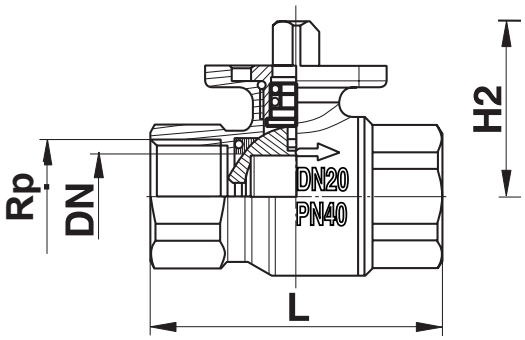
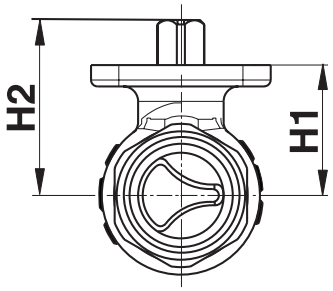
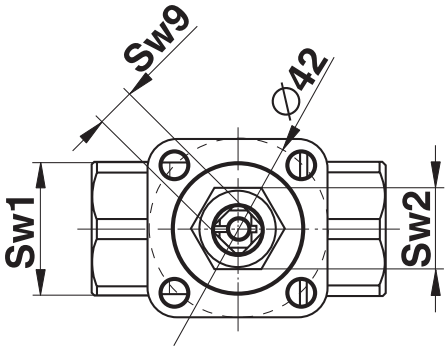
HERZ - DZR Ball valve with characteristic

Data sheet **2117**, Issue 0222

Dimensions







With handle

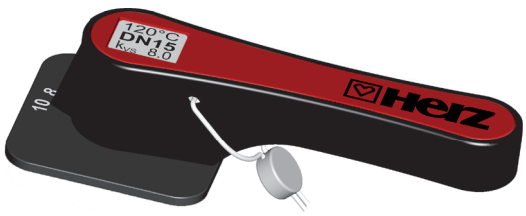
Order number	DN	PN	Rp	L	H1	H2	SW1	SW2	Kvs	W [kg]
1 **2117** 01	15	40	1/2	60	27,5	38	25	19	5	0,252
1 **2117** 02	20	40	3/4	68	30,5	41	31	19	8	0,362
1 **2117** 03	25	40	1	81	38	48,5	41	20	12,5	0,670
1 **2117** 04	32	25	5/4	95	41,5	52	51	20	20	1,088
1 **2117** 05	40	25	6/4	106	47	57,5	55	20	32	1,494
1 **2117** 06	50	25	2	127	54,8	65,3	70	20	50	2,613

Without handle

Order number	DN	PN	Rp	L	H1	H2	SW1	SW2	Kvs	W [kg]
1 **2117** 11	15	40	1/2	60	27,5	38	25	19	5	0,252
1 **2117** 12	20	40	3/4	68	30,5	41	31	19	8	0,362
1 **2117** 13	25	40	1	81	38	48,5	41	20	12,5	0,670
1 **2117** 14	32	25	5/4	95	41,5	52	51	20	20	1,088
1 **2117** 15	40	25	6/4	106	47	57,5	55	20	32	1,494
1 **2117** 16	50	25	2	127	54,8	65,3	70	20	50	2,613

Handle

The handle 1 2100 90 can be ordered separately. It fits to all dimensions from DN15 to DN50. It is used when the valve does not need an actuator.



Material

Body:	forged brass acc. to EN12165
Ball:	forged brass acc. to EN12165, V-form drill hole, hard chrome plated, DZR
Spindle:	machined brass acc. to EN12164, CW614N
Spindle sealing:	O-Ring double (EPDM)
Spindle seat:	Teflon (PTFE)
Locking sleeve:	Brass
Locking sleeve gasket:	O-Ring double (EPDM)
Connections:	Female thread according to ISO 7-1
Ball seals:	PTFE with EPDM

Operating data

Max. operating pressure:	DN15 - DN25: PN40 DN32 - DN50: PN25
Permanent temperature load:	from -10 °C to 110 °C
Angle of working stroke:	90 °
Max. short-term temp. load:	130

Medium:

Heating water quality according to ÖNORM H5195 or VDI-Standard 2035. The use of ethylene or propylene glycol in a mixing ratio 25- 50% is allowed. Please refer to manufacturers documentation when using ethylene glycol products for frost and corrosion protection. Please note that EPDM gaskets will be affected by Mineral oils lubricants and thus lead to failure of the EPDM seals in the valves that use EPDM seals. HERZ ball valve for heating and chilled water is not suitable for usage of agressive medium (such as: acids, alkalis, combustible and explosive gases) because it can destroy sealing components.

Field of application

The ball valve is used with or without an actuator in heating and cooling systems for infinitely variable control for the supply of cold and hot water or air in closed circulation circuits. Herz ball valve with characteristic DZR is made of CW602N; this material has the properties of dezincification-resistant brass. The spindle of the valve can easily be connected to the actuator. The synchronization characteristic of the ball made of forged brass is integrated on the valve. The sealing of the ball is ensured by the PTFE sleeve in the housing. These O-rings allow the ball and both sleeves a small axial movement, which enables a high level of tightness and low torques. The tightness of the spindle is guaranteed by 2 O-rings.

Installation instructions

Flow direction is marked with an arrow on the valve. As part of a power drive, hanging mounting is not recommended due to the possibility of water ingress into a power drive.

Spare parts

1 **7712** 33	Rotary drive, 2-point or 3-point, 230 V/AC
1 **7712** 35	Rotary drive, modulating 0 – 10 V, 24 V/AC/DC.

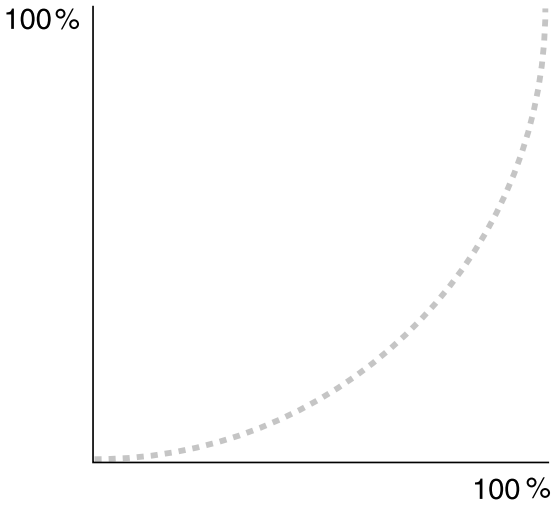
Disposal instruction

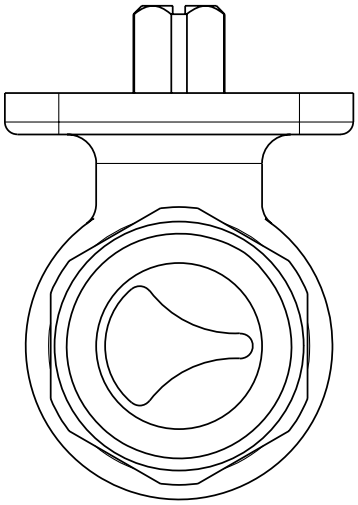
The disposal of HERZ ball valves for heating and chilled water must not endanger the health or the environment. National legal regulations for proper disposal of the HERZ ball valves for heating and chilled water have to be followed.

Brass

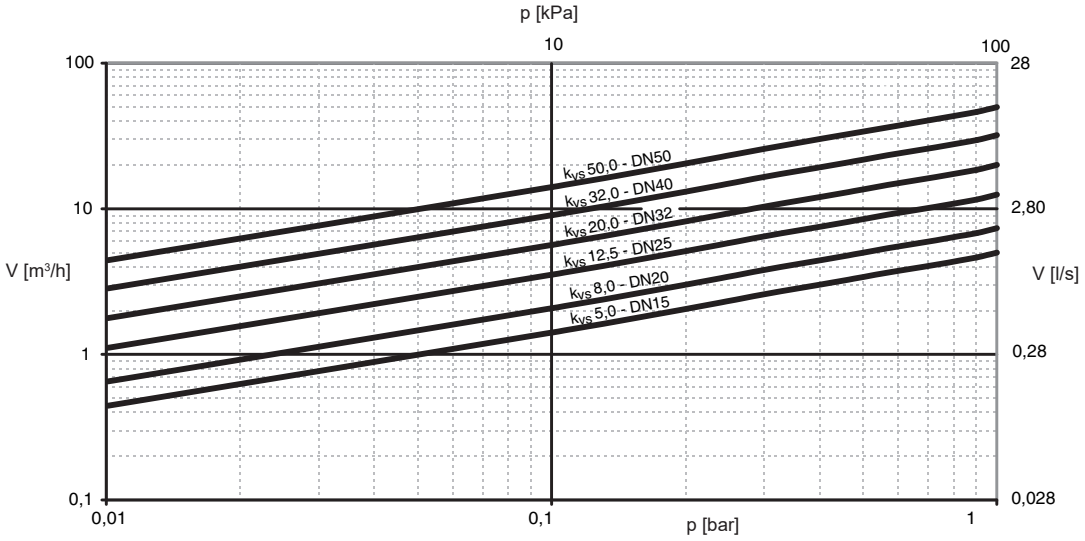
HERZ use top-quality brass that responds to the latest European norms DIN EN 12164, DIN EN 12165 and DIN EN 1982.
Pursuant to Article 33 of the REACH Regulation (EC No. 1907/2006), we are obliged to point out that the material lead is listed on the SVHC list and that all brass components manufactured in our products exceed 0.1% (w / w) lead (CAS: 7439-92-1 / EINECS: 231-100-4). Since lead is a component part of an alloy, actual exposure is not possible and therefore no additional information on safe use is necessary.

Characteristics



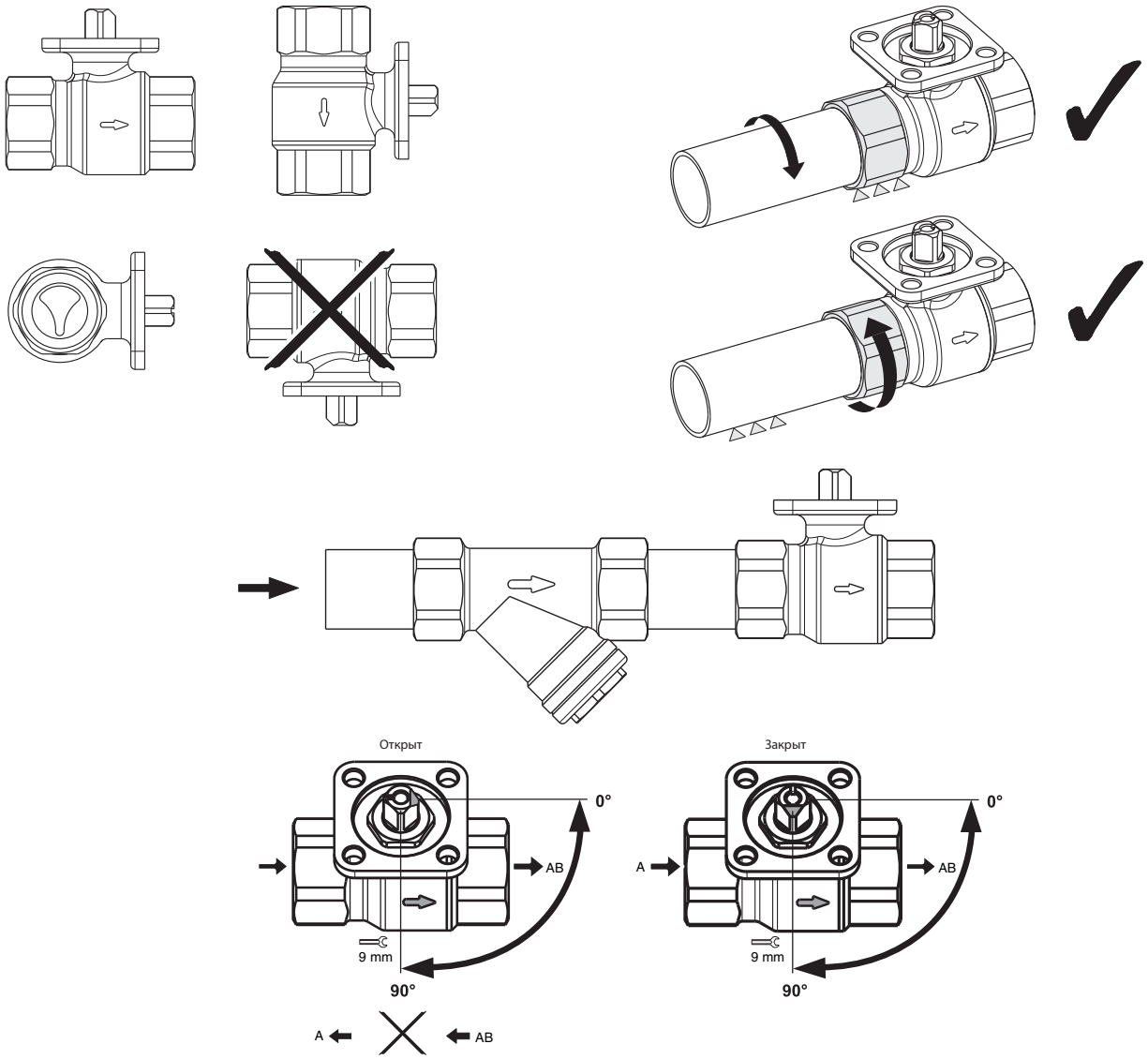


Flow diagram

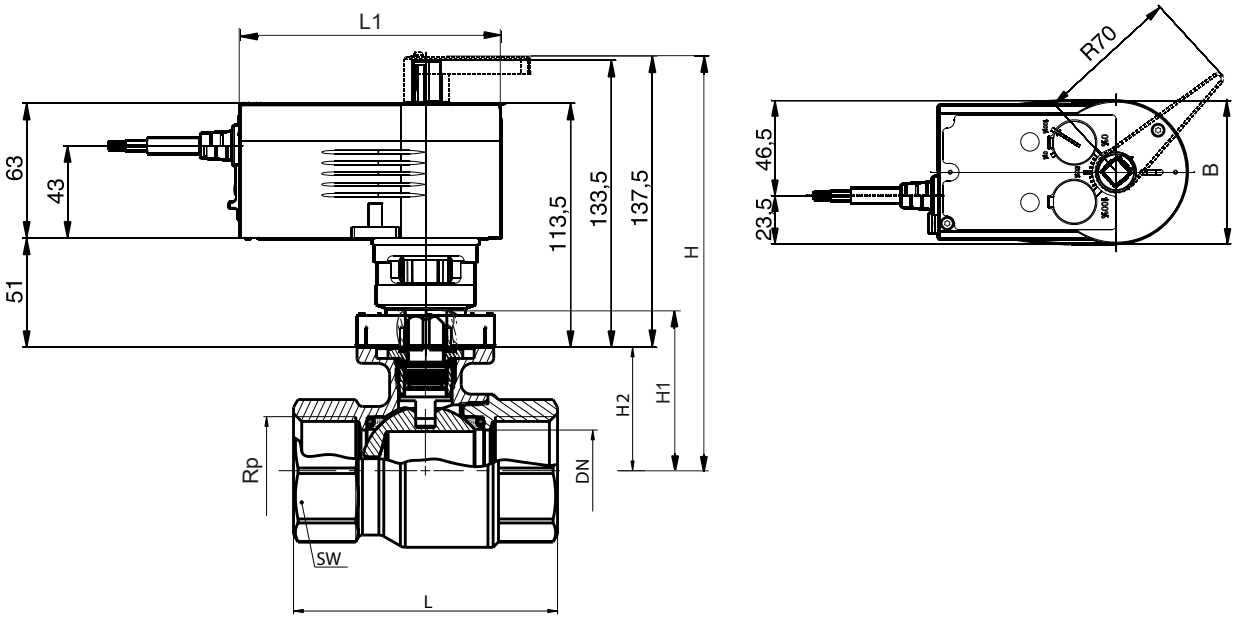


Assembly instructions

Direction of flow is marked on the valve with arrow. As part of a motor drive, the assembly in hanging position is not recomended due to the possibility of water breaking into a motor drive.



Installation



1 **7712** 33 and 1 **7712** 35 have the same dimensions. The installation dimensions depend on the DN of the used ball valve.

DN	Rp, in	L, mm	L1, mm	H, mm	H1, mm	H2, mm	B, mm	SW
15	1/2	60	122	137	38	28	70	25
20	3/4	68	122	140	41	31	70	31
25	1	81	122	147	49	38	70	41
32	1 1/4	95	122	151	52	42	70	50
40	1 1/2	106	122	156	58	47	70	55
50	2	127	122	164	65	55	70	70

Models

1 **7712** 33:

- For controllers with a switching output (2-/3-point control)
- Fitted to ball valves up to DN 50 without the need to use tools
- Synchronous motor with electronic activation and cut-out
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the ball valve manually (using the lever)
- Bracket and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve
- Fitting vertically upright to horizontal, not suspended

1 **7712** 35:

- For controllers with constant output (0...10 V) or switching output (2-/3-point control)
- Assembly with ball valve without the use of tools
- Stepping motor with SUT electronic control unit
- Electronic force-dependent motor cut-off
- Automatic recognition of applied control signal (continuous or switched)
- Coding switch for selection of characteristic and running time (35 s, 60 s, 120 s)
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Direction of operation can be selected directly on the cable
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the ball valve manually (using the lever)
- Bracket and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve

Technical data

General	
Ambient conditions	
Admissible ambient temperature	–10...55 °C
Admissible ambient humidity	5...95% rF without condensation
Temperature of medium	Max. 100 °C
Construction	
Weight	0,7 кг
Housing	Lower section black, upper section red
Housing material	Fire-retardant plastic
1 **7712** 33:	
Power supply	
Supply voltage 230 V~	±15%, 50...60 Hz
Power cable	1,2 m, 3 × 0,75 mm2
Response time	Min. 200 ms
Angle of rotation	90°
Control	2-/3-point
Standards and directives	
Type of protection	IP 54 acc. to EN 60529
Protection class	II acc. to IEC 60730
Over-voltage categories	III
Degree of contamination	II
CE conformity according	to Directive 2006/95/EC EN 60730-1/EN 60730-2-14 EMV Directive 2004/108/EC EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
1 **7712** 35:	
Supply voltage 24 V~	±20%, 50...60 Hz
Supply voltage 24 V=	–10%...20%
Power consumption	5,4 W/9,5 VA
Runnning time	35/60/120 s
Angle of rotation	90°
Response time	200 ms
Power cable	1,2 m, 5 × 0,5 mm²
Positioning signal y	0...10 V, Ri > 100 kΩ
Positioning feedback signal	0...10 V, Load > 10 kΩ
Starting point U0	0 V or 10 V
Control span ΔU	10 V
Switching range Xsh	200 mV
Installation	vertically upright to horizontal, not suspended

Standards and Directives			
Type of protection		IP54 nach EN 60529	
Protection class		III nach IEC 60730	
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3	
	EN 61000-6-4	Directive 2006/95/EG	Machine directive (EN 1050)

Description of operation

1 **7712** 33:

When voltage is applied to the cable, the control unit to be activated is moved to any desired position by means of the carrier stem.

Direction of rotation for 3-point control (viewing the spindle of the ball valve from the actuator):

- The stem turns in the anti-clockwise direction, with the voltage on the brown cable, and the through passage of the ball valve is opened.
- The stem turns in the clockwise direction, with the voltage on the black cable, and the through passage of the ball valve is closed.

With 3-point control, the direction of rotation is changed by swapping the connections.

Direction of rotation for 2-point control (viewing the spindle of the ball valve from the actuator):

There is always voltage on the black cable.

- The stem turns in the anti-clockwise direction, with the voltage on the brown cable, and the ball valve is opened.
- The stem turns in the clockwise direction, with no voltage on the brown cable, and the ball valve is closed.

In the end positions (limit stop in actuator), or in the case of an overload, the magnetic coupling is activated. The positioning signal is switched off by the electronic cut-out after 3 minutes. The manual adjustment is performed by releasing the gear unit (slide switch beside the connection cable) and simultaneously turning it with the lever. The actuator position can be determined by looking at the lever or the indicator knob on the top part of the actuator.

1 **7712** 35:

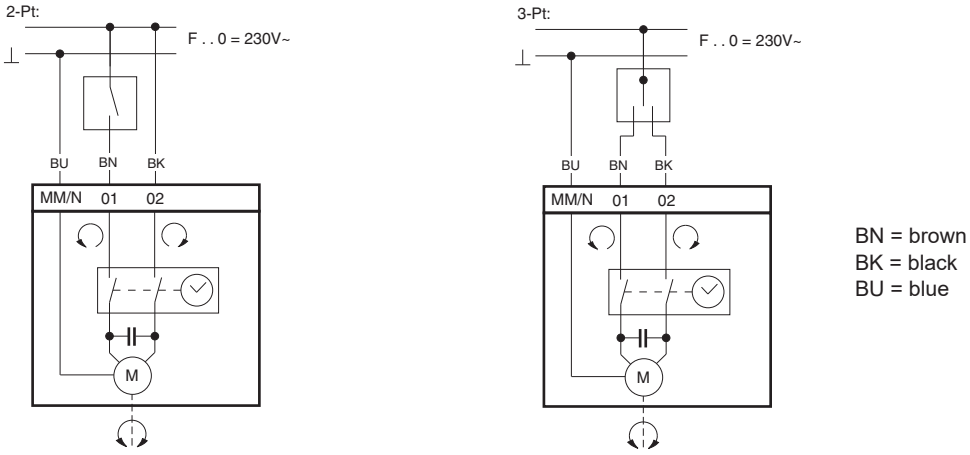
Depending on the type of connection (see connection diagram), the actuator can be used as a continuous 0...10 V, 2-point (OPEN/CLOSE) or 3-point actuator with an intermediate position (OPEN/STOP/CLOSE). The running time of the actuator can be set with the coding switch according to requirements. The coding switch can be used to select the equal-percentage, linear or quadratic characteristic. The HERZ rotary actuator 1 **7712** 35 is combined with ball valves that have an equal-percentage basic characteristic. The manual adjustment is performed by releasing the gear unit (slide switch beside the connection cable) and simultaneously turning it with the lever. The actuator position can be determined by looking at the lever or the indicator knob on the top part of the actuator.

Note: After manually adjusting the slide switch, put it back into its original position (engage gear unit).

Additional technical data

The upper section of the housing with the cover, indicator knob and cover knob contains the stepping motor and the SUT electronics. The lower section of the housing contains the maintenance-free gear unit.

Connection diagram



1 **7712** 35:

Connection as 2-point actuator

This OPEN/CLOSE activation can be performed via 2 cables. The actuator is connected to the voltage via the blue and brown cables. The control passage of the ball valve is opened by connecting the voltage to the black cable. After this voltage is switched off, the actuator moves to the opposite end position and closes the ball valve.

The unused red and grey wires must not be connected or come into contact with other cables. We recommend that you insulate these.

Connection as 3-point control unit

When voltage is applied to the cable (brown or black), the ball valve is moved to any desired position.

Direction of rotation (viewing the spindle of the ball valve from the actuator):

- The stem turns in the clockwise direction, with voltage on the brown cable, and closes the ball valve.
- The stem turns in the anti-clockwise direction, with the voltage on the black cable.

In the end positions (limit stop in actuator, max. angle of rotation of 95° reached) or in the case of an overload, the electronic motor cut-off is activated (no limit switches). Direction of rotation changed by transposing the connections.

The unused red and grey wires must not be connected or come into contact with other cables. We recommend that you insulate these.

Connection for control voltage 0...10 V

The built-in positioner controls the actuator depending on controller's output signal y. Direction of rotation (viewing the spindle of the ball valve from the actuator):

Direction of operation 1 (mains power supply on brown cable):

When the positioning signal is increasing, the carrier stem turns in the anti-clockwise direction and opens the control passage of the ball valve.

Direction of operation 2 (mains power supply on black cable):

When the positioning signal is increasing, the carrier stem turns in the clockwise direction and closes the control passage of the ball valve.

The starting point and control span are fixed. Only the brown cable or the black cable may be connected to the voltage. The cable not used must be insulated (if not connected via switch).

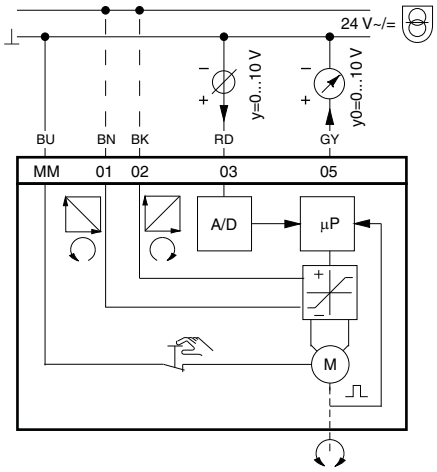
After a manual adjustment or a power failure of more than at least 5 min, the actuator automatically readjusts itself, always with a running time of 60 s.

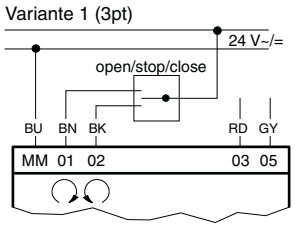
After the power supply is connected, the stepping motor moves to the 100% position, makes the connection with the carrier stem, and then moves to the 0% position and thus defines the working range. After this, every position between a 0 and 90 ° angle of rotation can be achieved, depending on the control voltage. Thanks to the electronics, no steps can be lost, and the actuator does not require periodic re-adjustment. It is possible to operate multiple actuators of the same type in parallel. The feedback signal y0 = 0...10 V corresponds to the effective angle of rotation of 0…90°.

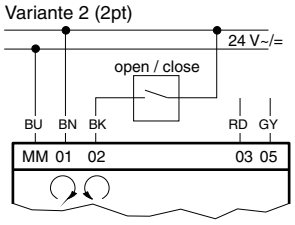
When control signal 0…10 V is interrupted and direction of operation 1 is connected, the ball valve is closed completely (0% position).

The coding switch can be used to select the characteristic of the ball valve. Characteristics can only be generated when the actuator is used as a continuous actuator. The running times can be selected with additional switch settings. These can be used regardless of whether the 2-point, 3-point or continuous function is selected

Connection diagram



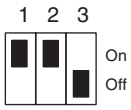
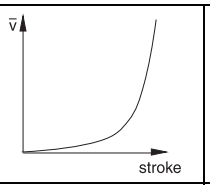
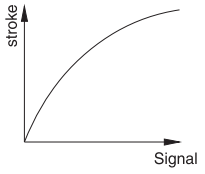
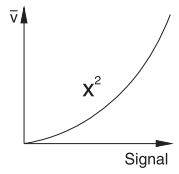
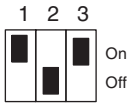
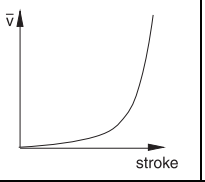
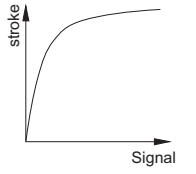
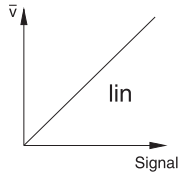
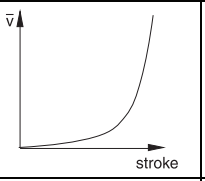
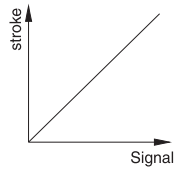
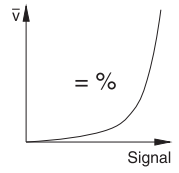
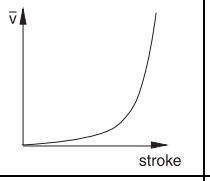
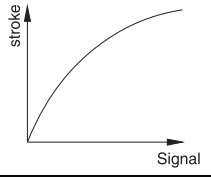
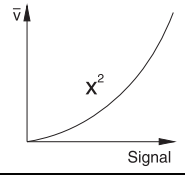
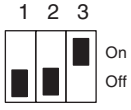
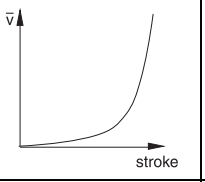
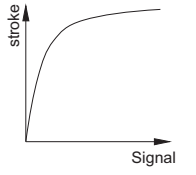
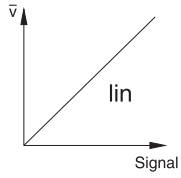
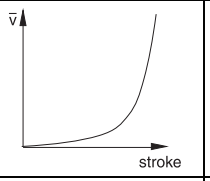
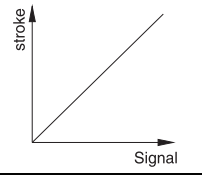
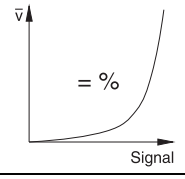
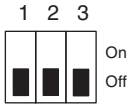
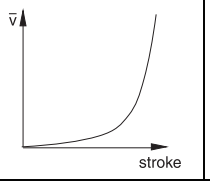
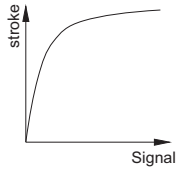
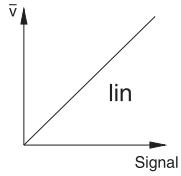




RD = red
BN = brown
BK = black
BU = blue
GY = grey

Coding switch for running time and characteristic selection

switch position	Y01955	Y07552	Y01852	running time/angle of rotation s/90°
1 2 3 On Off	v̄ stroke	stroke Signal	v̄ = % Signal	120 s ± 4

				120 s ± 4
				120 s ± 4
				60 s ± 2
				60 s ± 2
				60 s ± 2
				35 s ± 1
				35 s ± 1

Notes on engineering and installation

Condensate, dripping water, etc. must be prevented from entering the actuator along the carrier stem. When connecting the electricity supply, ensure that the cross-section of the power cable is adapted to the power output and the length. However, we recommend a minimum cross-section of 0.75 mm². The actuator/ball valve is mounted by inserting and turning the bayonet ring until the limit stop without any additional adjustment. No tools are required. The coupling of the spindle of the ball valve with the carrier stem is performed automatically, either by moving the manual adjuster to an angle of rotation of 100% or connecting the voltage. For dismantling, the bayonet ring is simply opened and the actuator removed. The device is delivered ex works in the middle position.

The concept of stepping motor and electronics enables parallel operation of multiple actuators of the same SUT type.

The coding switches are accessible via an opening with a black cover in the housing lid.

Note The housing must not be opened.

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