

DAL 50

Differential pressure controller with adjustable set-point and flow limitation



TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

These differential pressure controllers for heating and cooling systems are particularly effective in situations requiring high temperatures and/or pressure drop. Also suitable for use on the secondary side in district heating and comfort cooling systems. There is a throttle built in the valve that allows flow limitation. Ductile iron body - painted with Duasolid that offers good rust protection.

> **Special internal geometry**

Allows big pressure drop without noise.

> **Adjustable set-point**

Delivers desired differential pressure ensuring accurate balancing.

> **Adjustable flow**

Ensures the design flow.



> Technical description

Application:

Central heating, cooling systems and in district heating substations, primary side.

Functions:

Differential pressure control and flow limitation.
Closes at increasing flow or Δp .

Dimensions:

DN 65-200

Pressure class:

PN 25

DN 65-200: PN 16 and PN 25

Max. differential pressure (Δp_V):

1600 kPa = 16 bar

Setting range:

Differential pressure adjustable 10-60, 50-150 and 130-250 kPa.

Temperature:

Max. working temperature: 150°C

Min. working temperature: -10°C

Media:

Water and neutral fluids, water-glycol mixtures.

Material:

Valve body: Ductile iron EN-GJS-400-18LT

Actuator body: Ductile iron EN-GJS-400-18LT

Diaphragm: EPDM

Valve seat: Stainless steel

Valve plug: Stainless steel with EPDM insert

Surface treatment:

Duasolid painting.

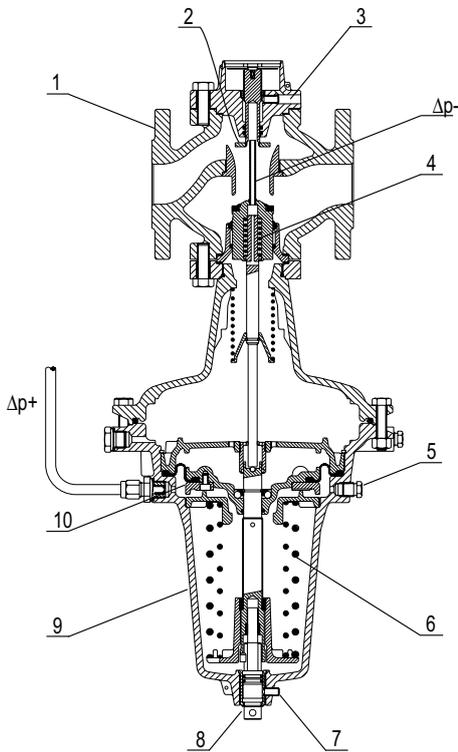
Marking:

TA, DN, PN and flow direction arrow.

Flanges:

According to EN-1092-2:1997, type 21.

Operating function



Installation in the return pipe. The controller consists of a valve (1) with built-in throttle for flow limitation and a diaphragm actuator (9). Valve is protected against overload with a safety spring (4).

The pressure upstream the consumer acts through an external impulse pipe ($\Delta p+$), $\text{Ø}6 \times 2500 \text{ mm}$, to the bottom side of the diaphragm (10) and attempts to close the valve. The pressure downstream the consumer and flow limitation throttle (2) acts through an internal impulse pipe ($\Delta p-$) to the top side of the diaphragm and attempts to open the valve together with the force of the working spring (6).

As long as the forces on the diaphragm are balanced, the valve's plug stands still. If the differential pressure rises, the valve closes until new balance is reached, and vice versa. Flow limitation can be secured using by the fixing screw (3).

Sizing

Select the size according to maximal speed. To prevent noise, maximal speed should not exceed 2 m/s in residential buildings and 3 m/s in industrial buildings.

Control the pressure drop in the valve by formula:

$$\Delta p = \left(\frac{q}{100 \times Kvs} \right)^2 \quad [\text{kPa, l/h}]$$

Installation

The controller has to be installed in the return pipe, downstream the consumer. The direction of the flow is shown by the arrow on the valve body.

It is recommended to install the controller in horizontal pipeline with actuator body below. Installation of a strainer upstream the controller is recommended.

Connect copper impulse pipe (.p+) to the pipeline upstream the consumer. In case of a horizontal pipeline connect the copper impulse pipe laterally to prevent air and dirt from entering. It is important to ensure that working temperature and pressure do not exceed allowed values.

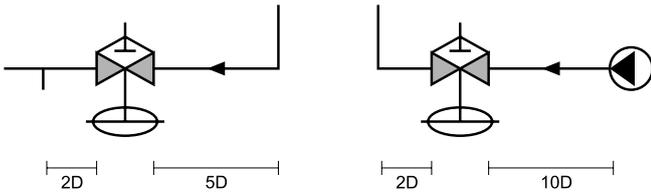
Before you mount the controller, check the fitting length of the controller, pitch diameter and the diameter of the holes for the screws.

When the pipeline and the controller are full of water and the pressure is stabilized, vent the controller by the vent screws (5).

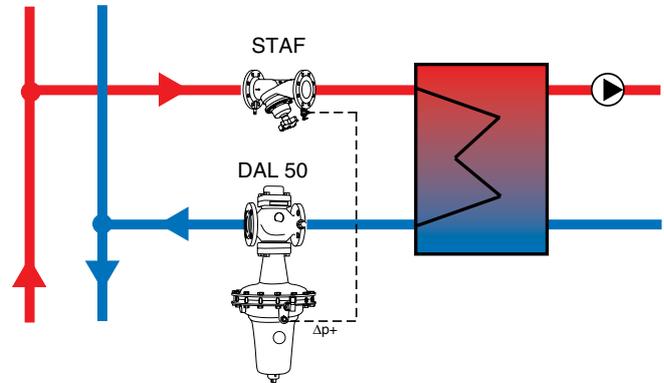
Installation of balancing valve STAF is recommended to enable flow measurement, commissioning and troubleshooting with balancing instrument TA-SCOPE or measuring instrument TA-CMI.

Normal pipe fittings

Try to avoid mounting taps and pumps immediately before the valve.



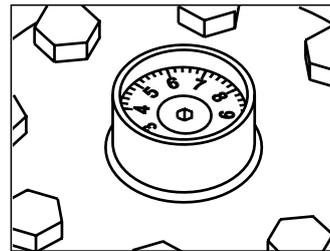
Application example



Setting

Differential pressure adjustment

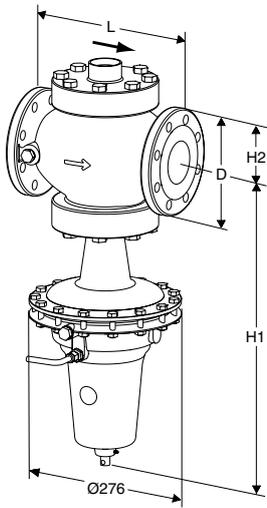
1. Release the fixing screw (7).
2. Adjust differential pressure by turning adjustment screw (8).
3. To increase the differential pressure, turn the adjustment screw clockwise (bottom view of the screw).
4. At the end, tighten the fixing screw.
5. Controlled differential pressure by the pressure gauges on the pipeline.



Flow adjustment

1. Release the fixing screw (4).
2. Turn the throttle (5) clockwise down to decrease flow and vice versa.
3. When the flow is correctly set, you can fix the presetting by tightening the fixing screw.

Articles



10-60 kPa

Article No	DN	D	L	H1	H2	Kvs	Kg
PN 16							
52 788-065	65	185	290	580	135	55	55
52 788-090	100	235	350	680	175	120	88
52 788-091	125	270	400	690	190	145	105
52 788-092	150	300	480	775	227	230	235
52 788-093	200	360	600	822	260	360	297
PN 25 (DN 32-50 and DN 80 also fit PN 16 flanges)							
52 788-332	32	140	180	535	102	21	38
52 788-340	40	150	200	535	102	25	39
52 788-350	50	165	230	560	116	32	46
52 788-365	65	185	290	580	135	55	55
52 788-380	80	200	310	592	149	70	66
52 788-390	100	235	350	680	175	120	88
52 788-391	125	270	400	690	190	145	105
52 788-392	150	300	480	775	227	230	235
52 788-393	200	360	600	822	260	360	297

50-150 kPa

Article No	DN	D	L	H1	H2	Kvs	Kg
PN 16							
52 788-165	65	185	290	580	135	55	55
52 788-190	100	235	350	680	175	120	88
52 788-191	125	270	400	690	190	145	105
52 788-192	150	300	480	775	227	230	235
52 788-193	200	360	600	822	260	360	297
PN 25 (DN 32-50 and DN 80 also fit PN 16 flanges)							
52 788-432	32	140	180	535	102	21	38
52 788-440	40	150	200	535	102	25	39
52 788-450	50	165	230	560	116	32	46
52 788-465	65	185	290	580	135	55	55
52 788-480	80	200	310	592	149	70	66
52 788-490	100	235	350	680	175	120	88
52 788-491	125	270	400	690	190	145	105
52 788-492	150	300	480	775	227	230	235
52 788-493	200	360	600	822	260	360	297

130-250 kPa

Article No	DN	D	L	H1	H2	Kvs	Kg
PN 16							
52 788-265	65	185	290	580	135	55	55
52 788-290	100	235	350	680	175	120	88
52 788-291	125	270	400	690	190	145	105
52 788-292	150	300	480	775	227	230	235
52 788-293	200	360	600	822	260	360	297
PN 25 (DN 32-50 and DN 80 also fit PN 16 flanges)							
52 788-532	32	140	180	535	102	21	38
52 788-540	40	150	200	535	102	25	39
52 788-550	50	165	230	560	116	32	46
52 788-565	65	185	290	580	135	55	55
52 788-580	80	200	310	592	149	70	66
52 788-590	100	235	350	680	175	120	88
52 788-591	125	270	400	690	190	145	105
52 788-592	150	300	480	775	227	230	235
52 788-593	200	360	600	822	260	360	297

→ = Flow direction

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