

# OSP-E..SBR Ball Screw Actuator with Internal Plain Bearing Guide and Piston Rod



## Contents

Description	Page
Overview	80
Technical Data	83
Dimensions	85
Order Instructions	86

The right to introduce technical modifications is reserved

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# BALL SCREW ACTUATOR WITH INTERNAL PLAIN BEARING GUIDE AND PISTON ROD FOR ACCURATE PISTON ROD APPLICATIONS

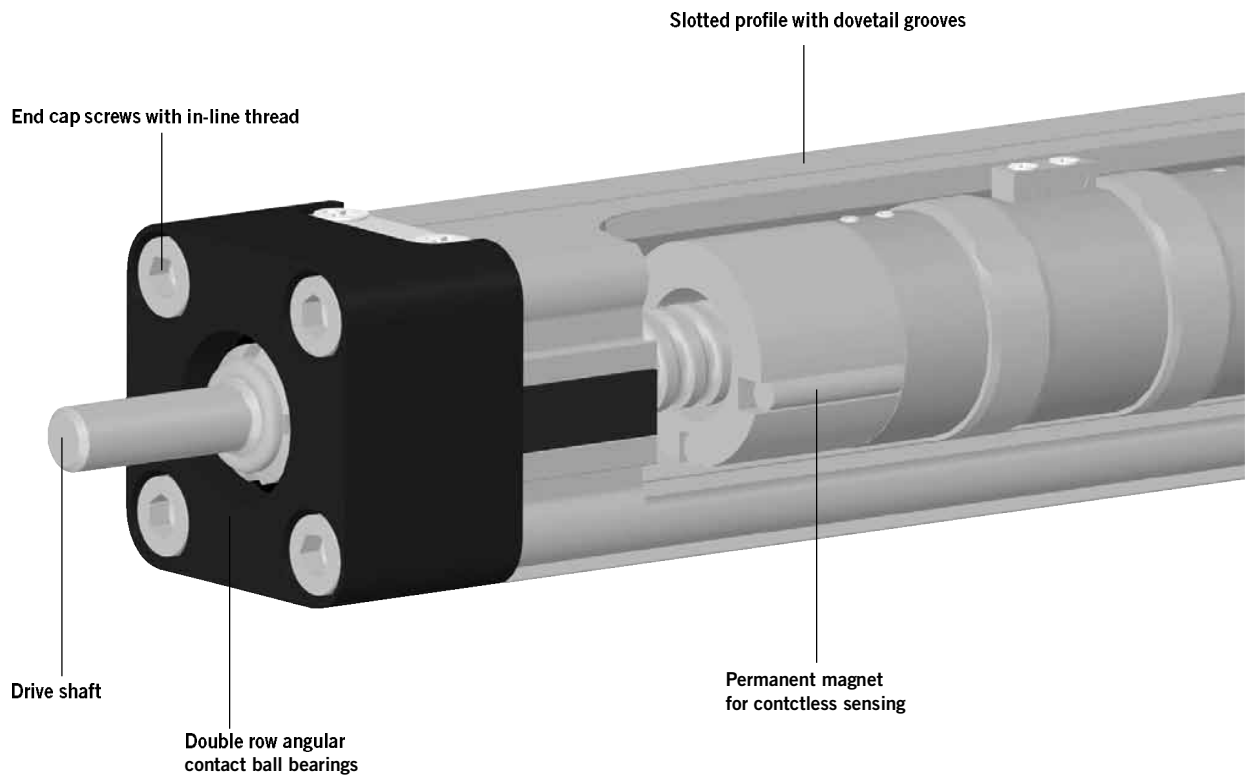
A completely new generation of actuators which can be integrated into any machine layout neatly and simply.

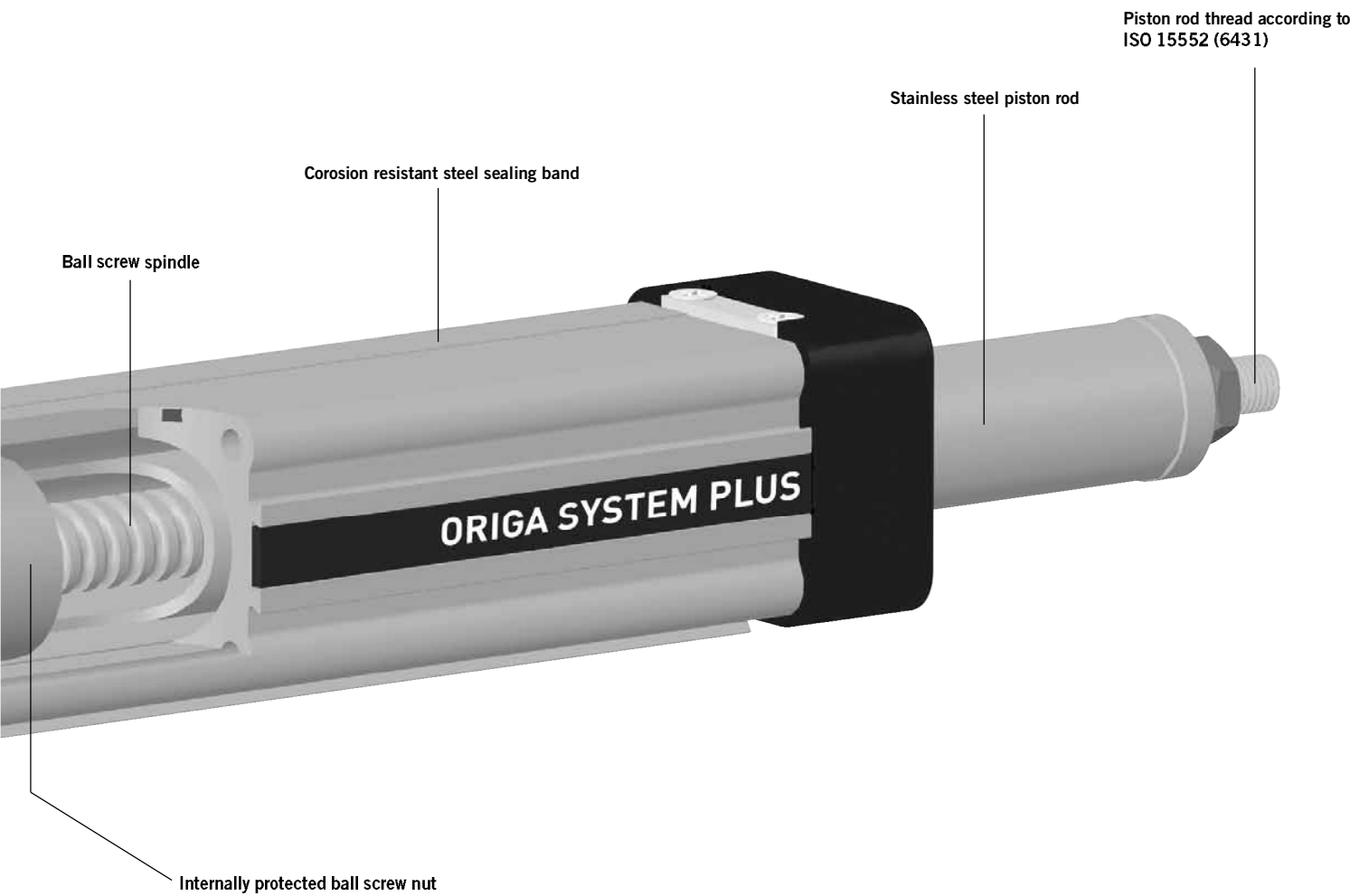
## Advantages

- 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](http://www.parker-origa.com)

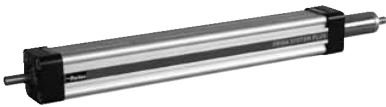


# OPTIONS AND ACCESSORIES

## 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.



Turning 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 misalignments



#### MAGNETIC SWITCHES SERIES RST AND EST

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



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

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

### 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  $M_x$ , that need to be guided externally. A compensation part e. g. piston rod eye (see order instructions page 86) is recommended.

### 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.

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

Size 25, 32, 50



### Standard Version:

- 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

### Option:

- Key way version



# Sizing Performance Overview Maximum Loadings

## Sizing of Actuator

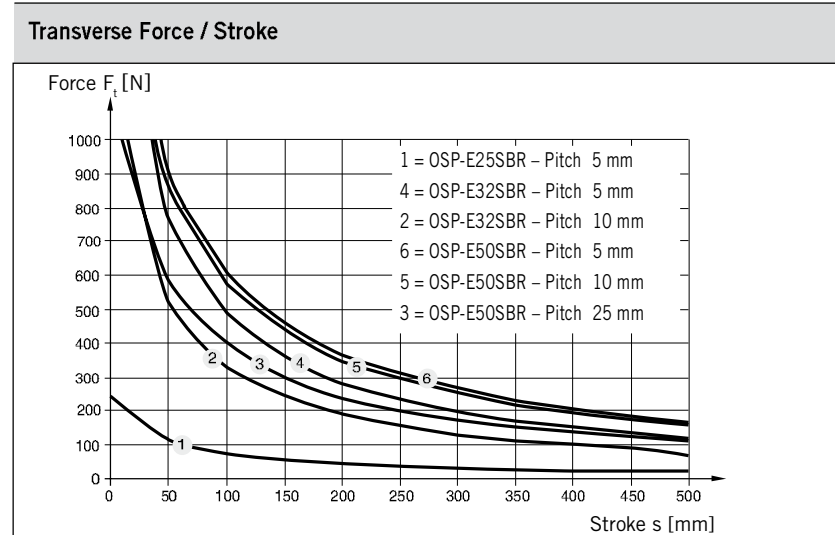
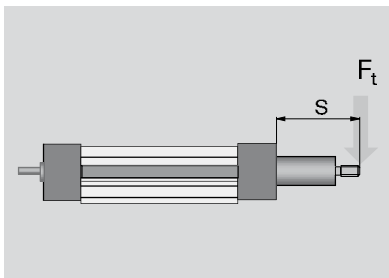
The following steps are recommended for selection :

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 applications.

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

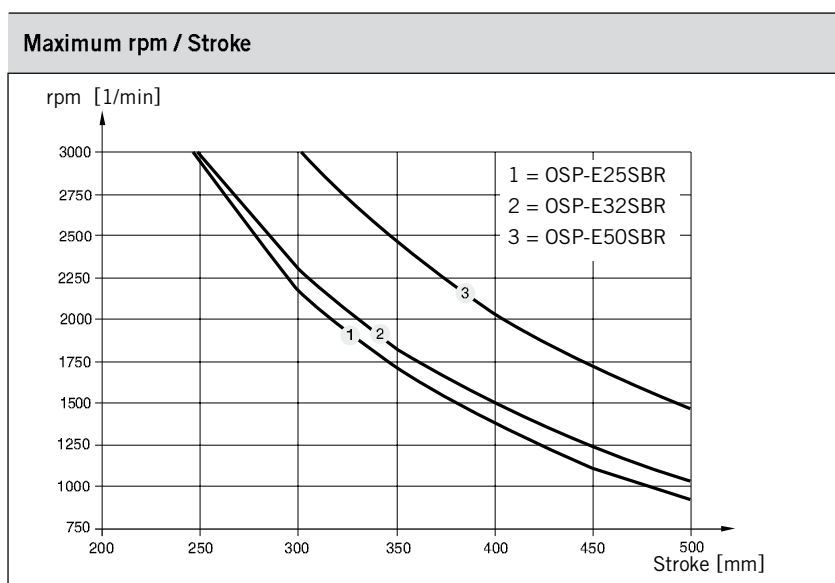
## Transverse Force / Stroke

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

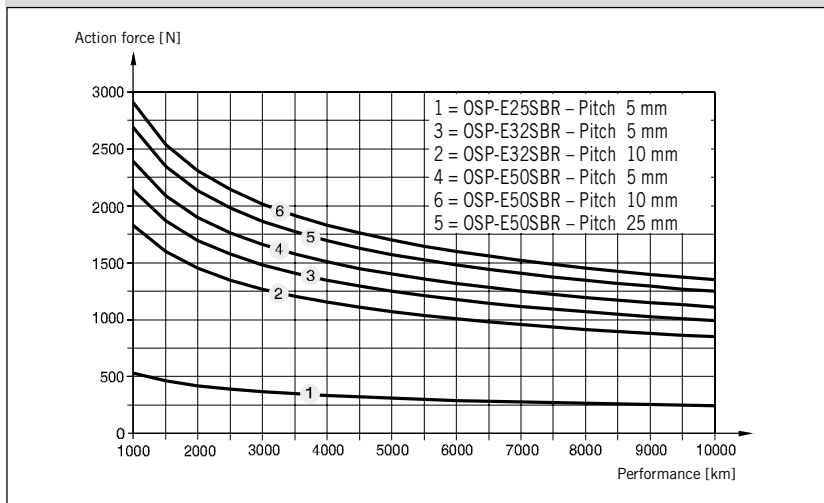


## Maximum rpm / Stroke

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



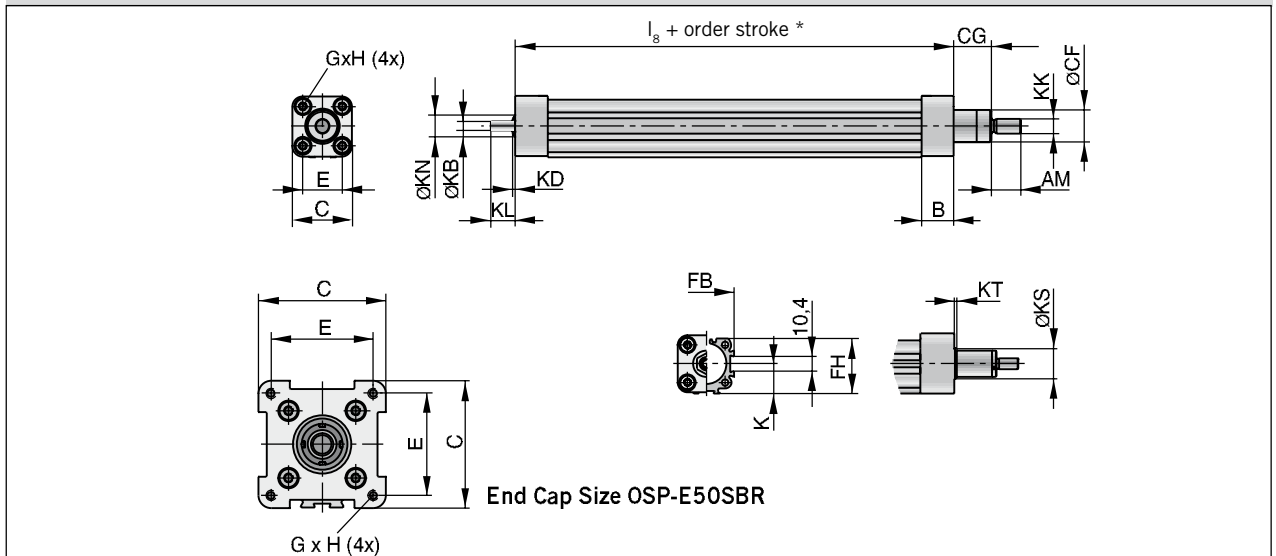
### Performance as a function of the action force



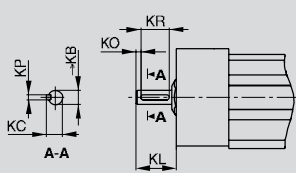
## Performance / Action force

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

### OSP-E..SBR Ball Screw Actuator with internal Plain Bearing Guide and Piston Rod – Basic Unit



#### Plain shaft with keyway (Option)



#### Dimension Table [mm]

Series	øKB <sub>h7</sub>	KC	KL Opt.3	Opt.4	KO	KP <sup>P9</sup>	KR
OSP-E25SBR	6	6.8	17	24	2	2	12
OSP-E32SBR	10	11.2	31	41	5	3	16
OSP-E50SBR	15	17.0	43	58	6	5	28

Option 3: Keyway  
 Option 4: Keyway long version

#### \* Note:

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

Order stroke = required travel + 2 x safety distance.

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

#### Dimension Table [mm]

Series	B	C	E	G x H	K	l <sub>b</sub>	AM	øCF	CG	FB	FH	øKB	KD	KK	KL	øKN	øKS	KT
OSP-E25SBR	22.0	41	27	M5 x 10	21.5	110.0	20	22	26	40	39.5	6 <sub>h7</sub>	2	M10x1.25	17	13	-	-
OSP-E32SBR	25.5	52	36	M6 x 12	28.5	175.5	20	28	26	52	51.7	10 <sub>h7</sub>	2	M10x1.25	31	20	33	2
OSP-E50SBR	33.0	87	70	M6 x 12	43.0	206.0	32	38	37	76	77.0	15 <sub>h7</sub>	3	M16x1.5	43	28	44	3

Order Instructions OSPE25 — 4 0 5 0 0 — 00000 — 0 0 0 0 0 0

Size of drive	
25	Size 25
32	Size 32
50	Size 50

Type of drive	
4	Ball screw actuator with internal plain bearing guide and piston rod

Pitch	
5	5 mm (for size 25, 32 and 50)
7	10 mm (for size 32 and 50)
8	25 mm (for size 50)

\* Option

Gear mounting *				
Size		25	32	50
0	without	x	x	x
1	LP050 i = 5	x	x	
2	LP050 i = 10	x	x	
3	LP070 i = 3		x	x
4	LP070 i = 5		x	x
5	LP070 i = 10		x	x

Info: For gears the mounting kit of the motor must be specified.  
 LP050: A0, A1, A2  
 LP070: A1, A2, A3

Order stroke
5 digits input in mm

Drive Shaft	
0 —	Plain Shaft
3 —*	Keyway
4 —*	Long with keyway

Mounting Kit for Motor and Gear *				
Size		25	32	50
A0	SY563T	x <sup>1</sup>	x <sup>1</sup>	
A1	SY873T	x <sup>1</sup>	x <sup>1</sup>	x <sup>1</sup>
A2	SMx60 xx xxx 8 11 ...	x <sup>1</sup>	x <sup>1</sup>	
A3	SMx82 xx xx 8 14 ...		x <sup>1</sup>	x <sup>1</sup>
A7	PS60		x <sup>1</sup>	x <sup>1</sup>
C0	LP050 / PV40-TA	x <sup>1</sup>	x <sup>1</sup>	
C1	LP070 / PV60-TA		x <sup>1</sup>	x <sup>1</sup>

x<sup>1</sup>: If a mounting kit is selected the **drive shaft** is a plain shaft

Info: Motor and Gear mounting dimensions see page 193



Piston rod mounting *	
0	Without
T	Piston rod eye
U	Piston rod clevis
V	Piston rod compensating coupling
see page 155 ff	

Niro	
0	Standard
1*	Niro screws

\* Option

Magnetic switches *	
0	Without
1	1 pc. RST-K 2NO / 5m cable
2	1 pc. RST-K 2NC / 5m cable
3	2 pc. RST-K 2NC / 5m cable
4	2 pc. RST-K 2NC, 1 pc. RST-K 2NO / 5m cable
5	1 pc. RST-S 2NO / M8 plug
6	1 pc. RST-S 2NC / M8 plug
7	2 pc. RST-S 2NC / M8 plug
8	2 pc. RST-S 2NC, 1 pc. RST-S 2NO / M8 plug
A	1 pc. EST-S NPN / M8 plug
B	2 pc. EST-S NPN / M8 plug
C	3 pc. EST-S NPN / M8 plug
D	1 pc. EST-S PNP / M8 plug
E	2 pc. EST-S PNP / M8 plug
F	3 pc. EST-S PNP / M8 plug
see page 165 ff	

Profile mounting *	
0	Without
1	1 pair type E1
2	1 pair type D1
3	1 pair type MAE
4	2 pair type E1
5	2 pair type D1
6	2 pair type MAE
7	3 pair type E1
8	3 pair type D1
9	3 pair type MAE
see page 141ff	
K	1 pair trunnion mounting EN
L	1 pair trunnion EN and pivot mounting EL
see page 154	

End cap mounting *	
0	Without
1	1 pc. type A1SR (size 25 and 32) or C1SR (size 50)
2	1 pc. type C-E
see pages 141 ff	

#### Accessories - please order separately

Description	Page
Motor mounting	137 ff
Multi-axis system for actuators	177 ff

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