

DFST-32-...-G2
Stopper cylinder

FESTO logo and contact information: Festo SE & Co. KG, Rüter Straße 82, 73734 Esslingen, Germany. Includes website www.festo.com.

Instructions | Operating

8123248
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[8123250]



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.
- 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 stopper cylinder DFST is designed for use as a retractable fixed stop in order to reach defined holding positions with transported material (e.g. on mounting or sorting systems). The DFST sorts the stationary transported material in buffer zones.

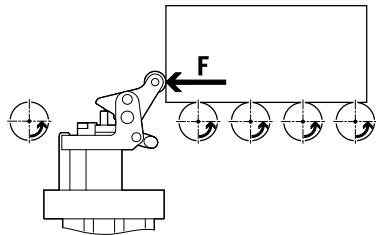


Fig. 1 Stopping transported material

2.3 Foreseeable misuse

With DFST-...-L: the toggle lever must not be overrun in the stop direction by the transported material when the lever locking mechanism is active. Otherwise the transported material will damage the locking mechanism.

2.4 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

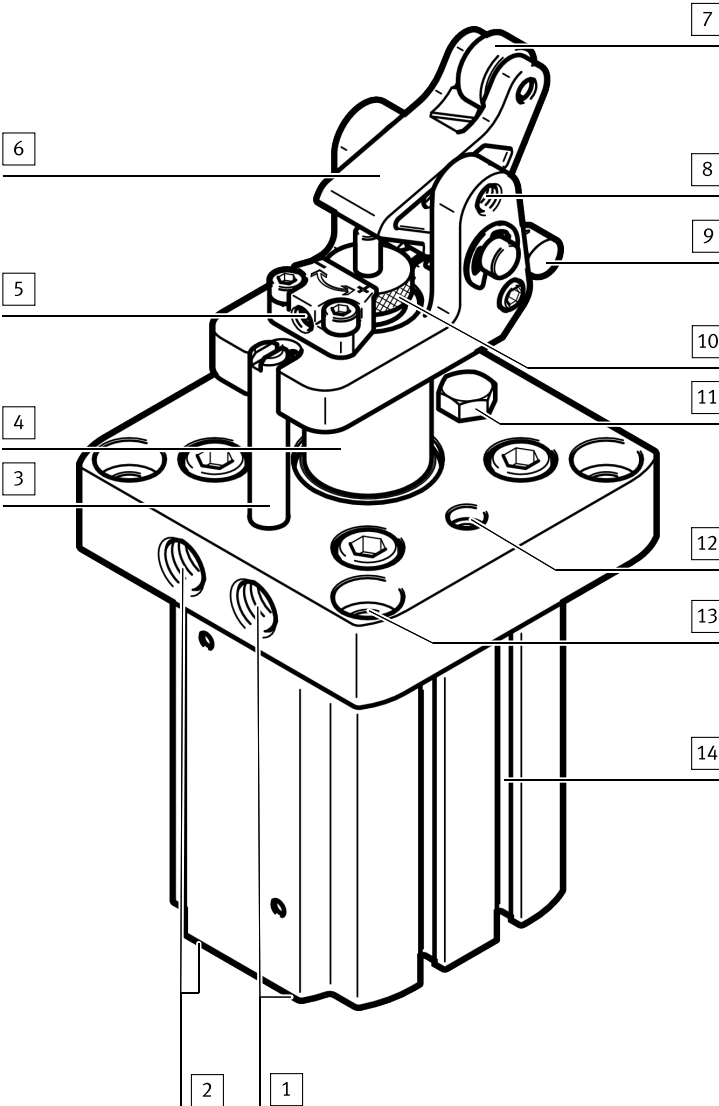
The stopper cylinder DFST is a double-acting cylinder. The piston rod is extended with the toggle lever mechanism by pressurising the supply port 1. The toggle lever gently stops the incoming transported material with the integrated shock

absorber. The piston rod is retracted by pressurising the supply port 2. The stopper cylinder with spring return (not applicable for DFST-...-D/DL) can also be set to single-acting. This is done by screwing a silencer into the supply port 1. This makes sense if reduced extension velocities are sufficient.

Lever Locking Mechanism

With the stopper cylinder DFST-...-L with a factory-installed lever locking mechanism, the toggle lever locks into its end position. When the stopper cylinder is retracted, the toggle lever locking mechanism is automatically deactivated.

5.2 Structure



- 1 Supply port (extending, 2x)
2 Supply port (retracting, 2x)
3 Guide rod for protection against rotation
4 Piston rod
5 Detent for knurled nut
6 Roller toggle lever
7 Stop roller
8 Thread for inductive proximity sensor (2x)
9 Lever locking mechanism (optional)
10 Knurled nut for setting the cushioning
11 Stop for lever locking mechanism
12 Hole for mounting toggle lever deactivation mechanism
13 Through-hole for mounting (4x)
14 Slot for proximity sensor (6x)

Fig. 2 Product design

6 Mounting
6.1 Preparation

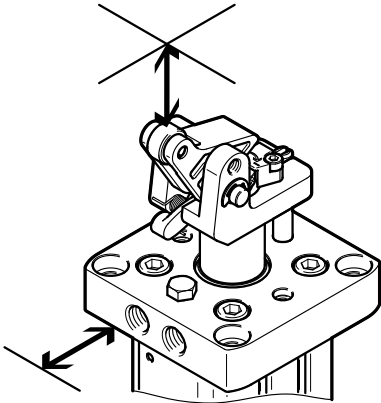


Fig. 3 Maintain required distances

- Leave sufficient space for the pneumatic connections and for replacing the shock absorber.

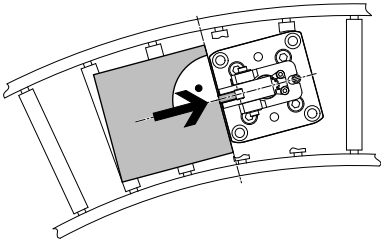


Fig. 4 Alignment of transported material

- Observe the following points:
 - the conveyed material impinges on the roller of the toggle lever.
 - the direction of transport of the transported material is exactly perpendicular to the roller toggle lever.

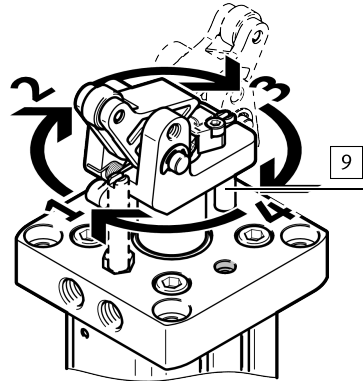


Fig. 5 Changing stopper head

- The roller toggle lever [9] can be rotated 90° to each of 4 positions by the offset of the guide rod. Lock guide rod with thread-locking compound when screwing it into the new position.

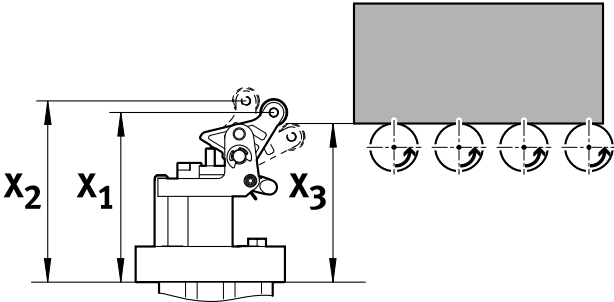


Fig. 6 Mounting Clearances

- Observe distances X_1 , X_2 and X_3 . The distances refer to the bottom of the flange as the mounting level of the stopper cylinder with the piston rod extended.

Size		32
X1 (maximum distance from the bottom of the pallet)	[mm]	76.1
X2 (toggle lever pressed)	[mm]	81.3

Size		32
X3 (minimum distance from the bottom of the pallet)	[mm]	73.8 ¹⁾

1) The dimensions refer to the position of the maximum energy absorption (knurled nut in the upper position).

Tab. 1 Mounting Clearances

6.2 Mounting

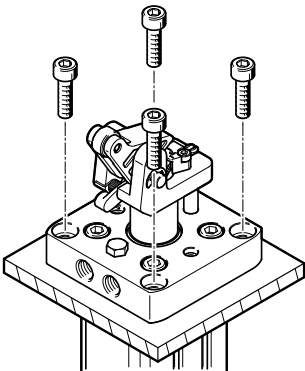


Fig. 7 Direct mounting

- Fasten the stopper cylinder with 4 screws.

Size	32
Screw	M6

Tab. 2 Screw Sizes

6.3 Mounting Accessories

Proximity Sensor

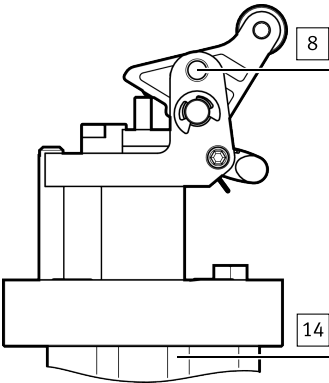


Fig. 8

- Fasten the proximity sensor in the thread [8] or in the slot [14] in accordance with the assembly instructions.

Lever Deactivating Mechanism

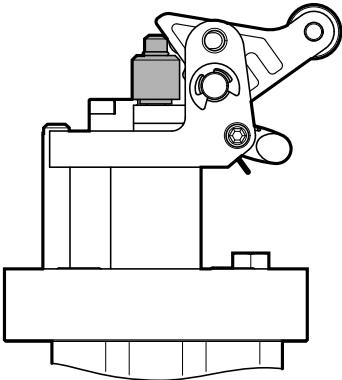


Fig. 9 Lever Deactivating Mechanism

- Attach the lever deactivating mechanism in accordance with the assembly instructions.

7 Pneumatic installation

- Select one of the two alternative connections:

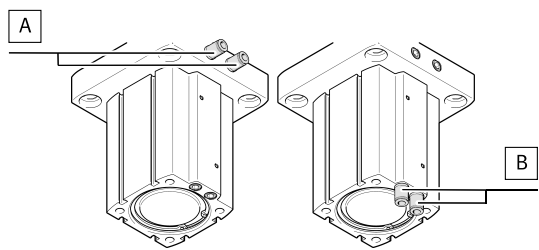


Fig. 10 Alternative pneumatic ports

- Select one of the two actuation types (single-acting/double-acting):

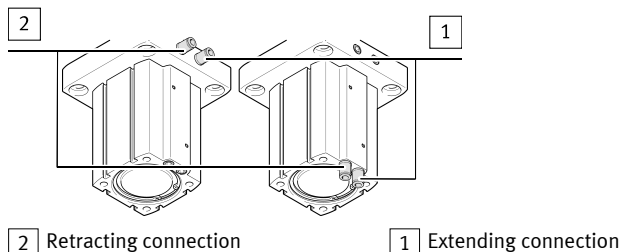


Fig. 11 Double-acting actuation

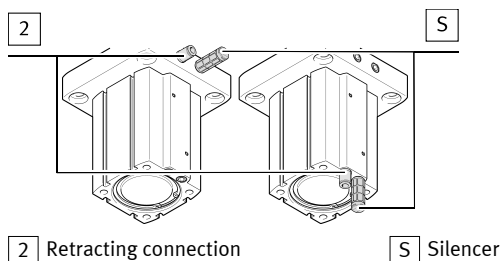


Fig. 12 Single-acting actuation

- When used as a single-acting cylinder: screw a silencer into the supply port on the bottom (→ www.festo.com/catalogue).
- Connect hoses to supply ports.
If necessary, convert and seal threaded pins in the alternative connections.

8 Commissioning

⚠ WARNING!

Risk of injury due to unexpected movement of components.

- Protect the positioning range from unwanted intervention.
- Keep foreign objects out of the positioning range.

- Pressurise the system slowly.
- Start test run:

Double-acting insert	Single-acting insert	Reaction
Pressurise [1] supply port.	Exhaust [2] supply port.	The piston rod extends.
Start stopper cylinder with transported material.		The moving transported material is stopped and presses the toggle lever to the rear end position (with the DFST-...-L variant this locks the toggle lever).
Pressurise [2] supply port and exhaust supply [1] port.	Pressurise [2] supply port.	The piston rod retracts. The lever deactivating mechanism is released. The transported materials is moved on.
Pressurise [1] supply port and exhaust supply [2] port.	Exhaust [2] supply port.	Piston rod extends. The stopper cylinder can stop the next batch of transported material.

Tab. 3 Commissioning Steps

- Finish test run after completing all settings.

Automatic Unlocking of the Lever Locking Mechanism with DFST-...-L (Accessories)

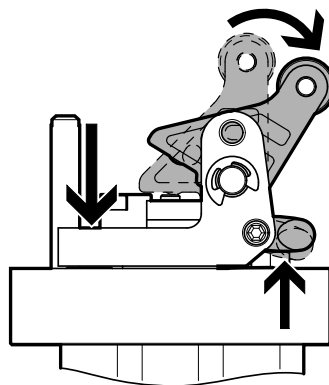


Fig. 13

- Pressurise [2] supply port.
When the piston rod is retracted, it presses the lever locking mechanism on the screw and releases the toggle lever.

Cushioning Setting

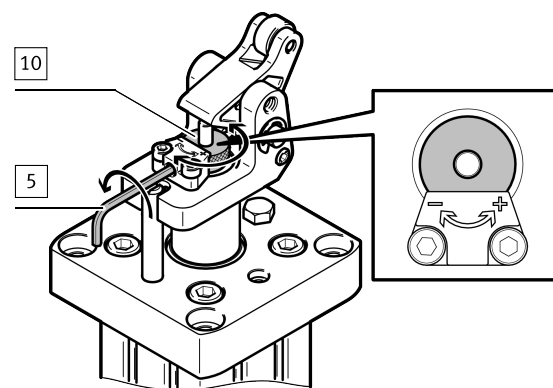


Fig. 14 Adjust shock absorber

- Loosen the detent for the knurled nut [5].
- Turn knurled nut until the desired cushioning is reached.
When the setting is correct, the transported material presses the toggle lever quickly and stops. The cushioning is too hard if the transported material springs back immediately or requires a long time to press the toggle lever down completely. The cushioning is too soft if the toggle lever hits the end position hard without any visible damping. The setting range has an upper and a lower stop:
 - Turn knurled nut [10] anticlockwise in the "+" direction: cushioning becomes harder
 - Turn knurled nut [10] clockwise in the "-" direction: cushioning becomes softer
- Tighten the detent for the knurled nut [5]. Tightening torque: 1.5 Nm

9 Maintenance

9.1 Cleaning

Clean the outside of the product with a soft cloth. Do not use aggressive cleaning agents.

9.2 Lubrication

- After every cleaning grease the following components with LUB-KC1
→ www.festo.com/spareparts:

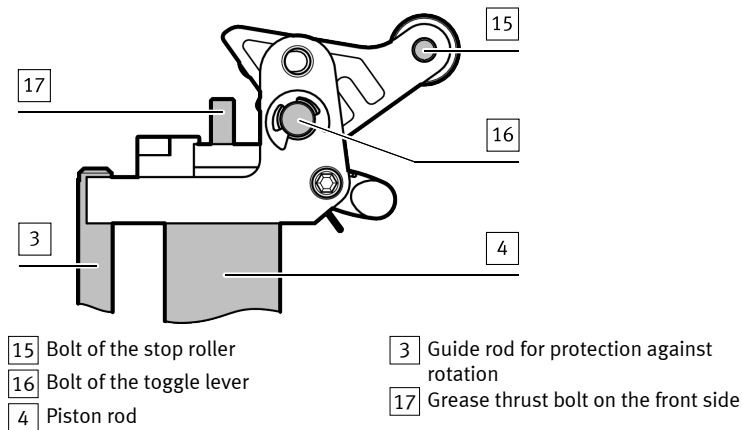


Fig. 15 Lubrication points

- With DFST-....-L with lever locking mechanism: also grease all bearing points of the moving parts.

9.3 Fault Clearance

Malfunction	Possible cause	Remedy
Wear on one side of the guide rod	Transported material impacts diagonally on the toggle lever	Align stopper cylinder in the direction of transport, transported material must meet the toggle lever vertically.
Hard impact on the toggle lever	Cushioning incorrectly set	Correct cushioning
	Conveyor speed too high	Reduce velocity
	Shock absorber faulty	Replace shock absorber (→ spare parts catalogue, www.festo.com)
Piston rod in initial position despite pressurisation	Tubing connection error	Check blanking plug Check tubing connection
	Reduced flow rate through elbow connectors	Avoid elbow connectors
Toggle lever does not reach end position	Cushioning incorrectly set	Correct cushioning
	Transported material load (push-through force) too low	– Increase load – Increase coefficient of friction between conveyor and material – Increase slope of conveyor

Tab. 4 Fault Clearance

9.4 Repair

⚠ WARNING!

Risk of injury caused by ejected components.

Springs under tension and compressed air eject the piston cap outwards when demounting the retaining ring.

- Never release the retaining ring on the bottom of the product.
- Open the product only by unscrewing the fitting between the flange cover and cylinder barrel.

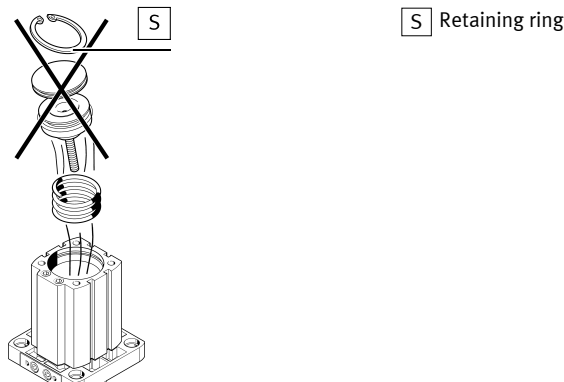


Fig. 16 Do not release retaining ring

Replacing the Shock Absorber

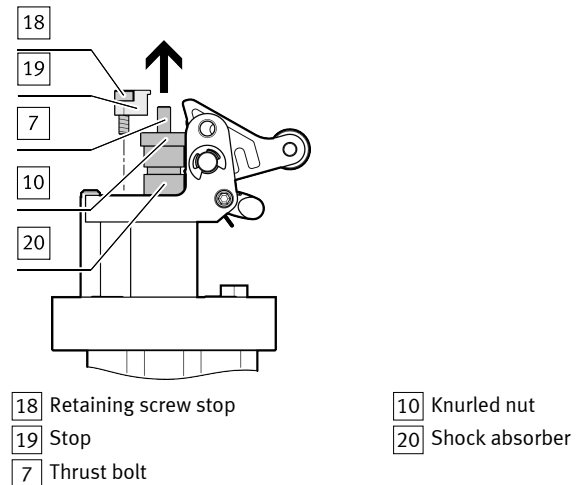


Fig. 17 Replace shock absorber

- Loosen the detent for the knurled nut [5].
- Loosen the retaining screws [18] from the stop and remove the stop [19].
- Remove the knurled nut [10] with the thrust bolt [7].
- Replace shock absorber [20].
- Attach knurled nut [10] with thrust bolt [7].
- Attach the stop [19] and screw in the retaining screws [18].
- Tighten the detent for the knurled nut [5]. Tightening torque 1.5 Nm.

10 Disposal

Dispose of the product and packaging at the end of its useful life through environmentally friendly recycling in accordance with applicable regulations.

11 Technical Data

Size	32
Constructive design	Piston rod with toggle lever
Mode of operation	– Double-acting with spring (extending) – With lever locking mechanism
Mounting position	Vertical
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Operating pressure range	[MPa] 0.2 ... 1
	[psi] 29 ... 145
	[bar] 2 ... 10
Pneumatic connection	G1/8
Reset force	
Reset force of the toggle lever (max.)	[N] 4
Reset spring of the piston rod (min.)	[N] 20
Cushioning	
Cylinder	Elastic cushioning rings/plates, at both ends
Toggle lever	Adjustable shock absorber
Ambient temperature	[°C] +5 ... +60
Materials	
Cover, housing	Aluminium
Piston rod	High-alloy stainless steel
Attachments	Cast steel, nickel-plated
Screws	Steel
Rollers	POM, steel (with DFST-....-S)
Seals	NBR
Weight	[g] 750

Tab. 5 Technical Data