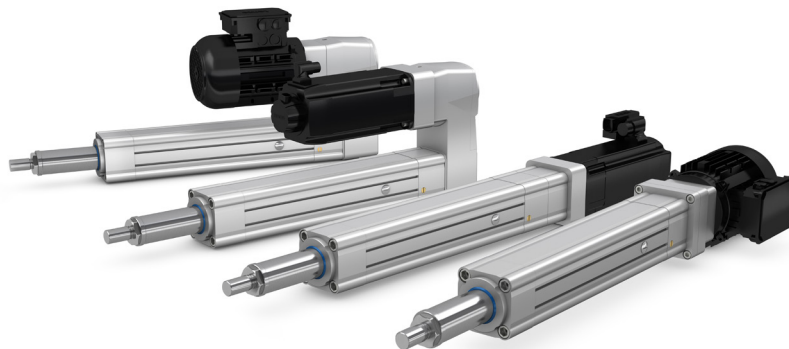


## Features

- Electric actuator with high modularity
- Ball-screws or roller-screws
- Inline and parallel gearboxes
- Including EMERSON servo motor
- Standardized interfaces
- High level of precision and repeatability
- Wide range of accessories



## Benefits

- For a wide range of applications with different performance and lifetime requirements
- Optimal lifetime even at very high forces
- High level of flexibility with variance of body assembly fitting most of the applications.
- Fits AC motors and servo motors
- Accurate positioning

## Performance Overview of Linear Units

Linear Unit	$F_{max}$ kN	$F_{0max}$ kN	$V_{max}$ mm/s
SPRA-BS-100	23	52	260
SPRA-BN-100	48	60	210
SPRA-BL-100	60	60	750
SPRA-RN-100	82	82	890

**Performance Overview of Actuators**

Linear Unit –	Motor –	Adapter –	$F_{c0}$ kN	$F_{p0}$ kN	$V_{max}$ mm/s
SPRA-BS-100	IC830M62K	inline	4,8	22	260
SPRA-BS-100	1FK7044	inline	2,4	7	260
SPRA-BS-100	1FK7064	inline	6,4	17,1	260
SPRA-BS-100	1FK7086	inline	15	23	260
SPRA-BS-100	1FK7105	inline	23	23	260
SPRA-BN-100	IC830M62K	inline	4,8	22	210
SPRA-BN-100	1FK7044	inline	2,4	6,9	210
SPRA-BN-100	1FK7064	inline	6,4	17,1	210
SPRA-BN-100	1FK7086	inline	14,9	56	210
SPRA-BN-100	1FK7105	inline	25,6	57	210
SPRA-BL-100	IC830M62K	inline	2,4	11	750
SPRA-BL-100	1FK7044	inline	1,2	3,5	750
SPRA-BL-100	1FK7064	inline	3,2	8,5	750
SPRA-BL-100	1FK7086	inline	7,5	28	750
SPRA-BL-100	1FK7105	inline	12,8	40	750
SPRA-RN-100	IC830M62K	inline	4,5	20,7	583
SPRA-RN-100	1FK7044	inline	2,3	6,5	750
SPRA-RN-100	1FK7064	inline	6	16,1	500
SPRA-RN-100	1FK7086	inline	14,1	52,8	500
SPRA-RN-100	1FK7105	inline	24,1	75,5	500

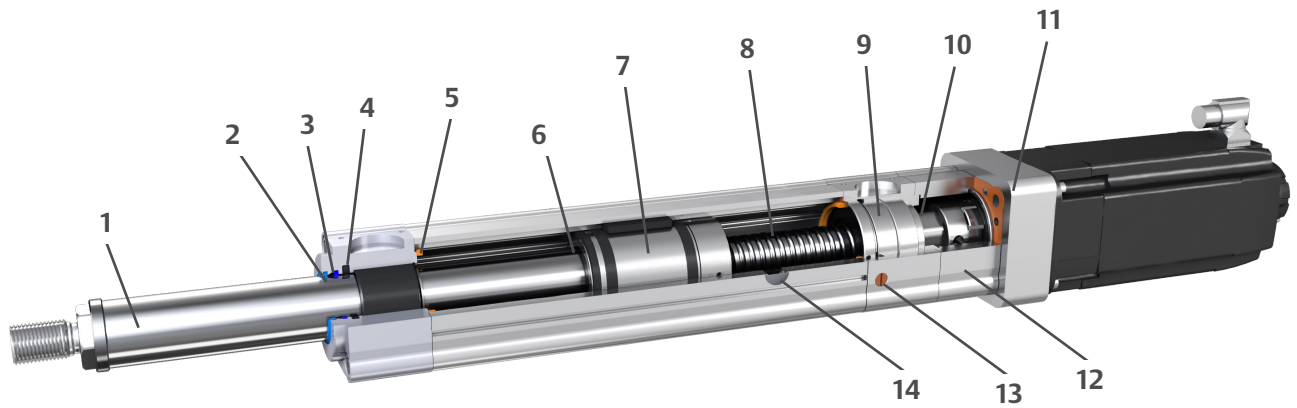
**Engineering Information**

For more details and calculation methods, click [here](#) or scan the QR code below.



## Product Description

SPRA-100 is an innovative modular electric actuator platform to address most of the applications in the automation and heavy machinery industries.

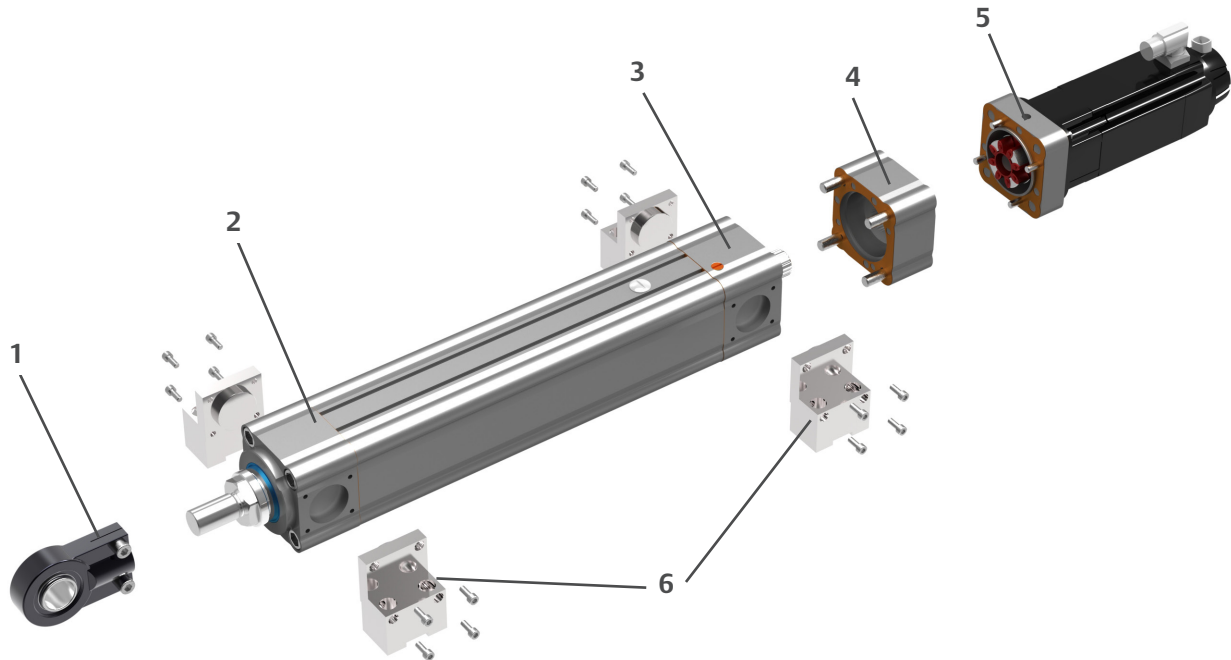


1. Push tube
2. Wiper ring
3. Solid oil ring
4. Sealing ring
5. Rubber bumper
6. Magnet ring for optional proximity sensors
7. Nut with guiding rings and anti-rotation
8. High quality ball and roller screws with low axial play and low friction
9. High quality bearings
10. Radial shaft sealing ring
11. Motor adapter and motor
12. Gearbox
13. Sinter filter for high airflow
14. Relubrication port

Series  
**SPRA-100**

## System Overview

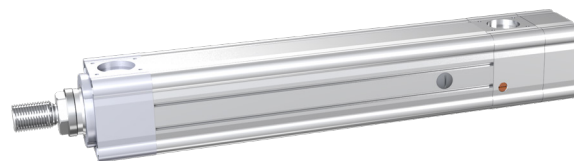
The SPRA-100 modular system comprises different components that are connected to each other through standardized interfaces. Each component provides a unique function for the complete system and is connected as shown below.



1. Front attachment: mechanical connection between the actuator and the moving part of the application. It is screwed to the push tube through the standard male thread.
2. Front housing: component that supports the push tube, through a dedicated bushing, also including the front sealing package.
3. Bearing housing: component that contains the set of ball bearings that support the screw shaft.
4. Gearbox: connecting module between the linear unit and the motor adapter. Is available in parallel or inline versions, with different reduction ratios.
5. Motor adapter: connecting module between the gearbox and the electric motor.
6. Housing attachments: actuator body attachments, connected to the fix part of the application. Depending on the attachment type, they can be installed on the different housings - front, bearing or gearbox.

## SPRA-100

Linear unit



### Technical Data

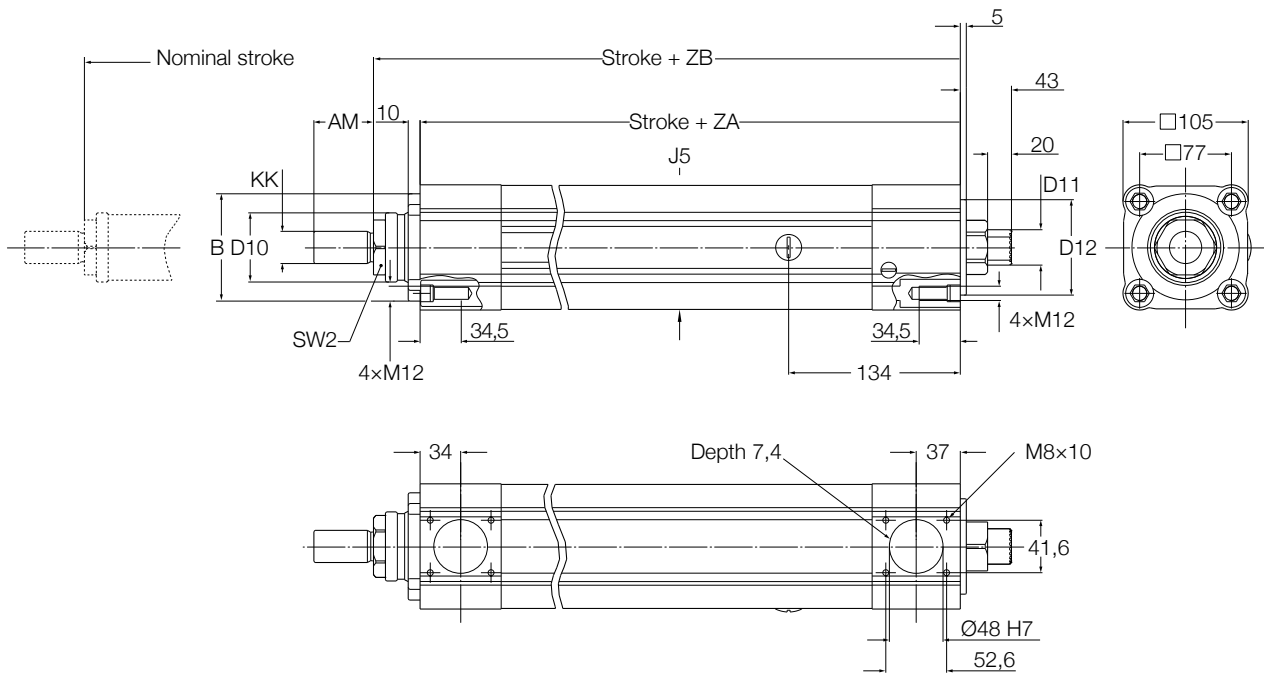
Designation	Symbol	Unit	SPRA-BS-100	SPRA-BN-100	SPRA-BL-100	SPRA-RN-100
<b>Performance Data</b>						
Max. dynamic axial force <sup>(1)</sup>	$F_{max}$	kN	23	48	60	82
Max. dynamic axial force L10 <sup>(2)</sup>	$F_{L10}$	kN	22	47	60	50
Max. static axial force	$F_{0max}$	kN	52	60	60	82
Dynamic load capacity	C	kN	27,1	61,5	41,3	106
Maximum torque to reach $F_{max}$	$T_{max}$	Nm	43	90	225	163
Max. linear speed	$v_{max}$	mm/s	260	210	750	890
Max. rotational speed	$n_{max}$	1/min	1560	1260	2250	5340
Max. acceleration	$a_{max}$	m/s <sup>2</sup>	6	6	12	12
Duty cycle	$D_{unit}$	%	100	100	100	100
<b>Mechanical Data</b>						
Screw type	-	-	Ball screw	Ball screw	Ball screw	Roller screw
Screw diameter	$d_{screw}$	mm	32	40	40	30
Screw lead	$P_{screw}$	mm	10	10	20	10
Lead accuracy	-	-	G9	G9	G9	G5
Stroke	s	mm	50...2000	50...2000	50...2000	50...2000
Internal overstroke each side	$s_0$	mm	2	2	2	2
Backlash	$s_{backlash}$	mm	0,2	0,2	0,2	0,2
Efficiency	$\eta_{lu}$	%	> 85	> 85	> 85	> 80
Inertia @ 0 mm stroke	$J_{lu}$	kgm <sup>2</sup>	0,00041	0,00051	0,00051	0,00045
$\Delta$ Inertia per 100 mm	$\Delta J$	kgm <sup>2</sup>	0,000064	0,000144	0,000138	0,000063
Weight @ 0 mm stroke	$m_{lu}$	kg	11	12,7	12,3	12,5
$\Delta$ weight per 100 mm	$\Delta m$	kg	2,4	2,7	2,7	2,4
<b>Environment</b>						
Ambient temperature	$T_{ambient}$	°C	-20...+50	-20...+50	-20...+50	-10...+50
Max. humidity	$\phi$	%	95	95	95	95
Degree of protection	IP	-	54S	54S	54S	54S

(1) Buckling limitation for long strokes, also limited by accessories and configurations. Please check the SPRA-100 configuration tool on Emerson.com

(2) Maximum dynamic axial force usable to apply the theoretical lifetime calculation (L10)

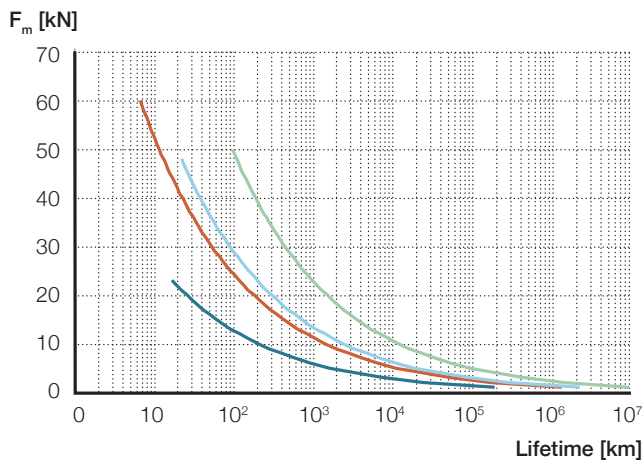
Series  
**SPRA-100**

## Dimensions (mm)



KK	SW2	J5 mm	ZA	ZB	B	D10	AM	D12	D11
-	-	mm	287±1,5	326±2	Ø90	-0,10 -0,35	50	Ø80	-
M27 × 2	AF 46	□ 104				Ø58		-0,02 -0,07	Spline DIN 5480 W 30x1,25x22x8f

## Performance Diagram



- SPRA-BS-100
- SPRA-BL-100
- SPRA-BN-100
- SPRA-RN-100

## Ordering Key

Stroke	SPRA-BS-100	SPRA-BN-100	SPRA-BL-100	SPRA-RN-100
100	R481633864	R481633874	R481633884	R481633894
200	R481633865	R481633875	R481633885	R481633895
300	R481633866	R481633876	R481633886	R481633896
400	R481633867	R481633877	R481633887	R481633897
500	R481633868	R481633878	R481633888	R481633898
600	R481633869	R481633879	R481633889	R481633899
700	R481633870	R481633880	R481633890	R481633900
800	R481633871	R481633881	R481633891	R481633901
900	R481633872	R481633882	R481633892	R481633902
1000	R481633873	R481633883	R481633893	R481633903

Series

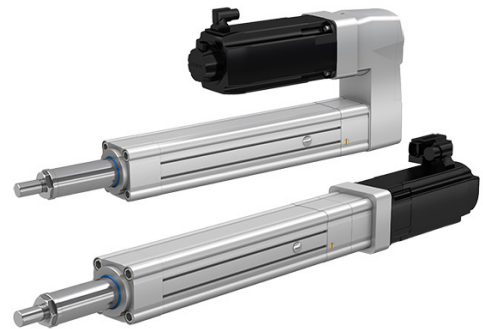
## SPRA-100

### Motors and Gearboxes

#### Servo Motors

The EMERSON motors come with a Hiperface DSL encoder, a shaft end with no key-way and a holding brake if required. In addition, they are equipped with a single connector. A rotating plug adapter simplifies the connection and cable routing in all installation positions.

For more information, click [here](#) or scan the QR code below.



#### Adapters for Servo Motors

Motor Adapter	For Motor
R412028535	IC830M62K-BK series
R412028547	Siemens 1FK7044 series
R412028548	Siemens 1FK7064 series
R412028549	Siemens 1FK7086 series
R412028550	Siemens 1FK7105 series

#### Ordering Key

Motor		Drive	Hybrid Cable	
Ordering Key	Option	Ordering Key	Ordering Key	Length
IC830M62K-BK92GF00	brake	IC830DP02407-NBEC	CCJ2A2-025-003-00	3m
IC830M62K-BK9NGF00	no brake		CCJ2A2-025-006-00	6m
			CCJ2A2-025-009-00	9m



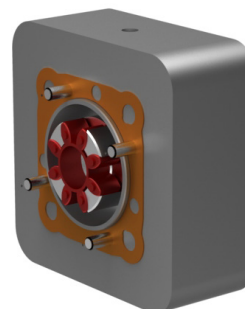
## Motors and Gearboxes

### Motor Adapter

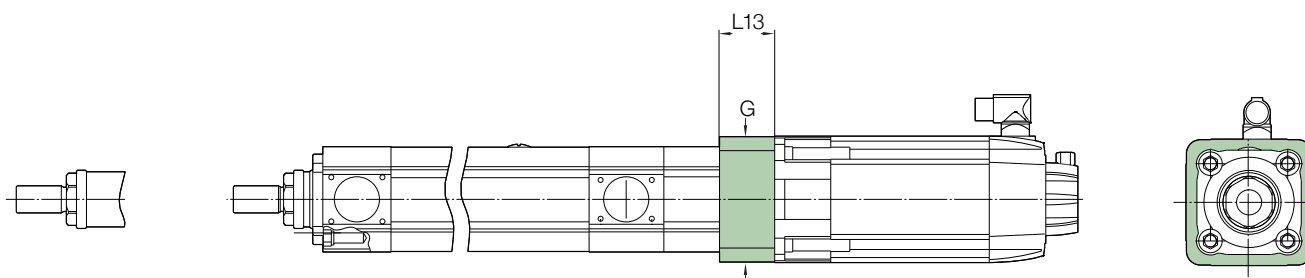
The modular system of SPRA-100 enables the use of virtually any kind of motor.

The motor adapter module makes your motor fit the entire SPRA-100 range, independent of the configuration. In fact, thanks to the standardized mechanical interface, this module can be directly attached to any inline or parallel gearbox.

Sealings, screws and half coupling parts are included in the package. Each motor adapter is provided with blind threaded hole M12 to screw an eye bolt for easier actuator handling.



### Dimensions (mm)



Motor Adapter	G mm	L13
R412028535	□ 125	60,5
R412028547	□ 105	44,5
R412028548	□ 125	54,5
R412028549	□ 139	62,5
R412028550	□ 192,5	85,5

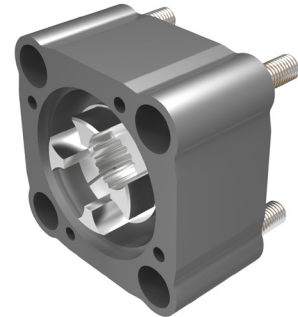
Series  
**SPRA-100**

## Gearboxes

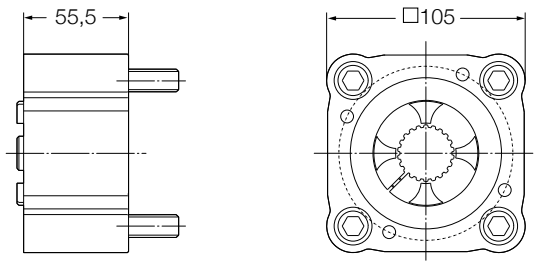
### Inline gearbox

Inline gearboxes consist of a housing which fits on one side to the linear unit and on the other side to the motor adapter with the matching coupling. The coupling can be pushed on the shaft of the linear unit and locked by a screw. The counterpart of the coupling is delivered with the motor adapter.

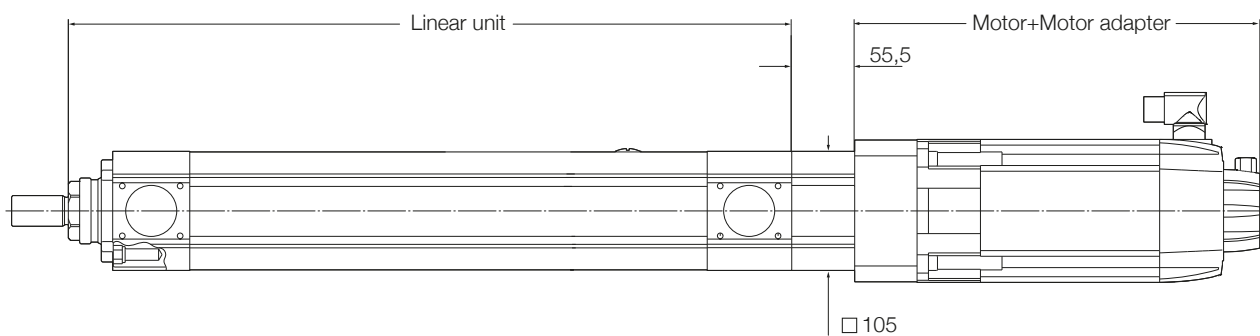
The inline gearbox transmits the motor torque (max. 150 Nm) directly to the linear unit with a gear ratio 1:1 and is maintenance-free.



### Dimensions (mm)



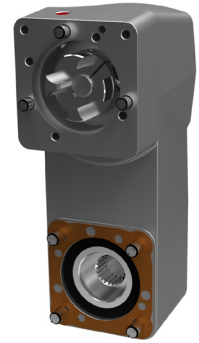
### Complete Actuator



## Parallel Gearbox

Parallel gearbox consists of one housing which fits on one side to the linear unit and on the other side to the motor adapter with the matching coupling. The coupling is already mounted on the input shaft of the gearbox and locked by a screw. The counterpart of the coupling is delivered with the motor adapter.

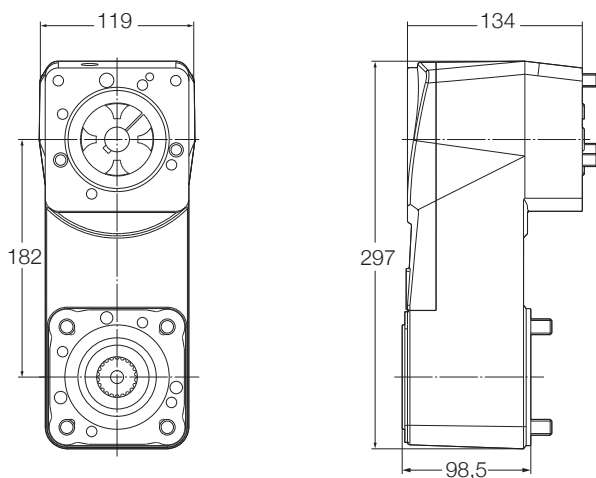
The parallel gearbox transmits the motor torque through three stage spur gear directly to the linear unit (max. output torque 300 Nm). Three gear ratios are available and it is maintenance free.



## Technical Data

Gearbox Type Short Designation	Unit	R412028533	R412028532	R412028531
Type	–	Parallel	Parallel	Parallel
Gear reduction	–	3,89	9,82	24,95
Nominal output torque	Nm	100	100	100
Max. output torque	Nm	300	300	300
Max. input power	W	3000	3000	3000
Max. input speed	r/min	4500	4500	4500
Efficiency	%	85	85	85
Weight	kg	9	9	9
Length	mm	98,5	98,5	98,5

## Dimensions (mm)

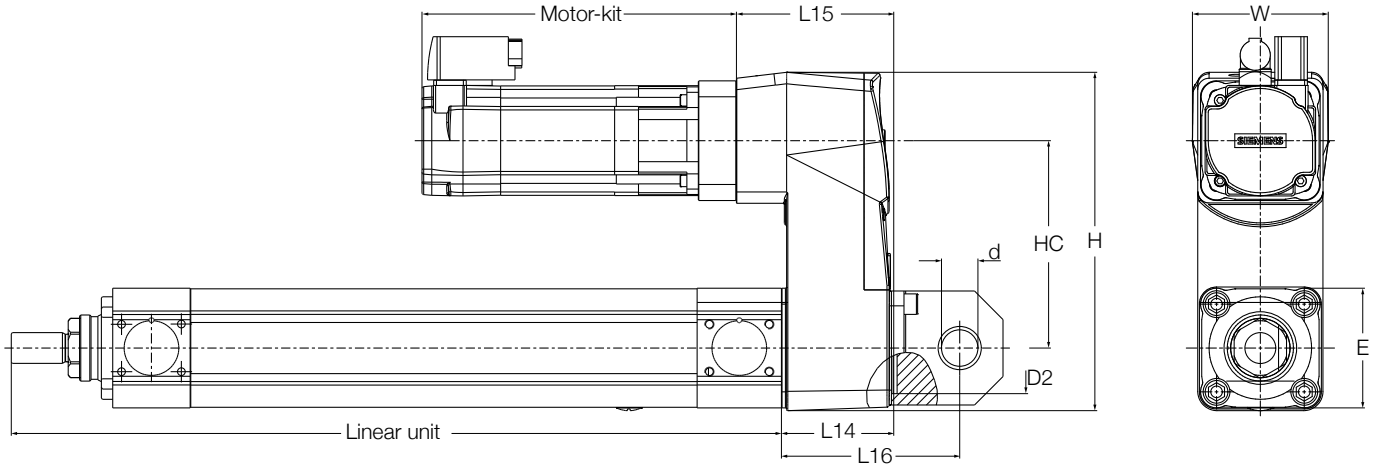


Series

## SPRA-100

### Dimensions (mm)

#### Complete Actuator



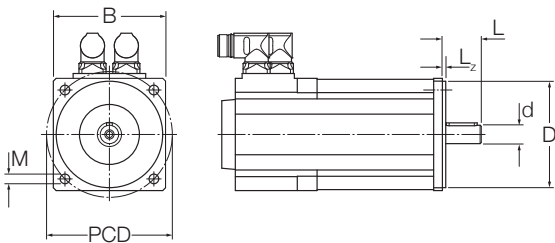
H	HC	L14	L15	L16	d	D2	W	E
297	182	98,5	138	156,5	Ø32 H7	Ø80 0 -0,1	119	□ 105

#### Ordering Key Gearbox

Part-Number	Type	Gear Ratio
R412028534	Inline	1:1
R412028533	Parallel	1:3,89
R412028532	Parallel	1:9,82
R412028531	Parallel	1:24,95

#### Third Party Motors

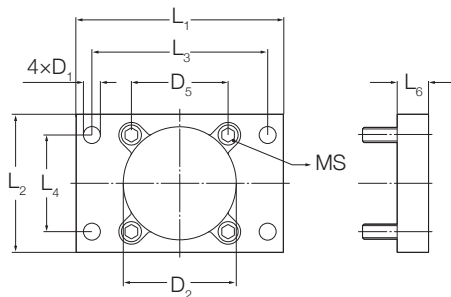
In order to attach your preferred motor to the gearbox, Emerson offers motor adapter flanges for the most common motor types. If your motor does not fit the following specifications, please contact Emerson.



Type	D (mm)	PCD (mm)	L (mm)	M	B (mm)	L <sub>z</sub> (mm)	d (mm)
R412028547	80	100	40	M6	≥ D + 6	< 7	19
R412028548	110	130	50	M8	≥ D + 6	< 7	24
R412028549	130	165	58	M10	≥ D + 6	< 7	32
R412028550	180	215	80	M12	≥ D + 6	< 7	38

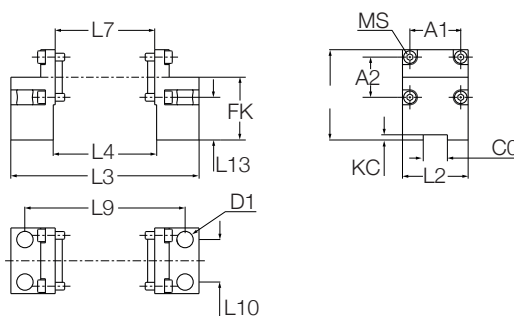
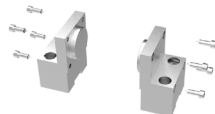
## Accessories

### Flange mounting MF1



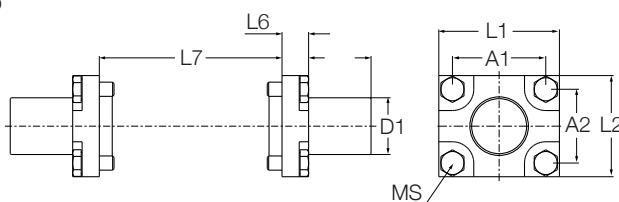
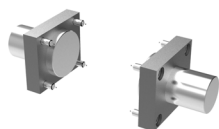
Type	MS	L <sub>1</sub> mm	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	D <sub>1</sub>	D <sub>5</sub>	D <sub>2</sub>	L <sub>6</sub>	m kg
R412028509	M12 × 40	165	109	140	77	Ø13,5	□77	Ø90	25	2,1

### Foot mounting MS1



Type	MS	L <sub>1</sub> mm	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>7</sub>	FK	A <sub>1</sub>	A <sub>2</sub>	L <sub>9</sub>	L <sub>10</sub>	KC	C0	L <sub>13</sub>	D <sub>1</sub>	m kg
R412028471	M8 × 20	93,5	68	194,8	107	103	65	52,6	41,6	165,8	44	5,4	25	50	Ø17	2,8

### Trunnion mounting MT5 and MT6

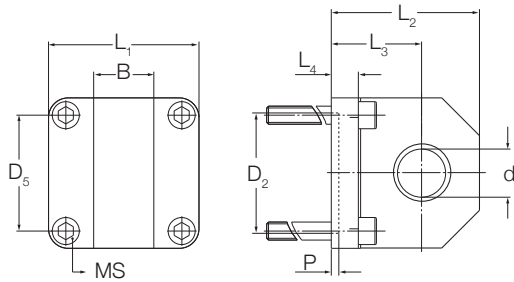
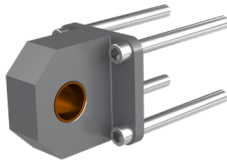


Type	MS	L <sub>1</sub> mm	L <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	L <sub>5</sub>	L <sub>6</sub>	L <sub>7</sub>	D <sub>1</sub>	m kg
R412028510	M8 × 18	68	57	52,6	41,6	35,2	15	103	Ø32	1,5

Series  
**SPRA-100**

## Accessories

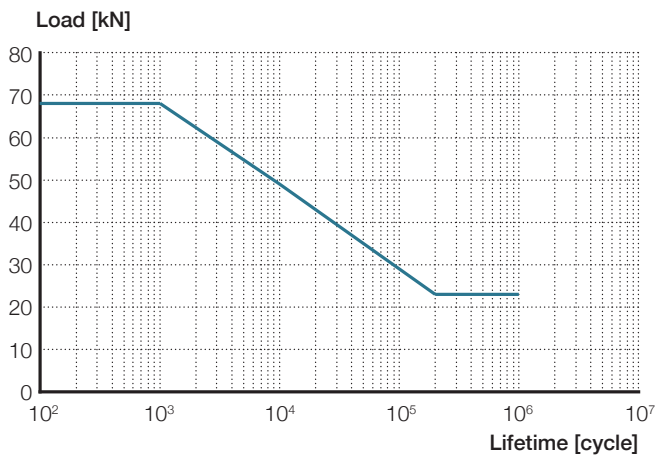
### Rear eye MP4



Type	MS	d mm	B	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	D <sub>2</sub>		P	D <sub>5</sub>	m kg
R412028513	M12 × 140	Ø32 H7	40	□ 100	98	60	11	Ø80	+0,1 +0,2	5	□ 77	3

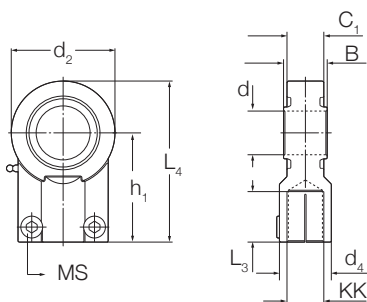
## Housing Attachment

Load rating and lifetime limitation on the foot and trunnion mount, see graph below.



## Accessories

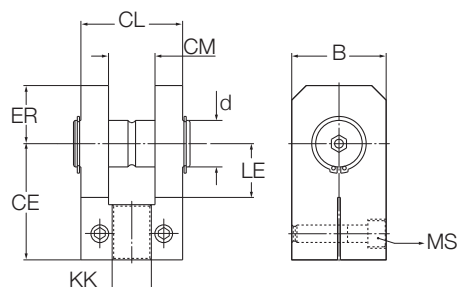
### SPRA-100 Push tube attachments Ball eye rod end AP6



**Technical info**  
Dynamic load rating:  
C=65,6 kN  
  
Static load rating:  
C=100 kN

Type	KK	MS	L <sub>3</sub> mm	B	C <sub>1</sub>	d	d <sub>4</sub>	L <sub>4</sub>	h <sub>1</sub>	d <sub>2</sub>	m <sub>2</sub> kg
R412028522	M27 × 2	M10	37	32	29	Ø32	Ø40	116,5	80	76	1,1

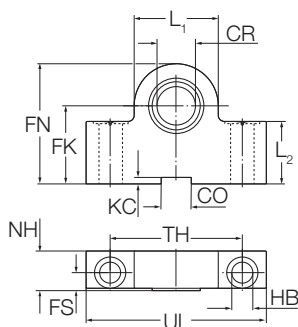
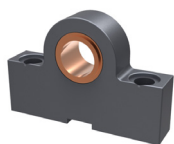
### Rod clevis AP2



**Technical info**  
Nominal force:  
50 kN

Type	KK	MS	CL mm	CM	LE	CE	ER	d	B	m kg
R412028518	M27 × 2	M12	70	32	42	80	40	Ø32	65	2,7

### Trunnion bracket rear AT4



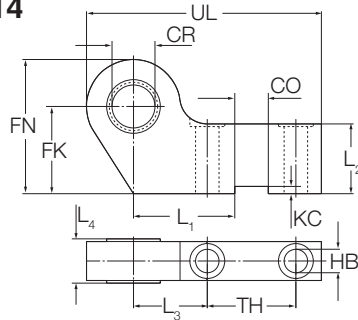
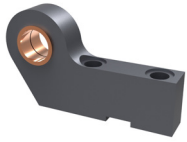
**Technical info**  
Nominal force:  
50 kN

Type	CR mm	FN	FK	HB	NH	TH	UL	CO	KC	FS	L <sub>1</sub>	L <sub>2</sub>	m kg
R412028512	Ø32	100	65	Ø17,5	33	110	150	25	5,4	15	70	52	4,4

Series  
**SPRA-100**

## Accessories

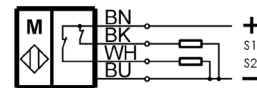
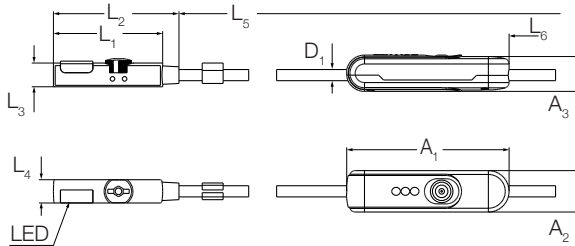
### Trunnion bracket front AT4



**Technical info**  
Nominal force:  
50 kN

Type	CR mm	FN	FK	TH	HB	L <sub>3</sub>	UL	CO	KC	L <sub>4</sub>	L <sub>2</sub>	L <sub>1</sub>	m kg
R412028511	Ø32	100	65	66	Ø17,5	55	175	25	5,4	33	52	75,5	4,2

### Proximity sensor



Switching function: Normally closed  
Output signal: PNP  
Rated voltage: 24 V DC  
Max. current: 100 mA

Ordering Key	Electrical Connection Type	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	D <sub>1</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	L <sub>6</sub>
R412028556	open cable ends	23,5	27	5,1	5	2000	Ø2,4	35	8,9	7,5	1765
R412028557	M8 Plug	23,5	27	5,1	5	300	Ø2,4	35	8,9	7,5	1765