Climate
Control

IMI TA

DAF 516
– NPT threads/ANSI flanges

Differential pressure controllers
With adjustable set-point – for installation in the supply pipe

Breakthrough
engineering for
a better world

DAF 516 – NPT threads/ANSI flanges

This compact differential pressure controller for heating and cooling systems is particularly effective in situations requiring high temperatures and/or pressure drop. DAF 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 supply pipe.

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

Dimensions:
DN 15-125

Pressure class:
DN 15-50: PN 25
DN 65-125: PN 25 / PN 16

Max. differential pressure (ΔpV):
1600 kPa = 16 bar

Setting range:
Δp over the load is adjustable within:
5-30 kPa, 10-60 kPa, 10-100 kPa or 60-150 kPa.
Delivery setting:
DN 15-50: Maximum value (30, 60, 100 resp. 150 kPa).
DN 65-125: Midway min./max. value (~18, ~35, ~55 resp. ~105 kPa).

Temperature:
Max. working temperature: 150°C
Min. working temperature: -10°C

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

Material:
Valve body: Ductile iron EN-GJS-400-15
Membranes and gaskets: EPDM
Adjustment ring: DN 15-50 Ryton PPS, DN 65-125 R St 37-2 steel.

Surface treatment:
Electrophoretic painting.

Marking:
IMI TA, Size, PN, Material, Kvs/Cvs, Δp and flow direction arrow.

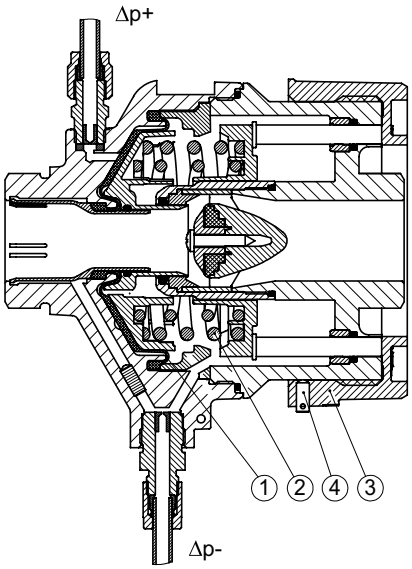
Connection:
DN 15-50: External threads according to ISO 228. (Separate connections with NPT threads.)
DN 65-125: Flanges according to ASME/ANSI B16.42 Class 150.

Operating function

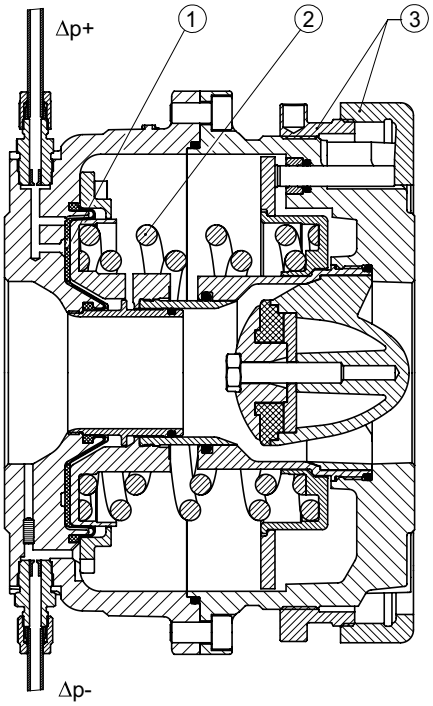
The pressure upstream of the load acts through an external capillary pipe (Δp+) on the plus side of the membrane (1) and attempts to close the valve.
The pressure downstream of the load acts through an external capillary pipe (Δp-) in the valve body and attempts, together with the spring (2) force, to 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 (3). Adjustment can be fixed (DN 15-50) by tightening the fixing screw (4).

DAF 516 should be mounted in the supply pipe upstream of the heat exchanger and STAD (STAF) on the return pipe, but downstream of the control valve. Function is the same as for DA 516, except that the pressure downstream the load acts through the another external copper impulse pipe (Δp-) to the minus side of the membrane. DAF 516 acts in this way as pressure controller (reducing valve) as well.

DN 15-50



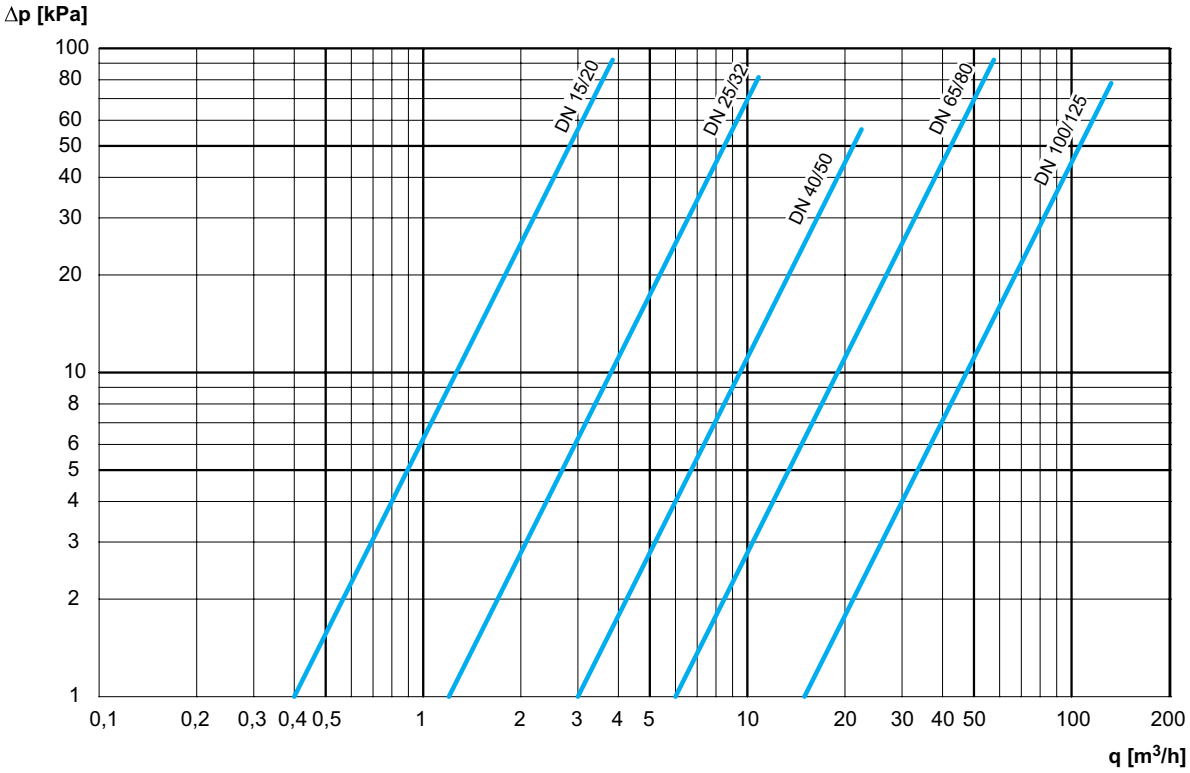
DN 65-125



Sizing

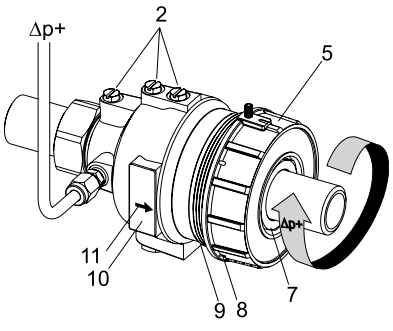
1. Select the smallest size for the designed flow according to the diagram.
2. Check that the available Δp is bigger than the pressure drop of the valve at the designed flow.
The pressure drop can be found in the diagram or calculated by the formula:

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



Installation

The DAF 516 must be installed in the supply pipe. Flow direction is shown by the arrow (11) on the valve's identification lable (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 Ø6x1) to the pipeline upstream of the load. Connect the other capillary pipe (Δp-, copper Ø6x1) downstream 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).
In case of valves DN 15-50, turn the adjustment ring (5) clockwise until stop to make the nut (7) on the outlet side accessible.
Note: When welding the connections (DN 15-50) the valve must be protected from too high temperature.



Capillary pipe
Before putting into operation, the capillary pipe must be installed.
- Capillary pipe (Δp-) is connected to the balancing valve STAD/STAF or other suitable point to the pipeline, **downstream** of the load.
- Capillary pipe (Δp+) is connected to the other suitable point to the pipeline, **upstream** of the load.

Setting

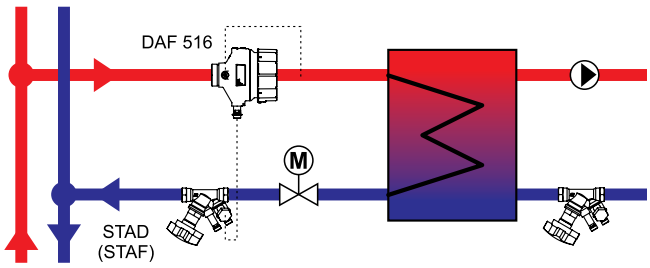
The differential pressure can be adjusted by turning the adjustment ring (5). The preset value can be sealed through the holes (see (8) and (9) under Installation).

DN	Number of turns	Δp [kPa] change per turn of setting nut/spanner			
		5-30	10-60	10-100	60-150
15/20	10	2,6	5,1	9,3	9,3
25/32	14	1,8	3,6	6,6	6,6
40/50	15	1,7	3,3	6,0	6,0
65	6,5	3,8	7,7	13,8	13,8
80	6,5	3,8	7,7	13,8	13,8
100	6,5	3,8	7,7	13,8	13,8
125	6,5	3,8	7,7	13,8	13,8

Measure flow and adjust Δp accordingly.

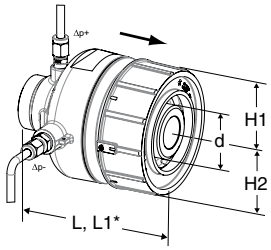
Application example

Keeping the differential pressure over a control valve constant



Heat exchanger
DAF 516 should be mounted in the supply pipe upstream of the heat exchanger and STAD (STAF) on the return pipe, but downstream of the control valve. DAF 516 acts in this way as pressure controller (reducing valve) as well.

Articles



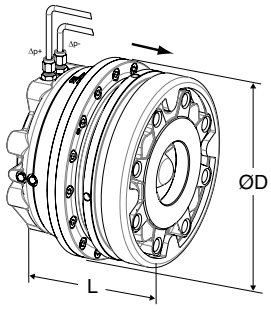
DN 15-50

External thread – Separate connections with NPT threads – see “Connections for DN 15-50”. External threads according to ISO 228.
Included: Capillary pipe (Ø6) 2 x 1 200 mm, connection set (G1/2+G3/4) for capillary pipe to e.g. STAD and 2 capillary pipe connections R1/4 (R1/8 mounted on valve).

PN 25

DN	d	L	L1*	H1	H2	Kvs	Kg	EAN	Article No
5-30 kPa									
15/20	G1	106	116	41	52	4	1,5	3831112505476	52 763-120
25/32	G1 1/4	125	150	51	57	12	2,6	3831112503953	52 763-125
40/50	G2	162	190	70	75	30	5,8	3831112504042	52 763-140
10-60 kPa									
15/20	G1	106	116	41	52	4	1,5	3831112505377	52 761-120
25/32	G1 1/4	125	150	51	57	12	2,6	3831112504134	52 761-125
40/50	G2	162	190	70	75	30	5,8	3831112504196	52 761-140
10-100 kPa									
15/20	G1	106	116	41	52	4	1,5	3831112504189	52 760-120
25/32	G1 1/4	125	150	51	57	12	2,6	3831112504004	52 760-125
40/50	G2	162	190	70	75	30	5,8	3831112504103	52 760-140
60-150 kPa									
15/20	G1	106	116	41	52	4	1,5	3831112504233	52 762-120
25/32	G1 1/4	125	150	51	57	12	2,6	3831112504141	52 762-125
40/50	G2	162	190	70	75	30	5,8	3831112504158	52 762-140

*) Length incl adjustment ring.



DN 65-125

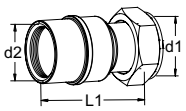
Flanges – Do not need any separate connections. Flanges according to ASME/ANSI B16.42 Class 150.
Included: Capillary pipe (Ø6) 2 x 1 500 mm and 2 capillary pipe connections R1/4 (M14x1 mounted on valve).

Class 150

DN	D	L	Kvs	Kg	EAN	Article No
5-30 kPa						
65	210	160	60	18	3831112529885	52 768-665
80	210	160	60	18	3831112529922	52 768-680
100	320	254	150	58	3831112529809	52 768-690
125	320	254	150	58	3831112529847	52 768-691
10-60 kPa						
65	210	160	60	18	3831112529878	52 768-765
80	210	160	60	18	3831112529915	52 768-780
100	320	254	150	58	3831112529793	52 768-790
125	320	254	150	58	3831112529830	52 768-791
10-100 kPa						
65	210	160	60	18	3831112529861	52 768-865
80	210	160	60	18	3831112529908	52 768-880
100	320	254	150	58	3831112529786	52 768-890
125	320	254	150	58	3831112529823	52 768-891
60-150 kPa						
65	210	160	60	18	3831112529892	52 768-965
80	210	160	60	18	3831112529939	52 768-980
100	320	254	150	58	3831112529816	52 768-990
125	320	254	150	58	3831112529854	52 768-991

Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.
→ = Flow direction

Connections for DN 15-50



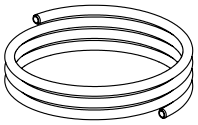
With internal thread NPT
Threads according to ANSI/ASME B1.20.1-1983.
Swivelling nut

d1	d2	L1*	EAN	Article No
G1 1/4	1 NPT	73	3831112533394	52 751-307
G1 1/4	1 1/4 NPT	80	3831112533400	52 751-308
G2	1 1/2 NPT	82	3831112533417	52 751-309
G2	2 NPT	93	3831112533424	52 751-310

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

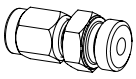
Other types of connections (ISO), see international version of DAF 516.

Accessories



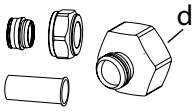
Capillary pipe
Ø6 mm.
2 pcs included in DAF 516.

L [m]	Ø	DN	EAN	Article No
1,2	6 mm	15-50	3831112527157	52 759-215
1,5	6 mm	65-125	3831112527164	52 759-265



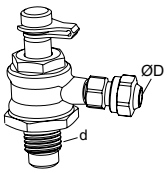
Capillary pipe connection
For capillary pipe Ø6 mm with R1/4, R1/8 and M14 connection.
DN 15-50: 2 pcs R1/4 included in DAF 516 (2 pcs R1/8 mounted on valve).
DN 65-125: 2 pcs R1/4 included in DAF 516 (2 pcs M14x1 mounted on valve).

	DN	EAN	Article No
6 x R1/4	15-125	3831112527355	52 759-201
6 x R1/8	15-32	3831112533868	52 759-213
6 x R1/8	40-50	3831112533875	52 759-218
6 x M14x1	65-125	3831112535145	52 759-214



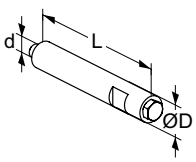
Connection set STAD
Must be used on STAD when connection of Ø6 mm capillary pipe.
2 transition nipples (G1/2 and G3/4), 1 thrust nut (Ø6), 1 cone (Ø6) and 1 support bush are included in DAF 516, DN 15-50.

d	EAN	Article No
G1/2	7318793850003	52 762-006
G3/4	7318793850102	52 762-106



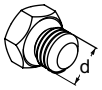
Capillary pipe connection with shut-off
For connection of Ø6 mm capillary pipe to STAF/STAF-SG.

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

d	D	L	EAN	Article No
M6	12	70	3831112531727	52 759-220



Venting screw
Brass/EPDM

d	EAN	Article No
M6	3831112527980	52 759-211