

## BALANCING VALVES



### BALANCING VALVE

The STAD balancing valve delivers accurate hydronic performance in an impressive range of applications. Ideally suited for use on the secondary side in heating and cooling systems, and tap water systems.



### HANDWHEEL

Equipped with a digital read-out, the handwheel ensures accurate and straightforward balancing. Positive shut-off function for easy maintenance.



### SELF-SEALING MEASURING POINTS

For simple, accurate balancing.



### AMETAL® CONSTRUCTION

Dezincification resistant alloy that guarantees a longer valve lifetime, and lowers the risk of leakage.

## TECHNICAL DESCRIPTION

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### Application:

Heating and cooling systems  
Tap water systems

### Functions:

Balancing  
Pre-setting  
Measuring  
Shut-off  
Draining (optional)

### Dimensions:

DN 10-50

### Pressure class:

PN 20

### Temperature:

Max. working temperature: 120°C.  
For higher temperatures max. 150°C, please contact the nearest sales office.  
**NOTE!** DN 25-50 with smooth ends max working temperature 120°C.  
Min. working temperature: -20°C

### Material:

The valves are made of AMETAL®  
Seat seal: Stem with EPDM O-ring  
Spindle seal: EPDM O-ring  
Handwheel: Polyamide  
*Smooth ends:*  
Nipple: AMETAL®  
Sealing (DN 25-50): EPDM O-ring

AMETAL® is the dezincification resistant alloy of TA.

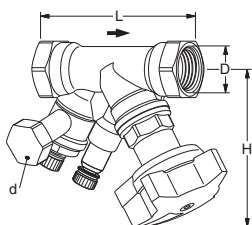
### Marking:

Body: TA, PN 20/150, DN and inch size.  
Handwheel: Valve type and DN.



## Female threads

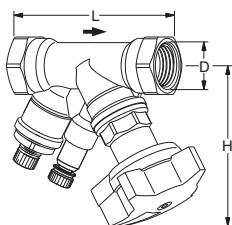
Thread according to ISO 228. Thread length according to ISO 7/1.  
With drain



TA No	TA No	DN	D	L	H	Kvs	Kg
<b>d = G1/2</b>		<b>d = G3/4</b>					
52 151-209*	52 151-609*	10/09	G3/8	83	100	1,47	0,65
52 151-214*	52 151-614*	15/14	G1/2	90	100	2,52	0,68
52 151-220*	52 151-620*	20	G3/4	97	100	5,70	0,77
52 151-225	52 151-625	25	G1	110	105	8,70	0,93
52 151-232	52 151-632	32	G1 1/4	124	110	14,2	1,3
52 151-240	52 151-640	40	G1 1/2	130	120	19,2	1,6
52 151-250	52 151-650	50	G2	155	120	33,0	2,4

## Female threads

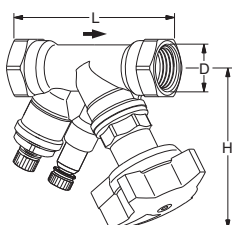
Thread according to ISO 228. Thread length according to ISO 7/1.  
Without drain (can be installed during operation)



TA No	DN	D	L	H	Kvs	Kg
52 151-009*	10/09	G3/8	83	100	1,47	0,58
52 151-014*	15/14	G1/2	90	100	2,52	0,62
52 151-020*	20	G3/4	97	100	5,70	0,72
52 151-025	25	G1	110	105	8,70	0,88
52 151-032	32	G1 1/4	124	110	14,2	1,2
52 151-040	40	G1 1/2	130	120	19,2	1,4
52 151-050	50	G2	155	120	33,0	2,3

## Female threads

Thread according to ISO 7 (≈BS 21)  
Without drain (can be installed during operation)



TA No	DN	D	L	H	Kvs	Kg
52 251-014	15/14	Rc1/2	90	100	2,52	0,62
52 251-020	20	Rc3/4	97	100	5,70	0,72
52 251-025	25	Rc1	110	105	8,70	0,88
52 251-032	32	Rc1 1/4	124	110	14,2	1,2
52 251-040	40	Rc1 1/2	130	120	19,2	1,4
52 251-050	50	Rc2	155	120	33,0	2,3

→ = Flow direction

Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

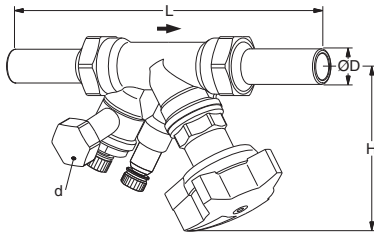
\*) Can be connected to smooth pipes by KOMBI compression coupling. See catalogue leaflet KOMBI.

# STAD

## BALANCING

### Smooth ends

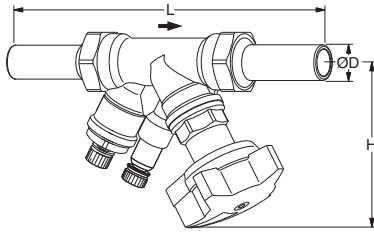
With drain



TA No	TA No	DN	D	L	H	Kvs	Kg
<b>d = G1/2</b>		<b>d = G3/4</b>					
52 451-209	52 451-609	10/09	12	141	100	1,47	0,71
52 451-214	52 451-614	15/14	15	154	100	2,52	0,78
52 451-220	52 451-620	20	22	179	100	5,70	0,93
52 451-225	52 451-625	25	28	208	105	8,70	1,2
52 451-232	52 451-632	32	35	233	110	14,2	1,7
52 451-240	52 451-640	40	42	260	120	19,2	2,1
52 451-250	52 451-650	50	54	305	120	33,0	3,2

### Smooth ends

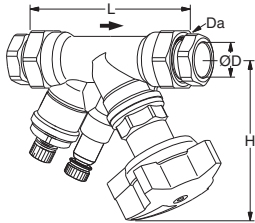
Without drain (can be installed during operation)



TA No	DN	D	L	H	Kvs	Kg
52 451-009	10/09	12	141	100	1,47	0,64
52 451-014	15/14	15	154	100	2,52	0,72
52 451-020	20	22	179	100	5,70	0,88
52 451-025	25	28	208	105	8,70	1,1
52 451-032	32	35	233	110	14,2	1,6
52 451-040	40	42	260	120	19,2	1,9
52 451-050	50	54	305	120	33,0	3,1

### With KOMBI compression couplings (not mounted)

Without drain (can be installed during operation)

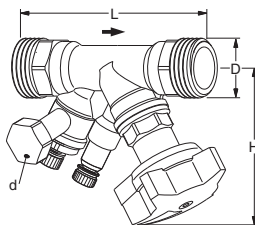


TA No	DN	Da	D	L	H	Kvs	Kg
52 151-314	15/14	G1/2	12 mm x 2 / 15 mm x 2	90	100	2,52	0,76
52 151-320	20	G3/4	18 mm x 2 / 22 mm x 2	97	100	5,70	0,96

### Male threads (STADA)

Thread length according to DIN 3546

With drain



TA No	TA No	DN	D	L	H	Kvs	Kg
<b>d = G1/2</b>		<b>d = G3/4</b>					
52 152-209	52 152-609	10/09	G1/2	105	100	1,47	0,70
52 152-214	52 152-614	15/14	G3/4	114	100	2,52	0,73
52 152-220	52 152-620	20	G1	125	100	5,70	0,88
52 152-225	52 152-625	25	G1 1/4	142	105	8,70	1,2
52 152-232	52 152-632	32	G1 1/2	160	110	14,2	1,6
52 152-240	52 152-640	40	G2	170	120	19,2	2,2
52 152-250	52 152-650	50	G2 1/2	200	120	33,0	3,3

→ = Flow direction

Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

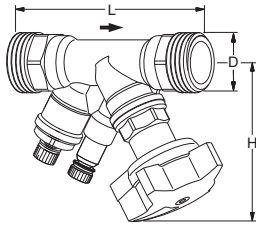
*we knowhow*

**TA**

## Male threads (STADA)

Thread length according to DIN 3546

Without drain (can be installed during operation)



TA No	DN	D	L	H	Kvs	Kg
52 152-009	10/09	G1/2	105	100	1,47	0,61
52 152-014	15/14	G3/4	114	100	2,52	0,66
52 152-020	20	G1	125	100	5,70	0,81
52 152-025	25	G1 1/4	142	105	8,70	1,1
52 152-032	32	G1 1/2	160	110	14,2	1,5
52 152-040	40	G2	170	120	19,2	2,1
52 152-050	50	G2 1/2	200	120	33,0	3,2

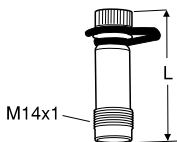
→ = Flow direction

Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

## ACCESSORIES

### Measuring points

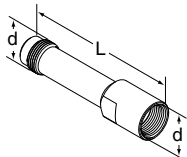
Max 120°C (intermittent 150°C)



TA No	L
52 179-014	44
52 179-015	103

### Extension for measuring point M14x1

Suitable when insulation is used.

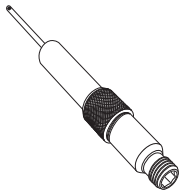


TA No	d	L
52 179-016	M14x1	71

### Measuring point

Extensions 60 mm (not for 52 179-000/-601)

Can be installed without draining of the system.

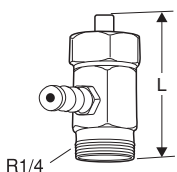


TA No
52 179-006

### Measuring point

For older STAD and STAF

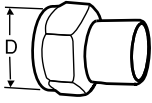
Max 150°C



TA No	L
52 179-000	30
52 179-601	90

### Welding connection

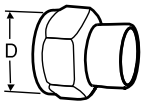
Max 120°C



TA No	Valve DN	D	Pipe DN
52 009-010	10	G1/2	10
52 009-015	15	G3/4	15
52 009-020	20	G1	20
52 009-025	25	G1 1/4	25
52 009-032	32	G1 1/2	32
52 009-040	40	G2	40
52 009-050	50	G2 1/2	50

### Soldering connection

Max 120°C

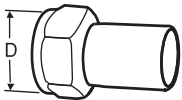


TA No	Valve DN	D	Pipe Ø
52 009-510	10	G1/2	10
52 009-512	10	G1/2	12
52 009-515	15	G3/4	15
52 009-516	15	G3/4	16
52 009-518	20	G1	18
52 009-522	20	G1	22
52 009-528	25	G1 1/4	28
52 009-535	32	G1 1/2	35
52 009-542	40	G2	42
52 009-554	50	G2 1/2	54

### Connection with smooth end

For connection with press coupling

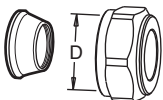
Max 120°C



TA No	Valve DN	D	Pipe DN
52 009-312	10	G1/2	12
52 009-315	15	G3/4	15
52 009-318	20	G1	18
52 009-322	20	G1	22
52 009-328	25	G1 1/4	28
52 009-335	32	G1 1/2	35
52 009-342	40	G2	42
52 009-354	50	G2 1/2	54

### Compression connection

Max 100°C

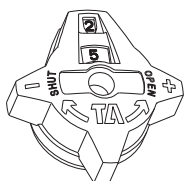


TA No	Valve DN	D	Pipe Ø
53 319-208	10	G1/2	8
53 319-210	10	G1/2	10
53 319-212	10	G1/2	12
53 319-215	10	G1/2	15
53 319-216	10	G1/2	16
53 319-615	15	G3/4	15
53 319-618	15	G3/4	18
53 319-622	15	G3/4	22
53 319-922	20	G1	22
53 319-928	20	G1	28

Support bushes shall be used, for more information see catalogue leaflet FPL.

## Handwheel

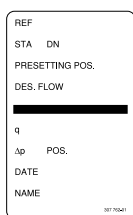
Complete



TA No
52 186-003

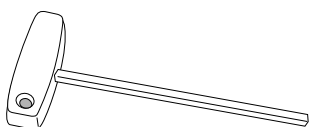
## Identification tag

Incl 1 pc per valve



TA No
52 161-990

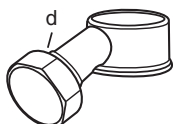
## Allen key



TA No		
52 187-103	3 mm	Pre-setting
52 187-105	5 mm	Draining

## Draining kit

Can be installed during operation

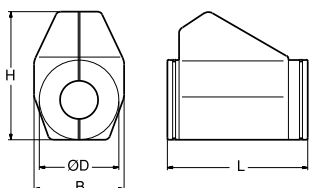


TA No	d
52 179-990	G1/2
52 179-996	G3/4

## Insulation

For heating/cooling

See catalogue leaflet Prefab insulations for complete details.



TA No	For DN	L	H	D	B
52 189-615	10, 15, 20	155	135	90	103
52 189-625	25	175	142	94	103
52 189-632	32	195	156	106	103
52 189-640	40	214	169	108	113
52 189-650	50	245	178	108	114

## MEASURING POINTS

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

## DRAINING

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Valves with draining for G $\frac{1}{2}$  or G $\frac{3}{4}$  hose connection.

Valves without draining have a sleeve. This sleeve can temporarily be removed and a draining kit is fitted, which is available as an accessory.

## SETTING

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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 2.3 turns (Fig. 2).
3. Using a 3 mm Allen key, turn the inner spindle clockwise until stop.
4. The valve is now set.

To check the setting: Close the valve, the indicator shows 0.0. Open it to the stop position. The indicator then shows the set value, in this case 2.3 (Fig. 2).

Diagrams showing the pressure drop for each valve size at different settings and flow rates are available to help determine the correct valve size and pre-setting (pressure drop).

Four turns corresponds to fully opened valve (Fig. 3). Opening it further will not increase the capacity.

**Fig. 1**

Valve closed



**Fig. 2**

The valve is set at 2.3



**Fig. 3**

Fully open valve





## MEASURING ACCURACY

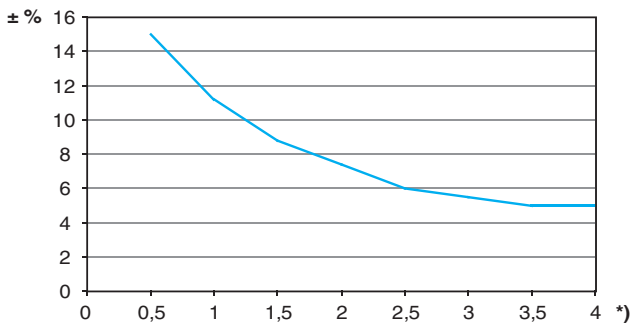
The zero position is calibrated and must not be changed.

### Deviation of flow at different settings

The curve (Fig. 4) is valid for valves with normal pipe fittings (Fig. 5). Try also to avoid mounting taps and pumps, immediately before the valve.

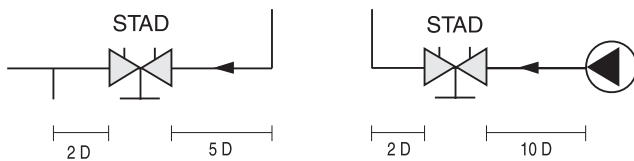
The valve can be installed with the opposite flow direction. The specified flow details are also valid for this direction although tolerances can be greater (maximum 5% more).

Fig. 4



\*) Setting, No. of turns.

Fig. 5



## CORRECTION FACTORS

The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water ( $\leq 20 \text{ cSt} = 3^\circ\text{E} = 100\text{S.U.}$ ), 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 directly in TA-CBI.

## SIZING

When  $\Delta p$  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

Turns	DN 10/09	DN 15/14	DN 20	DN 25	DN 32	DN 40	DN 50
0.5	-	0.127	0.511	0.60	1.14	1.75	2.56
1	0.090	0.212	0.757	1.03	1.90	3.30	4.20
1.5	0.137	0.314	1.19	2.10	3.10	4.60	7.20
2	0.260	0.571	1.90	3.62	4.66	6.10	11.7
2.5	0.480	0.877	2.80	5.30	7.10	8.80	16.2
3	0.826	1.38	3.87	6.90	9.50	12.6	21.5
3.5	1.26	1.98	4.75	8.00	11.8	16.0	26.5
4	1.47	2.52	5.70	8.70	14.2	19.2	33.0

## DIAGRAM EXAMPLE

### Wanted:

Presetting for DN 25 at a desired flow rate of 1,6 m<sup>3</sup>/h and a pressure drop of 10 kPa.

### Solution:

Draw a straight line joining 1,6 m<sup>3</sup>/h and 10 kPa. This gives Kv=5. Now draw a horizontal line from Kv=5. This intersects the bar for DN 25 which gives 2,35 turns.

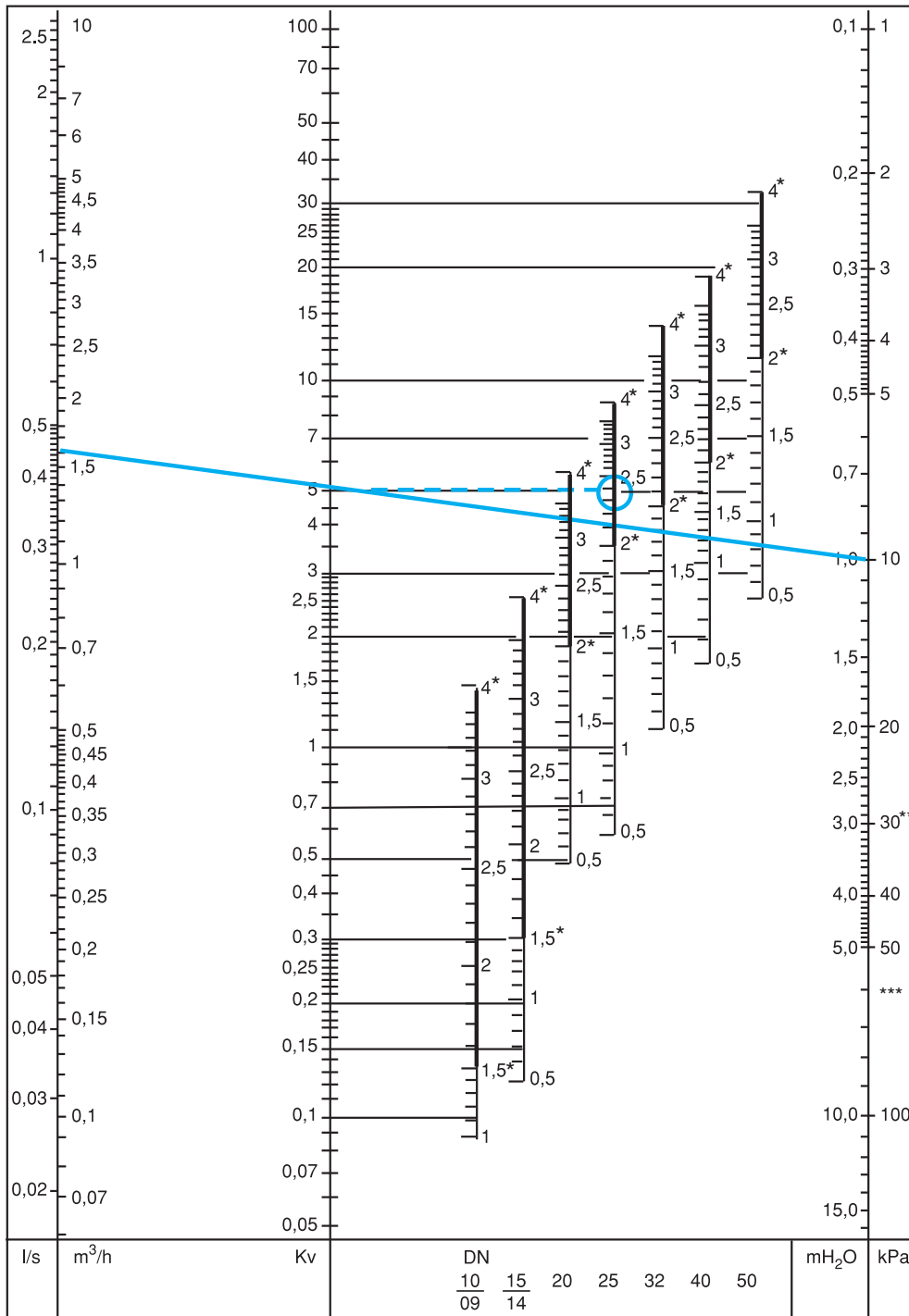
### NOTE:

If the flow rate is out of the scale in the diagram, the reading can be made as follows:

Starting with the example above, we get 10 kPa, Kv=5 and flow-rate 1.6 m<sup>3</sup>/h.

At 10 kPa and Kv=0,5 we get the flow-rate 0,16 m<sup>3</sup>/h, and at Kv=50, we get 16 m<sup>3</sup>/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



\*) Recommended area

\*\*) 25 db (A)

\*\*\*) 35 db (A)

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5-5-10 STAD 2008.11

