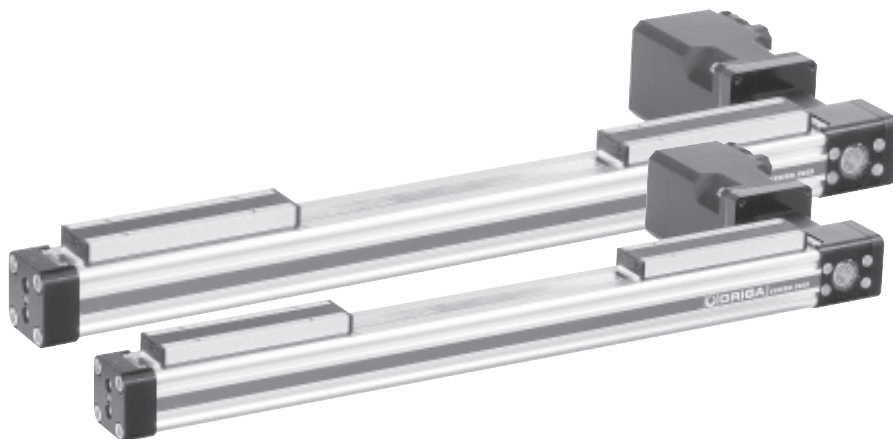


Linear Actuator with Toothed Belt and Bi-Parting Carriers Series OSP-E..BP



Contents

Description	Data Sheet No.	Page
Overview	1.25.001E	33-36
Technical Data	1.25.002E-1 to 5	37-41
Dimensions	1.25.002E-6	42
Order Instructions	1.25.002E-7	43

ELECTRIC LINEAR ACTUATOR FOR SYNCHRONIZED BI-PARTING APPLICATIONS

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

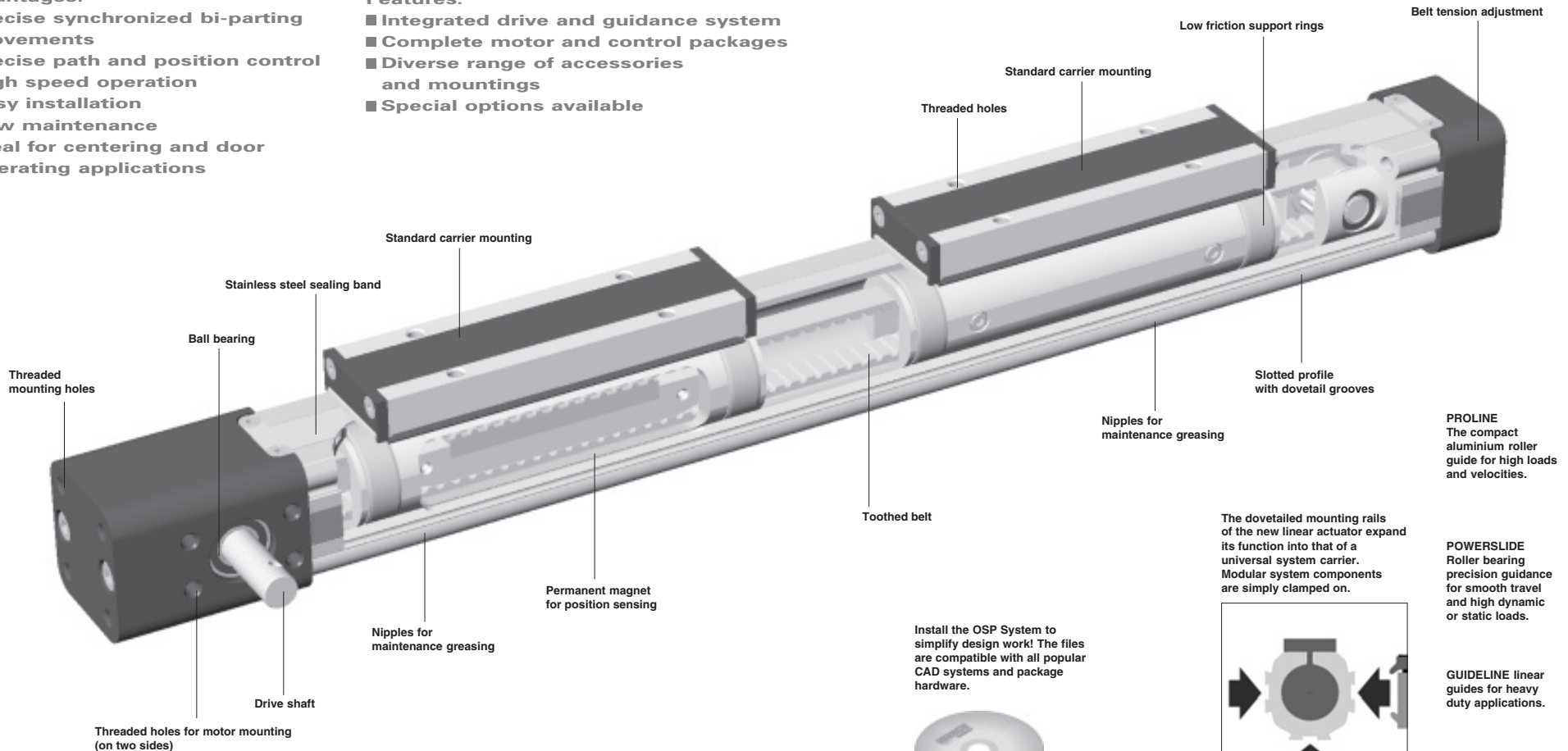
Linear Actuator with Toothed Belt and Bi-Parting Carriers

Advantages:

- Precise synchronized bi-parting movements
- Precise path and position control
- High speed operation
- Easy installation
- Low maintenance
- Ideal for centering and door operating applications

Features:

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

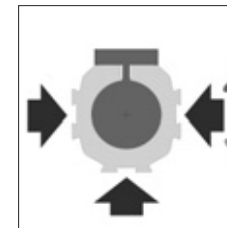


Install the OSP System to simplify design work! The files are compatible with all popular CAD systems and package hardware.



Data Sheet No. 1.25.001E-3

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.



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



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



GUIDELINE linear guides for heavy duty applications.

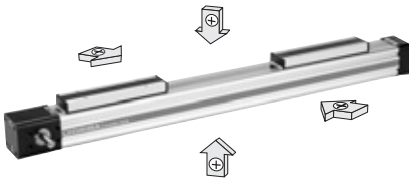


OPTIONS AND ACCESSORIES

SERIES OSP-E, BI-PARTING BELT DRIVEN

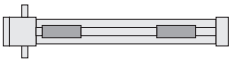
STANDARD VERSIONS OSP-E..BP

Data sheets 1.25.002E-1, -2
Standard carrier with integral guidance.
Dovetail profile for mounting of accessories and the actuator itself.



BASIC ACTUATOR OPTIONS

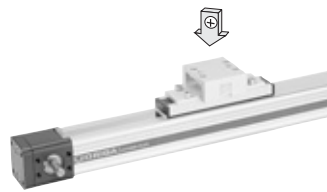
DRIVE SHAFT OPTIONS



MOUNTINGS FOR OSP-E25 TO E50

CLEVIS MOUNTING

Data sheet 1.45.021E
Carrier mounting for driving loads supported by external linear guides.



END CAP MOUNTING

Data sheet 1.45.022E
For end-mounting of the actuator



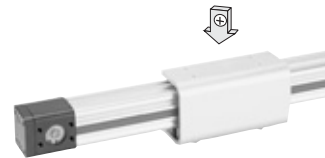
MID-SECTION SUPPORT

Data sheet 1.45.023E
For supporting long actuators or mounting the actuator on the dovetail grooves.



INVERSION MOUNTING

Data sheet 1.45.025E
The inversion mounting, mounted on the carrier, transfers the driving force to the opposite side, e.g. for dirty environments..



ACCESSORIES

PROXIMITY SENSOR SERIES RS AND ES

Data sheet 1.45.101E
For electrical sensing of end and intermediate carrier positions.



MOTOR MOUNTINGS

Data sheet 1.45.028E



A3P153E001Z50X

Technische Änderungen vorbehalten

Linear Actuator with Toothed Belt and Bi-Parting Carriers

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

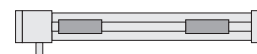


Characteristics			
Characteristics	Symbol	Unit	Description
General Features			
Type			Bi-Parting Belt-Driven for synchronized bi-parting movements
Series			OSP-E..BP
Mounting			See drawings
Ambient Temperature range	ϑ_{\min} ϑ_{\max}	°C °C	-30 +80
Weight (mass)		kg	See table
Installation			In any position
Material	Slotted profile		Extruded anodized aluminium
	Toothed belt		Steel-corded polyurethane
	Belt wheels		Aluminium
	Sealing band		Hardened stainless steel
	Screws, nuts		Zinc plated steel
	Mountings		Zinc plated steel and aluminium
Encapsulation class		IP	54

Weight (mass) kg and Inertia					
Series	At stroke 0 m	Weight (mass)[kg]		Inertia [$\times 10^{-6}$ kgm ²]	
		Add per metre stroke	Moving mass	At stroke 0 m	Add per metre
OSP-E25BP	1.2	1.6	0.5	48	6.6
OSP-E32BP	2.3	3.2	0.8	83	10
OSP-E50BP	6.3	6.2	2.1	585	45

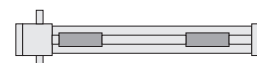
Standard Versions:

- Standard carrier with integral guidance.
- Dovetail profile for mounting of accessories and the actuator itself.



Special Versions:

- Position of Drive Shafts



Installation Instructions

Use the threaded holes in the end cap for mounting the linear actuator. See if mid-section supports are needed using the maximum allowable unsupported length graph on data sheet 1.25.002-E-3

At least one end cap must be secured to prevent axial sliding when mid-section support is used.

When the linear actuator is moving an externally guided load, the clevis mounting should be used (see on data sheet 1.45.021E).

The linear 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 (see on data sheet 1.45.025E).

Maintenance

All moving parts are long-term lubricated for a normal operational environment. We recommend a check and lubrication of the linear actuator, and if necessary a change of the toothed belt and wear parts, after an operation time of 12 months of operation or 3 000 km, depending on the type of application.

Additional greasing is easily done by using nipples in the slotted profile. Please see separate instructions.

Commissioning

The products in this datasheet should not be operated until the machine/application in which they are used has passed necessary inspection.



For **linear guides** see 1.40.020E to 024E
 For **proximity sensors** see 1.45.101E,
 For **mountings** and **accessories** see 1.45.020E to 028E

Sizing Performance Overview Maximum Loadings

Sizing of Linear Actuator

The following steps are recommended for selection:

1. Required acceleration is shown in graphs on data sheet 1.25.002E-4.
2. Required torque is shown on data sheet 1.25.002E-5.
3. Check that maximum values in the adjacent charts are not exceeded.
4. Check max. allowable torque on drive shaft by using table T2. (Pay attention to note under table) If value is lower than required, overview the moving profile or select if possible a bigger unit.
5. Before sizing and specifying the motor, the average torque must be calculated using the cycle time of the application.
6. Check that the maximum allowable unsupported length is not exceeded (see on data sheet 1.25.002E-3).

Performance Overview					
Characteristics	Unit	Description			
Size		OSP-E25BP	OSP-E32BP	OSP-E50BP	
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 action force	< 1 m/s:	[N]	50	150	425
	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. standard stroke length	[mm]	2 x 1500	2 x 2500	2 x 2500	

Maximum Allowable Torque on Drive Shaft Speed and Stroke* T2															
OSP-E25BP				OSP-E32BP				OSP-E50BP							
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	9.0	3	9.0
						4	2.3	4	8.0	4	7.0				
						5	1.8					5	7.5	5	6.0

Important:
 The maximum permissible moment on the drive shaft is the lowest value of the speed- or stroke-dependent moment value.
Example above: OSP-E32B-stroke 2 m, required speed 3 m/s;
 From table T2: speed 3 m/s gives 1.8 Nm and stroke 2 m gives 2.3 Nm.
 Max. torque for this application is 1.8 Nm.
 * The stroke is the ordering stroke, see data sheet 1.25.002E-6.

Maximum Allowable Static Loadings

$M = F \cdot r$.
 Bending moments are calculated from the centre of the linear actuator

Size	*Max. applied load L [N]	Max. moments [Nm]		
		M*	M _s	M _v
OSP-E25BP	160	12	2	8
OSP-E32BP	300	25	8	16
OSP-E50BP	850	80	16	32

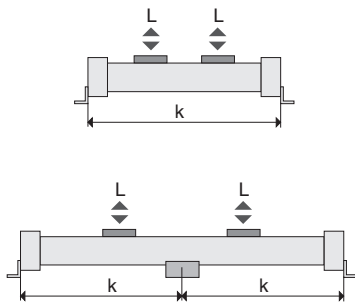
*The max. load and the max. moments is the total values of both carriers.

Combined Loadings

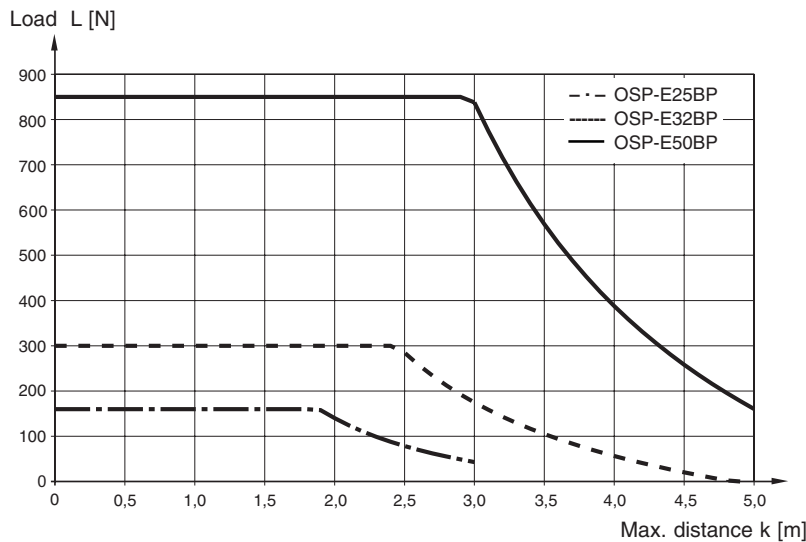
If several forces and moments are applied to the linear actuator simultaneously, then the following equation must be fulfilled in addition to the maximum loadings stated beside.

$$\frac{L}{L(\max)} + \frac{M}{M(\max)} + \frac{M_s}{M_s(\max)} + \frac{M_v}{M_v(\max)} \leq 1$$

Maximum Allowable Unsupported Length – Placing of Mid-Section Support



k = maximum allowable distance between end cap mounting and mid-section support for a given loading L .
The maximum force L must be distributed equally on the two carriers.



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

Maximum Allowable Unsupported Length Stroke Length

Stroke Lengths

The stroke lengths of linear actuators are available in multiples of 1 mm up max. 2 x 2500 mm (OSP-E25BP: max. 2 x 1500 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.

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 HOERBIGER-ORIGA technical support department.

When mechanical stops are required, external shock absorbers should be used (see separate catalogue).

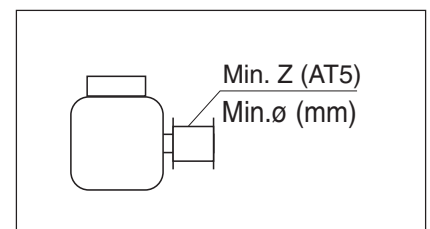
Align the centre line of the shock absorber as closely as possible with the object's centre of gravity.

Mounting on the Drive Shaft

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

Belt wheels

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



Size	Min. Z	Min. ϕ
OSP-E25BP	24	38
OSP-E32BP	24	38
OSP-E50BP	36	57

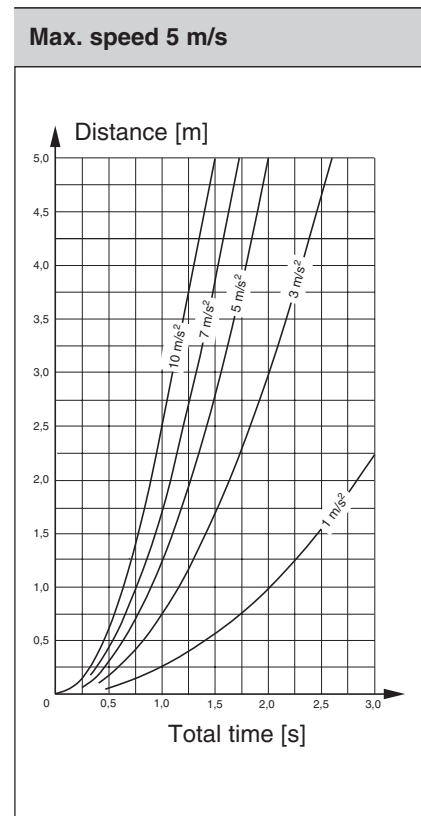
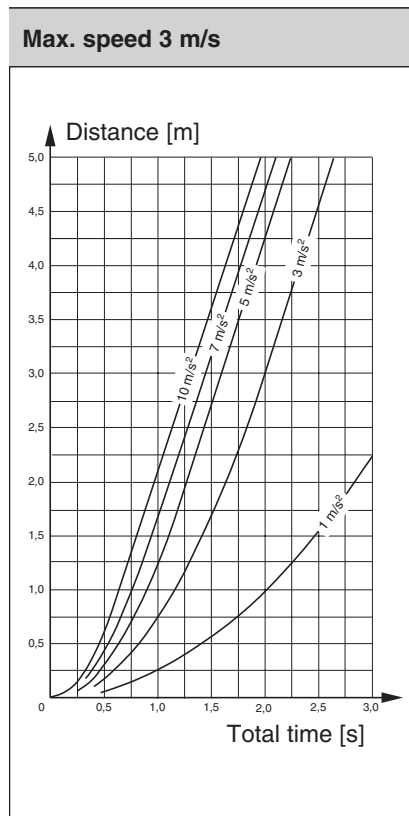
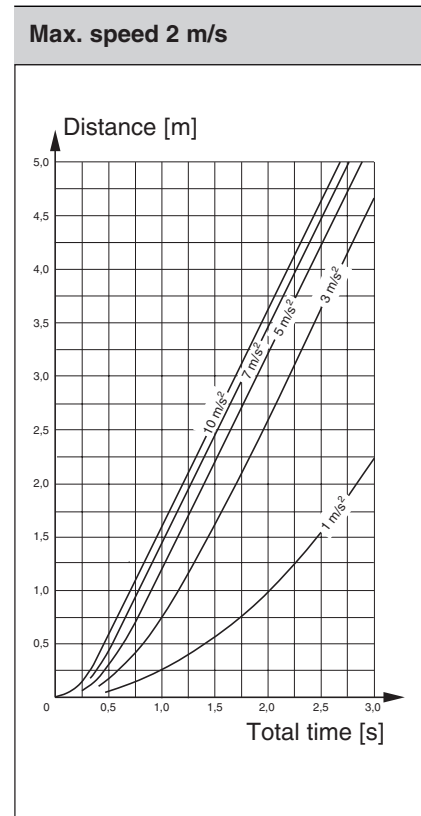
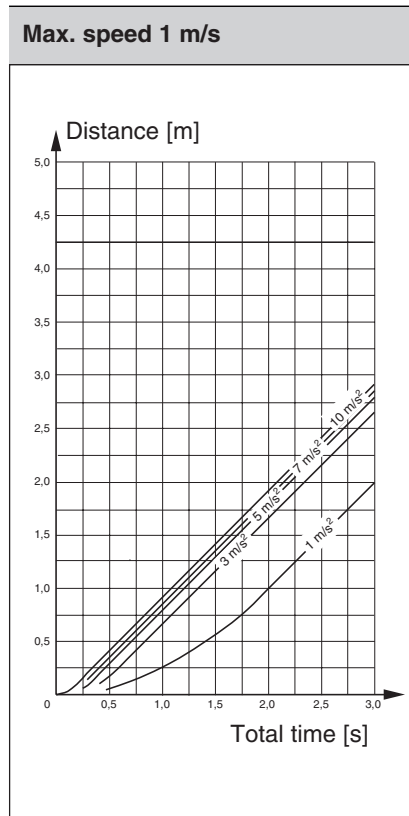
Required Acceleration

Distance-Time Graph

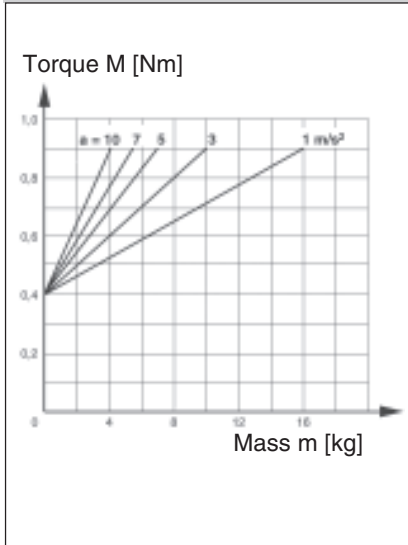
Using the required travel distance and total time, the adjacent graphs show the required acceleration based on maximum speed.

The graphs assume that acceleration and deceleration are equal.

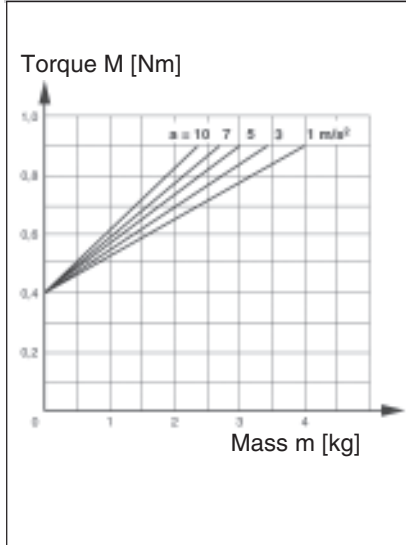
Please note that specifying non-essential high acceleration or short cycle time will result in an oversized motor.



**Size OSP-E25,
Horizontal Application**



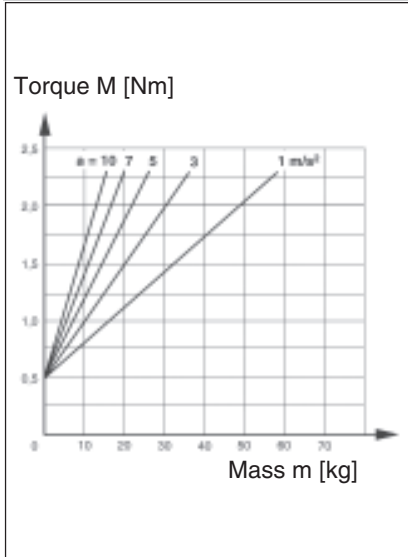
**Size OSP-E25,
Vertical Application**



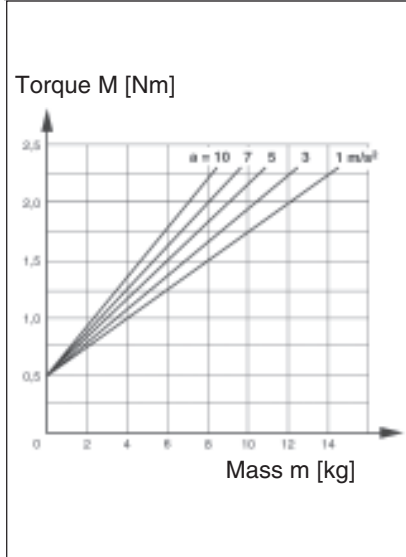
Required Torque

Using the known mass, the direction of the application and the required acceleration from the distance-time graphs, the linear actuator can be sized and the required torque is shown in the adjacent graphs. Mass in graphs = Load + moving mass of the linear actuator (according to the weight chart on data sheet 1.25.002E-1).

**Size OSP-E32,
Horizontal Application**



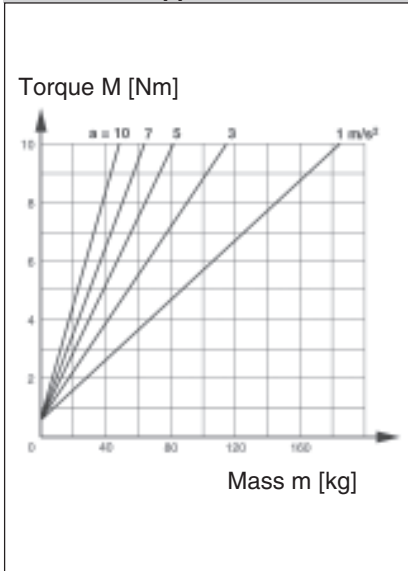
**Size OSP-E32,
Vertical Application**



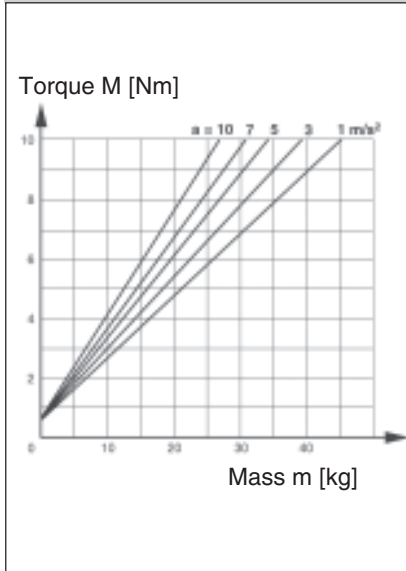
Please note:

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

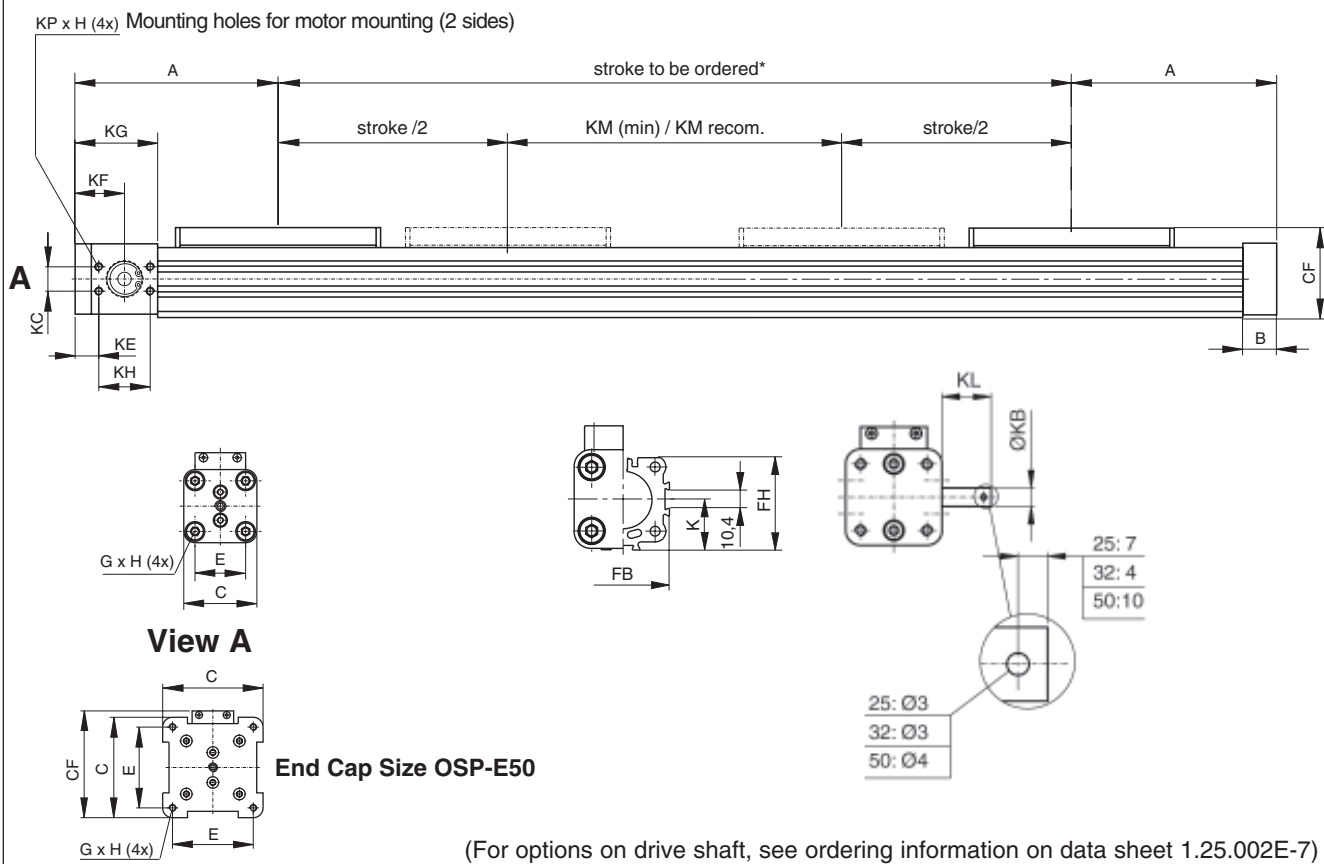
**Size OSP-E50,
Horizontal Application**



**Size OSP-E50,
Vertical Application**

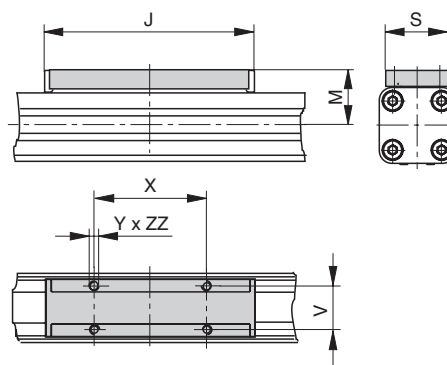


Belt Driven Linear Actuator - Basic Unit
Series OSP-E25BP, -E32BP, -E50BP



*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 HOERBIGER-ORIGA technical support department.

Standard Carrier Mounting
Series OSP-E25, -E32, -E50



Dimension KM (mm)




Size	KM _{min}	KM _{rec.}
25	130	190
32	170	230
50	220	320

Dimension Table (mm)

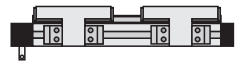
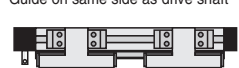
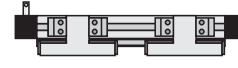

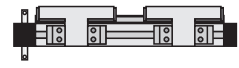

Series	A	B	C	E	G	H	J	K	M	S	V	X	Y	CF	FB	FH	KB	KC	KE	KF	KG	KH	KJ	KL	KM _{min}	KP	ZZ
OSP-E25BP	125	22	41	27	M5	10	117	21.5	31	33	25	65	M5	52.5	40	39.5	10 _{j6}	15	22	37	57	30	19 ^{H7}	24	130	M5	8
OSP-E32BP	150	25	52	36	M6	12	152	28.5	38	36	27	90	M6	66.5	52	51.7	10 _{j6}	18	17.5	36.5	61	38	26 ^{H7}	26	170	M6	10
OSP-E50BP	200	25	87	70	M6	12	200	43	49	36	27	110	M6	92.5	76	77	16 _{h8}	32	23.5	48.5	85	50	40 ^{H7}	34	220	M8	10

Order Instructions – Basic Electric Linear Actuator Series OSP-E..BP

Electric Linear Actuator

	OSP-E 25 - 0 0 0 0 2 - 00500	
	▲ ▲ ▲ ▲ ▲ ▲ ▲	
<p>Size</p> <p>25 = Size 25 32 = Size 32 50 = Size 50</p>		<p>Stroke</p> <p>Input (five digits) in mm</p>
<p>Actuator</p> <p>0 = Belt-driven</p>		<p>Option</p> <p>2 = Bi-parting (BP)</p>
<p>Carrier Mounting</p> <p>0 = Standard 1 = Tandem (Option, please contact customer support)</p>		<p>Gearbox</p> <p>0 = Without gearbox</p>
<p>Drive Shaft Options</p> <p>0 =  (Standard)</p> <p>1 = </p> <p>2 = </p>		

If combined with a linear guide, please also state position of linear guide

<p>Position of Drive Shaft Standard = 0</p> <p>Position of Linear Guide</p> <p>Standard Guide opposite the drive shaft</p>  <p>Opposite to Standard Guide on same side as drive shaft</p> 	<p>Position of Drive Shaft Opposite to Standard = 1</p> <p>Position of Linear Guide</p> <p>Standard Guide opposite the drive shaft</p>  <p>Opposite to Standard Guide on same side as drive shaft</p> 	<p>Position of Drive Shaft Both Sides = 2</p> <p>Position of Linear Guide</p> <p>Standard Guide opposite the drive shaft</p>  <p>Opposite to Standard Guide on same side as drive shaft</p> 
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Accessories - please order separately

Description	Data Sheet No.
Clevis Mounting	1.45.021E
End Cap Mountings	1.45.022E
Mid-Section Support	1.45.023E
Inversion Mounting	1.45.025E
Adaptor Profile	1.45.026E-1
T-Nut Profile	1.45.026E-2
Coupling Housing (for motor)	1.45.028E
Proximity Sensors	1.45.101E
Stepper Motor and Controller	1.60.001E-1.60.004E
Servo Motor and Controller	1.60.001E-1.60.004E