

**Product description****MD15, MD15-R, MD15-E****MD15, MD15-R and MD15-E small actuators**

with RZ/RWZ15–RZ/RWZ25 two-way/three-way valve

**Application**

MD15, MD15-R and MD15-E small actuators for 3-point or continuous control in zone post-treatment devices for heating, ventilation and air conditioning systems.

Positive connection with automatic coupling.



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Änderungen vorbehalten - Contents subject to change - Sous réserve de modifications - Reservado el derecho a modificación - Wijzigingen voorbehouden - Con riserva di modifichie - Innehåll som skall ändras - Změny vyhrazeny - Zmiany zastrzeżone - Возможны изменения - A változtatások jogát fenntartjuk - 保留未经通知而改动的权力

## Important Information Regarding Product Safety

### Safety Instructions

This data sheet contains information on installing and commissioning the product "MD15, MD15-R, MD15-E". Each person who carries out work on this product must have read and understood this data sheet. If you have any questions that are not resolved by this data sheet, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this data sheet, the protection provided will be impaired.

Applicable regulations must be observed when installing and using the device. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies). If the device is used in other countries, it is the responsibility of the system installer or operator to comply with local regulations.

Mounting, installation and commissioning work on the devices may only be carried out by qualified technicians. Qualified technicians are persons who are familiar with the described product and who can assess given tasks and recognize possible dangers due to technical training, knowledge and experience as well as knowledge of the appropriate regulations.

### Legend



#### WARNING

Indicates a hazard of medium risk which can result in death or severe bodily injury if it is not avoided.



#### CAUTION

Indicates a hazard of low risk which can result in minor or medium bodily injury if it is not avoided.



#### NOTICE

Indicates a hazard of medium risk which can result in material damage or malfunctions if it is not avoided.



#### NOTE

Indicates additional information that can simplify the work with the product for you.

### Notes on Disposal

For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed of as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

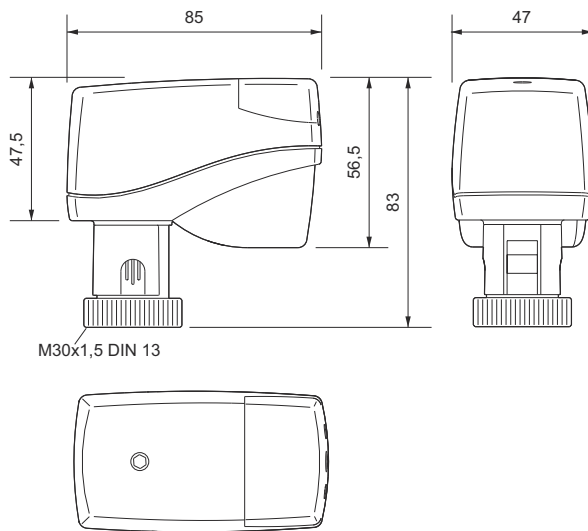
**Product description****MD15, MD15-R, MD15-E****Item**

MD15	Small actuator
MD15-R	Small actuator with position feedback
MD15-E	Small actuator with position feedback and limit switch

**Technical Data**

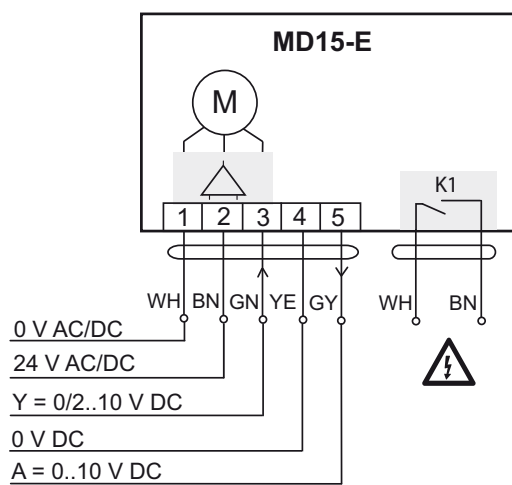
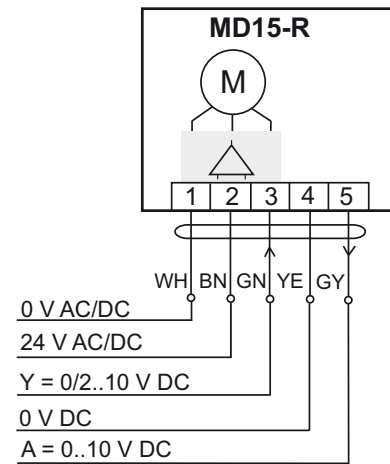
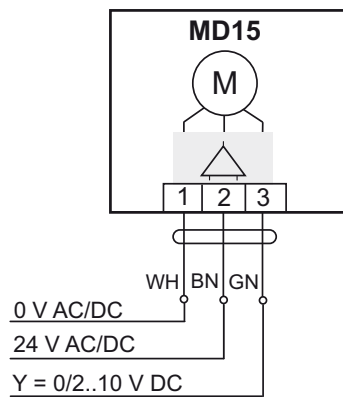
Nominal voltage	MD15; MD15-R AC 24 V $\pm$ 10%; 50/60 Hz; 2.5 VA; DC 24 V $\pm$ 10%; 0.8 W MD15-E AC 24 V $\pm$ 10%; 50/60 Hz; 2.7 VA; DC 24 V $\pm$ 10%; 1.0 W
Control	3-point signal (open/stop/closed) or continuous control DC 0(2) V–10 V; < 0,5 mA
Connection	Firmly pre-assembled cable MD15: 1.5 m; 3 x 0.34 mm <sup>2</sup> MD15-R: 1.5 m; 5 x 0.25 mm <sup>2</sup> MD15-E: 1.5 m; 5 x 0.25 mm <sup>2</sup> and 1.5 m; 2 x 0.5 mm <sup>2</sup>
Motor switch off	Actuator spindle: running out = load-dependant, running in = load-dependant
Display	LED display for operating voltage and status
Actuating sound	<31 dB (A)
Actuating stroke	Max. 9 mm
Actuating time	15 s/mm
Thrust	150 N
Position indicator	Stroke range scale
Position feedback	Only with MD15-R and MD15-E DC 0 V–10 V, 5 mA for 0–100% stroke
Limit switch	Only with MD15-E 1 potential-free NO contact, max. 250 V AC; 2 A adjustable switching point
Manual adjustment	Only when disconnected from the mains power supply Socket for hexagon key on the actuator cover, key socket 4 mm
Valve block protection	Optionally switchable
Ambient temp.	0–50 °C
Degree of protection	IP40
Protection class	MD15, MD15-R III in accordance with EN 60730 MD15-E II in accordance with EN 60730
Installation position	Vertical as far as a horizontal position
Maintenance	Maintenance-free
Weight	180 g

**Dimensions**

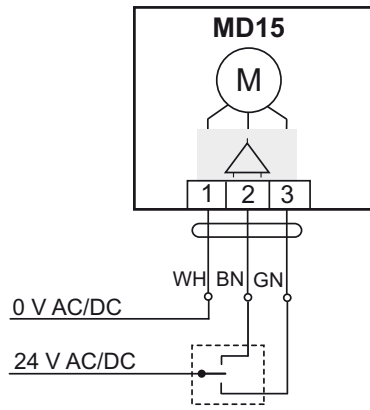


**Connection**

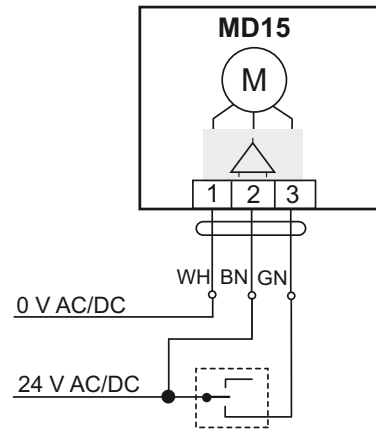
- Continuous control



- 3-point control



- 2-point control



**Three-way valve RWZ15–RWZ25 and two-way valve RZ15–RZ25 with small actuator MD15**

**Application**

RZ/RWZ15..25 brass two-way and three-way valves with small MD15 actuators are used in zone post-treatment devices for heating, ventilation, and air conditioning plants with water temperatures of 0 °C..120 °C for 3-point and continuous closed-loop control in room control.

The small actuator can be controlled with a 3-point or continuous control signal DC 0(2)V–10 V.

The small actuator itself detects the type of control.



**Types**

Brass two-way valve RZ15–RZ25 for water 0 °C– +120 °C with small actuator MD15

	<b>DN</b>	<b>PN</b>	<b>Kvs</b>	<b>Δp (bar)</b>	<b>Positioning time (s)</b>	<b>Weight (kg)</b>
RZ15/0.25MD15	15	16	0.25	6.0	98	0.340
RZ15/0.4MD15	15	16	0.4	6.0	98	0.340
RZ15/0.63MD15	15	16	0.63	6.0	98	0.340
RZ15/1.0MD15	15	16	1.0	6.0	98	0.340
RZ15/1.6MD15	15	16	1.6	6.0	98	0.340
RZ15/2.5MD15	15	16	2.5	6.0	98	0.340
RZ20/4.0MD15	20	16	4.0	3.0	98	0.395
RZ25/6.3MD15	25	16	6.3	1.5	98	0.680
RZ25/8.0MD15	25	16	8.0	1.5	98	0.680

Brass three-way valve RWZ15–RWZ25 for water 0 °C– +120 °C with small actuator MD15

	<b>DN</b>	<b>PN</b>	<b>Kvs</b>	<b>Δp (bar)</b>	<b>Positioning time (s)</b>	<b>Weight (kg)</b>
RWZ15/0.25MD15	15	16	0.25	6.0	98	0.350
RWZ15/0.4MD15	15	16	0.4	6.0	98	0.350
RWZ15/0.63MD15	15	16	0.63	6.0	98	0.350
RWZ15/1.0MD15	15	16	1.0	6.0	98	0.350
RWZ15/1.6MD15	15	16	1.6	6.0	98	0.350
RWZ15/2.5MD15	15	16	2.5	6.0	98	0.350
RWZ20/4.0MD15	20	16	4.0	3.0	98	0.425
RWZ25/6.3MD15	25	16	6.3	1.5	98	0.780
RWZ25/8.0MD15	25	16	8.0	1.5	98	0.780

**Accessories**

Not included.

Two Z... fittings are required for RZ15..25 two-way valves and three Z... fittings for RWZ15..25 three-way valves.

Z201 DN15 male thread fitting, 1/2" union nut, 3/8" nipple

Z202 DN20 male thread fitting, 3/4" union nut, 1/2" nipple

Z203 DN25 male thread fitting, 1 1/4" union nut, 1" nipple



Z204 DN15 solder fitting, 1/2" union nut, D 12 mm nipple

Z205 DN20 solder fitting, 3/4" union nut, D 15 mm nipple

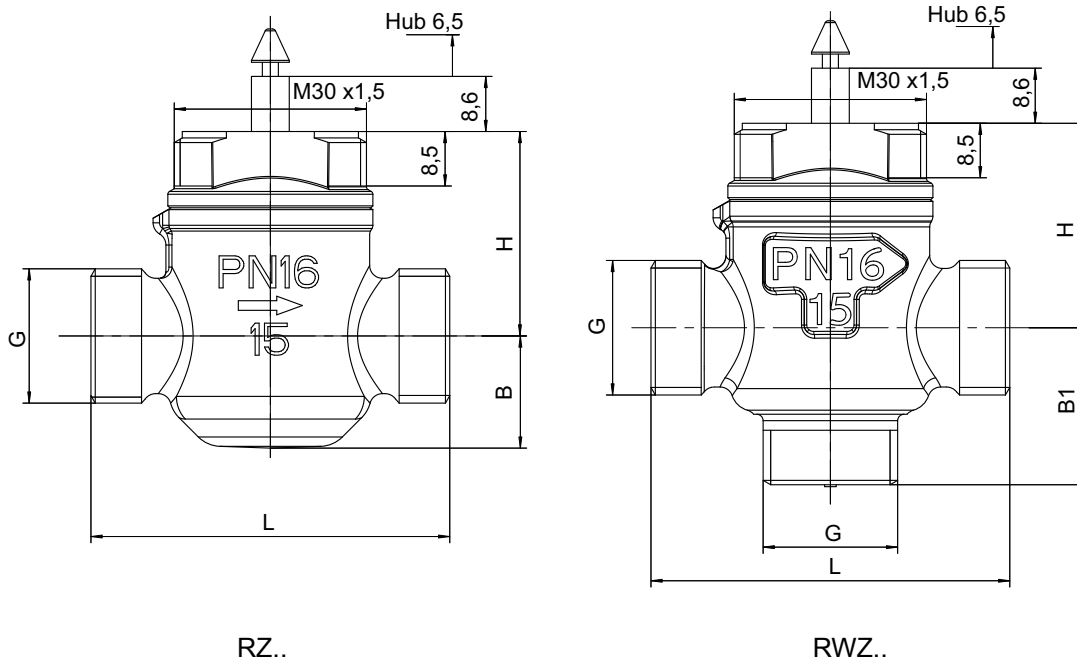
Z206 DN25 solder fitting, 1 1/4" union nut, D 28 mm nipple



**Technical data - valves RZ/RWZ15–RZ/RWZ25**

Nominal diameter	DN 15–25
Pressure rating	PN 16
Connection	G 1/2A ..G 1 1/4A male thread
Characteristic curve	RZ.. Same percentage RWZ.. RWZ.. A → AB = same percentage, B → AB = linear
Actuating stroke	6.5 ± 0.5 mm
Leak rate	In acc. with EN 1349, leakage class VI
Medium temperature	Cold and hot water 0 °C–120 °C with antifreeze and anti-corrosive agents (max. 50%), glycol, glycerin, ethylene glycol, propylene glycol, monoethylene, ethanol, methanol, Antifrogen® N + L. Not to be used for media based on mineral oils.
Housing	Two-way valve hot-pressed brass CW602N; Three-way valve permanent mold casting CuZn362Al-B
Cone	Brass
Valve stem	Stainless steel
Adapter	Stainless steel
Sealing elements	EPDM

**Dimensions**

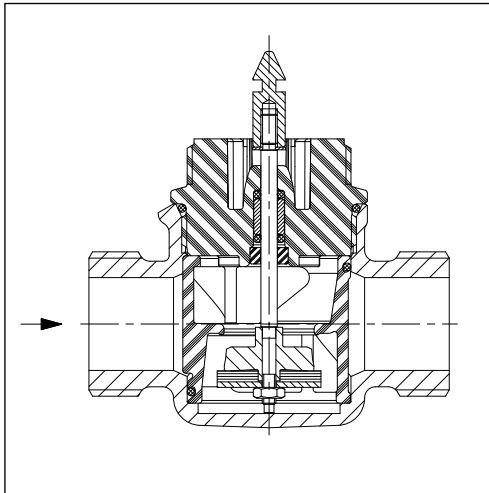


DN	G	L	B	B1	H
15	G 1/2A	56	18	24,5	32
20	G 3/4A	66	19	33	34
25	G 1 1/4A	76	26	38	46

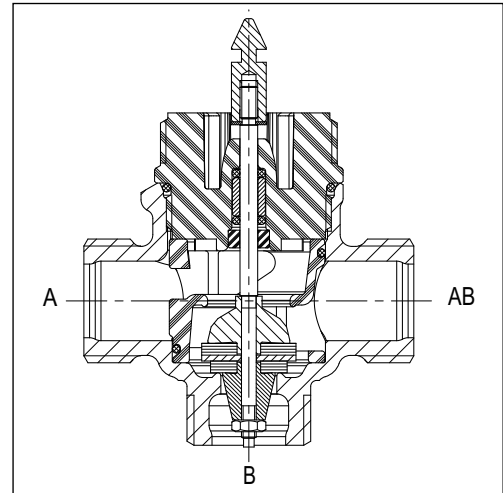
Dimensions L to H in mm



Valve principle

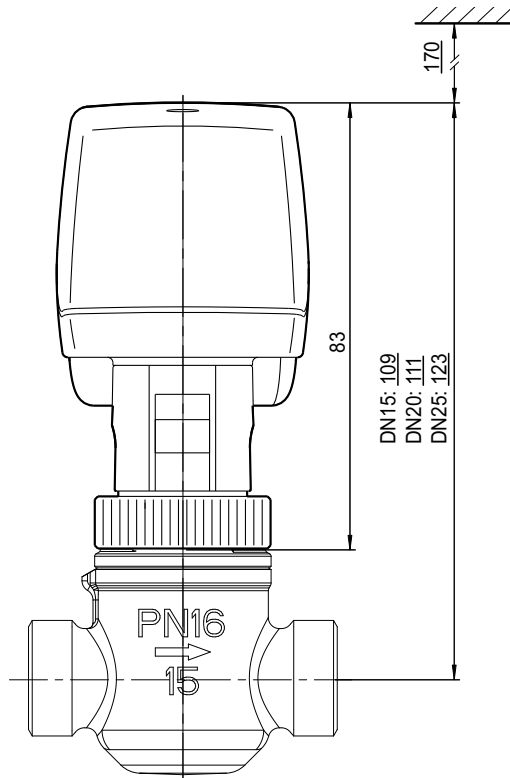


RZ..

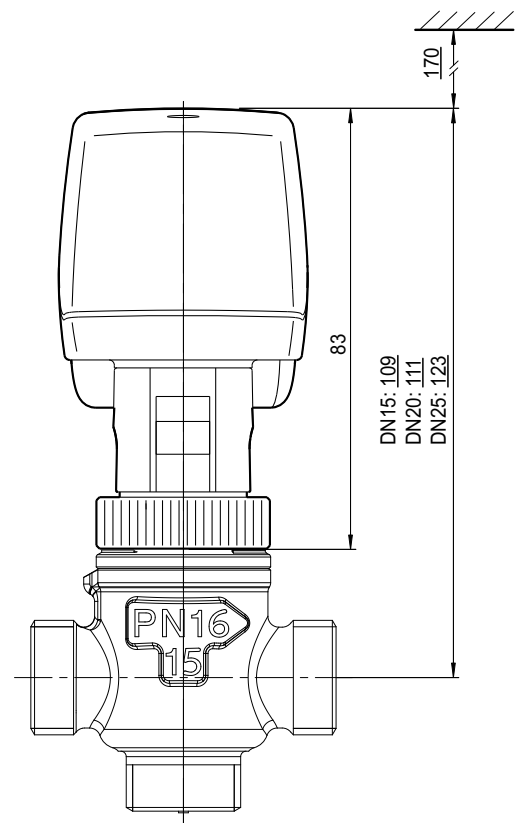


RWZ..

Dimensions with valve and actuator



MD15xxRZ..



MD15xxRWZ..

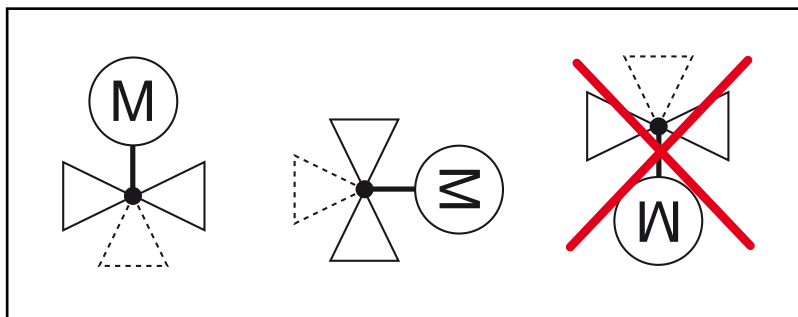
## Valve Installation



### NOTICE

The valve may only be installed by qualified technicians. In addition to the generally applicable installation guidelines, the following items are to be observed:

- The pipeline system and the fixture interior must be free of foreign objects. In the event of contaminated media, dirt collectors are to be inserted upstream of the valves with fine screens, mesh width 0.25 mm.
- There must be no tension between the valve and the pipeline connection.
- To avoid eddy formations in the valve body, the valve should be installed in a straight section of the pipe. A distance of 10 times the nominal diameter is recommended between the valve flange and manifold or other similar parts.
- The installation location is to be selected so that the ambient temperature at the actuator is kept between 0 °C–+50°C.
- When carrying out installation, the permissible max. pressure difference  $\Delta p$  and the specified direction of flow must be observed (see table in "Types" section, as well as the "Valve Principle").
- The three-way valves are to be used as mixing valves. Pay attention to the direction of flow (see fig. "Valve Principle").
- Once the valve is installed, make sure the ball in the valve seating can be moved easily by pushing in the valve stem.
- To install the actuator and remove the housing cover, approx. 170 mm of free space is required above the actuator.
- For safety reasons, do not suspend the small actuators under the valve.
- Observe the direction arrow on the valve body. Inverting the direction of flow impairs control behavior.



## Dimensions with valve and actuator



### CAUTION

Installation and commissioning work may only be carried out by qualified technicians.

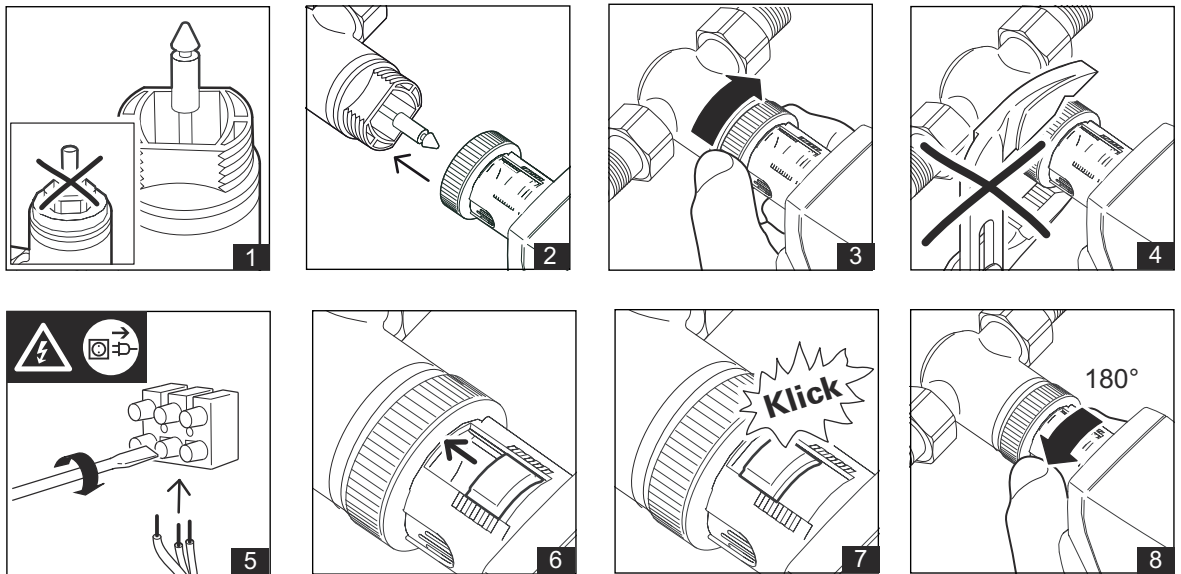
If the valve is installed in the system, make sure that no differential pressure builds up in the valve body before beginning work. If necessary, close the gate valve and turn off pumps. After the pipeline has cooled off, the actuator can be installed.

Be sure to comply with VDE guidelines and local wiring regulations. The device is connected according to the legally binding system circuit diagram.



### NOTICE

Do not operate the MD15, MD15-R, MD15-E Small Actuator electrically without a valve.



- Place the small actuator on the threaded connection of the valve and tighten hand-tight with the union nut.
- Establish the electrical connection.
- After the mains power supply has been switched on, an automatic initialization run takes place. The small actuator moves into upper end position. Adaptation of the valve takes place at  $Y = 10\text{ V}$  or  $24\text{ V}$  on lead "GN" at 3-point operation.
- After installation and commissioning work is complete, the automatic coupling must be protected with the dust cover (see fig. 8).

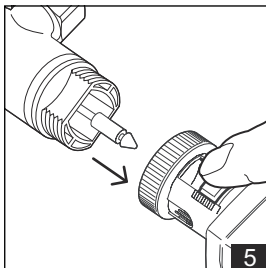
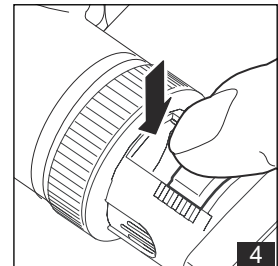
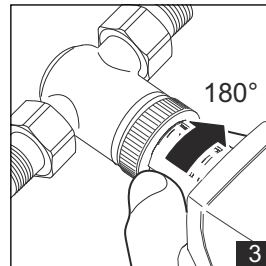
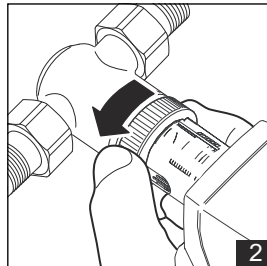
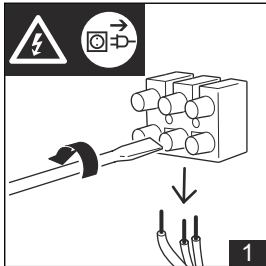
## Installation and commissioning of the small actuator



### CAUTION

Before beginning to remove the unit, make sure that no differential pressure builds up in the valve body before beginning work. If necessary, close the gate valve and turn off pumps.

After the pipeline has cooled off, you can begin removal of the small actuator.

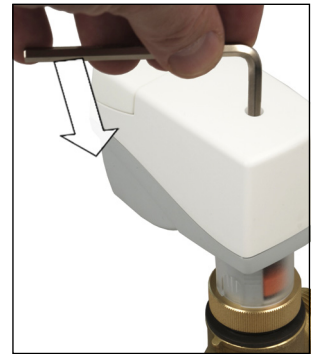


- Disconnect the small actuator from the mains power supply. Then disconnect all electrical connections.
- Remove the union nut.
- Turn the dust cover far enough so you can press the safety button.
- Push the safety button of the automatic coupling as far as it will go and hold down (see fig. 4).
- Remove the small actuator from the valve.

**Manual adjustment****NOTICE**

Manual adjustment may only be performed when the actuator is installed.

- The small actuator must be disconnected from the mains power supply for manual operation.
- Using a hexagon key (key socket 4 mm), the actuator can be moved into any position.

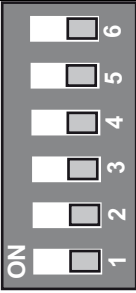



**NOTICE**

If you manually adjust until the slip clutch responds, turn the hexagon key half a turn in the opposite direction after the manually set stroke position has been reached.

**Commissioning**

**Valve Functions**

The valve functions are adjusted with switches (A) 1 to 6 under the connection cover.

Function	Switch (A)	Function
No function		No function
Switching position auxiliary switch active		Switching position auxiliary switch inactive
No function		No function
Actuating direction and positioning feedback 100% to 0% 		Actuating direction and positioning feedback 0% to 100% 
DC 2 V to 10 V		DC 0 V to 10 V
Valve block protection On		Valve block protection Off 

**Switch 1:** Valve block protection

If the plant specifications permit it, the valve block protection can be activated during commissioning.



Block protection prevents the ball from jamming when the valve is not moved for a longer period of inactivity, e.g. for heating systems during the summer.


When the block protection is activated, the valve cone is raised for a few seconds if no stroke movement has occurred in a period of 24 hours.

**Factory setting:** Off

**Switch 2:** Setting of the control range by the continuous actuating signal DC 0 V to 10 V or DC 2 V to 10 V

**Factory setting:** DC 0 V to 10 V

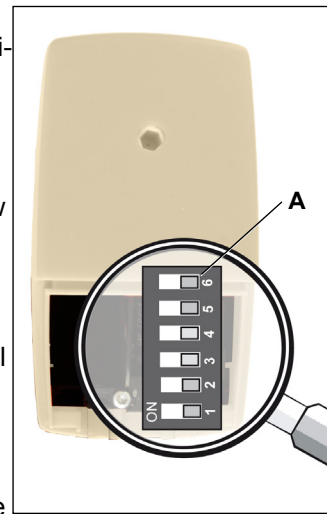
**Switch 3:** Setting of the actuating direction with DC 10 V control voltage “valve open”  or “valve closed”  and position feedback

**Factory setting:** 0% to 100%; “valve open” 

**Switch 5 (only with MD15-E):** Setting of the auxiliary switch position

The switching point of the auxiliary switch can be set to any position of the nominal stroke. To do so, put the actuator in the desired position using the control signal DC 0(2) V to 10 V. Then change the switch from the “inactive” position to the “active” position. This sets the switching point.

**Factory setting:** Inactive



**NOTE**

If the small actuator is controlled with a 3-point actuating signal, the only valve function in effect is the setting of the actuating direction “valve open” or “valve closed” (switch 3).