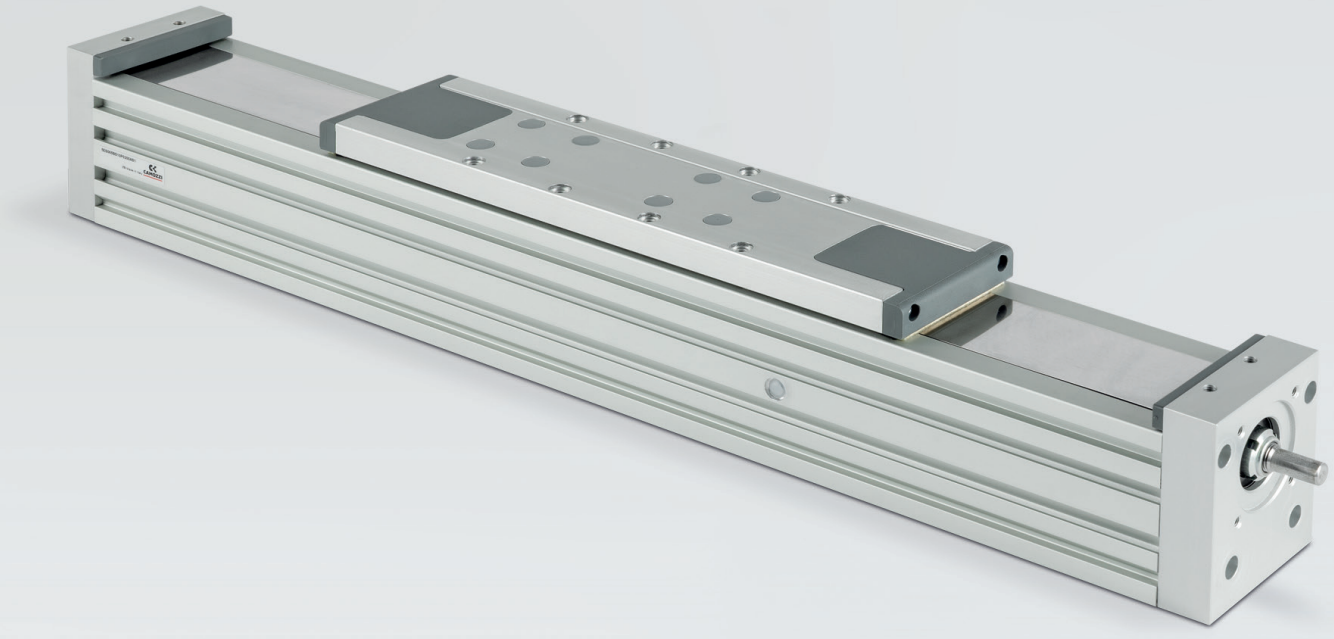
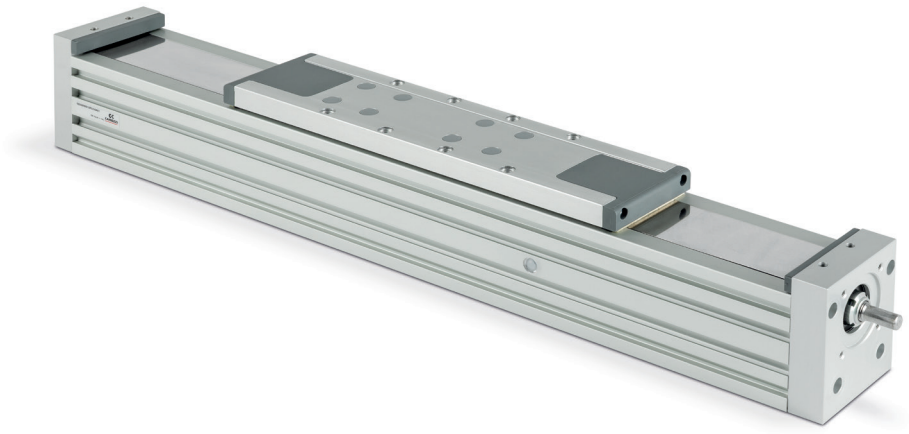
USE AND MAINTENANCE MANUAL

CAMOZZI
Automation

SERIES 5ES...BS
ELECTROMECHANICAL AXES



Contents



i. Introduction

This user manual must be read in its entirety before beginning mounting and installation of the Series 5E electromechanical axis.
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.

The original instructions were written in Italian.

1. General safety warnings

- The locally valid provisions, laws and reculations for the destination of the product must always be respected.
- The Series 5E electromechanical axis must be used free from tampering or demage and in the original condition provided.
- The Series 5E general catalogue (available from our distributors and/or on our website) defines the usage limits within which the Series 5E electromechanical axis 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 5E electromechanical axis. 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.
- Avoid that the slider of the electromechanical axis collides with the end caps. Avoid any kind of shock between slider and end cap.

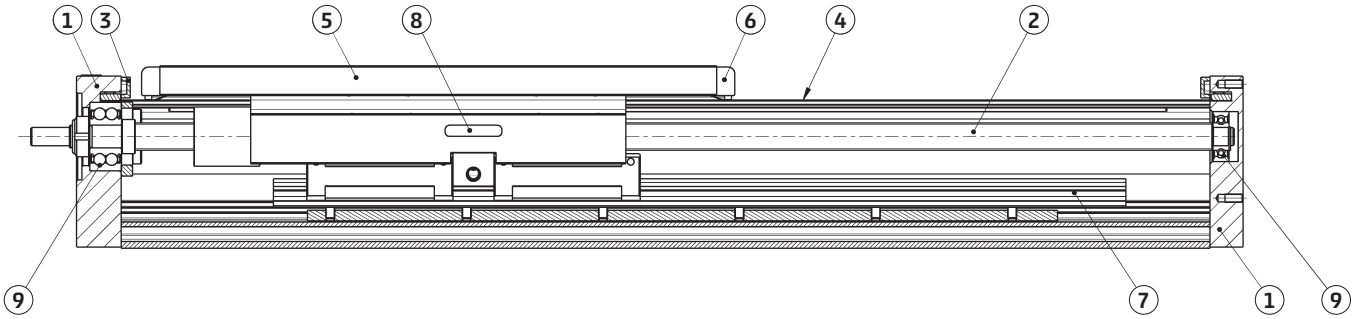
2. Reference documents

Before installation of the Series 5E electromechanical axis the installation engineer must ensure the following documentation is at disposal:

Document Title		Application
Instruction sheet (included in the package)		Basic information
Series 5E electromechanical axes		Electric actuation catalogue
Series DRCS and DRWB Drives for control of electrical actuation		Electric actuation catalogue
Series MTS and MTB motors for electrical actuation		Electric actuation catalogue
Series DRWB drives for brushless motors instruction sheet		Basic information
Series DRCS drives for stepper motors instruction sheet		Basic information
Documentation relating to application in the system and instructions for the other components	[1]	-

[1] - Only in case of installation within a machine or application, make sure to have all documentation relating to the application at hand, in order to assess any risks to persons, animals or property.

3. Components and materials



PARTS		MATERIALS
1	End cap	Aluminium alloy
2	Recirculating ball screw	Steel
3	End cap bumper	Technopolymer
4	Protection plate	Stainless steel
5	Slider	Aluminium alloy
6	Bumper	Technopolymer
7	Recirculating ball guide	Steel
8	Magnet	Neodymium
9	Bearing	Steel

N.B.:
Versions DS1 and DC1 are without recirculating ball screw and ball bearings.

4. Coding

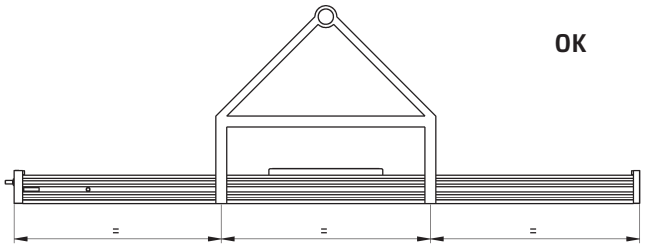
5E	S	050	BS	05P	0200	A	S	1

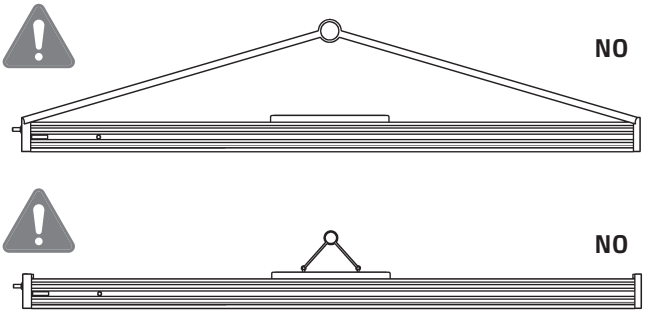
5E	SERIES
S	PROFILE S = square section
050	SIZE 050 = 50x50 mm 065 = 65x65 mm 080 = 80x80 mm
BS	TRASMISSION BS = recirculating ball screw
05P	SCREW PITCH 00P = without spindle (only for D version) 05 = 5mm 10 = 10mm 16 = 16mm
0200	TOTAL STROKE (TS) See table of mechanical characteristics (on the catalogue for min. and max. strokes)
A	VERSIONS A = standard axis D = support axis (dummy)
S	TYPE OF SLIDER S = standard C = short
1	NUMBER OF SLIDERS 1 = 1 slider

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 lifting of the Series 5E electromechanical axis in at least two places as shown in the figure below (left) is recommended.





- The proper handling of the product should be carried out according to the figure above, raising the profile of the Series 5E electromechanical axis with appropriate means.
- It is forbidden to lift the Series 5E electromechanical axis using the end caps.
- It is forbidden to lift the Series 5E electromechanical axis using the slider.
- It is recommended to lift the Series 5E electromechanical axis by placing the slider/sliders between the hoisting gears.
- It is recommended, before lifting the axis, to consider the weight of the component as there may be unbalance in the version 5E-HS due to the presence of the external guide and the relative side plate connected.

6. Storage

- The product should be stored in dry environment protected from the weather and external corrosive agents.
- Storage temperatures should be between -20°C and +80°C.

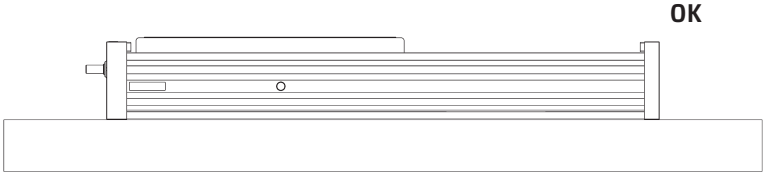
7. Installation

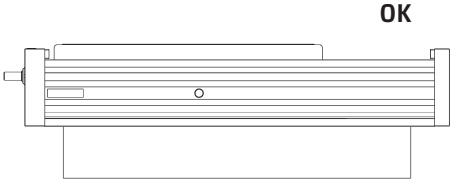
The assembly of the Series 5E electromechanical axis should only be carried out by specialized or trained staff under the guidance and supervision of qualified staff.

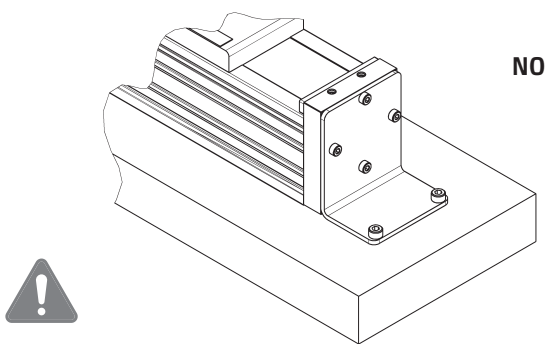
Fixing on a continuous surface

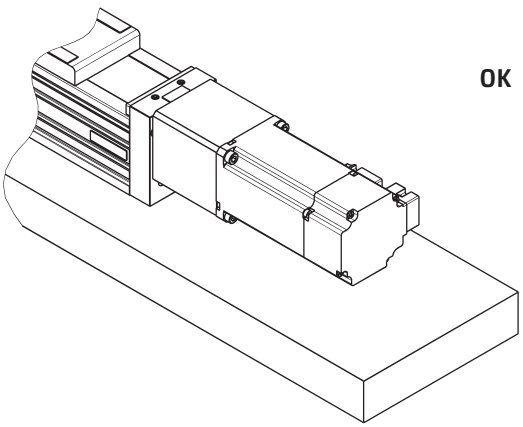
The Series 5E electromechanical axis may either be fixed on a continuous or contact surface.
In this particular case, the end caps of the Series 5E electromechanical axis lie on the same surface but must not be used for the fixing of the axis itself.

The drill holes on the sides of the end caps must only be used for the fixing of motor components (gearbox, motor and connection flanges).
Mechanical properties and flatness of the base plane may influence the life and accuracy of the product.





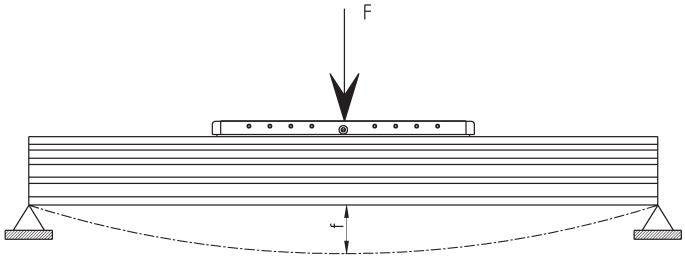




Fixing on 2 or more supports

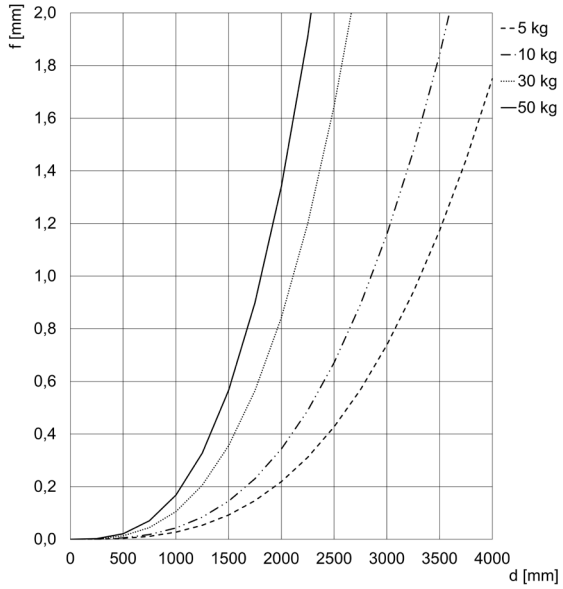
In order to guarantee the best performance, it is recommended to mount the Series 5E...BS electromechanical axis with its profile resting on a rigid structure of an even surface. The actuator can also be mounted resting on 2 or more support points, in this case it is necessary to respect the minimum center space between these points, as defined by the following formula:

$$f_{max} = c_{max} \cdot 5 \cdot 10^{-4}$$

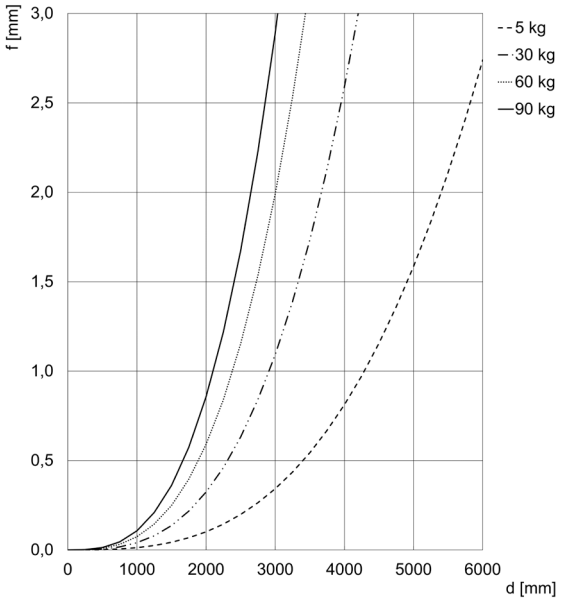


The following graphs indicate the deflection of the Series 5E electromechanical axis based on the distance between supports and the applied loads.

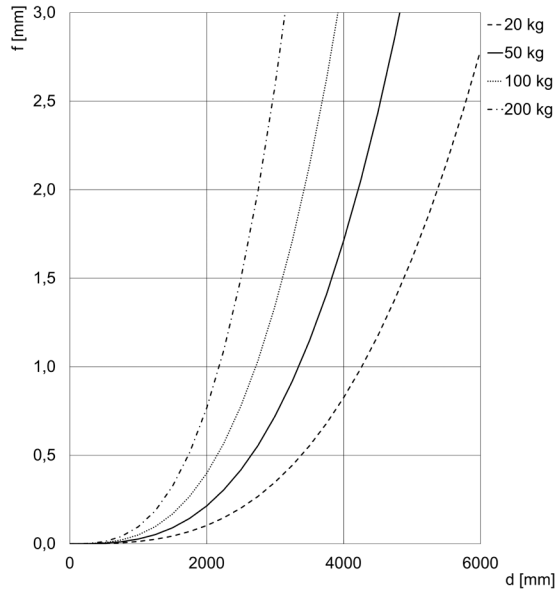
Series 5E size 50



Series 5E size 65

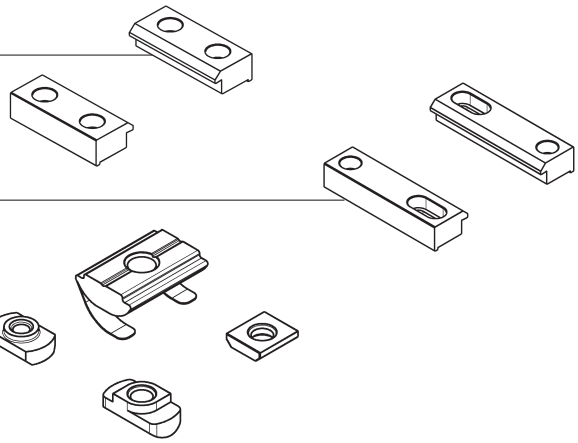


Series 5E size 80



Fixing accessories

For the fixing of the Series 5E electromechanical axis several types of fixing elements are available:
- BGS clamps (available in various versions)
- BGA clamps (available in various versions)
- PCV-5E slot nuts (available in various versions)



BGS clamps
Mod. BGS clamps are ideal for quick fixing on plates and interfaces. Using constant pitch between drill holes allows dimensions to be reduced.
Dimensions on electric actuation catalogue

BGA clamps
Mod. BGA clamps are ideal for quick fixing on modular profiles at variable distances.
Dimensions on electric actuation catalogue

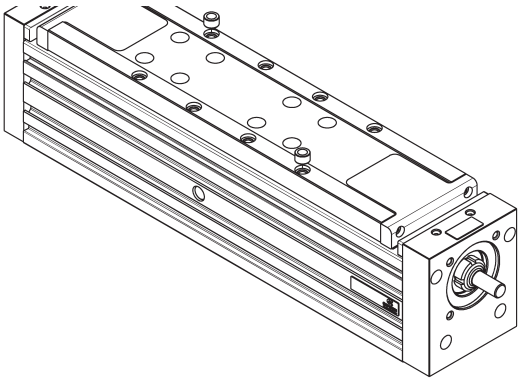
PCV-5E slot nuts
PCV-5E slot nuts are ideal for the side fixing of the axis or for connection of external accessories.
Dimensions on electric actuation catalogue

Connections to the slider

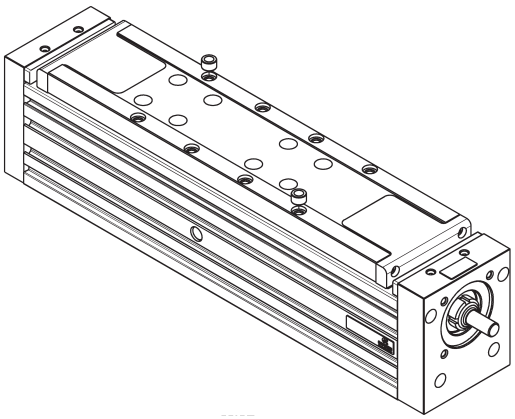
In order to guarantee the good positioning of any element attached to the slider, the use of the centring bushes provided with the Series 5E electromechanical axis is recommended.

Each interface in the Camozzi catalogue allows mounting through screws and centring bushes.

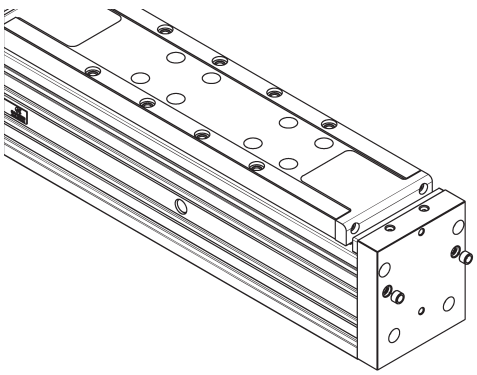
It is recommended to mount the two bushes on the opposite ends to obtain the best assembly precision.



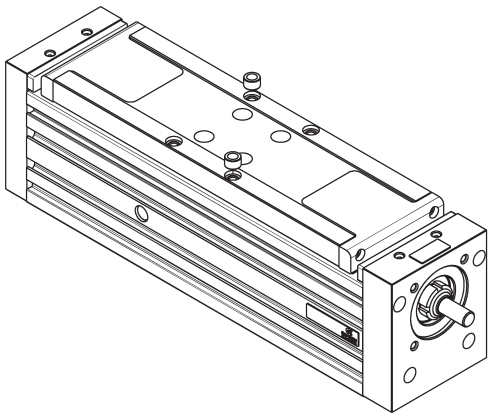
The slider of the Series 5E-AS1 (and 5E-DS1) electromechanical axis has 8 threaded holes (reinforced with steel threading) to fix the application.



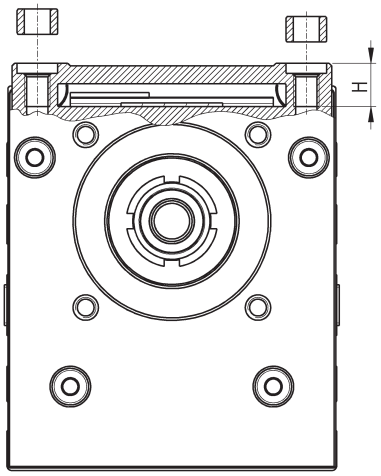
The end caps without motor of the Series 5E-BS electromechanical axis have 4 threaded holes to fix it to the application, two of which with bush seat.



The slider of the Series 5E-AC1 electromechanical axis has 4 threaded holes to fix the application for sizes 50 and 65, 8 holes for size 80..



Pay particular attention to the maximum depth of the indicated threading (H).



Size	Threading	H [mm]	C* [Nm]
50	M4x0.7	7.5	3.5
65	M5x0.8	8	5.5
80	M6x1	12	8
* Allowance of± 5%			

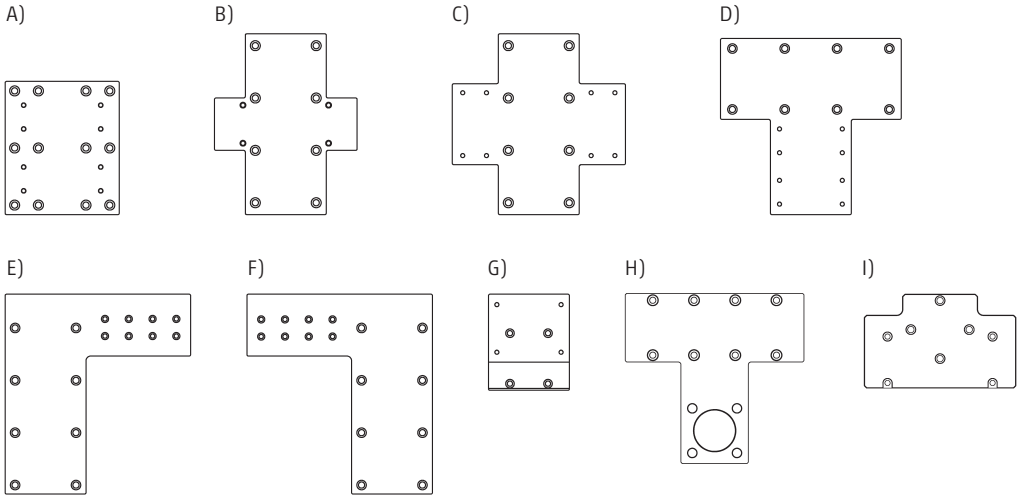
CAUTION: In the event of the indicated value (H) exceeded, this leads to product malfunctions.

Interfaces for multi-axis mounting

The Series 5E electromechanical axis may be used for the execution of Cartesian robot systems.
On both the slider and the interfaces there are places for the insertion of centring bushes to ensure orthogonality between the two elements.
To configure the Cartesian robot system, assembly interfaces for all of the Series 5E electromechanical axis' sizes are available.

A) Connection to flat surface
B) XY connection slider on slider
C) XY connection profile on slider
D) XY connection cantilever profile on slider
E) XY connection hollow cantilever profile on L type LL slider
F) XY connection hollow cantilever profile on L type LR slider
G) XY connection for Series 6E
H) XY connection on slider for Series 6E
I) YZ connection on slider for Series 5V

Available on the catalogue



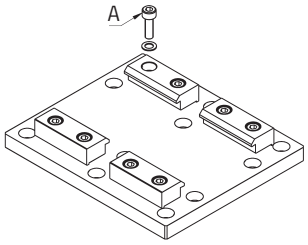
CAUTION: If there is connection between several Series 5E electromechanical axes in the various configurations shown on the catalogue, it is the responsibility of the client to ensure the proper functioning and sizing of the created machine.

Instructions for multi-axis mounting

The following is an explanation of the screws used in the kits for the execution of multi-axis systems using the Series 5E.

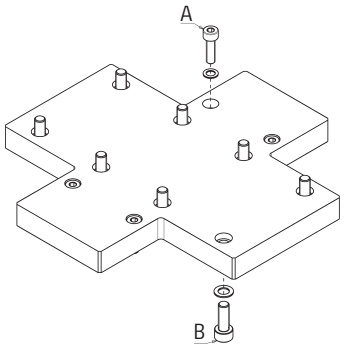
A) Connection to a flat surface

Mod.	A (DIN 912)
X-P50	M5x14
X-P65	M5x16
X-P80	M6x16



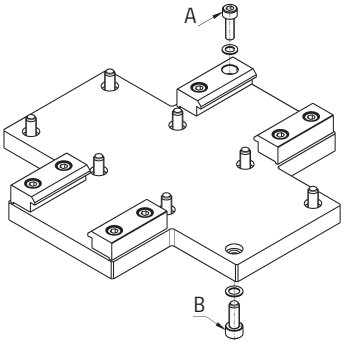
B) XY connection slider on slider

Mod.	A (DIN 912)	B (DIN 912)
XY-S65-S50	M4x14	M5x14
XY-S80-S50	M4x14	M6x16
XY-S80-S65	M5x14	M6x16



C) XY connection profile on slider

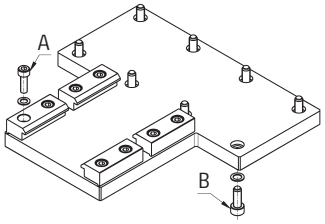
Mod.	A (DIN 912)	B (DIN 912)
XY-S65-S50	M5x16	M5x14
XY-S80-S50	M5x16	M6x16
XY-S80-S65	M5x16	M6x16



D) XY connection cantilever profile on slider

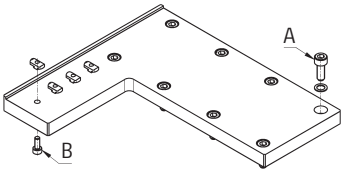
Mod.	A (DIN 912)	B (DIN 912)
XY-S65-P50-T	M5x16	M5x14
XY-S80-P50-T	M5x16	M6x16
XY-S80-P50-T	M5x16	M6x16

N.B. : Pay particular attention to the assembly with FRH and FS models



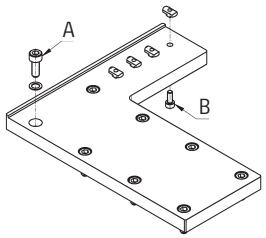
E) XY connection hollow cantilever profile on L type LL slider

Mod.	A (DIN 912)	B (DIN 912)
XY-S65-LL50	M5x14	M4x10
XY-S80-LL50	M5x16	M4x10
XY-S80-LL65	M5x16	M4x10



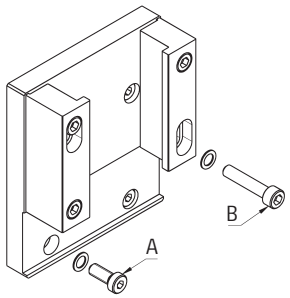
F) XY connection hollow cantilever profile on L type LR slider

Mod.	A (DIN 912)	B (DIN 912)
XY-S65-LR50	M5x14	M4x10
XY-S80-LR50	M5x16	M4x10
XY-S80-LR65	M5x16	M4x10



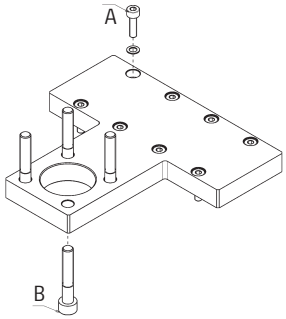
G) XY connection for Series 6E

Mod.	A (DIN 7984)	B (DIN 912)
XY-S65-6E32	M5x14	M4x22
XY-S65-6E40	M5x14	M5x25
XY-S80-6E32	M6x16	M4x25
XY-S80-6E40	M6x16	M5x25
XY-S80-6E50	M6x16	M6x30



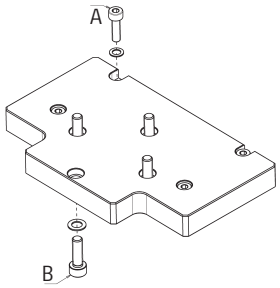
H) XY connection on slider for Series 6E

Mod.	A (DIN 912)	B (DIN 912)
XY-S50-45N32	M6x35	M4x14
XY-S65-45N32	M6x35	M5x14
XY-S65-45N40	M6x40	M5x14
XY-S65-45N50	M8x40	M5x14
XY-S80-45N40	M6x40	M6x16
XY-S80-45N50	M8x40	M6x16
XY-S80-45N63	M8x40	M6x16



I) YZ connection on slider for Series 5V

Mod.	A (DIN 912)	B (DIN 912)
YZ-65-5V50	M5x14	M5x16
YZ-65-5V65	M5x14	M6x18
YZ-80-5V50	M6x18	M5x16
YZ-80-5V65	M6x18	M6x18
YZ-80-5V80	M6x18	M8x20

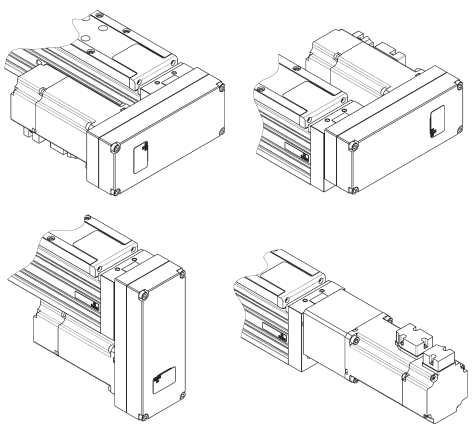


Motor connections

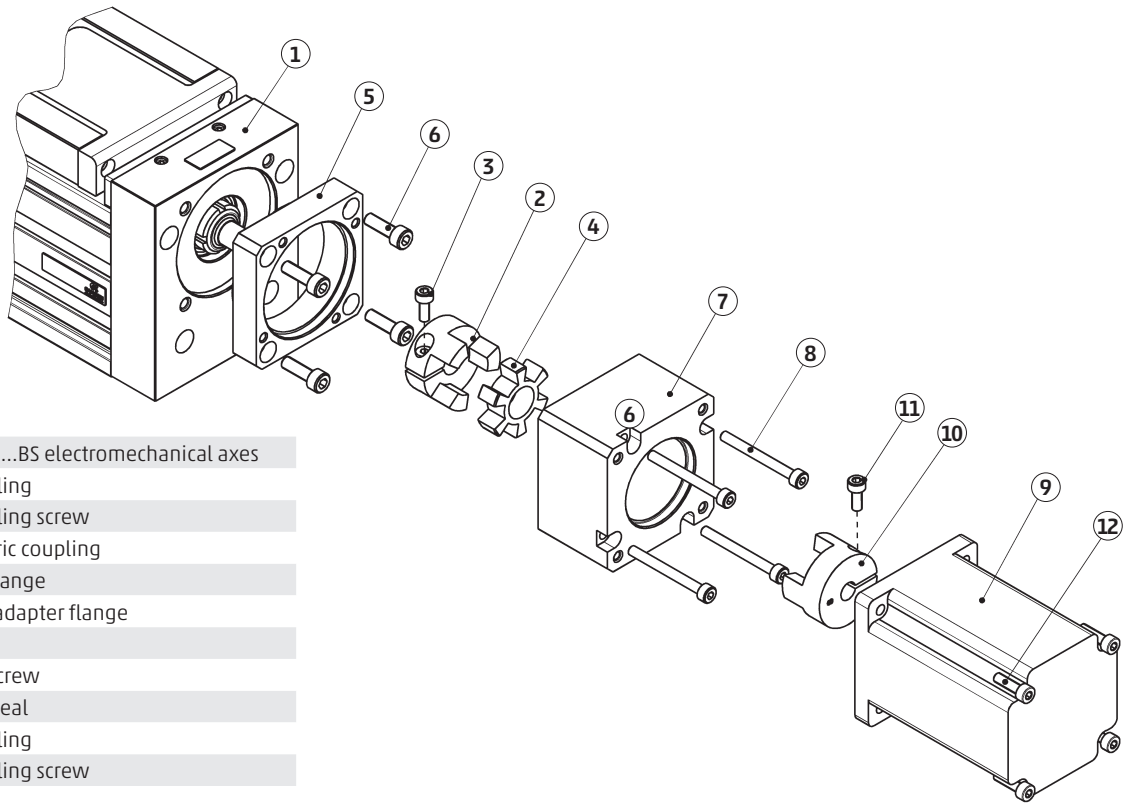
The motor connections of Series 5ES...BS axis allow the motor to be mounted in line or parallel to the axis. The figure below indicates the possible connections on the end caps of the axis.

"Standard" connections that allow to mount the motor in line, are called AM connections (figure A), while the connections for parallel mounting are called PM (figure B).
Motion transmission is ensured through locking sets or couplings.
See "Locking set" and "Elastic expansion coupling" for more information.

Motor configuration		
Size	**Kit**	**Motor**
50	AM-5E-50-100W	MTB-010-...
	AM-5E-50-0024	MTS-24-...
	PM-5E-50-100W	MTB-010-...
	PM-5E-50-0024	MTS-24-...
65	AM-5E-65-400W	MTB-040-...
	AM-5E-65-0024	MTS-24-...
	PM-5E-65-400W	MTB-040-...
	PM-5E-65-0024	MTS-24-...
80	AM-5E-80-750W	MTB-075-...
	AM-5E-80-0024	MTS-24-...
	PM-5E-80-400W	MTB-040-...
	PM-5E-80-750W	MTB-075-...
	PM-5E-80-0024	MTS-24-...

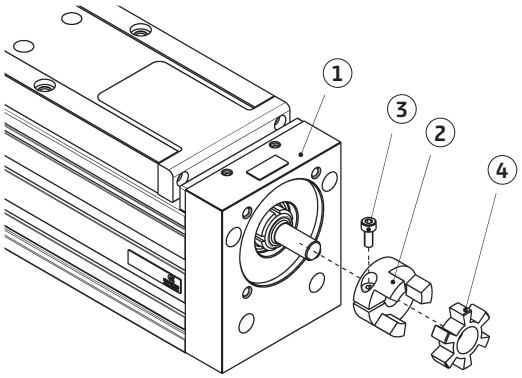


Installation with gearbox in line

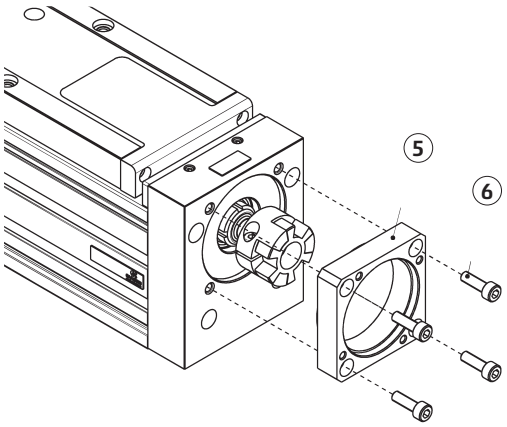


1	Series 5ES...BS electromechanical axes
2	Half coupling
3	Half coupling screw
4	Elastomeric coupling
5	Adapter flange
6	Screw of adapter flange
7	Adapter
8	Adapter screw
9	Gearbox seal
10	Half coupling
11	Half coupling screw
12	Gearbox

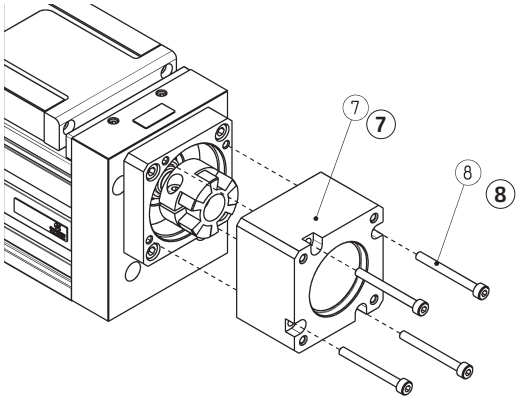
STEP 1
After having positioned the Series 5ES...BS electromechanical axis (1) properly, insert the half coupling (2) on the shaft of the motor end cap and block it with the screw (3) as indicated in section "Mounting of elastic coupling". Position the elastomer insert (4).



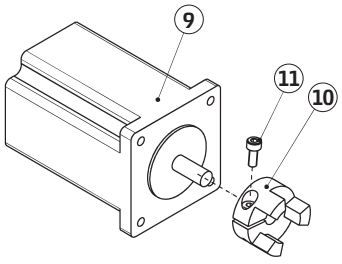
STEP 2
Assemble the adapter flange (5), if present, to the axis using the centring diameter. Block the motor flange (5) with the screws (6) supplied.



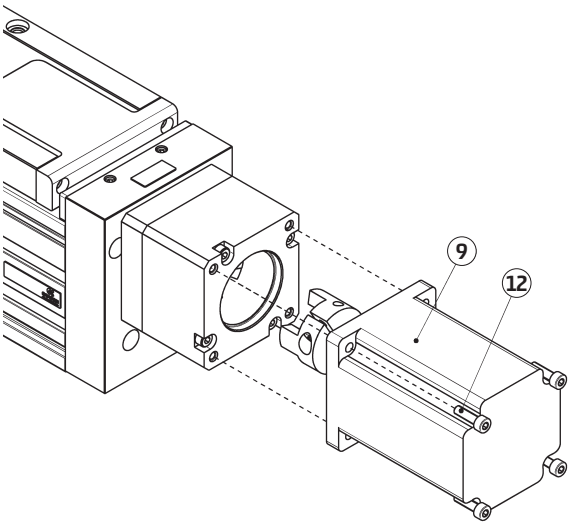
STEP 3
Assemble the connection adapter (7) on the adapter flange (5) if present or on the end cap of the electromechanical axis (1), using the centring diameter. Block everything with the screws (8) supplied.



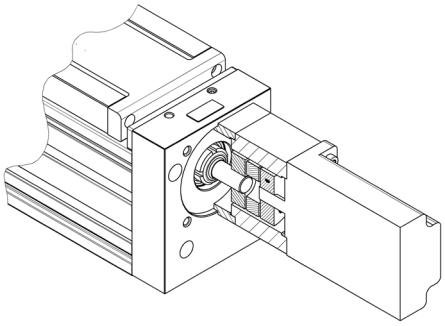
STEP 4
After having positioned the electric motor (9) properly, insert the remaining half coupling (10) on the motor shaft and block with the screw (11).



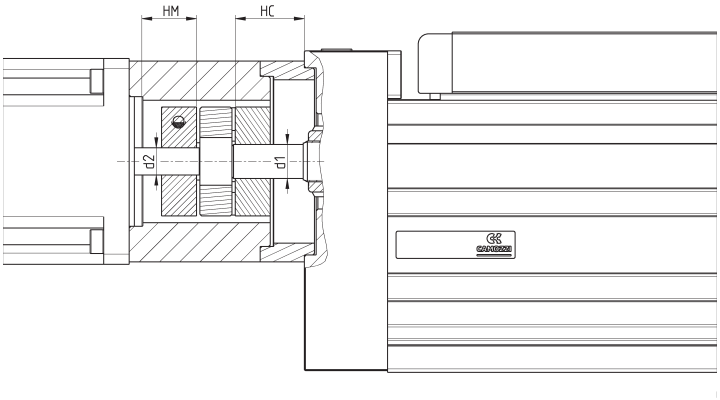
STEP 5
Assemble the motor unit (9) with the cylinder unit using the centring diameter, paying special attention to properly couple the half couplings. Block the motor unit with the screws (13) supplied.



Flexible coupling assembly



ELECTRIC MOTOR Series 5ES...BS electromechanical axes



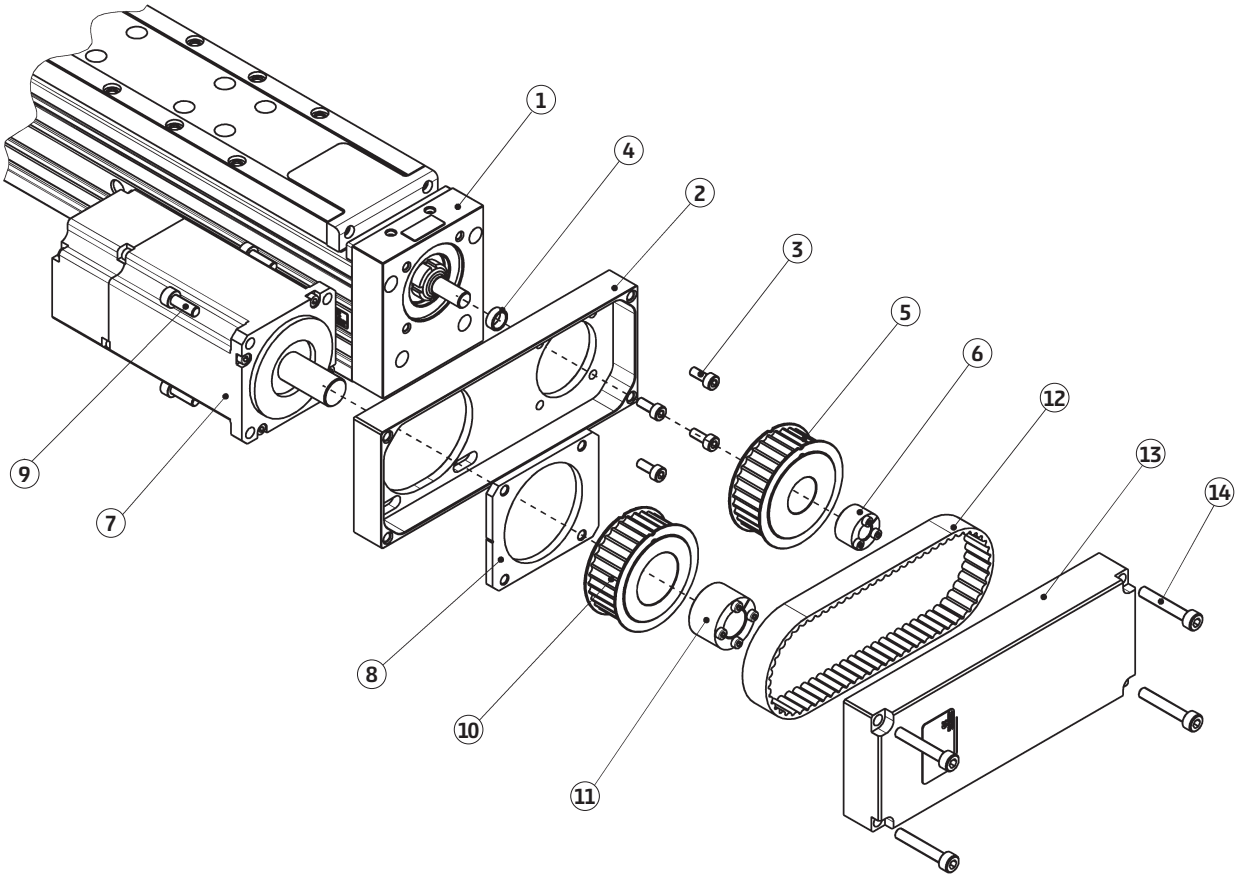
HC: distance between centring of the rear end cap and the internal stop of the flexible coupling.

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.

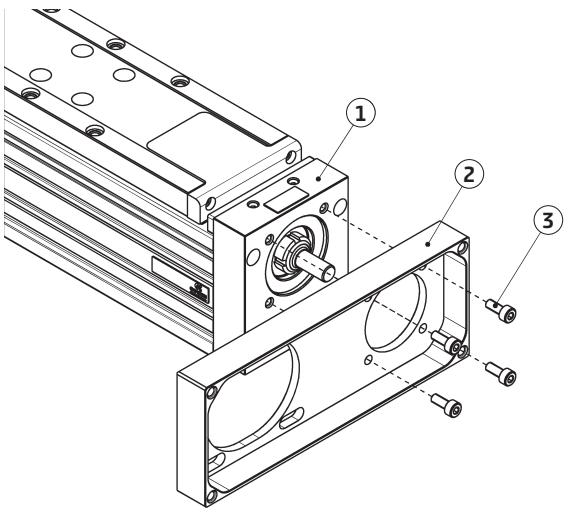
MODEL	AXIS SIZE	MOTOR	HC [mm]	HM [mm]	TAGLIA GIUNTO	"d1 x d2 [mm] x [mm]"	MS [Nm]	SCREW
AM	**50**	**MTB-010**	22	21.5	5	8 x 8	2	M3
AM	**50**	**MTS-24**	22	19	5	8 x 8	2	M3
AM	**65**	**MTB-040**	19.5	27	10	8 x 14	4	M4
AM	**65**	**MTS-24**	19.5	19	5	8 x 8	2	M3
AM	**80**	**MTB-075**	20.5	37	20	10 x 19	8	M5
AM	**80**	**MTS-24**	20.5	19	10	10 x 8	4	M4

Parallel installation

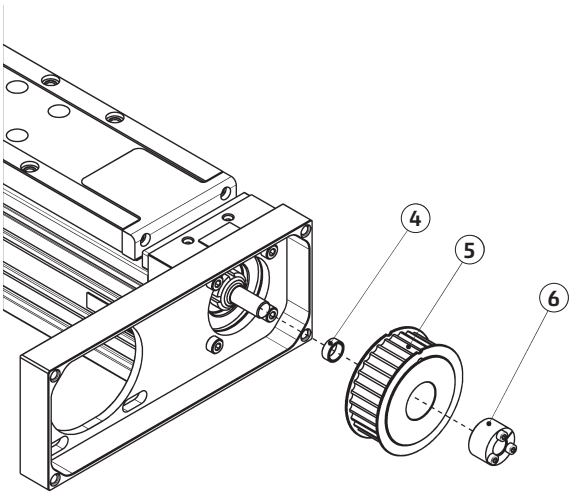


1	Series 5ES...BS electromechanical axes	**8**	Motor fixing flange
2	Front flange	**9**	Motor fixing screws
3	Front flange blocking screw	**10**	Motor pulley
4	Spacer bushing	**11**	Self-centering locking set (motor)
5	Axis pulley	**12**	Toothed belt
6	Self-centering locking set (axis)	**13**	Rear flange
7	Electric motor	**14**	Screws to close the flange

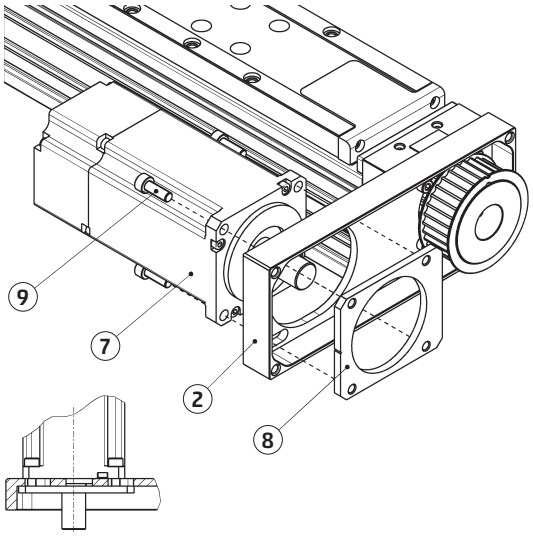
STEP 1
After having positioned the axis (1) properly, assemble the front flange (2) on the motor side of the axis, blocking the flange with the screws (3) supplied.



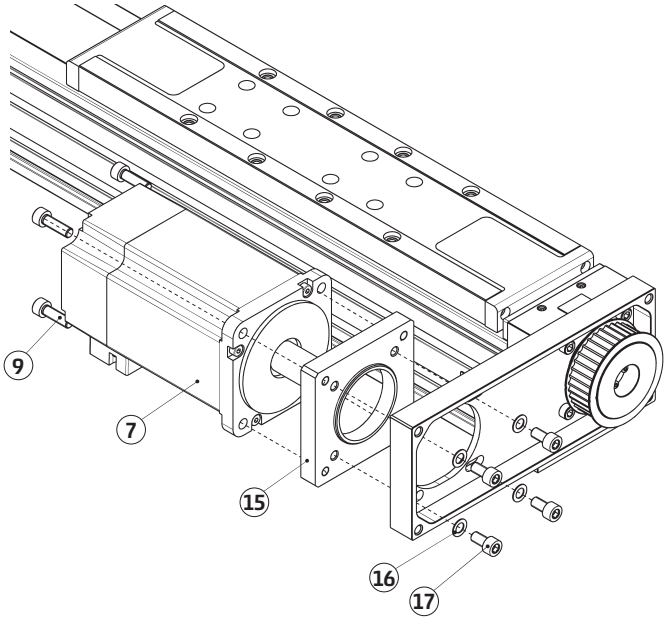
STEP 2
Assemble the spacer bushing (4), if present, on the curb of the axis' shaft so that it abuts the curb. Assemble the pulley (5) and locking set (6), following the indications given in paragraph "Mounting of self-centering locking set and adjustment of pulley".



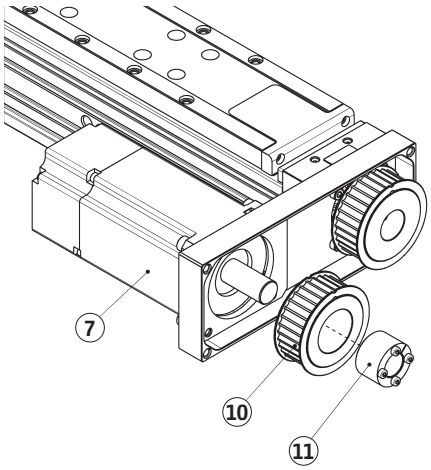
STEP 3 A
With fixing flange (8):
Position the electric motor (7) in the hole of the front flange (2) using the cenetring diameter. Fix the flange (8) to the electric motor (7) paying attention to the right direction, the upper side is marked on the flange.
Fix with the screws (9) supplied in such a way the motor-flange unit can move along the hole but cannot rotate.



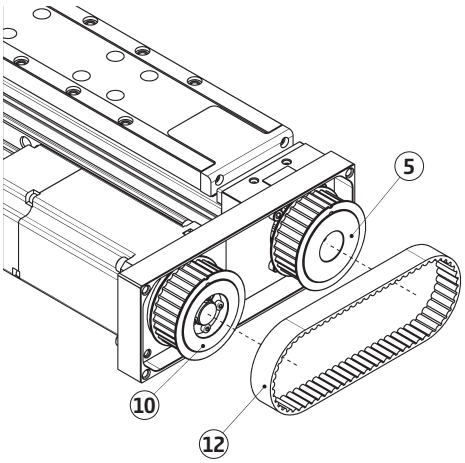
STEP 3 B
With adapter flange (15):
Connect the electric motor (7) with the adapter flange (15) using the centring diameter and the screws (9) supplied.
Place the electric motor-adapter flange unit in the hole of the front flange (2) and fix with the screws and washers (16-17) in such a way the motor-flange unit can move along the hole but cannot rotate.



STEP 4
Assemble the pulley (10) and locking set (11), following the indications given in paragraph "Mounting of self-centring locking set and adjustment of pulley" on the shaft of the electric motor (7).

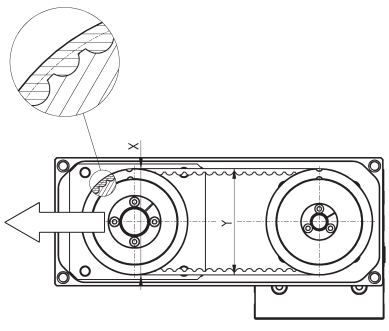


STEP 5
Move the electric motor within the hole in such a way to reduce the center distance with the electromechanical axis.
Place the toothed bel (12) on the pulleys (5-10) paying attention that the teeth of the belt and the pulleys mesh correctly.

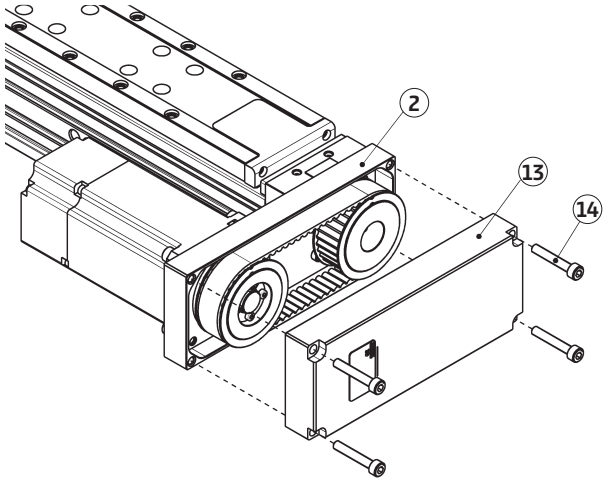


STEP 6
Pull the toothed belt, moving the motor, along the hole in the flange, to the opposite direction of the axis with tensioning force F indicated in the table. When the belt is pulled correctly, the width of the strands (Y) will be the same as the width close to the pulley (X).
Make sure the belt is meshed correctly by turning the pulleys slowly and checking if the belt doesn't loosen.

Mod.	F [N]
PM-5E-50-0100	65
PM-5E-50-0024	65
PM-5E-65-0400	90
PM-5E-65-0024	90
PM-5E-80-0400	90
PM-5E-80-0750	110
PM-5E-80-0024	110



STEP 7
Close the front flange (2) with the rear flange (13), tightening everything with the screws (14) supplied.



List of components for installation with motor in parallel

		PM-5E-50-0100	PM-5E-50-0024
3	Front flange blocking screws	M4x8 UNI 5931 SCREW	M4X8 UNI 5931 SCREW
4	Spacer bushing	8x10x4 BUSHING	-
6	Self-centering locking set (axis)	8-18 SELF-CENTERING LOCKING SET	8-18 SELF-CENTERING LOCKING SET
9	Motor fixing screws	M3X20 UNI 5931 SCREW	M4X14 UNI 5931 SCREW
11	Self-centering locking set (motor)	8-18 SELF-CENTERING LOCKING SET	8-18 SELF-CENTERING LOCKING SET
14	Flange closing screws	M4X20 UNI 5931 SCREW	M4X20 UNI 5931 SCREW
16	Washers for adapter flange screws	-	M3 WASHER
17	Adapter flange screws	-	M3X10 UNI 5931 SCREW

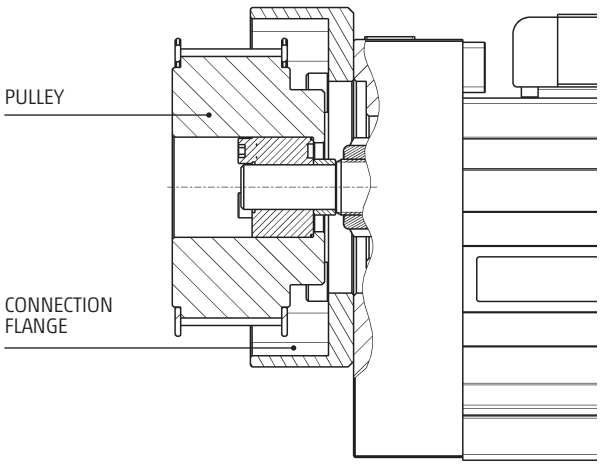
		PM-5E-65-0400	PM-5E-65-0024
3	Front flange blocking screws	M4X10 UNI 5931 SCREW	M4X10 UNI 5931 SCREW
4	Spacer bushing	8X10X4 BUSHING	8X10X4 BUSHING
6	Self-centering locking set (axis)	8-18 SELF-CENTERING LOCKING SET	8-18 SELF-CENTERING LOCKING SET
9	Motor fixing screws	M5X16 UNI 5931 SCREW	M4X16 UNI 5931 SCREW
11	Self-centering locking set (motor)	14-26 SELF-CENTERING LOCKING SET	8-18 SELF-CENTERING LOCKING SET
14	Flange closing screws	M5X30 UNI 5931 SCREW	M5X30 UNI 5931 SCREW
16	Washers for adapter flange screws	-	-
17	Adapter flange screws	-	-

		PM-5E-80-0400	PM-5E-80-0750	PM-5E-80-0024
3	Front flange blocking screws	M5X14 UNI 5931 SCREW	M5X14 UNI 5931 SCREW	M5X14 UNI 5931 SCREW
4	Spacer bushing	10X12X8 BUSHING	10X12X8 BUSHING	10X12X8 BUSHING
6	Self-centering locking set (axis)	10-20 SELF-CENTERING LOCKING SET	10-20 SELF-CENTERING LOCKING SET	10-20 SELF-CENTERING LOCKING SET
9	Motor fixing screws	M5X16 UNI 5931 SCREW	M6x20 UNI 5931 SCREW	M4X16 UNI 5931 SCREW
11	Self-centering locking set (motor)	14-26 SELF-CENTERING LOCKING SET	19-35 SELF-CENTERING LOCKING SET	8-18 SELF-CENTERING LOCKING SET
14	Flange closing screws	M5X30 UNI 5931 SCREW	M5X30 UNI 5931 SCREW	M5X30 UNI 5931 SCREW
16	Washers for adapter flange screws	-	M6 WASHER	-
17	Adapter flange screws	-	M6X12 UNI 5931 SCREW	-

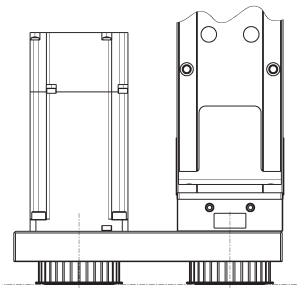
Installation of self-centering locking set and pulley adjustment

Make sure that all contact surfaces are clean and slightly oiled (do not use "Molykote" and molybdenum disulphide based lubricants).
Place the locking set on the hub of the pulley, paying attention to maintain the entire locking set within the length of the hub, making the locking set abut the pulley.
Assemble this unit on the shaft of the electromechanical axis, inserting the locking set until it abuts the special bushing or the shoulder screw.
Then fix the locking set on the shaft with the screws, respecting the tightening torque (MS) indicated in the table.
Gradually and uniformly tighten the screws, passing from one to the opposite one (crossed pattern) with the following method:
- 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
- Repeat this operation up to reaching the indicated tightening torque (MS) using a toque wrench
- Make sure all screws are tightened at the appropriate tightening torque (MS) indicated.

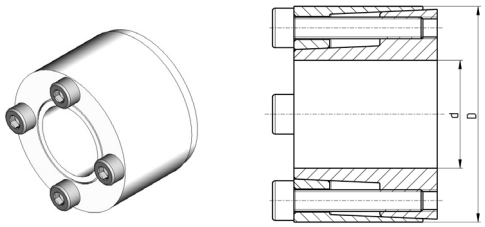
In case the locking set is reused, it is necessary to oil the screws and the conical parts before proceeding with assembly.



For the assembly of pulley and locking set on the motor shaft, repeat the operations explained on the previous page, paying attention to place the pulley in such a way it is aligned with the keyed pulley on the shaft of the electromechanical axis.
Tighten as indicated on the previous page.



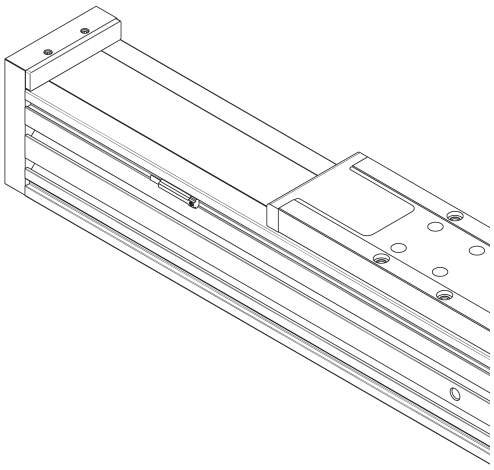
Mod.	d x D	MS [Nm]
COT-1800-0800	8x18	1,2
COT-2000-1000	10x20	1,2
COT-2600-1400	14x26	2,1
COT-3500-1900	19x35	4,9



Fixing of the sensors

On all sizes, the Series 5E electromechanical axis provides a slot for CSH sensors for front-feed insert. There is also an internal magnet in order to guarantee the sensors' reading.

The magnet for Series CSH proximity switch inside the Series 5E electromechanical axis is positioned on both sides, near the special slot.



8. Maintenance

Cleaning
For the cleaning of the Series 5E electromechanical axis, the use of solvents and aggressive cleaning products is forbidden, as they may damage seals or aluminium elements because of chemical incompatibility.

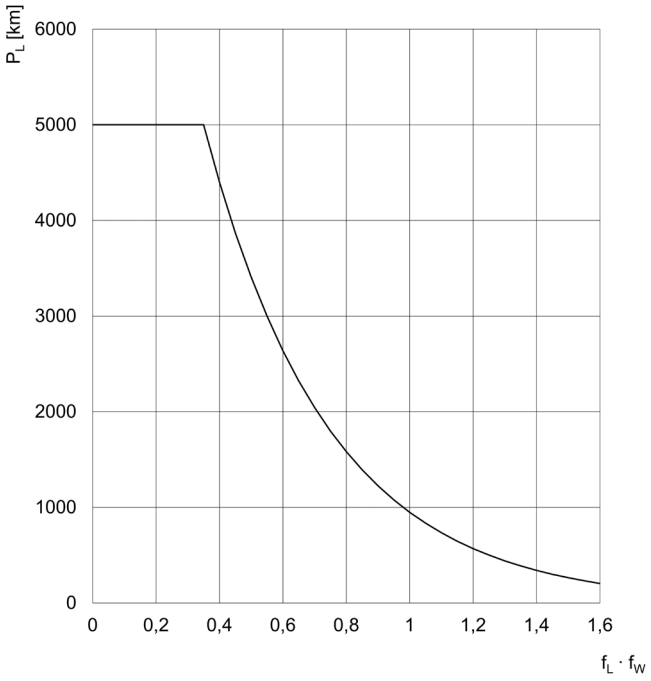
It is however possible to use mild water-soluble detergents (Nonetheless, check the compatibility of the unit's materials with such cleaning products.)

CAUTION: disconnect all electrical components from the electrical supply and suitably protect all connectors and electrical contacts against humidity.

Guide lubrication
The Series 5ES...BS electromechanical axis is supplied with already lubricated guides.
It is necessary to relubricate the blocks, by means of a specifically-designed system, directly by the slider through a hole on the extruded profile.
The chart on the right allows to determine the relubrication stroke PL according to the factors fl and fw, that depend on the application.
The load factor fl is obtained as indicated more in detail on the catalogue, here below you can find the table for the coefficient fw.

SAFETY COEFFICIENT OF THE GUIDE fw

Application	Acceleration [m/s²]	Speed [m/s]	Coefficient fw
light	< 10	< 1	1 ÷ 1.5
normal	10 ÷ 25	1 ÷ 2	1.5 ÷ 2.5
heavy	> 25	> 2	2.5 ÷ 3.5

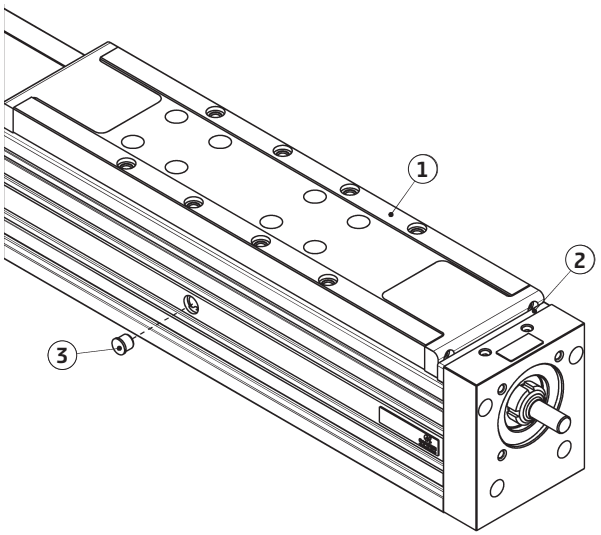


Do not use greases with solid additives (like for example graphite or MoS2)!

In presence of dirt, vibrations and/or shock loads, it is recommended to relubricate more often. Even in normal conditions of use, relubrication must be performed after maximum 1 year, due to ageing of the grease.

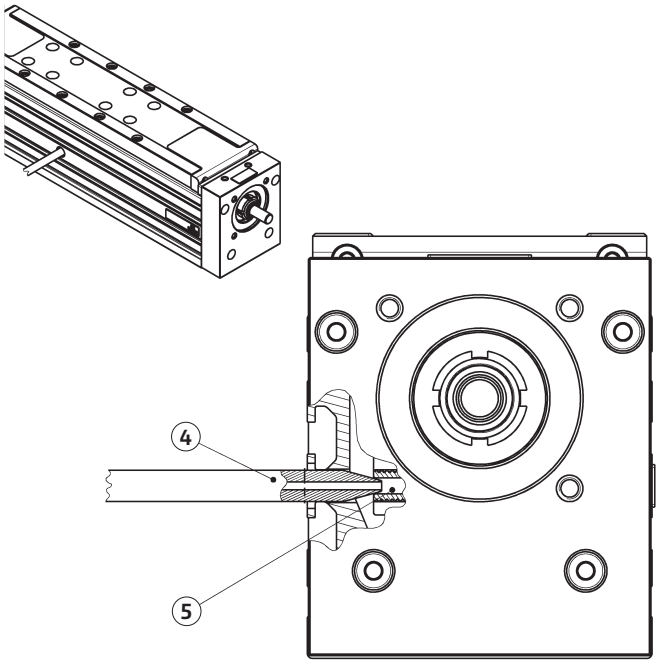
Guide lubrication instructions

STEP 1
Slowly move (<100mm/s) the slider (1) to position 0, until the slider touches the end cap bumper (2).
Then remove the protection plug (3) inserted on the side of the actutator.



STEP 2
Insert the lubrication nozzle (4) through the hole, coming into contact with the grease nipple (5) on the slider.
Then pump the grease inside the slider in the quantity indicated in the table.

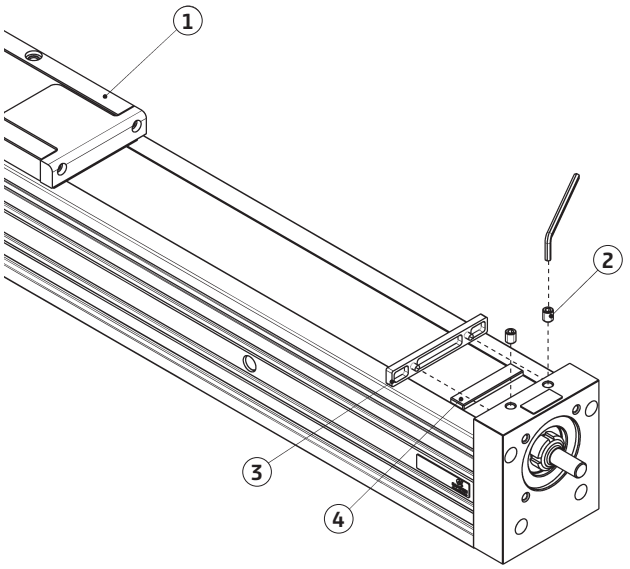
STEP 3
Extract the lubrication nozzle and put the protection plug back again.



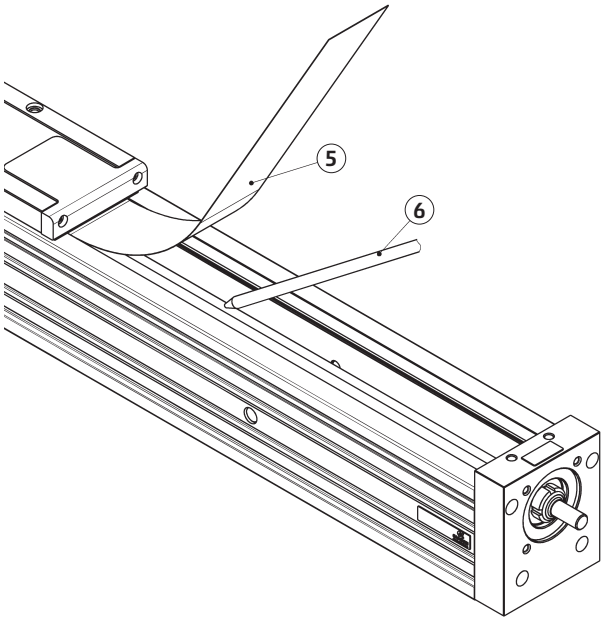
Size	Version	Initial lubrication [cm^3]	Replenishment [cm^3]
50	AC	0,26	0,08
50	AS	0,22	0,16
65	AC	0,75	0,25
65	AS	1,45	0,50
80	AC	1,52	0,45
80	AS	2,12	0,90

Ball screw lubrication instructions

STEP 1
Slowly move (<100mm/s) the slider (1) to a stroke of at least 200 mm (for shorter strokes arrive until the stroke's end). Remove the nuts (2) inserted on the cap with motor and then remove the end cap bumper (3) and the fixing strip (4) of the plate.

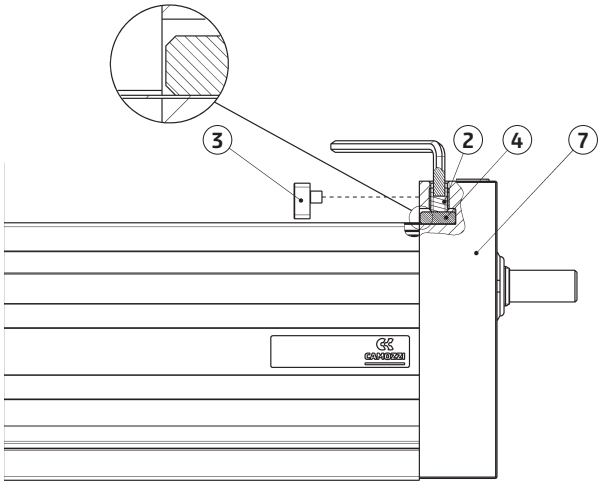


STEP 2
Lift the protection plate (5) paying attention to the sharp edges. By means of the lubrication nozzle (6), spread the grease along the visible section of the recirculating ball screw, except for the first 20mm.



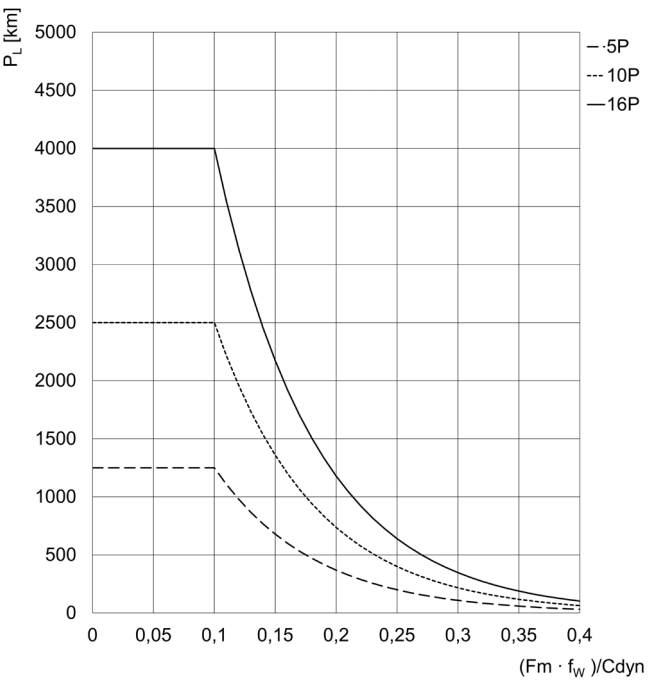
STEP 3
Reposition the plate and the fixing strip (4) paying attention it doesn't protrude from the end cap (7) and fully tighten the nuts (2). Put the end cap bumper (3) back in its place.

STEP 4
Perform some cycles (at least 3) at low speeds (< 100 mm/s) before resuming usual operating cycle.



SAFETY COEFFICIENT OF THE SCREW fw

Application	Acceleration [m/s²]	Speed [m/s]	Duty cycle	Coefficient fw
light	< 5.0	< 0.5	< 35%	1 ÷ 1.25
normal	5.0 ÷ 15.0	0.5 ÷ 1.0	35% ÷ 65%	1.25 ÷ 1.5
heavy	> 15.0	> 1.0	> 65%	1.5 ÷ 3.0

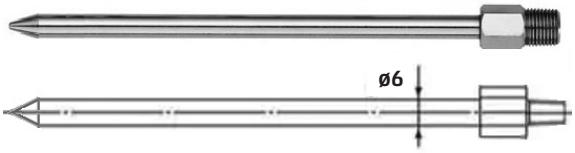


Do not use greases with solid additives (like for example graphite or MoS2)!

In presence of dirt, vibrations and/or shock loads, it is recommended to relubricate more often. Even in normal conditions of use, relubrication must be performed after maximum 1 year, due to ageing of the grease.

Type of lubricant
To lubricate Series 5E electromechanical axis, it is recommended to use grease with NLGI 2 grade lithium soap additive that is compatible with grease of type NYE Lubricants Rheolube 363 AX 1.

Type of grease gun
It is necessary to use a grease gun of the type indicated in the figure.



9. Resolution of any failure

FAILURE	POSSIBLE CAUSE	POSSIBLE SOLUTION
Slider does not move	The screw connection on the slider is too long	Check that the "H" value indicated in the manual "Connection on the slider" has been complied with.
	Applied load heavier than that stated in the catalogue	Reduce the load or replace the unit with a bigger size that is able to support the load
	Applied load heavier than that stated in the catalogue	Return the Series 5ES...BS electromechanical axis to Camozzi Automation S.p.A. for repair or replacement
	Breakage of the toothed belt	Verificare il serraggio del calettatore e del morsetto riduttore
Positioning error	Slippage of motor connections	Check the tightening of the locking set and the clamp of the gearbox
	Wear	Return the Series 5ES...BS electromechanical axis to Camozzi Automation S.p.A. for repair or replacement
	Sensor not reading	Check that the positioning and connection of the sensors are correct, see manual
Protection plate has waves	Wear	Replace the protection plate
	Excessive vibrations	Manually and visually check that the plate is in place and is protected on its ends
Overheating of the unit	Excessive torque absorption because of incorrect fixings	Check that the fixings are not causing the misalignment or twisting of the unit

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

10. Dismantling and parts replacement

In case of anomalies of the Series 5E electromechanical axis or if it is necessary to replace groups of internal components, contact the Camozzi Automation S.p.A. After-Sales Service that will evaluate the level of intervention and the appropriate counter-measures to take. Disassembly and replacement of components should only be carried by Camozzi Automation S.p.A. staff. For any maintencance that involves opening the Series 5E electromechanical axis, please contact the technical assistance.

11. Disposal

In the Series 5E electromechanical axis there is:
- Aluminium alloy
- Steel
- Plastic material
- Grease
- Epoxy resin

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

12. Technical information

According to Electric actuation catalogue

MIX COMUNICAZIONE - MI

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