



# Intelligent Automation

TUVQIPÁ ÁŮŸ^~{ ææææ äÄÜ^&dæÄÖ'æ^ÁŮ•cŸ •

simply the first

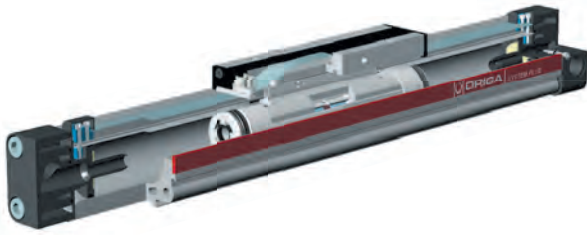


Rodless Cylinders  
@bYUf; i JXYS  
9YWFJW5VH Uhcfs  
A chcfğžGearheads  
Air Cylinders  
DbYi a UhjWJ Uj Yg  
: F@žFittingsžHi VY  
Vacuum Equipment



# ORIGA SYSTEM PLUS OSP-P

**Pneumatic Drives**  
the ORIGINAL rodless cylinders



## Stainless steel sealing system

- Low friction for longest seal life (8,000 km)
- Extreme temperatures (- 40°C to + 120°C)
- Widest operating speed range (0.005 m/s to 30 m/s)
- Suitable for extremely demanding environments

## Broadest size range

- Diameters: 10, 16, 25, 32, 40, 50, 63, 80 mm
- Any length of stroke up to 10,000 mm (up to 41,000 mm on request)

## Most choice of integrated options

Mountings, brakes, sensors, encoders, control valves, extended cushioning, shock absorbers, intermediate stops

## 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 down to -40°C



slow speed version  $v = 0.005 - 0.2 \text{ m/s}$



high speed version  $v_{\text{max.}} = 30 \text{ m/s}$



cylinders with extremely long strokes up to 41 m



...Simply the first modular guide options for the widest scope of applications



**OSP-P Standard Internal Guide**  
Single, Tandem, Duplex, Low Cost



**SLIDELINE Composite Plain Guide**  
Economic, Rigid, Moderate Speeds



**POWERSLIDE V-Roller Guide**  
Robust, Harsh Environments



**PROLINE Roller Guide**  
Smooth, Quiet, Highly Dynamic



**STARLINE Recirculating Ball Bearing Guide**  
Precision, Highly Rigid, Variable Stops



**HD Guide Heavy Duty, Twin Rail**  
Max. Precision, Loading, Rigidity, Stability

## Why does Origa offer the best Rodless Cylinders?

### Action Force [N] values for D.25 mm

**ORIGA** 252 N

Competitors 205 - 230 N

### Max. Stroke [mm]

**ORIGA** up to 41,000 mm

Competitors 5,000 - 8,000 mm

### Min. Speed [m/s]

**ORIGA** 0.005 m/s

Competitors 0.1 m/s

### Max. Speed [m/s]

**ORIGA** 30 m/s

Competitors 3 - 10 m/s

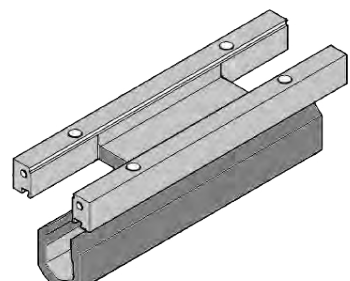
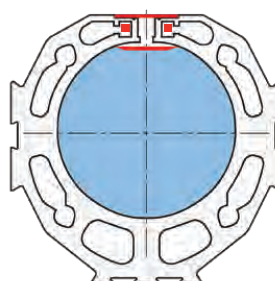
### Temp. Range [°C]

**ORIGA** -40 to 120°C

Competitors -20 to 80°C

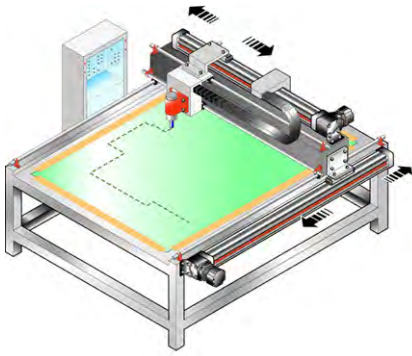
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## ORIGA Stainless Steel Sealing Bands

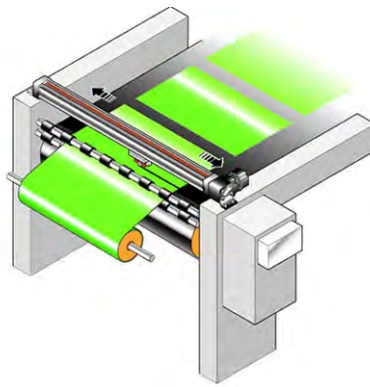


# Applications for ORIGA

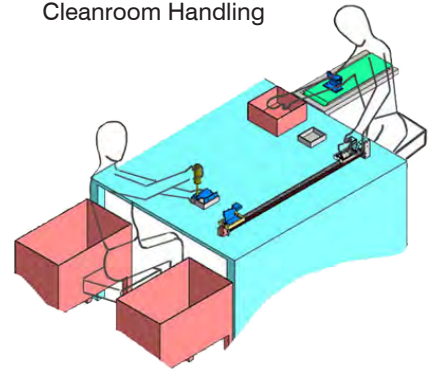
Profile Cutting



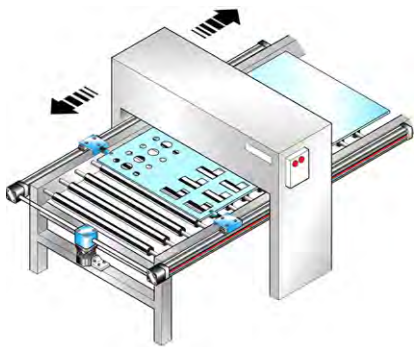
Slitting Machines



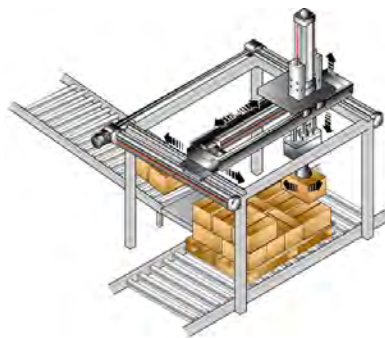
Cleanroom Handling



Punching Machines



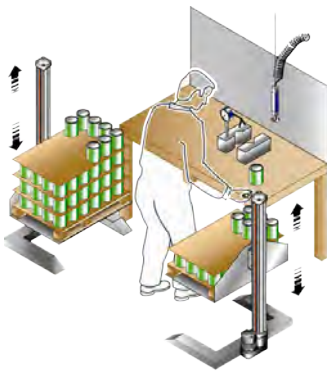
Palletizer, Auto Handling



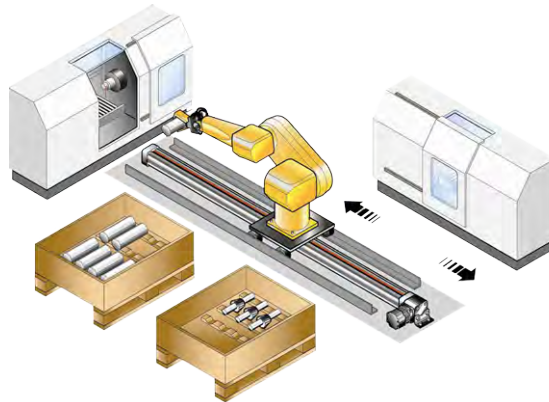
Material Handling



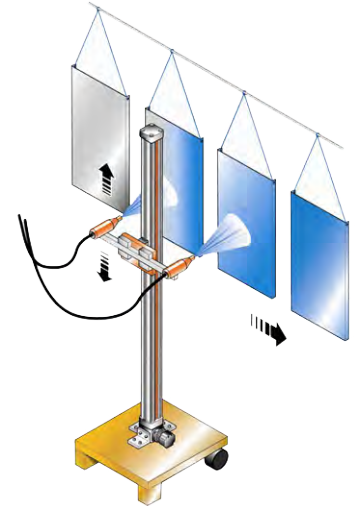
Ergonomic Workstations



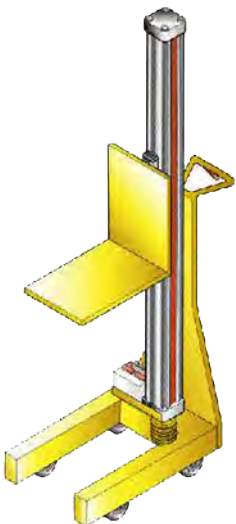
Robotic Installations



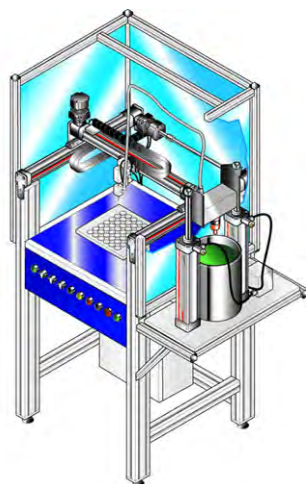
Spraying Equipment



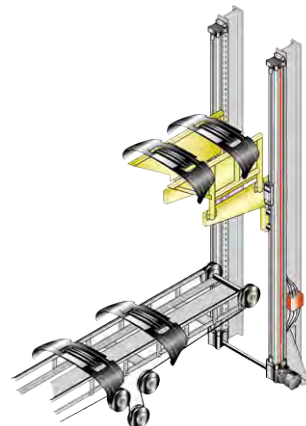
Mobile Lifting



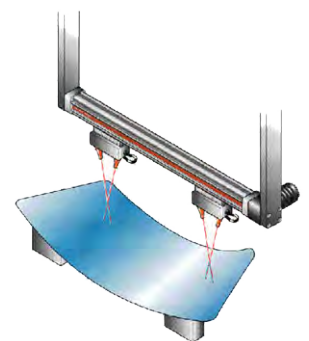
Auto Filling Machines



Parallel Operation

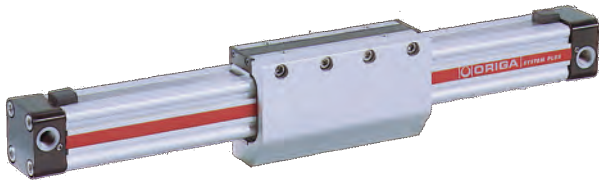


Bi-parting Operation



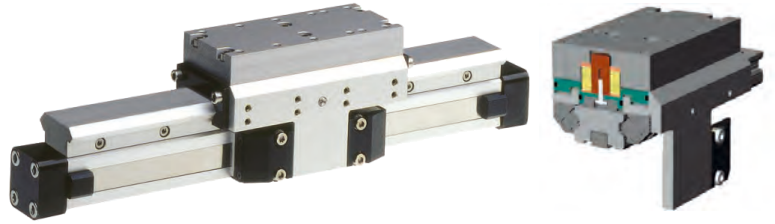
## Active Brake

Brake by Compressed Air



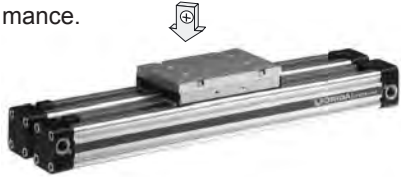
## Passive Brake

Release by Compressed Air



## DUPLEX CONNECTION

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



## END-FACE AIR CONNECTION

To solve special installation problems.



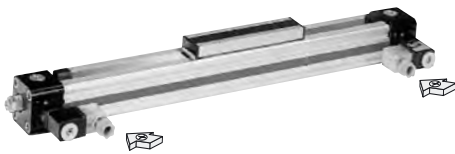
## BOTH AIR CONNECTIONS AT ONE END

For simplified tubing connections and space saving.



## INTEGRATED VOE VALVES

The complete compact solution for optimal cylinder control.



## ACCESSORIES

### PROXIMITY SENSORS TYPE RST AND EST

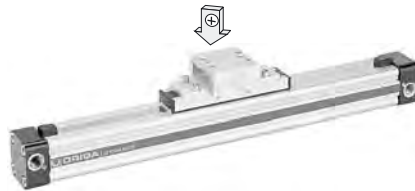
For electrical sensing of end and intermediate piston positions.



## MOUNTINGS for OSP-P10 to P80

### CLEVIS MOUNTING

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



### END CAP MOUNTING

For end-mounting of the cylinder.



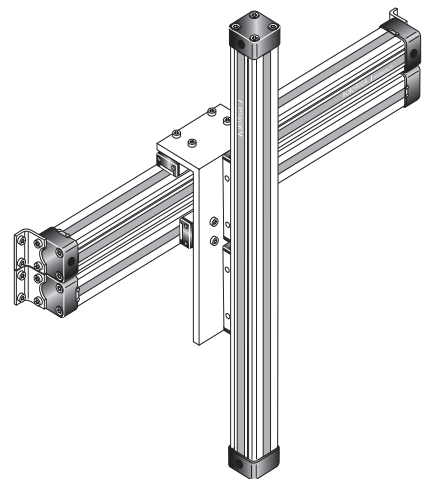
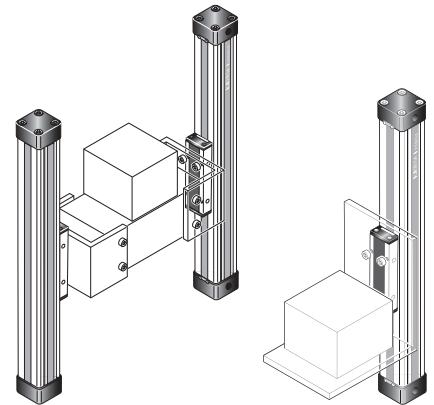
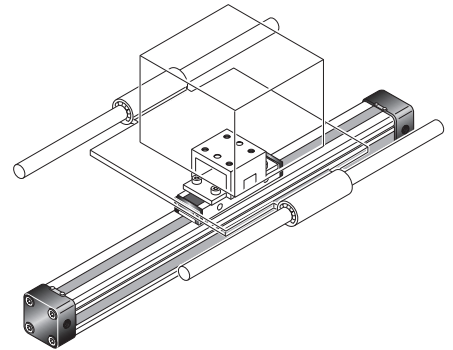
### MID-SECTION SUPPORT

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



### INVERSION MOUNTING

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



### P1Z magnetic coupled



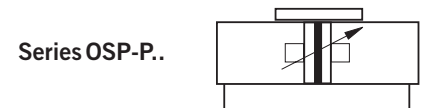
A1P537E00HAA00X

The right to introduce technical modifications is reserved

Characteristics		Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description				
<b>General Features</b>							
Type			Rodless cylinder				
Series			OSP-P				
System			Double-acting, with cushioning, position sensing capability				
Mounting			See drawings				
Air Connection			Threaded				
Ambient temperature range	$T_{min}$ $T_{max}$	°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 / Plastic (P10)				
	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				
<b>Weight (mass) kg</b>							
Cylinder series (Basic cylinder)	At 0 mm stroke		Weight (Mass) kg 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				
<b>Size Comparison</b>							
P10	P16	P25	P32	P40	P50	P63	P80
For <b>linear guides</b> see 1.40.001E to 006E For <b>magnetic switches</b> see 1.45.100E, 1.45.104E, 1.45.105E For <b>mountings and accessories</b> see 1.45.001E to 009E							

# Rodless Pneumatic Cylinder

∅ 10-80 mm



### Standard Versions:

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

### Special Versions:

- with special pneumatic 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)



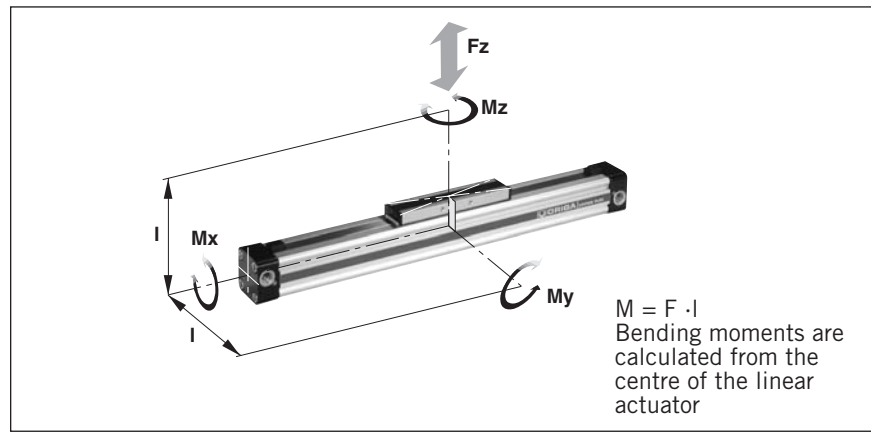
## Loads, Forces and Moments

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  $v \leq 0.5$  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.



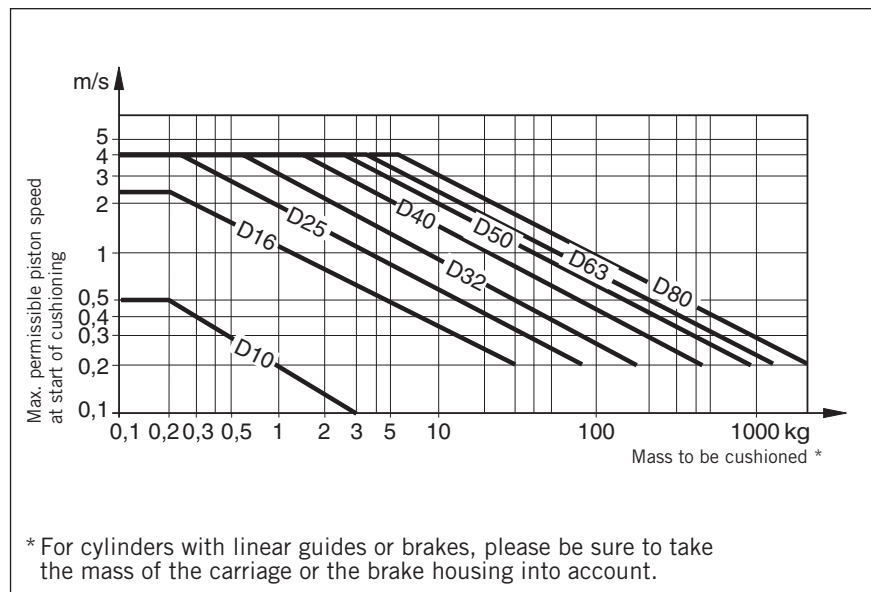
Cylinder-Series [mm Ø]	Theoretical Action Force at 6 bar [N]	effektive Action Force $F_A$ at 6 bar [N]	max. Moments			max. Load F [N]	Cushion Length [mm]
			Mx [Nm]	My [Nm]	Mz [Nm]		
OSP-P10	47	32	0.2	1	0.3	20	2.5 *
OSP-P16	120	78	0.45	4	0.5	120	11
OSP-P25	295	250	1.5	15	3	300	17
OSP-P32	483	420	3	30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



**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.

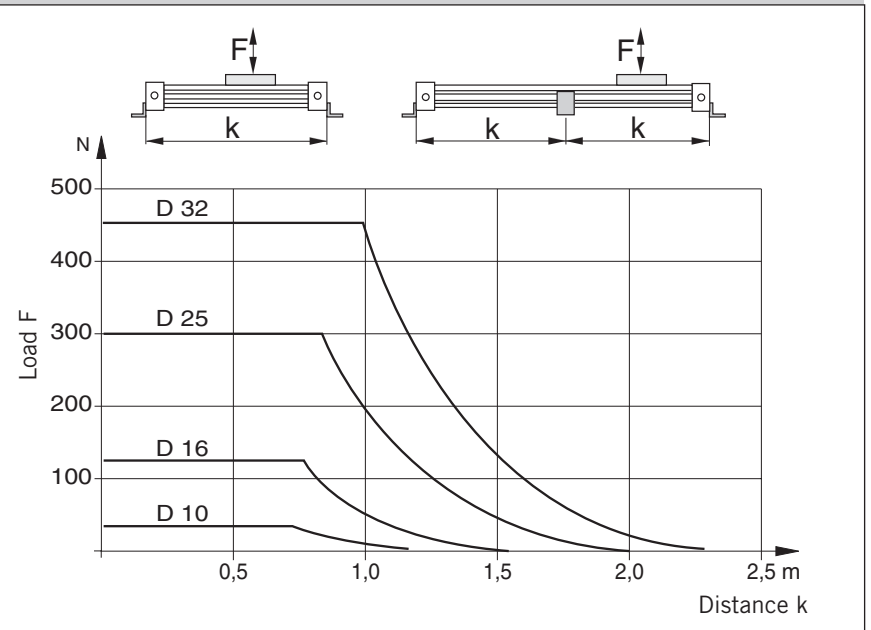
## Mid-Section Supports

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.

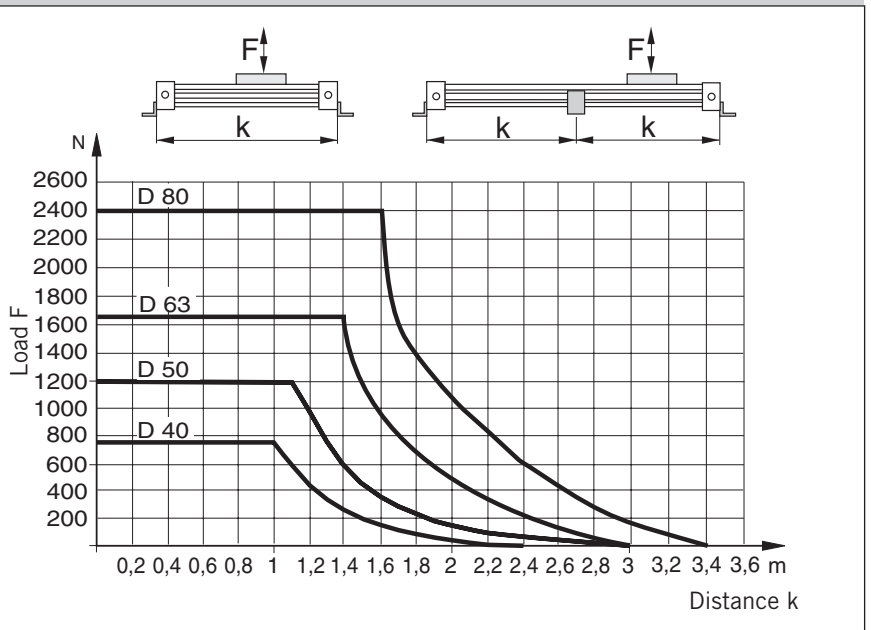
Bending up to max. 0.5 mm is permissible between supports. The mid-section supports are clamped on to the dovetail profile of the cylinder tube. They are also able to take the axial forces.

For types and dimensions see 1.45.004E.

### Permissible Support Spacings: OSP - P10 - P32



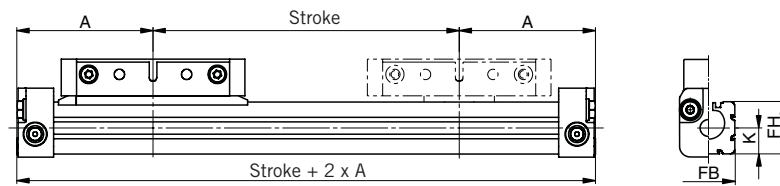
### Permissible Support Spacings: OSP - P40 - P80



## Cylinder Stroke and Dead Length A

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

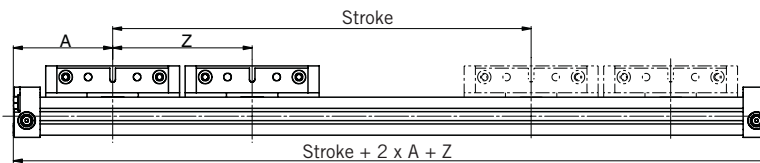
### Dimensions of Basic Cylinder OSP-P10



## Tandem Cylinder

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

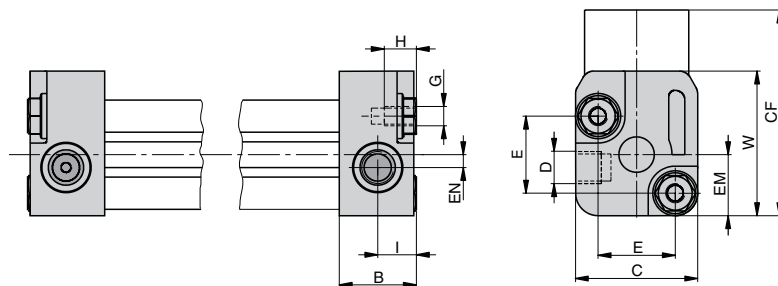
- Free choice of stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.
- **Stroke length to order is stroke + dimension "Z"**



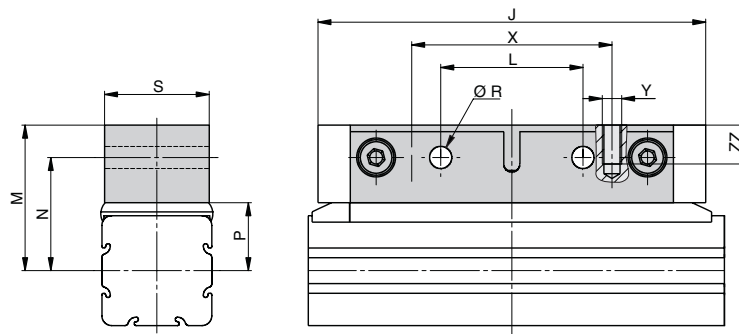
Please note:

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

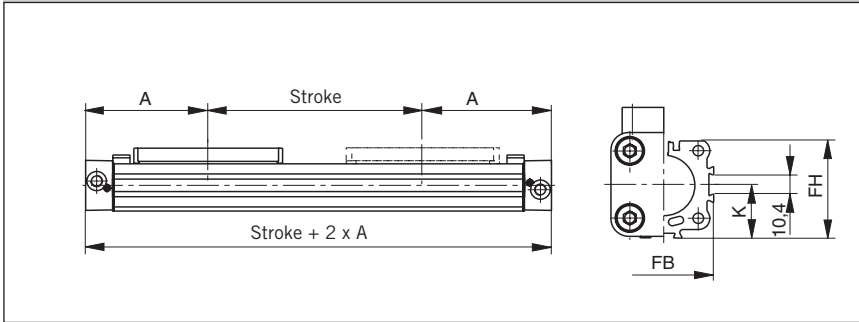


Dimension Table (mm)

Cylinder Series	A	B	C	D	E	G	H	I	J	K	L	M	N	P	R	S	W	X	Y	Z <sub>min</sub>	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	10.5	3.4	16	22.5	31	M3	64	32	9.5	2	17	17	6

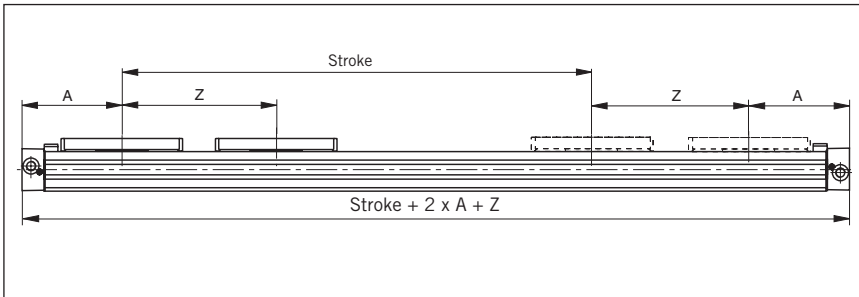


### Dimensions of Basic Cylinder OSP - P16-P80



### Cylinder Stroke and Dead Length A

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

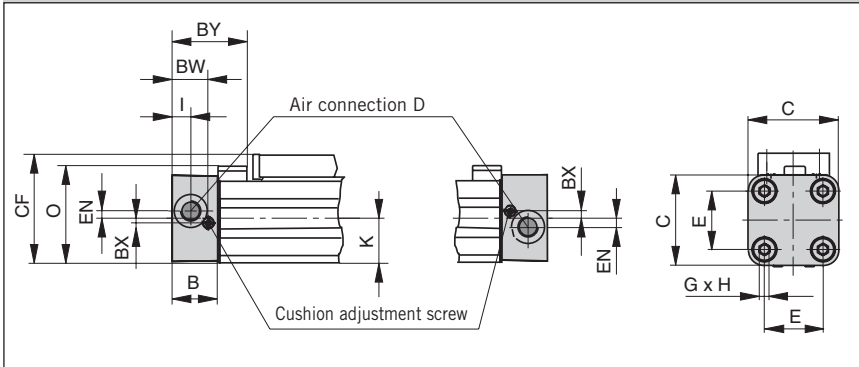


### Tandem Cylinder

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"**

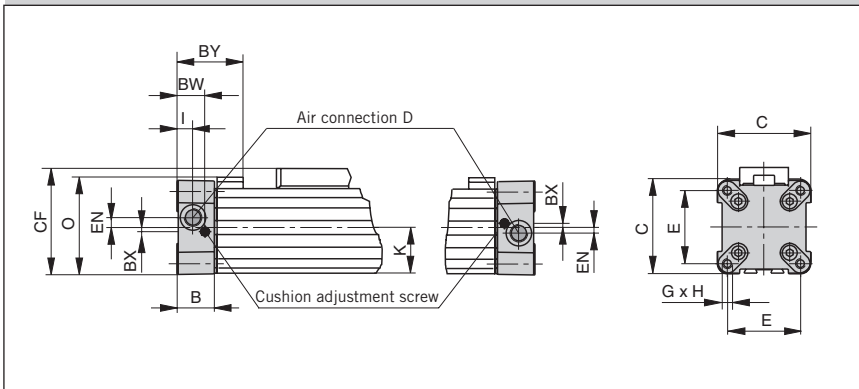
### End Cap/Air Connection can be rotated 4 x 90° Series OSP-P16 to P32



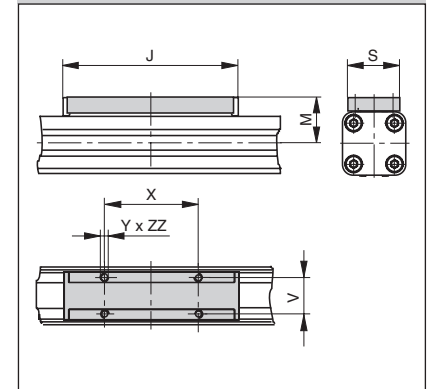
Please note:

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

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



### Carrier Series OSP-P16 to P80



### Dimension Table (mm)

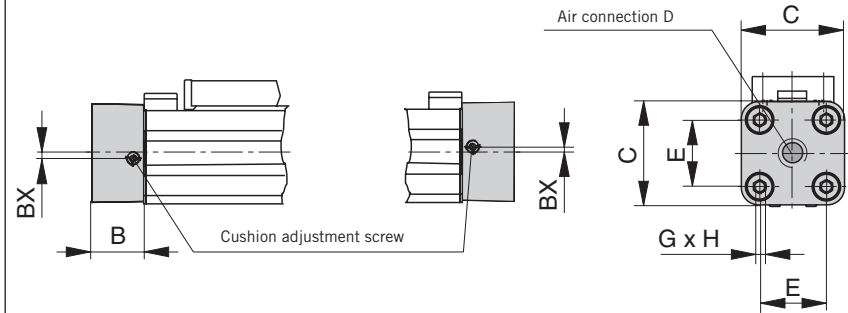
Cylinder Series	A	B	C	D	E	G	H	I	J	K	M	O	S	V	X	Y	Z min	BW	BX	BY	CF	EN	FB	FH	ZZ
OSP-P16	65	14	30	M5	18	M3	9	5.5	69	15	23	33.2	22	16.5	36	M4	81	10.8	1.8	28.4	38	3	30	27.2	7
OSP-P25	100	22	41	G1/8	27	M5	15	9	117	21.5	31	47	33	25	65	M5	128	17.5	2.2	40	52.5	3.6	40	39.5	8
OSP-P32	125	25.5	52	G1/4	36	M6	15	11.5	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

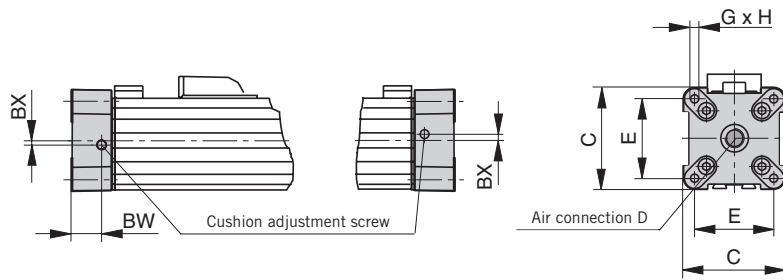
In some situations it is necessary or desirable to fit a special end cap with the air connection on the end-face instead of the standard end cap with the air connection on the side. The special end cap can also be rotated 4 x 90° to locate the cushion adjustment screw as desired. Supplied in pairs.



### Series OSP-P16 to P32



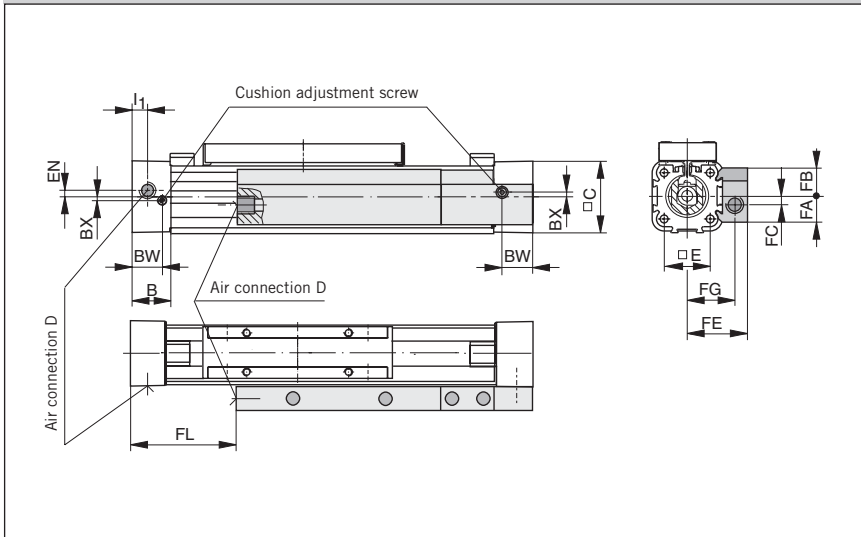
### Series OSP-P40 to P80



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



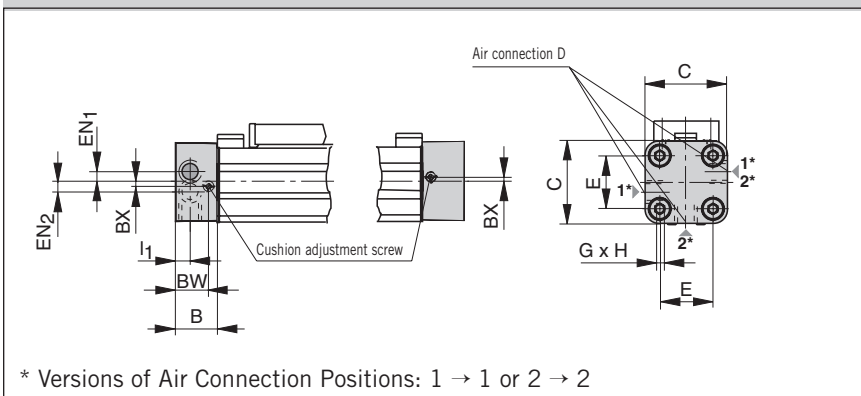
### Both Air Connections at One End

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.**



### Series OSP-P25

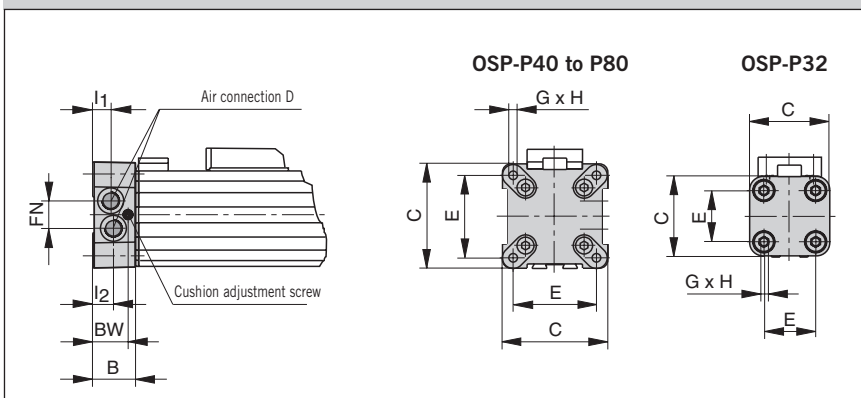


\* Versions of Air Connection Positions: 1 → 1 or 2 → 2

**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.**

### Series OSP-P32 to P80



### Dimension Table (mm)

Cylinder Series	B	C	D	E	G	H	I <sub>1</sub>	I <sub>2</sub>	BX	BW	EN	EN <sub>1</sub>	EN <sub>2</sub>	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

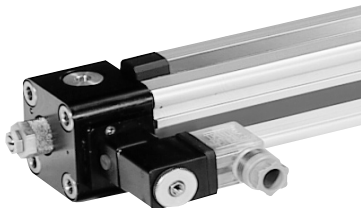
For optimal control of the OSP-P cylinder, 3/2 way valves integrated into the cylinder's end caps can be used as a compact and complete solution. They allow for easy positioning of the cylinder, smooth operation at the lowest speeds and fast response, making them ideally suited for the direct control 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 4 x 90°, Solenoid can be rotated 4 x 90°, 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!

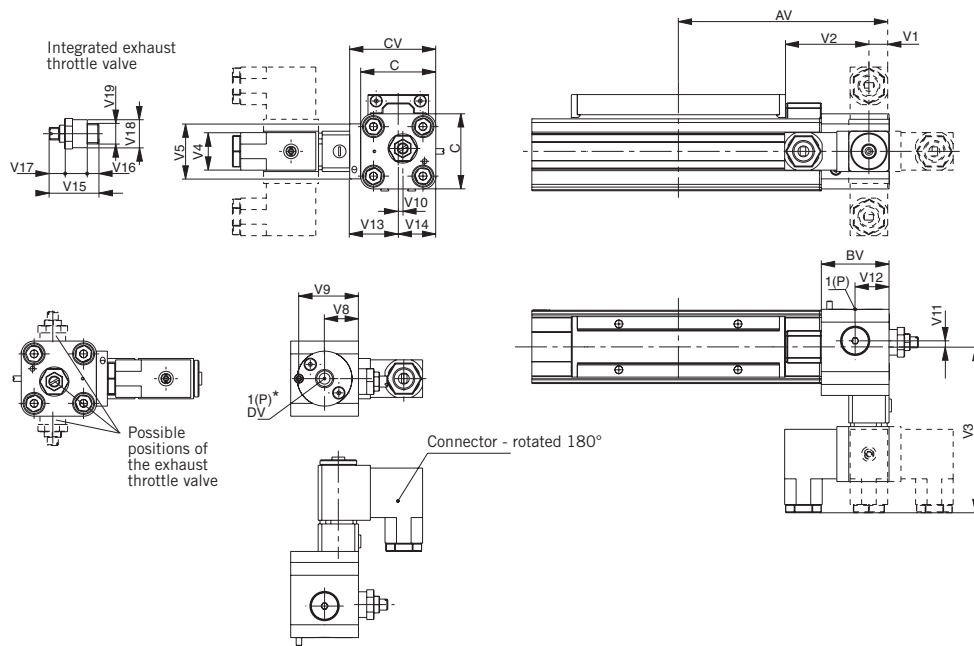


### Characteristics 3/2 Way Valves VOE

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

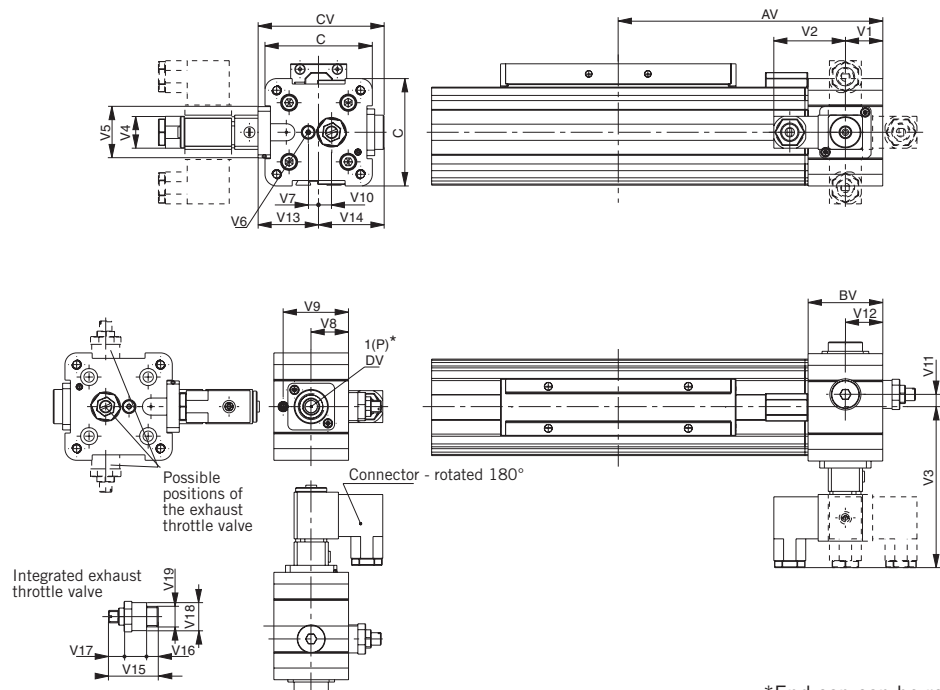


\* End cap can be rotated 4x90°

#### 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