CCO kit

Compact Change Over - 6-way switch valve with motor

QUICK FACTS

- Enables heating & cooling in products with only one heat exchanger circuit
- Precise flow regulation
- For 4-pipe cooling/heating system
- Valve, PN10, DN10,
- Kvs 0.9 m^3/h
- Separate kv value settings for cooling/heating
- Motor, 24V 2-10V
- Enables use of the whole heat exchanger in e.g. a cooling beam for either cooling or heating.
- One actuator and one valve, instead of the traditional double set

Swegon

Technical description

Use

Switch valve for regulating the heated water – chilled water flow in climate beams and comfort modules.

The valve supplies the above product with heated or chilled water which means that the whole product's coil can be utilised and only one actuator with valve is required.

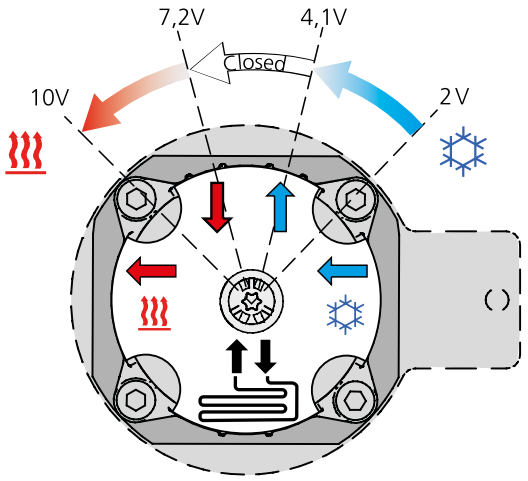
Function

The valve is regulated by a 2-10V motor which turns the valve 90°. At 2V the valve is in one of its end positions and fully open for cooling.

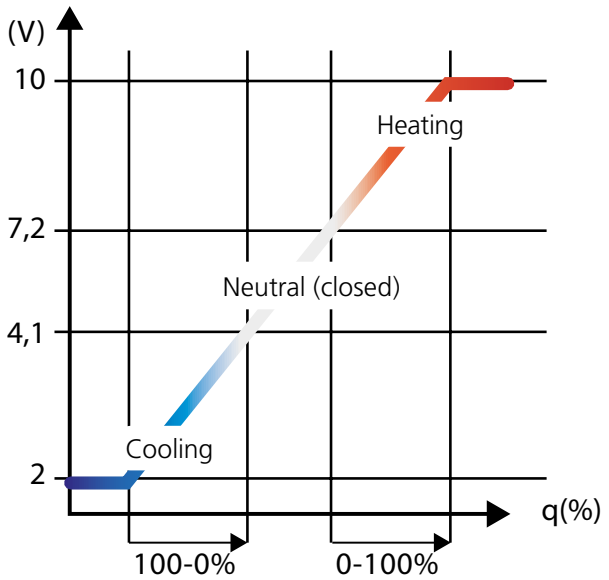
If there is less need for cooling, the volt signal is increased and stops completely at 4.1.

In the range between 4.1 and 7.2V the valve is closed.

At 7.2V the valve begins to open for heating, and at 10V it becomes fully open for the heated water flow.



❄	←	Supply pipe, chilled water
	↑	Return pipe, chilled water
≋	↓	Supply pipe, heated water
	←	Return pipe, heated water
	↑	Return pipe from coil
	↓	Supply pipe to coil



2-10V modulating:

- 2-4.1 Cooling
- 4.1-7.2 Neutral
- 7.2-10 Heating

Technical / mechanical design

Characteristics & advantages

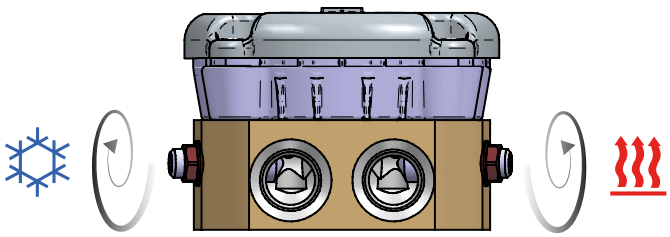
The flow sound from the valve is very low, lower than for traditional valves of the same dimension.

The design means that heating and cooling can never be run simultaneously, but both circuits will be in contact with one another which means that a very minute volume of heated water and chilled water will be exchanged when the valve switches between heating and cooling. The exchanger's water volume being exchanged is approx. 1 litre, and the changeover between cooling and heating operation will normally occur only once per 24-hour period at the most.

To adjust the Kv value

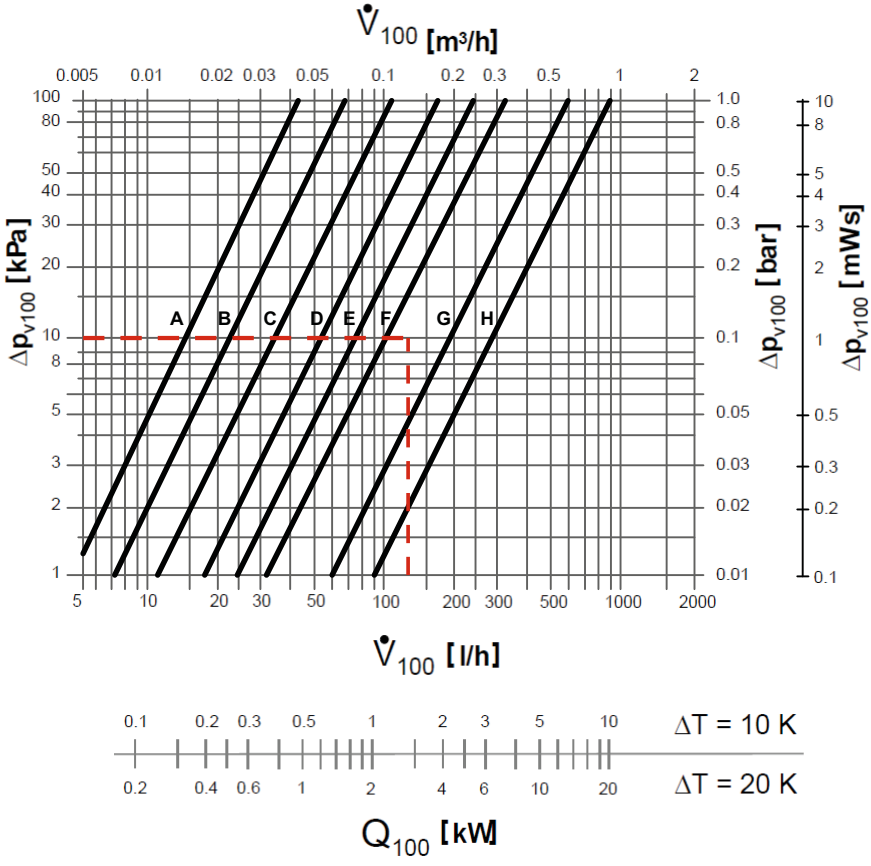
Kv values can be set for cooling and heating using separate adjustment screws.

Turn the screw clockwise to its stop position, then open it a number of turns in order to achieve a specific kv value



Kv value

Number of turns that the adjustment screw is open								
	A	B	C	D	E	F	G	H
Turns	0.5 turn	0.75 turn	1 turn	1.25 turn	1.5 turn	2 turns	3 turns	4 turns
Kvs m³/h	0.042	0.072	0.116	0.171	0.24	0.327	0.6	0.9



Example:

In a typical case, a flow of 144 l/h is required to obtain correct capacity in the cooling case, and a pressure drop of 10 kPa across the valve is desirable to obtain good regulation.

In the diagram (see red marking) you can see that this is achieved at the preset kv value between F and G, i.e. the screw should be opened approx. 2.5 turns, see Table above.

Technical data

Valve

Pressure class	PN10
Media temperature	2-80 °C
Permissible media	Water with max. 45% ethylene glycol.
	Water treatment to VDI 2035
Differential pressure, max.	1 bar
Kv value, min.	0.028
Kv value, max.	0.9
Connections	G 3/8" internal / Ø 12 mm clamp-ring coupling
Material	
valve casing	Brass
enclosure	Plastic
reinforcing enclosure	Galvanized sheet steel
spindle	Plastic
o-rings	EPDM
cover	Plastic
Flow distributor	Ceramic
Weight of valve	0.9 kg

Maintenance

The valve and motor do not require any maintenance at all.

Dimensions, valve

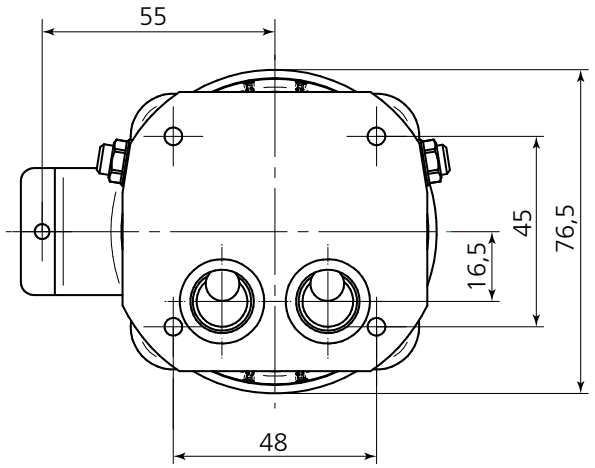


Figure 1. Dimensions, valve, viewed from bottom

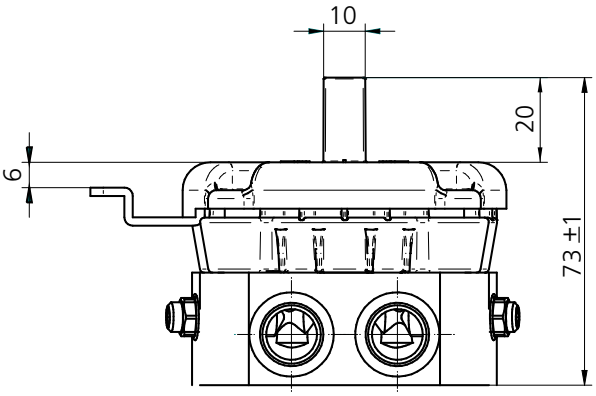


Figure 2. Dimensions, valve, viewed from the side.

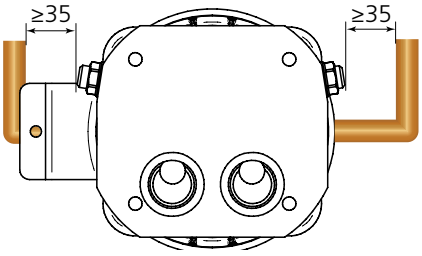


Figure 3. Install the pipe at least 35 mm from the adjustment screw.

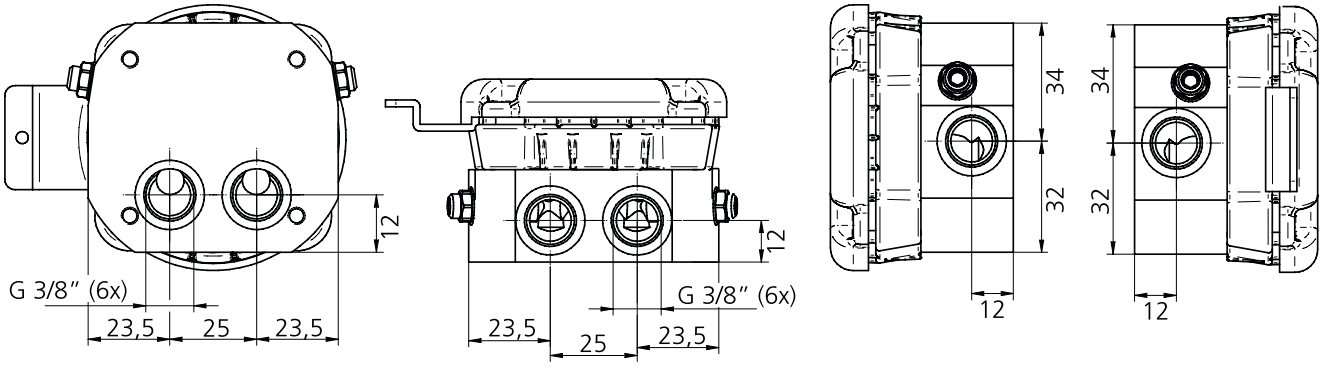
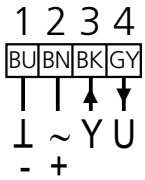


Figure 4. Connections: Six 3/8" connections. Supplied with mounted clamp-ring couplings for Ø 12 mm pipes.

Motor

Electrical data		
Rated voltage	24 VAC {50/60Hz), 24 VDC	
Rated voltage range	19...29 VAC/DC	
Power consumption	(operation) Stand-by (end position)	1.5 W 1.0 W
Cable sizing	3.0VA	
Control	Continuous	
	2...10 VDC / Ri > 100 kΩ	
	4...20 mA / Rext. = 500 Ω	
Re-feed position	2...10VDC, max. 5 mA	
Functional data		
Torque moment	4 Nm	
Synchronised speed	± 5%	
Direction of rotation	Optional depending on instal-lation configuration	
Disengagement of gear box	By turns, self-resetting	
Actuating time, motor	150 s / 90°	
Sound power level	<35 dB(A)	
Connection to damper / valve	10 mm (4E10)	
Position indicator	Mechanical with indicator	
Service / useful life	>60'000 cycles (0° - 95° - 0°)	
Safety		
Degree of protection	III (extra-low voltage)	
Enclosure class	IP54	
EMC	CE (2004/108/EEC)	

Wiring



Bleeding

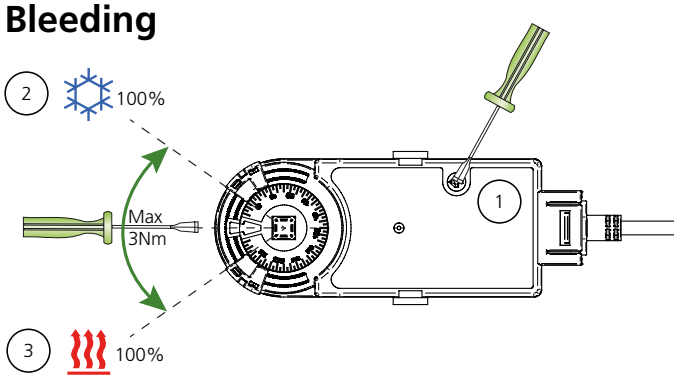


Figure 5. Bleeding the system
Bleeder is not built-in in the product, an external bleeder should be mounted to the pipe-system

1. Release the motor-gear (1)
2. Turn valve shaft to end position (2) full cooling and bleed the system.
3. Turn valve shaft to end position (3) full heating and bleed the system.
4. Startup is done with motor anywhere between end positions

Dimensions and weight, motor

Weight	
Weight of motor	0.3 Kg

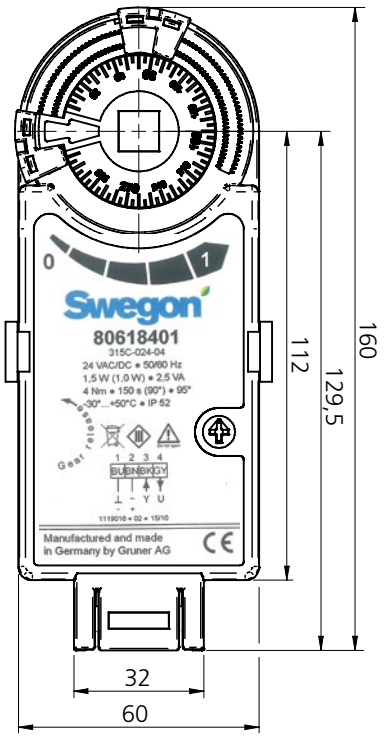


Figure 6. Dimensions, motor, viewed from above.

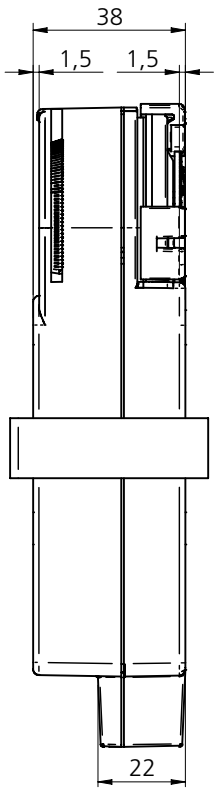


Figure 7. Dimensions, motor, viewed from side.

Dimensions, valve with mounted motor

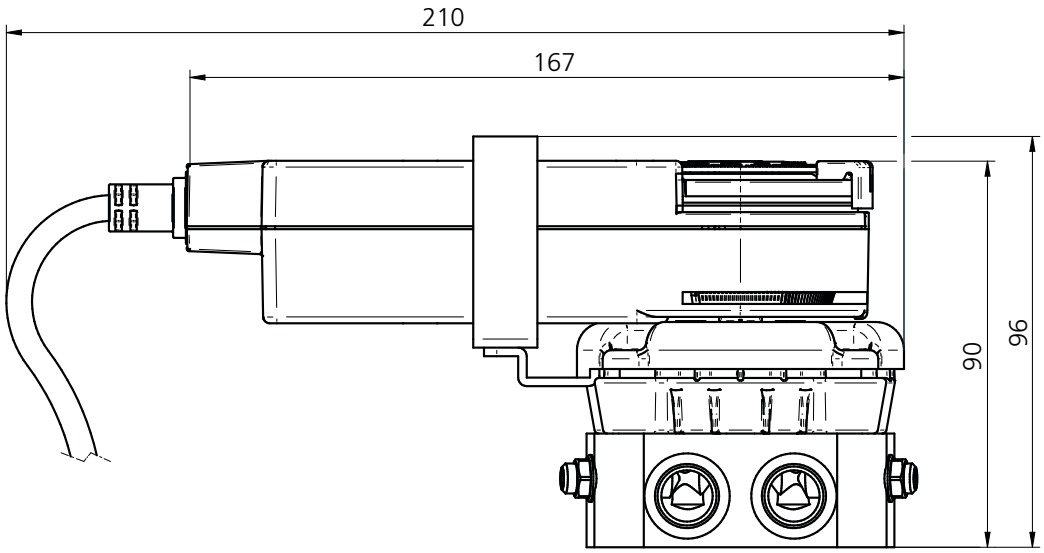


Figure 8. Dimensions, valve with motor, viewed from side.

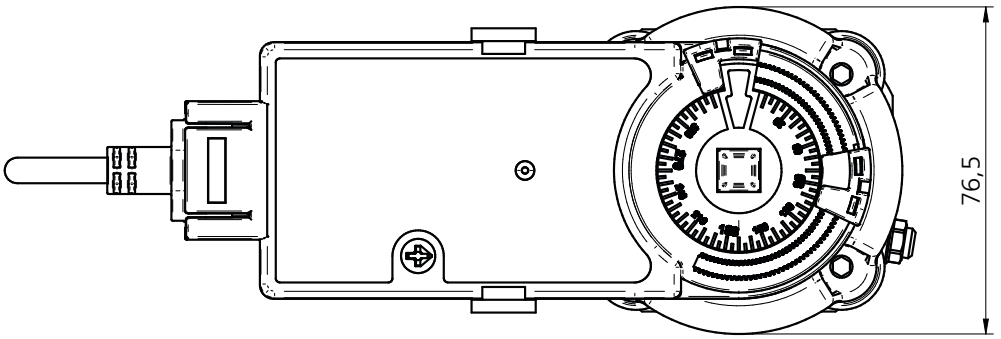


Figure 9. Dimensions, valve with motor, viewed from above.