

DA 50



Differential pressure controllers
Adjustable set-point

Engineering
GREAT Solutions

DA 50

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.

Key features

> Special internal geometry

Allows big pressure drop without noise.

> Adjustable set-point

Delivers desired differential pressure ensuring accurate 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:

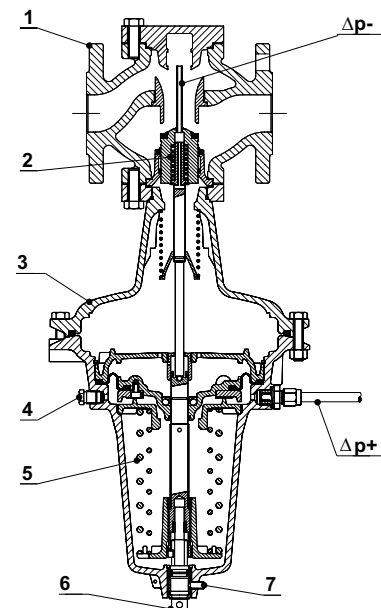
According to EN-1092-2:1997, type 21.

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



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 $\text{Ø}6 \times 1$) always laterally to the pipe.

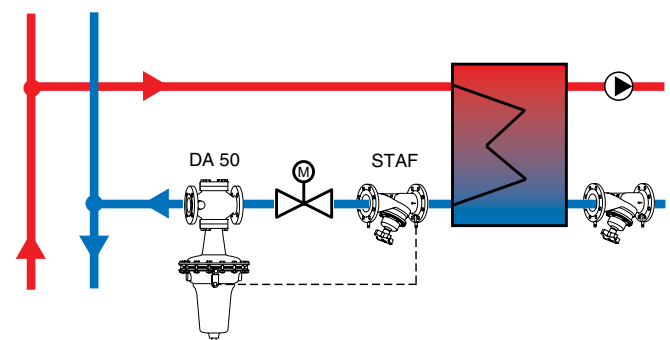
Application example

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.

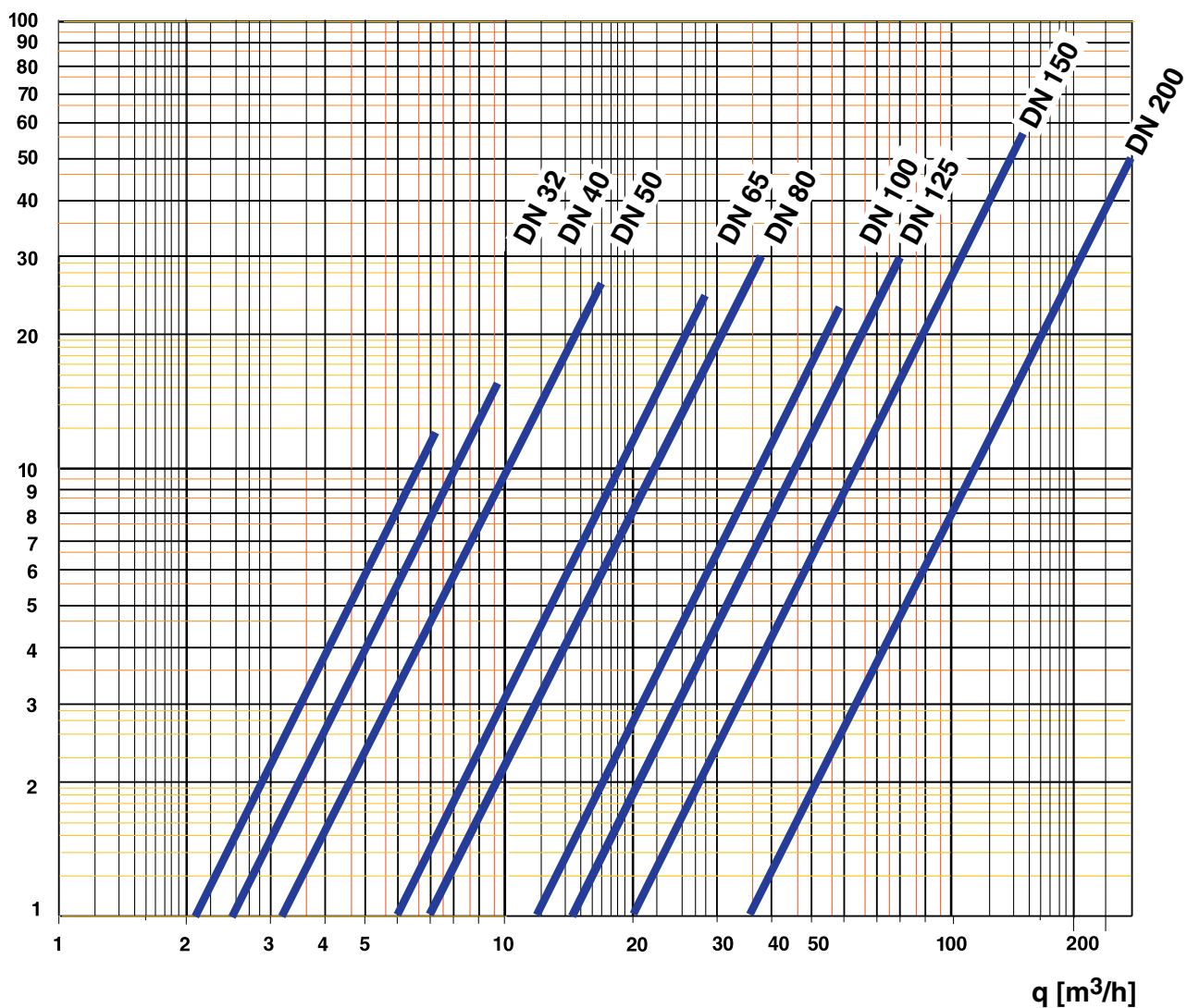


Sizing

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:

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

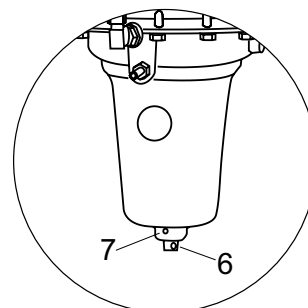
Δp [kPa]



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.



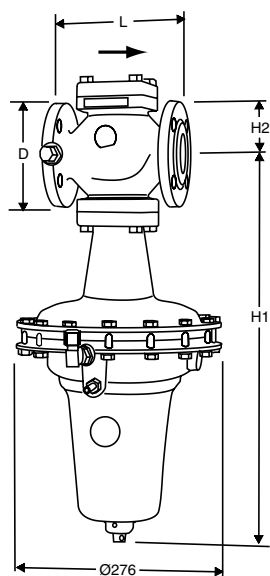
Δp [kPa] change per turn of setting spanner

DN	10-60 kPa	50-150 kPa	130-250 kPa	100-400 kPa
32	0,9	2,6	4,0	13,2
40	0,9	2,6	4,0	13,2
50	0,9	2,6	4,0	13,2
65	0,9	2,6	4,0	13,2
80	0,9	2,6	4,0	13,2
100	0,9	2,6	4,0	13,2
125	0,9	2,6	4,0	13,2
150	1,1	2,1	2,6	6,4
200	1,1	2,1	2,6	6,4

Max. number of turns

DN	10-60 kPa	50-150 kPa	130-250 kPa	100-400 kPa
32	54	38	30	22,5
40	54	38	30	22,5
50	54	38	30	22,5
65	54	38	30	22,5
80	54	38	30	22,5
100	54	38	30	22,5
125	54	38	30	22,5
150	47	47	47	47
200	47	47	47	47

Articles

**PN 25**

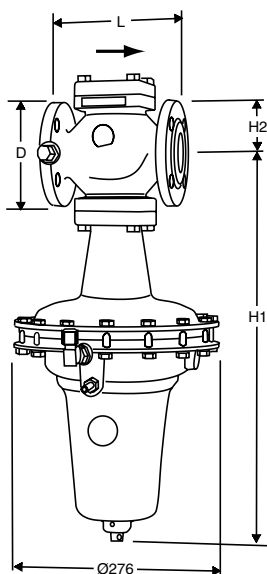
(DN 32-50 and DN 80 also fit PN 16 flanges)

Capillary pipe (Ø6) included: 2 500 mm

DN	D	L	H1	H2	Kvs	Kg	EAN	Article No
10-60 kPa								
32	140	180	535	102	21	38	3831112516663	52 780-132
40	150	200	535	102	25	39	3831112516724	52 780-140
50	165	230	560	116	32	46	3831112516786	52 780-150
65	185	290	580	135	55	55	3831112516908	52 780-165
80	200	310	592	149	70	66	3831112516960	52 780-180
100	235	350	680	175	120	88	3831112516229	52 780-190
125	270	400	690	190	145	105	3831112516342	52 780-191
150	300	480	775	227	230	235	3831112516489	52 780-192
200	360	600	822	260	360	297	3831112516601	52 780-193
50-150 kPa								
32	140	180	535	102	21	38	3831112516700	52 780-232
40	150	200	535	102	25	39	3831112516762	52 780-240
50	165	230	560	116	32	46	3831112516823	52 780-250
65	185	290	580	135	55	55	3831112516946	52 780-265
80	200	310	592	149	70	66	3831112517004	52 780-280
100	235	350	680	175	120	88	3831112516267	52 780-290
125	270	400	690	190	145	105	3831112516380	52 780-291
150	300	480	775	227	230	235	3831112516526	52 780-292
200	360	600	822	260	360	297	3831112516649	52 780-293
130-250 kPa								
32	140	180	535	102	21	38	3831112516687	52 780-332
40	150	200	535	102	25	39	3831112516748	52 780-340
50	165	230	560	116	32	46	3831112516809	52 780-350
65	185	290	580	135	55	55	3831112516922	52 780-365
80	200	310	592	149	70	66	3831112516984	52 780-380
100	235	350	680	175	120	88	3831112516243	52 780-390
125	270	400	690	190	145	105	3831112516366	52 780-391
150	300	480	775	227	230	235	3831112516502	52 780-392
200	360	600	822	260	360	297	3831112516625	52 780-393
100-400 kPa								
32	140	180	535	102	21	38	3831112513679	52 780-432
40	150	200	535	102	25	39	3831112513686	52 780-440
50	165	230	560	116	32	46	3831112513693	52 780-450
65	185	290	580	135	55	55	3831112513709	52 780-465
80	200	310	592	149	70	66	3831112513723	52 780-480
100	235	350	680	175	120	88	3831112513730	52 780-490
125	270	400	690	190	145	105	3831112513754	52 780-491
150	300	480	775	227	230	235	3831112516472	52 780-492
200	360	600	822	260	360	297	3831112513778	52 780-493

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.

→ = Flow direction



PN 16

Capillary pipe (Ø6) included: 2 500 mm

DN	D	L	H1	H2	Kvs	Kg	EAN	Article No
10-60 kPa								
65	185	290	580	135	55	55	3831112516847	52 780-565
100	235	350	680	175	120	88	3831112516168	52 780-590
125	270	400	690	190	145	105	3831112516281	52 780-591
150	300	480	775	227	230	235	3831112516410	52 780-592
200	360	600	822	260	360	297	3831112516540	52 780-593
50-150 kPa								
65	185	290	580	135	55	55	3831112516885	52 780-665
100	235	350	680	175	120	88	3831112516205	52 780-690
125	270	400	690	190	145	105	3831112516328	52 780-691
150	300	480	775	227	230	235	3831112516458	52 780-692
200	360	600	822	260	360	297	3831112516588	52 780-693
130-250 kPa								
65	185	290	580	135	55	55	3831112516861	52 780-765
100	235	350	680	175	120	88	3831112516182	52 780-790
125	270	400	690	190	145	105	3831112516304	52 780-791
150	300	480	775	227	230	235	3831112516434	52 780-792
200	360	600	822	260	360	297	3831112516564	52 780-793
100-400 kPa								
65	185	290	580	135	55	55	3831112513716	52 780-865
100	235	350	680	175	120	88	3831112513747	52 780-890
125	270	400	690	190	145	105	3831112513761	52 780-891
150	300	480	775	227	230	235	3831112516403	52 780-892
200	360	600	822	260	360	297	3831112513785	52 780-893

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.
 → = Flow direction

