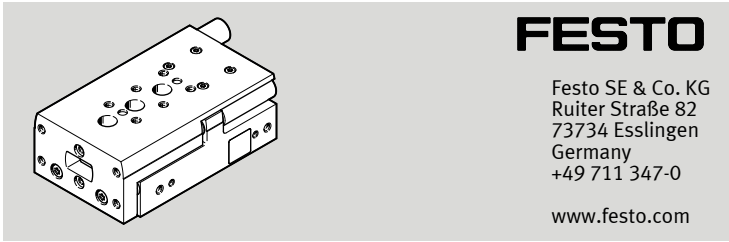


DGST
Mini slide



Operating instructions

8134845
2020-04b
[8134847]



Translation of the original instructions

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1 Applicable Documents

All available documents for the product -> www.festo.com/sp.

2 Safety

2.1 Safety Instructions

- Take into consideration the ambient conditions at the location of use.
- Only use the product in original status without unauthorised modifications.
- Observe labelling on the product.
- Store the product in a cool, dry, UV-protected and corrosion-protected environment. Ensure that storage times are kept to a minimum.
- Prior to mounting, installation and maintenance work: Switch off compressed air supply and secure it from being switched back on.
- Observe tightening torques. Unless otherwise specified, the tolerance is ± 20 %.

2.2 Intended use

The product is intended for the space-saving transport of masses. A high degree of positioning accuracy is achieved.
The product is approved for slide operating mode.

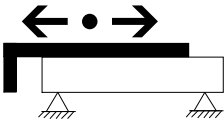


Fig. 1

2.3 Training of qualified personnel

Installation, commissioning, maintenance and disassembly should only be conducted by qualified personnel.
The skilled personnel must be familiar with the installation of pneumatic control systems.

3 Further information

- Accessories -> www.festo.com/catalogue.
- Spare parts -> www.festo.com/spareparts.

4 Service

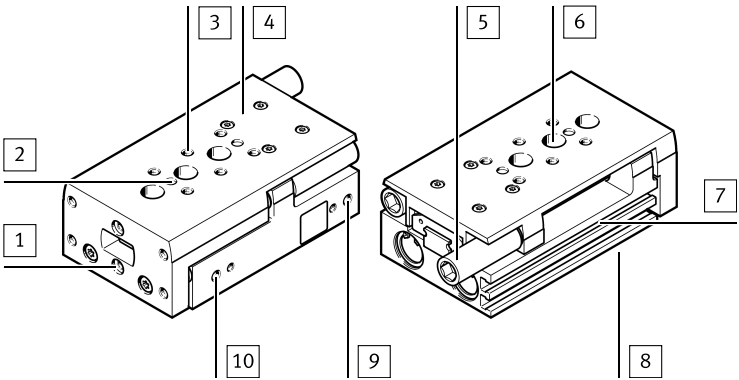
Contact your regional Festo contact person if you have technical questions
-> www.festo.com.

5 Product overview

5.1 Function

The DGST mini slide is a non-rotating double-piston drive with bearing guide. When the compressed air supply ports are pressurised reciprocally, the slide moves back and forth. The DGST-...-E1 is the basic variant with internal elastic cushioning and without the option of adjusting the stroke. The slide is braked by external elastic cushioning components in the case of DGST-...-P and by external hydraulic shock absorbers in the case of DGST-...-Y12. These cushioning components also serve to adjust the stroke.

5.2 Design



- 1 Thread with centring hole for mounting the payload
- 2 Centring
- 3 Thread for mounting the payload
- 4 Slide
- 5 Threaded sleeve with cushioning component:
- Elastic cushioning (P)
- Hydraulic cushioning (Y12)
- 6 Drill holes for mounting the mini slide from above (concealed under the slide)
- 7 Slot for proximity sensor
- 8 Thread for mounting the mini-slide from below (concealed underneath)
- 9 Compressed air supply port (extending)
- 10 Compressed air supply port (retracting)

Fig. 2 Operating elements and connections

6 Transport

NOTICE!

Unexpected and unbraked movement of components

- Secure moving components for transport.
- Take product weight into account -> 12 Technical data.

7 Assembly

7.1 Preparation

- Do not modify the screws and threaded pins.
Exception: immediate requirement for change in this instruction manual.
- Place the product in such a way that the operating elements can be reached (e.g. threaded sleeves for cushioning components).
- Install product without torsional stresses.
- Mount the product to a mounting surface with flatness of 0.05 % of the stroke length, but max. 0.1 mm.
- If needed: select mounting components or accessories
-> www.festo.com/catalogue. Centring sleeves are not included in the scope of delivery.
To prevent collisions, mount the mounting components outside the positioning range.

7.2 Mounting

- 1. Attach drive paying attention to the minimum number of screws.

Direct mounting	Through-hole mounting

Tab. 1 Types of mounting

2. Tighten screws evenly.

DGST-...	6	8	10	12	16	20	25
Minimum number of screws dependent on stroke							
10 ... 150 [mm]	2	2	2	2	2	2	2
200 [mm]	–					3	
Direct mounting							
Screw	M4	M4	M5	M5	M6	M8	M8
Centring [H7] [mm]	5	5	7	7	9	12	12
Through-hole mounting							
Screw	M3	M3	M4	M4	M5	M6	M6
Centring [H7] [mm]	5	5	7	7	9	12	12

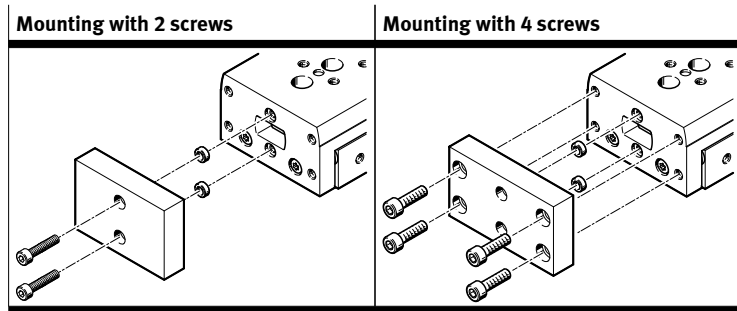
Tab. 2 Number of screws and screw size

7.3 Attachment

- Fasten the attachment to the slide or the yoke plate with screws and centring elements. Observe maximum screw-in depth D.

If needed: select mounting components or accessories

→ www.festo.com/catalogue. Centring sleeves are not included in the scope of delivery.



Tab. 3 Types of mounting

DGST	6	8	10	12	16	20	25
Mounting on the slide (top)							
Screw	M3	M3	M4	M4	M5	M5	M6
Max. screw-in depth D [mm]	3.1	5.5	4.5	5.2	7.2	8	11
Centring [H7] [mm]	Ø 5	Ø 5	Ø 5	Ø 5	Ø 5	Ø 12	Ø 12
Mounting on the slide with 2 screws (front side)							
Screw	–	M3	M3	M4	M4	M5	M6
Max. screw-in depth D [mm]	–	4.7	5.2	6.4	6.4	7.4	7.4
Centring [H7] [mm]	–	Ø 5	Ø 5	Ø 7	Ø 7	Ø 12	Ø 12
Mounting on the slide with 4 screws (front side)							
Screw	M3	M3	M4	M4	M5	M5	M6
Max. screw-in depth D [mm]	4.5	4.5	6.5	6.5	8	8	10
Centring [H7] [mm]	Ø 2H8	Ø 5	Ø 5	Ø 7	Ø 7	Ø 12	Ø 12

Tab. 4 Screw-in depth and screw size

7.4 Mounting accessories

Cushioning components

DGST-...-E1 with internal cushioning:

NOTICE!

When operating the product with internal cushioning, reduce the speed.

- Observe permitted impact energy → Technical data.

Cushioning components for retrofitting cushioning can be ordered separately and integrated into the DGST subsequently → www.festo.com/catalogue.

Proximity sensor

For position sensing with proximity sensors:

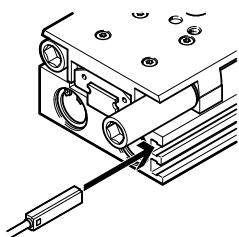


Fig. 3 Position sensing

- Slide the proximity sensors [7] into the slots → 5.2 Design.
- Avoid external influence caused by magnetic or ferritic parts in the vicinity of the proximity sensors. Check the required distance in the application case.
- To avoid contamination: use slot covers on all unused slots
→ www.festo.com/catalogue.

One-way flow control valves

To set the speed:

- Use one-way flow control valves in the supply ports. These are screwed directly into the compressed air supply ports.

To secure the payload from dropping when a pressure failure occurs:

- Use check valves.

8 Pneumatic installation

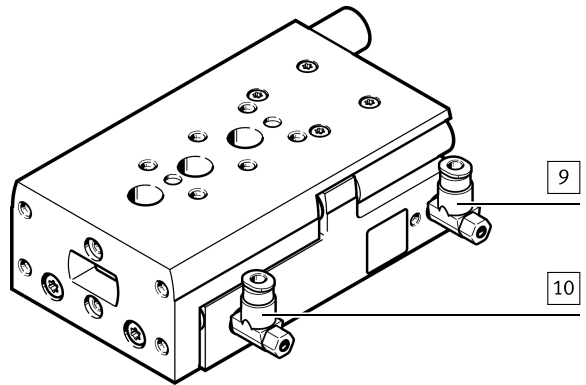


Fig. 4 Supply ports with one-way flow control valves

- Use one-way flow control valves for setting the speed of the slide.
- Connect hoses to supply ports:
 - 9 Extending movement
 - 10 Retracting movement

9 Commissioning

9.1 Preparation

NOTICE!

Unexpected movement of components.

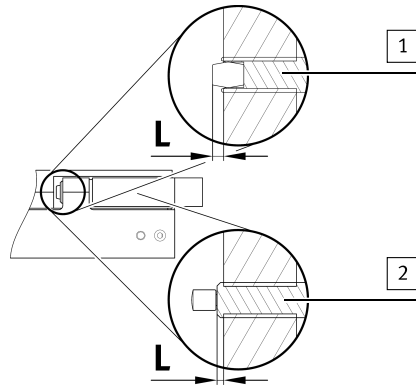
- Keep foreign objects out of the positioning range.
- Initiate start-up at low speed.

- Slowly supply complete system with air. For slow start-up pressurisation, use on-off valve HEL.

With medium or large payloads and/or at high speeds:

- Use sufficiently large arrester fixtures.
Without the use of external arrester fixtures, the product can contend with the maximum speeds and payloads defined in catalogue details or in technical data.

To adjust the end-positions:



1 DGST-...-P

2 DGST-...-Y12

Fig. 5 End position adjustment

- Observe the following points:
 - The distance L of the cushioning component must be maintained at a minimum (factory setting).
 - For all adjustment work, all threads of the cushioning component are constantly manipulated.

If the minimum factory setting L is not maintained, the drive will strike internally (external cushioning not entirely sufficient). This can result in the destruction of the drive.

DGST-...	6	8	10	12	16	20	25
Distance L at DGST-...-P/-Y12							
Retracted end position [mm]	2.5	3	3	3	3	3.5	3.5
Extended end position [mm]	1.5	2.3	2.4	2.4	2.35	2.25	2.5

Tab. 5 Measure of distance L

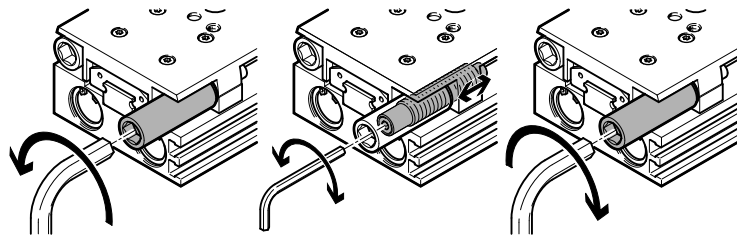


Fig. 6 End position adjustment

1. Loosen threaded sleeve [5].
2. Position the slide in the desired end position.
3. Turn the internal cushioning component until the end position is reached. Observe the maximum torque here → following table.

NOTICE!

The exact slide position must be checked during a test run with compressed air applied and, if necessary, corrected.

4. Retighten the threaded sleeve with the following tightening torque.

DGST-...	6	8	10	12	16	20	25
Threaded sleeve							
Tightening torque [Nm]	0.45	0.7	0.9	1.8	2.7	4.5	7
Cushioning component							
Max. torque [Nm]	0.1	0.5	0.6	1	3	5	10

Tab. 6 Torque

9.2 Execution

NOTICE!

Risk of collision by payloads that protrude through the rotor/slide.

- Only turn adjusting screws while the rotor/slide is stationary.

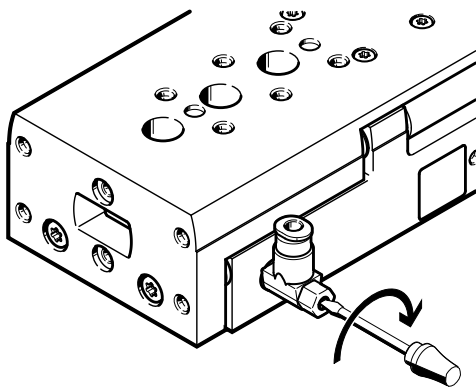


Fig. 7

1. First of all, close the one-way flow control valves on both sides completely, then unscrew them one complete turn.
2. Initially exhaust drive simultaneously at both sides.
↳ This causes the slide to move slightly to a point of balance.
3. Then exhaust the drive on just one side.
↳ This causes the slide to move into an end position.
4. Start the test run.
5. If needed: correct speed at the one-way flow control valves. The slide should reach the end positions without striking them harshly or recoiling.

10 Malfunctions

10.1 Fault clearance

Fault description	Cause	Remedy
Slide moves unequally.	One-way flow control valves are not installed correctly.	Control flow of exhaust air, if possible (not supply air).
The slide strikes the end position harshly.	Speed is too high.	Reduce the speed.
	Cushioning is insufficient.	<ul style="list-style-type: none"> – Adjust shock absorber/fixed stop again → Preparation for commissioning. – Reduce the speed. – Check and, if necessary, replace cushioning components.
	Missing air cushion.	Pressurise both air supply ports at the same time and then exhaust at one end.
	The shock absorber is faulty.	Replace the shock absorber.
	Payload is too great.	Reduce payload.
Slide in initial position despite pressurisation.	Tubing incorrectly connected.	Check tubing connection.

Fault description	Cause	Remedy
The slide speed is too low.	Air volume is lacking.	<ul style="list-style-type: none"> – Increase connection cross-section. – Check the adjustment of throttle. – Connect volume upstream.

Tab. 7

10.2 Repair

Send the product to the Festo repair service for repair.

- Use the shock absorber paying due regard to environmental protection (use of problem substances). The shock absorber is filled with hydraulic fluid. Due to the design, the hydraulic fluid cannot be refilled.

To replace the integrated cushioning components:

1. Observe section on "Adjusting the end positions" → 9.1 Preparation.
2. Loosen the threaded sleeve [5] on the cushioning component.
3. Replace cushioning component → www.festo.com/catalogue:
 - DYE-F-G8-M_-Y1 at DGST-...-P
 - DYSS-G8-...-Y1F at DGST-...-Y12.
4. Adjust the end positions.
5. Lock both cushioning components with the threaded sleeve, observe the tightening torque → Tab. 6 Torque.

11 Disposal

ENVIRONMENT!

Send the packaging and product for environmentally sound recycling in accordance with the current regulations → www.festo.com/sp.

12 Technical data

Size	6	8	10	12	16	20	25	
Design	Drive with yoke kinematics and							
Guide	Recirculating ball bearing guide					Three-part cage guide		
Mode of operation	Double-acting							
Pneumatic connection	M3	M5				G1/8		
Cushioning								
– DGST-...-E1	Elastic cushioning, without end-position adjustment, at both ends							
– DGST-...-P	Elastic cushioning at both ends, non-adjustable, with end-position adjustment							
– DGST-...-Y12	Shock absorber, self-adjusting on both sides, with end-position adjustment							
Mounting position	Any							
Max. speed								
– DGST-...-E1/Y12	[m/s]	0.5						
– DGST-...-P	[m/s]	0.5	0.8					
Repetition accuracy								
– DGST-...-E1/P	[mm]	≤ 0.3						
– DGST-...-Y12	[mm]	≤ 0.02						
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]							
Note on the operating medium	Lubricated operation possible (in which case lubricated operation will always be required)							
Operating pressure ¹⁾	[bar]	1.5 ... 8		1 ... 8				
Ambient temperature	[°C]	−10 ... +60						
Theoretical force at 6 bar (supply)	[N]	34	60	94	136	241	377	589
Theoretical force at 6 bar (return)	[N]	25	45	79	102	207	317	495
Impact energy at the end positions								
– DGST-...-E1	[J]	0.005	0.03	0.05	0.07	0.15	0.2	0.3
– DGST-...-P	[J]	0.018	0.05	0.08	0.12	0.25	0.35	0.45
– DGST-...-Y12 (per stroke)	[J]	0.09	0.18	0.28	0.48	0.85	1.9	3.6
Max. operating frequency at DGST-...-Y12	[Cycles/-min]	50	80	80	80	70	50	50
Product weight at 10 mm stroke with DGST-...-E1	[g]	90	129	247	391	454	978	1463
Product weight at max. stroke with DGST-...-E1	[g]	172	310	561	988	1402	3275	4803
Materials								
Slide, housing	Anodised wrought aluminium alloy							
Piston rod	High-alloy stainless steel							
Guide	High-alloy steel, POM, TPE							
Seals	HNBR/PU							

1) For sizes 6/8/10/12, the min. operating pressure can be easily increased after a rest period > 24 h.

Tab. 8 Technical data DGST