

DA 516 – NPT threads



Differential pressure controllers

With adjustable set-point – size 1/2" - 2"

DA 516

– NPT threads

This compact differential pressure controller for heating and cooling systems is particularly effective in situations requiring high temperatures and/or pressure drop. DA 516 can be used both on the primary and secondary side in district heating and comfort cooling systems. Rust protection is assured thanks to the electrophoretic painted ductile iron body.



Key features

- > **Inline design**
Inline flow allows high pressure drops without noise.
- > **Adjustable set-point**
Delivers desired differential pressure ensuring accurate balancing.
- > **Measuring point**
Simplifies the balancing procedure, increases its accuracy and enables troubleshooting.

Technical description

Application:

Heating and cooling systems.
Installation in the return pipe.

Functions:

Differential pressure control
Pre-setting Δp over the load (Δp_L)
Measuring (Δp_L)

Dimensions:

1/2" - 2"

Pressure class:

PN 25 (362 psi)

Max. differential pressure (Δp_V):

230 psi

Setting range:

Δp over the load is adjustable within:
0.73-4.35 psi, 1.45-8.7 psi, 1.45-14.5 psi,
8.7-22 psi.
Delivery setting:
Maximum value (4.35, 8.7, 14.5, 22 psi).

Temperature:

Max. working temperature:
- with measuring points: 248°F
- without measuring points: 302°F
Min. working temperature: 14°F

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

Material:

Valve body: Ductile iron EN-GJS-400-15
Membrans and gaskets: EPDM
Adjustment ring: Ryton PPS

Surface treatment:

Electrophoretic painting.

Marking:

IMI TA, Size, PN, Material, Cvs, Δp and flow direction arrow.

Connection:

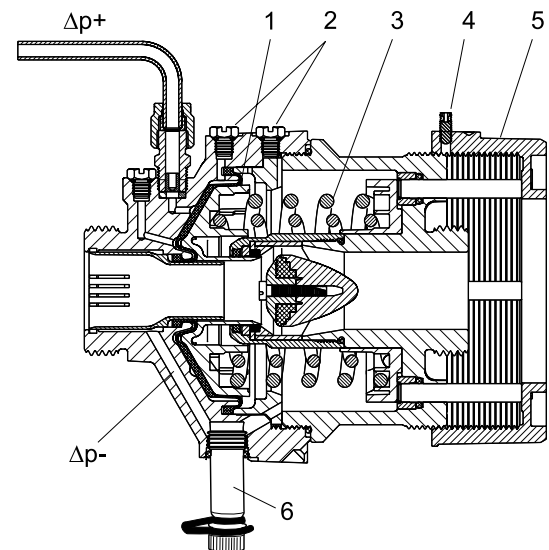
External threads according to ISO 228.
Separate connections with NPT threads available.

Operating function

The pressure upstream of the load acts through an external capillary pipe ($\Delta p+$) on the plus side of the membrane (1) and attempts to close the valve.

The pressure downstream of the load acts via an internal capillary pipe in the valve body and attempts, together with the spring (3) force, to open the valve. In this way, the differential pressure over the load is kept constant on the set value.

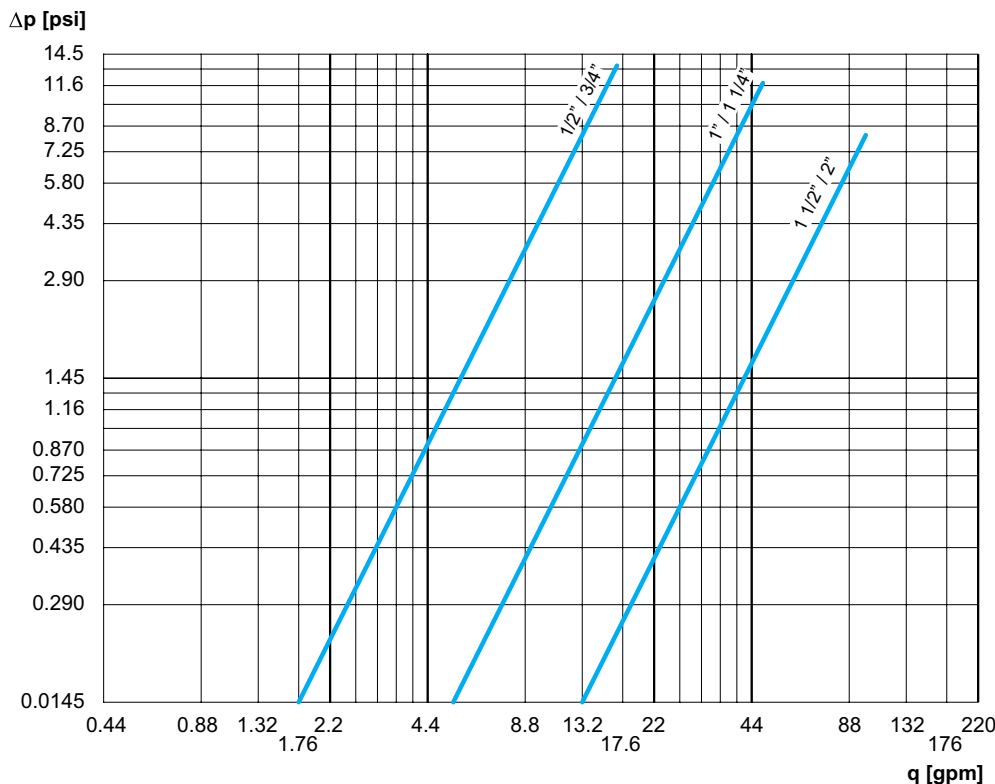
The spring force can be adjusted by turning the adjustment ring (5). Adjustment can be fixed by tightening the fixing screw (4).



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 valve at the designed flow. The pressure drop can be found in the diagram or calculated by the formula:

$$\Delta p = \left(\frac{q}{100 \times Cvs} \right)^2 \quad [\text{psi, gpm}]$$



Installation

IMPORTANT: The valve body must not be disassembled.

By inccornt handling, the controller may not work properly and safety problems may occur.

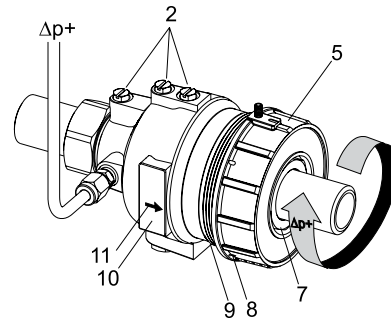
The DA 516 must be installed in the return pipe. Flow direction is shown by the arrow (11) on the valve's identification plate (10). The best position is horizontal with the venting screws (2) pointing upwards.

Installation of a strainer upstream of the valve is recommended. Connect capillary pipe ($\Delta p+$, copper $\text{Ø}6 \text{ mm} \times 1$), to the pipeline upstream of the load. In case of a horizontal pipeline connect the capillary pipe laterally to prevent air and dirt from entering.

When filling, vent the body by using the venting screws (2). When welding the connections, the valve must be protected from too high a temperature.

Turn the adjustment ring (5) clock-wise until stop to make the nut (7) on the outlet side accessible.

If measuring point is mounted on the DA 516, the differential pressure over the load can be measured by using our balancing instrument.



Capillary pipe

Before putting into operation, the capillary pipe must be installed. The other end of the capillary pipe is connected to the balancing valve STAD/STAF or other suitable point on the pipeline.

Setting

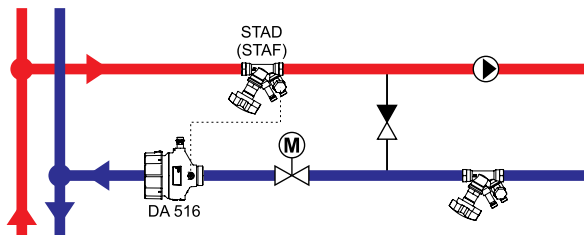
The differential pressure can be adjusted by turning the adjustment ring (5). The preset value can be sealed through the holes (see (8) and (9) under Installation).

DN	Number of turns	Δp [psi] change per turn of setting nut/spanner			
		0.73-4.35 (5-30 kPa)	1.45-8.7 (10-60 kPa)	1.45-15 (10-100 kPa)	8.7-22 psi (60-150 kPa)
1/2" / 3/4"	10	2.6	5.1	9.3	9.3
1" / 1 1/4"	14	1.8	3.6	6.6	6.6
1 1/2" / 2"	15	1.7	3.3	6.0	6.0

Measure flow and adjust Δp accordingly.

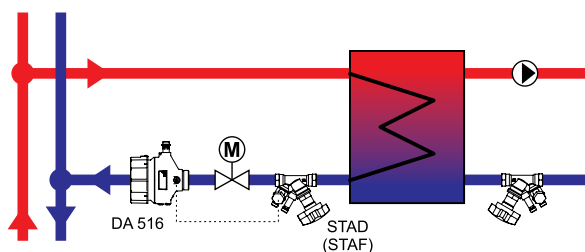
Application example

Keeping the differential pressure over a control valve constant



Shunt group

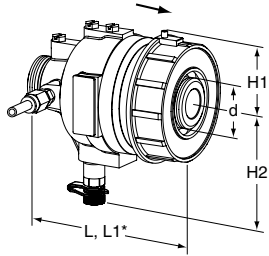
DA 516 should be mounted downstream of the control valve and STAD (STAF) may preferably be mounted in the supply pipe.



Heat exchanger

DA 516 should be mounted downstream of the control valve and STAD (STAF) upstream of the control valve, but downstream of the heat exchanger. STAD (STAF) can be mounted in the supply pipe, but with a decreased valve authority as a consequence.

DA 516 – With measuring points (max. 248 °F)



External thread

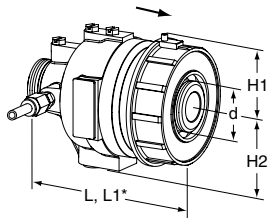
Threads according to ISO 228. Separate connections with NPT threads – see Connections for size 1/2"-2".

Capillary pipe (Ø6 mm) included: 4 ft

Connection set (G1/2+G3/4) for capillary pipe to e.g. STAD and 1 capillary pipe connection R1/4 included.

Size	d	L	L1*	H1	H2	Cvs	Weight [lb]	Article No
1-4 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	3.3	4.6	3.3	52 795-020
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	3.9	13.9	5.7	52 795-025
1 1/2" / 2"	G2	6.4	7.5	2.8	4.3	34.7	12.8	52 795-040
4-9 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	3.3	4.6	3.3	52 795-120
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	3.9	13.9	5.7	52 795-125
1 1/2" / 2"	G2	6.4	7.5	2.8	4.3	34.7	12.8	52 795-140
4-15 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	3.3	4.6	3.3	52 795-220
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	3.9	13.9	5.7	52 795-225
1 1/2" / 2"	G2	6.4	7.5	2.8	4.3	34.7	12.8	52 795-240
9-21 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	3.3	4.6	3.3	52 795-320
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	3.9	13.9	5.7	52 795-325
1 1/2" / 2"	G2	6.4	7.5	2.8	4.3	34.7	12.8	52 795-340

DA 516 – Without measuring points (max. 302 °F)



External thread

Threads according to ISO 228. Separate connections with NPT threads – see Connections for size 1/2"-2".

Capillary pipe (Ø6 mm) included: 4 ft

Connection set (G1/2+G3/4) for capillary pipe to e.g. STAD and 1 capillary pipe connection R1/4 included.

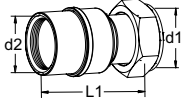
Size	d	L	L1*	H1	H2	Cvs	Weight [lb]	Article No
1-4 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	2.2	4.6	3.3	52 752-720
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	2.8	13.9	5.7	52 752-725
1 1/2" / 2"	G2	6.4	7.5	2.8	3.2	34.7	12.8	52 752-740
4-9 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	2.2	4.6	3.3	52 754-620
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	2.8	13.9	5.7	52 754-625
1 1/2" / 2"	G2	6.4	7.5	2.8	3.2	34.7	12.8	52 754-640
4-15 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	2.2	4.6	3.3	52 760-320
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	2.8	13.9	5.7	52 760-325
1 1/2" / 2"	G2	6.4	7.5	2.8	3.2	34.7	12.8	52 760-340
9-21 psi								
1/2" / 3/4"	G1	4.2	4.6	1.6	2.2	4.6	3.3	52 760-920
1" / 1 1/4"	G1 1/4	4.9	5.9	2.0	2.8	13.9	5.7	52 760-925
1 1/2" / 2"	G2	6.4	7.5	2.8	3.2	34.7	12.8	52 760-940

*) Length incl adjustment ring.

Cvs = gpm at a pressure drop of 1 psi and fully open valve.

→ = Flow direction

Connections for size 1/2"-2"



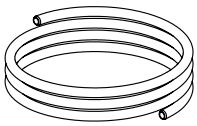
With internal thread NPT

Threads according to ANSI/ASME B1.20.1-1983.
Swivelling nut

d1	d2	L1* [in]	Article No
G1 1/4	1 NPT	2.87	52 751-307
G1 1/4	1 1/4 NPT	3.15	52 751-308
G2	1 1/2 NPT	3.23	52 751-309
G2	2 NPT	3.66	52 751-310

*) Fitting length (from the gasket surface to the end of the connection).

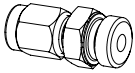
Accessories



Capillary pipe

Ø6 mm
1 pc included in DA 516.

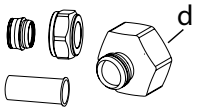
L [ft]	Ø	Article No
4	6 mm	52 759-215



Capillary pipe connection

For capillary pipe Ø6 mm with R1/4 and R1/8 connection.
1 pc R1/4 included in DA 516 (R1/8 mounted on valve)

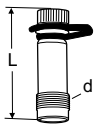
Valve size	Article No
6 mm x R1/4	1/2" - 2"
6 mm x R1/8	1/2" - 1 1/4"
6 mm x R1/8	1 1/2" - 2"



Connection set STAD

Must be used on STAD when connection of Ø6 mm capillary pipe.
2 transition nipples (G1/2 and G3/4),
1 thrust nut (Ø6), 1 cone and 1 support bush are included in DA 516.

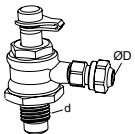
d	Article No
G1/2	52 762-006
G3/4	52 762-106



Measuring point

Max 248°F (intermittent 302°F)
AMETAL®/EPDM

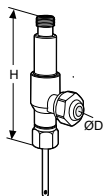
d	L [in]	Article No
M14x1	1.7	52 179-014
M14x1	4.1	52 179-015



Capillary pipe connection with shut-off

For connection of Ø6 mm capillary pipe to STAF/STAF-SG.

d	D	Valve size	Article No
G1/4	6 mm	3/4" - 2"	52 265-209
G3/8	6 mm	2 1/2" - 16"	52 265-208



Measuring point, two-way

For connection of Ø6 mm copper pipe while permitting simultaneous use of our balancing instrument.

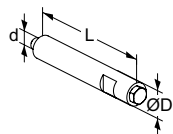
D	H [in]	Article No
6 mm	2.68	52 179-206



Measuring point, extension 2.36 in.

Can be installed without draining of the system.
AMETAL®/Stainless steel/EPDM

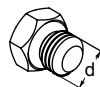
L [in]	Article No
2.36	52 179-006



Venting extension

Suitable when insulation is used.
Stainless steel/EPDM/Brass.

d	D [in]	L [in]	Article No
M6	0.47	2.76	52 759-220



Venting screw

Brass/EPDM

d	Article No
M6	52 759-211

