Kieback&Peter

OPERATING INSTRUCTIONS

MF100/230-SR-L AND MF100/230-SR-L-E

Actuators with emergency control function for valves from the 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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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 part of the MF100/230-SR-L and MF100/230-SR-L-E actuator with emergency control function for two-way/three-way valves from the RD/RGD/RWG/RGDE series and are only applicable for this actuator with emergency control function and these valves.

To make the document easier to read, the MF100/230-SR-L and MF100/230-SR-L-E actuators with emergency control function are referred to in the text below as the “actuator”. The two-way/three-way valves of the RD/RGD/RWG/RGDE series are referred to in the text as “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

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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 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.

Muscoloskeletal disorders

There is a risk of severe of 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. NOT DEFINED
- 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 the 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 MF100/230-SR-L and MF100/230-SR-L-E actuators with emergency control function with a positioning force of 1000 N are used for fine stroke adjustment of two-way and three-way valves of the types:

- RD65
- RGD50..80
- RWG50..80
- RGDE65..80

This is controlled with one of the following signals:

- 3-point signal open/stop/closed energized
- 3-point signal open/stop/closed floating

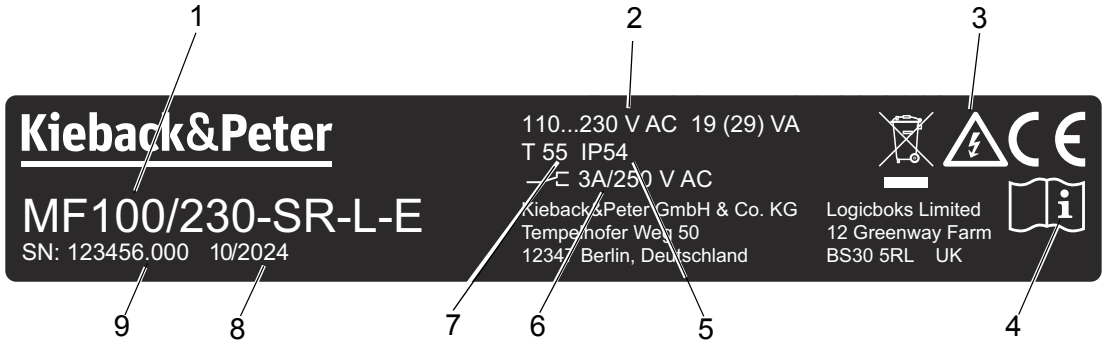
The actuator has an emergency control function that, depending on the type of valve used, automatically closes or opens valves with spring force in the event of a power failure.

Emergency control function: Drive extended without current

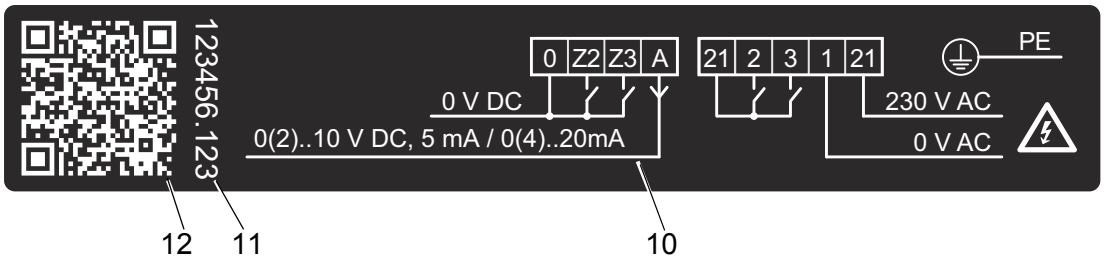
The actuator MF100/230-SR-L-E additionally has an auxiliary switch module with two galvanically separated changers for the optional message of the valve positions open or closed.

3.1 Identification

The actuator labelling is on the beam.



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



3-2: Wiring diagram (sample illustration)

1 Actuator type
2 Key electrical data for the actuator
3 Labeling: Disposal, protection class, CE
4 Reference to the operating instructions regarding further information
5 Switching capacity of the auxiliary switches, only for MF100/230-SR-L-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

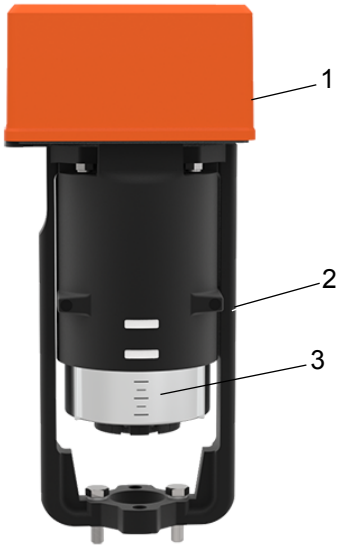
NOTE

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.

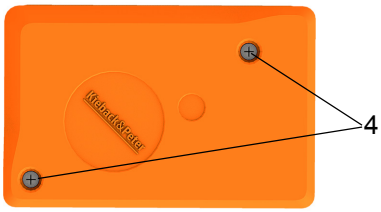
You can find important valve-specific information on the type plate of the valve. Depending on the valve type, the type plate is affixed to different positions on the valve body or flange.

3.2 Actuator

3.2.1 Structure



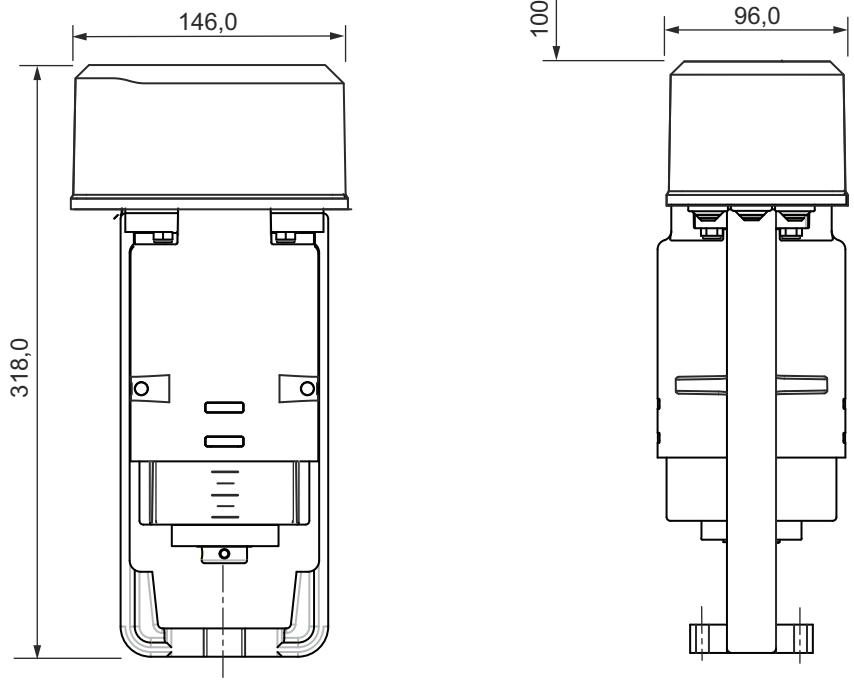
3-3: Actuator layout – view A



3-4: Actuator layout – view B

1	Cover	Actuator cover
2	Beam	
3	Stroke range scale	Display of the valve's current stroke position
4	Cover screws (2x)	Cover fastening

3.2.2 Dimensions



3.2.3 Technical data

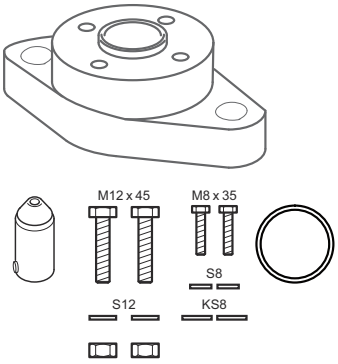
Nominal voltage	110..230 V AC ±10%; 50/60 Hz
Dimensioning	29 VA (AC)
Switch-on current	max. 7 A, < 1 ms, < 0.049 A²s
Power consumption	Sleep mode: 8 VA (AC)
	Nominal: 19 VA (AC)
Auxiliary switch	Auxiliary switch module only for MF100/230-SR-L-E 2 floating changeover contacts, contact load max. 3 A, 250 V AC
Cable cross section	min. 0.75 mm²
Regulation	3-point signal (open/stop/closed); maximum switch-on time 2 s
Position feedback	Adjustable via DIP switch (see 31) - Voltage signal DC 0(2) to 10 V; < 5 mA, invertible; approx. 12.5 V signal in case of malfunction - Current signal 0(4)..20 mA; Ri = 0.5 kΩ; invertible; approx. 0 mA signal during fault
Stroke	Max. 30 mm, automatic stroke adjustment though initialization
Actuating speed	Approx. 1 s/mm (factory setting) Approx. 9 s/mm
Emergency stop speed	Approx. 1 s/mm
Emergency control function	Actuator extending without current, by means of return spring
Positioning force	Nominal 1000 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	MF100/230-SR-L: 3.10 kg, MF100/230-SR-L-E: 3.20 kg

3.2.4 Accessories

Z190 Mounting kit for RGDE.. from DN65

With factory-delivered valve/drive combinations, the Z190 mounting kit is pre-fitted.

Mounting instructions 3.10-40.299-99 (included with the Z190 accessories) contains further information about the mounting process.



3.3 RD65 two-way valve with actuator

Application

The nodular iron two-way valve with actuator is used to precisely regulate liquid and vapor flow rates.

The actuators have an emergency control function that uses spring force to close the valve automatically in the event of a power failure.

3.3.1 Types

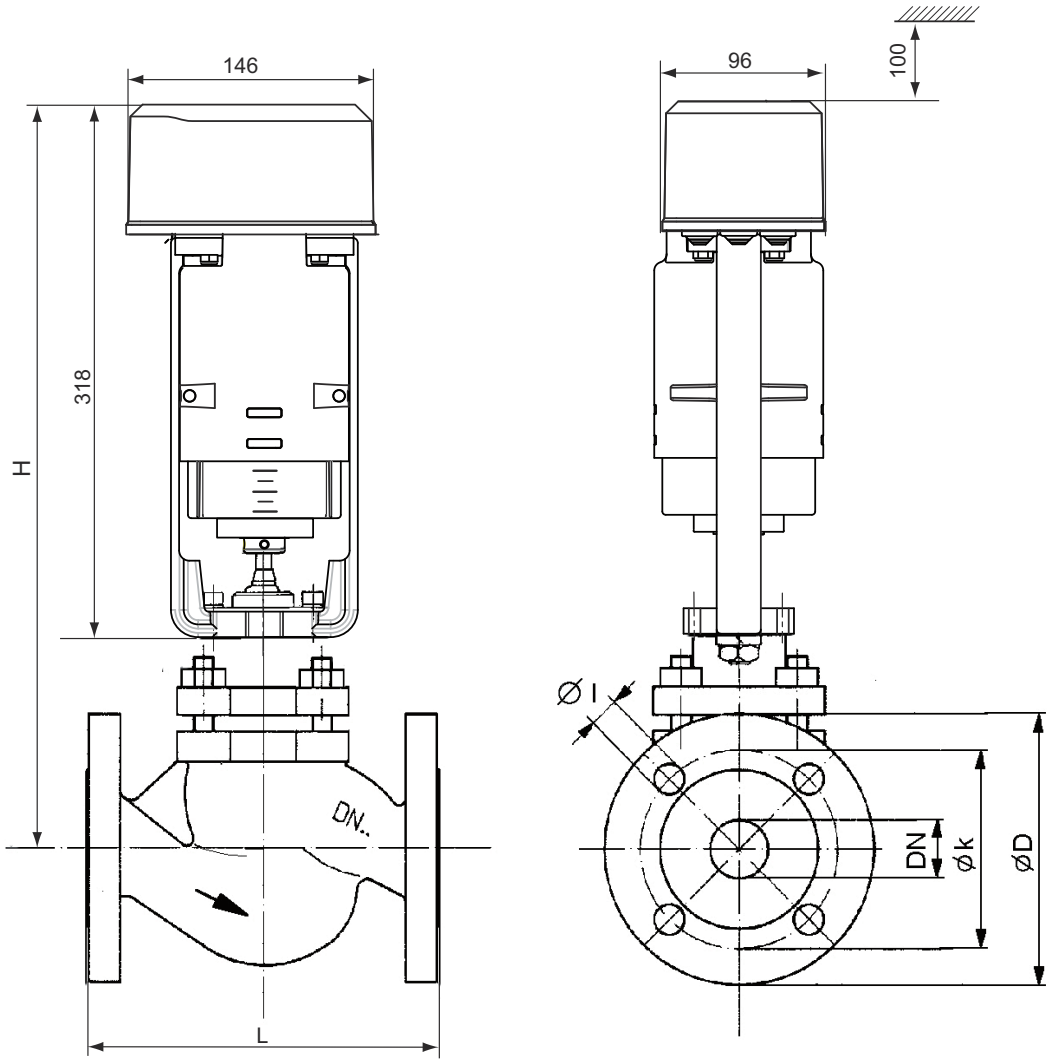
RD65 nodular iron two-way valve for MF100-SR/230-L or MF100/230-SR-L-E actuator, for water up to 120 °C, 16 bar and hot water and vapor up to 200 °C, 13 bar.

Type	DN	PN	Kvs	Δp (bar)	Weight (kg)	Emergency control function
RD65	65	16	63	1.7	16.5	Valve: Closed

3.3.2 Technical data RD65 valves

Nominal width	DN65
Pressure rating	PN 16
CE marking	CE marking, notified body: 0525
Connection	Flange in accordance with DIN, PN16
Characteristic curve	Equal percentage
Positioning stroke	30 mm
Leak rate	In accordance with EN 1349, leakage class VI
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 up to -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 1.4571
Stem seal	Chevron sealUniverdit with PTFE bushing, maintenance-free

Dimensions



DN	H	L	Ø I	Ø K	Ø K	D
65	440.5	290	160	4x Ø 11	145	185
	Dimensions H to D in mm					

3.4 RGD50..80 two-way valve with actuator (TÜV certified)

Application

The MF100/230-SR-L(-E) spheroidal cast iron two-way valve with actuator is used for fine volume control of fluids and vapors and has an emergency control function that automatically closes the valve with spring force in the event of a power failure.

When valve-actuator combinations are delivered ex works, the product is certified in accordance with the Pressure Equipment Directive 2014/68/EU Category IV Module B (EU type examination, certificate no. 01 202 969/B-25-0006-01)
and Module D (certificate no. 01 202 969/Q-25 0001.00).

The test was carried out by TÜV Rheinland Industrie Service (notified body for pressure equipment: 0035).

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3.4.1 Types

RGD50..80 nodular iron two-way valve for MF100/230-SR-L or MF100/230-SR-L-E actuator, for water up to 120 °C, 25 bar and hot water and vapor up to 200 °C, 20 bar.

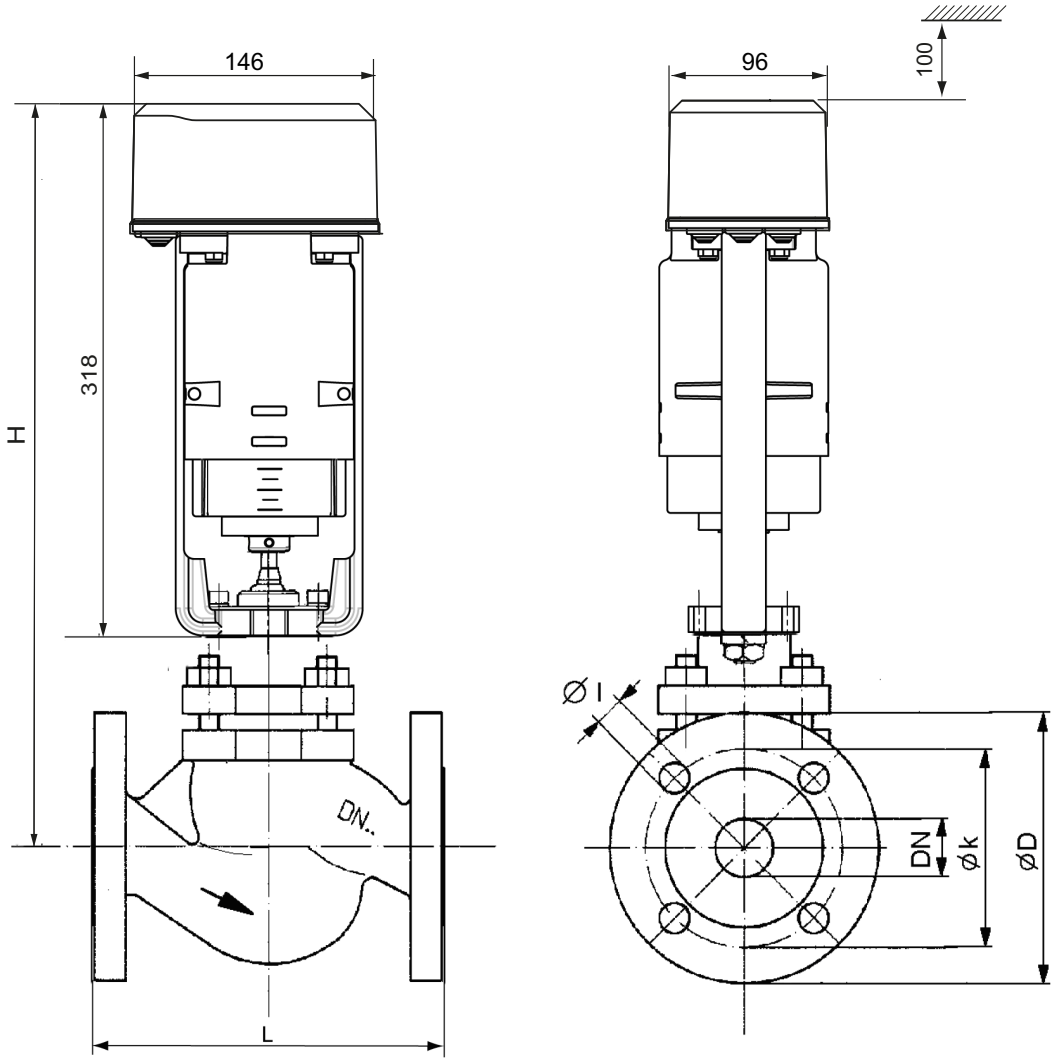
Type	DN	PN	Kvs	Δp (bar)	Weight (kg)	Emergency control function
RGD50	50	25	40	2.5	11.2	Valve: Closed
RGD65	65	25	63	1.7	15.5	Valve: Closed
RGD80	80	25	100	1.1	21.5	Valve: Closed

3.4.2 Technical data RGD50..80 valves

Nominal width	DN50..80
Pressure rating	PN 25
CE marking	CE marking, 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 up to -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 1.4571
Stem seal	Chevron sealUniverdit with PTFE bushing, maintenance-free

Dimensions



DN	H	L	Ø l	Ø k	Ø D
50	425,0	230	4x Ø 18	125	165
65	440.5	230	8x Ø 18	145	185
80	456.5	310	8x Ø 18	160	200
	Dimensions H to D in mm				

3.5 RWG50..80 three-way valves with actuator (TÜV certified)

Application

The MF100/230-SR-L(-E) spheroidal cast iron three-way valve with actuator is used for fine volume control of fluids and vapors and has an emergency control function that automatically closes valve gate B in the event of a power failure = straight passage A → AB, normally open.

When valve-actuator combinations are delivered ex works, the product is certified in accordance with the Pressure Equipment Directive 2014/68/EU Category IV Module B (EU type examination, certificate no. 01 202 969/B-25-0006-01)
and Module D (certificate no. 01 202 969/Q-25 0001.00).

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3.5.1 Types

RWG50..80 nodular iron three-way valves for MF100/230-SR-L or MF100/230-SR-L-E actuator, for water up to 120 °C, 25 bar and hot water and vapor up to 200 °C, 20 bar

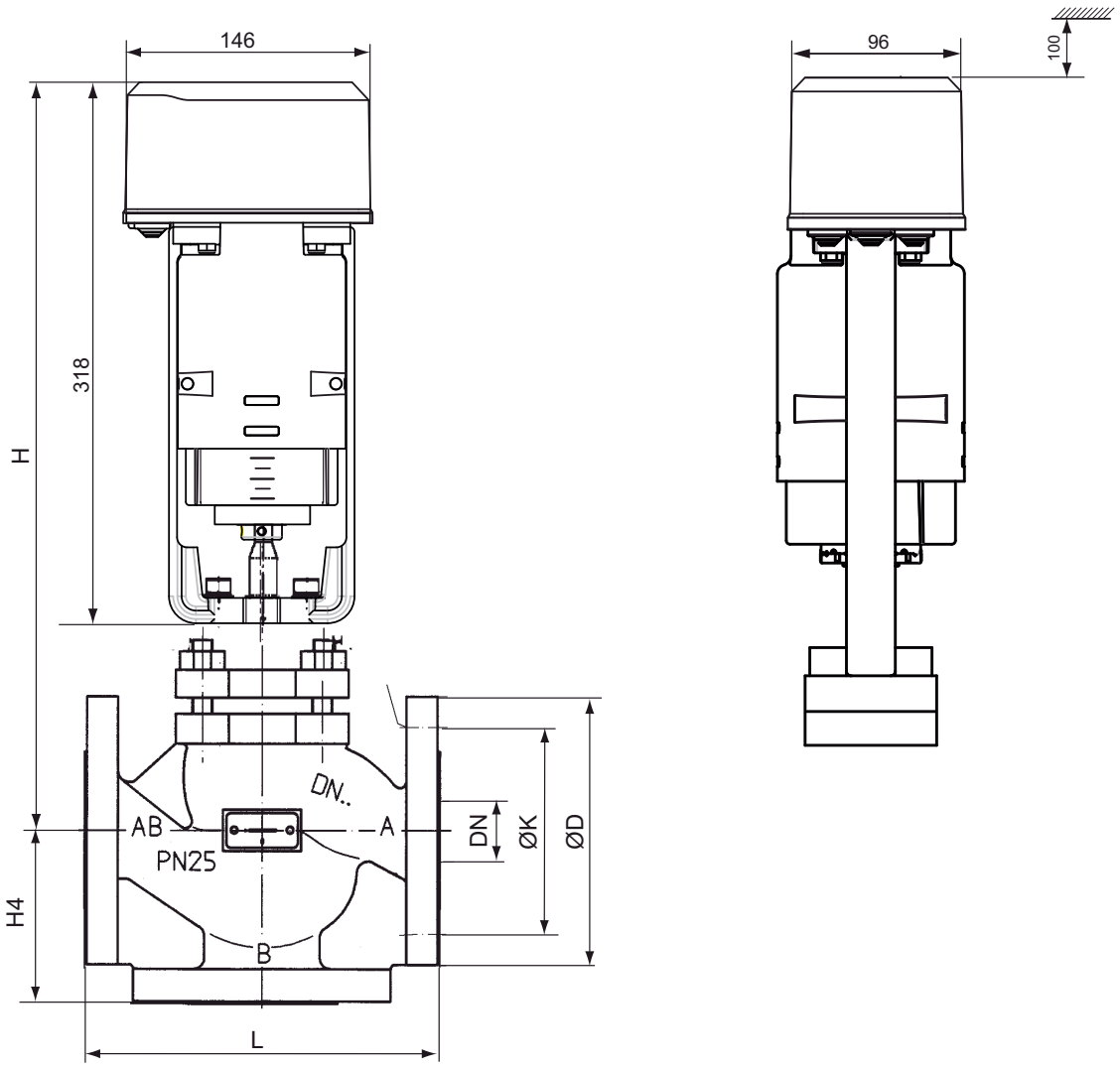
Type	DN	PN	Kvs	Δp (bar)	Weight (kg)	Emergency control function
RWG50	50	25	40	2.5	16.8	Port A: Open
RWG65	65	25	63	1.7	23.5	Port A: Open
RWG80	80	25	100	1.1	30.5	Port A: Open

3.5.2 Technical data RWG50..80 valves

Nominal width	DN50..80
Pressure rating	PN 25
CE marking	CE marking, notified body: 0525
Connection	Flange in accordance with DN, PN 25
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 up to -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 1.4571
Stem seal	Chevron sealUniverdit with PTFE bushing

Dimensions



DN	L	H	H4	Ø D	Ø K	Ø l
50	230	445.5	100	165	125	4 x Ø18
65	290	484	120	185	145	4 x Ø18
80	310	500	130	200	160	4 x Ø18
	Dimensions L to l in mm, flanges according to DIN, PN25					

3.6 RGDE65..80 two-way valve with actuator (TÜV certified)

Application

The MF100/230-SR-L(-E) spheroidal cast iron two-way valve with actuator is used for fine volume control of fluids and vapors and has an emergency control function that automatically closes the valve with spring force in the event of a power failure.

When valve-actuator combinations are delivered ex works, the product is certified in accordance with the Pressure Equipment Directive 2014/68/EU Category IV Module B (EU type examination, certificate no. 01 202 969/B-25-0006-01)
and Module D (certificate no. 01 202 969/Q-25 0001.00).

The test was carried out by TÜV Rheinland Industrie Service (notified body for pressure equipment: 0035).

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3.6.1 Types

RGDE65..80 pressure-relief nodular iron two-way valve for MF100/230-SR-L or MF100/230-SR-L-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)	Emergency control function
RGDE65	65	25	63	13	25	Valve closed
RGDE80	80	25	100	6	34.5	Valve closed

NOTE

Z190 mounting kit required (see accessories page 11).

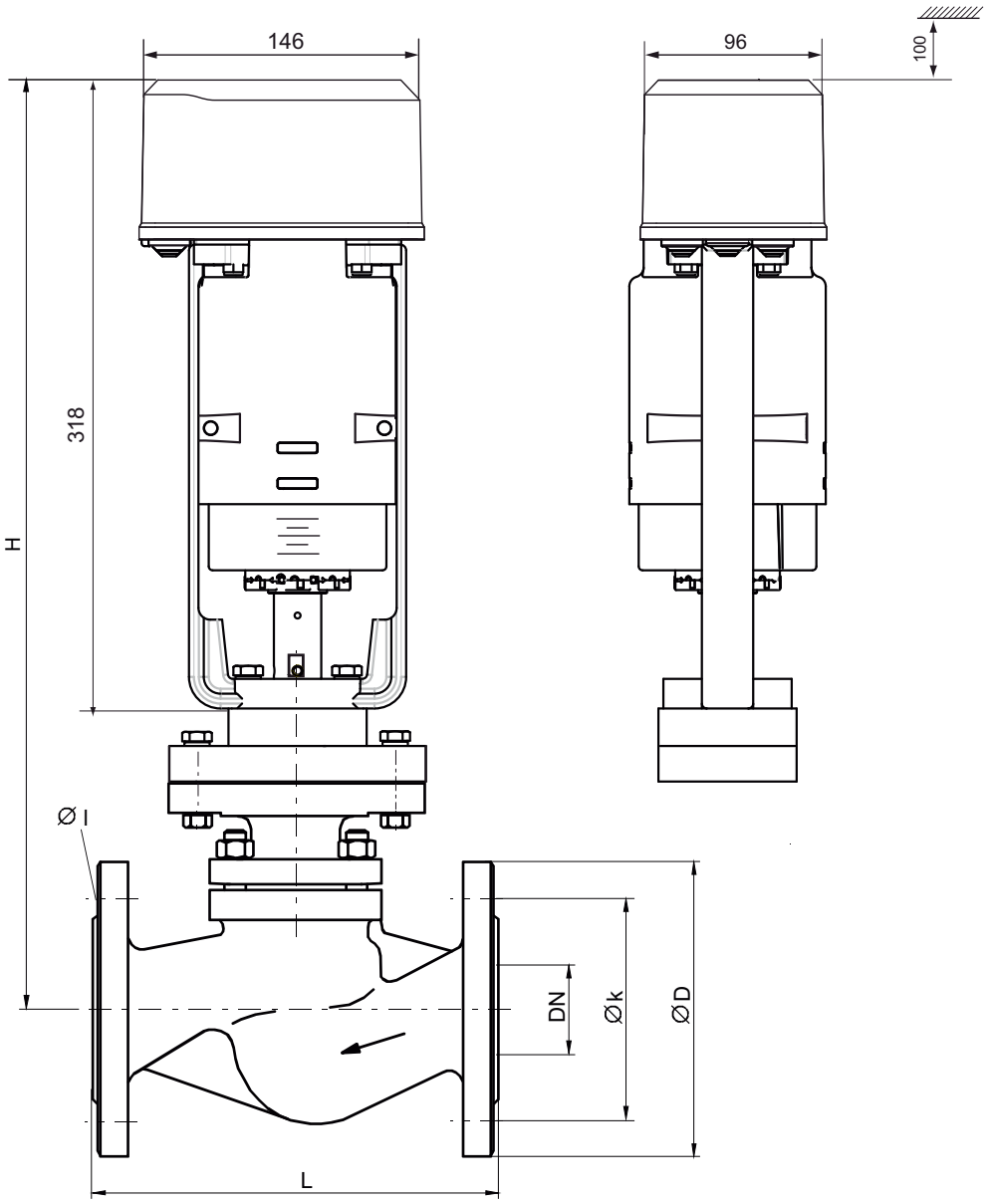
When valve/actuator combinations are delivered from the factory, the Z190 mounting kit is preassembled.

3.6.2 Technical data RGDE65..80 valves

Nominal width	DN65..80
Pressure rating	PN 25
CE marking	CE marking, notified body 0525
Connection	Flanges DIN 2501-1, PN 25
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 up to -10 °C only with spindle heating
Housing	Spheroidal cast iron GGG-40.3
Valve seat	CrNi steel 1.4021
Cone	CrNi steel 1.4021, metallic sealing, pressure relief cone seal made from PTFE with stainless steel insert (max. 200°C)
Valve spindle	CrMo steel 1.4571
Stem seal	Chevron sleeves PTFE, maintenance-free

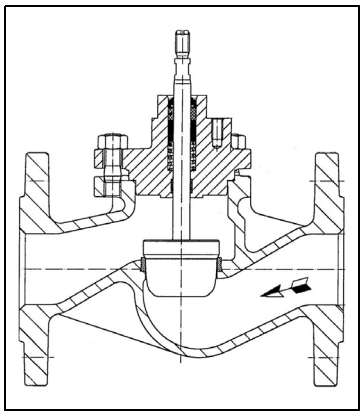
Dimensions



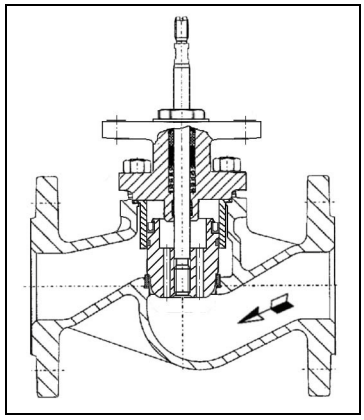
DN	L	Ø D	Ø k	Ø l	H
65	290	185	145	8x Ø 18	447.5
80	310	200	160	8x Ø 18	455.0
Dimensions L to H in mm					

3.7 Valve Cross-Sections with Flow Directions

Two-way valves

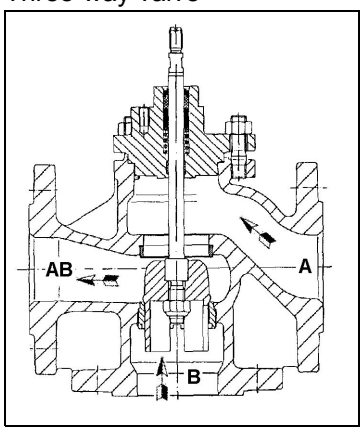


RD/RGD..



RGDE..

Three-way valve



RWG..

4 Scope of delivery, transportation and storage

Scope of delivery

The actuator can be supplied in different combinations with the valve and valve accessories or as a standalone product.

The maximum scope of delivery includes:

- MF100/230-SR-L or MF100/230-SR-L-E actuator
- One M16x1.5 screw connection
- One M20x1.5 screw connection, only for MF100/230-SR-L-E
- One RD65, RGD50..80 or RGDE65..80 two-way valve or one RWG50..80 three-way valve
- Operating instructions for the MF100/230-SR-L and MF100/230-SR-L-E actuator for the valve types listed above
- Mounting instructions MF100/230-SR-L or MF100/230-SR-L-E

Unpacking

- ► 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

- ► Maintain the specified ambient temperature of -25..+60 °C and ambient humidity of 0..85% r.h. non-condensing.
- ► Avoid slipping

Storage

- ► Maintain the specified ambient temperature of -20..+60 °C and ambient humidity of 0..85% r.h. non-condensing.

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 the fitting up to the horizontal position.
- 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 Mount the actuator onto a valve

CAUTION

There is a risk of getting crushed between the cross member and the spring pan.

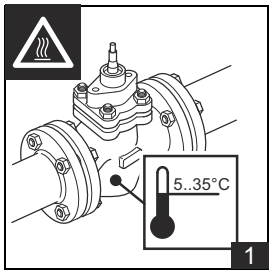
The emergency function of the actuator automatically moves the valve into the lower end position using high spring force when the power supply is interrupted.

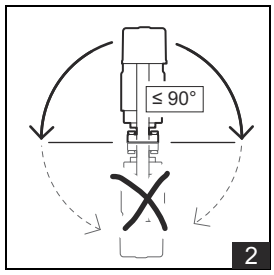
CAUTION

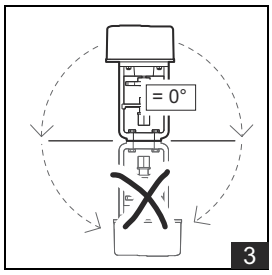
Risk of injury caused by unexpected movements of the actuator!

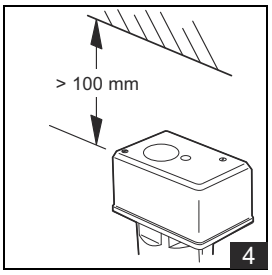
The actuator may only be mounted in the de-energized state!

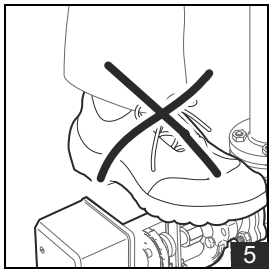
Installation instructions











- 1 After the pipeline has cooled off, the actuator can be mounted.
- 2 3 Installation position: anywhere from vertical above the valve to a horizontal position. For the horizontal installation position, the beam must be visible from the front.
- 4 Mount the device so that there is a clearance of at least 100 mm above it.
- 5 Do not use the actuator as a step or shelf.

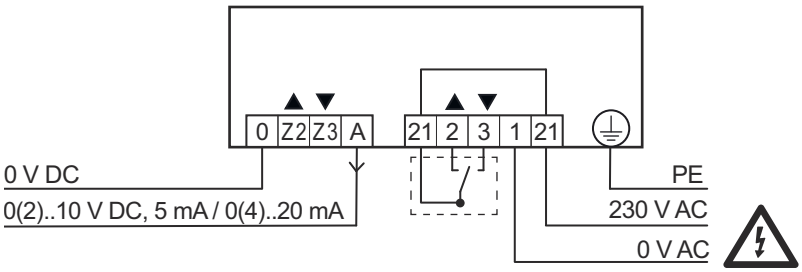
Mounting

- 1 Screw the adapter onto the valve stem as far as it will go. The torque is absorbed with an open-end wrench on the valve stem.
- 2 Secure the adapter. Tighten the two hex keys evenly in alternation using a 2.5 mm hexagon socket and a torque of 3 Nm.
- 3 Loosen both screws and remove the actuator cover.
- 4 5 Move actuator to upper position by adjusting this manually (turn with 4 mm hex key).
- 6 7 Insert toggle to lock manual adjustment.
- 8 Remove the 4 mm hex key for manual adjustment.
- 9 Attach the actuator to the valve.
- 10 Screw in both console screws using washers.
- 11 Tighten the console screws with a torque of 14 Nm.
- 12 13 Remove the toggle from the lock and guide it into the toggle holder.
- 14 The actuator will close due to its reset function. The valve is adapted automatically thanks to the automatic coupling.
- 15 Return the actuator cover to its original position and tighten both screws.

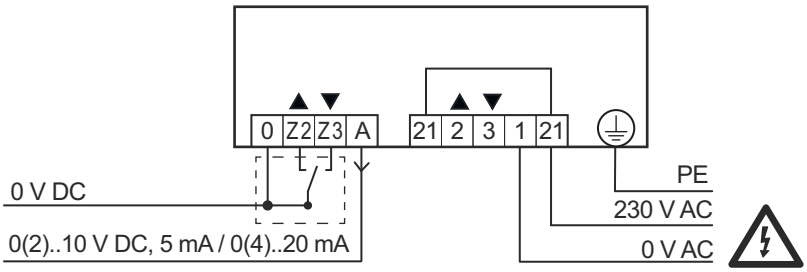
6 Connecting the actuator and putting it into operation

6.1 Wiring diagram

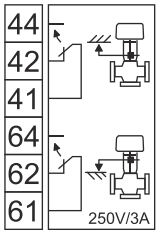
- 3-point signal open/stop/closed energized



- 3-point signal open/stop/closed floating



- Auxiliary switch connection only with MF100/230-SR-L-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 mm^2. 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.

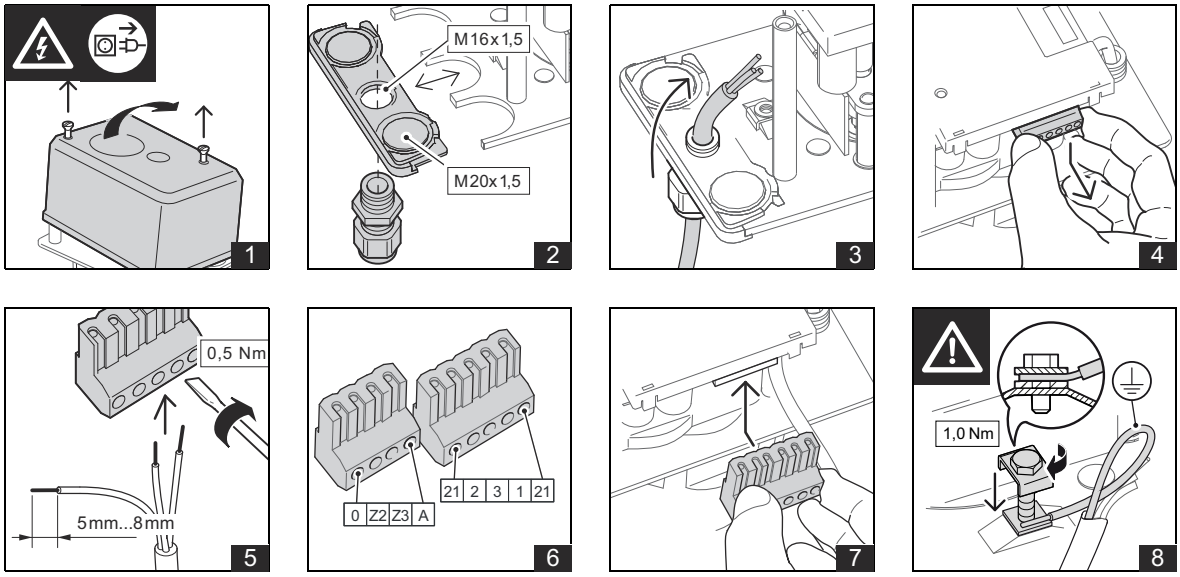
CAUTION

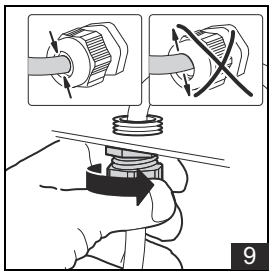
The electrical connection for the actuator must be a fixed installation and connected to a valve.

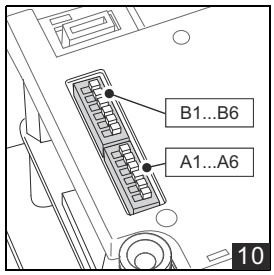
An M16x1.5 screw fitting is included with the delivery of the actuator as a strain relief device. For the actuator with auxiliary switches, the scope of delivery also includes an M20x1.5 screw connection.

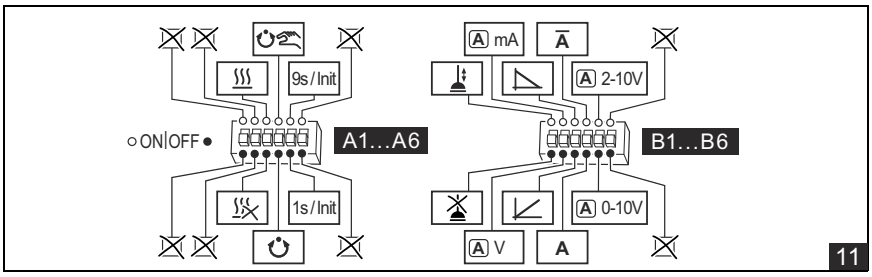
The electrical connection is established using screw terminals (connection diameter 0.3..2.3 mm).

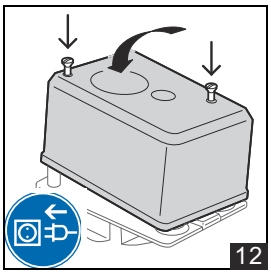
- **MF100/230-SR-L electrical connection**





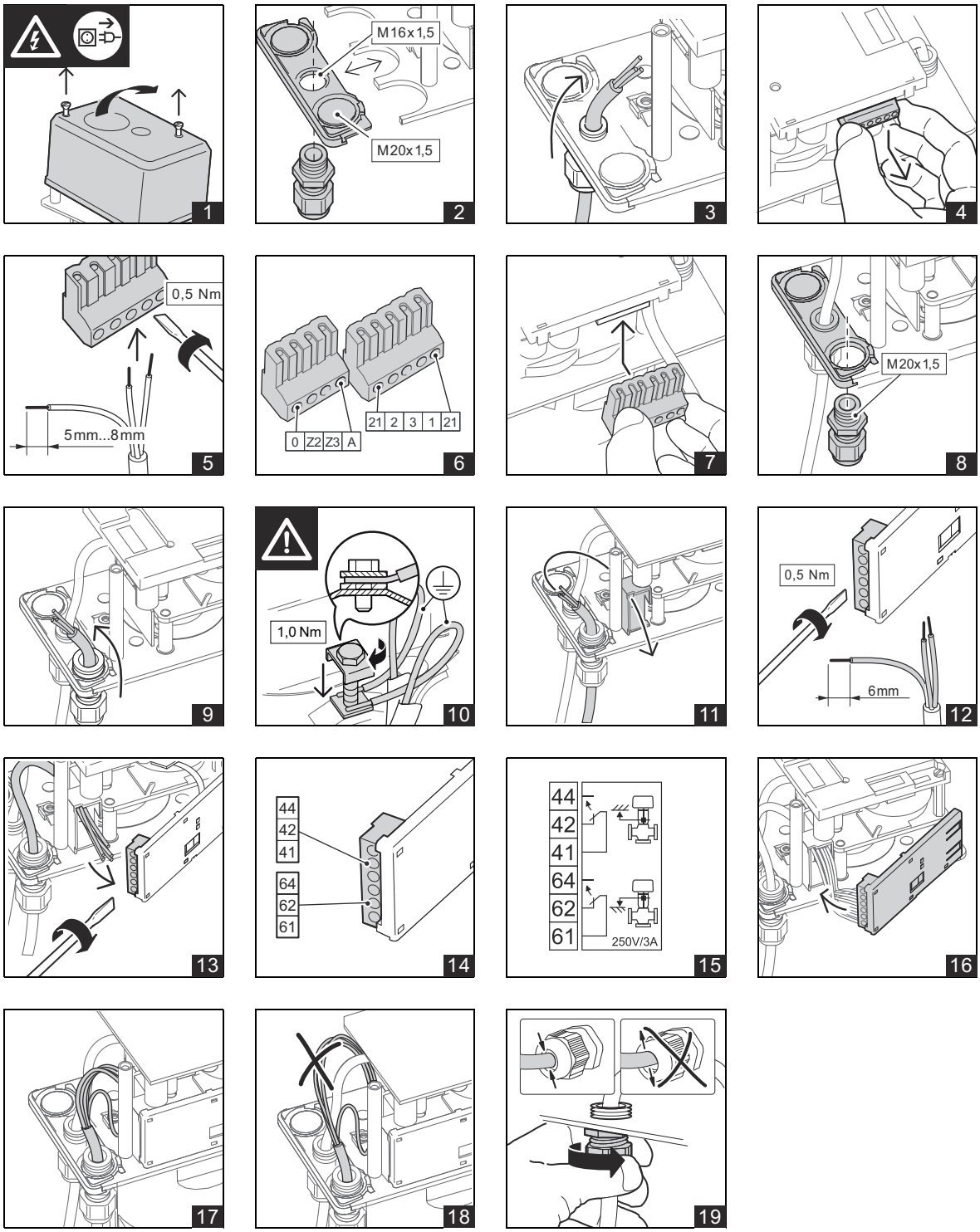


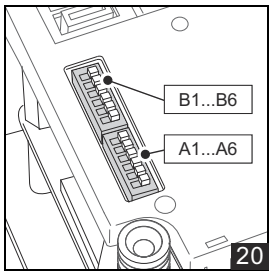


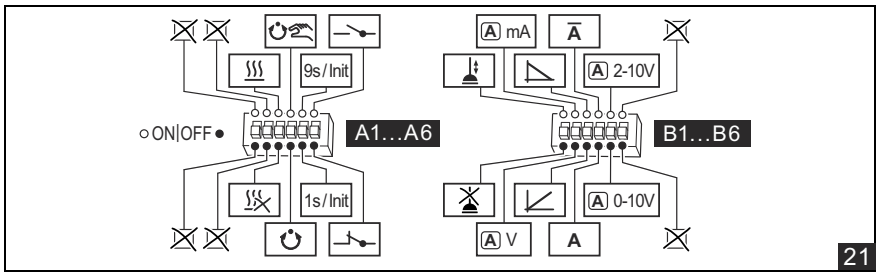


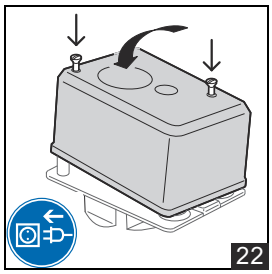
- 1 Loosen both screws and remove the actuator cover.
- 2 Install the cable gland.
- 3 Insert the connection line through the cable gland.
- 4 Remove the connector from the actuator.
- 5 6 Carry out the electrical connection of the actuator as a fixed installation.
- 7 Insert the pre-assembled connection plug.
- 8 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.
- 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 30).
- 12 Return the actuator cover to its original position and fasten with two screws. Switch on the power supply.

MF100/230-SR-L-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 6 Carry out the electrical connection of the actuator as a fixed installation.
- 7 Insert the pre-assembled connection plug.
- 8 Install the second cable gland.
- 9 Insert the connection line (of the auxiliary switches) through the cable gland.
- 10 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.
- 11 Route the connection line (of the auxiliary switches) through the auxiliary switch module bracket.
- 12 to 15 Carry out the electrical connection of the auxiliary switches as a fixed installation.
- 16 Attach the auxiliary switch module to the bracket.
- 17 18 Do not cross the connection lines.
- 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 30).
- 22 Return the actuator cover to its original position and fasten with two screws. Switch on the power supply.

6.3 Commissioning

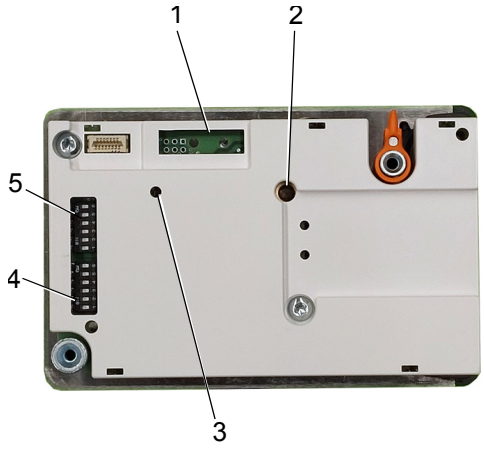
CAUTION

Risk of fatal electric shock.

When you remove the actuator cover, you may come into contact with live components.

- ► Before removing the actuator cover, disconnect the power supply to the actuator.
- ► Work that needs to be performed while the device is live and the cover is removed must be carried out only by an electrical specialist.

Operating and functional components beneath the actuator cover



(1) Fitting the toggle for manual adjustment

(2) Bushing for hexagon socket wrench
(3) LED display status
(4) DIP switch A
(5) DIP switch B

6.3.1 Commissioning steps

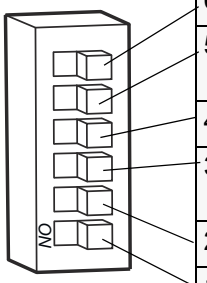
Adjustment of the actuator functions

The preset actuator functions can be adapted with DIP switches A and B.

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	**Switch (A)**		**Function** switch position OFF (factory setting)
Auxiliary switch inverted *1)		6	Auxiliary switch not inverted
Actuating speed: 9 s/mm * 2) (triggers init.)		5	Actuating speed: 1 s/mm (triggers init)
Manual adjustment		4	Automatic mode
Actuator heating: On (switched on below approx. 8 °C)		3	Actuator heating: Off
No function		2	No function
No function		1	No function

*1) **Only** with MF100/230-SR-L-E

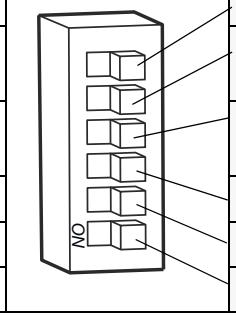
In the case of an inversion (A6 to ON), the auxiliary switch associated with an end position is no longer switched on in the end position. It is now switched on outside of the associated end position.

NOTE

In the case of inversion, A6 at ON, both auxiliary switches in the end positions are switched off when the actuator is de-energized.

This means that the actuator is in the final safety position and the respective contact can be used as an operating message.

*2) The value 9 s/mm is reached via interval travel (1.5 s travel at 1 s/mm / 6 s break).

Function switch position ON	**Switch (B)**		**Function** switch position OFF (factory setting)
No function		6	No function
Position feedback: 2..10 V (4..20 mA) → 0..100 %		5	Position feedback: 0..10 V (0..20 mA) → 0..100%
Position feedback inverted: 0..100 % → 10..0 V (20..0 mA) 		4	Position feedback not inverted: 0..100% → 0..10 V(0..20 mA) 
Actuating direction inverted		3	Actuating direction not inverted
Position feedback: mA		2	Position feedback: V
Valve blocking protection: On		1	Valve blocking protection: Off

Switching on the power supply

The LED (1) flashes green.

Initialization, adjustment to the valve stroke

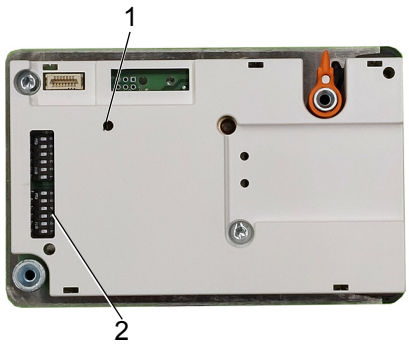
The one-off initialization run for adjusting to the valve stroke starts automatically during initial commissioning.

Initialization takes place only when the DIP switch A5 is in the OFF position.

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

In this case, the feedback is passed via Yout with a signal of approx. 12.5 V or 0 mA

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



1 LED

2 DIP switch A5

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 A5 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

The current stroke position of the valve is indicated by the position of the stroke scale (1).

Automatic blocking algorythmus

If a blockage by foreign bodies in the pipeline occurs within the valve lift, the actuator signals this fault at the connection terminal A by a feedback signal of approx. 12.5 V DC.

Using an automatic rectification algorithm, the actuator then attempts to remove the valve blockage itself several times by raising the poppet for a brief period of time.

Manual adjustment

For manual adjustment, remove the actuator cover and set switch A4 to the ON position (manual adjustment). The valve can be adjusted to any position using an Allen key (4 mm wrench socket)..

Then use the toggle to lock the actuator. See section Mounting the actuator on a valve - Installation Figs. 3 to 8 (see page 24).

Actuator heating

The actuator heating is for preventing the buildup of condensation at low temperatures.

This function is activated via DIP switch A3.

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 B1.

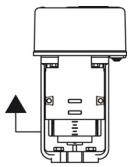
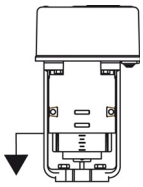
Safety limit position / resynchronizing the limit position

After a voltage reset or after ending manual operation using the DIP switch A4, the limit position is resynchronized by way of movement to the safety limit position.

The safety limit position is the end position which the actuator automatically travels to with spring force in the event of a power failure.

In this case, the feedback is passed with a signal of approximately 12.5 V at connection terminal A.

Actuating directions

Actuator drive running in (pulling)		Two-way valves RD..,RGD.. and RGDE.. open
		Three-way valves RWG.. Gate A: closes Gate B: opens
Actuator: extending (pressing) **Emergency function with no power: extending**		Two-way valves RD..,RGD.. and RGDE.. closing
		Three-way valves RWG.. Gate A: opens Gate B: closes

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 does not regulate in automatic mode	Power outage	► Determine the cause and rectify it.
	Actuator is connected incorrectly	► Check the connection and correct.
Actuator unexpectedly moves to emergency control end position	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	Voltage drop due to the connection line being too long and/or the cross section being too small	► Measure the operating voltage. Recalculate the electrical connection lines and replace.
	Power supply fluctuations greater than the permitted tolerance	► Improve the electrical system conditions.
	Valve is jammed	► Ensure the valve can travel freely or replace the valve.
	Pressure difference too high	► Have the hydraulic system and differential pressure checked and adjusted.
	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 dismounting the actuator

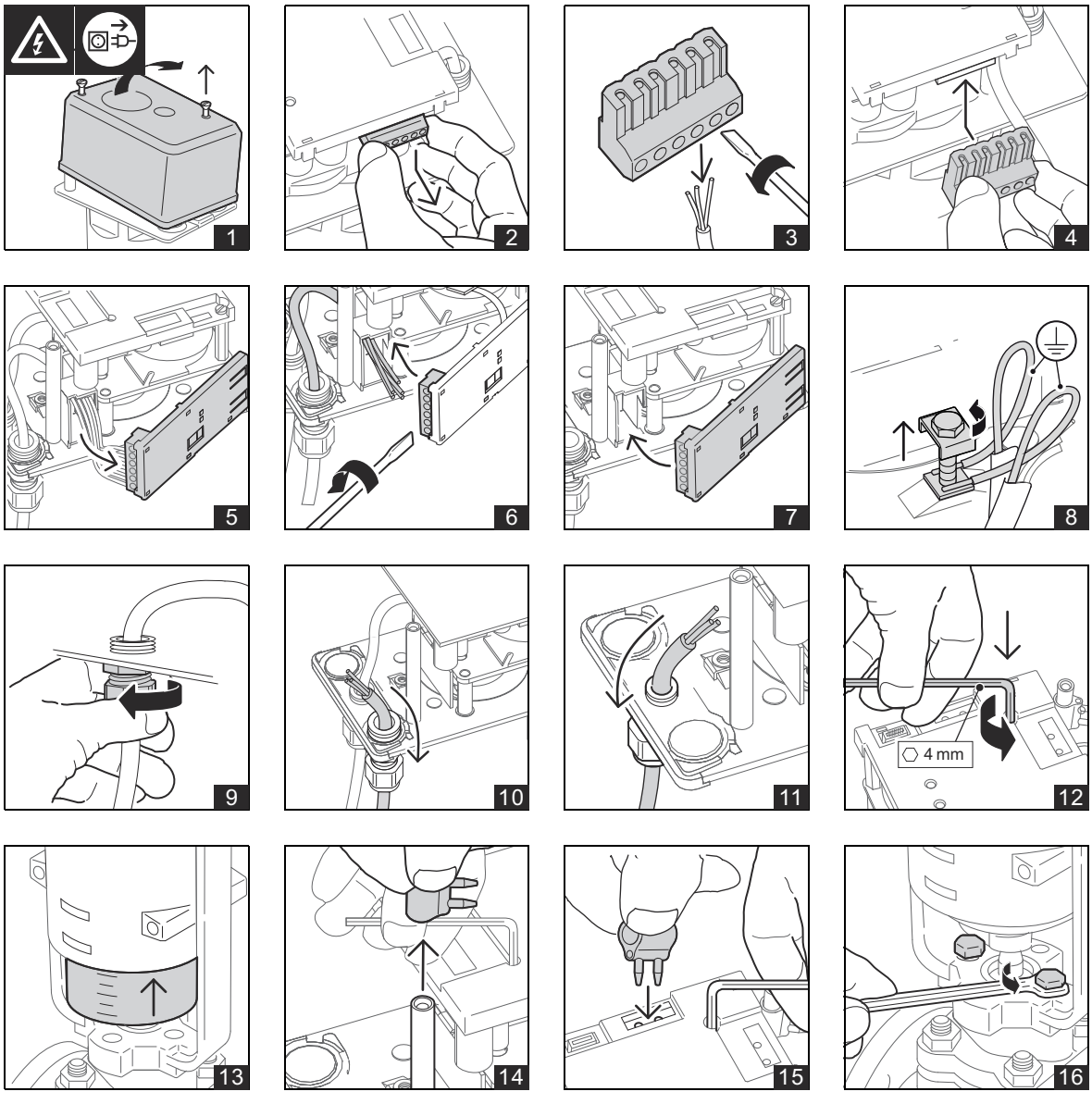
WARNING

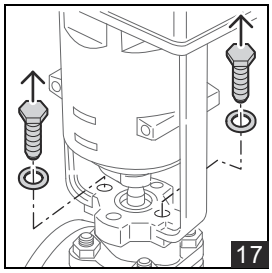
Hot and cold surfaces!

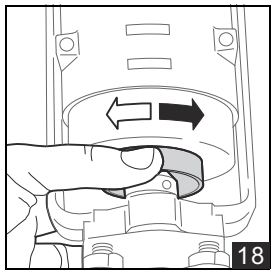
If a hardware or software error occurs, there may be unexpected movements and the valve may open. There is a risk of severe burns or hypothermia from contact with hot or cold surfaces on the valves and pipelines.

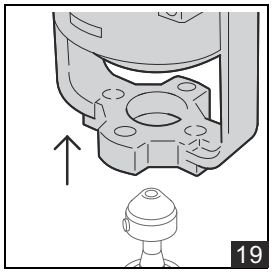
► Wear protective gloves

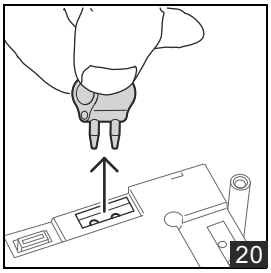
- Before beginning to dismount the unit, make sure that no differential pressure builds up in the valve body before beginning work. If necessary, close the gate valve and turn off pumps. After the pipeline has cooled off, the actuator can be dismounted.
- Disconnect the actuator from power. Then disconnect all electrical connections.

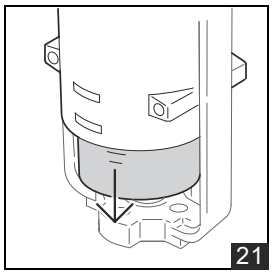


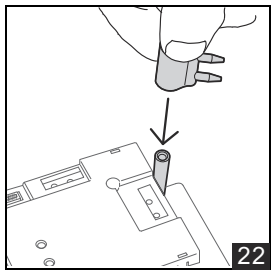


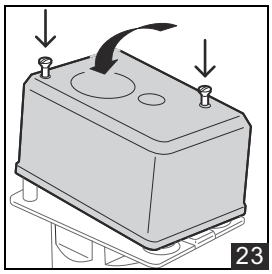


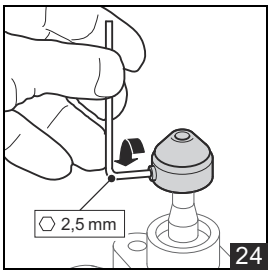


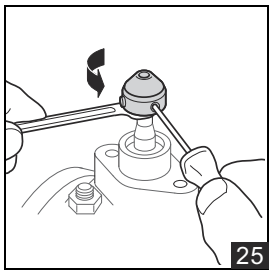


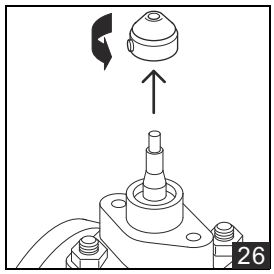












NOTE

Disassembly steps 5 to 7 are required only for MF100/230-SR-L-E.

- 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 module.
- 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 Move actuator to upper position by adjusting this manually (turn with 4 mm hex key).
- 14 15 Insert the toggle to lock manual adjustment and remove the hex key again.

- ▶ 16 Loosen the console screws.
- ▶ 17 Remove both console screws with washers.
- ▶ 18 Turn the automatic coupling to the right and remove the actuator from the valve.
- ▶ 19 Remove the actuator from the valve.
- ▶ 20 Remove the toggle from the board.
- ▶ 21 The actuator moves into the lower position
- ▶ 22 Guide the toggle to the toggle bracket.
- ▶ 23 Return the actuator cover to its original position and fasten with two screws.
- ▶ 24 Loosen the hex key on the adapter using a 2.5 mm hexagon socket.
- ▶ 25 26 Unscrew the adapter from the valve stem and remove it.

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

UK CA

DECLARATION OF CONFORMITY

Kieback&Peter GmbH & Co. KG
Tempelhofer Weg 50
12347 Berlin / Germany

Authorized Representative for Documentation:
Logicboks Limited
12 Greenway Farm
BS30 5RL UK

declares in sole responsibility that the designated product

actuator

MF100/230-SR-L

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

RD/ RGD/ RWG/ RGDE

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

- Supply of Machinery (Safety) Regulations 2008
- The Pressure Equipment (Safety) Regulations 2016
- Electromagnetic Compatibility Regulations 2016
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Harmonised standards applied:

DIN EN 60730-2-14:2023-03
DIN EN ISO 12100:2011-03

Signed for and on behalf of:

Berlin,
15/04/2024

(Rainer Mahling)
Managing Director
Solution & Support Center

(Frank Külich)
Head of
Product Development

QM-F-061| Rev. 1.1 vom 30.05.2022
Template: QM-T-034, Rev 1.3

Klassifizierung: Öffentlich

Kieback&Peter

DECLARATION OF CONFORMITY

Kieback&Peter GmbH & Co. KG
Tempelhofer Weg 50
12347 Berlin / Germany

Authorized Representative for Documentation:
Logicboks Limited
12 Greenway Farm
BS30 5RL UK

declares in sole responsibility that the designated product

actuator

MF100/230-SR-L-E

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

RD/ RGD/ RWG/ RGDE

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

- Supply of Machinery (Safety) Regulations 2008
- The Pressure Equipment (Safety) Regulations 2016
- Electromagnetic Compatibility Regulations 2016
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Harmonised standards applied:

DIN EN 60730-2-14:2023-03
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QM-F-061| Rev. 1.1 vom 30.05.2022
Template: QM-T-034, Rev 1.3

Klassifizierung: Öffentlich

Kieback&Peter

EU-DECLARATION OF CONFORMITY

Kieback&Peter GmbH & Co. KG
Tempelhofer Weg 50
12347 Berlin / Germany

declares in sole responsibility that the designated product

Actuator

MF100/230-SR-L, MF100/230-SR-L-E

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

RGD/RWG/RGDE

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

- **2014/68/EU** Pressure Equipment Directive
- **2006/42/EC** Directive Machinery
- **2014/35/EU** Low Voltage Directive
- **2014/30/EU** electromagnetic compatibility
- **2011/65/EU** Restriction of certain Hazardous Substances

The product described has been certified according to Category lV, Module B (EU Type-examination, Certificate no. 01 202 969/B-25-0006-01) and Module D (Certificate no. 01 202 969/Q-25 0001.00) by TÜV Rheinland Industrie Service GmbH, Am Grauen Stein, 51101 Köln, Germany, (notified body: **0035**) in accordance with the Pressure Equipment Directive.

Harmonised standards applied:

DIN EN 60730-2-14: 2023-03
DIN EN ISO 12100:2011-03
DIN EN 14597: 2015-02

Signed for and on behalf of:

Berlin,
21/01/26

(ppa. Philipp Menzel)
Managing Director
Product & Solutionmanagement

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

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