

SELF-ACTING Δp CONTROLLERS



DIFFERENTIAL PRESSURE CONTROLLER WITH ADJUSTABLE SET-POINT

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. Ductile iron body - painted with duasolid that offers good rust protection.



SPECIAL INTERNAL GEOMETRY

Allows high pressure drops without noise.



ADJUSTABLE SET-POINT

Delivers desired differential pressure ensuring accurate balancing.

DA 50

BALANCING

TECHNICAL DESCRIPTION

Application:

Heating and cooling systems with variable flow.
District heating substations, primary side.

Functions:

Differential pressure control over the load.
Closes at increasing Δp .

Dimensions:

DN 32-200

Pressure class:

PN 16 and PN 25

Max. differential pressure (Δp_v):

1600 kPa = 16 bar

Setting range:

Δp is adjustable within 10-60 kPa, 50-150 kPa, 130-250 kPa and 100-400 kPa.
Delivery setting: 10 kPa, 50 kPa, 130 kPa and 100 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
Actuator body: Ductile iron EN-GJS-400
Diaphragm: EPDM
Valve seat: Stainless steel.
Valve plug: Stainless steel with EPDM insert.

Surface treatment:

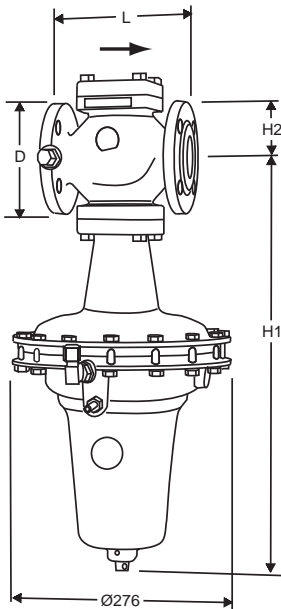
Duasolid painting.

Marking:

TA, DN, PN and flow direction arrow.

Flanges:

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



PN 25 (DN 32-50 and DN 80 also fit PN 16 flanges)

TA No	DN	D	L	H1	H2	Kvs	Kg
10-60 kPa							
52 780-132	32	140	180	535	102	21	38
52 780-140	40	150	200	535	102	25	39
52 780-150	50	165	230	560	116	32	46
52 780-165	65	185	290	580	135	55	55
52 780-180	80	200	310	592	149	70	66
52 780-190	100	235	350	680	175	120	88
52 780-191	125	270	400	690	190	145	105
52 780-192	150	300	480	775	227	230	235
52 780-193	200	360	600	822	260	360	297
50-150 kPa							
52 780-232	32	140	180	535	102	21	38
52 780-240	40	150	200	535	102	25	39
52 780-250	50	165	230	560	116	32	46
52 780-265	65	185	290	580	135	55	55
52 780-280	80	200	310	592	149	70	66
52 780-290	100	235	350	680	175	120	88
52 780-291	125	270	400	690	190	145	105
52 780-292	150	300	480	775	227	230	235
52 780-293	200	360	600	822	260	360	297
130-250 kPa							
52 780-332	32	140	180	535	102	21	38
52 780-340	40	150	200	535	102	25	39
52 780-350	50	165	230	560	116	32	46
52 780-365	65	185	290	580	135	55	55
52 780-380	80	200	310	592	149	70	66
52 780-390	100	235	350	680	175	120	88
52 780-391	125	270	400	690	190	145	105
52 780-392	150	300	480	775	227	230	235
52 780-393	200	360	600	822	260	360	297
100-400 kPa							
52 780-432	32	140	180	535	102	21	38
52 780-440	40	150	200	535	102	25	39
52 780-450	50	165	230	560	116	32	46
52 780-465	65	185	290	580	135	55	55
52 780-480	80	200	310	592	149	70	66
52 780-490	100	235	350	680	175	120	88
52 780-491	125	270	400	690	190	145	105
52 780-492	150	300	480	775	227	230	235
52 780-493	200	360	600	822	260	360	297

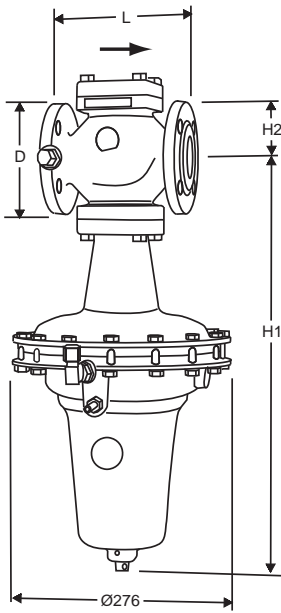
Capillary pipe (Ø6) included:

2 500 mm

→ = Flow direction

DA 50

BALANCING



PN 16

TA No	DN	D	L	H1	H2	Kvs	Kg
10-60 kPa							
52 780-565	65	185	290	580	135	55	55
52 780-590	100	235	350	680	175	120	88
52 780-591	125	270	400	690	190	145	105
52 780-592	150	300	480	775	227	230	235
52 780-593	200	360	600	822	260	360	297
50-150 kPa							
52 780-665	65	185	290	580	135	55	55
52 780-690	100	235	350	680	175	120	88
52 780-691	125	270	400	690	190	145	105
52 780-692	150	300	480	775	227	230	235
52 780-693	200	360	600	822	260	360	297
130-250 kPa							
52 780-765	65	185	290	580	135	55	55
52 780-790	100	235	350	680	175	120	88
52 780-791	125	270	400	690	190	145	105
52 780-792	150	300	480	775	227	230	235
52 780-793	200	360	600	822	260	360	297
100-400 kPa							
52 780-865	65	185	290	580	135	55	55
52 780-890	100	235	350	680	175	120	88
52 780-891	125	270	400	690	190	145	105
52 780-892	150	300	480	775	227	230	235
52 780-893	200	360	600	822	260	360	297

Capillary pipe (Ø6) included: 2 500 mm

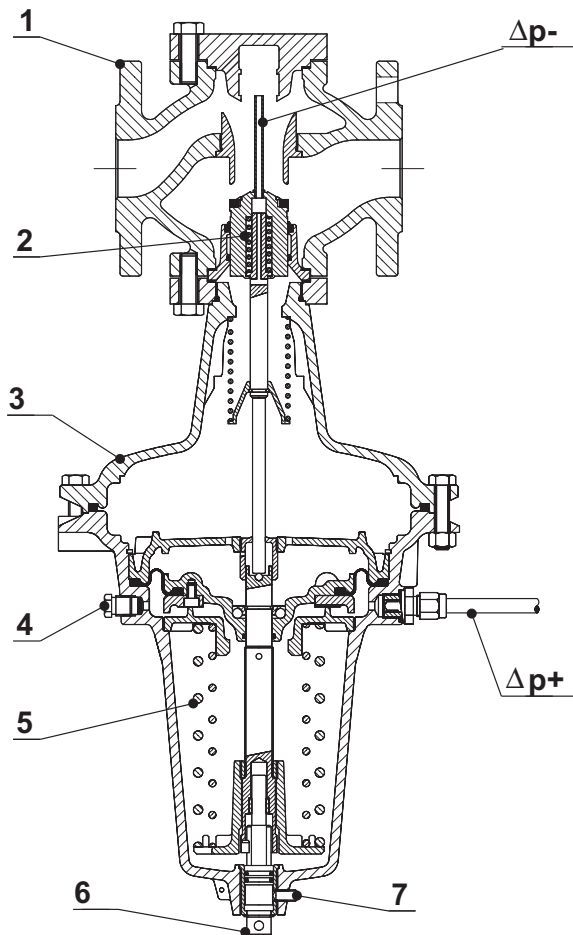
→ = Flow direction

OPERATING FUNCTION

The controller consists of a valve (1) and a diaphragm actuator (3). The valve is protected against overload with a safety spring (2). The pressure upstream of the load acts through an external capillary pipe ($\Delta p+$) to the bottom side of the diaphragm and attempts to close the valve.

The pressure downstream of the load acts through an internal capillary pipe ($\Delta p-$) to the top side of the diaphragm and attempts to open the valve together with the force of the working spring (5).

Provided the forces on the diaphragm are balanced, the valve's plug stands still. If the differential pressure rises, the valve closes until a new balance is reached, and vice versa.



1. Valve
2. Safety spring
3. Diaphragm actuator
4. Venting screws
5. Working spring
6. Adjustment screw
7. Fixing screw

DA 50

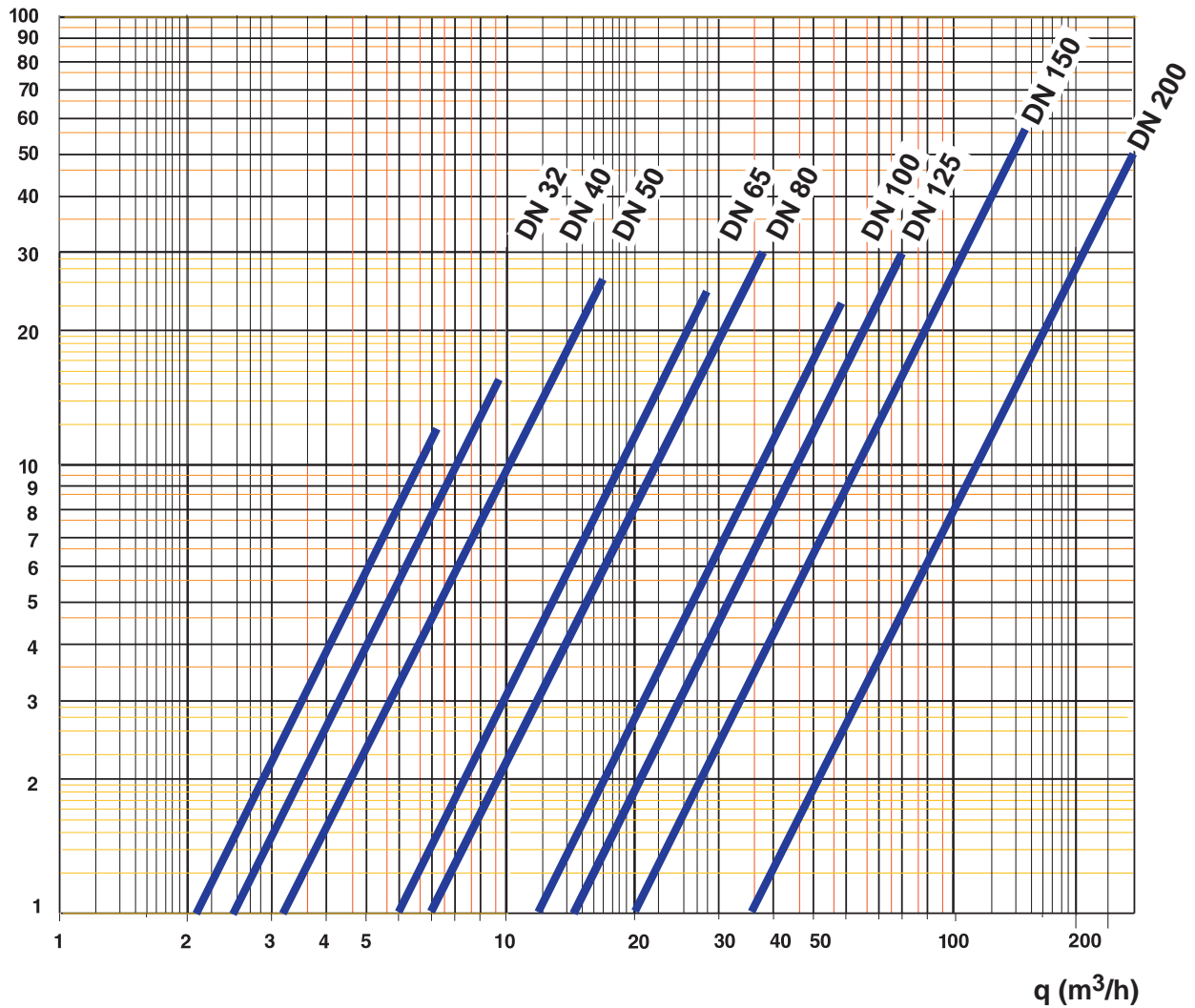
BALANCING

SIZING

1. Select the smallest size for the designed flow according to the diagram.
2. Check that the available Δp is bigger than the pressure drop of the DA 50 at the designed flow. The pressure drop can be found in the diagram or calculated by the formula:

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

Δp (kPa)



INSTALLATION

The controller must be installed in the return pipe. It is recommended to install the controller in the horizontal pipeline with the actuator body facing downwards. Installation of a strainer upstream of the valve is recommended. When filling, vent the actuator body by using the venting screws. The direction of the flow is shown by the arrow on the valve body. Connect capillary pipes (copper Ø6x1) always laterally to the pipe.

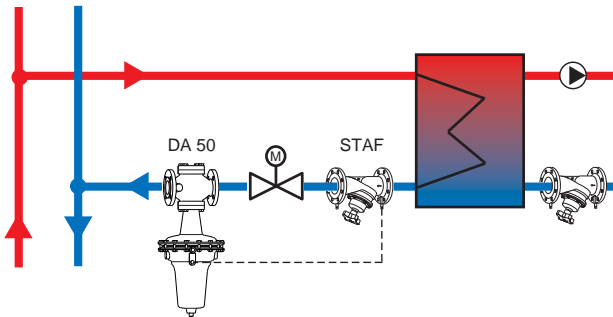
APPLICATION EXAMPLE

Keeping the differential pressure over a control valve constant

Heat exchanger

The controller should be mounted downstream the control valve and STAF upstream the control valve, but downstream of the heat exchanger.

STAF can be mounted in the supply pipe, but with a decreased valve authority as a consequence.



SETTING

Differential pressure adjustment

1. Release fixing screw (7).
2. Adjust differential pressure by turning the adjustment screw (6).
3. To increase the differential pressure, turn the adjustment screw clockwise (bottom view of screw).
4. At the end, tighten the fixing screw.

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