Climate
Control

IMI TA

STAP ZERO

Differential pressure controllers

DN 15-25 made of lead-free brass (less then 0.1% lead), adjustable set-point and shut-off function

Breakthrough
engineering for
a better world

STAP ZERO

STAP ZERO is a high-performing differential pressure controller that keeps the differential pressure over the load constant. This delivers accurate and stable modulating control, ensures less risk of noise from control valves, and results in easy balancing and commissioning. STAP ZERO's unrivalled accuracy and compact size make it particularly suitable for use on the secondary side of heating and cooling systems. The STAP ZERO is a lead-free product (<0.1% lead content) especially designed to address local environmental demands.

Key features

ZERO lead
Product made of lead-free brass (<0.1% lead content).

Pressure relief cone
Ensures accurate differential pressure control.

Adjustable set-point and shut-off function
Delivers desired differential pressure ensuring accurate balancing. Shut-off function makes maintenance easy and straightforward.

Measuring point with drain option
Simplifies the balancing procedure, and increases its accuracy.

Technical description

Application:
Heating and cooling systems.

Functions:
Differential pressure control
Adjustable Δp
Measuring point
Shut-off
Draining (accessory)

Dimensions:
DN 15-25

Pressure class:
PN 16

Max. differential pressure (ΔpV):
250 kPa

Setting range:
DN 15 LF: 5* - 25 kPa
DN 15 - 20: 5* - 25 kPa
DN 15 LF: 10* - 60 kPa
DN 15 - 25: 10* - 60 kPa
*) Delivery setting
LF = Low flow

Temperature:
Max. working temperature: 120°C
Min. working temperature: -20°C

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

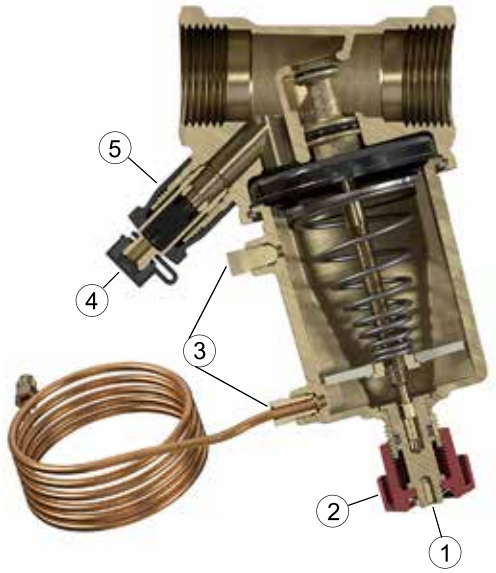
Material:
Valve body: Brass CC768S
Bonnet: Brass CC768S
Cone: Brass CW724R (CuZn21Si3P)
Spindles: Brass CW724R (CuZn21Si3P)
O-rings: EPDM rubber
Membrane: HNBR rubber
Spring: Stainless steel
Spring support: Brass CW724R (CuZn21Si3P) and reinforced PPS
Handwheel: Polyamide

Measuring point: Brass CW724R (CuZn21Si3P)
Sealings: EPDM
Caps: Polyamide and TPE

Marking:
Body: IMI or IMI TA, ZERO, PN, DN, inch size and flow direction arrow.
Bonnet: STAP, ΔpL 5-25 or 10-60. For low flow version also "Low flow" (label).

Connection:
Internal thread according to ISO 228, thread length according to ISO 7-1.

Operating function



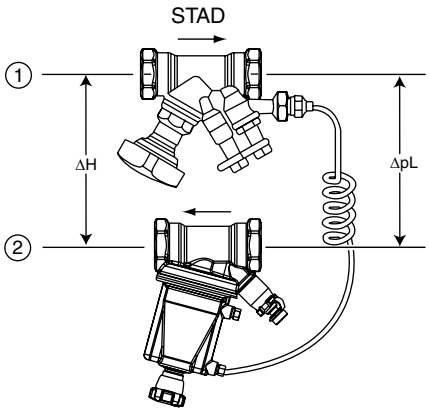
1. Setting ΔpL (3 mm allen key)
2. Shut-off
3. Connection capillary pipe
   Venting
   Connection measuring point STAP
4. Measuring point
5. Connection draining kit (accessory)

Measuring point
Remove the cover and then insert the probe through the self-sealed measuring point.
Measuring point STAP (accessory) can be connected to the venting if the STAD valve is out of reach for measuring of differential pressure.

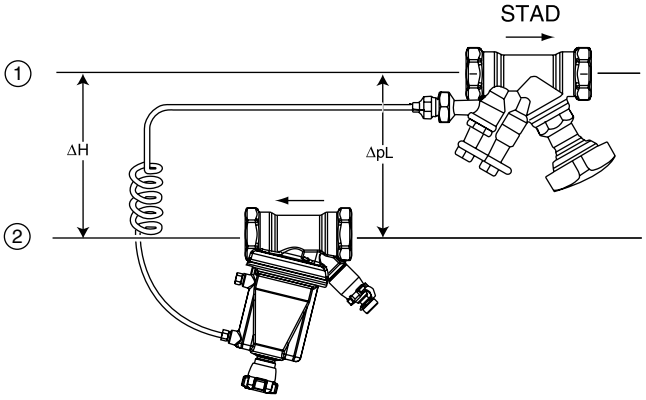
Drain
Draining kit available as accessory. Can be connected during operation.

Installation

With ΔpV STAD **excluded** from the load.



With ΔpV STAD **included** in the load.



1. Inlet
2. Return

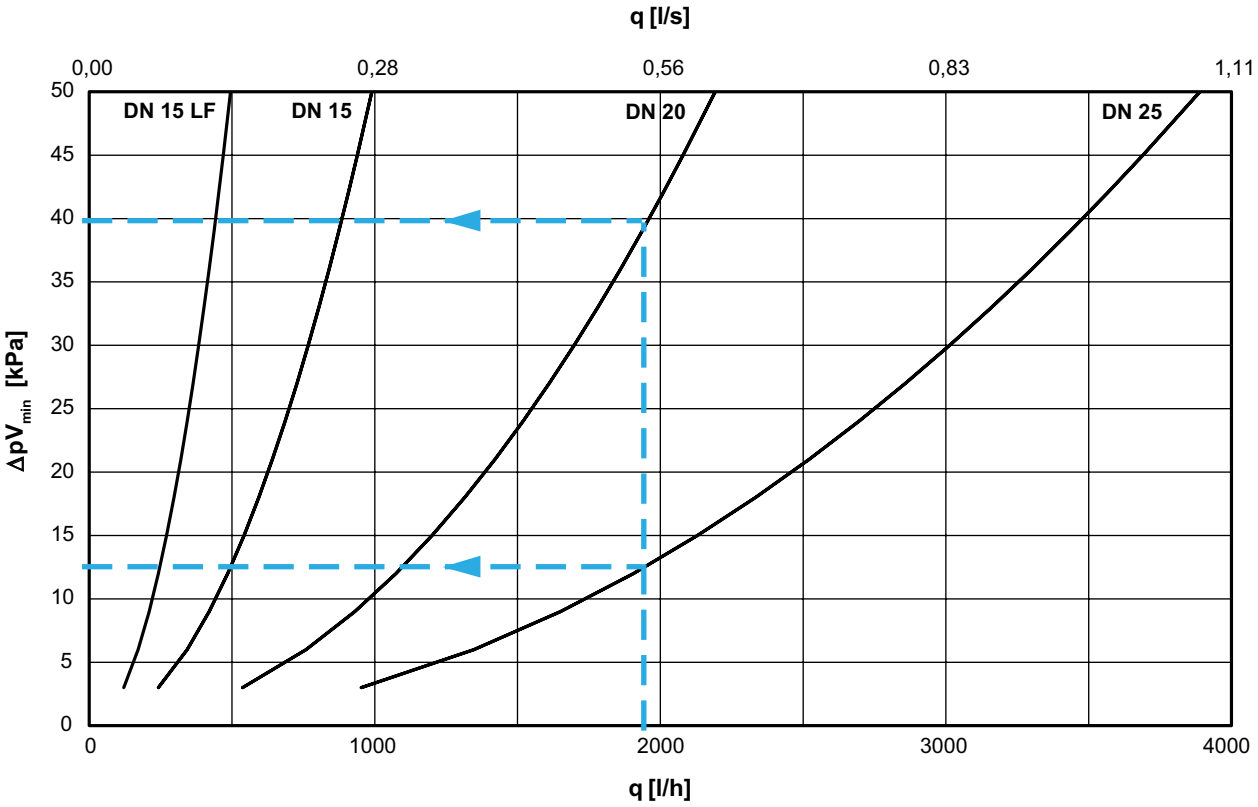
Note! The STAP must be placed in the return pipe and with correct flow direction.
To simplify installations in tight spaces, the bonnet can be detached.

When extending the capillary pipe, use e.g. 6 mm copper pipe and extension kit (accessory). **Note!** The supplied capillary pipe must be included.

For further installation examples, see Handbook No 4 - Hydronic balancing with differential pressure controllers.
STAD – see catalogue leaflet “STAD”.

Sizing

The diagram shows the lowest pressure drop required for the STAP valve to be within its working range at different flows.



LF = Low flow

Example:
Design flow 1 950 l/h, ΔpL = 12 kPa and available differential pressure ΔH = 75 kPa.

1. Design flow (q) 1 950 l/h.

2. Read the pressure drop ΔpV_{min} from the diagram.

DN 20 ΔpV_{min} = 39,6 kPa
DN 25 ΔpV_{min} = 12,6 kPa

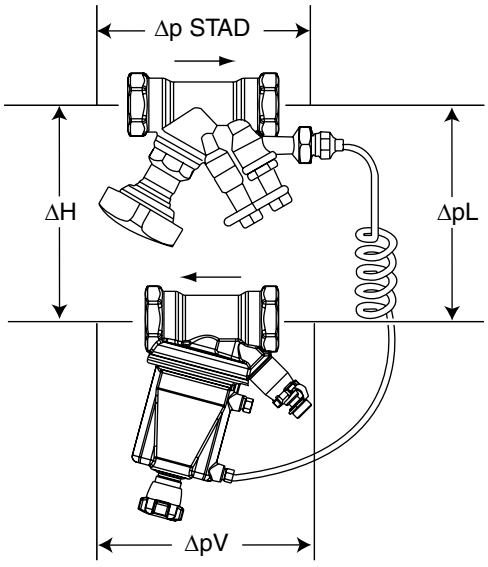
3. Check that the ΔpL is within the setting range for these sizes.

4. Calculate required available differential pressure ΔH_{min}.
At 1 950 l/h and fully open STAD the pressure drop is,
DN 20 = 13,1 kPa and DN 25 = 5,2 kPa.

$\Delta H_{min} = \Delta pV_{STAD} + \Delta pL + \Delta pV_{min}$

DN 20: ΔH_{min} = 13,1 + 12 + 39,6 = 64,7 kPa
DN 25: ΔH_{min} = 5,2 + 12 + 12,6 = 29,8 kPa

5. In order to optimise the control function of the STAP select the smallest possible valve, in this case DN 20.



$\Delta H = \Delta pV_{STAD} + \Delta pL + \Delta pV$

IMI recommends the software HySelect for calculating the valve size. HySelect can be downloaded from climatecontrol.imiplc.com.

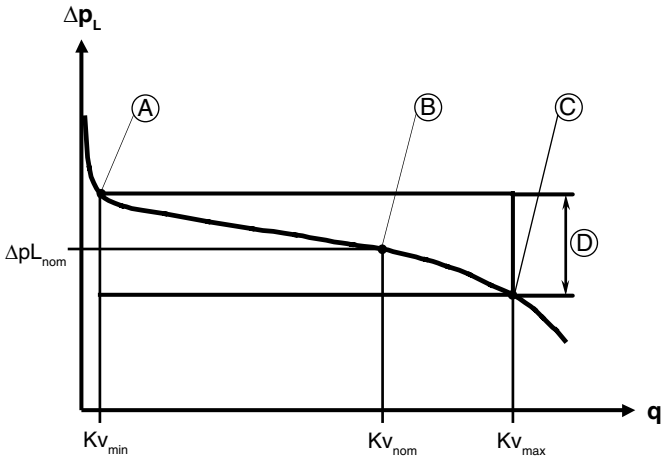
Working range

	Kv_{min}	Kv_{nom}	Kv_m	q_{max} [m^3/h]
DN 15 LF	0,05	0,17	0,7	0,5
DN 15	0,07	1,0	1,4	1,0
DN 20	0,16	2,2	3,1	2,2
DN 25	0,28	3,8	5,5	3,9

Kv_{min} = m^3/h at a pressure drop of 1 bar and minimum opening corresponding to the p-band (+20% respectively +25%).
Kv_{nom} = m^3/h at a pressure drop of 1 bar and opening corresponding to the middle of the p-band (ΔpL_{nom}).
Kv_m = m^3/h at a pressure drop of 1 bar and maximum opening corresponding to the p-band (-20% respectively -25%).
LF = Low flow

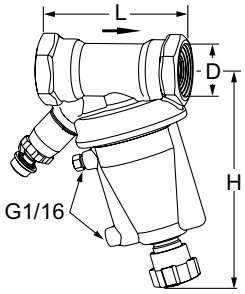
Note! The flow in the circuit is determined by its resistance, i.e. Kv_C:

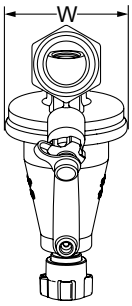
$q_C = Kv_C \sqrt{\Delta pl}$



A. Kv_{min}
B. Kv_{nom} (Delivery setting)
C. Kv_m
D. Working range ΔpL_{nom} ±20%. STAP ZERO 5-25 kPa ±25%.

Articles



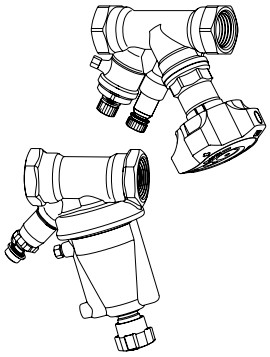


Internal threads
1 m capillary pipe and transition nipples G1/2 and G3/4 are included.

DN	D	L	H	W	Kv_m	q_{max} [m^3/h]	Kg	EAN	Article No
5-25 kPa									
15* LF	G1/2	83	137	72	0,7	0,5	1,2	5902276823138	52 262-114
15*	G1/2	83	137	72	1,4	1,0	1,2	5902276823145	52 262-115
20*	G3/4	90	139	72	3,1	2,2	1,3	5902276823152	52 262-120
10-60 kPa									
15* LF	G1/2	83	137	72	0,7	0,5	1,2	5902276823091	52 262-014
15*	G1/2	83	137	72	1,4	1,0	1,2	5902276823107	52 262-015
20*	G3/4	90	139	72	3,1	2,2	1,3	5902276823114	52 262-020
25	G1	92	141	72	5,5	3,9	1,4	5902276823121	52 262-025

→ = Flow direction
LF = Low flow
Kv_m = m^3/h at a pressure drop of 1 bar and maximum opening corresponding to the p-band (-20% respectively -25%).
*) Can be connected to smooth pipes by KOMBI compression coupling.
G = Thread according to ISO 228. Thread length according to ISO 7-1.

STAP ZERO/STAD ZERO

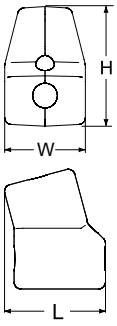


STAP ZERO/STAD ZERO package
For more information on STAD ZERO see separate catalogue leaflet

STAP ZERO DN	STAD ZERO DN	EAN	Article No
5-25 kPa			
15 LF	10	5902276823237	52 262-101
15 LF	15	5902276823244	52 262-102
15	15	5902276823251	52 262-103
20	20	5902276823268	52 262-104
10-60 kPa			
15 LF	10	5902276823176	52 262-001
15 LF	15	5902276823183	52 262-002
15	10	5902276823190	52 262-003
15	15	5902276823206	52 262-004
20	20	5902276823213	52 262-005
25	25	5902276823220	52 262-006

LF = Low flow

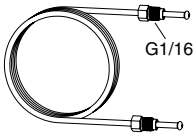
Accessories



Insulation
For heating/cooling
Material: EPP
Fire class: B2 (DIN 4102)
Max working temperature: 120°C (intermittent 140°C)
Min working temperature: 12°C, -8°C at sealed joints

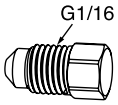
For DN	L	H	W	EAN	Article No
15-25	145	172	116	7318793658906	52 265-225

Spare parts



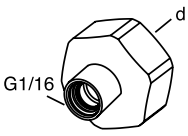
Capillary pipe

L	EAN	Article No
1 m	5902276823381	52 262-301



Plug
Venting

EAN	Article No
5902276823275	52 262-302



Transition nipple
For capillary pipe with G1/16 connection.

d	EAN	Article No
G1/2	5902276823282	52 262-303
G3/4	5902276823299	52 262-304

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