

#### Application:

The pressure independent control valve Cocon QTZ PN 16 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: 16 bar (1600 kPa)

Fluid: 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: 16 bar (1600 kPa) in the direction of flow

#### Control range:

| DN | Control range [l/h] (min.-max.) | Differential pressure $p_1-p_3$ (min.-max.) |
|----|---------------------------------|---|
| 10 | 30 - 210                        | 0.2 bar-4 bar<br>(20 kPa-400 kPa)           |
| 10 | 90 - 450                        |   |
| 15 | 30 - 210                        |   |
| 15 | 90 - 450                        |   |
| 15 | 150-1050                        |   |
| 20 | 150-1050                        |   |
| 20 | 180-1300                        | 0.15 bar-4 bar<br>(15 kPa-400 kPa)          |
| 25 | 300-2000                        |   |
| 32 | 600-3600                        |   |

#### Data for actuator connection:

Connection thread: M 30 x 1.5  
 Control piston stroke: 2.8 mm (DN 10/15/20: 30-1050 l/h)  
 3.5 mm (DN 20: 180-1300 l/h)  
 4 mm (DN 25 und DN 32)

Closing dimension: 11.8 mm

Closing force (actuator): 90 - 150 N

#### Materials:

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

#### Function:

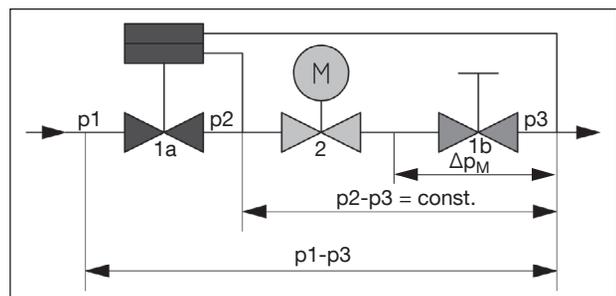
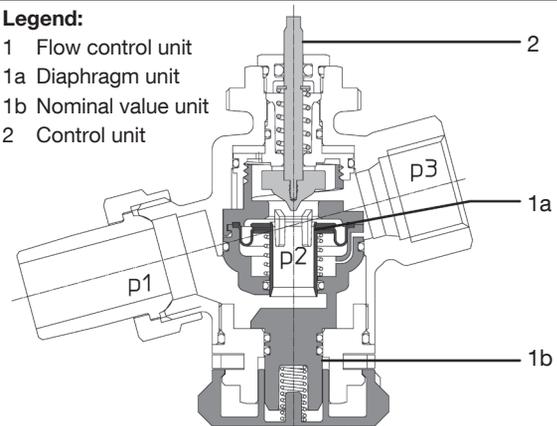
The required flow rate can be set at the handwheel (see page 3 at the bottom). The nominal value setting can be secured by engaging the handwheel and by inserting the locking ring, which is lead sealable. During low demand periods, regulation can be carried out with the help of an actuator or a temperature controller, which can be screwed onto the valve.



Cocon QTZ PN 16

#### Legend:

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



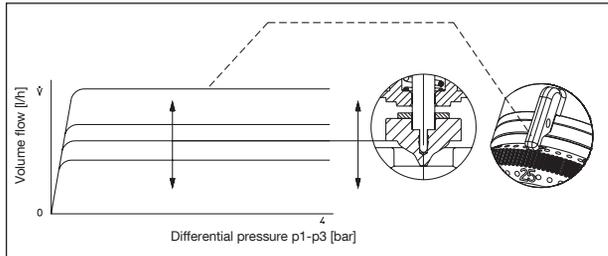
The illustrated section of the pressure independent control valve Cocon QTZ shows three pressure ranges.

“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.

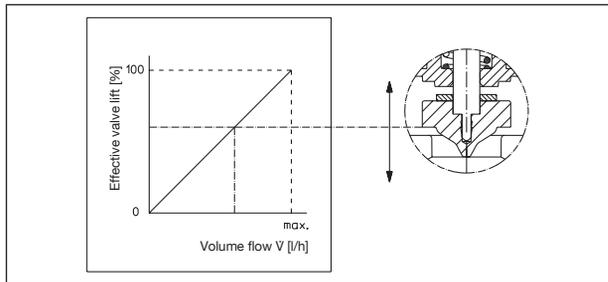
Even where high differential pressure variations “p1” – “p3” occur, for instance if sections of the system are activated or inactivated, the differential pressure “p1” – “p2” is kept at a constant level. This way, the valve authority of 100% is maintained (a = 1). Even during low demand periods with 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:

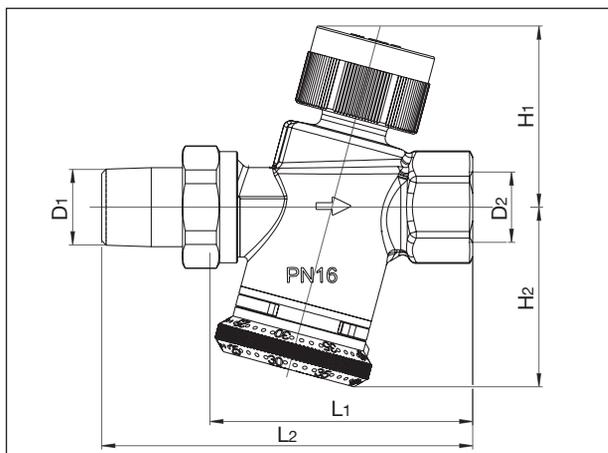
- constant high valve authority
- small sizes
- presetting of the nominal values even with mounted actuator
- optical display of the set nominal value even with mounted actuator
- excellent optical display of the presetting in any installation position
- nominal values can be read off in l/h without 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



The maximum volume flow ( $\dot{V}$ ) 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.

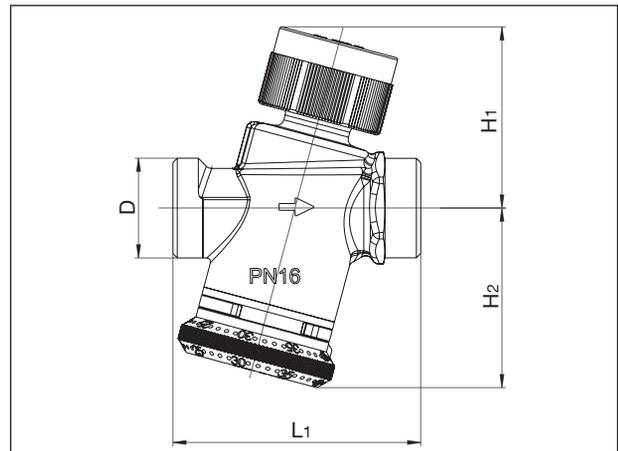


The pressure independent control valve Cocon QTZ has an almost linear characteristic line within the effective valve lift. This is advantageous when using actuators (electrothermal or electromotive) which also have a linear stroke behaviour across the control voltage. In general, the valve can also be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



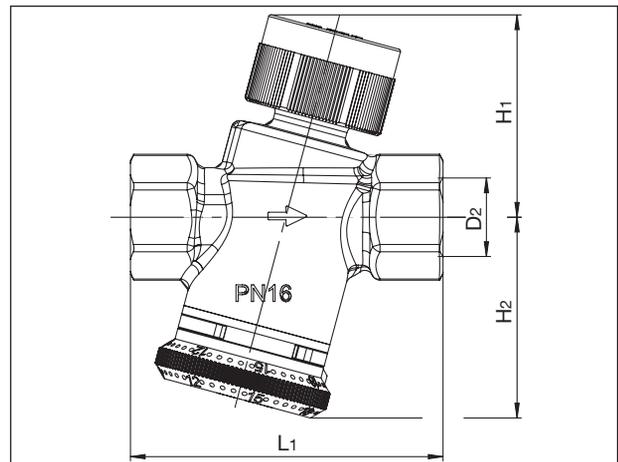
| DN                | L1   | L2    | H1 | H2   | D1      | D2       |
|-------------------|------|-------|----|------|---------|----------|
| 15                | 70   | 98.5  | 52 | 48   | R 1/2   | Rp 1/2   |
| 20 (150-1050 l/h) | 74   | 106   | 52 | 48   | R 3/4   | Rp 3/4   |
| 20 (180-1300 l/h) | 85.5 | 117.5 | 58 | 54.5 | R 3/4   | Rp 3/4   |
| 25                | 118  | 154   | 66 | 79   | R 1     | Rp 1     |
| 32                | 124  | 165   | 66 | 79   | R 1 1/4 | Rp 1 1/4 |

Dimensions



| DN                | L1  | H1 | H2   | D       |
|-------------------|-----|----|------|---------|
| 10                | 60  | 54 | 46   | G 1/2   |
| 15                | 66  | 52 | 48   | G 3/4   |
| 20 (150-1050 l/h) | 74  | 52 | 48   | G 1     |
| 20 (180-1300 l/h) | 84  | 58 | 54.5 | G 1     |
| 25                | 118 | 66 | 79   | G 1 1/4 |
| 32                | 124 | 66 | 79   | G 1 3/4 |

Dimensions



| DN                | L1   | H1 | H2   | D        |
|-------------------|------|----|------|----------|
| 15                | 74,5 | 52 | 48   | Rp 1/2   |
| 20 (150-1050 l/h) | 78   | 52 | 48   | Rp 3/4   |
| 20 (180-1300 l/h) | 89   | 58 | 54.5 | Rp 3/4   |
| 25                | 122  | 66 | 79   | Rp 1     |
| 32                | 130  | 66 | 79   | Rp 1 1/4 |

Dimensions

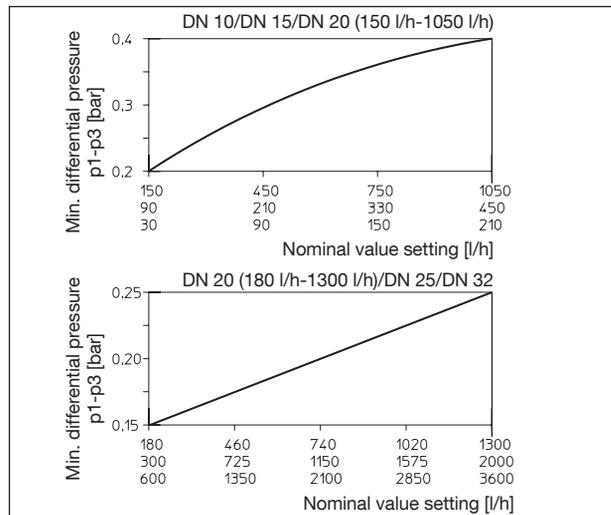
Actuators:

The Cocon QTZ valves can be combined with different Oventrop actuators (connection thread M 30x1.5, operating voltage 24 V or 230 V, two point/three point or steady control).

The Cocon QTZ valves can also be used with Oventrop thermostats and Oventrop temperature controllers.

The complete range of actuators can be found in the Oventrop catalogue and on the internet.

Min. differential pressure  $p_1 - p_3$  for the valve design:  
The minimum required differential pressure  $p_1-p_3$  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.

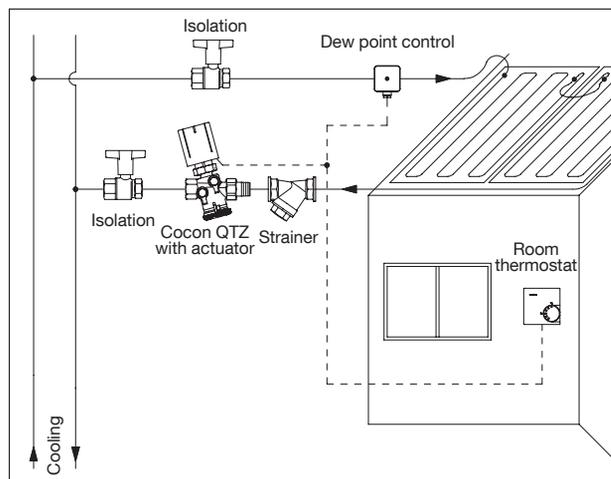


**Installation:**

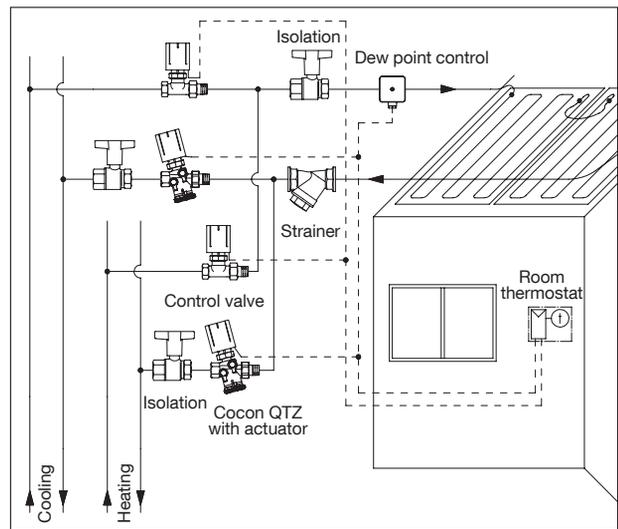
- The direction of flow must conform to the arrow on the valve body.
- The valve may be installed in any position (electric actuators must not be installed in a vertical downward position, the data sheets of the actuators must be observed).
- Do not use any greasing agents or oil for the installation,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



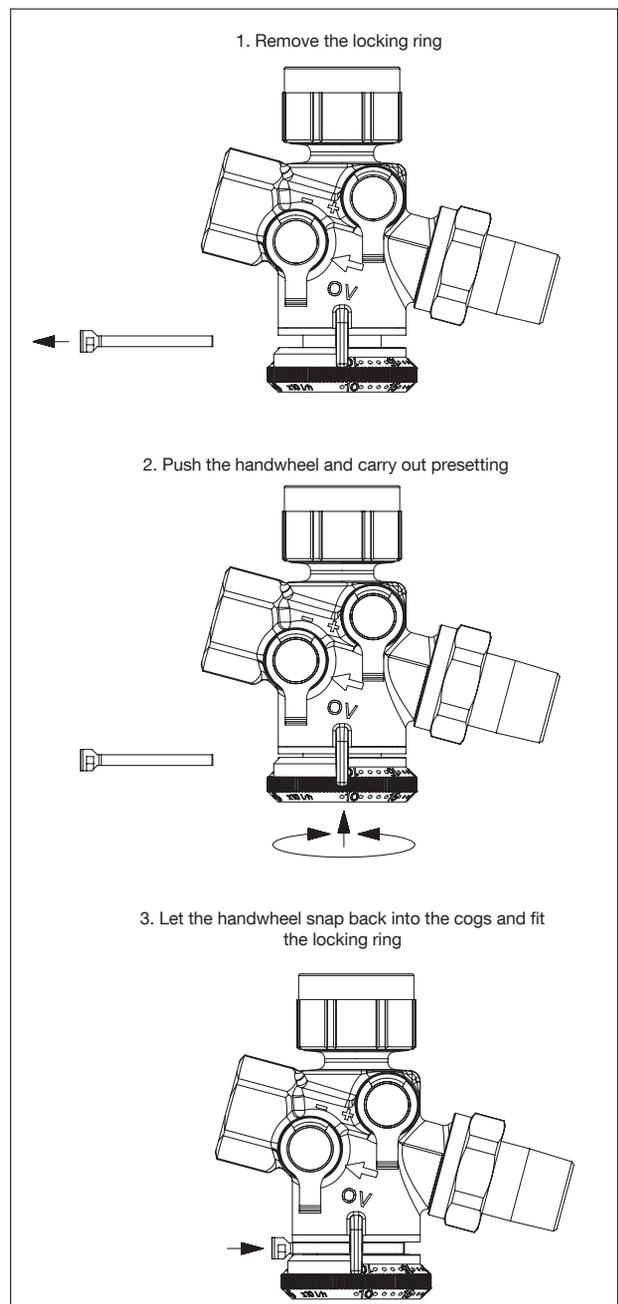
System illustration: Two pipe system



System illustration: Four pipe system

**Setting of the flow rate:**

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



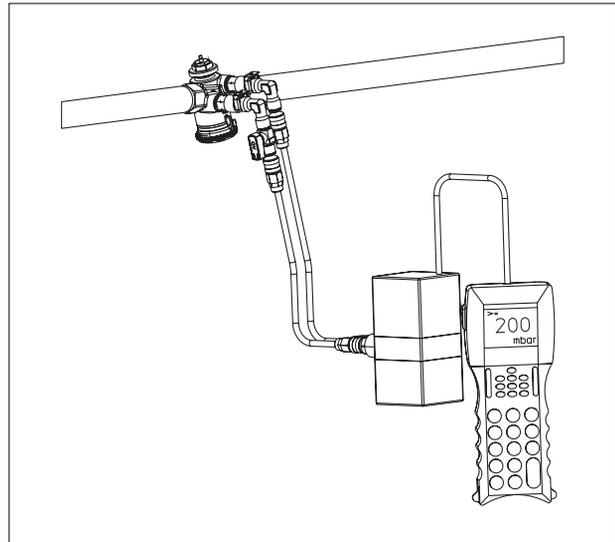
**Pressure test points:**

The measuring system 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.

As the measured differential pressure is not equal to the minimum differential pressure ( $p_1 - p_3$ ) for valve design, the following charts must be used.

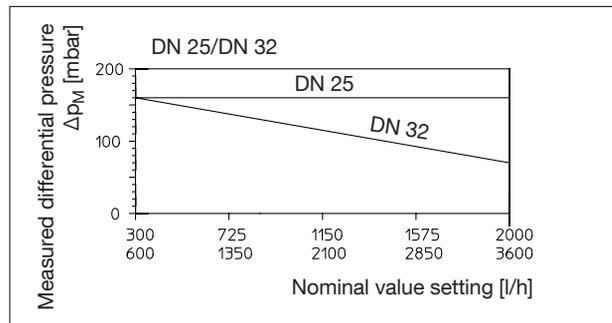
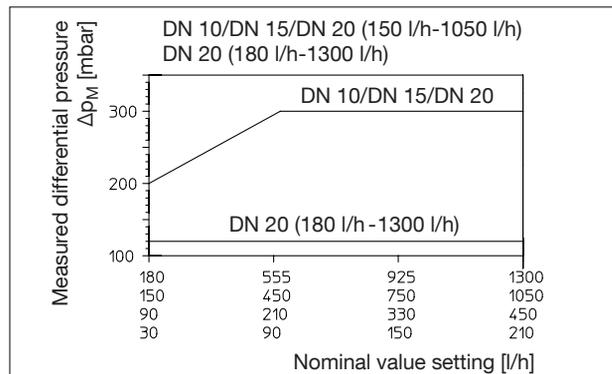
With a measuring system (e.g. OV-DMC 3) connected, the differential pressure is measured across the flow control unit. The regulating valve must be fully open (unscrew the protection cap or set the actuator to open position). As soon as the measured differential pressure has reached or exceeded the differential pressure  $\Delta p_M$  indicated in the chart, the valve works within the control range.



Pressure test points

**Maintenance:**

The valve has to be serviced if malfunctions occur. The gland is replaceable under working conditions.



| DN | Control range [l/h] | kvs value | Item no.                     |                 |               |   |                 |               |
|----|---------------------|-----------|------------------------------|-----------------|---------------|---|-----------------|---------------|
|    |                     |           | without pressure test points |                 |               | with pressure test points measuring technique "classic" |                 |               |
|    |                     |           | male/male                    | female/coupling | female/female | male/male   | female/coupling | female/female |
| 10 | 30-210              | 0,5       | 1145563                      | -               | -             | 1146063   | -               | -             |
| 10 | 90-450              | 1,1       | 1145663                      | -               | -             | 1146163   | -               | -             |
| 15 | 30-210              | 0,5       | 1145564                      | 1145504         | 1147504       | 1146064   | 1146004         | 1148504       |
| 15 | 90-450              | 1,1       | 1145664                      | 1145604         | 1147604       | 1146164   | 1146104         | 1148604       |
| 15 | 150-1050            | 1,8       | 1145764                      | 1145704         | 1147704       | 1146264   | 1146204         | 1148704       |
| 20 | 150-1050            | 1,8       | 1145566                      | 1145506         | 1147506       | 1146066   | 1146006         | 1148506       |
| 20 | 180-1300            | 2,5       | 1145666                      | 1145606         | 1147606       | 1146166   | 1146106         | 1148606       |
| 25 | 300-2000            | 4         | 1145668                      | 1145608         | 1147608       | 1146168   | 1146108         | 1148608       |
| 32 | 600-3600            | 7,2       | 1145670                      | 1145610         | 1147610       | 1146170   | 1146110         | 1148610       |

Models

**Insulation shells DN 15 – DN 32**

**Tender specification:**

The insulation shells have a CFC-free inner core made of polyurethane rigid foam with a 1.5 mm plastic coat.

They consist of two double shells which are tightened by two metal straps.

For heating and cooling systems.

Building material class B2 according to DIN 4102.

Operating temperature  $t_s$ : -10 °C up to +120 °C.

**Models:**

DN 15 – DN 20  
DN 20, model 180 – 1300 l/h  
DN 25 – DN 32

**Item no.**

1149104  
1149106  
1149108

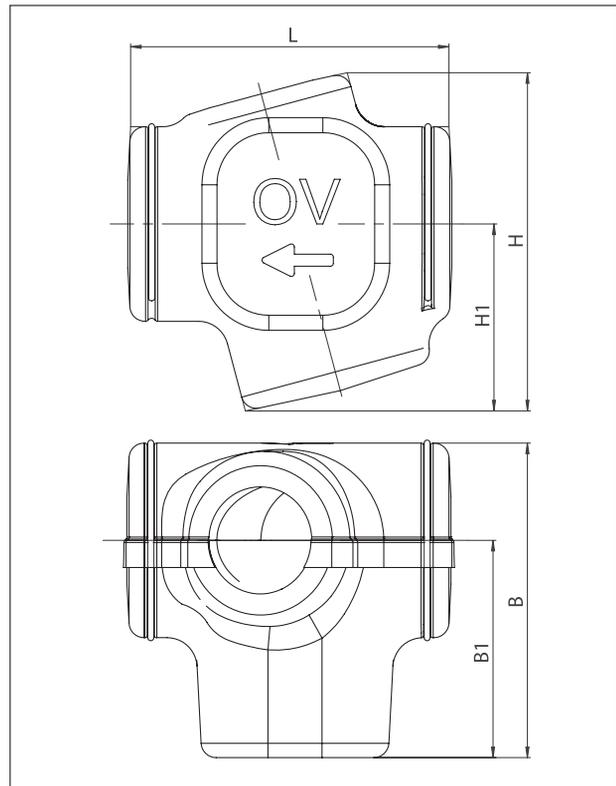
**Accessories:**

Adapter with stem for Cocon QTZ

1149190

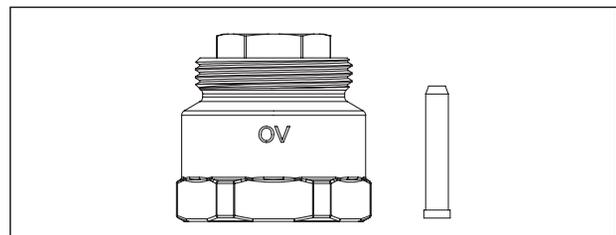
Extension = 25 mm

Is required if the Cocon QTZ valves shall be equipped with insulation shells and actuators.



| DN    | L   | H   | H1  | B   | B1 | Item no. |
|-------|-----|-----|-----|-----|----|----------|
| 15/20 | 106 | 112 | 62  | 105 | 72 | 1149104  |
| 20*   | 116 | 125 | 69  | 120 | 82 | 1149106  |
| 25/32 | 166 | 169 | 101 | 154 | 97 | 1149108  |

Dimensions - \* Model: 180 – 1300 l/h



Adapter with stem

One pipe heating system:

| Configuration level of the one pipe heating system                    |  | Advantages  |
|---|--|---|
| 1. Constant volume flows for each riser                               | <p>1a Hydronic balancing of the one pipe heating system</p> <p>Cap 1146091<br/>+<br/>Cocon QTZ DN 10-DN 32</p>   | <ul style="list-style-type: none"> <li>- Hydronic balancing by constant volume flows in the one pipe heating risers</li> <li>- The risers do not influence each other</li> <li>- No undersupply</li> </ul>  |
|   | <p>1b Hydronic balancing + temperature setback of the dwelling unit</p> <p>Digital room thermostat 1152561/ 1152562<br/>+<br/>actuator 1012415/ 1012416<br/>+<br/>Cocon QTZ DN 10-DN 32</p> <p>Rooms supplied by the riser must belong to one dwelling unit!</p> | <ul style="list-style-type: none"> <li>- Hydronic balancing by constant volume flows in the one pipe heating risers</li> <li>- The risers do not influence each other</li> <li>- No undersupply</li> <li>+<br/>- Additional energy savings by reduction of the volume flow and of the heat loss during low demand periods, e.g. night setback</li> <li>- Daily and weekly setback periods programmable via a digital room thermostat</li> </ul>   |
| 2. Variable volume flows for each riser by return temperature limiter | <p>2 Hydronic balancing + return temperature limitation + minimum flow rate</p> <p>Uni RTLH 1149068<br/>+<br/>Distance piece 1149090<br/>+<br/>Cocon QTZ DN 10-DN 32</p>   | <ul style="list-style-type: none"> <li>- Hydronic balancing by constant volume flows in the one pipe heating risers</li> <li>- The risers do not influence each other</li> <li>- No undersupply</li> <li>+<br/>- Energy savings by return temperature limitation</li> <li>- Room temperature control is improved by the reduction of the volume flow during low demand periods as overheating is avoided</li> <li>- Quick reactivation after reduction to a minimum volume flow which is guaranteed by a distance piece</li> <li>- Low return temperatures (important for gross calorific appliances and district heating systems)</li> </ul> |

To be observed: The Cocon QTZ valves should not be installed in rooms which are sensitive to noise.

Subject to technical modifications without notice.

Product range 3  
ti 218-EN/10/MW  
Edition 2020