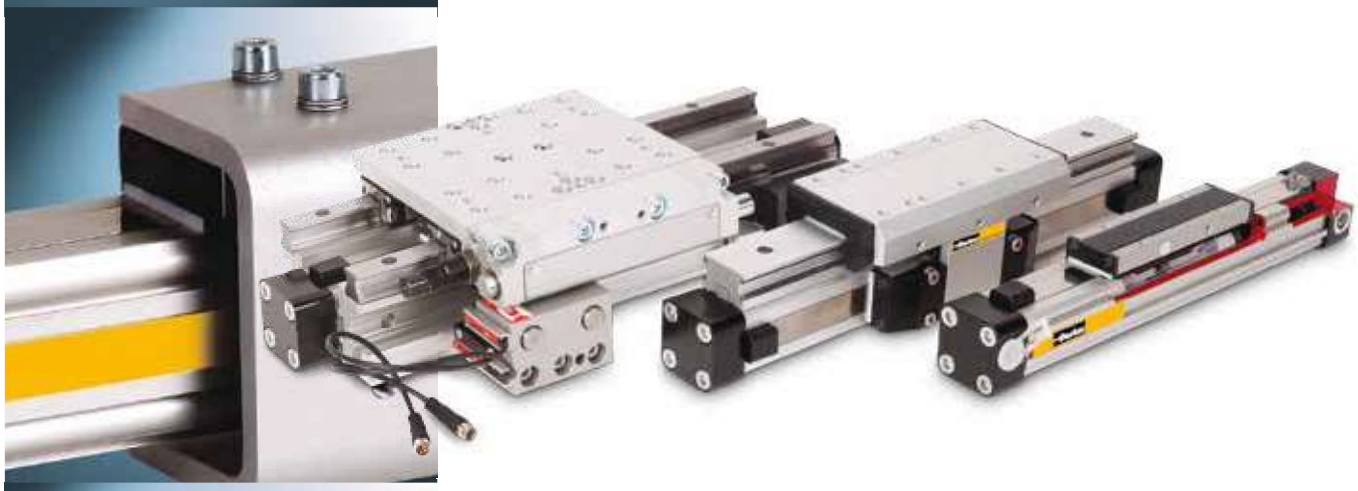
ORIGA SYSTEM PLUS OSP-P

The "ORIGINAL" rodless pneumatic cylinders



A NEW Modular Linear Drive System

With this second generation linear drive Parker 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.

- Completely modular design
- Compact design
- Widest capability for speed, load and movement profiles
- End caps can be rotated 4 x 90°
- High loads and moments
- High service life up to 8,000km
- Low friction forces ≥ high action forces
- Wide speed range (0.005 – 30m/s)
- Modular System – easy to mount guides, brakes and displacement measuring system

Parker Origa rodless pneumatic cylinders are the first rodless cylinders that have been approved for use in potentially explosive atmospheres in Equipment Group II, Category 2 GD.

The Cylinders are to the ATEX Certification 94/9/EG (ATEX 95) for Pneumatic Components.

For full details and information on OSP-P range of rodless cylinders please see catalogue no.: P-A4P011GB

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 m/s

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

Cylinders with extreme long strokes
Stroke length up to 41 m

*** Information on electrical linear drives series OSP-E, please refer to catalogue P-A4P017GB**

Basic Linear Drive Standard Version • Series OSP-P • Series OSP-E* Belt drive Belt drive with integrated Guides Vertical belt drive with recirculating ball bearing guide • Series OSP-E* Screw drive (Ball Screw, Trapezoidal Screw)	
Air Connection on the End-face or both at One End • Series OSP-P	
Long-Stroke Cylinders for strokes up to 41 m • Series OSP-P	
Clean Room Cylinder certified to DIN EN ISO 14644-1 • Series OSP-P • Series OSP-E..SB	
Products for ATEX Areas • Series OSP-P Rodless Cylinders	
Products for ATEX Areas • Series OSP-P Rodless Cylinders with Linear Guide BASIC GUIDE	
Products for ATEX Areas • Series OSP-P Rodless Cylinders with Linear Guide SLIDELINE	
Bi-parting Version • Series OSP-P	
Integrated 3/2 Way Valves • Series OSP-P	
Clevis Mounting • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive*	
End Cap Mounting • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive*	
Mid-Section Support • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive*	
Inversion Mounting • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive*	

BASIC GUIDE • Series OSPP-BG	
Duplex Connection • Series OSP-P	
Multiplex Connection • Series OSP-P	
Linear Guides – SLIDELINE • Series OSP-P • Series OSP-E Screw drive*	
Linear Guides – POWERSLIDE • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive*	
Linear Guides – PROLINE • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive*	
Linear Guides – STARLINE • Series OSP-P	
Linear Guides – KF • Series OSP-P	
Heavy Duty Linear Guides – HD • Series OSP-P • Series OSP-E Screw drive*	
Intermediate stop module – ZSM • Series OSP-P	
Brakes • Active Brakes • Passive Brakes	
Magnetic Switches • Series OSP-P • Series OSP-E Belt drive* • Series OSP-E Screw drive* • ATEX-Versions	
SENSOFLEX-Measuring system • Series SFI-plus	
Variable Stop VS • Series OSP-P with Linear Guide STL, KF, HD	

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

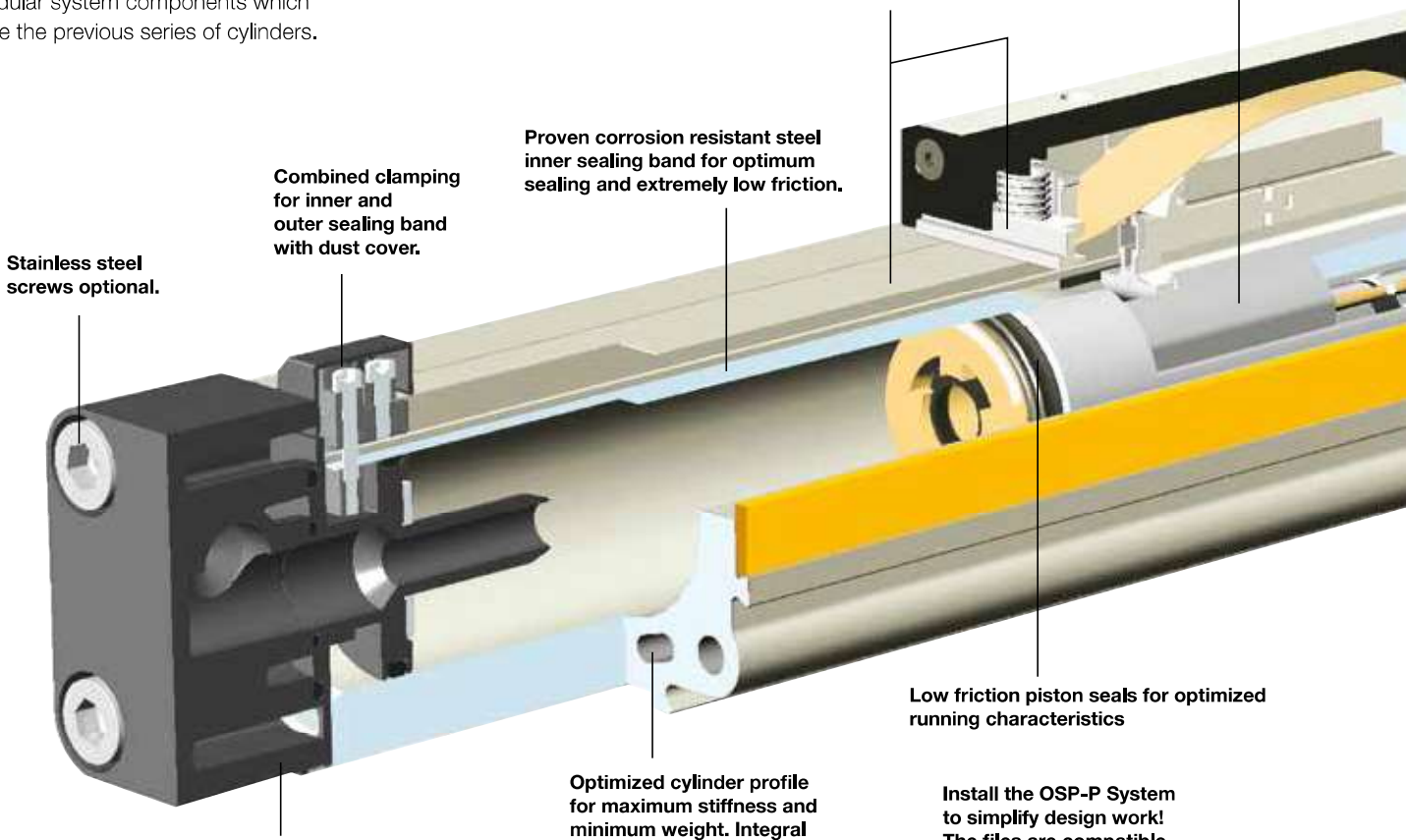
With this second generation linear drive Parker Origa offers design engineers complete flexibility. The well known ORIGA cylinder has been further developed into a combined linear actuator, guidance and control package. It forms the basis for the new, versatile ORIGA SYSTEM PLUS linear drive system.

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.

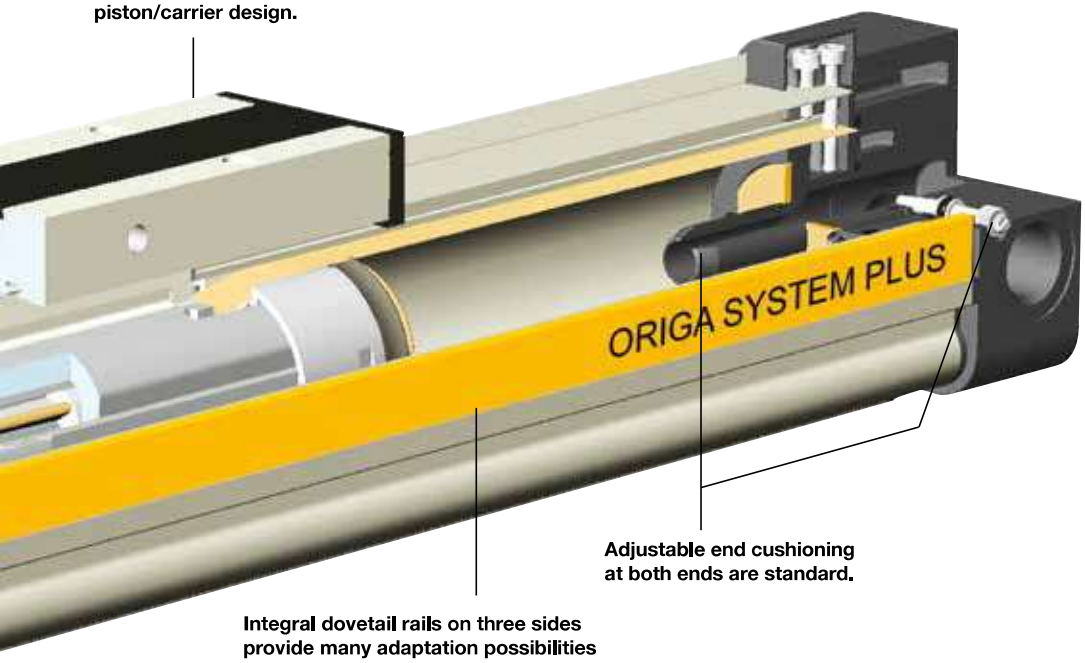
The modular system concept forms an ideal basis for additional customer-specific functions.



Clean Room Version
certified to DIN EN ISO 14644-1

Rodless Cylinder
for synchronized bi-parting movements

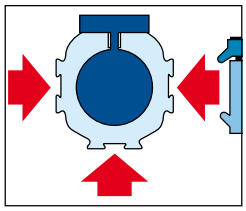
New low profile piston/carrier design.



Adjustable end cushioning at both ends are standard.

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

Modular system components are simply clamped on.



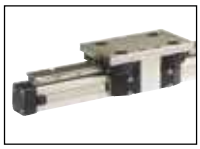
INTEGRATED VOE VALVES
The complete compact solution for optimal cylinder control.

SENSOFLEX SFI-plus
incremental measuring system with 0.1 (1.0) mm resolution.

BASIC GUIDE
Compact, robust plain bearing guide for medium loads.

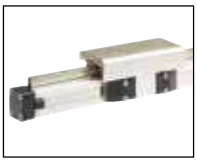
SLIDELINE
Guide system for moderate loads. Optional with Active- / Passive-Brake.

POWERSLIDE
Roller guide for high loads and rough conditions.



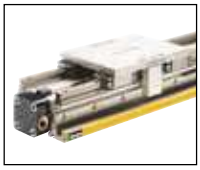
PROLINE
The compact aluminium roller guide for high loads and velocities. Optional with Active- / Passive-Brake.

STARLINE
Recirculating ball bearing guide for very high loads and precision.



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

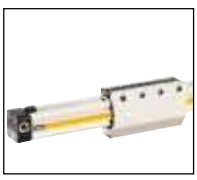
HEAVY DUTY GUIDE HD
for heavy duty applications.



VARIABLE STOP VS
The variable stop provides simple stroke limitation.

PASSIVE BRAKE
reacts automatically to pressure failure.

ACTIVE BRAKE
pneumatic brake for secure, positive stopping at any position.



Options and Accessories for system versatility

Series OSP-P

STANDARD VERSIONS OSP-P10 to P80

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.

LONG-STROKE VERSION

For extremely long strokes up to max. 41m

BASIC CYLINDER OPTIONS

CLEAN ROOM CYLINDERS

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

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®.
Corrosion resistant steel sealing bands.

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.

DUPLEX CONNECTION

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

MULTIPLEX CONNECTION

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

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

MOUNTING FOR OSP-P10 UP TO P80

CLEVIS MOUNTING

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

MID-SECTION SUPPORT

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

END CAP MOUNTING

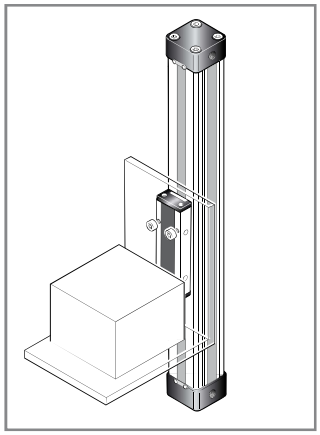
For end-mounting of the cylinder.

INVERSION MOUNTING

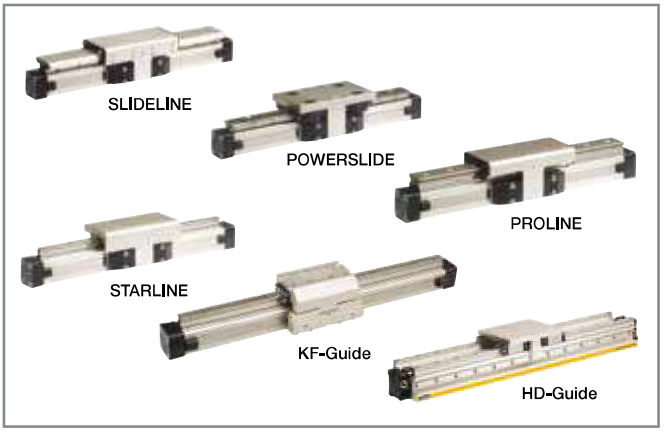
The inversion mounting transfers the driving force to the opposite side, e.g. for dirty environments.

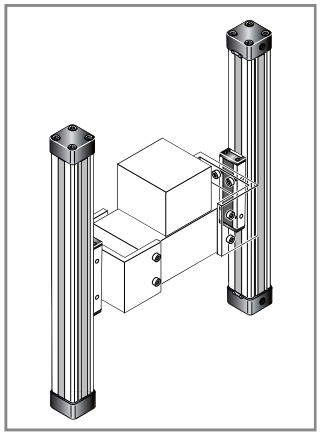
OSP-P Application examples

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.



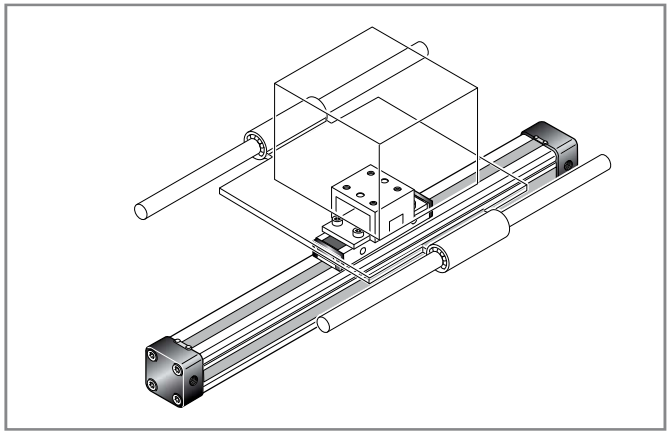


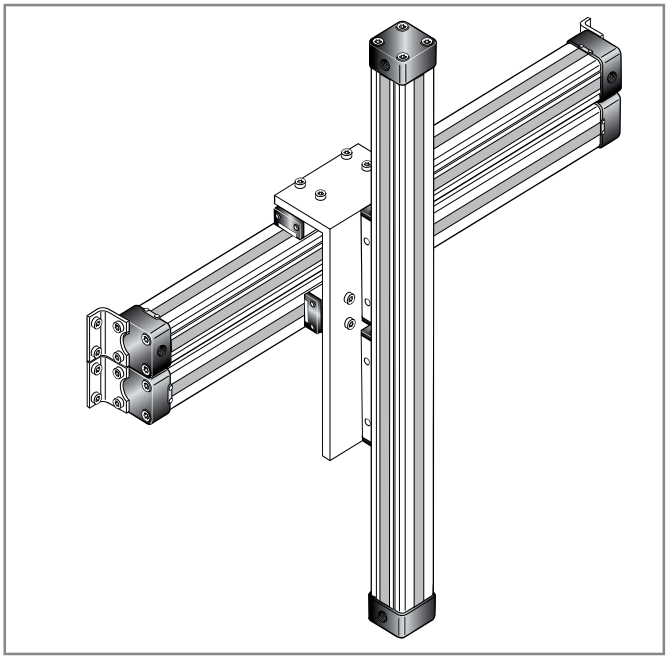
The mechanical design of the OSP-P allows synchronised movement of two cylinders.

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.

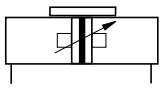




For further information and assembly instructions, please contact your local Parker Origa dealer.

Rodless Pneumatic Cylinder Ø 10-80 mm

OSP ORIGA SYSTEM PLUS



Standard Versions:

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

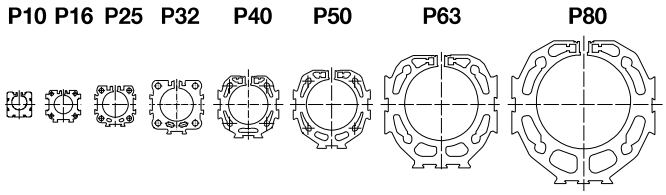
Long-Stroke Cylinders for stroke lenghts up to 41 m
See page 133

Special Versions:

- Cushioning system for cycle time optimization (on request)
- Clean room cylinders
- ATEX-Version
- 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, Long-Stroke version (Ø50-80mm) for stroke lengths up to 41 m

Size Comparison



Characteristics	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 T_{min}	-10 °C Other temperature ranges
T_{max}	+80 °C on request
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}	8 bar

Loads, Forces and Moments

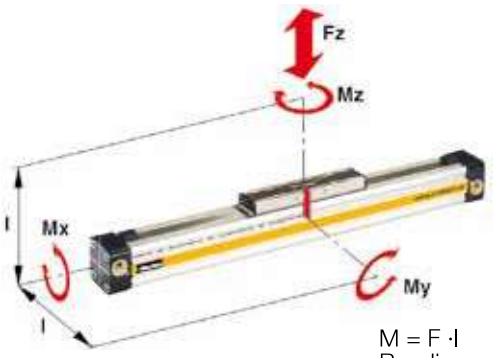
Choice of cylinder is decided by:

- 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.



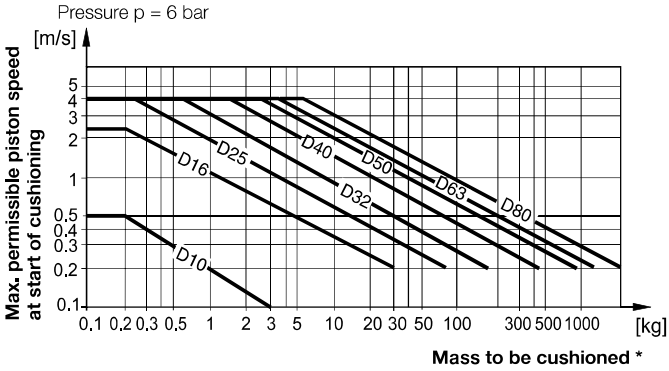
M = F ·l
Bending moments are calculated from the centre of the linear actuator

Cylinder-Series Ø [mm]	Theoretical Action Force at 6 bar [N]	effektive Action Force F_A at 6 bar [N]	max. Moments Mx [Nm]	My [Nm]	Mz [Nm]	max. Load F [N]	Cushion Length [mm]
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 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.



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

* 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.

Integrated 3/2 Way Valves VOE

Series OSP-P25, P32, P40 and P50

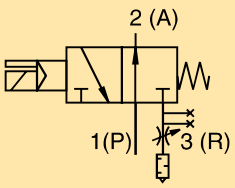
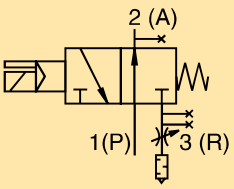
OSP ORIGA SYSTEM PLUS

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.

Features:

- 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

For further technical information see catalogue P-A4P011GB

Order Instructions - Basic Cylinder

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

10
16
25
32
40
50
63
80

Version / Piston

0	standard
1	Tandem

Air Connection

0	standard
1	end face
2	both at one end
3	left stand. right end face
4	right stand. left end face
A	3/2 Way valve VOE 24 V= Ø 25,32,40,50
B	3/2 Way valve VOE 230 V~ / 110 V= Ø 25,32,40,50
C	3/2 Way valve VOE 48 V= Ø 25,32,40,50
E	3/2 Way valve VOE 110 V~ Ø 25,32,40,50

Seals

0	standard (NBR)
1	Viton ® 1)

Lubrication

0	standard
1	slow speed 2)3)

Screws

0	standard
1	Stainless

Stroke Length

In mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard
1	max. length 3)

Piston Mounting

0	without
1	clevis mounting

Guides/ Brakes/ Inversion

0	without
A	Activebrake AB Ø 25-80
M	Inversion Ø 16-80
N	Duplex Ø 25,32,40,50

add. Guide Carriage

0	without

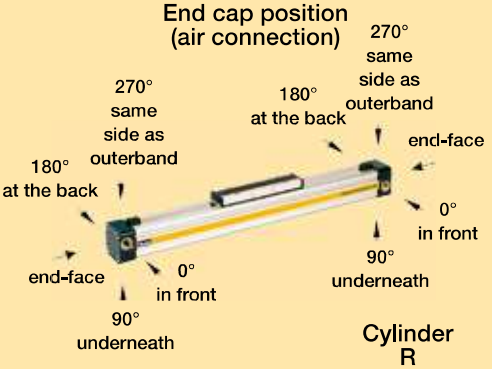
Cover / Cable Channel

0	standard
1	Cable channel
2	Cable channel two-sided
X	without cover rail

Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

End cap position (air connection)



Cylinder R (right end side)

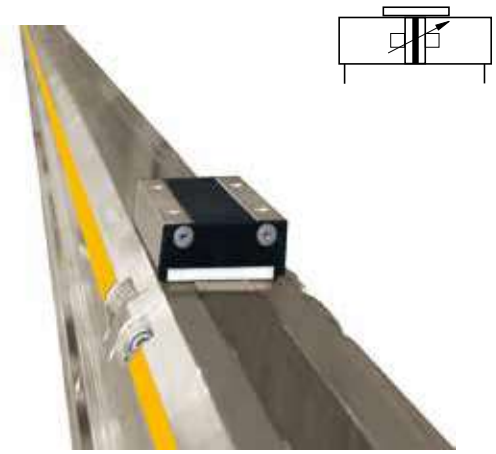
Cylinder L (left end side)

1) Viton with VOE not available.

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

3) „Lubrication slow speed“ in combination with „max. cushioning length“ not possible.

Long Stroke Cylinder Ø 50-80 mm for strokes up to 41 m

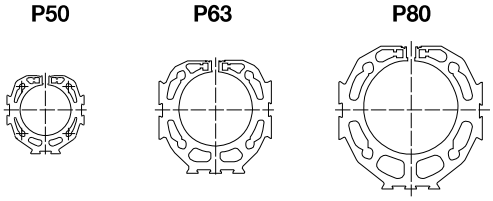


Standard Versions:
- Double-acting with adjustable end cushioning
- With magnetic piston for position sensing

Special Versions:
- Stainless steel screws
- Slow speed lubrication
- Viton® seals

Options:
- Displacement measuring system SFI-plus
- Active brake AB..

Size Comparison



Weight (mass) [kg]

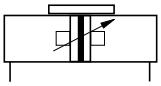
Cylinder series (Basic cylinder)	Weight (Mass) [kg] At 0 mm stroke	per 100 mm stroke
OSP-P50LS	3.53	0.566
OSP-P63LS	6.41	0.925
OSP-P80LS	12.46	1.262

Characteristics	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 T_{min}	10 °C Other temperature ranges
T_{max}	+40 °C on request
Installation	Vertical, horizontal (piston at top or at bottom)
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	Anodized aluminium
Sealing bands	Corrosion resistant steel
Seals	NBR (Option: Viton®)
Screws	Galvanized steel
	Option: stainless steel
Dust covers, wipers	Plastic
Max. operating pressure p_{max}	8 bar
Max. speed v	2 m/s

For further technical information see catalogue P-A4P011GB

Clean Room Cylinder Ø 16-32 mm Certified to DIN EN ISO 14644-1

OSP ORIGA SYSTEM PLUS



Standard Versions:

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

Special Versions:

- Slow speed lubrication
- Viton® seals

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 down 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

Size Comparison

P16 P25 P32

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

For further technical information see catalogue P-A4P011GB

Characteristics	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 T_{min} T_{max}	-10 °C Other temperature ranges +80 °C on request
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	Stainless steel
Covers	Anodised aluminium
Guide plate	Plastic
Max. operating pressure p_{max}	8 bar

Order Instructions - Clean Room Cylinder

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	4	7	0	0	1	01100	0	0	0	0	0	0	0	0	0

Piston-Ø
- 16
- 25
- 32

Version / Piston
- 4 Clean room

Air Connection
- 7 End cap Clean room

Seals
- 0 Standard (NBR)
- 1 Viton®

Lubrication
- 0 Standard
- 1 Slow speed [1]

Screws
- 1 Stainless

Stroke Length
in mm (5 digits) [2]

End cap position
- 0 L+R 0° = in front

Cushioning
- 0 Standard

Piston Mounting
- 0 without

Guides/ Brakes/ Inversion
- 0 without

add. Guide Carriage
- 0 without

Cover / Cable Channel
- 0 Standard
- 1 Cable channel
- 2 Cable channel two-sided
- X without Cover rail

Measuring system
- 0 without

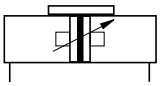
[1] The combination „Slow speed lubrication“ and „Viton® sealings“ are available on request.
[2] max. stroke lengths 1200 mm, longer strokes on request.

Components for EX-Areas

Information for ATEX-Directives

The rodless pneumatic cylinders of Parker Origa are the first linear drive unit, for that Ex range in the group of equipment II, Category 2 GD are certified.

Detail informations for use pneumatic components in Ex-Areas see leaflet PDE2584TCUK „EU Directive 94/9/EG (ATEX 95) for Pneumatic Components“.



Rodless Cylinder Ø 10-80 mm

Basic Cylinder - Series: OSP-P .. ATEX

BASIC GUIDE Ø 25-50 mm

Basic Guide - Series: BG .. ATEX

Plain Bearing Guide Ø 16-80 mm

SLIDELINE - Series: SL .. ATEX

Technical Data (deviant to the Standard Cylinder)

Characteristics	Description
General Features	
Ambient T_{min}	-10 °C
temperature range T_{max}	+60 °C
Max. switching frequency	1 (double stroke/s) Basic cylinder 0.5 (1stroke/s) Cylinder with guide
Operating pressure range p_{max}	Max. 8 bar
Max. speed v_{max}	3 (Basic cylinder) 2 (Cylinder with guide SLIDELINE and cylinder with guide BASIC GUIDE)
Medium	Filtered, unlubricated 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	70 dB (A)
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

Equipment Group II Categorie 2GD

Rodless cylinder: Ex II 2GD c T4 T135°C -10°C≤Ta≤+60°C

Series	Size	Stroke range	Accessories
OSP-P	Ø 10 to 80	1– 6000 mm	Mountings programme
BASIC GUIDE	Ø 25 to 50	1– 6000 mm	Mountings programme
SLIDELINE	Ø 16 to 80	1– 5500 mm	Mountings programme

For further technical information see catalogue P-A4P011GB

Synchronised Rodless Cylinder Ø 40 mm

For synchronised bi-parting movements

Type OSP-P40-SL-BP

Applications:

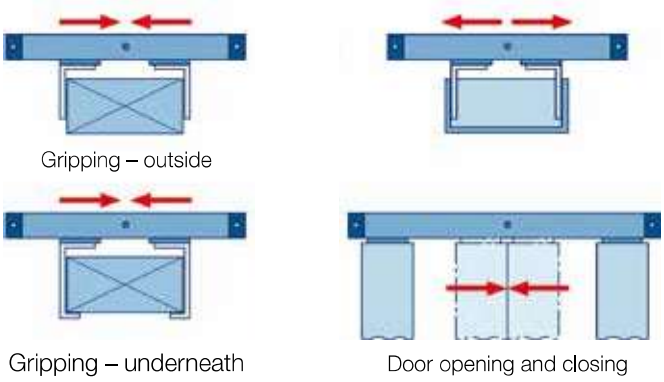
- Opening and closing operations
- Gripping of workpieces – outside
- Gripping of hollow workpieces – inside
- Gripping underneath larger objects
- Clamping force adjustable via pressure regulator

Features:

- Accurate bi-parting movement through toothed belt synchronization
- Optimum slow speed performance
- Increased action force
- Anodized aluminium guide rail with prism-form slideway arrangement
- Adjustable polymer slide units
- Combined sealing system with polymer and felt elements to remove dirt and lubricate the slideway
- Integrated grease nipples for guide lubrication

OSP
ORIGA
SYSTEM
PLUS

Applications:



Characteristics		Description
General Features		
Type		Rodless cylinder for synchronised bi-parting movements
Series		OSP-P
System		Double-acting with end cushioning for contactless position sensing
Guide		Slideline SL40
Synchronisation		Toothed belt
Mounting		See drawings
Ambient temperture range		-10 °C to +60 °C
Installation		In any position
Medium		Filtered, unlubricated compressed air (other media on request)
Lubrication		Special slow speed grease - additional oil mist lubrication not required
Operating pressure	p_{max}	6 bar
Cushioning middle position		Elastic buffer
Max. speed	v_{max}	0.2 m/s
Max. stroke of each stroke		500 mm
Max . mass per guide carrier		25 kg
Max . moments on guide carrier		
Lateral moment	Mx_{max}	25 Nm
Axial moment	My_{max}	46 Nm
Rotating moment	Mz_{max}	46 Nm
Material		
Toothed belt		Steel-corded polyurethane
Belt wheel		Aluminium

For further technical information see catalogue P-A4P011GB

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 page 129 (Standard)
See page 136 (ATEX-Version)

BASIC GUIDE
Compact, robust plain bearing guide for medium loads.

Piston diameters 25 – 50 mm

See page 139 (Standard)
See page 136 (ATEX-Version)

Linear Guides

SLIDELINE
The cost-effective plain bearing guide for medium loads.
Active/ Passive Brake optional.

Piston diameters 16 – 80 mm

See page 141 (Standard)
See page 136 (ATEX-Version)

POWERSLIDE
The roller guide for heavy loads and hard application conditions

Piston diameters 16 – 50 mm

See page 143

PROLINE
The compact aluminium roller guide for high loads and velocities.
Active/ Passive Brake optional.
Piston diameters 16 – 50 mm

See page 145

STARLINE
Recirculating ball bearing guide for very high loads and precision

Piston diameters 16 – 50 mm

See page 147

KF GUIDE
Recirculating ball bearing guide.
Correspond to FESTO dimensions (Type DGPL-KF)

Piston diameters 16 – 50 mm

See page 151

HD HEAVY DUTY GUIDE
Recirculating ball bearing guide for highest loads and greatest accuracy.

Piston diameters 25 – 50 mm

See page 153

Plain Bearing Guide
BASIC GUIDE
Series BG 25 to 50 for Linear Drive
Compact, robust plain bearing guide for medium loads

OSP
ORIGA SYSTEM PLUS

Features:

- Compact: guide rail integrated in cylinder profile tube
- Robust: wiper system and grease nipples for long service life
- smooth operation
- simple to (re-) adjust
- Integrated grease nipples
- Any length of stroke up to 6000 mm (longer strokes on request)

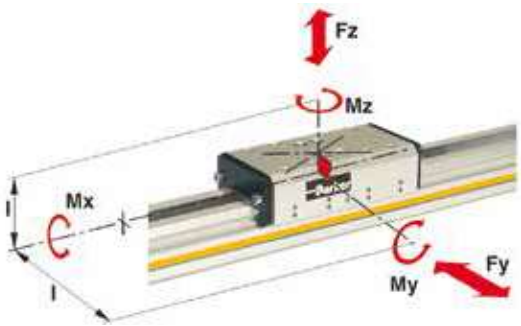
Options:

- Corrosion resistant version available on request
- VOE-Valves

Accessories:

- Mid-Section Support
- End Cap Mountings
- Magnetic Switches

Loads, Forces and Moments



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.

For further technical information see catalogue P-A4P011GB

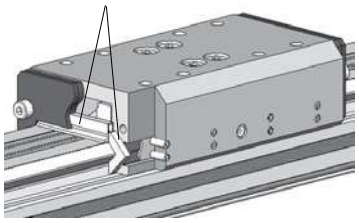
* **Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

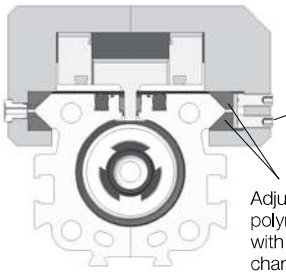
$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

The sum of the loads should not exceed >1.

Loads, Forces and Moments

Composite sealing system with high-tech polymer and felt wiper elements to remove dirt and lubricate the slideways.





Series	Max. Moments [Nm]			Max. Load [Nm]	Mass of Basic Guide [kg]		Mass* of guide carriage [kg]	Cushion Length [mm]
	Mx	My	Mz	Fy, Fz	at 0 mm stroke	per 100 mm stroke		
BG25	10	28	28	590	1.09	0.22	0.29	17
BG32	17	43	43	850	2.26	0.38	0.69	20
BG40	39	110	110	1600	3.52	0.41	1.37	27
BG50	67	165	165	2000	5.30	0.58	1.91	30

Order Instructions- BASIC GUIDE

1-6	7+8	9	10	11	12	13	14-18	19	20	21	22	23	24	25
OSPPBG	25	0	0	0	0	0	01100	0	0	0	0	0	0	0

Piston-Ø

25
32
40
50

Version / Piston

0	Standard
1	Tandem
* 6	ATEX Standard [3]

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V= Ø 25, 32, 40, 50
B	3/2 way valve VOE 230 V~/110 V= Ø 25, 32, 40, 50
C	3/2 way valve VOE 48 V= Ø 25, 32, 40, 50
E	3/2 way valve VOE 110 V~ Ø 25, 32, 40, 50

Seals

0	standard (NBR)
1	Viton® [1]

Lubrication

0	standard
1	slow speed [2]

Screws

0	standard
1	stainless

Stroke

Input in mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard

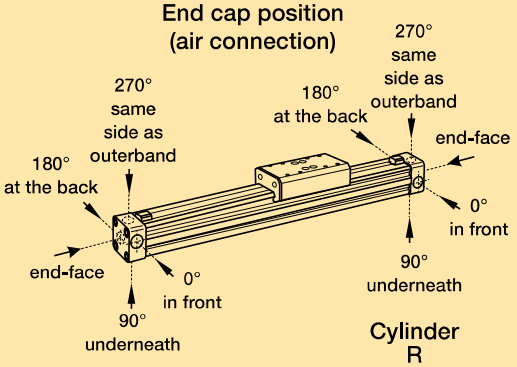
Piston Mounting

0	without

Cover / Cable Channel

0	standard
1	cable channel dove tail Ø 32, 40, 50
2	cable channel dove tail two-sided Ø 32, 40, 50

End cap position (air connection)



Cylinder L (left end side)

Cylinder R (right end side)

[1] Viton with VOE not possible.

[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

[3] ATEX with VOE not possible.

Plain Bearing Guide
SLIDELINE
Series SL 16 to 80 for Linear Drive

OSP
ORIGA SYSTEM PLUS

Features:

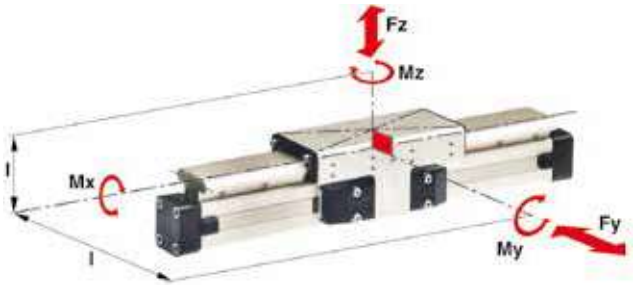
- ATEX-version (without brake) is also available See page 136
- Anodised aluminium guide rail with prism-shaped slideway arrangement
- Adjustable plastic slide elements – optional with integral brake
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideways
- 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 information see catalogue P-A4P011GB

Loads, Forces and Moments



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.

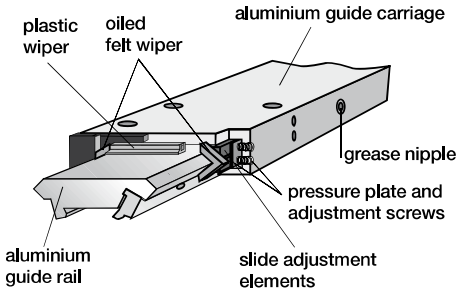
For further technical information see catalogue P-A4P011GB

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

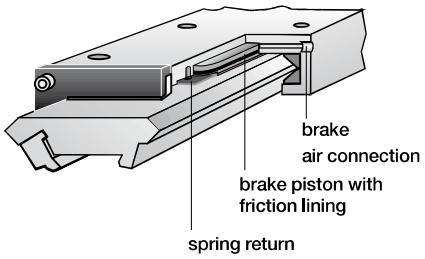
1) Only with integrated brake: Braking force on dry oil-free surface Values are decreased for lubricated slideways

2) Corrosion resistant fixtures available on request

Carriage Without Brake



Option - Integrated Brake



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) Guide without cylinder	
		Mx	My	Mz	Fy, Fz		with 0 mm stroke	increase per 100 mm stroke		without brake	with brake
SL16	OSP-P16	6	11	11	325	-	0.57	0.22	0.23	**20341**	**-**
SL25	OSP-P25	14	34	34	675	325	1.55	0.39	0.61	**20342**	**20409**
SL32	OSP-P32	29	60	60	925	545	2.98	0.65	0.95	**20196**	**20410**
SL40	OSP-P40	50	110	110	1600	835	4.05	0.78	1.22	**20343**	**20411**
SL50	OSP-P50	77	180	180	2000	1200	6.72	0.97	2.06	**20195**	**20412**
SL63	OSP-P63	120	260	260	2500	-	11.66	1.47	3.32	**20853**	**-**
SL80	OSP-P80	120	260	260	2500	-	15.71	1.81	3.32	**21000**	**-**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: SLIDELINE guide without brake D25 mm, stroke 1000 mm: 20342-01000

Order Instructions- SLIDELINE

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

16
25
32
40
50
63
80

Version / Piston

0	standard
1	Tandem

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V= Ø 25,32,40,50
B	3/2 way valve VOE 230 V~/110 V= Ø 25,32,40,50
C	3/2 way valve VOE 48 V= Ø 25,32,40,50
E	3/2 way valve VOE 110 V~ Ø 25,32,40,50

Seals

0	standard (NBR)
1	Viton® [1]

Lubrication

0	standard
1	slow speed [2]

Screws

0	standard
1	stainless

Stroke

Input in mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard

Piston Mounting

0	without

Guides/ Brakes/ Inversion

0	without
2	Slideline SL Ø 16-80
3	Slideline with Activebrake SL-AB Ø 25-50
4	Slideline with Multibrake SL-MB Ø 25-80

add. Guide Carriage

0	without
2	Guide Carriage Slideline SL Ø 16-80
3	Guide Carriage Slideline Activebrake SL-AB Ø 26-50
4	Guide Carriage Slideline Multibrake SL-MB Ø 25-80
M	Guide Carriage Slideline Multibrake SL-MB without brakefunction Ø 25-80

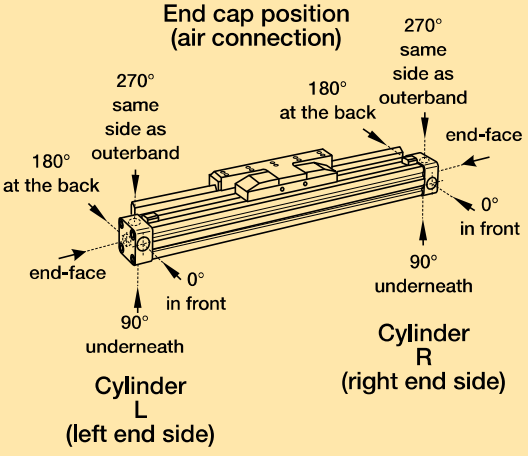
Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

Cover / Cable Channel

0	standard
1	cable channel
2	cable channel two-sided
X	without Cover rail

End cap position (air connection)



[1] Viton with VOE not possible.

[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

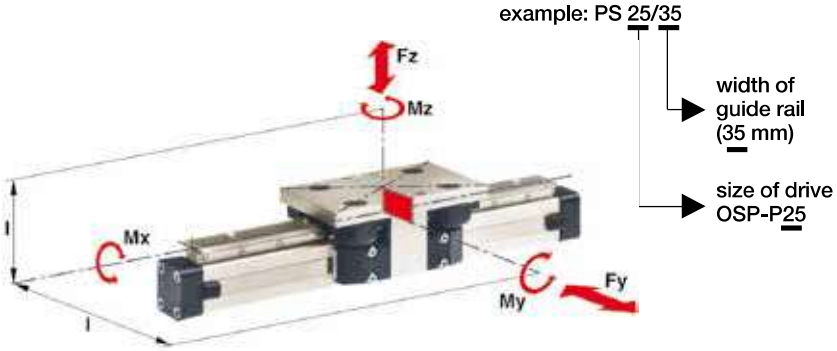
Roller Guide
POWERSLIDE
Series PS 16 to 50 for Linear Drive

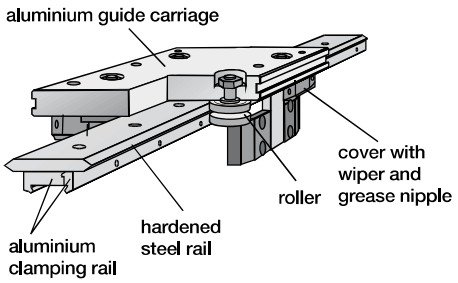
OSP
ORIGA SYSTEM PLUS

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)

Loads, Forces and Moments





Technical Data

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

For further technical information see catalogue P-A4P011GB

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

Series	For linear drive	Max. Moment [Nm]			Max. loads [N]	Mass of linear drive with guide [kg]		Mass * guide carriage [kg]	**Order-No ** POWERSLIDE** Guide without cylinder [1]
		Mx	My	Mz	Fy, Fz	with 0 mm stroke	increase per 100 mm stroke		
PS 16/25	OSP-P16	14	45	45	1400	0.93	0.24	0.7	**20285**
PS 25/25	OSP-P25	14	63	63	1400	1.5	0.4	0.7	**20015**
PS 25/35	OSP-P25	20	70	70	1400	1.7	0.4	0.8	**20016**
PS 25/44	OSP-P25	65	175	175	3000	2.6	0.5	1.5	**20017**
PS 32/35	OSP-P32	20	70	70	1400	2.6	0.6	0.8	**20286**
PS 32/44	OSP-P32	65	175	175	3000	3.4	0.7	1.5	**20287**
PS 40/44	OSP-P40	65	175	175	3000	4.6	1.1	1.5	**20033**
PS 40/60	OSP-P40	90	250	250	3000	6	1.3	2.2	**20034**
PS 50/60	OSP-P50	90	250	250	3000	7.6	1.4	2.3	**20288**
PS 50/76	OSP-P50	140	350	350	4000	11.5	1.8	4.9	**20289**

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

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: PS25/25 Guide D25 mm, stroke 1000 mm: 20015-01000

Order Instructions- POWERSLIDE

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

16
25
32
40
50

Stroke

Input in mm (5 digits)

Piston Mounting

0	without

Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

Screws

0	standard
1	stainless

Cushioning

0	standard
1	max. length [3]

Version / Piston

0	standard
1	Tandem

Lubrication

0	standard
1	Slow speed [2][3]

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Guides/ Brakes/ Inversion

0	without
E	PSXX/25 Powerslide Ø 16, 25
F	PSXX/35 Powerslide Ø 25, 32
G	PSXX/44 Powerslide Ø 25, 32, 40
H	PSXX/60 Powerslide Ø 40, 50
I	PSXX/76 Powerslide Ø 50

Cover / Cable Channel

0	standard
1	cable channel
2	cable channel two-sided
X	without Cover rail

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V= Ø 25,32,40, 50
B	3/2 way valve VOE 230 V~/110 V= Ø 25,32,40,50
C	3/2 way valve VOE 48 V= Ø 25,32,40,50
E	3/2 way valve VOE 110 V~ Ø 25,32,40,50

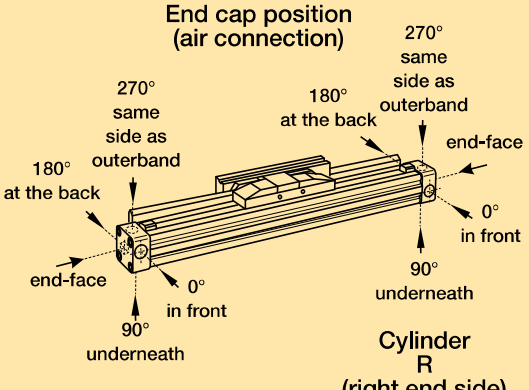
Seals

0	standard (NBR)
1	Viton® [1]

add. Guide Carriage

0	without
E	Guide Carriage Powerslide PSXX/25 Ø 16, 25
F	Guide Carriage Powerslide PSXX/35 Ø 25, 32
G	Guide Carriage Powerslide PSXX/44 Ø 25, 32, 40
H	Guide Carriage Powerslide PSXX/60 Ø 40, 50
I	Guide Carriage Powerslide PSXX/76 Ø 50

End cap position (air connection)



Cylinder L (left end side)

Cylinder R (right end side)

[1] Viton with VOE not possible.

[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

[3] „Lubrication slow speed" in combination with „max. cushioning length" not possible.

Aluminium Roller Guide PROLINE

Series PL 16 to 50 for Linear Drive

Features:

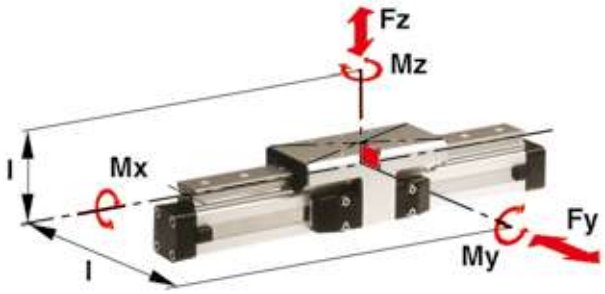
- High precision
- High velocities (10 m/s)
- Smooth operation - low noise
- Integated wiper system
- Long life lubrication
- Compact dimensions - compatible to Slideline plain bearing guide
- Any length of stroke up to 3750 mm

OSP
ORIGA SYSTEM PLUS

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

- Actuated by pressurisation
- Released 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:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

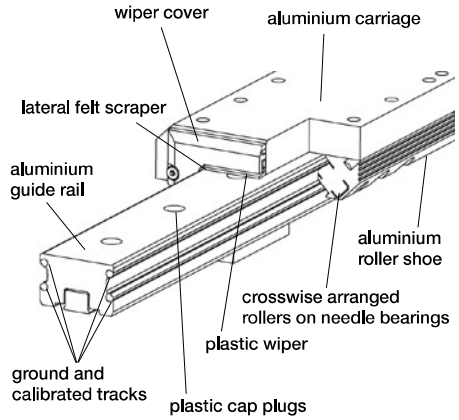
The sum of the loads should not exceed >1. With a load factor of less than 1, service life is 8000 km

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

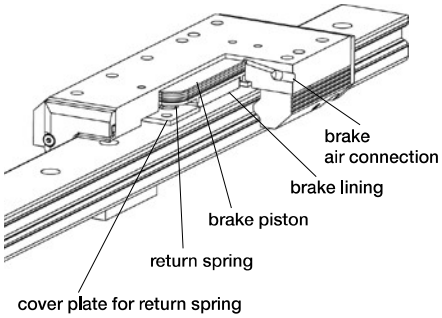
For further technical information see catalogue P-A4P011GB

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

Carriage Without Brake



Option - Integrated Brake



Series	For linear drive	Max. Moment [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 Guide without cylinder	
		Mx	My	Mz	Fy, Fz		with 0 mm stroke	increase per 100 mm stroke		without Brake	with Brake
PL 16	OSP-P16	8	12	12	542	-	0.55	0.19	0.24	**20855**	**-**
PL 25	OSP-P25	16	39	39	857	on request	1.65	0.40	0.75	**20856**	**20860**
PL 32	OSP-P32	29	73	73	1171	on request	3.24	0.62	1.18	**20857**	**20861**
PL 40	OSP-P40	57	158	158	2074	on request	4.35	0.70	1.70	**20858**	**20862**
PL 50	OSP-P50	111	249	249	3111	on request	7.03	0.95	2.50	**20859**	**20863**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: PROLINE guide without brake D16 mm, stroke 1000 mm: 20855-01000

Order Instructions- PROLINE

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

16
25
32
40
50

Version / Piston

0	standard
1	Tandem

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V = Ø 25, 32, 40, 50
B	3/2 way valve VOE 230 V~/110 V= Ø 25, 32, 40, 50
C	3/2 way valve VOE 48 V= Ø 25, 32, 40, 50
E	3/2 way valve VOE 110 V~ Ø 25, 32, 40, 50

Seals

0	standard (NBR)
1	Viton® [1]

Lubrication

0	standard
1	Slow speed [2] [3]

Screws

0	standard

Stroke

Input in mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard
1	max. length [3]

Piston Mounting

0	without

Guides/ Brakes/ Inversion

0	without
6	Proline PL Ø 16-50
7	Proline with Activebrake PL-AB Ø 25-50
8	Proline with Multibrake PL-MB Ø 25-50

Cover / Cable Channel

0	standard
1	cable channel
2	cable channel two-sided
X	without Cover rail

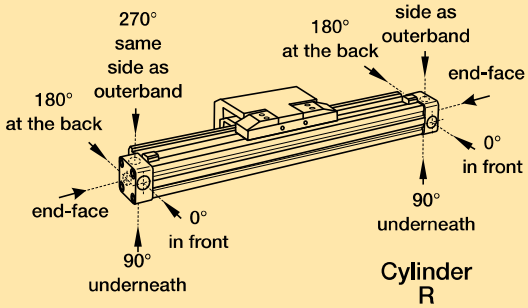
Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

add. Guide Carriage

0	without
6	Guide Carriage Proline PL Ø 16-50
7	Guide Carriage Proline Activebrake PL-AB Ø 25-50
8	Guide Carriage Proline Multibrake PL-MB Ø 25-50
N	Guide Carriage Proline Multibrake PL-MB without brake function Ø 25-50

End cap position (air connection)



Cylinder L (left end side)

Cylinder R (right end side)

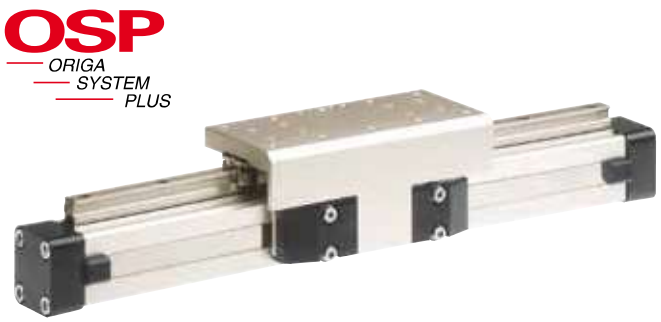
[1] Viton with VOE not possible.

[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

[3] „Lubrication slow speed" in combination with „max. cushioning length" not possible.

Recirculating Ball Bearing Guide STARLINE

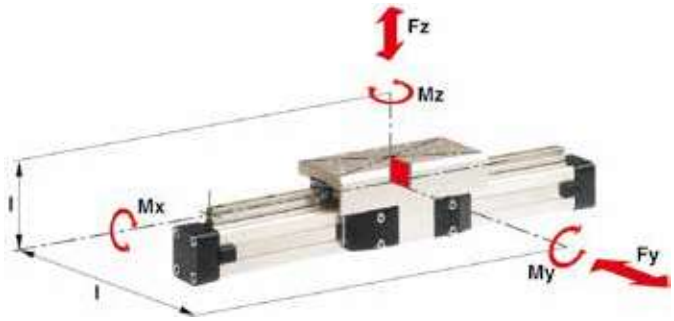
Series STL 16 to 50 for Linear Drive

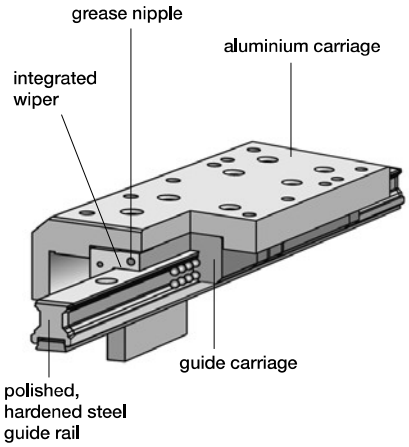


Features:

- 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
- 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

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:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

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.

For further technical information see catalogue P-A4P011GB

* **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. Moment [Nm]			Max. loads [N]		Mass of linear drive with guide [kg]		Mass * guide carriage [kg]	Order-No ** STARLINE Guide without cylinder
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke		
STL 16	OSP-P16	15	30	30	1000	1000	0.598	0.210	0.268	**21111**
STL 25	OSP-P25	50	110	110	3100	3100	1.733	0.369	0.835	**21112**
STL 32	OSP-P32	62	160	160	3100	3100	2.934	0.526	1.181	**21113**
STL 40	OSP-P40	150	400	400	4000	7500	4.452	0.701	1.901	**21114**
STL 50	OSP-P50	210	580	580	4000	7500	7.361	0.936	2.880	**21115**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: STARLINE guide D16 mm, stroke 1000 mm: 21111-01000

Variable Stop

Type VS16 to VS50

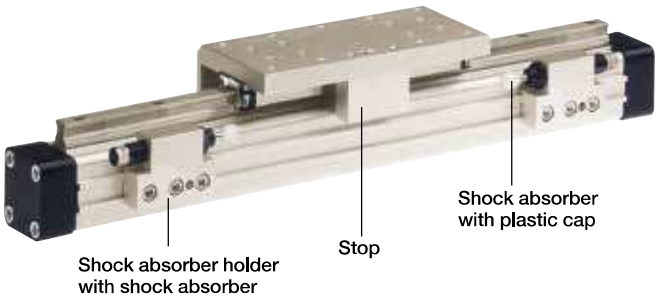
Arrangement with two variable stops

The variable stop Type VS provides simple stroke limitation. 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“.

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.

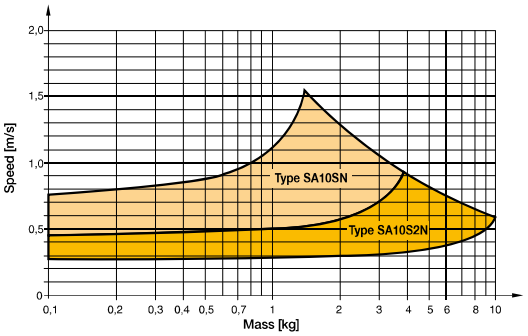


Shock Absorber Selection

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

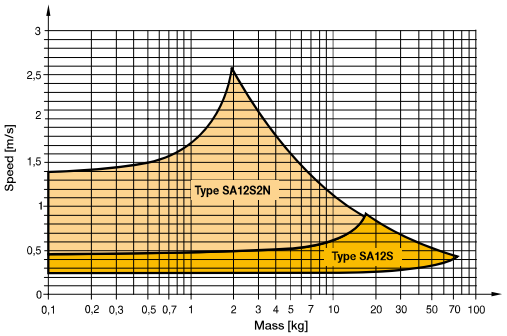
The mass of the carrier itself must be taken into account.

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



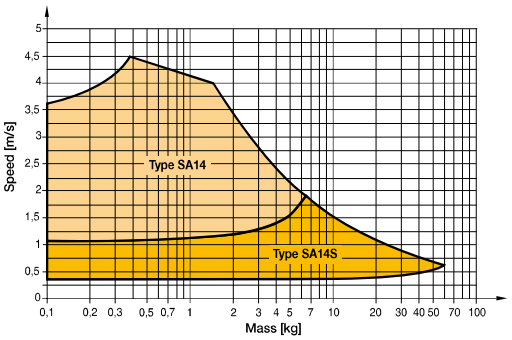
The values relate to an effective driving force of 78 N (6 bar)

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



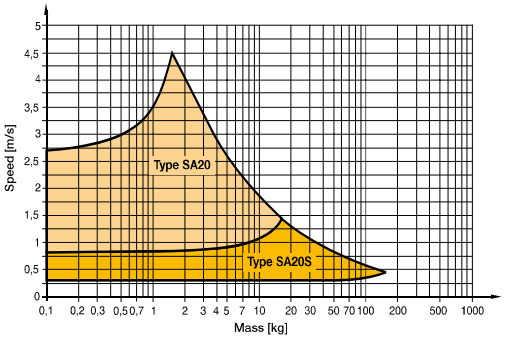
The values relate to an effective driving force of 250 N (6 bar)

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



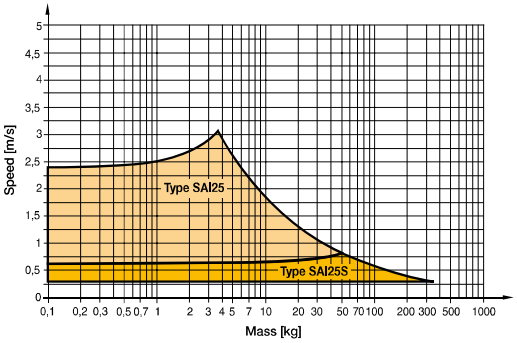
The values relate to an effective driving force of 420 N (6 bar)

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



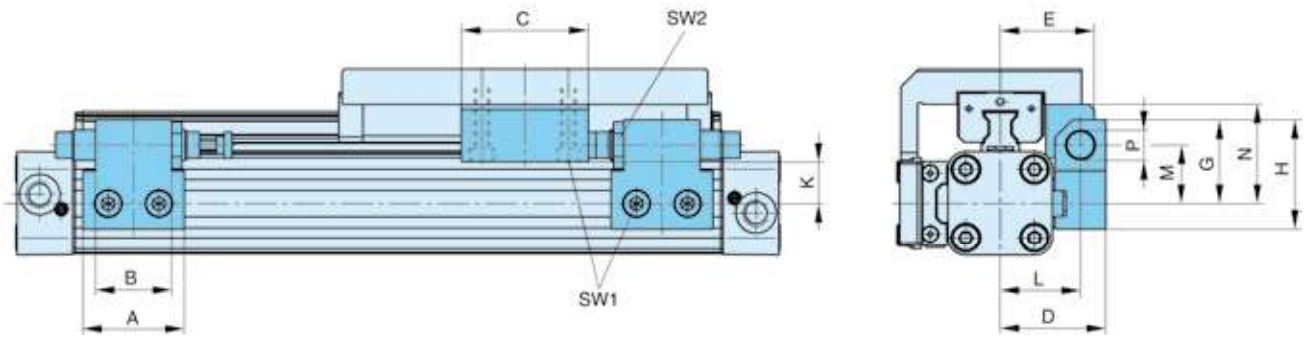
The values relate to an effective driving force of 640 N (6 bar)

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



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

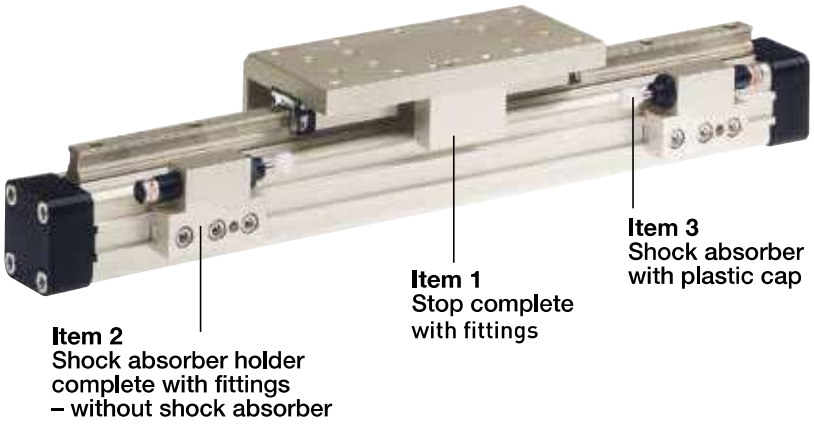
Dimensions - Variable Stop Type VS16 to VS50



Dimension Table [mm] – Variable Stop Type VS16 to VS50

Series	Type	A	B	C	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 - without cylinder and without guide



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	-	21196FIL	-	21197FIL	-	21198FIL	-	21199FIL	-	21200FIL
2	Shock absorber holder complete	-	21201FIL	-	21202FIL	-	21203FIL	-	21204FIL	-	21205FIL
3*	Shock absorber, soft	SA10SN	7718FIL	SA12S2N	7723FIL	SA14	7708FIL	SA20	7710FIL	SAI25	7712FIL
	Shock absorber, hard	SA10S2N	7721FIL	SA12S	7707FIL	SA14S	7709FIL	SA20S	7711FIL	SAI25S	7713FIL

* Shock absorber with plastic cap

Note: Order instructions for VS in combination with the cylinder and guide see page 150, pos.18

Order Instructions- STARLINE

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

16
25
32
40
50

Version / Piston

0	standard
1	Tandem

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V= Ø 25, 32, 40, 50
B	3/2 way valve VOE 230 V~/110 V= Ø 25, 32, 40, 50
C	3/2 way valve VOE 48 V= Ø 25, 32, 40, 50
E	3/2 way valve VOE 110 V~ Ø 25, 32, 40, 50

Seals

0	standard (NBR)
1	Viton® [1]

Lubrication

0	standard
1	Slow speed [2][3]

Screws

0	standard

Stroke

Input in mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard
1	max. length [3]
2	VS variable stop, soft left for Starline
3	VS variable stop, hard, left for Starline
4	VS variable stop, soft, right for Starline
5	VS variable stop, hard, right for Starline
6	VS variable stop, soft, both sides for Starline
7	VS variable stop, hard, both sides for Starline

Piston Mounting

0	without

Guides/ Brakes/ Inversion

0	without
B	Starline STL

add. Guide Carriage

0	without
B	Guide Carriage Starline STL

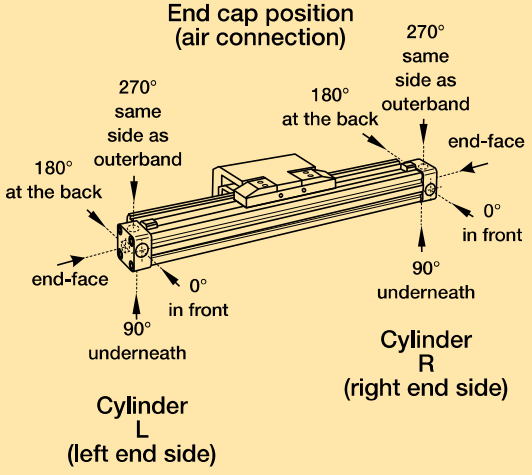
Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

Cover / Cable Channel

0	standard
1	cable channel
2	cable channel two-sided
X	without Cover rail

End cap position (air connection)



Cylinder L (left end side)

Cylinder R (right end side)

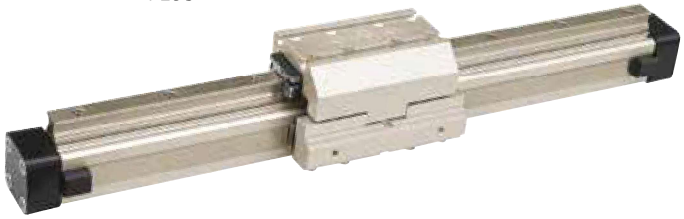
[1] Viton with VOE not possible.

[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

[3] „Lubrication slow speed" in combination with „max. cushioning length" not possible.

Recirculating Ball Bearing Guide
Series KF 16 to 50 for Linear Drive

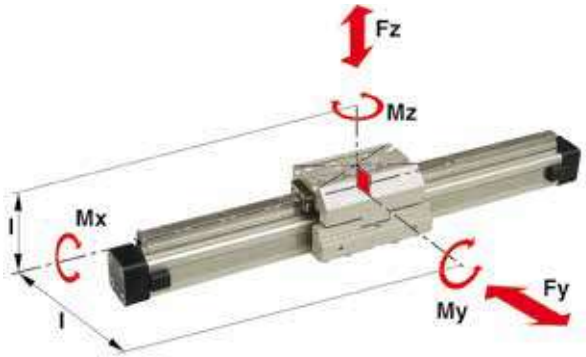
OSP ORIGA SYSTEM PLUS



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
- Maximum speed
  KF16, KF40: v = 3 m/s
  KF25, KF32, KF50: v = 5 m/s

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:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

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.

For further technical information see catalogue P-A4P011GB

Variable Stop

The variable stop Type VS provides simple stroke limitation. It can be retrofitted and positioned anywhere along the stroke length. For every cylinder diameter two types of shock absorber are available. 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

For shock absorber selection in dependence on mass and speed see page 148.

* **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. moment [Nm]			Max. loads [N]		Mass of linear drive with guide [kg]		Mass* guide carriage [kg]	Groove stone	Order-No.	
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke		Thread size	Groove Stone	Guide KF without cylinder**
KF16	OSP-P16	12	25	25	1000	1000	0.558	0.21	0.228	-	**-**	**21101**
KF25	OSP-P25	35	90	90	3100	3100	1.522	0.369	0.607	M5	**13508FIL**	**21102**
KF32	OSP-P32	44	133	133	3100	3100	2.673	0.526	0.896	M5	**13508FIL**	**21103**
KF40	OSP-P40	119	346	346	4000	7100	4.167	0.701	1.531	M6	**13509FIL**	**21104**
KF50	OSP-P50	170	480	480	4000	7500	7.328	0.936	2.760	M8	**13510FIL**	**21105**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: KF guide D16 mm, stroke 1000 mm: 21101-01000

Note: Order instructions for VS in combination with the cylinder and guide see page 152, pos.18

Order Instructions- KF

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

16
25
32
40
50

Stroke

Input in mm (5 digits)

Piston Mounting

0	without

Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

Screws

0	standard

Cushioning

0	standard
1	max. length [3]
2	VS variable stop, soft left for KF
3	VS variable stop, hard, left for KF
4	VS variable stop, soft, right for KF
5	VS variable stop, hard, right for KF
6	VS variable stop, soft, both sides for KF
7	VS variable stop, hard, both sides for KF

Version / Piston

C	Classic
T	Classic Tandem

Lubrication

0	standard
1	Slow speed [2] [3]

Cover / Cable Channel

0	standard
1	cable channel
2	cable channel two-sided
X	without Cover rail

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V= Ø 25,32,40,50
B	3/2 way valve VOE 230 V~/110 V= Ø 25,32,40,50
C	3/2 way valve VOE 48 V= Ø 25,32,40,50
E	3/2 way valve VOE 110 V~ Ø 25,32,40,50

Seals

0	standard (NBR)
1	Viton® [1]

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

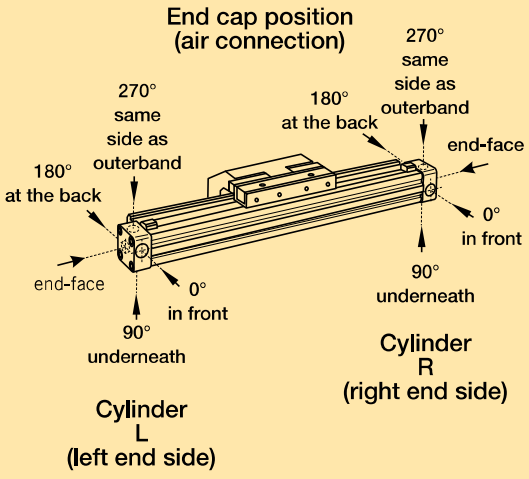
Guides/ Brakes/ Inversion

0	without
C	KF

add. Guide Carriage

0	without
C	Guide Carriage KF

End cap position (air connection)



[1] Viton with VOE not possible.

[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

[3] „Lubrication slow speed" in combination with „max. cushioning length" not possible.

Heavy Duty Guide
HD
Series HD 25 to 50 for Linear Drive

Features:

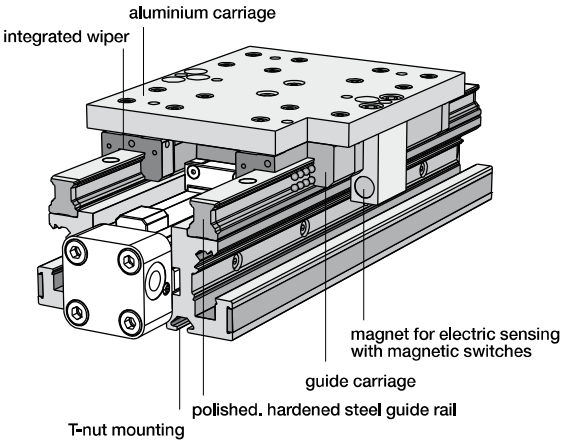
- Guide system: 4-row recirculating ball bearing guide
- Polished and hardened steel guide rail
- For highest loads in all directions
- Highest precision
- Integrated wiper system
- Integrated grease nipples
- Any lengths of stroke up to 3700 mm (longer strokes on request)
- Anodized aluminium guide carriage - dimensions compatible with OSP guide GUIDELINE
- Maximum speed v = 5 m/s

OSP
ORIGA SYSTEM PLUS

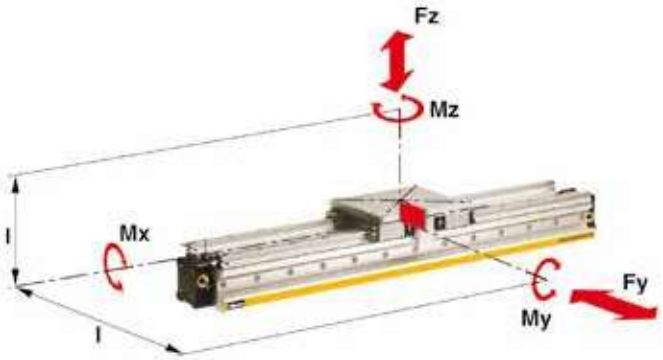
Options:

- With variable stop
- With intermediate stop module

Version with pneumatic linear drive series OSP-P



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:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

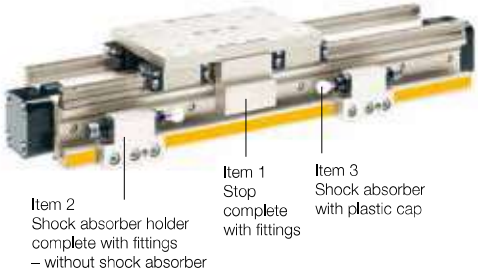
The sum of the loads should not exceed >1.

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

For further technical information see catalogue P-A4P011GB

Variable Stop

Variable Stop Type VS25 to VS50



For shock absorber selection in dependence on mass and speed see page 148.

* **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. moment [Nm]			Max. loads [N]		Mass of linear drive with guide carriage [kg]		Mass * guide [kg]	Order-No. ** HD Guide without cylinder
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke		
HD 25	OSP-P25	260	320	320	6000	6000	3.065	0.924	1.289	**21246**
HD 32	OSP-P32	285	475	475	6000	6000	4.308	1.112	1.367	**21247**
HD 40	OSP-P40	800	1100	1100	15000	15000	7.901	1.748	2.712	**21248**
HD 50	OSP-P50	1100	1400	1400	18000	18000	11.648	2.180	3.551	**21249**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: HD Guide D25 mm, stroke 1000 mm: 21246-01000

Note: Order instructions for VS in combination with HD guide see page 154, pos.18

Parker Hannifin Corporation
Origa Division - Europe

Order Instructions- HEAVY DUTY - HD

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

25
32
40
50

Version / Piston

0	standard
1	Tandem

Air Connection

0	standard
1	on the end face
2	both at one end (not turnable)
3	left standard right end face
4	right standard left end face
A	3/2 way valve VOE 24 V= Ø 25, 32, 40, 50
B	3/2 way valve VOE 230 V~/110 V= Ø 25, 32, 40, 50
C	3/2 way valve VOE 48 V= Ø 25, 32, 40, 50
E	3/2 way valve VOE 110 V~ Ø 25, 32, 40, 50

Seals

0	standard (NBR)
1	Viton® [1]

Lubrication

0	standard
1	Slow speed [2][3]

Screws

0	standard

Stroke

Input in mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard
1	max. length [3]
2	VS variable stop, soft left for HD
3	VS variable stop, hard, left for HD
4	VS variable stop, soft, right for HD
5	VS variable stop, hard, right for HD
6	VS variable stop, soft, both sides for HD
7	VS variable stop, hard, both sides for HD

Guides/ Brakes/ Inversion

0	without
D	HD

Piston Mounting

0	without

add. Guide Carriage

0	without
D	Guide Carriage HD

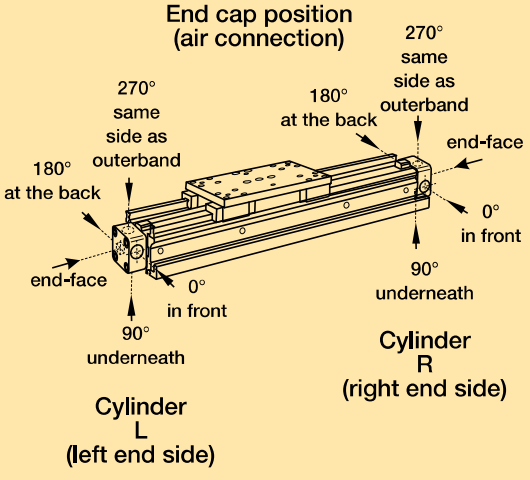
Cover / Cable Channel

0	standard
1	cable channel
2	cable channel two-sided
X	without Cover rail

Measuring system

0	without
X	SFI 0.1 mm
Y	SFI 1 mm

End cap position (air connection)



[1] Viton with VOE not possible.

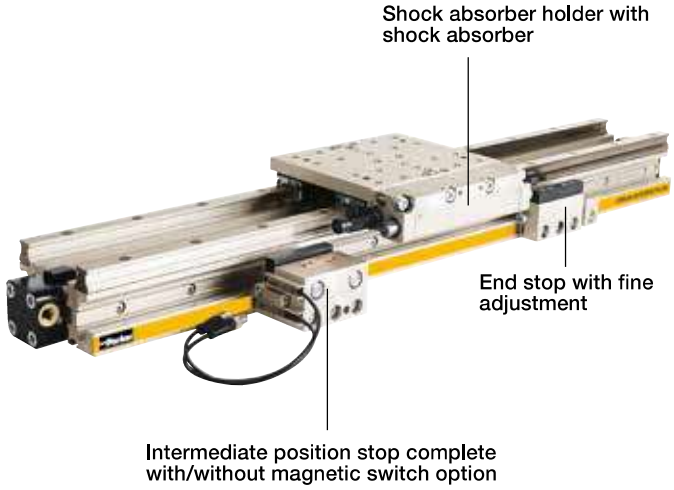
[2] "Slow speed lubrication" in combination with „Viton®" seals on demand.

[3] „Lubrication slow speed" in combination with „max. cushioning length" not possible.

Intermediate Stop Module

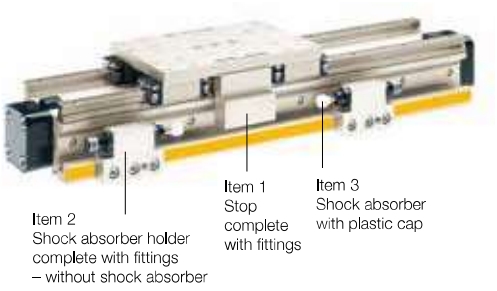
Type ZSM .. HD

The intermediate stop module ZSM allows the guide carriage to stop at any desired intermediate positions with high accuracy. It can be retrofitted. Depending on the application, i.e. the number of intermediate stops, one or more intermediate position stops can be used. The intermediate position stops can be retracted and extended without the need for the guide carriage to be moved back out of position.
Therefore the guide carriage can be made to stop at the defined intermediate positions in any order.



ORIGA intermediate stop module ZSM:

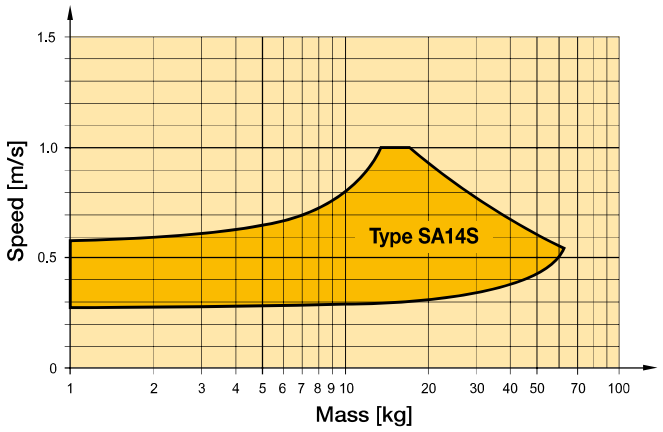
- Allows stopping at any intermediate positions
- Intermediate position stops can be located steplessly anywhere along the whole stroke length
- Movement to the next position without reverse stroke
- Compact unit
- Cost-effective positioning module without electrical or electronic components
- Option: end stop with fine adjustment



Operating information

Operating pressure range:	4 - 8 bar
Temperature range:	-10°C to +70°C
Intermediate position grid	85 mm

Shock Adsorbers Type SA14S



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

Order Instructions - Intermediate Stop Module - Type ZSM..HD

Item	Description	For intermediate stop module	Order-No.
1*	Shock absorber holder with shock absorber SA14S, both sides	**ZSM25HD**	**21342BFIL**
2*	Shock absorber holder with shock absorber SA14S, left	**ZSM25HD**	**21342LFIL**
3*	Shock absorber holder with shock absorber SA14S, right	**ZSM25HD**	**21342RFIL**
4	Intermediate position stop complete, without magnetic switch option	**ZSM25HD**	**21343FIL**
5	Intermediate position stop complete, with magnetic switch option	**ZSM25HD**	**21344FIL**
6	End stop with fine adjustment	**ZSM25HD**	**21346FIL**

* The shock absorbers are installed in the shock absorber holder and adjusted in our workshop.

Note:
For movement onwards from the intermediate position, the intermediate position stop must advance.
The intermediate position stop can only advance if both cylinder chambers of the OSP-P cylinder are pressurized.

For further technical information see catalogue P-A4P011GB

OSP
ORIGA SYSTEM PLUS

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 page 157

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

See page 141

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

See page 145

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

See page 158

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

See page 159

Active Brake

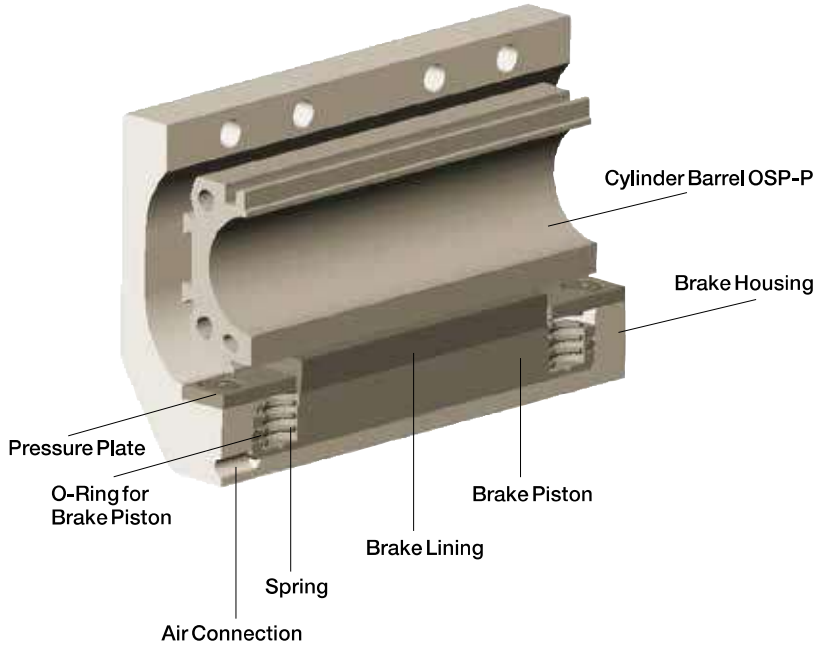
Series AB 25 to 80 for Linear Drive

OSP ORIGA SYSTEM PLUS

Features:

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

Function



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	Linear drive with brake increase per 100 mm stroke	Brake *
AB 25	OSP-P25	350	2.5	1.0	0.197	0.35
AB 32	OSP-P32	590	2.5	2.02	0.354	0.58
AB 40	OSP-P40	900	2.5	2.83	0.415	0.88
AB 50	OSP-P50	1400	2.5	5.03	0.566	1.50
AB 63	OSP-P63	2170	3.0	9.45	0.925	3.04
AB 80	OSP-P80	4000	3.0	18.28	1.262	5.82

(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 further technical information see catalogue P-A4P011GB

Note:
For combinations Active Brake AB + SFI-plus + Magnetic Switch contact our technical department please.

Active brake in combination with Basic Cylinder see page 132, pos.20

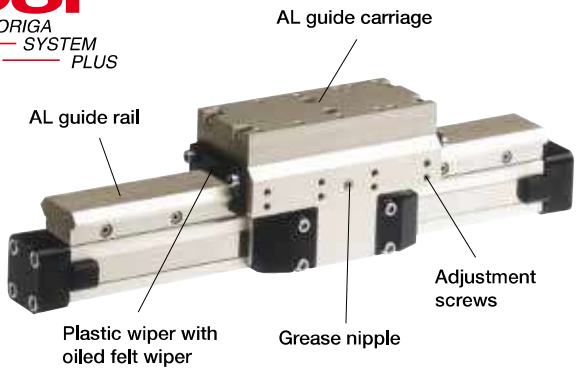
Multi-Brake
Passive Brake

with plain bearing guide Slideline SL
Series MB-SL 25 to 80 for Linear Drive

Features:

- Brake operated by spring actuation
- Brake release by pressurisation
- 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

OSP
ORIGA SYSTEM PLUS



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.

Loads, Forces and Moments

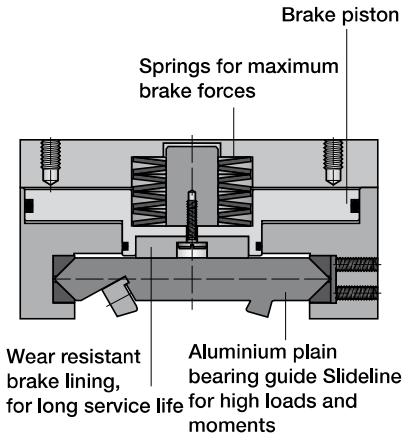
Technical Data

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 see catalogue P-A4P011GB

Function



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

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

Series	For linear drive	Max. moments [Nm] Mx	My	Mz	Max. loads [N] Fy, Fz	Max. brake force [N] [1]	Mass of linear drive with guide [kg] with 0 mm stroke	increase per 100 mm stroke	Mass [2] guide carriage [kg]	Order-No.** MB-SL Guide with passivebrake without cylinder *
MB-SL 25	OSP-P25	14	34	34	675	470	2.04	0.39	1.10	**20796**
MB-SL 32	OSP-P32	29	60	60	925	790	3.82	0.65	1.79	**20797**
MB-SL 40	OSP-P40	50	110	110	1600	1200	5.16	0.78	2.34	**20798**
MB-SL 50	OSP-P50	77	180	180	2000	1870	8.29	0.97	3.63	**20799**
MB-SL 63	OSP-P63	120	260	260	2500	2900	13.31	1.47	4.97	**20800**
MB-SL 80	OSP-P80	120	260	260	2500	2900	17.36	1.81	4.97	**20846**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: MB-SL guide with passive brake D 25 mm, stroke 1000 mm: 20796-01000

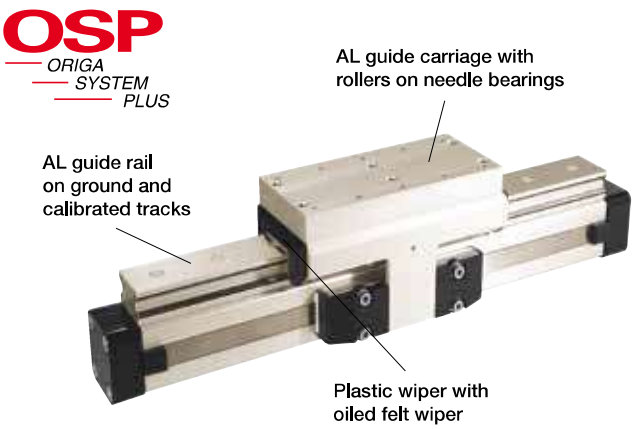
MB-SL in combination with cylinder see page142, pos. 20

Multi-Brake
Passive Brake

with Aluminium Roller Guide Proline PL
Series MB-PL 25 to 50 for Linear Drive

Features:

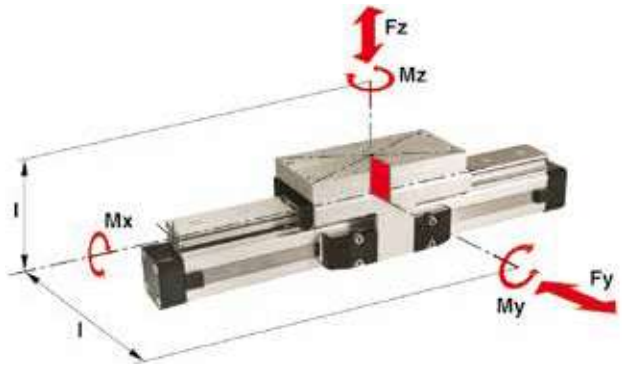
- Brake operated by spring actuation
- Brake release by pressurisation
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Blocking function in case of pressure loss
- Intermediate stops possible



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.

Loads, Forces and Moments



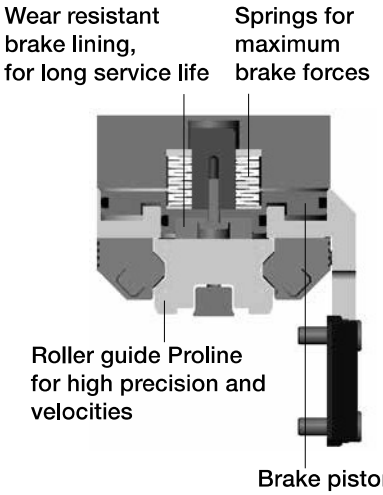
Technical Data

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

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Ly}{Ly_{max}} + \frac{Lz}{Lz_{max}} \leq 1$$

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

Function



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.

For further technical information see catalogue P-A4P011GB

Series	For linear drive	Max. moments [Nm] Mx	My	Mz	Max. loads [N] Fy, Fz	Max. brake force [N] [1]	Mass of linear drive with guide [kg] with 0 mm stroke	increase per 100 mm stroke	Mass [2] guide carrriage [kg]	Order-No.** MB-PL Guide with passivebrake without cylinder*
MB-PL25	OSP-P25	16	39	39	857	315	2.14	0.40	1.24	**20864**
MB-PL32	OSP-P32	29	73	73	1171	490	4.08	0.62	2.02	**20865**
MB-PL40	OSP-P40	57	158	158	2074	715	5.46	0.70	2.82	**20866**
MB-PL50	OSP-P50	111	249	249	3111	1100	8.60	0.95	4.07	**20867**

** Please use this order pattern: Order-No. + „stroke in mm“ (5 digits)
Example: MB-PL guide with passive brake, D25 mm, stroke 1000 mm: 20864-01000

MB-PL in combination with cylinder see page 146, pos. 20

Linear Drive Accessories

(Mountings and Magnetic Switches)

Series OSP-P

Description
Overview
Clevis Mounting
End Cap Mountings
End Cap Mountings (for Linear Drives with guides)
Mid-Section Support
Mid-Section Support (for Linear Drives with guides)
Inversion Mounting
Adaptor Profile
T-Slot Profile
Connection Profile
Duplex Connection
Multiplex Connection
Magnetic Switch, standard version
Magnetic Switch for T-Nut mounting
Magnetic Switch ATEX-version ⟨Ex⟩
Cable Cover

See Catalogue P-A4P011GB

Origa - Sensoflex

Displacement measuring system for automated movement

Series SFI-plus (Incremental measuring system)

Characteristics:

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

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 down stream

  (e.g. PLC, PC, digital counter)

For further technical information see catalogue P-A4P011GB

Note: Order instructions in combination with basic cylinder see page 132, pos.25

ORIGA Pneumatic Linear Drives OSP-L

Very long lifetime and lowest leakage

A NEW Modular Linear Drive System

With this second generation linear drive Parker 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.

- Completely modular design
- Compatible with the comprehensive ORIGA OSP system component range
- High loads and moments
- Space saving
- For a wide range of loads, speeds and motion profiles

Introduction – OSP Concept

Basic Linear Drive Standard Version • Series OSP-L	
Air Connection on the End-face or both at One End • Series OSP-L	
Integrated 3/2 Way Valves • Series OSP-L	
Clevis Mounting • Series OSP-L	
End Cap Mounting • Series OSP-L	
Mid-Section Support • Series OSP-L	
Inversion Mounting • Series OSP-L	

Duplex Connection • Series OSP-L	
Multiplex Connection • Series OSP-L	
Linear Guides – SLIDELINE • Series OSP-L	
Linear Guides – STARLINE • Series OSP-L	
Magnetic Switches • Series OSP-L	
Variable Stop VS • Series OSP-L with Linear Guide STL	

Options and Accessories for system versatility

Series OSP-L

STANDARD VERSIONS OSP-L25 to L63

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

The special design of the linear drive enables all emissions to be led away.

STAINLESS VERSION

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

END-FACE AIR CONNECTION

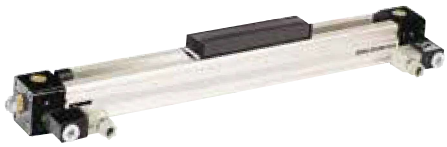
To solve special installation problems.

BOTH AIR CONNECTIONS AT ONE END

For simplified tubing connections and space saving.

INTEGRATED VOE VALVES

The complete compact solution for optimal cylinder control.



DUPLEX CONNECTION

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

MULTIPLEX CONNECTION

The multiplex connection combines two or more OSP-L 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

For electrical sensing of end and intermediate piston positions.

MOUNTINGS FOR OSP-L25 TO L63

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.

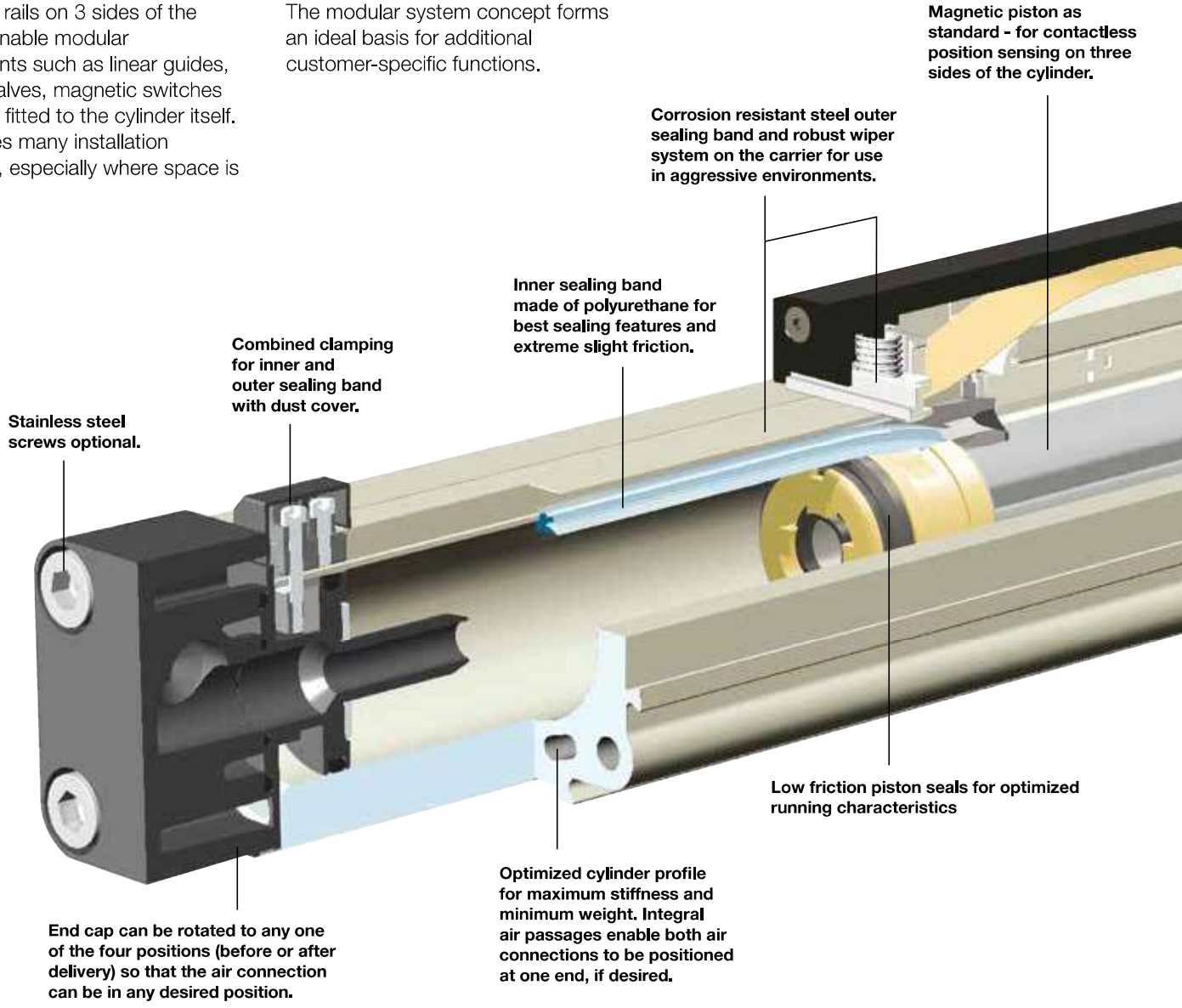
Origa System Plus - Innovation from a proven design

The newly developed product line OSP-L can be simply and neatly integrated into any machine layout.

MOUNTING RAILS ON 3 SIDES

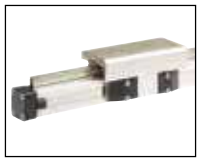
Mounting rails on 3 sides of the cylinder enable modular components such as linear guides, brakes, valves, magnetic switches etc. to be fitted to the cylinder itself. This solves many installation problems, especially where space is limited.

The modular system concept forms an ideal basis for additional customer-specific functions.



SLIDELINE
Cost-effective plain bearing guide for medium loads.

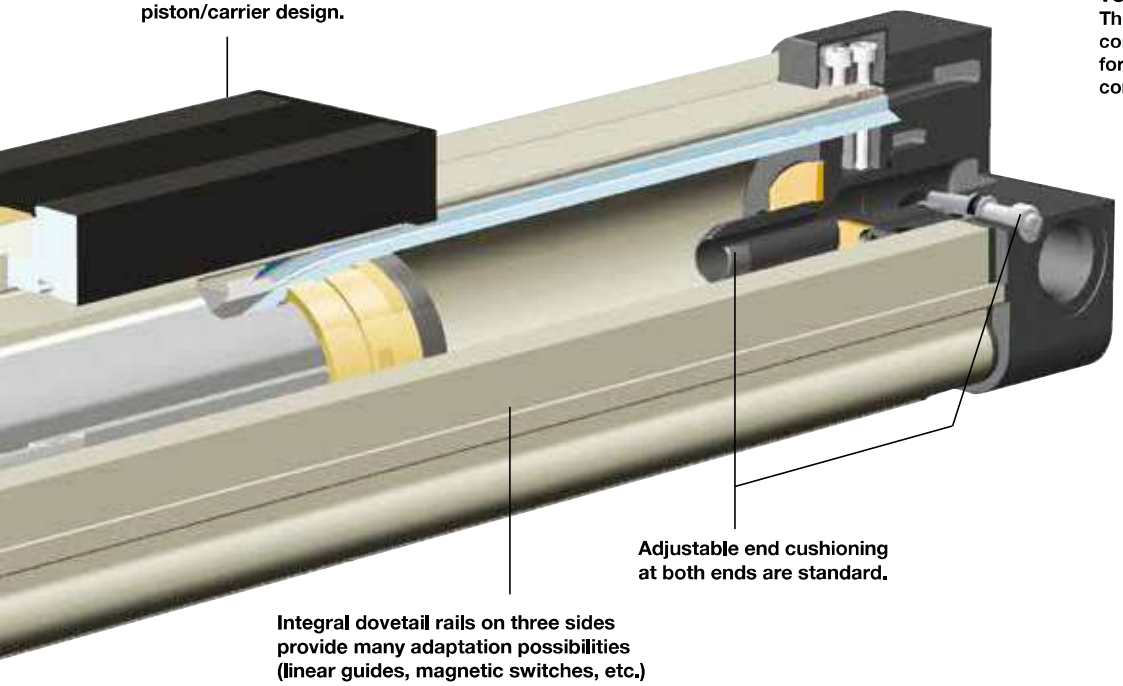
STARLINE
Recirculating ball bearing guide for very high loads and precision.



VARIABLE STOP VS
The variable stop provides simple stroke limitation.

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

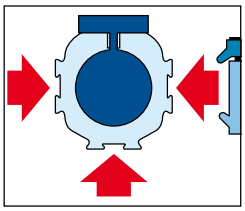
New low profile piston/carrier design.



Adjustable end cushioning at both ends are standard.

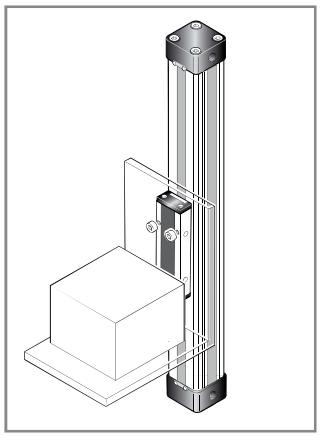
Integral dovetail rails on three sides provide many adaptation possibilities (linear guides, magnetic switches, etc.)

Modular system components are simply clamped on.

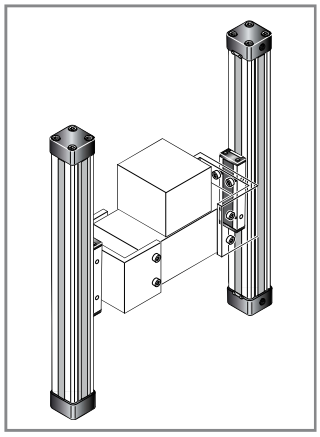


OSP-L Application examples

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.

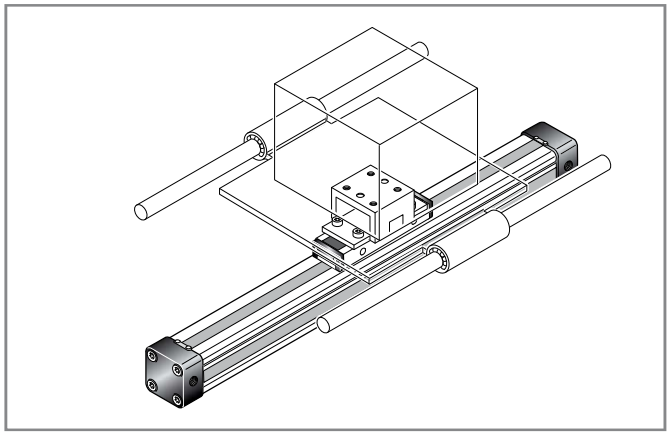


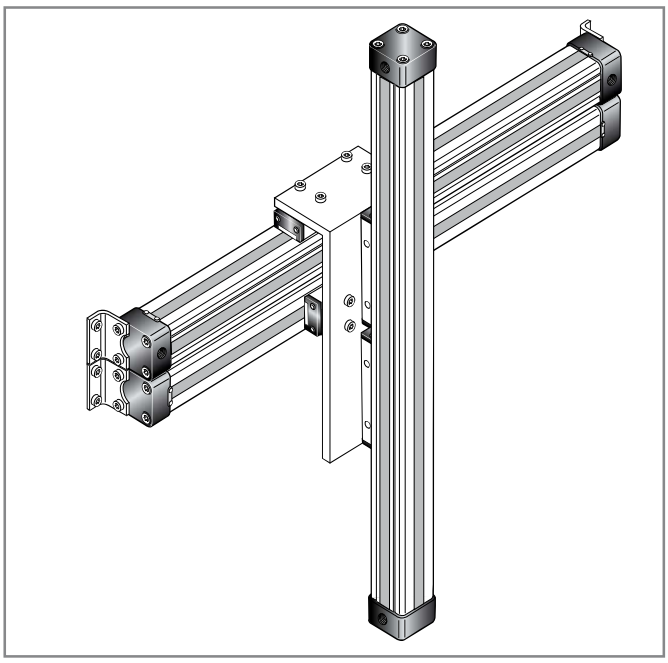
The mechanical design of the OSP-L allows synchronised movement of two cylinders.

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.

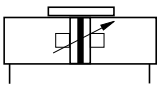




For further information and assembly instructions, please contact your local Parker Origa dealer.

Rodless Pneumatic Cylinder
Ø 25-63 mm

OSP
ORIGA
SYSTEM
PLUS



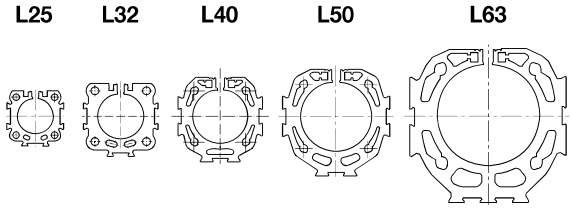
Standard Versions:

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

Special Versions:

- Stainless steel screws
- Both air connections on one end
- Air connection on the end-face
- Integrated Valves VOE
- End cap can be rotated 4 x 90° to position air connection as desired
- Free choice of stroke length up to 6000 mm

Size Comparison



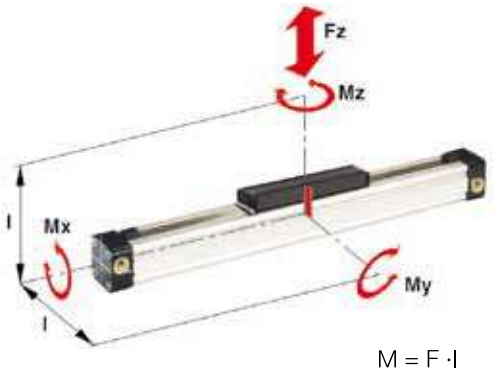
Characteristics	Description
General Features	
Type	Rodless cylinder
Series	OSP-L
System	Double-acting, with cushioning, position sensing capability
Mounting	See drawings
Air Connection	Threaded
Ambient T_{min}	-20 °C Other temperature ranges
temperature range T_{max}	+80 °C on request
Installation	In any position
Medium	Filtered, unlubricated compressed air (other media on request)
Lubrication	Permanent grease lubrication (additional oil mist lubrication not required)
Material	
Cylinder Profile	Anodized aluminium
Carrier (piston)	Anodized aluminium
End caps	Aluminium, lacquered
Sealing bands	Corrosion resistant steel (outer band)
	Polyurethane (inner band)
Seals	Polyurethane, NBR
Screws	Galvanized steel
	Option: stainless steel
Dust covers, wipers	Plastic
Max. operating pressure p_{max}	8 bar

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).



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

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.

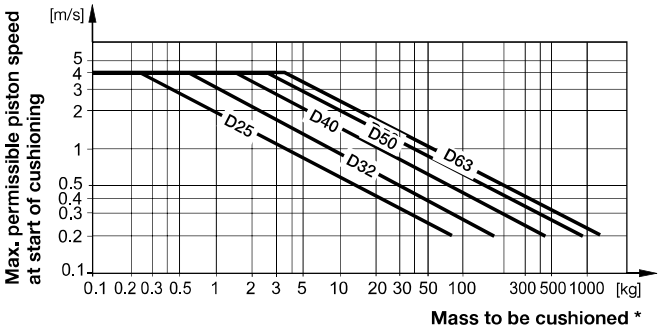
When working out the action force required, it is essential to take into account the friction forces generated by the specific application or load.

Cylinder-Series Ø [mm]	Theoretical Action Force at 6 bar [N]	effektive Action Force F_A at 6 bar [N]	max. Moments Mx [Nm]	My [Nm]	Mz [Nm]	max. Load F [N]	Cushion Length [mm]
OSP-L25	295	250	1.5	15	3	300	17
OSP-L32	483	420	3	30	5	450	20
OSP-L40	754	640	6	60	8	750	27
OSP-L50			in progress				
OSP-L63							

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



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

Weight (mass) [kg]

Cylinder series (Basic cylinder)	Weight (Mass) [kg] At 0 mm stroke	per 100 mm stroke
OSP-L25	0.65	0.197
OSP-L32	1.44	0.354
OSP-L40	1.95	0.415
OSP-L50	in progress	
OSP-L63		

For further technical information see catalogue P-A4P012GB

Integrated 3/2 Way Valves VOE

Series OSP-L25, L32, L40 and L50

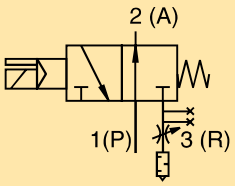
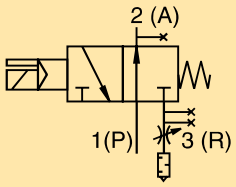
OSP ORIGA SYSTEM PLUS

For optimal control of the OSP-L 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.

Features:

- 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-L 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

For further technical information see catalogue P-A4P012GB

Order Instructions- Basic Cylinder

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPL	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø
- 25
- 32
- 40
- in progress
- in progress

Stroke
in mm (5 digits)

Piston Mounting
0	without
1	clevis mounting

add. Guide Carriage
0	without

Measuring system
0	without

Screws
0	standard
1	Stainless

Cushioning
0	standard
1	max. length

Version / Piston
0	standard
1	Tandem

Lubrication
0	standard

End cap position
0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

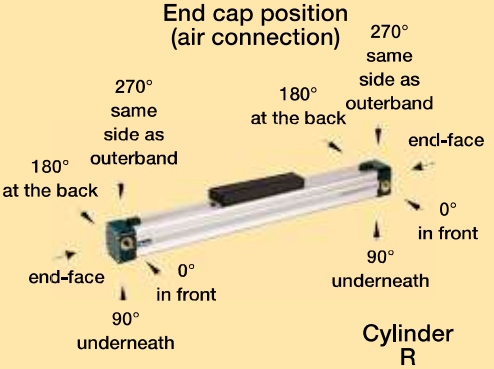
Guides/ Brakes/ Inversion
0	without
M	Inversion Ø 16-80
N	Duplex Ø 25,32,40,50

Cover / Cable Channel
0	standard
1	Cable channel
2	Cable channel two-sided

Air Connection
0	standard
1	end face
2	both at one end
3	left standard right end face
4	right standard left end face
A	3/2 Way valve VOE 24 V = Ø 25,32,40,50
B	3/2 Way valve VOE 230 V~ / 110 V= Ø 25,32,40,50
C	3/2 Way valve VOE 48 V = Ø 25,32,40,50
E	3/2 Way valve VOE 110 V~ Ø 25,32,40,50

Seals
0	standard

End cap position (air connection)



Cylinder L (left end side)

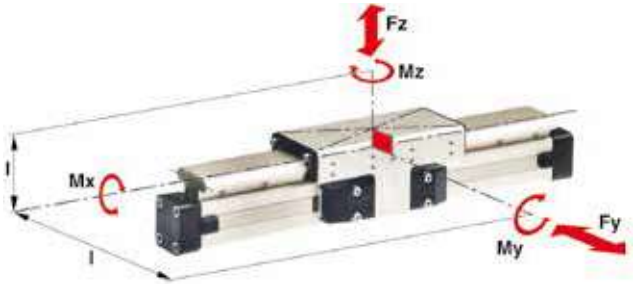
Cylinder R (right end side)

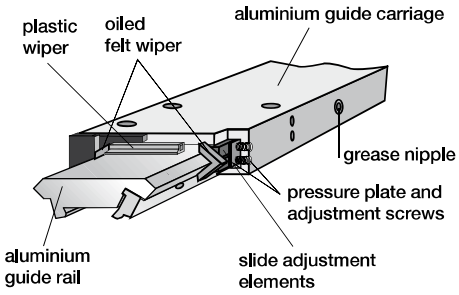
Plain Bearing Guide
SLIDELINE
Series SL 25 to 63 for Linear Drive

Features:

- Anodised aluminium guide rail with prism-shaped slideway arrangement
- Adjustable plastic slide elements
- 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)

Loads, Forces and Moments





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.

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

For further technical information see catalogue P-A4P012GB

Series SL	For linear drive	Max. moments [Nm] Mx	My	Mz	Max. loads [N] Fy,Fz	Mass of linear drive with guide [kg] with 0 mm stroke	increase per 100 mm stroke	Mass * of guide carriage [kg]	**Order No. ** SLIDELINE** [1] Guide without cylinder
SL25	OSP-L25	14	34	34	675	1.55	0.39	0.61	**20342FIL**
SL32	OSP-L32	29	60	60	925	2.98	0.65	0.95	**20196FIL**
SL40	OSP-L40	50	110	110	1600	4.05	0.78	1.22	**20343FIL**
SL50	OSP-L50	in progress							
SL63	OSP-L63								

** Please use this order pattern: Order-No. + "stroke in mm" (5 digits)
Example: SLIDELINE guide D25mm, stroke 1000mm: 20342-01000

[1] Corrosion resistant fixtures available on request

Order Instructions SLIDELINE

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPL	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø

25
32
40
in progress
in progress

Version / Piston

0	standard
1	Tandem

Air Connection

0	standard
1	end face
2	both at one end
3	left standard right end face
4	right standard left end face
A	3/2 Way valve VOE 24 V = Ø 25,32,40,50
B	3/2 Way valve VOE 230 V~ / 110 V= Ø 25,32,40,50
C	3/2 Way valve VOE 48 V = Ø 25,32,40,50
E	3/2 Way valve VOE 110 V~ Ø 25,32,40,50

Seals

0	standard

Lubrication

0	standard

Screws

0	standard
1	Stainless

Stroke

in mm (5 digits)

End cap position

0	l+r 0° = in front
1	l+r 90° = under-neath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning

0	standard

Piston Mounting

0	without

Guides/ Brakes/ Inversion

0	without
2	Slideline SL Ø 25-63

add. Guide Carriage

0	without
2	Guide Carriage Slideline SL Ø 25-63

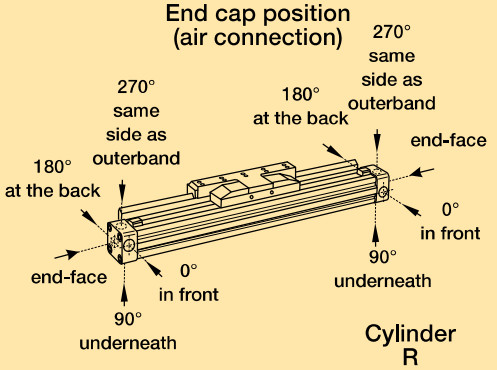
Measuring system

0	without

Cover / Cable Channel

0	standard
1	Cable channel
2	Cable channel two-sided

End cap position
(air connection)



Cylinder
L
(left end side)

Cylinder
R
(right end side)

Recirculating Ball Bearing Guide STARLINE

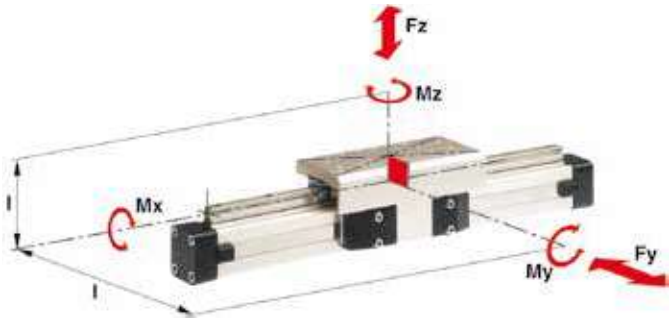
Series STL 16 to 50 for Linear Drive

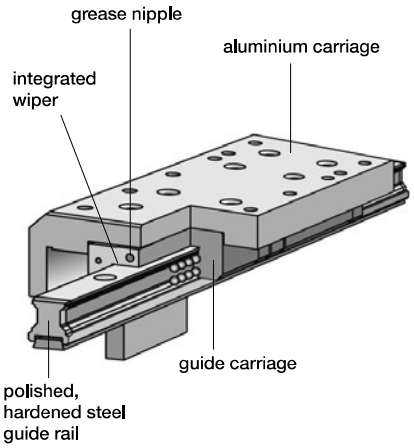
OSP ORIGA SYSTEM PLUS

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
- Anodized aluminium guide carriage – dimensions compatible with OSP guides SLIDELINE
- Installation height (STL25 - 32) compatible with OSP-L guides SLIDELINE
- Maximum speed
  STL25 to 50: v = 5 m/s

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:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

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.

For further technical information see catalogue P-A4P012GB

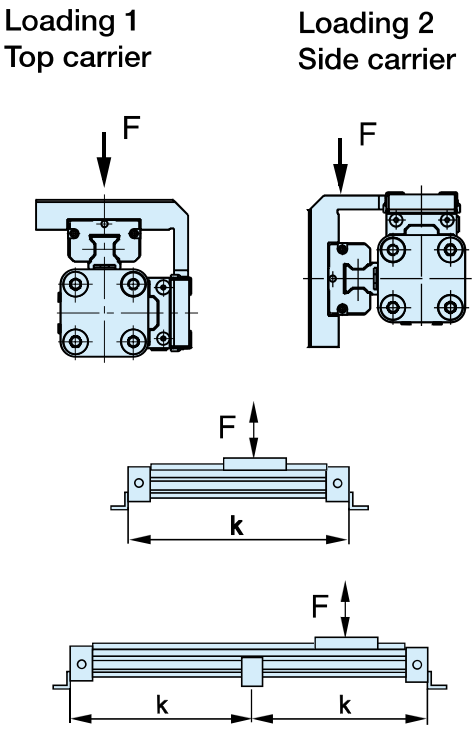
* **Please note:**
The mass of the carriage has to be added to the total moving mass when using the cushioning diagram

Series STL	For linear drive	Max. moments [Nm]			Max. loads [N]		Mass of linear drive with guide [kg]		Mass * of guide carriage [kg]	**Order No. ** STARLINE** Guide without cylinder
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke		
STL25	OSP-L25	50	110	110	3100	3100	1.733	0.369	0.835	**21112**
STL32	OSP-L32	62	160	160	3100	3100	2.934	0.526	1.181	**21113**
STL40	OSP-L40	150	400	400	4000	7500	4.452	0.701	1.901	**21114**
STL50	OSP-L50	in progress								

** Please use this order pattern: Order-No. + "stroke in mm" (5 digits)
Example: STARLINE guide D25mm, stroke 1000mm: 21112-01000

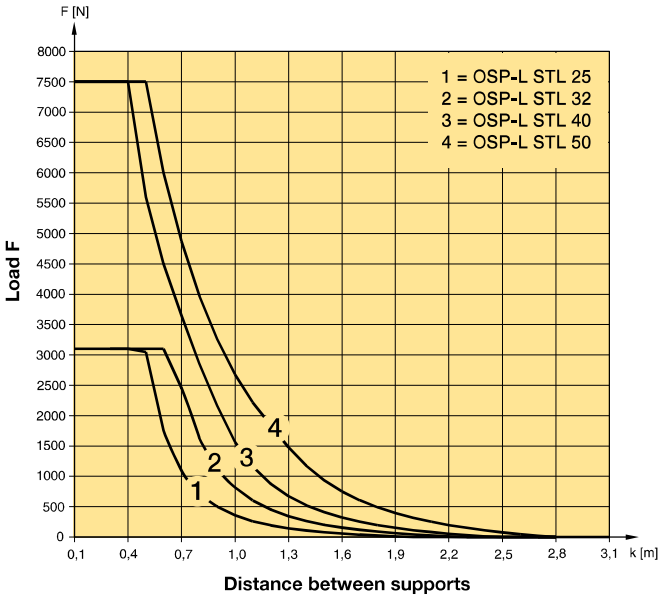
Mid-Section Support

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. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



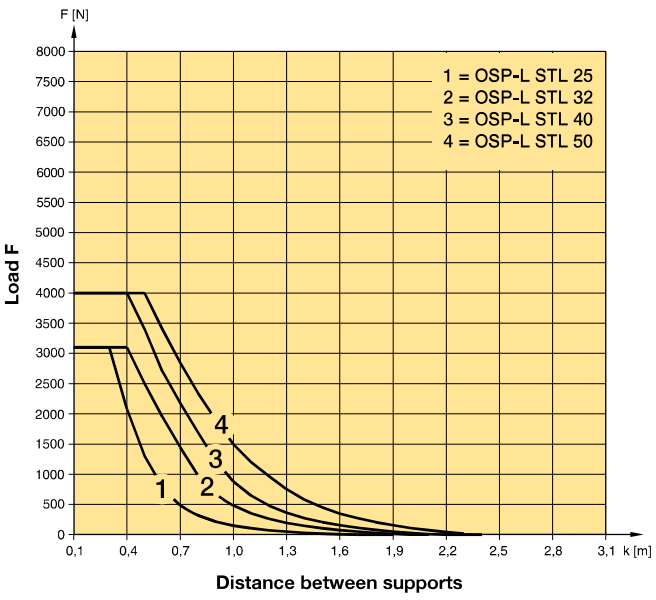
Permissible Unsupported Length STL25 to STL50

Loading 1 – Top carrier



Permissible Unsupported Length STL25 to STL50

Loading 2 – Side carrier



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

Variable Stop

Type VS25 to VS50

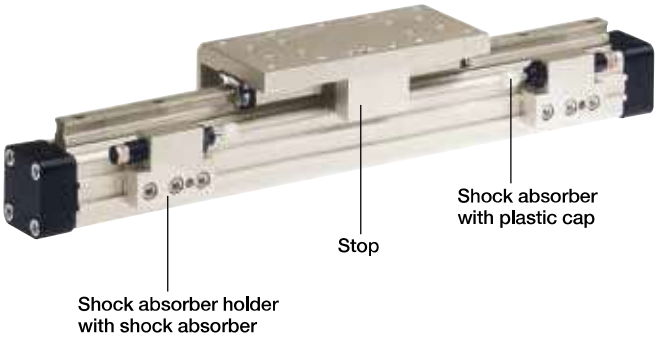
Arrangement with two variable stops

The variable stop Type VS provides simple stroke limitation. 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.

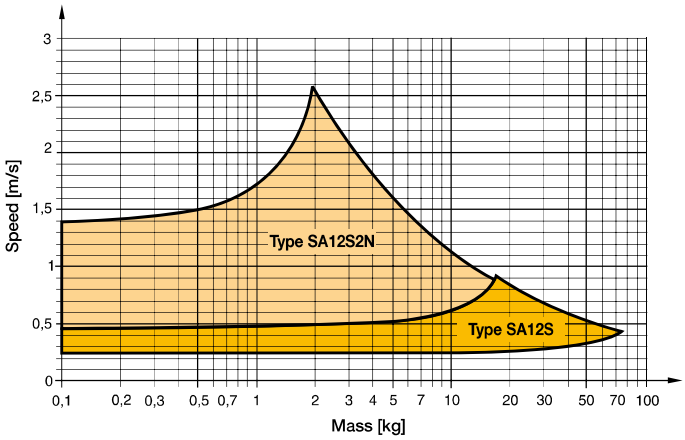


Shock Absorber Selection

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

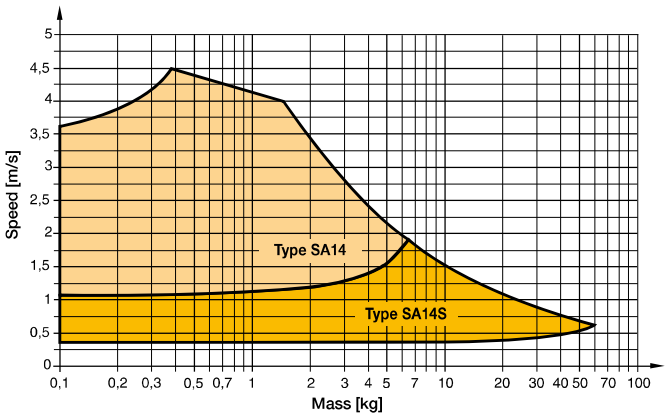
The mass of the carrier itself must be taken into account.

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



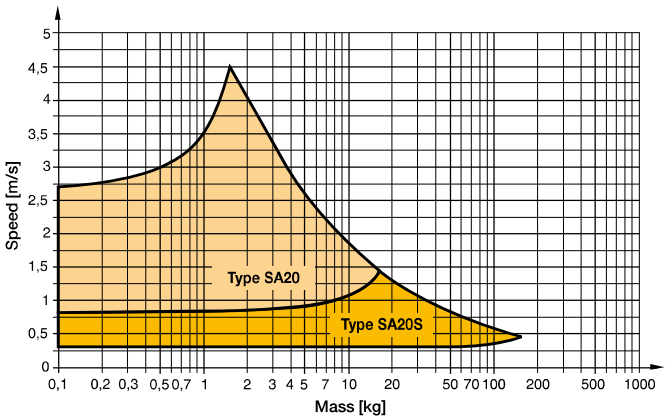
The values relate to an effective driving force of 250 N (6 bar)

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



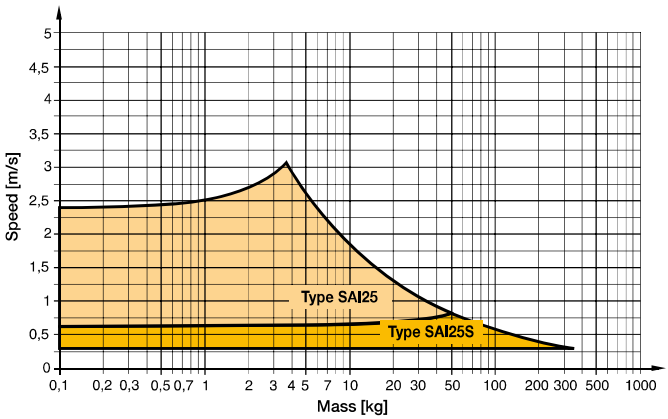
The values relate to an effective driving force of 420 N (6 bar)

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



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

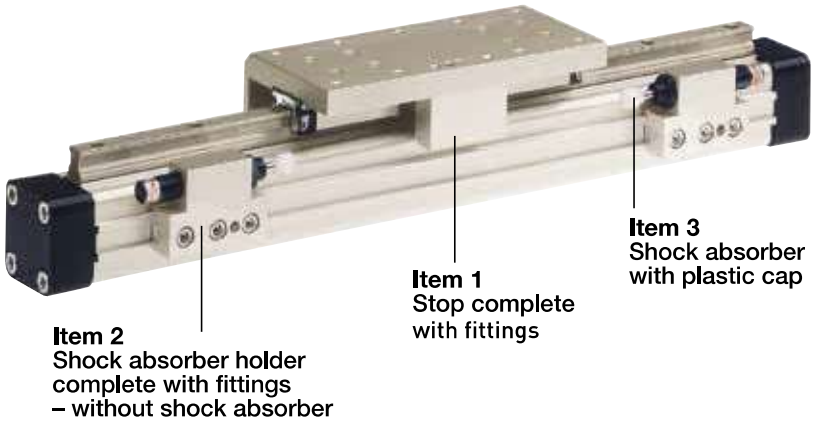
Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-L-STL50



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

Variable Stop

Type VS25 to VS50



Order Instructions – Variable Stop Type VS25 to VS50

without cylinder and without guide

Item	Description	Size							
		VS25		VS32		VS40		VS50	
		Type	Order-No.	Type	Order-No.	Type	Order-No.	Type	Order-No.
1	Stop, complete	–	21197FIL	–	21198FIL	–	21199FIL	in progress	
2	Shock absorber holder complete	–	21202FIL	–	21203FIL	–	21204FIL		
3 *	Shock absorber, soft	SA12S2N	7723FIL	SA14	7708FIL	SA20	7710FIL		
	Shock absorber, hard	SA12S	7707FIL	SA14S	7709FIL	SA20S	7711FIL		

* Shock absorber with plastic cap

Note: Order instructions for VS in combination with the Starline see page 177 pos.18

For further technical information see catalogue P-A4P012GB

Order Instructions - STARLINE

1-4	5+6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPL	25	0	0	0	0	0	01100	0	0	0	0	0	0	0	0	0

Piston-Ø
- 25
- 32
- 40
- in progress

Version / Piston
0	standard
1	Tandem

Air Connection
0	standard
1	end face
2	both at one end
3	left standard right end face
4	right standard left end face
A	3/2 Way valve VOE 24 V = Ø 25,32,40,50
B	3/2 Way valve VOE 230 V~ / 110 V= Ø 25,32,40,50
C	3/2 Way valve VOE 48 V = Ø 25,32,40,50
E	3/2 Way valve VOE 110 V~ Ø 25,32,40,50

Lubrication
0	standard

Seals
0	standard

Stroke
in mm
(5 digits)

Screws
0	standard

End cap position
0	l+r 0° = in front
1	l+r 90° = underneath
2	l+r 180° = at the back
3	l+r 270° = same side as outerband
4	l 90° = underneath; r 0° = in front
5	l 180° = at the back; r 0° = in front
6	l 270° = same side as outerband; r 0° = in front
7	l 0° = in front; r 90° = underneath
8	l 180° = at the back; r 90° = underneath
9	l 270° = same side as outerband; r 90° = underneath
A	l 0° = in front; r 180° = at the back
B	l 90° = underneath; r 180° = at the back
C	l 270° = same side as outerband; r 180° = at the back
D	l 0° = in front; r 270° = same side as outerband
E	l 90° = underneath; r 270° = same side as outerband
F	l 180° = at the back; r 270° = same side as outerband

Cushioning
0	standard
1	max. length
2	variable stop complete VS soft left for Starline
3	variable stop complete VS hard left for Starline,
4	variable stop complete VS soft right for Starline
5	variable stop complete VS hard right for Starline
6	variable stop complete VS soft both sides for Starline
7	variable stop complete VS hard both sides for Starline

Piston Mounting
0	without

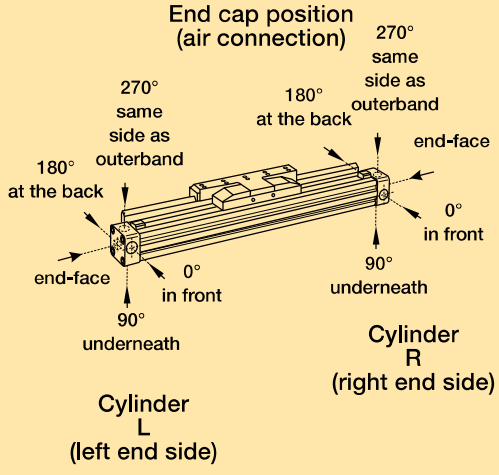
Guides/ Brakes/ Inversion
0	without
B	Starline STL

add. Guide Carriage
0	without
B	Guide Carriage Starline STL

Cover / Cable Channel
0	standard
1	Cable channel
2	Cable channel two-sided

Measuring system
0	without

End cap position (air connection)






Magnetically coupled pneumatic cylinder P1Z ...

No leakage, with high magnetic coupling force

The P1Z is a rodless pneumatic cylinder with piston and carriage equipped with ring magnets.

Motion is transmitted via the magnetic force locking between the piston and the carriage.

The guided version consists of a carriage fitted with 4 plain bearings, guided on 2 guide rods the design provides high rigidity, accurate guidance and a non rotating movement.

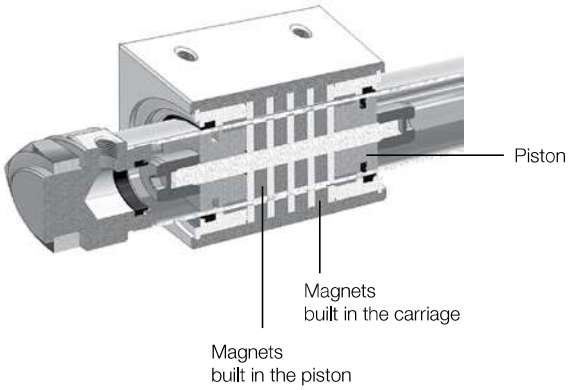
- Double acting with guide
- Magnetically coupled without mechanical connection
- Mechanical protection in case of occasional overload due to magnetic uncoupling
- Piston chamber and Slide are pressure tight
- Pressure tight and leak free system
- With adjustable pneumatic end cushioning on both sides
- Carriage is free to rotate 360° around the cylinder axis
- Air connection at one end (option)
- Position sensing:
  Al-profile rail for magnetic switches (option).
  Magnetic switches available as reed switches or as electronic sensors (option).
- Various mounting arrangements

P1Z Series - Basic Version
Ø 16-40 mm

The P1Z is a rodless pneumatic cylinder. The piston and the carriage are equipped with ring magnets. The motion is transmitted via the magnetic force locking between the piston and the carriage.

Features:

- Double acting
- Magnetically coupled without mechanical connection
- Mechanical protection in case of occasional overload due to magnetic uncoupling
- Piston chamber and carriage are pressure tight
- Pressure tight and leak free system
- Dirt and dust cannot enter
- With adjustable pneumatic end cushioning on both sides
- Carriage is free to rotate 360° around the cylinder axis
- Various mounting arrangements



Mounting and Technical Data
Basic Version

- The loads can be fitted onto the carriage by 4 tapped holes.
- The cylinder is mounted at the end caps with hexagonal nuts, flange or foot mountings.

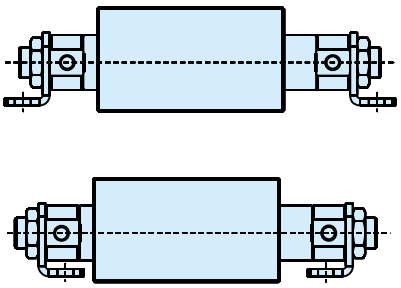
Materials

Cylinder barrel	Stainless steel
Carriage	Al, anodised
End cap	Al, anodised
Seals	NBR

With 2 hexagonal nuts to fix the cylinder (included in scope of delivery)

Flange mounting (pair) option

Foot mounting (pair) option



Technical Data

Piston diameter Ø [mm]	**16**	**20**	**25**	**32**	**40**
Max. stroke length [mm]	1000	1500	2000	2000	2000
Stroke tolerance [mm] up to 1000 mm	0/+1.5				
Stroke tolerance [mm] > 1000 mm	0/+2				
Temperature range [°C]	0 to 60				
Operating medium	Filtered compressed air, dry, lubricated or unlubricated * (other media on request)				
Air supply port size	M5	G1/8	G1/8	G1/8	G1/4
Max. magnetic coupling force [N]	157	236	383	703	942
Velocity range [m/s]	0.1 to 1.3				
Min. operating pressure [bar]	1.8				
Max. operating pressure [bar]	6.5	7			
Cushion length [mm]	9	15	15	12	19
Weight [kg]					
at 0 mm stroke	0.28	0.46	0.83	1.35	2.01
per 100 mm stroke	0.043	0.082	0.088	0.14	0.16

* if external lubrication is added, this must always be continued.

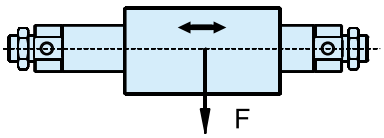
Loads, forces and moments Basic Version

If the operating conditions are outside of the permissible values, either the P1Z guided version or the P1Z in combination with an external guide should be used !

Forces [N]

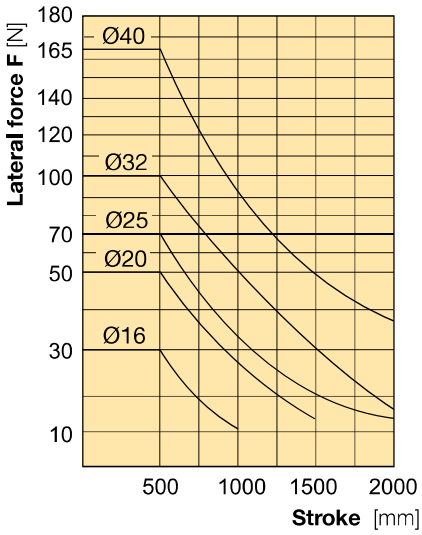
Piston [mm]	16	20	25	32	40
Theoretical force at 6 bar [N]	120	188	295	483	754
Max. magnetic coupling force [N]	157	236	383	703	942

Permissible lateral force, depending on the stroke length

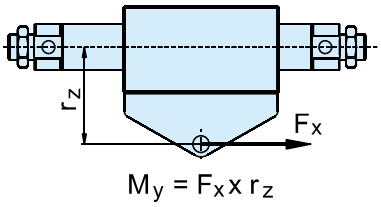


Ø [mm]	Permissible lateral force F [N]
16	30.0
20	50.0
25	70.0
32	100.0
40	165.0

The values are based on velocities v<= 0.4m/s



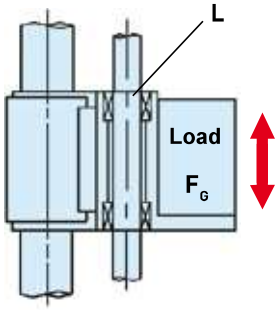
Permissible axial load, horizontal mounting

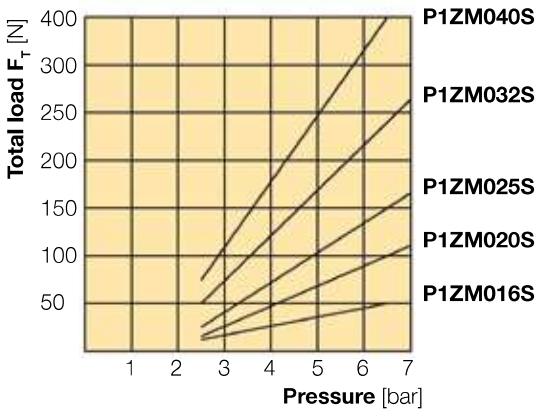


Ø [mm]	Max. Moment My [Nm]
16	1.2
20	2.5
25	3.8
32	8.5
40	13.0

Dynamic forces must not exceed the maximum magnetic coupling force!

Permissible axial load, vertical mounting

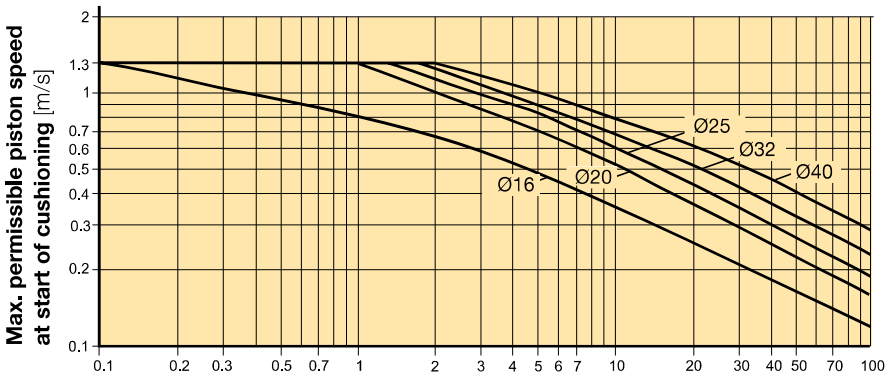




L = Weight of the external carriage
F_G = Load
F_T = Total load = Load F_G + Weight of the external carriage L + Force due to friction

Cushioning diagram

If the permitted limit values are exceeded, additional shock absorbers should be fitted in the area of the centre of gravity.



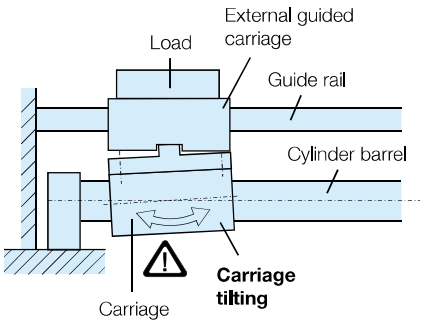
Horizontal mounting position, operating pressure p = 6 bar

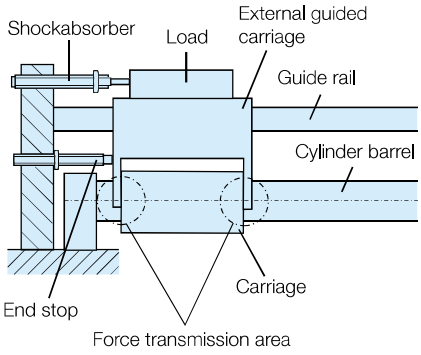
Installation tips for use with external guides

When stopping a load having a large inertia force at the stroke end, tilting of the carriage and damage to the bearings and cylinder barrel may occur (fig. left).

To prevent this, the force transmission should be realized at the middle axis of the cylinder.

The combination of the shock absorber with an end stop, can help to prevent the tilting of the carriage (fig. right).





Order Instructions - Basic Cylinder - Series P1Z

Basic cylinder (15 digits)															With option (18 digits)		
P	1	Z	M	0	1	6	S	A	N	0	8	5	0	W	F	M	N

Piston diameter	
016	Ø 16 mm
020	Ø 20 mm
025	Ø 25 mm
032	Ø 32 mm
040	Ø 40 mm

Options	
B	without
W	with

End of stroke cushioning	
A	Pneumatically adjustable (Ø 16, 20, 25, 32 and 40 mm)

Mountings	
N	without
F	Foot mounting
L	Flange mounting

Stroke length	
max. stroke [mm]	Piston Ø [mm]
1000	Ø 16
1500	Ø 20
2000	Ø 25
2000	Ø 32
2000	Ø 40

Air supply port type	
M	Metric thread (Ø 16 mm)
B	G-thread (Ø 20 - 40 mm)
(Other types on request)	

Order code examples:

- **P1ZM016SAN0100B** Ø 16 mm, stroke 100 mm, supplied with hexagonal nuts on each end cap.
- **P1ZM020SAN1000WFBN** Ø 20 mm, stroke 1000 mm, with foot mounting at both end caps.

For further technical information see catalogue P-A4P019GB

P1Z Series - Guided Version
Ø 16-40 mm

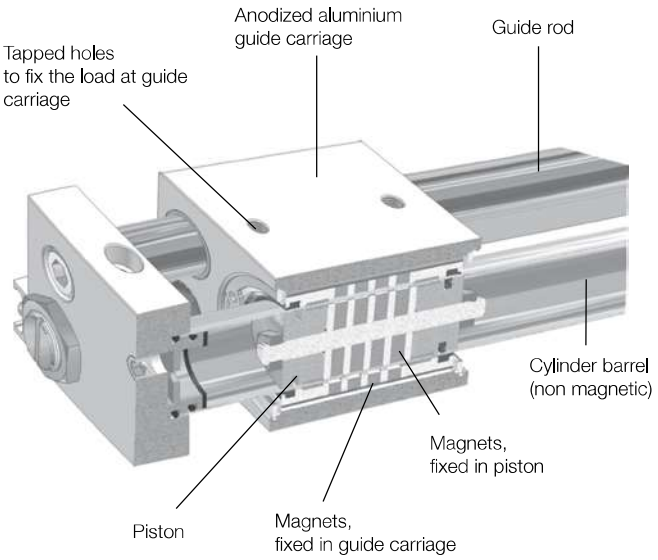
The P1Z is a rodless pneumatic cylinder with guide. The piston and the guide carriage are equipped with ring magnets.

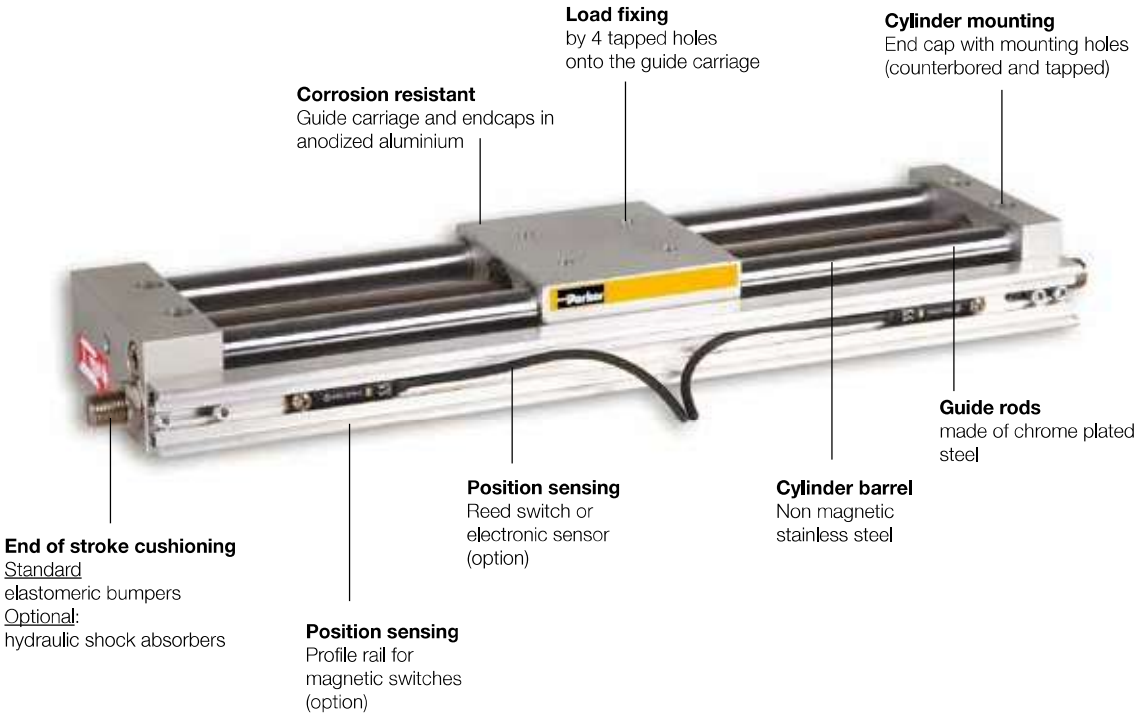
The motion is transmitted via the magnetic force between the piston and the guide carriage.

The guided version consists of a carriage fitted with 4 plain bearings, guided on 2 guide rods. The design provides high rigidity, accurate guidance and a non rotating movement.

Features:

- Double acting with guide
- Magnetically coupled without mechanical connection
- Mechanical protection in case of occasional overload due to magnetic uncoupling
- Piston chamber and Slide are pressure tight
- Pressure tight and leak free system
- Air connection at one end (option)
- End of stroke cushioning:
  with elastomeric bumpers (standard),
  with hydraulic shock absorbers (option)
- Position sensing:
  Al-profile rail for magnetic switches (option).
  Magnetic switches available as reed switches or as electronic sensors (option).





Guided Version
Ø 16 - 40 mm

Air connection

Guided version P1Z and
air connection on both sides
(standard)

Guided version P1Z and
air connection at one end
(option)

End of stroke cushioning

The end of stroke cushioning for light loads is provided by elastomeric bumpers (standard).

For medium and heavy loads hydraulic shock absorbers should be used (option).

Guided version P1Z and
elastomeric bumpers
(standard)

Guided version P1Z and
hydraulic shock absorbers
(option)

Position sensing

The guide carriage is fitted with a magnet for position sensing (standard)

An Al-profile rail for magnetic switches is available as an option. The rail is located on the same side as the elastomeric bumpers or the shock absorbers.

Reed switches or electronic sensors in several versions can be moved in the profile rail along the entire stroke length.

Guided version P1Z with magnet
in the guide carriage for position
sensing (standard).

Guided version P1Z and
Al-profile rail for magnetic
switches (option).

Guided version P1Z and
Al-profile rail with 2 magnetic
switches (option).

Mounting and Technical Data
Guided Version

The loads can be fixed onto the guide carriage by 4 tapped holes.

Cylinder mounting provided with 4 tapped and counterbored holes. Additional mountings are not required.

Materials

Cylinder barrel	Stainless steel
Carriage	Al, anodised
End cap	Al, anodised
Seals	NBR
Guide rods	Steel, chrome plated

Technical Data

Piston diameter Ø [mm]	**16**	**20**	**25**	**32**	**40**
Max. stroke length [mm]	750	1000	1500	1500	1500
Stroke tolerance [mm] up to 1000 mm	0/+1.5				
Stroke tolerance [mm] > 1000 mm	0/+2				
Temperature range [°C]	0 to 60				
Operating medium	Filtered compressed air, dry, lubricated or unlubricated * (other media on request)				
Air supply port size	M5	G1/8	G1/8	G1/8	G1/4
Max. magnetic coupling force [N]	157	236	383	703	942
Velocity range [m/s]	0.5 to 0.4				
Min. operating pressure [bar]	2.3	2			
Max. operating pressure [bar]	6.5	7			
Weight [kg]					
at 0 mm stroke	0.9	1.52	1.70	3.63	5.44
per 100 mm stroke	0.2	0.33	0.42	0.53	0.86

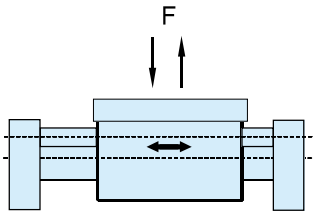
* if external lubrication is added, this must always be continued.

Loads, forces and moments Guided Version

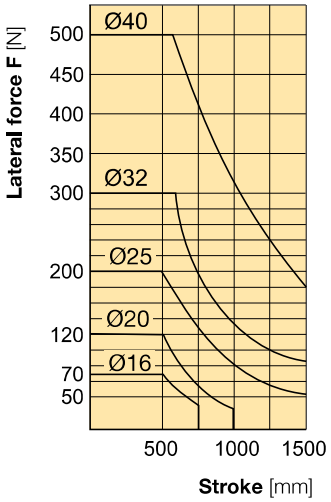
Forces [N]

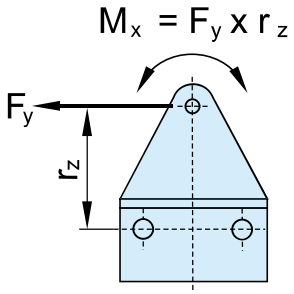
Piston [mm]	16	20	25	32	40
Theoretical force at 6 bar [N]	120	188	295	483	754
Max. magnetic coupling force [N]	157	236	383	703	942

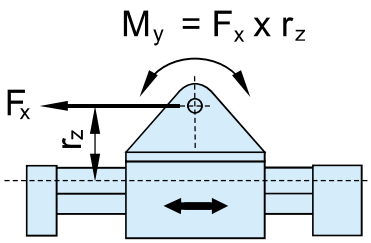
Permissible lateral force, depending on the stroke length

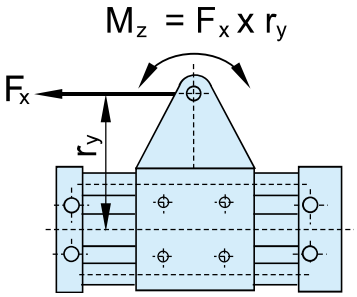


Ø [mm]	Max. Moment M_x [Nm]	Max. Moment M_y [Nm]	Max. Moment M_z [Nm]
16	0.5	2.4	2.4
20	1.0	5.0	5.0
25	1.8	9.5	9.5
32	3.0	15.0	15.0
40	4.5	24.0	24.0

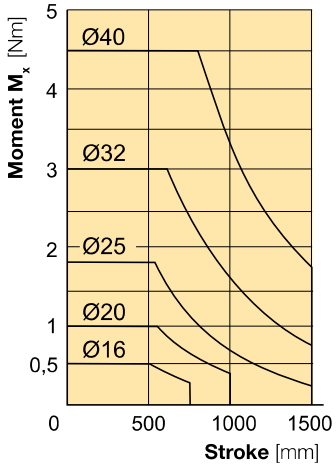








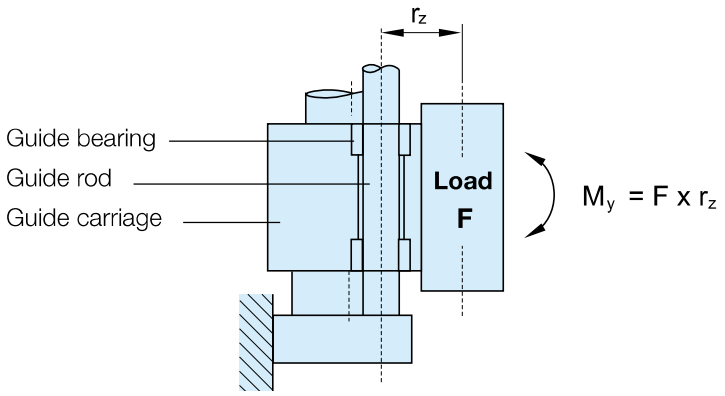
Permissible moment M_x depending on the stroke length



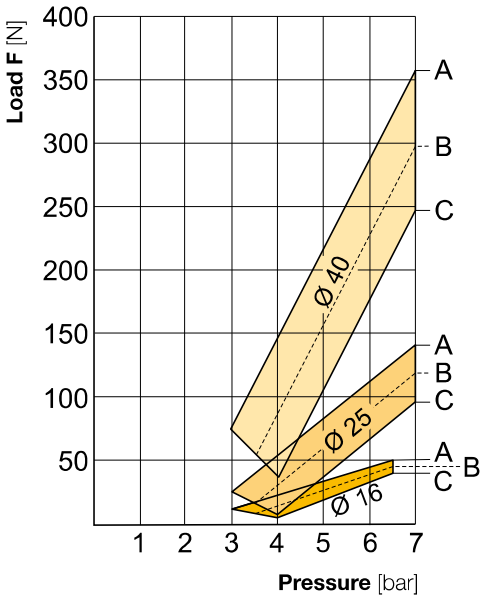
Dynamic forces must not exceed the maximum magnetic coupling force!

Permissible axial load, vertical mounting

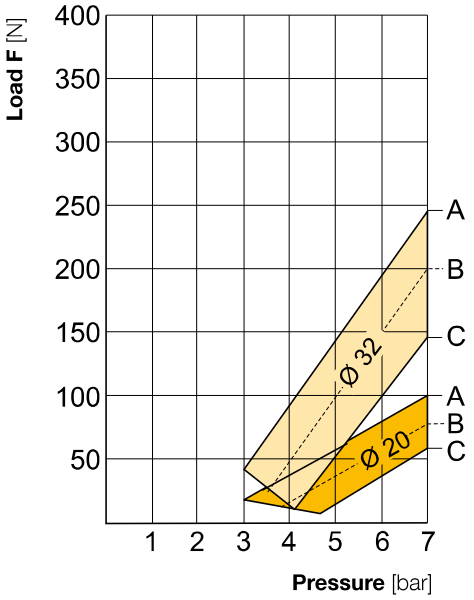
For vertical applications please refer to the values in the diagrams !



Cylinder Ø 16, 25, 40



Cylinder Ø 20, 32



Ø [mm]	Max. Load F [N]	B Max. Moment M_y / 2 [Nm]	C Max. Moment M_y [Nm]
16	50.0	1.2	2.4
20	100.0	2.5	5.0
25	140.0	4.75	9.5
32	240.0	7.5	15.0
40	360.0	12.0	24.0

A = curve at moment **M_y = 0**

B = curve at moment **M_y/2 =** see **column B**

C = curve at moment **$M_{y\,max.}$** = see **column C**

Order Instructions - Guided version

Basic cylinder (15 digits)															With option (18 digits)		
P	1	Z	M	0	1	6	T	C	N	0	8	5	0	W	N	M	L

Piston diameter	
016	Ø 16 mm
020	Ø 20 mm
025	Ø 25 mm
032	Ø 32 mm
040	Ø 40 mm

Options	
B	without
W	with

Version	
G	Guided version and air connection on both sides
T	Guided version and air connection at one end

Air supply port type	
M	Metric thread (Ø 16 mm)
B	G-thread (Ø 20 - 40 mm)
(Other types on request)	

End of stroke cushioning	
C	with elastomeric bumpers
H	with two hydraulic shock absorbers

Position sensing	
N	without
L	Al-profile without magnetic switch
S	2 Reed switches, 0.3 m with M8 connector, snap in
C	2 Reed switches, 3 m flying leads
K	2 Electronic sensors PNP 0.3 m with M8 connector, snap in
H	2 Electronic sensors PNP 3 m flying leads

Stroke length	
max. stroke [mm]	piston Ø [mm]
750	Ø 16
1000	Ø 20
1500	Ø 25
1500	Ø 32
1500	Ø 40

Order code examples:

- P1ZM016TCN0100B Cylinder guided version -Ø 16 mm, stroke 100 mm, with air connection at one end and elastomeric bumpers.

- P1ZM020GHN1000WNBL Cylinder guided version -Ø 20 mm, stroke 1000 mm, with air connection on both sides, with two hydraulic shock absorbers and profile rail for magnetic switches.

For further technical information see catalogue P-A4P019GB

Cylinder bore mm	Series		Stroke	Bore mm	Piston rod mm	Area cm²	Max theoretical force in N 1.0 bar	2.0 bar	3.0 bar	4.0 bar	5.0 bar	6.0 bar	7.0 bar	8.0 bar	9.0 bar	10.0 bar
10/4	**P1A**	Double acting	+	10	4	0.8	8	15	23	31	39	**46**	54	62	69	77
	P1S		-	10	4	0.7	6	13	19	26	32	**39**	45	52	58	65
12/5	**C05**	Double acting	+	12	5	1.1	11	22	33	44	55	**67**	78	89	100	111
			-	12	5	0.9	9	18	28	37	46	**55**	64	73	83	92
12/6	**P1A**	Double acting	+	12	6	1.1	11	22	33	44	55	**67**	78	89	100	111
	P1Q		-	12	6	0.8	8	17	25	33	42	**50**	58	67	75	83
	P1S															
16/6	**P1A**	Double acting	+	16	6	2.0	20	39	59	79	99	**118**	138	158	178	197
	P1S		-	16	6	1.7	17	34	51	68	85	**102**	119	136	153	170
16/8	**P1Q**	Double acting	+	16	8	2.0	20	39	59	79	99	**118**	138	158	178	197
			-	16	8	1.5	15	30	44	59	74	**89**	104	118	133	148
20/8	**P1A**	Double acting	+	20	8	3.1	31	62	92	123	154	**185**	216	247	277	308
	P1S		-	20	8	2.6	26	52	78	104	129	**155**	181	207	233	259
20/10	**C05**	Double acting	+	20	10	3.1	31	62	92	123	154	**185**	216	247	277	308
	P1Q		-	20	10	2.4	23	46	69	92	116	**139**	162	185	208	231
	P5T															
25/10	**P1A**	Double acting	+	25	10	4.9	48	96	144	193	241	**289**	337	385	433	482
	P1Q		-	25	10	4.1	40	81	121	162	202	**243**	283	324	364	405
	P1S															
	P5T															
32/12	**C05**	Double acting	+	32	12	8.0	79	158	237	316	394	**473**	552	631	710	789
	P1D		-	32	12	6.9	68	136	203	271	339	**407**	475	542	610	678
	P1P															
	P1Q															
	P1S															
	P1D-B		+	32	12	8.0	80	161	241	322	402	**483**	563	643	724	804
	P1D-C		-	32	12	6.9	69	138	207	276	346	**415**	484	553	622	691
	P1D-X															
32/16	**P5T**	Double acting	+	32	16	8.0	79	158	237	316	394	**473**	552	631	710	789
			-	32	16	6.0	59	118	178	237	296	**355**	414	473	533	592
40/16	**P1D**	Double acting	+	40	16	12,6	126	251	377	503	628	**754**	880	1005	1131	1257
	P1D-C		-	40	16	10,6	106	212	318	424	530	**636**	742	848	954	1060
40/12	**P1P**	Double acting	+	40	12	12.6	123	247	370	493	616	**740**	863	986	1109	1233
			-	40	12	11.4	112	224	337	449	561	**673**	785	897	1010	1122
40/16	**P1Q**	Double acting	+	40	16	12.6	123	247	370	493	616	**740**	863	986	1109	1233
			-	40	16	10.6	104	207	311	414	518	**621**	725	828	932	1036
	P1D-B		+	40	16	12,6	126	251	377	503	628	**754**	880	1005	1131	1257
	P1D-C		-	40	16	10,6	106	212	318	424	530	**636**	742	848	954	1060
	P1D-X															
50/16	**C05**	Double acting	+	50	16	19.6	193	385	578	770	963	**1156**	1348	1541	1734	1926
	P1P		-	50	16	17.6	173	346	519	692	865	**1037**	1210	1383	1556	1729
50/20	**P1D**	Double acting	+	50	20	19.6	193	385	578	770	963	**1156**	1348	1541	1734	1926
	P1Q		-	50	20	16.5	162	324	485	647	809	**971**	1133	1295	1456	1618
	P1S															
	P5T															
	P1D-B		+	50	20	19,6	196	393	589	785	982	**1178**	1374	1571	1767	1963
	P1D-C		-	50	20	16,5	165	330	495	660	825	**990**	1155	1319	1484	1649
	P1D-X															

Cylinder bore mm	Series	Stroke	Bore mm	Piston rod mm	Area cm²	Max theoretical force in N 1.0 bar	2.0 bar	3.0 bar	4.0 bar	5.0 bar	6.0 bar	7.0 bar	8.0 bar	9.0 bar	10.0 bar
63/16	**C05** Double acting	+	63	16	31.2	306	612	917	1223	1529	**1835**	2141	2446	2752	3058
	P1P	-	63	16	29.2	286	572	858	1144	1430	**1717**	2003	2289	2575	2861
63/20	**P1D** Double acting	+	63	20	31.2	306	612	917	1223	1529	**1835**	2141	2446	2752	3058
	P1Q	-	63	20	28.0	275	550	825	1100	1375	**1650**	1925	2200	2475	2750
	P1S														
	P5T														
	P1D-B	+	63	20	31,2	312	623	935	1247	1559	**1870**	2182	2494	2806	3117
	P1D-C	-	63	20	28,0	280	561	841	1121	1402	**1682**	1962	2242	2523	2803
	P1D-X														
80/25	**P1D** Double acting	+	80	25	50.3	493	986	1479	1972	2466	**2959**	3452	3945	4438	4931
	P1Q	-	80	25	45.4	445	890	1335	1780	2225	**2670**	3115	3560	4005	4450
	P1S														
	P5T														
	P1D-B	+	80	25	50,3	503	1005	1508	2011	2513	**3016**	3519	4021	4524	5027
	P1D-C	-	80	25	45,4	454	907	1361	1814	2268	**2721**	3175	3629	4082	4536
	P1D-X														
84/20	**C0D300** Double acting	+	84	20	55.4	544	1087	1631	2175	2718	**3262**	3806	4349	4893	5436
		-	84	20	52.3	513	1026	1539	2051	2564	**3077**	3590	4103	4616	5128
100/25	**P1D** Double acting	+	100	25	78.5	770	1541	2311	3082	3852	**4623**	5393	6164	6934	7705
	P1Q	-	100	25	73.6	722	1445	2167	2889	3612	**4334**	5056	5779	6501	7223
	P1S														
	P5T														
	P1D-B	+	100	25	78,5	785	1571	2356	3142	3927	**4712**	5498	6283	7069	7854
	P1D-C	-	100	25	73,6	736	1473	2209	2945	3682	**4418**	5154	5890	6627	7363
	P1D-X														
114/20	**C0D600** Double acting	+	114	20	101.9	1000	2000	3000	4000	5000	**6000**	7001	8001	9001	10001
		-	114	20	98.8	969	1939	2908	3877	4846	**5816**	6785	7754	8724	9693
125/32	**P1D** Double acting	+	125	32	122.7	1204	2408	3612	4815	6019	**7223**	8427	9631	10835	12039
	P1S	-	125	32	114.7	1125	2250	3375	4500	5625	**6750**	7875	9000	10125	11250
	P1D-B	+	125	32	122,7	1227	2454	3682	4909	6136	**7363**	8590	9817	11045	12272
	P1D-C	-	125	32	114,7	1147	2294	3440	4587	5734	**6881**	8027	9174	10321	11468
	P1D-X														
161/25	**C0D1200** Double acting	+	161	25	203.9	2000	4000	6000	8000	10000	**12000**	14000	16000	18000	20000
		-	161	25	199.0	1952	3904	5856	7808	9759	**11711**	13663	15615	17567	19519
160/40	**P1E** Double acting	+	160	40	201.1	1972	3945	5917	7890	9862	**11835**	13807	15779	17752	19724
	P1D-T	+	160	40	201,0	2010	4019	6029	8038	10048	**12058**	14067	16077	18086	20096
		-	160	40	188,4	1884	3768	5652	7536	9420	**11304**	13188	15072	16956	18840
200/40	**P1E** Double acting	+	200	40	314.2	3082	6164	9246	12328	15410	**18491**	21573	24655	27737	30819
200/50	**P1D-T**	+	200	50	314,2	3142	6283	9425	12566	15708	**18850**	21991	25133	28274	31416
		-	200	50	294,5	2945	5891	8836	11781	14727	**17672**	20617	23562	26508	29453
250/28	**C0P2500** Double acting	+	250	28	490.9	4815	9631	14446	19262	24077	**28893**	33708	38524	43339	48155
		-	250	28	484.7	4755	9510	14265	19020	23776	**28531**	33286	38041	42796	47551
250/50	**P1D-T**	+	250	50	490,9	4909	9818	14726	19635	24544	**29453**	34362	39270	44179	49088
		-	250	50	471,3	4713	9425	14138	18850	23563	**28275**	32988	37700	42413	47125
320/63	**P1D-T**	+	320	63	804,25	8043	16085	24128	32170	40213	**48255**	56298	64340	72383	80425
		-	320	63	773,1	7731	15462	23192	30923	38654	**46385**	54116	61846	69577	77308

+ = Outward stroke
- = Return stroke

Note!
Select a theoretical force 50-100% larger than the force required

The Force Guide is only for double acting cylinders, please look into the technical catalogue for every individual sigle acting cylinder to see the forces.

Note! For all single acting cylinders you have to reduce the force in the table with the spring force to get the theoretical force.
The spring force is not calculted to create any work, it is only to take the piston rod into the cylinder.