

CCO kit

Compact change-over – 6-way reversing valve with actuator



QUICK FACTS

- 6-way reversing valve for heating & cooling in products with only one heat exchanger circuit
- Maximum cooling and heating capacities when the entire heat exchanger is used.
- Kvs 0.9 m³/h at 1 bar pressure drop
- Separate Kv-value settings for cooling/heating
- Actuator for 24 V with 2-10 V DC control
- Valve size DN10 with 12 mm clamp-ring connectors

Technical Description

Implementation

The CCO kits consists of a 6-way valve and actuator.

The valve is fitted with a bracket for fitting to wall or ceiling, for example.

Function

The reversing valve regulates heating and cooling water flow in products including climate beams, comfort modules and radiation panels.

The valve supplies the above products with hot or cold water, which means that the whole product's heat exchanger can be utilised and only one actuator with valve is required.

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 hot water and cold water will be exchanged when the valve switches between heating and cooling.

It is important that systems are designed to be able to handle the system liquid moving between the cold and hot system.

Materials and Surface Treatment

Valve:

- The valve casing is manufactured in brass
- Enclosure and lid are manufactured in PA6
- The shaft is manufactured in POM
- The outer enclosure is manufactured in galvanised sheet steel
- The flow distributor is manufactured in ceramic
- The O-rings are EPDM.

Actuator:

- The outer casing is manufactured in PA6 and PA6.6
- The gear wheel is manufactured in POM.

Installing, Commissioning, Maintenance

Connectors are supplied fitted to the valve. They can be unscrewed by hand and connected to Ø 12 mm copper pipes.

Then attach the copper pipes to the connectors fitted on the valve.

Finally screw the actuator into the valve shaft using the included screw (PH2), see section "Mounting Actuator on Valve".

See also detailed information about e.g. water quality, assembly and commissioning in separate instructions at swegon.com.

Installation should be performed by a qualified professional.

The CCO kit does not require maintenance.

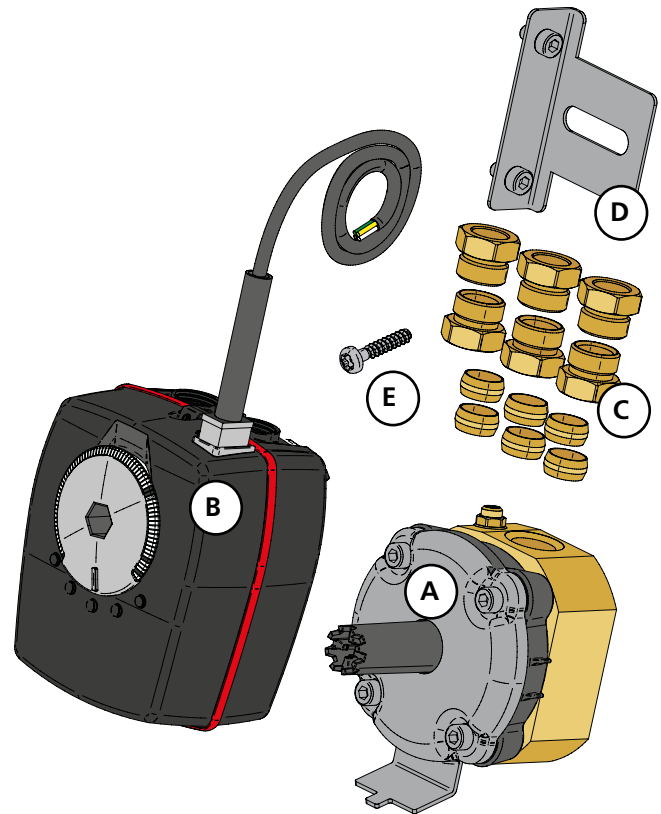


Figure 1. CCO kit: Included Parts

- A: CCO valve
- B: Actuator with cable
- C: Connectors
- D: Bracket
- E: Screw

Technical data

Valve

Pressure class	PN10
Media temperature	2-80°C
Permissible media	Water with max. 45% ethylene glycol.
	Water treatment as per VDI 2035
Differential pressure max*	1 bar
Kv-value, min.	0.028
Kv-value, max.	0.9
Connections	G 3/8" inv. /Ø 12 mm clamp-ring coupling
Material	
Valve casing	Brass
Enclosure	PA6
Cover	PA6
Outer cover	Galvanised sheet steel
Shaft	POM
O-rings	EPDM
Flow distributor	Ceramic
Weight	
Valve	1.0 kg

*Pressure differential between hot and cold side. There is a risk of leakage at higher pressures

Actuator

Electrical data	
Voltage:	24 V DC ±10%
Operation:	2-10 V DC
Power consumption operation:	5 W
Power consumption standby:	350 mW
Function data	
Runtime:	120S/90°
Disengagement of gearbox:	Retractable wheel
Torque:	5 Nm
Safety	
EMC	2014/30/EU
Enclosure class:	IP20
Material	
Outer casing:	PA6 and PA6.6
Gear:	POM
Weight	
Actuator	0.4 kg

Assembly

Valve and actuator are assembled as shown below.

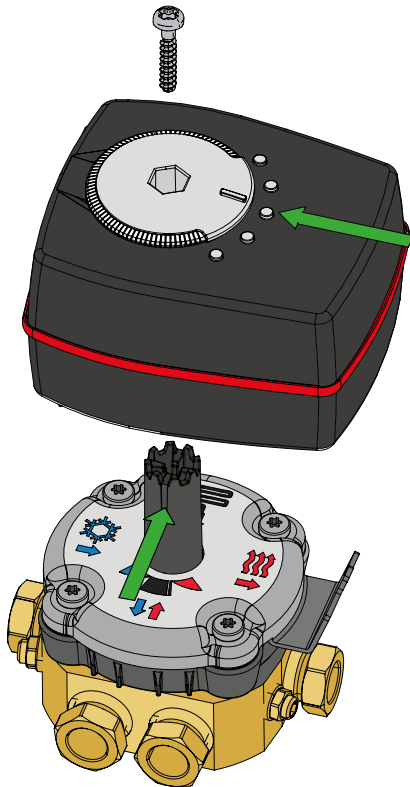


Figure 2. Mounting of Actuator on Valve

Mounting of Actuator on Valve

1. First, make sure the shaft and actuator are in the correct position.
 - a. The slot on the valve shaft should be pointing in the direction shown in the figure above
 - b. The actuator should be in neutral mode.
2. Mount the actuator on the valve shaft and make sure the actuator is correctly resting against the valve support.
3. Finally attach the actuator into the valve shaft using the included screw (PH2).

The valve shaft can be rotated by hand or using a rod. To change the actuator's starting position, lift the upper grey part to neutral and then turn the grey knob until the actuator is pointing at centre position. Then press the grey part down again.

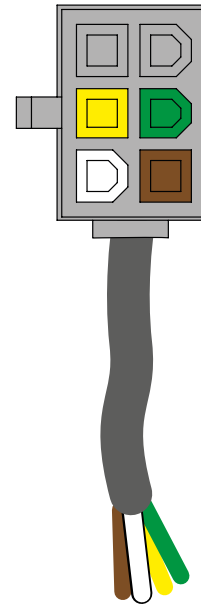
The product is fitted with clamp-ring connectors for copper pipes. These connectors must be installed according to industry regulations and with the correct torque ensure tightness. Incorrectly installed connectors may result in leakages and extensive water damage. Installation should be performed by a qualified professional.

Coupling

Cable ends are connected as shown in the table below.

Only DC current may be used.

Yellow	Green	White	Brown
0-10 V	GND	I/GND	PWR

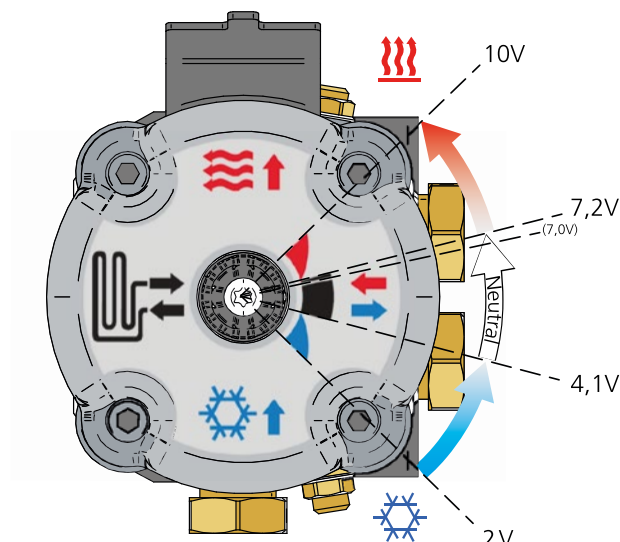


Commissioning

Valve

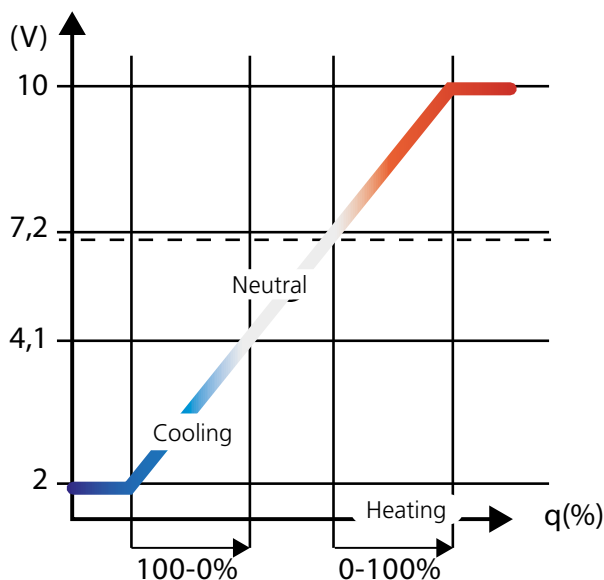
The valve can be regulated using a 2-10 V actuator, which turns the valve.

- At 2 V the valve is in one of its end positions and fully open for cooling.
- When the cooling requirement is less, the voltage signal is increased to close the valve completely at 4.1 V.
- In the range between 4.1 and 7.2 V, the valve is in neutral mode (also see neutral mode below)
- At 7.0 V, the valve is closed in service mode.
- At 7.2 V, it begins to open for heating, and at 10 V is fully open for the flow of hot water.



Neutral Mode

The valve is equipped with a pressure equalisation channel. This prevents pressure differences occurring between the product and system.



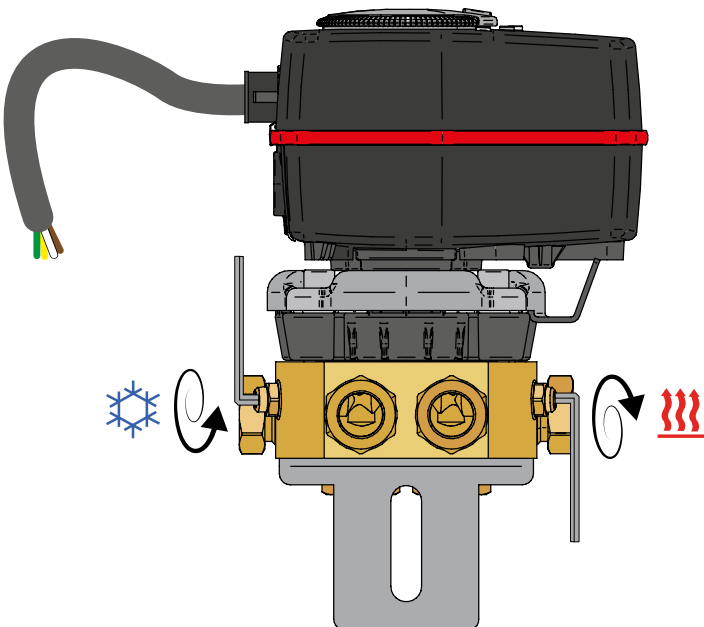
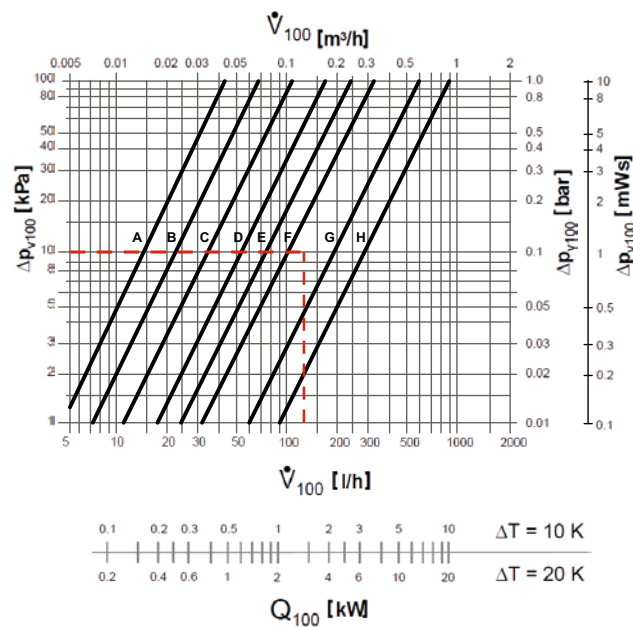
		Supply cooling
		Return cooling
		Supply heating
		Return heating
		Return coil
		Supply coil
		From max. to min. heating
		Black field = neutral Narrow left position = closed for servicing
		From min. to max. cooling

2-10 V modulating:

- 2-4.1 Cooling
- 4.1-7.2 Neutral mode
- 7.0 Service mode
- 7.2-10 Heating

Service

Setting of Kv-value



Kv-value

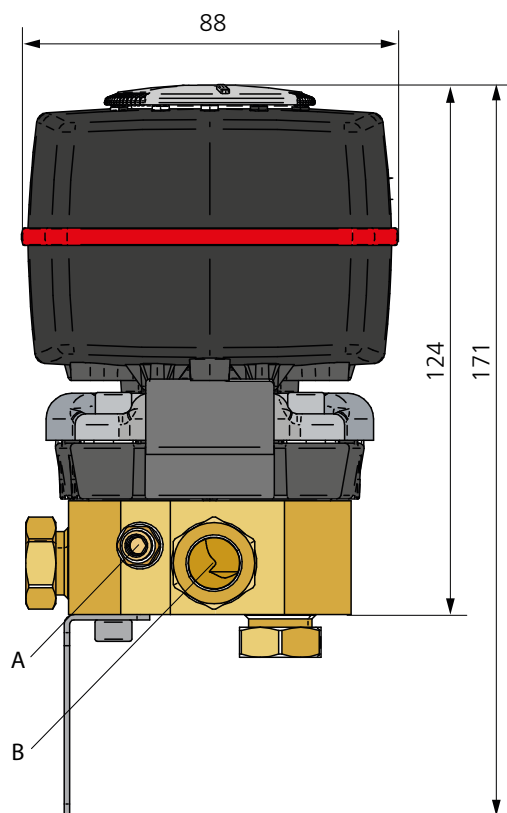
Number of turns that the adjustment screw is open								
	A	B	C	D	E	F	G	H
Turns	0.5	0.75	1	1.25	1.5	2	3	4
Kvs m³/h	0.042	0.072	0.116	0.171	0.24	0.327	0.6	0.9
Kvs l/s	0.012	0.020	0.032	0.048	0.067	0.091	0.17	0.25

Example:

In a typical case, a flow of 144 l/h is required to obtain correct capacity in the cooling situation, 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.

Dimensions



A:	Allen key 4 mm
B:	Nut 9 mm

Specification

Ordering Specification

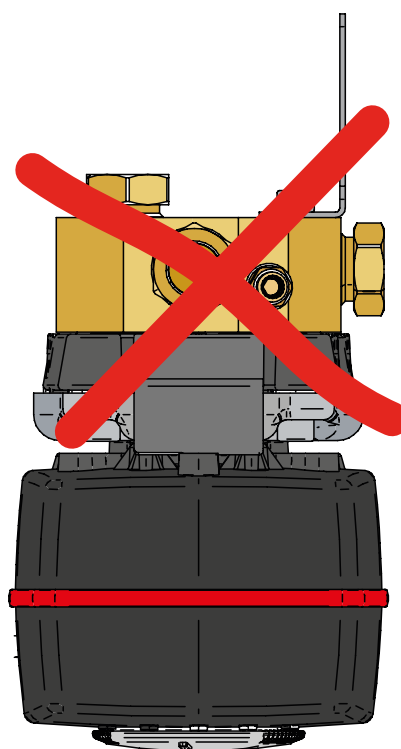
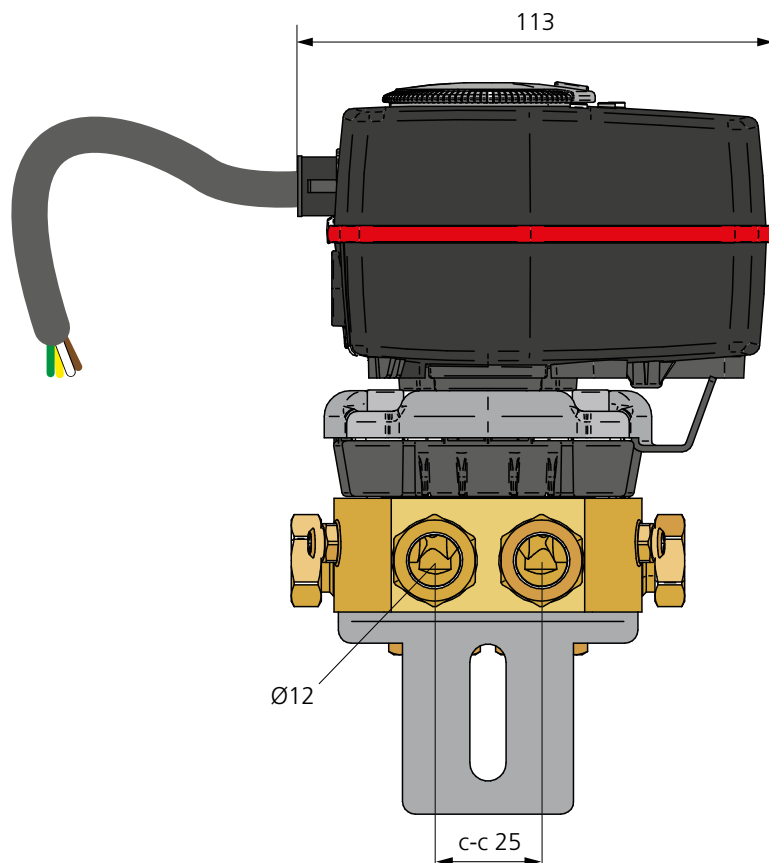
CCO kit
(CCO valve + ESBE actuator comp.)

CCO kit

Accessories

DC transformer
(stripped cable ends)

Power 24 VDC 24 W



Incorrect mounting position!