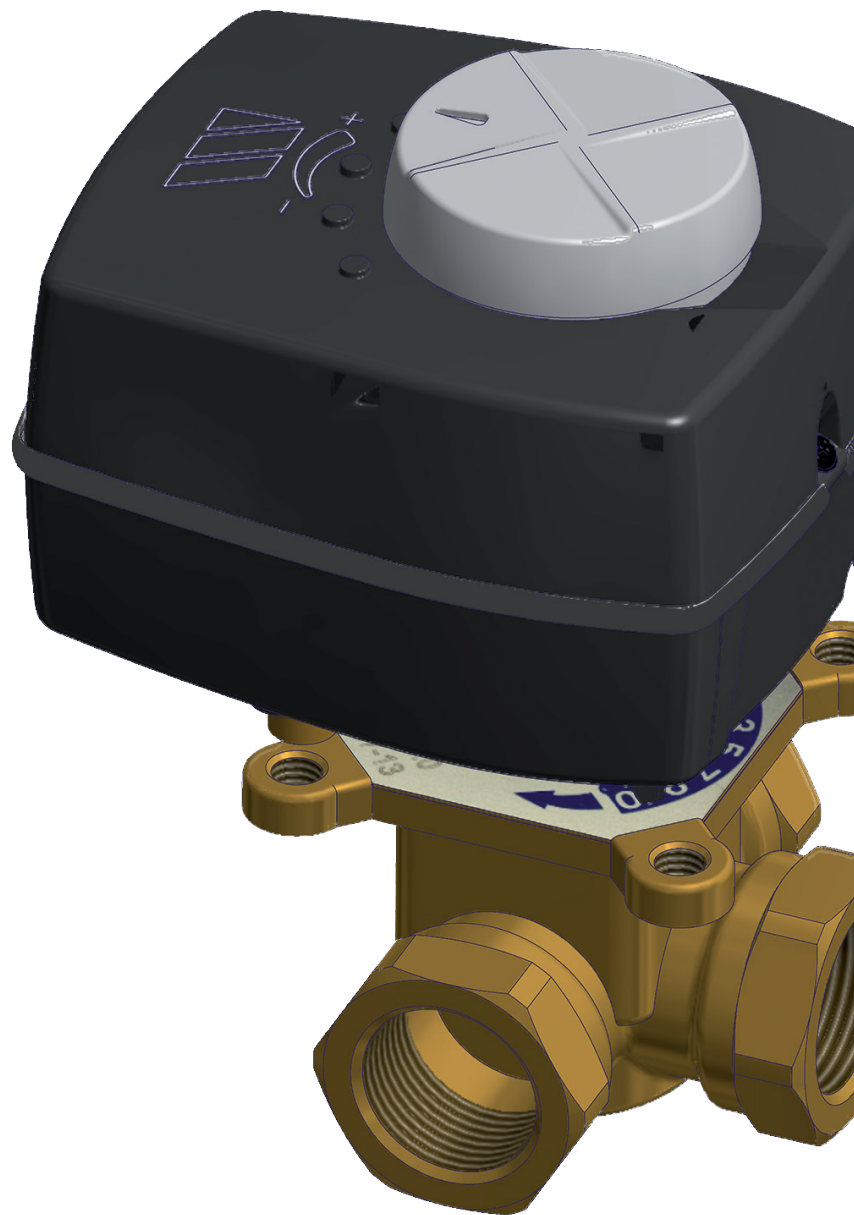


V3GB CLASSIC, V4GB CLASSIC Series

Three-way and Four-way sector mixing valves

Technical Data Sheet



Description

The three-way sector mixing valves **V3GB CLASSIC Series** and four-way **V4GB CLASSIC Series**, equipped with the 3-point actuator **WATTS CLASSIC Series**, are control valves for heating and cooling systems installed to optimize the use of the available energy.

V3GB CLASSIC

Three-way sector mixing valve equipped with 3-point actuator. Maximum working pressure 10 bar. Working temperature 0÷110°C. Brass body and rotor, EPDM gaskets. Threaded female connections from 1/2" to 2". Rotation angle of 90° in 120 seconds. Power supply 230 V, 50 Hz; power consumption 5 VA. Complete of 2 meters length electrical cable. Working also as diverting valve. Suitable for water with maximum glycol 50%.



Type	Part No.	DN	Kvs	Weight (kg)
V3GB CLASSIC	W3GB0015M60230	1/2"	2,5	1,07
V3GB CLASSIC	W3GB0204M60230	3/4"	4	1,14
V3GB CLASSIC	W3GB0206M60230	3/4"	6	1,13
V3GB CLASSIC	W3GB2508M60230	1"	8	1,29
V3GB CLASSIC	W3GB2512M60230	1"	12	1,27
V3GB CLASSIC	W3GB3215M60230	1.1/4"	15	1,66
V3GB CLASSIC	W3GB3218M60230	1.1/4"	18	1,63
V3GB CLASSIC	W3GB4026M60230	1.1/2"	26	2,67
V3GB CLASSIC	W3GB5040M60230	2"	40	2,92

V4GB CLASSIC

Four-way sector mixing valve equipped with 3-point actuator. Maximum working pressure: 10 bar. Working temperature 0÷110°C. Brass body and rotor, EPDM gaskets. Threaded female connections from 1/2" to 2". Rotation angle of 90° in 120 seconds. Power supply 230 V, 50 Hz; power consumption 5 VA. Complete of 2 meters length electrical cable. Suitable for water with maximum glycol 50%.



Type	Part No.	DN	Kvs	Weight (kg)
V4GB CLASSIC	W4GB0015M60230	1/2"	2,5	1,12
V4GB CLASSIC	W4GB0204M60230	3/4"	4	1,20
V4GB CLASSIC	W4GB0206M60230	3/4"	6	1,20
V4GB CLASSIC	W4GB2508M60230	1"	8	1,46
V4GB CLASSIC	W4GB2512M60230	1"	12	1,43
V4GB CLASSIC	W4GB3215M60230	1.1/4"	15	1,76
V4GB CLASSIC	W4GB3218M60230	1.1/4"	18	1,64
V4GB CLASSIC	W4GB4026M60230	1.1/2"	26	2,87
V4GB CLASSIC	W4GB5040M60230	2"	40	3,00

Technical Features

Maximum operating pressure	10 bar
Maximum operating temperature - valve	0÷110°C (rarely -20÷130°C)
Maximum operating temperature - actuator	-5 ÷55°C
Compatible fluids	Water, water with maximum glycol 50%
Rotor leakage	< 0,1%
Actuator action	3-points
Rotating angle	90°
Running time	120 seconds ± 5%
Nominal torque	6 Nm
Power supply	230 VAC ±10%
Frequency	50 Hz
Power consumption	5 VA
Protection class	IP 41
Electrical Protection class	II

Features

Valve Body	from 1/2" to 1.1/4" - Brass CW617N from 1" 1/2 to 2" - Brass CB753S
Rotor	Brass CW617N
Sealing	EPDM
Casing	ABS
Other components	Engineered polymers
Connections	Female threaded connection EN 10226-1

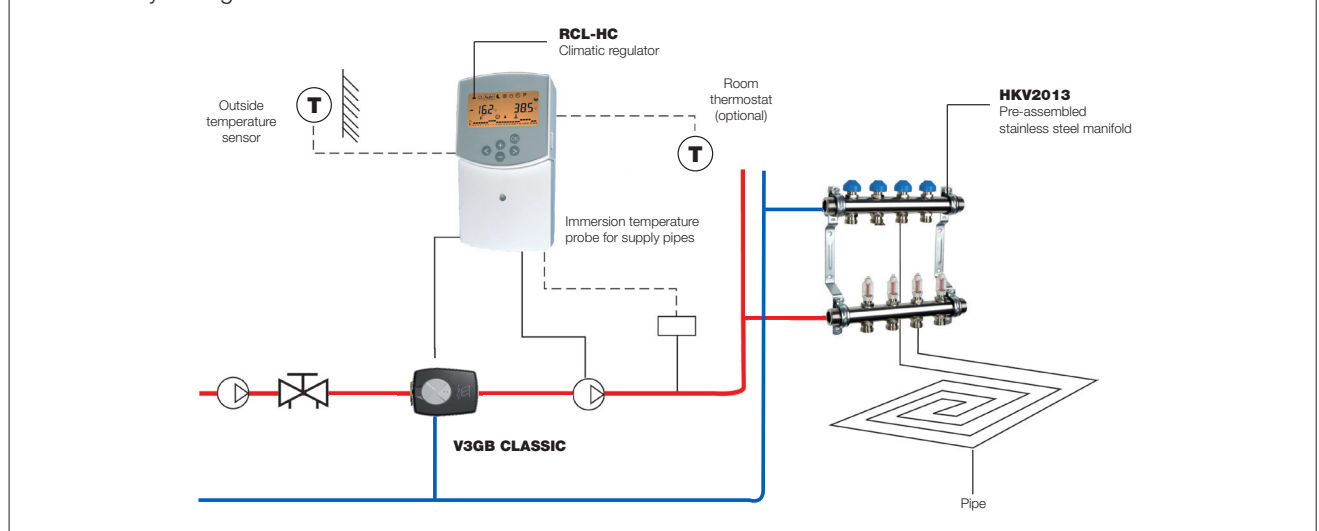
Operation and application

The three-way and four-way mixing valves are control devices with the function to regulate the mix of two fluids with different temperatures (typically hot and cold water). The scope is to obtain a fluid downstream of the valve with the temperature required from the system. The mix of the two inlet fluids is across the shaped brass rotor that by rotating changes section ports of the fluids. The mixed fluid flow rates are proportional to the rotation angle of the rotor. These valves can be used in any application where is required to regulate the temperature of a fluid.

Some typical application are:

- Delivery temperature regulation of centralized heating/cooling systems.
- Temperature regulation in function of the outside temperature of heating systems with the climatic regulation (see the following graphic).
- Adjustment of the water circuit in the plants with a boiler, with solar boiler or exchanger.

In this graphic is represented a sample of application with the modulating climatic regulation to control the radiant panel water temperature in function of the outside temperature obtained with the climatic regulator Climatic Control **RCL-HC Series** and the three-way mixing valve **V3GB CLASSIC Series**.



Depending on the three-way valves **V3GB CLASSIC Series** are connected can work both as mixing valves and as diverting valves.

V3GB as diverting valve (figure 1)

The inlet flow rate (2) is divided in two (1 and 3) in function of the angular position of the rotor. Running the actuator will **regulate the flow rates** (1 and 3) downstream the valve.

V3GB as mixing valve (figure 2)

V3GB as mixing valve (figure 2)

The outlet flow rate (2) is the sum of the inlet flow rates (1 and 3) that are mixed in function of the angular position of the rotor. Running the actuator will **regulate the temperature** of the fluid (2) downstream the valve.

V4GB as mixing valve (figure 3)

The flow rate outgoing from the way marked with the pump symbol (▲) the system delivery, is the mix of the flow rates coming from the boiler (1) and the return of the system (2); the flow rate (3) is the return to the boiler. Since the angular position of the rotor determines the mixing rate of all the fluids, this valve can be used to **regulate the delivery temperature** to the system (▲), or to regulate the temperature of the boiler inlet (as anti-condensing valve for solid fuel fired boiler).

The four-way valve Series V4GB functions also as hydraulic switch between primary and secondary circuits.

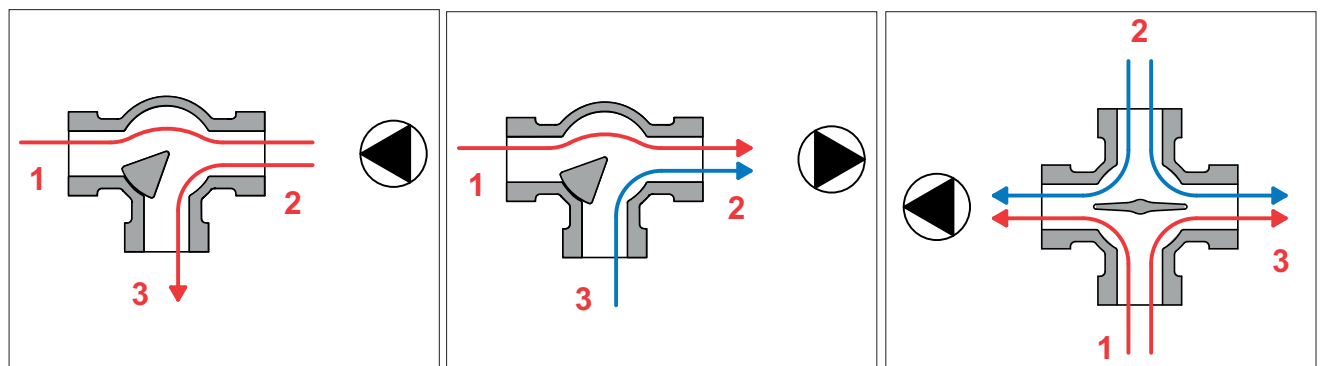


Fig.1 - 3-way diverting valve

Fig.2 - 3-way mixing valve

Fig.3 - 4-way mixing valve

The three-way valves **V3GB CLASSIC Series** and the four-way valves **V4GB CLASSIC Series** are equipped with the three-point actuator **WATTS CLASSIC Series** that it can both automatically or manually operate.

Automatic operating

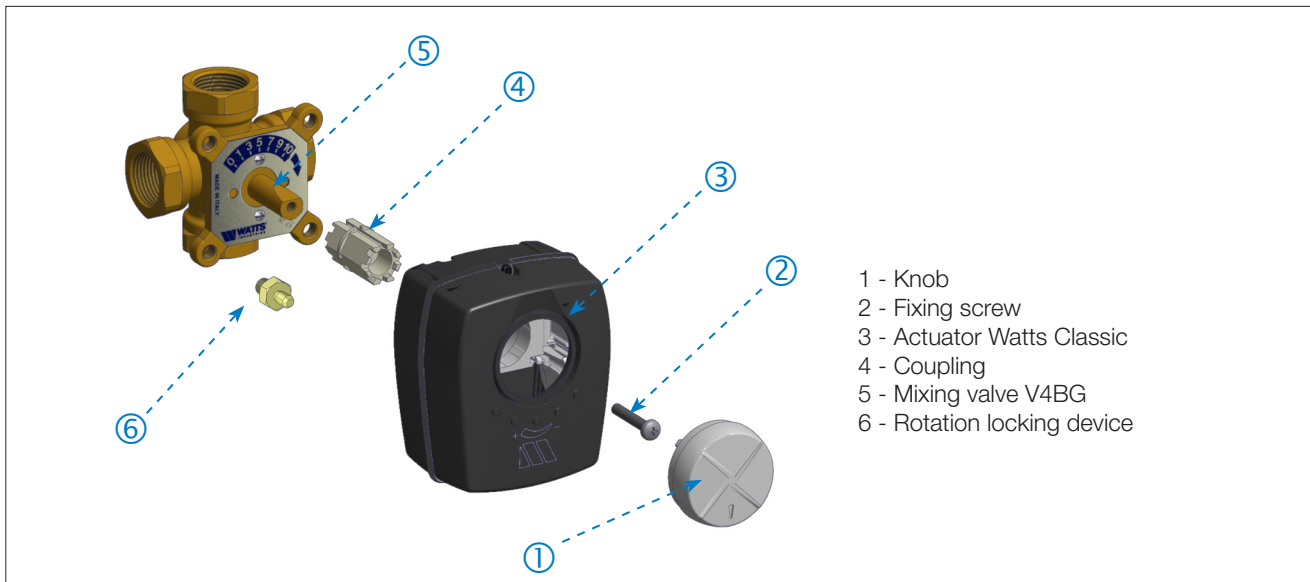
When the voltage is applied between blue and brown cable, the actuator shaft rotates clockwise and it automatically stops at the end of the stroke (Fig.1=100% of the inlet flow rate 2 is diverted to 3).

When the voltage is applied between blue and black cable, the actuator shaft rotates counter-clockwise and it automatically stops at the end of the stroke (Fig.1=100% of the inlet flow rate 2 is diverted to 1).

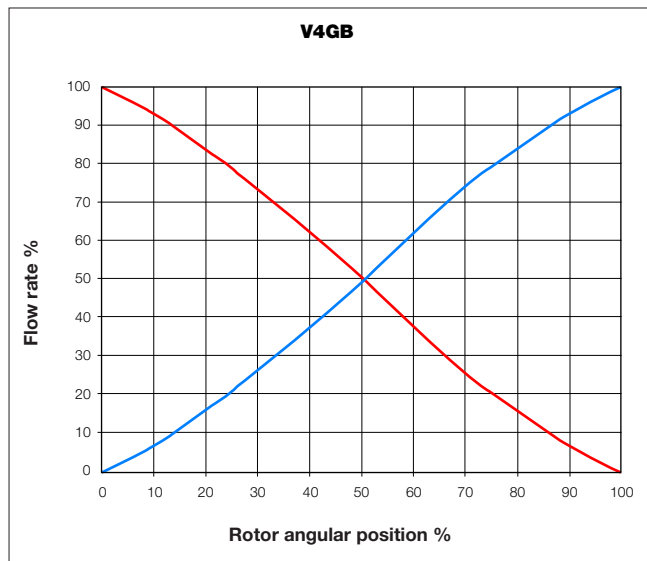
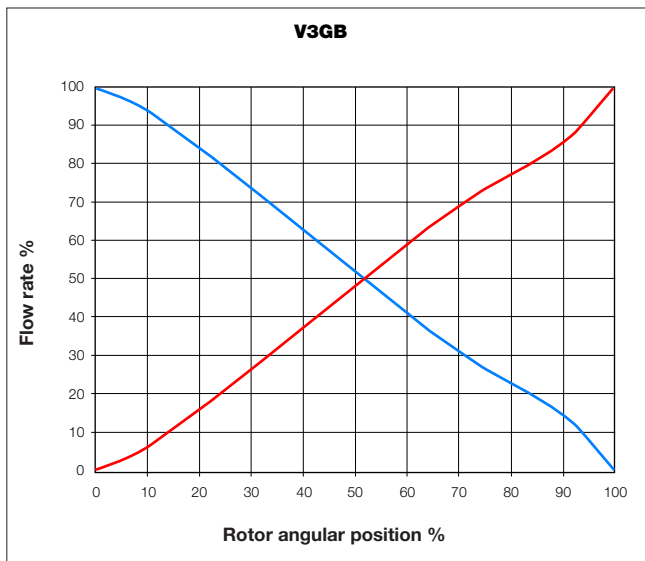
When the voltage is not applied, the actuator remains in its position.

Manual operating

By extracting one step the knob, the gearbox is by-passed and the actuator (valve) shaft can be directly moved rotating the knob by hand.



Charts

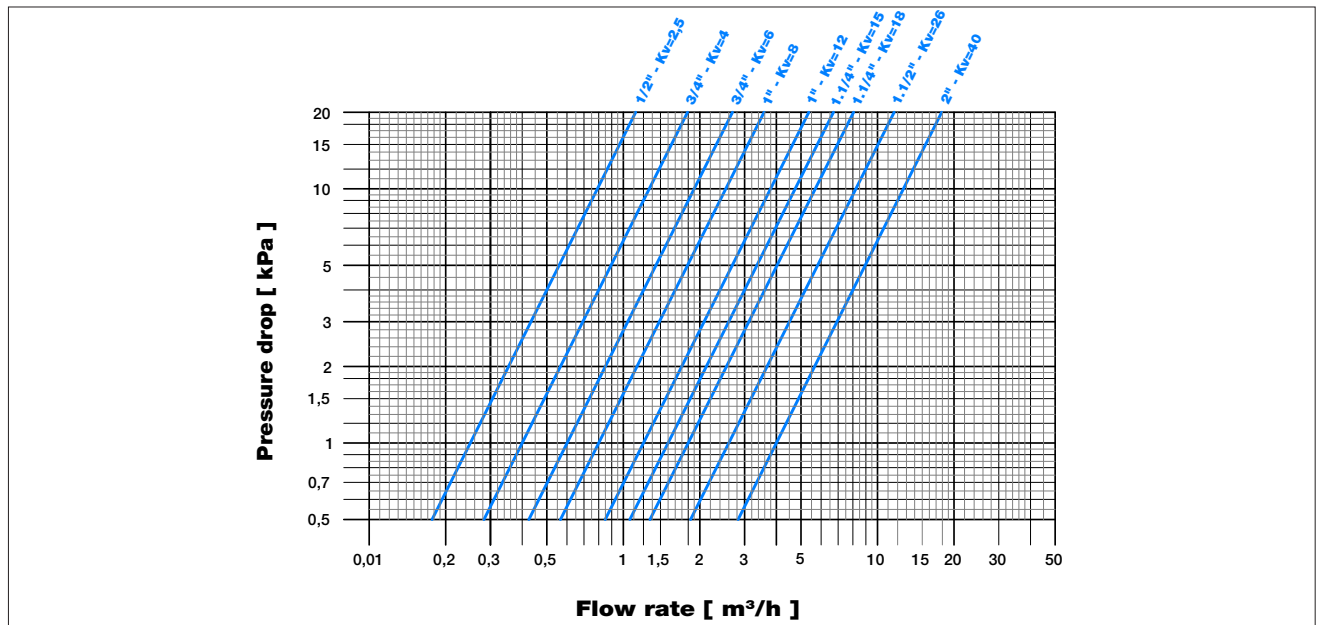


— Hot water — Cold water

Sizing

To size the mixing valve use the flow rate / pressure drops nomograph. To obtain a good valve authority and low pressure drops, it is suggest to consider a valve pressure drop of about the 10% of the downstream circuit. The intersection point between this value and the flow rate corresponds to the optimal regulation of the circuit. Therefore select the valve with the curve closer to this point.

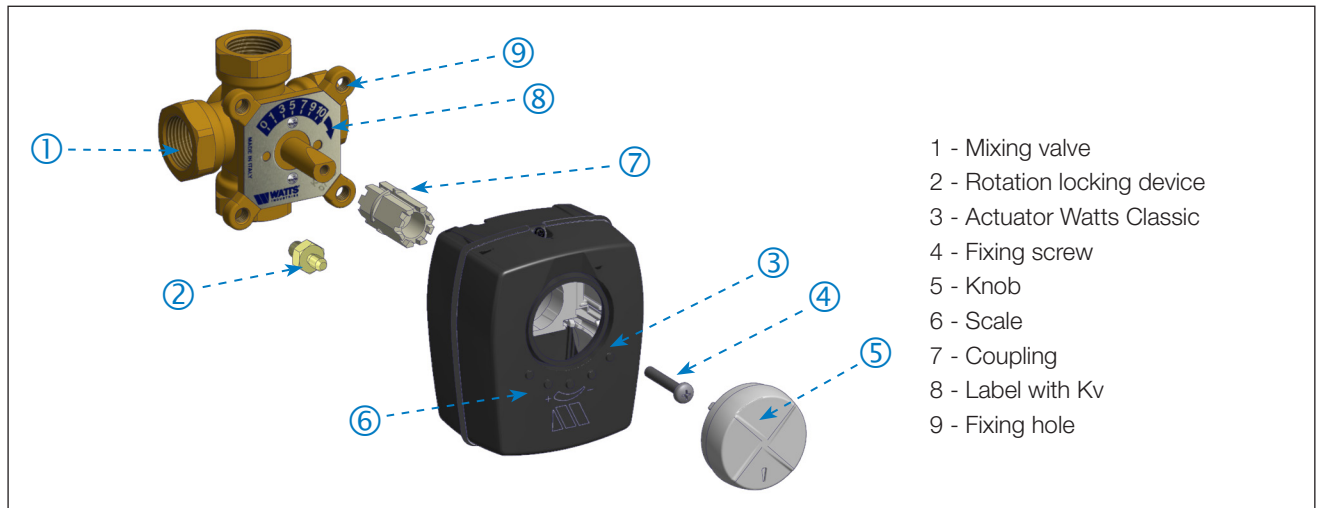
Chart



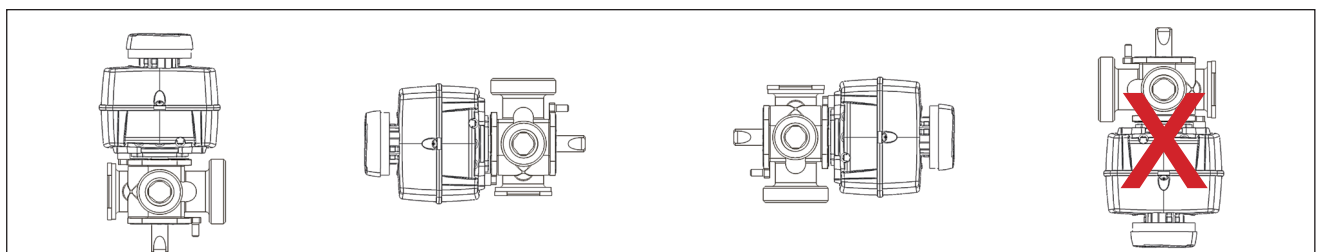
Installation

Referring to following picture:

- Remove the knob (5).
- Screw the rotation locking device (2) with a key of 13 mm (torque 15 Nm).
- Place the coupling (7) between the valve shaft and the actuator shaft.
- Mount the actuator ensuring that the actuator fixing hole (9) and the rotation locking device (2) match.
- Verify the alignment among the knob arrow (5), the valve shaft milling and the two scales (6) and (8).
- Fix the screw (4) (torque 1÷1,5 Nm) and mount again the knob.



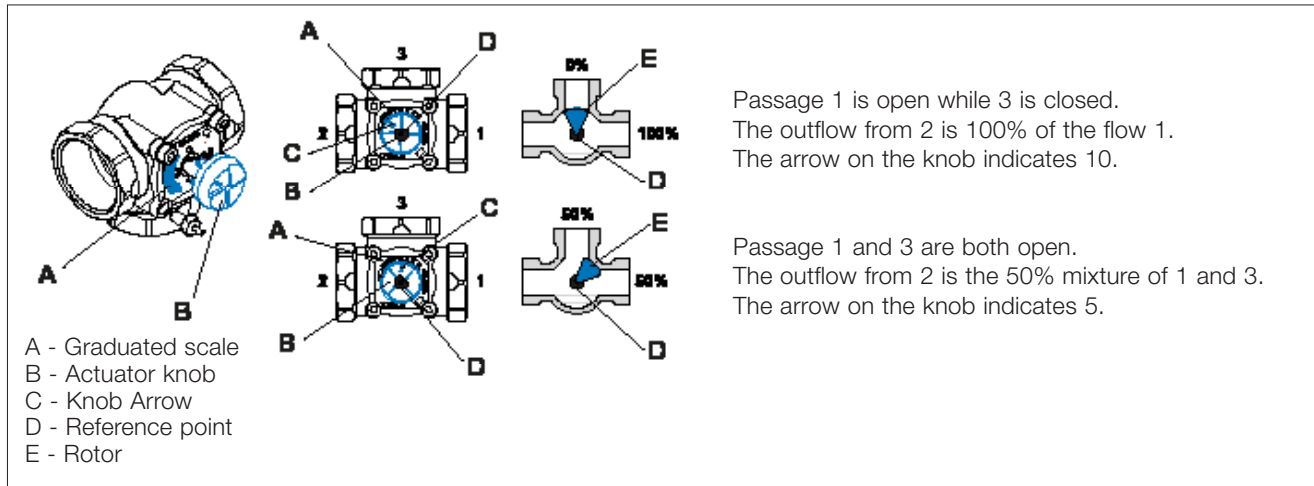
The mixing valve **V3GB CLASSIC Series** and **V4GB CLASSIC Series** can be installed in any orientation respect to the pipe except upside-down as showed in the following picture. Install the valve leaving enough space to manually operate the actuator and to make the electrical connections.



By changing the shutter position relative to the valve, it is possible to obtain different configurations of the same therefore it is important, in the first installation, to align the valve and motor references.

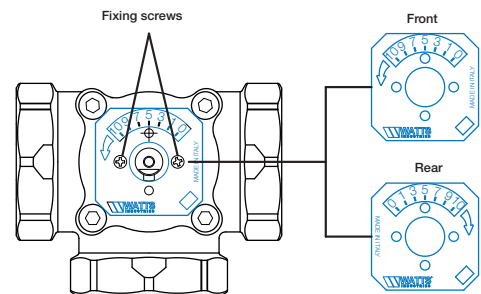
Referring to the figure below, consider the following information:

- use the actuator knob (B) to rotate the valve shaft;
- the knob arrow (C) indicates the percentage of mix on the graduated scale (A) of the valve;
- the position of the rotor (E) inside the valve is indicated by the machining (D) on the shaft.

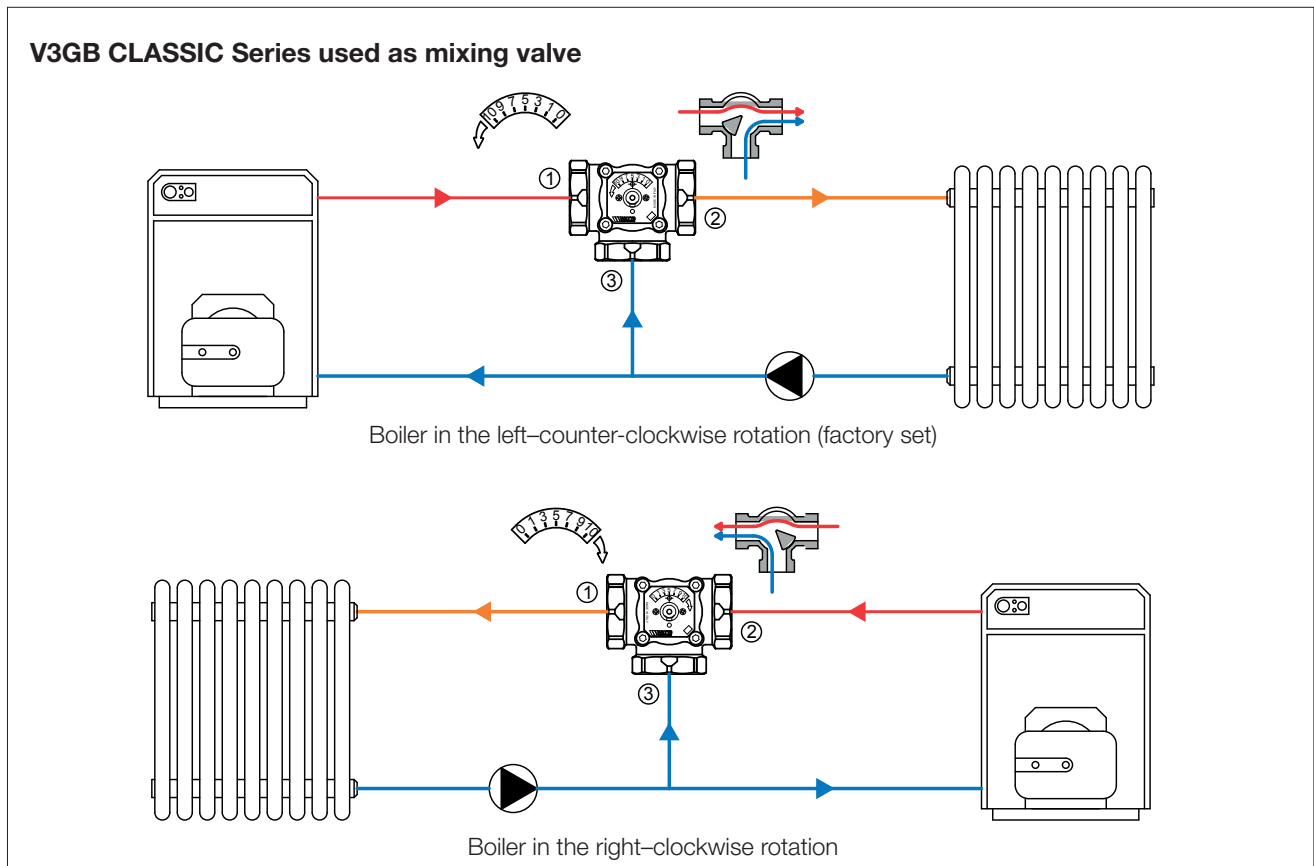


The aluminium label of the valve is printed in both of sides. In the front side there is the scale for the counter-clockwise rotation and in the rear side there is the scale for the clockwise rotation. To change the scale unscrew the fixing screws, overturn the label and fix it again.

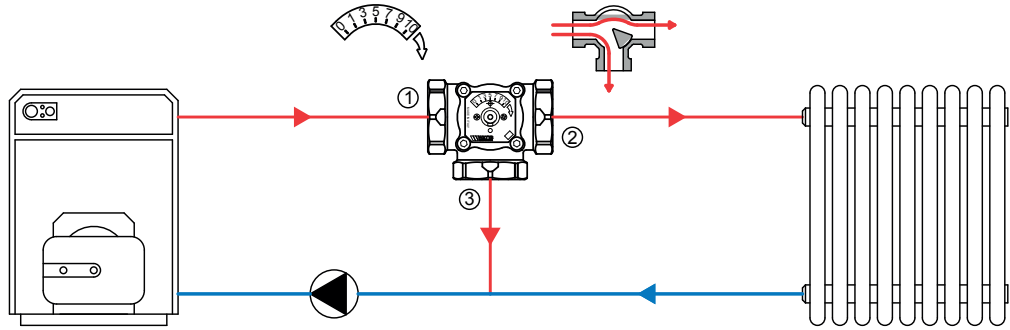
To make easy the installation all the ways of the valves are marked as following:
V3GB CLASSIC Series with the numbers 1, 2 and 3;
V4GB CLASSIC Series with the numbers 1, 2, 3 and the symbol ▲
 This marking is shown on the underside of the body of the valve.



Examples of installation

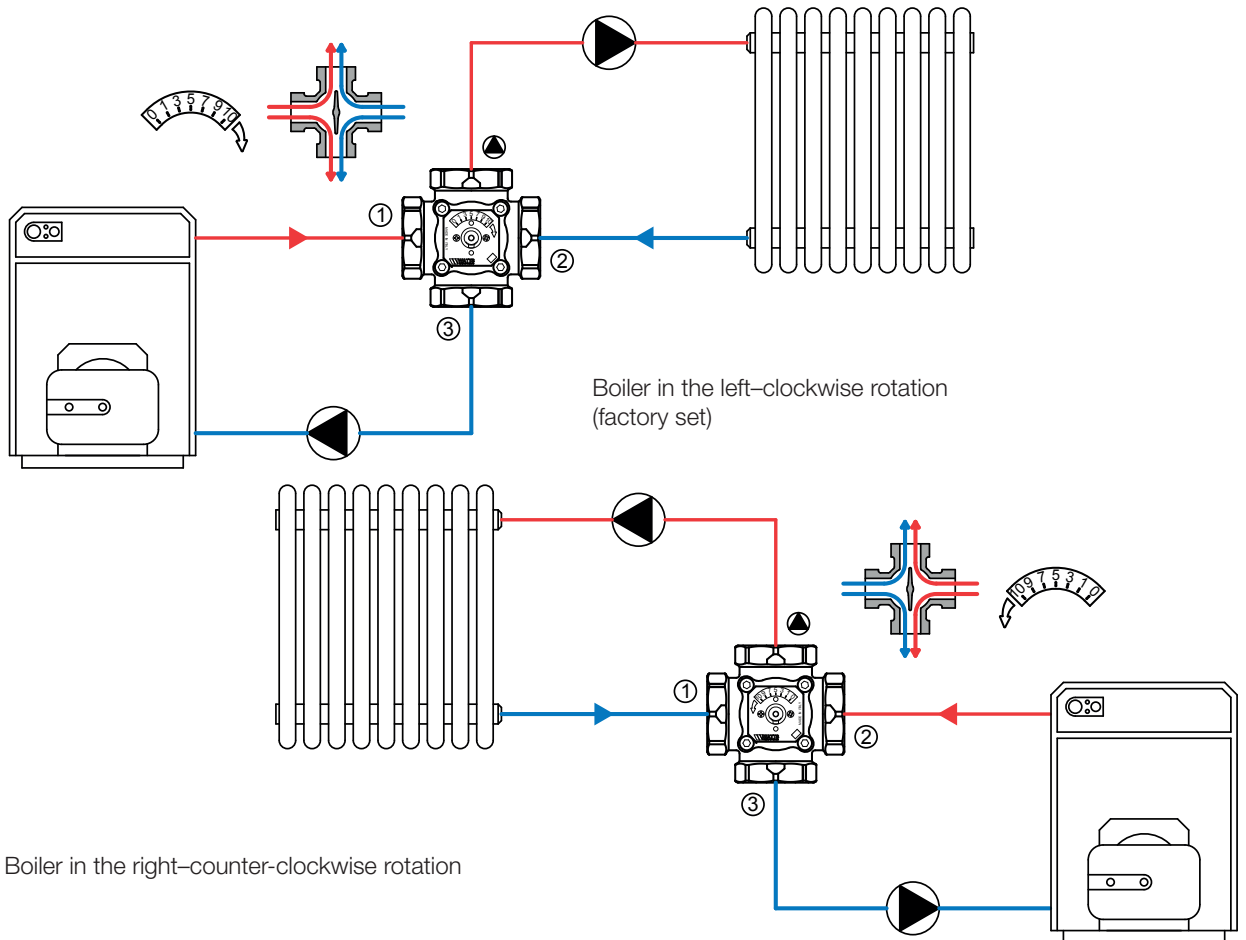


V3GB CLASSIC Series used as diverting valve



Boiler in the left-clockwise rotation

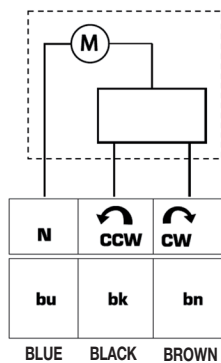
V4GB CLASSIC Series used as mixing valve



Boiler in the left-clockwise rotation (factory set)

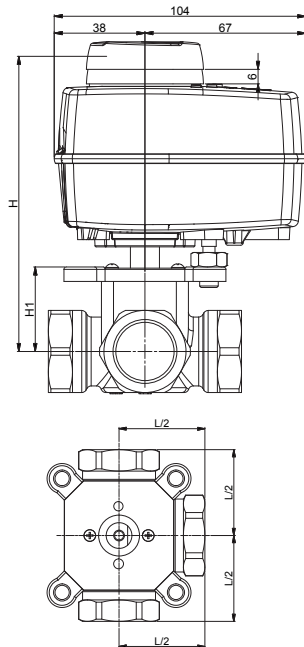
Boiler in the right-counter-clockwise rotation

Electric diagram

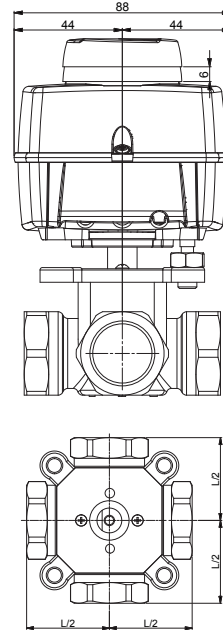


Overall dimensions (mm)

V3GB CLASSIC



V4GB CLASSIC



Part no.	DN	Kvs	L	H	H1
W3GB0015M60230	1/2"	2,5	80	119	35
W3GB0204M60230	3/4"	4	80	119	35
W3GB0206M60230	3/4"	6	80	119	35
W3GB2508M60230	1"	8	82	119	35
W3GB2512M60230	1"	12	82	119	35
W3GB3215M60230	1.1/4"	15	85	121	37
W3GB3218M60230	1.1/4"	18	85	121	37
W3GB4026M60230	1.1/2"	26	116	126	42
W3GB5040M60230	2"	40	125	127	43

Part no.	DN	Kvs	L	H	H1
W4GB0015M60230	1/2"	2,5	80	119	35
W4GB0204M60230	3/4"	4	80	119	35
W4GB0206M60230	3/4"	6	80	119	35
W4GB2508M60230	1"	8	82	119	35
W4GB2512M60230	1"	12	82	119	35
W4GB3215M60230	1.1/4"	15	85	121	37
W4GB3218M60230	1.1/4"	18	85	121	37
W4GB4026M60230	1.1/2"	26	116	126	42
W4GB5040M60230	2"	40	125	127	43

Specification text

V3GB CLASSIC Series

3-way sector mixing valve **V3GB CLASSIC Series** WATTS brand complete with 3-point bi-directional actuator. PN 10 bar. Operating temperature: 0÷110° C. Brass body and rotor and EPDM gaskets. Threaded fittings 1/2 "to 2". Rotation angle 90° in 120 s. Power supply 230 V, 50 Hz; maximum power 5 VA. Complete with electric cable L = 2 meters. It can also be used in diversion. Suitable for water with glycol up to 50%.

V4GB CLASSIC Series

4-way sector mixing valve **V4GB CLASSIC Series** brand complete with 3-point bi-directional actuator. PN 10 bar. Operating temperature: 0÷110° C. Brass body and rotor and EPDM gaskets. Threaded fittings 1/2 "to 2". Rotation angle 90° in 120 s. Power supply 230 V, 50 Hz; maximum power 5 VA. Complete with electric cable L = 2 meters. Suitable for water with glycol up to 50%.

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