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climate control  
electromechanical  
filtration  
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**pneumatics**  
process control  
sealing & shielding



# OSP-E Series Electric Linear Drives and Guides

Catalog 0951



ENGINEERING YOUR SUCCESS.

**Warning, Offer of Sale**

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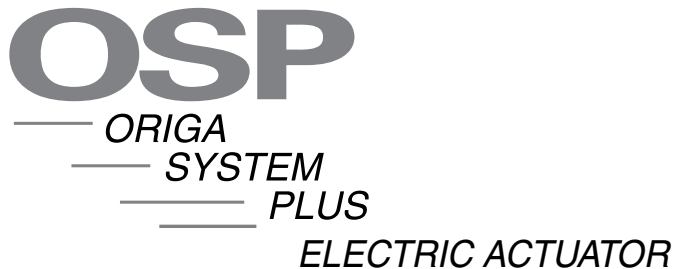
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**Parker Hannifin Corporation**  
Parker-Origa  
Glendale Heights, Illinois  
[www.parkeroriga.com](http://www.parkeroriga.com)

**Conversion Table**

**2D & 3D  
 CAD Drawings  
 can be downloaded  
 from website  
[www.parkeroriga.com](http://www.parkeroriga.com)**

**ATTENTION!**

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

630-871-8300

Application Sheet on Page 173

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

**Conversion Table**

<b>Multiply</b>	<b>By</b>	<b>To Obtain</b>
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**

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**The System Concept**

Based on the concept of the rodless pneumatic cylinder, well proven worldwide, PARKER-ORIGA now offers the complete solution for linear drive systems. Developed for absolute reliability, high performance, easy handling and optimized design, ORIGA SYSTEM PLUS can master even the most difficult installation requirements.

**ORIGA SYSTEM PLUS**

is a completely modular concept, enabling pneumatic and electric drives to be combined with guides and control modules for all kinds of applications.

The main system carriers are the drives themselves, consisting of extruded aluminium profiles with double dovetail slots on three sides,

providing direct mounting for all modular options.

**MODULAR SYSTEM**

- **Electric Toothed Belt Drive**
  - For applications with higher speeds and precise movement and positioning for longer travel.
- **Electric Screw Drive**
  - For higher drive power and precise movement and positioning.



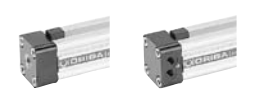

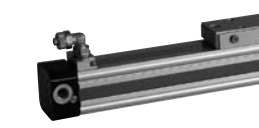









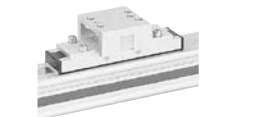






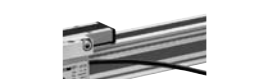


- **Pneumatic Drive**

- For a wide variety of applications with simple handling, combined with simple control possibilities and a broad power spectrum.
- Ideal for fast, repetitive movements and simple positioning duties.

**For additional information on rodless pneumatic actuators, please contact factory for OSP-P literature.**

- 18 additional guide variants provide any required precision, performance and load capacity.
- Compact solutions, easy to install and simple to retrofit.
- Valves and control elements can be mounted directly on the pneumatic drive.
- A wide range of mounting options provides great installation flexibility.

\* Information on Pneumatic Linear Drives, contact factory for literature

<p><b>Basic Linear Drive – Standard Version</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Toothed Belt with internal Plain Bearing Guide Toothed Belt with integrated Guides Vertical Toothed Belt with integrated Recirculating Ball Bearing Guide</li> <li>● Series OSP-E Screw (Ball Screw, Trapezoidal Screw)</li> </ul>		<p><b>Multi-Axis Systems</b>  <b>Connecting elements</b></p> <ul style="list-style-type: none"> <li>● Adapter Plates</li> <li>● Intermediate Drive Shafts</li> </ul>	
<p><b>Air Connection on the End-face or both at One End</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> </ul>		<p><b>Duplex-Connection</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> </ul>	
<p><b>Clean Room Cylinders certified to DIN EN ISO 146644-1</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E..SB</li> </ul>		<p><b>Multiplex-Connection</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> </ul>	
<p><b>Products in ATEX-Version</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P* Rodless Cylinders</li> </ul>		<p><b>Linear Guides – SLIDELINE</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Screw</li> </ul>	
<p><b>Products in ATEX-Version</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P* Rodless Cylinders with plain bearing SLIDELINE</li> </ul>		<p><b>Linear Guides – POWERSLIDE</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>	
<p><b>Cylinders for synchronized counter-rotation of the cylinders</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> </ul>		<p><b>Linear Guides – PROLINE</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>	
<p><b>Integrated 3/2-Way Valves</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> </ul>		<p><b>Linear Guides – STARLINE</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> </ul>	
<p><b>Clevis Mounting</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>		<p><b>Heavy Duty-Guides – HD</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Screw</li> </ul>	
<p><b>End Cap Mounting</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>		<p><b>Brakes</b></p> <ul style="list-style-type: none"> <li>● Active Brakes*</li> <li>● Passive Brakes*</li> </ul>	
<p><b>Mid-Section Support</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>		<p><b>Magnetic Switches</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>	
<p><b>Inversion Mounting</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Belt</li> <li>● Series OSP-E Screw</li> </ul>		<p><b>SFI-Plus Dispacemet Mesuring Systems</b></p> <ul style="list-style-type: none"> <li>● Series OSP-P*</li> <li>● Series OSP-E Screw</li> </ul>	
<p><b>Drive Systems and components for Electrical Linear Drives OSP-E</b></p> <ul style="list-style-type: none"> <li>● Stepper Motor and Controller</li> <li>● Servo Motor and Controller</li> <li>● Gears</li> </ul>		<p><b>Drive Systems and components for Electrical Linear Drives OSP-E</b></p> <ul style="list-style-type: none"> <li>● Stepper Motor and Controller</li> <li>● Servo Motor and Controller</li> <li>● Gears</li> </ul>	

Drives	OSP-E20 -BHD <sup>1)</sup>	OSP-E25 -BHD <sup>1),2)</sup>	OSP-E32 -BHD <sup>1),2)</sup>	OSP-E50 -BHD <sup>1),2)</sup>	OSP-E20 -BV <sup>3)</sup>	OSP-E25 -BV <sup>3)</sup>	OSP-E25 -B <sup>4)</sup>	OSP-E32 -B <sup>4)</sup>	OSP-E50 -B <sup>4)</sup>	
Effective action force F <sub>A</sub> [N]	450 - 550	550 - 1070	1030 - 1870	1940 - 3120	450 - 650	1050 - 1490	50	100 - 150	300 - 425	
Max. Velocity v [m/s]	3.0	10.0 / 5	10.0 / 5	10.0 / 5	3.0	5.0	2.0	3.0	5.0	
Integrated Magnets	○	○	○	○	–	–	○	○	○	
Free choice of stroke length [mm] **	1 - 5760	1 - 7000	1 - 7000	1 - 7000	1 - 1000	1 - 1500	1 - 3000	1 - 5000	1 - 5000	
Temperature range [°C]	-30 – +80	-30 – +80	-30 – +80	-30 – +80	-30 – +80	-30 – +80	-30 – +80	-30 – +80	-30 – +80	
Tandem Version	○	○	○	○	○	○	○	○	○	
Bi-parting Version	○	○	○	○	–	–	○	○	○	
Stainless steel parts	X	X	X	X	X	X	X	X	X	
Integrated planetary gearbox LPB***	–	○	○	○	–	–	–	–	–	
<b>Self-Guidance</b>										
F [N]	1600	3000 / 986	10000 / 1348	15000 / 3704	1600	3000	160	300	850	
M <sub>x</sub> [Nm]	21	50 / 11	120 / 19	180 / 87	20	50	2	8	16	
M <sub>y</sub> [Nm]	150	500 / 64	1000 / 115	1800 / 365	100	200	12	25	80	
M <sub>z</sub> [Nm]	150	500 / 64	1400 / 115	2500 / 365	100	200	8	16	32	
<b>Slideline</b>										
F [N]	–	–	–	–	–	–	–	–	–	
M <sub>x</sub> [Nm]	–	–	–	–	–	–	–	–	–	
M <sub>y</sub> [Nm]	–	–	–	–	–	–	–	–	–	
M <sub>z</sub> [Nm]	–	–	–	–	–	–	–	–	–	
<b>Proline</b>										
F [N]	–	–	–	–	–	–	986	1348	3582	
M <sub>x</sub> [Nm]	–	–	–	–	–	–	19	33	128	
M <sub>y</sub> [Nm]	–	–	–	–	–	–	44	84	287	
M <sub>z</sub> [Nm]	–	–	–	–	–	–	44	84	287	
<b>Powerslide</b>										
F [N]	–	–	–	–	–	–	910 - 1190	1400 - 2300	3000 - 4000	
M <sub>x</sub> [Nm]	–	–	–	–	–	–	14 - 20	20 - 50	90 - 140	
M <sub>y</sub> [Nm]	–	–	–	–	–	–	63 - 175	70 - 175	250 - 350	
M <sub>z</sub> [Nm]	–	–	–	–	–	–	63 - 175	70 - 175	250 - 350	
<b>HD-Guide (Heavy Duty)</b>										
F [N]	–	–	–	–	–	–	–	–	–	
M <sub>x</sub> [Nm]	–	–	–	–	–	–	–	–	–	
M <sub>y</sub> [Nm]	–	–	–	–	–	–	–	–	–	
M <sub>z</sub> [Nm]	–	–	–	–	–	–	–	–	–	
<b>Accessories</b>										
<b>Multi-Axis System</b>										
Connecting elements	○	○	○	○	○	○	○	○	○	
Connecting shaft	○	○	○	○	○	○	○	○	○	
<b>Special Drives</b>										
Clean Room Cylinders	X	X	X	X	X	X	X	X	X	
<b>Mountings</b>										
Clevis Mounting	X	X	X	X	X	X	○	○	○	
End Cap Mounting / Midsection Support	○	○	○	○	X	X	○	○	○	
Inversion Mounting	X	X	X	X	X	X	○	○	○	
Adapter Profile / T-Nut Profile	○	○	○	○	X	X	○	○	○	
<b>Magnetic switches</b>										
Reed Switches RS (NO, NC)	○	○	○	○	○	○	○	○	○	
Electronic Switches ES (PNP, NPN)	○	○	○	○	○	○	○	○	○	
<b>Measuring systems</b>										
SFI-plus Displacement Measuring System	X	X	X	X	X	X	X	X	X	
<b>Motor package (stepper / servo)</b>										
	○	○	○	○	○	○	○	○	○	
<b>Gearbox</b>										
Planetary gear and angular gear	○	○	○	○	○	○	–	–	–	

○ = Standard version  
 ○ = Option  
 X = Currently not available  
 \* = other temperature ranges on request  
 \*\* = exc. safety clearance from mechanical end position  
 other stroke lengths on request  
 \*\*\* = ratio i = 3, 5, 10

<sup>1)</sup> = Linear Drive with Toothed Belt and Integrated Recirculating Ball Bearing Guide  
<sup>2)</sup> = Linear Drive with Toothed Belt and Integrated Roller Guide  
<sup>3)</sup> = Vertical Linear Drive with Toothed Belt and Integrated Recirculating Ball Bearing Guide  
<sup>4)</sup> = Linear Drive with Toothed Belt and Internal Plain Bearing Guide  
<sup>5)</sup> = Linear Drive with Ball Screw Drive and Internal Plain Bearing Guide  
<sup>6)</sup> = Linear Drive with Trapezoidal Screw Drive and Internal Plain Bearing Guide  
<sup>7)</sup> = Linear Drive with Ball Screw Drive, Internal Plain Bearing Guide and Piston Rod  
<sup>8)</sup> = Linear Drive with Trapezoidal Screw Drive, Internal Plain Bearing Guide and Piston Rod



	OSP-E25 -SB <sup>5)</sup>	OSP-E32 -SB <sup>5)</sup>	OSP-E50 -SB <sup>5)</sup>	OSP-E25 -ST <sup>6)</sup>	OSP-E32 -ST <sup>6)</sup>	OSP-E50 -ST <sup>6)</sup>	OSP-E25 -SBR <sup>7)</sup>	OSP-E32 -SBR <sup>7)</sup>	OSP-E50 -SBR <sup>7)</sup>	OSP-E25 -STR <sup>8)</sup>	OSP-E32 -STR <sup>8)</sup>	OSP-E50 -STR <sup>8)</sup>
	250	600	1500	600	1300	2500	260	900	1200	800	1600	3300
	0.25	0.5	1.25	0.1	0.1	0.15	0.25	0.5	1.25	0.075	0.1	0.125
	○	○	○	○	○	○	○	○	○	○	○	○
	1 - 1100	1 - 2000	1 - 3200	1 - 1100	1 - 2000	1 - 2500	1 - 500	1 - 500	1 - 500	1 - 500	1 - 500	1 - 500
	-20 - +80	-20 - +80	-20 - +80	-20 - +70	-20 - +70	-20 - +70	-20 - +80	-20 - +80	-20 - +80	-20 - +70	-20 - +70	-20 - +70
	○	○	○	○	○	○	-	-	-	-	-	-
	X	X	X	X	X	X	X	X	X	X	X	X
	-	-	-	-	-	-	-	-	-	-	-	-
	500	1200	3000	500	1000	1500	-	-	-	-	-	-
	2	8	16	2	6	13	-	-	-	-	-	-
	12	25	80	24	65	155	-	-	-	-	-	-
	8	16	32	7	12	26	-	-	-	-	-	-
	675	925	2000	675	925	2000	-	-	-	-	-	-
	14	29	77	14	29	77	-	-	-	-	-	-
	34	60	180	34	60	180	-	-	-	-	-	-
	34	60	180	34	60	180	-	-	-	-	-	-
	986	1348	3582	986	1348	3582	-	-	-	-	-	-
	19	33	128	19	33	128	-	-	-	-	-	-
	44	84	287	44	84	287	-	-	-	-	-	-
	44	84	287	44	84	287	-	-	-	-	-	-
	910-1190	1400-2300	3000-4000	900-1190	1400-2300	3000-4000	-	-	-	-	-	-
	14-20	20-50	90-140	14-20	20-50	90-140	-	-	-	-	-	-
	63-175	70-175	250-350	63-175	70-175	250-350	-	-	-	-	-	-
	63-175	70-175	250-350	63-175	70-175	250-350	-	-	-	-	-	-
	6000	6000	18000	6000	6000	18000	-	-	-	-	-	-
	320	475	1400	320	475	1400	-	-	-	-	-	-
	260	285	1100	260	285	1100	-	-	-	-	-	-
	320	475	1400	320	475	1400	-	-	-	-	-	-
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	X	X	X	X	X	X	X	X	X
	○	○	○	○	○	○	-	-	-	-	-	-
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	-	-	-	-	-	-
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	-	-	-	-	-	-
	○	○	○	○	○	○	○	○	○	○	○	○
	-	-	-	-	-	-	-	-	-	-	-	-

### Drive Options

## OSP-E Series Electric Linear Drives and Guides One System – Seven Drive Options

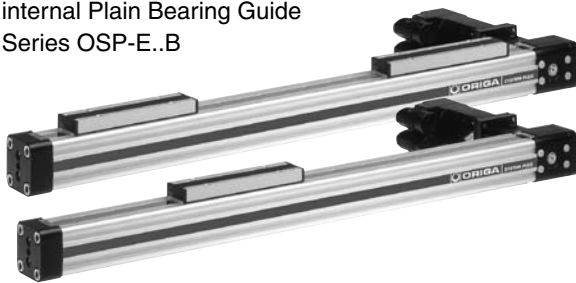
Linear Drive with Toothed Belt and integrated Recirculating Ball Bearing Guide or Roller Guide  
Series OSP-E..BHD



Vertical Linear Drive with Toothed Belt and integrated Recirculating Ball Bearing Guide  
Series OSP-E..BV



Linear Drive with Toothed Belt and internal Plain Bearing Guide  
Series OSP-E..B



Linear Drive with Ball Screw Drive and internal Plain Bearing Guide  
Series OSP-E..SB



Linear Drive with Trapezoidal Screw Drive and internal Plain Bearing Guide  
Series OSP-E..ST

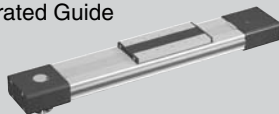
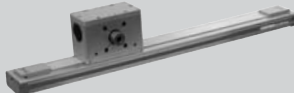
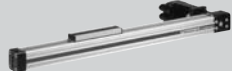
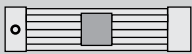



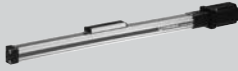
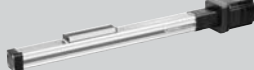




Linear Drive with Ball Screw Drive, internal Plain Bearing Guide and Piston Rod  
Series OSP-E..SBR



Linear Drive with Trapezoidal Screw Drive, internal Plain Bearing Guide and Piston Rod  
Series OSP-E..STR



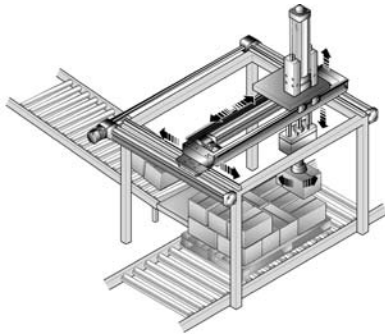
Description		Toothed Belt-Driven – Basic Versions		
	Toothed Belt-Driven with Integrated Guide 	Vertical Linear Drive with Toothed Belt 	Toothed Belt-Driven 	
Standard Versions	 – Direction of motion – Position of the drive shaft	– Position of the drive shaft	 – Position of the drive shaft	
Options	– Tandem – Bi-directional – Integrated Planetary Gearbox	– Tandem	– Tandem – Bi-directional – Niro	
<b>Mountings</b>				
Clevis Mounting	–	–	O	
End Cap Mounting	O	–	O	
Mid-Section Support	O	–	O	
Inversion Mounting	–	–	O	
<b>Accessories</b>				
Magnetic Switches	O	O	O	
Motor Mountings	O	O	O	
<b>Linear Guides</b>	–	–	O	
<b>Multi-Axis Connection System</b>	O	O	O	

Description		Screw-Driven – Basic Versions		
	Ball Screw -Driven 	Trapezoidal Screw- Driven 	Screw-Driven with extending Rod – with Trapezoidal Screw – with Ball Screw 	
Standard Versions	 – Spindle pitch of the ball screws			
Options	– Clean room version – Displacement Measuring System SFI-plus	– Displacement Measuring System SFI-plus		
<b>Mountings</b>				
Clevis Mounting	O	O	–	
End Cap Mounting	O	O	O	
Mid-Section Support	O	O	O	
Inversion Mounting	O	O	–	
<b>Accessories</b>				
Magnetic Switches	O	O	O	
Motor Mounting	O	O	O	
Flansh Mounting	–	–	O	
Trunnion Mounting	–	–	O	
Piston Rod Mounting	–	–	O	
<b>Linear Guides</b>	O	O	–	
<b>Multi-Axis Connection System</b>	O	O	O	

**Features**

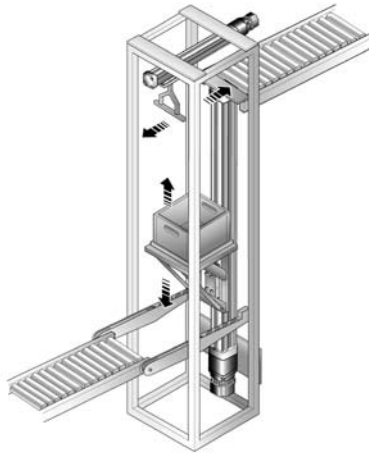
**Auto Handling**

– high speed pick and place movements



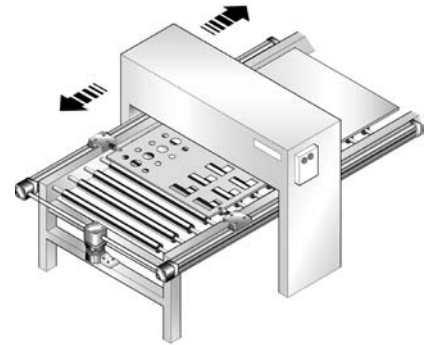
**Material Handling Systems**

– vertical and horizontal transfer movements



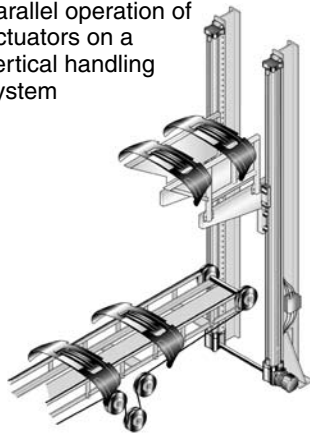
**Punching Machines**

– accurate feeding and positioning



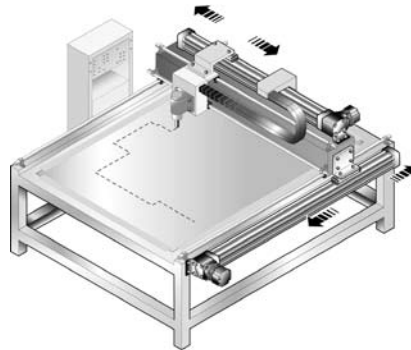
**Mechanical Handling**

– parallel operation of actuators on a vertical handling system



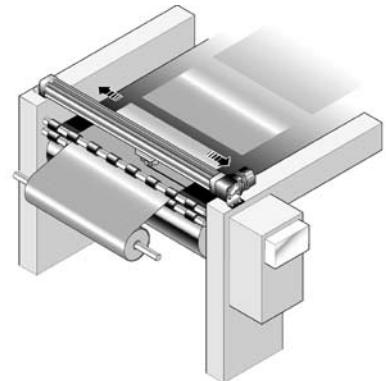
**Profile Cutting Machines**

– intricate profile movements of water jets and lasers



**Slitting Machines**

– high speed traverse applications for the slicing of papers and textiles



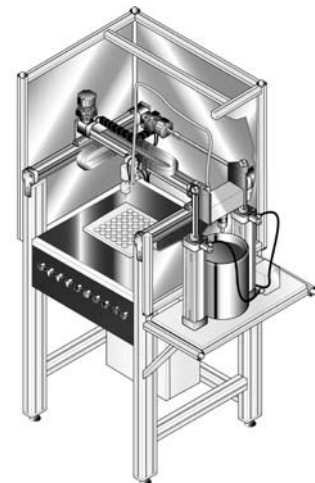
**Spray Coating**

– synchronized high speed bi-parting movements



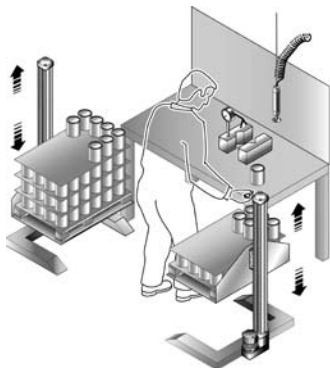
**Automated Filling Machines**

– accurate 3-axis positioning



**Ergonomic Workstations**

– adjustment of working levels



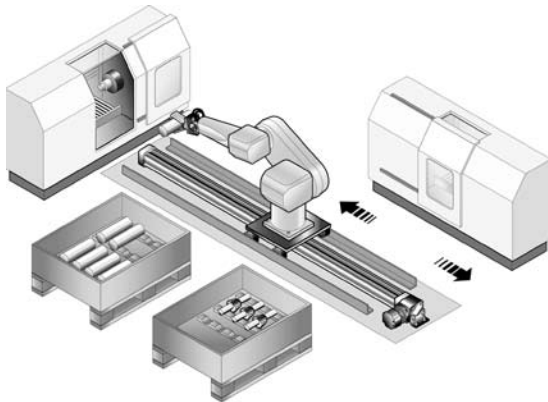
**Automatic Doors and Guards**

– simple bi-parting operation



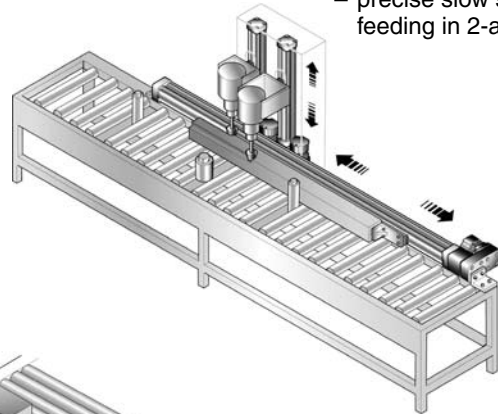
**Robotic Installations**

– traverse of robots between work stations



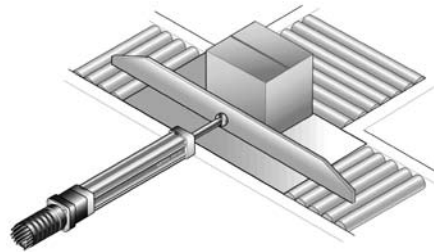
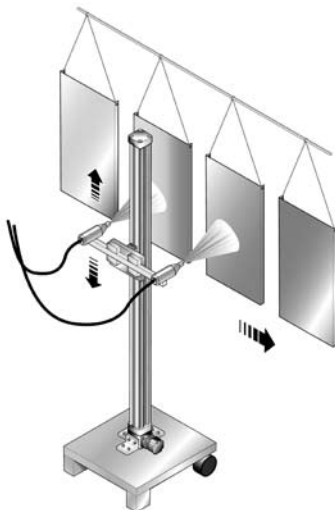
**Milling Machines**

– precise slow speed feeding in 2-axis



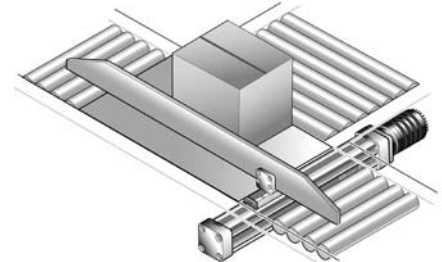
**Spraying Equipment**

– precision reciprocating action



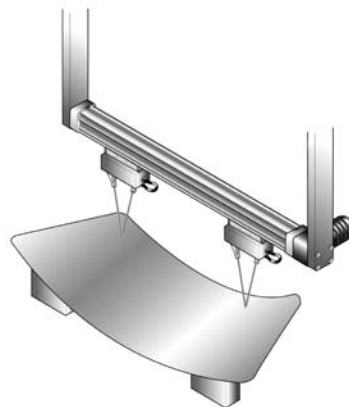
**Conveyor Systems**

– simple cross-transfer actuators



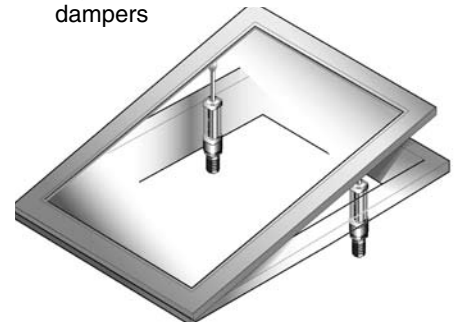
**Measuring Systems**

– optical curvature gauging using synchronised bi-parting actuation



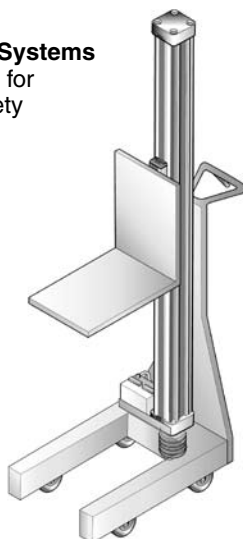
**Ventilation Systems**

– adjustment of air dampers



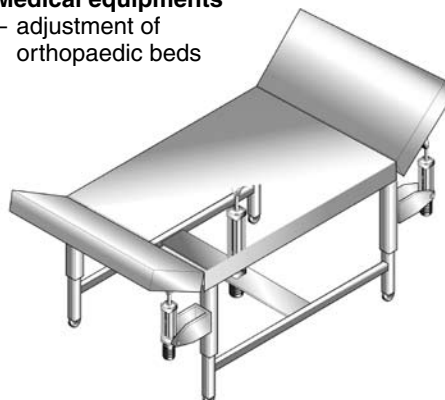
**Mobile Lifting Systems**

– lifting devices for industrial safety



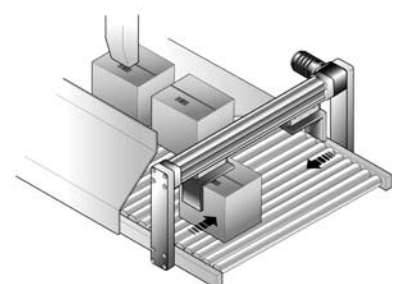
**Medical equipments**

– adjustment of orthopaedic beds



**Conveyor Systems**

– centring of packages on conveyor lines



**Notes**

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# Linear Drive with Toothed Belt and Integrated Guide

– with Recirculating Ball Bearing Guide  
– with Roller Guide

## Series OSP-E..BHD



### Contents

Description	Page
Overview	11-14
<b>Version with Recirculating Ball Bearing Guide</b>	
Technical Data	15-17
Dimensions	18, 19
Order Instructions	24
<b>Version with Roller Guide</b>	
Technical Data	19-22
Dimensions	23

**Features**

The latest generation of high capacity linear drives, the OSP-E..BHD series combines robustness, precision and high performance. The aesthetic design is easily integrated into any machine constructions by virtue of extremely adaptable mountings.

## Linear Drive with Toothed Belt - selective with Integrated Recirculating Ball Bearing Guide or Integrated Roller Guide

**Advantages:**

- **Accurate path and position control**
- **High force output**
- **High speed operation**
- **High load capacity**
- **Easy installation**
- **Low maintenance**
- **Ideal for multi-axis applications**

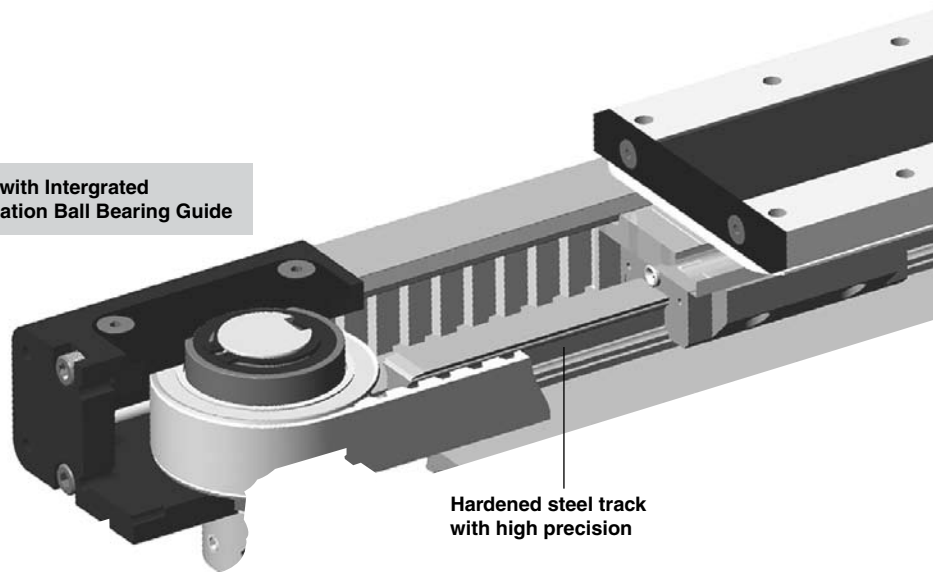
**Features:**

- **Integrated recirculating ball bearing guide or integrated roller guide**
- **Diverse range of multi-axis connection elements**
- **Diverse range of accessories and mountings**
- **Complete motor and control packages**
- **Optional integrated planetary gearbox**
- **Special options on request**

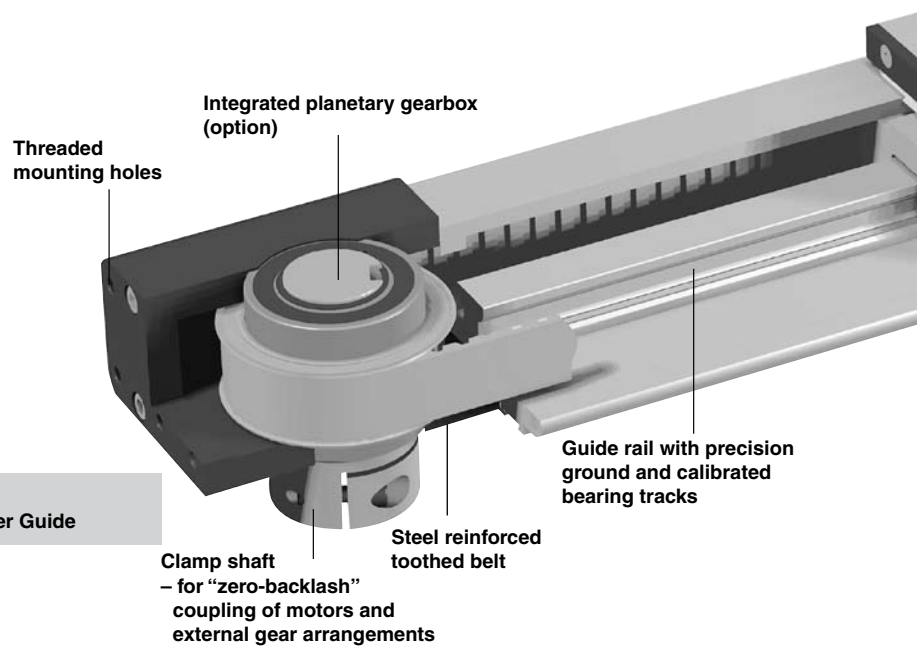
To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems



Version with Intergrated Recirculation Ball Bearing Guide



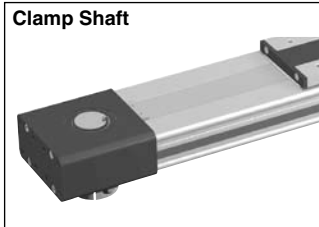
Version with Integrated Roller Guide



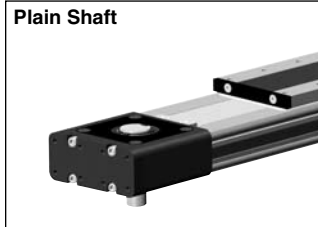


**Drive Shaft Versions**

**Clamp Shaft**



**Plain Shaft**



**Drive Shaft OPTIONS**

**Clamp Shaft and Plain Shaft**

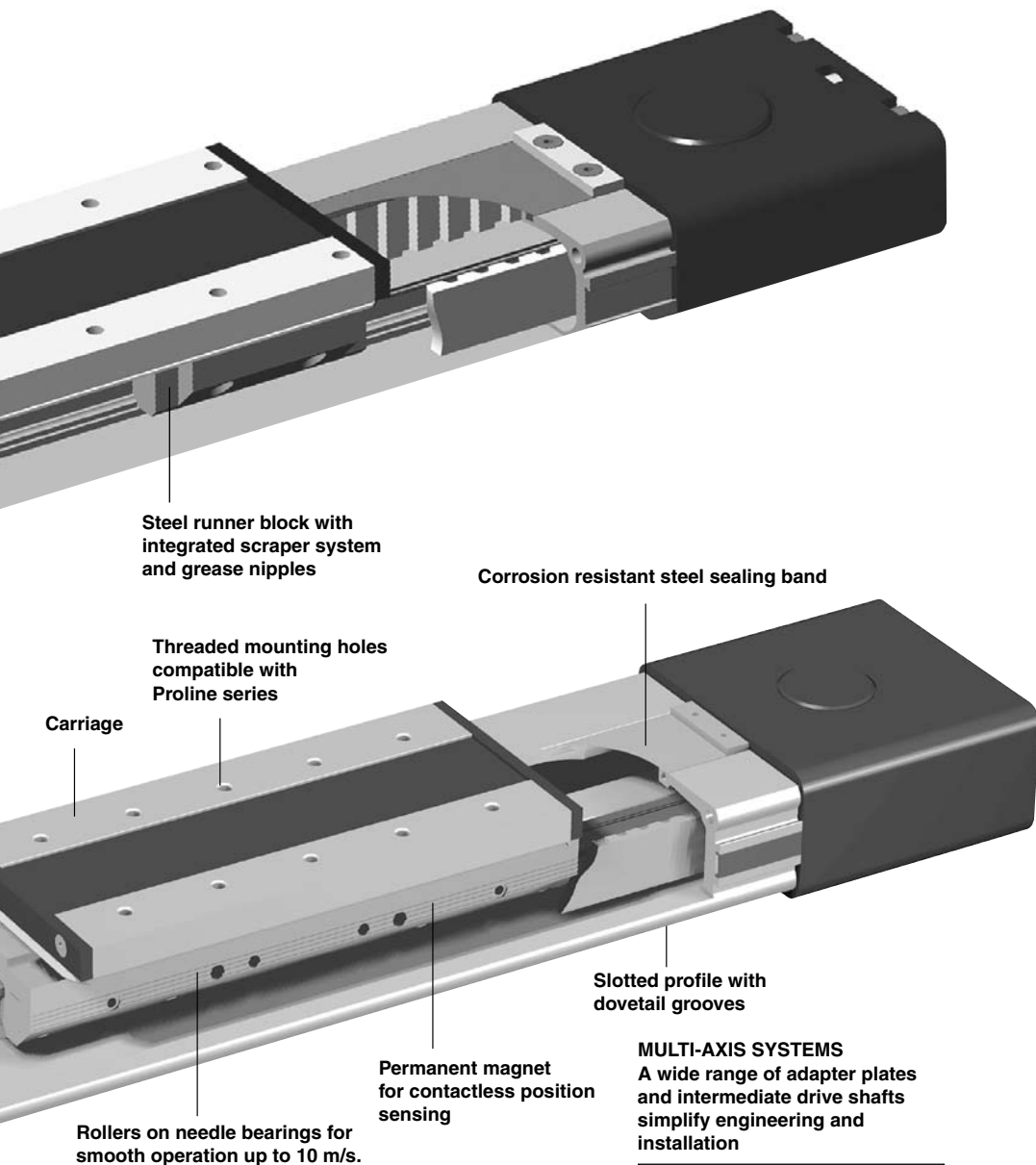


**Hollow Shaft with Keyway**



**OPTION**

**Integrated planetary gearbox**



Steel runner block with integrated scraper system and grease nipples

Corrosion resistant steel sealing band

Threaded mounting holes compatible with Proline series

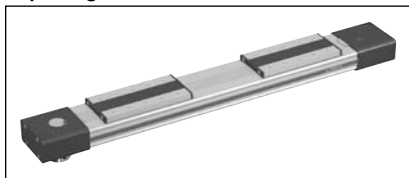
Carriage

Slotted profile with dovetail grooves

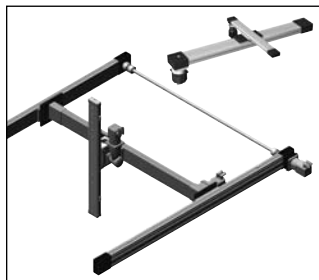
Permanent magnet for contactless position sensing

Rollers on needle bearings for smooth operation up to 10 m/s.

**BI-PARTING Version** for perfectly synchronised bi-parting movements.



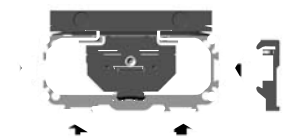
**MULTI-AXIS SYSTEMS**  
 A wide range of adapter plates and intermediate drive shafts simplify engineering and installation



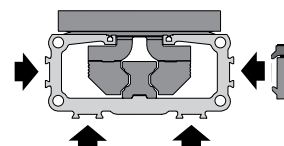
- Highly compact and rigid solution fully integrated in the drive cap housing
- Purpose designed for the BHD series
- Available with three standard ratios (3, 5 and 10)
- Very low backlash
- A wide range of available motor flanges

The dovetailed mounting rails of the new linear actuator expand its function into that of a universal system carrier. Modular system components are simply clamped on

**Version with Integrated Recirculating Ball Bearing Guide**



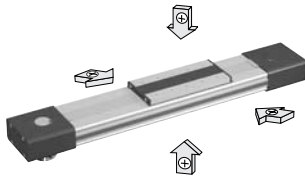
**Version with Integrated Roller guide**



# SERIES OSP-E, LINEAR DRIVE WITH TOOTHED BELT AND INTEGRATED GUIDE

**STANDARD VERSIONS**  
**OSP-E..BHD**  
**Version with Recirculating Ball Bearing Guide**  
 Pages 15-19  
**Version with Roller Guide**  
 Pages 20-23

Standard carrier with integrated guide and magnets for contactless position sensing. Dovetail profile for mounting of accessories and the actuator itself.



**DRIVE SHAFT WITH CLAMP SHAFT**

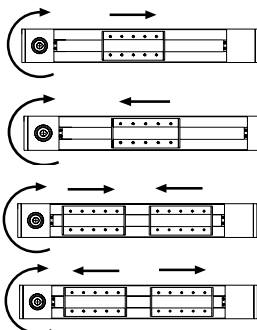


**DRIVE SHAFT WITH PLAIN SHAFT**



**ACTUATING DIRECTION**  
 Page 172

Important in parallel operations, e.g. with intermediate drive shaft



Standard

Standard –  
 Bi-Parting  
 Version

## OPTIONS

**TANDEM**  
 Page 18  
 For higher moment support.



**BI-PARTING VERSION**  
 Page 18  
 For perfectly synchronised bi-parting movements.



**DRIVE SHAFT WITH CLAMP SHAFT AND PLAIN SHAFT**  
 For connections with intermediate drive shaft  
 (Page 99)



**HOLLOW SHAFT WITH KEYWAY**  
 For close coupling of motors and external gears.



**INTEGRATED PLANETARY GEARBOX**  
 Page 19  
 For compact installation and very low backlash.



## ACCESSORIES

**MOTOR MOUNTINGS**

Page 120



**END CAP MOUNTING**

Page 128

For mounting the drives on the end cap.



**MID-SECTION SUPPORT**

Page 134

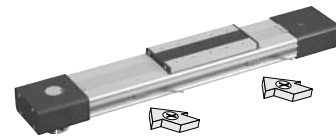
For supporting long drives or mounting the linear drives on dovetail grooves.



**MAGNETIC SWITCHES**  
 TYPE RS AND ES

Page 153

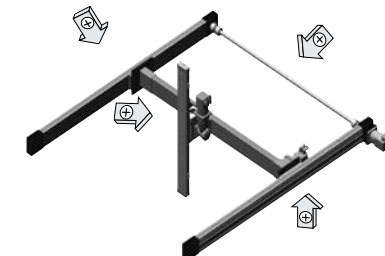
For contactless position sensing of end stop and intermediate carrier positions.



**MULTI-AXIS SYSTEMS**

Page 86

For modular assembly of linear drives up to multi-axis systems.



A3P106E00FAG0X

The right to introduce technical modifications is reserved

**Technical Data**

Characteristics			
Characteristics		Symbol	Unit Description
<b>General Features</b>			
Series			OSP-E..BHD
Name			Linear Drive with Toothed Belt and integrated recirculating ball bearing guide
Mounting			See drawings
Ambient-Temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-30 +80
Weight (mass)		kg	See table
Installation			In any position
Material	Slotted profile		Extruded anodized aluminium
	Toothed belt		Steel-corded polyurethane
	Pulley		Aluminium
	Guide		Recirculating Ball Bearing Guide
	Guide rail		Hardened steel rail with high precision, accuracy class N
	Guide carrier		Steel carrier with integrated wiper system, grease nipples, preloaded 0.02 x C, accuracy class H
	Sealing band		Hardened, corrosion resistant steel
	Screws, nuts		Zinc plated steel
	Mountings		Zinc plated steel and aluminium
Encapsulation class		IP	54

# Linear Drive with Toothed Belt and Integrated Recirculating Ball Bearing Guide Series OSP-E..BHD Size 20 to 50



**Standard Versions**

- Toothed Belt Drive with integrated Recirculating Ball Bearing Guide
- Drive Shaft with clamp shaft or plain shaft
- Choice of motor mounting side
- Dovetail profile for mounting of accessories and the drive itself

**Options**

- Tandem version for higher moments
- Bi-parting version for synchronised movements
- Integrated planetary gearbox
- Drive shaft with
  - clamp shaft and plain shaft
  - hollow shaft with keyway
- Special drive shaft versions on request

**Weight (mass) and Inertia**

Series	Weight (mass)[kg]			Inertia [ $\times 10^{-6}$ kgm <sup>2</sup> ]		
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre stroke	per kg mass
OSP-E20BHD	2.8	4	0.8	280	41	413
OSP-E25BHD	4.3	4.5	1.5	1229	227	821
OSP-E32BHD	8.8	7.8	2.6	3945	496	1459
OSP-E50BHD	26	17	7.8	25678	1738	3103
OSP-E20BHD*	4.3	4	1.5	540	41	413
OSP-E25BHD*	6.7	4.5	2.8	2353	227	821
OSP-E32BHD*	13.5	7.8	5.2	7733	496	1459
OSP-E50BHD*	40	17	15	49180	1738	3103

\* Version: Tandem and Bi-parting (Option)

**Installation Instructions**

Use the threaded holes in the end cap for mounting the linear drive. Check if mid-section supports are needed using the maximum allowable unsupported length graph on page 17. At least one end cap must be secured to prevent axial sliding when mid-section support is used.

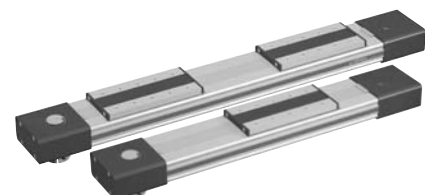
recommended after 12 months or 3000 km operation. Please refer to the operating instructions supplied with the drive.

**First service start-up**

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.

**Maintenance**

Depending on operating conditions, inspection of the linear drive is



A1P559E00GAG0X  
The right to introduce technical modifications is reserved



# Sizing Performance Overview

## Maximum Loadings

### Sizing of Linear Drive

The following steps are recommended:

1. Determination of the lever arm length  $l_x$ ,  $l_y$  and  $l_z$  from  $m_e$  to the center axis of the linear drive.
2. Calculation of the load  $F_x$  or  $F_y$  to the carrier caused by  $m_e$   
 $F = m_e \cdot g$
3. Calculation of the static and dynamic force  $F_A$  which must be transmitted by the toothed belt.  
 $F_{A(\text{horizontal})} = F_a + F_0 = m_g \cdot a + M_0 \cdot 2\pi / U_{ZR}$   
 $F_{A(\text{vertical})} = F_g + F_a + F_0 = m_g \cdot g + m_g \cdot a + M_0 \cdot 2\pi / U_{ZR}$
4. Calculation of all static and dynamic moments  $M_x$ ,  $M_y$  and  $M_z$  which occur in the application.  
 $M = F \cdot l$
5. Selection of maximum permissible loads via Table T3.
6. Calculation and checking of the combined load, which must not be higher than 1.
7. Checking of the maximum torque that occurs at the drive shaft in Table T2.
8. Checking of the required action force  $F_A$  with the permissible load value from Table T1.

For motor sizing, the effective torque must be determined, taking into account the cycle time.

### Legend

- $l$  = distance of a mass in the x-, y- and z-direction from the guide [m]
- $m_e$  = external moved mass [kg]
- $m_{LA}$  = moved mass of linear drive [kg]
- $m_g$  = total moved mass ( $m_e + m_{LA}$ ) [kg]
- $F_{x/y}$  = load exerted on the carrier in dependence of the installation position [N]
- $F_A$  = action force [N]
- $M_0$  = no-load torque [Nm]
- $U_{ZR}$  = circumference of the pulley (linear movement per revolution) [m]
- $g$  = gravity [m/s<sup>2</sup>]
- $a_{max.}$  = maximum acceleration [m/s<sup>2</sup>]

Performance Overview <span style="float: right;">T1</span>					
Characteristics	Unit	Description			
Series		OSP-E20BHD	OSP-E25BHD	OSP-E32BHD	OSP-E50BHD
Max. speed	[m/s]	3 <sup>1)</sup>	5 <sup>1)</sup>	5 <sup>1)</sup>	5 <sup>1)</sup>
Linear motion per revolution of drive shaft	[mm]	125	180	240	350
Max. rpm on drive shaft	[min <sup>-1</sup> ]	2000	1700	1250	860
Max. effective Action force $F_A$ at speed	< 1 m/s: [N] 1-3 m/s: [N] > 3 m/s: [N]	550	1070	1870	3120
No-load torque	[Nm]	0.6	1.2	2.2	3.2
Max. acceleration/deceleration	[m/s <sup>2</sup> ]	50	50	50	50
Repeatability	[mm/m]	±0.05	±0.05	±0.05	±0.05
Max. standard stroke length	[mm]	5760 <sup>2)</sup>	5700 <sup>2)</sup>	5600 <sup>2)</sup>	5500 <sup>2)</sup>

<sup>1)</sup> up to 10 m/s on request  
<sup>2)</sup> longer strokes on request

Maximum Permissible Torque on Drive Shaft Speed / Stroke <span style="float: right;">T2</span>															
OSP-E20BHD				OSP-E25BHD				OSP-E32BHD				OSP-E50BHD			
Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed [m/s]	Torque [Nm]	Stroke [m]	Moment [Nm]	Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]
1	11	1	11	1	31	1	31	1	71	1	71	1	174	1	174
2	10	2	11	2	28	2	31	2	65	2	71	2	159	2	174
3	9	3	8	3	25	3	31	3	59	3	60	3	153	3	138
4		4	7	4	23	4	25	4	56	4	47	4	143	4	108
5		5	5	5	22	5	21	5	52	5	38	5	135	5	89

### Important:

The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.

### Example above:

OSP-E25BHD, stroke 5 m, required speed 3 m/s from table T2  
 speed 3 m/s gives 25 Nm and stroke 5 m gives 21 Nm. Max. torque for this application is 21 Nm.

When sizing Bi-parting units: for ordering stroke see page 18.

Maximum Permissible Loads <span style="float: right;">T3</span>					
Series	Max. applied load		Max. moments [Nm]		
	F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>
OSP-E20BHD	1600	1600	21	150	150
OSP-E25BHD	2000	3000	50	500	500
OSP-E32BHD	5000	10000	120	1000	1400
OSP-E50BHD	12000	15000	180	1800	2500

Tightening for Clamp Hub				
	20	25	32	50
BHD	—	9.5	17	40
BHDII	4.8	9.5	17	40
BV	4.8	9.5	—	—

**Combined Loads**

If the linear drive is subjected to several forces, loads and moments at the same time, the maximum load is

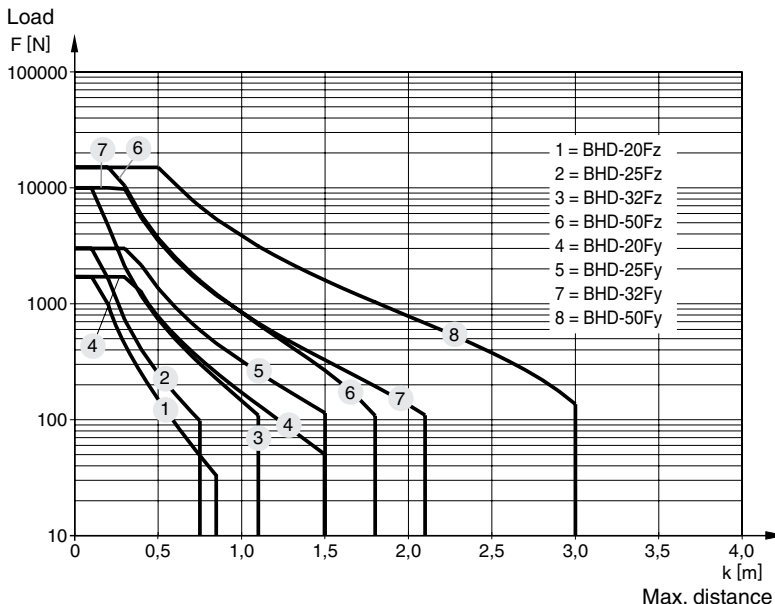
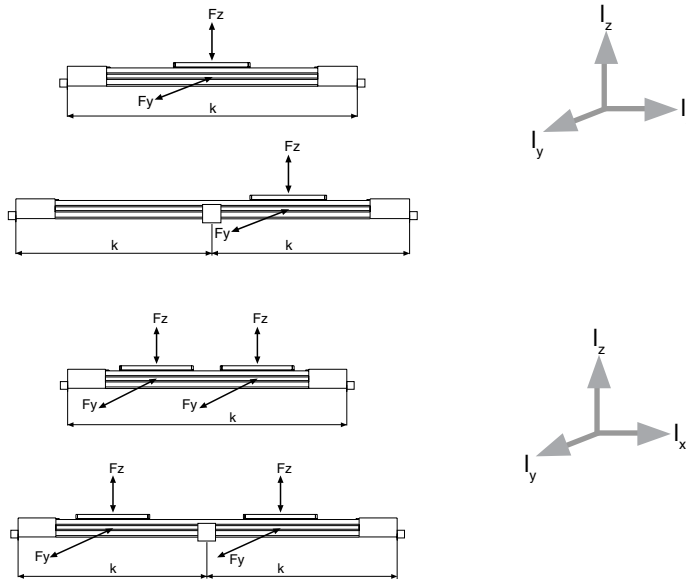
calculated with the equation shown here. The maximum permissible loads must not be exceeded.

**Equation for Combined Loads**

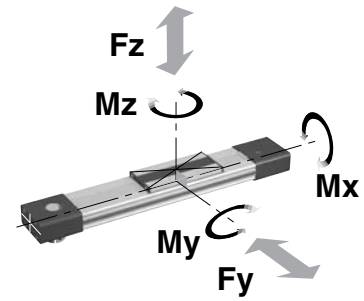
$$\frac{F_y}{F_y(\max)} + \frac{F_z}{F_z(\max)} + \frac{M_x}{M_x(\max)} + \frac{M_y}{M_y(\max)} + \frac{M_z}{M_z(\max)} \leq 1$$

The total of the loads must not exceed >1 under any circumstances.

**Maximum Permissible Unsupported Length – Placing of Mid-Section Support**



**Forces, loads and moments**



The distance ( $l_x, l_y, l_z$ ) for calculation of moments relates to the center axis of the linear drive. Bending moments are calculated from the center of the linear drive and  $F$  indicates actual force.

$$M = F \cdot l \text{ [Nm]}$$

$$M_x = M_{x\text{static}} + M_{x\text{dynamic}}$$

$$M_y = M_{y\text{static}} + M_{y\text{dynamic}}$$

$$M_z = M_{z\text{static}} + M_{z\text{dynamic}}$$

**Maximum Permissible Unsupported Length**

**Stroke Length**

The stroke lengths of the linear drives are available in multiples of 1 mm up to 5700 mm.

Other stroke lengths are available on request.

**The end of stroke must not be used as a mechanical stop.**

Allow an additional safety clearance at **both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.**

The use of an AC motor with frequency converter normally requires a larger clearance than that required for servo systems.

For advice, please contact your local PARKER-ORIGA technical support department.

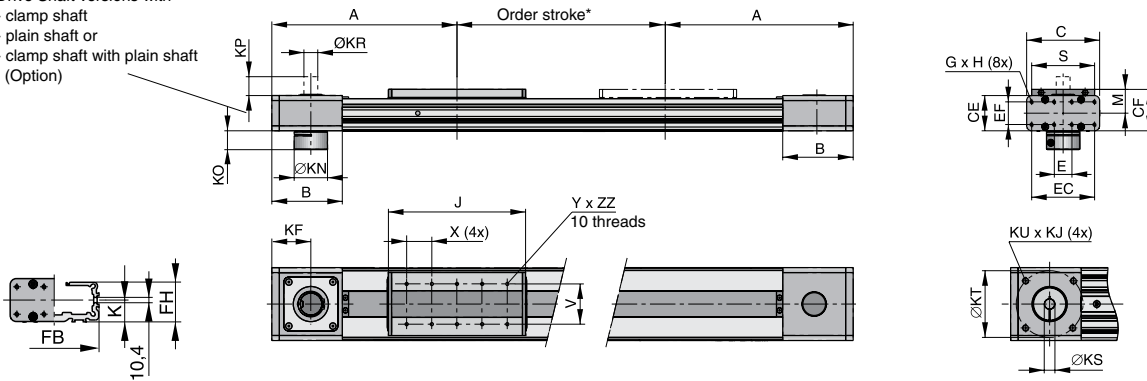
\* For Bi-parting version the max. load ( $F$ ) is the total load of both carriers  
 $F = F_{\text{carrier 1}} + F_{\text{carrier 2}}$

$k$  = Max. permissible distance between mountings/mid-section support for a given load  $F$ .

When loadings are below or up to the curve in the graph below the deflection will be max. 0.01 % of distance  $k$ .

**Linear Drive with Toothed Belt and integrated Recirculating Ball Bearing Guide – Basic Unit  
 Series OSP-E..BHD**

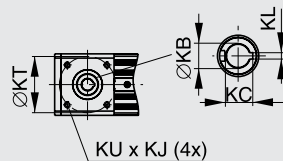
Drive Shaft versions with  
 - clamp shaft  
 - plain shaft or  
 - clamp shaft with plain shaft  
 (Option)



Mounting holes for motor flange  
 or external planetary gearbox <sup>1)</sup>

**Hollow shaft with keyway (Option)  
 Dimension Table [mm]**

Series	KB <sup>1)</sup>	KC	KL	KT	KU x KJ
OSP-E20BHD	12 <sup>H7</sup>	13.8	4	65,7	M6 x 8
OSP-E25BHD	16 <sup>H7</sup>	18.3	5	82	M8 x 8
OSP-E32BHD	22 <sup>H7</sup>	24.8	6	106	M10 x 12
OSP-E50BHD	32 <sup>H7</sup>	35.3	10	144	M12 x 19



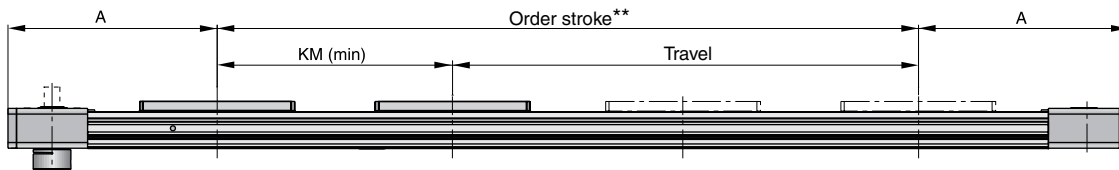
**1) Note:**

The mounting holes for the coupling housing / motor flange / gearbox are located on the opposite side to the carrier (motor mounting standard). They also can be located on the same side as the carrier (motor mounting 180° standard).

**\* Note:**

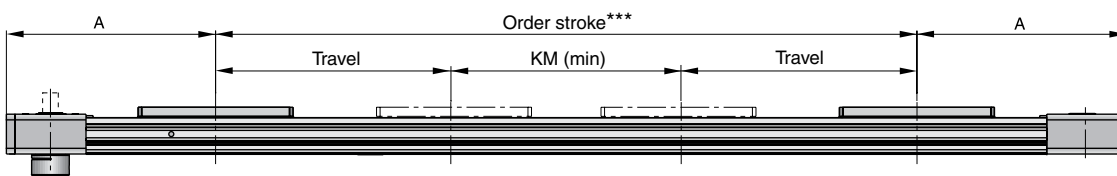
The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.  
 Order stroke = required travel + 2 x safety distance.  
 The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.  
 For further information please contact your local PARKER-ORIGA representative.

**Option – Tandem  
 Series OSP-E..BHD**



\*\* Order stroke = required travel + KM min + 2 x safety distance

**Option – Bi-Parting  
 Series OSP-E..BHD**



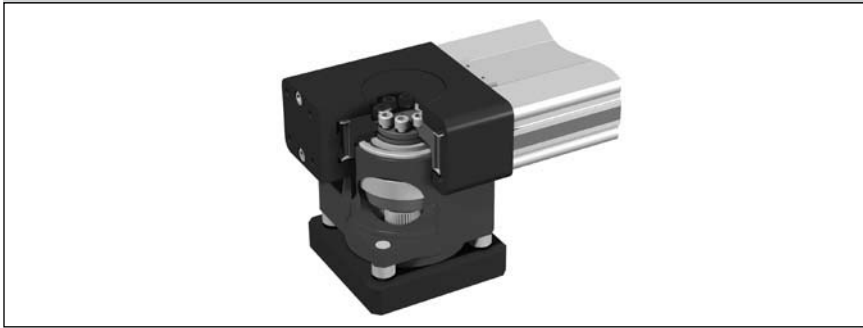
\*\*\* Order stroke = 2 x required travel + KM min + 2 x safety distance

**Dimension Table [mm]**

Series	A	B	C	E	GxH	J	K	M	S	V	X	YxZZ	CE	CF	EC	EF	FB	FH	KF	KM <sub>min</sub>	KM <sub>ec.</sub>	KN	KO	KP	KR	KS	KT	KUxKJ
OSP-E50BHD	347	147	175	18	M6x12	288	43	49	124	90	60	M6x10	87	92.5	158	70	164	77	79.5	354	400	75	41	35	32 <sub>H7</sub>	32 <sup>H7</sup>	144	M12x19
OSP-E20BHD	185	76.5	73	18	M5x8.5	155	21.1	27.6	67	51	30	M5x8	38	49	60	27	73	36	42.5	180	220	27	18	25	12 <sub>H7</sub>	12 <sup>H7</sup>	65.7	M6x8
OSP-E25BHD	218	88	93	25	M5x10	178	21.5	31	85	64	40	M6x8	42	52.5	79	27	92	39.5	49	210	250	34	21.7	30	16 <sub>H7</sub>	16 <sup>H7</sup>	82	M8x8
OSP-E32BHD	262	112	116	28	M6x12	218	28.5	38	100	64	40	M6x10	56	66.5	100	36	116	51.7	62	250	300	53	30	30	22 <sub>H7</sub>	22 <sup>H7</sup>	106	M10x12
OSP-E50BHD	347	147	175	18	M6x12	288	43	49	124	90	60	M6x10	87	92.5	158	70	164	77	79.5	354	400	75	41	35	32 <sub>H7</sub>	32 <sup>H7</sup>	144	M12x19

(Other dimensions for KS and KB for special drive shafts on request – see order instructions.)

Series OSP-E..BHD – with Integrated Planetary Gearbox (Option)



## Integrated Planetary Gearbox

**Features**

- Highly compact and rigid solution fully integrated in the drive cap housing
- Purpose designed for the BHD series.
- Available with three standard ratios (3, 5 and 10)
- Very low backlash
- A wide range of available motor flanges

Please contact your local PARKER-ORIGA technical support for available motor flanges.

For motors and controllers, see separate catalogue "Drive technology for electric linear drives OSP-E".

Material:  
Aluminium (AL-H) / Steel (St-H)

**Standard Version:**

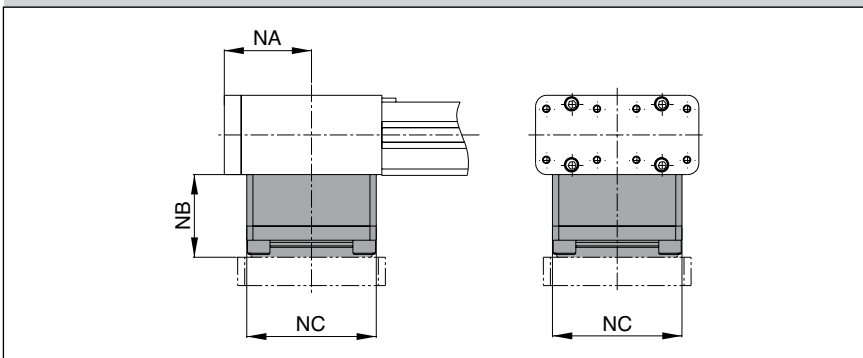
- Gearbox on opposite side to carrier.

**Note:**  
When ordering, specify model/type of motor and manufacturer for correct motor flange.

**Performance Overview**

Characteristics		Unit	Description		
Series			OSP-E25BHD	OSP-E32BHD	OSP-E50BHD
Ratio (1-stage)	i		3/5/10		
Max. axial load	$F_{amax}$	[N]	1550	1900	4000
Torsional rigidity (i=5)	$C_{t,21}$	[Nm/arcmin]	3.3	9	24
Torsional rigidity (i=3/10)	$C_{t,21}$	[Nm/arcmin]	2.8	7.5	20.5
Torsional backlash	$J_t$	[arcmin]	<12		
Linear motion per revolution of drive shaft		[mm]	220	280	360
Nominal input speed	$n_{nom}$	[min <sup>-1</sup> ]	3700	3400	2600
Max. input speed		$n_{1max}$	6000		
No-load torque at Nominal input speed	$T_{012}$	[Nm]	<0.14	<0.51	<1.5
Lifetime		[h]	20 000		
Efficiency	$\eta$	[%]	>97		
Noise level ( $n_1=3000 \text{ min}^{-1}$ )	$L_{PA}$	[db]	<70	<72	<74

**Dimensions**



**Dimension Table [mm] and additional Weight**

Series	NA	NB	NC	Weight (Mass) [kg]
OSP-E25BHD	49	43	76	2.6
OSP-E32BHD	62	47	92	4.9
OSP-E50BHD	79.5	49.5	121	9.6

# Linear Drive with Toothed Belt and Integrated Roller Guide

## Series OSP-E..BHD Size 25, 32, 50

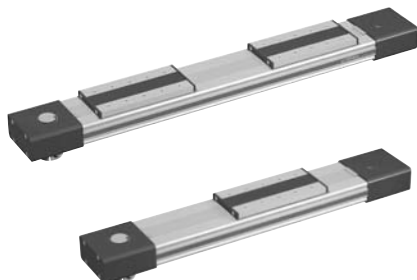


### Standard Versions

- Toothed Belt Drive with integrated Recirculating Ball Bearing Guide
- Drive Shaft with clamp shaft or plain shaft
- Choice of motor mounting side
- Dovetail profile for mounting of accessories and the drive itself

### Options

- Tandem version for higher moments
- Bi-parting version for synchronised movements
- Integrated planetary gearbox
- Drive shaft with
  - clamp shaft and plain shaft
  - hollow shaft with keyway
- Special drive shaft versions on request



Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..BHD
Name			Linear Drive with Toothed Belt and integrated Roller Guide
Mounting			see drawings
Ambient Temperatur range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-30 +80
Weight (Mass)		kg	see table
Installation			In any position
Material	Slotted profile		Extruded anodized aluminium
	Toothed belt		Steel-corded polyurethane
	Pulley		Aluminium
	Guide		Roller Guide
	Guide rail		Aluminium
	Track		high alloyed steel
	Roller cartridge		Steel rollers in aluminium housing
	Sealing band		Hardened, corrosion resistant steel
	Screws, nuts		Zinc plated steel
	Mountings		Zinc plated steel and aluminium
Encapsulation class		IP	54

Weight (mass) and Inertia					
Series	Weight (mass)[kg]			Inertia [x 10 <sup>-6</sup> kgm <sup>2</sup> ]	
	at stroke 0 m	ad per metre stroke	Moving mass	at stroke 0 m	ad per metre stroke
OSP-E25BHD	3.8	4.3	1.0	984	197
OSP-E32BHD	7.7	6.7	1.9	3498	438
OSP-E50BHD	22.6	15.2	4.7	19690	1489
OSP-E25BHD*	5.7	4.3	2.0	1805	197
OSP-E32BHD*	11.3	6.7	3.8	6358	438
OSP-E50BHD*	31.7	15.2	9.4	34274	1489

\*Version: Tandem and Bi-parting (Option)

### Installation Instructions

Use the threaded holes in the end cap for mounting the linear drive. Check if mid-section supports are needed using the maximum allowable unsupported length graph on page 17. At least one end cap must be secured to prevent axial sliding when mid-section support is used.

### Maintenance

All moving parts are lifetime-lubricated. Depending on operating conditions, inspection of the linear drive is recommended after 12 months or 3000 km operation. Please refer to the operating instructions supplied with the drive.

### First service start-up

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.



Performance Overview					T1
Characteristics	Unit	Description			
Series		OSP-E25BHD	OSP-E32BHD	OSP-E50BHD	
Max. speed	[m/s]	10	10	10	
Linear motion per revolution drive shaft	[mm]	180	240	350	
Max. rpm. drive shaft	[min <sup>-1</sup> ]	3000	2500	1700	
Max. effective action force $F_A$ at speed	< 1 m/s: 1-3 m/s: > 3-10 m/s:	[N]	[N]	[N]	
		1070	1870	3120	
		890	1560	2660	
		550	1030	1940	
No-load torque [Nm]		1.2	2.2	3.2	
Max. acceleration/deceleration	[m/s <sup>2</sup> ]	40	40	40	
Repeatability	[mm/m]	±0.05	±0.05	±0.05	
Max. standard stroke length	[mm]	7000	7000	7000	

Maximum Permissible Torque on Drive Shaft Speed and Stroke												T2
Speed [m/s]	OSP-E25BHD			OSP-E32BHD				OSP-E50BHD				
	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed. [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed. [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	
1	31	1	31	1	71	1	71	1	174	1	174	
2	28	2	31	2	65	2	71	2	159	2	174	
3	25	3	31	3	59	3	60	3	153	3	138	
4	23	4	25	4	56	4	47	4	143	4	108	
5	22	5	21	5	52	5	38	5	135	5	89	
6	21	6	17	6	50	6	32	6	132	6	76	
7	19	7	15	7	47	7	28	7	126	7	66	
8	18			8	46			8	120			
9	17			9	44			9	116			
10	16			10	39			10	108			

**Important:**

The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.

**Example above:**

OSP-E25BHD, stroke 5 m, required speed 3 m/s from table T2 speed 3 m/s gives 25 Nm and stroke 5 m gives 21 Nm. Max. torque for this application is 21 Nm.

When sizing Bi-parting units: for ordering stroke see page 23.

Maximum Permissible Loads					T3
Series	Max. applied load $F_y, F_z$ [N]	Max. moments [Nm]			
		$M_x$	$M_y$	$M_z$	
OSP-E25BHD	986	11	64	64	
OSP-E32BHD	1348	19	115	115	
OSP-E50BHD	3704	87	365	365	

Tightening for Clamp Hub				
	20	25	32	50
BHD	—	9.5	17	40
BHDII	4.8	9.5	17	40
BV	4.8	9.5	—	—

## Sizing Performance Overview

### Maximum Loadings

#### Sizing of Linear Drive

The following steps are recommended:

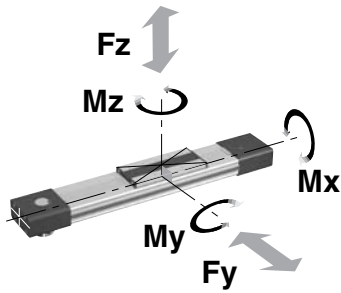
1. Determination of the lever arm length  $l_x, l_y$  and  $l_z$  from  $m_e$  to the center axis of the linear drive.
2. Calculation of the load  $F_x$  or  $F_y$  to the carrier caused by  $m_e$   
 $F = m_e \cdot g$
3. Calculation of the static and dynamic force  $F_A$  which must be transmitted by the toothed belt.  
 $F_{A(horizontal)} = F_a + F_0 = m_g \cdot a + M_0 \cdot 2\pi / U_{ZR}$   
 $F_{A(vertical)} = F_g + F_a + F_0 = m_g \cdot g + m_g \cdot a + M_0 \cdot 2\pi / U_{ZR}$
4. Calculation of all static and dynamic bending moments  $M_x, M_y$  and  $M_z$  which occur in the application  
 $M = F \cdot l$
5. Selection of maximum permissible loads via Table T3.
6. Calculation and checking of the combined load, which must not be higher than 1.
7. Checking of the maximum torque that occurs at the drive shaft in Table T2.
8. Checking of the required action force  $F_A$  with the permissible load value from Table T1.

For motor sizing, the effective torque must be determined, taking into account the cycle time.

#### Legend

- $l$  = distance of a mass in the x-, y- and z-direction from the guide [m]
- $m_e$  = external moved mass [kg]
- $m_{LA}$  = moved mass of linear drive [kg]
- $m_g$  = total moved mass ( $m_e + m_{LA}$ ) [kg]
- $F_{x/y}$  = load exerted on the carrier in dependence of the installation position [N]
- $F_A$  = action force [N]
- $M_0$  = no-load torque [Nm]
- $U_{ZR}$  = circumference of the pulley (linear movement per revolution) [m]
- $g$  = gravity [m/s<sup>2</sup>]
- $a_{max.}$  = maximum acceleration [m/s<sup>2</sup>]

**Forces, loads and moments**



$M = F \cdot l$  [Nm]  
 $M_x = M_{x \text{ static}} + M_{x \text{ dynamic}}$   
 $M_y = M_{y \text{ static}} + M_{y \text{ dynamic}}$   
 $M_z = M_{z \text{ static}} + M_{z \text{ dynamic}}$

The distance  $l$  ( $l_x, l_y, l_z$ ) for calculation of moments relates to the center axis of the linear drive.

**Combined Loads**

If the linear drive is subjected to several forces, loads and moments at the same time, the maximum load is

calculated with the equation shown here. The maximum permissible loads must not be exceeded.

**Equation for Combined Loads**

$$\frac{F_y}{F_y \text{ (max)}} + \frac{F_z}{F_z \text{ (max)}} + \frac{M_x}{M_x \text{ (max)}} + \frac{M_y}{M_y \text{ (max)}} + \frac{M_z}{M_z \text{ (max)}} \leq 1$$

The total of the loads must not exceed >1 under any circumstances.

# Maximum Permissible Unsupported Length

**Stroke Length**

The stroke lengths of the linear drives are available in multiples of 1 mm up to 5700 mm.

Other stroke lengths are available on request.

**The end of stroke must not be used as a mechanical stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.**

The use of an AC motor with frequency converter normally requires a larger clearance than that required for servo systems.

For advice, please contact your local PARKER-ORIGA technical support department.

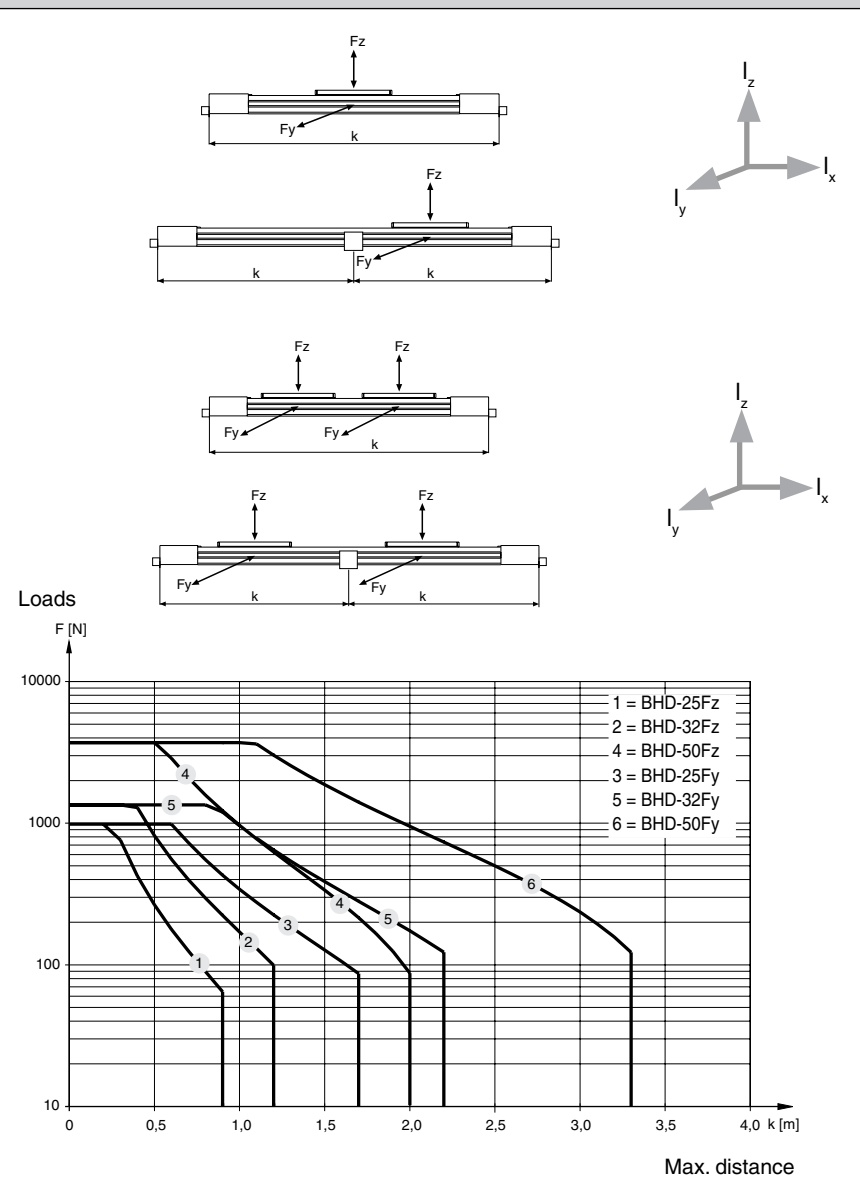
\* For the bi-parting version the maximum load (F) complies with the total of the load at both carriers.

$$F = F_{\text{carriage 1}} + F_{\text{carriage 2}}$$

$k$  = Maximum permissible distance between mountings/mid-section support for a given load  $F$ .

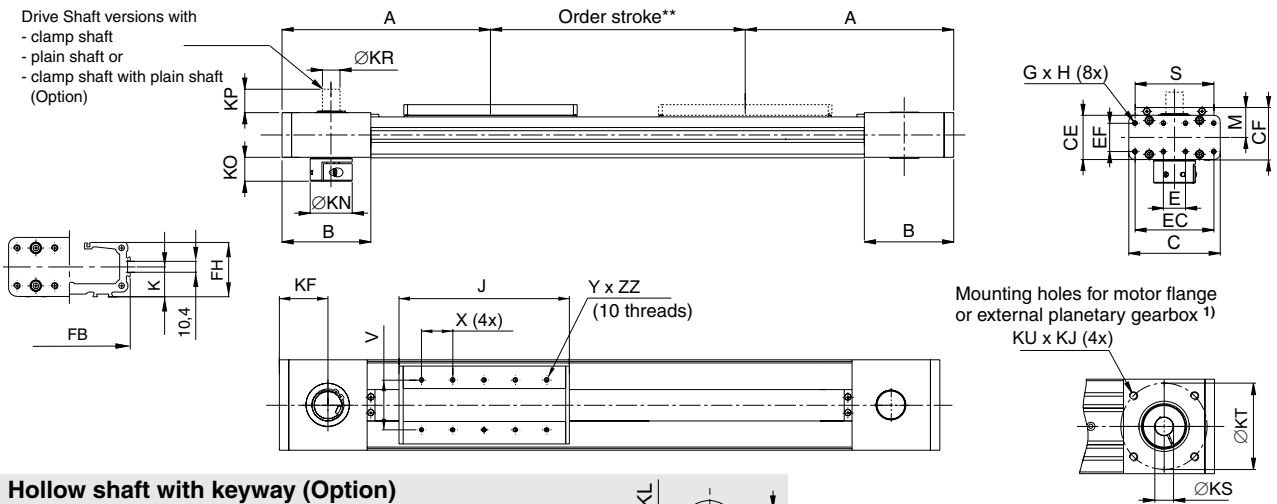
If the loads are below or up to the curve in the graph the deflection will be max. 0.01 % of distance  $k$ .

**Maximum Permissible Unsupported Length – Placing of Mid-Section Support**



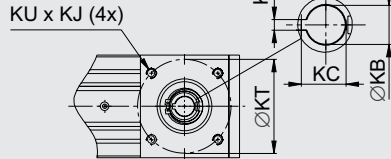
Dimensions

Linear Drive with Toothed Belt and Integrated Roller Guide – Basic Unit  
Series OSP-E..BHD



Hollow shaft with keyway (Option)  
Dimension table [mm]

Series	KB	KC	KL	KT	KUxKJ
OSP-E25BHD	16 <sup>H7</sup>	18.3	5	82	M8x8
OSP-E32BHD	22 <sup>H7</sup>	24.8	6	106	M10x12
OSP-E50BHD	32 <sup>H7</sup>	35.3	10	144	M12x19

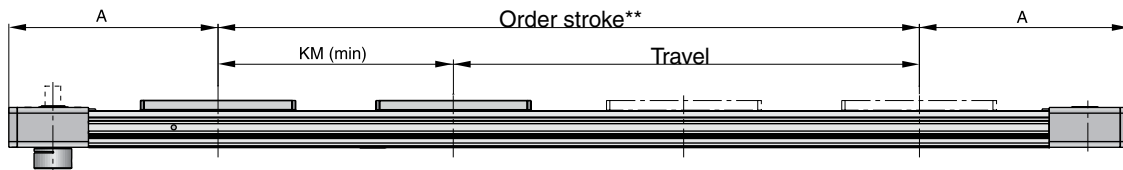


1) **Note:**  
The mounting holes for the coupling housing / motor flange / gearbox are located on the opposite side to the carrier (motor mounting standard). They also can be located on the same side as the carrier (motor mounting 180° standard).

\* **Note:**

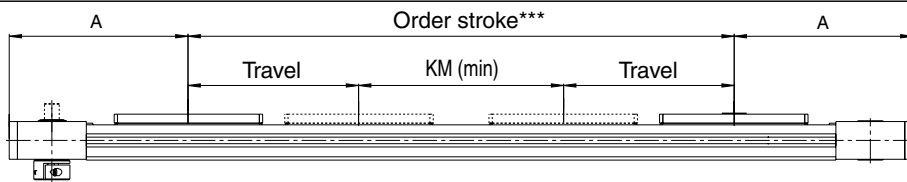
The mechanical end position must not be used as a mechanical end stop.  
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.  
Order stroke = required travel + 2 x safety distance.  
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.  
For further information please contact you local PARKER-ORIGA representative.

Option – Tandem  
Series OSP-E..BHD



\*\* Order stroke = required travel + KM min + 2 x safety distance

Options – Bi-Parting  
Series OSP-E..BHD



\*\*\* Order stroke = 2 x required travel + KM min + 2 x safety distance

Dimension Table [mm]

Series	A	B	C	E	GxH	J	K	M	S	V	X	YxZZ	CE	CF	EC	EF	FB	FH	KF	KM <sub>min</sub>	KM <sub>rec</sub>	KN	KO	KP	KR	KS	KT	KUxKJ
OSP-E25BHD	218	88	93	25	M5x10	178	21.5	31	85	64	40	M6x8	42	52.5	79	27	92	39.5	49	210	250	34	21.7	30	16 <sub>17</sub> <sup>H7</sup>	16 <sup>H7</sup>	82	M8x8
OSP-E32BHD	262	112	116	28	M6x12	218	28.5	38	100	64	40	M6x10	56	66.5	100	36	116	51.7	62	250	300	53	30	30	22 <sub>17</sub> <sup>H7</sup>	22 <sup>H7</sup>	106	M10x12
OSP-E50BHD	347	147	175	18	M6x12	263	43	49	124	90	60	M6x10	87	92.5	158	70	164	77	79.5	295	350	75	41	35	32 <sub>17</sub> <sup>H7</sup>	32 <sup>H7</sup>	144	M12x19

(Other dimensions for KS and KB for special drive shafts on request – see order instructions.)

**Notes**

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# Vertical Linear Drive with Toothed Belt and Integrated Recirculating Ball Bearing Guide Series OSP-E..BV



## Contents

Description	Page
Overview	25-28
Technical Data	29-31
Dimensions	32-33



## TOOTHED BELT DRIVE FOR VERTICAL MOVEMENTS IN MULTI-AXIS SYSTEMS

The OSP-E..BV vertical linear drive with toothed belt and integrated recirculating ball bearing guide has been specially developed for lifting movements in the Z-axis. The especially low vibration OSP-E..BV vertical drive in combination with the heavy duty series OSP-E..BHD meets the highest demands in portal and handling applications.

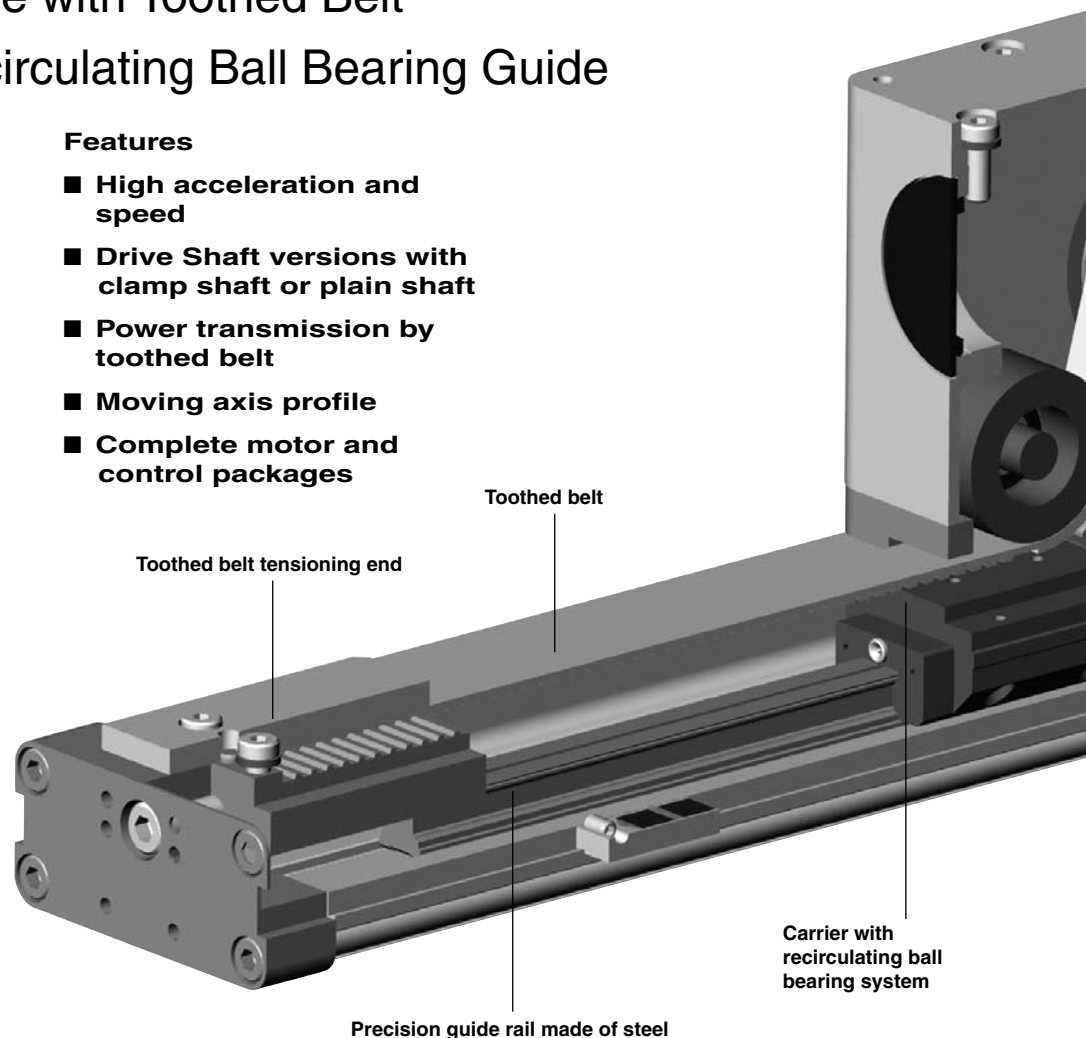
### Vertical Linear Drive with Toothed Belt and integrated Recirculating Ball Bearing Guide

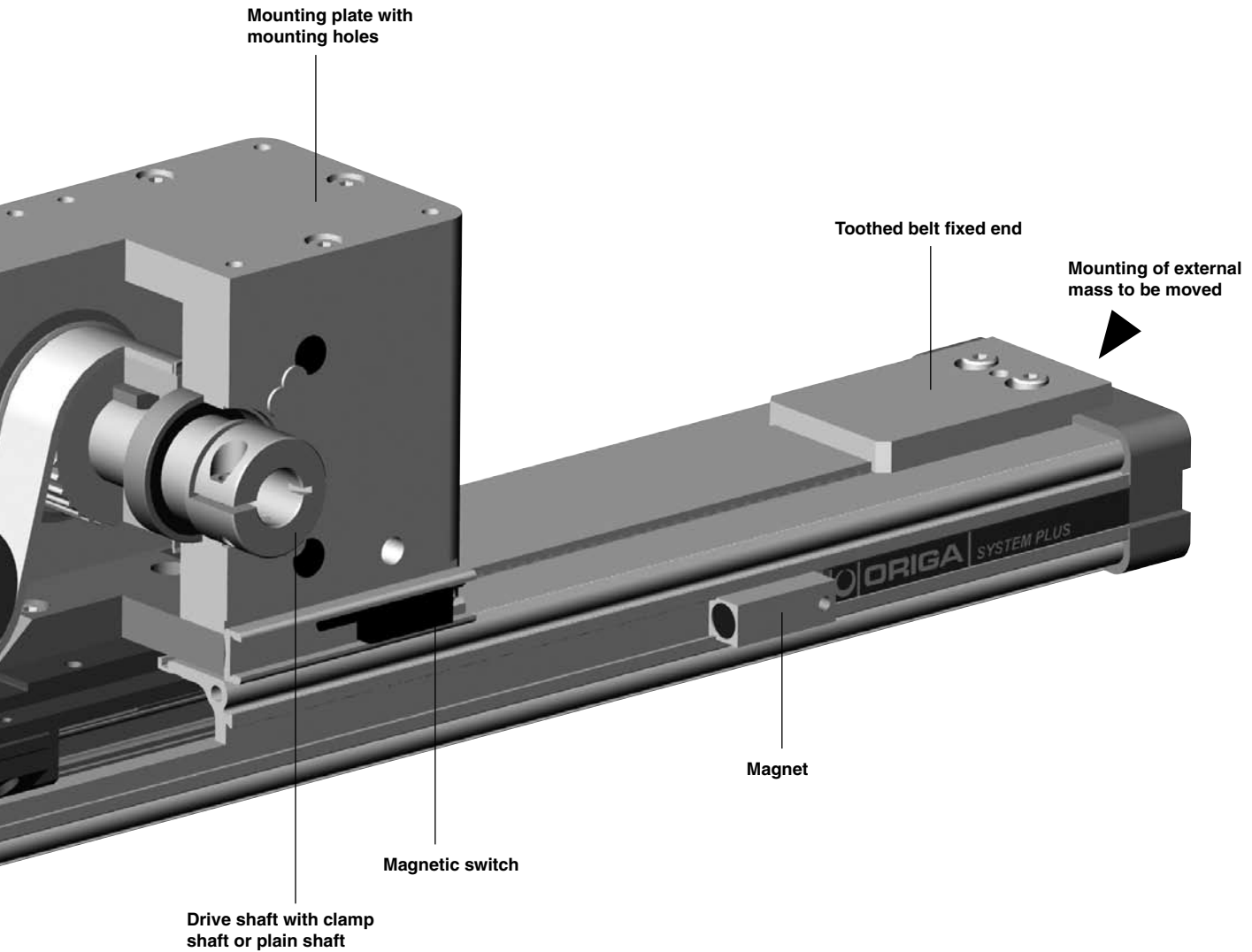
#### Advantages

- Fixed drive head for low moving mass
- Integrated recirculating ball bearing guide for high bending moments
- Magnetic switch set for contactless position sensing
- Easy to install
- Low maintenance

#### Features

- High acceleration and speed
- Drive Shaft versions with clamp shaft or plain shaft
- Power transmission by toothed belt
- Moving axis profile
- Complete motor and control packages





To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems



**Options & Accessories**

**SERIES OSP-E, VERTICAL LINEAR DRIVE WITH TOOTHED BELT AND INTEGRATED RECIRCULATING BALL BEARING GUIDE**

**STANDARD VERSION  
OSP-E..BV**

Pages 29 & 30

Standard drive head with clamp shaft or tenon and integrated recirculating ball bearing guide with two carriers. Choice of side on which gearbox or motor is to be mounted.

Drive Shaft with Clamp Shaft



Drive Shaft with Plain Shaft



**DRIVE SHAFT**  
"CLAMP SHAFT AND PLAIN SHAFT"  
OR "DOUBLE PLAIN SHAFT"  
e.g. for parallel operation of two Z-axes with an intermediate drive shaft.

Drive Shaft with Clamp Shaft and Plain Shaft



Drive Shaft with Double Plain Shaft



**ACCESSORIES**

**MOTOR MOUNTINGS**

Page 121

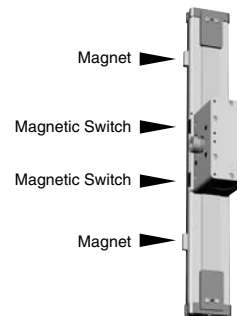
For connection of gearbox or motor direct to drive shaft with clamp shaft, or with a motor coupling to drive shaft with plain shaft.



**MAGNETIC SWITCHES SET**

Page 33

Magnetic switches with connector, mounting rail and magnets for contactless sensing of the end positions. Cable (suitable for cable chain) can be ordered separately in 5 m, 10 m or 15 m length.



**OPTIONS**

**TANDEM**

Pages 29 & 30

Additional drive head and two additional carriers for higher bending moments.



**HOLLOW SHAFT WITH KEYWAY**

For direct connection of gearbox or motor with keyway.



**MULTI-AXIS SYSTEMS**

Page 86

For modular assembly of linear drives up to multi-axis systems.



A3P750E00GAG50X

The right to introduce technical modifications is reserved



# Vertical Linear Drive with Toothed Belt and Integrated Recirculating Ball Bearing Guide

## Series OSP-E..BV Size 20, 25



### Standard Version:

- Toothed Belt drive with integrated recirculating ball bearing guide
- Drive shaft with clamp shaft or plain shaft
- Choice of motor mounting side

### Options:

- Tandem version for higher moments
- Drive shaft with
  - clamp shaft and plain shaft or double plain shaft
  - hollow shaft with keyway
- Special drive shaft versions on request.



Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..BV
Name			Vertical linear drive with toothed Belt and integrated recirculating ball bearing guide
Mounting			See drawings
Temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-30 +80
Weight (mass)		kg	See table
Installation			vertical
Material	Profile		Extruded anodized aluminium
	Toothed belt		Steel-corded polyurethane
	Pulley		Aluminium
	Guide		Recirculating ball bearing guide
	Guide rail		Hardened steel rail with high precision, accuracy class N
	Guide carrier		Steel carrier with integrated wiper system, grease nipples, preloaded 0.08 x C, accuracy class N
	Screws, nuts		Zinc plated steel
Encapsulating class		IP	20

Weight (mass) and Inertia							
Series	Total weight (Mass) [kg]		Moving mass [kg]		Inertia [x 10 <sup>-6</sup> kgm <sup>2</sup> ]		
	At stroke 0 m	Drive head	At stroke 0 m	Add per metre stroke	At Stroke 0 m	Add per metre stroke	Add per kg mass
OSP-E20BV	3.4	1.9	1.6	4.0	486	1144	289
OSP-E25BV	7.7	5.3	2.4	4.4	1695	2668	617.5
OSP-E20BV*	5.3	2 x 1.9	1.6	4.0	533	1144	289
OSP-E25BV*	13	2 x 5.3	2.4	4.4	1915	2668	617.5

\* Version: Tandem (Option)

### Installation Instructions

Make sure that the OSP-E..BV is always operated with a brake on the drive side. For the mounting of the external mass to be moved there are threaded holes in the end caps. Before mounting, check the correct center of gravity distance from the table on page 31.

Mount the external mass on the toothed belt fixed end, so that the belt tension can be checked and adjusted at the toothed belt tensioning end without dismantling.

### Maintenance

Depending on operating conditions, inspection of the linear drive is recommended after 12 months or 3000 km operation. Please refer to the operating instructions supplied with the drive.

### First service start-up

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.

A1P749E00FAG00X

The right to introduce technical modifications is reserved

# Sizing Performance Overview

## Maximum Loadings

### Sizing of Linear Drive

The following steps are recommended:

1. Determination of the lever arm length  $l_x$ ,  $l_y$  and  $l_z$  from  $m_e$  to the center axis of the linear drive.
2. Calculation of the static and dynamic force  $F_A$  which must be transmitted by the toothed belt.  
 $F_A = F_g + F_a + F_0$   
 $= m_g \cdot g + m_g \cdot a + M_0 \cdot 2\pi / U_{ZR}$
3. Calculation of all static and dynamic moments  $M_x$ ,  $M_y$  and  $M_z$  which occur in the application.  
 $M = F \cdot l$
4. Selection of maximum permissible loads via Table T3.
5. Calculation and checking of the combined load, which must not be higher than 1.
6. Checking of the maximum moment that occurs at the drive shaft in Table T2.
7. Checking of the required action force  $F_A$  with the permissible load value from Table T1.

For motor sizing, the effective torque must be determined, taking into account the cycle time.

### Legend

- $l$  = distance of a mass in the x-, y- and z-direction from the guide [m]
- $m_e$  = external moved mass [kg]
- $m_{LA}$  = moved mass of linear drive [kg]
- $m_g$  = total moved mass ( $m_e + m_{LA}$ ) [kg]
- $F_A$  = action force [N]
- $M_0$  = no-load torque [Nm]
- $U_{ZR}$  = circumference of the pulley (linear movement per revolution) [m]
- $g$  = gravity [m/s<sup>2</sup>]
- $a_{max}$  = maximum acceleration [m/s<sup>2</sup>]

Performance Overview			T1	
Characteristics	Unit	Description		
Series		OSP-E20BV	OSP-E25BV	
Max. Speed	[m/s]	3.0	5.0	
Linear motion per revolution of drive shaft	[mm/U]	108	160	
Toothed Belt		35ATL3	40ATL5	
Max. rpm. drive shaft	[min <sup>-1</sup> ]	1700	1875	
Max. effective action force $F_A$ at speed	1 m/s	[N]	650	1430
	1 - 2 m/s	[N]	450	1200
	> 3 - 5 m/s	[N]	—	1050
No-load torque <sup>2)</sup>	[Nm]	0.6	1.2	
Max. acceleration/deceleration	[m/s <sup>2</sup> ]	20	20	
Repeatability	+/- [mm/m]	0.05	0.05	
Max. standard stroke length <sup>1)</sup>	[mm]	1000	1500	
Max. recommended permissible mass <sup>3)</sup>	[kg]	10	20	

<sup>1)</sup> Longer strokes on request and only with profile stiffening

<sup>2)</sup> As a result of static friction force

<sup>3)</sup> vertical

Max. Permissible Torque on Drive Shaft Speed / Stroke								T2	
OSP-E-20BV				OSP-E-25BV					
Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]		
1	19	1	17	1	36	1	36		
2	17	2	10.5	2	30	2	36		
3	15.5			3	30				
				4	28				
				5	27				

### Important:

The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.

### Example above:

OSP-E25BV required speed  $v = 3$  m/s and stroke = 1 m.

Accordingly Table T2 shows permissible moments of 30 Nm for the speed and 36 Nm for the stroke. Therefore the maximum moment at the drive shaft is determined by the speed and must not exceed 30 Nm.

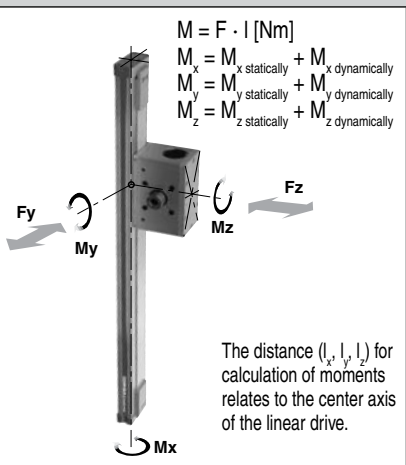
Tightening for Clamp Hub				
	20	25	32	50
BHD	—	9.5	17	40
BHDII	4.8	9.5	17	40
BV	4.8	9.5	—	—

Technical Data

Maximum Permissible Loads T3

Series	Max. applied load		Max. moments		
	Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]
OSP-E20BV	1600	1600	20	100	100
OSP-E25BV	2000	3000	50	200	200

Forces, loads and moments



Equation for Combined Loads

$$\frac{F_y}{F_y \text{ (max)}} + \frac{F_z}{F_z \text{ (max)}} + \frac{M_x}{M_x \text{ (max)}} + \frac{M_y}{M_y \text{ (max)}} + \frac{M_z}{M_z \text{ (max)}} \leq 1$$

The total of the loads must not exceed >1 under any circumstances.

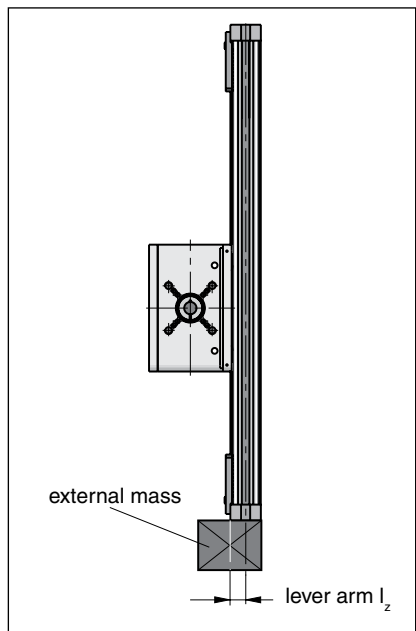
Combined Loads

If the linear drive is subjected to several forces, loads and moments at the same time, the maximum load is calculated with the equation shown here.

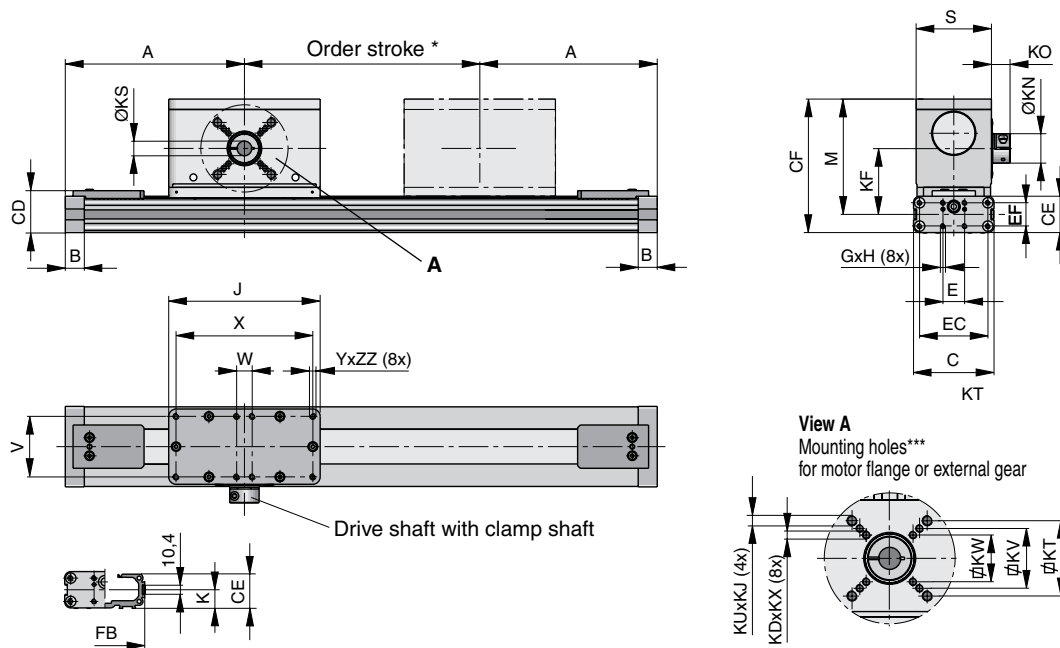
The maximum permissible loads must not be exceeded.

Distance of Center of Gravity of External Mass from Mid-Point of Drive

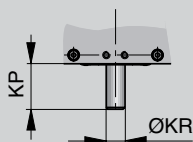
Mass [kg]	OSP-E20BV		OSP-E25BV	
	Lever arm $l_z$ [mm]	Max. permissible acceleration/ deceleration [m/s <sup>2</sup> ]	Lever arm $l_z$ [mm]	Max. permissible acceleration/ deceleration [m/s <sup>2</sup> ]
> 3 to 5	0	20	50	20
> 5 to 10	0	20	40	20
> 10 to 15	-	-	35	20
> 15 to 20	-	-	30	15



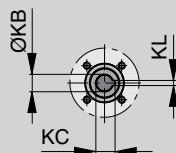
**Vertical Linear Drive with Toothed Belt and integrated Recirculating Ball Bearing – Basic Unit Series OSP-E.. BV**



**Plain shaft**



**Hollow shaft with keyway (Option)**

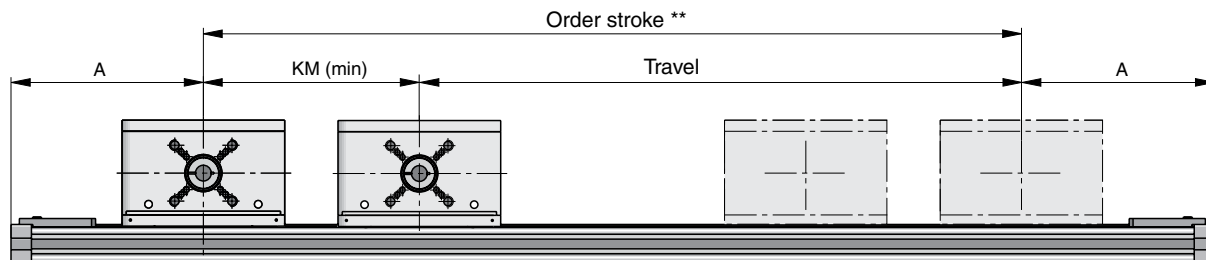


Series	ØKB	KC	KL	KP	ØKR
OSP-E22BV	12 <sup>H7</sup>	13.8	4	28.5	12 <sub>h7</sub>
OSP-E25BV	16 <sup>H7</sup>	18.3	5	31.5	16 <sub>h7</sub>

**\* Note:**

The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm. Order stroke = required travel + 2 x safety distance. The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For further information please contact your local PARKER-ORIGA representative.

**Option – Tandem  
 Series OSP-E.. BV**



\*\* Order stroke = required travel + KM min + 2 x safety distance.

Dimension Table [mm]																
Series	A	B	C	E	GxH	J	K	M	S	V	W	X	Y	CD	CE	CF
OSP-E20BV	148	22	93	25	M5x12	139	21.1	102.3	68	51	40	120	M6	40.4	34	123.3
OSP-E25BV	210	22	93	25	M5x12	175	21.5	133.5	87	70	18	158	M6	49	42	154.5

Series	EC	EF	FB	FH	KDxKX	KF	KM <sub>min</sub>	KN	KO	KS	KT	KUxKJ	KV	KW	ZZ
OSP-E20BV	59	21	73	36.0	–	61.3	155	27	16	12 <sup>H7</sup>	46.5	M6x10	36	–	10
OSP-E25BV	79	27	92	39.5	M6x16	76	225	34	21.5	16 <sup>H7</sup>	58	M8x16	46	36	10

\*\*\* The mounting holes for the coupling housing are on the motor-mounting side. Therefore please ensure that the motor-mounting side is correctly stated when ordering the drive.

(For special drive shafts, other dimensions for KS and KB are available on request – see Order Instructions.)

**Dimensions**

The magnetic switches and magnets can be mounted on either sides

**Dimension table [mm]**

Series	MA	MB	MC	MD
OSP-E20BV	46	23.7	42.3	35
OSP-E25BV	56	26.0	51.0	35

## Contactless Position Sensing with Magnetic Switches

The magnetic switch set, comprising two magnetic switches, a mounting rail and two magnets, is for contactless sensing of the end positions. The mounting rail and magnetic switches are mounted on the drive head and the magnets are mounted in the dovetail slot on the profile.

The magnetic switches are the RS-S type (connector version).

For the connecting cable PARKER-ORIGA recommends the use of cable suitable for cable chain.

Order instructions	
Description	Ident-No.
Magnetic switch set, obtaining: - 2 magnetic switches - KL3087, TypRS-S - 1 mounting rail - 2 magnets	15886
Connecting cable, suitable for cable chain	
5 m	KL3186
10 m	KL3217
15 m	KL3216

**Notes**

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# Linear Drive with Toothed Belt Series OSP-E..B



## Contents

Description	Page
Overview	35-38
Technical Data	39-43
Dimensions	44-45

## ELECTRIC LINEAR DRIVE FOR POINT-TO-POINT APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

### Linear Drive with Toothed Belt and internal Plain Bearing Guide

#### Advantages

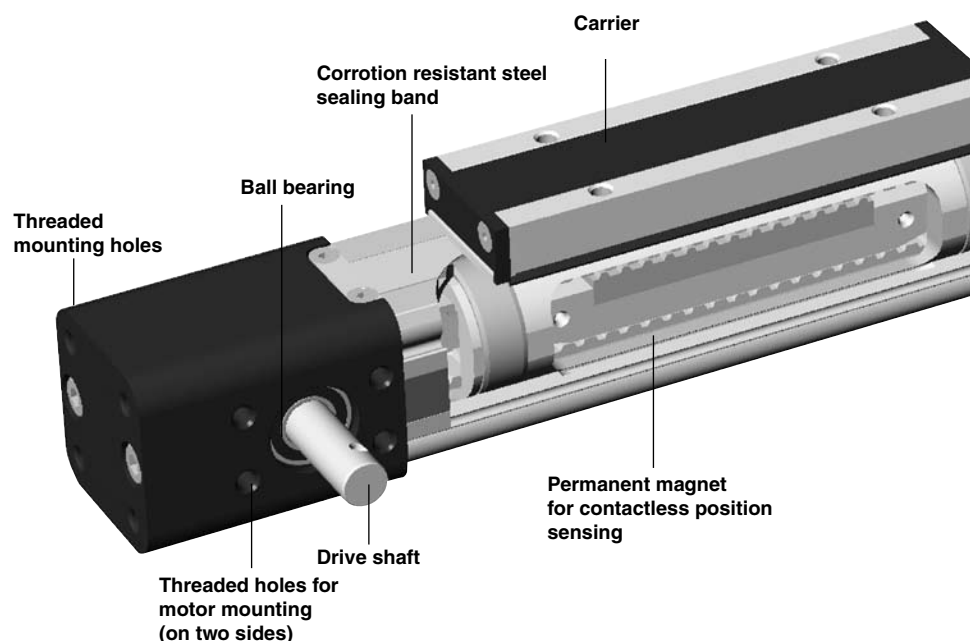
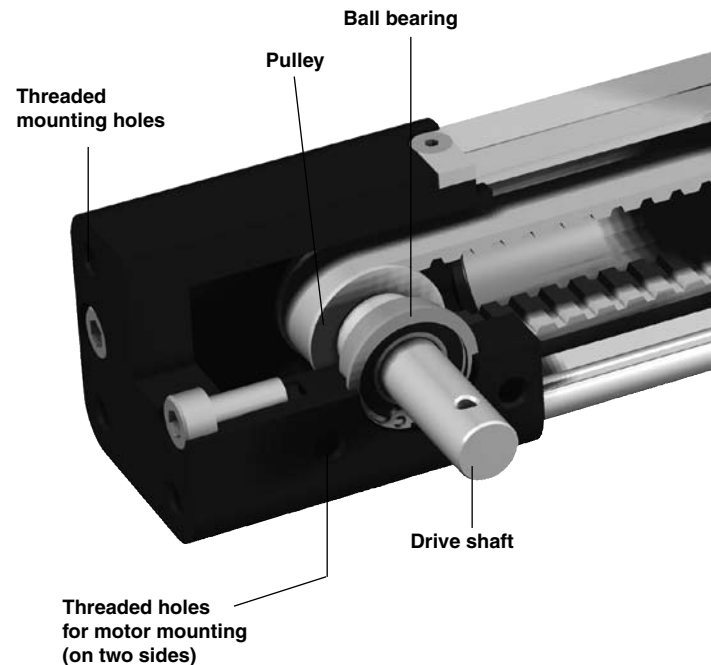
- Precise path and position control
- High speed operation
- Easy installation
- Low maintenance
- Ideal for precise point-to-point applications

#### Features

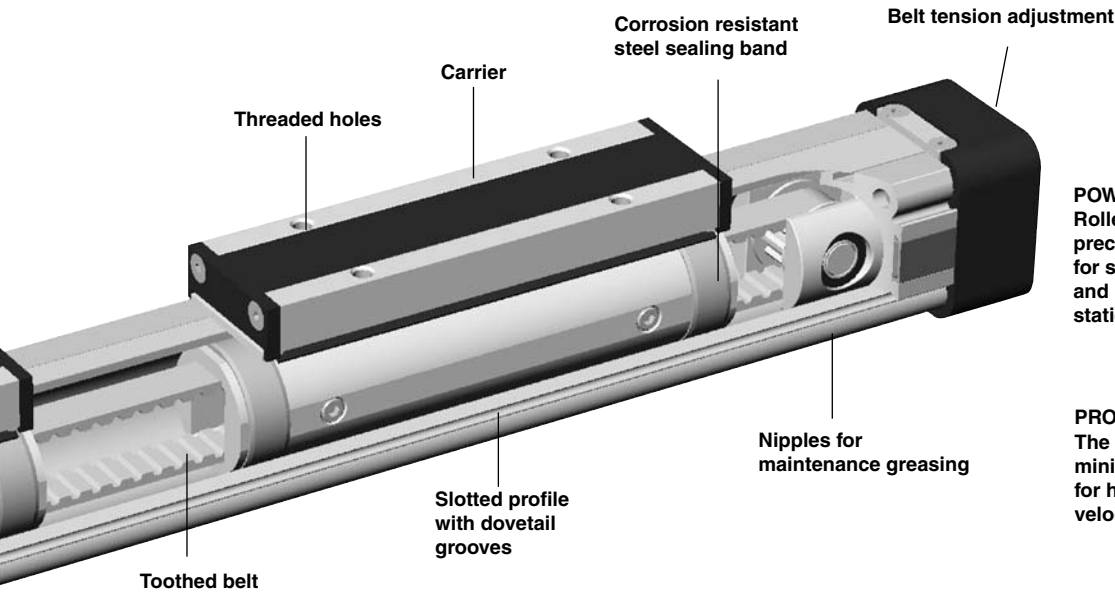
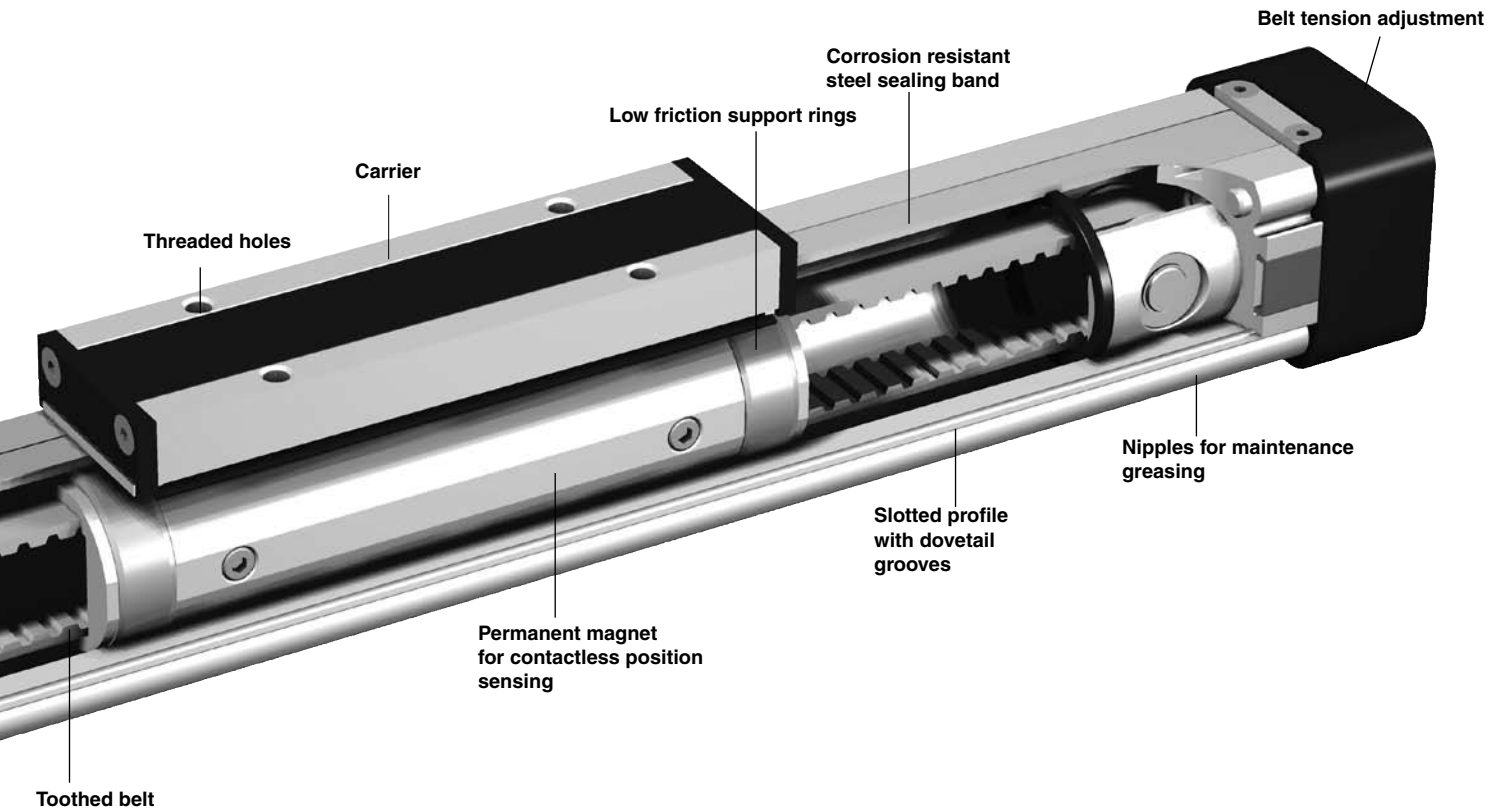
- Integrated drive and guidance system
- Tandem configuration with increased carrier distance for higher moment supports
- Long available strokes
- Complete motor and control packages
- Diverse range of accessories and mountings
- Bi-parting and special options available



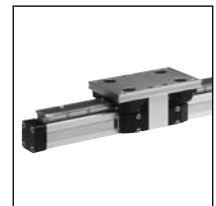
To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems







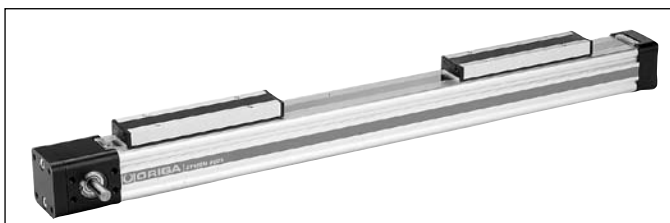
**POWERSLIDE**  
 Roller bearing precision guidance for smooth travel and high dynamic or static loads.



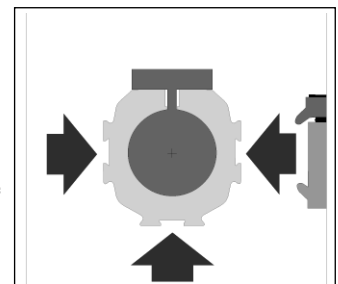
**PROLINE**  
 The compact aluminium roller guide for high loads and velocities.



Tandem configuration with increased carrier distance for higher moment supports.  
 Bi-parting version for precise synchronized movements



The dovetailed mounting rails of the new linear drive expand its function into that of a universal system carrier. Modular system components are simply clamped on.



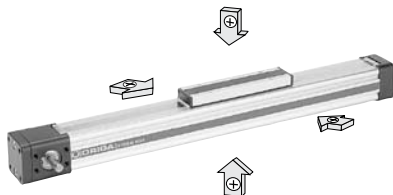
**Options & Accessories**

# SERIES OSP-E, LINEAR DRIVE WITH TOOTHED BELT AND INTERNAL PLAIN BEARING GUIDE

## STANDARD VERSIONS OSP-E..B

Pages 39 & 40

Carrier with internal guidance and magnet packet for contactless position sensing. Dovetail profile for mounting of accessories and the actuator itself.



### DRIVE SHAFT VERSIONS

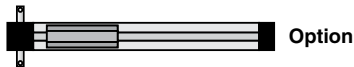
- Plain shaft or
- double plain shaft (Option)  
e.g. to drive two linear drives in parallel.



Standard



Standard



Option

## OPTIONS

### TANDEM

Pages 39 & 40

For higher moment support.



### BI-PARTING

Pages 39 & 40

For perfectly synchronised bi-parting movements.



## ACCESSORIES

### MOTOR MOUNTING

Page 122



### END CAP MOUNTING

Page 129

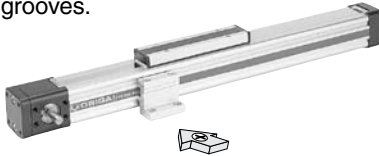
For end-mounting of the drive.



### MID-SECTION SUPPORT

Page 134

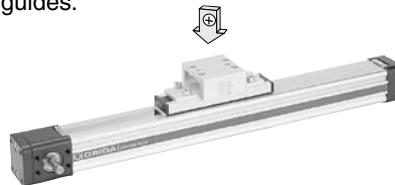
For supporting long drives or mounting the linear drive on the dovetail grooves.



### CLEVIS MOUNTING

Page 140

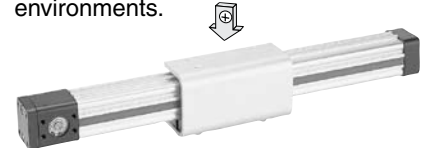
Carrier with tolerance and parallelism compensation to drive external linear guides.



## INVERSION MOUNTING

Page 142

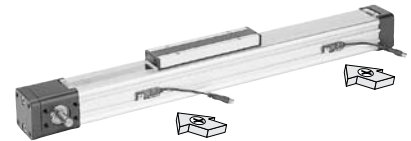
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments.



## MAGNETIC SWITCHES SERIES RS AND ES

Page 153

For contactless position sensing of end stop and intermediate carrier positions.



A3P106E0GFAG0X

The right to introduce technical modifications is reserved

# Linear Drive with Toothed Belt Series OSP-E..B Size 25, 32, 50



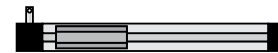
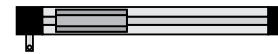
Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..B
Name			Linear Drive with Toothed Belt
Mounting			See drawings
Temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-30 +80
Weight (mass)		kg	See table
Installation			See table
Material	Slotted profile		Extruded anodized aluminium
	Toothed belt		Steel-corded polyurethane
	Pulley		Aluminium
	Guide bearings		Low friction plastic
	Sealing band		Hardened corrosion resistant steel
	Screws, nuts		Zinc plated steel
	Mountings		Zinc plated steel and aluminium
Encapsulation class	IP	54	

Weight (mass) and Inertia					
Series	at stroke 0 m	Weight (mass) [kg]		Inertia [x 10 <sup>-6</sup> kgm <sup>2</sup> ]	
		ad per meter stroke	moving mass	at stroke 0 m	ad per meter stroke
OSP-E25B	0.9	1.6	0.2	25.3	6.6
OSP-E32B	1.9	3.2	0.40	43.3	10
OSP-E50B	5.2	6.2	1.0	312.2	45
OSP-E25B*	1.2	1.6	0.5	48	6.6
OSP-E32B*	2.3	3.2	0.8	83	10
OSP-E50B*	6.3	6.2	2.1	585	45

\* Version: Tandem and Bi-parting (Option)

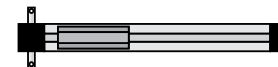
### Standard Versions:

- Standard carrier with internal plain bearing guide
- Dovetail profile for mounting of accessories and the actuator itself
- Position of Drive Shafts



### Options:

- Tandem-Version
- Bi-parting version for synchronized movements
- Drive shaft with double plain shaft



### Installation Instructions

Use the threaded holes in the end cap for mounting the linear drive. See if mid-section supports are needed using the maximum allowable unsupported length graph on page 41. At least one end cap must be secured to prevent axial sliding when mid-section support is used.

When the linear drive is moving an externally guided load, the clevis mounting must be used (see pages 140-141).

The linear drives can be fitted with the standard carrier mounting facing in any direction.

To prevent contamination such as fluid ingress, the drive should be fitted with its sealing band facing downwards. The inversion mounting can be fitted to transfer the driving force to the opposite side (see page 142).

### Maintenance

All moving parts are long-term lubricated for a normal operational environment. PARKER-ORIGA recommends a check and lubrication of the linear drive, and if necessary a change of the toothed belt and wear parts, after an operation time of 12 months of operation or 3 000 km travel of distance.

Additional greasing is easily done by using nipples in the slotted profile. Please refer to the operating instructions supplied with the drive.

### First service start-up

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.



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The right to introduce technical modifications is reserved

# Sizing Performance Overview

## Maximum Loadings

### Sizing of Linear Drive

The following steps are recommended for selection:

1. Required acceleration is shown in graphs on page 42.
2. Required torque is shown on page 43.
3. Check that maximum values in the table 3 are not exceeded
4. Drive shaft by using table T2.  
 (Pay attention to note under table)  
 If value is lower than required, overview the moving profile or select if possible a bigger unit.
5. Before sizing and specifying the motor, the average torque must be calculated using the cycle time of the application.
6. Check that the maximum allowable unsupported length is not exceeded (see page 41).

### Performance Overview

Characteristics	Unit	Description			
Size		OSP-E25B	OSP-E32B	OSP-E50B	
Max. speed	[m/s]	2	3	5	
Linear motion per revolution, drive shaft	[mm]	60	60	100	
Max. rpm drive shaft	[min <sup>-1</sup> ]	2 000	3 000	3 000	
Max. effective action force $F_A$ at speed	< 1 m/s:	[N]	50	150	425
	1- 2 m/s:	[N]	50	120	375
	> 2 m/s:	[N]	–	100	300
No-load torque	[Nm]	0.4	0.5	0.6	
Max. acceleration/deceleration	[m/s <sup>2</sup> ]	10	10	10	
Repeatability	[mm/m]	±0.05	±0.05	±0.05	
Max. stroke length OSP-E..B	[mm]	3000	5000	5000	
Max. stroke length OSP-E..B*	[mm]	2 x 1500	2 x 2500	2 x 2500	

\* Bi-parting version

### Maximum Permissible Torque on Drive Shaft Speed / Stroke

**T2**

OSP-E25B				OSP-E32B				OSP-E50B			
Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]	Speed [m/s]	Torque [Nm]	Stroke [m]	Torque [Nm]
1	0.9	1	0.9	1	2.3	1	2.3	1	10.0	1	10.0
2	0.9	2	0.9	2	2.0	2	2.3	2	9.5	2	10.0
		3	0.9	3	1.8	3	2.3	3	9.0	3	9.0
						4	2.3	4	8.0	4	7.0
						5	1.8	5	7.5	5	6.0

### Important:

The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.

### Example above:

OSP-E32B stroke 2 m, required speed 3 m/s;  
 From table T2: speed 3 m/s gives 1.8 Nm and stroke 2 m gives 2.3 Nm.  
 Max. torque for this application is 1.8 Nm.

### Forces, loads and moments

$M = F \cdot l$  [Nm]  
 $M_x = M_{x \text{ statically}} + M_{x \text{ dynamically}}$   
 $M_y = M_{y \text{ statically}} + M_{y \text{ dynamically}}$   
 $M_z = M_{z \text{ statically}} + M_{z \text{ dynamically}}$

The distance  $l$  ( $l_x, l_y, l_z$ ) for calculation of moments relates to the center axis of the linear drive.

### Combined Loads

If the linear drive is subjected to several forces, loads and moments at the same time, the maximum load is calculated with the equation shown here.

The maximum permissible loads must not be exceeded.

### Maximum Permissible Loads

**T3**

Series	Max. applied load $F_z$ [N]	Max. moments [Nm]		
		$M_x$	$M_y$	$M_z$
OSP-E25B	160	2	12	8
OSP-E32B	300	8	25	16
OSP-E50B	850	16	80	32
OSP-E..B Bi-partional	The maximum load $F$ must be equally distributed among the two carriers.			

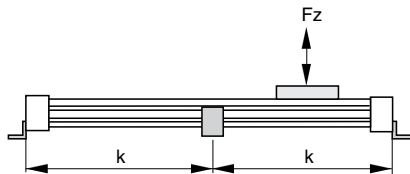
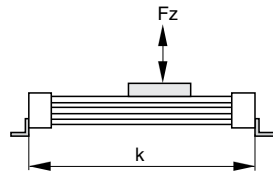
### Equation for Combined Loads

$$\frac{F_z}{F_z \text{ (max)}} + \frac{M_x}{M_x \text{ (max)}} + \frac{M_y}{M_y \text{ (max)}} + \frac{M_z}{M_z \text{ (max)}} \leq 1$$

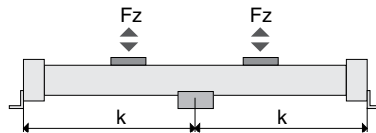
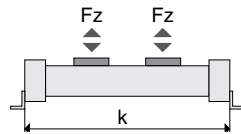
The total of the loads must not exceed >1 under any circumstances.

**Maximum permissible unsupported length – Placing of Mid-Section Support**

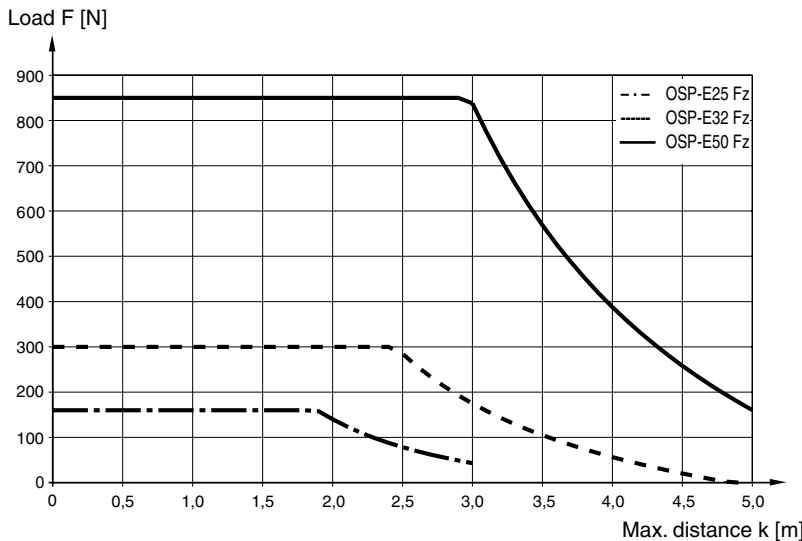
**Series OSP-E..B**



**Series OSP-E..B  
 Bi-parting version**



k = Maximum permissible distance between mountings/mid-section support for a given load F.



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k)

# Maximum Permissible Unsupported Length

## Stroke Length

The stroke lengths of the linear drives are available in multiples of 1 mm up to max.

OSP-E25B: 3 m / 2 x 1.5 m \*

OSP-E32B: 5 m / 2 x 2.5 m \*

OSP-E50B: 5 m / 2 x 2.5 m \*

\* Version: Bi-partional

Other stroke lengths are available on request.

**The end of stroke must not be used as a mechanical stop.**

**Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft.**

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.

For advise, please contact your local PARKER-ORIGA technical support department.

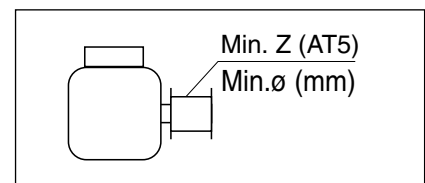
When mechanical stops are required, external shock absorbers should be used (see separate data sheet). Align the center line of the shock absorber as closely as possible with the object's center of gravity (see separate data sheet).

## Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupler or pulley, a steadying block should be used.

## Pulley

Minimum allowable number of teeth Z (AT5) at maximum applied torque.



Series	Min. Z	Min. ø
OSP-E25B	24	38
OSP-E32B	24	38
OSP-E50B	36	57

# Required Acceleration

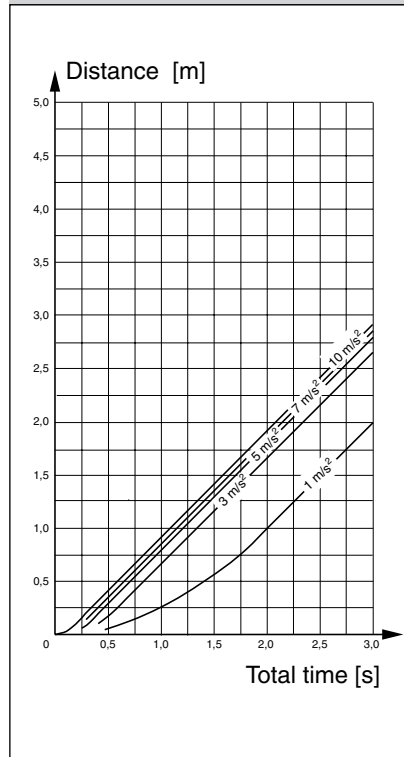
## Distance / Time Graph

Using the required travel distance and total time, the adjacent graphs show the required acceleration based on maximum speed.

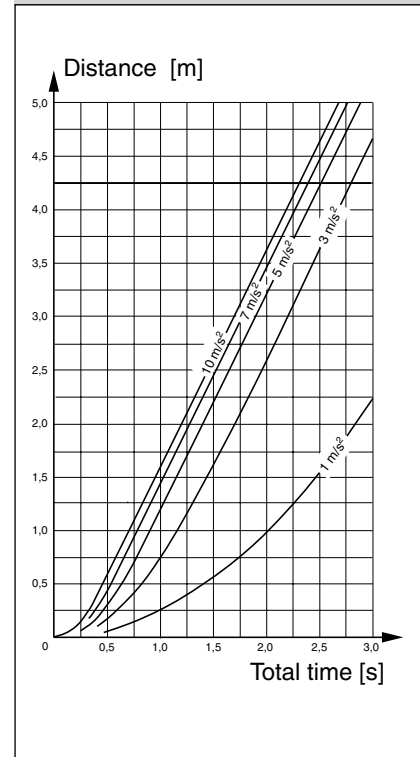
The graphs assume that acceleration and deceleration are equal.

Please note that specifying non-essential high acceleration or short cycle time will result in an oversized motor.

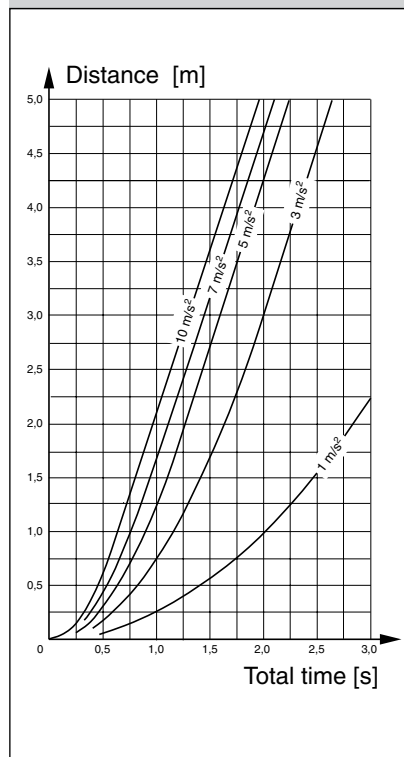
**Max. speed 1 m/s**



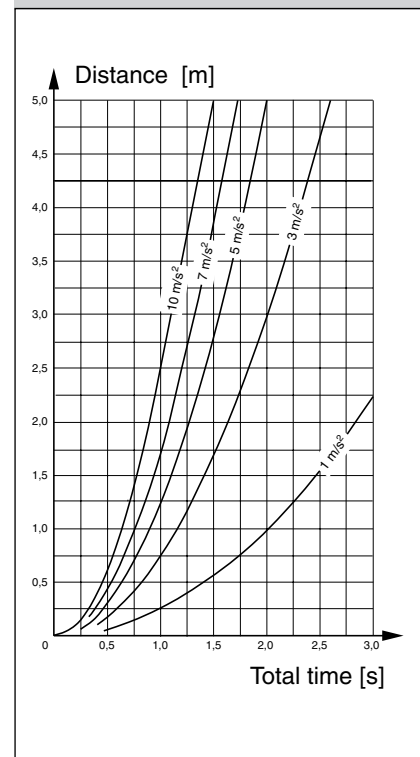
**Max. speed 2 m/s**



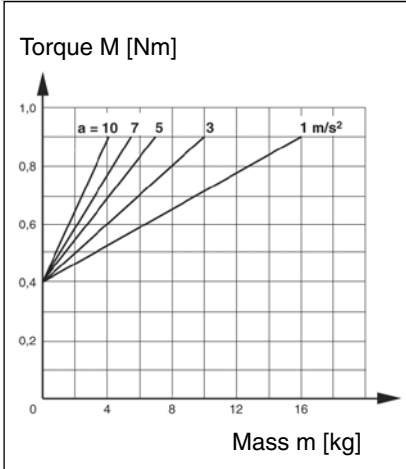
**Max. speed 3 m/s**



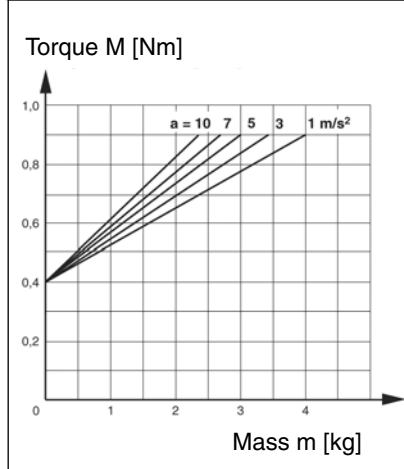
**Max. speed 5 m/s**



**Size OSP-E25B,  
 Horizontal Application**



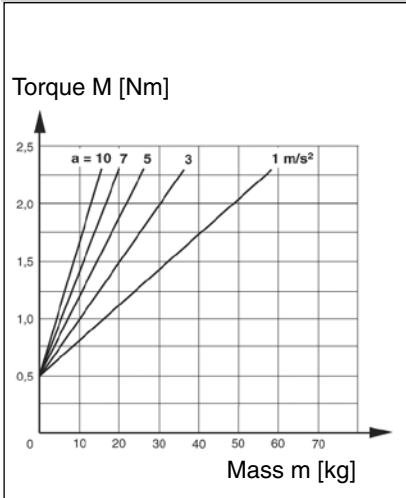
**Size OSP-E25B,  
 Vertical Application**



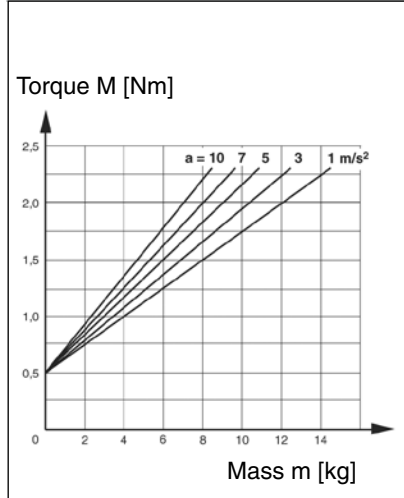
## Required Torque / Mass

Using the known mass, the direction of the application and the required acceleration from the distance-time graphs, the linear drive can be sized and the required torque is shown in the adjacent graphs. Mass in graphs = Load + moving mass of the linear drive (according to the weight chart on page 39).

**Size OSP-E32B,  
 Horizontal Application**



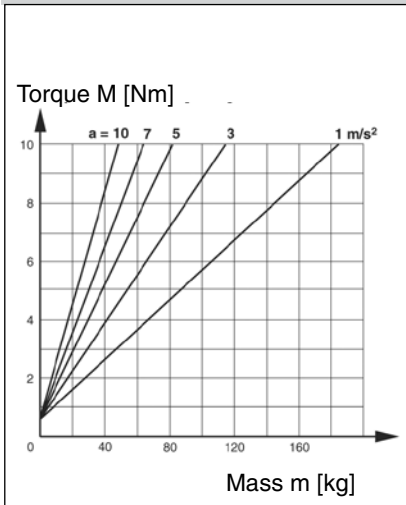
**Size OSP-E32B,  
 Vertical Application**



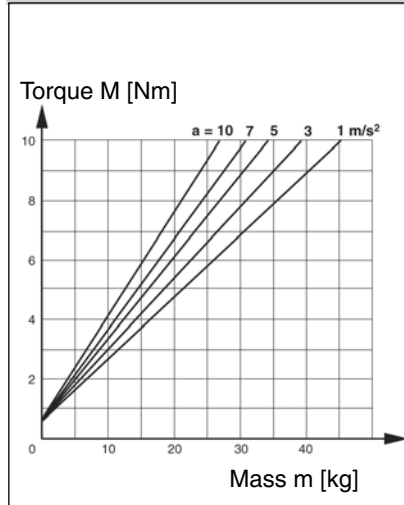
**Please note:**

When using an additional guide, please add the mass of the carriage to the total moving mass.

**Size OSP-E50B,  
 Horizontal Application**

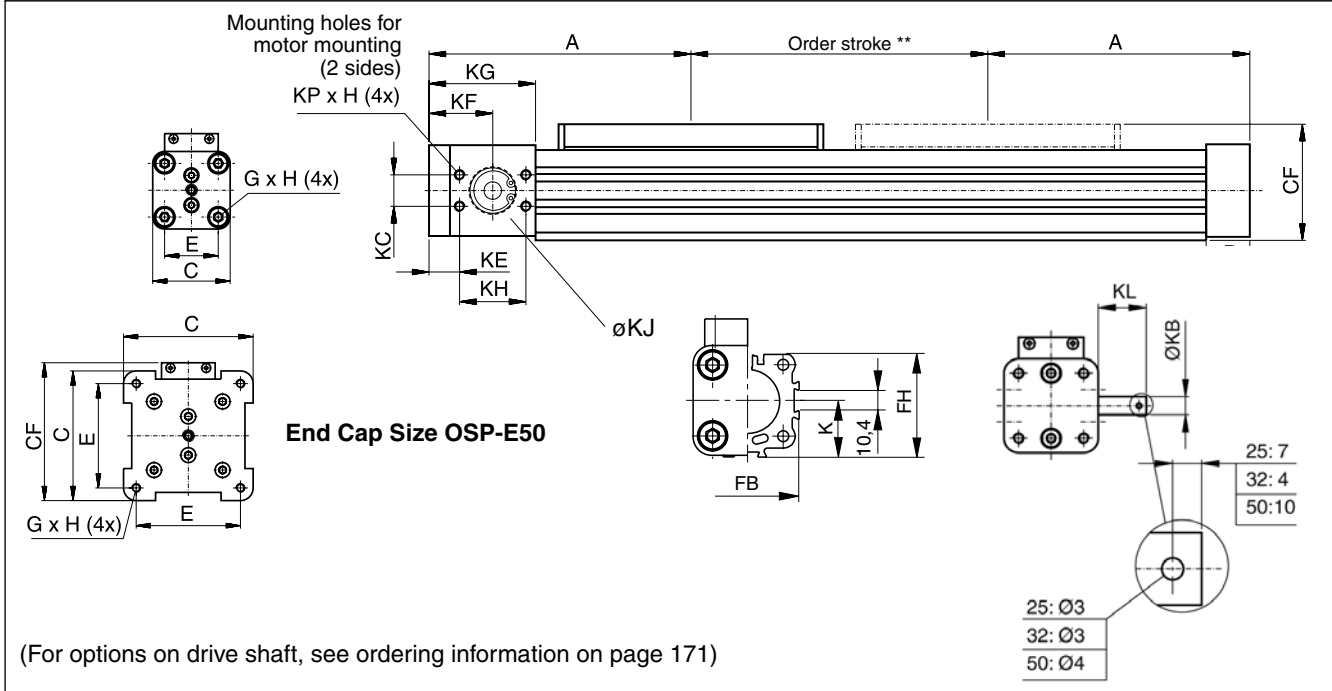


**Size OSP-E50B,  
 Vertical Application**



Dimensions

Linear Drive with Toothed Belt - Basic Unit  
Series OSP-E..B



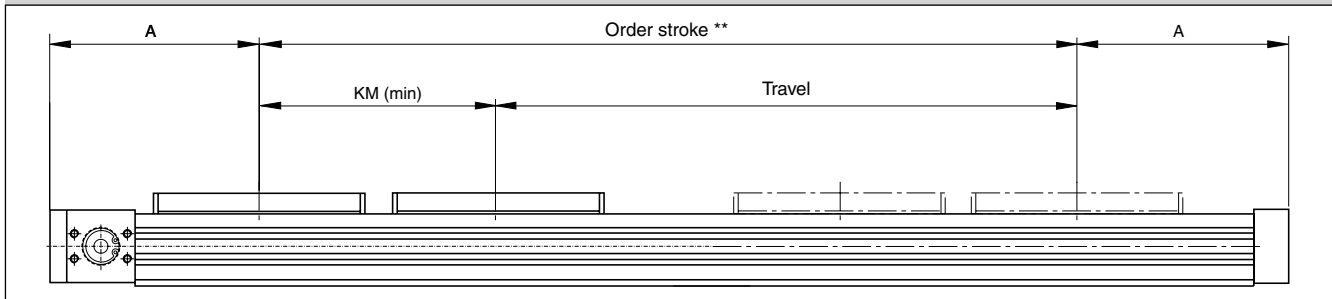
\* Note:

The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.

Order stroke = required travel + 2 x safety distance.

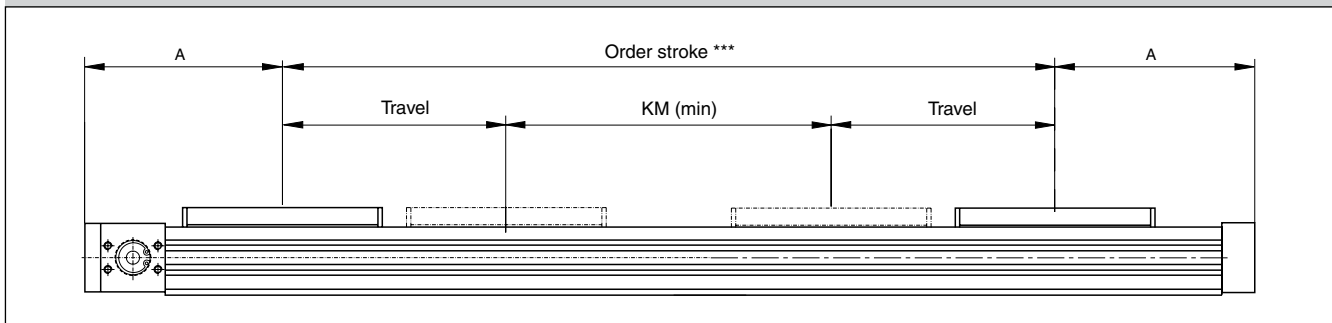
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For further information please contact your local PARKER-ORIGA representative.

Option – Tandem  
Series OSP-E..B



\*\* Order stroke = required travel + KM min + 2 x safety distance

Option – Bi-parting  
Series OSP-E..B

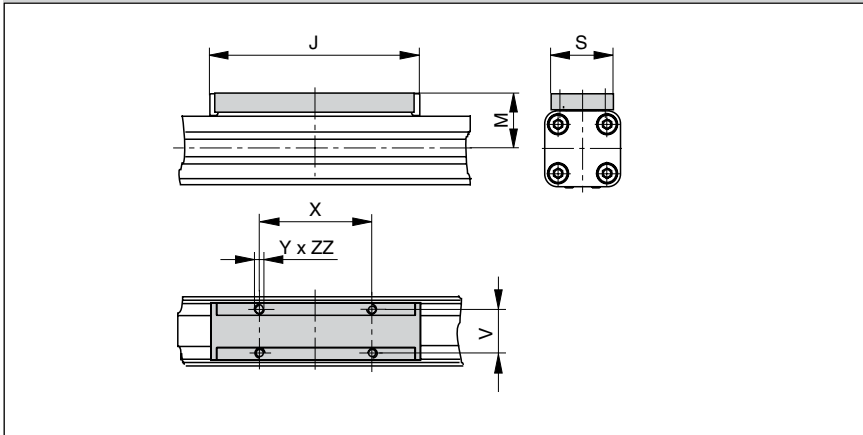


\*\*\* Order stroke = 2 x required travel + KM min + 2 x safety distance



**Dimensions**

**Standard Carrier  
Series OSP-E..B**



**Dimension Table [mm]**

Series	A	B	C	E	G x H	J	K	M	S	V	X	Y	CF
OSP-E25B	125	22	41	27	M5 x 10	117	21.5	31	33	25	65	M5	52.5
OSP-E32B	150	25	52	36	M6 x 12	152	28.5	38	36	27	90	M6	66.5
OSP-E50B	200	25	87	70	M6 x 12	200	43	49	36	27	110	M6	92.5

Series	FB	FH	KB	KC	KE	KF	KG	KH	KJ	KL	KM <sub>min</sub>	KM <sub>empf.</sub>	KP x H	ZZ
OSP-E25B	40	39.5	10 <sub>j6</sub>	15	22	37	57	30	19 <sup>H7</sup>	24	130	190	M5 x 10	8
OSP-E32B	52	51.7	10 <sub>j6</sub>	18	17.5	36.5	61	38	26 <sup>H7</sup>	26	170	230	M6 x 12	10
OSP-E50B	76	77	16 <sub>h8</sub>	32	23.5	48.5	85	50	40 <sup>H7</sup>	34	220	320	M8 x 12	10

**Notes**

---



# Linear Drive with Ball Screw Drive Series OSP-E..SB



## Contents

Description	Page
Overview	47-50
Technical Data	51-55
Dimensions	56-57

# ELECTRIC LINEAR DRIVE FOR HIGH ACCURACY APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

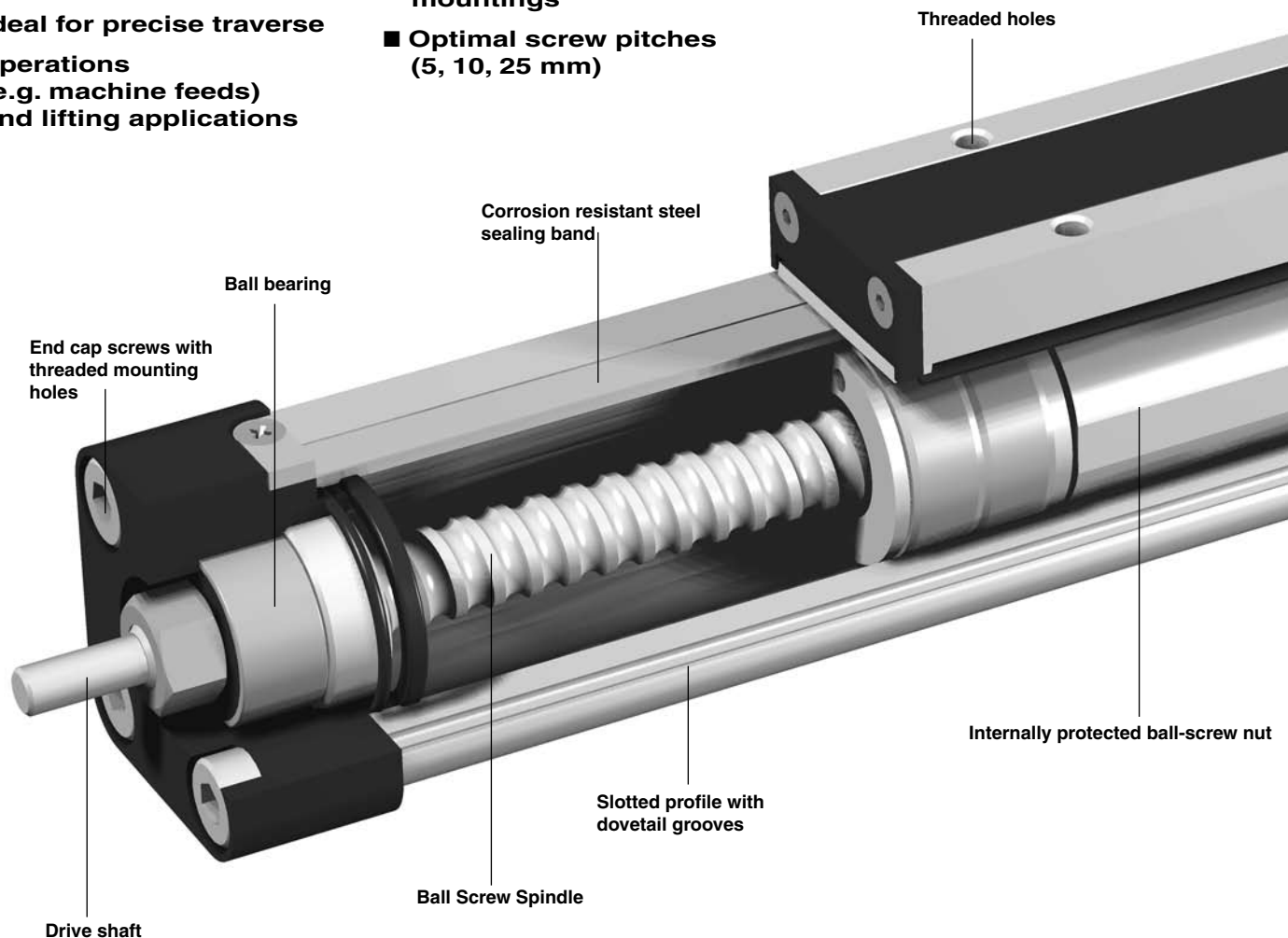
## Linear Drive with Ball Screw Drive and Internal Plane Bearing Guide

### Advantages

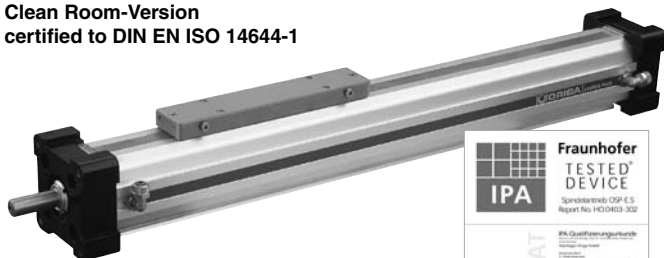
- Accurate path and position control
- High force output
- Easy installation
- Excellent slow speed characteristics
- Ideal for precise traverse operations (e.g. machine feeds) and lifting applications

### Features

- Integrated drive and guidance system
- Complete motor and control packages
- Diverse range of accessories and mountings
- Optimal screw pitches (5, 10, 25 mm)

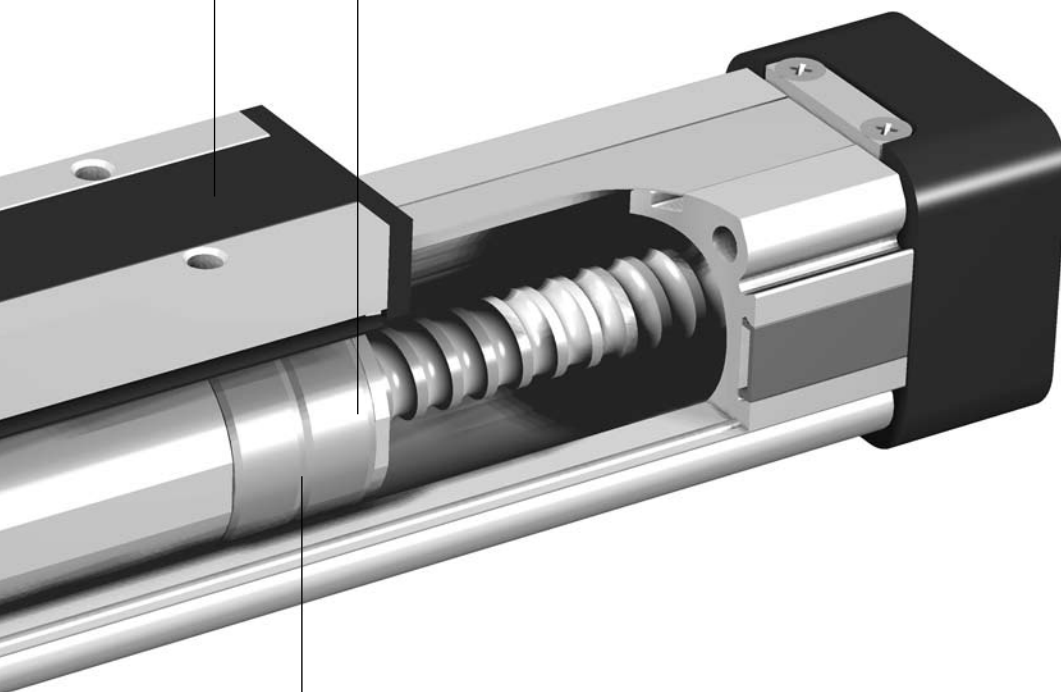


Clean Room-Version  
 certified to DIN EN ISO 14644-1



Low friction support rings

Carrier



Permanent magnet for  
 contactless sensing



To simplify design work OSP-E system  
 CAD files are available, which are compa-  
 tible with most common CAD systems

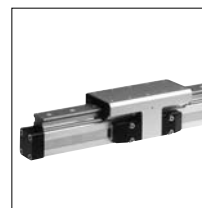
**SLIDELINE**  
 Combination with  
 linear guides  
 provides for hea-  
 vier loads.



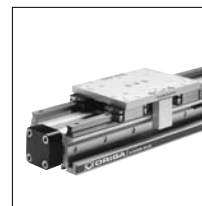
**POWERSLIDE**  
 Roller bearing  
 precision guidance  
 for smooth travel  
 and high dynamic or  
 static loads.



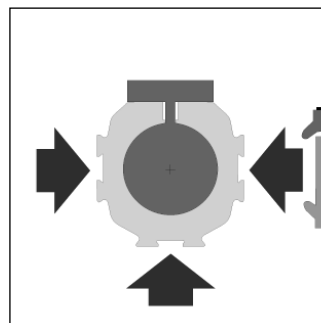
**PROLINE**  
 The compact  
 aluminium roller  
 guide for high  
 loads and veloci-  
 ties.



**Heavy Duty guide**  
 HD linear guides for  
 heavy duty applica-  
 tions



**SFI-plus**  
 displacement  
 measuring system



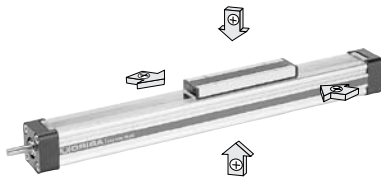
The dovetailed mounting rails  
 of the new linear drive expand  
 its function into that of a uni-  
 versal system carrier.  
 Modular system components  
 are simply clamped on.

# SERIES OSP-E, LINEAR DRIVE WITH BALL SCREW DRIVE AND INTERNAL PLAIN BEARING GUIDE

## STANDARD VERSION OSP-E..SB

Page 51

Standard carrier with internal guidance and integrated magnet set for contactless position sensing. Dovetail profile for mounting of accessories and the actuator itself.



## BALL SCREW PITCH

The ball screws spindles are available in various pitches:  
 OSP-E25SB: 5 mm  
 OSP-E32SB: 5, 10 mm  
 OSP-E50SB: 5, 10, 25 mm

## OPTIONS

### TANDEM

Page 56

For higher moment support.



### CLEAN ROOM

certified to DIN EN ISO 14644-1



## DISPLACEMENT MEASURING SYSTEM SFI-plus

Page 157

Incremental measuring system with practically relevant resolution.



## ACCESSORIES

### MOTOR MOUNTINGS

Page 123



### END CAP MOUNTING

Page 129

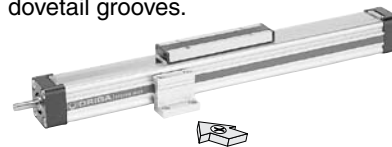
For end-mounting of the drive.



### MID-SECTION SUPPORT

Page 134

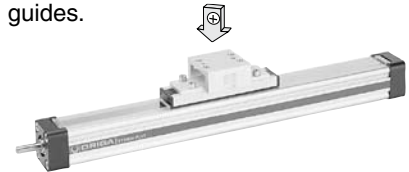
For supporting long drives or mounting the linear drive on the dovetail grooves.



## CLEVIS MOUNTING

Page 140

Carrier with tolerance and parallelism compensation to drive external linear guides.



## INVERSION MOUNTING

Page 142

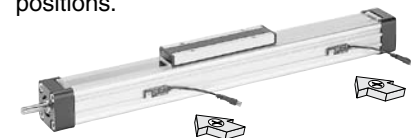
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments.



## MAGNETIC SWITCHES SERIES RS AND ES

Page 153

For contactless position sensing of end stop and intermediate carrier positions.



A3P107E 00GAG0X

The right to introduce technical modifications is reserved

# Linear Drive with Ball Screw Drive

## Series OSP-E..SB Size 25, 32, 50



Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..SB
Name			Linear Drive with Ball Screw Drive
Mounting			See drawings
Temperature Range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-20 +80
Weight (mass)		kg	See table
Installation			In any position
Material	Slotted profile		Extruded anodized aluminium
	Ball screw		Hardened steel
	Ball screw nut		Hardened steel
	Guide bearings		Low friction plastic
	Sealing band		Hardened, corrosion resistant steel
	Screws, nuts		zinc plated steel
	Mountings		zinc plated steel and aluminium
Encapsulation class		IP	54

Weight (mass) and Inertia					
Series At stroke 0 m	Add per metre stroke	Weight (mass) [kg]		Inertia [ $\times 10^{-6}$ kgm <sup>2</sup> ]	
		Moving mass	At stroke 0 m	Add per metre	
OSP-E25SB	0.8	2.3	0.2	2.2	11.3
OSP-E32SB	2.0	4.4	0.4	8.4	32
OSP-E50SB	5.2	9.4	1.2	84	225

### Standard Versions:

- Standard carrier with internal plain bearing guide
- Dovetail profile for mounting of accessories and the actuator itself
- Pitches of Ball Screw Spindle  
 Type OSP-E25 : 5 mm  
 Type OSP-E32: 5, 10 mm  
 Type OSP-E50: 5, 10, 25 mm

### Options:

- Tandem-Version
- Clean room-version, according to DIN EN ISO 14644-1
- Displacement Measuring System SFI-plus (page 157)

### Installation Instructions

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear drive.

See if mid-section supports are needed using the maximum permissible unsupported length graph on page 53. At least one end cap must be secured to prevent axial sliding when mid-section support is used.

When the linear drive is moving an externally guided load, the clevis mounting must be used (see pages 140-141).

The linear drives can be fitted with the standard carrier mounting facing in any direction.

To prevent contamination such as fluid ingress, the drive should be fitted with its sealing band facing downwards.

The inversion mounting can be fitted to transfer the driving force to the opposite side (see page 142).

### Maintenance

All moving parts are long-term lubricated for a normal operational environment. PARKER-ORIGA recommends a check and lubrication of the linear drive, and if necessary a change of wear parts, after an operation time of 12 months or 3000 km travel of distance. Please refer to the operating instructions supplied with the drive.

### First service start-up

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.



A1P560E00GAG0X

The right to introduce technical modifications is reserved

# Sizing Performance Overview

## Maximum Loadings

### Sizing of Linear Drive

The following steps are recommended for selection :

1. Recommended maximum acceleration is shown in graphs on page 54
2. Required torque is shown in graphs on page 55
3. Check that maximum values in the adjacent charts are not exceeded.
4. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time of the application.
5. Check that the maximum allowable unsupported length is not exceeded (see page 53)

### Performance Overview

Characteristics	Unit	Description					
Series		OSP-E25SB		OSP-E32SB		OSP-E50SB	
Pitch	[mm]	5	5	10	5	10	25
Max. speed	[m/s]	0.25	0.25	0.5	0.25	0.5	1.25
Linear motion per revolution drive shaft	[mm]	5	5	10	5	10	25
Max. rpm, drive shaft	[min <sup>-1</sup> ]	3 000		3 000		3 000	
Max. effective action force F <sub>A</sub>	[N]	250		600		1 500	
Corresponding torque on drive shaft	[Nm]	0.35	0.75	1.3	1.7	3.1	7.3
No-load torque	[Nm]	0.2	0.2	0.3	0.3	0.4	0.5
Max. allowable torque on drive shaft	[Nm]	0.6	1.5	2.8	4.2	7.5	20
Repeatability	[mm/m]	±0.05		±0.05		±0.05	
Max. Standard stroke length	[mm]	1100		2000		3200	

### Forces, loads and moments

$M = F \cdot l \text{ [Nm]}$   
 $M_x = M_{x \text{ statically}} + M_{x \text{ dynamically}}$   
 $M_y = M_{y \text{ statically}} + M_{y \text{ dynamically}}$   
 $M_z = M_{z \text{ statically}} + M_{z \text{ dynamically}}$

### Maximum Permissible Loads T3

Series	Max. applied load [N] Fz	Max. moments [Nm]		
		Mx	My	Mz
OSP-E25SB	500	2	12	8
OSP-E32SB	1 200	8	25	16
OSP-E50SB	3 000	16	80	32

### Combined Loads

If the linear drive is subjected to several forces, loads and moments at the same time, the maximum load is calculated with the equation shown here.

The maximum permissible loads must not be exceeded.

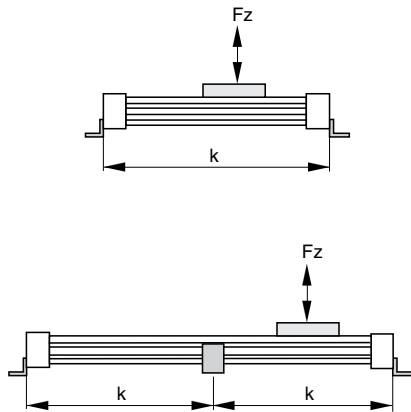
### Equation for combined loads

$$\frac{Fz}{Fz \text{ (max)}} + \frac{Mx}{Mx \text{ (max)}} + \frac{My}{My \text{ (max)}} + \frac{Mz}{Mz \text{ (max)}} \leq 1$$

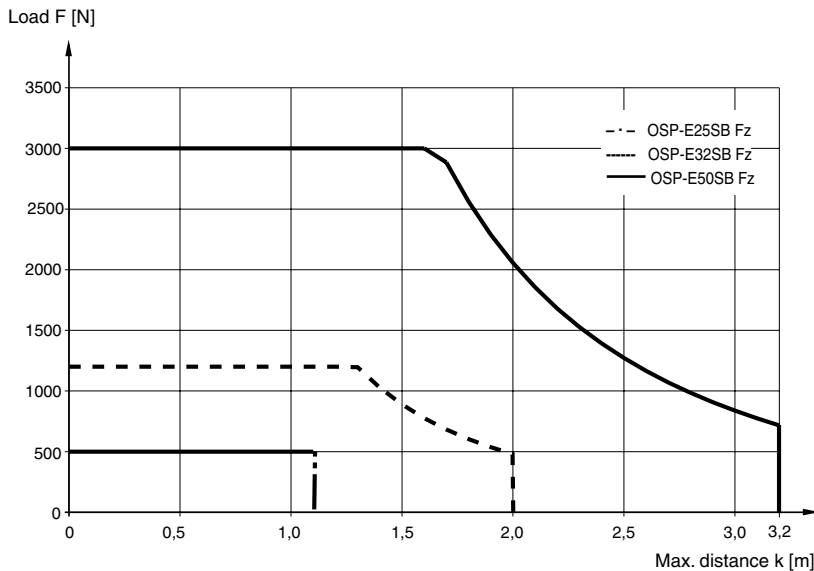
**The total of loads must not exceed >1 under any circumstances.**



**Maximum Permissible Unsupported Length – Placing of Mid-Section Support**



k = Maximum permissible distance between mountings/mid-section support for a given load F.



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

## Maximum Permissible Unsupported Length

### Stroke Length

The stroke lengths of the linear drives are available in multiples of 1 mm up to above maximum stroke lengths.

**OSP-E25SB:** max. 1100 mm

**OSP-E32SB:** max. 2000 mm

**OSP-E50SB:** max. 3200 mm

Other stroke lengths are available on request.

**The end of stroke must not be used as a mechanical stop.**

**Allow an additional safety clearance of minimum 25 mm at both ends.**

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.

For advise, please contact your local PARKER-ORIGA technical support department.

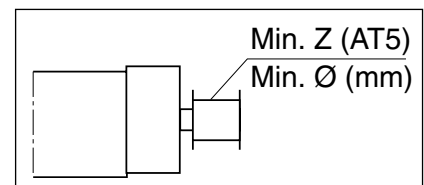
When mechanical stops are required, external shock absorbers should be used (see separate catalogue). Align the centerline of the shock absorber as closely as possible with the object's center of gravity.

### Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupling or belt wheel, a steadying block should be used.

### Belt wheels

Minimum allowable number of teeth (AT5) and diameter of belt wheel at maximum applied torque.

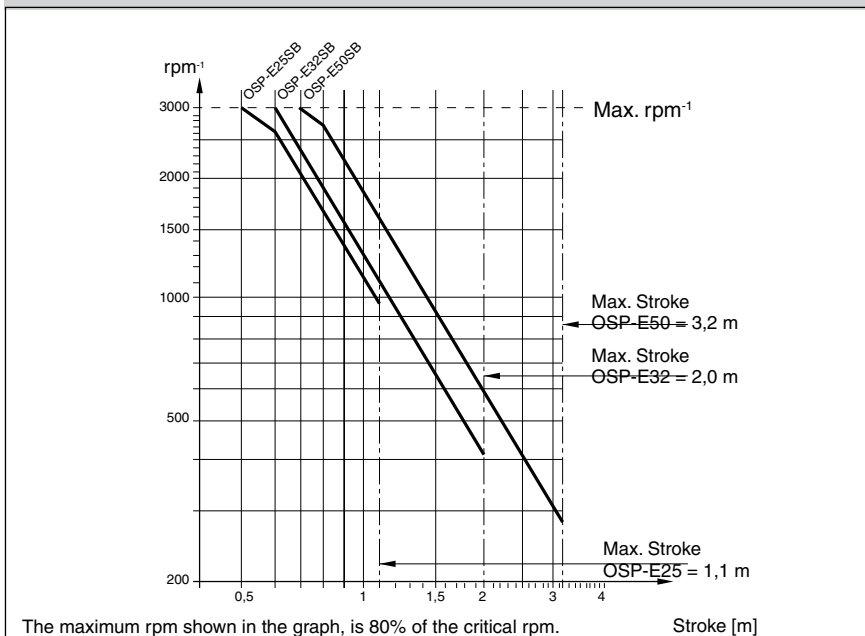


Size	Min. Z	Min. Ø
OSP-E25SB	24	38
OSP-E32SB	24	38
OSP-E50SB	36	57

## Maximum rpm / Stroke

At longer strokes the speed has to be reduced according to the adjacent graphs.

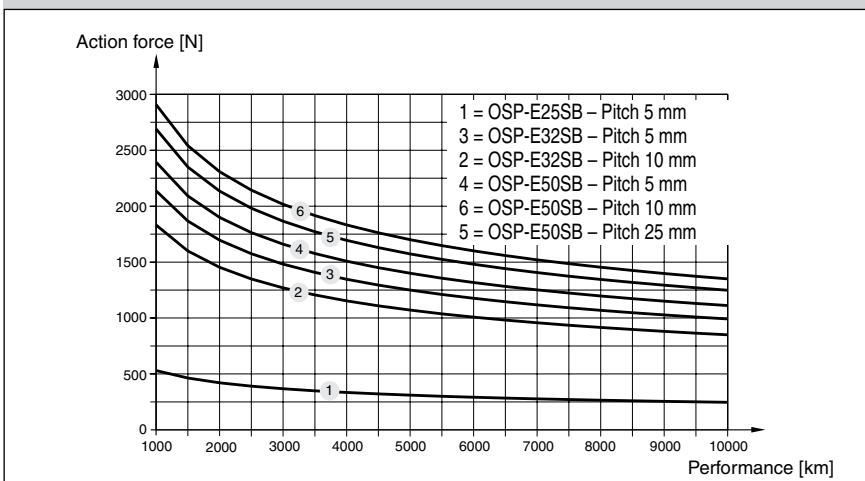
### Maximum rpm / Stroke



## Performance / Action force

The performance to be expected depends on the maximum required actions force of the application. An increase of the action force will lead to a reduced performance.

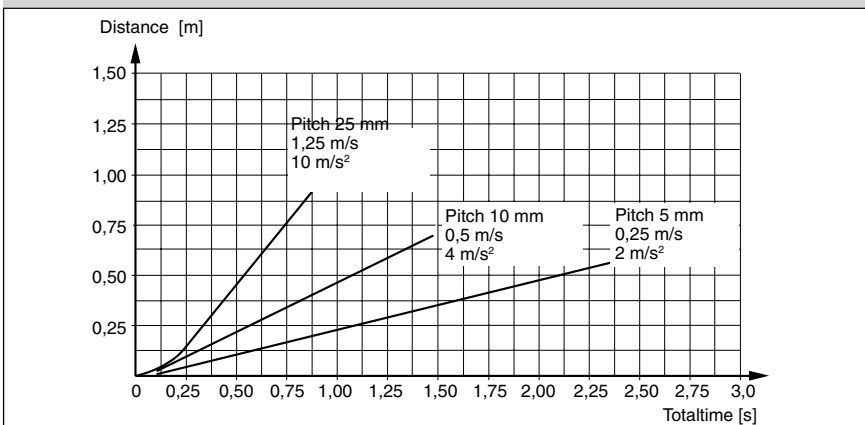
### Performance as a function of the action force



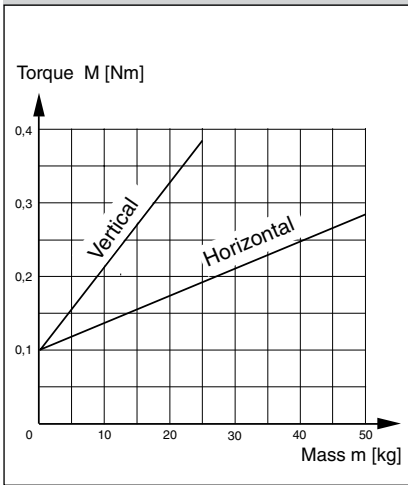
## Distance / Time Graph

The adjacent graphs show travel distance and total time at maximum speed and recommended maximum acceleration. The graph assumes that acceleration and deceleration are equal.

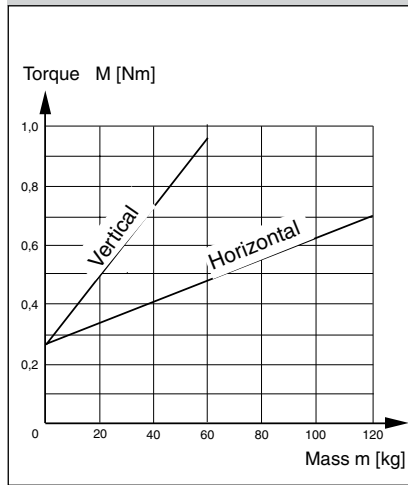
### Distance / Time Graph



Size OSP-E25SB, Pitch 5mm  
Acceleration 2 m/s<sup>2</sup>



Size OSP-E32SB, Pitch 5 mm  
Acceleration 2 m/s<sup>2</sup>



## Required Torque / Mass

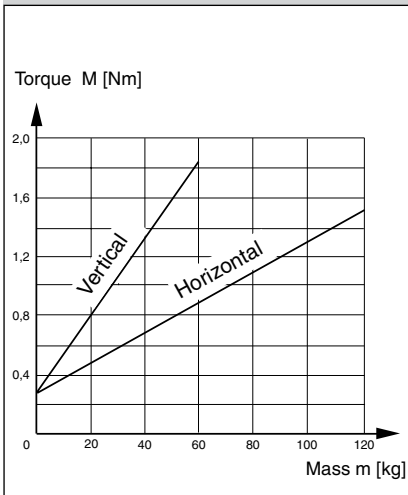
Using the known mass, the direction of the application and the recommended acceleration, the linear drive can be sized and the required torque is shown in the adjacent graphs.

Mass in graphs = Load + moving mass of the linear drive according to the weight chart (see table on page 51).

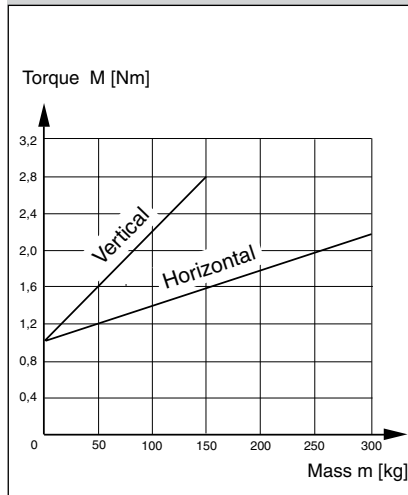
**Please mind:**

If an additional guide is used, mind the weight of the guide carriage.

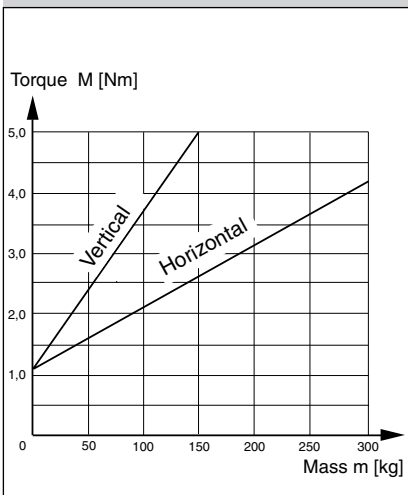
Size OSP-E32SB, Pitch 10 mm  
Acceleration 4 m/s<sup>2</sup>



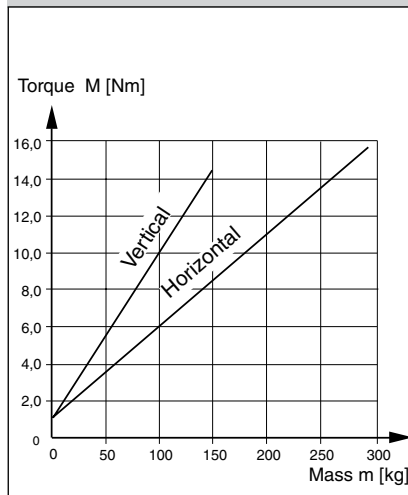
Size OSP-E50SB, Pitch 5 mm  
Acceleration 2 m/s<sup>2</sup>



Size OSP-E50SB, Pitch 10 mm  
Acceleration 4 m/s<sup>2</sup>

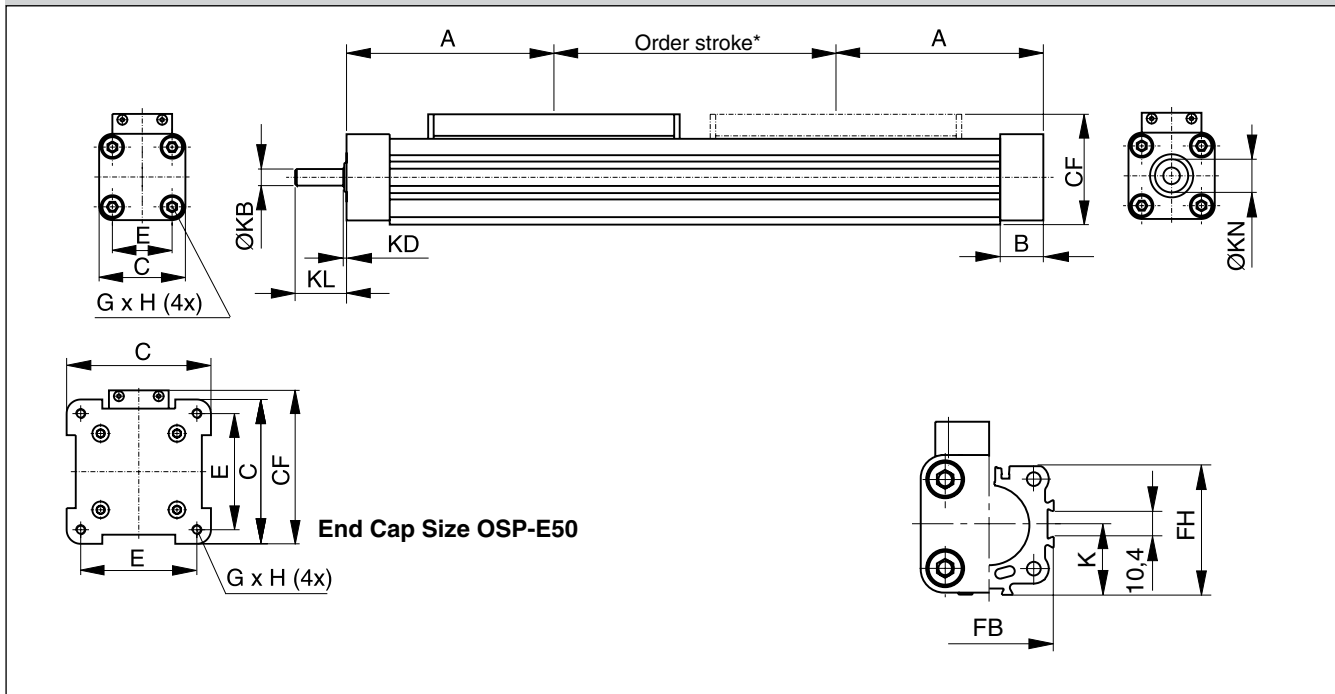


Size OSP-E50SB, Pitch 25 mm  
Acceleration 10 m/s<sup>2</sup>

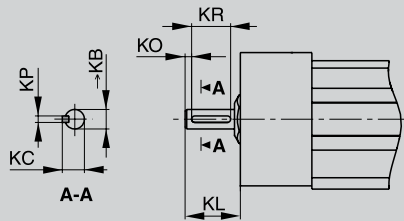


Dimensions

Linear Drive with Ball Screw Drive – Basic Unit  
Series OSP-E..SB



Plain shaft with keyway (Option)



Dimension Table [mm]

Series	ØKB <sub>h7</sub>	KC	KL Opt.3	Opt.4	KO	KP <sup>P9</sup>	KR
OSP-E25SB	6	6.8	17	24	2	2	12
OSP-E32SB	10	11.2	31	41	5	3	16
OSP-E50SB	15	17	43	58	6	5	28

Option 3: Keyway  
Option 4: Keyway long version

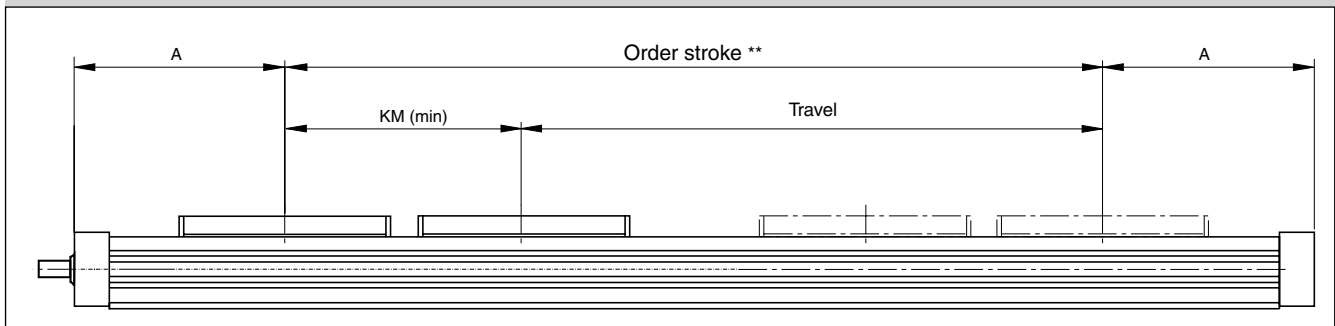
\* Note:

The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 25 mm.

Order stroke = required travel + 2 x safety distance.

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For further information, please contact your local PARKER-ORIGA representative.

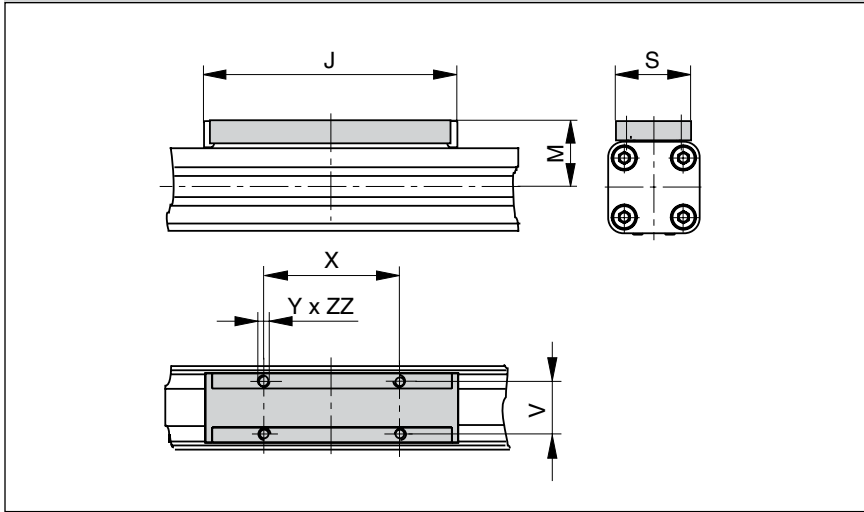
Option – Tandem  
Series OSP-E..SB



\*\* Order stroke = required travel + KM min + 2 x safety distance

**Dimensions**

**Standard Carrier  
Series OSP-E..SB**



**Dimension table [mm]**

Series	A	B	C	E	G x H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KD	KL	KM <sub>min</sub>	KN	ZZ
OSP-E25SB	100	22	41	27	M5 x 10	117	21.5	31	33	25	65	M5	52.5	40	39.5	6 <sub>h7</sub>	2	17	120	13	8
OSP-E32SB	125	25.5	52	36	M6 x 12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10 <sub>h7</sub>	2	31	165	20	10
OSP-E50SB	175	33	87	70	M6 x 12	200	43	49	36	27	110	M6	92.5	76	77	15 <sub>h7</sub>	3	43	235	28	10

**Notes**

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# Linear Drive with Trapezoidal Screw Drive Series OSP-E..ST



## Contents

Description	Page
Overview	59-62
Technical Data	63-66
Dimensions	67

# ELECTRIC LINEAR DRIVE FOR INTERMITTENT APPLICATIONS

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

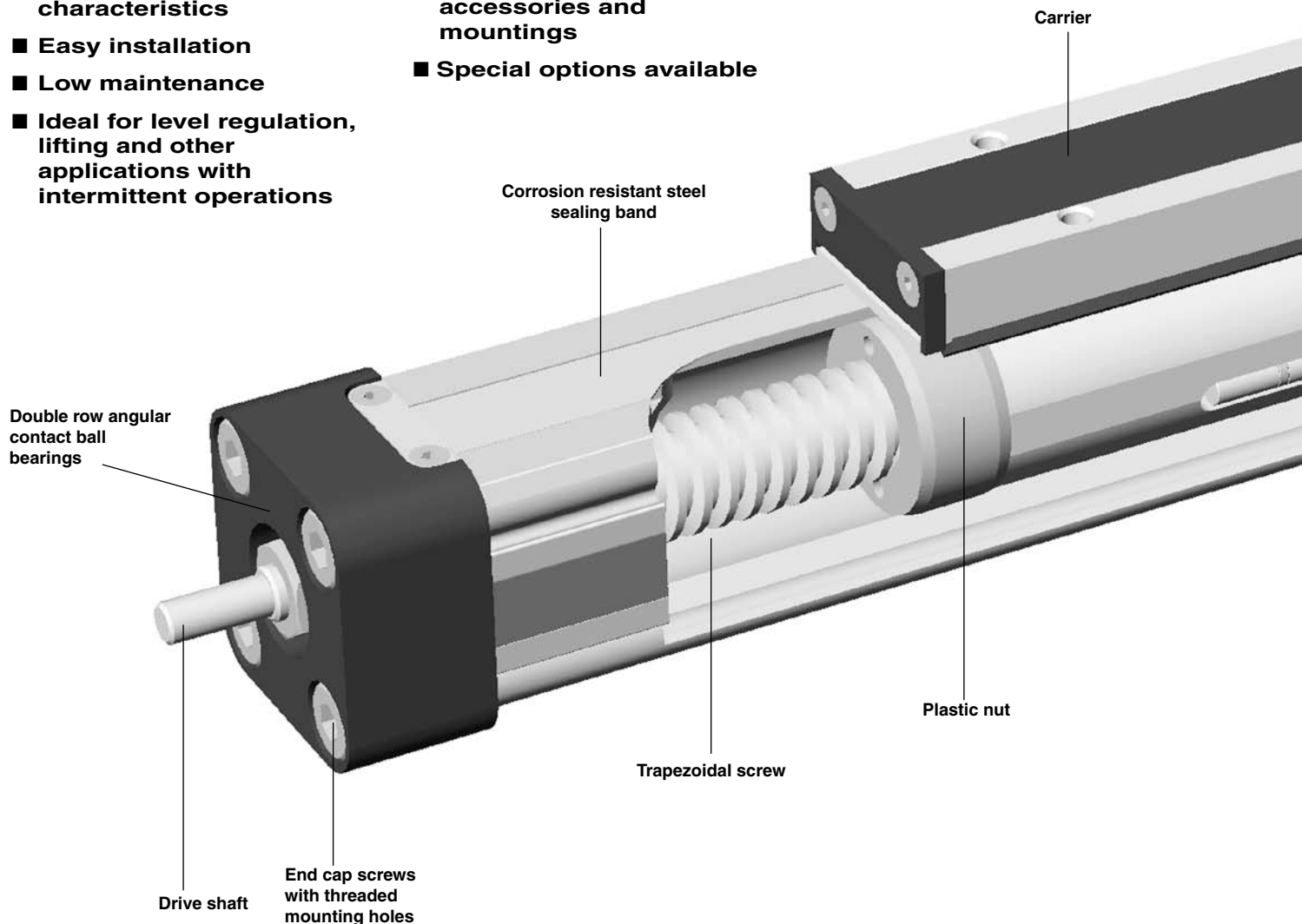
## Linear Drive with Trapezoidal Screw Drive and Internal Plain Bearing Guide

### Advantages

- Accurate path and position control
- High force output
- Self-locking
- Excellent slow speed characteristics
- Easy installation
- Low maintenance
- Ideal for level regulation, lifting and other applications with intermittent operations

### Features

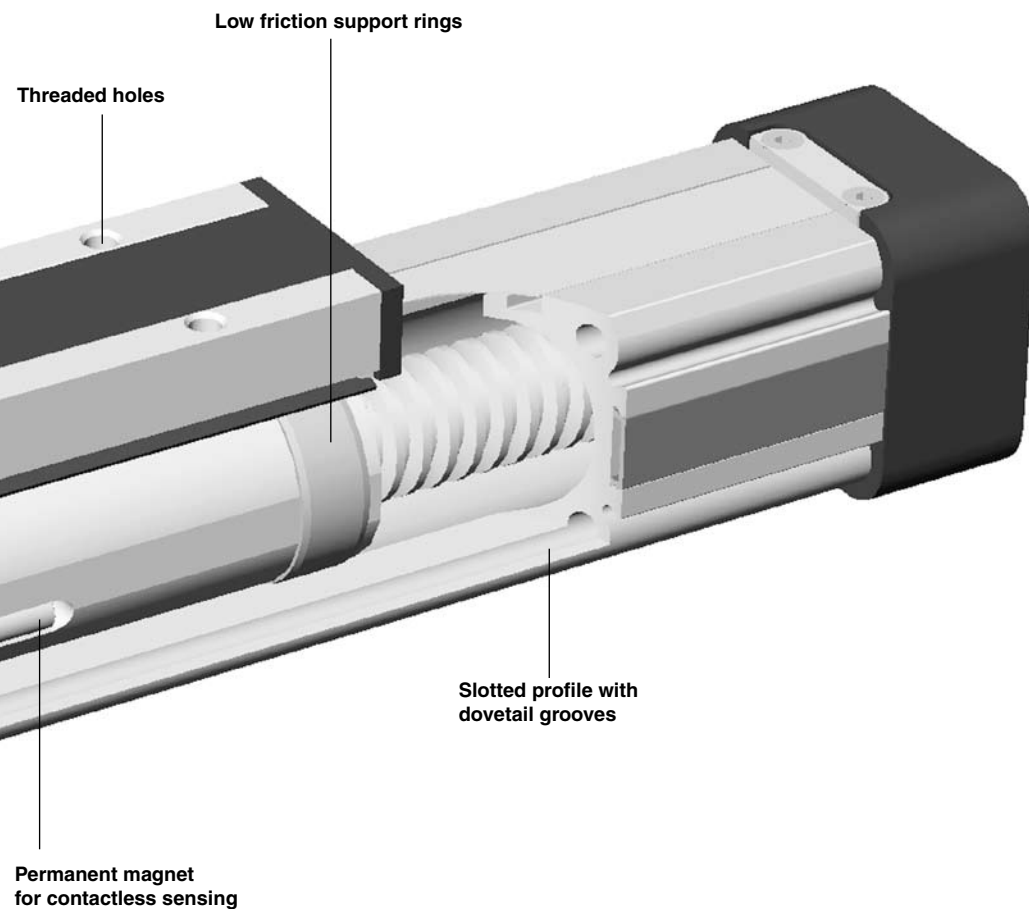
- Integrated drive and guidance system
- Complete motor and control packages
- Diverse range of accessories and mountings
- Special options available







To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems



**SLIDELINE**  
 Combination with sliding guide for heavy-duty operation



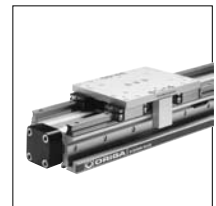
**POWERSLIDE**  
 Roller bearing precision guidance for smooth travel and high dynamic or static loads.



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



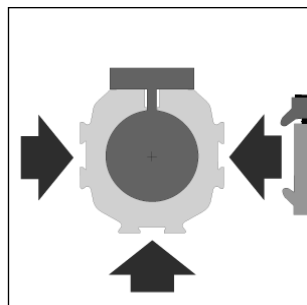
**Heavy Duty guide**  
 HD linear guides for heavy duty applications



**SFI-plus**  
 displacement measuring system



The dovetailed mounting rails of the new linear drive expand its function into that of a universal system carrier. Modular system components are simply clamped on.

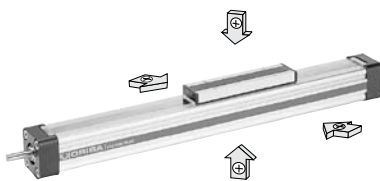


# SERIES OSP-E, LINEAR DRIVE WITH TRAPEZOIDAL SCREW DRIVE AND INTERNAL PLAIN BEARING GUIDE

## STANDARD VERSIONS OSP-E..ST

Pages 63 & 64

Standard carrier with internal guidance and integrated magnet set for contactless position sensing. Dovetail profile for mounting of accessories and the actuator itself.



## ACCESSORIES

### MOTOR MOUNTINGS

Page 123



### END CAP MOUNTING

Page 130

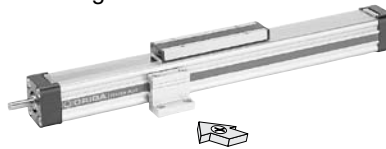
For end-mounting of the actuator



### MID-SECTION SUPPORT

Page 135

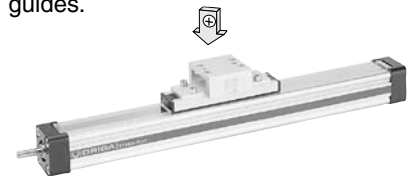
For supporting long drives or mounting the linear drive on the dovetail grooves.



### CLEVIS MOUNTING

Page 140

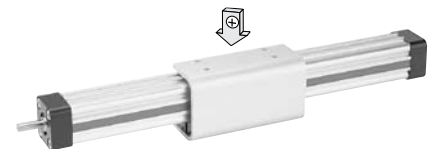
Carrier with tolerance and parallelism compensation to drive external linear guides.



### INVERSION MOUNTING

Page 142

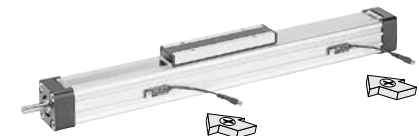
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments.



### MAGNETIC SWITCHES SERIES RS UND ES

Page 153

For contactless position sensing of end stop and intermediate carrier positions.



A3P154E00FAG0X

The right to introduce technical modifications is reserved

# Linear Drive with Trapezoidal Screw Drive

## Series OSP-E..ST Size 25, 32, 50



Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..ST
Name			Linear Drive with Trapezoidal Screw Drive
Mounting			See drawings
Temperature Range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-20 +70
Weight (mass)		kg	See table
Installation			In any position
Material	Slotted profile		Extruded anodized aluminium
	Trapezoidal screw		Cold rolled steel
	Drive nut		Thermoplastic polyester
	Guide bearings		Low friction plastic
	Sealing band		Hardened, corrosion resistant steel
	Screws, nuts		zinc plated steel
	Mountings		zinc plated steel and aluminium
Encapsulation class		IP	54

Weight (mass) and Inertia					
Series At stroke 0 m	Weight (mass)[kg]		At stroke 0 m	Inertia [x 10 <sup>-6</sup> kgm <sup>2</sup> ]	
	Add per metre stroke	Moving mass		Add per metre	
OSP-E25ST	0.9	2.8	0.2	6	29.6
OSP-E32ST	2.1	5.0	0.5	21.7	81
OSP-E50ST	5.1	10.6	1.3	152	400

**Standard Versions:**

- Standard carrier with internal plain bearing guide
- Dovetail profile for mounting of accessories and the actuator itself
- Pitch of Trapezoidal Spindle:  
 Type OSP-E25ST : 4 mm  
 Type OSP-E32ST: 4 mm  
 Type OSP-E50ST: 6 mm

**Options:**

- Displacement Measuring System SFI-plus (page 157)
- Keyway



**Installation Instructions**

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear drive.

See if mid-section supports are needed using the maximum permissible unsupported length graph on page 65. At least one end cap must be secured to prevent axial sliding when mid-section support is used.

When the linear drive is moving an externally guided load, the clevis mounting must be used (see pages 140-141).

The linear drives can be fitted with the standard carrier mounting facing in any direction.

To prevent contamination such as fluid ingress, the drive should be fitted with its sealing band facing downwards.

The inversion mounting can be fitted to transfer the driving force to the opposite side (see page 142).

**Maintenance**

All moving parts are long-term lubricated for a normal operational environment. PARKER-ORIGA recommends a check and lubrication of the linear drive, and if necessary a change of wear parts, after an operation time of 12 months or 300 km travel of distance. Please refer to the operating instructions supplied with the drive.

**First service start-up**

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.

A1P639E00GAG0X  
 The right to introduce technical modifications is reserved

# Sizing Performance Overview

## Maximum Loadings

### Sizing of Linear Drive

The following steps are recommended for selection :

1. Check that maximum values in the table T3 are not exceeded.
2. Check the maximum values in graph on page 66 are not exceeded.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time of the application.
4. Check that the maximum allowable unsupported length is not exceeded (see page 65).

Performance Overview				
Characteristics	Unit	Description		
Size		OSP-E25ST	OSP-E32ST	OSP-E50ST
Pitch	[mm]	4	4	6
Max. speed	[m/s]	0.1	0.1	0.15
Linear motion per revolution drive shaft	[mm]	4	4	6
Max. rpm, drive shaft	[min <sup>-1</sup> ]	1500	1500	1500
Max. effective action force F <sub>A</sub>	[N]	600	1300	2 500
Corresponding torque on drive shaft	[Nm]	1.35	3.2	8.8
No-load torque	[Nm]	0.3	0.4	0.5
Max. allowable torque on drive shaft	[Nm]	1.55	4.0	9.4
Self-locking force F <sub>L</sub> <sup>1)</sup>	[N]	600	1300	2500
Repeatability	[mm/m]	±0.5	±0.5	±0.5
Max. Standard stroke length	[mm]	1100	2000	2500*

<sup>1)</sup> Related to screw types Tr 16x4, Tr 20x4, TR 30x6  
 see data sheet 1.35.002E-1 – for inertia.

\* For strokes longer than 2000 mm in horizontal applications, please contact our customer support.

### Forces, loads and moments

$M = F \cdot l$  [Nm]  
 $M_x = M_{x \text{ static}} + M_{x \text{ dynamic}}$   
 $M_y = M_{y \text{ static}} + M_{y \text{ dynamic}}$   
 $M_z = M_{z \text{ static}} + M_{z \text{ dynamic}}$

The distance  $l$  ( $l_x, l_y, l_z$ ) for calculation of the bending moments relates to the center axis of the linear drive.

### Combined Loads

If the linear drive is subjected to several forces, loads and moments at the same time, the maximum load is calculated with the equation shown here.

The maximum permissible loads must not be exceeded.

### Maximum Permissible Loads

**T3**

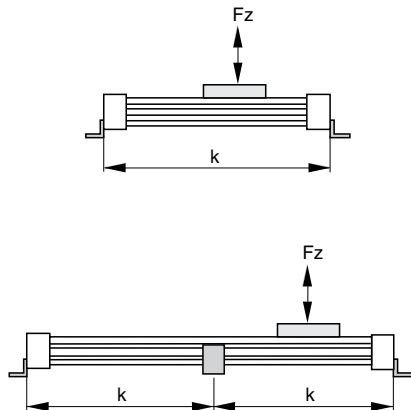
Size	Max. applied load [N] Fz	Max. moments [Nm]		
		Mx	My	Mz
OSP-E25ST	500	2	24	7
OSP-E32ST	1000	6	65	12
OSP-E50ST	1500	13	155	26

### Equation for Combined Loads

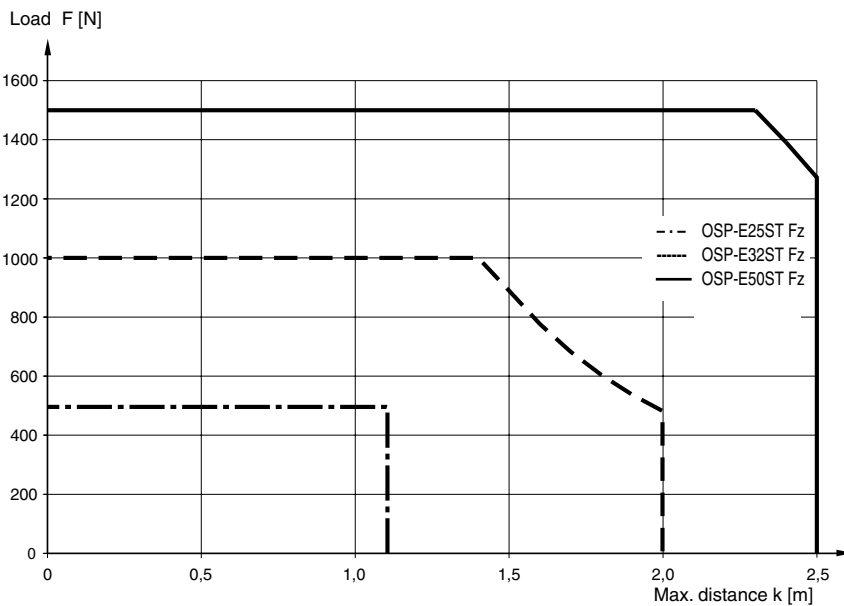
$$\frac{F_z}{F_z \text{ (max)}} + \frac{M_x}{M_x \text{ (max)}} + \frac{M_y}{M_y \text{ (max)}} + \frac{M_z}{M_z \text{ (max)}} \leq 1$$

**The total of the loads must not exceed >1 under any circumstances.**

**Maximum Permissible Unsupported Length – Placing of Mid-Section Support**



k = Maximum permissible distance between mountings/mid-section support for a given load F.



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

# Maximum Permissible Unsupported Length

## Stroke Length

The stroke lengths of the linear drives are available in multiples of 1 mm up to the following maximum stroke lengths.

**OSP-E25ST:** max. 1100 mm

**OSP-E32ST:** max. 2000 mm

**OSP-E50ST:** max. 2500 mm \*

Other stroke lengths are available on request.

\* For strokes longer than 2000 mm in horizontal applications, please contact our customer support

## The end of stroke must not be used as a mechanical stop.

**Allow an additional safety clearance of minimum 25 mm at both ends.**

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.

For advise, please contact your local PARKER-ORIGA technical support department.

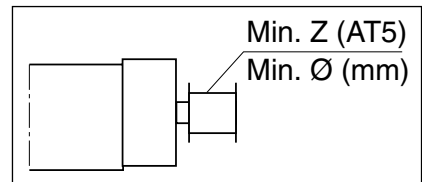
When mechanical stops are required, external shock absorbers should be used (see separate data sheet). Align the centerline of the shock absorber as closely as possible with the object's center of gravity.

## Mounting on the Drive Shaft

Do not expose the drive shaft to uncontrolled axial or radial forces when mounting coupling or belt wheel, a steadying block should be used.

## Belt wheels

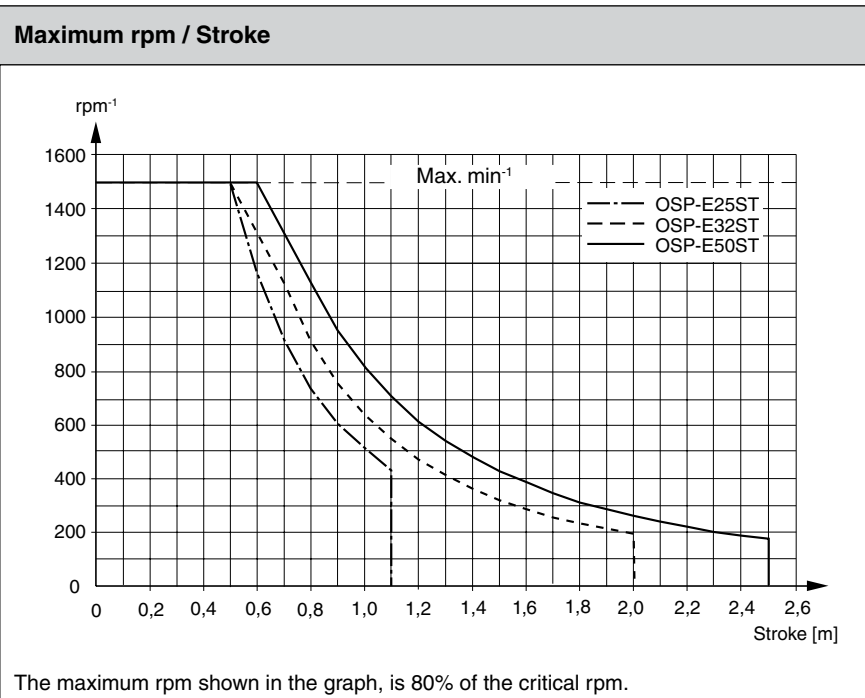
Minimum allowable number of teeth (AT5) and diameter of belt wheel at maximum applied torque.



Size	Min. Z	Min. Ø
OSP-E25ST	24	38
OSP-E32ST	24	38
OSP-E50ST	36	57

## Maximum rpm / Stroke

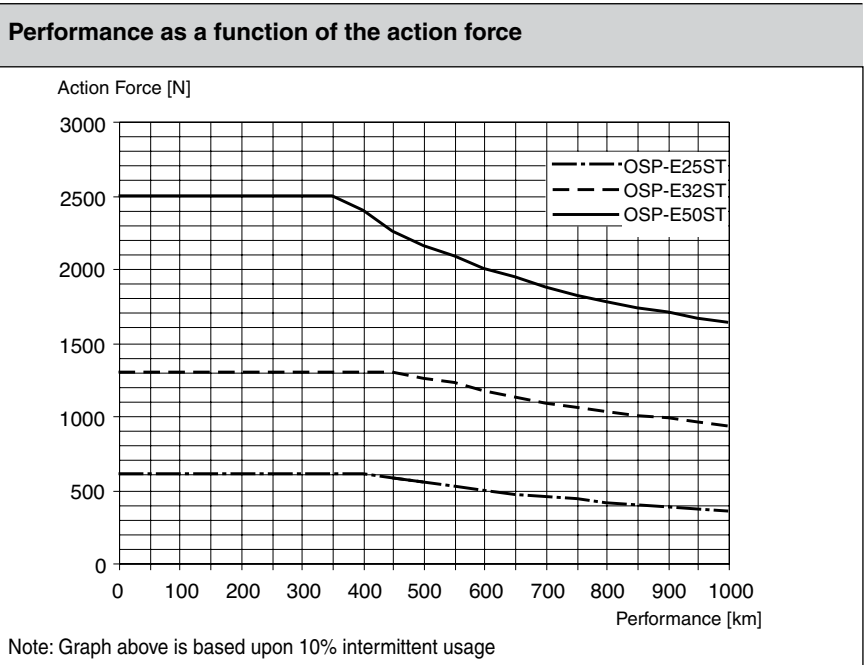
At longer strokes the speed has to be reduced according to the adjacent graphs.



## Performance / Action Force

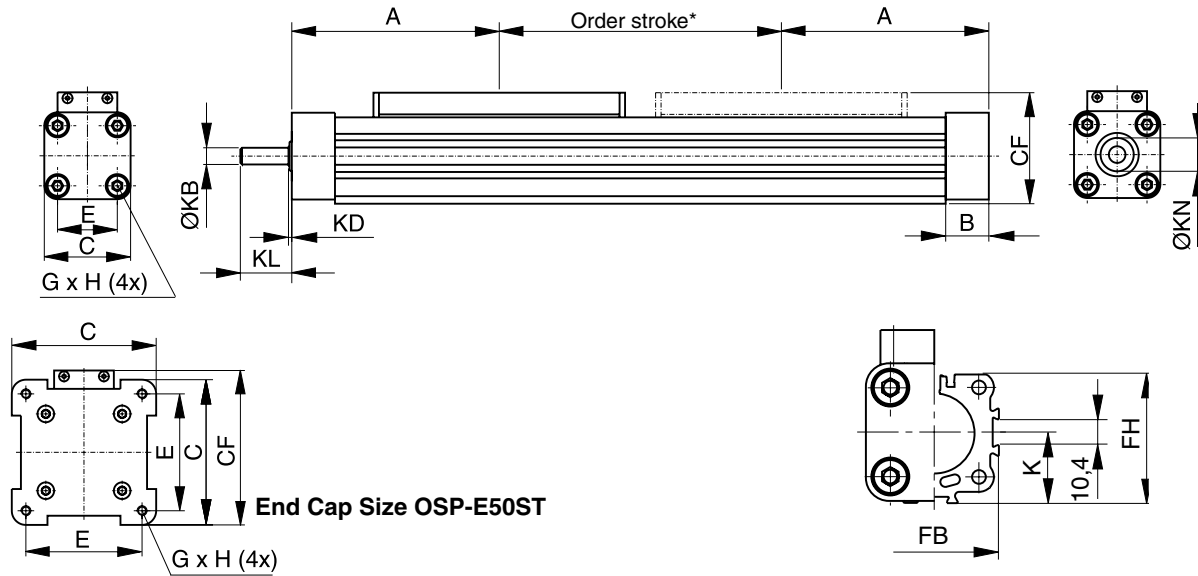
The Linear Drives are designed for a 10% intermittent usage.

The performance to be expected depends on the maximum required actions force of the application. An increase of the action force will lead to a reduced performance.

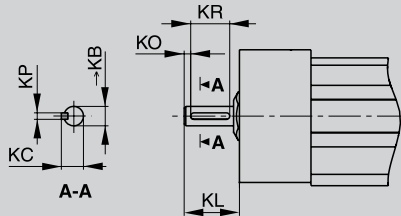


Dimensions

Linear Drive with Trapezoidal Screw Drive – Basic Unit  
Series OSP-E..ST



Plain Shaft with Keyway (Option)



Dimension Table [mm]

Series	∅KB <sub>h7</sub>	KC	KL Opt.3	Opt.4	KO	KP <sup>P9</sup>	KR
OSP-E25ST	6	6.8	17	24	2	2	12
OSP-E32ST	10	11.2	31	41	5	3	16
OSP-E50ST	15	17	43	58	6	5	28

Option 3: Keyway  
Option 4: Keyway long version

\* NOTE:

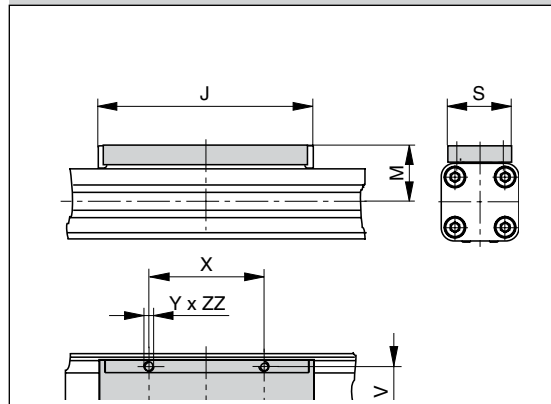
The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 25 mm.

Order stroke = required travel + 2 x safety distance.

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.

For further information, please contact your local PARKER-ORIGA representative.

Standard Carrier  
Series OSP-E..ST



Dimension Table [mm]

Series	A	B	C	E	G x H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KD	KL	KN	ZZ
OSP-E25ST	100	22	41	27	M5 x 10	117	21.5	31	33	25	65	M5	52.5	40	39.5	6 <sub>h7</sub>	2	17	13	8
OSP-E32ST	125	25.5	52	36	M6 x 12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10 <sub>h7</sub>	2	31	20	10
OSP-E50ST	175	33	87	70	M6 x 12	200	43	49	36	27	110	M6	92.5	76	77	15 <sub>h7</sub>	3	43	28	10

**Notes**

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# Linear Drive with Ball Screw Drive and Piston Rod Series OSP-E..SBR



## Contents

Description	Page
Overview	69-72
Technical Data	73-75
Dimensions	75

# ELECTRIC LINEAR DRIVE FOR PRECISE AND HIGH SPEED POSITIONING OF HIGH MASSES

A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

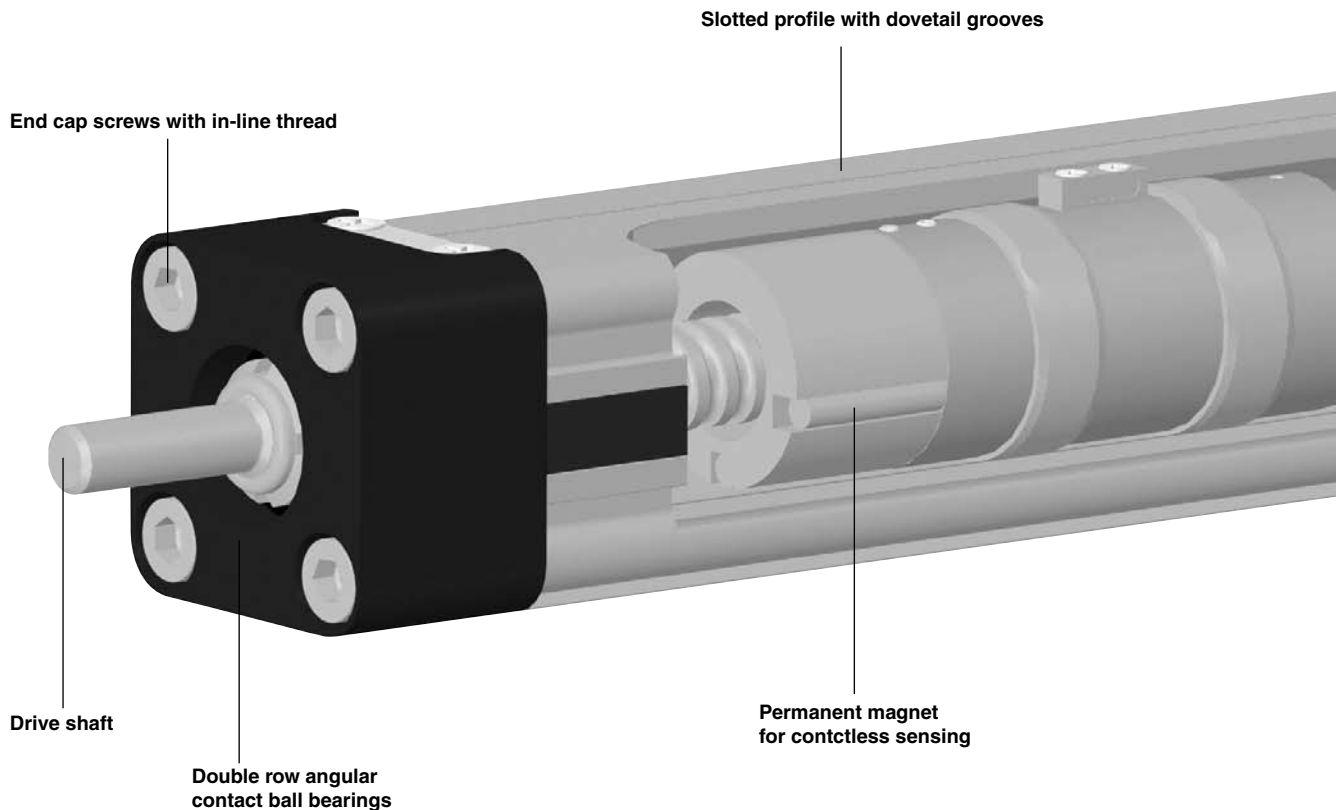
## Linear Drive with Ball Screw Drive, Internal Plain Bearing Guide and Piston Rod

### Advantages

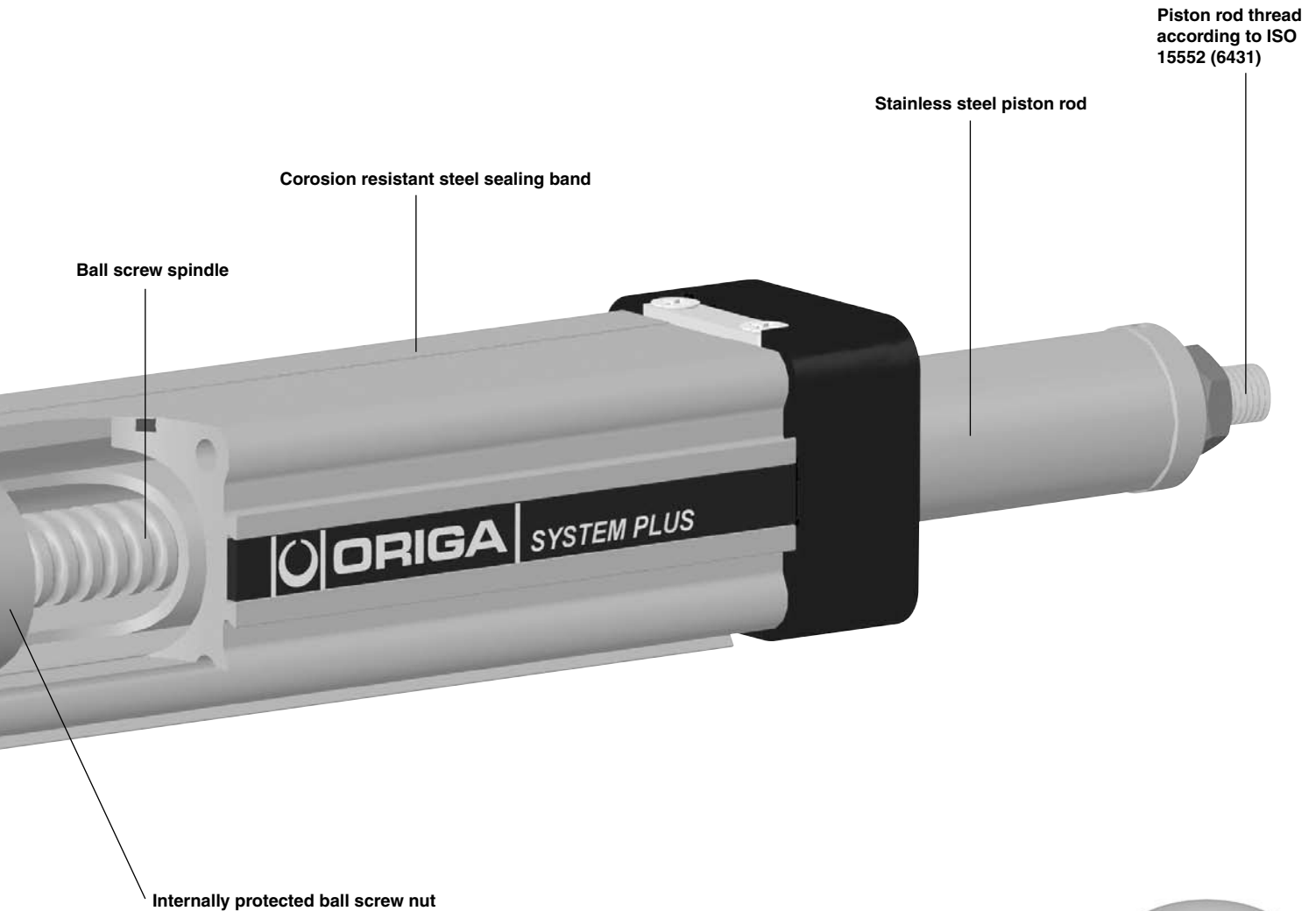
- High output force
- Excellent running characteristics
- Accurate path and position control
- High levels of repeatability

### Features

- Extending drive rod
- Ball screw spindle
- Non-rotating drive rod
- Continuous duty operation
- Large range of accessories



# Linear Drive with Ball Screw Drive and Piston Rod Series OSP-E..SBR



To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems



# SERIES OSP-E, LINEAR DRIVE WITH BALL SCREW DRIVE, INTERNAL PLAIN BEARING GUIDE AND PISTON ROD

## STANDARD VERSIONS OSP-E..SBR

Pages 73-75

Standard carrier with internal guidance and integrated magnet set for contactless position sensing. Dovetail profile for mounting of accessories and the actuator itself.



## BALL SCREW PITCH

The ball screws spindles are available in various pitches:

- OSP-E25SBR: 5 mm
- OSP-E32SBR: 5, 10 mm
- OSP-E50SBR: 5, 10, 25 mm

## ACCESSORIES

### MOTOR MOUNTINGS

Page 123



### END CAP MOUNTING

Page 131

For end-mounting the actuator on the extending rod side

### MID SECTION SUPPORT

Page 135

For mounting the actuator on the dovetail grooves and on the motor end



### FLANGE MOUNTING C

Page 132

For end-mounting the actuator on the extending rod side.



### TRUNNION MOUNTING EN

Page 139

Trunning mounting EN in combination with pivot mounting EL.  
 – steplessly adjustable in axial direction.



### PISTON ROD EYE

Page 148



### PISTON ROD CLEVIS

Page 148



### PISTON ROD COMPENSATING COUPLING

Page 149

For compensating of radial and angular misalignments



### MAGNETIC SWITCHES SERIES RS AND ES

Page 153

For contactless position sensing of end stop and intermediate carrier positions.



A1P702E00GAG50X

The right to introduce technical modifications is reserved

**Features**

Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..SBR
Name			Linear drive with ball screw drive and piston rod
Mounting			see drawings
Temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°C °C	-20 +80
Weight (Mass)		kg	see table
Installation			In any position
Material	Slotted profile		Al anodized
	Ball screw		Steel
	Ball nut		Steel
	Piston rod		Stainless steel
	Guide bearings		Low friction plastic
	Sealing band		Hardened, corrosion resistant steel
	Screws, nuts		Zinc plated steel
	Mountings		Zinc plated steel and aluminium
Encapsulation class		IP	54

Weight (Mass) and Inertia						
Series	Weight (Mass) [kg]		Moving Mass [kg]		Inertia [x 10 <sup>-6</sup> kgm <sup>2</sup> ]	
	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre stroke
OSP-E25SBR	0.7	3.0	0.2	0.9	1.2	11.3
OSP-E32SBR	1.7	5.6	0.6	1.8	5.9	32.0
OSP-E50SBR	4.5	10.8	1.1	2.6	50.0	225.0

# Linear Drive with Ball Screw Drive and Piston Rod

## Series OSP-E..SBR Size 25, 32, 50



**Standard Version:**

- Standard carrier with internal plain bearing guide
- Pitches of Ball Screw Spindle:  
Type OSP-E25SBR : 5 mm  
Type OSP-E32SBR: 5, 10 mm  
Type OSP-E50SBR: 5, 10, 25 mm

**Option:**

- Key way version



**Installation Instructions**

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear actuator.

**Maintenance**

All moving parts are long-term lubricated for a normal operational environment. PARKER-ORIGA recommends a check and lubrication of the linear drive, and if necessary a change of wear parts, after an operation time of 12 months or 3000 km travel of distance. Please refer to the operating instructions supplied with the drive.

**First service start-up**

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.

A1P703E00GAG00X

The right to introduce technical modifications is reserved

# Sizing Performance Overview Maximum Loadings

## Sizing of Linear Drive

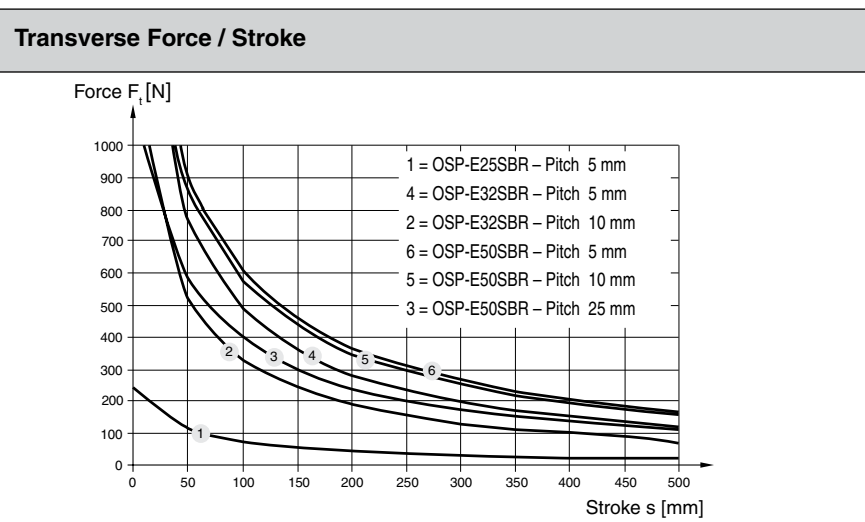
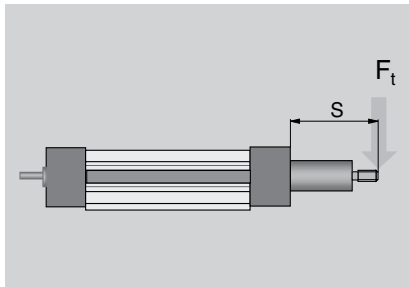
The following steps are recommended for selection :

1. Check that the maximum values in the adjacent chart and transverse force/stroke graph below are not exceeded.
2. Check the lifetime/travel distance in graph below.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time in application.

Performance overview							
Characteristics	Unit	Description					
Series		OSP-E25SBR		OSP-E32SBR		OSP-E50SBR	
Pitch	[mm]	5	5	10	5	10	25
Max. speed	[m/s]	0.25	0.25	0.5	0.25	0.5	1.25
Linear motion per revolution drive shaft	[mm]	5	5	10	5	10	25
Max. rpm drive shaft	[min <sup>-1</sup> ]	3000		3000		3000	
Max. effective action force $F_A$	[N]	260		900		1200	
Corresponding torque drive shaft	[Nm]	0.45		1.1   1.8		1.3   2.8   6.0	
No-load torque	[Nm]	0.2		0.2   0.3		0.3   0.4   0.5	
Max. allowable torque on drive shaft	[Nm]	0.6		1.5   2.8		4.2   7.5   20	
Max. allowable acceleration	[m/s <sup>2</sup> ]	5		5		5	
Typical repeatability	[mm/m]	±0.05		±0.05		±0.05	
Max. Standard stroke length	[mm]	500		500		500	

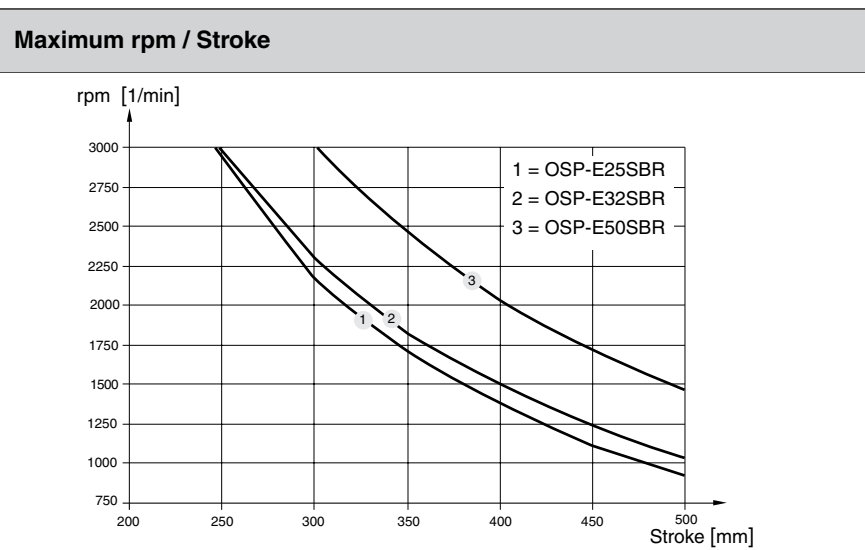
## Transverse Force / Stroke

The permissible transverse force is reduced with increasing stroke length, according to the adjacent graphs.

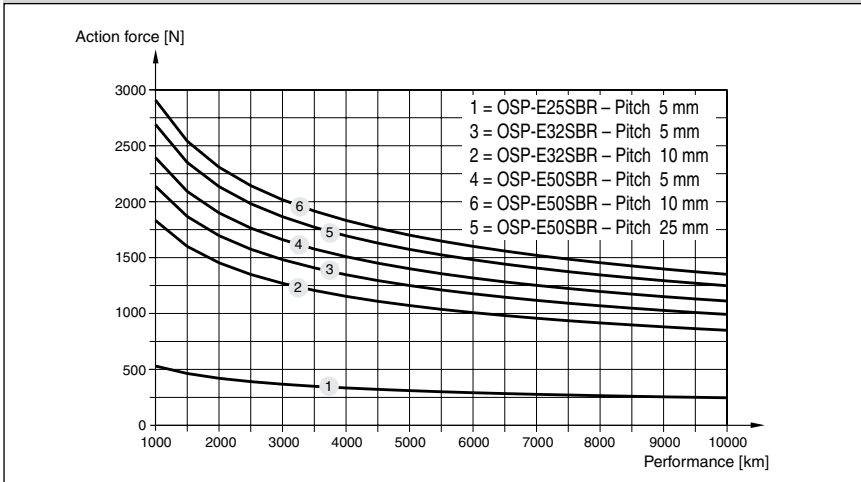


## Maximum rpm / Stroke

At longer strokes the speed has to be reduced according to the adjacent graphs.



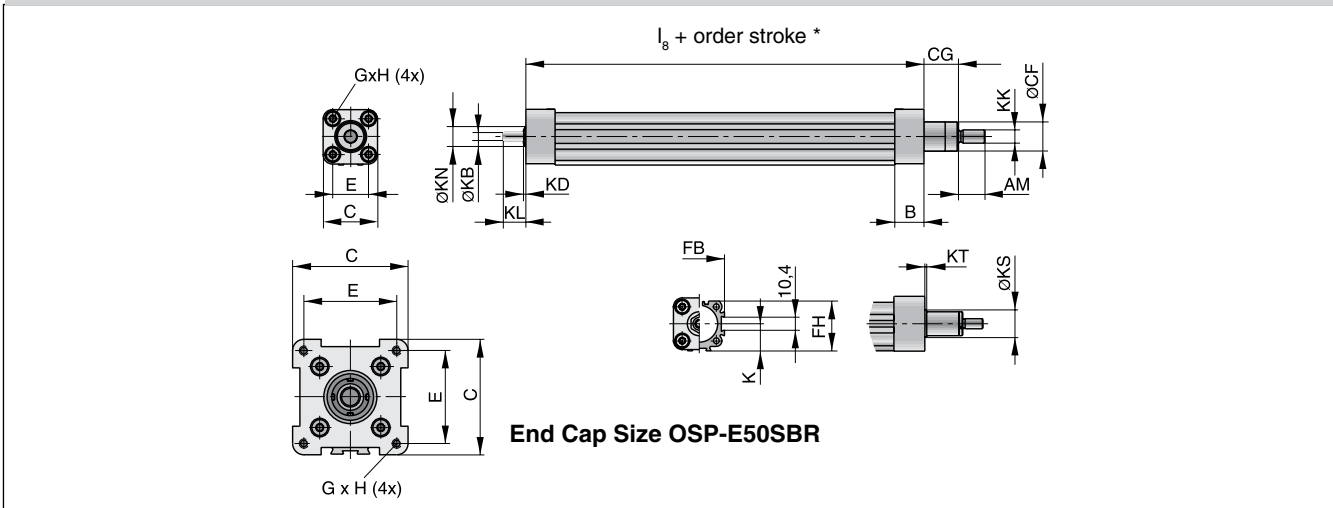
**Performance as a function of the action force**



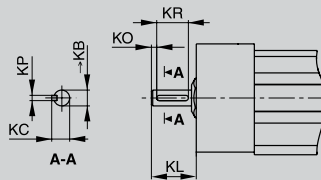
**Performance /  
 Action force**

The performance to be expected depends on the maximum required actions force of the application. An increase of the action force will lead to a reduced performance.

**Linear Drive with Ball Screw Drive and Piston Rod – Basic Unit  
 Series OSP-E..SBR**



**Plain shaft with keyway (Option)**



**Dimension Table [mm]**

Series	∅KB <sub>h7</sub>	KC	KL Opt.3	Opt.4	KO	KP <sup>P9</sup>	KR
OSP-E25SBR	6	6.8	17	24	2	2	12
OSP-E32SBR	10	11.2	31	41	5	3	16
OSP-E50SBR	15	17	43	58	6	5	28

**Option 3: Keyway  
 Option 4: Keyway long version**

**\* Note:**

The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 25 mm.

Order stroke = required travel + 2 x safety distance.

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For further information, please contact your local PARKER-ORIGA representative.

**Dimension Table [mm]**

Series	B	C	E	G x H	K	I <sub>0</sub>	AM	∅CF	CG	FB	FH	∅KB	KD	KK	KL	∅KN	∅KS	KT
OSP-E25SBR	22	41	27	M5 x 10	21.5	110	20	22	26	40	39.5	6 <sub>h7</sub>	2	M10x1.25	17	13	–	–
OSP-E32SBR	25.5	52	36	M6 x 12	28.5	175.5	20	28	26	52	51.7	10 <sub>h7</sub>	2	M10x1.25	31	20	33	2
OSP-E50SBR	33	87	70	M6 x 12	43	206	32	38	37	76	77	15 <sub>h7</sub>	3	M16x1.5	43	28	44	3

**Notes**

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# Linear Drive with Trapezoidal Screw Drive and Piston Rod Series OSP-E..STR



## Contents

Description	Page
Overview	77-80
Technical Data	81-82
Dimensions	83

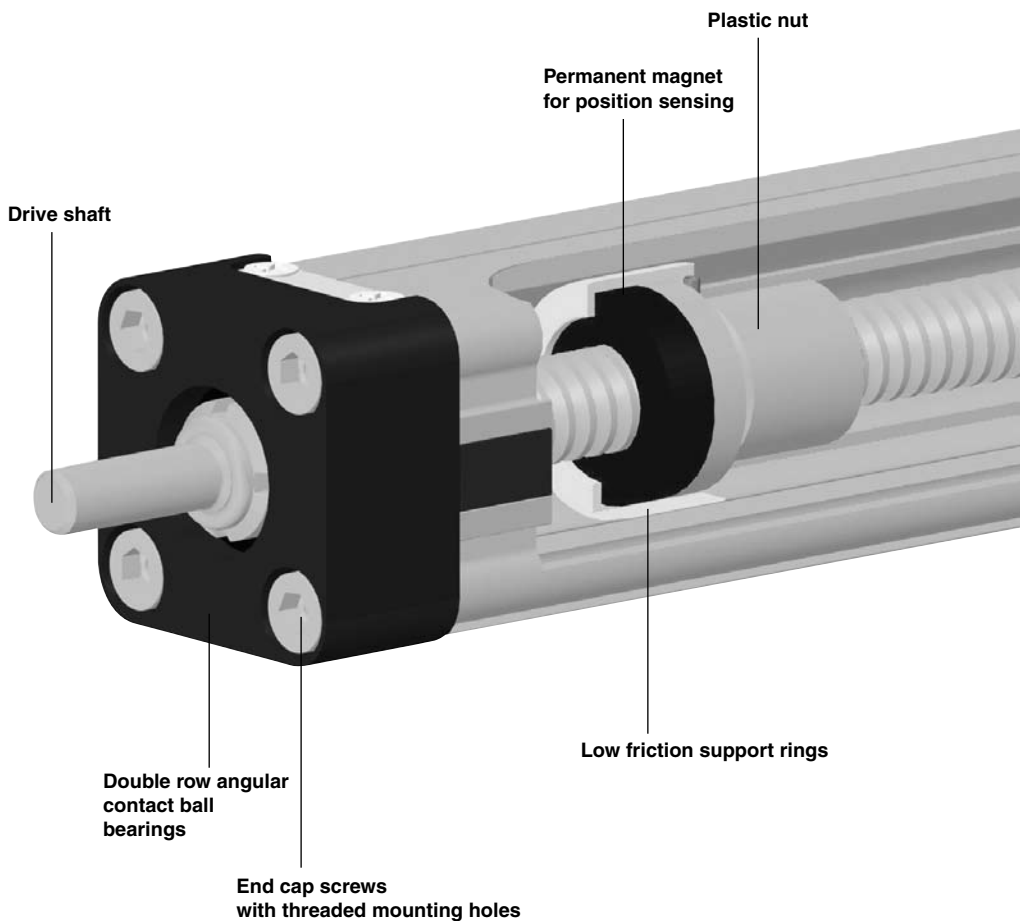
## ELECTRIC LINEAR DRIVE FOR INTERMITTENT APPLICATIONS

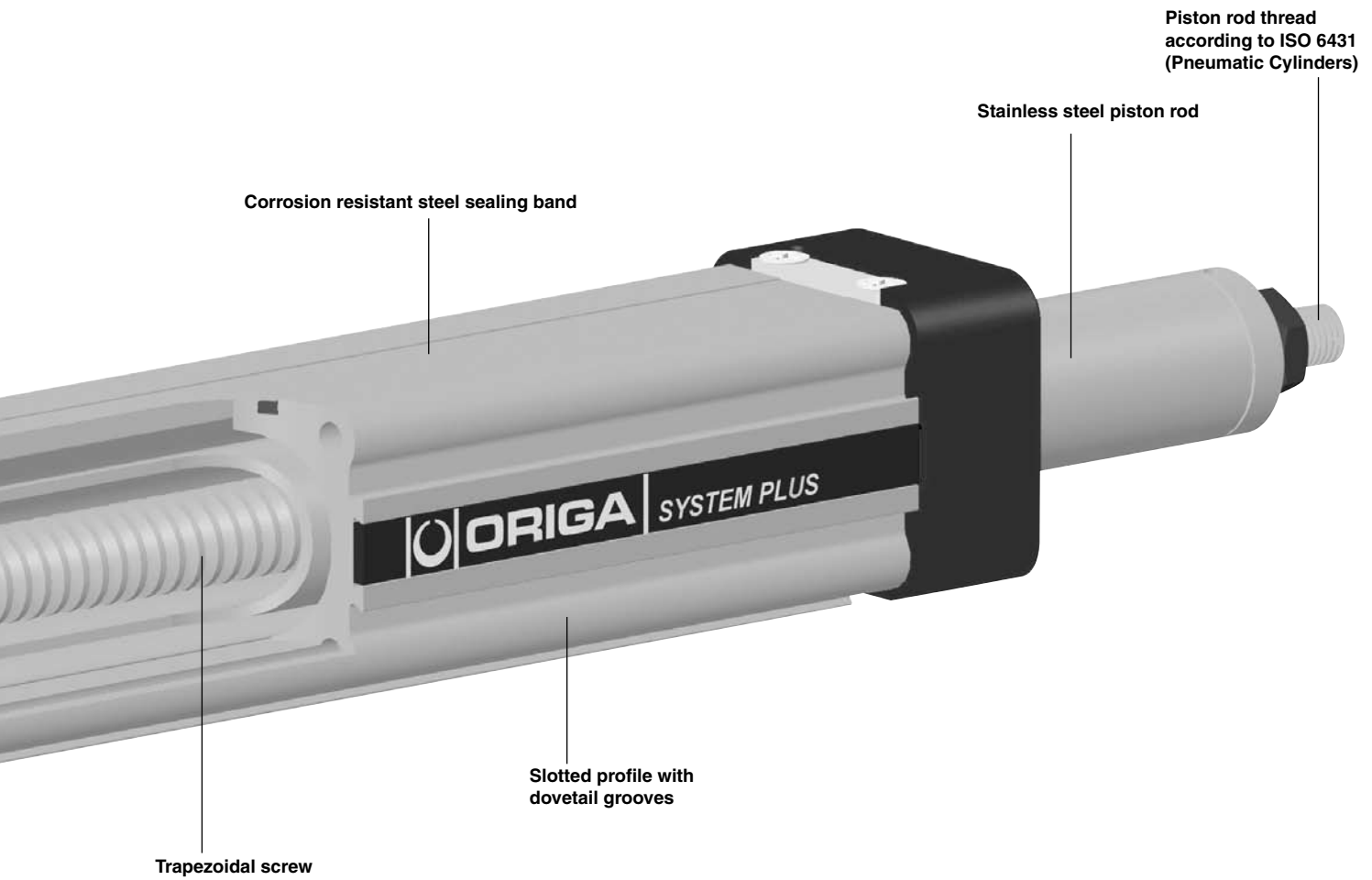
A completely new generation of linear drives which can be integrated into any machine layout neatly and simply.

### Linear Drive with Trapezoidal Screw Drive, Internal Plain Bearing Guide and Piston Rod

#### Advantages

- Accurate path and position control
- High force output
- Self-locking
- Excellent slow speed characteristics
- Easy installation
- Low maintenance
- Ideal for level regulation, lifting and other applications with intermittent operations





To simplify design work OSP-E system CAD files are available, which are compatible with most common CAD systems

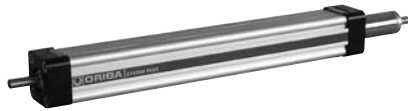


# SERIES OSP-E, LINEAR DRIVE WITH TRAPEZOIDAL SCREW DRIVE, INTERNAL PLAIN BEARING GUIDE AND PISTON ROD

## STANDARD VERSIONS OSP-E..STR

Pages 80-83

Standard carrier with internal guidance and integrated magnet for contactless position sensing. Dovetail profile for mounting of accessories and the actuator itself.



## ACCESSORIES

### MOTOR-MOUNTINGS

Page 123



### END CAP MOUNTING

Page 130

For end-mounting the actuator on the extending rod side.

### MID SECTION SUPPORT

Page 134

For mounting the actuator on the dovetail grooves and on the motor end.



### FLANGE MOUNTING C

Page 132

For end-mounting the actuator on the extending rod side



### TRUNNION MOUNTING EN

Page 139

Trunning mounting EN in combination with pivot mounting EL.

– steplessly adjustable in axial direction.



### PISTON ROD EYE

Page 148



### PISTON ROD CLEVIS

Page 148



### PISTON ROD COMPENSATING COUPLING

Page 149

For compensating of radial and angular misalignment.



### MAGNETIC SWITCHES SERIES RS AND ES

Page 153

For contactless position sensing of end stop and intermediate carrier positions.



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The right to introduce technical modifications is reserved

Characteristics			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Series			OSP-E..STR
Name			Linear Drive with Trapezoidal Screw Drive and Piston Rod
Mounting			See drawings
Temperature Range	$\varnothing_{\min}$ $\varnothing_{\max}$	°C °C	-20 +70
Weight (mass)		kg	See table
Installation			In any position
Material	Slotted profile		Extruded anodized aluminium
	Trapezoidal screw		Cold rolled steel
	Drive nut		Thermoplastic polyester
	Piston rod		Stainless steel
	Sealing band		Hardened, corrosion resistant steel
	Guide bearings		Low friction plastic
	Screws, nuts		zinc plated steel
	Mountings		zinc plated steel and aluminium
Encapsulation class		IP	54

Weight (mass) and Inertia						
Series	Weight (mass)[kg]		Moving mass [kg]		Inertia [x 10-6 kgm2]	
	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre stroke	At stroke 0 m	Add per metre
OSP-E25STR	0.4	2.9	0.1	0.7	1.1	10.3
OSP-E32STR	0.9	5.4	0.2	1.2	3.9	29.6
OSP-E50STR	2.4	10.6	0.8	1.6	24.6	150

# Linear Drive with Trapezoidal Screw Drive and Piston Rod

**Series OSP-E..STR  
 Size 25, 32, 50**



**Standard Version:**

- Dovetail profile for mounting of accessories and the actuator itself
- Pitch of Trapezoidal Spindle:  
 Type OSP-E25STR: 3 mm  
 Type OSP-E32STR: 4 mm  
 Type OSP-E50STR: 5 mm



**Installation Instructions**

Use the threaded holes in the free end cap and a mid-section support close to the motor end for mounting the linear actuator.

The linear actuator can be fitted in any position. To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.

**Maintenance**

All moving parts are long-term lubricated for a normal operational environment. PARKER-ORIGA recommends a check and lubrication of the linear drive, and if necessary a change of wear parts, after an operation time of 12 months or 300 km travel of distance. Please refer to the operating instructions supplied with the drive.

**First service start-up**

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the linear drive machine into service, the user must ensure the adherence to the EC Machine Directive 91/368/EEC.

**Contactless position sensing**

Please use the magnetic switch mentioned below:

- KL3096** (Type RS-K, normally closed, Reed-contact, with cable)
- KL3098** (Type ES-S, Magnetic electronic, PNP-switch with DIN-plug)

For more information see page 153.

A1P640E00GAG0X

The right to introduce technical modifications is reserved

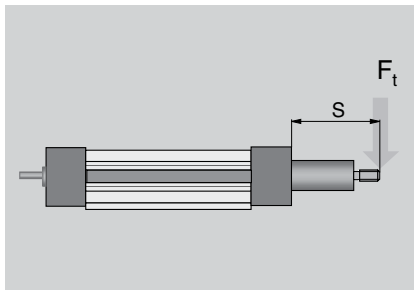
# Sizing Performance Overview Maximum Loadings

## Sizing of Linear Drive

The following steps are recommended for selection :

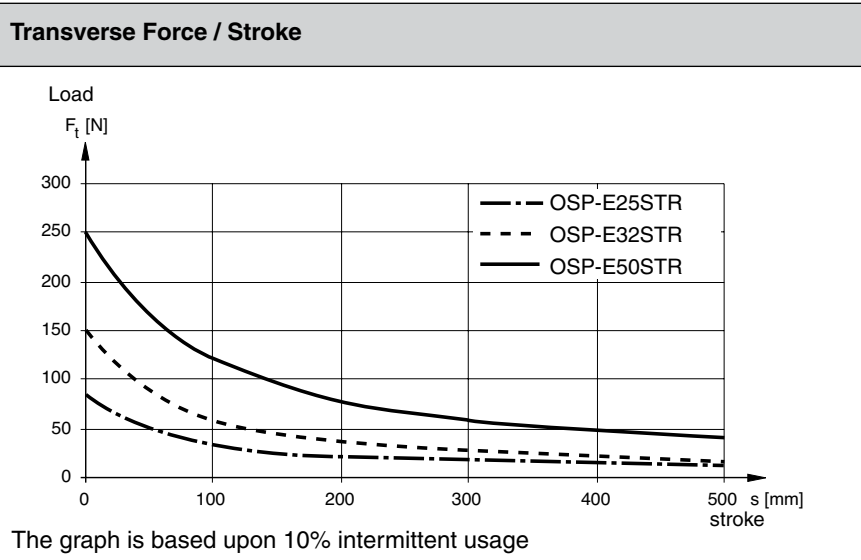
1. Check that the maximum values in the adjacent chart and transverse force/stroke graph below are not exceeded.
2. Check the lifetime/travel distance in graph below.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time in application

## Transverse Force / stroke



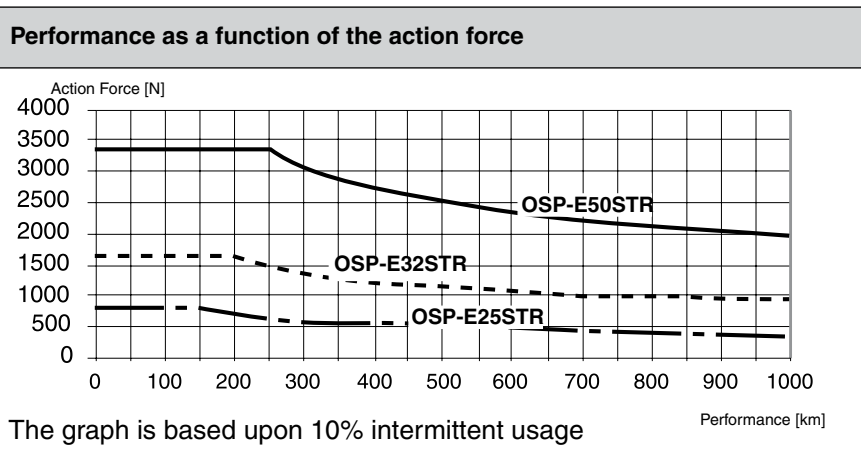
Performance Overview				
Characteristics	Unit	Description		
Size		OSP-E25STR	OSP-E32STR	OSP-E50STR
Pitch	[mm]	3	4	5
Max. speed	[m/s]	0.075	0.1	0.125
Linear motion per revolution, drive shaft	[mm]	3	4	5
Max. rpm, drive shaft	[min <sup>-1</sup> ]	1500 <sup>2)</sup>	1500	1500
Max. effective action force $F_A$	[N]	800	1600	3300
Corresponding torque on drive shaft	[Nm]	1.35	3.4	9.25
No-load torque	[Nm]	0.3	0.4	0.5
Max. allowable torque on drive shaft	[Nm]	1.7	4.4	12
Self-locking force $F_L^{1)}$	[N]	800	1600	3300
Typical repeatability	[mm/m]	±0,5	±0,5	±0,5
Max. Standard stroke length	[mm]	500	500	500

<sup>1)</sup> Related to screw types Tr 12x3, Tr 16x4, Tr 24x5  
 see data sheet 1.35.011-1 – for inertia  
<sup>2)</sup> from 0,4 m stroke max. 1200 min<sup>-1</sup> permissible

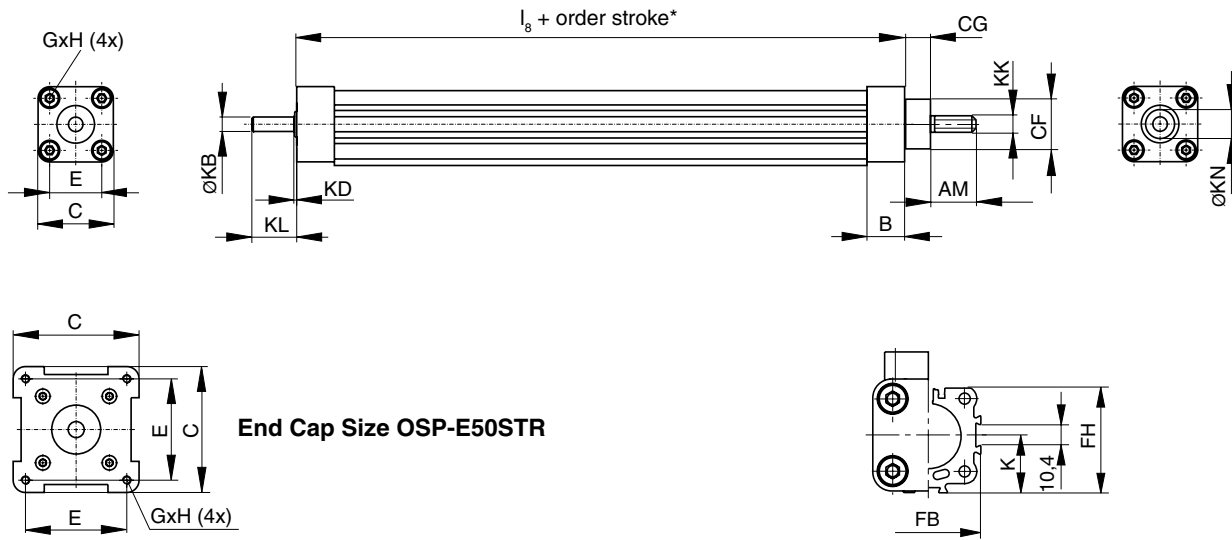


## Performance / Action Force

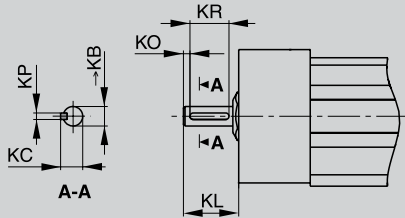
The Linear Drives are designed for a 10% intermittent usage. The performance to be expected depends on the maximum required actions force of the application. An increase of the action force will lead to a reduced performance.



**Linear Drive with Trapezoidal Screw Drive and Piston Rod – Basic Unit  
Series OSP-E..STR**



**Plain shaft with keyway (Option)**



**Dimension Table [mm]**

Series	∅KB <sub>h7</sub>	KC	KL Opt.3	Opt.4	KO	KP <sup>P9</sup>	KR
OSP-E25STR	6	6.8	17	24	2	2	12
OSP-E32STR	10	11.2	31	41	5	3	16
OSP-E50STR	15	17	43	58	6	5	28

**Option 3: Keyway  
Option 4: Keyway long version**

**\* NOTE:**

The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 25 mm.

Order stroke = required travel + 2 x safety distance.

The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems. For further information, please contact your local PARKER-ORIGA representative.

**Dimension Table [mm]**

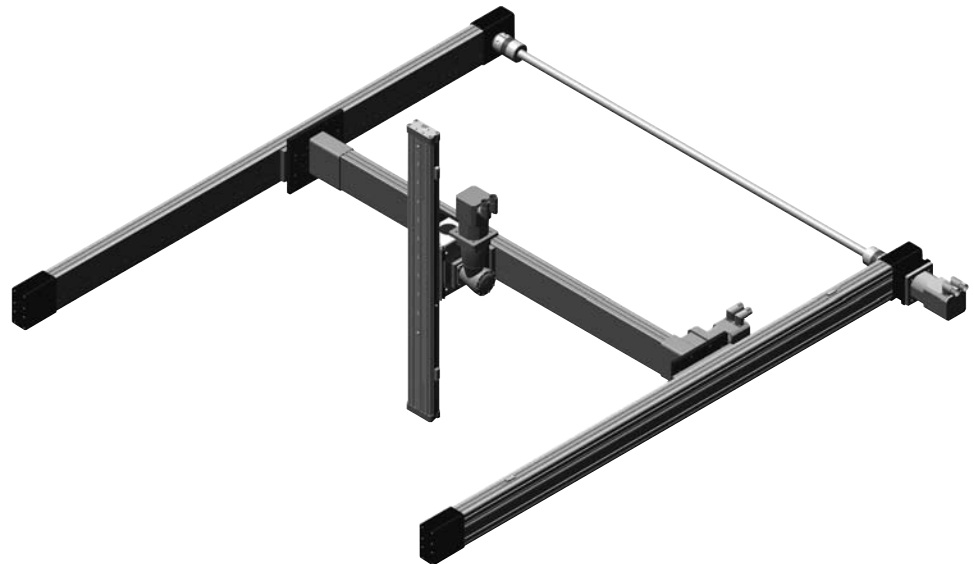
Series	B	C	E	G x H	K	I <sub>b</sub>	AM	CF	CG	FB	FH	KB	KD	KK	KL	KN
OSP-E25STR	22	41	27	M5 x10	21.5	83	20	22	26	40	39.5	6 <sub>h7</sub>	2	M10x1.25	17	13
OSP-E32STR	25.5	52	36	M6 x12	28.5	94	20	28	26	52	51.7	10 <sub>h7</sub>	2	M10x1.25	31	20
OSP-E50STR	33	87	70	M6 x12	43	120	32	38	37	76	77	15 <sub>h7</sub>	3	M16x1,5 43	28	

**Notes**

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# Multi-Axis System for Electrical Linear Drives Series OSP-E



## Contents

Description	Page
Overview	85-88
Adapter plates	89-97
Profile Mountings	129
Intermediate Drive Shafts	101

## MULTI-AXIS CONNECTION SYSTEM – SIMPLIFIES ENGINEERING AND INSTALLATION

A completely new system for easy connection of OSP-E linear drives in multi-axis systems.

### MULTI-AXIS CONNECTIONS

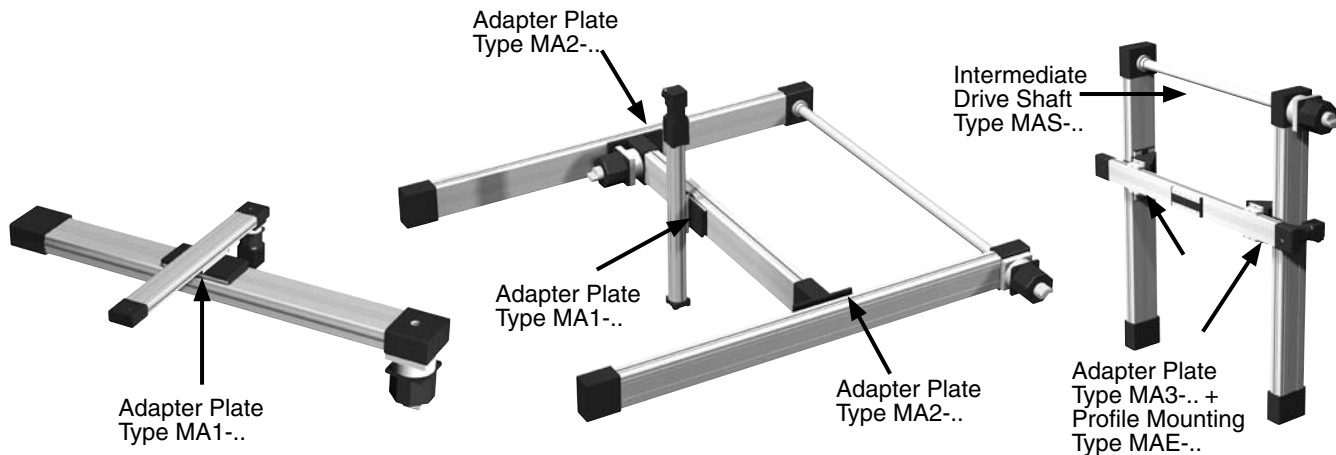
With this highly adaptable system for connection of linear drives in multi-axis arrangements, PARKER-ORIGA offers design engineers complete flexibility. A wide range of adapter plates, profile mountings and intermediate drive shafts simplify engineering and installation.

The connection system enables actuators to be mounted in carrier to carrier, carrier to profile, carrier to end cap mounting, carrier to end cap.

Developed for the heavy-duty toothed belt drive series OSP-E..BHD, the system provides cross-connection with the same series and also other linear drive series in the ORIGA SYSTEM PLUS range.



# MULTI-AXIS CONNECTION SYSTEM



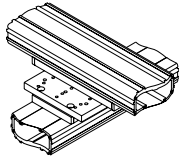
\* For available standard combinations, see page 88

<b>Adapter Plate Type MA1-..*</b> For connecting carrier to carrier, carrier to profile mounting or carrier to end cap mounting.	Combination C*	Combination P*	Combination EM*
	Combination C*	Combination P*	Combination EM*
<b>Adapter Plate Type MA2-..*</b> For connecting carrier to end cap.	Combination E*	Combination E*	Combination E*
	Combination P*	Combination P*	
<b>Adapter Plate Type MA3-..*</b> For connecting 90° carrier to profile mounting or carrier to end cap mounting.	Combination EM*	Combination EM*	
	Combination P*	Combination P*	
<b>Profile Mounting Type MAE-..</b>	Combination C*	Combination P*	
	Combination EM*	Combination EM*	
<b>Intermediate Drive Shaft Type MAS-..</b>			

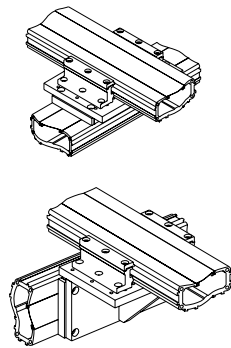
# AVAILABLE MOUNTING COMBINATIONS

**Available Mounting Combinations**

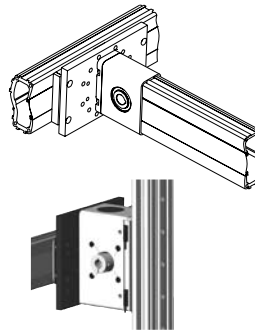
Combination C\*



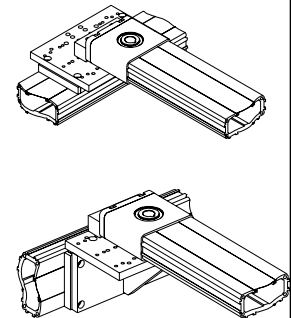
Combination P



Combination E\*



Combination EM\*



Illustrations just show OSP-E..BHD examples

Series																										
	Type	25BHD				32BHD				50BHD				25BV	25B/SB/ST				32B/SB/ST				50B/SB/ST			
	C <sup>1</sup>	P <sup>2</sup>	E <sup>3</sup>	EM <sup>4</sup>	C <sup>5</sup>	P <sup>6</sup>	E <sup>7</sup>	EM <sup>8</sup>	C <sup>9</sup>	P <sup>10</sup>	E <sup>11</sup>	EM <sup>12</sup>	E <sup>11</sup>	C <sup>13</sup>	P <sup>14</sup>	E <sup>15</sup>	EM <sup>16</sup>	C <sup>17</sup>	P <sup>18</sup>	E <sup>19</sup>	EM <sup>20</sup>	C <sup>21</sup>	P <sup>22</sup>	E <sup>23</sup>	EM <sup>24</sup>	
OSP-E25BHD	MA1-25	X	X		X	X		X						X	X		X	X	X	X		X	X		X	
OSP-E32BHD	MA1-32	X	X		X	X		X	X	X		X							X	X		X	X		X	
OSP-E50BHD	MA1-50	X	X		X	X		X	X	X		X							X				X	X		X
OSP-E25BHD	MA2-25			X				X																	X	
	MA2-32												X													
OSP-E32BHD	MA2-32			X				X				X	X												X	
OSP-E50BHD	MA2-50			X				X				X	X												X	
OSP-E25BHD	MA3-25		X		X			X							X		X		X		X		X		X	X
OSP-E32BHD	MA3-32		X		X			X		X		X							X		X		X		X	X
OSP-E50BHD	MA3-50		X		X			X		X		X											X		X	X

Abbreviations:

**C** = MAn to Carrier,

**P** = MAn to Profile mounting,

**E** = MAn to End cap,

**EM** = MAn to End cap mounting (n=1,2,3)

\* For type OSP-E..SBR / ..STR only combination P is available.

Values in superscript refer to corresponding adapter plate dimensions on pages 89-97.

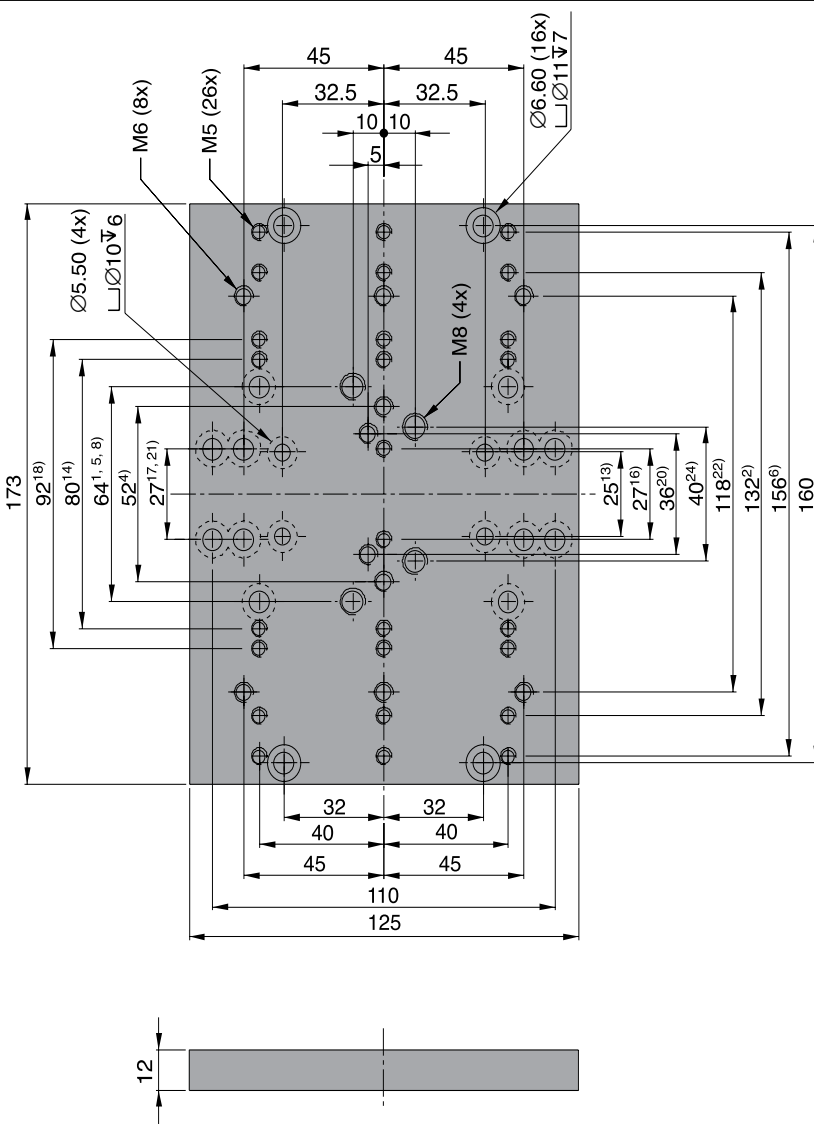
e.g. Dimensions corresponding to combination option "C" for adapter plate MA1-50 connected to an OSP-E32BHD carrier are shown with Superscript number 5 on the MA1-50 adapter plate on page 91

Other combinations on request.

A3P154E00IZ50X

The right to introduce technical modifications is reserved

**Dimensions [mm] Adapter Plate Type MA1-25**



Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
 e.g. Dimensions with superscript number 5 correspond to the option "C" for OSP-E32BHD actuator.

# Adapter Plate for OSP-E25



Type: MA1-25



A1P559E00FAG0X

The right to introduce technical modifications is reserved

**Order Instructions and Weight**

Description	Weight(mass) [kg]	Order -No.
Adapter Plate Type MA1-25	0.7	<b>12269</b>

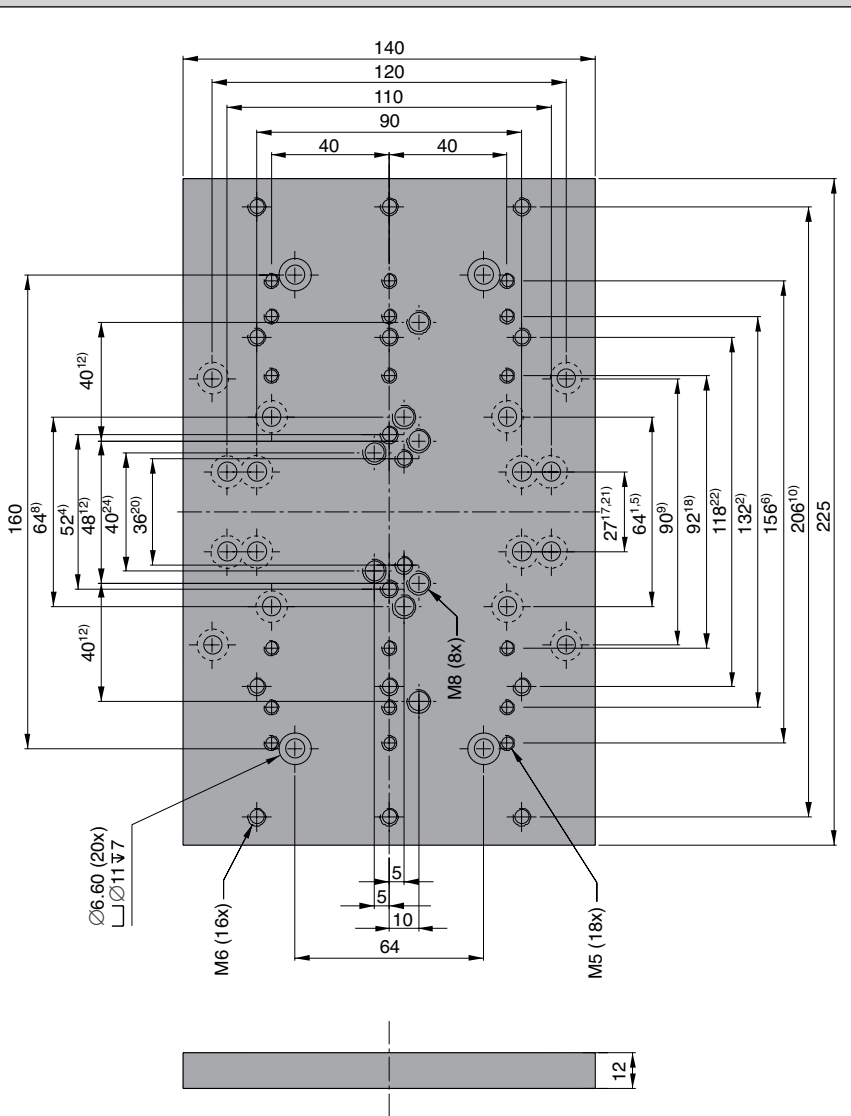
# Adapter Plate for OSP-E32



Type: MA1-32



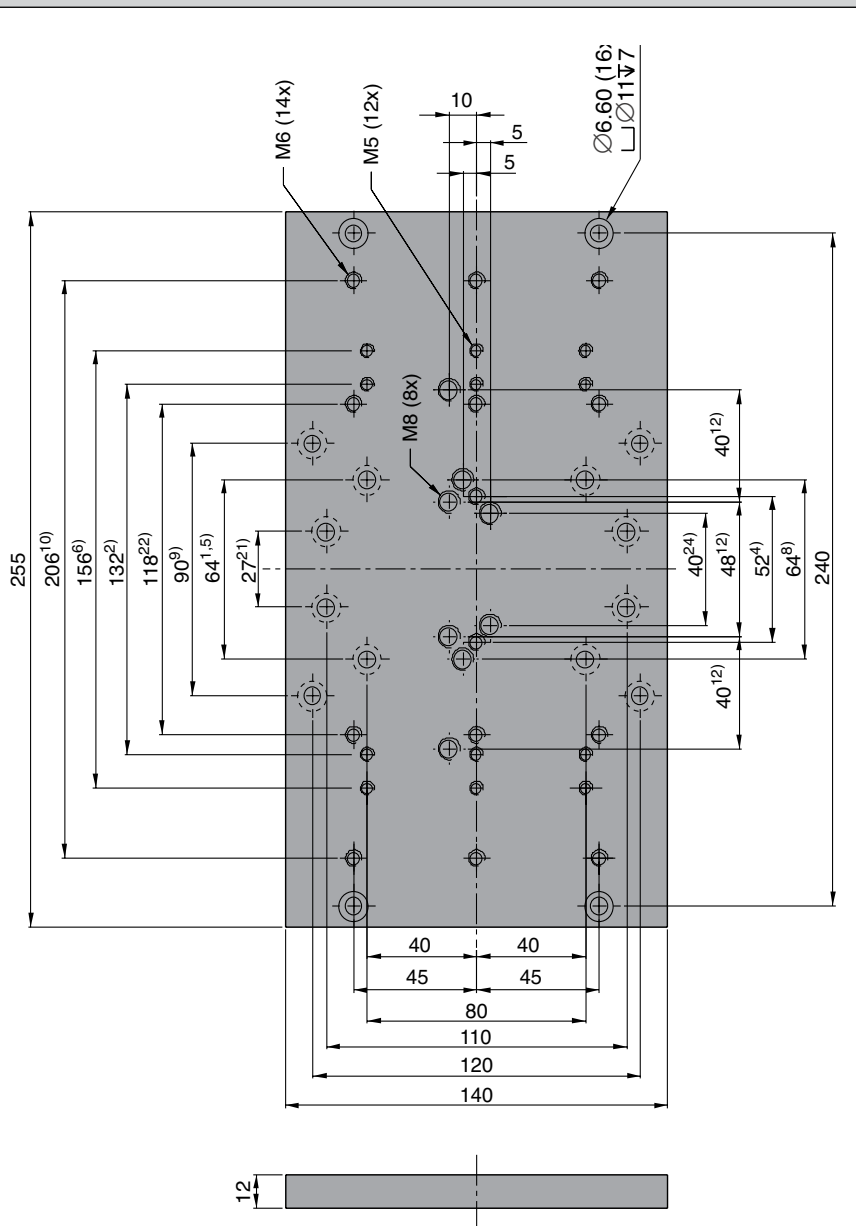
Dimensions [mm] Adapter Plate Type MA1-32



Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
 e.g. Dimensions with superscript number 5 correspond to the option "C" for OSP-E32BHD actuator.

Order Instructions and Weight		
Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA1-32	1.0	<b>12272</b>

**Dimensions [mm Adapter Plate Type MA1-50]**



Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
 e.g. Dimensions with superscript number 5 correspond to the option "C" for OSP-E32BHD actuator.

# Adapter Plate for OSP-E50



**Type: MA1-50**



**Order Instructions and Weight**

Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA1-50	1.1	<b>12275</b>

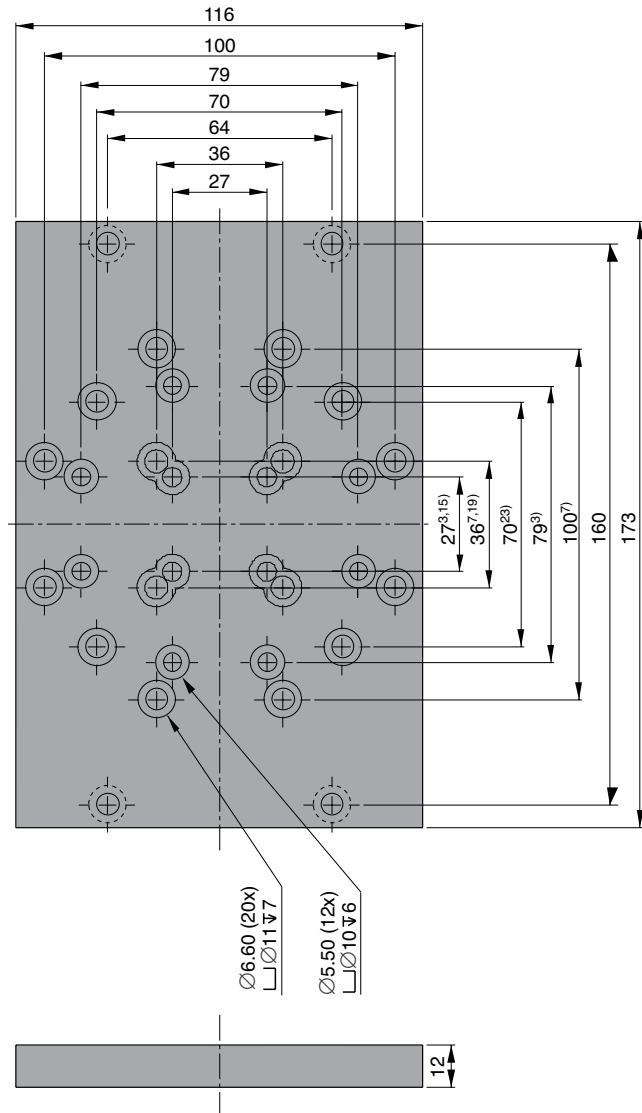
# Adapter Plate for OSP-E25



Type: MA2-25



Dimensions [mm] Adapter Plate Type MA2-25

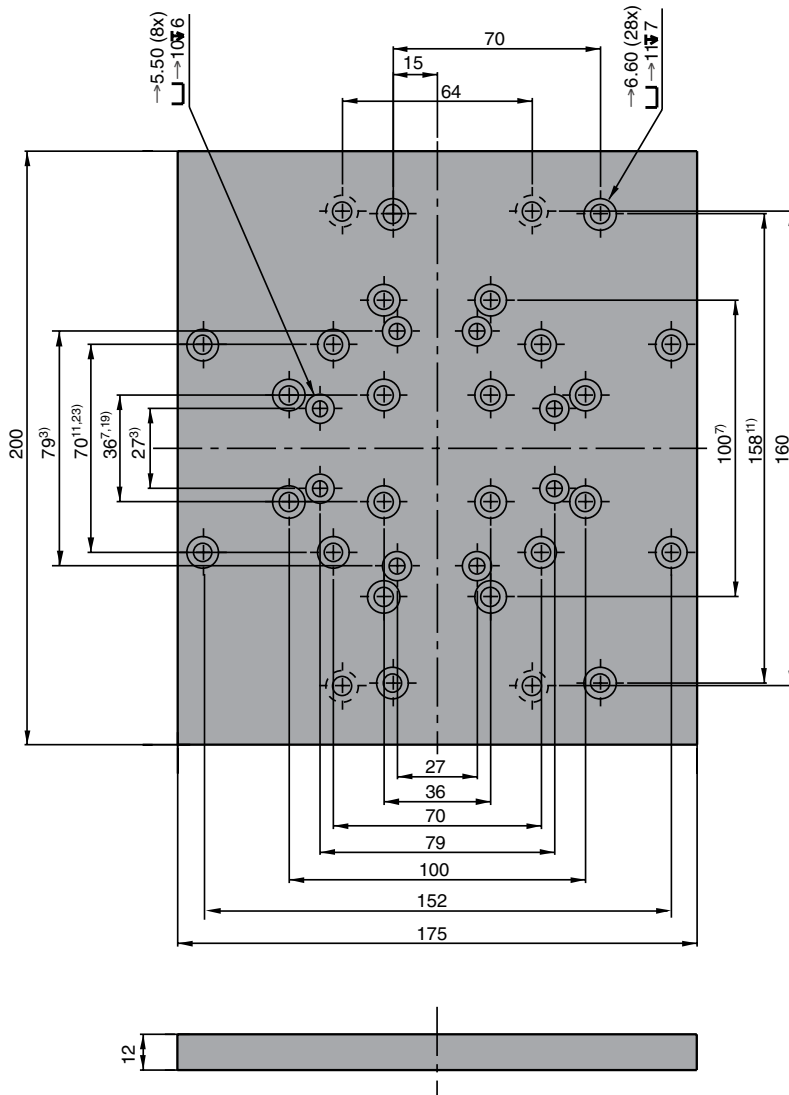


### Order Instructions and Weight

Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA2-25	0.6	<b>12270</b>



**Dimensions [mm] Adapter Plate Type MA2-32**



Dimensions with superscript values refer to the corresponding available options detailed on page 88 .  
 e.g. Dimensions with superscript number 5 correspond to the option "E" for OSP-E32BHD actuator.

# Adapter Plate for OSP-E32



**Type: MA2-32**



**Order Instructions and Weight**

Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA2-32	1.1	<b>12273</b>

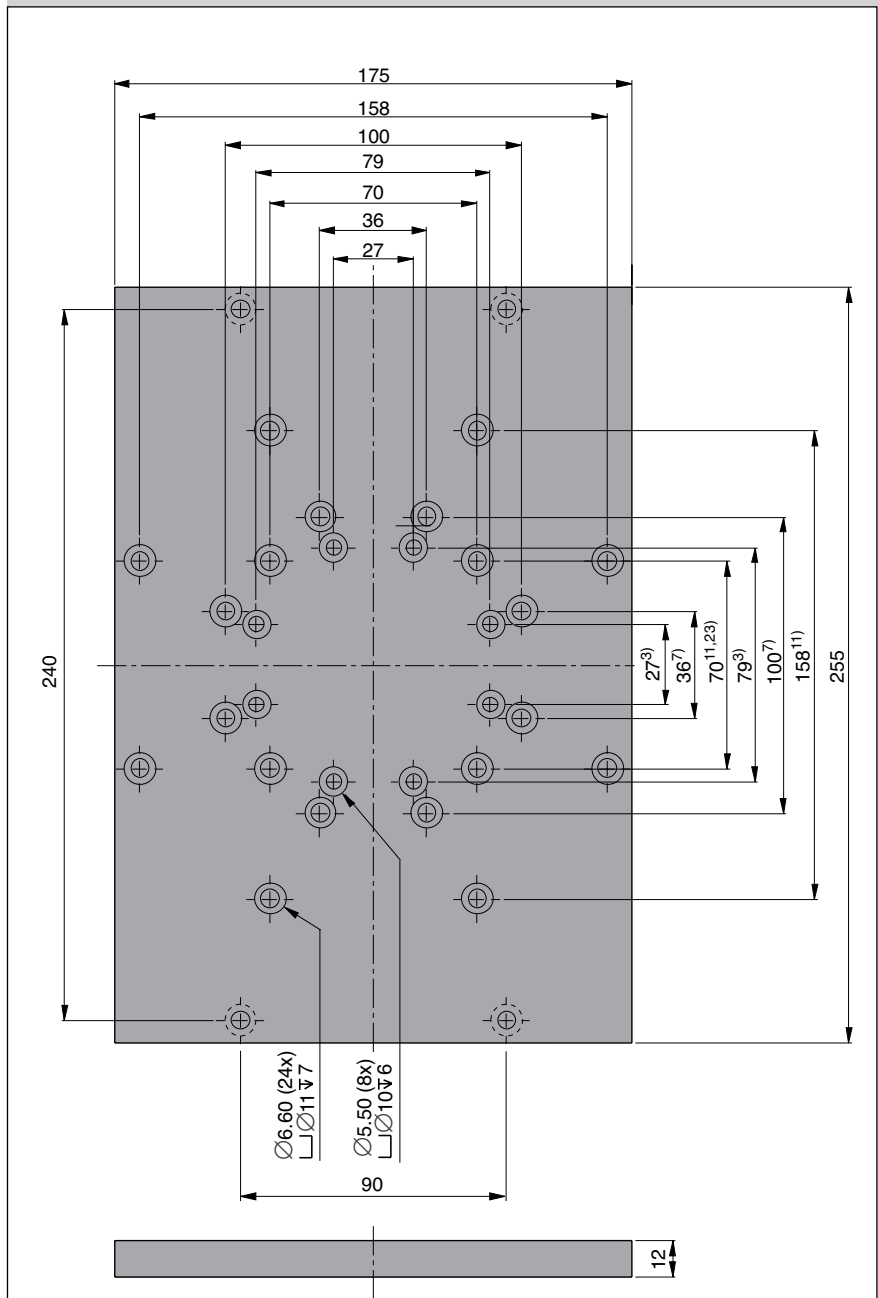
# Adapter Plate for OSP-E50



Type: MA2-50



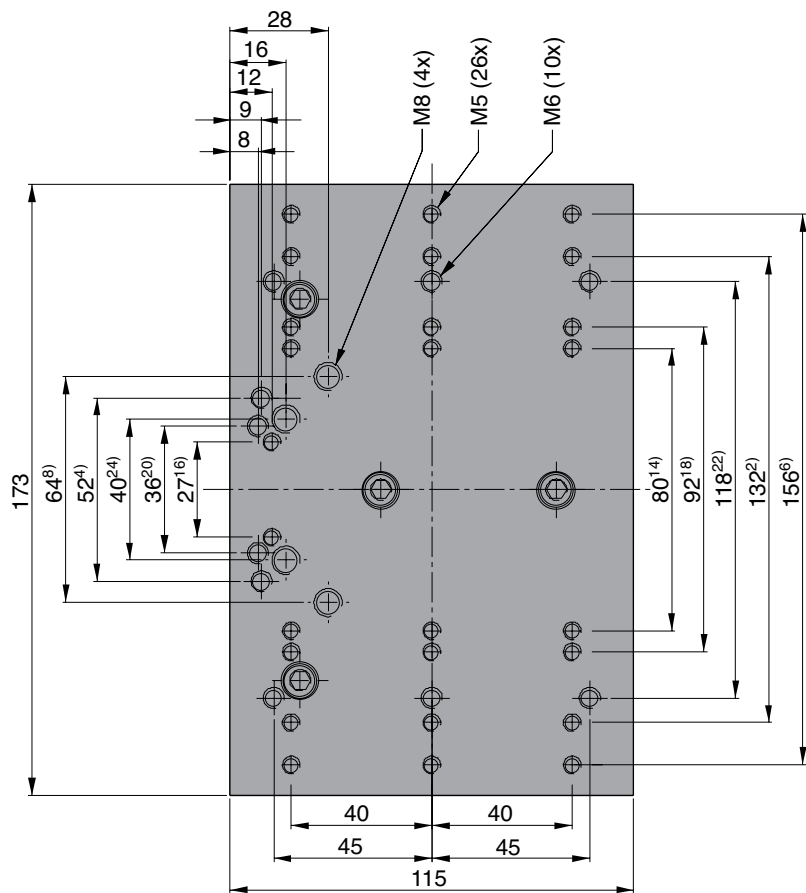
Dimensions [mm] Adapter Plate Type MA2-50



Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
 e.g. Dimensions with superscript number 5 correspond to the option "E" for OSP-E32BHD actuator.

Order Instructions and Weight		
Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA2-50	1.4	12276

**Dimensions [mm] Adapter Plate Type MA3-25**

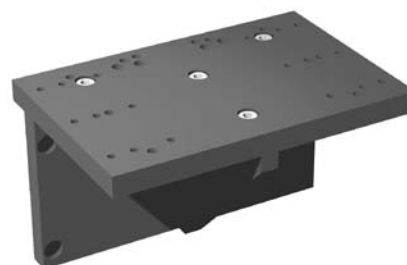


Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
 e.g. Dimensions with superscript number 5 correspond to the option "EM" for OSP-E32BHD actuator.

# Adapter Plate for OSP-E25



**Type: MA3-25**



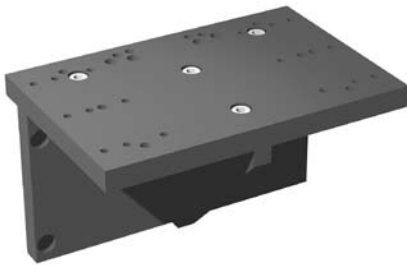
**Order Instructions and Weight**

Description	Weight(mass) [kg]	Order No.
Adapter Plate Type MA3-25	1.3	<b>12271</b>

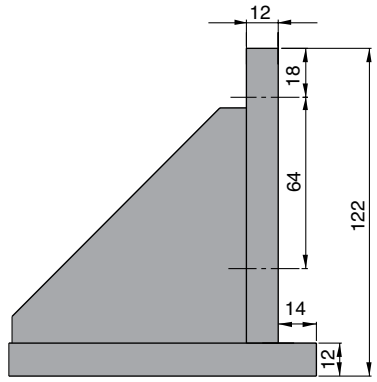
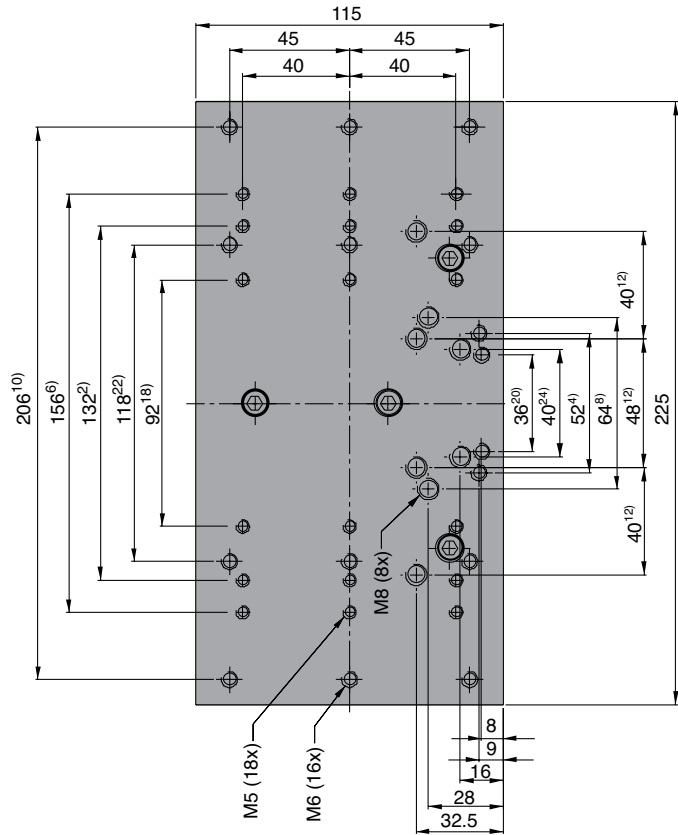
# Adapter Plate for OSP-E32



Type: MA3-32



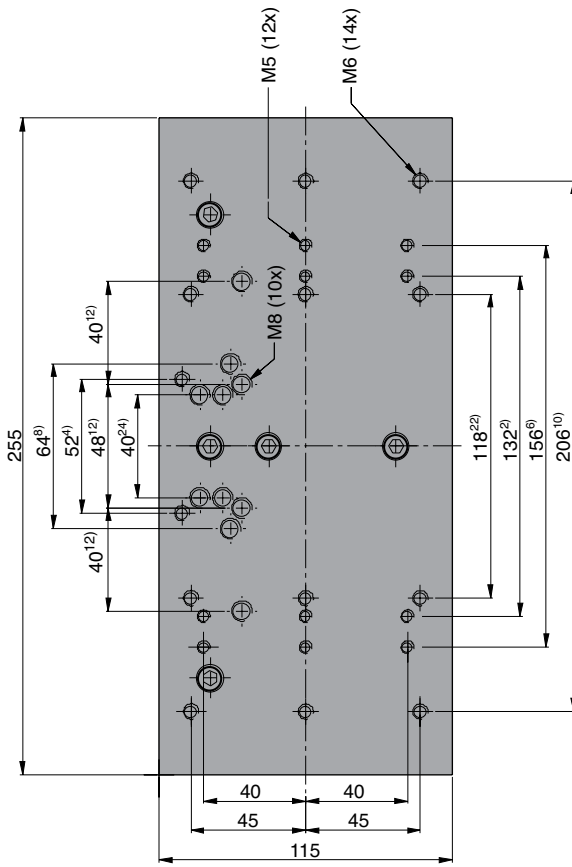
Dimensions [mm Adapter Plate Type MA3-32]



Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
e.g. Dimensions with superscript number 5 correspond to the option "EM" for OSP-E32BHD actuator.

Order Instructions and Weight		
Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA3-32	1.8	<b>12274</b>

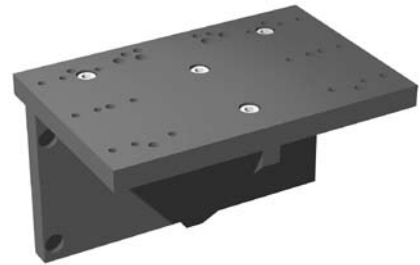
**Dimensions [mm] Adapter Plate Type MA3-50**



# Adapter Plate for OSP-E50



**Type: MA3-50**



Dimensions with superscript values refer to the corresponding available options detailed on page 88.  
 e.g. Dimensions with superscript number 4 correspond to the option "EM" for OSP-E25BHD actuator.

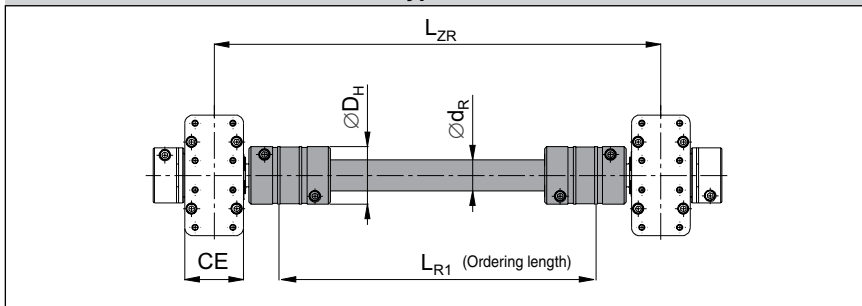
**Order Instructions and Weight**

Description	Weight (mass) [kg]	Order No.
Adapter Plate Type MA3-50	2.3	<b>12277</b>

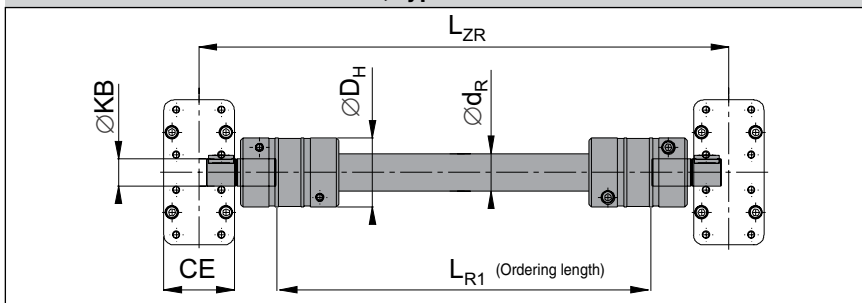
**Notes**

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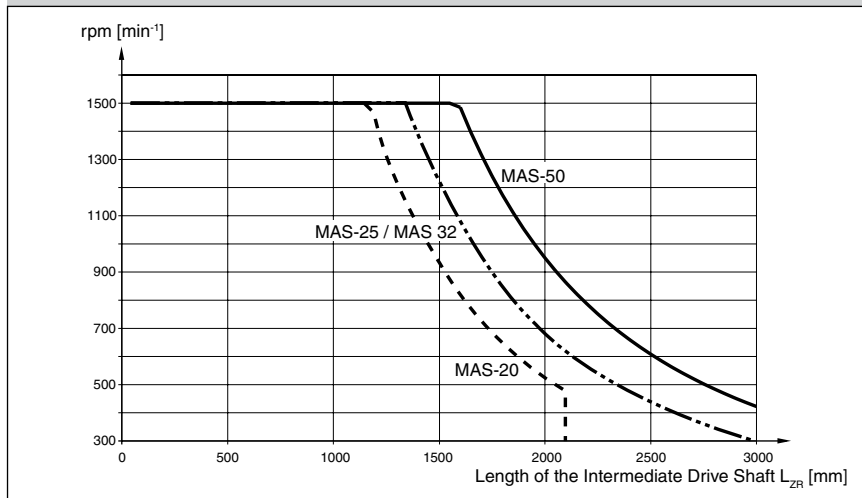
**Intermediate Drive Shaft with Clamp Shaft**  
Series OSP-E20BHD to E50BHD, Type MAS-..



**Intermediate Drive Shaft with Plain Shaft and Keyway**  
Series OSP-E20BHD to E50BHD, Type MAS-..



**Critical Speed v. for Coupling Length**



# Multi-Axis-System Accessories

## Complete Intermediate Drive Shaft

Size 25, 32, 50



for Linear drive  
• Series OSP-E..BHD

**Note:**  
For Series OSP-E..BHD with integrated gearbox, please contact your local PARKER-ORIGA technical support.

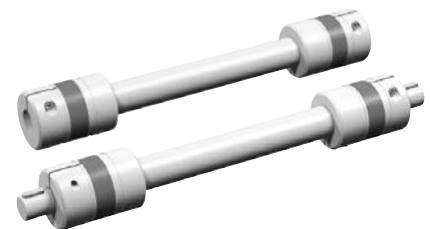
For other series on request.

**Features:**

- Backlash-free shaft connection under pre-stress
- Design up to speed 1500 rpm
- Intermediate Drive Shaft with double coupling for larger displacements of parallel linear drives
- Easy to mount

**Material:**

Aluminium (AL-H) / Steel (St-H)  
Polyurethane/Hytrell



A1P679E00FAG00X

The right to introduce technical modifications is reserved

**Characteristics / Dimension Table [mm] and Order No.**

Series	Type	Max.Torque- [Nm]**	CE	D <sub>H</sub>	KB***	L <sub>ZR</sub>	L <sub>R1</sub>	d <sub>R</sub>	Order No. *	
									For Clamp Shaft	For Hollow
OSP-E20BHD	MAS-20	28	38	40	12 <sub>kG</sub>	< 2100	L <sub>ZR</sub> -98	20x3.0	16256-...	16257-...
OSP-E25BHD	MAS-25	39	42	55	16 <sub>kG</sub>	< 3000	L <sub>ZR</sub> -112	25x2.5	12305-...	12281-...
OSP-E32BHD	MAS-32	42	56	55	22 <sub>kG</sub>	< 3000	L <sub>ZR</sub> -126	25x2.5	12306-...	12282-...
OSP-E50BHD	MAS-50	102	87	65	32 <sub>kG</sub>	< 3000	L <sub>ZR</sub> -167	35x4.0	12307-...	12283-...

\* Complete with L<sub>R1</sub> Length in mm.  
Example: 12305-1200  
(Length L<sub>R1</sub> = 1200 mm)

\*\* For higher torque requirement, please contact your local PARKER-ORIGA technical support

\*\*\* Other dimensions for KB on request.

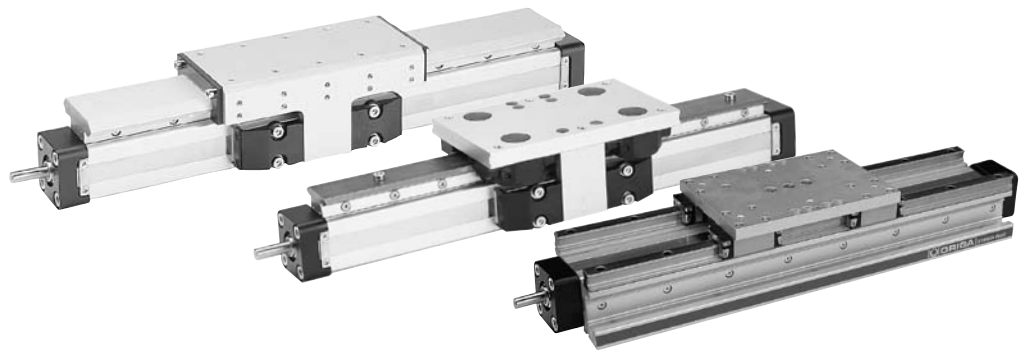
**Notes**

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# Linear Guides Series OSP-E



## Contents

	Description	Page
	Overview	101-102
	Plain Bearing SLIDELINE	103-104
	Roller Guide POWERSLIDE	105-108
	Aluminium Roller Guide PROLINE	109-111
<b>NEW</b>	Heavy-duty guide HD	113-115

# 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.

## Versions:

### Electric Linear Drive

#### Series:

- OSP-E..B
- OSP-E..SB
- OSP-E..ST

#### Sizes:

25 - 32 - 50

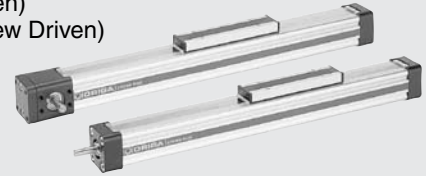
## Advantages:

- Takes high loads and moments
- High precision
- Smooth operation
- Can be retrofitted
- Can be installed in any position

## Linear Guides

### Electric linear drive

- Series OSP-E..B (Toothed Belt Driven)
- Series OSP-E..SB (Ball Screw Driven)
- Series OSP-E..ST (Trapezoidal Screw Driven)



### SLIDELINE

The cost-effective plain bearing guide for medium loads.

- for spindle drives only
- Series OSP-E..SB, OSP-E..ST

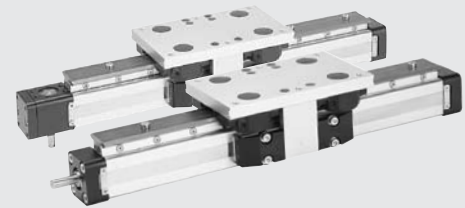
See page 103



### POWERSLIDE

The roller guide for heavy loads.

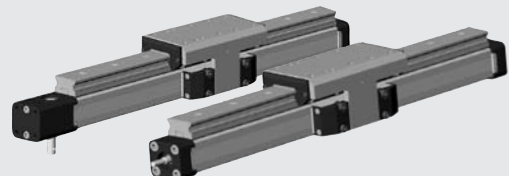
See page 105



### PROLINE

The ball bushing guide for heavy loads and speed.

See page 109

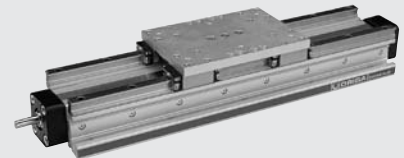


### HD-Guide (heavy-duty guide)

The recirculating ball bearing guide for the heaviest loads and greatest accuracy.

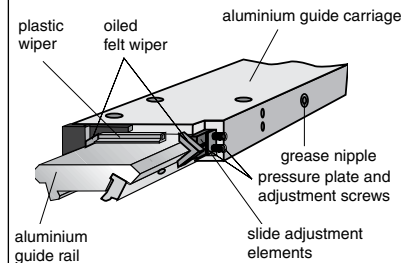
- for Screw Drives only
- Series OSP-E..SB, OSP-E..ST

See page 113



**Versions**

– for electric linear drive:  
**Series OSP-E Screw**



# Plain Bearing Guide SLIDELINE



**Series SL 25 to 50  
 for Linear Drive  
 • Series OSP-E Screw**

**Technical Data**

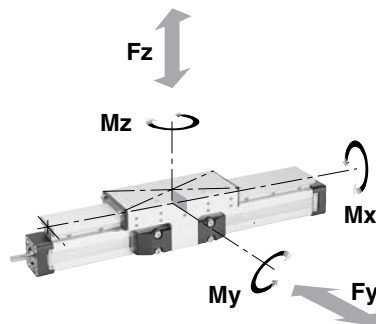
The table shows the maximum permissible values for smooth operation, which must not be exceeded even under dynamic conditions.

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

**Features:**

- Anodised aluminium guide rail with prism-shaped slideway arrangement
- Adjustable plastic slide elements
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideways.
- Corrosion-resistant version available on request

**Loads, forces and moments**



Series	Max. Moments [Nm]			Max. Load [N] F	Mass of Drive with guide [kg]		Mass of guide carriage [kg]	Ident-Nr. SLIDELINE <sup>1)</sup> without brake for OSP-E Screw
	Mx	My	Mz		with 0 mm stroke OSP-E Screw	increase per 100 mm stroke OSP-E Screw		
<b>SL25</b>	14	34	34	675	1.8	0.42	0.61	<b>20342</b>
<b>SL32</b>	29	60	60	925	3.6	0.73	0.95	<b>20196</b>
<b>SL50</b>	77	180	180	2000	8.7	1.44	2.06	<b>20195</b>

<sup>1)</sup> Corrosion resistant fixtures available on request

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The right to introduce technical modifications is reserved

**Dimensions**

**Series OSP-E Screw**

For further mounting elements and options see accessories..  
 For further information and technical data see data sheets for linear drives OSP-E (pages 51 & 63)

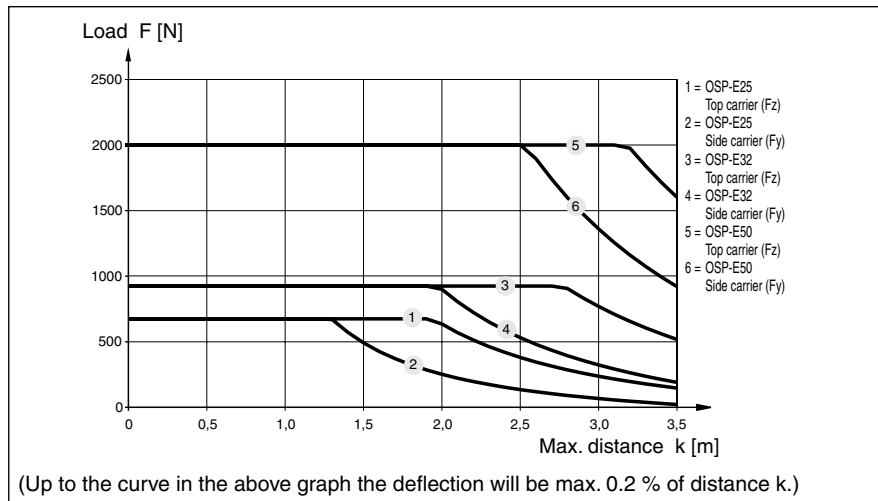
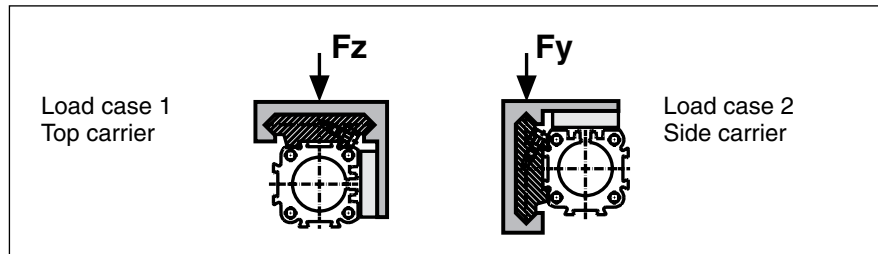
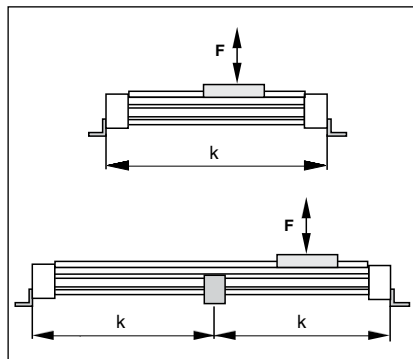
**Dimension Table [mm]**

Series	A	B	J	M	Z	AA	BB	DD	CF	EC	ED	EE	EG	EW	FF	FT	FS	GG	JJ	ZZ
SL25	100	22	117	40.5	M6	162	142	60	72.5	47	12	53	39	30	64	73.5	20	50	120	12
SL32	125	25.5	152	49	M6	205	185	80	91	67	14	62	48	33	84	88	21	64	160	12
SL50	175	33	200	62	M6	284	264	120	117	94	14	75	56	39	110	118.5	26	90	240	16

## Mid-Section Support

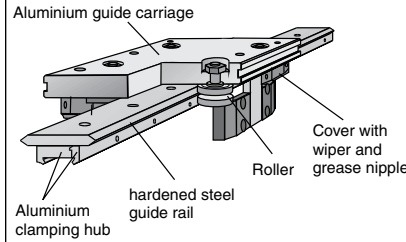
(for versions see page 146)

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.



**Versions**

– for electric linear drive:  
**Series OSP-E Belt**  
**Series OSP-E Screw**



# Roller Guide- POWERSLIDE



**Series PS 25 to 50  
for Linear Drive**  
• **Series OSP-E Belt \***  
• **Series OSP-E Screw**

**Technical Data**

The Table shows the maximum permissible values for smooth operation, which must not be exceeded even under dynamic conditions.

**Features:**

- anodised aluminium guide carriage with vee rollers having 2 rows of ball bearings
- hardened steel guide rail
- several guide sizes can be used on

the same drive

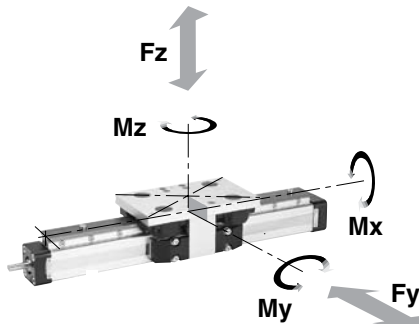
- max. speed  $v = 3$  m/s
- tough roller cover with wiper and grease nipple
- any length of stroke up to 3500 mm (longer strokes on request). The maximum stroke lengths of drives OSP-E..B, OSP-E..SB and OSP-E..ST must be observed.

**OSP-E Belt:**

For position of guides see page 106

\* **Series PS for OSP-E Bi-parting version on request**

**Loads, forces and moments**



Example: PS 25/35

width of guide rail (35 mm)

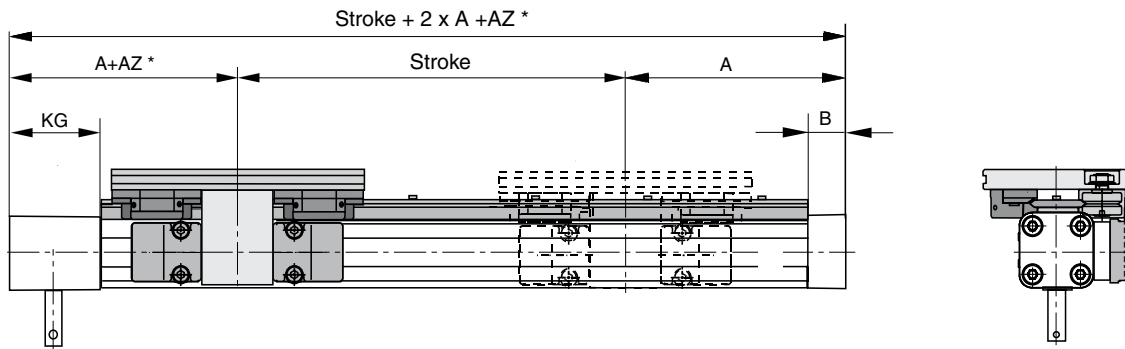
Size of drive (OSP-E25)

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The right to introduce technical modifications is reserved

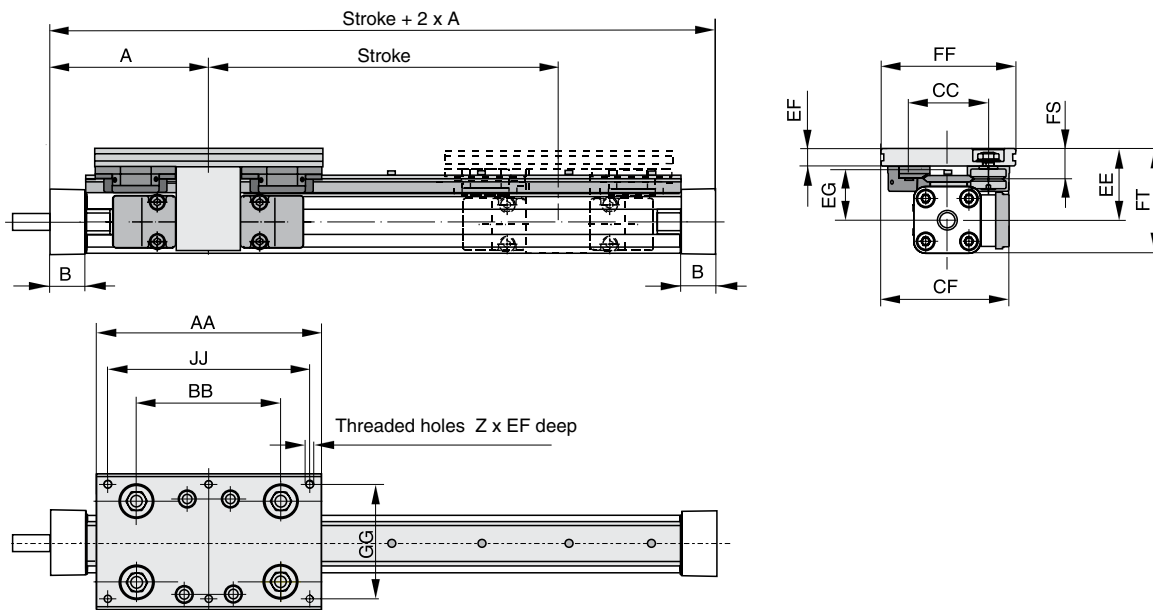
Series	Max. Moments [Nm]			Max. Load with $F_y, F_z$	Mass of drive with guide [kg]				of guide for [kg]	Mass* Powerslide		Order No.
	Mx	My	Mz		0 mm stroke		100 mm stroke			OSP-E* Belt	OSP-E Screw	
					OSP-E Belt	OSP-E Screw	OSP-E Belt	OSP-E Screw				
<b>PS 25/25</b>	14	63	63	910	1.9	1.8	0.30	0.37	0.7	<b>20304</b>	<b>20015</b>	
<b>PS 25/35</b>	17	70	70	1010	2.1	1.9	0.34	0.41	0.8	<b>20305</b>	<b>20016</b>	
<b>PS 25/44</b>	20	175	175	1190	3.0	2.7	0.42	0.49	1.5	<b>20306</b>	<b>20017</b>	
<b>PS 32/35</b>	20	70	70	1400	3.1	3.2	0.51	0.63	0.8	<b>20307</b>	<b>20286</b>	
<b>PS 32/44</b>	50	175	175	2300	4.0	4.1	0.59	0.70	1.5	<b>20308</b>	<b>20287</b>	
<b>PS 50/60</b>	90	250	250	3000	8.8	8.7	1.04	1.36	2.3	<b>20309</b>	<b>20288</b>	
<b>PS 50/76</b>	140	350	350	4000	12.2	12.0	1.28	1.6	4.9	<b>20310</b>	<b>20289</b>	

**Dimensions – Series OSP-E Belt**



**\* Please note**  
 The dimension "AZ" must be added to "A". Stroke length to order is stroke + dimension "AZ" + safety clearance.  
 Please also note the effect of dimension "AZ" when retrofitting a guide – contact your local PARKER-ORIGA technical support department.

**Dimensions – Series OSP-E Screw**



**Dimension Table [mm]**

Series	A	B	Z	AA	AZ	BB	CC	CF	EE	EF	EG	FF	FS	FT	GG	JJ	KG
	OSP-E Belt	OSP-E Screw															
PS 25/25	125	100	6xM6	145	5	90	47	79.5	53	11	39	80	20	73.5	64	125	57
PS 25/35	125	100	6xM6	156	10	100	57	89.5	52.5	12.5	37.5	95	21.5	73	80	140	57
PS 25/44	125	100	6xM8	190	27	118	73	100	58	15	39	116	26	78.5	96	164	57
PS 32/35	150	125	6xM6	156	-	100	57	95.5	58.5	12.5	43.5	95	21.5	84.5	80	140	61
PS 32/44	150	125	6xM8	190	6	118	73	107	64	15	45	116	26	90	96	164	61
PS 50/60	200	175	6xM8	240	5	167	89	130.5	81	17	61	135	28.5	123.5	115	216	85
PS 50/76	200	175	6xM10	280	25	178	119	155.5	93	20	64	185	39	135.5	160	250	85

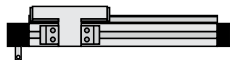
**OSP-E Belt – If combined with a linear guide, please also state position of linear guide**

**Position of Drive Shaft  
 Standard = 0**

**Position of Linear Guide**

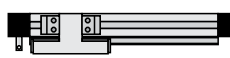
**Standard**

Position of the guide on the opposite side of the drive shaft



**Opposite to Standard**

Position of the guide on the side of the drive shaft

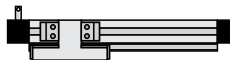


**Position of Drive Shaft  
 Opposite to Standard = 1**

**Position of Linear Guide**

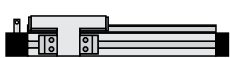
**Standard**

Position of the guide on the opposite side of the drive shaft



**Opposite to Standard**

Position of the guide on the side of the drive shaft

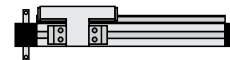


**Position of Drive Shaft  
 Both Sides = 2**

**Position of Linear Guide**

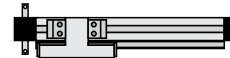
**Standard**

Position of the guide on the opposite side of the drive shaft

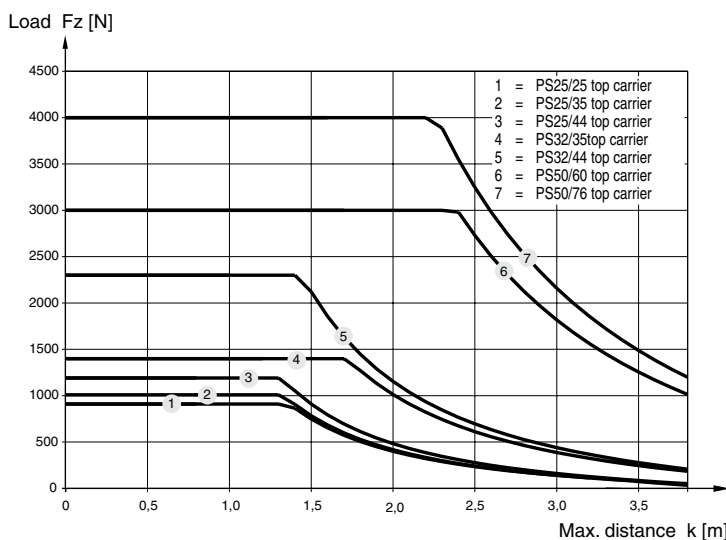


**Opposite to Standard**

Position of the guide on the side of the drive shaft

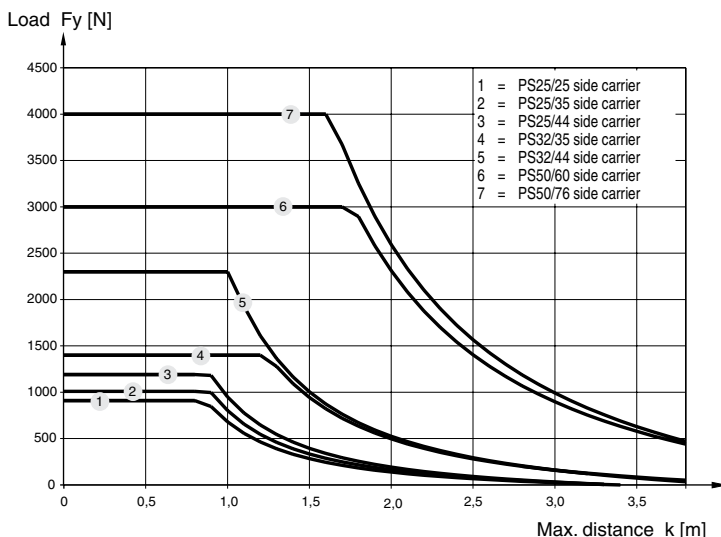


**Load Case 1 – Top Carrier**



(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

**Load Case 2 – Side Carrier**

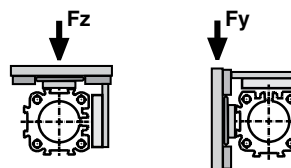


(Up to the curve in the above graph the deflection will be max. 0.2 % of distance k.)

**Mid-Section  
 Support**

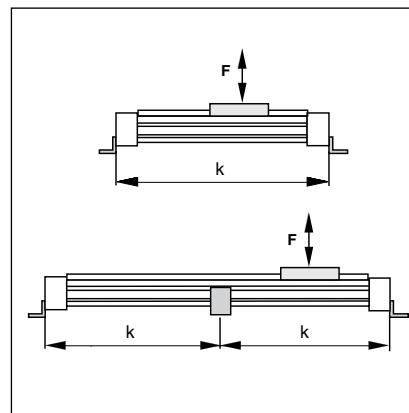
(for versions see page 146)

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.



Load case 1  
 Top carrier

Load case 2  
 Side carrier



## 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 $L_F$

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

with combined loads,  $L_F$  must 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. Calculation of service life

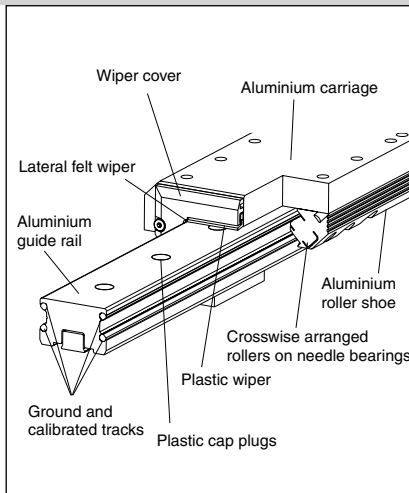
• For PS 25/25, PS 25/35 and PS 32/35:	Service life [km] = $\frac{106}{(L_F + 0,02)^3}$
• For PS 25/44, PS 32/44 and PS 50/60:	Service life [km] = $\frac{314}{(L_F + 0,015)^3}$
• For PS 50/76:	Service life [km] = $\frac{680}{(L_F + 0,015)^3}$



Features

Versions

– For electric Linear Drive:  
Series OSP-E Belt  
Series OSP-E Screw



# Aluminium Roller Guide PROLINE



Series PL 25 to 50  
for Linear Drive  
• Series OSP-E Belt \*  
• Series OSP-E Screw

Technical Data

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

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

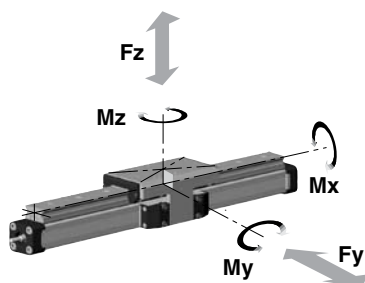
The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

With a load factor of < 1, the service life is 5000 km.  
The sum of the loads must not exceed >1

Features:

- High precision
- High velocities (10 m/s)
- Smooth operation - low noise
- Integrated wiper system
- Compact dimensions - compatible to Slideline plain bearing guide
- Stainless steel version available on request
- Any length of stroke up to 3750 mm  
The maximum stroke lengths of drives OSP-E..B, OSP-E..SB and OSP-E..ST must be observed

Loads, Forces and Moments



\* Series PL for OSP-E Bi-parting version on request

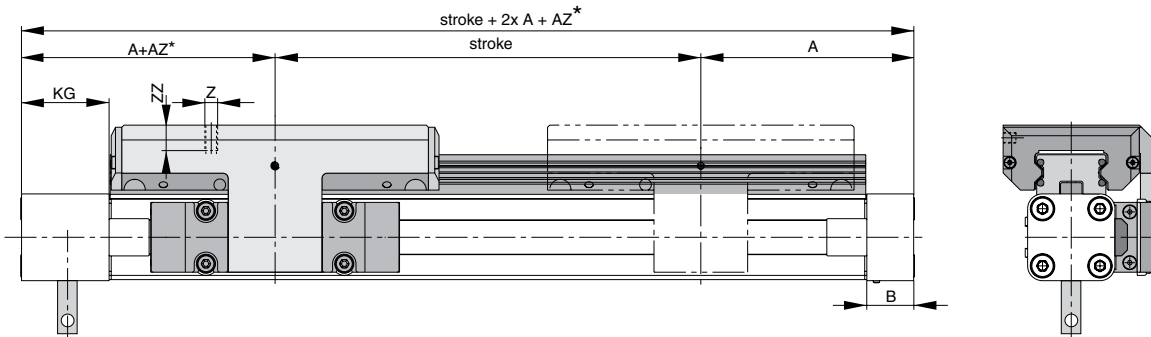
Series	Max. Moments [Nm]			Max. Load [N]	Mass of Drive with guide [kg]				Mass guide-carriage [kg]	Order No. PROLINE <sup>1)</sup> for	
	Mx	My	Mz		Fy, Fz	with 0 mm stroke	with 100 mm stroke	increase per 100 mm stroke		OSP-E Belt*	OSP-E Screw
PL 25	19	44	44	986	1.9	1.8	0.33	0.40	0.75	20874	20856
PL 32	33	84	84	1348	3.6	3.7	0.58	0.70	1.18	20875	20857
PL 50	128	287	287	3582	8.9	8.8	1.00	1.32	2.50	20876	20859

<sup>1)</sup> Stainless steel version on request

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The right to introduce technical modifications is reserved

**Dimensions Series OSP-E Belt PL25, PL32, PL50**

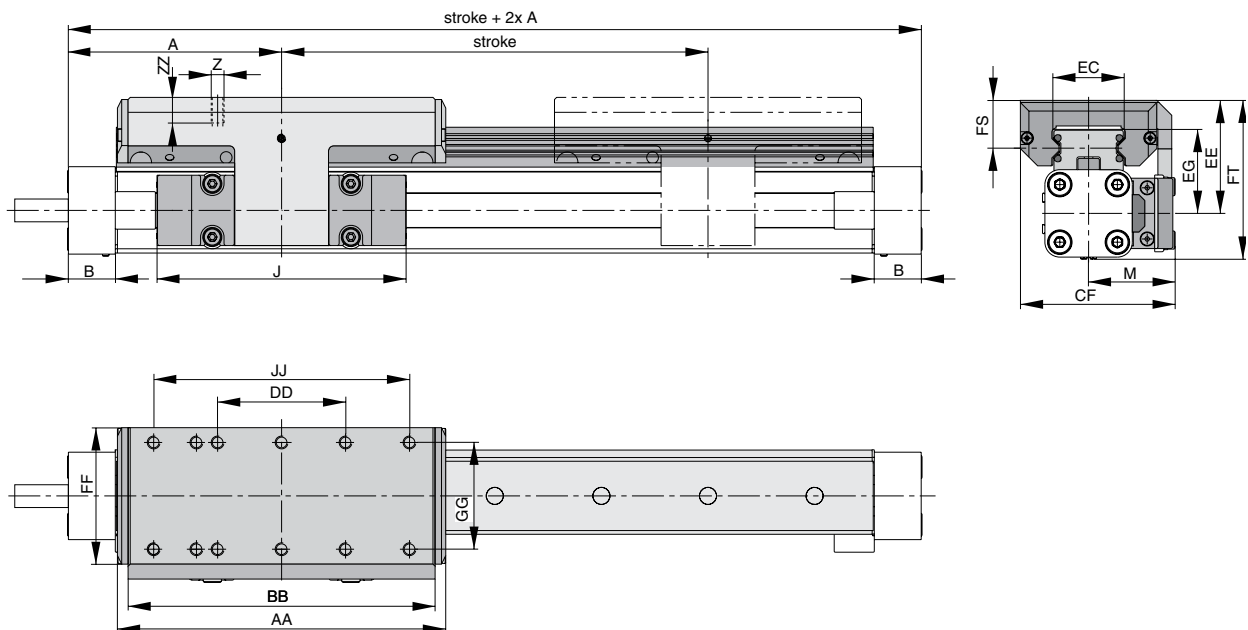


**\* Please observe:**  
 Dimension "AZ" must be added to dimension "A". The stroke to be ordered will be: stroke + min. dimension "AZ" + additional length.  
 Please observe the effect of dimension "AZ" when retrofitting a guide. Please contact our application engineers.

**Dimension Table [mm] Series OSP-E Belt PL25, PL32, PL50**

Series	A	B	J	M	Z	AA	AZ	BB	DD	CF	EC	EE	EG	FF	FS	FT	GG	JJ	KG	ZZ
PL25	125	22	117	40,5	M6	154	10	144	60	72.5	32.5	53	39	64	23	73.5	50	120	57	12
PL32	150	25	152	49	M6	197	11	187	80	91	42	62	48	84	25	88	64	160	61	12
PL50	200	25	200	62	M6	276	24	266	120	117	63	75	57	110	29	118.5	90	240	85	16

**Dimensions Series OSP-E Screw PL25, PL32, PL50**



**Dimension Table [mm] OSP-E Screw PL25, PL32, PL50**

Series	A	B	J	M	Z	AA	BB	DD	CF	EC	EE	EG	FF	FS	FT	GG	JJ	ZZ
PL25	100	22	117	40.5	M6	154	144	60	72.5	32.5	53	39	64	23	73.5	50	120	12
PL32	125	25.5	152	49	M6	197	187	80	91	42	62	48	84	25	88	64	160	12
PL50	175	33	200	62	M6	276	266	120	117	63	75	57	110	29	118.5	90	240	16

OSP-E Belt – If combined with a linear guide, please also state position of linear guide

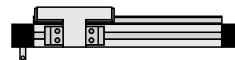
**Position of Drive Shaft**  
 Standard = 0

**Position of Drive Shaft**  
 Opposite to Standard = 1

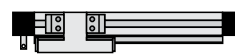
**Position of Drive Shaft**  
 Both Sides = 2

**Position of Guide**

Standard  
 Guide opposite the drive shaft



Opposite to Standard  
 Guide on same side as drive shaft



**Position of Guide**

Standard  
 Guide opposite the drive shaft

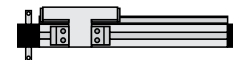


Opposite to Standard  
 Guide on same side as drive shaft

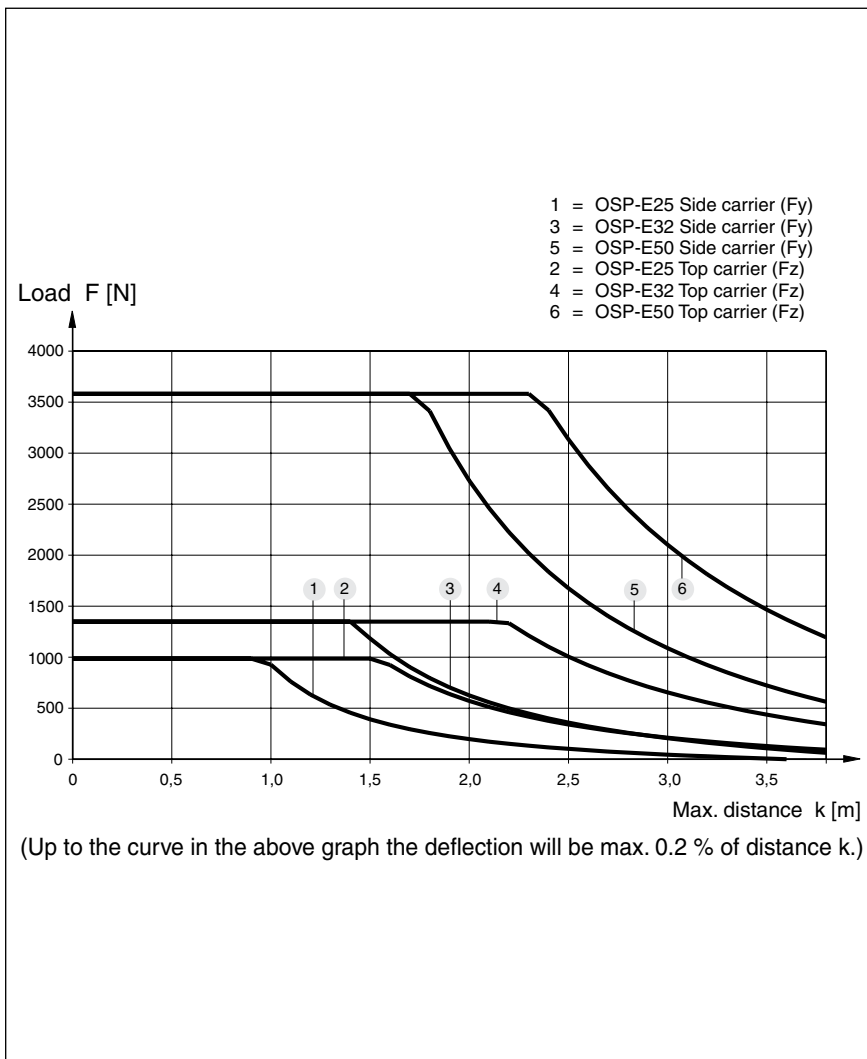
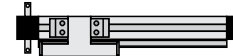


**Position of Guide**

Standard  
 Guide opposite the drive shaft



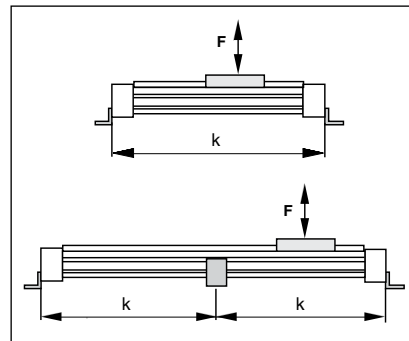
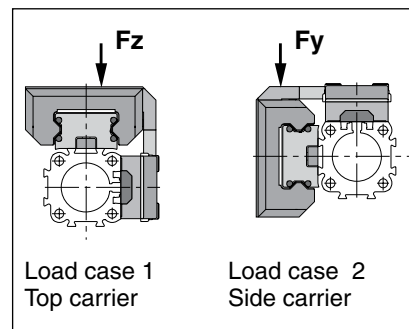
Opposite to Standard  
 Guide on same side as drive shaft



## Mid-Section Support

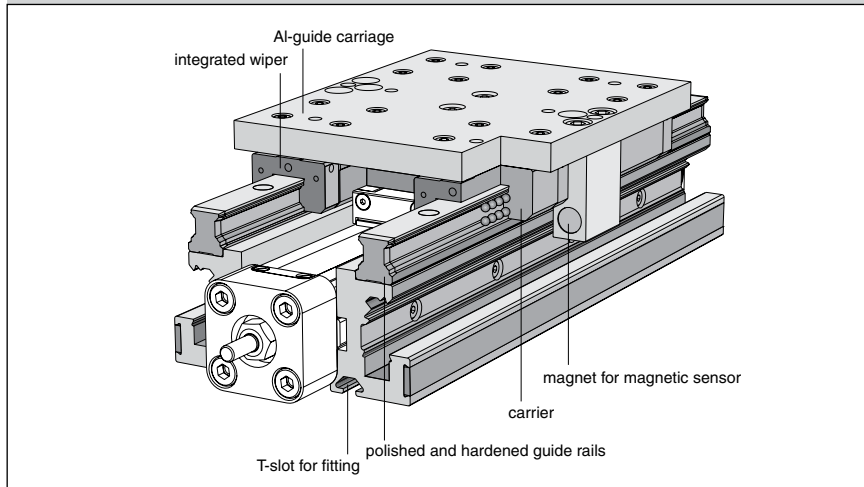
(for versions see page 146)

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.





**Version for Electric Linear-Drive: Series OSP-E Screw**



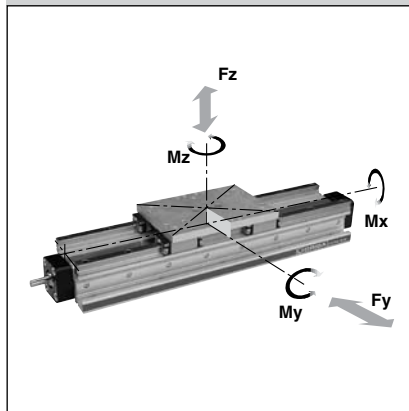
# Heavy-duty-Guide HD



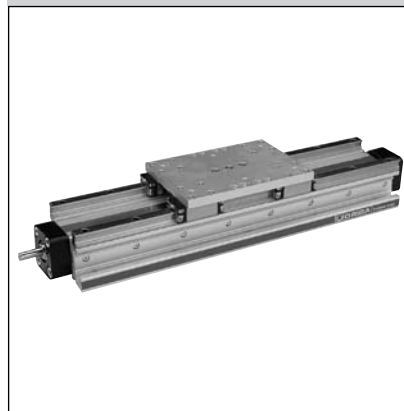
**Series HD 25 to 50**  
 for Linear Drive

- Series OSP-E..SB, ..ST

**Loads, forces and moments**



**OSP-E..SB, ..ST**



**Features:**

- Guide system  
 4-row recirculating ball bearing guide
- polished and hardened guide rails of steel
- for highest loads in all directions
- highest precision
- integrated wiper
- grease nipple for relubrication
- anodized guide carriage with the same connecting dimensions as OSP-guide GUIDELINE
- maximum velocity v = 5 m/s

**Technical Data**

For the maximum permissible loads please refer to the table below. If several forces and moments loads act upon the guide simultaneously, the following equation will apply:

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

The total of the loads must not exceed 1 under any circumstances.

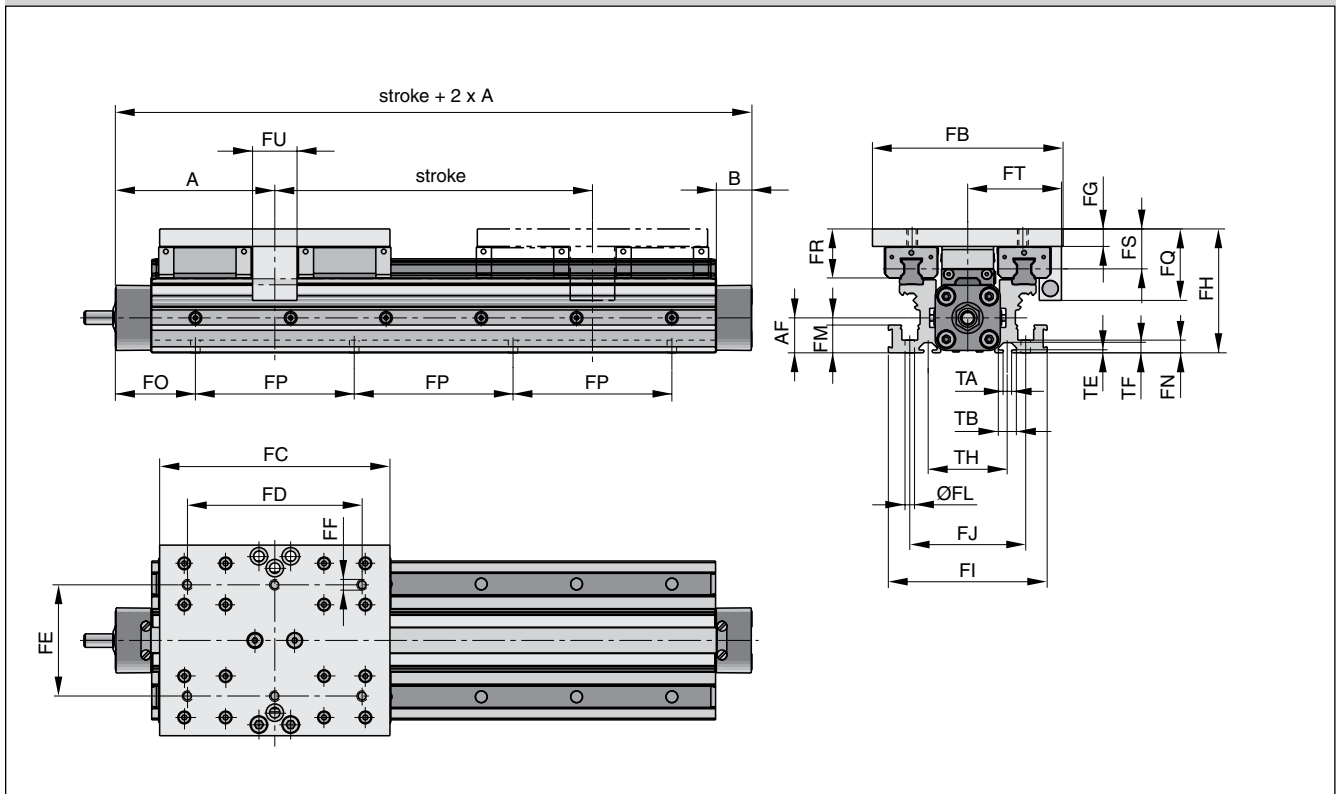
The table shows the maximum permissible values for light, shock-free operation which must not be exceeded even under dynamic conditions.

Series	Max. Moments [Nm]			Max. Load [N]		Mass of drive with guide [kg] at 0mm stroke				Mass guide-carrier [kg]	Order No HD-guide for OSP-E
	Mx	My	Mz	Fy	Fz	ad per 100 mm stroke					
HD 25	260	320	320	6000	6000	OSP-E..SB	OSP-E..ST	OSP-E..SB	OSP-E..ST	1.289	21246
HD 32	285	475	475	6000	6000	4.868	4.968	1.198	1.258	1.367	21247
HD 50	1100	1400	1400	18000	18000	13.218	13.318	2.554	2.674	3.551	21249

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The right to introduce technical modifications is reserved

**Dimensions Series OSP-E Screw HD25, HD32, HD50**



**Hint:**

The heavy-duty guide HD must be fitted to a level surface over the entire length.

If T-nuts are used, the distance between them must not exceed 100 mm.

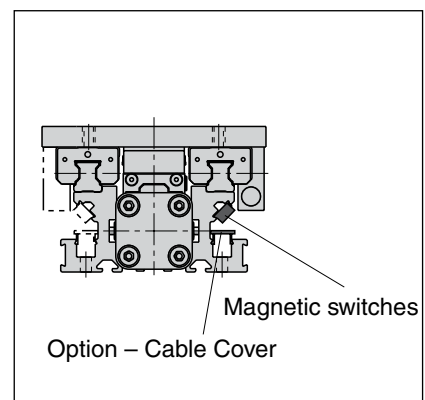
**Arrangement of magnetic switches:**

The magnetic switches can be fitted to either side over the entire length.

More Information:

Magnet switch see page 153

Cable cover see page 160



Dimensions

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
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
HD50	22	10	100	58	44	35.5	89	30	8.2	20	4.5	12.3	76

FO			
OSP-E..SB, ..ST			
x	HD25	HD32	HD50
00	50.0	75.0	75.0
01	50.5	75.5	75.5
02	51.0	76.0	76.0
03	51.5	76.5	76.5
04	52.0	77.0	77.0
05	52.5	77.5	77.5
06	53.0	78.0	78.0
07	53.5	78.5	78.5
08	54.0	79.0	79.0
09	54.5	79.5	79.5
10	55.0	80.0	80.0
11	55.5	80.5	80.5
12	56.0	81.0	81.0
13	56.5	81.5	81.5
14	57.0	82.0	82.0
15	57.5	82.5	82.5
16	58.0	83.0	83.0
17	58.5	83.5	83.5
18	59.0	84.0	84.0
19	59.5	84.5	84.5
20	60.0	85.0	85.0
21	60.5	85.5	85.5
22	61.0	86.0	86.0
23	61.5	86.5	86.5
24	62.0	87.0	87.0
25	62.5	87.5	87.5
26	63.0	88.0	88.0
27	63.5	88.5	88.5
28	64.0	89.0	89.0
29	64.5	89.5	89.5
30	65.0	90.0	90.0
31	65.5	90.5	90.5
32	66.0	91.0	91.0
33	66.5	91.5	91.5
34	67.0	92.0	92.0
35	67.5	92.5	92.5
36	68.0	93.0	93.0
37	68.5	93.5	93.5
38	69.0	94.0	94.0
39	69.5	94.5	94.5
40	70.0	95.0	95.0
41	70.5	95.5	95.5
42	71.0	96.0	96.0
43	71.5	96.5	96.5
44	72.0	97.0	97.0
45	72.5	97.5	97.5
46	73.0	98.0	98.0
47	73.5	98.5	98.5
48	74.0	99.0	99.0
49	74.5	99.5	99.5

FO			
OSP-E..SB, ..ST			
x	HD25	HD32	HD50
50	75.0	50.0	50.0
51	75.5	50.5	50.5
52	76.0	51.0	51.0
53	76.5	51.5	51.5
54	77.0	52.0	52.0
55	77.5	52.5	52.5
56	78.0	53.0	53.0
57	78.5	53.5	53.5
58	79.0	54.0	54.0
59	79.5	54.5	54.5
60	80.0	55.0	55.0
61	80.5	55.5	55.5
62	81.0	56.0	56.0
63	81.5	56.5	56.5
64	82.0	57.0	57.0
65	82.5	57.5	57.5
66	83.0	58.0	58.0
67	83.5	58.5	58.5
68	84.0	59.0	59.0
69	84.5	59.5	59.5
70	85.0	60.0	60.0
71	85.5	60.5	60.5
72	86.0	61.0	61.0
73	86.5	61.5	61.5
74	87.0	62.0	62.0
75	87.5	62.5	62.5
76	88.0	63.0	63.0
77	88.5	63.5	63.5
78	89.0	64.0	64.0
79	89.5	64.5	64.5
80	90.0	65.0	65.0
81	90.5	65.5	65.5
82	91.0	66.0	66.0
83	91.5	66.5	66.5
84	92.0	67.0	67.0
85	92.5	67.5	67.5
86	93.0	68.0	68.0
87	93.5	68.5	68.5
88	94.0	69.0	69.0
89	94.5	69.5	69.5
90	95.0	70.0	70.0
91	95.5	70.5	70.5
92	96.0	71.0	71.0
93	96.5	71.5	71.5
94	97.0	72.0	72.0
95	97.5	72.5	72.5
96	98.0	73.0	73.0
97	98.5	73.5	73.5
98	99.0	74.0	74.0
99	99.5	74.5	74.5

**NOTE:**

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

**Sample :**

stroke 15**25** mm



For a cylinder OSP-E25 the table shows that for x = 25 mm: FO = 62.5 mm





# Accessories for Electric Linear Drives Series OSP-E

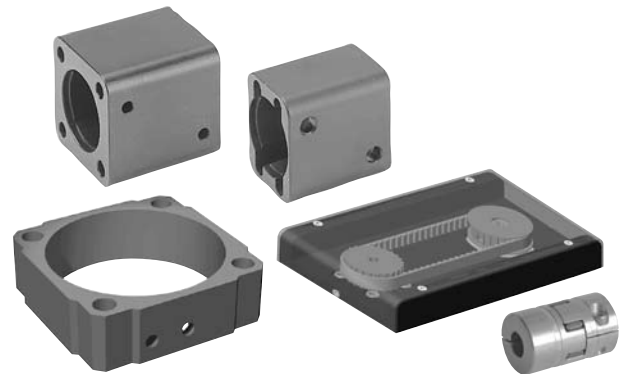
Description	Illustration	Page
Motor Mounting (Coupling housing, motor flange, motor coupling)		120-125
Belt Gear		126
End Cap Mountings, Standard End Cap Mountings for OSP-E with guides		128-131 144, 145
Flange Mountings C		132
Profile Mounting for Multi-Axis systems		133
Mid-Section Support, Standard Mid-Section Support for OSP-E with guides		134, 135 146
Profile connections (Adaptor Profile, T-nut Profile, Connection Profile)		136-138
Trunnion Mounting EN Pivot Mounting EL		139
Clevis Mounting		140, 141
Inversion Mounting		142
Piston Rod Eye		148
Piston Rod Clevis		148
Piston Rod Compensating Coupling		149
Magnetic Switches		153 - 156
SFI-plus Displacement Measuring System		157-159
Cable Cover		160

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The right to introduce technical modifications is reserved



# Accessories for Electric Linear Drives Series OSP-E Motor Mountings



A1P741E00FAG00X

The right to introduce technical modifications is reserved

## Contents

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Coupling housing (OSP-E..BHD)	120
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Motor flanges (OSP-E..BV)	121
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Motor Coupling (OSP-E..B)	122
Coupling housing (OSP-E..SB, ..ST, ..SBR, ..STR)	123
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Motor flanges for freely selectable mounting dimensions (OSP-E..B, ..SB, ..ST, ..SBR, ..STR)	124, 125
Belt Gear for freely selectable mounting dimensions (OSP-E..B, ..SB, ..ST, ..SBR, ..STR)	126

# Coupling Housing Motor Flange

Size 20, 25, 32, 50



- Series OSP-E..BHD  
Linear Drive with toothed belt  
and  
integrated guide

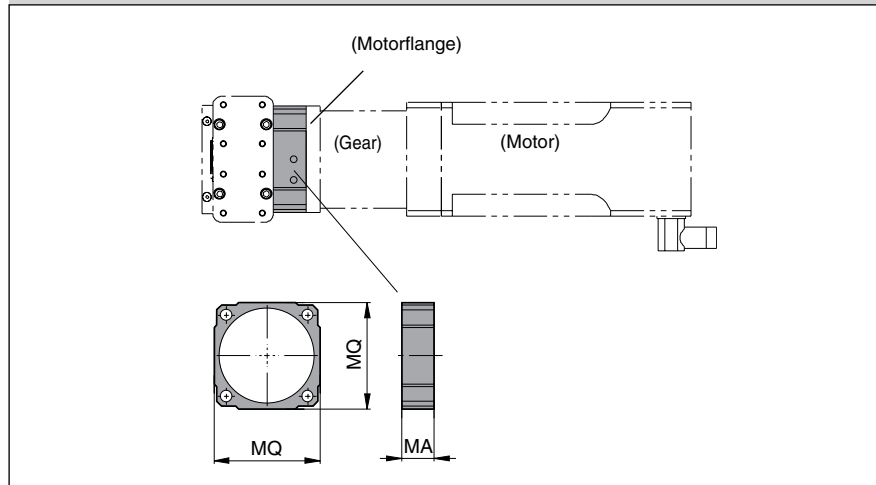
Via the coupling housing the gear or the motor can be fitted directly to the drive and the drive shafts by means of a motor flange.



The motor flange matches the above mentioned coupling housing and has to be reworked to match the respective type of motor.

Motor flanges for the available range of gears, servo and stepper motors are included in the respective data sheet, including technical data and dimensions. Please refer to the respective catalogues.

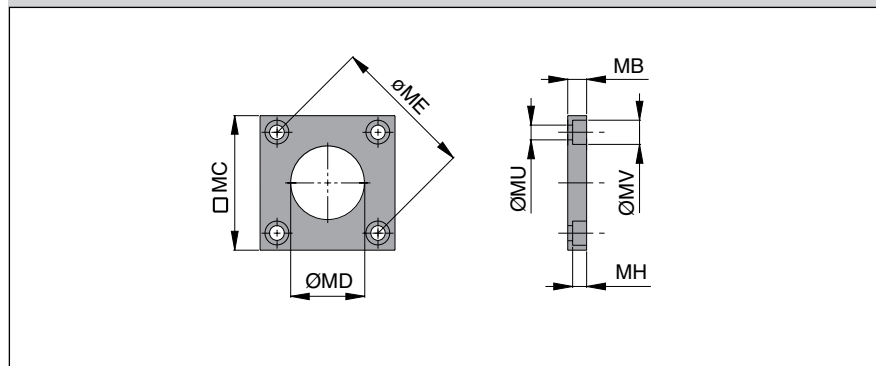
## Coupling Housing (for gear or motor mounting)



## Dimension Table [mm] and Order Instructions

Series	Description	MA	MQ	Order No.
OSP-E20BHD	Coupling Housing	19	60	16215
OSP-E20BHD	Motor Flange LP050	–	–	16224
OSP-E25BHD	Coupling Housing	22	76	12300
OSP-E25BHD	Motor Flange LP070	–	–	12311
OSP-E32BHD	Coupling Housing	30	98	12301
OSP-E32BHD	Motor Flange LP090	–	–	12312
OSP-E50BHD	Coupling Housing	41	128	12302
OSP-E50BHD	Motor Flange LP120	–	–	12313

## Motor Flange (semi-finished)

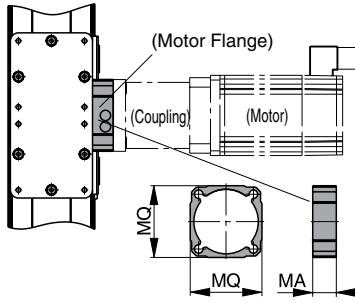


## Dimension Table [mm] and Order Instructions

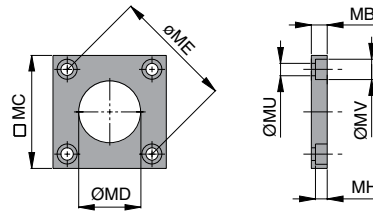
Series	MB	MC	MD	ME	MH	MU	MV	Order No.
OSP-E20BHD	10	75	25	65.8	6.8	6.6	11	16216
OSP-E25BHD	14	90	36	82	8.5	9	15	12308
OSP-E32BHD	14	100	55	106	10.5	11	18	12309
OSP-E50BHD	18	125	77	144	12.5	13.5	20	12310

Motor Mountings for OSP-E..BV with drive shaft, clamping hub, version 2-5<sup>1)</sup>

Coupling Housing for direct clamping



Motor Flange (semi-finished)

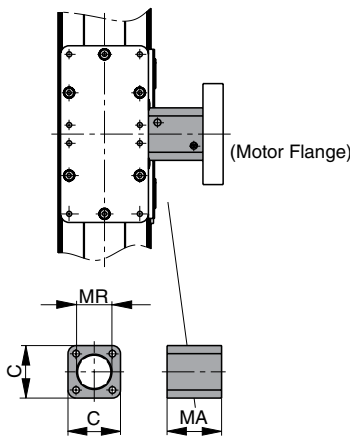


Dimension Table [mm] and Order Instructions

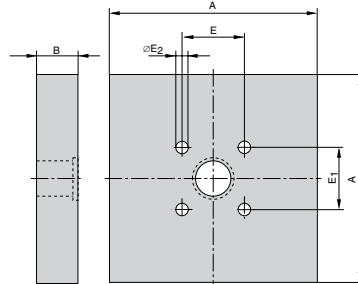
Series	Description	MA	MB	MC	MD	ME	MH	MQ	MU	MV	Order-No.
OSP-E20BV	Coupling Housing	19	-	-	-	-	-	60	-	-	16215
OSP-E20BV	Motor flange semi-finished	-	10	75	25	65,8	6,8	-	6,6	11	16216
OSP-E20BV	Motor flange LP050	-	-	-	-	-	-	-	-	-	16224
OSP-E25BV	Coupling Housing	22	-	-	-	-	-	76	-	-	12300
OSP-E25BV	Motor flange semi-finished	-	14	90	36	82	8,5	-	9	15	12308
OSP-E25BV	Motor flange LP070	-	-	-	-	-	-	-	-	-	12311

Motor Mountings for OSP-E..BV with drive shaft and tenon, version A-D<sup>1)</sup>

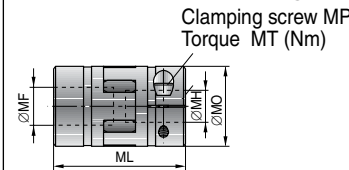
Coupling Housing for clamping with Motor Coupling



Universal Motor Flange



Universal Motor Coupling



Dimension Table [mm] and Order Instructions

Series	Description	A	B	C	E	E <sub>1</sub>	E <sub>2</sub>	MA	MR	Order-No.
OSP-E20BV	Coupling Housing	-	-	60	-	-	-	79	46,5	16269
OSP-E20BV	Universal-Motor Flange	120	15	-	46,5	46,5	6,6	-	-	16267
OSP-E25BV	Coupling Housing	-	-	87	-	-	-	84	48	20139
OSP-E25BV	Universal-Motor Flange	120	15	-	46	46	6,6	-	-	12069

Dimension Table [mm] and Order Instructions for Universal Motor Coupling

Series	MF	ML	MH	MO	MT [Nm]	Order-No.
OSP-E20BV	12 <sup>H7</sup>	66	9,5 <sup>H7</sup>	40	10,5	16268
OSP-E25BV	16 <sup>H7</sup>	66	9,5 <sup>H7</sup>	40	10,5	10845

# Coupling Housing

# Motor Flange

# Motor Coupling

Size 20, 25

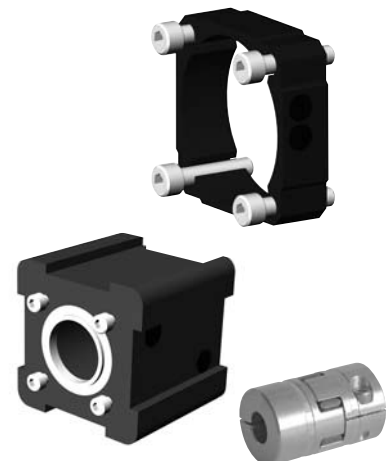


- Series OSP-E..BV  
Vertical Linear Drive with toothed belt and integrated recirculating ball bearing guide

The coupling housing with suitable motor flange allows proper connection between the drive shaft of the linear drive and the gear shaft or motor shaft. The gear or motor can either be fitted to the linear drive directly or indirectly. If a PARKER-ORIGA gear is used, direct clamping of the gear shaft into to the drive shaft with clamping hub. As an alternative the gear or motor can be fitted to the linear drive via a motor coupling.

<sup>1)</sup>Hint:

when selecting the type of motor mounting please observe the respective drive shaft versions in accordance with the ordering code of the linear drive (page 171).



# Coupling Housing Motor Flange Motor Coupling

Size 25, 32, 50



• Series OSP-E..B  
Linear Drive with Belt

The coupling housing with suitable motor flange allows easy and inherently stable connection of the gear or the motor to the linear drive.

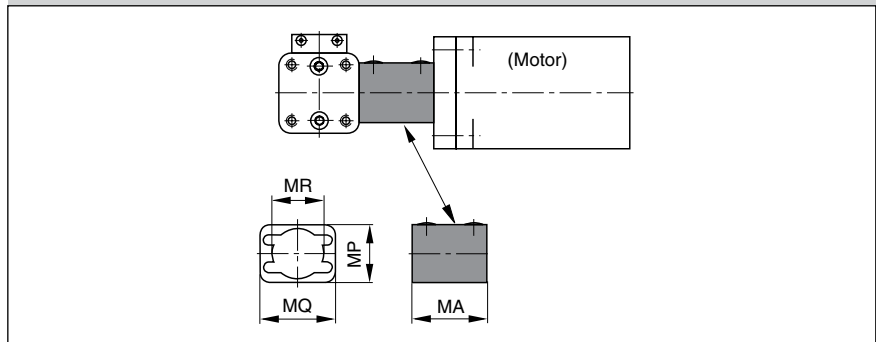
**Hint:**

Let us know the mounting dimensions of your motor. Upon request we will be pleased to check and manufacture a motor flange that will come up to your individual needs.

(Also see "motor flange for freely selectable mounting dimensions" page 124)



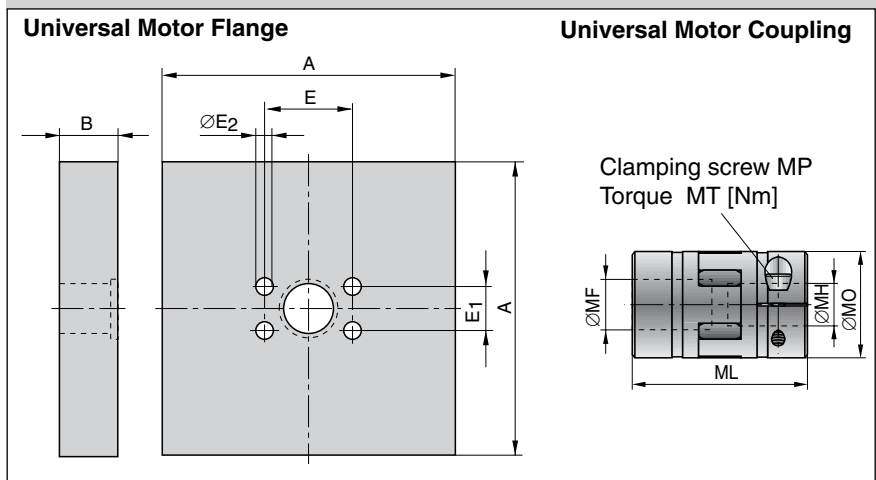
Coupling Housing (for gear or motor mounting)



Dimension Table [mm] and Order Instructions

Series	Typ	MA	MP	MQ	MR	Order No.
OSP-E25B	250	47	30	40	25	20606
OSP-E32B	320	49	38	49	33	20607
OSP-E50B	500	76	54	65	48	20608

Universal Motor Flange and Motor Coupling



Dimension Table [mm] and Order Instructions für Universal Motor Flange

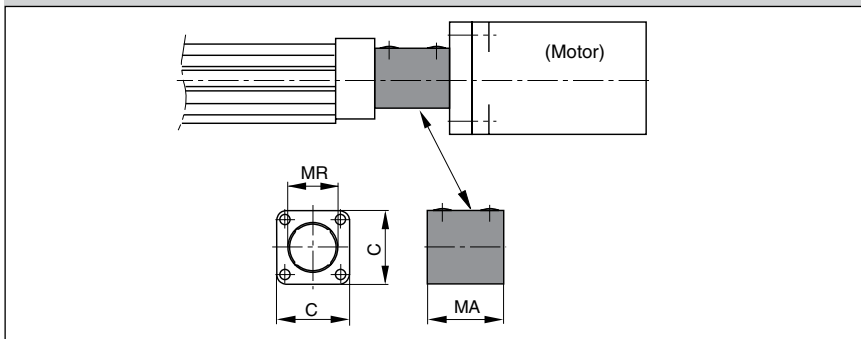
Series	A	B	E	E <sub>1</sub>	E <sub>2</sub>	Order No.
OSP-E25B	100	20	30	15	5.5	12050
OSP-E32B	100	20	38	18	6.6	12053
OSP-E50B	120	15	50	32	9.0	12056

Dimension Table [mm] and Order Instructions für Universal Motor Coupling

Series	MF <sup>H7</sup>	ML	MH <sup>H7 *</sup>	MO	MT [Nm]	Order No.
OSP-E25B	10	30	4	20	0.76	15231
OSP-E32B	10	35	6	30	1.34	15197
OSP-E50B	16	66	9.5	40	10.5	10845

\* can be bored out to motor shaft diameter by customer.  
Other dimensions on request

**Coupling Housing (for motor)**

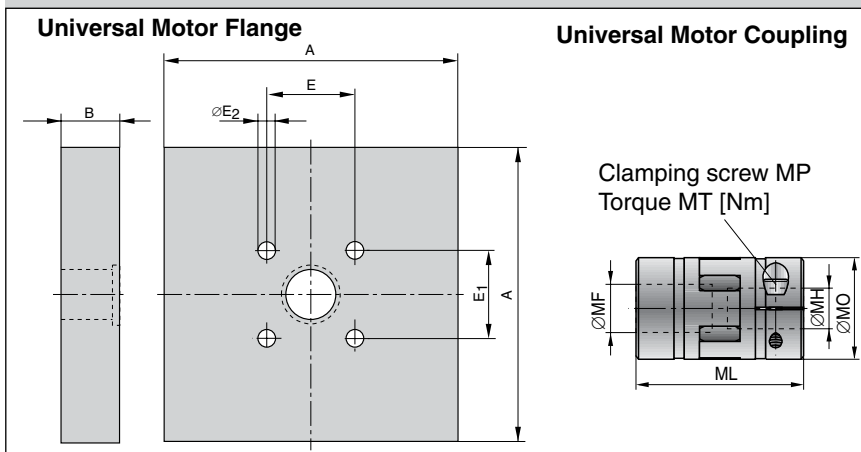


**Dimension Table [mm] and Order Instructions**

Series	Typ	MA	C	MR	Order No.
OSP-E25*	251	38	41	25	20137
OSP-E32*	321	54	52	33	20138
OSP-E50*	501	84	87	48	20139

\* ..SB, ..ST, ..SBR, ..STR

**Universal Motor Flange and Motor Coupling**



**Dimension Table [mm] and Order Instructions for Universal Motor Flange**

Series	A	B	E	E <sub>1</sub>	E <sub>2</sub>	Order No.
OSP-E25*	100	20	27	27	5.5	12060
OSP-E32*	100	20	36	36	6.6	12064
OSP-E50*	120	15	46	46	6.6	12069

\* ..SB, ..ST, ..SBR, ..STR

**Dimension Table [mm] and Order Instructions for Universal Motor Coupling**

Series	MF <sup>H7</sup>	ML	MH <sup>H7</sup> **	MO	MT [Nm]	Order No.
OSP-E25*	6	30	6	20	0.76	12073
OSP-E32*	10	35	6	30	1.34	15197
OSP-E50*	15	66	9.5	40	10.5	12079

\* ..SB, ..ST, ..SBR, ..STR

\*\* can be bored out to motor shaft diameter by customer.  
 Other dimensions on request.

# Coupling Housing Motor Flange Motor Coupling

Size 25, 32, 50



- Series  
**OSP-E..SB, ..ST, ..SBR, ..STR**  
**Linear Drive with Screw**

The coupling housing with suitable motor flange allows easy and inherently stable connection of the gear or the motor to the linear drive.

**Hint:**

Let us know the mounting dimensions of your motor. Upon request we will be pleased to check and manufacture a motor flange that will come up to your individual needs.

(Also see "motor flange for freely selectable mounting dimensions" page 124)



# Motor Flange

for freely selectable  
 mounting  
 dimensions

Size 25, 32, 50



• Series OSP-E..B  
 Linear Drive with Belt

• OSP-E..SB, ..ST, ..SBR, ..STR  
 Linear Drive with Screw

The motor flange for motors with freely selectable mounting dimensions offers flexible possibilities to connect most different types of motors to the electric linear drives OSP-E. The drive shafts of linear drive and motor are connected with a motor coupling in the coupling housing and the motor flange is centered.

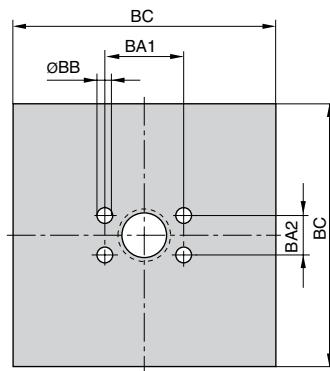
**Hint**

Please check the following data for the connection of the motor to the freely selectable motor flange and state when ordering:

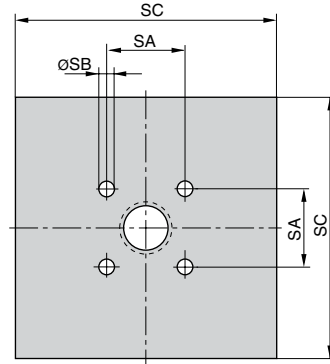
1. mounting angle W of the motor
2. bore hole version B as thread M or counterbore S
3. pitch circle diameter A as a function of M or S
4. Diameter of centring spigot
5. Length of motor shaft G

**Flange version**

**Belt drive**



**Screw drive**

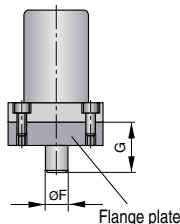


**Dimension Table [mm] and Order Instructions**

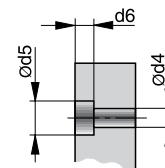
Size	BA1	BA2	ØBB	BC	SA	ØSB	SC	Order No.
25	30	15	5.5	100	27	5.5	100	Contact Factory
32	38	18	6.6	100	36	6.6	100	Contact Factory
50	50	32	9.0	120	46	6.6	120	Contact Factory

**Variable Dimensions for Flange**

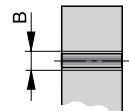
**Version Thread "M"**  
 Flange plate with thread,  
 Motor flange with through  
 bolt



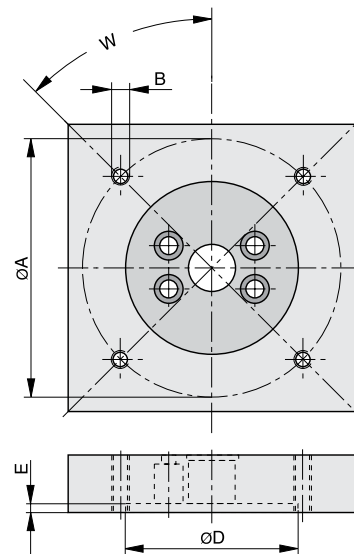
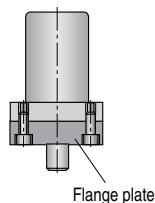
**Version Counterbore "S"**



**Version Thread "M"**



**Version Counterbore "S"**  
 Flange plate with through bore  
 Motor flange with thread



**Counterbore  
 Dimensions  
 [mm]**

Scw.Size B	Ø d4	Ø d5	d6
M4x16	4.5	8	4.6
M5x22	5.5	10	5.7
M6x20	6.6	11	6.8
M8x25	9	15	9
M10x25	11	18	11



## Dimensions

Dimension table of the variable dimensions [mm] – Version for Belt drive

W	45 °			90 °			
Size	25	32	50	25	32	50	
A	min. Vers. S	48 + Ød5	60 + Ød5	80 + Ød5	40 + Ød5	49 + Ød5	65 + Ød5
	max. Vers. S	135 - Ød5	135 - Ød5	160 - Ød5	100 - Ød5	100 - Ød5	120 - Ød5
	min. Vers. M	45 + B	55 + B	75 + B	40 + B	48 + B	50 + B
	max. Vers. M	135 - B	135 - B	160 - B	96 - B	96 - B	116 - B
B	max.	M10			M10		
D	min.	20	30	40	20	30	40
	max.	98	98	118	85	85	105
G	min.	18	21	32	18	21	32
	max.	33	35	45	33	35	45

Dimension table of the variable dimensions [mm] – Version for Screw drive

W	45 °			90 °			
Size	25	32	50	25	32	50	
A	min. Vers. S	58 + Ød5	74 + Ød5	123 + Ød5	41 + Ød5	52 + Ød5	87 + Ød5
	max. Vers. S	135 - Ød5	135 - Ød5	160 - Ød5	100 - Ød5	100 - Ød5	120 - Ød5
	min. Vers. M	525 + B	68 + B	82 + B	30 + B	40 + B	50 + B
	max. Vers. M	135 - B	135 - B	160 - B	96 - B	96 - B	116 - B
B	max.	M10			M10		
D	min.	20	30	40	20	30	40
	max.	98	98	118	85	85	105
G	min.	18	21	32	18	210	32
	max.	33	35	45	33	35	45

## Legend

- W [°] = Angle of fastening boreholes  
A [mm] = Pitch circle diameter  
B = Thread size of fastening screw  
(version: M = thread, S = counterbore)  
D [mm] = Diameter of centring spigot  
E [mm] = Depth of centring spigot  
F [mm] = Diameter of motor shaft  
G [mm] = Length of motor shaft

# Belt Gear

for freely selectable  
mounting  
dimensions

Size 25, 32, 50



• Series OSP-E..SB, ..ST, ..SBR, ..STR  
Linear Drive with Screw

The toothed belt gear with its freely selectable mounting dimensions offers the possibility to fit most different types of motors to the linear drive parallel to the motor axis.

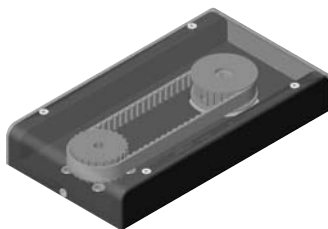
After the flange dimensions of the motor had been checked, the mounting side of the motor will be prepared for the individual demands of the customer.

When ordering please observe the version of the drive shaft of the linear drive OSP-E with spindle. This version can either be ordered with plain shaft or plain shaft with keyway (Option). (If the version keyway is selected, the delivery period may be elongated.)

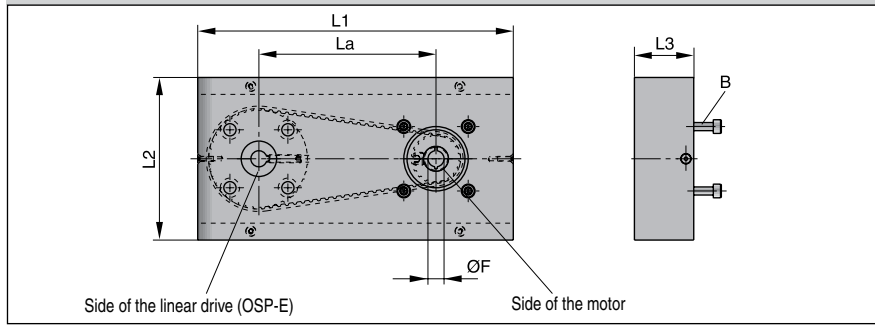
**Max. allowed Moments M [Nm]  
for Belt Gear**

Size	Transmission ratio	
	1:1	2:1
25	5	5
32	10	10
50	20	20

Beware of the max. allowed moments of the corresponding linear drive.



**Belt Gear**

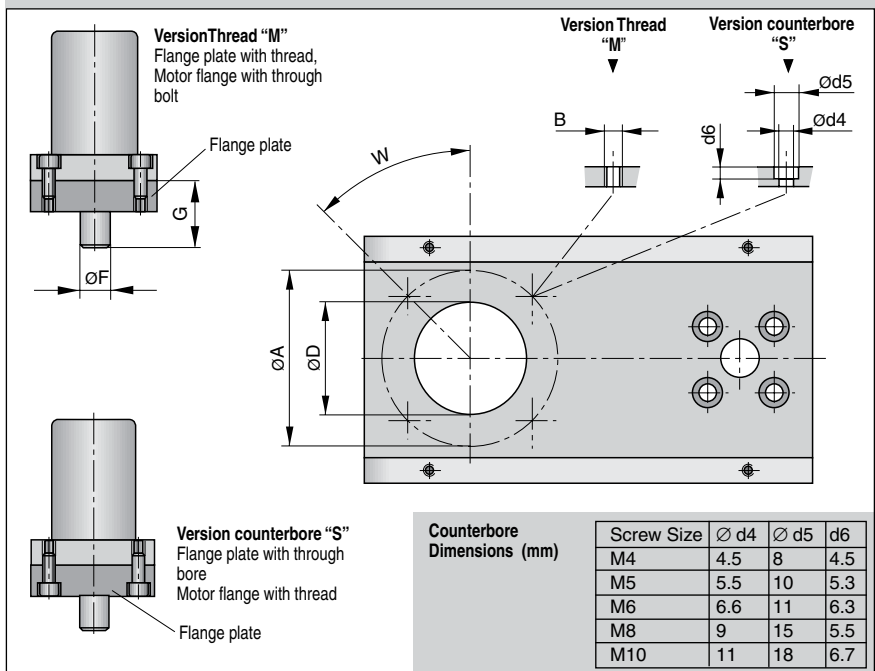


**Dimension Table [mm] and Order Instructions**

Series	L1	L2	L3	La		B	ØF*	Order No.
				1:1	2:1			
OSP-E25	186	101	30	110	109.3	M4 – M10	6, 7, 8, 9, 10, 11	15576
OSP-E32	196	101	37	110	111.4		8, 9, 10, 11, 12, 14	15576
OSP-E50	234	101	50	135	133.7		12, 14, 16, 19	15576

\* other diameters on request

**Variable Dimensions for Motor Mounting**



**Dimension table of the variable dimensions [mm]**

W	45 °			90 °		
	25	32	50	25	32	50
Size						
A min.	30					
max. Vers. S	110 - Ød5			70 - Ød5	70 - Ød5	80 - Ød5
max. Vers. M	110 - Ød4			70 - Ød4	70 - Ød4	80 - Ød4
B max.	M 8			M 8		
D min.	20			20		
max.	80	80	100	60	60	70
G min.	16	20	30	16	20	30
max.	23	30	40	23	30	40
ØF [mm]	6, 7, 8, 9, 10, 11	8, 9, 10, 11, 12, 14	12, 14, 16, 19	6, 7, 8, 9, 10, 11	8, 9, 10, 11, 12, 14	12, 14, 16, 19

# Accessories for Electric Linear Drives Series OSP-E Mountings, Sensors



A1P742E00FAG00X

The right to introduce technical modifications is reserved

### Contents

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# End Cap Mounting

Size 20, 25, 32, 50



- **Series OSP-E..BHD**  
**For Linear Drive with Toothed Belt and integrated Guides**

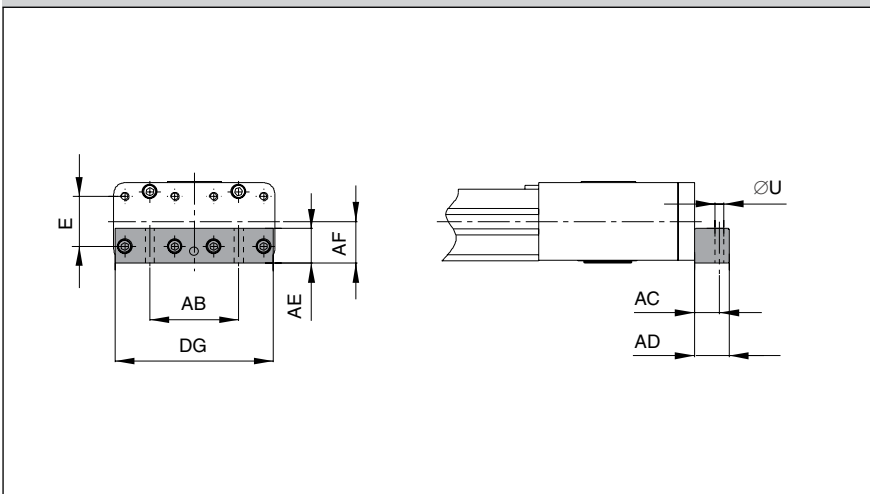
On the end-face of each end cap there are eight threaded holes for mounting the actuator.

Material:  
 Anodized aluminium.

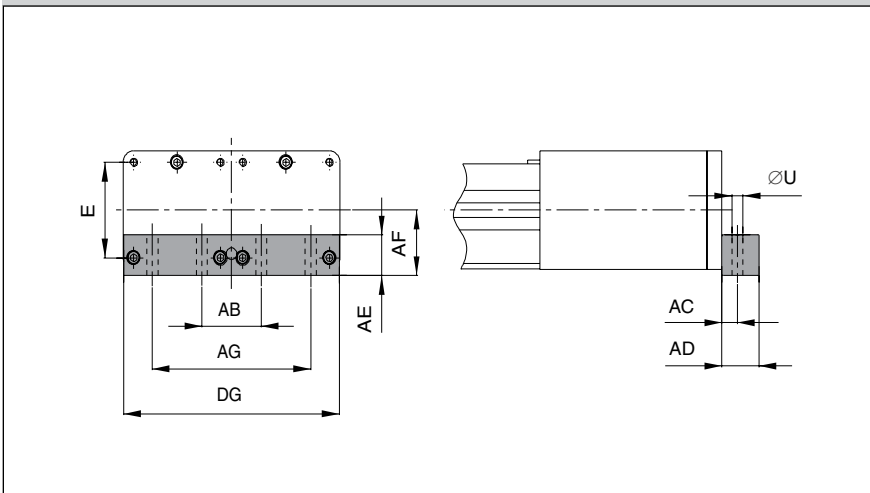
**The mountings are supplied in pairs.**



## Series OSP-E20BHD to E32BHD: Type CN-20, CN-25, CN-32



## Series OSP-E50BHD: Type C50

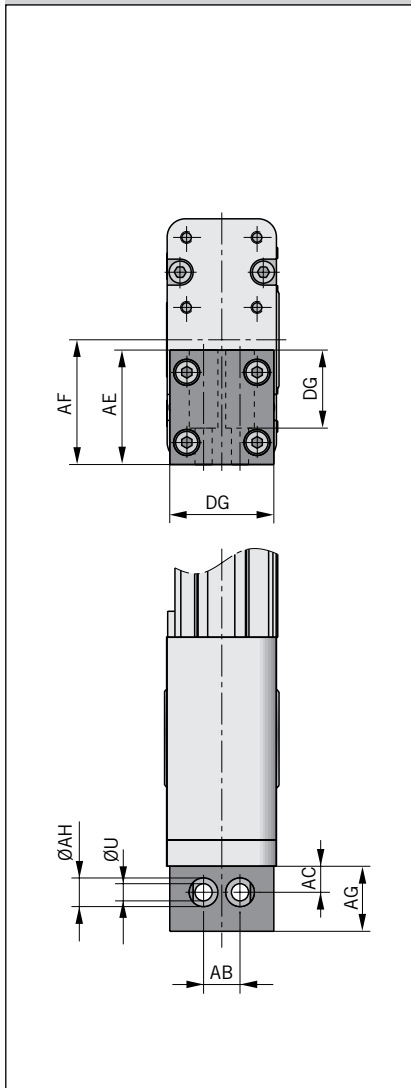


### Dimension Table [mm] and Order Instructions

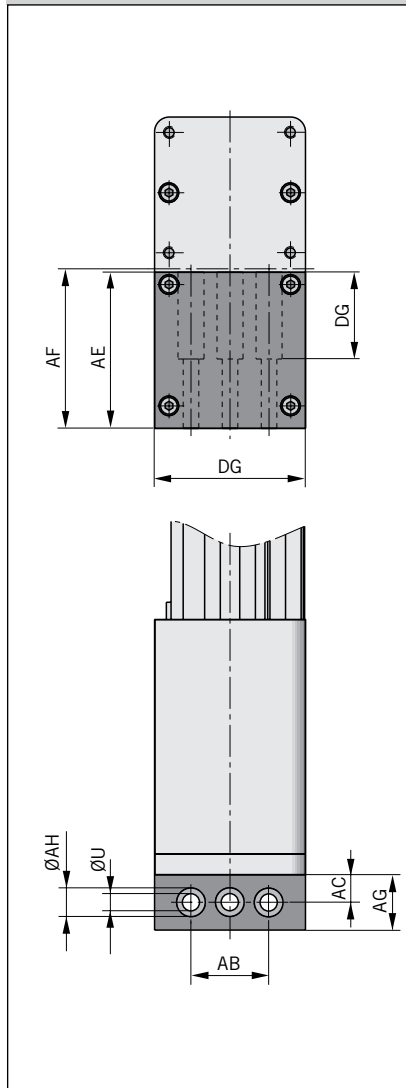
Series	Type	E	ØU	AB	AC	AD	AE	AF	AG	DG	Order No. *)
OSP-E20BHD	CN-20	27	6,6	40	10	20	20	22	–	74	16213
OSP-E25BHD	CN-25	27	6,6	52	16	25	25	22	–	91	12266
OSP-E32BHD	CN-32	36	9	64	18	25	25	30	–	114	12267
OSP-E50BHD	CN-50	70	9	48	12,5	30	30	48	128	174	12268

\*) = Pair

**Series OSP-E20BHD to E32BHD:  
 Type CO-20, CO-25, CO-32**



**Series OSP-E50BHD:  
 Type CO-50**



# End Cap Mounting

Size 20, 25, 32, 50

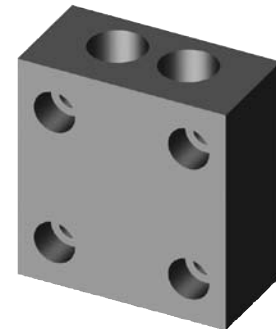


- Series OSP-E..BHD Linear Drive with Belt and Integrated Guide

On the end-face of each end cap there are eight threaded holes each for mounting the actuator.

Material:  
 Anodized aluminium.

The mountings are supplied in pairs.



**Dimension Table [mm] and Order Instructions**

Series	Type	ØU	AB	AC	AD	AE	AF	AG	DG	Order No. *)	
OSP-E20BHD	CO-20	6,6	18	15	22	42	45	39	11	40	16241
OSP-E25BHD	CO-25	6,6	14	10	25	44	48	30	11	40	16245
OSP-E32BHD	CO-32	9	19	12	28	60	62	42	15	56	16246
OSP-E50BHD	CO-50	9	45	16	32	90	92	50	15	87	16247

\*) = Pair

# End Cap Mounting

Size 25, 32, 50



- Series OSP-E..SBR, ..STR  
Linear Drive with Screw  
and extending rod

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.

Material:

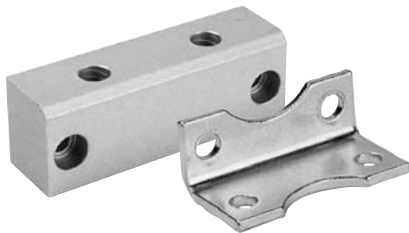
Series OSP-25 to 32:

Galvanised steel.

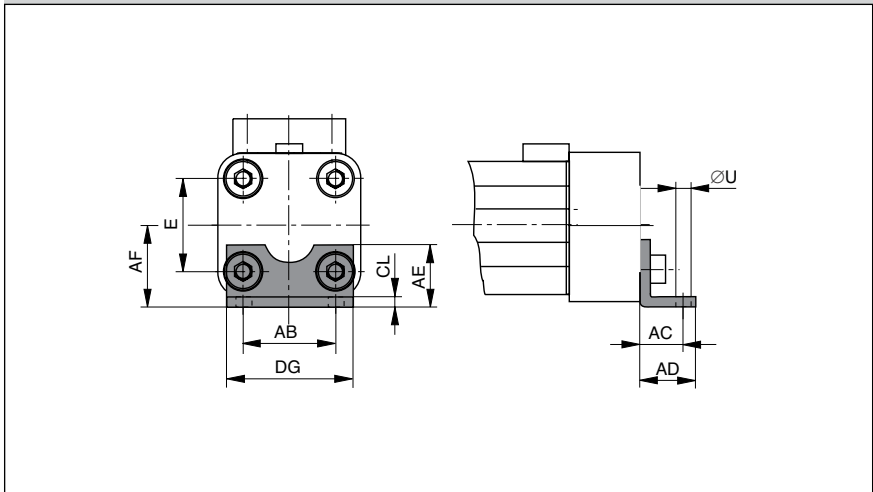
Series OSP-50:

Anodized aluminium.

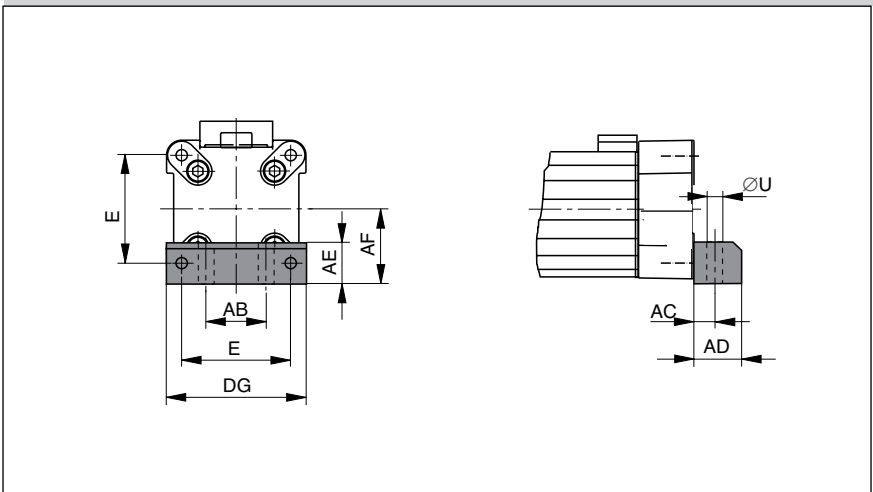
The mountings are supplied as pairs



## Series OSP-E25 to E32: Type A1



## Series OSP-E50: Type C1



### Dimension Table [mm] and Order Instruction

Series	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. *)	
										Typ A1	Typ C1
OSP-E25	27	5,8	27	16	22	18	22	2,5	39	2010	–
OSP-E32	36	6,6	36	18	26	20	30	3	50	3010	–
OSP-E50	70	9	40	12,5	24	30	48	–	86	–	5010

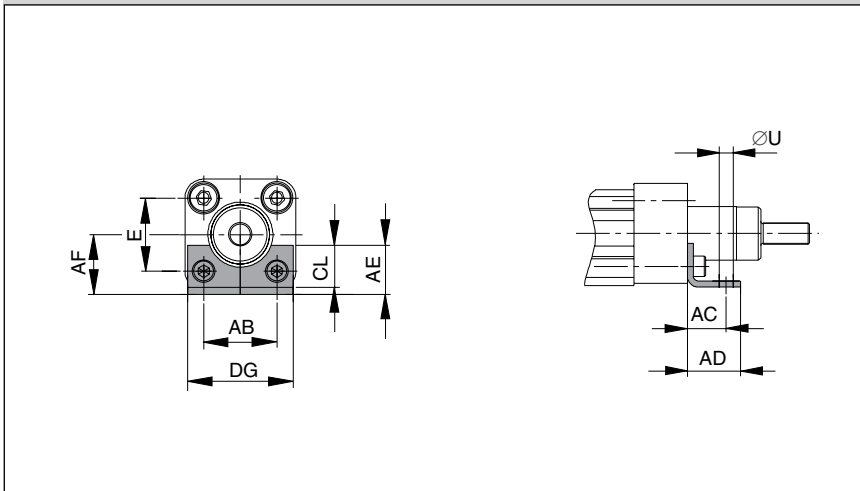
\*) = Pair

#### Important:

With the OSP-E Screw series, the end cap mounting can only be used at the end opposite to the drive shaft.

We recommend the application of two mid section supports (page 135) at the drive shaft end of the actuator.

**Series OSP-E25SBR, 25STR to E32SBR, 32STR: Type A1SR**



# End Cap Mounting

Size 25, 32, 50



- **Series OSP-E..SBR, ..STR Linear Drive with Screw and extending rod**

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.

Material:

Series OSP-25 to 32:

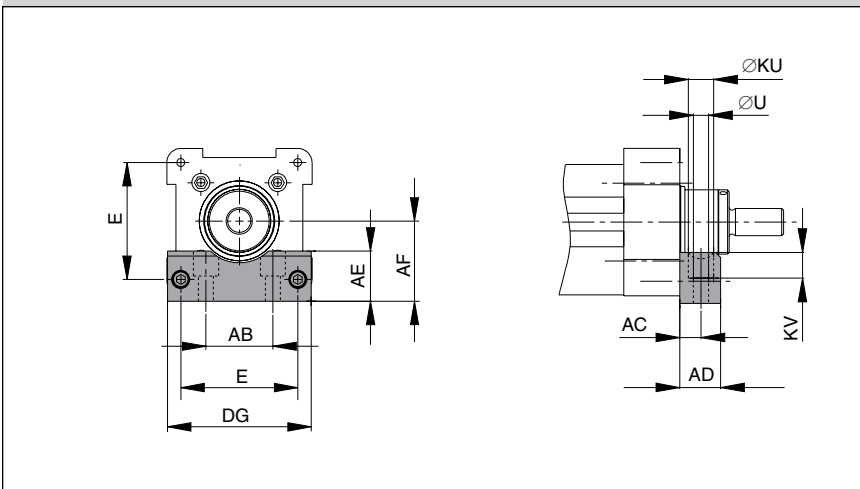
Galvanised steel.

Series OSP-50:

Anodized aluminium.

**The mountings are supplied as pairs**

**Series OSP-E50SBR, 50STR: Type C1SR**



**Dimension Table [mm] and Order Instruction**

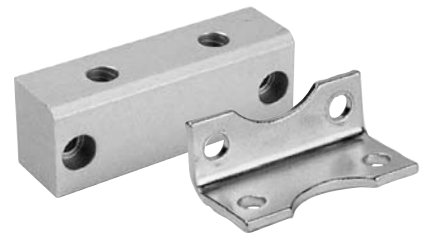
Series	E	øU	AB	AC	AD	AE	AF	CL	DG	øKU	KV	Order No. *)	
												Type A1SR	Type C1SR
OSP-E25SBR, STR	27	5,8	27	16	22	18	22	2,5	39	–	–	12263	–
OSP-E32SBR, STR	36	6,6	36	18	26	20	30	3	50	–	–	12264	–
OSP-E50SBR, STR	70	9	40	12,5	24	30	48	–	86	15	15	–	12265

\*) = single

**Important:**

With the OSP-E Screw series, the end cap mounting can only be used at the end opposite to the drive shaft.

We recommend the application of two mid section supports (page 135) at the drive shaft end of the actuator.



# Flange Mounting C

Size 25, 32, 50

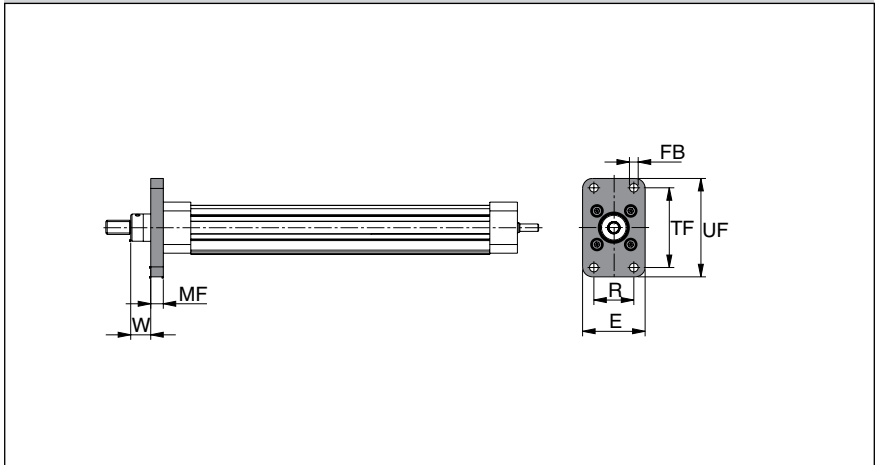


- **Series OSP-E..SBR, ..STR Linear Drive with Screw and extending rod**

The flange mounting C-E can only be mounted at the piston rod end of the linear drive.

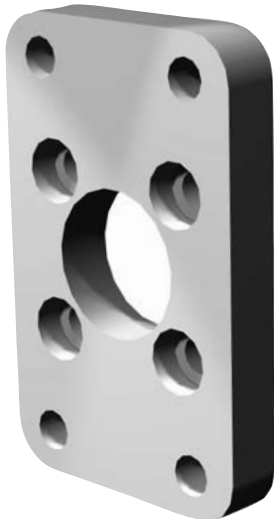
Material: Aluminium

Series OSP-E25SBR, STR to E50SBR, STR: Type C-E..



**Dimension Table [mm] and Order Instructions**

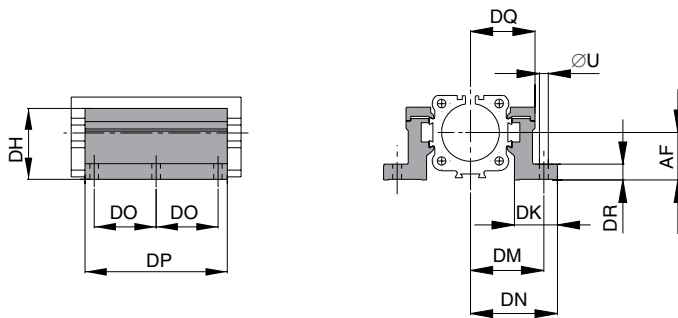
Series	Type	ø FB	E	MF	R	TF	UF	W	Order No.
OSP-E25SBR, STR	C-E25	7	50	10	32	64	79	16	12232
OSP-E32SBR, STR	C-E32	9	56	10	36	72	90	16	12233
OSP-E50SBR, STR	C-E50	12	100	16	63	126	153	21	12234





**Series OSP-E25 to E50, Type MAE-..**

OSP-E..B, ..SB, ..ST, ..SBR, ..STR



# Profile Mountings for Multi-Axis Systems

Size 20, 25, 32, 50



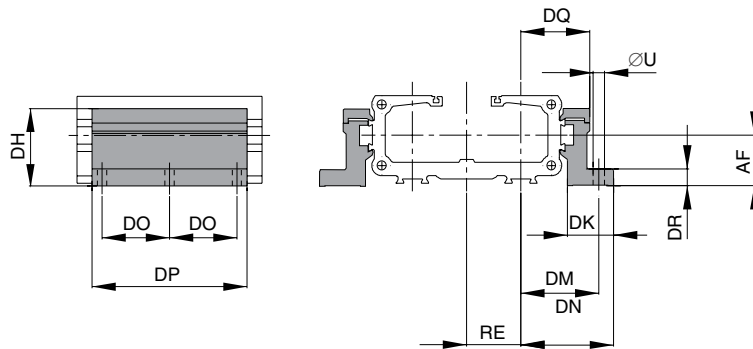
• Series OSP-E

Material: Anodized aluminum

Stainless steel version on request.

The mountings are supplied in pairs.

**Series OSP-E20BHD to E50BHD, Type MAE-..**



**Weight (mass) [kg]**

Series	Weight (mass) [kg] (pair)
MAE-20	0,3
MAE-25	0,3
MAE-32	0,4
MAE-50	0,8



**Dimension Table [mm] and Order Instructions**

Series	Type	R	U	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DT	EF	EM	EN	EQ	RE	Order No.
OSP-E20	MAE-20	M5	5.5	22	27	38	26	33.5	41	40	92	28	8	10	41,5	28.5	49	36	26	12278
OSP-E25	MAE-25	M5	5.5	22	27	38	26	40	47.5	40	92	34.5	8	10	41.5	28.5	49	36	26	12278
OSP-E32	MAE-32	M5	5.5	30	33	46	27	46	54.5	40	92	40.5	10	10	48.5	35.5	57	43	32	12279
OSP-E50	MAE-50	M6	7	48	40	71	34	59	67	45	112	52	10	11	64	45	72	57	44	12280

# Mid-Section Support

Size 20, 25, 32, 50



- Series OSP-E ..BHD  
Linear Drive with Toothed Belt  
and integrated guide

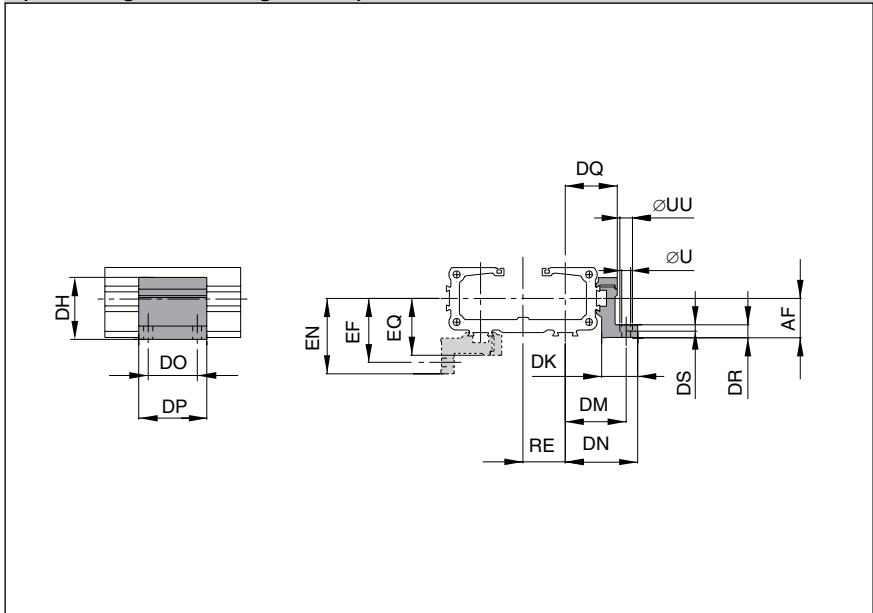
Note on Types E1 and D1:  
The mid-section support can also be  
mounted on the underside of the  
actuator, in which case its distance  
from the center of the actuator is  
different.  
For design notes, see page 17

Stainless steel version on request.

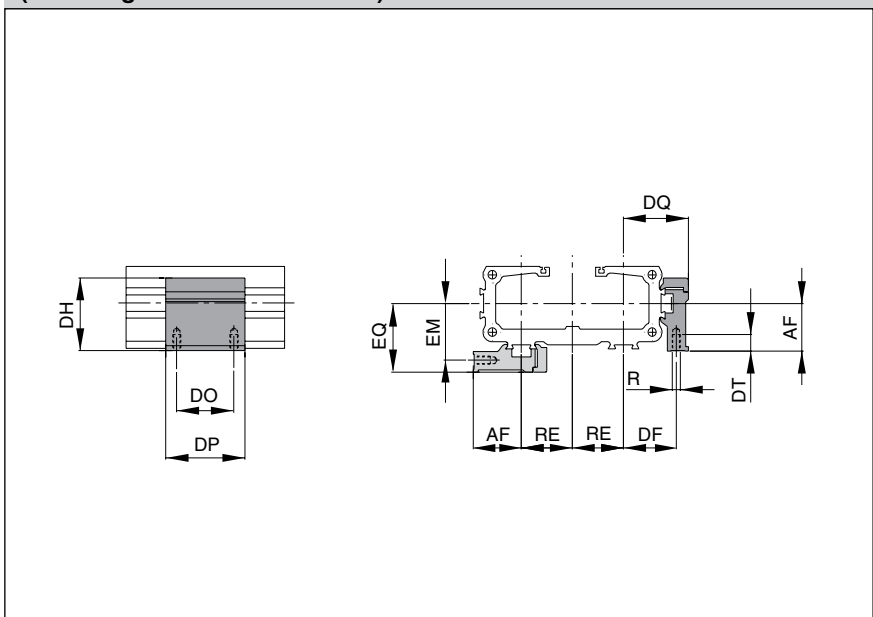
The mountings are supplied singly.



Series OSP-E20BHD to E50BHD: Type E1  
(Mounting with through holes)



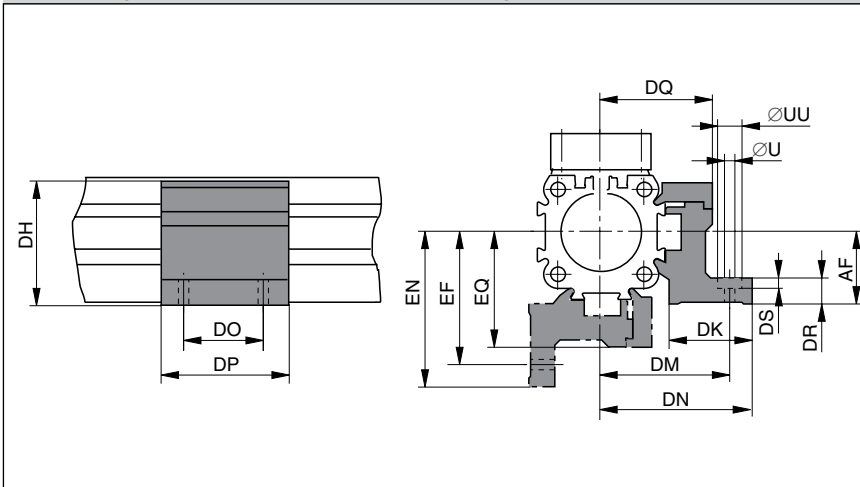
Series OSP-E20BHD to E50BHD: Type D1  
(Mountings with internal thread)



Dimension Table [mm] and Order Instructions

Series	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	RE	Order No.	
																					Type E1	Type D1
OSP-E20	M5	5.5	10	22	20.5	38	26	33.5	41	36	50	28	8	5.7	10	41.1	28.1	48.6	35.6	23	20009	20008
OSP-E25	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	26	20009	20008
OSP-E32	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	32	20158	20157
OSP-E50	M6	7	-	48	40	71	34	59	67	45	60	52	10	-	11	64	45	72	57	44	15536	15534

**Series OSP-E25, E32, E50, Type E1**  
 (Mounting from above / below with 2 through holes)



# Mid-Section Support

Size 25, 32, 50

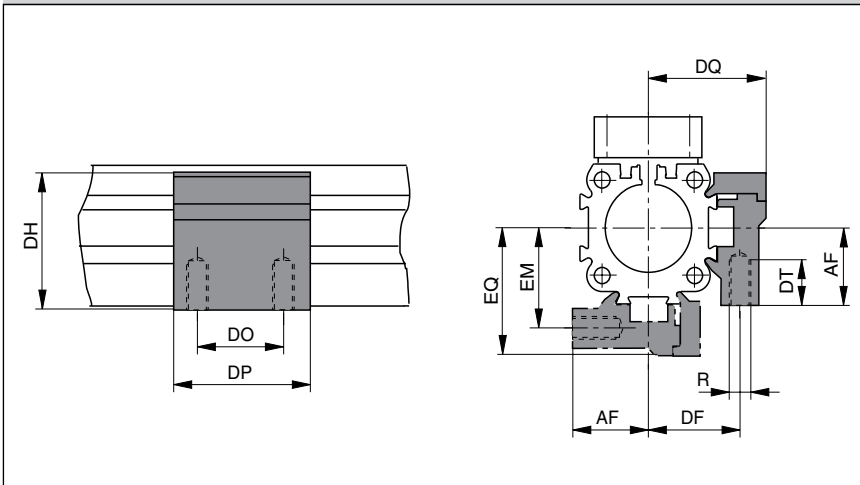


- **Series OSP-E..B**  
 Linear Drive with toothed Belt and integrated Guides
- **Series OSP-E..SB, ..ST, ..SBR, ..STR**  
 Linear Drive with Screw

Note on Types E1 and D1:  
 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 request

**Series OSP-E25, E32, E50, Type D1**  
 (Mountings from below with 2 screws, internal thread)



**Dimension Table [mm] and Order Instructions**

Series	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	Order No.	
																				TypeE1	TypeD1
OSP-E25	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-E32	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-E50	M6	7	-	48	40	71	34	59	67	45	60	52	10	-	11	64	45	72	57	20163	20162



# Adaptor Profile

Size 20, 25, 32, 50

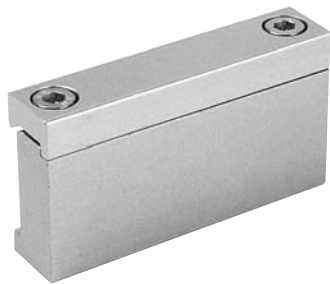


• Series OSP-E

**Adaptor Profile OSP**

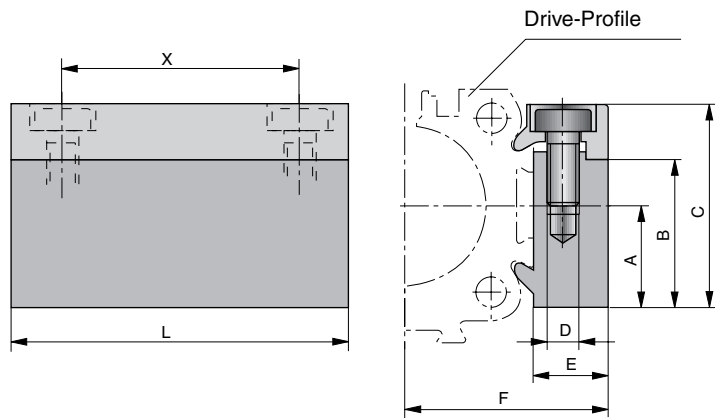
- A universal attachment for mounting of additional items
- Solid material

The mountings are supplied singly.

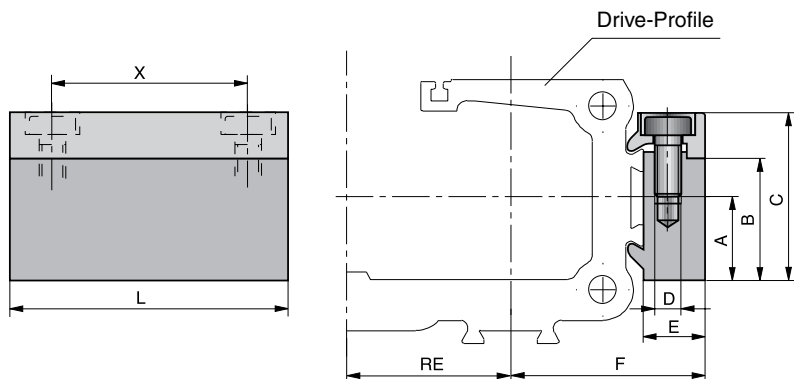


Series OSP-E25 to E50

OSP-E..B,..SB,..ST,..SBR,..STR



Series OSP-E20BHD to E50BHD

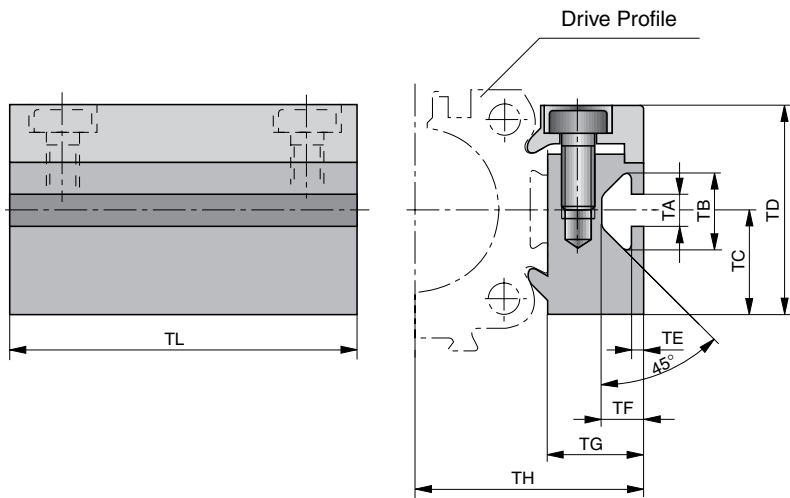


Dimension Table [mm] and Order Instructions

Series	A	B	C	D	E	F	L	X	RE	Order No.	
										Standard	Stainless
OSP-E20	16	23	32	M5	10.5	24	50	36	23	20006	20186
OSP-E25	16	23	32	M5	10.5	30.5	50	36	26	20006	20186
OSP-E32	16	23	32	M5	10.5	36.5	50	36	32	20006	20186
OSP-E50	20	33	43	M6	14	52	80	65	44	20025	20267

**Series OSP-E25 to E50**

**OSP-E..B,..SB,..ST,..SBR,..STR**



# T-Nut Profile

Size 20, 25, 32, 50



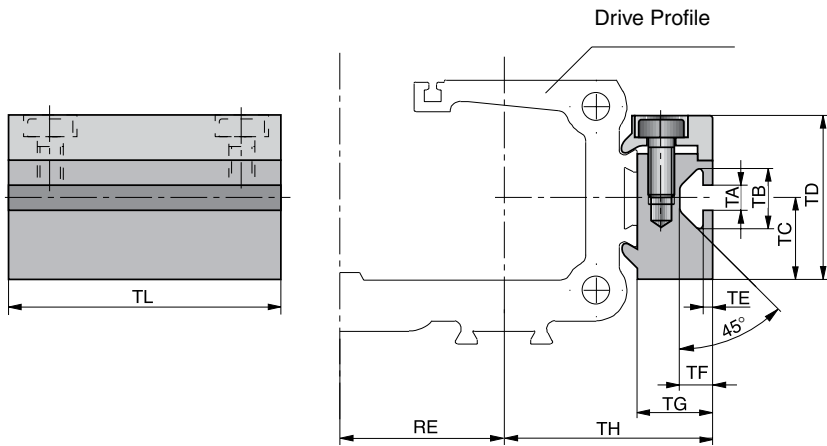
• **Series OSP-E**

**T-Nut Profile OSP**

• A universal attachment for mounting with standard T-nuts.

**The mountings are supplied singly.**

**Series OSP-E20BHD to E50BHD**



**Dimension Table [mm] and Order Instructions**

Series	RE	TA	TB	TC	TD	TE	TF	TG	TH	TL	Order No.	
											Standard	Stainless
OSP-E20	23	5	11.5	16	32	1.8	6.4	14.5	28	50	20007	20187
OSP-E25	26	5	11.5	16	32	1.8	6.4	14.5	34.5	50	20007	20187
OSP-E32	32	5	11.5	16	32	1.8	6.4	14.5	40.5	50	20007	20187
OSP-E50	44	8,2	20	20	43	4.5	12.3	20	58	80	20026	20268

# Adaptor Profile

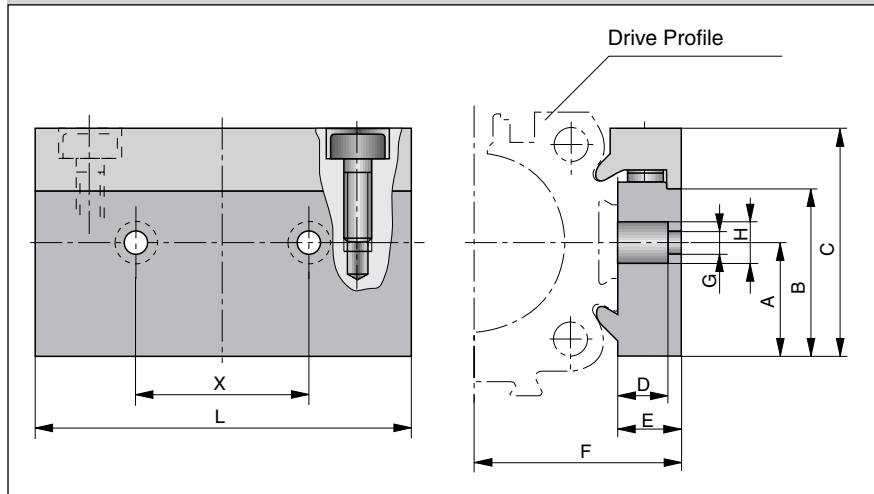
Size 25, 32, 50



to connect

- Series OSP-E with system profiles
- Series OSP-E with Series OSP-E or OSP-P

## Adaptor Profile



### Dimension Table [mm] and Order Instructions

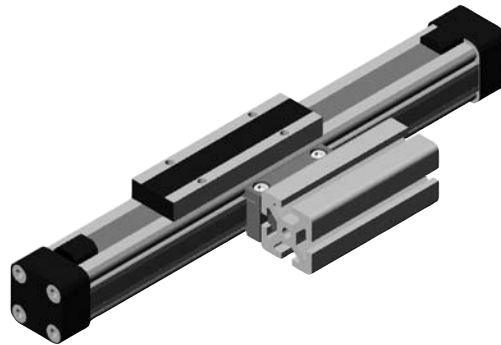
Series	for the connection to the driver of	A	B	C	D	E	F	G	H	L	X	Order No.
OSP-E25	OSP32-50	16	23	32	8.5	10.5	30.5	6.6	11	60	27	20850
OSP-E32	OSP32-50	16	23	32	8.5	10.5	36.5	6.6	11	60	27	20850
OSP-E50	OSP32-50	20	33	43	8	14	52	6.6	11	60	27	20851

The mountings are supplied singly.

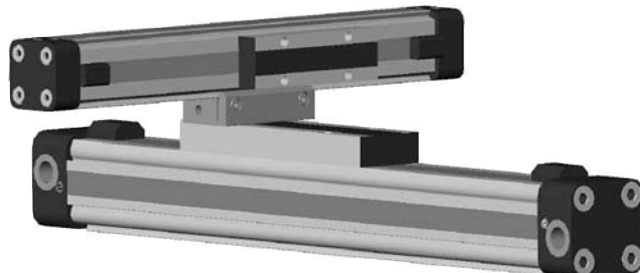


### Connecting possibilities

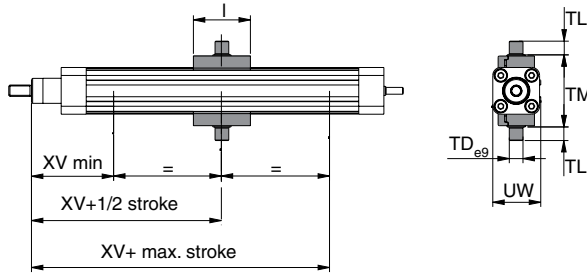
#### Connection of series OSP-E with system profiles



#### Connection of series OSP-E with series OSP-E/OSP-P



**Series OSP-E25SBR, 25STR to 50SBR, 50STR: Type EN-..**



Material: Aluminium

# Trunnion Mounting EN

# Pivot Mounting EL

Size 25, 32, 50



**Dimension Table [mm] and Order Instructions – for Trunnion Mounting EN-..**

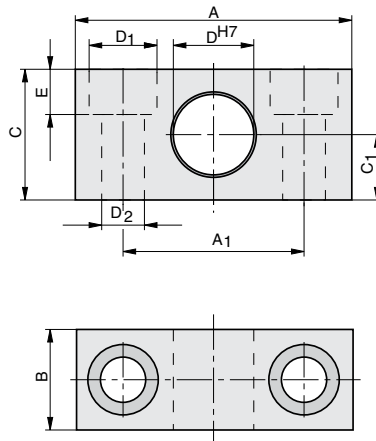
Series	Type	l	ø TD e9	TL	TM	UW	XV min	XV+ 1/2 Stroke	XV+ max. Stroke	Order No.
OSP-E25SBR, STR	EN-E25	50	12	12	63	42	73	83	62	12235
OSP-E32SBR, STR	EN-E32	50	16	16	75	52	76.5	90	69.5	12236
OSP-E50SBR, STR	EN-E50	80	20	20	108	87	110	110	84	12237

- Series OSP-E..SBR, ..STR For Linear Drive with spindle drive and piston rod

The trunnion mounting is fitted to the dovetail rails of the actuator profile and is continuously adjustable in axial direction.

**The mountings are supplied in pairs.**

**Series OSP-E25SBR, 25STR to 50SBR, 50STR: Type EL-..**



Material: Aluminium

Trunnion Mounting EN



Pivot Mounting EL



**Dimension Table [mm] and Order Instructions – for Pivot Mounting EL-..**

Series	Type	A	A <sub>1</sub>	B	C	C <sub>1</sub>	øD <sup>H7</sup>	øD <sub>1</sub>	øD <sub>2</sub>	E	Weight (mass) (kg)	Order No.
OSP-E25SBR, STR	EL-032	55	36	20	26	13	12	13.5	8.4	9	0.06	PD23381
OSP-E32SBR, STR	EL-040/050	55	36	20	26	13	16	13.5	8.4	9	0.06	PD23382
OSP-E50SBR, STR	EL-063/080	65	42	25	30	15	20	16.5	10.5	11	0.10	PD23383

# Clevis Mounting

Size 25, 32, 50



- **Series OSP-E..B**  
 For Linear Drives with Belt
- **Series OSP-E..SB, ..ST**  
 For Linear Drives with Screw

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.

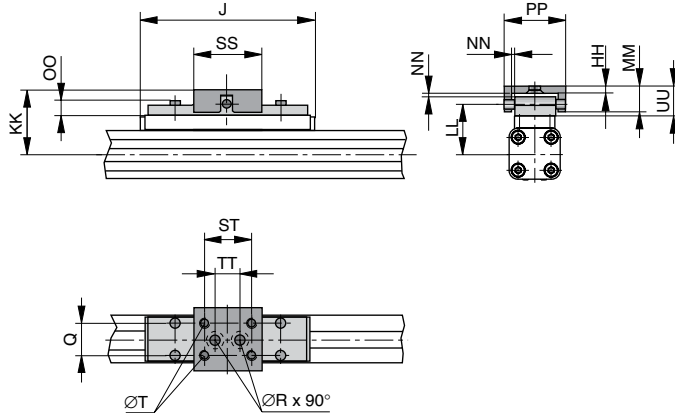
Freedom of movement is provided as follows:

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

A stainless steel version is also available.

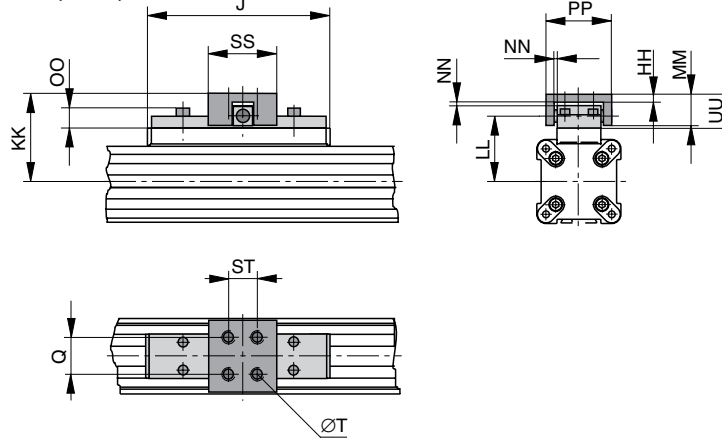
## Series OSP-E25 to E32

### OSP-E..B, ..SB, ..ST



## Series OSP-E50

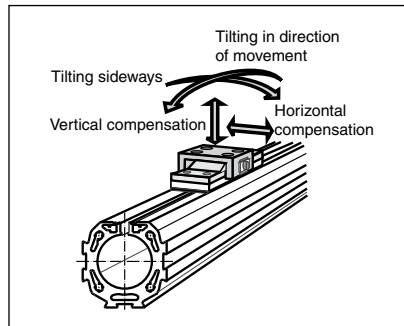
### OSP-E..B, ..SB, ..ST



### Dimension Table [mm] and Order Instructions

Series	J	Q	T	øR	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU	Order No.	
																Standard	Stainless
OSP-E25	117	16	M5	5.5	3.5	52	39	19	2	9	38	40	30	16	21	20005	20092
OSP-E32	152	25	M6	6.6	6	68	50	28	2	13	62	60	46	40	30	20096	20094
OSP-E50	200	25	M6	—	6	79	61	28	2	13	62	60	46	—	30	20097	20095

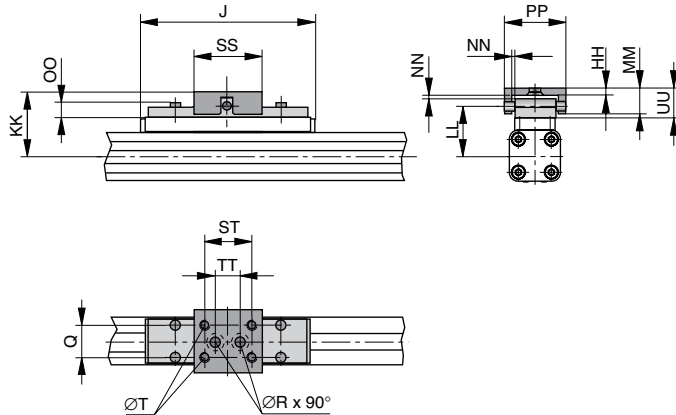
\* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.





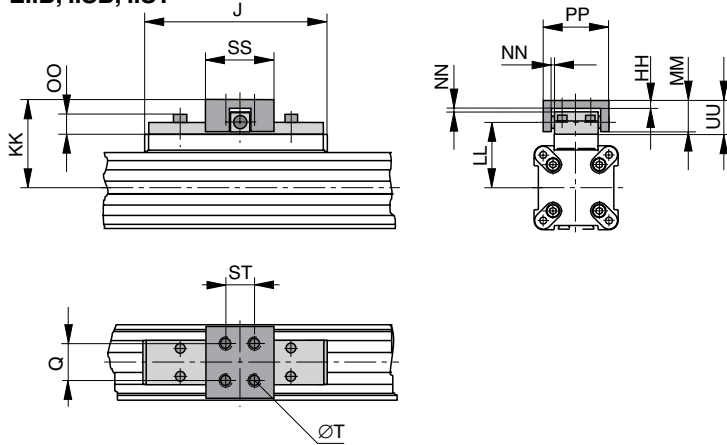
**Series OSP-E25 to E32**

**OSP-E..B, ..SB, ..ST**



**Series OSP-E50**

**OSP-E..B, ..SB, ..ST**



# Clevis Mounting, Low Backlash

Size 25, 32, 50



- Series OSP-E..B Linear Drives with Belt
- Series OSP-E..SB, ..ST Linear Drives with Screw

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 clevis mounting has a low backlash fit. Freedom of movement is provided as follows:

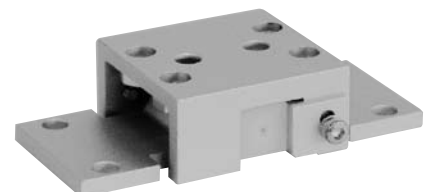
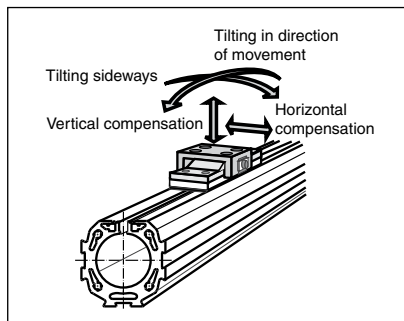
- Tilting in direction of movement
- Vertical compensation
- Tilting sideways
- Horizontal compensation

A stainless steel version is also available.

**Dimension Table [mm] and Order Instructions**

Series	J	Q	T	øR	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU	Order No.	
																Standard	Stainless
OSP-E25	117	16	M5	5.5	3.5	52	39	19	2	9	49	40	30	16	21	20496	20498
OSP-E32	152	25	M6	6.6	6	68	50	28	2	13	69	60	46	40	30	20497	20499
OSP-E50	200	25	M6	—	6	79	61	28	2	13	69	60	46	—	30	20812	20818

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



# Inversion Mounting

Size 25, 32, 50



- Series OSP-E..B  
 For Linear Drive with Belt
- Series OSP-E..SB, ..ST  
 For Linear Drive with Screw

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 request.

**Please note:**

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

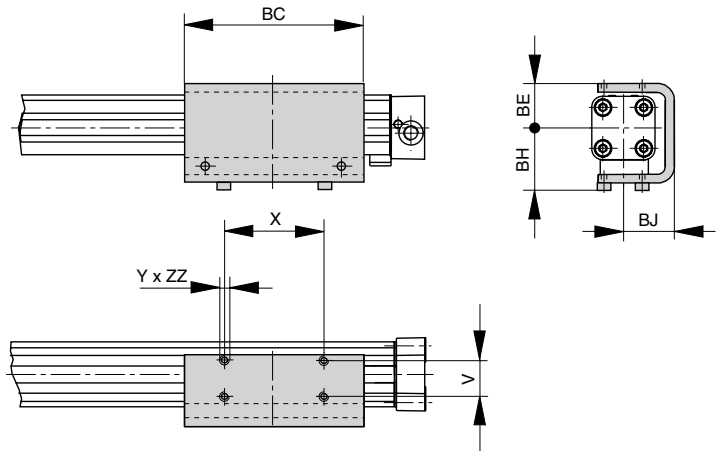
**Important Note:**

May be used in combination with Clevis Mounting, ref. dimensions on pages 139 & 140



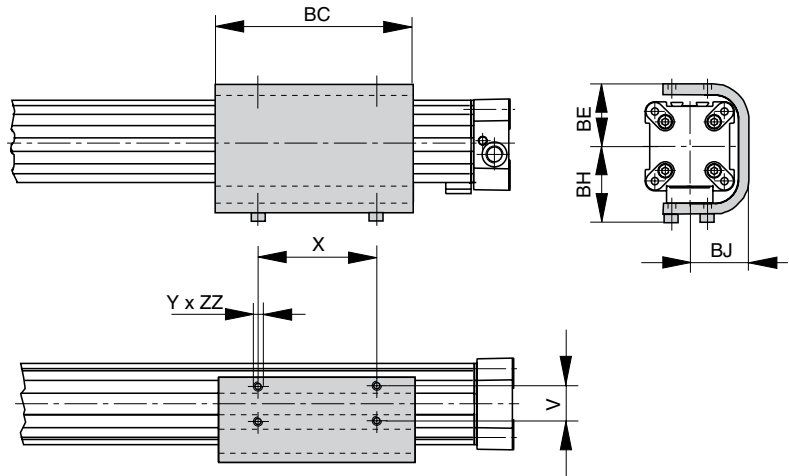
**Series OSP-E25 to E32**

**OSP-E..B, ..SB, ..ST**



**Series OSP-E50**

**OSP-E..B, ..SB, ..ST**



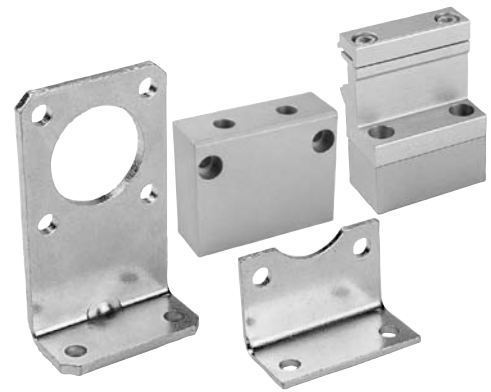
**Dimension Table (mm) and Order Instructions**

Series	V	X	Y	BC	BE	BH	BJ	ZZ	Order No.
OSP-E25	25	65	M5	117	31	43	33.5	6	20037
OSP-E32	27	90	M6	150	38	51	39.5	6	20161
OSP-E50	27	110	M6	200	55	65	52	8	20166



# Accessories for Electric Linear Drives Series OSP-E

## Mountings for Linear drive with guide



A1P743E00FAG00X

The right to introduce technical modifications is reserved

### Contents

Description	Page
Overview mountings/guides	144
End Cap Mounting	145
Mid-Section Support	146






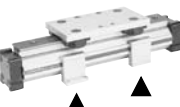
# Overview


## Mountings for Linear Drives with OSP-Guides



- Series OSP-E..B Linear Drive with Belt
- Series OSP-E..SB, ..ST Linear Drive with Screw \*



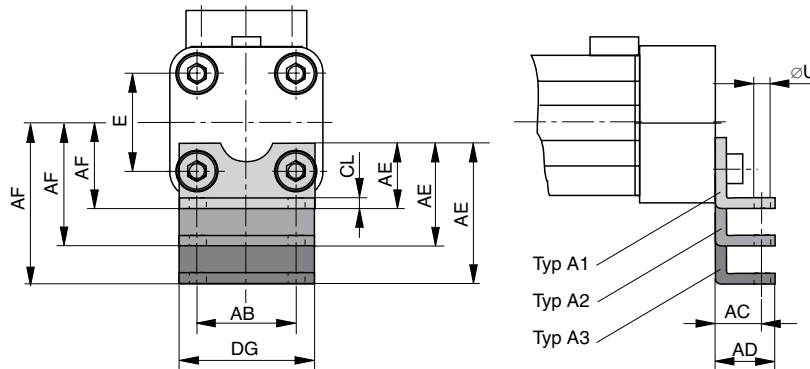
Overview											
Type of mounting des Zylinders	Type	Versions – OSP-guide									
		SLIDELINE			POWERSLIDE						
		PROLINE			MULTIBRAKE						
		25	32	50	25/25	25/35	25/44	32/35	32/44	50/60	50/76
End Cap Mounting 	Type A1										
	Type A2	O	O								
	Type A3				O	O		O			
End Cap Mounting reinforced 	Type B1	X	X		X	X	X	X	X		
	Type B3										
	Type B4						O		O		
End Cap Mounting 	Type C1			X						X	X
	Type C2			O							
	Type C3									O	
	Type C4										O
Mid-Section Support narrow Mid-Section Support wide 	Type D1	X	X	X	X	X	X	X	X	X	X
	Type E1	X	X	X	X	X	X	X	X	X	X
	Type E2	O	O	O							
	Type E3				O	O		O		O	
	Type E4						O		O		O

- X = mounting position carriage top (12 clock position)
- O = mounting position carriage side (3 or 9 clock position)
-  = available components

**\* Please note:**  
With series OSP-E-Spindle the end cap mountings A, B and C can only be fitted to the side opposite to the drive shaft. On the side of the drive shaft we recommend to use our mid-section supports (page 146).

**Series OSP – E25, E32: Type A**

**OSP-E..B,..SB,..ST**



**End Cap Mounting \***

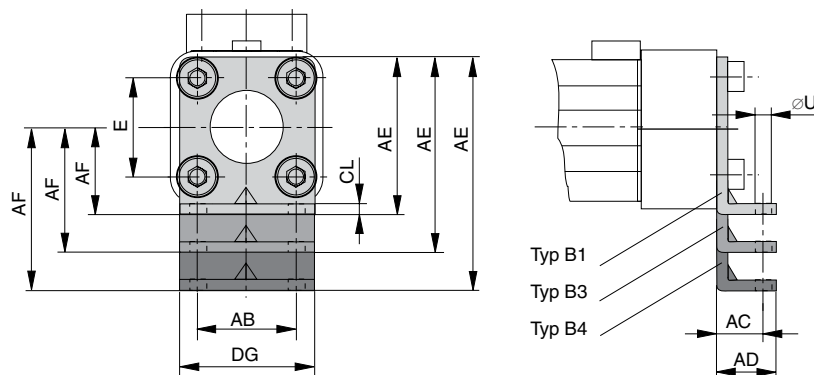
At the end face of each end caps there are four holes with internal threads to fix the drive. The hole layout is square so that the drive can be fitted on the bottom, the top or either side.

Material: series OSP-25, 32: steel, zinc galvanized  
 series OSP-50: aluminium, anodized

The mountings are supplied in pairs.

**Series OSP – E25, E32: Type B**

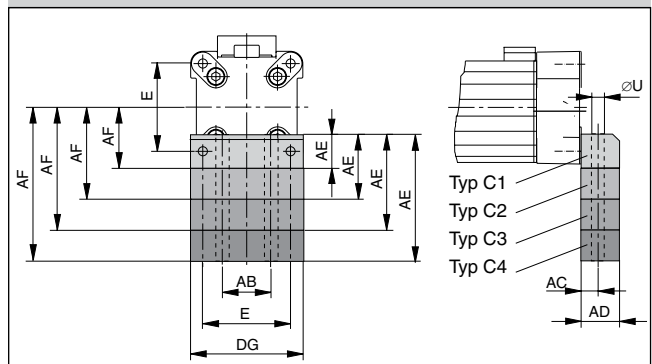
**OSP-E..B,..SB,..ST**



**Dimension Table [mm]**  
 – Dimension AE and AF (Depending on type of mounting)

Type of mount.	Dimension AE at size			AF at size		
	25	32	50	25	32	50
A1	18	20	-	22	30	-
A2	33	34	-	37	44	-
A3	45	42	-	49	52	-
B1	42	55	-	22	30	-
B3	-	-	-	-	-	-
B4	80	85	-	60	60	-
C1	-	-	30	-	-	48
C2	-	-	39	-	-	57
C3	-	-	54	-	-	72
C4	-	-	77	-	-	95

**Series OSP – E50: Type C**



**Dimension Table [mm]**

Series	E	øU	AB	AC	AD	CL	D
OSP-E25	27	5.8	27	16	22	2.5	39
OSP-E32	36	6.6	36	18	26	3	50
OSP-E50	70	9	40	12.5	24	-	86

\* see survey for mounting types on page 144

## Mid-Section Support

Information on type E1 and D1:

The mid-section supports can also be fitted to the bottom side of the drive. In this case please observe the new center line dimensions of the drive.

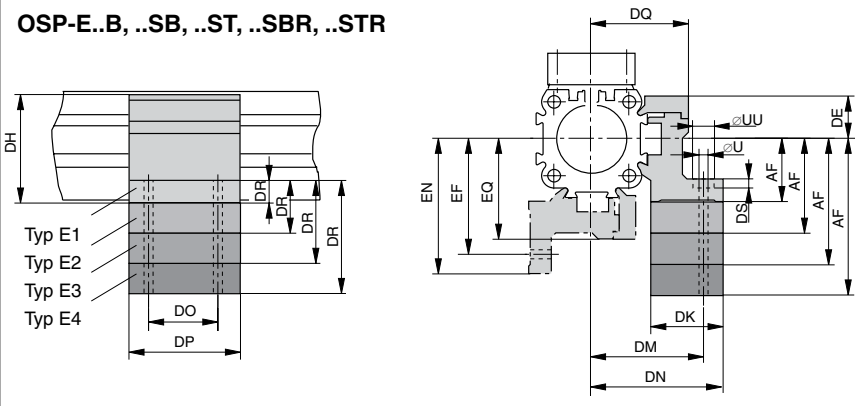
For layout information please refer to pages 104, 107 & 111

Stainless version on request.



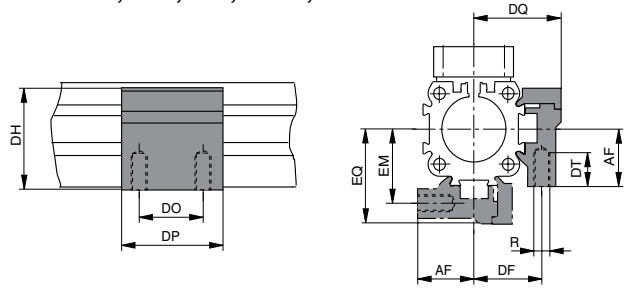
Series OSP-E25, E32, E50: Type E.  
(Mounting with through hole)

OSP-E..B, ..SB, ..ST, ..SBR, ..STR



Series OSP-E25, E32, E50: Type D1  
(Mounting with internal thread)

OSP-E..B, ..SB, ..ST, ..SBR, ..STR



Dimension Table [mm]  
– Dimension DR and AF (Depending on type of mounting)

Type of mount.	Dimensions DR at size			AF at size		
	25	32	50	25	32	50
D1	–	–	–	22	30	48
E1	8	10	10	22	30	48
E2	23	24	19	37	44	57
E3	35	32	31	49	52	72
E4	46	40	57	60	60	95

Dimension Table [mm]

Series	R	U	UU	DE	DF	DH	DK	DM	DN	DO	DP	DQ	DS	DT	EF	EM	EN	EQ
OSP-E25	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-E32	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-E50	M6	7	–	23	40	71	34	59	67	45	60	52	–	11	64	45	72	57

### Order Instructions for Mountings Type A – Type B – Type C – Type D – Type E

Type of mounting (Versions)	Order No. Size		
	25	32	50
A1 *1)	2010	3010	–
A2 *1)	2040	3040	–
A3 *1)	2060	3060	–
B1 *1)	20311	20313	–
B3 *1)	–	–	–
B4 *1)	20312	20314	–
C1 *1)	–	–	5010
C2 *1)	–	–	20349
C3 *1)	–	–	20350
C4 *1)	–	–	20351
D1 *2)	20008	20157	20162
E1 *2)	20009	20158	20163
E2 *2)	20352	20355	20361
E3 *2)	20353	20356	20362
E4 *2)	20354	20357	20363

\*1) The mountings are supplied in pairs

\*2) The mountings are supplied simply



# Accessories for Linear Drives Series OSP-E

## Piston Rod Mountings



A1P744E 00FAG00X

The right to introduce technical modifications is reserved

### Contents

Description	Page
Piston Rod Eye according to ISO 8139	148
Piston Rod Clevis according to ISO 8140	148
Piston rod Compensating Coupling	149



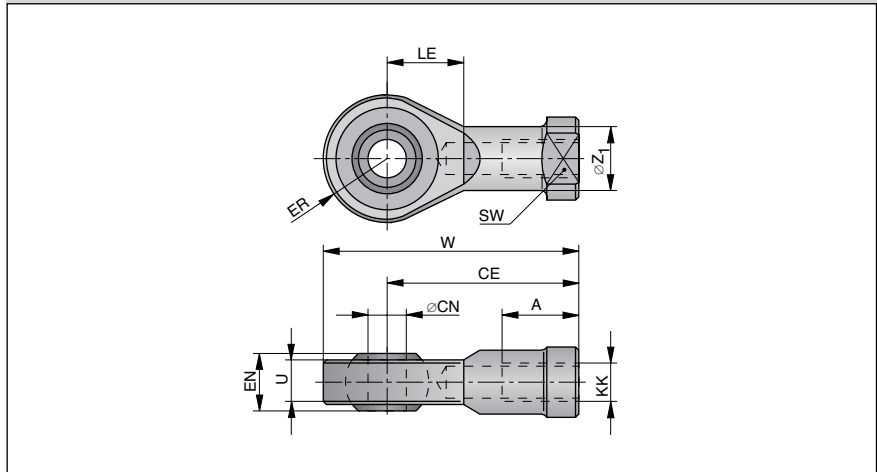
# Piston Rod Eye according to ISO 8139



- Series OSP-E..SBR, ..STR Linear Drive with Screw and Piston Rod



Piston Rod Eye according to ISO 8139 (CETOP RP103 P)  
 Type: GA-..



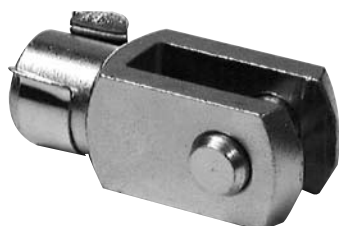
Order Instructions, Dimension Table [mm], Weight

Series	Type	A	CE	øCN	EN	ER	KK	LE	SW	U	W	øZ <sub>1</sub>	Weight [kg]	Order No.
OSP-E25SBR,STR	GA-M10x1.25	20	43	10	14	14	M10x1.25	15	17	10.5	57	15	0.072	KY6147
OSP-E32SBR,STR	GA-M10x1.25	20	43	10	14	14	M10x1.25	15	17	10.5	57	15	0.072	KY6147
OSP-E50SBR,STR	GA-M16x1.5	28	64	16	21	21	M16x1.5	22	22	15	85	22	0.21	KY6150

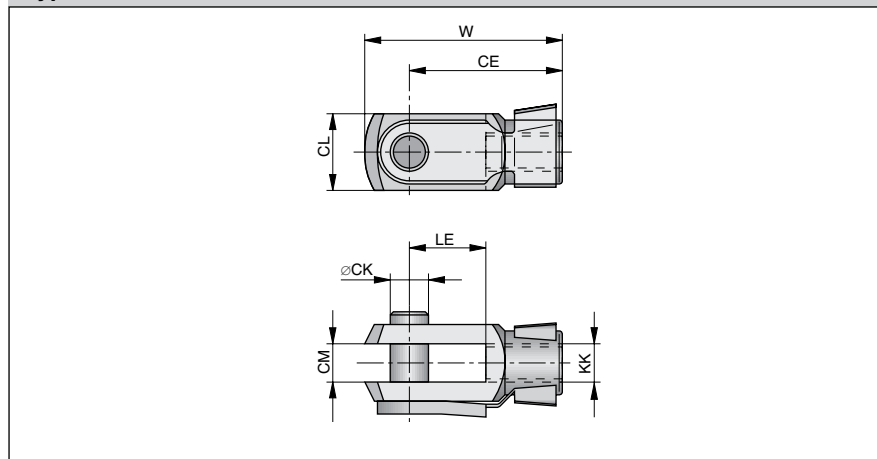
# Piston Rod Clevis according to ISO 8140



- Series OSP-E..SBR, ..STR Linear Drive with Screw and Piston Rod



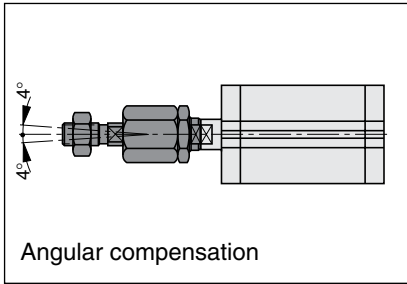
Piston Rod Clevis according to ISO 8140 (CETOP RP102P)  
 Type: GK-..



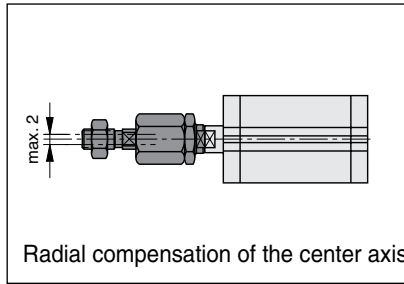
Order Instructions, Dimension Table [mm], Weight

Series	Type	øCK	CE	CL	CM	KK	LE	W	Weight[kg]	Order No.
OSP-E25SBR,STR	GK-M10x1.25	10	40	20	10	M10x1.25	20	52	0.08	KY6135
OSP-E32SBR,STR	GK-M10x1.25	10	40	20	10	M10x1.25	20	52	0.08	KY6135
OSP-E50SBR,STR	GK-M16x1.5	16	64	32	16	M16x1.5	32	83	0.30	KY6139





Angular compensation



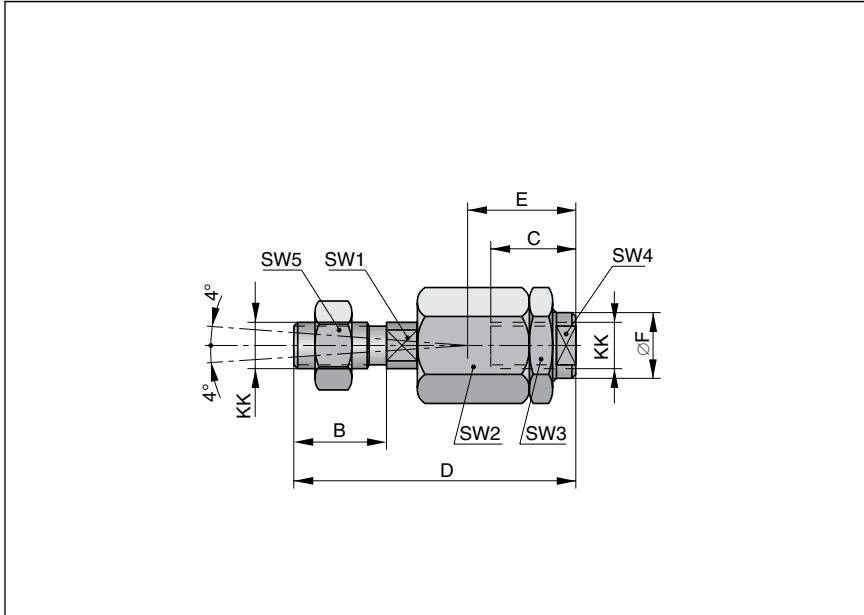
Radial compensation of the center axis

# Piston Rod Compensating Coupling



**Piston Rod compensating coupling  
Type: AK-..**

- Series OSP-E..SBR, ..STR  
Linear Drive with Screw  
and Piston Rod



**Order Instructions, Dimension Table [mm], Weight**

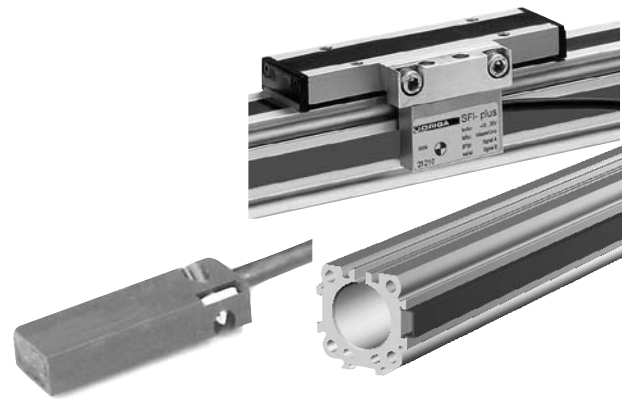
Series	Type	B	C	D ±2	E	ØF	KK	SW1	SW2	SW3	SW4	SW5	Weight [kg]	Order No.
OSP-E25SBR,STR	AK-M10x1.25	20	23	73	31	21,5	M10x1.25	12	30	30	19	17	0.218	KY 1129
OSP-E32SBR,STR	AK-M10x1.25	20	23	73	31	21,5	M10x1.25	12	30	30	19	17	0.218	KY 1129
OSP-E50SBR,STR	AK-M16x1.5	40	32	108	45	33,5	M16x1.5	19	41	41	30	30	0.637	KY 1133





# Accessories for Electric Linear Drives Series OSP-E

## Magnetic Switches SFI-plus Displacement Measuring System



A1P752E00FAG00X

The right to introduce technical modifications is reserved

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Cable Cover	160





**Characteristics**

Characteristics				
Characteristics		Symbol	Unit	Description
<b>Electrical Characteristics</b>			<b>Type RS Type ES</b>	
Operating voltage	U <sub>B</sub>	V	10-240 AC/DC (NO) 10-150 AC/DC (NC) 10-70 AC/DC (NO/NC)**	10-30 DC
Connection			Two wire	Three wire
Switching function			Normally open (NO) Normally closed (NC)	NPN (NO) PNP (NC)
Max. permanent switching current	I <sub>Dmax</sub>	mA	200	200
Max. switching capacity	VA (W)	10 VA	—	
Residual voltage at I <sub>Lmax</sub>		V	< 3	< 3
Max. current consumption		mA	—	< 20
Status indicator			LED, yellow	
Typical switching time		ms	On: < 2	On: < 2
Switch-off delay		ms	—	approx. 25
Pole reversal			LED without function	—
Pole reversal protection			—	built in
Short circuit protection			—	built in
Switchable capacity		µF	0.1 at 100Ω, 24VDC	
Switching distance		mm	approx. 15	approx. 15
Hysteresis for OSP		mm	approx. 8	approx. 3
<b>Mechanical Characteristics</b>				
Housing			Macrolon, grey	
Insulation class			F to VDE 0580	
Connection*)	Type RS-K		Cable, 5 m long	3-pole Connector M8, Cable length ca. 100mm
	Type RS-S		3-pole Connector M8, Cable length ca. 100mm**	
Cable cross section (highly flexible)		mm <sup>2</sup>	2 x 0.14	3 x 0.14
Cable (highly flexible *)			PVC	PUR, black
Wire colors			brown AC/DC+ blue or white signal output	Pin 1 = +, brown Pin 3 = 0V, blue Pin 4 = Signal black or white
Minimum permissible bending radius	fixed	mm	≥ 20	
of cable	moving	mm	≥ 70	
Switching point accuracy	mm		± 0.2	
Temperature range *) <sup>1)</sup>	ϑ <sub>min</sub> ϑ <sub>max</sub>	°C	-25 other temperature ranges +80 on request	
Service life, switching cycles			3 x 10 <sup>6</sup> up to 6 x 10 <sup>6</sup>	theoretically unlimited
Electrical protection		IP	67 according to DIN EN 60529	
Shock resistance			m/s <sup>2</sup> (contact switches)	100 500
Weight (mass)		kg	0.12	

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The right to introduce technical modifications is reserved

\*) other versions on request

\*\*)RS with connector (RS-S)

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

# Magnetic Switches



**Type RS-**  
**Type ES-**

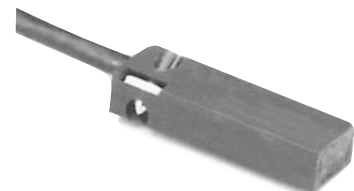
For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted.

The magnetic switches can as well be used as cut-out switches for a lot of intermediate positions.

Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

**Piston speed and switching distance affect signal duration and should be considered in conjunction with the minimum reaction time of ancillary control equipment. In accordance to this, the contact travel must be included in the calculation.**

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



## Magnetic Switches RS and ES

### Electrical Service Life Protective Measures

Type RS 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.

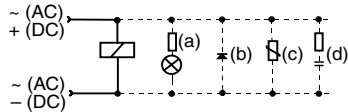
With **resistive** and **capacitive** loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

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.

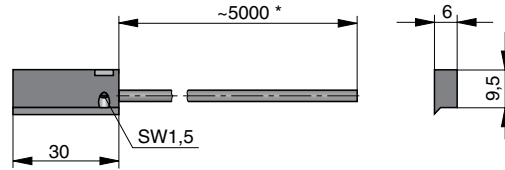
## Type RS

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

## Type ES

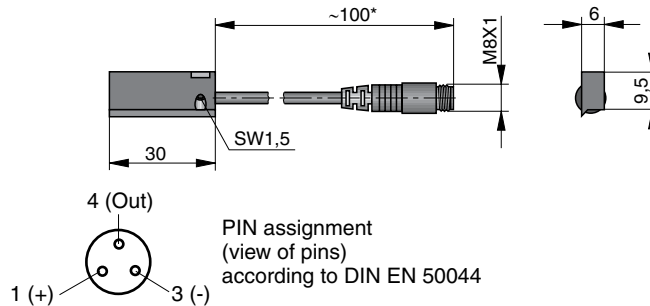
In the type ES contact is made by an electronic switch – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations.

### Dimensions [mm] – Type RS-K



\* Length with possible minus tolerance, see chart below

### Dimensions [mm] – Type ES-S / RS-S\*\*



PIN assignment  
 (view of pins)  
 according to DIN EN 50044

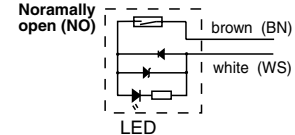
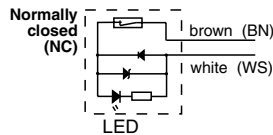
\*\* Length with possible minus tolerance, see table below

\*\*Operating voltage max. 70 V

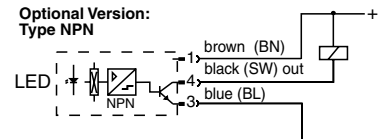
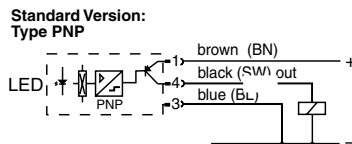
### Length of connection cable with length tolerance

Sensor Order No.	Nominal cable length	max. Length tolerance
KL3087	100 mm	-20 mm
KL3047	100 mm	-20 mm
KL3054	100 mm	-20 mm
KL3060	145 mm	± 5 mm
KL3048	5000 mm	-50 mm
KL3045	5000 mm	-50 mm

### Electrical Connection Type RS

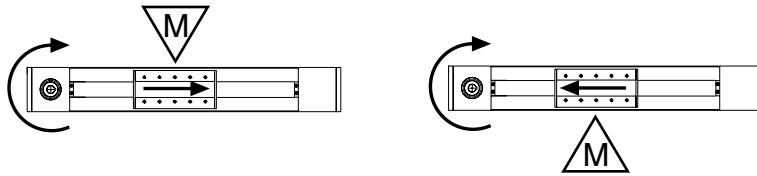


### Electrical Connection Type ES



**Positioning of Magnetic Sensors/Permanent Magnets — OSP-E..BHD**

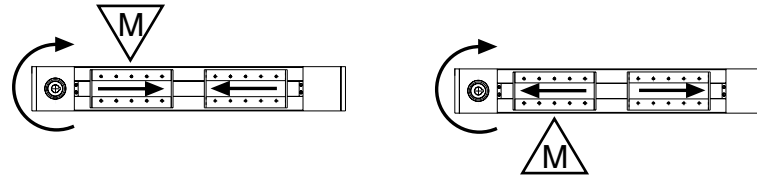
**Standard Version**



Drive Shaft Option = 0

Drive Shaft Option = 1

**Bi-Parting Version**

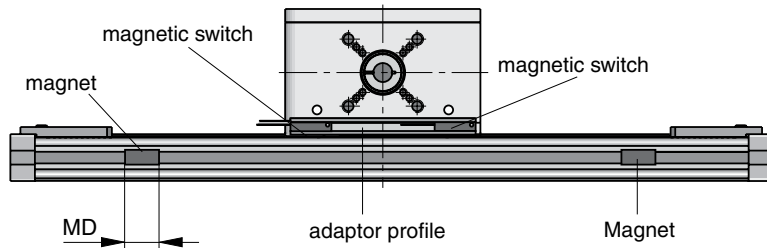


Drive Shaft Option = 2

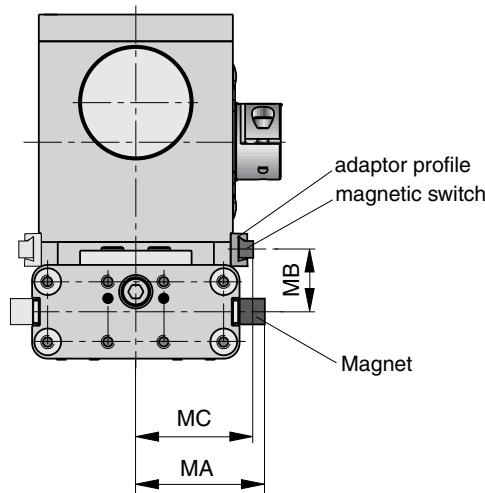
Drive Shaft Option = 3

When arranging the magnetic switches, please mind the position of the magnets integrated in the carrier as a function of the operating direction. "M" indicates where magnet is fitted in carrier.

**Dimensions for magnetic switch set  
 Series OSP-E..BV**



The magnetic switch as well as the magnet can be fitted to either side



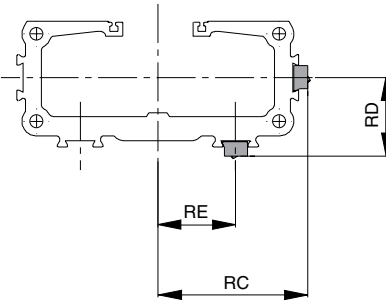
Dimensions see page 146

Magnetic switch and magnet are externally fitted to the OSP-E..BV.

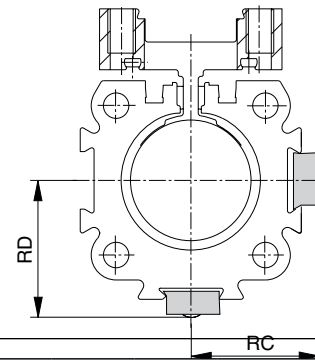
For this purpose please order the magnetic switch set (consisting of 2 magnetic switches, 1 fastening rail and 2 magnets) for contactless position sensing.

**Dimensions**

**OSP-E..BHD**



**OSP-E..B, ..SB, ..ST, ..SBR, ..STR**






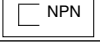
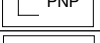
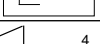



**Dimension Table (mm)**

Series	Dimension						
	RC	RD	RE	MA	MB	MC	MD
<b>OSP-E20BHD</b>	41.5	26.6	23	–	–	–	–
<b>OSP-E25BHD</b>	51	27	26	–	–	–	–
<b>OSP-E32BHD</b>	63	34	32	–	–	–	–
<b>OSP-E50BHD</b>	87	48	34	–	–	–	–
<b>OSP-E20BV</b>	–	–	–	46	23.7	42.3	35
<b>OSP-E25BV</b>	–	–	–	56	26	51	35
<b>OSP-E25*</b>	25	27	–	–	–	–	–
<b>OSP-E32*</b>	31	34	–	–	–	–	–
<b>OSP-E50*</b>	43	48	–	–	–	–	–

\* = ..B, ..SB, ..ST, ..SBR, ..STR

**Order Instructions**

Description	Function	Series	Cable Length [mm]	Type	Order No.
Magnetic switches, Reed contact, with M8-Connector PIN 3 neutral (ES-S compatible connector)	NC 	all*	100	RS-S	KL3087
	NO 	all*	100	RS-S	KL3047
Magnetic switches, Reed contact, with cable	NC 	all*	5000	RS-K	KL3048
	NO 	all*	5000	RS-K	KL3045
	NC 	OSP-E..STR	5000	RS-K	KL3096
Magnetic switches, electronical with M8-connector	NPN (NO) 	all*	100	ES-S	KL 3060
	PNP (NC) 	all*	100	ES-S	KL 3054
	PNP (NC) 	OSP-E..STR	100	ES-S	KL 3098
Magnetic switch set **	NC 	OSP-E..BV	2 x 100	RS-S	15886
Connecting cable	suitable for cable chain		5000		KL3186
	suitable for cable chain		10000		KL3217
	suitable for cable chain		15000		KL3216
	standard		5000		4041
	standard		10000		KL9074

\* = except for OSP-E..STR

\*\* = consisting of 2 magnetic switches KL 3087, 1 fastening rail, 2 magnets



Characteristics		
Characteristics	Unit	Description
<b>Type</b>		<b>21210</b>
<b>Output function</b>		
Resolution	mm	0.1
Pole length scale	mm	5
Max. speed	m/s	10
Repeating accuracy		± 1 increment
Distance sensor/scale mm		≤ 4
Tangential deviation	≤ 5°	
Possible lateral deviation	mm	≤ ± 1.5
Switching output		PNP
<b>Electrical Characteristics</b>		
Operating voltage U <sub>b</sub>	V DC	18 – 30
Voltage drop	V	≤ 2
Continuous current per output	mA	≤ 20
Power consumption at U <sub>b</sub> = 24V, switched on, no-load	mA	≤ 50
Short-circuit protection		yes
Reverse voltage protection		yes
Protection against inductive switch-off peak		yes
Power-up pulse suppression		yes
<b>EMC</b>		
Electrostatic discharge	kV	6, B, according to EN 61000-4-2
Electromagnetic field	V/m	10, A, according to EN61000-4-3
Fast transients signals, burst (signal connections)	kV	1, B, according to EN 61000-4-4
Fast transients signals, burst (DC-connections)	kV	2, B, according to EN 61000-4-4
EMC immunity, surge (signal-connections)	kV	1, B, according to EN 61000-4-5
EMC immunity, surge (DC-connections)	kV	0,5, B, according to EN 61000-4-5
HF cable fed	V	10, A, according to EN 61000-4-6
Magnetic field at 50 Hz	A/m	30, A, according to EN 61000-4-8
Radio frequency interference		according to EN 61000-6-4
Radiated disturbances		according to EN 55011, group 1, A
<b>Mechanical parameters</b>		
Housing		Aluminium
Cable length	m	5.0 – fixed, open end
Cable cross-section	mm <sup>2</sup>	4 x 0.14
Type of cable		PUR, black
Bending radius	mm	≥ 36
Weight (mass)	kg	approx. 0.165
<b>Ambient conditions/shock resistance</b>		
Encapsulation class	IP	67 according to EN60529
Ambient temperature range		°C -25 to +80
Broad band noise according to EN 60068-2-64	g	5.5 Hz to 2 kHz, 0.5 h per axis
Vibration according to EN 60068-2-6	g	12, 10 Hz to 2 kHz, 2 mm, 5 h per axis
Shock acc. EN 60068-2-27	g	100, 6 ms, 50 shocks per axis
Continuous shock according to EN 60068-2-29	g	5, 2 ms, 8000 shocks per axis

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The right to introduce technical modifications is reserved

# Displacement Measuring System

for automated movement

## ORIGA-Sensoflex

(Incremental Displacement Measuring System)

Series SFI-plus

- **Series OSP-E..SB**  
Linear Drive with ball screw
- **Series OSP-E..ST**  
Linear Drive with trapezoidal screw

### Special properties:

- contactless, magnetic displacement measuring system
- freely selectable displacement length up to 32 m
- resolution 0,1 mm
- displacement speed up to 10 m/s
- suited for linear and gyratory movements
- for almost all control and display units with suitable counter input

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

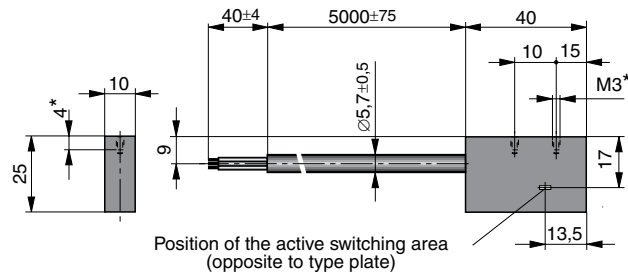
- **Measuring scale**  
self-adhesive, magnetic measuring scale
- **Sensing head**  
converts the magnetic poles into electric signals which are then processed by counter inputs downstream (e.g. PLC, PC, digital counters)



**Sensing head**

The sensing head supplies two pulsating, 90° out of phase counter signals (phase A/B) with a resolution of 0,4 mm (option 4 mm). External pulse edge control can improve the resolution to 0.1.mm (option 1 mm). The counting direction automatically results from the phase shift of the counter signal.

**Dimensions [mm] – Reading Head**



\* Max. thread depth 4mm

**Electric connection**

colour	Designation
bn = brown	+ DC
bl = blue	- DC
bk = black	phase A
wt = white	phase B

**Signal curve – sensing head OUT**

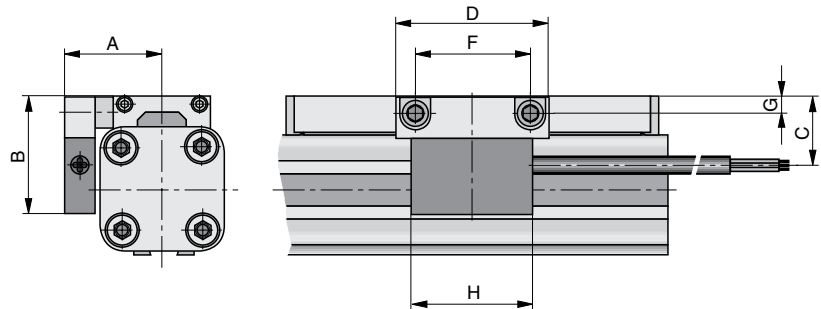
$U_a = U_e$	Phase B	$U_{a1}$	0°	
	Phase A	$U_{a2}$	90°	

**SFI-plus in connection with electric linear drives of series OSP-E..ST**

The SFI-plus can be mounted directly to the electric linear drive of series OSP-E..ST by means of a special mounting kit. The position of the sensing head is generally staggered by 90° to the carrier.



**Dimensions – in combination with OSP-E linear drives**



**Dimension Table [mm]**

Series	A	B	C	D	F	G	H
OSP-E25SB, ST	32	39	23	50	38	5.5	40
OSP-E32SB, ST	37.5	46	30	50	38	6.5	40
OSP-E50SB, ST	49.5	55	39	50	38	6.5	40

For later installation a corresponding carrier kit with threaded holes can be ordered.

**SFI-plus in connection with electric linear drives of series OSP-E..SB**

The displacement measuring system in connection with series OSP-E..SB can only be retrofitted, if the system is reconditioned by the manufacturer.

**Ordering Information**

Order Instructions	
Description	Order No.
Sensing head with measuring scale – resolution 0.1 mm (please indicate scale length)	<b>21240</b>
Sensing head - resolution 0.1 mm (spare part)	<b>21210</b>
Measuring scale per meter for (to be replaced)	<b>21235</b>
Mounting kit for OSP-P25	<b>21213</b>
Mounting kit for OSP-P32	<b>21214</b>
Mounting kit for OSP-P50	<b>21216</b>

\* The overall length of the measuring scale results from the dead length of the linear drive and the stroke length.  
For dead lengths for linear drives of series OSP-E see table.

Series	Dead lengths [mm]
OSP-E25SB, ST	154
OSP-E32SB, ST	196
OSP-E50SB, ST	280

**Example:**

Linear Drive OSP-E, Ø25 mm,  
stroke 1000 mm

Dead length + stroke = overall length of the measuring scale  
**154 mm + 1000 mm = 1154 mm**

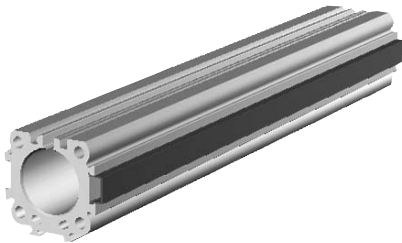
# Cable Cover

Size 20, 25, 32, 50

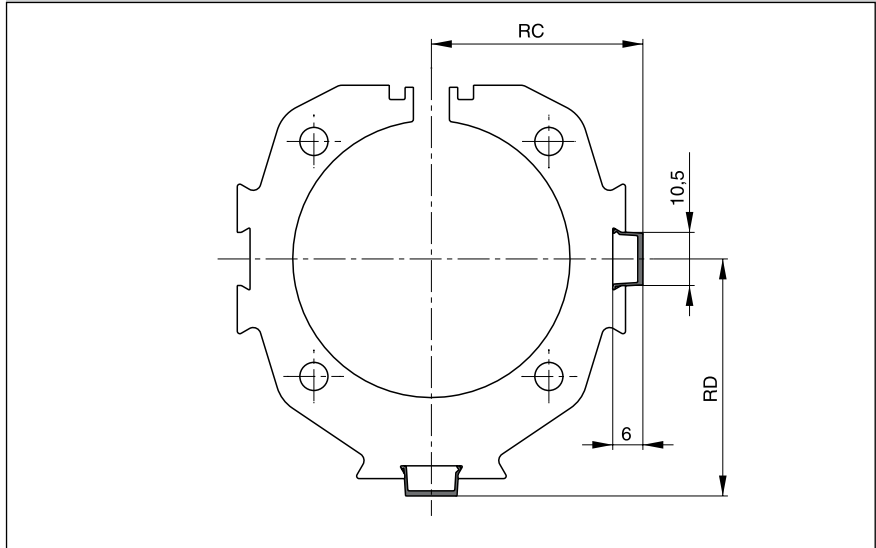


For clean guidance of magnetic switch cables along the cylinder body.  
 Contains a maximum of 3 cables with diameter 3 mm.

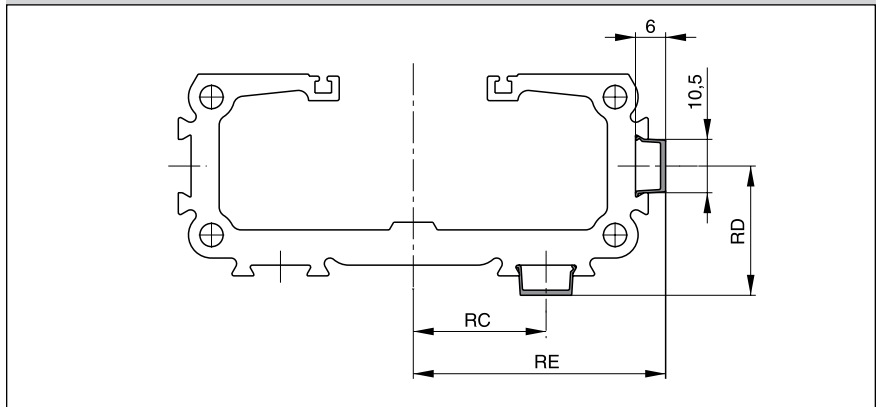
Material: Plastic  
 Colour: Red  
 Temperature Range: -10 bis +80°C



Series OSP-E..B,..SB,..ST,..SBR,..STR – Dimensions [mm]



Series OSP-E..BHD – Dimensions [mm]



Dimension Table [mm] and Order Instructions

for Series	RC	RD	RE	Order No.
OSP-E25 *	23.5	25.5	–	<b>13039</b>  Minimum length: 1m Max. profile length: 2m Multiple profiles can be used.
OSP-E32 *	29.5	32	–	
OSP-E50 *	41.5	46.5	–	
OSP-E20BHD	23	25	40	
OSP-E25BHD	26	25.5	49.5	
OSP-E32BHD	32	32	61.5	
OSP-E50BHD	44	46.5	85.5	

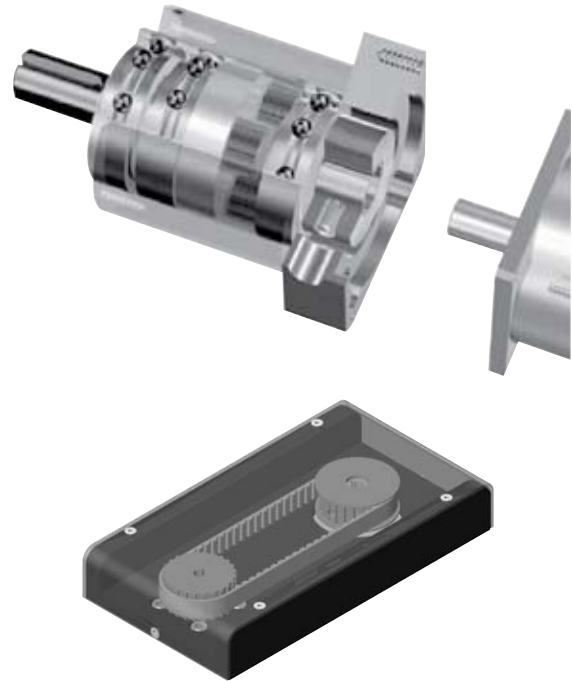
\* B, SB, ST, SBR, STR

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The right to introduce technical modifications is reserved



# Gearboxes & Motor Mounts



## Contents

Description	Page
Gearbox for BHD Series	162-164
Gearbox for OSP-E Belt	165-168
Motor Mounts	169-170

# PLANETARY GEARBOX FOR THE OSP-E BHD HEAVY DUTY ACTUATOR

A gearbox-mounting flange allows the LP series gearbox to be mounted directly to the actuator, eliminating the need for a coupling.

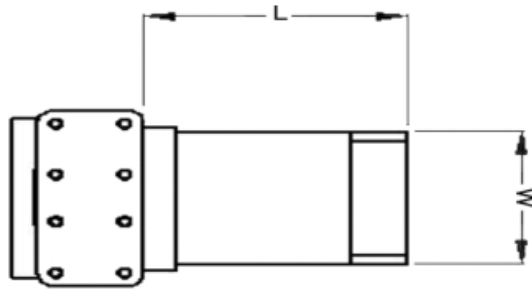
Motor mounting flange and reducing bush are custom made to suit the motor.

**Please specify the motor manufacturer and model when ordering.**

**Note maximum shaft diameter below!**



OSP-E BHD Heavy Duty Belt Gearbox				Series LP050 (BHD 20)	Series LP070 (BHD25)	LP090 (BHD32)	LP120 (BHD50)
Nominal Output Torque	T2n	Nm (lb-in)	5:1, 25:1, 50:1	5.7 (50.4)	32 (283)	80 (708)	200 (1770)
			3:1, 10:1, 15:1, 30:1, 100:1	5.2 (46)	15 (133)	35 (310)	90 (797)
Maximum Acceleration Torque	T2B	Nm (lb-in)	5:1, 25:1, 50:1	12 (106.5)	32 (283)	80 (708)	200 (1770)
			3:1, 10:1, 15:1, 30:1, 100:1	11 (97.4)	29 (257)	72 (637)	180 (1593)
Nominal Speed	n1max	RPM		4000	3700	3400	2600
Maximum Speed	n1n	RPM		8000	6000	6000	4800
Standard Output Backlash	j	arcmin	1-stage: 3, 5, 10	< 12			
			2-stage: 15, 25, 30, 50, 100	< 15			
Weight	m	kg	1-stage		1.9 (4.2)	4.1 (9)	9 (19.8)
		(lb)	2-stage		2.2 (4.9)	5.1 (11.2)	11.2 (24.7)
Mass Moment of Inertia	J1	kgcm <sup>2</sup>	1-stage	62.15 (0.055)	0.28 (0.096)	1.77 (0.604)	5.42 (1.85)
		(lb-in <sup>2</sup> )	2-stage	62.15 (0.055)	0.28 (0.096)	1.78 (0.608)	5.49 (1.874)
Maximum Motor Shaft Diameter		mm (ins)		11 (.433)	16 (0.6299)	24 (0.9448)	32 (1.2598)
Ratios Available				1-stage: 5, 10 2-stage: 25, 50, 100	1-stage: 3, 5, 10 2-stage: 15, 25, 30, 50, 100		
Efficiency at Load				1-stage: >97% 2-stage: >95%			
Average Lifetime				20,000 hours			
Lubrication				Flow Grease			
Protection Rating				IP 64			



Type	Available Ratio	L*	W*	Weight Kg
<b>LP 050</b>				
Single Stage	5, 10	72/79	50	0.75
Double Stage	25, 50, 100	87.5/94.5	50	0.95
<b>LP 070</b>				
Single Stage	5, 10	96/103	70	3.3
Double Stage	25, 50, 100	116/123	70	3.6
<b>LP 090</b>				
Single Stage	3, 5, 10	115/125	90	5.5
Double Stage	15, 25, 30, 50, 100	141.5/151.5	90	6.5
<b>LP 120</b>				
Single Stage	3, 5, 10	148/158	120	10.4
Double Stage	15, 25, 30, 50, 100	180.5/190.5	120	12.6

L\* Overall length will vary depending on the motor  
W\* Standard dimension may vary depending on the motor  
Above dimensions are for reference only. Consult factory for further information on all Gear Heads.

**Order Number for OSP-E BHD Gearbox**

**ALWAYS STATE EXACT MOTORTYPE WHEN ORDERING GEAR!**

Description		Reduction	Order Number
Planetary Gear	LP 050 1-stage	5:1	LP050-M01-5
	LP 050 1-stage	10:1	LP050-M01-10
LP50 for BHD20	LP 050 2-stage	25:1	LP050-M02-25
	LP 050 2-stage	50:1	LP050-M02-50
Planetary Gear	LP 070 1-stage	l=3:1	80001240
	LP 070 1-stage	i=5:1	80001252
	LP 070 1-stage	i=10:1	80001253
	LP 070 2-stage	l=15:1	80001242
	LP 070 2-stage	i=25:1	80001254
	LP 070 2-stage	l=30:1	80001243
	LP 070 2-stage	i=50:1	80001255
	LP 070 2-stage	i=100:1	80001256
LP70 for BHD25	LP 090 1-stage	l=3:1	80001244
	LP 090 1-stage	i=5:1	80001216
	LP 090 1-stage	i=10:1	80001257
	LP 090 2-stage	l=15:1	80001245
	LP 090 2-stage	i=25:1	80001258
	LP 090 2-stage	l=30:1	80001246
	LP 090 2-stage	i=50:1	80001259
	LP 090 2-stage	i=100:1	80001260
LP90 for BHD32	LP 120 1-stage	l=3:1	80001247
	LP 120 1-stage	i=5:1	80001250
	LP 120 1-stage	i=10:1	80001261
	LP 120 2-stage	l=15:1	80001248
	LP 120 2-stage	i=25:1	80001262
	LP 120 2-stage	l=30:1	80001249
	LP 120 2-stage	i=50:1	80001263
	LP 120 2-stage	i=100:1	80001264
LP120 for BHD50	LP 120 1-stage	l=3:1	80001247
	LP 120 1-stage	i=5:1	80001250
	LP 120 1-stage	i=10:1	80001261
	LP 120 2-stage	l=15:1	80001248
	LP 120 2-stage	i=25:1	80001262
	LP 120 2-stage	l=30:1	80001249
	LP 120 2-stage	i=50:1	80001263
	LP 120 2-stage	i=100:1	80001264

**Gearbox Mounting Flanges -  
See New Ordering Instructions Position 4 for Shaft Type**

		Shaft Type	
Gearbox flange to mount the LP series to BHD	LP 050	K,L,M,N	16224
	LP70 for BHD25	K,L,M,N	12311
	LP90 for BHD32	K,L,M,N	12312
	LP120 for BHD50	K,L,M,N	12313

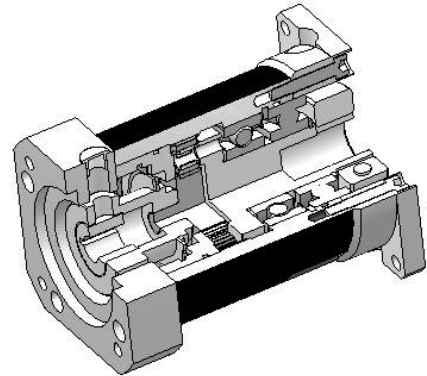


# PLANETARY GEARBOX FOR THE OSP-E BELT ACTUATOR

A gearbox mounts directly to the actuator, eliminating the need for a coupling.

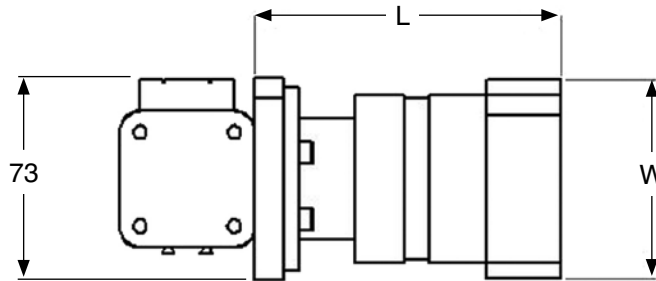
A simple adaptor flange and bushing allows for use of 23 and 34 frame stepper motors from Applied Motion Products. Additional flanges available for Yaskawa SGMPH 01, 02 and 04 Servo Motors.

The gearbox input shaft connects directly to the motor shaft and is secured using a split-clamping ring.



OSP-E Belt Gearbox			Series AL	
Nominal Output Torque	T2n	Nm (lb-in)	3:1, 10:1	22 (195)
			5:1, 7:1	20 (177)
Maximum Acceleration Torque	T2B	Nm (lb-in)	3:1, 10:1	44 (389)
			5:1, 7:1	40 (354)
Nominal Speed	n1max	RPM		3100
Maximum Speed	n1n	RPM		6000
Standard Output Backlash	j	arcmin	3:1 - 10:1	≤ 12
Weight	m	kg (lb)	1-stage	1.7 (3.75)
Mass Moment of Inertia	J1	kgcm <sup>2</sup> (lb-in <sup>2</sup> )	i = 3	0.29 (0.1)
			i = 5	0.29 (0.1)
			i = 7,10	0.29 (0.1)
Ratios Available			1-stage: 3, 5, 7, 10	
Efficiency at Load			1-stage: 97%	
Average Lifetime			> 20,000 hours	
Lubrication			Synthetic Grease	
Protection Rating			IP 65	
Operating Temperature			-10°C to 90°C	

## Planetary Gearbox Dimensions



Actuator and Type	Available Ratio	L Max	W Max	Weight Kg
<b>25 Belt/Ballscrew</b>				
Nema 23	3, 5, 7, 10	114.5	70	2.02
Nema 34	3, 5, 7, 10	122.0	85	2.24
SGMPH 01	3, 5, 7, 10	113.5	70	2.0
SGMPH 02/04	3, 5, 7, 10	124.0	80	2.22
<b>32 Belt/Ballscrew</b>				
Nema 23	3, 5, 7, 10	114.5	70	2.02
Nema 34	3, 5, 7, 10	122.0	85	2.24
SGMPH 01	3, 5, 7, 10	113.5	70	2.0
SGMPH 02/04	3, 5, 7, 10	124.0	80	2.22
<b>50 Belt/Ballscrew</b>				
Nema 23	3, 5, 7, 10	114.5	70	2.02
Nema 34	3, 5, 7, 10	122.0	85	2.24
SGMPH 01	3, 5, 7, 10	113.5	70	2.0
SGMPH 02/04	3, 5, 7, 10	124.0	80	2.22

Gear Heads have hollow shafts and do not require gearbox mounts  
 Gear Heads are not to be used with BHD model actuators  
 Above dimensions are for reference only. Consult factory for further information on all Gear Heads.

## Ordering Information

## Order Number for OSP-E Belt and Ballscrew Gearbox

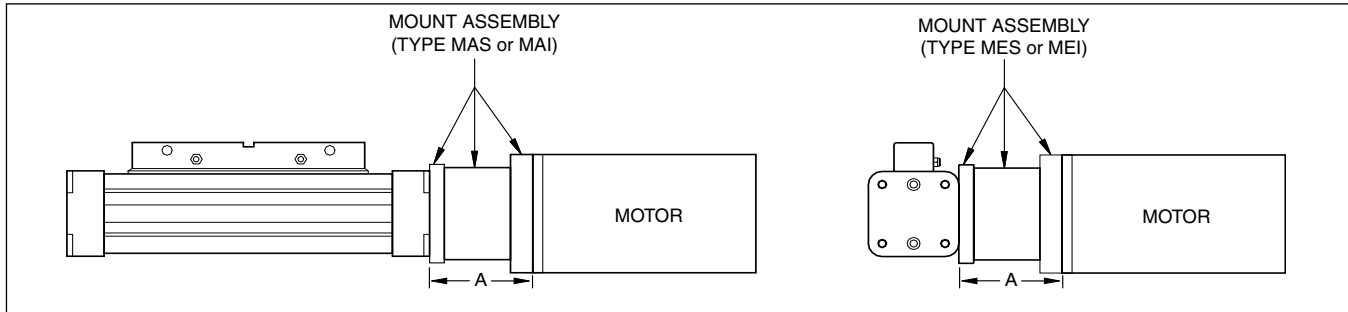
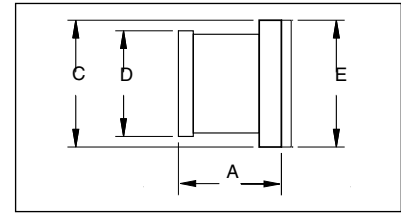
Order Numbers	Description
<b>25 Belt Actuator</b>	
AL00003-B2523A	Gearbox 3:1 Ratio 25 Belt .250 motor shaft
AL00005-B2523A	Gearbox 5:1 Ratio 25 Belt .250 motor shaft
AL00007-B2523A	Gearbox 7:1 Ratio 25 Belt .250 motor shaft
AL00010-B2523A	Gearbox 10:1 Ratio 25 Belt .250 motor shaft
AL00003-B2523	Gearbox 3:1 Ratio 25 Belt .375 motor shaft
AL00005-B2523	Gearbox 5:1 Ratio 25 Belt .375 motor shaft
AL00007-B2523	Gearbox 7:1 Ratio 25 Belt .375 motor shaft
AL00010-B2523	Gearbox 10:1 Ratio 25 Belt .375 motor shaft
AL00003-B2534	Gearbox 3:1 Ratio 25 Belt .375 motor shaft
AL00005-B2534	Gearbox 5:1 Ratio 25 Belt .375 motor shaft
AL00007-B2534	Gearbox 7:1 Ratio 25 Belt .375 motor shaft
AL00010-B2534	Gearbox 10:1 Ratio 25 Belt .375 motor shaft
<b>32 Belt Actuator</b>	
AL00003-B3223A	Gearbox 3:1 Ratio 32 Belt .250 motor shaft
AL00005-B3223A	Gearbox 5:1 Ratio 32 Belt .250 motor shaft
AL00007-B3223A	Gearbox 7:1 Ratio 32 Belt .250 motor shaft
AL00010-B3223A	Gearbox 10:1 Ratio 32 Belt .250 motor shaft
AL00003-B3223	Gearbox 3:1 Ratio 32 Belt .375 motor shaft
AL00005-B3223	Gearbox 5:1 Ratio 32 Belt .375 motor shaft
AL00007-B3223	Gearbox 7:1 Ratio 32 Belt .375 motor shaft
AL00010-B3223	Gearbox 10:1 Ratio 32 Belt .375 motor shaft
AL00003-B3234	Gearbox 3:1 Ratio 32 Belt .375 motor shaft
AL00005-B3234	Gearbox 5:1 Ratio 32 Belt .375 motor shaft
AL00007-B3234	Gearbox 7:1 Ratio 32 Belt .375 motor shaft
AL00010-B3234	Gearbox 10:1 Ratio 32 Belt .375 motor shaft
<b>50 Belt Actuator</b>	
AL00003-B5023	Gearbox 3:1 Ratio 50 Belt .375 motor shaft
AL00005-B5023	Gearbox 5:1 Ratio 50 Belt .375 motor shaft
AL00007-B5023	Gearbox 7:1 Ratio 50 Belt .375 motor shaft
AL00010-B5023	Gearbox 10:1 Ratio 50 Belt .375 motor shaft
AL00003-B5034	Gearbox 3:1 Ratio 50 Belt .375 motor shaft
AL00005-B5034	Gearbox 5:1 Ratio 50 Belt .375 motor shaft
AL00007-B5034	Gearbox 7:1 Ratio 50 Belt .375 motor shaft
AL00010-B5034	Gearbox 10:1 Ratio 50 Belt .375 motor shaft

**Order Number for Yaskawa Metric Frame Motors Gearbox**

<b>Order Numbers</b>	<b>Description</b>
<b>25 Belt Actuator</b>	
AL00003-B2501	Gearbox 3:1 Ratio 25 Belt SGMPH01 Motor
AL00005-B2501	Gearbox 5:1 Ratio 25 Belt SGMPH01 Motor
AL00007-B2501	Gearbox 7:1 Ratio 25 Belt SGMPH01 Motor
AL00010-B2501	Gearbox 10:1 Ratio 25 Belt SGMPH01 Motor
AL00003-B2504	Gearbox 3:1 Ratio 25 Belt SGMPH02/04 Motor
AL00005-B2504	Gearbox 5:1 Ratio 25 Belt SGMPH02/04 Motor
AL00007-B2504	Gearbox 7:1 Ratio 25 Belt SGMPH02/04 Motor
AL00010-B2504	Gearbox 10:1 Ratio 25 Belt SGMPH02/04 Motor
<b>32 Belt Actuator</b>	
AL00003-B3201	Gearbox 3:1 Ratio 32 Belt SGMPH01 Motor
AL00005-B3201	Gearbox 5:1 Ratio 32 Belt SGMPH01 Motor
AL00007-B3201	Gearbox 7:1 Ratio 32 Belt SGMPH01 Motor
AL00010-B3201	Gearbox 10:1 Ratio 32 Belt SGMPH01 Motor
AL00003-B3204	Gearbox 3:1 Ratio 32 Belt SGMPH02/04 Motor
AL00005-B3204	Gearbox 5:1 Ratio 32 Belt SGMPH02/04 Motor
AL00007-B3204	Gearbox 7:1 Ratio 32 Belt SGMPH02/04 Motor
AL00010-B3204	Gearbox 10:1 Ratio 32 Belt SGMPH02/04 Motor
<b>50 Belt Actuator</b>	
AL00003-B5001	Gearbox 3:1 Ratio 50 Belt SGMPH01 Motor
AL00005-B5001	Gearbox 5:1 Ratio 50 Belt SGMPH01 Motor
AL00007-B5001	Gearbox 7:1 Ratio 50 Belt SGMPH01 Motor
AL00010-B5001	Gearbox 10:1 Ratio 50 Belt SGMPH01 Motor
AL00003-B5004	Gearbox 3:1 Ratio 50 Belt SGMPH02/04 Motor
AL00005-B5004	Gearbox 5:1 Ratio 50 Belt SGMPH02/04 Motor
AL00007-B5004	Gearbox 7:1 Ratio 50 Belt SGMPH02/04 Motor
AL00010-B5004	Gearbox 10:1 Ratio 50 Belt SGMPH02/04 Motor

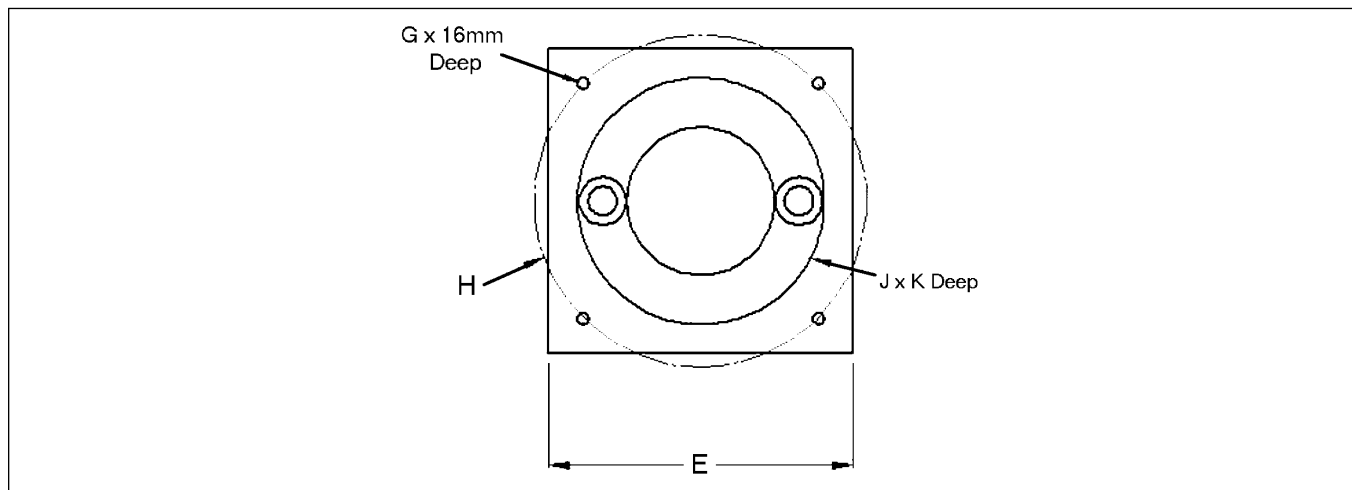
The coupling housing is the mounting base for the motor and includes a self aligning coupling.

Motor flanges and couplings suitable for the available range of servo and stepper motors will be found together with technical data and dimensions on motors and drives, see separate data sheet.



Motor Mount	Motor Shaft Diameter	Size	Type	Motor Type	A	C	D	E
MES-2504	14mm	25	Belt	Metric 04	95.7	70	70	70
MES-3204	14mm	32	Belt	Metric 04	86.7	70	70	70
MES-5004	14mm	50	Belt	Metric 04	86.7	70	90	70
MES-5008	16mm	50	Belt	Metric 08	114.7	90	90	90
MEI-2523	.250"	25	Belt	Nema 23	76.7	70	70	70
MEI-3234	.375"	32	Belt	Nema 34	88.7	90	70	90
MEI-5034	.375"	50	Belt	Nema 34	83	90	90	90
MGM-3234	.750"	32	Belt	Nema 34	88.7	90	70	90
MGM-5034	.750"	50	Belt	Nema 34	88.7	90	90	90
MAS-2501	8mm	25	Screw	Metric 01	51.4	42	42	42
MAS-3204	14mm	32	Screw	Metric 04	86.7	70	70	70
MAS-5004P	14mm	50	Screw	Metric 04P**	88.7	90	90	90
MAS-5008	14mm	50	Screw	Metric 08	88.7	90	90	90
MAI-2517	5mm	25	Screw	Nema 17	51.4	42	42	42
MAI-3223	.250"	32	Screw	Nema 23	76.7	70	70	70
MAI-5034	.375"	50	Screw	Nema 34	88.7	90	90	90
MAS-5008P	16mm	50	Screw	Metric 08P**	88.7	120	90	120
MEI-5042	.625"	50	Belt	Nema 42	88.7	120	90	120
MAI-3101	.500"	32	Screw	Nema 34	86.7	90	70	90
MAI-3234	.375"	32	Screw	Nema 34	86.7	90	70	90
MEI-3223	.250"	32	Belt	Nema 23	76.7	70	70	70
MAI-2523	.250"	25	Screw	Nema 23	51.4	70	42	70
MGM-3223	.500"	32	Belt	Nema 23	76.7	70	70	70
MGM-5034S	.750"	50	Screw	Nema 34	88.7	90	90	90
MGM-3223S	.500"	32	Screw	Nema 23	86.7	70	70	70
MES-3208	14mm	32	Belt	Metric 08	88.7	90	90	90

Dimensions are for reference purposes only  
 Nema mounts match IMS stepper motors or equivalent  
 Metric mounts match Yaskawa SGM Servo motors or equivalent  
 \*Drilled & counterbored for 4-40 socket head cap screw from opposite side  
 MGM = Gearbox mount



Motor Mount	Size	Type	Motor Type	G	H	J	K
MES-2504	25	Belt	Metric 04	10-32 UNF	70	50	3.5
MES-3204	32	Belt	Metric 04	10-32 UNF	70	50	3.5
MES-5004	50	Belt	Metric 04	10-32 UNF	70	50	3.5
MES-5008	50	Belt	Metric 08	10-32 UNF	90	70	3.5
MEI-2523	25	Belt	Nema 23	10-32 UNF	66.68	38.1	2
MEI-3234	32	Belt	Nema 34	10-32 UNF	98.42	73.08	2
MEI-5034	50	Belt	Nema 34	10-32 UNF	98.42	73.08	2
MGM-3234	32	Belt	Nema 34	10-32 UNF	98.42	73.08	2
MGM-5034	50	Belt	Nema 34	10-32 UNF	98.42	73.08	2
MAS-2501	25	Screw	Metric 01	M4	46	30	3
MAS-3204	32	Screw	Metric 04	10-32 UNF	70	50	3.5
MAS-5004P	50	Screw	Metric 04P**	10-32 UNF	90	70	3.5
MAS-5008	50	Screw	Metric 08	10-32 UNF	90	70	3.5
MAI-2517	25	Screw	Nema 17	*	43.8	22	2.5
MAI-3223	32	Screw	Nema 23	10-32 UNF	66.68	38.1	2
MAI-5034	50	Screw	Nema 34	10-32 UNF	98.42	73.08	2
MAS-5008P	50	Screw	Metric 08P**	M8 X125	145	110	4
MEI-5042	50	Belt	Nema 42	.25-20 UNC	127	55.58	2
MAI-3101	32	Screw	Nema 34	10-32 UNF	98.42	73.08	2
MAI-3234	32	Screw	Nema 34	10-32 UNF	98.42	73.08	2
MEI-3223	32	Belt	Nema 23	10-32 UNF	66.68	38.1	2
MAI-2523	25	Screw	Nema 23	10-32 UNF	66.68	38.1	2
MGM-3223	32	Belt	Nema 23	10-32 UNF	66.68	38.1	2
MGM-5034S	50	Screw	Nema 34	10-32 UNF	98.42	73.08	2
MGM-3223S	32	Screw	Nema 23	10-32 UNF	66.68	38.1	2
MES-3208	32	Belt	Metric 08	10-32 UNF	90	70	3.5

Dimensions are for reference purposes only  
 Nema mounts match IMS stepper motors or equivalent  
 Metric mounts match Yaskawa SGM Servo motors or equivalent  
 \*Drilled & counterbored for 4-40 socket head cap screw from opposite side  
 MGM = Gearbox mount

1	2	3	4	5	6
series	bore	lead	shaft	mount	double mount
E Electric	0 20	0 belt	0 right (belt)	0 if double (all and BHD)	0 if single (all and BHD)
	2 25	1	1 left (belt)	1 std mnt (nr20) (all and BHD)	1 std mnt (nr20) (all and BHD)
H Heavy Duty	3 32	2 5mm BS	2 double (belt)	2 floating mount (nr25) (all)	2 floating mount (nr25) (all)
	5 50	3	3	3 invert mount (nr30) (all)	3 invert mount (nr30) (all)
Roller Guide (BHD)		4 10mm BS	4 BHD Integrated Gearbox 3:1**	4 invert float mount (nr35) (all)	4 invert float mount (nr35) (all)
		5	5 BHD Integrated Gearbox 5:1**	5 slideline (Ball Screw Only)	5 slideline (Ball Screw Only)
		6 25mm BS	6 BHD Integrated Gearbox 10:1**	6 powerslide ps25 (25)	6 ps25 (one mount, two carriages)(25)
		7	7	7 powerslide ps35 (25,32)	7 ps35 (one mount, two carriages)(25,32)
R Heavy Duty		8	8	8 powerslide ps44 (25,32)	8 ps44 (one mount, two carriages)(25,32)
		9	9	9 powerslide ps60 (50)	9 ps60 (one mount, two carriages)(50)
Ball Guide (BHD-II)		A BP (belt Bi-parting)	A STD (screw)	A powerslide ps76 (50)	A ps76 (one mount, two carriages)(50)
		B	B 2 end (screw)	B	B
		C	C	C	C
		D	D Clamp Shaft-Right (BHD, BV)	D	D
S Extending Rod		E	E Clamp Shaft-Left (BHD, BV)	E	E
		F	F Clamp Shaft-Close (BHD)	F	F
Ball Screw (OSP-SBR)		G	G Clamp Shaft-Open (BHD)	G	G
		H	H Plain Shaft-Right (BV)	H	H
		J	J Plain Shaft-Left (BV)	J	J
V Belt Rack Drive (OSP-BV)		K	K Hollow Shaft-Right (BHD, BV)	K	K
		L	L Hollow Shaft-Left (BHD, BV)	L	L
		M	M Hollow Shaft-Close (BHD)	M	M
		N	N Hollow Shaft-Open (BHD)	N	N
		P	P Clamp Shaft-Right-IS (BHD, BV)*	P	P
		Q	Q Clamp Shaft-Left-IS (BHD, BV)*	Q Proline/GDL (all)	Q Proline/GDL (all)
		R	R Clamp Shaft-Close-IS (BHD)*	R	R
		S	S Clamp Shaft-Open-IS (BHD)*	S	S
		T	T Obsolete (BHD)	T	T
		U	U Obsolete (BHD)	U OSP-BV Reserved	U
		V	V Obsolete (BHD)	V OSP-BV Size 20	V
		W	W Obsolete (BHD)	W OSP-BV Size 25	W
		X	X Double Plain Shaft-Right (BV)	X	X
		Y	Y Double Plain Shaft-Left (BV)	Y HD Heavy Duty Series Screw (25,32,50)	Y
		Z special	Z special	Z special	Z special

**Drive Shaft Options (OSP-E)**

0 = Standard  
1 =  
2 =

**Drive Shaft Options (OSP-E-BV)**

J Plain Shaft-Left (BV)	
H Plain Shaft-Right (BV)	
Y Double Plain Shaft-Left (BV)	
X Double Plain Shaft-Right (BV)	
E Clamp Shaft-Left (BV)	
Q Clamp Shaft-Left-IS (BHD, BV)*	
D Clamp Shaft-Right (BHD, BV)	
P Clamp Shaft-Right-IS (BHD, BV)*	
L Hollow Shaft-Left (BHD, BV)	
K Hollow Shaft-Right (BHD, BV)	

**Shaft Options Example:**

**Actuating Direction Options - BHD**

Right D, K and P =		Standard
Left E, L and Q =		
Close F, M and R =		Standard Bi-Parting
Open G, N and S =		

\*For use with intermediate shaft  
\*\*Consult factory before ordering  
\*\*\*All Options in Box are for Column 4 - Shaft

7*	8	9*	10	11	12	13	14	15	16	17	18
motor mount	screws & coating	support	center support qty	switch	switch qty	stroke (mm)					
0	none and Standard BHD	0 std	0 none and BHD	0 none	0	-	0	0	0	0	0
1	mes-2504 (belt)(25)	1 stainless hardware	1	1 no reed KL3045 (all)	-	-	-	-	-	-	-
2	mes-3204 (belt)(32)	2 xylan coated aluminum	2	2 nc reed KL3048 (all)	-	-	-	-	-	-	-
3	mes-5004 (belt)(50)	3 stainless/xylan	3	3 pnp KL3054+4041 (all)	-	-	-	-	-	-	-
4	mes-5008 (belt)(50)	4 purge ports	4	4 npn KL3060+4041 (all)	-	-	-	-	-	-	-
5	mei-2523 (belt)(25)	5 purge / stainless	5	5	-	-	-	-	-	-	-
6	mei-3234 (belt)(32)	6 purge / stainless / xylan	6	6	-	-	-	-	-	-	-
7	mei-5034 (belt)(50)	7	7	7	-	-	-	-	-	-	-
8	mgm-3234 (belt)(32)	8	8	8	-	-	-	-	-	-	-
9	mgm-5034 (belt)(50)	9	9	9	-	-	-	-	-	-	-
A	mas-2501 (screw)(25)	A	A	A	-	-	-	-	-	-	-
B	mas-3204(screw)(32)	B	B D1 (all)	B	-	-	-	-	-	-	-
C	mas-5004P(screw)(50)	C	C E1 (all)	C	-	-	-	-	-	-	-
D	mas-5008(screw)(50)	D	D E2 (all)	D	-	-	-	-	-	-	-
E	mai-2517 (screw)(25)	E	E E3 (all)	E	-	-	-	-	-	-	-
F	mai-3223 (screw)(32)	F	F E4 (all)	F	-	-	-	-	-	-	-
G	mai-5034 (screw)(50)	G	G A1+D1 (25,32)	G	-	-	-	-	-	-	-
H	mas-5008p (screw)(50)	H	H B1+D1 (25,32)	H	-	-	-	-	-	-	-
J	mei-5042 (belt)(50)	J	J C1+D1 (50)	J	-	-	-	-	-	-	-
K	mai-3101 (screw)(32)	K	K A1+E1 (25,32)	K	-	-	-	-	-	-	-
L	mai-3234 (screw)(32)	L	L B1+E1 (25,32)	L	-	-	-	-	-	-	-
M	mei-3223 (belt)(32)	M	M C1+E1 (50)	M	-	-	-	-	-	-	-
N	mai-2523 (screw)(25)	N	N A2+E2 (25,32)	N	-	-	-	-	-	-	-
P	mgm-3223 (belt)(32)	P	P C2+E2 (50)	P	-	-	-	-	-	-	-
Q	mgm-5034S (screw)(50)	Q	Q A3+E3 (25,32)	Q	-	-	-	-	-	-	-
R	mgm-3223S (screw)(32)	R	R	R	-	-	-	-	-	-	-
S	mes-3208 (belt)(32)	S	S C3+E3 (50)	S	-	-	-	-	-	-	-
T	Belt Gear 1:1 (Screw Only)	T	T B4+E4 (25,32)	T	-	-	-	-	-	-	-
U	Belt Gear 2:1 (Screw Only)	U	U C4+E4 (50)	U	-	-	-	-	-	-	-
V		V	V	V	-	-	-	-	-	-	-
W		W	W	W	-	-	-	-	-	-	-
X		X	X	X	-	-	-	-	-	-	-
Y	Optional BHD (see below)	Y	Y	Y	-	-	-	-	-	-	-
Z	special	Z special	Z special	Z special	-	-	-	-	-	-	-

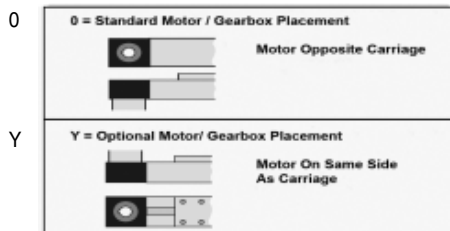
7\* (BHD) Non-standard KB and KL dimensions must be specified on a separate line item (use "Z" in part number).

7\* (BHD) Order motor mount and/or gearbox as a separate line item (contact customer service).

7\* Contact customer service if non-standard motor mounting holes are required.

9\* (BHD) Order supports as a separate line item.

9\* Only one end support is supplied in the OSP-E part number. If more than one is required, please order additional end supports as a separate line item.





# Electric Actuator Application Sheet

Distributor: \_\_\_\_\_

End-User: \_\_\_\_\_

Salesperson: \_\_\_\_\_

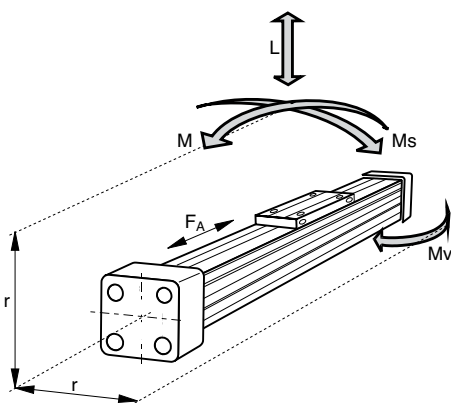
Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Stroke: \_\_\_\_\_ Time to make move: \_\_\_\_\_ Load: \_\_\_\_\_ Incline: \_\_\_\_\_

Check if load is externally supported

Actuator type: \_\_\_\_\_



M = \_\_\_\_\_

MS = \_\_\_\_\_

MV = \_\_\_\_\_

Description: \_\_\_\_\_

See Attached for info /a additional info

Special Features Required:

Switches Type \_\_\_\_\_ Qty. \_\_\_\_\_

Controller Needed

Servo Motor Needed

Stepper Motor Needed

Customer Supplied Motor

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



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