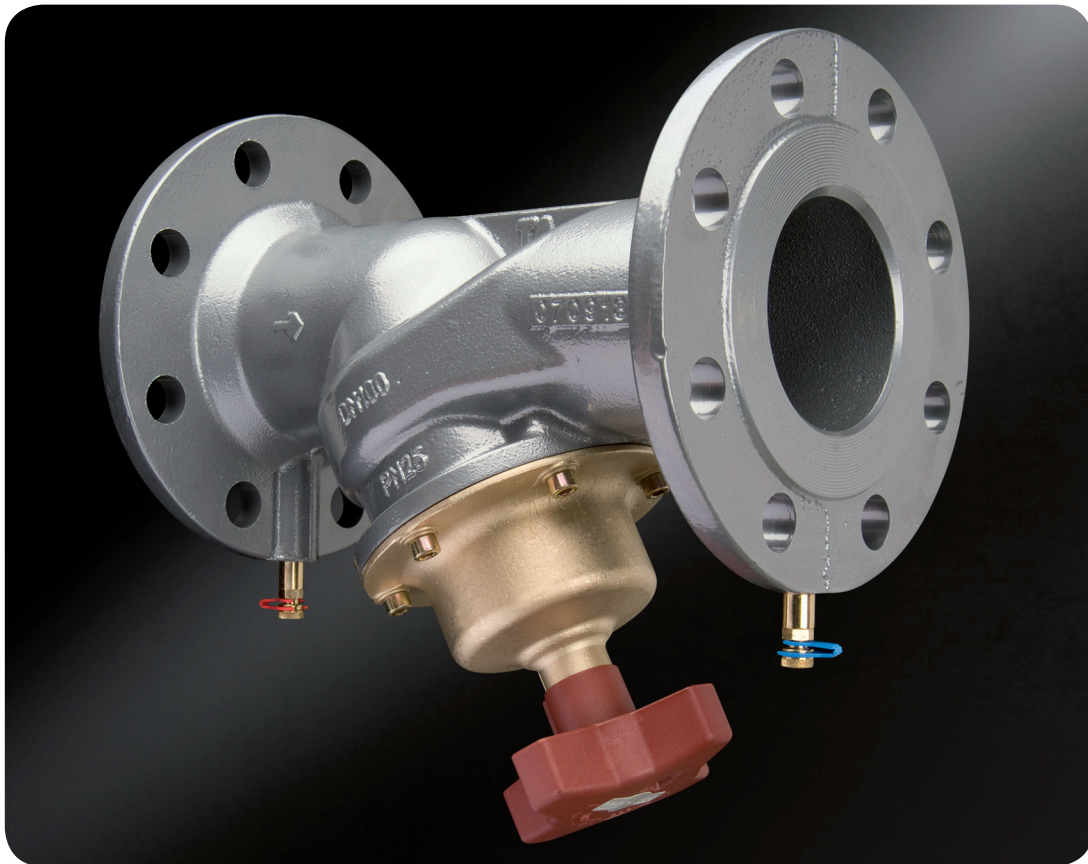


BALANCING VALVES



BALANCING VALVE – ANSI FLANGES – DUCTILE IRON

A flanged, Ductile iron balancing valve that delivers accurate hydronic performance in an impressive range of applications. The STAF-SG is ideal for use mainly on the secondary side in heating and cooling systems.



HANDWHEEL

Equipped with a digital read-out, the handwheel ensures accurate and straightforward balancing.



SELF-SEALING MEASURING POINTS

For simple, accurate balancing.



POSITIVE SHUT-OFF FUNCTION

For easy maintenance.

TECHNICAL DESCRIPTION

Application:

Heating (not steam) and cooling systems

Functions:

Balancing

Pre-setting

Measuring

Shut-off (The restriction cone for valve sizes DN 65-400 is pressure released).

Dimensions:

DN 20-400

Pressure class:

Class 150

Temperature:

Max. working temperature: 120°C

Min. working temperature: -20°C

Material:

Body: Ductile iron, EN-GJS-400-15 (~ ASTM A536 Grade 60-40-18, ISO 1083 Grade 400-15).

Bonnet: DN 20-150 AMETAL®, DN 200-400 ductile iron.

Restriction cone: DN 20-200 AMETAL®, DN 250-300 bronze, DN 350-400 silicon brass.

Spindle: AMETAL®.

Seat seal: Cone with EPDM ring.

Bonnet bolts: Chromed steel.

Handwheel: DN 20-150 polyamide, DN 200-400 aluminium.

AMETAL® is the dezincification resistant alloy of TA.

Surface treatment:

DN 20-200: Epoxy painting.

DN 250-400: Duasolid painting.

Marking:

DN 20-50: TA, PN, DN (mm), 400-15 (material) and flow direction arrow.

DN 65-400: TA, Class 150, size (inch), 60-40-18 (material), casting date and flow direction arrow.

CE-marking according to table:

Marking	STAF-SG (Class 150)
CE	DN 50-125
CE 0409*	DN 150-400

*) Notified body.

Flanges:

DN 20-50: ISO 7005-2 and EN 1092-2. Bolt circle according to Class 150 ASME/ANSI B16.42.

DN 65-400: Class 150 ASME/ANSI B16.42 (~ PN 20 according to ISO 7005-2).

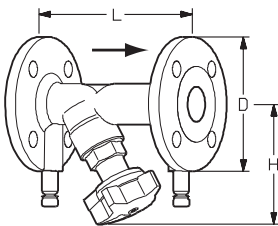
Face to face:

According to ISO 5752 series 1 and EN 558-1 series 1.



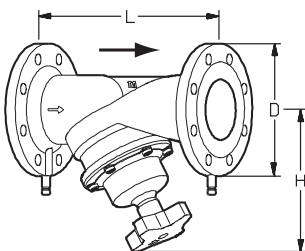
ANSI flanges

Threaded bonnet



TA No	DN	(Size)	Number of bolt holes	L	H	D	Kvs	Kg
52 182-920	20	3/4"	4	150	100	105	5.7	2.3
52 182-925	25	1"	4	160	109	115	8.7	2.9
52 182-932	32	1 1/4"	4	180	111	140	14.2	4.3
52 182-940	40	1 1/2"	4	200	122	150	19.2	5.2
52 182-950	50	2"	4	230	122	165	33	6.6

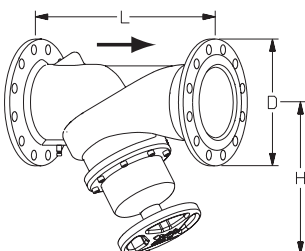
Bolted bonnet



TA No	DN	(Size)	Number of bolt holes	L	H	D	Kvs	Kg
52 182-965	65	2 1/2"	4	290	205	180	85	11
52 182-980	80	3"	4	310	220	190	120	14
52 182-990	100	4"	8	350	240	230	190	19.6
52 182-991	125	5"	8	400	275	255	300	28.1
52 182-992	150	6"	8	480	285	280	420	37.1

Bolted bonnet

Measurement points on body



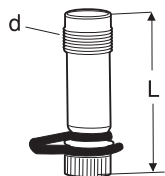
TA No	DN	(Size)	Number of bolt holes	L	H	D	Kvs	Kg
52 182-993	200	8"	8	600	430	345	765	76
52 182-994	250	10"	12	730	420	406	1185	122
52 182-995	300	12"	12	850	480	483	1450	163
52 182-996	350	14"	12	980	585	533	2200	297
52 182-997	400	16"	16	1100	640	597	2780	406

→ = Flow direction

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.

ACCESSORIES

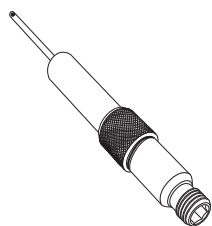
Measurement point



TA No	d	L
DN 20-50		
52 179-009	R1/4	39
52 179-609	R1/4	103
DN 65-400		
52 179-008	R3/8	39
52 179-608	R3/8	103

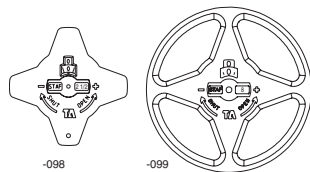
Measuring point, extension 60 mm

Can be installed without draining of the system.



TA No
52 179-006

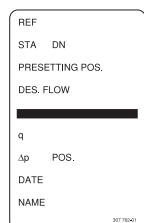
Complete digital handwheel



TA No	For DN
-	20-50
52 186-098	65-150
52 186-099	200-400

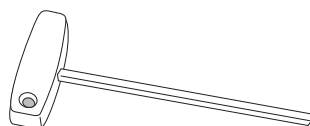
Identification tag

(incl 1 pc per valve)



TA No
52 161-990

Allen key

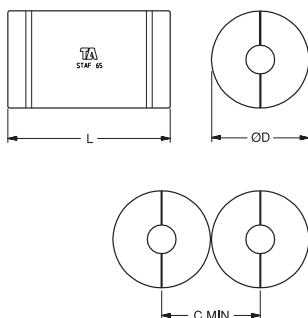


TA No	For DN	
52 187-103	3 mm	20-50
52 187-105	5 mm	65-400

Insulation

For heating/cooling

See catalogue leaflet Prefab insulations for complete details.



TA No	For DN	L	D	C
52 189-850	50	390	250	252
52 189-865	65	450	270	272
52 189-880	80	480	290	292
52 189-890	100	520	320	322
52 189-891	125	570	350	352
52 189-892	150	660	380	382

MEASURING POINTS

Measuring points are self-sealed. Remove the cap and insert the probe through the seal.

SETTING

It is possible to read the set value on the handwheel.

The number of turns between the fully open and closed positions is:

- 4 turns for DN 20-50,
- 8 turns for DN 65-150,
- 12 turns for DN 200-250,
- 16 turns for DN 300,
- 20 turns for DN 350 and
- 22 turns for DN 400.

Initial setting of a valve for a particular pressure drop, e.g. corresponding to 2.3 turns on the graph, is carried out as follows:

1. Close the valve fully (Fig. 1)
2. Open the valve to 2.3 turns (Fig. 2).
3. Using a Allen key, turn the inner spindle clockwise until stop.
4. The valve is set.

To check the setting of a valve, first close the valve, then open it to the stop position; the indicator then shows the presetting number, in this case 2.3 (Fig. 2).

Example DN 65 (2 1/2")

Fig. 1 Valve closed

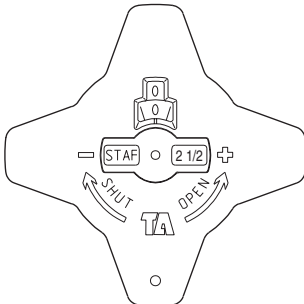
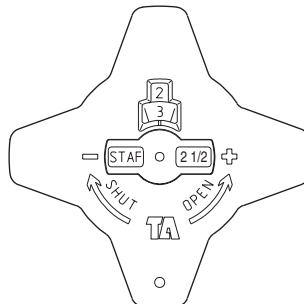


Fig. 2 The valve is set at 2.3



Example DN 200 (8")

Fig. 1 Valve closed

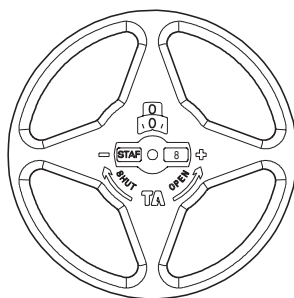
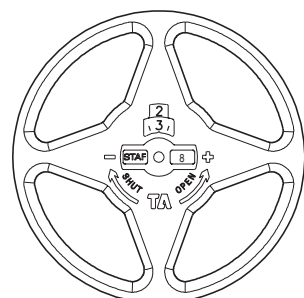


Fig. 2 The valve is set at 2.3



MEASURING ACCURACY

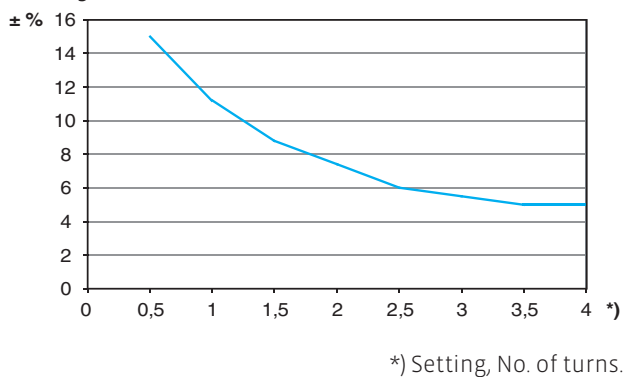
The handwheel zero position is calibrated and must not be changed.

Deviation of flow at different settings

The curves (Fig. 3) holds for valves with the correct flow direction, straight pipe distances (Fig. 4) and normal pipe fittings.

Fig. 3

DN 20-50



DN 65-400

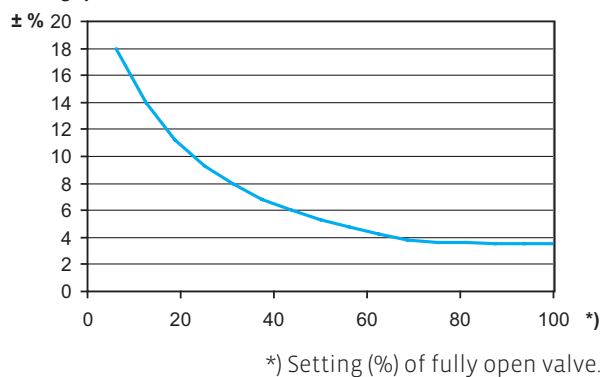
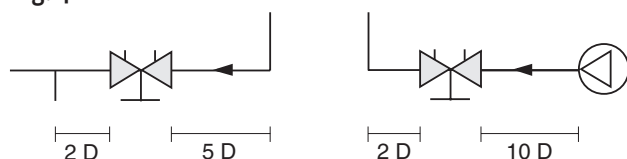


Fig. 4



CORRECTION FACTORS

The flow calculations are valid for water (+20°C). For other liquids with approx. the same viscosity as water (≤ 20 cSt = 3°E =100S.U.), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This causes a flow deviation that increases with small valves, low settings and low differential pressures. Correction for this deviation can be made with the software TA Select or direct in TA-CBI.

SIZING

When Δp and the design flow are known, use the formula to calculate the Kv-value or use the diagram.

$$K_v = 0.01 \frac{q}{\sqrt{\Delta p}} \quad q \text{ l/h, } \Delta p \text{ kPa}$$

$$K_v = 36 \frac{q}{\sqrt{\Delta p}} \quad q \text{ l/s, } \Delta p \text{ kPa}$$

KV VALUES

DN 20-50

Turns	DN 20	DN 25	DN 32	DN 40	DN 50
0.5	0,511	0,60	1,14	1,75	2,56
1	0,757	1,03	1,90	3,30	4,2
1.5	1,19	2,10	3,10	4,60	7,2
2	1,90	3,62	4,66	6,10	11,7
2.5	2,80	5,30	7,10	8,80	16,2
3	3,87	6,90	9,50	12,6	21,5
3.5	4,75	8,00	11,8	16,0	26,5
4	5,70	8,70	14,2	19,2	33

DN 65-150

Turns	DN 65-2	DN 80	DN 100	DN 125	DN 150
0.5	1,8	2	2,5	5,5	6,5
1	3,4	4	6	10,5	12
1.5	4,9	6	9	15,5	22
2	6,5	8	11,5	21,5	40
2.5	9,3	11	16	27	65
3	16,3	14	26	36	100
3.5	25,6	19,5	44	55	135
4	35,3	29	63	83	169
4.5	44,5	41	80	114	207
5	52	55	98	141	242
5.5	60,5	68	115	167	279
6	68	80	132	197	312
6.5	73	92	145	220	340
7	77	103	159	249	367
7.5	80,5	113	175	276	391
8	85	120	190	300	420

DN 200-400

Turns	DN 200	DN 250	DN 300	DN 350	DN 400
0.5	-	-	-	-	-
1	-	-	-	-	-
1.5	-	-	-	-	-
2	40	90	-	-	-
2.5	50	110	-	-	-
3	65	140	150	109	125
3.5	90	195	230	129	148
4	120	255	300	148	171
4.5	165	320	370	170	208
5	225	385	450	207	264
5.5	285	445	535	254	326
6	340	500	620	302	386
6.5	400	545	690	352	449
7	435	590	750	404	515
7.5	470	660	815	471	590
8	515	725	890	556	680
9	595	820	970	784	894
10	650	940	1040	957	1140
11	710	1050	1120	1100	1250
12	765	1185	1200	1260	1400
13	-	-	1320	1420	1560
14	-	-	1370	1610	1730
15	-	-	1400	1760	1940
16	-	-	1450	1870	2140
17	-	-	-	1960	2280
18	-	-	-	2040	2410
19	-	-	-	2130	2530
20	-	-	-	2200	2630
21	-	-	-	-	2710
22	-	-	-	-	2780

DIAGRAM EXAMPLE

Wanted:

Presetting for DN 25 at a desired flow rate of 1.8 m³/h and a pressure drop of 20 kPa.

Solution:

Draw a straight line joining 1.8 m³/h and 20 kPa. This gives Kv=4.

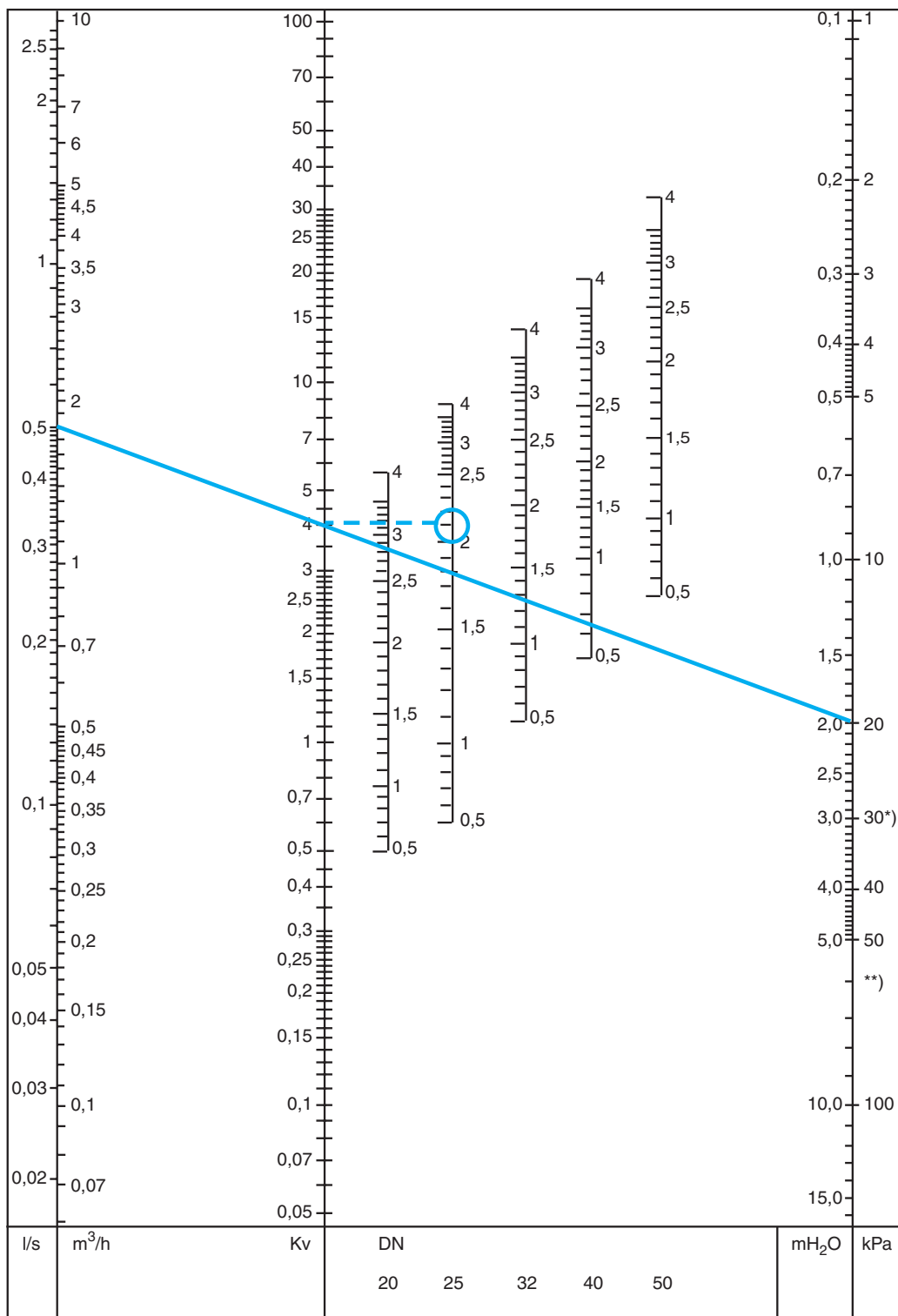
Now draw a horizontal line from Kv=4.

This intersects the bar for DN 25 at the desired presetting of 2.1 turns.

NOTE:

If the flow rate falls outside the scale in the diagram, the reading can be made as follows: Starting with the example above, we get 20 kPa, Kv = 4 and flowrate 1.8 m³/h. At 20 kPa and Kv = 0.4 we get the flow-rate 0.18 m³/h, and at Kv = 40, we get 18 m³/h. That is, for a given pressure drop, it is possible to read 10 times or 0.1 times the flow and Kv-values.

DIAGRAM DN 20-50

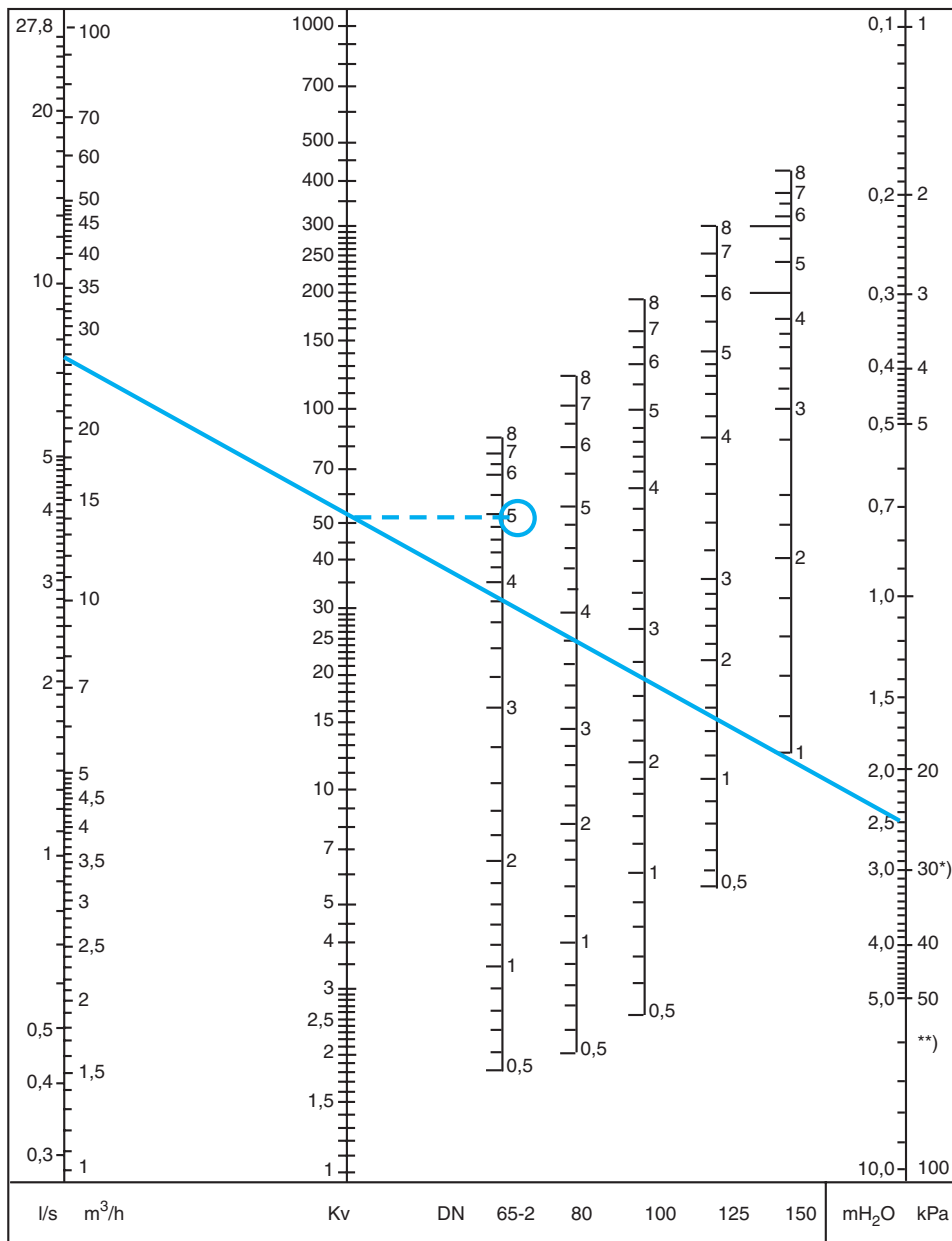


*) 25 db (A)

**) 35 db (A)

Recommended area: See Fig. 3 under "Measuring accuracy".

DIAGRAM DN 65-150

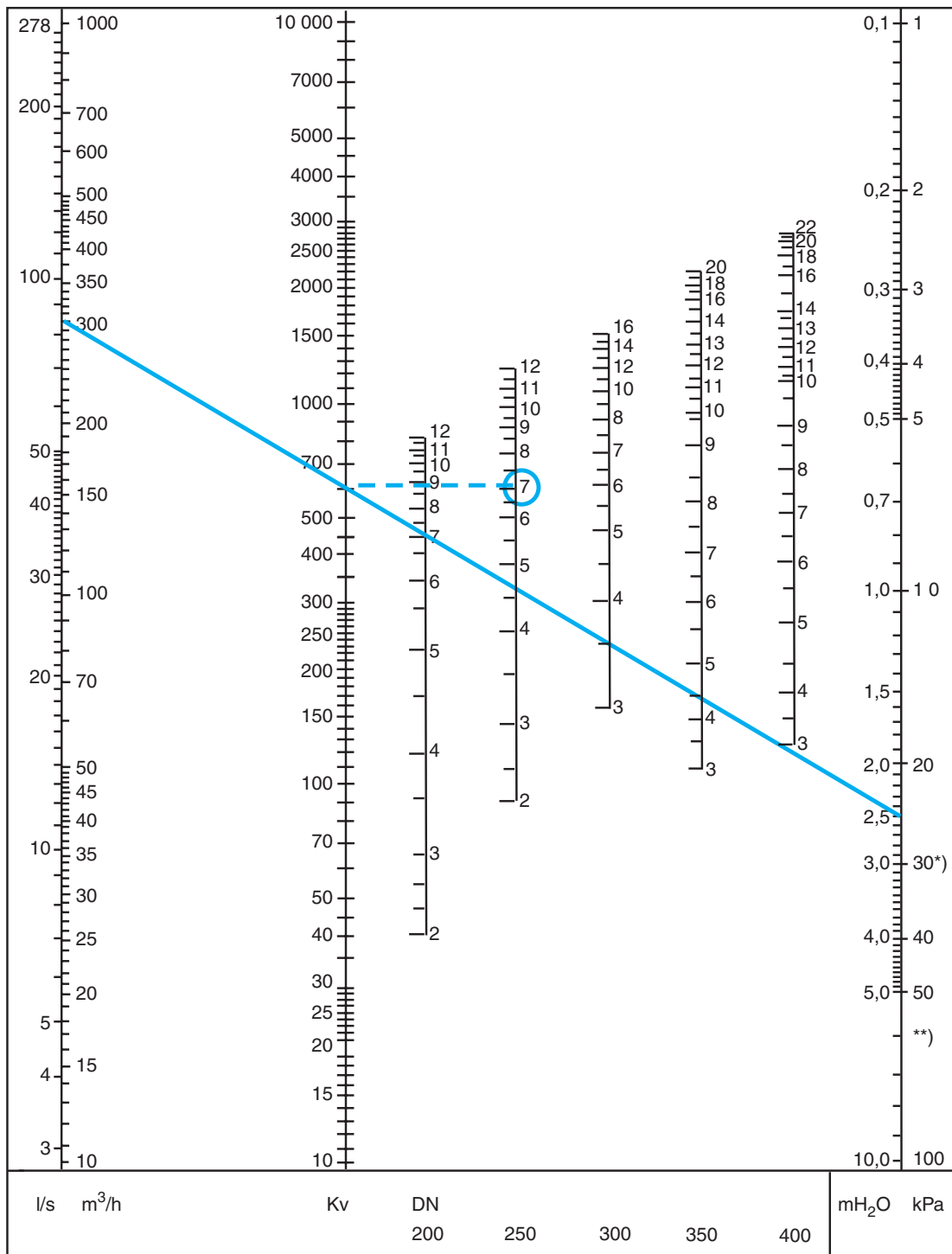


*) 25 db (A)

**) 35 db (A)

Recommended area: See Fig. 3 under "Measuring accuracy".

DIAGRAM DN 200-400



*) 25 db (A)

**) 35 db (A)

Recommended area: See Fig. 3 under "Measuring accuracy".

Tour & Andersson retains the right to make changes to its products and specifications without prior notice.

5-5-16 STAF-SG ANSI 2008.05