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Innovation + Quality

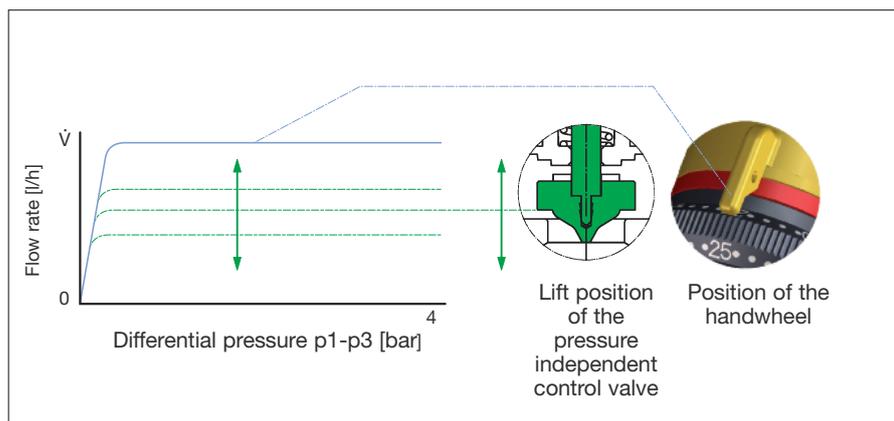
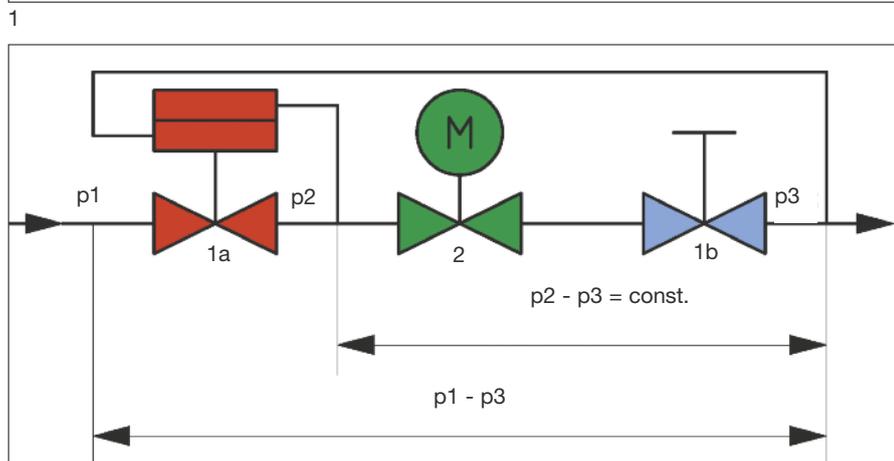
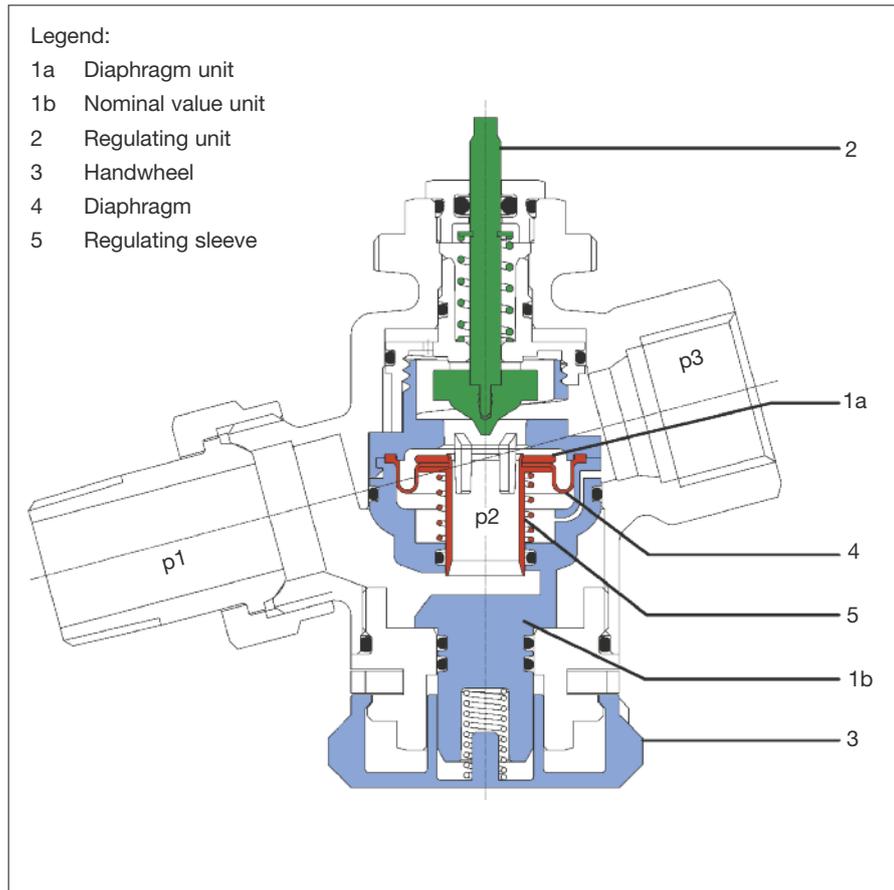
Valves, controls + systems

“Cocon QTZ/QTR/QFC”
Pressure independent control valves

Product range

MADE IN
GERMANY





The pressure independent control valve “Cocon QTZ” with automatic flow control is a compact valve combination consisting of a flow regulator and a regulating valve. The nominal value of the flow regulator can be set with the help of an easily accessible handwheel.

The pressure independent control valve can be equipped with an actuator, temperature controller or manual head (connection thread M 30 x 1.5).

The valve can be used for dynamic hydronic balancing and temperature control of appliances or sections of the system in chilled ceilings, fan coil units and convectors as well as central heating and surface heating systems.

The valve is made of dezincification resistant brass and the seals of EPDM or PTFE. The valve stem is made of stainless steel.

Models:

- DN 10 up to DN 32
- with or without pressure test points
- inlet port: coupling, outlet port: female thread or inlet and outlet port: male thread

1 The required flow rate is set at the handwheel (pos. 3). The nominal setting is protected against unauthorized tampering with the help of the handwheel which engages automatically. This setting can be additionally secured by inserting the locking ring. During low demand periods, regulation can be carried out with the help of an actuator or a temperature controller which can be screwed onto the valve. The illustrated section of the “Cocon QTZ” valve shows three pressure ranges. “p1” is the inlet and “p3” the outlet pressure of the valve. “p2” is the pressure actuating the integrated diaphragm unit (pos. 1 a) which maintains the differential pressure “p2” – “p3” at a constant level.

2 The integrated diaphragm unit (pos. 1 a) maintains the differential pressure “p2” – “p3” at a constant level via the regulating unit (pos. 2) which is activated through the actuator and via the nominal value unit (pos. 1 b) which can be set to a maximum flow value. Even where high differential pressure variations “p1” – “p3” occur, e.g. if sections of the system are activated or inactivated, the differential pressure “p2” – “p3” is kept at a constant level.

This way, the valve authorities of 100% are maintained (a=1). Even during low demand periods with steady control (e.g. in conjunction with 0-10 V actuators), the valve authority within the effective valve lift amounts to 100% (a=1).

3 The maximum flow volume (\dot{V}) within the control range (0.15 – 4 bar) is set with the help of the handwheel. During low demand periods, the flow rate is regulated to the required value by the lift position of the pressure independent control valve.



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Advantages:

- constant, high valve authority ($a=1$)
- differential pressure independent valve
- reduced dimensions
- the valve combines several functions
- dynamic, hydraulic balancing by setting the required flow value
- the installed valves do not require a readjustment if the installation is extended or modified

1 Even with the actuator in place, the required nominal values can be set and controlled with the help of the handwheel which is easily accessible.

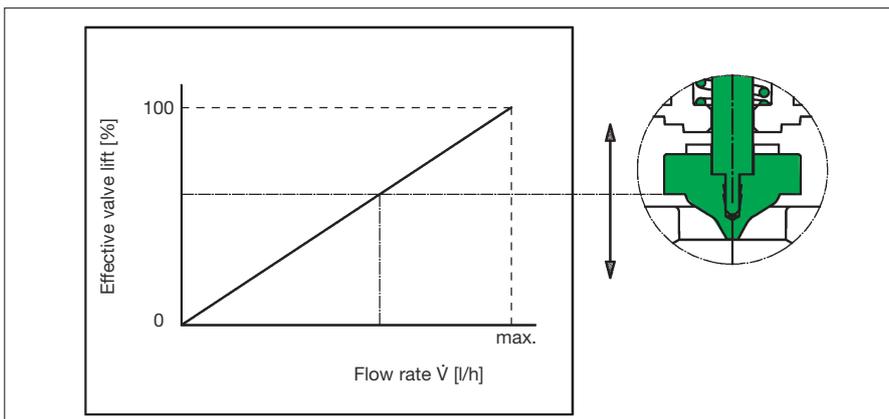
2 The set nominal value can be read off even with the actuator in place which is important for the control and documentation of the flow values. The nominal setting is protected against unauthorized tampering with the help of the handwheel which engages automatically. The setting can be additionally secured by inserting the red locking ring.

3 The nominal values are imprinted on two oblique (45°) handwheel surfaces ensuring an excellent optical display of the values in any installation position.

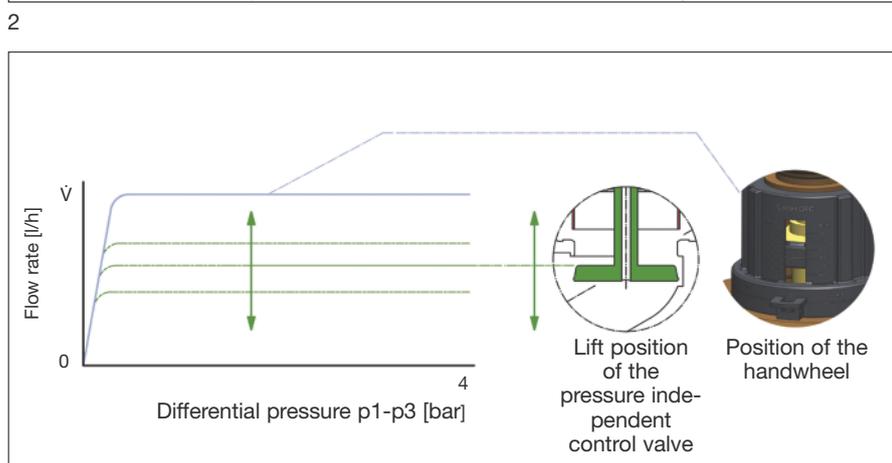
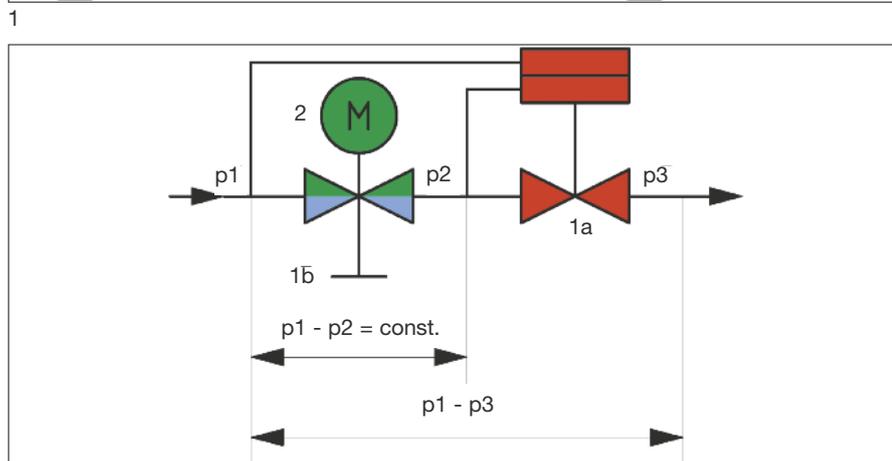
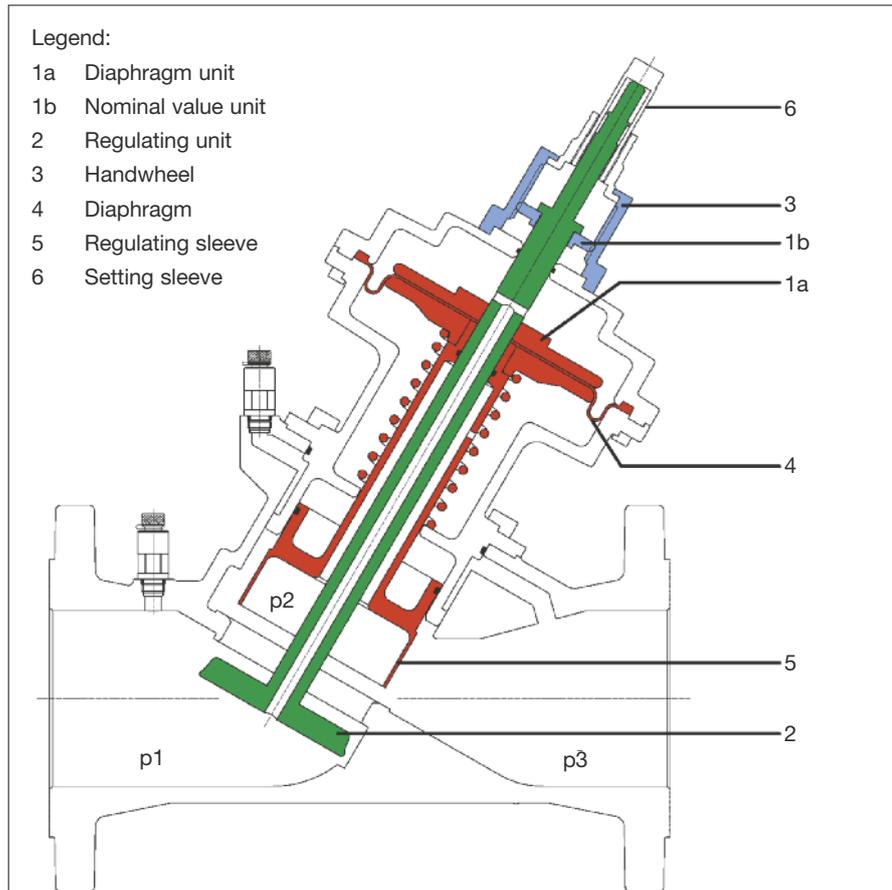
4 The locking ring can be lead sealed to secure the setting from unauthorized access.

5 The pump setting can be optimized with the help of a flow-meter (e.g. “OV-DMC 2”) which is connected to the pressure test points of the valve. For this purpose, the pump head is reduced until the pressure independent control valves “Cocon QTZ” are just working within the control range.

6 The “Cocon QTZ” valve has a linear characteristic line which is advantageous when using actuators (electrothermal or electromotive) which also have a linear stroke behaviour. In general, the “Cocon QTZ” valve may also be combined with a temperature controller.



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The pressure independent control valve “Cocon QTR/QFC” is a valve combination consisting of an automatic flow regulator (with manual nominal value setting) and a regulating valve. The pressure independent control valve can be equipped with an actuator.

The valve can be used for dynamic hydronic balancing and for temperature control of appliances or sections of the system in heating, air conditioning and cooling systems.

Models:

- DN 40 up to DN 150
- inlet and outlet port: flanged cast iron body: “Cocon QFC” or inlet and outlet port: male or female thread (DN 40/50) bronze body: “Cocon QTR”

1 The required flow rate is set at the handwheel (pos. 3). The nominal setting is protected against unauthorized tampering by engaging the locking clip. During low demand periods, regulation can be carried out with the help of an actuator which can be screwed onto the valve.

The illustrated section of the “Cocon QFC” valve shows three pressure ranges. “ p_1 ” is the inlet and “ p_3 ” the outlet pressure of the valve. “ p_2 ” is the pressure actuating the integrated diaphragm unit (pos. 1 a) which maintains the differential pressure “ p_1 ” – “ p_2 ” at a constant level.

2 The integrated diaphragm unit (pos. 1 a) maintains the differential pressure “ p_1 ” – “ p_2 ” at a constant level via the regulating unit (pos. 1 b) which is activated through the actuator and via the nominal value unit (pos. 1 b) which can be set to a maximum flow value. Even where high differential pressure variations “ p_1 ” – “ p_3 ” occur, e.g. if sections of the system are activated or inactivated, the differential pressure “ p_1 ” – “ p_2 ” is kept at a constant level.

This way, the valve authorities of 100% are maintained ($a=1$). Even during low demand periods with steady control (e.g. in conjunction with 0-10 V actuators), the valve authority within the effective valve lift amounts to 100% ($a=1$).

3 The maximum flow volume (V) within the control range (0.20 – 4 bar) is set with the help of the handwheel. During low demand periods, the flow rate is regulated to the required value by the lift position of the pressure independent control valve.



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Advantages:

- constant, high valve authority ($a=1$)
- differential pressure independent valve
- the valve combines several functions
- pressure balanced valve disc
- optimisation of the installation by measuring the valve differential pressure
- dynamic, hydraulic balancing by setting the required flow value
- the installed valves do not require a readjustment if the installation is extended or modified

1 Compact construction without external capillaries

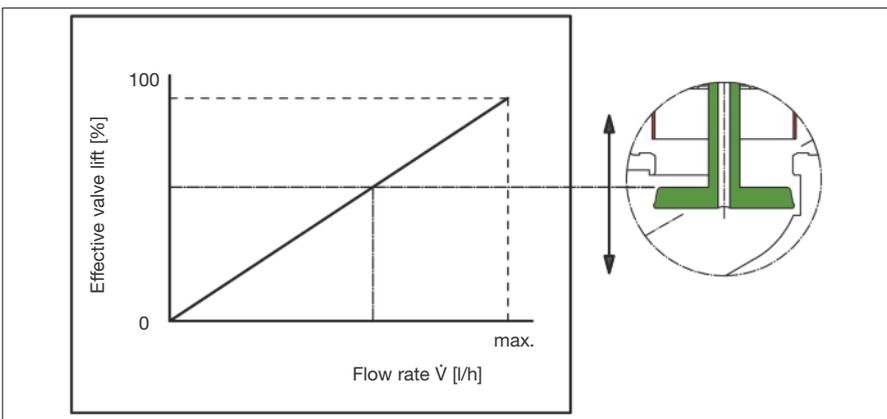
2 The nominal values are imprinted on three peripheral scales ensuring an excellent optical display of the values in any installation position.

3 The nominal values can be read off in (m^3/h) without conversion. The nominal value range of the valve is imprinted on the handwheel in a prominent position.

4 The locking clip can be lead sealed to secure the setting from unauthorized access.

5 The valve can also be operated without actuator. The setting sleeve supplied with the valve allows the operation with set flow value.

6 The “Cocon QFC/QTR” valve has a linear characteristic line which is advantageous when using actuators which also have a linear stroke behaviour.



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1 Pressure independent control valve “Cocon QTZ” with electromotive actuator for modulating control (0-10V) with connection thread M 30 x 1.5.

Item no.: 101 27 05

Choice of function and characteristic line via a DIP switch.

Suitable for heating, air conditioning and cooling systems for a precise flow and temperature control.

2 Electrothermal actuator, connection thread M 30 x 1.5, for room temperature control in conjunction with two-point controllers, connecting cable 1 m long.

Models:

Item no. 101 29 15 (closed with current “off”, 230 V)

Item no. 101 29 25 (opened with current “off” 230 V)

Item no. 101 29 16 (closed with current “off” 24 V)

Item no. 101 29 26 (opened with current “off” 24 V)

Item no. 101 29 51 (closed with current “off” 24 V; 0-10 V)

3 Electromotive actuator with connection thread M 30 x 1.5.

Item no.: 101 27 03

For room temperature control in conjunction with three-point controllers.

Suitable for radiant ceiling panels, chilled ceiling systems and induction air systems.

Model:

- 230 V, three-point actuator, without anti-blocking function

4 Electromotive actuator with connection thread M 30 x 1.5.

Item no. 101 27 10/11

For room temperature control in conjunction with two-point controllers.

Suitable for use in radiant ceiling panels, chilled ceiling systems and induction air systems.

Models:

- 230 V, two-point actuator, without anti-blocking function

- 24 V, two-point actuator, without anti-blocking function

5 Electromotive actuators with connection thread M 30 x 1.5, systems EIB and LON[®] with integrated bus coupling.

The electromotive actuators EIB and LON[®] are suitable for a direct connection to the European installation bus control system or to LONWORKS[®] networks. The power absorption is extremely low, so that a separate power supply is not needed.

Actuator	Voltage	Control behaviour		
		2-point	3-point	Proportional
Electro-thermal	24V	101 28 16/26* 101 29 16/26		101 29 52 (0-10V)*
	230V	101 28 15/25/17* 101 29 15/25		
Electro-motive	24V		101 27 01	101 27 00/05 (0-10V)
	230V	101 27 10	101 27 03*	
	EIB			115 60 65/66*
	LON			115 70 65*

Actuator index

* Actuators with piston strokes of less than 4 mm. When combining these actuators with the valves sized DN 25 and DN 32, the maximum possible flow rates will not be reached due to their small piston strokes.



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1 “Cocon QFC” valve with electromotive actuator for modulating control (0-10 V or 4-20 mA), may also be used for two- or three-point control, for “Cocon QFC/QTR” sized DN 40-150.

Item no. 115 80 30 (24 V), squeeze connection

Item no. 115 80 31 (24 V, with spring return*), squeeze connection

Choice of function and characteristic line via a DIP switch.

Suitable for heating, air conditioning and cooling systems for a precise flow and temperature control** and integration into the building automation.

* The spring return provokes an automatic opening of the valve if a breakdown of the operating current occurs.

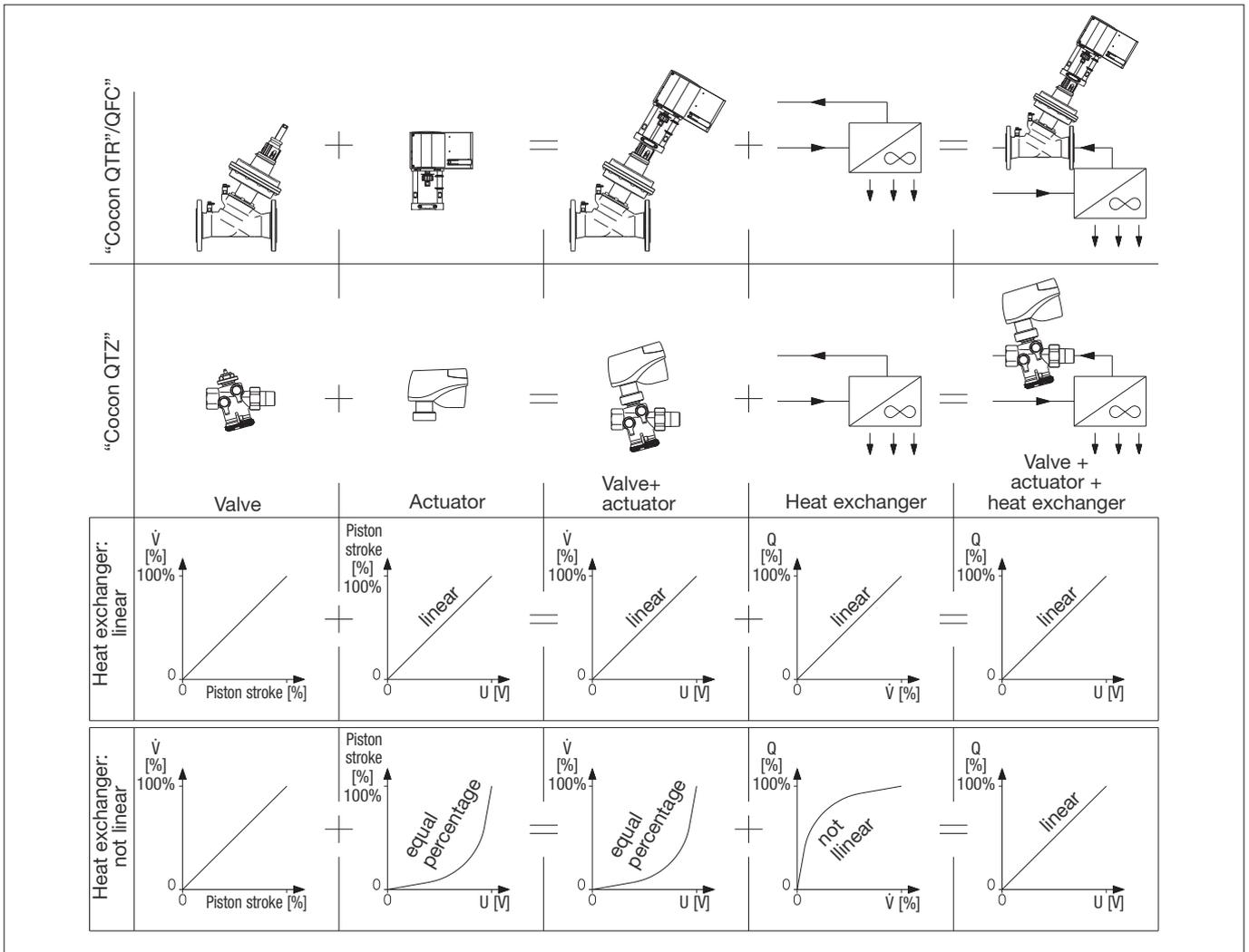
** Separate temperature controllers must be used for temperature control.

2 Electromotive actuator for modulating control (0-10 V), may also be used for two- or three-point control, for “Cocon QTR/QFC” sized DN 40/50.

Item no. 115 80 10, squeeze connection

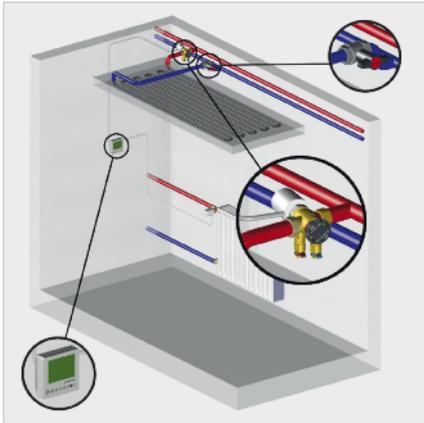
Choice of function and characteristic line via a DIP switch.

Suitable for heating, air conditioning and cooling systems for a precise flow and temperature control and integration into the building automation.

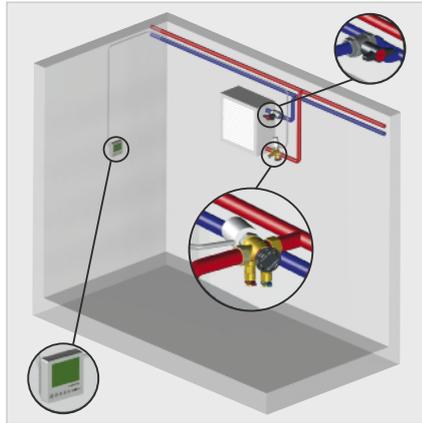


Optimisation of the interplay of valve, actuator and heat exchanger with modulating 0-10 V actuators.

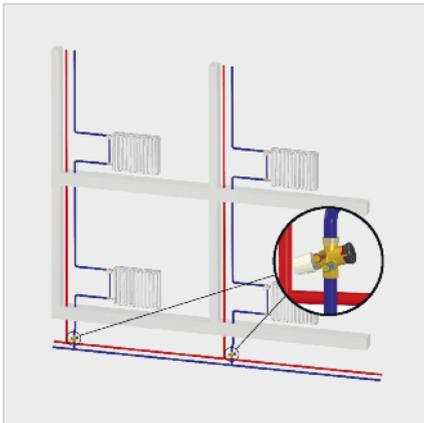
The illustrations show idealised characteristic lines explaining the control principle.



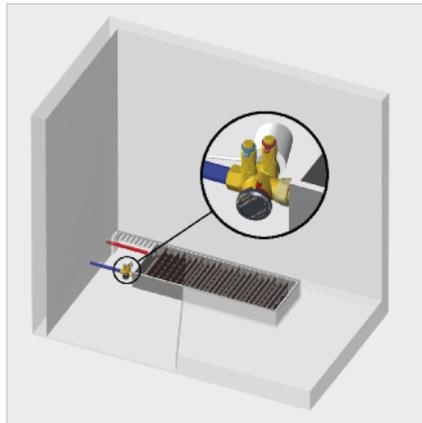
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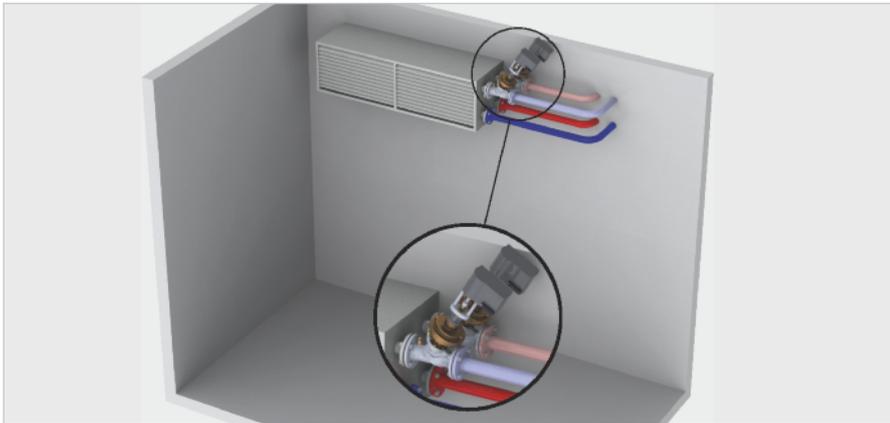
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1 Room temperature control via chilled ceilings

The pressure independent control valve “Cocon QTZ” is used in chilled ceiling systems for the hydronic balancing of individual chilled ceiling elements and for room temperature control with the help of actuators.

When sections of the system are activated or inactivated, the regulation of the remaining chilled ceilings is not influenced. In the example of the application, the “Cocon QTZ” valve is installed in the return pipe. The supply pipe can be isolated by using an Oventrop ball valve “Optibal”. Oventrop room thermostats and actuators are used for room temperature control.

2 Room temperature control via fan coils

The hydronic balance of each fan coil unit is guaranteed by the installation of the pressure independent control valves “Cocon QTZ” in the fan coil system. Due to the high authority of the valves, a good room temperature control is achieved even during low demand periods. Apart from the “Cocon QTZ” valves, Oventrop ball valves, actuators and room thermostats are also installed in this example.

3 Flow regulation in one pipe heating systems

The hydronic balance of the one pipe heating system is achieved by installing the “Cocon QTZ” valves in the return pipe. In the example of the application, the pressure independent control valve “Cocon QTZ” is equipped with a manual head for the isolation of the riser.

(Further information regarding the use of “Cocon QTZ” valves in one pipe heating systems can be found in the following leaflet:

“Unofix System for the refurbishment of one pipe heating systems with a good benefit/cost ratio”)

4 Room temperature control via convectors

The room temperature control and hydronic balancing of a heating or cooling system equipped with convectors, is guaranteed by using the pressure independent control valves “Cocon QTZ” with mounted actuators.

5 Room temperature control via combined heating and cooling systems

Hydronic balancing of heating and cooling elements. The nominal flow is set at the handwheel of the “Cocon QTR/QFC” valve. During low demand periods, the lift position of the valve is set by the actuator.

Further information can be found in the catalogue “Products” and on the internet, product range 3.

Subject to technical modifications.

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