

# oventrop

Innovation + Quality

Valves, controls + systems

Flow, pressure and  
temperature balancing

Product range

Awards:



design  
preis  
SCHWEIZ



aqua-therm



Flow balancing via double regulating and commissioning valves

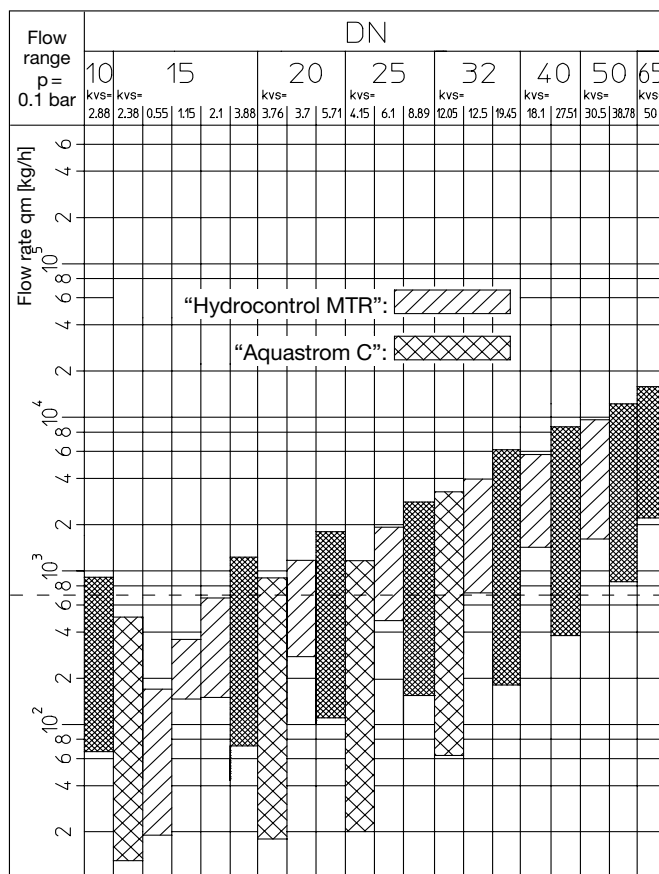
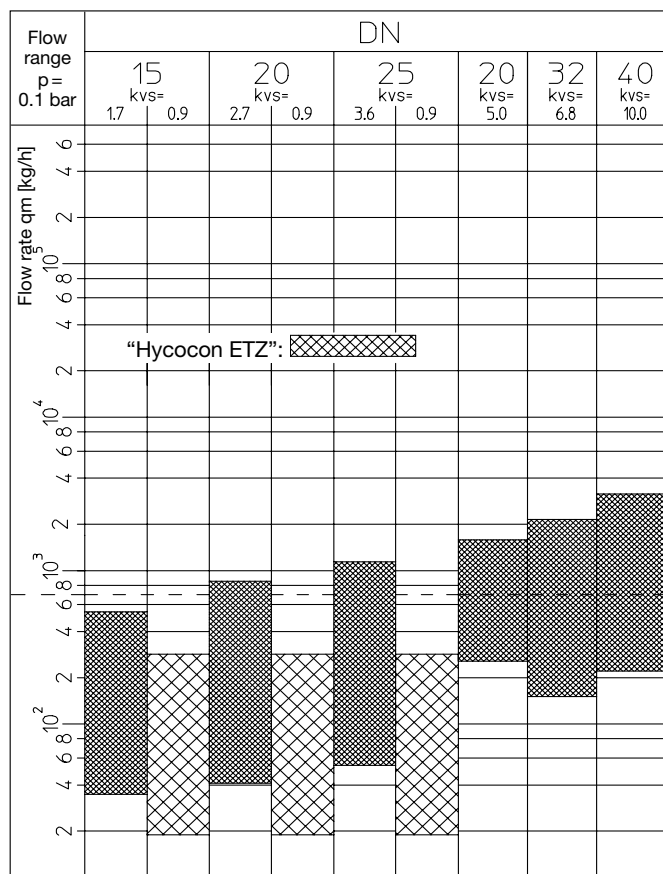
Regulation according to pipework calculation or by using a p measuring gauge



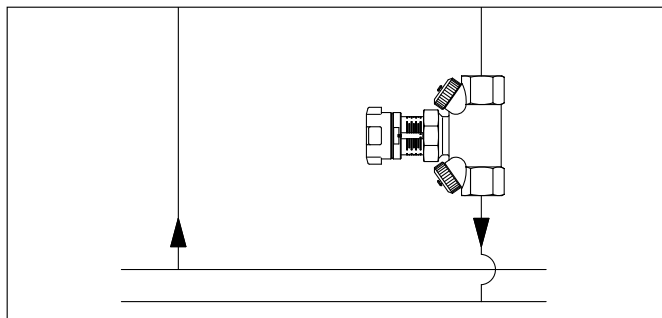
“Hycocon ATZ/VTZ/ETZ/HTZ”



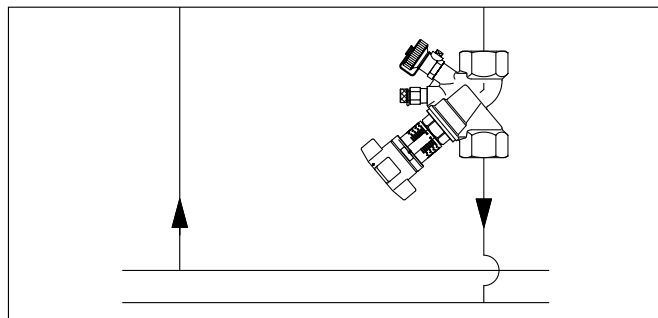
“Hydrocontrol VTR/ATR”/“Hydrocontrol MTR”/“Aquastrom C”



Flow ranges between lowest and highest presetting with  $p = 0.1 \text{ bar}$  via the double regulating and commissioning valve.  
The below examples only show the valves which are really required for hydronic balancing.



Example: Two pipe heating system for low to medium flow rates.



Example: Two pipe heating system for medium to high flow rates.

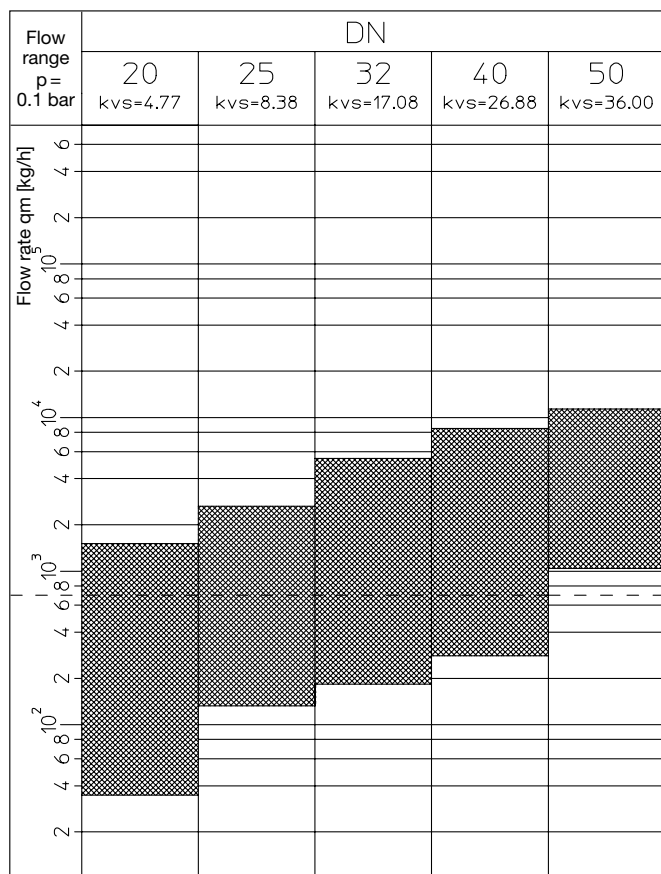
Conversion of the flow and differential pressure values from a design calculation on the flow rates with  $p = 0.1 \text{ bar}$  illustrated here:

Design calculation:  $p_A, \dot{V}_A$

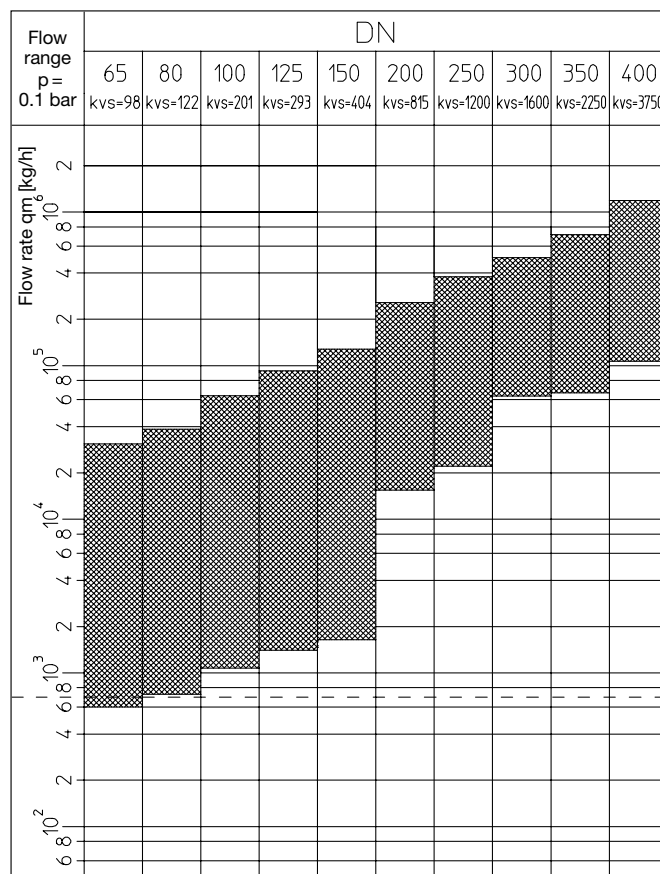
Conversion:  $\dot{V}_{0.1 \text{ bar}} = \dot{V}_A \cdot \frac{0.1 \text{ bar}}{p_A}$



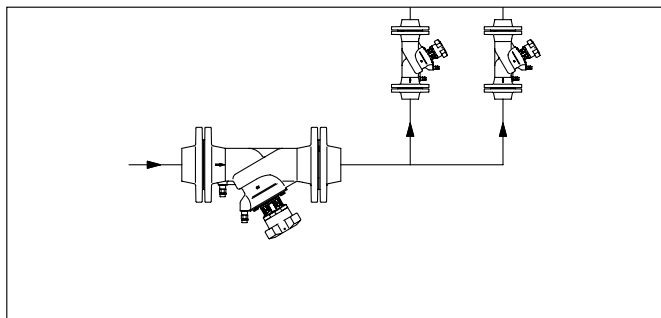
“Hydrocontrol VFC”



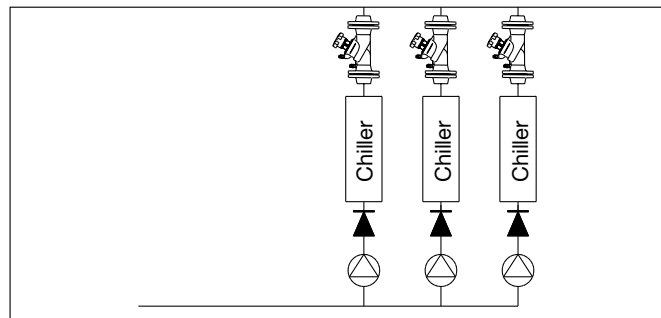
“Hydrocontrol VFC/VFR/VFN/VGC”



Flow ranges between lowest and highest value of presetting with  $p=0.1$  bar via the double regulating and commissioning valve. The below examples only show the valves which are really required for hydronic balancing.



Example: Central heating system with flanged connections.



Example: Cooling system with flanged connections.

Example:  $p_A = 0.15$  bar,  $\dot{V}_A = 850$  kg/h

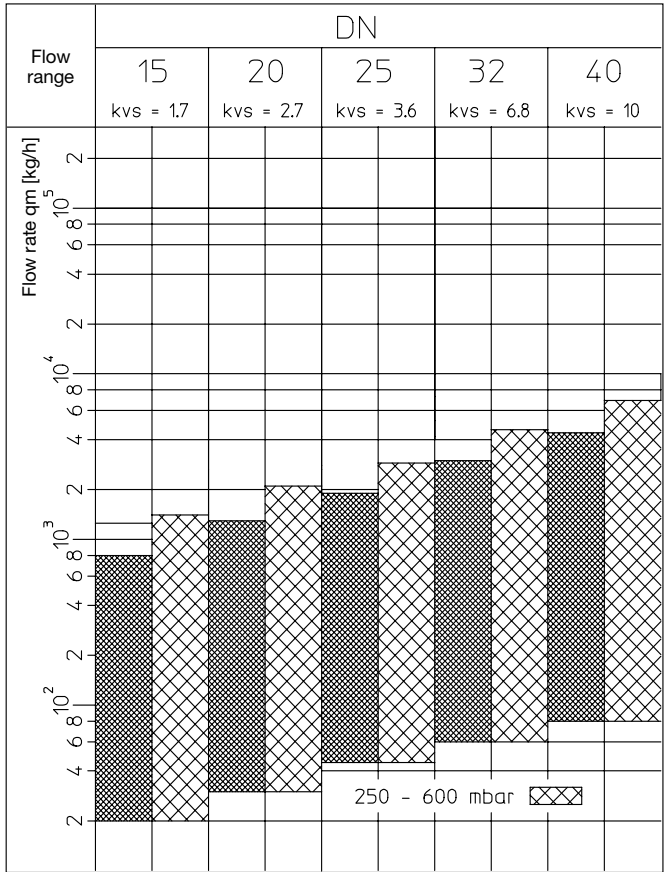
$$\dot{V}_{0.1 \text{ bar}} = \dot{V}_A \cdot \frac{0.1 \text{ bar}}{0.15 \text{ bar}} = 694 \text{ kg/h}$$

With the help of the value  $\dot{V}_{0.1 \text{ bar}}$  a preselection, e.g. “Hydrocontrol VTR”, DN 20, can be made (see broken line).

Differential pressure regulation

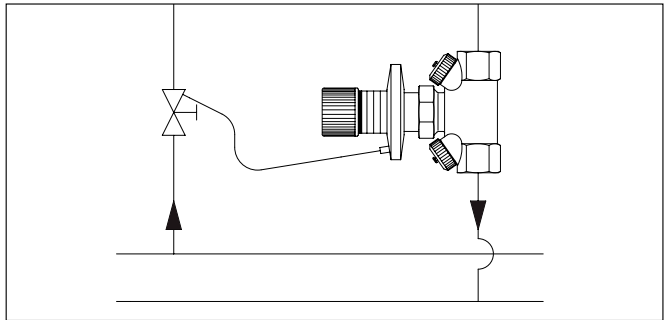


“Hycocon DTZ” (50–300 mbar) “Hycocon DTZ” (250–600 mbar)



Flow ranges of the differential pressure regulator “Hycocon DTZ” for adjustable differential pressures in the circuits 50–300 mbar or 250–600 mbar

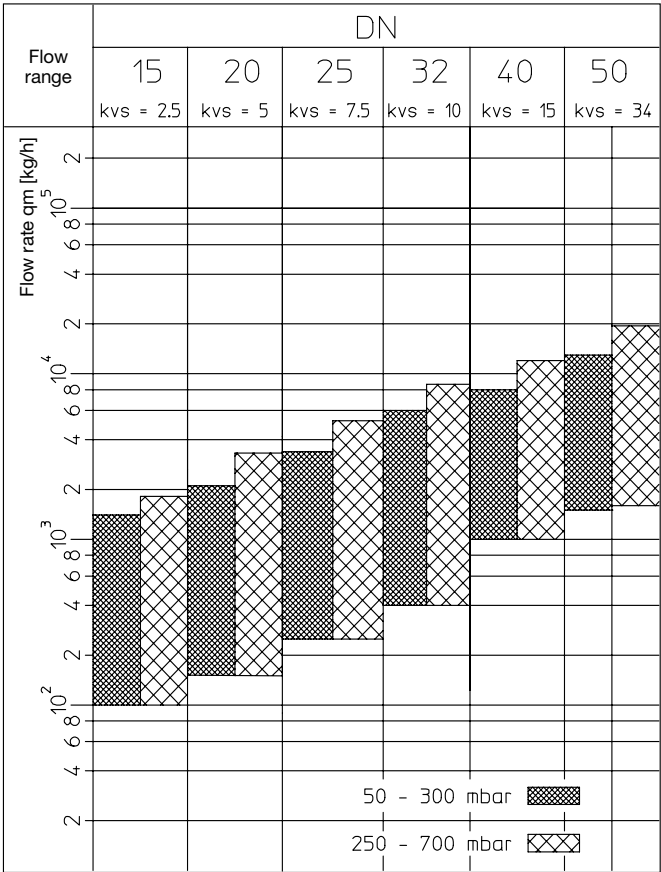
The below examples only show the valves which are really required for differential pressure regulation.



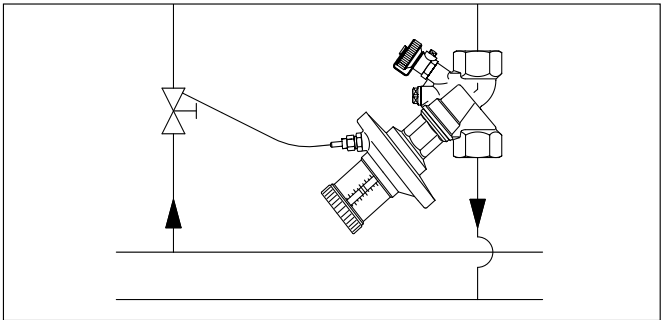
Example: Differential pressure regulation in installations with presettable thermostatic radiator valves (circuits with low to medium flow rate).



“Hydromat DTR” (50–300 mbar) “Hydromat DTR” (250–700 mbar)



Flow ranges of the differential pressure regulator “Hydromat DTR” for adjustable differential pressures in the circuits 50–300 mbar or 250–700 mbar

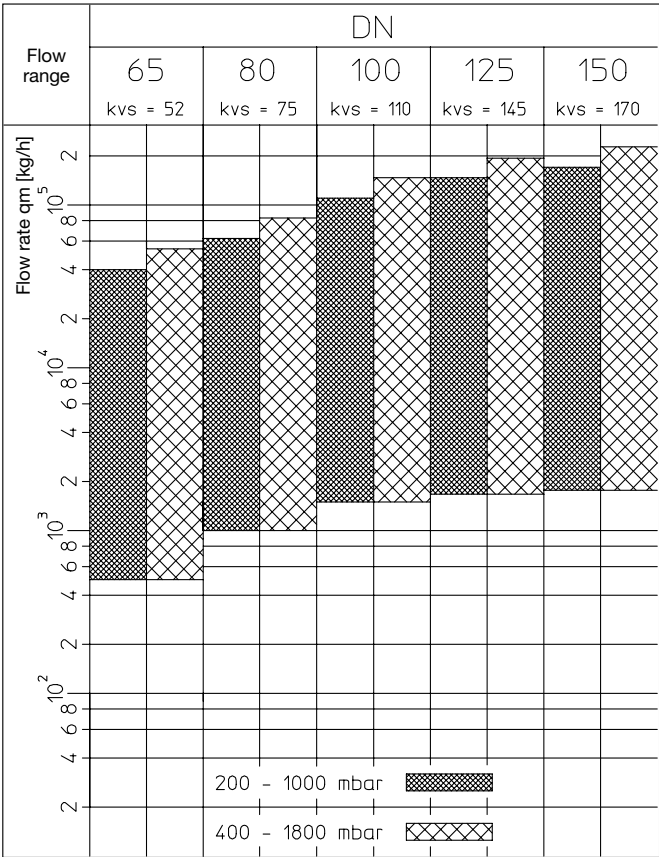


Example: Differential pressure regulation in installations with presettable thermostatic radiator valves (circuits with medium to high flow rate).

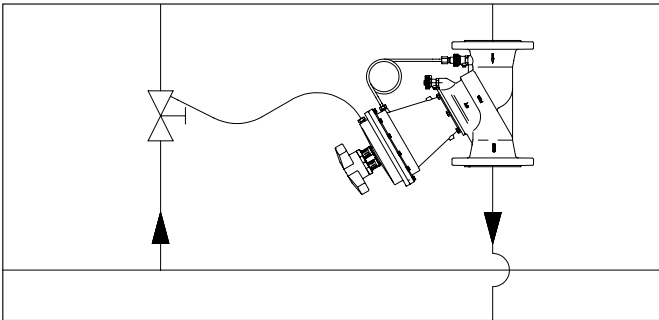




“Hydromat DFC” (200–1000 mbar)  
“Hydromat DFC” (400–1800 mbar)



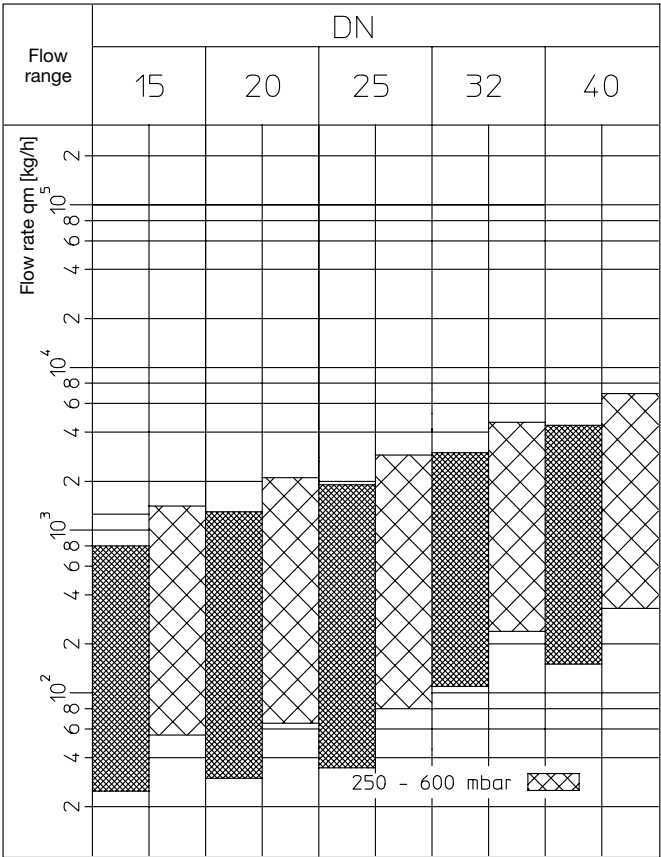
Flow ranges of the differential pressure regulator “Hydromat DFC” for adjustable differential pressures in the circuits 200–1000 mbar or 400–1800 mbar



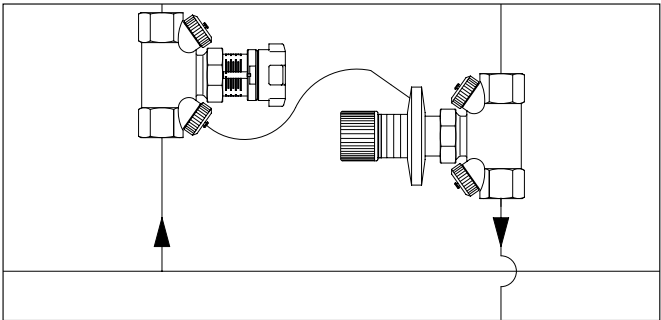
Example: Differential pressure regulation in installations with flanged connections.



“Hycococon DTZ” (50–300 mbar)/“Hycococon VTZ”  
“Hycococon DTZ” (250–600 mbar)/“Hycococon VTZ”



Flow ranges of the differential pressure regulator “Hycococon DTZ” for adjustable differential pressures in the circuits 50–300 mbar or 250–600 mbar and additional flow limitation at the double regulating and commissioning valve “Hycococon VTZ”

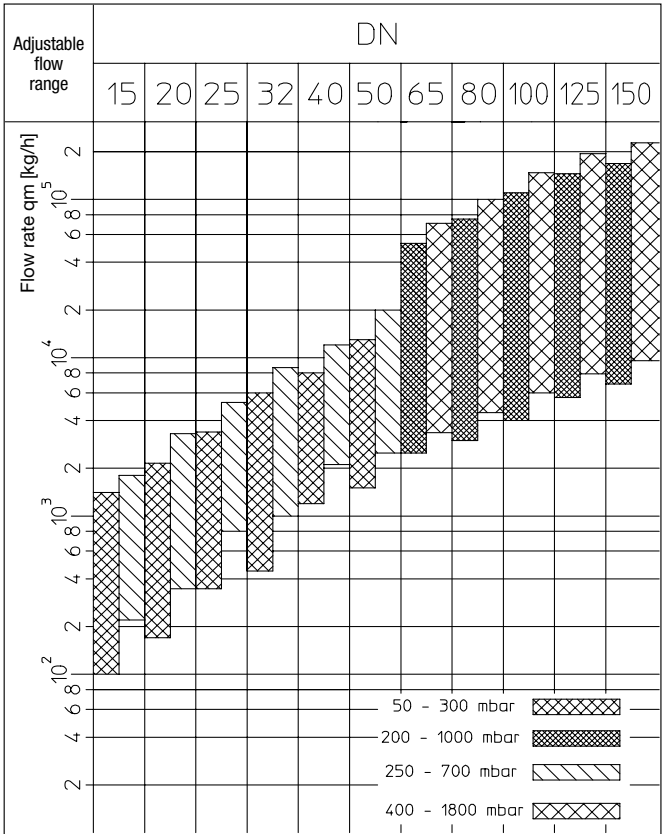


Example: Differential pressure regulation with flow limitation in installations with non presettable thermostatic radiator valves.

Differential pressure regulation with flow limitation

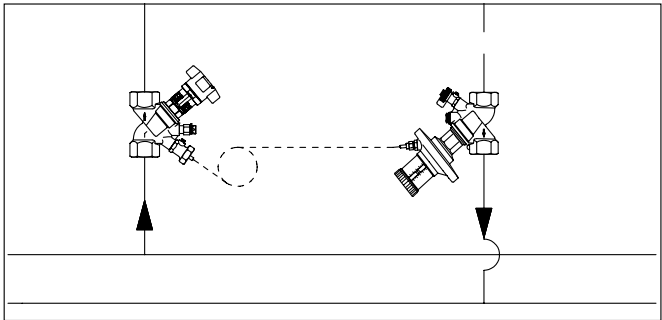


“Hydromat DTR”/“Hydrocontrol VTR”  
“Hydromat DTR”/“Hydrocontrol VFC”



Flow ranges of the differential pressure regulator “Hydromat DTR” for adjustable differential pressures in the circuits 50–300 mbar or 250–700 mbar. For the “Hydromat DFC” differential pressures of 200–1000 mbar or 400–1800 mbar are possible. The additional flow limitation is carried out at the double regulating and commissioning valve “Hydrocontrol VTR/VFR”.

The below examples only show the valves which are really required for regulation.

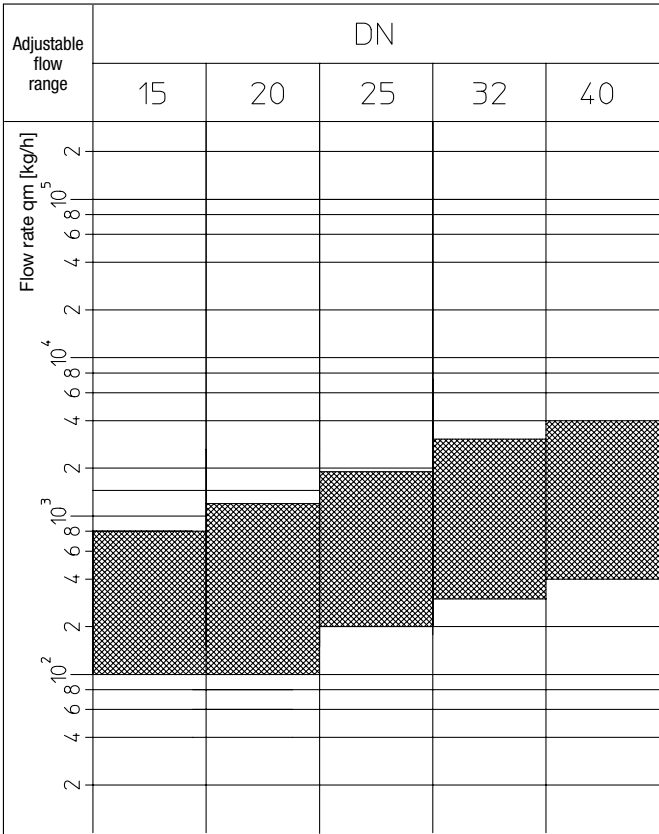


Example: Differential pressure regulation with flow limitation in installations with non presettable thermostatic radiator valves.

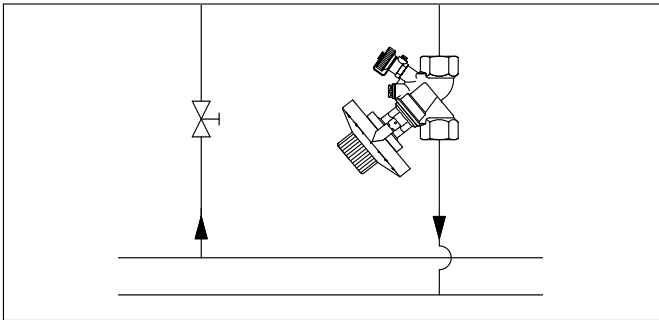
Flow regulation



“Hydromat QTR”



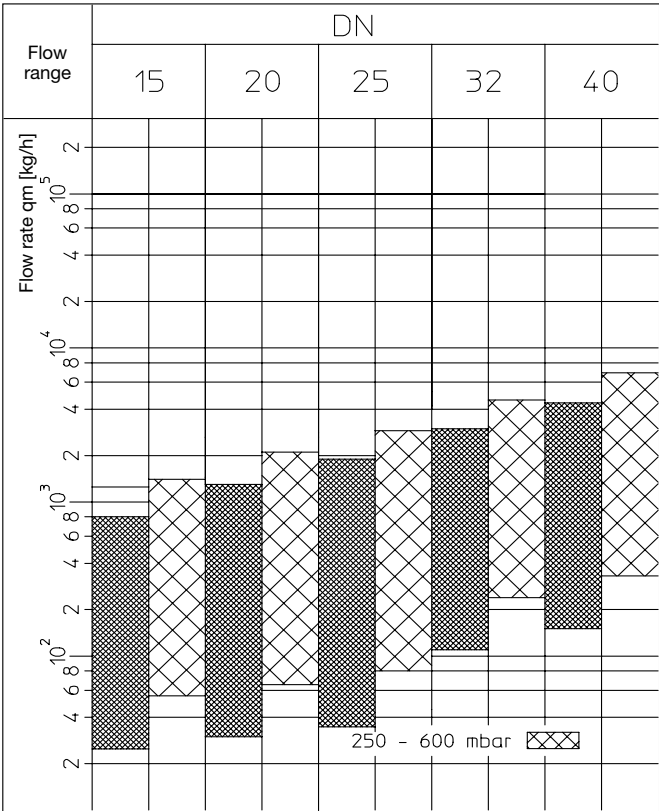
Adjustable flow values at “Hydromat QTR”.  
Flow regulation for an application range between 40 kg/h and 4000 kg/h



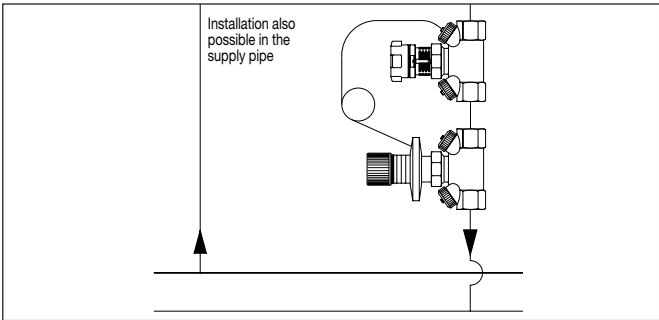
Example: Flow regulation e.g. in cooling systems. Presetting can be set at regulator and is visible from the outside.



“Hycocon DTZ”/“Hycocon VTZ”



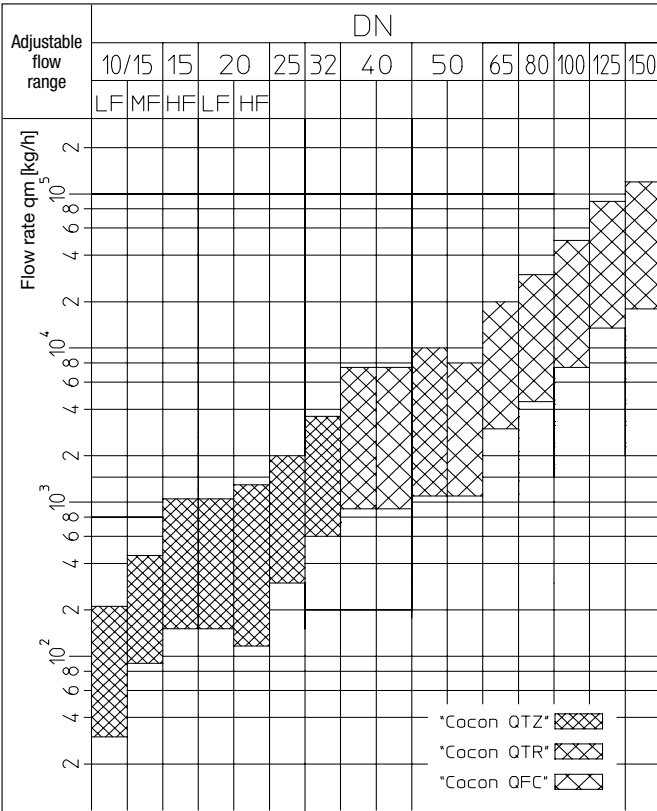
Adjustable flow values for regulation with combination:  
Set differential pressure at “Hycocon DTZ” between 50 and 600 mbar (pressure is taken at “Hycocon VTZ”). With the help of the pressure loss chart (see data sheet “Hycocon VTZ, design as example 5, page 15) determine the presetting value for “Hycocon VTZ” for the required flow rate and set at the handwheel.



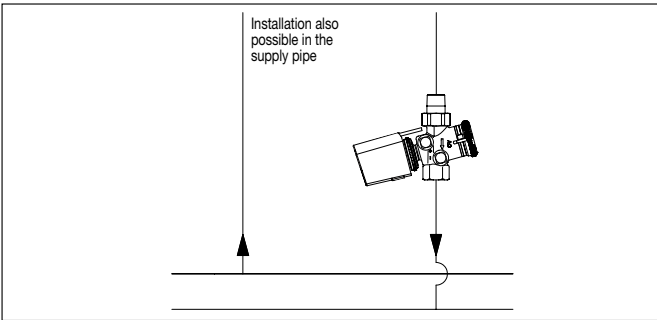
Example: Flow regulation with the help of the combination differential pressure regulator “Hycocon DTZ” and double regulating and commissioning valve “Hycocon VTZ”.



“Cocon QTZ/QFC” with actuators



Adjustable flow rates at “Cocon QTZ”/“QTR/QFC”:  
Flow regulation for an application range between 30 kg/h–120.000 kg/h. The “Cocon QTR/QFC” allow the setting of smaller flow rates up to complete isolation.



Example: Flow regulation at the pressure independent control valve “Cocon QTZ”.

oventrop

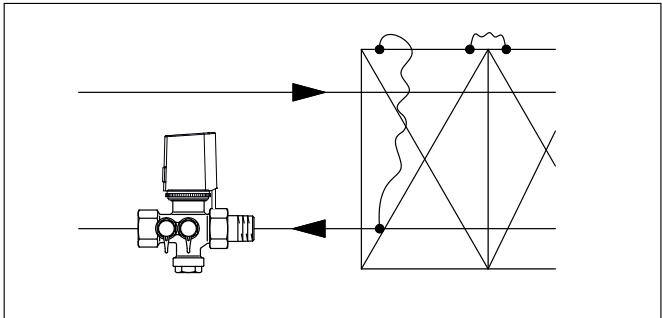
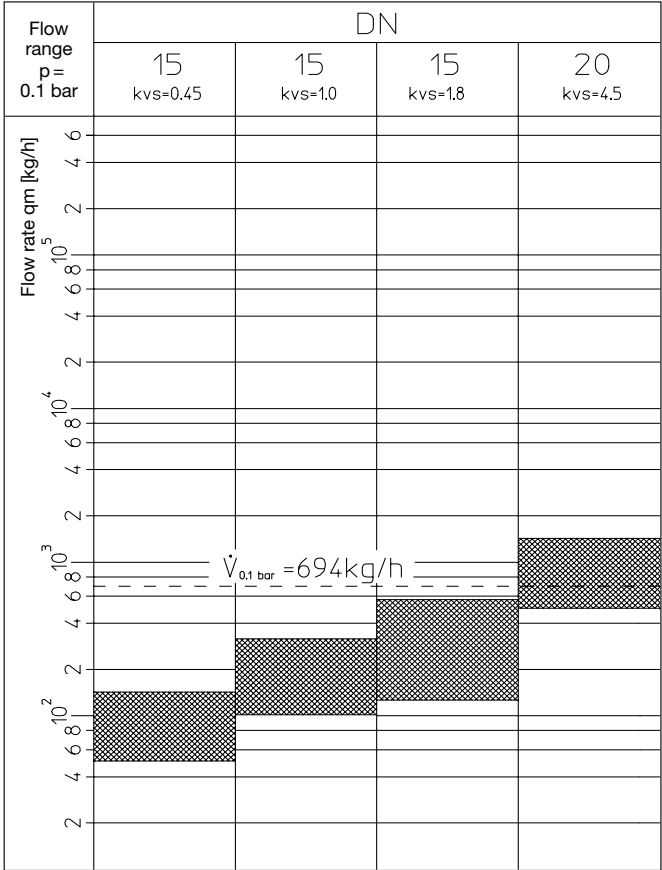
Oventrop regulating valve with integrated metering station

Ranges of control and performance

Flow and temperature balancing by use of regulating valves  
 Regulation according to pipework calculation or by using a p measuring gauge



Regulating valve “Cocon 2TZ” with integrated metering station



Example: Installation with chilled ceiling system to reduce the room temperature.

Conversion of the flow and differential pressure values from a design calculation on the flow rates with p=0.1 bar illustrated here.



### Flow balancing by use of metering stations

Regulation according to pipework calculation or by using a p measuring gauge



Metering station DN 15 – DN 50

Flow values with  $p = 1$  bar via the metering station

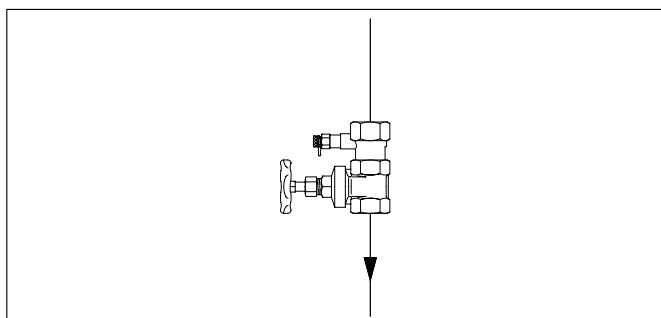
DN	kvs		
	Brass resistant to dezincification		
	LF	MF	Standard
15	0.55	1.20	2.20
20			4.25
25			8.60
32			15.90
40			23.70
50			48.00



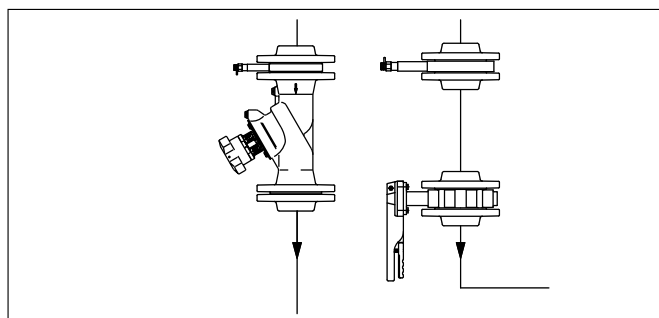
Metering station DN 65 – DN 1000

Flow values with  $p = 1$  bar via the metering station

DN	kvs	
	Cast iron	Stainless steel
65	93	102
80	126	120
100	244	234
125	415	335
150	540	522
200	1010	780
250	1450	1197
300	2400	1810
350		2050
400		2650
450		3400
500		4200
600		6250
700		10690
800		14000
900		17577
1000		22540



Example: Central heating system with female threaded connections.



Example: Central heating system with flanged connections.

Example:  $p_A = 0.15$  bar,  $\dot{V}_A = 850$  kg/h

$$\dot{V}_{0.1 \text{ bar}} = \dot{V}_A \cdot \frac{0.1 \text{ bar}}{0.15 \text{ bar}} = 694 \text{ kg/h}$$

With the help of the value  $\dot{V}_{0.1 \text{ bar}}$  a preselection, e.g. "Cocon 2TZ", DN 20, can be made (see broken line).



"OV-DMPC"



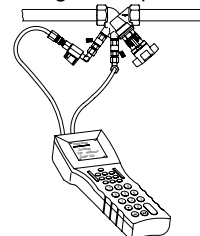
"OV-DMC 2"

Even a subsequent hydronic balance or a correction at the heating or cooling system leads to an increased economical profit and comfort. For this purpose, Oventrop offers the differential pressure measuring needles for the measuring techniques "classic" and "eco".

The new measuring system **"OV-DMPC"** is especially designed for an easy regulation on site. The measuring system is equipped with an USB interface for the connection to standard notebooks. Together with the included Windows software, it enables an easy regulation of heating and cooling systems. The **"OV-DMPC"** is used for differential pressure measurement at regulating valves and the resulting determination of the flow rate. Calculation of the presetting for double regulating and commissioning valves is possible after having entered the valve data and the required nominal flow rate. The characteristic lines of all Oventrop regulating valves are stored in the software. All accessories (e. g. operating keys, measuring adapters etc.) required for flow measurement are included in the service case.

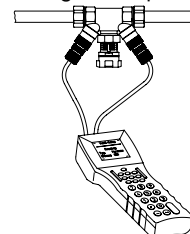
The measuring system **"OV-DMC 2"** is especially designed for the flow measurement of Oventrop regulating valves. It features a water- and dustproof keyboard and is equipped with an offline rechargeable set of batteries. All accessories (e. g. operating keys, measuring adapters etc.) required for flow measurement are included in the service case. The characteristic lines of all Oventrop regulating valves are stored in the flowmeter. The flow rate is indicated after having entered the valve size and the presetting. To ease handling, zero balance is carried out automatically. If the presetting value of the double regulating and commissioning valve has not been calculated, this can be done by the **"OV-DMC 2"**. After having entered the valve size and the required flow rate, the **"OV-DMC 2"** calculates the differential pressure, compares the nominal and actual values and the required presetting will be displayed.

Measuring technique "classic"



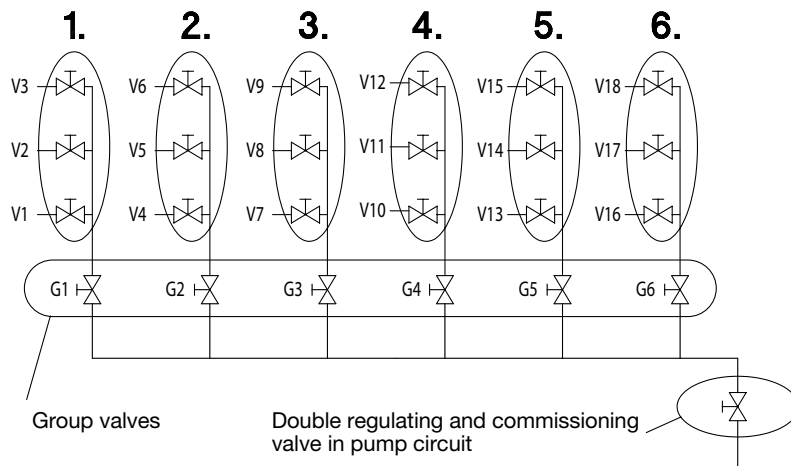
Regulation at double regulating and commissioning valve "Hydrocontrol VTR"

Measuring technique "eco"



Regulation at double regulating and commissioning valve "Hycocn VTZ"

### Regulating groups 1–6



Example: OV-Balance method



"OV-Connect"

### OV-Balance method:

The main advantage of this method is that the values of presetting for the double regulating and commissioning valves may be calculated on site with the help of the Oventrop flow-meter "OV-DMC 2" and that the complete system may be regulated by only one person. The time required for the hydronic balance is reduced considerably provided that the installation is structured clearly.

Before carrying out the regulation, all isolating valves within the circuit of appliance have to be opened. Moreover, the installation has to correspond to the design rate, e.g. thermostatic valves preset and thermostats removed.

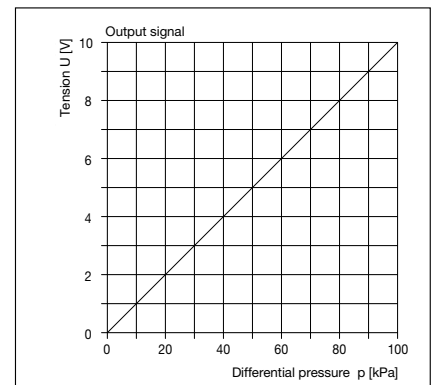
The sequence of regulation is detailed in the operating instructions of the "OV-DMC 2" (11 steps).

### Differential pressure transmitter "OV-Connect"

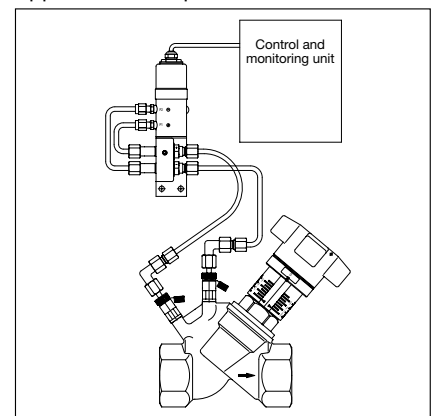
The Oventrop differential pressure transmitter "OV-Connect" is designed to obtain a permanent differential pressure measurement across Oventrop valves with measuring technique "classic" in heating, cooling and potable water systems which are operated with water or water glycol mixtures. The received signals can be processed by an electronic control and monitoring unit.

The differential pressure of the valve is measured via the measuring needles and the 6 mm copper pipes at the pressure test points.

Under working conditions, the appliance passes on an output signal proportional to the measured differential pressure (0 – 10 V).



### Application example:



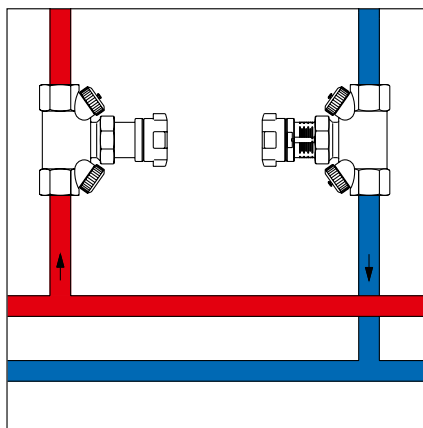




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4

The Oventrop series "Hycococon" made of DZR brass comprises small, compact valves for use in heating, cooling and air conditioning systems PN 16 between  $-10^{\circ}\text{C}$  and  $+120^{\circ}\text{C}$ .

The series "Hycococon" consists of the following components:

"Hycococon VTZ": Double regulating and commissioning valve

"Hycococon ATZ": Isolating and orifice valve

"Hycococon ETZ": Regulating valve with AV6 insert for thermostats or actuators

"Hycococon HTZ": Regulating valve with special insert for high flow rates and for thermostats and actuators

"Hycococon DTZ": Differential pressure regulator

Connection thread M 30 x 1.5

The sizes DN 15, DN 20, DN 25, DN 32 and DN 40 are available and the valves may be supplied with female or male threaded connection. Installation is possible in the supply and the return pipe.

The valves "Hycococon VTZ" and "Hycococon ATZ" are supplied with insulation shell (suitable up to  $80^{\circ}\text{C}$ ). The new valve insert of the "Hycococon" valves allows the replacement of the handwheels or the bonnets for isolation, regulation and differential pressure regulation without draining the system (DN 15, DN 20, DN 25 with the help of the "Demo-Bloc").

Combined with a thermostat, temperature controller or electrothermal or electromotive actuator, the "Hycococon ETZ/HTZ" valves may be used as a dynamic regulating valve. When fitted with an electromotive actuator EIB or LON<sup>®</sup>, it may even be used as an intelligent regulating valve.

With these universal connection possibilities, Oventrop offers a practical and effective solution for any automatic and manual hydronic balancing in the Building Services Industry.

**1** "Hycococon HTZ" with bonnets

- double regulating and commissioning valve
- differential pressure regulator
- isolating and orifice valve

**2** "Hycococon HTZ" with thermostat, electrothermal or electromotive actuator

**3** System illustration

Isolating and orifice valve "Hycococon ATZ" and double regulating and commissioning valve "Hycococon VTZ" in a heating riser

**4** "Hycococon VPZ" and "Hycococon APZ" both ports with press connection.

For the direct connection of copper pipes according to EN 1057 or stainless steel pipes.





1



2



3



4

Oventrop double regulating and commissioning valves "Hycococon VTZ" are installed in hot water central heating and cooling systems and serve to achieve a hydronic balance between the various circuits of the system.

Precise balancing can be achieved due to an infinitely adjustable presetting with memory position which is lockable and lead sealable. Sizes DN 15 to DN 25 with six and sizes DN 32 and DN 40 even with eight major graduation values divided into steps of  $\frac{1}{10}$ th (i. e. 60 or 80 presetting values) guarantee a high resolution with small flow tolerances.

Installation is possible in either the supply or the return pipe.

### Advantages:

- supplied with insulation shell (suitable up to 80 °C)
- the location of all functioning components on one level allows a simple assembly and easy operation
- only one valve for 5 functions:
  - presetting
  - measuring
  - isolating
  - filling
  - draining
- supplied with mounted pressure test point and drain valve (measuring technique "eco")
- easy filling and draining by fitting a separate tool (accessory) to one of the pressure test points
- infinitely adjustable presetting, exact measurement of pressure loss and flow with the help of the pressure test points
- thread according to EN 10226 (BS 21) suitable for Oventrop compression fittings (one edge olive) for copper pipes with a max. diameter of 22 mm as well as Oventrop composition pipe "Copipe" 14 and 16 mm

Models available: both ports female or male thread.

Dimensions and flow capacities:

DN 15  $k_{vs}$  = 1.7

DN 20  $k_{vs}$  = 2.7

DN 25  $k_{vs}$  = 3.6

DN 32  $k_{vs}$  = 6.8

DN 40  $k_{vs}$  = 10.0

### 1 Double regulating and commissioning valve "Hycococon VTZ"

Model: both ports female thread according to EN 10226 (BS 21)

### Awards:

**ISH** ISH Frankfurt  
"Design Plus"

design award Design Award Switzerland

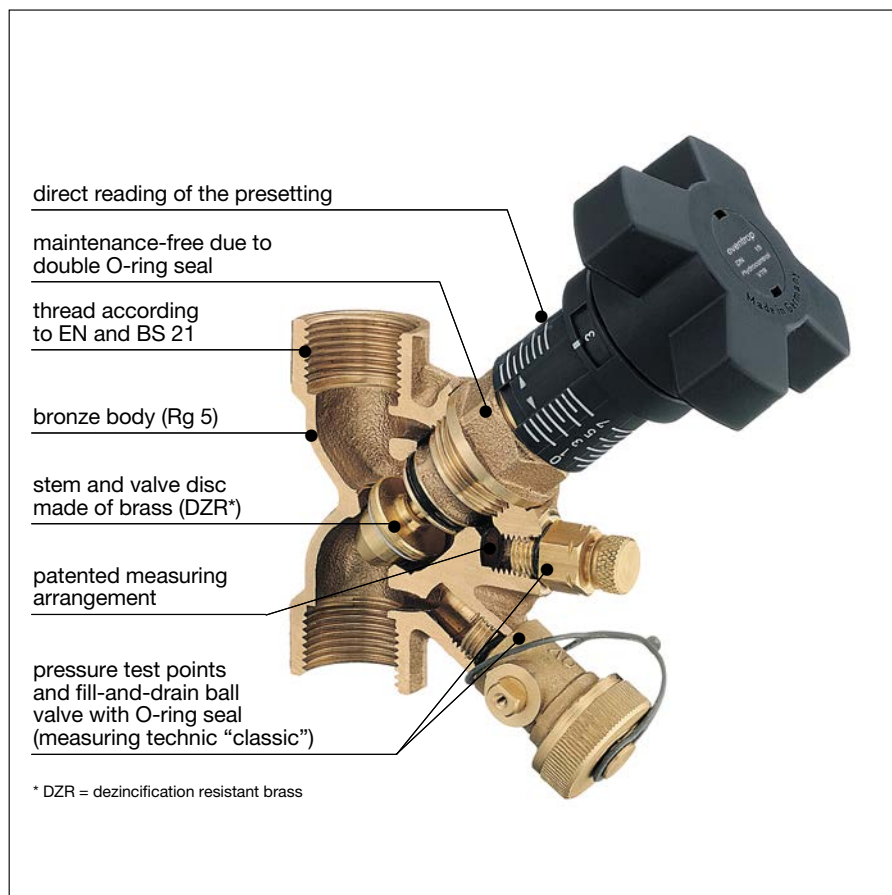
**iF** International Forum  
Design Hanover  
iF design award

**Design Award of the Federal Republic of Germany**

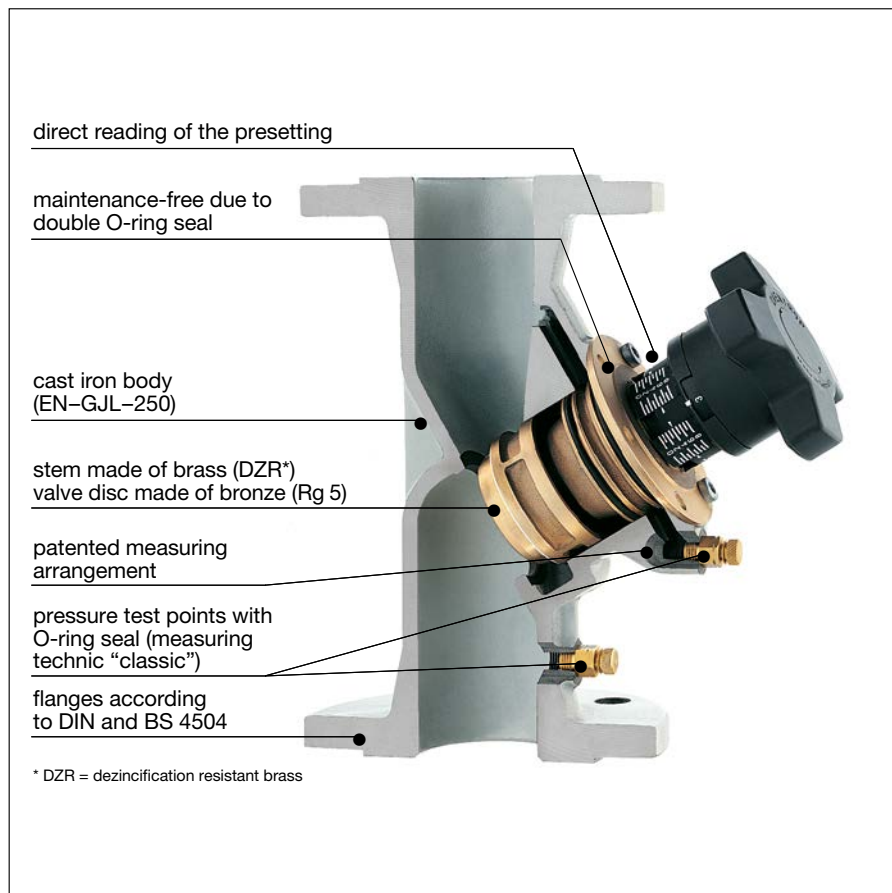
### 2 Double regulating and commissioning valve "Hycococon VTZ" combined with flow-meter "OV-DMC 2"

### 3 Presetting Basic and fine setting scale

### 4 Pressure test points for use with flow-meter "OV-DMC 2"



1



2

With their balancing systems, Oventrop offers the installer all the valves and valve combinations necessary to achieve the hydronic balance of heating and cooling systems. The products can be delivered separately or as a system. Thus the appropriate valves and valve combinations are available for any possible demand.

The bronze double regulating and commissioning valves "Hydrocontrol VTR"/"Hydrocontrol VFC" are installed in hot water central heating systems ("Hydrocontrol VTR": PN 25/150 °C, with press connection: max. 120 °C, "Hydrocontrol VFC": PN 16/150 °C) and cooling systems in order to provide a hydronic balance between the various circuits of the system. The bronze double regulating and commissioning valves "Hydrocontrol VTR" are also suitable for cold salt water (38 °C max.) and domestic water. The calculated flow rate or pressure loss can be preset for each individual circuit, thus making the hydronic balance easy to achieve. They can be installed in either the supply or the return pipe.

Advantages:

- the location of functioning components on one level allows a simple assembly and easy operation
- only one valve for 5 functions:
  - presetting
  - measuring
  - isolating
  - filling
  - draining
- low pressure loss (oblique pattern)
- infinitely adjustable presetting, exact measurement of pressure loss and flow by using the pressure test points (measuring technique "classic")
- thread of "Hydrocontrol VTR" according to EN 10226 (BS 21), suitable for Oventrop compression fittings (one edge olive) for copper pipes with a max. diameter of 22 mm
- flanges of "Hydrocontrol VFN", "Hydrocontrol VFR" and "Hydrocontrol FR": round flanges according to DIN EN 1092-2 (BS 4504), lengths according to DIN EN 558-1 (BS 7350), basic series 1
- groove connections for couplings of "Hydrocontrol VGC" suitable for couplings of the systems Victaulic and Grinnell
- fill and drain ball valve with internal stop and pressure test point with O-ring seal between valve body and test point (no additional seals required)
- patented measuring channel led around the stem assembly to the test points ensures the best possible accuracy between the differential pressure measured at the pressure test points and the actual differential pressure of the valve.

**1** Sectioned double regulating and commissioning valve "Hydrocontrol VTR"

Awards:



International Design Award  
Baden-Württemberg



Good Design Award Japan



International Forum Design Hanover  
Award iF

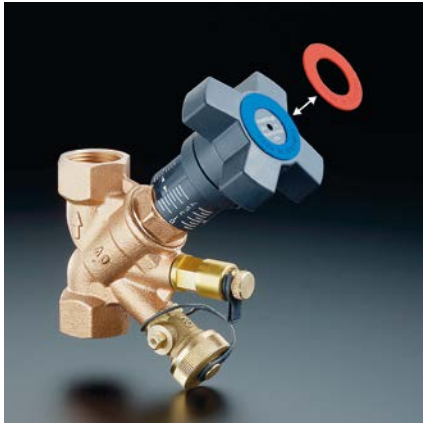
**2** Sectioned double regulating and commissioning valve "Hydrocontrol VFC"

Award:



Pragotharm Prague  
Diploma for the best exhibit





1



2



3



4



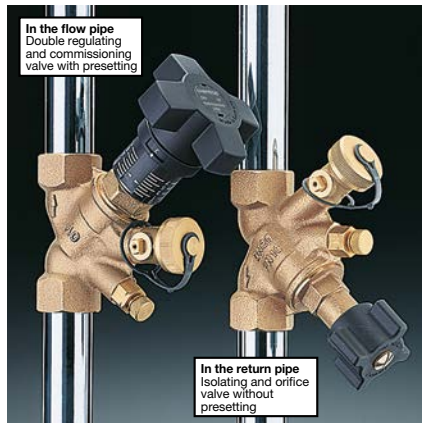
5



6



7



8

**1** Double regulating and commissioning valve “Hydrocontrol VTR” both ports female thread according to EN 10226 and BS 21, sizes DN 10 – DN 65 both ports male thread with collar nuts, sizes DN 10 – DN 50 or both ports press connection, sizes DN 15 – DN 50. Complies with BS 7350 and BS 5154. Body and bonnet made of bronze Rg5, valve disc with PTFE seal, stem and valve disc made of dezincification resistant brass. DVGW, SVGW and WRAS approval for DN 15 – DN 32.

The valves “Hydrocontrol VTR” in the supply respectively return pipe can be clearly marked by use of the replaceable colour rings.

**2** Possible connections for the model “Hydrocontrol VTR” with both ports male thread:

- weldable tailpipes
- solder tailpipes
- male screwed tailpipes
- female screwed tailpipes
- connection piece for all pipes

**3** Double regulating and commissioning valve “Hydrocontrol VPR” both ports with press connection. For the direct connection of copper pipes according to EN 1057 or stainless steel pipes.

**4** Double regulating and commissioning valve “Hydrocontrol VFC” PN 16 both ports flanged, sizes DN 20 – DN 400. Body made of cast iron EN-GJL-250 DIN EN 1561, valve disc with PTFE seal, bronze bonnet (D 200-DN 400 made of nodular cast iron), stem and valve disc made of dezincification resistant brass, sizes DN 65 and above bronze valve disc. Round flanges according to DIN EN 1092-2 Lengths according to DIN EN 558-1, basic series 1 and BS 7350

Also available with hole circle according to ANSI-Class 150

**5** Double regulating and commissioning valves “Hydrocontrol VFR”-PN 16/ “Hydrocontrol VFN” – PN 25

– Double regulating and commissioning valve “Hydrocontrol VFR” – PN 16 both ports flanged, sized DN 50 – DN 200. Body, bonnet and disc made of bronze, stem made of stainless steel. Dimensions of flanges identical with “Hydrocontrol VFC”.

Round flanges according to DIN EN 1092-2

Lengths according to DIN EN 558-1 basic series 1 and BS 4504

– Double regulating and commissioning valve “Hydrocontrol VFN” – PN 25 both ports flanged, sized DN 65 – DN 300. Body made of nodular cast iron EN-GJS-500.

Round flanges according to DIN EN 1092-2

Lengths according to DIN EN 558-1 basic series 1 and BS 4504

**6** “Hydrocontrol AFC” Sizes DN 65 – DN 150

**7** Double regulating and commissioning valve “Hydrocontrol VGC” both ports groove connection for couplings, DN 65 – DN 300.

Suitable for couplings of the systems Victaulic and Grinnell.

Body made of cast iron EN-GJL-250 DIN EN 1561, disc with PTFE seal, bonnet (DN 200 – DN 300 made of nodular cast iron) and valve disc made of bronze, stem made of brass resistant to dezincification.

**8** Valves for supply and return pipe The valve for the return pipe has the same functions as the double regulating and commissioning valve “Hydrocontrol VTR” except for the presetting.



1



2

### 1 Differential pressure regulator “Hycocon DTZ”

The differential pressure regulator is a proportional regulator working without auxiliary energy. It is designed for use in heating and cooling systems to maintain a constant differential pressure within a necessary proportional band. The nominal value is infinitely adjustable between 50 mbar and 300 mbar or 250 mbar and 600 mbar. PN 16, 120 °C

- high flow capacity
- nominal value can be locked
- very good optical display of the nominal value at any time
- installation in the return pipe
- with isolating facility
- supplied with drain valve
- easy filling and draining by screwing separate tool (accessory) onto one of the pressure test points (possibility to connect a flexible hose)
- pressure balanced valve disc
- all functioning components on one level
- thread according to EN 10226 (BS 21) suitable for Oventrop compression fittings (one edge olive) for copper pipes with a max. diameter of 22 mm as well as Oventrop composition pipe “Copipe” 14 and 16 mm
- female and male thread

### 2 Differential pressure regulator “Hydromat DTR”

The differential pressure regulator is a proportional regulator working without auxiliary energy. It is installed in heating and cooling systems of existing and new buildings for a decentral or central regulation of the differential pressure.

The regulators maintain a constant differential pressure within a necessary proportional band.

The sizes DN 15 to DN 50 are infinitely adjustable between 50 mbar and 300 mbar and size DN 50 additionally between 250 mbar and 700 mbar.

The “Hydromat DFC” sized DN 65 to DN 100 is infinitely adjustable between 200 mbar and 1000 mbar or 400 mbar and 1800 mbar.

Additional technical information:

PN 16, –10 °C up to 120 °C

Connections DN 15 to DN 50:

- both ports female thread according to EN/BS

- both ports male thread with collar nut


Connections DN 65 to DN 150:

- both ports flanged according to DIN EN 1092-2, PN 16 (corresponds to ISO 7005-2, PN 16)

Lengths according to DIN EN 558-1, basic series 1 (corresponds to ISO 5752 series 1)

Advantages:

- high flow capacity
- nominal value can be locked
- very good optical display of nominal value at any time
- installation in the return pipe (DN 15 to DN 50)
- with isolating facility
- with ball valve for filling and draining
- pressure balanced valve disc
- existing double regulating and commissioning valves can be converted to differential pressure regulators (identical bodies)
- all functioning components on one level

 item is protected by patent.



Industrial Forum Design Hanover  
Award if  
Pragothem, Prague, Grand Prix





1

The flow regulators “Hydromat QTR”, “Cocon QTZ” and “Cocon QFC” are proportional regulators working without auxiliary energy. They are designed for use in heating and cooling systems to maintain a constant flow within a necessary proportional band.

Additional technical information:

**1 “Hydromat QTR”:**

PN 16 up to 120 °C

Connections alternatively

both ports female thread according to EN

both ports male thread and collar nuts

Corrosion resistant due to bronze material  
DN 15 – DN 40

Advantages:

- control range 0.2 – 2 bar
- high flow capacity
- installation in the supply or return pipe
- with isolating facility
- with ball valve for filling and draining
- pressure balanced valve disc
- very good optical display of nominal values at the handwheel
- nominal value lockable and lead sealable
- existing double regulating and commissioning valves can be converted to flow regulators (identical bodies)
- all functioning components on one level
- no need to exchange regulation inserts to modify nominal values

This item is protected by patent.

Awards:



Industrial Forum Design Hannover  
Award iF



Aquatherm Prague



Interclima Paris  
Trophée du Design



Design Award Switzerland

**2 “Cocon QTZ” and “Cocon QFC”:**

PN 16, –10 °C up to +120 °C

Control range 0.15 – 4 bar

Adjustable nominal control range

30 – 120.000 l/h

**“Cocon QTZ”** DN 10 – DN 32

Inlet port: Coupling

Outlet port: Female thread

The pressure independent control valve can be equipped with an actuator, temperature controller or manual head (connection thread M 30 x 1.5). Body and bonnet made of dezincification resistant brass, seals made of EPDM or PTFE, valve stem made of stainless steel.

**“Cocon QFC”** DN 40 – DN 150

Connections:

both ports flanged according to DIN EN 1092-2; lengths according to DIN EN 558-1, basic series 1

The pressure independent control valve can be equipped with an actuator. Steady control 0–10 V and free choice of type of characteristic line.

Body made of cast iron (EN-GJL-250 according to DIN EN 1561), bronze bonnet, seals made of EPDM, valve stem made of dezincification resistant brass.

Advantages:

- installation in supply or return pipe
- nominal value lockable and lead sealable
- the set nominal value can be read off even with the actuator in place
- the nominal values in m³/h can be set directly without conversion
- activation through actuator

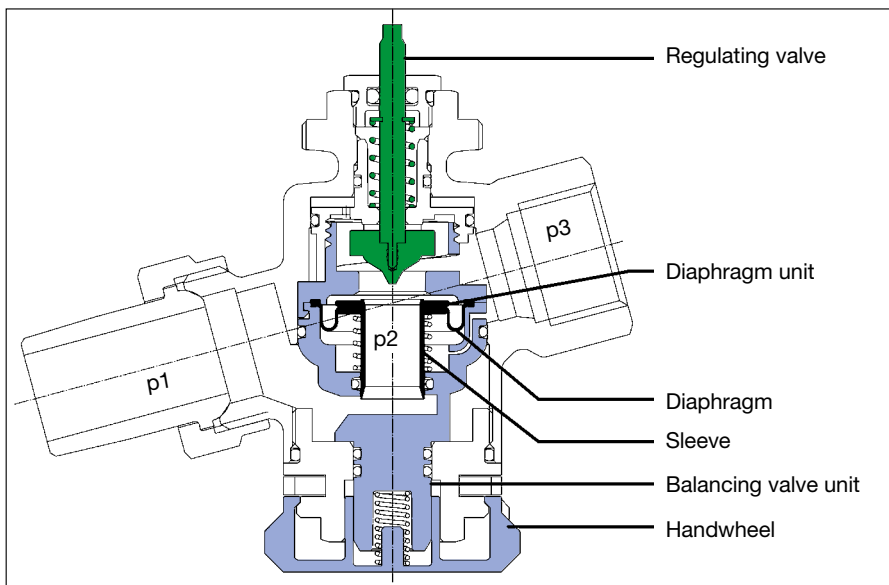


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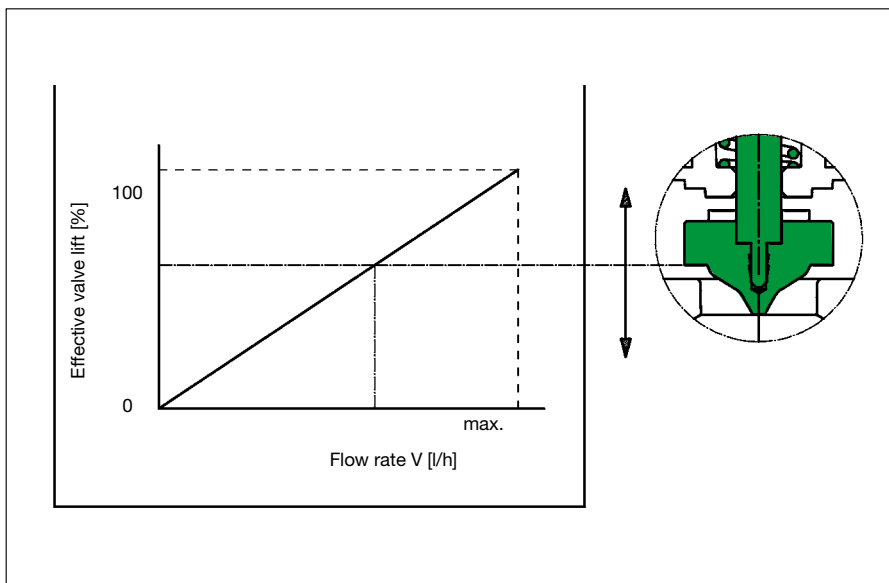
# oventrop Pressure independent control valve with automatic flow control "Cocon QTZ"



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**1** The Oventrop pressure independent control valve "Cocon QTZ" is a valve combination consisting of an automatic regulator (nominal value manually adjustable) and a regulating valve. 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 is used for the automatic hydronic balancing and temperature control of appliances or sections of the system in chilled ceiling, fan coil, convector, 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 15 up to DN 32
- with or without pressure test points
- inlet port: coupling, outlet port: female thread or inlet and outlet port: female thread

**2** The desired flow rate is set at the handwheel (pos. 4). 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 temperature controller which can be screwed onto the valve.

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

"p1" is the inlet and "p3" the outlet pressure of the valve. "p2" is the pressure actuating the diaphragm unit and maintaining the differential pressure "p2"-"p3" at a constant level.

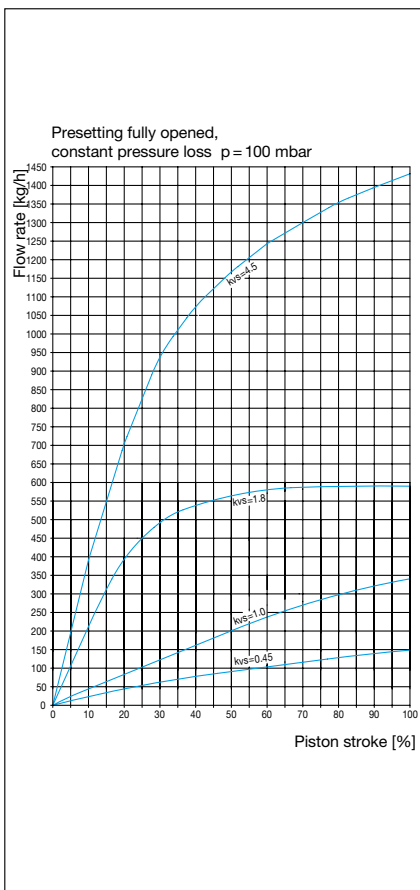
**3** The pressure independent control valve "Cocon QTZ" has a linear characteristic line which is advantageous when using actuators (electrothermal or electromotive) which also have a linear stroke behaviour. In general, the valve may also be combined with a temperature controller.

Advantages:

- constant, high valve authority
- reduced dimensions
- even with the actuator in place, the required nominal values can be set
- the set nominal value can be read off even with the actuator in place
- excellent optical display of the set values in any installation position
- the nominal values in l/h can be set directly without conversion. The nominal value range of the valve is imprinted on the handwheel in a prominent position.
- the locking ring can be lead sealed to secure the setting from unauthorised access
- the pump setting can be optimised 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



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4

### 1 Regulating valve "Cocon 2TZ" for chilled and radiant ceilings (illustr. with measuring technique "classic")

The calculated flow rate for a given differential pressure is set at the regulating valve "Cocon 2TZ". Moreover, it serves to regulate the room temperature with the help of an electrothermal or electromotive actuator by an adapted linear characteristic line (not for  $k_{vs} = 1.8$  and  $4.5$ ).

The valve is installed in heating and cooling systems and is especially suitable for the installation in the return pipe of chilled ceiling modules. The flow rate is determined by measuring the differential pressure via the integrated metering station by use of the flow-meter "OV-DMC 2". The flow rate to be regulated can be read off the flow-meter. To carry out the hydronic balance, a flow rate deviation can immediately be readjusted by modification of the adjustment screw.

When actuating the presetting screw, the flow rate to be regulated can be read off the flow-meter if connected to the pressure test points of the regulating valve "Cocon 2TZ". For isolation, the setting screw can be completely screwed in. When opening until stop, the value of presetting is restored.

Four different models of the regulating valve "Cocon" are available:

- size  $\frac{1}{2}$ ",  $k_{V\text{value}} = 0.45$
- size  $\frac{1}{2}$ ",  $k_{V\text{value}} = 1.0$
- size  $\frac{1}{2}$ ",  $k_{V\text{value}} = 1.8$
- size  $\frac{3}{4}$ ",  $k_{V\text{value}} = 4.5$

### General information:

To guarantee a permanent functional efficiency of the regulation and control components as well as a permanent availability of the complete cooling system, preparatory measures should be taken for the protection of the system.

On the one hand, these measures are related to possible damages caused by corrosion, especially in installations with pairings of system components of different materials (copper, steel and plastic) and on the other hand to the choice and settings of the control parameters (e.g. avoiding of energy losses in combined heating/cooling systems).

### 2 Flow rate depending on the piston stroke of the valve

The chart shows the linear characteristic lines of the regulating valves "Cocon 2TZ" size  $\frac{1}{2}$ ",  $k_{vs} = 0.45$ ,  $1.0$  and  $1.8$  and size  $\frac{3}{4}$ ",  $k_{vs} = 4.5$ .

### 3 Regulating valves "Cocon 2TZ" for chilled and radiant ceilings (illustr. with measuring technique "eco")

Due to the connection thread  $M 30 \times 1.5$  the valve can be used in combination with:

- Oventrop electrothermal actuators with two point control
- Oventrop electrothermal actuators (0–10 V)
- Oventrop electromotive actuators as proportional (0–10 V) or three point control
- Oventrop electromotive actuators EIB or LON®

### 4 Measuring device for a quick regulation of the "Cocon 2TZ" valves with measuring technique "eco".



# oventrop

## Three-way valves "Tri-D TB/TR", "Tri-D plus TB" and "Tri-M TR" Four-port valve "Tri-M plus TR" Regulating valve with reversed closing function



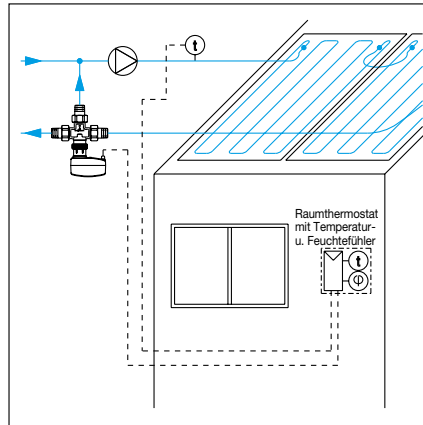
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**1** Three-way diverter valve "Tri-D TB", brass  
valve DN 15 with connection thread  
M 30 x 1.5 for use in heating and cooling  
systems, 3 x 3/4" male threaded connection  
"Euro" cone for different pipes:  
– threaded tailpipe  
– solder tailpipe  
– plug-in tailpipe  
– compression fittings for copper, plastic  
and composition pipes

The valve is installed in the return pipe of  
chilled ceilings for the regulation of the flow  
temperature depending on the dew point  
temperature of the room. Adaptation of the  
flow temperature of the chilled ceiling  
without interrupting cooling operation. The  
installation not only of a temperature sensor  
in the supply pipe of the chilled ceiling but  
also of a sensor detecting the humidity of  
the room is required.

**2** Three-way diverter valve "Tri-D plus TB"  
with T-piece DN 15 with connection thread  
M 30 x 1.5 for thermostats and actuators.  
Male threaded connection 4 x 3/4" to the  
pipe for different tailpipes and compression  
fittings.

Application:

- chilled ceilings
- Fan-Coil units
- heating systems
- for mass flow distribution with additional  
possibility for room temperature control  
or dew point control e. g.

**3** Three-way diverter valve "Tri-D TR",  
bronze

Three-way mixing valve "Tri-M TR", bronze  
Flat sealing valves sized DN 20, 25, 40 with  
connection thread M 30 x 1.5 for  
thermostats or actuators. The valves are  
used in heating or cooling systems in which  
the volumes of flow are to be diverted,  
mixed or changed-over. They are frequently  
used for storage charging connections or in  
heating systems with two heat producers.

**4** System illustration

Three-way diverter valve in a chilled ceiling  
e. g. with electromotive actuator with  
temperature sensor in the supply pipe.

**5** Four-port mixing valve "Tri-M plus TR",  
brass Regulating valve for heating and  
cooling systems as well as for the regulation  
of suspended and vertical Fan-Coil units.

Valve DN 15 with connection thread  
M 30 x 1.5 for thermostats and actuators.  
Flat sealing male threaded connection  
4 x 1/2".

Technical data:

Max. operating pressure: 10 bar

Max. differential pressure: 1 bar

Operating temperature range:

–10 °C to +120 °C

kvs values: 0.45/1.0/1.8

**6** "Series KT"

Valves for the regulation of Fan-Coil units  
and induction-coil appliances. Oventrop  
thermostatic radiator valves for use in  
chilled water circuits are proportional  
regulators working without auxiliary energy.  
The room temperature is regulated by  
varying the chilled water flow. The valve  
opens with the temperature at the sensor  
rising. Angle and straight pattern valves: DN  
15 to DN 25

**7** Thermostats

The thermostats with remote control "Uni  
FH" or the Oventrop remote control with  
additional remote sensor (see system  
illustration, illustr. 7 and 8) are used as  
regulators.





1



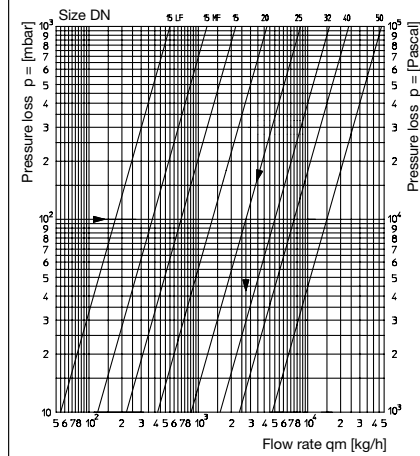
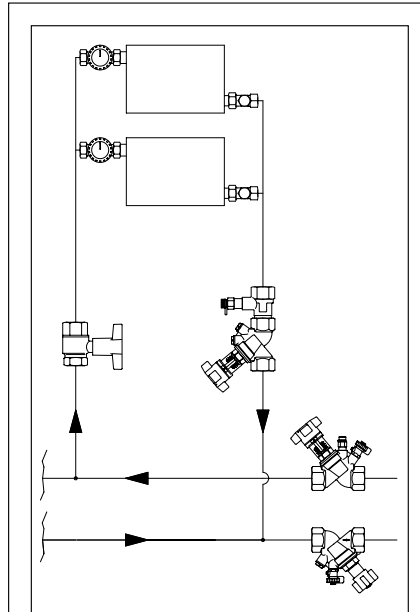
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### Design example

Required: Flow value at the metering station

Given: Differential pressure via the metering station = 100 mbar  
Size DN 25

Solution: Flow value = 2750 kg/h  
(taken from chart for bronze metering station)

The measurement of the flow values and the hydronic regulation of parts of the system may also be carried out with the help of the metering stations. They are installed in the direction of flow in front of the "Hycocn", "Hydrocontrol" or "Hydromat".

Unlike the measuring technique at the double regulating and commissioning valves ("Hydrocontrol"), the pressure differences for the registration of the flow values are measured at invariable flow cross sections.

The metering stations use the same test point connection system as the "Hydrocontrol" valves.

When using the Oventrop flow-meter "OV-DMC 2", in which the flow characteristic lines of the metering stations are stored, the simultaneous indication of the flow value on the display is possible when modifying the throttle cross section at the valve.

Flow values for Oventrop metering stations at 1 bar differential pressure are indicated on page 13.

**1** Commissioning set "Hydroset" PN 25  
Double regulating and commissioning valve with metering station made of dezincification resistant brass  
Sizes: DN 15 – DN 50

**2** "Hydrocontrol MTR" PN 25  
Double regulating and commissioning valve with integrated metering station (measuring technique "classic") for the hydronic balancing of heating and cooling systems, with reproducible presetting. Quick regulation of the valve. Steady and direct flow indication during the regulation. Pressure test points and handwheel on the same level.  
Sizes: DN 15 – DN 50

**3** Stainless steel or cast iron metering station for installation between flanges  
Sizes: DN 65 – DN 1000

**4** Commissioning set "Hydroset F"  
Double regulating and commissioning valve with metering station

**5** Butterfly valves  
With metering station for installation between flanges  
Sizes: DN 32 – DN 400



5

# oventrop

Hydronics

“Optibal” Ball valves





Ball valves both port female thread and one port male and one port female thread



Brass ball valves



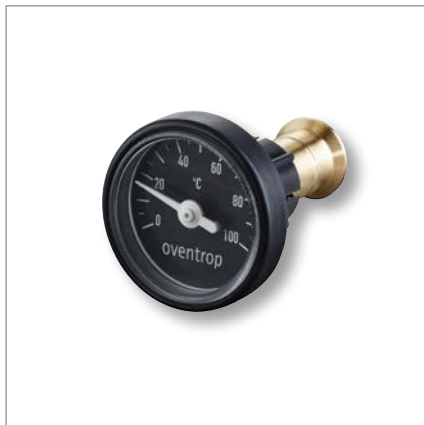
Ball valve with draining valve



Ball valve with coupling



Insulation made of expanded polypropylene



Thermometer conversion set

Oventrop brass and bronze ball valves “Optibal” with full flow are used in industrial, commercial and domestic installations for the isolation of pipes transporting fluids.

Depending on the model, they may be used for different fluids: Water, mineral, heating and hydraulic oil, fuel and air. Please observe the technical data sheet.

The ball valve is opened/closed by turning the handle or lever by 90°. The position of the ball is indicated by the position of the lever or handle which moves parallel to the ball. Even if the lever or handle is removed, the stem with two flats still indicates the position of the ball.

#### Advantages:

- full flow
- wide range of application
- all standard types of handles are available
- simple insulation of the models with extended plastic handle or stem extension
- suitable for high pressures due to blow-off proof stem and solid bodies
- the ball valves with extended plastic handle can be upgraded with a thermometer
- ball valves with press connection for copper and stainless steel pipes available
- components and auxiliary materials free from silicone
- suitable for water and glycol mixtures with a glycol proportion up to 50%
- ball surface hard-chrome plated





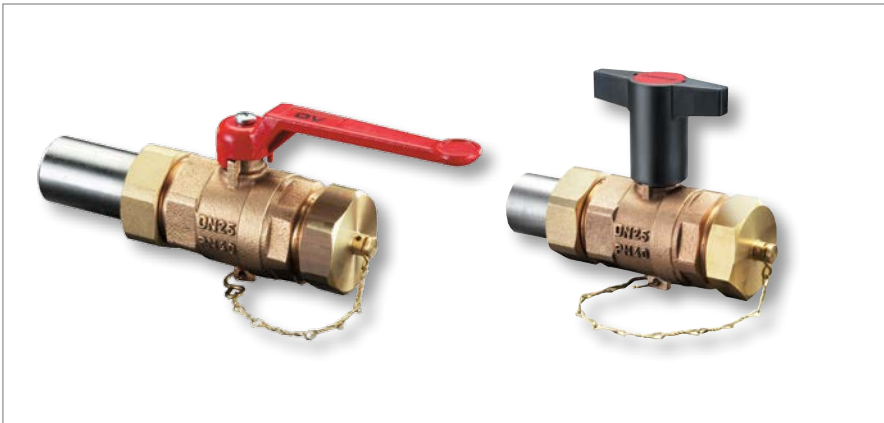
## “Optibal” Ball valves



Bronze ball valves “Optibal TW” for potable water

The bronze ball valves for potable water “**Optibal TW**” with full flow according to DIN EN 13828 (DN 15-DN 80) feature plugged draining orifices G 1/4 on both sides. The ball is always surrounded by water and the valve does not feature a dead zone. For the direct connection of copper pipes according to EN 1057 and stainless steel pipes “NiroSan”, the ball valve “Optibal TW” is also available with press connection on both sides.

DVGW, GDV and VA certified.



Bronze ball valves

The isolating set “**Optibal PK**” with thermometers is a product assembly for the realisation of individual boiler connections.

The set consists of a pump ball valve with check valve for the installation at the pump inlet, a pump ball valve with red thermometer for the supply and a ball valve with blue thermometer for the return. The set includes two collar nuts made of nickel plated brass and two flat seals for the connection to the pump.

The set allows the installer to realise a connection between the boiler and the pipework according to requirements on site. Standard pumps with flat sealing male thread can be used.

Pump ball valves “**Optibal P**” made of nickel plated brass with and without check valve are used in central heating systems with circulation pump. They are directly connected to the pump with the help of a collar nut. Unwanted gravity circulation is prevented by the installation of a pump ball valve “Optibal P” with check valve at the pump inlet.



Isolating set “Optibal PK”

### Advantages “Optibal P”:

- dry running of the pump is avoided by the installation of a pump ball valve with check valve at the pump inlet
- extended plastic handle allowing for a continuous insulation, no stem extension required
- operating handle outside the insulation
- check valve lockable for gravity circulation
- blow-off proof stem
- suitable for water and glycol mixtures with a glycol proportion up to 50%



Pump ball valve “Optibal P” with check valve



Insulation for pump ball valves “Optibal P”



Room climate

Hydronics

Stations  
Storage  
cylinders  
Pipes

Potable water

Oil  
Solar

Smart Home  
Smart Building

Subject to technical modifications  
without notice.  
Private persons may purchase our  
products from their qualified installer.

Presented by:



# oventrop

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