

DPDM

Compact cylinder

FESTO

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Operating instruction

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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

- Only use the product in its original condition without unauthorised modifications.
- Observe the identifications on the product.
- Take into account the ambient conditions at the location of use.
- Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.
- Before working on the product, switch off the compressed air supply and lock it to prevent it from being switched on again.
- Observe the tightening torques. Unless otherwise specified, the tolerance is ± 20%.

2.2 Intended use

The compact cylinder moves masses and transmits forces. The product is intended for use in industrial 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. The qualified personnel have knowledge and experience in pneumatics.

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

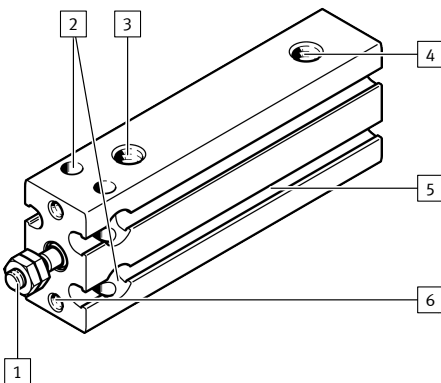


Fig. 1: Compact cylinder DPDM

- | | |
|-------------------------|----------------------------------|
| 1 Male or female thread | 4 Pneumatic port 2 |
| 2 Through-hole (4x) | 5 Slot for proximity switch (4x) |
| 3 Pneumatic port 1 | 6 Thread |

4.2 Function

- DPDM(-Q)-...-P/-S: when the cylinder chamber is pressurised at pneumatic port 1 or 2, the piston rod moves outwards or inwards. The integrated return spring moves the piston rod inwards or outwards. The cylinder force varies during advance and retraction. The position of the piston can be queried by proximity switches.
- DPDM(-Q): when the cylinder chamber is pressurised at pneumatic port 2, the piston rod moves outwards. When the cylinder chamber is pressurised at pneumatic port 1, the piston rod moves inwards. The cylinder force is equal during advance and return. The position of the piston can be queried by proximity switches.

5 Assembly

5.1 Mounting compact cylinder

Requirement:

- The product is installed without tension.
- Avoid mechanical misalignment between the piston rod and an external guide with one of the following measures:
 - precise alignment
 - use of a self-aligning rod coupler FK
 - use of a guide unit FEN with compensating coupling

A rigid coupling will reduce the service life and adversely affect the function of the cylinder.

- Fasten the cylinder with 2 screws. Observe the tightening torque.

| DPDM | -6 | -10 | -16 | -20 | -25 | -32 |
|------------------------|----|-----|-----|-----|-----|-----|
| Thread | M3 | M3 | M4 | M5 | | M6 |
| Tightening torque [Nm] | 1 | 1 | 2.5 | 5 | | 8 |

5.2 Mounting accessories

- Use one-way flow control valves to adjust the velocity.
 - DPDM(-Q)-...-P/-S: GRLA, exhaust air flow control
 - DPDM(-Q): GRLZ, supply air flow control
- DPDM(-Q)-...-A: use proximity switches with mounting kit. Avoid external influence caused by magnetic or ferritic parts in the vicinity of the proximity switches. Distance ≥ 10 mm

6 Installation

Requirement:

- Suitable shock absorbers or external stops are fitted with maximum payload, maximum piston velocity or when using quick exhaust valves.
- Piloted check valves are fitted for vertical or inclined mounting position.
- Connect tubing to the pneumatic ports.

7 Commissioning

1. Pressurise the complete system. A soft start valve is used for the gradual start-up pressurisation.
2. With medium or large payloads or at high velocities:
 - Use an arrester fixture with sufficient sizing.

DPDM(-Q)-...-P/-S:

1. Close the one-way flow control valve completely, then open it again by one revolution.
2. Pressurise the cylinder on the connection side.
 - ↳ The piston rod moves to the end position.
3. Exhaust the cylinder.
- ↳ The spring return moves the piston rod to the other end position.
4. Start the test run.
5. If needed: correct velocity at the one-way flow control valves. The piston rod should reach the end stop without hard impact or rebounding.

DPDM(-Q):

1. Screw the one-way flow control valves all the way in on both sides, then loosen by one revolution.
2. Pressurise the cylinder simultaneously on both connection sides.
 - ↳ The piston rod moves slightly to a point of balance.
3. Exhaust the cylinder on one side.
 - ↳ The piston rod moves to an end position.
4. Start the test run.
5. If needed: correct velocity at the one-way flow control valves. The piston rod should reach the end stop without hard impact or rebounding.

8 Cleaning

- Clean the product with a clean, soft cloth and non-abrasive cleaning agents.

9 Fault clearance

| Malfunction | Cause | Remedy |
|-------------------------------------|--|--|
| Irregular motion of the piston rod. | Lack of lubricant. | – Relubricate the cylinder as specified by the wearing parts sheet → 3 Additional information. |
| | The one-way flow control valves restrict the supply air. | – Reduce the flow control of the supply air. |

| Malfunction | Cause | Remedy |
|---|---|---|
| Irregular motion of the piston rod. | The piston rod is dirty. | - Clean the cylinder. |
| | | - Install a covering. |
| | | - Relubricate after cleaning. |
| | The supply air is insufficient. | - Keep the tubing short and select suitable cross sections. |
| - Select the correct operating pressure. | | |
| - Keep the operating pressure constant. | | |
| The piston does not move to the end position. | The pressure is too low. | - Connect a volume upstream. |
| | The cylinder is damaged. | - Replace the cylinder. |
| | Foreign matter in the cylinder. | - Filter the compressed air. |
| False triggering during position sensing | The cylinder travels to an external end stop. | - Readjust the end stop. |
| | The temperatures are too high or too low | - Maintain the permissible temperature range. |
| | The proximity switches are defective. | - Replace the proximity switches. |

Tab. 1: Fault clearance

10 Technical data

10.1 Technical data, general

| DPDM | -6 | -10 | -16 | -20 | -25 | -32 |
|-------------------------------------|---|-----|-----|-----|-----|-------|
| Mounting position | Any | | | | | |
| Cushioning | Elastic cushioning rings/plates at both ends | | | | | |
| Pneumatic port | M5 | | | | | G 1/8 |
| Operating medium | Compressed air to ISO 8573-1:2010 [7:4:4] | | | | | |
| Information on the operating medium | Lubricated operation possible, in which case lubricated operation will always be required | | | | | |
| Ambient temperature [°C] | -20 ... +80 | | | | | |

Tab. 2: Technical data, general

10.2 Technical data, pneumatic

| DPDM | -6 | -10 | -16 |
|--------------------|-------|--------------|--------------|
| Operating pressure | | | |
| DPDM(-Q) | [MPa] | 0.2 ... 0.8 | 0.15 ... 0.8 |
| | [bar] | 2 ... 8 | 1.5 ... 8 |
| | [psi] | 29 ... 116 | 21.8 ... 116 |
| DPDM(-Q)-...-P/-S | [MPa] | 0.25 ... 0.8 | 0.2 ... 0.8 |
| | [bar] | 2.5 ... 8 | 2 ... 8 |
| | [psi] | 36.3 ... 116 | 29 ... 116 |

Tab. 3: Technical data, pneumatic DPDM-6 ... -16

| DPDM | -20 | -25 | -32 |
|--------------------|-------|--------------|--------------|
| Operating pressure | | | |
| DPDM(-Q) | [MPa] | 0.1 ... 0.8 | |
| | [bar] | 1 ... 8 | |
| | [psi] | 14.5 ... 116 | |
| DPDM(-Q)-...-P/-S | [MPa] | 0.2 ... 0.8 | 0.15 ... 0.8 |
| | [bar] | 2 ... 8 | 1.5 ... 8 |
| | [psi] | 29 ... 116 | 21.8 ... 116 |

Tab. 4: Technical data, pneumatic DPDM-20 ... -32