

# HydroControl D

## Differential Pressure Control Valve PN 25

### DN 15...50



For automatic hydronic balancing of distribution pipes in central heating and cooling systems with closed circuits. The differential pressure control ensures hydronic balancing even in partial load range and prevents high differential pressures in the controlled system section, e.g. at the radiator valve.

When using a HydroControl V or M as partner valve, the water quantity in the pipeline can also be measured with the help of the OV-DMC 3 measuring system with the impulse tube connected.

Y-pattern version with secured, at any time controllable, infinitely adjustable presetting of the desired nominal differential pressure value. All functions accessible from the top.

### Functions

- Differential pressure control
- Shutoff
- Measurement (with HydroControl V or M as partner valve)

### Features

- + High flow rate
- + Small diaphragm housing
- + Body made of dezincification resistant brass
- + Measurement function support

# Product Details

## Technical Data

|                               |                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Nominal sizes                 | DN 15...50                                                                                                         |
| Variants                      | With internal thread according to EN 10226<br>With external thread according to ISO 228                            |
| Operating temperature         | -20...120 °C                                                                                                       |
| Operating pressure            | PN 25                                                                                                              |
| Medium                        | Heating or cooling water according to VDI 2035 or ÖNORM 5195<br>Water-glycol mixtures with max. 50% glycol content |
| Max differential pressure     | 2.5 bar                                                                                                            |
| Nominal differential pressure | 5...30 kPa oder 25...70 kPa                                                                                        |

## Functions

### Differential pressure control

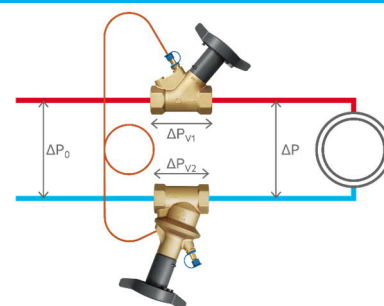
The main function of the HydroControl D is to control the differential pressure via a control circuit. For this purpose, the pressure pickup is carried out in the supply and in the return.

- The pressure pickup in the return is carried out inside the HydroControl D – which must always be installed in the return
- The pressure pickup in the supply is transmitted to the HydroControl D via the supplied impulse tube. The pressure pickup is usually carried out via a so-called partner valve, typically a shutoff or throttle valve

The desired differential pressure  $\Delta P$  is set as the nominal value on the HydroControl D handwheel. The required nominal value setting can be determined from the charts in the chapter “Sizing” further on. The HydroControl D is available in two setting ranges:

- 5 to 30 kPa (50 to 300 mbar)
- 25 to 70 kPa (250 to 700 mbar)

The total pressure loss of the system section  $\Delta P_0$  is the sum of  $\Delta P$ ,  $\Delta P_{V2}$  and, if applicable, the pressure loss of the partner valve  $\Delta P_{V1}$ . As a rule, pressure pickup is carried out on the partner valve downstream of its valve seat so that no pressure loss needs to be taken into account. This is also shown in the above graphic.



### IMPULSE TUBE



The impulse tube required for pressure pickup in the supply pipe is included in the scope of delivery. The impulse tube can be connected to a HydroControl V, HydroControl M or HydroControl A partner valve without tools. The connection is usually made at the blue HydroPort auxiliary valve of the partner valve.

On the HydroControl D, the impulse tube is screwed into the connection thread above the diaphragm housing and tightened with an open-end spanner.

### PARTNER VALVE

All HydroControl shutoff and throttle valves are suitable as partner valves:

- The HydroControl A shutoff valve enables a quick and easy connection on the impulse tube

- The HydroControl V double regulating valve additionally enables throttling and measurement of the water quantity in the pipeline
- The HydroControl M fixed orifice double regulating valve additionally enables the measurement of the water quantity in the pipeline via a fixed orifice metering station, which simplifies measuring

Item numbers of HydroControl partner valves

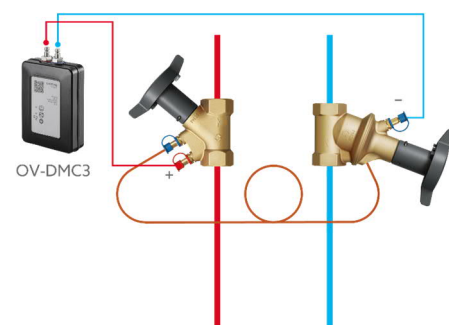
| Nominal size | HydroControl A  |                 | HydroControl V  |                 | HydroControl M  |
|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|              | Internal thread | External thread | Internal thread | External thread | Internal thread |
| DN <b>15</b> | 1067524         | 1067624         | 1062404         | 1062604         | 1065804         |
| DN <b>20</b> | 1067526         | 1067626         | 1062406         | 1062606         | 1065806         |
| DN <b>25</b> | 1067528         | 1067628         | 1062408         | 1062608         | 1065808         |
| DN <b>32</b> | 1067530         | 1067630         | 1062410         | 1062610         | 1065810         |
| DN <b>40</b> | 1067532         | 1067632         | 1062412         | 1062612         | 1065812         |
| DN <b>50</b> | 1067536         | 1067636         | 1062416         | 1062616         | 1065816         |

## Flow measurement



Each HydroControl D is equipped with a HydroPort auxiliary valve as standard. With the HydroPort valve, the blue measuring hose of an OV-DMC 3 differential pressure measuring device can be easily and safely connected by means of a snap lock. HydroPort valves are opened by a quarter turn.

For the measurement, however, a partner valve with measuring function is required, i.e. a HydroControl V or HydroControl M double regulating valve. The red measuring hose of the OV-DMC 3 is connected to this partner valve, the respective partner valve is to be selected in the OV-DMC 3 measuring device.

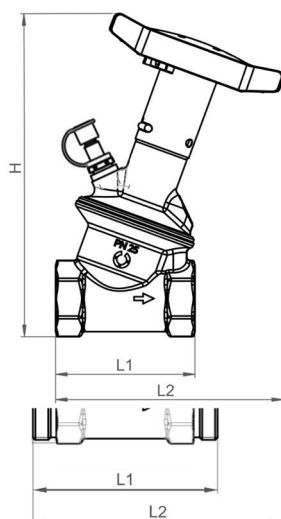
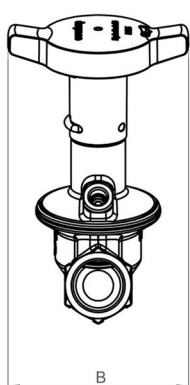


## Shutoff

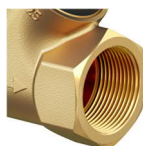
Turning the handwheel as far as it will go shuts off the pipeline tightly.

## Dimensions

| DN        | INTERNAL THREAD |            |            | EXTERNAL THREAD |            |            | B<br>[mm] | H<br>[mm] | Weight<br>[kg] |
|-----------|-----------------|------------|------------|-----------------|------------|------------|-----------|-----------|----------------|
|           | Con-<br>nection | L1<br>[mm] | L2<br>[mm] | Con-<br>nection | L1<br>[mm] | L2<br>[mm] |           |           |                |
| <b>15</b> | Rp ½            | 73         | 131        | G ¾             | 89         | 138        | 109       | 180       | 1.3            |
| <b>20</b> | Rp ¾            | 78         | 133        | G 1             | 90         | 140        | 109       | 186       | 1.4            |
| <b>25</b> | Rp 1            | 84.5       | 138        | G 1 ¼           | 96         | 142        | 109       | 195       | 1.6            |
| <b>32</b> | Rp 1 ¼          | 107        | 154        | G 1 ½           | 125        | 164        | 109       | 195       | 1.8            |
| <b>40</b> | Rp 1 ½          | 110        | 155        | G 1 ¾           | 130        | 165        | 109       | 200       | 2.0            |
| <b>50</b> | Rp 2            | 126        | 166        | G 2 ¾           | 137        | 175        | 109       | 222       | 2.9            |



## Item Numbers



### INTERNAL THREAD

### EXTERNAL THREAD

| DN | Nominal value range | Connection size | Item no. | Connection size | Item no. |
|----|---------------------|-----------------|----------|-----------------|----------|
| 15 | 5...30 kPa          | Rp ½            | 1064524  | G ¾             | 1064624  |
| 20 |                     | Rp ¾            | 1064526  | G 1             | 1064626  |
| 25 |                     | Rp 1            | 1064528  | G 1 ¼           | 1064628  |
| 32 |                     | Rp 1 ¼          | 1064530  | G 1 ½           | 1064630  |
| 40 |                     | Rp 1 ½          | 1064532  | G 1 ¾           | 1064632  |
| 50 |                     | Rp 2            | 1064536  | G 2 ¾           | 1064636  |
| 15 | 25...70 kPa         | Rp ½            | 1064724  |                 |          |
| 20 |                     | Rp ¾            | 1064726  |                 |          |
| 25 |                     | Rp 1            | 1064728  |                 |          |
| 32 |                     | Rp 1 ¼          | 1064730  |                 |          |
| 40 |                     | Rp 1 ½          | 1064732  |                 |          |
| 50 |                     | Rp 2            | 1064736  |                 |          |

### Scope of delivery

- HydroControl D differential pressure control valve
- Impulse tube, length = 1 meter, with quick-release fastener for HydroPort auxiliary valves
- Quick guide

### Suitable partner valves

- When using HydroControl V, HydroControl M or HydroCom V double regulating valves as partner valve, the flow rate can be measured with the OV-DMC 3 measuring system
- When using HydroControl A or HydroCom A shutoff valves as partner valve, it is not possible to measure the flow rate

#### Double regulating valves: Flow rate measurement possible

#### Shutoff valves: flow rate measurement not possible

##### HydroControl V

##### HydroControl M

##### HydroCom V

##### HydroControl A

##### HydroCom A



| DN | Item no. IT | Item no. ET | Item no. IT | Item no. IT | Item no. IT | Item no. ET | Item no. IT |
|----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 15 | 1062404     | 1062604     | 1065804     | 1062704     | 1067524     | 1067624     | 1062724     |
| 20 | 1062406     | 1062606     | 1065806     | 1062706     | 1067526     | 1067626     | 1062726     |
| 25 | 1062408     | 1062608     | 1065808     | 1062708     | 1067528     | 1067628     | 1062728     |
| 32 | 1062410     | 1062610     | 1065810     | 1062710     | 1067530     | 1067630     | 1062730     |
| 40 | 1062412     | 1062612     | 1065812     |             | 1067532     | 1067632     |             |
| 50 | 1063616     | 1062616     | 1065816     |             | 1067536     | 1067636     |             |

## Accessories

### Extended impulse tube



Original impulse tube in extended version. On one side with screw fitting for connection to the HydroControl D diaphragm housing. On the other side with quick-release fastener for connection to HydroPort auxiliary valves.

| Length   | Suitable for                   | Item no. |
|----------|--------------------------------|----------|
| 2 metres | All nominal sizes and variants | 1069626  |
| 5 metres | All nominal sizes and variants | 1069627  |

### Insulation shell



Only for heating systems. Meets the requirements of Appendix 8 to Sections 69 and 71(1), line ee) of the German Building Energy Act (GEG). Building material class B2 according to DIN 4102.

Operating temperature up to 110 °C.

| Suitable for | Item no. |
|--------------|----------|
| DN 15        | 1069620  |
| DN 20        | 1069621  |
| DN 25        | 1069622  |
| DN 32        | 1069623  |
| DN 40        | 1069624  |
| DN 50        | 1069625  |

### Fittings PN 16



Connection set with externally threaded tailpipes.

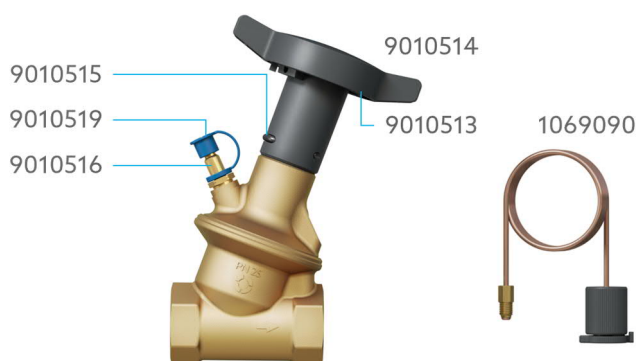
Consisting of two tailpipes, union nuts and sealing rings.

Suitable for HydroControl with external thread.

When using these fittings, the pressure rating is reduced to PN 16 = max. operating pressure 16 bar!

| Connection size | Suitable for | Item no. |
|-----------------|--------------|----------|
| R ½             | DN 15        | 1140792  |
| R ¾             | DN 20        | 1140793  |
| R 1             | DN 25        | 1140794  |
| R 1 ¼           | DN 32        | 1140795  |
| R 1 ½           | DN 40        | 1140796  |
| R 2             | DN 50        | 1140797  |

### Spare parts



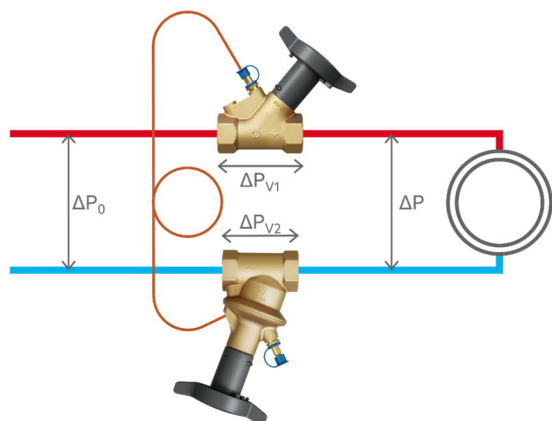
| Spare part                           | Suitable for      | Item no. |
|--------------------------------------|-------------------|----------|
| Impulse tube, complete               |                   | 1069090  |
| Blocking clip (concealed, 10 pieces) |                   | 9010513  |
| Handwheel set, complete              | All nominal sizes | 9010514  |
| Securing clip (10 pieces)            | and variants      | 9010515  |
| HydroPort                            |                   | 9010516  |
| Protection cap (10 pieces)           |                   | 9010519  |

# Sizing

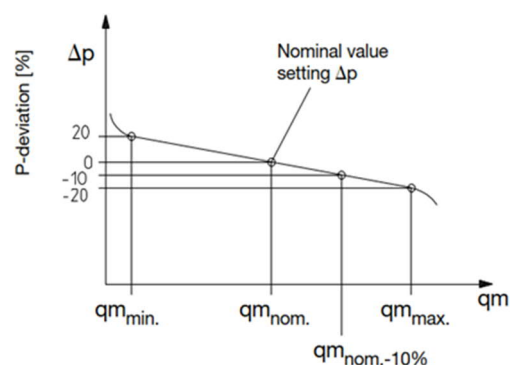
The recommended application range is determined by the minimum flow rate ( $q_{m\min}$ ) and the maximum flow rate ( $q_{m\max}$ ). The controller sizing can be done with the help of the charts. Depending on the flow rate and the differential pressure, the appropriate control valve can be determined. The expected maximum flow of the installation must not exceed that of the control valve ( $q_{m\max}$ ). With the  $q_{m\text{nom}}$  curve, the differential pressure of the installation corresponds to the set nominal value.

The  $q_{m\text{nom}} -10\%$  curve shows the values with a P-deviation of  $-10\%$ . The performance data apply to the condition  $\Delta P_0 \geq 2 \times \Delta P$ . To ensure sufficient valve authority of the differential pressure control valve,  $\Delta P_0$  should be  $\geq 1.5 \times \Delta P$ .

Note: A function of the differential pressure control valve is also given below this value.



System illustration



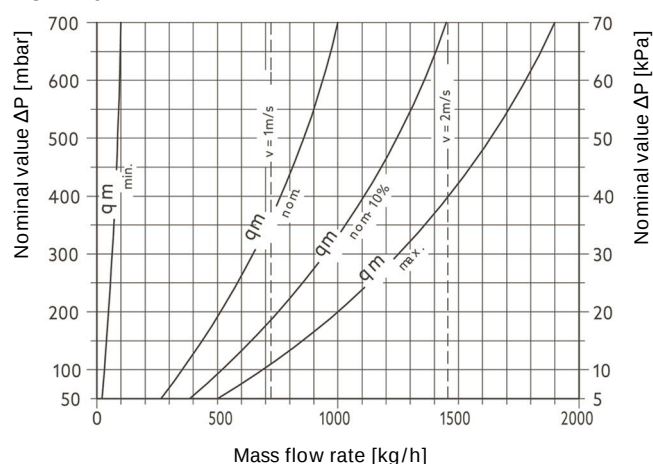
Smallest P-deviation at medium nominal value setting ( $q_{m\text{nom}}$ )

## Performance Data

Area of application range for  $\Delta P_0 = 2 \times \Delta P$

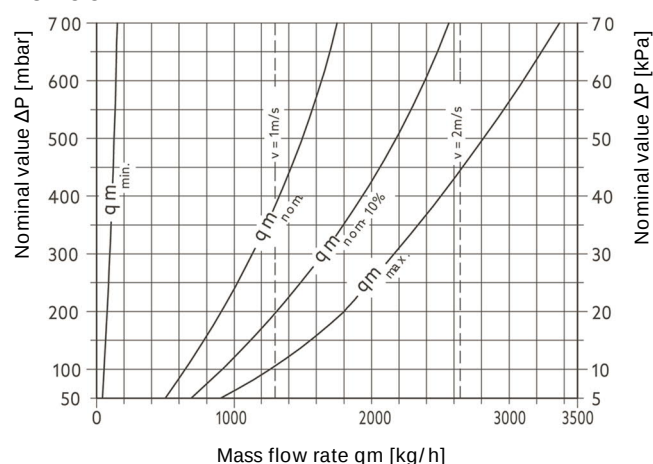
### DN 15

$Kvs = 4.0$



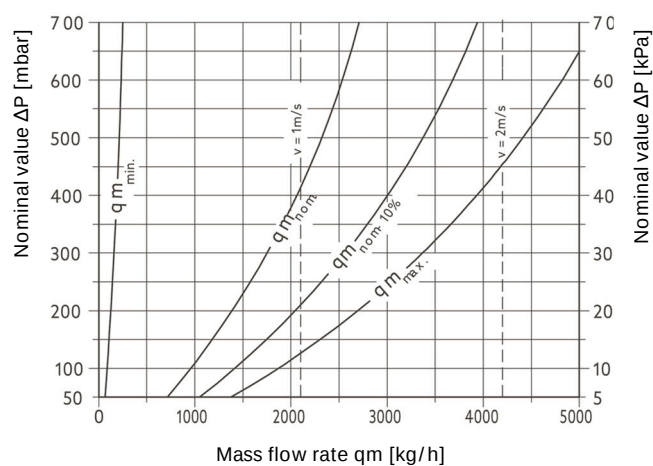
### DN 20

$Kvs = 5.5$



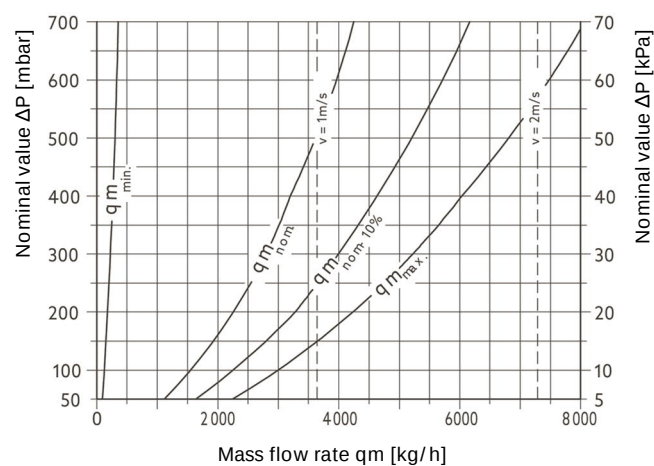
## DN 25

Kvs = 7.5



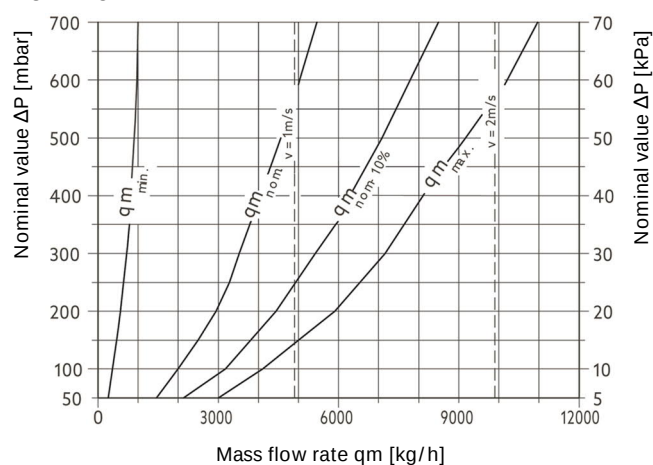
## DN 32

Kvs = 9.5



## DN 40

Kvs = 11.5



## DN 50

Kvs = 20.0

