



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



OSP-P Series Pneumatic Rodless Cylinders and Guides

Catalog 0951



ENGINEERING YOUR SUCCESS.

Warning, Offer of Sale

 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Offer of Sale".

© Copyright 2008 Parker Hannifin Corporation. All Rights Reserved



Parker Hannifin Corporation
Parker-Origa
Glendale Heights, Illinois
www.parkeroriga.com

Conversion Table

OSP
 — ORIGA
 — SYSTEM
 — PLUS

ELECTRIC ACTUATOR

**2D & 3D
 CAD Drawings
 can be downloaded
 from website
www.parkeroriga.com**

ATTENTION!

Contact PARKER-ORIGA for sizing software
 and/or technical assistance

630-871-8300

Application Sheet on Page 104

All dimensions are in European-Standard.
 Please convert all in US-Standard.

Conversion Table

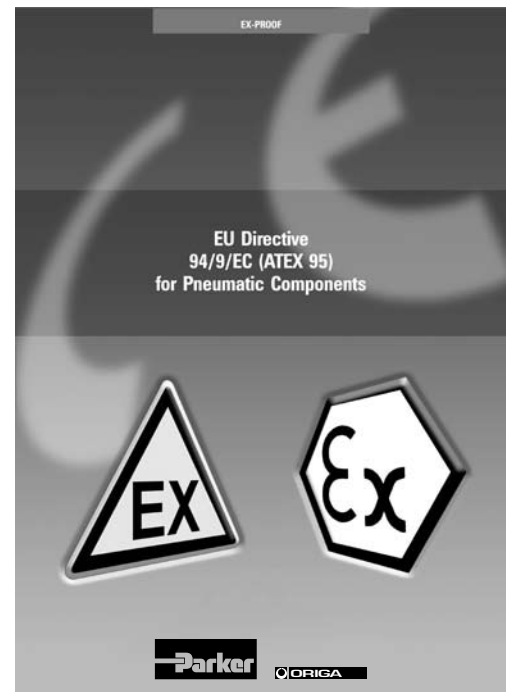
| Multiply | By | To Obtain |
|-----------------|-----------|------------------|
| Millimeters | .03937 | Inches |
| Newtons | .2248 | Lbs.(F) |
| Newton-Meters | 8.8512 | In-Lbs |
| Kilograms | 2.205 | Lbs. |
| Inches | 25.4 | Millimeters |
| Lbs.(F) | 4.448 | Newtons |
| In-Lbs | .113 | Newtons-Meters |
| Lbs. | .45359 | Kilograms |

Notes

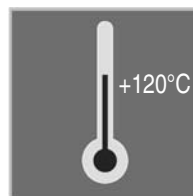
PARKER-ORIGA rodless pneumatic cylinders are the first rodless cylinders that have been approved for use in potentially explosive atmospheres in Equipment Group II, Category 2 GD

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

For the different classifications and details please see pages 27 and 92.



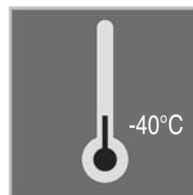
for use in Ex-Areas



High Temperature Version
for temperatures up to +120°C



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



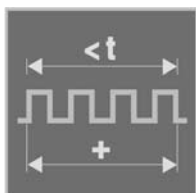
Low Temperature Version
for temperatures up to
-40°C



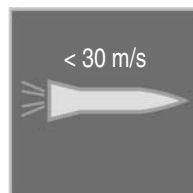
Stainless steel version
for special applications



Slow Speed Version
 $v = 0.005 - 0.2 \text{ m/s}$



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



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



| | Page | | Page |
|--|-------|---|---------|
| Introduction – OSP Concept | 1-3 | OSP – Accessories | |
| Modular Components Overview | 4-5 | Overview | 65-66 |
| Control Examples for OSP-P | 6 | Clevis Mounting | 67-68 |
| OSP-P Application examples | 7 | End Cap Mounting | 69 |
| | | Mid-Section Support | 70 |
| | | Mountings for Linear Drives fitted with OSP-Guides | 71-77 |
| Rodless Pneumatic Cylinders | | Inversion Mounting | 78 |
| Overview | 9-13 | Adaptor Profile | 79 |
| Series OSP-P \varnothing 10 to 80 mm | 15-21 | T-Slot Profile | 80 |
| Integrated Valves VOE | 22-23 | Connection Profile | 81 |
| Clean Room Cylinders | 24-26 | Duplex Connection | 82 |
| NEW ATEX-Version | 27 | Multiplex Connection | 83 |
| NEW ATEX-Version Plain Bearing | 27 | Magnetic Switches | |
| Guide SLIDELINE | | – Standard Version | 84-86 |
| NEW Bi-parting Version | 28-29 | NEW – T-Slot Version | 88-91 |
| | | NEW – ATEX-Version | 92-94 |
| | | Wireway Cover | 87 |
| | | – Metric Conversion Fittings | 87 |
| Linear Guides | | Displacement Measuring Systems | |
| Overview | 31-32 | ORIGA SENSOFLEX | |
| Plain Bearing Guide SLIDELINE | 33-34 | Overview | 95-96 |
| Roller Guide | 35-38 | NEW – Series SFI-plus | 97-99 |
| POWERSLIDE | | | |
| Aluminium-Roller Guide | 39-40 | Service Packs | 100 |
| PROLINE | | | |
| Aluminium-Roller Guide | 39-40 | Ordering Instructions | 102-103 |
| – PROLINE with ACTIVE-Brake | | | |
| Recirculating Ball Bearing Guide | 41-43 | Application Sheet | 104 |
| STARLINE | | | |
| – Variable Stop VS | 44-46 | Safety Guide | 105-106 |
| Heavy Duty Guide HD | 47-49 | | |
| NEW – Variable Stop VS | 50 | Offer of Sale | 107 |
| | | | |
| Brakes | | | |
| Overview | 51-52 | | |
| | | | |
| ACTIVE-Brakes | | | |
| ACTIVE-Brake | 53-56 | | |
| – for Standard Cylinder | | | |
| Plain Bearing Guide SLIDELINE | 33-34 | | |
| – with ACTIVE-Brake | | | |
| Aluminium-Roller Guide | 39-40 | | |
| PROLINE with ACTIVE-Brake | | | |
| | | | |
| PASSIVE-Brakes | | | |
| Multi-Brake: PASSIVE-Brake with | 57-60 | | |
| Plain Bearing Guide SLIDELINE | | | |
| Multi-Brake: PASSIVE-Brake with | 61-63 | | |
| Aluminium-Roller Guide PROLINE | | | |

The System Concept

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

ORIGA SYSTEM PLUS

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

The actuators at the core of the system all have a common aluminium extruded profile, with double dovetail mounting rails on three sides, these

are the principle building blocks of the system to which all modular options are directly attached.

**SYSTEM MODULARITY**

- **Pneumatic Drive**

– For all round versatility and convenience, combining ease of control and broad performance capability. Ideally suited for point-to point operations, reciprocating movements and simple traverse / transfer applications.

- **Electric Screw Drive**

– For high force capability and accurate path and position control.




















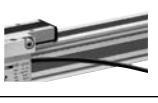



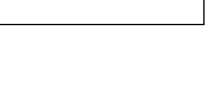
- **Electric Belt Drive**

– For high speed applications, accurate path and position control and longer strokes.

For additional information on electric linear actuators, please contact factory for OSP-E literature.



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

* For information on Electric Linear Drives, contact factory for literature

| | | | |
|---|---|--|---|
| <p>Basic Linear Drive Standard Version</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E* Belt drive Belt drive with integrated Guides Vertical belt drive with recirculating ball bearing guide ● Series OSP-E* Screw drive (Ball Screw, Trapezoidal Screw) |  | <p>Duplex Connection</p> <ul style="list-style-type: none"> ● Series OSP-P |  |
| <p>Air Connection on the End-face or both at One End</p> <ul style="list-style-type: none"> ● Series OSP-P |  | <p>Multiplex Connection</p> <ul style="list-style-type: none"> ● Series OSP-P |  |
| <p>Clean Room Cylinder certified to DIN EN ISO 146644-1</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E..SB |  | <p>Linear Guides – SLIDELINE</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Screw drive* |  |
| <p>Products for ATEX Areas</p> <ul style="list-style-type: none"> ● Series OSP-P Rodless Cylinders |  | <p>Linear Guides – POWERSLIDE</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  |
| <p>Products for ATEX Areas</p> <ul style="list-style-type: none"> ● Series OSP-P Rodless Cylinders with Linear Guide SLIDELINE |  | <p>Linear Guides – PROLINE</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  |
| <p>Bi-parting Version</p> <ul style="list-style-type: none"> ● Series OSP-P |  | <p>Linear Guides – STARLINE</p> <ul style="list-style-type: none"> ● Series OSP-P |  |
| <p>Integrated 3/2 Way Valves</p> <ul style="list-style-type: none"> ● Series OSP-P |  | <p>Heavy Duty Linear Guides – HD</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Screw drive* |  |
| <p>Clevis Mounting</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  | <p>Brakes</p> <ul style="list-style-type: none"> ● Active Brakes |  |
| <p>End Cap Mounting</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  | <ul style="list-style-type: none"> ● Passive Brakes |  |
| <p>Mid-Section Support</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  | <p>Magnetic Switches</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  |
| <p>Inversion Mounting</p> <ul style="list-style-type: none"> ● Series OSP-P ● Series OSP-E Belt drive* ● Series OSP-E Screw drive* |  | <p>SENSOFLEX-Measuring System</p> <ul style="list-style-type: none"> ● Series SFI-plus |  |
| <p>Variable Stop VS</p> <ul style="list-style-type: none"> ● Series OSP-P with Linear Guide STL, HD |  | <p>Variable Stop VS</p> <ul style="list-style-type: none"> ● Series OSP-P with Linear Guide STL, HD |  |

Modular Components Overview

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

| Linear Drives | OSP-P10 | OSP-P16 | OSP-P25 | OSP-P32 | OSP-P40 | OSP-P50 | OSP-P63 | OSP-P80 |
|---|---------|------------|------------|------------|------------|------------|------------|------------|
| HD Heavy Duty Guide | | | | | | | | |
| F [N] | × | × | 6000 | 6000 | 15000 | 18000 | × | × |
| Mx [Nm] | × | × | 260 | 285 | 800 | 1100 | × | × |
| My [Nm] | × | × | 320 | 475 | 1100 | 1400 | × | × |
| Mz [Nm] | × | × | 320 | 475 | 1100 | 1400 | × | × |
| – variable Stop | × | × | ○ | ○ | ○ | ○ | × | × |
| Active Brake | | | | | | | | |
| Braking force at 6 bar (brake surface dry) [N] | × | × | 350 | 590 | 900 | 1400 | 2170 | 4000 |
| Slideline SL / Proline PL with Brakes | | | | | | | | |
| Active Brake | | | | | | | | |
| SL Braking force at 6 bar (brake surface dry) [N] | × | × | 325 | 545 | 835 | 1200 | × | × |
| PL Braking force at 6 bar (brake surface dry) [N] | × | × | on request | on request | on request | on request | × | × |
| Passive Brake Multibrake | | | | | | | | |
| SL Braking force at 6 bar (brake surface dry) [N] | × | × | 470 | 790 | 1200 | 1870 | 2900 | 2900 |
| PL Braking force at 6 bar (brake surface dry) [N] | × | × | 315 | 490 | 715 | 1100 | – | – |
| Magnetic Switches | | | | | | | | |
| Standard Version | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| T-Nut Version | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ATEX Version for EX- Areas  | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Displacement measuring systems | | | | | | | | |
| SFI-plus incremental | × | × | ○ | ○ | ○ | ○ | ○ | ○ |
| Integrated valves 3/2 WV NO VOE | × | × | ○ | ○ | ○ | ○ | on request | on request |
| Mountings | | | | | | | | |
| End Cap Mounting / Mid-Section Support | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Inversion Mounting | × | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Shock absorber for intermediate positioning | × | × | on request | on request | on request | on request | × | × |
| Adaptor Profile / T-Nut Profile | × | ○ | ○ | ○ | ○ | ○ | × | × |
| Special Cylinders | | | | | | | | |
| Special Pneumactical Cushioning System | × | on request | on request | on request | on request | on request | × | × |
| Clean Room Cylinders to DIN EN ISO 14644-1 | × | ○ | ○ | ○ | × | × | × | × |
| ATEX Version for EX-Areas  | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Bi-parting Version | × | × | × | × | ○ | × | × | × |
| High-Speed up to 30 m/s | × | on request | on request | on request | × | × | × | × |

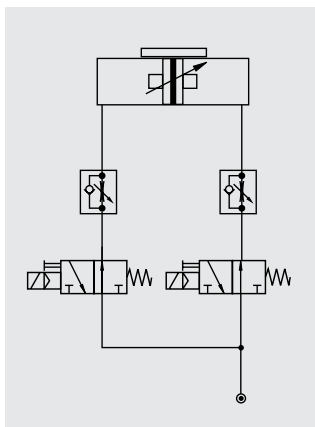
□ = Standard version

▲ = longer strokes on request

* = other temperature ranges on request

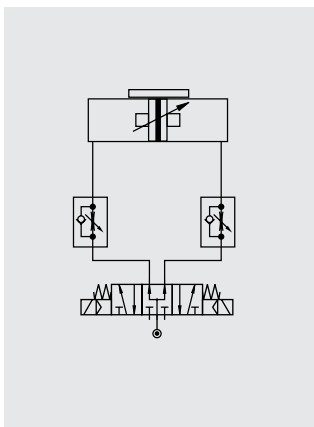
○ = Option

× = not applicable



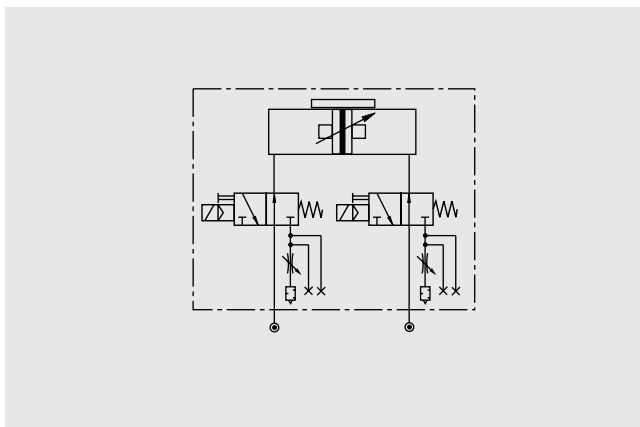
Circuit diagram for end of stroke application. Intermediate positioning is also possible.

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



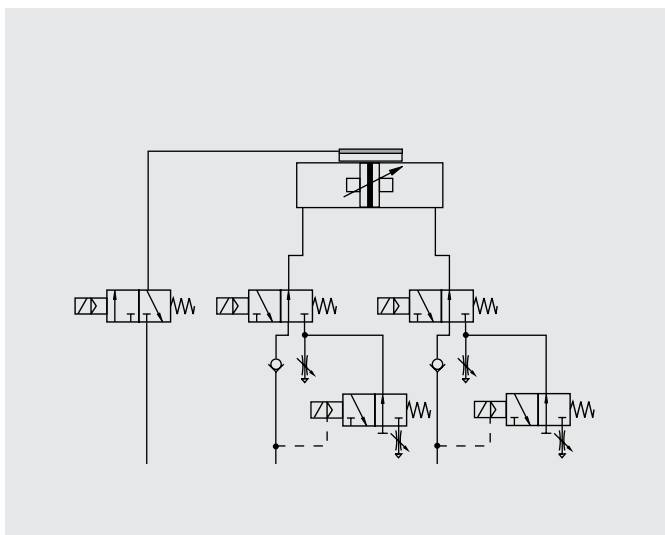
Circuit diagram for end of stroke application. Intermediate positioning is also possible.

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



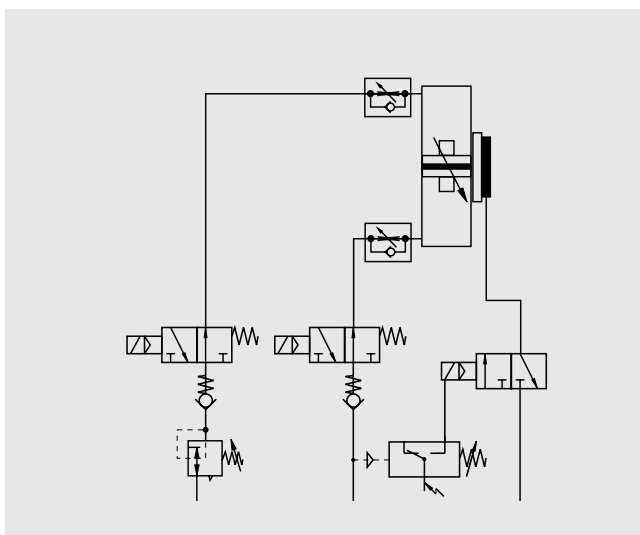
The optional integrated VOE Valves offer optimal control, and allow accurate

positioning of intermediate positions and the lowest possible speeds.



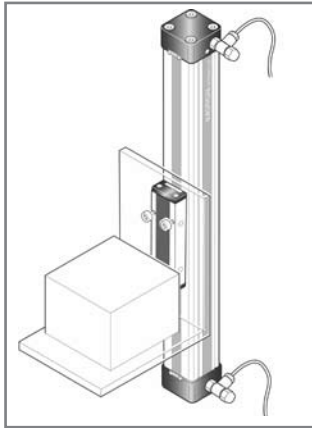
Fast/Slow speed cycle control with pneumatic brake for accurate positioning at high velocities. Additional 3/2-way valves with adjustable throttle valves at the exhaust of the standard directional control valves for two displacement

speeds in each direction of the piston's travel. The valve controlling the brake is activated after the slow speed cycle is activated

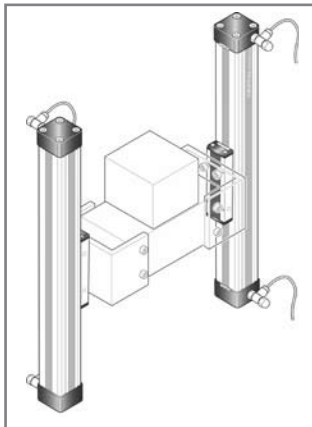
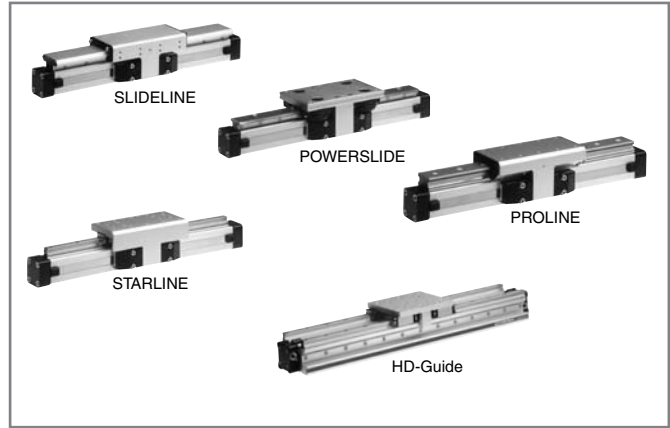


The combination of an OSP-cylinder with the passive MULTIBRAKE as shown here, allows accurate positioning and safety in case of loss of pneumatic air pressure.

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



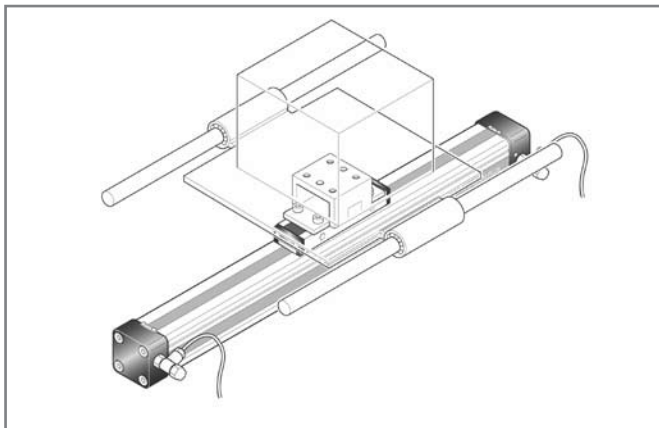
The high load capacity of the piston can cope with high bending moments without additional guides.



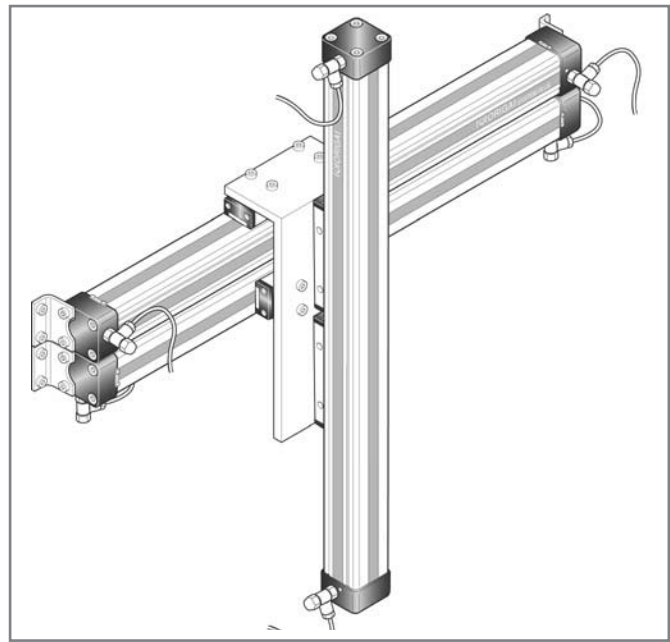
The mechanical design of the OSP-P allows synchronized movement of two cylinders.

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.



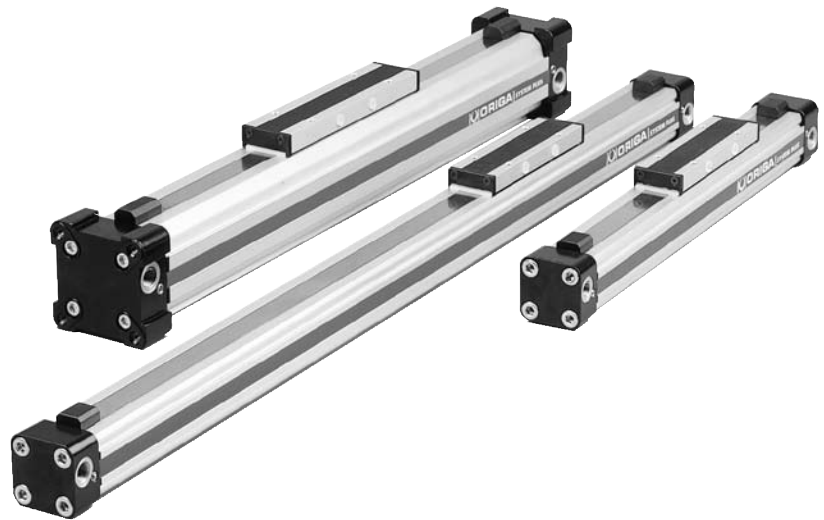
When using external guides, the clevis mounting is used to compensate for deviations in parallelism.




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

Notes

Rodless Pneumatic Cylinders Series OSP-P



Contents

| Description | Page |
|---|-------|
| Standard Cylinders | |
| Overview | 9-13 |
| Technical Data | 15-17 |
| Dimensions | 18-23 |
| Clean Room Cylinders | |
| Technical Data | 24-25 |
| Dimensions | 26 |
| Cylinders ATEX-Version  | |
| Technical Data | 27 |
| Dimensions | 18-23 |
| Cylinders for synchronized bi-parting movements | |
| Technical Data | 28 |
| Dimensions | 29 |

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.

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

Corrosion resistant steel outer sealing band and robust wiper system on the carrier for use in aggressive environments.

Proven corrosion resistant steel inner sealing band for optimum sealing and extremely low friction.

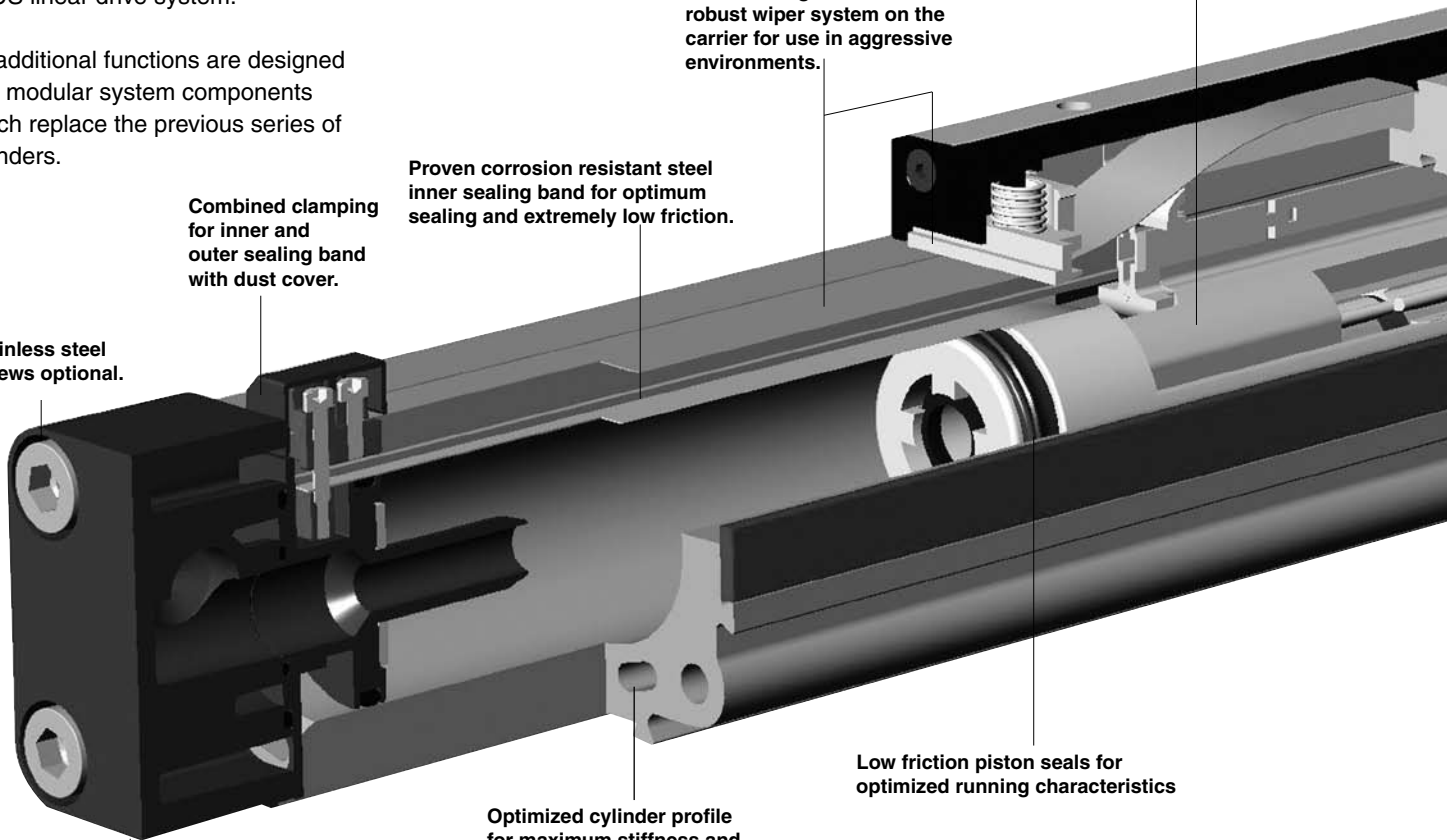
Combined clamping for inner and outer sealing band with dust cover.

Stainless steel screws optional.

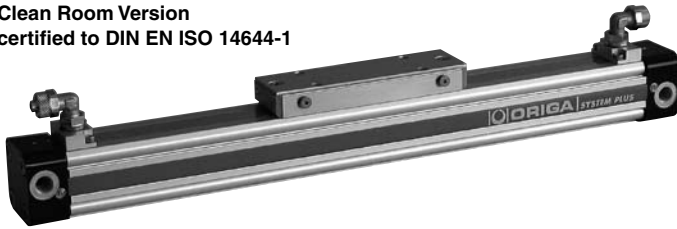
Low friction piston seals for optimized running characteristics

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

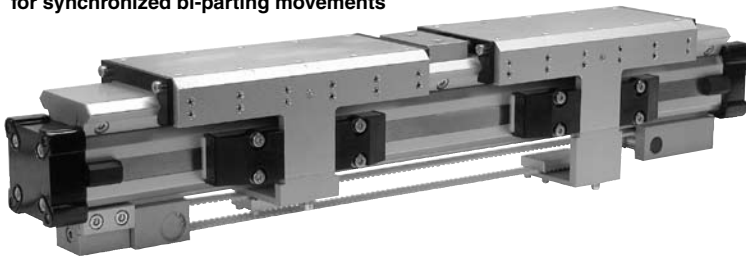
End cap can be rotated to any one of the four positions (before or after delivery) so that the air connection can be in any desired position.



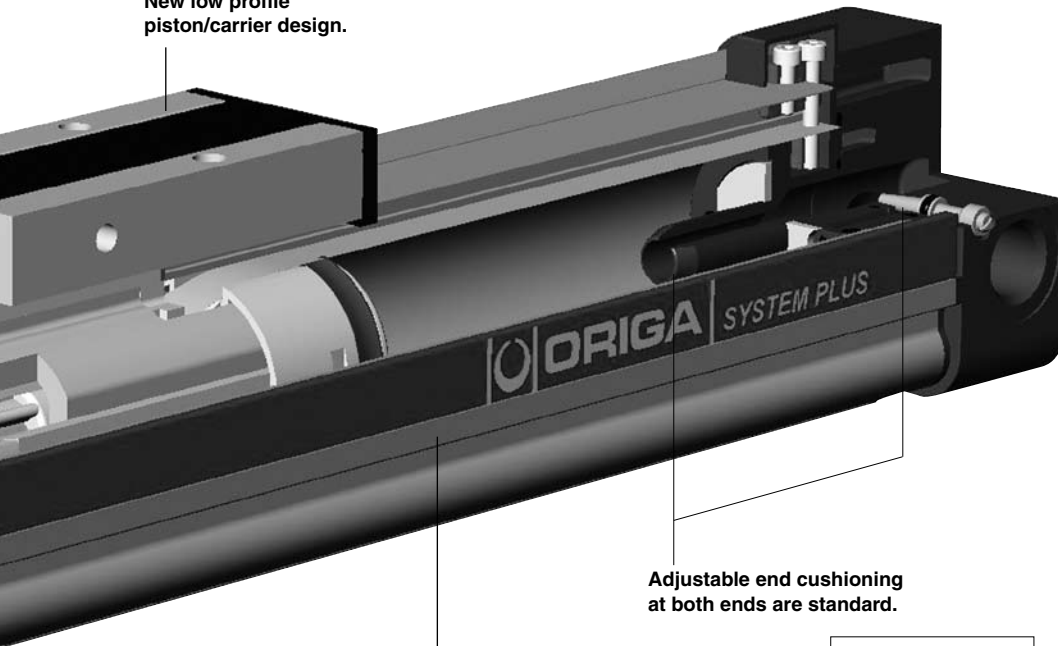
Clean Room Version
certified to DIN EN ISO 14644-1



Rodless Cylinder
for synchronized bi-parting movements



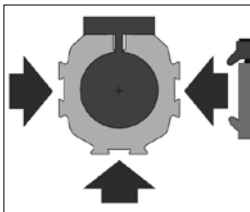
New low profile
piston/carrier design.



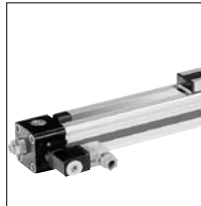
Adjustable end cushioning
at both ends are standard.

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

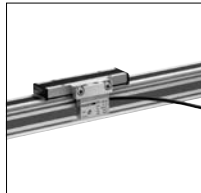
Modular system components
are simply clamped on.



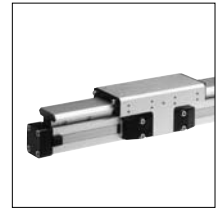
**INTEGRATED
VOE VALVES**
The complete
compact solution
for optimal cylinder
control.



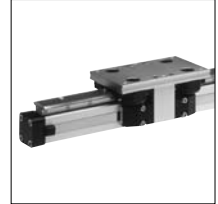
**SENSOFLEX
SFI-plus**
incremental
measuring system
with 0,1 (1,0) mm
resolution



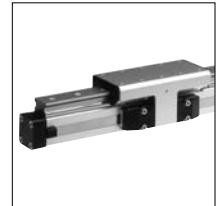
SLIDELINE
Combination with
linear guides
provides for
heavier loads.



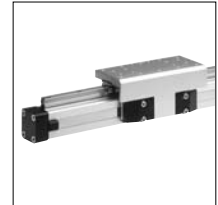
POWERSLIDE
Roller bearing
precision guidance
for smooth travel
and high dynamic
or static loads.



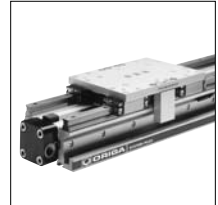
PROLINE
The compact
aluminium roller
guide for high loads
and velocities.



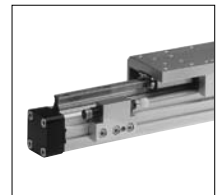
STARLINE
Recirculating ball
bearing guide for
very high loads
and precision



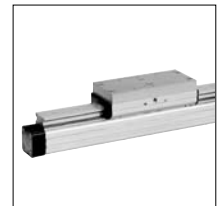
**HEAVY DUTY
GUIDE HD**
for heavy duty
applications.



**VARIABLE STOP
VS**
The variable stop
provides simple
stroke limitation.



Passive
pneumatic brake
reacts automati-
cally to pressure
failure.



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



OPTIONS AND ACCESSORIES FOR SYSTEM VERSATILITY

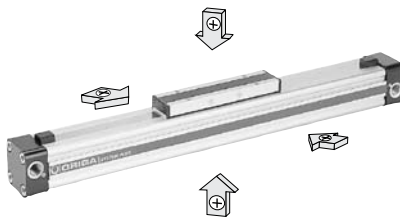
SERIES OSP-P

STANDARD VERSIONS OSP-P10 to P80

Pages 15-18

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

CLEAN ROOM CYLINDERS Page 24

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 Page 27

For use in Ex-Areas



STAINLESS VERSION

For use in constantly damp or wet environments. All screws are A2 quality stainless steel



SLOW SPEED OPTIONS

Specially formulated grease lubrication facilitates slow, smooth and uniform piston travel in the speed range from 0.005 to 0.2 m/s.



Minimum achievable speeds are dependent on several factors. Please consult our technical department. Slow speed lubrication in combination with Viton® on demand. Oil free operation preferred.

VITON® VERSION

For use in an environment with high temperatures or in chemically aggressive areas.

All seals are made of Viton®. Sealing bands: Stainless steel



CORROSION RESISTANCE COATING

FDA Approved Xylan® Coating

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

END-FACE AIR CONNECTION

Page 20



To solve special installation problems. SINGLE END PORTING

Page 21

For simplified tubing connections and space saving.



INTEGRATED VOE VALVES

Page 22

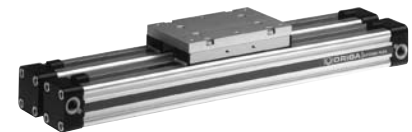
The complete compact solution for optimal cylinder control.



DUPLEX CONNECTION

Page 82

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



MULTIPLEX CONNECTION

Page 83

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

Pages 84-94

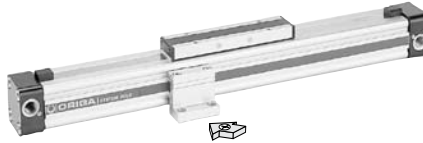
For electrical sensing of end and intermediate piston positions, also in EX-Areas.



MID-SECTION SUPPORT

Page 70

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

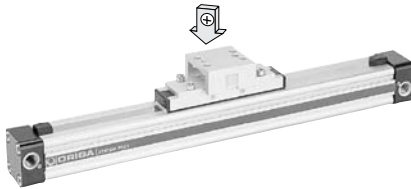


MOUNTINGS

CLEVIS MOUNTING

Page 67-68

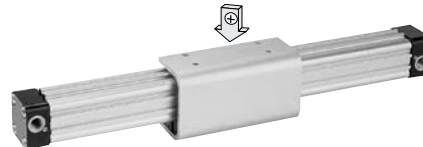
Carrier with tolerance and parallelism compensation for driving loads supported by external linear guides.



INVERSION MOUNTING

Page 78

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



END CAP MOUNTING

Page 69

For end-mounting of the cylinder.



| Characteristics | | Pressures quoted as gauge pressure | | |
|---------------------------|--------------------------------------|------------------------------------|--|-------------------------------------|
| Characteristics | Symbol | Unit | Description | |
| General Features | | | | |
| Type | | | Rodless cylinder | |
| Series | | | OSP-P | |
| System | | | Double-acting, with cushioning, position sensing capability | |
| Mounting | | | See drawings | |
| Air Connection | | | Threaded | |
| Ambient temperature range | T _{min} T _{max} | °C °C | -10 +80 | Other temperature ranges on request |
| Weight (mass) | | kg | See table below | |
| Installation | | | In any position | |
| Medium | | | Filtered, unlubricated compressed air (other media on request) | |
| Lubrication | | | Permanent grease lubrication (additional oil mist lubrication not required) Option: special slow speed grease | |
| Material | Cylinder Profile | | Anodized aluminium | |
| | Carrier (piston) | | Anodized aluminium | |
| | End caps | | Aluminium, lacquered / Plastic (P10) | |
| | Sealing bands | | Corrosion resistant steel | |
| | Seals | | NBR (Option: Viton®) | |
| | Screws | | Galvanized steel Option: stainless steel | |
| | Dust covers, wipers | | Plastic | |
| Max. operating pressure | p _{max} | bar | 8 | |

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

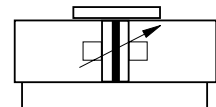
| Size Comparison | | | | | | | |
|-----------------|-----|-----|-----|-----|-----|-----|-----|
| P10 | P16 | P25 | P32 | P40 | P50 | P63 | P80 |
| | | | | | | | |

Rodless Pneumatic Cylinder

ø 10-80 mm



Series OSP-P..



Standard Versions:

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

Special Versions:

- with special pneumatic cushioning system (on request)
- Clean room cylinders (see page 24)
- ATEX-Version (Ex) (see page 27)
- Stainless steel screws
- Slow speed lubrication
- Viton® seals
- Both air connections on one end
- Air connection on the end-face
- Integrated Valves



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

The right to introduce technical modifications is reserved

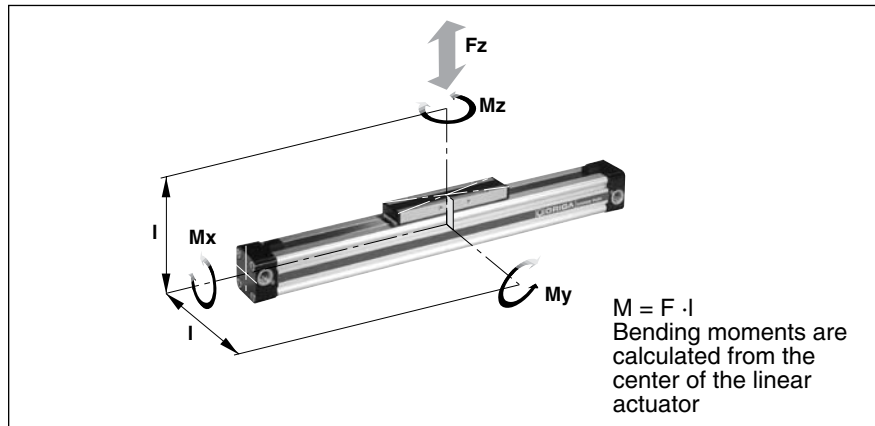
Loads, Forces and Moments

Choice of cylinder is decided by:

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

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

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

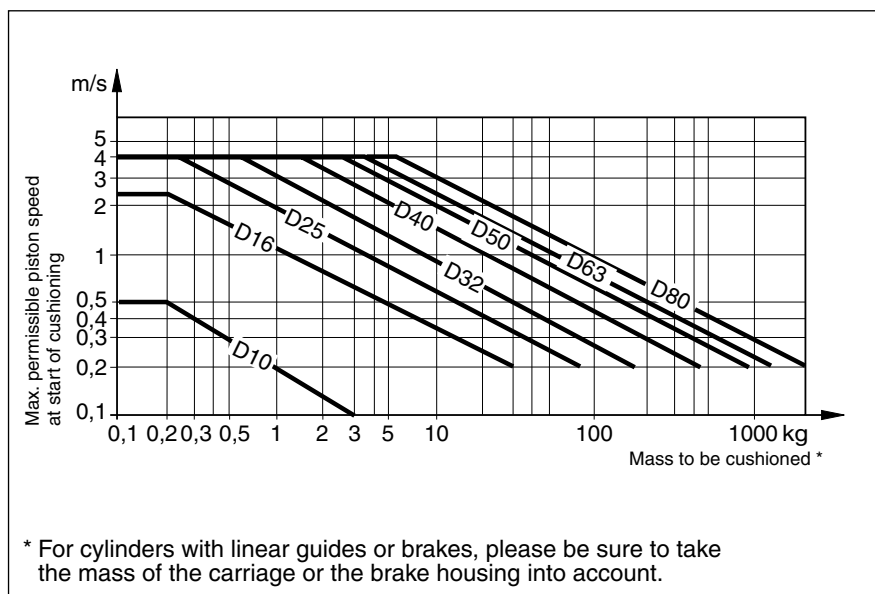


| Cylinder-Series [mm Ø] | Theoretical Action Force at 6 bar [N] | effektive Action Force F_A at 6 bar [N] | max. Moments | | | max. Load F [N] | Cushion Length [mm] |
|---------------------------|---------------------------------------|---|--------------|---------|---------|-----------------|---------------------|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

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



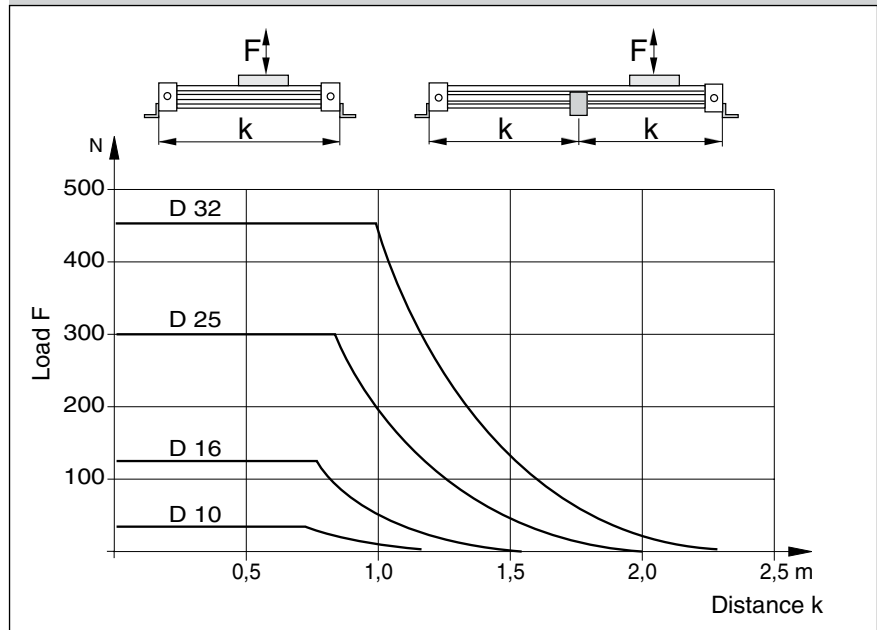
If the permitted limit values are exceeded, either additional shock absorbers should be fitted in the area of the center of gravity or you can consult us about our special cushioning system
 – we shall be happy to advise you on your specific application.

Mid-Section Supports

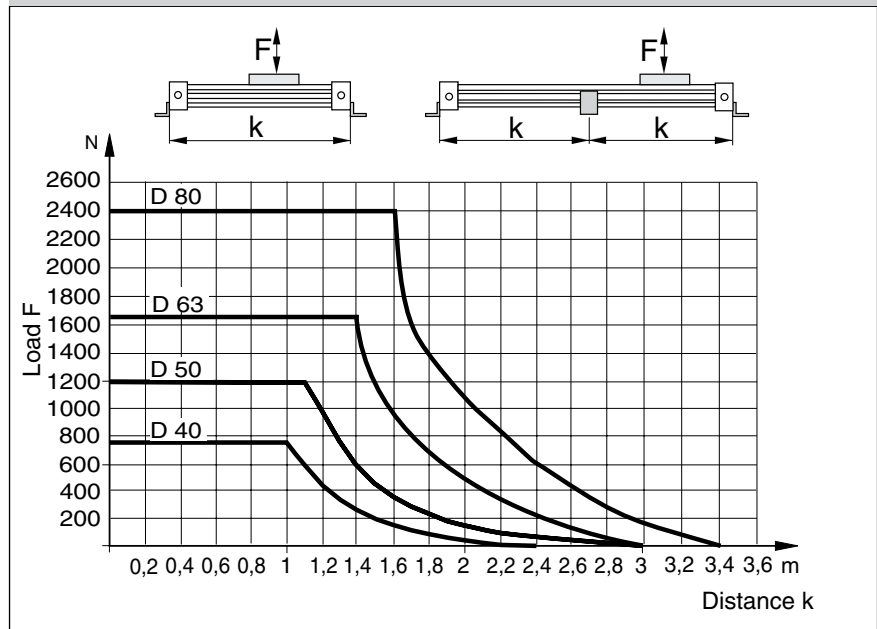
To avoid excessive bending and oscillation of the cylinder, mid-section supports are required dependent on specified stroke lengths and applied loads. The diagrams show the maximum possible support spacings depending on the load.

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

Permissible Support Spacings: OSP - P10 - P32



Permissible Support Spacings: OSP - P40 - P80

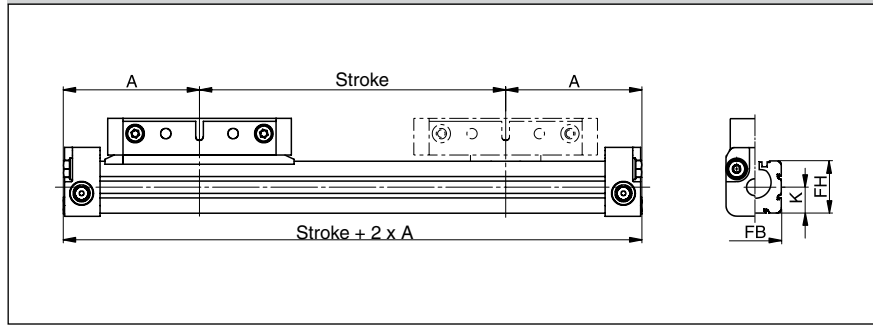


Dimensions

Cylinder Stroke and Dead Length A

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

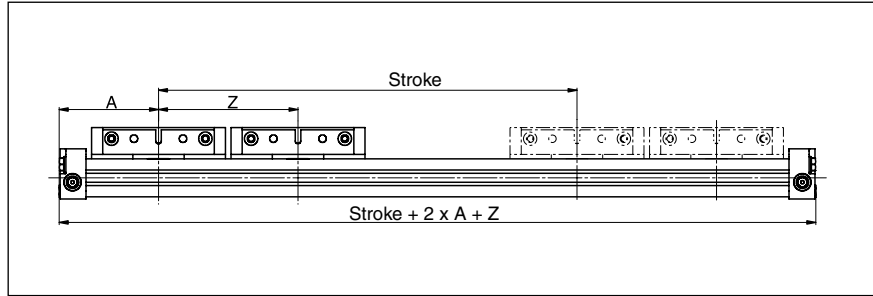
Dimensions of Basic Cylinder OSP-P10



Tandem Cylinder

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

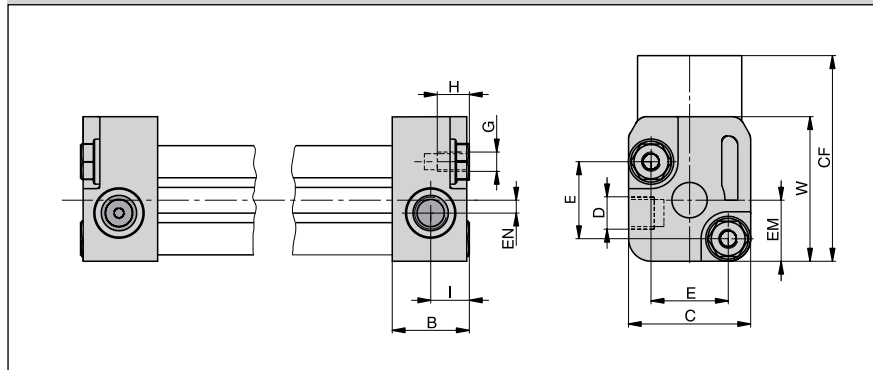
- Free choice of stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.
- **Stroke length to order is stroke + dimension "Z"**



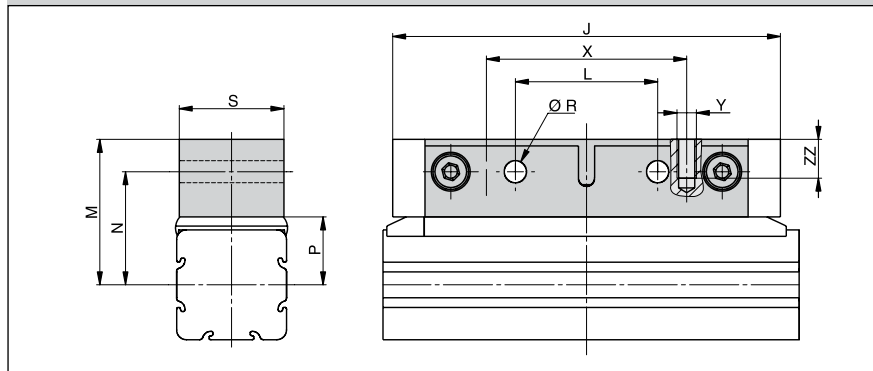
Please note:

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

End Cap/Air Connection Series OSP-P10



Carrier Series OSP-P10

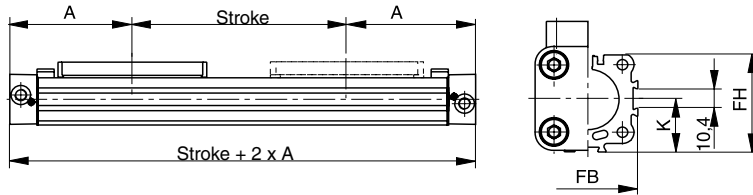


Dimension Table (mm)

| Cylinder Series | A | B | C | D | E | G | H | I | J | K | L | M | N | P | R | S | W | X | Y | Z min | CF | EM | EN | FB | FH | ZZ |
|-----------------|------|----|----|----|----|----|---|---|----|-----|----|------|------|------|-----|----|------|----|----|-------|----|-----|----|----|----|----|
| OSP-P10 | 44.5 | 12 | 19 | M5 | 12 | M3 | 5 | 6 | 60 | 8.5 | 22 | 22.5 | 17.5 | 10.5 | 3.4 | 16 | 22.5 | 31 | M3 | 64 | 32 | 9.5 | 2 | 17 | 17 | 6 |

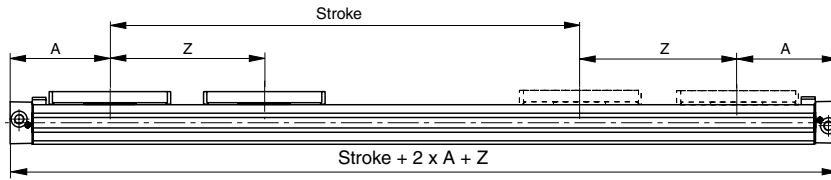
Dimensions

Dimensions of Basic Cylinder OSP - P16-P80



Cylinder Stroke and Dead Length A

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

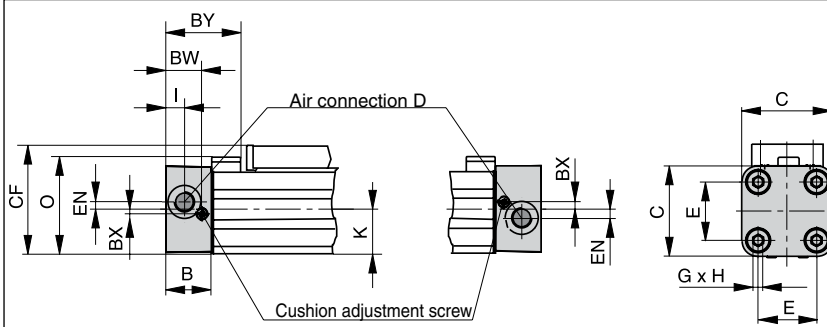


Tandem Cylinder

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

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

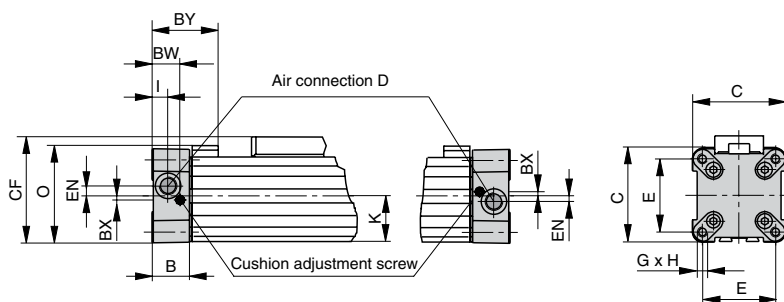
End Cap/Air Connection can be rotated 4 x 90° Series OSP-P16 to P32



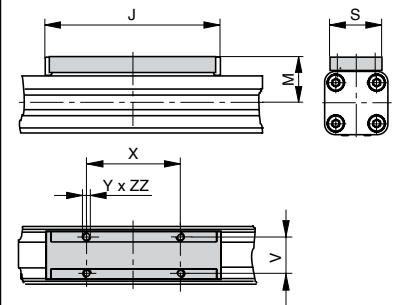
Please note:

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

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



Carrier Series OSP-P16 to P80

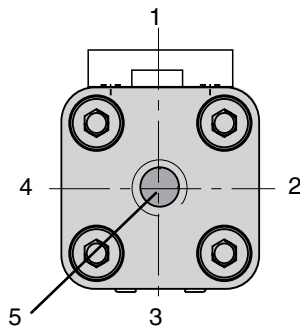


Dimension Table (mm)

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

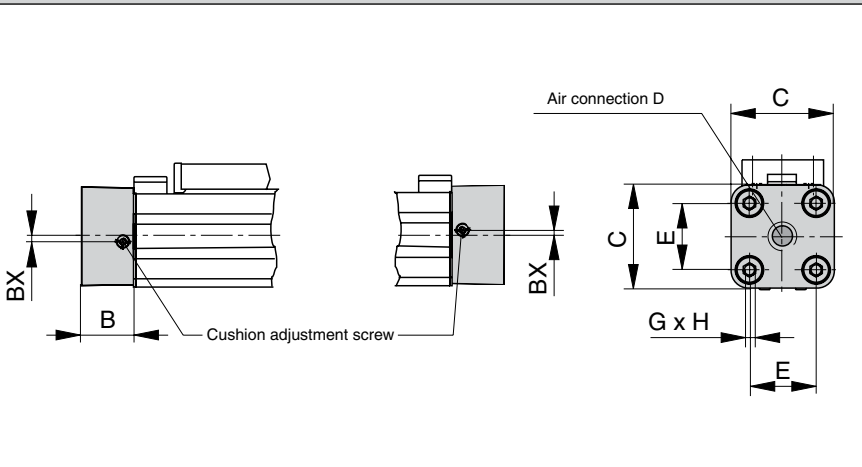
Air Connection on the End-Face #5

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

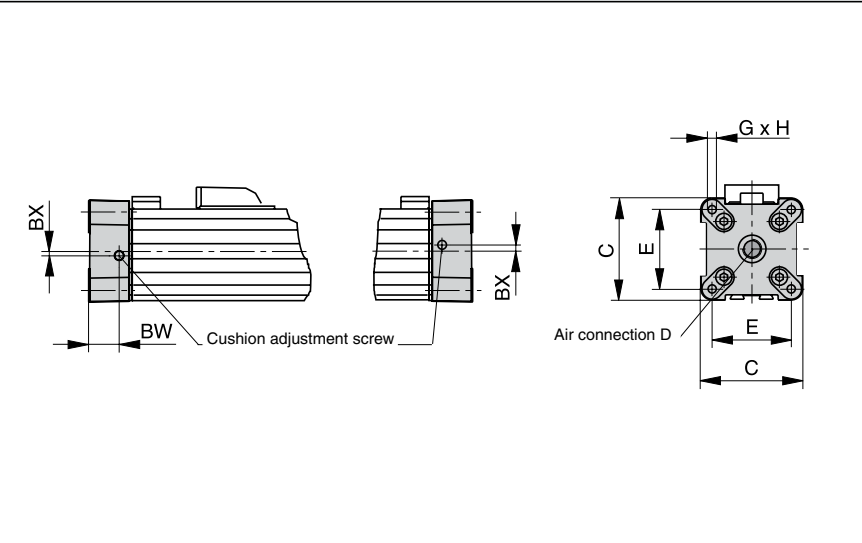


Note: Position #2 is the standard location.

Series OSP-P16 to P32



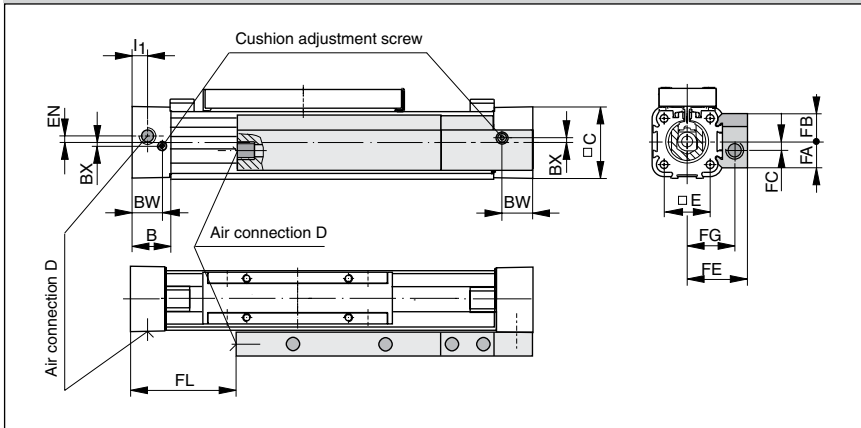
Series OSP-P40 to P80



Dimension Table (mm)

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

Series OSP-P16



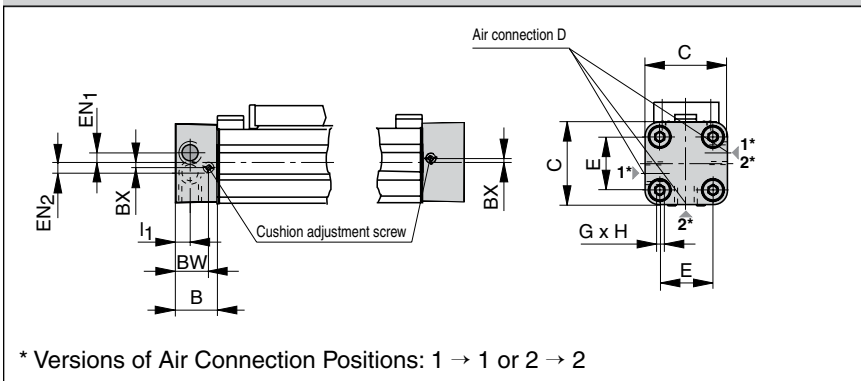
Single End Porting

A special end cap with both air connections on one side is available for situations where shortage of space, simplicity of installation or the nature of the process make it desirable.

Air supply to the other end is via internal air passages (OSP-P25 to P80) or via a hollow aluminium profile fitted externally (OSP-P16).

In this case the end caps cannot be rotated.

Series OSP-P25



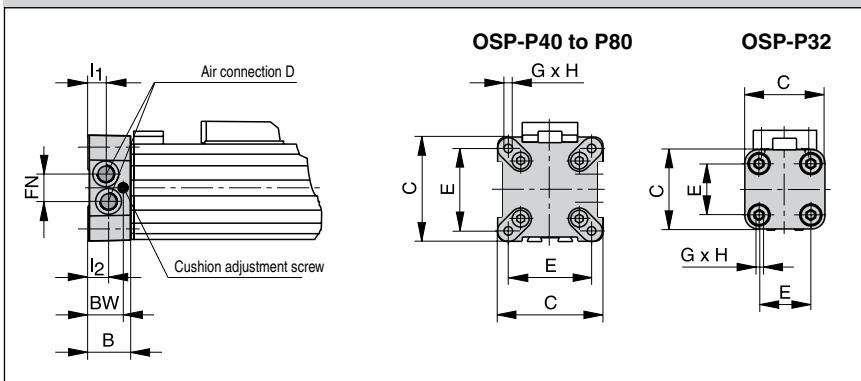
* Versions of Air Connection Positions: 1 → 1 or 2 → 2



Please note:

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

Series OSP-P32 to P80



Dimension Table (mm)

| Cylinder Series | B | C | D | E | G | H | I ₁ | I ₂ | BX | BW | EN | EN ₁ | EN ₂ | FA | FB | FC | FE | FG | FL | FN |
|-----------------|------|-----|------|----|-----|----|----------------|----------------|-----|------|----|-----------------|-----------------|------|------|----|----|----|----|------|
| OSP-P16 | 14 | 30 | M5 | 18 | M3 | 9 | 5.5 | - | 1.8 | 10.8 | 3 | - | - | 12.6 | 12.6 | 4 | 27 | 21 | 36 | - |
| OSP-P25 | 22 | 41 | G1/8 | 27 | M5 | 15 | 9 | - | 2.2 | 17.5 | - | 3.6 | 3.9 | - | - | - | - | - | - | - |
| OSP-P32 | 25.5 | 52 | G1/8 | 36 | M6 | 15 | 12.2 | 10.5 | - | 20.5 | - | - | - | - | - | - | - | - | - | 15.2 |
| OSP-P40 | 28 | 69 | G1/8 | 54 | M6 | 15 | 12 | 12 | - | 21 | - | - | - | - | - | - | - | - | - | 17 |
| OSP-P50 | 33 | 87 | G1/4 | 70 | M6 | 15 | 14.5 | 14.5 | - | 27 | - | - | - | - | - | - | - | - | - | 22 |
| OSP-P63 | 38 | 106 | G3/8 | 78 | M8 | 21 | 16.5 | 13.5 | - | 30 | - | - | - | - | - | - | - | - | - | 25 |
| OSP-P80 | 47 | 132 | G1/2 | 96 | M10 | 25 | 22 | 17 | - | 37.5 | - | - | - | - | - | - | - | - | - | 34.5 |

Integrated 3/2 Way Valves VOE

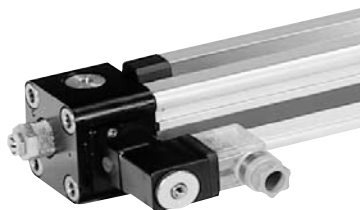
For optimal control of the OSP-P cylinder, 3/2 way valves integrated into the cylinder's end caps can be used as a compact and complete solution. They allow for easy positioning of the cylinder, smooth operation at the lowest speeds and fast response, making them ideally suited for the direct control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

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



Characteristics:

- Complete compact solution
- Various connection possibilities:
Free choice of air connection with rotating end caps with VOE valves,
Air connection can be rotated 4 x 90°,
Solenoid can be rotated 4 x 90°,
Pilot valve can be rotated 180°
- High piston velocities can be achieved with max. 3 exhaust ports
- Minimal installation requirements
- Requires just one air connection per valve
- Optimal control of the OSP-P cylinder
- Excellent positioning characteristics
- Integrated operation indicator
- Integrated exhaust throttle valve
- Manual override - indexed
- Adjustable end cushioning
- Easily retrofitted – please note the increase in the overall length of the cylinder!

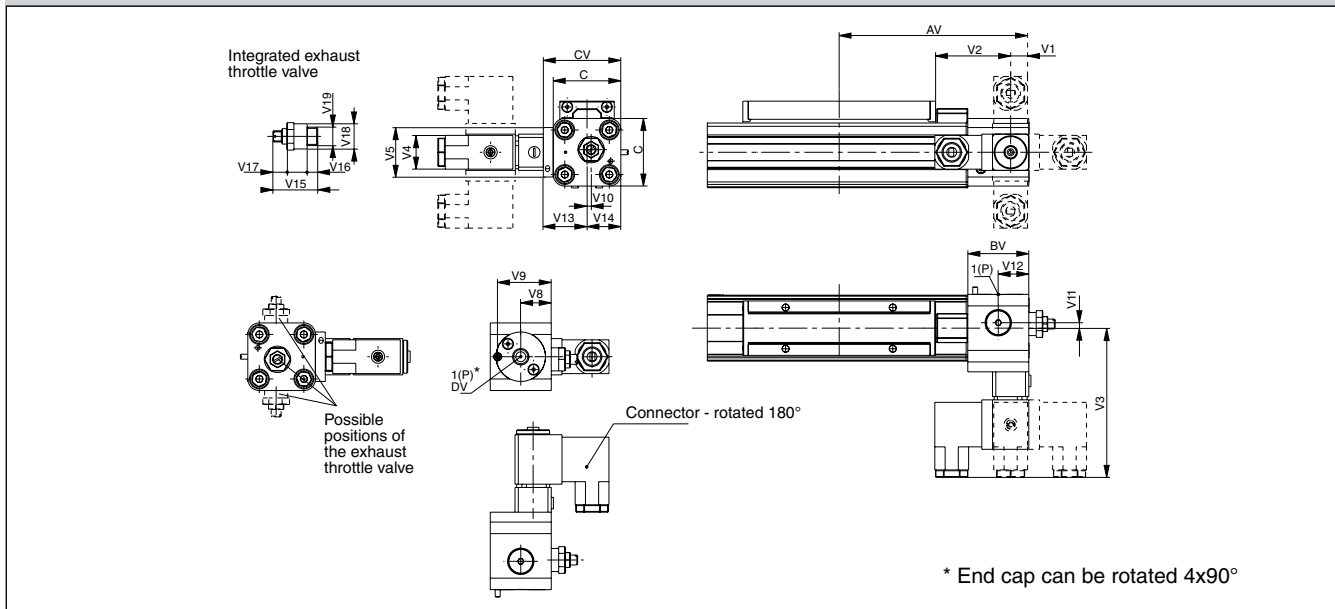


Characteristics 3/2WayValvesVOE

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

* other temperature ranges on request

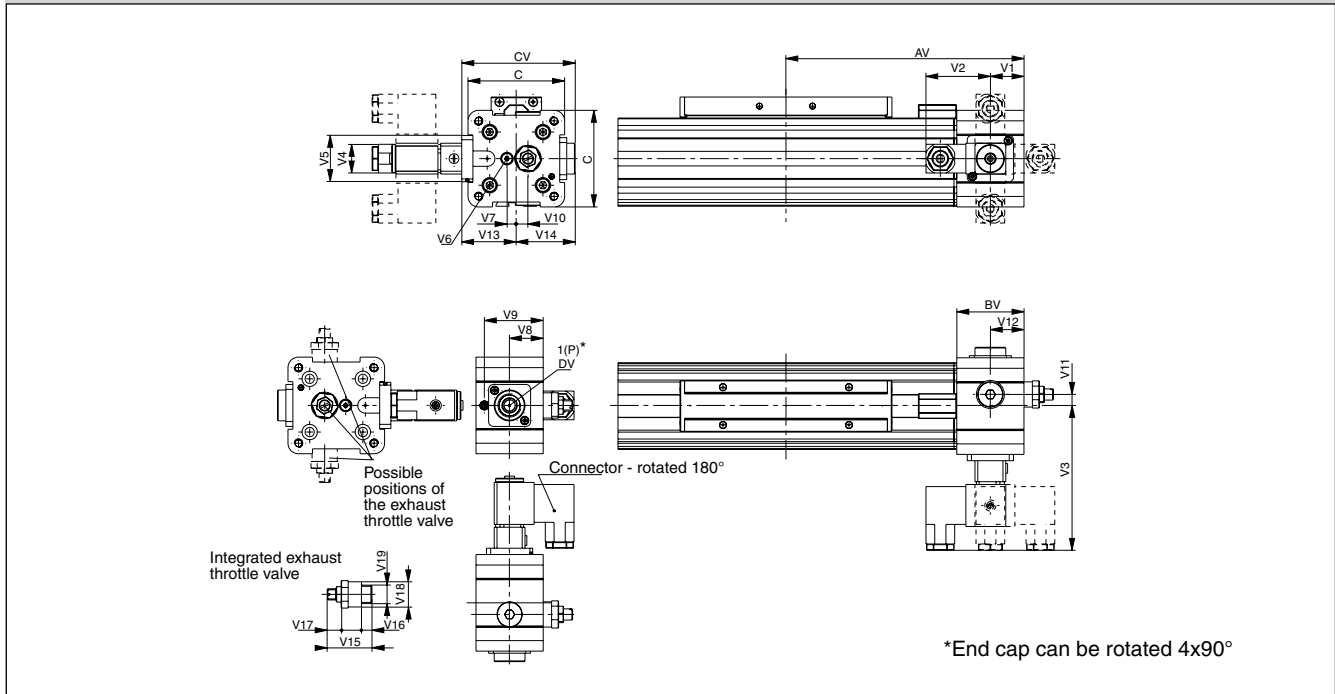
Dimensions VOE Valves OSP-P25 and P32



Dimension Table (mm)

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

Dimensions VOE Valves OSP-P40 and P50



Dimension Table (mm)

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

Clean Room Cylinder

ø 16 – 32 mm

Rodless Cylinder

certified to
DIN EN ISO 14644-1



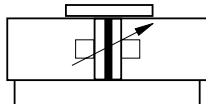
Standard Versions:

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

Special Versions:

- Slow speed lubrication
- Viton® seals

Series OSP-P..



Features:

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



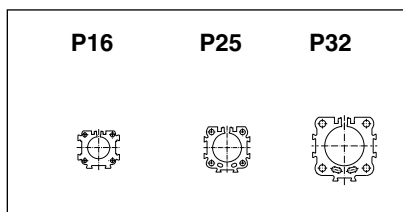
| Characteristics | | Pressure quoted as gauge pressure | |
|--------------------------------------|------------------------|-----------------------------------|--|
| Characteristics | Symbol | Unit | Description |
| General Features | | | |
| Type | | | Rodless Cylinder |
| Series | | | OSP-P |
| System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

* Pressure quoted as gauge pressure

Weight (Mass) kg

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

Size Comparison



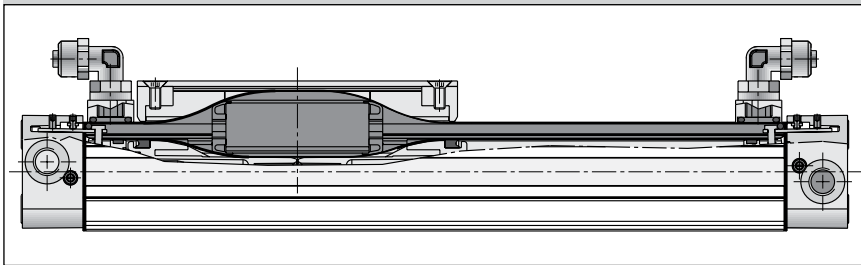
The right to introduce technical modifications is reserved

Certification

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



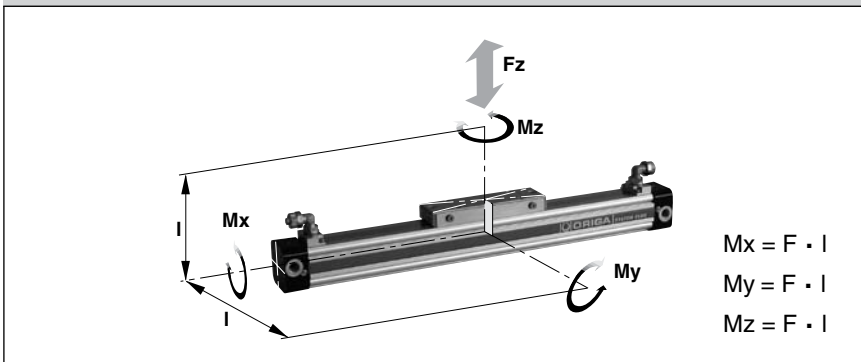
Function Diagram



Function:

The clean room cylinders of the ORIGA SYSTEM PLUS (OSP-P) combines the efficiency of the PARKER-ORIGA slot seal system with vacuum protection against progressive wear and contamination from the sliding components. A partial vacuum drawn between inner and outer sealing bands prevents emission into the clean room. To achieve the necessary vacuum a suction flow of ca. 4 m³/h is required.

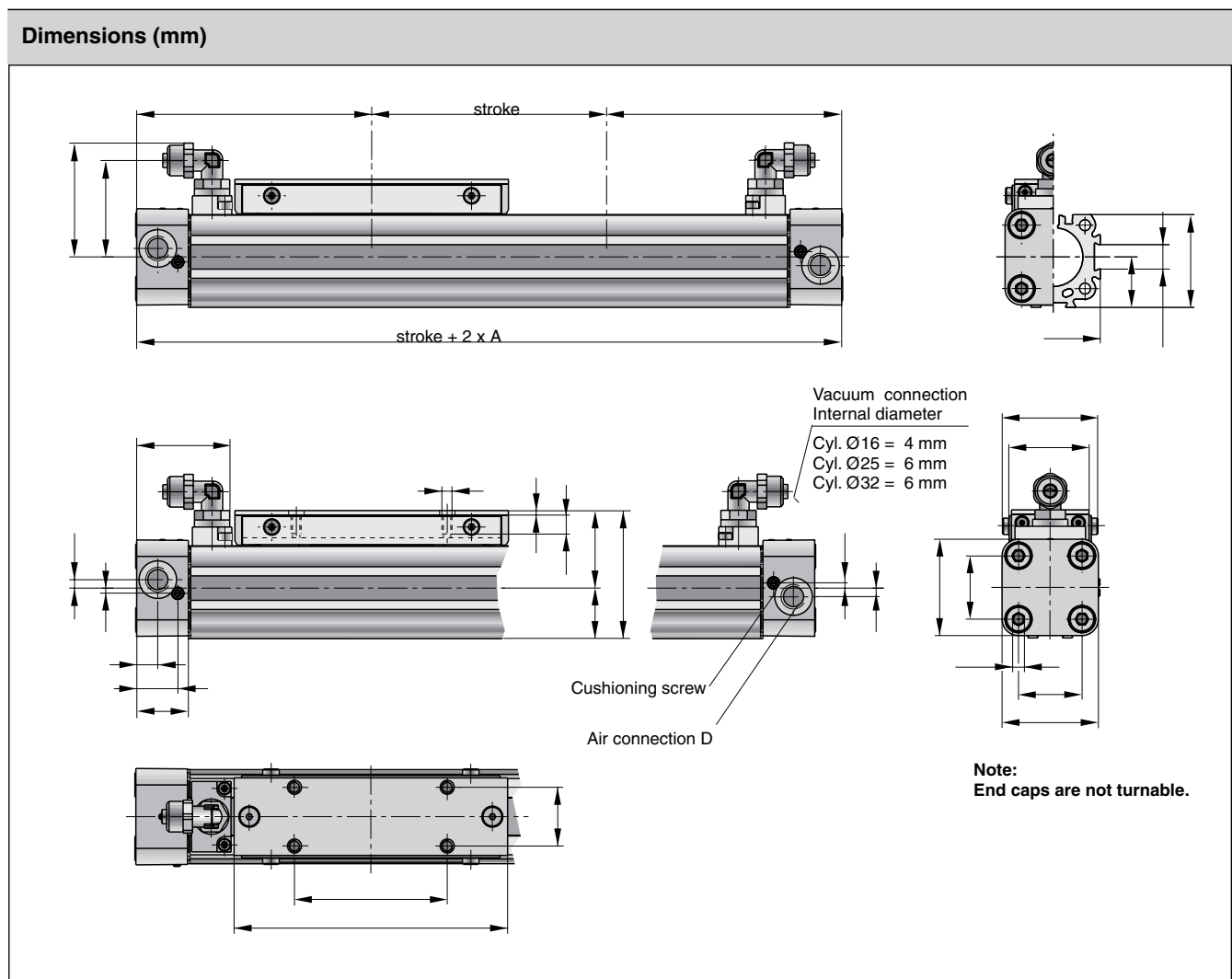
Loads, Forces and Moments



| Cylinder Series [mmØ] | Effective Force at 6 bar [N] | Max. Moment | | | Max. Load Fz [N] | Cushion length [mm] |
|-----------------------|------------------------------|-------------|---------|---------|------------------|---------------------|
| | | Mx [Nm] | My [Nm] | Mz [Nm] | | |
| OSP-P16 | 78 | 0.45 | 4 | 0.5 | 120 | 11 |
| OSP-P25 | 250 | 1.5 | 15 | 3.0 | 300 | 17 |
| OSP-P32 | 420 | 3.0 | 30 | 5.0 | 450 | 20 |

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

Dimensions



Dimension Table (mm)

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

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

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.


Technical Data (deviant to the Standard Cylinder)

Pressure quoted as gauge pressure

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

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

Equipment Group II Categorie 2GD

Rodless cylinder:  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 program |
| SLIDELINE | Ø 16 to 80 | 1– 6000 mm | Mountings program |

The right to introduce technical modifications is reserved

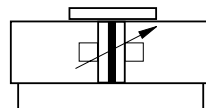


Components for EX-Areas



**Rodless Cylinder
Ø 10 – 80 mm
Basic Cylinder**

Series: OSP-PATEX



**Plain Bearing Guide SLIDELINE
Ø 16 – 80 mm**

Series: SL -..ATEX



Rodless Cylinder Ø 40 mm

for synchronized
 bi-parting move-
 ments

**Type OSP-P40-SL-
 BP**

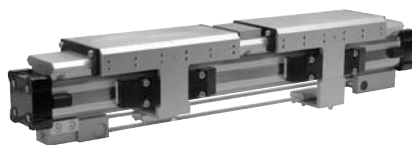


Features:

- 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:

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



| Characteristics | | | |
|---|------------------------|----------|--|
| Characteristics | Symbol | Unit | Description |
| General Features | | | |
| Type | | | Rodless cylinder for synchronized bi-parting movements |
| Series | | | OSP-P |
| System | | | Double acting with end cushioning. For contactless position sensing |
| Guide | | | Slideline SL40 |
| Synchronization | | | Toothed belt |
| Mounting | | | See drawings |
| Ambient temperature range | T_{min} T_{max} | °C °C | -10 +60 |
| Weight (Mass) | | kg | see page 29 |
| Medium | | | Filtered, unlubricated compressed air (other media on request) |
| Lubrication | | | Special slow speed grease – additional oil mist lubrication not required |
| Material | | | |
| Toothed Belt | | | Steel-corded polyurethane |
| Belt wheel | | | Aluminium |
| Operating pressure range | p_{max} | bar | 6 |
| Cushioning middle position | | | Elastic buffer |
| Max. Speed | v_{max} | m/s | 0.2 |
| Max. stroke of each stroke | | mm | 500 |
| Max. mass per guide carrier | | kg | 25 |
| Max. moments on guide carrier | | | |
| lateral moment | Mx_{max} | Nm | 25 |
| axial moment | My_{max} | Nm | 46 |
| rotating moment | Mz_{max} | Nm | 46 |
| For more technical information see pages 32 and 35 | | | |

Applications

Gripping – outside

Gripping – inside

Gripping – underneath

Door opening and closing

The right to introduce technical modifications is reserved

Weight (mass) kg

| Cylinder series (Basic cylinder) | Weight (Mass) kg | |
|-------------------------------------|------------------|-------------------|
| | At 0 mm stroke | per 100 mm stroke |
| OSP-P40-SL-BP | 10.334 | 2.134 |

Function:

The OSP-P40-SL-BP bidirectional linear drive is based on the OSP-P40 rodless pneumatic cylinder and adapted SLIDELINE SL40 polymer plain-bearing guides.

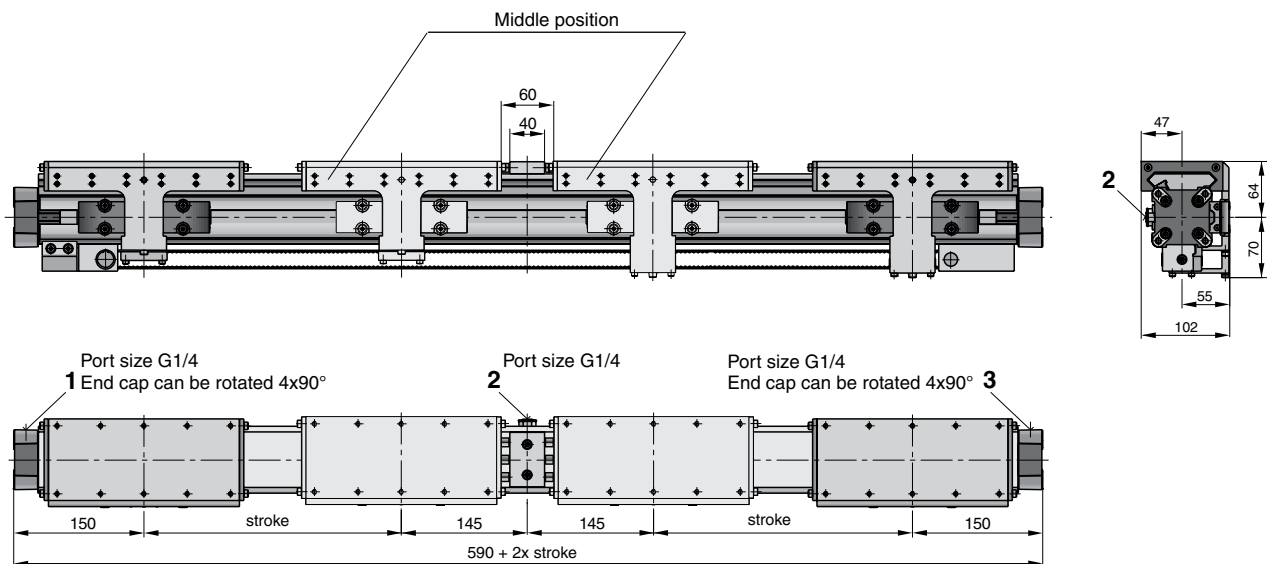
Two pistons in the cylinder bore are connected via yokes and carriers to the SLIDELINE guide carriers, which handle the forces and moments generated.

The bi-parting movements of the guide carriers are accurately synchronized by a recirculating toothed belt.

The two pistons are driven from the middle to the end positions via a common G1/4 air connection in the middle of the cylinder, and are driven from the end positions to the middle via an air connection in each end cap.

End position cushioning is provided by adjustable air cushioning in the end caps, and middle position cushioning by rubber buffers.

Dimensions (mm)



Air connections:

To drive the guide carriers to the middle position: pressurize ports 1 and 3.

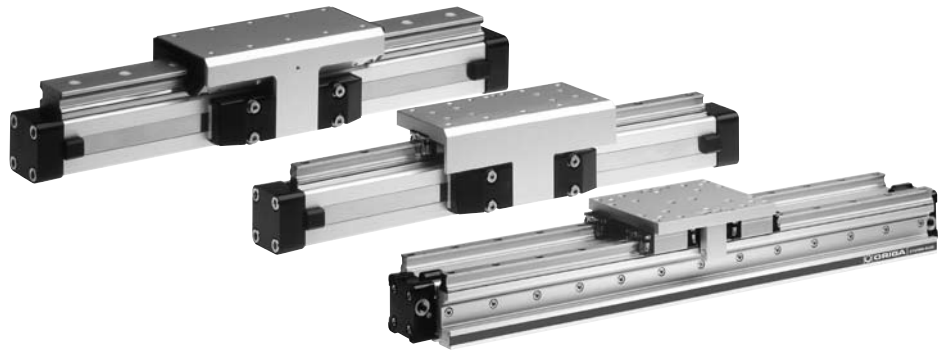
To drive the guide carriers to the end positions: pressurize port 2.

For more dimensions see pages 19 and 34

Notes



Linear Guides Series OSP-P



Contents

| | Description | Page |
|------------|---|-------|
| | Overview | 31-32 |
| | Plain bearing guide SLIDELINE | 33-34 |
| | Roller guide POWERSLIDE | 35-38 |
| | Aluminium roller guide PROLINE | 39-40 |
| | Recirculating ball bearing guide STARLINE | 41-46 |
| NEW | Heavy duty guide HD | 47-50 |

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

Linear Guides

SLIDELINE

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

Piston diameters 16 – 80 mm

See pages 33-34



POWERSLIDE

The roller guide for heavy loads and hard application conditions

Piston diameters 16 – 50 mm

See pages 35-38



PROLINE

The compact aluminium roller guide for high loads and velocities.

Active/ Passive Brake optional.

Piston diameters 16 – 50 mm

See pages 39-40

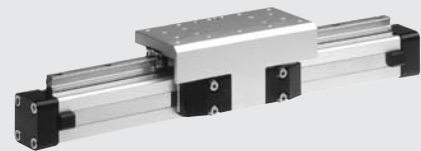


STARLINE

Recirculating ball bearing guide for very high loads and precision

Piston diameters 16 – 50 mm

See pages 41-46

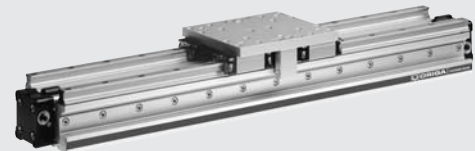


HD HEAVY DUTY GUIDE

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

Piston diameters 25 – 50 mm

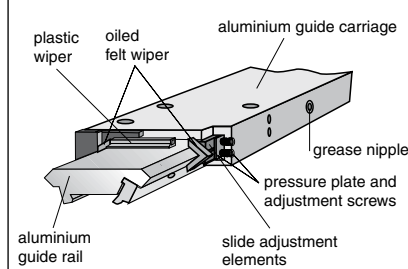
See pages 47-50



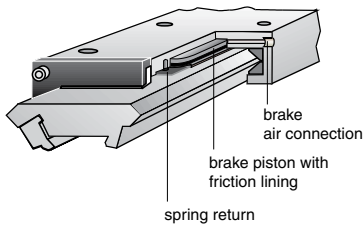
The right to introduce technical modifications is reserved

Versions

**for pneumatic linear drive:
 Series OSP-P**



Option – Integrated Brake

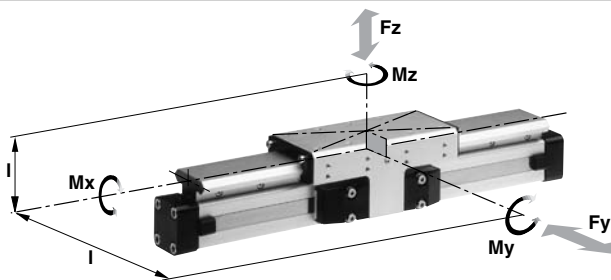


**Integrated Brake (optional)
 for series OSP-P25 to OSP-P50:**

- Actuated by pressure
- Released by exhausting and spring return

For further technical data see also linear drives OSP-P (page 15)

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.

Plain Bearing Guide SLIDELINE



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

Features:

- ATEX-version (without brake) is also available (see page 27)
- Anodized 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)

- 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

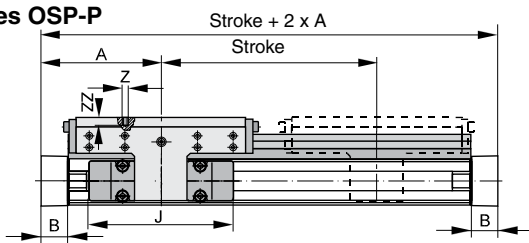
| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | Maximum braking force at 6 bar [N] ¹⁾ | Mass of linear drive with guide [kg] | | Mass* of guide carriage [kg] |
|-------------|------------------|-------------------|-----|-----|----------------|--|--------------------------------------|------------------|------------------------------|
| | | Mx | My | Mz | | | Fy, Fz | with 0 mm stroke | |
| SL16 | OSP-P16 | 6 | 11 | 11 | 325 | – | 0.57 | 0.22 | 0.23 |
| SL25 | OSP-P25 | 14 | 34 | 34 | 675 | 325 | 1.55 | 0.39 | 0.61 |
| SL32 | OSP-P32 | 29 | 60 | 60 | 925 | 545 | 2.98 | 0.65 | 0.95 |
| SL40 | OSP-P40 | 50 | 110 | 110 | 1500 | 835 | 4.05 | 0.78 | 1.22 |
| SL50 | OSP-P50 | 77 | 180 | 180 | 2000 | 1200 | 6.72 | 0.97 | 2.06 |
| SL63 | OSP-P63 | 120 | 260 | 260 | 2500 | – | 11.66 | 1.47 | 3.32 |
| SL80 | OSP-P80 | 120 | 260 | 260 | 2500 | – | 15.71 | 1.81 | 3.32 |

The right to introduce technical modifications is reserved

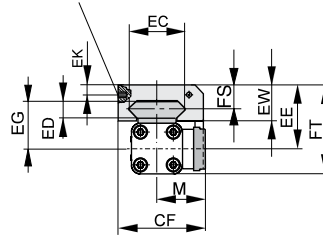


Dimensions

Series OSP-P



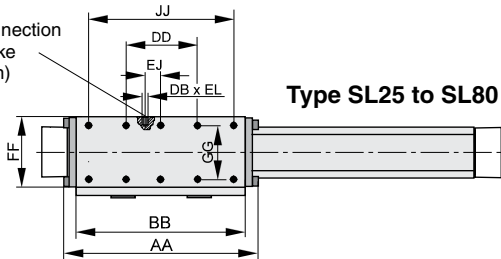
Air connection for brake (Option)



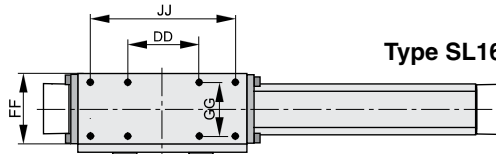
For further mounting elements and options see accessories.

For further information and technical data see data sheets for linear drives OSP-P (page 15)

Air connection for brake (Option)



Type SL25 to SL80



Type SL16

Dimension Table (mm)

| Series | A | B | J | M | Z | AA | BB | DB | DD | CF | EC | ED | EE | EG | EJ | EK | EL | EW | FF | FT | FS | GG | JJ | ZZ |
|--------|-----|------|-----|------|----|-----|-----|----|-----|------|-----|----|----|----|----|----|----|----|-----|-------|------|-----|-----|----|
| SL 16 | 65 | 14 | 69 | 31 | M4 | 106 | 88 | - | 30 | 55 | 36 | 8 | 40 | 30 | - | - | 22 | 48 | 55 | 14 | 36 | 70 | 8 | |
| SL 25 | 100 | 22 | 117 | 40.5 | M6 | 162 | 142 | M5 | 60 | 72.5 | 47 | 12 | 53 | 39 | 22 | 6 | 6 | 30 | 64 | 73.5 | 20 | 50 | 120 | 12 |
| SL 32 | 125 | 25.5 | 152 | 49 | M6 | 205 | 185 | M5 | 80 | 91 | 67 | 14 | 62 | 48 | 32 | 6 | 6 | 33 | 84 | 88 | 21 | 64 | 160 | 12 |
| SL 40 | 150 | 28 | 152 | 55 | M6 | 240 | 220 | M5 | 100 | 102 | 77 | 14 | 64 | 50 | 58 | 6 | 6 | 34 | 94 | 98.5 | 21.5 | 78 | 200 | 12 |
| SL 50 | 175 | 33 | 200 | 62 | M6 | 284 | 264 | M5 | 120 | 117 | 94 | 14 | 75 | 56 | 81 | 6 | 6 | 39 | 110 | 118.5 | 26 | 90 | 240 | 16 |
| SL 63 | 215 | 38 | 256 | 79 | M8 | 312 | 292 | - | 130 | 152 | 116 | 18 | 86 | 66 | - | - | - | 46 | 152 | 139 | 29 | 120 | 260 | 14 |
| SL 80 | 260 | 47 | 348 | 96 | M8 | 312 | 292 | - | 130 | 169 | 116 | 18 | 99 | 79 | - | - | - | 46 | 152 | 165 | 29 | 120 | 260 | 14 |

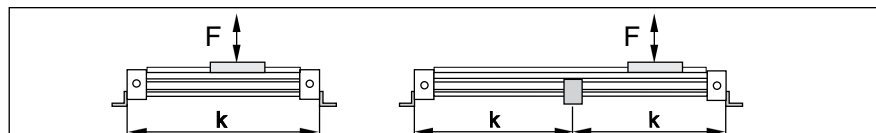
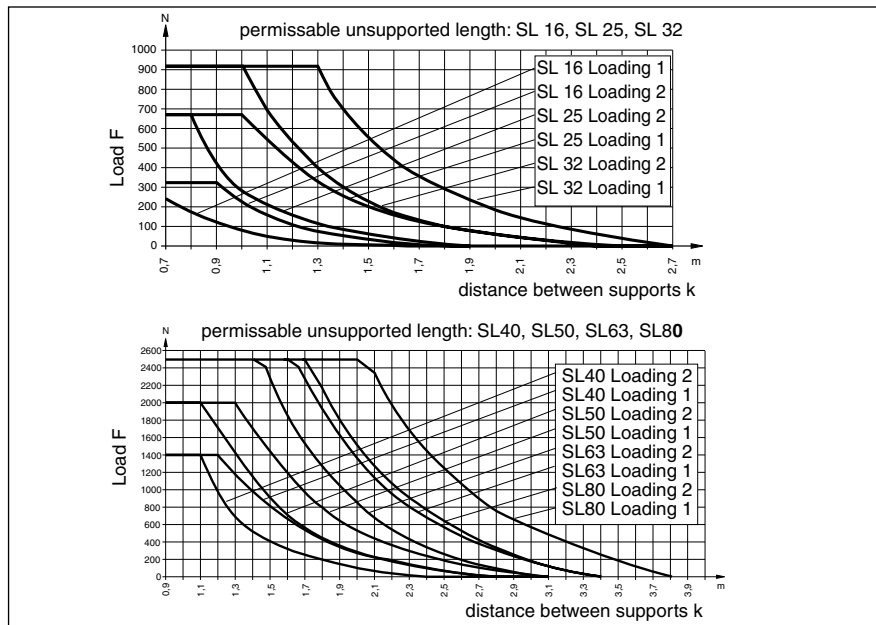
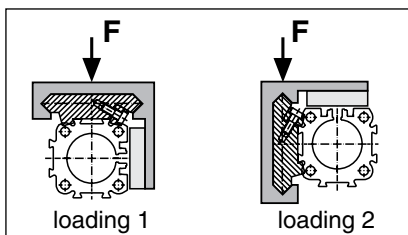
Mid-Section Support

(for versions see pages 71)

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

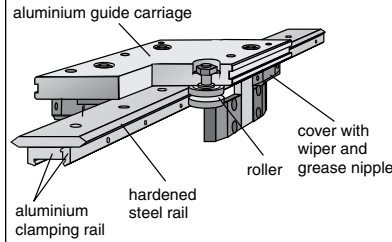
Note:

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



Versions

for pneumatic linear drive:
Series OSP-P

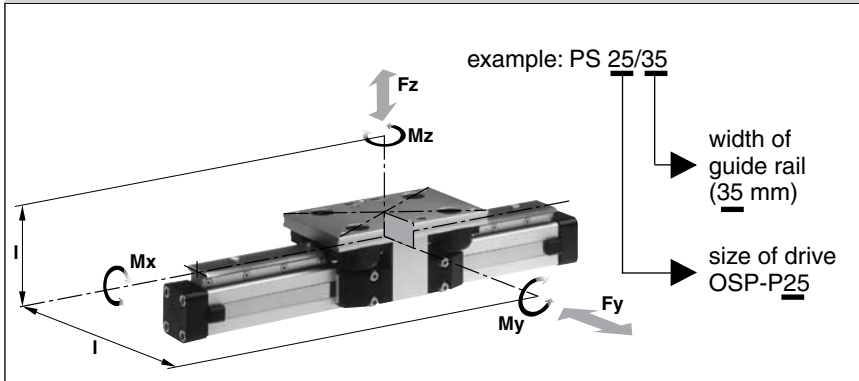


Roller Guide POWER- SLIDE



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

Loads, Forces and Moments



Features:

- Anodized 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 $v = 3 \text{ m/s}$,
- Tough roller cover with wiper and grease nipple
- Any length of stroke up to 3500 mm, (longer strokes on request)

Technical Data

The Table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions. For further information and technical data see page 15 for linear drives OSP-P

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

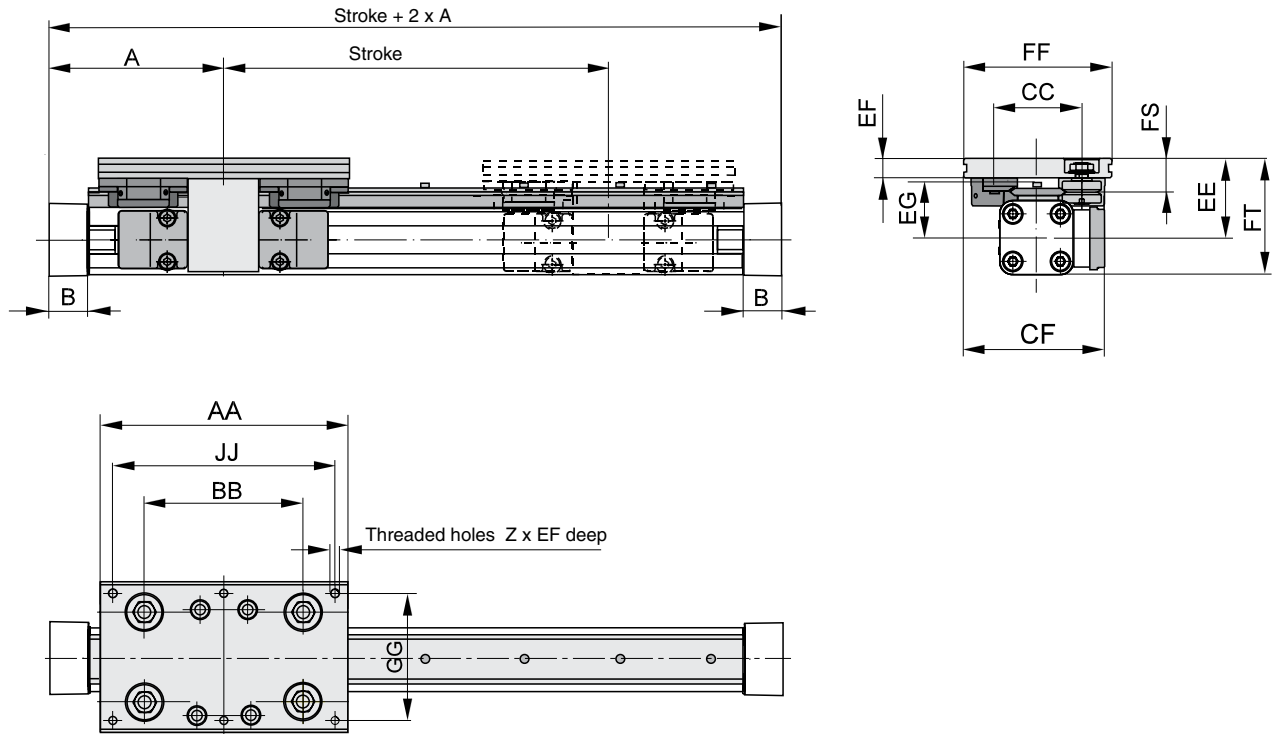
| Series | For linear drive | Max. moments [Nm] | | | Max. load [N] | Mass of linear drive with guide [kg] | | Mass* of guide carriage [kg] |
|----------|------------------|-------------------|-----|-----|---------------|--------------------------------------|------------------|------------------------------|
| | | Mx | My | Mz | | Fy, Fz | with 0 mm stroke | |
| PS 16/25 | OSP-P16 | 14 | 45 | 45 | 1400 | 0.93 | 0.24 | 0.7 |
| PS 25/25 | OSP-P25 | 14 | 63 | 63 | 1400 | 1.5 | 0.4 | 0.7 |
| PS 25/35 | OSP-P25 | 20 | 70 | 70 | 1400 | 1.7 | 0.4 | 0.8 |
| PS 25/44 | OSP-P25 | 65 | 175 | 175 | 3000 | 2.6 | 0.5 | 1.5 |
| PS 32/35 | OSP-P32 | 20 | 70 | 70 | 1400 | 2.6 | 0.6 | 0.8 |
| PS 32/44 | OSP-P32 | 65 | 175 | 175 | 3000 | 3.4 | 0.7 | 1.5 |
| PS 40/44 | OSP-P40 | 65 | 175 | 175 | 3000 | 4.6 | 1.1 | 1.5 |
| PS 40/60 | OSP-P40 | 90 | 250 | 250 | 3000 | 6 | 1.3 | 2.2 |
| PS 50/60 | OSP-P50 | 90 | 250 | 250 | 3000 | 7.6 | 1.4 | 2.3 |
| PS 50/76 | OSP-P50 | 140 | 350 | 350 | 4000 | 11.5 | 1.8 | 4.9 |

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

The right to introduce technical modifications is reserved

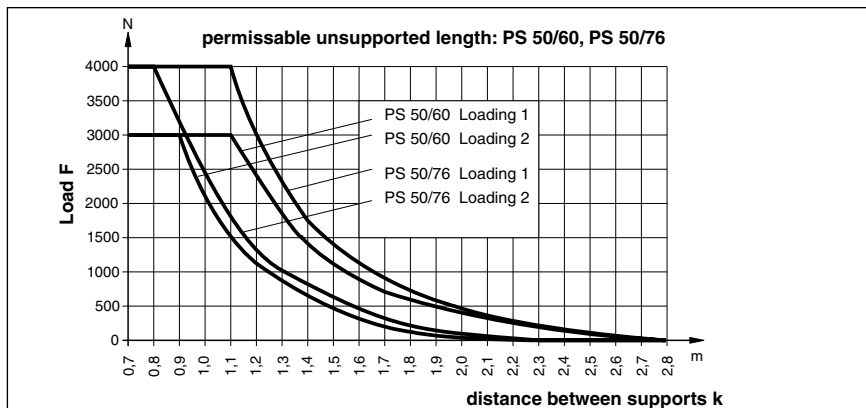
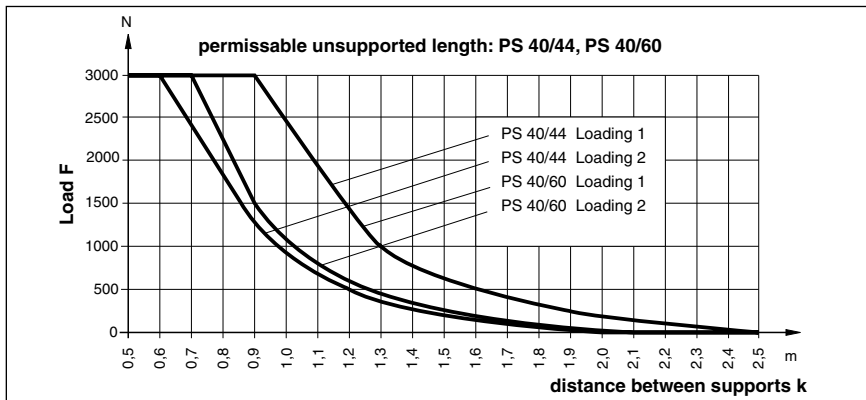
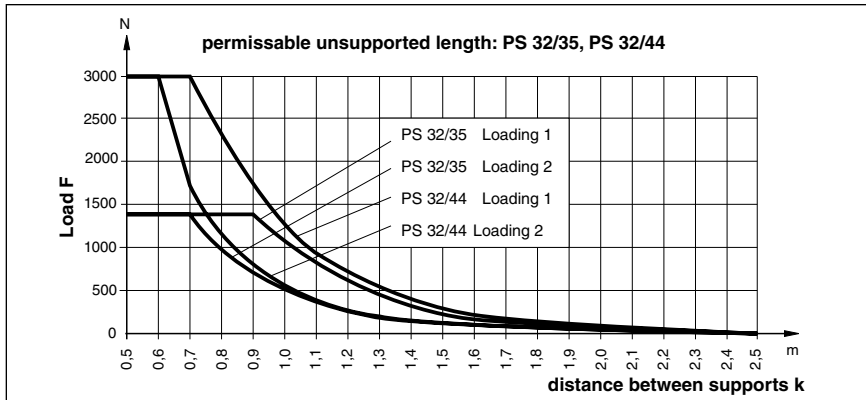
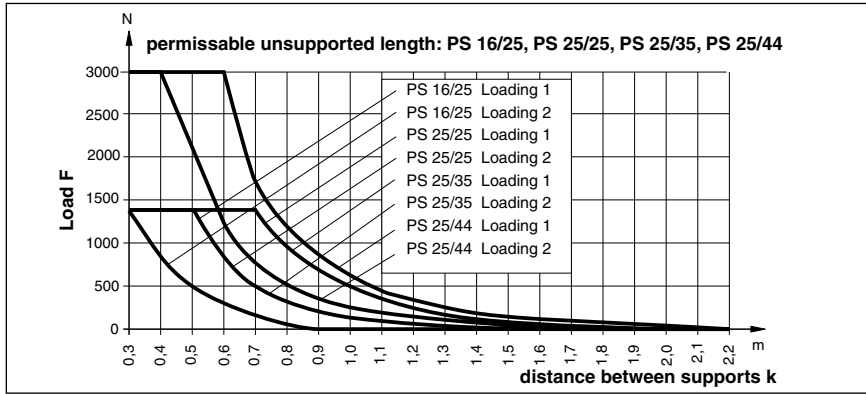
Dimensions

Series OSP-P



Dimension Table (mm)

| Series | A | B | Z | AA | BB | CC | CF | EE | EF | EG | FF | FS | FT | GG | JJ |
|----------|-----|------|-------|-----|-----|-----|-------|------|------|------|-----|------|-------|-----|-----|
| PS 16/25 | 65 | 14 | 4xM6 | 120 | 65 | 47 | 80 | 49 | 12 | 35 | 80 | 21 | 64 | 64 | 100 |
| PS 25/25 | 100 | 22 | 6xM6 | 145 | 90 | 47 | 79.5 | 53 | 11 | 39 | 80 | 20 | 73.5 | 64 | 125 |
| PS 25/35 | 100 | 22 | 6xM6 | 156 | 100 | 57 | 89.5 | 52.5 | 12.5 | 37.5 | 95 | 21.5 | 73 | 80 | 140 |
| PS 25/44 | 100 | 22 | 6xM8 | 190 | 118 | 73 | 100 | 58 | 15 | 39 | 116 | 26 | 78.5 | 96 | 164 |
| PS 32/35 | 125 | 25.5 | 6xM6 | 156 | 100 | 57 | 95.5 | 58.5 | 12.5 | 43.5 | 95 | 21.5 | 84.5 | 80 | 140 |
| PS 32/44 | 125 | 25.5 | 6xM8 | 190 | 118 | 73 | 107 | 64 | 15 | 45 | 116 | 26 | 90 | 96 | 164 |
| PS 40/44 | 150 | 28 | 6xM8 | 190 | 118 | 73 | 112.5 | 75 | 15 | 56 | 116 | 26 | 109.5 | 96 | 164 |
| PS 40/60 | 150 | 28 | 6xM8 | 240 | 167 | 89 | 122.5 | 74 | 17 | 54 | 135 | 28.5 | 108.5 | 115 | 216 |
| PS 50/60 | 175 | 33 | 6xM8 | 240 | 167 | 89 | 130.5 | 81 | 17 | 61 | 135 | 28.5 | 123.5 | 115 | 216 |
| PS 50/76 | 175 | 33 | 6xM10 | 280 | 178 | 119 | 155.5 | 93 | 20 | 64 | 185 | 39 | 135.5 | 160 | 250 |



Mid-Section Support

(for versions, see accessories)

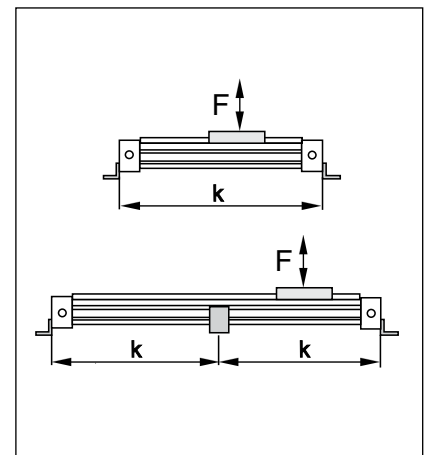
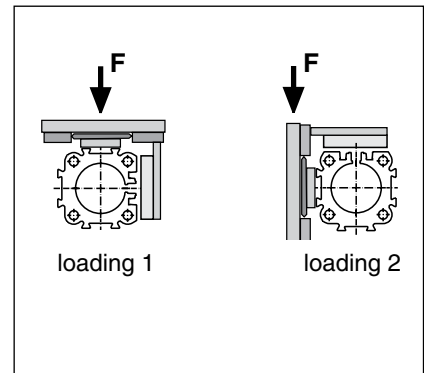
Mid section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.

A distinction must be drawn between loading 1 and loading 2.

Deflection of 0.5 mm max. between supports is permissible.

Note

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



Service life

Calculation of service life is achieved in two stages:

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

1. Calculation of load factor L_F

$$L_F = \frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} + \frac{F_y}{F_{y_{max}}} + \frac{F_z}{F_{z_{max}}}$$

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

Lubrication

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

Only high quality Lithium based greases should be used.

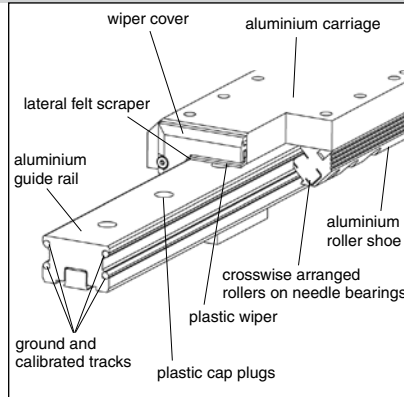
Lubrication intervals are dependent on environmental conditions (temperature, running speed, grease quality etc.) therefore the installation should be regularly inspected.

2. Service life calculation

- For PS 16/25, PS 25/25, PS 25/35, and PS 32/35 **Service life [km] =** $\frac{106}{(L_F + 0,02)^3}$
- For PS 25/44, PS 32/44, PS 40/44, PS 40/60 and PS 50/60: **Service life [km] =** $\frac{314}{(L_F + 0,015)^3}$
- For PS 50/76: **Service life [km] =** $\frac{680}{(L_F + 0,015)^3}$

Versions

for pneumatic linear drive:
Series OSP-P



Aluminium Roller Guide PROLINE



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

Technical Data

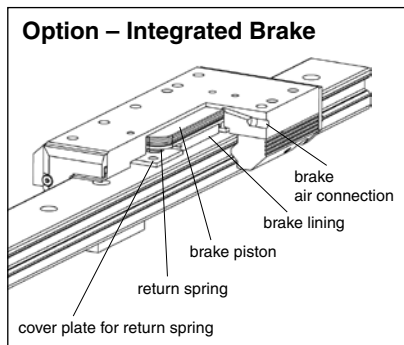
The table shows the maximal permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} + \frac{F_y}{F_{y_{max}}} + \frac{F_z}{F_{z_{max}}} \leq 1$$

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.

Option – Integrated Brake



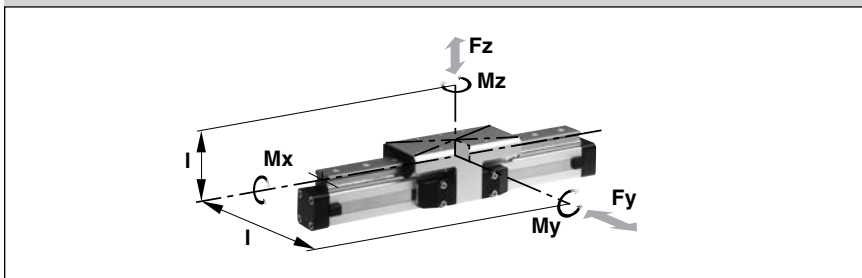
Features:

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

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

- Actuated by pressurization
- Release by depressurization and spring actuation

Loads, Forces and Moments



*** Please note:**

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

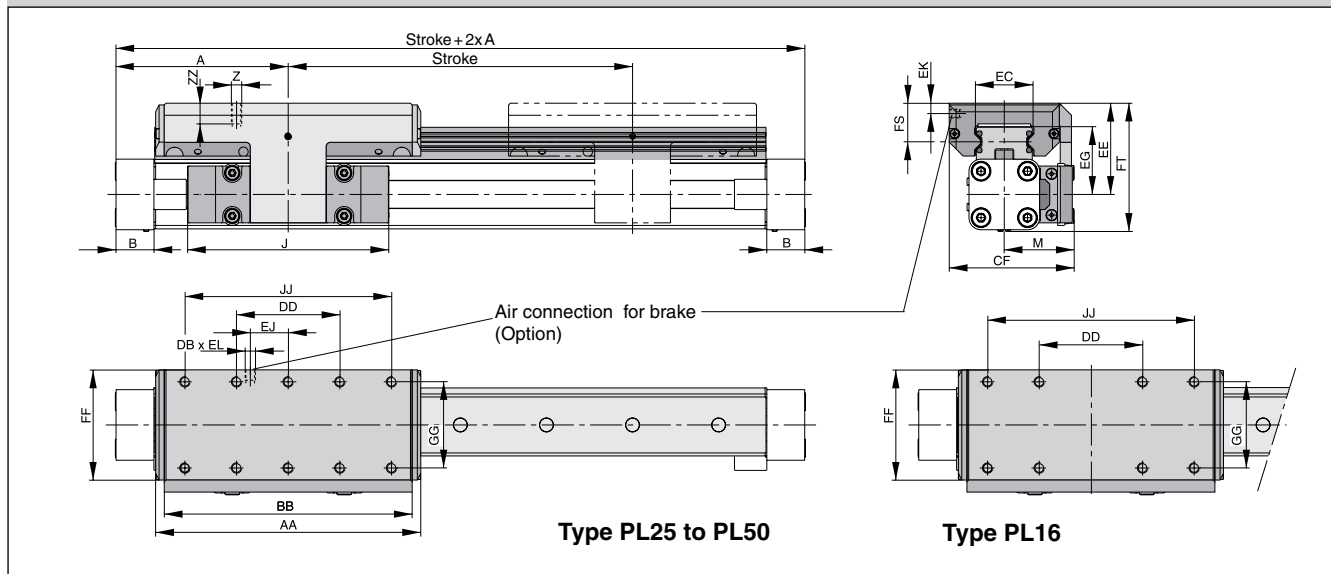
The right to introduce technical modifications is reserved

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] Fy, Fz | Maximum braking force at 6 bar [N] ¹⁾ | Mass of linear drive with guide [kg] | | Mass* guide carriage [kg] |
|--------------|------------------|-------------------|-----|-----|--------------------------|--|--------------------------------------|----------------------------|---------------------------|
| | | Mx | My | Mz | | | with 0 mm stroke | increase per 100 mm stroke | |
| PL 16 | OSP-P16 | 8 | 12 | 12 | 542 | – | 0.55 | 0.19 | 0.24 |
| PL 25 | OSP-P25 | 16 | 39 | 39 | 857 | on request | 1.65 | 0.40 | 0.75 |
| PL 32 | OSP-P32 | 29 | 73 | 73 | 1171 | on request | 3.24 | 0.62 | 1.18 |
| PL 40 | OSP-P40 | 57 | 158 | 158 | 2074 | on request | 4.35 | 0.70 | 1.70 |
| PL 50 | OSP-P50 | 111 | 249 | 249 | 3111 | on request | 7.03 | 0.95 | 2.50 |

¹⁾ Only for version with brake:

Braking surface dry – oiled surface reduces the effective braking force.

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



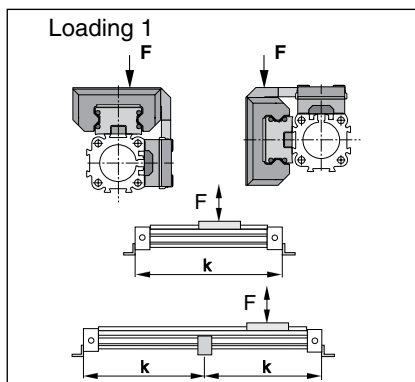
Dimension Table (mm) Series OSP-P PL16, PL25, PL32, PL40, PL50

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

Mid-Section Support

(For versions, see page 71)

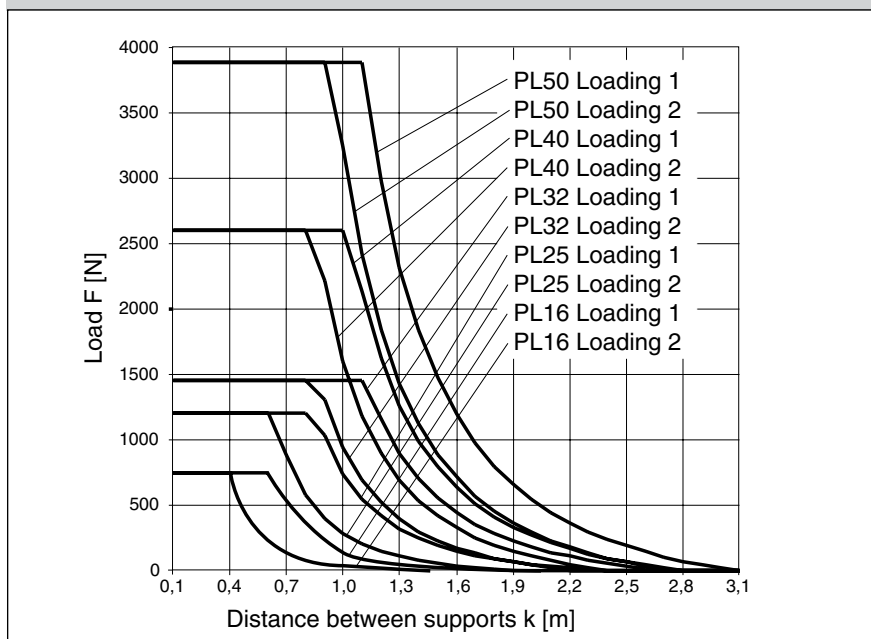
Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max.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



Note:

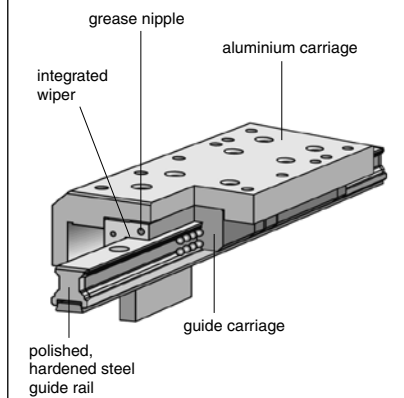
For speeds $v > 0.5$ m/s the distance between supports should not exceed 1 m.

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



Versions

for pneumatic linear drive:
Series OSP-P

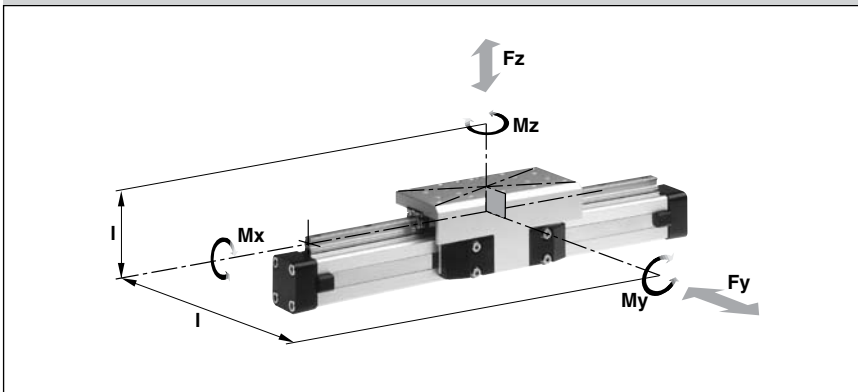


Recirculating Ball Bearing Guide STARLINE



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

Loads, Forces and Moments



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

Technical Data

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

$$\frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} + \frac{F_y}{F_{y_{max}}} + \frac{F_z}{F_{z_{max}}} \leq 1$$

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

The sum of the loads should not exceed >1

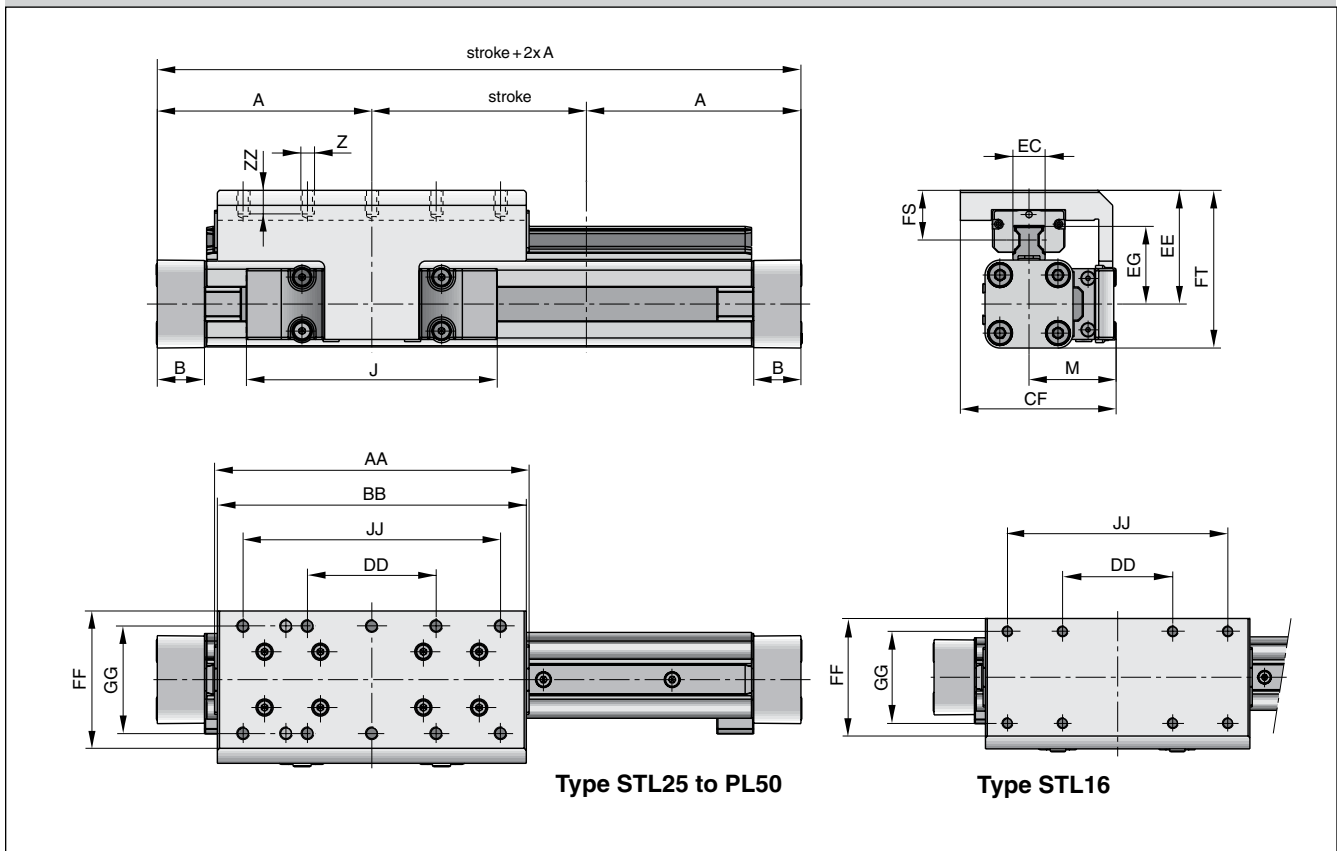
**** Please note:**

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

The right to introduce technical modifications is reserved

| Series | For linear drive | Max. moments [Nm] | | | Max. loads [N] | | Mass of linear drive with guide [kg] | | Mass ** guide carriage [kg] |
|--------------|------------------|-------------------|-----|-----|----------------|------|--------------------------------------|----------------------------|-----------------------------|
| | | 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 |
| STL25 | OSP-P25 | 50 | 110 | 110 | 3100 | 3100 | 1.733 | 0.369 | 0.835 |
| STL32 | OSP-P32 | 62 | 160 | 160 | 3100 | 3100 | 2.934 | 0.526 | 1.181 |
| STL40 | OSP-P40 | 150 | 400 | 400 | 4000 | 7500 | 4.452 | 0.701 | 1.901 |
| STL50 | OSP-P50 | 210 | 580 | 580 | 4000 | 7500 | 7.361 | 0.936 | 2.880 |

Dimensions Series OSP-P STL16 to STL 50

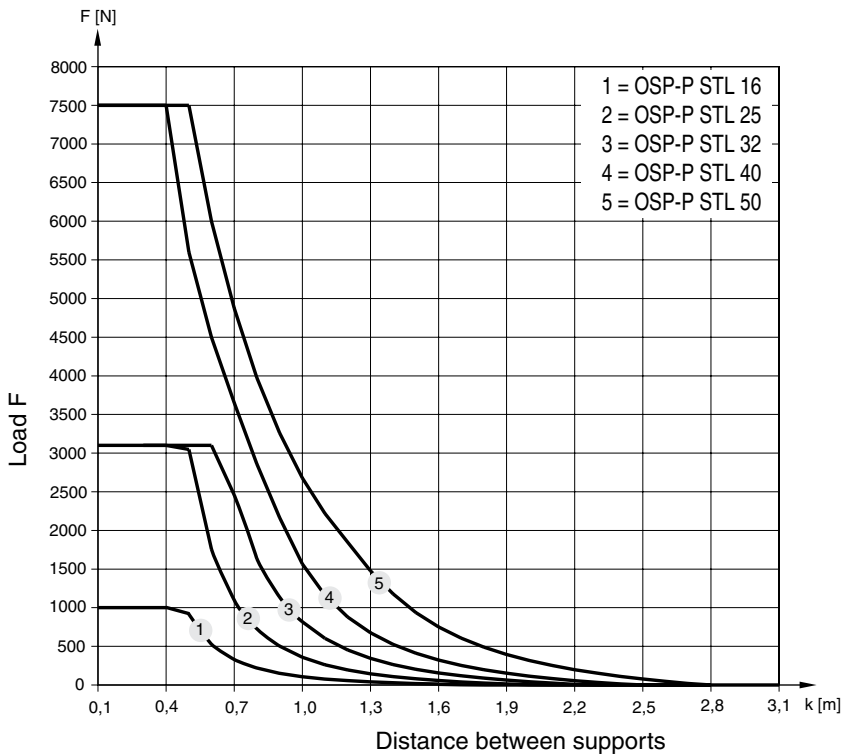


Dimension Table (mm) Series OSP-P STL16 to STL50

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

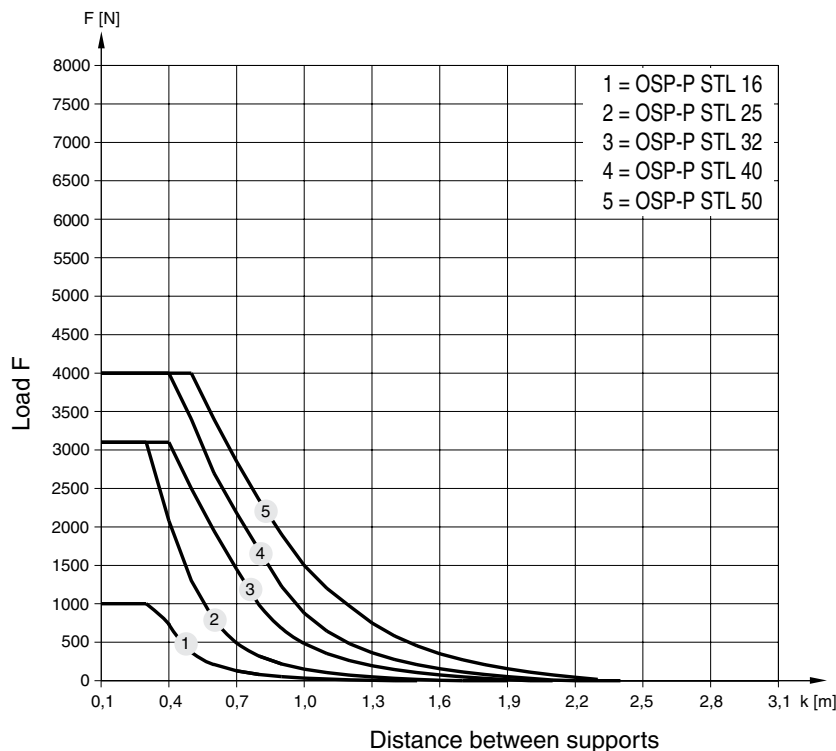
Permissible Unsupported Length STL16 to STL50

Loading 1 – Top carrier



Permissible Unsupported Length STL16 to STL50

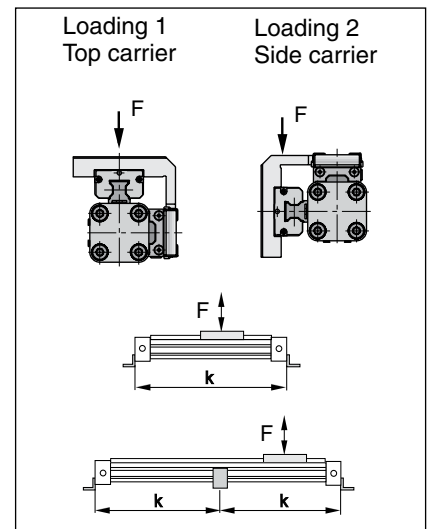
Loading 2 – Side carrier



Mid-Section Support

(For versions, see pages 76-77)

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



Note:

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

Variable Stop

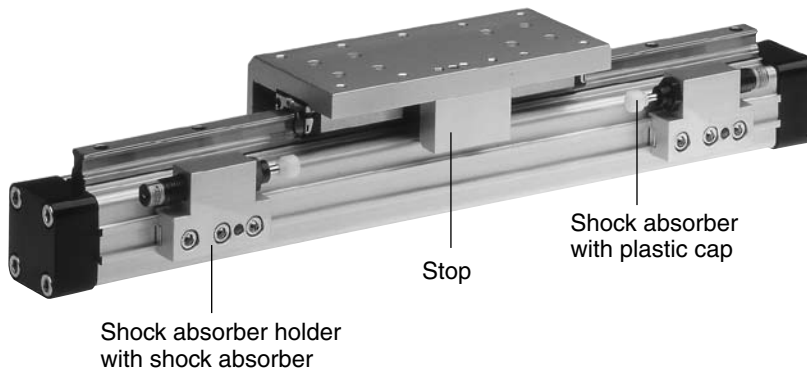
The variable stop Type VS provides simple stroke limitation. It can be retrofitted and positioned anywhere along the stroke length. For every cylinder diameter two types of shock absorber are available – see “Shock Absorber Selection” below.

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.

Variable Stop Type VS16 to VS50

Arrangement with two variable stops

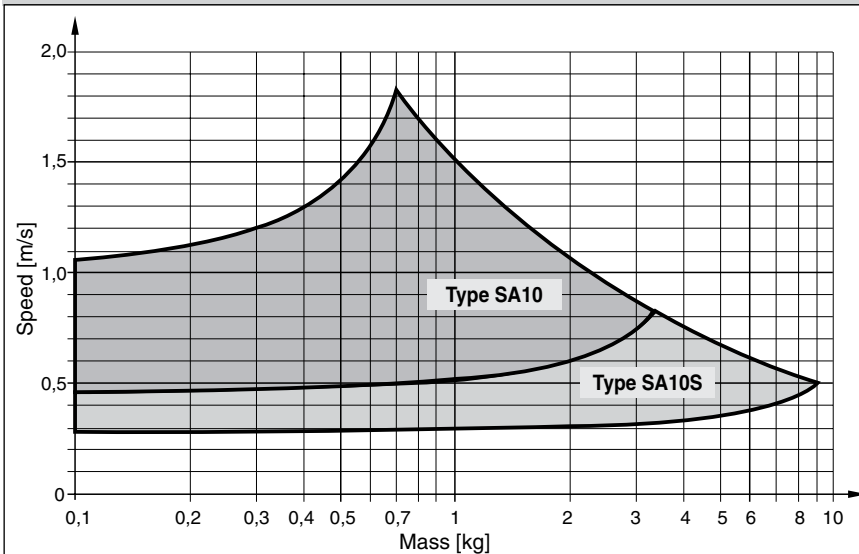


Shock Absorber Selection

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

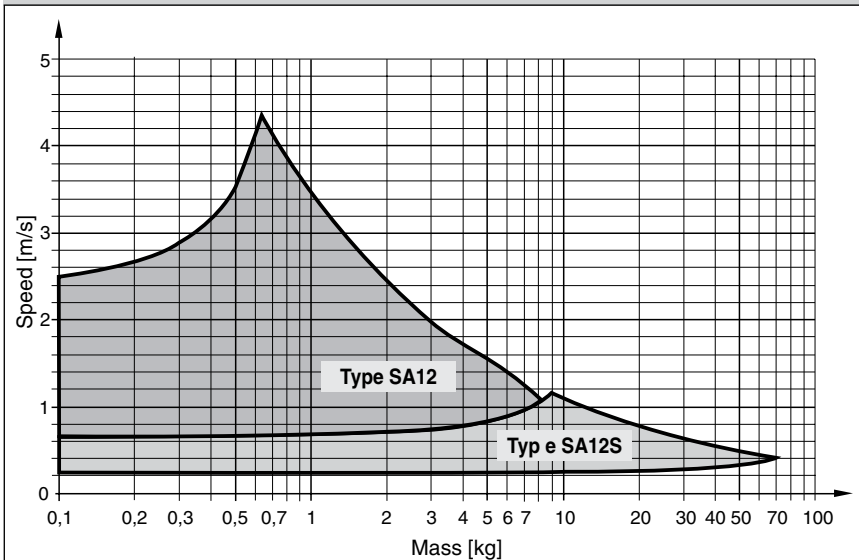
The mass of the carrier itself must be taken into account.

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



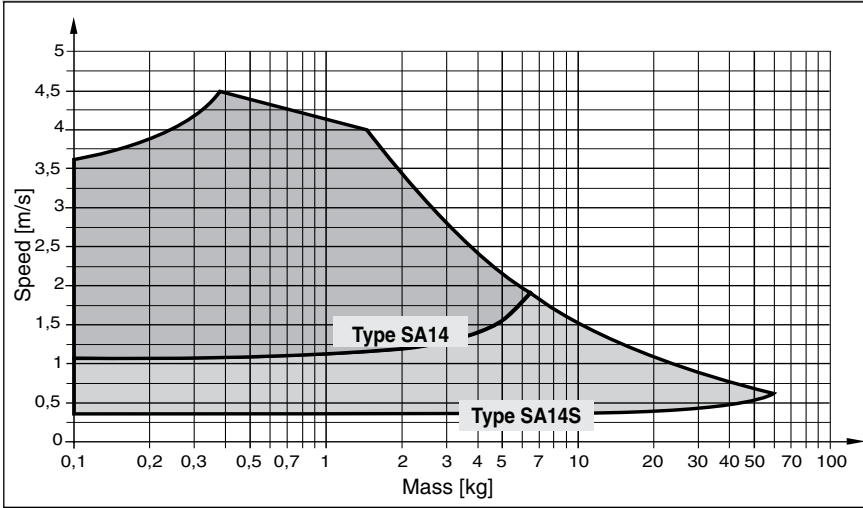
The values relate to an effective driving force of 78 N (6 bar)

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



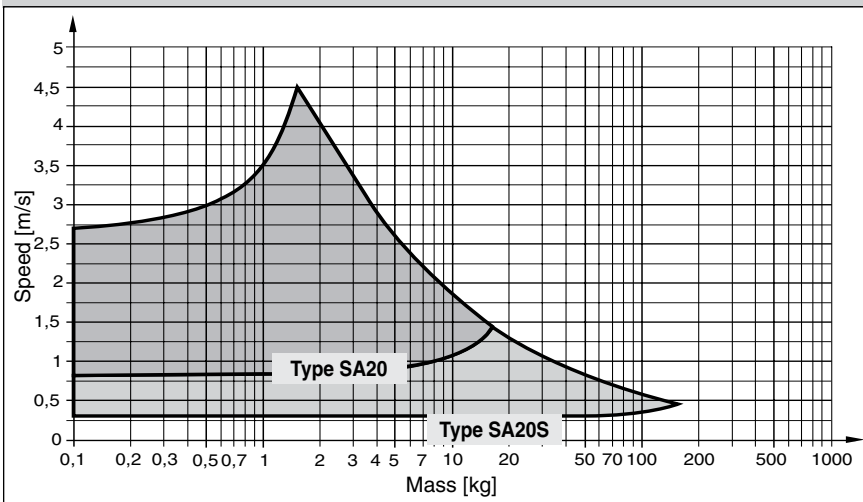
The values relate to an effective driving force of 250 N (6 bar)

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



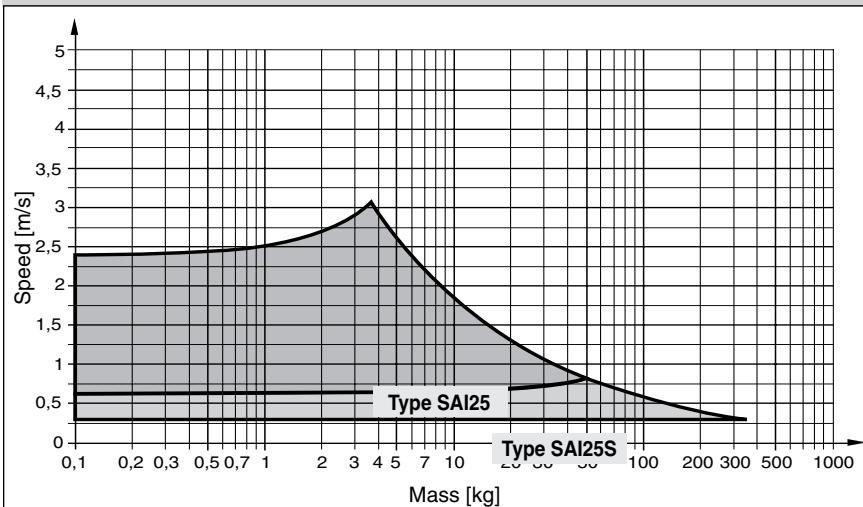
The values relate to an effective driving force of 420 N (6 bar)

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



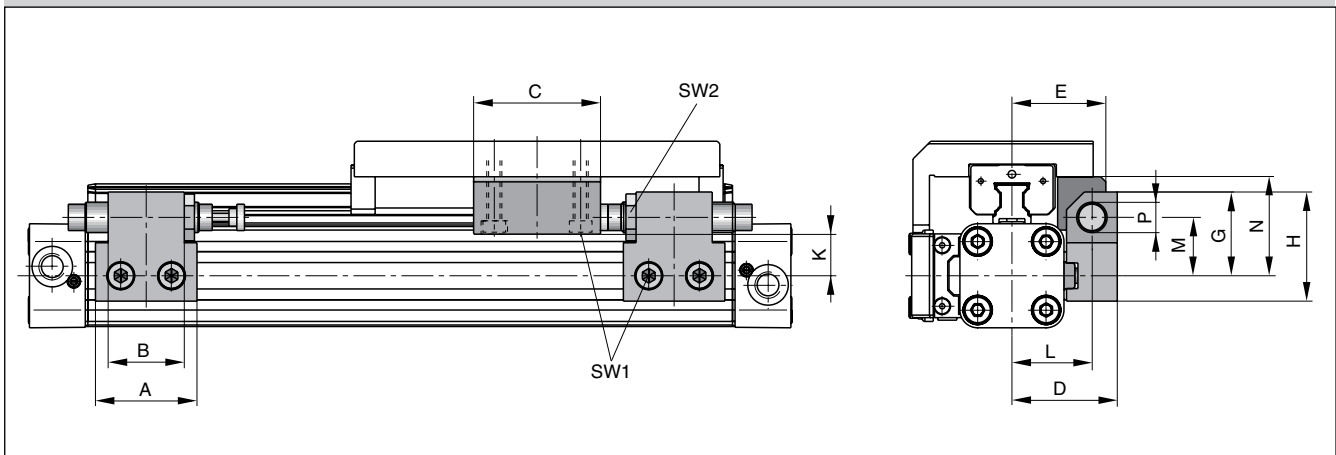
The values relate to an effective driving force of 640 N (6 bar)

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



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

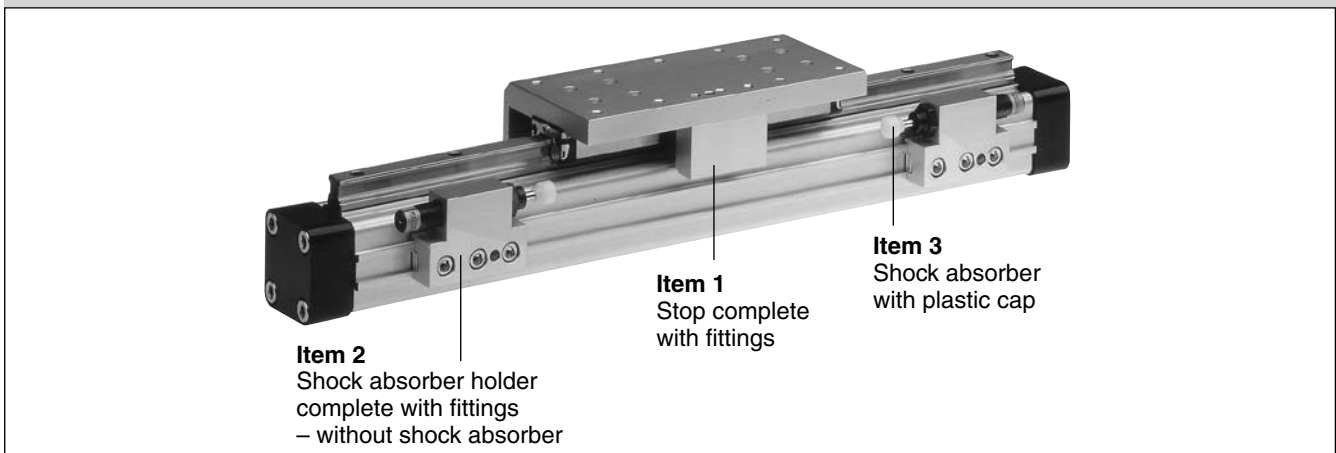
Dimensions – Variable Stop Type VS16 to VS50



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

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

Order Information – Variable Stop Type VS16 to VS50

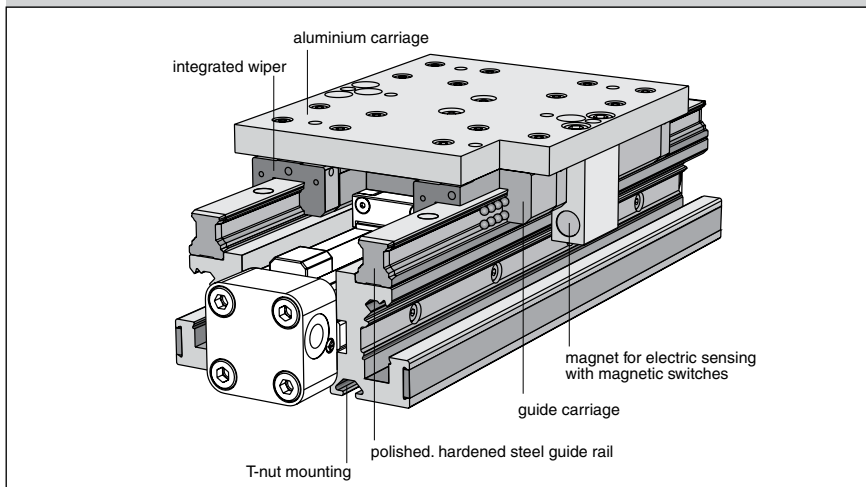


Order Instructions – Variable Stop Type VS16 to VS50

| Item | Description | Size | | | | | | | | | |
|------|---------------------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|--------|-----------|
| | | VS16 | | VS25 | | VS32 | | VS40 | | VS50 | |
| | | Type | Order No. | Type | Order No. | Type | Order No. | Type | Order No. | Type | Order No. |
| 1 | Stop, complete | - | 21196 | - | 21197 | - | 21198 | - | 21199 | - | 21200 |
| 2 | Shock absorber holder, complete | - | 21201 | - | 21202 | - | 21203 | - | 21204 | - | 21205 |
| 3 * | Shock absorber, standard | SA10 | 7718 | SA12 | 7706 | SA14 | 7708 | SA20 | 7710 | SAI25 | 7712 |
| | Shock absorber, version S | SA10S | 7721 | SA12S | 7707 | SA14S | 7709 | SA20S | 7711 | SAI25S | 7835 |

* Shock absorber with plastic cap

Version with pneumatic linear drive series OSP-P

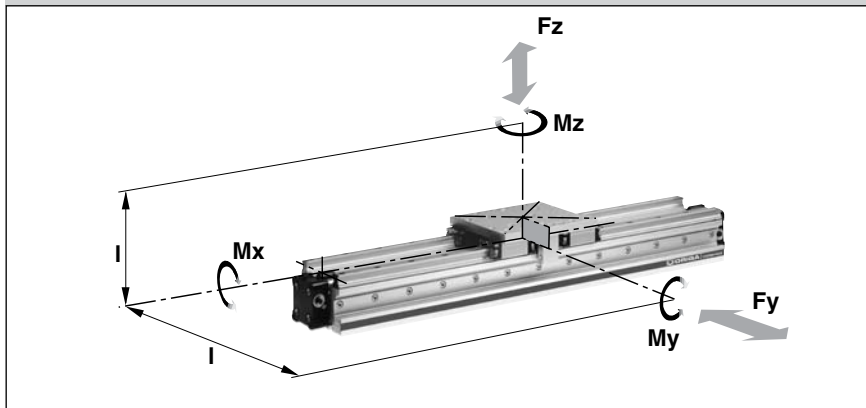


Heavy Duty- Guide HD



**Series HD 25 to 50
for Linear Drive Series OSP-P**

Loads, Forces and Moments



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

Technical Data

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

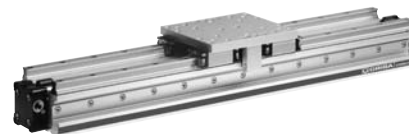
$$\frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} + \frac{F_y}{F_{y_{max}}} + \frac{F_z}{F_{z_{max}}} \leq 1$$

The sum of the loads should not >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 does not have to be added to the total moving mass when using the cushioning diagram.

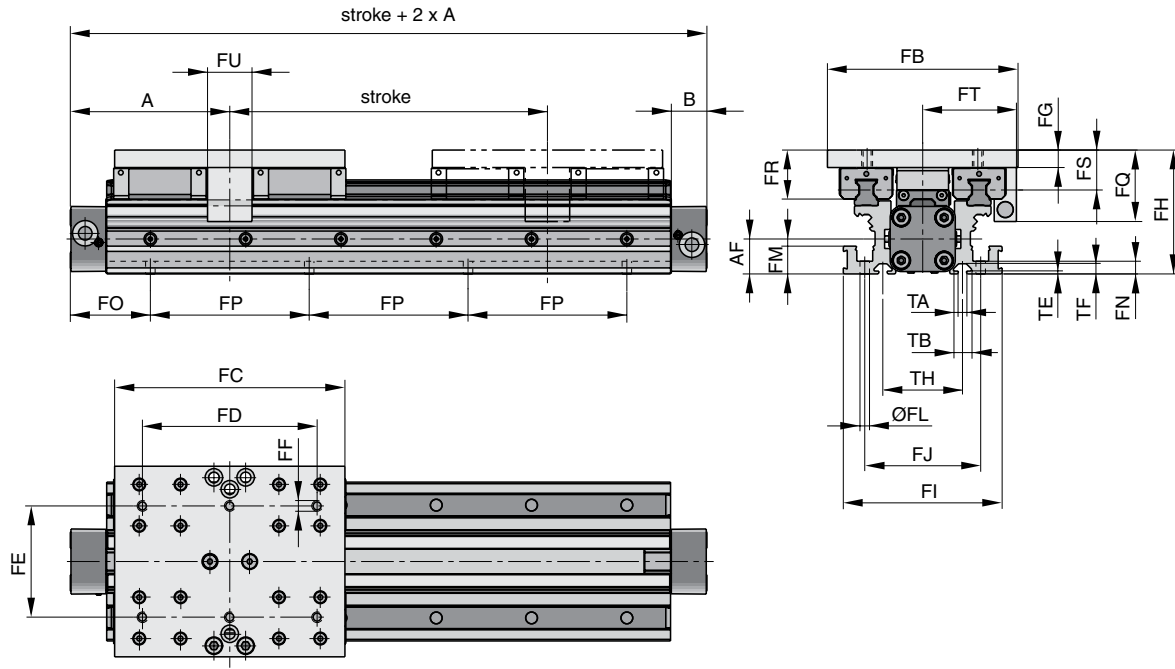


The right to introduce technical modifications is reserved

| Series | for linear drive | Max. moments [Nm] | | | Max. loads [N] | | Mass of the linear drive with guide [kg] | | Mass * guide carriage [kg] |
|--------|------------------|-------------------|------|------|----------------|-------|--|----------------------------|----------------------------|
| | | Mx | My | Mz | Fy | Fz | with 0mm stroke | increase per 100 mm stroke | |
| HD 25 | OSP-P25 | 260 | 320 | 320 | 6000 | 6000 | 3.065 | 0.924 | 1.289 |
| HD 32 | OSP-P32 | 285 | 475 | 475 | 6000 | 6000 | 4.308 | 1.112 | 1.367 |
| HD 40 | OSP-P40 | 800 | 1100 | 1100 | 15000 | 15000 | 7.901 | 1.748 | 2.712 |
| HD 50 | OSP-P50 | 1100 | 1400 | 1400 | 18000 | 18000 | 11.648 | 2.180 | 3.551 |

Dimensions

Series OSP-P



Note:

The HD heavy duty guide must be mounted on a flat surface for its entire length.

If T-grooves or T-bolts are used, the distance between them should not exceed 100 mm.

**Variable Stop
 Type VS25 to VS50**

The variable stop provides simple stroke limitation and can be supplied mounted on the right or left, as required.

For further information see following data sheets:

For dimensions and order instructions see page 50

For shock absorber selection see pages 44-45

**Incremental displacement
 measuring system
 ORIGA-Sensoflex
 Series SFI-plus**

can be supplied mounted on the right or left, as required.

For further information see page 97

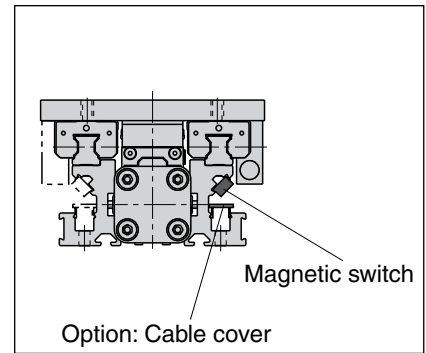
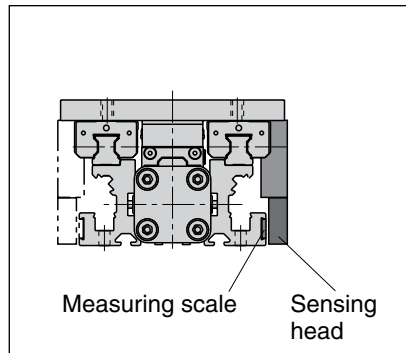
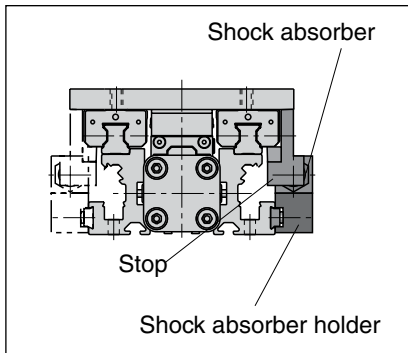
Arrangement of magnetic switches:

Magnetic switches can be fitted anywhere on either side.

For further information see following data sheets:

Magnetic Switches see pages 84, 86 and 88-94

Cable Cover see page 87



Dimension Table (mm)

| Series | A | B | AF | FB | FC | FD | FE | FF | FG | FH | FI | FJ | ØFL |
|--------|-----|------|----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|
| HD25 | 100 | 22 | 22 | 120 | 145 | 110 | 70 | M6 | 11 | 78 | 100 | 73 | 6 |
| HD32 | 125 | 25.5 | 30 | 120 | 170 | 140 | 80 | M6 | 11 | 86 | 112 | 85 | 6 |
| HD40 | 150 | 28 | 38 | 160 | 180 | 140 | 110 | M8 | 14 | 108 | 132 | 104 | 7.5 |
| HD50 | 175 | 33 | 48 | 180 | 200 | 160 | 120 | M8 | 14 | 118 | 150 | 118 | 7.5 |

| Series | FM | FN | FP | FQ | FR | FS | FT | FU | TA | TB | TE | TF | TH |
|--------|------|----|-----|----|----|------|----|----|-----|------|-----|------|----|
| HD25 | 17.5 | 8 | 100 | 45 | 31 | 25 | 59 | 28 | 5.2 | 11.5 | 1.8 | 6.4 | 50 |
| HD32 | 17.5 | 8 | 100 | 45 | 31 | 25 | 63 | 30 | 5.2 | 11.5 | 1.8 | 6.4 | 60 |
| HD40 | 22 | 10 | 100 | 58 | 40 | 31.5 | 76 | 30 | 8.2 | 20 | 4.5 | 12.3 | 66 |
| HD50 | 22 | 10 | 100 | 58 | 44 | 35.5 | 89 | 30 | 8.2 | 20 | 4.5 | 12.3 | 76 |

Note:

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

Example:

Stroke 15**25** mm



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

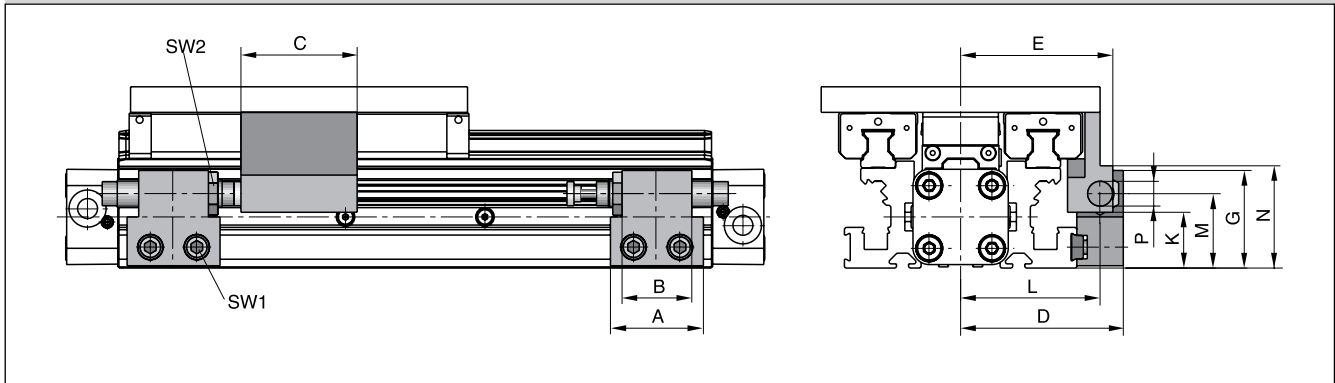
FO = 62.5 mm

| FO | | | | |
|-------|------|------|------|------|
| OSP-P | | | | |
| x | HD25 | HD32 | HD40 | HD50 |
| 00 | 50.0 | 75.0 | 50.0 | 75.0 |
| 01 | 50.5 | 75.5 | 50.5 | 75.5 |
| 02 | 51.0 | 76.0 | 51.0 | 76.0 |
| 03 | 51.5 | 76.5 | 51.5 | 76.5 |
| 04 | 52.0 | 77.0 | 52.0 | 77.0 |
| 05 | 52.5 | 77.5 | 52.5 | 77.5 |
| 06 | 53.0 | 78.0 | 53.0 | 78.0 |
| 07 | 53.5 | 78.5 | 53.5 | 78.5 |
| 08 | 54.0 | 79.0 | 54.0 | 79.0 |
| 09 | 54.5 | 79.5 | 54.5 | 79.5 |
| 10 | 55.0 | 80.0 | 55.0 | 80.0 |
| 11 | 55.5 | 80.5 | 55.5 | 80.5 |
| 12 | 56.0 | 81.0 | 56.0 | 81.0 |
| 13 | 56.5 | 81.5 | 56.5 | 81.5 |
| 14 | 57.0 | 82.0 | 57.0 | 82.0 |
| 15 | 57.5 | 82.5 | 57.5 | 82.5 |
| 16 | 58.0 | 83.0 | 58.0 | 83.0 |
| 17 | 58.5 | 83.5 | 58.5 | 83.5 |
| 18 | 59.0 | 84.0 | 59.0 | 84.0 |
| 19 | 59.5 | 84.5 | 59.5 | 84.5 |
| 20 | 60.0 | 85.0 | 60.0 | 85.0 |
| 21 | 60.5 | 85.5 | 60.5 | 85.5 |
| 22 | 61.0 | 86.0 | 61.0 | 86.0 |
| 23 | 61.5 | 86.5 | 61.5 | 86.5 |
| 24 | 62.0 | 87.0 | 62.0 | 87.0 |
| 25 | 62.5 | 87.5 | 62.5 | 87.5 |
| 26 | 63.0 | 88.0 | 63.0 | 88.0 |
| 27 | 63.5 | 88.5 | 63.5 | 88.5 |
| 28 | 64.0 | 89.0 | 64.0 | 89.0 |
| 29 | 64.5 | 89.5 | 64.5 | 89.5 |
| 30 | 65.0 | 90.0 | 65.0 | 90.0 |
| 31 | 65.5 | 90.5 | 65.5 | 90.5 |
| 32 | 66.0 | 91.0 | 66.0 | 91.0 |
| 33 | 66.5 | 91.5 | 66.5 | 91.5 |

| FO | | | | |
|-------|------|------|------|-------|
| OSP-P | | | | |
| x | HD25 | HD32 | HD40 | HD50 |
| 34 | 67.0 | 42.0 | 67.0 | 92.0 |
| 35 | 67.5 | 42.5 | 67.5 | 92.5 |
| 36 | 68.0 | 43.0 | 68.0 | 93.0 |
| 37 | 68.5 | 43.5 | 68.5 | 93.5 |
| 38 | 69.0 | 44.0 | 69.0 | 94.0 |
| 39 | 69.5 | 44.5 | 69.5 | 94.5 |
| 40 | 70.0 | 45.0 | 70.0 | 95.0 |
| 41 | 70.5 | 45.5 | 70.5 | 95.5 |
| 42 | 71.0 | 46.0 | 71.0 | 96.0 |
| 43 | 71.5 | 46.5 | 71.5 | 96.5 |
| 44 | 72.0 | 47.0 | 72.0 | 97.0 |
| 45 | 72.5 | 47.5 | 72.5 | 97.5 |
| 46 | 73.0 | 48.0 | 73.0 | 98.0 |
| 47 | 73.5 | 48.5 | 73.5 | 98.5 |
| 48 | 74.0 | 49.0 | 74.0 | 99.0 |
| 49 | 74.5 | 49.5 | 74.5 | 99.5 |
| 50 | 75.0 | 50.0 | 75.0 | 100.0 |
| 51 | 75.5 | 50.5 | 75.5 | 100.5 |
| 52 | 76.0 | 51.0 | 76.0 | 101.0 |
| 53 | 76.5 | 51.5 | 76.5 | 101.5 |
| 54 | 77.0 | 52.0 | 77.0 | 102.0 |
| 55 | 77.5 | 52.5 | 77.5 | 102.5 |
| 56 | 78.0 | 53.0 | 78.0 | 103.0 |
| 57 | 78.5 | 53.5 | 78.5 | 103.5 |
| 58 | 79.0 | 54.0 | 79.0 | 104.0 |
| 59 | 79.5 | 54.5 | 79.5 | 104.5 |
| 60 | 80.0 | 55.0 | 80.0 | 105.0 |
| 61 | 80.5 | 55.5 | 80.5 | 105.5 |
| 62 | 81.0 | 56.0 | 81.0 | 106.0 |
| 63 | 81.5 | 56.5 | 81.5 | 106.5 |
| 64 | 82.0 | 57.0 | 82.0 | 107.0 |
| 65 | 82.5 | 57.5 | 82.5 | 107.5 |
| 66 | 83.0 | 58.0 | 83.0 | 108.0 |
| 67 | 83.5 | 58.5 | 83.5 | 108.5 |

| FO | | | | |
|-------|------|------|------|------|
| OSP-P | | | | |
| x | HD25 | HD32 | HD40 | HD50 |
| 68 | 34.0 | 59.0 | 84.0 | 59.0 |
| 69 | 34.5 | 59.5 | 84.5 | 59.5 |
| 70 | 35.0 | 60.0 | 85.0 | 60.0 |
| 71 | 35.5 | 60.5 | 85.5 | 60.5 |
| 72 | 36.0 | 61.0 | 86.0 | 61.0 |
| 73 | 36.5 | 61.5 | 86.5 | 61.5 |
| 74 | 37.0 | 62.0 | 87.0 | 62.0 |
| 75 | 37.5 | 62.5 | 87.5 | 62.5 |
| 76 | 38.0 | 63.0 | 88.0 | 63.0 |
| 77 | 38.5 | 63.5 | 88.5 | 63.5 |
| 78 | 39.0 | 64.0 | 89.0 | 64.0 |
| 79 | 39.5 | 64.5 | 89.5 | 64.5 |
| 80 | 40.0 | 65.0 | 90.0 | 65.0 |
| 81 | 40.5 | 65.5 | 90.5 | 65.5 |
| 82 | 41.0 | 66.0 | 91.0 | 66.0 |
| 83 | 41.5 | 66.5 | 91.5 | 66.5 |
| 84 | 42.0 | 67.0 | 92.0 | 67.0 |
| 85 | 42.5 | 67.5 | 92.5 | 67.5 |
| 86 | 43.0 | 68.0 | 93.0 | 68.0 |
| 87 | 43.5 | 68.5 | 93.5 | 68.5 |
| 88 | 44.0 | 69.0 | 94.0 | 69.0 |
| 89 | 44.5 | 69.5 | 94.5 | 69.5 |
| 90 | 45.0 | 70.0 | 95.0 | 70.0 |
| 91 | 45.5 | 70.5 | 95.5 | 70.5 |
| 92 | 46.0 | 71.0 | 96.0 | 71.0 |
| 93 | 46.5 | 71.5 | 96.5 | 71.5 |
| 94 | 47.0 | 72.0 | 97.0 | 72.0 |
| 95 | 47.5 | 72.5 | 97.5 | 72.5 |
| 96 | 48.0 | 73.0 | 98.0 | 73.0 |
| 97 | 48.5 | 73.5 | 98.5 | 73.5 |
| 98 | 49.0 | 74.0 | 99.0 | 74.0 |
| 99 | 49.5 | 74.5 | 99.5 | 74.5 |

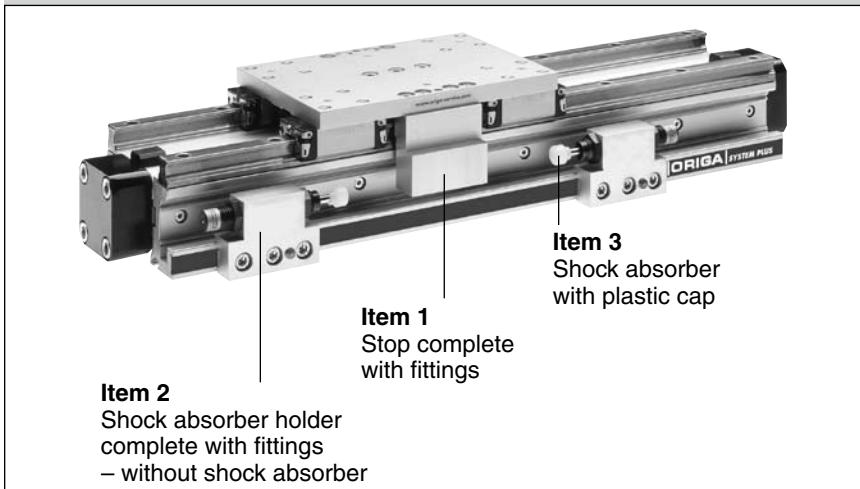
Dimensions – Variable Stop Type VS25 to VS50



Dimension Table (mm) – Variable Stop Type VS25 to VS50

| Series | Type | A | B | C | D | E | G | K | L | M | N | P | SW1 | SW2 |
|----------|------|----|----|----|-----|------|----|----|----|----|----|-----------|-----|-----|
| OSP-HD25 | VS25 | 40 | 30 | 50 | 70 | 65.5 | 42 | 26 | 60 | 32 | 42 | M12 x 1 | 5 | 16 |
| OSP-HD32 | VS32 | 60 | 40 | 54 | 73 | 71 | 44 | 28 | 63 | 34 | 53 | M14 x 1.5 | 5 | 17 |
| OSP-HD40 | VS40 | 84 | 52 | 55 | 96 | 92 | 59 | 35 | 82 | 45 | 61 | M20 x 1.5 | 5 | 24 |
| OSP-HD50 | VS50 | 84 | - | 60 | 107 | 105 | 66 | 37 | 89 | 49 | 66 | M25 x 1.5 | 5 | 30 |

Order Information – Variable Stop Type VS25 to VS50



Shock Absorber Selection

For shock absorber selection in dependence on mass and speed see pages 44-45

Order Instructions – Variable Stop Type VS25 to VS50

| Item | Description | Size VS25 | | VS32 | | VS40 | | VS50 | |
|------|---------------------------------|-----------|-----------|-------|-----------|-------|-----------|--------|-----------|
| | | Type | Order No. | Type | Order No. | Type | Order No. | Type | Order No. |
| 1 | Stop, complete | - | 21257 | - | 21258 | - | 21259 | - | 21260 |
| 2 | Shock absorber holder, complete | - | 21202 | - | 21203 | - | 21204 | - | 21205 |
| 3 * | Shock absorber, standard | SA12 | 7706 | SA14 | 7708 | SA20 | 7710 | SAI25 | 7712 |
| | Shock absorber, version S | SA12S | 7707 | SA14S | 7709 | SA20S | 7711 | SAI25S | 7835 |

* Shock absorber with plastic cap (see pages 44-45)

Active and Passive Brakes Series OSP-P



Contents

| Description | Page |
|--|-------|
| Overview | 51-52 |
| Standard cylinder with Active brake | 53-56 |
| Plain bearing SLIDELINE with Active brake | 33-34 |
| Aluminium roller guide PROLINE with Active brake | 39-40 |
| Plain bearing SLIDELINE with Passive brake Multibrake | 57-60 |
| Aluminium roller guide PROLINE with Passive brake Multibrake | 61-63 |



Active Brakes and Passive Brakes

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

See pages 53-56

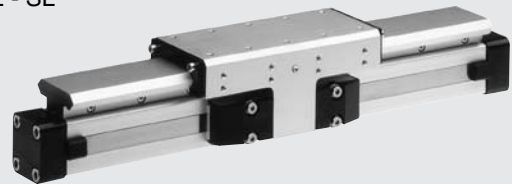


Versions:

- 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

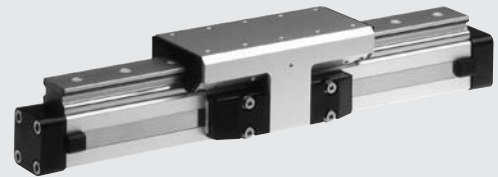
Slideline with Active Brake
Plain bearing guide SLIDELINE - SL
with integrated ACTIVE Brake
Piston diameters 25 - 50 mm.

See pages 33-34



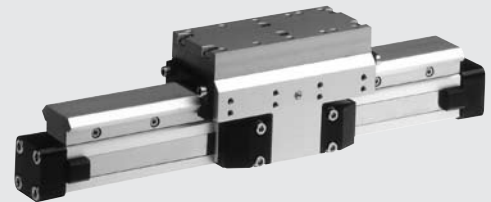
Proline with Active Brake
Aluminium roller guide
PROLINE - PL with
integrated ACTIVE Brake
Piston diameters 25 - 50 mm.

See pages 39-40



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

See pages 57-60

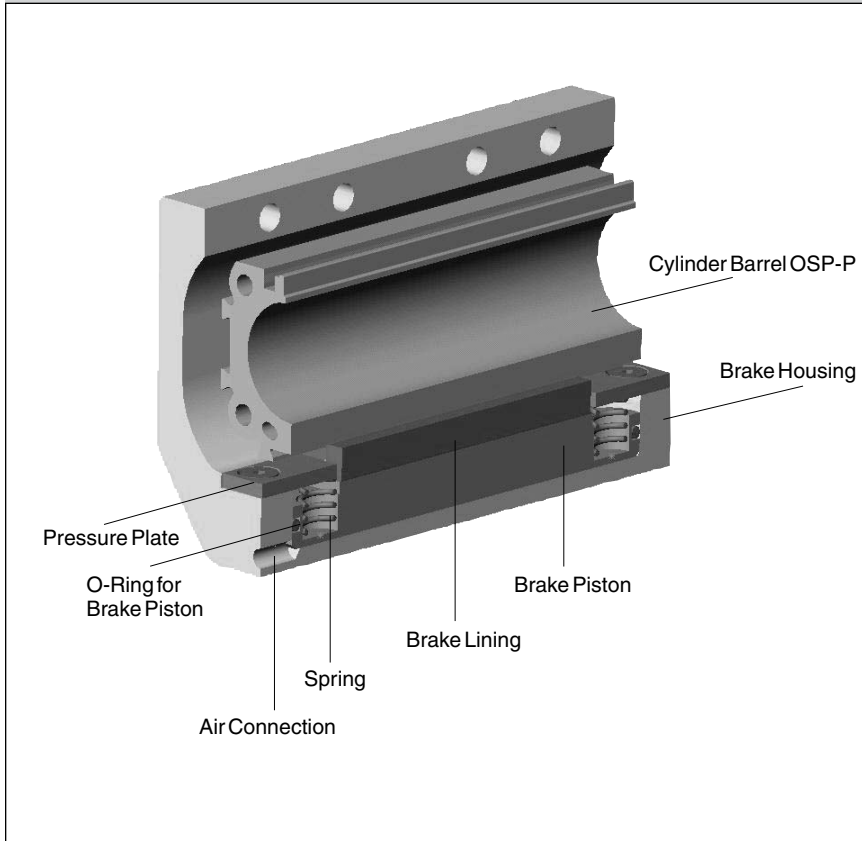


Multibrake with Proline
MULTI BRAKE – PASSIVE Brake
with aluminium roller guide
PROLINE - PL
Piston diameters 25 - 50 mm.

See pages 61-63



Function



Active Brake



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

Features:

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

For further technical data, please refer to the data sheets for linear drives OSP-P (page 15)

Note:

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

Forces and Weights

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

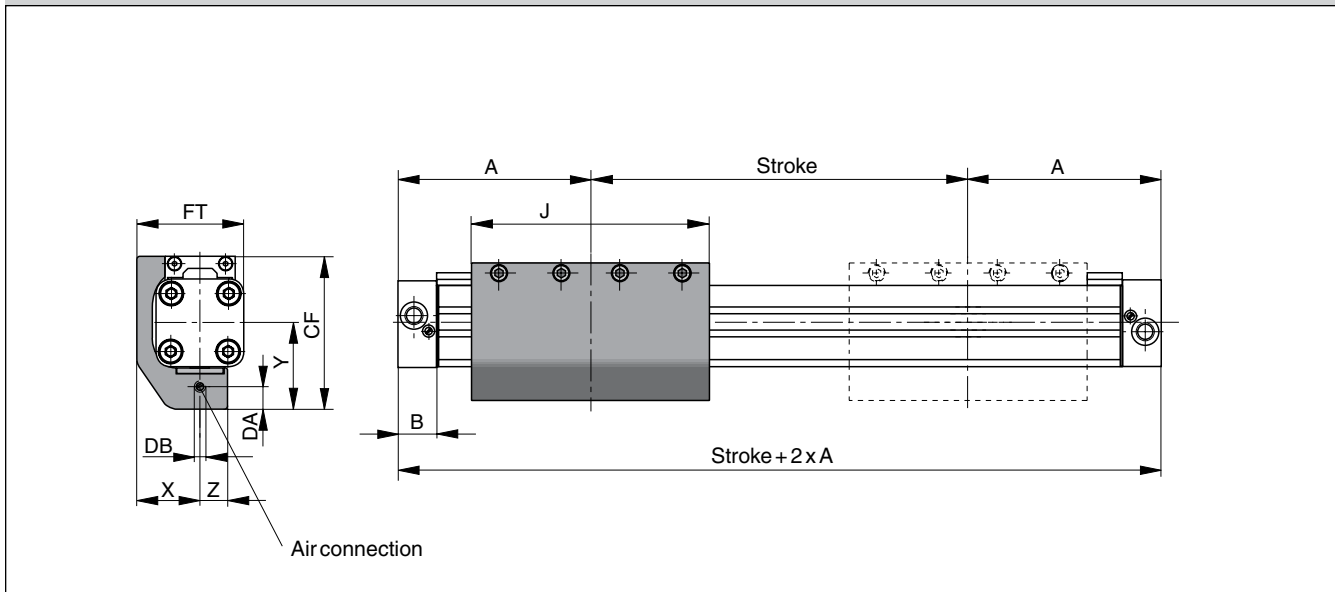
⁽¹⁾ – at 6 bar
 both chambers pressurized with 6 bar
 Braking surface dry
 – oil on the braking surface will reduce the braking force

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

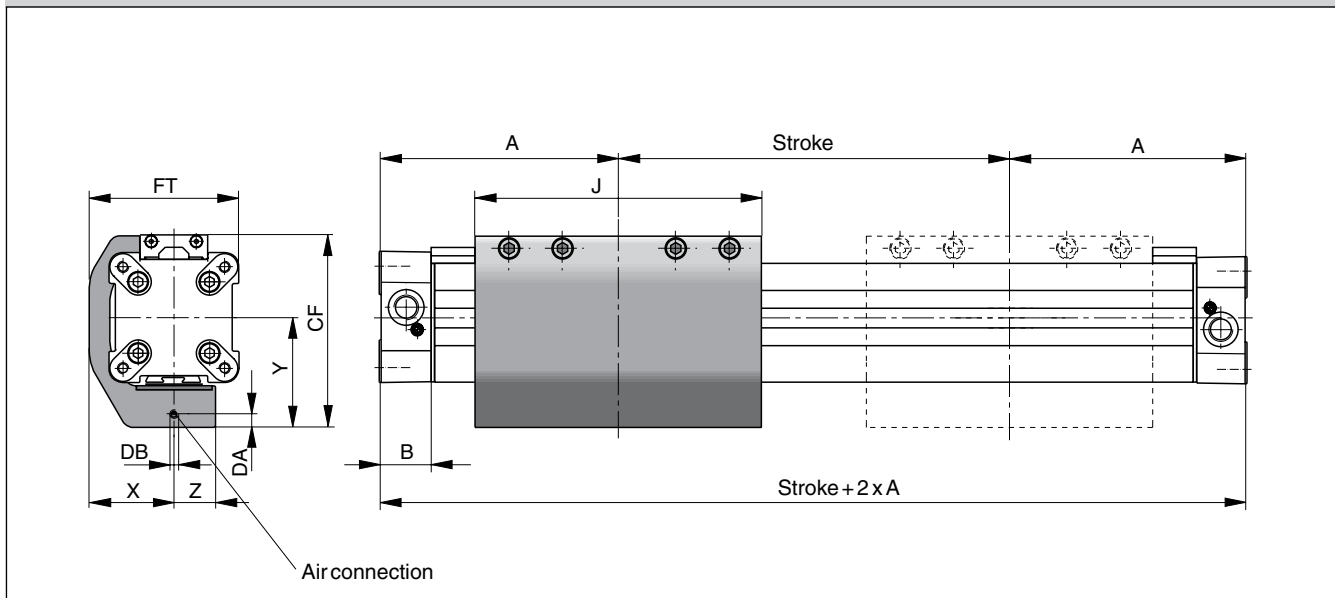
The right to introduce technical modifications is reserved



Series OSP-P25 and P32 with Active Brake AB



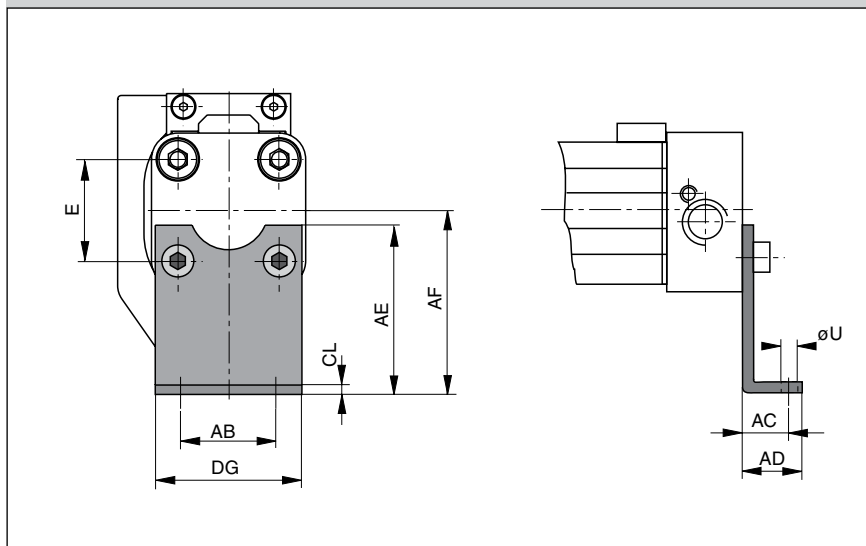
Series OSP-P40, P50, P63, P80 with Active Brake AB



Dimension Table (mm)

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

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



End Cap Mountings

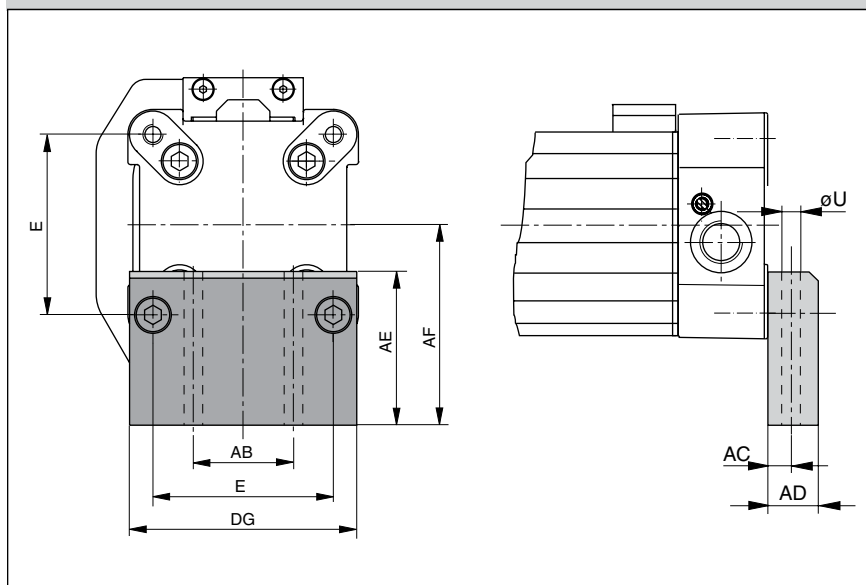
On the end-face of each cylinder end cap there are four threaded holes for mounting the cylinder. The hole layout is square, so that the mounting can be fitted to the bottom, top or either side.

Material: Series OSP-P25, P32:
Galvanized steel

The mountings are supplied in pairs.



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



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

The mountings are supplied in pairs.

Stainless steel version on request.



Dimension Table (mm)

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

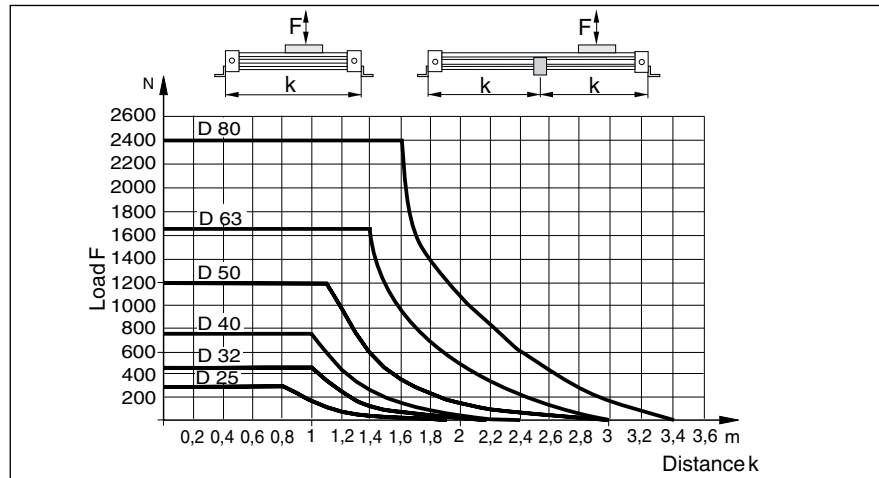
Mid Section Supports

Mid Section Support

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

The diagrams show the maximum permissible unsupported length in relation to loading. Deflection of 0.5 mm max. between supports is permissible.

The mid section supports are attached to the dovetail rails, and can take axial loads.



Mid Section Supports

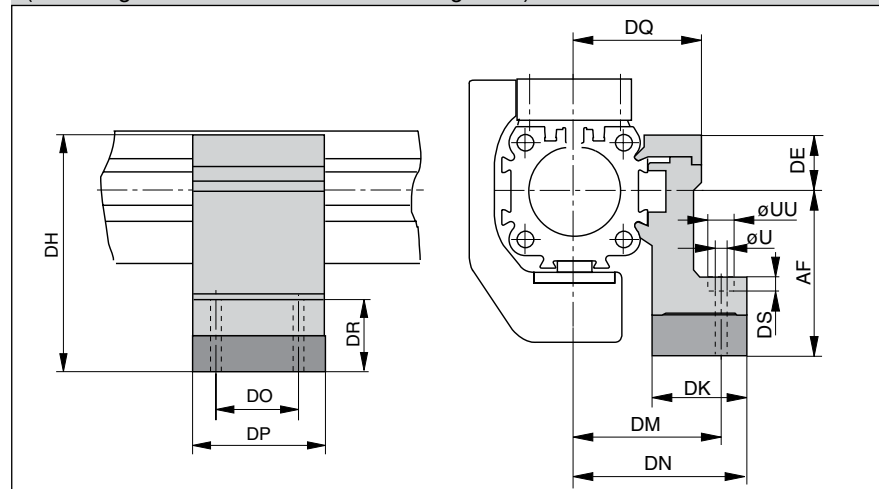
Note to Type E3:

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

Stainless steel version available on request.



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

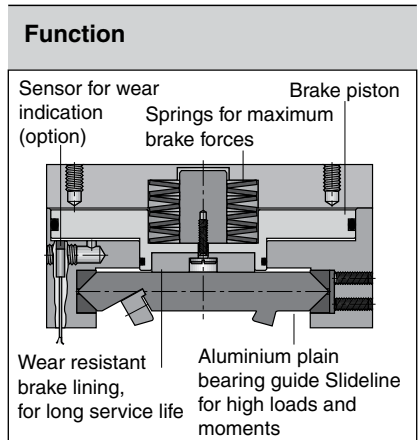
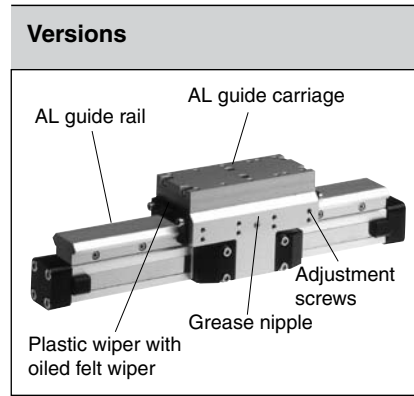


Dimension Table (mm)

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

Accessories for linear drives with Active Brakes – please order separately

| Description | For detailed information, page no. |
|--|------------------------------------|
| Clevis mounting | 68 |
| Adaptor profile | 79 |
| T-groove profile | 80 |
| Connection profile | 81 |
| Magnetic switch (can only be mounted opposite of the brake housing) | 84-86, 88-94 |
| Incremental displacement measuring system SFI-plus | 97-99 |



Multi-Brake Passive Brake with plain bearing guide Slideline SL



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

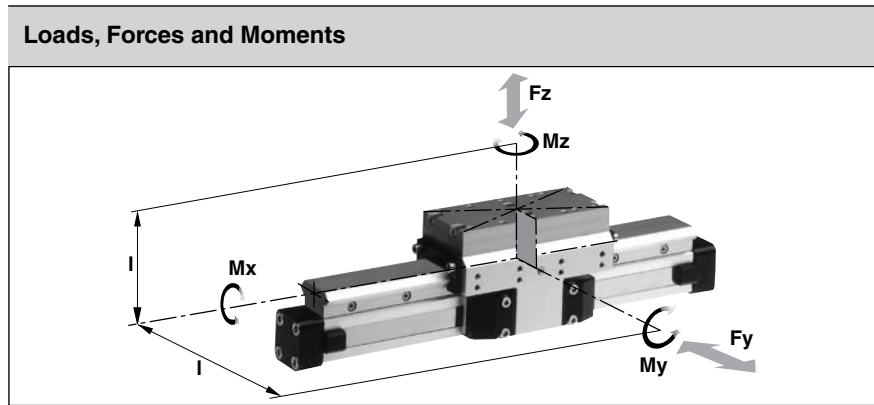
Function:

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 pressurization.

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.

Features:

- Brake operated by spring actuation
- Brake release by pressurization
- Optional sensor to indicate brake lining wear
- Anodized 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



Technical Data:

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

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 (page 15)

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

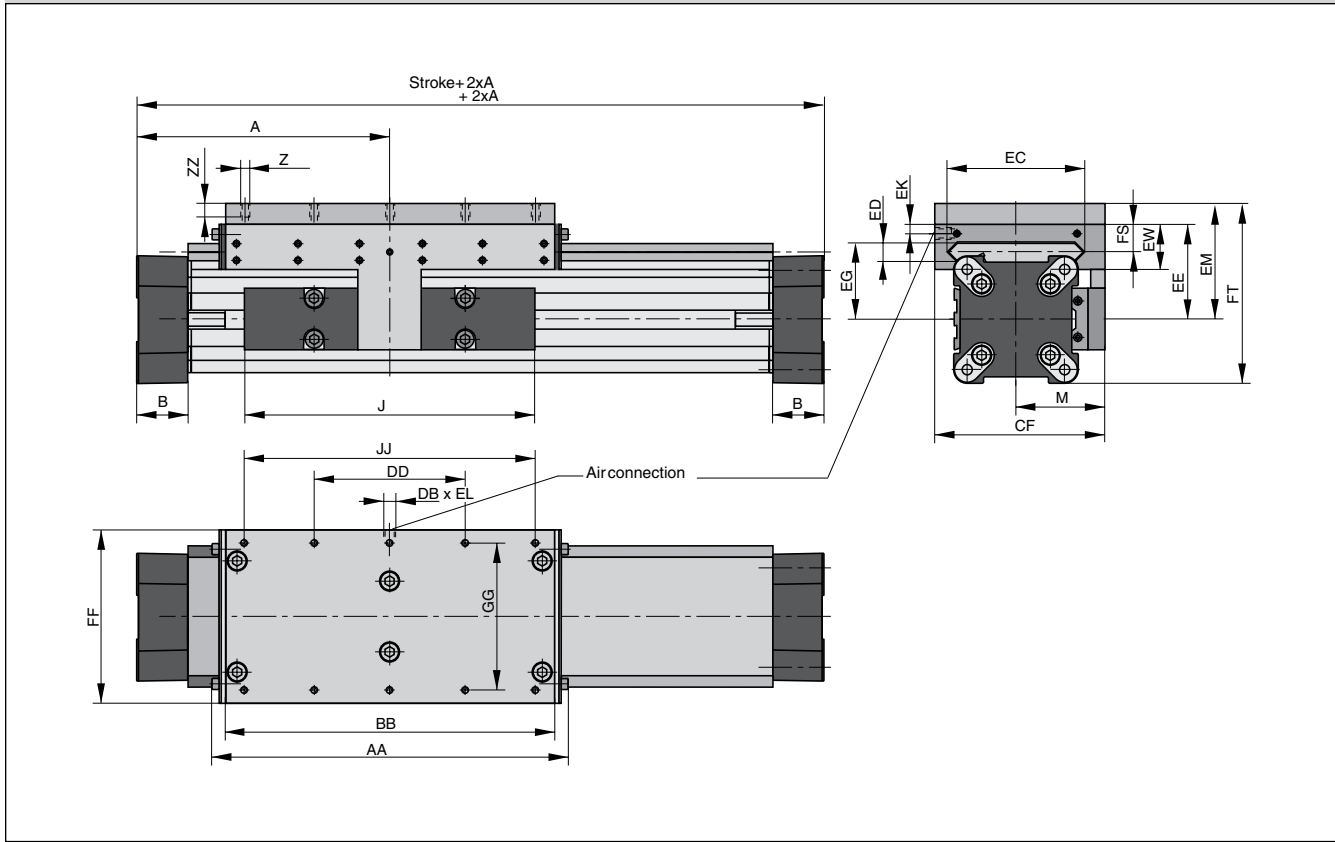
* **Please note:**
in the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

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

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

The right to introduce technical modifications is reserved

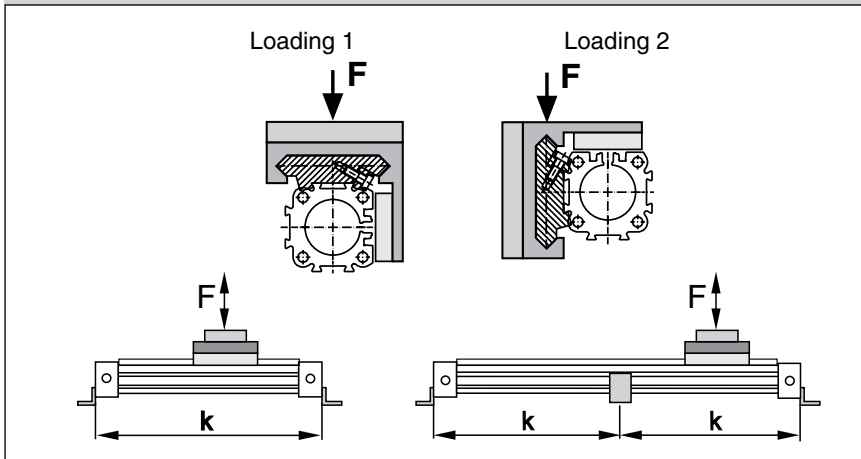
Series OSP-P with Passive Brake MB-SL



Dimension Table (mm)

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

Loading



Mid Section Support

(for versions see page 77)

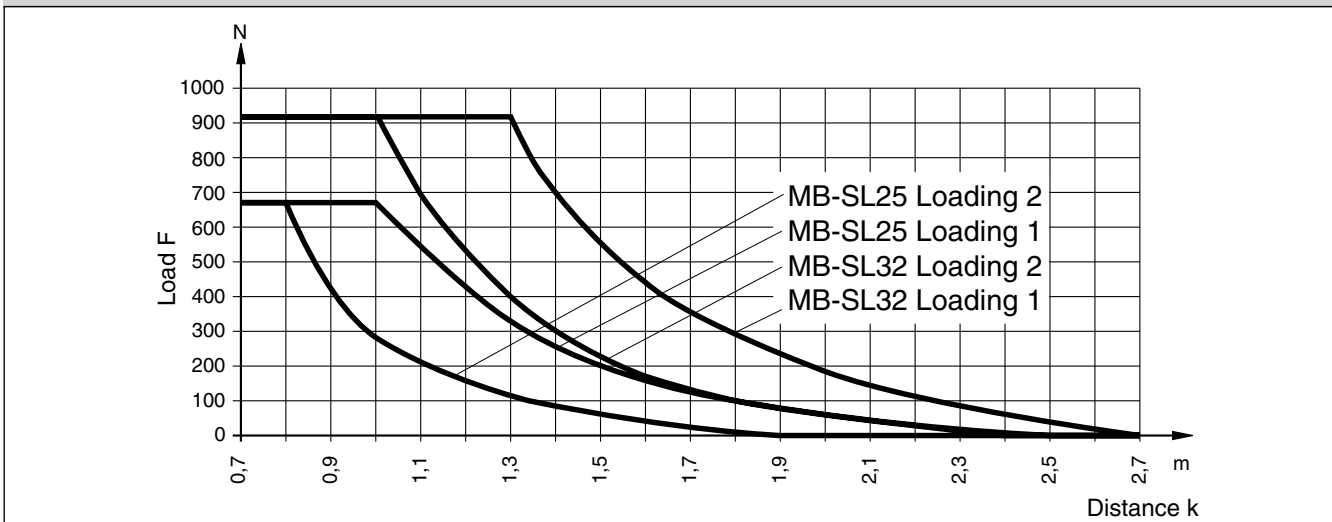
Mid section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive.

The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.

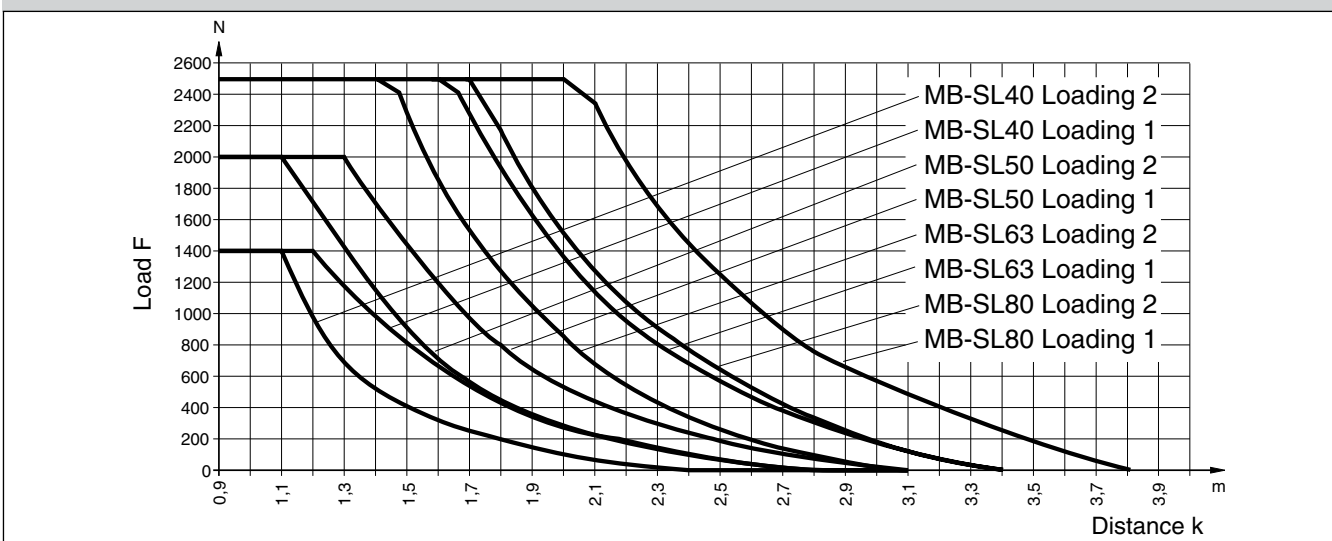
Note:

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

Permissible Unsupported Length MB-SL25, MB-SL32

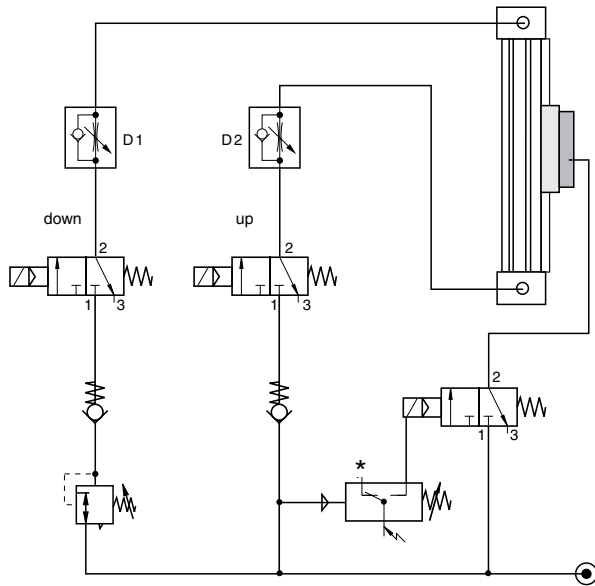


Permissible Unsupported Length MB-SL40, MB-SL50, MB-SL63 and MB-SL80

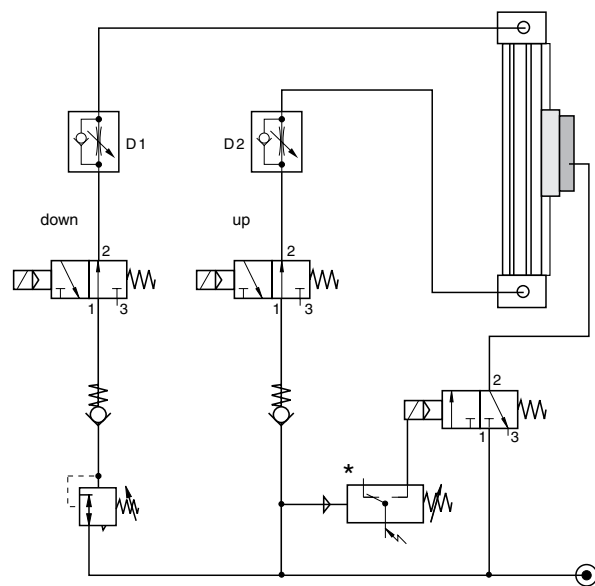


Application Example - Vertical Application

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



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



Control Examples

Under normal operating circumstances the pressure switch is closed and the air flows through the 3/2 way solenoid valves from port 1 to 2, thus lifting the brake from the rail (operating condition).

The brake is pressurized by means of a 3/2 way valve in combination with a pressure switch. When there is a pressure loss, the brake is actuated by the pressure switch.

When the air pressure is restored to both cylinder chambers, the brake is lifted and the linear drive can be moved again.

The speed regulating valves D1 and D2 control the speed of the linear drive, and have no influence on the brake. The two non-return valves give the system a higher stability.

The pressure regulating valve is used to compensate for the downward force in this vertical application.



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

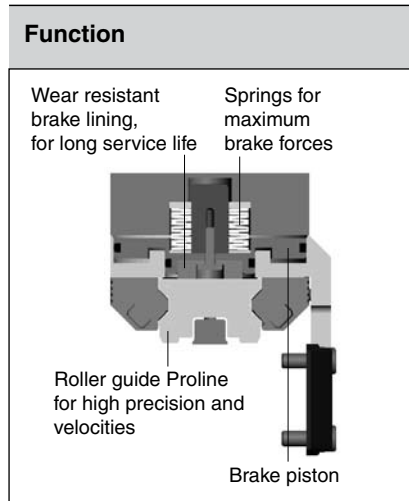
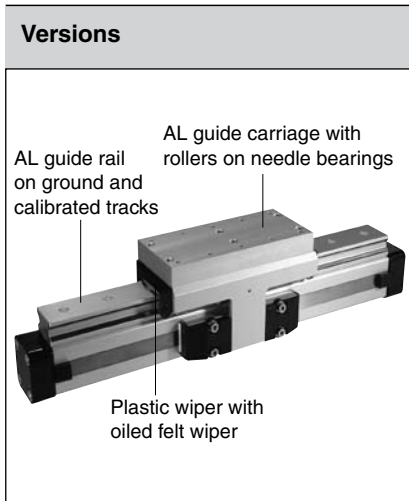
***Tip:**
 The pressure switch actuates the brake when the pressure drops below the set value.

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

Required Components

| |
|----------------------------------|
| Way Valves |
| Port size |
| M5, G1/8 |
| G1/4, G1/2 |
| Pressure Regulating Valves |
| G1/8 - G3/8 |
| Pneumatic Accessories |
| P/E-Switch |
| Non-Return Valves |
| G1/8 - G3/8 |
| Screw-in Speed Regulating Valves |
| M5 - G1/4 |

Contact factory for literature on the above valves/accessories



Multi-Brake Passive Brake with Aluminium Roller Guide Proline PL



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

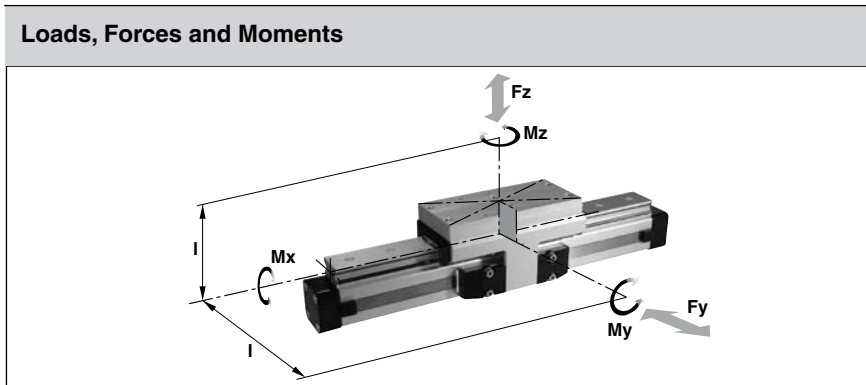
Function:

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 pressurization.

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.

Features:

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



Technical Data

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

$$\frac{M_x}{M_{x_{max}}} + \frac{M_y}{M_{y_{max}}} + \frac{M_z}{M_{z_{max}}} + \frac{L_y}{L_{y_{max}}} + \frac{L_z}{L_{z_{max}}} \leq 1$$

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.

Operating Pressure 4.5 - 8 bar. A pressure of min. 4.5 bar release the brake.

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

*** Please note:**

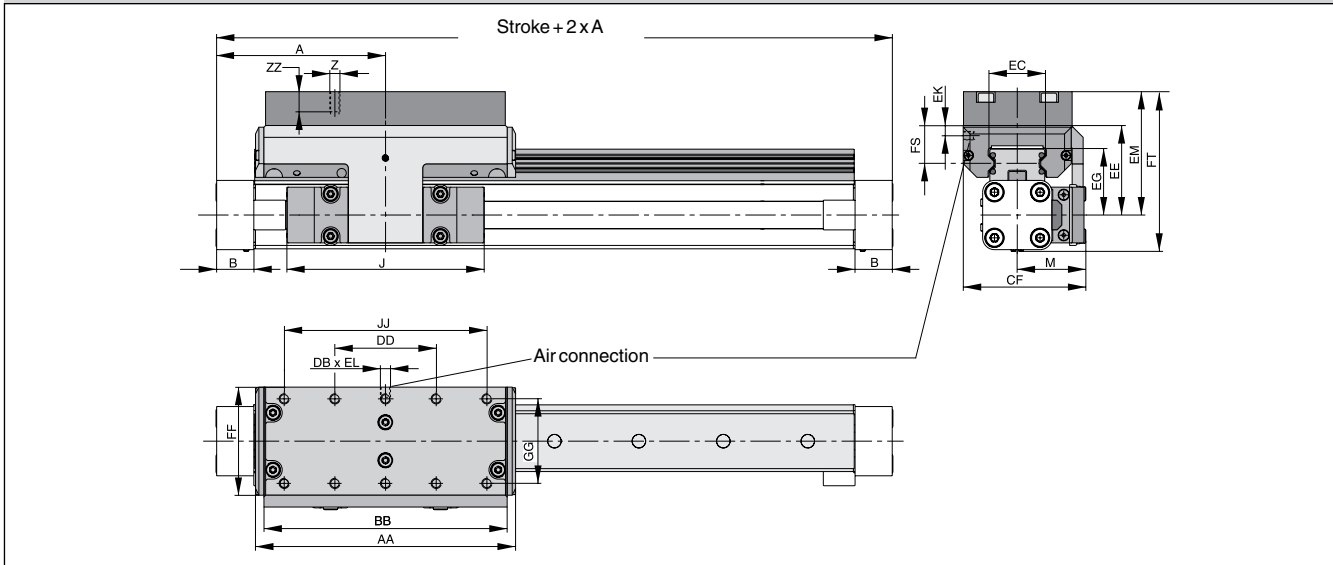
In the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

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

The right to introduce technical modifications is reserved



Series OSP-P with Passive Brake MB-PL



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

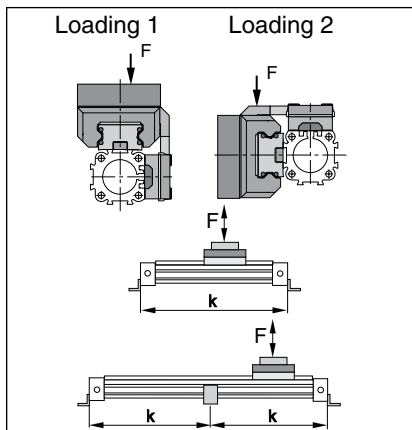
| Series | A | B | J | M | Z | AA | BB | DB | DD | CF | EC | EE | EG | EK | EL | EM | FF | FS | FT | GG | JJ | ZZ |
|---------|-----|------|-----|------|----|-----|-----|------|-----|------|------|----|------|-----|----|----|-----|------|-------|----|-----|----|
| MB-PL25 | 100 | 22 | 117 | 40.5 | M6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

Mid Section Support

(for versions see page 71)

Mid section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.

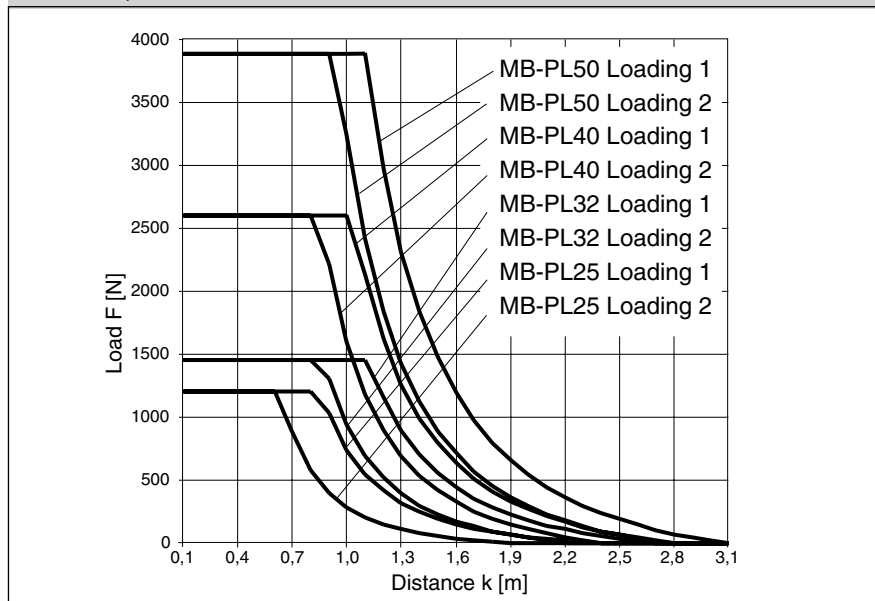
A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:

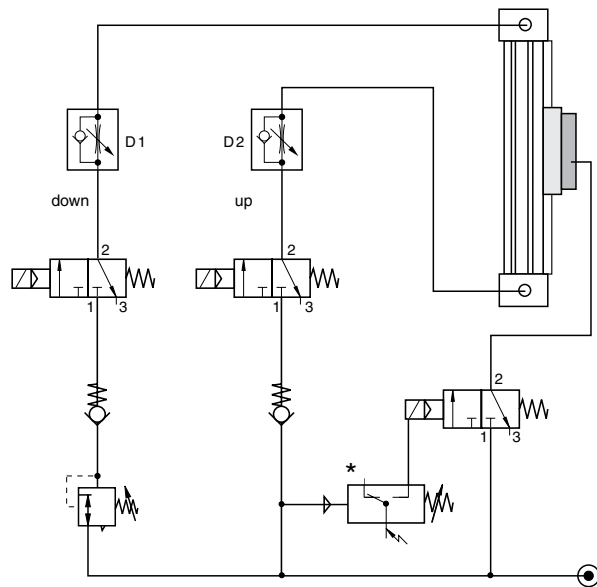
For speeds $v > 0.5$ m/s the distance between supports should not exceed 1 m.

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

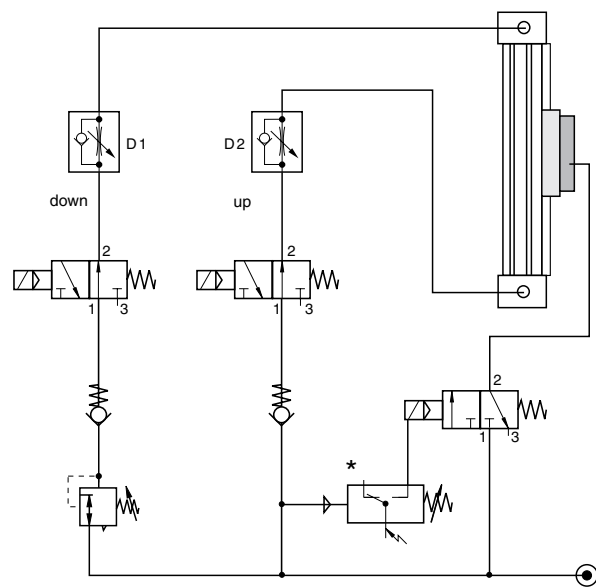


Application Example - Vertical Application

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



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



Control Examples

Under normal operating circumstances the pressure switch is closed and the air flows through the 3/2 way solenoid valves from port 1 to 2, thus lifting the brake from the rail (operating condition).

The brake is pressurized by means of a 3/2 way valve in combination with a pressure switch. When there is a pressure loss, the brake is actuated by the pressure switch.

When the air pressure is restored to both cylinder chambers, the brake is lifted and the linear drive can be moved again.

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



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

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

Required Components


| |
|----------------------------------|
| Way Valves |
| Port size |
| M5, G1/8 |
| G1/4, G1/2 |
| Pressure Regulating Valves |
| G1/8 - G3/8 |
| Pneumatic Accessories |
| P/E-Switch |
| Non-Return Valves |
| G1/8 - G3/8 |
| Screw-in Speed Regulating Valves |
| M5 - G1/4 |

















Contact factory for literature on the above valves/accessories

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



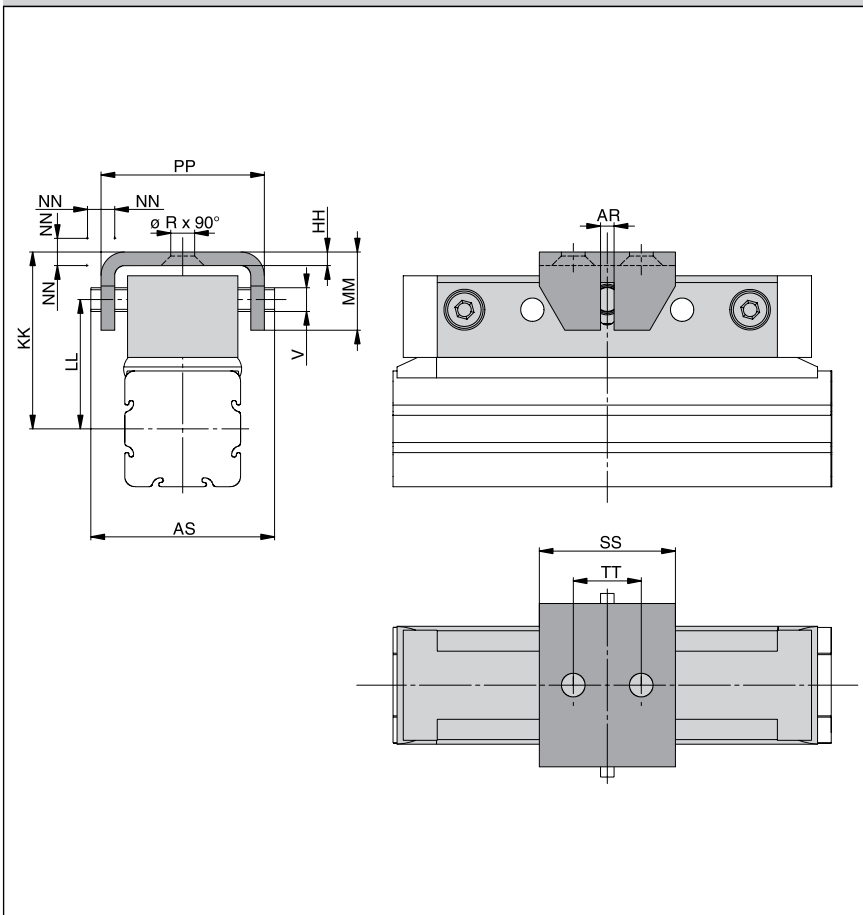
Contents

| Description | Page |
|--|----------------|
| Overview | 65-66 |
| Clevis Mounting | 67-68 |
| End Cap Mountings | 69 |
| End Cap Mountings (for Linear Drives with guides) | 71, 72, 74, 75 |
| Mid-Section Support | 70 |
| Mid-Section Support (for Linear Drives with guides) | 71, 73, 76-77 |
| Inversion Mounting | 78 |
| Adaptor Profile | 79 |
| T-Slot Profile | 80 |
| Connection Profile | 81 |
| Duplex Connection | 82 |
| Multiplex Connection | 83 |
| Magnetic Switch, standard version | 84-86 |
| Magnetic Switch for T-Nut mounting | 88-91 |
| Magnetic Switch ATEX-version  | 92-94 |
| Wireway Cover | 87 |
| Metric Conversion Fittings | 87 |

| Linear Drive Accessories for Series OSP-P | | |
|---|--|----------------|
| Description | | Page No. |
| Clevis Mounting |  | 67-68 |
| End Cap Mountings |  | 69 |
| End Cap Mountings (for Linear Drives with guides) |  | 71, 72, 74, 75 |
| Mid-Section Support |  | 70 |
| Mid-Section Support (for Linear Drives with guides) |  | 71, 73, 76, 77 |
| Inversion Mounting |  | 78 |
| Adaptor Profile |  | 79 |
| T-Slot Profile |  | 80 |
| Connection Profile |  | 81 |
| Dulex Connection |  | 82 |
| Multiplex Connection |  | 83 |
| Magnetic Switch, standard version |  | 84-86 |
| Magnetic Switch, ATEX-version  | | 92-94 |
| Magnetic Switch for T-Nut mounting |  | 88-91 |
| Wireway Cover |  | 87 |
| Metric Conversion Fittings |  | 87 |

The right to introduce technical modifications is reserved

Series OSP-P10



Linear Drive Accessories

ø 10 mm

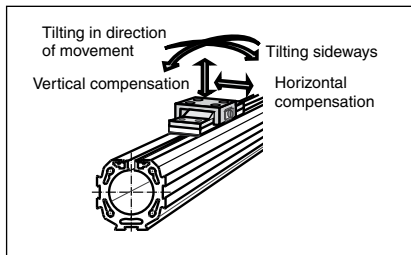
Clevis Mounting



For Linear-drive
• Series OSP-P

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

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



Dimension Table (mm)

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

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

The right to introduce technical modifications is reserved



Linear Drive Accessories

ø 16-80 mm

Clevis Mounting

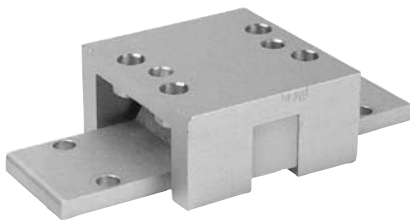


For Linear-drive
 • Series OSP-P

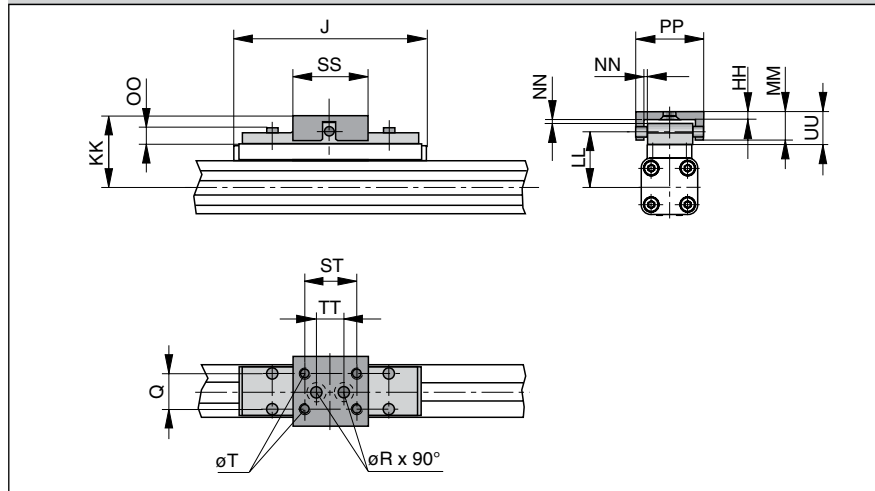
When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting. In the drive direction, the mounting has very little play. Freedom of movement is provided as follows:

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

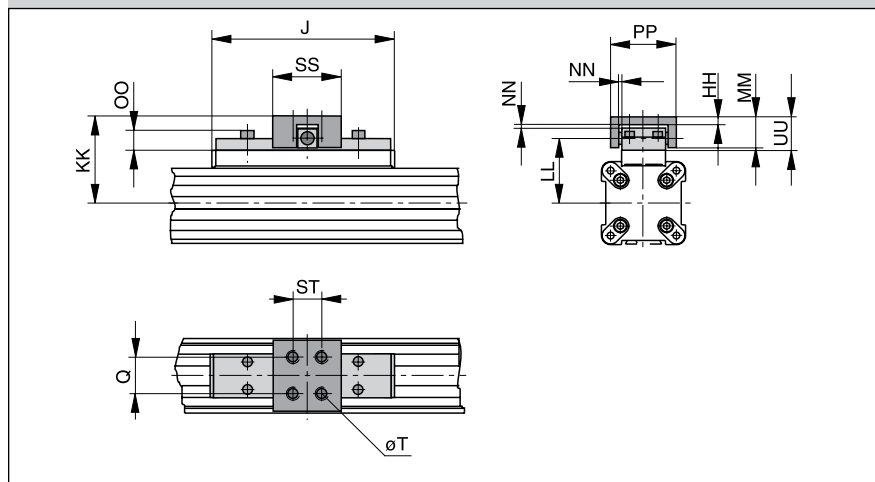
A stainless steel version is also available.



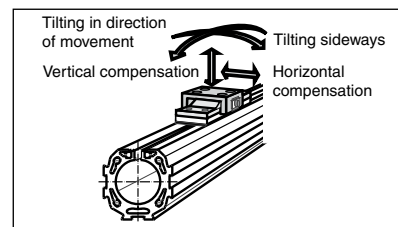
Series OSP-P16 to 32



Series OSP-P40 to 80



Please note:
 When using additional inversion mountings, take into account the dimensions in page 78.

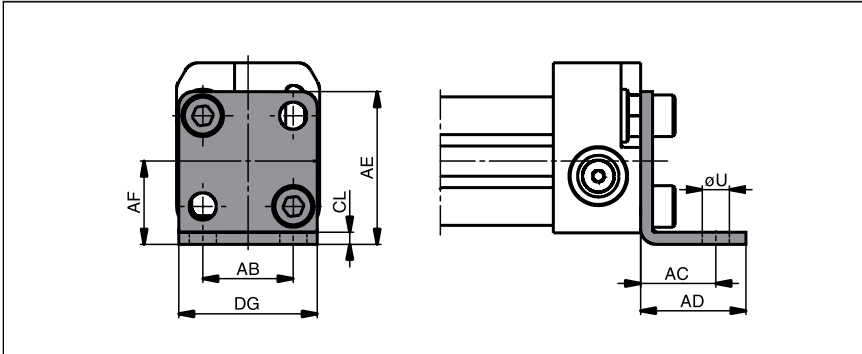


Dimension Table (mm)

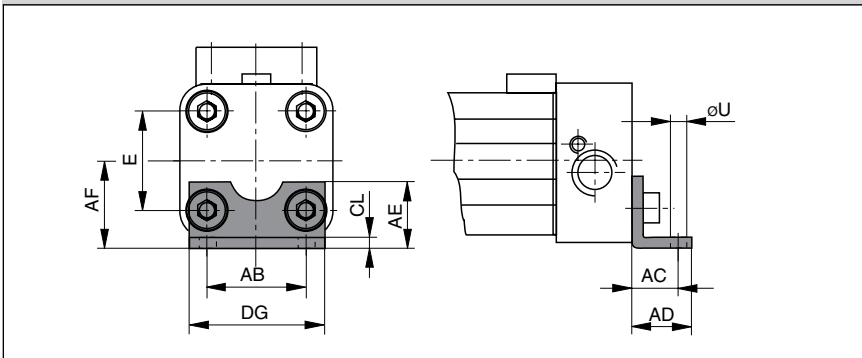
| Series | J | Q | T | øR | HH | KK | LL | MM | NN* | OO | PP | SS | ST | TT | UU | Order No. | |
|---------|-----|----|-----|-----|-----|-----|------|----|-----|-----|----|----|----|----|----|-----------|-----------|
| | | | | | | | | | | | | | | | | Standard | Stainless |
| OSP-P16 | 69 | 10 | M4 |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

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

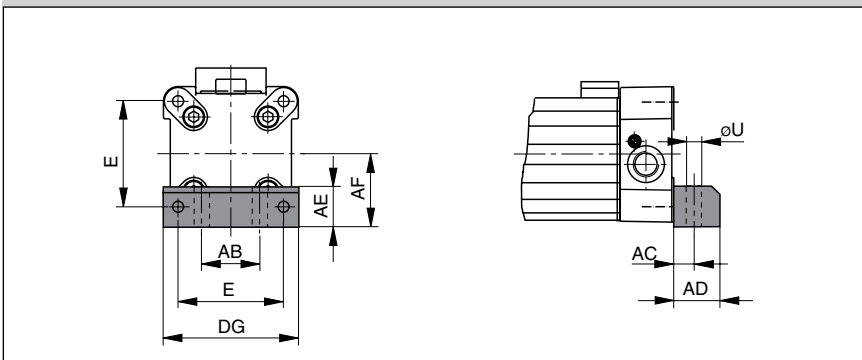
Series OSP-P10 :Type A1



Series OSP-P16 to 32:Type A1



Series OSP-P40 to 80:Type C1



Linear Drive Accessories

ø 10-80 mm

End Cap Mountings



For Linear-drive
• **Series OSP-P**

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

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

The mountings are supplied in pairs.



Dimension Table (mm)

| Series | E | øU | AB | AC | AD | AE | AF | CL | DG | Order No. (* | |
|---------|----|-----|----|------|----|------|----|-----|------|--------------|---------|
| | | | | | | | | | | Type A1 | Type C1 |
| OSP-P10 | - | 3.6 | 12 | 10 | 14 | 20.2 | 11 | 1.6 | 18.4 | 0240 | – |
| OSP-P16 | 18 | 3.6 | 18 | 10 | 14 | 12.5 | 15 | 1.6 | 26 | 20408 | – |
| OSP-P25 | 27 | 5.8 | 27 | 16 | 22 | 18 | 22 | 2.5 | 39 | 2010 | – |
| OSP-P32 | 36 | 6.6 | 36 | 18 | 26 | 20 | 30 | 3 | 50 | 3010 | – |
| OSP-P40 | 54 | 9 | 30 | 12.5 | 24 | 24 | 38 | – | 68 | – | 4010 |
| OSP-P50 | 70 | 9 | 40 | 12.5 | 24 | 30 | 48 | – | 86 | – | 5010 |
| OSP-P63 | 78 | 11 | 48 | 15 | 30 | 40 | 57 | – | 104 | – | 6010 |
| OSP-P80 | 96 | 14 | 60 | 17.5 | 35 | 50 | 72 | – | 130 | – | 8010 |

(*= Pair)

The right to introduce technical modifications is reserved

Linear Drive Accessories

Ø 10-80 mm

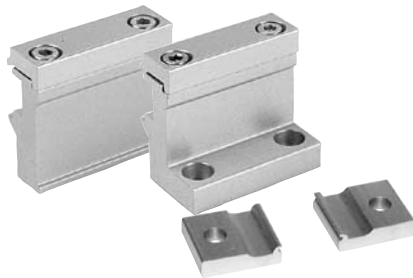
Mid-Section Support



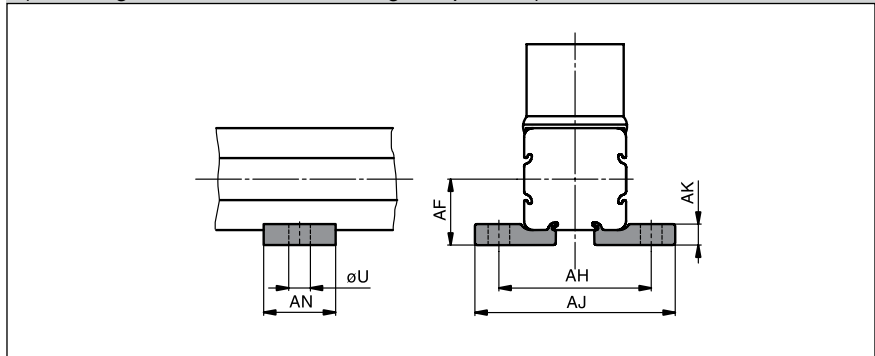
For Linear-drive
 • Series OSP-P

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

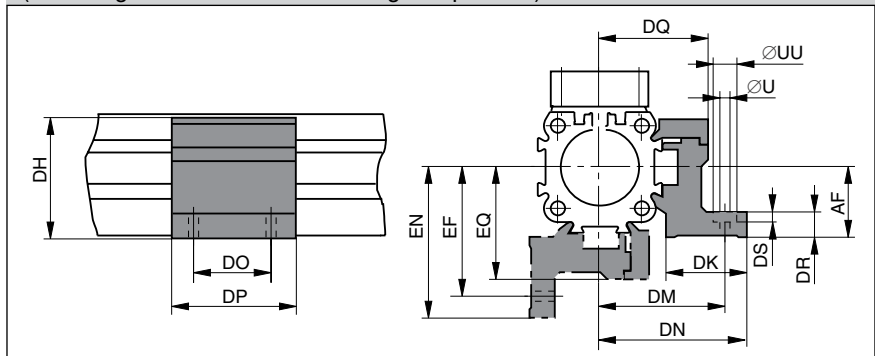
Stainless steel version on demand.



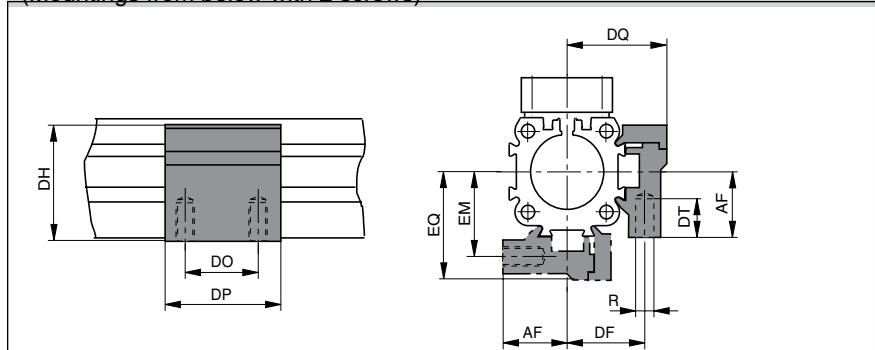
Series OSP-10, Type E1
 (Mounting from above / below using a cap screw)



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



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



Dimension Table (mm) Series OSP-P10




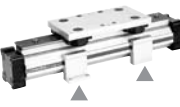
| Series | U | AF | AH | AJ | AK | AN | Order No. | |
|---------|-----|----|------|------|-----|----|-----------|---------|
| | | | | | | | Type E1 | Type D1 |
| OSP-P10 | 3.6 | 11 | 25.4 | 33.4 | 3.5 | 12 | 0250 | - |

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

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

The right to introduce technical modifications is reserved



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

- X = carriage mounted in top (12 o'clock position)
- O = carriage mounted in lateral (3 or 9 o'clock position)
- = available components

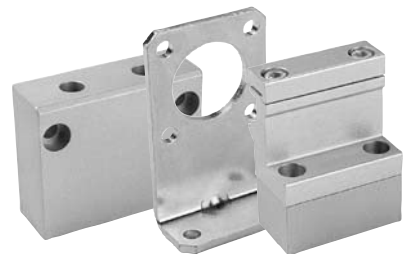
1) = not available for all sizes

Linear Drive Accessories Mountings for Linear Drives fitted with OSP-Guides



For Linear-drives
• Series OSP-P

Note:
For mountings and mid-section supports for linear drives with recirculating ball bearing guide STARLINE see pages 74-77



The right to introduce technical modifications is reserved

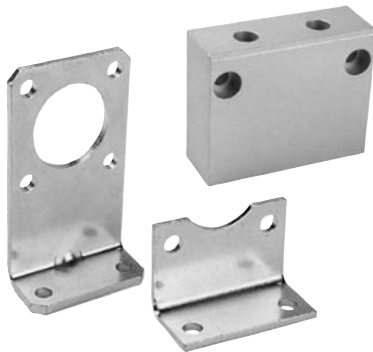
End Cap Mountings

End cap mountings*

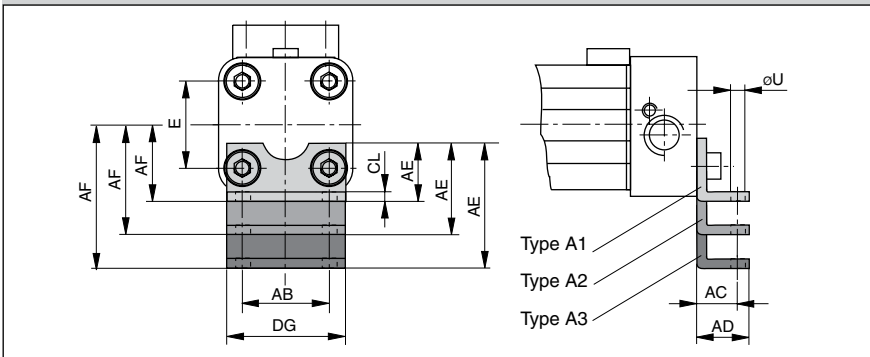
Four internal screw threads are located in the end faces of all OSP actuators for mounting the drive unit. End cap mountings may be secured across any two adjacent screws.

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

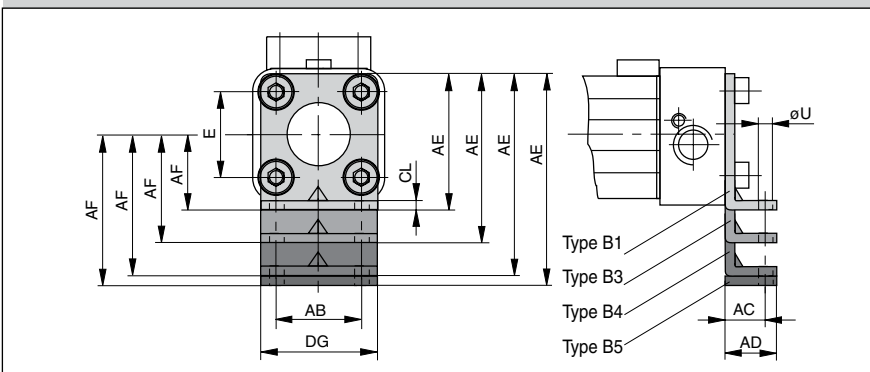
The mountings are supplied in pairs.



Series OSP-P16, 25, 32: Type A

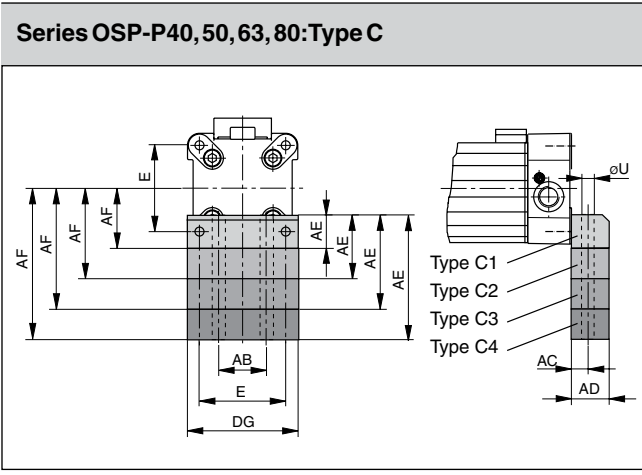


Series OSP-P16, 25, 32: Type B



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

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

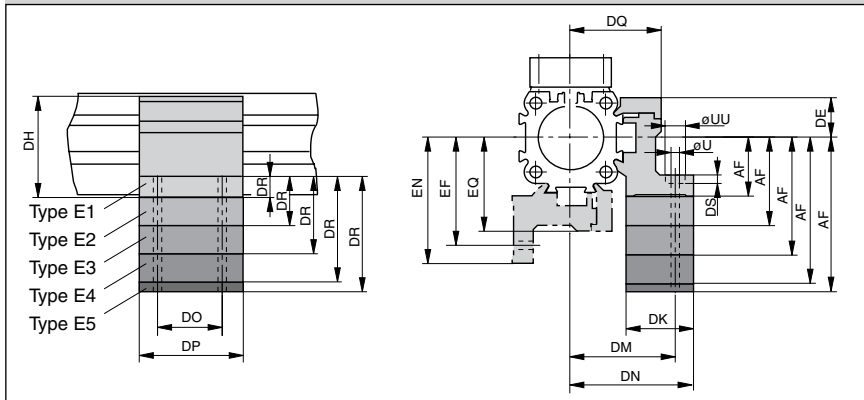


Dimension Table (mm)

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

* see mounting instructions on page 77

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



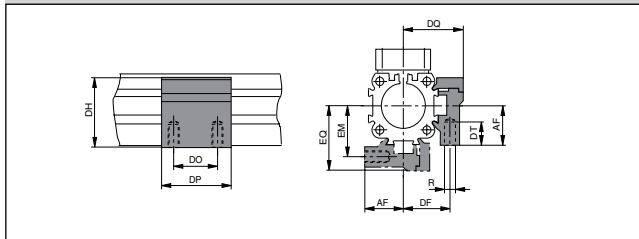
Mid-Section Support

Information regarding type E1 and D1:
Mounting of the mid section supports is also possible on the lower side of the drive. In this case, please note the new center line dimensions.

Stainless steel version on request.



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



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

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

Dimension Table (mm)

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

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

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

(* Pair)

Linear Drive Accessories

Ø 16 to 32 mm

End Cap Mounting Type: B

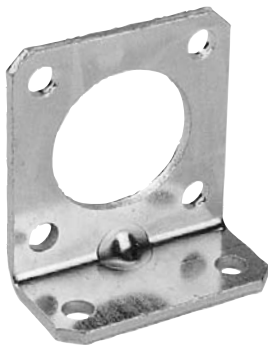
for Linear Drives with Recirculating Ball Bearing Guide

• Series OSP-P STL

Material:

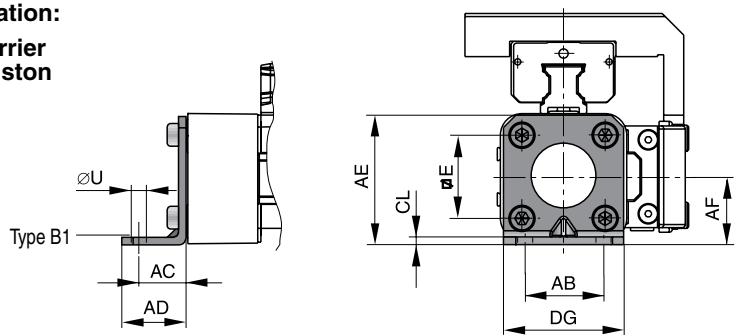
Galvanized steel
Anodized aluminium

The mountings are supplied in pairs.



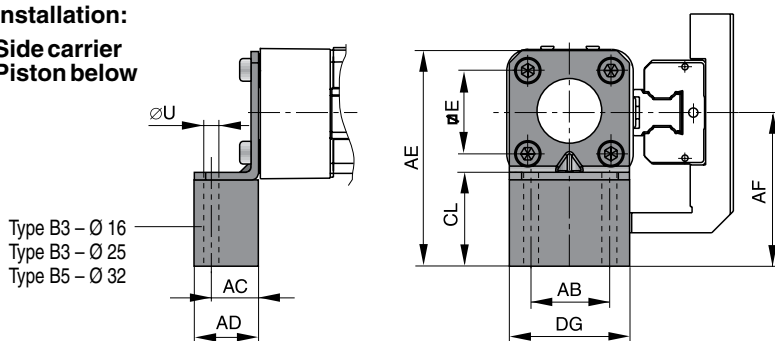
Series OSP-P STL16, STL25, STL32 : Type B1

Installation:
Top carrier
Side piston



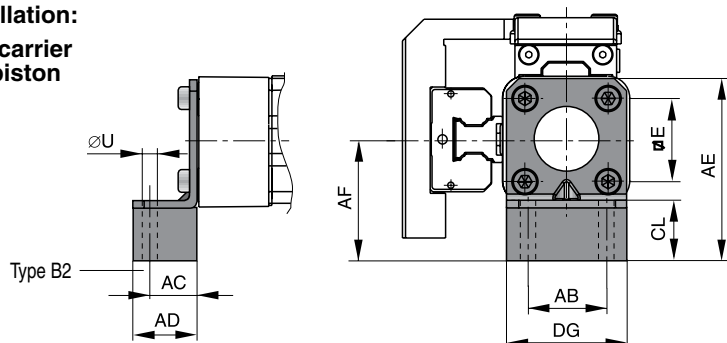
Series OSP-P STL16, STL25, STL32: Type B3 (Ø 32: B5)

Installation:
Side carrier
Piston below



Series OSP-P STL16, STL25, STL32: Type B2

Installation:
Side carrier
Top piston

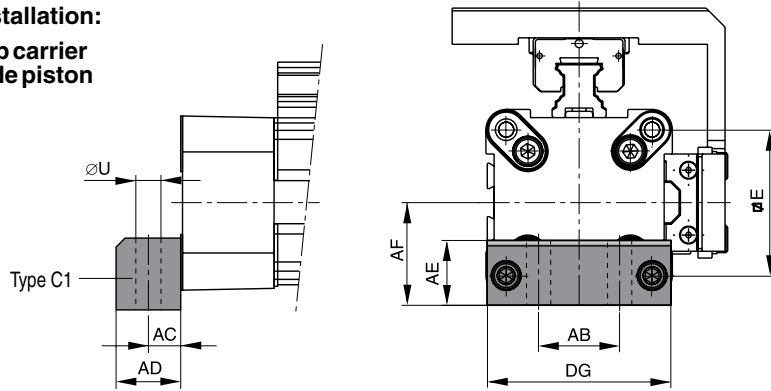


Dimension Table (mm) for End Cap Mounting Type: B1 to B5

| Series Type | Mounting | E | ØU | AB | AC | AD | AE | AF | CL | DG | Order No. (pair) |
|-------------|----------|----|-----|----|----|----|----|----|------|----|------------------|
| OSP-PSTL16 | B1 | 18 | 3.6 | 18 | 10 | 14 | 28 | 15 | 2 | 26 | 21135 |
| | B2 | 18 | 3.6 | 18 | 10 | 14 | 43 | 30 | 17 | 26 | 21136 |
| | B3 | 18 | 3.6 | 18 | 10 | 14 | 55 | 42 | 29 | 26 | 21137 |
| OSP-PSTL25 | B1 | 27 | 5.8 | 27 | 16 | 22 | 42 | 22 | 2.5 | 39 | 20311 |
| | B2 | 27 | 5.8 | 27 | 16 | 22 | 57 | 37 | 17.5 | 39 | 21138 |
| | B3 | 27 | 5.8 | 27 | 16 | 22 | 69 | 49 | 29.5 | 39 | 21139 |
| OSP-PSTL32 | B1 | 36 | 6.6 | 36 | 18 | 26 | 55 | 30 | 3 | 50 | 20313 |
| | B2 | 36 | 6.6 | 36 | 18 | 26 | 69 | 44 | 17 | 50 | 21140 |
| | B5 | 36 | 6.6 | 36 | 18 | 26 | 90 | 65 | 9 | 50 | 21141 |

Series OSP-P STL40, STL50: Type C1

Installation:
Top carrier
Side piston



**$\varnothing 40$ to 50 mm
End Cap Mounting
Type: C**

for Linear Drives with Recirculating Ball Bearing Guide

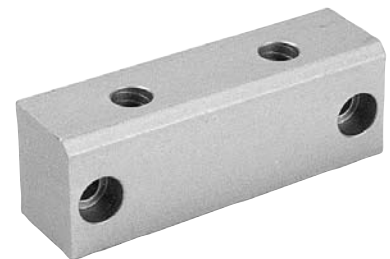
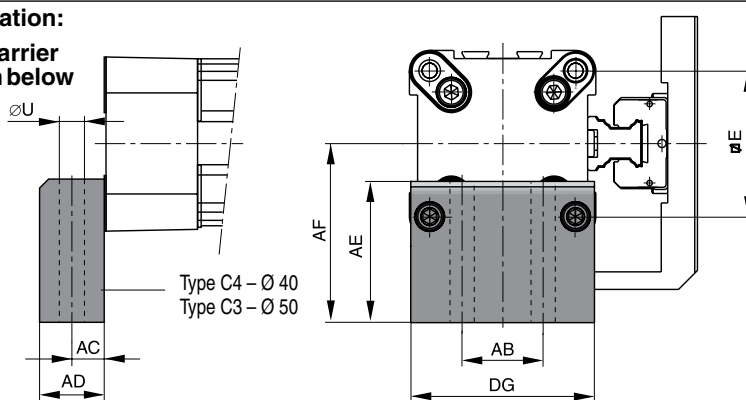
- Series OSP-P STL

Material:
Anodized aluminium

The mountings are supplied in pairs.

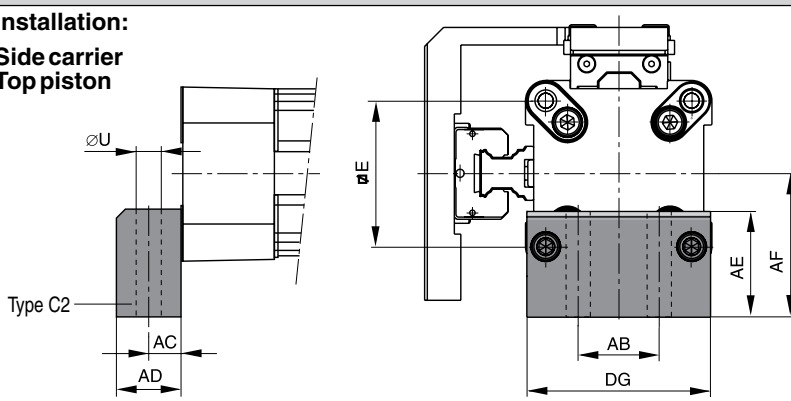
Series OSP-P STL40, STL50: Type C4 ($\varnothing 50$: C3)

Installation:
Side carrier
Piston below



Series OSP-P STL40, STL50: Type C2

Installation:
Side carrier
Top piston



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

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

Linear Drive Accessories

Ø 16 to 50 Mid-Section Support Type: D1ST

for Linear Drives with Recirculating Ball Bearing Guide

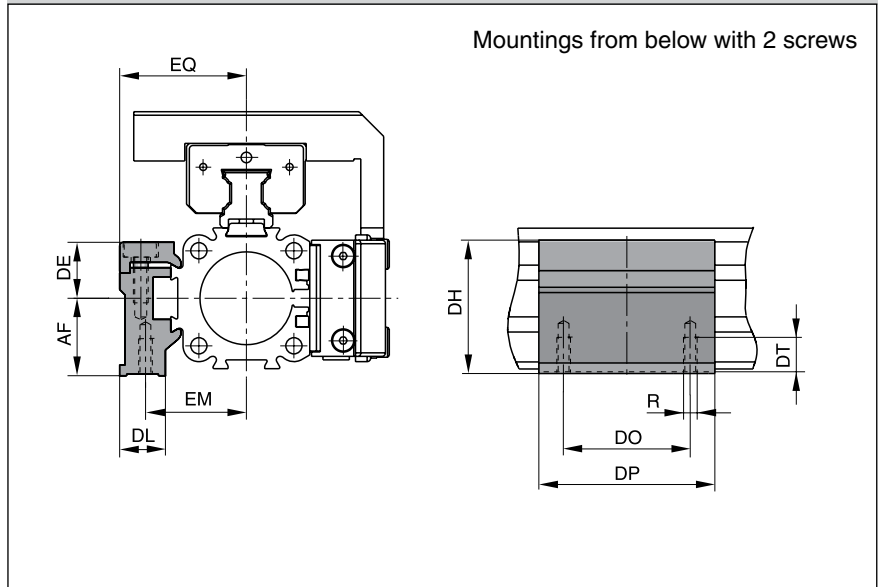
• Series OSP-P STL

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

For design notes, see page 45



Series OSP-P STL16 to STL50: Type D1ST



Dimension Table (mm) Mid-Section Support D1ST

| Series OSP-P | Mounting Type | R | AF | DE | DH | DL | DO | DP | DT | EM | EQ | Order No. |
|--------------------|---------------|----|----|------|------|------|----|----|-----|------|----|-----------|
| STL16 | D1ST | M3 | 15 | 14.2 | 29.2 | 14.6 | 18 | 30 | 6.5 | 20 | 27 | 21125 |
| STL25 | D1ST | M5 | 22 | 16 | 38 | 13 | 36 | 50 | 10 | 28.5 | 36 | 21126 |
| STL32 | D1ST | M5 | 30 | 16 | 46 | 13 | 36 | 60 | 10 | 35.5 | 43 | 21127 |
| STL40 | D1ST | M6 | 38 | 23 | 61 | 19 | 45 | 60 | 11 | 38 | 48 | 21128 |
| STL50 | D1ST | M6 | 48 | 23 | 71 | 19 | 45 | 60 | 11 | 45 | 57 | 21129 |

Order example: Type D1ST16 Order No. 21125

Mid-Section Support Type: E1ST bis E5ST

for Linear Drives with Recirculating Ball Bearing Guide

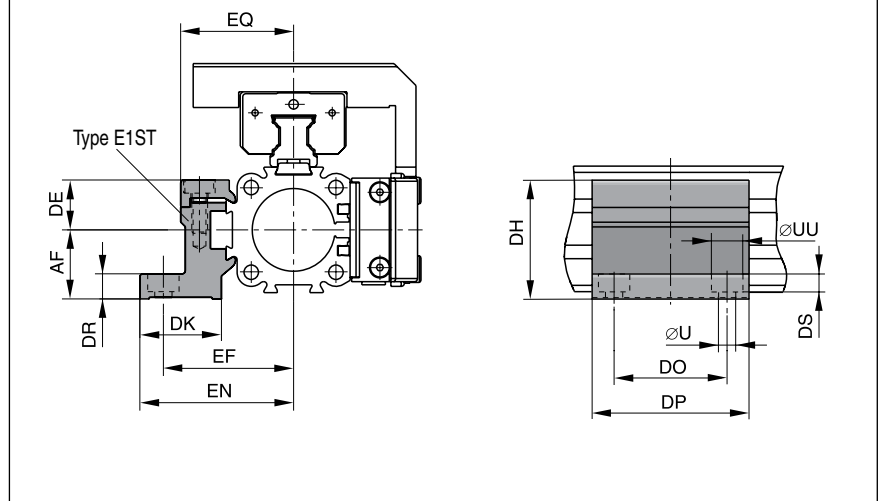
• Series OSP-P STL



Series OSP-P STL16 to STL50: Type E1ST

Installation:
Top carrier
Side position

Mounting from above / below
using a cap screw



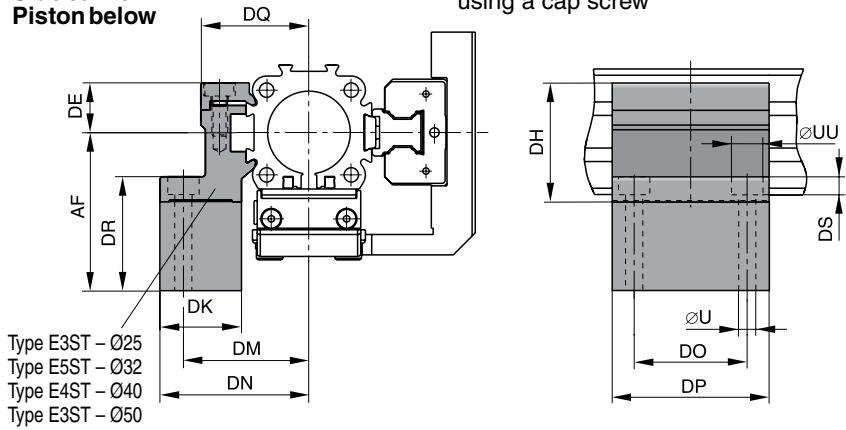
Mid Section Support Type E1ST - E5ST

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

Installation:

**Side carrier
Piston below**

Mounting from above / below
using a cap screw



**Mid-Section Support
Type: E1ST to E5ST**

for Linear Drives with
Recirculating Ball Bearing Guide

- Series OSP-P STL

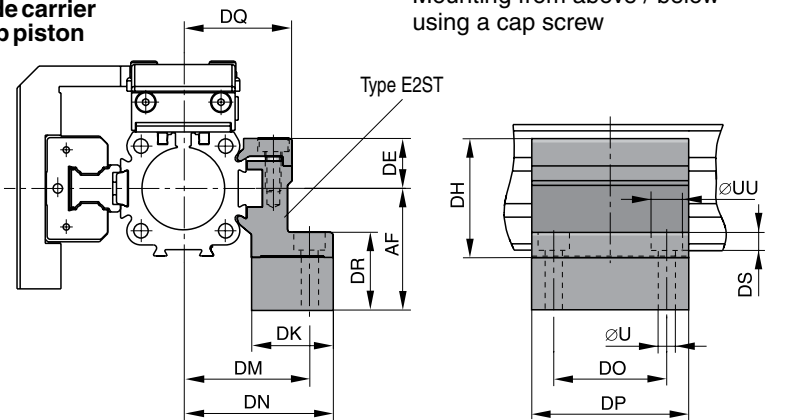


Series OSP-P STL16 to STL50: Type E2ST

Installation:

**Side carrier
Toppiston**

Mounting from above / below
using a cap screw



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

| Series OSP-P | Mounting Type | ØU | ØUU | AF | DE | DH | DK | DM | DN | DO | DP | DR | DQ | DS | EF | EN | EQ | Order No. |
|--------------------|---------------|-----|-----|----|------|------|----|----|------|----|----|----|------|-----|------|------|----|-----------|
| STL16 | E1ST | 3.4 | 6 | 15 | 14.2 | 29.2 | 24 | 32 | 36.4 | 18 | 30 | 6 | 27 | 3.4 | 32 | 36.4 | 27 | 21130 |
| STL16 | E2ST | 3.4 | 6 | 30 | 14.2 | 29.2 | 24 | 32 | 36.4 | 18 | 30 | 21 | 27 | 3.4 | 32 | 36.4 | 27 | 21142 |
| STL25 | E1ST | 5.5 | 10 | 22 | 16 | 38 | 26 | 40 | 47.5 | 36 | 50 | 8 | 34.5 | 5.7 | 41.5 | 49 | 36 | 21131 |
| STL25 | E2ST | 5.5 | 10 | 37 | 16 | 38 | 26 | 40 | 47.5 | 36 | 50 | 23 | 34.5 | 5.7 | 41.5 | 49 | 36 | 21143 |
| STL25 | E3ST | 5.5 | 10 | 49 | 16 | 38 | 26 | 40 | 47.5 | 36 | 50 | 35 | 34.5 | 5.7 | 41.5 | 49 | 36 | 21148 |
| STL32 | E1ST | 5.5 | 10 | 30 | 16 | 46 | 27 | 46 | 54.5 | 36 | 60 | 10 | 40.5 | 5.7 | 48.5 | 57 | 43 | 21132 |
| STL32 | E2ST | 5.5 | 10 | 44 | 16 | 46 | 27 | 46 | 54.5 | 36 | 60 | 24 | 40.5 | 5.7 | 48.5 | 57 | 43 | 21144 |
| STL32 | E5ST | 5.5 | 10 | 65 | 16 | 46 | 27 | 46 | 54.5 | 36 | 60 | 45 | 40.5 | 5.7 | 48.5 | 57 | 43 | 21151 |
| STL40 | E1ST | 7 | - | 38 | 23 | 61 | 34 | 53 | 60 | 45 | 60 | 10 | 45 | - | 56 | 63 | 48 | 21133 |
| STL40 | E2ST | 7 | - | 51 | 23 | 61 | 34 | 53 | 60 | 45 | 60 | 23 | 45 | - | 56 | 63 | 48 | 21145 |
| STL40 | E4ST | 7 | - | 70 | 23 | 61 | 34 | 53 | 60 | 45 | 60 | 42 | 45 | - | 56 | 63 | 48 | 21150 |
| STL50 | E1ST | 7 | - | 48 | 23 | 71 | 34 | 59 | 67 | 45 | 60 | 10 | 52 | - | 64 | 72 | 57 | 21134 |
| STL50 | E2ST | 7 | - | 57 | 23 | 71 | 34 | 59 | 67 | 45 | 60 | 19 | 52 | - | 64 | 72 | 57 | 21146 |
| STL50 | E3ST | 7 | - | 72 | 23 | 71 | 34 | 59 | 67 | 45 | 60 | 34 | 52 | - | 64 | 72 | 57 | 21149 |

Order example: Type E1ST16

Order No. 21130



Linear Drive Accessories

∅ 16-80 mm

Inversion Mounting



For Linear-drive
• Series OSP-P

In dirty environments, or where there are special space problems, inversion of the cylinder is recommended.

The inversion bracket transfers the driving force to the opposite side of the cylinder. The size and position of the mounting holes are the same as on the standard cylinder.

Stainless steel version on demand.

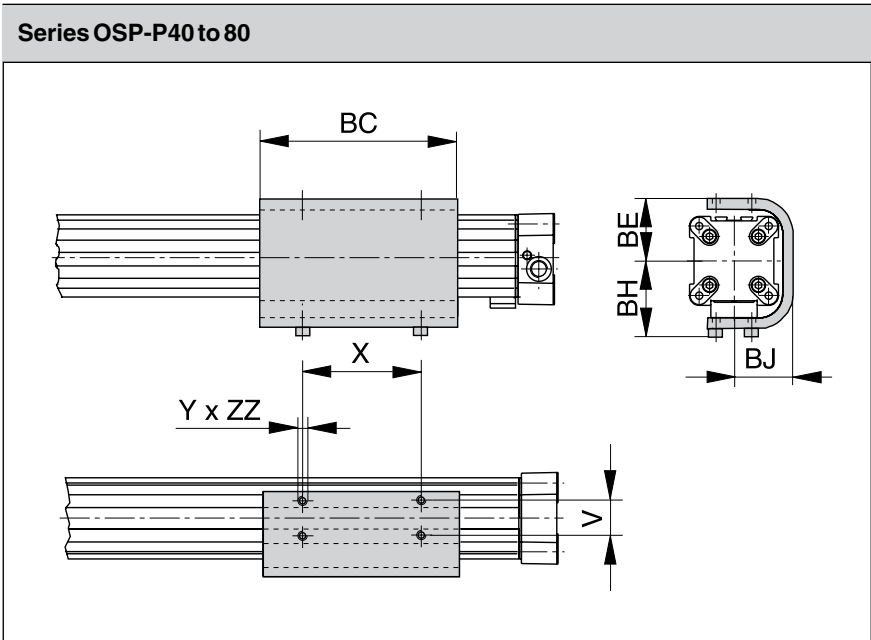
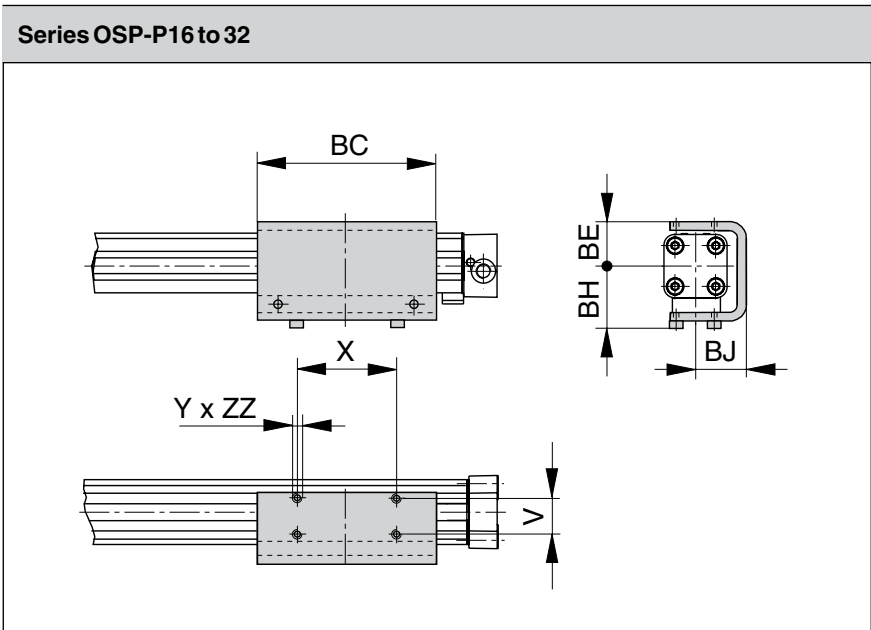
Please note:

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

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

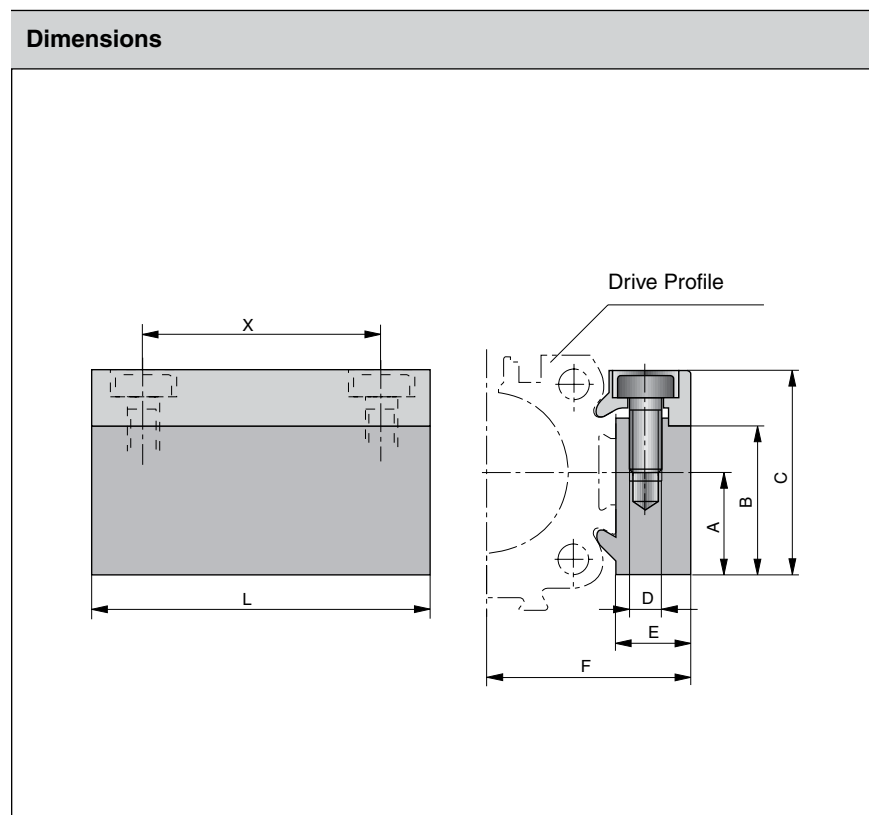
Important Note:

May be used in combination with **Clevis Mounting**, ref. dimensions in pages 67-68



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

The right to introduce technical modifications is reserved



Linear Drive Accessories

∅ 16-50 mm

Adaptor Profile

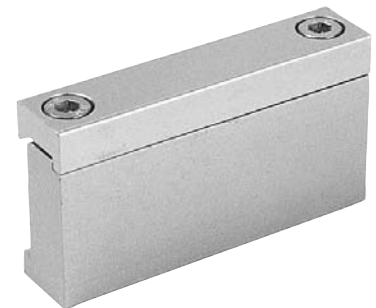


For Linear-drive
• **Series OSP-P**

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

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

The right to introduce technical modifications is reserved



Linear Drive Accessories

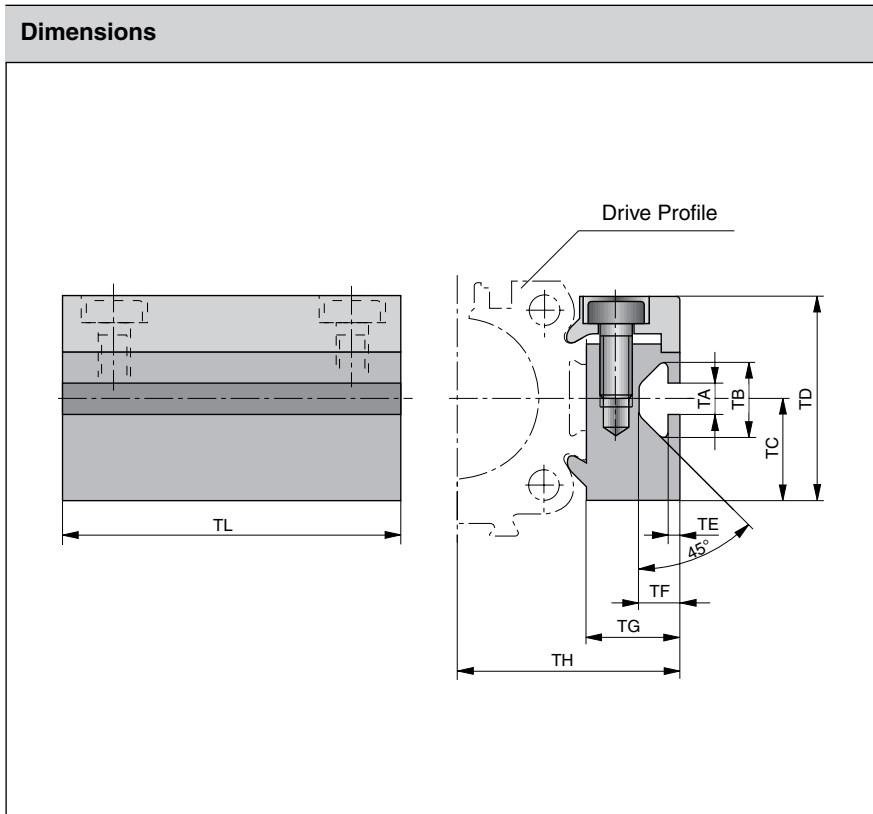
∅ 16-50 mm T-Slot Profile



For Linear-drive
• Series OSP-P

T-Slot Profile OSP

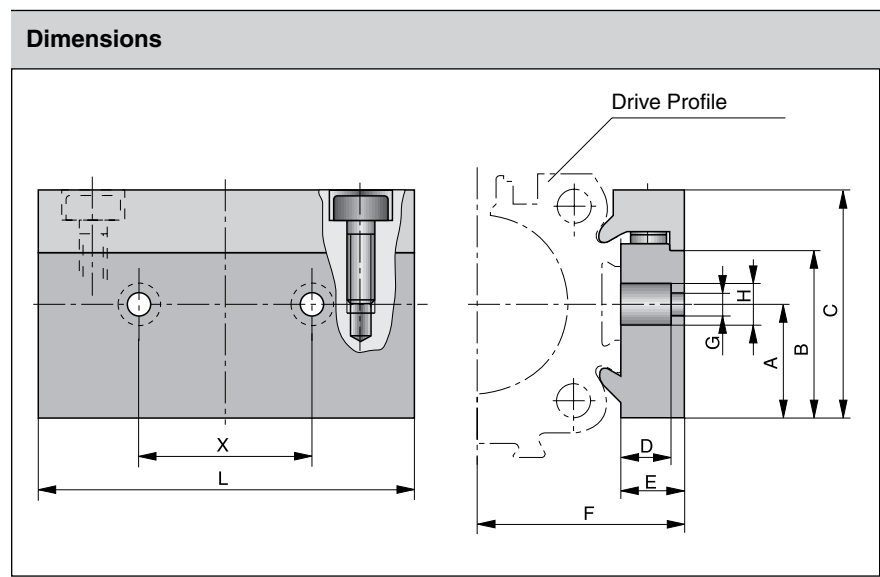
- A universal attachment for mounting with standard T-Nuts



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



The right to introduce technical modifications is reserved



Linear Drive Accessories

ø 16-50 mm
Connection Profile



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

Dimension Table (mm)

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



The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 25-50 mm

Duplex Connection



For connection of cylinders of the Series OSP-P

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

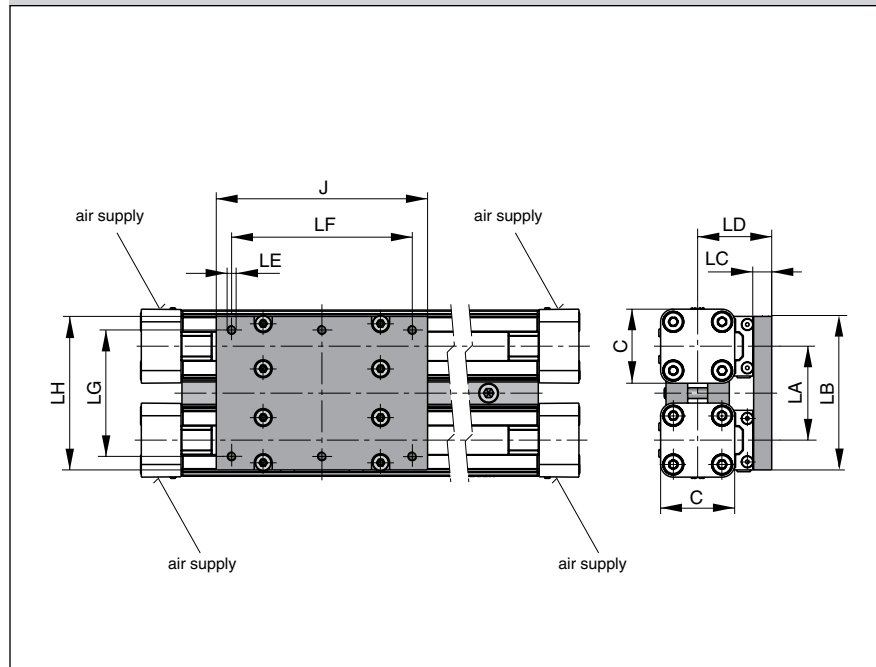
Features

- increased load and torque capacity
- higher driving forces

Included in delivery:

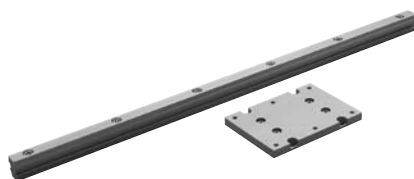
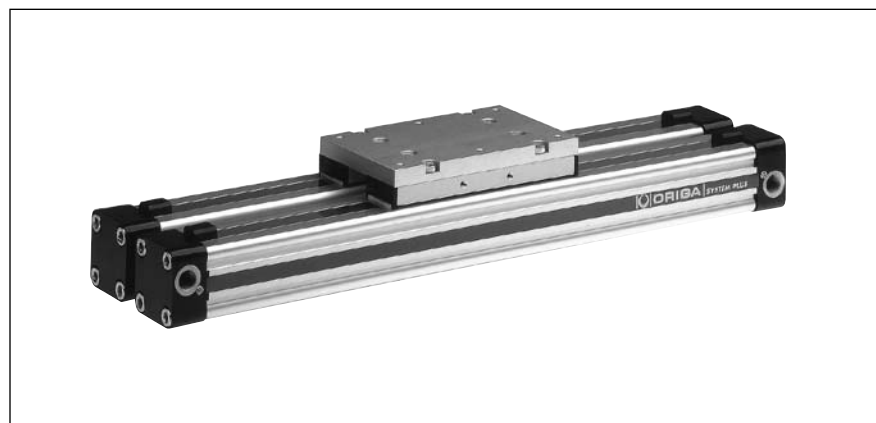
- 2 clamping profiles with screws
- 1 mounting plate with fixings

Dimensions

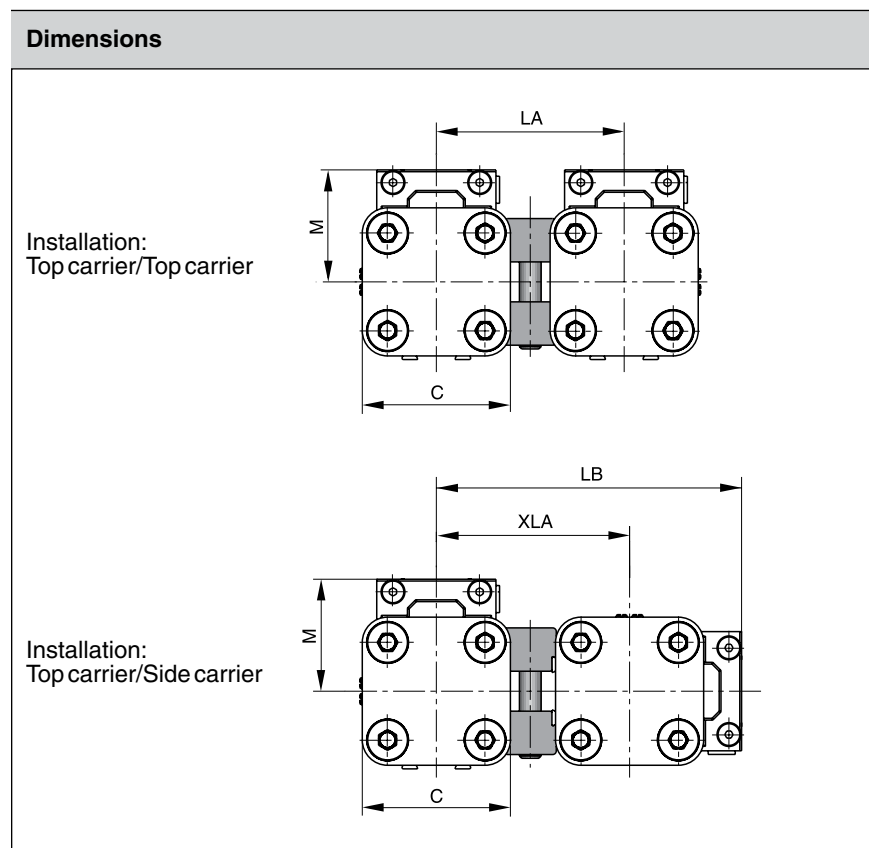


Dimension Table (mm)

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



The right to introduce technical modifications is reserved



Linear Drive Accessories

ø 25-50 mm Multiplex Connection



For connection of cylinders of the Series OSP-P

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

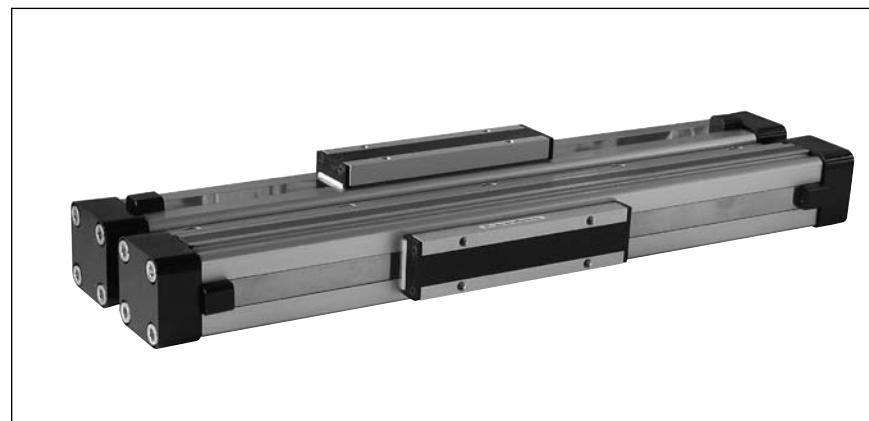
Features

- The orientation of the carriers can be freely selected

Included in delivery:
 2 clamping profiles with clamping screws

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

The right to introduce technical modifications is reserved



Linear Drive Accessories

ø 10-80 mm Magnetic Switches



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

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

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

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



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

*) other versions on request

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

The right to introduce technical modifications is reserved

Magnetic Switches

Type RS

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

Type ES

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

Magnetic Switches RS and ES

Electrical Service Life Protective Measures

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

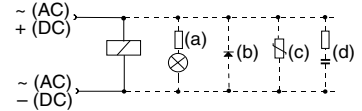
With **resistive and capacitive loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves

and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

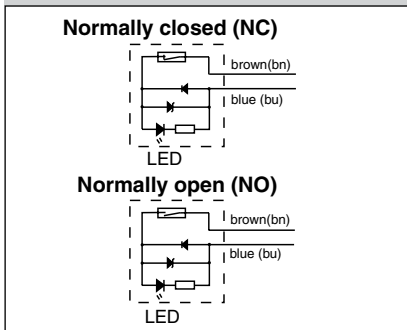
Connection Examples

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

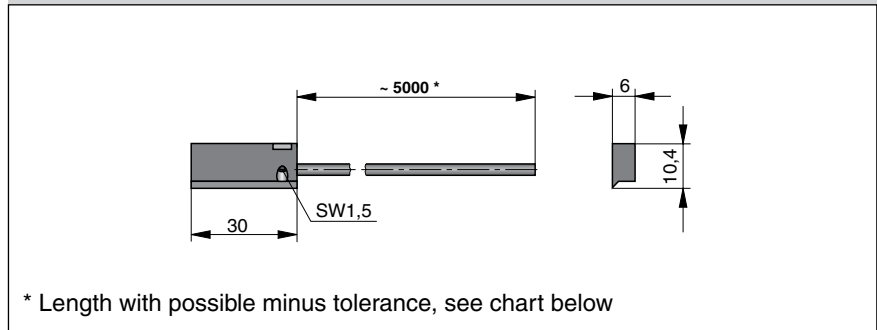


For the type ES, external protective circuits are not normally needed.

Electrical Connection, Type RS

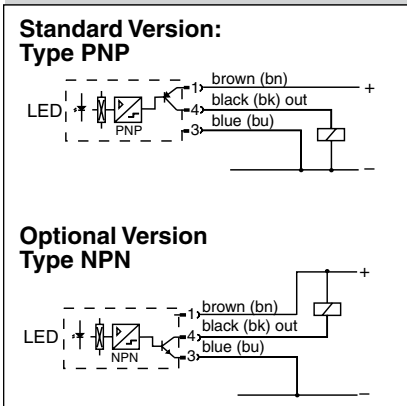


Dimensions (mm) – Type RS-K

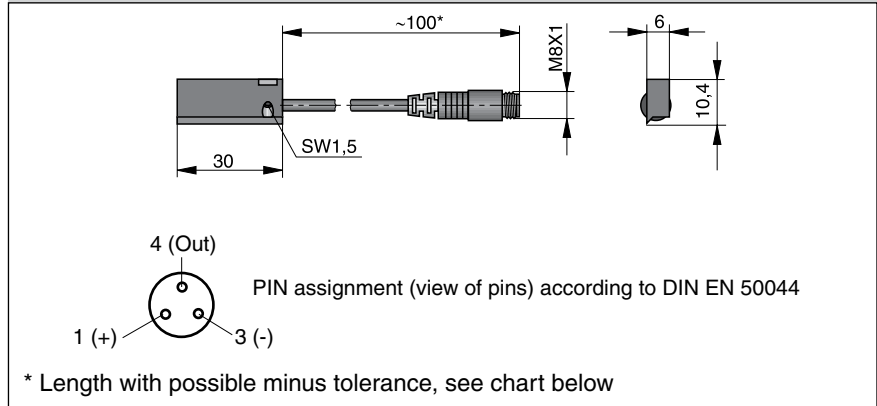


* Length with possible minus tolerance, see chart below

Electrical Connection, Type ES



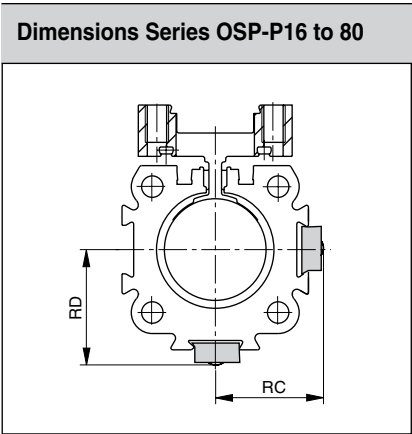
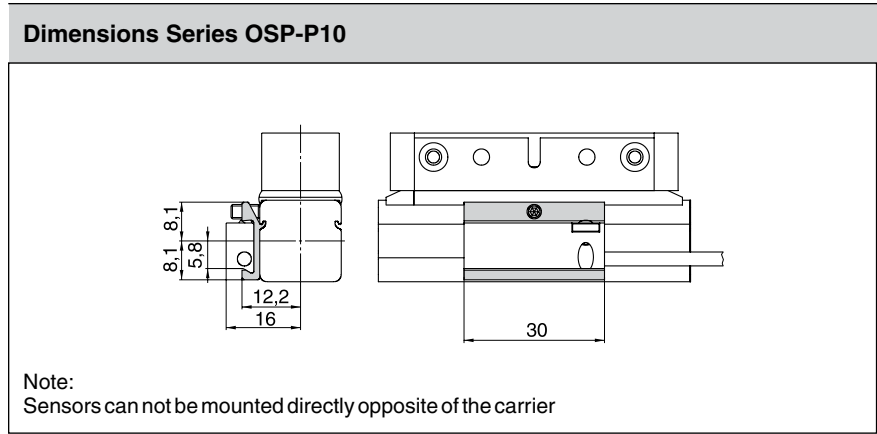
Dimensions (mm) – Type ES-S



* Length with possible minus tolerance, see chart below

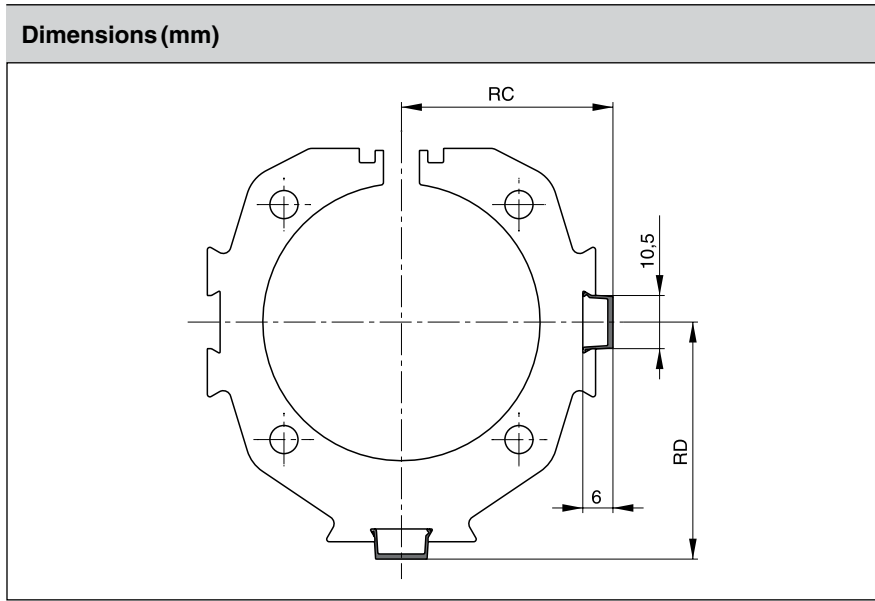
Length of connection cable with length tolerance

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



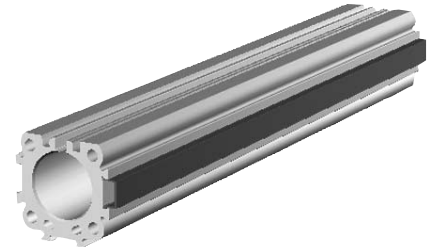
Dimension Table (mm) and Order Instructions

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



Linear Drive Accessories

**ø 16-80 mm
 Wireway Cover**



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

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

| Metric Conversion Fittings | | |
|----------------------------|------------------|---------------|
| Order Number | Port Size | Bore Size |
| 2521-1/8-02 | G1/8 to 1/8" NPT | P25 |
| 2521-1/4-04 | G1/4 to 1/4" NPT | P32, P40, P50 |
| 2521-3/8-06 | G3/8 to 3/8" NPT | P63 |
| 2521-1/2-08 | G1/2 to 1/2" NPT | P80 |



The right to introduce technical modifications is reserved

Linear Drive Accessories

ø 10-80 mm Magnetic Switches



Series **RST**
EST

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

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

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

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



| Characteristics | | | |
|---|-----------------|--|--|
| Characteristics | Unit | Description | |
| Electrical Characteristics | | Type RST | Type EST |
| Switching output | | Reed | PNP |
| Operating voltage | V | 10-30 AC/DC | 10-30 DC |
| Ripple | | - | ≤10% |
| Voltage drop | V | ≤3 | ≤2 |
| Electrical configuration | | 2 wire | 3 wire |
| Output function | | normally open normally closed | normally open |
| Permanent current | mA | ≤ 100 | ≤ 100 |
| Breaking capacity | W | ≤ 6 peak | - |
| Power consumption, at $U_B=24V$, switched on, without load | mA | - | ≤ 10 |
| Function indicator | | LED, yellow (not for normally closed) | |
| Response time | ms | ≤2 | ≤0.5 |
| Sensitivity | mT | 2–4 | 2–4 |
| Time delay before availability | ms | - | ≤2 |
| Reverse polarity prot. | | yes | yes |
| Short-circuit protection | | no | yes (pulsed) |
| Switchable capacity load | μF | 0.1 at 100 Ω, 24 VDC | |
| Switching frequency | Hz | ≤400 | ≤5 k |
| Repeatability | mm | ≤0.2 | ≤0.2 |
| Hysteresis | mm | ≤1.5 | ≤1.5 |
| EMC | EN | 60947-5-2 | |
| Lifetime | | ≥ 35 Mio. cycles with PLC load | unlimited |
| Power-up pulse suppression | | - yes | |
| Protection for inductive load | | - | yes |
| Mechanical Characteristics | | | |
| Housing | | Plastic / PA66 + PA6I red | |
| Cable cross section | mm ² | 2x0.14 | 3x0.14 |
| Cable type | | PUR, black | PUR, black |
| Bending radius | mm | ≥36 | ≥30 |
| Weight | kg | ca. 0.030 RST-K ca. 0.010 RST-S | ca. 0.030 EST-K ca. 0.010 EST-S |
| Degree of protection | IP | 67 to EN 60529 | |
| Ambient temperature range ¹⁾ | °C | -25 to +80 | -25 to +75 at $U_B=10-30 V$ -25 to +80 at $U_B=10-28 V$ |
| - with adapter | °C | -25 to +60 | |
| Adapter tightening torque | Nm | 0.15 (tightening torque of screwing adapter on to magnetic switch) | |
| Shock resistance | | | |
| Vibration to EN 60068-2-6 | G | 15, 11 ms, 10 to 55 Hz, 1 mm | |
| Shock to EN 60068-2-27 | G | 50, 11 ms | |
| Bump to EN 60068-2-29 | G | 30, 11 ms, 1000 bumps each axis | |

The right to introduce technical modifications is reserved

Type RST

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

Type EST

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

Type ES with 5 m cable.

Magnetic Switches RST and EST

Electrical Service Life Protective Measures

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

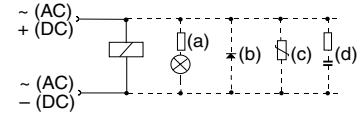
With **resistive and capacitive loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads

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

Connection Examples

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



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

Electrical Connection Type RST-K

Normally closed

Normally open

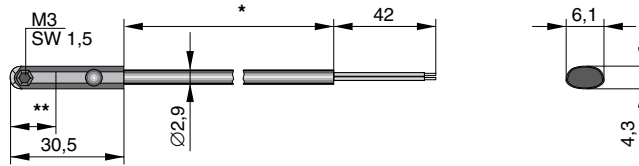
Electrical Connection Type EST-K

Electrical Connection Type RST-S

Electrical Connection Type EST-S

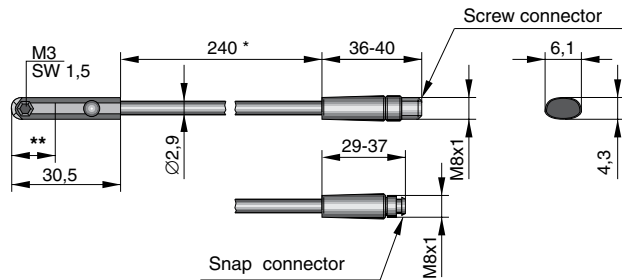
Magnetic Switches – Dimensions

Dimensions (mm) – Type RST-K, EST-K

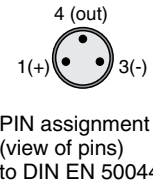


- * Cable lengths available: 5000 mm ± 75 mm
2000 mm ± 40 mm
- ** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

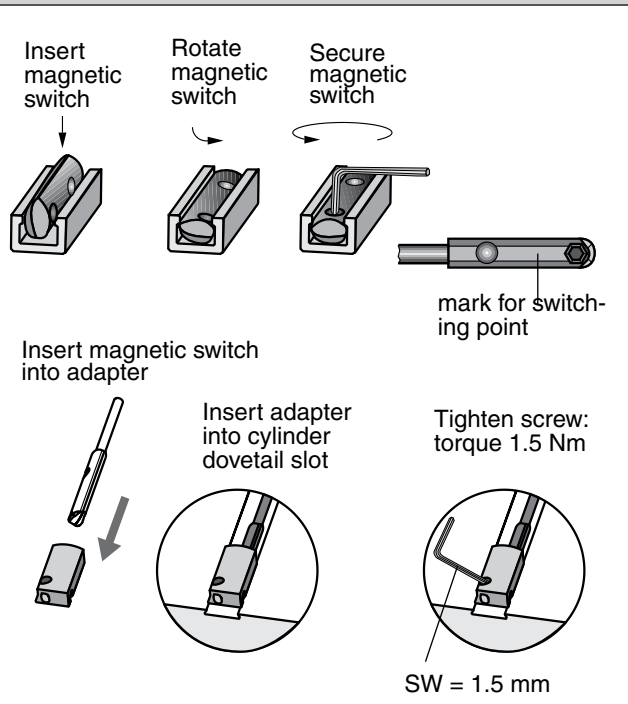
Dimensions (mm) – Type RST-S, EST-S



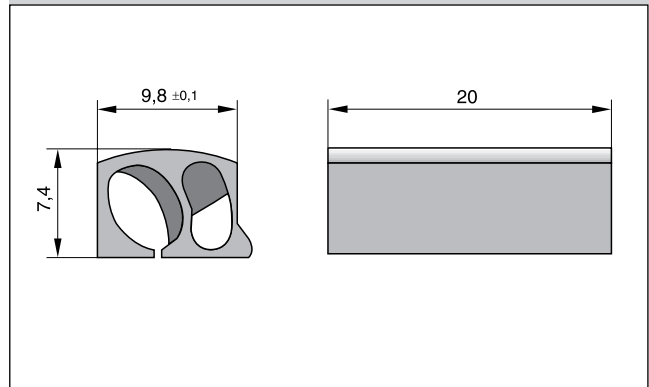
- * ± 6 mm
- ** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm



Installation



Dimensions of Adapter for Magnetic Switch



Magnetic Switches – Ordering

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

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

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



Components for EX-Areas

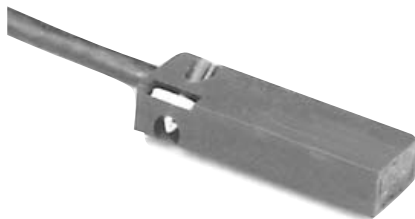


Magnetic Switches ø 10 – 80 mm

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

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

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



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

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

The right to introduce technical modifications is reserved

**Magnetic Switches
Type RS-K
ATEX-Version**

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

ATEX-Category Type: RS-K

⊕ II 3GD EEX nC IIC T3 146°C

**Electrical Service Life
Protective Measures**

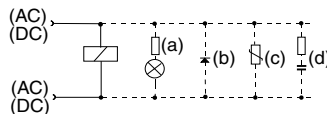
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

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

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

Connection Examples

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



(d) RC element on inductivity

**Magnetic Switches
Type ES-K
ATEX-Version**

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

ATEX-Category Type: ES-K

⊕ II 2GD EEX ib IIC T5 100°C

Note!

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

**Electrical Connection
Type RS-K ATEX**

Normally open (Reed)

**Electrical Connection
Type ES-K ATEX**

Normally open (NAMUR)

Dimensions (mm)

Dimension Table (mm)

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

Magnetic Switches – Ordering

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

Accessories

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

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



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



Contents

| Description | Page |
|-----------------------------|-------|
| Overview | 95-96 |
| Technical Data SFI-plus | 97-98 |
| Dimensions SFI-plus | 99 |
| Order Instructions SFI-plus | 100 |

ORIGA- Sensoflex

Displacement measuring system
for automated movement

Series SFI-plus
(incremental measuring system)

for cylinder series

- OSP-P...

Characteristics

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

For further specifications, see page 97



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

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

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

The right to introduce technical modifications is reserved

| Characteristics | | | |
|--|-----------------|---|--------------|
| Characteristics | Unit | Description | |
| Type | | 21210 | 21211 |
| Output Function | | | |
| Resolution | mm | 0.1 | 1 |
| Pole lengths magnetic scale | mm | 5 | |
| Maximum speed | m/s | 10 | |
| Repeat accuracy | | ± 1 Increment | |
| Distance between sensor and scale | mm | ≤ 4 | |
| Tangential deviation | | ≤ 5° | |
| Lateral deviation | mm | ≤ ± 1.5 | |
| Switching output | | PNP | |
| Electrical Characteristics | | | |
| Operating voltage U _b | V DC | 18 – 30 | |
| Voltage drop | V | ≤ 2 | |
| Continuous current for each output | mA | ≤ 20 | |
| Power consumption at U _b = 24V, switched on, without load | mA | ≤ 50 | |
| Short-circuit protection | | yes | |
| Reverse polarity protection | | yes | |
| Protection from inductive load | | yes | |
| Power-up pulse suppression | | yes | |
| EMC | | | |
| Electrostatic discharge immunity | kV | 6, B, to EN 61000-4-2 | |
| Electromagnetic field immunity | V/m | 10, A, to EN61000-4-3 | |
| Electrical fast transient/burst immunity (for signal connections) | kV | 1, B, to EN 61000-4-4 | |
| Electrical fast transient/burst immunity (for DC connections) | kV | 2, B, to EN 61000-4-4 | |
| Surge immunity (for signal connections) | kV | 1, B, to EN 61000-4-5 | |
| Surge immunity (for DC connections) | kV | 0,5, B, to EN 61000-4-5 | |
| Immunity to conducted disturbances | V | 10, A, to EN 61000-4-6 | |
| Power frequency magnetic field immunity at 50 Hz | A/m | 30, A, to EN 61000-4-8 | |
| Emission standard for residential | | to EN 61000-6-4 | |
| Radio disturbance characteristics | | to EN 55011, Group 1, A | |
| Mechanical Characteristics | | | |
| Housing | | Aluminium | |
| Cable length | m | 5.0 – fixed, open end | |
| Cable cross section | mm ² | 4 x 0.14 | |
| Cable type | | PUR, black | |
| Bending radius | mm | ≥ 36 | |
| Weigth (mass) | kg | ca. 0.165 | |
| Environmental Conditions / Shock Resistance | | | |
| Degree of protection | IP | 67 to EN60529 | |
| Ambient temperature range | °C | -25 to +80 | |
| Broad-band random vibration to EN 60068-2-64 | g | 5, 5 Hz to 2 kHz, 0.5 h each axis | |
| Vibration stress to EN 60068-2-6 | g | 12, 10 Hz to 2 kHz, 2 mm, 5 h each axis | |
| Shock to EN 60068-2-27 | g | 100, 6 ms, 50 bumps each axis | |
| Bump to EN 60068-2-29 | g | 5, 2 ms, 8000 bumps each axis | |

The right to introduce technical modifications is reserved

Displacement Measuring System

for automated movement

ORIGA-Sensoflex (incremental displacement measuring system)

Series SFI-plus

for cylinder series

- OSP-P...

Note:

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



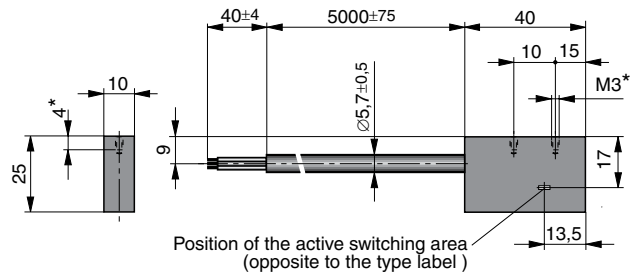
Sensoflex – Dimensions

Sensing Head

The sensing head provides two pulsating, 90° out of phase counter signals (phase A/B) with a 0.4 mm resolution (option 4 mm).

External processing can improve the resolution to 0.1 mm (option 1 mm). The counting direction can be determined automatically from the phase variance of the counter signals.

Dimensions (mm) – Sensing Head



* Maximum thread depth 4mm

| Electrical Connection | |
|-----------------------|-------------|
| Color | Description |
| bn = brown | + DC |
| bu = blue | - DC |
| bl = black | Phase A |
| wt = white | Phase B |

Output signal – Sensing Head

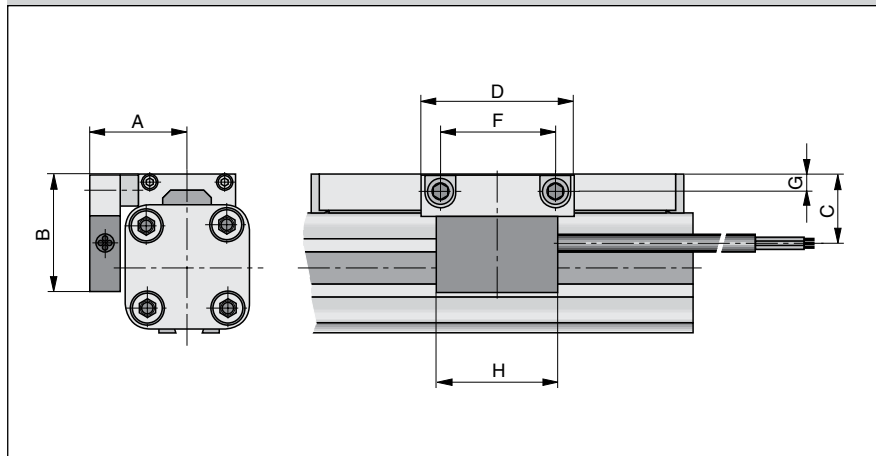
| | | | | |
|-------------|---------|----------|-----|--|
| $U_a = U_e$ | Phase B | U_{a1} | 0° | |
| | Phase A | U_{a2} | 90° | |

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

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



Dimensions – in combination with OSP-P cylinders



Dimension Table (mm)

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

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

| Order instructions | |
|--|------------------|
| Description | Order No. |
| Sensing head with measuring scale – Resolution 0.1 mm (scale length = required measuring distance + a minimum of – see table below) | 21240 |
| Option: Sensing head with measuring scale – Resolution 1 mm (scale length = required measuring distance + a minimum of – see table below) | 21241 |
| Sensing head – Resolution 0.1 mm (spare part) | 21210 |
| Option: Sensing head – Resolution 1 mm (spare part) | 21211 |
| Measuring scale per meter (spare part) | 21235 |
| Mounting kit for OSP-P25 | 21213 |
| Mounting kit for OSP-P32 | 21214 |
| Mounting kit for OSP-P40 | 21215 |
| Mounting kit for OSP-P50 | 21216 |
| Mounting kit for OSP-P63 | 21217 |
| Mounting kit for OSP-P80 | 21218 |

* Overall length of the measuring scale results from stroke length of the cylinder + dead length
Dead length for linear drives series OSP-P see table.

| Series | Dead length (mm) |
|----------|---------------------|
| OSP-P 25 | 154 |
| OSP-P 32 | 196 |
| OSP-P 40 | 240 |
| OSP-P 50 | 280 |
| OSP-P 63 | 350 |
| OSP-P 80 | 422 |

Example:

Cylinder OSP-P, Ø25 mm, stroke length 1000 mm

$$\begin{array}{rcl} \text{dead length} & + & \text{stroke length} & = & \text{overall length of the measuring scale} \\ \mathbf{154\ mm} & + & \mathbf{1000\ mm} & = & \mathbf{1154\ mm} \end{array}$$

Service Packs

| | | Bore Sizes | | | | | | |
|---|-------------|------------|-------|-------|-------|-------|-------|-------|
| | | 16mm | 25mm | 32mm | 40mm | 50mm | 63mm | 80mm |
| Buna Service Pack Single Piston | Part Number | 11111 | 11112 | 11113 | 11114 | 11115 | 11116 | 11118 |
| Viton Service Pack Single Piston | Part Number | 11121 | 11122 | 11123 | 11124 | 11125 | 11126 | 11128 |
| Buna Service Pack Single Piston - Slow Speed Grease | Part Number | 11131 | 11132 | 11133 | 11134 | 11135 | 11136 | 11138 |
| Viton Service Pack Single Piston - Slow Speed Grease | Part Number | 11141 | 11142 | 11143 | 11144 | 11145 | 11146 | 11148 |

*Behind part number, please add stroke length in mm

Service Pack Information

Service Packs, containing all the components necessary to completely rebuild an Origa rodless cylinder, are available. Each pack contains a complete seal kit, inner and outer bands, Origa grease tube, cleaning tool and repair instructions. It's all packaged in an easy-to-ship, easy-to-store box clearly labeled to indicate the cylinder type, bore and stroke it is intended for. Contact your local Origa distributor for more information.

Seal Kits

| | | Bore Sizes | | | | | | |
|--|-------------|------------|-------|-------|-------|-------|-------|-------|
| | | 16mm | 25mm | 32mm | 40mm | 50mm | 63mm | 80mm |
| Buna Seal Kit - Standard Cylinder | Part Number | 11052 | 11053 | 11054 | 11055 | 11056 | 11057 | 11058 |
| Viton Seal Kit - Standard Cylinder | Part Number | 11059 | 11060 | 11061 | 11062 | 11063 | 11064 | 11065 |
| Seal Kit - Sideline Carriage | Part Number | 11066 | 11067 | 11068 | 11069 | 11070 | – | – |
| Seal Kit Active Brake - Standard Cylinder | Part Number | – | 11822 | 11823 | 11824 | 11825 | 11826 | 11827 |
| Seal Kit - Multibrake | Part Number | – | 11089 | 11090 | 11091 | 11092 | 11093 | – |

Notes

Ordering Instructions / Part Numbering System for OSP Series Pneumatic Actuators

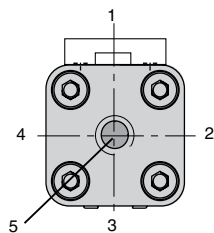
US-OSP-

| 1 Series | 2 Bore | 3 Mount Single Piston | 4 Mount Double Piston | 5 Seals | 6 Grease |
|-------------------------|-----------|--|--|------------|-------------|
| P Pneumatic | 0 10 | 0 if double (all) | 0 if single (all) | 0 buna | 0 std |
| C Pneumatic Cleanroom** | 1 16 | 1 std mnt (NR20) (all) | 1 std mnt (NR20) (all) | 1 viton | 1 slow |
| | 2 25 | 2 floating mount (NR25) (all) | 2 floating mount (NR25) (all) | 2 | 2 clean |
| | 3 32 | 3 invert mount (NR30) (all) | 3 invert mount (NR30) (all) | 3 | 3 food |
| | 4 40 | 4 invert float mount (NR35) (all) | 4 invert float mount (NR35) (all) | 4 | 4 |
| | 5 50 | 5 slideline (NR50) (16,25,32,40,50,63,80) | 5 slideline (NR50) (two pistons, two carriages) (16,25,32,40,50,63,80) | 5 | 5 |
| | 6 63 | 6 powerslide 25 (16,25)(page 35) | 6 powerslide 25 (two pistons, two carriages) (16,25) | 6 | 6 |
| | 8 80 | 7 powerslide 35 (25,32) | 7 powerslide 35 (two pistons, two carriages) (25,32) | 7 | 7 |
| | | 8 powerslide 44 (25,32,40) | 8 powerslide 44 (two pistons, two carriages) (25,32,40) | 8 | 8 |
| | | 9 powerslide 60 (40,50) | 9 powerslide 60 (two pistons, two carriages) (40,50) | 9 | 9 |
| | | A powerslide 76 (50) | A powerslide 76 (two pistons, two carriages) (50) | A special | A special |
| | | B brake active-pressure (25,32,40,50,63,80) | B brake active-pressure (25,32,40,50,63,80) | B | B |
| | | C | C | C | C |
| | | D joint clamp std (25,32,40,50) | D joint clamp std (25,32,40,50) | D | D |
| | | E joint clamp floating (25,32,40,50) | E joint clamp floating (25,32,40,50) | E | E |
| | | F joint clamp invert (25,32,40,50) | F joint clamp invert (25,32,40,50) | F | F |
| | | G joint clamp invert float (25,32,40,50) | G joint clamp invert float (25,32,40,50) | G | G |
| | | H joint clamp plate (25,32,40,50) | H joint clamp plate (25,32,40,50) | H | H |
| | | J joint clamp invert plate (25,32,40,50) | J joint clamp invert plate (25,32,40,50) | J | J |
| | | K joint clamp brake active-pressure (25,32,40,50) | K joint clamp brake active-pressure (25,32,40,50) | K | K |
| | | L Starline (16,25,32,40,50) | L | L | L |
| | | M | M | M | M |
| | | N SL multibrake-passive w/sensor (25,32,40,50,63,80) | N SL-Biparting (40) | N | N |
| | | P SL multibrake-passive w/o sensor (25,32,40,50,63,80) | P | P | P |
| | | Q Proline/GDL (16,25,32,40,50) | Q | Q | Q |
| | | R Proline w/active brake-pressure (25,32,40,50) | R | R | R |
| | | S Proline w/multibrake w/o sensor (25,32,40,50) | S | S | S |
| | | T "T" section piston mount (NR22) (40,50,63,80) | T "T" section piston mount (NR22) (40,50,63,80) | T | T |
| | | U slideline w/active brake (25,32,40,50) | U slideline w/active brake (two pistons, two carriages) (25,32,40,50) | U | U |
| | | V | V | V | V |
| | | W | W | W | W |
| | | X | X | X | X |
| | | Y HD Heavy Duty Series (25,32,40,50) | Y | Y | Y |
| | | Z special | Z special | Z | Z |

**Pneumatic Cleanroom: Only available in 16, 25 and 32 base cylinders without guide systems.

| 7 Ports | 8 Screws & Coating | 9* End Cap Support | 10 Center Support Qty. | 11 Switch | 12 Switch Qty | 13 14 15 16 17 18 Stroke (mm) |
|--|-------------------------|-----------------------------|---------------------------|---|------------------|----------------------------------|
| 0 std (pos 2) (only available option for 10mm cyl) | 0 std | 0 none | 0 none | 0 none | 0 | - 0 0 0 0 0 |
| 1 pos 5 | 1 stainless hardware | 1 A1 (10,16,25,32) | | 1 no reed KL3045 (all except 10mm) | | - |
| 2 single | 2 xylan coated aluminum | 2 A2 (16,25,32) | | 2 nc reed KL3048 (all except 10mm) | | - |
| 3 pos 1 | 3 stainless/xylan | 3 A3 (25,32) | | 3 pnp KL3054+4041 (all except 10mm) | | - |
| 4 pos 3 | 4 | 4 C1 (40,50,63,80) | | 4 npn KL3060+4041 (all except 10mm) | | - |
| 5 pos 4 | 5 | 5 C2 (40,50) | | 5 no reed 3047 (only 10mm) | | - |
| 6 VOE (25-G1/8,32-G1/4,40-G3/8,50-G3/8) 24VDC | 6 | 6 C3 (40,50,63,80) | | 6 pnp 3049+4041 (only 10mm) | | - |
| 7 VOE (25-G1/8,32-G1/4,40-G3/8,50-G3/8) 230VAC | 7 | 7 C4 (40,50) | | 7 npn 3753+4041 (only 10mm) | | - |
| 8 | 8 | 8 B1 (25,32) | | 8 | | - |
| 9 | 9 | 9 B3 (16) | | 9 | | - |
| A special | A | A B4 (25,32) | | A | | - |
| B | B | B D1 (all) | | B | | - |
| C | C | C E1 (all except 10mm) | | C | | - |
| D | D | D E2 (16,25,32,40,50) | | D | | - |
| E | E | E E3 (16,25,32,40,50,63,80) | | E | | - |
| F | F | F E4 (25,32,40,50) | | F servotec (25,32) 24VDC | | - |
| G | G | G A1+D1 (10,16,25,32) | | G nc reed with connector and 5m cable, KL3087 and 4041 (all except 10mm) | | - |
| H | H | H B1+D1 (25,32) | | H servotec (25,32) 220VAC | | - |
| J | J | J C1+D1 (40,50,63,80) | | J KL3047 + KC3102 (all except 10mm) | | - |
| K | K | K A1+E1 (16,25,32) | | K | | - |
| L | L | L B1+E1 (25,32) | | L | | - |
| M | M | M C1+E1 (40,50,63,80) | | M | | - |
| N | N | N A2+E2 (16,25,32) | | N | | - |
| P | P | P C2+E2 (40,50) | | P | | - |
| Q | Q | Q A3+E3 (25,32) | | Q | | - |
| R | R | R B3+E3 (16) | | R | | - |
| S | S | S C3+E3 (40,50,63,80) | | S | | - |
| T | T | T B4+E4 (25,32) | | T | | - |
| U | U | U C4+E4 (40,50) | | U | | - |
| V | V | V B2 (16,25,32) | | V | | - |
| W | W | W B5 (32) | | W | | - |
| X | X | X B2+E2 (16,25,32) | | X | | - |
| Y | Y | Y B5+E5 (32) | | Y | | - |
| Z | Z special | Z special | | Z special | | - |

9* Two end supports are supplied in the OSP-P part number



Note: Position #2 is the standard location.

Pneumatic Actuator Application Sheet

Distributor: _____

End-User: _____

Salesperson: _____

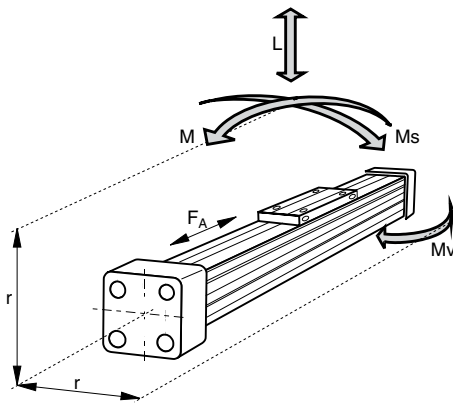
Phone: _____

Fax: _____

Stroke: _____ Time to make move: _____ Load: _____ Incline: _____

Check if load is externally supported

Actuator type: _____



My = _____

Mx = _____

Mz = _____

Description: _____

See Attached for additional information

Special Features Required:

Switches Type _____ Qty. _____

Please complete and fax to: 630/871-1515, Attention: Technical Support
(Can also be downloaded from website @ www.parkeroriga.com)

Safety Guide

Safety Guide for Selecting and Using Hydraulic, Pneumatic Cylinders and Their Accessories

WARNING: ⚠ **FAILURE OF THE CYLINDER, ITS PARTS, ITS MOUNTING, ITS CONNECTIONS TO OTHER OBJECTS, OR ITS CONTROLS CAN RESULT IN:**

- Unanticipated or uncontrolled movement of the cylinder or objects connected to it.
- Falling of the cylinder or objects held up by it.
- Fluid escaping from the cylinder, potentially at high velocity.

THESE EVENTS COULD CAUSE DEATH OR PERSONAL INJURY BY, FOR EXAMPLE, PERSONS FALLING FROM HIGH LOCATIONS, BEING CRUSHED OR STRUCK BY HEAVY OR FAST MOVING OBJECTS, BEING PUSHED INTO DANGEROUS EQUIPMENT OR SITUATIONS, OR SLIPPING ON ESCAPED FLUID.

Before selecting or using Parker (The Company) cylinders or related accessories, it is important that you read, understand and follow the following safety information. Training is advised before selecting and using The Company's products.

1.0 General Instructions

1.1 Scope – This safety guide provides instructions for selecting and using (including assembling, installing, and maintaining) cylinder products. This safety guide is a supplement to and is to be used with the specific Company publications for the specific cylinder products that are being considered for use.

1.2 Fail Safe – Cylinder products can and do fail without warning for many reasons. All systems and equipment should be designed in a fail-safe mode so that if the failure of a cylinder product occurs people and property won't be endangered.

1.3 Distribution – Provide a free copy of this safety guide to each person responsible for selecting or using cylinder products. Do not select or use The Company's cylinders without thoroughly reading and understanding this safety guide as well as the specific Company publications for the products considered or selected.

1.4 User Responsibility – Due to very wide variety of cylinder applications and cylinder operating conditions, The Company does not warrant that any particular cylinder is suitable for any specific application. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The hydraulic and pneumatic cylinders outlined in this catalog are designed to The Company's design guidelines and do not necessarily meet the design guideline of other agencies such as American Bureau of Shipping, ASME Pressure Vessel Code etc. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the cylinders and related accessories.
- Determining if the cylinders are required to meet specific design requirements as required by the Agency(s) or industry standards covering the design of the user's equipment.
- Assuring that the user's requirements are met, OSHA requirements are met, and safety guidelines from the applicable agencies such as but not limited to ANSI are followed and that the use presents no health or safety hazards.
- Providing all appropriate health and safety warnings on the equipment on which the cylinders are used.

1.5 Additional Questions – Call the appropriate Company technical service department if you have any questions or require any additional information. See the Company publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2.0 Cylinder and Accessories Selection

2.1 Seals – Part of the process of selecting a cylinder is the selection of seal compounds. Before making this selection, consult the "seal information page(s)" of the publication for the series of cylinders of interest.

The application of cylinders may allow fluids such as cutting fluids, wash down fluids etc. to come in contact with the external area of the cylinder. These fluids may attack the piston rod wiper and or the primary seal and must be taken into account when selecting and specifying seal compounds.

Dynamic seals will wear. The rate of wear will depend on many operating factors. Wear can be rapid if a cylinder is mis-aligned or if the cylinder has been improperly serviced. The user must take seal wear into consideration in the application of cylinders.

2.2 Piston Rods – Possible consequences of piston rod failure or separation of the piston rod from the piston include, but are not limited to are:

- Piston rod and or attached load thrown off at high speed.
- High velocity fluid discharge.
- Piston rod extending when pressure is applied in the piston retract mode.

Piston rods or machine members attached to the piston rod may move suddenly and without warning as a consequence of other conditions occurring to the machine such as, but not limited to:

- Unexpected detachment of the machine member from the piston rod.
- Failure of the pressurized fluid delivery system (hoses, fittings, valves, pumps, compressors) which maintain cylinder position.
- Catastrophic cylinder seal failure leading to sudden loss of pressurized fluid.
- Failure of the machine control system.

Follow the recommendations of the "Piston Rod Selection Chart and Data" in the publication for the series of cylinders of interest. The suggested piston rod diameter in these charts must be followed in order to avoid piston rod buckling.

Piston rods are not normally designed to absorb bending moments or loads which are perpendicular to the axis of piston rod motion. These additional loads can cause the piston rod to fail. If these types of additional loads are expected to be imposed on the piston rod, their magnitude should be made known to our engineering department.

The cylinder user should always make sure that the piston rod is securely attached to the machine member.

On occasion cylinders are ordered with double rods (a piston rod extended from both ends of the cylinder). In some cases a stop is threaded on to one of the piston rods and used as an external stroke adjuster. On occasions spacers are attached to the machine member connected to the piston rod and also used as a stroke adjuster. In both cases the stops will create a pinch point and the user should consider appropriate use of guards. If these external stops are not perpendicular to the mating contact surface, or if debris is trapped between the contact surfaces, a bending moment will be placed on the piston rod, which can lead to piston rod failure. An external stop will also negate the effect of cushioning and will subject the piston rod to impact loading. Those two (2) conditions can cause piston rod failure. Internal stroke adjusters are available with and without cushions. The use of external stroke adjusters should be reviewed with our engineering department.

The piston rod to piston and the stud to piston rod threaded connections are secured with an anaerobic adhesive. The strength of the adhesive decreases with increasing temperature. Cylinders which can be exposed to temperatures above +250°F (+121°C) are to be ordered with a non studded piston rod and a pinned piston to rod joint.

2.3 Cushions – Cushions should be considered for cylinder applications when the piston velocity is expected to be over 4 inches/second.

Cylinder cushions are normally designed to absorb the energy of a linear applied load. A rotating mass has considerably more energy than the same mass moving in a linear mode. Cushioning for a rotating mass application should be reviewed by our engineering department.

2.4 Cylinder Mountings – Some cylinder mounting configurations may have certain limitations such as but not limited to minimum stroke for side or foot mounting cylinders or pressure de-ratings for certain mounts. Carefully review the catalog for these types of restrictions.

Always mount cylinders using the largest possible high tensile alloy steel socket head cap screws that can fit in the cylinder mounting holes and torque them to the manufacturer's recommendations for their size.

2.5 Port Fittings – Hydraulic cylinders applied with meter out or deceleration circuits are subject to intensified pressure at piston rod end.

The rod end pressure is approximately equal to:

$$\frac{\text{operating pressure} \times \text{effective cap end area}}{\text{effective rod end piston area}}$$

Contact your connector supplier for the pressure rating of individual connectors.

3.0 Cylinder and Accessories Installation and Mounting

3.1 Installation

3.1.1 – Cleanliness is an important consideration, and cylinders are shipped with the ports plugged to protect them from contaminants entering the ports. These plugs should not be removed until the piping is to be installed. Before making the connection to the cylinder ports, piping should be thoroughly cleaned to remove all chips or burrs which might have resulted from threading or flaring operations.

3.1.2 – Cylinders operating in an environment where air drying materials are present such as fast-drying chemicals, paint, or weld splatter, or other hazardous conditions such as excessive heat, should have shields installed to prevent damage to the piston rod and piston rod seals.

3.1.3 – Proper alignment of the cylinder piston rod and its mating component on the machine should be checked in both the extended and retracted positions. Improper alignment will result in excessive rod gland and/or cylinder bore wear. On fixed mounting cylinders attaching the piston rod while the rod is retracted will help in achieving proper alignment.

3.1.4 – Sometimes it may be necessary to rotate the piston rod in order to thread the piston rod into the machine member. This operation must always be done with zero pressure being applied to either side of the piston. Failure to follow this procedure may result in loosening the piston to rod-threaded connection. In some rare cases the turning of the piston rod may rotate a threaded piston rod gland and loosen it from the cylinder head. Confirm that this condition is not occurring. If it does, re-tighten the piston rod gland firmly against the cylinder head.

For double rod cylinders it is also important that when attaching or detaching the piston rod from the machine member that the torque be applied to the piston rod end of the cylinder that is directly attaching to the machine member with the opposite end unrestrained. If the design of the machine is such that only the rod end of the cylinder opposite to where the rod attaches to the machine member can be rotated, consult the factory for further instructions.

3.2 Mounting Recommendations

3.2.1 – Always mount cylinders using the largest possible high tensile alloy steel socket head screws that can fit in the cylinder mounting holes and torque them to the manufacturer's recommendations for their size.

3.2.2 – Side-Mounted Cylinders – In addition to the mounting bolts, cylinders of this type should be equipped with thrust keys or dowel pins located so as to resist the major load.

3.2.3 – Tie Rod Mounting – Cylinders with tie rod mountings are recommended for applications where mounting space is limited. The standard tie rod extension is shown as BB in dimension tables. Longer or shorter extensions can be supplied. Nuts used for this mounting style should be torqued to the same value as the tie rods for that bore size.

3.2.4 – Flange Mount Cylinders – The controlled diameter of the rod gland extension on head end flange mount cylinders can be used as a pilot to locate the cylinders in relation to the machine. After alignment has been obtained, the flanges may be drilled for pins or dowels to prevent shifting.

3.2.5 – Trunnion Mountings – Cylinders require lubricated bearing blocks with minimum bearing clearances. Bearing blocks should be carefully aligned and rigidly mounted so the trunnions will not be subjected to bending moments. The rod end should also be pivoted with the pivot pin in line and parallel to axis of the trunnion pins.

3.2.6 – Clevis Mountings – Cylinders should be pivoted at both ends with centerline of pins parallel to each other. After cylinder is mounted, be sure to check to assure that the cylinder is free to swing through its working arc without interference from other machine parts.

4.0 Cylinder and Accessories Maintenance, Troubleshooting and Replacement

4.1 Storage – At times cylinders are delivered before a customer is ready to install them and must be stored for a period of time. When storage is required the following procedures are recommended.

4.1.1 – Store the cylinders in an indoor area which has a dry, clean and noncorrosive atmosphere. Take care to protect the cylinder from both internal corrosion and external damage.

4.1.2 – Whenever possible cylinders should be stored in a vertical position (piston rod up). This will minimize corrosion due to possible condensation which could occur inside the cylinder. This will also minimize seal damage.

4.1.3 – Port protector plugs should be left in the cylinder until the time of installation.

4.1.4 – If a cylinder is stored full of hydraulic fluid, expansion of the fluid due to temperature changes must be considered. Installing a check valve with free flow out of the cylinder is one method.

4.1.5 – When cylinders are mounted on equipment that is stored outside for extended periods, exposed unpainted surfaces, e.g. piston rod, must be coated with a rust-inhibiting compound to prevent corrosion.

4.2 Cylinder Trouble Shooting

4.2.1 – External Leakage

4.2.1.1 – Rod seal leakage can generally be traced to worn or damaged seals. Examine the piston rod for dents, gouges or score marks, and replace piston rod if surface is rough.

Rod seal leakage could also be traced to gland wear. If clearance is excessive, replace rod bushing and seal. Rod seal leakage can also be traced to seal deterioration. If seals are soft or gummy or brittle, check compatibility of seal material with lubricant used if air cylinder, or operating fluid if hydraulic cylinder. Replace with seal material, which is compatible with these fluids. If the seals are hard or have lost elasticity, it is usually due to exposure to temperatures in excess of 165°F. (+74°C). Shield the cylinder from the heat source to limit temperature to 350°F. (+177°C.) and replace with fluorocarbon seals.

4.2.1.2 – Cylinder body seal leak can generally be traced to loose tie rods. Torque the tie rods to manufacturer's recommendation for that bore size.

Excessive pressure can also result in cylinder body seal leak. Determine maximum pressure to rated limits. Replace seals and retorque tie rods as in paragraph above. Excessive pressure can also result in cylinder body seal leak. Determine if the pressure rating of the cylinder has been exceeded. If so, bring the operating pressure down to the rating of the cylinder and have the tie rods replaced.

Pinched or extruded cylinder body seal will also result in a leak. Replace cylinder body seal and retorque as in paragraph above.

Cylinder body seal leakage due to loss of radial squeeze which shows up in the form of flat spots or due to wear on the O.D. or I.D. – Either of these are symptoms of normal wear due to high cycle rate or length of service. Replace seals as per paragraph above.

4.2.2 – Internal Leakage

4.2.2.1 – Piston seal leak (by-pass) 1 to 3 cubic inches per minute leakage is considered normal for piston ring construction. Virtually no static leak with lipseal type seals on piston should be expected. Piston seal wear is a usual cause of piston seal leakage. Replace seals as required.

4.2.2.2 – With lipseal type piston seals excessive back pressure due to over-adjustment of speed control valves could be a direct cause of rapid seal wear. Contamination in a hydraulic system can result in a scored cylinder bore, resulting in rapid seal wear. In either case, replace piston seals as required.

4.2.2.3 – What appears to be piston seal leak, evidenced by the fact that the cylinder drifts, is not always traceable to the piston. To make sure, it is suggested that one side of the cylinder piston be pressurized and the fluid line at the opposite port be disconnected. Observe leakage. If none is evident, seek the cause of cylinder drift in other component parts in the circuit.

4.2.3 – Cylinder Fails to Move the Load

4.2.3.1 – Pneumatic or hydraulic pressure is too low. Check the pressure at the cylinder to make sure it is to circuit requirements.

4.2.3.2 – Piston Seal Leak – Operate the valve to cycle the cylinder and observe fluid flow at valve exhaust ports at end of cylinder stroke. Replace piston seals if flow is excessive.

4.2.3.3 – Cylinder is undersized for the load – Replace cylinder with one of a larger bore size.

4.3 Erratic or Chatter Operation

4.3.1 – Excessive friction at rod gland or piston bearing due to load misalignment – Correct cylinder-to-load alignment.

4.3.2 – Cylinder sized too close to load requirements – Reduce load or install larger cylinder.

4.3.3 – Erratic operation could be traced to the difference between static and kinetic friction. Install speed control valves to provide a back pressure to control the stroke.

4.4 Cylinder Modifications, Repairs, or Failed Component – Cylinders as shipped from the factory are not to be disassembled and or modified. If cylinders require modifications, these modifications must be done at company locations or by The Company's certified facilities. The Cylinder Division Engineering Department must be notified in the event of a mechanical fracture or permanent deformation of any cylinder component (excluding seals). This includes a broken piston rod, tie rod, mounting accessory or any other cylinder component. The notification should include all operation and application details. This information will be used to provide an engineered repair that will prevent recurrence of the failure.

It is allowed to disassemble cylinders for the purpose of replacing seals or seal assemblies. However, this work must be done by strictly following all the instructions provided with the seal kits.

Offer of Sale

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and Divisions ("Company") and its authorized distributors, are hereby offered for sale at prices to be established by the Company, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such item, when communicated to the Company, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from the Company. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.**

NOTWITHSTANDING THE FOREGOING, THERE ARE NOWARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGN OR SPECIFICATIONS.

5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter,

discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

Notes

Parker Hannifin Corporation
Parker-Origa
100 West Lake Drive
Glendale Heights, IL 60139 USA

Phone 630-871-8300
fax 630-871-1515
toll free 800-695-5984
email: info-hous-market@parker.com
website www.parkeroriga.com

