

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



Technical Data

Characteristics			
Characteristics	Symbol	Unit	Description
General Features			
Series			OSP-E..ST
Name			Linear Drive with Trapezoidal Screw Drive
Mounting			See drawings
Temperature Range	ϑ_{\min} ϑ_{\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 ⁻⁶ kgm ²]	
	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

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.

Linear Drive with Trapezoidal Screw Drive

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



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



A1P639E00GAG0X

The right to introduce technical modifications is reserved

Technical Data

Sizing Performance Overview

Maximum Loadings

Sizing of Linear Drive

The following steps are recommended for selection :

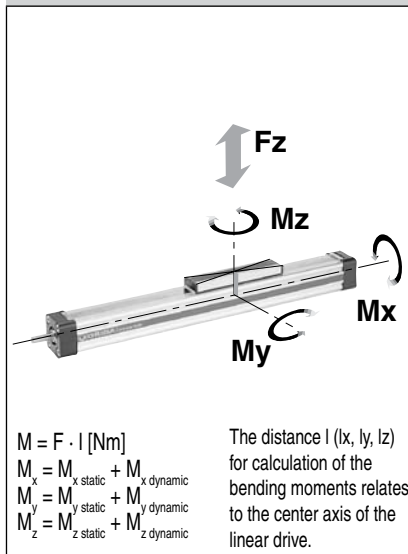
1. Check that maximum values in the table T3 are not exceeded.
2. Check the maximum values in graph on page 66 are not exceeded.
3. When sizing and specifying the motor, the RMS-average torque must be calculated using the cycle time of the application.
4. Check that the maximum allowable unsupported 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 ⁻¹]	1500	1500	1500
Max. effective action force F _A	[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 _L ¹⁾	[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
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



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

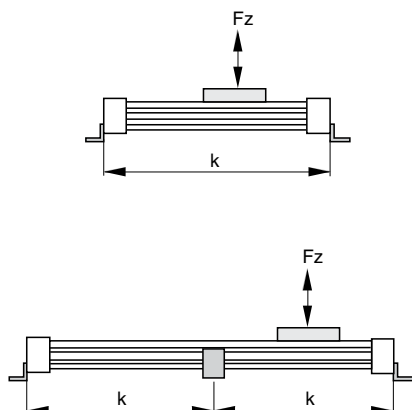
Equation for Combined Loads

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

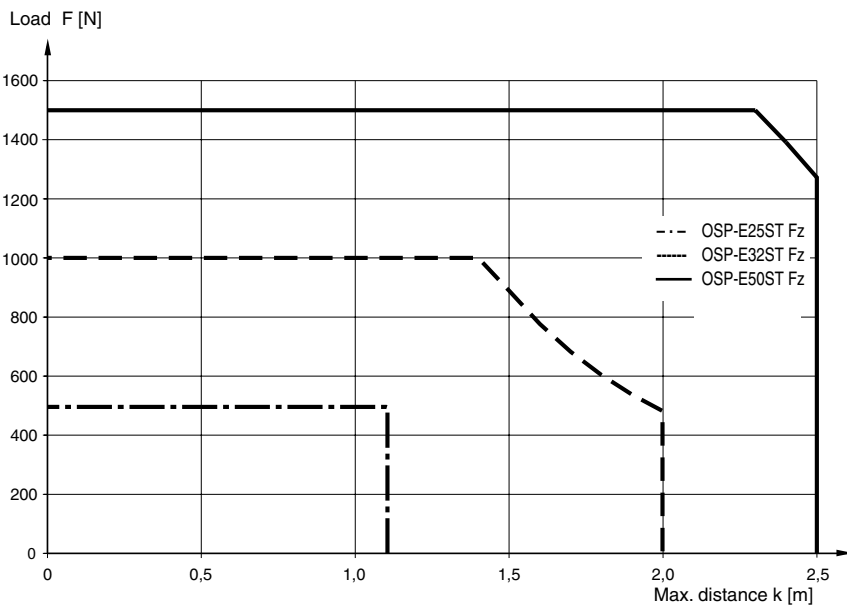
The total of the loads must not exceed >1 under any circumstances.

Technical Data

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.

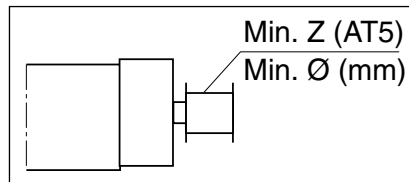
When mechanical stops are required, external shock absorbers should be used (see separate data sheet). Align the centerline of the shock absorber as closely as possible with the object's center of gravity.

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.



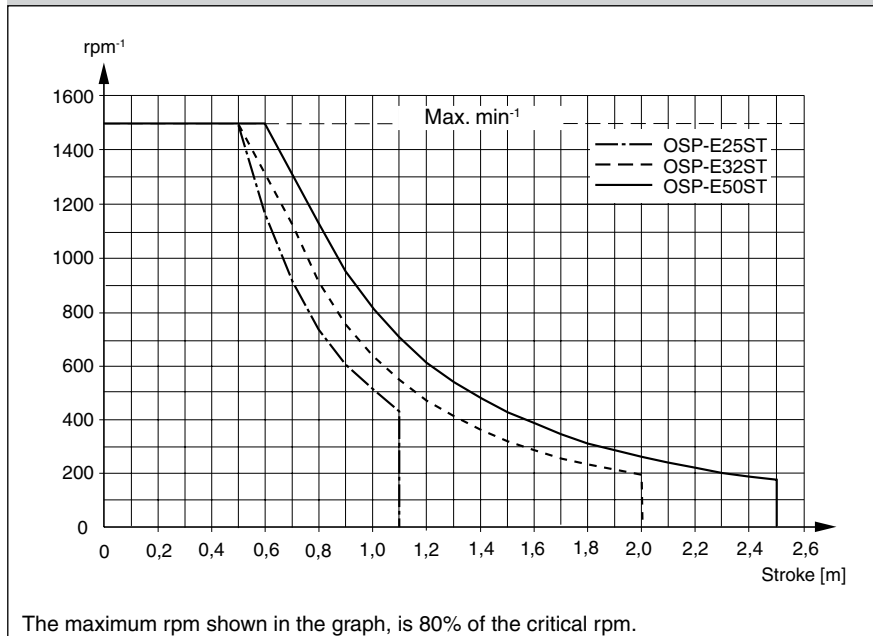
Size	Min. Z	Min. Ø
OSP-E25ST	24	38
OSP-E32ST	24	38
OSP-E50ST	36	57

Technical Data

Maximum rpm / Stroke

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

Maximum rpm / Stroke

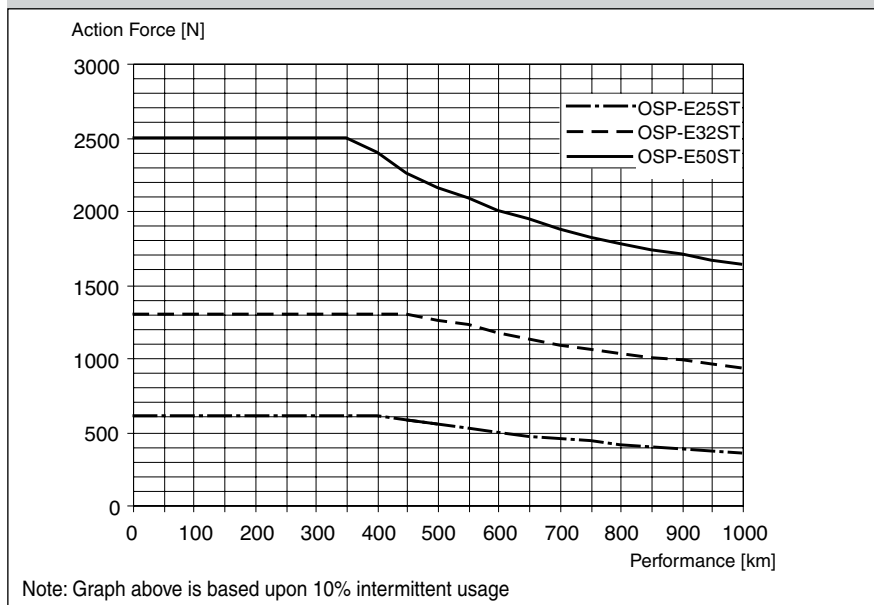


Performance / Action Force

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

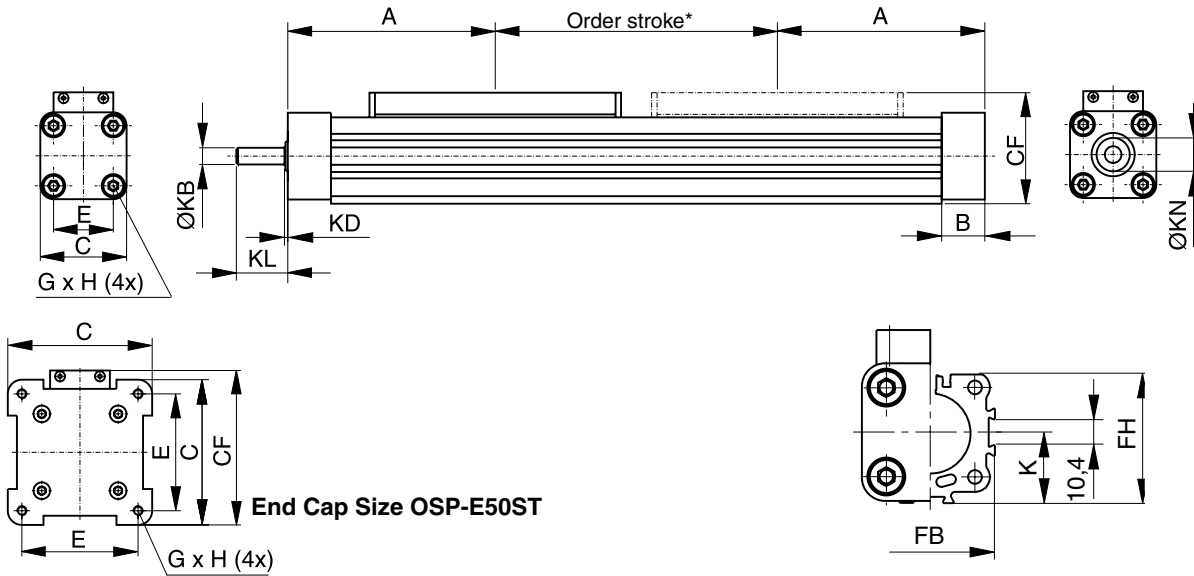
The performance to be expected depends on the maximum required actions force of the application. An increase of the action force will lead to a reduced performance.

Performance as a function of the action force

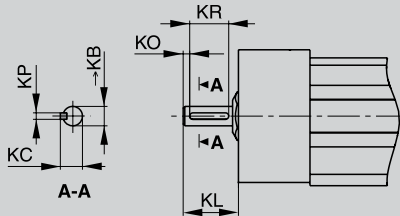


Dimensions

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



Plain Shaft with Keyway (Option)



Dimension Table [mm]

Series	ØKB _{h7}	KC	KL		KO	KP ^{P9}	KR
			Opt.3	Opt.4			
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:

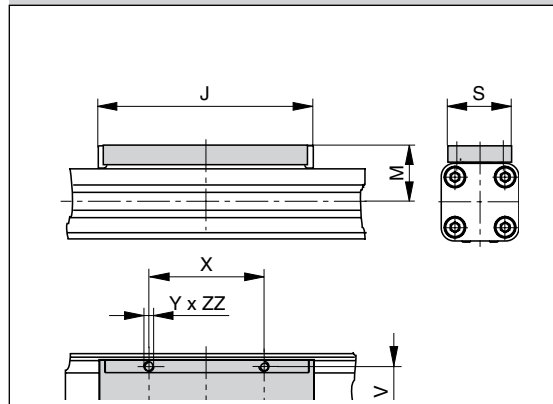
The mechanical end position must not be used as a mechanical end stop. Allow an additional safety clearance at both ends equivalent to the linear movement of one revolution of the drive shaft, but at least 25 mm.

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 _{h7}	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 _{h7}	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 _{h7}	3	43	28	10