Technical description

Applications:
STAF, STAF-SG, STAG:
Heating and cooling systems
STAF-R:
Heating and cooling systems
Tapwater systems

Functions:
Balancing
Pre-setting
Measuring
Shut-off (The balancing cone for valve DN 65-400 is pressure released).

Pressure class:
PN 16 and PN 25 (see each product)

Temperature:
Max. working temperature: 120°C
For higher temperatures (max.150°C), please contact closest sales office.
Min. working temperature:
STAF: -10°C
STAF-SG, STAG, STAF-R: -20°C

Material:
Body:
STAF: Cast iron EN-GJL-250 (GG 25).
STAF-SG/STAG: Ductile iron EN-GJS-400-15.
STAF-R: Bronze CuSn5Zn5Pb5.
DN 20-150: Bonnet, restriction cone and spindle of AMETAL®.
DN 200-300: Bonnet of ductile iron, cone of Bronze and spindle of AMETAL®.
DN 350-400: Bonnet of ductile iron, cone of silicon brass CuZn16Si4-C (EN 1982) or brass CuZn35Pb2Al-C-GS (EN 1982) and spindle of AMETAL®.
Seat seal: Cone with EPDM ring.
Bonnet bolts: Chromed steel.
Digital handwheel: DN 20-150 are fitted with a red Polyamide plastic handwheel, DN 200-400 with a red aluminium handwheel.

AMETAL® is the dezincification resistant alloy of TA.

Surface treatment:
STAF, STAF-SG and STAG:
DN 20-200: Epoxy painting.
DN 250-400: Duasolid painting.

Marking:
STAF, STAF-SG, STAF-R:
Body: TA, PN, DN, flow direction arrow, material and casting date (year, month, day).
STAG:
Body: TA, Class 150, inch size, flow direction arrow, material and casting date (year, month, day).

CE-marking according to table.

Marking	STAF	STAF-SG (PN 16)	STAF-SG (PN 25)	STAF-R	STAG
CE	DN 65-150	DN 200	DN 50-125	DN 65-150	DN 65-125
CE 0409*		DN 250-400	DN 150-400		DN 150-300

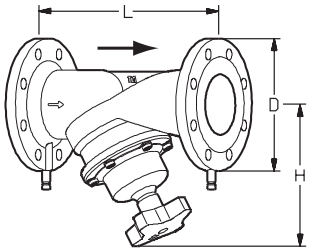
*) Registered body.

Face to face length:
ISO 5752 series 1, BS 2080 and EN 558-1 series 1.

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

STAF: Cast iron

Bolted bonnet
PN 16, ISO 7005-2, EN 1092-2



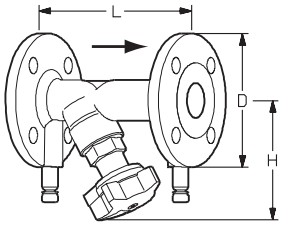
TA No	DN	*)	D	L	H	Kvs	Kg
52 181-065	65-2	4	185	290	205	85	12.4
52 181-080	80	8	200	310	220	120	15.9
52 181-090	100	8	220	350	240	190	22
52 181-091	125	8	250	400	275	300	32.7
52 181-092	150	8	285	480	285	420	42.4

*) Number of bolt holes.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

= Flow direction

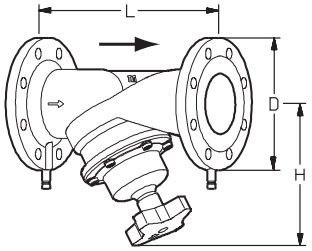
STAF-SG: Ductile iron

Threaded bonnet
PN 25, ISO 7005-2, EN 1092-2
(DN 20-50 also fit PN 16 flanges)



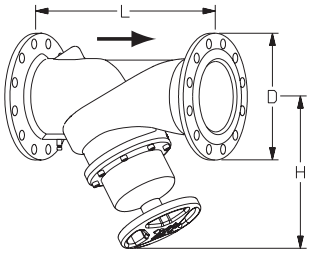
TA No	DN	*)	D	L	H	Kvs	Kg
52 182-020	20	4	105	150	100	5.7	2.3
52 182-025	25	4	115	160	109	8.7	2.9
52 182-032	32	4	140	180	111	14.2	4.3
52 182-040	40	4	150	200	122	19.2	5.2
52 182-050	50	4	165	230	122	33	6.6

Bolted bonnet
PN 25, ISO 7005-2, EN 1092-2



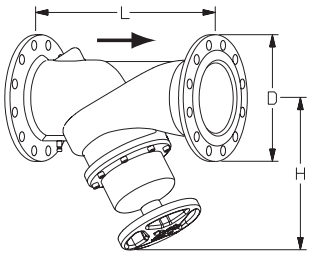
TA No	DN	*)	D	L	H	Kvs	Kg
52 182-065	65-2	8	185	290	205	85	11
52 182-080	80	8	200	310	220	120	14
52 182-090	100	8	235	350	240	190	19.6
52 182-091	125	8	270	400	275	300	28.1
52 182-092	150	8	300	480	285	420	37.1

Bolted bonnet
Measuring points on body
PN 16, ISO 7005-2, EN 1092-2



TA No	DN	*)	D	L	H	Kvs	Kg
52 181-093	200	12	360	600	430	765	76
52 181-094	250	12	425	730	420	1185	122
52 181-095	300	12	485	850	480	1450	163
52 181-096	350	16	555	980	585	2200	297
52 181-097	400	16	620	1100	640	2780	406

PN 25, ISO 7005-2, EN 1092-2



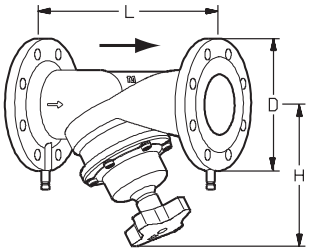
TA No	DN	*)	D	L	H	Kvs	Kg
52 182-093	200	12	360	600	430	765	76
52 182-094	250	12	425	730	420	1185	122
52 182-095	300	16	485	850	480	1450	163
52 182-096	350	16	555	980	585	2200	297
52 182-097	400	16	620	1100	640	2780	406

*) Number of bolt holes.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

= Flow direction

STAF-R: Bronze

Bolted bonnet
PN 16, ISO 7005-3, EN 1092-3



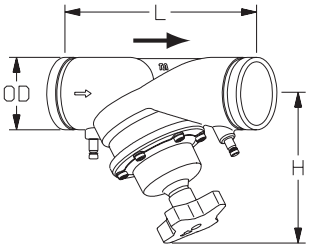
TA No	DN	*)	D	L	H	Kvs	Kg
52 181-765	65-2	4	185	290	205	85	14.3
52 181-780	80	8	200	310	220	120	18.7
52 181-790	100	8	220	350	240	190	24.6
52 181-791	125	8	250	400	275	300	36.8
52 181-792	150	8	285	480	285	420	52

*) Number of bolt holes.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

= Flow direction

STAG: Ductile iron, groove end (Victaulic)

Bolted bonnet
Measuring points on body
PN 25, ISO 4200



TA No	DN	ØD	L	H	Kvs	Kg
52 183-073	65-2	73.0	290	205	85	6.4
52 183-076	65-2	76.1	290	205	85	6.4
52 183-089	80	88.9	310	220	120	9.1
52 183-114	100	114.3	350	240	190	14
52 183-140	125	139.7	400	275	300	22.7
52 183-141	125	141.3	400	275	300	22.7
52 183-165[1]	150	165.1	480	285	420	31.3
52 183-168	150	168.3	480	285	420	31.3
52 183-219	200	219.1	600	430	765	63.5
52 183-273	250	273	730	420	1185	92
52 183-324	300	323.9	850	480	1450	127

1) Not comforming to ISO 4200.
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

= Flow direction

Example DN 65 and DN 200

Example DN 65

Fig. 1 Valve closed

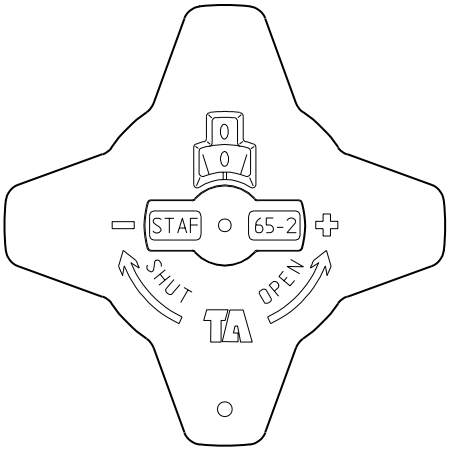
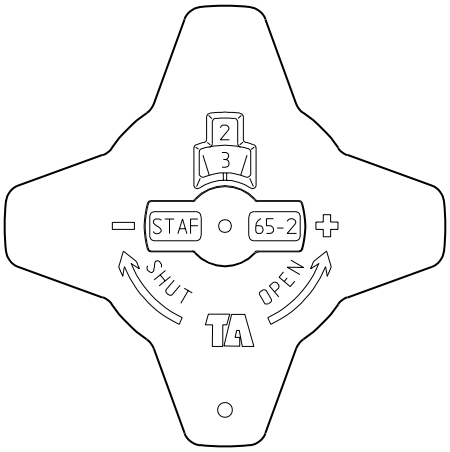


Fig. 2 The valve is set at 2.3



Example DN 200

Fig. 1 Valve closed

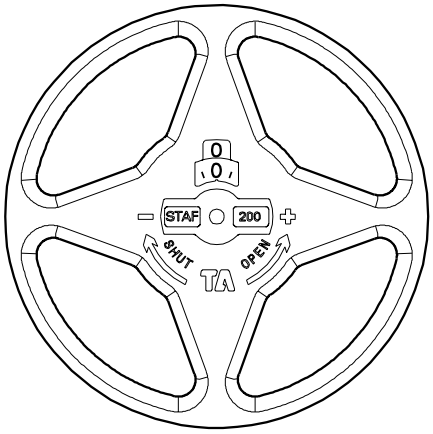
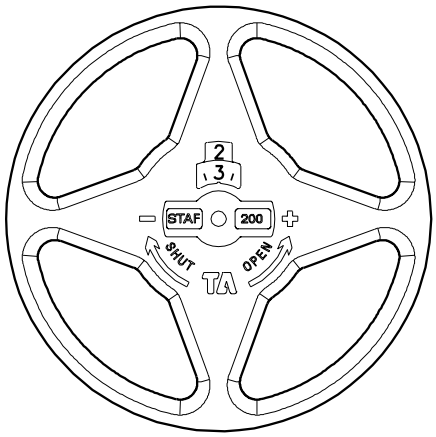


Fig. 2 The valve is set at 2.3



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.

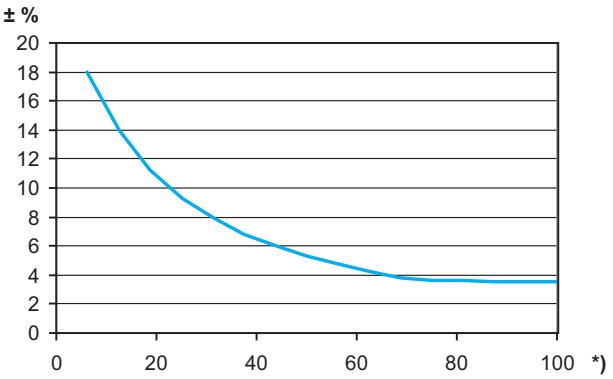
To check the setting of a valve, first close the valve, then open it to the stop position; the indicator then shows the presetting number, in this case 2.3 (Fig. 2).

Measuring accuracy

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

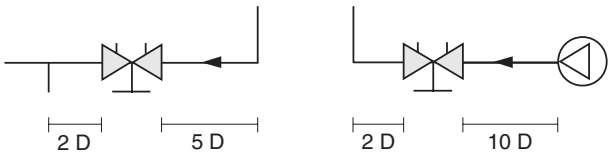
Deviation of flow at different settings
The curve (Fig. 3) holds for valves with the correct flow direction, straight pipe distances (Fig. 4) and normal pipe fittings.

Fig. 3
DN 20-400



*) Setting (%) of fully open valve.

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.

$$Kv = 0.01 \frac{q}{\sqrt{\Delta p}}$$ q l/h, Δp kPa

$$Kv = 36 \frac{q}{\sqrt{\Delta p}}$$ q l/s, Δp kPa

Support material

Software
TA Select: Makes it easy to choose the right balancing valves by taking into account the desired flow, pressure drop and flow rate.

Measuring instruments
Use the balancing instrument TA-CBI. It is programmed with valve characteristics for TA valves, enabling measured differential pressure to be read off directly as a flow rate. For further information on TA-CBI, see catalogue leaflet TA-CBI.

Conversion disc
By using the conversion disc it is easy to calculate the relationship between flow, pressure and setting values for all valve sizes.

Manuals
See the following manuals for descriptions of various balancing methods:
Total hydronic balancing
Manual no. 1: Balancing control circuits
Manual no. 2: Balancing distribution systems
Manual no. 3: Balancing of radiator systems
Manual no. 4: Hydronic balancing with differential pressure controllers

Kv values

	DN														
Pos.	20	25	32	40	50	65-2	80	100	125	150	200	250	300	350	400
0,5	0,511	0,60	1,14	1,75	2,56	1,8	2	2,5	5,5	6,5	-	-	-	-	-
1	0,757	1,03	1,90	3,30	4,2	3,4	4	6	10,5	12	-	-	-	-	-
1,5	1,19	2,10	3,10	4,60	7,2	4,9	6	9	15,5	22	-	-	-	-	-
2	1,90	3,62	4,66	6,10	11,7	6,5	8	11,5	21,5	40	40	90	-	-	-
2,5	2,80	5,30	7,10	8,80	16,2	9,3	11	16	27	65	50	110	-	-	-
3	3,87	6,90	9,50	12,6	21,5	16,3	14	26	36	100	65	140	150	109	125
3,5	4,75	8,00	11,8	16,0	26,5	25,6	19,5	44	55	135	90	195	230	129	148
4	5,70	8,70	14,2	19,2	33	35,3	29	63	83	169	120	255	300	148	171
4,5	-	-	-	-	-	44,5	41	80	114	207	165	320	370	170	208
5	-	-	-	-	-	52	55	98	141	242	225	385	450	207	264
5,5	-	-	-	-	-	60,5	68	115	167	279	285	445	535	254	326
6	-	-	-	-	-	68	80	132	197	312	340	500	620	302	386
6,5	-	-	-	-	-	73	92	145	220	340	400	545	690	352	449
7	-	-	-	-	-	77	103	159	249	367	435	590	750	404	515
7,5	-	-	-	-	-	80,5	113	175	276	391	470	660	815	471	590
8	-	-	-	-	-	85	120	190	300	420	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

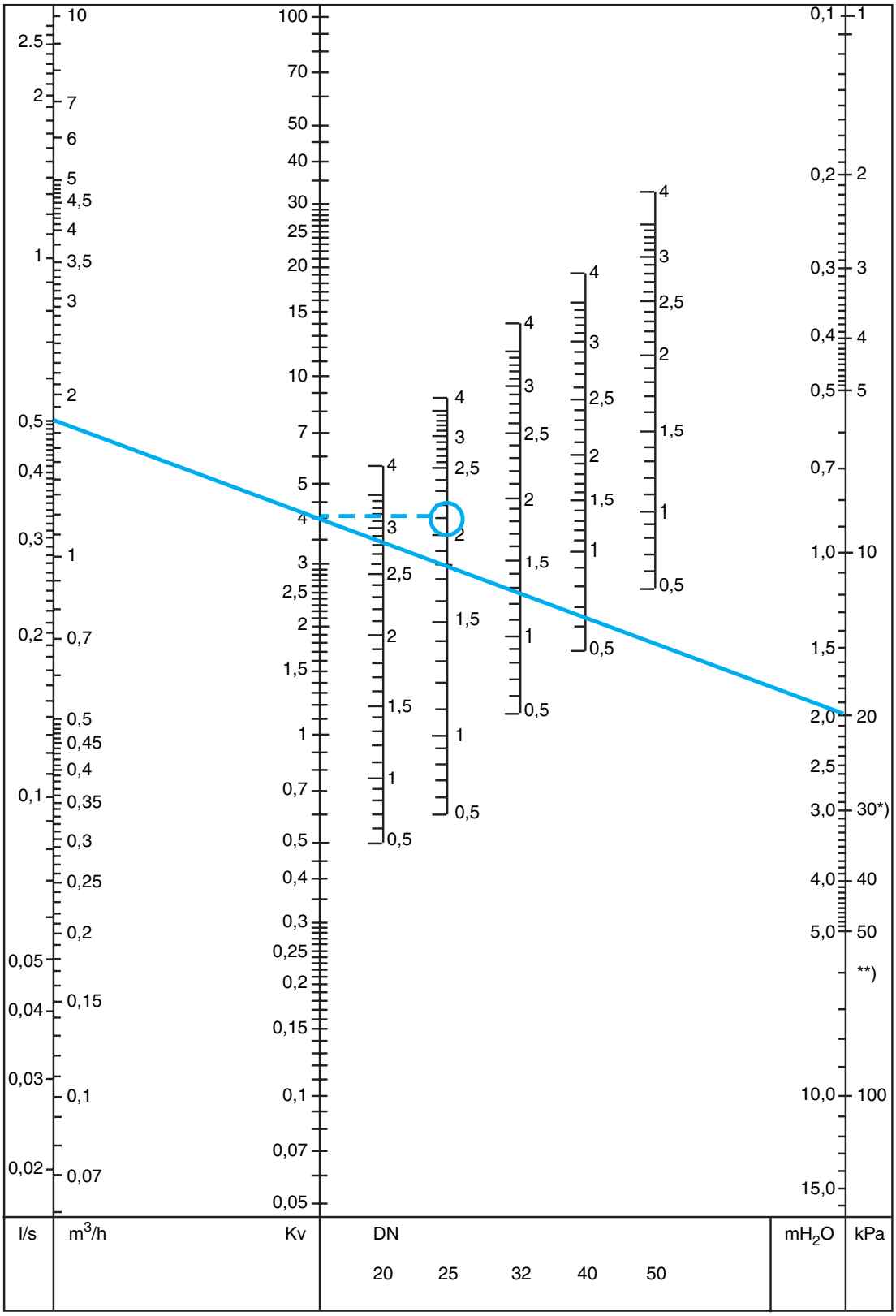
Example

Wanted:
Presetting for DN 25 at a desired flow rate of 1.8 m^3/h and a pressure drop of 20 kPa.

Solution:
Draw a straight line joining 1.8 m^3/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 m^3/h. At 20 kPa and Kv = 0.4 we get the flow-rate 0.18 m^3/h, and at Kv = 40, we get 18 m^3/h. That is, for a given pressure drop, it is possible to read 10 times or 0.1 times the flow and Kv-values.

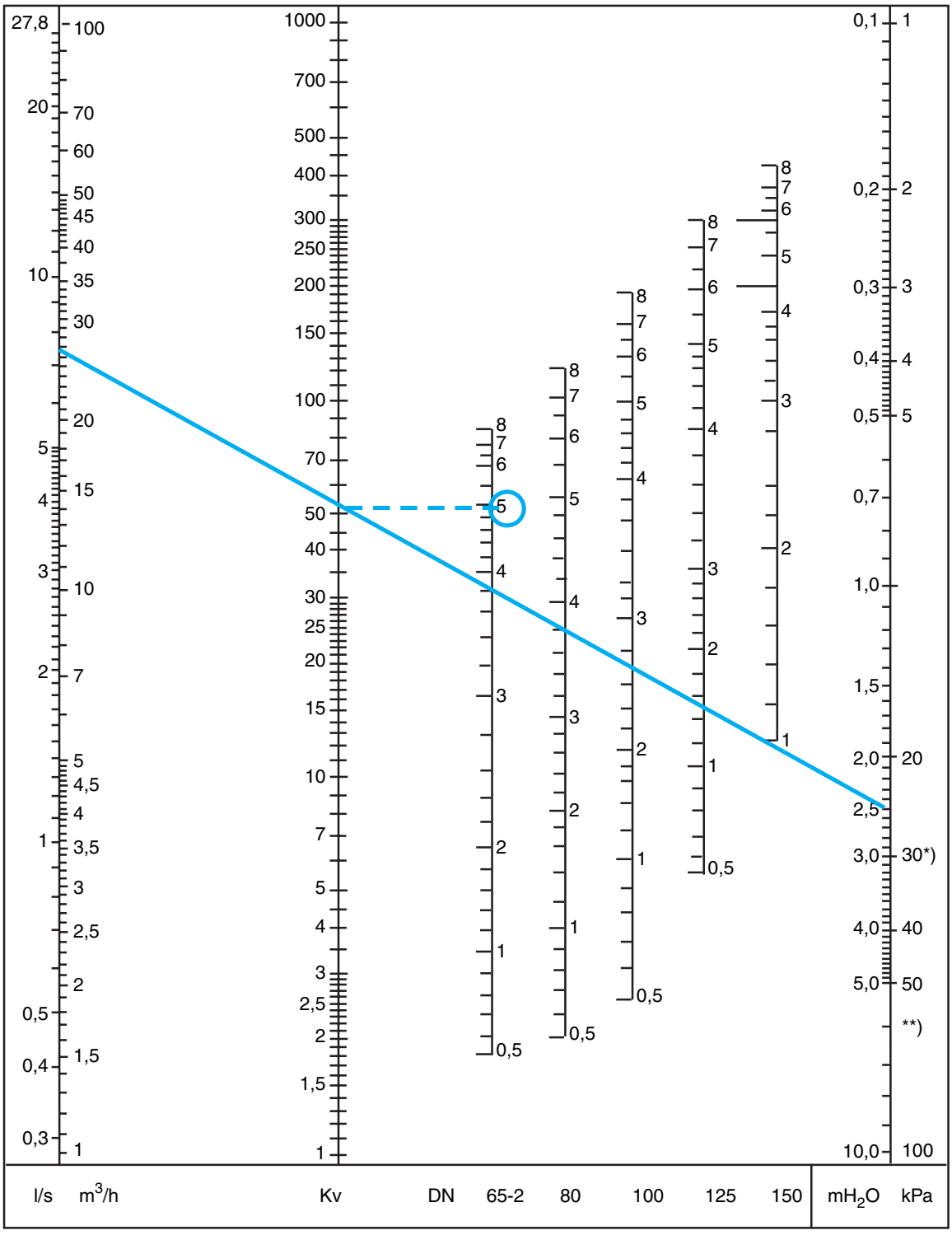
Diagram DN 20-50



*) 25 db (A)
**) 35 db (A)

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

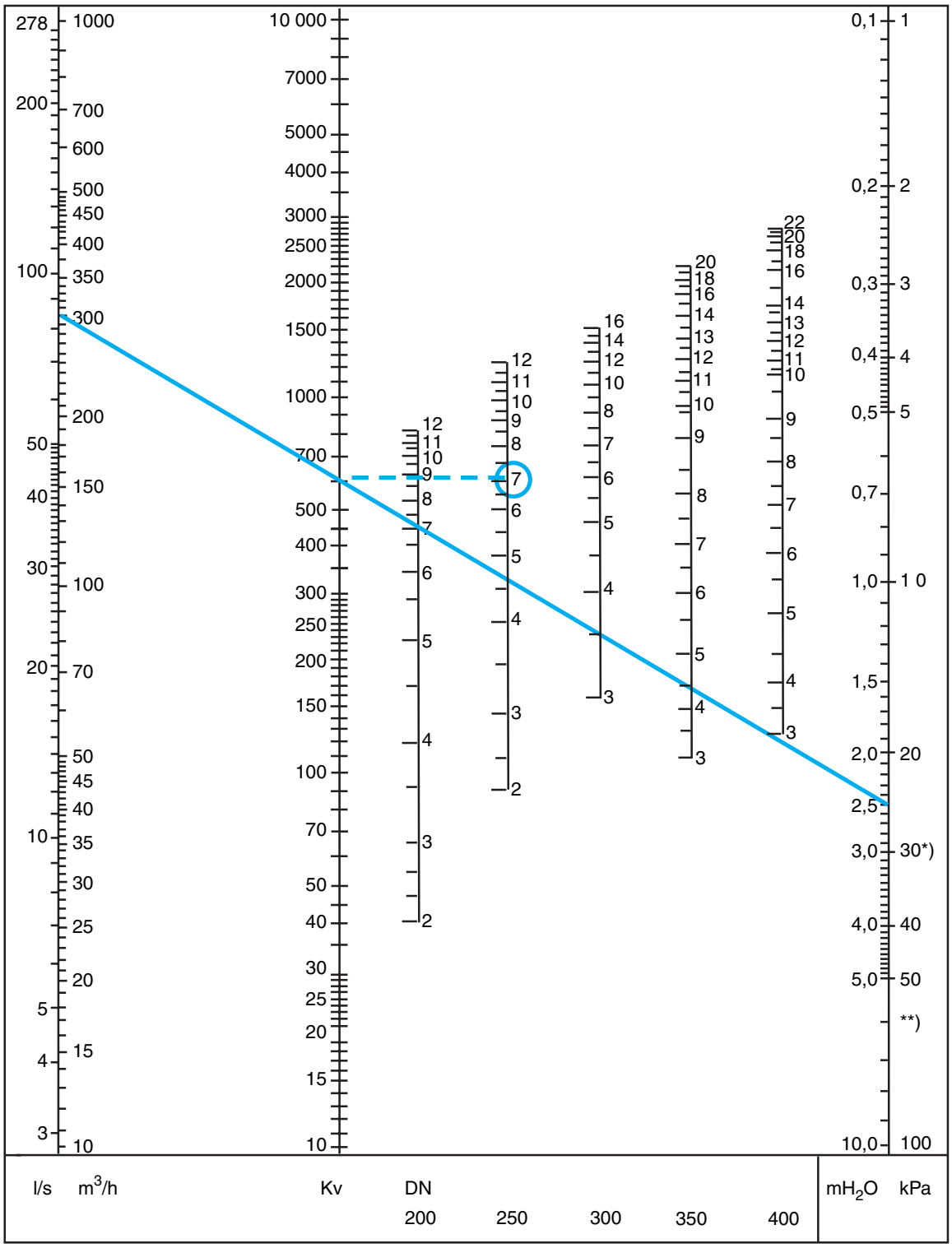
Diagram DN 65-150



*) 25 db (A)
**) 35 db (A)

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

Diagram DN 200-400

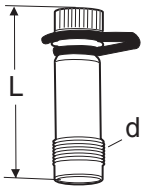


*) 25 db (A)
**) 35 db (A)

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

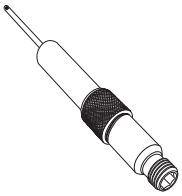
Accessories

Measuring points



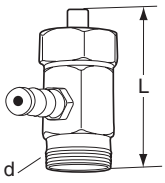
TA No	d	L
DN 20-50		
52 179-009	1/4	39
52 179-609	1/4	103
DN 65-400		
52 179-008	3/8	39
52 179-608	3/8	103

Measuring point
Extensions 60 mm (not for 52 179-000/-601).
Can be installed without draining of the system.



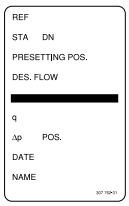
TA No
52 179-006

Measuring point
max 180°C
+ older STAD et STAF



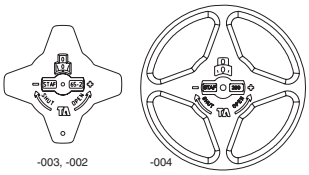
TA No	d	L
DN 20-50		
52 179-000	R1/4	30
52 179-601	R1/4	90
DN 65-400		
52 179-007	R3/8	30
52 179-607	R3/8	90

Identification tag
Incl 1 pc per valve



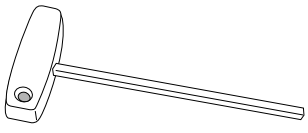
TA No
52 161-990

Handwheel
Complete



TA No	DN
52 186-003	20-50
52 186-002	65-150
52 186-004	200-400

Allen key



TA No		For DN
52 187-103	3 mm	20-50
52 187-105	5 mm	65-150
-	8 mm	200-400

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