

# DA 50



## **Differential pressure controllers**

With adjustable set-point –  
DN 32-50



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. Suitable for use on the secondary side in district heating and comfort cooling systems. Rust protection is assured thanks to the electrophoretically painted ductile iron body.

## 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.  
Installation in return pipe.

### Functions:

Differential pressure control over the load.  
Closes at increasing  $\Delta p$ .

### Dimensions:

DN 32-50

### Pressure class:

PN 25

### Max. differential pressure ( $\Delta p_V$ ):

1600 kPa = 16 bar

### Setting range:

$\Delta p$  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:

Electrophoretic painting.

### Marking:

TA, DN, PN and flow direction arrow.

### Flanges:

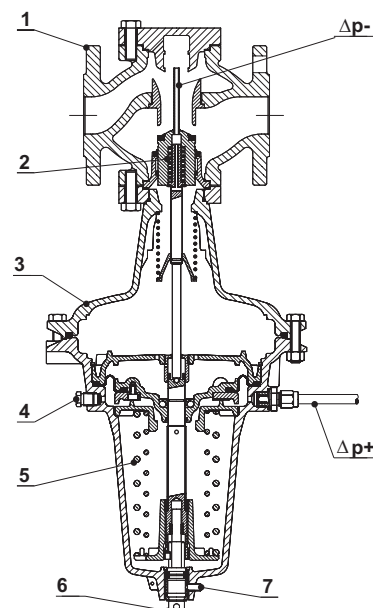
According to EN-1092-2:1997, type 21.

## 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 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.

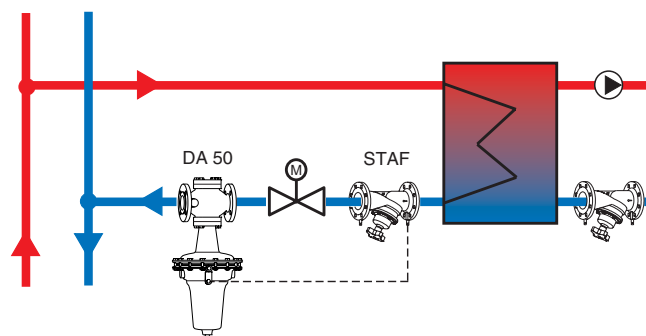
## Application example

### 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.

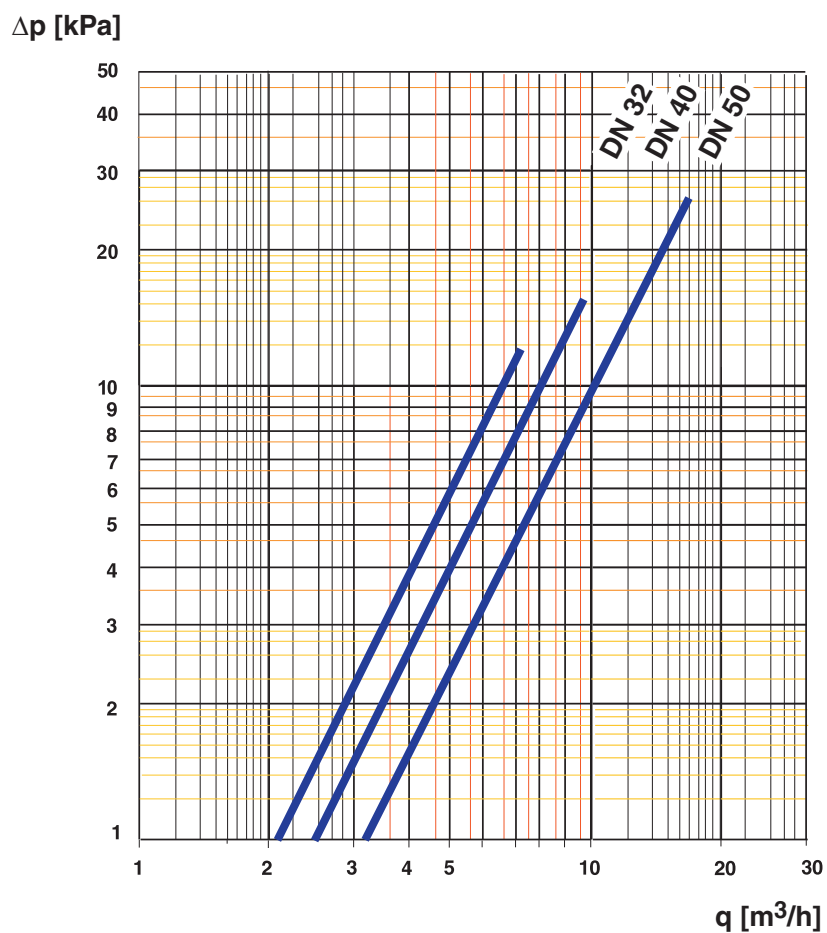
STAF can be mounted in the supply pipe, but with a decreased valve authority as a consequence.



## Sizing

1. Select the smallest size for the designed flow according to the diagram.
2. Check that the available  $\Delta p$  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:

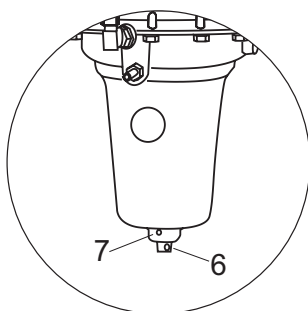
$$\Delta p = \left( \frac{q}{100 \times Kvs} \right)^2 \quad [\text{kPa, l/h}]$$



## 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.



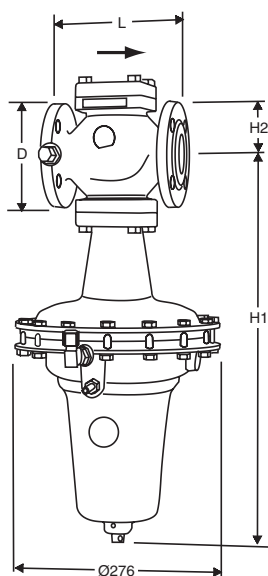
### $\Delta p$ [kPa] change per turn of setting spanner

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

### 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

## Articles



### PN 25

(Also fit PN 16 flanges)

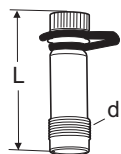
Capillary pipe (Ø6) included: 2 500 mm

DN	D	L	H1	H2	Kvs	Kg	EAN	Article No
<b>10-60 kPa</b>								
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
<b>50-150 kPa</b>								
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
<b>130-250 kPa</b>								
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
<b>100-400 kPa</b>								
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

Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

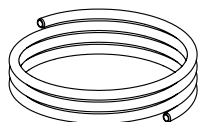
→ = Flow direction

## Accessories



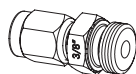
**Measuring point**  
Max 120°C (intermittent 150°C)

d	L	EAN	Article No
M14x1	44	7318792813207	52 179-014
M14x1	103	7318793858108	52 179-015



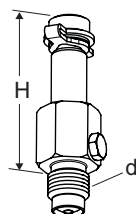
**Capillary pipe**  
Ø6 mm  
1 pc included in DA 50.

L [m]	EAN	Article No
2,5	3831112527171	52 759-203



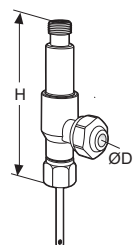
**Capillary pipe connection**  
For capillary pipe Ø6 mm with R3/8 connection.  
1 pc included in DA 50.

	EAN	Article No
6xR3/8	3831112527348	52 759-209



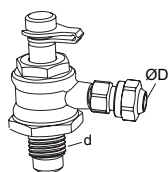
**Adapter for measuring point**  
For measuring of  $\Delta p$ .

d	H	EAN	Article No
M14x1	53	3831112532922	52 759-223



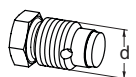
**Measuring point, two-way**  
For connection of capillary pipe while permitting simultaneous use of our balancing instrument.  
For connection to existing measuring point on STAF/STAF-SG.  
Can be installed during operation.

D	H	EAN	Article No
6	68	7318793848703	52 179-206



**Capillary pipe connection with shut-off**  
For replacement of existing measuring point on STAF/STAF-SG.

d	D	For DN	EAN	Article No
G1/4	6	20-50	7318793999504	52 265-209
G3/8	6	65-400	7318793999405	52 265-208



**Venting screw**

d	EAN	Article No
M14x1	3831112527980	52 759-224



