Issue 2015-08-12 Datasheet 3.10-15.003-01-EN

Product Description

M1503Y/24 and M150Y/230 actuators

with RV/RH/RVW/RHW125..200 two-way/three-way valve

M1503Y/24 and M150Y/230 actuators

with RV/RH/RVW/RHW125..200 two-way/three-way valve

Application

M1503Y.... actuating drives with an actuating force of 15 kN are used to finely adjust the position of valves. A 3-point or a continuous control signal is used for control, using either 0(2) 10 V DC or 0(4) 20 mA.



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



with RV/RH/RVW/RHW125..200 two-way/three-way valve

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M1503Y/24 and M150Y/230 actuators

with RV/RH/RVW/RHW125..200 two-way/three-way valve

Important Information Regarding Product Safety

Safety Instructions

This data sheet contains information on installing and commissioning the product "M1503Y/24, M1503Y/230". Each person who carries out work on this product must have read and understood this data sheet. If you have any questions that are not resolved by this data sheet, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this data sheet, the protection provided will be impaired. Applicable regulations must be observed when installing and using the device. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies). If the device is used in other countries, it is the responsibility of the system installer or operator to comply with local regulations.

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

Legend



WARNING

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



CAUTION

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



CAUTION

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



NOTE

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

Notes on Disposal

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



Iteml

M1503Y/24 Actuator 24 VAC with 3 point signal or continuous control signal, either

0(2)..10 VDC or 0(4).. 20 mA, for two-way valves RV/RH125..200 and

three-way valves RVW/RHW125..200.

M1503Y/230 Actuator 230 VAC with 3 point signal or continuous control signal, either

0(2)..10 VDC or 0(4).. 20 mA, for two-way valves RV/RH125..200 and

three-way valves RVW/RHW125..200.

Technical data

M1503Y/24 24 V AC ±10%, 50/60 Hz, 50 VA Nominal voltage

M1503Y/230 230 V.A.C. ±10%, 50/60 Hz, 64 VA.

Control 3-point (open/closed/Stop) or

continuous control 0(2) 10 V DC or 0(4) 20 mA, invertible

Operating mode S3-30% ED c/h 1200 EN 60034-1

Hysteresis Adjustable 0.05 V, 0.15 V, 0.3 V or 0.5 V Actuating stroke M1503Y/24, M1503Y/230 max 80 mm

Position feedback 0.. 10 V DC, 8 mA, invertible

Manual mode It is possible to use the feedback signal "R" by moving the hand wheel

- with M1530Y/24 24 V DC, max 100 mA – with M1503Y/230 24 V DC, max 100mA

Positioning time 2.0 s/mm 15 kN **Thrust** Ambient temp. -10..+50°C

IP54 Degree of protection

Installation position Vertical above the valve, to horizontal position

Maintenance Maintenance-free

Weight M1503Y/24, M1503Y/230 11.5 kg

Accessories (not included in delivery)

HW-106923 2 voltage-free switches, path-dependently adjustable, AC 230 V max., 8 A; DC 30 V, 8 A

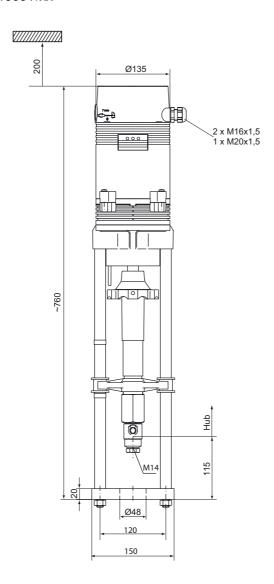




Product Description

Dimensions

M1503Y/xx



Installation



CAUTION

Warning: Mains voltage 230 V AC

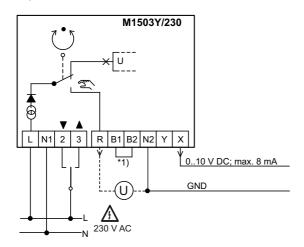
Electrical installation and unit connection may only be carried out by qualified technicians.

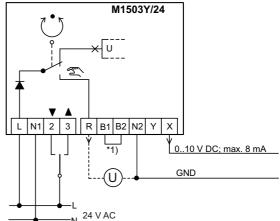
The mains supply may only be connected after commissioning. Be sure to comply with local wiring regulations. The device is connected according to the legally binding wiring diagram.



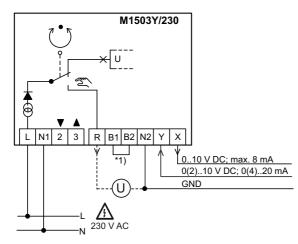
Connection

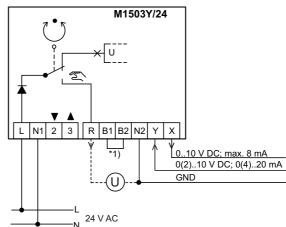
- 3-point control





- Continuous control

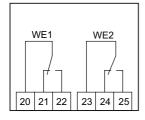




R feedback signal for manual mode

* 1) Should the electricity supply between terminals B1 and B2 be interrupted, the actuator will move to the stop position pre-selected with code switch "S7". This has priority over all other input signals and can be used for the frost protection/limiting function.

Connection accessories





Product Description

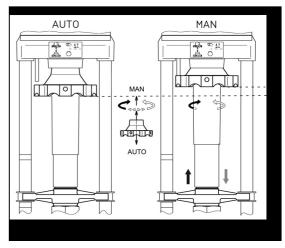
Manual/automatic mode

Choose between manual or automatic modes by moving the handwheel.

When the handwheel is in the lower position (A), the actuator is in automatic mode (AUTO).

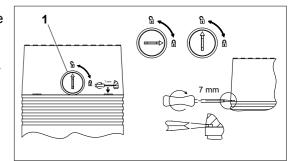
Manual mode (MAN) is activated by moving the handwheel to the upper position (B). Turn and push the handwheel until you feel it lock into position. The spindle nut can then be brought into the required position manually by turning the handwheel.

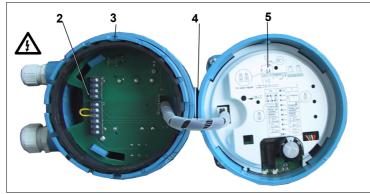
Terminal "R" emits feedback for "manual mode" when this is active.



Removing and replacing the cover

- The cover must first be unlocked before it can be removed. Using a screwdriver, turn the dial (1) 90° anti-clockwise.
- Place the screwdriver into a notch on the cover and lift off the unlocked cover by turning it slightly.
- Carefully remove the cover .





- (2) Connection terminals
- (3) Cover
- (4) Cable connection with plug
- (5) Main board
- Where applicable, remove the cable connection with plug (4) from the main board (5).

Ensure that the cover's wiring is neither torn off or damaged while removing the cover. The device may only be commissioned or test run without the hood by qualified technicians.

Before replacing the cover (3) re-connect the cable by inserting the plug. The plug connection is mechanically coded so that it can only be connected in the correct position.



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M1503Y/24 and M150Y/230 actuators

with RV/RH/RVW/RHW125..200 two-way/three-way valve

Product Description

■ Replace the cover (3) by pressing it into place with moderate force. Turn the dial on the cover clockwise (90°) to lock it into place.



NOTE

The cover can be mounted in four different positions which are set at 90° from one another. This offers the advantage that the connecting cable can be routed conveniently for different installations of the actuator.

Additional actuator functions

Frost protection function

Should the temperature in the actuator drop below 15 °C during operating pauses, the motor switches to heating mode. The heating power is 12.5W with temperatures of approximately 8 °C to approx. 15 °C. The heating power will be increased to 18 W at temperatures below 8 C. If the actuator's temperature reaches approx. 22 °C, the heating mode switches off automatically. If the temperature drops again below 15 °C, the heating mode will be re-activated. Heating mode is indicated by a constantly lit, red LED (see also page 24).

Internal temperature monitoring in the actuator.

If the actuator overheats by reaching a temperature of more than approx. 84 °C, the power supply is cut from the motor. This is shown by a flashing light on the red LED to a rhythm of approx. 0.25 seconds. When it has cooled down to approx. 78 °C, the motor will be supplied with power again.



RV125..200 two-way valve with M1503Y/24 and M1503Y/230 actuating drives

Application

Graphite cast-iron two-way valves RV 125..200 with M1503/Y and M1503Y/230 actuating drives are used for fine quantity control of liquid and vapors. A 3-point or a continuous control signal is used to control the activator, using either 0(2)..10 V DC or 0(4)..20 mA.

Types

RV125..200 graphite cast iron two-way valve with the M1503Y/24 and M1503Y/230 actuators for water up to 120 °C, 16 bar, as well as for hot water and steam up to 200 °C, 13 bar

	DN	PN	cvs	∆p (bar)	Positioning time (s)	Weight (kg)
RV125M1503Y/24	125	16	250	9.5	120	72.5
RV125M1503Y/230	125	16	250	9.5	120	72.5
RV150M1503Y/24	150	16	400	7.0	120	104.5
RV150M1503Y/230	150	16	400	7.0	120	104.5
RV200M1503Y/24	200	16	630	3.7	120	241.5
RV200M1503Y/230	200	16	630	3.7	120	241.5



Technical data - RV125..200 valves

Nominal diameter DN 125..200C

Pressure rating PN 16

Connection Flange according to DIN 2533

Characteristic curve Same percentage Actuating stroke RV125..200: 60 mm

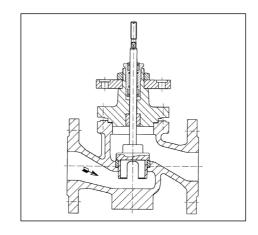
Leak rate In accordance with EN 1349, seat leakage IV L1 (≤0.01% from cvs value)

Medium temperature 0 to 200 °C

Housing Gray cast-iron EN-JL1040

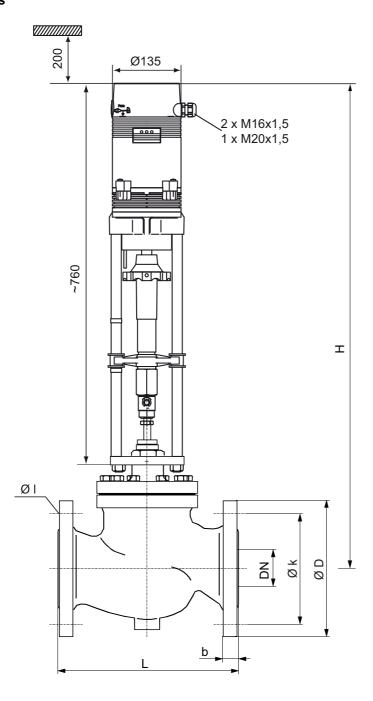
Seat ring CrNi steel 1.4021 Cone CrNi steel 1.4057 Valve spindle CrMo steel 1.4122 Spindle seal PTFE lip seals

Valve principle RV125..200





Dimensions



DN	L	b	ØD	Øk	ØΙ	Н	
125	400	24	250	210	8 x Ø 18	1020	
150	480	24	285	240	8 x Ø 22	1045	
200	600	30	340	295	12 x Ø 22	1150	
	Dimensions L to H in mm						



RH125..200 two-way valve with M1503Y/24 and M1503Y/230 actuating drives

Application

Graphite cast-iron two-way valves RH 125..200 with M1503/Y and M1503Y/230 actuating drives are used for fine quantity control of liquid and vapor. A 3-point or a continuous control signal is used to control the activator, either 0(2)..10 V DC or 0(4)..20 mA.

Types

RH125..200 graphite cast iron two-way valve with the M1503Y/24 and M1503Y/ 230 actuators for water up to 120 °C, 40 bar, as well as for hot water and steam up to 200 °C, 35 bar

	DN	PN	cvs	∆p (bar)	Position- ing time (s)	Weight (kg)
RH125M1503Y/24	125	40	250	9.5	120	78.5
RH125M1503Y/230	125	40	250	9.5	120	78.5
RH150M1503Y/24	150	40	400	7.0	120	113.5
RH150M1503Y/230	150	40	400	7.0	120	113.5
RH200M1503Y/24	200	40	630	3.7	120	271.5
RH200M1503Y/230	200	40	630	3.7	120	271.5



Technical data - RH125..200 valves

Nominal diameter DN 125..200

PN 40 Pressure rating

Connection Flange according to DIN 2545

Characteristic curve Same percentage Actuating stroke RH125..200: 60 mm

Leak rate in accordance with EN 1349, seat leakage IV L1 (≤0.01%

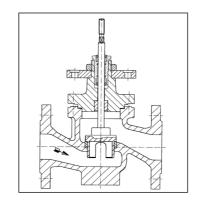
from cvs value)

Medium temperature 0 to 200 °C

Housing Graphite cast iron 1,0616+N

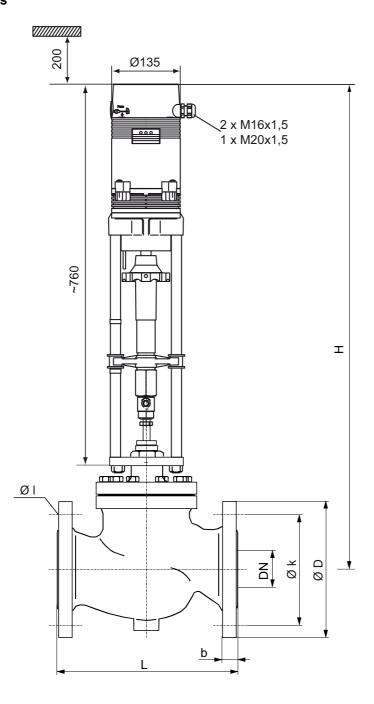
Seat ring CrNi steel 1.4057 Cone CrNi steel 1.4057 Valve spindle CrMo steel 1.4122 Spindle seal PTFE lip seals

Valve principle RH125..RH200





Dimensions



DN	L	b	Ø D	Øk	ØΙ	Н	
125	400	26	270	220	8 x Ø 26	1020	
150	480	28	300	250	8 x Ø 26	1045	
200	600	34	375	320	12 x Ø 30	1150	
	Dimensions L to H in mm						



RVW125..200 three-way valve with M1503Y/24 and M1503Y/230 actuating drives

Application

Graphite cast-iron three-way valves RVW 125 .. 200 with M1503/Y and M1503Y/230 actuating drives are used for fine quantity control of liquid and vapor A 3-point or a continuous control signal is used to control the activator, either 0(2)..10 V DC or 0(4)..20 mA.

Types

RVW125..200 cast graphite iron three-way valve with the M1503Y/24 and M1503Y/230 actuators for water up to 120 °C, 16 bar, as well as for hot water and steam up to 200°C, 13 bar

.,	DN	PN	cvs	∆p (bar)	Position- ing time (s)	Weight (kg)
RVW125M1503Y/24	125	16	250	9.5	120	84.5
RVW125M1503Y/230	125	16	250	9.5	120	84.5
RVW150M1503Y/24	150	16	400	7.0	120	115.5
RVW150M1503Y/230	150	16	400	7.0	120	115.5
RVW200M1503Y/24	200	16	630	3.7	120	281.5
RVW200M1503Y/230	200	16	630	3.7	120	281.5



Technical data - RVW125..200 valves

Nominal diameter DN 125..200

PN 16 Pressure rating

Connection Flange according to DIN 2533

Characteristic curve A→AB same percentage; B→AB linear

Actuating stroke RVW125..200: 60 mm

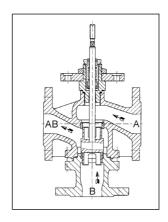
Leak rate In accordance with EN 1349, seat leakage IV L1 (≤0.01% from cvs value)

Medium temperature 0 to 200 °C

Housing Gray cast-iron EN-JL1040

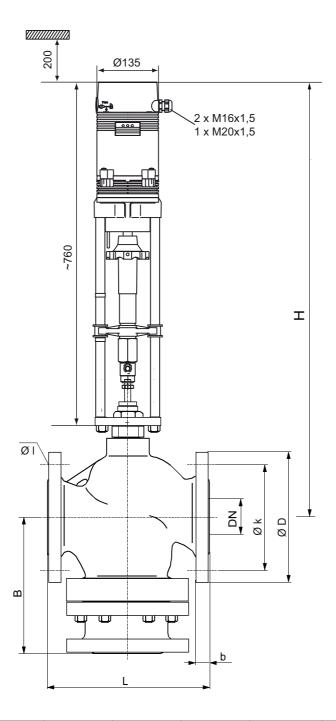
CrNi steel 1.4021 Seat ring CrNi steel 1,4057 Cone Valve spindle CrMo steel 1.4122 Spindle seal PTFE lip seals

Valve principle RVW125..200





Dimensions



DN	L	В	b	ØD	Øk	Ø١	Н
125	400	260	24	250	210	8 x Ø 18	965
150	480	280	24	285	240	8 x Ø 22	985
200	600	400	30	340	295	12 x Ø 22	110
Dimensions L to H in mm							



Product Description

RHW125..200 three-way valve with M1503Y/24 and M1503Y/230 actuating drives

Application

Graphite cast-iron three-way valves RH 125..200 with M1503Y/24 and M1503Y/230 actuating drives are used for fine quantity control of liquid and vapor. A 3-point or a continuous control signal is used to control the activator, either 0(2)..10 V DC or 0(4)..20 mA.

Types

RHW125..200 graphite cast iron three-way valve with the M1503Y/24 and M1503Y/230 actuators for water up to 120 $^{\circ}$ C, 40 bar, as well as for hot water and steam up to 200 $^{\circ}$ C, 13 bar

'	DN	PN	cvs	∆p (bar)	Position- ing time (s)	Weight (kg)
RHW125M1503Y/24	125	40	250	9.5	120	90.5
RHW125M1503Y/230	125	40	250	9.5	120	90.5
RHW150M1503Y/24	150	40	400	7.0	120	132.5
RHW150M1503Y/230	150	40	400	7,0	120	132.5
RHW200M1503Y24	200	40	630	3.7	120	311.5
RHW200M1503Y/230	200	40	630	3.7	120	311.5



Technical data - RHW125..200 valves

Nominal diameter DN 125..200

Pressure rating PN 40

Connection Flange according to DIN 2545

Characteristic curve A→AB same percentage; B→AB linear

Actuating stroke RHW125..200: 60 mm

Leak rate In accordance with EN 1349, seat leakage IV L1 (≤0.01%

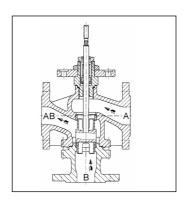
from cvs value)

Medium temperature 0 to 200 °C

Housing Graphite cast iron 1,0619+N

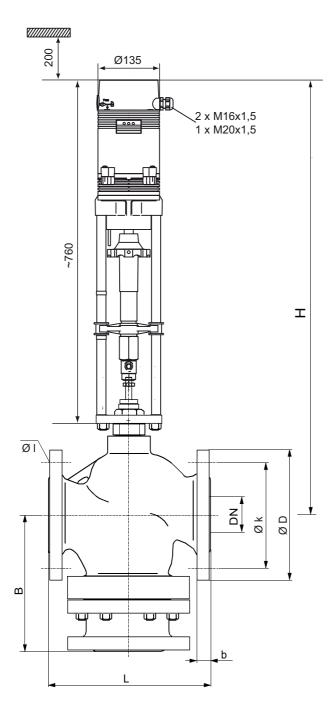
Seat ring CrNi steel 1.4021
Cone CrNi steel 1.4057
Valve spindle CrMo steel 1.4122
Spindle seal PTFE lip seals

Valve principle RHW125..200





Dimensions



DN	L	В	b	Ø D	Øk	ØΙ	Н
125	400	260	26	270	220	8 x Ø 26	965
150	480	280	28	300	250	8 x Ø 26	985
200	600	400	34	375	320	12 x Ø 30	110
Dimensions L to H in mm							



M1503Y/24 and M150Y/230 actuators

with RV/RH/RVW/RHW125..200 two-way/three-way valve

Product Description

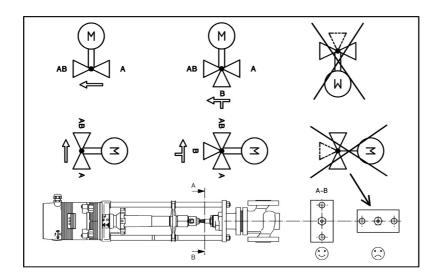
Valve Installation



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 ports come with protective caps to protect against contamination. They are to be removed before installing the valves.
- The pipeline system and the fixture interior must be free of foreign objects. In the case of contaminated media, dirt collectors are to be inserted upstream of the valves.
- There must be no tension between the valve and the pipeline connection.
- Use only perfectly fitting flange seals, inserted centrally in the valve flanges.
- To avoid eddy formations in the valve body, the valve should be installed in a straight section of the pipe. A distance of 10 times the nominal diameter is recommended between the valve flange and manifold or other similar parts.
- The installation location is to be selected so that the ambient temperature at the actuator is kept between -10.. +50 °C.
- When carrying out installation, the permissible max. pressure difference \(\Delta \pressure \) and the specified direction of flow must be taken into account (see table in "Types" section, as well as the "Valve Principle").
- Insert the three-way valves as mixing valves. Pay attention to the direction of flow (see fig. "Valve Principle").
- The actuator can be installed vertically above the fixture, or in any position as far as a horizontal position. When installed horizontally, the drive pillars must be one upon the other. Where applicable, turn the cross member after loosening the retaining nut.
- To remove the actuator hood, approx. 200 mm of free space is required above the drive.
- The actuator is delivered with a protective box. Up until commissioning, this cover protects the drive during the installation phase and pipeline work.
- Observe the direction arrow on the valve body! Inverting the direction of flow impairs control behavior.





Installation of the actuator

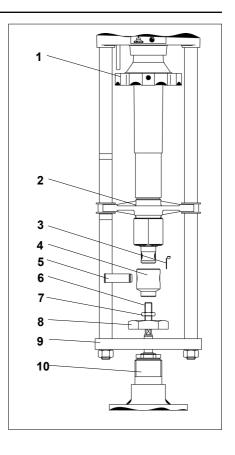


CAUTION

Installation may only be carried out by qualified technicians.

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

- Detach the plug-in plate (3), pull out or carefully force out the bolt (5) from the coupling piece (4).
- Unscrew the flat hex nut M10 (7) from the valve spindle (6)
 Unscrew the coupling piece (4) from the valve spindle (6).
- Place the actuator with the cross member (9) onto the valve nozzle and secure with a flat hex nut (8).
- Push the actuator into manual mode (MAN) (see page 8).
- Using the handwheel (1), adjust the height of the spindle nut so that the bolt (5) can be reattached. Pay attention while connecting the plug-in plate (3).
- Secure the flat hex nut (7) to ensure that the valve swindle does not get twisted.
- Put the actuator into automatic mode (see page 8)
- The actuator is uninstalled in reverse order.



Commissioning



CAUTION

Warning: Mains voltage 230 V AC

Only qualified technicians may connect the device and switch on the power supply.

- Before switching on the power, check that the valve, as well as the electrical connection, are installed correctly.
- Check the control and actuating direction (open/close valve).

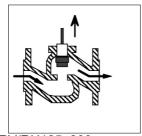


Product Description

Valve functions

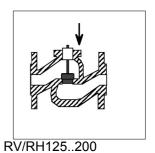
Two-way valve open





Two-way valve closed

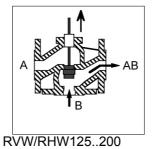




RV/RH125..200

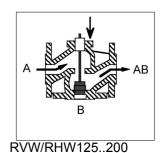
Three-way valve Gates A - AB closed B – AB open





Three-way valve Gates A – AB open B - AB closed





Actuating direction when delivered

R..M1503Y/24 R..M1503Y/230





Control voltage Y = 0 V DC





Control voltage Y = 10 V DC









Initialization, adjustment to valve stroke

For commissioning or following repair work on the valve or actuator or when the valve or actuator has been replaced, the valve stroke must be initialized.

Pressing the INIT button (1) on the main board or applying operating voltage to terminals "2" and "3" simultaneously triggers initialization.

Keep the INIT button pressed for at least 1 second (holding period), or keep terminals "2" and "3" supplied with operating voltage for at least 1 second. The end positions are approached during initialization.

The actuator also initializes following an interruption of the power supply or after switching from manual to automatic mode

Using the code switch "S7", select the end position to be moved.



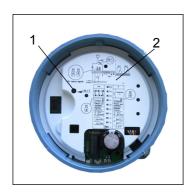


NOTE

Following initialization, the actuator will move into the position specified by the controller.

Setting the code switches

The actuator functions can be adjusted by using the code switches (3) "S1" to "S10" (situated under the main board cover). To set the functions, remove the cover (2) from the main board (4).





- (1) INIT button
- (2) The main board cover
- (3) Code switches S1 to S10
- (4) Main board

Fig. main board with cover

Fig. main board without cover

M1503Y/24 and M150Y/230 actuators

with RV/RH/RVW/RHW125..200 two-way/three-way valve

Funktion	Kodier- schalter	Funktion
mA	— 6	V
0,5	6	Hysteresse V
Endpos.	7	Endpos.
Pause Autotest ein	9	Pause Autotest aus
Stellzeit 2,5 s/mm	5	Stellzeit 5 s/mm
010 V (020 mA)	4	210 V (420 mA)
у	3	у
x	2	x
	NO 1	ICSP

- The code switch "S1" must always be in the "ON" position to ensure operation.
- Code switch "S6" ("ON") auto-test and auto-pause function.

Auto-test

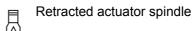
The stop position that was set with code switch "S7" is approached in rapid speed mode every ten days. This simultaneously also effects a zero adjustment. This also significantly reduces the risk of the valve or valve spindle becoming jammed as a result of corrosion when the machine is not used for a longer period of time.

Auto-pause The actuator counts the motion commands that would mean a shift in direction. If there are more than 20 such motion commands per minute, the device executes a mandatory break of 3 seconds is made. The measuring cycle is 2 minutes long.

Code switch "S7" actuator spindle stop position



Extended actuator spindle



By setting the code switch "S7", you can select the stop position, which is approached in the following situations:

- Open circuit detection of the Y signal
- A binary signal (an interruption of the circuit between terminals "B1" and "B2")
- Initialization, the pre-set position is approached first



Status LEDs



- (1) Status LED 1 (green)
- (2) Status LED 2 (red)

Status LED 1 (green)

Normal operation (stand-by)

The LED is lit constantly, actuator awaits a motion command.

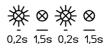


Normal operation (actuator executes motion command)

The LED flashes in a short – short rhythm.

Open circuit detection

The input signal is only checked for an open circuit in the operating modes 2..10 V DC and 4 20 mA (live zero). This means the actuator spindle is moved to the pre-selected stop position, as set with code switch "S7", if the input signal is lower than 1 V or 2 mA. The LED flashes in a short - long rhythm.



Blockage (only with continuous control)

The actuator has a blockage safety system. In the event of a mechanical blockage, the actuator moves backward and then tries to override the blockage (seven attempts in total). Should it not be able to override the blockage, the actuator turns off automatically. This ensures that no further damage can happen to the actuator and valve. In the event of blockage, the LED flashes in a long – long rhythm.



Constant signal

Behavior with constant signal on terminal "2+3". An initialization run takes place upon simultaneous control signals on terminal "2+3". If the signal on 1,5s 0,2s 1,5s 0,2s terminal "2+3" is constant (perhaps as a result of the controller's relay contact becoming stuck), the actuator will execute a maximum of four initialization runs before switching itself off. With a constant signal on terminal "2+3", the off-position is indicated by the LED, in this case with a long – short rhythm. After clearing the constant signal on terminal "2+3", the actuator automatically returns to normal operating mode.





with RV/RH/RVW/RHW125..200 two-way/three-way valve

Reset after a malfunction

After resolving a malfunction, the actuator can be reset in the following ways:

- Briefly disconnect the actuator from the power supply
- Apply the operating voltage "L" to terminals "2" and "3" simultaneously (1 s 5 s)
- Briefly turn the manual adjustment on and off again
- Press the INIT button

LED 2 (red) status

Heating mode Temperature in normal operating \otimes mode Off Actuator is overheated Flashing



Datasheet 3.10-15.003-01-EN Issue 2015-08-12

M1503Y/24 and M150Y/230 actuators with RV/RH/RVW/RHW125..200 two-way/three-way valve

Product Description



M1503Y/24 and M150Y/230 actuators with RV/RH/RVW/RHW125..200 two-way/three-way valve

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