OVENTOP "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 (hydronic 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 w ethylene/propylene gly (max. 50 %), ph value 6	ater and col δ.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 125 [)	DN 200	
Control piston stro	ke	10 mm		20 mm		36 mm		40 mm		40 mm	
Closing force 500 I		N	8	50 N	2000 N	1	2000 N		2000 N		
Item	n	D.	DN	Weight		Control range [m ³ /h]		k _{vs}		Differential pressure	
PN 16	F	PN 25			[ĸg]	(min.*-max.)		value		(minmax.)	
1146149	11	46649 40			10	1.5 - 7.5		11.5			
1146150	11	146650	50		13	2.0 - 8.0		12.0			
1146151	11	146651	65		27	5.0 - 20.0		36.0		0.2 bar -	
1146152	6152 1146652		80		32	7.5 - 30.0		56.0		4 bar	
1146153	53 1146653		100		45	12.5 - 50.0)	80.0		(20 kPa-	
1146154	1146154 1146654		125	;	72	27.0 - 108.0 150.0			400 kPa)		
1146155	11	146655	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"





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).

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

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 "of	1158021 ff")
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 "of	1158031 ff")
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



			PN 16			PN 25			
DN	L ₁	Н	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	
Dimens	sions								

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 the 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.

Subject to technical modifications. Product range 2.1 ti 239-EN/10/MW Edition 2019



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.