

General information:

The Oventrop differential pressure regulators “Hydromat DFC” 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 riser is reached.

Application:

Central heating and cooling systems PN 16. For cooling systems: Please provide frost protection and diffusion tight insulation!

Lengths according to DIN EN 558-1, basic series 1:

– Item no. 10646/48... Round flanges according to DIN EN 1092-2, PN 16

– Item no. 10649...: Hole circle according to ANSI 150

Infinitely adjustable nominal value. The nominal value can be locked and is visible from outside. With isolating facility and ball valve for draining and filling, oblique pattern model.

Valve 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 O-ring made of EPDM. The regulators are supplied complete with connection set consisting of:

1 capillary 1 m (6 x 1 mm copper pipe), 1 isolating ball valve for the capillary (connection thread G ¼)

The regulator is suitable for use in the return pipe.

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

An average flow rate ($q_{m_{nom}}$) 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 4. The correct regulator can be determined from the flow rate and the differential pressure.

Technical data:

Max. operating temperature t_s : +120 °C

Min. operating temperature t_s : -10 °C

Max. operating pressure p_s : 16 bar (PN 16)

Max. differential pressure Δp_V : 5 bar

Length of capillary: 1 m

Models:

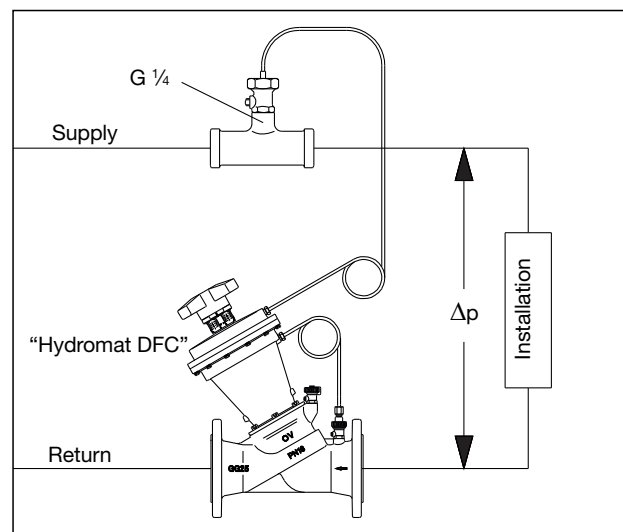
Size	kvs	Item no. 200-1000 mbar	Item no. 400-1800 mbar
DN 65	52	1064651	10647/4951
DN 80	75	1064652	10647/4952
DN 100	110	1064653	10647/4953
DN 125	145	1064654	10647/4954
DN 150	170	1064655	10647/4955
DN 200	420	-	1064756

Advantages:

- all functional components in one plate
- infinitely adjustable 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 riser
- pressure balanced valve disc
- seat and disc made of stainless steel



“Hydromat DFC” DN 65 to 150



“Hydromat DFC”, Installation in the return pipe

Installation of the regulator:

The differential pressure regulators are installed in the return pipe. Installation is possible in any position provided the direction of flow conforms to the direction of the arrow on the valve body. The pipework has to be flushed thoroughly before installation of the differential pressure regulator. The installation of an Oventrop “Y” type strainer is recommended. The capillary should be fitted above or horizontal to the supply pipe, to avoid blockage of the capillary by small particles, it should not be connected to the supply pipe from underneath.

The enclosed isolating ball valve is to be installed with an appropriate sealant into a G ¼ connection, then the capillary can be connected.

Before putting the system into operation, the upper and lower diaphragm chamber 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 differential pressure regulator is installed. After installation, check all installation points 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 the pressure must be made equally at the ⊕/⊖ connections. At not time may the ⊖ pressure be higher than the ⊕ pressure!

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

Setting of the nominal value DN 65 – DN 200:

The nominal value of the Oventrop differential pressure regulator is infinitely adjustable between 200 and 1000 mbar or 400 and 1800 mbar. DN 65 to DN 150 (see illustr. Setting of the nominal value):

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.

The required value is set by turning the handwheel.

DN 200 (see illustr. Locking and lead sealing of the nominal value):

- The complete turns of the handwheel are shown by the outer display.
- 1/10th of a turn of the handwheel is shown by the inner display.

Operation of the manual isolation:

The Oventrop differential pressure regulator “Hydromat DFC” can be closed off manually, e.g. for servicing the system, and 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 with 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 required 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**.

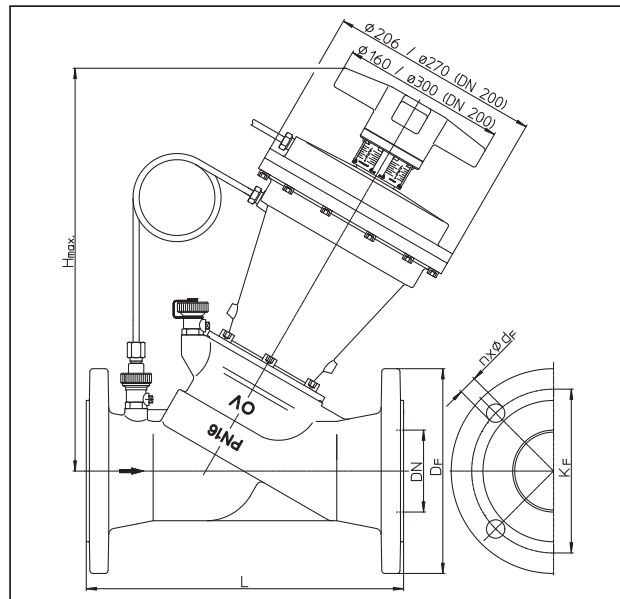
Readability of the nominal setting:

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.

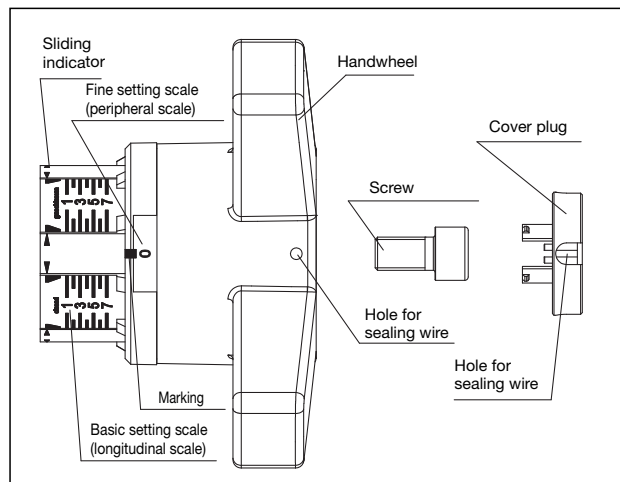
Locking the nominal setting:

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.

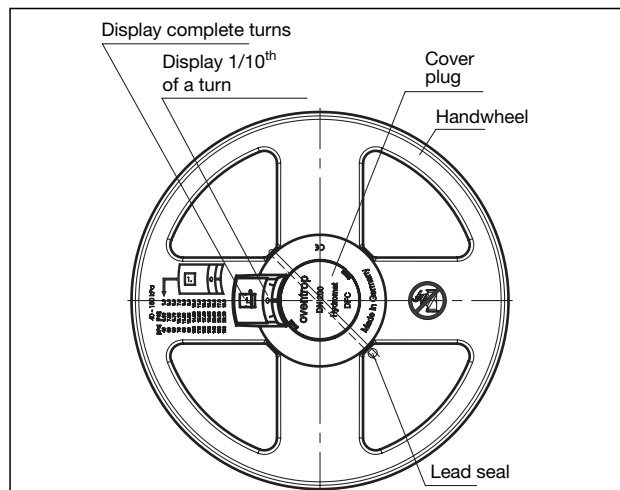


“Hydromat DFC”			PN 16		ANSI 150		
DN	L	H _{max.}	DF	K _F	n x Ø d _F	K _F	n x Ø d _F
65	290	375	185	145	4 x 19	140	4 x 19
80	310	395	200	160	8 x 19	152	4 x 19
100	350	410	220	180	8 x 19	191	8 x 19
125	400	450	250	210	8 x 19	216	8 x 22
150	480	450	285	240	8 x 23	241	8 x 22
200	600	655	340	295	12 x 23		

Dimensions



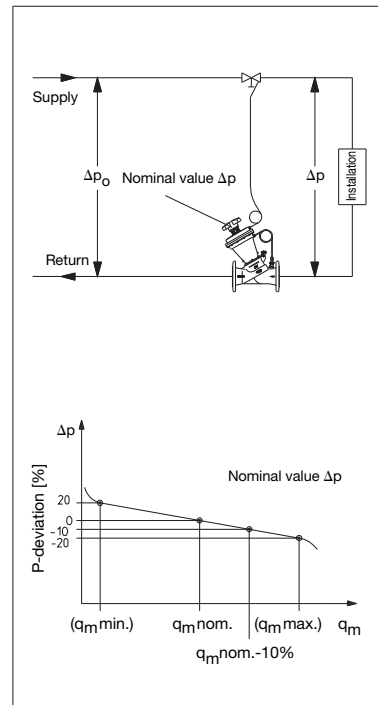
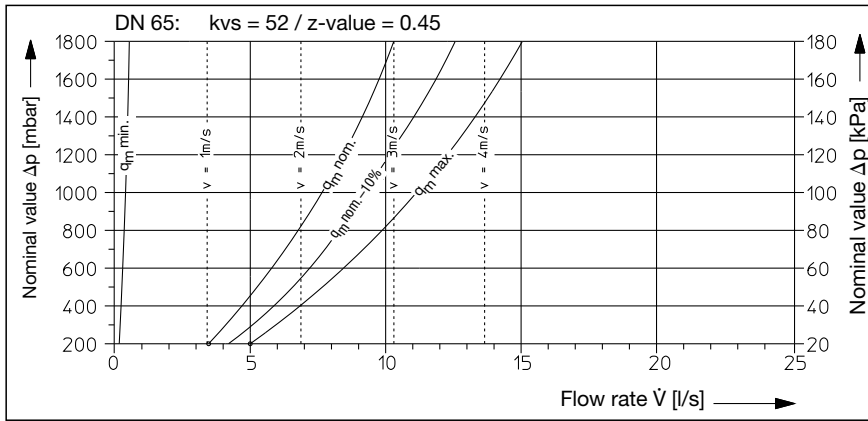
Setting of the nominal value



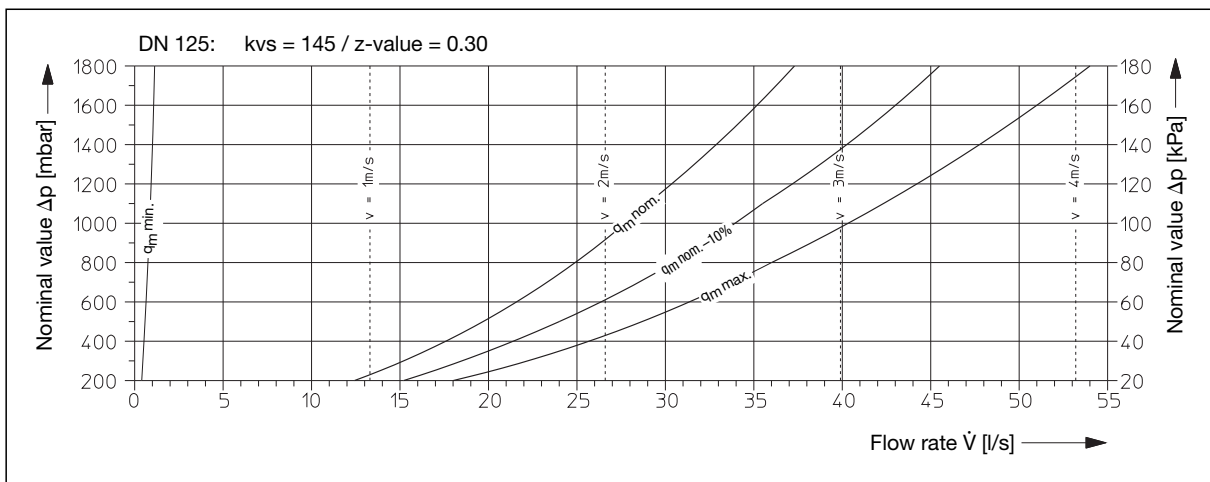
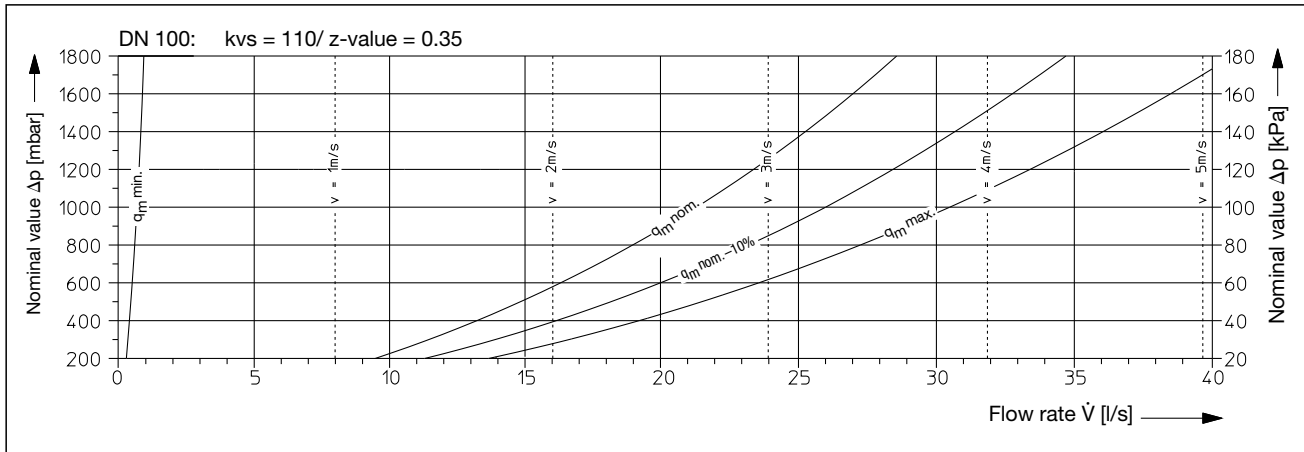
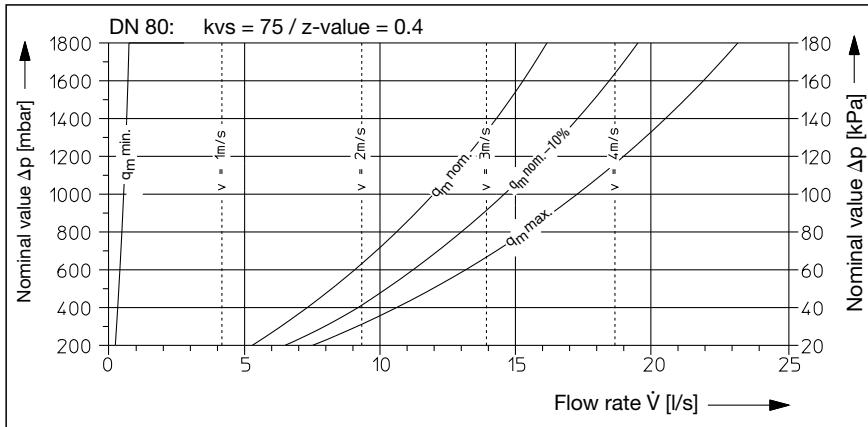
Locking and lead sealing of the nominal value

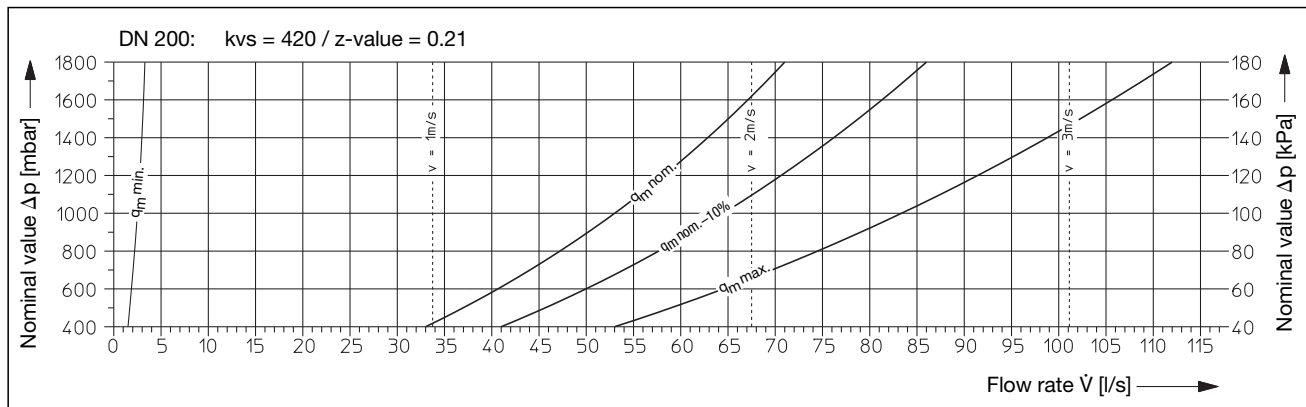
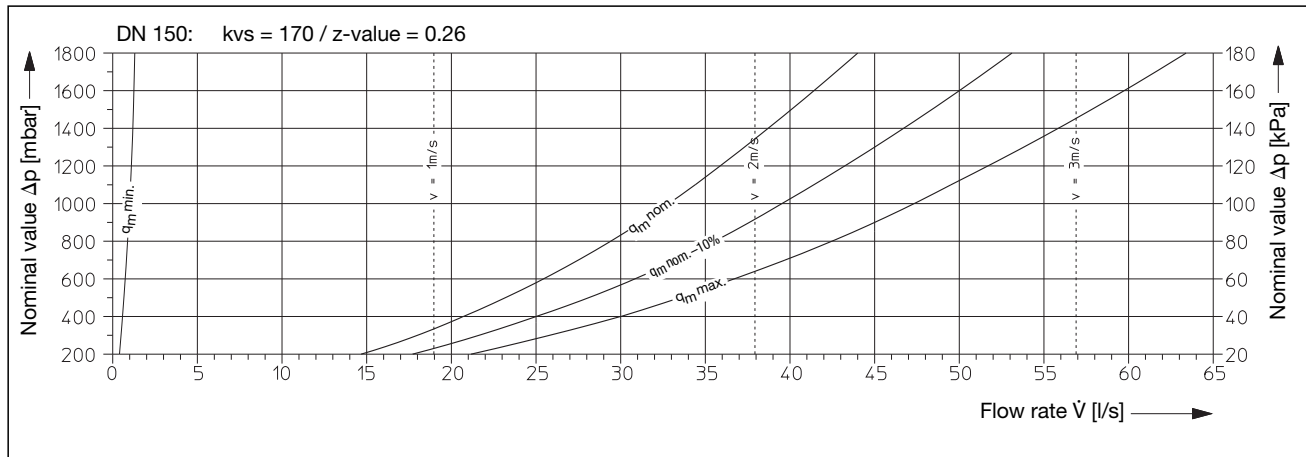
Regulator design:

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



System illustration





The recommended application range is determined by the minimum flow rate ($q_{m\min}$) and the maximum flow rate ($q_{m\max}$). Design of the regulator can be carried out with the help of the charts illustrated above. Depending on the flow rate and the differential pressure, the suitable regulator can be determined. The maximum flow rate of the installation to be expected may not exceed the flow rate of the regulator ($q_{m\max}$). As for the curve $q_{m\text{nom}}$, the differential pressure of the installation corresponds to the set nominal value.

The curve $q_{m\text{nom}} - 10\%$ shows the values with a p-deviation of 10%. The charts are valid for the condition $\Delta p_0 \geq 2 \times \Delta p$. To guarantee a sufficient valve authority of the differential pressure regulator, Δp_0 should be $\Delta p_0 \geq 1.5 \times \Delta p$. Note: Operation of the differential pressure regulator is guaranteed even below this value.

	Range of setting 200 to 1000 mbar																			
	No-	[kPa]	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
	nominal	[mbar]	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
	value	[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 to 1800 mbar																			
No-	[kPa]	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120		
nominal	[mbar]	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200		
value	[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-	[kPa]	130	140	150	160	170	180													
nominal	[mbar]	1300	1400	1500	1600	1700	1800													
value	[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												

Setting table DN 65 to DN 150

	Range of setting 400 to 1800 mbar														
	No-	[kPa]	40	50	60	70	80	90	100	110	120	130	140	160	180
	nominal	[mbar]	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800
	value	[PSI]	5.80	7.25	8.70	10.15	11.60	13.05	14.50	15.95	17.40	18.85	20.30	23.20	26.10
	Setting		1.0	3.0	5.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	15.0	17.0	19.0

Setting table DN 200

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