

# oventrop “Cocon QFC” Cast iron pressure independent control valve with automatic flow control

Technical data sheet

## Application:

The pressure independent control valve “Cocon QFC” is designed to be installed in heating and cooling systems with closed water circuit (e.g. central heating systems, surface heating systems, fan coil units, chilled ceilings and fan convectors) for automatic flow control (hydraulic balancing). It can also be used for room temperature control by modifying the flow rate with the help of actuators.

## Technical data:

Max. operating temperature: 120 °C  
 Min. operating temperature: -10 °C  
 Max. operating pressure: 16 bar (1600 kPa) 1146149-56  
 25 bar (2500 kPa) 1146649-56  
 Max. differential pressure: 4 bar (400 kPa)  
 Fluid: Water or mixtures of water and ethylene/propylene glycol (max. 50 %), pH value 6.5-10  
 Max. Closing pressure in flow direction: 16 bar (1600 kPa) 1146149-56  
 25 bar (2500 kPa) 1146649-56

## Data for actuator connection:

	DN 40/50	DN 65/80/100	DN 125	DN 150	DN 200
Control piston stroke	10 mm	20 mm	36 mm	40 mm	40 mm
Closing force	500 N	850 N	2000 N	2000 N	2000 N

Item no.		DN	Weight [kg]	Control range [m³/h] (min.-max.)	k <sub>vs</sub> value	Differential pressure p1-p3 (min.-max.)
PN 16	PN 25					
1146149	1146649	40	10	1.5 - 7.5	11.5	0.2 bar - 4 bar (20 kPa-400 kPa)
1146150	1146650	50	13	2.0 - 8.0	12.0	
1146151	1146651	65	27	5.0 - 20.0	36.0	
1146152	1146652	80	32	7.5 - 30.0	56.0	
1146153	1146653	100	45	12.5 - 50.0	80.0	
1146154	1146654	125	72	27.0 - 108.0	150.0	
1146155	1146655	150	85	36.0 - 150.0	220.0	
1146156	1146656	200	150	55.0 - 190.0	270.0	

\* Recommended lowest setting; starting from the set value, the flow rate can be reduced up to complete isolation with a suitable actuator.

## Materials:

Cast iron body, seals made of EPDM or PTFE, inner parts made of DZR brass, maintenance-free stem seal due to double O-ring.

## Model:

“classic” measuring technique, both ports flanged connection according to DIN EN 1092-2

## Function:

The Oventrop pressure independent control valve “Cocon QFC” is a valve combination consisting of an automatic flow regulator (with manually adjustable nominal value) and a control valve which may be equipped with an actuator.

## Advantages:

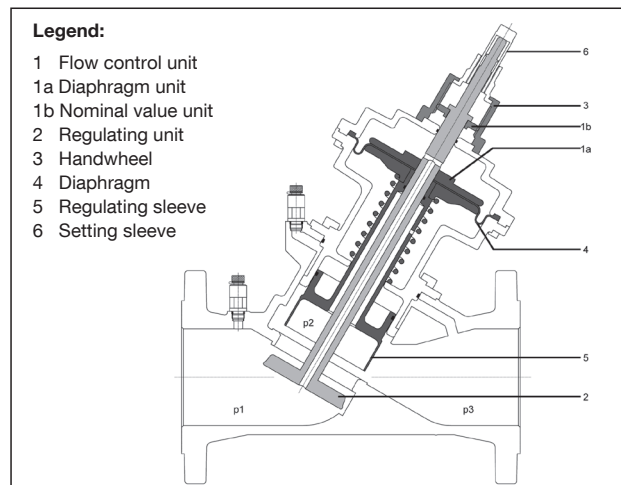
- presetting of the nominal values even with mounted actuator
- optical display of the set nominal value even with mounted actuator
- excellent optical display of the presetting in any installation position
- nominal values can be read off in m³/h without conversion
- presetting can be locked and lead sealed
- constant high valve authority
- installation can be optimised by measuring the regulating pressure
- linear characteristic line if actuator driven

## Accessory:

Lead locking set, item no. 1089091

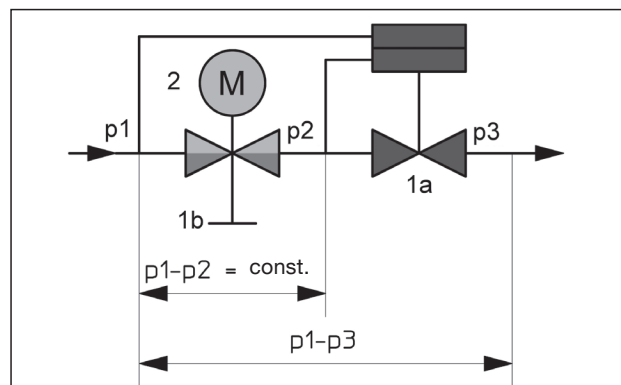


“Cocon QFC”



## Legend:

- 1 Flow control unit
- 1a Diaphragm unit
- 1b Nominal value unit
- 2 Regulating unit
- 3 Handwheel
- 4 Diaphragm
- 5 Regulating sleeve
- 6 Setting sleeve



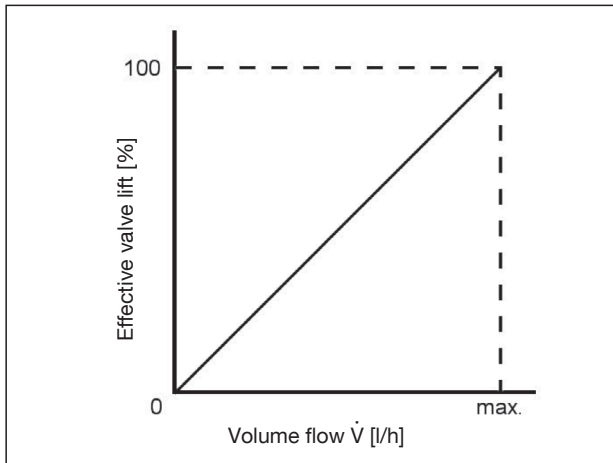
The illustrated section of the pressure independent control valve “Cocon QFC” shows three pressure ranges.

“p1” is the inlet pressure and “p3” is the outlet pressure of the valve. “p2” is the pressure actuating the diaphragm unit and maintaining the differential pressure “p1-p2” at a constant level. The pressure independent control valve “Cocon QFC” combines the functions of three valves. The integrated diaphragm unit (pos. 1a) acts as differential pressure regulator and guarantees a constant regulation of the differential pressure “p1-p2” across the second valve (regulating unit - pos. 2 activated through the actuator) and across the third valve (flow control unit - pos. 1 adjustable with the help of the handwheel - pos. 3).

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Even where high differential pressure variations “p1-p3” occur, for instance if sections of the system are activated or inactivated, the differential pressure “p1-p2” is kept at a constant level. This way the valve authority of the “Cocon QFC” valves amounts to 100 % (a = 1). Even during low demand periods with steady control (for instance in combination with 0-10 V actuators), the valve authority of the “Cocon QFC” valve within the effective valve lift amounts to 100 % (a = 1)

The “Cocon QFC” valve has a linear characteristic line within the effective valve lift. This is advantageous when using actuators which also have a linear stroke behaviour across the control voltage.



Characteristic line of the “Cocon QFC” valve

### Application:

Oventrop pressure independent control valves “Cocon QFC” are used for flow control in central heating and chilled ceiling systems with circulation pump. Room temperature control can, for instance, be carried out with the help of room thermostats and actuators.

The “Cocon QFC” valves can be used in combination with the following Oventrop actuators:

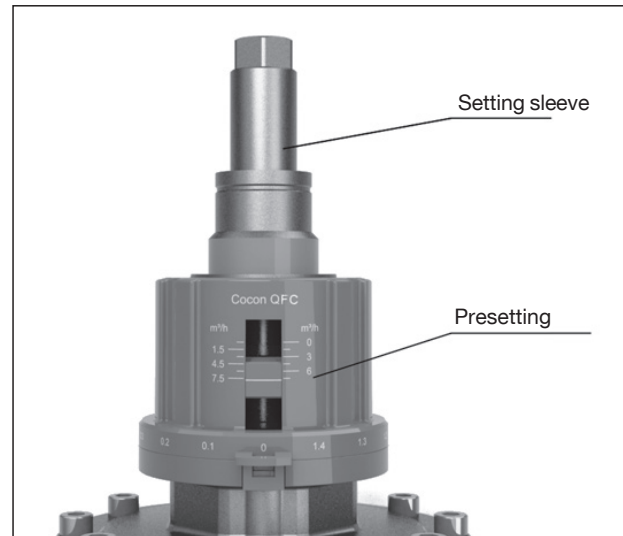
The setting sleeve (spanner size 17) has to be unscrewed. The installation instructions supplied with the actuator have to be observed!

Models:	Item no.
Actuator with squeeze connection (DN 40/50) 24 V, steady 0 – 10 V	1158010
Actuator with squeeze connection (DN 40 - 100) 24 V, steady 0 – 10 V and 4 – 20 mA	1158020
Actuator with squeeze connection (DN 40 - 100) 24 V, steady 0 – 10 V and 4 – 20 mA, additionally with spring return (opening with current “off”)	1158021
Actuator with squeeze connection (DN 40 - 100) 24 V, steady 0 – 10 V and 4 – 20 mA additionally with spring return (closing with current “off”)	1158022
Actuator with squeeze connection (DN 125 - 200) 24 V, steady 0 – 10 V and 4 – 20 mA	1158030
Actuator with squeeze connection (DN 125 - 200) 24 V, steady 0 – 10 V and 4 – 20 mA, additionally with spring return (opening with current “off”)	1158031
Actuator with squeeze connection (DN 125 - 200) 24 V, steady 0 – 10 V and 4 – 20 mA, additionally with spring return (closing with current “off”)	1158032

### Setting of the flow rate:

The desired flow rate can be set with the help of the handwheel and the setting sleeve.

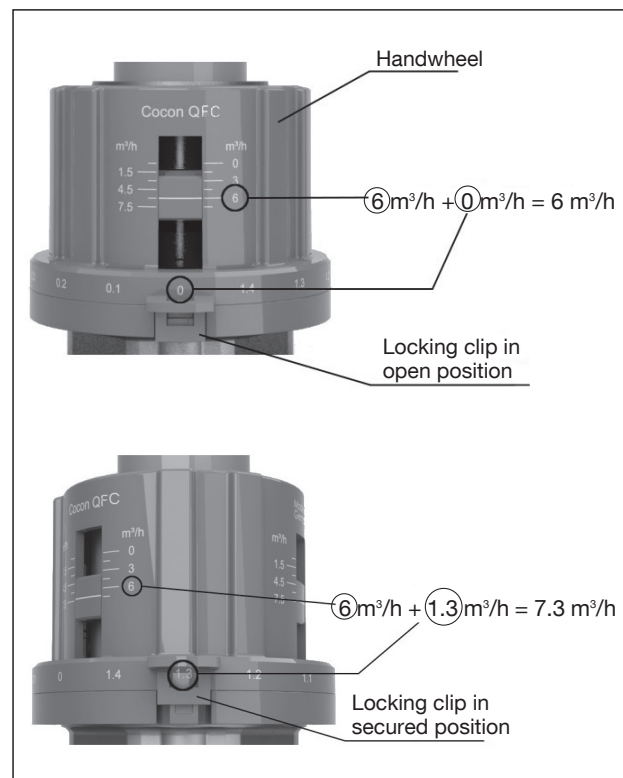
The setting can only be modified after release of the setting sleeve.



Setting sleeve

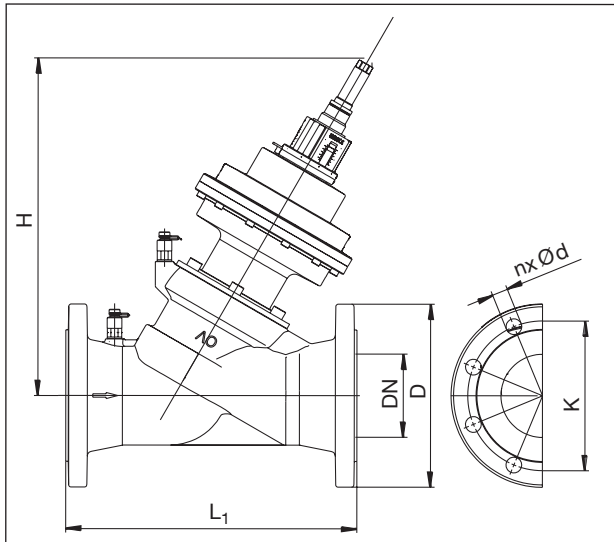
### Securing and locking:

The presetting can be secured and lead locked with the help of the locking clip .



Example settings

**“Cocon QFC” Cast iron pressure independent control valve  
with automatic flow control**



DN	L <sub>1</sub>	H	PN 16			PN 25		
			D	K	nx Ø d	D	K	nx Ø d
49	200	250	150	110	4 x 19	150	110	4 x 19
50	230	270	165	125	4 x 19	165	125	4 x 19
65	290	370	185	145	4 x 19	185	145	8 x 19
80	310	385	200	160	8 x 19	200	160	8 x 19
100	350	405	220	180	8 x 19	235	190	8 x 23
125	400	520	250	210	8 x 19	270	220	8 x 28
150	480	520	285	240	8 x 23	300	250	8 x 28
200	600	565	340	295	12 x 23	360	310	12 x 28

Dimensions

**Installation:**

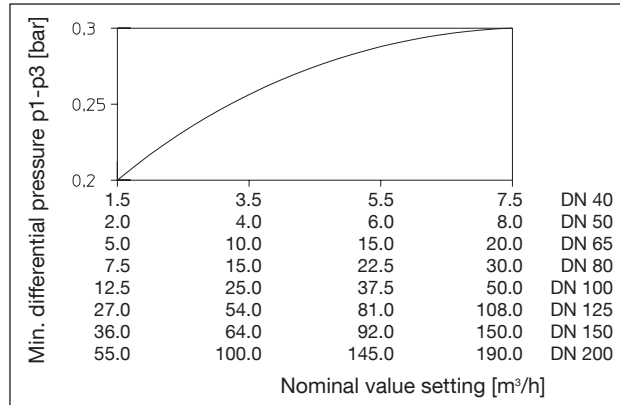
- The direction of flow must conform to the arrow on the valve body.
- The valve can be installed in any position (electric actuators must not be installed in a vertical downward position).
- Do not use any greasing agents or oil for the installation as these can destroy the seals. Any dirt particles or grease or oil residues must be flushed out of the pipework before the valve is installed.
- Any tension which could be transferred through the pipework must be avoided.
- When choosing the operating fluid, the latest technical status (e.g. VDI 2035) has to be considered.
- The installation of an isolating valve in front of and behind the valve or section of the system is recommended for maintenance work.
- A strainer must be installed in the supply pipe to avoid contaminated operating fluids (see VDI 2035).
- The correction factors of the manufacturers of the antifreeze liquids have to be considered when setting the flow rate.
- After installation, check all installation points for leaks.

**Min. differential pressure “p1-p3” for the valve design:**

The minimum required differential pressure “p1-p3” across the valve can be obtained from the chart on the top right hand side.

Explanation of chart:

As for valves with integrated flow control, the required minimum differential pressure changes depending on the nominal value setting. The mathematical interrelationship is considered in the chart.

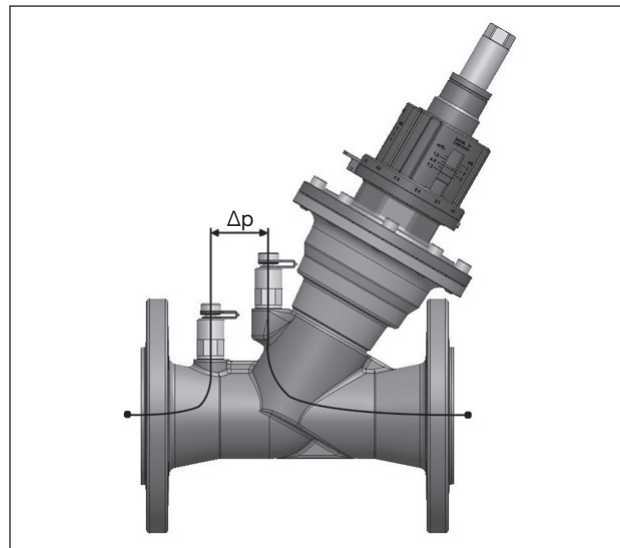


Max. differential pressure 4 bar (400 kPa)

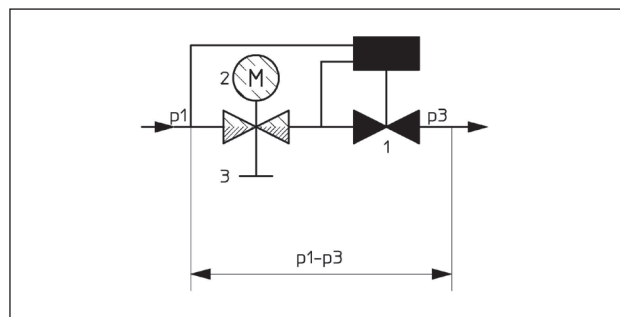
**Pressure test points:**

The measuring system “OV-DMC 3” can be connected to the pressure test points. This will confirm if the valve is working within the control range. The pump setting can be optimised by measuring the differential pressure.

For this purpose, the pump head is reduced until the hydraulically underprivileged valves are just working within the control range. The minimum differential pressures have to be considered. As soon as the measured differential pressure is identical with or higher than the minimum differential pressure “p1-p3”, the valve is working within the control range.



Differential pressure



With a measuring system connected (e.g. “OV-DMC 3”), the differential pressure (“p1-p3”) is measured across the valve.

Subject to technical modifications.

Product range 2.1  
ti 239-EN/10/MW  
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