

Device description

M250Y actuating drive with straight-through valves and 3-way valves



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Subject to change

Issue date: February 26, 2007

Information about the technical data sheet

The description contains information about installation, starting-up and use of the M250Y actuating drive with the valve series RK65..100(-BF), RF65..100(-BF), RD65/RD100, RWD65/RWD100, RGD50..100 and RWG50..100.

If questions should arise which are not covered by the device description, further information should be obtained from the supplier or manufacturer.

The specified regulations/guidelines for installation apply for the Federal Republic of Germany.

When the actuating devices/valves/water jet pumps are used abroad, the local regulations are to be complied with at the personal responsibility of the system installer or operator.

Operating personnel are to be instructed according to the description of the technical data sheet.

Safety instructions

The valid work protection, accident prevention and VDE regulations are to be observed for installing and using the actuating devices/motor valves.

Each person who uses the devices must have read and understood the descriptions on the technical data sheet.

Commissioning and servicing work on the actuating device or valve may only be carried out by qualified technicians.

Before removing the actuating drive hood, the actuating drive is to be safely disconnected from the mains.

When work is being carried out on the valves, the pipeline is to be depressurized and blocked before beginning work.

Work may only be started when the medium has cooled down to the point that burning/scalding cannot occur.

Meanings of symbols on the technical data sheet:



Warning of dangerous electric voltage



Warning of general hazard



General warning - must be observed



Additional note to be observed

Danger means that non-observance can lead to life-threatening danger, serious bodily injury or major material damage.

Attention means that non-observance involves the risk of injury or material damage.

Note indicates information pointing out something which should be given special attention.

Qualified technicians

Qualified technicians in the context of the technical data sheet are persons who are familiar with the described devices and have the corresponding qualifications in their jobs.

This includes, for example:

- Authorization to connect the devices in accordance with VDE regulations and the local energy supply company regulations, as well as authorization for switching on, off and enabling devices taking the in-house regulations into consideration.
- Knowledge of accident prevention regulations
- Knowledge about the use of devices within the system
- etc.

Device description

M250Y actuating drive
with straight-through valves and 3-way valves

M250Y actuating drive

Application

The M250Y actuating drive with an actuating force of 1600 N is used to finely adjust the position of valves.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Type

M250Y 24 V AC valve actuating drive with continuous 0..10 V DC control

Technical data

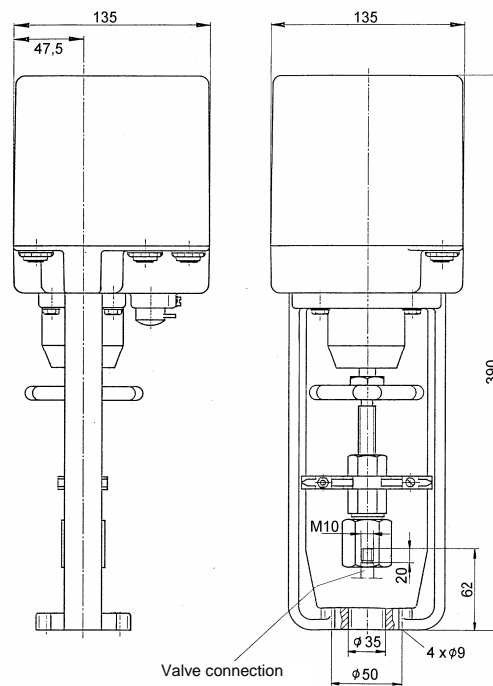
Mains	24 V AC \pm 10%, 10.3 VA
Drive	Reversible synchronous motor
End-switch	Force-dependent motor switch-off via micro-switch at the valve end positions
Control	Continuous with control voltage Y 0..10 V DC, 0.5 mA, invertible
Positioning range	30 mm
Position indicator	Sliding bridge within the position marks on the valve, as well as 0..10 V DC position feedback, 5 mA for 100% positioning range
Positioning time	6.6 s/mm positioning displacement, approx. 200 s for 30 mm positioning displacement
Positioning force	1600 N
Ambient temp.	0..50°C
Degree of protection	IP54
Installation position	Straight above the valve, up to the horizontal position
Manual mode	By means of lifting button and handwheel on actuating drive
Maintenance	The working drive is maintenance-free. Depending on the operating conditions, the threaded spindle is to be greased, if necessary (e.g. with Weicon Anti-Seize, Art.No. NN311).



Accessories

- E Additional end switch on both sides, max. 250 V AC, 3 A
- Q Flow limit contact for setting the minimum opening travel

Dimensions



To remove the hood, approx. 180 mm of free space is required above the base of the hood.

M250Y actuating drive

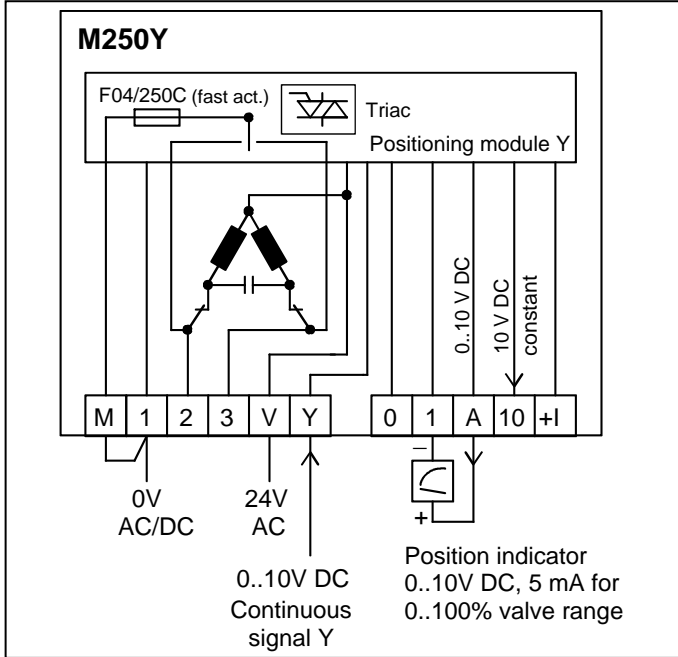
Installation



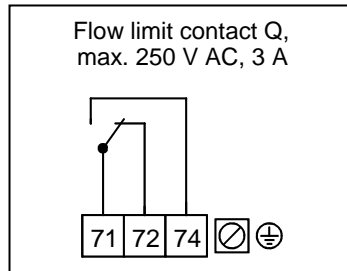
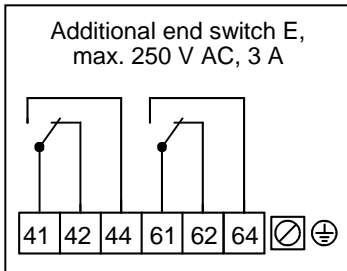
Attention – 230 V mains voltage on the additional installation parts (accessories). The electrical installation and the device connection may only be carried out by qualified technicians, e.g. an electrician.

The VDE regulations and local regulations are to be complied with here.
The device is connected according to the binding system circuit diagram.

Connection



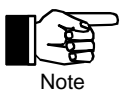
Accessories



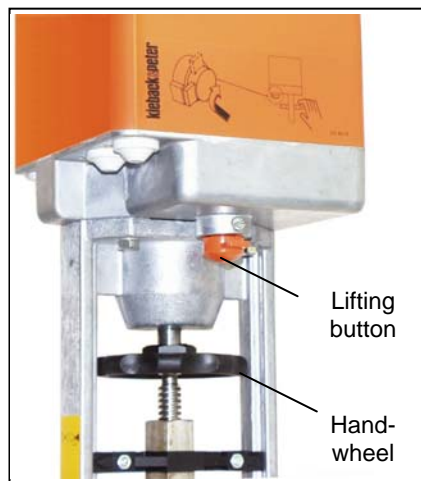
Manual mode

Press the red lifting button and engage (quarter turn) for manual mode.

Afterwards, the manual adjustment can be carried out by turning the handwheel.



To return to automatic mode, the lifting button must be disengaged again.



Device description

M250Y actuating drive
with straight-through valves and 3-way valves

RK65..100 3-way valve with M250Y actuating drive
RK65..100-BF straight-through valve with M250Y actuating drive

PN6

Application

RK65..100 gray cast-iron 3-way valves with M250Y actuating drive are used for mixing liquids precisely.

The RK.. valves are used as straight-through valves with the BF blind flange. RK..-BF straight-through valves with an M250Y actuating drive are for precisely regulating liquid flowrates.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Types

RK.. gray cast-iron 3-way valve/RK..-BF straight-through valve with M250Y actuating drive for water up to 120°C, 6 bar

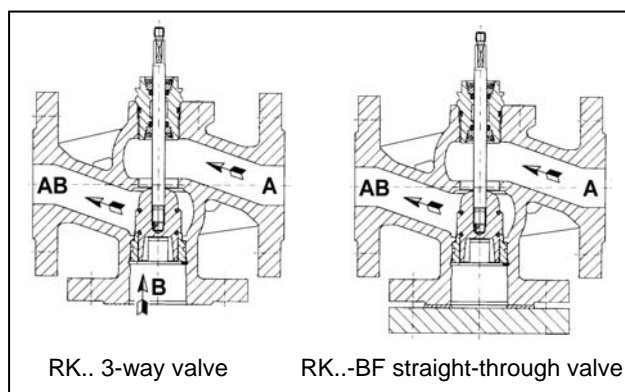
	DN	PN	kvs	Δp (bar)	Positioning time (s)
RK65 M250Y	65	6	63	3.9	200
RK80 M250Y	80	6	100	2.5	200
RK100 M250Y	100	6	160	1.5	200
RK65..100-BF M250Y	as straight-through valve with BF blind flange, data as before				



Technical data – RK65..100/RK65..100-BF valves

Nominal width	DN65 to DN100		
Pressure level	PN6		
Connection	Flange according to DIN, PN6		
Characteristic	RK..	A → AB = same percentage	
		B → AB = linear	
	RK..-BF	A → AB = same percentage	
Positioning range	30 mm		
Leakage rate	In accordance with EN 1349, leakage class VI		
Medium temperature	0..130°C (up to 120°C at 6 bar)		
Housing	Gray cast iron, GG-25 0.6025		
Cone	Brass	2.0401	with soft seal
Valve spindle	Niro steel, CrNi	1.4571	
Spindle seal	O-rings	EPDM	

Valve principle

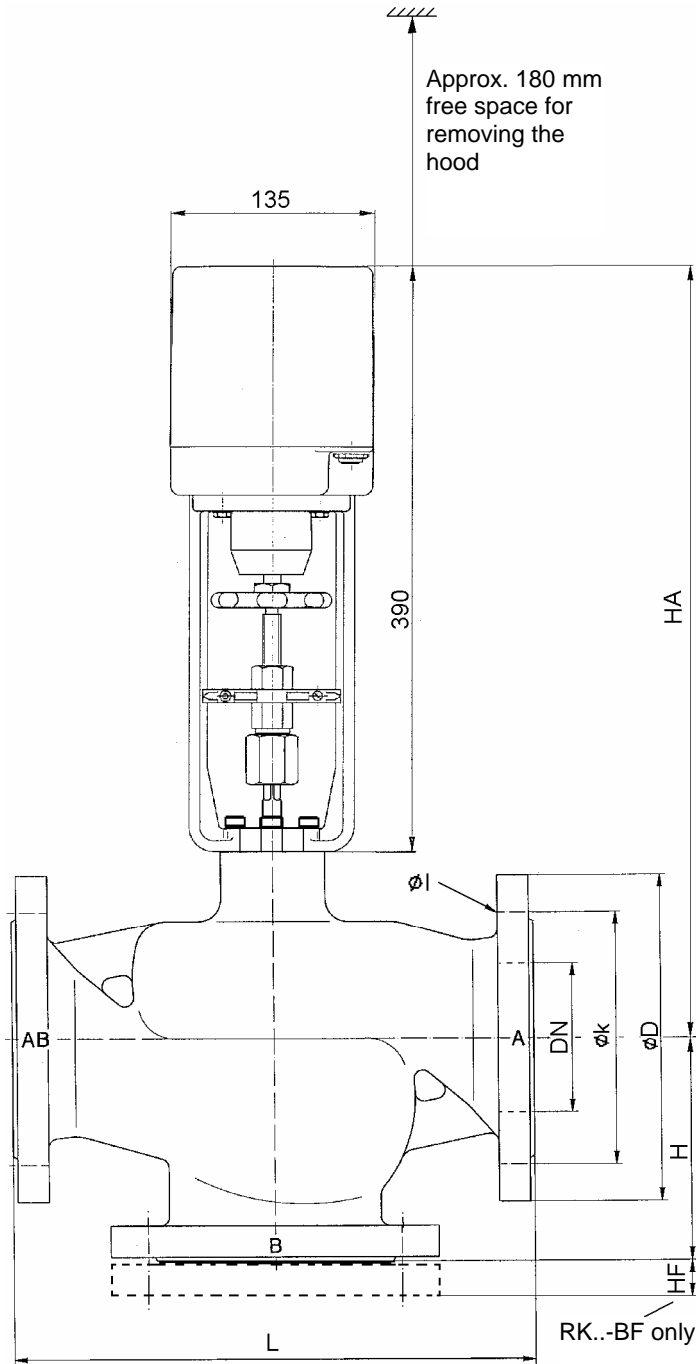


The technical data of the actuating drive with accessories is on page 3.

PN6

RK65..100 3-way valve with M250Y actuating drive
RK65..100-BF straight-through valve with M250Y actuating drive

Dimensions



DN	L	H	HA	HF	Ø D	Ø k	Ø l
65	290	120	497	approx. 16	160	130	4xØ14
80	310	130	509	approx. 18	190	150	4xØ18
100	350	150	516	approx. 18	210	170	4xØ18

Dimensions in mm, Flange according to DIN, PN6

Device description

M250Y actuating drive
with straight-through valves and 3-way valves

RF65..100 3-way valve with M250Y actuating drive
RF65..100-BF straight-through valve with M250Y actuating drive

PN16

Application

RF65..100 gray cast-iron 3-way valves with M250Y actuating drive are used for mixing liquids precisely.

The RF.. valves are used as straight-through valves with the BF blind flange. RF..-BF straight-through valves with an M250Y actuating drive are used for precisely regulating liquid flowrates.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Types

RF.. gray cast-iron 3-way valve/RF..-BF straight-through valve with M250Y actuating drive for water up to 120°C, 16 bar

	DN	PN	kvs	Δp (bar)	Positioning time (s)
RF65 M250Y	65	16	63	3.8	200
RF80 M250Y	80	16	100	2.4	200
RF100 M250Y	100	16	160	1.5	200

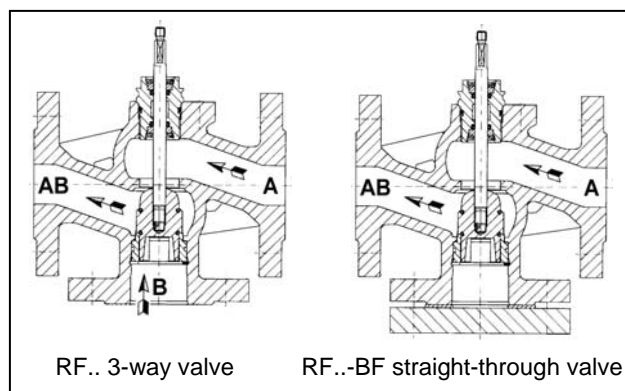
RF65..100-BF M250Y as straight-through valve with BF blind flange, data as before



Technical data – RF65..100/RF65..100-BF valves

Nominal width	DN65 to DN100		
Pressure level	PN16		
CE marking	CE marking, notified body: 0045		
Connection	Flange according to DIN, PN16		
Characteristic	RF..	A → AB = same percentage	
		B → AB = linear	
	RF..-BF	A → AB = same percentage	
Positioning range	30 mm		
Leakage rate	in acc. with EN 1349, leakage class VI		
Medium temperature	0..130°C		
Housing	Gray cast iron, GG-25 0.6025		
Cone	Brass	2.0401	with soft seal
Valve spindle	Niro steel, CrNi	1.4571	
Spindle seal	O-rings	EPDM	

Valve principle

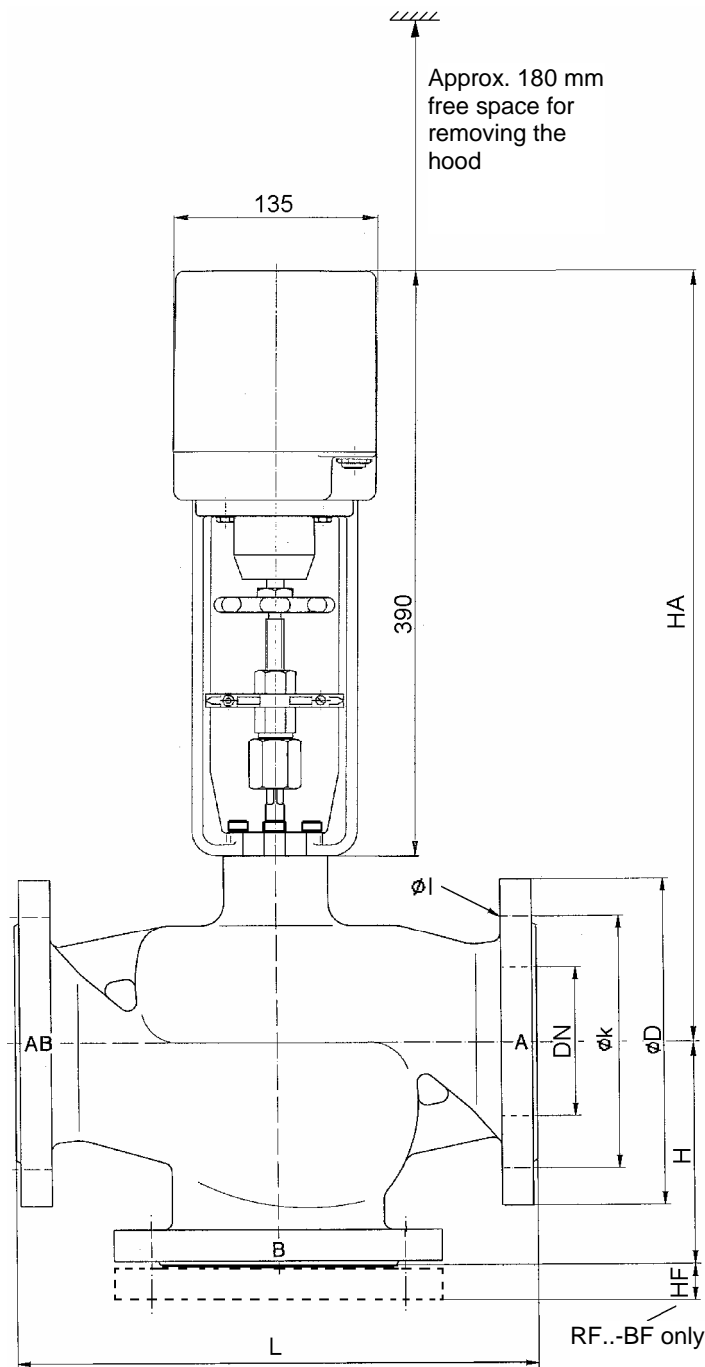


The technical data of the actuating drive with accessories is on page 3.

PN16

RF65..100 3-way valve with M250Y actuating drive
RF65..100-BF straight-through valve with M250Y actuating drive

Dimensions



DN	L	H	HA	HF	Ø D	Ø k	Ø I
65	290	120	497	approx. 20	185	145	4xØ18
80	310	130	509	approx. 22	200	160	8xØ18
100	350	150	516	approx. 22	220	180	8xØ18

Dimensions in mm, Flange according to DIN, PN16

Device description

M250Y actuating drive
with straight-through valves and 3-way valves

RD65/RD100 straight-through valve with M250Y actuating drive

PN16

Application

RD.. graphite cast-iron straight-through valves with an M250Y actuating drive are used for precisely regulating liquid, gas and vapor flowrates.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Types

RD.. graphite cast-iron straight-through valve with M250Y actuating drive for water up to 120°C, 16 bar, as well as for hot water and steam up to 200°C, 13 bar

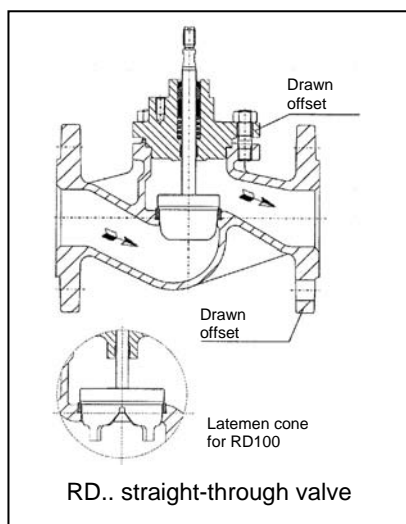
	DN	PN	kvs	Δp (bar)	Positioning time (s)
RD65M250Y	65	16	63	3	200
RD100M250Y	100	16	160	1	200

Technical data – RD65 and RD100 valves

Nominal width	DN65 and DN100	
Pressure level	PN 16	
CE	CE marking, notified body: 0525	
Connection	Flange according to DIN, PN16	
Characteristic	same percentage	
Positioning range	30 mm	
Leakage rate	in acc. with EN 1349, leakage class IV	
Medium temperature	0..200°C	
Housing	Graphite cast iron	GGG-40.3
Seat ring	Niro steel	1.4021
Cone	Niro steel	1.4021
Valve spindle	Niro steel	1.4571
Spindle seal	Gaskets	Univerdit with PTFE sleeve



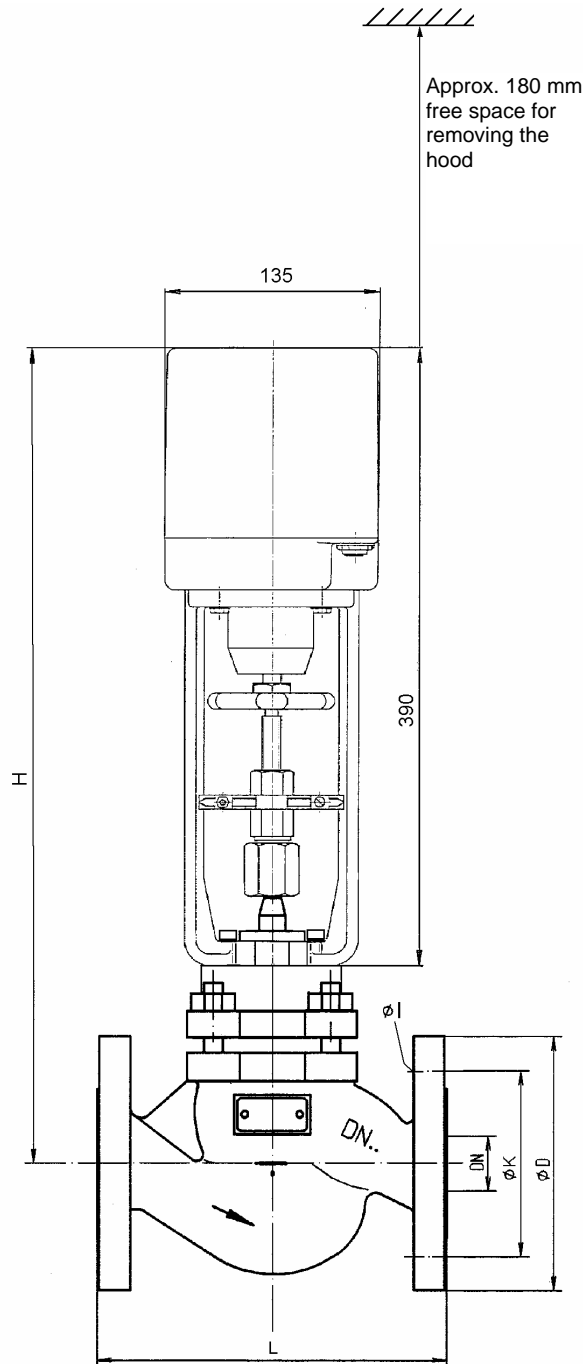
Valve principle



The technical data of the actuating drive with accessories is on page 3.

PN16 RD65/RD100 straight-through valve with M250Y actuating drive

Dimensions



DN	L	H	Ø D	Ø K	Ø I
65	290	512.5	185	145	4xØ18
100	350	547	220	180	8xØ18

Dimensions in mm,
Flange according to DIN, PN16

Device description

M250Y actuating drive
with straight-through valves and 3-way valves

RWD65/RWD100 3-way valves with M250Y actuating drive

PN16

Application

RWD.. graphite cast-iron 3-way valves with M250Y actuating drives are used for mixing liquids precisely.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Types

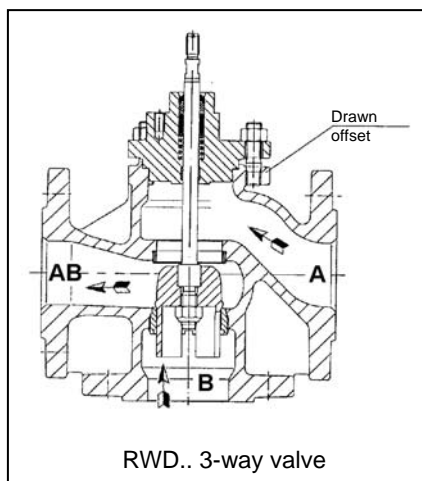
RWD.. graphite cast-iron 3-way valve with M250Y actuating drive for water up to 120°C, 16 bar, as well as for hot water and steam up to 200°C, 13 bar

	DN	PN	kvs	Δp (bar)	Positioning time (s)
RWD65M250Y	65	16	63	3	200
RWD100M250Y	100	16	160	1	200

Technical data – RWD65/RWD100 valves

Nominal width	DN65 and DN100	
Pressure level	PN 16	
CE	CE marking, notified body: 0525	
Connection	Flange according to DIN, PN16	
Characteristic	Gates A → AB = same percentage, B → AB = linear	
Positioning range	30 mm	
Leakage rate	in acc. with EN 1349, leakage class IV	
Medium temperature	0..200°C	
Housing	Graphite cast iron	GGG-40.3
Seat ring	Niro steel	1.4021
Cone	Niro steel	1.4021
Valve spindle	Niro steel	1.4571
Spindle seal	Gaskets	Univerdit with PTFE sleeve

Valve principle

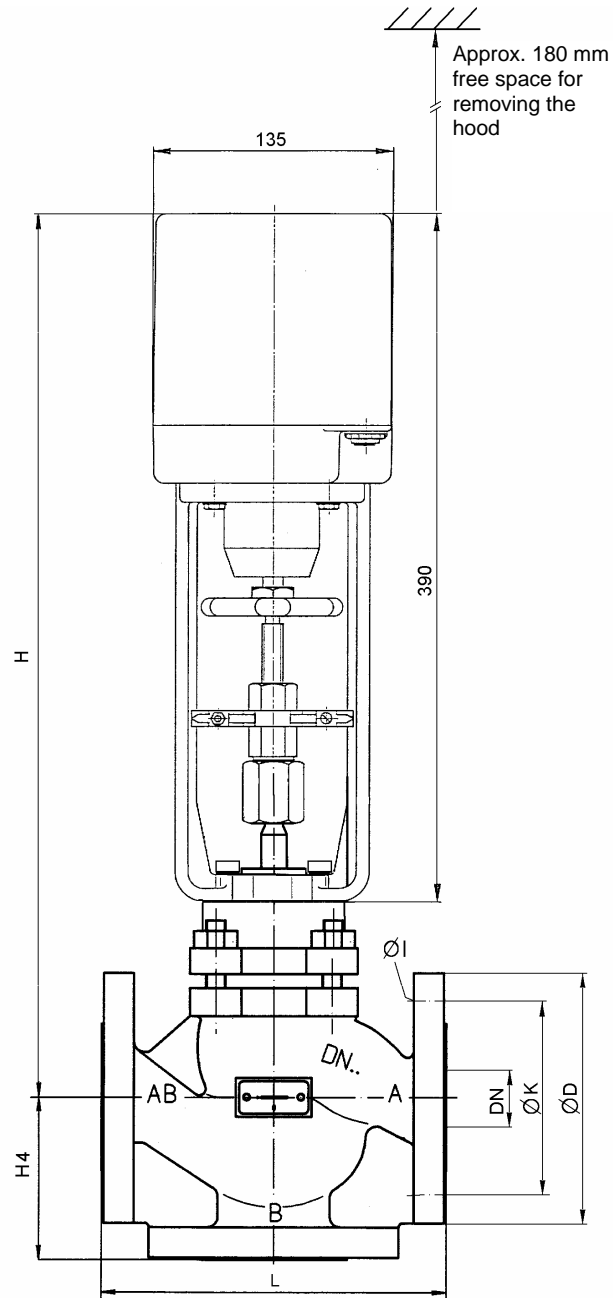


The technical data of the actuating drive with accessories is on page 3.

PN16

RWD65/RWD100 3-way valves with M250Y actuating drive

Dimensions



DN	L	H	H4	Ø D	Ø K	Ø I
65	290	556	120	185	145	4x Ø18
100	350	590.5	150	220	180	8x Ø18

Dimensions in mm
Flange according to DIN, PN16

Device description

M250Y actuating drive
with straight-through valves and 3-way valves

RGD50..100 straight-through valve with M250Y actuating drive

PN25

Application

RGD.. graphite cast-iron straight-through valves with an M250Y actuating drive are used for precisely regulating liquid, gas and vapor flowrates.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Types

RGD.. graphite cast-iron straight-through valve with M250Y actuating drive for water up to 120°C, 25 bar, as well as for hot water and steam up to 200°C, 20 bar

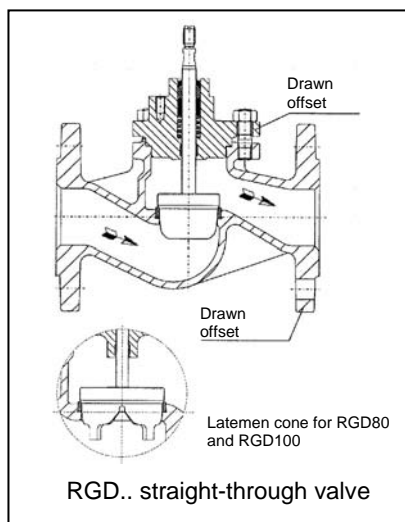
	DN	PN	kvs	Δp (bar)	Positioning time (s)
RGD50M250Y	50	25	40	5.5	200
RGD65M250Y	65	25	63	3	200
RGD80M250Y	80	25	100	1.8	200
RGD100M250Y	100	25	160	1	200



Technical data – RGD50..100 valves

Nominal width	DN50 to DN100	
Pressure level	PN25	
CE	CE marking, notified body: 0525	
Connection	Flange according to DIN, PN25	
Characteristic	same percentage	
Positioning range	30 mm	
Leakage rate	in acc. with EN 1349, leakage class IV	
Medium temperature	0..200°C	
Housing	Graphite cast iron	GGG-40.3
Seat ring	Niro steel	1.4021
Cone	Niro steel	1.4021
Valve spindle	Niro steel	1.4571
Spindle seal	Gaskets	Univerdit with PTFE sleeve

Valve principle

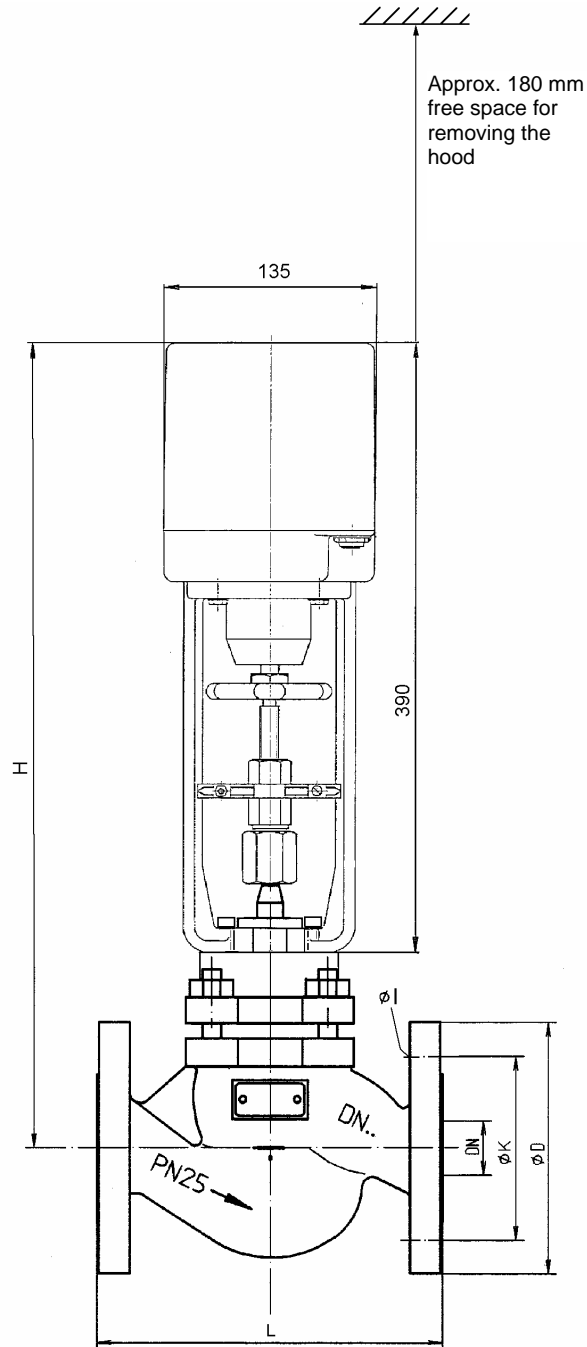


The technical data of the actuating drive with accessories is on page 3.

PN25

RGD50..100 straight-through valve with M250Y actuating drive

Dimensions



DN	L	H	Ø D	Ø K	Ø I
50	230	497	165	125	4xØ18
65	290	512.5	185	145	8xØ18
80	310	528.5	200	160	8xØ18
100	350	547	235	190	8xØ22

Dimensions in mm, Flange according to DIN, PN25

Device description

M250Y actuating drive
with straight-through valves and 3-way valves

RWG50..100 3-way valve with M250Y actuating drive

PN25

Application

RWG.. graphite cast-iron 3-way valves with M250Y actuating drives are used for mixing liquids precisely.

The M250Y is actuated continuously with a control signal Y 0..10 V DC.

Types

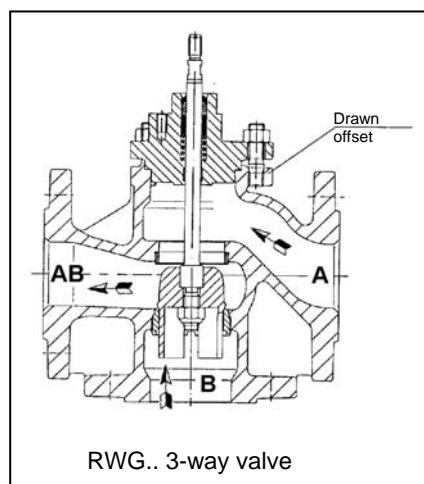
RWG.. graphite cast-iron 3-way valve with M250Y actuating drive for water up to 120°C, 25 bar, as well as for hot water and steam up to 200°C, 20 bar

	DN	PN	kvs	Δp (bar)	Positioning time (s)
RWG50M250Y	50	25	40	5.5	200
RWG65M250Y	65	25	63	3	200
RWG80M250Y	80	25	100	1.8	200
RWG100M250Y	100	25	160	1	200

Technical data – RWG50..100 valves

Nominal width	DN50 to DN100	
Pressure level	PN25	
CE	CE marking, notified body: 0525	
Connection	Flange according to DIN, PN25	
Characteristic	Gates A → AB = same percentage, B → AB = linear	
Positioning range	30 mm	
Leakage rate	in acc. with EN 1349, leakage class IV	
Medium temperature	0..200°C	
Housing	Graphite cast iron	GGG-40.3
Seat ring	Niro steel	1.4021
Cone	DN15..32	Niro steel 1.4571
	DN40..100	Niro steel 1.4021
Valve spindle	Niro steel	1.4571
Spindle seal	Gaskets	Univerdit with PTFE sleeve

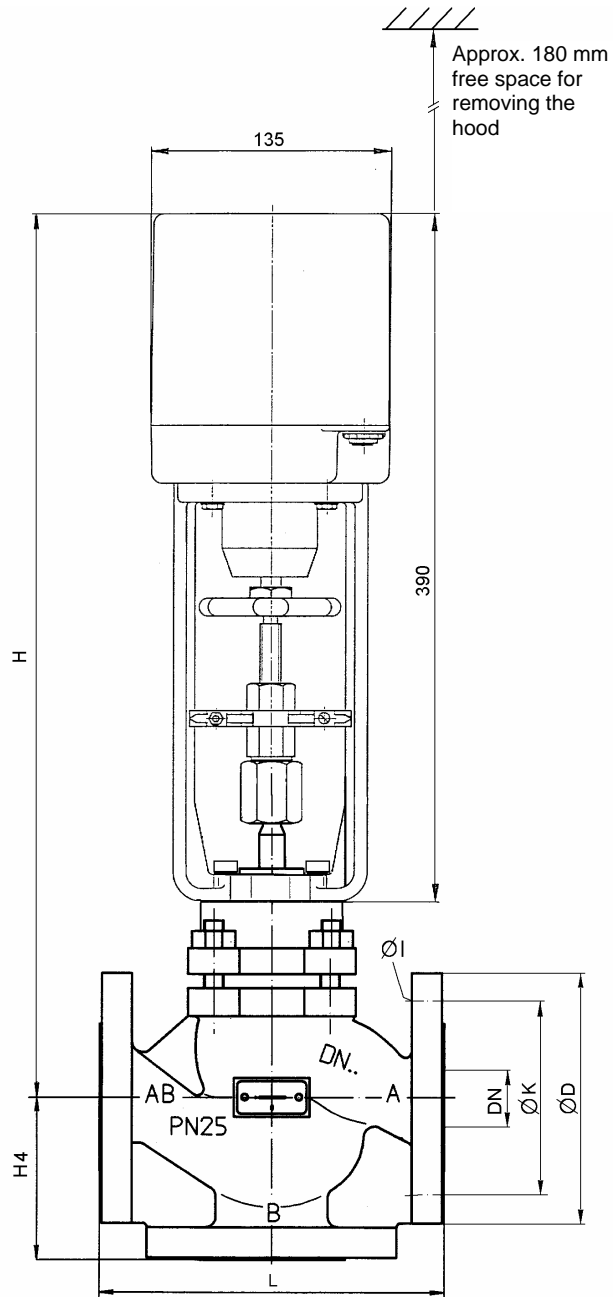
Valve principle



The technical data of the actuating drive with accessories is on page 3.

PN25 RWG50..100 3-way valve with M250Y actuating drive

Dimensions



DN	L	H	H4	Ø D	Ø K	Ø I
50	230	517,5	100	165	125	4x Ø18
65	290	556	120	185	145	8x Ø18
80	310	572	130	200	160	8x Ø18
100	350	590.5	150	235	190	8x Ø22

Dimensions in mm
Flange according to DIN, PN25

Device description

M250Y actuating drive with straight-through valves and 3-way valves

Installation of the valve



Danger

The valve may only be installed by qualified technicians.

In addition to the generally valid installation guidelines, the following items are to be observed:

- The valve ports come with protective caps to protect against contamination. They are to be removed before installing the valves.
- The pipeline system and the valve interior must be free of foreign objects.
In the case of contaminated media, dirt collectors are to be inserted upstream of the valves.
- To avoid the eddy formation in the valve, it should be installed in a straight section of pipe. A distance of 10 times the nominal width is recommended between the valve flange and elbow or other similar parts.
- There must be no tension between the valve and the pipeline connection.
- The installation position is to be selected so that the ambient temperature at the actuating drive is kept between 0..50°C.
- When carrying out installation, the permissible max. pressure difference Δp and the specified direction of flow are to be observed. See table in Types section, as well as the valve principle.
- The 3-way valves are most suitable for mixing applications. Noise may occur for splitting applications.
- The actuating drive can be installed vertically onto the valve, or in any position as far as a horizontal position.
- To remove the actuating drive hood, approx. 180 mm of room is required above the base of the hood.
- The actuating drive is delivered with a protective box.
This cover protects the drive during the installation phase and pipeline work (before commissioning).

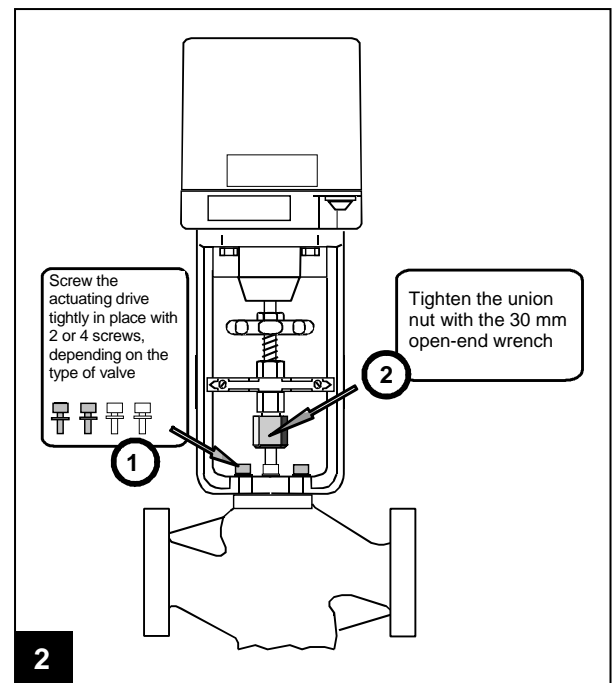
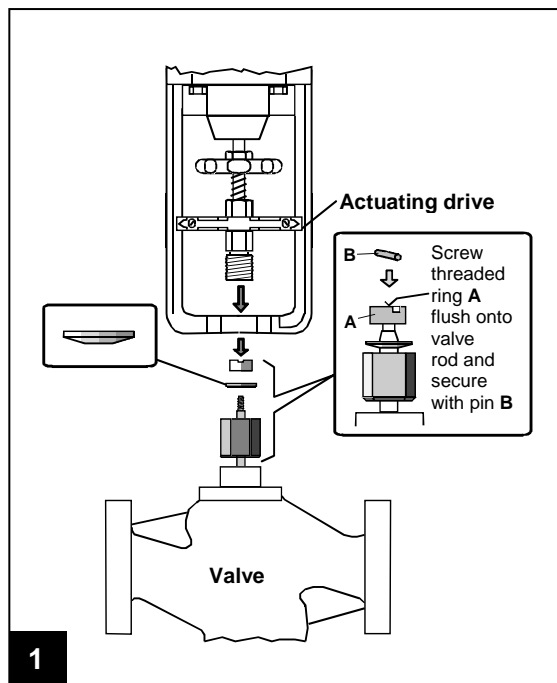
Installation of the actuating drive



Danger

The actuating drive may only be installed by qualified technicians.

- If the valve is already installed in the system, before beginning the drive installation, it must be made sure that no differential pressure builds up in the valve body. If necessary, close the shut-off valve or turn off the pump.
- After the pipeline has cooled off, the actuating drive can be installed.
- The M250Y actuating drive can be installed on the valve types RK65..100, RK65..100-BF, RF65..100, RF65..100-BF, RD65, RD100, RWD65, RWD100, RGD50..100, RWG50..100. See Figures 1 and 2.



For installation and device connection, see page 4.

For the adaptation of the Y control signal to the valve positioning range, see the next page.

Adaptation of the Y control signal to the positioning range of the valve after drive installation



When the actuating drive with installed valve is delivered, the Y control signal for the positioning range is already set in the factory.

When the drive is delivered without a valve, the Y control signal of the M250Y actuating drive is set to a basic setting. After the drive is installed and the device is connected, the control of both valve end positions as well as a few intermediate positions are to be checked with the control signal Y 0..10 V DC. To do this, the actuating drive can be controlled with the manual function of the controller or control system (control signal Y 0..10 V = Valve positioning range 0..100%).



If required, the Y control signal can be adapted to the positioning range of the installed valve:

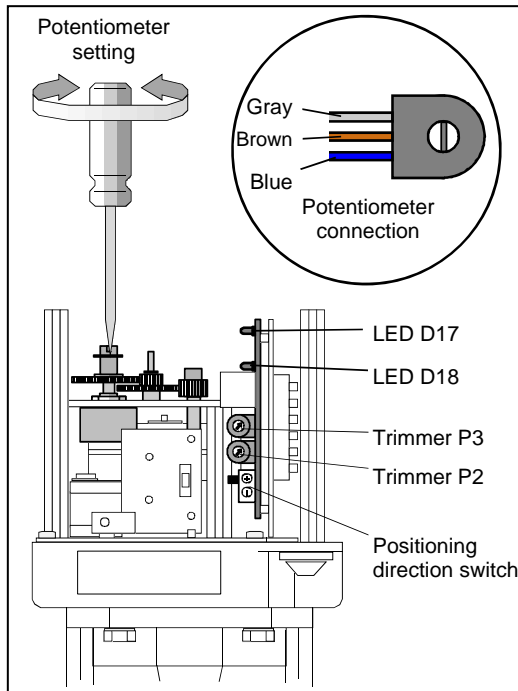
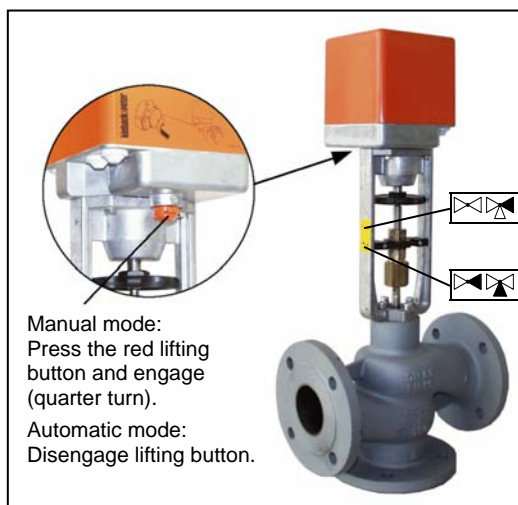


The following settings may only be carried out by qualified technicians, e.g. by the commissioning technician.

Attention – 230 V mains voltage on the additional installation parts (accessories). These connections are to be removed from voltage before removing the hood.

Setting example shows 3-way valve:

1. Set the actuating drive to manual mode (push lifting button and engage)
Switch off the 24 V AC power supply and remove the hood of the actuating drive.
2. Mains on Terminal V = 24 V AC (phase) and Terminal Connect 2 = 24 V AC (neutral conductor).
Set continuous Y signal from the controller to 0 V or disconnect from actuating drive.
3. Switch on the power supply and set actuating drive to automatic mode (disengage lifting button).
Caution! Rotating parts
Actuating drive runs to the upper valve end position. 
4. Once the upper end position has been reached, set the actuating drive to manual mode (push lifting button and engage).
5. Set trimmers P2 and P3 to the right stop.
Switch positioning direction switch to (-).
6. Set potentiometer to 10..20 Ω (measured between brown/blue connection lines).
7. Switch off mains supply.
8. Connect mains for controller operation:
Terminal V = 24 V AC (phase)
Terminal 1 = 24 V AC (neutral conductor).
9. Switch on mains supply. LED D17 is illuminated.
10. Slowly rotate trimmer P2 to the left until LED D17 goes out.
Slowly rotate trimmer P2 back to the right until LED D17 just lights up again.
11. Set actuating drive to automatic mode (disengage lifting button).
12. Switch positioning direction switch to (+). LED D18 is illuminated, LED D17 is off.
Actuating drive runs to the lower valve end position. 
13. Once the lower end position has been reached, set the actuating drive to manual mode (push lifting button and engage).
14. Slowly rotate trimmer P3 to the left until LED D18 goes out. Then slowly rotate trimmer P3 back to the right until LED D18 just lights up again.
15. Set the positioning direction switch to (+) or (-) according to the valve function. See the Commissioning section.
16. Set the controller back to automatic mode or reconnect the continuous Y signal back to the Y terminal.
17. Put the hood on and set actuating drive to automatic mode (disengage lifting button).
18. Carry out function tests in controller manual and automatic modes.



Device description

M250Y actuating drive
with straight-through valves and 3-way valves

Commissioning – Valve with actuating drive

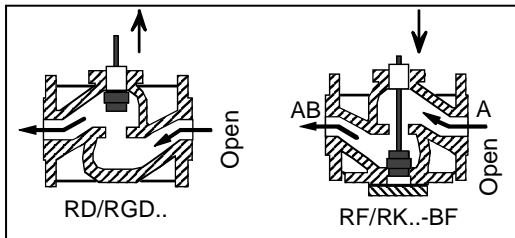
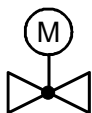


Attention – 230 V mains voltage on the additional installation parts (accessories). The commissioning of the actuating drive may only be carried out by qualified technicians.

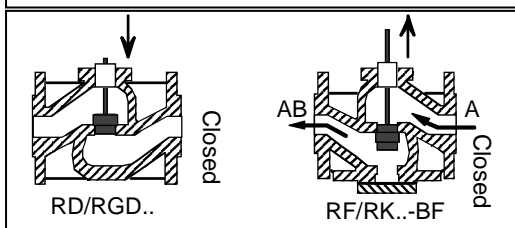
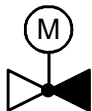
- Before switching on the mains, make sure that the valve as well as the electrical connection are installed correctly.

Valve functions of the individual valve types

Straight-through valves Open:

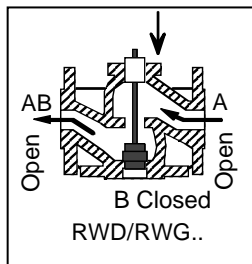
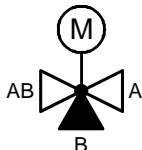


Straight-through valves Closed:

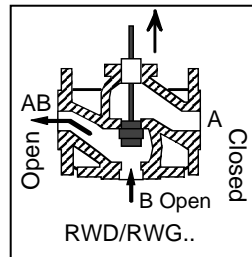
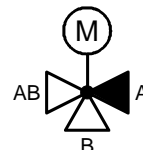


3-way valves

Gates A – AB Open
B – AB Closed:



3-way valves
Gates A – AB Closed
B – AB Open:

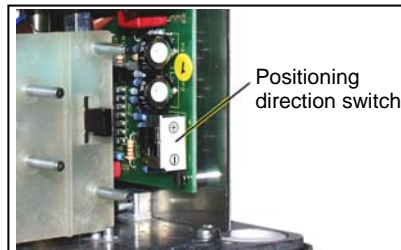


- The positioning direction (valve open/closed) is to be checked in accordance with the hydraulic diagram and to be adapted, if necessary.

Positioning direction (setting at delivery)	
M250Y	
Y = 10V	
Y = 0V	
◁ = Port open ◀ = Port closed	

Positioning direction change:

- Switch off mains voltage.
- Remove actuating drive hood.
- Switch positioning direction switch in the actuating drive to –.



- Replace the actuating drive hood and screw tightly into place.
- Switch on the mains voltage and check function.

- Positioning feedback 0..10 V DC, 5 mA for 0..100% positioning range, terminal connection: A – 1.

Valve position		
Positioning feedback	0 V DC	10 V DC

M250Y actuating drive
with straight-through valves and 3-way valves

Device description