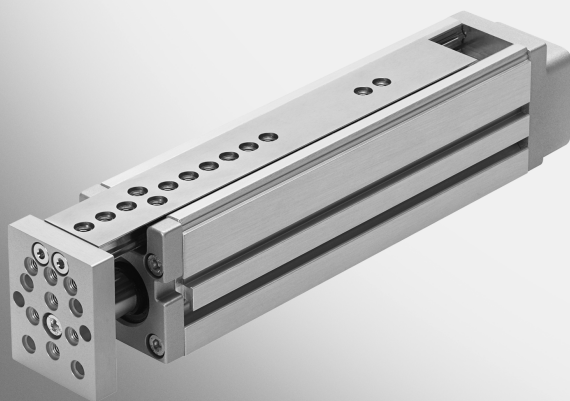


Mini slide

EGSL



FESTO

(en) Operating
instructions

8074716
2017-11c
[8074718]

Translation of the original instructions

Symbols:



Warning

Installation and commissioning may only be performed in accordance with these instructions by technicians with appropriate qualifications.



Caution



Note



Environment



Accessories

EGSL mini slide

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Documentation on the product



For all available product documentation → www.festo.com/pk

1 Control sections and connections

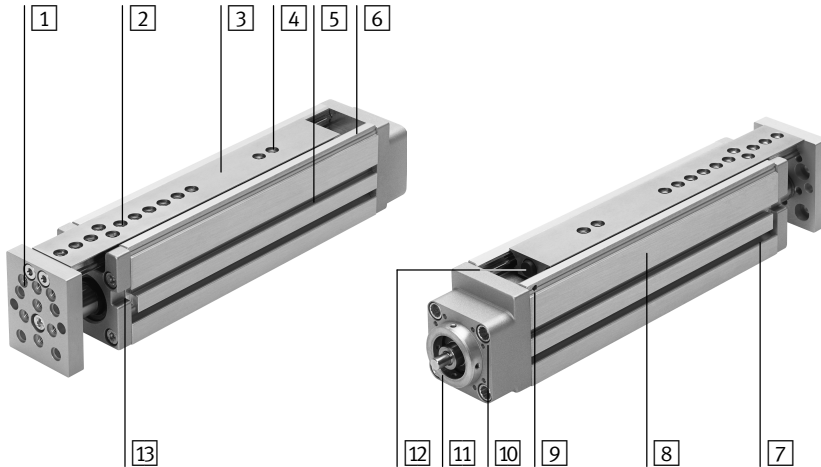


Fig. 1

- | | |
|--|---|
| <p>1 Mounting thread and centring holes for effective load (on front plate)</p> | <p>7 Mounting slots for terminal strip (accessories)</p> |
| <p>2 Mounting thread and centring holes for effective load (on guide rail)</p> | <p>8 Base profile with integrated rolling guide</p> |
| <p>3 Guide rail (slide)</p> | <p>9 Mounting thread for axial protection of the cover (accessories)</p> |
| <p>4 Mounting thread for switch lug (accessories)</p> | <p>10 Mounting thread for motor mounting kit (accessories)</p> |
| <p>5 Slot for proximity sensor (accessories)</p> | <p>11 Drive shaft</p> |
| <p>6 Mounting slot for cover (accessories)</p> | <p>12 Rubber buffer</p> |
| | <p>13 Recess for inserting the proximity switch</p> |

2 Function and application

A rotating slide spindle converts a motor's rotation into linear motion. The slide 3 will then move backwards and forwards. The slide is bearing mounted. The reference position of the slide unit can be determined with the help of proximity sensors (→ chapter 10 "Accessories") in the slot 5 or through homing against a fixed stop (retracted end position).

The EGSL mini slide is intended to be used for the precise positioning of effective loads.



Note

The EGSL mini slide does not have automatic locking: When input torque is not applied, the slide can be moved freely.

A latching function for the entire system can usually be achieved by the use of motors with an integrated holding brake or by other suitable measures such as, for example, clamping systems, motors with high gear ratios or automatically locking gear units. Which measure is appropriate to select basically depends on the application and the safety requirements.

- Select the corresponding Festo motor from our catalogue.
You will then be operating mating devices, which are especially adapted to each other (→ catalogue information, www.festo.com/catalogue and design software "PositioningDrives" → www.festo.com).
- Observe the limit values for forces and positioning times
→ chapter 12 "Technical data".

3 Transport and storage

- Take the product's weight into account. It weights up to 8 kg.
- Ensure the following storage conditions are met:
 - short storage times
 - cool, dry, shaded, corrosion-resistant storage locations.

4 Requirements for product use



Warning

Unexpectedly fast moveable masses can harm people or property (crushing).

- Apply power to the drive motor, at first limited to low speeds and torques.



Note

Particles (e.g. dust, liquids, ...) which penetrate the mechanics of the EGSL can cause damage or lead to reduced performance.

- Make sure that the dust concentrations for the permitted IP protection class are complied with (→ chapter 12 “Technical data”).

The cover (→ Accessories) prevents reaching between guide rail and end cover, but not penetration of dust and contamination.



Note

Malfunctions will occur if the device is not used correctly.

- Be sure to always comply with the specifications in this chapter. In this way, the product will perform as intended.

- Compare the limit values specified in these operating instructions with those of your actual application (e.g. forces, torques, temperatures, masses, speeds). Only compliance with the load limits allows operation of the product in compliance with the relevant safety regulations.

- Take into consideration the ambient conditions at the location of use. Corrosive elements in the environment (e.g. ozone) will reduce the service life of the product.

- Comply with the regulations of the trade association, the German Technical Control Board (TÜV) or corresponding national regulations.



- Remove transport packaging such as films and cardboard. The packaging is intended to be recycled on the basis of its constituent materials (exception: oiled paper = other waste).

- Use the product in its original condition without any unauthorised modifications.

- Note the warnings and instructions on the product and in the relevant operating instructions.
- Take the tolerance of the tightening torques into account. Unless otherwise specified, the tolerance is $\pm 20\%$.

5 Installation

Mechanical installation

- Do not modify the screws and threaded pins if not directly requested to do so in these operating instructions.
- Mount the motor on the mini slide in accordance with the assembly instructions for the motor mounting kit recommended in the catalogue.

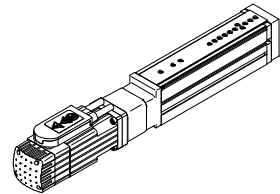


Fig. 2

For installation in a vertical or sloping position:



Warning

Falling masses can cause personal injury and material damage (crushing). If there is a power failure or if the spindle nut breaks, the work mass will drop.

- Make sure that you use only motors with an integrated holding brake.
- Check whether additional external safety measures are required to prevent damage due to spindle nut fracture (e.g. toothed latches or moving bolts).

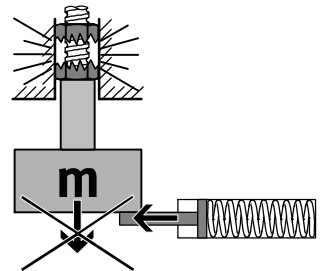
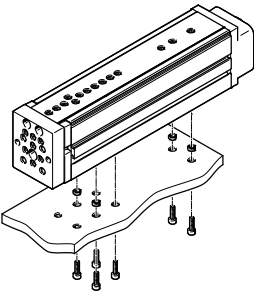
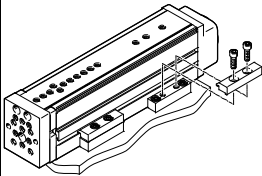
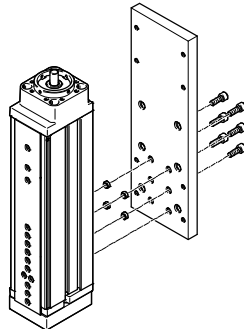


Fig. 3

- Make sure that the device is installed free of mechanical stress and sag (evenness of bearing surface $\leq 0.05\%$ of stroke length).
- Position the EGSL so that its control sections can be reached.

- Fasten the EGSL with at least 4 mounting attachments.
- Please select the appropriate accessories from our catalogue www.festo.com/catalogue

Direct mounting	Profile mounting attachment	Fastening with adapter plates
		
	Profile mounting in the groove of the mounting surface 7	

- Tighten the mounting screws evenly with the following tightening torque.

EGSL-...	35	45	55	75
Screw	M4	M5	M5	M6
Min. screw-in depth	[mm] 4.8	5.5	5.5	6.6
Max. screw-in depth	[mm] 6.0	6.5	7.0	10.5
Centring sleeve	[mm] 7x3 (ZBH-7)	7x3 (ZBH-7)	7x3 (ZBH-7)	9x4 (ZBH-9)
Tightening torque				
– Direct mounting/ Fastening with adapter plates	[Nm] 2.9	5.9	5.9	9.9
– Profile mounting attachment	[Nm] 1	5	5	5

Fig. 4

Installing the effective load



Note

If the steel slide becomes bent against a buckled effective load, the service life of the guide will be reduced.

- Make sure that the mounting surface of the effective load is even to within $t \leq 0.05$ mm.

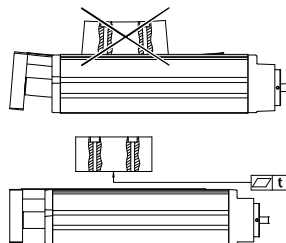


Fig. 5

- Place the effective load so that the pull-out torque from the force (parallel to the axis of motion) and lever arm remains low.
- Check the necessity of adapter plates.
Connection of the EGSL to Festo handling components is made possible through adapter plates (→ chapter 10 “Accessories”).
- Fasten the effective load to the slide unit with screws (A) and, if necessary, with centring elements (B).
The screw-in depth must be less than the threaded holes.

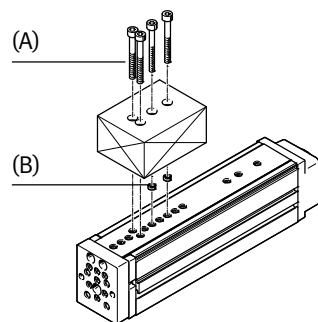


Fig. 6

EGSL-...		35	45	55	75
Screw	(A)	M4	M5	M5	M6
Centring sleeve	(B) [mm]	7x3 (ZBH-7)	7x3 (ZBH-7)	7x3 (ZBH-7)	9x4 (ZBH-9)
Min. screw-in depth					
– Guide rail	[mm]	3.6	4.5	4.5	5.4
– Yoke plate	[mm]	4.8	6	6	7.2

EGSL-...		35	45	55	75
Max. screw-in depth					
– Guide rail	[mm]	7.4	10.8	10.8	12.4
– Yoke plate	[mm]	8.4	8.4	8.5	12.9
Tightening torque	[Nm]	2.9	5.9	5.9	9.9

Fig. 7

For useful load geometries with projection in the longitudinal direction of the slide:

- Make sure that the useful load does not strike against the motor.

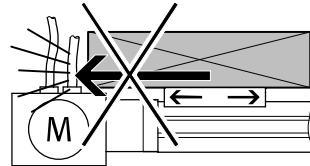


Fig. 8

Electrical installation

If proximity sensors are used:

- Push the proximity sensors through the cut-out 13 on the housing cover into the upper sensor slot. The cable of a proximity sensor can be guided away via the cross groove (C) into the lower groove.

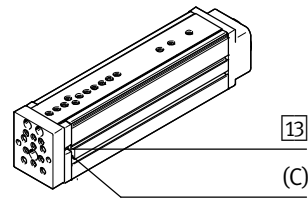


Fig. 9

Protecting the end positions against uncontrolled overrunning:

- Check whether additional hardware proximity switches are necessary.
- Observe that this reduces the effective stroke (→ catalogue specifications, www.festo.com/catalogue).

If proximity sensors are used as hardware limit switches:

- Use proximity switches with normally-closed function.
The normally closed function protects the EGSL against overrunning the end position if the proximity sensor cable is broken.
- Avoid external influence caused by strong magnetic fields or ferrite parts in the vicinity of the proximity sensors. The minimum distance is summarised in the table below:

EGSL-...	35	45	55	75
Minimum distance [mm]	20	25	20	40

Fig. 10

If proximity sensors are used as reference switches:

- Use the proximity sensors corresponding to the input of the controller used (→ catalogue specifications, www.festo.com/catalogue).

To prevent soiling:

- Use the slot covers from our catalogue.

6 Commissioning



Warning

Moving masses can cause personal injury and material damage (crushing).

- Make sure that, in the travel range,
 - nobody can place his/her hand in the path of the moving load (e.g. by use of a protective crate),
 - there are no foreign objects.

It should not be possible to touch the EGSL until the mass has come to a complete standstill.

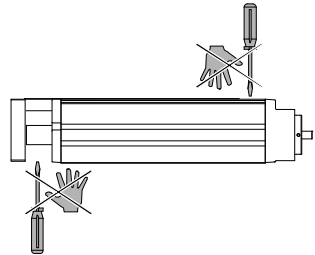


Fig. 11



Note

Incorrect default values of the braking ramp in STOP conditions (e.g. EMERGENCY STOP and quick stop) result in overloading of the linear axis and can damage it or drastically reduce its service life.

- Check the settings for all braking ramps on your controller or the higher-order controller (deceleration values and jerking).
- Taking the travel speed, moveable load and mounting position into account, make sure that the delay values (brake delay and delay times) are set in such a way that the maximum drive torque or feed force of the linear axis used is not exceeded.
- Use the Festo “PositioningDrives” sizing software to design the mini slide
→ www.festo.com.




Note

Block-step acceleration profiles (without smoothing) cause high peaks in the motive force that can lead to drive overload. In addition, positions outside the permissible range may occur as a result of overswing effects. A jolt-limited acceleration specification reduces vibrations in the entire system and has a positive effect on stress in the mechanical system.

- Check which controller settings may be adapted (e.g. jolt limitation and smoothing the acceleration profile).

1. Check travel	2. Homing	3. Test run
Determining the direction of movement of the motor	Comparing the real situation with the image in the controller	Checking the overall behaviour

Fig. 12: Definitions

1. Start **check travel** limited to low dynamics.
In spite of equal control, motors of the same type sometimes turn in the opposite direction due to the circuitry.
The EGSL has a clockwise-rotating spindle: When the drive shaft is rotated clockwise, the slide moves in the direction of the motor.
2. Start **homing** in accordance with the operating instructions for your motor drive system limited to low dynamics (max. speed: 10 mm/s):
 - up to the reference switch or
 - up to the retracted end position at the fixed stop.
For this, the rubber buffer  in the slide must be removed.
3. Start a **test run** and limit it to low dynamic response.
4. Check whether the EGSL fulfils the following requirements:
 - The slide must be able to move through the complete intended positioning cycle.
 - The slide must stop as soon as it reaches a limit switch.
5. If the proximity sensors do not respond:
 - ➔ chapter 11 “Eliminating malfunctions” and the operating instructions for the proximity switches.

7 Operation



Warning

Moveable masses can cause personal injury and material damage.

- Make sure that, in the travel range,
 - nobody can place his/her hand in the path of the moving components (e.g. by means of a protective guard),
 - there are no foreign objects.

It should not be possible to touch the EGSL until the mass has come to a complete standstill.

If the motor turns in the wrong direction:



Note

When the motor is removed (e.g. turning the motor) the reference position is lost.

- Start a reference run as detailed in the chapter 6 “Commissioning”, in order to reference the new positioning cycle.

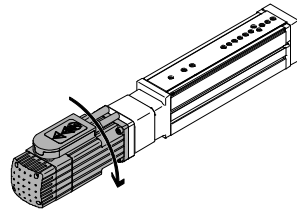


Fig. 13

8 Service and maintenance



Warning

Controller signals can cause the EGSL to make unintended movements.

- Switch off the controller before any work on the EGSL and secure the controller to prevent it from being switched on again.

On cleaning and maintenance:

- If necessary, clean the EGSL with a soft cloth.
Cleaning agents: Any gentle detergent

9 Disassembly and repair

- Recommendation: Send the product to our repair service.
The necessary fine adjustments and tests will then be taken especially into account.

10 Accessories



Note

- Please select the appropriate accessories from our catalogue www.festo.com/catalogue

11 Eliminating malfunctions

Malfunction	Possible cause	Remedy
Squeaking noises, vibrations or rough operating behaviour	The coupling is fitted too tight	Comply with permissible coupling distances (→ Motor mounting kit assembly instructions)
	Distortions	Install EGSA without tension (Observe evenness of bearing surface/effective load: → chapter 5 “Mechanical installation”)
	Speed exceeded	Reduce travel speed
	Incorrect regulator settings	Modify the regulator parameters (only with servo motors)
Slide does not move	Loads too high	Reduce load mass
	Coupling hub slipping	Check coupling mounting (→ Assembly instructions)
	Foreign matter blocking slide	<ul style="list-style-type: none"> – Remove foreign matter – Use cover (→ chapter 10 “Accessories”)
Slide travels beyond the end position	Proximity sensor not sensing	Check the proximity switches, connections and controller

Fig. 14

12 Technical data

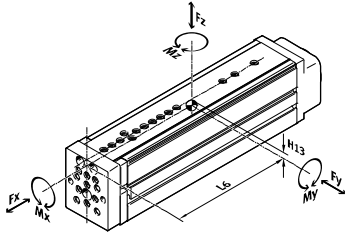
EGSL-...	35	45	55	75
Design	Electrical mini slide with ball bearing cage guide and recirculating ball bearing spindle			
Mounting position	Any			
Repetition accuracy [mm]	± 0.015			
Axial play when new [mm]	≤ 0.05			
Ambient temperature [°C]	0 ... +60			
Protection class	IP40			
Duty cycle [%]	100			
Note on materials	Contains materials with PWIS			
Materials				
– Cover	Painted aluminium			
– Housing	Anodised aluminium			
– Guide rail, spindle; spindle nut	Rolled steel			
– Dust protection (scraper)	Nitrile rubber			

Fig. 15

EGSL-...		35		45		55		75		
		8P	3P	10P	5P	12.7P	10P	20P		
Max. feed force F _x	[N]	75	150		300		450			
Continuous feed force	[N]	50	100		200		300			
Max. radial force on drive shaft	[N]	20	120		260		300			
Max. driving torque	[Nm]	0.2	0.45	0.51	0.9	1.25	3.25	3.25		
Max. no-load driving torque	[Nm]	0.015	0.090	0.080	0.095	0.130	0.250	0.155		
Max. speed	[m/s]	0.5	0.3	1	0.4	1	0.7	1.3		
Nominal acceleration	[m/s ²]	15								
Max. acceleration ¹⁾	[m/s ²]	25								
Max. rotational speed	[rpm]	3750	6000		4800		3900			
Feed constant	[mm/rev.]	8	3	10	5	12.7	10	20		
Product weight										
– at 50 mm stroke	[kg]	0.57	–							
– at 100 mm stroke	[kg]	–	1.54	1.57	2.47	2.55	5.10	5.10		
– at 200 mm stroke	[kg]	–	2.16	2.19	3.48	3.40	6.52	6.51		
– at 250 mm stroke	[kg]	–	–		3.95	4.05	–			
– at 300 mm stroke	[kg]	–	–				8.05	8.05		
¹⁾ The max. acceleration can reduce the service life										

Fig. 16

Permitted force and torque loading



$$\frac{|M_x|}{M_{x_{max}}} + \frac{|M_y|}{M_{y_{max}}} + \frac{|M_z|}{M_{z_{max}}} + \frac{|F_y|}{F_{y_{max}}} + \frac{|F_z|}{F_{z_{max}}} \leq 1$$

and $|F_x| \leq F_{x_{max}}, |F_y| \leq F_{y_{max}}$

and $|M_x| \leq M_{x_{max}}, |M_y| \leq M_{y_{max}}, |M_z| \leq M_{z_{max}}$

EGSL-...		35	45	55			75			
		50	100	200	100	200	250	100	200	300
Max. force $F_{Y_{max}} = F_{Z_{max}}$	[N]	412	631	291	1047	490	563	1539	714	555
Max. torque $M_{X_{max}}$	[Nm]	6.2	18.6	14.3	33.1	24.2	27.0	67.4	48.5	46.4
Max. torque $M_{Y_{max}} = M_{Z_{max}}$	[Nm]	6.0	16.3	12.3	31.0	22.6	33.0	47.1	33.8	36.5
Geometric characteristics:										
H13	[mm]	4.2	6.4	6.4			7.6			
L6	[mm]	106	162	262	180	280	344	187	287	389

Fig. 17

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