# 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.

- Compact: guide rail integrated in the cylinder profile
- Long lifetime and high service intervals
- High loads and moments
- Easy to re-adjust through simple design => easy to maintain
- Integrated scraper system and grease nipples
- High service life ≥ 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 the different classifications and details please see page 152**

**For full details and information on OSP-P range of rodless cylinders please see catalogue no.: P-A4P011**


## Special Versions


for use in Ex-Areas


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

Stainless steel version for special applications

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


High Temperature Version for temperatures up to +120°C

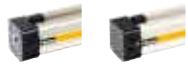

Low Temperature Version for temperatures up to -40°C


Slow Speed Version v = 0.005 – 0.2 m/s


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


Cylinders with extreme long strokes
Stroke length up to 41 m

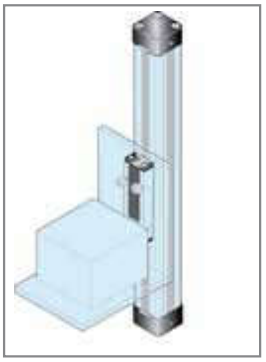
*** Information on electrical linear drives series OSP-E, please refer to catalogue P-A4P017E**

| | |
|---|---|
| Basic Linear Drive<br>Standard Version<br>• Series OSP-P<br>• Series OSP-E*<br>Belt drive<br>Belt drive with integrated Guides<br>Vertical belt drive with recirculating ball bearing guide<br>• Series OSP-E*<br>Screw drive (Ball Screw, Trapezoidal Screw) |  |
| Air Connection on the End-face or both at One End<br>• Series OSP-P |  |
| Long-Stroke Cylinders for strokes up to 41 m<br>• Series OSP-P |  |
| Clean Room Cylinder certified to DIN EN ISO 146644-1<br>• Series OSP-P<br>• Series OSP-E..SB |  |
| Products for ATEX Areas<br>• Series OSP-P<br>Rodless Cylinders |  |
| Products for ATEX Areas<br>• Series OSP-P<br>Rodless Cylinders<br>with Linear Guide SLIDELIN |  |
| Bi-parting Version<br>• Series OSP-P |  |
| Integrated 3/2 Way Valves<br>• Series OSP-P |  |
| Clevis Mounting<br>• Series OSP-P<br>• Series OSP-E Belt drive*<br>• Series OSP-E Screw drive* |  |
| End Cap Mounting<br>• Series OSP-P<br>• Series OSP-E Belt drive*<br>• Series OSP-E Screw drive* |  |
| Mid-Section Support<br>• Series OSP-P<br>• Series OSP-E Belt drive*<br>• Series OSP-E Screw drive* |  |
| Inversion Mounting<br>• Series OSP-P<br>• Series OSP-E Belt drive*<br>• Series OSP-E Screw drive* |  |

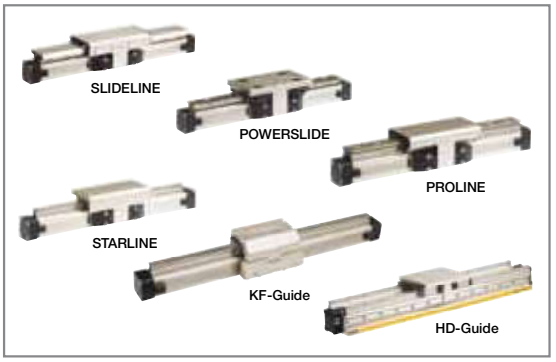
| | |
|---|---|
| Basic Guide<br>• Series OSPP-BG |  |
| Duplex Connection<br>• Series OSP-P |  |
| Multiplex Connection<br>• Series OSP-P |  |
| Linear Guides<br>– SLIDELINE<br>• Series OSP-P<br>• Series OSP-E Screw drive* |  |
| Linear Guides<br>– POWERSLIDE<br>• Series OSP-P<br>• Series OSP-E Belt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

# 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.

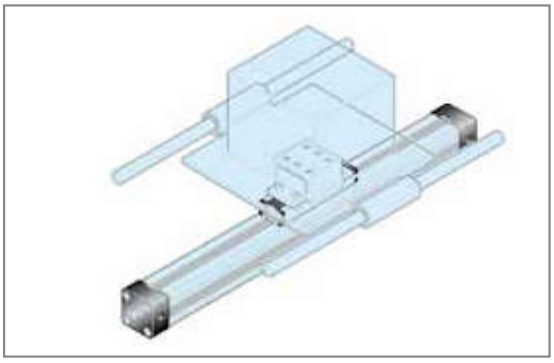


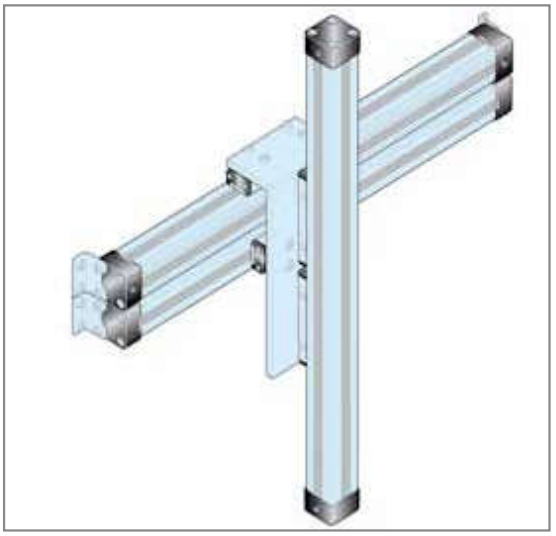

The mechanical design of the OSP-P allows synchronised movement of two cylinders.

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.

# 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

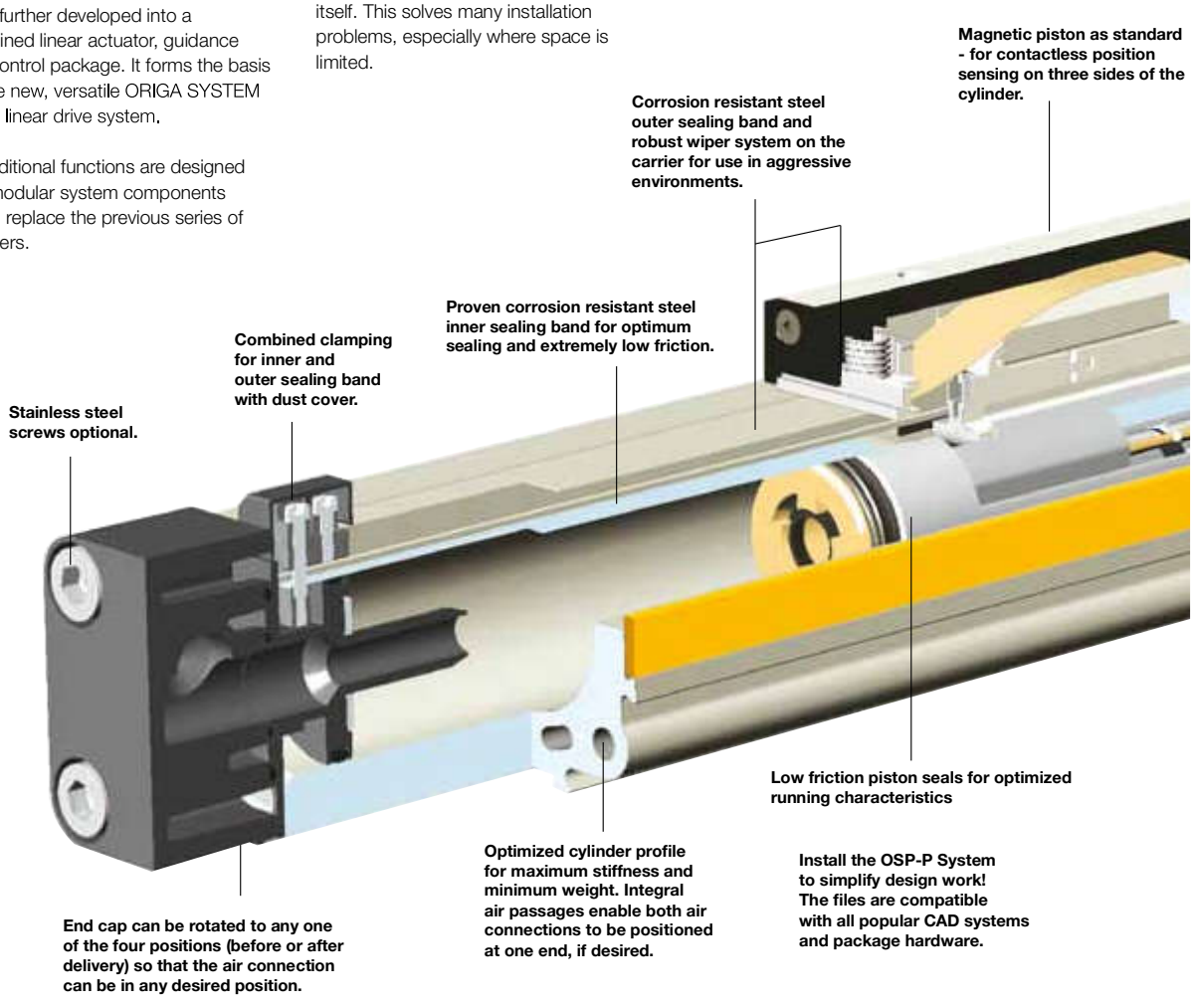
With this second generation linear drive Parker Origa offers design engineers complete flexibility. The well known ORIGA cylinder has been further developed into a combined linear actuator, guidance and control package. It forms the basis for the new, versatile ORIGA SYSTEM PLUS linear drive system.

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.

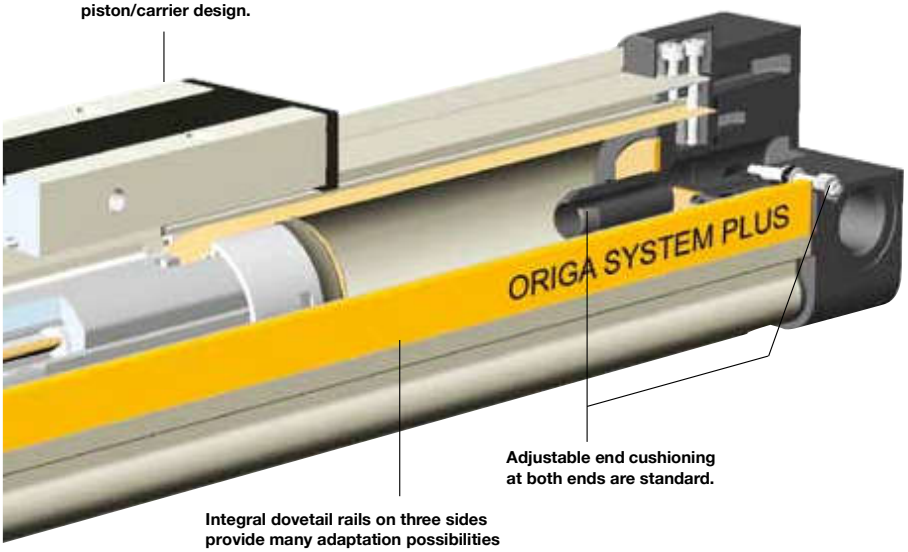
The modular system concept forms an ideal basis for additional customer-specific functions.



**Clean Room Version**
**certified to DIN EN ISO 14644-1**


**Rodless Cylinder**
**for synchronized bi-parting movements**

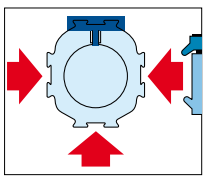
**New low profile piston/carrier design.**




**Adjustable end cushioning at both ends are standard.**

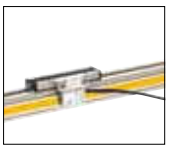
**Integral dovetail rails on three sides provide many adaptation possibilities (linear guides, magnetic switches, etc.).**

**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

See page 149

For extremely long strokes up to max. 41m


## BASIC CYLINDER OPTIONS

### CLEAN ROOM CYLINDERS

See page 150

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

See page 152

For use in Ex-Areas


### STAINLESS VERSION

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

### SLOW SPEED OPTIONS

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


### VITON® VERSION

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


### END-FACE AIR CONNECTION

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

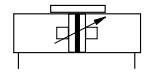
For end-mounting of the cylinder.

### INVERSION MOUNTING

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

# 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 149

### Special Versions:

- with special pneumatical cushioning system (on request)
- Clean room cylinders (See page 150)
- ATEX-Version (See page 152)
- 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

P10 P16 P25 P32 P40 P50 P63 P80

| 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<br>+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)<br>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<br>Option: stainless steel |
| Dust covers, wipers | Plastic |
| Max. operating pressure $p_{max}$ | 8 bar |

## Loads, Forces and Moments

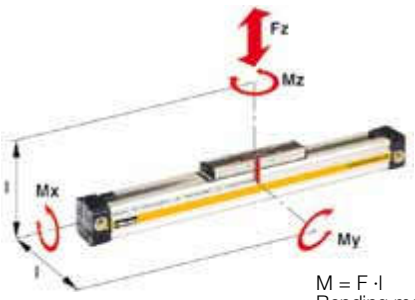
### Choice of cylinder is decided by:

- 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.



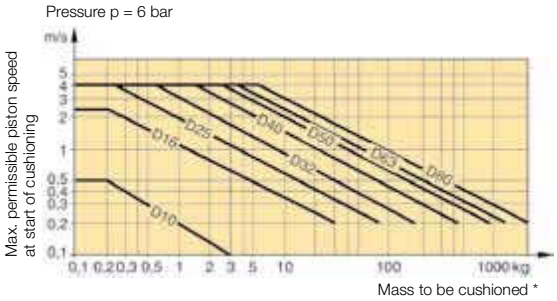

M = F ·l
Bending moments are calculated from the centre of the linear actuator

| Cylinder-Series [mm Ø] | 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.
If these maximum permissible values are exceeded, additional shock absorbers must be used.




### 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.

## Options - 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 |

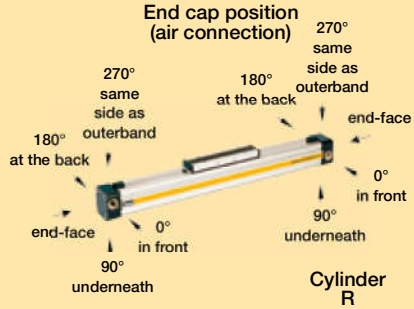
**Cover / Cable Channel**

| | |
|---|---|
| 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 L (left end side)

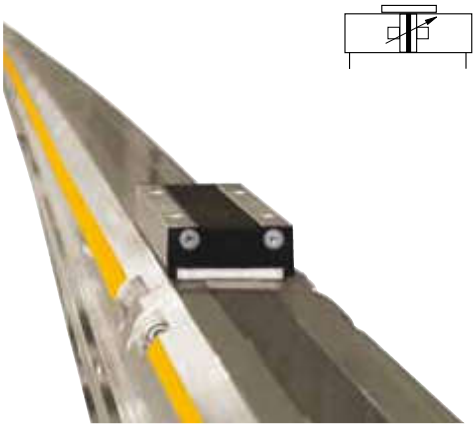
Cylinder R (right end side)

[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

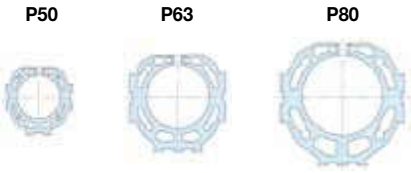


### Standard Versions:
- Double-acting with adjustable end cushioning
- With magnetic piston for position sensing

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

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

### Size Comparison



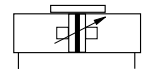

### Weight (mass) kg

| 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)<br>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<br>Option: stainless steel |
| Dust covers, wipers | Plastic |
| Max. operating pressure $p_{max}$ | 8 bar |
| Max. speed v | 2 m/s |

# 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 up to $v_{min}$ = 0.005 m/s
- Optional stroke length up to 1200 mm (longer strokes on request)
- Low maintenance
- Compact design with equal force and velocity in both directions
- Aluminium piston with bearing rings to support high direct and cantilever loads

### Size Comparison

| P16 | P25 | P32 |
|---|---|---|
|  |  |  |

### Weight (mass) kg

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

| 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<br>+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)<br>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 |

## Options - Clean Room Cylinders

| 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

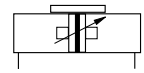
**add. Guide Carriage**
- 0 without

**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 P-A5P060 „EU Directive 94/9/EG (ATEX 95) for Pneumatic Components“.

## Rodless Cylinder Ø 10-80 mm

**Basic Cylinder - Series: OSP-P ... 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 Hz (double stroke/s) Basic cylinder 0.5 Hz (1 stroke/s) Cylinder with guide |
| Operating pressure range $p_{max}$ | Max. 8 bar |
| Max. speed $v_{max}$ | 3 m/s Basic cylinder, 2 m/s Cylinder with guide |
| Medium | Filtered, unlubricated compressed air – free from water and dirt to ISO 8573-1<br>Solids: Class 7 particle size < 40 µm for Gas<br>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

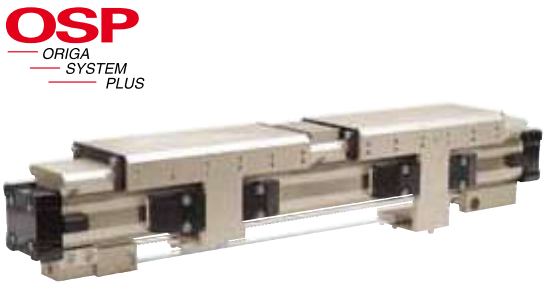
**Rodless cylinder: Ⓔx II 2GD c T4 T135°C -10°C≤Ta≤+60°C**

| Series | Size | Stroke range | Accessories |
|---|---|---|---|
| **OSP-P** | Ø 10 to 80 | 1– 6000 mm | Mountings programme |
| **SLIDELINE** | Ø 16 to 80 | 1– 5500 mm | Mountings programme |

# Synchronised Rodless Cylinder Ø 40 mm

## For synchronised bi-parting movements

## Type OSP-P40-SL-BP



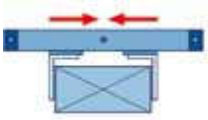
### Applications:

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

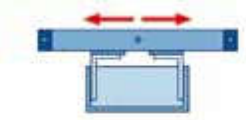
### Features:

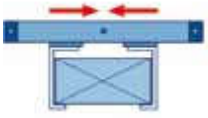
- Accurate bi-parting movement through toothed belt synchronization
- Optimum slow speed performance
- Increased action force
- Anodized aluminium guide rail with prism-form slideway arrangement
- Adjustable polymer slide units
- Combined sealing system with polymer and felt elements to remove dirt and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

### Applications:

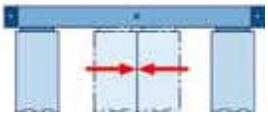


Gripping – outside





Gripping – underneath



Door opening and closing

| 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 more 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 146 (Standard)**
**See page 152 (ATEX-Version)**

**Plain Bearing Guide BASIC GUIDE**

Series BG 25 to 40 for Linear Drive Compact, robust plain bearing guide for medium loads

## Linear Guides

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

Piston diameters 16 – 80 mm

**See page 156 (Standard)**
**See page 152 (ATEX-Version)**

**POWERSLIDE**
The roller guide for heavy loads and hard application conditions

Piston diameters 16 – 50 mm

**See page 157**

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

**See page 158**

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

Piston diameters 16 – 50 mm

**See page 159**

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

Piston diameters 16 – 50 mm

**See page 160**

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

Piston diameters 25 – 50 mm

**See page 161**

# Plain Bearing Guide
# BASIC GUIDE
## Series BG 25 to 40 for Linear Drive
**Compact, robust plain bearing guide for medium loads**

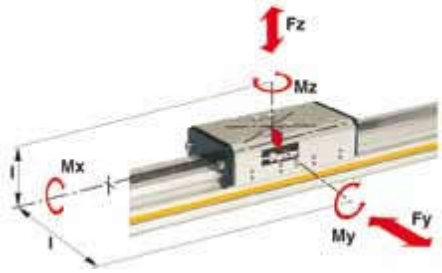
OSP ORIGA SYSTEM PLUS

### 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.

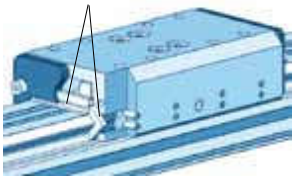
* **Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

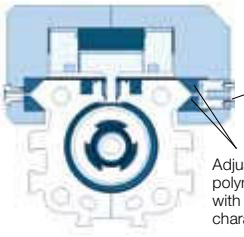
$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

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] Mx | My | Mz | Max. load [Nm] Fy, Fz | Mass of Basic guide [kg] at stroke | per 100mm stroke | Mass * of guide carriage [kg] | Cushion stone (mm) |
|---|---|---|---|---|---|---|---|---|
| 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 |

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

OSP ORIGA SYSTEM PLUS

### Features:

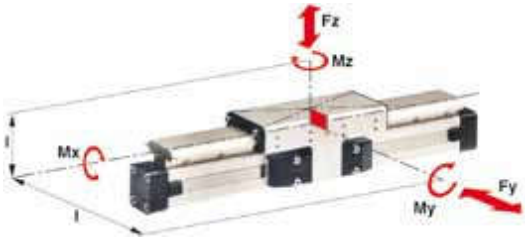
- ATEX-version (without brake) is also available See page 153
- Anodised aluminium guide rail with prism-shaped slideway arrangement
- Adjustable plastic slide elements – optional with integral brake
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideways
- Corrosion resistant version available on request
- Any length of stroke up to 5500 mm (longer strokes on request)

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

- Actuated by pressure
- Released by exhausting and spring return

For further technical data see also Linear Drives OSP-P 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.

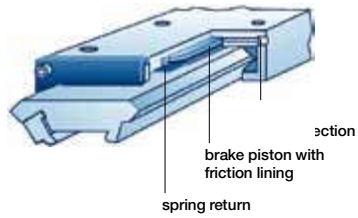
The load and moment figures apply to speeds v < 0.2 m/s.

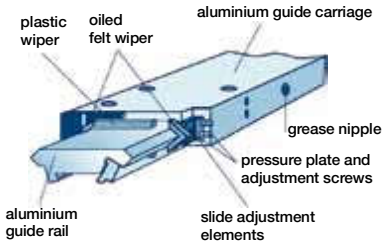
* **Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

[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

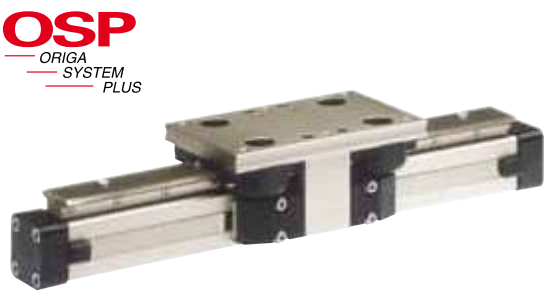
## Option - Integrated Brake




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

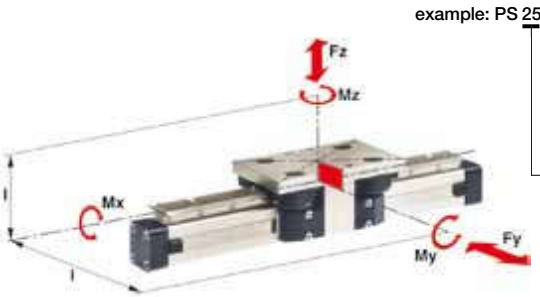
# Roller Guide
# POWERSLIDE
## Series PS 16 to 50 for Linear Drive

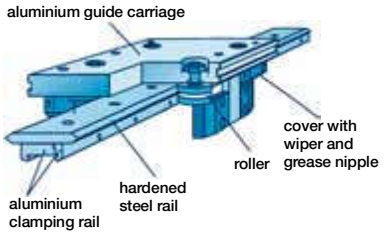



### Features:

- 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 information and technical data see data sheets for linear drives OSP-P 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. moments [Nm] | | | Max. load [N] | Mass of linear drive with guide [kg] | | Mass * of 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 | **20285FIL** |
| **PS 25/25** | OSP-P25 | 14 | 63 | 63 | 1400 | 1.5 | 0.4 | 0.7 | **20015FIL** |
| **PS 25/35** | OSP-P25 | 20 | 70 | 70 | 1400 | 1.7 | 0.4 | 0.8 | **20016FIL** |
| **PS 25/44** | OSP-P25 | 65 | 175 | 175 | 3000 | 2.6 | 0.5 | 1.5 | **20017FIL** |
| **PS 32/35** | OSP-P32 | 20 | 70 | 70 | 1400 | 2.6 | 0.6 | 0.8 | **20286FIL** |
| **PS 32/44** | OSP-P32 | 65 | 175 | 175 | 3000 | 3.4 | 0.7 | 1.5 | **20287FIL** |
| **PS 40/44** | OSP-P40 | 65 | 175 | 175 | 3000 | 4.6 | 1.1 | 1.5 | **20033FIL** |
| **PS 40/60** | OSP-P40 | 90 | 250 | 250 | 3000 | 6 | 1.3 | 2.2 | **20034FIL** |
| **PS 50/60** | OSP-P50 | 90 | 250 | 250 | 3000 | 7.6 | 1.4 | 2.3 | **20288FIL** |
| **PS 50/76** | OSP-P50 | 140 | 350 | 350 | 4000 | 11.5 | 1.8 | 4.9 | **20289FIL** |

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

# Aluminium Roller Guide PROLINE

## Series PL 16 to 50 for Linear Drive

### Features:

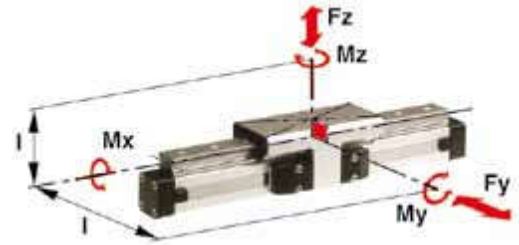
- High precision
- High velocities (10 m/s)
- Smooth operation - low noise
- Integated wiper system
- Long life lubrication
- Compact dimensions - compatible to Slideline plain bearing guide
- Any length of stroke up to 3750 mm

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:

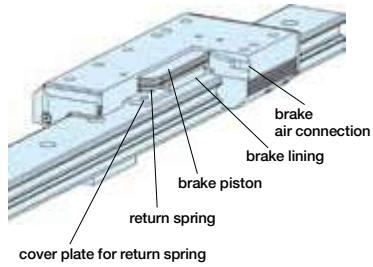
$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

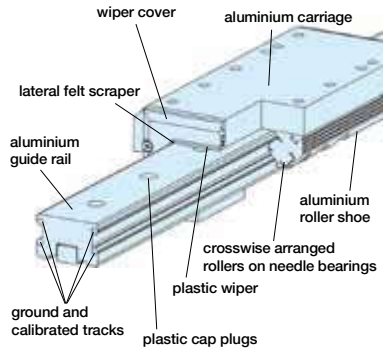
The sum of the loads should not exceed >1. With a load factor of less than 1, service life is 8000 km

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

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

## 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 * 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 | **20855FIL** | - |
| **PL 25** | OSP-P25 | 16 | 39 | 39 | 857 | on request | 1.65 | 0.40 | 0.75 | **20856FIL** | **20860FIL** |
| **PL 32** | OSP-P32 | 29 | 73 | 73 | 1171 | on request | 3.24 | 0.62 | 1.18 | **20857 FIL** | **20861FIL** |
| **PL 40** | OSP-P40 | 57 | 158 | 158 | 2074 | on request | 4.35 | 0.70 | 1.70 | **20858FIL** | **20862FIL** |
| **PL 50** | OSP-P50 | 111 | 249 | 249 | 3111 | on request | 7.03 | 0.95 | 2.50 | **20859FIL** | **20863FIL** |

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

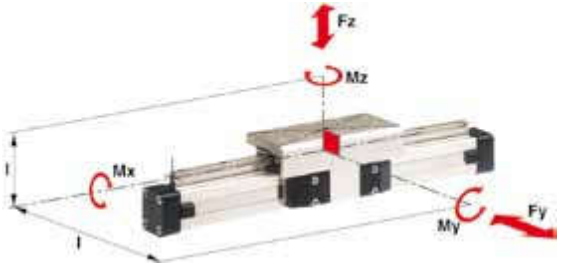
# Recirculating Ball Bearing Guide STARLINE

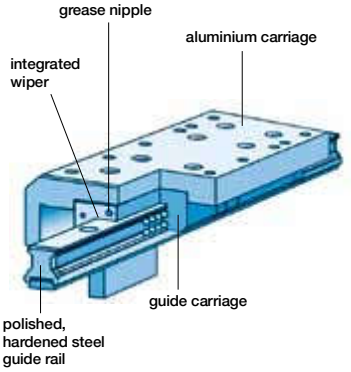
## Series STL 16 to 50 for Linear Drive


### 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.

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

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | | 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 | | |
| **STL16** | OSP-P16 | 15 | 30 | 30 | 1000 | 1000 | 0.598 | 0.210 | 0.268 | **21111FIL** |
| **STL25** | OSP-P25 | 50 | 110 | 110 | 3100 | 3100 | 1.733 | 0.369 | 0.835 | **21112FIL** |
| **STL32** | OSP-P32 | 62 | 160 | 160 | 3100 | 3100 | 2.934 | 0.526 | 1.181 | **21113FIL** |
| **STL40** | OSP-P40 | 150 | 400 | 400 | 4000 | 7500 | 4.452 | 0.701 | 1.901 | **21114FIL** |
| **STL50** | OSP-P50 | 210 | 580 | 580 | 4000 | 7500 | 7.361 | 0.936 | 2.880 | **21115FIL** |

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

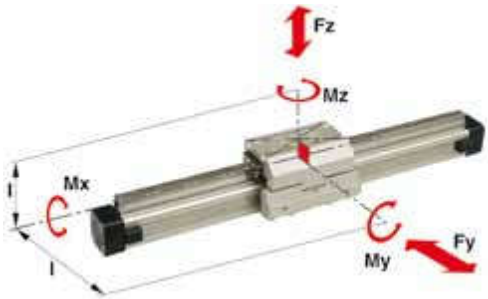
OSP ORIGA SYSTEM PLUS

### 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:

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

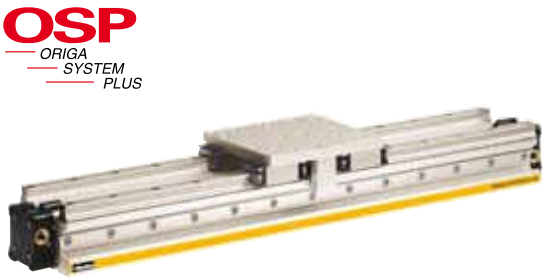
The sum of the loads should not exceed >1.

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

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

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | | Mass of linear drive with guide [kg] | | Mass * guide carriage [kg] | Groove stone | Order No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | with 0 mm stroke | increase per 100 mm stroke | | Thread size | Groove stone | Guide without cylinder |
| | | Mx | My | Mz | Fy | Fz | | | | | | |
| **KF 16** | OSP-P16 | 12 | 25 | 25 | 1000 | 1000 | 0.558 | 0.21 | 0.228 | - | - | **21101FIL** |
| **KF 25** | OSP-P25 | 35 | 90 | 90 | 3100 | 3100 | 1.522 | 0.369 | 0.607 | M5 | 13508FIL | **21102FIL** |
| **KF 32** | OSP-P32 | 44 | 133 | 133 | 3100 | 3100 | 2.673 | 0.526 | 0.896 | M5 | 13508FIL | **21103FIL** |
| **KF 40** | OSP-P40 | 119 | 346 | 346 | 4000 | 7100 | 4.167 | 0.701 | 1.531 | M6 | 13509FIL | **21104FIL** |
| **KF 50** | OSP-P50 | 170 | 480 | 480 | 4000 | 7500 | 7.328 | 0.936 | 2.760 | M8 | 13510FIL | **21105FIL** |

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



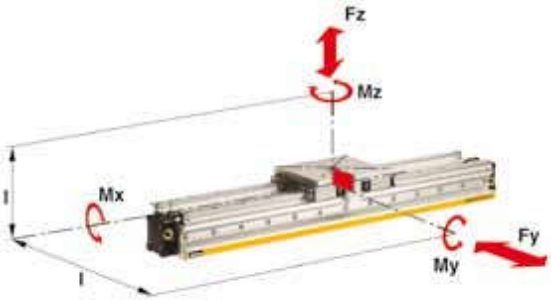

### Features:

- 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

### Options:

- With variable stop
- With intermediate stop module

### Loads, Forces and Moments




**Technical Data**

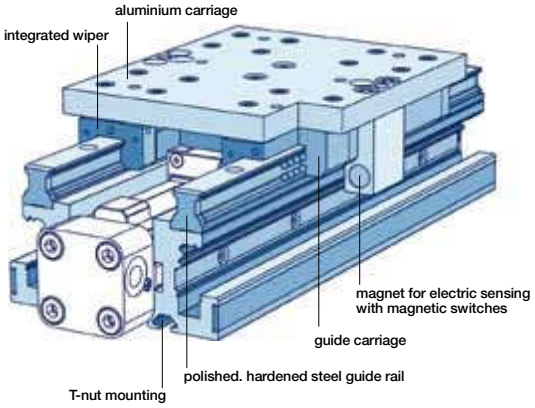
The table shows the maximal permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

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

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.

### Version with pneumatic linear drive series OSP-P



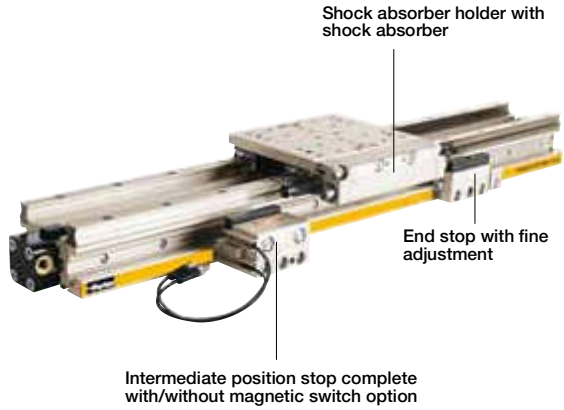

* **Please note:**
The mass of the carriage has to be added to the total moving mass when using the cushioning diagram

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | | Mass of the linear drive with guide [kg] | | Mass * guide carriage [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 | **21246FIL** |
| **HD 32** | OSP-P32 | 285 | 475 | 475 | 6000 | 6000 | 4.308 | 1.112 | 1.367 | **21247FIL** |
| **HD 40** | OSP-P40 | 800 | 1100 | 1100 | 15000 | 15000 | 7.901 | 1.748 | 2.712 | **21248FIL** |
| **HD 50** | OSP-P50 | 1100 | 1400 | 1400 | 18000 | 18000 | 11.648 | 2.180 | 3.551 | **21249FIL** |

## 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.



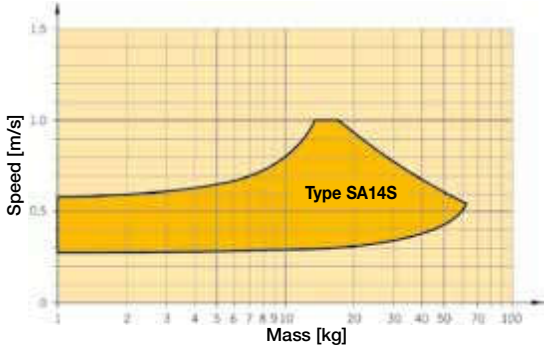

**ORIGA intermediate stop module ZSM:**

- 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)

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 164**

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

**See page 156**

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

**See page 158**

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

**See page 165**

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

**See page 166**

# Active Brake

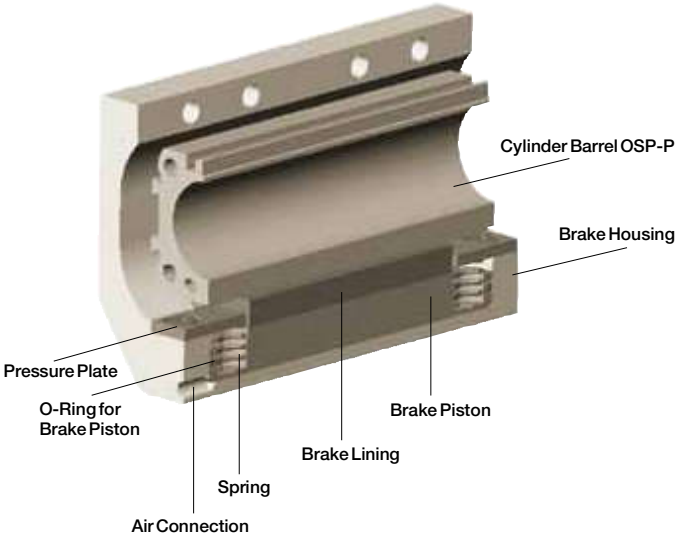
## Series AB 25 to 80 for Linear Drive

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 | increase per 100mm 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 data, please refer to the data sheets for linear drives OSP-P see catalogue P-A4P011GB.

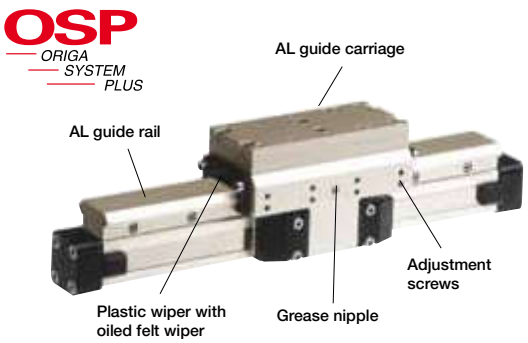
**Note:**
For combinations Active Brake AB + SFI-plus + Magnetic Switch contact our technical department please.

# Multi-Brake
# Passive Brake

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

### Features:

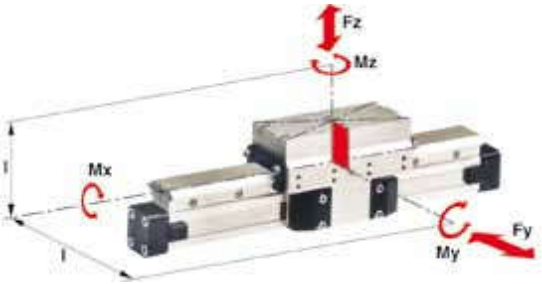
- Brake operated by spring actuation
- Brake release by pressurisation
- Anodised aluminium rail, with prism shaped slide elements
- Adjustable plastic slide elements
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Replenishable guide lubrication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




### 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



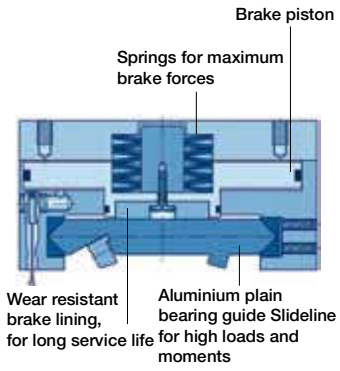

### Technical Data

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, please refer to the data sheets for linear drives OSP-P 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.

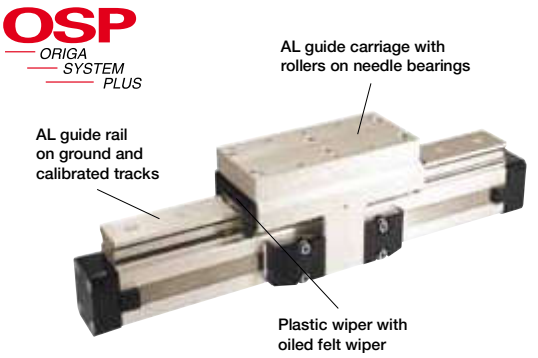
[1] Braking surface dry – oil on the braking surface will reduce the braking force

| 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* guide carriage [kg] | Order No. – MB-SL Guide with passive brake without cylinder* |
|---|---|---|---|---|---|---|---|---|---|---|
| **MB-SL 25** | OSP-P25 | 14 | 34 | 34 | 675 | 470 | 2.04 | 0.39 | 1.10 | **20796FIL** |
| **MB-SL 32** | OSP-P32 | 29 | 60 | 60 | 925 | 790 | 3.82 | 0.65 | 1.79 | **20797FIL** |
| **MB-SL 40** | OSP-P40 | 50 | 110 | 110 | 1500 | 1200 | 5.16 | 0.78 | 2.34 | **20798FIL** |
| **MB-SL 50** | OSP-P50 | 77 | 180 | 180 | 2000 | 1870 | 8.29 | 0.97 | 3.63 | **20799FIL** |
| **MB-SL 63** | OSP-P63 | 120 | 260 | 260 | 2500 | 2900 | 13.31 | 1.47 | 4.97 | **20800FIL** |
| **MB-SL 80** | OSP-P80 | 120 | 260 | 260 | 2500 | 2900 | 17.36 | 1.81 | 4.97 | **20846FIL** |

# Multi-Brake
# Passive Brake
## with Aluminium Roller Guide Proline PL
## Series MB-PL 25 to 50 for Linear Drive

### Features:

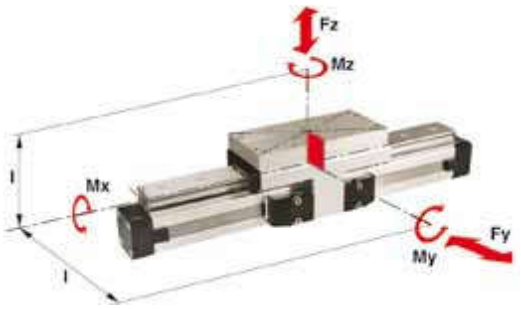
- Brake operated by spring actuation
- Brake release by pressurisation
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Blocking function in case of pressure loss
- Intermediate stops possible




### 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



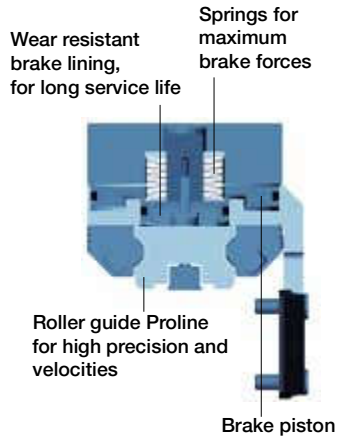

### Technical Data

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.

| 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* guide carriage [kg] | Order No. – MB-PL Guide with passive brake without cylinder* |
|---|---|---|---|---|---|---|---|---|---|---|
| **MB-PL25** | OSP-P25 | 16 | 39 | 39 | 857 | 315 | 2.14 | 0.40 | 1.24 | **20864FIL** |
| **MB-PL32** | OSP-P32 | 29 | 73 | 73 | 1171 | 490 | 4.08 | 0.62 | 2.02 | **20865FIL** |
| **MB-PL40** | OSP-P40 | 57 | 158 | 158 | 2074 | 715 | 5.46 | 0.70 | 2.82 | **20866FIL** |
| **MB-PL50** | OSP-P50 | 111 | 249 | 249 | 3111 | 1100 | 8.60 | 0.95 | 4.07 | **20867FIL** |

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

# 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 | See |
| Adaptor Profile | Catalogue |
| T-Slot Profile | P-A4P011GB |
| Connection Profile | |
| Duplex Connection | |
| Multiplex Connection | |
| Magnetic Switch, standard version | |
| Magnetic Switch for T-Nut mounting | |
| Magnetic Switch ATEX-version ⟨Ex⟩ | |
| Cable Cover | |

## 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 7 m/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)


# 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

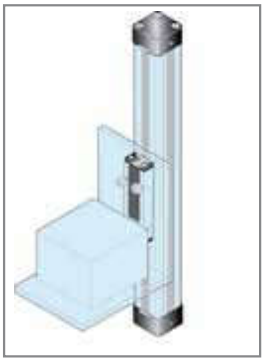
# Introduction – OSP Concept

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

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

# OSP-L Application examples

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



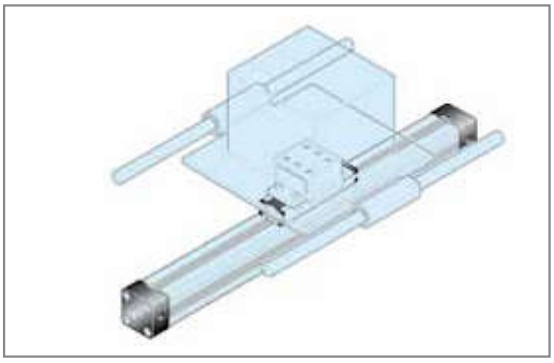
The high load capacity of the piston can cope with high bending moments without additional guides.

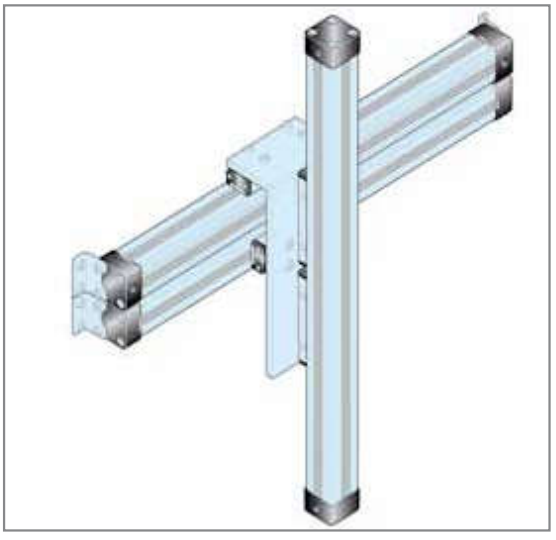

The mechanical design of the OSP-L allows synchronised movement of two cylinders.

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.

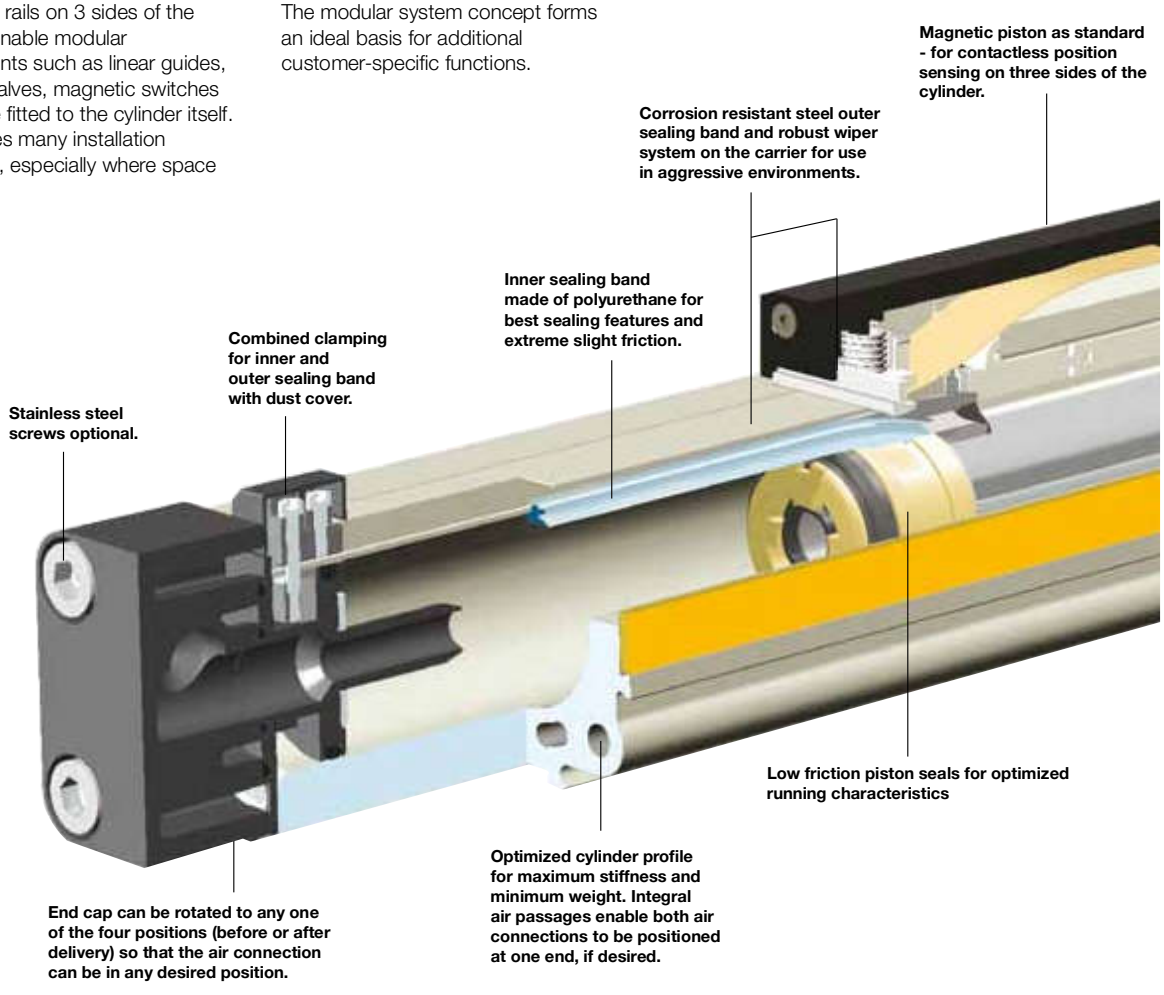
# Origa System Plus
# - Innovation from a proven design

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.



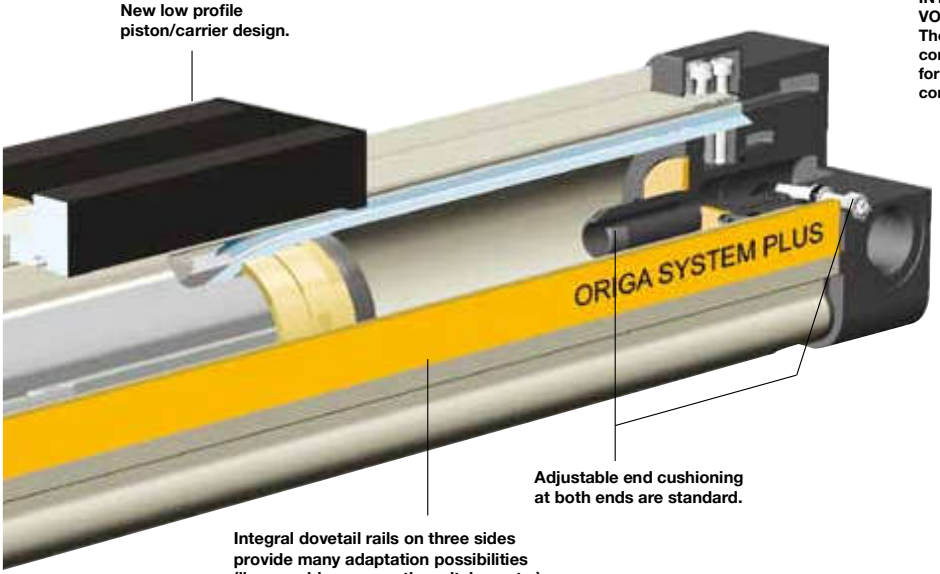
**SLIDELINE**
**Cost-effective plain bearing guide for medium loads.**

**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.**

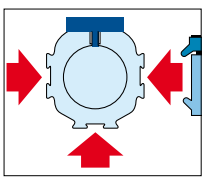
**New low profile piston/carrier design.**




**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.**



# 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

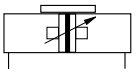
For supporting long cylinders or mounting the cylinder by its dovetail rails.

INVERSION MOUNTING

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

# 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

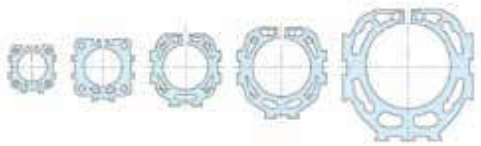
**Special Versions:**

- 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**

L25 L32 L40 L50 L63



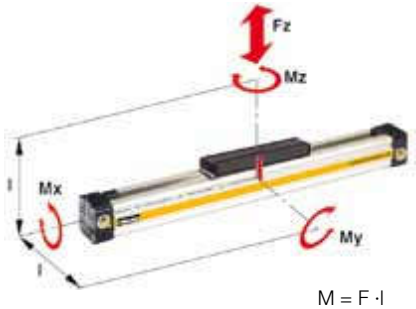
| Characteristics | Description |
|---|---|
| **General Features** | |
| Type | Rodless cylinder |
| Series | OSP-L |
| System | Double-acting, with cushioning, position sensing capability |
| Mounting | See drawings |
| Air Connection | Threaded |
| Ambient temperature range $T_{min}$ $T_{max}$ | -20 °C Other temperature ranges<br>+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)<br>Polyurethane (inner band) |
| Seals | Polyurethane, NBR |
| Screws | Galvanized steel<br>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

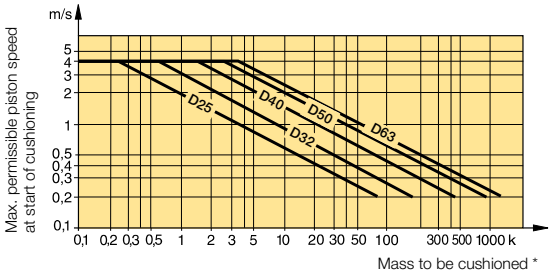
The adjacent table shows the maximum values for light, shock-free operation, which must not be exceeded even in dynamic operation. Load and moment data are based on speeds v ≤ 0.5 m/s.

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 [mm Ø] | 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 these maximum permissible values are exceeded, additional shock absorbers must be used.




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

### 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** | | |

# Integrated 3/2 Way Valves VOE

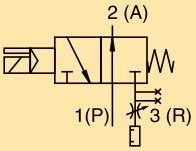
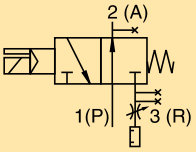
## Series OSP-L25, L32, L40 and L50

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

## Options

| 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+r0° = in front |
| 1 | l+r90° = underneath |
| 2 | l+r180° = at the back |
| 3 | l+r270° = same side as outerband |
| 4 | l90° = underneath; r0° = in front |
| 5 | l180° = at the back; r0° = in front |
| 6 | l270° = same side as outerband; r0° = in front |
| 7 | l0° = in front; r90° = underneath |
| 8 | l180° = at the back; r90° = underneath |
| 9 | l270° = same side as outerband; r90° = underneath |
| A | l0° = in front; r180° = at the back |
| B | l90° = underneath; r180° = at the back |
| C | l270° = same side as outerband; r180° = at the back |
| D | l0° = in front; r270° = same side as outerband |
| E | l90° = underneath; r270° = same side as outerband |
| F | l180° = at the back; r270° = same side as outerband |

**Guides/ Brakes/ Inversion**

| | |
|---|---|
| 0 | without |
| M | Inversion Ø16-80 |
| N | Duplex Ø25,32,40,50 |

**Cover / Cable Channel**

| | |
|---|---|
| 0 | standard |
| 1 | Cable channel |
| 2 | Cable channel two-sided |

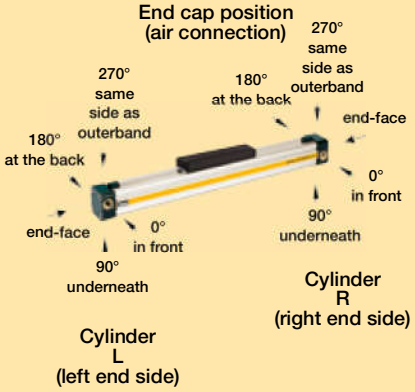
**Air Connection**

| | |
|---|---|
| 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= Ø25,32,40,50 |
| B | 3/2 Way valve VOE 230 V~ / 110 V= Ø25,32,40,50 |
| C | 3/2 Way valve VOE 48 V= Ø25,32,40,50 |
| E | 3/2 Way valve VOE 110 V~ Ø25,32,40,50 |

**Seals**

| | |
|---|---|
| 0 | standard |

End cap position (air connection)




Cylinder R (right end side)

Cylinder L (left end side)

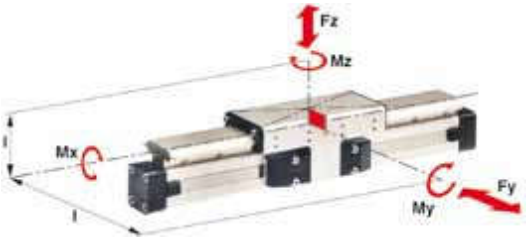
# Plain Bearing Guide
# SLIDELINE
## Series SL 25 to 63 for Linear Drive

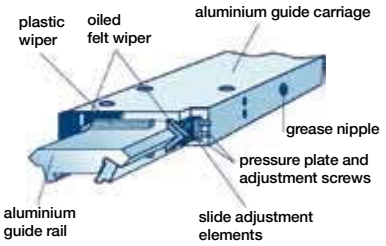



### Features:

- 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.

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | Maximum braking force at 6 bar [N] [1] with 0 mm stroke | Mass of linear drive with guide [kg] | | Mass* of guide carriage [kg] | Order No. SLIDELINE [2] Guide without cylinder |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mx | My | Mz | Fy, Fz | | | | increase per 100 mm stroke | | |
| **SL 25** | OSP-L25 | 14 | 34 | 34 | 675 | 325 | 1.55 | 0.39 | 0.61 | **20342FIL** |
| **SL 32** | OSP-L32 | 29 | 60 | 60 | 925 | 545 | 2.98 | 0.65 | 0.95 | **20196FIL** |
| **SL 40** | OSP-L40 | 50 | 110 | 110 | 1500 | 835 | 4.05 | 0.78 | 1.22 | **20343FIL** |
| **SL50** | OSP-L50 | in progress | | | | | | | | |
| **SL63** | OSP-L63 | | | | | | | | | |

[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

## Options

| 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 |

**Measuring system**

| | |
|---|---|
| 0 | without |

**Screws**

| | |
|---|---|
| 0 | standard |
| 1 | Stainless |

**Cushioning**

| | |
|---|---|
| 0 | standard |

**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 |
| 2 | Slideline SL Ø 25-63 |

**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 |

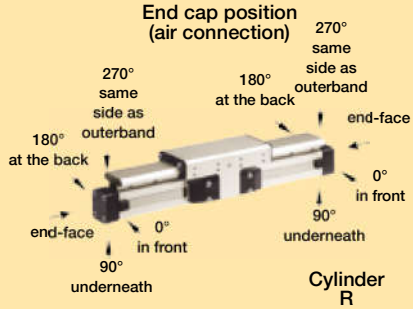
**Seals**

| | |
|---|---|
| 0 | standard |

**add. Guide Carriage**

| | |
|---|---|
| 0 | without |
| 2 | Guide Carriage Slideline SL Ø 25-63 |

End cap position (air connection)




Cylinder L (left end side)

Cylinder R (right end side)

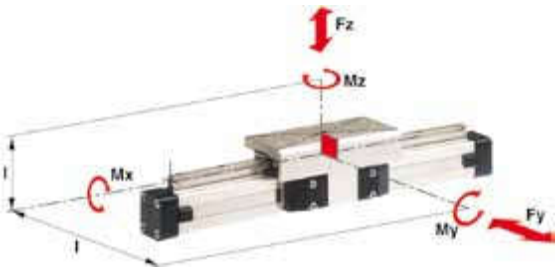
# Recirculating Ball Bearing Guide STARLINE

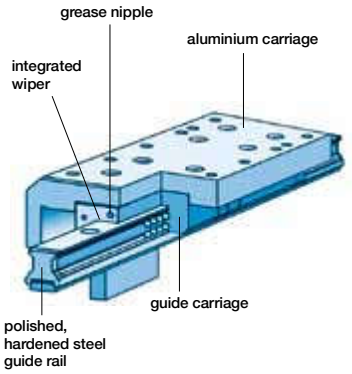
## Series STL 16 to 50 for Linear Drive


### 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.

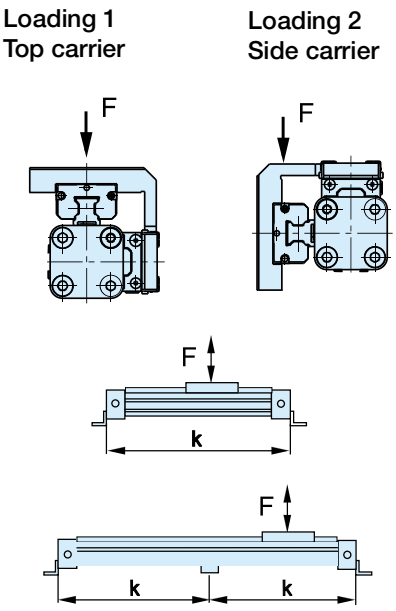
The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

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

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | | 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 | | |
| **STL25** | OSP-L25 | 50 | 110 | 110 | 3100 | 3100 | 1.733 | 0.369 | 0.835 | **21112FIL** |
| **STL32** | OSP-L32 | 62 | 160 | 160 | 3100 | 3100 | 2.934 | 0.526 | 1.181 | **21113FIL** |
| **STL40** | OSP-L40 | 150 | 400 | 400 | 4000 | 7500 | 4.452 | 0.701 | 1.901 | **21114FIL** |
| **STL50** | OSP-L50 | in progress | | | | | | | | |

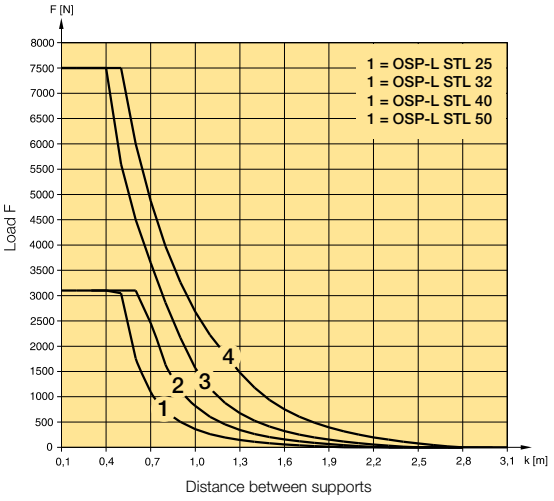
## Mid-Section Support

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.



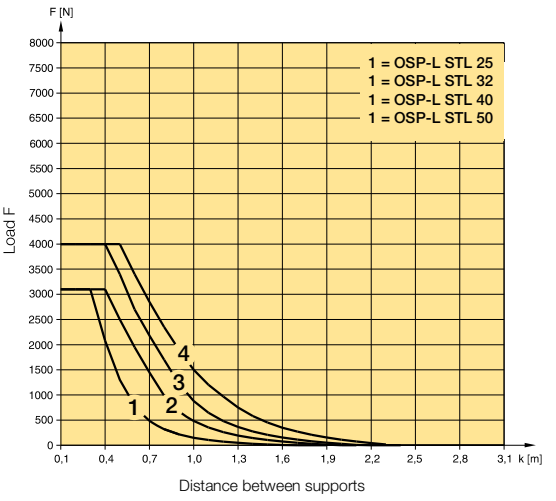

### Permissible Unsupported Length STL25 to STL50

Loading 1 – Top carrier




### Permissible Unsupported Length STL25 to STL50

Loading 2 – Side carrier

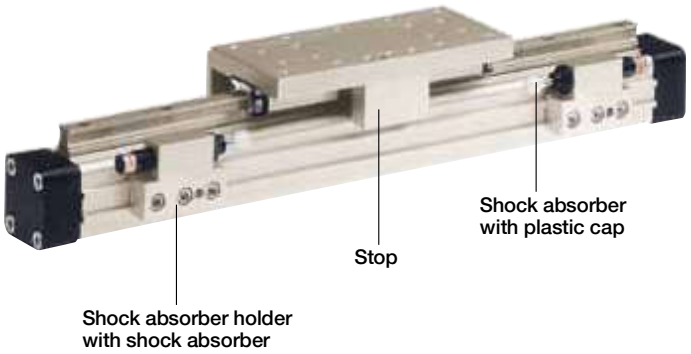



**Note:**
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

## 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.

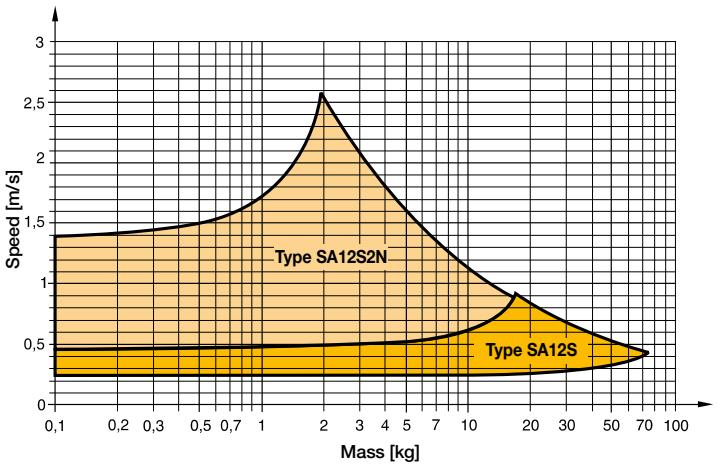
Depending on the application, two variable stops can be fitted if required.

## Shock Absorber Selection

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

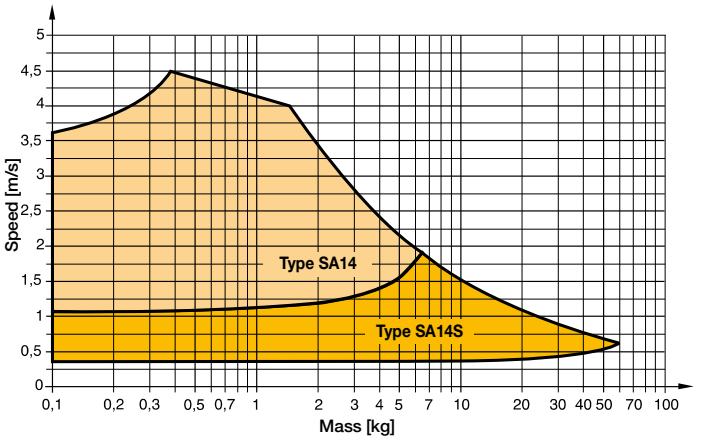
The mass of the carrier itself must be taken into account.

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



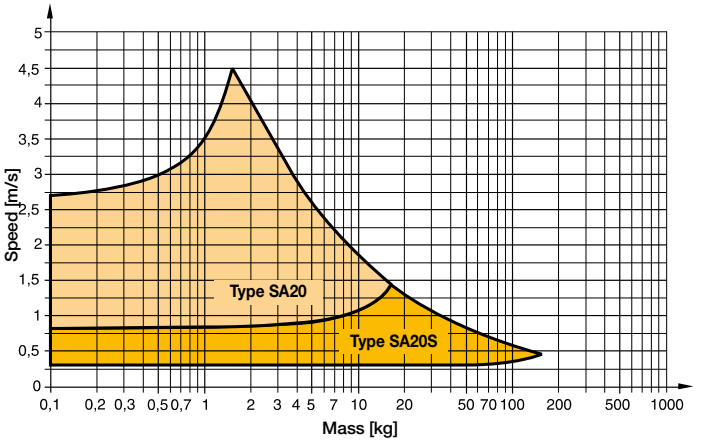

The values relate to an effective driving force of 250 N (6 bar)

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



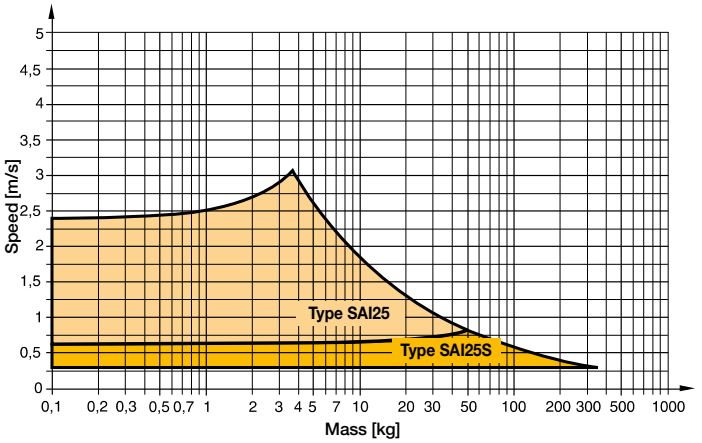

The values relate to an effective driving force of 420 N (6 bar)

## 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)

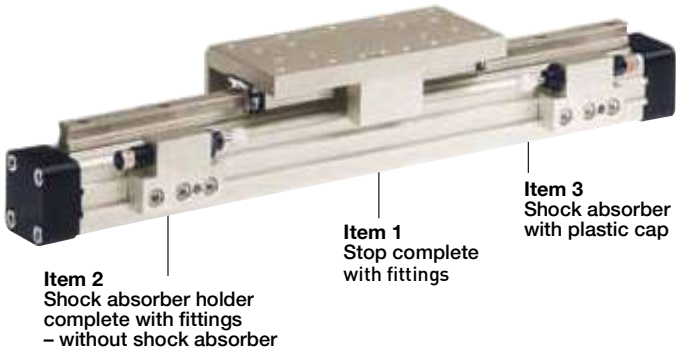
## Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-L-STL50




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

## Options - 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 |

**Screws**
| | |
|---|---|
| 0 | standard |

**Stroke**
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 |
| 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 |

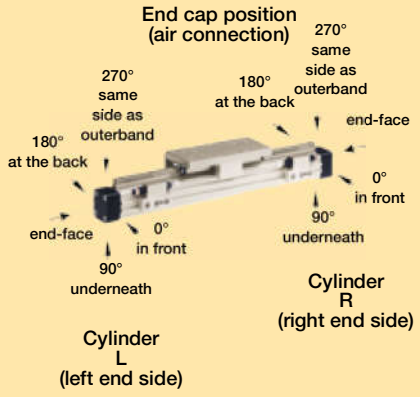
**Piston Mounting**
| | |
|---|---|
| 0 | without |

**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 |



# 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.

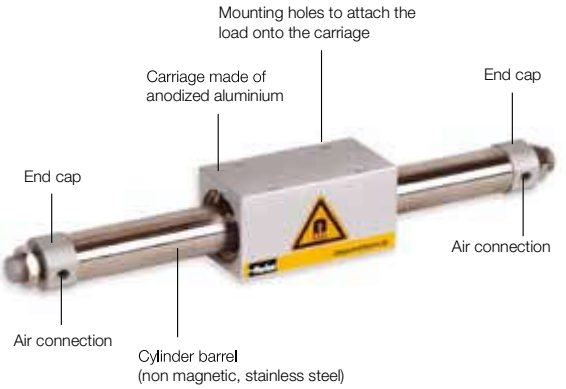
Motion is transmitted via the magnetic force locking between the piston and the carriage.

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

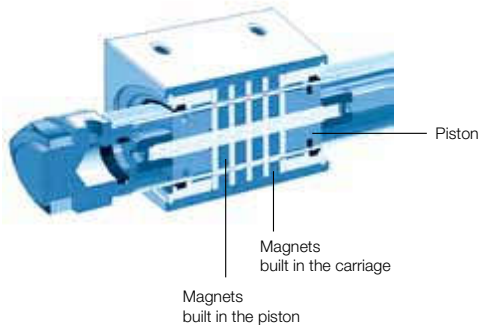
## P1Z Series - Basic Version
## Ø 16-40 mm

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.

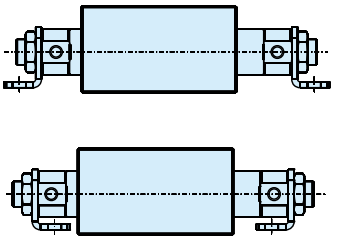
### Materials

| | |
|---|---|
| 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.

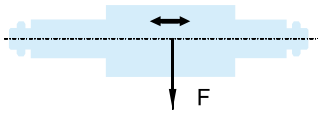
## Loads, forces and moments Basic Version

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]**

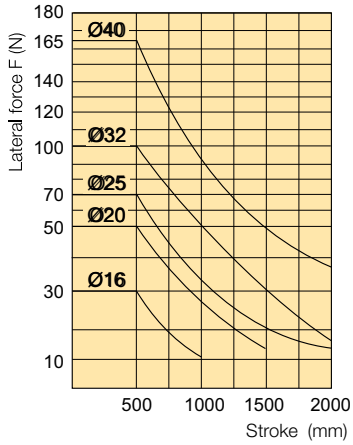
| Piston (mm) | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|
| Theoretical force at 6 bar [N] | 120 | 188 | 295 | 483 | 754 |
| Max. magnetic coupling force [N] | 157 | 236 | 383 | 703 | 942 |

### Permissible lateral force, depending on the stroke length

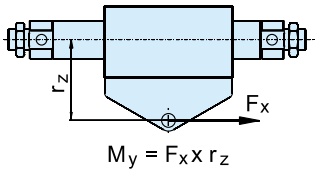



| Ø (mm) | Permissible lateral force F [N] |
|---|---|
| 16 | 30.0 |
| 20 | 50.0 |
| 25 | 70.0 |
| 32 | 100.0 |
| 40 | 165.0 |

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

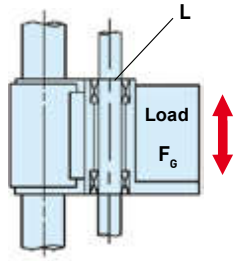


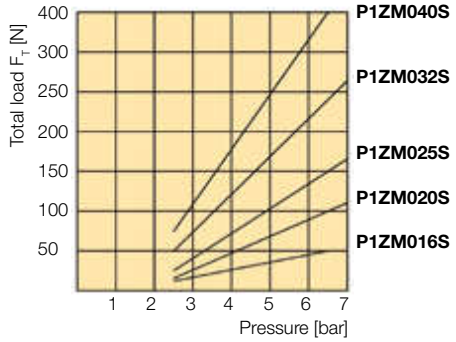

### Permissible axial load, horizontal mounting




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

### Permissible axial load, vertical mounting



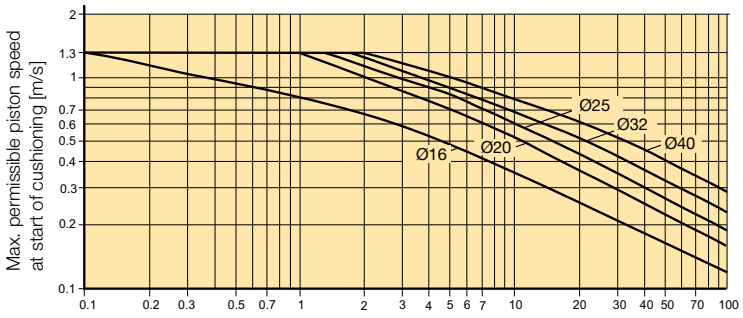




L = Weight of the external carriage
$F_G$ = Load
$F_T$ = Total load = Load $F_G$ + Weight of the external carriage L + Force due to friction

**Dynamic forces must not exceed the maximum magnetic coupling force!**

## Cushioning diagram

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



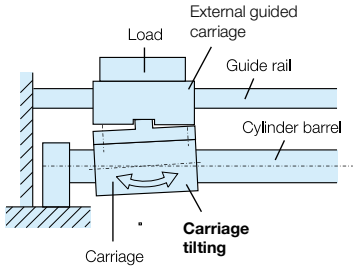

Horizontal mounting position, operating pressure p = 6 bar

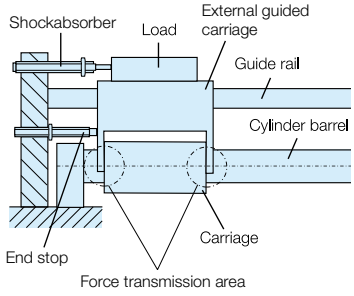
## Installation tips for use with external guides

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.

# P1Z Series - Guided Version
# Ø 16-40 mm

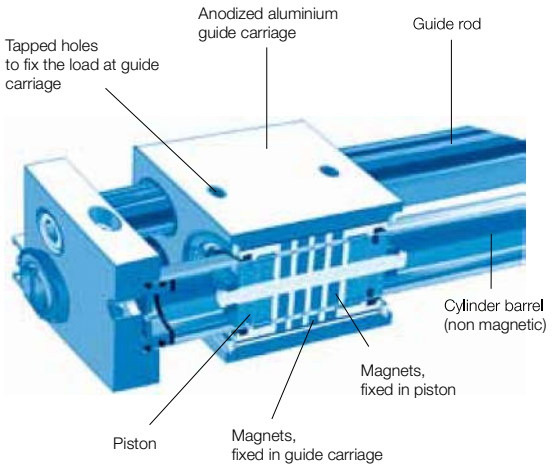
The P1Z is a rodless pneumatic cylinder with guide. The piston and the guide carriage are equipped with ring magnets.

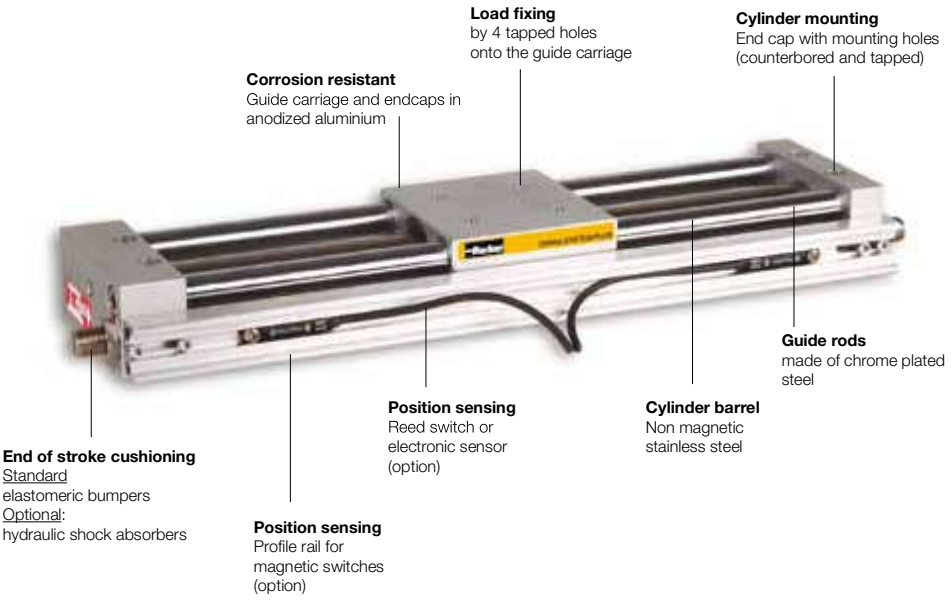
The motion is transmitted via the magnetic force between the piston and the guide carriage.

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).



## 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 |

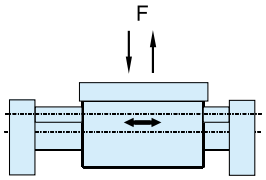
* if external lubrication is added, this must always be continued.

# Loads, forces and moments Guided Version

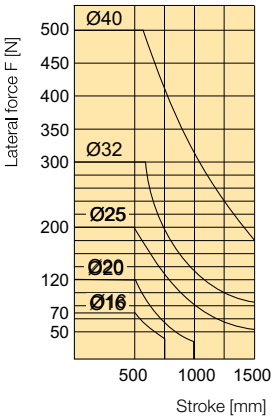
**Forces [N]**

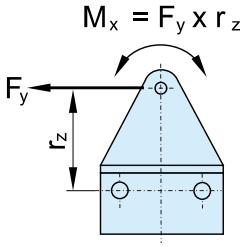
| Piston (mm) | 16 | 20 | 25 | 32 | 40 |
|---|---|---|---|---|---|
| Theoretical force at 6 bar [N] | 120 | 188 | 295 | 483 | 754 |
| Max. magnetic coupling force [N] | 157 | 236 | 383 | 703 | 942 |

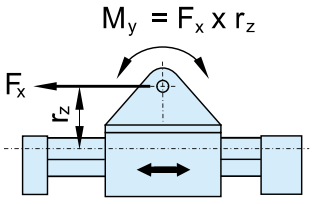
## Permissible lateral force, depending on the stroke length

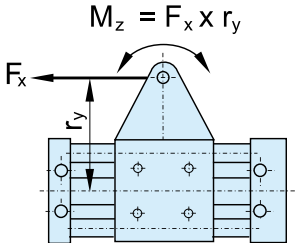



| Ø (mm) | Max. Moment $M_x$ [Nm] | Max. Moment $M_y$ [Nm] | Max. Moment $M_z$ [Nm] |
|---|---|---|---|
| 16 | 0.5 | 2.4 | 2.4 |
| 20 | 1.0 | 5.0 | 5.0 |
| 25 | 1.8 | 9.5 | 9.5 |
| 32 | 3.0 | 15.0 | 15.0 |
| 40 | 4.5 | 24.0 | 24.0 |

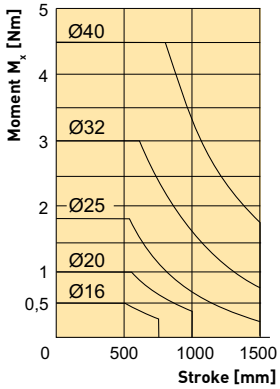


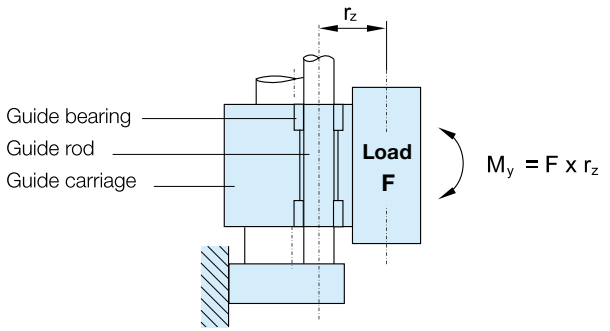

## Permissible moment $M_x$ depending on the stroke length



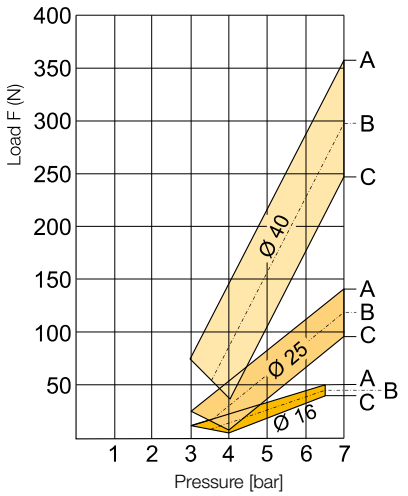

**Dynamic forces must not exceed the maximum magnetic coupling force!**

## Permissible axial load, vertical mounting

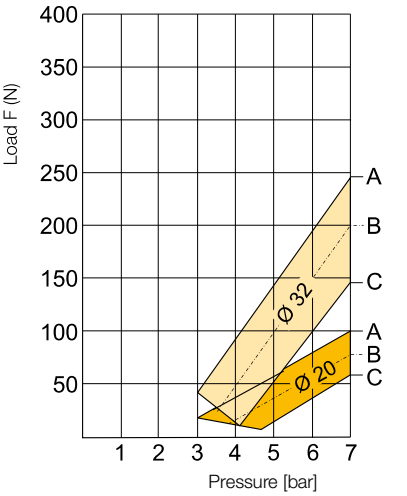
For vertical applications please refer to the values in the diagrams !




**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 $\mathbf{M_y = 0}$

**B** = curve at moment $\mathbf{M_y/2}$ = see **column B**

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