

# DA 518

Differential pressure controller with adjustable set-point



**TA**

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

The DA 518 is a differential pressure controller for variable flow heating and cooling systems as well as secondary side usage in district heating systems. Venturi-based flow measurement capability ensures supremely accurate measuring, while an electrophoretically painted ductile iron body ensures optimum rust protection.

> **Inline design**

Inline flow allows high pressure drops without noise.

> **Adjustable set-point**

Delivers desired differential pressure ensuring accurate balancing.

> **Measuring points**

Simplifies the balancing procedure, and increases its accuracy.



## > Technical description

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**Application:**

Heating and cooling systems with variable flow.

**Functions:**

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

**Dimensions:**

DN 15-32

**Pressure class:**

PN 16

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

500 kPa = 5 bar

**Setting range:**

Differential pressure adjustable in range 5-20 kPa resp. 10-30 kPa.

**Temperature:**

Max. working temperature: 120°C

Min. working temperature: -10°C

**Media:**

Water and neutral fluids, water-glycol mixtures.

**Material:**

Valve body: Ductile iron EN-GJS-400-15

Diaphragms and gaskets: EPDM

Adjustment ring: Rytan plastic.

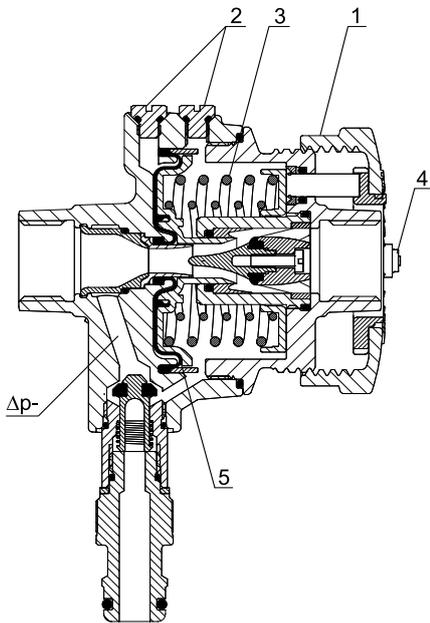
**Surface treatment:**

Electrophoretic painting

**Marking:**

TA, DN, PN, Kvs,  $\Delta p$  and flow direction arrow.

## Operating function



Installation in the return pipe. The pressure upstream the consumer acts through an external impulse pipe ( $\Delta p+$ ) to the inlet side of the diaphragm (5) and closes the valve. The pressure downstream the consumer (in front of the controller) acts through an internal impulse pipe ( $\Delta p-$ ) to the outlet side of the diaphragm and together with spring (3) attempts to open the valve. The spring force can be adjusted by turning the setting wheel (1).

## 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

Install the controller in the return pipe, downstream the consumers. Flow direction is shown by the arrow on the valve's identification plate.

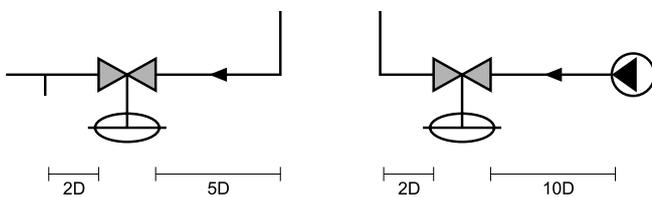
The best position is horizontal with vent screws (2) on top. Installation of a strainer upstream the controller is recommended. Connect copper capillary pipe ( $\Delta p+$ ) to the pipeline upstream the consumer. In case of a horizontal pipeline connect the copper capillary pipe laterally to prevent air and dirt from entering.

It is important to ensure that working temperature and pressure do not exceed allowed values.

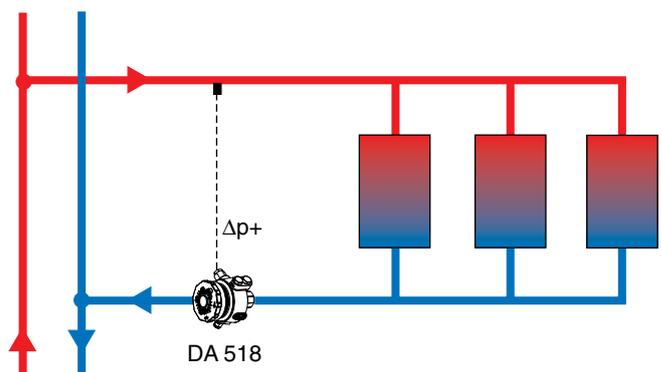
Before you mount the controller, check the fitting length of the controller and distance between connections on the pipeline. When the pipeline and the controller are full of water and the pressure is stabilized, vent the controller by vent screws (2).

### Normal pipe fittings

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



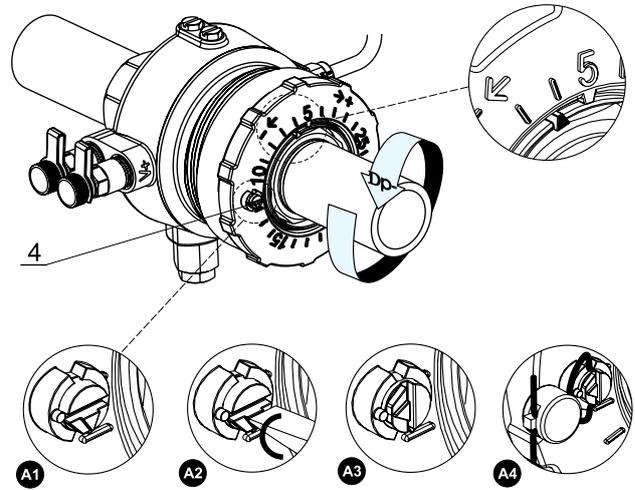
### Application example



## Setting

### Differential pressure adjustment

1. On the setting wheel (1) there are numbers which show how the differential pressure changes in range from 5 to 30 kPa within one turn of the setting wheel.
2. Turn the setting wheel clockwise to increase the differential pressure and vice versa.
3. The differential pressure can be controlled through pressure gauges on the pipeline.
4. After required differential pressure  $\Delta p$  is reached, lock the adjustment by turning a fixing plug (4) clockwise for 1/4 turn - A1, A2, A3.
5. It is also possible to secure the setting with the leaden seal through the fixing plug - A4



## Measuring

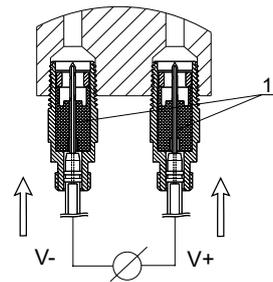
### Flow measuring

1. There are two measurement points: V- in V+ laterally on the valve body.
2. Unscrew the two covers (10).
3. Connect the measuring needles (11) to the measurement points - the needles should break through the rubber gaskets.
4. When the measurement is finished take out the needles and screw the covers back to the measurement points.
5. Flow is calculated by the equation:

$$Q = K_{VV} \cdot \sqrt{(V_+ - V_-)}$$

Where V+ in V- is measured differential pressure at Venturi orifice in bar and KVV is a constant of a Venturi orifice in  $(m^3/h) / \sqrt{\text{bar}}$ .

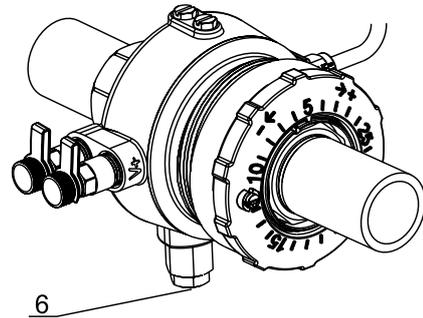
Constant KVV for DN 15 is 1,25 and for DN 25 4,25.



## Draining and shut-off

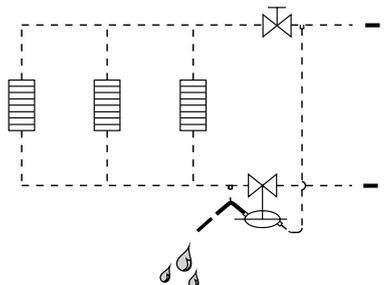
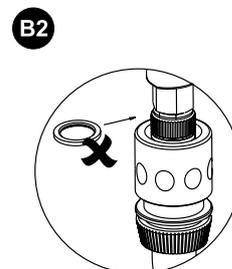
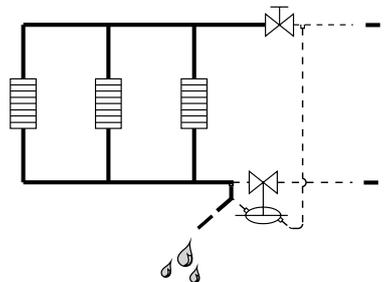
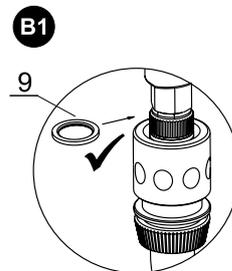
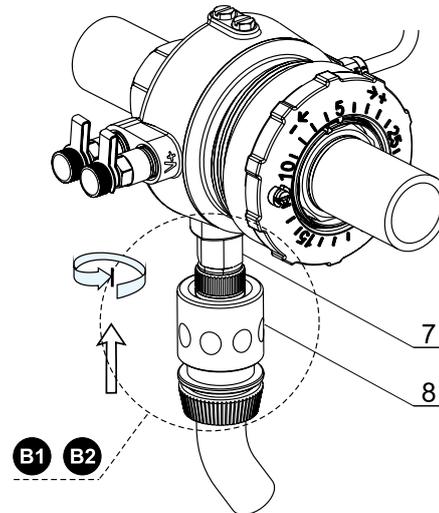
### Draining of the risers - B1

1. Close the valve upstream.
2. Unscrew the 1/4" plug (6) on the valve body.
3. Instead of 1/4" plug, put in the washer (9) and screw the connection (7) with the draining pipe (8).
4. The water should be drained out into the drain.
5. After the draining you screw-off the connection (7) and take down the draining pipe (8).
6. Put out the washer and screw the 1/4" plug back to the valve body.



### Hydraulic shut-off of the valve - B2

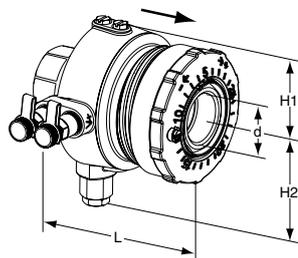
1. Unscrew the 1/4" plug (6) on the valve body.
2. Instead of 1/4" plug screw the connection (7) with the draining pipe (8).
3. The water should be drained out into the drain.
4. After the draining you unscrew the connection (7) and take down the draining pipe (8).
5. Screw the 1/4" screw plug back to the valve body.



## Articles

### With measuring points

1 200 mm capillary pipe (Ø6) included



#### 5-20 kPa

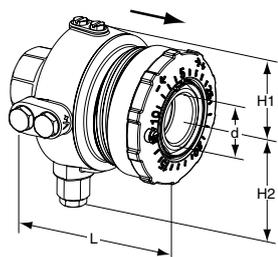
Article No	DN	d	D	L	H1	H2	Kvs	Kg
52 763-915	15	G1/2	87	97	41	64	2,5	1,3
52 763-920	20	G3/4	100	110	48	102	8,0	1,9
52 763-925	25	G1	100	110	48	102	8,0	1,8
52 763-932	32	G1 1/4	100	157	48	102	8,0	2,2

#### 10-30 kPa

Article No	DN	d	D	L	H1	H2	Kvs	Kg
52 763-215	15	G1/2	87	97	41	64	2,5	1,3
52 763-220	20	G3/4	100	110	48	102	8,0	1,9
52 763-225	25	G1	100	110	48	102	8,0	1,8
52 763-232	32	G1 1/4	100	157	48	102	8,0	2,2

### Without measuring points

1 200 mm capillary pipe (Ø6) included



#### 5-20 kPa

Article No	DN	d	D	L	H1	H2	Kvs	Kg
52 763-815	15	G1/2	87	97	41	64	2,5	1,3
52 763-820	20	G3/4	100	110	48	102	8,0	1,9
52 763-825	25	G1	100	110	48	102	8,0	1,8
52 763-832	32	G1 1/4	100	157	48	102	8,0	2,2

#### 10-30 kPa

Article No	DN	d	D	L	H1	H2	Kvs	Kg
52 763-315	15	G1/2	87	97	41	64	2,5	1,3
52 763-320	20	G3/4	100	110	48	102	8,0	1,9
52 763-325	25	G1	100	110	48	102	8,0	1,8
52 763-332	32	G1 1/4	100	157	48	102	8,0	2,2

→ = Flow direction

## > Accessories

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Connection for draining (7)

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**Article No**

52 759-210 Connection for draining G1 /4

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