

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 “eco”, 3/4" male thread

Item no.	k_{VS} value	k_V value of the fixed orifice	Marking on gland and protection cap
114 78 04	0.45	0.61	P1
114 79 04	1.0	1.06	P2
114 80 04	1.8	2.80	P3

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:

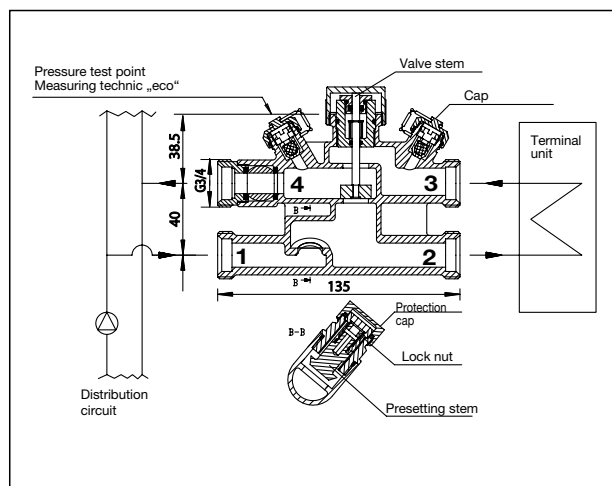
- The flow direction must comply with the arrow on the valve body.
- The valve may be installed in any position (electric actuators may not be installed pointing vertically downwards).
- Do not use any lubricant or oil when installing the valve, as these may destroy the valve seals.
 If necessary, all 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:

- By use of suitable Oventrop compression fittings “Ofix”, tail-pipe sets or inner parts (for use of flat sealing tailpipes).

Actuators:

Actuator	Voltage	Control		
		Two point	Three point	Proportional
Electro-thermal	24 V	1012486		1012951 (0-10 V)
	230 V	101 24 85/87/89		
Electro-motive	24 V	101 27 01	101 27 01	1012700 (0-10V)
	230 V	1012710	101 27 03	
	EIB			115 60 65/66
	LON			115 70 65



Example of installation, dimensions:

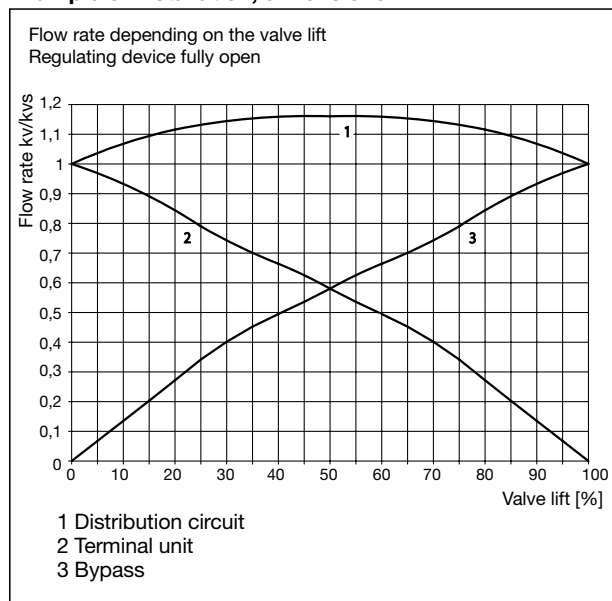


Chart 1

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):

- 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. Filling/draining/bleeding/flushing by use of the fill and drain tool items no. 106 17 91:

- Note:** If only the succeeding system shall be filled or drained, the valve has to be isolated as described in point 4.
- 6.1 Unscrew cap of the fill and drain tool.
- 6.2 Fit fill and drain tool to the valve and carry out filling/draining/bleeding or flushing.
- 6.3 Unscrew tool and replace cap tightly.

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

- 7.1 Unscrew protection cap of the regulating stem.
- 7.2 Loosen regulating valve insert by turning a 10 mm spanner anticlockwise (max. ¼ turn).
- 7.3 Fit service tool (item no. 109 05 51) to the valve.
 Attention: Tighten the 19 mm compression nut closely (max. 10 Nm).
- 7.4 Fit measuring adapter (item no. 106 02 98) to service tool.
- 7.5 Fit 6 mm square spanner to the service tool and open drain valve by turning it anticlockwise.
- 7.6 Connect flow meter (e.g. “OV-DMC 2”, item no. 106 91 77) and measure differential pressure or flow 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) (see illustr. 5).
- 7.7 For return temperature measurement connect fill and drain tool (item no. 106 17 91) with mounted measuring adapter (item no. 106 02 98) to the pressure test point (+). Open valve and measure return temperature.
- 7.8 After measurement: Turn 6 mm square spanner clockwise until it stops, remove service tool (item no. 109 05 51) and re-tighten insert by use of the 10 mm spanner (max. 10 Nm). Close pressure test point and unscrew second tool. Replace protection cap tightly.

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

- 8.1 Isolate valve as described in point 4.
- 8.2 Loosen regulating valve insert by turning a 10 mm spanner anticlockwise (max. ¼ turn).
- 8.3 Fit service tool to the valve.
 Attention: Tighten the 19 mm compression nut closely (max. 10 Nm).
- 8.4 Fit the 6 mm square spanner to the tool and carry out draining / flushing by turning it anticlockwise.
- 8.5 Connect fill and drain tool (item no. 106 17 91) to pressure test point (+).
- 8.6 Connect flushing and delivery hose to fill and drain tools.
- 8.7 Flush terminal unit.
- 8.8 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.

9. Correction factors for mixtures of water and glycol

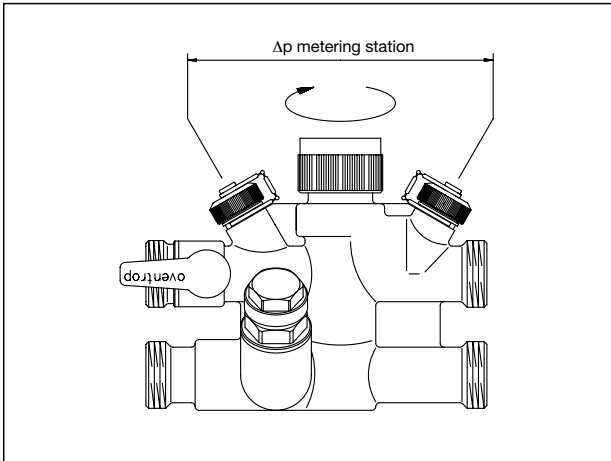
- 9.1 Calculation with given flow rate
 When antifreeze liquids are added to the coolant, the pressure loss given in the chart must be multiplied by the correction factor f (chart 6/7).

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

- 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 “eco”



Illutr. 1

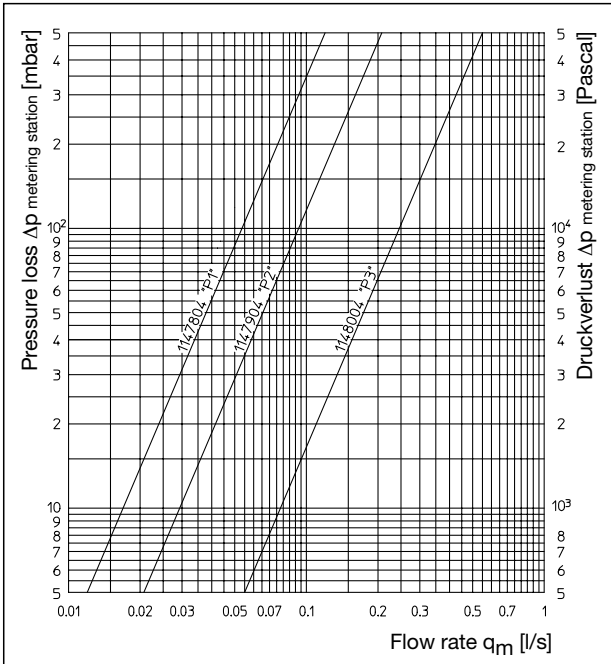


Chart 2

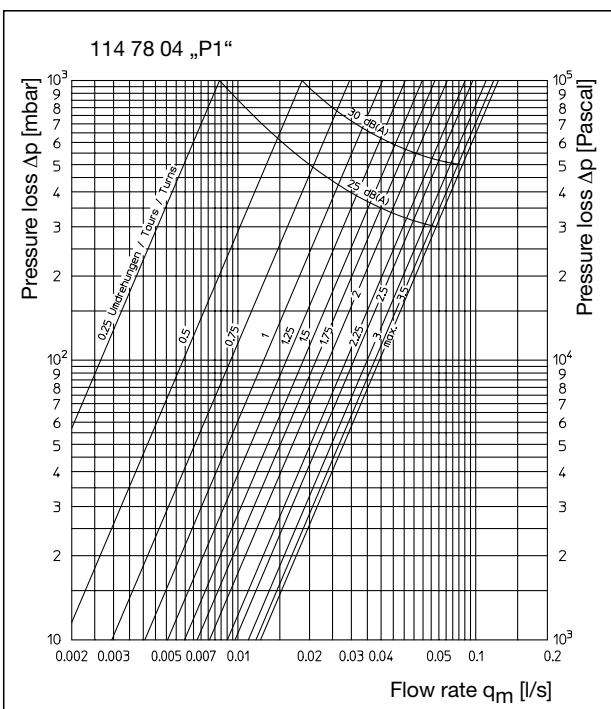


Chart 3

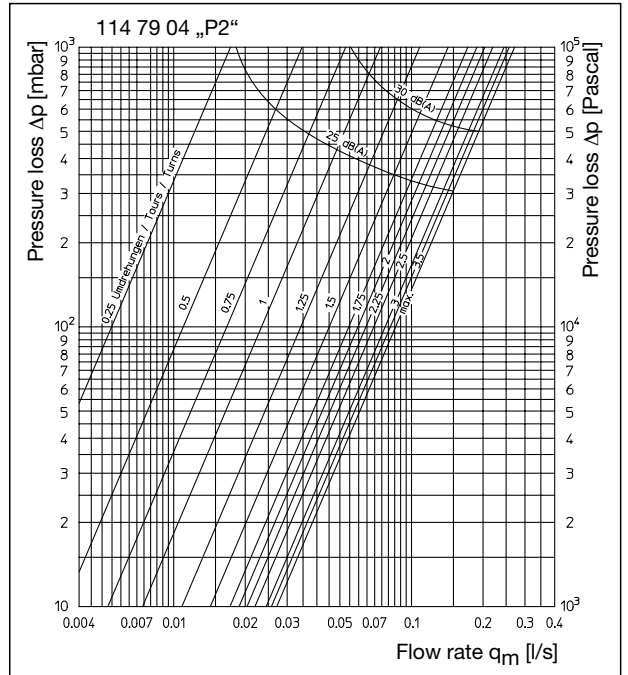


Chart 4

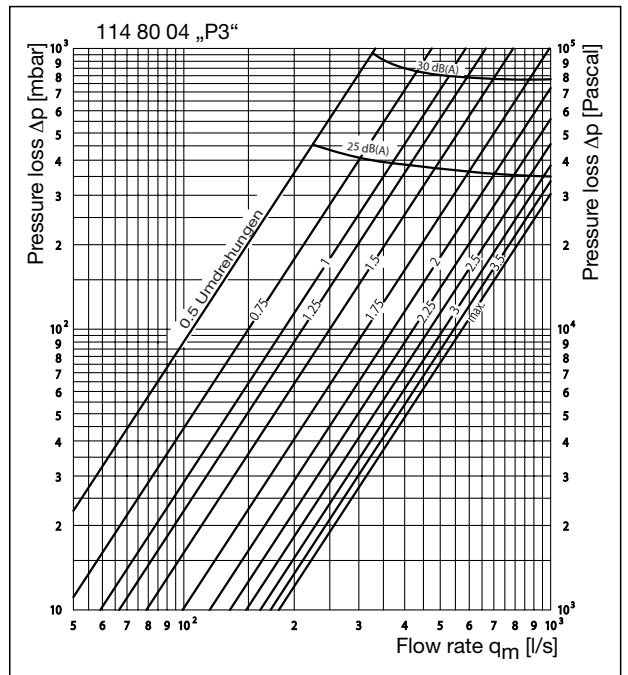
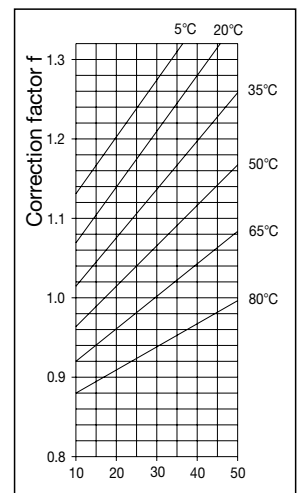
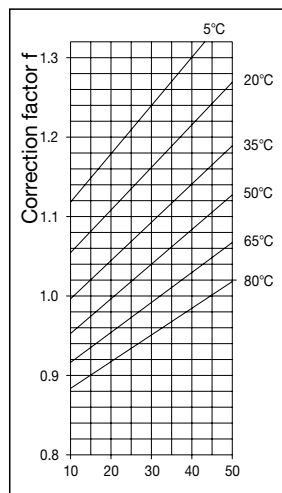


Chart 5

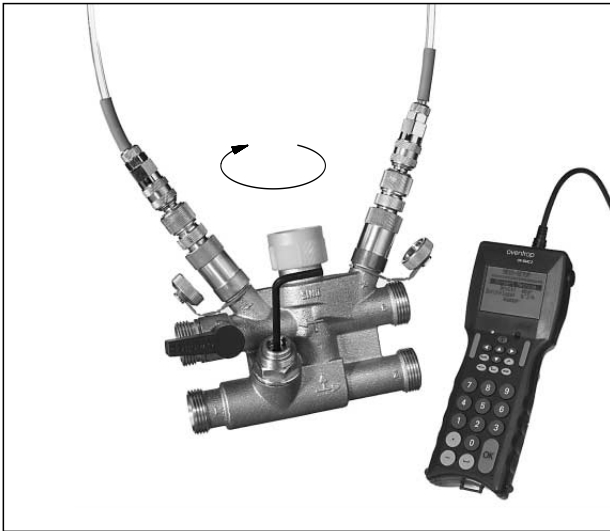


Weight proportion of ethylene glycol [%]

Weight proportion of propylene glycol [%]

Charts 6

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Illustr. 2
Presetting by differential pressure measurement



Illustr. 5
Temperature measurement of terminal unit



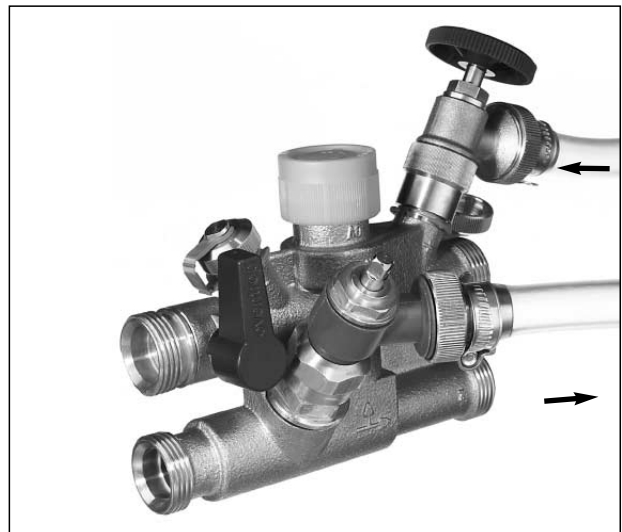
Illustr. 3
Isolation



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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