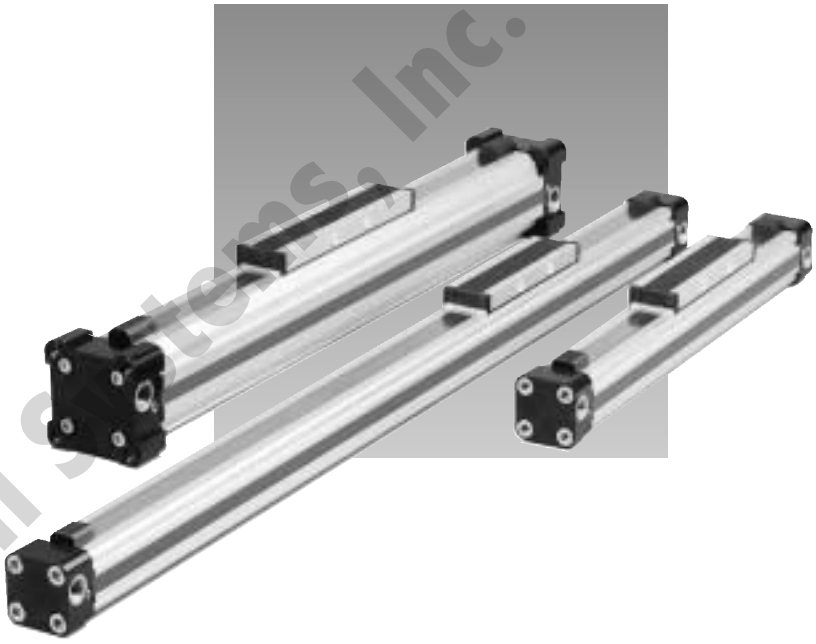
PNEUMATIC
GROUP

OSP-P

ORTMAN SYSTEM PLUS

RODLESS
PNEUMATIC CYLINDERS



ORTMAN 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

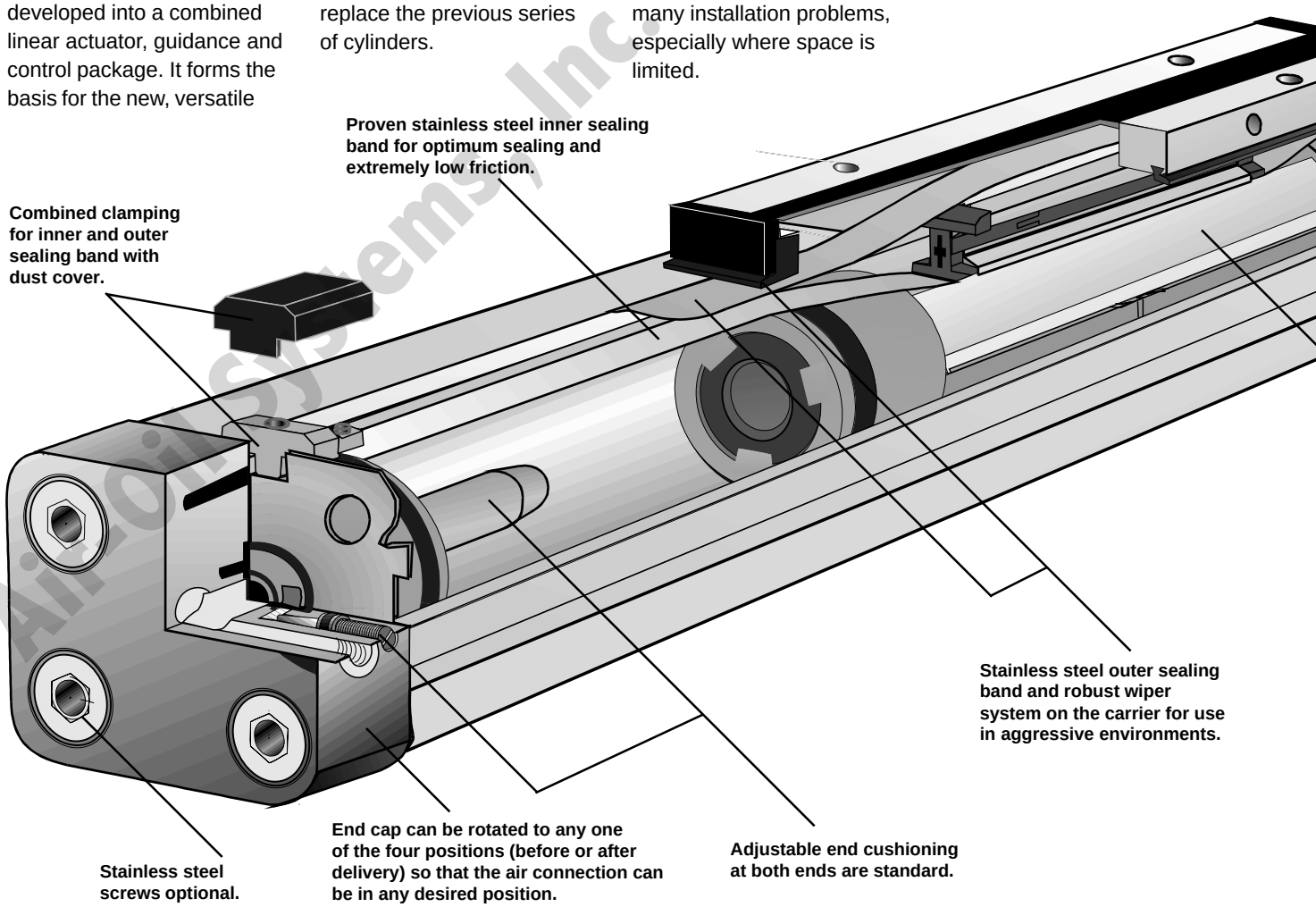
With this second generation linear drive ORTMAN FLUID POWER offers design engineers complete flexibility. The well known ORTMAN cylinder has been further developed into a combined linear actuator, guidance and control package. It forms the basis for the new, versatile ORTMAN SYSTEM PLUS linear drive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

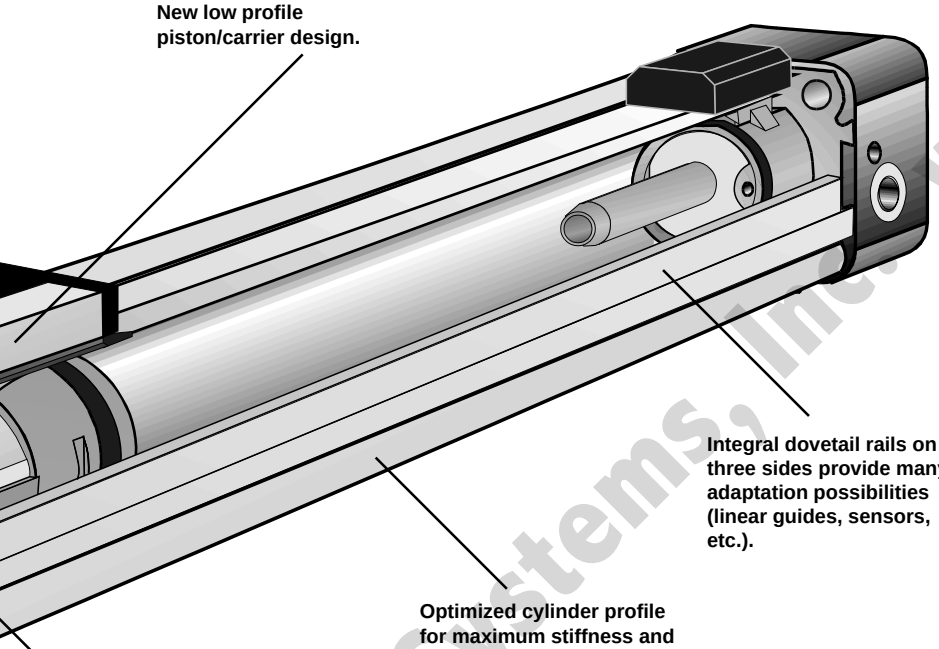


PNEUMATIC LINEAR ACTUATOR WITH NEW MODULAR SYSTEM

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

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

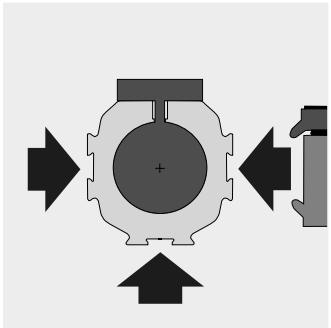
New low profile piston/carrier design.



Integral dovetail rails on three sides provide many adaptation possibilities (linear guides, sensors, etc.).

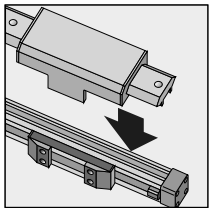
Optimized cylinder profile for maximum stiffness and minimum weight. Integral air passages enable both air connections to be positioned at one end, if desired.

Magnetic piston as standard - for contactless position sensing on three sides of the cylinder.

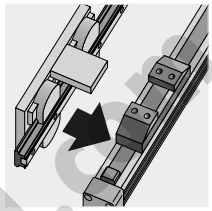


Modular system components are simply clamped on.

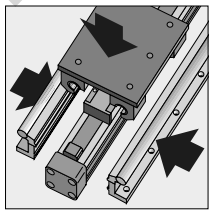
SLIDELINE
Combination with linear guides provides for heavier loads.



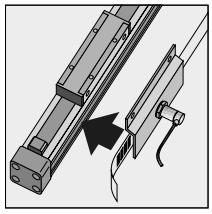
POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



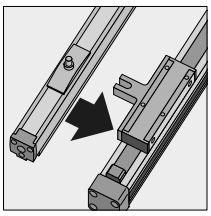
GUIDELINE
Linear guides for heavy-duty applications.



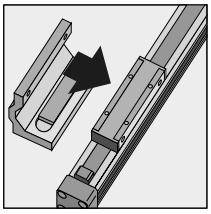
SENSOFLEX SFI
incremental measuring system with 1mm resolution.



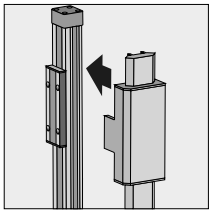
SENSOFLEX SFA
analogue measuring system. Simple and robust for high accuracy applications.



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



Passive pneumatic brake reacts automatically to pressure failure.



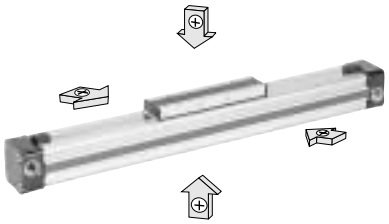
OPTIONS AND ACCESSORIES FOR SYSTEM VERSATILITY

SERIES OSP-P

STANDARD VERSIONS OSP-P16 to P80

Page 13

Standard Carrier with integral guidance. End cap can be rotated 4 x 90° to position air connection on any side.
Magnetic piston as standard.
Dovetail profile for mounting of accessories and the cylinder itself.



BASIC CYLINDER OPTIONS

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

CORROSION RESISTANCE COATING

FDA Approved Xylan® Coating

Good for food applications, caustic washdown, salt spray, dionized water and chemical resistance.

END-FACE AIR CONNECTION

Page 16

To solve special installation problems.

BOTH AIR CONNECTIONS AT ONE END

Page 17

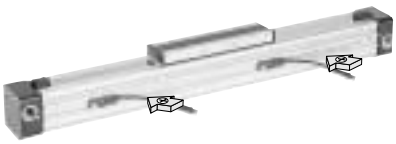
For simplified tubing connections and space saving.

ACCESSORIES

PROXIMITY SENSORS TYPE RS AND ES

Page 60

For electrical sensing of end and intermediate piston positions.

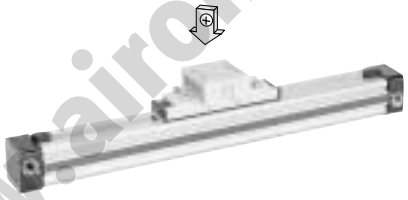


MOUNTINGS FOR OSP-P16 to P80

CLEVIS MOUNTING

Page 49

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



END CAP MOUNTING

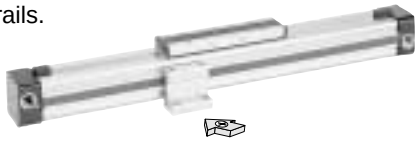
Page 50

For end-mounting of the cylinder.

MID-SECTION SUPPORT

Page 51

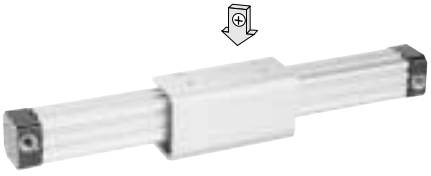
For supporting long cylinders or mounting the cylinder by its dovetail rails.



INVERSION MOUNTING

Page 55

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



Rodless Pneumatic Cylinder

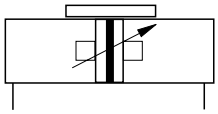
ø 16-80 mm

OSP
ORTMAN SYSTEM PLUS

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

Special Versions:
- Stainless-steel screws
- Slow speed lubrication
- Viton seals
- Both air connections on one end
- Air connection on the end-face
- Integrated Valves

Series OSP-P..



- 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)

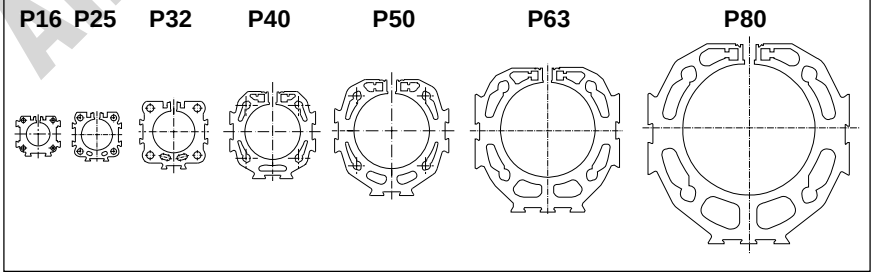
Characteristics according to VDI 3292 Pressures quoted as gauge pressure

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 aluminum
	Carrier (piston)			Anodized aluminum
	End caps			Aluminum, lacquered
	Sealing bands			Stainless 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-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

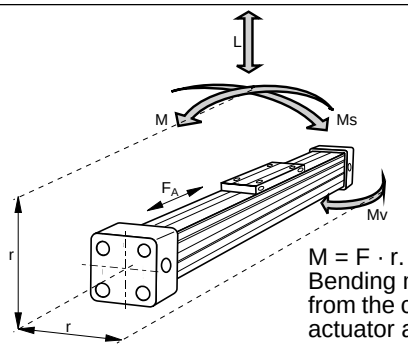
Size Comparison



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.



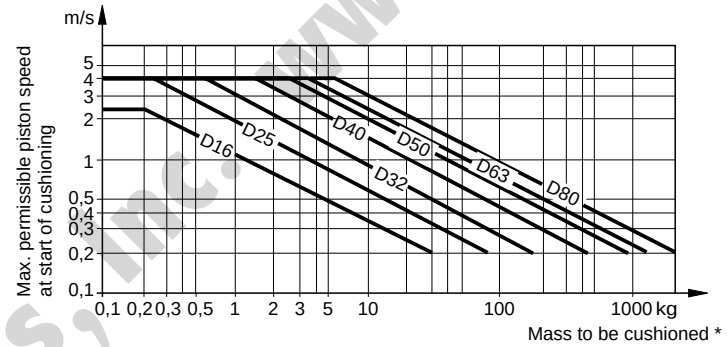
M = F · r.
Bending moments are calculated from the center of the linear actuator and F indicates actual force.

Cylinder-Series [mm Ø]	Theoretical Action Force at 6 bar [N]	Effective 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[1]	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

1) Rodless Pneumatic Cylinder according to Series P 210, more informations on request

Cushioning Diagram

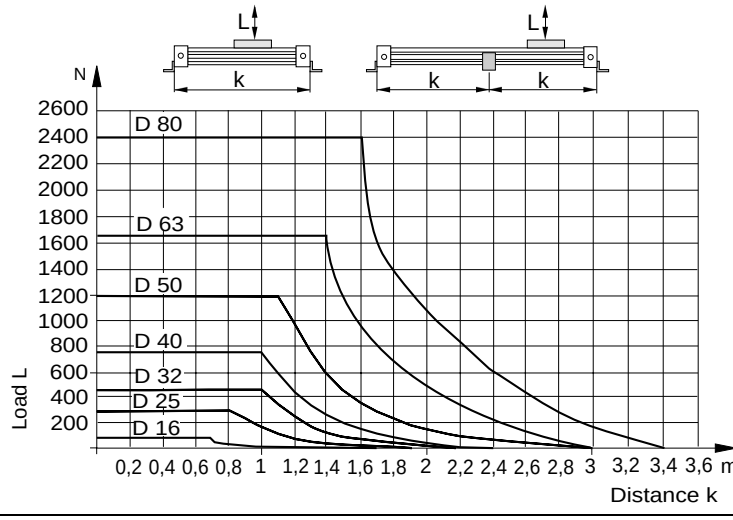
Work out your expected moving mass and read off the maximum permissible speed at start of cushioning.
Alternatively, take your desired speed and expected mass and find the cylinder size required.
Please note that piston speed at start of cushioning is typically ca. 50 % higher than the average speed, 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.
Please ask for info on the optional adaptable cushioning system.



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

Mid-Section Supports

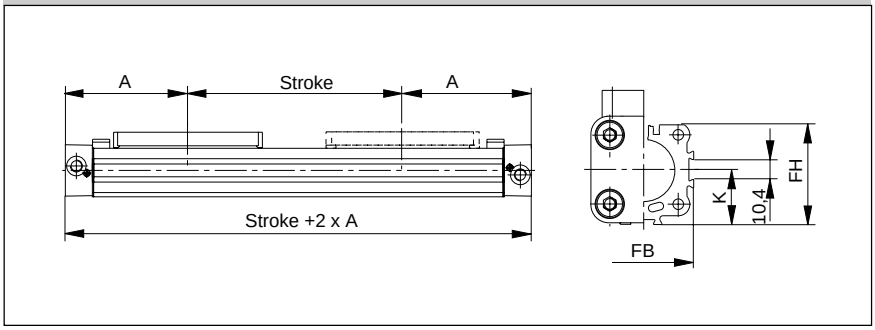
To avoid excessive bending and oscillation of the cylinder, mid-section supports are required dependent on specified stroke lengths and applied loads.

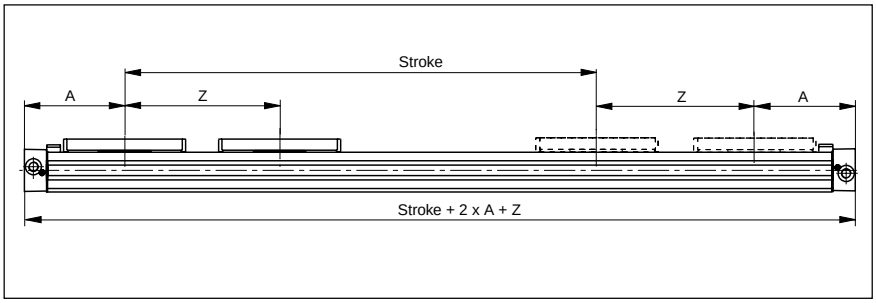


The diagram shows the maximum possible unsupported length dependent on the load. Deformation of 0.5 mm maximum between supports is permissible.

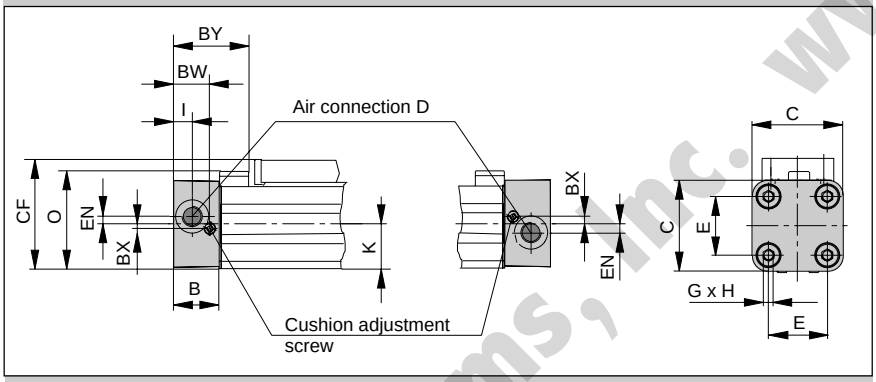
Mid-section supports are clamped on to the dovetail profile of the cylinder. They can also withstand axial forces.
For types and dimensions see Page 54.

Dimensions of Basic Cylinder OSP-P

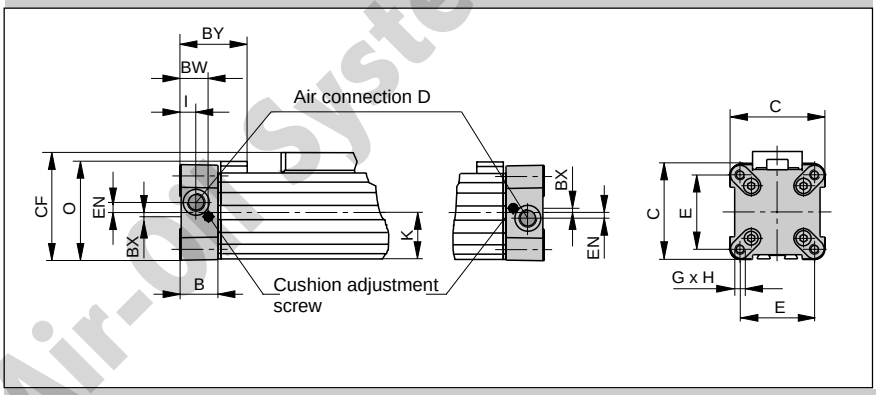




End Cap/Air Connection can be rotated 4 x 90°
Series OSP-P16 to P32



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

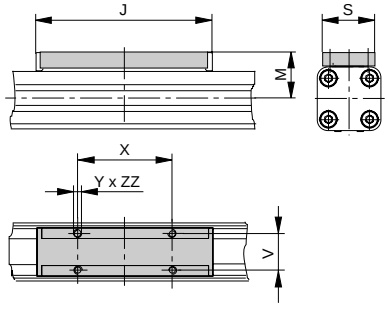
Two pistons are fitted: dimension "Z" is optional. (Please note minimum distance "Zmin").

- 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 sensors, the second piston is not equipped with magnets.

Carrier
Series OSP-P16 to P80



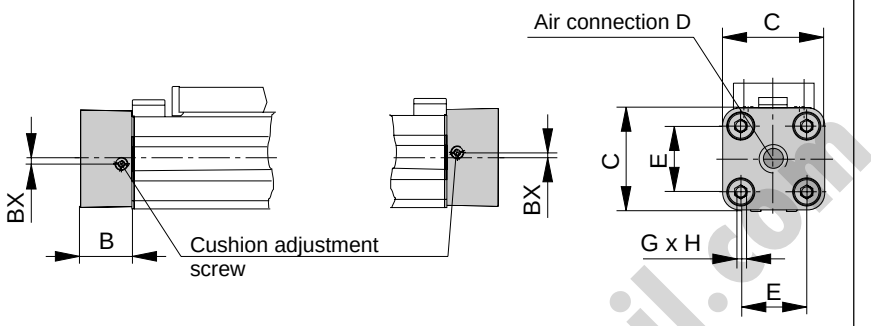
Dimension Table (mm)

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

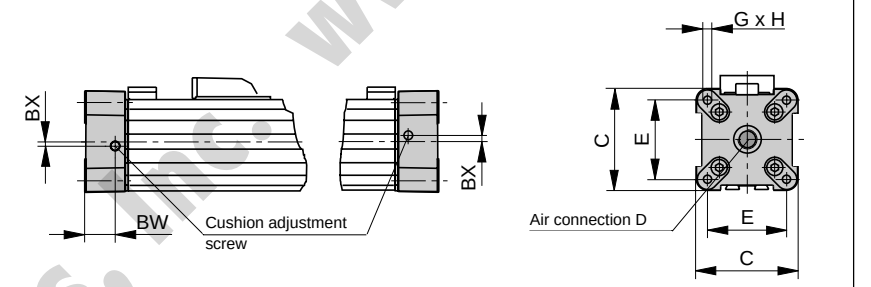
Air Connection on the End-face

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



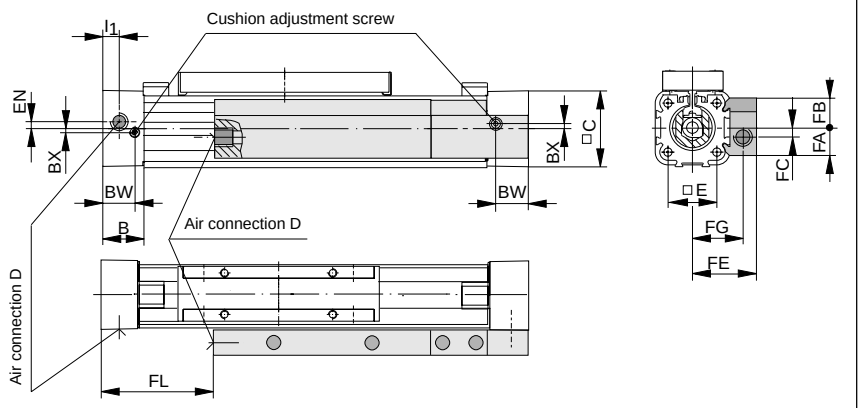
Series OSP-P40 to P80



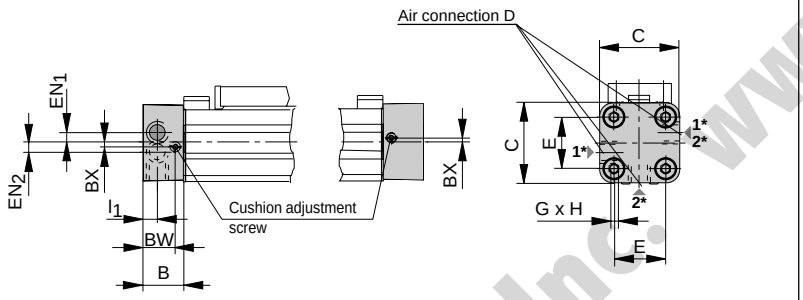
Dimension Table (mm)

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

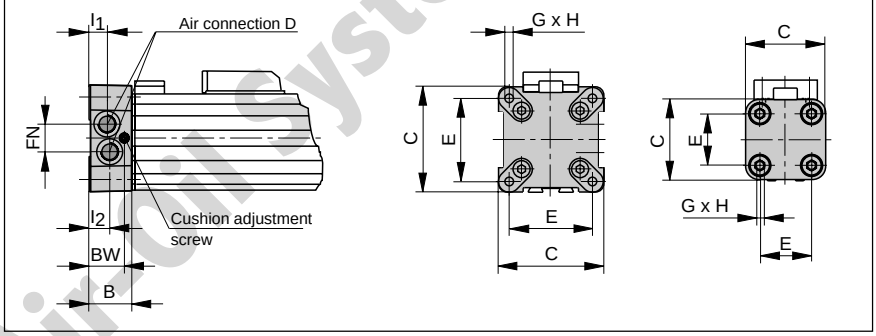


Series OSP-P25



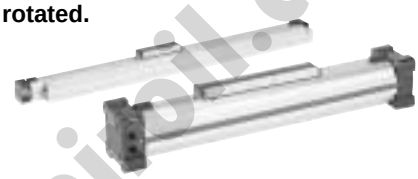
* Versions of Air Connection Positions : 1→1 order 2→2

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 aluminum 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 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	–	–	14	14	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