



Kieback&Peter

OPERATING INSTRUCTIONS

**MD15-SBT ACTUATOR FOR TWO-WAY
AND THREE-WAY VALVES**

VVP45.xx, VXP45.xx AND VMP45.xx

This document replaces all versions with an older release date. This version is not updated automatically. Subject to change.

The original operating instructions were composed in German.

Operating instructions in other languages have been translated from German.

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IMPORTANT

READ CAREFULLY BEFORE USE

RETAIN FOR LATER REFERENCE

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1 Notes on these operating instructions



NOTE

If you have any questions that cannot be clarified with these operating instructions, you can obtain further information from your Kieback&Peter contact person.

1.1 Validity of the operating instructions

These operating instructions are an integral part of the MD15-SBT small actuator for two-way and three-way valves of the series VVP45.xx, VXP45.xx and VMP45.xx with nominal widths of DN10..20 and DN25 to Kvs 6.3 and is only valid for this small actuator and these valves.

For better readability, the MD15-SBT small actuator is referred to as “actuator” hereinafter. The valves mentioned above are referred to as “valve” in the following text.

1.2 Display elements



NOTE

Notes provide you with important information.

You can find the following display elements in these instructions:

- List point
- ▶ Step or measure for avoiding danger

2 Safety

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2.1 Explanation of safety instructions and warnings

The basic safety information includes general instructions for the safe use of the actuator with valve or instructions to maintain its safe condition.

Action-related warnings of residual risks are indicated prior to performing dangerous actions.

Presentation and structure of warnings

The warnings are action-related and are structured as follows.



CAUTION

Type and source of danger!

Potential consequences when the danger occurs or the warning is not observed.

▶ Measures to avoid the danger.

Warnings are classified according to the severity of the hazard. The hazard levels and their corresponding signal words and warning symbols are described below:



WARNING

Indicates a hazard of medium risk which can result in **death or serious bodily injury** if not avoided.



CAUTION

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



CAUTION

Indicates a hazard which can result in **material damage or malfunctions** if not avoided.

2.2 Basic safety instructions

Safety in the workplace depends on the attention, care and rationality of all the persons involved. To prevent damage and injury, read and follow the safety instructions below, the safety instructions in the documentation on using the components and the applicable local regulations.

Sharp edges and corners

There is a risk of skin abrasions and cutting injuries due to sharp edges and corners, such as those on cast iron bodies and the outer threads of the valves and individual parts of the actuators.

- ▶ Proceed with care.
- ▶ Wear protective gloves.

Toppling, falling and ejected parts

Severe injury and substantial damage to property due to:

- Toppling or falling valve or actuator parts
- Ejected parts in the event of impermissible pressure increases (bursting components)
- Impermissible drop in pressure (e.g. when using tensioning devices)
- ▶ Secure the protected area against access by unauthorized persons.
- ▶ Secure parts to prevent toppling and falling.
- ▶ Do not exceed the maximum valve operating pressure.

Pressurized liquids

There is a risk of severe burns and injuries caused by liquid jets due to incorrect connections.

- ▶ Do not exceed the maximum valve operating pressure.
- ▶ Check all connections before filling the system.
- ▶ Secure the protected area against access by unauthorized persons.

Hot and cold surfaces

There is a risk of severe burns or hypothermia from contact with hot or cold surfaces on the valves and pipelines.

- ▶ Before starting work, wait until the temperature of the pipelines and valves is between roughly 10 to 40 °C.

Musculoskeletal disorders

There is a risk of severe musculoskeletal disorders (e.g. back injuries) due to incorrect posture or excessive exertion (e.g. due to weight loads).

- ▶ Proceed with care.

2.3 Responsibilities of the Operator

The actuator and valve must be operated only when in a technically sound and safe condition. The operator must observe the following points:

- Ensure that the operating instructions are available to all persons who perform work on the actuator and valve.
- Ensure that all persons have read and understood the operating instructions before working on the actuator and valve.
- Ensure the required ambient conditions and clearances at the mounting location.
- Ensure that mounting, installation and commissioning are carried out only by a fitter or specialist electrician, according to the tasks. Siehe Absatz "Who is permitted to perform which tasks?", Seite 8.
- Inform your Kieback&Peter contact person in the event of damage to the actuator and/or valve.
- Ensure that personnel receive the personal protective equipment (PPE) stipulated in the specific country and use this equipment at all times.

2.4 Qualification of personnel

Fitter

The fitter is familiar with heating, ventilation and air conditioning systems. Based on his or her technical training and appropriate knowledge and experience, he or she is familiar with the described actuator and valve. The fitter knows the applicable regulations, can assess his or her assigned tasks and identify potential dangers.

Electrical specialist

The electrical specialist is a person who is familiar with the described actuator. Based on his or her professional training, knowledge and experience, he or she has a very good understanding of the fields of cable, wire and laying systems and a good knowledge of the areas of electrical engineering and electrical machines and actuators. The electrical specialist knows the applicable regulations, can assess work assigned to him or her and identify possible dangers.

Who is permitted to perform which tasks?

Task	Fitter	Electrical specialist
Mounting		
Assembling the valve	x	
Assembling the actuator	x	
Commissioning		
Electrical connection		x
Adapting actuator functions		x
Faults and remedial measures		
Searching for and correcting faults	x	x
Decommissioning, disassembly and disposal		
Taking the actuator out of operation		x
Disassembling the actuator	x	
Disassembling the valve	x	
Disposal	x	

2.5 Intended use

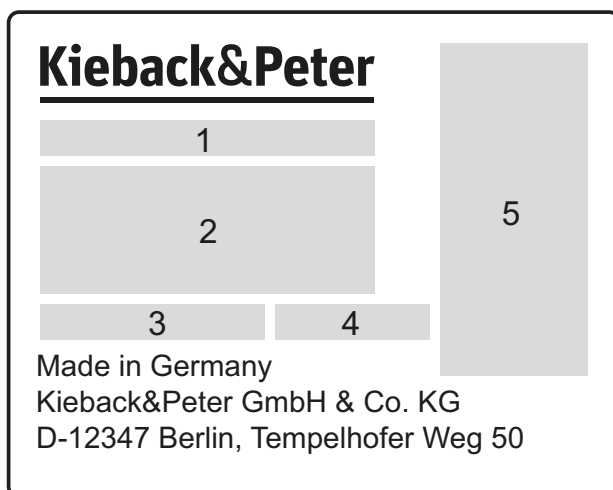
- The actuator with valve is designed to control the flow or precise mixture of liquids for heating, ventilation and air conditioning systems.
- Operate the actuator only with one of the specified valves and the original valve accessories.
- The actuator with valve is intended only for industrial and commercial use; never operate the actuator with valve in the private sphere or in households.
- Only operate the actuator with valve indoors.
- Maintain the specified ambient conditions during operation, transport and storage.
- Use a suitable operating medium.
- Only operate the actuator with valve in its original condition. Modifications to the actuator and/or valve may result in unforeseeable dangers and are thus prohibited.

3 Description

The MD15-SBT is a small actuator for 2-point, 3-point or continuous control in zone post-treatment devices for heating, ventilation and air conditioning systems. It is used with two-way and three-way valves of the VVP45.xx, VXP45.xx and VMP45.xx series.

3.1 Product identification

The type plate is attached on the underside of the actuator housing.



- 1 Item number
- 2 Technical data (nominal voltage, power consumption, etc.)
- 3 Serial number/revision number
- 4 Year and month of construction (mm/yyyy)
- 5 Symbols, graphics (CE marks, protection class, etc.)

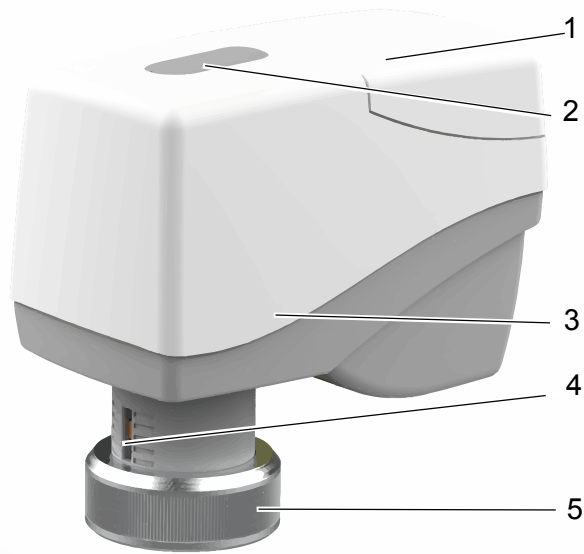


NOTE

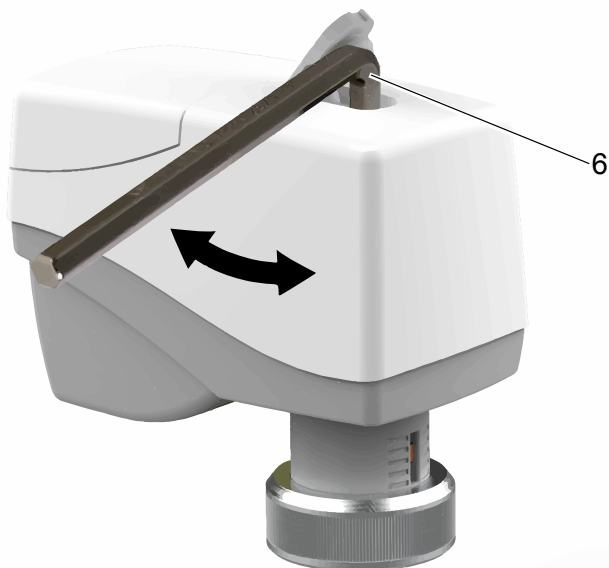
Information on the type of valve can be found on the cast body of the valve.

3.2 Actuator

3.2.1 Structure



- 1 Inspection cover
- 2 Plug/port for manual adjustment
- 3 Housing
- 4 Position indicator
- 5 Union nut



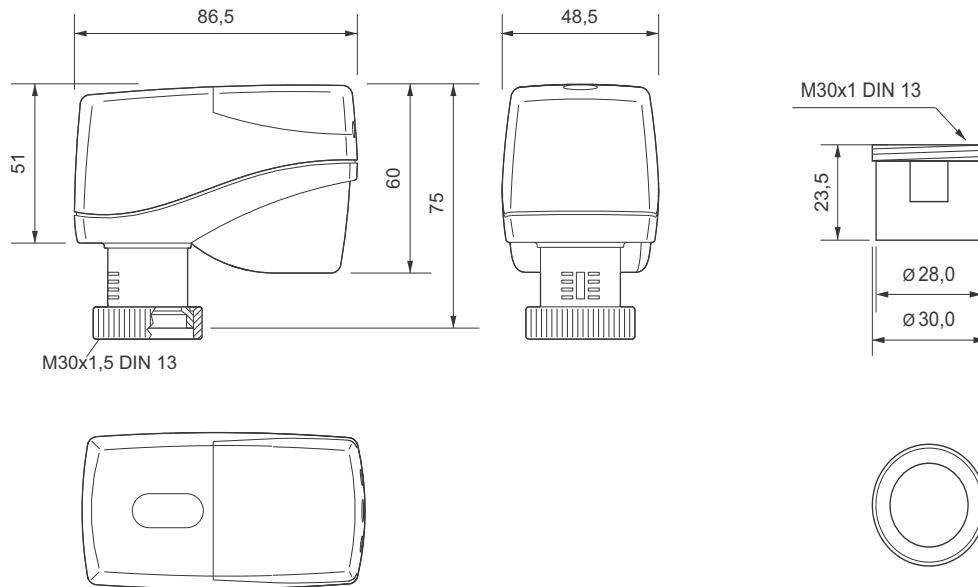
- 6 Manual adjustment (only when disconnected from the power supply)

The receptacle for a hex key (4 mm) is located under the plug.
The hex key is not included in the scope of delivery.

3.2.2 Technical specifications

Nominal voltage	AC 24 V $\pm$ 10%; 50/60 Hz; DC 24 V $\pm$ 10%
Dimensioning	3.7 VA (AC 24 V); 1.7 W (DC 24 V)
Switch-on current	Max. 8 A <1 ms; <0.064 A ² s*
Power consumption	Sleep mode: 0.7 VA (AC); 0.3 W (DC) Nominal: 2.5 VA (AC 24 V); 1.3 W (DC 24 V)
Connection	Built-in cable 1.5 m; 2 x 0.5 mm ²
Control	3-point signal (open/stop/closed), min. switch-on time 2 s, invertible 2-point signal (open/closed), invertible Continuous control, DC 0(2)..10 V; Re = 100 k Ω , invertible
Sound power	< 23 dB (A)
Positioning stroke	5.5 mm
Positioning time	22 s/mm
Positioning force	Nominal 200 N
Permitted medium temperature in the valve	0..+120° C
Ambient temperature	0..50 °C
Ambient humidity	0..85% r.h., non-condensing
Overvoltage category	III
Level of contamination	2
Degree of protection	IP54 only with the appropriate installation position
Protection class	III in accordance with EN 60730
Installation position	360°
Maintenance	Maintenance-free
Weight	240 g

Dimensions



Other properties

Display	LED display for operating voltage and status
Position indicator	Stroke range scale
Manual adjustment	Only when disconnected from the power supply
	Socket for hexagon key under the cover plug on the actuator cover, 4 mm key socket
Valve exercise	Can be switched on
Characteristic curve compensation	Can be switched on

3.3 Radiator valves VVP45.xx, VXP45.xx und VMP45.xx for actuator MD15-SBT

3.3.1 Types

VVP45.xx two-way	VXP45.xx three-way	VMP45.xx three-way with T-bypass	DN	Kvs	kvs*	Connec- tion
VVP45.10-0.25	VXP45.10-0.25	VMP45.10-0.25	10	0.25	0.18	G 1/2B
VVP45.10-0.4	VXP45.10-0.4	VMP45.10-0.4	10	0.4	0.28	G 1/2B
VVP45.10-0.63	VXP45.10-0.63	VMP45.10-0.63	10	0.63	0.44	G 1/2B
VVP45.10-1	VXP45.10-1	VMP45.10-1	10	1.0	0.70	G 1/2B
VVP45.10-1.6	VXP45.10-1.6	VMP45.10-1.6	10	1.6	1.12	G 1/2B
VVP45.15-2.5	VXP45.15-2.5	VMP45.15-2.5	15	2.5	1.75	G 3/4B
VVP45.20-4	VXP45.20-4	VMP45.20-4	20	4.0	2.80	G 1B
VVP45.25-6.3	VXP45.25-6.3		25	6.3	4.40	G 1 1/4B

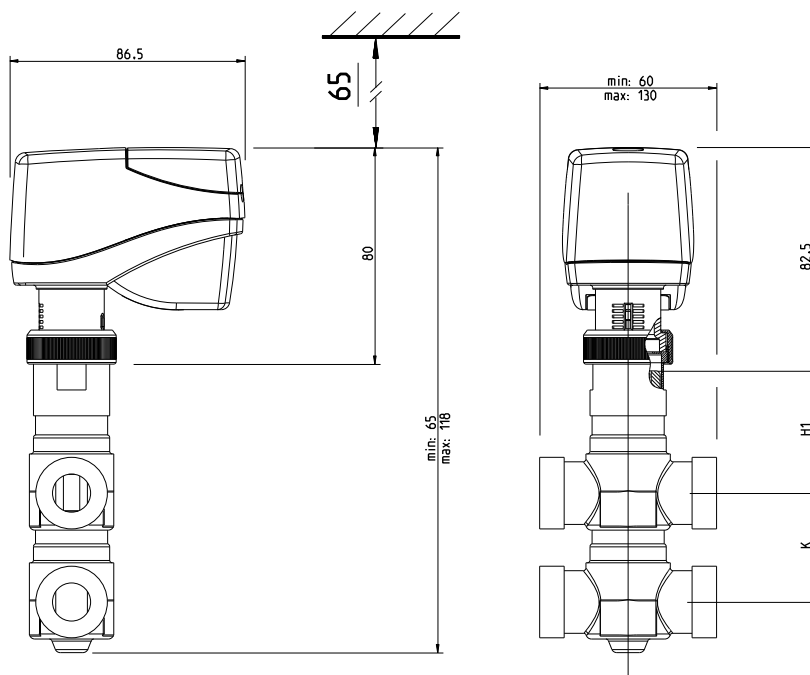
* Only applies to three-way versions

3.3.2 Technical data - valves VVP45.xx, VXP45.xx and VMP45.xx

Nominal width	DN10..25
Pressure rating	PN16
Connection	Flat-sealing male thread connections G..B in accordance with ISO 228-1
Positioning stroke	5.5 mm
Medium temperature	Water up to 120°C
Housing	Gunmetal, nickel-plated
Cone	EPDM
Valve spindle	Stainless steel
Stem seal	EPDM
Maintenance	Maintenance-free

3.3.3 Dimensions

- MD15-SBT with VVP45.xx, VXP45.xx, VMP45.xx



4 Scope of delivery, transportation and storage

Scope of delivery

The actuator can be delivered in different combinations with valve and valve accessories or as a single product.

The maximum scope of delivery includes:

- MD15-SBT actuator
- VVP45.xx, VXP45.xx or VMP.xx valve
- Operating instructions MD15-SBT actuator for VVP45.xx, VXP45.xx and VMP.xx valves
- Mounting instructions MD15-SBT

Transportation

- ▶ Transport the actuator, valve and valve accessories in suitable packaging.
- ▶ Avoid shocks and mechanical damage.
- ▶ Do not throw the product or allow it to fall.
- ▶ Maintain the specified ambient temperature of -25..+60 °C and ambient humidity of 0..85% r.h., non-condensing.

Storage

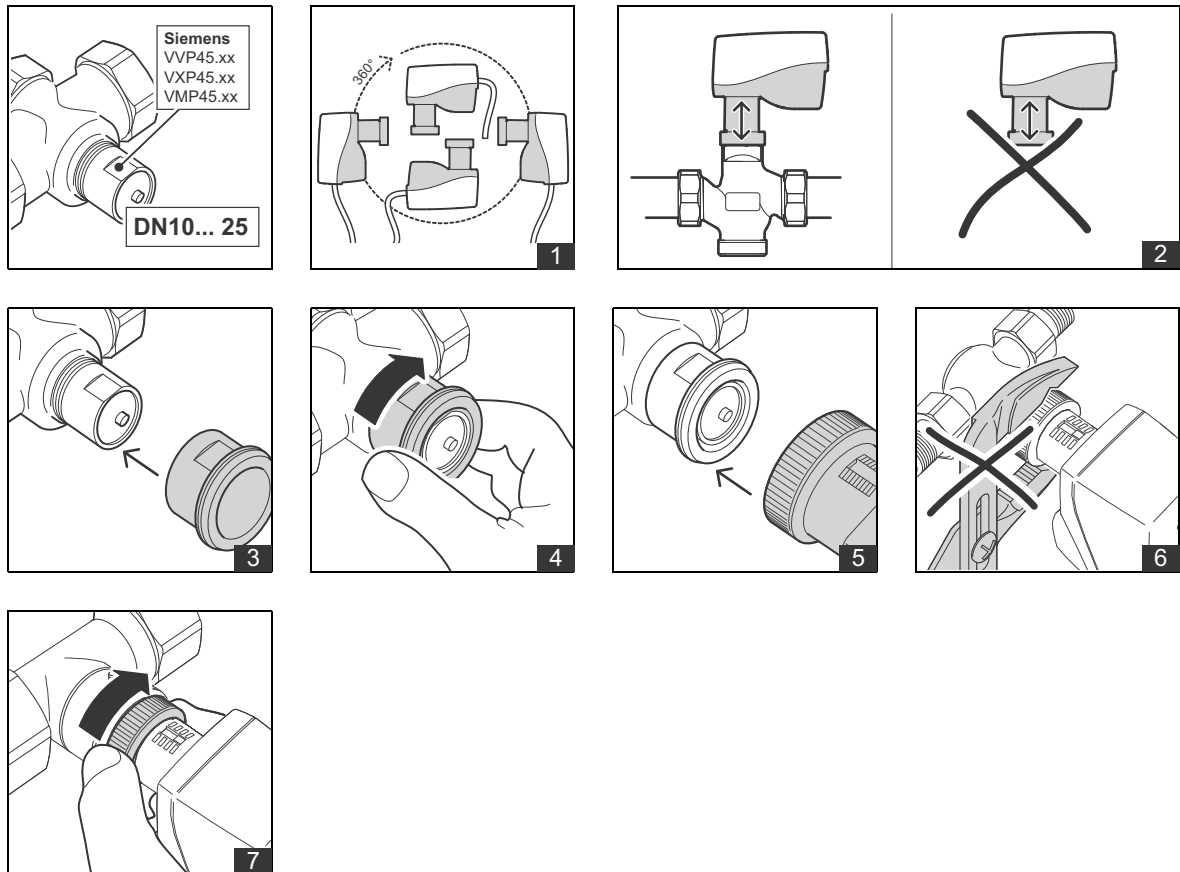
- ▶ Store the actuator, valve and valve accessories only indoors.
- ▶ Avoid shocks and mechanical damage.
- ▶ Maintain the specified ambient temperature of -20..+60 °C and ambient humidity of 0..85% r.h., non-condensing.

5 Mounting

5.1 Mounting conditions

- Any protective caps on the valve gates should be removed before assembling the valves.
- No grease or oil may be used during assembly because these could destroy the valve seals.
- The pipeline system and the interior of the fitting must be free of foreign objects, particles of dirt, and grease and oil residues. Rinse them out if necessary.
- There must be no tension between the fixture 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 and +50 °C.
- If the operating medium is contaminated, a strainer must be installed in the supply pipe. For maintenance purposes, we recommend to install shut-off valves both upstream and downstream of the valve or plant section.
- During installation, observe the maximum permitted differential pressure Δp .
- Note that a free space of 150 mm above the valve is required for mounting the actuator and removing the connection cover.
- Observe the direction of flow arrow on the valve body. Inverting the direction of flow impairs control behavior.
- Differential pressure must not occur on the valve body. Close the gate valve and turn off pumps.
- Screw the valve connections onto the pipelines.

5.2 Mounting the MD15-SBT actuator on the valve

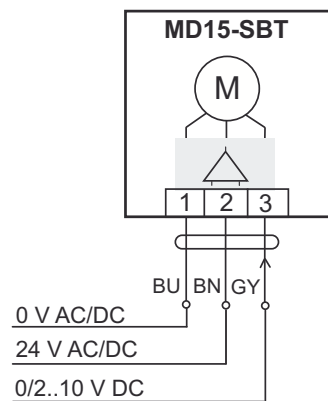


- ▶ **1** Any actuator installation positions in which the cabling runs downward are permitted.
- ▶ **2** CAUTION! Do not operate the actuator without a valve.
- ▶ **3** Set the valve adapter onto the valve.
- ▶ **4** Screw the valve adapter onto the valve by hand up to the stop.
- ▶ **5** Set the actuator onto the threaded connection on the adapter.
- ▶ **6** CAUTION! Do not use a pipe wrench. This may damage the actuator and valve.
- ▶ **7** Tighten the union nut by hand.

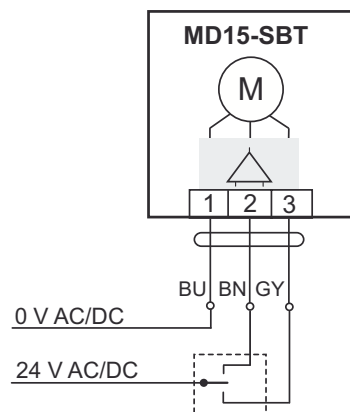
6 Connecting the actuator and putting it into operation

6.1 Wiring diagram

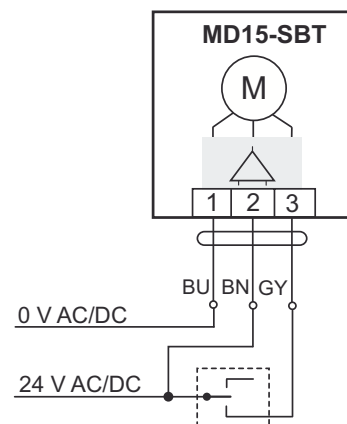
- Continuous control



- Three-point control



- Two-point control

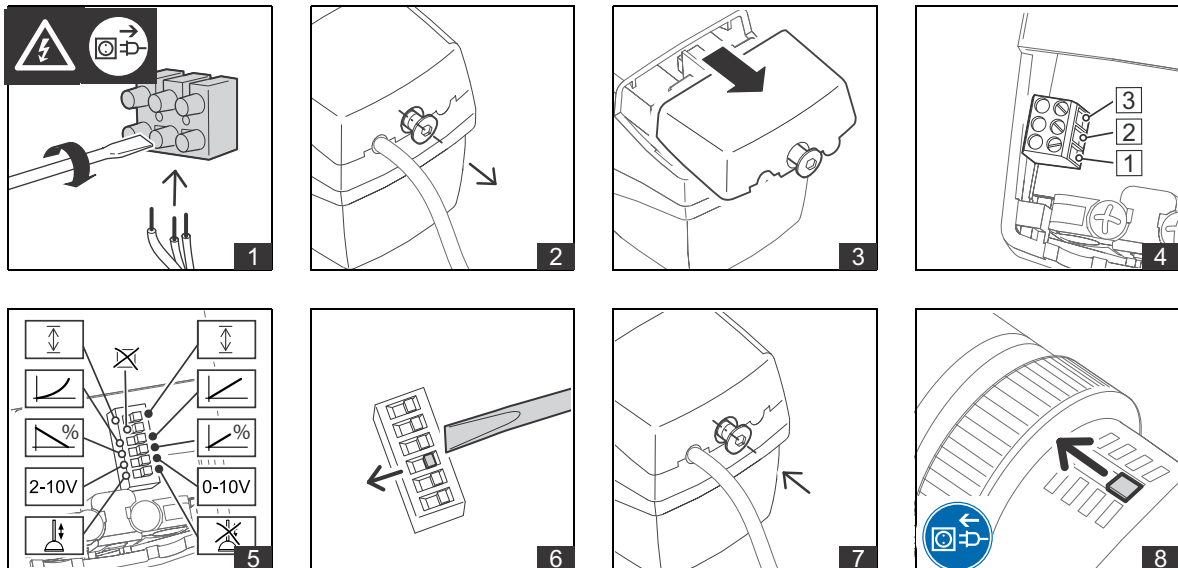


6.2 Commissioning



CAUTION

Temporary peak loads of up to 8 A may occur when switching on the actuator. Ensure suitability of switching components (e.g. controller connection) to ensure proper functioning and to avoid malfunctions and damage.



- ▶ **1** Carry out the electrical connection of the actuator as a fixed installation.
- ▶ **2 3** Remove the inspection cover.
- ▶ **4** Refer to the circuit diagram.
- ▶ **5 6** Adjust the actuator functions with switches 1 to 6 (see page 19).
- ▶ **7** Mount the inspection cover.
- ▶ **8** Automatic initialization takes place once the supply voltage has been switched on for the first time. The actuator first travels to the upper end position and then to the lower end position. The actuator will not respond to the control signal until the initialization run is complete.



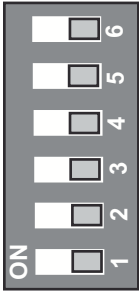
NOTE

An initialization run can be started manually by switching switch 6.

6.3 Adapting actuator functions

Valve Functions

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

Function Switch position ON	Switch (A)	Function Switch position OFF
Reinitialization ON->OFF/OFF ->ON		Reinitialization ON->OFF/OFF ->ON
No function		No function
Equal percentage characteristic curve 		Linear characteristic curve 
Actuating direction and position feedback 100..0% 		Actuating direction and position feedback 0..100% 
DC 2..10 V		DC 0..10 V
Valve exercise on		Valve exercise off

Switch 1: Valve exercise

If plant specifications permit, the valve exercise feature may be activated during commissioning.

Valve exercise prevents the cone from jamming when the valve is not moved for a long period of inactivity, e.g. for heating systems during the summer.

If valve exercise is activated, the valve cone is raised for a few seconds when there is no movement for 21 days.

Default setting: off

Switch 2: sets the control range for the continuous actuating signal to DC 0..10 V or DC 2..10 V

Default setting: DC 0..10 V

Switch 3: sets the actuating direction and position feedback for a control voltage of DC 10 V to “valve open”  or “valve closed” .

Default setting: 0..100%; “valve open” 

Switch 4: Characteristic curve compensation

sets the valve characteristic curve to linear or equal percentage.

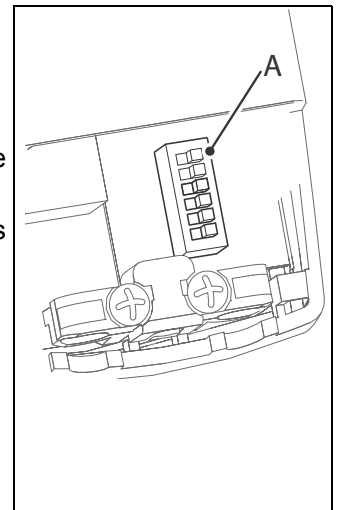
Default setting: linear 

Switch 6: Reinitialization

When the unit is remounted, you must adapt the valves again by performing a reinitialization.

You can do this by moving switch 6 from “OFF” to “ON” or from “ON” to “OFF”.

The LED (under the connection cover) flashes during initialization.



7 Maintenance

Maintenance

The actuator does not require maintenance.

Cleaning

The actuator does not require cleaning.

8 Faults and remedial measures



WARNING

Hot and cold surfaces!

If a hardware or software error occurs, there may be unexpected movements and the valve may open. There is a risk of severe burns or hypothermia from contact with hot or cold surfaces on the valves and pipelines.

- ▶ Wear protective gloves

Error	Cause	Remedy
No actuator control in automatic mode	Power failure	▶ Identify and correct the cause.
	Actuator is incorrectly connected	▶ Check and correct the connection.
	Short circuit due to incorrect connection	▶ Check and correct the connection.
Actuator runs unstably	Voltage drop because the electrical connection line is too long and/or the cross section is too small	▶ Measure the operating voltage. Recalculate and replace the connection lines.
	Mains fluctuations greater than the permitted tolerance	▶ Improve the mains conditions.
Actuator stops intermittently	Supply line has a loose connection	▶ Check and tighten the connections on the terminal strip.
Actuator does not move or does not correctly move to the valve position specified by the input signal; valve does not close or open	Valve jams	▶ Ensure that the valve moves freely or replace the valve.
	Differential pressure is too high	▶ Set the differential pressure correctly.
	Main board is defective	▶ Contact your Kieback&Peter contact person.

LED states

LED flashes green in 1 s cycle	Initialization is running or initialization was not completed successfully
LED lights up green permanently	Initialization was successfully completed, control operation
LED lights up red permanently	Blockage, intervention necessary
	Trigger initialization or briefly interrupt power supply

9 Repair

At the installation location, the valve/actuator combination can only be repaired by replacing the valve or actuator. Contact your Kieback& Peter contact person.

10 Decommissioning, Removal and Disposal

10.1 Manual adjustment



CAUTION

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

- ▶ Disconnect the actuator from the voltage supply.
- ▶ Open the cover plug.
- ▶ A hexagon key (key socket 4 mm) can be used to move the actuator into any position.



CAUTION

If you manually adjust the spindle position until the slip clutch engages in the upper or lower end position, you must turn back the hexagon key by half a turn.



NOTE

An initialization run must be performed after a manual adjustment.

This occurs during operation when a valve end position is reached as part of normal operation.

This initialization can be performed manually by switching switch 6.

10.2 Decommissioning and removing the actuator

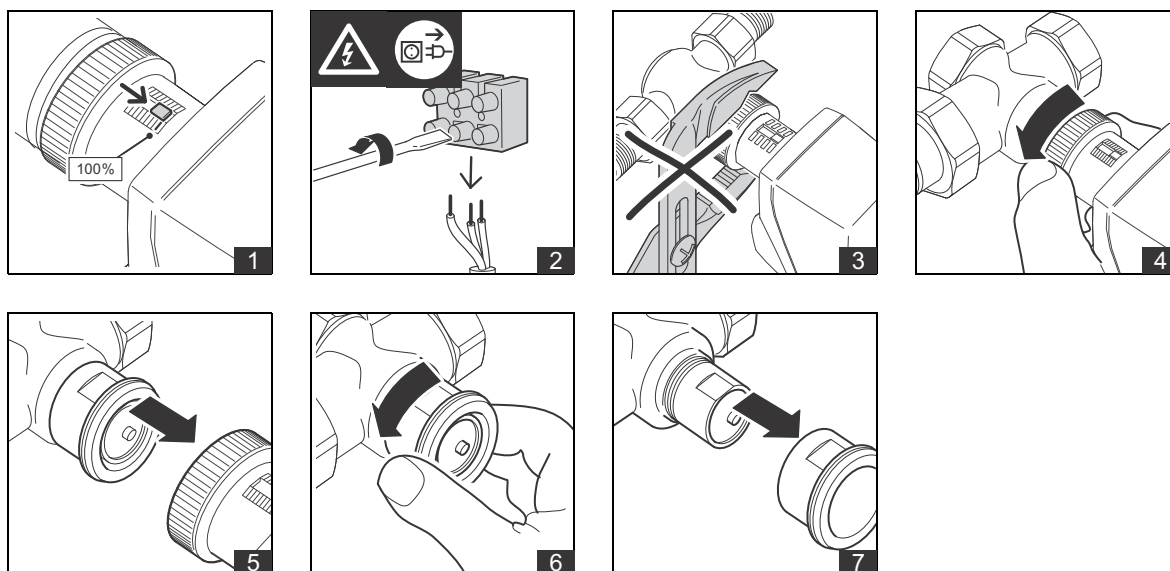


WARNING

Hot and cold surfaces!

If a hardware or software error occurs, there may be unexpected movements and the valve may open. There is a risk of severe burns or hypothermia from contact with hot or cold surfaces on the valves and pipelines.

- ▶ Wear protective gloves



- ▶ **1** Move the actuator to the top position using a control signal.
- ▶ **2** Disconnect the actuator from the power supply and remove all electrical lines.
- ▶ **3** ATTENTION: Do not use a pipe wrench. The actuator and valve may be damaged.
- ▶ **4** Loosen the union nut.
- ▶ **5** Remove the actuator from the adapter.
- ▶ **6** Remove the M4 hexagon socket screw.
- ▶ **7** Remove the valve adapter from the valve.

10.3 Removing the valve

- ▶ No differential pressure must occur on the valve body. Close the gate valve and turn off pumps.
- ▶ Loosen the screw fittings between the pipeline and the valve connections.
- ▶ Remove the valve from the pipeline.

10.4 Notes on disposal

In accordance with the applicable laws and directives of the European Union countries, the product should not be disposed of with household waste. This ensures environmental protection and sustainable recycling or raw materials. Commercial users should contact their supplier and observe the conditions of the purchase agreement. This device may not be disposed of together with other commercial waste.

10.5 Contact persons

Orders and questions

If you want to submit an order, have questions or require technical information, please contact your Kieback&Peter contact person.

Repair service

If your device has a defect, firstly contact your Kieback&Peter contact person to clarify how to proceed.

Repair queries must include a delivery note in which the defect is clearly described and which contains a contact address for any further issues. The package must have sufficient postage paid and is to be sent to:

Kieback&Peter GmbH & Co. KG
Dahmestrasse 18-19, 15749 Mittenwalde/Germany

10.6 Declaration of conformity

Kieback&Peter

EU-KONFORMITÄTSERKLÄRUNG EU-DECLARATION OF CONFORMITY



Kieback&Peter GmbH & Co. KG

Tempelhofer Weg 50
12347 Berlin / Germany

Dokumentationsbevollmächtigte/
Authorized Representative for Documentation:
Lydia Bruchno / Eva Franke

bestätigt in alleiniger Verantwortung, dass das
bezeichnete Produkt

declares in sole responsibility that the designated
product

Stellantrieb

Actuator

MD15-SBT

in Verbindung mit den **Ventilen** der Baureihen

in combination with the **valves** of the series

VVP45.xx, VXP45.xx, VMP45.xx

auf das sich diese Erklärung bezieht, den
Anforderungen entspricht, die in den folgenden
europäischen Richtlinien festgelegt sind:

to which this declaration refers, corresponds to the
requirements which are stipulated in the following
European directives:

- | | |
|---|--|
| • 2006/42/EG Maschinenrichtlinie | • 2006/42/EC Directive Machinery |
| • 2014/35/EU Niederspannungsrichtlinie | • 2014/35/EU Low Voltage Directive |
| • 2014/30/EU elektromagnetische
Verträglichkeit | • 2014/30/EU electromagnetic compatibility |
| • 2011/65/EU RoHS-Richtlinie | • 2011/65/EU Restriction of certain Hazardous
Substances |

Angewendete harmonisierte Normen:

Harmonised standards applied:

DIN EN 60730-2-14:2019-10
DIN EN ISO 12100:2011-03

Unterzeichnet für und im Namen von:

Signed for and on behalf of:

Berlin,
21 April 2021

(ppa. Rainer Mahling)
Geschäftsleitung
Solution & Support Center
Managing Director
Solution & Support Center

(i.V. Frank Külich)
Bereichsleitung
Produktentwicklung
Head of
Product Development

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