

Tender specification:

The pressure independent control valve “Cocon QTZ” PN 25 with automatic, differential pressure independent flow control is a 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 regulating valve can be equipped with a temperature controller or a manual head (connection thread M 30 x 1.5).

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

Technical data:

Performance data

Max. operating temperature: 120 °C

Min. operating temperature: -10 °C

Max. operating pressure: 25 bar (2500 kPa)

Medium: Water or mixtures of water and ethylene/propylene glycol (max. 50 %), pH value 6.5-10, according to VDI 2035/ÖNORM 5195

Max. closing pressure: 6 bar (600 kPa) in the direction of flow

Control range:

| DN | Valve lift [mm] | Control range [l/h] (min.-max.) | Differential pressure p1-p3 (min.-max.) |
|----|-----------------|---------------------------------|---|
| 10 | 2.8 | 30- 210 | 10 - 600 kPa |
| 10 | 4 | 150- 700 | 13 - 600 kPa |
| 15 | 2.8 | 30- 210 | 10 - 600 kPa |
| 15 | 4 | 150- 700 | 13 - 600 kPa |
| 15 | 4 | 200-1300 | 16 - 600 kPa |
| 20 | 4 | 250-1800 | 18 - 600 kPa |
| 25 | 4 | 400-2500 | 20 - 600 kPa |
| 32 | 4 | 600-4800 | 23 - 600 kPa |

Data for actuator connection:

Connection thread: M 30 x 1.5

Closing dimension: 11.8 mm

Closing pressure (actuator): 90 - 150 N

Lower lift position: ≤ 11.3

Upper lift position: ≥ 14.6 (30-210 l/h)
≥ 15.8

Materials:

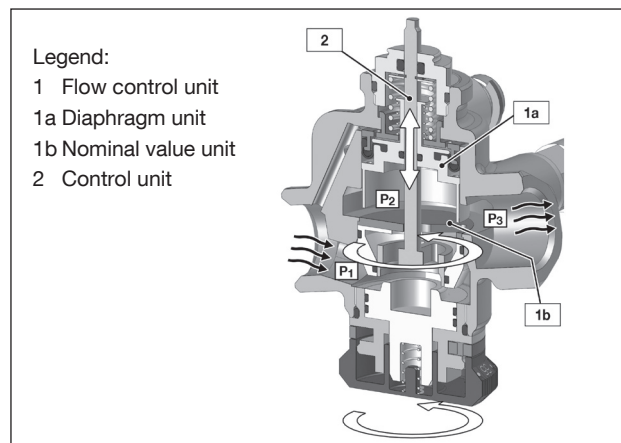
Body made of dezincification resistant brass, seals made of EPDM, valve stem made of stainless steel.

Function:

The required flow rate can be set at the handwheel (see page 3 at the bottom). The nominal value setting can be secured by engaging the handwheel and by inserting the locking ring, which is lead sealable. 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.

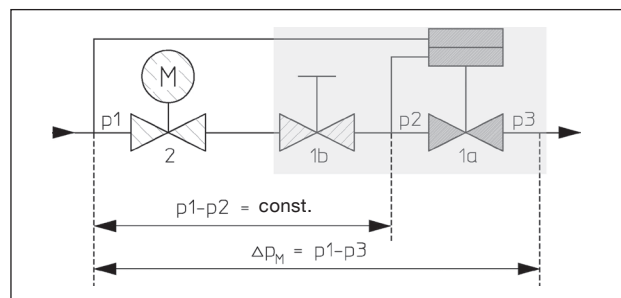


“Cocon QTZ” PN 25



Legend:

- 1 Flow control unit
- 1a Diaphragm unit
- 1b Nominal value unit
- 2 Control unit



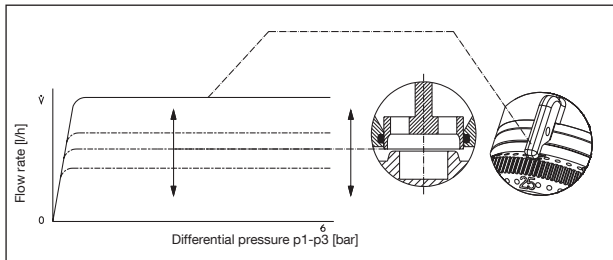
The illustrated section of the pressure independent control valve “Cocon QTZ” shows three pressure ranges.

“p1” is the inlet pressure, “p3” the outlet pressure of the valve. “p2” is the pressure actuating the integrated diaphragm unit (pos. 1a) which maintains the differential pressure “p1”-“p2” at a constant level via the regulating unit (pos. 2) which is activated through the actuator and via the nominal value unit (pos. 1b) which can be set to a maximum flow rate.

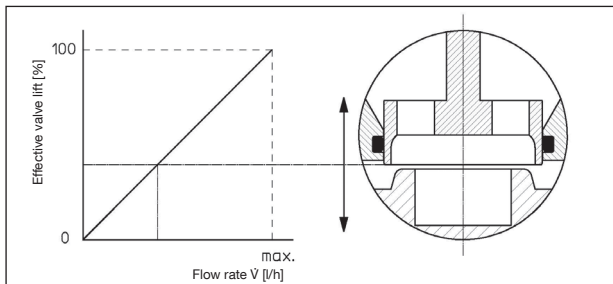
Even where high differential pressure variations “p1” - “p3” occur, for instance if sections of the system are activated or inactivated, the differential pressure “p1” - “p2” is kept at a constant level. This way, the valve authority of 100% is maintained (a = 1). Even during low demand periods with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

Advantages:

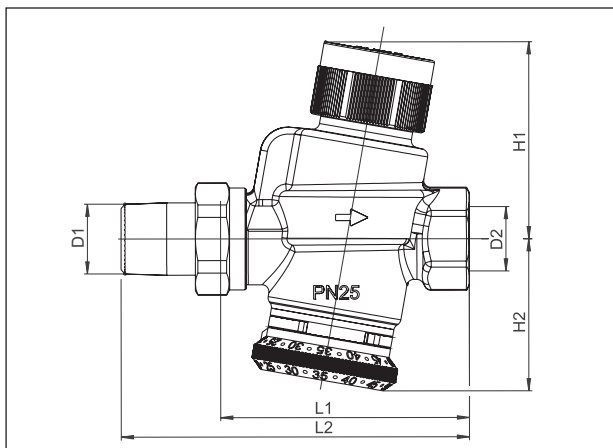
- constant high valve authority
- small sizes
- presetting of the nominal values even with mounted actuator
- optical display of the set nominal value even with mounted actuator
- excellent optical display of the presetting in any installation position
- nominal values can be read off in l/h without conversion
- presetting is secured by engaging the handwheel
- presetting can be locked and lead sealed with the help of the locking ring
- installation can be optimised by measuring the regulating pressure
- almost linear characteristic line if actuator driven
- high valve lift, even with small presetting values
- soft sealing valve disc
- draining, filling, bleeding and flushing of the system via the measuring connections



The maximum flow rate (\dot{V}) within the control range is set with the help of the handwheel. During low demand periods, room temperature control may, for instance, be carried out with the help of actuators and room thermostats.

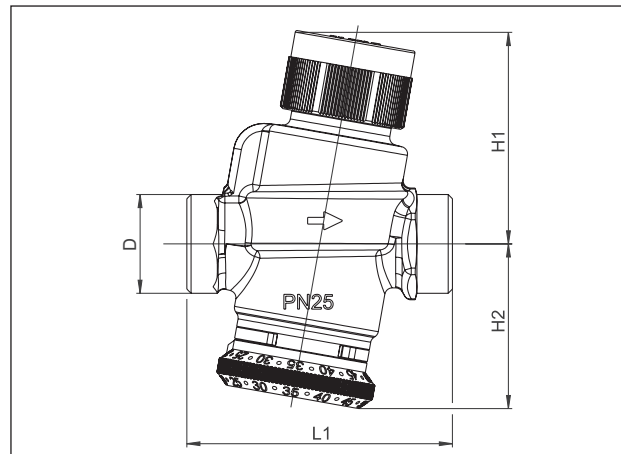


The pressure independent control valve “Cocon QTZ” has an almost linear characteristic line within the effective valve lift. This is advantageous when using actuators (electrothermal or electromotive) which also have a linear stroke behaviour across the control voltage. In general, the valve can also be combined with a temperature controller.



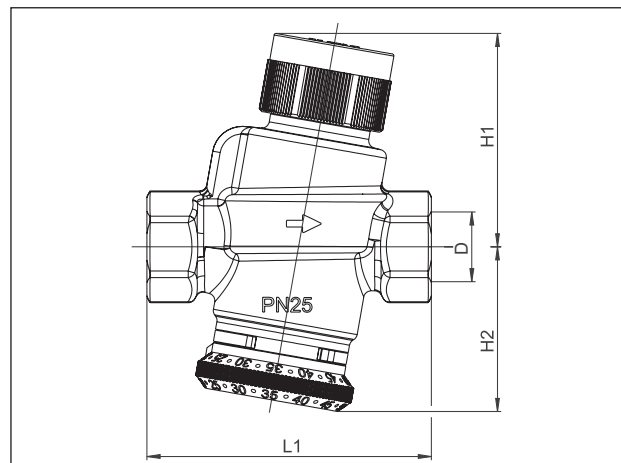
| DN | L ₁ | L ₂ | H ₁ | H ₂ | D ₁ | D ₂ |
|----|----------------|----------------|----------------|----------------|----------------|----------------|
| 15 | 72 | 100.8 | 57 | 44 | R 1/2 | Rp 1/2 |
| 20 | 91 | 122.7 | 63.8 | 48.8 | R 3/4 | Rp 3/4 |
| 25 | 101 | 136 | 61.8 | 50.5 | R 1 | Rp 1 |
| 32 | 129 | 169.9 | 71.4 | 70.3 | R 1 1/4 | Rp 1 1/4 |

Dimensions



| DN | L ₁ | H ₁ | H ₂ | D |
|----|----------------|----------------|----------------|---------|
| 10 | 71 | 57 | 44 | G 1/2 |
| 15 | 71 | 57 | 44 | G 3/4 |
| 20 | 91 | 63.8 | 48.5 | G 1 |
| 25 | 103 | 61.8 | 50.58 | G 1 1/4 |
| 32 | 129 | 71.4 | 70.3 | G 1 3/4 |

Dimensions



| DN | L ₁ | H ₁ | H ₂ | D |
|----|----------------|----------------|----------------|----------|
| 15 | 76 | 57 | 44 | Rp 1/2 |
| 20 | 91 | 63.8 | 48.5 | Rp 3/4 |
| 25 | 101 | 61.8 | 50.5 | Rp 1 |
| 32 | 130 | 71.4 | 70.3 | Rp 1 1/4 |

Dimensions

Actuators:

The pressure independent control valves “Cocon QTZ” can be combined with the Oventrop actuators* (M 30 x 1.5).

When using actuators with piston strokes smaller than 4 mm, the following must be observed:

Due to the smaller piston strokes, the maximum possible flow rates will not be reached when combining these actuators with the valves.

This does not apply to the valves DN 10: 30-210 l/h and DN 15: 30-210 l/. The “Cocon QTZ” valves can also be used with Oventrop thermostats and temperature controllers*.

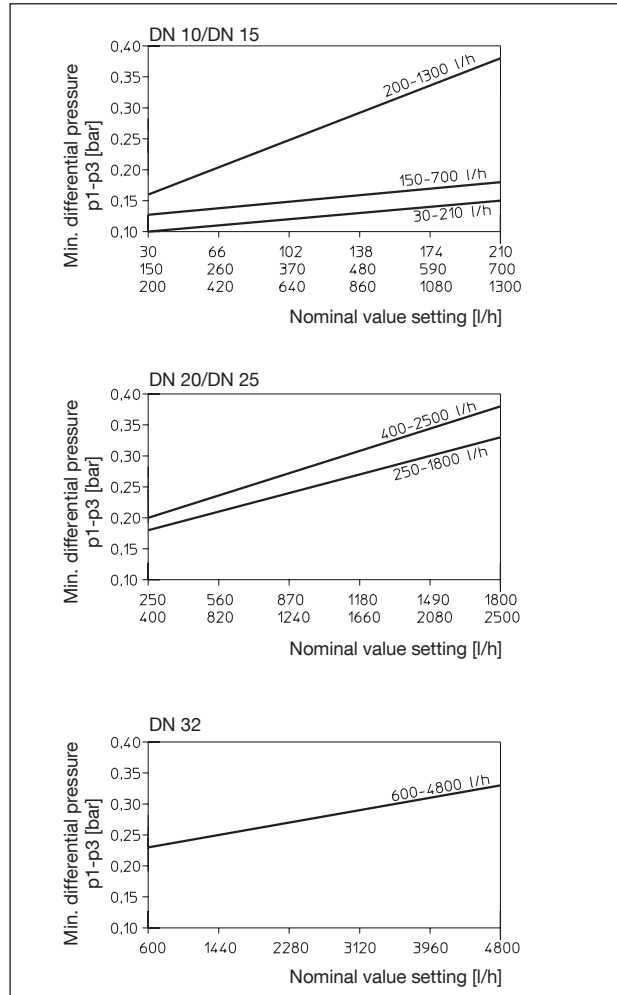
*See Oventrop data sheets “Actuators” and “Temperature controllers”

Min. differential pressure p1 – p3 for the valve design:

The minimum required differential pressure p1-p3 across the valve can be obtained from the below chart:

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.

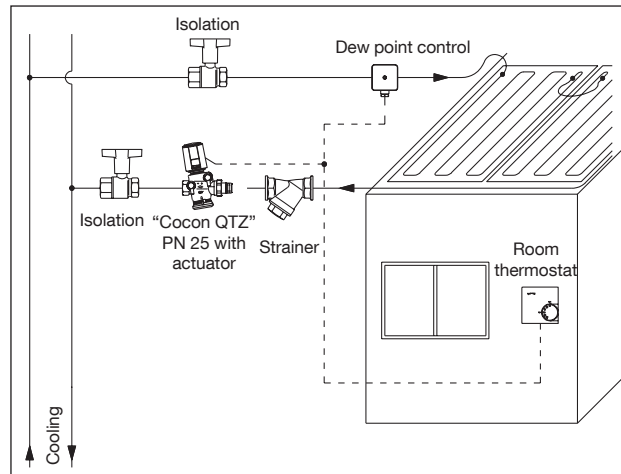


Installation:

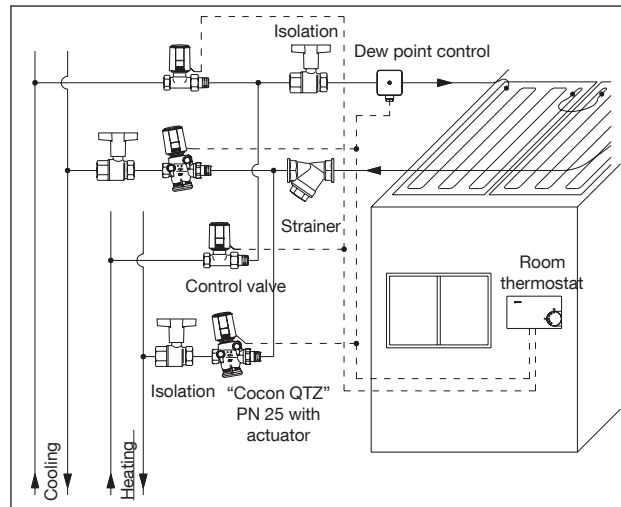
- The direction of flow must conform to the arrow on the valve body.
- The valve may be installed in any position (electric actuators must not be installed in a vertical downward position, the data sheets of the actuators must be observed).
- Do not use any greasing agents or oil for the installation, 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 has to be considered (e.g. VDI 2035).
- 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.

Pipe connection:

- Use suitable “Ofix” compression fittings, tailpipe connection sets or inserts (when using flat sealing tailpipes) of the Oventrop product range.



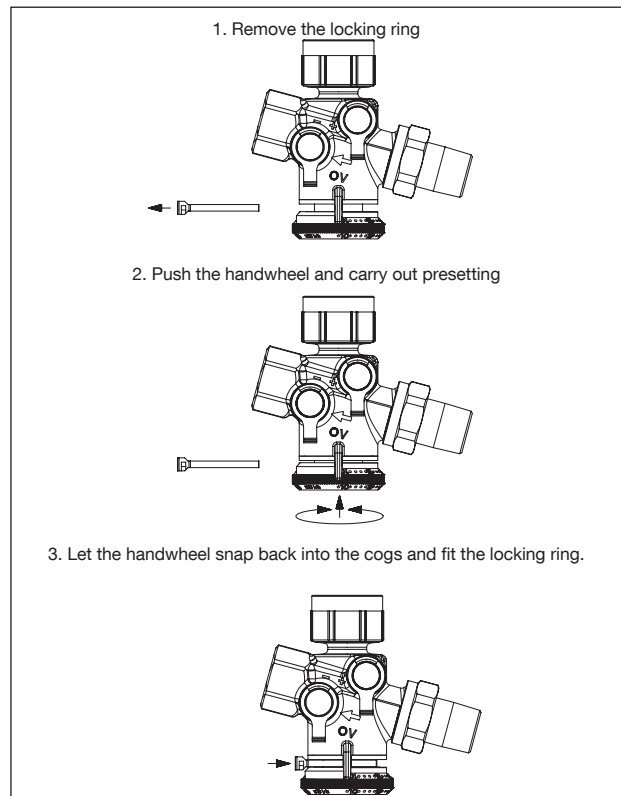
System illustration: Two pipe system



System illustration: Four pipe system

Setting of the flow rate:

The maximum flow rate can be set with the help of the protected presetting at the handwheel.

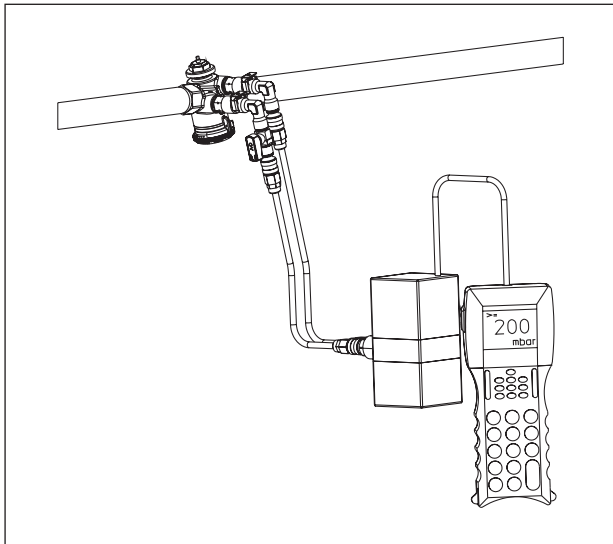


Differential pressure measurement p1-p3:

The measuring system “OV-DMC 2 /OV-DMC 3” can be connected to the pressure test points (model “Cocon QTZ” with 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.

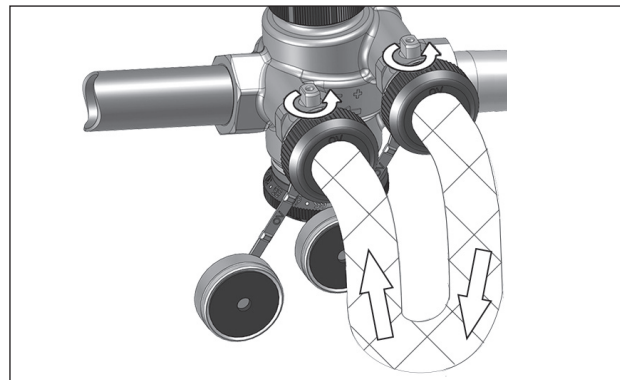
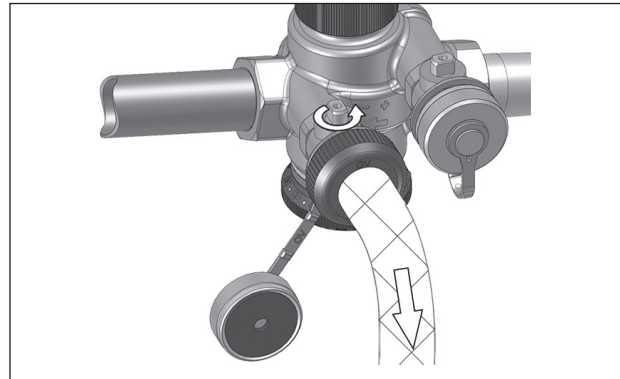
For this purpose, the pump head is reduced until the hydraulically underprivileged valves are just working within the control range.

To do so, the regulating valve must be fully open (unscrew the protection cap or set the actuator to open position). As soon as the measured differential pressure has reached or exceeded the differential pressure Δp_M indicated in the chart, the valve works within the control range.



Differential pressure measurement p1-p3

Sections of the system can be drained, filled, flushed and bled with the “Cocon QTZ” in mounted condition. Fill and drain ball valves (accessory) which are fitted to the measuring connections of the valve can be used for this purpose.



| DN | Control range [l/h] | kvs value | Item no. | | | | | |
|----|---------------------|-----------|-------------------------|-----------------|---------------|---------------------------|-----------------|---------------|
| | | | without pressure points | | | with pressure test points | | |
| | | | male/male | female/coupling | female/female | male/male | female/coupling | female/female |
| 10 | 30-210 l/h | 0.55 | 1143563 | – | – | 1143163 | – | – |
| 10 | 150-700 l/h | 1.7 | 1143663 | – | – | 1143263 | – | – |
| 15 | 30-210 l/h | 0.55 | 1143564 | 1143504 | 1147204 | 1143164 | 1143104 | 1149204 |
| 15 | 150-700 l/h | 1.7 | 1143664 | 1143604 | 1147304 | 1143264 | 1143204 | 1149304 |
| 15 | 200-1300 l/h | 2.1 | 1143764 | 1143704 | 1147404 | 1143364 | 1143304 | 1149404 |
| 20 | 250-1800 l/h | 3.1 | 1143666 | 1143606 | 1147306 | 1143266 | 1143206 | 1149306 |
| 25 | 400-2500 l/h | 4.1 | 1143668 | 1143608 | 1147308 | 1143268 | 1143208 | 1149308 |
| 32 | 600-4800 l/h | 8.4 | 1143670 | 1143610 | 1147310 | 1143270 | 1143210 | 1149310 |

Subject to technical modifications without notice.

Product range 3
 ti 391-EN/10/MW
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