

Application:

Four port fixed orifice double regulating and control valve “Cocon 4” for heating and cooling systems (e.g. Fan Coil units, chilled ceiling modules and fan convectors).

Max. working temperature: + 120 °C

Min. working temperature: - 10 °C

Max. working pressure: 10 bar

Max. differential pressure: 1 bar

Fluid: Water, ethylene glycol water mixtures or propylene glycol water mixtures (max. 50%)
pH value 6.5 to 10

Models:

Measuring technic “classic”, ½" male thread with 15 mm compression fittings:

| Item no. | k_{VS} value | k_V value of the fixed orifice | Marking on gland and protection cap |
|--------------|------------------|----------------------------------|-------------------------------------|
| 114 80/81 51 | 0.45 | 0.61 | P1 |
| 114 80/81 52 | 1.0 | 1.06 | P2 |
| 114 80/81 53 | 1.8 | 2.80 | P3 |
| 114 80 .. | - Standard model | | |
| 114 81 .. | - Parallel model | | |

Function:

The Oventrop regulating valve “Cocon 4” controls the room temperature by changing the flow rate to the terminal unit by use of actuators whilst maintaining an almost constant flow within the distribution circuit.

Due to the reduction of the bypass flow rate to 70%, the resistance of the terminal unit is taken into account.

Setting of the flow rate is carried out by use of the integrated, hidden, infinitely adjustable presetting device with memory position. The flow rate can be directly read off the flow meter “OV-DMC 2” when connected to the two pressure test points. The terminal unit can be isolated from the system and can be drained, filled, bled and flushed with the help of the service tool (available separately).

Bronze body, seals made of EPDM or PTFE, bonnet made of brass resistant to dezincification, valve stem made of stainless steel with double O-ring seal.

Installation:

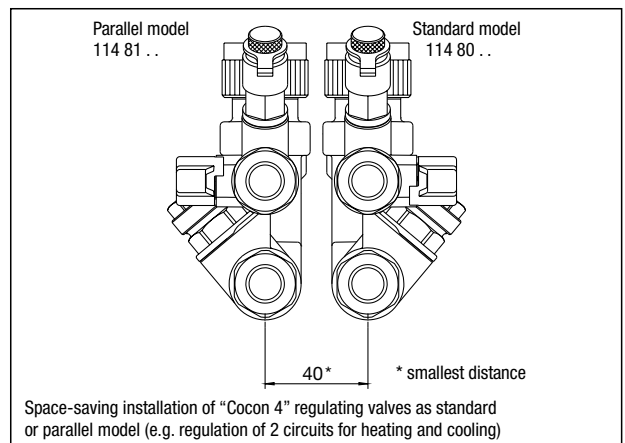
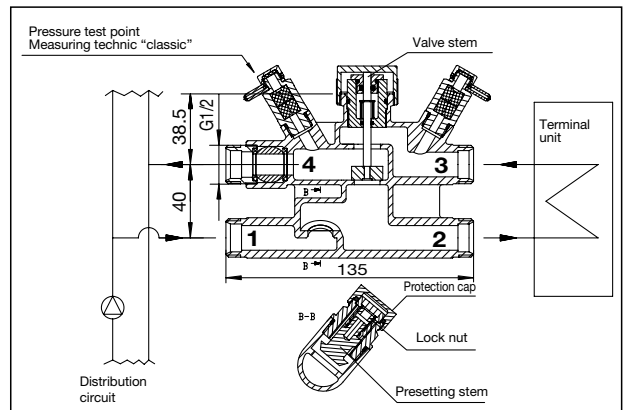
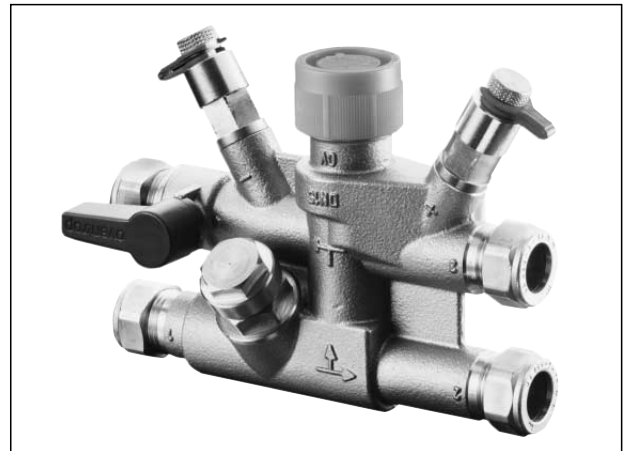
- The flow direction must comply with the arrow on the valve body.
- The valve may be installed in any position (electric actuators may not be installed vertically downwards).
- Do not use any lubricant or oil when installing the valve, as these may destroy the valve seals.
If necessary, all lubricant or oil residues must be removed from the pipework by flushing the latter.
- All installation work being completed, check all installation points for leaks.
- Before initial operation, bleed distribution circuit and terminal unit thoroughly.

Pipe connection / 15 mm compression fitting:

- Before connection, cut copper pipe at a right angle and deburr and calibrate if required. Please ensure that the connection surface does not show any damage and that the pipe protrudes the compression ring for at least 2 mm.
- When installing copper pipes with a wall thickness ≤ 1 mm (> 1 mm according to the instructions of the pipe manufacturer), reinforcing sleeves are to be used.
- In case of tensile or flexional strains, the pipes have to be fixed additionally.
- Provide for expansion loops in case of thermal conditional changes in length.

Actuators:

| Actuator | Voltage | Control | | |
|-----------------|---------|-----------------|-------------|--------------------|
| | | Two point | Three point | Proportional |
| Electro-thermal | 24 V | 1012486 | | 101 29 51 (0-10 V) |
| | 230 V | 101 24 85/87/89 | | |
| Electro-motive | 24 V | 101 27 01 | 101 27 01 | 101 27 00 (0-10V) |
| | 230 V | 101 27 10 | 101 27 03 | |
| | EIB | | | 115 60 65/66 |
| | LON | | | 115 70 65 |



Example of installation, dimensions:

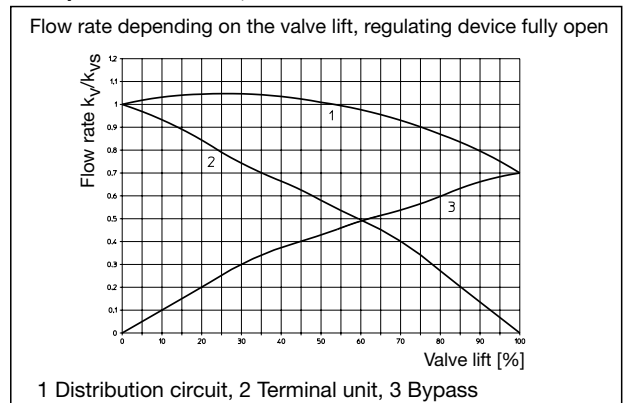


Chart 1

1. Presetting according to calculated values:

- 1.1 Unscrew protection cap of the regulating stem.
- 1.2 Close the valve disc by turning a 4 mm spanner clockwise.
- 1.3 Then preset the valve disc by turning the 4 mm spanner anticlockwise according to the number of turns taken from chart 3.

Note: To achieve an almost constant flow rate in the distribution circuit, the set flow value must be identical with or be lower than the maximum possible flow rate in the terminal unit.

- 1.4 Finally, using a screwdriver, turn the lock nut clockwise until stop (the presetting once chosen is now reproducible) and replace protection cap tightly.

2. Presetting by differential pressure measurement (illustr. 2):

- 2.1 Unscrew protection cap of the regulating stem.
- 2.2 Carry out differential pressure measurement according to point 3.
- 2.3 Now carry out presetting of the valve disc by use of the 4 mm spanner until the desired flow rate is indicated on the “OV-DMC 2”.

Note: To achieve an almost constant flow rate in the distribution circuit, the set flow value must be identical with or be lower than the maximum possible flow rate in the terminal unit.

- 2.4 Finally, using a screwdriver, turn the lock nut clockwise until stop and replace protection cap tightly.

3. Differential pressure measurement/Flow determination:

- 3.1 Ensure valve is in full flow conditions by either turning the protection cap clockwise until it stops or using the control system to drive the valve to full flow if the actuators are already fitted.
- 3.2 Connect flow meter “OV-DMC 2”, item no. 106 91 77 or an industry standard manometer to the pressure test points and measure the differential pressure

Note: The relationship between flow and differential pressure/signal is illustrated in chart 2.

4. Isolation (illustr. 3):

- 4.1 Isolate ball valve.
 - 4.2 Unscrew protection cap of the regulating stem.
 - 4.3 Close the valve disc by turning a 4 mm spanner clockwise.
- Note:** To return the valve to its regulated setting after isolation, care must be taken not to adjust the lock nut whilst performing this operation.

5. Filling/draining/bleeding/flushing by use of service tool, item no. 109 05 51 (illustr. 4):

Note: If only the succeeding system shall be filled or drained, the valve has to be isolated as described in point 4.

- 5.1 Unscrew protection cap of the regulating stem.
- 5.2 Loosen insert by turning a 10 mm spanner anticlockwise (max. ¼ turn).
- 5.3 Fit the service tool to the valve.
Attention: Tighten 19 mm compression nut closely (max. 10 Nm).
- 5.4 Fit a 6 mm square spanner to the tool and carry out filling/draining/bleeding or flushing by turning it anticlockwise.
- 5.5 After procedure: Turn 6 mm square spanner clockwise until it stops, remove service tool and re-tighten insert by use of the 10 mm spanner (max. 10 Nm).
Replace protection cap tightly.

6. Measurement of differential pressure (illustr. 6) / temperatures (illustr. 5) of terminal unit:

- 6.1 Unscrew protection cap of the regulating stem.
- 6.2 Loosen regulating valve insert by turning a 10 mm spanner anticlockwise (max. ¼ turn).
- 6.3 Fit the service tool to the valve.
Attention: Tighten the 19 mm compression nut closely (max. 10 Nm).
- 6.4 Fit measuring adapter (item no. 106 02 98) to service tool.
- 6.5 Fit 6 mm square spanner to the service tool and open drain valve by turning it anticlockwise.
- 6.6 Connect flow meter (e.g. “OV-DMC 2”, item no. 106 91 77) and measure differential pressure or temperature.

| | |
|------------------------------------|--|
| Differential pressure measurement: | Connect red measuring hose (high pressure) to the measuring adapter (service tool 109 05 51) and blue measuring hose (low pressure) to the pressure test point (+) (see illustr. 6). |
| Temperature measurement: | Introduce temperature sensor into measuring adapter (flow temperature) and then into pressure test point (return temperature) (see illustr. 5). |
- 6.7 After measurement: Turn 6 mm square spanner clockwise until it stops, remove service tool and re-tighten insert by use of the 10 mm spanner (max. 10 Nm).
Replace protection cap tightly.

7. Flushing of isolated terminal unit (illustr. 7):

- 7.1 Isolate valve as described in point 4.
- 7.2 Loosen regulating valve insert by turning a 10 mm spanner anticlockwise (max. ¼ turn).
- 7.3 Fit service tool to the valve.
Attention: Tighten the 19 mm compression nut closely (max. 10 Nm).
- 7.4 Fit the 6 mm square spanner to the tool and carry out draining / flushing by turning it anticlockwise.
- 7.5 Replace pressure test point (+) by fill and drain ball valve (item no. 106 01 91).
- 7.6 Connect flushing hose to fill and drain ball valve and delivery hose to service tool.
- 7.7 Flush terminal unit.
- 7.8 After flushing: Turn 6 mm square spanner clockwise until stop, remove service tool and re-tighten insert by use of the 10 mm spanner (max. 10 Nm).
Replace protection cap tightly.
Replace fill and drain ball valve by pressure test point.

8. Correction factors for mixtures of water and glycol:

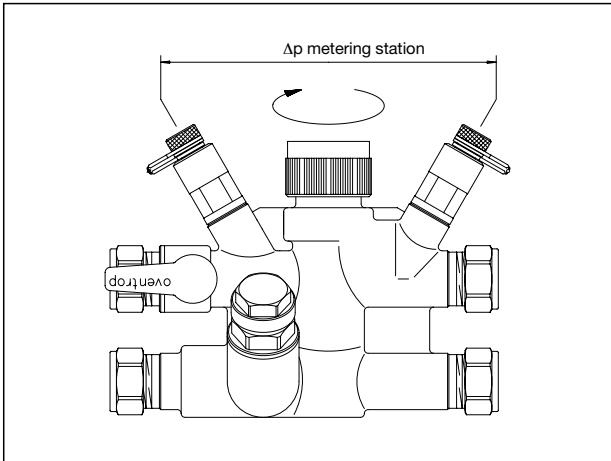
- 9.1 Calculation with given flow rate
When antifreeze liquids are added to the coolant, the pressure loss given in the chart must be multiplied by the correction factor f (charts 6).

$$\Delta p_{\text{mixture}} = \Delta p_{\text{chart}} \cdot f$$

- 9.2 Calculation with given or measured pressure loss
When antifreeze liquids are added to the coolant, the measured pressure loss must be divided by the correction factor f.

$$\Delta p_{\text{chart}} = \Delta p_{\text{mixture}} : f$$

**“Cocon 4” Four port fixed double regulating and control valve
Measuring technic “classic”**



Illustr. 1

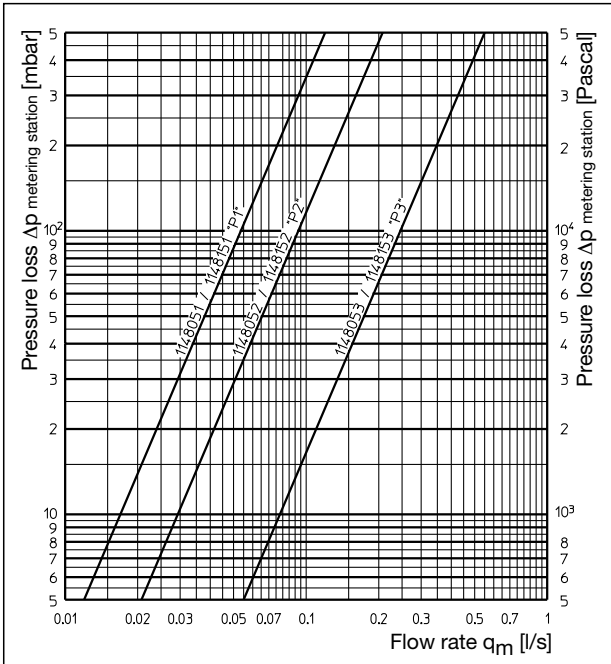


Chart 2

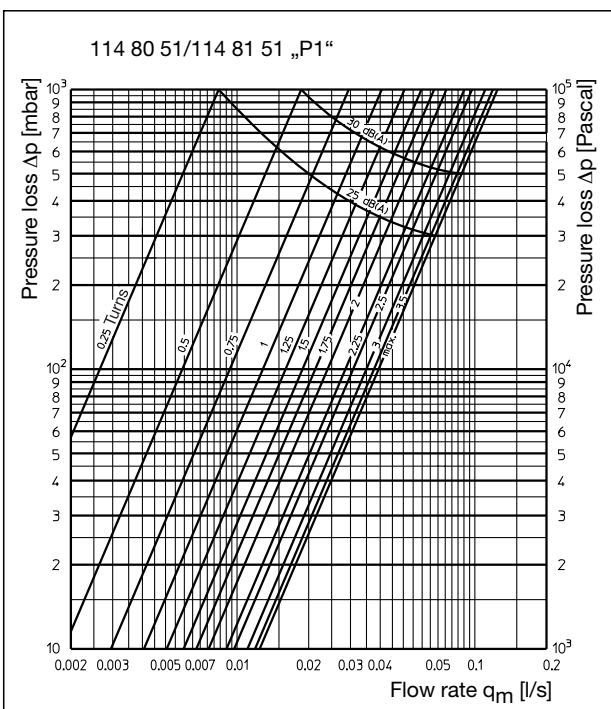


Chart 3

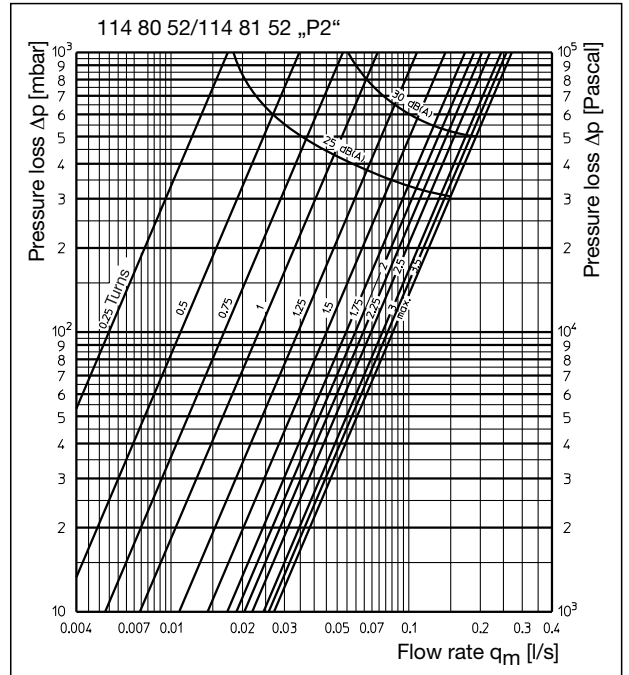


Chart 4

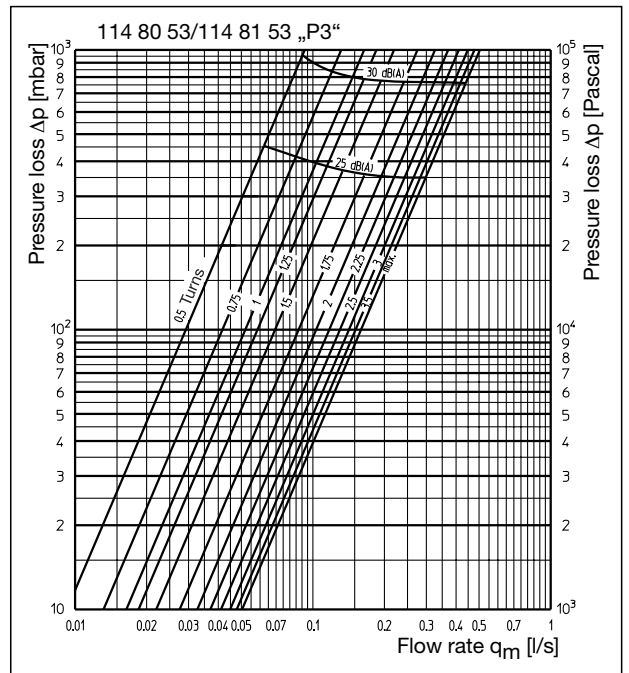
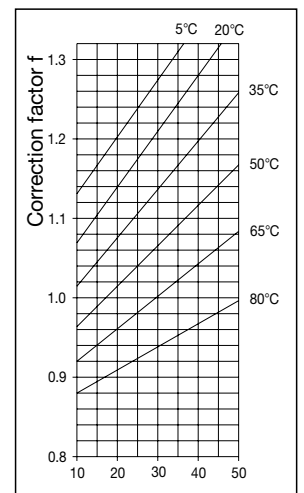
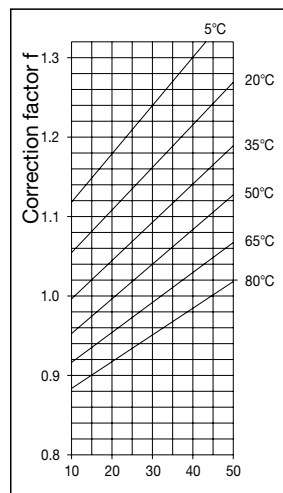


Chart 5



Charts 6

**“Cocon 4” Four port fixed double regulating and control valve
Measuring technic “classic”**



Illustr. 2
Presetting by differential pressure measurement



Illustr. 5
Temperature measurement of terminal unit



Illustr. 3
Isolation



Illustr. 6
Differential pressure measurement of terminal unit



Illustr. 4
Filling/Draining/Bleeding/Flushing



Illustr. 7
Flushing of isolated terminal unit

Subject to technical modification without notice.

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