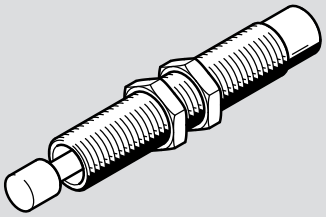
# DYSS
## Shock absorber



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Operating instructions

8129073
2021-04c
[8129075]

8129073

Translation of the original instructions



### 1 Applicable documents

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

These operating instructions do not apply to the product variant DYSS-G8. Separate operating instructions are available for the product variant DYSS-G8.

### 2 Safety

#### 2.1 Safety instructions

- Only use the product in original status without unauthorised modifications.
- Observe labelling on the product.
- Before working on the product, switch off the power supply and secure it against being switched on again.

#### 2.2 Intended use

The product is intended for use for cushioning the force of linear moving masses. The product is not suitable for rotary drives and for use in damp environments.

#### 2.3 Training of qualified personnel

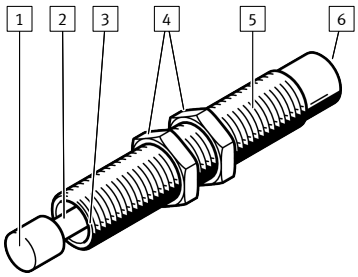
Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. Personnel must have the relevant mechanical training.

### 3 Additional information

- Contact the regional Festo contact if you have technical problems ➔ www.festo.com.
- Accessories and spare parts ➔ www.festo.com/catalogue.

### 4 Product overview

#### 4.1 Product design




| | |
|---|---|
| 1 | Buffer (only DYSS-5... -12) |
| 2 | Piston rod |
| 3 | Fixed stop |
| 4 | Lock nuts |
| 5 | Male thread |
| 6 | Internal hexagon socket/ Slot (DYSS-2 only) |

Fig. 1: Product design

The screw in the internal hexagon socket of the shock absorber must not be loosened.

**NOTICE**

Tensile forces on the piston rod can seriously damage the shock absorber.

#### 4.2 Function

The hydraulic shock absorber has the following characteristics:
- position-controlled flow control function
- fixed stop on housing

Force applied to the piston rod causes the piston rod to move to the fixed stop. The internal return spring moves the piston rod back to its initial position.

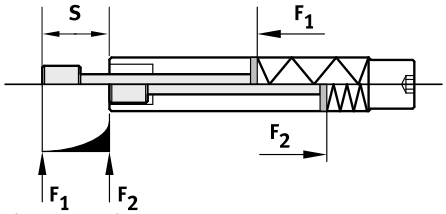



Fig. 2: Function

### 5 Transport and storage

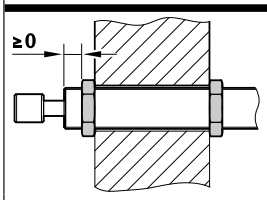
Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.

### 6 Assembly

#### 6.1 Mounting product

Mounting options:
- in through-hole
- in through thread

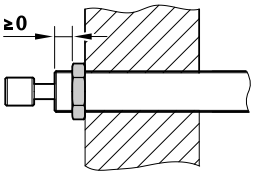
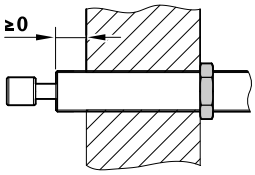
**When mounting in hole**

| Lock nut mounting, at both ends |
|---|
|   |
| The lock nuts must not protrude beyond the threaded area. |

Tab. 1: Mounting in hole

1. Insert product to the desired stop position.
2. Secure the product with lock nuts. Tighten the lock nuts with tightening torque.

**With mounting in thread**

| Lock nut mounting on one side | |
|---|---|
|   |   |
| The lock nut must not protrude beyond the threaded area. | The mounting surface must not protrude beyond the thread area. |

Tab. 2: Mounting in thread

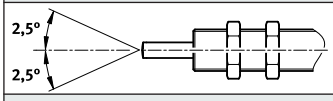
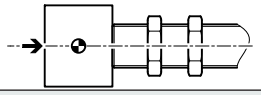
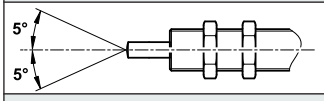
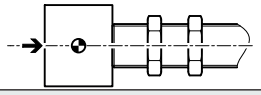
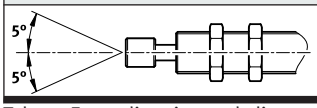
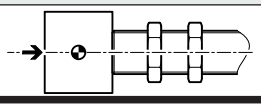
1. Screw product in to the desired stop position.
   Do not exceed the maximum torque when screwing or holding the internal hexagon socket/slot.
2. Tighten the lock nut to the tightening torque.

| Size | | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|
| Internal hexagon socket/slot | | | | | | | | | |
| Max. torque | [Nm] | 0.1 | 0.5 | 0.6 | 1 | 3 | 5 | 10 | 16 |
| Lock nut | | | | | | | | | |
| Tightening torque | [Nm] | 0.5 | 1 | 1 | 2 | 3 | 5 | 8 | 20 |
| | | Tolerance ± 20% | | | | | | | |

Tab. 3: Torques

#### 6.2 Align product

- Observe the maximum deviation of the direction of force from the shock absorber axis.
- The mass must meet the piston rod and the fixed stop over a wide area.

| Max. deviation of direction of force | Alignment of the load |
|---|---|
| DYSS-2 | |
|   |  |
| DYSS-3/4 | |
|   |  |
| DYSS-5 ... -12 | |
|   |  |

Tab. 4: Force direction and alignment

## 7 Commissioning

### 7.1 Executing test run

1. Start the test run at the drive with reduced speed.
2. If necessary, readjust the position of the shock absorber.
3. Gradually increase the speed of the drive in steps to the operating value. If set correctly, the end position is reached without a hard stop.
   With hard stop:
   – If necessary, reduce impact speed.
   – Check function and design of the shock absorber.

### 7.2 Notes on operation

**Energy absorption**

- Only use shock absorbers within the permissible range from 25% to 100% of the maximum energy absorption ➔ 11 Technical data.

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Recommendation: use shock absorbers within the optimum range from 50% to 80% of the maximum energy absorption.

| Area of energy absorption | Note |
|---|---|
| 0 ... 25% | unfavourable; increased fluid leakage at the shock absorber possible |
| 25 ... 50% | permissible |
| 50 ... 80% | optimal |
| 80 ... 100% | permissible |
| > 100% | impermissible |

Tab. 5: Energy absorption of the shock absorber

**Cushioning effect**

The viscosity of the hydraulic fluid declines over the operating life due to the generated friction heat. This can reduce the cushioning effect.

## 8 Maintenance

| Maintenance interval | Maintenance work |
|---|---|
| Every 2 million load changes | Check shock absorber:<br>– sealing, no fluid leakage<br>– fixed stop, no deformation<br>– Cushioning distance s ➔ 11 Technical data<br>In case of leakage, hard stop or insufficient cushioning distance: replace shock absorber. |

Tab. 6: Maintenance schedule

## 9 Malfunctions

### 9.1 Fault clearance

| Malfunction | Possible cause | Remedy |
|---|---|---|
| Leakage/fluid leakage | The shock absorber is faulty. | Replace the shock absorber. |
| Hard stop | Fixed stop or shock absorber overloaded. | Reduce impact speed or check the design of the shock absorber. |
| | The shock absorber is faulty. | Replace the shock absorber. |

Tab. 7: Fault clearance

### 9.2 Repair

The shock absorber cannot be repaired.
The hydraulic fluid in the shock absorber cannot be topped up.

## 10 Dismantling and disposal

**⚠ CAUTION**

**The product contains pressurised hydraulic fluid that can escape in an uncontrolled manner if the housing is damaged.**
The hydraulic fluid can injure people's eyes and skin and damage the environment.

- Have the product disposed of by a qualified waste disposal company.
- Do not destroy the product in order to drain the hydraulic fluid.

## 11 Technical data

| Size | | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Stroke/cushioning distance s | [mm] | 4 | 4 | 4 | 5 |
| Male thread | | M4x0.5 | M5x0.5 | M6x0.5 | M8x1 |
| Mode of operation | | single-acting, pushing | | | |
| Cushioning | | self-adjusting | | | |
| Mounting position | | any | | | |
| Max. load | [kg] | 0.8 | 1 | 1.7 | 2.5 |
| Max. energy absorption per stroke at +20 °C[1] | [J] | 0.1 | 0.4 | 0.8 | 1.4 |
| Max. energy absorption per hour at +20 °C[1] | [kJ] | 0.27 | 4.5 | 5.5 | 8 |
| Max. operating frequency[2] | [cycles/min] | 50 | 80 | 80 | 80 |
| Impact velocity | [m/s] | 0.1 ... 0.5 | 0.1 ... 1.0 | | |
| Min. insertion force $F_2$ | [N] | 2.5 | 3.5 | 4.5 | 10 |
| Max. stop force in end position | [N] | 60 | 80 | 100 | 200 |
| Min. reset force $F_1$ | [N] | 0.7 | 0.5 | 0.7 | 0.9 |
| Reset time at 20 °C[3] | [s] | ≤ 0.5 | ≤ 0.2 | | |
| Ambient temperature | [°C] | –10 ... +70 | –10 ... +80 | | |

1) At higher temperatures in the range of 80 °C the maximum mass will be reduced by approximately 50%.
2) For energy utilisation from 70 % per stroke.
3) At temperatures below 0 °C, the reset time can increase to 1 s. The reset time may increase during continuous actuation in the end position.

Tab. 8: Technical data, size 2 ... 5

| Size | | 7 | 8 | 10 | 12 |
|---|---|---|---|---|---|
| Stroke/cushioning distance s | [mm] | 5 | 8 | 10 | 12 |
| Male thread | | M10x1 | M12x1 | M14x1 | M16x1 |
| Mode of operation | | single-acting, pushing | | | |
| Cushioning | | self-adjusting | | | |
| Mounting position | | any | | | |
| Max. load | [kg] | 5.5 | 15 | 20 | 45 |
| Max. energy absorption per stroke at +20 °C[1] | [J] | 2 | 3 | 6 | 10 |
| Max. energy absorption per hour at +20 °C[1] | [kJ] | 12 | 18 | 25 | 36 |
| Max. operating frequency[2] | [cycles/min] | 70 | 50 | 50 | 50 |
| Impact velocity | [m/s] | 0.1 ... 1.5 | | | |
| Min. insertion force $F_2$ | [N] | 10 | 18 | 24 | 35 |
| Max. stop force in end position | [N] | 300 | 500 | 700 | 1000 |
| Min. reset force $F_1$ | [N] | 1.2 | 2.5 | 4 | 4 |
| Reset time at 20 °C[3] | [s] | ≤ 0.2 | | | |
| Ambient temperature | [°C] | –10 ... +80 | | | –5 ... +80 |

1) At higher temperatures in the range of 80 °C the maximum mass will be reduced by approximately 50%.
2) For energy utilisation from 70 % per stroke.
3) At temperatures below 0 °C, the reset time can increase to 1 s. The reset time may increase during continuous actuation in the end position.

Tab. 9: Technical data, size 7 ... 12