Mixing valves 3- and 4-way Series G

3 G and 4G, DN 20-50, cast iron, PN 6. Internal thread.

Valves designed for	● Heating	● Comfort Cooling	○ Potable water	○ Zone	○ Ventilation	○ District Hotwater	○ District Heating	○ District Cooling

Operation

The ESBE series G is a compact mixing valve made of cast iron for use in heating and cooling installations.

The mixing proportions are adjusted manually with a handle or, in automatically controlled plants, by means of an actuator. Suitable actuators are ESBE series 60 or series 90.

Valves series G is available in dimensions DN 20-50 with internal threaded connections (ISO 7/1 Rp).

The scale is graduated on both sides and can be turned, allowing a choice of mounting positions. Operation angle = 90°.

Service and maintenance

All major parts are replaceable. The shaft seal consist of two o-rings, one of which can be replaced without the need for draining down the system or dismantling the valve. But before doing so, the pressure in the system must be de-pressurised.

Required actuator torque

The figures below are only as a recommendation for ordinary installations. In some applications the valve may require even more actuator torque.

Valve size up to . . . . . DN 25 . . . actuator torque 3 Nm
. . . . . DN 50 . . . . . 5 Nm

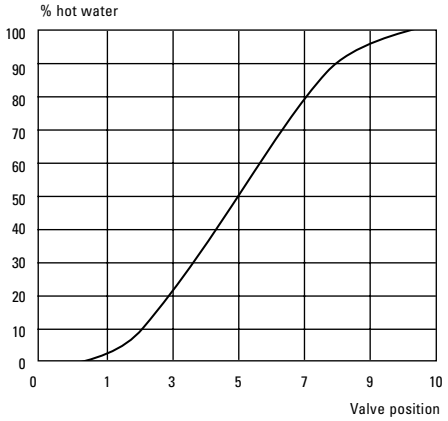
Material

Valve body: . . . . . Cast iron EN-JL 1030
Slide: . . . . . DN 20-40, brass CW 614N
. . . . . DN 50, brass CW 614N and stainless steel
Bushing: . . . . . DN 20-40, plastic
. . . . . DN 50, brass CW 602N
Cover plate: . . . . . DN 20-40, zinc
. . . . . DN 50, cast iron
O-rings: . . . . . EPDM

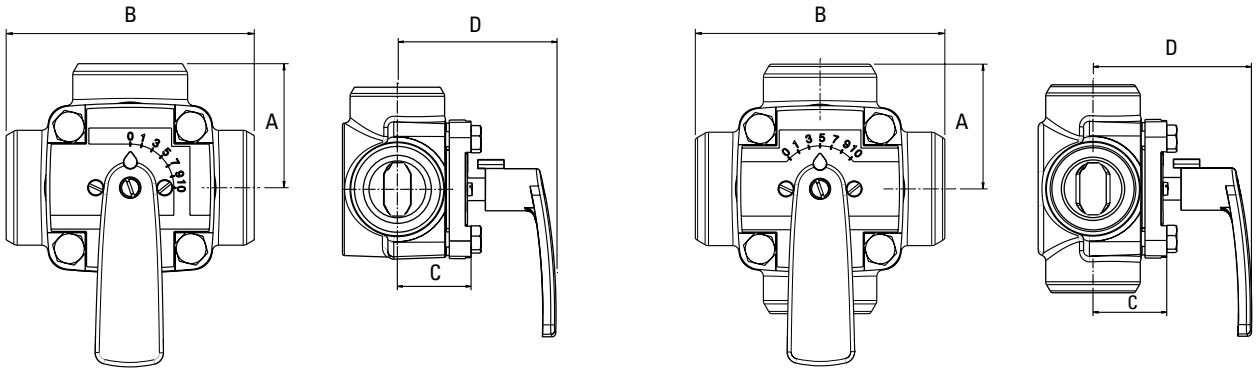
Technical Data

Pressure class: . . . . . PN 6
Max. temperature: . . . . . 110°C
Min. temperature: . . . . . -10°C
Max. differential pressure drop . . . . . 50 kPa
Leakrate in % of flow: . . . . . Mixing max. 1.0%
. . . . . Diverting max. 0.5%
Rangeability $Kv/Kv^{min.}$: 100
Connection: . . . . . Internal thread, ISO 7/1

Valve Characteristic



Mixing valves 3- and 4-way Series G



Dimensions, 3-way

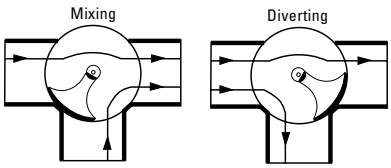
Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]
1105 01 00	3 G 20	20	8	Rp 3/4	52.5	105	39	81	1.6
1105 02 00	3 G 25	25	12	Rp 1	54	108	39	81	1.8
1105 03 00	3 G 32	32	18	Rp 1 1/4	57.5	115	39	81	2.2
1105 04 00	3 G 40	40	28	Rp 1 1/2	60	120	39	81	2.5
1105 06 00	3 G 50	50	44	Rp 2	78	156	46	89	4.4

Dimensions, 4-way

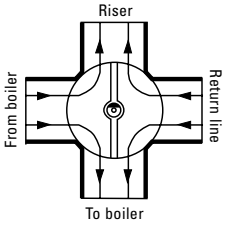
Art. No.	Reference	DN	Kvs*	Connection	A	B	C	D	Weight [kg]
1105 08 00	4 G 20	20	8	Rp 3/4	52.5	105	39	81	1.7
1105 10 00	4 G 25	25	12	Rp 1	54	108	39	81	2.0
1105 13 00	4 G 32	32	18	Rp 1 1/4	57.5	115	39	81	2.4
1105 14 00	4 G 40	40	28	Rp 1 1/2	60	120	39	81	3.0
1105 16 00	4 G 50	50	44	Rp 2	78	156	46	89	5.0

* Kvs-value in m^3/h at a pressure drop of 1 bar. See flow chart on page 10.

3-way:
The flatsided spindle top (as same as the indicator of the knob) points towards the center of the spindle.

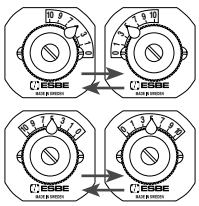


4-way:
The flatsided spindle top (as same as the indicator of the knob) is in line with the partition of spindle.

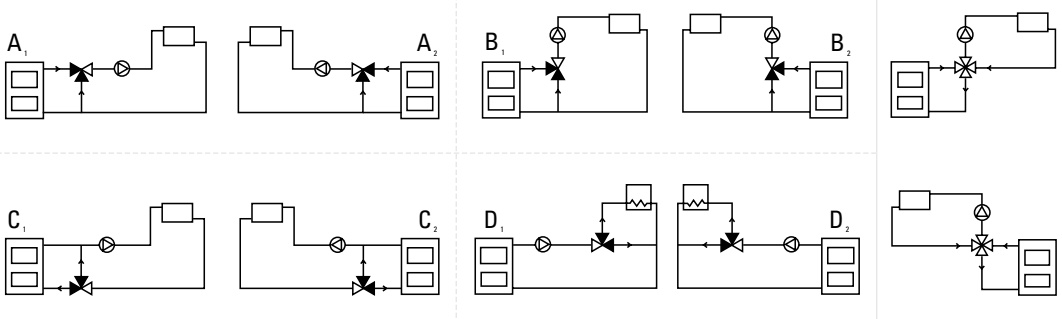


Example of installations

All the examples of installations can be reversed. The valve position plate is graduated on both sides and shall at the installation be fitted in the correct position as shown in the instruction for installation.



3-way, A–D | 4-way



Modulating rotary actuator in connection with a mounting kit for the motorisation of the most common mixing valves in HVAC systems

- **Torque 10 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Modulating**

Technical data

Electrical data	Nominal voltage		AC 24 V, 50/60 Hz / DC 24 V
	Power supply range		AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V
	Power consumption	In operation	1.5 W at nominal torque
		For wire sizing	2.5 VA
	Connection		Terminals 4 mm^2 (cable Ø 6 ... 8 mm, three-core)
	Parallel connection		Yes (Note performance data for supply!)
Functional data	Torque (nominal torque)		Min. 10 Nm at nominal voltage
	Control	control signal Y	DC 0 ... 10 V, Input resistance 100 kΩ
		operating range	DC 2 ... 10 V for 0 ... 90°∢ (can be switched to DC 0 ... 10 V)
	Position response (measuring voltage U)		DC 2 ... 10 V, max. 1 mA, for 0 ... 90°∢) (can be switched to DC 0 ... 10 V)
	Position accuracy		±5%
	Manual override		Temporary and permanent disengagement of the gearing latch by means of the rotary knob on the housing
	Running time		140 s / 90°∢
	Sound power level		Max. 35 dB (A)
	Position indication		Reversable scale plate 0 ... 1
Safety	Protection class		**III** Extra low voltage
	Degree of protection		IP40
	EMC		CE according to 89/336/EEC
	Mode of operation		Type 1 (to EN 60730-1)
	Rated impulse voltage		0.8 kV (to EN 60730-1)
	Control pollution degree		3 (to EN 60730-1)
	Ambient temperature range		0 ... +50°C
	Media temperature		+5 ... +120°C (in mixing body)
	Non-operating temperature		–30 ... +80°C
	Ambient humidity range		95% r.H., non-condensating (to EN 60730-1)
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 2
	Weight		Approx. 500 g

Safety notes

⚠

- **The actuator has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.**
- **It may only be installed by suitably trained personnel.**
  All applicable legal or institutional installation regulations must be complied with.
- **The device does not contain any parts that can be replaced or repaired by the user.**
- **To calculate the torque required, the specifications supplied by the mixing valve manufacturer must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Modulating rotary actuator AC/DC 24 V, 10 Nm

Product features

Mode of operation
The actuator is controlled with a standard signal of DC 0 ... 10 V and moves into the position defined by the control signal.

Simple direct mounting
Straightforward direct mounting with only one screw. The mounting position in relation to the mixing valve can be selected in 90° ◁ steps.

Manual operation
Manual operation possible by lever (temporary disengagement of the gearing latch by pressing, permanent disengagement by means of the rotary knob on the housing).

Functional reliability
The actuator switches off automatically when the end stops are reached.
The actuator switches off for seven seconds in the case of blocking, then attempts to restart.
If the blocked condition persists, the actuator attempts to restart once every two minutes a total of 15 times and subsequently once every two hours.

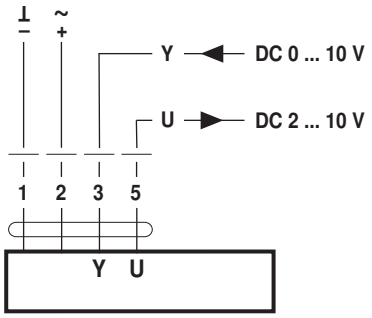
Accessories

	Description
Mechanical accessories	Mounting kits for ESBE, Termomix, Pommerening, Dumserwerk, Lovato, Landis & Staefa, Lazzari, Oventrop, Meibes, Wita, Holter, Satchwell and Centra mixing valves.

Electrical installation

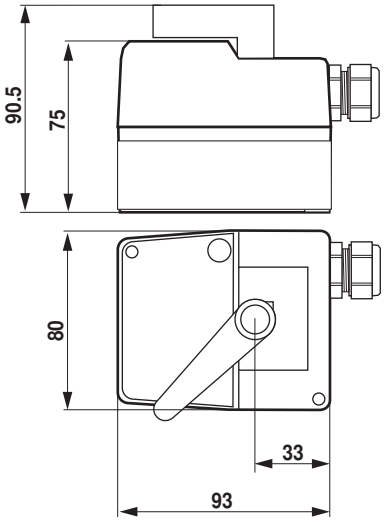
Wiring diagram

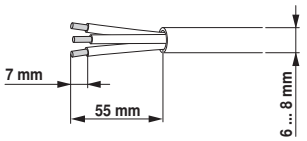
Notes
- Connect via safety isolation transformer.
- Parallel connection of several actuators possible. Power consumption must be observed!
- Factory setting: Operating range/Position feedback DC 2 ... 10 V (can be switched to DC 0 ... 10 V)



Dimensions [mm]

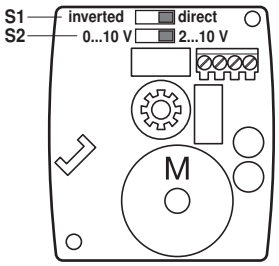
Dimensional diagrams



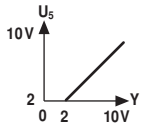
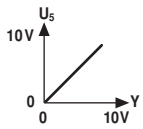


Adjusting switch S1 and S2

The S1 and S2 switches for setting the direction of rotation and the operating range/position feedback are located underneath the housing cover.



Switch S1	Direction of rotation	
Signal direct *	0	Y = 0%
Signal inverted	1	Y = 0%

Switch S2	Operating range/Position feedback
2 ... 10 V *	
0 ... 10 V	

* Factory setting

Dismounting the housing cover

Loosen the central screw at the black lever and remove the two Phillips screws of the housing cover.

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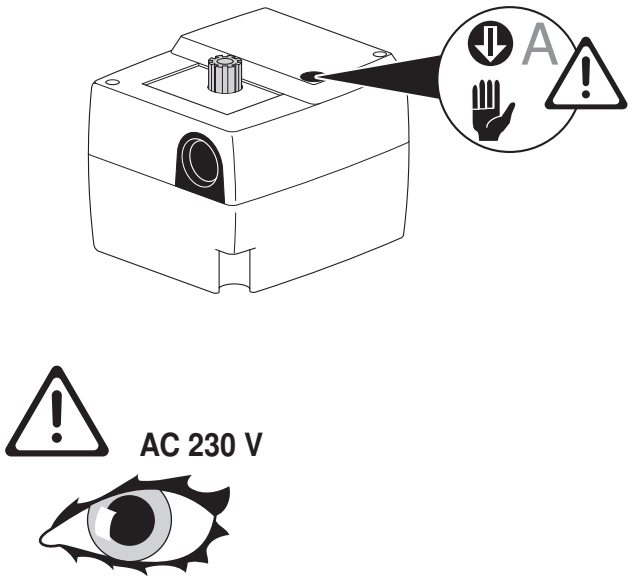

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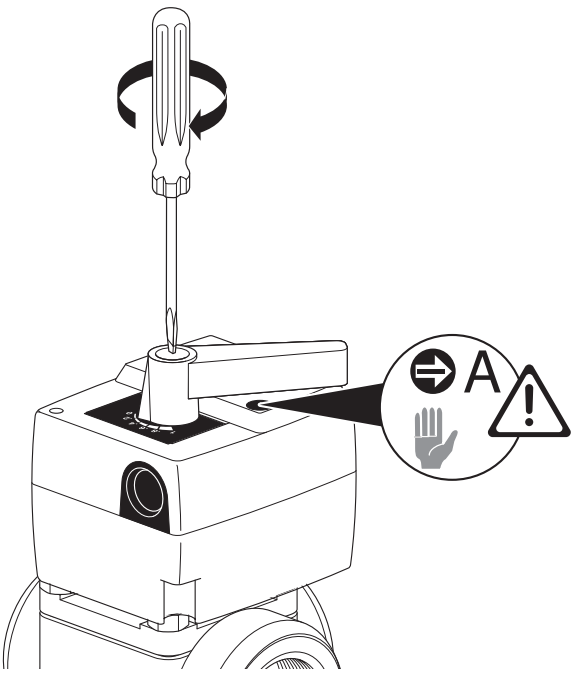

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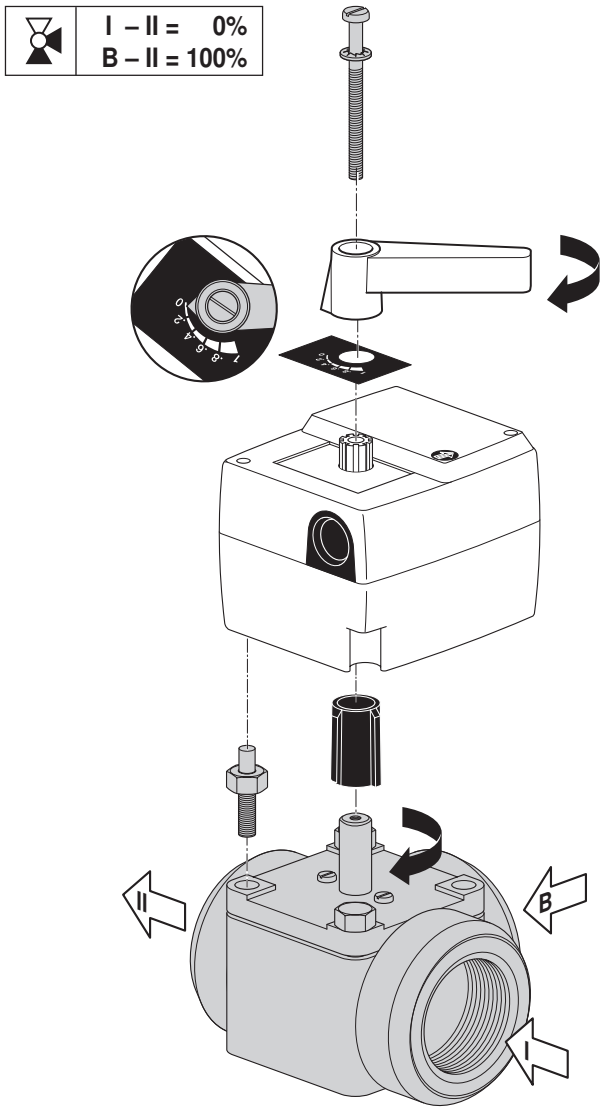
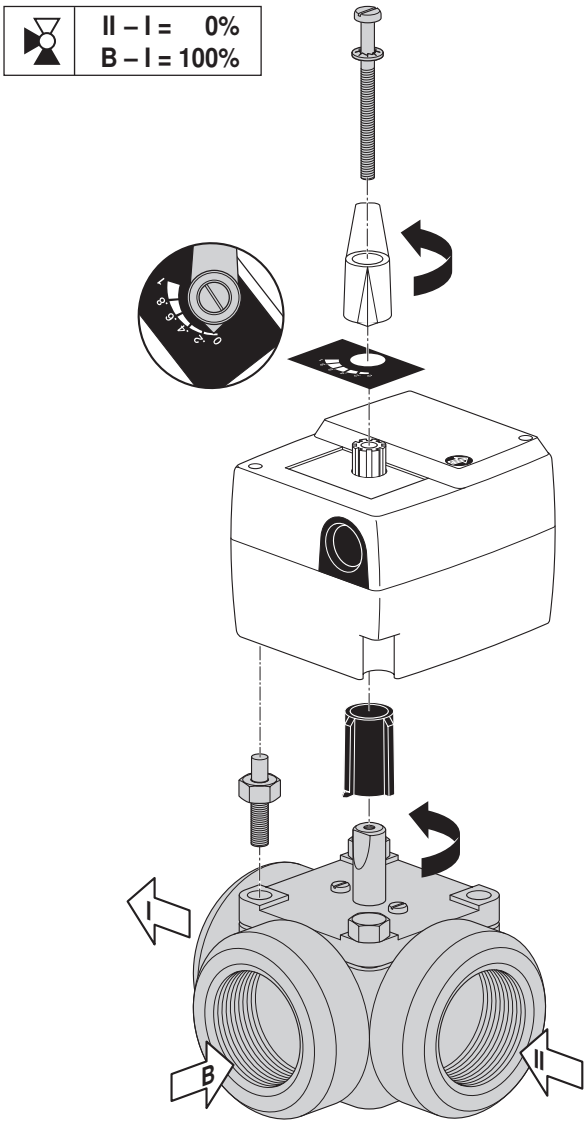
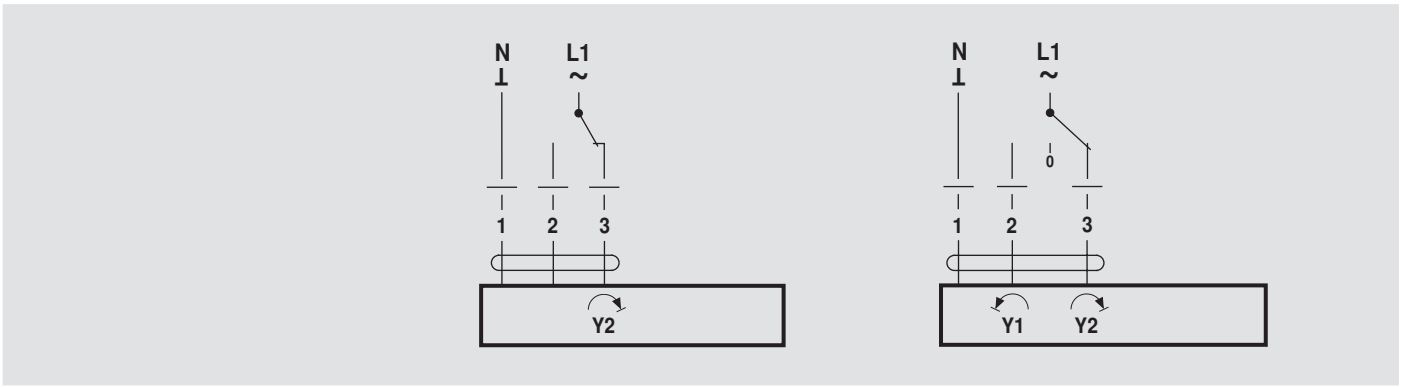
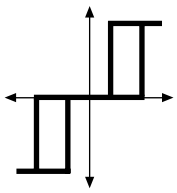
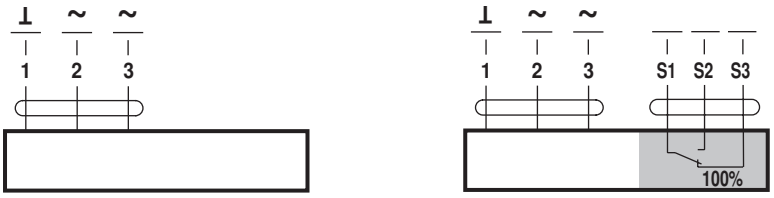








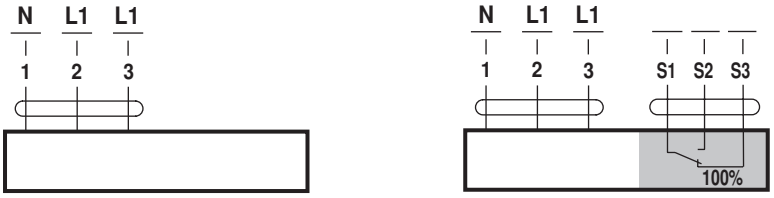
AC 24 V



HT..24-3-T

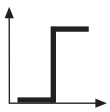
HT..24-3-S

AC 230 V ⚠

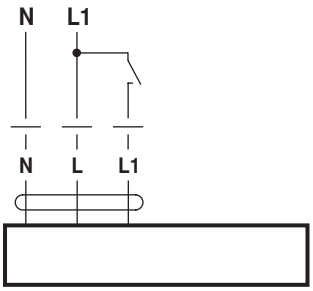


HT..230-3-T

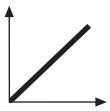
HT..230-3-S



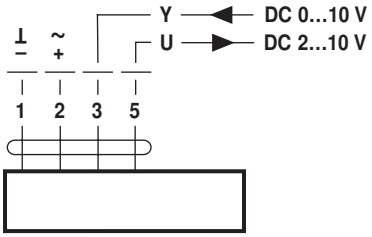
AC 230 V ⚠



HT..230-1-T



AC 24 V / DC 24 V



HT..24-SR-T

AC 230 V