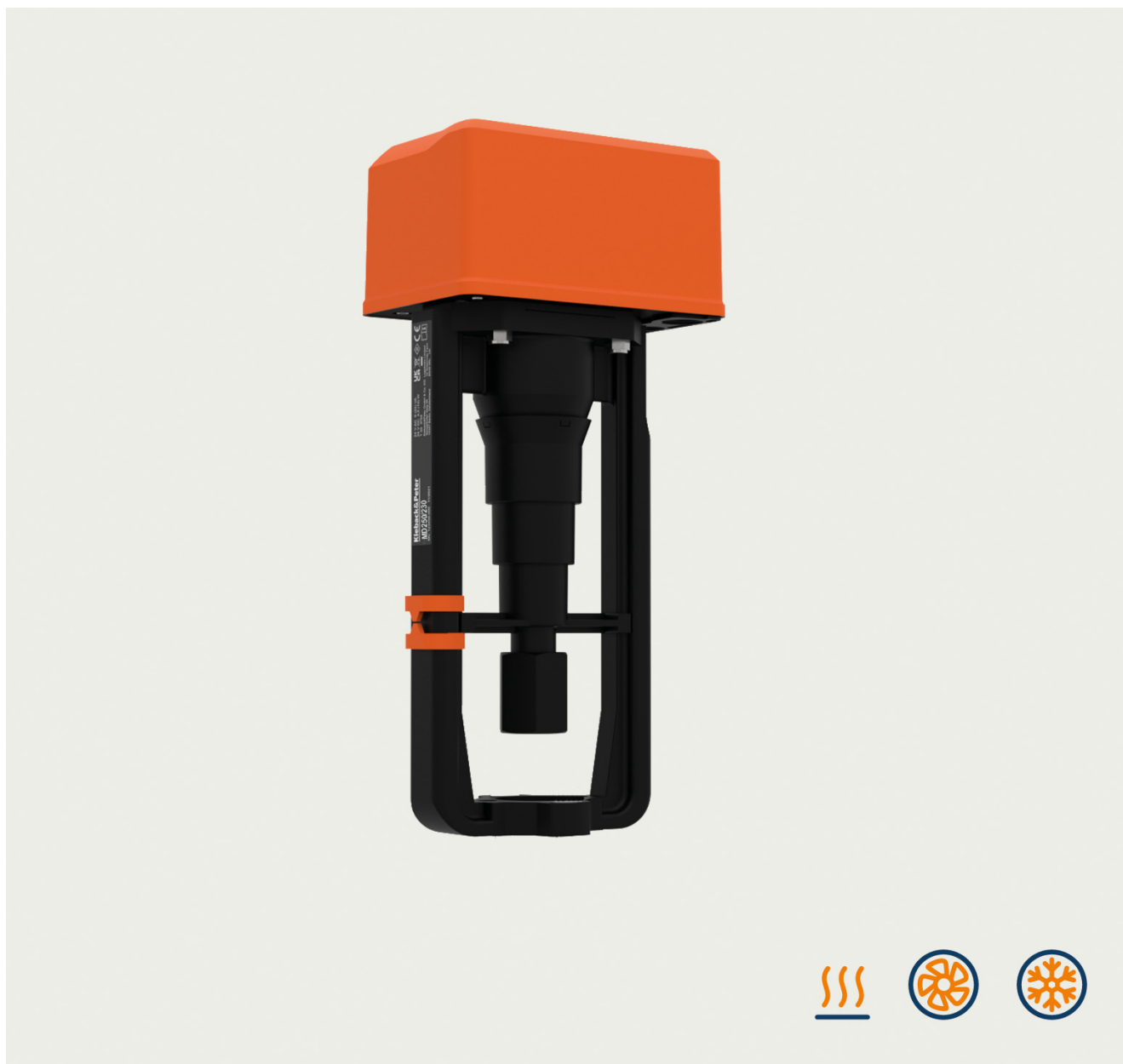




Kieback&Peter

OPERATING INSTRUCTIONS

MD250/230 AND MD250/230-E

**Actuators for valves from the
RK/RF/RD/RGD/RWG/RGDE SERIES**

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

The figures in this document were created with the utmost care. Nevertheless, we cannot guarantee that the delivered product will not differ from these figures.

The original operating instructions were composed in German.

Documentation in other languages has been translated from German.

Kieback&Peter is not liable for damages that result directly or indirectly from the improper use of this device.

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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

This document is a part of the MD250/230 and MD250/230-E actuator for RXX valves and is valid only for these actuators and the described valves.

To make the document easier to read, the MD250/230 and MD250/230-E actuator is referred to in the text below as the “actuator.” The RXX valves are referred to in the text as the “valve.”

The scope of delivery is specific to each actuator and is in accordance with the customer requirements. The positions and figures of the components in the operating instructions may differ depending on the choice of the valve.

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

IMPORTANT

READ CAREFULLY BEFORE USE

RETAIN FOR LATER REFERENCE

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 or cold surfaces

Severe burns or hypothermia are possible if contact is made with hot or cold surfaces at valves and pipelines.

- ▶ Before starting the work, wait until the temperature of the pipelines and valves corresponds to around 5 to 35°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.
- 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 actuators MD250/230 and MD250/230-E with a positioning force of 2500 N are used for fine stroke adjustment of two-way and three-way valves of the types:

- RK65..100(-BF)
- RF65..100(-BF)
- RD65..100
- RGD50..100
- RWG50..100
- RGDE25..100

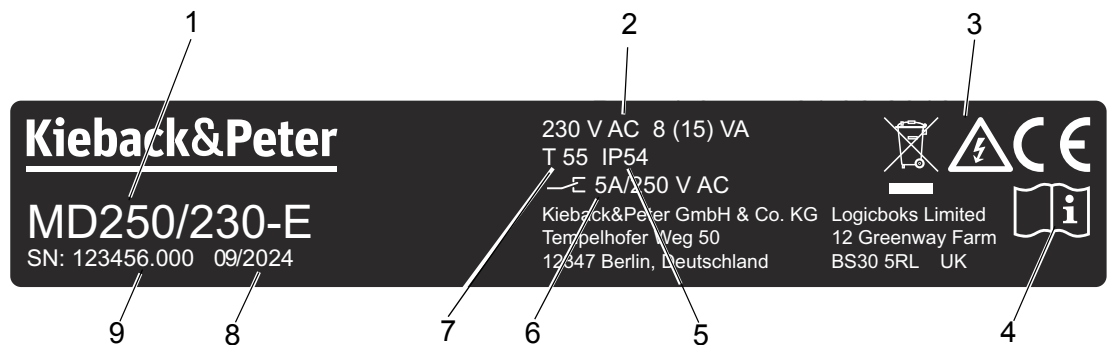
The devices are controlled with the following signal:

- 3-point signal open/stop/closed or
- 2-point signal open/closed

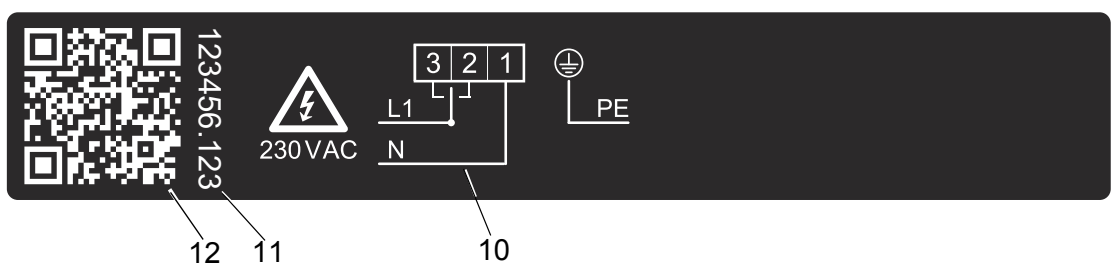
The actuator MD250/230-E additionally has an auxiliary switch module with two galvanically separated changers for the optional message of the valve positions open, closed, two valve positions (adjustable) or malfunction message.

3.1 Identification

The actuator labelling is on the beam.



3-1: Type plate of the actuator (example presentation)



3-2: Connection diagram (exemplary representation)

- 1 Actuator type
- 2 Key electrical data for the actuator
- 3 Labelling: Disposal, protection class, CE
- 4 Reference to the operating instructions regarding further information
- 5 Switching capacity of the auxiliary switch, only for MD250/230-E
- 6 Degree of protection of the actuator
- 7 Temperature range
- 8 Month/year of construction
- 9 Serial number
- 10 Wiring diagram
- 11 Production number
- 12 Production-related QR code with integrated URL link to the documents



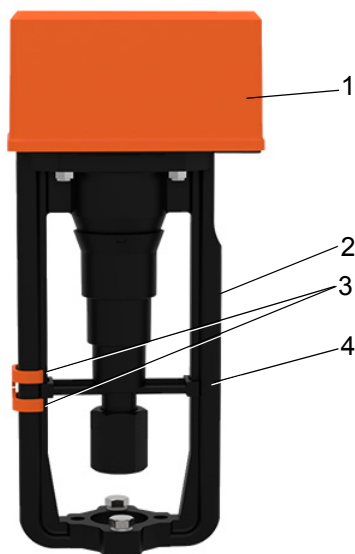
NOTE

The product number of the valve is only entered on the actuator's type plate if you have received a pre-mounted actuator-valve combination.

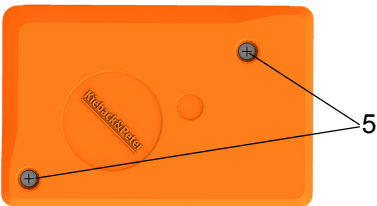
You can find important valve-specific information on the type plate of the valve. Depending on the valve type, the type plate is affixed to different positions on the valve body or flange.

3.2 Actuator

3.2.1 Structure



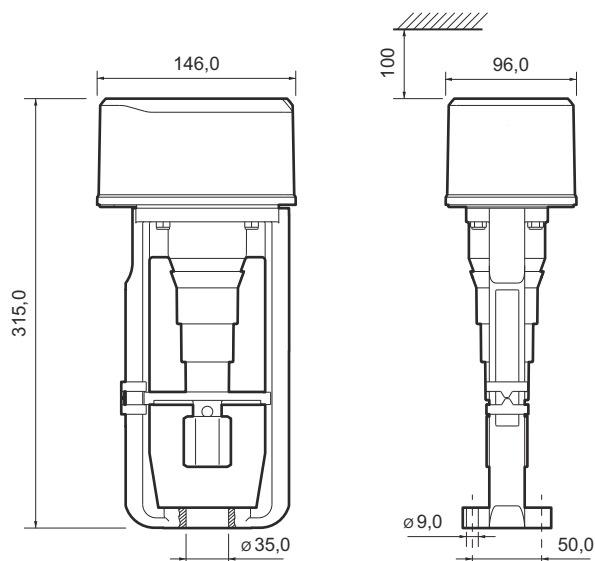
3-3: Actuator layout – view A



3-4: Actuator layout – view B

- | | | |
|---|--------------------------------------|---|
| 1 | Cover | Actuator cover |
| 2 | Beam | |
| 3 | Position marks for the valve setting | Labelling of the maximum and minimum valve stroke |
| 4 | Position indicator | Display of the current valve stroke |
| 5 | Cover screws (2x) | Cover fastening |

3.2.2 Dimensions



3.2.3 Technical data

Nominal voltage	AC 110..230 V $\pm 10\%$; 50/60 Hz
Dimensioning	15 VA (AC) With actuator heating: 21 VA (AC)
Switch-on current	max. 11 A, < 1 ms, < 0.097 A ² s
Power consumption	Sleep mode: 1.5 VA (AC) 3.8 s/mm; nominal: 8 VA (AC) 11 s/mm; nominal: 4.5 VA (AC)
Auxiliary switch	Auxiliary switch module only with MD250/230-E 2 floating changeover contacts, contact load max. 5 A, 250 V AC
Cable cross section	min. 0.75 mm ²
Control	3-point signal (open/stop/closed); maximum switch-on time 2 s 2-point signal (open/closed)
Stroke	max. 30 mm, automatic stroke adaptation
Actuating speed	Adjustable via DIP switch (see page) 3.8 s/mm (factory setting) 11 s/mm
Positioning force	Nominal 2500 N
Ambient temperature	0..55 °C
Ambient humidity	0..95% r.h., non-condensing
Degree of protection	IP54
Protection class	I in accordance with EN 60730
Installation position	180°; anywhere from vertically above the valve to a horizontal position
Maintenance	Maintenance-free
Weight	MD250/230: 2.28 kg; MD250/230-E: 2.35 kg



NOTE

Bistable relays are installed in the auxiliary switch. They have the property of remaining in their last switch state in the de-energized state.

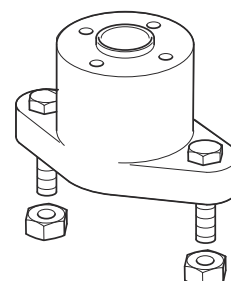
3.2.4 Accessories

Z193

Mounting kit for RGDE DN25 to DN100

With factory-delivered valve/drive combinations, the Z193 mounting kit is pre-fitted.

Mounting instructions 3.10-09.250-99 (included with the Z193 accessories) contains further information about the mounting process.



3.3 RK65..100(-BF) three-way/two-way valve with actuator

Application

The gray cast iron three-way valves and two-way valves with an actuator are used for mixing liquids precisely.

The valves can be used as two-way valves using the BF blank flange on gate B.



3.3.1 Types

RK65..100 gray cast iron three-way valves usable for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 6 bar

Type	DN	PN	kvs	Δp (bar)	Weight (kg)
RK65/50	65	6	50	6.0	14,7
RK65	65	6	63	6.0	14,7
RK80/80	80	6	80	4.0	22
RK80	80	6	100	4.0	22
RK100/125	100	6	125	2.4	31
RK100	100	6	160	2.4	31

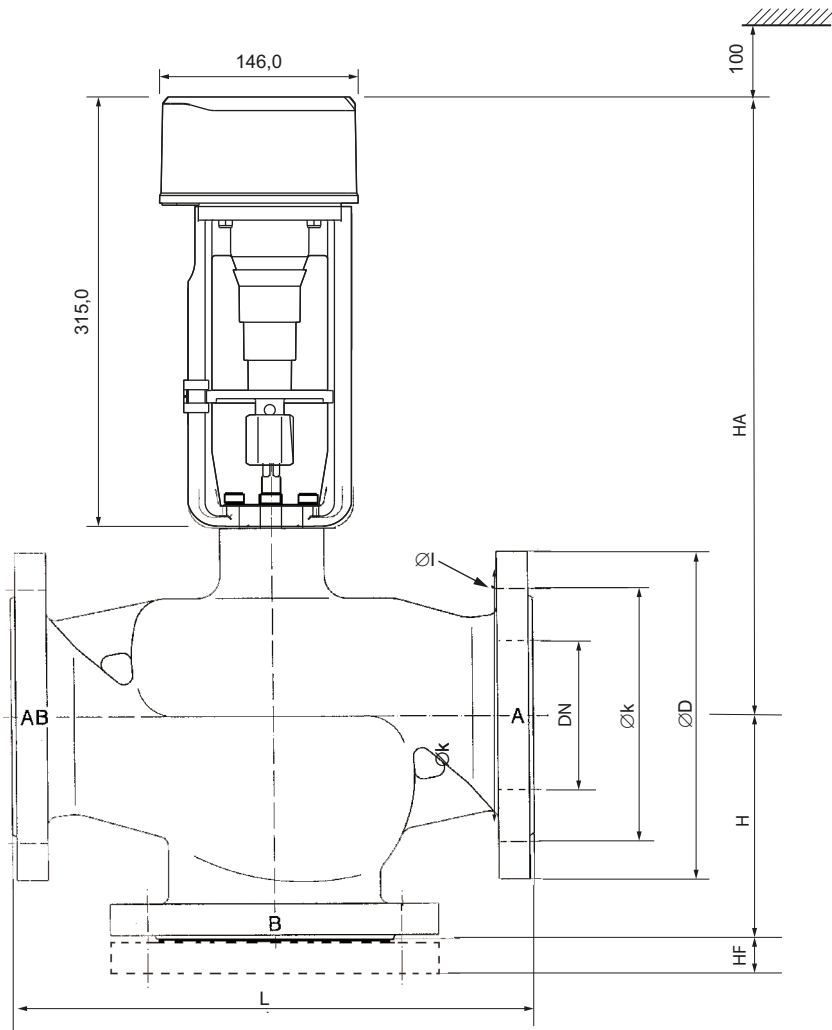
RK65..100-BF gray cast iron two-way valve usable for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 6 bar

Type	DN	PN	kvs	Δp (bar)	Weight (kg)
RK65/50-BF	65	6	50	6.0	17,9
RK65-BF	65	6	63	6.0	17,9
RK80/80-BF	80	6	80	4.0	26,3
RK80-BF	80	6	100	4.0	26,3
RK100/125-BF	100	6	125	2.4	37,1
RK100-BF	100	6	160	2.4	37,1

3.3.2 Technical Data: RK..(-BF) Valves

Nominal width	DN65..100	
Pressure rating	PN 6	
Connection	Flanges to EN 1092-2 type 21	
Characteristic curve	RK..	Ports A → AB = equal percentage Gates B → AB = linear
	RK..-BF	Ports A → AB = equal percentage
Positioning stroke	RK65..100(-BF): 30 mm	
Leak rate	In accordance with EN 1349, leakage class VI	
Medium	Water or max. 50% glycol-water mixtures (pH 6.5..10)	
Medium temperature	0..130 °C (max. 120 °C at 6 bar) As low as -10 °C only with spindle heating	
Housing	Gray cast iron EN-JL1040	
Cone	Brass CW614N	
Valve spindle	CrMo steel 1.4122	
Stem seal	O-rings EPDM, maintenance-free	

Dimensions



DN	L	H	HA	HF (RK...BF)	Ø D	Ø k	Ø l
65	290	120	422	approx. 16	160	130	4x Ø 14
80	310	130	434	approx. 18	190	150	8x Ø 18
100	350	150	441	approx. 18	210	170	8x Ø 18
	Dimensions L to l in mm						

3.4 RF65..100(-BF) three-way/two-way valve with actuator

Application

The gray cast iron three-way valves and two-way valves with an actuator are used for mixing liquids precisely.

The valves can be used as two-way valves using the BF blank flange on gate B.

3.4.1 Types

RF65..100 gray cast iron three-way valves usable for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 16 bar

Type	DN	PN	Kvs	Δp (bar)	Weight (kg)
RF65/50	65	16	50	6.2	18.8
RF65	65	16	63	6.2	18.8
RF80/80	80	16	80	4.0	24
RF80	80	16	100	4.0	24
RF100/125	100	16	125	2.4	36
RF100	100	16	160	2.4	36

RF65..100 gray cast iron two-way valves usable for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 16 bar

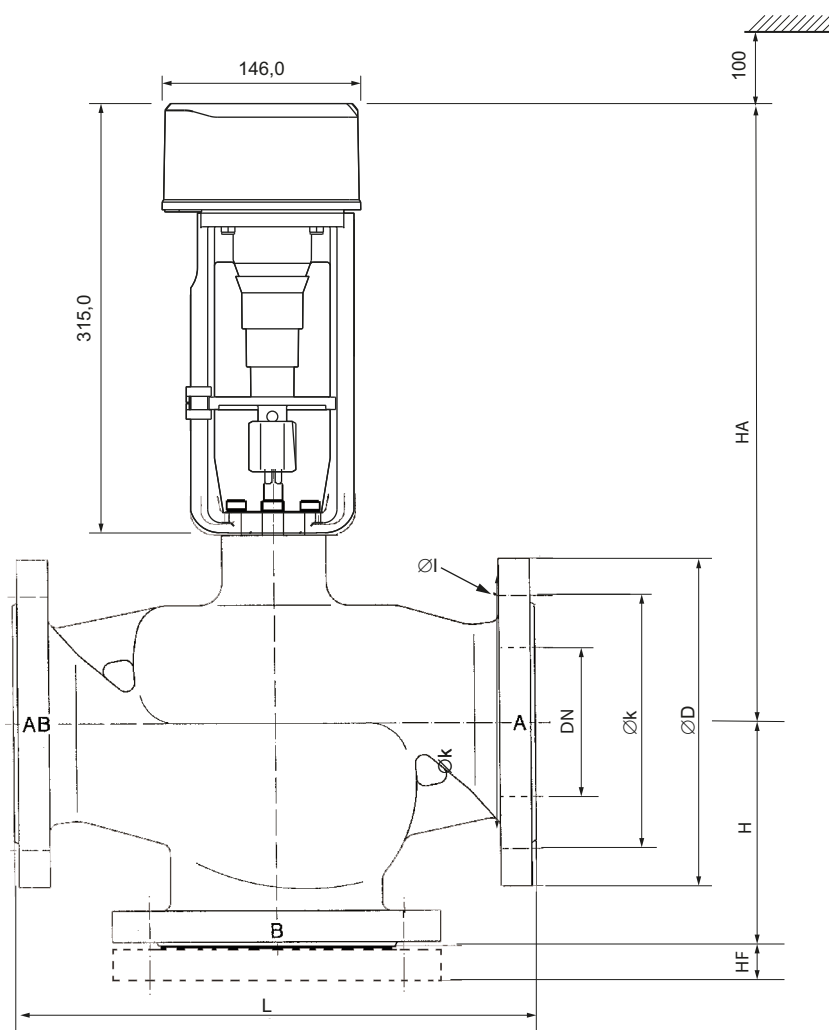
Type	DN	PN	Kvs	Δp (bar)	Weight (kg)
RF65/50-BF	65	16	50	6.2	24.8
RF65-BF	65	16	63	6.2	24.8
RF80/80-BF	80	16	80	4.0	29.8
RF80-BF	80	16	100	4.0	29.8
RF100/125-BF	100	16	125	2.4	42.9
RF100-BF	100	16	160	2.4	42.9



3.4.2 Technical Data: RF..(-BF) Valves

Nominal width	DN65..100	
Pressure rating	PN 16	
CE marking	CE marking, notified body: 0045	
Connection	Flanges to EN 1092-2 type 21	
Characteristic curve	RF..	Ports A → AB = equal percentage
		Gates B → AB = linearl
	RF..-BF	Ports A → AB = equal percentage
Positioning stroke	RF65..100(-BF): 30 mm	
Leak rate	In accordance with EN 1349, leakage class VI G1 (tight-sealing)	
Medium	Water or max. 50% glycol-water mixtures (pH 6.5..10)	
Medium temperature	0..130 °C (max. 120 °C at 16 bar)	
	As low as -10 °C only with spindle heating	
Housing	Gray cast GG25/ EN-JL1040	
Cone	Brass CW614N	
Valve spindle	CrMo steel 1.4122	
Stem seal	O-rings EPDM, maintenance-free	

Dimensions



DN	L	H	HA	HF (RK...BF)	Ø D	Ø k	Ø I
65	290	120	422	approx. 20	185	145	4x Ø 18
80	310	130	434	approx. 22	200	160	8x Ø 18
100	350	150	441	approx. 22	220	180	8x Ø 18
Dimensions L to I in mm							

3.5 RD65..100 two-way valve with actuator

Application

The nodular iron two-way valves with an actuator are used for precisely regulating liquid and vapor flow rates.

3.5.1 Types

RD65..100 nodular iron two-way valves for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 16 bar and hot water and vapor up to 200 °C, 13 bar.

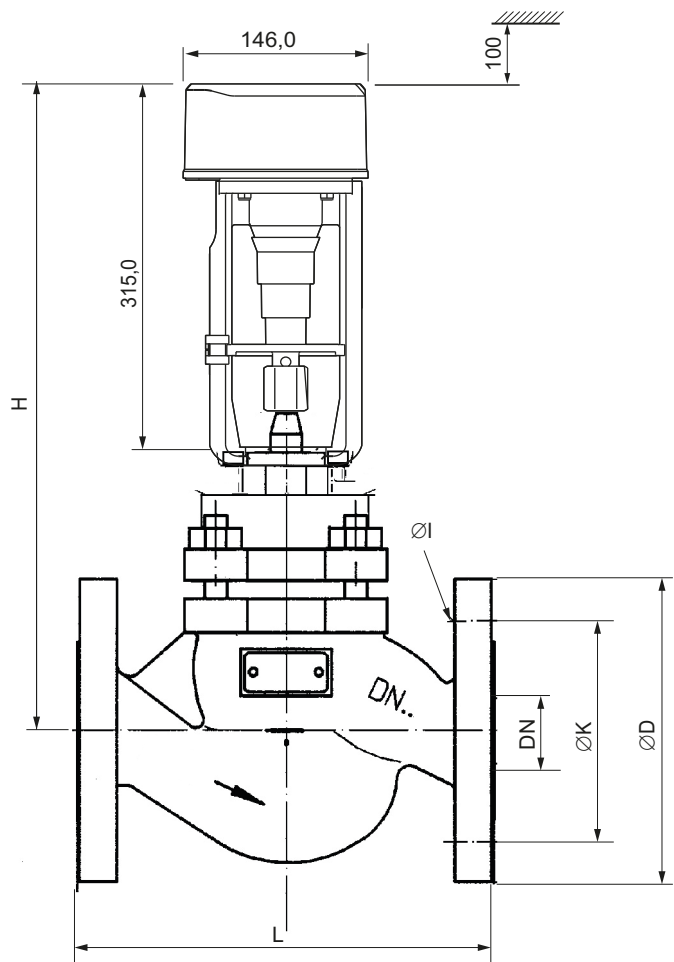
Type	DN	PN	Kvs	Δp (bar)	Weight (kg)
RD65	65	16	63	7.0	16.5
RD100	100	16	160	2.9	32.6



3.5.2 Technical Data: RD.. Valves

Nominal width	DN65..100
Pressure rating	PN16
CE marking	CE marking, notified body: 0045
Connection	Flange in accordance with DIN, PN16
Characteristic curve	Equal percentage
Positioning stroke	30 mm
Leak rate	In accordance with EN 1349, leakage class IV
Medium	Water up to 120 °C; 16 bar max. 50% glycol/water mixtures (pH 6.5..10) up to 120 °C; 16 bar Hot water and steam up to 200 °C; 13 bar
Medium temperature	0..200 °C As low as -10 °C only with spindle heating
Housing	Spheroidal cast iron GGG-40.3
Valve seat	Stainless steel 1.4021
Cone	Stainless steel 1.4021
Valve spindle	Stainless steel 1.4021
Stem seal	Chevron seals, Univerdit with PTFE bushing

Dimensions



DN	L	H	Ø D	Ø K	Ø I
65	290	437,5	185	145	4x Ø 18
100	350	472	220	180	8x Ø 18
Dimensions L to I in mm					

3.6 RGD50..100 two-way valve with actuator

Application

The nodular iron two-way valves with an actuator are used for precisely regulating liquid and vapor flow rates.

3.6.1 Types

RGD50..100 nodular iron two-way valves for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 25 bar and hot water and vapor up to 200 °C, 20 bar.

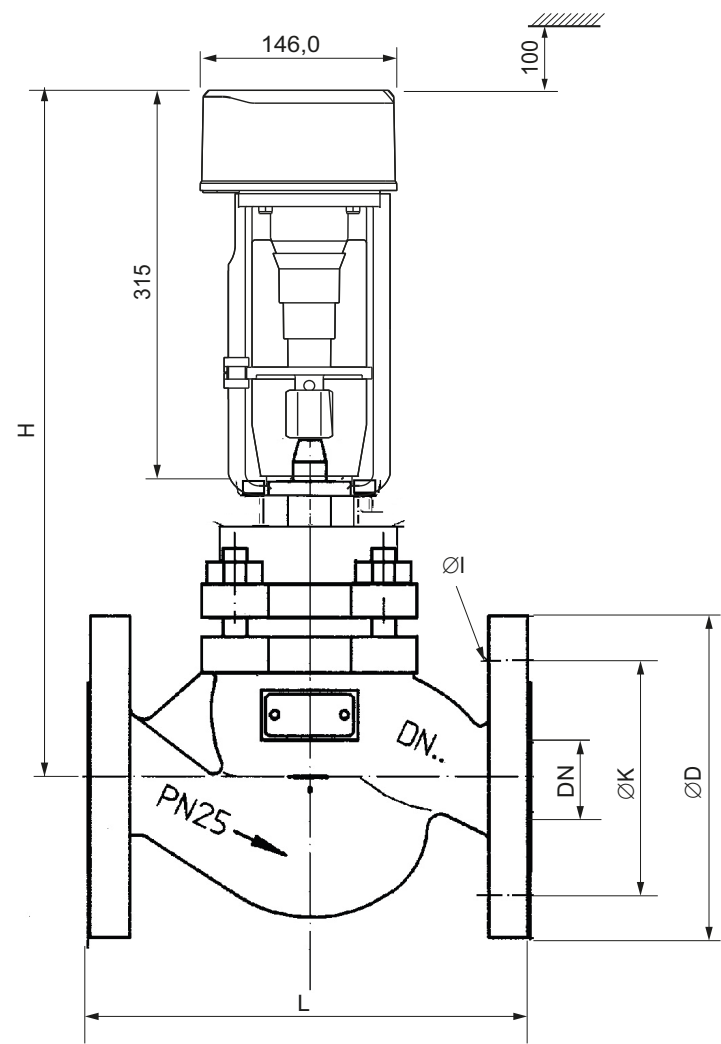
Type	DN	PN	Kvs	Δp (bar)	Weight (kg)
RGD50	50	25	40	11.7	11.2
RGD65	65	25	63	6.9	15.5
RGD80	80	25	100	4.5	21.5
RGD100	100	25	160	2.9	35



3.6.2 Technical Data: RGD.. Valves

Nominal width	DN65..100
Pressure rating	PN 25
CE designation	CE marking from DN32, notified body: 0525
Connection	Flange in accordance with DIN, PN25
Characteristic curve	Equal percentage
Positioning stroke	30 mm
Leak rate	In accordance with EN 1349, leakage class VI
Medium	Water up to 120 °C; 25 bar max. 50% glycol/water mixtures (pH 6.5..10) up to 120 °C; 25 bar Hot water and steam up to 200 °C; 20 bar
Medium temperature	0..200 °C As low as -10 °C only with spindle heating
Housing	Spheroidal cast iron GGG-40.3
Valve seat	Stainless steel 1.4021
Cone	Stainless steel 1.4571
Valve spindle	Stainless steel 1.4571
Stem seal	Chevron seals, Univerdit with PTFE bushing

Dimensions



DN	L	H	Ø D	Ø K	Ø I
50	230	422	165	125	4xØ18
65	290	437,5	185	145	8xØ18
80	310	453,5	200	160	8xØ18
100	350	472	235	190	8xØ22
Masse L bis I in mm					

3.7 RWG50..100 three-way valves with actuator

Application

The nodular iron three-way valves with actuator are used for precisely regulating liquid and vapor flow rates.

3.7.1 Types

RWG50..100 nodular iron three-way valves for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 25 bar, as well as for hot water up to 200 °C, 20 bar

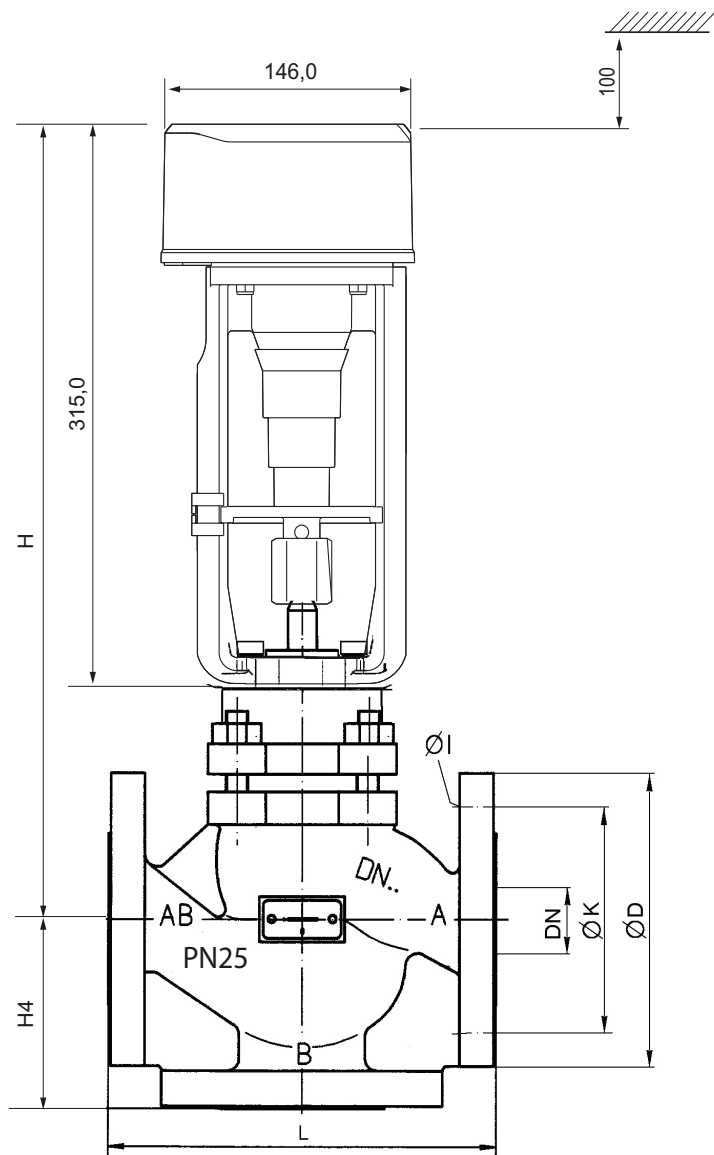
Type	DN	PN	Kvs	Δp (bar)	Weight (kg)
RWG50	50	25	40	11.7	16.8
RWG65	65	25	63	6.9	23.5
RWG80	80	25	100	4.5	30.6
RWG100	100	25	160	2.9	47



3.7.2 Technical Data for RWG Valves

Nominal width	DN50..100
Pressure rating	PN 25
CE marking	CE marking, notified body: 0045
Connection	Flange in accordance with DIN, PN25
Characteristic curve	Ports A → AB = equal percentage Gates B → AB = linear
Positioning stroke	30 mm
Leak rate	In accordance with EN 1349, leakage class VI
Medium	Water up to 120 °C; 25 bar max. 50% glycol/water mixtures (pH 6.5..10) up to 120 °C; 25 bar Hot water and steam up to 200 °C; 20 bar
Medium temperature	0..200 °C As low as -10 °C only with spindle heating
Housing	Spheroidal cast iron GGG-40.3
Valve seat	Stainless steel 1.4021
Cone	CrNi steel 1.4021
Valve spindle	Stainless steel 1.4571
Stem seal	Chevron sleeves Univerdit with PTFE bushing (maintenance-free)

Dimensions



DN	L	H	H4	Ø D	Ø K	Ø I
50	230	442,5	100	165	125	4 x Ø18
65	290	481	120	185	145	8 x Ø18
80	310	497	130	200	160	8 x Ø18
100	350	515,5	150	235	190	8 x Ø22
Dimensions L to I in mm						

3.8 RGDE25..100 two-way valve with actuator

Application

The nodular iron two-way valves with pressure-relief cone and with actuator are used for precisely regulating liquid, gas and vapor flow rates.

3.8.1 Types

RGDE50..100 nodular iron two-way valves for MD250/230 or MD250/230-E actuator, for water up to 120 °C, 25 bar and hot water and vapor up to 200 °C, 20 bar

Type	DN	PN	Kvs	Δp (bar)	Weight (kg)
RGDE25	25	25	10	20.0	7
RGDE32	32	25	16	20.0	9
RGDE40	40	25	25	20.0	12
RGDE50	50	25	40	17.5	15
RGDE65	65	25	63	17.5	25
RGDE80	80	25	100	16.5	34.5
RGDE100	100	25	160	12.3	48



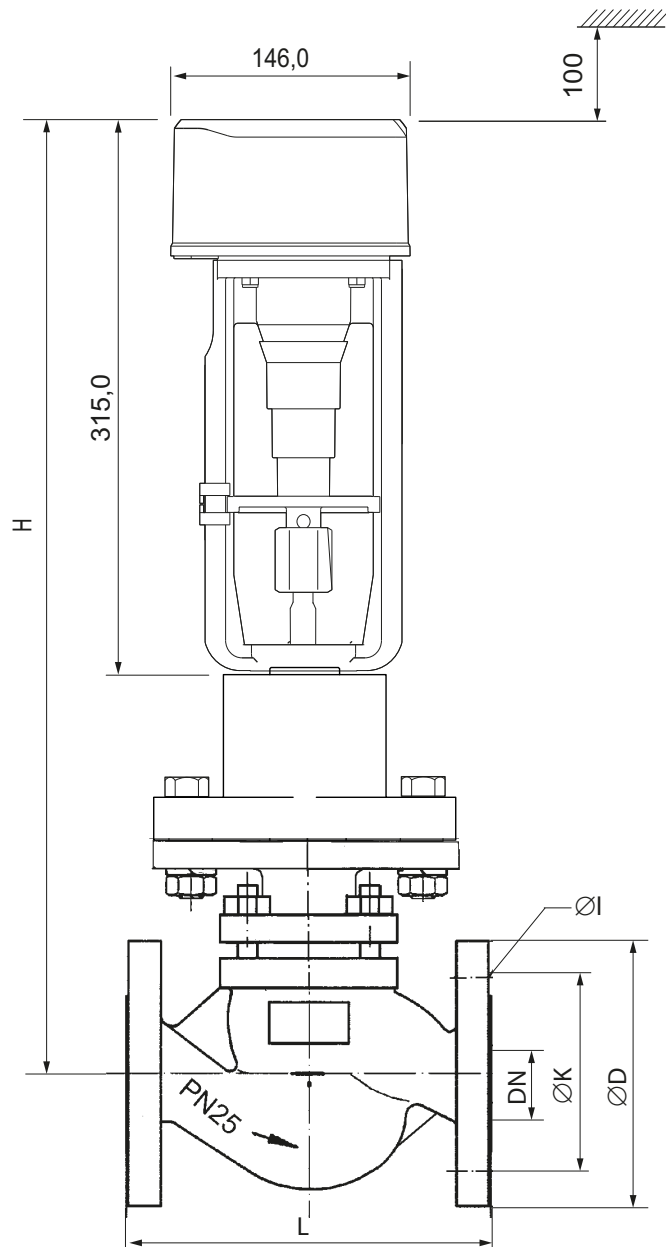
NOTE

Z193 mounting kit required (see accessories page 11).
When valve/actuator combinations are delivered from the factory, the Z193 mounting kit is preassembled.

3.8.2 Technical Data for RGDE Valves

Nominal width	DN50..100
Pressure rating	PN 25
CE marking	CE marking, notified body: 0045
Connection	Flange in accordance with DIN, PN25
Characteristic curve	equal percentage
Positioning stroke	30 mm
Leak rate	In accordance with EN 1349, leakage class VI
Medium	Water up to 120 °C; 25 bar max. 50% glycol/water mixtures (pH 6.5..10) up to 120 °C; 25 bar Hot water and steam up to 200 °C; 20 bar
Medium temperature	0..200 °C As low as -10 °C only with spindle heating
Housing	Spheroidal cast iron GGG-40.3
Valve seat	Stainless steel 1.4021
Cone	CrNi steel 1.4021
Valve spindle	Stainless steel 1.4571
Stem seal	Chevron sleeves Univerdit with PTFE bushing (maintenance-free)

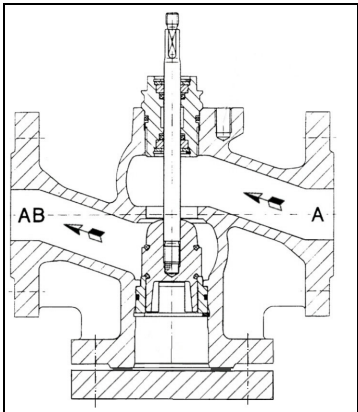
Dimensions



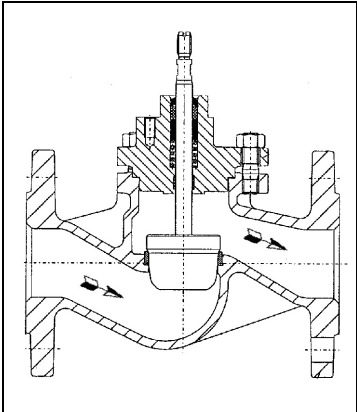
DN	L	H	Ø K	Ø D	Ø I
25	160	500.5	85	115	4 x Ø14
32	180	500.5	100	140	4 x Ø18
40	200	507.5	110	150	4 x Ø18
50	230	513.5	125	165	4 x Ø18
65	290	526.5	145	185	8 x Ø18
80	310	542.0	160	200	8 x Ø18
100	350	561.6	190	235	8 x Ø22
Measurements L to I in mm					

3.9 Valve cross-sections with flow directions

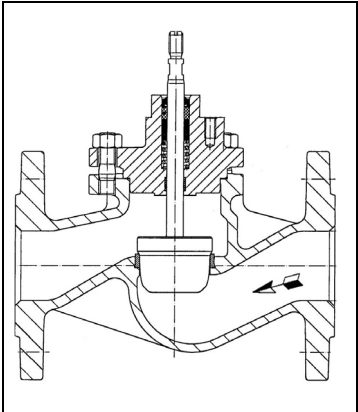
Two-way valves



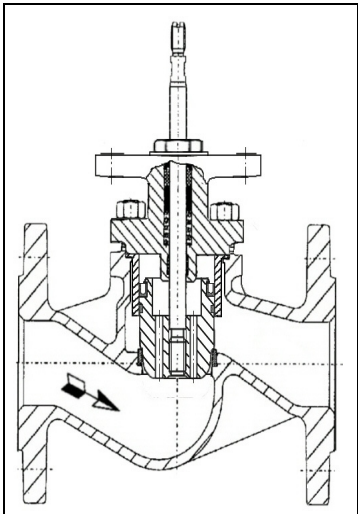
RK/RF..-BF



RD..

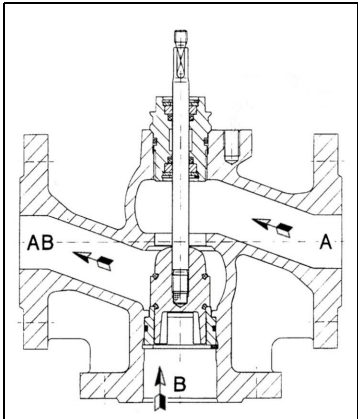


RGD..

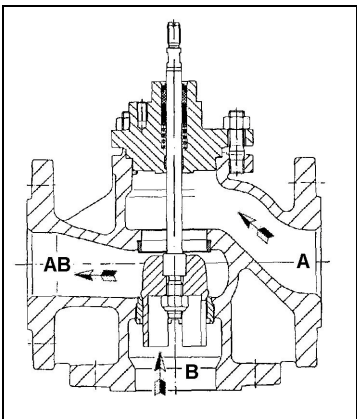


RGDE..

Three-way valves



RK/RF..



RWG..

4 Scope of delivery, transportation and storage

Scope of delivery

The actuator can be supplied in different combinations with the valve or as a standalone product. The actuator and valve can also be ordered as a pre-assembled combination.

The maximum scope of delivery includes:

- MD250/230 or MD250/230-E actuator including:
 - Two hexagon screws ISO4017-M8x30-8.8
 - Two washers S8
 - One M16x1.5 screw connection
 - One M20x1.5 screw connection (only with MD250/230-E)
 - One union nut with washer, drive ring and cylindrical pin
- A two-way or three-way valve from the RK/RF/RD/RGD/RWG/RGDE series
- MD250/230 and MD250/230-E operating instructions for actuators for valves from the RK/RF/RD/RGD/RWG/RGDE series
- MD250/230 or MD250/230-E mounting instructions

Unpacking

- ▶ Check for damage.
- ▶ Do not use damaged deliveries and get in touch with your contact at Kieback&Peter.
- ▶ Dispose of packaging material according to local regulations.

Repackaging

- ▶ Use suitable packaging material to facilitate the transportation and to protect the product from damage.

Transportation

- ▶ Transport in suitable packaging.
- ▶ Avoid shocks and mechanical damage.
- ▶ Do not throw packaged products or allow them to fall.
- ▶ Maintain the specified environmental conditions.

Storage

- ▶ Always store products indoors.
- ▶ Avoid shocks and mechanical damage.
- ▶ Maintain the specified environmental conditions.



WARNING

Risk of injury due to weight load!

Persons who carry or hold a valve or an actuator/valve combination may be injured due to the heavy weight of the load. There is a risk of accidents with severe injuries and damage to property.

- ▶ Use suitable aids to lift and carry the valve or the actuator/valve combination.
-

5 Valve Mounting



CAUTION

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

- The valve gates come with protective caps to protect against contamination. They are to be removed before the valve is mounted.
- The pipeline system and the interior of the fitting must be free of foreign objects. In the case of contaminated media, dirt traps are to be inserted before the valves.
- There must be no tensions between the fitting and the pipeline connection.
- Only use flange seals which fit precisely and insert the valve flanges centrally.
- To prevent vortex formation in the valve bodies, these should be inserted in a straight length of pipe. The guideline value 10 x the nominal width is used as the measurement between the valve flange and the manifold.
- The installation location is to be selected so that the ambient temperature at the actuator is kept between 0°C and +55°C.
- When carrying out mounting, the permissible max. pressure difference Δp and the specified flow direction must be taken into account (see table in “Types” section as well as “Valve Principle”).
- The three-way valves are to be used as mixing valves. Please observe the flow direction (see fig. “Valve Principle”).
- The actuator can be fitted vertically above and below the fitting up to the horizontal position. If installed horizontally, the actuator columns must be positioned one on top of the other vertically. If necessary, turn the beam after loosening the fastening nut.
- To remove the actuator cover, you need 100 mm of free space above the actuator.
- The delivery includes a protective box for the actuator. Before commissioning, this cover serves as actuator protection during the construction phase and piping work.
- Observe the direction of flow arrow on the valve body. A reverse flow direction will impair the control performance!

5.1 Mounting the actuator



NOTE

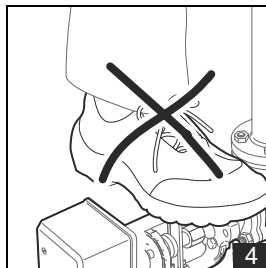
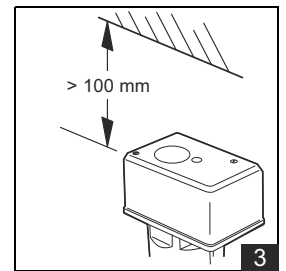
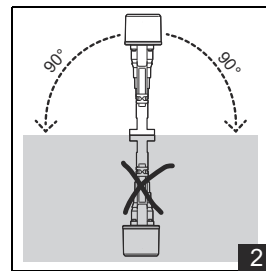
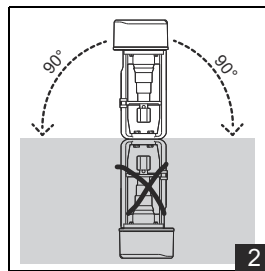
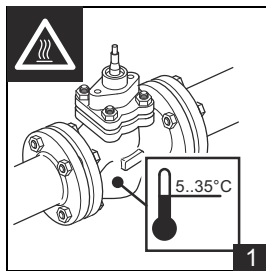
The actuator is delivered in a protective box.
Use this box to protect the actuator until commissioning.

Preparatory tasks

Perform the following preparatory tasks to mount the actuator on a valve in a plant that is in operation:

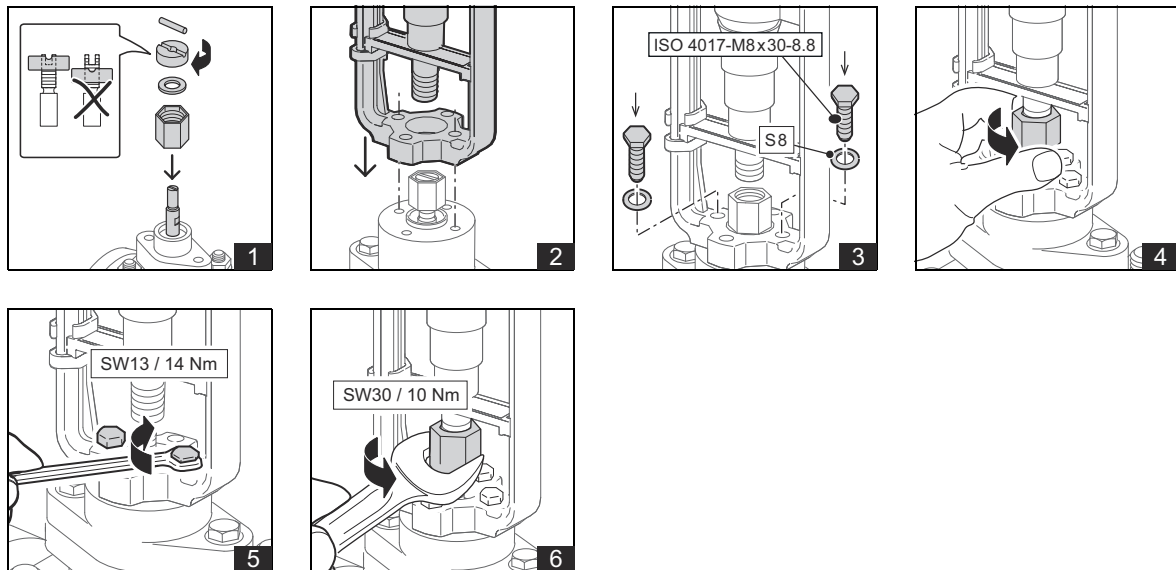
- ▶ Before starting the tasks, ensure that there is no buildup of differential pressure in the valve body.
 - ▶ Close the gate valve and turn off pumps.
- ▶ Allow the valve and pipelines to cool down.

Installation instructions



- ▶ **1** After the pipeline has cooled off, the actuator can be mounted.
- ▶ **2** Any installation positions on the upper semi-sphere are permitted.
- ▶ **3** Mount the device so that there is a clearance of at least 100 mm above it.
- ▶ **4** Do not use the actuator as a step or shelf.

Mounting

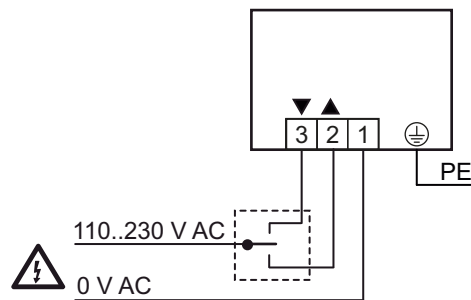


- ▶ **1** Position the union nut above the valve spindle. Insert the circlip into the union nut. Position the drive ring on the valve spindle. Position the locking pin.
- ▶ **2** Position the actuator on the valve. Ensure that the actuator beam is resting on the valve beam without any tension.
- ▶ **3** Install washers S8 and screws ISO4017-M8x30-8.8 and tighten them by hand.
- ▶ **4** Tighten the union nut by hand.
- ▶ **5** Tighten the ISO4017-M8x30-8.8 screws to a tightening torque of 14.0 Nm using an open-ended wrench.
- ▶ **6** Tighten the union nut using a size 30 open-end wrench and a tightening torque of 10.0 Nm.

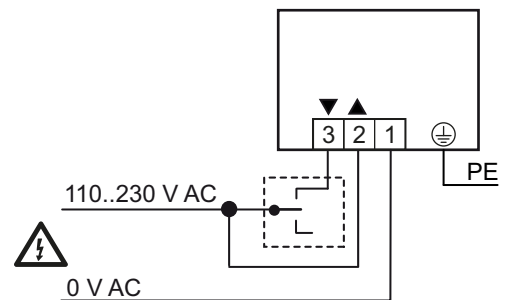
6 Connecting the actuator and putting it into operation

6.1 Wiring diagrams

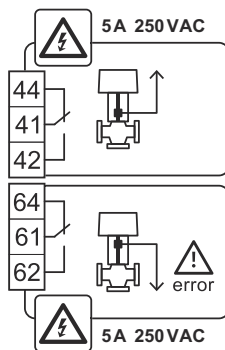
- 3-point operation (open/stop/closed)



- 2-Point operation (open/closed)



- Connection of auxiliary switch only for MD250/230-E



6.2 Electrical connection



CAUTION

Electrical installation and device connection may only be carried out by qualified technicians, e.g. an electrician. Ensure that this process complies with guidelines from the VDE (Association for Electrical, Electronic & Information Technologies) and local wiring regulations.



NOTE

The cable cross-section has to be at least 0.75 mm². You may need to consider adjusting the cable cross-section, depending on the length of the cables. Please observe the applicable installation specifications outlined in the applicable VDE guidelines for each respective use case.



CAUTION

The electrical connection for the actuator must be a fixed installation and connected to a valve.

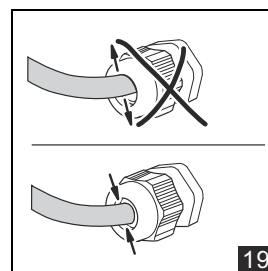
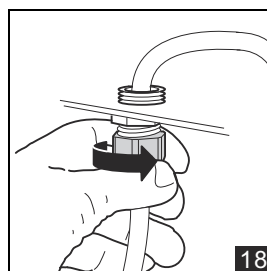
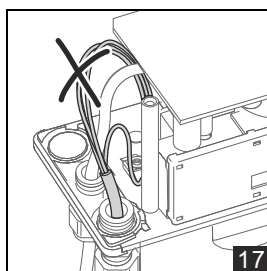
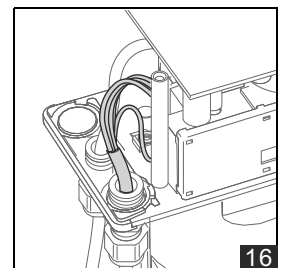
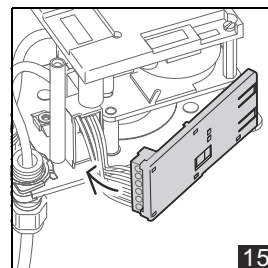
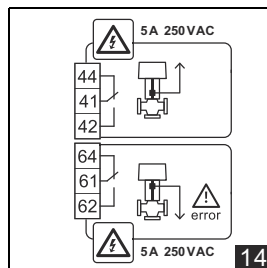
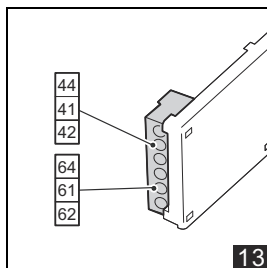
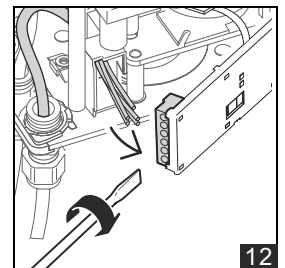
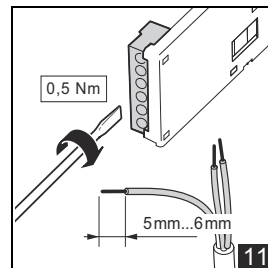
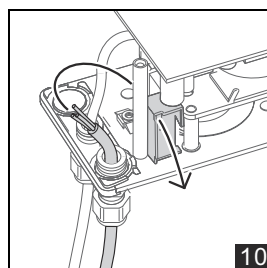
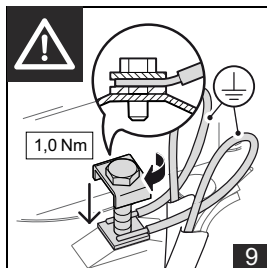
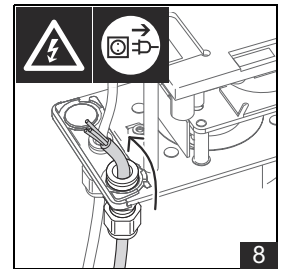
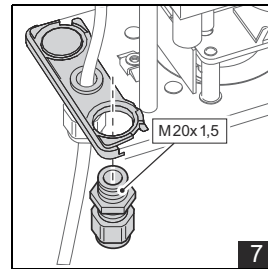
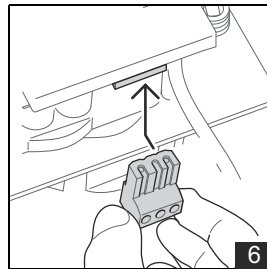
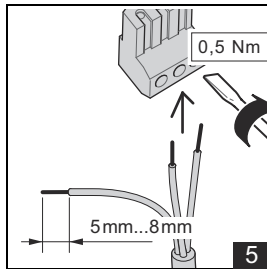
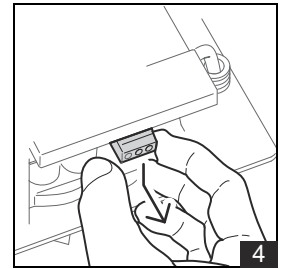
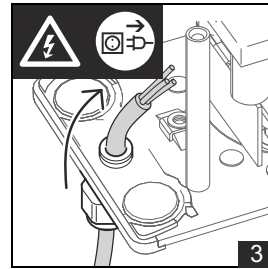
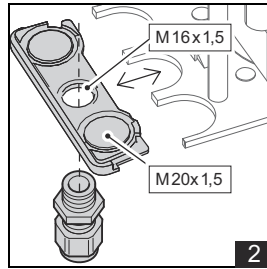
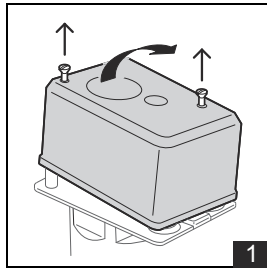
An M16x1.5 screw fitting is included with the delivery of the actuator as a strain relief device. For the actuator with auxiliary switches, the scope of delivery also includes an M20x1.5 screw connection. The electrical connection is established using screw terminals (connection diameter 0.3..2.3 mm).

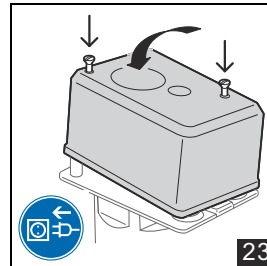
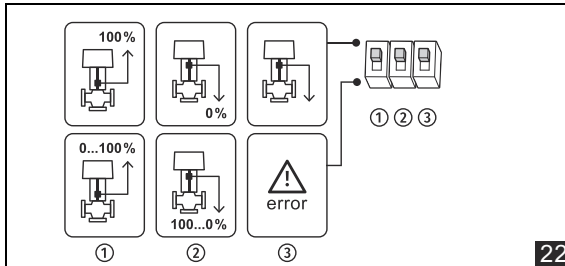
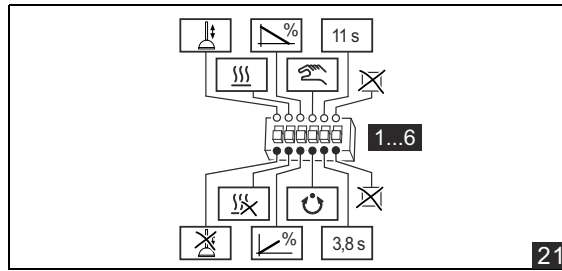
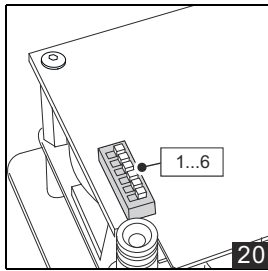
■ MD250/230 electrical connection



- ▶ **1** Loosen both screws and remove the actuator cover.
- ▶ **2** Install the cable gland.
- ▶ **3** Insert the connection line through the cable gland.
- ▶ **4** Remove the connector from the actuator.
- ▶ **5** Carry out the electrical connection of the actuator as a fixed installation.
- ▶ **6** Insert the pre-assembled connection plug.
- ▶ **7** Connect the PE cable of the PE terminal between the terminal clip and the square washer (Cupul washer), with the copper-coated side of the washer facing the terminal clip.
- ▶ **8 9** Tighten the cable gland by hand until it tightly closes the cable.
- ▶ **10 11** Adjust the actuator functions using the DIP switches (see page S.32).
- ▶ **11** Return the actuator cover to its original position and fasten with two screws. Switch on the power supply.

■ MD250/230-E electrical connection





- ▶ **1** Loosen both screws and remove the actuator cover.
- ▶ **2** Install the first cable gland.
- ▶ **3** Insert the connection line (board) through the cable gland.
- ▶ **4** Remove the connector from the actuator.
- ▶ **5** Carry out the electrical connection of the actuator as a fixed installation.
- ▶ **6** Insert the pre-assembled connection plug.
- ▶ **7** Install the second cable gland.
- ▶ **8** Insert the connection line (of the auxiliary switches) through the cable gland.
- ▶ **9** Connect the PE cable of the PE terminal between the terminal clip and the square washer (Cupal washer), with the copper-coated side of the washer facing the terminal clip.
- ▶ **10** Route the connection line (of the auxiliary switches) through the auxiliary switch module bracket.
- ▶ **11 to 14** Carry out the electrical connection of the auxiliary switch as a fixed installation.
- ▶ **15** Insert the auxiliary switch into the bracket.
- ▶ **16 17** Do not cross the connection lines.
- ▶ **18 19** Tighten the cable glands by hand until they tightly close the cable.
- ▶ **20 21** Adjust the actuator functions using the DIP switches (see page 32).
- ▶ **22** Adjust the auxiliary switch functions using the DIP switches (see page).
- ▶ **23** Return the actuator cover to its original position and fasten with two screws. Switch on the power supply.

6.3 Commissioning

6.3.1 Commissioning steps

Adjustment of the actuator functions

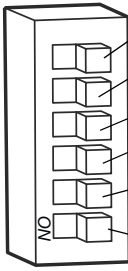
The preset actuator functions can be adjusted with DIP switches 1 to 6.

The switches are located under the actuator cover on the side of the circuit board.



CAUTION

Risk of short circuit! The tool used to actuate the DIP switches must not contact any conductive areas of the printed circuit board.

Function switch position ON	DIP switch	Function switch position OFF (factory setting)
Without function		Without function
11 s/mm (triggers init.)		3.8 s/mm (triggers init.)
Manual adjustment		Automatic mode
Actuating direction inverted		Actuating direction not inverted
Actuator heating: On (is switched on at temperatures approx. < 8 °C)		Actuator heating: Off
Valve blocking protection: On		Valve blocking protection: Off



CAUTION

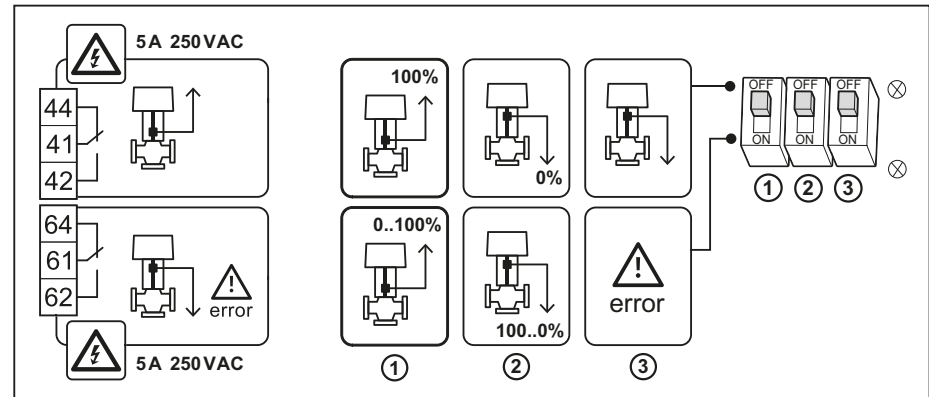
The actuator heating and valve blocking protection functions take effect only during two-point operation because the actuator must be permanently supplied with voltage/in operation to do so.

Adjustment of auxiliary switch functions, only for MD250/230-E

The auxiliary switch has two galvanically separated changers for the optional message of the valve positions open, closed, two valve positions (adjustable) or malfunction message.

The auxiliary switch functions can be adapted with DIP switches 1 to 3.

The DIP switches are located laterally under the actuator cover.



Changer 1 = terminal 42, 41 and 44

Changer 2 = terminal 62, 61 and 64

DIP switch	Position	Description
1	OFF	Changer 1 closes terminals 41 and 44 in the upper end position, the upper LED lights up.
1	ON	When the DIP switch is switched to the ON position, the current valve position is saved. Changer 1 switches at this position on the way to the upper end position.
2	OFF	Changer 2 closes terminals 61 and 64 in the lower end position, the lower LED lights up.
2	ON	When the DIP switch is switched to the ON position, the current valve position is saved. Changer 2 switches at this position on the way to the lower end position.
3	OFF	Changer 2 switches according to the settings of DIP switch 2.
3	ON	Changer 2 switches when an error is detected. The settings of DIP switch 2 are ineffective.

Factory setting: all DIP switches in the OFF position

Switching on the power supply

The LED (1) flashes green.

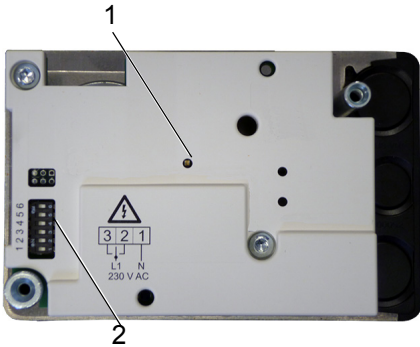
Initialization, adjustment to the valve stroke

The one-off initialization run for adjusting to the valve stroke starts automatically during initial commissioning.

Initialization takes place only when DIP switch 4 is in the OFF position.

During the initialization the valve is opened once fully and closed. The stroke is learned.

The LED (1) flashes green during the initialization. The completed initialization is indicated with a constant light.



- 1 LED
- 2 DIP switch 5



NOTE

When the unit is remounted (or after any settings for the maximum flow value on the valve have been changed), you must adapt the valves again by performing a reinitialization.

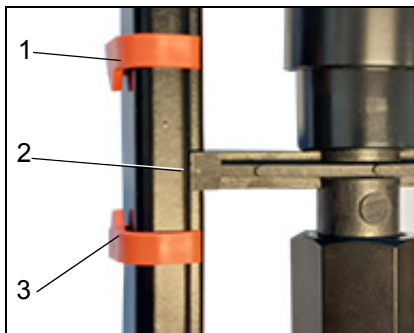
- ▶ To do this, switch DIP switch 5 (2) back and forth (change the switch position).

6.3.2 Status of the LED displays

LED under the actuator cover	Meaning
LED constant green	Normal/automatic mode
LED flashing green	VBS (valve blocking protection)
	Initialization (valve adaption)
LED alternately flashing green/orange	Manual adjustment of DIP 4 = ON / actuator does not follow the input signal
LED constant red	Insoluble blockage
LED flashing red	Initialization failed / actuator does not follow the input signal
LED quick flashing red	Operating voltage is too low

6.4 Actuator functions

Position display at the actuator



- (1) Position mark for upper valve position
- (2) Current stroke position
- (3) Position mark for lower valve position

Actuator heating

The actuator heating is for preventing the buildup of condensation at low temperatures. This function is activated via DIP switch 3.

VBS (valve blocking protection)

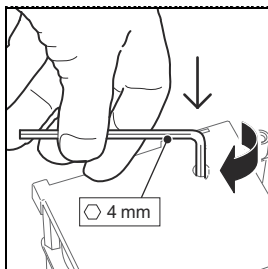
If plant specifications permit, the valve blocking protection feature may be activated during commissioning.

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

If the valve blocking protection is activated, the valve poppet is raised one half stroke and back if no stroke movement has been performed within 21 days.

This functionality can be switched on via DIP switch 1.

Manual adjustment



To adjust manually, remove the actuator cover and set DIP switch A4 to the ON position (manual adjustment). You can move the actuator to any position using an Allen key (4 mm socket).

7 Maintenance

Maintenance

The actuator does not require maintenance.

Cleaning

The actuator does not require cleaning.



NOTE

Regular inspection of the plant, including functional testing of the actuator, is recommended.

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	Rectification
Actuator not moving, LED off	Power outage	▶ Determine the cause and rectify it.
	Actuator is connected incorrectly	▶ Check the connection and correct.
	Main circuit board defective	▶ Get in touch with your contact at Kieback&Peter.
Actuator not moving, LED alternately flashing green/orange	Actuator is not in automatic mode	▶ DIP switch position 4 set to OFF
Actuator instable when running	Voltage drop due to the connection line being too long and/or the cross section being too small	▶ Measure the operating voltage. Check and correctly dimension the connection lines.
	Power supply fluctuations greater than the permitted tolerance	▶ Improve the electrical system conditions.
Actuator stops every so often	Supply line has a loose connection	▶ Check and tighten the connections to the terminal strip.
Actuator not moving or not moving correctly to the valve position dictated by the input signal, valve not closing or opening	Valve is jammed	▶ Ensure the valve can travel freely or replace the valve.
	Pressure difference too high	▶ Set the pressure difference correctly.
	Main circuit board defective	▶ Get in touch with your contact at Kieback&Peter.

9 Repair

At the installation location, the valve/actuator combination can only be repaired by replacing the valve or actuator. Get in touch with your contact at Kieback&Peter.

10 Decommissioning, Removal and Disposal

10.1 Decommissioning and dismantling the actuator



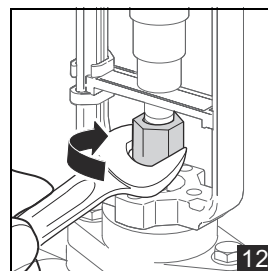
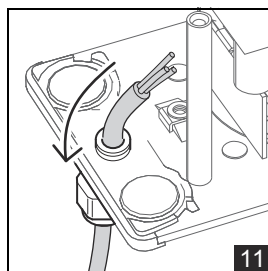
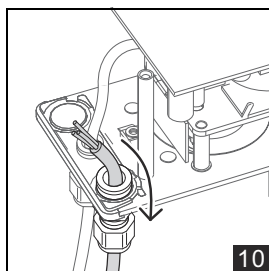
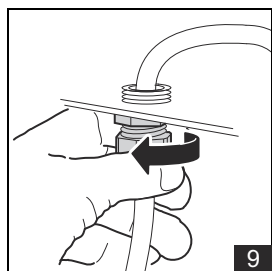
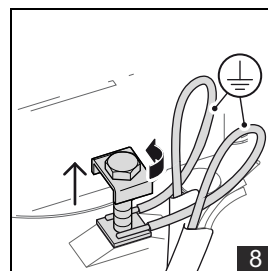
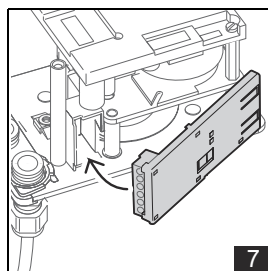
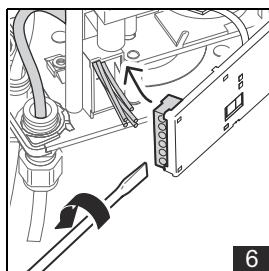
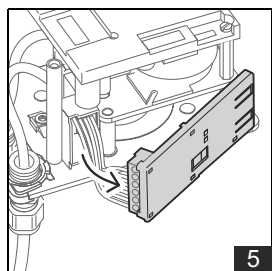
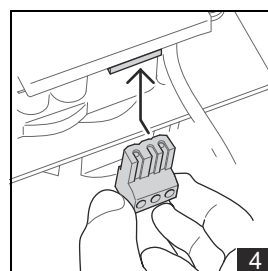
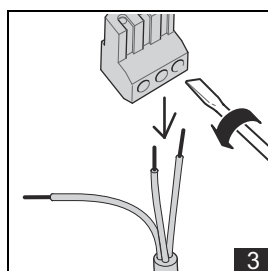
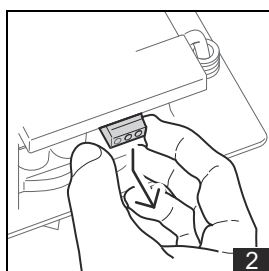
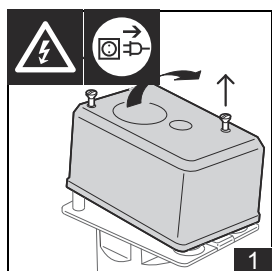
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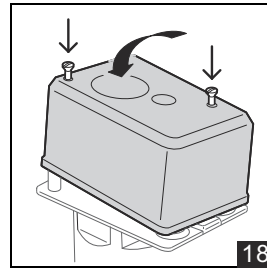
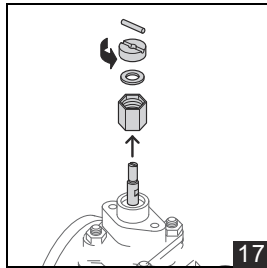
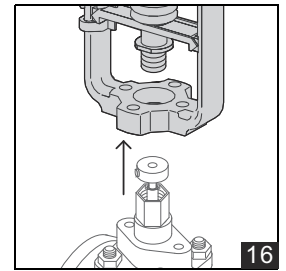
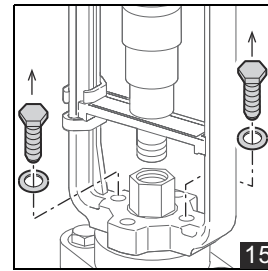
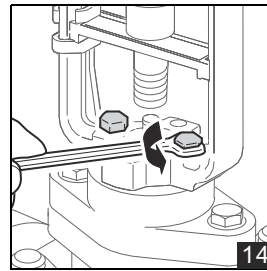
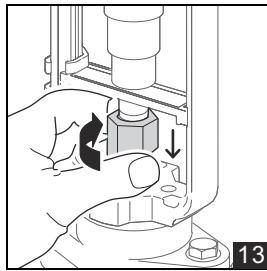
Hot and cold surfaces!

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

- Before beginning to dismantle 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 to dismantle the actuator.





NOTE

Demontageschritte 5 bis 7 und 10 nur bei MD250/230-E notwendig.

- ▶ Using an actuating signal or the handwheel, move the actuator from the limit position into a more central position.
- ▶ **1** Disconnect the actuator from power.
Loosen both screws and remove the actuator cover.
- ▶ **2** Remove the connector from the actuator.
- ▶ **3** Loosen the electrical connections from the connector.
- ▶ **4** Re-insert the connector.
- ▶ **5** Remove the auxiliary switch module from the bracket.
- ▶ **6** Disconnect the electrical connections from the connector of the auxiliary switch.
- ▶ **7** Reconnect the auxiliary switch module
- ▶ **8** Disconnect the PE cable from the PE terminal.
- ▶ **9** Unscrew the cable glands.
- ▶ **10** **11** Remove the connection cable from the actuator.
- ▶ **12** **13** Loosen the union nut.
- ▶ **14** Loosen the console screws.
- ▶ **15** Remove both console screws with washers.
- ▶ **16** Remove the actuator from the valve.
- ▶ **17** Remove the union nut from the valve spindle together with the washer, drive ring and cylindrical pin.
- ▶ **18** Return the actuator cover to its original position and fasten with two screws.

10.2 Remove 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.

10.3 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.

11 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, contact your Kieback&Peter contact person to clarify how to proceed.

12 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

MD250/230

in Verbindung mit den **Ventilen** der Baureihen

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

RK/RF/RD/RGD/RWG/RGDE

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
- **2014/35/EU** Niederspannungsrichtlinie
- **2014/30/EU** elektromagnetische Verträglichkeit
- **2011/65/EU** RoHS-Richtlinie
- **2006/42/EC** Directive Machinery
- **2014/35/EU** Low Voltage Directive
- **2014/30/EU** electromagnetic compatibility
- **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,
15/02/24

(ppa. Rainer Mahling)

Geschäftsleitung
Solution & Support Center

Managing Director
Solution & Support Center

(i.V. Frank Külich)

Bereichsleitung
Produktentwicklung

Head of
Product Development

QM-F-060 | Rev. 1.0 vom 24.05.2022
Template: QM-T-034, Rev 1.3

Klassifizierung: Öffentlich



EU-KONFORMITÄTSERKLÄRUNG EU-DECLARATION OF CONFORMITY

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