



### Differential pressure regulator "Hydromat DP" DN 65 to DN 150

Technical information

#### General information:

The Oventrop differential pressure regulators "Hydromat DP" are proportional regulators working without auxiliary energy and are designed to maintain a constant differential pressure within a necessary proportional band.

With the differential pressure in the installation increasing, the valve disc closes down and opens as the differential pressure falls. The excess differential pressure is reduced by the differential pressure regulator, until the set differential pressure in the pipe is reached.

#### Application:

Central heating and cooling systems PN 16. For cooling systems: Please provide for frost protection and diffusion tight insulation! Lengths according to DIN EN 558-1 basic series 1, both ports flanged connection according to DIN EN 1092-2. Infinitely adjustable nominal value which can be locked and read-off from the outside at any time. With isolating facility and ball valve for draining and filling, oblique pattern.

Body made of cast iron (EN-GJL-250 DIN EN 1561), bronze bonnet, stem made of brass resistant to dezincification (DZR), seat and disc (soft seal) made of stainless steel. Maintenance free stem seal due to double EPDM O-ring.

The regulators are supplied complete with connection set, consisting of:

1 capillary 1 m (6x1 mm copper pipe), 1 isolating ball valve for the capillary (connection thread 1/4").

The regulator is suitable for use in the return pipe (illustr. 1).

#### Performance data:

Max. working temperature $t_s$ :	120 °C
Min. working temperature $t_s$ :	-10 °C
Max. working pressure $p_s$ :	16 bar (PN 16)
Max. differential pressure $\Delta p_v$ :	5 bar
Length of capillary:	1 m

	kvs	Item no.	Item no.
		200 to 1000 mbar	400 to 1800 mbar
DN 65	52	106 46 51	106 47 51
DN 80	75	106 46 52	106 47 52
DN 100	110	106 46 53	106 47 53
DN 125	145	106 46 54	106 47 54
DN 150	170	106 46 55	106 47 55

The recommended application area is determined by the minimum flow rate ( $q_{m\min.}$ ) and the maximum flow rate ( $q_{m\max.}$ ).

An average flow rate ( $q_{m\text{nom.}}$ ) will show the lowest P-deviation from the set nominal value.

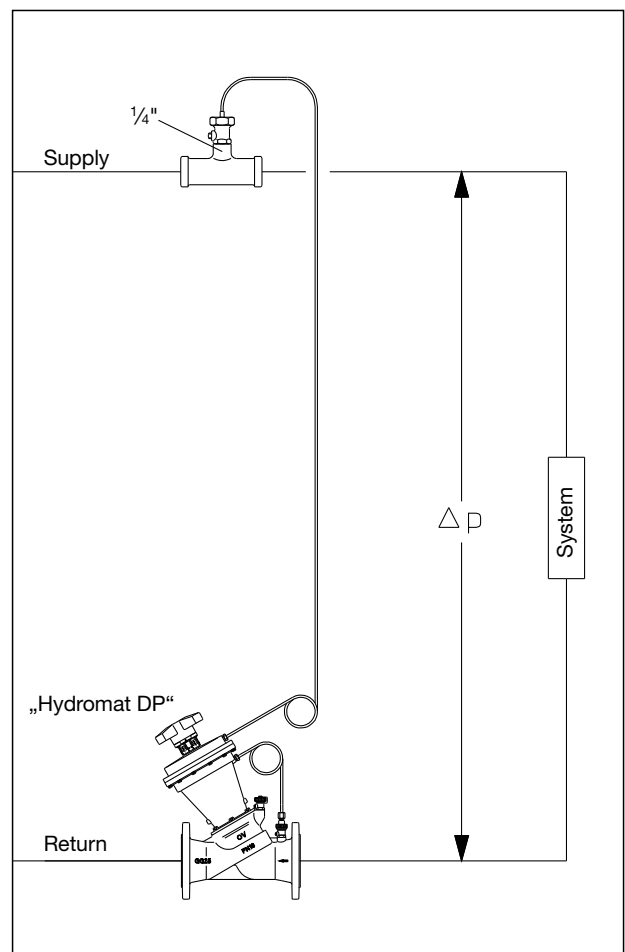
The design of the regulator can be made with the help of the charts on page 3. The correct regulator can be determined from the flow rate and the differential pressure.

#### Advantages:

- all functioning components on one level
- infinite adjustment of the nominal value between 200 and 1000 mbar/400 and 1800 mbar
- very good optical display of the set nominal value on a scale
- nominal value can be locked and lead sealed
- simple isolation of the pipe
- pressure balanced valve disc
- seat and disc made of stainless steel



Differential pressure regulator "Hydromat DP"



Illustr. 1: "Hydromat DP"

### Installation and fitting of the regulator:

The differential pressure regulators are installed in the return pipe (see illustr. 1 ).

Installation is possible in any position provided the direction of flow conforms with the direction of the arrow on the valve body. Before installing the regulator into the pipework, it is advisable to flush the latter thoroughly. The installation of an Oventrop "Y" type strainer is recommended. The capillary should be fitted above or horizontal to the supply pipe, but not from underneath where it might be prone to get blocked by dirt particles.

The enclosed isolating ball valve is to be installed with an appropriate sealant into a 1/4" threaded connection, then the capillary can be connected.

Before putting the system into operation, the two diaphragm chambers must be de-aerated. To do so, loosen the venting screws at the highest point with a 4 mm spanner and tighten again after this process.

**Do not use any greasing agents or oils for the installation**, as these can destroy the valve seals. Any dirt particles or grease or oil residues must be flushed out before the regulator is installed. Once the valve has been fitted, the installation points must be checked for leaks.

**Pressurise the system only after the capillaries have been connected and the ball valves are in the open position. (Max. test pressure 1.5 x PN)**

**The increase of pressure must be made equally at the ⊕/⊖ connections. At no time may the ⊖ pressure be higher than the ⊕ pressure!**

**If this rule is not observed, the regulator might be damaged!**

### Setting the nominal value DN 65 –DN 150 (illustr. 2):

The nominal value of the Oventrop differential pressure regulator is infinitely adjustable between 200 and 1000 mbar or 400 and 1800 mbar.

The required value is set by turning the handwheel.

- The display of the basic setting is shown by the longitudinal scale together with the sliding indicator. Each turn of the handwheel is represented by a line on the longitudinal scale.
- The display of the fine setting is shown by the peripheral scale on the handwheel together with the marking. The subdivisions of the peripheral scale correspond to 1/10th of a turn of the handwheel.

### Operation of the manual isolation:

The differential pressure regulator can be closed off manually, e.g. for maintenance works and thus additionally acts as an isolating valve.

Close off as follows:

- Close** both isolating ball valves for the capillaries of the lower and upper diaphragm chamber.  
**It can cause damage if this is not adhered to!**
- Turn the handwheel as far as it will go (scale will display closed position)

Now the system can be drained off. The pressure in the direction of flow, in front of the differential pressure regulator must be equal or higher than the pressure behind the differential pressure regulator.

Open as follows:

- Set the desired nominal value by turning the handwheel.
- Once the system has been filled, both isolating ball valves for the capillaries of the lower and upper diaphragm chamber must be **opened**.

### Readability of the nominal setting:

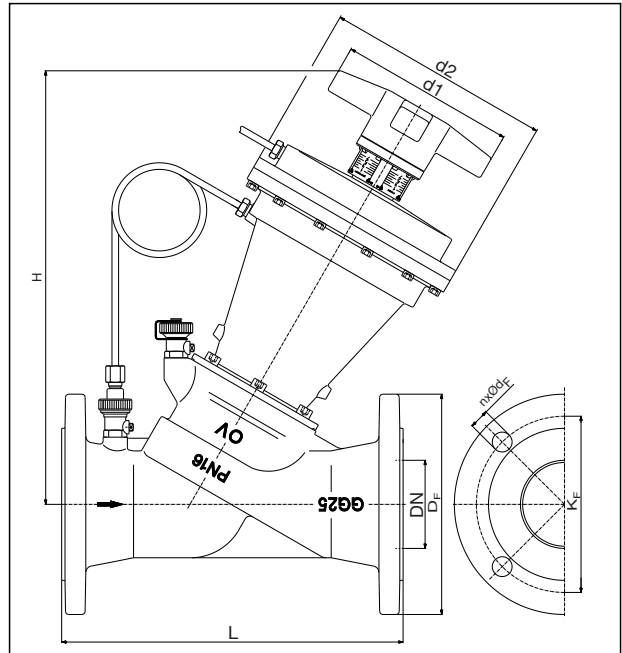
Depending on the installation position of the differential pressure regulator, an improvement of the readability of the nominal setting is obtained by turning the scale. To do so, remove cover plug, undo screw and, with a light tug, pull the handwheel off the valve stem.

Next, without altering the setting, adjust the position of the handwheel so that the indicator window of the peripheral scale is clearly visible. Finally, refit the handwheel to the valve stem, tighten the screw and replace the cover plug.

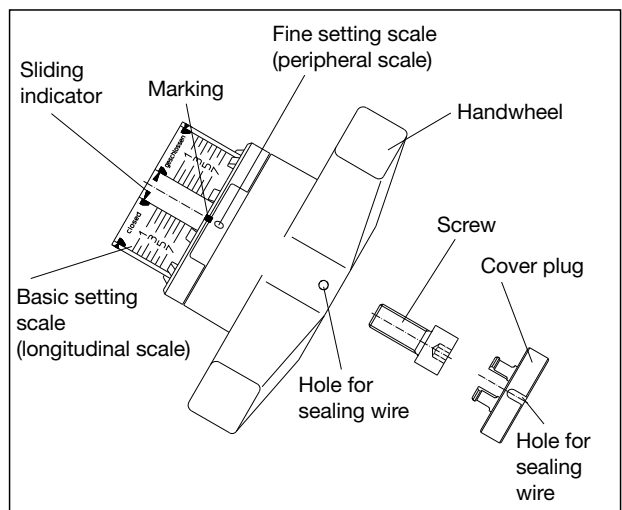
### Locking the nominal setting (illustr. 3):

The nominal value can be locked in any position (1/10th of a turn). To do so, push the enclosed clip into the cut-out in the handwheel below the holes between the guides until stop (see illustr. 2). The clip can now be sealed as illustrated. It is essential that the sealing wire is fitted tightly.

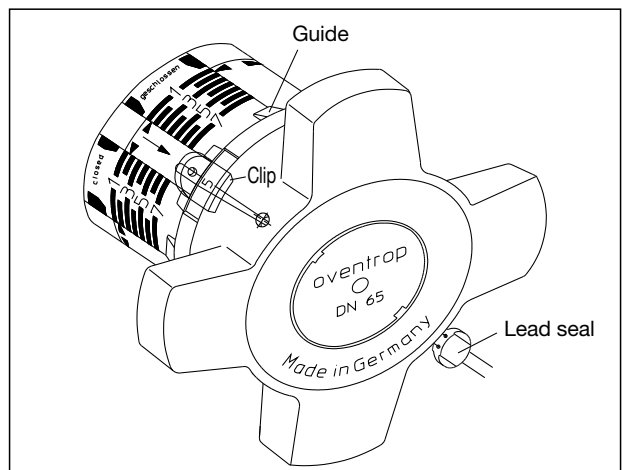
### Dimensions:



DN	L	DF	KF	Hmax.	d1	d2	nxøDF
65	290	185	145	375	160	206	4 x 19
80	310	200	160	395	160	206	8 x 19
100	350	220	180	410	160	206	8 x 19
125	400	250	210	450	160	206	8 x 19
150	480	285	240	450	160	206	8 x 23



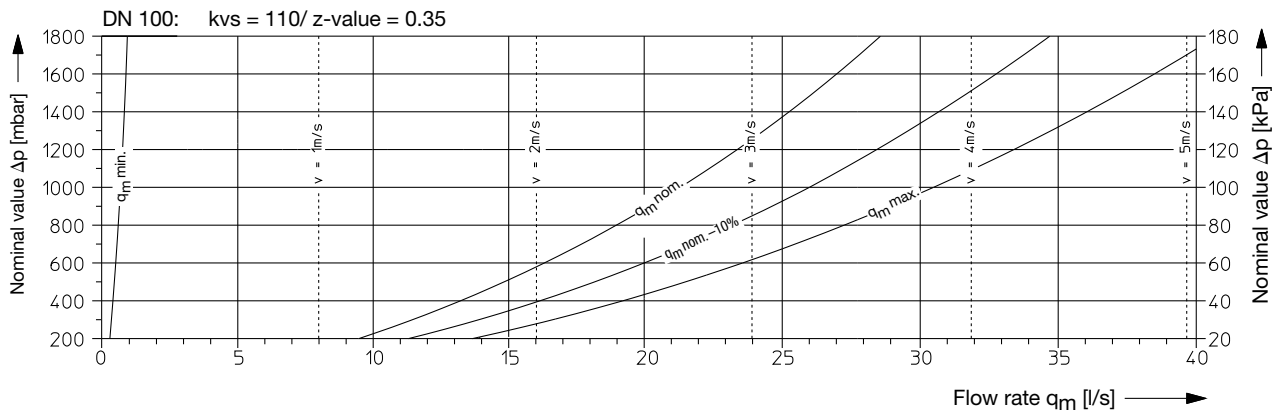
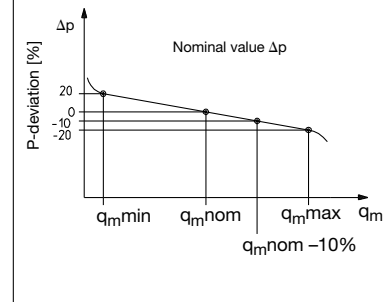
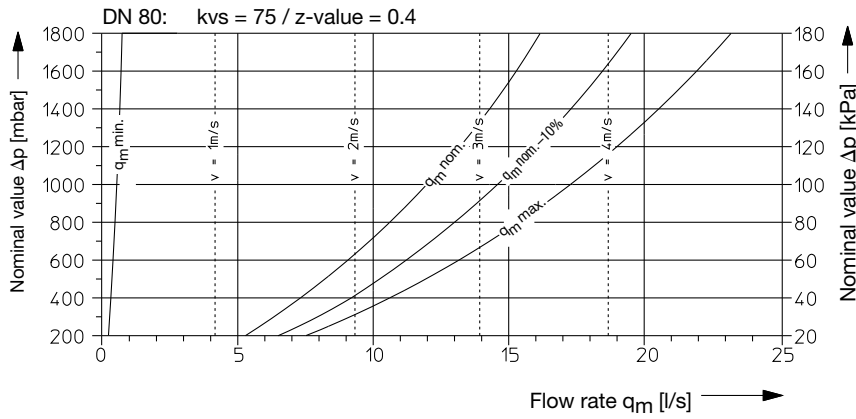
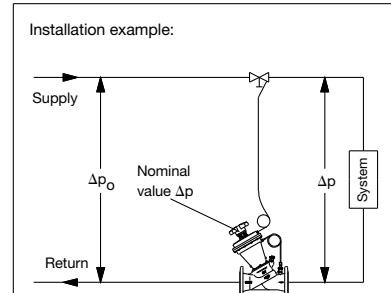
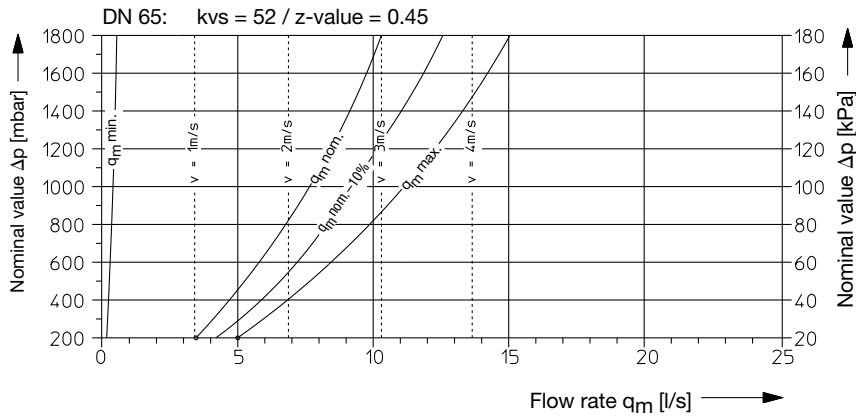
Illustr. 2: Setting of nominal value



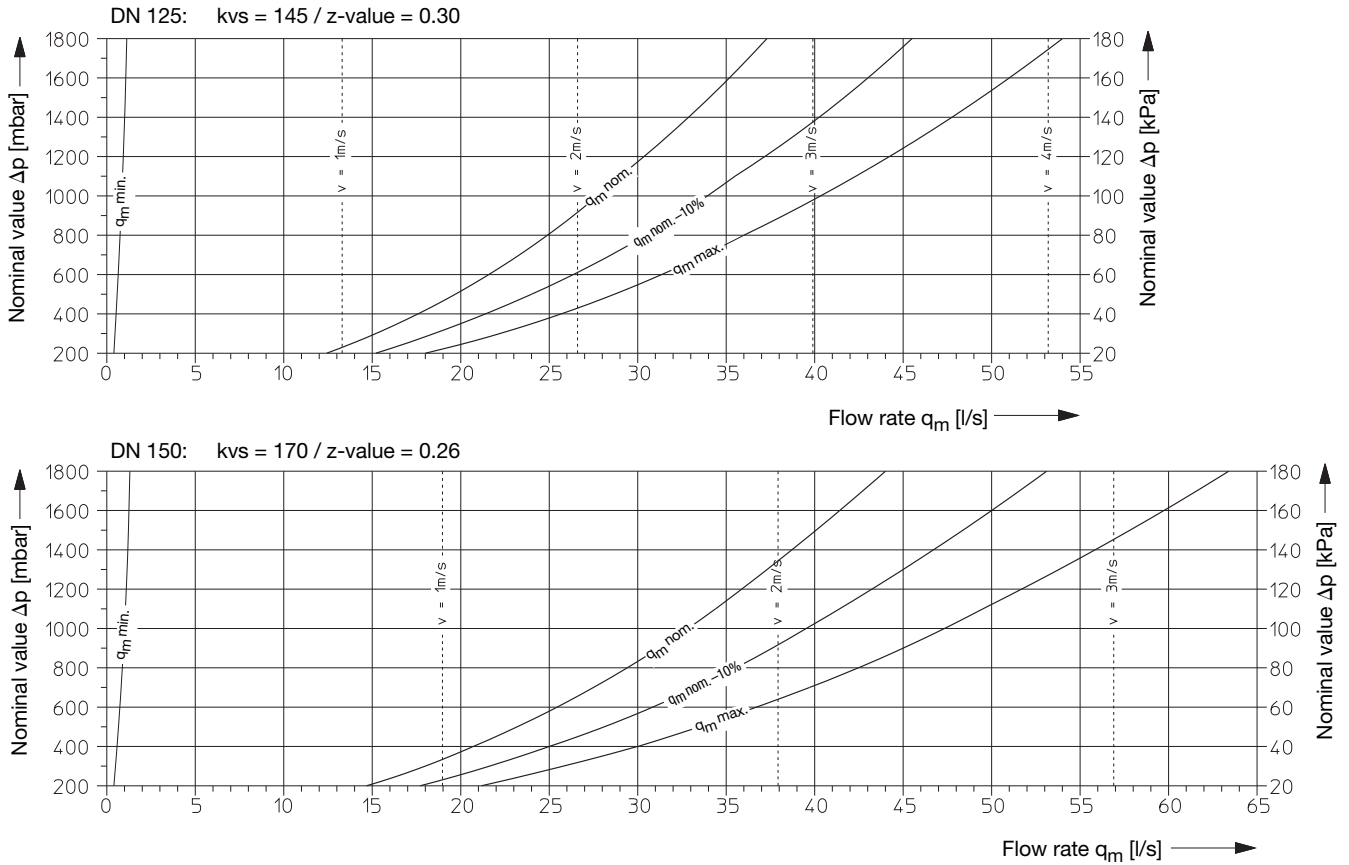
Illustr. 3: Locking and lead sealing of nominal value

**Regulator design:**

Application area at  $\Delta p_o \geq 2 \times \Delta p$



**Differential pressure regulator "Hydromat DP"**  
**Regulator design DN 125 and DN 150**  
**Setting table**



The recommended application range is determined by the minimum flow rate ( $q_{m,min.}$ ) and the maximum flow rate ( $q_{m,max.}$ ).  
 The design of the regulator can be made with the help of the above charts. The correct regulator can be determined from the flow rate and the differential pressure. The maximum flow rate to be expected in the system may not exceed that of the regulator

( $q_{m,max.}$ ). As for the curve  $q_{m,nom.}$ , the differential pressure of the system is identical with the set nominal value. The curve  $q_{m,nom.} -10\%$  shows the values with a P-deviation of  $-10\%$ .  
 To guarantee a sufficient valve authority of the differential pressure regulator,  $\Delta p$  should be  $\geq 1.5 \times \Delta p$ .

**Setting table:**

	Range of setting 200 bis 1000 mbar																	
	No-minal value [kPa]	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	[mbar]	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
	[PSI]	2.90	3.63	4.35	5.08	5.80	6.53	7.25	7.98	8.70	9.43	10.15	10.9	11.60	12.3	13.05	13.8	14.50
Setting	1.0	1.6	2.2	2.8	3.4	3.9	4.4	4.8	5.2	5.5	5.8	6.0	6.3	6.5	6.7	6.9	7.0	
Range of setting 400 bis 1800 mbar																		
No-minal value [kPa]	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	
[mbar]	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	
[PSI]	5.80	6.53	7.25	7.98	8.70	9.43	10.15	10.9	11.60	12.3	13.05	13.8	14.50	15.23	15.95	16.68	17.40	
Setting	1.0	1.3	1.7	2.1	2.5	2.9	3.3	3.7	4.0	4.3	4.6	4.8	5.0	5.2	5.4	5.6	5.8	
No-minal value [kPa]	130	140	150	160	170	180												
[mbar]	1300	1400	1500	1600	1700	1800												
[PSI]	18.85	20.30	21.75	23.20	24.65	26.10												
Setting	6.0	6.4	6.8	7.0	7.2	7.5												

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Subject to technical modification without notice.

Product group 3  
 ti 171-1/10/MW  
 Edition 2010

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