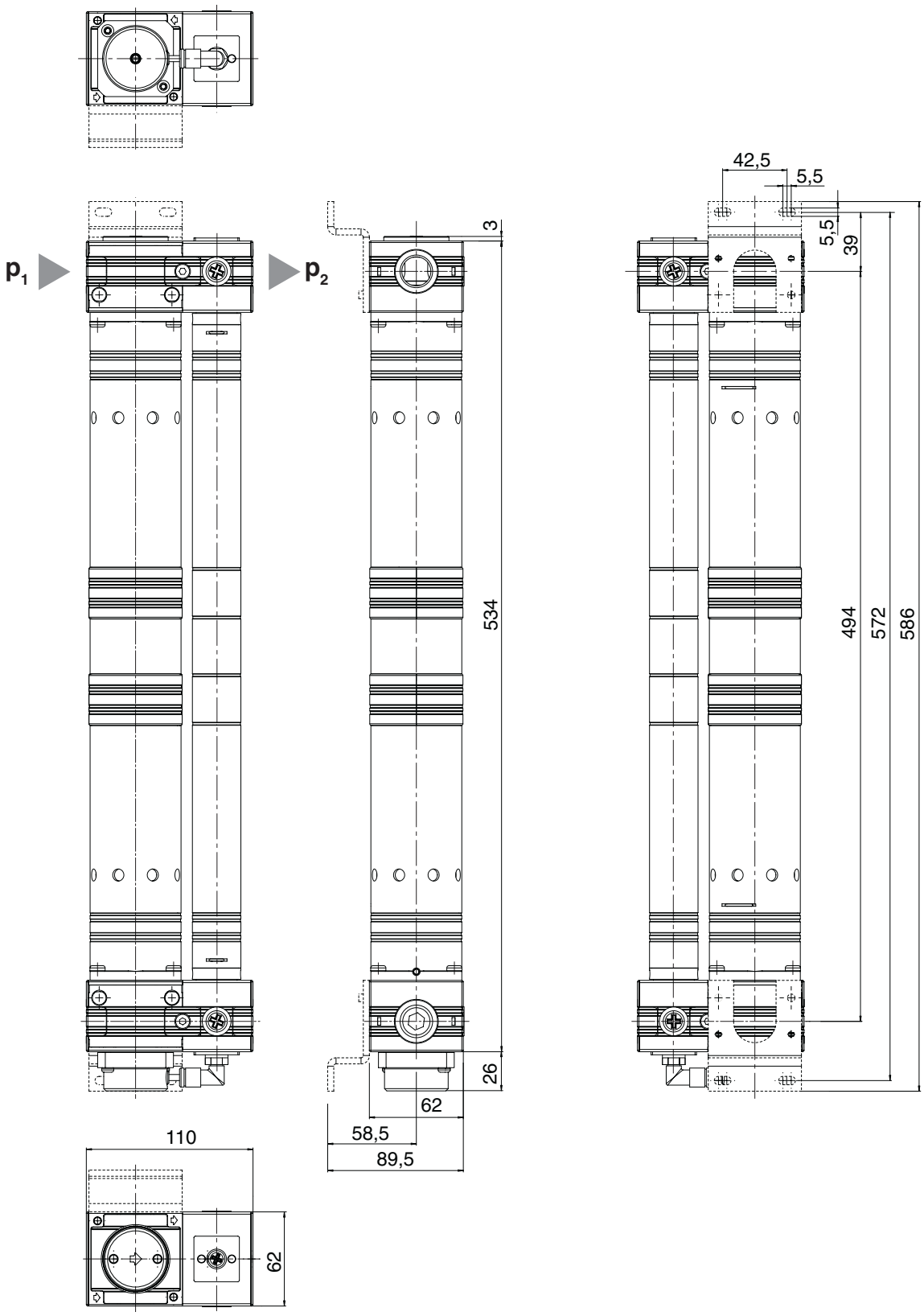


Flow rate in relation to pressure dewpoint reduction and inlet pressure

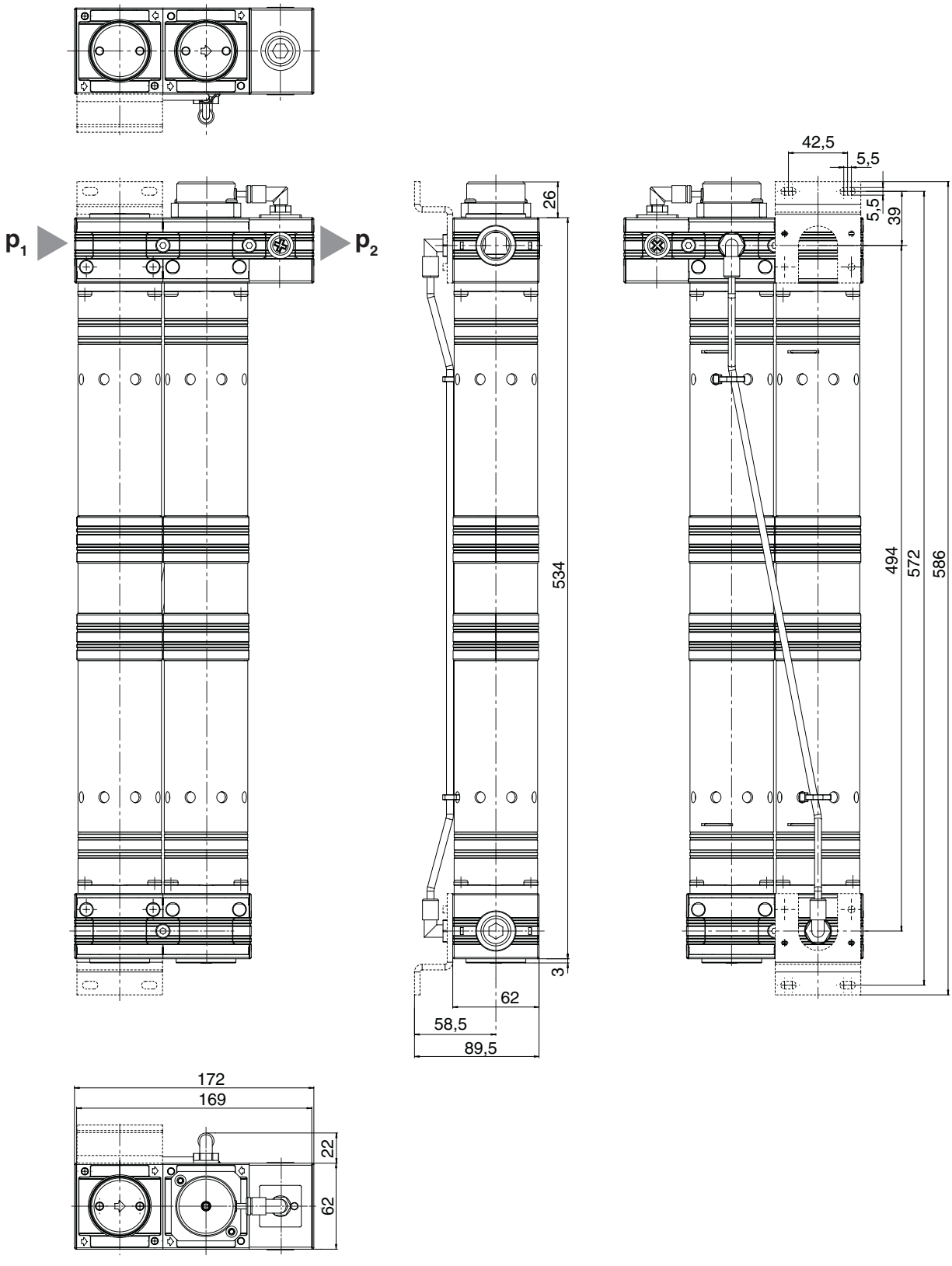
Type CDM50-1/2-CS



Dimensions (mm)
Type CDM10/15/20/25-CR



Dimensions (mm)
Type CDM35/50-CS



Order Instructions			
Description	Port Size	**Type**	**Order No.**
Membrane dryer with patented purge air regulation	G1/2	**CDM10-1/2-CR**	**PB 54349-040**
	G1/2	**CDM15-1/2-CR**	**PB 54349-041**
	G1/2	**CDM20-1/2-CR**	**PB 54349-042**
	G1/2	**CDM25-1/2-CR**	**PB 54349-043**
	G1/2	**CDM35-1/2-CS**	**PB 54349-050**
	G1/2	**CDM50-1/2-CS**	**PB 54349-053**

Accessories	
Description	**Order No.**
Mounting kit (2 kits per mounting recommended)	**PL 17518**
Coupling kit	**PL 17608**

Membrane Dryers

G1

With patented purge air regulation

airfit dry

XDM-1

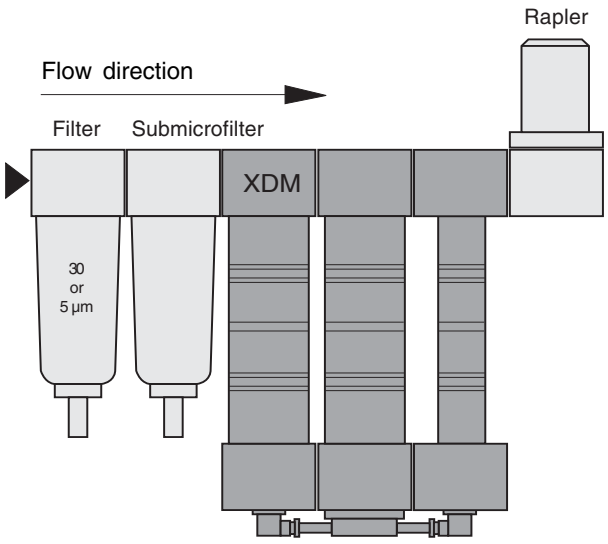
Characteristics			Pressures quoted as gauge pressure				
System			Drying by highly selective, water-permeable membrane (hollow fibres) based on partial pressure difference between inside and outside of membrane.				
Type			XDM 65-1-CPR	XDM 80-1-CPR	XDM 100-1-CPR	XDM 125-1-CPR	XDM 150-1-CPR
Port size			G 1				
Installation			In any position				
Medium and ambient temperatures	T_{min} T_{max}	°C °C	+2 +60				
Medium			Filtered air [3]				
Weight (mass)		kg	9.5	12.5	15.5	18.5	18.5
Pneumatic Characteristics							
Operating pressure range	p_{min} p_{max}	bar bar	5 15				
Flow rate at compressed air inlet [1]	Q_1	l/min m³/h	**1083** **65**	**1333** **80**	**1667** **100**	**2083** **125**	**2500** **150**
Max. flow rate at compressed air inlet [2]	$Q_{1\ max}$	l/min m³/h	3350 200	4150 250	5150 310	6500 390	7750 465
Pressure dewpoint reduction [1]	Δt_{pd}	°C	20				
Purge air consumption		%	env. 10 (only at flow)				
Pressure drop	Δp	bar	0.3				

For optimum product selection please contact our sales engineer.

[1] Inlet conditions according to DIN ISO 7183: p_1 = 7 bar, t_1 = 35°C, t_{pd1} = 35°C.
[2] See also the flow rate diagrams on the next page.
[3] According to ISO 8573-1, quality classes 1-1, see assembly instruction below.

Assembly Instruction

Recommended assembly order



- With patented purge air regulation
- airfit Design
- Compact
- Variant with NPTF thread
- Immediate dry air delivery
- No electric power supply required
- Low pressure drop
- No change in air composition



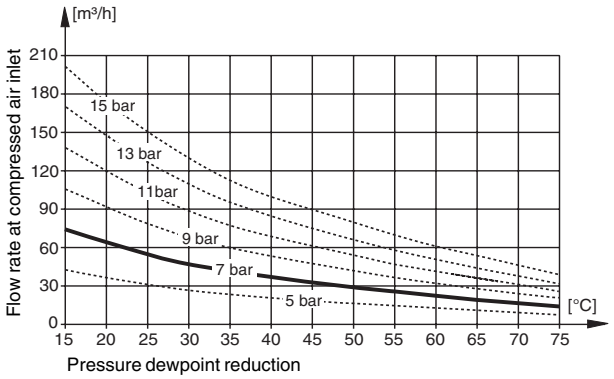
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

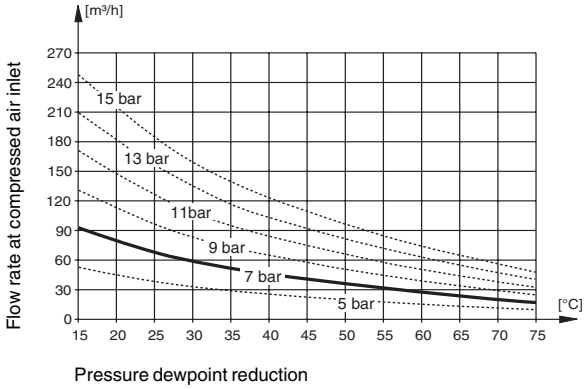
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type: XDM65-1-CPR



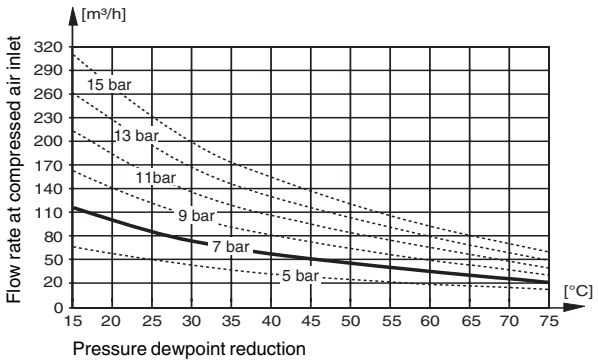
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type: XDM80-1-CPR



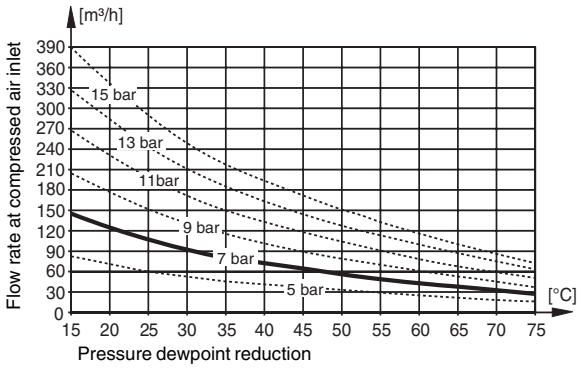
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type: XDM100-1-CPR



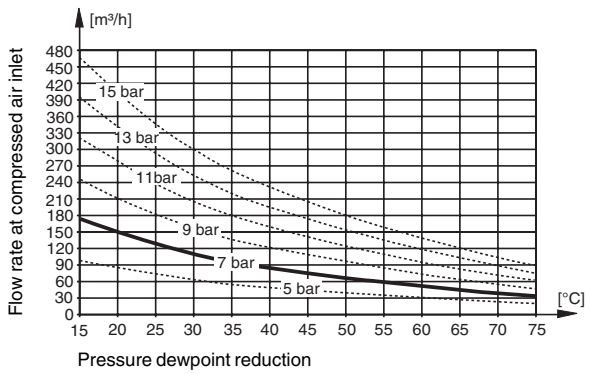
Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type: XDM125-1-CPR

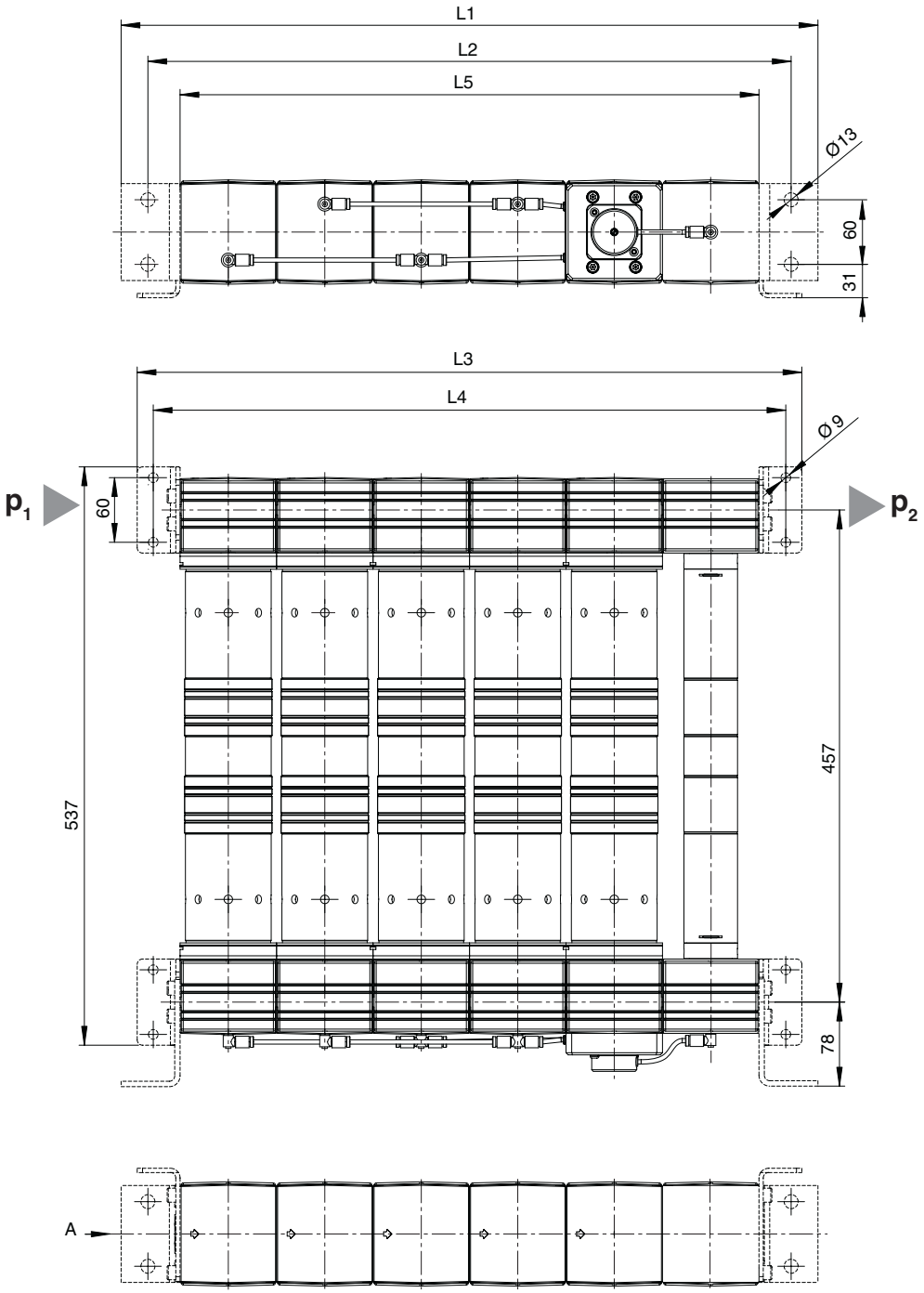


Flow rate in relation to pressure dewpoint reduction and inlet pressure

Type: XDM150-1-CPR



Dimensions (mm)
Type: XDM65/80/100/125/150-CPR



Product Group Overview and Dimensions

Type	Number of modules	Dimensions (mm)				
		L1	L2	L3	L4	L5
XDM65-1-CPR	2 + return pipe	380	330	350	320	270
XDM80-1-CPR	3 + return pipe	470	420	440	410	360
XDM100-1-CPR	4 + return pipe	560	510	530	500	450
XDM125-1-CPR	5 + return pipe	650	600	620	590	540
XDM150-1-CPR	5 + return pipe	650	600	620	590	540

Order Instructions			
Description	Port Size	**Type**	**Order No.**
Membrane dryer	G1	**XDM65-1-CPR**	**PB 30949-120**
with patented purge air regulation	G1	**XDM80-1-CPR**	**PB 30949-130**
	G1	**XDM100-1-CPR**	**PB 30949-140**
	G1	**XDM125-1-CPR**	**PB 30949-150**
	G1	**XDM150-1-CPR**	**PB 30949-151**

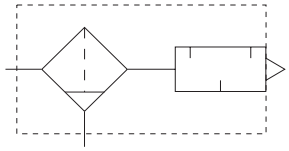
Accessories	
Description	**Order No.**
Mounting kit for wall (2 bracket, 4 screws)	**PL 15669** **(2 kits per mounting recommended)**
Mounting kit for floor (2 bracket, 4 screws)	**PL 18363** **(included in delivery)**

Exhaust Filter Silencer

G1/4–G2

airfit micro

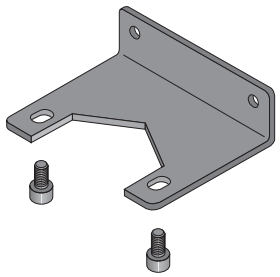
AF



Characteristics			Pressures quoted as gauge pressure						
System			3-stage coalescence filter						
Type			AF-08	AF-10	AF-15	AF-20	AF-25	AF-32	AF-50
Port size			G1/4	G3/8	G1/2	G3/4	G1	G11/4	G2
Installation			Vertical, bowl at the bottom						
Medium and ambient temperatures	T_{min} T_{max}	°C °C	+1.5 +60						
Condensate drainage			Manual						
Weight (mass)		kg	0.3	0.3	0.6	0.6	1.1	1.1	1.17
Pneumatic Characteristic									
Operating pressure range	p_{min} p_{max}	bar bar	0 10						
Pressure drop	Δp	bar	See diagram						
Degree of filtration	η	%	99.999 D.O.P. solid particles and vapours (oil, water) >0.1 micron						
Residual oil content		mg/m³	0.01						
Silencing compared with open exhaust		dB	20	20	20	25	35	35	35
Exhaust capacity		l/s	See diagram						

Accessories

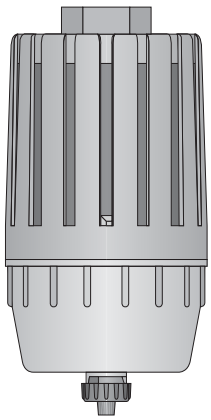
Mounting kit



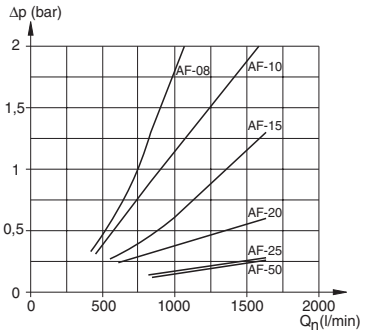
Order No.:
KX 9132 (G1/2, G3/4)
KX 9133 (G1, G2)

Exhaust filter-silencers clean the exhaust air of pneumatic equipment and reduce the exhaust noise created by sudden expansion.

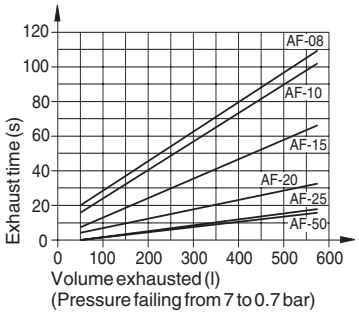
- Very high oil filtration
- High exhaust capacity
- Low pressure drop
- Very good silencing



Pressure Drop



Exhaust Capacity



For product group list see 5.80.001E

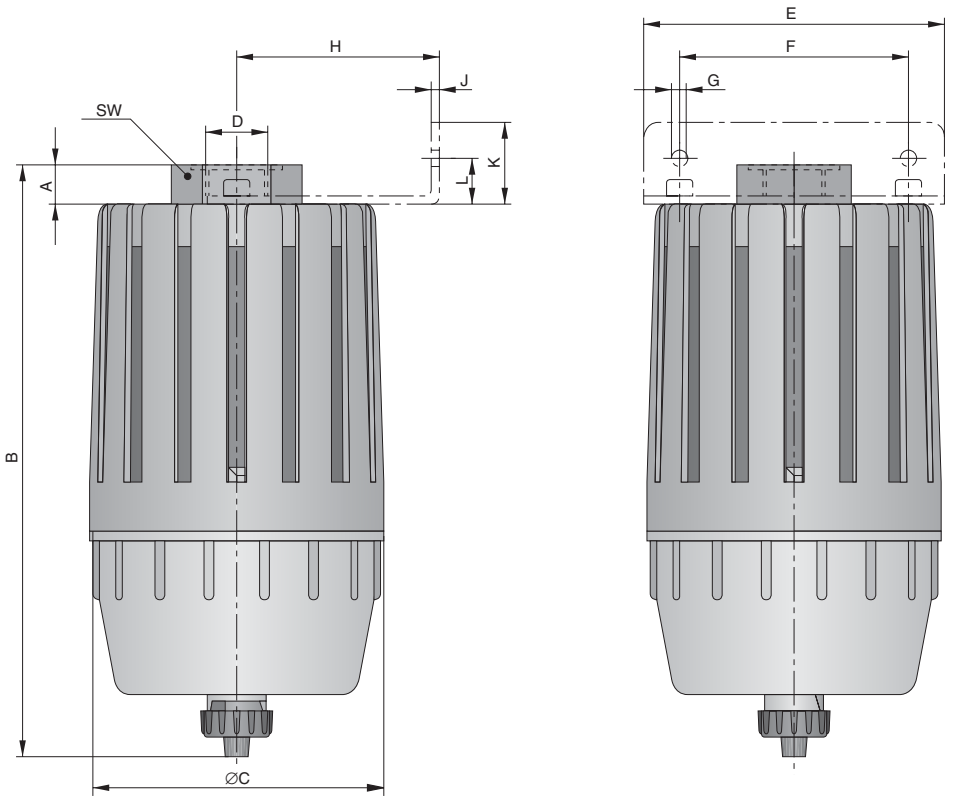
Data Sheet No. 5.89.002E-1

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Dimensions (mm)



Dimension Table (mm)

Type	A	B	C	D	E	F	G	H	J	K	L	SW
AF-08	6	130	77	G1/4	64	45	5.8	50	2.5	11	3	26
AF-10	6	130	77	G3/8	64	45	5.8	50	2.5	11	3	26
AF-15	12	180	90	G1/2	81	56.5	5.5	52	1.5	25	13	41
AF-20	12	180	90	G3/4	81	56.5	5.5	52	1.5	25	13	41
AF-25	15	254	110	G1	93	70	5.5	62	1.5	25	13	50
AF-32	30	270	110	G11/4	93	70	5.5	62	1.5	25	13	55
AF-50	73	311	110	G2	93	70	5.5	62	1.5	25	13	55

Order Instructions

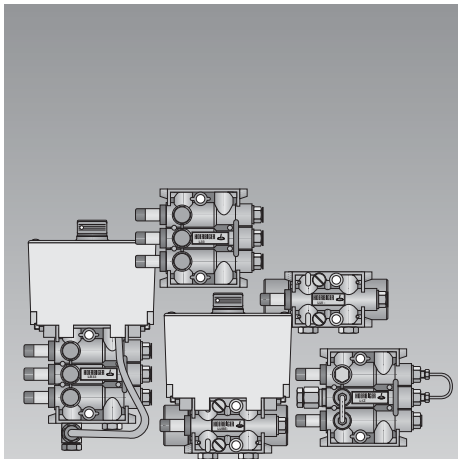
Description	Port size	**Type**	**Order No.**
Exhaust filter-silencer	G1/4	**AF-08**	**PB 35149-000**
	G3/8	**AF-10**	**PB 35249-000**
	G1/2	**AF-15**	**PB 35349-000**
	G3/4	**AF-20**	**PB 35449-000**
	G1	**AF-25**	**PB 35549-000**
	G11/4	**AF-32**	**PB 36949-000**
	G2	**AF-50**	**PB 35049-000**

Accessories

Mounting kit (bracket and screws)		**AF-08/10**	**KG 6045**
		AF-15/20	**KX 9132**
		AF-25/32/50	**KX 9133**

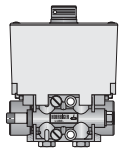
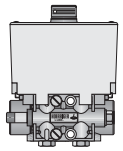
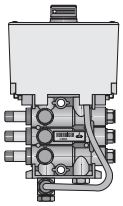
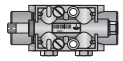
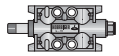
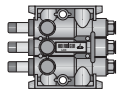
INJECTION LUBRICATOR SYSTEMS SERIES

oilfit



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		Port size	Recommended flow (l/min)*	**Type**	Data Sheet No.
Injection lubricador combination units		G1/4	550	**LUBI-08**	5.90.002E
		G3/8	850	**LUBI-10**	
		G1/2	1900	**LUBI-15**	
		G3/4	3500	**LUBI-20**	
		G1	5000	**LUBI-25**	
		G1/4	550	**LUBE-08**	5.90.003E
		G3/8	850	**LUBE-10**	
		G1/2	1900	**LUBE-15**	
		G3/4	3500	**LUBE-20**	
		G1	5000	**LUBE-25**	
		G1/8*	-	**LB11**	5.90.004E
		G1/8*	-	**LB31**	
		G1/8*	-	**LB33**	
		G1/4	550	**LUI-08**	5.90.008E
		G3/8	850	**LUI-10**	
		G1/2	1900	**LUI-15**	
		G3/4	3500	**LUI-20**	
		G1	5000	**LUI-25**	
Single units		G1/8*	-	**L10i**	5.90.005E
		G1/8*	-	**L10e**	
		G1/8*	-	**L11**	5.90.006E
		G1/8*	-	**L31**	
		G1/8*	-	**L33**	

* Control signal inlet.

Oil recommendation: see 5.61.050E

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Injection Lubricator Combination

G1/4-G1

oilfit

LUBI

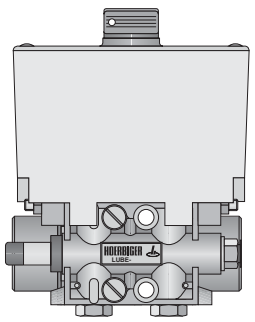
Characteristics				Pressures quoted as gauge pressure				
System				Single point injection lubricator. Automatic oilfeed when connected pneumatic tool is switched on.				
Mounting				In-line mounting: 2 screws M6 are included in delivery				
Tube connection				Thread				
Port size				G1/4	G3/8	G1/2	G3/4	G1
Port size lubricant				Coupling for tube Ø 2.5/1.5 coaxially in airline				
Weight (mass)			kg	0.65	0.65	0.65	0.75	0.80
Installation				Horizontal, reservoir on top				
Control medium				Filtered compressed air				
Lubricant				Mineral oil to DIN51524 and DIN 51525				
Viscosity			mm^2/s	20-765				
Medium and ambient temperatures		T_{min} T_{max}	°C °C	-20 +50				
Material	Reservoir			Polyester resin (PETP)				
	Sensor housing			Diecast aluminium				
	Sensor flap			Acetal resin (POM)				
Operating pressure range control fluid		p_{min} p_{max}	bar bar	3 10				
Operating pressure range lubricant				Inlet: without pressure from fitted reservoir (gravity feed)				
				Outlet: 0-250 bar depending on operating pressure and oil injection conditions				
Recommended flow[1])		Q_n	l/min m^3/h	550 33	850 51	1900 114	3500 210	5000 300
Own air usage[2])		Q_n	m^3/h	0.36				
Minimum flow at 6 bar		Q_{min}	m^3/h	9				
Reservoir capacity			cm^3	250				
Oil feed per stroke			mm^3	3-30 adjustable factory adjustment 30 mm^3/stroke				
Optional extension kits				Up to max. 10 lubrication points by fitting of elements L11, L31 or L33				

[1]) at 6 bar and 25 m/s
[2]) at 6 bar and Ø 0.3 mm and $Q_n > Q_{min}$ (i.e. only when there is flow)

Comprising:
Oil reservoir
Air flow sensor
One-point injection lubricator

With combination units type LUBI-.., the pressure oil connection is inside the air outlet port of the air flow sensor.

For lubrication of individual hand operated pneumatic tools.



For product group list see 5.90.001E
For further lubrciators see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

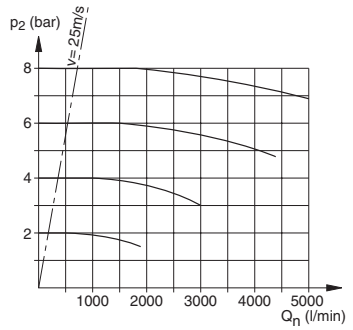
Data Sheet No. 5.90.002E-1

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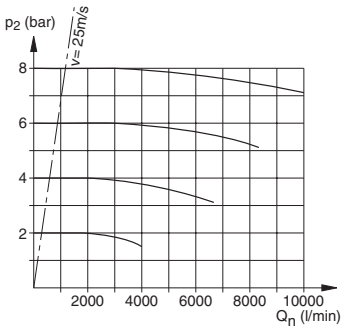
The right to introduce technical modifications is reserved

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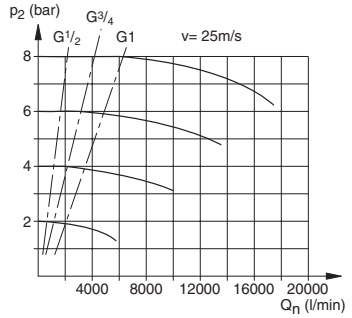
Flow Characteristics Type: LUBI-08



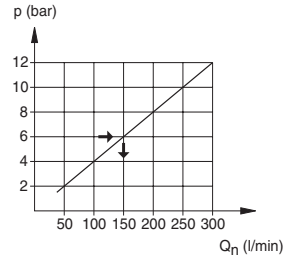
Flow Characteristics Type: LUBI-10



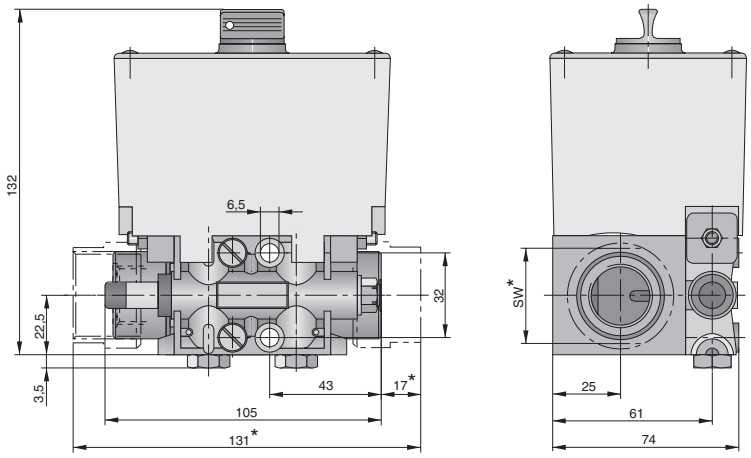
Flow Characteristics Type: LUBI-15, 20, 25



Minimum Flow

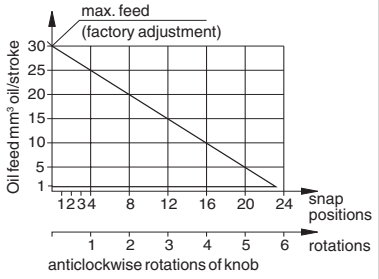


Dimensions (mm)



* only for LUBI-20 SW = 36
LUBI-25 SW = 41

Adjustment of Oil Feed



Order Instructions

Description	Port size	Type	Order No.
Injection lubricator combination	G1/4	**LUBI-08**	**PB 13449-005**
Injection lubricator combination	G3/8	**LUBI-10**	**PB 13549-005**
Injection lubricator combination	G1/2	**LUBI-15**	**PB 13649-005**
Injection lubricator combination	G3/4	**LUBI-20**	**PB 13749-005**
Injection lubricator combination	G1	**LUBI-25**	**PB 13849-005**

Injection Lubricator Combination

G1/4-G1

oilfit

LUBE

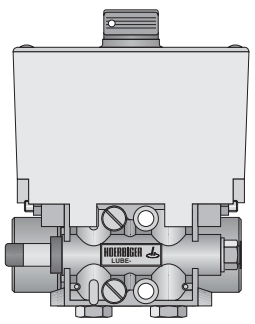
Characteristics				Pressures quoted as gauge pressure				
System				Single point injection lubricator. Automatic oilfeed when connected pneumatic tool is switched on.				
Mounting				In-line mounting: 2 screws M6 are included in delivery				
Tube connection				Thread				
Port size				G1/4	G3/8	G1/2	G3/4	G1
Port size lubricant				M6 x 0.75				
Weight (mass)			kg	0.65	0.65	0.65	0.75	0.80
Installation				Horizontal, reservoir on top				
Control medium				Filtered compressed air				
Lubricant				Mineral oil to DIN51524 and DIN 51525				
Viscosity			mm^2/s	20-765				
Medium and ambient temperatures		T_{min} T_{max}	°C °C	-20 +50				
Material	Reservoir			Polyester resin (PETP)				
	Sensor housing			Diecast aluminium				
	Sensor flap			Acetal resin (POM)				
Operating pressure range control fluid		p_{min} p_{max}	bar bar	3 10				
Operating pressure range lubricant				Inlet: without pressure form fitted reservoir (gravity feed)				
				Outlet: 0-250 bar depending on operating pressure and oil injection conditions				
Recommended flow[1])		Q_n	l/min m^3/h	550 33	850 51	1900 114	3500 210	5000 300
Own air usage[2])		Q_n	m^3/h	0.36				
Minimum flow at 6 bar		Q_{min}	m^3/h	9				
Reservoir capacity			cm^3	250				
Oil feed per stroke			mm^3	3-30 adjustable factory adjustment 30 mm^3/stroke				
Optional extension kits				Up to max. 10 lubrication points by fitting of elements L11, L31 or L33				

[1]) at 6 bar and 25 m/s
[2]) at6 bar and Ø 0.3 mm and $Q_n > Q_{min}$ (i.e. only when there is flow)

Comprising:
Oil reservoir
Air flow sensor
One-point injection lubricator

With combination units type LUBE.., the pressure oil connection is outside of the flow sensor, directly on the outlet of lubricator element.

For lubrication of individual hand operated pneumatic tools.



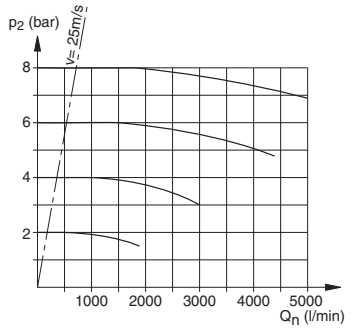
For product group list see 5.90.001E
For further lubricators see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

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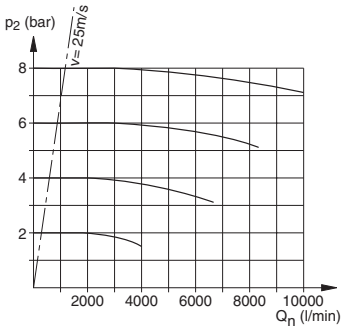
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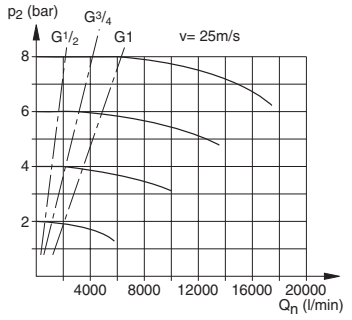
Flow Characteristics Type: LUBE-08



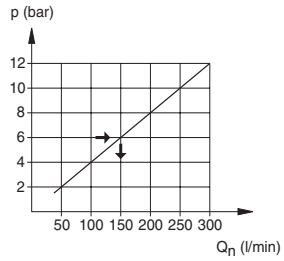
Flow Characteristics Type: LUBE-10



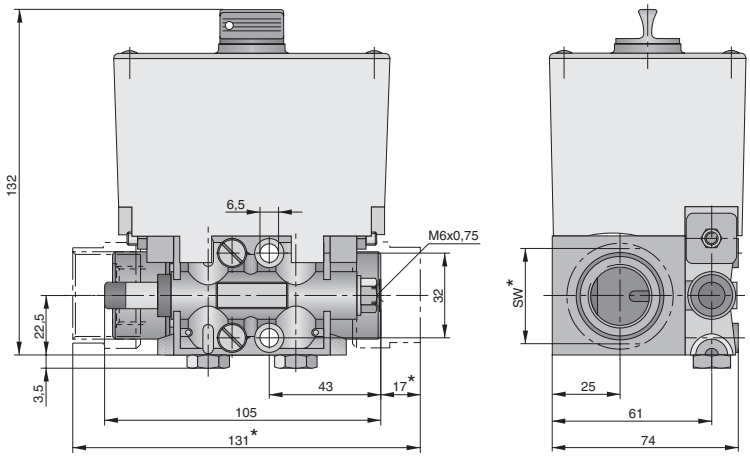
Flow Characteristics Type: LUBE-15, 20, 25



Minimum Flow

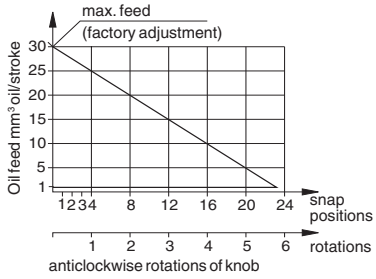


Dimensions (mm)



* only for LUBE-20 SW = 36
LUBE-25 SW = 41

Adjustment of Oil Feed



Order Instructions

Description	Port size	Type	Order No.
Injection lubricator combination	G1/4	**LUBE-08**	**PB 13449-007**
Injection lubricator combination	G3/8	**LUBE-10**	**PB 13549-007**
Injection lubricator combination	G1/2	**LUBE-15**	**PB 13649-007**
Injection lubricator combination	G3/4	**LUBE-20**	**PB 13749-007**
Injection lubricator combination	G1	**LUBE-25**	**PB 13849-007**

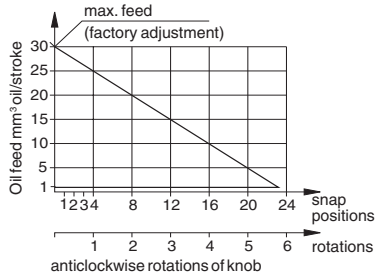
Injection Lubricator Combination

oilfit

LB11
LB31
LB33

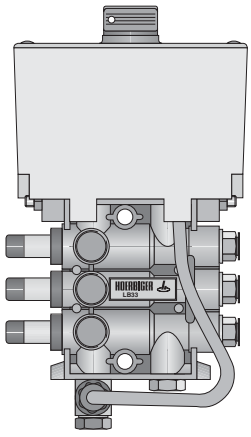
Characteristics				Pressures quoted as gauge pressure	
System	LB11			One-point lubricator with 1 control air inlet	Oil feed actuated by external pneumatic signal
	LB31			Three-point injection lubricator with 1 combined control air inlet (combined actuation)	
	LB33			Three-point injection lubricator with 3 separate control air inlets (individual actuation)	
Mounting				2 screws M6 (are included in delivery)	
Installation				Horizontal, reservoir on top	
Port size				G 1/8 control signal inlet M6x0.75 lubricant outlet	
Weight (mass)			kg	LB11: 0.45; LB31, LB33: 0.65	
Control medium				Filtered compressed air	
Lubricant				Mineral oil to DIN51524 and DIN 51525	
Viscosity			mm^2/s	20-765	
Medium and ambient temperatures		T_{min} T_{max}	°C °C	-20 +50	
Material	Reservoir			Polyester resin (PETP)	
	Element housing			Diecast zinc	
Operating pressure range control fluid		p_{min} p_{max}	bar bar	3 10	
Operating pressure range lubricant				Inlet: without pressure form fitted reservoir (gravity feed)	
				Outlet: 0-250 bar depending on operating pressure and oil injection conditions	
Reservoir capacity			cm^3	250	
Oil feed per stroke			mm^3	3-30 adjustable factory adjustment 30 mm^3/stroke	
Optional extension kits				Up to max. 10 lubrication points by fitting of elements L11, L31 or L33	

Adjustment of Oil Feed



Comprising:
Oil reservoir
Lubricator element

These combinations are used for lubricating pneumatic cylinders, cycle-operating pneumatic feeding devices and pneumatic tools.



For product group list see 5.90.001E
For data sheets see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

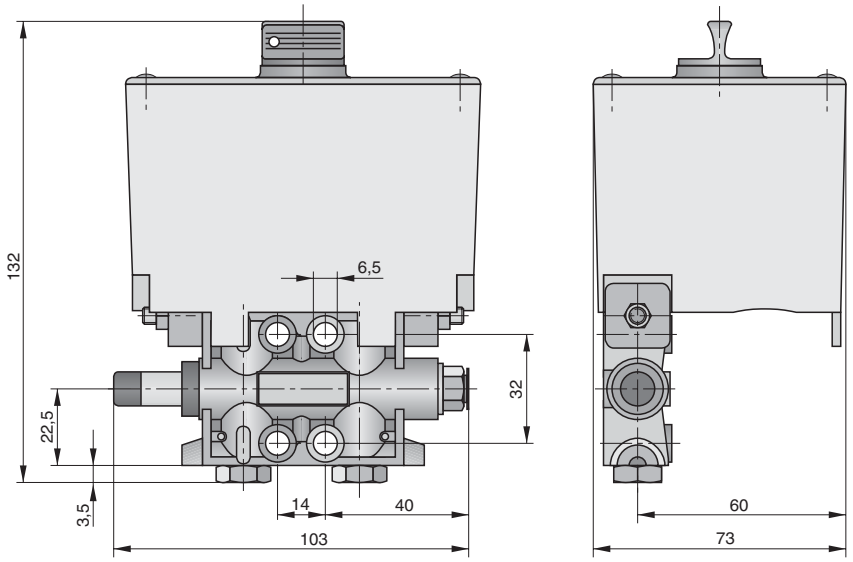
Data Sheet No. 5.90.004E-1

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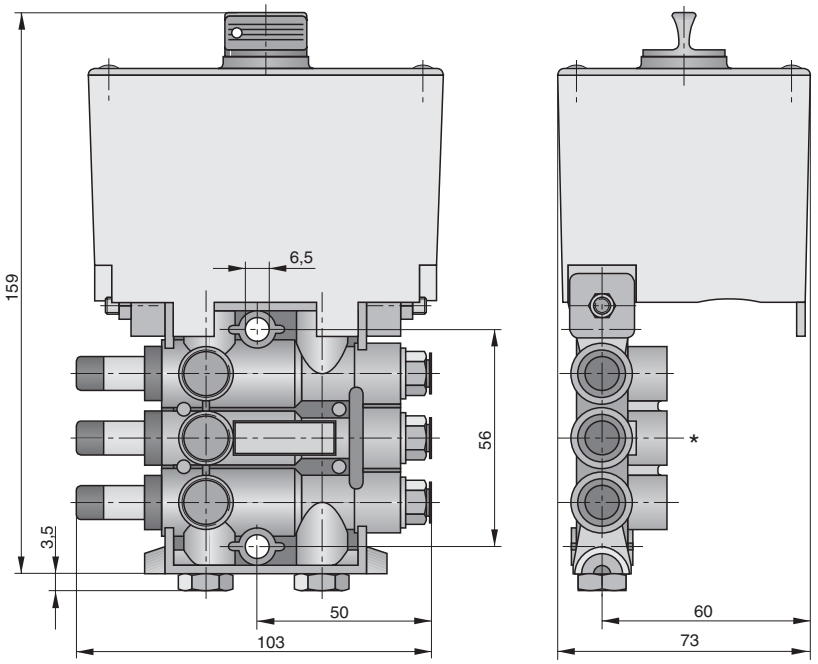
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HOERBIGER ORIGA

Dimensions (mm)
Type: LB11



Dimensions (mm)
Type: LB31, LB33



* 3 lateral connections G1/8 only with type LB33

Order Instructions

Description	Type	Order No.
One-point injection lubricator combination with air connection on the bottom side	**LB11**	**PB 13049-000**
Three-pint injection lubricator combination with air connection on the bottom side (air signal actuates all 3 pressure oil outlets sumultaneously)	**LB31**	**PB 13149-000**
Three-point injection lubricator combination with 3 lateral air connections (each air signal actuates only its corresponding pressure oil outlet)	**LB33**	**PB 13249-000**

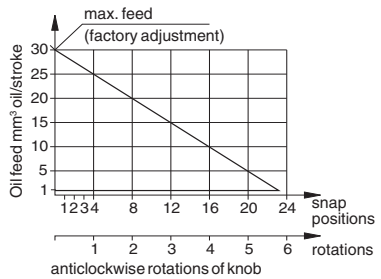
Injection Lubricator Combination

oilfit

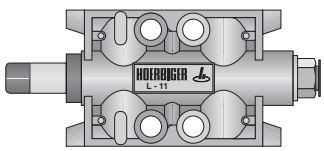
L10i
L10e

Characteristics				Pressures quoted as gauge pressure
System				Single acting air hydraulic pump
Mounting				2 screws M6, with coupling kit either directly on oil reservoir or on other lubricator elements
Tube connection				Thread
Port size control air				G1/8
Port size lubricant				Inlet: G 1/8 Outlet: M6 x 0.75 (L10e)
Weight (mass)			kg	0.25
Installation				Horizontal (oil channel S∅S) see drawing
Control medium				Filtered compressed air
Lubricant				Mineral oil to DIN51524 and DIN 51525
Viscosity			mm^2/s	20-765
Medium and ambient temperatures		T_{min} T_{max}	°C °C	-20 +80
Material	Housing			Diecast zinc
	Seals			Buna N
	Actuating plunger			Polyamid transparent
	Oil connection			Brass
Operating pressure range of air		p_{min} p_{max}	bar bar	3 10
Operating pressure range of lubricant				Inlet: gravity feed or pressure feed (max. 3 bar)
				Outlet: 0-250 bar depending on operating pressure and oil injection conditions
Oil feed per stroke			mm^3	3-30 adjustable factory adjustment 30 mm^3/stroke

Adjustment of Oil Feed



The lubricator elements have an unthreaded lateral air connection and can only be used for flanging to the air flow sensor.



For product group list see 5.90.001E
For further lubricators see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

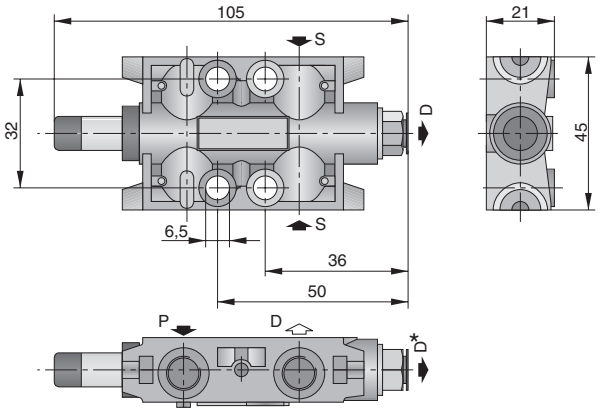
HOERBIGER ORIGA

Data Sheet No. 5.90.005E-1

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The right to introduce technical modifications is reserved

Dimensions (mm)



* only type L10e

Order Instructions

Description	Type	Order No.
Injection lubricator element with internal pressure oil outlet into the flow sensor	**L10i**	**KY 2030**
Injection lubricator element with external pressure (M6 x 0.75)	**L10e**	**KY 2031**

Accessories

Description	Type	Order No.
Coupling kit (in 9 parts)	**K**	**PL 08066**

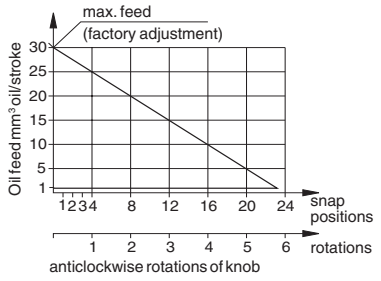
Injection Lubricator Combination

oilfit

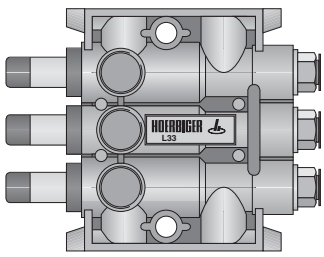
L11
L31
L33

Characteristics				Pressures quoted as gauge pressure
System				Single acting air hydraulic pump
Mounting				2 screws M6, with coupling kit either directly on oil reservoir or on other lubricator elements
Tube connection				Thread
Port size control air				G1/8
Port size lubricant				Inlet: G 1/8 Outlet: M6 x 0.75
Weight (mass)			kg	0.40
Installation				Horizontal (oil channel SØS) see drawing
Control medium				Filtered compressed air
Lubricant				Mineral oil to DIN51524 and DIN 51525
Viscosity			mm^2/s	20-765
Medium and ambient temperatures		T_{min} T_{max}	°C °C	-20 +80
Material	Housing			Diecast zinc
	Seals			Buna N
	Actuating plunger			Polyamid transparent
	Oil connection			Brass
Operating pressure range of air		p_{min} p_{max}	bar bar	3 10
Operating pressure range of lubricant				Inlet: gravity fee or pressure feed (max. 3 bar)
				Outlet: 0-250 bar depending on operating pressure and oil injection conditions
Oil feed per stroke			mm^3	3-30 adjustable factory adjustment 30 mm^3/stroke

Adjustment of Oil Feed



Lubricator elements for flanging to the reservoir or for extending a lubricator combination (with or without reservoir)



For product group list see 5.90.001E
For further lubricators see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

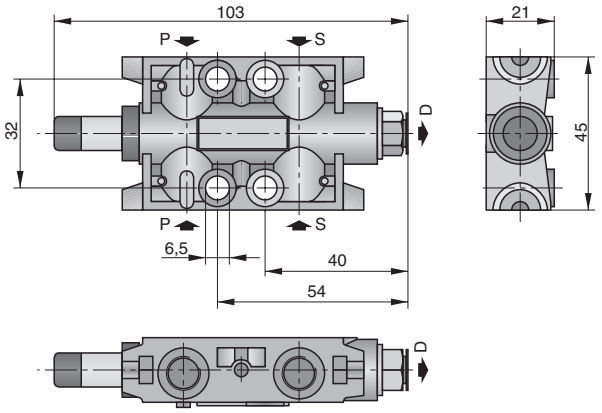
Data Sheet No. 5.90.006E-1

HOERBIGER ORIGA

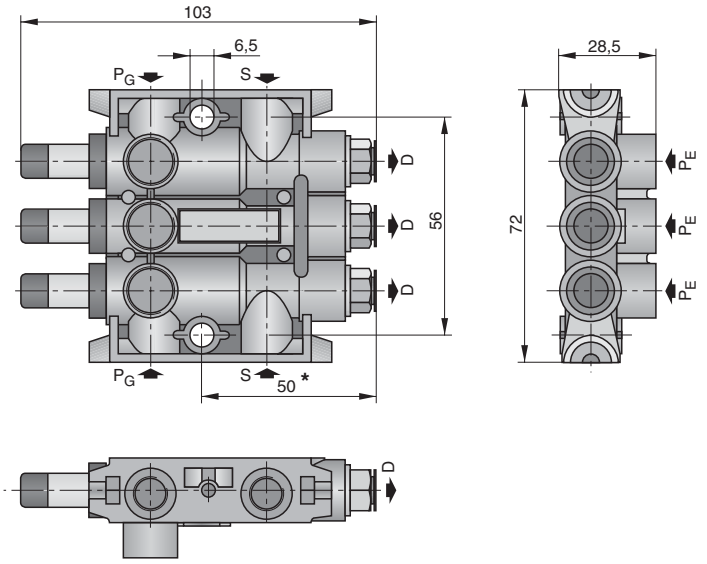
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The right to introduce technical modifications is reserved

Dimensions (mm)
Type: L11



Dimensions (mm)
Type: L31, L33



P... pilot air
S... suction line (from oil reservoir)
P_G... air supply for L31 (P_E is closed)
P_E... air supply for L33 (P_G is closed)
D... pressure oil line
* oil return line may be required

Order Instructions

Description	Type	Order No.
One-point injection lubricator element with air connection on top and bottom side	**L11**	**KY 2033**
Three-point injection lubricator element with air connection on top and bottom side for combined actuation (air signal simultaneously actuates all 3 pressure oil outlets)	**L31**	**KY 2032**
Three-point lubricator element with 3 lateral air connections (each air signal actuates only its corresponding pressure oil outlet)	**L33**	**KY 2034**

Injection Lubricator Combination

G1/4-G1

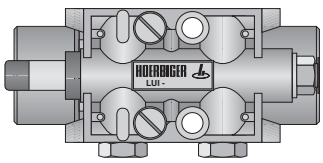
oilfit

LUI

Characteristics				Pressures quoted as gauge pressure				
System				Single point injection lubricator. Automatic oilfeed when connected pneumatic tool is switched on.				
Mounting				In-line mounting: 2 screws M6 are included in delivery				
Tube connection				Thread				
Port size				G1/4	G3/8	G1/2	G3/4	G1
Port size lubricant				Coupling for tube Ø 2.5/1.5 coaxially in airline				
Weight (mass)			kg	0.45	0.45	0.45	0.50	0.55
Installation				Flow direction of air flow sensor: horizontal				
Control medium				Filtered compressed air				
Lubricant				Mineral oil to DIN51524 and DIN 51525				
Viscosity			mm^2/s	20-765				
Medium and ambient temperatures		T_{min} T_{max}	°C °C	-20 +50				
Material	Injection lubricator			Diecast aluminium				
	Sensor housing			Diecast aluminium				
	Sensor flap			Acetal resin (POM)				
Operating pressure range control fluid		p_{min} p_{max}	bar bar	3 10				
Operating pressure range lubricant				Inlet: without pressure from fitted reservoir (gravity feed)				
				Outlet: 0-250 bar depending on operating pressure and oil injection conditions				
Recommended flow[1])		Q_n	l/min m^3/h	550 33	850 51	1900 114	3500 210	5000 300
Own air usage[2])		Q_n	m^3/h	0.36				
Minimum flow at 6 bar		Q_{min}	m^3/h	9				
Reservoir capacity			cm^3	250				
Oil feed per stroke			mm^3	3-30 adjustable factory adjustment 30 mm^3/stroke				
Optional extension kits				Up to max. 10 lubrication points by fitting of elements L11, L31 or L33				

[1]) at 6 bar and 25 m/s
[2]) at6 bar and Ø 0.3 mm and $Q_n > Q_{min}$ (i.e. only when there is flow)

Comprising:
Air flow sensor (U-..)
One-point injection lubricator (L10i)



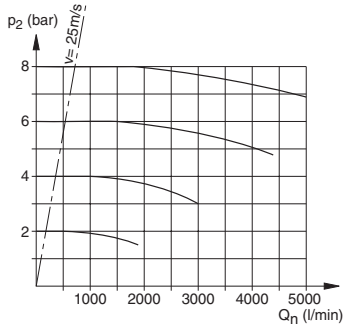
HOERBIGER
ORIGA

For product group list see 5.90.001E
For data sheets see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

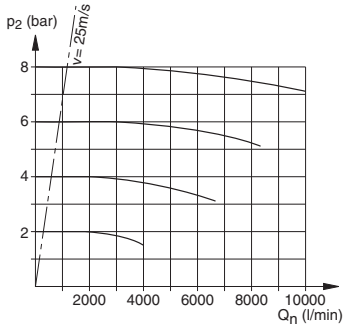
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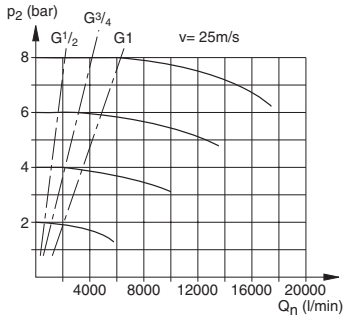
Flow Characteristics Type: LUI-08



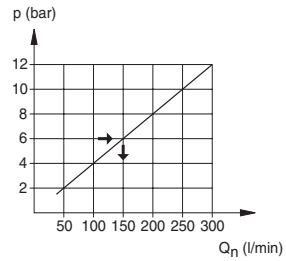
Flow Characteristics Type: LUI-10



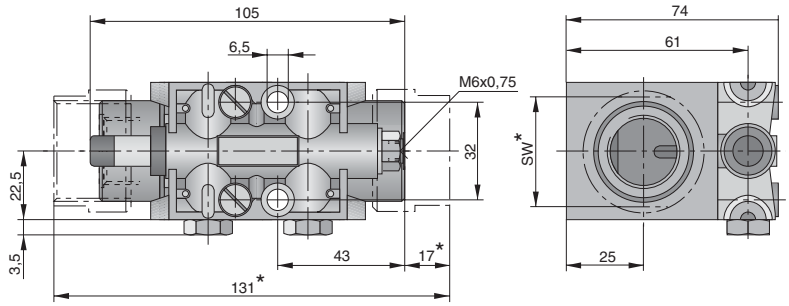
Flow Characteristics Type: LUI-15, 20, 25



Minimum Flow

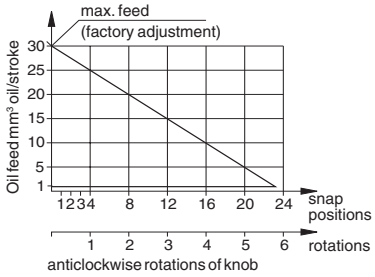


Dimensions (mm)



* only for LUI-20 SW = 36
LUI-25 SW = 41

Adjustment of Oil Feed



Order Instructions

Description	Port size	Type	Order No.
Injection lubricator combination	G1/4	**LUI-08**	**PB 13449-001**
Injection lubricator combination	G3/8	**LUI-10**	**PB 13549-001**
Injection lubricator combination	G1/2	**LUI-15**	**PB 13649-001**
Injection lubricator combination	G3/4	**LUI-20**	**PB 13749-001**
Injection lubricator combination	G1	**LUI-25**	**PB 13849-001**

Air Flow Sensor

to Injection Lubricator Element Types L10i, L10e

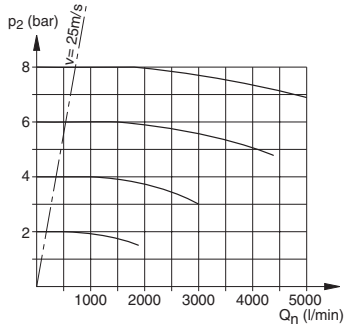
oilfit Accessories

U

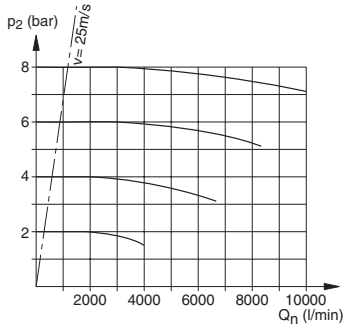
Characteristics			Pressures quoted as gauge pressure				
System			Flow sensor for converting air flow into a digital air signal				
Mounting			In-line mounting, to element L10 2 screws M6				
Tube connection			Thread				
Port size control fluid			G1/4	G3/8	G1/2	G3/4	G1
Port size lubricant			Tube nipple for tube Ø 2.5/1.5 coaxially in airline				
Weight (mass)		kg	0.20	0.20	0.20	0.25	0.30
Installation			Horizontal				
Control medium			Filtered compressed air				
Medium and ambient temperatures	T_{min} T_{max}	°C °C	-20 +80				
Material			Diecast aluminium Flap: acetal resin (POM)				
Operating pressure range	p_{min} p_{max}	bar bar	3 10				
Recommended flow[1])	Q_n	l/min m³/h	550 33	850 51	1900 114	3500 210	5000 300
Own air usage[2])	Q_n	m³/h	0.36				
Minimum flow at 6 bar	Q_{min}	m³/h	9				

[1]) at 6 bar and 25 m/s
[2]) at 6 bar and Ø 0.3 mm and $Q_n > Q_{min}$ (i.e. only when there is flow)

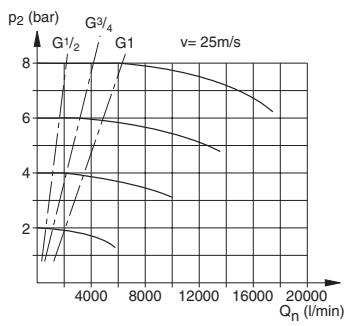
Flow Characteristics Type: U-08



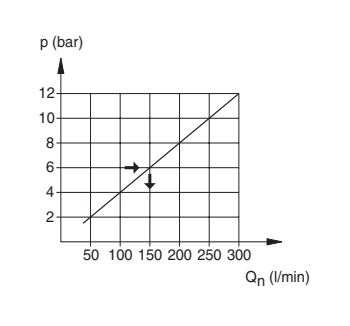
Flow Characteristics Type: U-10



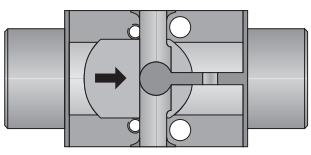
Flow Characteristics Type: U-15, 20, 25



Minimum Flow



The airflow sensor converts air flow into a digital air signal.



For product group list see 5.90.001E
For data sheets see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

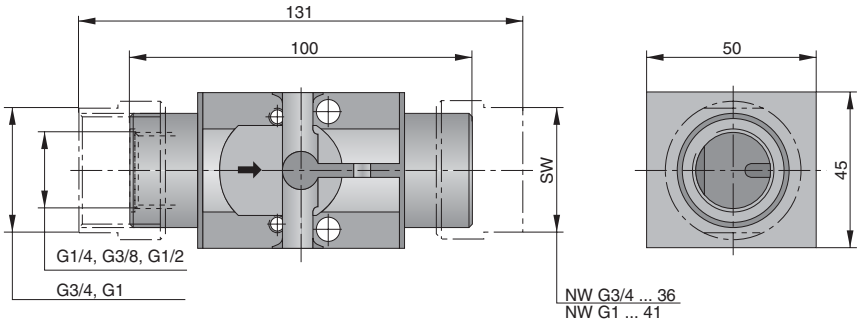
Data Sheet No. 5.91.002E-1

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Dimensions (mm)



Order Instructions

Description	Port size	**Type**	**Order No.**
Air flow sensor	G1/4	**U-08**	**PL 08144**
Air flow sensor	G3/8	**U-10**	**PL 08109**
Air flow sensor	G1/2	**U-15**	**PL 08110**
Air flow sensor	G3/4	**U-20**	**PL 08111**
Air flow sensor	G1	**U-25**	**PL 08112**

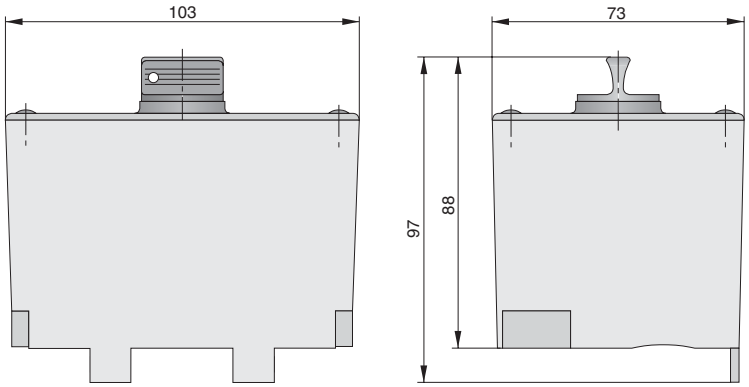
Oil Reservoir

oilfit **Accessories**

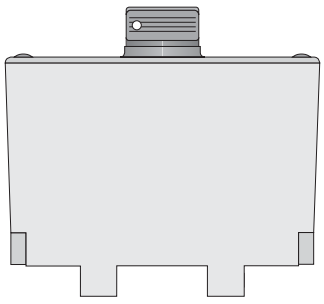
Bi

Characteristics	
Type	Bi
Connection	Without thread, directly flangeable to lubricator element
Installation	Vertical, filling plug on top (see drawing)
Mounting	With coupling kit to lubricator element
Oil capacity	250 cm^3
Oil supply	Without pressure (gravity feed)
Material	Polyester resin (PETP)

Dimensions (mm)



The reservoir provides oil supply for one or more lubricator element.



Order Instructions		
Description	**Type**	**Order No.**
Oil reservoir directly flangeable to lubricato element	**Bi**	**PL 08108**

Accessories		
Description	**Type**	**Order No.**
Coupling kit (in 9 parts)	**K**	**PL 08066**

Data Sheet No. 5.91.003E

HOERBIGER ORIGA

A1P155E00KY00X

The right to introduce technical modifications is reserved

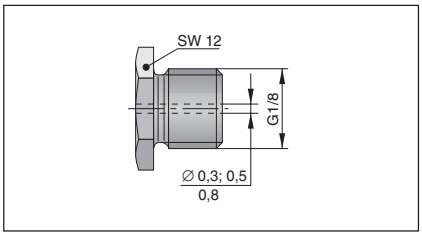
Injection Lubricator Accessories

Plug screw
Connection kit
Oil tube
Coupling kit

oilfit

Plug Screw with Exhaust Port

The plug screw provides quick exhaust of lubricator element L10 in the combinations LUBI and LUBE. Exhaust port Ø optional (see order instructions).

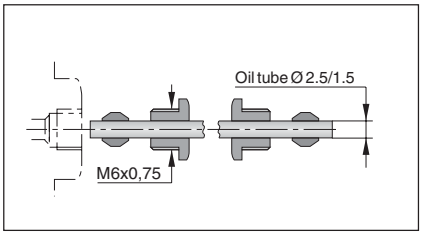


Order Instructions

Description	Ø Exhaust port	**Order No.**
Plug screw with exhaust port	0.3	**PL 08326**
Plug screw with exhaust port	0.5	**PL 08325**
Plug screw with exhaust port	0.8	**PL 08324**

Connection Kit - 12 parts

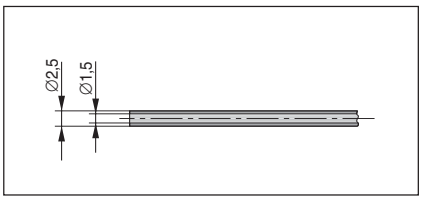
The connection kit consisting of 12 parts (for 3 pressure oil lines) is used for connecting pressure oil tubes with the lubricator element and the discharge element.



Order No.: PL 08185 (Type A)

Oil Tube

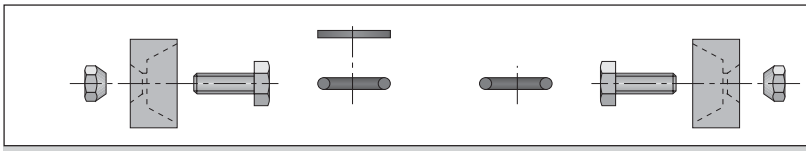
Connects the lubricator element with the oil discharge element on the unit to be lubricated (tool, cylinder).
Material: polyamid (PA)
Supplied in lengths of 10 m, pre-filled with oil and ends plugged.



Order No.: PL 08187 (Type S)

Coupling Kit

The coupling kit is used for assemling all the components of the system.

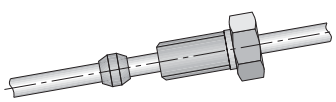


Order No.: PL 08066 (Type K)

Accessories



Order No.: KY 8766
see Data Sheet No. 5.61.050E



HOERBIGER
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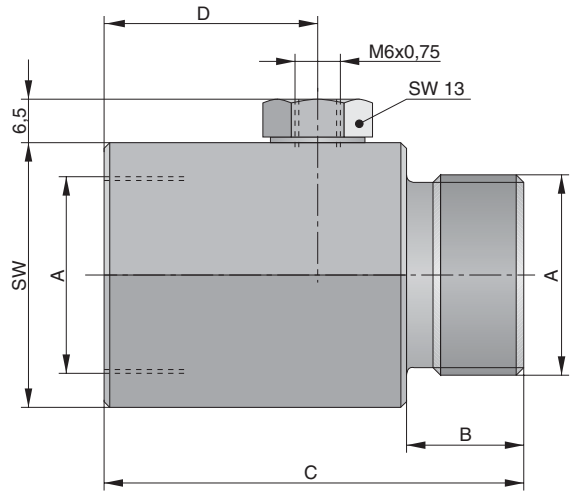
The right to introduce technical modifications is reserved

Air Connection with Oil Injector

oilfit **Accessories**

E
E_0

Dimensions (mm) Air Connection with Oil Injector



Dimension Table (mm)

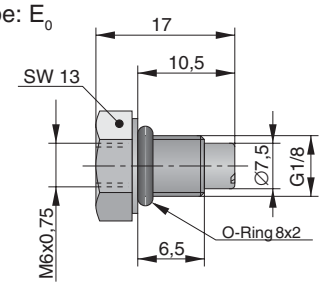
Typ	A	B	C	D	SW
E-06	G1/8	8	35	17	22
E-08	G1/4	12	45	22	22

Order Instructions (inclusive E_0)

Description	Port size	**Type**	**Order No.**
Air connection with oil injector	G1/8	**E-06**	**PL 08100**
Air connection with oil injector	G1/4	**E-08**	**PL 08101**

Oil Injector - Single

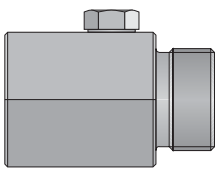
Type: E_0



Oil injector with check valve for pressure oil line.

Order No.: PL 08091

The air connection with oil injector connects the pressure oil line to the air line of a pneumatic unit (e.g. screws directly into a cylinder port).



HOERBIGER ORIGA

Data Sheet No. 5.91.005E-1

A1P157E00KY00X

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Oil Reservoir

with sight glass

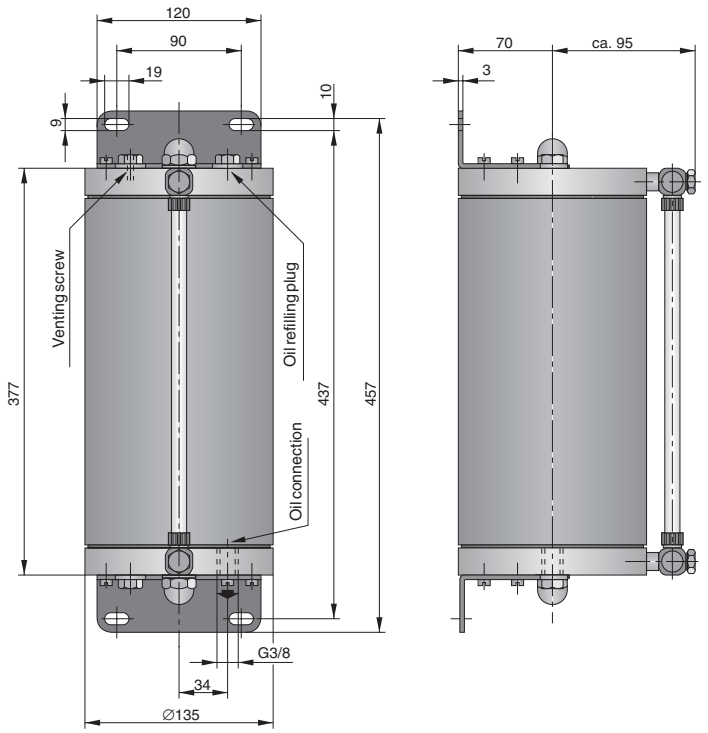
Capacity: 4 l

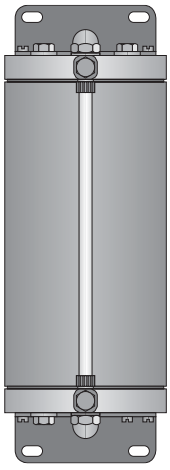
oilfit Accessories

B-04
B-04P

Characteristics				
System			Oil reservoir for gravity feed of one or more injection lubricators	
Connection			Thread	
Port size			Inlet: M16x1.5 Outlet: G3/8	
Installation			Vertical (see drawing)	
Mounting			4 screws M8 Mounting brackets are included in delivery	
Oil capacity		cm^3	4000	
Type			B-04	B04P
Oil supply			Unpressurized	max. 3 bar
Weight (mass)		kg	4.50	

Dimensions (mm)





The oil reservoir supplies one or more injection lubricators.

Order Instructions

Description	Type	Order No.
Oil reservoir for (unpress.)	**B-04**	**PL 15534**
Oil reservoir (3 bar)	**B-04P**	**PL 18728**

For product group list see 5.90.001E
For data sheets see 5.90.002E-5.90.008E
For accessories see 5.91.002E-5.91.008E

Data Sheet No. 5.91.006E-1

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HOERBIGER ORIGA

Atomizer

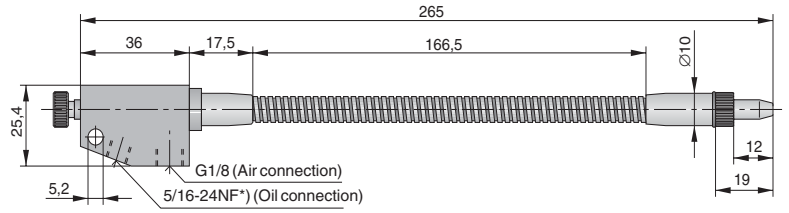
Types:
Flexible atomizer
Rigid atomizer

oilfit **Accessories**

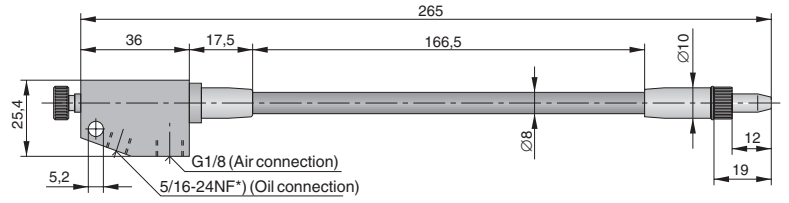
Characteristics

Adjustment of oil feed	With setting screw in the back of the housing
Oil connection	G1/8 for discharge element E_0
Air connection	G1/8
Spray angle	Conical

Dimensions (mm) - Flexible Atomizer



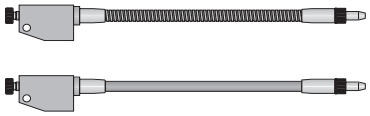
Dimensions (mm) - Rigid Atomizer



Accessories

Description	Type	Order No.
*) Adapter 5/16-24NF/G1/8	**B-6056**	**KX 6026**

Adjustable atomizer
for all kinds of spraying operations
(continuous jet).



Order Instructions:
Flexible atomizer : KY 9914
Rigid atomizer : KY 8783

Data Sheet No. 5.91.008E-1

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HOERBIGER ORIGA

Central Air Line Lubricator

G1, G2

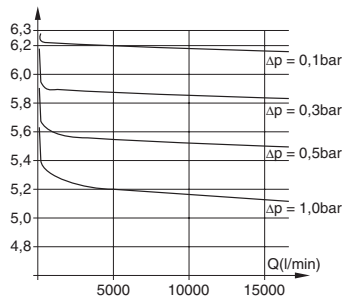
airfit

EL

Characteristics			Pressures quoted as gauge pressure	
System			Micro-mist-lubricator with pilot operated differential pressure regulating valve for the oil-feed adjustment	
Type			**EL-25**	**EL-50**
Port size			**G1**	**G2**
Max. oil capacity		cm^3	2500	5000
Oil refilling			Manual - also during operation	
Installation			Vertical	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	+5 +60	
Weight (mass)		kg	10	18
Recommended pre-filter			A25F-1	A25F-2
Size of micro-mist particles		µm	0.2-2	
Recommended oil viscosity		mm^2/s	32 (32 cSt) [1]	
Pneumatic Characteristic				
Recommended flow	Q_{min} Q_{max}	l/min(m^3/h) l/min(m^3/h)	**100 (6)** **5500 (330)**	**200 (12)** **17000 (1000)**
Operating pressure range	p_{max}	bar	10	
Differential pressure range	p_{min} p_{max}	bar bar	0.2 0.8	0.2 1

[1]) Use only recommended oils with viscosity VG32 to ISO 3448 (32 mm^2/s at 40°C) or HOERBIGER special oil, Order No.: KY 8766 (Cat.-No. 5.61.050E)

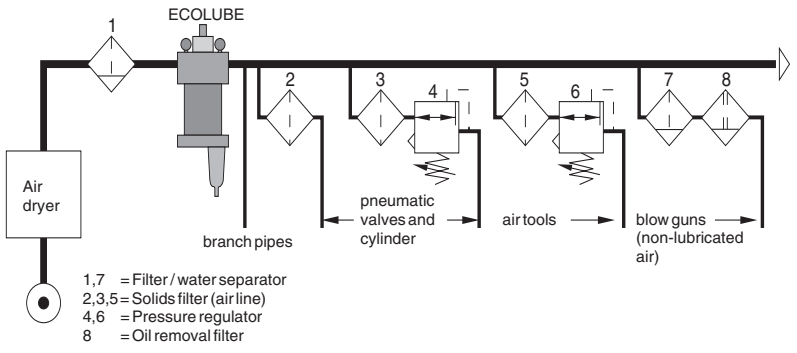
Differential pressure in relation to of the flow rate

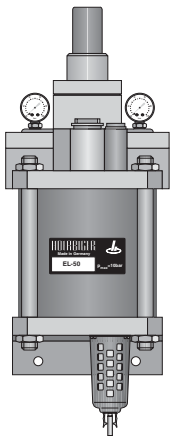


Installation Advice

In most cases it is advisable to instal HOERBIGER air line filters in branch pipes. When constant operating pressures are required (e.g. cylinders, pneumatic screw drivers, etc.) HOERBIGER pressure regulators should be used. If small amounts of oil-free air are needed, a HOERBIGER filter-water-separator followed by a MICROFIT submicrofilter can be installed (see Installation Diagram).

Installation Diagram





Mikro-mist-lubricator with oil-feed adjustment depending on differential pressure.

Comprising:
lubricator unit
2 gauges and
mounting bracket

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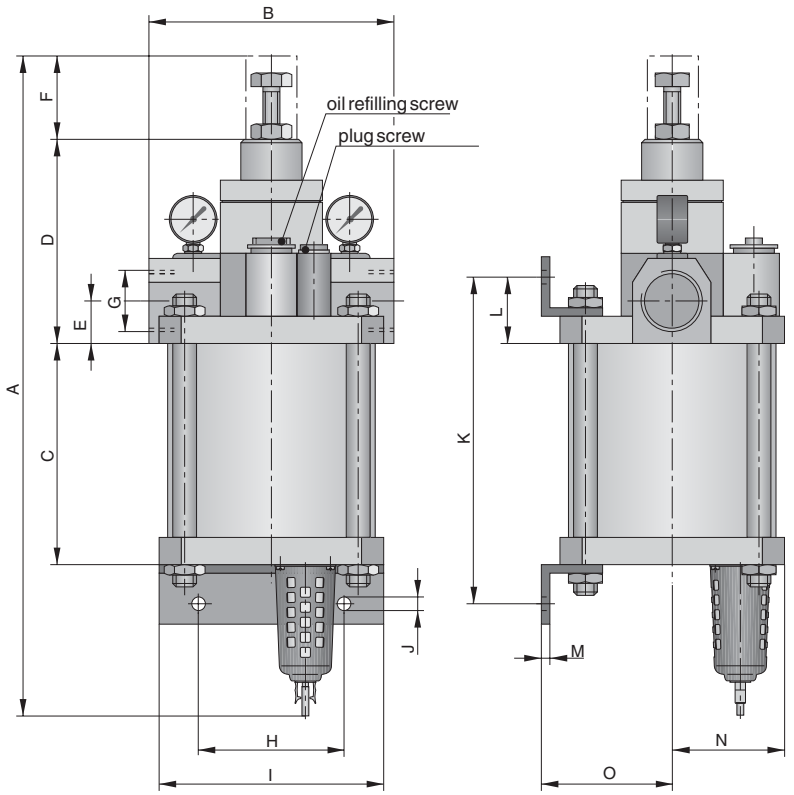
Data Sheet No. 5.92.002E-1

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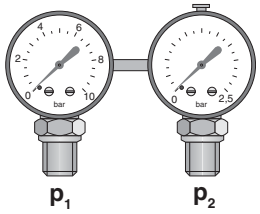
Dimensions (mm)

EL-25
EL-50



Accessories

Differential pressure gauge
Assembly kit with mounting kit



Order No.: **EL-20/25 PL 17653**
EL-40/50 PL 17652

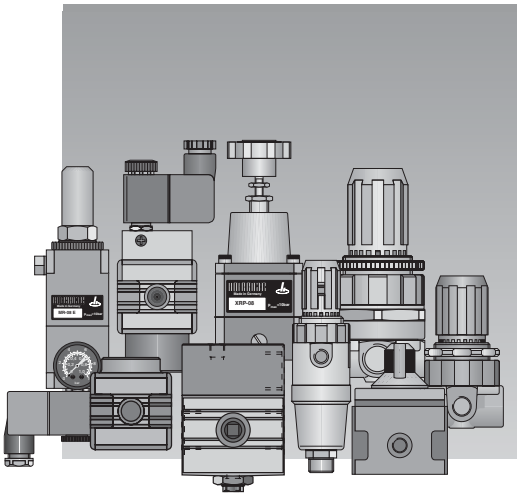
Dimension Table

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
EL-25	530	180	187	160	35	37	G1	115	180	18	304	77	3	90	110
EL-50	608	250	225	198	46	45	G2	150	225	13	342	72	6	112.5	124.1

Order Instructions

Description	Port size	**Type**	**Order No.**
Basic model with transparent glassfibre-reinforced plastic tube	G1	**EL-25**	**PB 15749-020**
	G2	**EL-50**	**PB 15549-020**
Model with electric oil level control (aluminium tube)	G2	**EL-50-E**	**PB 15549-026**

SPECIAL UNITS



HOERBIGER

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		Port size	Recommended flow (l/min)*	**Type**	Data Sheet No.
Dual pressure regulating valve		G1/4	550	**MR-08 P**	5.95.002E
		G1/4	550	**MR-08 E**	
Soft start valve		G1/4	550	**SDA-1/4**	5.95.015E
		G3/8	850	**SDA-3/8**	
		G3/8	850	**CDA-3/8**	5.95.020E
		G1/2	1900	**CDA-1/2**	
Stop valve		G1/4	550	**SDR-1/4 P**	5.95.016E
		G3/8	850	**SDR-3/8 P**	
		G1/4	550	**SDR-1/4 E**	
		G3/8	850	**SDR-3/8 E**	
		G3/8	850	**CDR-3/8 P**	5.95.019E
		G1/2	1900	**CDR-1/2 P**	
		G3/8	850	**CDR-3/8 E**	
		G1/2	1900	**CDR-1/2 E**	
Start-stop valve		G3/4	1900	**XDS-3/4**	5.95.017E
		G1	1900	**XDS-1**	
Water regulator		G1/8	-	**WRS-06**	5.95.010E
		G1/4	-	**WRS-08**	
Pressure relief valve		G1/2	-	**XR-15 E**	5.95.011E
Filter regulator		(Output) G1/4 (Input) G3/8	550	**MFRS-08**	5.95.012E
Precision pressure regulating valve		G1/4	-	**XRP-08-8**	5.95.013E
		G1/4	-	**XRP-08-4**	
		G1/4	-	**XRP-08-08**	
Pressure regulating valve for panel mounting		G1/8	300	**MRS-06**	5.95.021E
		G1/4	550	**MRS-08**	

* For max. flows see diagrams on single data sheet.
Max. flow is much higher than the given recommended flow.

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The right to introduce technical modifications is reserved

		Port size	Recommended flow (l/min)*	**Type**	Data Sheet No.
Soft start valve for SAE flange		G1 1/2	8000	**A50DA**	5.95.023E
		G2	10000	**A50DA**	
2/2 Way start-stop valve for SAE flange		G1 1/2	8000	**A50DS-1 1/2**	5.95.024E
		G2	10000	**A50DS-2**	
3/2 Way start-stop valve for SAE flange		G1 1/2	8000	**A50DS-1 1/2**	5.95.025E
		G2	10000	**A50DS-2**	
Filter-water-separator, Dust filter		G1/8	300	**SF-1/8 SFD-1/8**	5.95.026E
		G1/4	550	**SF-1/4 SFD-1/4**	
		G3/8	850	**SF-3/8 SFD-3/8**	
Pressure regulating valve		G1/8	300	**SR-1/8**	5.95.028E
		G1/4	500	**SR-1/4**	
		G3/8	850	**SR-3/8**	
Filter-regulator		G1/8	300	**SK-1/8**	5.95.029E
		G1/4	550	**SK-1/4**	
		G3/8	850	**SK-3/8**	
Pressure regulating valve		G1/8	300	**SR-1/8**	5.95.030E
		G1/4	500	**SR-1/4**	
		G3/8	850	**SR-3/8**	
		G3/8	850	**CR-3/8**	5.95.031E
		G1/2	1900	**CR-1/2**	
Start-stop valve		G3/4	-	**A25DS-3/4**	5.95.032E
		G1	-	**A25DS-1**	
Precision pressure regulating valve		G1	5000	**XRP-1**	5.95.034E

* For max. flows see diagrams on single data sheet.
Max. flow is much higher than the given recommended flow.

Table of Contents see 5.00.001E

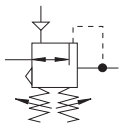
Dual Pressure Regulating Valve

G1/4

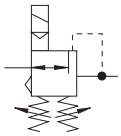
Actuation: Pneumatic
Electrical

airfit

MR-08P



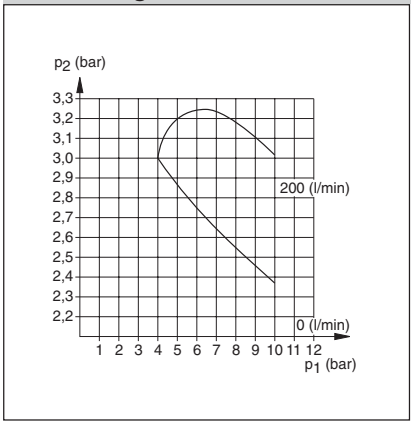
MR-08E



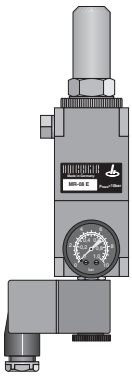
Characteristics			Pressures quoted as gauge pressure	
System			Spring loaded diaphragm-type pressure regulating valve with pneumatic or electrical actuation	
Type			**MR-08P**	**MR-08E**
Actuation			Pneumatic	Electrical
Port size			G1/4 G1/8 (at pilot control port)	
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	When using below freezing point it is necessary to consult us
Weight (mass)		kg	0.55	0.65
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	0 10	
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 8	(2 different pressures can be set)
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	1.6 0.6	
Recommended flow[1)]	Q_n	l/min m^3/h	**550** **33**	
Electrical Characteristic				
Voltage			AC	DC
Nominal Voltage	Un	V	220	24
			Further voltages on request	
Initial power consumption		VA (W)	8.5	2.5
Continous consumption		VA (W)	6.0	2.5
Duty cycle	ED	%	100	
Electrical protection			IP 65 to DIN 40050 (with plug)	
Insulating material			F to VDE 0580	
Connection			Plug to DIN 43650	

[1)] at p_2=6 bar and 25 m/s

Outlet Pressure Variation with Fluctuating Inlet Pressure



For setting 2 different outlet pressures in one unit.
Switching from the lower to the higher value is effected pneumatically or electrically.



Application:
Energy saving during cylinder operations, for clamping devices etc.

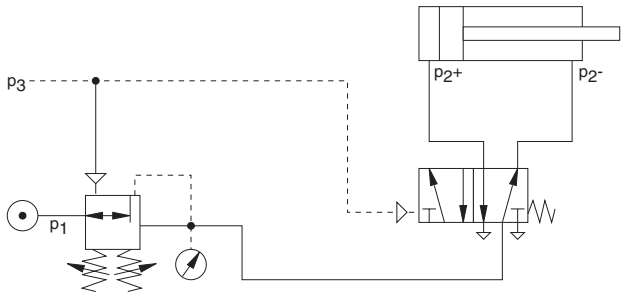
Example:
Different operating pressures can be set for the forward and reverse stroke of a cylinder. Energy saving increases proportionally to the difference of the two outlet pressures.

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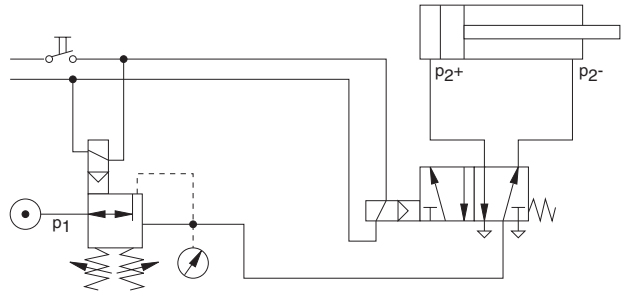
The right to introduce technical modifications is reserved

Dual Pressure Regulating Valve Pneumatically Actuated
Type: MR-08P



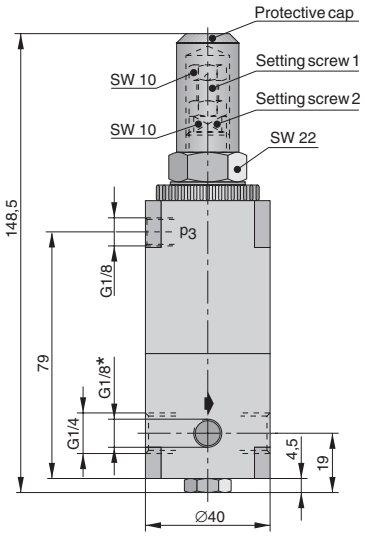
The actuating pressure p_3 both actuates the higher operating p_2+ on the dual pressure regulating valve and switches the 5/2 way valve, so that the cylinder makes its forward stroke with the higher pressure p_2+.
When actuating pressure p_3 is removed, the lower pressure p_2- is set on the dual pressure regulating valve and the 5/2 way valve switches back, so that the cylinder makes its return stroke with the lower pressure p_2-.

Dual Pressure Regulating Valve Electrically Actuated
Type: MR-08E



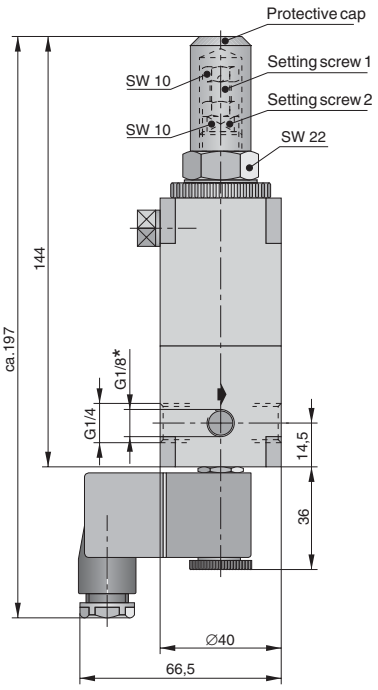
The electrical signal both actuates the higher operating pressure p_2+ on the dual pressure regulating valve and switches the 5/2 way valve, so that the cylinder makes its forward stroke with the higher pressure p_2+.
When the electrical signal stops, the lower pressure p_2- is set on the dual pressure regulating valve and the 5/2 way valve switches back, so that the cylinder makes its return stroke with the lower pressure p_2-.

Dimensions (mm)
Type: MR-08P



* Gauge port on both sides

Dimensions (mm)
Type: MR-08E



* Gauge port on both sides

Functioning

Both the higher p_2+ and the lower p_2- operating pressure are set by means of setting screws.

p_2- with setting screw 2. The screw is secured by a knurled nut.

p_2+ with setting screw 1. The screw is secured by a hexagon nut.

Accidental changes of the set pressures are prevented by a protctive cap.

The respective pressure can be shown by a gauge, which is an optional accessory.

Order Instructions

Type	Actuation	Voltage	**Order No.**
MR-08P	Pneumatic	-	**PB 21649-200**
MR-08E	Electrical	24 V=	**PB 21649-203**
		220 V/50 Hz	**PB 21649-206**

Other voltages on request.

Accessories

Description	**Order No.**
Gauge	**KZ 8813**

Pressure Regulating Valve

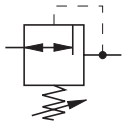
G1/8, G1/4

for use with water

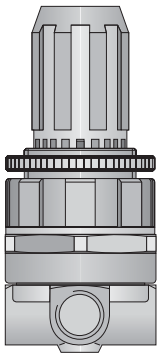
Characteristics			Pressures quoted as gauge pressure	
System			Diaphragm type pressure regulator (spring loaded)	
Type			**WRS-06**	**WRS-08**
Port size			**G1/8**	**G1/4**
Installation			In-line mounting, wall mounting with bracket or panel mounting (Ø30.3$^{+0.2}$ mm to DIN 43696)	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.25	
Pneumatic Characteristics				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 10	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 0.5[1)] 3 4
Min. pressure difference	p_1-p_2	bar	0.2	

[1)] By the use of special springs, the outlet pressure can be precisely regulaten the specified p_2 range.

WRS



Special solutions
(e.g. temperature, pressure, medium ...) on request



Diaphragm-type pressure regulator (spring loaded) for water

- Robust brass housing with glassfibre-reinforced polymer upper body for hard use
- Mounting ring included
- Handwheel lockable

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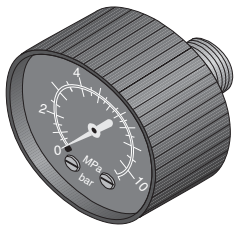
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For product group list see 5.95.001E

Accessories

Gauge
Ø 40, 0-10 bar, G1/8



Order No.: KZ 8813

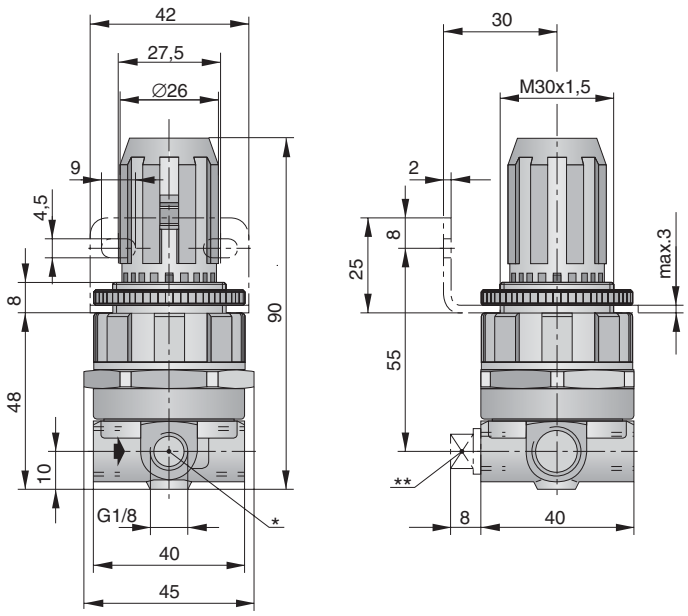
Accessories

Mounting bracket



Order No.: PL 15531

Dimensions (mm)



* Two opposite gauge ports.
** On delivery the plug is not assembled.

Order Instructions

Description	Port size	Type	Order No.
06	G1/8	**WRS-06**	**PB 21749-020**
08	G1/4	**WRS-08**	**PB 21649-020**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

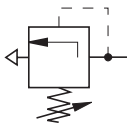
Description	Order No.
Gauge Ø 40, 0-10 bar	**KZ 8813**
Mounting bracket	**PL 15531**
Regulator spring for operating pressure 3 bar	**PL 15876**
Regulator spring for operating pressure 4 bar	**PL 16776**
Mounting ring for sheet thickness 6 mm (hole Ø 36.5 - 38 mm)	**PL 16198**
Mounting ring for sheet thickness 8 mm (hole Ø 36.5 - 38 mm)	**PL 15925**

Pressure Relief Valve

G1/2

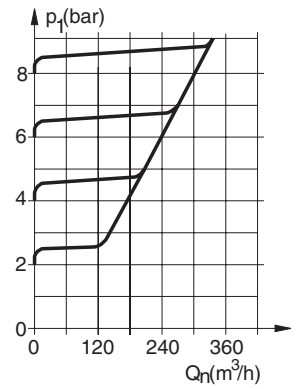
airfit C, X

XR-15 E

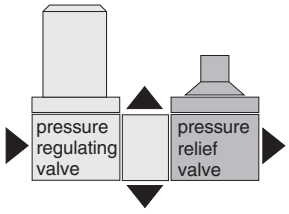


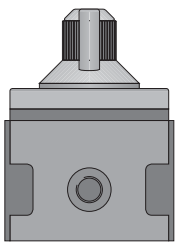
Characteristics			Pressures quoted as gauge pressure
System			Pressure relief valve (pilot operated) with adjustable opening pressure and high flow capacity
Type			**XR-15 E**
Port size			**G1/2**
Installation			beliebig
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60 (further temperatures on request)
Weight (mass)		kg	0.75
Pneumatic Characteristics			
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 10 (16)

Exhaust Flow



Assembly Instructions





Pressure relief valve with adjustable opening pressure and high flow capacity.

For air preparation units see 5.20-002E-5.20.005E
For product group list see 5.95.001E

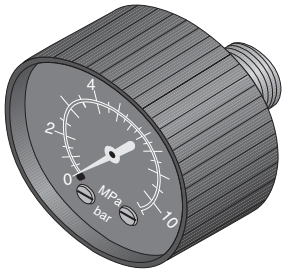
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Accessories

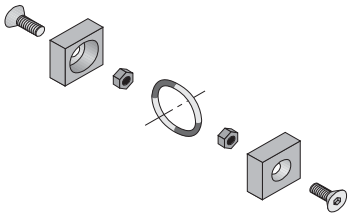
Gauge
Ø 50, 0-10 bar, G1/8



Order No.: KZ 8815

Accessories

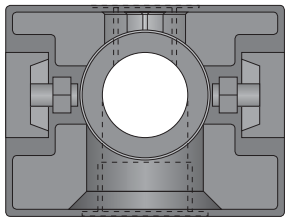
Coupling kit
for connecting 2 single units



Order No.: PL 08267

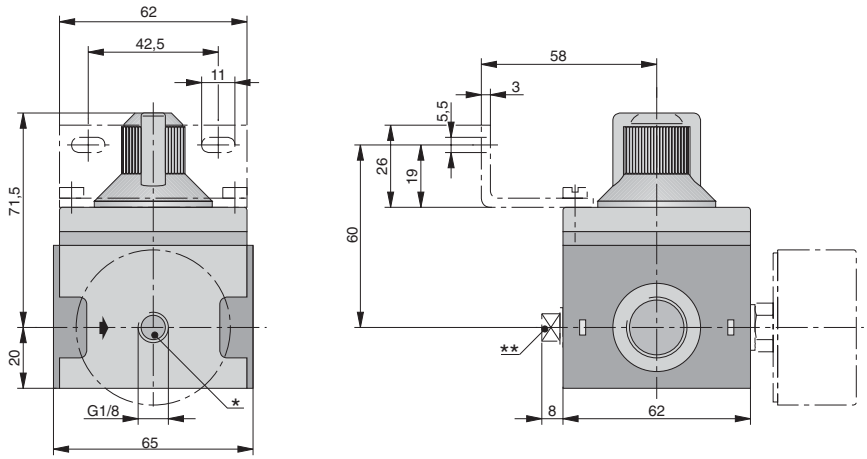
Accessories

Porting block kit
to provide unlubricated air
for ruther details see 5.21.001E



Order No.: PL 15003

Dimensions (mm)



Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/2	**XR-15 E**	**PB 10549-100**

Accessories

Description	Order No.
Gauge Ø 50 mm, 0-10 bar, G1/8	**KZ 8815**
Mounting kit	**PL 15169**
Coupling kit	**PL 08267**
Porting block kit G1/2, G1/4	**PL 15003**
Regulator spring for operating pressure 16 bar	**PL 15758**

Filter-Regulator

G3/8

for small capacity Compressors

airfit

MFRS



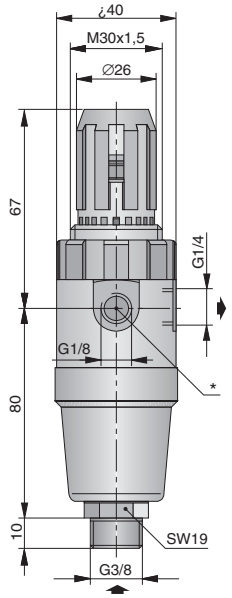
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure
System			Filter element combined with piston-type pressure regulating valve (spring loaded) in strong housing.
Type			**MFRS-08**
Port size			**G3/8** inlet **G1/4** outlet
Pore size of filter element		µm	30
Condensate drainage			Into receiver below
Installation			Vertical
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60 at 10 bar
Weight (mass)		kg	0.5
Pneumatic Characteristic			
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 10
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 8
Min. pressure difference	p_1-p_2	bar	0.2
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	1.6 0.6
Maximum flow[1)]	Q_{max}	l/min m^3/h	**550** **33**

[1)] at p_1 = 10 bar on p_2 = 6.3 bar, Δp = 1 bar

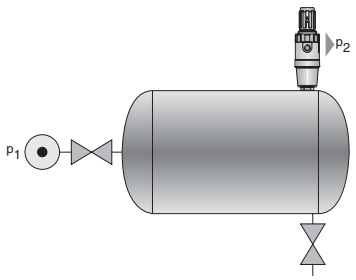
Dimensions (mm)

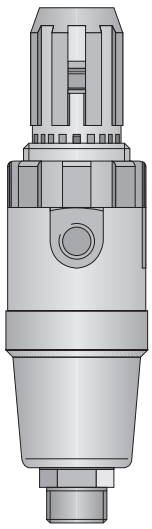
Type: MFRS-10



* Gauge port G1/8

Assembly Instructions





Robust filter-regulator for direct mounting on to compressor's receiver.

Order Instructions

Description	Type	Order No.
Basic model	**MFRS-08**	**PB 40199-029**

For product group list see 5.95.001E

Data Sheet No. 5.95.012E-1

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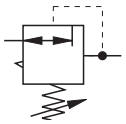
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Precision Pressure Regulator

G1/4

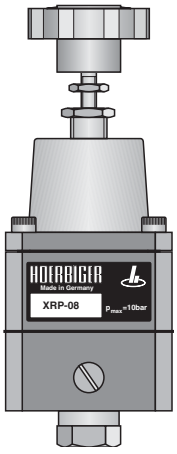
XRP



Characteristics			Pressures quoted as gauge pressure		
System			Diaphragm-type pressure regulating valve (2 diaphragm), pre-stage spring controlled, integrated filter		
Type			**XRP-08-8**	**XRP-08-4**	**XRP-08-08**[1)]
Port size			**G1/4**		
Installation			In any position		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	-5 +60		
Weight (mass)		kg	0.7		
Material					
Housing			Aluminium		
Internals			Partly Ms, NBR		
Pneumatic Characteristic					
Operating pressure range - inlet pressure	$p_{1\,min}$ $p_{1\,max}$	bar bar	1 10	1 7	1 7
Operating pressure range - outlet pressure	$p_{2\,min}$ $p_{2\,max}$	bar bar	0.5 8	0.1 4	0.02 0.8
Own air usage	Q	l/min	max. 10 at full airflow		
Hysteresis		bar	max. 0.1 bar		
Recommended flow[2)]	Q_n	l/min	**75 x (p_2 + 1) for p_2 pressures quoted in bar**		

[1)] The precision pressure regulator should not be used for "static" applications, i.e. with zero airflow. In such cases a small "artificial" airflow should be created on the secondary side using a 0.3 - 0.6 mm Ø jet.

[2)] Corresponds to 25 m/s with NW8 mm bore. Higher airspeeds can lead to large pressure drops in the connected air lines, although the precision pressure regulator will handle larger airflows in most cases (see diagrams).



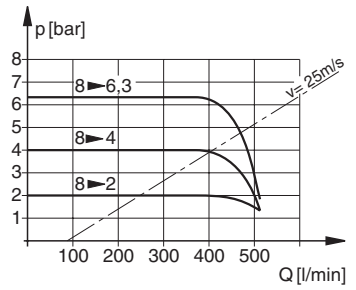
HOERBIGER ORIGA

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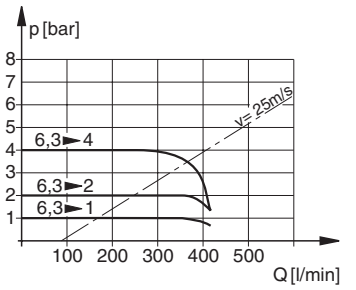
Flow Characteristic

Type: XRP-08-8



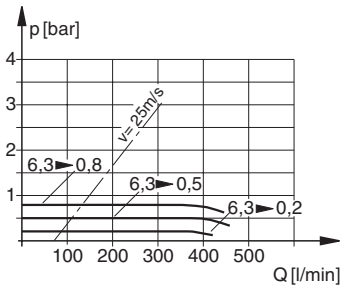
Flow Characteristic

Type: XRP-08-4

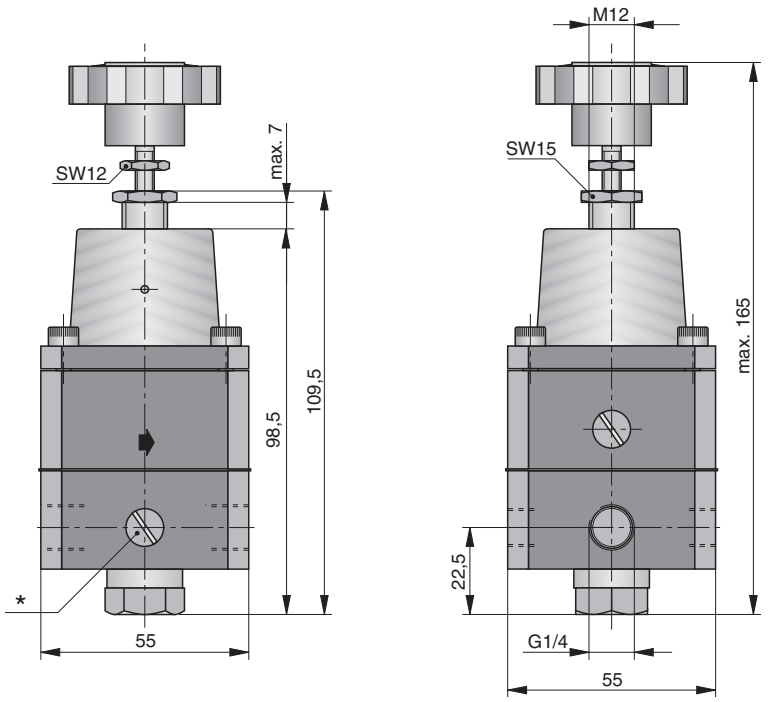


Flow Characteristic

Type: XRP-08-08



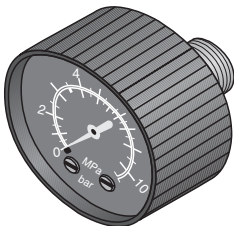
Dimensions (mm)



* Two opposite gauge ports G1/8
On delivery the plug screws are not assembled.

Accessories

Gauge
Ø 40, G1/8 behind



Order No.: KZ 8894 0-1.6 bar
KZ 8811 0-4 bar
KZ 8813 0-10 bar

Order Instructions

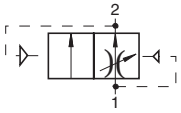
Description	Port size	Type	Order No.
Precision pressure regulator	G1/4	**XRP-08-8**	**PB 03249-000**
Precision pressure regulator	G1/4	**XRP-08-4**	**PB 03249-001**
Precision pressure regulator	G1/4	**XRP-08-08**	**PB 03249-002**

Soft Start Valve

G1/4,G3/8

(Pressure build-up valve)

SDA



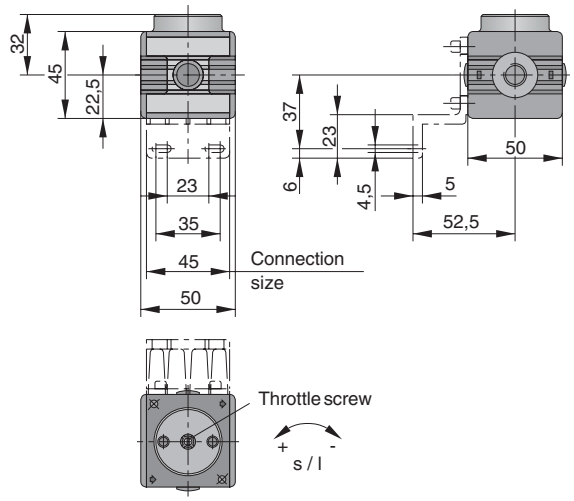
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Poppet valve with integral throttle for slow pressure build-up (e.g. after emergency shutdown). At 0.5 x operating pressure the valve switches to full flow.	
Type			**SDA-1/4**	**SDA-3/8**
Port size			G1/4	G3/8
Installation			In any position - direct assembly to air preparation units series AIRFIT-swing	
Medium and ambient temperatures	T_{min} T_{max}	bar bar	0 (further temperatures +60 on request)	
Weight (mass)		kg	0.35	
Pneumatic Characteristics				
Operating pressure range	p_{min} p_{max}	bar bar	2 16	
Recommended flow[1)]	Q_n	l/min m^3/h	**550** **33**	**850** **51**
Maximum flow[2)]	Q_{max}	l/min m^3/h	1500 90	1600 96

[1)] at p_2 = 6.3 bar and 25 m/s
[2)] at p_1 = 6.3 bar and Δp = 1 bar

Flow time in start phase with adjustment screw fully open and 6.3 bar: 1,5 s/l

Dimensions(mm)

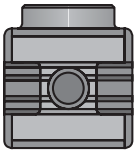


Order Instructions

Description	Port size	**Type**	**Order No.**
Soft start valve	G1/4	**SDA-1/4**	**PB 47149-100**
Soft start valve	G3/8	**SDA-3/8**	**PB 47249-100**

Accessories

Description	**Order No.**
Coupling kit	**PL 16959**
Mounting kit	**PL 16965**



Safety valve for slow pressure build-up in pneumatic circuits.
It prevents uncontrolled movements of the pneumatic components under the impact of full operating pressure.
Pressure build-up time can be adjusted with the throttle screw.

For soft start valve G1/2 see 5.95.004E
For air preparation units see 5.12.002E - 5.12.008E
For product group list see 5.95.001E

Data Sheet No. 5.95.015E-1

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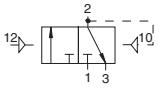
Stop Valve

G1/4,G3/8

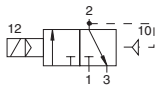
Characteristics			Pressures quoted as gauge pressure	
System			3/2 way poppet valve with pneumatic or electrical actuation and integrated exhaust silencer	
Type			**SDR-1/4 P (E)**	**SDR-3/8 P (E)**
Actuation			Pneumatic(P) or electrical (E)	
Port size			**G1/4**	**G3/8**
Installation			Follow the installation notes!	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.5 (0.8)	0.5 (0.8)
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	2 16	
Recommended flow[1)]	Q_n	l/min m^3/h	**550** **33**	**850** **51**
Maximum flow[2)]	Q_n	l/min m^3/h	1500 90	1600 96

[1)] at p_2 = 6.3 bar and 25 m/s
[2)] at p_1 = 6.3 bar, Δp = 1 bar

SDR-P



SDR-E



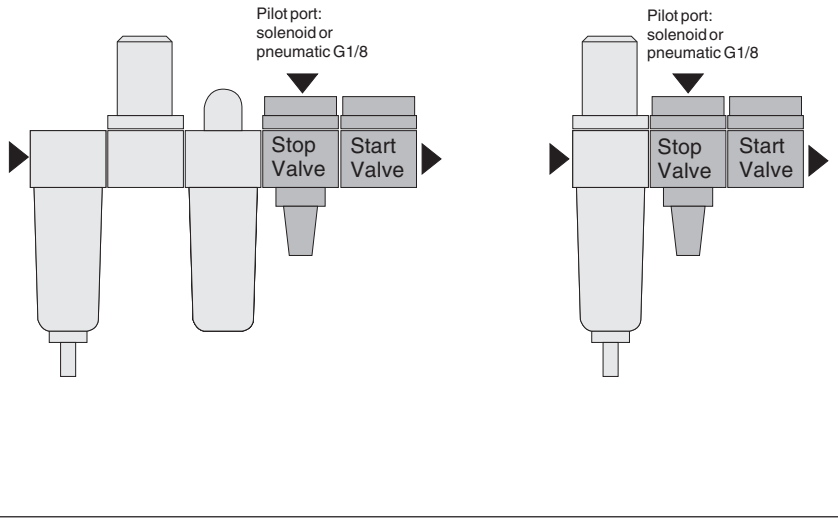
Special solutions
(e.g. temperature, pressure, medium ...) on request

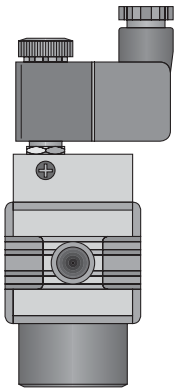
Venting Time in Relation to Volume

Pressure Reduction Range	Ventin Time (s) *
von 8 ∅ 0.1bar	0.7 x V (l) = t (s)
von 6 ∅ 0.1bar	0.65 x V (l) = t (s)
von 4 ∅ 0.1bar	0.55 x V (l) = t (s)
von 2 ∅ 0.1bar	0.45 x V (l) = t (s)

* Notes: This calculation assumes short connections with NW 8 mm tubing directly after the SDR stop valve.

Assembly Instructions



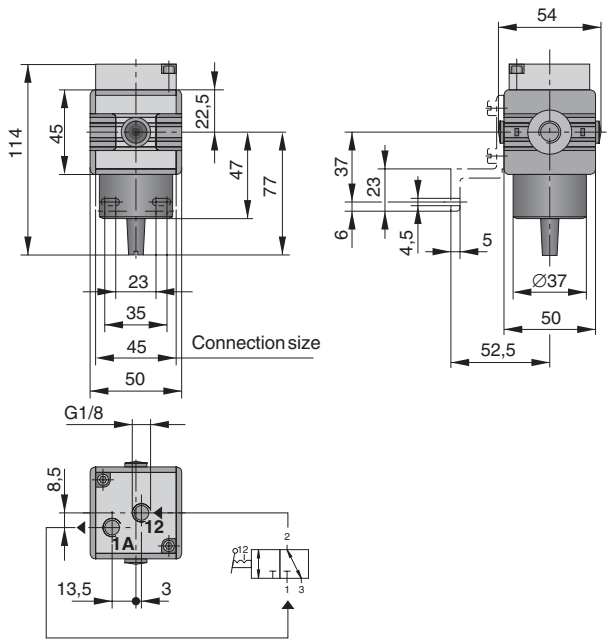


The stop valve is used in conjunction with the soft start valve for exhausting pneumatic circuits.

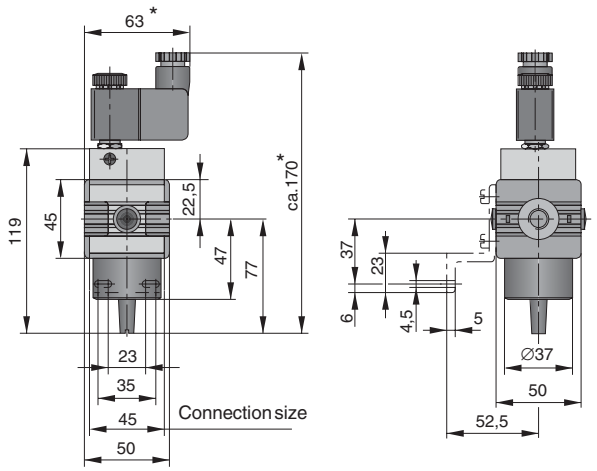
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The right to introduce technical modifications is reserved

Dimensions (mm)
Type: SDR-1/4 P, SDR-3/8 P



Dimensions (mm)
Type: SDR-1/4 E, SDR-3/8 E

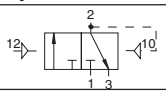
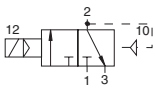


* ...for version with ASI valve connector

AS-Interface



Order Instructions

Description	Actuation	Symbol	Nominal voltage	Port size	Type	Order No.
Stop Valve	Pneumatic		-	G1/4	SDR-1/4 P	PB 47149-200
			-	G3/8	SDR-3/8 P	PB 47249-200
	Electrical		24 V DC	G1/4	SDR-1/4 E	PB 47149-201
				G3/8	SDR-3/8 E	PB 47249-201
			220 V/50Hz	G1/4	SDR-1/4 E	PB 47149-204
				G3/8	SDR-3/8 E	PB 47249-204
	with ASI valve connector		24 V DC	G1/4	SDR-1/4E-ASI	PB 47149-206
				G3/8	SDR-3/8E-ASI	PB 47249-206

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit	PL16965
Coupling kit	PL 16959

Stop Valve

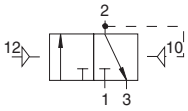
G3/8,G1/2

airfit comfort

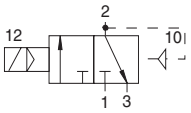
Characteristics			Pressures quoted as gauge pressure			
System			3/2 way poppet valve with pneumatic or electrical actuation and integrated exhaust silencer			
Type			**CDR-3/8 P**	**CDR-1/2 P**	**CDR-3/8 E**	**CDR-1/2 E**
Actuation			Pneumatic		electrical	
Port size			**G3/8**	**G1/2**	**G3/8**	**G1/2**
Installation			Follow the installation notes !			
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)		
Weight (mass)		kg	0.7		0.8	
Pneumatic Characteristic						
Operating pressure range	p_{min} p_{max}	bar bar	2 16			
Recommended flow[1)]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**	**850** **51**	**1900** **114**
Maximum flow[2)]	Q_{max}	l/min m^3/h	2500 150	2900 174	2500 150	2900 174

[1)] at p_2 = 6,3 bar and 25 m/s
[2)] at p_1 = 6.3 bar, Δp = 1 bar

CDR-P



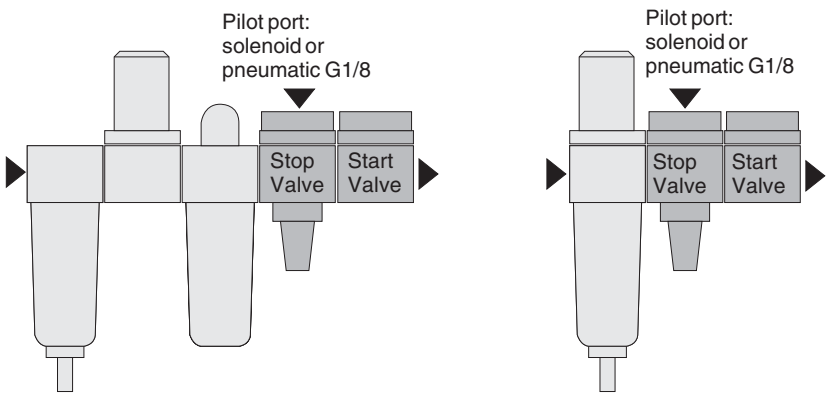
CDR-E



Special solutions
(e.g. temperature, pressure, medium ...) on request

Venting Time (s) in Relation to Volume	
Pressure Reduction from to	**Venting Time (s)**
8 → 0.1bar	0.75 x V (l) = t (s)
6 → 0.1bar	0.65 x V (l) = t (s)
4 → 0.1bar	0.50 x V (l) = t (s)

Assembly Instructions





The stop valve is used in conjunction with the soft start valve for exhausting pneumatic circuits.

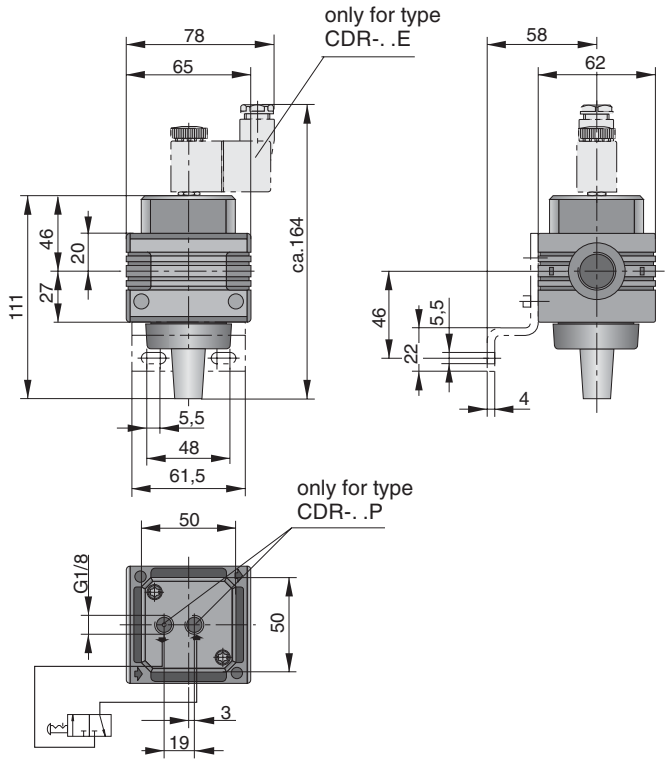
- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

HOERBIGER ORIGA

A1P557E00KY00X

The right to introduce technical modifications is reserved

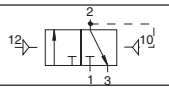
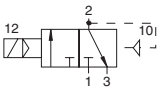
Actuation: pneumatic, Type: CDR-3/8 P, CDR-1/2 P
electrical, Type: CDR-3/8 E, CDR-1/2 E



AS-Interface



Order Instructions

Description	Actuation	Symbol	Nominal voltage	Port size	Type	Order No.
Stop Valve	Pneumatic			G3/8	**CDR-3/8 P**	**PB 57249-200**
				G1/2	**CDR-1/2 P**	**PB 57349-200**
	Electrical		24 V DC	G3/8	**CDR-3/8 E**	**PB 57249-201**
				G1/2	**CDR-1/2 E**	**PB 57349-201**
			230 V/50 Hz	G3/8	**CDR-3/8 E**	**PB 57249-204**
				G1/2	**CDR-1/2 E**	**PB 57349-204**
	with ASI valve connector		24 V DC	G3/8	**CDR-3/8E-ASI**	**PB 57249-206**
				G1/2	**CDR-1/2E-ASI**	**PB 57349-206**

For the version with NPTF thread, complete the Order No. as follows:
PB...49-... → PB...49-N...

Accessories

Description	Order No.
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Adapter kit G3/4	**PL 17682**

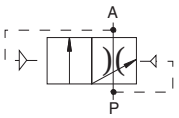
Soft Start Valve

G3/8,G1/2

(Pressure build-up valve)

airfit comfort

CDA



Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Poppet valve with integral, adjustable throttle*) for slow pressure build-up (e.g. after emergency shutdown). At 0.5 x operating pressure the valve switches to full flow.	
Type			**CDA-3/8**	**CDA-1/2**
Port size			**G3/8**	**G1/2**
Installation			In any position - direct assembly to air preparation units series AIRFIT-comfort	
Medium and ambient temperatures	T_{min} T_{max}	bar bar	0 (further temperatures +60 on request)	
Weight (mass)		kg	0.60	
Pneumatic Characteristics				
Operating pressure range	p_{min} p_{max}	bar bar	2 16	
Recommended flow[1)]	Q_n	l/min m^3/h	**850** **51**	**1900** **114**
Maximum flow[2)]	Q_{max}	l/min m^3/h	3500 210	3700 222

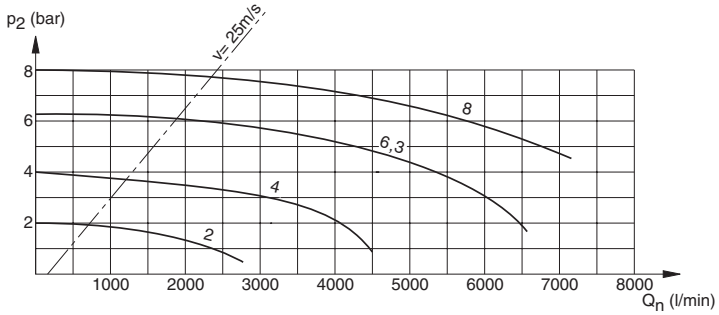
[1)] at p_2 = 6.3 bar and 25 m/s
[2)] at p_1 = 6.3 bar and Δp = 1 bar

***) Note:**
During the start-phase no components in the system should consume any air (build-up only).

Flow time in start phase with adjustment screw fully open and 6.3 bar: 1.5 s/l

Flow Characteristic

Type: CDA-1/2



Valve to slow pressure build-up in pneumatic circuits.

It prevents uncontrolled movements of the pneumatic components under the impact of full operating pressure.



- Eas and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

For table of contents see 5.00.001E

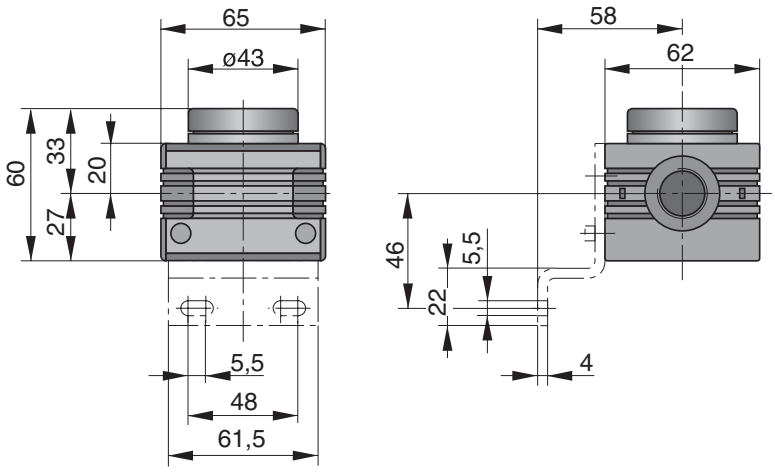
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HOERBIGER ORIGA

Dimensions (mm)

Type: CDA-1/2



Order Instructions

Description	Port size	Type	Order No.
Soft start valve	G3/8	**CDA-3/8**	**PB 57249-100**
Soft start valve	G1/2	**CDA-1/2**	**PB 57349-100**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Adapter kit G3/4	**PL 17682**

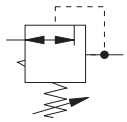
Pressure Regulating Valve

G1/8, G1/4

for panel mounting

airfit

MRS



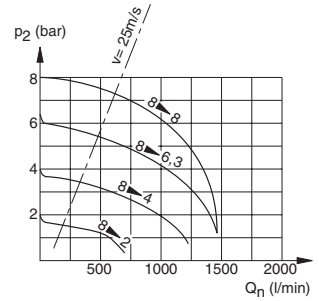
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Piston-type pressure regulating valve (pilot operated) with secondary pressure relief	
Type			**MRS-06**	**MRS-08**
Port size			**G1/8**	**G1/4**
Installation			In-line mounting with bracket or panel mounting (Ø30.3$^{+0.2}$ mm to DIN 43696)	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)
Weight (mass)		kg	0.18	
Pneumatic Characteristics				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 0.5[2] 0.5 3 4 16
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	1.6 0.6	
Recommended flow [1]	Q_n	l/min m³/h	**300** **18**	**550** **33**
max. flow[2]	Q_{max}	l/min m³/h	350 33	585 35

[1] at 6.3 bar and 25 m/s
[2] at p_1 = 10 bar and p_2 = 6,3 bar, Δp = 1 bar
[3] By the use of special springs, the outlet pressure can be precisely regulaten the specified p_2 range.

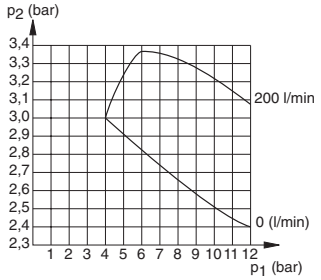
Flow Characteristics

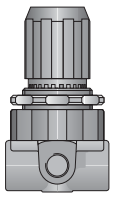
Type: MRS-08



Outlet Pressure Variation with Fluctuating Inlet Pressure

Type: MRS-08





Piston-type pressure regulating valve (pilot operated) with secondary pressure relief - Handwheel lockable

- Mounting ring included
- Robust brass housing with glassfibrereinforced polymer upper body for hard use

For single units see 5.09.004E-5.09.008E
For air preparation units see 5.09.002E, 5.09.003E
For product group list see 5.09.001E

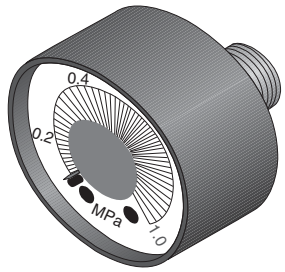
HOERBIGER
ORIGA

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The right to introduce technical modifications is reserved

Accessories

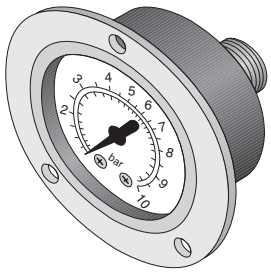
Gauge
Ø 40, 0-10 bar



Order No.: KZ 8891

Accessories

Gauge for panel mounting
Ø 40, 0-10 bar



Order No.: KZ 8822

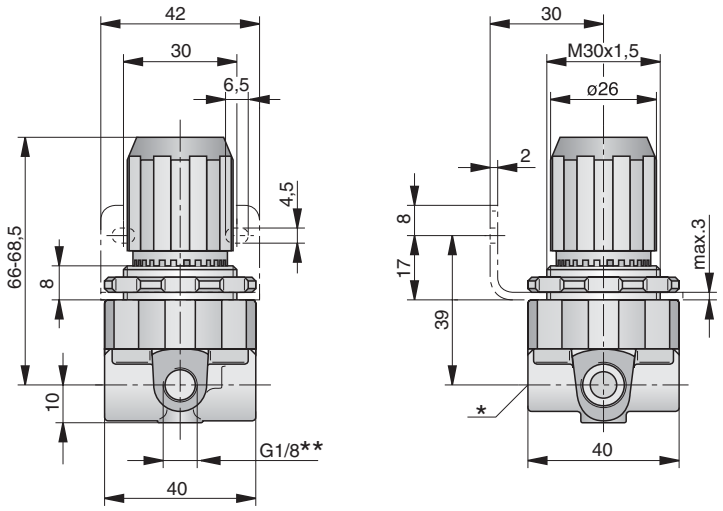
Accessories

Mounting bracket



Order No.: PL 15531

Dimensions (mm)



* On delivery the plug is not assembled.
** Two opposite gauge ports G1/8

Order Instructions

Nominal size	Port size	Type	Order No.
06	G1/8	**MRS-06**	**PB 21749-010**
08	G1/4	**MRS-08**	**PB 21649-010**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

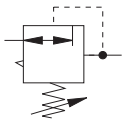
Description	Order No.
Gauge, Ø 40, 0-10 bar	**KZ 8891 (airfit light design)** **KZ 8813 (neutral)**
Gauge for panel mounting Ø 40, 0-10 bar	**KZ 8822**
Mounting bracket	**PL 15531**
Regulator spring for operating pressure 3 bar	**PL 15876**
Regulator spring for operating pressure 4 bar	**PL 16776**
Mounting ring for sheet thickness 6 mm (hole Ø 36.5 - 38 mm)	**PL 16198**
Mounting ring for sheet thickness 8 mm (hole Ø 36.5 - 38 mm)	**PL 15925**

Pressure Relief Valve

G1/8, G1/4, G3/8

airfit Swing

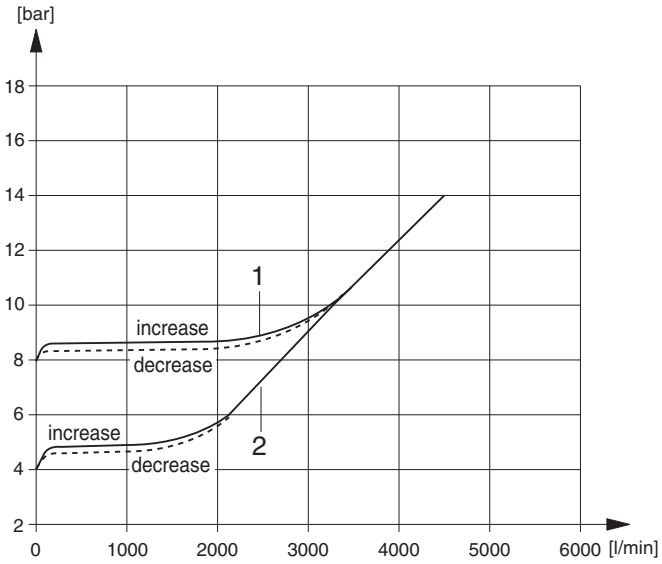
SR-E



Special solutions
(e.g. temperature, pressure, medium ...) on request

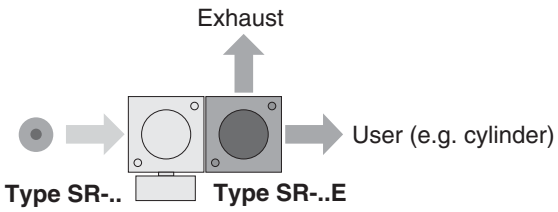
Characteristics			Pressures quoted as gauge pressure		
System			Pressure limiting valve with adjustable opening pressure for venting of large air volumes (full flow)		
Type			**SR-1/8E**	**SR-1/4E**	**SR-3/8E**
Port size			**G1/8**	**G1/4**	**G3/8**
Installation			beliebig		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)	
Weight (Masse)		kg	0,3		
Pneumatic Characteristic					
Operating pressure range	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 8 – 4 – according to the type		

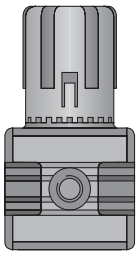
Exhaust Flow



1 = Version 0–8 bar
2 = Version 0–4 bar

Installation





- Can be screwed directly into air line
- Version with NPTF thread
- Colour and print can be customer-specific
- Pressure limiting valve with adjustable opening pressure for venting of large air volumes (full flow)

For single units see 5.12.004E-5.12.008E
For air preparation units see5.12.002E-5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.95.022E-1

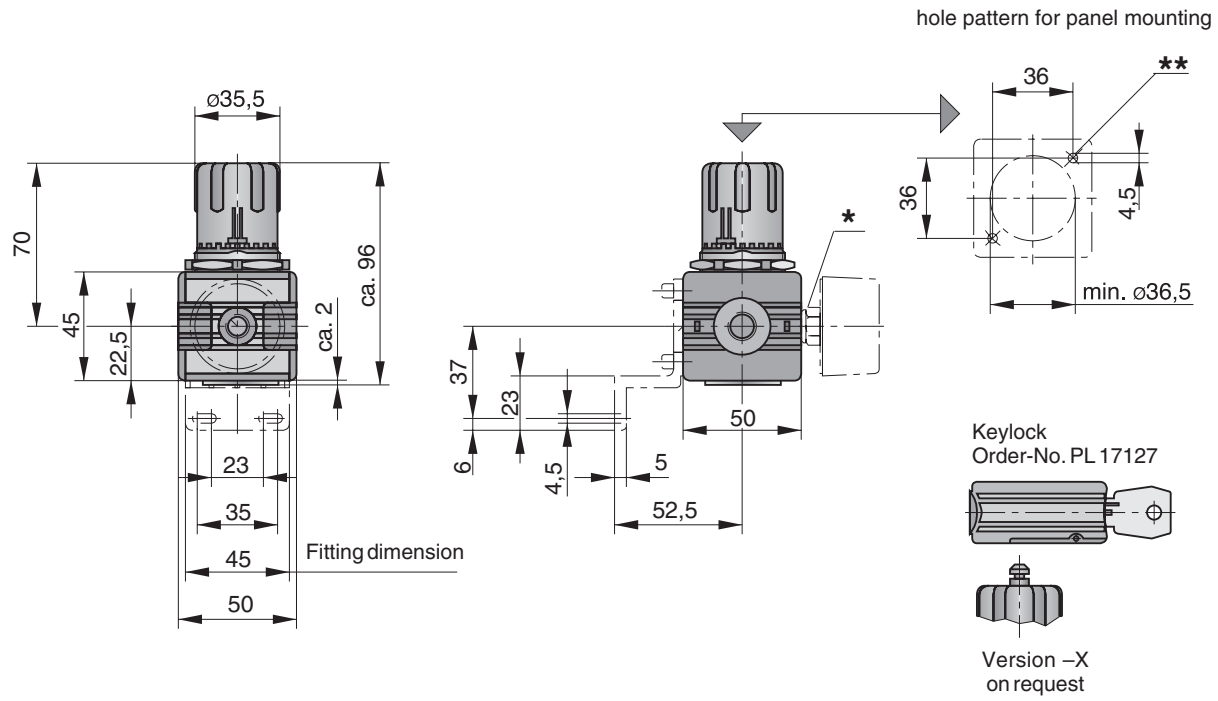
HOERBIGER ORIGA

A1P484E00DY00X

The right to introduce technical modifications is reserved

Dimensiones (mm)

Type: SR-1/8E, 1/4E, 3/8E



* On delivery the plug is not assembled.
** For self-tapping screw …, screw depth max. 10 mm

Order Instructions

Pressure range *	Port size	**Type**	**Order No.**
0 – 8 bar	G1/8	**SR-1/8E**	**PB 45349-150**
	G1/4	**SR-1/4E**	**PB 45449-150**
	G3/8	**SR-3/8E**	**PB 45549-150**
0 – 4 bar	G1/8	**SR-1/8E**	**PB 45349-151**
	G1/4	**SR-1/4E**	**PB 45449-151**
	G3/8	**SR-3/8E**	**PB 45549-151**

*** other pressure ranges on request**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	**Order No.**
Gauge Ø 40, 0-10 bar, G1/8	**KZ 8891**
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**

Soft Start Valve

for SAE flange G2(G1 1/2)

airfit

A50DA

Special solutions
(e.g. temperature, pressure, medium ...) on request

The start function is designed to provide slow pressure build-up in pneumatic equipment.

- Pressure build-up time adjustable

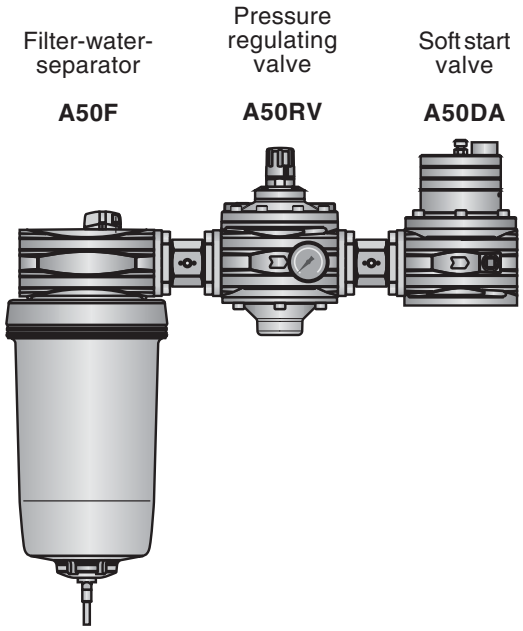
Characteristics			Pressures quoted as gauge pressure	
System			Seat valve for slow pressure build-up (e.g. after emergency shutdown). At 0.5 x operating pressure the valve switches to full flow.	
Type			**A50DA**	
Connection			SAE flange	
Port size			**G1 1/2**	**G2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	bar bar	0 (further temperatures +60 on request)	
Weight (mass)		kg	3.40	3.40
Pneumatic Characteristics				
Operating pressure range	p_{min} p_{max}	bar bar	2 17.5	
Recommended flow	Q_n	l/min m^3/h	**8000** [1] **480** [1]	**10000** [2] **600** [2]
Maximum flow [3]	Q_{max}	l/min m^3/h	>40000 >2400	>40000 >2400

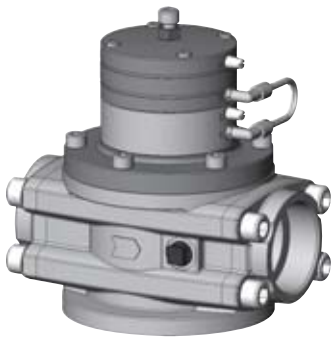
[1] at p_1 = 6 bar and 15 m/s
[2] at p_1 = 6 bar and 12 m/s
[3] at p_1 = 6 bar and Δp = 1 bar

A1P724E00IAE00X

The right to introduce technical modifications is reserved

Installation Procedure





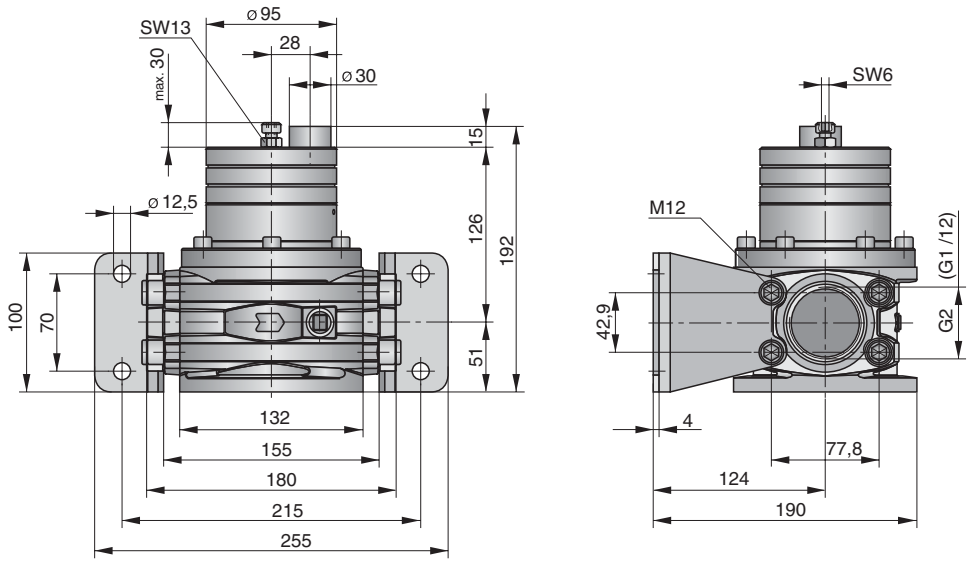
For single units see 5.50.003E, 5.55.007E, 5.92.002E, 5.95.024E

HOERBIGER ORIGA

Data Sheet No. 5.95.023E-1

Dimensions (mm)

Type: A50DA



* Adjusting screw for start time selection (socket head screw SW 6)

Order Instructions

Description	Port size	Type	Order No.
Soft start valve	für SAE flange	**A50DA**	**PB 60649-100**
Soft start valve with connection kit	G1 1/2	**A50DA-1 1/2**	**PB 60549-150**
	G2	**A50DA-2**	**PB 60649-150**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Coupling kit	**PL 18735**
Mounting kit (2 brackets + 4 screws)	**PL 18672**
Connection kit G1 1/2	**PL 18660**
Connection kit G2	**PL 18662**
Porting block kit G1 with flange for pressure switch	**PL 18779**

2/2 Way Start-Stop Valve

for SAE flange G2(G1 1/2)

Actuation: Pneumatic
Electrical

airfit

A50DS

Special solutions
(e.g. temperature, pressure, medium ...) on request

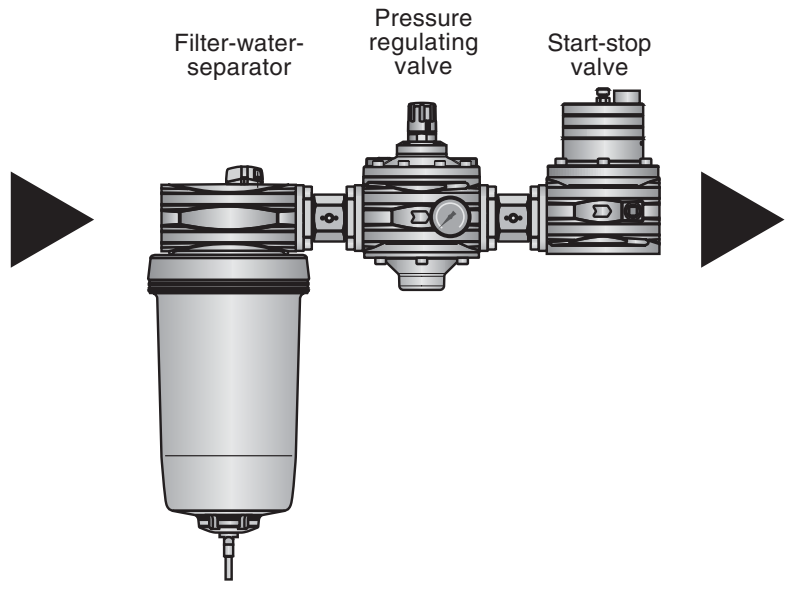
The start function is designed to provide slow pressure build-up.

- Stop function without p2 venting
- stepless adjustment
- full pressurization at half inlet pressure

Characteristics			Pressures quoted as gauge pressure	
System			Start-stop valve with pneumatic actuation	
Type			**A50DS-1 1/2**	**A50DS-2**
Actuation			Pneumatic or electrical	
Port size			**G1 1/2**	**G2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	bar bar	0 (further temperatures +60 on request)	
Weight (mass)		kg	3.40	3.40
Pneumatic Characteristics				
Operating pressure range	p_{min} p_{max}	bar bar	2 17.5	
Recommended flow	Q_n	l/min m^3/h	**8000** [1] **480** [1]	**10000** [2] **600** [2]
Maximum flow [3]	Q_{max}	l/min m^3/h	>40000 >2400	>40000 >2400

[1] at p_1 = 6 bar and 15 m/s
[2] at p_1 = 6 bar and 12 m/s
[3] at p_1 = 6 bar and Δp = 1 bar

Installation Procedure





For air preparation units see 5.50.003E, 5.55.007E, 5.92.002E, 5.95.023E

HOERBIGER ORIGA

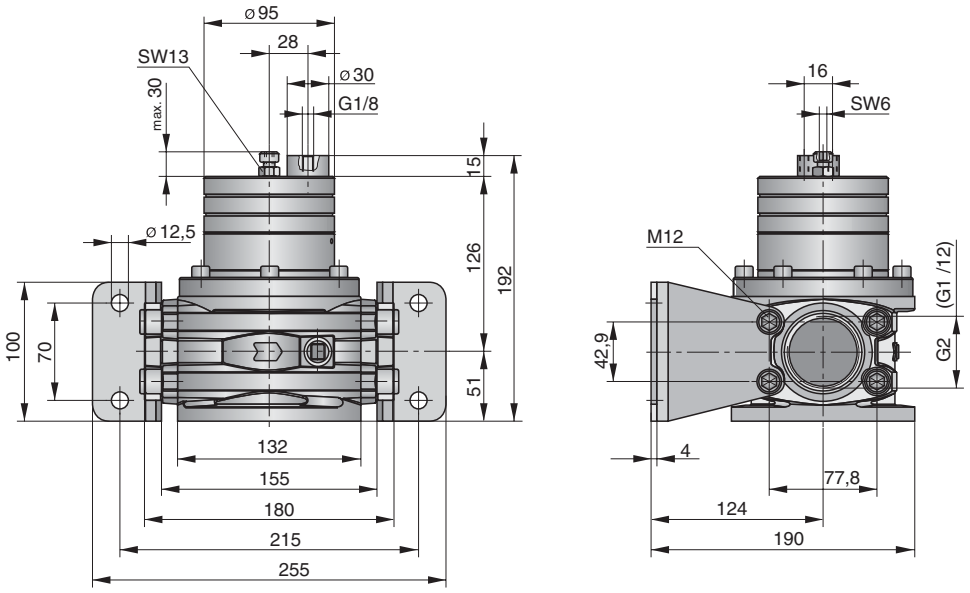
Data Sheet No. 5.95.024E-1

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The right to introduce technical modifications is reserved

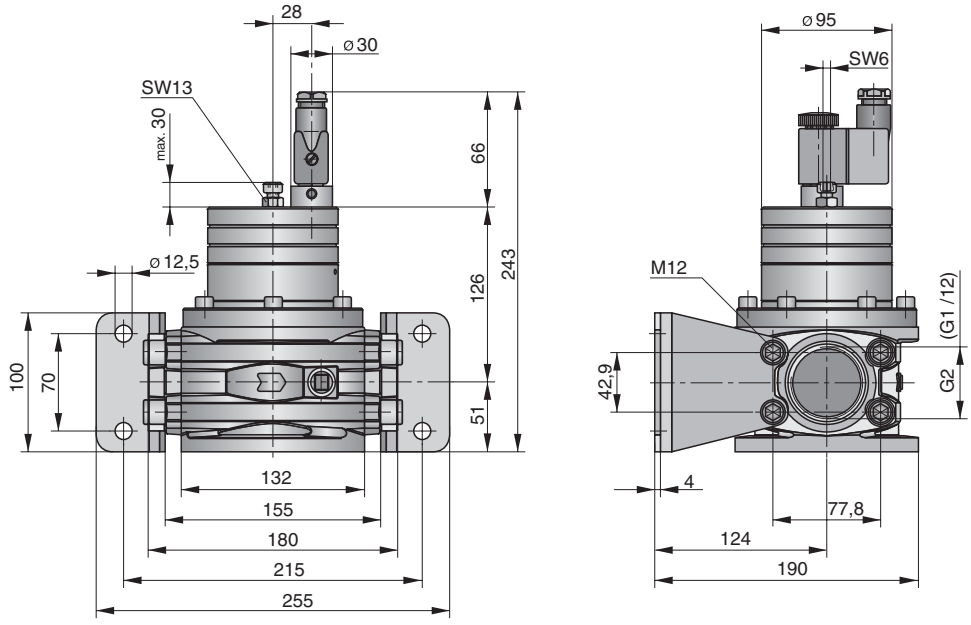
Dimensions (mm)

Type: A50DS-P



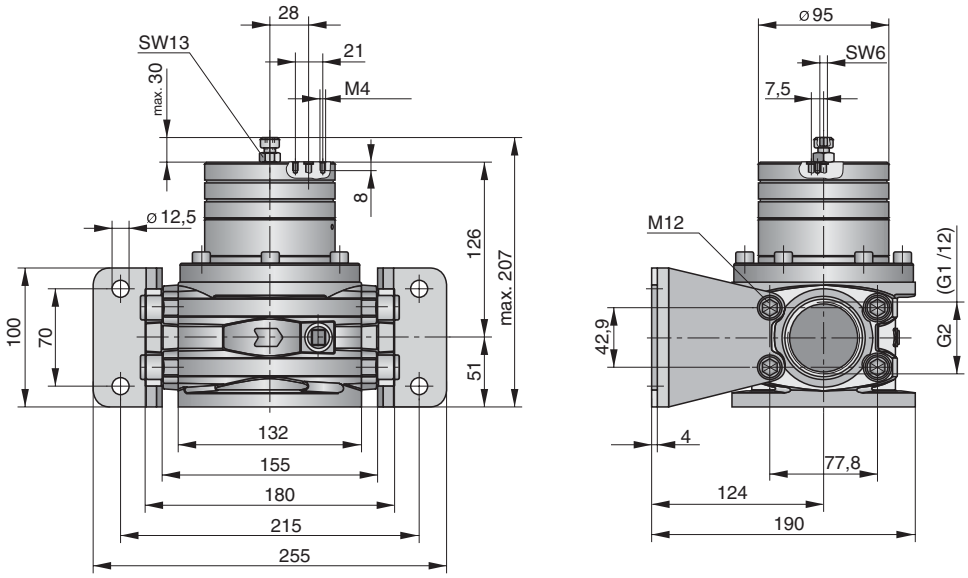
Dimensions (mm)

Type:A50DS-E



Dimensions (mm)

Type: A50DS-C



Order Instructions

Description	Actuation	Port size	Type	Order No.
Start-stop valve	pneumatic	for SAE flange	**A50DS-P**	**PB 60649-200**
		G1 1/2	**A50DS-1 1/2-P**	**PB 60549-250**
		G2	**A50DS-2-P**	**PB 60649-250**
Start-stop valve	electrical 230 V / 50 Hz	for SAE flange	**A50DS-E**	**PB 60649-204**
		G1 1/2	**A50DS-1 1/2-E**	**PB 60549-254**
		G2	**A50DS-2-E**	**PB 60649-254**
Start-stop valve	electrical 24 V / DC	for SAE flange	**A50DS-E**	**PB 60649-201**
		G1 1/2	**A50DS-1 1/2-E**	**PB 60549-251**
		G2	**A50DS-2-E**	**PB 60649-251**
Start-stop valve	CNOMO-connection	for SAE flange	**A50DS-C**	**on request**
		G1 1/2	**A50DS-1 1/2-C**	**on request**
		G2	**A50DS-2-C**	**on request**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit (2 brackets + 4 screws)	**PL 18672**
Coupling kit	**PL 18735**
Connection kit G1 1/2	**PL 18660**
Connection kit G2	**PL 18662**
Porting block kit G1 with flange for pressure switch	**PL 18779**

3/2 Way Start-Stop Valve

for SAE flange G2(G1 1/2)

Actuation: Pneumatic
Electrical

airfit

A50DS

Special solutions
(e.g. temperature, pressure, medium ...) on request

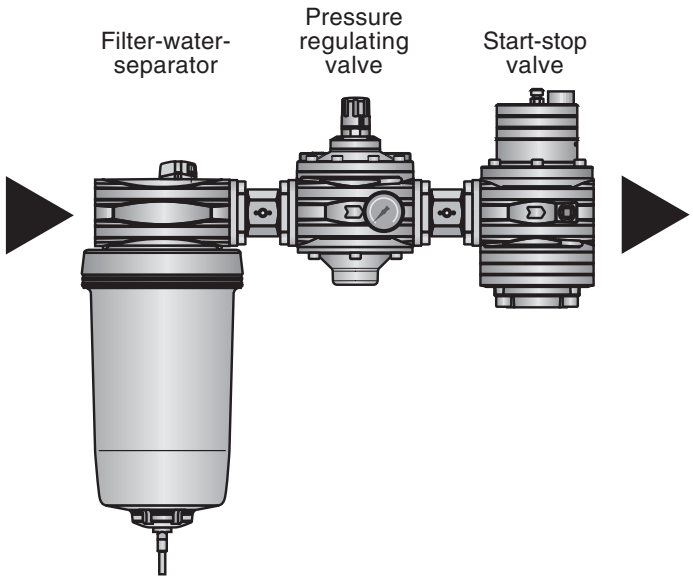
The start function is designed to provide slow pressure build-up, the stop function to provide exhaust pneumatic installation.

- Stop function without p2 venting
- Stepless adjustment
- Full pressurization at half inlet pressure

Characteristics			Pressures quoted as gauge pressure	
System			Start-stop valve with pneumatic actuation and integrated exhaust silencer	
Type			**A50DS-1 1/2**	**A50DS-2**
Actuation			Pneumatic or electrical	
Port size			**G1 1/2**	**G2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	bar bar	0 (further temperatures +60 on request)	
Weight (mass		kg	5.0	5.0
Pneumatic Characteristics				
Operating pressure range	p_{min} p_{max}	bar bar	2 17.5	
Recommended flow	Q_n	l/min m^3/h	**8000** [1] **480** [1]	**10000** [2] **600** [2]
Maximum flow [3]	Q_{max}	l/min m^3/h	>40000 >2400	>40000 >2400

[1] at p_1 = 6 bar and 15 m/s
[2] at p_1 = 6 bar and 12 m/s
[3] at p_1 = 6 bar and Δp = 1 bar

Installation Procedure





For air preparation units see 5.50.003E, 5.55.007E, 5.92.002E, 5.95.023E

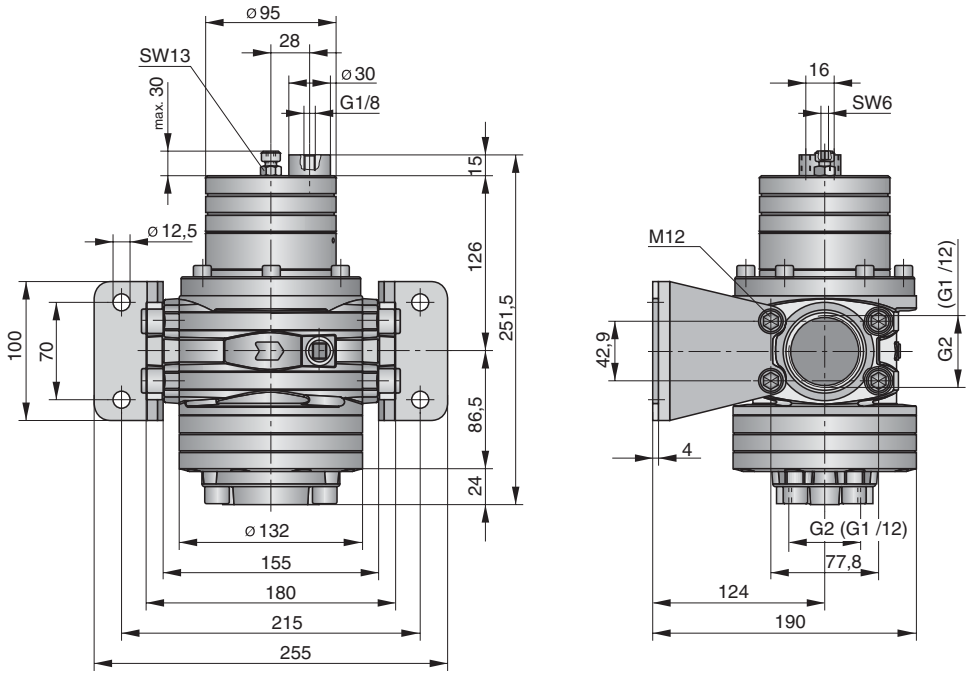
HOERBIGER ORIGA

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The right to introduce technical modifications is reserved

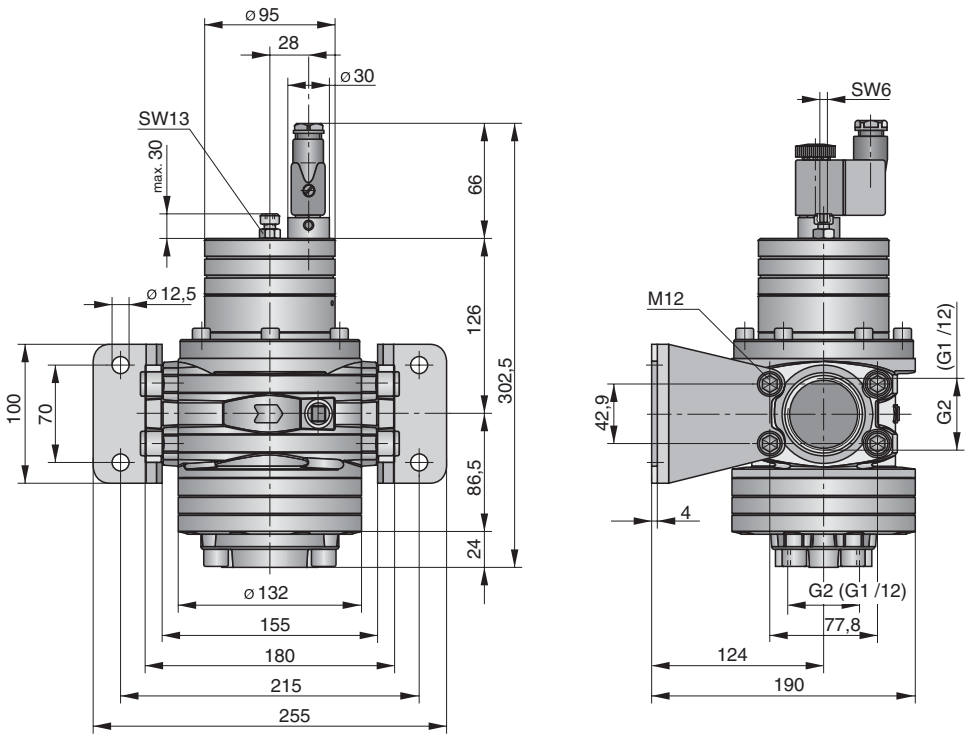
Dimensions (mm)

Type: A50DS-P



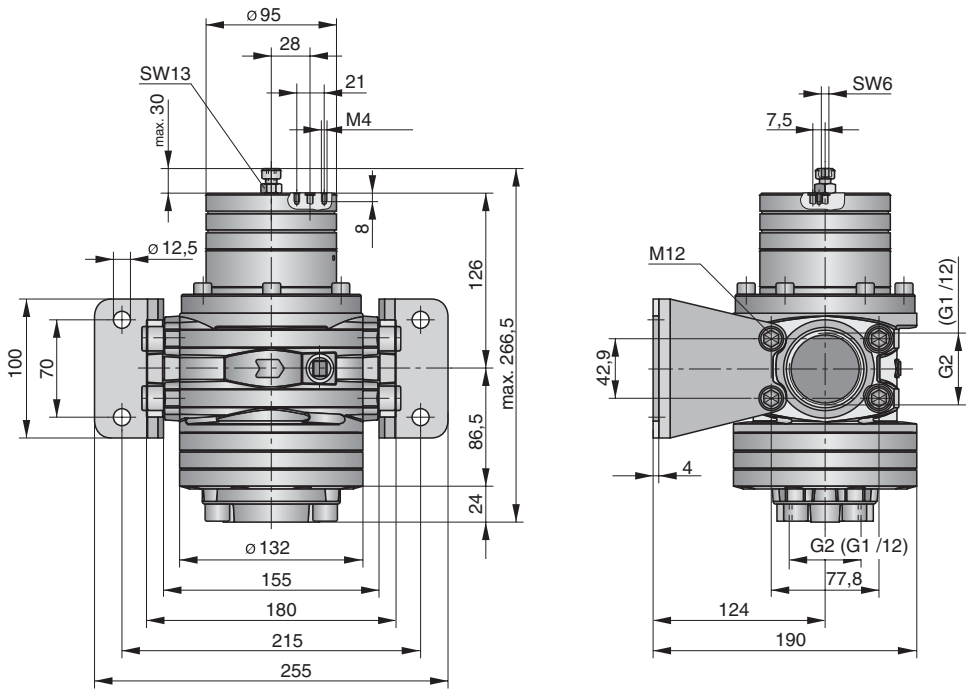
Dimensions (mm)

Type:A50DS-E



Dimensions (mm)

Type: A50DS-C



Order Instructions

Description	Actuation	Port size	Type	Order No.
Start-stop valve	pneumatic	for SAE flange	**A50DS-P**	**PB 60649-220**
		G1 1/2	**A50DS-1 1/2-P**	**PB 60549-270**
		G2	**A50DS-2-P**	**PB 60649-270**
Start-stop valve	electrical 230 V / 50 Hz	for SAE flange	**A50DS-E**	**PB 60649-224**
		G1 1/2	**A50DS-1 1/2-E**	**PB 60549-274**
		G2	**A50DS-2-E**	**PB 60649-274**
Start-stop valve	electrical 24 V / DC	for SAE flange	**A50DS-E**	**PB 60649-221**
		G1 1/2	**A50DS-1 1/2-E**	**PB 60549-271**
		G2	**A50DS-2-E**	**PB 60649-271**
Start-stop valve	CNOMO-connection	for SAE flange	**A50DS-C**	**on request**
		G1 1/2	**A50DS-1 1/2-C**	**on request**
		G2	**A50DS-2-C**	**on request**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit (2 brackets + 4 screws)	**PL 18672**
Coupling kit	**PL 18735**
Connection kit G1 1/2	**PL 18660**
Connection kit G2	**PL 18662**
Porting block kit G1 with flange for pressure switch	**PL 18779**

Filter-Water-Separator, Dust Filter

G1/8, G1/4, G3/8

$p_{min/max}$ = 0-30 bar

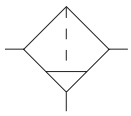
Characteristics			Pressures quoted as gauge pressure					
System			Cyclone system and filter element					
Type			SF-1/8	SFD-1/8	SF-1/4	SFD-1/4	SF-3/8	SFD-3/8
Port size			**G1/8**		**G1/4**		**G3/8**	
Pore size of filter element		µm	Standard: 30 5 and 1(Type SFD)					
Max. condensate capacity		cm^3	22					
Condensate drainage			Manual or semiautomatic with pressure relief (Type SF)					
Installation			Vertical					
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 at 10 bar (further temperatures on request)					
Weight (mass)		kg	0.25					
Pneumatic Characteristic								
Operating pressure range	p_{min} p_{max}	bar bar	0 30					
Recommended flow[1]	Q_n	l/min m^3/h	**300** **18**		**550** **33**		**850** **51**	
Maximum flow[2]	Q_{max}	l/min m^3/h	990 59	1030 62	1440 86	1340 80	1520 91	1620 97
Degree of moisture separation at recommended flow	η	%	95	*	95	*	90	*

[1] at p = 6 bar and 25 m/s
[2] at p_1 = 6.3 bar, Δp = 1 bar

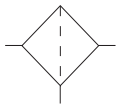
*only solid particles > 99 % related to 1µm

airfit Swing

SF

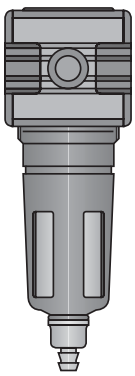


SFD



Special solutions
(e.g. temperature, pressure, medium ...) on request

SF:
Filter-water-separator with cyclone system and filter element.

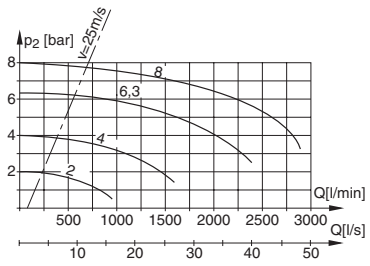


SFD:
For compressed air systems with air dryers.

- easily adaptable to customer's choice of colour and private labelling
- quick, easy filter change with new Quick-Snap system
- no nonferrous metal
- version with NPTF thread

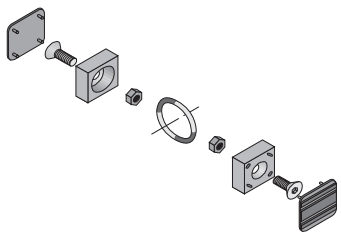
Flow Characteristics

Type: SF-1/4



Accessories

Coupling kit
for filter-regulator-lubricator combination



Order No.: PL 16959

For single units see 5.12.004E-5.12.007E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

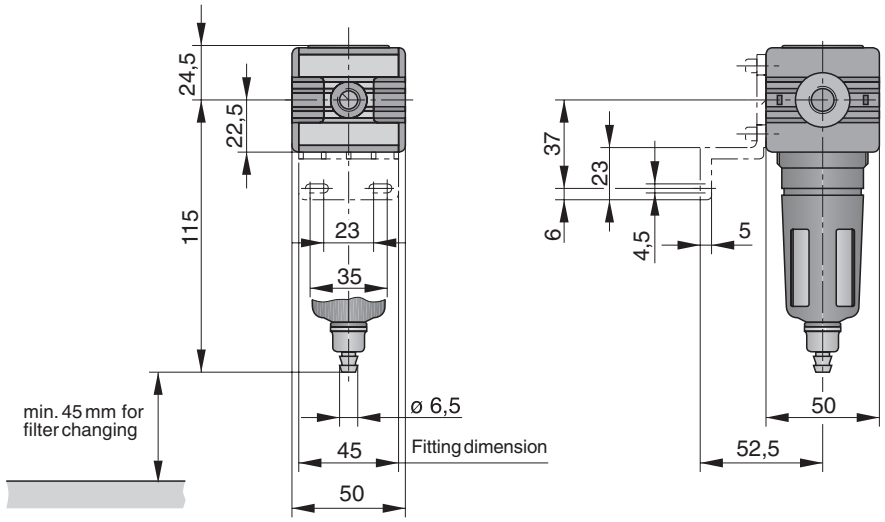
Data Sheet No. 5.95.026E-1

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The right to introduce technical modifications is reserved

Dimensions (mm)

Type: SF-1/8, 1/4, 3/8



Order Instructions

Description	Port size	Type	Order No.
With metal bowl	G1/8	**SF-1/8-D**	**PB 45049-003**
With metal bowl	G1/4	**SF-1/4-D**	**PB 45149-003**
With metal bowl	G3/8	**SF-3/8-D**	**PB 45249-003**
With filter element 5 µm	G1/8	**SF-1/8-5D**	**PB 45049-018**
With filter element 5 µm	G1/4	**SF-1/4-5D**	**PB 45149-018**
With filter element 5 µm	G3/8	**SF-3/8-5D**	**PB 45249-018**
With filter element 1 µm	G1/8	**SFD-1/8-1D**	**PB 45049-073**
With filter element 1 µm	G1/4	**SFD-1/4-1D**	**PB 45149-073**
With filter element 1 µm	G3/8	**SFD-3/8-1D**	**PB 45249-073**
With semiautomatic drainage	G1/8	**SF-1/8-DH**	**PB 45049-041**
With semiautomatic drainage	G1/4	**SF-1/4-DH**	**PB 45149-041**
With semiautomatic drainage	G3/8	**SF-3/8-DH**	**PB 45249-041**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**

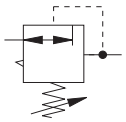
Pressure Regulating Valve

G1/8, G1/4, G3/8

$p_{1\ min/max}$ = 0-40 bar

airfit Swing

SR



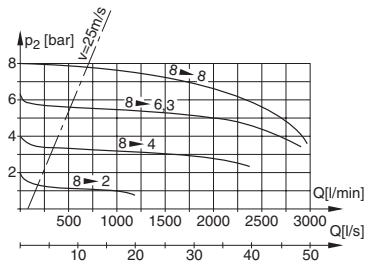
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure		
System			Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief		
Type			**SR-1/8**	**SR-1/4**	**SR-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Installation			In any position		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60	(further temperatures on request)	
Weight (mass)		kg	0.3		
Pneumatic Characteristic					
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 40		
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 16		
Min. pressure difference	p_1-p_2	bar	0.2		
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.5 0.4		
Recommended flow[1]	Q_n	l/min m³/h	**300** **18**	**500** **33**	**850** **51**
Maximum flow [2]	Q_{max}	l/min m³/h	790 47	2850 171	3300 198

[1] at p_2 = 6 bar and 25 m/s
[2] at p_1 = 10 bar on p_2 = 6,3 bar, Δp = 1 bar

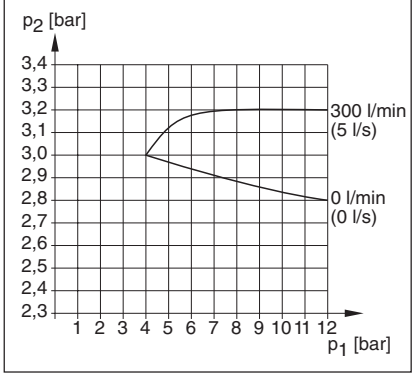
Flow Characteristics

Type: SR-1/4

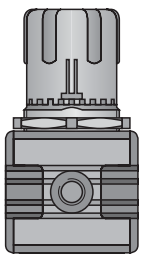


Outlet Pressure Variation with Fluctuacting Inlet Pressure

Type: SR-1/4



Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief, inlet pressure and volume compensation handwheel lockable



- easily adaptable to customer's choice of colour and private labelling
- inlet pressure and volume compensation
- version with NPTF thread
- specially developed roller diaphragm

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

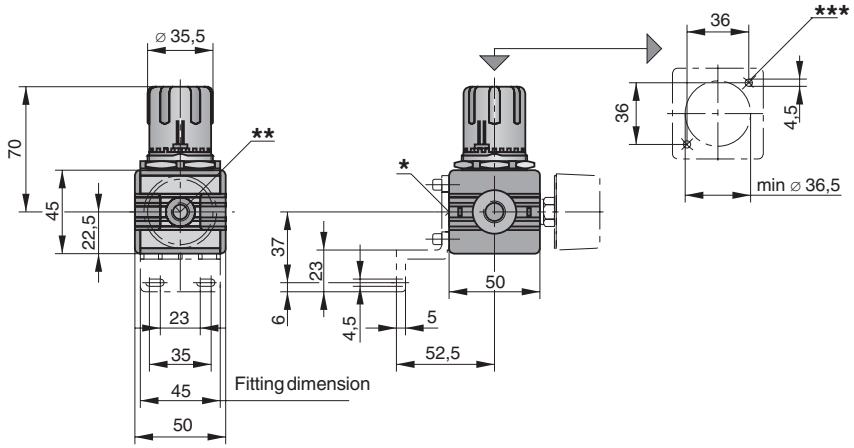
Data Sheet No. 5.95.028E-1

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The right to introduce technical modifications is reserved

Dimensions (mm)

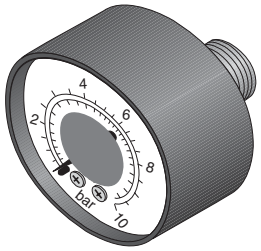
Type: SR-1/8, 1/4, 3/8



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Accessories

Gauge
Ø 40 mm, 0-10 bar, G1/8



Order No.: KZ 8891

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SR-1/8-SO**	**PB 45349-208**
Basic model	G1/4	**SR-1/4-SO**	**PB 45449-208**
Basic model	G3/8	**SR-3/8-SO**	**PB 45549-208**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge, Ø 40, 0-10 bar, G1/8*	**KZ 8891**
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Porting block kit G1/4 / 3xG1/8 (incl. coupling kit)	**PL 16969**
Ring fastener for panel mounting	**PL 07651**

* For pressure ranges see 5.21.005E

Filter-Regulator

G1/8, G1/4, G3/8

Pressure regulating valve with filter-water-separator

$T_{min/max}$ = -40 to +80°C

airfit Swing

SK



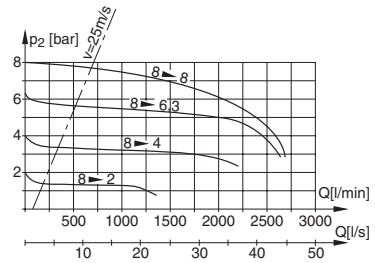
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure		
System			Cyclone system and filter element, combined with diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief		
Type			**SK-1/8**	**SK-1/4**	**SK-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Pore size of filter element		µm	5		
Max. condensate capacity		cm^3	22		
Condensate drainage			Manual or semiautomatic (pressure relief)		
Installation			Vertical		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	-40 +80		
Weight (mass)		kg	0.35		
Pneumatic Characteristic					
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16		
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 4	0.5[2] 15
Min. pressure difference	p_1-p_2	bar	0.2		
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.5 0.4		
Recommended flow[1]	Q_n	l/min m^3/h	**300** **18**	**550** **33**	**850** **51**
Maximum flow[3]	Q_{max}	l/min m^3/h	790 47	2280 137	3200 192
Degree of moisture separation at recommended flow	η	%	95	95	90

[1] at p_2 = 6 bar and 25 m/s
[2] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[3] at p_1 = 10 bar on p_2 = 6.3 bar, Δp = 1 bar

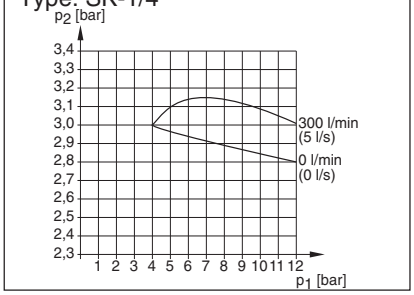
Flow Characteristics

Type: SK-1/4



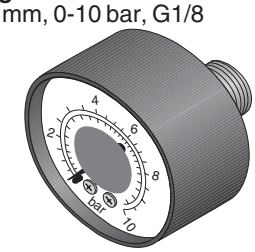
Outlet Pressure Variation with Fluctuation Inlet Pressure

Type: SK-1/4

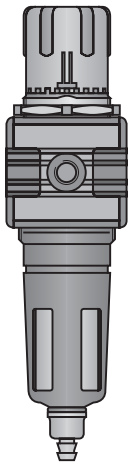


Accessories

Gauge
Ø40 mm, 0-10 bar, G1/8



Order No.: KZ 8891



Filter -regulator with secondary pressure relief, inlet pressure and volume compensation hand wheel lockable

- easily adaptable to customer's choice of colour and private labelling
- quick, easy filter change with new Quick-Snap system
- inlet pressure and volume compensation
- version with NPTF thread

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

Data Sheet No. 5.95.029E-1

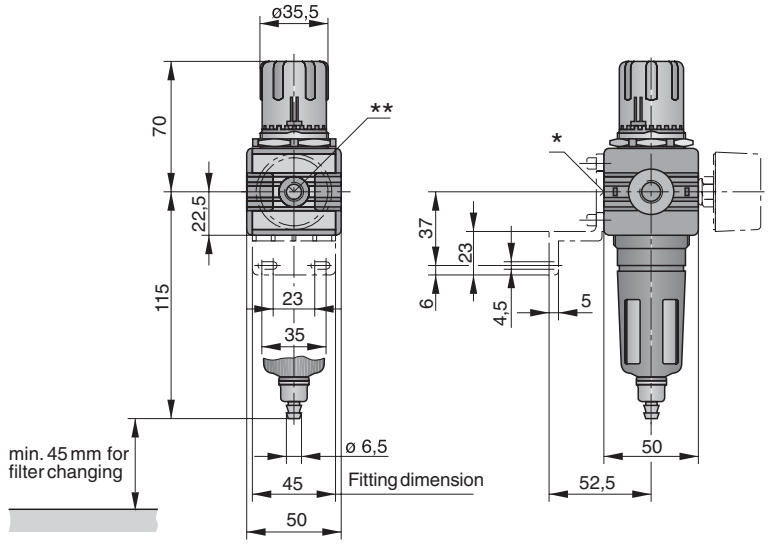
HOERBIGER ORIGA

A1P730E00IAE00X

The right to introduce technical modifications is reserved

Dimensions (mm)

Type: SK-1/8, 1/4, 3/8



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Order Instructions

Description	Port size	Type	Order No.
With filter element 5 µm	G1/8	**SK-1/8-5D**	**PB 45649-065**
With filter element 5 µm	G1/4	**SK-1/4-5D**	**PB 45749-065**
With filter element 5 µm	G3/8	**SK-3/8-5D**	**PB 45849-065**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge, Ø 40, 0-10 bar, G1/8*	**KZ 8891**
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Porting block kit G1/4 / 3xG1/8 (inc. coupling kit)	**PL 16969**
Ring fastener for panel mounting	**PL 07651**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 15 bar	**PL 16320**

* For pressure ranges see 5.21.005E

Pressure Regulating Valve

G1/8, G1/4, G3/8

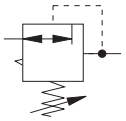
$T_{min/max}$ = -40 to +80°C

Characteristics			Pressures quoted as gauge pressure		
System			Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief		
Typ			**SR-1/8**	**SR-1/4**	**SR-3/8**
Port size			**G1/8**	**G1/4**	**G3/8**
Installation			In any position		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	-40 +80		
Weight (mass)		kg	0.3		
Pneumatic Characteristic					
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16		
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 4	0.5[2] 10
Min. pressure difference	p_1-p_2	bar	0.2		
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.5 0.4		
Recommended flow [1]	Q_n	l/min m³/h	**300** **18**	**500** **33**	**850** **51**
Maximum flow [3]	Q_{max}	l/min m³/h	790 47	2850 171	3300 198

[1] at p_2 = 6 bar and 25 m/s
[2] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[3] at p_1 = 10 bar on p_2 = 6.3 bar and Δp = 1 bar

airfit Swing

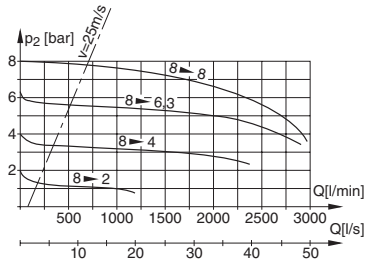
SR



Special solutions
(e.g. temperature, pressure, medium ...) on request

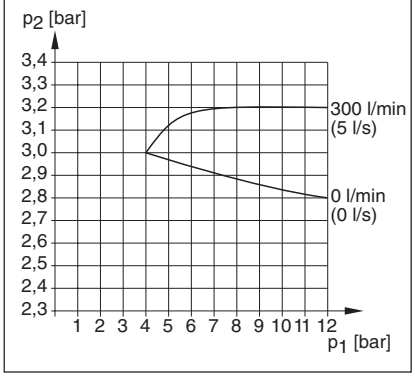
Flow Characteristics

Type: SR-1/4

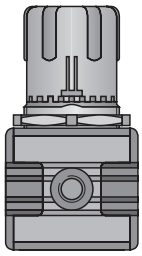


Outlet Pressure Variation with Fluctuacting Inlet Pressure

Type: SR-1/4



Diaphragm-type pressure regulating valve (spring loaded) with secondary pressure relief, inlet pressure and volume compensation handwheel lockable



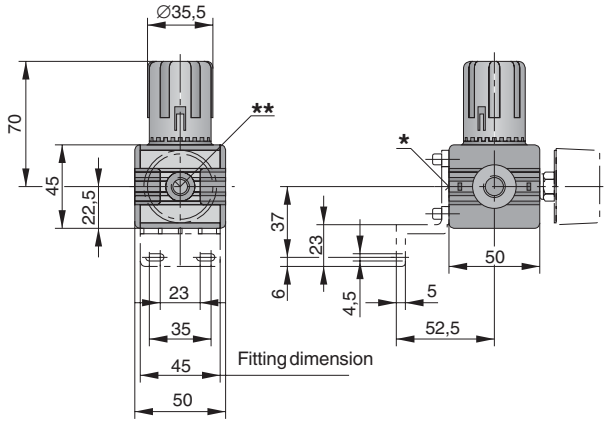
- easily adaptable to customer's choice of colour and private labelling
- inlet pressure and volume compensation
- version with NPTF thread
- specially developed roller diaphragm

For single units see 5.12.004E-5.12.008E
For air preparation units see 5.12.002E, 5.12.003E
For product group list see 5.12.001E

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The right to introduce technical modifications is reserved

Dimensions (mm)

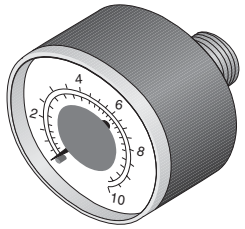
Type: SR-1/8, 1/4, 3/8



* On delivery the plug screw is not assembled.
** Two opposite gauge ports G1/8

Accessories

Gauge
Ø 40 mm, 0-10 bar, G1/8



Order No.: KZ 8891

Order Instructions

Description	Port size	Type	Order No.
Basic model	G1/8	**SR-1/8-SO**	**PB 45349-080**
Basic model	G1/4	**SR-1/4-SO**	**PB 45449-080**
Basic model	G3/8	**SR-3/8-SO**	**PB 45549-080**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge, Ø 40, 0-10 bar, G1/8*	**KZ 8891**
Mounting kit	**PL 16965**
Coupling kit	**PL 16959**
Porting block kit G1/4 / 3xG1/8 (incl. coupling kit)	**PL 16969**
Ring fastener for panel mounting	**PL 07651**
Regulator spring for operating pressure 4 bar	**PL 15249**
Regulator spring for operating pressure 15 bar	**PL 16320**

* For pressure ranges see 5.21.005E

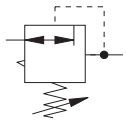
Pressure Regulating Valve

G3/8,G1/2

$T_{min/max}$ = -40 to +80°C

airfit comfort

CR



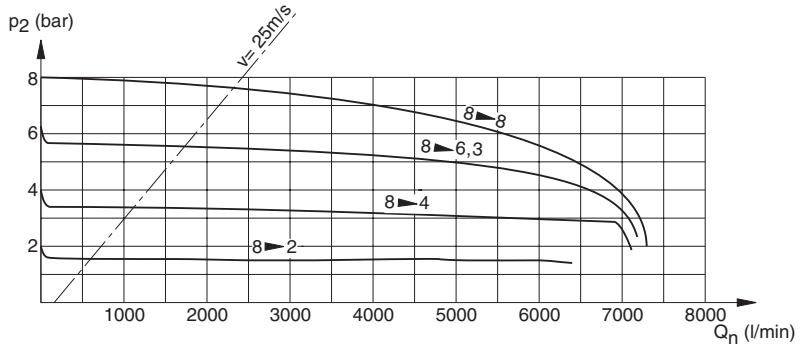
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Diaphragm-type pressure regulating valve (spring loaded) with flow compensation and secondary pressure relief	
Type			**CR-3/8**	**CR-1/2**
Port size			**G3/8**	**G1/2**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	-40 +80	
Weight (mass)		kg	0.55	
Pneumatic Characteristic				
Operating pressure range - inlet pressure	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	
Operating pressure range - outlet pressure	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.5 on request 8	0.5 0.5[2] 4 10
Min. pressure difference	p_1-p_2	bar	0.2	
Hysteresis p_1=10/p_2=0 Hysteresis p_1=10/p_2=8		bar bar	0.9 0.7	
Recommended flow[1]	Q_n	l/min m³/h	**850** **51**	**1900** **114**
Maximum flow[3]	Q_{max}	l/min m³/h	4200 252	5700 342

[1] at p_2 = 6 bar and 25 m/s
[2] By the use of special springs, the outlet pressure can be precisely regulated in the specified p_2 range
[3] at p_1 = 10 bar and p_2 = 6.3 bar, Δp = 1 bar

Flow Characteristics

CR-1/2





Diaphragm-type pressure regulating valve (spring loaded) flow compensation and with secondary pressure relief, handwheel lockable

- Easy and quick installation of mounting kit
- Suitable for direct wall mounting
- Modern design
- Version with NPTF thread

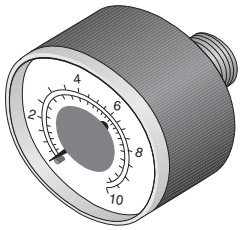
For single units see 5.19.004E-5.19.011E
For accessories see 5.21.012E-5.21.013E
For air preparation units see 5.19.002E, 5.19.003E
For product group list see 5.19.001E

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Accessories

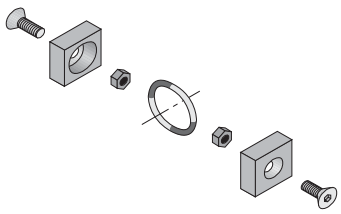
Gauge
Ø 50, 0-10 bar, G1/4



Order No.: KG 8011

Accessories

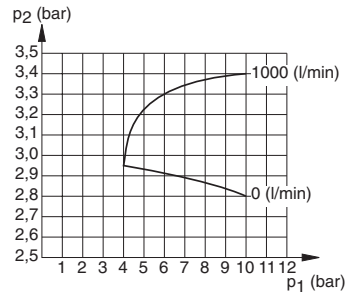
Coupling kit
for connecting 2 single units



Order No.: PB 17608

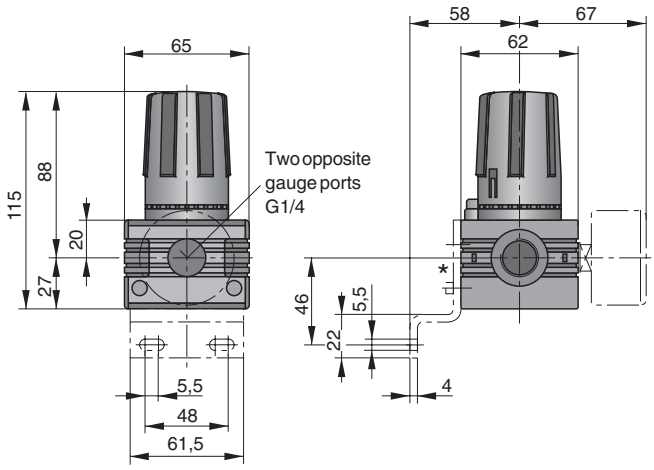
Outlet Pressure Variation with Fluctuacting Inlet Pressure

CR-1/2



Dimensions (mm)

Type: CR-1/2



*) On delivery the plug screw is not assembled.

Order Instructions

Description	Port size	Type	Order No.
Basic model	G3/8	**CR-3/8-SO**	**PB 55549-080**
	G1/2	**CR-1/2-SO**	**PB 55649-080**

For the version with NPTF thread, complete the Order No. as follows:
PB ...49-... → PB ...49-N...

Accessories

Description	Order No.
Gauge, Ø 50, 0-10 bar, G1/4	**KG 8011**
Mounting kit	**PL 17518**
Coupling kit	**PL 17608**
Porting block kit G1/2/G1/4	**PL 17607**
Porting block kit G1/2 with holes for mounting pressure switch (6.00.003E)	**PL 17609**
Regulator spring for operating pressure 4 bar	**PL 17748**
Regulator spring for operating pressure 10 bar	**PL 17705**
Adapter kit G3/4	**PL 17682**

Start-/ Stop Valve

G3/4, G1

airfit A25

A25DS

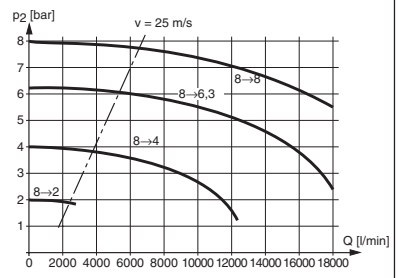
Special solutions
(e.g. temperature, pressure, medium ...) on request

Characteristics			Pressures quoted as gauge pressure	
System			Start-/ stop valve with electrical or pneumatic actuation	
Type			**A25DS-3/4**	**A25DS-1**
Actuation			elektrical or pneumatic	
Port size			**3/4-14 NPTF, G3/4**	**1-11/2 NPTF, G1**
Installation			In any position	
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +50 (+60°C to 12.5 bar)	
Weight (mass)		kg	1.4	
Pneumatic Characteristic				
Operating pressure range	p_{min} p_{max}	bar bar	2 17.5 (16 at A25DS-E)	
Maximum flow [1]	Q_n	l/min m^3/h	10500 630	12000 720

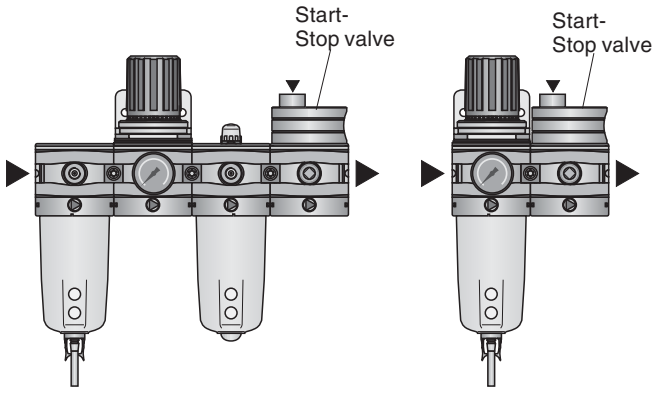
[1] at p_1=10 bar on p_2=6.3 bar and Δp=1 bar

Flow Characteristics

Type: A25DS



Assembly Instructions





For air preparation units see 5.23.002E - 5.23.003E
For product group list see 5.23.001E

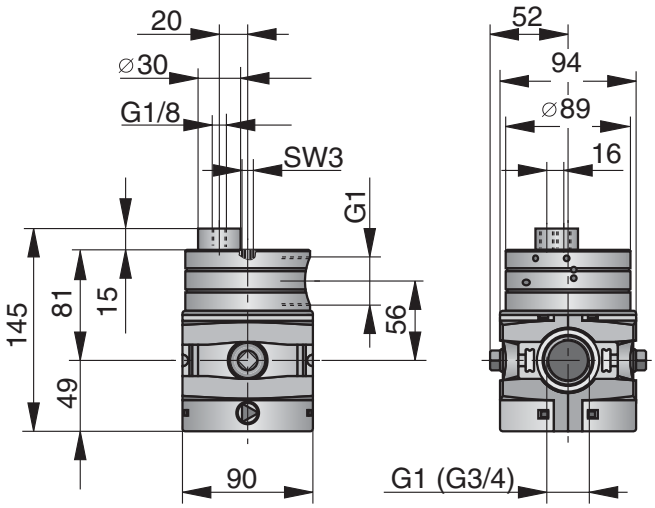
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The right to introduce technical modifications is reserved

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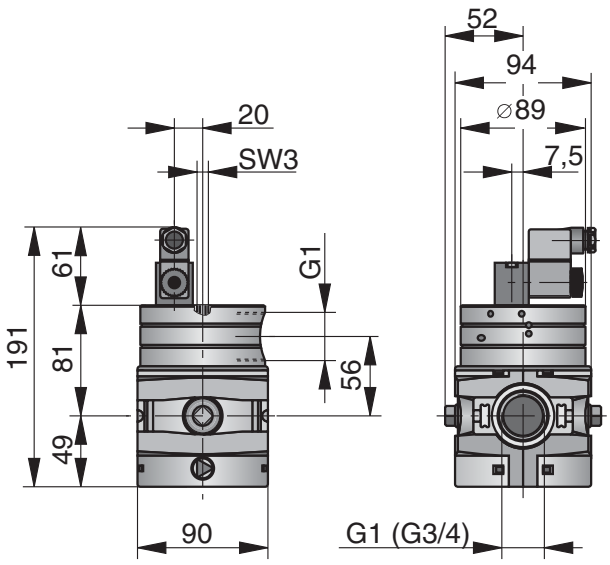
Dimensions (mm)

Type: A25DS-P



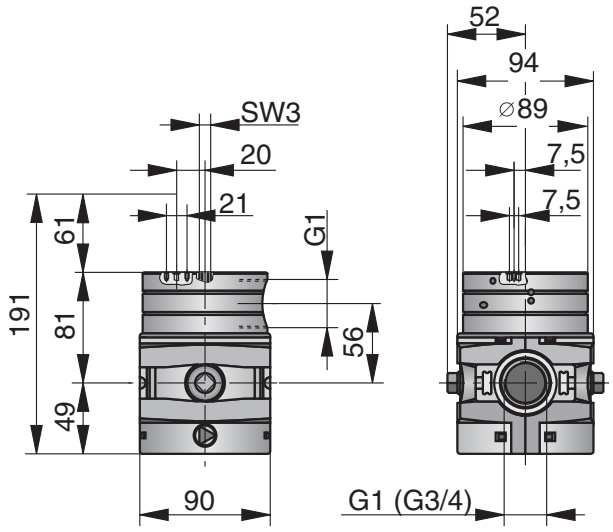
Dimensions (mm)

Type:A25DS-E



Dimensions (mm)

Type: A25DS-C



Order Instructions

Description	Actuation	Port size	Type	Order No.
Start-/ stop valve	Pneumatic	G3/4	**A25DS-3/4-P**	**PB 63049-000**
		G1	**A25DS-1-P**	**PB 63149-000**
Start-/ stop valve	Electrical 230 V / 50 Hz	G3/4	**A25DS-3/4-E**	**PB 63049-004**
		G1	**A25DS-1-E**	**PB 63149-004**
Start-/ stop valve	Electrical 24 V / DC	G3/4	**A25DS-3/4-E**	**PB 63049-001**
		G1	**A25DS-1-E**	**PB 63149-001**
Start-/ stop valve	CNOMO-connection	G3/4	**A25DS-3/4-C**	**on request**
		G1 1/2	**A25DS-1-C**	**on request**

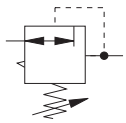
Accessories

Description	Order No.
Mounting kit (interchangeable with airfit Prestige)	**PL 18988**
Porting block kit	**PL 18986**
Coupling kit	**PL 18987**

Precision Pressure Regulator

G1

XRP-1



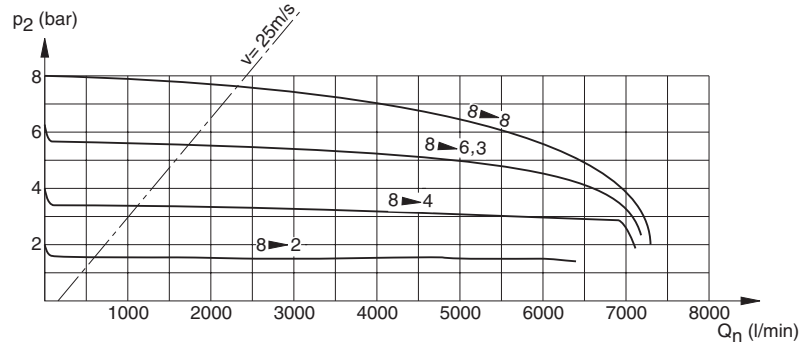
Special solutions
(e.g. temperature, pressure, medium ...) on request

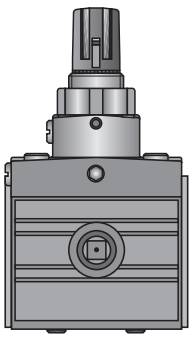
Characteristics			Pressures quoted as gauge pressure		
System			Diaphragm-type pressure regulating valve (2 diaphragm), pre-stage spring controlled, integrated filter		
Type			**XRP-1-10**	**XRP-1-25**	**XRP-1-40**
Port size			**G1**		
Installation			In any position		
Medium and ambient temperatures	T_{min} T_{max}	°C °C	0 +60		
Weight (mass)		kg	1.7		
Material					
Housing			Aluminium		
Internals			Partly Ms, NBR		
Pneumatic Characteristic					
Operating pressure range - inlet pressur	$p_{1\ min}$ $p_{1\ max}$	bar bar	0 16	0 45	0 45
Operating pressure range - outlet pressur	$p_{2\ min}$ $p_{2\ max}$	bar bar	0.05 10	0.05 25	0.05 40
Own air usage	Q	l/min	2.7	12.5	17.0
Hysteresis		bar	max. 0.1 bar		
Recommended flow [1]	Q_n	l/min	**5000** **300**		
Maximum flow [2]	Q_{max}	l/min m^3/h	13500 840		

[1] at p_2 = 6 bar and 25 m/s
[2] at p_1 = 10 bar on p_2 = 6.3 bar and Δp = 1 bar

Flow Characteristics

Type: XRP-1





For single units see 5.22.004E - 5.22.007E
For air preparation units see 5.22.002E, 5.22.003E
For product group list see 5.22.001E

Data Sheet No. 5.95.034E-1

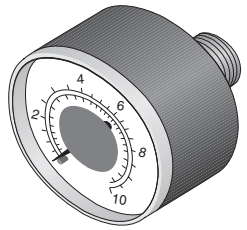
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HOERBIGER ORIGA

Accessories

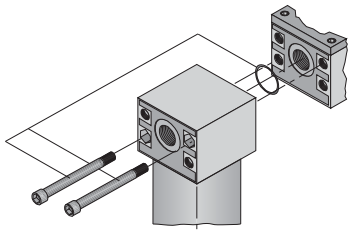
Gauge
Ø 63, 0-10 bar, G1/4



Order No.: KG 8002

Accessories

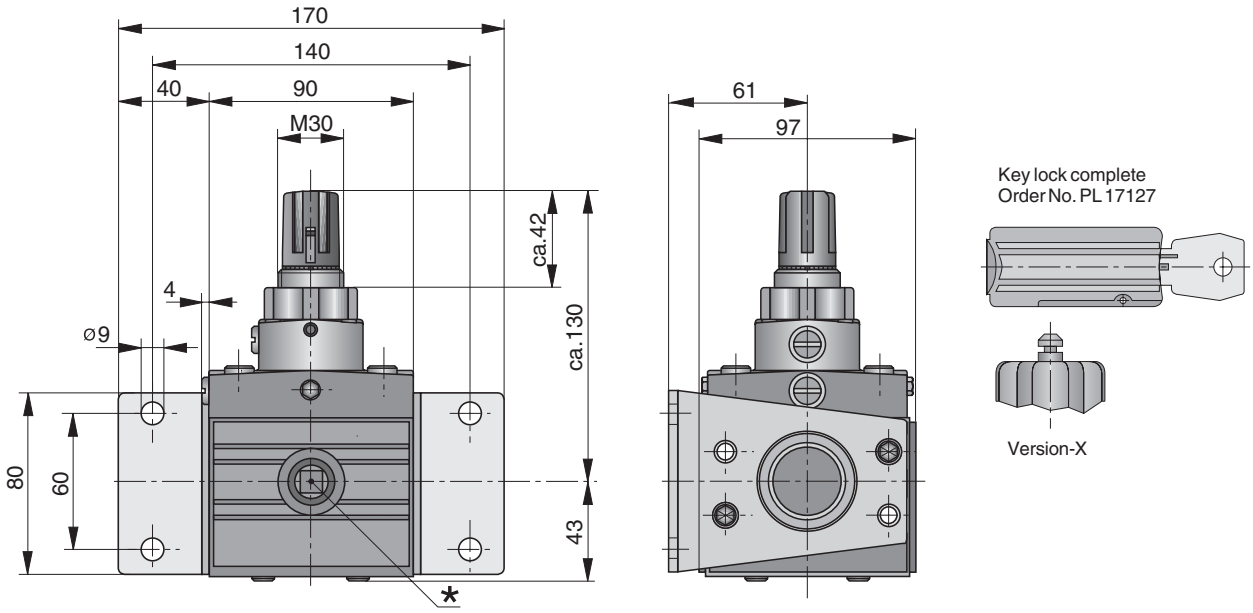
Coupling kit
for connecting 2 single units



Order No.: PL 15670

Dimensions (mm)

Type: XRP-1



* Gauge ports in front G1/4

Order Instructions

Description	Port size	Type	Order No.
Precision pressure regulator	G1	**XRP-1-10**	**PB 34349-500**
Precision pressure regulator	G1	**XRP-1-25**	**PB 34349-506**
Precision pressure regulator	G1	**XRP-1-40**	**PB34349-505**
Precision pressure regulator with adapter for keylock	G1	**on request**	

Accessories

Description	Order No.
Gauge, Ø 63, 0-10 bar, G1/4 (HOERBIGER-design)	**KG 8002**
Mounting kit	**PL 15669**
Coupling kit	**PL 15670**
Porting block kit G1/2	**PL 15672**
Keylock	**PL 17127**

ELECTRONICALLY CONTROLLED PRESSURE REGULATING VALVE (PROPORTIONAL PRESSURE REGULATING VALVE) SERIES

airfit control



HOERBIGER

ORIGA

Description	Abb.	Port size	Recommended flow (l/min)*	**Type**	Data Sheet No.
airfit tecno Proportional pressure valve 0-10 V		G1/8	115 (Nominal flow)	**PRE-U**	5.96.002E
airfit tecno Proportional pressure valve 4-20 mA			G1/8	115 (Nominal flow)	**PRE-I** 5.96.002E
airfit control Proportional pressure valve 0-10 V normally closed normally open		G1/4 G3/8	550 (2200*) 850 (2500*)	**SRE-U-1/4** **SRE-U-3/8**	5.96.004E
airfit control Proportional pressure valve 4-20 mA		G1/4 G3/8	550 (2200*) 850 (2500*)	**SRE-I-1/4** **SRE-I-3/8**	5.96.004E
airfit control Proportional pressure valve 0-20 mA		G1/4 G3/8	550 (2200*) 850 (2500*)	**SRE-I-1/4** **SRE-I-3/8**	5.96.004E
airfit control Proportional pressure valve 0-10 V normally closed normally open		G3/8 G1/2	850 (4500*) 1900 (6000*)	**CRE-U-3/8** **CRE-U-1/2**	5.96.005E
airfit control Proportional pressure valve 4-20 mA		G3/8 G1/2	850 (4500*) 1900 (6000*)	**CRE-I-3/8** **CRE-I-1/2**	5.96.005E
airfit control Proportional pressure valve 0-20 mA		G3/8 G1/2	850 (4500*) 1900 (6000*)	**CRE-I-3/8** **CRE-I-1/2**	5.96.005E

* Max. flow at p_1 =10 bar to p_2 = 6:3 bar, Δp = 1 bar

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The right to introduce technical modifications is reserved

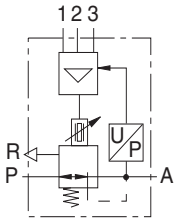
Pressure Regulating Valve

G1/8, NW 2.5

Electronically controlled (proportional pressure regulating valve with piezo pilot)

airfit tecno

PRE-.



Versions

- Voltage controlled (Type PRE-U)
- Current controlled (Type PRE-I)
- 3 pressure ranges
- Option: actual value output
- Option: EMV-mass

Electronically controlled pressure regulating valve with actual value feed-back.
The unit is highly adaptable to prevailing operating conditions.
Remote controlled.



Characteristics to VDI 3292			Pressures quoted as gauge pressures		
System			3 way proportional pressure regulator with PIEZO pilot control and pneumatic and electronic feedback.		
Flow direction			In: from 1 to 2 Out: from 2 to 3		
Reaction to power failure			Port 2 vents to 0 bar		
Mounting			Flange		
Port size			NW 2.5 without base plate G1/8 with base plate		
Installation			In any position		
Weight (mass)		kg	0.160 without base plate 0.215 with base plate		
Medium and ambient temperature range	T_{min} T_{max}	°C °C	0 +50		
Storage temperature	T_{min} T_{max}	°C °C	-30 +60		
Medium			Filtered, dry, lubricated [1] or oil-free compressed air		
Filtration		µm	30; recommended: 5		
Electrical protection		IP	30 to DIN EN 60529		
Materials Housing Internal parts Seals			Anodized aluminium, plastic Aluminium, brass, plastic NBR		
Pneumatic Characteristics					
Version			**0-8 bar**	**0-2 bar**	**0-200 mbar**
Pressure range, inlet	$p_{1\ min}$ $p_{1\ max}$	bar bar	1.5 10	1.5 6	1.5 2.5
Pressure range, outlet	$p_{2\ min}$ $p_{2\ max}$	bar bar	0 [2] 8	0 2	0 0.2
Nominal flow rate	Q_N	l/min	200		
Maximum flow rate [3]	Q_N	l/min	350		
Hysteresis [5]	Δp_2	%	< 0.2	< 0.2	< 0.5
Repeatability	Δp_2	%	< 0.2	< 0.2	< 0.5
Responsiveness [5]	Δp_2	%	< 0.1	< 0.1	< 0.5
Linearity [4] [5]	$\Delta p_{2\ max}$	%	< 0.5	< 0.5	< 2
Own air consumption [6]		Nl/min	≤ 0.6	≤ 0.5	≤ 0.4
Electrical Characteristics see page 2					

[1] oil-free air is recommended.
If the system must have lubricated air, sparing lubrication (max. 30 mg/m3) is recommended.
[2] other pressure ranges on request.
[3] at p_1=10 bar and p_2=6.3 bar, Δp=1 bar.
[4] at ambient temperature 20 °C.
[5] relative to p_{2max}.
[6] at p_1 max.

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The right to introduce technical modifications is reserved

HOERBIGER ORIGA

Continuation of Characteristics			Pressures quoted as gauge pressures
Electrical Characteristics, General			
Connector			3-pin connector M8 [7 or to DIN 43650-1 C
Electromagnetic Compatibility (EMC) [8]			
Resistance to interference			EN 61000-6-2
Interference emissions			EN 50 081-1
Electrical Characteristics for Type PRE-U			
Nominal voltage	U_N	V DC	24 ±10 %
Nominal power max.	P_N	W	0.4
Residual ripple max.		%	10
Current consumption	I_{Bmax}	mA	15
Set value input	W	V	0-10
Version 0 - 8 bar			0 V → 0 bar, 8 V → 8 bar
Version 0 - 2 bar			0 V → 0 bar, 10 V → 2 bar
Version 0 - 0.2 bar			0 V → 0 bar, 10 V → 0.2 bar
Input resistance	R_E	kΩ	61.5
Electrical Characteristics for Type PRE-I			
Power supply [9	I_B	mA	4
Power supply [9	W	mA	4...20
Max. voltage at input [10]	U_{Wmax}	V	12.5
Version 0 - 8 bar			4 mA → 0 bar, 20 mA → 8 bar
Version 0 - 2 bar			4 mA → 0 bar, 20 mA → 2 bar
Version 0 - 0.2 bar			4 mA → 0 bar, 20 mA → 0.2 bar
Input resistance	R_E	Ω	≤ 550
Actual value output [11]			
Output voltage	U_X	V	0 bar → 1.25 V $p_{2\,max}$ → 6.25 V
Output current max.	I_X max	mA	1
Internal protective resistance	R_I	Ω	1000

[7] depending on version, see Order No.'s, Page 6.
[8] To comply with the specification, shielded connecting cables must be used
[9] 2-wire technology, i.e. power supply and set value via the same cable.
[10] higher voltage will damage the valve.
[11] optional, see Order No.'s, page 6.

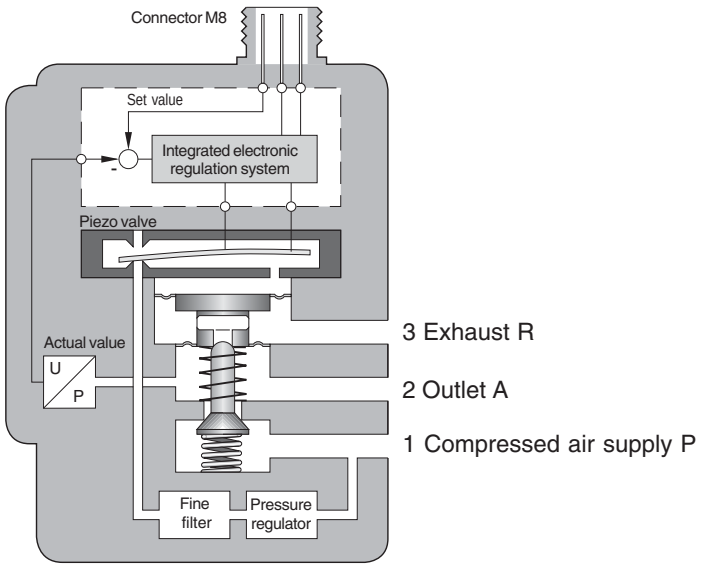
How it Works

The actuating element in the **tecno valve** is not a solenoid system, as in conventional proportional pressure regulating valves, but a piezo valve – an encapsulated Piezo-ceramic element based on the jet-and- baffle principle.

The piezo valve makes use of the Piezo effect: the Piezo-ceramic element bends when a voltage is applied to it.

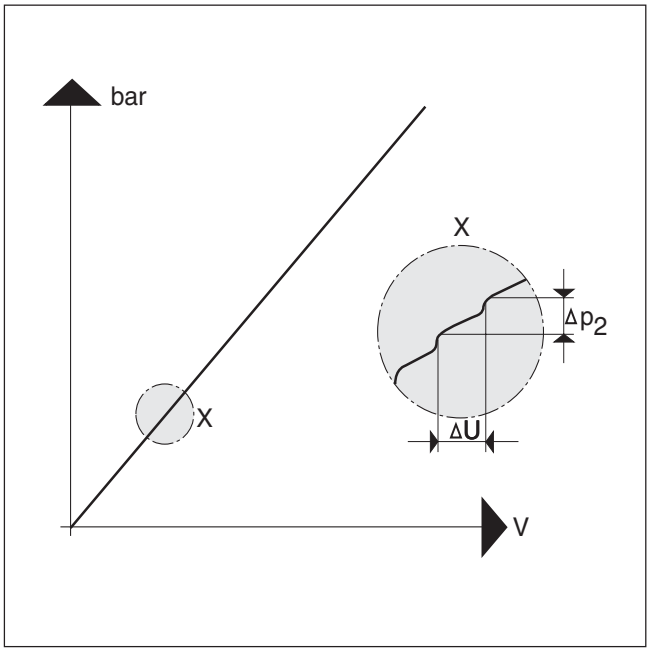
A built-in electronic control system applies variable voltage to the element, producing variable bending and therefore variable pressure on the diaphragm in the pilot chamber. Diaphragm movement is transferred to the main valve by a plunger acting against a spring.

The pressure thus produced at the valve outlet is compared via a sensor with the preset value and if necessary corrected by the electronic control system.



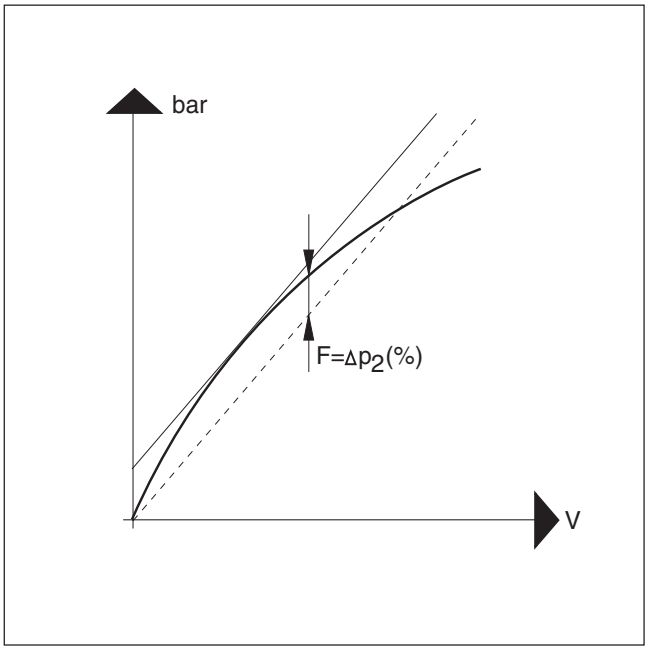
Sensitivity

The smallest change in the electronic input signal which leads to a change in actual output pressure is referred to as sensitivity.This is expressed as a percentage of maximum output pressure. For the Tecno this value is < 0.1% to < 0.5% depending on the version.



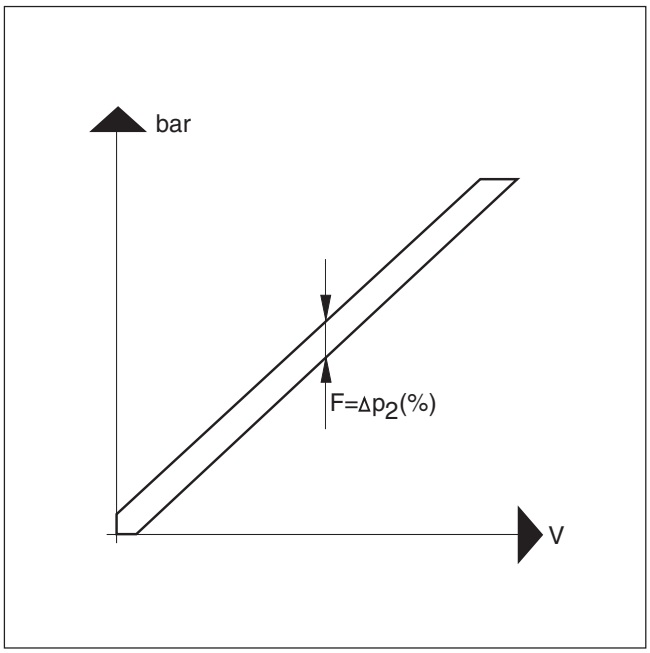
Linearity

The ideal curve showing output pressure in relation to electronic signal would be a straight line. Linearity is the maximum deviation from the straight line, expressed as a percentage of maximum output pressure.



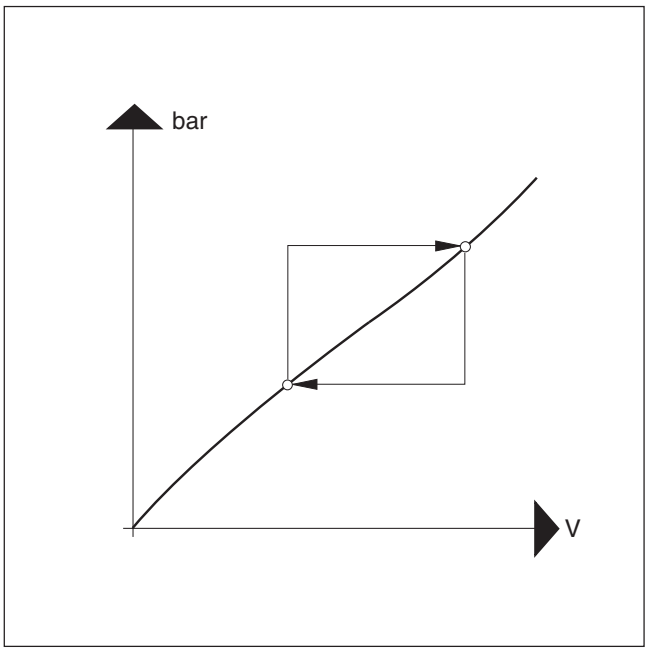
Hysteresis

The same electronic signal generates slightly different actual output pressures, depending on whether the previous signal was higher or lower. This difference, known as hysteresis, is caused by friction and temporary deformation of elastic components.
The hysteresis of the electronically operated pressure regulating valve **AIRFIT tecno** from HOERBIGER is between < 0.2 % and < 0.5 % of the output pressure.

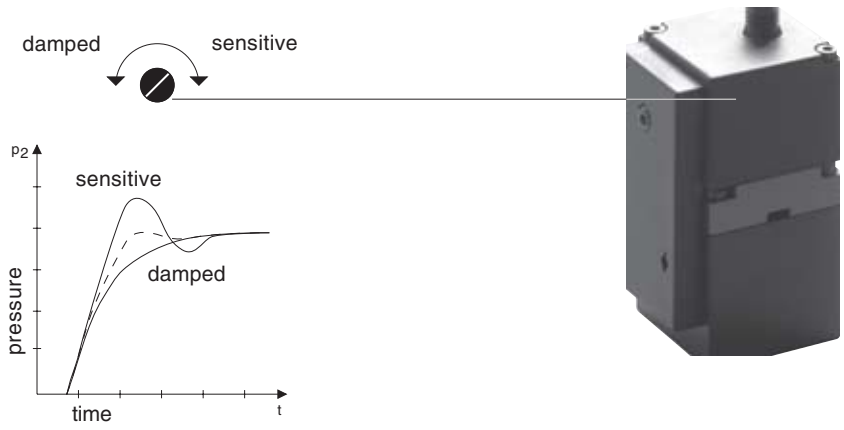


Repeatability

Control components, for a given set value, usually produce repeated actual values which differ less from each other than from the absolute set value, because the relatively large linearity deviation is excluded.

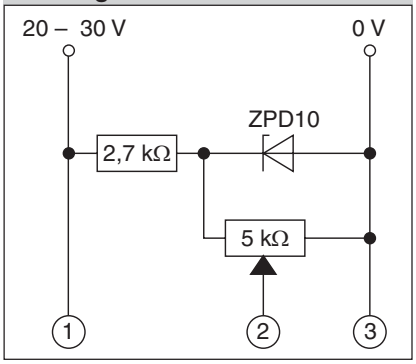


Adjustment



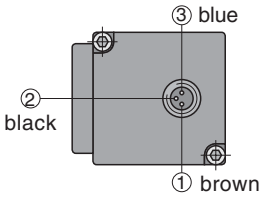
The regulation amplification of the electronic regulation system is designed for universal use of the valve and is preset at the factory for a minimum volume of ca. 5 ml.
If required the regulation amplification can be adjusted for higher sensitivity (with larger volume) - see diagram. However if the setting is too sensitive the outlet pressure can tend towards instability.

Examples of Connections – Voltage controlled 0-10 V



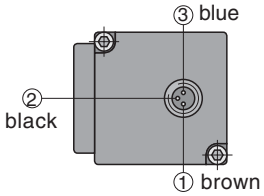
Connection Diagram for 3-pole plug

Connections Diagram No. 1



Voltage-controlled 0-10 V, Type PRE-U
1 = power supply 24 V DC / 15 mA
2 = set value 0-10 V
3 = GND set value and power supply

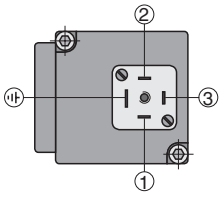
Connections Diagram No. 2



Current-controlled 4-20 mA, Type PRE-I (2-wire technology)
1 = free
2 = set value 4-20 mA, +
3 = set value GND

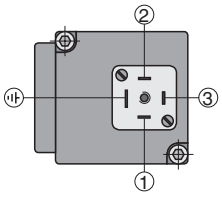
Connection Diagram for plug to 43650-1C

Connections Diagram No. 3



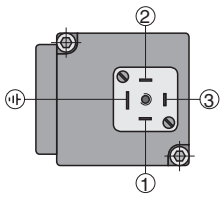
Voltage-controlled 0-10 V, Type PRE-U with actual value output
1 = power supply 24 V DC
2 = set value 0-10 V
3 = actual value output 1.25 V (0 bar output), – 6.25 V (p_{max} output)
⏚ GND set value and power supply

Connections Diagram No. 4



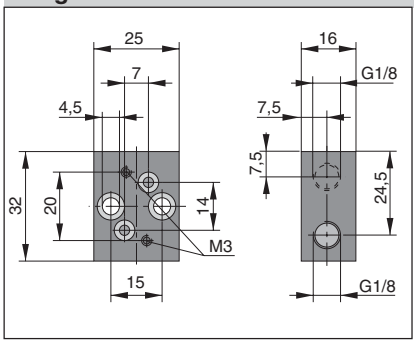
Voltage-controlled 0-10 V, Type PRE-U with EMC mass
1 = power supply 24 V DC
2 = set value 0-10 V
3 = GND set value and power supply
⏚ EMC mass

Connections Diagram No. 5

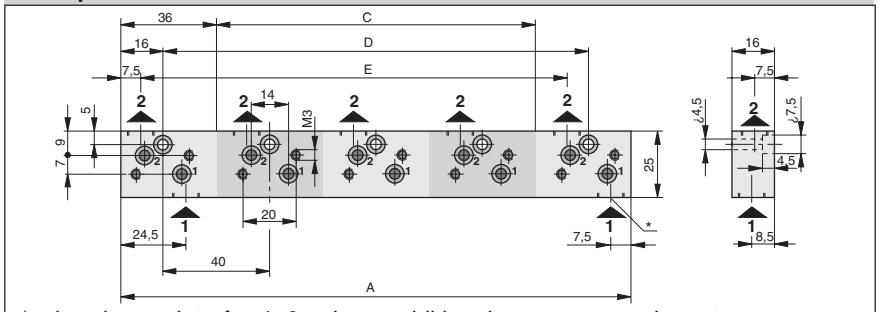


Current-controlled 4-20 mA, Type PRE-I with EMC mass
1 = free
2 = set value 4-20 mA, +
3 = set value GND
⏚ EMC mass

Dimensions (mm)
Single Base Plate G1/8



Dimensions (mm)
Multiple Base Plate G1/8

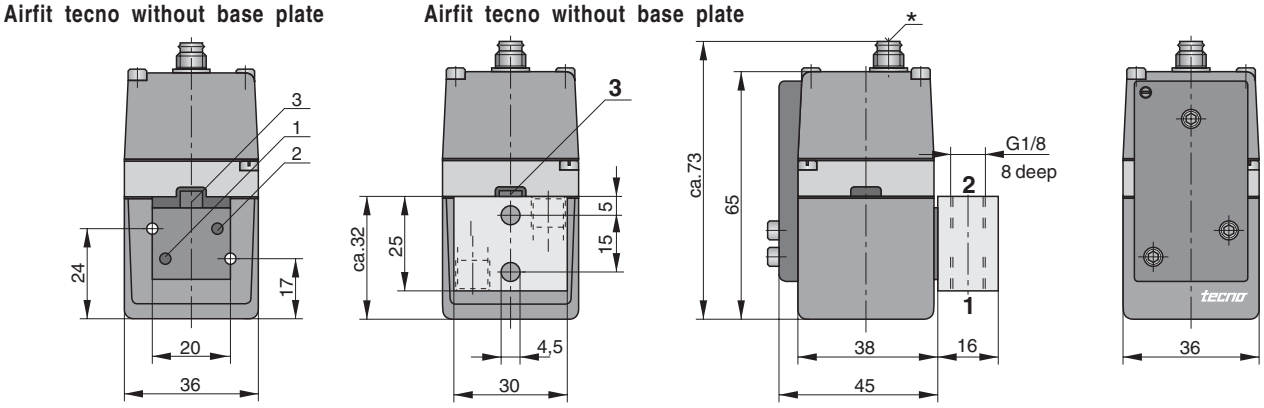


* when base plate for 4..6 valves: additional pressure supply port

Table of dimensions (mm) and Weight (mass)
Multiple Base Plate G1/8

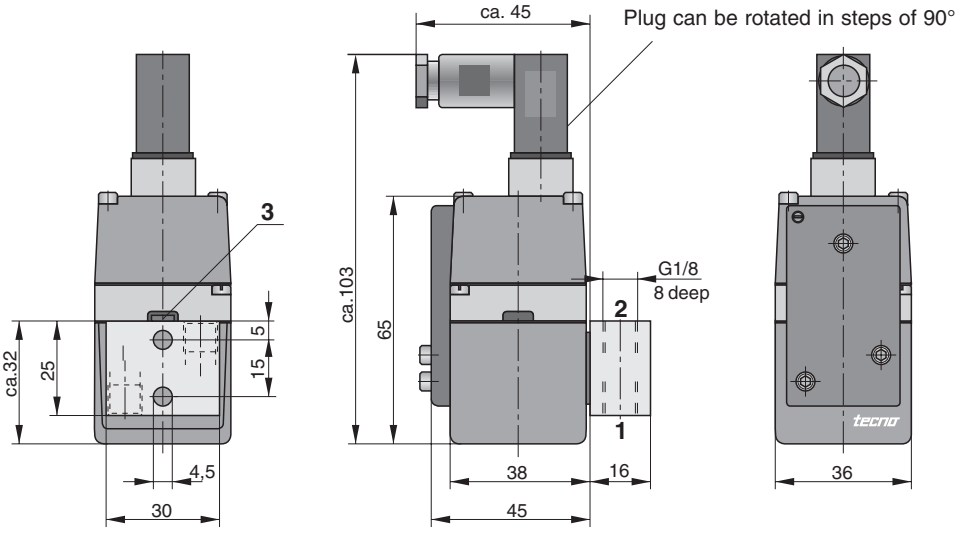
Number of valves	Dimensions (mm) A	C	D	E	Port size 1	2	Weight (mass) (kg)
2	72	0	40	40	1 x G1/8	G1/8	0.07
3	112	40	80	80	1 x G1/8	G1/8	0.11
4	152	80	120	120	2 x G1/8	G1/8	0.15
5	192	120	160	160	2 x G1/8	G1/8	0.19
6	232	160	200	200	2 x G1/8	G1/8	0.23

Dimensional Diagram No.1 (dimensions in mm)
Version with 3-pole connector and base plate



* Connection for 3-pole Plug M8 (KC3104, KC3106)

Dimensional Diagram No.2 (dimensions in mm)
Version with plug to DIN 43650-1C and base plate



Data Sheet No. 5.96.002E-5

Order Instructions

Version	Elec. Conn. Diagram No.	Dimensional Diagram No.	Order Instructions Type	Order No.
Sets, complete, (0-8 bar) consisting of				
Prop.-pressure regulating valve, 0-8 V Base plate G1/8, cable set straight (2m)	1	1	**PRE-U-01**	**PS11140-B-01**
Prop.-pressure regulating valve, 0-8 V Base plate G1/8, cable set bended (2m)	1	1	**PRE-U-01**	**PS11150-B-01**
Prop.-pressure regulating valve, 4-20 mA 2 Base plate G1/8, cable set straight (2m)	1		**PRE-I-01**	**PS11141-B-01**
Prop.-pressure regulating valve, 4-20 mA 2 Base plate G1/8, cable set bended (2m)	1		**PRE-I-01**	**PS11151-B-01**

Prop.-pressure regulating valve NW 2.5 (without accessories)				
Prop.-pressure regulating valve, 0-8 V, 0-8 bar	1	1	**PRE-U**	**PS11110-B**
Prop.-pressure regulating valve, 4-20 mA, 0-8 bar	2	1	**PRE-I**	**PS11111-B**
Prop.-pressure regulating valve, 0-10 V, 0-2 bar	1	1	**PRE-U**	**PS11130-B-20**
Prop.-pressure regulating valve, 4-20 mA, 0-2 bar	2	1	**PRE-I**	**PS11139-B-20**
Prop.-pressure regulating valve, 0-10 V, 0-200 mbar	1	1	**PRE-U**	**PS11130-B-02**
Prop.-pressure regulating valve, 4-20 mA, 0-200 mbar	2	1	**PRE-I**	**PS11139-A-02**

Prop.-pressure regulating valve NW 2.5 with actual value output and plug to DIN 43650-1C (single units without accessories) *				
Prop.-pressure regulating valve, 0-8 V, 0-8 bar, Actual value output 1.25 V (0 bar) – 6.25 V (8 bar)	3	2	**PRE-U**	**PS11113-B**
Prop.-pressure regulating valve, 0-10 V, 0-2 bar, Actual value output 1.25 V (0 bar) - 6.25 V (2 bar)	3	2	**PRE-U**	**PS11162-B-20**
Prop.-pressure regulating valve, 0 -10 V, 0-0.2 bar, Actual value output 1.25 V (0 bar) - 6.25 V (0,2 bar)	3	2	**PRE-U**	**PS11162-B-02**

Prop.-pressure regulating valve NW 2.5 with EMV-mass and plug to DIN 43650-1C (single units without accessories) *				
Prop.-pressure regulating valve, 0-8 V, 0-8 bar	4	2	**PRE-U**	**PS11164-B**
Prop.-pressure regulating valve, 0-10 V, 0 -2 bar	4	2	**PRE-U**	**PS11165-B-20**
Prop.-pressure regulating valve, 0-10 V, 0-0.2 bar	4	2	**PRE-U**	**PS11165-B-02**
Prop.-pressure regulating valve, 4-20 mA, 0-8 bar	5	2	**PRE-I**	**PS11168-B**
Prop.-pressure regulating valve, 4-20 mA, 0-2 bar	5	2	**PRE-I**	**PS11169-B-20**
Prop.-pressure regulating valve, 4-20 mA, 0-0.2 bar	5	2	**PRE-I**	**PS11169-B-02**

* Corresponding connector included

Accessories	
Single base plate G1/8	**PS11112-A-01**
Multiple base plate G1/8, for 2 valves	**PS11112-A-02**
Multiple base plate G1/8, for 4 valves	**PS11112-A-04**
Multiple base plate G1/8, for 6 valves	**PS11112-A-06**
Cover plate, complete	**PS11160-A**
Cable set straight (5 m)	**KC3104**
Cable set bended (5 m)	**KC3106**

Characteristics to VDI 3292			Pressures quoted as gauge pressures	
System			Piston-type pressure regulating valve, pilot operated, with pneumatic and electric feedback	
Type			**SRE-1/4**	**SRE-3/8**
Port size			**G1/4**	**G3/8**
Installation			In any position	
Weight (mass)		kg	0.6	
Medium and ambient temperature	T_{min} T_{max}	°C °C	0 +50	
Medium			Filtered, lubricated or oil-free compressed air	
Lubrication			Not required	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6.3	
Inlet pressure range [1]	p_{1min} p_{1max}	bar bar	0 10	
Outlet pressure range	p_{2min} p_{2max}	bar bar	0 10	
Nominal flow [2]	Q_N	l/min m³/h	**2200** **132**	**2500** **150**
Recommended flow [3]	Q	l/min m³/h	**550** **33**	**850** **51**
Hysteresis [4]	p_{2max}	%	<1	
Repeatability [4]	p_{2max}	%	<0.5	
Sensitivity [4]	p_{2max}	%	<0.5	
Linearity [4]	p_{2max}	%	<1	
Electrical Characteristics				
Nominal voltage	U_N	V DC	24 V = ± 10 %	
Residual ripple		%	10	
Power consumption	I_{Bmax}	A	0.15	
Set value input	U_W I	V mA	0 – 10 0 – 20, 4 – 20	
Input resistance	R_E	k	200	
Actual value output	U_X	V	0 – 10	
Output current	I_{Amax}	mA	20	
Electrical protection		IP	IP65 to DIN 40050, EN 60529	

[1] $p_1 \geq p_2 + 10\ \%\ p_2$
[2] at p_1 = 10 bar to p_2 = 6,3 bar
[3] at 6.3 bar and 25 m/s
[4] see explanation on page 3

For table of contents see 5.96.001E

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The right to introduce technical modifications is reserved

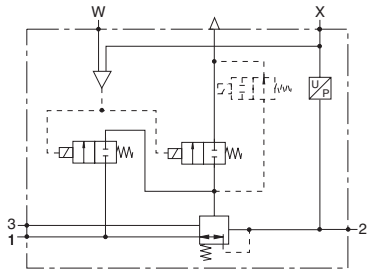
Pressure Regulating Valve

G1/4–G3/8

Electronically controlled (proportional pressure regulating valve)

airfit control

SRE-..



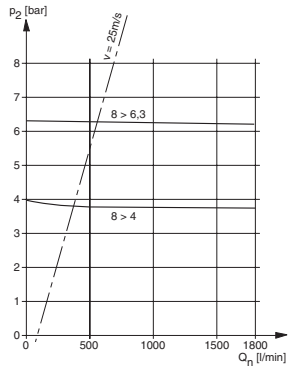
Special solutions (e.g. temperature, pressure, medium ...) on request



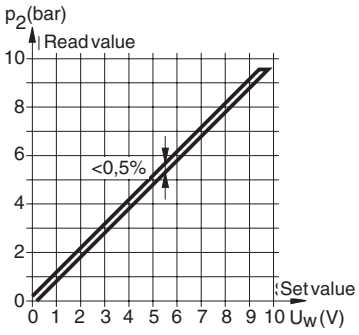
- Electronically controlled pressure regulating valve
- Remote controlled
- Control- and operating pressure from 0 bar
- Airfit design
- Direct coupling with airfit swing units
- No air consumption

HOERBIGER ORIGA

Flow Characteristics Type: SRE-1/4

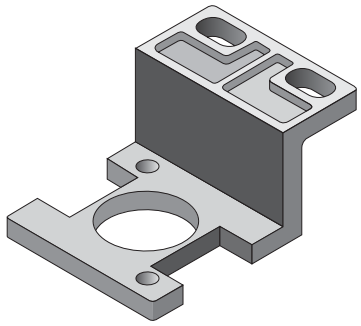


Output Pressure as Function of Input Voltage



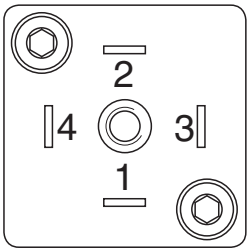
Accessories

Mounting kit



Order no.: PL 16965

Connection Diagram



Pin 1: Power supply
Plus +24 V DC ± 10%
0,15 A
Residual ripple 10%

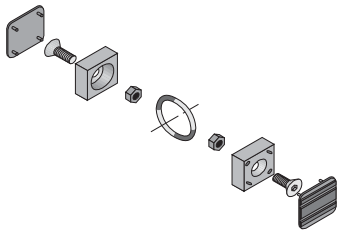
Pin 2: Power supply 0 V
Reference and mass capacity for set- and actual value

Pin 3: Set value input
Positive set value voltage (0-20 mA, 4-20 mA), 0 – 10 V

Pin 4: Analog actual value output. 0 – 10 V for units with 10 bar output pressure.
This output has a max. capacity of 20 mA. The signal voltage is compared to the reference capacity (pin 2)

Accessories

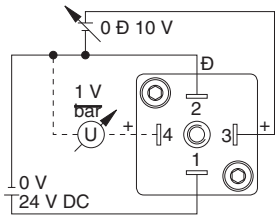
Coupling kit



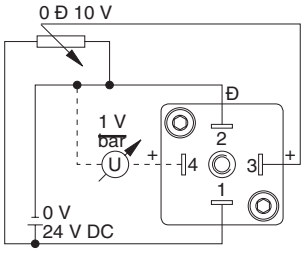
Order No.: PL 16959

Control Options

Analog voltage

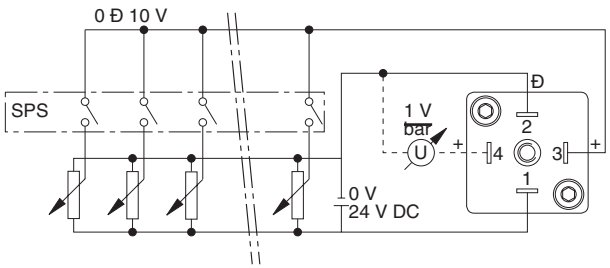


with a single potentiometer



The resistance of the potentiometer should range between 500 ý and 100 ký.

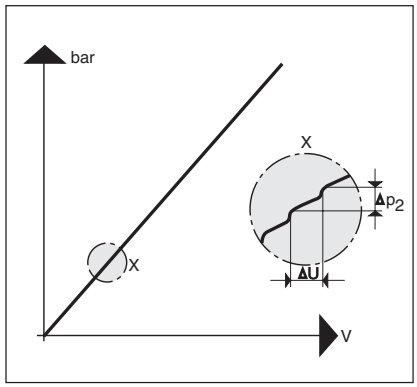
PLC in connection with several potentiometers



The total resistance of the potentiometer series should not be less than 500 ý.

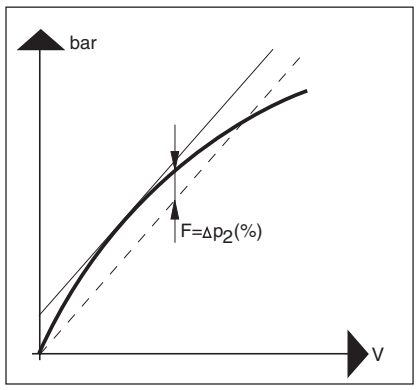
Sensitivity

The smallest deviation from set output pressure which leads to a change in actual output pressure is referred to as sensitivity and this is expressed as a percentage of maximum output pressure. Sensitivity of the XRE II valve is below 0.5%, which allows output pressure to be set very precisely.



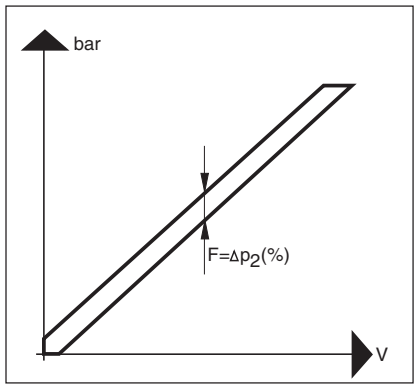
Linearity

The ideal curve showing output pressure in relation to electronic signal would be a straight (linear) line (see dotted line), to predict exactly which pressure can be expected at a given voltage. The deviation can be calculated from the maximal deviation from the straight line, in relation to the highest possible pressure.



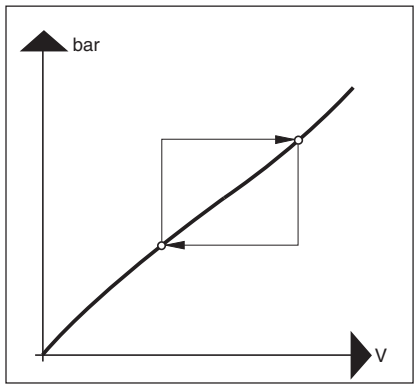
Hysteresis

The same set output pressure generates slightly different actual output pressures, depending on whether the previous setting was higher or lower. This difference, known as hysteresis, is caused by friction and temporary deformation of elastic components. The hysteresis of the SRE valve is below 0.1 bar.



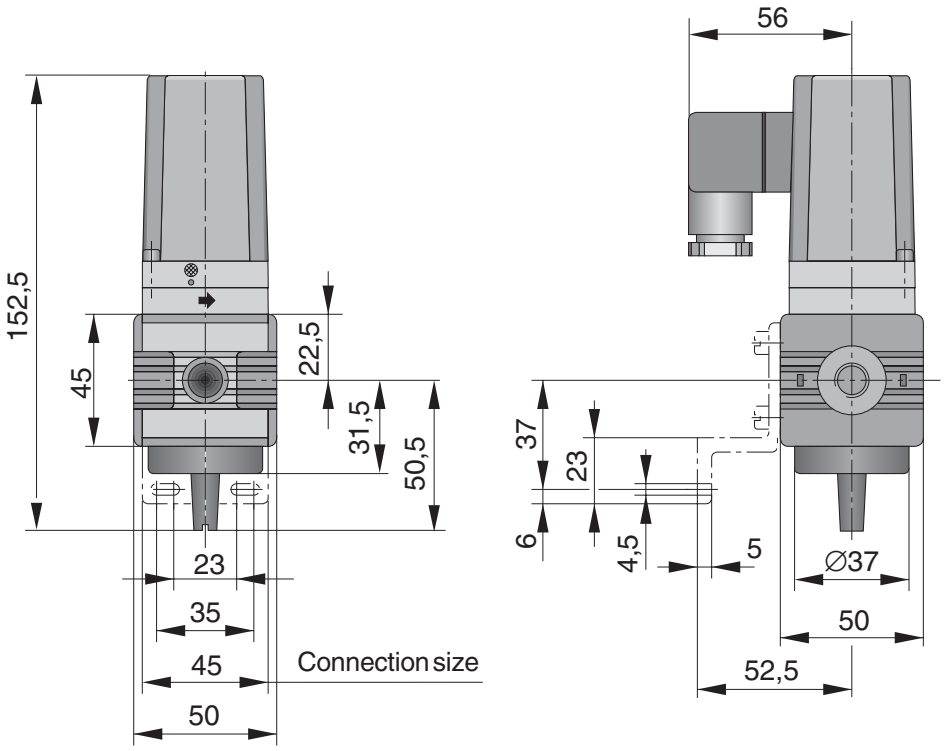
Repeatability

Control components, for a given set value, usually produce repeated actual values which differ less from each other than from the abolute set value, because the relatively large linearity deviation is excluded. Repeatability is improved if hysteresis is minimised.



Dimensions (mm)

Type: SRE-1/4



Order Instructions

Basic model for control 0– 10 V, NG (normally closed)			
Port size	max. output pressure (bar)	**Type**	**Order No.**
G1/4	10	**SRE-U-1/4 NG**	**PB 59849-000**
G3/8	10	**SRE-U-3/8 NG**	**PB 59949-000**
Version for control 4 – 20 mA, NG (normally closed)			
G1/4	10	**SRE-I-1/4 NG**	**PB 59849-002**
G3/8	10	**SRE-I-3/8 NG**	**PB 59949-002**
Version for control 0 – 20 mA, NG (normally closed)			
G1/4	10	**SRE-I-1/4 NG**	**PB 59849-001**
G3/8	10	**SRE-I-3/8 NG**	**PB 59949-001**
Version for control 0– 10 V, NO (normally open)			
G1/4	10	**SRE-U-1/4 NO**	**PB 59849-010**
G3/8	10	**SRE-U-3/8 NO**	**PB 59949-010**
Version for control 4 – 20 mA, NO (normally open)			
G1/4	10	**SRE-U-1/4 NO**	**PB 59849-012**
G3/8	10	**SRE-U-3/8 NO**	**PB 59949-012**
Version for control 0 – 20 mA, NO (normally open)			
G1/4	10	**SRE-U-1/4 NO**	**PB 59849-011**
G3/8	10	**SRE-U-3/8 NO**	**PB 59949-011**
For the version with NPTF thread, complete the Order No. as follows: PB ...49-... → PB ...49-N...			
Accessories			
Mounting kit			**PL 16965**

Characteristics to VDI 3292			Pressures quoted as gauge pressures	
System			Piston-type pressure regulating valve, pilot operated, with pneumatic and electric feedback	
Type			**CRE-3/8**	**CRE-1/2**
Port size			**G3/8**	**G1/2**
Installation			In any position	
Weight (mass)		kg	0.95	
Medium and ambient temperature	T_{min} T_{max}	°C °C	0 +50	
Medium			Filtered, lubricated or oil-free compressed air	
Lubrication			Not required	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6.3	
Inlet pressure range[1)]	p_{1min} p_{1max}	bar bar	0 16	
Outlet pressure range	p_{2min} p_{2max}	bar bar	0 10	
Nominal flow[2)]	Q_N	l/min m³/h	**4500** **270**	**6000** **360**
Recommended flow[3)]	Q	l/min m³/h	**850** **51**	**1900** **114**
Hysteresis[4)]	p_{2max}	%	<1	
Repeatability[4)]	p_{2max}	%	<0.5	
Sensitivity[4)]	p_{2max}	%	<0.5	
Linearity[4)]	p_{2max}	%	<1	
Electrical Characteristics				
Nominal voltage	U_N	V DC	24 V = ± 10 %	
Residual ripple		%	10	
Power consumption	I_{Bmax}	A	0.15	
Set value input	U_W I	V mA	0 – 10 (1V =1bar) 0 – 20, 4 – 20	
Input resistance	R_E	k	200	
Actual value output	U_X	V	0 – 10	
Output current	I_{Amax}	mA	20	
Electrical protection		IP	IP 65 acc. DIN 40050, EN 60529	

1) p1 ≥ p2 + 10 % p2
2) at p_1 = 10 bar to p_2 = 6.3 bar
3) at 6.3 bar and 25 m/s
4) see explanation on page 3

For table of contents see 5.96.001E

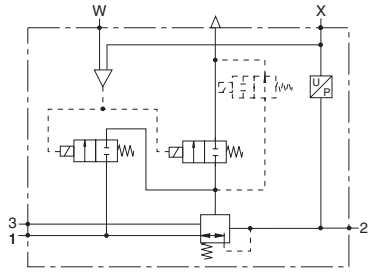
Pressure Regulating Valve

G3/8-G1/2

Electronically controlled (proportional pressure regulating valve)

airfit control

CRE



Special solutions (e.g. temperature, pressure, medium ...) on request

- Electronically controlled pressure regulating valve
- remote controlled
- Control- and operating pressure from 0 bar
- Airfit design
- Version with NPTF-thread
- no air consumption

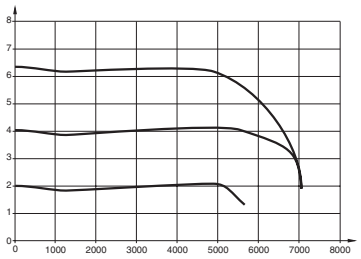


HOERBIGER ORIGA

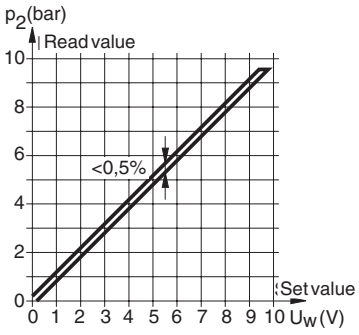
A1P666E00CAA00X

The right to introduce technical modifications is reserved

Flow Characteristics Type: CRE-1/2



Output Pressure as Function of Input Voltage



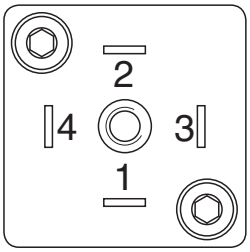
Accessories

Mounting kit



Order no.: PL 17518

Connection Diagram



Pin 1: Power supply
Plus +24 V DC ± 10%
0,15 A
Residual ripple 10%

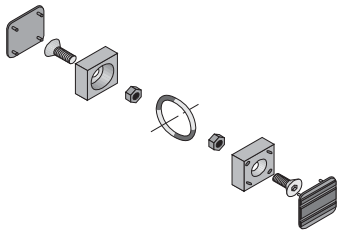
Pin 2: Power supply 0 V
Reference and mass capacity for set- and actual value

Pin 3: Set value input
Positive set value voltage of 0 – 10 V

Pin 4: Analog actual value output. 0 – 10 V for units with 10 bar output pressure.
This output has a max. capacity of 20 mA. The signal voltage is compared to the reference capacity (pin 2)

Accessories

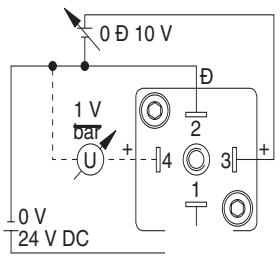
Coupling kit



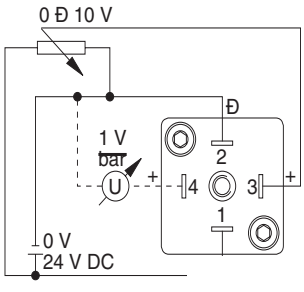
Order No.: PL 17608

Control Options

Analog voltage

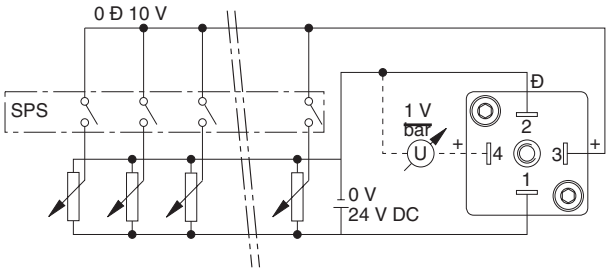


with a single potentiometer



The resistance of the potentiometer should range between 500 ý and 100 ký.

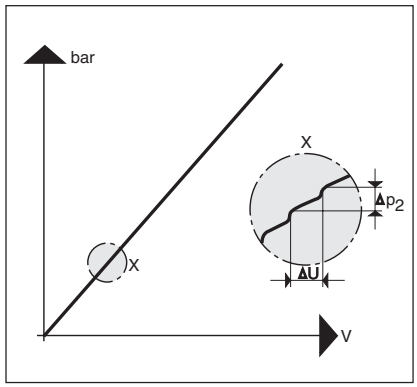
PLC in connection with several potentiometers



The total resistance of the potentiometer series should not be less than 500 ý.

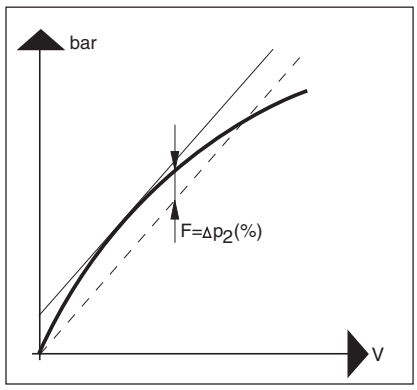
Sensitivity

The smallest deviation from set output pressure which leads to a change in actual output pressure is referred to as sensitivity and this is expressed as a percentage of maximum output pressure. Sensitivity of the CRE valve is below 0.5%, which allows output pressure to be set very precisely.



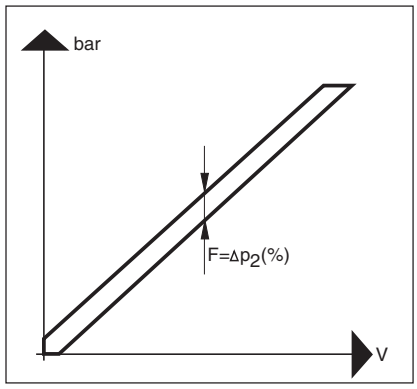
Linearity

The ideal curve showing output pressure in relation to electronic signal would be a straight (linear) line (see dotted line), to predict exactly which pressure can be expected at a given voltage. The deviation can be calculated from the maximal deviation from the straight line, in relation to the highest possible pressure.



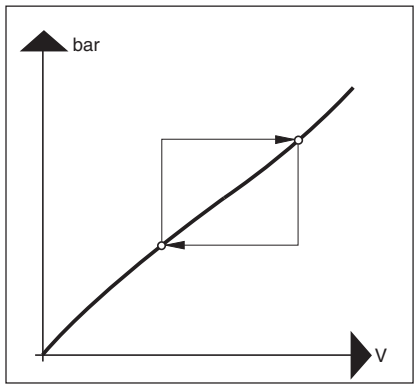
Hysteresis

The same set output pressure generates slightly different actual output pressures, depending on whether the previous setting was higher or lower. This difference, known as hysteresis, is caused by friction and temporary deformation of elastic components. The hysteresis of the CRE valve is below 0.1 bar.



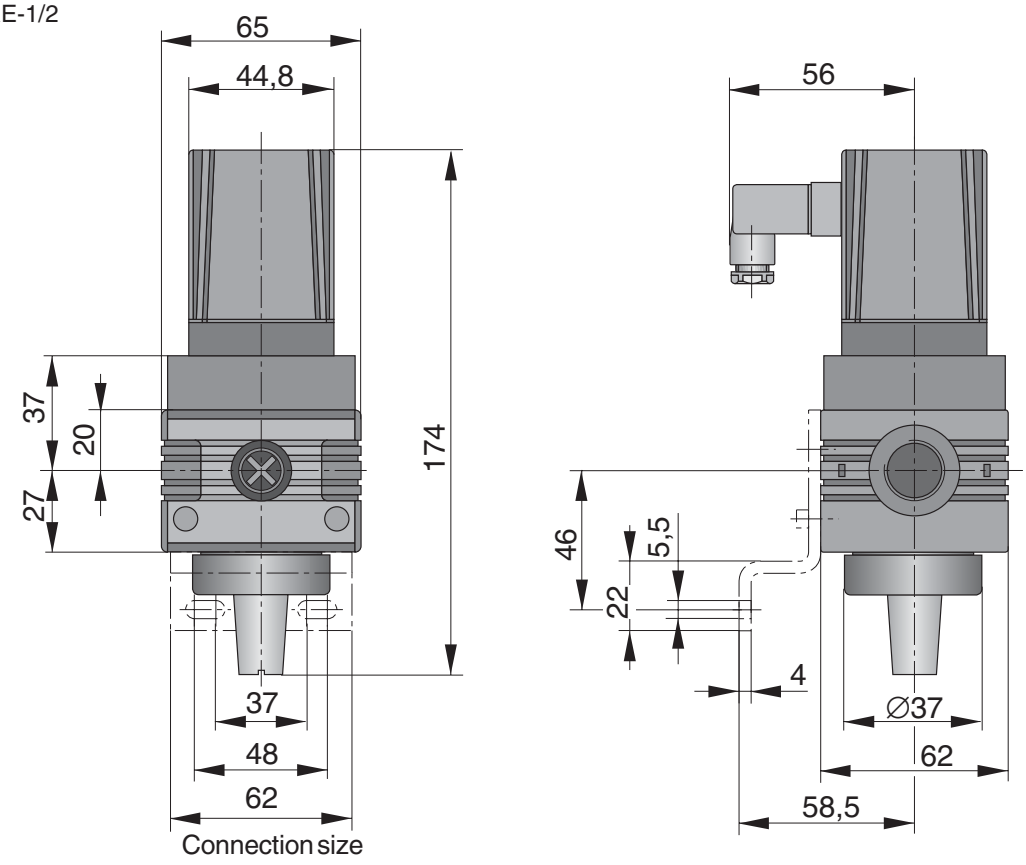
Repeatability

Control components, for a given set value, usually produce repeated actual values which differ less from each other than from the abolute set value, because the relatively large linearity deviation is excluded. Repeatability is improved if hysteresis is minimised.



Dimensions (mm)

Type: CRE-1/2

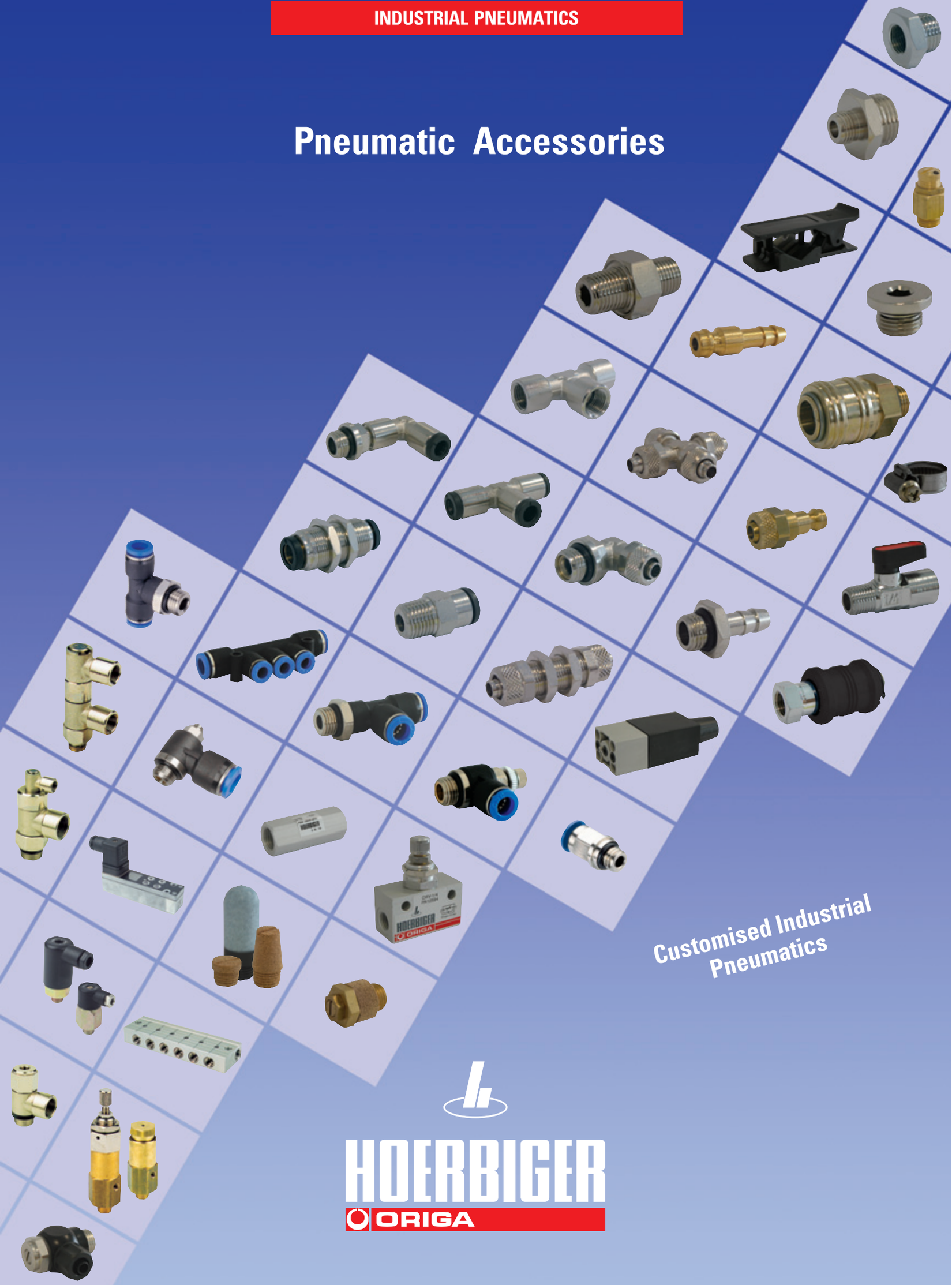


Order Instructions

Port size	max. output pressure (bar)	Type	Order No.
Basic model for control 0– 10 V, NG (normally closed)			
G3/8	10	**CRE-U-3/8 NG**	**PB 60149-000**
G1/2	10	**CRE-U-1/2 NG**	**PB 60249-000**
Version for control 4 – 20 mA, NG (normally closed)			
G3/8	10	**CRE-I-3/8 NG**	**PB 60149-002**
G1/2	10	**CRE-I-1/2 NG**	**PB 60249-002**
Version for control 0 – 20 mA, NG (normally closed)			
G3/8	10	**CRE-I-3/8 NG**	**PB 60149-001**
G1/2	10	**CRE-I-1/2 NG**	**PB 60249-001**
Version for control 0– 10 V, NO (normally open)			
G3/8	10	**CRE-U-3/8 NO**	**PB 60149-010**
G1/2	10	**CRE-U-1/2 NO**	**PB 60249-010**
Version for control 4 – 20 mA, NO (normally open)			
G3/8	10	**CRE-U-3/8 NO**	**PB 60149-012**
G1/2	10	**CRE-U-1/2 NO**	**PB 60249-010**
Version for control 0 – 20 mA, NO (normally open)			
G3/8	10	**CRE-U-3/8 NO**	**PB 60149-011**
G1/2	10	**CRE-U-1/2 NO**	**PB 60249-010**
Accessories			
Mounting kit			**PL 17518**
Coupling kit			**PL 17608**

INDUSTRIAL PNEUMATICS

Pneumatic Accessories



Customised Industrial Pneumatics

HOERBIGER

ORIGA

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Check Valves

- Check valves, in-line
- Quick exhaust valves
- Throttle check valves, in-line
- Check valves, screw-in
- Throttle check valves, screw-in

- Metal version
- Plastic version



Check Valves Series RV

Check Valves G1/8, G1/4



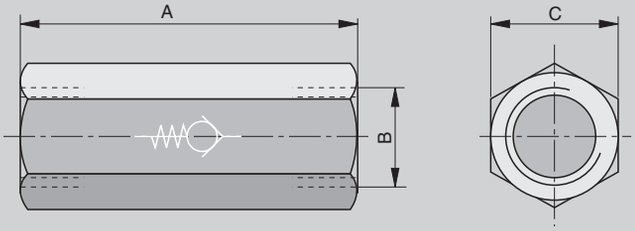


RV series check valves are designed for continuous flow (not suitable for pulsating flow).

Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General features				
Type			Spring loaded check valve	
Mounting			Directly in tubing	
Tube connection			Thread	
Port size			G1/8	G1/4
Weight (mass)		kg	0.02	0.02
Installation			In any position	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing point (0 °C)
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +80	it is necessary to consult us
Medium			Filtered compressed air, gases, fluids	
Lubrication			Oil mist lubrication compatible with Buna N	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10	
Nominal flow	Q_N	l/min	700	1000
Flow direction			In one direction	
Differential pressure for opening		bar	<0.5	

Dimensions



Dimension Table and Order Instructions

Order Instructions Type	Order No.	A	B	C
RV-06	**PA10024**	40	G1/8	SW17
RV-08	**PA12007**	45	G1/4	SW17

Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description					
General features								
Type			Spring loaded check valve					
Mounting			Directly in tubing					
Tube connection			Thread					
Port size			G3/8	G1/2	G3/4	G1	G11/4	G11/2
Weight (mass)		kg	0.18	0.19	0.27	0.49	0.74	0.98
Installation			In any position					
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing point (0 °C) it is necessary to consult us				
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +110					
Medium			Filtered compressed air, cold and warm water, various oils					
Lubrication			Oil mist lubrication compatible with Buna N					
Material			Housing: brass Valve disc and guide: brass Seal/spring interface dish: stainless CrNi steel Spring: stainless CrNi steel Valve seal disc: special synthetic rubber composition					
Pneumatic Characteristics								
Nominal pressure	p_n	bar	6					
Operating pressure range	p_{min} p_{max}	bar bar	0.2 18					
Nominal flow rate	Q_N	l/min	3400	4335	7585	12500	20835	33335
Flow direction			In one direction					
Differential pressure for opening		bar	0.2					

Check Valves G3/8 – G11/2

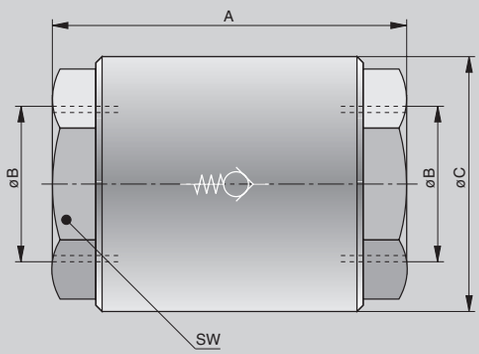




RV9 series check valves are designed for contiuous flow (not suitable for pulsating flow).

Suitable for:
– 100% oxygen
– natural gas
– vacuum

Dimensions



Dimension Table and Order Instructions

Order Instructions Type*	Order No.	A	B	C	SW
RV9-10	**PD 36114**	54	G3/8x10 deep	34	23
RV9-15	**PD 36335**	57	G1/2x10 deep	34	27
RV9-20	**PD 36336**	64	G3/4x10 deep	41	33
RV9-25	**PD 36337**	75	G1x12 deep	48	40
RV9-32	**PD 36338**	82	G11/4x12 deep	60	50
RV9-40	**PD 36339**	93	G11/2x14 deep	71	55

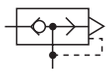
* other sizes on request

Dimensions in mm

Quick Exhaust Valves Series SV

Quick Exhaust Valves G1/8 – G3/4

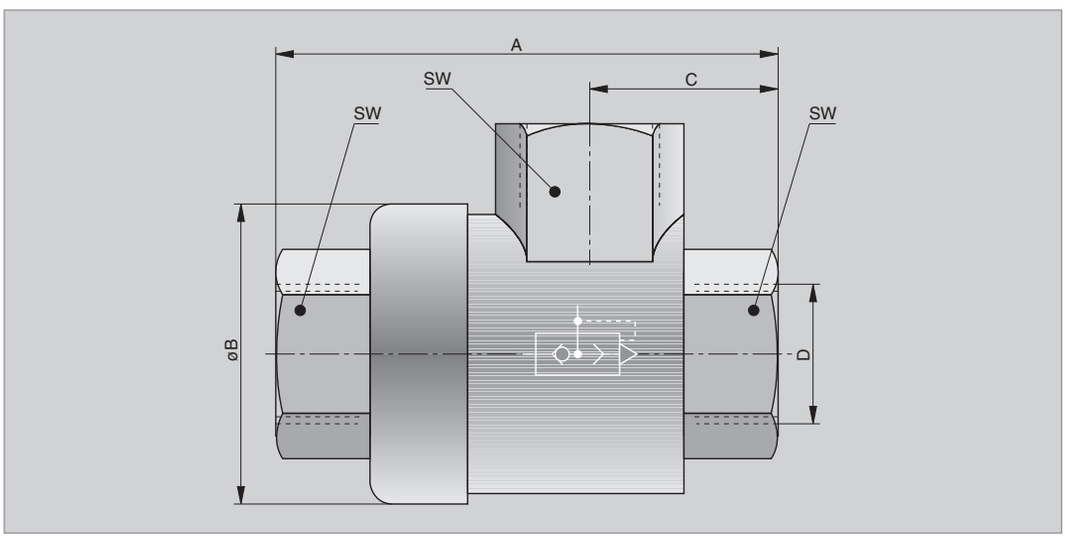




Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description			
General Features						
Type			Poppet valve			
Mounting			Directly in tubing			
Tube connection			Thread			
Port size			G1/8	G1/4	G1/2	G3/4
Weight (mass)		kg	0.088	0.143	0.334	0.790
Installation			In any position			
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +80	Note: When using below freezing point (0 °C)		
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +80	it is necessary to consult us		
Medium			Filtered compressed air			
Lubrication			Oil mist lubrication compatible with Buna N			
Pneumatic Characteristics						
Nominal pressure	p_n	bar	6			
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10			
Nominal flow A→R	Q_N	l/min	800	1670	4500	10750

Dimensions



Dimension Table, Weight and Order Instructions

Order Instructions Type	Order No.	A	B	C	D	SW	Weight (mass) (kg)
SV-06-2	**PD39152**	42	Ø 27.5	15	G1/8	15	0.088
SV-08-2	**PD39153**	54	Ø 33	19	G1/4	19	0.143
SV-10-2	**PD39154**	54	Ø 33	19	G3/8	19	0.140
SV-15-2	**PD39155**	72	Ø 43	27	G1/2	26	0.334
SV-20-2	**PD39156**	87	Ø 49	35,5	G3/4	32	0.790

Throttle Check Valves Series DRV

Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description				
General Features							
Type			Throttle valve with parallel check valve				
Mounting			Directly in tubing 2 through-bolts panel mounting				
Tube connection			Thread				
Port size			M5	G1/8	G1/4	G3/8	G1/2
Weight (mass)		kg	0.020	0.035	0.130	0.225	0.245
Installation			In any position				
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing point (0 °C)			
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +80	it is necessary to consult us			
Medium			Filtered compressed air, lubricated or unlubricated				
Lubrication			Oil mist lubrication compatible with Buna N				
Pneumatic Characteristics							
Nominal pressure	p_n	bar	6				
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10				
Nominal flow [1] (Throttle valve)	Q_N	l/min	80	125	450	1100	1200
Nominal flow [2] (Check valve)	Q_N	l/min	80	125	450	1100	1200
Differential pressure for opening the check valve		bar	<0.5				

[1]) If the throttle is completely open
[2]) If the throttle is completely closed

Throttle Check Valves M5 – G1/2



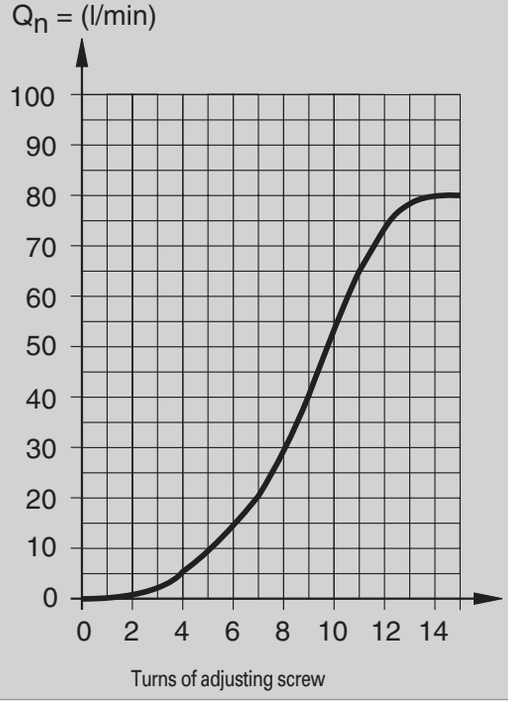


Important:
Please note the flow direction

1 ⟶ 2 throttled

2 ⟶ 1 free exhaust

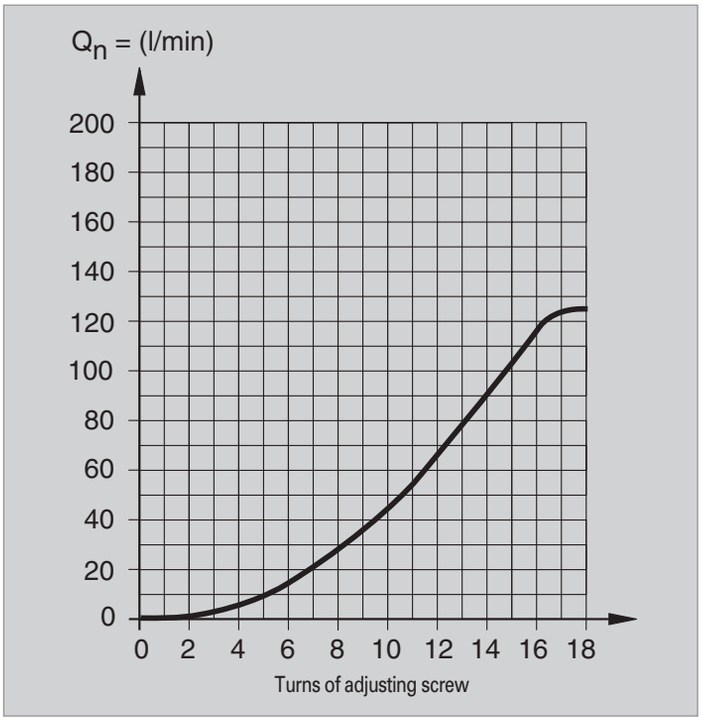
Flow Characteristics Type: DRV-M5



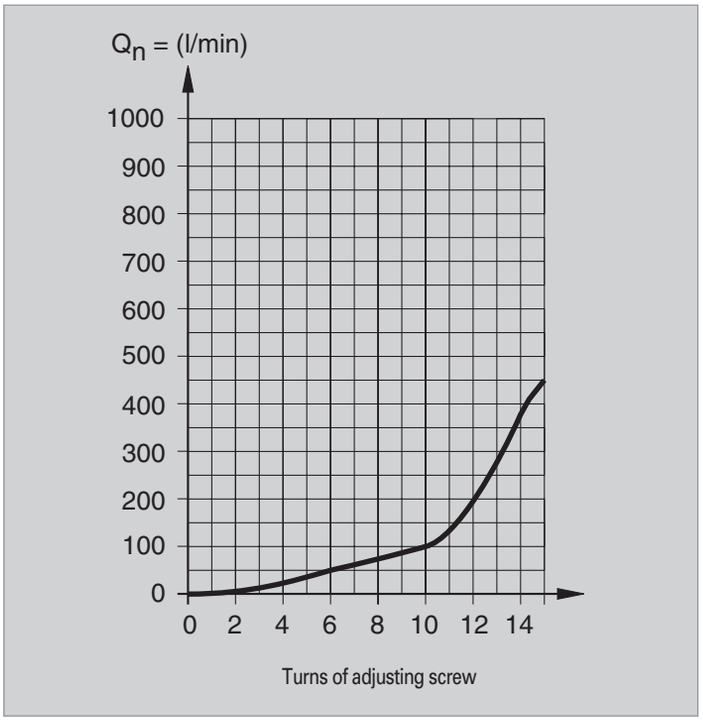
Dimensions in mm

Throttle Check Valves Series DRV

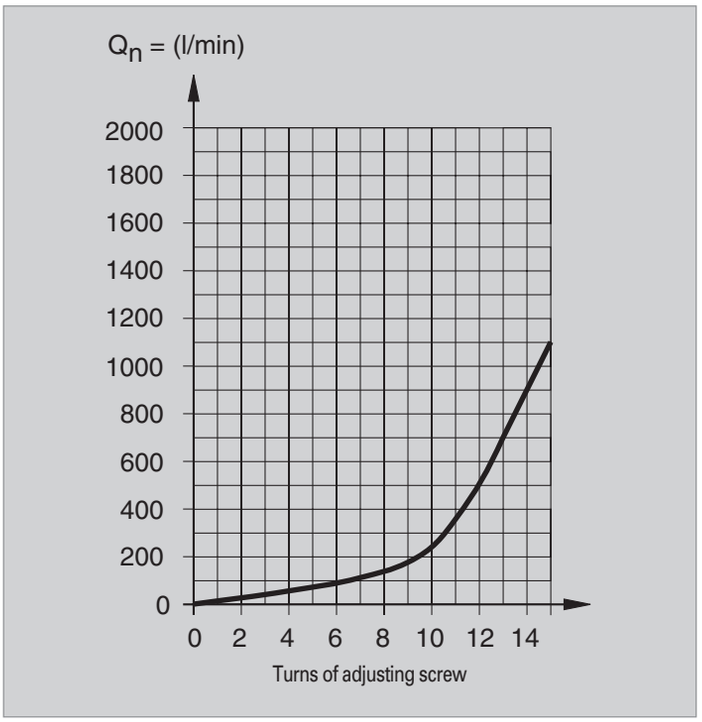
Flow Characteristics Type: DRV-1/8



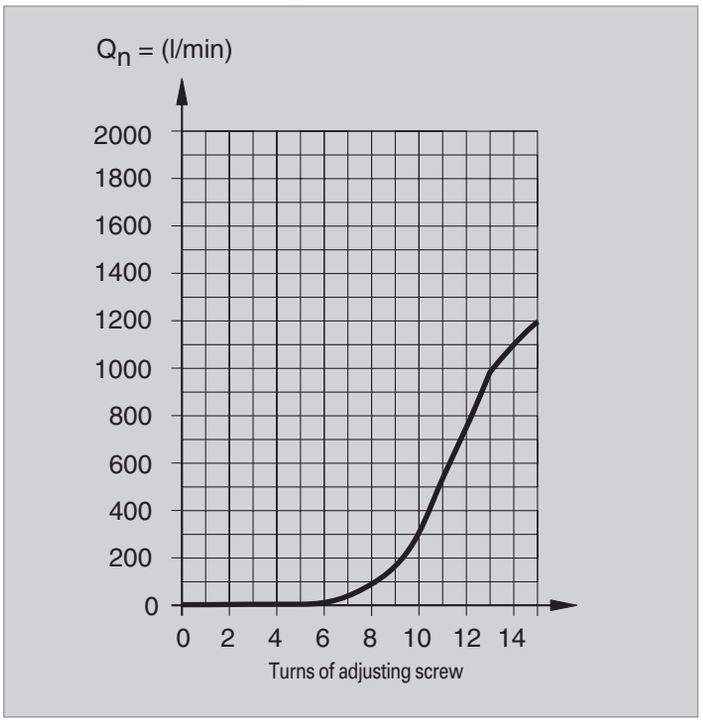
Flow Characteristics Type: DRV-1/4



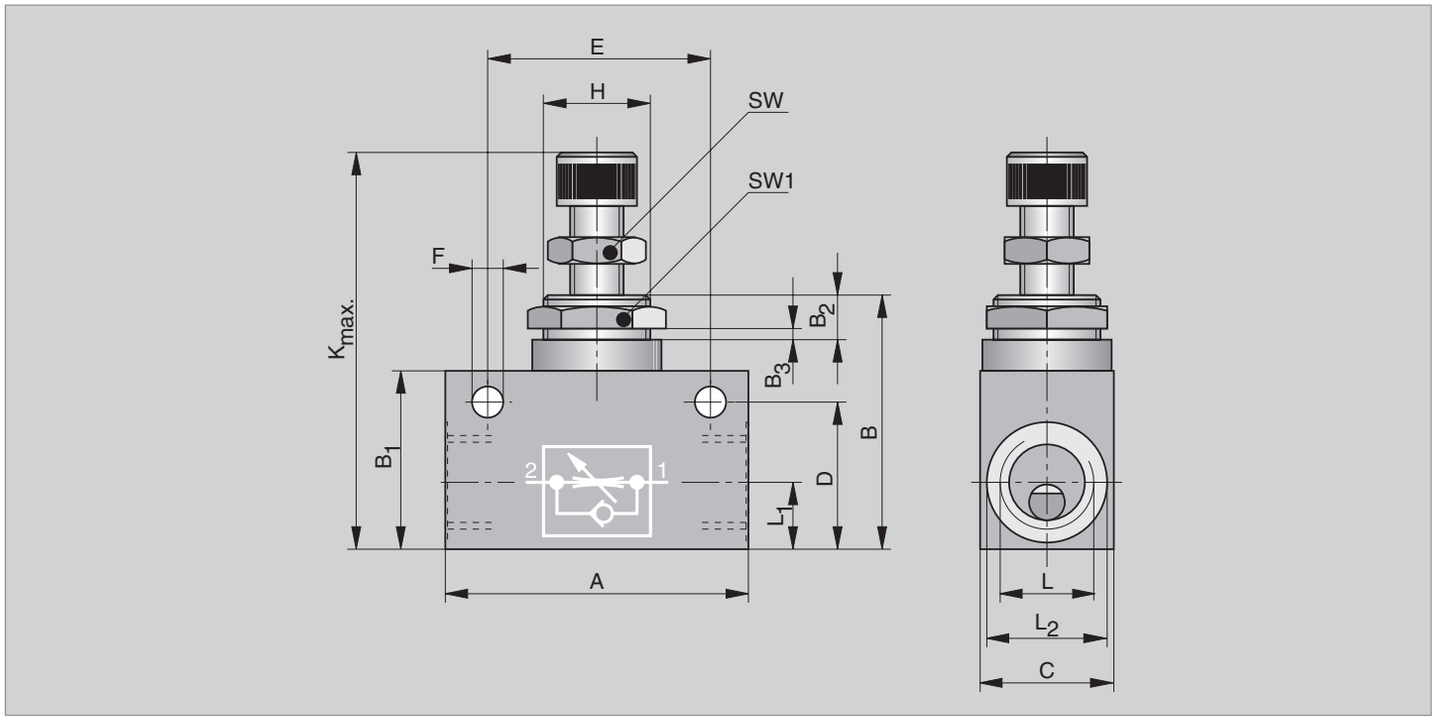
Flow Characteristics Type: DRV-3/8



Flow Characteristics Type: DRV-1/2



Dimensions



Dimension Table and Order Instructions

Order Instructions Type	Order No.	A	B	B_1	B_2	B_3	C	D	E	ØF	H	L	L1	ØL_2	K_{max}	SW	SW_1
DRV-M5	**PA 10232**	26	26.5	16	6	2.5	14	12.5	18	4.4	M10x1	M5	5.5	8.5	44	7	14
DRV-1/8	**PA 10233**	32.5	31.5	22	6	2.5	16	17.5	24	4.4	M12x1	G1/8	9	13.5	52	10	17
DRV-1/4	**PA 12594**	55	48	32	10	4.5	25	25	35	6.5	M20x1.5	G1/4	12	19	72	13	22
DRV-3/8	**PA 16143**	58	57	40	10	5.0	30	33	43	6.5	M24x1.5	G3/8	13.5	23	92	19	27
DRV-1/2	**PA 16144**	68	57	40	10	5.0	30	33	50	6.5	M24x1.5	G1/2	15	27.5	92	19	27

Dimensions in mm

Throttle Check Valves, Plastic, Series DRV

Throttle Check Valves, Plastic, with push-in connections





Important:
Please note the flow direction

1 ⟶ 2 throttled

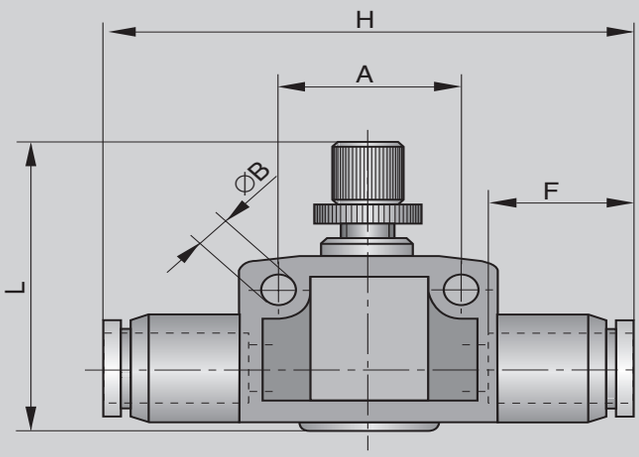
2 ⟶ 1 free exhaust

Characteristics Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description				
General features							
Tube connection			Push-in connections				
Tube diameter	ØDA	mm	4	6	8	10	12
Installation			In any position				
Ambient and medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +60	Note: When using below freezing point (0 °C) it is necessary to consult us			
Material			Housing – aluminium/plastic Throttle spindle– brass, anodized Seals – Buna N				
Pneumatic Characteristics							
Nominal pressure	p_n	bar	6				
Operating pressure range	p_{min} p_{max}	bar bar	0 10				
Nominal flow [1] (throttle valve)	Q_N	l/min	117	183	300	467	767
Nominal flow [2] (check valve)	Q_N	l/min	234	366	600	934	1534

[1]) If the throttle is completely open
[2]) If the throttle is completely closed

Dimensions



Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube Ø OD	L_{max}	A	Ø B	F	H
DRV-4MsvKU	**KT0447**	4	29.9	15	3.3	16.8	45.1
DRV-6MsvKU	**KT0448**	6	35.0	20	4.3	17.6	50.3
DRV-8MsvKU	**KT0449**	8	37.4	23	4.4	18.7	55.7
DRV-10MsvKU	**KT0450**	10	43.8	28	4.4	19.6	61.2
DRV-12MsvKU	**KT0451**	12	47.4	32	4.4	21.9	69.8

Check Valves Series ERV

Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description
General features			
Type			Spring loaded check valve with cone-shaped seal element and elastic seal
Connections			Port 1: internal thread to IS0 228, push-in fitting Port 2: external thread to ISO 228 Port 12: M5, G1/8 internal
Port sizes			See dimension table
Weight (mass)		kg	See table
Installation			In any position – rings can be rotated 360° after the valve has been installed
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +60 — Note: When using below freezing point (0 °C), please consult our technical department
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +60
Medium			Filtered compressed air, neutral gases *
Lubrication			With or without oil mist lubrication [1]
Material			Metal parts: nickel-plated brass or stainless steel Springs: stainless steel Seals: Buna N (NBR) Sealing ring: Polyamide
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	p_{min} p_{max}	bar bar	0.3 10
Nominal flow rate	Q_N	l/min	See table
Actuation:			
pneumatic			Direct
Actuation pressure range	p_{st}	bar	See diagram

* other media on request

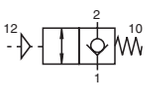
[1] We recommend the use of mineral oil type VG32 to ISO 3448

Nominal Flow Rate, Tightening Torque, Opening Pressure, Weight (mass)

Port Size	DN [mm]	$Q_N 1 \rightarrow 2$ [l/min]	$Q_N 2 \rightarrow 1$ [l/min]	Max. Tightening Torque [Nm]	p_{min} 2→1 [bar]	Weight mass [kg]
G1/8	3.0	220	280	1.2	0.2	0.068 – no hollow screw 0.048 – with thread G1/8 0.048 – fitting ø 6
G1/4	4.4	340	460	1.8	0.2	0.050 – no hollow screw 0.075 – with thread G1/4 0.075 – fitting ø 6 0.082 – fitting ø 8
G3/8	5.7	700	910	3.5	0.2	0.150 – with thread G3/8 0.145 – fitting ø 8 0.155 – fitting ø 10
G1/2	8.8	1450	1660	4.0	0.15	0.210 – with thread G1/2 0.240 – fitting ø 12

Screw-in Check Valves G1/8 – G1/2



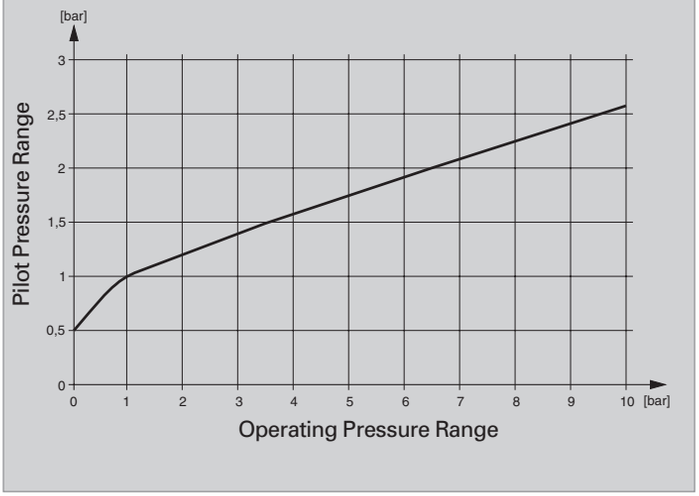


Actuation:
pneumatic deblocking

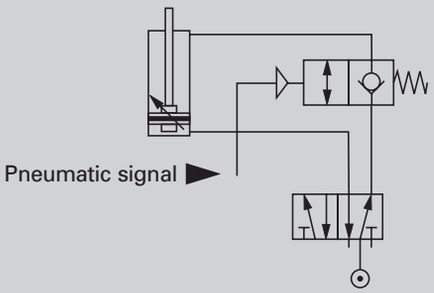
Dimensions in mm

Check Valves Series ERV

Pilot Pressure in Relation to Operating Pressure

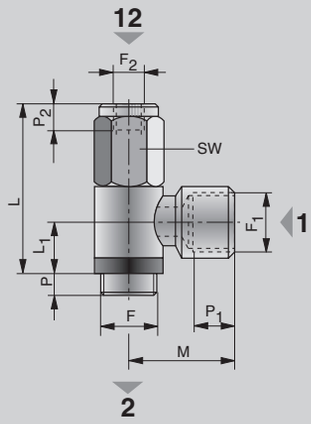


Example of Control System

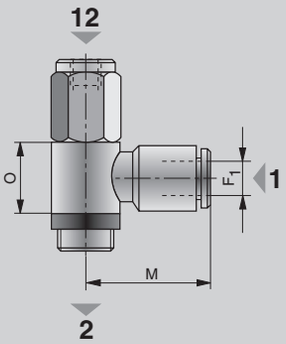


Dimensions

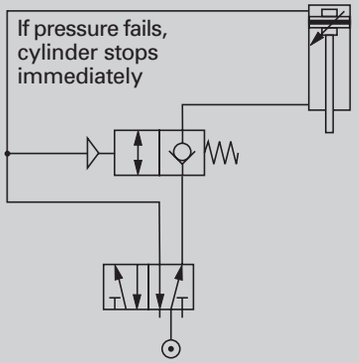
Version with internal thread



Version with push-in fitting



Example of Control System with Vertical Load



Dimension Table and Order Instructions

F	F_1	F_2	L	L_1	M	O*	P	P_1	P_2	SW	Order Instructions	
											Type	Order No.
G1/8	G1/8	M5	37.5	12.5	21	15	6.5	7	6	14	**ERV-1/8**	**KL4077**
G1/8	ø 6	M5	37.5	12.5	25	15	6.5	–	6	14	**ERV-1/8**	**KL4078**
G1/4	G1/4	G1/8	42.5	13.5	25	17	7	8	7	17	**ERV-1/4**	**KL4080**
G1/4	ø 6	G1/8	42.5	13.5	27.5	17	7	–	7	17	**ERV-1/4**	**KL4081**
G1/4	ø 8	G1/8	42.5	13.5	32	17	7	–	7	17	**ERV-1/4**	**KL4082**
G3/8	G3/8	G1/8	46	15	31	20	9	10	7	19	**ERV-3/8**	**KL4083**
G3/8	ø 8	G1/8	46	15	31.5	20	9	–	7	19	**ERV-3/8**	**KL4084**
G3/8	ø 10	G1/8	46	15	36	20	9	–	7	19	**ERV-3/8**	**KL4085**
G1/2	G1/2	G1/8	51.5	17	40	24	10	14	7	24	**ERV-1/2**	**KL4086**
G1/2	ø 12	G1/8	51.5	17	40.5	24	10	–	7	24	**ERV-1/2**	**KL4087**

Throttle Check Valves Series EDRV

Characteristics according to VDI 3291 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
Type			Spring loaded throttle check valve	
Mounting			Screw-in valve	
Tube connection			Thread	
Port size			G1/8	G1/4
Weight (mass)		kg	0.03	0.04
Installation			In any position	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +60	Note: When using below freezing point (0 °C)
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +60	it is necessary to consult us
Medium			Filtered compressed air	
Lubrication			Oil mist lubrication compatible with Buna N	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10	
Nominal flow rate, throttle valve (throttle completely open)	Q_N	l/min	250	400
Nominal flow rate, check valve (throttle completely closed)	Q_N	l/min	350	450

Screw-in Throttle Check Valves G1/8, G1/4

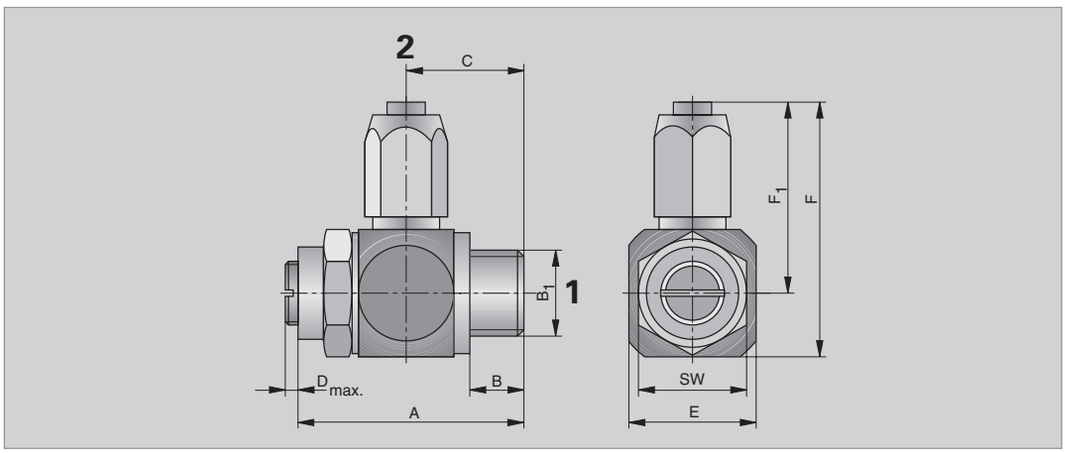


for air outlet throttling



Speed Regulating Valve
This valve is used for regulating the piston speed of pneumatic cylinders.

Dimensions



Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube ØOD/ID	A	B	B_1	C	D_{max}	E	F	F_1	SW
EDRV-06-5/3	**PA 10018**	5/3	34	8	G1/8	16.5	1	16	18.5	26.5	14
EDRV-06-6/4	**PA 10019**	6/4	34	8	G1/8	16.5	1	16	21.5	29.5	14
EDRV-06-8/6	**PA 10020**	8/6	34	8	G1/8	16.5	1	16	22.5	30.5	14
EDRV-08-6/4	**PA 12001**	6/4	38	10.5	G1/4	19	1.2	20	23	33	17
EDRV-08-8/6	**PA 12002**	8/6	38	10.5	G1/4	19	1.2	20	24	34	17
EDRV-08-10/8	**PA 12003**	10/8	38	10.5	G1/4	19	1.2	20	26	36	17

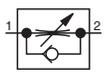
Dimensions in mm

Screw-in Throttle Check Valves M5 – G1/4





for air outlet throttling



for air inlet throttling

Characteristics according to VDI 3293 Pressures quoted as gauge pressure

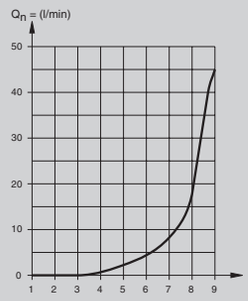
Characteristics	Symbol	Unit	Description		
General Features					
Type			Spring loaded throttle check valve		
Mounting			Screw-in valve		
Tube connection			Thread		
Port size			M5	G1/8	G1/4
Weight (mass)		kg	0.019	0.042	0.083
Installation			In any position		
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing point (0 °C)	
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	it is necessary to consult us	
Medium			Filtered compressed air		
Lubrication			Oil mist lubrication compatible with Buna N		
Pneumatic Characteristics					
Nominal pressure	p_n	bar	6		
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10		
Nominal flow rate, throttle valve (throttle completely open)	Q_N	l/min	45	200	450
Nominal flow rate, check valve (throttle completely closed)	Q_N	l/min	30	140	380

– with tube connection
– for air inlet and air outlet throttling

This valve is used for regulating the piston speed of pneumatic cylinders.

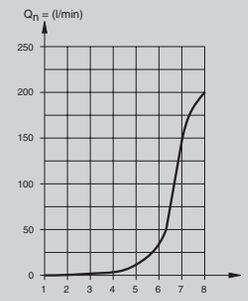
Flow Characteristics Type: EDRV/SEDRV-M5

Tube Ø ID 3 mm



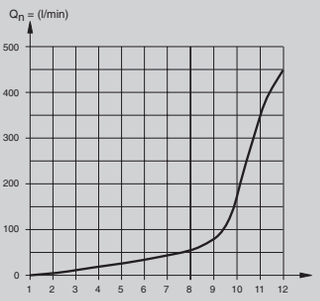
Flow Characteristics Type: EDRV/SEDRV-G1/8

Tube Ø ID 6 mm



Flow Characteristics Type: EDRV/SEDRV-G1/4

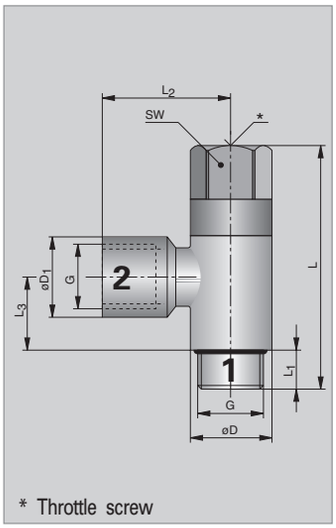
Tube Ø ID 8 mm



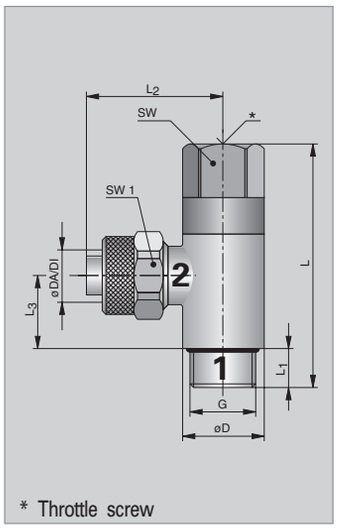
Versions for air inlet throttling



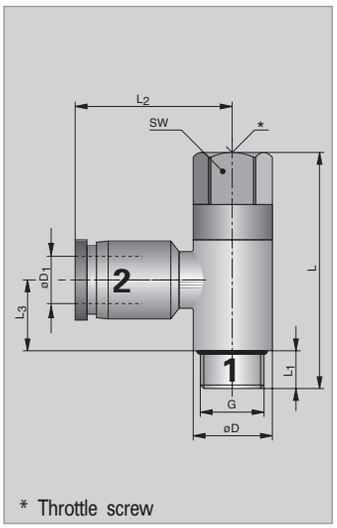
Screw-in Throttle Check Valves Type: EDRV-....BI



Screw-in Throttle Check Valves Type: EDRV-....B



Screw-in Throttle Check Valves Type: SEDRV-....B



Screw-in Throttle Check Valves with push-in fittings – Type SEDRV-....B
Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube ØOD	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
SEDRV-184B	**KW0530**	4	G1/8	12	-	14	11	37	7	25	11.5
SEDRV-185B	**KW0531**	5	G1/8	12	-	14	12	37	7	25	11.5
SEDRV-186B	**KW0532**	6	G1/8	12	-	14	13	37	7	26	11.5
SEDRV-146B	**KW0533**	6	G1/4	16	-	18	13	50	9	28	15
SEDRV-188B	**KW0534**	8	G1/8	12	-	14	15	37	7	31	11.5
SEDRV-148B	**KW0535**	8	G1/4	16	-	18	15	50	9	31	15
SEDRV-1410B	**KW0536**	10	G1/4	16	-	18	18	50	9	36	15

Screw-in Throttle Check Valves with union nut – Type EDRV-....B
Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube ØDA/DI*	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
EDRV-184B	**KW0539**	4/2	G1/8	12	10	14	-	37	6	28	11.5
EDRV-185B	**KW0540**	5/3	G1/8	12	10	14	-	37	6	28	11.5
EDRV-186B	**KW0541**	6/4	G1/8	12	12	14	-	37	6	27.5	11.5
EDRV-146B	**KW0542**	6/4	G1/4	16	12	18	-	50	8	30	15
EDRV-188B	**KW0543**	8/6	G1/8	12	14	14	-	37	6	28	11.5
EDRV-148B	**KW0544**	8/6	G1/4	16	14	18	-	50	8	31	15
EDRV-1410B	**KW0545**	10/8	G1/4	16	16	18	-	50	8	29.5	15

Screw-in Throttle Check Valves with internal thread – Type EDRV-....BI
Dimension Table and Order Instructions

Order Instructions Type	Order No.	Internal Thread D1	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
EDRV-1818BI	**KW0537**	G1/8	G1/8	12	-	14	13.5	37	7	20.5	11.5
EDRV-1414BI	**KW0538**	G1/4	G1/4	16	-	18	17	50	8	29.5	15

* = Tube ØOD/ID

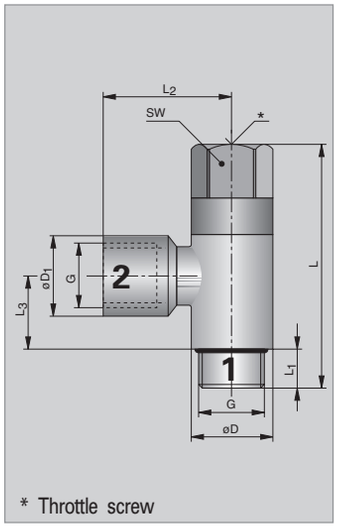
Dimensions in mm

Throttle Check Valves Series EDRV, SEDRV

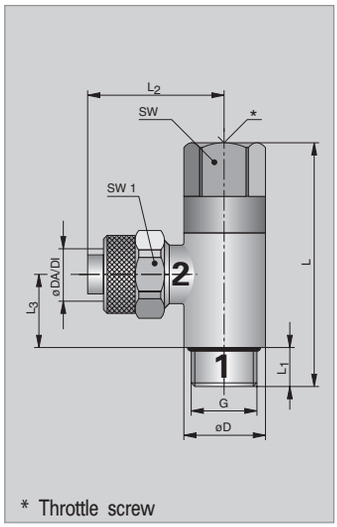
Versions for air outlet throttling



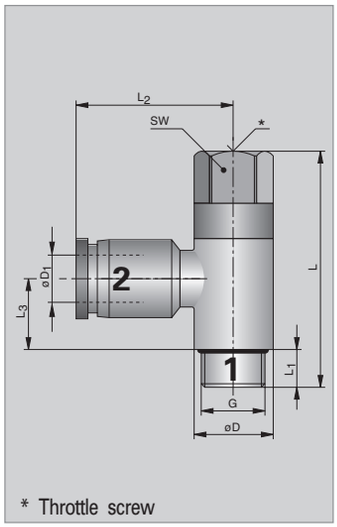
Screw-in Throttle Check Valves Type: EDRV-....AI



Screw-in Throttle Check Valves Type: EDRV-....A



Screw-in Throttle Check Valves Type: SEDRV-....A



Screw-in Throttle Check Valves with push-in fittings – Type SEDRV-....A
Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube ØOD	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
SEDRV-54A	**KW0511**	4	M5	9	-	10	10	28	5	24	5.5
SEDRV-184A	**KW0512**	4	G1/8	12	-	14	11	37	7	25	11.5
SEDRV-55A	**KW0513**	5	M5	9	-	10	11	28	5	25	5.5
SEDRV-185A	**KW0514**	5	G1/8	12	-	14	12	37	7	25	11.5
SEDRV-186A	**KW0515**	6	G1/8	12	-	14	13	37	7	26	11.5
SEDRV-146A	**KW0516**	6	G1/4	16	-	18	13	50	9	28	15
SEDRV-188A	**KW0517**	8	G1/8	12	-	14	15	37	7	31	11.5
SEDRV-148A	**KW0518**	8	G1/4	16	-	18	15	50	9	31	15
SEDRV-1410A	**KW0519**	10	G1/4	16	-	18	18	50	9	36	15

Screw-in Throttle Check Valves with union nut – Type EDRV-....A
Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube ØDA/DI*	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
EDRV-54A	**KW0522**	4/2	M5	9	9	10	-	28	4.5	23.5	6
EDRV-184A	**KW0523**	4/2	G1/8	12	10	14	-	37	6	28	11.5
EDRV-185A	**KW0524**	5/3	G1/8	12	10	14	-	37	6	28	11.5
EDRV-186A	**KW0525**	6/4	G1/8	12	12	14	-	37	6	27.5	11.5
EDRV-146A	**KW0526**	6/4	G1/4	16	12	18	-	50	8	30	15
EDRV-188A	**KW0527**	8/6	G1/8	12	14	14	-	37	6	28	11.5
EDRV-148A	**KW0528**	8/6	G1/4	16	14	18	-	50	8	31	15
EDRV-1410A	**KW0529**	10/8	G1/4	16	16	18	-	50	8	29.5	15

Screw-in Throttle Check Valves with internal thread – Type EDRV-....AI
Dimension Table and Order Instructions

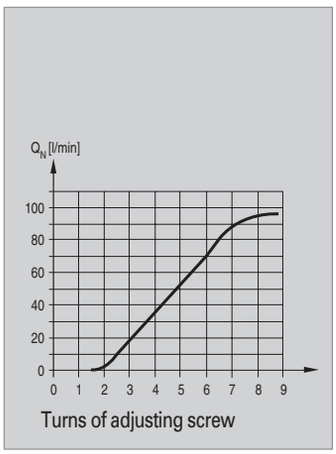
Order Instructions Type	Order No.	Internal thread D1	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
EDRV-1818AI	**KW0520**	G1/8	G1/8	12	-	14	13.5	37	7	20.5	11.5
EDRV-1414AI	**KW0521**	G1/4	G1/4	16	-	18	17	50	8	29.5	15

* = Tube ØOD/ID

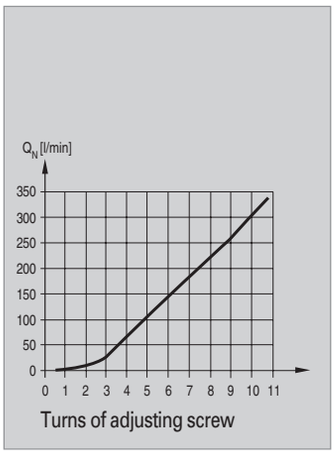
Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
Type			Spring loaded throttle check valve	
Mounting			Screw-in valve	
Tube connection			Thread	
Installation			In any position	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing point (0 °C)
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	it is necessary to consult us
Medium			Filtered compressed air	
Lubrication			Oil mist lubrication compatible with Buna N	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10	

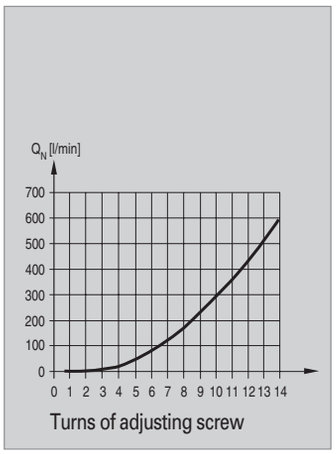
Flow Characteristics M5



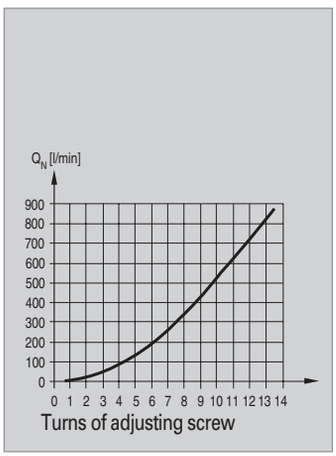
Flow Characteristics G1/8



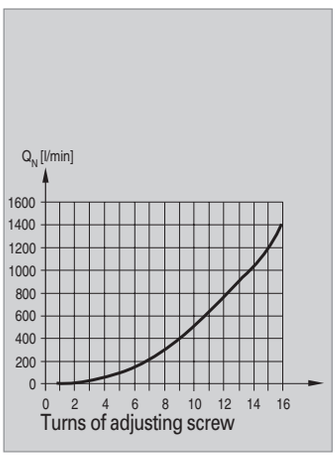
Flow Characteristics G1/4



Flow Characteristics G3/8



Flow Characteristics G1/2



Screw-in Throttle Check Valves M5 – G1/2





for air outlet throttling



for air inlet throttling

- **with tube connection**
- **for air inlet and air outlet throttling**

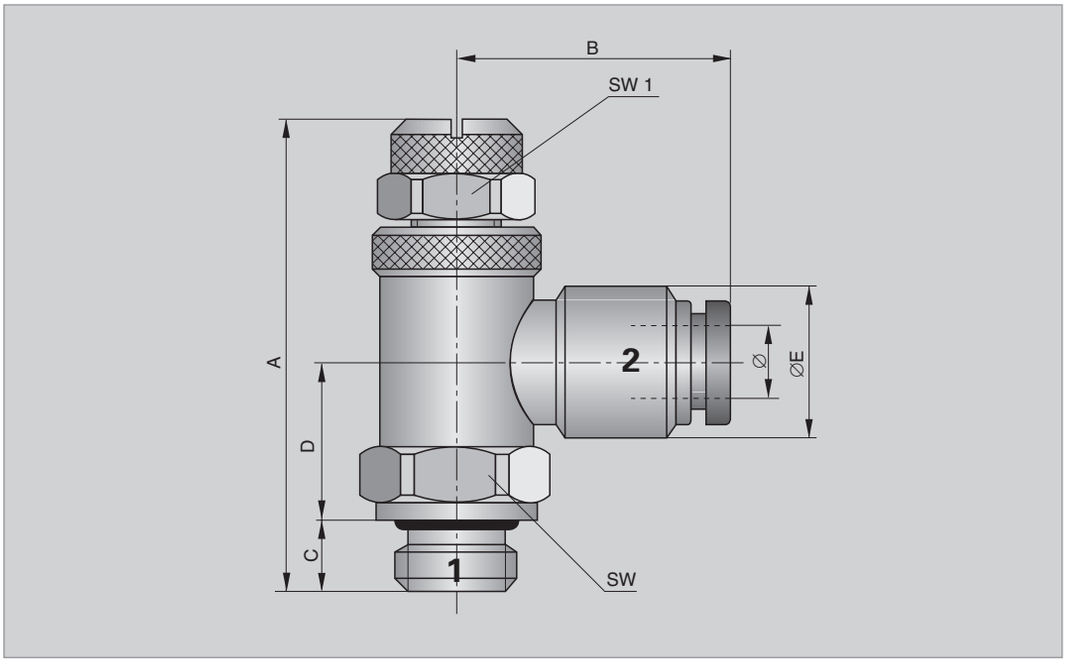
This valve is used for regulating the piston speed of pneumatic cylinders.

Dimensions in mm

Versions for air inlet throttling



Screw-in Throttle Check Valves Type: SEDRV-....B

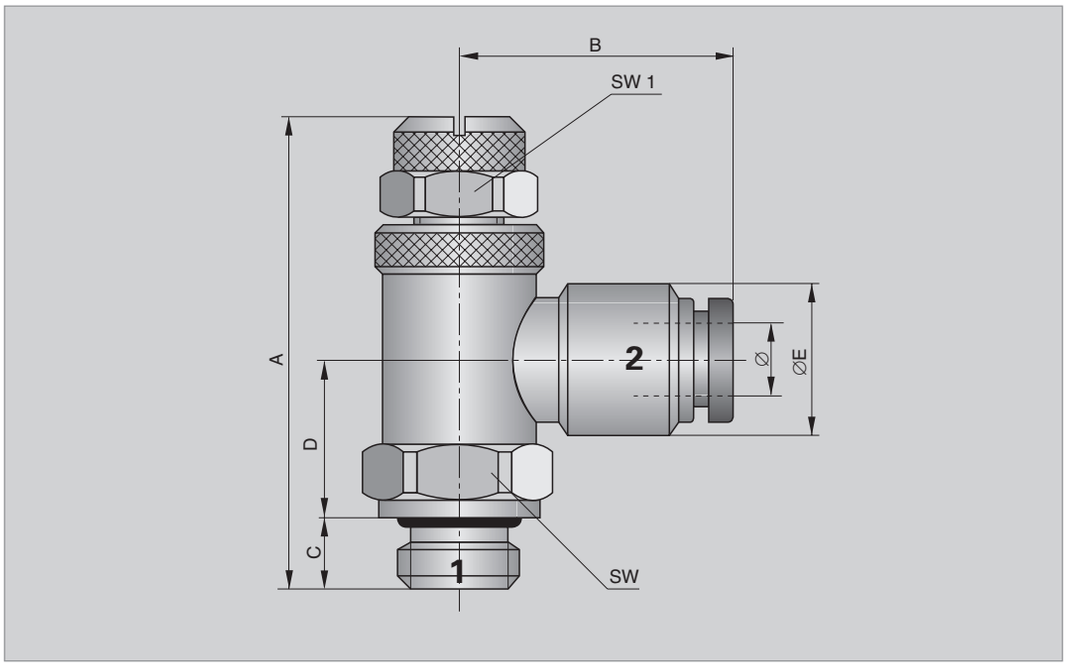


Screw-in Throttle Check Valves with push-in fittings – Type SEDRV-....B
Dimension Table and Order Instructions

Order Instructions		Tube	Port Size	SW	SW1	ØE	B	A	D	C	Q_N
Type	**Order No.**	Ø *									[Nl/min]
SEDRV-54B-Msv	**KW1001**	4	M5	9	9	10.9	23.5	28.2	9.3	4	95
SEDRV-55B-Msv	**KW1002**	5	M5	9	9	12	24.5	28.2	9.3	4	95
SEDRV-56B-Msv	**KW1003**	6	M5	9	9	13.5	24.5	28.2	9.3	4	95
SEDRV-184B-Msv	**KW1004**	4	G1/8	15	12	11.5	25	42	13.7	6	340
SEDRV-185B-Msv	**KW1005**	5	G1/8	15	12	12.0	25	42	13.7	6	340
SEDRV-186B-Msv	**KW1006**	6	G1/8	15	12	13.5	25	42	13.7	6	340
SEDRV-188B-Msv	**KW1007**	8	G1/8	15	12	15.5	30	42	13.7	6	340
SEDRV-146B-Msv	**KW1008**	6	G1/4	18	12	13.5	27.5	48	16	8	600
SEDRV-148B-Msv	**KW1009**	8	G1/4	18	12	15.5	32	48	16	8	600
SEDRV-1410B-Msv	**KW1010**	10	G1/4	18	12	18	34.3	48	16	8	600
SEDRV-1412B-Msv	**KW1011**	12	G1/4	18	12	20.2	37.5	48	16	8	600
SEDRV-3810B-Msv	**KW1012**	10	G3/8	21	14	18	36.3	53	19	9	870
SEDRV-3812B-Msv	**KW1013**	12	G3/8	21	14	20.2	40.5	53	19	9	870
SEDRV-1212B-Msv	**KW1014**	12	G1/2	26	17	20.2	40.5	60.5	22	11	1400

* = Tube ØOD

Screw-in Throttle Check Valves Type: SEDRV-....A



Versions for air outlet throttling



Screw-in Throttle Check Valves with push-in fittings – Type SEDRV-....A
Dimension Table and Order Instructions

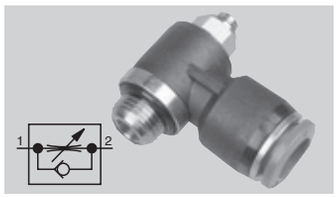
Order Instructions		Tube	Port Size	SW	SW1	ØE	B	A	D	C	Q_N
Type	**Order No.**	Ø *	G								[Nl/min]
SEDRV-54A-Msv	**KW 1015**	4	M5	9	9	10.9	23.5	28.2	9.3	4	95
SEDRV-55A-Msv	**KW 1016**	5	M5	9	9	12	24.5	28.2	9.3	4	95
SEDRV-56A-Msv	**KW 1017**	6	M5	9	9	13.5	24.5	28.2	9.3	4	95
SEDRV-184A-Msv	**KW 1018**	4	G1/8	15	12	11.5	25	42	13.7	6	340
SEDRV-185A-Msv	**KW 1019**	5	G1/8	15	12	12.0	25	42	13.7	6	340
SEDRV-186A-Msv	**KW 1020**	6	G1/8	15	12	13.5	25	42	13.7	6	340
SEDRV-188A-Msv	**KW 1021**	8	G1/8	15	12	15.5	30	42	13.7	6	340
SEDRV-146A-Msv	**KW 1022**	6	G1/4	18	12	13.5	27.5	48	16	8	600
SEDRV-148A-Msv	**KW 1023**	8	G1/4	18	12	15.5	32	48	16	8	600
SEDRV-1410A-Msv	**KW 1024**	10	G1/4	18	12	18	34.3	48	16	8	600
SEDRV-1412A-Msv	**KW 1025**	12	G1/4	18	12	20.2	37.5	48	16	8	600
SEDRV-3810A-Msv	**KW 1026**	10	G3/8	21	14	18	36.3	53	19	9	870
SEDRV-3812A-Msv	**KW 1027**	12	G3/8	21	14	20.2	40.5	53	19	9	870
SEDRV-1212A-Msv	**KW 1028**	12	G1/2	26	17	20.2	40.5	60.5	22	11	1400

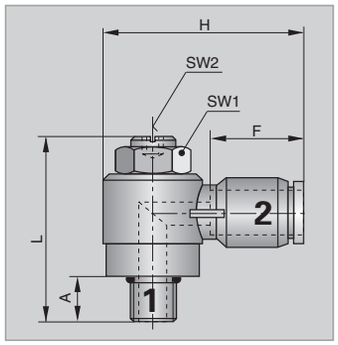
* = Tube ØOD

Dimensions in mm

Throttle Check Valves Series EDRVK, Plastic

Versions for air inlet throttling





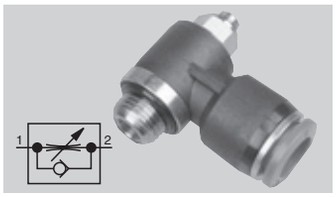
Screw-in Throttle Check Valve Type: EDRV-...B
Short design, with slot and hexagon socket

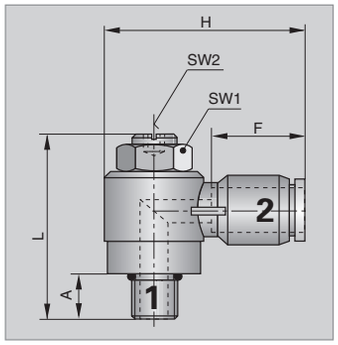
Order Instructions		Port	Tube	A	L_{max}*	H	F	SW1	SW2	Q_N
Type	Order No.	Size	∅OD							[Nl/min]
EDRVK-54B-MsvKU	**KT0452**	M5	4	3.6	23.1	25.1	16.3	8	–	130
EDRVK-56B-MsvKU	**KT0453**	M5	6	3.6	23.1	27.8	17.6	8	2	130
EDRVK-184B-MsvKU	**KT0454**	G1/8	4	6	30.4	30.5	16.3	8	2	300
EDRVK-186B-MsvKU	**KT0455**	G1/8	6	6	30.4	31.2	17.6	8	2	400
EDRVK-188B-MsvKU	**KT0456**	G1/8	8	6	30.4	33.0	18.7	8	2	400
EDRVK-146B-MsvKU	**KT0457**	G1/4	6	8	36.3	35.0	17.6	12	2	620
EDRVK-148B-MsvKU	**KT0458**	G1/4	8	8	36.3	36.8	18.7	12	2	720
EDRVK-1410B-MsvKU	**KT0459**	G1/4	10	8	36.3	38.8	19.6	12	2	720

Material:
plastic/nickel-plated brass

* If the throttle is completely open

Versions for air outlet throttling





Screw-in Throttle Check Valve Type: EDRV-...A
Short design, with slot and hexagon socket

Order Instructions		Port	Tube	A	L_{max}*	H	F	SW1	SW2	Q_N
Type	Order No.	Size	∅OD							[Nl/min]
EDRVK-54A-MsvKU	**KT0460**	M5	4	3.6	23.1	25.1	16.3	8	–	130
EDRVK-56A-MsvKU	**KT0461**	M5	6	3.6	23.1	27.8	17.6	8	2	130
EDRVK-184A-MsvKU	**KT0462**	G1/8	4	6	30.4	30.5	16.3	8	2	300
EDRVK-186A-MsvKU	**KT0463**	G1/8	6	6	30.4	31.2	17.6	8	2	400
EDRVK-188A-MsvKU	**KT0464**	G1/8	8	6	30.4	33.0	18.7	8	2	400
EDRVK-146A-MsvKU	**KT0465**	G1/4	6	8	36.3	35.0	17.6	12	2	620
EDRVK-148A-MsvKU	**KT0466**	G1/4	8	8	36.3	36.8	18.7	12	2	720
EDRVK-1410A-MsvKU	**KT0467**	G1/4	10	8	36.3	38.8	19.6	12	2	720

Material:
plastic/nickel-plated brass

* If the throttle is completely open

Throttle Check Valves Series EDRV, Plastic

Screw-in Throttle Check Valve Type: EDRV-...B

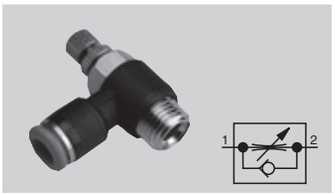
Order Instruction		Tube	Port	A	L_{max}*	H	F	SW	Q_N
Type	Order No.	∅OD	Size						[Nl/min]
EDRV-54B-MsvKU	KT0417	4	M5	4.6	37.0	26.6	16.8	8	100
EDRV-56B-MsvKU	KT0418	6	M5	4.6	37.0	27.2	17.6	8	100
EDRV-184B-MsvKU	KT0419	4	G1/8	4.5	40.1	30.9	16.3	8	165
EDRV-186B-MsvKU	KT0420	6	G1/8	4.5	40.1	31.4	17.6	8	165
EDRV-188B-MsvKU	KT0421	8	G1/8	4.5	40.1	34.2	18.7	8	165
EDRV-146B-MsvKU	KT0422	6	G1/4	5.5	47.6	35.6	17.6	12	410
EDRV-148B-MsvKU	KT0423	8	G1/4	5.5	47.6	38.3	18.7	12	410
EDRV-1410B-MsvKU	KT0424	10	G1/4	5.5	47.6	39.5	19.6	12	410
EDRV-1412B-MsvKU	KT0425	12	G1/4	5.5	47.6	41.8	21.9	12	410
EDRV-386B-MsvKU	KT0426	6	G3/8	6.0	55.9	39.0	17.6	12	500
EDRV-388B-MsvKU	KT0427	8	G3/8	6.0	55.9	40.0	18.7	12	500
EDRV-3810B-MsvKU	KT0428	10	G3/8	6.0	55.9	42.5	19.6	12	500
EDRV-3812B-MsvKU	KT0429	12	G3/8	6.0	55.9	45.5	21.9	12	500
EDRV-1210B-MsvKU	KT0430	10	G1/2	7.0	59.6	47.1	19.6	19	900
EDRV-1212B-MsvKU	KT0431	12	G1/2	7.0	59.6	50.3	21.9	19	900

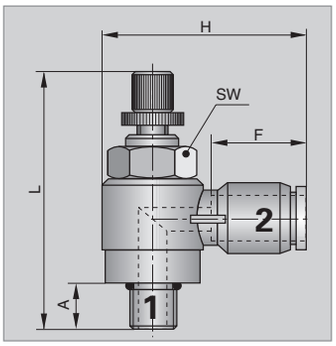
Material:
plastic/nickel-plated brass

* If the throttle is completely open

Complete with:
rotating ring, two seals and O-ring, preassembled

Versions for air inlet throttling





Screw-in Throttle Check Valve Type: EDRV-...A

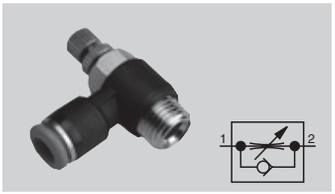
Order Instruction		Tube	Port	A	L_{max}*	H	F	SW	Q_N
Type	Order No.	∅OD	Size						[Nl/min]
EDRV-54A-MsvKU	KT0432	4	M5	4.6	37.0	26.6	16.8	8	100
EDRV-56A-MsvKU	KT0433	6	M5	4.6	37.0	27.2	17.6	8	100
EDRV-184A-MsvKU	KT0434	4	G1/8	4.5	40.1	30.9	16.3	8	165
EDRV-186A-MsvKU	KT0435	6	G1/8	4.5	40.1	31.4	17.6	8	165
EDRV-188A-MsvKU	KT0436	8	G1/8	4.5	40.1	34.2	18.7	8	165
EDRV-146A-MsvKU	KT0437	6	G1/4	5.5	47.6	35.6	17.6	12	410
EDRV-148A-MsvKU	KT0438	8	G1/4	5.5	47.6	38.3	18.7	12	410
EDRV-1410A-MsvKU	KT0439	10	G1/4	5.5	47.6	39.5	19.6	12	410
EDRV-1412A-MsvKU	KT0440	12	G1/4	5.5	47.6	41.8	21.9	12	410
EDRV-386A-MsvKU	KT0441	6	G3/8	6.0	55.9	39.0	17.6	14	500
EDRV-388A-MsvKU	KT0442	8	G3/8	6.0	55.9	40.0	18.7	14	500
EDRV-3810A-MsvKU	KT0443	10	G3/8	6.0	55.9	42.0	19.6	14	500
EDRV-3812A-MsvKU	KT0444	12	G3/8	6.0	55.9	45.5	21.9	14	500
EDRV-1210A-MsvKU	KT0445	10	G1/2	7.0	59.6	47.1	19.6	19	900
EDRV-1212A-MsvKU	KT0446	12	G1/2	7.0	59.6	50.3	21.9	19	900

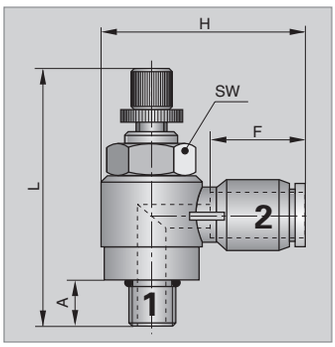
Material:
plastic/nickel-plated brass

* If the throttle is completely open

Complete with:
rotating ring, two seals and O-ring, preassemble

Versions for air outlet throttling



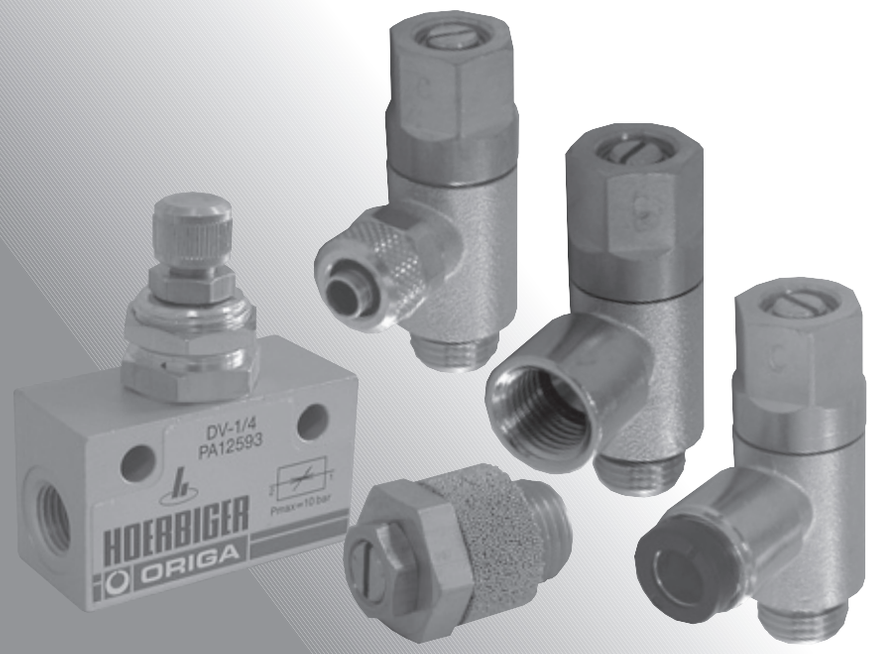


Dimensions in mm

Flow Control Valves

- Flow control valves, in-line
- Flow control valves, screw-in

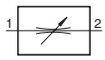
- Metal version



Block Version Series DV

Flow Control Valves M5 – G1/2

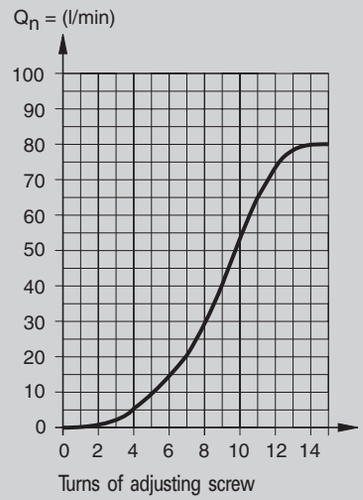




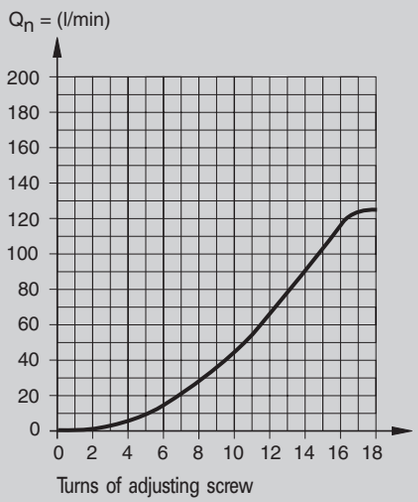
Characteristics according to VDI 3291 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description				
General Features							
Type			Throttle Valve				
Mounting			Directly in tubing 2 through-bolts panel mounting				
Tube connection			Thread				
Port size			M5	G1/8	G1/4	G3/8	G1/2
Weight (mass)		kg	0.020	0.035	0.130	0.225	0.245
Installation			In any position				
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing point (0 °C)			
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +80	it is necessary to consult us			
Medium			Filtered, lubricated or unlubricated compressed air				
Lubrication			Oil mist lubrication compatible with Buna N				
Pneumatic Characteristics							
Nominal pressure	p_n	bar	6				
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10				
Nominal flow when throttle is completely open	Q_N	l/min	80	125	450	1100	1200

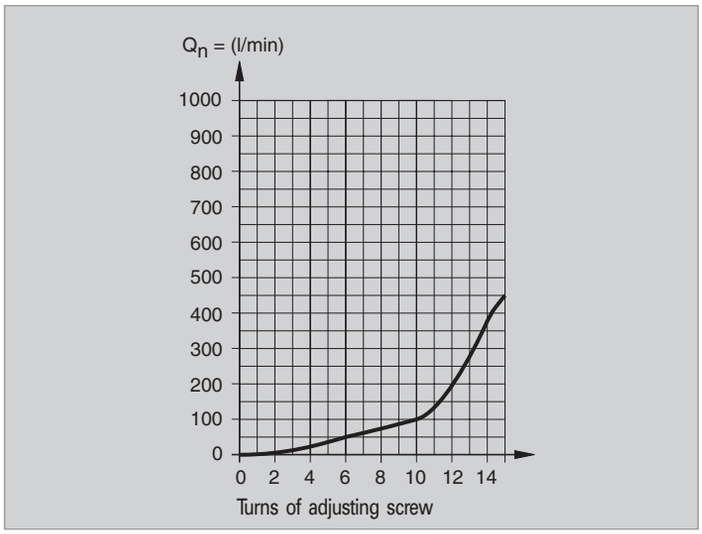
Flow Characteristics Type: DV-M5



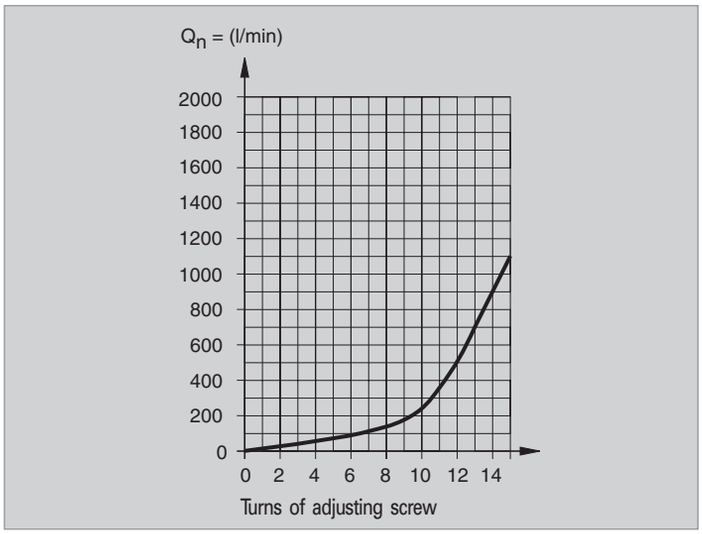
Flow Characteristics Type: DV-1/8



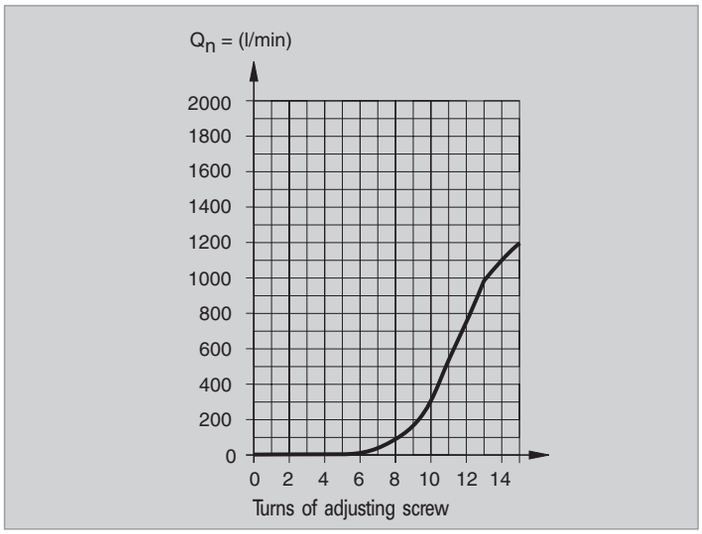
Flow Characteristics Type: DV-1/4



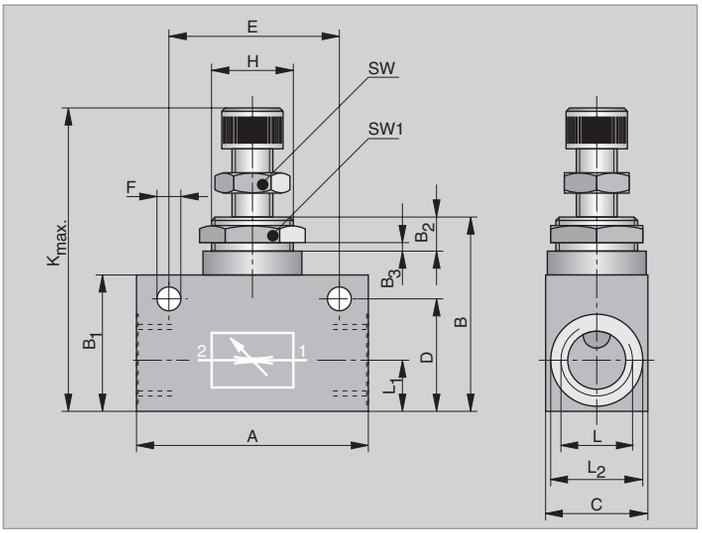
Flow Characteristics Type: DV-3/8



Flow Characteristics Type: DV-1/2



Dimensions



Dimension Table and Order Instructions

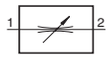
Order Instructions Type	Order No.	A	B	B_1	B_2	B_3	C	D	E	ØF	H	L	L1	$ØL_2$	K_{max}	SW	SW_1
DV-M5	**PA 10230**	26	26.5	16	6	2.5	14	12.5	18	4.4	M10x1	M5	5.5	8.5	44	7	14
DV-1/8	**PA 10231**	32.5	31.5	22	6	2.5	16	17.5	24	4.4	M12x1	G1/8	9	13.5	52	10	17
DV-1/4	**PA 12593**	55	48	32	10	4.5	25	25	35	6.5	M20x1.5	G1/4	12	19	72	13	22
DV-3/8	**PA 16141**	58	57	40	10	5.0	30	33	43	6.5	M24x1.5	G3/8	13.5	23	92	19	27
DV-1/2	**PA 16142**	68	57	40	10	5.0	30	33	50	6.5	M24x1.5	G1/2	15	27.5	92	19	27

Dimensions in mm

Flow Control Valves Series EDV, SEDV

Screw-in Flow Control Valves M5 – G1/4





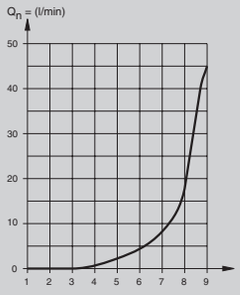
– with tube connection

Characteristics according to VDI 3291 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description		
General Features					
Type			Throttle Valve		
Mounting			Screw-in valve		
Tube connection			Thread		
Port size			M5	G1/8	G1/4
Weight (mass)		kg	0.019	0.042	0.083
Installation			In any position		
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing point (0 °C) it is necessary to consult us	
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70		
Medium			Filtered compressed air		
Lubrication			Oil mist lubrication compatible withBuna N		
Pneumatic Characteristics					
Nominal pressure	p_n	bar	6		
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10		
Nominal flow rate, throttle valve (throttle completely open)	Q_N	l/min	45	200	450

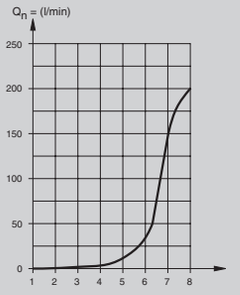
Flow Characteristics Type: EDV/SEDV-M5

Tube Ø ID 3 mm



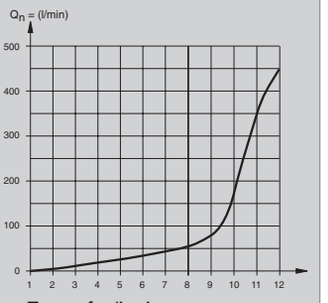
Flow Characteristics Type: EDV/SEDV-G1/8

Tube Ø ID 6 mm

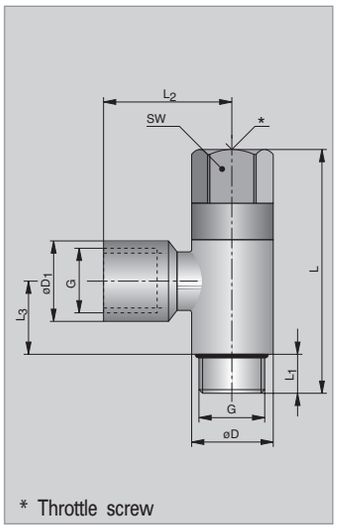


Flow Characteristics Type: EDV/SEDV-G1/4

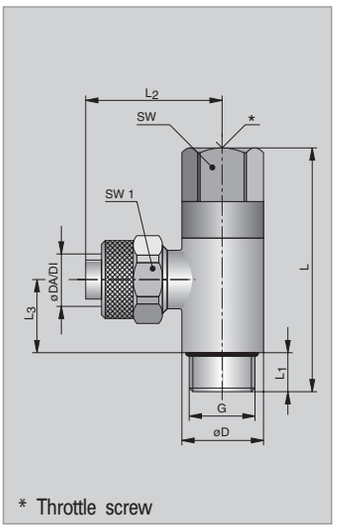
Tube Ø ID 8 mm



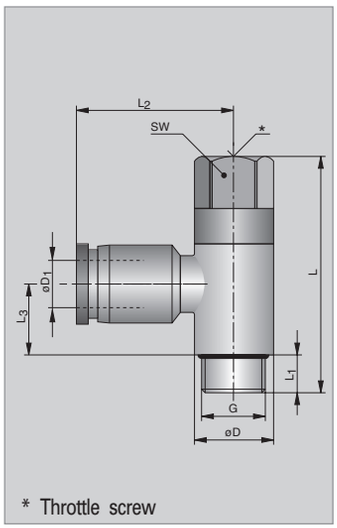
Screw-in Flow Control Valves
Type: EDV-....C



Screw-in Flow Control Valves
Type: EDV-....C



Screw-in Flow Control Valves
Type: SEDV-....C



Screw-in Flow Control Valves with push-in fittings – Type SEDV-....C
Dimension Table and Order Instructions

Order Instructions Type	Order No.	Tube ØOD	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
SEDV-54C	**KW0546**	4	M5	9	-	10	10	28	5	24	5.5
SEDV-184C	**KW0547**	4	G1/8	12	-	14	11	37	7	25	11.5
SEDV-55C	**KW0548**	5	M5	9	-	10	11	28	5	25	5.5
SEDV-185C	**KW0549**	5	G1/8	12	-	14	12	37	7	25	11.5
SEDV-186C	**KW0550**	6	G1/8	12	-	14	13	37	7	26	11.5
SEDV-146C	**KW0551**	6	G1/4	16	-	18	13	50	9	28	15
SEDV-188C	**KW0552**	8	G1/8	12	-	14	15	37	7	31	11.5
SEDV-148C	**KW0553**	8	G1/4	16	-	18	15	50	9	31	15
SEDV-1410C	**KW0554**	10	G1/4	16	-	18	18	50	9	36	15

Screw-in Flow Control Valves with union nut – Type EDV-....C
Dimension Table and Order Instructions

Order Instructions Type	Order No	Tube ØDA/DI*	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
EDV-54C	**KW0557**	4/2	M5	9	9	10	-	28	4.5	23.5	6
EDV-184C	**KW0558**	4/2	G1/8	12	10	14	-	37	6	28	11.5
EDV-185C	**KW0559**	5/3	G1/8	12	10	14	-	37	6	28	11.5
EDV-186C	**KW0560**	6/4	G1/8	12	12	14	-	37	6	27.5	11.5
EDV-146C	**KW0561**	6/4	G1/4	16	12	18	-	50	8	30	15
EDV-188C	**KW0562**	8/6	G1/8	12	14	14	-	37	6	28	11.5
EDV-148C	**KW0563**	8/6	G1/4	16	14	18	-	50	8	31	15
EDV-1410C	**KW0564**	10/8	G1/4	16	16	18	-	50	8	29.5	15

Screw-in Flow Control Valves with internal thread – Type EDV-....CI
Dimension Table and Order Instructions

Order Instructions Type	Order No	Internal thread. D1	Port Size G	SW	SW1	ØD	$ØD_1$	L	L_1	L_2	L_3
EDV-1818CI	**KW0555**	G1/8	G1/8	12	-	14	13.5	37	7	20.5	11.5
EDV-1414CI	**KW0556**	G1/4	G1/4	16	-	18	17	50	8	29.5	15

* = Tube ØOD/ID

Dimensions in mm

Flow Control Valves Series SEDV

Screw-in Flow Control Valves M5 – G1/2





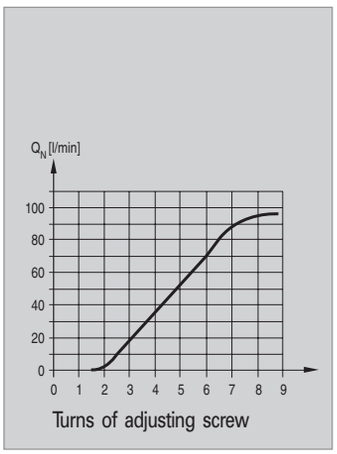
– with tube connection

This valve is used for regulating the piston speed of pneumatic cylinders.

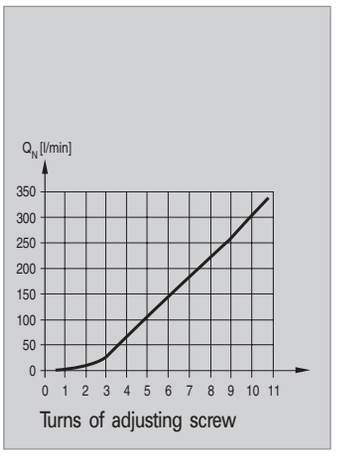
Characteristics according to VDI 3291 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
Type			Throttle Valve	
Mounting			Screw-in valve	
Tube connection			Thread	
Installation			In any position	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	Note: When using below freezing point (0 °C)
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70	it is necessary to consult us
Medium			Filtered compressed air	
Lubrication			Oil mist lubrication compatible withBuna N	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10	

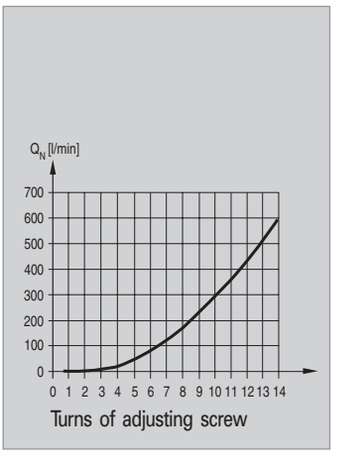
Flow Characteristics M5



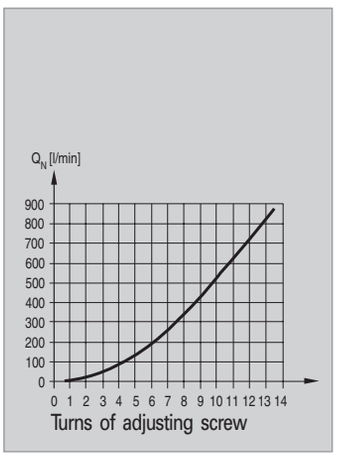
Flow Characteristics G1/8



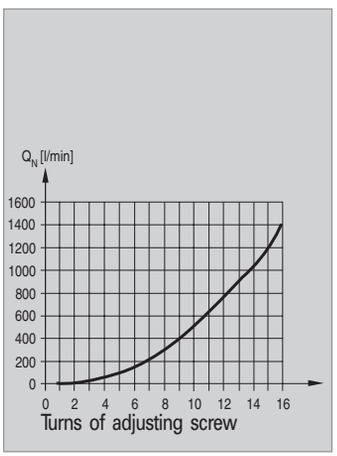
Flow Characteristics G1/4



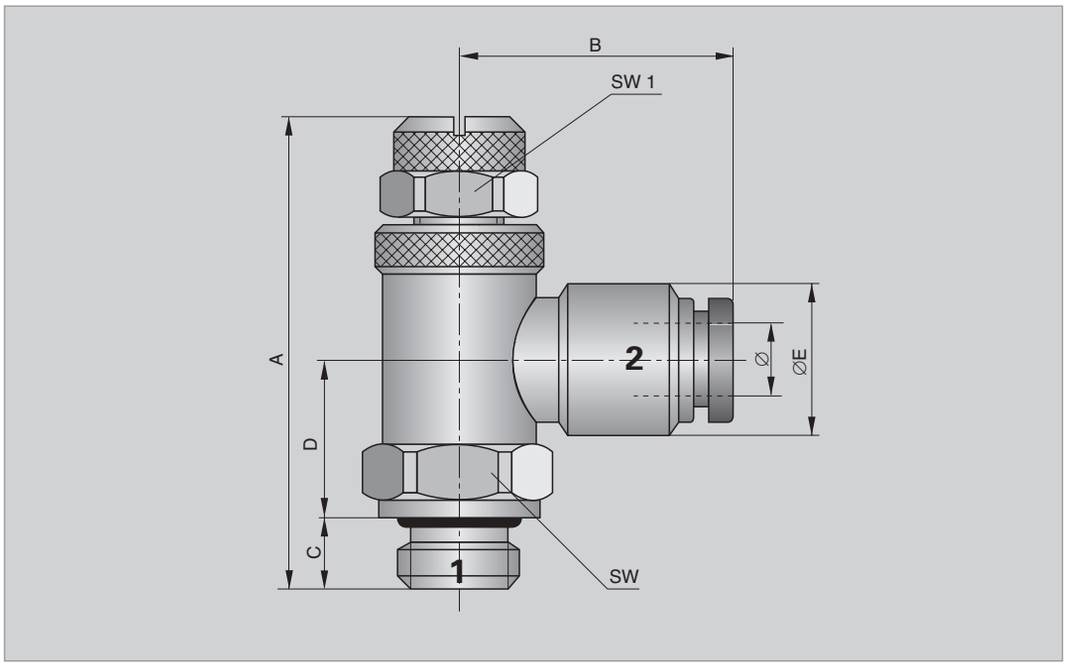
Flow Characteristics G3/8



Flow Characteristics G1/2



Screw-in Flow Control Valves Type: SEDV-...



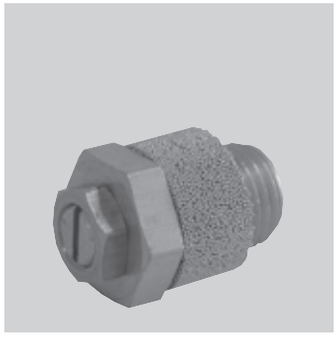
Screw-in Flow Control Valves with push-in fittings – Type SEDV-...
Dimension Table and Order Instructions

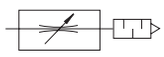
Order Instructions		Tube	Port Size	SW	SW1	ØE	B	A	D	C	Q_N
Type	**Order No.**	ØO *	G								[Nl/min]
SEDV-54-Msv	**KW 1029**	4	M5	9	9	10.9	23.5	28.2	9.3	4	95
SEDV-55-Msv	**KW 1030**	5	M5	9	9	12	24.5	28.2	9.3	4	95
SEDV-56-Msv	**KW 1031**	6	M5	9	9	13.5	24.5	28.2	9.3	4	95
SEDV-184-Msv	**KW 1032**	4	G1/8	15	12	11.5	25	42	13.7	6	340
SEDV-185-Msv	**KW 1033**	5	G1/8	15	12	12.0	25	42	13.7	6	340
SEDV-186-Msv	**KW 1034**	6	G1/8	15	12	13.5	25	42	13.7	6	340
SEDV-188-Msv	**KW 1035**	8	G1/8	15	12	15.5	30	42	13.7	6	340
SEDV-146-Msv	**KW 1036**	6	G1/4	18	12	13.5	27.5	48	16	8	600
SEDV-148-Msv	**KW 1037**	8	G1/4	18	12	15.5	32	48	16	8	600
SEDV-1410-Msv	**KW 1038**	10	G1/4	18	12	18	34.3	48	16	8	600
SEDV-1412-Msv	**KW 1039**	12	G1/4	18	12	20.2	37.5	48	16	8	600
SEDV-3810-Msv	**KW 1040**	10	G3/8	21	14	18	36.3	53	19	9	870
SEDV-3812-Msv	**KW 1041**	12	G3/8	21	14	20.2	40.5	53	19	9	870
SEDV-1212-Msv	**KW 1042**	12	G1/2	26	17	20.2	40.5	60.5	22	11	1400

* = Tube ØOD

Dimensions in mm

Exhaust Throttle Valves G1/8 – G1/2

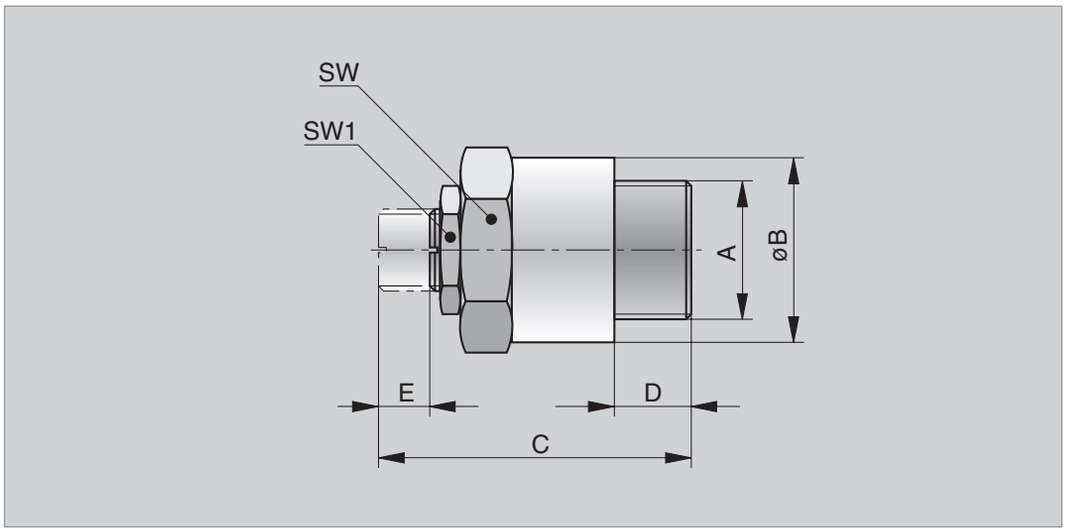




Exhaust throttle valves which are screwed directly into the exhaust connections of valves.

Note:
The regulating spindle of this valve can be unscrewed right out of the valve. Therefore the spindle must not be unscrewed more than 8 turns from the closed position and must then be secured immediately with the lock nut.

Dimensions



Dimension Table and Order Instructions

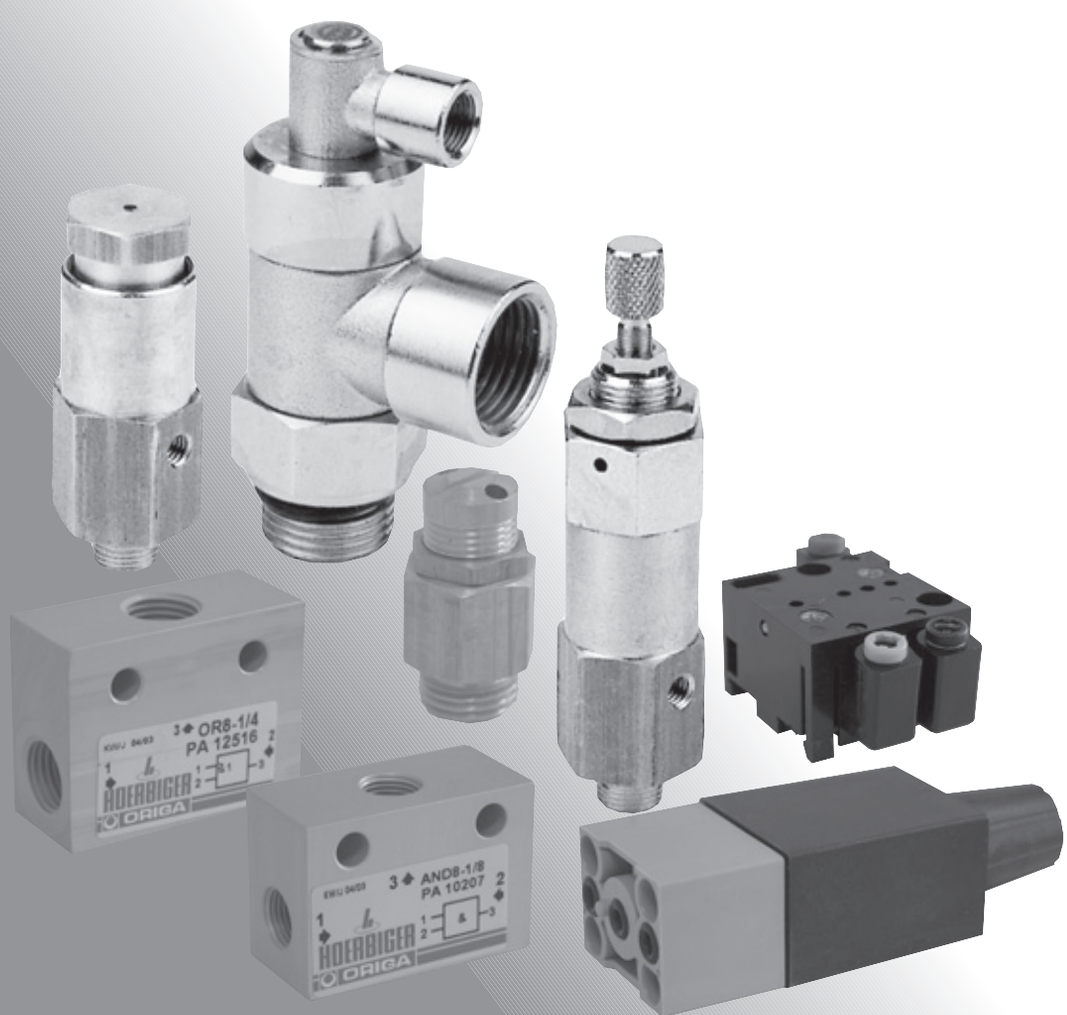
Order Instructions Type	Order No	A	B	C	D	E	SW	SW1	Weight Mass (kg)
DVE-06	**KY 6952**	G1/8	14	24	5	4	14	9	0.010
DVE-08	**KY 6953**	G1/4	18	32	7.5	6	17	11	0.025
DVE-15	**KY 6954**	G1/2	27	45	9.5	10	27	17	0.090

Material: Brass / sintered bronze

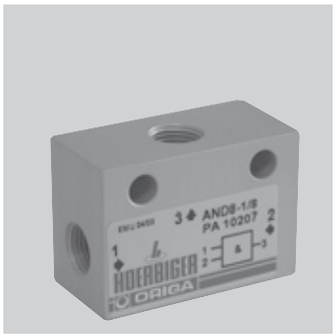
Dimensions in mm

Special Valves

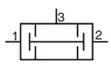
- Logic components AND / OR
- Timer
- 2/2 way screw-in valves
- 3/2 way hollow screw valves
- Miniature screw-in pressure regulators
- Relief valves



AND Valves (Dual Pressure Valves) G1/8





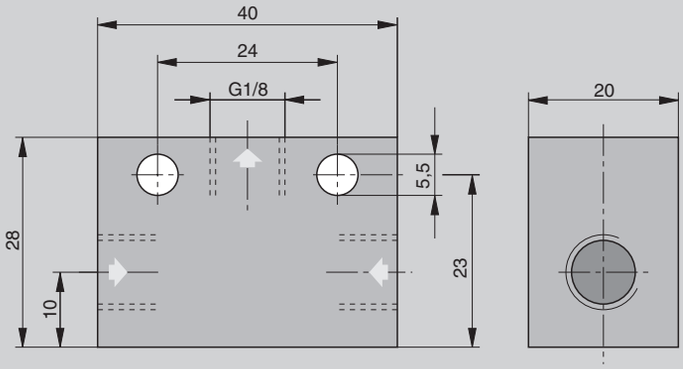


Actuation: Pneumatic

Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description
General Features			
Type			Poppet valve
Mounting			2 through-bolts M5
Tube connection			Thread
Port size			G1/8
Weight (mass)		kg	0.05
Installation			In any position
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80 Note: When using below freezing point (0 °C) it is necessary to consult us
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +80
Medium			Filtered compressed air
Lubrication			With or without oil mist lubrication
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10
Nominal flow rate	Q_N	l/min	134

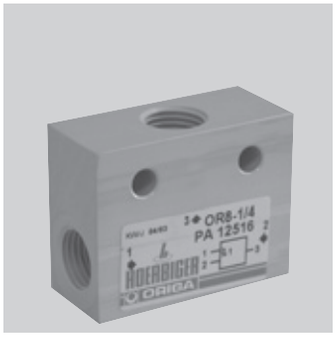
Dimensions

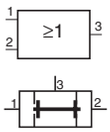


Order Instructions

AND 8-1/8	**PA10207**

OR Valves (Shuttle Valves) G1/8, G1/4

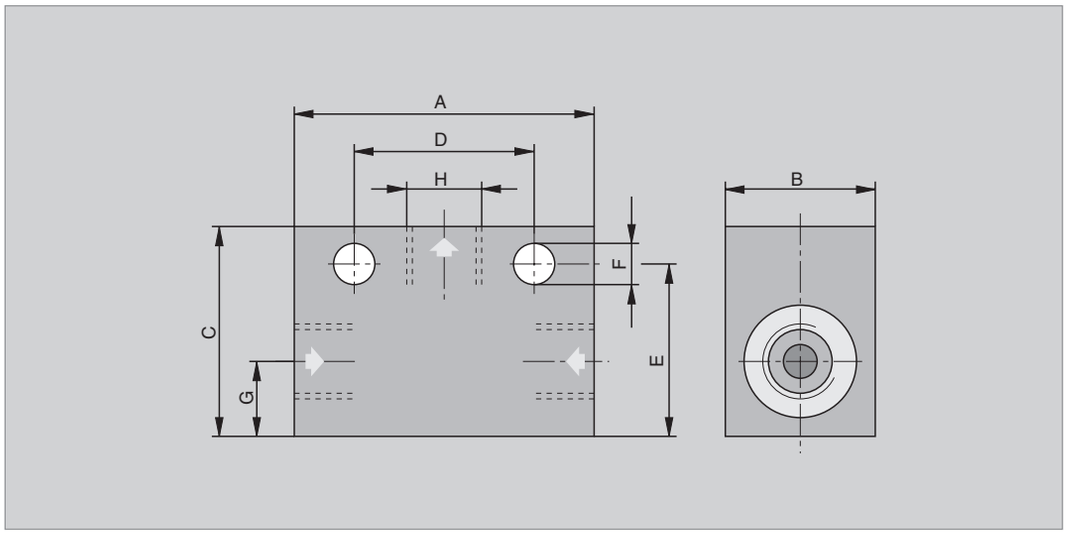




Characteristics according to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
Type			Poppet valve	
Mounting			2 through-bolts M5	
Tube connection			Thread	
Port size			G1/8	G1/4
Weight (mass)		kg	0.05	0.08
Installation			In any position	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80	Note: When using below freezing point (0 °C)
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +80	it is necessary to consult us
Medium			Filtered compressed air	
Lubrication			With or without oil mist lubrication	
Pneumatic Characteristics				
Nominal pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	0.5 10	
Nominal flow rate	Q_N	l/min	385	635

Dimensions

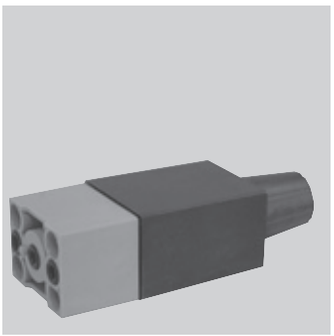


Dimension Table and Order Instructions

Order Instructions Type	Order No.	A	B	C	D	E	F	G	H
OR8-1/8	**PA10206**	40	20	28	24	23	5.5	10	G1/8
OR8-1/4	**PA12516**	45	20	35	24	27	5.5	10	G1/4

Dimensions in mm

Timer



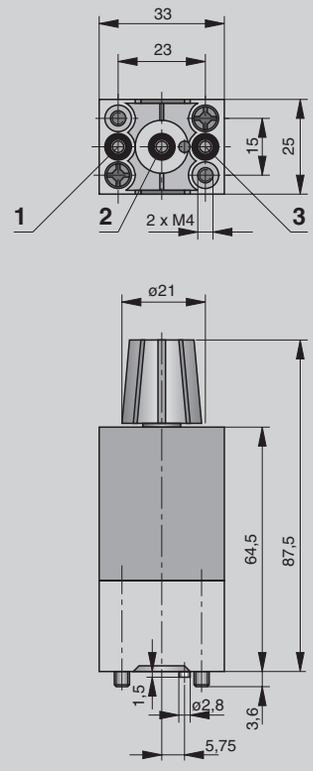


Supplied without base plate
– please order this separately

Characteristics Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description
General Features			
Mounting			On base plate
Tube connection			Swivelling plug-in connection
Port size		mm	For tube Ø 4/2.7
Installation			In any position
Ambient temperatures	ϑ_{min} ϑ_{max}	°C °C	-10 +60
Medium			Filtered and lubricated or filtered and unlubricated air
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	p_{min} p_{max}	bar bar	2 7
Nominal flow rate	Q_N	m^3/h	In direction 1-3: 12.2 In direction 3-1: 13.3
Time delay	t_{max}	s	max. 40 (according to type)
Reset time			Not more than 200 ms

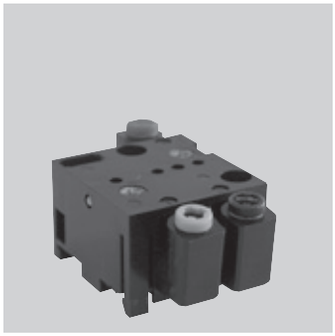
Dimensions



Order Instructions

Version (Time Delay)	Function	Order Instructions Type	Order No.
1.0 -10 sec.	NC (normally closed)	**LTY-10/2**	**KY8103**
5.0 -40 sec.	NC (normally closed)	**LTY-10/3**	**KY8104**
0.5 -6 sec.	NO (normally open)	**LTN-10/2**	**KY8105**
2.5 -25 sec.	NO (normally open)	**LTN-10/3**	**KY8106**

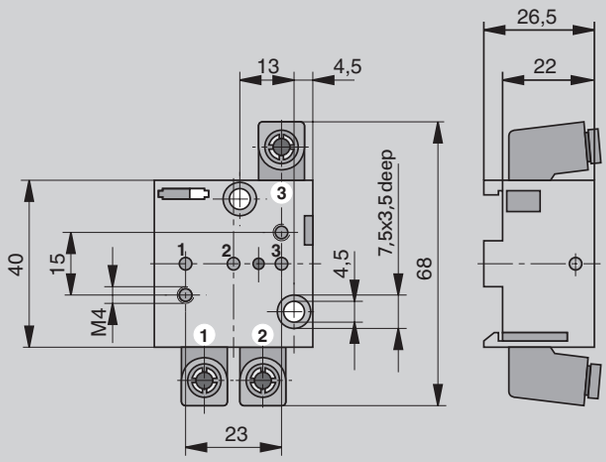
Base Plate for Timer



Characteristics of Base Plate

Characteristics	Comments
Mounting	On rail to DIN 46 277 (35 x 15 or 35 x 7.5); clamps on. On flat surface with 2 screws M4
Connections	Swivelling plug-in connection for tube Ø 4/2.7

Dimensions of Base Plate



Colour coding:

1 = green – Pilot signal 12

2 = black – Pressure supply 1

3 = red – Outlet 2

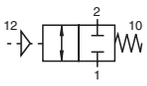
Order Instructions: BIC 3P10 KY 9484

Dimensions in mm

2/2 Way Screw-in Valves Series EVP

2/2 Way Screw-in Valves (Check Valves) G1/8 – G1/2





Actuation:
pneumatic

Characteristics according to VDI 3290 Pressures quoted as gauge pressure

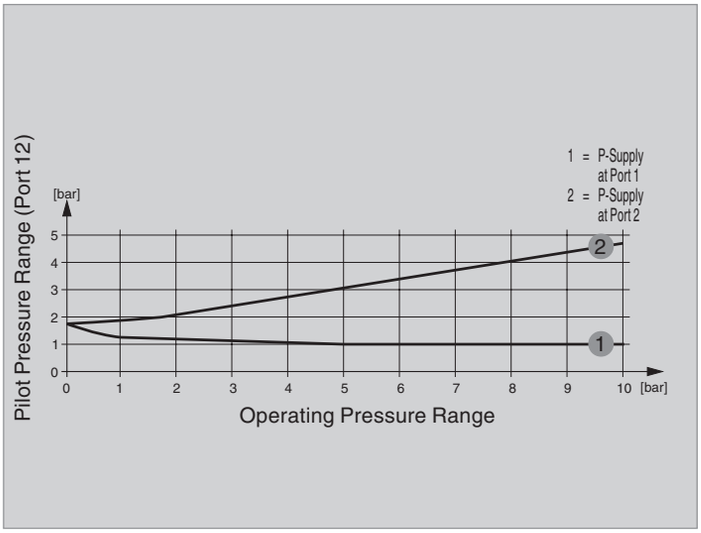
Characteristics	Symbol	Unit	Description
General Features			
Type			Spool valve with spring return
Tube connection			Port 1: Internal thread to IS0 228 Port 2: External thread to ISO 228 Port 12: G1/8 internal, push-in. Ø 4
Port size			See dimension drawing
Weight (mass)		kg	See table
Installation			In any position – rings can be rotated 360° after the valve has been installed
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70 — Note: When using below freezing point (0 °C) it is necessary to consult us
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +70
Medium			Filtered compressed air, neutral gases*
Lubrication			With or without oil mist lubrication [1]
Material			Metal parts: nickel-plated brass or stainless steel Springs: stainless steel Seals: Buna N (NBR)
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	p_{min} p_{max}	bar bar	0 10
Nominal flow rate	Q_N	l/min	See table
Actuation			
Pneumatic			Direct
Actuation pressure range	p_{st}	bar	See diagram

* Other media on request
[1] we recommend the use of mineral oil VG 32 to ISO 3448

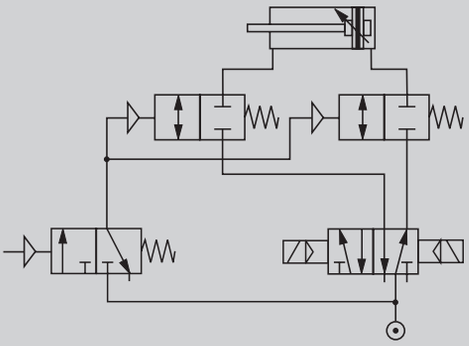
Nominal flow rate, tightening torque, opening pressure, weight (mass)

Port Size	DN [mm]	Q_N [l/min]	max. tightening [Nm]	Weight Mass [kg]
G1/8	4.0	300	3.0	0.068 – with thread 0.070 – fitting ø 6
G1/4	5.6	700	7.0	0.104 – with thread 0.104 – fitting ø 6 0.110 – fitting ø 8
G3/8	7.7	1200	9.0	0.150 – with thread 0.145 – fitting ø 8 0.155 – fitting ø 10
G1/2	10.0	2100	15.0	0.210 – with thread 0.240 – fitting ø 12

Pilot Pressure in Relation to Operating Pressure

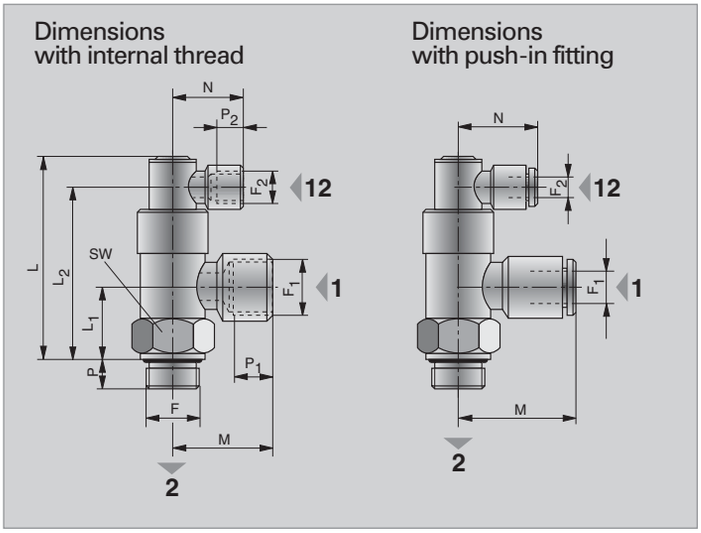


Example



The cylinder can be stopped during extension and retraction

Dimensions



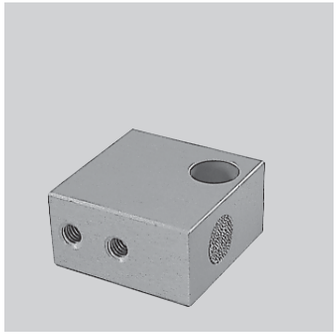
Dimension Table and Order Instructions

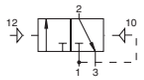
F	F_1	F_2	L	L_1	L_2	M	N	P	P_1	P_2	SW	Order Instructions Type	Order No.
G1/8	G1/8	G1/8	51.5	16	42	21	21	6	7	7	14	**EVP-1/8**	**KL4062**
G1/8	ø 6	ø 4	51.5	16	42	25	25	6	–	–	14	**EVP-1/8**	**KL4063**
G1/4	G1/4	G1/8	57.5	19.5	48	25	21	8	8	7	17	**EVP-1/4**	**KL4064**
G1/4	ø 6	ø 4	57.5	19.5	48	27.5	25	8	–	–	17	**EVP-1/4**	**KL4065**
G1/4	ø 8	ø 4	57.5	19.5	48	32	25	8	–	–	17	**EVP-1/4**	**KL4066**
G3/8	G3/8	G1/8	63	22.5	53.5	31	21	8	10	7	22	**EVP-3/8**	**KL4067**
G3/8	ø 8	ø 4	63	22.5	53.5	31.5	25	8	–	–	22	**EVP-3/8**	**KL4068**
G3/8	ø 10	ø 4	63	22.5	53.5	36	25	8	–	–	22	**EVP-3/8**	**KL4069**
G1/2	G1/2	G1/8	71.5	27	61.5	40	21	12	14	7	27	**EVP-1/2**	**KL4070**
G1/2	ø 12	ø 4	71.5	27	61.5	40.5	25	12	–	–	27	**EVP-1/2**	**KL4071**

Dimensions in mm

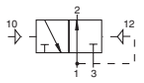
3/2 Way Hollow Screw Valves Series EVP

3/2 Way Hollow Screw Valves M5 (G1/8)





EVP-M5NG



EVP-M5NO

Actuation: Pneumatic

Versions:
normally closed
normally open

3/2 Way hollow screw valve for direct assembly to the cylinder with a hollow screw. It is also possible to control multiple cylinders through port 2. The valve can also be used as an AND element.

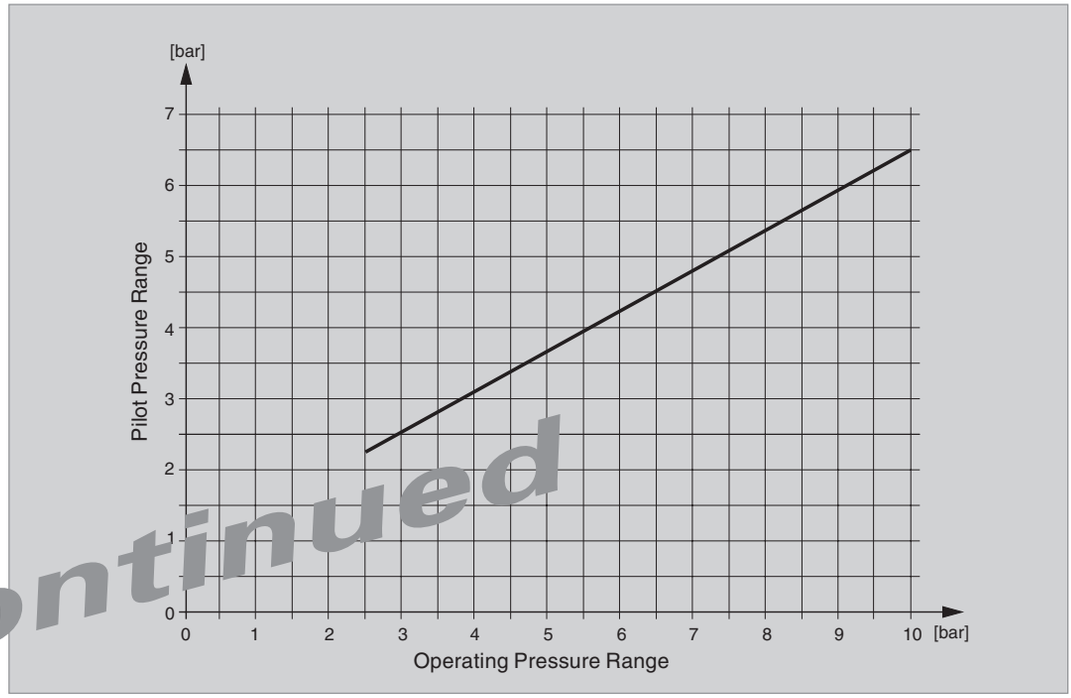
Supplied:
1 valve without hollow screw

Characteristics according to VDI 3290 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
Type			Spool valve with air spring return	
Tube connection			Thread ø 10 mm for hollow screw G1/8	
Port size			M5 (G1/8)	
Installation			With hollow screw G1/8	
Weight (mass)		kg	0.050	
Installation			In any position	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +80	Note: When using below freezing point (0 °C),
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +80	please consult our technical department
Medium			Filtered compressed air, neutral gases*	
Lubrication			With or without oil mist lubrication [1)]	
Material			Housing: anodised aluminium Internal parts: Ms 58 Seals: Buna N (NBR)	
Pneumatic Characteristics				
Nominal Pressure	p_n	bar	6	
Operating pressure range	p_{min} p_{max}	bar bar	2.5 10	
Nominal flow rate	Q_N	l/min	120	
Actuation				
Pneumatic			Direct	
Actuation pressure range	p_{st}	bar	See diagram	

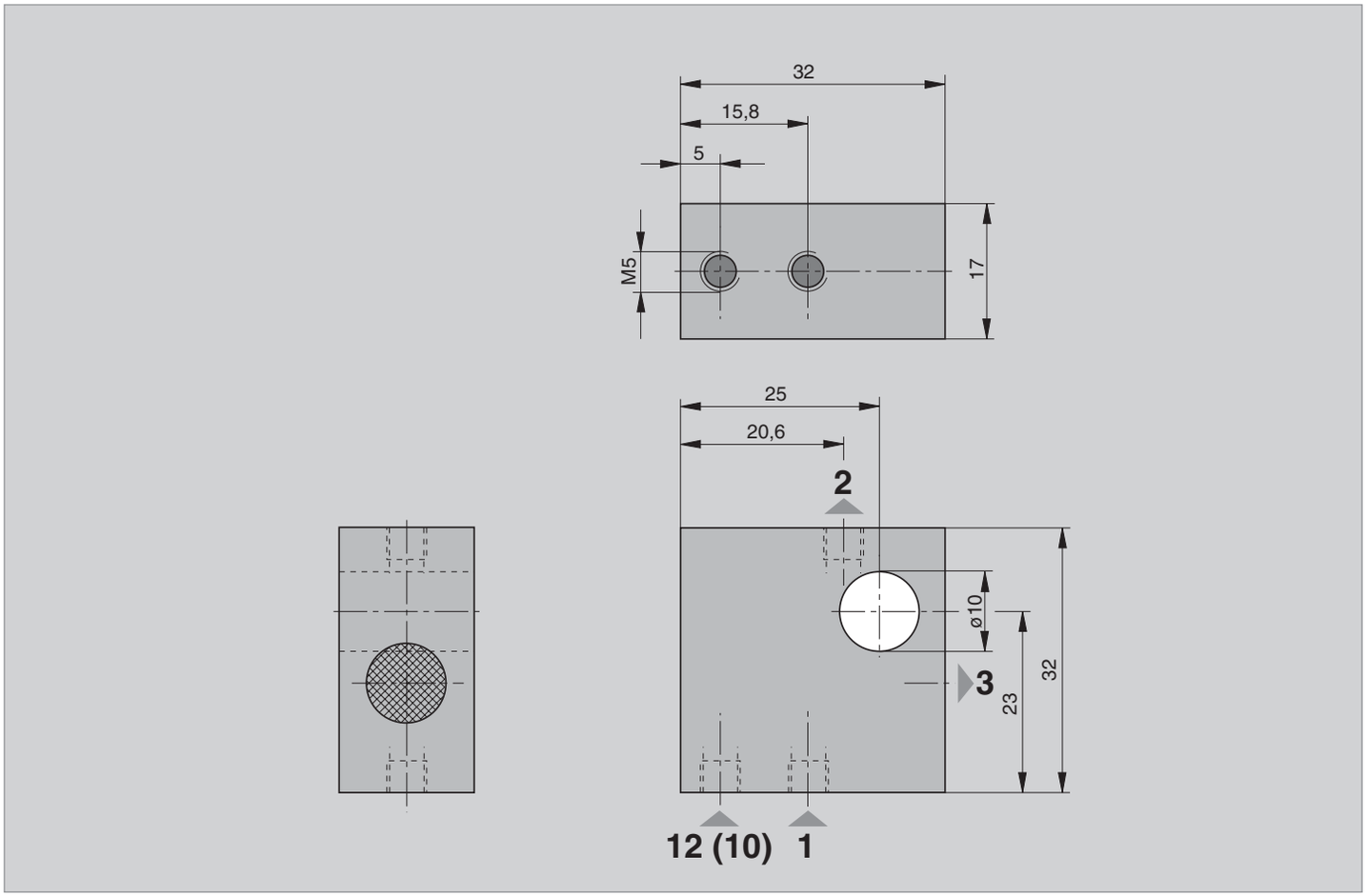
* Other media on request
[1)] We recommend the use of mineral oil type VG32 to ISO 3448

Pilot Pressure in Relation to Operating Pressure

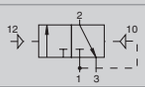
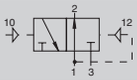


Discontinued

Dimensions



Order Instructions

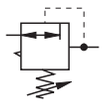
Actuation	Return	Symbol	Order Instructions Type	Order No.
Pneumatic, permanent signal	Air spring return		**EVP-M5NG**	**KL4090**
	Air spring return		**EVP-M5N0**	**KL4089**

Discontinued

Miniature Screw-in Pressure Regulators Series H

Miniature Screw-in Pressure Regulators G1/8, M5





Versions:
- Screw-in version
- for panel mounting
- Viton version*

* Note:
The Viton version can be used for temperatures up to 140°C.
Please consult us before using the valve in high temperatures, especially when using other media than compressed air.

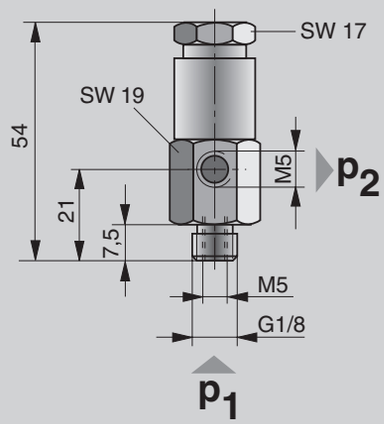
Characteristics to VDI 3290 Pressures quoted as gauge pressures

Characteristics	Symbol	Unit	Description
General Features			
Type			Pressure regulating valve, piston type with secondary pressure relief
Tube connection			Thread
Port size			Input: G1/8 and M5 Output: M5 Gauge: M5
Nominal bore		mm	2.2
Weight (mass)		kg	0.08 (0.11)
Installation			In any position
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +60 — Note: When using below freezing point (0 °C) please consult our technical department
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +80
Medium			Filtered compressed air, neutral gases*
Lubrication			With or without oil mist lubrication [1]
Material			Metal parts: brass Ms 58 Springs: stainless and zinc-plated steel Seals: Buna N (NBR)
Pneumatic Characteristics			
Operating pressure range	p_{min} p_{max}	bar bar	0 12
Secondary pressure range	p_{min} p_{max}	bar bar	1 8
Flow rate	Q_N	l/min	100 **

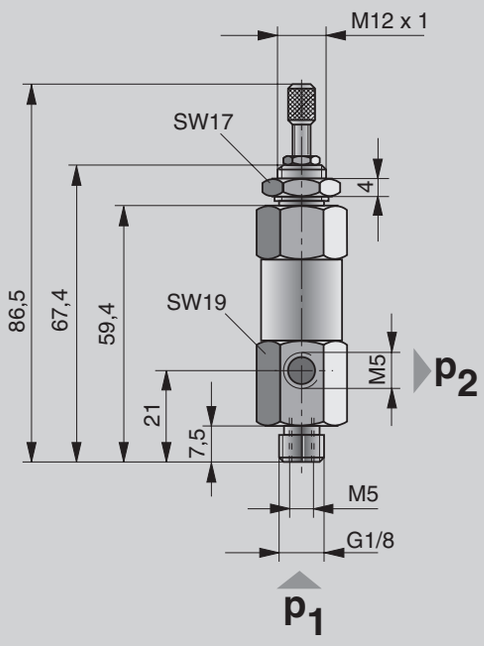
* Other media on request
**at p1 = 10 bar to p2 = 6 bar, Δp = 1 bar
[1] We recommend the use of mineral oil type VG32 to ISO 3448

Dimensions

Screw-in version



Panel mounting version



Order Instructions

Version	Port Size	Seal	Order Instructions	
			Type	**Order No.**
Screw-in version	G1/8, M5	Buna N	**HMR-1/8**	**KL4072**
Panel version	G1/8, M5	Buna N	**HMRS-1/8**	**KL4074**
Screw-in version	G1/8, M5	Viton	**HMR-1/8-V**	**KL4073**
Panel version	G1/8, M5	Viton	**HMRS-1/8-V**	**KL4075**

Relief Valves Series USV

Relief Valves G1/8, G1/4

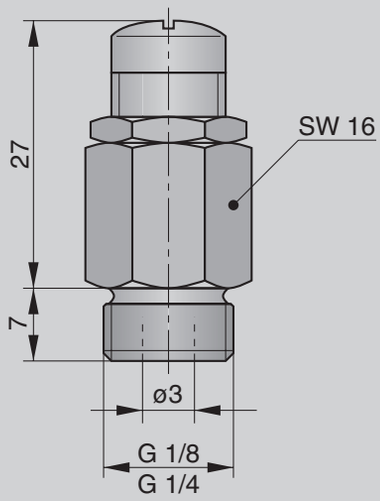


Adjustment:
1-4 bar
3-7 bar

Characteristics Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description	
General Features				
System			Spring-loaded poppet valve with adjustable opening pressure	
Type			USV-1/8	USV-1/4
Port size			G1/8	G1/4
Installation			In any position	
Temperature range	ϑ_{min} ϑ_{max}	°C °C	0 +90	
Medium			Compressed air	
Opening pressure		bar	1-4 or 3-7 (adjustable)	
Material			Brass	

Dimensions



Order Instructions

Adjustment	Port Size	Order Instructions	
		Type	**Order No.**
1 – 4 bar	G1/8	**USV-1/8 (1-4 bar)**	**KY 4093**
3 – 7 bar	G1/8	**USV-1/8 (3-7 bar)**	**KY 4065**
1 – 4 bar	G1/4	**USV-1/4 (1-4 bar)**	**KY 4094**
3 – 7 bar	G1/4	**USV-1/4 (3-7 bar)**	**KY 4066**

Silencers, Strainers, Screw-In Sieves

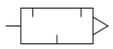
- Exhaust silencers, sintered metal
- Exhaust silencers, plastic
- Strainers, brass
- Screw-In sieves, brass



Exhaust Silencers, Sintered Metal Series D1, D1K

Exhaust Silencers M5 – G1



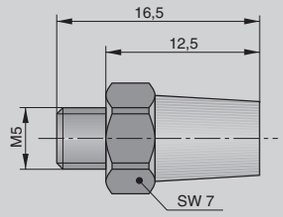


Exhaust silencers disperse the exhaust air, reduce exhaust noise and prevent the ingress of dirt into components

Characteristics (not for type 50030) Pressures quoted as gauge pressures

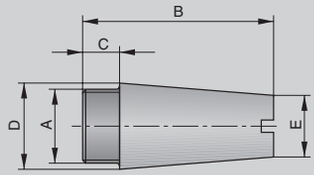
Characteristics	Symbol	Unit	Description					
General Features								
Type			Single-chamber principle					
Port size			G1/8	G1/4	G3/8	G1/2	G3/4	G1
Weight (mass)		kg	0.005	0.01	0.03	0.06	0.11	0.2
Ambient temperature range	ϑ_{max}	°C	+250 (danger of icing in lower temperature range)					
Material			Sintered bronze (on M5, threaded part is bronze)					
Grain size		mm	0.3 to 0.6					
Pneumatic Characteristics								
Operating pressure range	p_{min} p_{max}	bar bar	0 16					

Dimensions Type: 50030
Port size M5

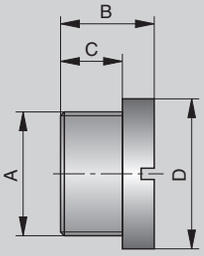


Order No. KY 8869

Dimensions Type: D1
Port size G1/8–G1



Dimensions Type: D1K
Port size G1/8–G3/8



Order Instructions

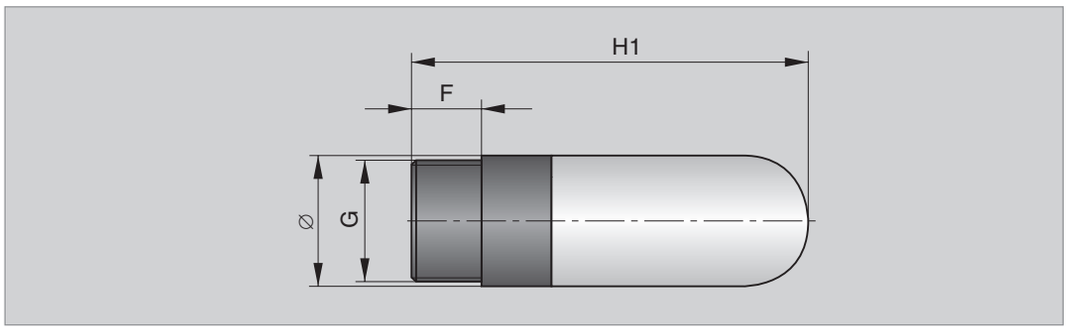
Order Instructions Type	Order No.	A	B	C	D	E
D1-06I	**PD 20636**	G1/8 i	22	8	Ø 15	Ø 12
D1-06	**KY 2010**	G1/8	21	6	Ø 11	Ø 8
D1K-06	**KY 2260**	G1/8	10	6	Ø 12	-
D1-08	**KY 2011**	G1/4	27	8	Ø 14	Ø 10
D1K-08	**KW 0705**	G1/4	12	8	Ø 15	-
D1-10	**KY 2012**	G3/8	38	8	Ø 18	Ø 15
D1K-10	**KW 0706**	G3/8	12	8	Ø 20	-
D1-15	**KY 2013**	G1/2	44	10	Ø 24	Ø 19
D1-20	**KY 2014**	G3/4	63	12	Ø 30	Ø 20
D1-25	**KY 2015**	G1	77	15	Ø 36	Ø 25

Exhaust Silencers, Plastic Series D1..K

Characteristics Pressures quoted as gauge pressures

Characteristics	Symbol	Unit	Description					
General Features								
Type			Single-chamber principle					
Port size			G1/8	G1/4	G3/8	G1/2	G3/4	G1
Ambient temperature range	ϑ_{max}	°C	-30 to +80					
Material			Polyethylene					
Grain size		mm	0.3 to 0.6					
Medium			Highly resistant to most media, but not to chlorinated hydrocarbons (trichloroethylene, perchloroethylene or hydrogen tetrachlorides)					
Pneumatic Characteristics								
Operating pressure range	p_{min} p_{max}	bar bar	0 8					

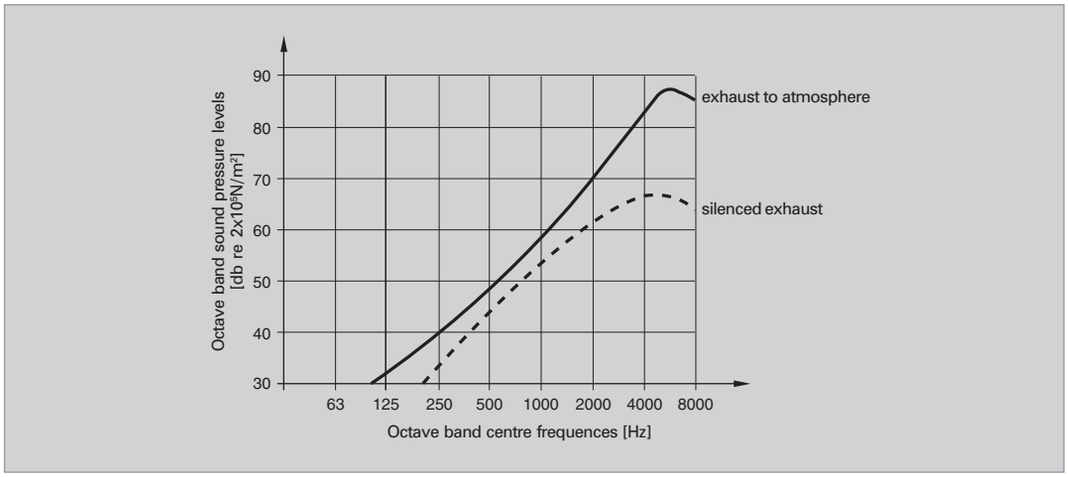
Dimensions Type: D1....K
Port size G1/8–G1



Order Instructions

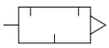
Order Instructions Type	Order No.	G	Ø	F	H1
D1-M5K	**KY8830**	M5	6.7	3.4	20.4
D1-06K	**KY8831**	G1/8	12.7	6.7	34
D1-08K	**KY8832**	G1/4	15.5	8.2	42.5
D1-10K	**KY8833**	G3/8	18.4	12.1	67.5
D1-15K	**KY8834**	G1/2	23	14	78
D1-20K	**KY8835**	G3/4	38.9	14.9	131
D1-25K	**KY8836**	G1	49.4	20	160

Noise reduction for a G1/2 valve with exhaust silencer and p = 6 bar



Exhaust Silencers M5 – G1





Exhaust silencers disperse the exhaust air, reduce exhaust noise and prevent the ingress of dirt into components

These exhaust silencers are recommended for use in environments where particle deposition might block the pores of sintered bronze silencers, e.g. in the cement and concrete industry

Dimensions in mm

Series SFS

Strainers G1/8 – G2



For direct installation in tubings

Characteristics

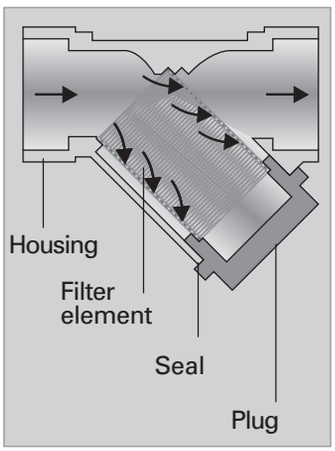
Pressures quoted as gauge pressures

Characteristics	Symbol	Unit	Description								
General Features											
Series			Filter element for solid particles								
Port size			G1/8	G1/4	G3/8	G1/2	G3/4	G1	G11/4	G11/2	G2
Weight (Mass)		kg	0.170	0.170	0.155	0.165	0.285	0.460	0.690	1.010	1.535
Pore size		µm	45								
Mounting			horizontal, sieve facing dows								
Medium and ambient temperature	ϑ_{min} ϑ_{max}	°C °C	0 +150								
Material			Brass (Filter element: sinter bronze)								
Pneumatic Characteristics											
Operating pressure range	p_{min} p_{max}	bar bar	–1 +16								
Nominal flow [1]	Q_N	l/min	1500	1700	3700	7500	12000	auf Anfrage	auf Anfrage	auf Anfrage	auf Anfrage
Recommended flow [1]	Q	l/min	750	783	1320	2570	3670				

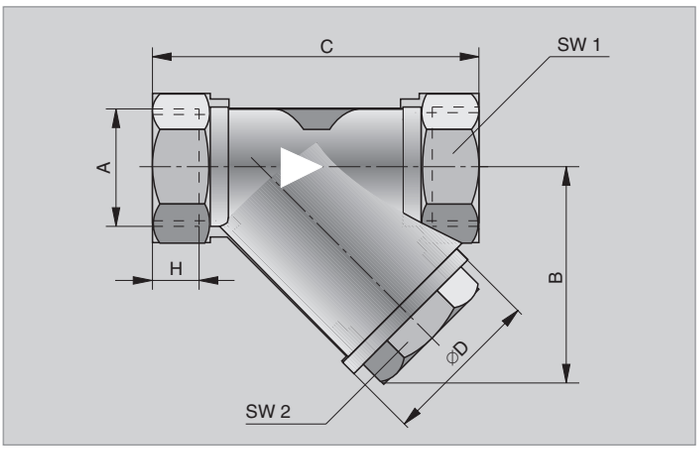
[1] at 6 bar and Δp=0,2 bar

Operating Principle

When air flows through the filter element, any large particles are retained.
The pore size for the sinter-bronze filter element is 45 µm



Dimensions



Dimension Table

Dimension	Port size (A)								
	G1/8	G1/4	G3/8	G1/2	G3/4	G1	G11/4	G11/2	G2
øD	8	8	10	15	20	25	32	40	50
B	40	40	40	40	50	60	68	75	90
C	55	55	55	58	70	90	96	106	126
H	10.0	10.0	10.3	10.5	12.0	17.0	17.5	17.5	20
SW 1	21	21	21	25	31	38	49	55	68
SW 2	20	20	20	20	27	32	35	38	46

Order Instructions

Port size	Strainers with sinter bronze filter element		Spare parts Sinter element (45 µm)		Seals	
	Typ	**Bestell-Nr.**	**Typ**	**Bestell-Nr.**	**Typ**	**Bestell-Nr.**
G1/4	**SFS-1/4**	**KL2001**	**SFSE-1/4**	**KL2015**	**SFDI-1/4**	**KL7002**
G3/8	**SFS-3/8**	**KL2002**	**SFSE-3/8**	**KL2015**	**SFDI-3/8**	**KL7002**
G1/2	**SFS-1/2**	**KL2003**	**SFSE-1/2**	**KL2015**	**SFDI-1/2**	**KL7002**
G3/4	**SFS-3/4**	**KL2004**	**SFSE-3/4**	**KL2016**	**SFDI-3/4**	**KL7003**
G1	**SFS-1**	**KL2005**	**SFSE-1**	**KL2017**	**SFDI-1**	**KL7004**
G11/4	**SFS-1 1/4**	**KL2006**	**SFSE-1 1/4**	**KL2018**	**SFDI-1 1/4**	**KL7005**
G11/2	**SFS-1 1/2**	**KL2007**	**SFSE-1 1/2**	**KL2019**	**SFDI-1 1/2**	**KL7006**
G2	**SFS-2**	**KL2008**	**SFSE-2**	**KL2020**	**SFDI-2**	**KL7007**

Srew-In Sieves
Series SB

Dimension Table

Port size	Pore size	Material	Order Instructions Type	Order No.
M5	0.27 mm	Housing: brass	**SB-M5-G**	**KY2330**
G1/8		Sieve: bronze	**SB-1/8-G**	**KY2008**
G1/4			**SB-1/4-G**	**KY2007**

Screw-In Sieve M5 – G1/4



lathed version with fitted sieve

Dimension Table

Port size	Mesh dimension	Material	Order Instructions Type	Order No.
G1/4	0,27 mm	Housing: brass plate	**SB-14**	**KW0723**
G3/8		Sieve: brass	**SB-38**	**KY2097**
G1/2			**SB-12**	**KY2098**

Screw-In Sieve G1/4 – G1/2

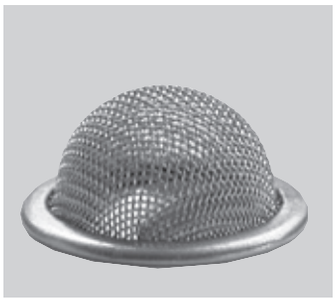


plate version with flanged sieve

Dimensions in mm

Pressure Switches

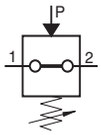
- Pressure switches, pneumatic
- Pressure switches, electronic



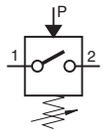
Pneumatic, Screw Terminal Series 801, 802

Pressure Switches Pneumatic G1/8, G1/4





Break contact



Make contact

Actuation: Pneumatic

Switching function:
Make contact
– closes the circuit when the set pressure is reached

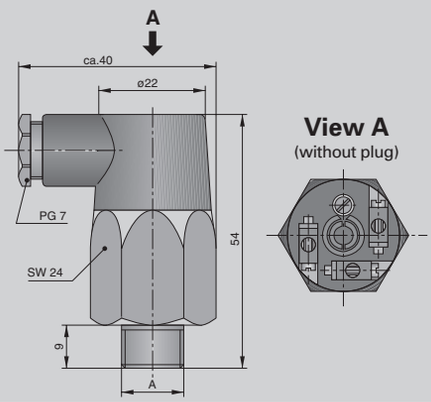
Break contact
– interrupts the circuit when the set pressure is reached

Characteristics Pressures quoted as gauge pressures

Characteristics	Symbol	Unit	Description		
Type Break contact			801-..-01	801-..-1	801-..-10
Make contact			802-..-01	802-..-1	802-..-10
Setting range	$p_{min/max}$	bar	-0.1 to -0.95*	0.1-1	1-10
Safety pressure relief	p_{max}	bar	50	100	100
Port size			G1/8 external, G1/4 external		
Weight (mass)		kg	0.09		
Material			Housing: galvanised steel, plastic Diaphragm: Buna N		
Medium and ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +100		
Consistency		%	5-10**		
Switch back difference		%˜	5**		
Voltage	U	V	max. 250		
Current	I	A	max. 2		
Electrical connection			Screw terminal, protective cap Pg7		
Electrical protection			IP65		
Switching frequency		s/min	200		

* for vacuum operation
** refers to increasing pressure

Dimensions



Order Instructions

Order Instructions Type	Order No.	Port Size A	Function	Setting range
801-1/8-01	**KL3010**	G1/8	Break contact	-0.2 to -1 (for vacuum operation)
801-1/4-01	**KZ3791**	G1/4		
802-1/8-01	**KL3011**	G1/8	Make contact	
802-1/4-01	**KZ3792**	G1/4		
801-1/8-1	**KL3012**	G1/8	Break contact	0.2-1
801-1/4-1	**KZ3793**	G1/4		
802-1/8-1	**KL3013**	G1/8	Make contact	
802-1/4-1	**KZ3794**	G1/4		
801-1/8-10	**KL3014**	G1/8	Break contact	1-10
801-1/4-10	**KZ3795**	G1/4		
802-1/8-10	**KL3015**	G1/8	Make contact	
802-1/4-10	**KZ3796**	G1/4		

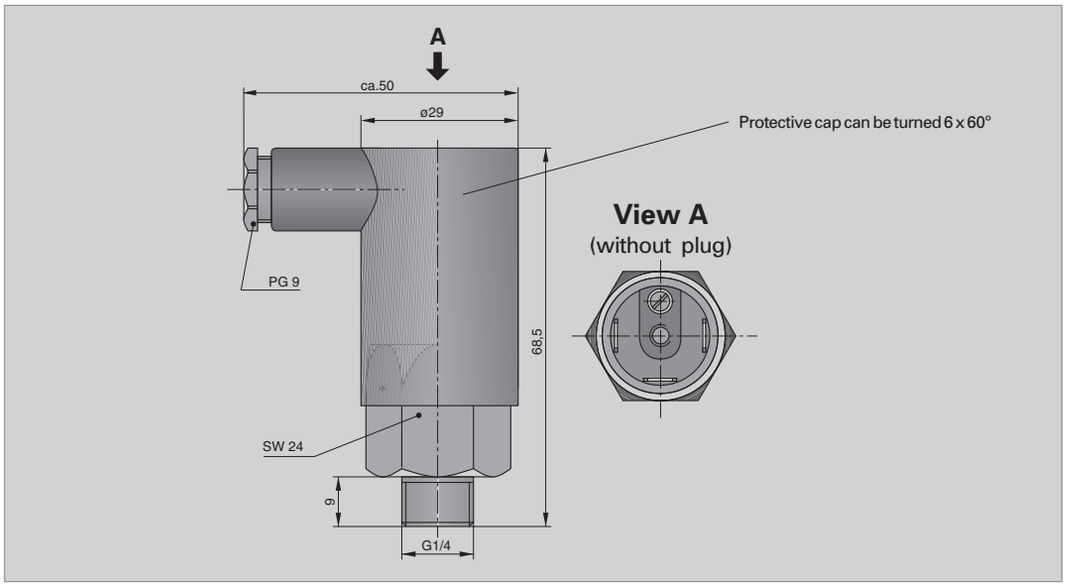
Pneumatic, Flat Pin Plug Series 803, 804

Characteristics Pressures quoted as gauge pressures

Characteristics	Symbol	Unit	Description	
Type Break contact			803-..-1	803-..-10
Make contact			804-..-1	804-..-10
Setting range	$p_{min/max}$	bar	-0.1-1	1-10
Safety pressure relief	p_{max}	bar	100	100
Port size			G1/8 external, G1/4 external	
Weight (mass)		kg	0.09	
Material			Housing: galvanised steel, plastic Diaphragm: Buna N	
Medium and ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-20 +100	
Consistency		%	5-10*	
Switch back difference		%˜	5*	
Voltage	U	V	max. 250	
Current	I	A	max. 2	
Electrical connection			Flat pin plug, protective cap PG9	
Electrical protection			IP55	
Switching frequency		s/min	200	

*refers to increasing pressure

Dimensions



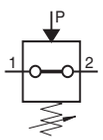
Order Instructions

Order Instructions Type	Order No.	Port Size A	Function	Setting range
803-1/8-1	**KL3018**	G1/8	Break contact	0.2-1
803-1/4-1	**KL3094**	G1/4		
804-1/8-1	**KL3019**	G1/8	Make contact	
804-1/4-1	**KL3095**	G1/4		
803-1/8-10	**KL3016**	G1/8	Break contact	1-10
803-1/4-10	**KW0721**	G1/4		
804-1/8-10	**KL3017**	G1/8	Make contact	
804-1/4-10	**KW0722**	G1/4		

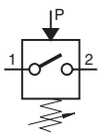
Pressure Switches Pneumatic G1/8, G1/4



Break contact



Make contact



Actuation: Pneumatic

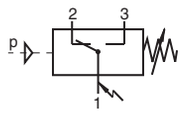
Switching function:
Make contact
– closes the circuit when the set pressure is reached

Break contact
– interrupts the circuit when the set pressure is reached

Dimensions in mm

Pressure Switches Pneumatic G1/8, G1/4





Actuation: Pneumatic

Features
– suited for intrinsically safe operation
– especially compact design
– high switching frequency
– attractive design
– Shockproof up to 30 g

Pin 1 – 3:
rising pressure makes contact

Pin 1 – 2:
rising pressure breaks contact

Characteristics Pressures quoted as gauge pressures

Characteristics	Symbol	Unit	Description			
Type – thread version			G1/4-0I*	G1/4-2I	G1/4-8I	G1/4-16I
Type – flange version			G1/4-0P*	G1/4-2P	G1/4-8P	G1/4-16P
Setting range	$p_{min/max}$	bar	-1 to 0	0.2-2	0.5-8	1-16
Safety pressure relief	p_{max}	bar	80	80	80	80
Port size			Type I: G1/4 internal, Type P: flange			
Mounting			2 through-holes Ø 5.2			
Installation			In any position			
Weight (mass)		kg	0.275			
Medium			Filtered compressed air (10µm), lubricated or unlubricated			
Material						
Housing			Special aluminium die casting, powder-coated			
Diaphragm, seals			Buna N			
Medium and ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +80			
Consistency		%	±2 in relation to end-of-range value			
Switch back difference			See diagram			
Hysteresis, vacuum version		%	<15			
Vibration resistance		g	10 (10 ... 2000 Hz)			
Shock resistance		g	30			
Voltage	U	V	max. 250			
Voltage type			AC and DC			
Operating current and operating voltage for category of use			AC12 to VDE0660 4A at 250 VAC AC14 to VDE0660 1A at 250 VAC DC12 to VDE0660 3A at 28 VDC DC13 to VDE0660 1A at 28 VDC			
CE marking			to EC Directive 73/23/EWG			
Electrical connection			Connector to DIN 43650, Form A, ISO4400 oder M12x1 – 4-pin			
Electrical protection		IP	65			
Switching element			Pole-changing switch with catch spring as switching element, with self-cleaning contacts			
Switching frequency		s/min	max. 200			

* for vacuum operation

Selection and Mounting Notes

Range selection:
Selection is optimal when the switching points are in the middle of the switching range.

Electrical connection:
Wiring according to VDE regulations.

Tightening torque for plug:
0.7 ± 0.1 Nm

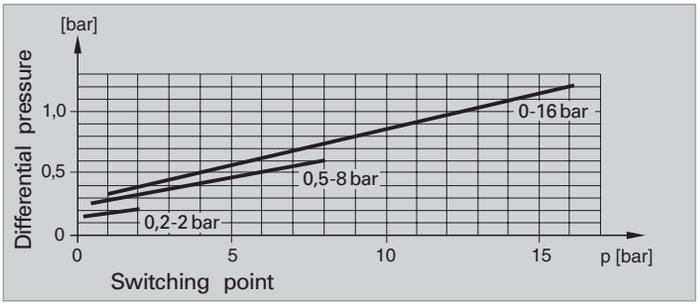
Outdoor use only with sufficient protection against critical environmental conditions (e.g. aggressive atmosphere, salty environments, high temperature changes).

Scope of delivery

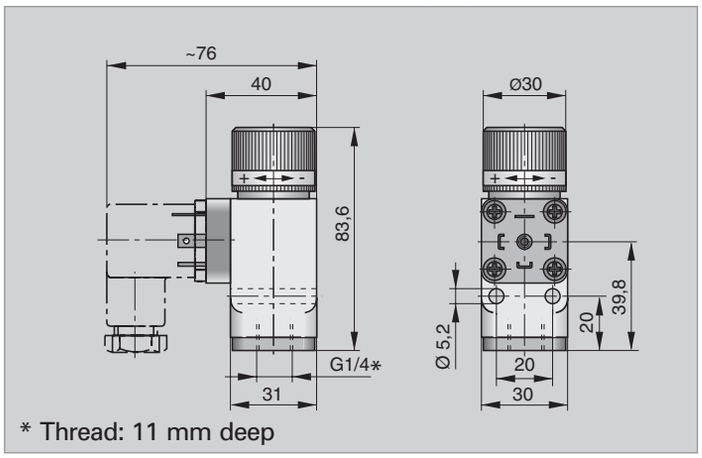
The flange version (surface roughness of flange surface 12µm) is supplied with an O-ring 5 x 1.5mm and 2 screws 5 x 35 DIN 912. Minimum thread length to be used: 4 mm.

Max. diameter of the pressure opening 3 mm.

Switch back difference

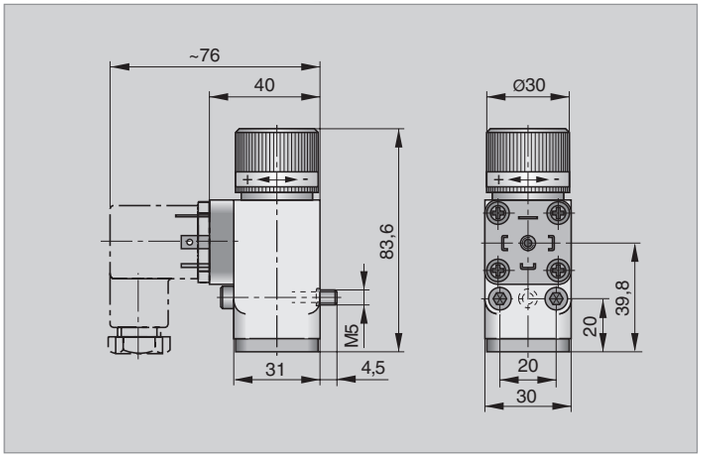


Dimensions
(Version with internal thread and plug to DIN 43650)

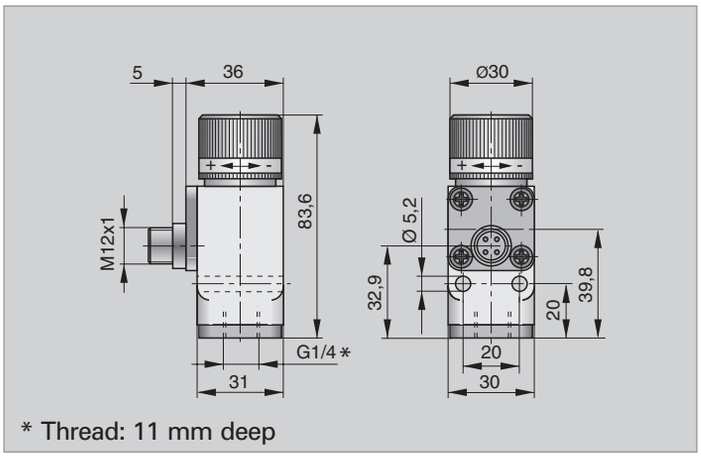


* Thread: 11 mm deep

Dimensions
(Flange version with plug to DIN 43650)

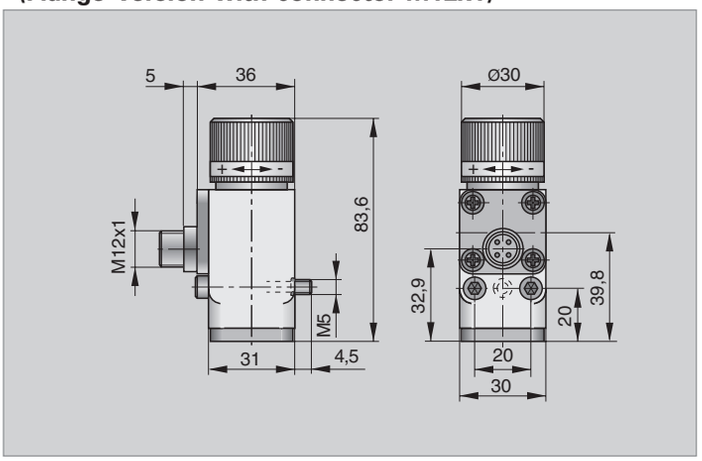


Dimensions
(Version with internal thread and connector M12x1)



* Thread: 11 mm deep

Dimensions
(Flange Version with connector M12x1)



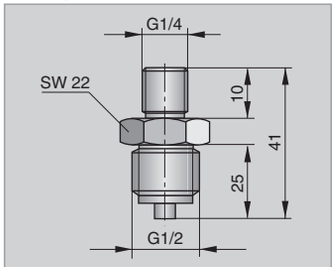
Order Instructions

Setting range [bar]	Order Instructions Type	Order No.
-1 to 0	**G1/4-0I-DIN**	**KL3200**
-1 to 0	**G1/4-0I-M12**	**KL3208**
0.2 to 2	**G1/4-2I-DIN**	**KL3201**
0.2 to 2	**G1/4-2I-M12**	**KL3209**
0.5 to 8	**G1/4-8I-DIN**	**KL3202**
0.5 to 8	**G1/4-8I-M12**	**KL3210**
1.0 to 16	**G1/4-16I-DIN**	**KL3203**
1.0 to 16	**G1/4-16I-M12**	**KL3211**

Order Instructions

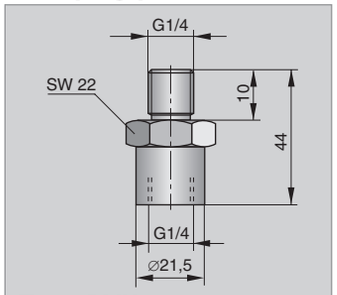
Setting range [bar]	Order Instructions Type	Order No.
-1 to 0	**G1/4-0P-DIN**	**KL3204**
-1 to 0	**G1/4-0P-M12**	**KL3212**
0.2 to 2	**G1/4-2P-DIN**	**KL3205**
0.2 to 2	**G1/4-2P-M12**	**KL3213**
0.5 to 8	**G1/4-8P-DIN**	**KL3206**
0.5 to 8	**G1/4-8P-M12**	**KL3214**
1.0 to 16	**G1/4-16P-DIN**	**KL3207**
1.0 to 16	**G1/4-16P-M12**	**KL3215**

Pressure connection adapter



Type: DP-1412
Order No. KL9232

Damping prechamber



Type: DVK-1414
Order No. KL9231

Plugs to DIN 43650, Form A, ISO 4400

Description	Order Instructions Type	Order No.
Standard version	**GSD-30DS**	**KL3349**
Version with LEDs 24V	**GSD-30DSL24V**	**KL3350**
Version with LEDs 230V	**GSD-30DSL230V**	**KL3351**



Standard version



Version with LEDs

Dimensions in mm

Magic Pressure Control Series MPC

Pressure Switches Electronic



Actuation: electrical

Magic Pressure Control
The magic pressure control is an electronic pressure control, monitoring and regulating device. Basically, it consists of a pressure connection with a pressure sensor and integrated control electronics.

Applications
- Pneumatic control systems
- Pressing technology
- Welding technology
- Packing machines and filling systems
- Test systems
- Clamping systems
- Plastic blow-moulding machinery
- Robotics and handling industry

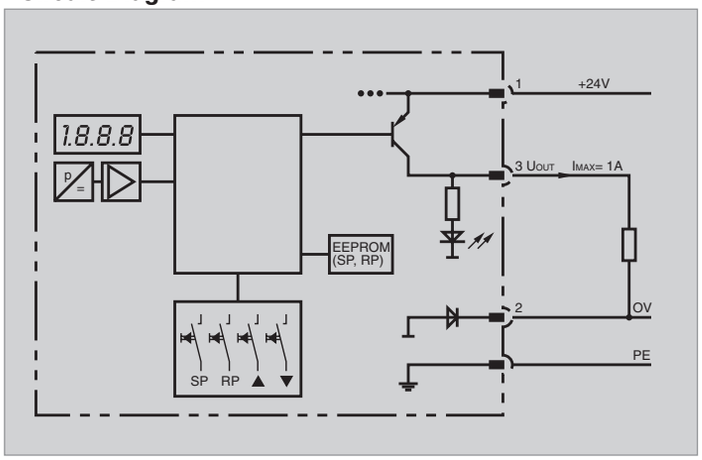
Features
- independent of switch back point of set value
- Switching point can be set without compressed air (independent of location)
- LED display
- Switching time < 5 ms
- long service life
- easy handling
- display of system pressure
- adjustable hysteresis
- adjustable switching window (Window Mode)
- Shockproof up to 25 g

Characteristics Pressures quoted as gauge pressure

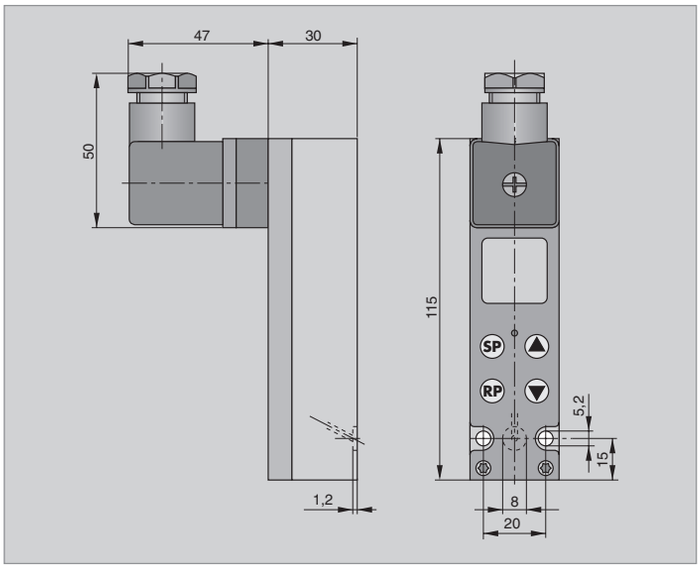
Characteristic	Symbol	Unit	Description	
Type			MPC-V*	MPC
Setting range	$p_{min/max}$	bar	-1 to 1	0 to 10
Switching point		%	0-100 of maximum. value, adjustable	
Switch-back point		%	0-100 of maximum value, adjustable	
Safety pressure relief	p_{max}	bar	10	30
Mounting			By flange (see dimensions drawing)	
Display			3 1/2 digit	
Linearity		%	< 0.2 ± 1 digit	
Installation			In any position	
Shockproof up to		g	25	
Weight (mass)		kg	0.01	0.05
Medium			Filtered compressed air	
Material				
Housing			Zinc die-casting	
Diaphragm			Buna N	
Ambient temperature range	ϑ_{min} ϑ_{max}	°C °C	-10 +60	
Medium temperature range	ϑ_{min} ϑ_{max}	°C °C	–10 +60	
Temperature variation of the zero point		%	0.4 of end value / 10 K	
Temperature variation of the set range		%	0.2 of end value / 10 K	
Voltage	U	V	18 to 32 V reverse pole-proof	
Voltage type			Direct current	
Allowable residual ripple		%	10 (within 18-32 V)	
Power consumption		mA	< 50 (excluding load current)	
Switching type			Open collector, potentially bound switching to Ub, suitable for inductive loads	
Output voltage			Supply voltage – 1.5 V	
Switching current	Imax	A	1 (short circuit-proof)	
Switching time		ms	< 5	
Service life			100 million switching operations	
Switching logic			Signal when pressure rises, if SP > RP Signal when pressure falls, if SP < RP	
EM emission			To EN 50081. part 1	
EM resistance			To EN 50082. part 2	
Electrical connection			Plug to DIN 43650	
Electrical protection		IP	65 (with plug to DIN 43650)	

* for vacuum operation

Circuit Diagram

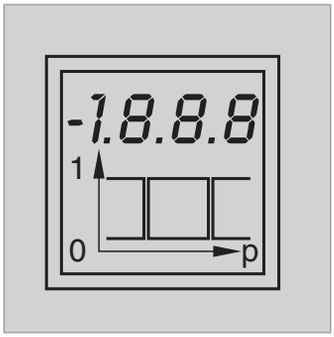


Dimensions



Display test

Each time the power is switched on, the display is tested for 2 - 3 seconds. During this test all elements of the display are shown, and the following appears:



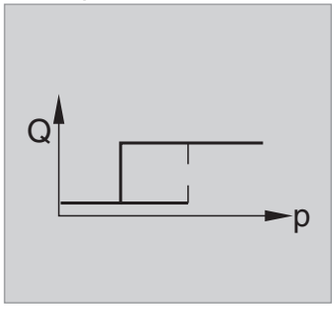
Order Instructions

Setting Range [bar]	Order Instructions Type	Order No.
-1 to 1	**MPC-V**	**KL3003**
0 to 10	**MPC**	**KL3002**

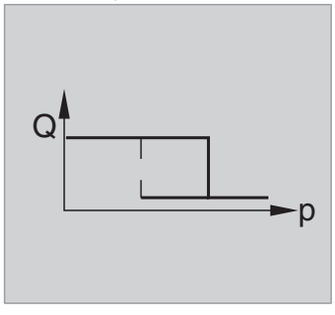
Adjusting the switching points and switching pressure differences

Setting the switching points

Example 1



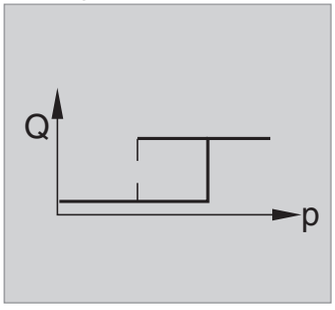
or Example 2



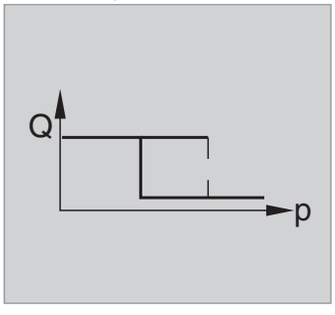
Press button (SP) and keep it pressed down. The display will show the current switching pressure and the dotted line will blink as long as the button remains pressed.
Using the arrow keys, you can adjust the switching point up or down. Keeping the arrow keys pressed down longer will increase the adjustment speed.
When the arrow key is released the switching pressure stops. When the button (SP) is released, the set value is stored and active. The current pressure value is displayed and the dotted line stops blinking.

Setting the switch-back point

Example 1



or Example 2



Press button (RP) and keep it pressed down. The display shows the current switch-back pressure and the dotted line will blink as long as the button remains pressed down.

Adjust the pressure with the arrow keys as described earlier.

When adjusting the settings, it can happen that the hysteresis diagram changes its mode. This occurs when the set switch-off pressure is higher than the switch-on pressure. Once both points are set correctly, the hysteresis diagram reverts to its correct mode.

You can switch between SP and RP until the settings are correct.

Dimensions in mm

Adjusting the switching points and switching pressure differences

Setting access protection

Coding:
The pressure switch is protected from unauthorised access with a four-digit code.
To access the code setting mode, press buttons SP and RP simultaneously during the display test. Release SP and RP after the display test has been completed. The display will now blink »Cod«.
The code consists of four digits, each digit consisting of a combination of 1 to 4 keys. Each of the four positions can now be set. Once a position has been set, the display will show » – «.
If the display shows » – – – – « the code has been set. It can be stored by pressing SP.
The switching and switch-back points can then only be adjusted by entering the code.

When access protection is enabled, the switching and switch-back points can still be displayed by pressing the buttons, but when an attempt to change the settings is made, the display will show »Code«, and the code must be entered. When the code is correct, the switching and switch-back points can be adjusted.

Removing access protection

To remove the code, press SP and ↑ simultaneously during the display test. Release the buttons SP and ↑ after the display test has been completed. The display will show »Code«. Now enter the the current code and the display will show »CLC«. The pressure switch is then no longer protected from unauthorised access.

Setting a damping time factor

A damping time factor can be set to avoid the evaluation of each and every single change in pressure. By adjusting the damping time factor, pressure changes are only processed if they last longer than the set time.
To set the damping time, press SP during the display test.
Release the SP button after the display test has been completed. The display now shows the damping time in milliseconds (e.g. t01).
Using the arrow keys ↑,↓), the damping time can be changed to 03, 06, 12 or 24 ms. Store the desired setting
by pressing SP.

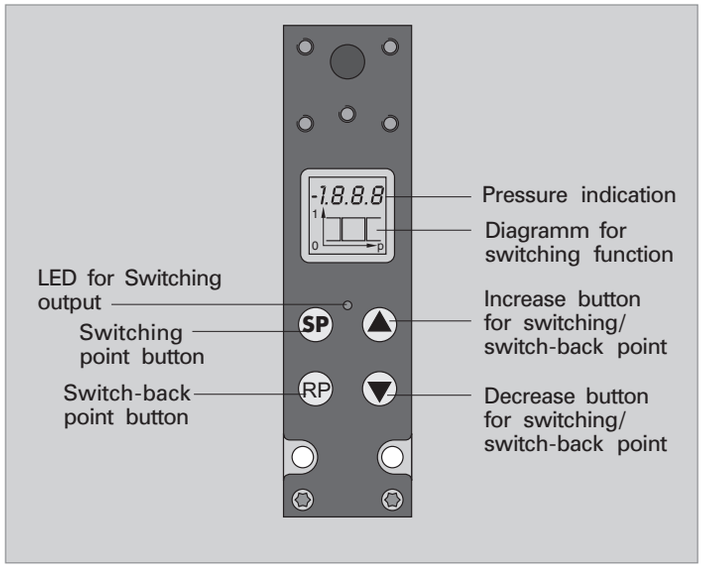
Adjusting the pressure switch to ambient pressure = 0.

Press RP during the display test, and release it after the test has been completed. The display will indicate »OFS«. Using the arrow keys (↑,↓), the pressure indicator can be set to 0 and the setting can be stored with SP.

Hysteresis operation

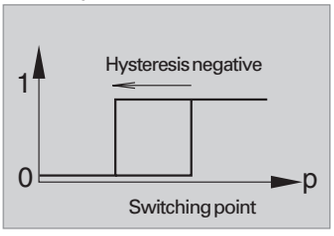
If a fixed hysteresis is desired instead of the switch-back point, it can be set to your specifications. Press SP and ↓ simultaneously during the display test, and release them once the test has completed. The display will now show the operation mode. Use the arrow keys ↑,↓ to change the mode until the display shows HYS. Store the operation mode by pressing SP. Pressing SP will now allow you to display the set switching point and change it with the arrow keys ↑,↓ . Pressing RP will now allow you to display the hysteresis and change it with the arrow keys ↑,↓ .

Position of the Control Elements



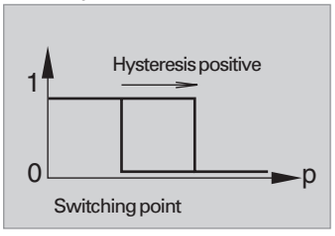
Negative hysteresis means: Signal at rising pressure (Example 1)

Example 1



Positive hysteresis means: Signal at falling pressure (Example 2)

Example 2

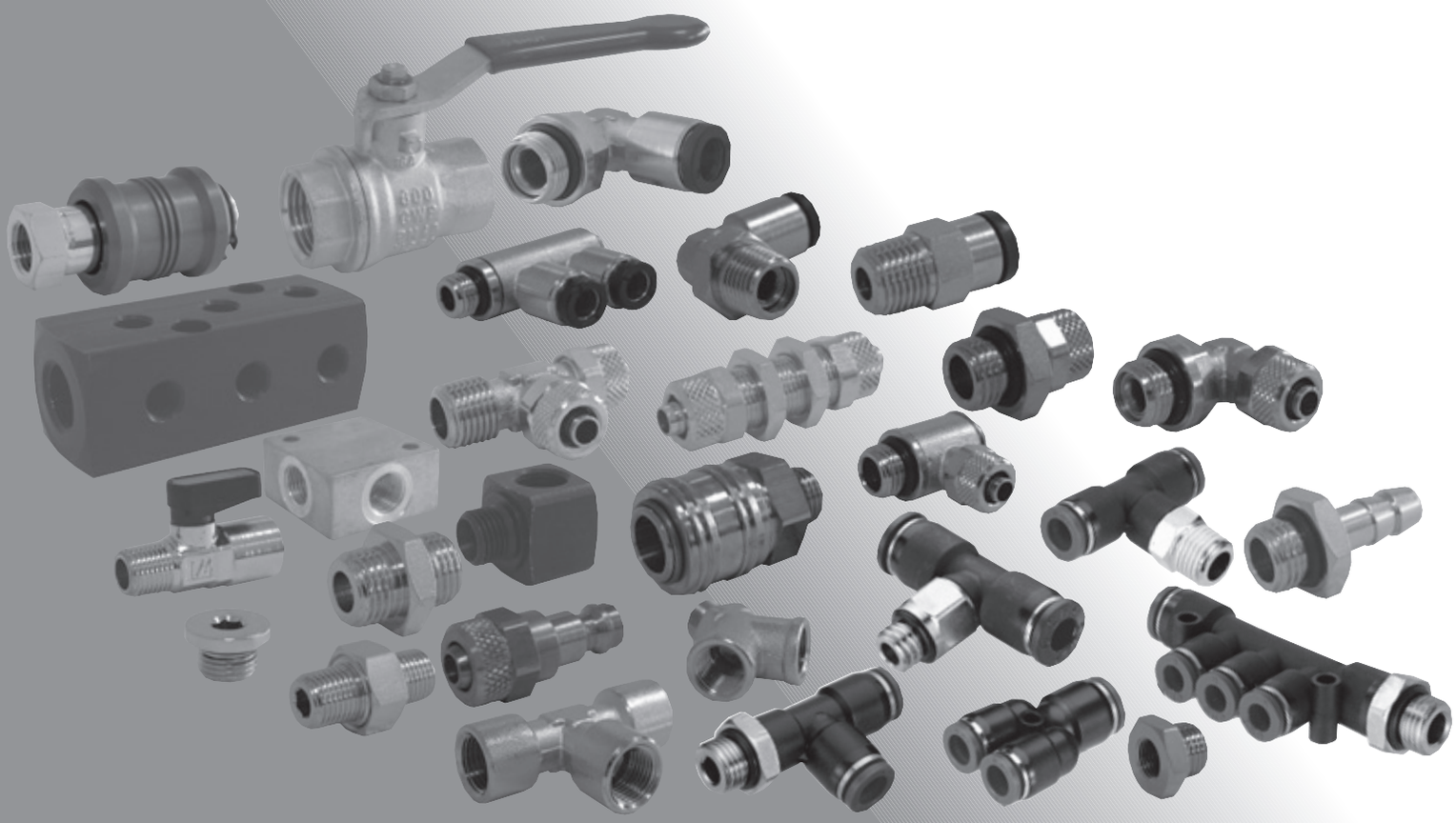


If the switching point is changed, the switch-back point will be adjusted automatically by the value of the set hysteresis.

Display of hardware errors / malfunctions

Message	Meaning	Possible causes / Solutions
O.Er	output error	Output error: capacity switch malfunction, feedback to processor interrupted. Repair required.
E.Er	E^2PROM error	E^2PROM error: component defective or connection to processor malfunctioning. Repair required.
I.Er	init. error	Initialisation data check-sum error. Solution: enter any SETUP-function and exit with “SP”. As the error was caused by a data error, all SETUP settings should be checked and if necessary corrected.
C.Er	cali. error	Calibration data check-sum error. New calibration required.
SC.L	short circuit low	Short circuit output to mass. Check wiring. The power supply for the connected load may be too weak. (voltage collapse especially with loads with a high initial power consumption or capacity)
UFL	underflow	The current pressure is below the measuring range. Increase the pressure until it is within range.
OFL	overflow	The current pressure is above the measuring range. Reduce the pressure until it is within range.
Display of hardware errors / malfunctions (can be switched off)		
SC.H	short circuit high	Short circuit output to power supply. Check wiring, if the switching wire of the user (e.g. electrical control circuit, PLC, etc) is kept on a potential of > 3V, or if multiple pressure switches are used in parallel, this function should be switched off (press ↓ during display test, then SP).
U.Lo	voltage low	Operating voltage too low (Vcc < 15 V). Check power supply, load may be too high (switch off ↑ during display test, then SP)
Messages during initialisation of SETUP functions		
Cod	code	Request for entering code, or code programming.
CLC	clear code	Delete current code.
txx		Set damping time factor. xx = Delay of switching output. xx = (03, 06, 12, 24) in ms
OFS	offset	Request for Offset calibration with ↑ or ↓ button.
SC.H	short circuit high	Short circuit monitoring activated.
U.LO	voltage low	Voltage monitoring activated.
OFF	off	Short circuit / voltage monitoring off.
Std	Standard mode	Standard mode active
HYS	Hysteresis mode	Hysteresis mode active
FEn	Window mode	Window mode active

- Metal push-in fittings
- Plastic push-in fittings
- Miniature plastic push-in fittings
- Compression fittings
- Banjo bolts
- Standard fittings for general installation work
- Sealing rings and tapes
- Tube/ hose fittings
- Tubing
- Tubing accessories
- Air line accessories (see below)
- Quick release couplings, self-sealing
- 3/2 way slide valves
- Manifolds with integrated ball valves
- Ball valves
- Blow guns



Overview

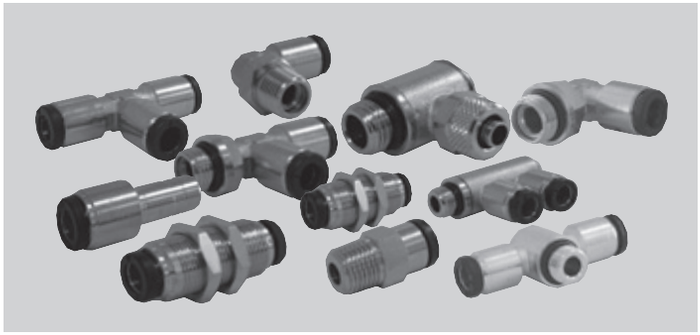
Contents

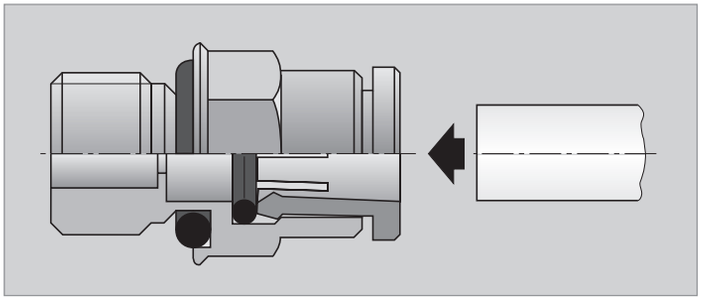
Fittings, Tubing and Accessories Pages 59–120

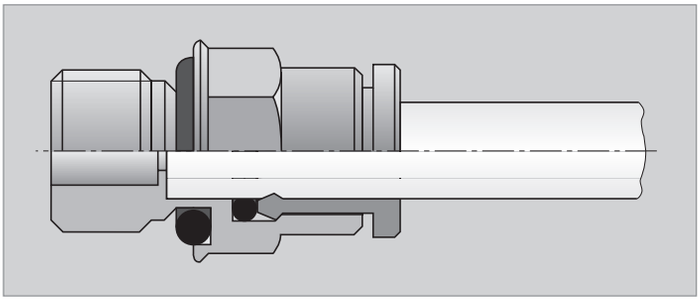
Metal push-in fittings..... 61–69
Plastic push-in fittings..... 71–82
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Standard fittings for general installation work..... 95–105
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Quick release couplings, self-sealing..... 115–117
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Manifolds with integrated ball valves, Series VL..... 118
Ball valves, Series KH, KHE, KHM..... 119,120
Blow guns, Series BP..... 120

Connection System for Fast Assembly / Dismantling without Tools

- Metal fittings (nickel-plated brass)
- Tubing clamped on outside diameter by precision collet
- Tubing sealed on outside diameter by O-rings
- Integrated O-rings (on types with parallel thread) for reliable thread sealing (e.g. on bevelled or uneven surfaces) and easier handling (no additional seal rings required)
- Connecting the tubing: simply push the tube into the collet up to the stop
- Disconnecting the tubing: push the release ring back and pull the tube out







Technical Data

Connecting thread*	M5, G1/8, G1/4, G3/8, G1/2 (parallel and taper)
Tubing outside diameter *	Ø4, Ø5, Ø6, Ø8, Ø10, Ø12, Ø14
Material	Body: nickel-plated brass; O-rings: NBR
Operating pressure range	0 to 18 bar
Temperature range	-10°C to +80°C (other temperature ranges on request)
Medium	Compressed air (other media on request)

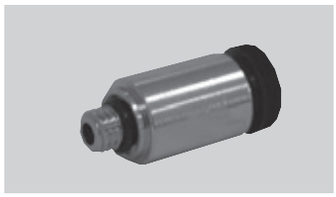
* depending on version

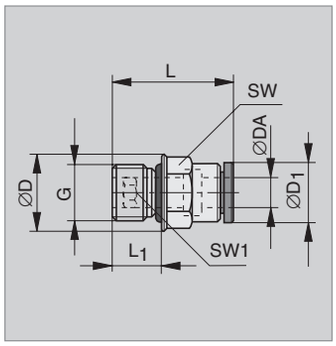
Tubing Recommendations[1)]

Tubing type	Calibrated tubing, surface hardness min. 65 Shore
Tubing outside diameter*	Ø4, Ø5, Ø6, Ø8, Ø10, Ø12, Ø14
Tubing tolerances (outside diameter)	Ø4, Ø5: +0.05, -0.07
	Ø6 to Ø14: +0.05, -0.1
Tubing material	PA 12 or similar

[1)] see our range of tubing (Type PS-..) in Section on Tubing and Hoses, pages 109–111

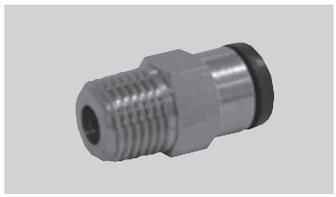
Metal Push-in Fittings

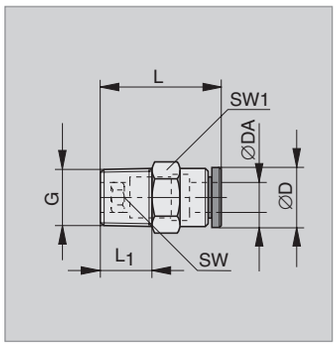




Straight Adaptor, male parallel thread with O-ring

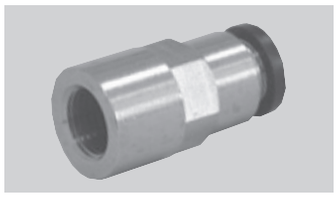
Order Instructions Type	Order No.	Tube ØDA *	G	SW	SW1	ØD	$ØD_1$	L	L_1
GS-54Msv	**KW 0006**	4	M5	-	2.5	9.9	10	23	4
GS-184Msv	**KW 0007**	4	G1/8	11	3.0	15	10	22	6
GS-144Msv	**KW 0861**	4	G1/4	12	3.0	18	10	22	8
GS-55Msv	**KW 0008**	5	M5	-	2.5	11	11.5	23	4
GS-185Msv	**KW 0009**	5	G1/8	11	3.0	15	11.5	23	6
GS-145Msv	**KW 0010**	5	G1/4	12	3.0	18	11.5	24	8
GS-56Msv	**KW 0011**	6	M5	-	2.5	13	12.5	25	4
GS-186Msv	**KW 0012**	6	G1/8	13	4.0	15	12.5	28	6
GS-146Msv	**KW 0013**	6	G1/4	13	4.0	18	12.5	27	8
GS-188Msv	**KW 0014**	8	G1/8	14	5.0	15.9	14	30	6
GS-148Msv	**KW 0015**	8	G1/4	15	6.0	18	14	28.5	8
GS-388Msv	**KW 0016**	8	G3/8	15	6.0	21	14	28.5	9
GS-1410Msv	**KW 0017**	10	G1/4	17	7.0	20	16.5	34.5	8
GS-3810Msv	**KW 0018**	10	G3/8	17	8.0	21	16.5	31.5	9
GS-1412Msv	**KW 0019**	12	G1/4	19	7.0	22	19	36	6
GS-3812Msv	**KW 0020**	12	G3/8	19	10.0	22	19	37.5	9
GS-1210Msv	**KW 0982**	10	G1/2	17	8	26	16.5	32	11
GS-1212Msv	**KW 0021**	12	G1/2	21	10.0	26	19	35	11
GS-1214Msv	**KW 0022**	14	G1/2	23	12.0	26	21.5	40.5	11

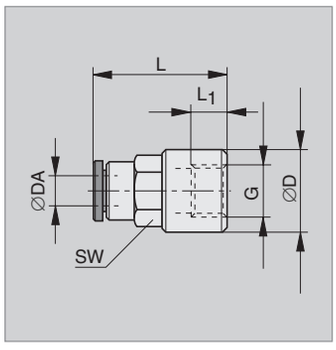




Straight Adaptor, male taper thread

Order Instructions Type	Order No.	Tube ØDA *	G	SW	SW1	ØD	L	L_1
GSK-184Msv	**KW 0001**	4	R1/8	2.5	10	10	21	7.5
GSK-186Msv	**KW 0002**	6	R1/8	2.5	12	11.5	24	7.5
GSK-146Msv	**KW 0003**	6	R1/4	4	14	11.5	26	11
GSK-188Msv	**KW 0004**	8	R1/8	5	14	14.5	28	7.5
GSK-148Msv	**KW 0005**	8	R1/4	6	14	14.5	28	11
GSK-388Msv	**KW 0862**	8	R3/8	6	17	14.5	28	11
GSK-1410Msv	**KW 0863**	10	R1/4	7	17	16.5	30	11
GSK-3810Msv	**KW 0864**	10	R3/8	7	17	16.5	30.5	11
GSK-3812Msv	**KW 0865**	12	R3/8	7	19	19	33	11





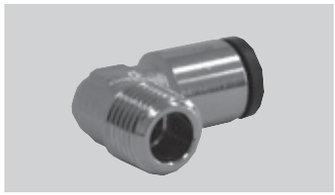
Pressure Gauge Adaptor

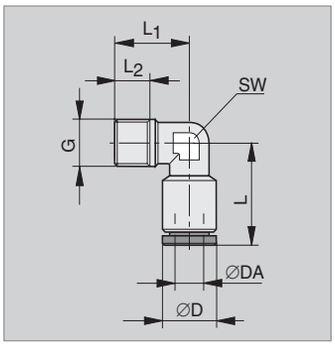
Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	L	L_1
MS-184Msv	**KW 0030**	4	G1/8	11	14	28.5	7
MS-185Msv	**KW 0031**	5	G1/8	11	14	28.5	7
MS-186Msv	**KW 0032**	6	G1/8	13	15	30.5	7
MS-146Msv	**KW 0033**	6	G1/4	13	17	33	8
MS-188Msv	**KW 0034**	8	G1/8	14	17	31.5	7
MS-148Msv	**KW 0035**	8	G1/4	14	17	34	8
MS-1410Msv	**KW 0036**	10	G1/4	17	20	36	8

* = Tube ØOD

Elbow Adaptor, male taper thread

Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	L	L_1	L_2
LSK-184Msv	**KW 0037**	4	R1/8	10	10	22.5	16	6
LSK-186Msv	**KW 0038**	6	R1/8	10	12.5	24.5	16	6
LSK-146Msv	**KW 0039**	6	R1/4	10	12.5	24.5	18.5	9.5
LSK-188Msv	**KW 0040**	8	R1/8	12	14	27.5	17	6
LSK-148Msv	**KW 0041**	8	R1/4	12	14	27.5	20	10
LSK-388Msv	**KW 0042**	8	R3/8	14	14	29	22.5	10
LSK-1410Msv	**KW 0043**	10	R1/4	14	16.5	31.5	22	8.5

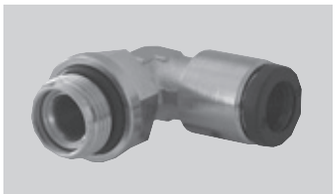


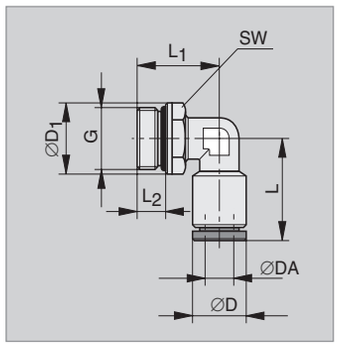


Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	$ØD_1$	L	L_1	L_2
LDS-54Msv	**KW 0049**	4	M5	8	10	9	22.5	19	4
LDS-184Msv	**KW 0050**	4	G1/8	13	10	15	22.5	21	6
LDS-55Msv	**KW 0051**	5	M5	8	11.5	9	23	19	4
LDS-185Msv	**KW 0052**	5	G1/8	13	11.5	15	23	21	6
LDS-145Msv	**KW 0053**	5	G1/4	16	11.5	18	23	25	8
LDS-56Msv	**KW 0872**	6	M5	9	12.5	9	24.5	17.5	4
LDS-186Msv	**KW 0054**	6	G1/8	13	12.5	15	24.5	21	6
LDS-146Msv	**KW 0055**	6	G1/4	16	12.5	18	26	25	8
LDS-188Msv	**KW 0056**	8	G1/8	13	14	15	27.5	22.5	6
LDS-148Msv	**KW 0057**	8	G1/4	16	14	18	27.5	25	8
LDS-388Msv	**KW 0058**	8	G3/8	19	14	22	29.5	30.5	9
LDS-1410Msv	**KW 0059**	10	G1/4	16	16.5	18	31.5	27	8
LDS-3810Msv	**KW 0060**	10	G3/8	19	16.5	22	31.5	30.5	9
LDS-1210Msv	**KW 0983**	10	G1/2	22	16.5	26	31.5	30	11
LDS-1412Msv	**KW 0061**	12	G1/4	16	19	18	34.5	28	8
LDS-3812Msv	**KW 0062**	12	G3/8	22	19	22	34.5	31.5	9
LDS-1212Msv	**KW 0873**	12	G1/2	22	21.5	26	37.5	35	11
LDS-1214Msv	**KW 0835**	14	G1/2	22	21.5	26	37.5	34.5	11

For frequent swivelling, see Type ESS on page 62

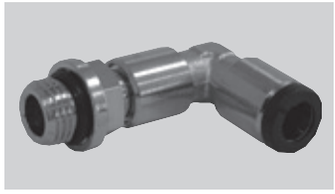


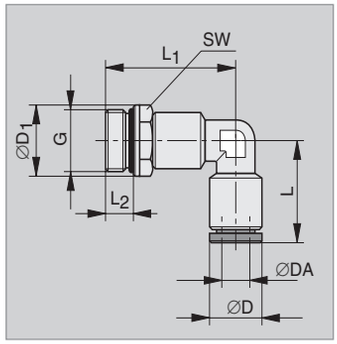


Extended Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	$ØD_1$	L	L_1	L_2
LDSL1-186Msv	**KW 0756**	6	G1/8	13	12.5	15	24.5	38	6
LDSL1-146Msv	**KW 0757**	6	G1/4	14	12.5	18	24.5	41	8
LDSL1-188Msv	**KW 0754**	8	G1/8	13	14	15	27.5	41	6
LDSL1-148Msv	**KW 0755**	8	G1/4	14	14	18	27.5	44	8

* = Tube ØOD

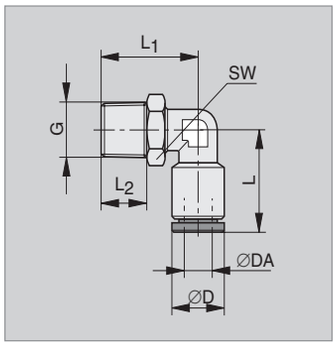




Dimensions in mm

Metal Push-in Fittings



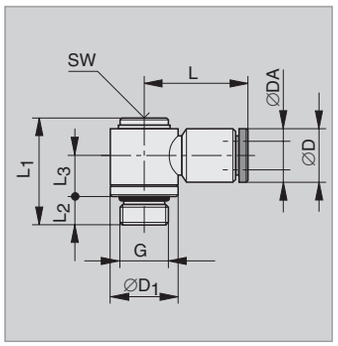


Elbow Adaptor, swivelling, male taper thread

Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	L	L_1	L_2
LDSK-184Msv	**KW 0044**	4	R1/8	12	10	22	22.5	7.5
LDSK-186Msv	**KW 0045**	6	R1/8	12	11.5	23.5	22.5	7.5
LDSK-146Msv	**KW 0046**	6	R1/4	16	11.5	23.5	24.5	11
LDSK-188Msv	**KW 0047**	8	R1/8	12	14.5	26.5	24	7.5
LDSK-148Msv	**KW 0048**	8	R1/4	16	14.5	26.5	26.5	11
LDSK-388Msv	**KW 0867**	8	R3/8	19	14.5	29	30	11.5
LDSK-1410Msv	**KW 0868**	10	R1/4	16	16.5	31.5	28	11
LDSK-3810Msv	**KW 0869**	10	R3/8	19	16.5	31.5	30	11.5
LDSK-3812Msv	**KW 0870**	12	R3/8	19	19	34.5	31	11.5

For frequent swivelling, see Type ESS below



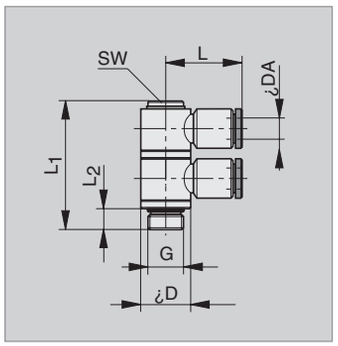


Banjo Elbow Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	$ØD_1$	L	L_1	L_2	L_3
ESS-54Msv	**KW 0148**	4	M5	2	10	10	22.5	17	4	6.5
ESS-184Msv	**KW 0149**	4	G1/8	5	10	15	23.5	27	6	10.5
ESS-55Msv	**KW 0150**	5	M5	2	11.5	10	23.5	17	4	6.5
ESS-185Msv	**KW 0151**	5	G1/8	5	11.5	15	24.5	27	6	10.5
ESS-186Msv	**KW 0152**	6	G1/8	5	12.5	15	26.5	27	6	10.5
ESS-146Msv	**KW 0153**	6	G1/4	6	12.5	18	28.5	31.5	8	11.5
ESS-188Msv	**KW 0154**	8	G1/8	5	14	15	30	27	6	10.5
ESS-148Msv	**KW 0155**	8	G1/4	6	14	18	32	31.5	8	11.5
ESS-1410Msv	**KW 0156**	10	G1/4	6	16.5	18	35	31.5	8	11.5

Application: for frequent swivelling





Double Banjo Elbow Adaptor, male parallel thread with O-ring

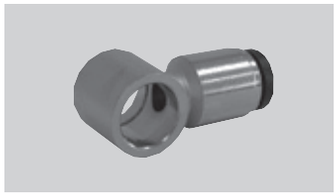
Order Instructions Type	Order No.	Tube ØDA *	G	SW	ØD	L	L_1	L_2
ZSS-184Msv	**KW 0887**	4	G1/8	5	14	25	42	6
ZSS-186Msv	**KW 0888**	6	G1/8	5	14	25	42	6
ZSS-146Msv	**KW 0889**	6	G1/4	6	18	27.5	49	8
ZSS-188Msv	**KW 0890**	8	G1/8	5	14	30	42	6
ZSS-148Msv	**KW 0891**	8	G1/4	6	18	32	49	8
ZSS-1410Msv	**KW 0892**	10	G1/4	6	18	34	49	8

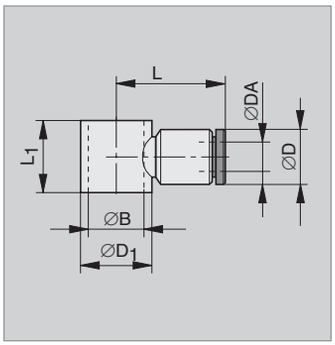
Application: for frequent swivelling

* = Tube ØOD

Banjo Elbow Body, for banjo bolt*

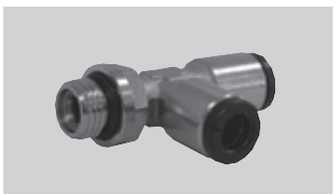
Order Instructions Type	Order No.	Tube ØDA **	ØB	ØD	$ØD_1$	L	L_1
RES-54Msv	**KW 0126**	4	5.2 (M5)	11.5	9.5	23.5	9
RES-184Msv	**KW 0127**	4	9.9 (G1/8)	11.5	14	25	15
RES-55Msv	**KW 0128**	5	5.2 (M5)	12	9.5	24	9
RES-185Msv	**KW 0129**	5	9.9 (G1/8)	12	14	24	15
RES-186Msv	**KW 0130**	6	9.9 (G1/8)	13.5	14	25	15
RES-146Msv	**KW 0131**	6	13.3 (G1/4)	13.5	18	27.5	17
RES-188Msv	**KW 0132**	8	9.9 (G1/8)	15.5	14	30	15
RES-148Msv	**KW 0133**	8	13.3 (G1/4)	15.5	18	32	17
RES-388Msv	**KW 0881**	8	16.3 (G3/8)	15.5	21	32	20
RES-1410Msv	**KW 0134**	10	13.3 (G1/4)	18	18	34	17
RES-3810Msv	**KW 0135**	10	16.8 (G3/8)	18	21	36	20
RES-1412Msv	**KW 0882**	12	13.3 (G1/4)	20	18	36	17
RES-3812Msv	**KW 0136**	12	16.8 (G3/8)	20	21	39	20
RES-1212Msv	**KW 0883**	12	21.5 (G1/2)	20	26	40.5	24

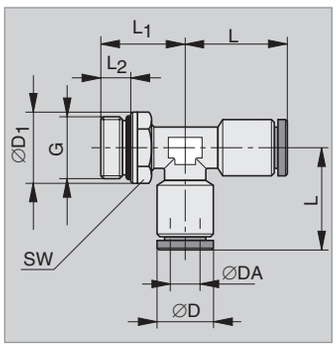




Run Tee Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØDA **	G	SW	ØD	$ØD_1$	L	L_1	L_2
WDS-184Msv	**KW 0080**	4	G1/8	13	10	15	22.5	21	6
WDS-185Msv	**KW 0081**	5	G1/8	13	11.5	15	23	21	6
WDS-186Msv	**KW 0082**	6	G1/8	13	12.5	15	24.5	21	6
WDS-146Msv	**KW 0083**	6	G1/4	16	12.5	18	26	25	8
WDS-188Msv	**KW 0084**	8	G1/8	13	14	15	27.5	22.5	6
WDS-148Msv	**KW 0085**	8	G1/4	16	14	18	27.5	25	8
WDS-1410Msv	**KW 0086**	10	G1/4	16	16.5	18	31.5	27	8
WDS-3810Msv	**KW 0087**	10	G3/8	19	16.5	22	31.5	30.5	9
WDS-3812Msv	**KW 0088**	12	G3/8	19	19	22	34.5	31.5	9
WDS-1212Msv	**KW 0877**	12	G1/2	22	19	26	34.5	32.5	11

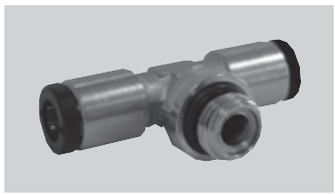


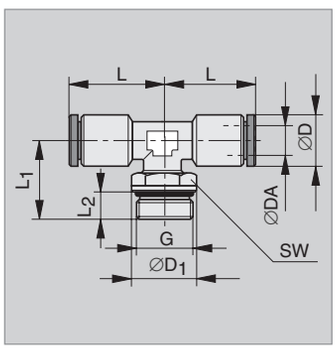


Branch Tee Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØDA **	G	SW	ØD	$ØD_1$	L	L_1	L_2
TDS-184Msv	**KW 0070**	4	G1/8	13	10	15	22.5	21	6
TDS-185Msv	**KW 0071**	5	G1/8	13	11.5	15	23	21	6
TDS-186Msv	**KW 0072**	6	G1/8	13	12.5	15	24.5	21	6
TDS-146Msv	**KW 0073**	6	G1/4	16	12.5	18	26	25	8
TDS-188Msv	**KW 0074**	8	G1/8	13	14	15	27.5	22.5	6
TDS-148Msv	**KW 0075**	8	G1/4	16	14	18	27.5	25	8
TDS-388Msv	**KW 0076**	8	G3/8	19	14	22	29.5	30.5	9
TDS-1410Msv	**KW 0077**	10	G1/4	16	16.5	18	31.5	27	8
TDS-3810Msv	**KW 0078**	10	G3/8	19	16.5	22	31.5	30.5	9
TDS-3812Msv	**KW 0079**	12	G3/8	19	19	22	34.5	31.5	9
TDS-1212Msv	**KW 0875**	12	G1/2	22	19	26	34.5	32.5	11
TDS-1214Msv	**KW 0876**	14	G1/2	22	21.5	26	37.5	34.5	11

For frequent swivelling, see Type TSS on page 66



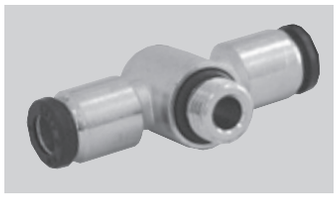


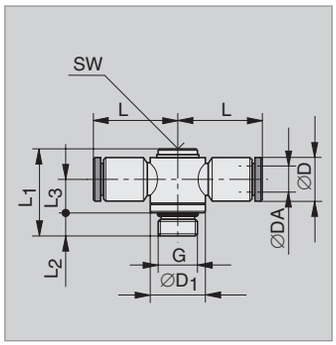
* For banjo bolts see pages 92-94

** = Tube ØOD

Dimensions in mm

Metal Push-in Fittings

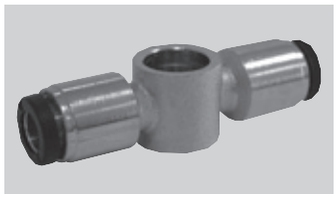


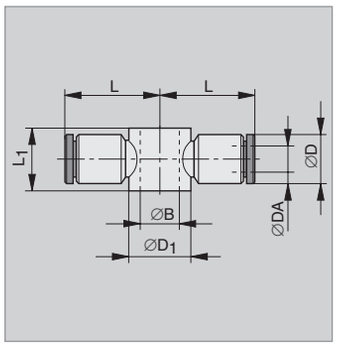


Banjo Tee Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØDA **	D	SW	ØD	$ØD_1$	L	L_1	L_2	L_3
TSS-54Msv	**KW 0157**	4	M5	2	10	10	22.5	17	4	6.5
TSS-184Msv	**KW 0158**	4	G1/8	5	10	15	23.5	27	6	10.5
TSS-55Msv	**KW 0159**	5	M5	2	11.5	10	24	17	4	6.5
TSS-185Msv	**KW 0160**	5	G1/8	5	11.5	15	24.5	27	6	10.5
TSS-186Msv	**KW 0161**	6	G1/8	5	12.5	15	26.5	27	6	10.5
TSS-146Msv	**KW 0162**	6	G1/4	6	12.5	18	28.5	31.5	8	11.5
TSS-188Msv	**KW 0163**	8	G1/8	5	14	15	30	27	6	10.5
TSS-148Msv	**KW 0164**	8	G1/4	6	14	18	32	31.5	8	11.5
TSS-1410Msv	**KW 0165**	10	G1/4	6	16.5	18	35	31.5	8	11.5

Application: for frequent swivelling

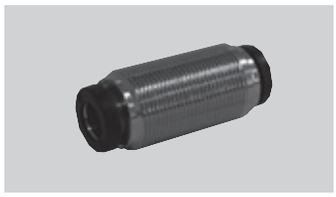


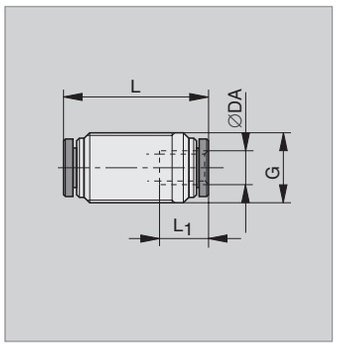


Banjo Tee Body, for banjo bolt*

Order Instructions Type	Order No.	Tube ØDA **	ØB	ØD	$ØD_1$	L	L_1
RDS-54Msv	**KW 0137**	4	5.2 (M5)	10	10	20	9
RDS-184Msv	**KW 0138**	4	9.9 (G1/8)	10	14	24	15
RDS-55Msv	**KW 0139**	5	5.2 (M5)	12	10	21.5	9
RDS-185Msv	**KW 0140**	5	9.9 (G1/8)	11.5	14	24	15
RDS-186Msv	**KW 0141**	6	9.9 (G1/8)	12.5	14	24.5	15
RDS-146Msv	**KW 0142**	6	13.3 (G1/4)	12.5	18	27.5	17
RDS-188Msv	**KW 0143**	8	9.9 (G1/8)	14	14	30	15
RDS-148Msv	**KW 0144**	8	13.3 (G1/4)	14	18	32	17
RDS-388Msv	**KW 0884**	8	16.8 (G3/8)	14	21	31.5	20
RDS-1410Msv	**KW 0145**	10	13.3 (G1/4)	16.5	18	34	17
RDS-3810Msv	**KW 0146**	10	16.8 (G3/8)	16.5	21	36	20
RDS-1412Msv	**KW 0885**	12	13.3 (G1/4)	19	18	36	17
RDS-3812Msv	**KW 0147**	12	16.8 (G3/8)	19	21	39	20
RDS-1212Msv	**KW 0886**	12	21.5 (G1/2)	19	26	40.5	24

* For banjo bolts see pages 92-94





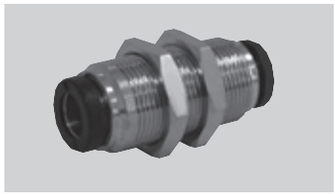
Straight Connector, threaded

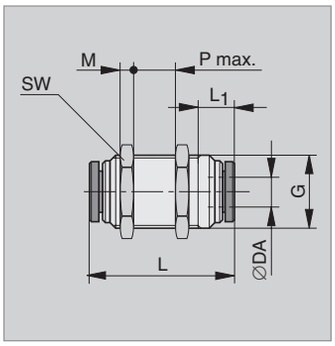
Order Instructions Type	Order No.	Tube ØDA **	G	L	L_1
GVS-4Msv	**KW 0023**	4	M13x1	32	9.5
GVS-5Msv	**KW 0024**	5	M14x1	32	10
GVS-6Msv	**KW 0025**	6	M15x1	32	9.5
GVS-8Msv	**KW 0026**	8	M17x1	39	9.5
GVS-10Msv	**KW 0027**	10	M20x1	42.5	10
GVS-12Msv	**KW 0028**	12	M22x1	49.5	11
GVS-14Msv	**KW 0029**	14	M24x1	53	13.5

** = Tube ØOD

Straight Bulkhead Connector

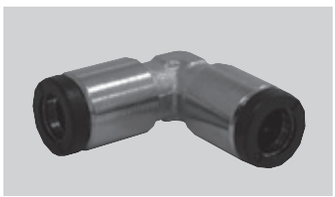
Order Instructions Type	Order No.	Tube ØDA *	G	SW	L	L_1	M	P_{max}
SOS-4Msv	**KW 0101**	4	M13x1	16	32	9.5	4	8
SOS-5Msv	**KW 0102**	5	M14x1	17	32	10	4	8
SOS-6Msv	**KW 0103**	6	M15x1	17	32	9.5	4	8
SOS-8Msv	**KW 0104**	8	M17x1	19	39	9.5	4	16
SOS-10Msv	**KW 0105**	10	M20x1	24	42.5	10	5	17
SOS-12Msv	**KW 0106**	12	M22x1	25	49.5	11.5	5	23
SOS-14Msv	**KW 0107**	14	M24x1	27	53	13.5	6	24

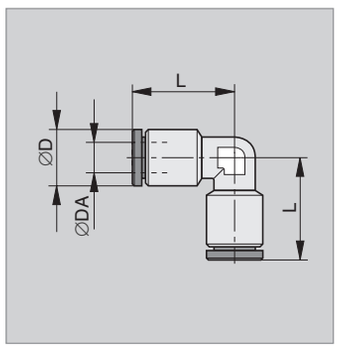




Equal Elbow Connector

Order Instructions Type	Order No..	Tube ØDA *	ØD	L
WS-4Msv	**KW 0063**	4	10	22.5
WS-5Msv	**KW 0064**	5	11.5	23
WS-6Msv	**KW 0065**	6	12.5	24.5
WS-8Msv	**KW 0066**	8	14	27.5
WS-10Msv	**KW 0067**	10	16.5	31.5
WS-12Msv	**KW 0068**	12	19	34.5
WS-14Msv	**KW 0069**	14	21.5	37.5

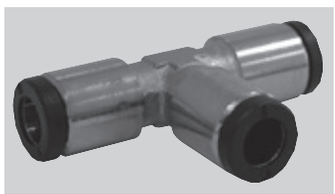


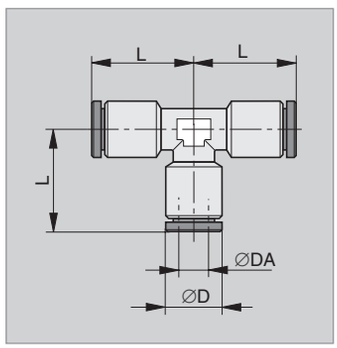


Equal Tee Connector

Order Instructions Type	Order No.	Tube ØDA *	ØD	L
TVS-4Msv	**KW 0089**	4	10	22.5
TVS-5Msv	**KW 0090**	5	11.5	23
TVS-6Msv	**KW 0091**	6	12.5	24.5
TVS-8Msv	**KW 0092**	8	14	27.5
TVS-10Msv	**KW 0093**	10	16.5	31.5
TVS-12Msv	**KW 0094**	12	19	34.5
TVS-14Msv	**KW 0095**	14	21.5	37.5

* = Tube ØOD

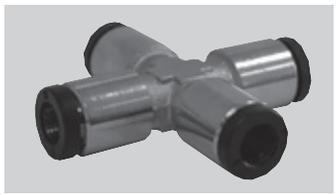


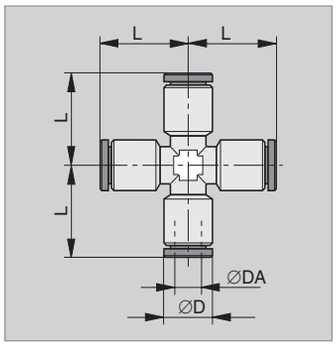


Dimensions in mm

Metal Push-in Fittings

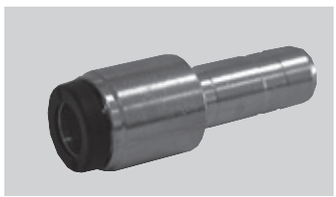
4-Way Cross Connector

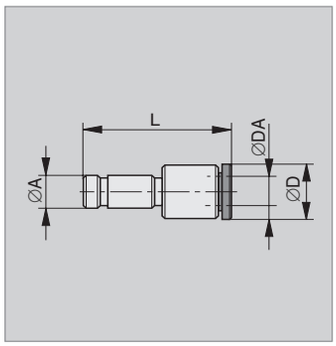




Order Instructions Type	Order No.	Tube ØDA *	ØD	L
KVS-4Msv	KW 0096	4	10	22.5
KVS-5Msv	KW 0097	5	11.5	23
KVS-6Msv	KW 0098	6	12.5	24.5
KVS-8Msv	KW 0099	8	14	27.5
KVS-10Msv	KW 0100	10	16.5	31.5

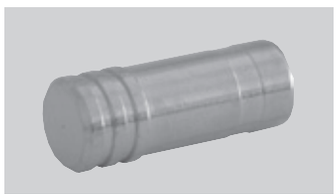
Reducing Straight Stem Connector

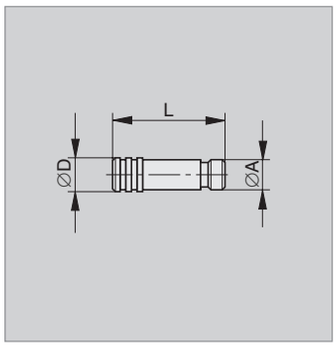




Order Instructions Type	Order No.	Tube ØDA *	Stem Ø A	ØD	L
R-54Msv	KW 0108	4	5	11	34
R-64Msv	KW 0109	4	6	11	34.5
R-84Msv	KW 0110	4	8	11	35.5
R-65Msv	KW 0111	5	6	12	35
R-85Msv	KW 0112	5	8	12	35.5
R-86Msv	KW 0113	6	8	13	37.5
R-106Msv	KW 0114	6	10	13	37.5
R-126Msv	KW 0115	6	12	13	38
R-108Msv	KW 0116	8	10	15	43
R-128Msv	KW 0117	8	12	15	39.5
R-148Msv	KW 0834	8	14	15	41
R-1210Msv	KW 0118	10	12	18	46

Blanking Plug



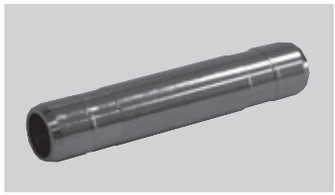


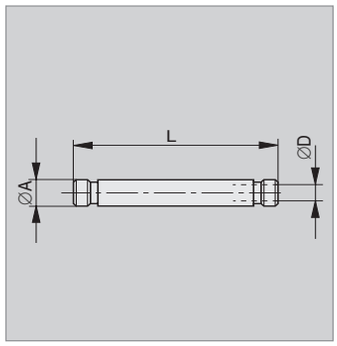
Order Instructions Type	Order No.	ØA	ØD	L
VST-4Msv	KW 0119	4	5	27
VST-5Msv	KW 0120	5	6	27
VST-6Msv	KW 0121	6	7	29
VST-8Msv	KW 0122	8	9	34
VST-10Msv	KW 0123	10	11	36
VST-12Msv	KW 0124	12	13	37
VST-14Msv	KW 0125	14	15	38

* = Tube ØOD

Straight Stem Connector

Order Instructions		ØA	ØD (NW)	L
Type	**Order No.**			
VR-4	**KW 0854**	4	2	32.5
VR-5	**KW 0855**	5	3	33
VR-6	**KW 0856**	6	4	33
VR-8	**KW 0857**	8	6	35
VR-10	**KW 0858**	10	8	39
VR-12	**KW 0859**	12	10	44
VR-14	**KW 0860**	14	12	67



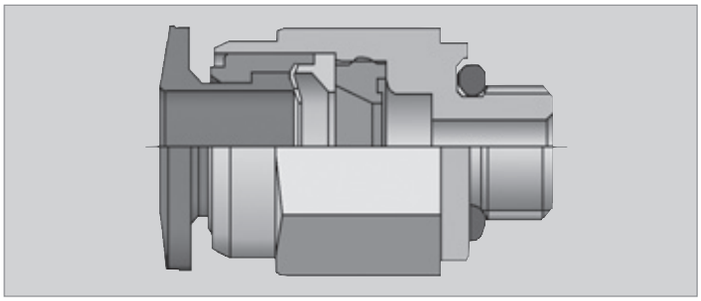


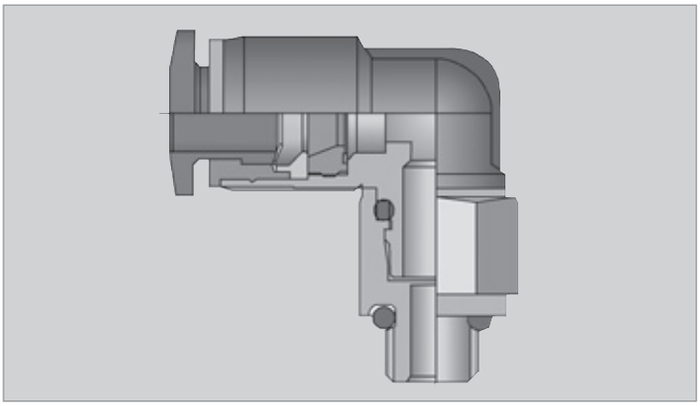
Dimensions in mm

Connection System for Fast Assembly / Dismantling without Tools

- Cost reductions through fast assembly and dismantling
- No passage area reduction relative to the diameter of the plastic tubing
- High reliability through profile seal
- O- ring seal on thread
- Stainless steel collet
- Suitable for plastic tubing and copper, steel and stainless steel piping
- Nickel-plated brass for optimum surface protection







Technical Data

Connecting thread*	M3, M5, M6, G1/8, G1/4, G3/8, G1/2 (parallel and taper)
Tubing outside diameter*	Ø3, Ø4, Ø6, Ø8, Ø10, Ø12, Ø16
Material	Body and sleeve: brass/POM Release ring: POM Collet: stainless steel O-ring: NBR
Operating pressure range	0 to 10 bar (and vacuum)
Temperature range	0°C to +60°C (other temperature ranges on request)
Medium	Compressed air (vacuum)

* depending on type

Tubing Recommendations[1)]

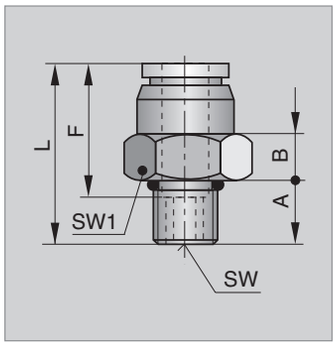
Tubing type	Calibrated tubing, surface hardness min. 65 Shore
Tubing outside diameter*	Ø3, Ø4, Ø6, Ø8, Ø10, Ø12, Ø16
Tubing material	PU, PA, PE or similar

[1)] see our range of tubing (Type PS-..) in Section on Tubing and Hoses, pages 109–111

Dimensions in mm

Plastic Push-in Fittings



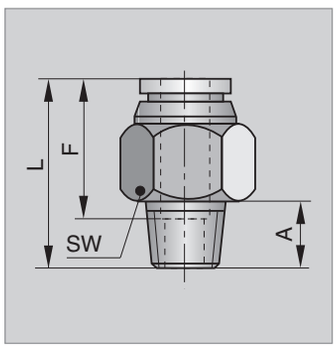


Straight Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	A	F	B	SW	SW1
GS-54Msv	**KT0100**	4	M5	21.9	4.6	15.9	-	-	10
GS-184Msv	**KT0101**	4	G1/8	21.5	6	15.9	7	3	13
GS-144Msv	**KT0102**	4	G1/4	23.5	8	15.9	8	3	15
GS-56Msv	**KT0103**	6	M5	23.6	4.6	16.5	-	-	12
GS-186Msv	**KT0104**	6	G1/8	22.5	6	16.5	7	4	13
GS-146Msv	**KT0105**	6	G1/4	24.5	8	16.5	8	5	15
GS-386Msv	**KT0106**	6	G3/8	25.5	8	16.5	7	5	17
GS-188Msv	**KT0107**	8	G1/8	26.7	6	17.7	9	5	15
GS-148Msv	**KT0108**	8	G1/4	26.7	8	17.7	8	6	15
GS-388Msv	**KT0109**	8	G3/8	25.0	8	17.7	8	6	17
GS-128Msv	**KT0110**	8	G1/2	26.0	9	17.7	8	6	21
GS-1410Msv	**KT0111**	10	G1/4	30.0	8	18.6	9	8	17
GS-3810Msv	**KT0112**	10	G3/8	27.0	8	18.6	8	8	17
GS-1210Msv	**KT0113**	10	G1/2	28.3	9	18.6	8	8	21
GS-1412Msv	**KT0114**	12	G1/4	32.2	8	20.9	9	8	19
GS-3812Msv	**KT0115**	12	G3/8	31.6	8	20.9	8	8	19
GS-1212Msv	**KT0116**	12	G1/2	31.6	9	20.9	8	8	21
GS-3816Msv	**KT0117**	16	G3/8	36.2	8	24.7	16	10	24
GS-1216Msv	**KT0118**	16	G1/2	36.2	9	24.7	15	10	24

Material: nickel-plated brass



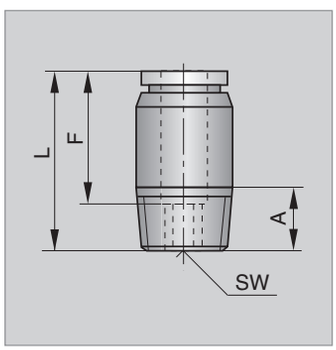


Straight Adaptor, teflon-coated male taper thread, external hexagon

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	A	F	SW
GSK-184Msv	**KT0119**	4	R1/8	21.8	8	15.9	10
GSK-186Msv	**KT0120**	6	R1/8	21.6	8	16.5	12
GSK-146Msv	**KT0121**	6	R1/4	21.6	10	16.5	14
GSK-188Msv	**KT0122**	8	R1/8	28.2	8	17.7	14
GSK-148Msv	**KT0123**	8	R1/4	26.0	10	17.7	14
GSK-388Msv	**KT0124**	8	R3/8	23.7	11	17.7	17
GSK-1410Msv	**KT0125**	10	R1/4	31.2	10	18.6	14
GSK-3810Msv	**KT0126**	10	R3/8	25.3	11	18.6	17
GSK-1210Msv	**KT0127**	10	R1/2	30.3	14	18.6	22
GSK-1412Msv	**KT0128**	12	R1/4	33.7	10	20.9	14
GSK-3812Msv	**KT0129**	12	R3/8	30.6	11	20.9	17
GSK-1212Msv	**KT0130**	12	R1/2	30.4	14	20.9	22

Material: nickel-plated brass





Straight Adaptor, teflon-coated male taper thread, hexagon socket

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	A	F	SW
GSKR-54Msv	**KT0131**	4	M5	21.8	4.6	15.9	2
GSKR-184Msv	**KT0132**	4	R1/8	20.4	8.0	15.9	3
GSKR-56Msv	**KT0133**	6	M5	22.6	4.6	16.5	2
GSKR-186Msv	**KT0134**	6	R1/8	21.8	8.0	16.5	4
GSKR-146Msv	**KT0135**	6	R1/4	22.5	10.0	16.5	4
GSKR-188Msv	**KT0136**	8	R1/8	27.0	8.0	17.7	4
GSKR-148Msv	**KT0137**	8	R1/4	25.0	10.0	17.7	6
GSKR-388Msv	**KT0138**	8	R3/8	25.0	110.0	17.7	6
GSKR-1410Msv	**KT0139**	10	R1/4	26.6	10.0	18.6	6
GSKR-3810Msv	**KT0140**	10	R3/8	26.6	11.0	18.6	6
GSKR-1210Msv	**KT0141**	10	R1/2	26.6	14.0	18.6	6
GSKR-3812Msv	**KT0142**	12	R3/8	32.4	11.0	20.9	8
GSKR-1212Msv	**KT0143**	12	R1/2	32.4	14.0	20.9	8

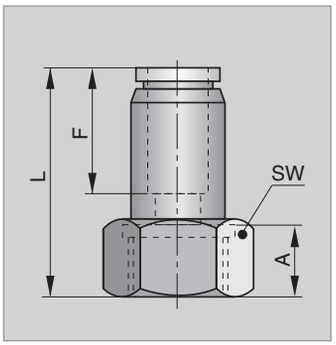
Material: nickel-plated-brass

Straight Adaptor, female parallel thread

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	A	F	SW
GMS-184Msv	**KT0144**	4	G1/8	26.8	10	15.9	14
GMS-186Msv	**KT0145**	6	G1/8	28.3	10	16.5	14
GMS-146Msv	**KT0146**	6	G1/4	30.0	11	16.5	17
GMS-188Msv	**KT0147**	8	G1/8	29.1	10	17.7	14
GMS-148Msv	**KT0148**	8	G1/4	31.2	11	17.7	17
GMS-388Msv	**KT0149**	8	G3/8	32.5	12	17.7	22
GMS-1410Msv	**KT0150**	10	G1/4	32.7	11	18.6	17
GMS-3810Msv	**KT0151**	10	G3/8	33.3	12	18.6	22
GMS-3812Msv	**KT0152**	12	G3/8	37.1	12	20.9	22
GMS-1212Msv	**KT0153**	12	G1/2	39.2	14	20.9	24

Material: nickel-plated brass

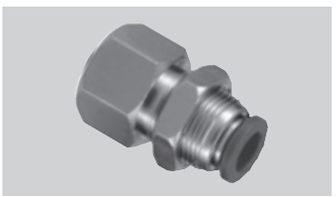


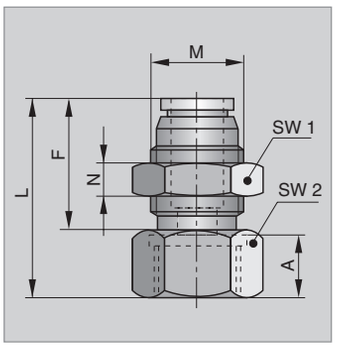


Straight Bulkhead Adaptor, female parallel thread

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	N	M	A	F	SW1	SW2
SOS-184Msv	**KT0154**	4	G1/8	27.0	5	M12 x 1	9	16.8	14	14
SOS-186Msv	**KT0155**	6	G1/8	29.1	5	M14 x 1	9	17.6	17	17
SOS-146Msv	**KT0156**	6	G1/4	31.2	5	M14 x 1	11	17.6	17	17
SOS-188Msv	**KT0157**	8	G1/8	32.3	5	M16 x 1	9	18.7	19	19
SOS-148Msv	**KT0158**	8	G1/4	31.1	5	M16 x 1	11	18.7	19	19
SOS-388Msv	**KT0159**	8	G3/8	32.9	5	M16 x 1	12	18.7	19	22
SOS-1410Msv	**KT0160**	10	G1/4	34.0	5	M20 x 1	11	19.6	24	24
SOS-3810Msv	**KT0161**	10	G3/8	33.9	5	M20 x 1	12	19.6	24	24
SOS-3812Msv	**KT0162**	12	G3/8	38.7	5	M22 x 1	12	21.9	26	24
SOS-1212Msv	**KT0163**	12	G1/2	40.6	5	M22 x 1	14	21.9	26	24

Material: nickel-plated brass



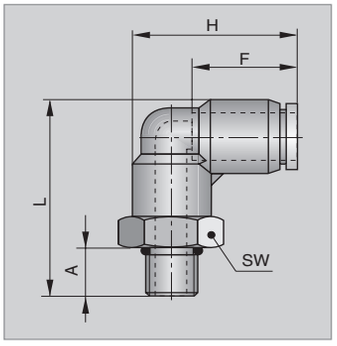


Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
LDS-54KU	**KT0164**	4	M5	27.3	23.8	4.6	16.8	10
LDS-184KU	**KT0165**	4	G1/8	27.4	23.8	6	16.8	14
LDS-144KU	**KT0166**	4	G1/4	29.4	23.8	8	16.8	17
LDS-56KU	**KT0167**	6	M5	30.3	26.5	4.5	17.6	12
LDS-186KU	**KT0168**	6	G1/8	30.6	26.5	6	17.6	14
LDS-146KU	**KT0169**	6	G1/4	32.6	26.5	8	17.6	17
LDS-386KU	**KT0170**	6	G3/8	33.6	26.5	9	17.6	20
LDS-188KU	**KT0171**	8	G1/8	32.9	29.7	6	18.7	14
LDS-148KU	**KT0172**	8	G1/4	34.9	29.7	8	18.7	17
LDS-388KU	**KT0173**	8	G3/8	35.9	29.7	9	18.7	20
LDS-1410KU	**KT0174**	10	G1/4	37.4	32.1	8	19.6	17
LDS-3810KU	**KT0175**	10	G3/8	38.4	32.1	9	19.6	20
LDS-1210KU	**KT0176**	10	G1/2	39.4	32.1	10	19.6	24
LDS-1412KU	**KT0177**	12	G1/4	41.4	36.9	8	21.9	19
LDSD-3812KU	**KT0178**	12	G3/8	42.4	36.9	9	21.9	20
LDS-1212KU	**KT0179**	12	G1/2	43.4	36.9	10	21.9	24
LDS-3816KU	**KT0180**	16	G3/8	53.8	44.2	9	23.9	24
LDS-1216KU	**KT0181**	16	G1/2	54.8	44.2	10	23.9	24

Material: nickel-plated brass

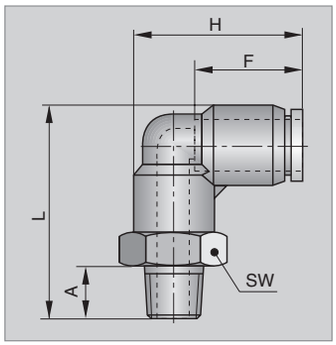




Dimensions in mm

Plastic Push-in Fittings



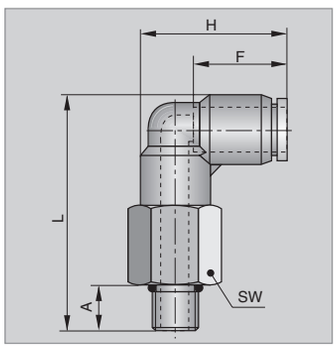


Elbow Adaptor, swivelling, teflon-coated male taper thread

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
LDSK-184KU	**KT0182**	4	R1/8	29.8	23.8	8	16.8	10
LDSK-186KU	**KT0183**	6	R1/8	32.8	26.5	8	17.6	12
LDSK-146KU	**KT0184**	6	R1/4	35.8	26.5	10	17.6	14
LDSK-188KU	**KT0185**	8	R1/8	35.2	29.7	8	18.7	14
LDSK-148KU	**KT0186**	8	R1/4	38.2	29.7	10	18.7	14
LDSK-388KU	**KT0187**	8	R3/8	39.2	29.7	11	18.7	17
LDSK-1410KU	**KT0188**	10	R1/4	40.3	32.1	10	19.6	17
LDSK-3810KU	**KT0189**	10	R3/8	41.3	32.1	11	19.6	17
LDSK-1210KU	**KT0190**	10	R1/2	44.3	32.1	14	19.6	22
LDSK-1412KU	**KT0191**	12	R1/4	44.7	36.9	10	21.9	19
LDSK-3812KU	**KT0192**	12	R3/8	45.7	36.9	11	21.9	19
LDSK-1212KU	**KT0193**	12	R1/2	48.7	36.9	14	21.9	22

Material: nickel-plated brass



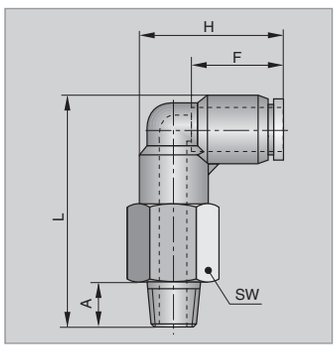


Extended Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
LDSL-54KU	**KT0194**	4	M5	38.8	23.8	4.6	16.8	10
LDSL-184KU	**KT0195**	4	G1/8	39.4	23.8	6	16.8	14
LDSL-144KU	**KT0196**	4	G1/4	41.4	23.8	8	16.8	17
LDSL-56KU	**KT0197**	6	M5	44.3	26.5	4.6	17.6	12
LDSL-186KU	**KT0198**	6	G1/8	45.6	26.5	6	17.6	14
LDSL-146KU	**KT0199**	6	G1/4	47.6	26.5	8	17.6	17
LDSL-386KU	**KT0200**	6	G3/8	48.6	26.5	9	17.6	20
LDSL-188KU	**KT0201**	8	G1/8	50.9	29.7	6	18.7	14
LDSL-148KU	**KT0202**	8	G1/4	52.9	29.7	8	18.7	17
LDSL-388KU	**KT0203**	8	G3/8	53.9	29.7	9	18.7	20
LDSL-1410KU	**KT0204**	10	G1/4	57.4	32.1	8	19.6	17
LDSL-3810KU	**KT0205**	10	G3/8	58.4	32.1	9	19.6	20
LDSL-1210KU	**KT0206**	10	G1/2	59.4	32.1	10	19.6	24
LDSL-1412KU	**KT0207**	12	G1/4	66.4	36.9	8	21.9	19
LDSL-3812KU	**KT0208**	12	G3/8	67.4	36.9	9	21.9	20
LDSL-1212KU	**KT0209**	12	G1/2	68.4	36.9	10.0	21.0	24

Material: nickel-plated brass





Extended Elbow Adaptor, swivelling, teflon-coated male taper thread

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
LDSLK-184KU	**KT0210**	4	R1/8	40.8	23.8	8	16.8	10
LDSLK-186KU	**KT0211**	6	R1/8	46.3	26.5	8	17.6	12
LDSLK-146KU	**KT0212**	6	R1/4	48.3	26.5	10	17.6	14
LDSLK-188KU	**KT0213**	8	R1/8	51.2	29.7	8	18.7	14
LDSLK-148KU	**KT0214**	8	R1/4	53.2	29.7	10	18.7	14
LDSLK-388KU	**KT0215**	8	R3/8	54.2	29.7	11	18.7	17
LDSLK-1410KU	**KT0216**	10	R1/4	50.5	32.1	10	19.6	14
LDSLK-3810KU	**KT0217**	10	R3/8	51.5	32.1	11	19.6	17
LDSLK-1210KU	**KT0218**	10	R1/2	54.5	32.1	14	19.6	22
LDSLK-1412KU	**KT0219**	12	R1/4	66.2	36.9	10	21.9	19
LDSLK-3812KU	**KT0220**	12	R3/8	67.2	36.9	11	21.9	19
LDSLK-1212KU	**KT0221**	12	R1/2	70.2	36.9	14	21.9	22

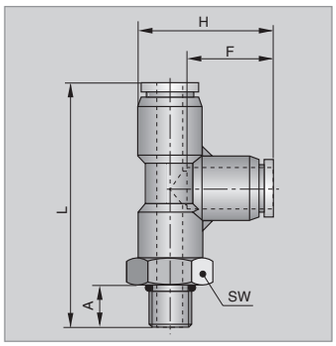
Material: nickel-plated brass

Run Tee Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
WDS-54KU	**KT0222**	4	M5	42.3	25.1	4.6	16.8	10
WDS-184KU	**KT0223**	4	G1/8	42.8	25.1	6	16.8	14
WDS-56KU	**KT0224**	6	M5	46.1	28.1	4.6	17.6	10
WDS-186KU	**KT0225**	6	G1/8	46.9	28.1	6	17.6	14
WDS-146KU	**KT0226**	6	G1/4	48.9	28.1	8	17.6	17
WDS-188KU	**KT0227**	8	G1/8	50.1	30.9	6	18.7	14
WDS-148KU	**KT0228**	8	G1/4	52.1	30.9	8	18.7	17
WDS-388KU	**KT0229**	8	G3/8	53.1	30.9	9	18.7	20
WDS-1410KU	**KT0230**	10	G1/4	55.9	34.6	8	19.6	17
WDS-3810KU	**KT0231**	10	G3/8	56.8	34.6	9	19.6	20
WDS-1210KU	**KT0232**	10	G1/2	57.8	34.6	10	19.6	24
WDS-3812KU	**KT0233**	12	G3/8	63.2	40.3	9	21.9	20
WDS-1212KU	**KT0234**	12	G1/2	64.2	40.3	10	21.9	24

Material: nickel-plated brass



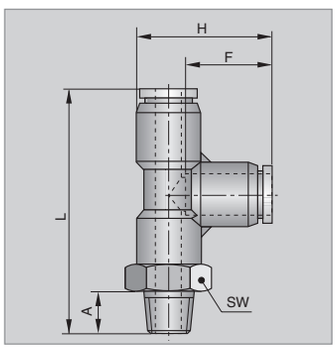


Run Tee Adaptor, swivelling, teflon-coated male taper thread

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
WDSK-184KU	**KT0235**	4	R1/8	45.3	25.1	8	16.8	10
WDSK-186KU	**KT0236**	6	R1/8	48.6	28.1	8	17.6	12
WDSK-146KU	**KT0237**	6	R1/4	51.2	28.1	10	17.6	14
WDSK-188KU	**KT0238**	8	R1/8	52.2	30.9	8	18.7	12
WDSK-148KU	**KT0239**	8	R1/4	55.2	30.9	10	18.7	14
WDSK-388KU	**KT0240**	8	R3/8	56.2	30.9	11	18.7	17
WDSK-1410KU	**KT0241**	10	R1/4	58.6	34.6	10	19.6	14
WDSK-3810KU	**KT0242**	10	R3/8	59.6	34.6	11	19.6	17
WDSK-1210KU	**KT0243**	10	R1/2	62.6	34.6	14	19.6	22
WDSK-3812KU	**KT0244**	12	R3/8	65.8	40.3	11	21.9	17
WDSK-1212KU	**KT0245**	12	R1/2	68.8	40.3	14	21.9	22

Material: nickel-plated brass



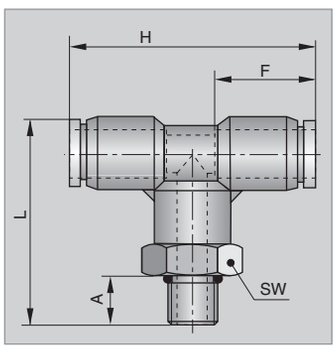


Branch Tee Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
TDS-54KU	**KT0246**	4	M5	27.3	37.6	4.6	16.8	10
TDS-184KU	**KT0247**	4	G1/8	27.8	37.6	6	16.8	14
TDS-56KU	**KT0248**	6	M5	30.3	41.0	4.6	17.6	12
TDS-186KU	**KT0249**	6	G1/8	30.8	41.0	6	17.6	14
TDS-146KU	**KT0250**	6	G1/4	32.8	41.0	8	17.6	17
TDS-188KU	**KT0251**	8	G1/8	33.3	44.4	6	18.7	14
TDS-148KU	**KT0252**	8	G1/4	35.3	44.4	8	18.7	17
TDS-388KU	**KT0253**	8	G3/8	36.3	44.4	9	18.7	20
TDS-1410KU	**KT0254**	10	G1/4	37.3	47.2	8	19.6	17
TDS-3810KU	**KT0255**	10	G3/8	38.3	47.2	9	19.6	20
TDS-1210KU	**KT0256**	10	G1/2	39.3	47.2	10	19.6	24
TDS-1412KU	**KT0257**	12	G1/4	41.7	54.8	8	21.9	19
TDS-3812KU	**KT0258**	12	G3/8	42.7	54.8	9	21.9	20
TDS-1212KU	**KT0259**	12	G1/2	43.7	54.8	10	21.9	24
TDS-3816KU	**KT0478**	16	G3/8	53.6	64.5	9	24.2	24
TDS-1216KU	**KT0479**	16	G1/2	53.6	64.6	10	24.0	24

Material: nickel-plated brass



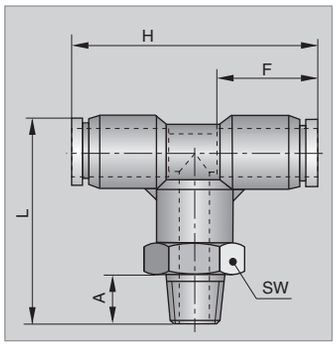


Dimensions in mm

Plastic Push-in Fittings

Branch Tee Adaptor, swivelling, teflon-coated male taper thread



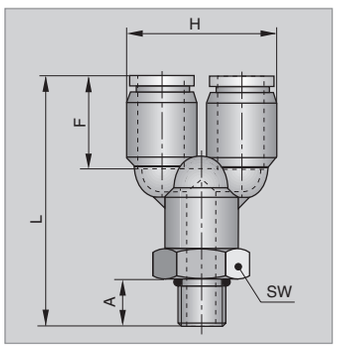


Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
TDSK-184KU	**KT0260**	4	R1/8	29.8	37.6	8	16.8	10
TDSK-186KU	**KT0261**	6	R1/8	32.8	41.0	8	17.6	12
TDSK-146KU	**KT0262**	6	R1/4	35.8	41.0	10	17.6	14
TDSK-188KU	**KT0263**	8	R1/8	35.3	44.4	8	18.7	12
TDSK-148KU	**KT0264**	8	R1/4	38.3	44.4	10	18.7	14
TDSK-388KU	**KT0265**	8	R3/8	39.3	44.4	11	18.7	17
TDSK-1410KU	**KT0266**	10	R1/4	41.6	50.6	10	19.6	14
TDSK-3810KU	**KT0267**	10	R3/8	42.9	50.6	11	19.6	17
TDSK-1210KU	**KT0268**	10	R1/2	45.5	50.6	14	19.6	22
TDSK-1412KU	**KT0269**	12	R1/4	44.7	54.8	10	21.9	14
TDSK-3812KU	**KT0270**	12	R3/8	45.7	54.8	11	21.9	17
TDSK-1212KU	**KT0271**	12	R1/2	48.7	54.8	14	21.9	22

Material: plastic, nickel-plated brass

Parallel Y Adaptor, swivelling, male parallel thread with O-ring



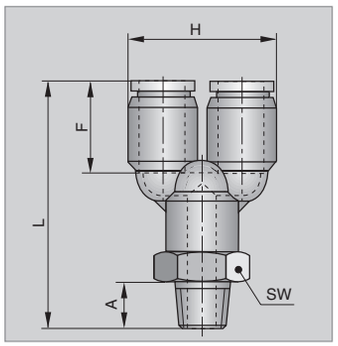


Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
YDS-54KU	**KT0272**	4	M5	34.8	21	4.6	16.8	10
YDS-184KU	**KT0273**	4	G1/8	41.0	21	6	16.8	14
YDS-56KU	**KT0274**	6	M5	41.6	25	4.6	17.6	12
YDS-186KU	**KT0275**	6	G1/8	42.4	25	6	17.6	14
YDS-146KU	**KT0276**	6	G1/4	44.4	25	8	17.6	17
YDS-188KU	**KT0277**	8	G1/8	43.7	29	6	18.7	14
YDS-148KU	**KT0278**	8	G1/4	45.7	29	8	18.7	17
YDS-388KU	**KT0279**	8	G3/8	46.7	29	9	18.7	20
YDS-1410KU	**KT0280**	10	G1/4	51.3	35	8	19.6	17
YDS-3810KU	**KT0281**	10	G3/8	52.3	35	9	19.6	20
YDS-1210KU	**KT0282**	10	G1/2	53.3	35	10	19.6	24
YDS-3812KU	**KT0283**	12	G3/8	55.8	41	9	21.9	20
YDS-1212KU	**KT0284**	12	G1/2	56.8	41	10	21.9	24

Material: plastic, nickel-plated brass

Parallel Y Adaptor, swivelling, teflon-coated male taper thread





Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
YDSK-184KU	**KT0285**	4	R1/8	41.3	21	8	16.8	10
YDSK-186KU	**KT0286**	6	R1/8	44.1	25	8	17.6	12
YDSK-146KU	**KT0287**	6	R1/4	47.1	25	10	17.6	14
YDSK-188KU	**KT0288**	8	R1/8	45.5	29	8	18.7	12
YDSK-148KU	**KT0289**	8	R1/4	48.5	29	10	18.7	14
YDSK-388KU	**KT0290**	8	R3/8	48.5	29	11	18.7	17
YDSK-1410KU	**KT0291**	10	R1/4	54.2	35	10	19.6	14
YDSK-3810KU	**KT0292**	10	R3/8	56.5	35	11	19.6	17
YDSK-1210KU	**KT0293**	10	R1/2	58.2	35	14	19.6	22
YDSK-3812KU	**KT0294**	12	R3/8	58.3	41	11	21.9	17
YDSK-1212KU	**KT0295**	12	R1/2	62.0	41	14	21.9	22

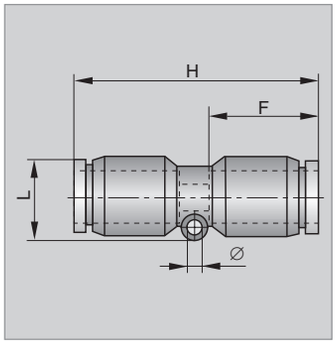
Material: plastic, nickel-plated brass

Straight Connector

Order Instructions Type	Order No.	Tube ØOD	H	L	Ø	F
GVS-4KU	**KT0296**	4	34.6	12.8	3.3	16.3
GVS-6KU	**KT0297**	6	36.8	14.8	3.3	17.6
GVS-8KU	**KT0298**	8	39.4	17.8	4.3	18.7
GVS-10KU	**KT0299**	10	43.2	20.0	4.3	19.6
GVS-12KU	**KT0300**	12	47.8	23.3	4.3	21.9
GVS-16KU	**KT0301**	16	51.1	25.8	-	24.0

Material: plastic



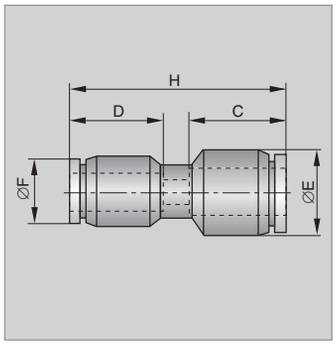


Reducing Straight Connector

Order Instructions Type	Order No.	Tube ØOD-A	Tube ØOD-B	H	C	D	ØE	ØF
GVSR-64KU	**KT0302**	6	4	36.6	17.6	16.8	12.5	10.5
GVSR-86KU	**KT0303**	8	6	37.6	18.7	17.6	14.5	12.5
GVSR-108KU	**KT0304**	10	8	41.0	19.6	18.7	17.5	14.5
GVSR-1210KU	**KT0305**	12	10	44.0	21.9	19.6	20.5	17.5
GVSR-1612KU	**KT0306**	16	12	49.2	24.2	22.9	25.7	20.7

Material: plastic



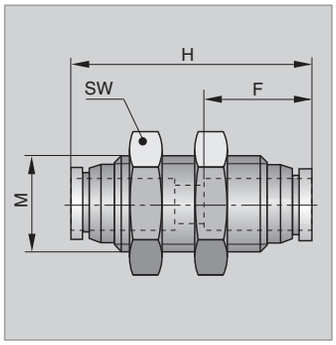


Straight Bulkhead Connector

Order Instructions Type	Order No.	Tube ØOD	H	F	M	SW
SOV-4Msv	**KT0307**	4	35.1	16.3	M12 x 1	14
SOV-6Msv	**KT0308**	6	39.4	17.6	M14 x 1	17
SOV-8Msv	**KT0309**	8	41.8	18.7	M16 x 1	19
SOV-10Msv	**KT0310**	10	44.0	19.6	M20 x 1	24
SOV-12Msv	**KT0311**	12	48.8	21.9	M22 x 1	26

Material: nickel-plated brass



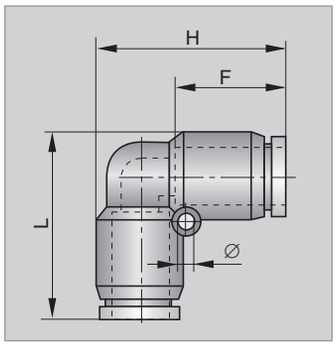


Dimensions in mm

Plastic Push-in Fittings

Equal Elbow Connector



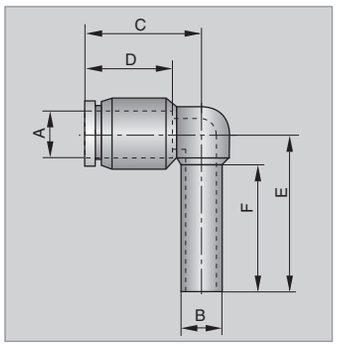


Order Instructions Type	Order No.	Tube ØOD	H	L	Ø	F
WVS-4KU	**KT0312**	4	23.9	23.9	3.3	16.8
WVS-6KU	**KT0313**	6	27.0	27.0	3.3	17.6
WVS-8KU	**KT0314**	8	31.1	31.1	4.3	18.7
WVS-10KU	**KT0315**	10	34.1	34.1	4.3	19.6
WVS-12KU	**KT0480**	12	39.1	39.1	4.3	21.9
WVS-16KU	**KT0481**	16	46.8	46.8	5.3	24.2

Material: plastic

Stem Elbow Connector



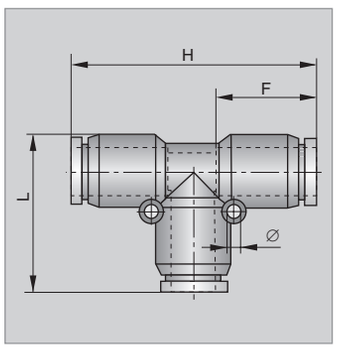


Order Instructions Type	Order No.	A	B	C	D	E	F
WVSN-44KU	**KT0482**	4	4	18.8	16.8	28.4	22
WVSN-66KU	**KT0316**	6	6	20.3	17.4	31.4	24
WVSN-88KU	**KT0317**	8	8	23.0	19.0	34.3	26
WVSN-1010KU	**KT0318**	10	10	24.2	19.7	37.9	28
WVSN-1212KU	**KT0319**	12	12	28.0	22.1	41.4	30
WVSN-1616KU	**KT0320**	16	16	32.0	24.0	48.5	35

Material: plastic

Equal Tee Connector





Order Instructions Type	Order No.	Tube ØOD	H	L	Ø	F
TVS-4KU	**KT0321**	4	36.6	24.2	3.3	16.3
TVS-6KU	**KT0322**	6	41.8	27.5	3.3	17.6
TVS-8KU	**KT0323**	8	44.9	30.7	4.3	18.7
TVS-10KU	**KT0324**	10	48.2	34.1	4.3	19.6
TVS-12KU	**KT0325**	12	56.8	39.9	4.3	21.9
TVS-16KU	**KT0326**	16	68.2	47.2	4.3	24.0

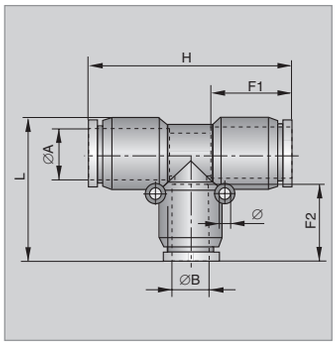
Material: plastic

Reducing Tee Connector

Order Instructions Type	Order No.	Tube ØOD-A	Tube ØOD-B	H	L	Ø	F1	F2
TVSR-108KU	**KT0468**	10	8	49.2	33.5	4.3	19.6	18.7
TVSR-1210KU	**KT0469**	12	10	56.0	37.6	4.3	21.9	19.6
TVSR-1610KU	**KT0470**	16	10	60.8	43.1	4.3	24.0	19.6
TVSR-1612KU	**KT0471**	16	12	63.7	45.5	4.3	24.0	21.9

Material: plastic



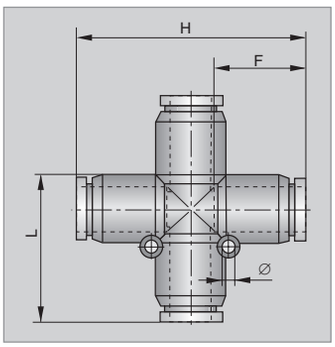


4-Way Cross Connector

Order Instructions Type	Order No.	Tube ØOD	H	L	Ø	F
KVS-4KU	**KT0483**	4	36.6	37.9	3.3	16.8
KVS-6KU	**KT0327**	6	41.8	42.5	4.3	17.6
KVS-8KU	**KT0328**	8	44.9	46.8	4.3	18.7
KVS-10KU	**KT0329**	10	48.2	50.5	4.3	19.6
KVS-12KU	**KT0330**	12	54.8	57.2	4.3	21.9

Material: plastic



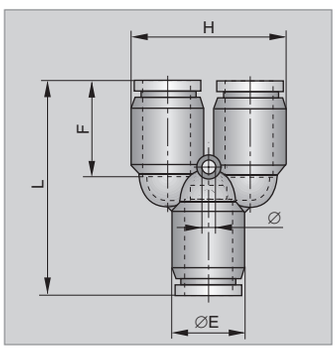


Parallel Y Connector

Order Instructions Type	Order No.	Tube ØOD	H	L	Ø	F	ØE
YVS-4KU	**KT0331**	4	21	37.1	3.3	16.3	10.5
YVS-6KU	**KT0332**	6	25	39.9	3.3	17.6	12.5
YVS-8KU	**KT0333**	8	29	43.4	4.3	18.7	14.5
YVS-10KU	**KT0334**	10	35	45.5	4.3	19.6	17.5
YVS-12KU	**KT0335**	12	41	54.8	4.3	21.9	20.5

Material: plastic



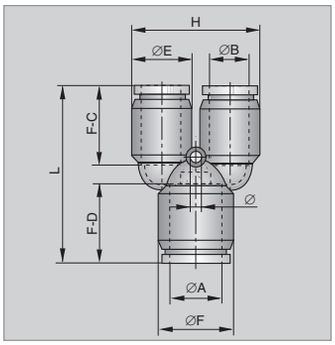


Dimensions in mm

Plastic Push-in Fittings

Reducing Parallel Y Connector



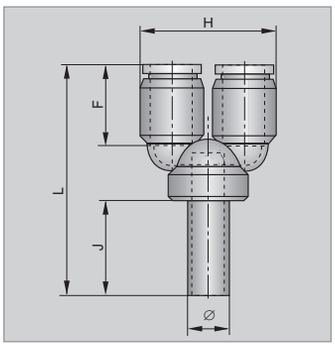


Order Instructions Type	Order No.	Tube ØOD-A	Tube ØOD-B	L	H	F-C	F-D	ØE	ØF	Ø
YVS-64KU	**KT0336**	6	4	37.9	21	17.6	16.3	12.5	10.5	3.3
YVS-86KU	**KT0337**	8	6	41.3	25	18.7	17.6	14.5	12.5	4.3
YVS-108KU	**KT0338**	10	8	43.3	29	19.6	18.7	17.5	14.5	4.3
YVS-1210KU	**KT0339**	12	10	46.5	35	21.9	19.6	20.5	17.5	4.3

Material: plastic

Parallel Y Stem Connector



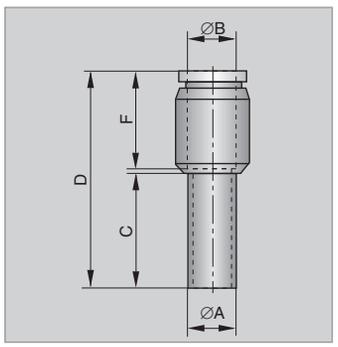


Order Instructions Type	Order No.	Tube ØOD	Stem Ø	J	H	L	F
YVSN-44KU	**KT0340**	4	4	22	21	49.5	16.8
YVSN-66KU	**KT0341**	6	6	24	25	54.7	17.6
YVSN-88KU	**KT0342**	8	8	26	29	59.8	18.7
YVSN-1010KU	**KT0343**	10	10	28	35	66.1	19.6
YVSN-1212KU	**KT0344**	12	12	30	41	71.6	21.9

Material: plastic

Reducing Straight Stem Connector





Order Instructions Type	Order No.	A	B	C	D	F
R-64KU	**KT0345**	6	4	21.7	41.0	12.8
R-84KU	**KT0346**	8	4	22.7	42.0	12.8
R-86KU	**KT0347**	8	6	23.7	44.3	13.4
R-106KU	**KT0348**	10	6	28.7	47.3	13.4
R-108KU	**KT0349**	10	8	27.7	49.7	14.2
R-128KU	**KT0350**	12	8	30.7	52.5	14.2
R-1210KU	**KT0351**	12	10	31.2	56.5	14.9

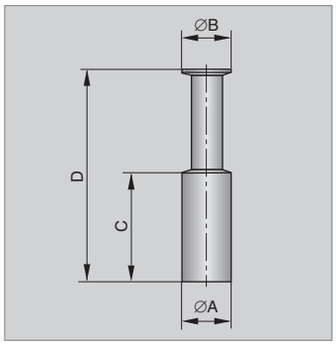
Material: plastic

Blanking Plug, black

Order Instructions Type	Order No.	A	B	C	D
VST-4KU	**KT0352**	4	4	17.7	30
VST-6KU	**KT0353**	6	6	19.4	34
VST-8KU	**KT0354**	8	8	21.2	38
VST-10KU	**KT0355**	10	10	23.8	42
VST-12KU	**KT0356**	12	12	29.5	46

Material: plastic



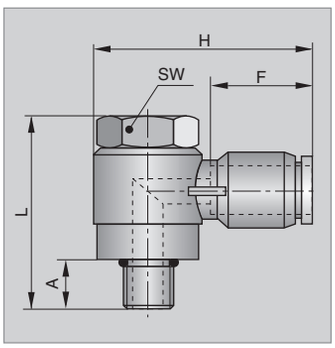


Banjo Elbow Adaptor, male parallel thread with O-ring

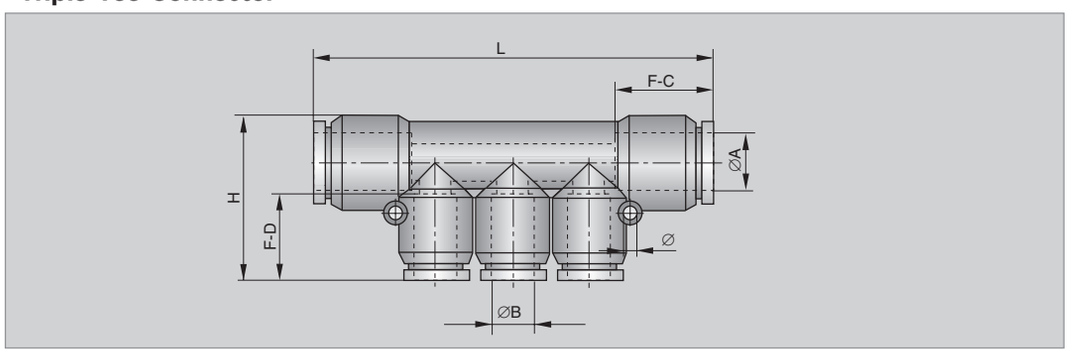
Order Instructions Type	Order No.	Tube ØOD	Port Size	L	H	A	F	SW
ESS-54KU	**KT0357**	4	M5	22.1	26.6	4.6	16.8	8
ESS-184KU	**KT0358**	4	G1/8	23.5	32.4	4.5	16.3	8
ESS-56KU	**KT0359**	6	M5	22.1	27.2	4.6	17.6	8
ESS-186KU	**KT0360**	6	G1/8	23.5	33.5	4.5	17.6	8
ESS-146KU	**KT0361**	6	G1/4	28.0	37.3	6.0	17.6	12
ESS-188KU	**KT0362**	8	G1/8	23.5	34.2	4.5	18.7	8
ESS-148KU	**KT0363**	8	G1/4	28.0	38.3	6.0	18.7	12
ESS-388KU	**KT0364**	8	G3/8	32.5	41.8	6.0	18.7	14
ESS-3810KU	**KT0365**	10	G3/8	32.5	42.5	6.0	19.6	14
ESS-1210KU	**KT0366**	10	G1/2	34.0	48.6	7.5	19.6	19
ESS-3812KU	**KT0367**	12	G3/8	32.5	44.8	6.0	21.9	14
ESS-1212KU	**KT0368**	12	G1/2	34.0	50.3	7.5	21.9	19

Material: plastic, nickel plated brass





Triple Tee Connector



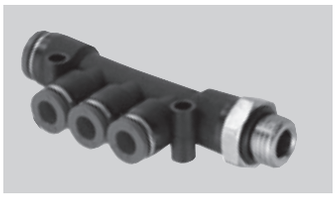


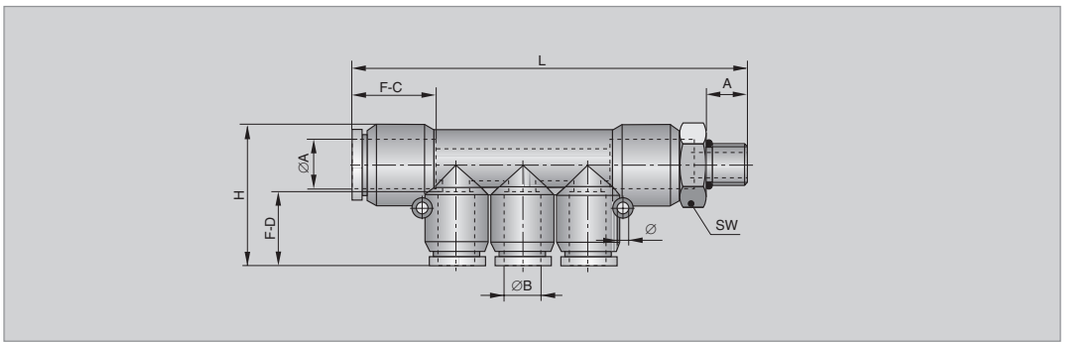
Order Instructions Type	Order No.	Tube ØOD-A	Tube ØOD-B	Ø	H	L	F-C	F-D
VVS-64KU	**KT0369**	6	4	3.3	24.2	63.7	17.6	16.3
VVS-84KU	**KT0370**	8	4	4.3	28.5	65.7	18.7	16.3
VVS-86KU	**KT0371**	8	6	4.3	34.0	71.7	18.7	17.6
VVS-106KU	**KT0372**	10	6	4.3	32.0	78.1	19.6	17.6
VVS-108KU	**KT0373**	10	8	4.3	34.5	83.4	19.6	18.7

Material: plastic

Dimensions in mm

Triple Run Tee Adaptor, swivelling, male parallel thread with O-ring

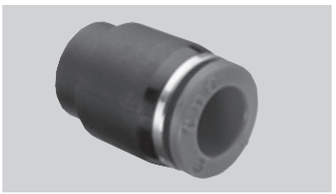


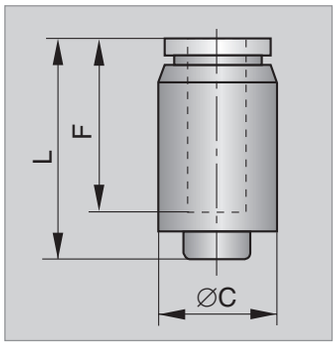


Order Instructions Type	Order No.	Tube ØOD-A	Tube ØOD-B	Port Size	Ø	H	L	F-C	F-D	A	SW
VDS-18-64KU	**KT0374**	6	4	G1/8	3.3	24.2	71.1	17.6	16.3	6	14
VDS-14-84KU	**KT0375**	8	4	G1/4	4.3	28.5	74.9	18.7	16.3	8	17
VDS-14-86KU	**KT0376**	8	6	G1/4	4.3	34.0	80.0	18.7	17.6	8	17
VDS-38-108KU	**KT0377**	10	8	G3/8	4.3	34.5	92.3	19.6	18.7	8	20

Material: plastic, nickel-plated brass

End Cap





Order Instructions Type	Order No.	Tube ØOD	C	L	F
VK-4KU	**KT0472**	4	10.5	18.0	16.8
VK-6KU	**KT0473**	6	12.5	19.0	17.6
VK-8KU	**KT0474**	8	14.5	21.0	18.7
VK-10KU	**KT0475**	10	17.5	23.0	19.6
VK-12KU	**KT0476**	12	19.5	25.0	21.9
VK-16KU	**KT0477**	16	25.5	27.5	24.0

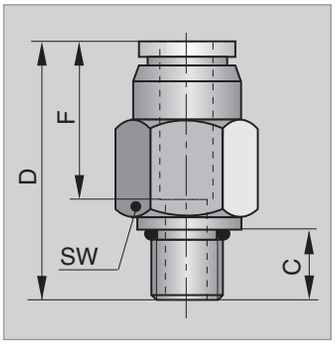
Material: plastic

Straight Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	C	D	F	SW
GSM-33Msv	**KT0378**	3	M3	4.0	17.1	11.1	7
GSM-53Msv	**KT0379**	3	M5	4.6	17.7	11.1	8
GSM-63Msv	**KT0380**	3	M6	5.1	18.2	11.1	8
GSM-34Msv	**KT0381**	4	M3	4.0	17.7	11.6	8
GSM-54Msv	**KT0382**	4	M5	4.6	18.2	11.6	8
GSM-64Msv	**KT0383**	4	M6	5.1	18.8	11.6	8
GSM-184Msv	**KT0384**	4	G1/8	6.0	18.0	11.6	12
GSM-56Msv	**KT0385**	6	M5	4.6	19.4	12.8	10
GSM-66Msv	**KT0386**	6	M6	5.1	19.9	12.8	10
GSM-186Msv	**KT0387**	6	G1/8	6.0	18.6	12.8	12

Material: nickel-plated brass



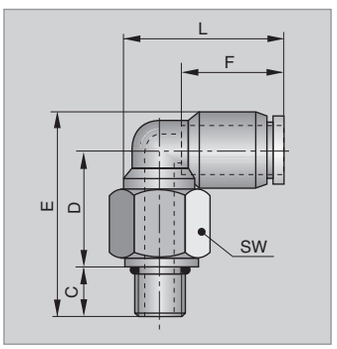


Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	C	D	E	L	F	SW
LDSM-33KU	**KT0388**	3	M3	3	13.0	19.8	17.2	11.1	8
LDSM-53KU	**KT0389**	3	M5	3.6	13.0	20.4	17.2	11.1	8
LDSM-63KU	**KT0390**	3	M6	4.1	13.0	20.9	17.2	11.1	8
LDSM-34KU	**KT0391**	4	M3	3	13.0	20.3	18.2	11.6	8
LDSM-54KU	**KT0392**	4	M5	3.6	13.0	20.9	18.2	11.6	8
LDSM-64KU	**KT0393**	4	M6	4.1	13.0	21.4	18.2	11.6	8
LDSM-184KU	**KT0394**	4	G1/8	6	12.2	21.2	21.5	11.6	14
LDSM-56KU	**KT0395**	6	M5	3.6	13.0	21.9	19.4	12.8	8
LDSM-66KU	**KT0396**	6	M6	4.1	13.0	22.4	19.4	12.8	8
LDSM-186KU	**KT0397**	6	G1/8	6	12.2	22.6	23.2	12.8	14

Material: plastic, nickel-plated brass



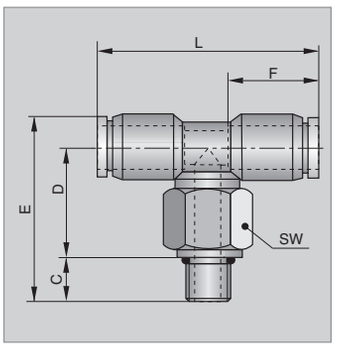


Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube ØOD	Port Size	C	D	E	L	F	SW
TDSM-33KU	**KT0398**	3	M3	3.0	13.0	19.8	26.6	11.1	8
TDSM-53KU	**KT0399**	3	M5	3.6	13.0	20.4	26.6	11.1	8
TDSM-63KU	**KT0400**	3	M6	4.1	13.0	20.9	26.6	11.1	8
TDSM-34KU	**KT0401**	4	M3	3.0	13.0	20.3	28.6	11.6	8
TDSM-54KU	**KT0402**	4	M5	3.6	13.0	20.9	28.6	11.6	8
TDSM-64KU	**KT0403**	4	M6	4.1	13.0	21.4	28.6	11.6	8
TDSM-184KU	**KT0404**	4	G1/8	6.0	12.2	21.4	28.6	11.6	14
TDSM-56KU	**KT0405**	6	M5	3.6	13.0	21.9	31.0	12.8	8
TDSM-66KU	**KT0406**	6	M6	4.1	13.0	22.4	31.0	12.8	8
TDSM-186KU	**KT0407**	6	G1/8	6.0	12.2	22.2	31.0	12.8	14

Material: plastic, nickel-plated brass





Dimensions in mm

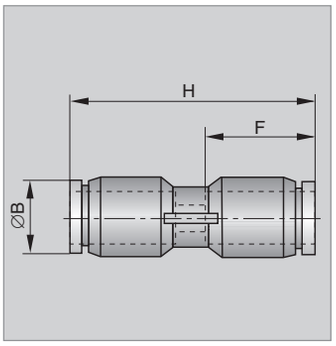
Miniature Plastic Push-in Fittings

Straight Connector



Order Instructions Type	Order No.	Tube ØOD	B	F	H
GVSM-3KU	**KT0408**	3	7.6	11.1	23.2
GVSM-4KU	**KT0409**	4	8.5	11.6	26.1
GVSM-6KU	**KT0410**	6	10.7	12.8	26.6

Material: plastic

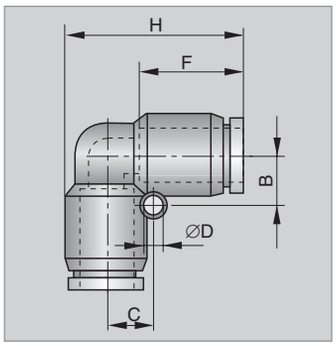


Equal Elbow Connector



Order Instructions Type	Order No.	Tube ØOD	B	C	D	F	H
WVSM-3KU	**KT0411**	3	5.4	5.4	3.2	11.1	17.1
WVSM-4KU	**KT0412**	4	5.8	5.8	3.2	11.6	18.5
WVSM-6KU	**KT0413**	6	6.9	6.9	3.2	12.8	21.8

Material: plastic

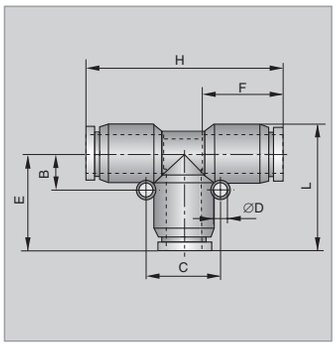


Equal Tee Connector



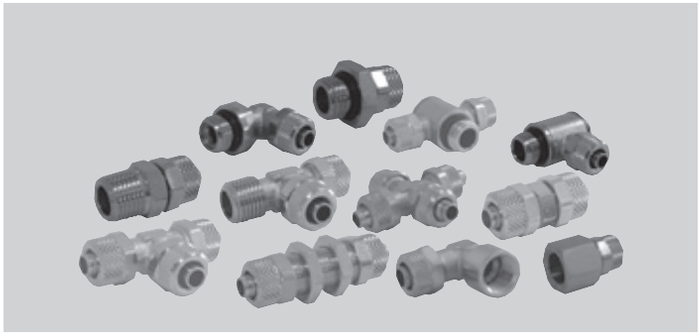
Order Instructions Type	Order No.	Tube ØOD	D	C	B	E	L	F	H
TVSM-3KU	**KT0414**	3	3,2	10,7	3,4	13,3	17,1	11,1	26,6
TVSM-4KU	**KT0415**	4	3,2	11,6	5,8	14,3	18,5	11,6	28,6
TVSM-6KU	**KT0416**	6	3,2	13,8	6,9	16,5	21,8	12,8	33,0

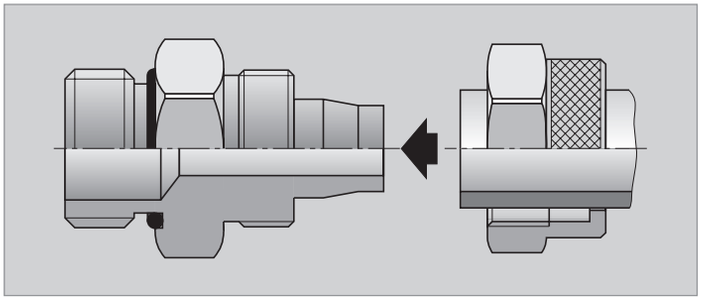
Material: plastic

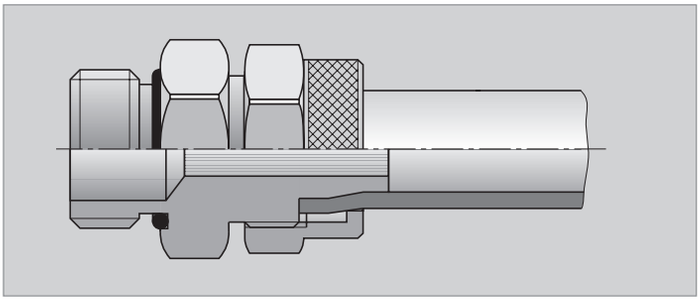


Proven Connection System with Guide Cone and Compression Nut

- Nickel-plated brass for optimum surface protection
- Tube clamped on its outside diameter by compression nut
- Tube sealed on its inner diameter by cone
- Thread sealed by integrated O-ring (no seal rings required)







Technical Data

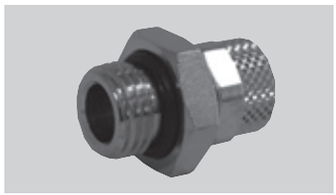
Connecting thread*	M5, G1/8, G1/4, G3/8, G1/2 (parallel and taper)
Tubing outside/inside diameter *	4/2, 5/3, 6/4, 8/6, 10/8, 12/10, 15/12,5
Material**	Body/nut: nickel-plated brass; O-rings: NBR
Operating pressure range	0 to 18 bar (suitable for low vacuum)
Temperature range	-25°C to +80°C (other temperature ranges on request)
Medium	Compressed air (other media on request)

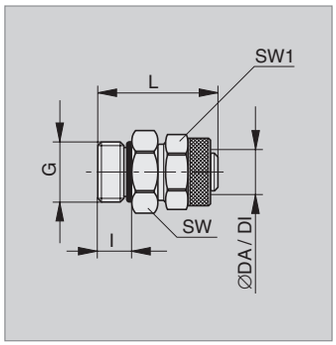
* depending on type
** exceptions on some types are specified

Tubing Recommendations[1)]

Tubing type	Compressed air tubing
Tubing tolerances	Usual tolerances
Tubing material	PE, PA, PU, PVC (glassfibre-reinforced) depending on application

[1)] see our range of tubing in Section on Tubing and Hoses, pages 109–111

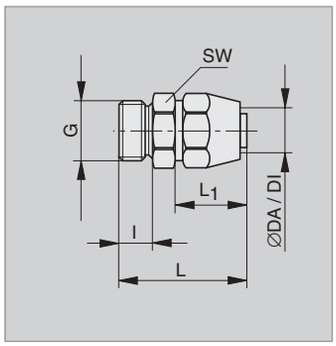




Straight Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	Nominal width	Tube ØDA/DI *	G	SW	SW1	I	L
G-54Msv	**KW 0178**	1.5	4/2	M5	8	9	4	22
G-55Msv	**KW 0181**	2	5/3	M5	8	8	4	22
G-185Msv	**KW 0182**	2	5/3	G1/8	14	8	6	23
G-56Msv	**KW 0183**	2.5	6/4	M5	9	9	4	22
G-186Msv	**KW 0184**	3	6/4	G1/8	15	12	6	25
G-146Msv	**KW 0185**	3	6/4	G1/4	18	12	8	27
G-188Msv	**KW 0186**	5	8/6	G1/8	15	14	6	25
G-148Msv	**KW 0187**	5	8/6	G1/4	18	14	8	27
G-388Msv	**KW 0188**	5	8/6	G3/8	21	14	9	29
G-1410Msv	**KW 0189**	6.8	10/8	G1/4	18	16	8	29
G-3810Msv	**KW 0190**	6.8	10/8	G3/8	21	16	9	31
G-1210Msv	**KW 0191**	6.8	10/8	G1/2	26	16	11	33
G-3812Msv	**KW 0192**	8.5	12/10	G3/8	21	19	9.0	33
G-1212Msv	**KW 0193**	8.5	12/10	G1/2	26	19	11	35
G-1215Msv	**KW 0194**	11	15/12.5	G1/2	26	22	11	35.5

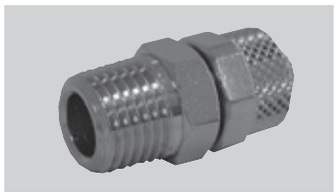


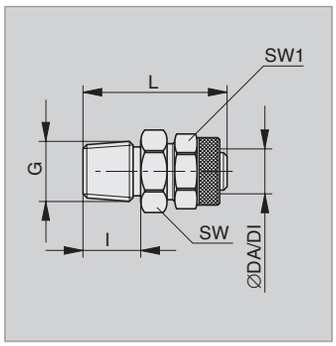


Straight Adaptor for metal-braided tubing, male parallel thread with O-ring

Order Instructions Type	Order No.	Nominal width	Tube ØDA/DI *	G	SW	I	L_1	L_2
G-146M	**KX 5517**	5.2	9/6	G1/4	17	9	35	20.5
G-149M	**KX 5518**	7.5	12/9	G1/4	22	9	38	23
G-386M	**KX 5519**	5.2	9/6	G3/8	19	9	35	20.5
G-389M	**KX 5520**	7.5	12/9	G3/8	22	9	38	23
G-126M	**KX 5521**	5.2	9/6	G1/2	24	11	37.5	20.5
G-129M	**KX 5522**	7.5	12/9	G1/2	24	11	40	23

Material: aluminum, black-anodized





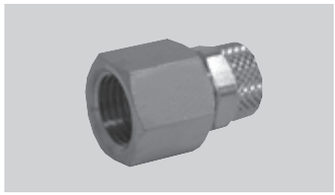
Straight Adaptor, male taper thread

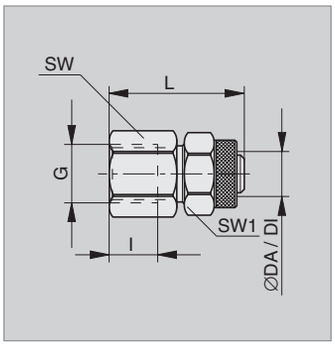
Order Instructions Type	Order No.	NW	Tube ØDA/DI *	G	SW	SW1	I	L
GK-185Msv	**KW 0166**	2.0	5/3	R1/8	12	8	8	24.5
GK-186Msv	**KW 0167**	3.0	6/4	R1/8	12	12	8	26.5
GK-146Msv	**KW 0168**	3.0	6/4	R1/4	14	12	11	30
GK-188Msv	**KW 0169**	5.0	8/6	R1/8	12	14	8	26
GK-148Msv	**KW 0170**	5.0	8/6	R1/4	14	14	11	30
GK-388Msv	**KW 0171**	5.0	8/6	R3/8	17	14	11.5	31
GK-1810Msv	**KW 0838**	6.8	10/8	R1/8	14	16	8	28.5
GK-1410Msv	**KW 0172**	6.8	10/8	R1/4	14	16	11	32
GK-3810Msv	**KW 0173**	6.8	10/8	R3/8	17	16	11.5	33
GK-1210Msv	**KW 0174**	6.8	10/8	R1/2	22	16	14	36
GK-3812Msv	**KW 0175**	8.5	12/10	R3/8	17	19	11.5	35
GK-1212Msv	**KW 0176**	8.5	12/10	R1/2	22	19	14	38
GK-1215Msv	**KW 0177**	10.5	15/12.5	R1/2	22	22	14	39.5

* = Tube ØOD/ID

Pressure Gauge Adaptor

Order Instructions Type	Order No.	Nominal width	Tube ØDA/DI *	G	SW	SW1	I	L
MV-186Msv	**KW 0195**	3	6/4	G1/8	14	12	7	26
MV-146Msv	**KW 0196**	3	6/4	G1/4	17	12	8	28
MV-188Msv	**KW 0197**	5	8/6	G1/8	14	14	7	26
MV-148Msv	**KW 0198**	5	8/6	G1/4	17	14	8	28
MV-388Msv	**KW 0199**	5	8/6	G3/8	20	14	10.3	32
MV-1410Msv	**KW 0200**	6.8	10/8	G1/4	17	16	8	30
MV-3810Msv	**KW 0201**	6.8	10/8	G3/8	20	16	10.3	34
MV-1210Msv	**KW 0202**	6.8	10/8	G1/2	24	16	11.4	37.5

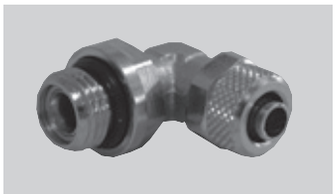


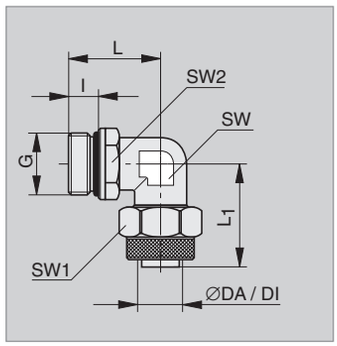


Elbow Adaptor, swivelling, male parallel thread with O-ring

Order Instructions Type	Order No.	NW	Tube ØDA/DI*	G	SW	SW1	SW2	I	L	L_1
LD-186Msv	**KW 0964**	3	6/4	G1/8	10	12	13	6	21	20.5
LD-146Msv	**KW 0965**	3	6/4	G1/4	10	12	16	8	22.5	21.6
LD-188Msv	**KW 0966**	6	8/6	G1/8	10	14	13	6	21	21
LD-148Msv	**KW 0967**	6	8/6	G1/4	12	14	16	8	24	22
LD-1410Msv	**KW 0968**	6.8	10/8	G1/4	12	16	16	8	24	24

For frequent swivelling, see Type ES-..

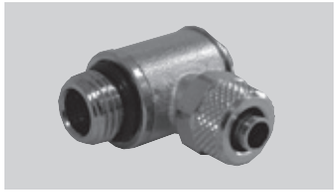


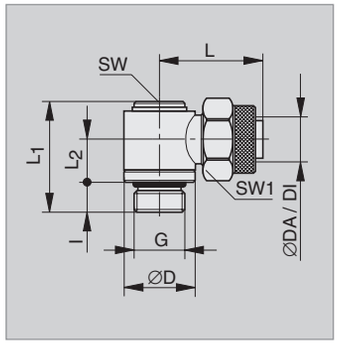


Banjo Elbow Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	NW	Tube ØDA/DI*	G	SW	SW1	ØD	I	L	L_1	L_2
ES-54Msv	**KW 0323**	1.5	4/2	M5	2	9	9.9	4	20	16.8	6.5
ES-185Msv	**KW 0325**	2	5/3	G1/8	5	8	15	6	17	27	10.5
ES-56Msv	**KW 0326**	3	6/4	M5	2	9	9.9	4	20.5	16.8	6.5
ES-186Msv	**KW 0327**	3	6/4	G1/8	5	12	15	6	24	27	10.5
ES-146Msv	**KW 0328**	3	6/4	G1/4	6	12	18	8	26.5	31.5	11.5
ES-188Msv	**KW 0329**	5	8/6	G1/8	5	14	15	6	24	27	10.5
ES-148Msv	**KW 0330**	5	8/6	G1/4	6	14	18	8	26	31.5	11.5
ES-388Msv	**KW 0331**	5	8/6	G3/8	6	14	21	9	28	36	13.5
ES-1410Msv	**KW 0332**	6.8	10/8	G1/4	6	16	18	8	28	31.5	11.5
ES-3810Msv	**KW 0333**	6.8	10/8	G3/8	6	16	21	9	29	36	13.5
ES-1210Msv	**KW 0334**	6.8	10/8	G1/2	10	16	26	11	30.5	32	15.5
ES-3812Msv	**KW 0335**	8.5	12/10	G3/8	6	19	21	9	31.5	36	13.5
ES-1212Msv	**KW 0336**	8.5	12/10	G1/2	10	19	26	11	33	42	15.5
ES-1215Msv	**KW 0829**	11	15/12.5	G1/2	10	22	26	11	35	42	15.5

Application: for frequent swivelling

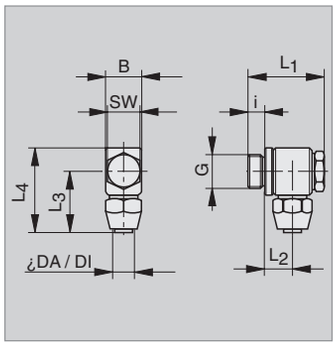




* = Tube ØOD/ID

Dimensions in mm

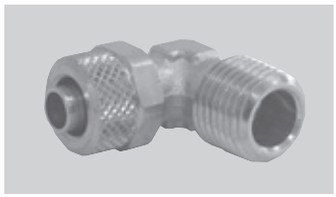


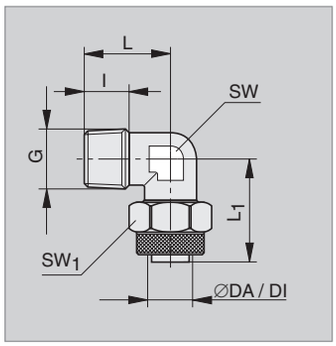


Banjo Elbow Adaptor for metal-braided tubing, male parallel thread with O-ring

Order Instructions Type	Order No.	NW	Tube ØDA/DI *	G	B	I	L_1	L_2	L_3	L_4	SW
ES-146M	**KX 5540**	5.2	9/6	G1/4	20	6.5	37	14.5	30	39.5	17
ES-149M	**KX 5541**	6.5	12/9	G1/4	20	6.5	40	16	32.5	42	17
ES-389M	**KX 5542**	7	12/9	G3/8	24	6.5	41	16	35	47	22

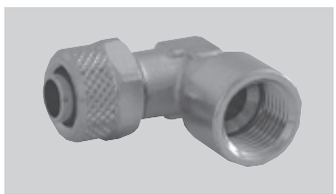
Material: aluminum, black-anodized

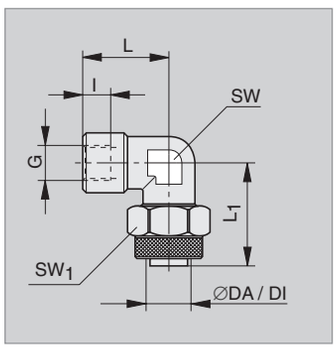




Elbow Adaptor, male taper thread

Order Instructions Type	Order No.	NW	Tube ØDA/DI *	G	SW	SW1	I	L	L_1
WE-185Msv	**KW 0215**	2	5/3	R1/8	8	8	8	17	21.5
WE-186Msv	**KW 0216**	3	6/4	R1/8	9	12	8	17	22
WE-146Msv	**KW 0217**	3	6/4	R1/4	9	12	11	20	22
WE-188Msv	**KW 0218**	5	8/6	R1/8	12	14	8	17	22
WE-148Msv	**KW 0219**	5	8/6	R1/4	12	14	11	20	22
WE-388Msv	**KW 0220**	5	8/6	R3/8	12	14	11.5	22	22.5
WE-1810Msv	**KW 0874**	6.8	10/8	R1/8	11	16	8	20.5	25.5
WE-1410Msv	**KW 0221**	6.8	10/8	R1/4	12	16	11	22	24.5
WE-3810Msv	**KW 0222**	6.8	10/8	R3/8	12	16	11.5	22	24.5
WE-1210Msv	**KW 0223**	6.8	10/8	R1/2	17	16	14	26	27.5
WE-3812Msv	**KW 0224**	8.5	12/10	R3/8	17	19	11.5	24.5	31
WE-1212Msv	**KW 0225**	8.5	12/10	R1/2	17	19	14	26	31
WE-1215Msv	**KW 0226**	11	15/12.5	R1/2	17	22	14	28	34





Elbow Adaptor, female parallel thread

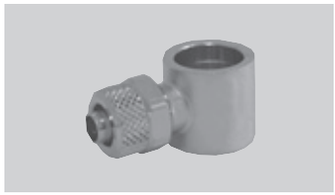
Order Instructions Type	Order No.	NW	Tube ØDA/DI *	G	SW	SW1	I	L	L_1
WI-185Msv	**KW 0963**	2	5/3	G1/8	8	8	7	21.5	22
WI-186Msv	**KW 0227**	3	6/4	G1/8	9	12	7	20	22
WI-146Msv	**KW 0228**	3	6/4	G1/4	11	12	8	23	25.5
WI-188Msv	**KW 0229**	5	8/6	G1/8	10	14	7	21	22.5
WI-148Msv	**KW 0230**	5	8/6	G1/4	12	14	8	22.5	22
WI-1410Msv	**KW 0231**	6.8	10/8	G1/4	11	16	8	23	25.5

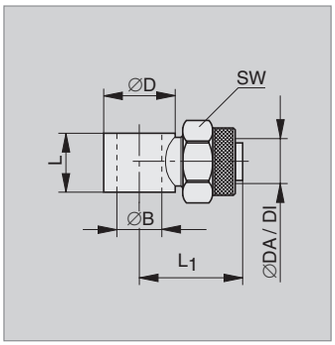
* = Tube ØOD/ID

Banjo Elbow Body, for banjo bolt*

Order Instructions Type	Order No.	NW	Tube ØDA/DI **	ØB for banjo bolt	SW	ØD	L	L_1
RE-54Msv	**KW 0270**	1.5	4/2	M5	9	9.5	9	19
RE-55Msv	**KW 0274**	2	5/3	M5	8	9.5	9	20.5
RE-185Msv	**KW 0275**	2	5/3	G1/8	8	14	15	24
RE-56Msv	**KW 0276**	3	6/4	M5	9	9.5	9	20.5
RE-186Msv	**KW 0277**	3	6/4	G1/8	12	14	15	24
RE-146Msv	**KW 0278**	3	6/4	G1/4	12	18	17	26
RE-188Msv	**KW 0279**	5	8/6	G1/8	14	14	15	24
RE-148Msv	**KW 0280**	5	8/6	G1/4	14	18	17	26
RE-388Msv	**KW 0281**	5	8/6	G3/8	14	21	20	28
RE-1410Msv	**KW 0282**	6.8	10/8	G1/4	16	18	17	28
RE-3810Msv	**KW 0283**	6.8	10/8	G3/8	16	21	20	28
RE-1210Msv	**KW 0284**	6.8	10/8	G1/2	16	26	24	30.5
RE-3812Msv	**KW 0285**	8.5	12/10	G3/8	19	21	20	31.5
RE-1212Msv	**KW 0286**	8.5	12/10	G1/2	19	26	24	33
RE-1215Msv	**KW 0287**	11	15/12.5	G1/2	22	26	24	35

* for banjo bolts see pages 92-94



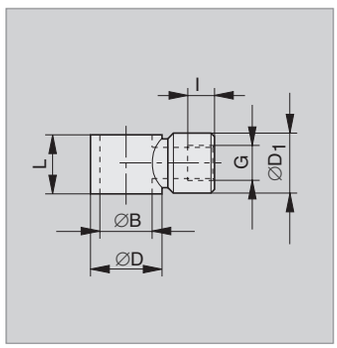




Banjo Elbow Body, female parallel thread, for banjo bolt*

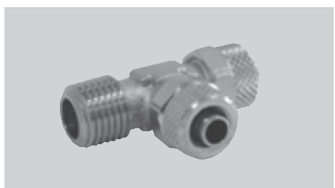
Order Instructions Type	Order No.	NW	ØB for banjo bolt	G	ØD	$ØD_1$	I	L
REI-1818Msv	**KW 0346**	3	G1/8	G1/8	14	13.3	7	15
REI-1414Msv	**KW 0347**	5	G1/4	G1/4	18	16.7	8	17
REI-3838Msv	**KW 0348**	8.5	G3/8	G3/8	21	20.2	10.3	20

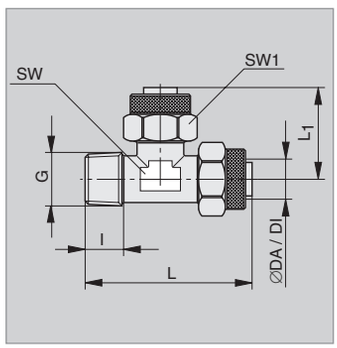
* for banjo bolts see pages 92-94



Run Tee Adaptor, male taper thread

Order Instructions Type	Order No.	NW	Tube ØDA/DI**	F	SW	SW1	I	L	L_1
LE-185Msv	**KW 0250**	2	5/3	R1/8	12	8	8	38.5	21.5
LE-186Msv	**KW 0251**	3	6/4	R1/8	12	9	8	39	22
LE-146Msv	**KW 0252**	3	6/4	R1/4	12	9	11	42	22
LE-188Msv	**KW 0253**	5	8/6	R1/8	12	14	8	39	22
LE-148Msv	**KW 0254**	5	8/6	R1/4	12	14	11	42	22
LE-388Msv	**KW 0255**	5	8/6	R3/8	12	14	11.5	44.5	22.5
LE-1410Msv	**KW 0256**	6.8	10/8	R1/4	12	16	11	46.5	24.5
LE-3810Msv	**KW 0257**	6.8	10/8	R3/8	12	16	11.5	46.5	24.5
LE-1210Msv	**KW 0258**	6.8	10/8	R1/2	17	16	14	53.5	27.5
LE-3812Msv	**KW 0259**	8.5	12/10	R3/8	17	19	11.5	55	31
LE-1212Msv	**KW 0260**	8.5	12/10	R1/2	17	19	14	57	31

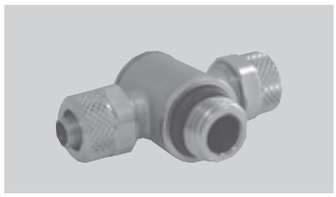


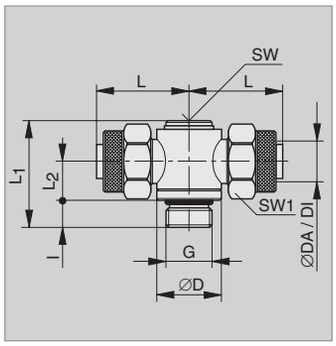


** = Tube ØOD/ID

Dimensions in mm

Banjo Tee Adaptor, male parallel thread with O-ring

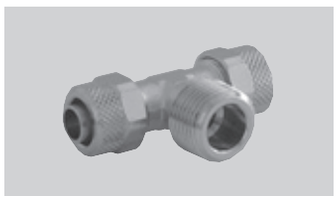


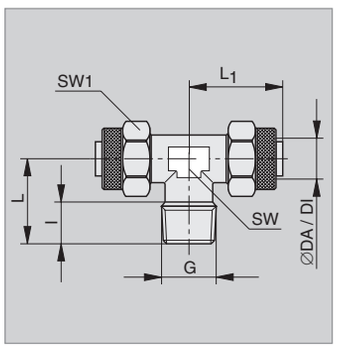


Order Instructions Type	Order No.	NW	Tube ØDA/DI**	G	SW	SW1	ØD	I	L	L_1	L_2
TS-186Msv	**KW 0337**	2	6/4	G1/8	5	12	15	6	24	27	10.5
TS-146Msv	**KW 0338**	3	6/4	G1/4	6	12	18	8	26	31.5	11.5
TS-188Msv	**KW 0339**	3	8/6	G1/8	5	14	15	6	24	27	10.5
TS-148Msv	**KW 0340**	5	8/6	G1/4	6	14	18	8	26	31.5	11.5
TS-388Msv	**KW 0341**	5	8/6	G3/8	6	14	21	9	28	36	13.5
TS-1410Msv	**KW 0342**	5	10/8	G1/4	6	16	18	8	27.5	31.5	11.5
TS-3810Msv	**KW 0343**	6.8	10/8	G3/8	6	16	21	9	29	36	13.5
TS-1210Msv	**KW 0344**	6.8	10/8	G1/2	10	16	26	11	30.5	42	15.5
TS-3812Msv	**KW 0345**	6.8	12/10	G3/8	6	19	21	9	31.5	36	13.5
TS-1212Msv	**KW 0830**	8.5	12/10	G1/2	10	19	26	11	33	42	19.5

Application: for frequent swivelling

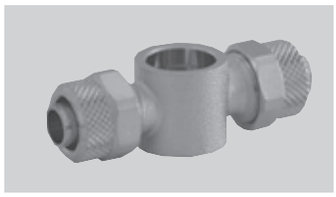
Branch Tee Adaptor, male taper thread

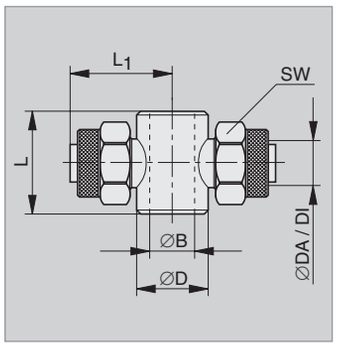




Order Instructions Type	Order No.	NW	Tube ØDA/DI **	G	SW	SW1	I	L	L_1
TE-185Msv	**KW 0238**	2	5/3	R1/8	8	8	8	17	21.5
TE-186Msv	**KW 0239**	3	6/4	R1/8	12	9	8	17	22
TE-146Msv	**KW 0240**	3	6/4	R1/4	12	9	11	20	22
TE-188Msv	**KW 0241**	5	8/6	R1/8	12	14	8	17	22
TE-148Msv	**KW 0242**	5	8/6	R1/4	12	14	11	20	22
TE-388Msv	**KW 0243**	5	8/6	R3/8	12	14	11.5	22	22.5
TE-1410Msv	**KW 0244**	6.8	10/8	R1/4	12	16	11	22	24.5
TE-3810Msv	**KW 0245**	6.8	10/8	R3/8	12	16	11.5	22	24.5
TE-1210Msv	**KW 0246**	6.8	10/8	R1/2	17	16	14	26	27.5
TE-3812Msv	**KW 0247**	8.5	12/10	R3/8	17	19	11.5	24	31
TE-1212Msv	**KW 0248**	8.5	12/10	R1/2	17	19	14	26	31
TE-1215Msv	**KW 0249**	11	15/12.5	R1/2	17	22	14	28	34

Banjo Tee Body, for banjo bolt*





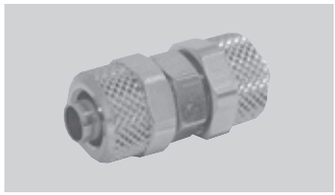
Order Instructions Type	Order No.	NW	Tube ØDA/DI**	ØB for banjo bolt	SW	ØD	L	L_1
RD-185Msv	**KW 0288**	2	5/3	G1/8	8	14	15	24
RD-186Msv	**KW 0289**	3	6/4	G1/8	12	14	15	24
RD-146Msv	**KW 0290**	3	6/4	G1/4	12	18	17	26
RD-188Msv	**KW 0291**	5	8/6	G1/8	14	14	15	24
RD-148Msv	**KW 0292**	5	8/6	G1/4	14	18	17	26
RD-388Msv	**KW 0293**	5	8/6	G3/8	14	21	20	28
RD-1410Msv	**KW 0294**	6.8	10/8	G1/4	16	18	17	28
RD-3810Msv	**KW 0295**	6.8	10/8	G3/8	16	21	20	28
RD-1210Msv	**KW 0296**	6.8	10/8	G1/2	16	26	24	30.5
RD-1212Msv	**KW 0297**	8.5	12/10	G1/2	19	26	24	33

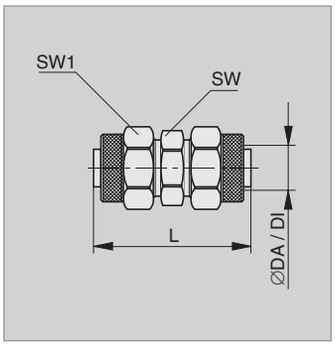
* for banjo bolts see pages 92–94

** = Tube ØOD/ID

Straight Connector

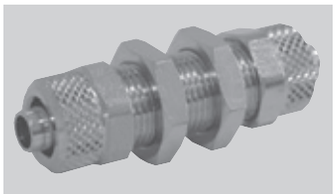
Order Instructions Type	Order No.	NW	Tube ØDA/DI *	SW	SW1	L
GV-5Msv	**KW 0203**	2	5/3	8	8	28.5
GV-6Msv	**KW 0204**	3	6/4	12	12	33
GV-8Msv	**KW 0205**	5	8/6	12	14	33
GV-10Msv	**KW 0206**	6.8	10/8	14	16	37
GV-12Msv	**KW 0207**	8.5	12/10	17	19	42
GV-15Msv	**KW 0208**	11	15/12.5	22	22	45

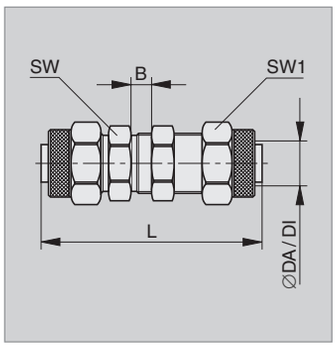




Straight Bulkhead Connector

Order Instructions Type	Order No.	NW	Tube ØDA/DI*	SW	SW1	L	B
SV-53Msv	**KW 0209**	2	5/3	8	8	40	9
SV-64Msv	**KW 0210**	3	6/4	14	12	47	11
SV-86Msv	**KW 0211**	5	8/6	16	14	48	13
SV-108Msv	**KW 0212**	6.8	10/8	17	16	49	10.5
SV-1210Msv	**KW 0213**	8.5	12/10	19	19	53	10
SV-1512Msv	**KW 0214**	11	15/12.5	24	22	53	10

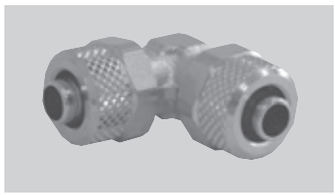


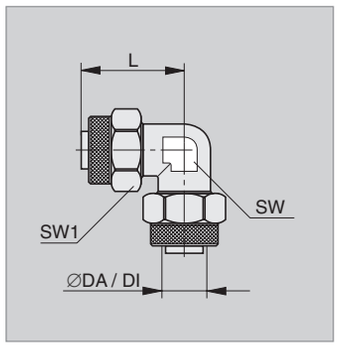


Equal Elbow Connector

Order Instructions Type	Order No.	NW	Tube ØDA/DI *	SW	SW1	L
W-5Msv	**KW 0232**	2	5/3	8	8	21
W-6Msv	**KW 0233**	3	6/4	9	12	22
W-8Msv	**KW 0234**	5	8/6	12	14	22
W-10Msv	**KW 0235**	6.8	10/8	12	16	24.5
W-12Msv	**KW 0236**	8.5	12/10	17	19	31
W-15Msv	**KW 0237**	11	15/12.5	17	22	34

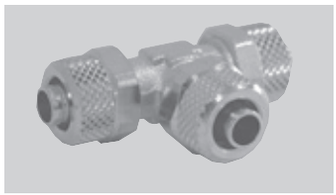
* = Tube ØOD/ID

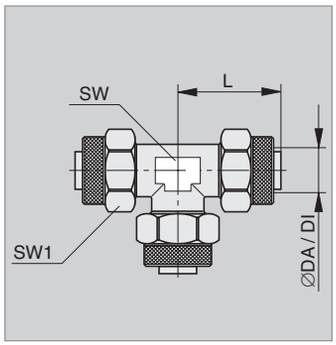




Dimensions in mm

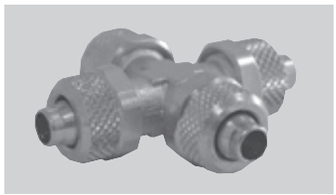
Compression Fittings, Banjo Bolts

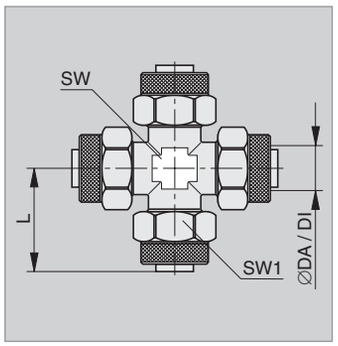




Equal Tee Connector

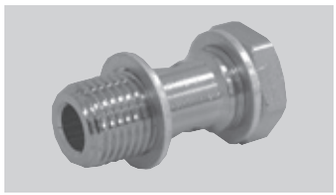
Order Instructions Type	Order No.	NW	Tube ØDA/DI **	SW	SW1	L
TV-5Msv	**KW 0261**	2	5/3	8	8	21
TV-6Msv	**KW 0262**	3	6/4	9	12	22
TV-8Msv	**KW 0263**	5	8/6	12	14	22
TV-10Msv	**KW 0264**	6.8	10/8	12	16	24.5
TV-12Msv	**KW 0265**	8.5	12/10	17	19	31
TV-15Msv	**KW 0266**	11	15/12.5	17	22	34

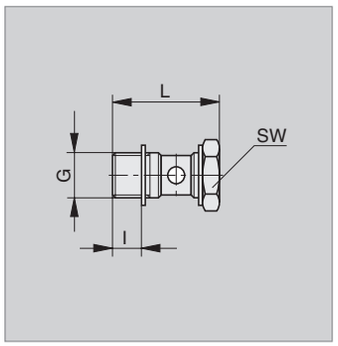




4-Way Cross Connector

Order Instructions Type	Order No.	NW	Tube ØDA/DI **	SW	SW1	L
KV-6Msv	**KW 0267**	3	6/4	9	12	21
KV-8Msv	**KW 0268**	5	8/6	12	14	22.5
KV-10Msv	**KW 0269**	6.8	10/8	12	16	26.5





Single Banjo Bolt, male parallel thread, for banjo bodies*

Order Instructions Type	Order No.	NW	G	SW	I	L
H-15Msv	**KW 0298**	2	M5	8	6	18
H-118Msv	**KW 0299**	3	G1/8	14	9	28
H-114Msv	**KW 0300**	5	G1/4	17	11	33
H-138Msv	**KW 0301**	6.8	G3/8	20	12	37
H-112Msv	**KW 0302**	8.5	G1/2	27	13	42

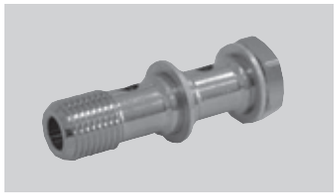
* for banjo elbow and tee bodies see pages 65, 66, 89, 90

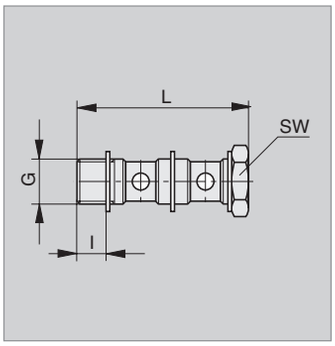
** = Tube ØOD/ID

Double Banjo Bolt , male parallel thread, for banjo bodies*

Order Instructions Type	Order No.	NW	G	SW	l	L
H-218Msv	**KW 0307**	3	G1/8	14	9	44.5
H-214Msv	**KW 0308**	5	G1/4	17	11	51.5
H-238Msv	**KW 0309**	6.8	G3/8	20	12	58.5
H-212Msv	**KW 0310**	8.5	G1/2	27	13	67.5

* for banjo elbow and tee bodies see pages 65, 66, 89, 90

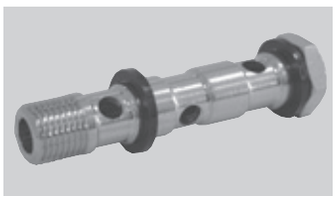


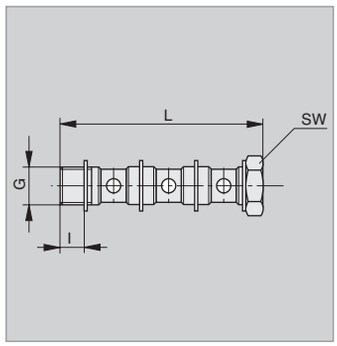


Triple Banjo Bolt, male parallel thread, for banjo bodies*

Order Instructions Type	Order No.	NW	G	SW	l	L
H-318Msv	**KW 0972**	3	G1/8	14	9	61
H-314Msv	**KW 0973**	5	G1/4	17	11	70

* for banjo elbow and tee bodies see pages 65, 66, 89, 90

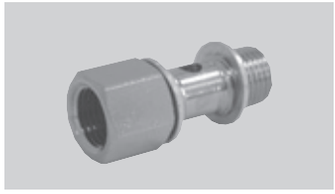


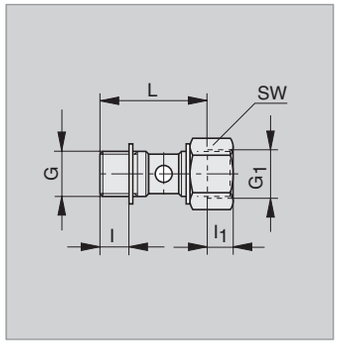


Single Hollow Bolt with Internal Thread – for L-Banjo's*

Order Instructions Type	Order No.	NW	G	G_1	SW	l	l_1	L
HI-118Msv	**KW 0303**	3	G1/8	G1/8	14	9	7	36.5
HI-114Msv	**KW 0304**	5	G1/4	G1/4	17	11	8	42
HI-138Msv	**KW 0305**	6.8	G3/8	G3/8	20	12	10.3	49.5
HI-112Msv	**KW 0306**	8.5	G1/2	G1/2	27	13	11.4	55

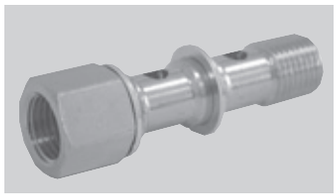
* for banjo elbow and tee bodies see pages 65, 66, 89, 90

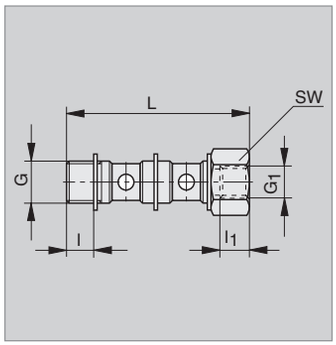




Dimensions in mm

Compression Fittings, Banjo Bolts

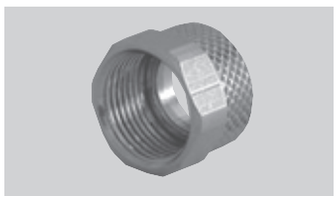


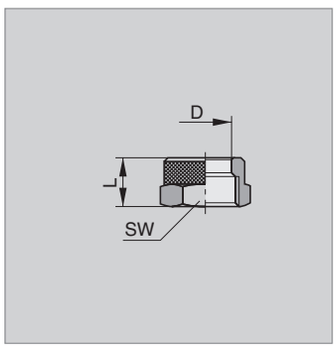


Double Banjo Bolt, female parallel thread, for banjo bodies*

Order Instructions Type	Order No.	NW	G	G_1	SW	l	l_1	L
HI-218Msv	**KW 0311**	3	G1/8	G1/8	14	9	7	53
HI-214Msv	**KW 0312**	5	G1/4	G1/4	17	11	8	60.5
HI-238Msv	**KW 0313**	6.8	G3/8	G3/8	20	12	10.3	71
HI-212Msv	**KW 0314**	8.5	G1/2	G1/2	27	13	11.4	80.5

* for banjo elbow and tee bodies see pages 65, 66, 89, 90



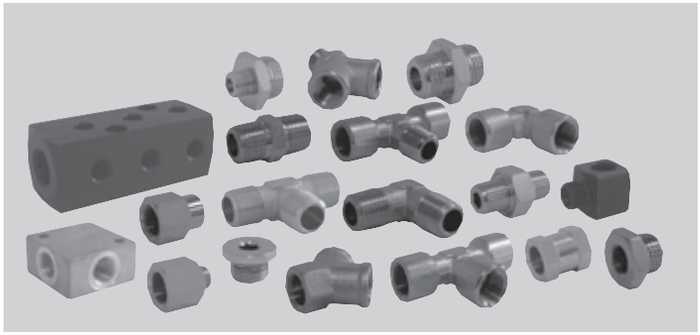


Compression Nut for Compression Fittings

Order Instructions Type	Order No.	For Compression Fittings with Port Size	Tube ØOD/ID	L	SW1
UM-4Msv	**KW 0710**	M5	4/2	9	9
UM-5Msv	**KW 0711**	M5. G1/8	5/3	8	8
UM-6/1Msv	**KW 0712**	M5	6/4	9	9
UM-6/2Msv	**KW 0713**	G1/8. G1/4	6/4	11	12
UM-8Msv	**KW 0714**	G1/8. G1/4. G3/8	8/6	11	14
UM-10Msv	**KW 0715**	G1/4. G3/8. G1/2	10/8	12	16
UM-12Msv	**KW 0716**	G3/8. G1/2	12/10	12	19
UM-15Msv	**KW 0717**	G1/2	15/12.5	13	22

Fittings for General Installation Work (rigid connections, junctions, couplings, etc.)

- Nickel-plated brass for optimum surface protection

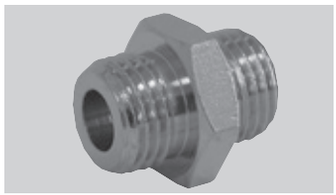


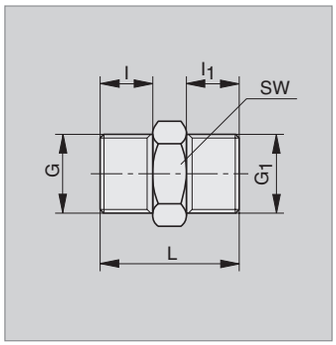
Technical Data

Connecting thread*	M5, G1/8, G1/4, G3/8, G1/2 (parallel and taper)
Tubing outside/inside diameter*	4/2, 5/3, 6/4, 8/6, 10/8, 12/10, 15/12,5
Material**	Nickel-plated brass; O-rings: NBR
Operating pressure range	0 to 18 bar (suitable for low vacuum)
Temperature range	-25°C to +80°C (other temperature ranges on request)
Medium	Compressed air (other media on request)

* depending on type
** exceptions on some types are specified

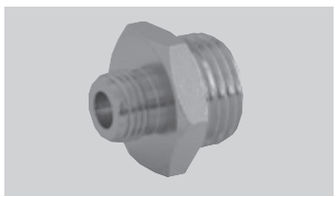
Double Nipple Connector, male parallel thread

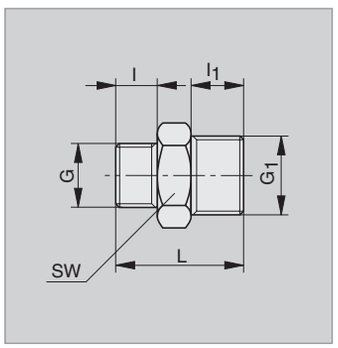




Order Instructions Type	Order No.	G	G_1	SW	I	I_1	L
DZ-5050Msv	**KW 0895**	M5	M5	8	4	4	11.5
DZ-1818Msv	**KW 0373**	G1/8	G1/8	14	6	6	17
DZ-1414Msv	**KW 0374**	G1/4	G1/4	17	8	8	21
DZ-3838Msv	**KW 0375**	G3/8	G3/8	20	9	9	24
DZ-1212Msv	**KW 0376**	G1/2	G1/2	25	10	10	26.5
DZ-3434Msv	**KW 0377**	G3/4	G3/4	30	11	11	28
DZ-1010Msv	**KW 0896**	G1	G1	36	12	12	31

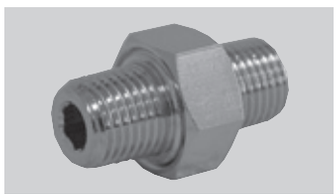
Reducing Nipple Adaptor, male parallel thread

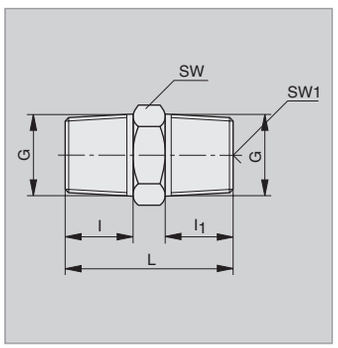




Order Instructions Type	Order No.	G	G_1	SW	I	I_1	L
DZ-1805Msv	**KW 0897**	M5	G1/8	8	4	4	11.5
DZ-1814Msv	**KW 0378**	G1/8	G1/4	17	6	8	19
DZ-1838Msv	**KW 0379**	G1/8	G3/8	20	6	9	20
DZ-1438Msv	**KW 0380**	G1/4	G3/8	20	8	9	22
DZ-1412Msv	**KW 0381**	G1/4	G1/2	25	8	10	24
DZ-3812Msv	**KW 0382**	G3/8	G1/2	25	9	10	25.5
DZ-1234Msv	**KW 0383**	G1/2	G3/4	30	10	11	27
DZ-3410Msv	**KW 0898**	G3/4	G1	36	11	12	30

Double Nipple Connector, male taper thread (3 separable parts)



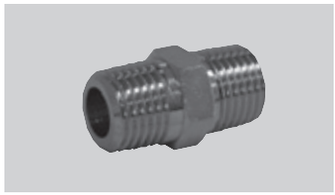


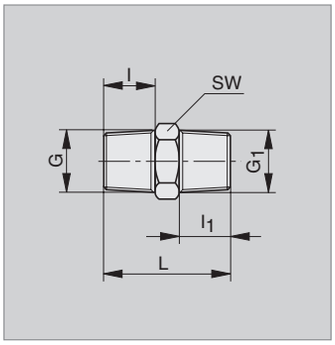
Order Instructions Type	Order No.	G	SW	SW	I	I_1	L
DT-1818	**KY 6364**	R1/8	15	5	9	9	27
DT-1414	**KY 6365**	R1/4	19	6	12	12	34
DT-3838	**KY 6366**	R3/8	22	8	13	13	36
DT-1212	**KY 6367**	R1/2	27	12	16	16	44
DT-3434	**KY 6368**	R3/4	36	14	18	18	52
DT-1010	**KY 6369**	R1	46	19	18	22	65

Material: brass uncoated

Double Nipple Connector, male taper thread

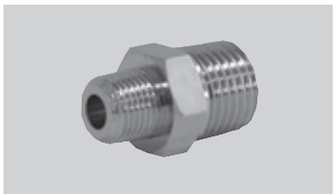
Order Instructions Type	Order No.	G	G_1	SW	l	l_1	L
DK-1818Msv	**KW 0368**	R1/8	R1/8	12	8	8	21
DK-1414Msv	**KW 0369**	R1/4	R1/4	14	11	11	27
DK-3838Msv	**KW 0370**	R3/8	R3/8	17	11.5	11	29
DK-1212Msv	**KW 0371**	R1/2	R1/2	22	14	14	35
DK-3434Msv	**KW 0372**	R3/4	R3/4	27	16.5	16.5	40
DK-1010Msv	**KW 0894**	R1	R1	34	16.5	16.5	41

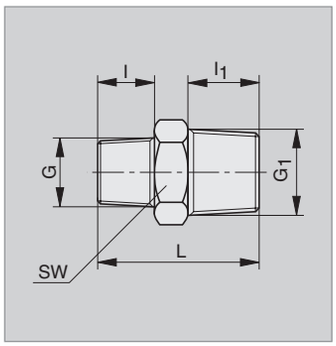




Reducing Nipple Adaptor, male taper thread

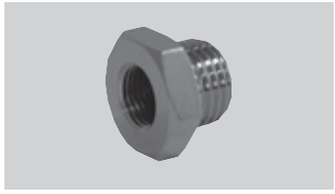
Order Instructions Type	Order No.	G	G_1	SW	l	l_1	L
DK-1814Msv	**KW 0362**	R1/8	R1/4	14	8	11	24
DK-1838Msv	**KW 0363**	R1/8	R3/8	17	8	11.5	25
DK-1438Msv	**KW 0364**	R1/4	R3/8	17	11	11.5	28
DK-1412Msv	**KW 0365**	R1/4	R1/2	22	11	14	32
DK-3812Msv	**KW 0366**	R3/8	R1/2	22	11.5	14	32.5
DK-1234Msv	**KW 0367**	R1/2	R3/4	27	14	17	37.5
DK-1034Msv	**KW 0893**	R3/4	R1	34	14	17	37.5

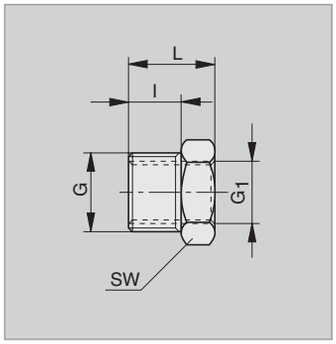




Reducing Nipple Adaptor, male / female parallel thread

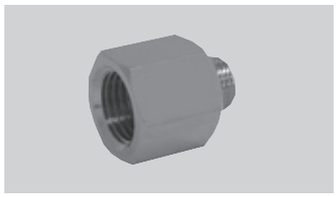
Order Instructions Type	Order No.	G	G_1	SW	l	L
RNZ-185Msv	**KW 0899**	G1/8	M5	14	6	10
RNZ-1418Msv	**KW 0411**	G1/4	G1/8	17	8	13
RNZ-3818Msv	**KW 0412**	G3/8	G1/8	20	9	14
RNZ-3814Msv	**KW 0413**	G3/8	G1/4	20	9	14
RNZ-1214Msv	**KW 0414**	G1/2	G1/4	25	10	15.5
RNZ-1238Msv	**KW 0415**	G1/2	G3/8	25	10	15.5
RNZ-3412Msv	**KW 0753**	G3/4	G1/2	30	11	17
RNZ-1034Msv	**KW 0900**	G1	G3/4	36	12	19

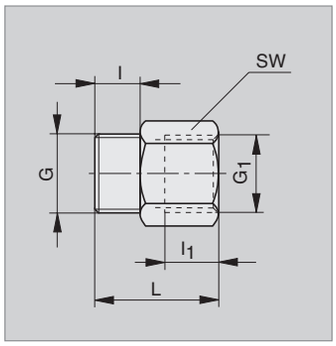




Dimensions in mm

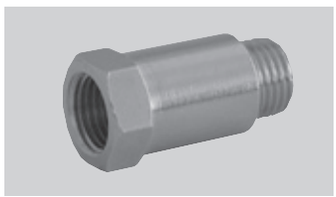
Standard Fittings

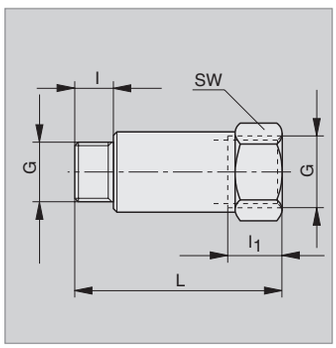




Order Instructions Type	Order No.	G	G_1	SW	I	I_1	L
RMZ-1805Msv	**KW 0391**	M5	G1/8	12	4	7	16
RMZ-1818Msv	**KW 0392**	G1/8	G1/8	14	6	7	18
RMZ-1814Msv	**KW 0393**	G1/8	G1/4	17	8	8	20
RMZ-1414Msv	**KW 0394**	G1/4	G1/4	17	8	8	21.5
RMZ-1438Msv	**KW 0395**	G1/4	G3/8	22	9	10.3	24
RMZ-3838Msv	**KW 0396**	G3/8	G3/8	22	9	10.3	25
RMZ-3812Msv	**KW 0397**	G3/8	G1/2	24	11	11.4	28
RMZ-1212Msv	**KW 0398**	G1/2	G1/2	25	11	11.4	28

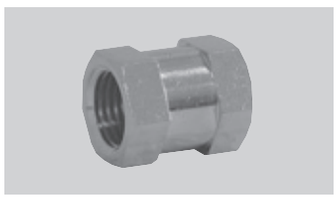
Extended Sleeve Adaptor, male / female parallel thread

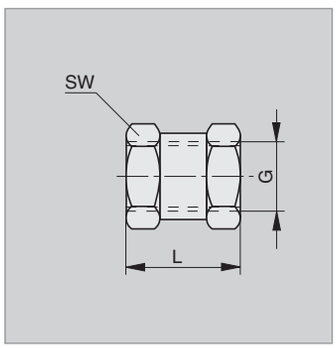




Order Instructions Type	Order No.	G	SW	I	I_1	L
RMZL1-18Msv	**KW 0399**	G1/8	14	6	8	22
RMZL2-18Msv	**KW 0400**	G1/8	14	6	8	42
RMZL1-14Msv	**KW 0401**	G1/4	17	8	9	35
RMZL2-14Msv	**KW 0402**	G1/4	17	8	9	51
RMZL3-18Msv	**KW 0403**	G1/8	14	6	8	100
RMZL3-14Msv	**KW 0404**	G1/4	17	8	9	100

Sleeve Connector, female parallel thread

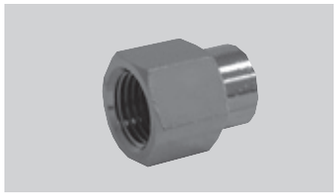


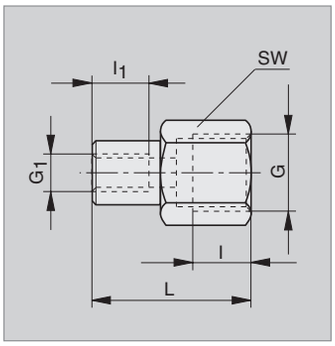


Order Instructions Type	Order No.	G	SW	L
MU-50Msv	**KW 0984**	M5	8	11
MU-18Msv	**KW 0416**	G1/8	14	15.0
MU-14Msv	**KW 0417**	G1/4	17	22.0
MU-38Msv	**KW 0418**	G3/8	22	24.0
MU-12Msv	**KW 0419**	G1/2	27	30.0

Reducing Sleeve Adaptor, female parallel thread

Order Instructions Type	Order No.	G	G_1	SW	l	l_1	L
RMZJ-1814Msv	**KW 0420**	G1/4	G1/8	17	8	8	20
RMZJ-1838Msv	**KW 0421**	G3/8	G1/8	22	10.3	7	22
RMZJ-1438Msv	**KW 0422**	G3/8	G1/4	22	10.3	9	24
RMZJ-1412Msv	**KW 0423**	G1/2	G1/4	24	11.4	9	27
RMZJ-3812Msv	**KW 0424**	G1/2	G3/8	24	11.4	11	28



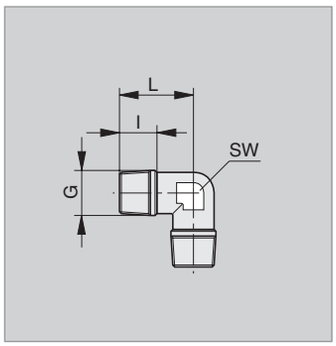


Equal Elbow Connector, male taper thread

Order Instructions Type	Order No.	G	SW	l	L
WEA-18Msv	**KW 0471**	R1/8	9	8.0	16.5
WEA-14Msv	**KW 0472**	R1/4	14	10.5	24.5
WEA-38Msv	**KW 0473**	R3/8	17	11.5	26.5
WEA-12Msv	**KW 0752**	R1/2	21	14.0	31.5

Version R3/4 and R1 on request

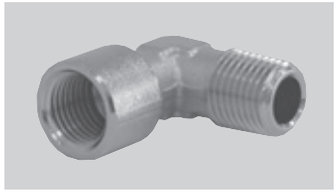


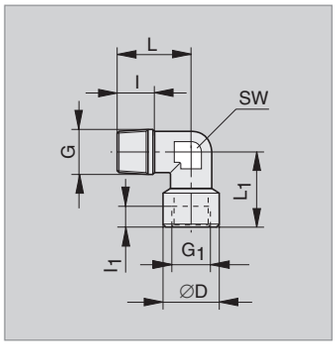


Elbow Adaptor, male taper / female parallel thread

Order Instructions Type	Order No.	G	G_1	SW	ØD	l	l_1	L	L_1
WEI-18Msv	**KW 0467**	R1/8	G1/8	9	13.5	8	7	16.5	19.5
WEI-14Msv	**KW 0468**	R1/4	G1/4	14	17	10.5	8	24.5	27
WEI-38Msv	**KW 0469**	R3/8	G3/8	17	15	11.5	10.3	27.5	31.5
WEI-12Msv	**KW 0470**	R1/2	G1/2	19	20	14	11.4	32	36.5

Version R3/4 and R1 on request

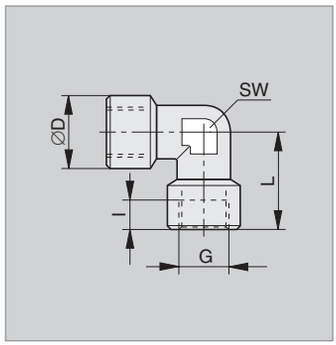




Dimensions in mm

Standard Fittings



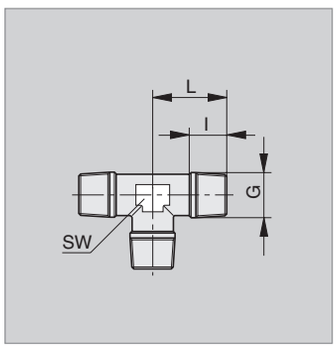


Equal Elbow Connector, female parallel thread

Order Instructions Type	Order No.	G	SW	ØD	I	L
WII-18Msv	**KW 0460**	G1/8	9	13.5	7	19.5
WII-14Msv	**KW 0461**	G1/4	14	17	8	27
WII-38Msv	**KW 0462**	G3/8	17	20.5	10.3	31.5
WII-12Msv	**KW 0463**	G1/2	19	25.5	11.4	36.5

Taper Thread version R3/4 and R1 on request

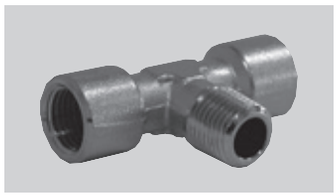


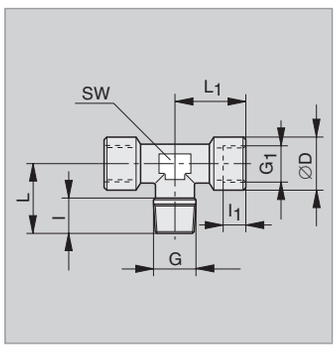


Equal Tee Connector, male taper thread

Order Instructions Type	Order No.	G	SW	I	L
TEC-18Msv	**KW 0490**	R1/8	9	8	16.5
TEC-14Msv	**KW 0491**	R1/4	14	11	24.5
TEC-38Msv	**KW 0492**	R3/8	17	11.5	26.5
TEC-12Msv	**KW 0493**	R1/2	21	14	31.5

Taper Thread version R3/4 and R1 on request





Branch Tee Adaptor, male taper / female parallel thread

Order Instructions Type	Order No.	G	G_1	SW	ØD	I	I_1	L	L_1
TEA-18Msv	**KW 0482**	R1/8	G1/8	9	13.5	8	7	16.5	19.5
TEA-14Msv	**KW 0483**	R1/4	G1/4	14	17	11	8	24.5	27
TEA-38Msv	**KW 0484**	R3/8	G3/8	17	21.5	11.5	10.3	27.5	31.5
TEA-12Msv	**KW 0485**	R1/2	G1/2	19	25.5	14	11.4	32	36.5

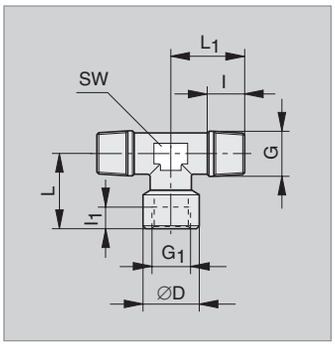
Taper Thread version R3/4 and R1 on request

Branch Tee Adaptor, male taper / female parallel thread

Order Instructions Type	Order No.	G	G_1	SW	ØD	I	I_1	L	L_1
TEB-18Msv	**KW 0486**	R1/8	G1/8	10	13	8	8	21	19
TEB-14Msv	**KW 0487**	R1/4	G1/4	14	17	11	8	27	24.5
TEB-38Msv	**KW 0488**	R3/8	G3/8	17	21	11.5	11.5	28	26.5
TEB-12Msv	**KW 0489**	R1/2	G1/2	21	25	14	14	35	31.5

Taper Thread version R3/4 and R1 on request

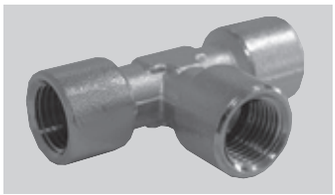


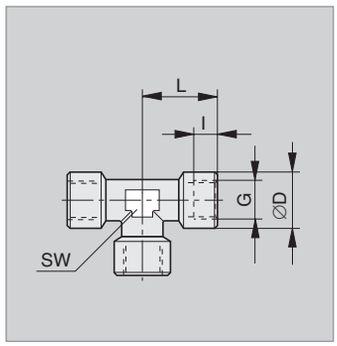


Equal Tee Connector, female parallel thread

Order Instructions Type	Order No.	G	SW	ØD	I	L
TI-18Msv	**KW 0478**	G1/8	9	13.5	7	19.5
TI-14Msv	**KW 0479**	G1/4	14	17	8	27
TI-38Msv	**KW 0480**	G3/8	17	21.5	10.3	31.5
TI-12Msv	**KW 0481**	G1/2	19	25.5	11.4	36.5
TI-34Msv	**KW 0773**	G3/4	31	33	11.4	30.3

Version G1 on request

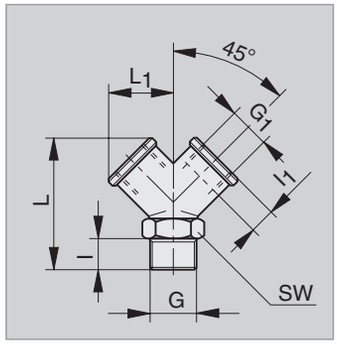




Y Adaptor, male / female parallel thread

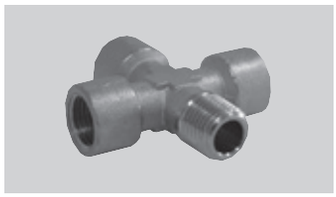
Order Instructions Type	Order No.	G	G_1	SW	I	I_1	L	L_1
YAI-18Msv	**KW 0505**	G1/8	G1/8	13	8	8	32	14.5
YAI-14Msv	**KW 0506**	G1/4	G1/4	17	11	11	32	18
YAI-38Msv	**KW 0507**	G3/8	G3/8	20	11.5	11.5	42	20.5
YAI-12Msv	**KW 0991**	G1/2	G1/2	25	14	14	53	26.5

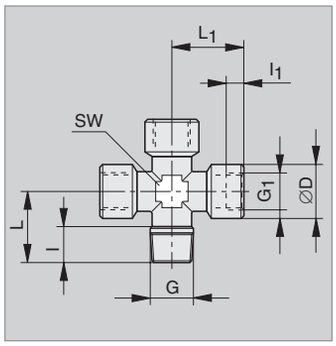




Dimensions in mm

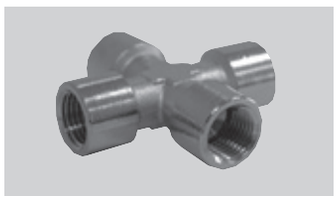
4-Way Cross Adaptor, male taper / female parallel thread

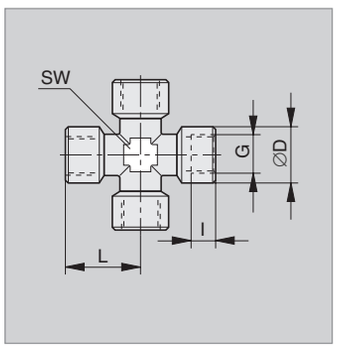




Order Instructions Type	Order No.	G	G_1	SW	ØD	I	I_1	L	L_1
TEF-18Msv	**KW 0502**	R1/8	G1/8	12	13.5	8	7	19	20
TEF-14Msv	**KW 0503**	R1/4	G1/4	14	17.5	11	8	25	27
TEF-38Msv	**KW 0504**	R3/8	G3/8	17	20.5	11.5	10.3	26.5	28
TEF-12Msv	**KW 0988**	R1/2	G1/2	21	25.5	15	14	33.5	35

4-Way Cross Connector, female parallel thread

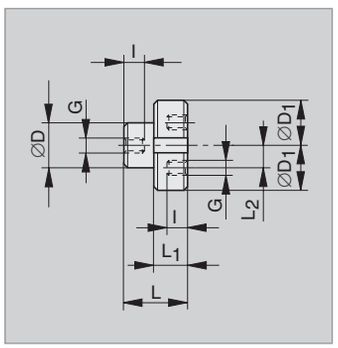




Order Instructions Type	Order No.	G	SW	ØD	I	L
KEI-18Msv	**KW 0464**	G1/8	12	13.5	7	20
KEI-14Msv	**KW 0465**	G1/4	14	17.5	8	27
KEI-38Msv	**KW 0466**	G3/8	17	21.5	10.3	31.5
KEI-12Msv	**KW 0987**	G1/2	21	25	11.4	35

Equal Y Connector, female parallel thread

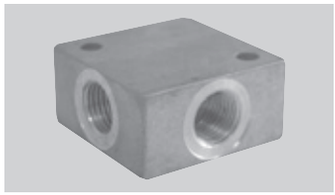


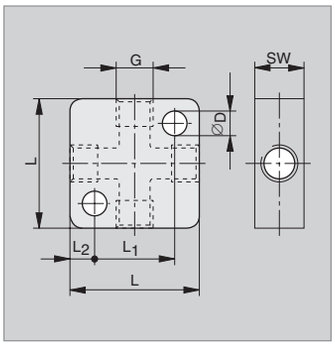


Order Instructions Type	Order No.	G	ØD	$ØD_1$	I	L	L_1	L_2
YI-5Msv	**KW 0508**	M5	11	11	5	19.5	7	5.5
YI-18Msv	**KW 0509**	G1/8	15	15.75	7	18	12	8.25
YI-14Msv	**KW 0510**	G1/4	18	18.25	8	20	13	9.25

4-Way Manifold

Order Instructions Type	Order No.	G	SW	ØD	L	L_1	L_2
VB-05	**KY 6691**	M5	8	-	14	-	-
VB-18ALN	**KW 0474**	G1/8	16	4.5	25	17	4
VB-14ALN	**KW 0475**	G1/4	20	5.5	40	26	7
VB-38ALN	**KW 0476**	G3/8	26	5.5	50	34	8
VB-12ALN	**KW 0477**	G1/2	32	5.5	50	34	8

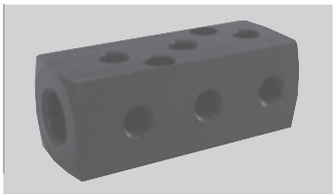


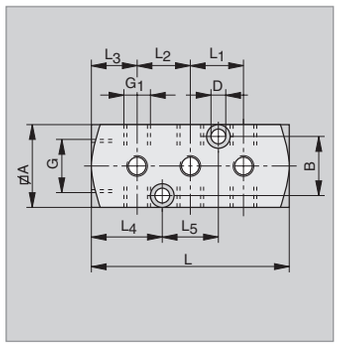


9-Way Manifold

Order Instructions Type	Order No.	G	G_1 (9x)	A	B	D	L	L_1	L_2	L_3	L_4	L_5
VL-185ALS	**KY 6540**	G1/8	M5	20	12	4.5	50	15	15	12	18	18
VL-3818ALS	**KY 6541**	G3/8	G1/8	30	19.5	5.5	80	24	24	20	30	28
VL-1214ALS	**KY 6542**	G1/2	G1/4	36	24	6.5	100	30	30	23	36	34

Material: aluminium, black -anodized



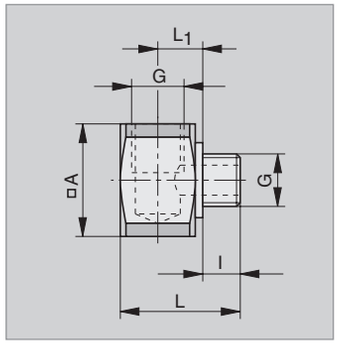


Elbow Adaptor Block, male / female parallel thread

Order Instructions Type	Order No.	G	A	I	L	L_1
WE-05	**KY 6370**	M5	10	4.5	14	5
WE-18	**KY 6371**	G1/8	15	6.5	23	9
WE-14	**KY 6372**	G1/4	22	9	29	11
WE-38	**KY 6373**	G3/8	27	9	32	12
WE-12	**KY 6374**	G1/2	36	11	40.5	16

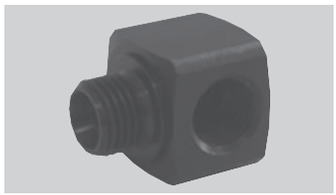
Material: aluminium, black -anodized

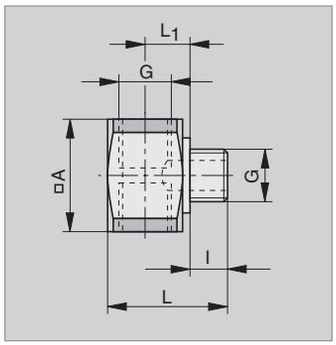




Dimensions in mm

Standard Fittings



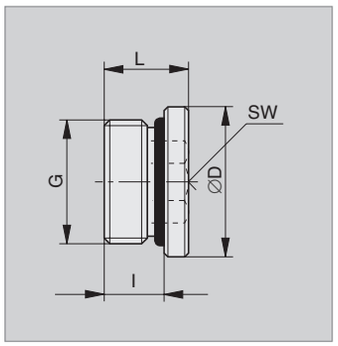


Tee Adaptor Block, male / female parallel thread

Order Instructions Type	Order No.	G	A	I	L	L_1
TE-05	**KY 6375**	M5	10	4.5	14	5
TE-18	**KY 6376**	G1/8	15	6.5	23	9
TE-14	**KY 6377**	G1/4	22	9	29	11
TE-38	**KY 6378**	G3/8	27	9	32	12.5
TE-12	**KY 6379**	G1/2	36	11	40.5	16

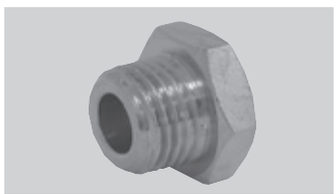
Material: aluminium, black-anodized

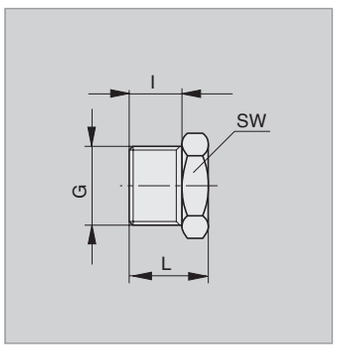




Screw Plug, male parallel thread, hexagon socket and O-ring

Order Instructions Type	Order No.	G	SW	ØD	I	L
VS-5Msv	**KW 0425**	M5	2.5	8	4	6.5
VS-18Msv	**KW 0426**	G1/8	3	15	7	9.5
VS-14Msv	**KW 0427**	G1/4	6	18	8	11
VS-38Msv	**KW 0428**	G3/8	8	21	9	12.5
VS-12Msv	**KW 0429**	G1/2	10	26	11	14.5



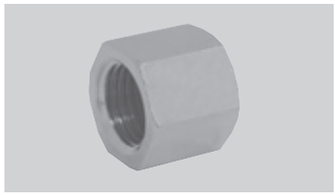


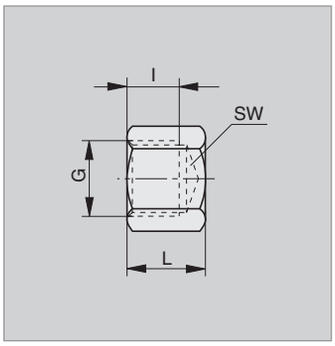
Screw Plug, male parallel thread

Order Instructions Type	Order No.	G	SW	I	L
VS-5Msv	**KW 0985**	M5	8	3.5	6.5
VS-18Msv	**KW 0430**	G1/8	14	6	11
VS-14Msv	**KW 0431**	G1/4	17	8	13
VS-38Msv	**KW 0432**	G3/8	19	9	14
VS-12Msv	**KW 0433**	G1/2	24	10	15
VS-34Msv	**KW 0434**	G3/4	30	9	14
VS-10Msv	**KW 0986**	G1	36	11	18

Cap Nut, female parallel thread

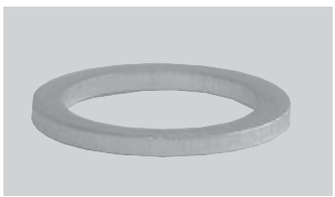
Order Instructions Type	Order No.	G	SW	l	L
UM-18Msv	**KW 0435**	G1/8	14	7.0	12.0
UM-14Msv	**KW 0436**	G1/4	17	8.0	14.0
UM-38Msv	**KW 0437**	G3/8	20	10.3	16.0
UM-12Msv	**KW 0438**	G1/2	24	11.4	19.0

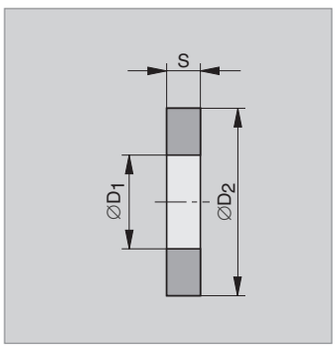




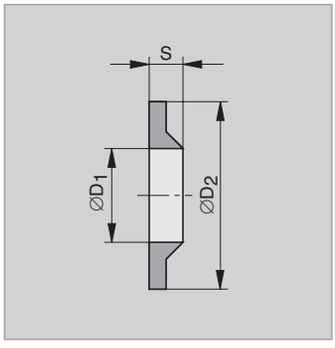
Sealing Rings

Order Instructions Type	Order No.	for Port Size	ØD$_1$	ØD$_2$	s	Material
Aluminium Sealing Rings						
DI-5AL	**KZ 7669**	M5	5	7.5	1	Aluminium
DI-18AL	**KW 0349**	G1/8	10	14	1.5	Aluminium
DI-14AL	**KW 0350**	G1/4	13.2	18	1.5	Aluminium
DI-38AL	**KW 0351**	G3/8	17	21	1.5	Aluminium
DI-12AL	**KW 0352**	G1/2	21	26	1.5	Aluminium
DI-34AL	**KZ 7865**	G3/4	26.5	31	2	Aluminium
DI-10AL	**KZ 7866**	G1	33.5	39	1.0	Aluminium
Plastic Sealing Rings						
DI-5KU	**KW 0582**	M5	5	7.5	1	PVC, hard
DI-18KU	**KW 0354**	G1/8	10	14	1.5	PVC, hard
DI-14KU	**KW 0355**	G1/4	13.2	18	1.5	PVC, hard
DI-38KU	**KW 0356**	G3/8	17	21	1.5	PVC, hard
DI-12KU	**KW 0357**	G1/2	21	26	1.5	PVC, hard
Copper Sealing Rings						
DI-5CU	**KW 0583**	M5	5	7.5	1	Copper
DI-18CU	**KW 0584**	G1/8	10	14	1.5	Copper
DI-14CU	**KW 0585**	G1/4	13.5	18	1.5	Copper
DI-38CU	**KW 0586**	G3/8	17	21	1.5	Copper
DI-12CU	**KW 0587**	G1/2	21	26	1.5	Copper







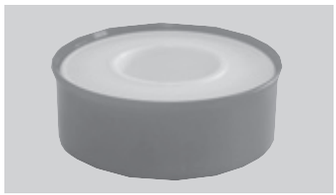


Pressure Gauge Sealing Ring

Order Instructions Type	Order No.	for Port Size	ØD$_1$	ØD$_2$	s	Material
MD-18	**KZ 7430**	G1/8	9.4	15	4.2	Plastic
MD-14	**KZ 7431**	G1/4	12.8	18.6	4.5	Plastic

Dimensions in mm

Standard Fittings



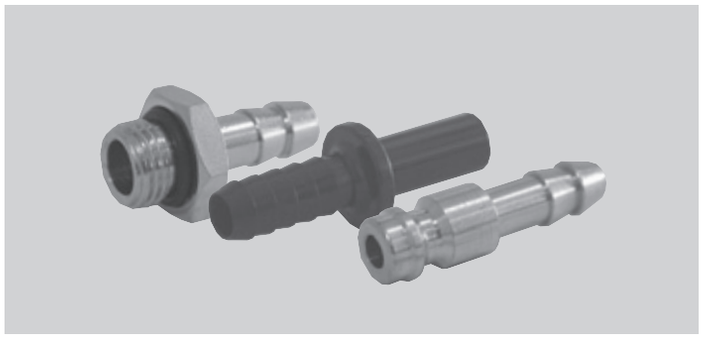
Thread Sealing Tape

Order Instructions Type	Order No.	Thickness	Length
GD-128	**KY 9426**	0.08 mm	12 m

Fittings for Tubing and Hoses in Special Applications

Sealing: by hose clip

- Metal types: nickel-plated brass with male parallel thread and integrated O-ring for thread sealing
- Plastic types in combination with plastic push-in fittings (see Section on Push-in Fittings)
- Metal types (nickel-plated brass) in combination with quick-release couplings (see Section on Miscellaneous Accessories)



Technical Data

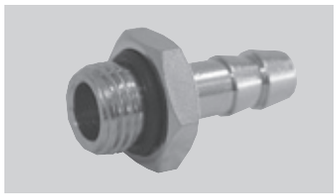
Connecting thread	G1/8, G1/4, G3/8, G1/2, G3/4 (parallel)
Tubing/ hose outside diameter (recommended sizes)	Ø4, Ø6, Ø8, Ø9, Ø11, Ø13, Ø19
Material	Body: nickel-plated brass; O-ring: NBR
Operating pressure range	0 to 18 bar
Medium	Compressed air (other media on request)

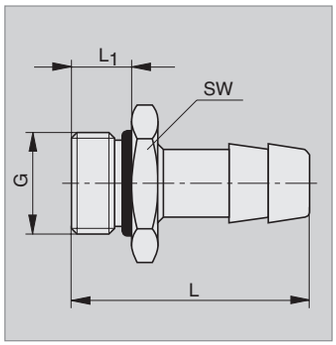
Tubing/ Hose Recommendations[1)]

Tubing/ hose type	Depending on application
Tubing/ hose material	PVC (polyester-braided or glassfibre-reinforced) PU

[1)] see Section on Tubing and Hoses, pages 109–111

Tube/ Hose Fittings

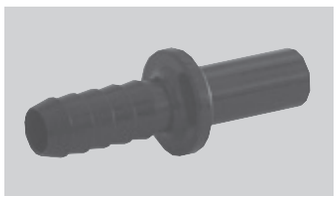




Tube/ Hose Adaptor, male parallel thread with O-ring

Order Instructions Type	Order No.	Tube/ Hose ØID	Thread G	L	L_1	SW
STO-184Msv	**KW 0974**	4	G1/8	31	6	15
STO-186Msv	**KW 0439**	6	G1/8	31	6	15
STO-146Msv	**KW 0440**	6	G1/4	33	8	18
STO-188Msv	**KW 0442**	8	G1/8	31	6	15
STO-148Msv	**KW 0443**	8	G1/4	33	8	18
STO-388Msv	**KW 0444**	8	G3/8	34	9	21
STO-149Msv	**KW 0975**	9	G1/4	33	8	18
STO-389Msv	**KW 0976**	9	G3/8	34	9	21
STO-1211Msv	**KW 0447**[1)]	11	G1/2	36	11	26
STO-3813Msv	**KW 0977**	13	G3/8	39	9	21
STO-1213Msv	**KW 0978**	13	G1/2	41	11	26
STO-3413Msv	**KW 0979**	13	G3/4	45	14	32
STO-3419Msv	**KW 0980**	19	G3/4	48	14	32

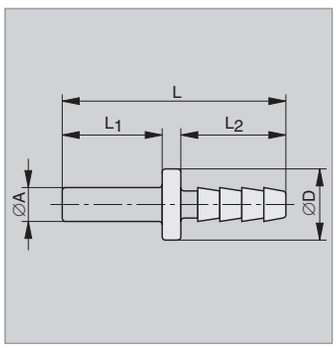
Material: nickel-plated brass [1)] type to be discontinued

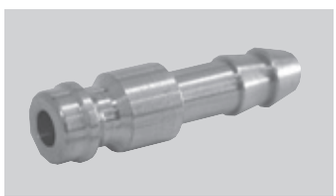


Tube/ Hose Stem Adaptor*

Order Instructions Type	Order No.	NW	Tube/ Hose ØOD/ID	Stem ØA	ØD	L	L1	L2
SST-84P	**KX 5326**	2.8	6/4	6	13.0	41.8	18.0	20.8
SST-86P	**KX 5327**	3.5	8/6	8	14.8	43.1	19.3	20.8
SST-108P	**KX 5328**	6.7	10/8	10	17.8	46.1	22.2	20.8

Material: plastic * see also page 117



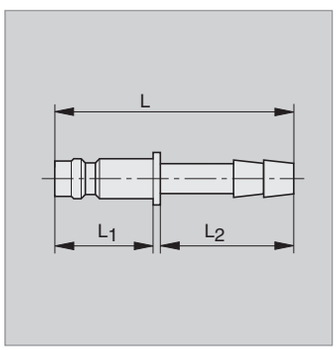


Quick Release Coupling Plug, hose barb*

Order Instructions Type	Order No.	NW	Tube/ Hose ØID	L	L_1	L_2
ST-32	**KX 5657**	2.7	3	24	10	13
ST-42	**KX 5658**	2.7	4	24	10	13
ST-45	**KY 6452**	5	4	32	14	17
ST-65	**KY 6453**	5	6	32	14	17
ST-47	**KY 6454**	7.8	4	48	20	25
ST-67	**KX 5053**	7.8	6	48	20	25
ST-97	**KY 6455**	7.8	9	48	20	25
ST-137	**KY 6456**	7.8	13	48	20	25
ST-1310	**KY 6197**	10	13	48	21.5	25

Material: nickel-plated brass (ST-1310: nickel-plated steel)

* see also page 117



Quality Tubing for a Wide Range of Applications

– to match the Fittings programme

Tubing Accessories

Hose clips
Tube holder racks
Tube cutters ...
– see pages 112, 113



Technical Data (Type STO)

Material	Polyethylene, polyurethane, nylon, PVC (polyester-braided), PVC (glassfibre-reinforced), rubber (metal-braided)
Operating pressure range	See specific data
Temperature range	See specific data
Bending radii	See specific data

Tubing Recommendations[1)]

Characteristics and resistance*	**Polyethylene tubing (HOERBIGER Type PE-.):** Low cost tubing for general use (not suitable for push-in fittings), lightweight, impact resistant and generally resistant to acids, alkalis and salt solutions. Tubing runs should be straight (danger of cracking).
	Polyurethane tubing (HOERBIGER Type PU-.): Good recovery properties (low deformation), high tear resistance, very good cold flexibility, resistant to most lubricating oils, resistant to ageing with oxygen and ozone, especially flexible.
	Nylon (HOERBIGER Type PS-.): Flexible tubing (calibrated) for use with push-in fittings, high impact and notched bar impact resistance, lightweight and easy to install, resistant to hydraulic oils and fuels.
	PVC tubing (HOERBIGER Type DH-. , polyester-braided): Flexible, resistant to weathering and ageing, generally resistant to diluted acids, alkalis, greases and various oils, resistant to abrasion.
	PVC tubing (HOERBIGER Type DVOH-. , glassfibre-reinforced): Especially flexible, lightweight tubing with high pressure resistance, generally resistant to diluted acids, alkalis, greases and various oils, especially suitable for pneumatic-hydraulic systems.
	Rubber tubing (HOERBIGER Type PBM-., metal-braided): Oil-resistant rubber tubing with metal braiding for protection (e.g. for welding systems).

* These are general notes: for special applications, the suitability of the tubing should always be carefully checked.

Tubing

Polyethylene Tubing

Order Instructions – Colors				Tube	Permissible Pressure (bar)		Min. Bending	Length/
Type	Transparent	Blue	Black	ØOD/ID	20°C	50°C (t_{max})	Radius (mm)	Roll
PE-42	**M857-5149**	**M857-5443**	**M857-5381**	4/2	20	12	20	50 m
PE-53	**M857-5299**	**M857-5059**	**M857-5152**	5/3	15	9	25	50 m
PE-64	**M857-5183**	**M857-5064**	**M857-5066**	6/4	13	8	30	50 m
PE-86	**M857-5184**	**M857-5070**	**M857-5298**	8/6	8	5	40	50 m
PE-108	**M857-5185**	**M857-5073**	**M857-5365**	10/8	6	4	60	50 m

Size Ø OD/ID 12/10 available on request

Polyurethane Tubing

Order Instructions – Colors				Tube	Permissible Pressure (bar)		Min. Bending	Length/
Type	Transparent	Blue	Black	ØOD/ID	20°C	50°C (t_{max})	Radius (mm)	Roll
PU-42	**KW 0995**	**KW 0996**	**KW 0997**	4/2	8	5,5	13	50 m
PU-53	**M814-5255**	**M814-5059**	**M814-5152**	5/3	8	5,5	14	50 m
PU-64	**M814-5062**	**M814-5064**	**M814-5066**	6/4	8	5,5	20	50 m
PU-86	**M814-5175**	**M814-5070**	**M814-5298**	8/6	8	5,5	36	50 m
PU-108	**M814-5173**	**M814-5073**	**M814-5368**	10/8	8	5,5	48	50 m

Nylon Tubing for Push-in Fittings

Order Instructions – Color				Tube	Permissible Pressure (bar)		Min. Bending	Length/
Type	Transparent	Blue	Black	ØOD/ID	20°C	90°C*(t_{max})	Radius (mm)	Roll
PS-427	**M812-5322**	**M812-5454**	**M812-5408**	4/2.7	45	9	30	50 m
PS-53	**M812-5366**	**M812-5455**	**M812-5457**	5/3	34	7	25	50 m
PS-64	**M812-5323**	**M812-5386**	**M812-5458**	6/4	27	5.5	30	50 m
PS-86	**M812-5324**	**M812-5389**	**M812-5459**	8/6	19	4	40	50 m
PS-108	**M812-5332**	**M812-5412**	**M812-5460**	10/8	15	3	60	50 m
PS-1210	**M812-5333**	**M812-5456**	**M812-5461**	12/10	12	2.5	85	50 m
PS-1411	**KW 0906**	**KW 0907**	**KW 0908**	14/11	16	3.2	80	50 m

* at +50°C the permissible pressure is 3 times the value at +90°C

Polyester-braided PVC Tubing

Order Instructions – Color		Tube	Permissible Pressure (bar)		Min. Bending	Length/
Type	Transparent	ØOD/ID	20°C	60°C (t_{max})	Radius (mm)	Roll
DH-126N	**M870-5307**	12/6	18	10	Ca. 10 x tube inside diameter	50 m
DH-148N	**M870-5304**	14/8	16	8		50 m
DH-159N	**M870-5305**	15/9	14	7		50 m
DH-1610N[1)]	**M870-5261**[1)]	16/10	12	6		50 m
DH-1912N	**M870-5306**	19/12	12	6		50 m
DH-2013N	**M870-5262**	20/13	12	6		50 m
DH-2719N	**KW 0962**	27/19	10	5		50 m

[1)] type to be discontinued

Glassfibre-reinforced PVC Tubing

Order Instructions – Color		Tube	Permissible Pressure (bar)		Min. Bending	Length/
Type	Blue	ØOD/ID	20°C	60° (t_{max})	Radius (mm)	Roll
DVOH-64B	**M870-5303**	6.2/4	40	28	50	50 m
DVOH-86B	**M870-5302**	8.2/6	40	28	60	50 m
DVOH-108B	**M870-5300**	10.2/8	35	24	65	50 m
DVOH-1512B	**M870-5301**	15/12.5	28	20	80	50 m

Glassfibre-reinforced PVC Tubing

Order Instructions – Color Type	Blue	Tube ØOD/ID	Permissible Pressure (bar) 20°C	60° (t_{max})	Min. Bending Radius (mm)	Length/ Roll
DVOH-64B	**M870-5303**	6.2/4	40	28	50	50 m
DVOH-86B	**M870-5302**	8.2/6	40	28	60	50 m
DVOH-108B	**M870-5300**	10.2/8	35	24	65	50 m
DVOH-1512B	**M870-5301**	15/12.5	28	20	80	50 m

Metal-braided Rubber Tubing

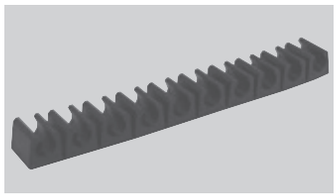
Order Instructions – Color Type	Silver	Tube ØOD/ID	Permissible Pressure (bar) 20°C	Minimum Bending Radius (mm)	Length/ Roll
PBM-96S	**M850-5437**	9/6	12	30	50 m
PBM-129S	**M850-5438**	12/9	12	45	50 m

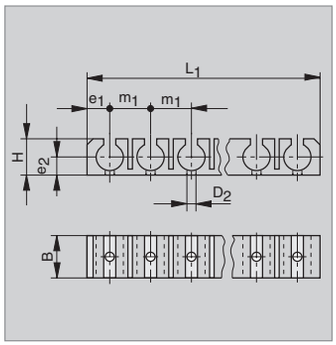
Nylon Spiral Tubing (with or without connectors G1/8, G1/4)

Order Instructions – Color Type	Order No.	Version	Colour	Tube ØOD/ID	Perm. Pressure (bar) 20°C	Working Length	Spiral Ø Inside
PAS-64N	**KW 0719**	**without connectors**	**Transparent**	6/4	12	5 m	60
PAS-86N	**KW 0720**	**without connectors**	**Transparent**	8/6	12	5 m	60
PAS-64B	**KY 0050**	**with connectors G1/8**	**Blue**	6/4	12	5 m	60
PAS-86B	**KY 0048**	**with connectors G1/4**	**Blue**	8/6	12	5 m	60
PAS-108B	**KY 0051**	**with connectors G1/4**	**Blue**	10/8	12	5 m	60

Tubing Accessories

Tube Holder Rack (10-fold)





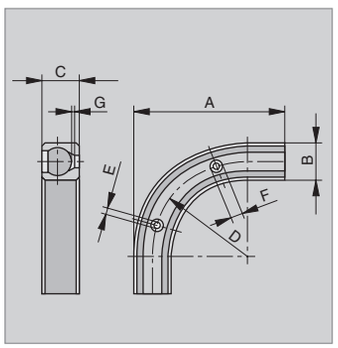
Order Instructions Type	Order No.	Tube ØOD	B	H	L_1	D_2	e_1	e_2	m_1
KL-53*	**KX 5614**	5	13.5	9	96	2.5	4.3	6	9.7
KL-64	**KX 5615**	6	13.5	9	105	3	5.2	5.5	10.5
KL-86	**KX 5616**	8	15.5	12	135	3	6.8	7.5	13.5
KL-108	**KZ 4953**	10	18	15	119.2	2.8	8.6	10	20.4

* also for tube ØOD = 4

Material: Nylon PA 6

Elbow Tube Holder





Order Instructions Type	Order No.	Tube ØOD	A	B	C	D	E	F	G
HB-8P	**KX 5329**	8	37	13	10	22	3.2	6.6	1.7
HB-10P	**KX 5330**	10	47	15	12	30	3.2	6.6	1.7

Material: POM

Tube Bundling Spiral

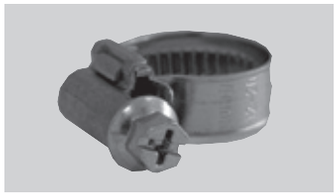


Order Instructions Type	Order No.	Number of Tubes	Tube ØOD/ID
SBS	**KX 5613**	20	5/3
		15	6/4
		8	8/6
		5	10/8

Hose Clip

Order Instructions Type	Order No.	Tubing Range
SCH-812	**KX 5622**	8-12 mm
SCH-1016	**KX 5623**	10-16 mm
SCH-1220	**KX 5624**	12-20 mm
SCH-1625	**KX 5399**	16-25 mm
SCH-2032	**KX 0934**	20-32 mm
SCH-2540	**KY 6901**	25-40 mm

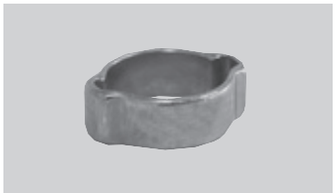
Material: zinc-plated steel



O-Clip

Order Instructions Type	Order No.	Tubing Range
SCHK-911	**KX 5617**	9-11 mm
SCHK-1113	**KX 5618**	11-13 mm
SCHK-1315	**KX 5619**	13-15 mm
SCHK-1417	**KX 5620**	14-17 mm
SCHK-1820	**KX 5621**	18-20 mm

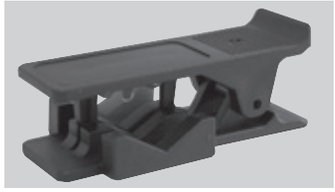
Material: zinc-plated steel



Tube Cutter

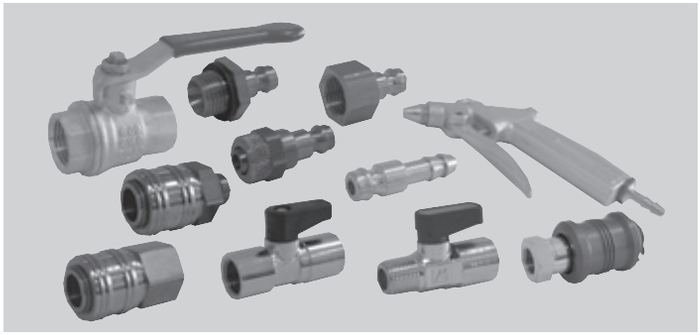
Order Instructions Type	Order No.
PSA-1	**KY 6813**

Material: plastic/steel



Air Line Accessories

- Quick release couplings, self-sealing
- 3/2 way slide valves
- Manifolds with integrated ball valves
- Ball valves
- Blow guns



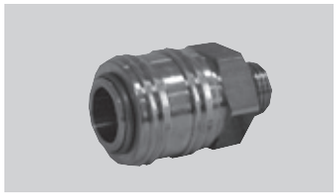
Technical Data

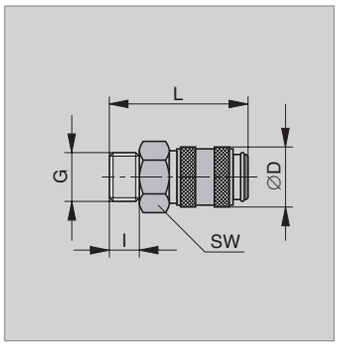
3/2 Way Slide Valves*	Versions	NW 2.7; NW 5; NW 7.8; NW 10
	Material	Brass (NW 10 nipple: nickel-plated steel)
	Operating pressure range	0 to 35 bar
	Temperature range	-20°C to +100°C
Quick release couplings, self-sealing	Medium	Compressed air (other media on request)
	Versions	G1/8, G1/4, G3/8, G1/2
	Material	Body: brass; sleeve: aluminium
Ball valves*	Versions	G1/4, G3/8, G1/2, G3/4, G1 (with or without venting)
	Material	Nickel-plated brass
Blow guns*	Versions	For NW 6 and NW 9 tubing
	Material	Aluminium

*suitable for the usual pressure and temperature ranges for pneumatic systems (0°C to 80°C, 0 to 16 bar).

Other pressure and temperature ranges on request

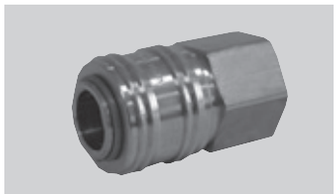
Accessories

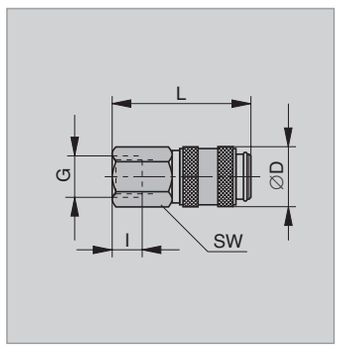




Quick Release Coupling Body, self-sealing, male parallel thread

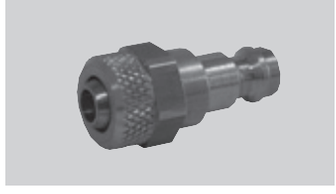
Order Instructions Type	Order No.	NW	G	ØD	I	L	SW
KA-525	**KX 5640**	2.7	M5	10	5	26	9
KA-185	**KY 1006**	5	G1/8	16	7	36	14
KA-145	**KY 1007**	5	G1/4	16	9	38	17
KA-187	**KY 1008**	7.2	G1/8	27	9	43	22
KA-147	**KY 1009**	7.2	G1/4	27	9	43	22
KA-387	**KY 1010**	7.2	G3/8	27	9	43	22
KA-127	**KY 1011**	7.2	G1/2	27	12	46	22
KA-3410	**KX 6198**	10	G3/4	28	17	65	27

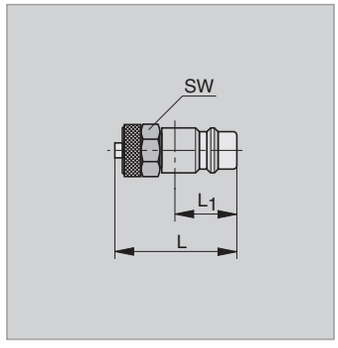




Quick Release Coupling Body, self-sealing, female parallel thread

Order Instructions Type	Order No.	NW	G	ØD	I	L	SW
KI-525	**KX 5647**	2.7	M5	10	5	26	9
KI-185	**KY 1012**	5	G1/8	16	9	36	14
KI-145	**KY 1013**	5	G1/4	16	9	38	17
KI-187	**KY 1014**	7.8	G1/8	25	8	45	22
KI-147	**KY 1015**	7.8	G1/4	27	9	43	22
KI-387	**KY 1016**	7.8	G3/8	27	9	43	22
KI-127	**KY 1017**	7.8	G1/2	27	12	46	24
KI-3410	**KX 6199**	10	G3/4	28	16	61	32





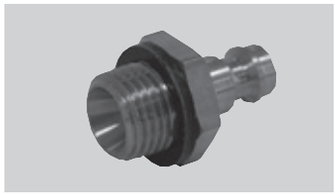
Quick Release Coupling Plug, compression fitting

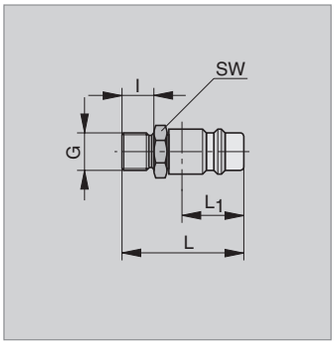
Order Instructions Type	Order No.	NW	Tube ØOD/ID	L	L_1	SW
SV-532	**KX 5654**	2.7	5/3	25	10	7
SV-642	**KX 5655**	2.7	6/4	25	10	8
SV-645	**KY 6447**	5	6/4	32	14	12
SV-865	**KY 6448**	5	8/6	32	14	12
SV-647	**KY 6449**	7.8	6/4	34	20	14
SV-867	**KY 6450**	7.8	8/6	34	20	14
SV-1087	**KY 6451**	7.8	10/8	42	20	14

Quick Release Coupling Plug, male parallel thread

Order Instructions Type	Order No.	NW	G	l	L	L_1	SW
SA-525	**KX 5659**	2.7	M5	5	18	10.5	7
SA-185	**KY 6457**	5	G1/8	7	25	14	14
SA-145	**KY 6458**	5	G1/4	9	28	14	17
SA-187	**KY 6459**	7.8	G1/8	6.5	31	20	14
SA-147	**KY 6460**	7.8	G1/4	9	33	20	17
SA-387	**KY 6461**	7.8	G3/8	9	33	20	19
SA-127	**KY 6462**	7.8	G1/2	12	38	20	22
SA-340	**KX 6200**	10	G3/4	19	46	21.5	27

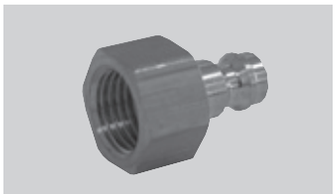
Material: nickel-plated brass (SA-340: nickel-plated steel)

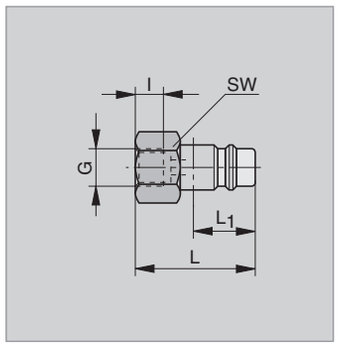




Quick Release Coupling Plug, female parallel thread

Order Instructions Type	Order No.	NW	G	l	L	L_1	SW
SI-525	**KX 5636**	2.7	M5	5	17	10	7
SI-185	**KY 6463**	5	G1/8	8	25	14	14
SI-145	**KY 6464**	5	G1/4	9	26	14	17
SI-187	**KY 6465**	7.8	G1/8	8	30	18	14
SI-147	**KY 6466**	7.8	G1/4	18	33	18	17
SI-387	**KY 6467**	7.8	G3/8	10	33	18	19
SI-127	**KY 6468**	7.8	G1/2	12	36	18	22

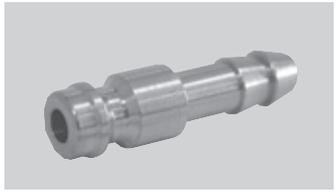


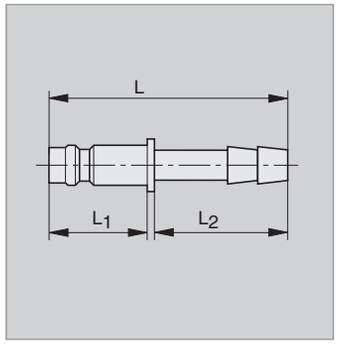


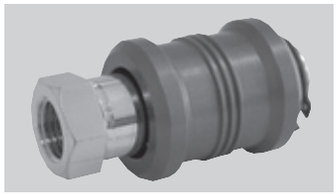
Quick Release Coupling Plug, hose barb

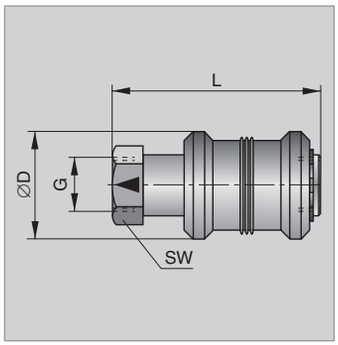
Order Instructions Type	Order No.	NW	Tube ØID	L_1	L_2	L_3
ST-32	**KX 5657**	2.7	3	24	10	13
ST-42	**KX 5658**	2.7	4	24	10	13
ST-45	**KY 6452**	5	4	32	14	17
ST-65	**KY 6453**	5	6	32	14	17
ST-47	**KY 6454**	7.8	4	48	20	25
ST-67	**KX 5053**	7.8	6	48	20	25
ST-97	**KY 6455**	7.8	9	48	20	25
ST-137	**KY 6456**	7.8	13	48	20	25
ST-1310	**KX 6197**	10	13	48	21.5	25

Material: Messing nickel-plated (ST-1310 Steel nickel-plated)









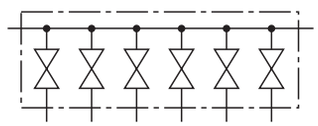
3/2 Way Slide Valves

Order Instructions Type	Order No.	NW	G	ØD	L	SW
HS-05	**KC4303**		M5	30	10	10
HS-18	**KC4304**	6	G1/8	25	48	14
HS-14	**KC4305**	8	G1/4	30	58	19
HS-38	**KC4306**	10	G3/8	35	68	22
HS-12	**KC4307**	15	G1/2	40	80	27

Manifold with integrated Ball Valves

Series VL



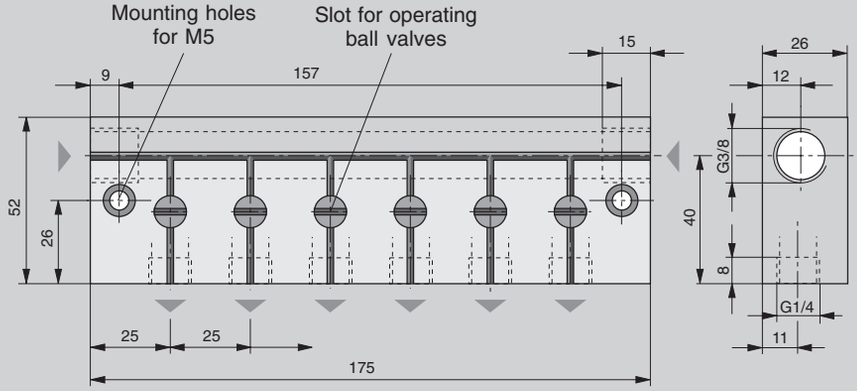


This manifold (with integrated ball valves) allows individual sections of a machine to be shut off. The slot indicates the position of the ball valves.

Characteristics to VDI 3293 Pressures quoted as gauge pressure

Characteristics	Symbol	Unit	Description
General features			
Series			Manifold with integrated ball valves
Type			VL-3/8
Port size			Input 2 x G3/8, Output 6 x G1/4
Nominal bore	NW (DN)	mm	8
Mounting			2 screws M5
Material			Housing – anodized aluminium Ball/spindle – chrome-plated brass Ms 58 Ball seal – Teflon (PTFE) O-rings – Buna N (NBR)
Temperature range		°C	-10 to +100
Operating pressure range	$p_{max.}$	bar	10
Actuation			Screwdriver (size 4 – 6 mm)
Actuation angle			90°
Weight (mass)		kg	0.65

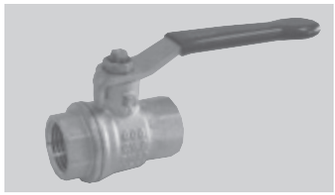
Dimensions

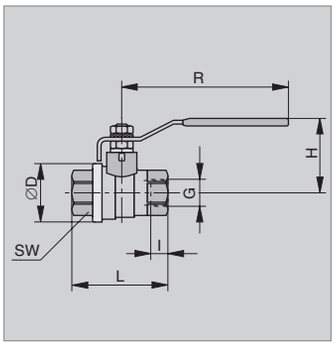


Order Instruction: Type VL3/8 Order No. KL4088

Ball Valves without venting

Order Instructions Type	Order No.	NW	G	ØD	L	I	H	R	SW
KH-14	**KZ 4451**	6	G1/4	25	39	8,5	38	82	20
KH-38	**KZ 4452**	10	G3/8	25	39	8,5	38	82	20
KH-12	**KZ 4453**	15	G1/2	33	50	10,0	43	100	25
KH-34	**KZ 4454**	20	G3/4	44	54	11,0	50	120	31
KH-10	**KZ 4455**	25	G1	48	67	13,0	54	120	38

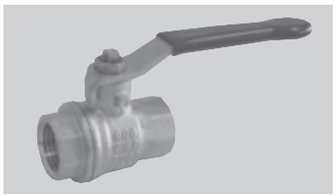


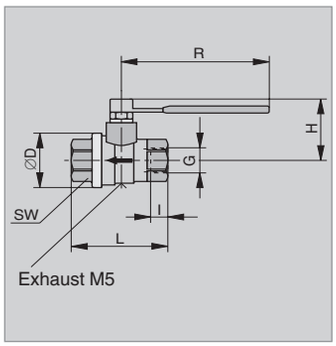


Ball Valves with venting

Order Instructions Type	Order No.	NW	G	ØD	L	I	H	R	SW
KHE-14	**KZ 4660**	6	G1/4	28	51	11	44	98	22
KHE-38	**KZ 4701**	10	G3/8	28	51	11,5	44	98	22
KHE-12	**KZ 4683**	15	G1/2	34	60	15	52	98	27
KHE-34	**KZ 4702**	20	G3/4	43	72	16,5	59	122	32
KHE-10	**KZ 4703**	25	G1	52	84	19	63	122	41
KHE-12BE *	**KW 0643**	15	G1/2	34	60	15	52	98	27

* Lockable version

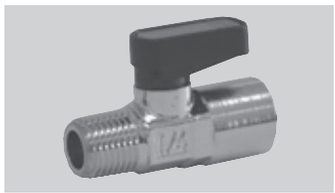


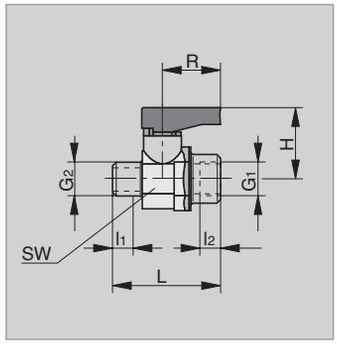


Ball Valves without venting

Order Instructions Type	Order No.	NW	G_1	G_2	L	l_1	l_2	H	R	SW
KHM-18AI	**KW 0709**	5.5	G1/8	G1/8	34	7	7	21	19	14
KHM-14AI	**KW 0708**	5.5	G1/4	G1/4	35	8	7	21	19	14

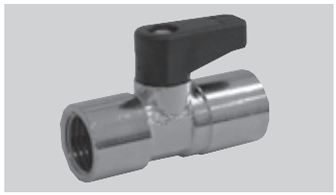
Other sizes on request





Dimensions in mm

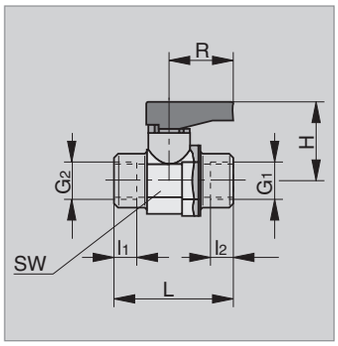
Accessories



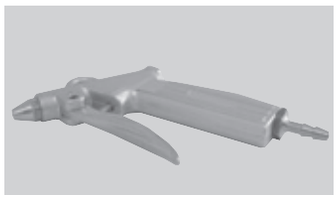
Ball Valves without venting

Order Instructions Type	Order No.	NW	G_1	G_2	L	l_1	l_2	H	R	SW
KHM-18I	**KW 0707**	5.5	G1/8	G1/8	35	7	7	21	19	14
KHM-14I	**KW 0702**	5.5	G1/4	G1/4	37	8	8	21	19	14

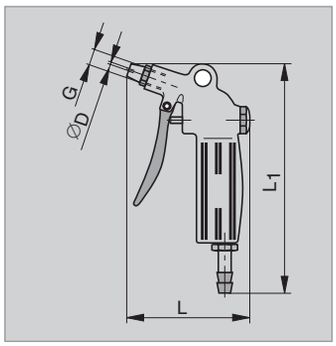
Other sizes on request



Spray Guns with Nipples



Order Instructions Type	Order No.	NW	G	L	L_1	ØD
BP-6	**KY 8915**	6	M12 x 1.25	92	140	1.5
BP-9	**KY 8916**	9	M12 x 1.25	92	140	1.5



EU Directive 94/9/EC (ATEX 95) for Pneumatic Components





HOERBIGER

ORIGA

ATEX (Atmosphères explosibles)

The abbreviation ATEX covers two European Union Directives: 94/9/EC and 1999/92/EC.



Directive **94/9/EC** is designed to harmonize the laws of the EU Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres.

Previously known as ATEX 100a, the Directive now has the working title **ATEX 95** and defines the unified safety requirements needed for free trade.
The Directive has been incorporated into the national law of the Member States and applies to the sales of equipment, components and protective systems for use in potentially explosive atmospheres with effect from 1st July 2003.
Therefore this Directive mainly affects the manufacturer.

Directive **1999/92/EC** defines the minimum requirements for the improvement of the health protection and safety of employees who may be endangered by explosive atmospheres.
It was previously known as ATEX 118a and is now called **ATEX 137**.
This Directive applies to operators of plant with explosive atmospheres and applies to the building of new plant, also with effect from 1st July 2003.
For the adaptation of existing plant there is a transitional phase up to 31st December 2005.

Potentially explosive atmospheres

Explosions can always occur where combustible gases, vapours, liquids or dusts are produced, stored or transported and can under certain conditions combine with air to form an explosive mixture. In such potentially explosive atmospheres a small spark is often enough to trigger an explosion. Potentially explosive atmospheres occur for example in chemical plants, refineries, tank installations, paint factories and other places where dust-forming bulk goods are processed or transported, e.g. in flour mills, animal feed factories and cement works.

What are potential ignition sources?

Electrical ignition sources can be:

- Arcing when contacts are opened
- Transient electric currents
- Electrostatic discharge
- Hot surfaces on coils

Examples of mechanical ignition sources:

- Hot surfaces caused by friction
- Adiabatic compression
- Sparks created by impacts

Examples of other ignition sources:

- Open fire
- Hot-running bearings
- Auto-ignition
- Lightning strike

Application of ATEX to Manufacturers and Operators

With effect from 1st July 2003 the responsibility for newly built plant with potentially explosive atmospheres lies not only with the manufacturer of explosion-proof equipment but also with the operator and builder of the plant.

What products are affected by ATEX 95?

All electrical equipment for use in potentially explosive atmospheres was already covered by the existing law on explosion protection. ATEX 95 however additionally applies to non-electrical equipment, such as piston rod cylinders, rodless cylinders and valves.
It therefore applies to all equipment for use in potentially explosive atmospheres which have any intrinsic potential source of ignition, including sources such as hot surfaces or adiabatic compression.



What products do not fall under ATEX 95?

The following product examples have no intrinsic sources of ignition and therefore do not fall under ATEX 95.

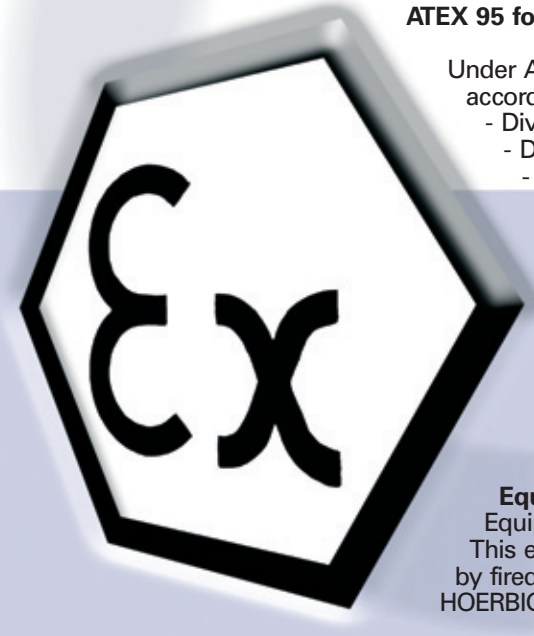
- Pneumatic accessories
- Mechanical accessories
- Tubing
- Fittings
- Check/ flow control valves

Such products can be used in specified potentially explosive atmospheres in accordance with the manufacturer's instructions.

What changes have been made by ATEX?

The application of ATEX has basically made the following changes:

- The Directive now also applies to non-electrical equipment (e.g. pneumatic drives) as well as to electrical equipment.
- It defines fundamental safety requirements and also applies to complete protective systems.
- Equipment is divided into Groups and Categories. These are then related to corresponding danger Zones which have to be defined by the operator in accordance with ATEX 137.
- Depending on the Equipment Category, a type approval is required.
- Marking with the CE mark is now compulsory.
- A declaration of conformity must accompany each product as well as the operating instructions.
- The Directive now also applies to potential dust explosion atmospheres.
- It now applies to underground mining operations as well as to all other potentially explosive atmospheres.



ATEX 95 for the Manufacturer

Under ATEX 95 the manufacturer has to evaluate his products and to mark them accordingly:

- Division into Equipment Groups and Categories for use in different Zones
- Division into Temperature Classes
- Division into Explosion Groups
- Determination of permissible ambient temperatures

The Equipment Groups and Categories are defined as follows. You will find further information on the Temperature Classes and Explosion Groups on page 7.

Equipment Group I

Equipment in Group I is divided into Categories M1 and M2.
This equipment is used in mining, where there is the danger of explosions caused by firedamp or flammable dust.
HOERBIGER-ORIGA do not manufacture Group I Equipment

Equipment Group II

Equipment in Group II is divided into Categories 1, 2 and 3 according to its suitability for use in the different Zones defined by ATEX 137.

Category 1

This equipment is designed to ensure a very high level of safety. It must ensure the required level of safety even in the event of rare equipment malfunctions. Therefore its explosion protection system must ensure that:

– in the event of the failure of one means of protection, at least one second, independent means provides the required level of protection
– or in the event of two faults occurring independently of each other, the required level of safety is still ensured.

Category 2

This equipment is designed to ensure a high level of safety. Its explosion protection system must ensure the required level of safety even in the event of frequently occurring incidents or equipment malfunctions which normally have to be expected.

Category 3

This equipment is designed to ensure a normal level of safety so that it provides the requisite level of safety in normal operation.

ATEX 137 for the Operator

Under ATEX 137 the operator must assess his plant, identify dangers, evaluate the risks (e.g. within the framework of an explosion protection document) and define appropriate protective measures:
– Division of the plant into Zones according to the assessed danger potential
– Determination of Temperature Classes
– Determination of Explosion Groups
– Determination of ambient temperatures experienced

The Zones are defined under ATEX 137 as follows. You will find further information on the Temperature Classes and Explosion Groups on page 7.



Zone 0 (Gases)

An area in which an explosive atmosphere occurs as a mixture of air and flammable gases, vapours or mists constantly, frequently or for long periods. Such conditions are found for example inside storage tanks or pipework.

Zone 1 (Gases)

An area in which an explosive atmosphere can occur as a mixture of air and flammable gases, vapours or mists occasionally. Such areas can be for example in close proximity to a Zone 0 or to filling and emptying equipment.

Zone 2 (Gases)

An area in which an explosive atmosphere as a mixture of air and flammable gases, vapours or mists does not normally occur in normal operation, or occurs only briefly. Such areas might be for example near a Zone 1, near pipework connections or in storage areas.

Zone 20 (Dusts)

An area in which an explosive atmosphere occurs as a dust cloud or dust layer consisting of air and flammable dust particles constantly, frequently or for long periods.

Zone 21 (Dusts)

An area in which an explosive atmosphere can occur as a dust cloud or dust layer consisting of air and flammable dust particles occasionally in normal operation.

Zone 22 (Dusts)

An area in which an explosive atmosphere as a dust cloud or dust layer consisting of air and flammable dust particles does not normally occur in normal operation, or occurs only briefly.

Allocation of Equipment Groups and Categories to Zones

Defined by ATEX 137			Defined by ATEX 95		
Zone for Gases	Zone for Dusts	Frequency of Occurrence of Explosive Atmosphere	Equipment Group	Equipment Category	Atmosphere/ Use
			I	M1, M2	Using in mining
0		Constantly, frequently, for long periods	II	1G	Gases, vapours, mists
	20		II	1D	Dust
1		Occasionally in normal operation	II	2G	Gases, vapours, mists
	21		II	2D	Dust
2		Seldom, only briefly	II	3G	Gases, vapours, mists
	22		II	3D	Dust

Types of Protection

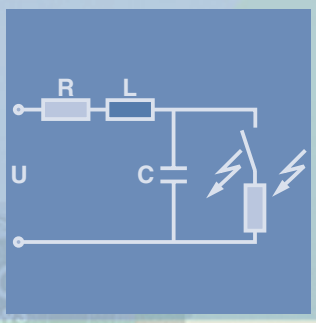
Intrinsically Safe Equipment

Intrinsically safe equipment is equipment in which all the circuits are intrinsically safe (in conformity with EN 50020).

Intrinsically Safe Circuits

An intrinsically safe circuit is a circuit in which neither a spark nor heat can cause the ignition of a defined potentially explosive atmosphere.

Conditions for trouble-free operation and also failure conditions are laid down in standard EN 50020.



Protection Type „Intrinsic Safety“

Intrinsic safety is basically a technology in which very low power consumption is used. It is therefore especially suitable for industrial instrumentation.

Intrinsic Safety „i“

Intrinsic safety is one of several usual methods of avoiding explosions in potentially explosive atmospheres.

In contrast to other types of protection, „intrinsic safety“ relates not only to individual components but to the whole circuit which is intrinsically safe.
The protection here lies in the circuit and not in design features such as housings or encapsulation.

Intrinsically safe equipment / circuits operate with very low electrical energy which is insufficient to ignite even the most flammable atmospheres.

For this reason there can be no spark creation or heat generation in intrinsically safe circuits, i.e. ignition of the explosive atmosphere cannot occur.

Two different ignition mechanisms are taken into account:
– ignition by electric sparks
– ignition by surfaces heated by current.

The potentially explosive atmosphere can include various flammable substances such as gases, vapours, dust, fibres and airborne particles.
Therefore the circuits and equipment are so designed that safety is guaranteed not only in normal operation but also in all possible failure conditions.



Protection Type „Encapsulation“

Encapsulation „m“

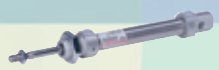
In encapsulation, possible ignition sources in electrical equipment are enclosed in a casting compound, so that the ignition of a potentially explosive atmosphere is impossible.

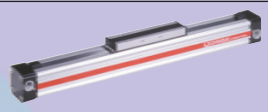
Type Marking of Equipment for Use in Ex-Atmospheres

Examples of type markings:
Mechanical equipment: CE Ex II 2 GD c T4 T135°C -10°C≤Ta≤+60°C
Electrical equipment: CE Ex II 2 GD E Ex ib IIC T5 T100°C -20°C≤Ta≤+75°C IP65

Mechanical Equipment	Electrical Equipment	Description
Ex	Ex	Ex mark. Approved for use in potentially explosive atmospheres
CE	CE	CE mark
II	II	Equipment Group I Use in mining II Use in all other Ex-atmospheres
2GD	2GD	Equipment Category G = gas, D = dust 2G Use in Zone 1 2GD Use in Zone 21 3G Use in Zone 2 3GD Use in Zone 22
	E	Equipment is approved to the CENELEC European Standard
	Ex	Equipment is explosion-proof
c	ib	Type of ignition protection ia Intrinsically safe, in normal operation will not cause ignition in the event of 1 or 2 faults in the unit ib Intrinsically safe, in normal operation will not cause ignition in the event of 1 fault in the unit b Ignition source monitoring c Safe design d Pressure-tight encapsulation e Enhanced safety fr Vapour-inhibiting encapsulation k Liquid encapsulation m Cast encapsulation o Oil encapsulation p Overpressure encapsulation q Sand encapsulation
	IIC	Explosion Group Different gases have different ignitability: **Group** / **Typical gas (example)** / **Minimum ignition energy** IIA Propane 180 µJ IIB Ethylene 60 µJ IIC Hydrogen, acetylene 20 µJ
T4	T5 (Gas)	Temperature Class Highest permissible surface temperature for use in gas-explosion-protected atmospheres **T-class** / **Max. surface temperature** / **Min. ignition temperature of the gas** T1 450°C > 450°C T2 300°C > 300°C bis ≤ 450°C T3 200°C > 200°C bis ≤ 300°C T4 135°C > 135°C bis ≤ 200°C T5 100°C > 100°C bis ≤ 135°C T6 85°C > 85°C bis ≤ 100°C
T135°C	T100°C	Maximum surface temperature for use in dust-explosion-protected atmospheres. If no Temperature Class is specified (e.g. T5), this value also applies to gas-explosion-protected atmospheres
-10°C≤Ta≤+60°C	-20°C≤Ta≤+75°C	Permissible temperature range for the use of the equipment in explosion-protected atmospheres
	IP65	Housing protection system for electrical equipment (e.g. IP65 = dust-tight and water-jet-proof from all directions)

HOERBIGER-ORIGA Products for ⟨Ex⟩-Atmospheres

Equipment Group II Category 2GD				
Piston Rod Cylinders: ⟨Ex⟩ II 2GD c T4 T135°C –10°C≤Ta≤+60°C				
Series	**Size**	**Stroke Range**	**Accessories**	**Illustration**
AZ Series 5000	Ø32 – 100	1 – 2000 mm	Mountings programme, FEUG/FEHG/FEHK	
DZ Series 5000	Ø125 – 250	10 – 2000 mm	Mountings programme,	
NZK Series 6000	Ø32 – 100	1 – 500 mm	Mountings programme, FEUG/FEHG/FEHK	
NZK Series 7000	Ø32 – 100	1 – 25 mm	Mountings programme, FEUG/FEHG/FEHK	
R Series 6000	Ø10 – 25	1 – 500 mm	Mountings programme, FEUG	
R Series 5000	Ø20 – 25	1 – 500 mm	Mountings programme, FEUG	
SZ Series 6000	Ø12 – 100	1 – 80 mm	Mountings programme	
SZ Series 7000	Ø32 – 100	1 – 25 mm	Mountings programme	
Magnetic Switches:				
RS-K ATEX, cable length 5m RS-K ATEX, cable length 10m			**⟨Ex⟩ II 3GD EEx nC IIC T3 T146°C –25°C≤Ta≤+80°C** **⟨Ex⟩ II 3GD EEx nC IIC T3 T146°C –25°C≤Ta≤+80°C**	
ES-K ATEX, cable length 5m ES-K ATEX, cable length 10m			**⟨Ex⟩ II 2GD EEx ib IIC T5 T100°C –20°C≤Ta≤+75°C** **⟨Ex⟩ II 2GD EEx ib IIC T5 T100°C –20°C≤Ta≤+75°C**	
Valves				
S9			For dust-EX-atmospheres see page 13	

Equipment Group II Category 2G				
Rodless Cylinders: ⟨Ex⟩ II 2G c T4 T135°C –10°C≤Ta≤+60°C				
Series	**Size**	**Stroke Range**	**Accessories**	**Illustration**
OSP-P	Ø10 – 80	1 – 6000 mm	Mountings programme	
Slideline	Ø16 – 80	1 – 6000 mm		
Valves: ⟨Ex⟩ II 2G c T4 T135°C –10°C≤Ta≤+60°C				
Series	**Size**		**Accessories**	**Illustration**
S9 pneumatically actuated	G1/8, G1/4, G1/2		P-/RPS-manifolds	
S9 manually actuated	G1/8, G1/4, G1/2		P-/RPS-manifolds	
S9 electrically actuated	G1/8, G1/4, G1/2		P-/RPS-manifolds	
Solenoids	**Category of Solenoid**			**Comments**
GS24V-3m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
GS24V-5m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
GS24V-10m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
GS24V-1,2m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
WS230V-3m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
WS230V-1,2m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
WS110V-1,2m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
WS24V-1,2m-ATEX	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+50°C			Individual use
Ambient temperature	⟨Ex⟩ II 2G EEx m II T5 -20°C≤Ta≤+40°C			Manifold mounting

HOERBIGER-ORIGA Products for ⟨Ex⟩-Atmospheres

Equipment Group II	
Pneumatic Accessories: Use in Zone 1, 2, 21, 22	
Check & flow control valves	
Logic valves	
Fittings	
Tubing	

Equipment Group II Category 2G			
Air Preparation Equipment: ⟨Ex⟩ II 2G c II B X - Use in Zone 1, 2			
Series	**Size**	**Accessories**	**Illustration**
Filter-regulators MFRS	G1/4		
airfit light Pressure regulators MRS	G1/8, G1/4	Pressure gauges, mountings, couplings	
airfit swing Shut-off valves SDV	G1/4, G3/8	Mountings, couplings, lock	
Filter-regulators SK	G1/4, G3/8	Pressure gauges, mountings, couplings	
Filter-water-separators SF	G1/4, G3/8	Mountings, couplings	
Pressure regulators SR	G1/4, G3/8	Pressure gauges, mountings, couplings	
Pressure regulators with through-p1 SR-..T-	G1/4, G3/8	Pressure gauges, mountings, couplings	
Oil mist lubricators SL	G1/4, G3/8	Mountings, couplings	
Pressure regulators, pilot-operated SRV	G1/4, G3/8	Pressure gauges, mountings, couplings	
Submicrofilters MF012	G1/4, G3/8	Mountings, couplings	
Activated carbon filters MC012	G1/4, G3/8	Mountings, couplings	
Soft start valves SDA	G1/4, G3/8	Mountings, couplings	
Stop valves SDR-P SDR-E (⟨Ex⟩ II 2G EEx m II T5)	G1/4, G3/8	Mountings, couplings	

Series	Size	Accessories	Illustration
airfit comfort			
Shut-off valves CDV	G3/8, G1/2	Mountings, couplings, lock	
Filter-water-separators CF	G3/8, G1/2	Mountings, couplings	
Dust filter CFD	G3/8, G1/2	Mountings, couplings	
Filter-regulators CK	G3/8, G1/2	Pressure gauge, mountings, couplings	
Pressure regulators CR	G3/8, G1/2	Pressure gauge, mountings, couplings	
Pressure regulators with through-p1 CR-..T-	G3/8, G1/2	Pressure gauge, mountings, couplings	
Pressure regulators, pilot-operated CRV	G3/8, G1/2	Pressure gauge, mountings, couplings	
Oil mist lubricators CL	G3/8, G1/2	Mountings, couplings	
Submicrofilters MF036	G3/8, G1/2	Mountings, couplings	
Activated carbon filters MC036	G3/8, G1/2	Mountings, couplings	
Soft start valves CDA	G3/8, G1/2	Mountings, couplings	
Stop valves CDR, CDR-P, CDR-E (Ex II 2G EEx m II T5)	G3/8, G1/2	Mountings, couplings	
airfit prestige			
Shut-off valves XDV *discontinued*	G3/4, G1	Mountings, couplings, lock	
Filter-regulators XK *discontinued*	G3/4, G1	Pressure gauge, mountings, couplings	
Filter-water-separators XF *discontinued*	G3/4, G1	Mountings, couplings	
Dust filters XFD *discontinued*	G3/4, G1	Mountings, couplings	
Pressure regulators XR *discontinued*	G3/4, G1	Pressure gauge, mountings, couplings	
Pressure regulators pilot-operated XRV *discontinued*	G3/4, G1	Pressure gauge, mountings, couplings	

HOERBIGER-ORIGA Products for Ex-Atmospheres

Series	Size	Accessories	Illustration
airfit prestige Oil mist lubricators XL *discontinued*	G3/4, G1	Mountings, couplings	
Submicrofilters MF110, MF185 *discontinued*	G3/4, G1	Mountings, couplings	
Activated carbon filters MC110, MC185 *discontinued*	G3/4, G1	Mountings, couplings	
Start/stop valves XDS *discontinued*	G3/4, G1	Mountings, couplings	
airfit A25 Shut-off valves A25DV	G3/4, G1	Mountings, couplings	
Filter-regulators A25K	G3/4, G1	Pressure gauge, mountings, couplings	
Filter-water-separators A25F	G3/4, G1	Mountings, couplings	
Dust filters A25FD	G3/4, G1	Mountings, couplings	
Pressure regulators A25R	G3/4, G1	Pressure gauge, mountings, couplings	
Pressure regulators pilot-operated A25RV	G3/4, G1	Pressure gauge, mountings, couplings	
Oil mist lubricators A25L	G3/4, G1	Mountings, couplings	
Submicrofilters A25MF	G3/4, G1	Mountings, couplings	
Activated carbon filters A25MC	G3/4, G1	Mountings, couplings	
Start/stop valves A25DS	G3/4, G1	Mountings, couplings	
airfit A50 Filter-water-separators A50F	G11/2, G2	Mountings, couplings	
Pressure regulators A50R	G11/2, G2	Pressure gauge, mountings, couplings	
Submicrofilters A50MF	G11/2, G2	Mountings, couplings	
Activated carbon filters A50MC	G11/2, G2	Mountings, couplings	
Start/stop valves A50DS	G11/2, G2	Mountings, couplings	
airfit dry Membrane dryers SDM, CDM, XDM	G1/4, G1/2, G1	Mountings, couplings	

HOERBIGER-ORIGA Products for ⟨Ex⟩-Atmospheres „eigensicher“

Equipment Group II Category 1G			
Valves: ⟨Ex⟩ II 1G EEx ia IIC T4/T5/T6			
Series	**Size**	**Accessories**	**Illustration**
P8 385	Flange	on request	

Equipment Group II Category 2GD			
Valves: ⟨Ex⟩ II 2G EEx ia IIC T4/T5/T6 Valves: ⟨Ex⟩ II 2D Ex ia D21 T125			
Series	**Size**	**Accessories**	**Illustration**
P8 385	Flange M5	P-manifolds M5 RPS-manifolds M5	

Equipment Group II Category 2G			
Valves: ⟨Ex⟩ II 2G EEx ia IIC T4/T5/T6			
Series	**Size**	**Accessories**	**Illustration**
P20 381	Flange to CNOMO G1/8	P-manifolds G1/8 RPS-manifolds G1/8	

Equipment Group I Category MI			
Valves: ⟨Ex⟩ I M1 EEx ia I			
Series	**Size**	**Accessories**	**Illustration**
P8 385	Flange	On Request	

Equipment Group II Category 2GD			
Valves: ⟨Ex⟩ II 2GD EEx c IIC T5/T6 TFR:03.41X (for use 2D-T125)			
Series	**Size**	**Accessories**	**Illustration**
S9 385 S9 585	G1/8	P-manifolds RPS-manifolds	
S9 385 S9 585	G1/4	P-manifolds RPS-manifolds	
S29 385 S29 585	NAMUR Output G1/4		

Definitions according to Directive 94/9/EC

Equipment

Equipment means machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy for the processing of material and which are capable of causing an explosion through their own potential sources of ignition.

Protective Systems

Protective systems are all devices with the exception of the components of the equipment defined above which are designed to halt incipient explosions immediately and/or to limit the area affected by the explosion. They are marketed separately as autonomous systems.

Components

Components are items which are essential for the safe operation of equipment and protective systems but which fulfil no autonomous function.

Explosive Atmosphere

A mixture of air and flammable gases, vapours, mists or dusts under atmospheric conditions in which, after ignition has occurred, the combustion process spreads to the entire unburnt mixture.

Equipment Groups and Categories

The Equipment Groups and Categories define the level of protection of a piece of equipment and thus its permissible use in potentially explosive atmospheres. You will find further information on page 4.

Potentially Explosive Atmosphere

An atmosphere which could become explosive due to local and operational conditions.

Intended Use

The use of equipment, protective systems and devices in accordance with the Equipment Group and Category and in compliance with all the manufacturer's information required for the safe operation of the products.

Zones

Under Directive 1999/92/EC, potentially explosive atmospheres must be divided into Zones (Zones 0, 1, 2), in accordance with the requirements for safe operation of explosion-proof equipment in these atmospheres.
You will find further information on page 5.



Incorporation of ATEX into the National Law of the EU Member States

All European Directives have to be incorporated into the national law of the EU Member States. In Germany the Directive 94/9/EG was incorporated into law by the 11th Ordinance of the Equipment Safety Statute (Explosion Protection Ordinance - 11. GSGV) of 12th December 1996.

The Directive 1999/92/EG was incorporated into German law by the Ordinance on Safety and Health Protection in the Construction and Operation of Equipment, Safety in the Operation of Equipment Requiring Monitoring, and Organisation of Operational Work Protection (Operating Safety Ordinance - BetrSichV) of 27th September 2002.



Directives for the US Market

In the USA, potentially explosive atmospheres are divided into two Divisions and combustible materials are divided into three Classes. In NEC Article 505 the ATEX requirements for Zones 0, 1 and 2 were taken over for Class I. The following table shows a comparison of the classification of potentially explosive atmospheres according to the US and European Directives.

Division 1

An explosive atmosphere exists constantly, for long periods or occasionally.

Division 2

An explosive atmosphere exists only seldom or briefly.

Class I

Combustible gases, vapours and liquids.

Class II

Combustible dusts.

Class III

Slightly combustible particles and materials.

Occurence of explosive atmosphere	ATEX 137		USA (NEC 500)		USA (NEC 505)
	Gases vapours, mists	Dusts	Gases, vapours, liquids	Dusts	Gases, vapours
Constantly, frequently, for long periods	Zone 0	Zone 20	Class I, Division 1	Class II, Division 1	Class I, Zone 0
Occasionally in normal operation	Zone 1	Zone 21			Class I, Zone 1
Seldom, briefly	Zone 2	Zone 22	Class I, Division 2	Class II, Division 2	Class I, Zone 2

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Additional representatives can be found on the Internet

The Strategic Business Units of the HOERBIGER Group



SBU Compression Technology



SBU Automation Technology



SBU Drive Technology

Your Contact



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