STAP

Differential pressure controller – DN 65-100

TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

The flanged STAP 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's unrivalled accuracy and compact size make it particularly suitable for use on the secondary side of heating and cooling systems.

› Adjustable set-point
Delivers desired differential pressure ensuring accurate balancing.

› Shut-off function
Shut-off function makes maintenance easy and straightforward.

› Measuring points
Simplifies the balancing procedure, and increases its accuracy.

› Technical description

Application:
Heating and cooling systems.

Functions:
Differential pressure control
Adjustable Δp
Measuring points
Shut-off

Dimensions:
DN 65-100

Pressure class:
PN 16

Max. differential pressure (ΔpV):
350 kPa

Setting range:
20-80 kPa resp 40-160 kPa.

Temperature:
Max. working temperature: 120°C
Min. working temperature: -10°C

Materials:
Valve body: Cast iron EN-GJL-250 (GG 25)
Bonnet: AMETAL®
Cone: AMETAL®
Spindles: AMETAL®
O-rings: EDPM rubber
Seat seal: Plug with EPDM O-ring
Membrane: Reinforced EPDM rubber
Spring: Stainless steel
Handwheel: Polyamide

AMETAL® is the dezincification resistant alloy of TA.

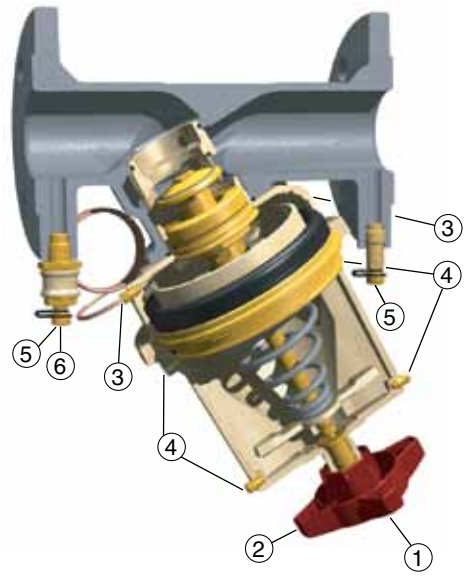
Surface treatment:
Valve body: Epoxy painting.

Marking:
Body: TA, PN 16, DN, CE, 250 CI, flow arrow and casting date (year, month, day).
Bonnet and handwheel: Label with STAP, DN, Δp_L 20-80 resp 40-160 kPa and bar code.

Face to face dimensions:
ISO 5752 series 1, BS 2080

Flanges:
ISO 7005-2.

Operating instruction



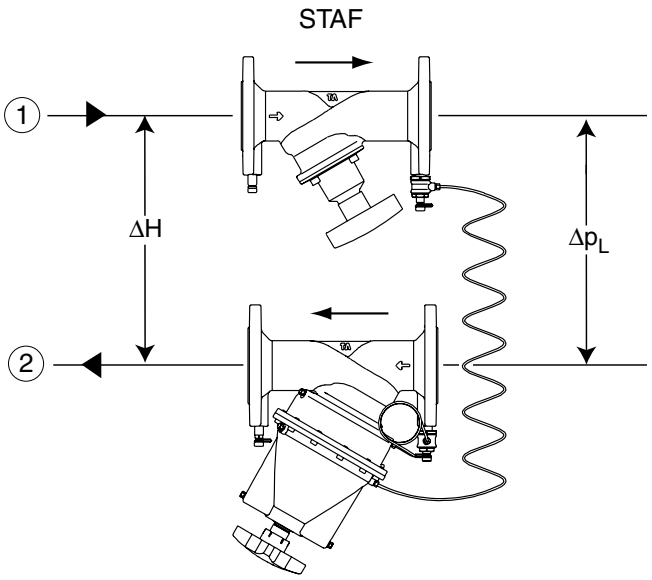
1. Setting Δp_L (5 mm allen key)
2. Shut-off
3. Connection capillary pipe, low pressure.
4. Venting. Connection measuring point STAP. Connection capillary pipe, high pressure.
5. Measuring point
6. Opening/closing of measure signal for the low pressure side

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 STAF valve is out of reach when measuring the differential pressure.

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

Installation

Note! The STAP must be placed in the return pipe and with correct flow direction.

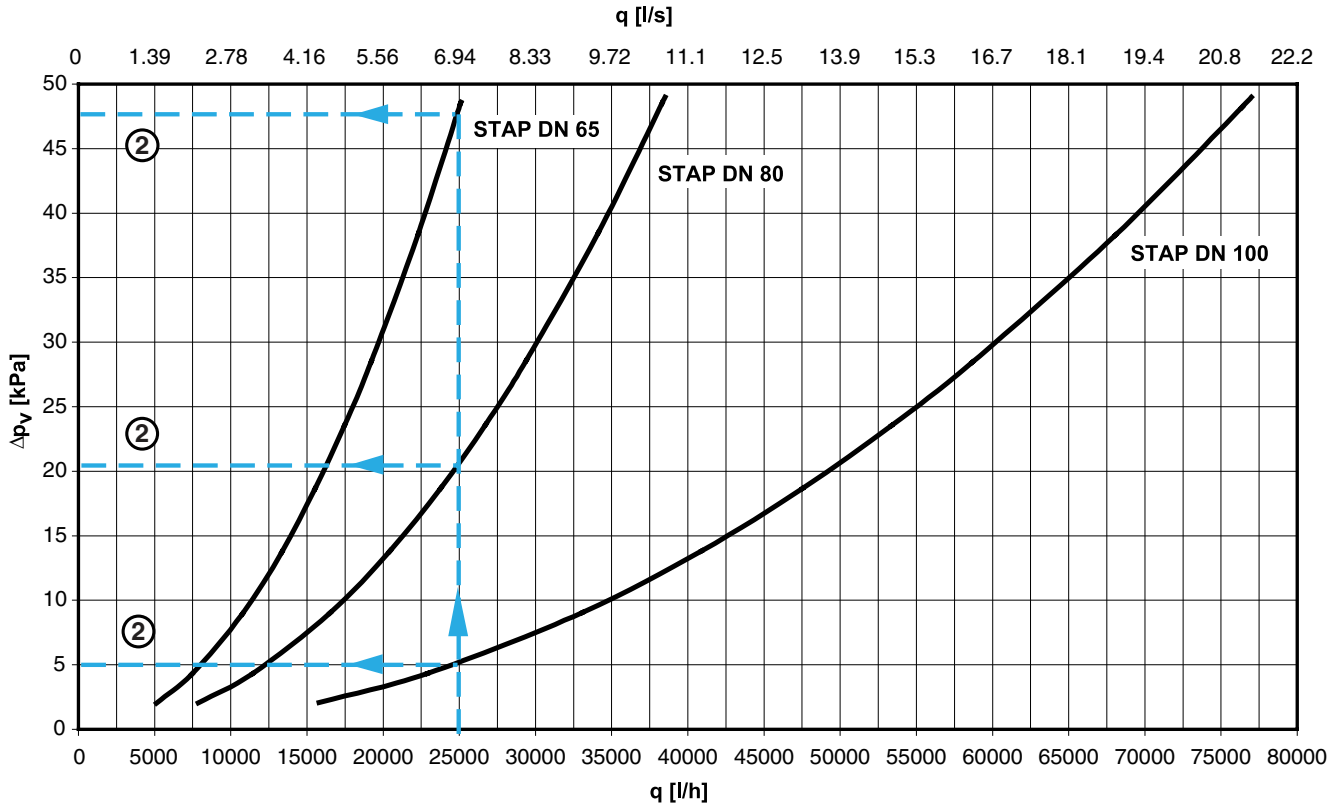


1. Inlet
2. Return

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

Diagram

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



Example:
Desired flow 25000 l/h, Δp_L = 34 kPa and available differential pressure ΔH = 85 kPa.

1. Desired flow (q) 25000 l/h.

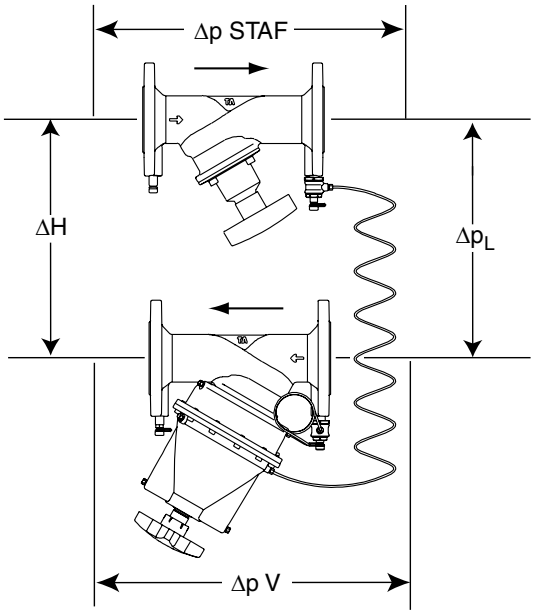
2. Read the pressure drop ΔpV_{min}
DN 65 ΔpV_{min} = 48 kPa
DN 80 ΔpV_{min} = 21 kPa
DN 100 ΔpV_{min} = 5 kPa

3. Calculate required available differential pressure ΔH_{min}.
At 25000 l/h and fully open STAF the pressure drop is, DN 65 = 9 kPa, DN 80 = 4 kPa and DN 100 = 2 kPa.

$\Delta H_{min} = \Delta p$ STAF+ $\Delta p_L + \Delta pV$

DN 65: ΔH_{min} = 9 + 34 + 48 = 91 kPa
DN 80: ΔH_{min} = 4 + 34 + 21 = 59 kPa
DN 100: ΔH_{min} = 2 + 34 + 5 = 41 kPa

4. In order to optimise the control function of the STAP select the smallest possible valve, in this case DN 80.
(DN 65 is not suitable since ΔH_{min} = 91 kPa and available differential pressure 85 kPa only).



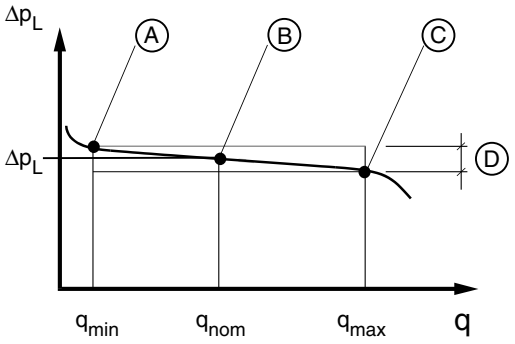
ΔH = Δp STAF + Δp_L + ΔpV

TA recommends the software *TA Select* for calculating the STAP size. *TA Select* can be downloaded from www.tahydronics.com

Working range

	Kv_{min}	Kv_{nom}	Kv_m
DN 65	1,4	25	36
DN 80	2,2	38	55
DN 100	4,4	77	110

Note! The flow in the circuit is determined by its resistance, i.e. Kv_C: $q_C = Kv_C \sqrt{\Delta p_L}$



A. Kv_{min}
B. Kv_{nom}. Delivery setting Δp_L = 20 kPa respectively 40 kPa
C. Kv_m
D. Working range Δp_L ±25%

Sizing

1. Select the desired Δp_L in the tables or diagrams.

2. Select the same size of the valve as the pipe.

3. Check that the desired flow is **smaller** than the specified q_{max}. If not, select the nearest bigger dimension, alternatively a bigger Δp_L.

The tables are valid for:
$\Delta H \geq 2 \times \Delta p_L$, but the valve works properly between ΔH ~1,5 x Δp_L to 350 kPa + Δp_L.

20-80 kPa (52 265-065, -080, -090)
q (l/h)

DN	Δp_L (kPa)														
	20			30			40			50			60		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	630	11200	16100	770	13700	19700	890	15800	22800	990	17700	25500	1080	19400	27900
80	980	17000	24600	1200	20800	30100	1390	24000	34800	1560	26900	38900	1700	29400	42600
100	1970	34400	49200	2410	42200	60200	2780	48700	69600	3110	54400	77800	3410	59600	85200

DN	Δp_L (kPa)					
	70			80		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1170	20900	30100	1250	22400	32200
80	1840	31800	46000	1970	34000	49200
100	3680	64400	92000	3940	68900	98400

40-160 kPa (52 265-165, -180, -190)
q (l/h)

DN	Δp_L (kPa)														
	40			50			60			70			80		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	890	15800	22800	990	17700	25500	1080	19400	27900	1170	20900	30100	1250	22400	32200
80	1390	24000	34800	1560	26900	38900	1700	29400	42600	1840	31800	46000	1970	34000	49200
100	2780	48700	69600	3110	54400	77800	3410	59600	85200	3680	64400	92000	3940	68900	98400

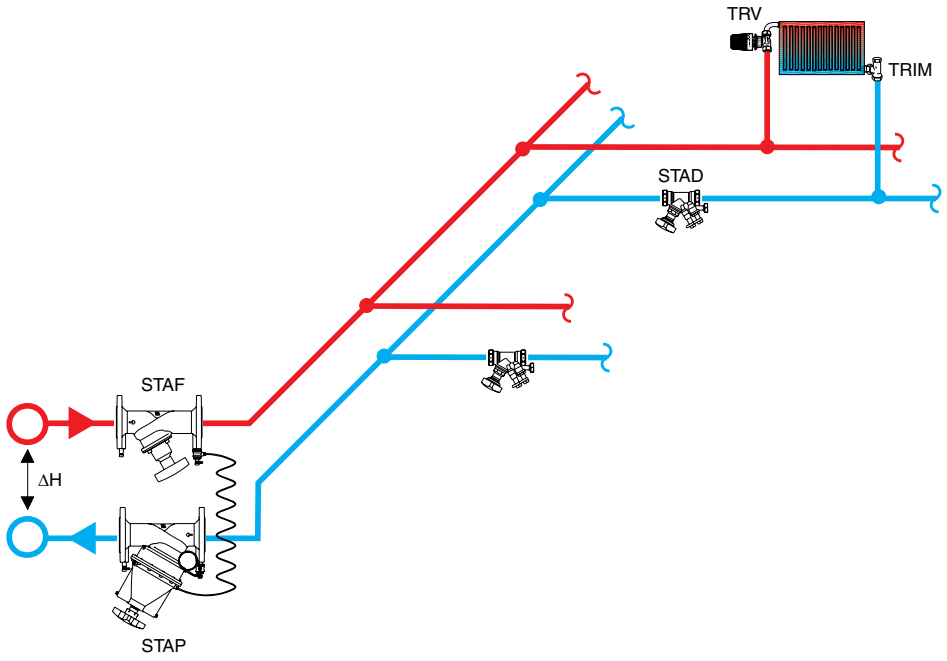
DN	Δp_L (kPa)														
	90			100			110			120			130		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1330	23700	34200	1400	25000	36000	1470	26200	37800	1530	27400	39400	1600	28500	41000
80	2090	36000	52200	2200	38000	55000	2310	39900	57700	2410	41600	60200	2510	43300	62700
100	4170	73000	104000	4400	77000	110000	4610	80800	115000	4820	84300	120500	5020	87800	125000

DN	Δp_L (kPa)								
	140			150			160		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1660	29600	42600	1710	30600	44100	1770	31600	45500
80	2600	45000	65100	2690	46500	67400	2780	48100	69600
100	5210	91100	130000	5390	94300	135000	5570	97400	139000

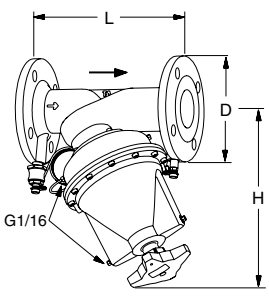
Application examples

Stabilising the differential pressure across a riser with balancing valves ("Modular valve method")
The "Modular valve method" is suitable when a plant is put into operation phase by phase. Install one differential pressure controller on every riser, so that each STAP controls one module.
STAP keeps the differential pressure from the main pipe at a stable value out to the risers and circuits. STAD(STAF) downstream on the circuits guarantees that overflows do not occur. With STAP working as a modular valve, the whole plant does not need to be re-balanced when a new module is taken into operation. There is no need for balancing valves on the main pipes (except for diagnostic purposes), since the modular valves distribute the pressure out to the risers.

- STAP reduces a big and variable ΔH to a suitable and stable Δp_L.
- The set Kv-value in STAD(STAF) limits the flow in each circuit.
- STAF is used for flow measuring, shut-off and connection of the capillary pipe.



Articles



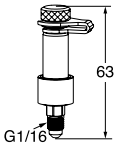
PN 16, ISO 7005-2

Article No	EAN	DN	Number of bolt holes	D	L	H	Kv_m	Kg
20-80 kPa								
52 265-065	7318793750402	65	4	185	290	321	36	26
52 265-080	7318793750600	80	8	200	310	337	55	32
52 265-090	7318793750808	100	8	220	350	350	110	35
40-160 kPa								
52 265-165	7318793750501	65	4	185	290	321	36	26
52 265-180	7318793750709	80	8	200	310	337	55	32
52 265-190	7318793750907	100	8	220	350	350	110	35

1 m capillary pipe and transition nipple with shut-off are included.

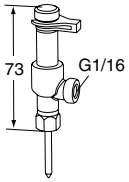
→ = Flow direction
Kv_m = m^3/h at a pressure drop of 1 bar and opening corresponding to the p-band (-25%).

Accessories



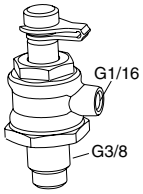
Measuring point STAP

Article No	EAN
52 265-205	7318793660602



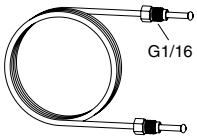
Measuring point, two-way
For connection of capillary pipe while permitting simultaneous use of TA's balancing instrument.

Article No	EAN
52 179-200	7318793784100



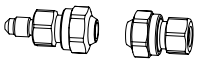
Capillary pipe connection with shut-off

Article No	EAN
52 265-206	7318793781604



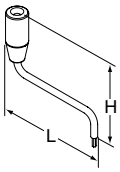
Capillary pipe

Article No	EAN	L
52 265-301	7318793661500	1 m



Extension kit for capillary pipe
Complete with connections for 6 mm pipe

Article No	EAN
52 265-212	7318793781505



Setting tool Δp_L

Article No	EAN	L	H	
52 265-304	7318793975409	207	72	5 mm

Plug
Venting

Article No	EAN
52 265-302	7318793661609

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