

USE AND MAINTENANCE MANUAL



SERIES 6E
ELECTROMECHANICAL CYLINDERS



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i. Introduction

This user manual must be read in its entirety before beginning mounting and installation of the Series 6E electromechanical cylinder. This document provides guidance on some specific product features and does not provide guidance on the correct application of the product under certain conditions. The final user must perform the controls and assessments necessary to validate the use of the product.

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1. General safety warnings

- The locally valid provisions, laws and regulations for the destination of the product must always be respected.
- The Series 6E electromechanical cylinder must be used free from tampering, damage or in the original condition provided.
- The Series 6E general catalogue (code 93-0518 0GB006, available from our distributors and/or on our website) defines the usage limits within which the Series 6E electromechanical cylinder must be applied.
- The products indicated in this document are subject to performance loss due to wear or aging of components subjected to loads and planned works.
- This document provides warnings relating to the Series 6E electromechanical cylinder. Assessment of any interactions with other components, objects or persons within the machine or an application is to be carried out by the designer or installation engineer of the machine or application itself.
- Certain hazards are associated with the product only after it has been installed on the machine/equipment. It is the final user's responsibility to identify these hazards and reduce the associated risks.
- The Series 5E electromechanical axes are designed for industrial use, they are not suitable to be used in potentially explosive atmospheres or underwater.
- In case of using the Series 5E electromechanical axis in potentially corrosive atmospheres, please contact Camozzi Automation S.p.A.
- Do not cover the Series 5E electromechanical axis with paint or other substances, do not use in direct contact with corrosive gases, chemicals, acids, salted water or vapour.

2. Reference documents

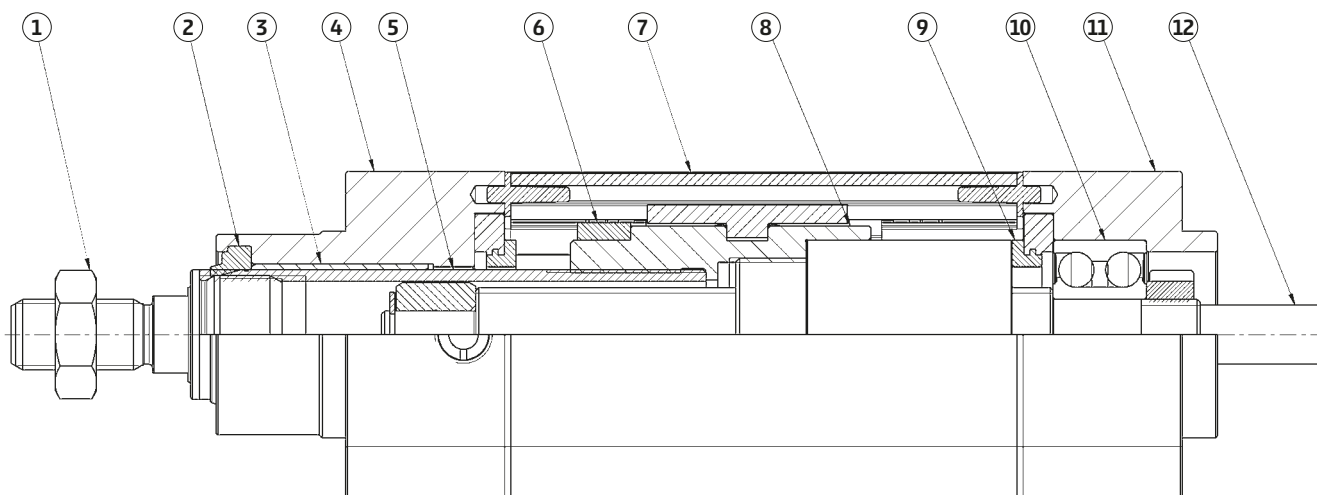
Before installation of the Series 6E electromechanical cylinder the installation engineer must ensure the following documentation is at disposal:

Document Title	Document Code	Application
Use and maintenance manual	93-7545-0009	Safety warnings
Instruction sheet (included in the package)	93-7545-0008	Basic information
Series 6E electromechanical cylinders	93-0518-0GB006	Electric Actuation catalogue
Series DRCS and DRWB Drivers for control of electrical actuation	93-0518-0GB006	Electric Actuation catalogue
Series MTB motors for electrical actuation	93-0518-0GB006	Electric Actuation catalogue
Series MTS motors for electrical actuation	93-0518-0GB006	Electric Actuation catalogue
DRWB instruction sheet - motors and brushless drivers	93-7545-0001	Basic information
DRCS instruction sheet - motors and brushless drivers	93-7545-0006	Basic information
Declaration of incorporation for linear systems	86-4020-0003 [1]	Documentation to read and keep
Documentation relating to application in the system and instructions for the other components	[2]	-

[1] - Only in case of purchase of the unit supplied with already installed motor.

[2] - Only in case of installation within a machine or insertion into applications check that all documentation relating to the application itself is available, to be able to assess any risks to persons or property.

3. Components and materials



PARTS	MATERIALS
1 Rod nut	Zinc-plated steel
2 Rod seal	PU
3 Bushing	Technopolymer
4 Front endcap	Anodized aluminium alloy
5 Rod	Stainless steel
6 Magnet	Plastoferrite
7 Extrusion profile	Anodized aluminium alloy
8 Guiding element BS screw	Aluminium alloy
9 End stroke seals	NBR
10 Bearing	Steel
11 Rear endcap	Anodized aluminium alloy
12 BS ball screw	Steel

4. Coding

6E	032	BS	0200	P05	A
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6E

SERIES

032

SIZE:
 032 = 32 mm
 040 = 40 mm
 050 = 50 mm
 063 = 63 mm
 080 = 80 mm
 100 = 100 mm

BS

VERSION:
 BS = recirculating ball screw

0200

STROKE:
 100 ÷ 1500 mm

P05

SCREW PITCH:
 P05 = 5 mm
 P10 = 10 mm
 P16 = 16 mm (only for size 40)
 P20 = 20 mm (only for sizes 50, 80, 100)
 P25 = 25 mm (only for size 63)
 P32 = 32 mm (only for size 80)
 P40 = 40 mm (only for size 100)

A

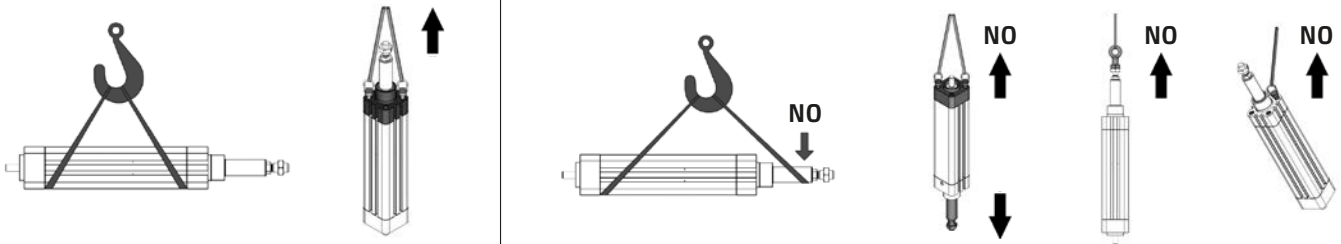
CONSTRUCTION TYPE:
 A = standard with rod nut

VERSION:
 = IP40 (not available for size 80 and 100)
 P = IP65
 (___) = rod longer than ___ mm

5. Transport and packaging

The product packaging is suited to handling and lifting with warehouse equipment.
Check the integrity of the packaging before handling.

Accidental falling and/or crushing of the packaging may compromise the functionality of the product and cause serious injury to the handler.



- The product must always be handled with the rod completely retracted.
- The product may only be lifted by the points shown in the figure above.
- It is forbidden to use the rod for lifting the Series 6E electromechanical cylinder.
- It is forbidden to use the rear end cap for lifting the product, in order to prevent emission of the rod from the cylinder body due to the reversibility of the recirculating ball screws.

6. Storage

- The product must be stored in a dry environment protected from severe weather conditions
- Storage temperatures must be between -20°C and $+80^{\circ}\text{C}$

7. Installation

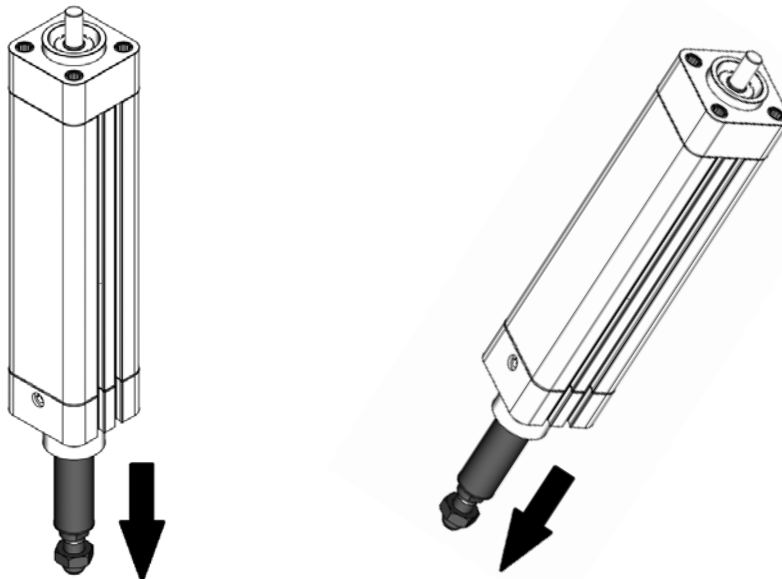
During installation of the component check that no hazards may arise from uncontrolled mechanical movements.

The Series 6E electromechanical cylinder can only be installed by specialised personnel or by staff instructed under the guidance and surveillance of qualified personnel.

Check the direction of rotation for screwing and unscrewing the screws before starting installation. It is absolutely not recommended to paint the Series 6E electromechanical cylinder.

cylinder with the rod pointed downwards may be hazardous. The rod may come out of the electromechanical cylinder at an uncontrolled speed due to the reversibility of the movement of the recirculating ball screws contained within it.

Vertical or inclined installation of the Series 6E electromechanical



Installation conditions

The general catalogue for the Series 6E electromechanical cylinder contains the correct usage conditions and the technical information. Before putting the Series 6E electromechanical cylinder into operation check that:

- The characteristics and features declared correspond to those required;
- It has not been damaged during transport;
- It has not been installed in such a way that could be hazardous to persons, property and/or animals;
- It is equipped with the appropriate brackets and is firmly fixed;
- Proper use of the installation configuration shown below in the manual is recommended;
- If it is exposed to the actions of the operator on a machine, provide suitable inescapable protections and/or appropriate PPE.

Before putting the Series 6E electromechanical cylinder into operation check correct functioning if it is to be used in circuits that are compliant with the regulation ISO 13849-1.

In case of divergent applications, please contact Camozzi Automation S.p.A.

The temperature during operation must be between 0 °C and 50°C.



CAUTION: observe the indicated temperature, protect from water, humidity and attack by corrosive substances.

Install the Series 6E electromechanical cylinder in an accessible place for maintenance so that it does not create hazards for maintenance personnel.

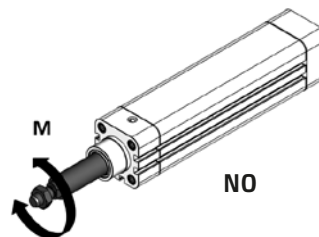
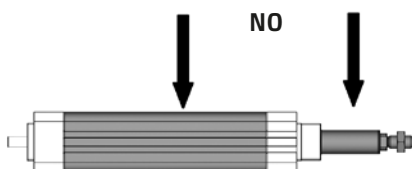


CAUTION: Due to the nature of the Series 6E electromechanical cylinder the rod is subject to movements.

Provide protective equipment for operators in the work area.

Loads not permitted

- The Series 6E electromechanical cylinder cannot be loaded radially on the rod or on the structure:
- Series 6E electromechanical cylinder includes an internal anti-rotation guide but cannot support torsions on the rod:



- The structure of the Series 6E electromechanical cylinder cannot be used for installing other components. For applications of this kind please contact Camozzi Automation S.p.A.

Installation position

The Series 6E electromechanical cylinder can be mounted in any position: horizontal, vertical with the rod pointed upwards, vertical with the rod pointed downwards, inclined.

Always avoid unexpected movement of the actuators which may generate hazards for the surrounding equipment or people.

In case of vertical or diagonal installation it is necessary to use auto-braking motors to prevent uncontrolled strokes in case of a voltage drop.

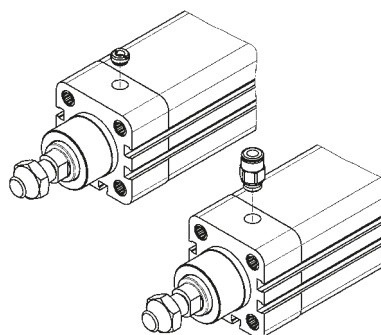


CAUTION: It is forbidden to pass or stand in the work area of the Series 6E electromechanical cylinder.

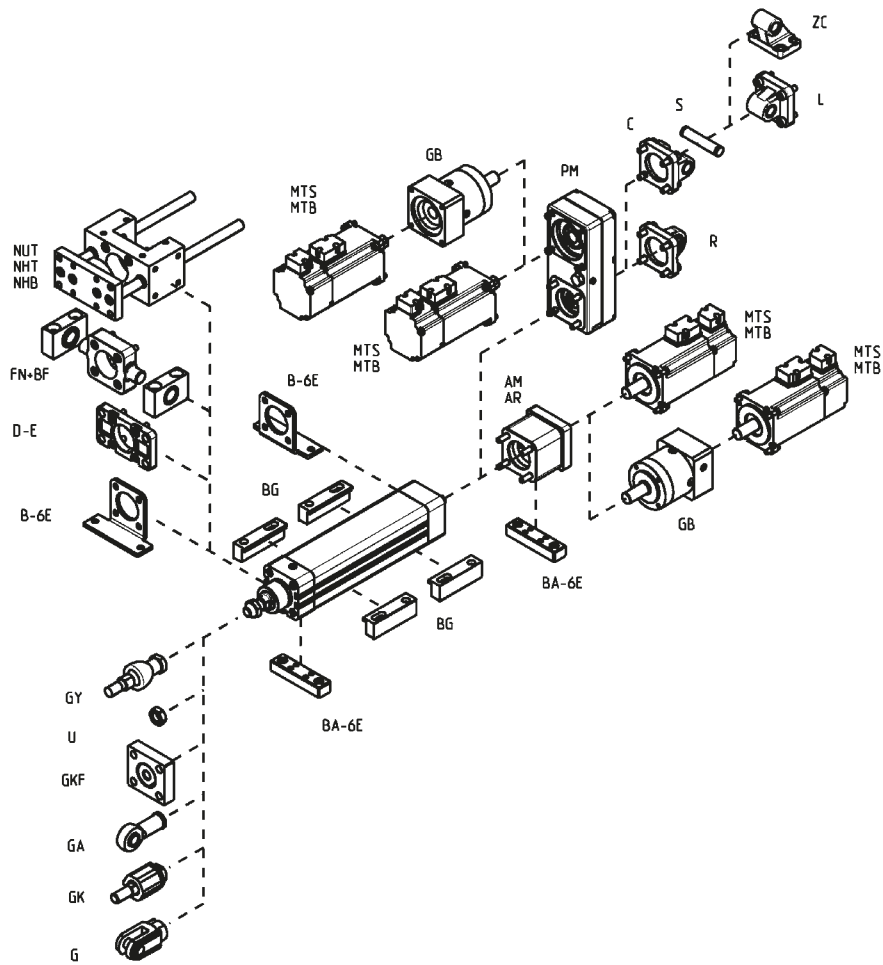
Pressure equalising hole

The Series 6E electromechanical cylinder is equipped with an equalising hole for the air inside it, with relative silencer.

For correct operation of the product it is necessary that this hole is not covered. In the IP65 version it is necessary to remove the silencer and replace it with a Series 6512 super rapid fitting (as shown in the picture).



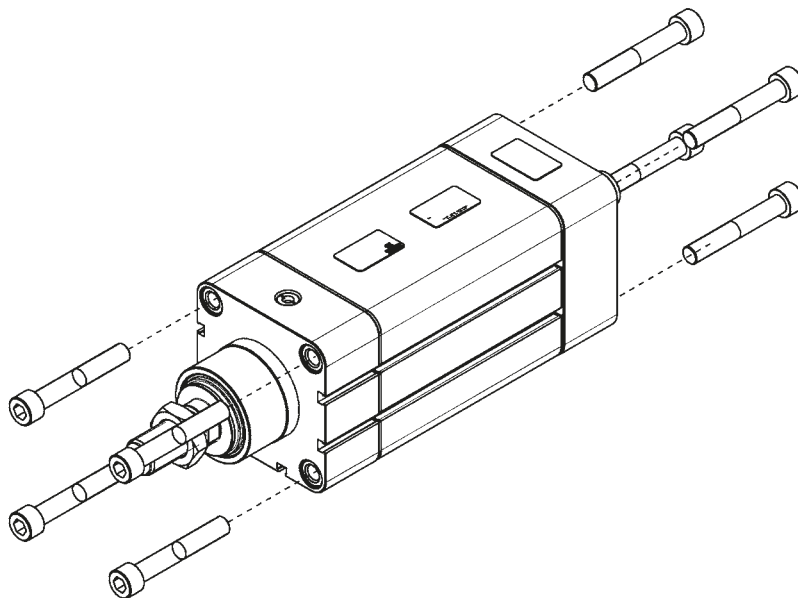
Accessories installation



Accessories installation - screw tightening

- Make sure to respect the correct tightening torque when fixing the accessories

TG32	TG40	TG50	TG63	TG80	TG100
5 Nm	5 Nm	10 Nm	10 Nm	15 Nm	15 Nm



Available support configurations

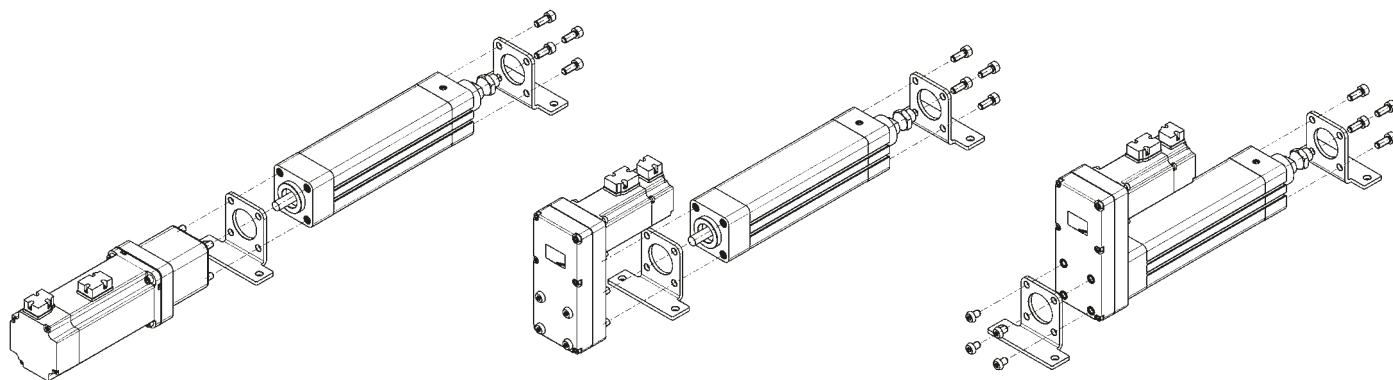
It is possible to fix the Series 6E electromechanical cylinder with the appropriate supports:

- 1 - On the front end cap of the Series 6E electromechanical cylinder;
- 2 - On the rear end cap of the Series 6E electromechanical cylinder, both in configuration with the motor in line and the motor parallel

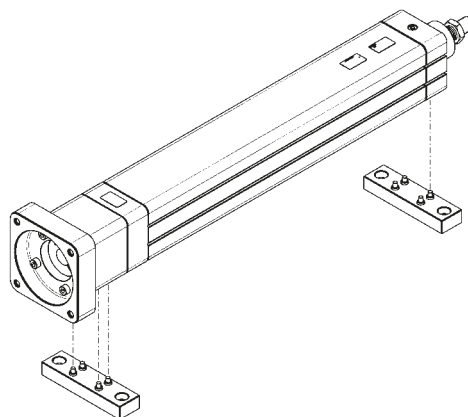
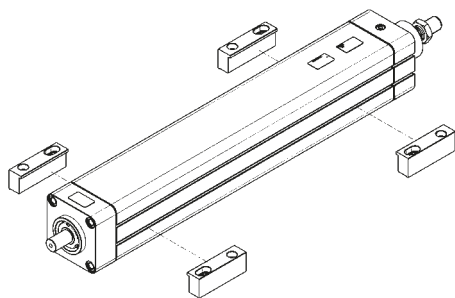
(assembly available only for size 32, 40, 50 and 63).

- 3 - On the cover assembly with the motor parallel.

CAUTION: in case of installing the support in the configuration with parallel motor, use the screws in the parallel motor kit.



Furthermore, it is also possible to fix the Series 6E electromechanical cylinder using the fixing elements as shown below.



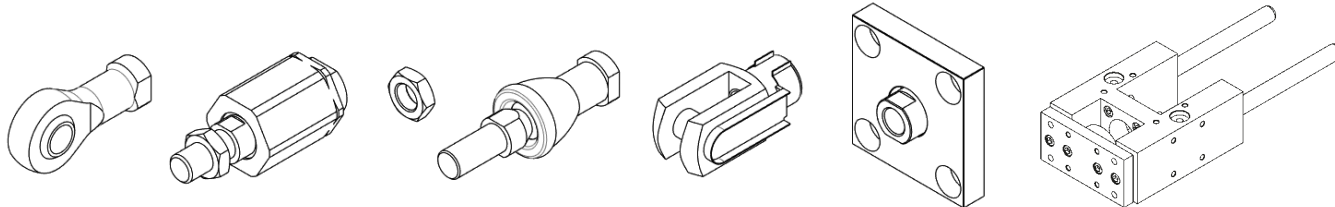
CAUTION: installation must be carried out so that the front and rear end caps are not supported.



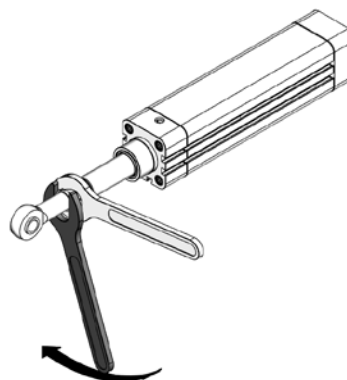
NO



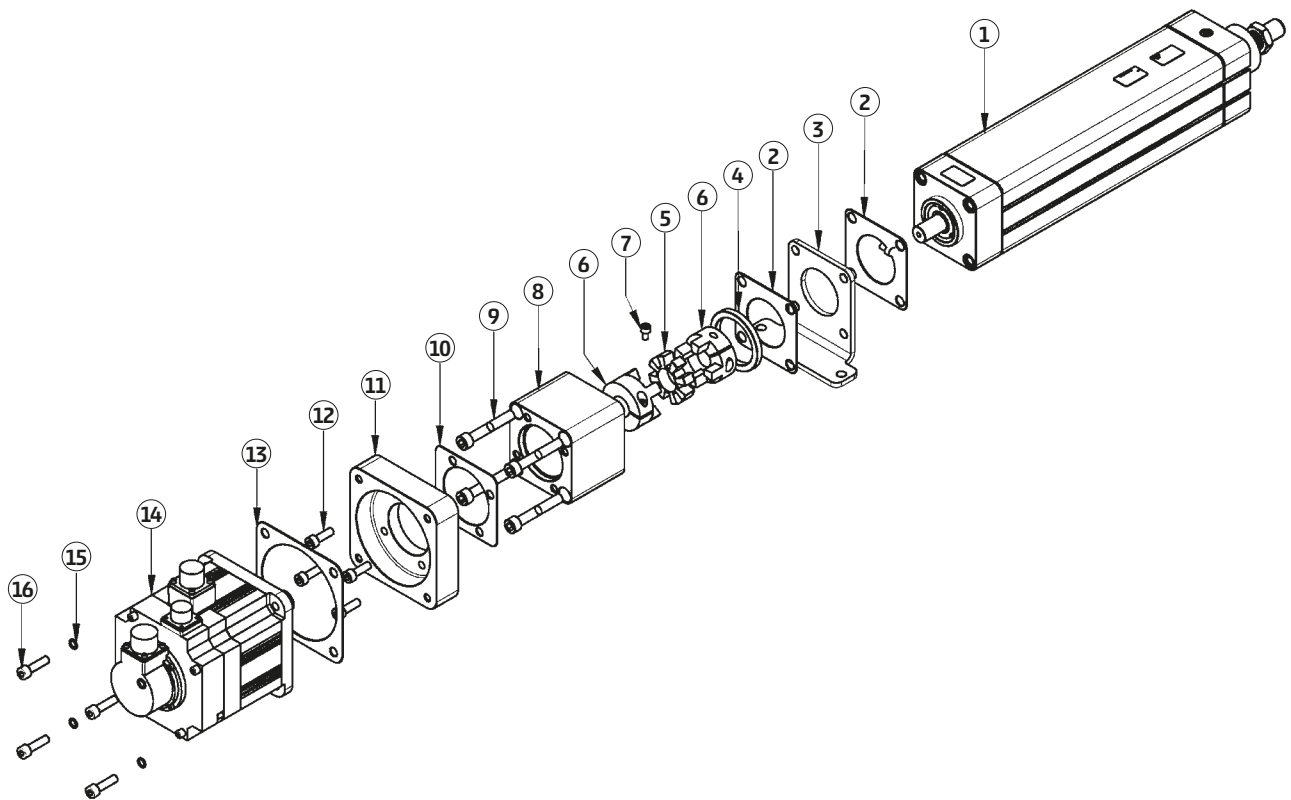
Installation of rod accessories



- It is forbidden to subject the cylinder rod to torsion due to the torque of the front accessories.



Installation with motor in line

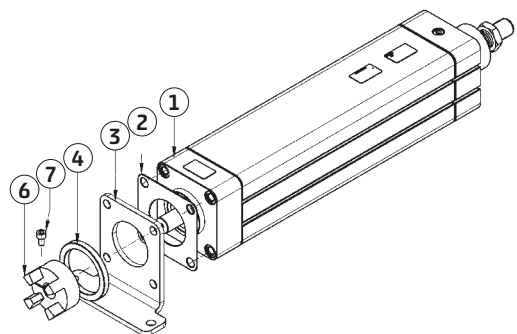


- | | |
|---|--------------------------------------|
| 1 | Series 6E electromechanical cylinder |
| 2 | Rear end cap seal |
| 3 | Support Bracket |
| 4 | Guide ring |
| 5 | Elastomeric coupling |
| 6 | Half coupling |
| 7 | Half coupling screw |
| 8 | Adapter |

- | | |
|----|-------------------------------|
| 9 | Adapter screw |
| 10 | Adapter-Flange interface seal |
| 11 | Motor flange |
| 12 | Motor flange screw |
| 13 | Motor seal |
| 14 | Electric motor |
| 15 | washer |
| 16 | Motor screw |

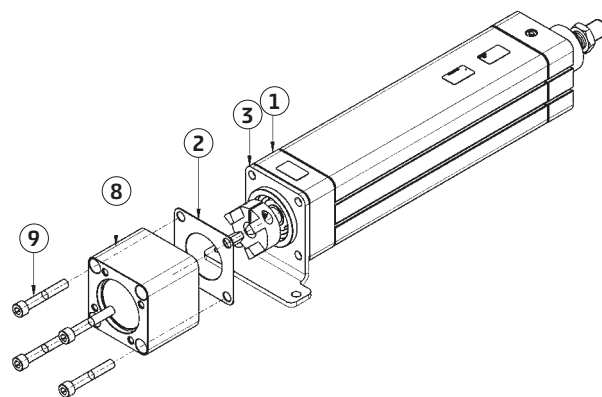
STEP 1

After having adequately positioned the Series 6E electromechanical cylinder (1), position the half coupling seal (2) on the rear end cap of the cylinder (in case of IP65) and, where present, fasten the support bracket (3) followed by the centering ring (4) on the rear side of the cylinder. Assemble the half coupling (6) on the rear shaft of the cylinder and secure with the screw (7) as indicated in the section "Flexible coupling assembly".

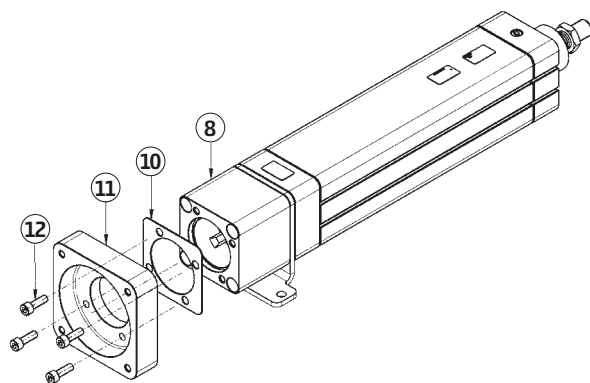


STEP 2

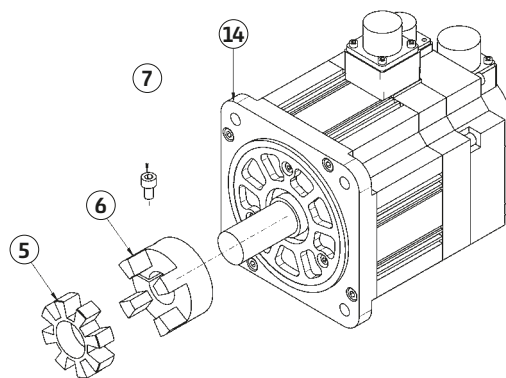
Assemble the adapter (8) on the rear side of the Series 6E electromechanical cylinder (1) using appropriate centering. In case of IP65, make sure to put the rear end cap seal (2) in between the support bracket (3) and the housing (8). Secure with the screws (9) provided.

**STEP 3**

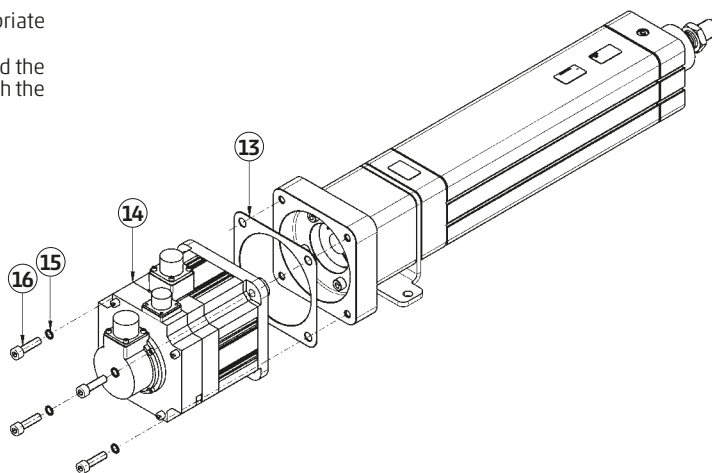
Assemble the motor flange (11), in case provided, to the adapter (8), using the appropriate centering. Put the flange-adapter interface seal (10) in between in case of IP65. Block the motor flange (11) with the screws (12) provided.

**STEP 4**

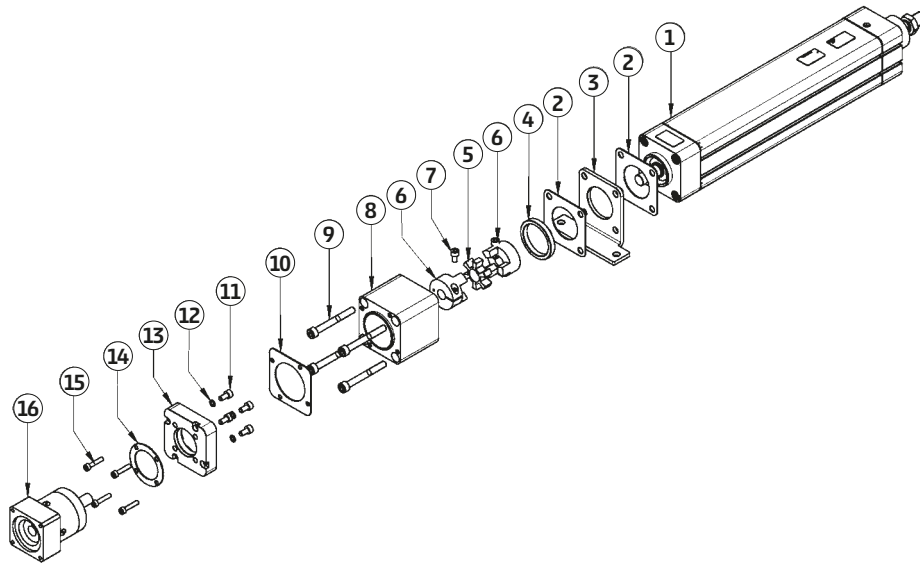
After having adequately positioned the electric motor (14), position the remaining half coupling (6) onto the motor shaft and secure with the screw (7) provided as indicated in the section "Flexible coupling assembly". In the end, insert the elastomeric coupling (5).

**STEP 5**

Assemble the motor unit (14) with the cylinder unit using appropriate centering, paying attention to coupling the half couplings. In case of IP65, put the motor seal (13) in between the motor unit and the cylinder unit. Secure the motor unit with the screws (16) provided with the relative washers (15) in case supplied.



Installation with gearbox in line

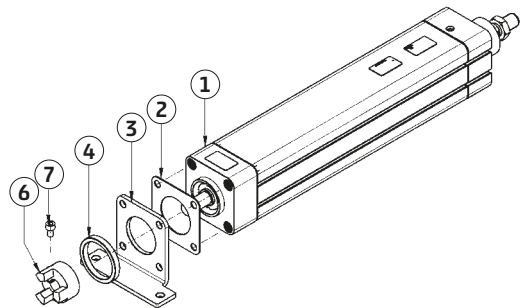


1	Series 6E electromechanical cylinder
2	Rear end cap seal
3	Support Bracket
4	Guide ring
5	Elastomeric coupling
6	Half coupling
7	Half coupling screw
8	Adapter

9	Adapter screw
10	Adapter-Flange interface seal
11	Gearbox screw
12	Washer
13	Gearbox flange
14	Gearbox seal
15	Gearbox flange screw
16	Gearbox

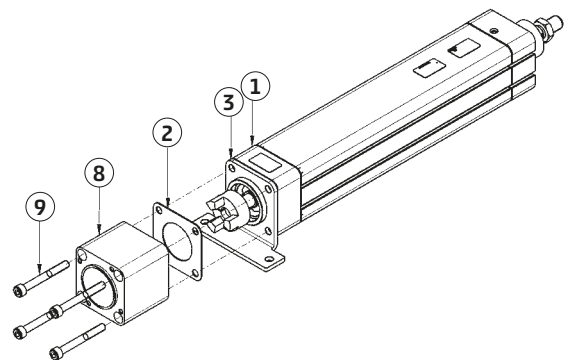
STEP 1

After having adequately positioned the Series 6E cylinder (1), position the seal (2) on the rear end cover of the cylinder (in case of IP65) and, in case provided, fix the support bracket (3) followed by the centering ring (4) on the rear side of the cylinder. Assemble the half coupling (6) on the rear shaft of the cylinder and secure it with the screw (7) as indicated in the section "Flexible coupling assembly"



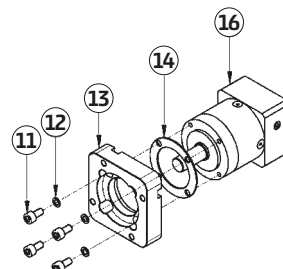
STEP 2

Assemble the adapter (8) on the rear side of the Series 6E electromechanical cylinder (1), using appropriate centring. In case of IP65, make sure to put the rear end cover seal (2) in between the support bracket (3) and the adapter (8). Secure with the screws (9) provided.



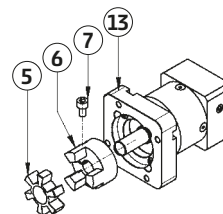
STEP 3

Assemble the gearbox flange (13 - in case provided) to the gearbox (16) using the appropriate centring. Put the gearbox interface seal (14) in case of IP65. Secure the gearbox flange (13) with the screws (11) provided and the relative washers (12) if provided.



STEP 4

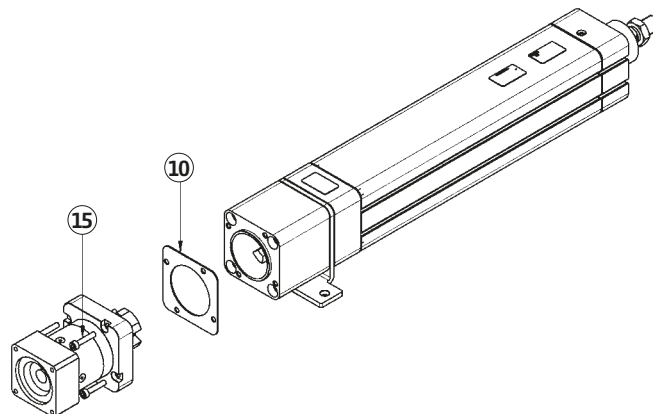
Insert the remaining half coupling (6) on the gearbox shaft and secure with the screw (7) provided as indicated in the section "Flexible coupling assembly". In the end, insert the elastomeric coupling (5).

**STEP 5**

Assemble the gearbox unit with the cylinder unit, using the appropriate centring, paying particular attention to coupling the half couplings. In case of IP65, put the flange-adapter interface seal (10) in between the motor unit and the cylinder unit. Secure the gearbox unit with the screws (15) provided.

Refer to the table below for the tightening of the gearbox' screw on the motor shaft

CH: Hexagon head screw dimension
CS: Tightening torque



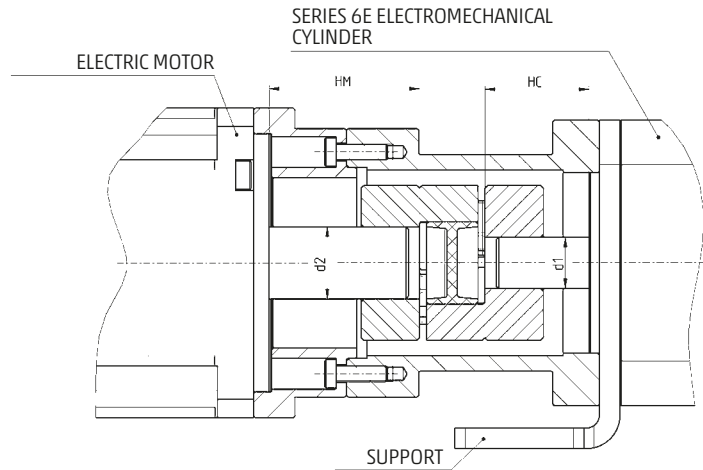
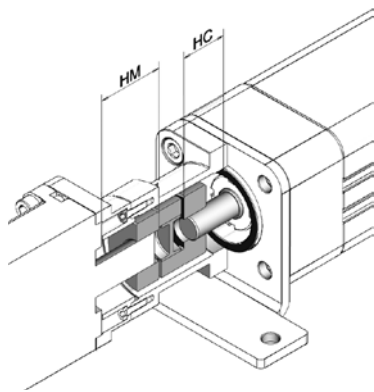
Mod.	GB-040	GB-060	GB-80	GB-120
CH [mm]	2,5	3	4	5
CS [Nm]	2	4,5	9,5	16,5

List of components for installation with motor/gearbox in line

	Adapter screw (9)	Screws of motor flange (12)	Washers (15)	Motor screws (16)
AM-6E-32-0100	M6X18 UNI 5931	M3X10 DIN7984	-	M3x20 UNI 5931
AM-6E-32-0100P	M6X18 UNI 5931	M3X10 DIN7984	WASHER M3	M3x20 UNI 5931
AM-6E-32-0023	M6X18 UNI 5931	M3X10 DIN7984	-	M4x12 UNI 5931
AM-6E-32-0023P	M6X18 UNI 5931	M3X10 DIN7984	WASHER M5	M4x12 UNI 5931
AM-6E-32-0024P	M6X40 UNI 5931	-	-	M4x14 UNI 5931
AM-6E-40-0400	M6X18 UNI 5931	M3X10 DIN7984	-	M5x14 UNI 5931
AM-6E-40-0400P	M6X18 UNI 5931	M3X10 DIN7984	WASHER M5	M5x14 UNI 5931
AM-6E-40-0023	M6X18 UNI 5931	M3X10 DIN7984	-	M4x12 UNI 5931
AM-6E-40-0023P	M6X18 UNI 5931	M3X10 DIN7984	WASHER M5	M4x12 UNI 5931
AM-6E-40-0024P	M6X40 UNI 5931	M4X14 UNI 5931	-	M4x14 UNI 5931
AM-6E-50-0400	M8X20 UNI 5931	M4X10 DIN7984	-	M5x14 UNI 5931
AM-6E-50-0400P	M8X20 UNI 5931	M4X10 DIN7984	WASHER M5	M5x14 UNI 5931
AM-6E-50-0750P	M8X80 UNI 5931	-	-	M6x20 UNI 5931
AM-6E-50-0024	M8X20 UNI 5931	M4X10 DIN7984	-	M4x14 UNI 5931
AM-6E-50-0024P	M8X20 UNI 5931	M4X10 DIN7984	WASHER M4	M4x14 UNI 5931
AM-6E-50-0034P	M8X80 UNI 5931	-	-	M6x20 UNI 5931
AM-6E-63-0750	M8X20 UNI 5931	M4X10 DIN7984	-	M6x20 UNI 5931
AM-6E-63-0750P	M8X20 UNI 5931	M4X10 DIN7984	WASHER M6	M6x20 UNI 5931
AM-6E-63-0024	M8X20 UNI 5931	M4X10 DIN7984	-	M4x14 UNI 5931
AM-6E-63-0024P	M8X20 UNI 5931	M4X10 DIN7984	WASHER M4	M4x14 UNI 5931
AM-6E-63-0034P	M8X50 UNI 5931	M6X16 UNI 5931	-	M6x20 UNI 5931
AM-6E-80-1000P	M10X65 UNI5931	M8X25 UNI5931	-	M8x25 UNI 5931
AM-6E-80-0034P	M10X65 UNI5931	M8X16 UNI 5931	-	M6x20 UNI 5931
AM-6E-100-1000P	M10X65 UNI5931	M8X25 UNI5931	-	M8x25 UNI 5931
AM-6E-100-0034P	M10X65 UNI5931	M8X16 UNI 5931	-	M6x20 UNI 5931

		AR-6E-50-R060	AR-6E-63-R060	AR-6E-80-R080	AR-6E-100-R120
9	Adapter screw	M8X50 UNI 5931	M8X70 UNI 5931	M10X100 UNI 5931	M10X45 UNI 5931
11	Gearbox screws	M5x20 UNI 5931	M5X12 UNI 5931	M6X70 UNI5931	M10X30 UNI 5931
12	Washer	WASHER M5	-	-	-
15	Screws of gearbox flange	M4X20 UNI 5931	M5X25 UNI 5931	-	M8X40 UNI 5931

Flexible coupling assembly



HC: distance between centring of the rear end cap and the internal stop of the flexible coupling.

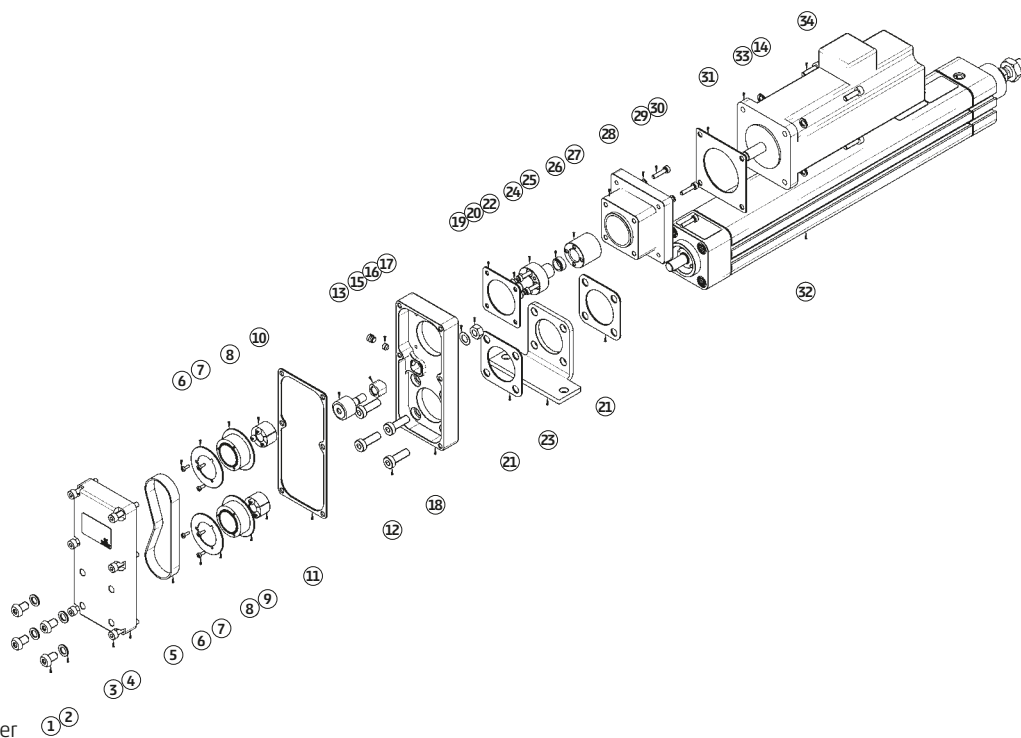
HM: distance between centring of the motor and the internal stop of the flexible coupling.

MS: Tightening torques to be used for fixing the half couplings onto the relative shafts.

MODEL	CYLINDER SIZE	MOTOR	WITHOUT BRACKET HC [mm]	WITHOUT BRACKET HM [mm]	WITH BRACKET HC [mm]	WITH BRACKET HM [mm]	COUPLING SIZE	d1 x d2 [mm] x [mm]	MS [Nm]	SCREW
AM	32	MTB-010	14,5	22	16,5	24	5	8 x 8	2	M3
AM	32	MTS-23	15,5	20	17,5	22	5	8 x 6,35	2	M3
AM	32	MTS-24	15,5	20	17,5	22	5	8 x 8	2	M3
AM	40	MTB-040	18	27	21	28	10	10 x 14	4	M4
AM	40	MTS-23	18,5	19,5	20,5	21,5	10	10 x 6,35	4	M4
AM	40	MTS-24	18,5	19,5	20,5	21,5	10	10 x 8	4	M4
AM	50	MTB-040	23	27	26	29	10	12 x 14	4	M4
AM	50	MTS-24	23	18,5	25	21,5	10	12 x 8	4	M4
AM	50	MTB-075	24,1	37,875	26,6	40,375	20	12 x 19	8	M5
AM	50	MTS-34	23,475	35,725	25,975	38,225	20	12 x 14	8	M5
AM	63	MTB-075	27,5	36,5	30,5	38,5	20	15 x 19	8	M5
AM	63	MTS-24	30,5	19,5	34	30,5	10	15 x 8	4	M4
AM	63	MTS-34	29,925	34,525	32,425	37,025	20	15 x 14	8	M5
AM	80	MTB-100	31,8	52,7	-	-	60	19 x 24	15	M6
AM	80	MTS-34	31,975	35,975	-	-	60	19 x 14	15	M6
AM	100	MTB-100	34,1	52,475	-	-	60	24 x 24	15	M6
AM	100	MTS-34	33,55	36,025	-	-	60	24 x 14	15	M6
AR	50	GB-60	23,1	32,6	25,6	35,1	10	12x14	4	M4
AR	63	GB-60	30,4	31,8	32,9	35,3	20	15x14	8	M5
AR	80	GB-80	31,4	37,25	-	-	60	19x20	15	M6
AR	100	GB-120	49	51,5	-	-	60	24x25	15	M6

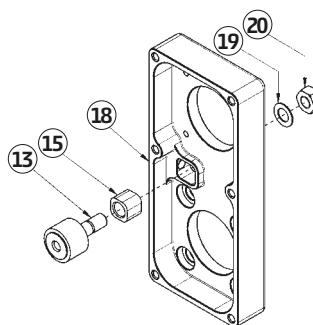
Parallel installation

- 1 Locking screws
- 2 Locking washers
- 3 Cover fixing screws
- 4 Rear flange
- 5 Toothed belt
- 6 Pulley fixing screws
- 7 flange of the pulley
- 8 Pulley
- 9 Cylinder locking set
- 10 Motor locking set
- 11 Interface seal
- 12 Cylinder fixing screws
- 13 Pin
- 14 Motor washer
- 15 belt tensioning block
- 16 Threaded plug
- 17 Grub screw
- 18 Front flange
- 19 Washer
- 20 Exagon nut
- 21 Cylinder seal
- 22 Motor flange seal
- 23 Bracket
- 24 Locking set adjustment screws
- 25 Locking set pin
- 26 Non self-centering locking set
- 27 Guide ring
- 28 Motor flange
- 29 Motor flange washers
- 30 Motor flange screws
- 31 Motor seal
- 32 Series 6E electromechanical cylinder
- 33 Electric motor
- 34 motor fixing screws



STEP 1

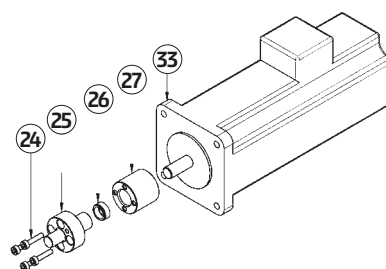
Assemble the belt tensioning block (15) inside the slot on the connection flange (18). Insert the pin (13) inside the belt tensioning block (15). Insert the washer (19) on the pin (13). Secure, without tightening too much, the hexagonal screw supplied (20).



STEP 2

In case there is a non self-centering locking set, follow the next steps, otherwise skip to the next step.

After having positioned the electric motor (33), paying attention to the diameters, insert the guide ring (27) on the motor shaft. Assemble the non self-centering locking set (26) and the locking set pin (25) on the motor shaft, up to the end stop. Then secure with the relative screws (24), following the indications given in the section "ASSEMBLY OF NON SELF-CENTERING LOCKING SETS".



STEP 3

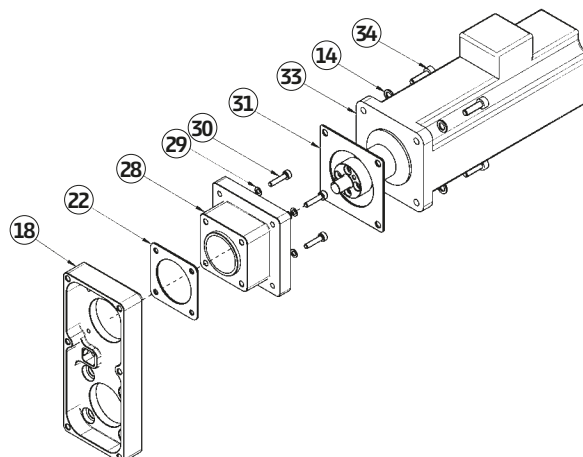
With motor

Position the motor flange seal (22) on the front flange (18) and fix the motor flange (28), if provided, with the screws (30) supplied and the relative washers (29) if provided.

Fix the electric motor (33) on the motor flange (28) with the screws (34) supplied and the relative washers (14) if provided, making sure to put the motor seal (31) in between.

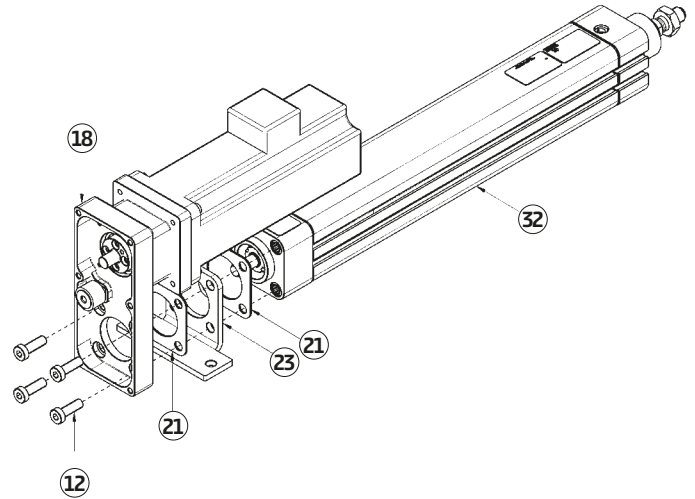
With motor and gearbox

In case it would be necessary to interpose a gearbox, assemble it following the same indications as for the motor, the assembly of the motor may, for convenience, be done at the end.



STEP 4

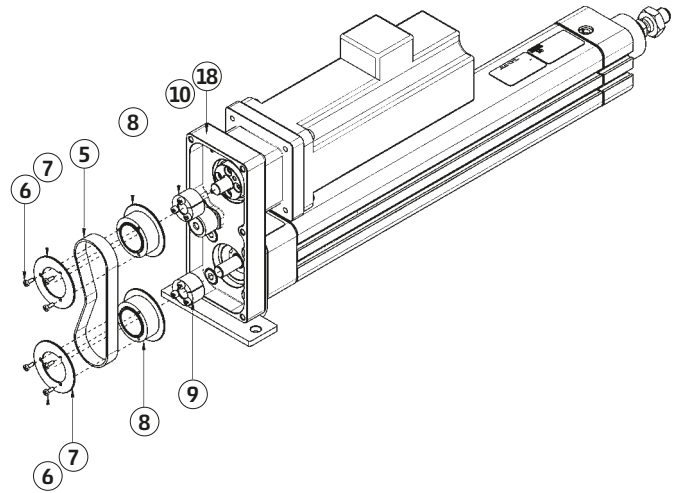
After having adequately positioned the Series 6E electromechanical cylinder (32), assemble the front flange (18) on the rear side of the cylinder, using the appropriate centring. Put the cylinder seal (21) in between, between the front flange (18) and the Series 6E electromechanical cylinder (32). If necessary, put the special support bracket (23) with its relative seal (21) between the seal and cylinder. In the end, secure the cylinder with the screws (12) provided.

**STEP 5**

Assemble the locking sets (9-10) on the shafts that protrude from the front flange (18) according to the indications in paragraph "Installation of self-centering locking set and pulley adjustment".

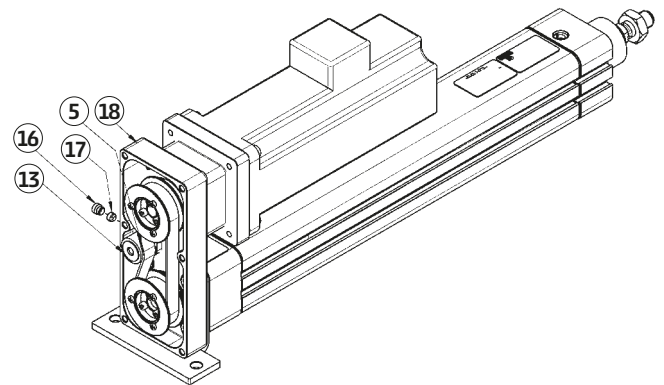
Then assemble the pulleys (8) on the locking sets. In case the pulley can be disassembled, first assemble only the toothed part (8). Once the toothed belt (5) is inserted, assemble the flange of the pulley (7) using the appropriate centering. In the end, secure the flange of the pulley (7) with the screws (6) supplied.

Once these steps are completed, it is important to make sure that the belt is mounted in the middle of the pulleys, so it doesn't touch the sides of the housing.

**STEP 6**

Insert the grub screw (17) in the special hole on the front flange (18). Tighten the grub screw (17) until the right tensioning of the belt (5)* is obtained.

Then cover the hole by inserting a threaded plug (16)



* For sizes 32, 40, 50 and 63, the belt is tensioned correctly when the grub screw touches the end stop of the belt tensioning block (15).
For sizes 80 and 100 you need to turn the grub screw for another half round.

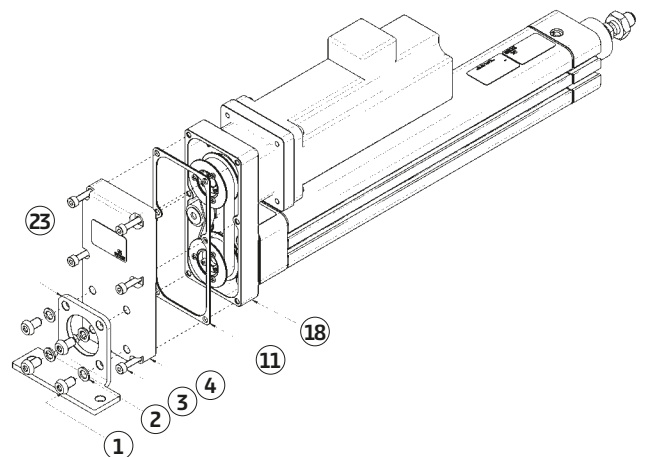
STEP 7

Close the front flange (18) with the rear flange (4), by putting an interface seal (11) in between and by tightening the screws (3) supplied. In the end tighten the screws (1) with the washers (2).

In case provided, use the above mentioned fixings (1-2) to secure the support bracket (23).

In case of assembly with gearbox, here below you can find information regarding the tightening of the gearbox' screw on the motor shaft.

CH: Hexagon head screw dimension
CS: Tightening torque



Mod.	GB-060	GB-080	GB-120	GC-060	GC-080	GC-120
CH [mm]	3	4	4	5	6	6
CS [Nm]	4,5	9,5	16,5	16,5	16,5	40
					9,8	41
					41	41

List of components for installation with motor in parallel

	PM-6E-32-0100P	PM-6E-32-0024P	PM-6E-40-0400P	PM-6E-40-0024P
1 Locking screws	M6X10 SCREW UNI 7380	M6X10 SCREW UNI 7380	M6X10 SCREW UNI 7380	M6X10 SCREW UNI 7380
2 Washers	M6 WASHER	M6 WASHER	M6 WASHER	M6 WASHER
3 Shell securing screws	M4x25 SCREW DIN 912	M4x25 SCREW DIN 912	M4X30 SCREW UNI5931	M4X30 SCREW UNI5931
6 Pulley securing screws	M2X6 SCREW UNI7687	M2X6 SCREW UNI7687	M3X8 SCREW UNI 5931	M3X8 SCREW UNI 5931
9 Cylinder locking set	SELF-CENTERING LOCKING SET 8-18	SELF-CENTERING LOCKING SET 8-18	SELF-CENTERING LOCKING SET 10-20	SELF-CENTERING LOCKING SET 10-20
10 Motor locking set	SELF-CENTERING LOCKING SET 8-18	SELF-CENTERING LOCKING SET 8-18	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 8-18
12 Cylinder securing screws	M6x16 SCREW UNI 9327	M6X18 SCREW DIN7984	M6x16 SCREW UNI 9327	M6X18 SCREW DIN7984
14 Motor washer	M3 WASHER	-	M5 WASHER	-
16 Threaded cover	M5 FITTING	M5 FITTING	M5 FITTING	M5 FITTING
17 Grub screw	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929
19 Washer	M6 WASHER UNI 8840 TYPE A	M6 WASHER UNI 8840 TYPE A	M8 WASHER UNI8840 TYPE A	M8 WASHER UNI8840 TYPE A
20 Hex nut	M6 NUT UNI-5588	M6 NUT UNI-5588	M8 NUT UNI-5588	M8 NUT UNI-5588
24 Set screws	-	M3X14 SCREW UNI5931	-	-
26 Non self-centering locking set	-	NON SELF-CENTERING LOCKING SET 8-11	-	-
29 Washer for motor flange	-	-	-	-
30 Screws for motor flange	-	-	-	-
34 Motor securing screws	M3x20 UNI 5931	M4x14 UNI 5931	M5x14 UNI 5931	M4x14 UNI 5931

	PM-6E-50-0400P	PM-6E-50-0034P	PM-6E-50-R060P	PM-6E-63-0750P
1 Locking screws	M8X12 SCREW UNI 7380	M8X12 SCREW UNI 7380	M8X12 SCREW UNI 7380	M8X12 SCREW UNI 7380
2 Washers	M8 WASHER	M8 WASHER	M8 WASHER	M8 WASHER
3 Shell securing screws	M5X30 SCREW UNI 5931	M5X30 SCREW UNI 5931	M5X30 SCREW UNI 5931	M5X30 SCREW UNI 5931
6 Pulley securing screws	M3X8 SCREW UNI 5931	M3X8 SCREW UNI 5931	M3X8 SCREW UNI 5931	M3X8 SCREW UNI 5931
9 Cylinder locking set	SELF-CENTERING LOCKING SET 12-22	SELF-CENTERING LOCKING SET 12-22	SELF-CENTERING LOCKING SET 12-22	SELF-CENTERING LOCKING SET 15-28
10 Motor locking set	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 19-35
12 Cylinder securing screws	M8X20 SCREW DIN 7984	M8X18 SCREW DIN7984	M8X18 SCREW DIN7984	M8X20 SCREW DIN 7984
14 Motor washer	M5 WASHER	-	-	M6 WASHER
16 Threaded cover	M5 FITTING	M5 FITTING	M5 FITTING	M5 FITTING
17 Grub screw	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929
19 Washer	M10 WASHER UNI 8840 TYPE A	M10 WASHER UNI 8840 TYPE A	M10 WASHER UNI 8840 TYPE A	M10 WASHER UNI 8840 TYPE A
20 Hex nut	M10 NUT UNI-5588	M10 NUT UNI-5588	M10 NUT UNI-5588	M10 NUT UNI-5588
24 Set screws	-	M5X16 SCREW UNI 5931	-	-
26 Non self-centering locking set	-	NON SELF-CENTERING LOCKING SET 14-18	-	-
29 Washer for motor flange	-	M5 KNURLED WASHER	-	-
30 Screws for motor flange	-	M5X25 SCREW UNI 5931	-	-
34 Motor securing screws	M5x14 UNI 5931	M6x20 UNI 5931	M5x10 UNI 5931	M6x20 UNI 5931

	PM-6E-63-0034P	PM-6E-63-R060P	PM-6E-80-1000P	PM-6E-80-0034P
1 Locking screws	M8X12 SCREW UNI 7380	M8X12 SCREW UNI 7380	M10X16 SCREW UNI 7380	M10X16 SCREW UNI 7380
2 Washers	M8 WASHER	M8 WASHER	M10 WASHER	M10 WASHER
3 Shell securing screws	M5X30 SCREW UNI 5931	M5X30 SCREW UNI 5931	M8X40 SCREW UNI 5931	M8X40 SCREW UNI 5931
6 Pulley securing screws	M3X8 SCREW UNI 5931	M3X8 SCREW UNI 5931	-	-
9 Cylinder locking set	SELF-CENTERING LOCKING SET 15-28	SELF-CENTERING LOCKING SET 15-28	SELF-CENTERING LOCKING SET 19-35	SELF-CENTERING LOCKING SET 19-35
10 Motor locking set	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 24-47	SELF-CENTERING LOCKING SET 14-26
12 Cylinder securing screws	M8X20 SCREW DIN 7984	M8X20 SCREW DIN 7984	M10x20 SCREW UNI 9327	M10x20 SCREW UNI 9327
14 Motor washer	M6 WASHER	-	M8 WASHER	M6 WASHER
16 Threaded cover	M5 FITTING	M5 FITTING	M5 FITTING	M5 FITTING
17 Grub screw	M5X4 NUT UNI 5929	M5X4 NUT UNI 5929	M5X10 NUT UNI 5923	M5X10 NUT UNI 5923
19 Washer	M10 WASHER UNI 8840 TYPE A	M10 WASHER UNI 8840 TYPE A	M12 WASHER UNI 8840 TYPE A	M12 WASHER UNI 8840 TYPE A
20 Hex nut	M10 NUT UNI-5588	M10 NUT UNI-5588	M12 NUT UNI-5588	M12 NUT UNI-5588
24 Set screws	-	-	-	-
26 Non self-centering locking set	-	-	-	-
29 Washer for motor flange	-	-	-	-
30 Screws for motor flange	-	-	-	-
34 Motor securing screws	M6x20 UNI 5931	M5x10 UNI 5931	M8x25 UNI 5931	M6x20 UNI 5931

	PM-6E-80-R080P	PM-6E-100-1000P	PM-6E-100-0034P	PM-6E-100-R080P
1 Locking screws	M10X16 SCREW UNI 7380	M10X16 SCREW UNI 7380	M10X16 SCREW UNI 7380	M10X16 SCREW UNI 7380
2 Washers	M10 WASHER	M10 WASHER	M10 WASHER	M10 WASHER
3 Shell securing screws	M8X40 SCREW UNI 5931	M8X40 SCREW UNI 5931	M8X40 SCREW UNI 5931	M8X40 SCREW UNI 5931
6 Pulley securing screws	-	-	-	-
9 Cylinder locking set	SELF-CENTERING LOCKING SET 19-35	SELF-CENTERING LOCKING SET 24-47	SELF-CENTERING LOCKING SET 24-47	SELF-CENTERING LOCKING SET 24-47
10 Motor locking set	SELF-CENTERING LOCKING SET 20-38	SELF-CENTERING LOCKING SET 24-47	SELF-CENTERING LOCKING SET 14-26	SELF-CENTERING LOCKING SET 20-38
12 Cylinder securing screws	M10x20 SCREW UNI 9327	M10x20 SCREW UNI 9327	M10x20 SCREW UNI 9327	M10x20 SCREW UNI 9327
14 Motor washer	-	M8 WASHER	M6 WASHER	-
16 Threaded cover	M5 FITTING	M5 FITTING	M5 FITTING	M5 FITTING
17 Grub screw	M5X10 NUT UNI 5923	M5X10 NUT UNI 5923	M5X10 NUT UNI 5923	M5X10 NUT UNI 5923
19 Washer	M12 WASHER UNI 8840 TYPE A	M12 WASHER UNI 8840 TYPE A	M12 WASHER UNI 8840 TYPE A	M12 WASHER UNI 8840 TYPE A
20 Hex nut	M12 NUT UNI-5588	M12 NUT UNI-5588	M12 NUT UNI-5588	M12 NUT UNI-5588
24 Set screws	-	-	-	-
26 Non self-centering locking set	-	-	-	-
29 Washer for motor flange	-	-	-	-
30 Screws for motor flange	-	-	-	-
34 Motor securing screws	M6x16 UNI 5931	M8x25 UNI 5931	M6x20 UNI 5931	M6x16 UNI 5931

Installation of self-centering locking set and pulley adjustment

Make sure that all contact surfaces are clean and slightly oiled (do not use "Molykote" and molybdenum disulphide based lubricants). Position the locking set onto the pulley hub, taking care to keep the entire locking set within the length of the hub.

Assemble it onto the shaft taking care to maintain the H dimension as indicated in the table below. Then gradually and uniformly tighten the screws, passing from one to the opposite one (crossed pattern) with the following method:

- hand-tighten the mounting screws until they touch the surface
- check the positioning of the hub on the shaft
- tighten the screws up to approximately half of the indicated tightening torque MS
- repeat the operation until the tightening torque is reached using a torque wrench
- make sure that all the screws have reached the specific tightening torque.

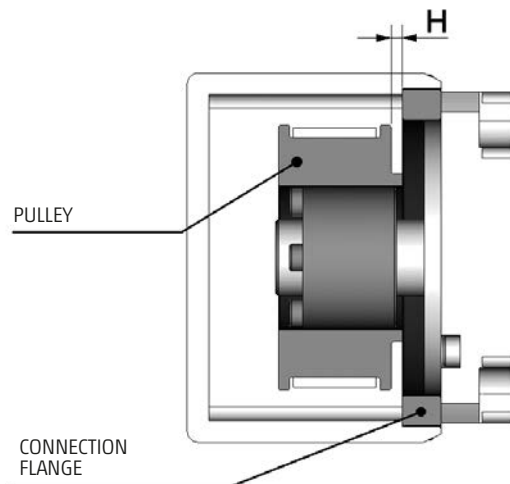
In case the locking set is reused, it is necessary to oil the screws and the conical parts before proceeding with assembly.

SIZE	32	40	50	63	80	100
H [mm]	3 *	3 **	5 ***	5	5	5

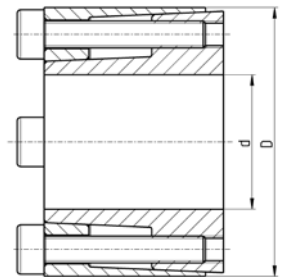
* for PM-6E-32-0024P length H = 4

** for PM-6E-40-0024P length H = 2

*** or PM-6E-50-0034P length H = 4



d x D	MS [Nm]
8x18	1,2
10x20	1,2
12x22	1,2
14x26	2,1
15x28	2,1
19x35	4,9
20x38	10
24x47	17



Installation of non self-centering locking set

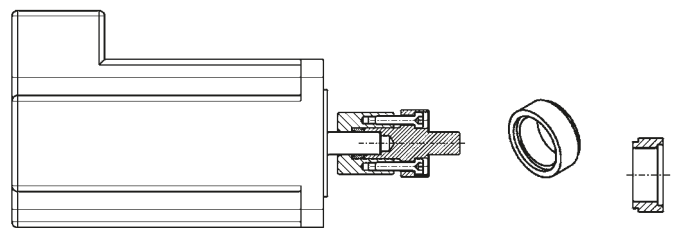
After having adequately positioned the locking set and brought the motor up to the end stop inside the pin (see picture aside), secure the screws gradually and uniformly, according to a cross pattern, following the next steps:

- Manually tighten the screws up to contacting the surface
- Check the position of the hub on the shaft
- Tighten the screws up to half the tightening torque (MS) indicated in the table

d x D	MS [Nm]
8x11	0,8
14x18	4,8

- Repeat this operation up to reaching the indicated tightening torque (MS) using a torque wrench
- Make sure all screws are tightened at the appropriate tightening torque (MS) indicated.

N.B. DO NOT USE MOLYBDENUM DISULFIDE BASED LUBRICANTS



Installation of anti-rotation guide units 45NHT / 45NHB / 45NUT / 6ENHT

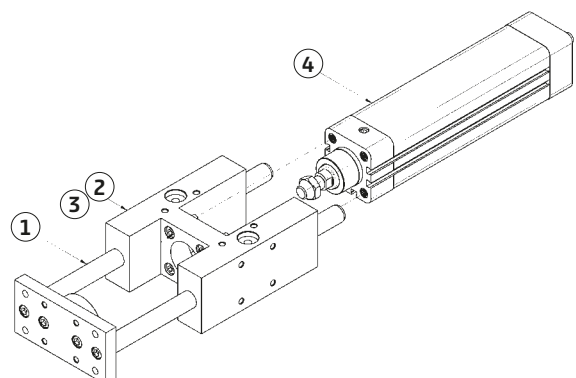
Series 6E electromechanical cylinder, compliant with the ISO 15552 standard, is compatible with the Series 45 anti-rotation guide units for sizes 32, 40, 50 and 63 and with the 6ENHT guides for sizes 80 and 100.



CAUTION: avoid direct contact between the surface of the rods and skin.

STEP 1

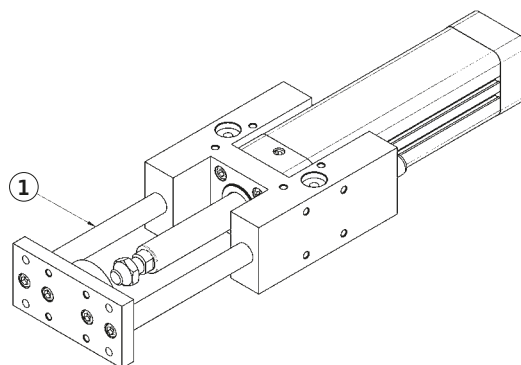
Slightly remove the guides (1) from the body of the anti-rotation guide units (2) in order to be able to access the fixing screws (3) with the tool. Assemble the body of the anti-rotation guide unit (2) on the Series 6E electromechanical cylinder and fix it with the provided screws (3), so that the lubrication holes are faced upwards.



STEP 2

Partly take the rod off the cylinder and fix it on the anti-rotation guide units (1) with the appropriate coupling.

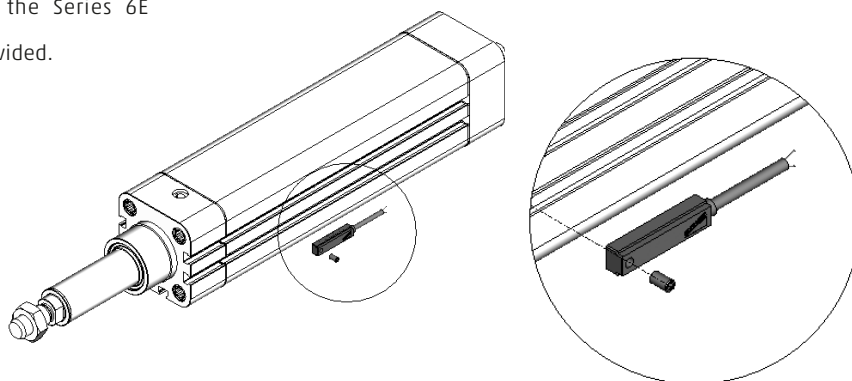
N.B. It is forbidden to submit the cylinder rod to torsion due to the torque of the front coupling (See paragraph "Installation of rod accessories").



Installation and positioning of the CST/CSH magnetic sensors

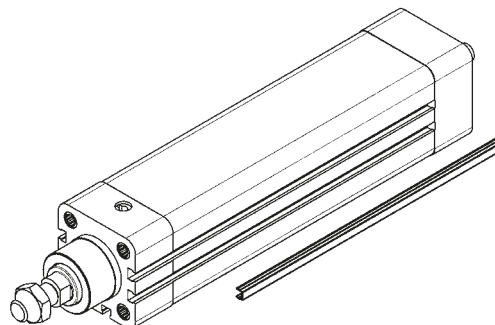
Insert the sensor into the appropriate slot on the Series 6E electromechanical cylinder.

Secure it by tightening the set screw and/or screw provided.



Installation of slot cover S-CST-500

Insert the slot cover sideways in the appropriate slots on the Series 6E electromechanical cylinder. Slightly press until the cover is inserted in the slot.



Start-up



CAUTION: Only put the Series 6E electromechanical cylinder into operation after having ensured that the system or machine in which it is installed is compliant with the country's specific regulations, safety regulations and applicable regulations.

Before carrying out the motor electrical connection check correct installation of all interface components.

Make sure that the range of motion is free from obstacles.

Subsequently connect the electrical connection.

CAUTION - Electrical hazard

- Before start up ensure that all connectors are properly connected;
- Risk of motor short circuiting due to the presence of openings. Possibility of damage to the motor due to penetration of liquids and foreign bodies;
- Check correct closure of the connectors. Possibility of collision due to connectors or end stroke set or positioned incorrectly. Possibility of damage to the product.

CAUTION - Risk of injury

- Risk of injury from moving parts;
- Do not touch moving parts during operation;
- Do not stand in the hazard area in front of the Series 6E electromechanical cylinder;
- Before start up ensure that there is nobody in front of the Series 6E electromechanical cylinder;

Check that the strokes have been set correctly, preventing product collisions with the end strokes.

- Observe the maximum stroke of the Series 6E electromechanical cylinder.
- Check correct application of the operating conditions.

For precision pay attention to: the ambient temperature, loading conditions, number of rotations and the maximum stroke of the Series 6E electromechanical cylinder. Precise indications are provided within the manual and in the catalogue information. For particular operating conditions contact technical services. Before using the Series 6E electromechanical cylinder under production conditions, test the entire stroke at very low speeds.

Only put the product into operation after having completed an operating test with a positive result under production conditions.



CAUTION: The Series 6E electromechanical cylinder is equipped with a cushioning system for emergency end stroke impacts. In order to maintain the product's integrity, it is recommended to avoid end stroke impacts.

8. Maintenance and repair

Cleaning and lubrication

For cleaning the Series 6E electromechanical cylinder it is forbidden to use solvents or aggressive detergents that may damage seals or aluminium parts due to chemical incompatibility. It is however possible to use mild water-soluble detergents (in any case check compatibility of the materials used with these cleaning products).

Proceed as follows:

1. Protect the cylinder openings and holes to prevent penetration of the liquid inside the cylinder itself;
2. Stop power to all electrical components and adequately protect the connectors and all contacts against moisture.
3. Clean with a damp cloth and without using direct sprays of liquid onto the cylinder.
4. At the end of cleaning lubricate the cylinder rod and the front seal with NYE Lubricants Rheolube 363 AX 1 type grease (order code 70-7902-0032) in order to improve the system's durability.

9. Dismantling and parts replacement

In case of cylinder anomalies and the need for replacement of component units within it, refer to the Camozzi Automation S.p.A. Assistance Service who will assess the scale of the issue and the countermeasures to be taken.

Disassembly and replacement of parts is only permitted by Camozzi Automation S.p.A. staff.

For maintenance that involves opening the Series 6E electromechanical cylinder, contact technical assistance.

10. Disposal

In the Series 6E electromechanical cylinder there is:

- Aluminium alloy
- Steel
- Plastic material
- Grease

- Epoxy resin

Components must be disposed of in compliance with current national and international standards and directives after having collected any lubricant present and disposing of it separately.

11. Technical information

According to the Series 6E electromechanical cylinder general catalogue.

12. Resolution of any failure

FAILURE	POSSIBLE CAUSE	POSSIBLE SOLUTION
Excessive axial play	Wear	Return the Series 6E electromechanical cylinder to Camozzi Automation S.p.A. for repair or replacement
Vibration during use	Excessive wear of internal components	Return the Series 6E electromechanical cylinder to Camozzi Automation S.p.A. for repair or replacement
	Improper sealing of the interface accessories	Check that all screws have been tightened
	Breakage of the anti-rotation system caused by radial loads applied to the rod	Application of radial loads is not permitted Return the Series 6E electromechanical cylinder to Camozzi Automation S.p.A. for repair or replacement
	Rod travel speed greater than that indicated in the catalogue	Reduce the travel speed or use a cylinder with a higher thread pitch (compatible with the loads to be handled)
The rod does not move	Improper assembly of the flexible coupling	Carry out installation following the indications listed in the user instructions
	Incorrect configuration of operating parameters	Check that the parameters entered are correct and suitable for use of the Series 6E electromechanical cylinder
	Incorrect positioning of the external magnetic proximity switch (if present)	Check that the sensor is positioned in the Series 6E electromechanical cylinder's useful stroke to ensure use of the entire stroke
	Rod travel speed greater than that indicated in the catalogue	Reduce the belt tension, by unscrewing the set screw (ref. Installation instructions with motor in parallel)
	Ambient temperature too low	- Partially apply the useful load - Operate with a reduced travel speed - Adjust the ambient temperature
	Load applied is greater than that indicated in the catalogue	Reduce the load or replace the Series 6E electromechanical cylinder with one that is able to exert a suitable force
Unit overheating	Excessive absorption of torque due to incorrect fixing	Check that fixing of the cylinder is not causing strain or misalignment to the unit
Excessive noise or noise alteration	Abnormal wear	Return the Series 6E electromechanical cylinder to Camozzi Automation S.p.A. for repair or replacement
Position error	Slipping of motor connection components	Perform the assembly of transmission components following the indications listed in the user instructions
	Wear	Return the Series 6E electromechanical cylinder to Camozzi Automation S.p.A. for repair or replacement
	Wrong reading of proximity switches (where present)	Check if position and connection of the proximity switches and relative accessories is performed correctly (see manual)
	Slipping of transmission components (parallel connection)	Make sure the belt is tensioned correctly; if necessary, recalibrate it by further tightening the special grub screw.



CAUTION: in case of fire in the surrounding area it is recommended to extinguish with carbon dioxide CO₂

Contacts

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Automation

