ORIGA SYSTEM PLUS OSPE

Electric Linear Actuators

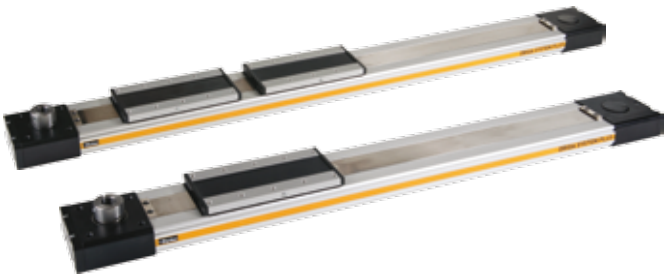
The latest generation of high capacity actuators

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

- For particularly high requirements regarding loads and forces
- For high-speed applications and highly dynamic motion profiles
- BHD with toothed belt and integrated heavy duty guide: roller guide or re-circulating ball bearing guide

One complete system
- Seven actuator options
For all possible applications

Series OSP-E..BHD
Belt Actuator with integrated Guide
– Ball Bearing Guide
– Roller Guide



Series OSP-E..B
Belt Actuator with Internal Guide

Series OSP-E..SB
Ball Screw Actuator with internal Plain Bearing Guide

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

Series OSP-E..BV
Vertical Belt Actuator with integrated Ball Bearing Guide

Series OSP-E..ST
Trapezoidal Screw Actuator with Internal Plain Bearing Guide

Series OSP-E..STR
Trapezoidal Screw ctuator with Internal Plain Bearing Guide and Piston Rod

Belt actuator with integrated guide for heavy duty applications

The latest generation of high capacity actuators, 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.

Belt Actuator with Integrated Guide - selective with Ball Bearing Guide or Roller Guide

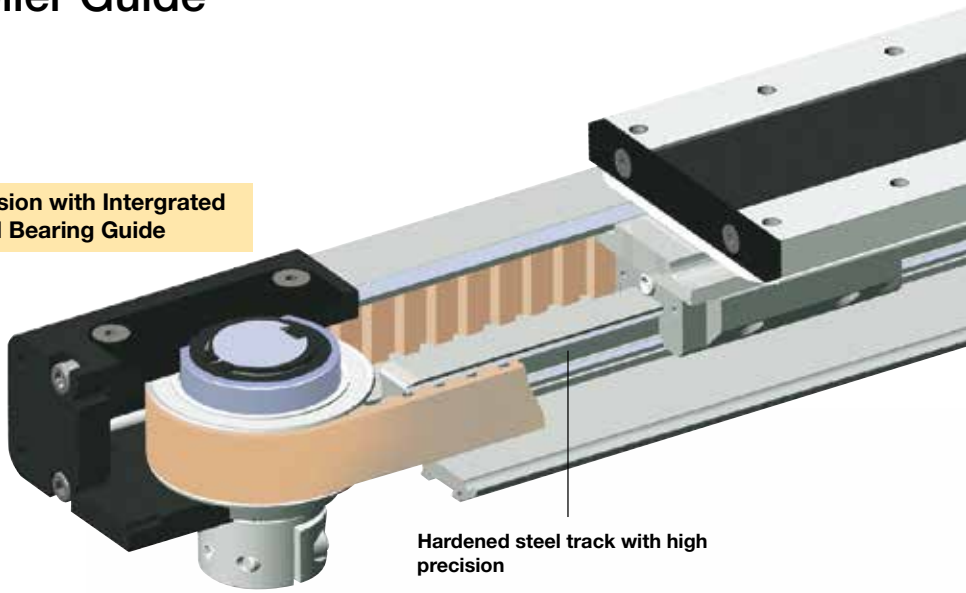
Advantages:

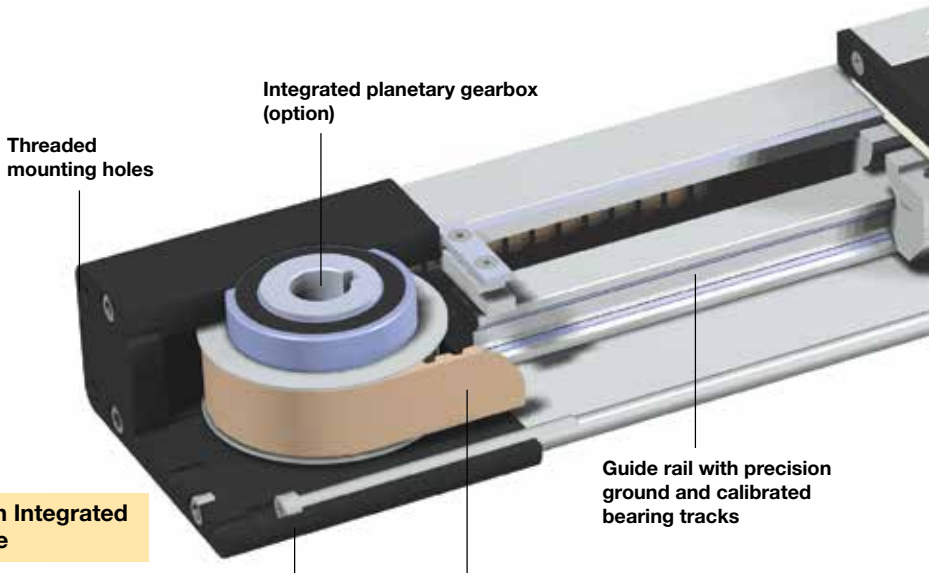
- Accurate path and position control
- High force output
- High speed operation
- High load capacity
- Easy installation
- Low maintenance
- Ideal for multi-axis applications

Features:

- Integrated 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

Version with Intergrated Ball Bearing Guide



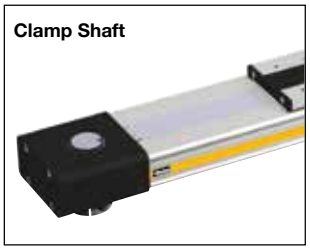


Version with Integrated Roller Guide

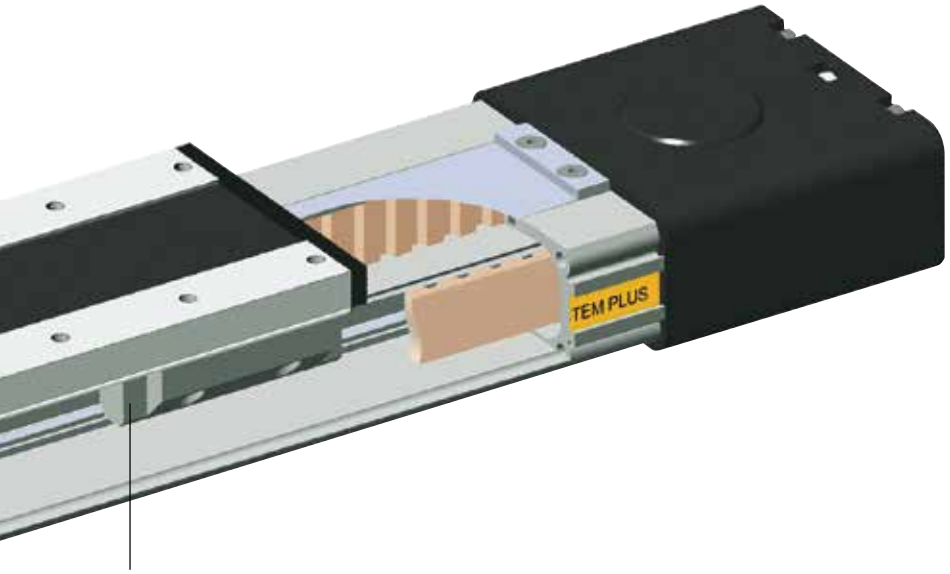
Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

Drive Shaft Versions

Clamp Shaft



Plain Shaft

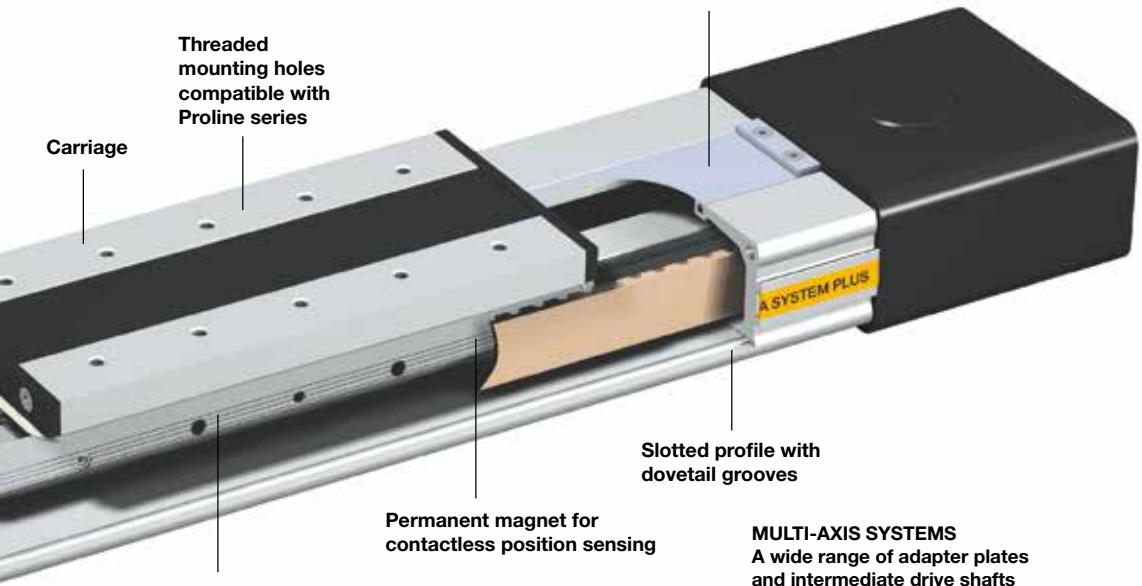


Steel runner block with integrated scraper system and grease nipples

Corrosion resistant steel sealing band

Threaded mounting holes compatible with Proline series

Carriage

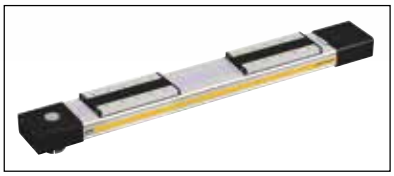


Slotted profile with dovetail grooves

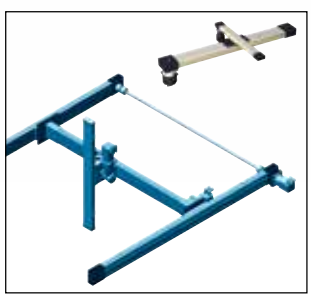
Permanent magnet for contactless position sensing

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

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

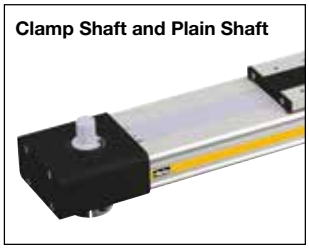


MULTI-AXIS SYSTEMS
A wide range of adapter plates and intermediate drive shafts simplify engineering and installation

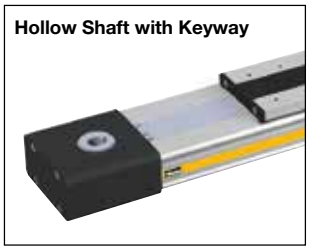


Drive Shaft OPTIONS

Clamp Shaft and Plain Shaft



Hollow Shaft with Keyway



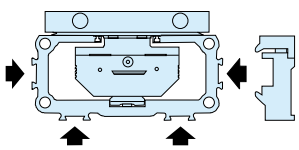
OPTION

Integrated planetary gearbox

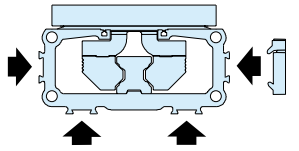
- Highly compact and rigid solution fully integrated in the drive cap housing
- Purpose designed for the BHD series
- Available with three standard ratios (3, 5 and 10)
- Very low backlash
- A wide range of available motor flanges

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 Ball Bearing Guide



Version with Integrated Roller guide

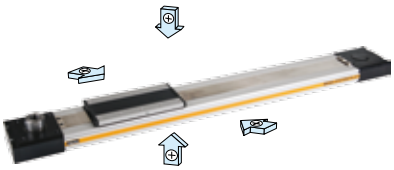


Options and Accessories

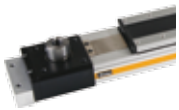
OSP-E..BHD
Belt actuator with integrated guide

STANDARD VERSIONS OSP-E..BHD

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

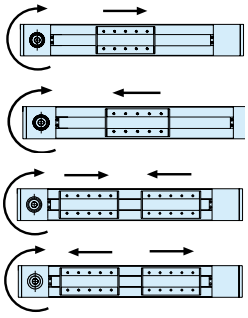


DRIVE SHAFT WITH CLAMP SHAFT



DRIVE SHAFT WITH PLAIN SHAFT

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



Standard

Standard – Bi-Parting Version

OPTIONS

TANDEM
For higher moment support.

BI-PARTING VERSION
For perfectly synchronised bi-parting movements.

DRIVE SHAFT WITH CLAMP SHAFT AND PLAIN SHAFT
For connections with intermediate drive shaft

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

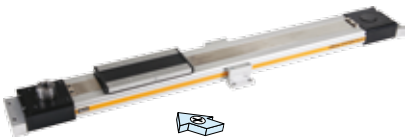
INTEGRATED PLANETARY GEARBOX
For compact installation and very low backlash.

ACCESSORIES

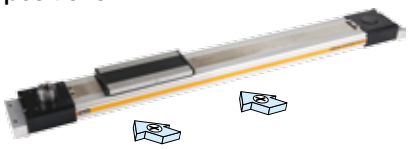
MOTOR MOUNTINGS

END CAP MOUNTING
For mounting the actuators on the end cap.

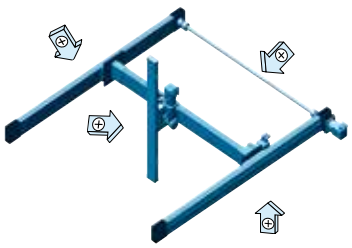
PROFILE MOUNTING
For supporting long actuators or mounting the actuators on dovetail grooves.



MAGNETIC SWITCHES TYPE RS AND ES
For contactless position sensing of end stop and intermediate carrier positions.



MULTI-AXIS SYSTEMS
For modular assembly of actuators up to multi-axis systems.



Belt Actuator with Integrated Ball Bearing Guide
Size 20 to 50
Type: OSP-E..BHD

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Standard Versions:
- Belt Actuator with integrated Ball Bearing Guide
- Drive shaft with clamp shaft or plain shaft
- Choice of motor mounting side
- Dovetail profile for mounting of accessories and the actuator 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

Installation Instructions
Use the threaded holes in the end cap for mounting the actuator.

Check if profile mountings are needed using the maximum allowable unsupported length graph.

At least one end cap must be secured to prevent axial sliding when profile mountings are used.

Characteristics	Description
Series	OSP-E..BHD
Mounting	See drawings
Ambient temperature range	-30 °C to +80 °C
Installation	In any position
Encapsulation class	IP 54
Material	
Slotted profile	Extruded anodized aluminium
Belt	Steel-corded polyurethane
Pulley	Aluminium
Guide	Ball bearing guide
Guide rail	Hardened steel rail with high precision, accuracy class N
Guide carrier preloaded 0.02 x C, accuracy class H	Steel carrier with integrated wiper system, grease nipples,
Steel band	Hardened, corrosion resistant steel
Screws, nuts	Zinc plated steel
Mountings	Zinc plated steel and aluminium

Weight (mass) and Inertia

Series	Weight (mass)[kg]			Inertia [x 10^{-6} kgm^2]		
	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)

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

First service start-up
The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

The following steps are recommended for selection :

1. Determination of the lever arm length l_x, l_y and l_z from m_e to the centre axis of the actuator.
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 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 actuator [kg]
- m_g = total moved mass ($m_e + m_{LA}$) [kg]
- $F_{x/y}$ = load excerted 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/s²]
- $a_{max.}$ = maximum acceleration [m/s²]

Performance Overview

T1

Characteristics		Unit	Description			
Series			OSP-E20BHD	OSP-E25BHD	OSP-E32BHD	OSP-E50BHD
Max. speed		[m/s]	3[1)]	5[1)]	5[1)]	5[1)]
Linear motion per revolution of drive shaft		[mm]	125	180	240	350
Max. rpm on drive shaft		[min⁻¹]	2000	1700	1250	860
Max. effective Action force F_A at speed	< 1 m/s:	[N]	550	1070	1870	3120
	1-3 m/s:	[N]	450	890	1560	2660
	> 3 m/s:	[N]	–	550	1030	1940
No-load torque		[Nm]	0.6	1.2	2.2	3.2
Max. acceleration/deceleration		[m/s²]	50	50	50	50
Repeatability		[mm/m]	±0.05	±0.05	±0.05	±0.05
Max. standard stroke length		[mm]	5760[2)]	5700[2)]	5600[2)]	5500[2)]

[1)] up to 10 m/s on request
[2)] longer strokes on request

Maximum Permissible Torque on Drive Shaft Speed / Stroke

T2

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]	Torque [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 torque on the drive shaft is the lowest value of the speed or stroke-dependent torque 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.

Maximum Permissible Loads

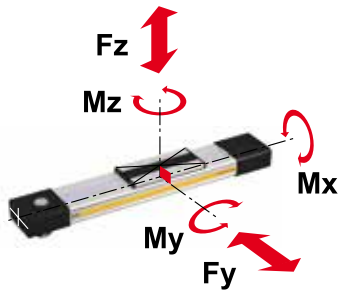
T3

Series	Max. applied load Fy[N]	Fz[N]	Max. moments [Nm] Mx	My	Mz
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

Loads, Forces and Moments

Combined loads

If the actuator 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 of Combined Loads

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

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

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

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

Maximum Permissible Unsupported Length

Stroke length

The stroke lengths of the actuators 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 clear-ance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 100 mm.

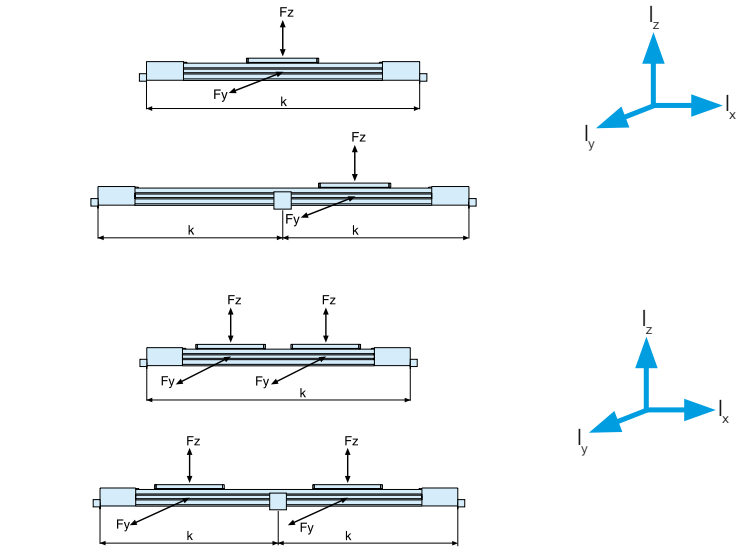
The use of an AC motor with frequency converter normally requires a larger clearance than that required for servo systems.
For advice, please contact your local Parker Origa technical support department.

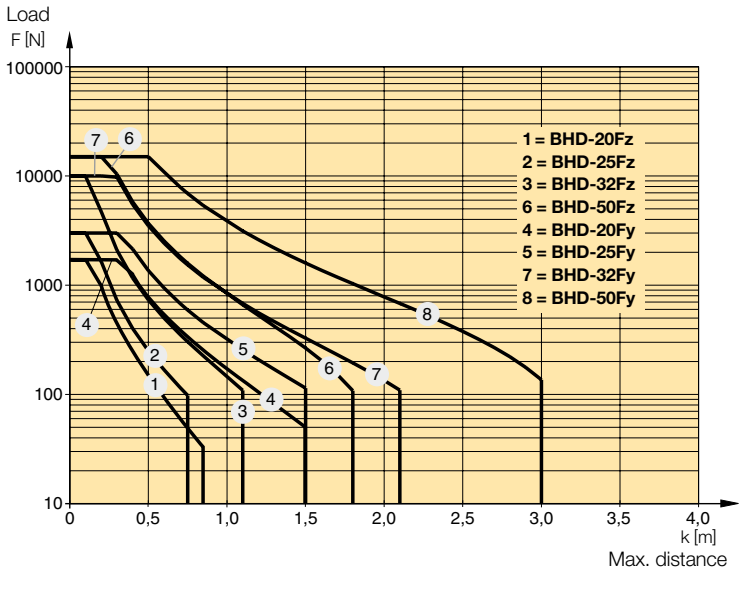
* For Bi-parting version the max. load (F) is the total load of both carriers
$F = F_{carrier\ 1} + F_{carrier\ 2}$

k = Max. permissible distance between mountings/Profile Mounting for a given load F.

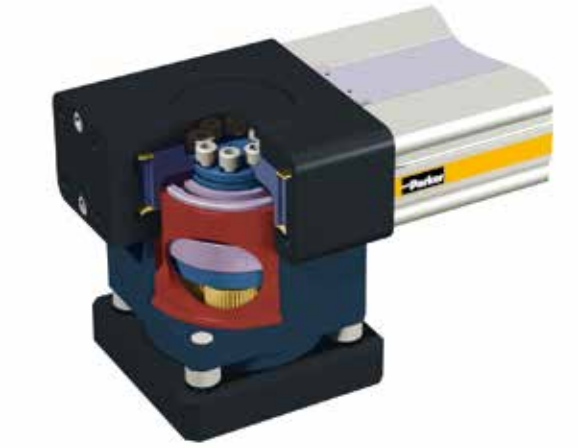
When loadings are below or up to the curve in the graph below the deflection will be max. 0.01 % of distance k.

Maximum Permissible Unsupported Length – Placing of Profile Mounting





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



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.

Standard Version:

- Gearbox on opposite side to carrier.

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

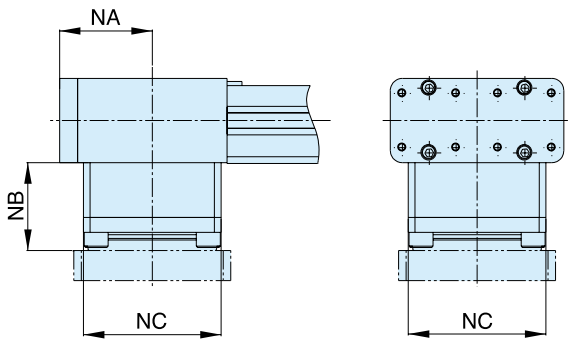
Material:

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

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	9.5	25.0
Torsional rigidity (i=3/10)	$C_{t.21}$	[Nm/arcmin]	2.8	7.5	222.0
Torsional backlash	J_t	[arcmin]	<12		
Linear motion per revolution of drive shaft		[mm]	220	280	360
Nominal input speed	n_{nom}	[min^{-1}]	3700	3400	2600
Max. input speed		n_{1max}	[min^{-1}] 6000		
No-load torque at Nominal input speed	T_{012}	[Nm]	<0.14	<0.51	<1.50
Lifetime		[h]	20 000		
Efficiency	η	[%]	>97		
Noise level (n_1=3000 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	80	50	121	9.6

Belt Actuator with Integrated Roller Guide
Size 25, 32, 50
Type: OSP-E..BHD

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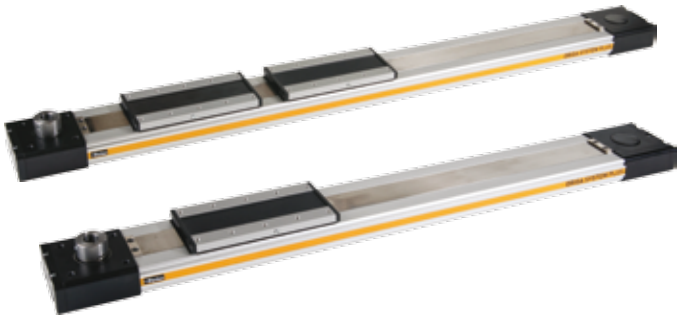


Standard Versions:
- Belt Actuator with integrated Roller Guide
- Drive shaft with clamp shaft or plain shaft
- Choice of motor mounting side
- Dovetail profile for mounting of accessories and the actuator itself

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

Installation Instructions
Use the threaded holes in the end cap for mounting the actuator.

Check if profile mountings are needed using the maximum allowable unsupported length graph.

At least one end cap must be secured to prevent axial sliding when profile mountings are used.

Characteristics	Description
Series	OSP-E..BHD
Mounting	See drawings
Ambient temperature range	-30 °C to +80 °C
Installation	In any position
Encapsulation class	IP 54
Material	
Slotted profile	Extruded anodized aluminium
Belt	Steel-corded polyurethane
Pulley	Aluminium
Guide	Roller guide
Guide rail	Aluminium
Track	High alloyed steel
Roller cartridge	Steel rollers in aluminium housing
Steel band	Hardened, corrosion resistant steel
Screws, nuts	Zinc plated steel
Mountings	Zinc plated steel and aluminium

Weight (mass) and Inertia

Series	Weight (mass)[kg]			Inertia [x 10^{-6} kgm^2]		
	At stroke 0 m	Add per metre stroke	Moving mass	At stroke 0 m	Add per metre stroke	per kg mass
OSP-E25BHD	3.8	4.3	1.0	984	197	821
OSP-E32BHD	7.7	6.7	1.9	3498	438	1459
OSP-E50BHD	22.6	15.2	4.7	19690	1489	3103
OSP-E25BHD*	5.7	4.3	2.0	1805	197	821
OSP-E32BHD*	11.3	6.7	3.8	6358	438	1459
OSP-E50BHD*	31.7	15.2	9.4	34274	1489	3103

* Version: Tandem and Bi-parting (Option)

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

First service start-up
The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

The following steps are recommended for selection :

1. Determination of the lever arm length l_x, l_y and l_z from m_e to the centre axis of the actuator.
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 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 actuator [kg]
- m_g = total moved mass ($m_e + m_{LA}$) [kg]
- $F_{x/y}$ = load excerted 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/s²]
- $a_{max.}$ = maximum acceleration [m/s²]

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⁻¹]	3000	2500	1700
Max. effective	< 1 m/s:	[N]	1070	1870	3120
action force F_A	1-3 m/s:	[N]	890	1560	2660
at speed	> 3-10 m/s:	[N]	550	1030	1940
No-load torque		[Nm]	1.2	2.2	3.2
Max. acceleration/deceleration		[m/s²]	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 / Stroke (T2)

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]	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 torque on the drive shaft is the lowest value of the speed or stroke-dependent torque 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.

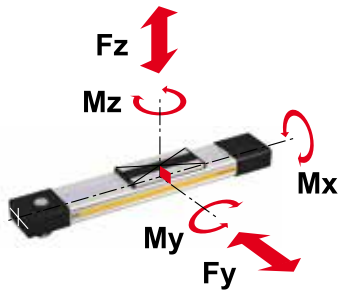
Maximum Permissible Loads (T3)

Series	Max. applied load Fy, Fz [N]	Max. moments [Nm] Mx	My	Mz
OSP-E25BHD	986	11	64	64
OSP-E32BHD	1348	19	115	115
OSP-E50BHD	3704	87	365	365

Loads, Forces and Moments

Combined loads

If the actuator 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 of Combined Loads

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

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

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

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

Maximum Permissible Unsupported Length

Stroke length

The stroke lengths of the actuators 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.

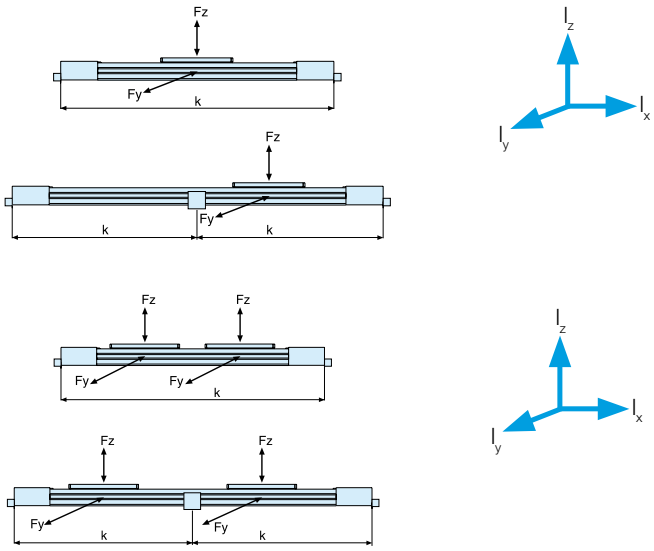
For advice, please contact your local Parker Origa technical support department.

* For the bi-parting version the maximum load (F) complies with the total of the load at both carriers.
$F = F_{carriage\ 1} + F_{carriage\ 2}$

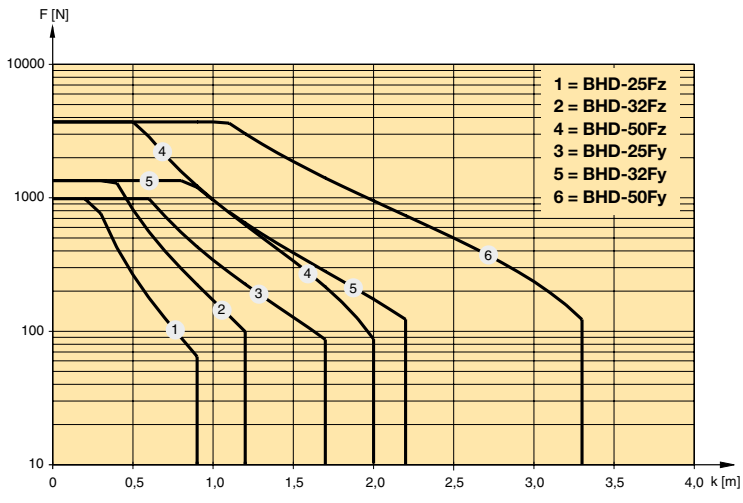
k = Maximum permissible distance between mountings/mid-section support for a given load F.

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 Profile Mounting



Loads



Max. distance

Options and Accessories

OSP-E..BV, Vertical belt actuator with integrated ball bearing guide

STANDARD VERSION OSP-E..BV

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

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

Drive Shaft with Plain Shaft

Drive Shaft with Clamp Shaft and Plain Shaft

Drive Shaft with Double Plain Shaft

OPTIONS

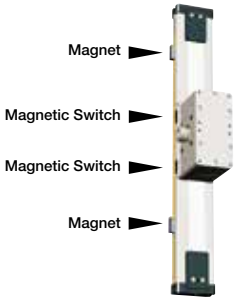
TANDEM
Additional actuator head and two additional carriers for higher bending moments.

HOLLOW SHAFT WITH KEYWAY
For direct connection of gearbox or motor with keyway.

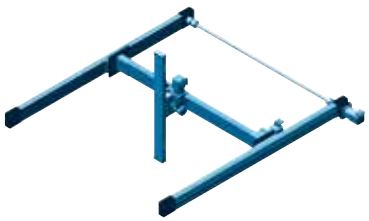
ACCESSORIES

MOTOR MOUNTINGS
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
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.



MULTI-AXIS SYSTEMS
For modular assembly of actuators up to multi-axis systems.



Vertical belt actuator with integrated ball bearing guide in multi-axis systems

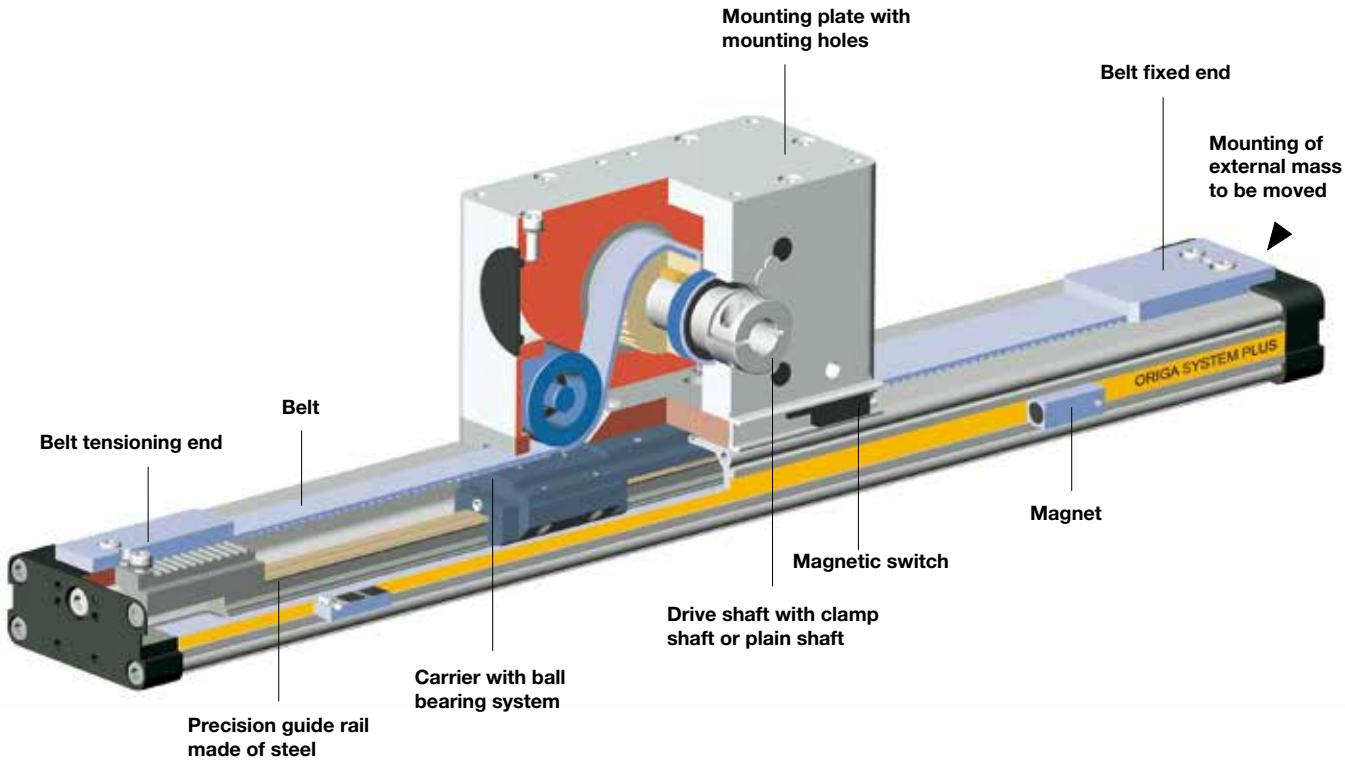
The OSP-E..BV vertical belt actuator with integrated ball bearing guide has been specially developed for lifting movements in the Z-axis.
The especially low vibration OSP-E..BV vertical actuator in combination with the heavy duty series OSP-E..BHD meets the highest demands in portal and handling applications.

Advantages

- Fixed actuator head for low moving mass
- Integrated 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 belt
- Moving axis profile
- Complete motor and control packages



Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

Vertical Belt Actuator with Integrated Ball Bearing Guide
Size 20, 25
Type: OSP-E..BV

Standard Versions:
- Vertical belt actuator with integrated 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

Installation Instructions
Make sure that the OSP-E..BV is always operated by motor with holding brake on the actuator side. For the mounting of the external mass to be moved there are threaded holes in the end caps. Before mounting, check the correct centre of gravity distance from the table.
Mount the external mass on the belt fixed end, so that the belt tension can be checked and adjusted at the belt tensioning end without dismantling.

Characteristics	Description
Series	OSP-E..BV
Mounting	See drawings
Ambient temperature range	-30 °C to +80 °C
Installation	Vertical
Encapsulation class	IP 20
Material	
Profile	Extruded anodized aluminium
Belt	Steel-corded polyurethane
Pulley	Aluminium
Guide	Ball bearing guide
Guide rail	Hardened steel rail with high precision, accuracy class N
Guide carrier preloaded 0.08 x C, accuracy class N	Steel carrier with integrated wiper system, grease nipples,
Screws, nuts	Zinc plated steel

Weight (mass) and Inertia

Series	Total weight (Mass) [kg]		Moving mass [kg]		Inertia [x 10^{-6} kgm^2]		
	At stroke 0 m	Actuator 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
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

* Version: Tandem (Option)

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

First service start-up
The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

The following steps are recommended for selection :

1. Determination of the lever arm length l_x, l_y and l_z from m_e to the centre axis of the actuator.
2. Calculation of the static and dynamic force F_A which must be transmitted by the 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 actuator [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/s²]

a_{max} = maximum acceleration [m/s²]

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
Max. rpm. drive shaft		[min^{-1}]	1700	1875
Max. effective action force F_A at speed	1m/s	[N]	650	1430
	1 - 2 m/s	[N]	450	1200
	> 3 - 5 m/s	[N]	–	1050
No-load torque [2]		[Nm]	0.6	1.2
Max. acceleration/deceleration		[m/s²]	20	20
Repeatability		+/- [mm/m]	0.05	0.05
Max. standard stroke length [1]		[mm]	1000	1500
Max. recomended permissible mass [3]		[kg]	10	20

[1] Longer strokes on request

[2] As a result of static friction force

[3] vertical

Maximum 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	11	2	30	2	36
3	16			3	(30)		
				4	28		
				5	27		

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

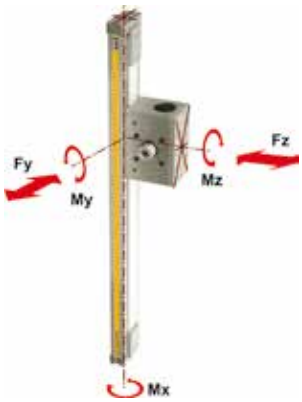
Example above:
OSP-E25BV required speed v = 3 m/s and stroke = 1 m.

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.

Loads, Forces and Moments

Combined loads

If the actuator 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.



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

The distance l (lx, ly, lz) for calculation of the bending moments relates to the centre axis of the actuator.

Maximum Permissible Loads

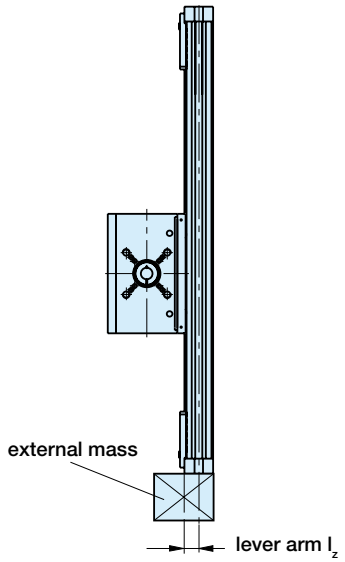
T3

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

Equation of Combined Loads

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

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



Distance of Centre of Gravity of External Mass from Mid-Point of Actuator

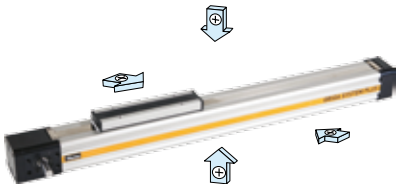
Mass [kg]	OSP-E20BV Lever arm l_z [mm]	Max. permissible acceleration/ deceleration [m/s²]	OSP-E25BV Lever arm l_z [mm]	Max. permissible acceleration/ deceleration [m/s²]
> 3 to 5	0	20	50	20
>5 to 10	0	20	40	20
>10 to 15	-	-	35	20
>15 to 20	-	-	30	15

Options and Accessories

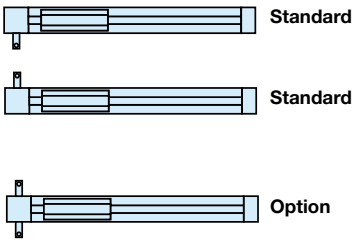
OSP-E..B
Belt actuator with internal plain bearing guide

STANDARD VERSIONS OSP-E..B

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 actuators in parallel.



OPTIONS

TANDEM
For higher moment support.

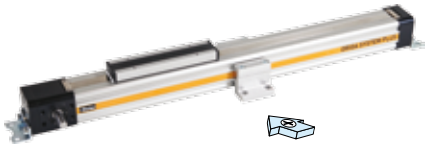
BI-PARTING
For perfectly synchronised bi-parting movements.

ACCESSORIES

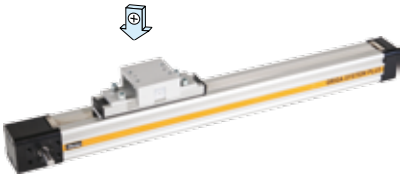
MOTOR MOUNTING

END CAP MOUNTING
For end-mounting of the actuator.

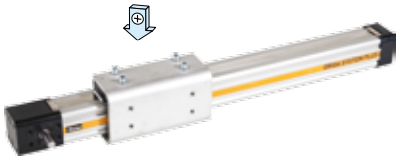
PROFILE MOUNTING
For supporting long actuators or mounting the actuator on the dovetail grooves.



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



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



MAGNETIC SWITCHES SERIES RST AND EST
For contactless position sensing of end stop and intermediate carrier positions.

Belt actuator with internal plain bearing guide for point-to-point applications

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

Advantages

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

Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

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

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

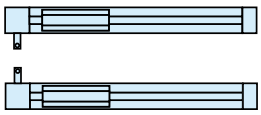
The dovetailed mounting rails of the new actuator expand its function into that of a universal system carrier.
Modular system components are simply clamped on.

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

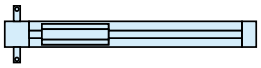
PROLINE
The compact aluminium roller guide for high loads and velocities.

Belt Actuator with Internal Plain Bearing Guide
Size 25, 32, 50
Type: OSP-E..B

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 actuator. See if Profile Mountings are needed using the maximum allowable unsupported length graph.
At least one end cap must be secured to prevent axial sliding when profile mounting is used.
When the actuator is moving an externally guided load, the compensation must be used.

The actuators can be fitted with the standard carrier mounting facing in any direction.
To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.
The inversion mounting can be fitted to transfer the driving force to the opposite side.

Characteristics	Description
Series	OSP-E..B
Mounting	See drawings
Ambient temperature range	-30 °C to +80 °C
Installation	See table
Encapsulation class	IP 54
Material	
Slotted Profile	Extruded anodized aluminium
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

Weight (mass) and Inertia

Series	Weight (mass) [kg]			Inertia [x 10^{-6} kgm^2]	
	at stroke 0 m	ad per meter stroke	moving mass	at stroke 0 m	ad per meter stroke
OSP-E25B	0.9	1.6	0.2	25	6.6
OSP-E32B	1.9	3.2	0.4	43	10
OSP-E50B	5.2	6.2	1.0	312	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)

Maintenance
All moving parts are long-term lubricated for a normal operational environment. Parker Origa recommends a check and lubrication of the actuator, and if necessary a change of the 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 actuator.

First service start-up
The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

The following steps are recommended for selection :

1. Required acceleration,
2. Required torque is shown on page 332
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.

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^{-1}]	2 000	3 000	3 000
Max. effective	< 1 m/s:	[N]	50	150	425
action force	1- 2 m/s:	[N]	50	120	375
F_A at speed	> 2 m/s:	[N]	–	100	300
No-load torque		[Nm]	0.4	0.5	0.6
Max. acceleration/deceleration		[m/s^2]	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

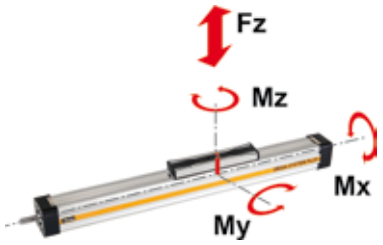
Important:
The maximum permissible torque on the drive shaft is the lowest value of the speed or stroke-dependent torque value.

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.

Loads, Forces and Moments

Combined loads

If the actuator 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.



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

The distance l (lx, ly, lz) for calculation of the bending moments relates to the centre axis of the actuator.

Maximum Permissible Loads T3

Size	Max. applied load [N] Fz	Max. moments [Nm] Mx	My	Mz
OSP-E25B	500	2	12	8
OSP-E32B	1200	8	25	16
OSP-E50B	3000	16	80	32
OSP-E..B Bi-partional	The maximum load F must be equally distributed among the two carriers			

Equation of Combined Loads

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

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

Maximum Permissible Unsupported Length

Stroke length

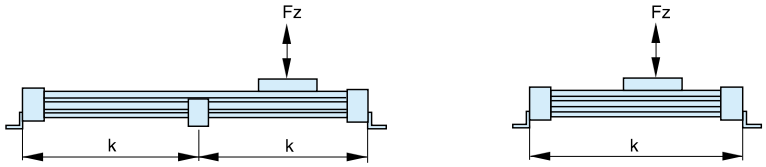
The stroke lengths of the actuators are available in multiples of 1 mm up to max.
OSP-E25B: 3 m / 2 x 1.5 m *
OSP-E32B: 5 m / 2 x 2.5 m *
OSP-E50B: 5 m / 2 x 2.5 m *
* Version: Bi-partional

Other stroke lengths are available on request.

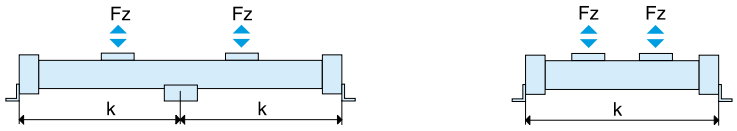
The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local Parker Origa technical support department.

Maximum Permissible Unsupported Length – Placing of Profile Mounting

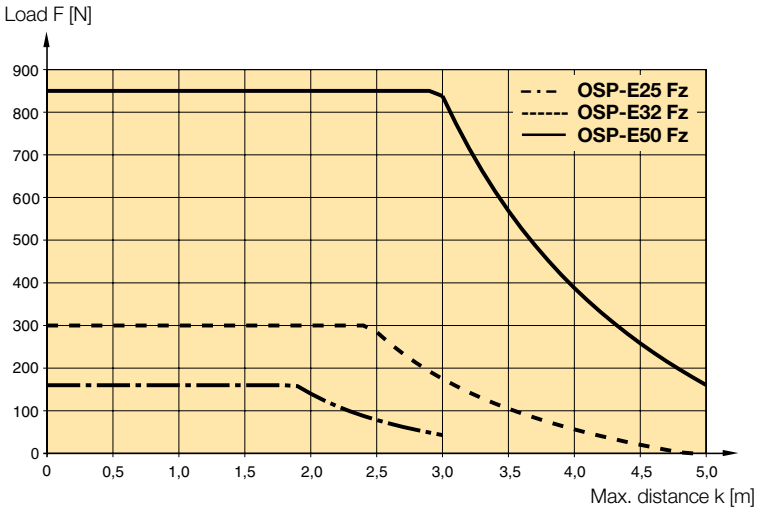
Series OSP-E..B



Series OSP-E..B
Bi-parting version



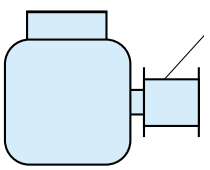
k = Maximum permissible distance between mountings/mid-section support for a given load F.



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

Mounting on the Drive Shaft

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



Pulleys

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

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

Required Acceleration

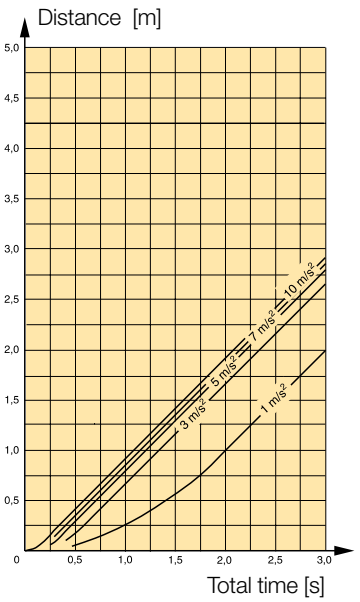
Distance / Time Graph

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

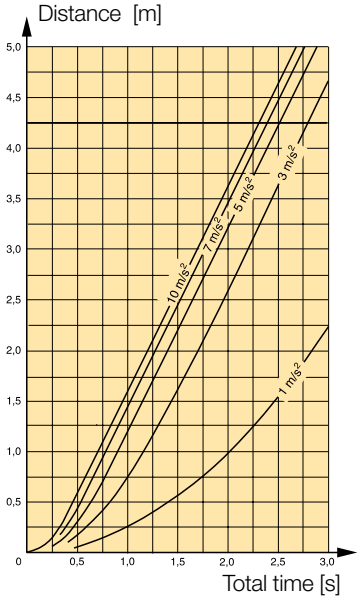
The graphs assume that acceleration and deceleration are equal.

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

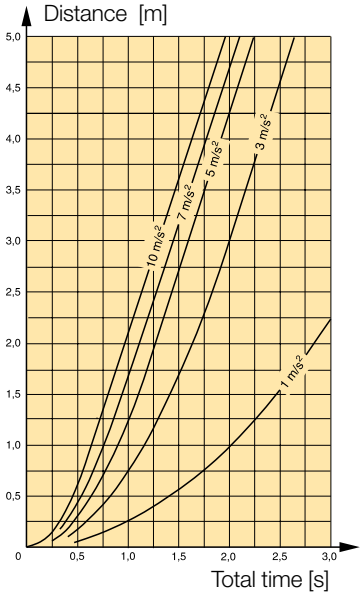
Max speed 1 m/s



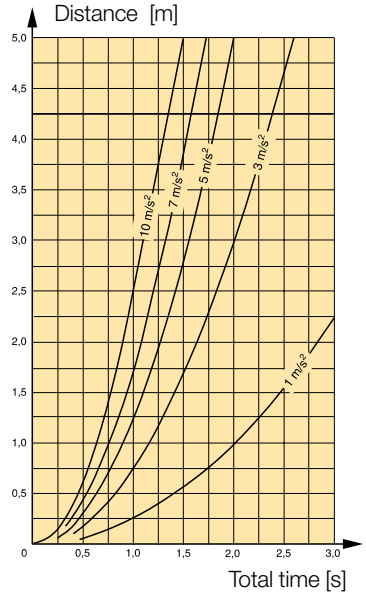
Max speed 2 m/s



Max speed 3 m/s



Max speed 5 m/s

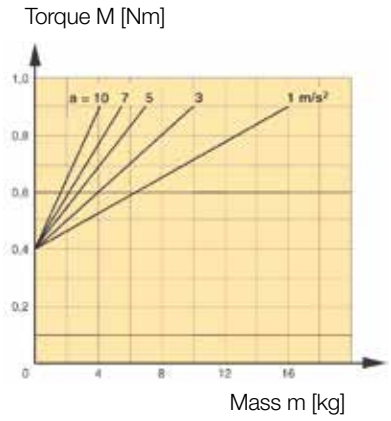


Required Torque / Mass

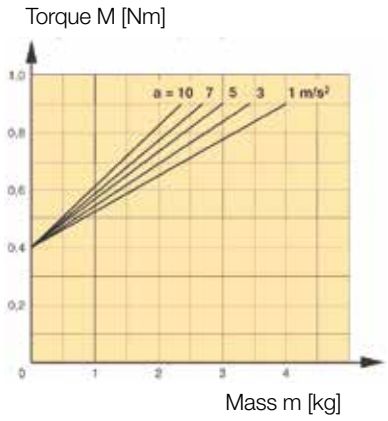
Using the known mass, the direction of the application and the required acceleration from the distance-time graphs, the actuator can be sized and the required torque is shown in the adjacent graphs.
Mass in graphs = Load + moving mass of the actuator.

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

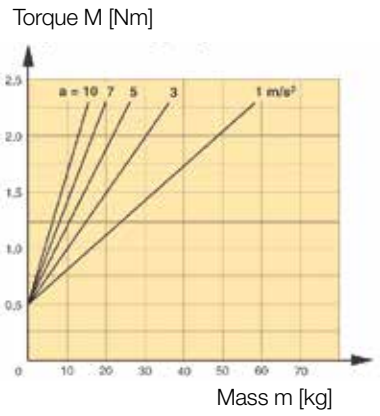
Size OSP-E25B, Horizontal Application



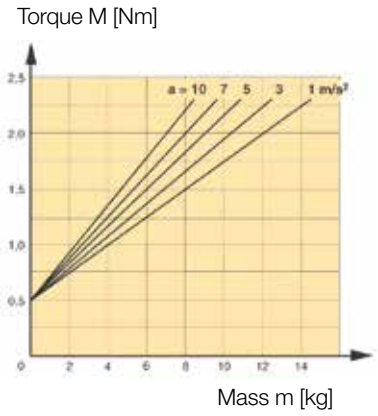
Size OSP-E25B, Vertical Application



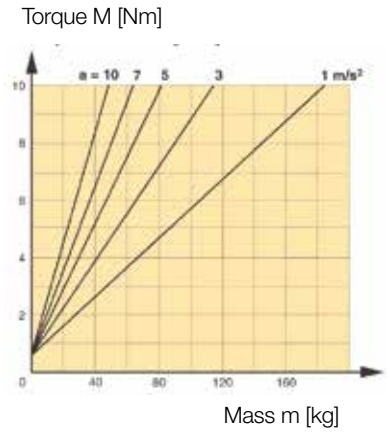
Size OSP-E32B, Horizontal Application



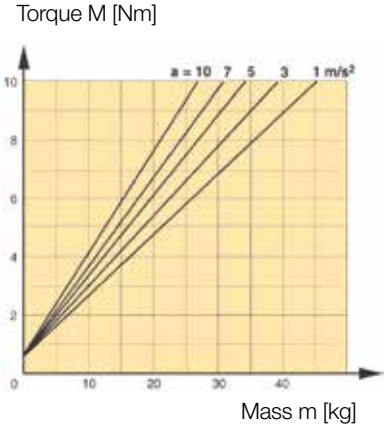
Size OSP-E32B, Vertical Application



Size OSP-E50B, Horizontal Application



Size OSP-E50B, Vertical Application



Ball screw actuator with internal plain bearing guide for high accuracy applications

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

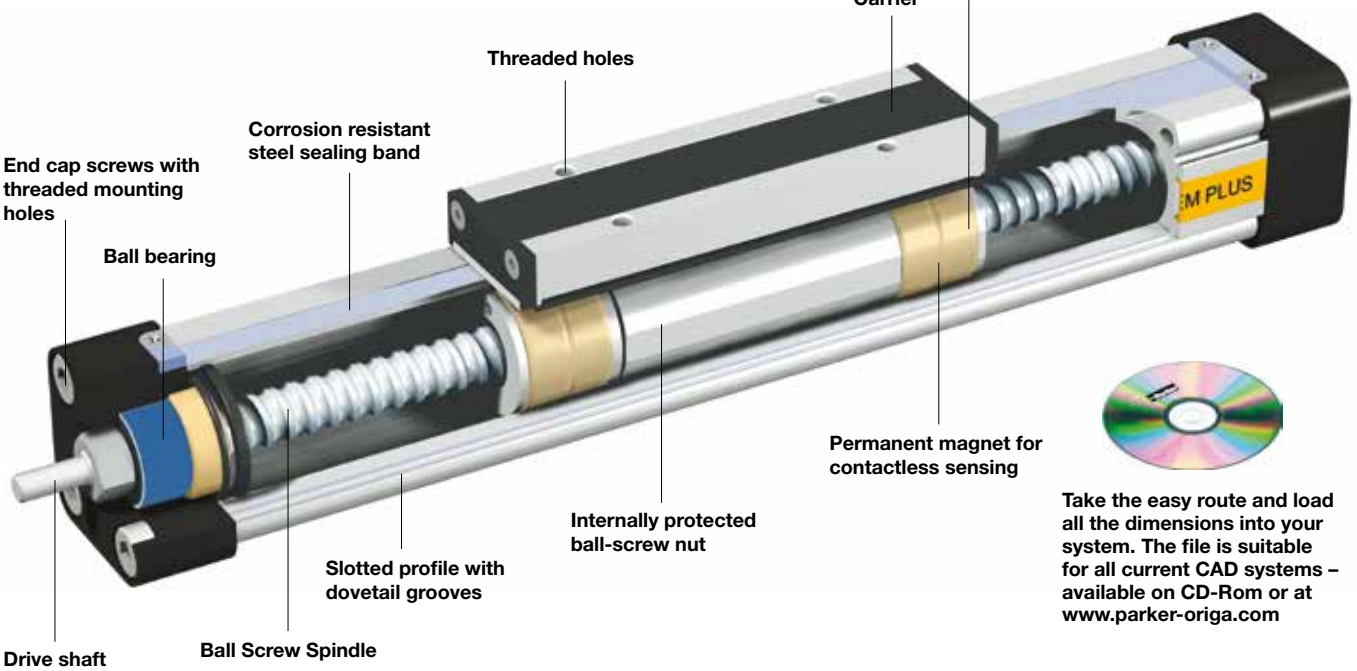
Advantages

- 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

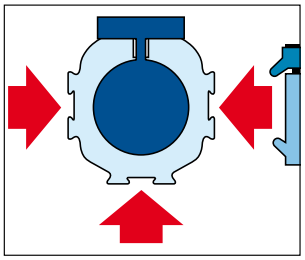
- Integrated drive and guidance system
- Complete motor and control packages
- Diverse range of accessories and mountings
- Optimal screw pitches (5, 10, 25 mm)

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



Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

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

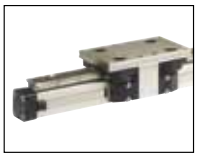


Heavy Duty guide HD linear guides for heavy duty applications

SFI-plus displacement measuring system

SLIDELINE Combination with linear guides provides for heavier loads.

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



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

Ball Screw Actuator with Internal Plain Bearing Guide
Size 25, 32, 50
Type: OSP-E..SB

OSP
ORIGA
SYSTEM
PLUS

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

Installation Instructions
Use the threaded holes in the end cap for mounting the actuator. See if Profile Mountings are needed using the maximum allowable unsupported length graph.
At least one end cap must be secured to prevent axial sliding when profile mounting is used.
When the actuator is moving an externally guided load, the compensation must be used.

The actuators can be fitted with the standard carrier mounting facing in any direction.
To prevent contamination such as fluid ingress, the actuator should be fitted with its sealing band facing downwards.
The inversion mounting can be fitted to transfer the driving force to the opposite side.

Characteristics	Description
Series	OSP-E..SB
Ambient temperature range	-20 °C to +80 °C
Installation	In any position
Mounting	See drawing
Encapsulation class	IP 54
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

Weight (mass) and Inertia

Series	Weight (mass) [kg]			Inertia [x 10^{-6} kgm^2]	
	at stroke 0 m	ad per meter stroke	moving mass	at stroke 0 m	ad per meter stroke
OSP-E25SB	0.8	2.3	0.2	2.2	11
OSP-E32SB	2.0	4.4	0.4	8.4	32
OSP-E50SB	5.2	9.4	1.2	84.0	225

Maintenance
All moving parts are long-term lubricated for a normal operational environment. Parker Origa recommends a check and lubrication of the actuator, and if necessary a change of the belt and wear parts, after an operation time of 12 months of operation or 3 000 km travel of distance.
Please refer to the operating instructions supplied with the actuator.

First service start-up
The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

The following steps are recommended for selection :

1. Recommended maximum acceleration is shown in graphs
2. Required torque is shown in graphs
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.

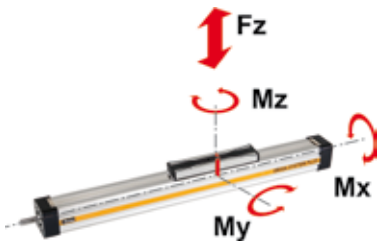
Performance Overview

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^{-1}]	3 000	3 000		3 000		
Max. effective action force F_A Corresponding torque on drive shaft	[N] [Nm]	250 0.35	600 0.75	1.3	1 500 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		

Loads, Forces and Moments

Combined loads

If the actuator 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.



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

The distance l (lx, ly, lz) for calculation of the bending moments relates to the centre axis of the actuator.

Maximum Permissible Loads

Size	Max. applied load [N] Fz	Max. moments [Nm] Mx	My	Mz
OSP-E25SB	500	2	12	8
OSP-E32SB	1200	8	25	16
OSP-E50SB	3000	16	80	32

Equation of Combined Loads

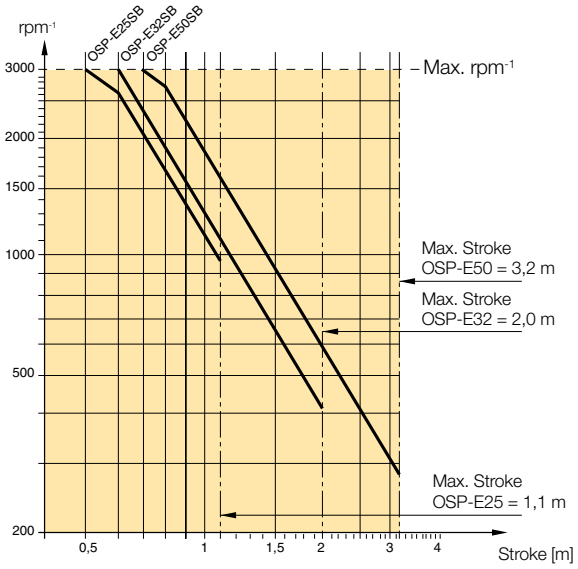
$$\frac{Fz}{Fz\ (max)} + \frac{Mx}{Mx\ (max)} + \frac{My}{My\ (max)} + \frac{Mz}{Mz\ (max)} \leq 1$$

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

Maximum rpm / Stroke

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

Maximum rpm / Stroke



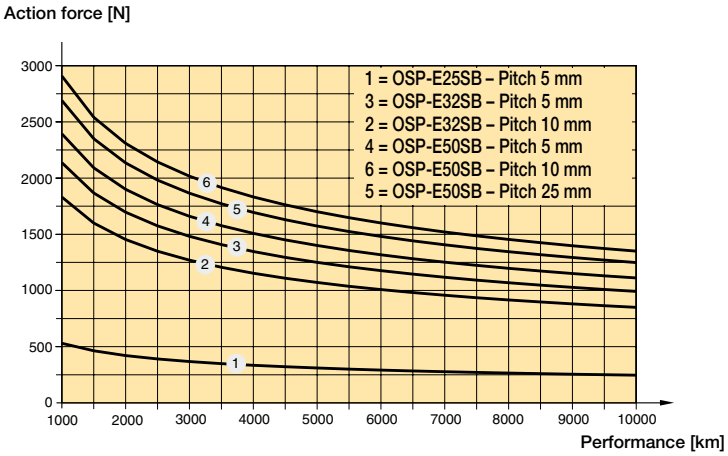
The maximum rpm shown in the graph, is 80% of the critical rpm.

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.

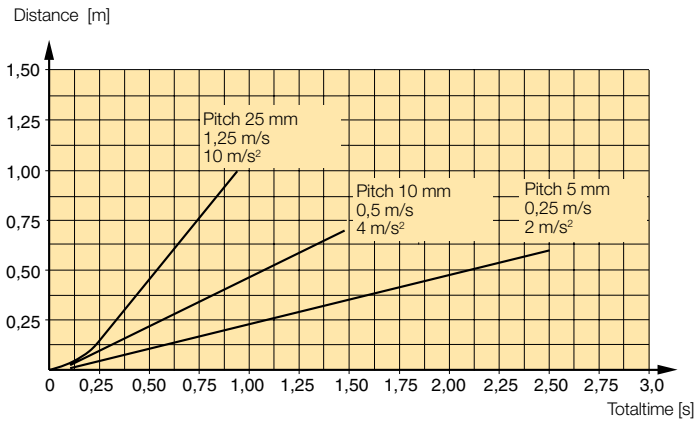
Performance as a function of the action force



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

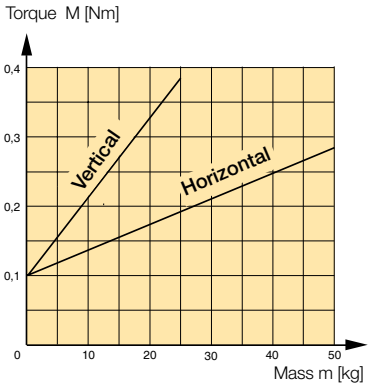


Required Torque / Mass

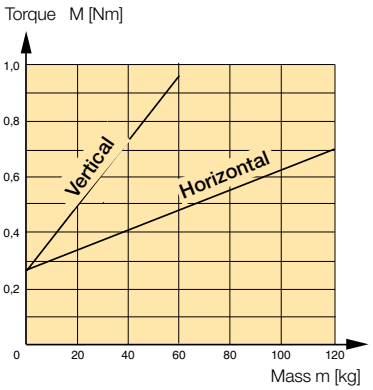
Using the known mass, the direction of the application and the recommended acceleration, the actuator can be sized and the required torque is shown in the adjacent graphs.
Mass in graphs = Load + moving mass of the actuator according to the weight chart.

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

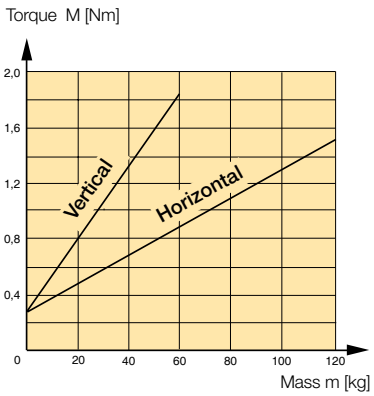
Size OSP-E25SB, Pitch 5mm Acceleration 2 m/s²



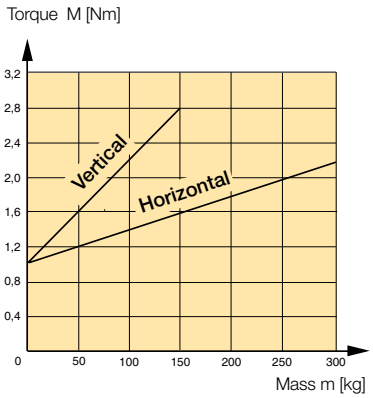
Size OSP-E32SB, Pitch 5mm Acceleration 2 m/s²



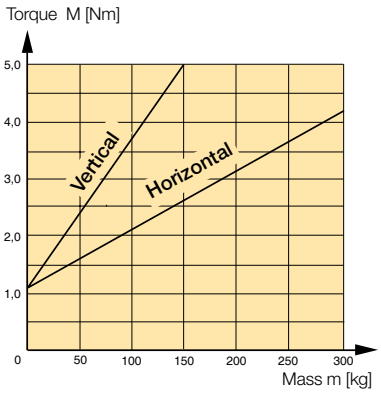
Size OSP-E32SB, Pitch 10mm Acceleration 4 m/s²



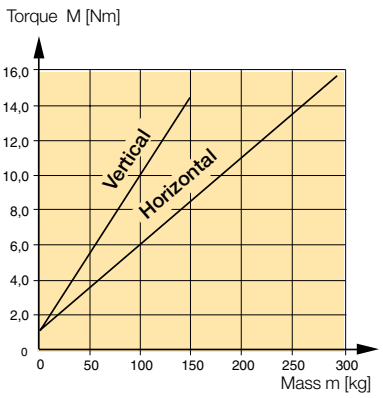
Size OSP-E50SB, Pitch 5mm Acceleration 2 m/s²



Size OSP-E50SB, Pitch 10mm Acceleration 4 m/s²



Size OSP-E50SB, Pitch 25mm Acceleration 10 m/s²



Trapezoidal screw actuator with internal plain bearing guide for intermittent applications

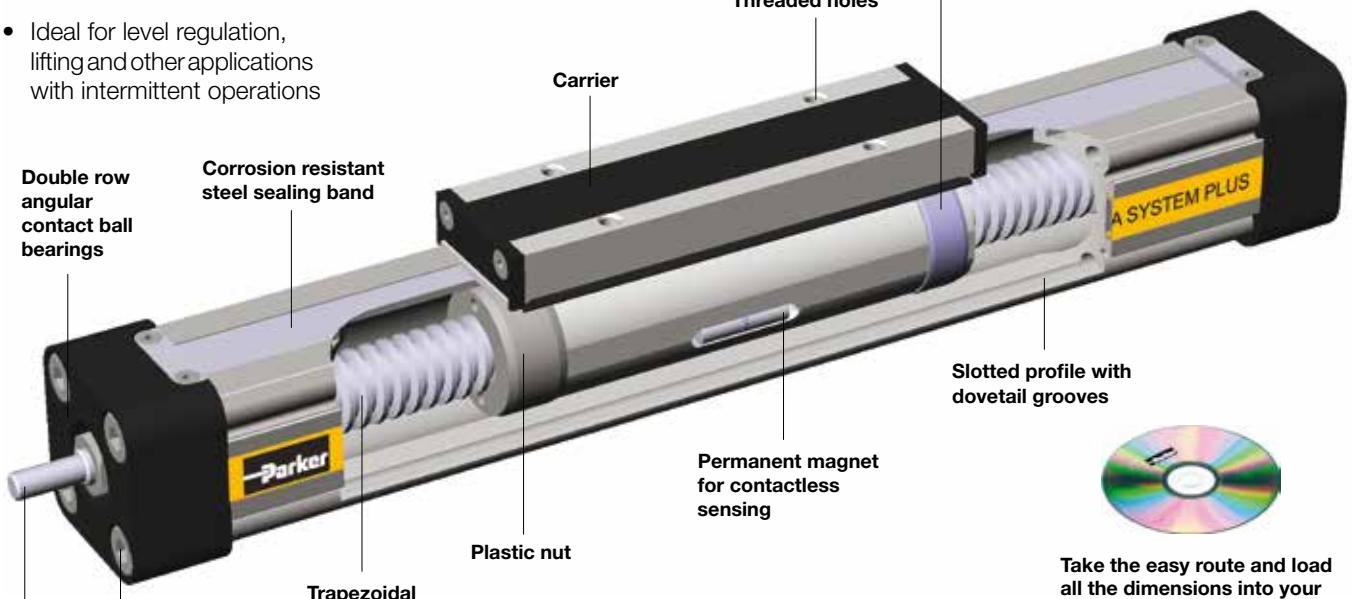
A completely new generation of actuators which can be integrated into any machine layout neatly and simply.

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

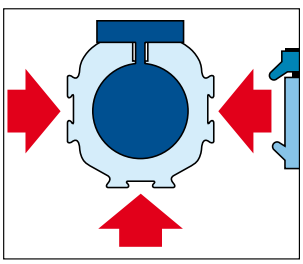
Features

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



Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

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

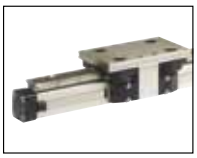


Heavy Duty guide
HD linear guides for heavy duty applications

SFI-plus displacement measuring system

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.

Trapezoidal Screw Actuator with Internal Plain Bearing Guide
Size 25, 32, 50
Type: OSP-E..ST

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
- Keyway

Installation Instructions
Use the threaded holes in the free end cap and a profile mounting close to the motor end for mounting the actuator.
See if profile mountings are needed using the maximum permissible unsupported length graph.
At least one end cap must be secured to prevent axial sliding when Profile Mounting is used.
When the actuator is moving an externally guided load, the compensation must be used.
The actuators 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.

Characteristics	Description
Series	OSP-E..ST
Mounting	See drawings
Ambient temperature range	-20 °C to +70 °C
Installation	In any position
Material	
Slotted Profile	Extruded anodized aluminium
Trapazoidal 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

Weight (mass) and Inertia

Series	Weight (mass) [kg]			Inertia [x 10^{-6} kgm^2]	
	at stroke 0 m	ad per meter stroke	moving mass	at stroke 0 m	ad per meter stroke
OSP-E25ST	0.9	2.8	0.2	6	30
OSP-E32ST	2.1	5.0	0.5	21.7	81
OSP-E50ST	5.1	10.6	1.3	152	400

Maintenance
All moving parts are long-term lubricated for a normal operational environment. Parker Origa recommends a check and lubrication of the actuator, and if necessary a change of the belt and wear parts, after an operation time of 12 months of operation 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 actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

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 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

Performance Overview

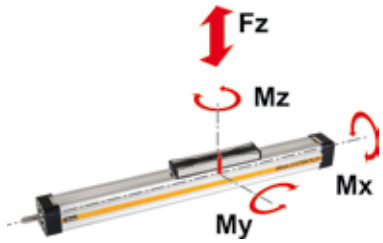
Characteristics	Unit	Description		
Size		OSP-E25ST	OSP-E32ST	OSP-E50ST
Pitch	[mm]	4	4	6
Max. speed	[m/s]	0.1	0.1	0.15
Linear motion per revolution drive shaft	[mm]	4	4	6
Max. rpm, drive shaft	[min-1]	1500	1500	1500
Max. effective action force FA Corresponding torque on drive shaft	[N] [Nm]	600 1.35	1300 3.2	2 500 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 FL1)	[N]	600	1300	2500
Repeatability	[mm/m]	±0.5	±0.5	±0.5
Max. Standard stroke length	[mm]	1100	2000	2500*

1) Related to screw types Tr 16x4, Tr 20x4, TR 30x6
* For strokes longer than 2000 mm in horizontal apllications, please contact our customer support.

Loads, Forces and Moments

Combined loads

If the actuator 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.



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

The distance l (lx, ly, lz) for calculation of the bending moments relates to the centre axis of the actuator.

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 of Combined Loads

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

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

Maximum Permissible Unsupported Length

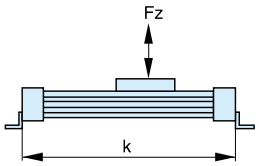
Stroke length

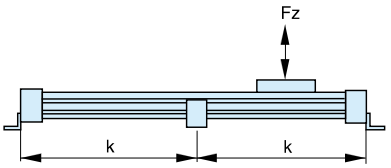
The stroke lengths of the actuators are available in multiples of 1 mm up to the following maximum stroke lengths.
OSP-E25ST: max. 1100 mm
OSP-E32ST: max. 2000 mm
OSP-E50ST: max. 2500 mm *
Other stroke lengths are available on request.

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

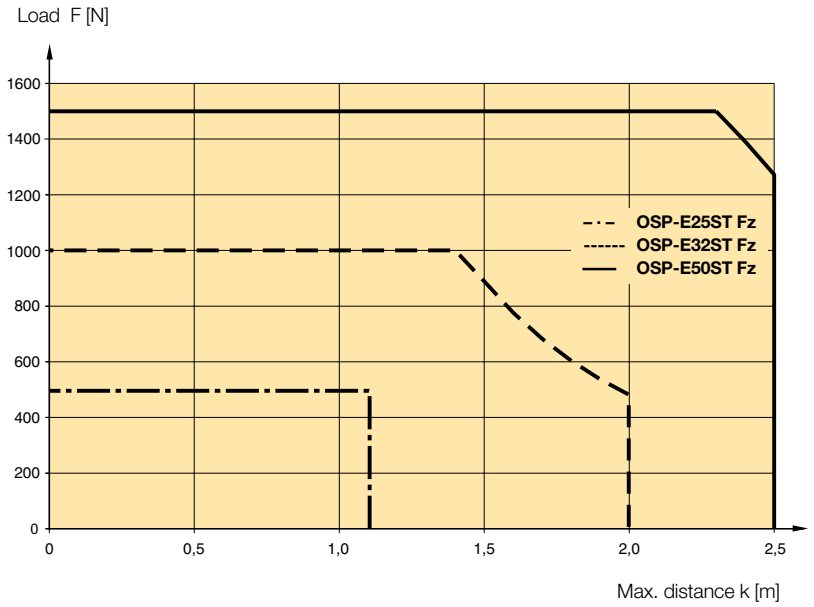
The end of stroke must not be used as a mechanical stop.
Allow an additional safety clearance of minimum 25 mm at both ends.
The use of an AC motor with frequency converter normally requires a larger safety clearance than that required for servo systems.
For advise, please contact your local Parker Origa technical support department.

Maximum Permissible Unsupported Length – Placing of Profile Mounting





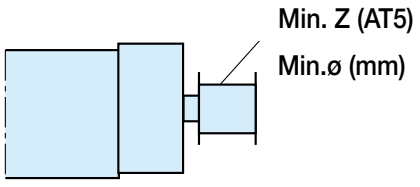
k = Maximum permissible distance between mountings/mid-section support for a given load F.



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

Mounting on the Drive Shaft

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



Pulleys

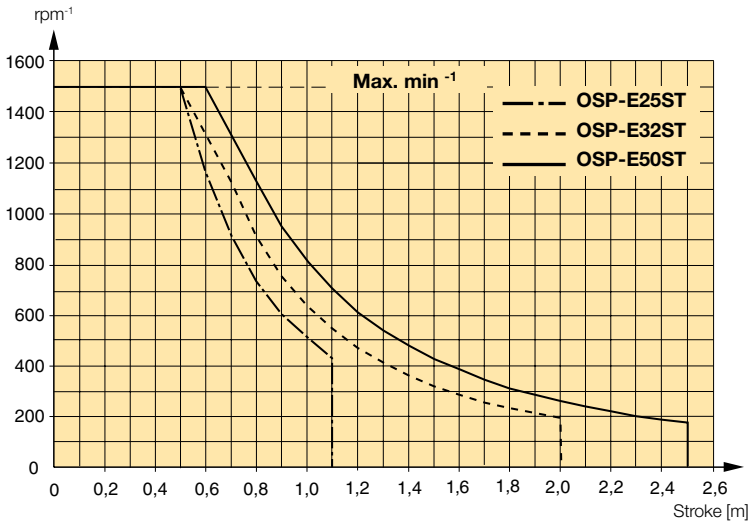
Minimum allowable number of teeth (AT5) and diameter of pulley at maximum applied torque.

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 redueced according to the adjacent graphs.

Maximum rpm / Stroke



The maximum rpm shown in the graph, is 80% of the critical rpm.

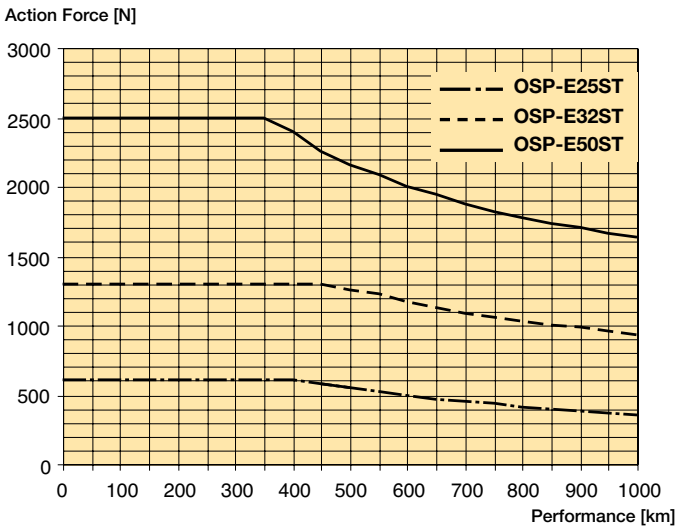
Performance / Action Force

The actuators 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.

Performance as a function of the action force



Note: Graph above is based upon 10% intermittent usage

Ball screw actuator with internal plain bearing guide and piston rod for accurate piston rod applications

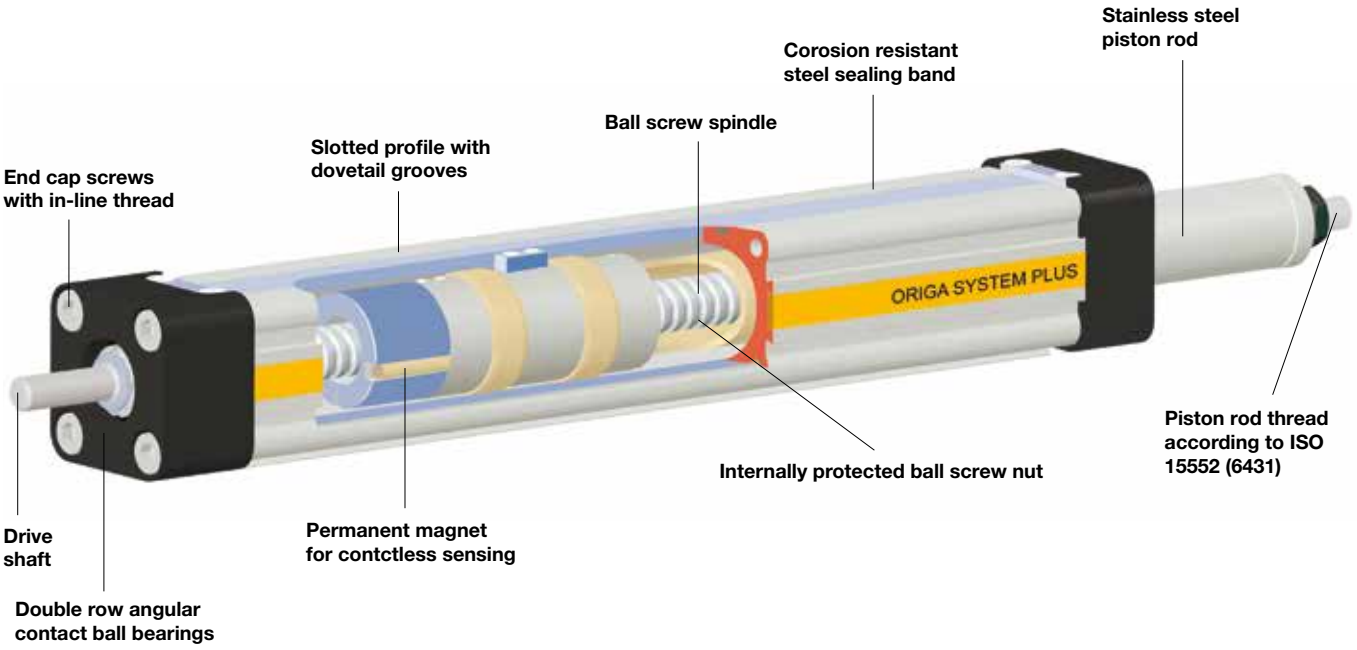
A completely new generation of actuators which can be integrated into any machine layout neatly and simply.

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



Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

Options and Accessories

OSP-E..SBR
Ball screw actuator with internal plain bearing guide and piston rod

STANDARD VERSIONS
OSP-E..SBR

Standard piston rod 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

END CAP MOUNTING
For end-mounting the actuator on the extending rod side.

Flange Mounting C
For end-mounting the actuator on the extending rod side.

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

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

COMPENSATION
Piston Rod eye

Piston rod Clevis

Piston Rod compensating coupling
For compensating of radial and angular misaligments

MAGNETIC SWITCHES
SERIES RST AND EST
For contactless position sensing of end stop and intermediate carrier positions.

Ball Screw Actuator with Internal Plain Bearing Guide and Piston Rod
Size 25, 32, 50
Type: OSP-E..SBR

Standard Versions:
- Standard piston rod 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

Options:
- Keyway version

Installation Instructions
Use the threaded holes in the free end cap and a profile mounting close to the motor end for mounting the actuator.

The piston rod is locked against rotations, but must not be used for radial loads Mx, that need to be guided externally. A compensation part e. g. piston rod eye is recommended.

Characteristics	Description
Series	OSP-E..SBR
Mounting	See drawings
Ambient temperature range	-20 °C to +80 °C
Installation	In any position
Encapsulation class	IP 54
Material	
Slotted Profile	Extruded anodized aluminium
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

Weight (mass) and Inertia

Series	Total weight (Mass) [kg]		Moving mass [kg]		Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Actuator head	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

Maintenance
All moving parts are long-term lubricated for a normal operational environment. Parker Origa recommends a check and lubrication of the actuator, 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 actuator.

First service start-up
The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

The following steps are recommended for selection :

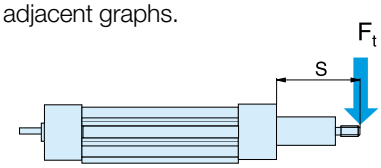
1. Check that the maximum values in the adjacent chart and transverse force/ stroke graph below are not exceeded.
2. Check the lifetime/travel distance in graph below.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time in application

Performance Overview

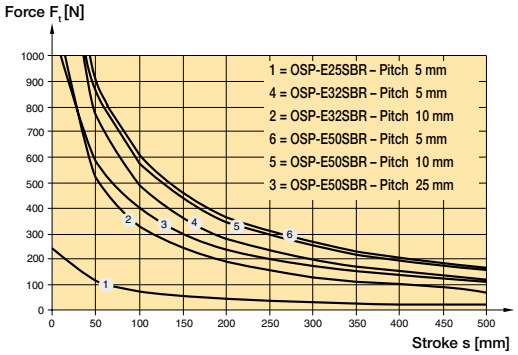
Characteristics	Unit	Description					
Series		OSP-E25SBR	OSP-E32SBR		OSP-E50SBR		
Pitch	[mm]	5	5	10	5	10	25
Max. speed	[m/s]	0.25	0.25	0.5	0.25	0.5	1.25
Linear motion per revolution drive shaft	[mm]	5	5	10	5	10	25
Max. rpm drive shaft		[min^{-1}]	3000	3000	3000		
Max. effective action force F_A	[N]	260	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^2]	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.



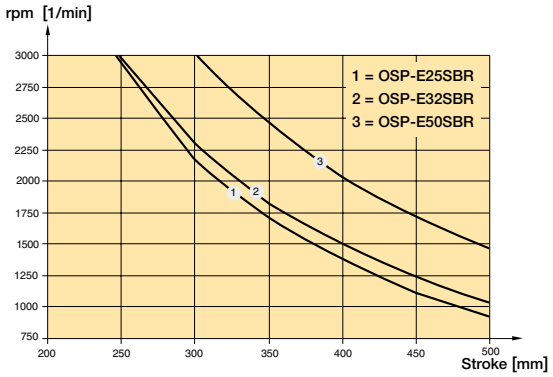
Transverse Force / Stroke



Maximum rpm / Stroke

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

Maximum rpm / Stroke

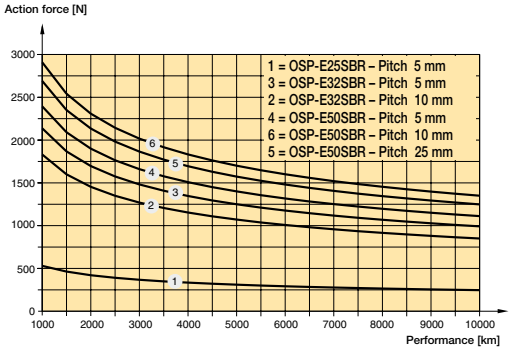


Performance / Action Force

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



Trapezoidal screw actuator with internal plain bearing guide and piston rod for intermittent applications

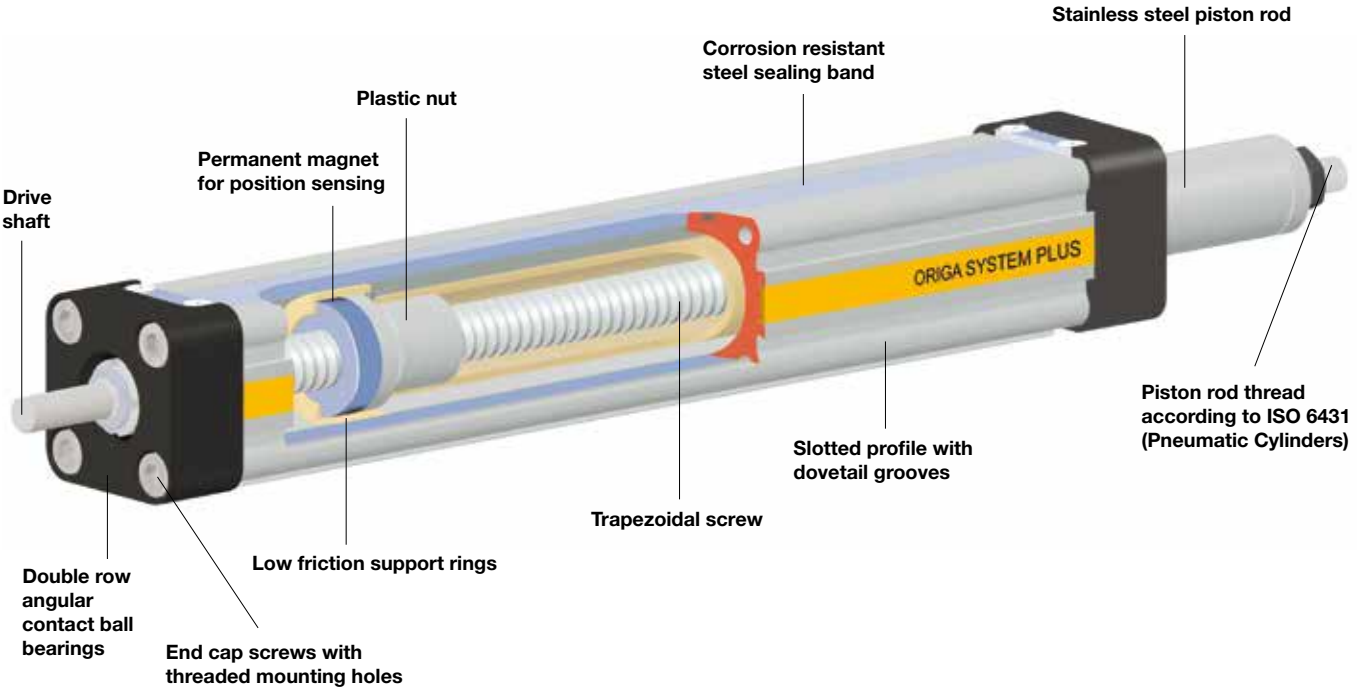
A completely new generation of actuators which can be integrated into any machine layout neatly and simply.

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

- Piston rod-end dimensions conforming to ISO pneumatic standards
- Complete motor and control packages
- Diverse range of accessories and mountings
- Special options available



Take the easy route and load all the dimensions into your system. The file is suitable for all current CAD systems – available on CD-Rom or at www.parker-origa.com

Options and Accessories

OSP-E..STR
Trapezoidal screw actuator with internal plain bearing guide and piston rod

STANDARD VERSIONS OSP-E..STR

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

ACCESSORIES

MOTOR MOUNTINGS

END CAP MOUNTING
For end-mounting the actuator on the extending rod side.

FLANGE MOUNTING C
For end-mounting the actuator on the extending rod side.

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

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

COMPENSATION PISTON ROD EYE

PISTON ROD CLEVIS

PISTON ROD COMPENSATING COUPLING
For compensating of radial and angular misaligments

MAGNETIC SWITCHES SERIES RST AND EST
For contactless position sensing of end stop and intermediate carrier positions.

Trapezoidal Screw Actuator with Internal Plain Bearing Guide and Piston rod

Size 25, 32, 50

Type: OSP-E..STR

OSP
ORIGA SYSTEM PLUS

Standard Versions:

- 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

Contactless position sensing

Please use the magnetic switch mentioned below:

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

Installation Instructions

Use the threaded holes in the free end cap and a profile mounting close to the motor end for mounting the actuator.

The piston rod is not locked against rotation and needs to be guided externally. A compensation part e. g. piston rod eye is recommended.

Characteristics	Description
Series	OSP-E..STR
Mounting	See drawings
Ambient temperature range	-20 °C to +70 °C
Installation	In any position
Encapsulation class	IP 54
Material	
Slotted Profile	Extruded anodized aluminium
Trapazoidal screw	Cold rolled steel
Drive nut	Thermoplastic polyester
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

Weight (mass) and Inertia

Series	Total weight (Mass) [kg]		Moving mass [kg]		Inertia [x 10^{-6} kgm^2]	
	At stroke 0 m	Actuator head	At stroke 0 m	Add per metre stroke	At Stroke 0 m	Add per metre stroke
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

Maintenance

All moving parts are long-term lubricated for a normal operational environment. Parker Origa recommends a check and lubrication of the actuator, 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 actuator.

First service start-up

The maximum values specified in the technical data sheet for the different products must not be exceeded. Before taking the actuator as a machine into service, the user must ensure the adherence to the EC Machine Directive 2006/42/EG.

Sizing Performance Overview Maximum Loadings

Sizing of Actuator

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

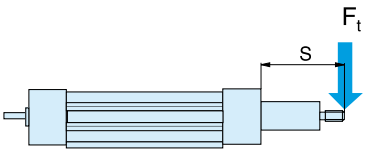
Performance Overview

Characteristics	Unit	Description		
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^{-1}]	1500 [2)]	1500	1500
Max. effective action force F_A Corresponding torque on drive shaft	[N] [Nm]	800 1.35	1600 3.4	3300 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

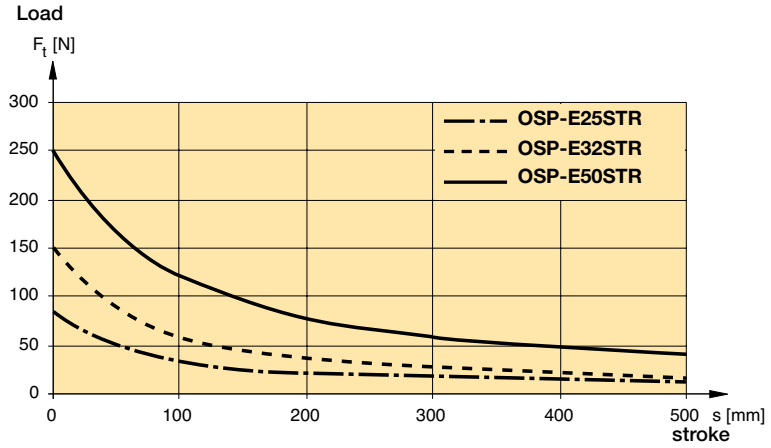
[1)] Related to screw types Tr 12x3, Tr 16x4, Tr 24x5

[2)] from 0,4 m stroke max. 1200 min-1 permissible

Transverse Force / Stroke



Transverse Force / Stroke

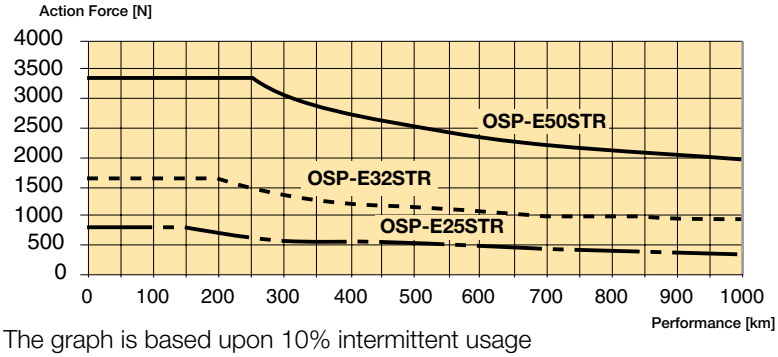


The graph is based upon 10% intermittent usage

Performance / Action Force

The Actuators 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.

Performance as a function of the action force



The graph is based upon 10% intermittent usage