

Climate Control

IMI TA

DA 516 – NPT threads



Differential pressure controllers With adjustable set-point – size 1/2" - 2"

Breakthrough engineering for a better world



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.

Technical description

Application:

Heating and cooling systems. Installation in the return pipe.

Functions:

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

Dimensions:

1/2" - 2"

Pressure class: PN 25 (362 psi)

Max. differential pressure (ΔpV): 230 psi

Setting range:

Measuring point

troubleshooting.

Simplifies the balancing procedure,

increases its accuracy and enables

 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 (Δp +) 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 value at the designed flow.
- The pressure drop can be found in the diagram or calculated by the formula:





Installation

IMPORTANT: The valve body must not be disassembled.

By incorrent 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 (Δp +, copper Ø6 mm x 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 tur	n 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 preferrably 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 (\emptyset 6 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.

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
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" / 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 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
4-9 psi 1/2" / 3/4" G1 4.2 4.6 1.6 3.3 4.6 3.3 52 795-120
1/2" / 3/4" G1 4.2 4.6 1.6 3.3 4.6 3.3 52 795-120
1"/11/4" 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
<u>1" / 1 1/4" G1 1/4 4.9 5.9 2.0 3.9 13.9 5.7 52 795-225</u>
1 1/2" / 2" G2 6.4 7.5 2.8 4.3 34.7 12.8 52 795-240
9-21 psi
<u>1/2" / 3/4" G1 4.2 4.6 1.6 3.3 4.6 3.3 52 795-320</u>
1" / 1 1/4" G1 1/4 4.9 5.9 2.0 3.9 13.9 5.7 52 795-325
<u>1 1/2" / 2" G2 6.4 7.5 2.8 4.3 34.7 12.8 52 795-340</u>

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.

 \rightarrow = 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	L [ft]	Ø	Article No
	1 pc included in DA 516.	4	6 mm	52 759-215
70	Capillary pipe connection			
10	For capillary pipe Ø6 mm with R1/4 and		Valve size	Article No
~		6 mm x R1/4	1/2" - 2"	52 759-201
	1 pc R1/4 included in DA 516 (R1/8	6 mm x R1/8	1/2" - 1 1/4"	52 759-213
	mounted on valve)	6 mm x R1/8	1 1/2" - 2"	52 759-218
d	Connection set STAD			
	Must be used on STAD when connection of	d		Article No
\bigcirc \nearrow	Ø6 mm capillary pipe.	G1/2		52 762-006
	2 transition nipples (G1/2 and G3/4),	G3/4		52 762-106
	1 thrust nut (Ø6), 1 cone and 1 support bush are included in DA 516.			
	Measuring point			
	Max 248°E (intermittant 202°E)	d	l [in]	Audials No.
	Max 240 F (Internittent 302 F)	ä	= []	Article No
	AMETAL®/EPDM	M14x1	1.7	52 179-014
	AMETAL®/EPDM	M14x1 M14x1	1.7 4.1	52 179-014 52 179-015
	AMETAL®/EPDM	M14x1 M14x1	1.7 4.1	52 179-014 52 179-015
SY ^{2D}	AMETAL®/EPDM Capillary pipe connection with shut-off For connection of Ø6 mm capillary pipe to	d D	1.7 4.1 Valve size	Article No 52 179-014 52 179-015 Article No
<u>j</u>	AMETAL®/EPDM Capillary pipe connection with shut-off For connection of Ø6 mm capillary pipe to STAF/STAF-SG.	d D G1/4 6 mr	1.7 4.1 Valve size n 3/4" - 2"	Article No 52 179-014 52 179-015 Article No 52 265-209
¶°°	AMETAL®/EPDM Capillary pipe connection with shut-off For connection of Ø6 mm capillary pipe to STAF/STAF-SG.	d D G1/4 6 mr G3/8 6 mr	1.7 4.1 Valve size n 3/4" - 2" n 2 1/2" - 16"	Article No 52 179-014 52 179-015 Article No 52 265-208 52 265-208
je ^{en}	AMETAL®/EPDM Capillary pipe connection with shut-off For connection of Ø6 mm capillary pipe to STAF/STAF-SG.	d D G1/4 6 mr G3/8 6 mr	1.7 4.1 Valve size n 3/4" - 2" n 2 1/2" - 16"	Article No 52 179-014 52 179-015 Article No 52 265-208 52 265-208
Ĩ	AMETAL®/EPDM Capillary pipe connection with shut-off For connection of Ø6 mm capillary pipe to STAF/STAF-SG. Measuring point, two-way For connection of Ø6 mm copper pipe	d D G1/4 6 mr G3/8 6 mr	L.7 4.1 Valve size m 3/4" - 2" m 2 1/2" - 16" H [in]	Article No 52 179-014 52 179-015 Article No 52 265-208 52 265-208 Article No





Measuring point, extension 2.36 in. Can be installed without draining of the	L [in]	Article No		
system. AMETAL [®] /Stainless steel/EPDM	2.36			52 179-006
Venting extension Suitable when insulation is used.	d	D [in]	L [in]	Article No
Stainless steel/EPDM/Brass.	M6	0.47	2.76	52 759-220
Venting screw				
Brass/EPDM	d			Article No
	140			

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