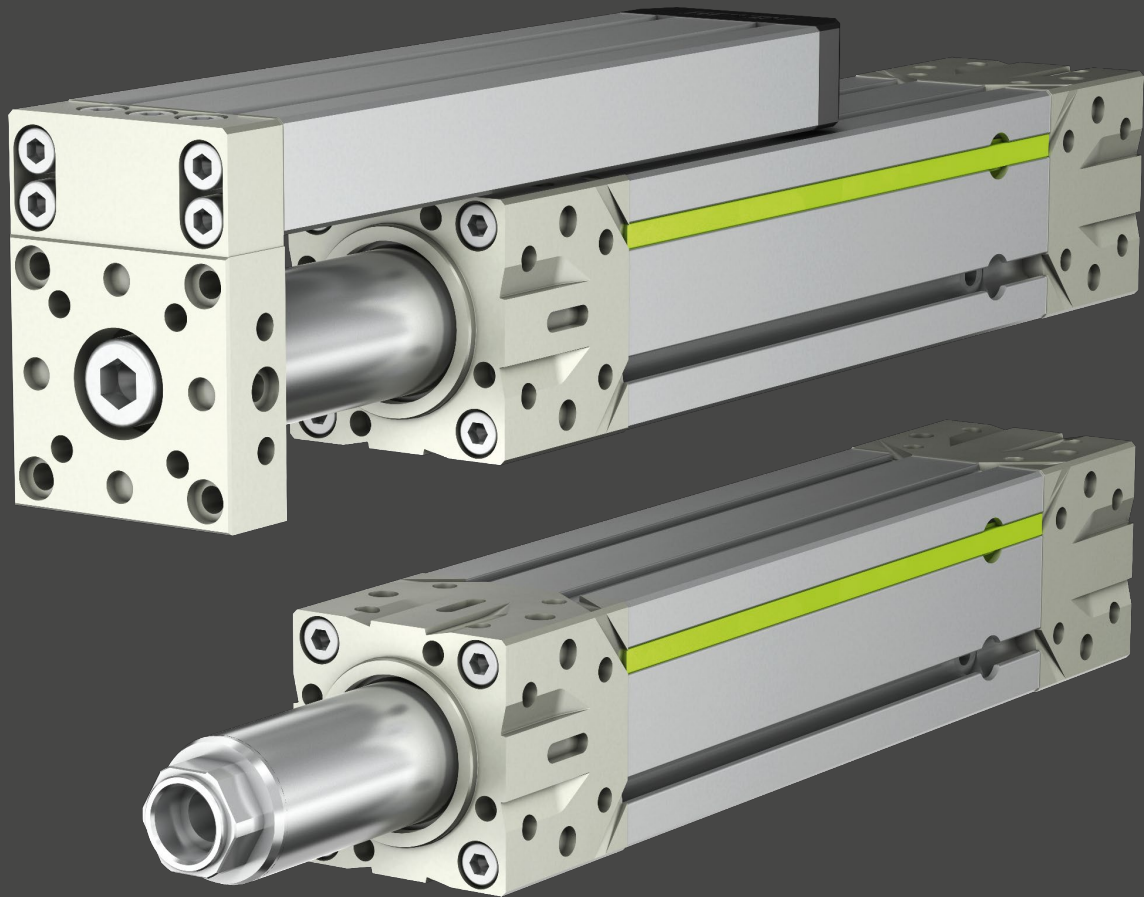


HIWIN®



ASSEMBLY INSTRUCTIONS

Electric actuators EA

EA-01-0-EN-2509-MA

Valid from serial no. EA 000 0041000

Legal information

HIWIN GmbH

Brücklesbünd 1

77654 Offenburg

Germany

Fon +49 781 93278-0

info@hiwin.de

hiwin.de

All rights reserved.

Full or partial reproduction is not permitted without our authorisation.

These assembly instructions are protected by copyright. Written permission is required from HIWIN GmbH for any duplication, publication in whole or in part, alterations or abridgement.

Contents

1	General	4
1.1	About these assembly instructions	4
1.2	Presentation and layout conventions used in these assembly instructions	4
1.3	Warranty and liability	6
1.4	Manufacturer information	6
1.5	Product monitoring	6
2	Basic safety notices	7
2.1	Proper use	7
2.2	Reasonably foreseeable misuse	7
2.3	Conversions or modifications	8
2.4	Residual risks	8
2.5	Requirements for personnel	8
2.6	Safety equipment	8
2.7	Labelling on the product	8
3	Description of electric actuators EA-S	9
3.1	Application	9
3.2	Main components	9
3.3	Function description	10
3.4	Order code for electric actuators EA-S	11
4	Transport and setup	13
4.1	Delivery	13
4.2	Transport to the installation location	13
4.3	Installation location requirements	14
4.4	Storage	14
4.5	Unpacking and setup	14
5	Mounting and connection	16
5.1	Mounting the electric actuators	18
5.2	Mounting the payload	25
5.3	Mounting the limit switches	26
5.4	Mounting the drive adaptation	27
5.5	Mounting the slide guide	39
6	Maintenance and cleaning	44
6.1	Cleaning the electric actuator	46
7	Faults	47
7.1	Faults on the electric actuator	47
8	Disassembly	49
9	Disposal	51
10	Installation certificate	52

1 General

1.1 About these assembly instructions

These assembly instructions are intended for planners, developers and operators of systems who plan and install the named products as machine elements. They are also intended for persons who carry out the following work in connection with the named electric actuators:

- Transport
- Mounting
- Electrical connection, including connection to the higher-level control system
- Integration into a safety system
- Retrofitting or upgrading
- Setup
- Commissioning
- Operation
- Cleaning
- Maintenance
- Troubleshooting
- Decommissioning, disassembly and disposal

1.1.1 Requirements

We assume that

- The operating personnel have been instructed in the safe operation of the named products and have read and understood these assembly instructions in full.
- Maintenance personnel maintain and repair the products in such a way that they present no danger to persons, the environment or property.

1.1.2 Availability

These assembly instructions must always be available to all persons working with or on the named products. The assembly instructions are available at hiwin.de.

1.2 Presentation and layout conventions used in these assembly instructions

1.2.1 Instructions

Instructions are provided in sequential order and identified with a triangle symbol. The results of the actions are accompanied by a tick symbol.

Example:

- ▶ Instruction 1
- ▶ Instruction 2
- ✓ Result

1.2.2 Lists

Lists are identified through the use of bullet points.

Example:

The products must not be operated:

- Outdoors
- In areas where there is a risk of explosion
- ...

1.2.3 Presentation of safety notices

Safety notices are always indicated by a signal word and sometimes with a hazard-specific symbol (see section [1.2.4 Symbols used](#)).

The following signal words/hazard levels are used:

 **Danger!** Immediate danger!

 Non-compliance with the safety notices will result in severe or fatal injury!

 **Warning!** Potentially dangerous situation!

 Non-compliance with the safety notices could result in severe or fatal injury!

 **Attention!** Potentially dangerous situation!

 Non-compliance with the safety notices could result in moderately severe or minor injury!

 **Caution!** Potentially dangerous situation!

 Non-compliance with the safety notices could result in damage to property or the environment!

1.2.4 Symbols used

The following symbols are used in these assembly instructions and on the products:

Warning and prohibition signs			
	Warning of dangerous electrical voltage!		Warning of risk of hearing damage!
	Warning of cutting injuries!		Warning of crushing risk!
	Environmentally hazardous substance!		Warning of danger from suspended loads!
Mandatory signs			
	Wear safety gloves!		Wear hearing protection!
	Wear protective goggles!		Release prior to work!

1.2.5 Notes

Note:

Notes describe general advice and recommendations.

1.3 Warranty and liability

The manufacturer's "General Terms and Conditions of Sale and Delivery" apply.

1.4 Manufacturer information

Address	HIWIN GmbH Brücklesbünd 1 77654 Offenburg
Telephone	+49 781 93278-0
Technical customer service team	+49 781 93278-77
Fax	+49 781 93278-90
Technical customer service team fax	+49 781 93278-97
E-Mail	support@hiwin.de
Internet	hiwin.de

1.5 Product monitoring

Please inform HIWIN GmbH, as manufacturer of the named products, about:

- Accidents
- Possible sources of danger on the products
- Any unclear information in these assembly instructions

2 Basic safety notices

Warning!

This chapter is for the safety of everyone who works with, assembles, installs, operates, maintains or disassembles the named products. Failure to comply with the following notes could be dangerous!

2.1 Proper use

Electric actuators represent a drive unit. Thanks to the optional guide, they combine drive and guide in one compact unit. They are used for the exact positioning in time and place of mounted loads within an automated system.

Electric actuators EA-S may only be used as described for the intended purpose:

- Performance limits are given for each size of the named products (see "Electric actuators EA-S" catalogue). These performance limits must not be exceeded during operation.
- The products must not be used in potentially explosive atmospheres.
- The products must not be operated in a vacuum.
- The products may only be used and operated indoors.
- In the event of vertical mounting, a suitable clamping or braking device must be provided to be able to prevent unintentional lowering of the load.
- The products are used as part of an overall system, therefore personal safety must be ensured via the concept of the overall system.
- The assembly instructions and the maintenance and servicing instructions must be complied to ensure the intended use of the products.
- Any other use of the products is considered improper use.

The electric actuators EA-S can be supplied as a system (guide, drive). That is why the entire documentation of the system must be observed. Depending on the type of electric actuator, the accompanying documentation may vary.

Requirements for ambient conditions

Ambient conditions during operation:	+5 to +40 °C
Relative humidity during operation:	according to IEC 60721-3-3, class 3K22, non-condensing
Climatic ambient conditions for transport and storage:	Ambient temperature: –20 to +50 °C, non-condensing

Note:

Prevent condensation from forming to avoid corrosion of the electric actuators.

2.2 Reasonably foreseeable misuse

The named products must not be operated:

- Outdoors
- In areas where there is a risk of explosion

2.3 Conversions or modifications

Conversions or modifications to the named products are not permitted! For special requirements, please contact HIWIN GmbH.

2.4 Residual risks

No residual hazards emanate from the named products during normal operation, as they are used as part of the overall system and personal safety is to be ensured by the operator via the overall system. Dangers that may arise during maintenance and servicing are specified in the respective chapters.

2.5 Requirements for personnel

Only authorised and qualified persons may carry out work on the products! They must be familiar with the safety equipment and regulations before they start work (see following table).

Activity	Qualifications
Normal operation	Instructed personnel
Cleaning	Instructed personnel
Maintenance	Qualified personnel of the operator or manufacturer
Servicing	Qualified personnel of the operator or manufacturer
Transport	Instructed personnel
Mounting	Instructed qualified personnel
Disassembly	Instructed qualified personnel

2.6 Safety equipment

Table 2.1: Personal protective equipment

Operating phase	Personal protective equipment
Normal operation	Staying around the named products is not permitted during normal operation. When staying in the vicinity of the products, the following personal protective equipment is necessary, depending on the travel speed: – Safety shoes – If necessary, hearing protection
All other operating phases (Cleaning, maintenance, servicing, retrofitting, troubleshooting, repair)	The following personal protective equipment is required for all other phases of operation of the named products: – Safety shoes – If necessary, protective gloves and goggles – If necessary, hearing protection – If necessary, hairnet

2.7 Labelling on the product

The labelling shown below can be found on the products.

Fig. 2.1: Example of a type plate

HIWIN® HIWIN GmbH Brücklesbünd 1 77654 Offenburg www.hiwin.de	Type: EA-060-S-005-0300-0000 S/N: HSN000001508 Art. No: 25.12082 Year built: 2025 Mass of stage: 5 kg
--	--

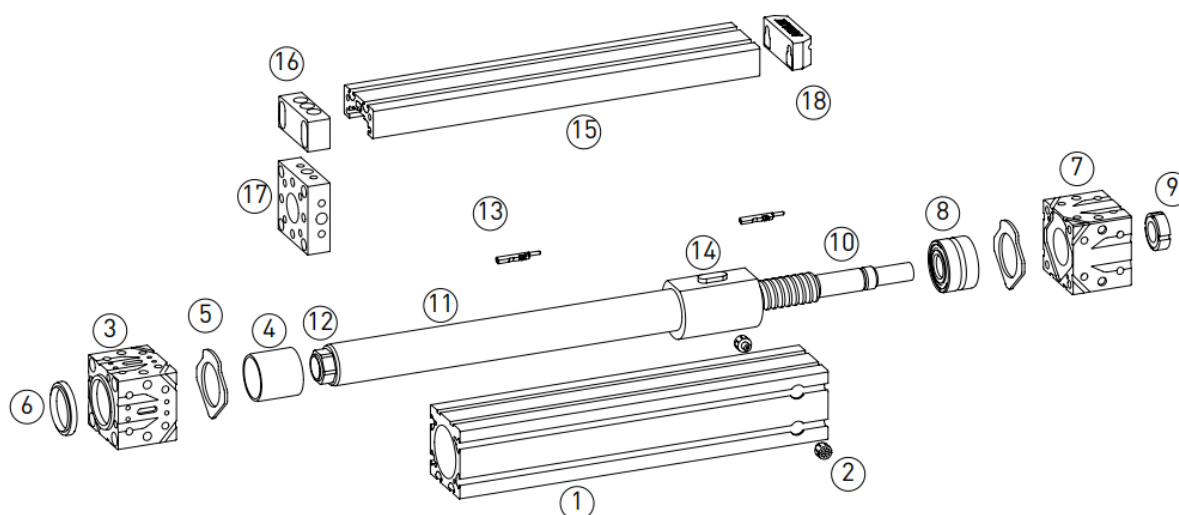
3 Description of electric actuators EA-S

3.1 Application

The electric actuators EA-S with ballscrew are compact and flexible positioning modules that are particularly suitable for applications where high precision and high feed forces are required.

3.2 Main components

Fig. 3.1: Main components of electric actuators EA-S

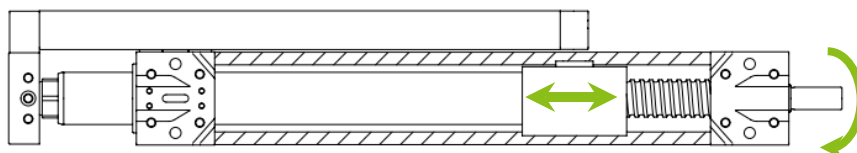


1	Actuator base profile	10	Ballscrew shaft
2	Air filter	11	Piston tube
3	End block	12	Screw plug
4	Slide bearing	13	Limit switch
5	Stop buffer	14	Ballscrew nut
6	Wiper	15	Slide profile
7	Drive block	16	Angle adapter
8	Ball bearing	17	Flange plate
9	Lock nut	18	Slide end piece

3.3 Function description

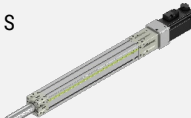
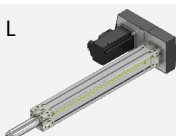
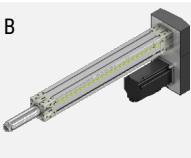
Electric actuators represent a drive unit. Thanks to the optional guide, they combine drive and guide in one compact unit. The forces and torques are transmitted from the load being moved via the screw plug to the piston tube and from the piston tube to the ballscrew and then to the ball bearings. The actual movement occurs via a ballscrew, the shaft of which is driven by an electric motor. The ballscrew converts the rotary movement of the motor into a linear movement of the nut. The nut is non-twist mounted in the actuator profile. With an optional guide, radial forces and torques are additionally absorbed by the linear guideway, which can relieve the load on the ballscrew.

Fig. 3.2: Functional principle of electric actuators EA-S



3.4 Order code for electric actuators EA-S

Number	1	2	3	4	5	6	7	8
Order code	EA	060	S	010	0123	0010	ANNN	FS
1	EA	Electric actuator						
2	060	Size (profile width): 040: 40 mm 050: 50 mm 060: 60 mm 080: 80 mm						
3	S	Drive type: S: Ballscrew						
4	010	Shaft lead [mm]: 005/010/016: EA040-S 005/010/020: EA050-S 005/010/025: EA060-S 005/010/020/040: EA080-S						
5	0123	Stroke length [mm]						
6	0010	Piston tube extension [mm]						
7	ANNN	Optional guide: No slide: – NNNN 1 slide: – ANNN = Top – BNNN = Bottom – LNNN = Left – RNNN = Right 2 slides: – ABNN = Top and Bottom – LRNN = Left and Right – ARNN = Top and Right – ALNN = Top and Left – BRNN = Bottom and Right – BLNN = Bottom and Left						
8	FS	Flange plate Without guide: NN With guide: FS						

Number	9	10	11
Continued Order code	A	A10N	HW01
9	A	Limit switches: N = without limit switch A = 1× NC contact, 300 mm cable, plug B = 2× NC contact, 300 mm cable, plug C = 1× NC contact, 2 m open cable end D = 2× NC contact, 2 m open cable end	
10	A10N	Drive interface ¹⁾ : N: Without S1: Straight, small coupling ²⁾ S2: Straight, large coupling L: Left R: Right A: Top B: Bottom 10: Transmission ratio in belt drive $i = 1.0$ 15: Transmission ratio in belt drive $i = 1.5$ N: Without swivel flange S: With swivel flange	     
11	HW01	Motor flange type ³⁾	

¹⁾ If no drive interface is selected, the order code ends after this digit.

²⁾ Depending on the size, various coupling sizes are available.

³⁾ If no flange type is selected, the order code ends after this digit.

4 Transport and setup

4.1 Delivery

4.1.1 Delivery condition

The electric actuators are delivered fully assembled and functionally tested.

4.1.2 Scope of delivery

The scope of delivery varies depending on the model, accessories and options ordered.

4.2 Transport to the installation location

 **Warning!** Danger from suspended loads or falling parts!

Lifting heavy loads can cause damage to health.

- ▶ Mounting and maintenance of the electric actuators only by qualified personnel!
- ▶ Take the mass of the parts into account during transport. Use suitable lifting gear!
- ▶ Comply with the applicable industrial safety regulations for handling suspended loads.
- ▶ Lift electric actuators only at specified support points!
- ▶ Secure machines and machine parts against tipping over!

 **Attention!** Risk of impact and crushing!

When moving the piston tube manually, injuries can be caused by moving attachments (accessories, attachments installed by the customer).

- ▶ Observe applicable industrial safety regulations!
- ▶ Transport to the installation site only by qualified personnel!

 **Caution!** Possible damage to the electric actuators!

The electric actuator can be damaged by mechanical stress.

- ▶ Lift electric actuators only at specified support points! (See section 4.5)!
- ▶ For longer electric actuators, ensure the centre sections have additional protection!
- ▶ Ensure that the electric actuators do not bend, as this will permanently affect the precision!
- ▶ Do not transport any additional loads on the electric actuators during transport!
- ▶ Provide additional support for heavy attachments!

The electric actuators are precision products and must be handled with care. Impacts and shocks can damage the electric actuators. Reduced running accuracy and a reduced service life could be the result. Transport the product packed as close as possible to the installation site. Only remove the packaging once there.

4.3 Installation location requirements

4.3.1 Environmental conditions

Ambient conditions during operation:	+5 to +40 °C
Relative humidity during operation:	according to IEC 60721-3-3, class 3K22, non-condensing
Climatic ambient conditions for transport and storage:	Ambient temperature: –20 to +50 °C, non-condensing

4.3.2 Safety equipment to be provided by the operator

Possible safety equipment/measures:

- Personal protective equipment according to UVV (accident prevention regulation)
- Electrosensitive protective equipment
- Mechanical safety equipment

4.4 Storage

- ▶ Store the electric actuators in the transport packaging.
- ▶ Alternative: Select packaging in which the electric actuators are secured against slipping, damage and vibration.
- ▶ Store the electric actuators only in dry, frost-free rooms.
- ▶ Clean and protect used electric actuators before storage.

4.5 Unpacking and setup

! Caution! Danger to health and the environment!

Contact with lubricants can cause irritation, poisoning and allergic reactions as well as damage to the environment.

- ▶ Only use suitable media that are not dangerous for humans. Observe the manufacturer's safety data sheets.
- ▶ Dispose of substances appropriately.

Note:

The electric actuators may only be set up and operated indoors.

- ▶ Remove the packaging.
- ▶ Lift the electric actuators for transport at specified support points A and B (see [Fig. 4.1](#), [Fig. 4.2](#) and [Fig. 4.3](#)). The distance of points A and B from the end of the actuator should be one quarter of the total length of the actuator.
- ▶ Do not lift the electric actuator at attachments. During transport, provide additional support for heavy attachments such as the drive.
- ▶ Dispose of the packaging in an environmentally friendly manner.

Fig. 4.1: Support points A and B for lifting and transporting, using the example of an electric actuator EA-S

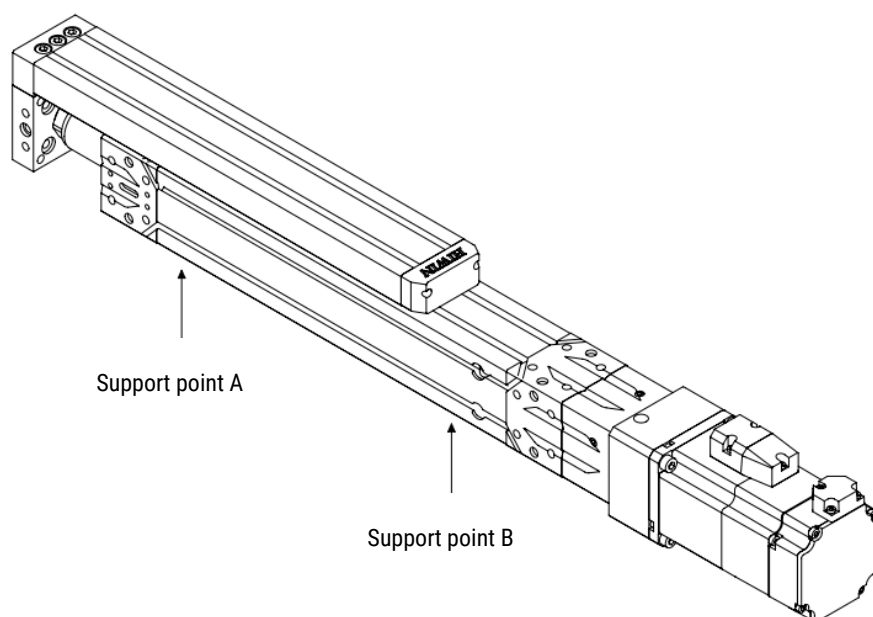


Fig. 4.2: Correct position of the support points

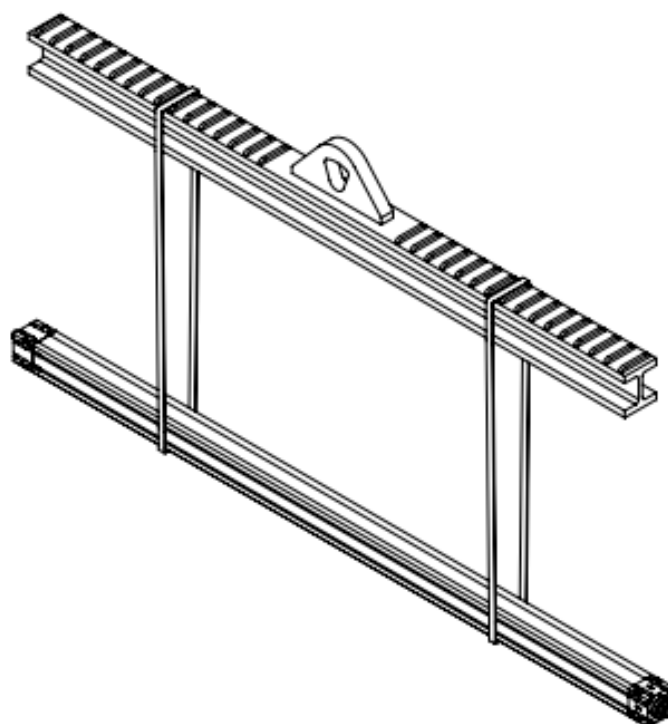
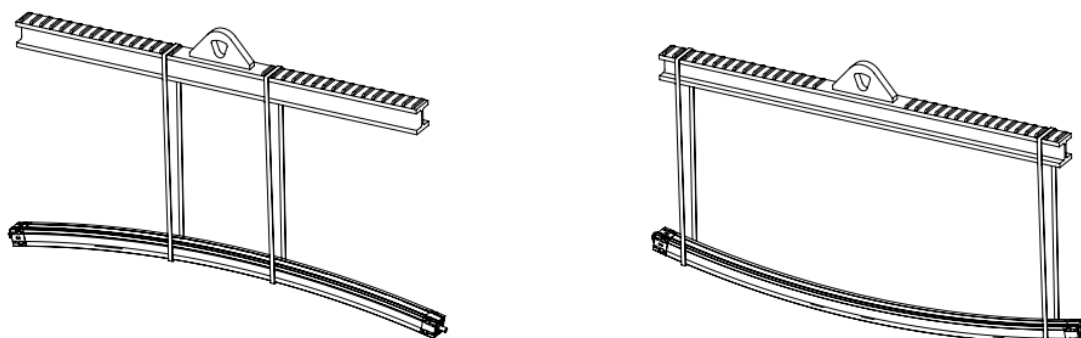


Fig. 4.3: Incorrect position of the support points



5 Mounting and connection

Warning! Risk of impact and crushing!

Injuries may occur due to automatic or manual movement of the piston tube.

- ▶ A safety guard must be provided for the operation of the electric actuators!
- ▶ Commissioning, set-up and troubleshooting only by qualified personnel!

Warning! Risk of impact and crushing!

Unintentional movements of the driven elements of the electric actuators can cause injuries.

- ▶ Construction of the control system according to DIN EN 12100. No start-up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!

Attention! Danger of hearing damage!

The electric actuators can generate noise above 70 dB(A) at high speeds.

- ▶ For fast running electric actuators with a noise development above 70 dB(A), hearing protection must be worn!

Attention! Danger from suspended loads or falling parts!

- ▶ Mounting and maintenance of the electric actuators only by qualified personnel!
- ▶ Take the mass of the parts into account during transport. Use suitable lifting gear!
- ▶ Comply with the applicable industrial safety regulations for handling suspended loads.
- ▶ Lift electric actuators only at specified support points!
- ▶ Secure machines and machine parts against tipping over!
- ▶ Attach the electric actuators according to the assembly instructions!
- ▶ When electric actuators are arranged vertically, secure the piston tube when stationary!

Attention! Danger of impacts and crushing due to the payload coming loose!

If the fastener is fastened incorrectly or fails, injuries can be caused by falling or flying parts.

- ▶ Carry out mounting in such a way that parts do not come loose even in the event of strong acceleration or continuous vibrations!
- ▶ Attach the payload in accordance with the assembly instructions!

Attention! Risk of impact and crushing!

If the electric actuators are moved by the motor, injuries can be caused by moving actuators and attachments (accessories, attachments installed by the customer).

- ▶ A safety guard must be provided for the operation of the electric actuators!
- ▶ When electric actuators are arranged vertically, secure the piston tube when stationary!

⚠ Attention! Danger of electric shock or burns from contact with live parts!

Contact with live parts can cause injuries.

If the customer installs cables incorrectly, the constant motion inside the energy chain can cause chafing and expose the electrical contact points.

- ▶ Construction of the control system according to DIN EN 12100. No start-up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!
- ▶ Only qualified personnel may install cabling!
- ▶ Work on electrical installations only by qualified personnel!

⚠ Caution! Danger to health and the environment!

Contact with lubricants can cause irritation, poisoning and allergic reactions as well as damage to the environment.

- ▶ Only use suitable media that are not dangerous for humans. Observe the manufacturer's safety data sheets.
- ▶ Dispose of substances appropriately.

5.1 Mounting the electric actuators

The electric actuators can be mounted in any position and can optionally be attached to the drive and end blocks or to the aluminium profile of the electric actuators. For size EA040-S, attachment to the aluminium profile is not permitted. Please consult HIWIN for advice. The electric actuators can be fastened to the mounting surface by screwing them directly into the drive and end blocks with clamping profiles (lateral grooves) or with T nuts (bottom grooves). Various optional accessories are also available for fastening the electric actuators.

Please note that the installation position influences the design of the electric actuators and that the actually acting forces and torques must be below the permissible values (see "Electric actuators EA-S" catalogue).

Note:

The aluminium profile is manufactured as an extruded precision profile according to EN 12020-2.

Note:

The screws must be secured against unintentional loosening.

5.1.1 Accuracy requirements for the mounting surface

When mounting the electric actuators, ensure that the electric actuator is mounted on a level surface and that the mounting points are aligned with each other to ensure that the required level of evenness of 0.2 mm/m is achieved.

5.1.2 Direct mounting to the end and drive blocks

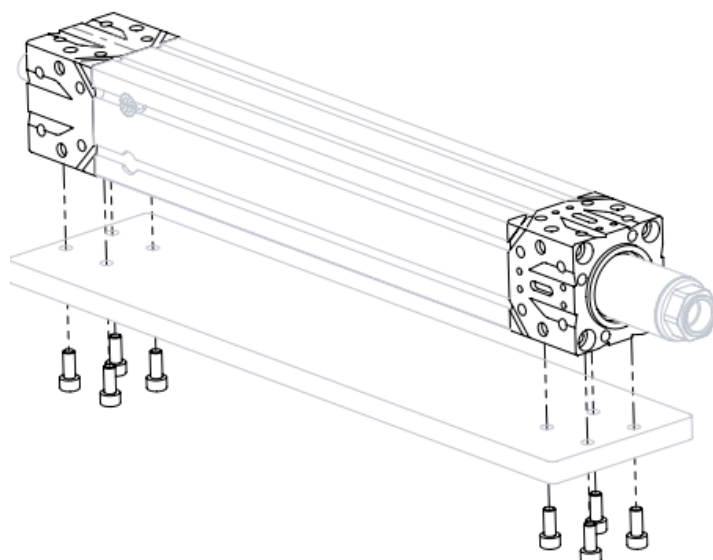
The respective thread dimensions can be found in the "Electric actuators EA-S" catalogue. Additional counter bores allow for the insertion of centring sleeves. HIWIN recommends arranging two centring sleeves diagonally opposite each other.

Table 5.1: Threaded holes for mounting to the end and drive blocks

Actuator type/size	Thread size × depth in end and drive block	Depth of counter bore for centring sleeve in the mounting surface	Counter bore diameter for centring sleeve [mm]
EA040-S	M4 × 5.0	2.0	Ø4 H7
EA050-S	M5 × 7.5	2.0	Ø6 H7
EA060-S	M5 × 6.5	2.0	Ø6 H7
EA080-S	M6 × 10	2.0	Ø8 H7

- Clean the mounting surfaces on the end and drive blocks.
- Clean the mounting surface.
- If necessary, use centring sleeves.
- Position the electric actuator on the mounting surface.
- Tighten the mounting screws in a criss-cross fashion.
- Check if the piston tube moves freely throughout the entire stroke.
- Tighten the screws.
- ✓ The electric actuator is installed.

Fig. 5.1: Mounting the electric actuator to the end and drive blocks



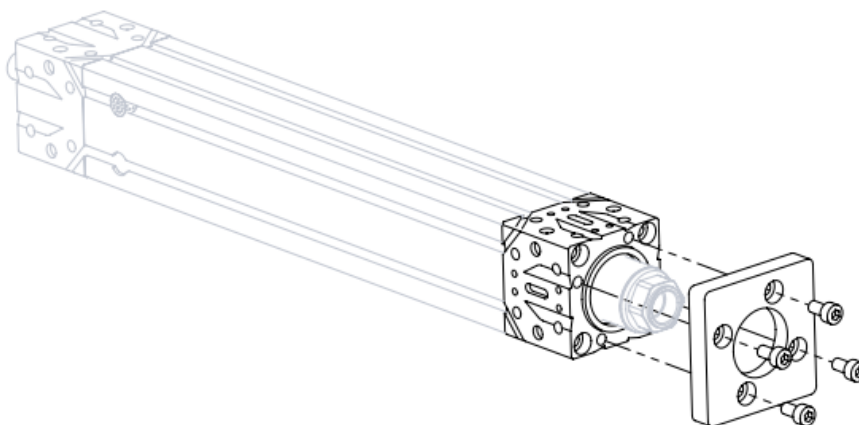
Alternatively, there are threaded holes at the front of the end blocks for fastening the electric actuator. The respective thread dimensions can be found in the "Electric actuators EA-S" catalogue. When mounting through the holes at the front, ensure that the drive block does not vibrate and that the electric actuator does not bend.

Table 5.2: Threaded holes for mounting to the end blocks at the front

Actuator type/size	Thread size × depth at the front in the end block	Centring collar on end block	Centring height
EA040-S	M4 × 5.0	31 g6	2.0
EA050-S	M5 × 7.5	37 g6	2.0
EA060-S	M5 × 6.5	42 g6	2.5
EA080-S	M6 × 10	60 g6	3.0

- ▶ Clean the mounting surfaces on the end block.
- ▶ Clean the mounting surface.
- ▶ Position the electric actuator on the mounting surface.
- ▶ Tighten the mounting screws in a criss-cross fashion.
- ▶ Check the stability of the mounting and attach additional mounting components, if necessary.
- ▶ Tighten the screws.
- ✓ The electric actuator is installed.

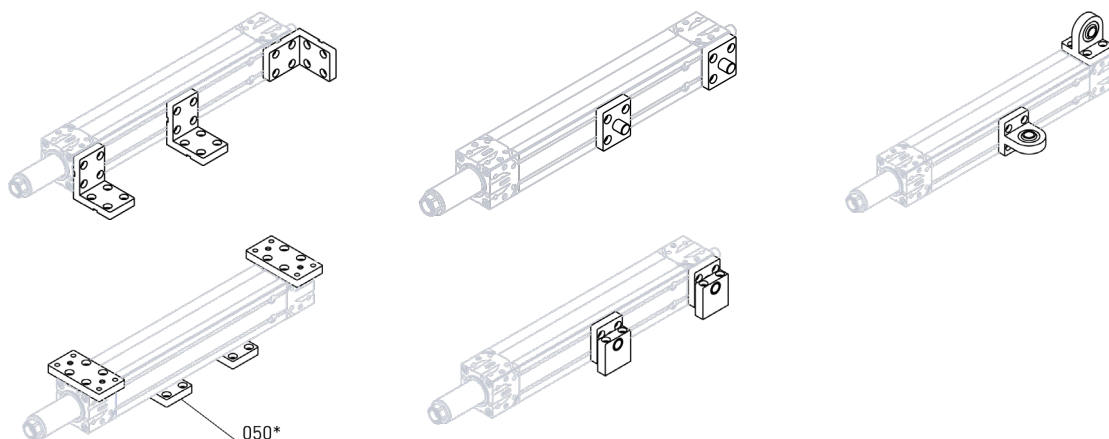
Fig. 5.2: Mounting the electric actuator at the front



5.1.3 Mounting using mounting accessories

Various accessories are available for mounting the electric actuators. The accessories should preferably be mounted to the end and drive blocks. With sizes EA050, EA060 and EA080, mounting to the grooves of the aluminium profile is also possible using T nuts. The respective dimensions can be found in the "Electric actuators EA-S" catalogue.

Fig. 5.3: EA standard mounting accessories



Screw the mounting accessories to the end and drive blocks:

- ▶ Clean the mounting surfaces on the end and drive blocks.
- ▶ Clean the mounting surface on the accessory.
- ▶ If necessary, use centring sleeves.
- ▶ Position the mounting accessories on the end or drive block of the electric actuator.
- ▶ Tighten the mounting screws to the electric actuator in a criss-cross fashion.
- ▶ Clean the mounting surface.
- ▶ If necessary, use centring sleeves on your mounting surface.
- ▶ Position the electric actuator with the mounting accessories on the mounting surface.
- ▶ Tighten the mounting screws to the mounting surface in a criss-cross fashion.
- ▶ Check if the piston tube moves freely throughout the entire stroke.
- ▶ Tighten the screws.
- ✓ The electric actuator is installed.

Table 5.3: Screw tightening torque – mounting accessories to the end and drive block

Actuator type/size	Screw	Screw tightening torque [Nm]
EA040-S	DIN912-M4 × 8-8.8	3.0
EA050-S	DIN912-M5 × 10-8.8	6.0
EA060-S	DIN912-M5 × 10-8.8	6.0
EA080-S	DIN912-M6 × 16-8.8	10.0

Table 5.4: Centring holes in the mounting surface

Actuator type/size	Depth of counter bore for centring sleeve in the mounting surface [mm]	Diameter of counter bore for centring sleeve
EA040-S	1.2	Ø4 H7
EA050-S	2.2	Ø6 H7
EA060-S	2.2	Ø6 H7
EA080-S	2.2	Ø8 H7

Screw the mounting accessories to the aluminium profile:

The T nut size to be used for each actuator size can be found in [Table 5.5](#). The permissible axial operating force per t nut in [Table 5.5](#) must be taken into account.

- ▶ Clean the mounting surfaces on the aluminium profile.
- ▶ Clean the mounting surface on the accessory.
- ▶ Swivel the T nut into the lower groove.
- ▶ Position the mounting accessories on the aluminium profile of the electric actuator.
- ▶ Tighten the mounting screws to the aluminium profile in a criss-cross fashion.
- ▶ Clean the mounting surface.
- ▶ If necessary, use centring sleeves on your mounting surface.
- ▶ Position the electric actuator with the mounting accessories on the mounting surface.
- ▶ Tighten the mounting screws to the mounting surface in a criss-cross fashion.
- ▶ Check if the piston tube moves freely throughout the entire stroke.
- ▶ Tighten the screws.
- ✓ The electric actuator is installed.

Table 5.5: Screws for screwing the mounting accessories to the aluminium profile

Actuator type/size	Groove size	Screw	Screw tightening torque [Nm]	F _{A,per.} ¹⁾ [N]
EA050-S	5	DIN912-M5 × 10-8.8	4.5	500
EA060-S	5	DIN912-M5 × 10-8.8	4.5	500
EA080-S	6	DIN912-M6 × 16-8.8	10.1	1750

¹⁾ Permissible axial operating force in tensile direction per T nut.

5.1.4 Mounting with T nuts

The T nut size to be used for each actuator size can be found in [Table 5.5](#). The T nuts must be arranged according to [Fig. 5.4](#) and [Fig. 5.6](#) or [Fig. 5.7](#). The required number of T nuts depends on the external load. To calculate the required number, the load values listed in [Table 5.6](#) (clamping force per T nut; permissible axial operating force in tensile direction per T nut) must be taken into account. The minimum number of T nuts specified in [Table 5.6](#) must not be undercut. The T nuts must be positioned in groups at mounting points, as shown in [Fig. 5.6](#) and [Fig. 5.7](#). It is important to ensure that there is at least one mounting point at each end of the actuator profile and that each mounting point is capable of safely transmitting the external load. The number and spacing of the additional mounting points should be chosen according to the load situation. Distances L_{NX} listed in [Table 5.6](#) are only reference values.

Note:

Since the outer dimensions of the end and drive blocks are larger than the aluminium profiles, it must be ensured that the end and drive blocks do not rest on the mounting surface.

- ▶ Drill the mounting holes in the mounting surface.
 - ▶ Clean the mounting surface and position the electric actuator on the mounting surface.
 - ▶ Swivel the T nut into the lower groove.
 - ▶ Pre-assemble the T nut with the screws with low screw tightening torque.
 - ▶ Tighten the screws in a criss-cross fashion at each mounting point, taking into account the screw tightening torques. When doing so, observe the sequence of the mounting points: Tighten either from the outside inwards or from one side to the other to avoid stress.
- ✓ The electric actuator is installed.

Observe the hole distances L_{NY} when mounting the electric actuators.

Fig. 5.4: Mounting with T nuts

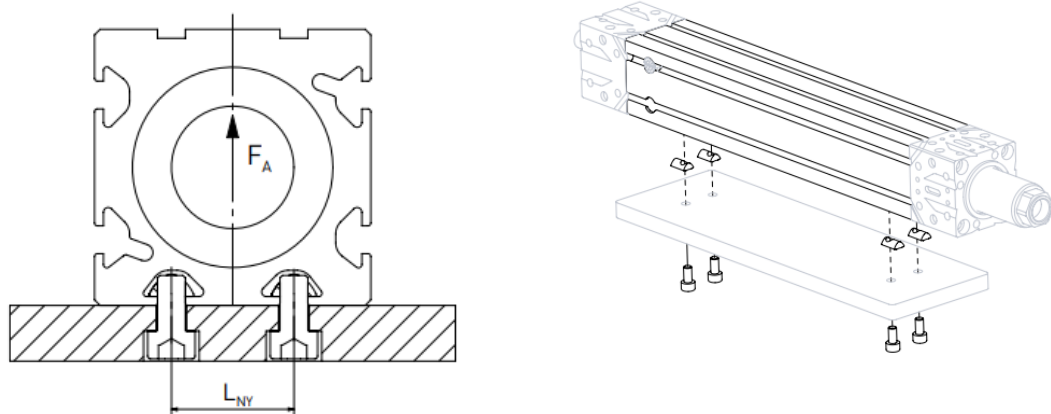


Fig. 5.5: Permissible axial operating force in tensile direction per T nut ($F_{A_per.}$)

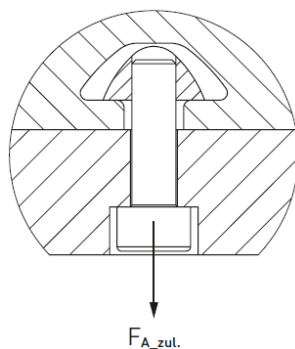


Fig. 5.6: Mounting with T nuts – EA050-S, EA060-S

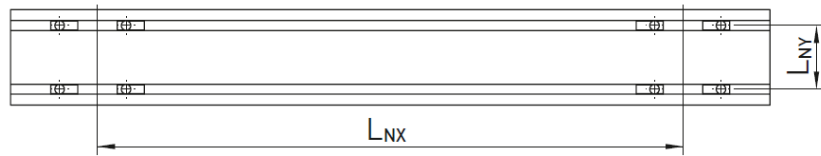


Fig. 5.7: Mounting with T nuts – EA080-S

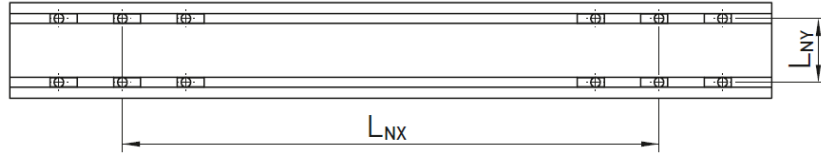


Table 5.6: Minimum number of T nuts for mounting the electric actuators and recommended distance between mounting points for longer actuators

Size	Minimum number of T nuts	L _{NY} [mm]	Recommended distance L _{NX} [mm]	Thread size	Screw tightening torque [Nm]	F _{A,per.} ¹⁾ [N]
EA050	8	20	200	M5	4.5	500
EA060	8	40	200	M5	4.5	500
EA080	8	40	300	M6	10.0	1750

¹⁾ Permissible axial operating force in tensile direction per T nut.

5.1.5 Mounting with clamping profiles

The clamping profiles must always be fitted in pairs (on the left and right of the aluminium profile) (see Fig. 5.8 and Fig. 5.9). The required number of clamping profiles depends on the external load. To calculate the required number, the load values listed in Table 5.7 (clamping force per clamping profile; permissible axial operating load in the tensile direction per clamping profile pair) must be taken into account. The minimum number of clamping profiles specified in Table 5.7 must not be undercut. It is important to ensure that there is at least one mounting point at each end of the actuator and that each mounting point is capable of safely transmitting the external load. The number and spacing of the additional mounting points should be chosen according to the load situation. Distances L_{SX} listed in Table 5.7 are only reference values.

Note:

Since the outer dimensions of the end and drive blocks are larger than the aluminium profiles, it must be ensured that the end and drive blocks do not rest on the mounting surface.

- ▶ Drill the mounting holes in the mounting surface.
- ▶ Clean the mounting surface and position the electric actuator on the mounting surface.
- ▶ Swivel the clamping profile into the lateral groove.
- ▶ Pre-assemble the clamping profile with the screws with low screw tightening torque.
- ▶ Tighten the screws in a criss-cross fashion at each mounting point, taking into account the screw tightening torques. When doing so, observe the sequence of the mounting points: Tighten either from the outside inwards or from one side to the other to avoid stress.
- ✓ The electric actuator is installed

Observe the hole distances L_{SY} (Fig. 5.8) when mounting the electric actuator.

Fig. 5.8: Hole distance for lateral mounting of the electric actuator EA-S with clamping profiles

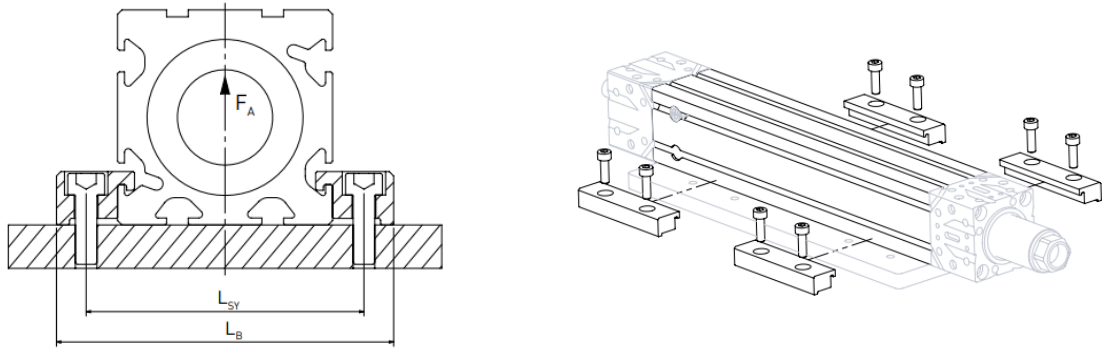


Fig. 5.9: Mounting with clamping profiles

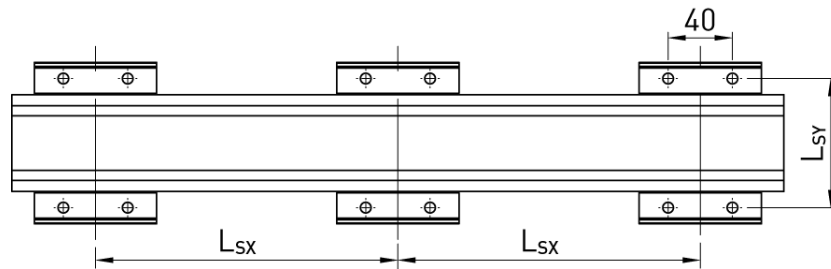


Table 5.7: Minimum number of clamping profiles for mounting the electric actuators and recommended distance between mounting points for longer electric actuators.

Size	Minimum number of clamping profiles	L_{SY} [mm]	L_B [mm]	Recommended distance L_{SX} [mm]	Thread size	Screw tightening torque [Nm]	$F_{A_per.}^{1)}$ [N]
EA050-S	4	64.5	78	200	M5	6.0	200
EA060-S	4	75	89	300	M5	6.0	200
EA080-S	4	100	120	400	M6	10.0	500

¹⁾ Permissible axial operating force in tensile direction per pair of clamping profiles

5.2 Mounting the payload

The payload must be connected to the piston tube. The connection can be made either by screwing directly into the screw plug or using optional accessories. The respective dimensions can be found in the "Electric actuators EA-S" catalogue.

Note

The piston tube has internal anti-twist protection. When working on the piston tube, always hold the spanner flat of the screw plug with a suitable tool to ensure that the anti-twist protection is not damaged.

Note

The payload must be connected to the piston tube in such a way that the radial acting forces from the piston tube remain low during operation. If necessary, use an additional load guide.

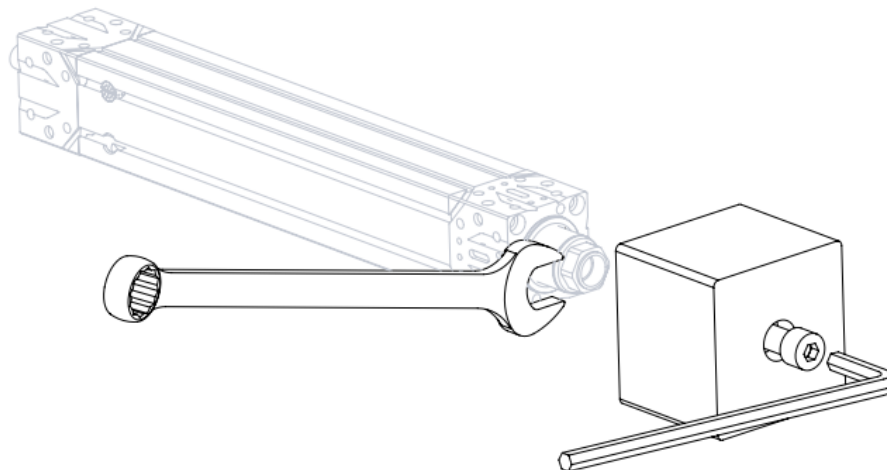
Note

If the payload is guided, even slight tension between the load and the piston tube can have a negative impact on the service life of the entire electric actuator. If necessary, use levelling elements.

5.2.1 Connecting payload directly to the screw plug

- ▶ Clean the mounting surfaces on the screw plug.
- ▶ Clean the mounting surface of the component being installed.
- ▶ Position the component being installed on the screw plug.
- ▶ Tighten the mounting screws while holding the spanner flat of the screw plug with a suitable tool ([Fig. 5.10](#)).
- ▶ Check if the load moves freely throughout the entire stroke.
- ▶ Tighten the screws.
- ✓ The payload is mounted.

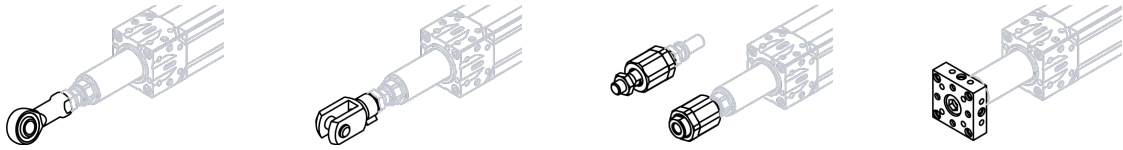
Fig. 5.10: Holding the screw plug when mounting the payload



5.2.2 Attaching piston tube accessories

Various piston tube accessories are available for connecting the payload to the piston tube (Fig. 5.11). To connect the piston tube accessory to the screw plug, a thread adapter is required, which is also available as an accessory.

Fig. 5.11: Piston tube accessories



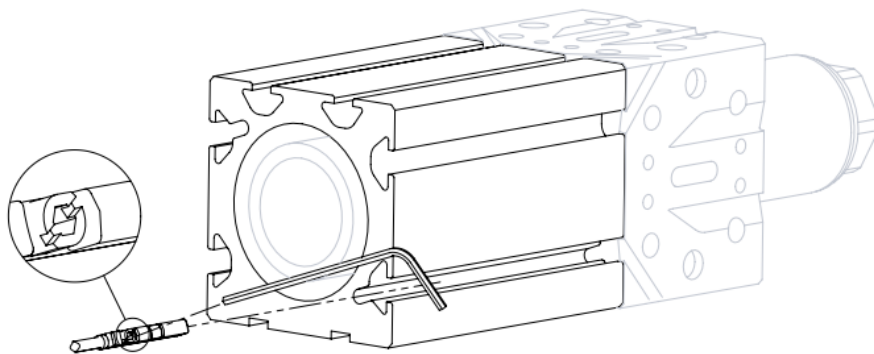
- ▶ Clean the mounting surfaces on the screw plug.
- ▶ Clean the mounting surface of the piston tube accessory.
- ▶ Screw the piston tube accessory into the screw plug.
- ▶ Tighten the thread of the piston tube accessory while holding the spanner flat of the screw plug with a suitable tool.
- ▶ Check if the load moves freely throughout the entire stroke.
- ▶ If necessary, secure the piston tube accessory with a lock nut.
- ✓ The piston tube accessory is mounted.

5.3 Mounting the limit switches

The limit switches are mounted in the C-grooves located in the T-groove of the aluminium profile (Fig. 5.12). The position of the limit switches for the stroke limits can be found in the "Electric actuator EA-S" catalogue.

- ▶ If necessary, remove the green trim strip from the T-groove.
- ▶ Insert the limit switch into the C-groove and position it to the desired position.
- ▶ Turn the clamping screw on the limit switch 90° with a suitable tool.
- ✓ The limit switch is mounted.

Fig. 5.12: Mounting limit switches EA-S



5.4 Mounting the drive adaptation

5.4.1 Mounting the coupling components

Attaching the coupling components:

- Mount the coupling housing with four screws, making sure that it is flat. For screw tightening torques, see [Table 5.8](#).

Fig. 5.13: Mounting the clamping hub and coupling housing on the electric actuator EA-S

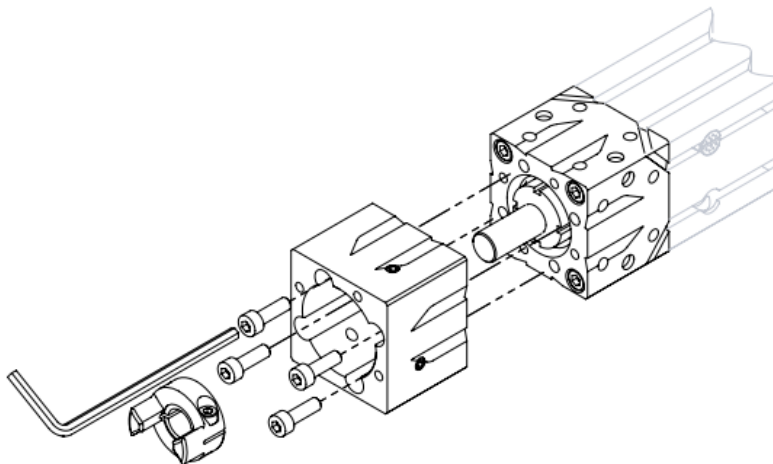


Table 5.8: Screw tightening torques for the coupling housing

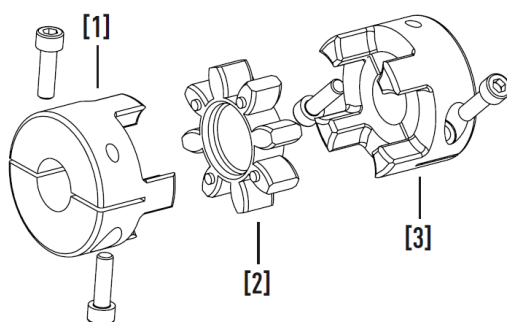
Size	Screw tightening torque [Nm]
EA040-S	3.0
EA050-S	6.0
EA060-S	6.0
EA080-S	10.0

Suitable coupling components are required for the motor attachment. They can be found in the "Electric actuator EA-S" catalogue

The coupling components consist of:

- 1 clamping hub for the actuator side **[1]**
- 1 elastomer insert **[2]**
- 1 clamping hub for the drive side **[3]**

Fig. 5.14: Coupling components



Before installation, please ensure that

- ▶ no parts are damaged
- ▶ all parts are free of dirt and grease

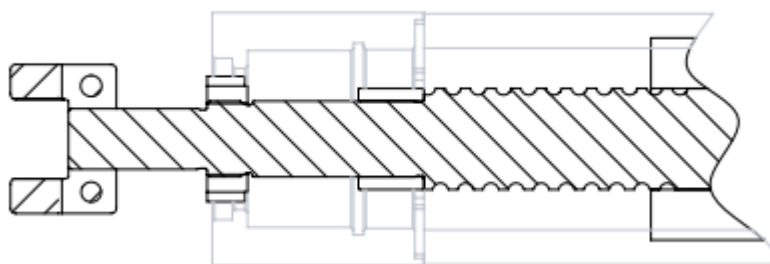
The screw tightening torques listed in [Table 5.8](#) and [Table 5.9](#) apply when mounting the coupling components:

Table 5.9: Screw tightening torques for the clamping hub

Size	Screw tightening torque for clamping hub for S1 [Nm]	Screw tightening torque for clamping hub for S2 [Nm]
EA040-S	2.1	5.0
EA050-S	5.0	14.0
EA060-S	14.0	15.0
EA080-S	15.0	35.0

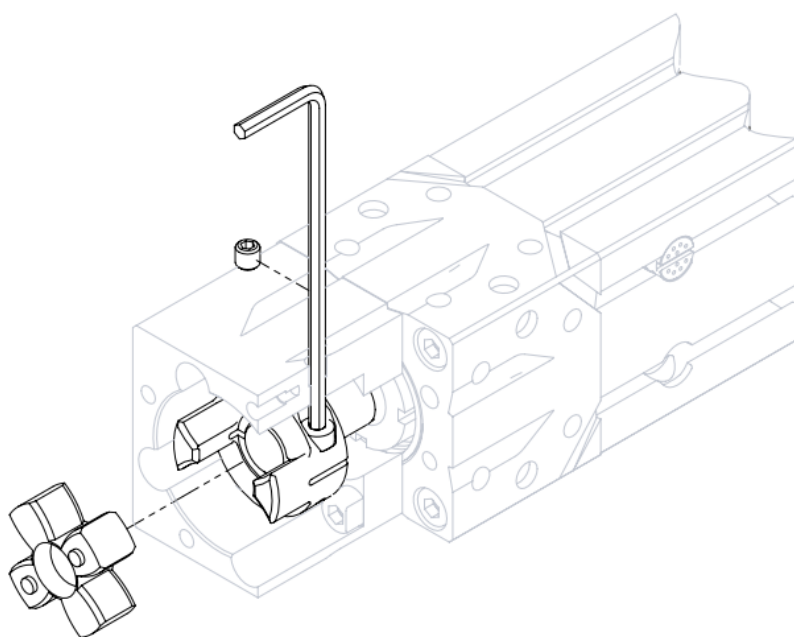
- ▶ Carefully press the clamping hub onto the journal of the shaft as shown in [Fig. 5.15](#). The cylindrical part of the clamping hub is flush with the journal of the shaft.

Fig. 5.15: Positioning the clamping hub on the journal of the shaft of the electric actuator



- ▶ Initially place the screw on the first side of the clamping hub, then tighten the screw on the second side and then on the first side to the screw tightening torque specified in [Table 5.8](#).

Fig. 5.16: Tightening the clamping hub



- ▶ Press the elastomer insert into the clamping hub.

Note:

The elastomer insert must be slightly preloaded without any backlash. It must be replaced if it is too easy to fit. Lightly greasing the elastomer insert with PU-compatible lubricants can make installation easier.

- Push the second clamping hub onto the elastomer insert until the dimension L_2 (see [Table 5.10](#)) is reached.

Fig. 5.17: Mounting the second clamping hub

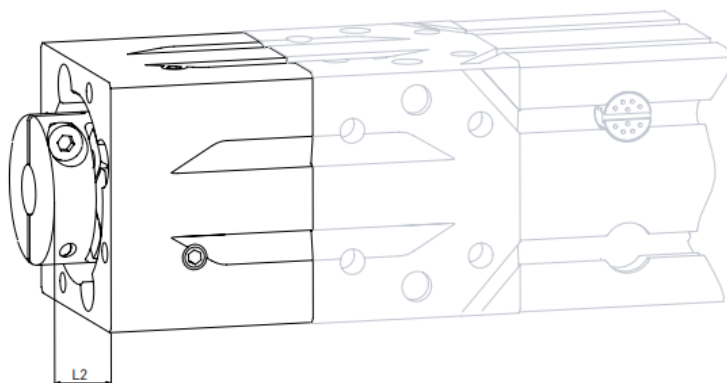
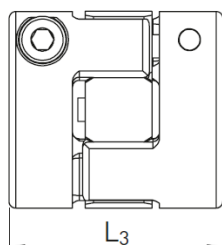


Table 5.10: Setting the coupling distance via the dimension L_2

Size	L_2 for S1 [mm]	L_2 for S2 [mm]
EA040-S	8.5	10.0
EA050-S	10.0	14.0
EA060-S	14.0	14.5
EA080-S	14.5	16.7

Fig. 5.18: Overall length of coupling components HM-S


Note:

When mounting without a coupling housing, the coupling distance L_3 must be set according to [Fig. 5.18](#) and [Table 5.11](#).

Table 5.11: Setting the coupling distance via the dimension L_3 for mounting without a coupling housing

Size	L_3 variant 1 [mm]	L_3 variant 2 [mm]
EA040-S	34	32
EA050-S	32	50
EA060-S	50	54
EA080-S	54	60.4

5.4.2 Mounting the motor

- Fit the motor adapter plate AM flat, paying attention to the position of the hole for the clamping screw of the clamping hub.
- Tighten the four screws. For screw tightening torques, see [Table 5.12](#).

Fig. 5.19: Mounting the motor adapter plate AM

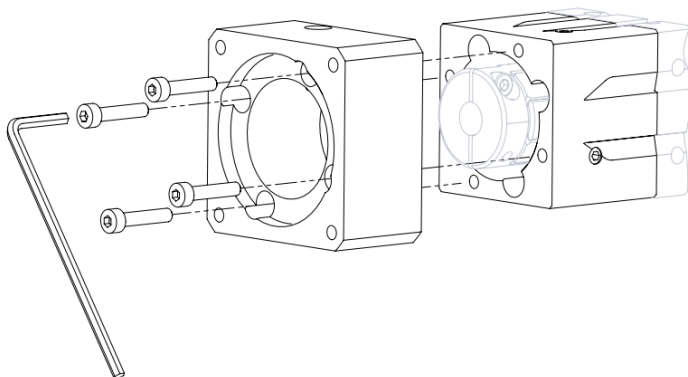
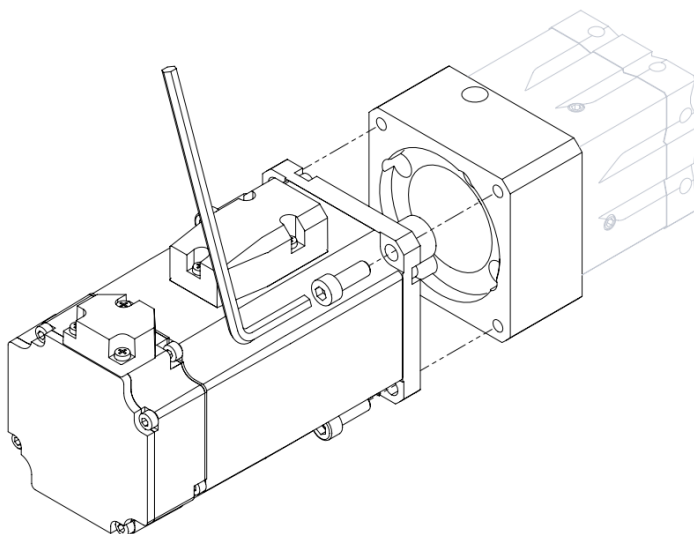


Table 5.12: Screw tightening torques for the motor adapter plate AM

		Coupling size S1		Coupling size S2	
Size	Screw strength class	Thread size	Screw tightening torque [Nm]	Thread size	Screw tightening torque [Nm]
EA040-S	8.8	M4	3.0	M4	3.0
EA050-S	8.8	M4	3.0	M6	10.0
EA060-S	8.8	M6	10.0	M6	10.0
EA080-S	8.8	M6	10.0	M8	25.0

- Secure the motor against falling down.
- Place the motor flat on the motor adapter plate AM.
- Mount the motor according to the information provided by the manufacturer.

Fig. 5.20: Screwing in the motor



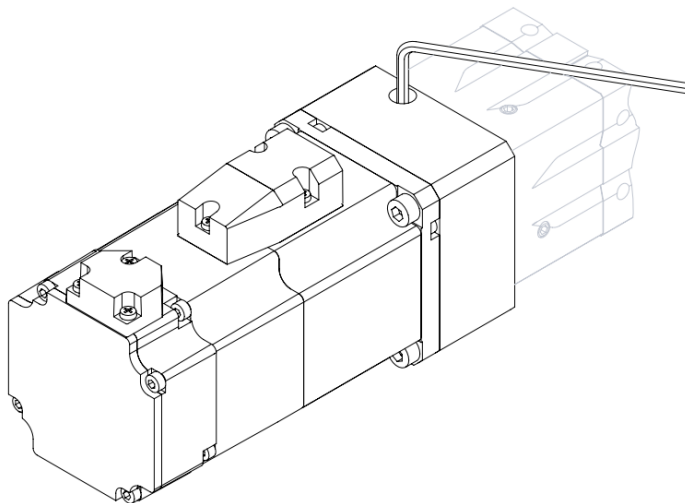
Note:

Ensure that the motor is pushed on straight, making sure that the previously set dimension L_2 does not change.

- Remove the plug from the lateral hole of the motor adapter plate AM.
- By moving the piston tube, move the clamping hub to the position in which the screw/screws of the clamping hub is/are reached through the hole.

- ▶ Tighten both screws of the clamping hub one after the other through the hole. Initially place the screw on the first side, then tighten the screw on the second side and then on the first side to the screw tightening torque specified in [Table 5.8](#).
- ▶ Seal the hole with the plug.
- ✓ The motor is mounted.

Fig. 5.21: Tightening the clamping hub on the motor shaft



5.4.3 Mounting the belt drive

Two types of belt drive are available for parallel attachment of the motor. With ([Fig. 5.22](#)) and without ([Fig. 5.23](#)) swivel flange.

Fig. 5.22: Belt drive without swivel flange

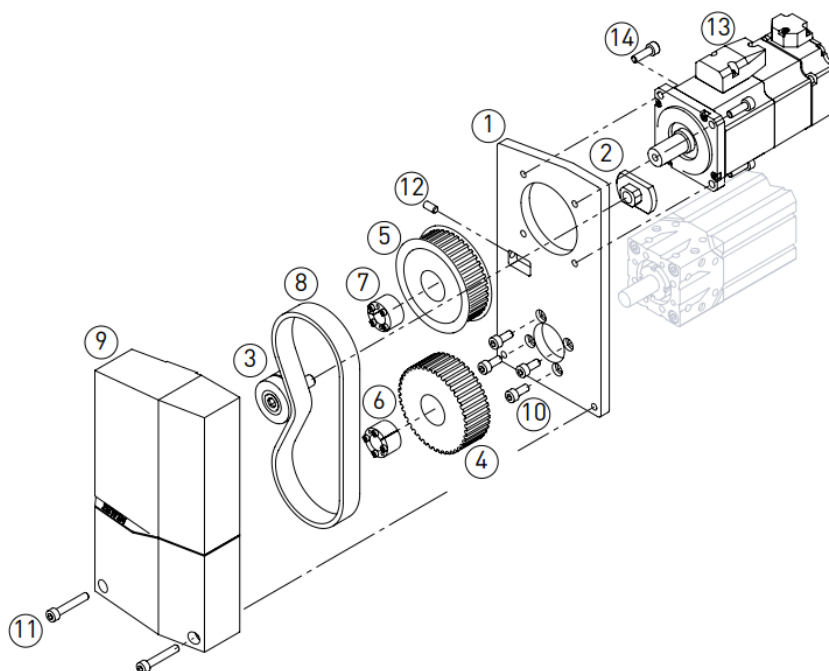
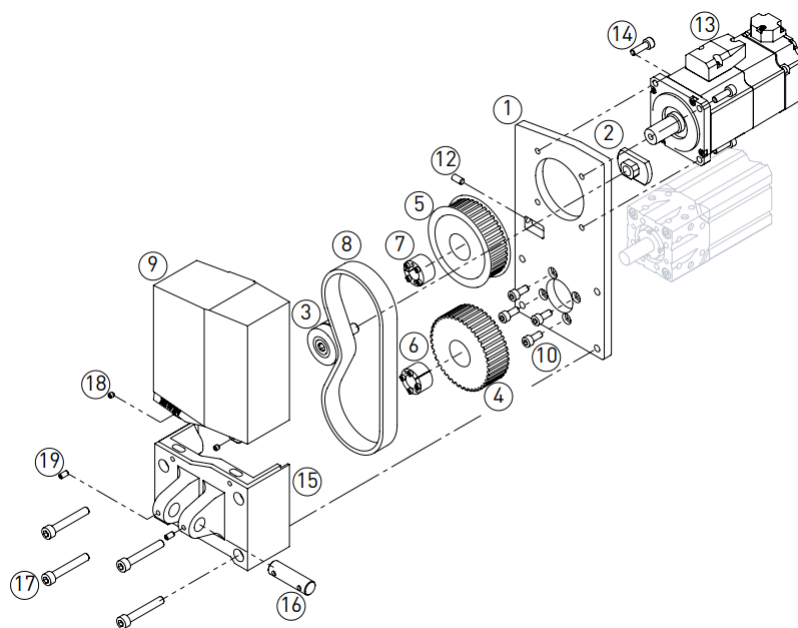


Fig. 5.23: Belt drive with swivel flange


Legend

1	Flange plate	11	Screw cover
2	Clamping nut	12	Grub screw for belt tensioner
3	Tensioning pulley	13	Motor
4	Toothed disc for actuator	14	Motor screws
5	Toothed disc for motor	15	Swivel flange
6	Clamping set for actuator	16	Locking pin
7	Clamping set for motor	17	Screws for swivel flange
8	Toothed belt	18	Grub screw for cover
9	Cover	19	Grub screw for locking pin
10	Screw for flange plate		

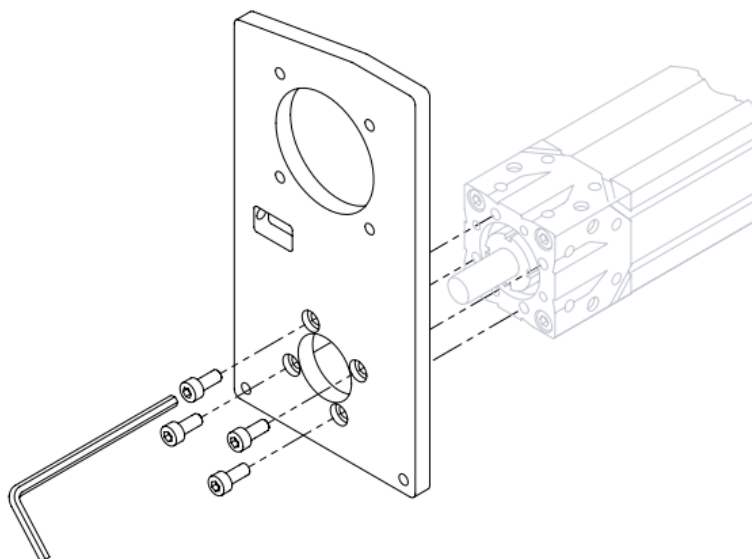
No distinction is made between "with" and "without" swivel flange in the first work steps.

- ▶ Align the flange plate of the belt drive in the desired direction and place it flat on the drive block of the electric actuator.
- ▶ Tighten the four screws. For screw tightening torques, see [Table 5.13](#). Tighten the screws ([Fig. 5.24](#)).

Table 5.13: Mounting screws for flange plate of the belt drive

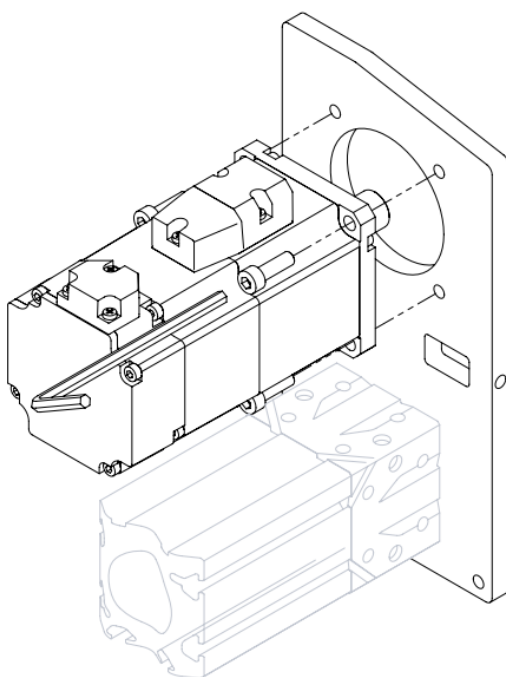
Size	Screw	Screw tightening torque [Nm]
EA040-S	DIN912-M4 × 8-8.8	3.0
EA050-S	DIN912-M5 × 10-8.8	6.0
EA060-S	DIN912-M5 × 12-8.8	6.0
EA080-S	DIN912-M6 × 18-8.8	10.0

Fig. 5.24: Mounting the flange plate of the belt drive



- ▶ Mount the motor on the flange plate as shown in Fig. 5.25. When selecting the length of the motor-specific mounting screws, ensure that they protrude max. 0.5 mm on the opposite side of the flange plate.

Fig. 5.25: Mounting the motor on the flange plate



- ▶ Insert the clamping sets into the toothed discs as in Fig. 5.26 and set distances A and B as in Table 5.14.
- ▶ Tighten the clamping screws of the clamping sets in a criss-cross fashion in three steps to the screw tightening torque specified in Table 5.15 and Table 5.16. Make sure that the clamping sets sink into the toothed discs as far as they will go.
- ▶ Then re-tighten the clamping screws of the clamping sets one after the other to the screw tightening torques according to Table 5.15 and Table 5.16.

Fig. 5.26: Mounting the toothed discs

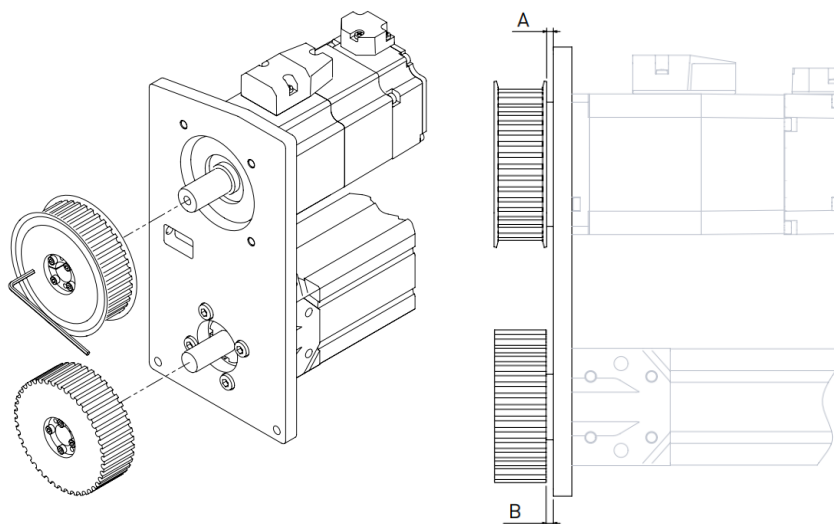


Table 5.14: Distances A and B for toothed disc mounting

Size	A	B
EA040-S	2.7	3.0
EA050-S	2.8	3.0
EA060-S	2.8	3.0
EA080-S	2.7	4.0

Table 5.15: Tightening torques for clamping screw on the actuator side

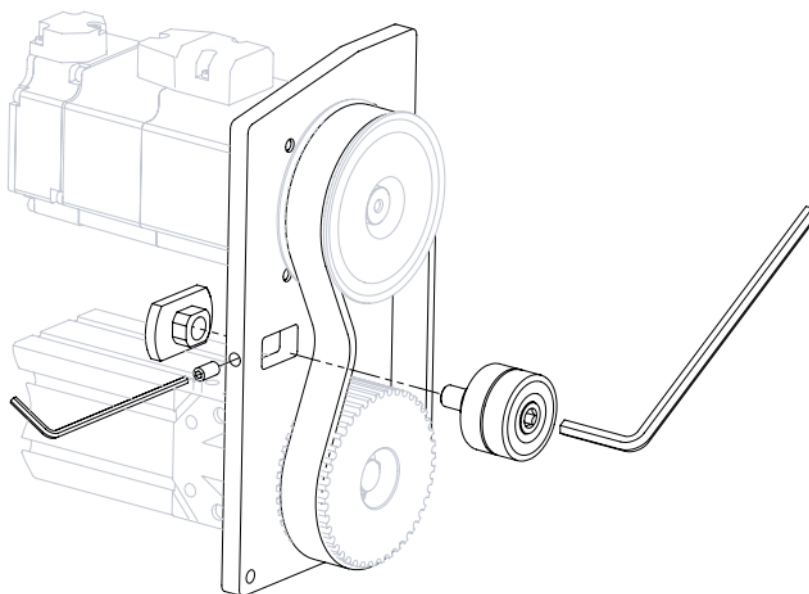
Size	Screw tightening torque for clamping screw [Nm]
EA040-S; EA050-S; EA060-S	1.2
EA080-S	9.7

Table 5.16: Tightening torques for clamping screw on the motor side

Motor shaft diameter [mm]	Screw tightening torque for clamping screw [Nm]
6 – 12	1.2
14 – 15	2.1
16 – 19	4.9
20	9.7
22 – 32	17.0

- Initially place the toothed belt over the motor-side toothed disc and then over the actuator-side toothed disc.
- Insert the tensioning nut into the flange plate on the motor side and screw the tensioning pulley into the tensioning nut, ensuring that the unit can still be moved ([Fig. 5.27](#)).

Fig. 5.27: Mounting the tensioning nut, tensioning pulley and toothed belt.



- ▶ Ensure that the actuator is in a load-free state and that the motor is not energised.
- ▶ Turn the grub screw laterally into the flange plate ([Fig. 5.27](#)) to move the belt tensioner unit and to set the required belt frequency.
- ▶ Carefully tighten the grub screw to move the belt tensioner unit until the belt frequency determined according to the formula $F. 5.1 \pm 10\%$ has been set. It can be determined via the outside of the belt using a Trummeter measuring device, as shown in [Fig. 5.28](#). If the frequency is within the specified range, you can tighten the belt tensioner as in [Fig. 5.29](#) to the tightening torque from [Table 5.18](#). Check the belt frequency again and secure the belt tensioner.

Fig. 5.28: Belt frequency setting

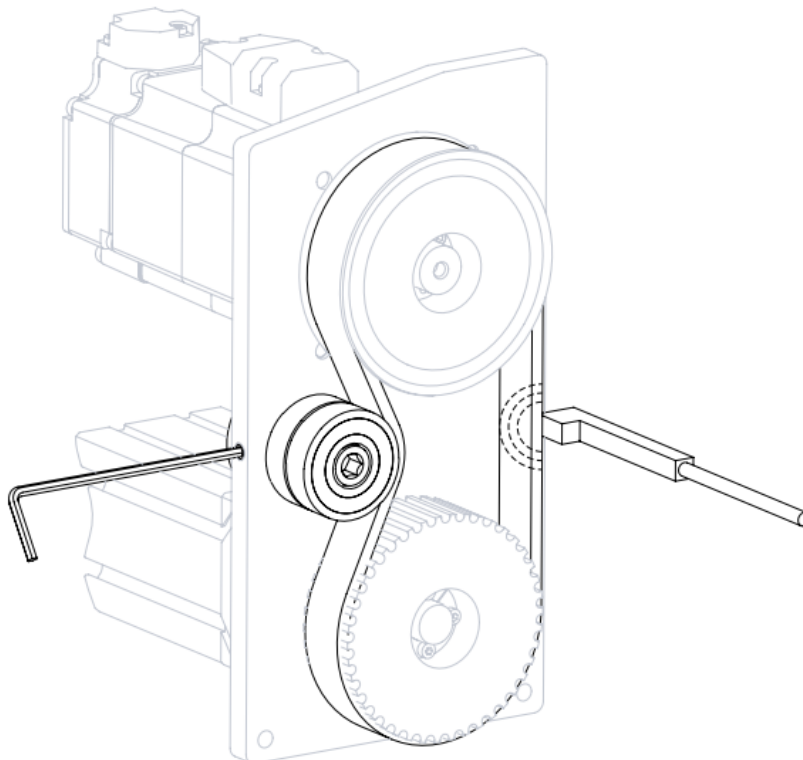
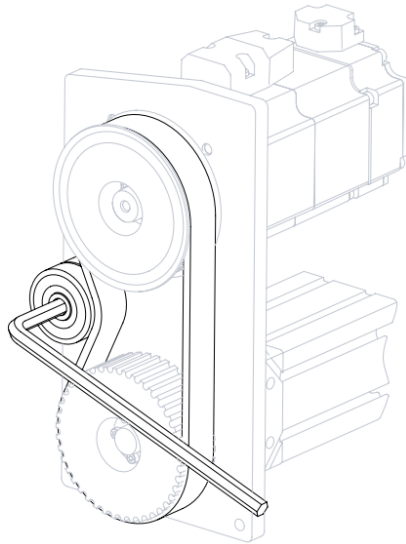


Fig. 5.29: Tightening the belt tensioner



Determining the belt frequency

F. 5.1

$$f = \sqrt{\frac{10^6 \times M}{X}} \geq f_{\min}$$

$f_{\min}$ Minimum belt frequency [Hz] (see [Table 5.17](#))

f Belt frequency [Hz]

M Application-dependent motor drive torque [Nm]

X Factor for determining the belt frequency [Nm/Hz²] (see [Table 5.17](#))

Table 5.17: Factor for determining the belt frequency

Size	Belt drive variant ¹⁾	Transmission ratio	X [Nm/Hz ²]	f _{min} [Hz]
EA040-S	V1	1.0	39.0	98.3
	V1	1.5	36.4	98.3
	V2	1.0	55.3	98.3
	V2	1.5	45.0	98.3
EA050-S	V1	1.0	155.8	101.6
	V1	1.5	151.0	101.6
	V2	1.0	206.0	101.6
	V2	1.5	179.0	101.6
EA060-S	V1	1.0	155.8	118.1
	V1	1.5	151.0	118.1
	V2	1.0	206.0	118.1
	V2	1.5	179.0	118.1
	V3	1.0	207.7	118.1
EA080-S	V1	1.0	484.4	138.5
	V1	1.5	430.7	138.5
	V2	1.0	511.1	138.5
	V2	1.5	538.5	138.5

¹⁾ Belt drive variant depending on the selected motor.

Table 5.18: Tightening torques for belt tensioners

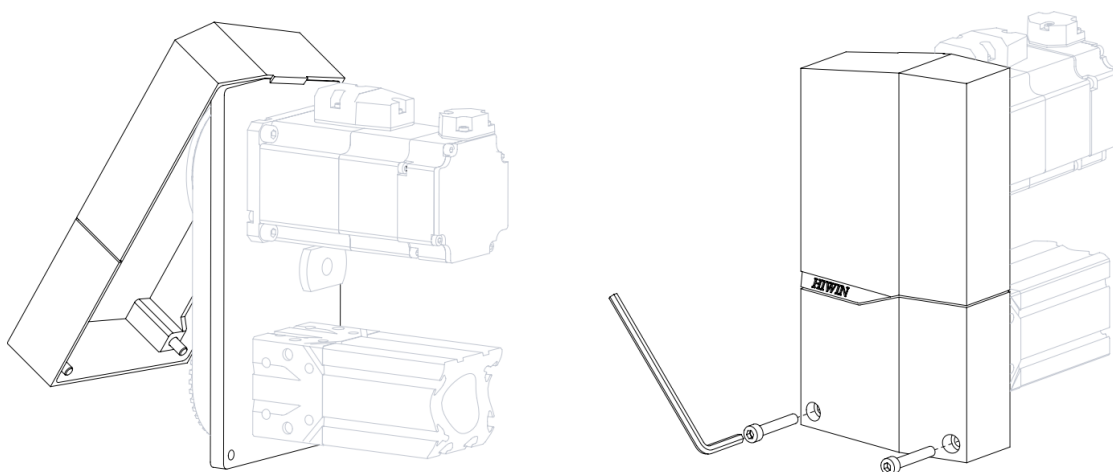
Sizes	Tightening torque [Nm]
EA040-S	13
EA050-S	30
EA060-S	30
EA080-S	58

When covering the belt drive, a distinction is made between the "without swivel flange" and "with swivel flange" variants.

Without swivel flange:

- ▶ Initially place the cover on the flange plate as shown in [Fig. 5.30](#) and then press it fully onto the flange plate.
- ▶ Tighten the cover screws hand-tight.
- ▶ Tighten the screws.
- ✓ The belt drive is mounted.

Fig. 5.30: Swivelling in the belt drive cover without swivel flange



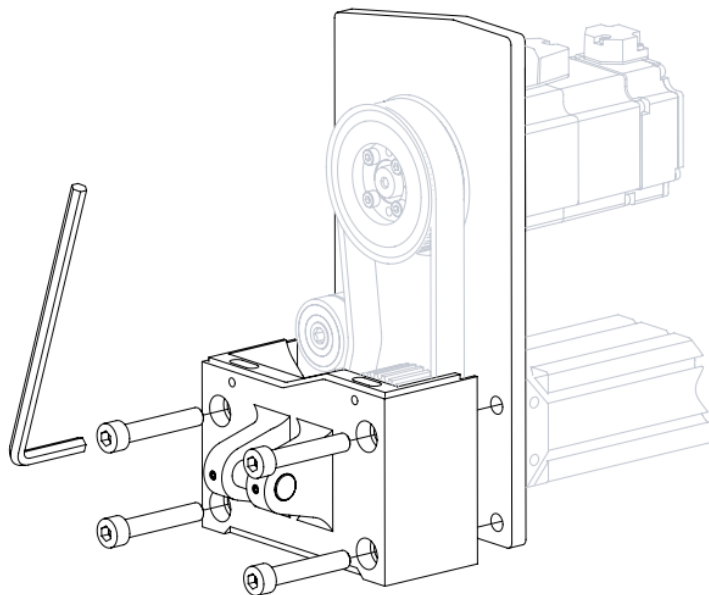
With swivel flange:

- Screw the swivel flange to the flange plate as specified in [Fig. 5.31](#) and tighten the screws as specified in [Table 5.19](#).

Table 5.19: Screw tightening torques for swivel flange

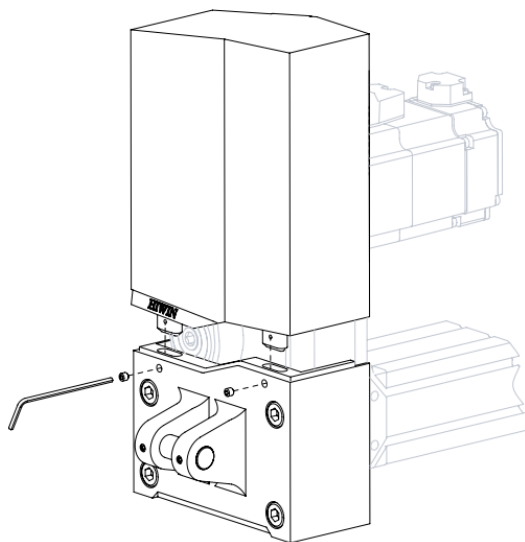
Sizes	Screw tightening torque [Nm]
EA040-S	10.0
EA050-S	10.0
EA060-S	10.0
EA080-S	25.0

Fig. 5.31: Mounting the swivel flange



- Fit the cover and tighten the grub screws hand-tight as shown in [Fig. 5.32](#) to secure the cover.
- Tighten the screws.
- ✓ The belt drive is mounted.

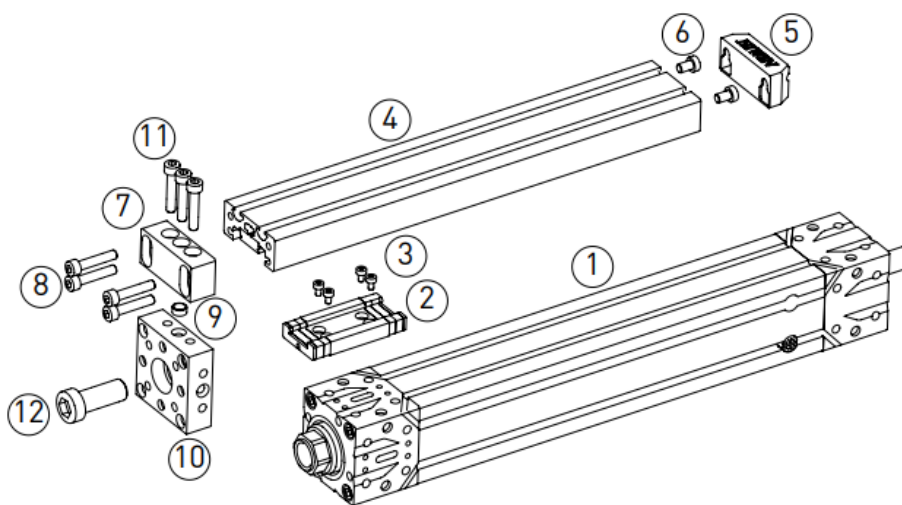
Fig. 5.32: Mounting the cover for belt drive with swivel flange



5.5 Mounting the slide guide

The electric actuators EA-S can be equipped with up to two guides as standard. The guides can be selected directly when configuring the electric actuator or added later on. The guides can also be configured as spare parts and be replaced when servicing is required. The second guide slide is mounted in the same way as the first one.

Fig. 5.33: Individual parts for slide guide EA-S



Legend

1	Electric actuator	7	Angle adapter
2	Block	8	Angle adapter screw
3	Block screw	9	Centring sleeve
4	Profile rail unit	10	Flange plate
5	Slide end piece	11	Screw for flange plate
6	Screw for slide end piece	12	Screw for screw plug

Mounting the guide slide:

- Clean the mounting surface on the end block and the block.
- Place the block with the pre-assembled feather key on the desired side of the end block by inserting the block with the feather key into the feather key groove.

Note:

As the feather key is used for centring, it does not matter which way round you mount the block on the end block.

- Screw in the block by tightening the screws in a criss-cross fashion to the screw tightening torque from [Table 5.20](#) as shown in [Fig. 5.34](#).

Fig. 5.34: Mounting the block on the end block

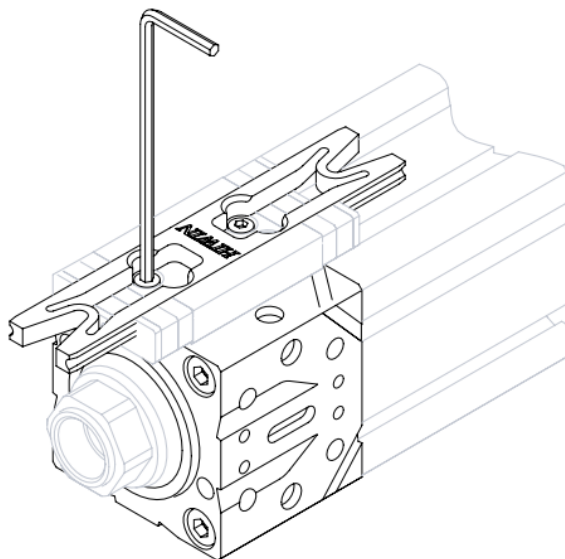


Table 5.20: Screw tightening torque for mounting the block

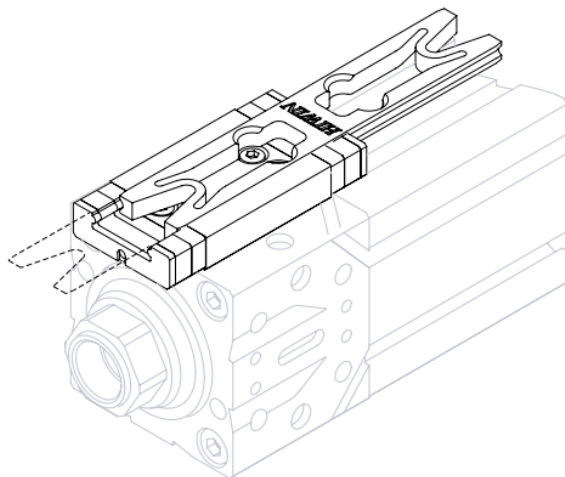
Sizes	Screw tightening torque [Nm]
EA040-S	2.0
EA050-S	2.0
EA060-S	4.0
EA080-S	7.0

- Tighten the screws.
- Push the installation aid back until the balls are still guided by the installation aid ([Fig. 5.35](#)).

Note:

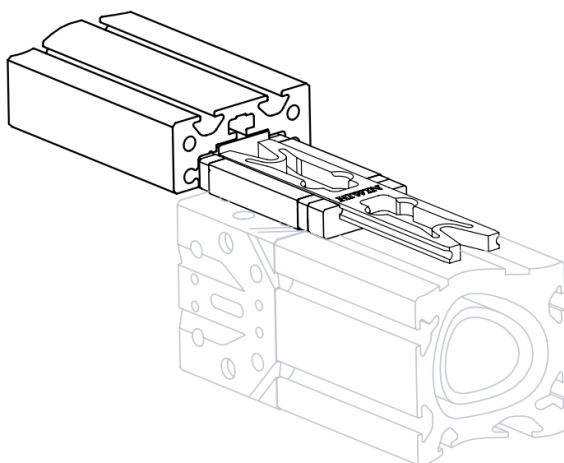
The installation aid has a high preload and can, therefore, only be moved with force. The high preload is designed to enable secure installation.

Fig. 5.35: Pushing back the installation aid



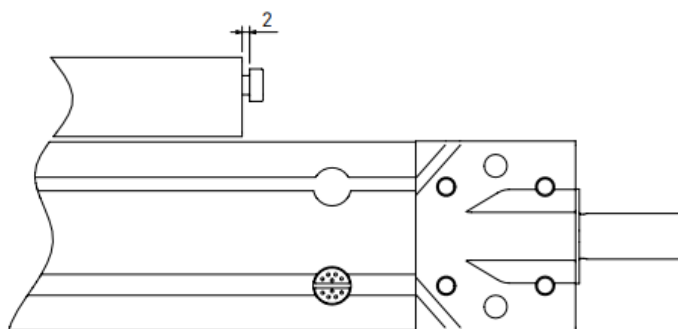
- Place the profile rail unit flush against the block ([Fig. 5.36](#))

Fig. 5.36: Positioning the profile rail unit on the block



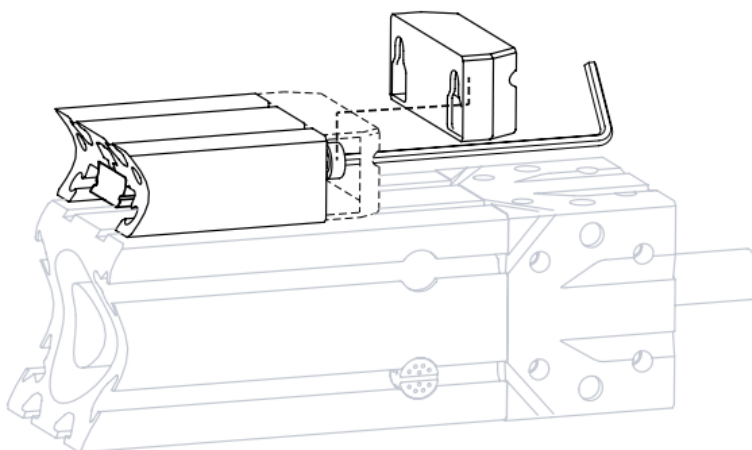
- ▶ Slide the profile rail unit onto the block.
- ▶ Fit the screws for the slide end piece and leave an approximately 2 mm gap between the screw head and the profile rail unit.

Fig. 5.37: Fitting the screws for the slide end piece



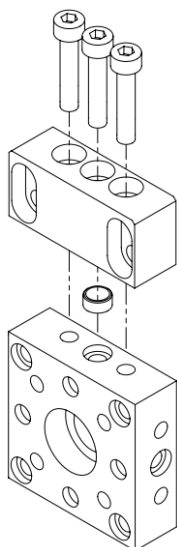
- ▶ Mount the slide end piece as in [Fig. 5.38](#) and tighten the screws hand-tight.
- ▶ Tighten the screws.

Fig. 5.38: Mounting the slide end piece



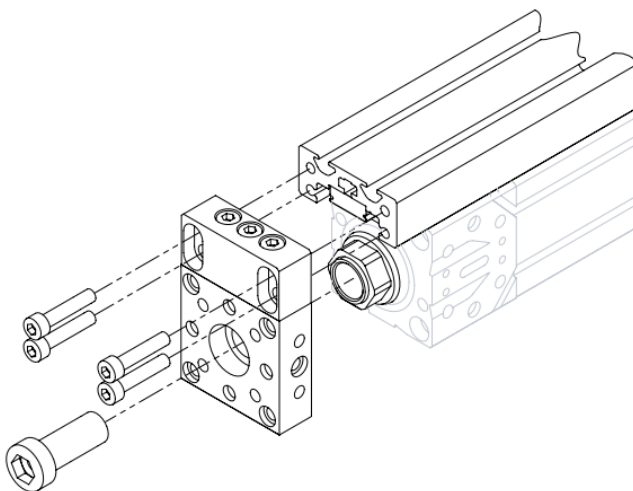
- ▶ Insert the centring sleeve between the angle adapter and the flange plate and only screw in the screws until the components can still be moved relative to each other.

Fig. 5.39: Pre-assembling the angle adapter and flange plate



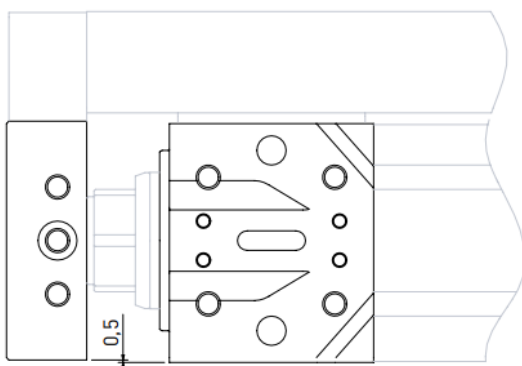
- Now also fit the screws from the angle adapter to the profile rail unit and the screw from the flange plate to the screw plug without pre-loading the screws.

Fig. 5.40: Pre-assembling the slide guide components



- Place the electric actuator on a flat surface and shim the flange plate with 0.5 mm to ensure that the flange plate is aligned with the end block ([Fig. 5.41](#) and [Fig. 5.42](#)).

Fig. 5.41: Aligning the flange plate



- Initially tighten the screw from the flange plate to the screw plug hand-tight and then to the screw tightening torque from [Table 5.21](#). Hold the screw plug with a suitable tool while tightening the screw ([Fig. 5.42](#)).

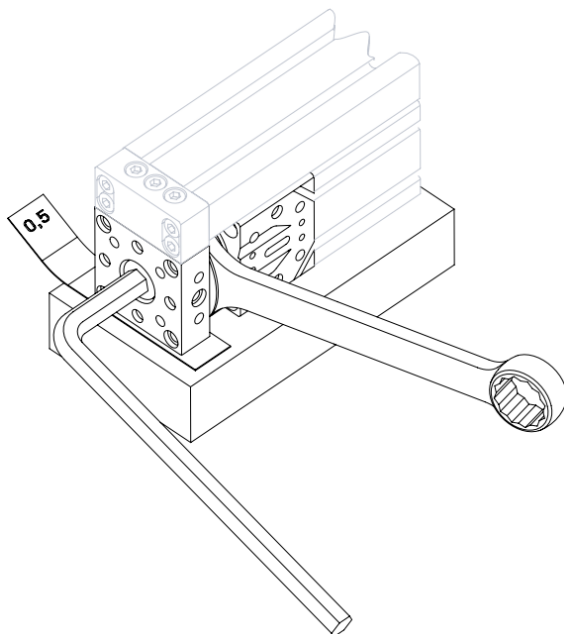
Note:

The piston tube has internal anti-twist protection. When working on the piston tube, always hold the spanner flat of the screw plug with a suitable tool to ensure that the anti-twist protection is not damaged.

Table 5.21: Screw tightening torque connection flange plate - screw plug

Sizes	Screw tightening torque [Nm]
EA040-S	40.0
EA050-S	60.0
EA060-S	60.0
EA080-S	90.0

Fig. 5.42: Mounting the flange plate to the screw plug



- Tighten the screws from the angle adapter to the flange plate and then the screws from the angle adapter to the profile rail unit hand-tight before tightening the screws in the same order to the screw tightening torque from [Table 5.22](#).

Table 5.22: Screw tightening torques for angle adapter

Sizes	Screw tightening torque [Nm] Angle adapter to flange plate	Screw tightening torque [Nm] Angle adapter to profile rail unit	
EA040-S	8.4	8.4	
EA050-S	8.4	8.4	
EA060-S	8.4	8.4	
EA080-S	13.0	M5: 8.4	M6:13.0

- Check if the load moves freely throughout the entire stroke.
- Tighten the screws.
- ✓ The guide slide is mounted.

6 Maintenance and cleaning

Warning! Risk of impact and crushing!

Displacement or unintentional movement of the piston tube can lead to injuries.

- ▶ When electric actuators are arranged vertically, secure the piston tube when stationary!
- ▶ Construction of the control system according to DIN EN 12100: No start up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!

Warning! Danger of injury and damage to property!

Unauthorised work on the unit may cause injury and invalidate the warranty.

- ▶ Mounting and maintenance of the system only by qualified personnel!

Attention! Danger of crushing due to tilting of the electric actuator!

- ▶ Secure machine and machine parts against tipping over!

Attention! Danger of impacts and crushing due to the electric actuator falling down or the payload coming loose! Danger due to high loads!

- ▶ Use suitable lifting gear!
- ▶ Attach the electric actuators according to the assembly instructions (see section [5.1](#))!
- ▶ Attach the payload according to the assembly instructions (see section [5.2](#))!

Attention! Risk of impact and crushing!

If the electric actuator is moved/driven manually, injuries can be caused by moving electric actuators and attachments (energy chains, attachments installed by the customer).

- ▶ Observe applicable industrial safety regulations!
- ▶ Transport to the installation site only by qualified personnel!

Attention! Danger of electric shock or burns from contact with live parts!

Contact with live parts can cause injuries. If the customer installs cables incorrectly, the constant motion inside the energy chain can cause chafing and expose the electrical contact points.

- ▶ Construction of the control system according to DIN EN 12100. No start-up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!
- ▶ Only qualified personnel may install cabling!
- ▶ Work on electrical installations only by qualified personnel!

Attention! Danger to health and the environment!

Contact with lubricants can cause irritation, poisoning and allergic reactions as well as damage to the environment.

- ▶ Only use suitable media that are not dangerous for humans. Observe the manufacturer's safety data sheets.
- ▶ Dispose of substances appropriately.

⚠ Attention! Danger to health and the environment!

Contact with lubricants can cause irritation, poisoning and allergic reactions as well as damage to the environment.

- ▶ Only use suitable media that are not dangerous for humans. Observe the manufacturer's safety data sheets.
- ▶ Dispose of substances appropriately.

! Caution! Damage due to incorrect lubricant!

Using the wrong lubricant can cause damage to property or environmental pollution.

- ▶ Use the correct type of lubricant (grease, oil) according to the specifications! See the electric actuators EA-S catalogue.

For maintenance work:

- ▶ Secure the electric actuator against unauthorised switching on.
- ▶ De-energise the electric actuator.
- ▶ Secure the electric actuator against unauthorised restart.

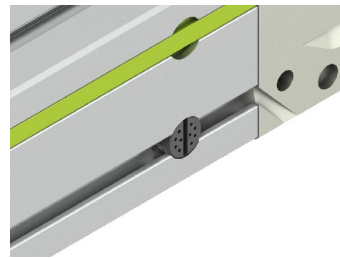
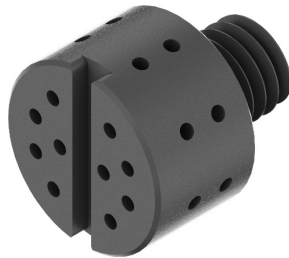


6.1 Cleaning the electric actuator

The electric actuators must be checked regularly and cleaned from the outside. Observe the following points when cleaning:

- Do not use compressed air.
- The surface is anodised and only resistant to alkaline cleaning agents under certain conditions.
Only neutral cleaning agents may be used for cleaning.
- Remove coarse particles from the surface regularly. A moistened, soft and lint-free cleaning cloth is ideal for this purpose.
- Clean the air filter regularly by unscrewing it for cleaning.
When re-tightening the air filter, only tighten it slightly without a tightening torque.

Fig. 6.1: Air filter EA-S



- Regularly remove accumulations of dirt from the piston tube. Ensure that a film of lubricant remains on the piston tube.

Note:

Without a film of lubricant on the piston tube, wear of the seal increases.

7 Faults

Possible faults on the electric actuator and their remedies can be found in [Table 7.1](#).

In the event of faults in the motor or the servo drive, refer to the instruction manual for the motor or the servo drive for the meaning of the fault and notes on how to remedy it.

7.1 Faults on the electric actuator

 **Attention!** Risk of impact and crushing!

If the electric actuator is moved by the motor, injuries can be caused by moving/driven electric actuators and attachments (energy chains, attachments installed by the customer).

- ▶ A safety guard must be provided for the operation of the electric actuator!
- ▶ When electric actuators are arranged vertically, secure the piston tube when stationary!

 **Attention!** Danger of electric shock or burns from contact with live parts!

Contact with live parts can cause injuries.

If the customer installs cables incorrectly, the constant motion inside the energy chain can cause chafing and expose the electrical contact points.

- ▶ Construction of the control system according to DIN EN 12100. No start up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!
- ▶ Only qualified personnel may install cabling!
- ▶ Work on electrical installations only by qualified personnel!

Table 7.1: Fault table

Fault	Possible cause	Remedy
Piston tube does not move	Coupling slips	Check coupling components for correct mounting, check tightening torques of the clamping screws and set them correctly
	Ballscrew is stuck or no longer rotates	Send the electric actuator to HIWIN GmbH for repairs
	Load too high	Reduce load or acceleration of the drive if necessary
Piston tube exhibits backlash and positions inaccurately	Backlash in the guides or drive elements after a collision or due to extreme external influences (impacts, load peaks, etc.)	Send the electric actuator to HIWIN GmbH for repairs
Programmed absolute position changes	Coupling slips	Check the torques of the clamping screws on the coupling elements and, if necessary, adjust them; check the maximum drive torque applied and, if necessary, reduce it
No limit switch function	Limit switch defective or cable break	Replace limit switch
	Signal does not arrive at the control system	Check the supply line to the control system
Noise development and vibrations at high speed	Speed is too high or supercritical speed	Reduce speed
	Tension in the system	Install the electric actuator so it is free of tension, check the evenness of the supporting surface and the attached load
	Incorrect settings on the drive controller	Retune and adjust controller settings to the application conditions
	No film of lubricant on the piston tube	Apply a suitable lubricant to the piston tube
	Slight tension in the sliding guides	Run in the electric actuator
Noise development of the guides	Lack of lubricant	Relubrication
	Damage to the guides, for example due to extreme impact loads on the slide or extreme contamination	Send the electric actuator to HIWIN GmbH for repairs
Motor load increases, control system switches off due to overload	Tension in the system	Install the electric actuator so it is free of tension, check the evenness of the supporting surface and the attached load.
	Heavy soiling of the electric actuator and the internal guide components	Clean the electric actuator, ensure free movement of the guide and drive elements

8 Disassembly

Danger! Danger due to electrical voltage!

Dangerous currents may flow before and during mounting, disassembly and repair work.

- ▶ Work may only be carried out by qualified electricians when the device is de-energised!
- ▶ Before working, disconnect the electric actuators from the power supply and secure them against being switched on again!

Warning! Risk of impact and crushing!

Displacement or unintentional movement of the piston tube can lead to injuries.

- ▶ When electric actuators are arranged vertically, secure the piston tube when stationary!
- ▶ Construction of the control system according to DIN EN 12100: No start up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!

Warning! Danger of crushing due to travel carriage!

Risk of injury due to crushing and damage to the electric actuators due to movement of the piston tube due to gravity, as the electric actuators do not have a brake by default.

- ▶ Ensure that the piston tube is secured against unintentional movement when stationary!

Warning! Danger from suspended loads or falling parts!

Lifting heavy loads can cause damage to health.

- ▶ Mounting and maintenance of the electric actuators only by qualified personnel!
- ▶ Take the mass of the parts into account during transport. Use suitable lifting gear!
- ▶ Comply with the applicable industrial safety regulations for handling suspended loads.
- ▶ Lift electric actuators only at specified support points!
- ▶ Secure machines and machine parts against tipping over!

Attention! Risk of impact and crushing!

If the electric actuators are moved/driven manually, injuries can be caused by moving electric actuators and attachments (energy chains, attachments installed by the customer).

- ▶ Observe applicable industrial safety regulations!
- ▶ Transport to the installation site only by qualified personnel!

Attention! Danger of electric shock or burns from contact with live parts!

Contact with live parts can cause injuries.

If the customer installs cables incorrectly, the constant motion inside the energy chain can cause chafing and expose the electrical contact points.

- ▶ Construction of the control system according to DIN EN 12100. No start up after:
 - Application, return of energy!
 - Correction of a fault!
 - Machine stop!
- ▶ Only qualified personnel may install cabling!
- ▶ Work on electrical installations only by qualified personnel!

Attention! Danger of crushing due to tilting of the electric actuator!

- ▶ Secure machine and machine parts against tipping over!

! Caution! Danger to health and the environment!

Contact with lubricants can cause irritation, poisoning and allergic reactions as well as damage to the environment.

- ▶ Only use suitable media that are not dangerous for humans. Observe the manufacturer's safety data sheets.
- ▶ Dispose of substances appropriately.

Disassembly steps:

- ▶ Disconnect the electric actuator from the electric system.
- ▶ Unscrew the moving load.
- ▶ Protect the moving parts (e.g. piston tube) from unintentional movement.
- ▶ Unscrew the electric actuator.
- ✓ The electric actuator is disassembled.

9 Disposal

⚠ Attention! Danger to health and the environment!

Contact with lubricants can cause irritation, poisoning and allergic reactions as well as damage to the environment.

- ▶ Only use suitable media that are not dangerous for humans. Observe the manufacturer's safety data sheets.
- ▶ Dispose of substances appropriately.

Table 9.1: Disposal

Liquids	
Lubricants	Dispose of as hazardous waste in an environmentally-safe manner
Soiled cleaning cloths	Dispose of as hazardous waste in an environmentally-safe manner
Electric actuator	
Cabling, electrical components	Dispose of as electrical waste
Plastic components (e.g. sliding guides)	Sort by type before disposal
Components made of steel (e.g. profile rail)	Sort by type before disposal
Aluminium components (e.g. profiles)	Sort by type before disposal

10 Installation certificate

In terms of EC Machinery Directive 2006/42/EC, Appendix II 1. B for incomplete machines

The manufacturer: HIWIN GmbH, Brücklesbünd 1, 77654 Offenburg, Germany

Documentation department: HIWIN GmbH, Brücklesbünd 1, 77654 Offenburg, Germany

Description and identification of the incomplete machine:

Product: Electric actuator EA-S
 Type: EA040-S, EA050-S, EA060-S, EA080-S
 Year of manufacture: from 2025

We hereby declare that the machine satisfies the following fundamental provisions of the Machinery Directive 2006/42/EC:

1.1.3, 1.1.5, 1.3.3, 1.3.4, 1.3.7, 1.3.9, 1.5.1, 1.5.8, 1.5.9, 1.6.2, 1.5.5, 1.1.2, 1.3.2, 1.5.4

We also declare that the specialist technical documents have been produced in accordance with appendix VII, part B.

We expressly declare that the incomplete machine satisfies all of the applicable provisions of the following EC directives.

2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility (EMC)
2011/65/EU	RoHS Directive on the restriction of hazardous substances

Reference of the harmonised standards applied in accordance with Article 7(2)

EN ISO 13732-1:2008	Ergonomics of the thermal environment – Evaluation methods for human responses to contact with surfaces - Part 1: Hot surfaces
EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction
EN 60204-1:2018	Safety of machinery – Electrical equipment of machines – Part 1: General requirements

The manufacturer or its agents undertake to provide the specialist documents on the incomplete machine to authorised organisations in the individual member states upon request.

Commercial copyrights remain unaffected.

Important note!

The incomplete machinery may not be put into operation until it has been ascertained that the machinery into which this incomplete machinery is to be incorporated is in conformity with this Directive.

Offenburg, August 2025

Werner Mäurer, Management

WE LIVE MOTION

Germany

HIWIN GmbH
Brücklesbünd 1
77654 Offenburg
Deutschland
Fon +49 781 93278-0
info@hiwin.de
hiwin.de

Taiwan

Headquarters
HIWIN Technologies Corp.
No. 7, Jingke Road
Precision Machinery Park
Taichung 40852
Táiwān
Fon +886 4 2359-4510
business@hiwin.tw
hiwin.tw

Taiwan

Headquarters
HIWIN Mikrosystem Corp.
No. 6, Jingke Central Road
Precision Machinery Park
Taichung 40852
Táiwān
Fon +886 4 2355-0110
business@hiwinmikro.tw
hiwinmikro.tw

France

HIWIN SAS
Le Méléze
17 Rue des Cigognes
67960 Entzheim
France
Fon +33 3 882884-80
contact@hiwin.fr
hiwin.fr

Poland

HIWIN GmbH Biuro Warszawa
ul. Puławska 405a
02-801 Warszawa
Polska
Fon +48 22 46280-00
info@hiwin.pl
hiwin.pl

Denmark

HIWIN GmbH
info@hiwin.dk
hiwin.dk

Netherlands

HIWIN GmbH
info@hiwin.nl
hiwin.nl

Austria

HIWIN GmbH
info@hiwin.at
hiwin.at

Hungary

HIWIN GmbH
info@hiwin.hu
hiwin.hu

Czech Republic

HIWIN s.r.o.
Medkova 888/11
62700 Brno
Česká republika
Fon +42 05 48528-238
info@hiwin.cz
hiwin.cz

Bulgaria

HIWIN Bulgaria
Christopher Columbus No. 4
1582 Sofia
Bulgaria
Fon +35 92 999 52 45
info@hiwin.bg
hiwin.bg

Slovakia

HIWIN s.r.o., o.z.z.o.
Mládežnícka 2101
01701 Považská Bystrica
Slovensko
Fon +421 424 4347-77
info@hiwin.sk
hiwin.sk

Switzerland

HIWIN (Schweiz) GmbH
Eichwiesstrasse 20
8645 Jona
Schweiz
Fon +41 55 22500-25
sales@hiwin.ch
hiwin.ch

Italy

HIWIN Srl
Via Pitagora 4
20861 Brugherio (MB)
Italia
Fon +39 039 28761-68
info@hiwin.it
hiwin.it

Romania

HIWIN Srl
info@hiwin.ro
hiwin.ro

Slovenia

HIWIN Srl
info@hiwin.si
hiwin.si

China

HIWIN Corp.
hiwin.cn

Japan

HIWIN Corp.
info@hiwin.co.jp
hiwin.co.jp

USA

HIWIN Corp.
info@hiwin.com
hiwin.us

Korea

HIWIN Corp.
hiwin.kr

Singapore

HIWIN Corp.
hiwin.sg