BALLOREX® S

- Static Balancing Valves

BROEN

BALLOREX® S – DN 10 - 50

Application

BALLOREX® S valves are combined balancing and isolation valves for heating, cooling and potable water systems. The valves are used for balancing of main risers and terminal units i.e. radiators. BALLOREX® S standard valves are used for potable water, heating systems, cooling and air conditioning systems.

BALLOREX® S is available in non-dezincifiable brass.

Function

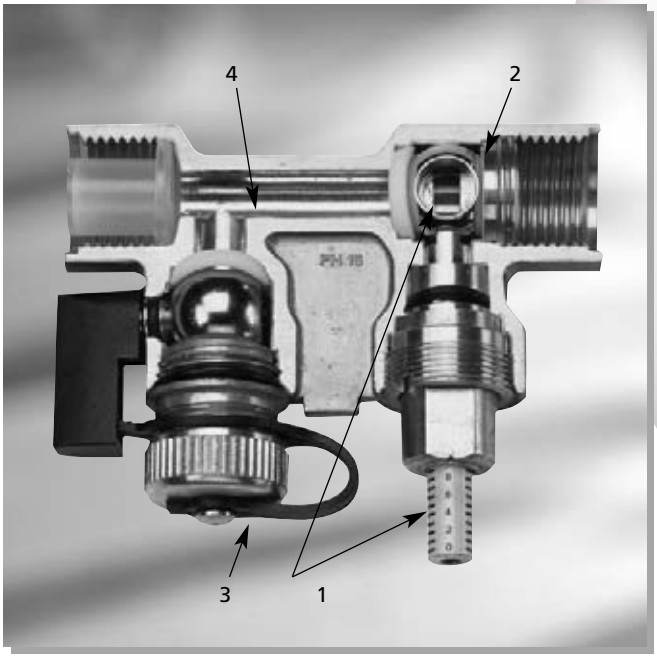
BALLOREX® S combines four different functions:

1. **Balancing**
   The regulation needle is installed within the isolation ball valve. To regulate the flow the needle is moved up or down to achieve the required flow. A scale on the side of the needle indicates the set position.
   The regulation needle works independently of the isolation ball valve. Therefore when isolating using the ball valve, the flow setting is not altered.

2. **Isolation**
   The valve can be used as isolation valve.
   The isolation function has no affect on the setting of the regulating needle.

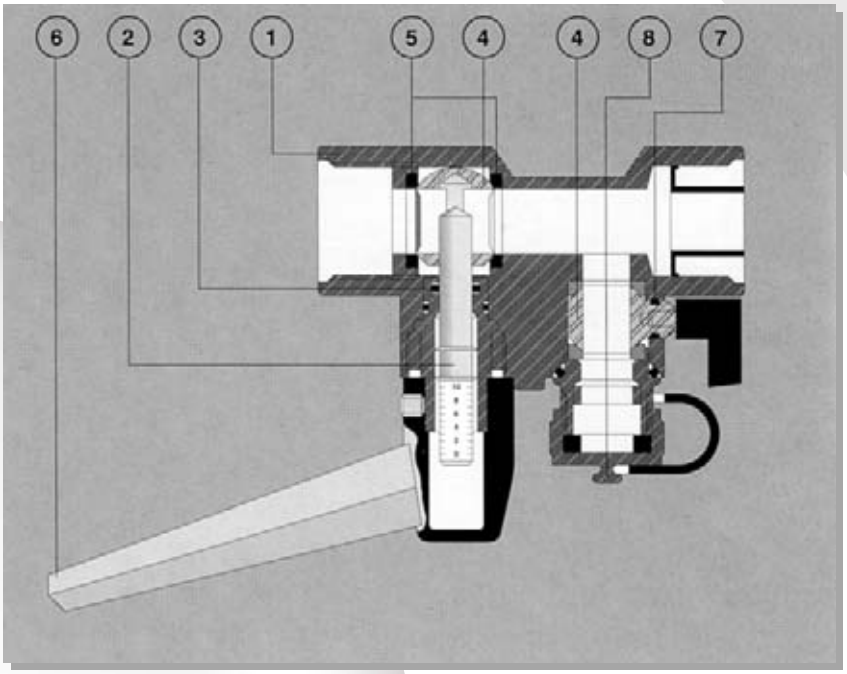
3. **Draining**
   The valve can be used for draining. This is carried out through the measuring port.

4. **Flow and temperature measuring**
   The flow through the valve can be measured in l/s or m3/h by means of the flowmeter. This is inserted through the drain port.



BALLOREX® S – DN 10 - 50

Construction



Specification of materials

1	Valve body	brass	EN12165 CW602N
2	Regulation needle	chrome coated brass*	EN12164 CW614N
3	O-ring		EPDM
4	Isolation ball	chrome coated brass*	EN12164 CW614N
5	Gasket	Teflon	PTFE
6	Handle	glass filled nylon	PA 6
7	O-ring		EPDM
8	Measuring/ draining valve	brass	EN12164 CW614N

**) For aggressive media made in non-dezincifiable brass (EN12164 CW602N).*

Data

Minimum media temperature:	-10°C
Minimum cooling media temperature:	-35°C*
Maximum media temperature:	135°C
Maximum working pressure:	16 bar = 1,6 MPa

Division of adjustment screw:	DN 10-25	0 - 10
	DN 32	0 - 18
	DN 40	0 - 20
	DN 50	0 - 18

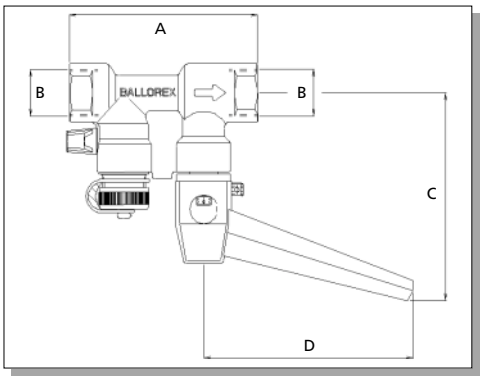
Pre-setting is determined by means of the table of rating, page 11.

**) Depends on cooling media.*

BALLOREX® S – DN 10 - 50

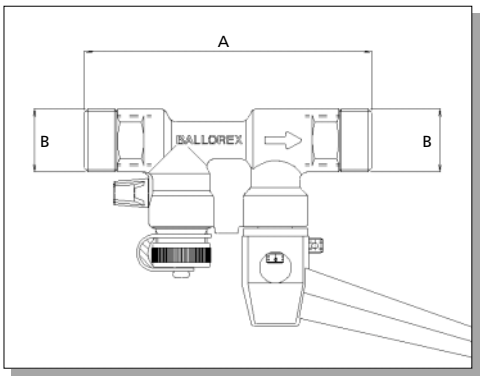
Ordering no. and installation dimensions

All dimensions in mm



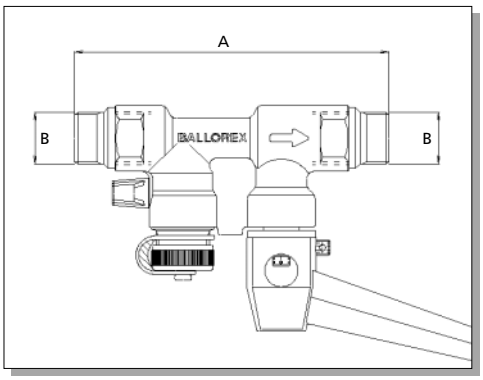
Female

DN	A	B	C	D	Ordering no.	K_{VS}
10	96	G 3⁄8"	94	100	3215000-005001	1,8
15	90	G 1⁄2"	94	100	3315000-005001*	1,8
20	95	G 3⁄4"	95	100	3415000-005001*	4,7
25	105	G 1"	97	100	3515000-005001*	7,3
32	115	G 1¼"	147	170	3615000-005001*	11,3
40	125	G 1½"	150	170	3715000-005001*	18,4
50	155	G 2"	155	170	3815000-005001*	24,8



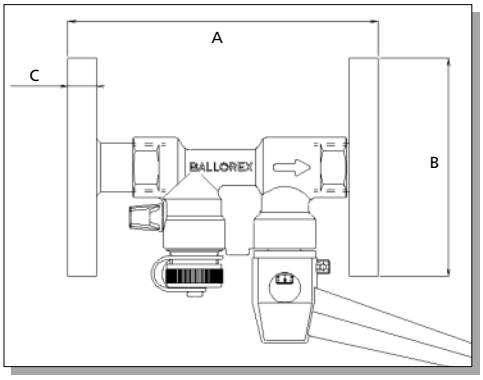
Flat thread

DN	A	B	D	Ordering no.	K_{VS}
15	116	G 3⁄4"	100	3315400-005001	1,8
20	119	G 1"	100	3415400-005001	4,7
25	133	G 1¼"	100	3515400-005001	7,3
32	143	G 1½"	170	3615400-005001	11,3
40	159	G 1¾"	170	3715400-005001	18,4
50	195	G 2⅜"	170	3815400-005001	24,8



Male

DN	A	B	D	Ordering no.	K_{VS}
10	119	G ⅜"	100	3215300-005001	1,8
15	121	G ½"	100	3315300-005001	1,8
20	129	G ¾"	100	3415300-005001	4,7
25	141	G 1"	100	3515300-005001	7,3
32	160	G 1¼"	170	3615300-005001	11,3
40	170	G 1½"	170	3715300-005001	18,4
50	207	G 2"	170	3815300-005001	24,8



Flange (all flanges are with 4-bolt holes)

DN	A	B	C	D	Ordering no.	K_{VS}
15	130	95	12	100	3315200-005005	1,8
20	150	105	14	100	3415200-005005	4,7
25	160	115	14	100	3515200-005005	7,3
32	180	140	16	170	3615200-005005	11,3
40	200	150	16	170	3715200-005005	18,4
50	230	165	18	170	3815200-005005	24,8

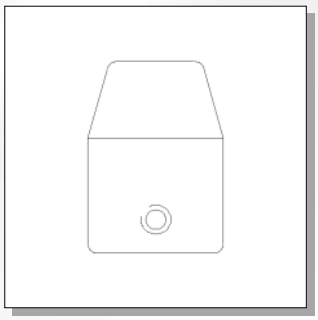
**) When ordering valves of non-dezincifiable brass the first digit in the Ordering no. must be changed from 3 to 4 - f.ex. Ordering no. 3315000-005001 must be changed into Ordering no. 4315000-005001.*

BALLOREX® S – DN 10 - 50

Accessories

Protection cover

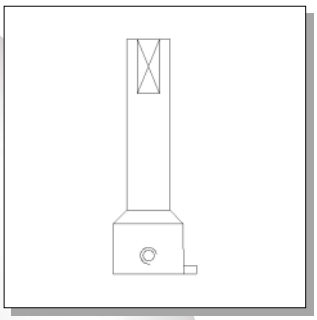
The protection cover is used as sealing of the shutting off function.



Dimension DN	Ordering no.
10-25	3315027-000005
32-50	3615027-000005

Extended spindle

When the insulation cover is used for DN 10 to DN 50, an extended spindle can be fitted to enable valve to be used for shut off operation without removing the insulation covers.



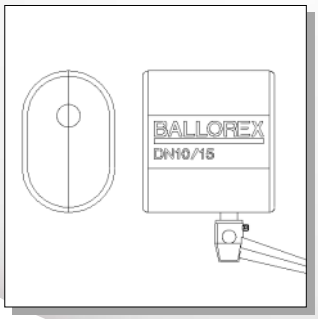
Dimension DN	Ordering no.
10-25	3315029-000005
32-50	3615029-000005

Insulation cover

To be used to minimise the thermal loss from the valve to the environments:

Min. temperature:	- 20°C
Max. temperature:	125°C
Thermal conductivity:	0,023 W/m°C

The insulation cap consists of 2 cups which are placed around the valve. The cups are assembled with an Allen-key to be mounted into the small hole next to the handle.



Dimension DN	Ordering no.
10/15	3315050-000005
20	3415050-000005
25	3515050-000005
32	3615050-000005
40	3715050-000005
50	3815050-000005

Additional accessories

- Allen-key*
- Handle, short
- Handle, long*
- Regulating needle
- Regulating needle tool
- Pins (DN 65-150)*
- Pointed screw (DN 65-150)*
- Installation instructions*

**) delivered with the valve as standard.*

BALLOREX® S – DN 65 - 300

Application

BALLOREX® S valves are combined balancing and isolation valves for heating and cooling systems.

The valves are used for balancing of main risers and terminal units i.e. radiators. BALLOREX® S standard valves are used for heating systems, cooling and air conditioning systems.

Function

BALLOREX® S combines four different functions:

1. **Balancing**

   DN 65-150
   The regulation needle is installed within the isolation ball valve. To regulate the flow the needle is moved up or down to achieve the required flow. A scale on the side of the needle indicates the set position. The regulation needle works independently of the isolation ball valve. Therefore when isolating using the ball valve, the flow setting is not altered.

   DN 200-300
   The setting of the butterfly valve determines the flow through the valve. Any isolation affects the setting. The setting is read on the gear box.

2. **Isolation**

   DN 65-150
   The valve can be used as isolation valve. The isolation function has no affect on the setting of the regulating needle.

   DN 200-300
   The butterfly valve can be used as isolation valve. The isolation affects the setting.

3. **Draining**

   DN 65-300
   The valve can be used for draining. This is carried out through the measuring port.

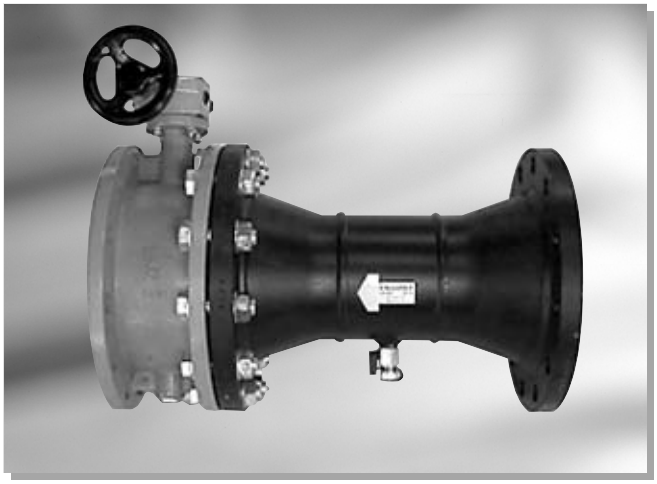
4. **Flow and temperature measuring**

   DN 65-300
   The flow through the valve can be measured in l/s or m^3/h by means of the flowmeter. This is inserted through the drain port.

DN 65-150 with welding ends

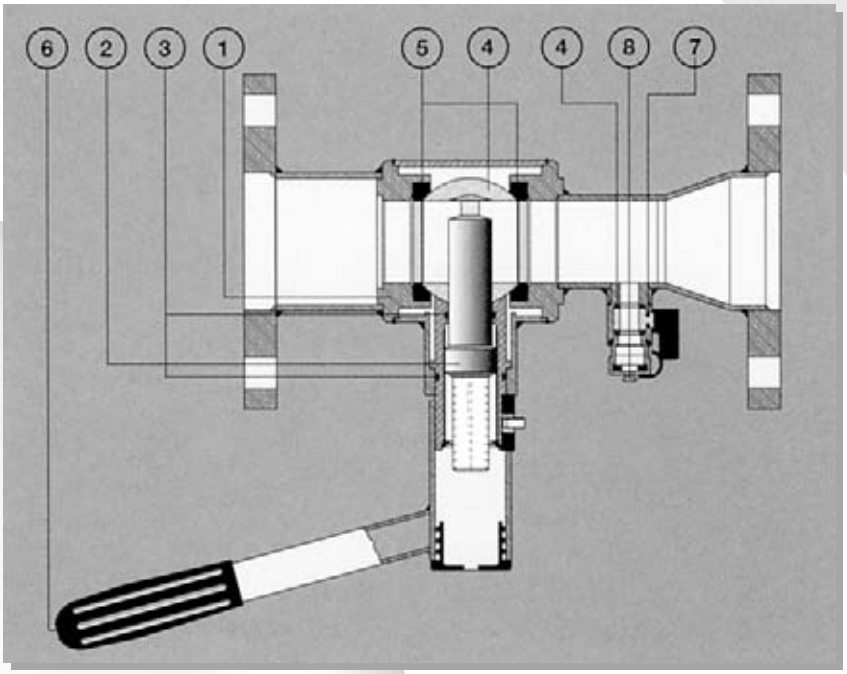
DN 65-150 with flange mounting

DN 200-300 with flange mounting



BALLOREX® S – DN 65 - 150

Construction



Specification of materials

1	Valve body	surface treated steel	St 37,0
2	Regulation needle	chrome coated brass	EN12164 CW614N
3	O-ring		EPDM
4	Isolation ball	chrome coated brass	EN12164 CW614N
5	Gasket	Teflon	PTFE
6	Handle	surface treated steel	St 37,0
7	O-ring		EPDM
8	Measuring/ draining valve	brass	EN12164 CW614N

Data

Minimum media temperature:	-10°C
Minimum cooling media temperature:	-35°C*
Maximum media temperature:	110°C
Maximum working pressure:	16 bar = 1,6 MPa

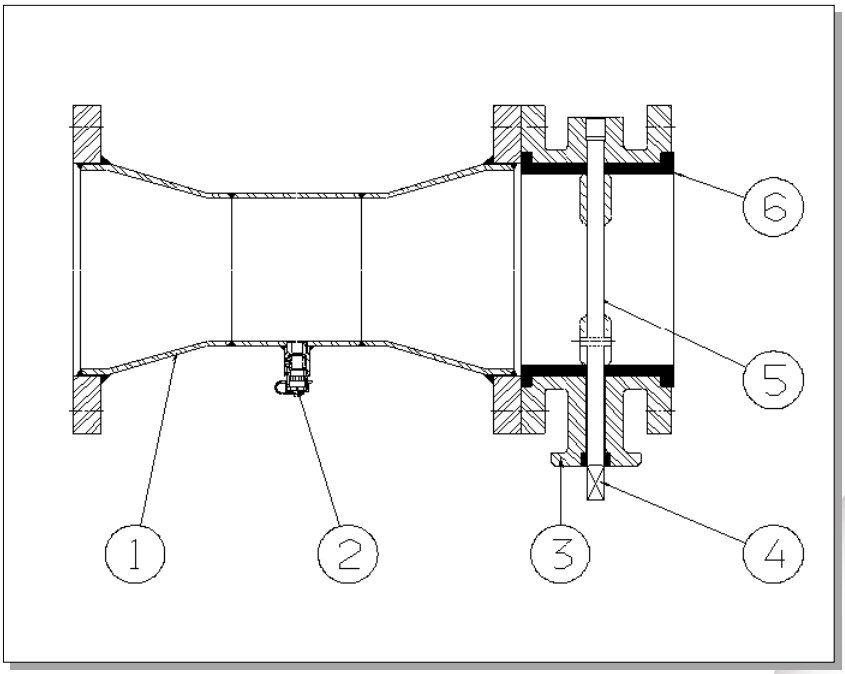
Division of adjustment screw:	DN 65	0 -30
	DN 80	0 - 27
	DN 100	0 - 24
	DN 125	0 - 24
	DN 150	0 - 29

Pre-setting is determined by means of the table of rating, page 12.

**) Depends on cooling media.*

BALLOREX® S – DN 200 - 300

Construction



Specification of materials

1	Valve housing/Pipe	surface treated steel	St 37,0
2	Measuring/draining valve	brass	EN12164 CW614N
3	Butterfly valve body	cast iron	GGG40
4	Spindle	stainless steel	AISI 304
5	Disc	stainless steel	AISI 304
6	Seat		EPDM

Data

Minimum media temperature:	-10°C	
Maximum media temperature:	110°C	
Maximum working pressure:	16 bar = 1,6 MPa	
The number of turns between the fully open and closed position:	DN 200	0 - 7
	DN 250	0 -10
	DN 300	0 -10

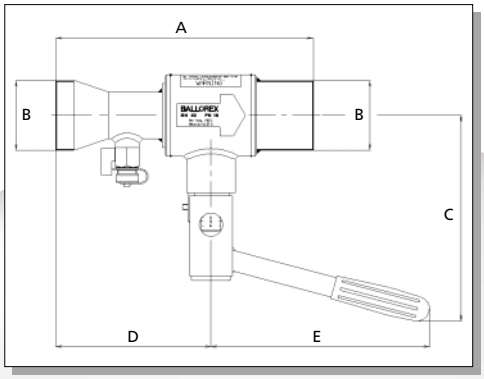
The butterfly valve can be adjusted in 10° steps.
Fully open means 90° turn of the valve disc.

Pre-setting is determined by means of the table of rating, page 13.

BALLOREX® S – DN 65 - 300

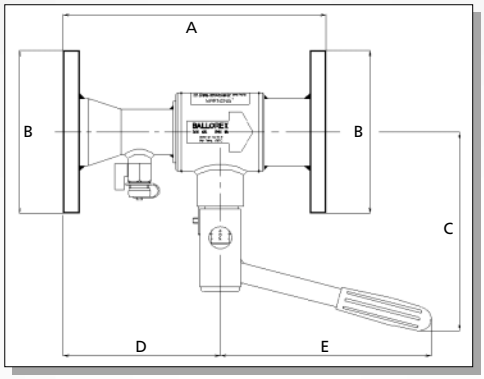
Ordering no. and installation dimensions

All dimensions in mm



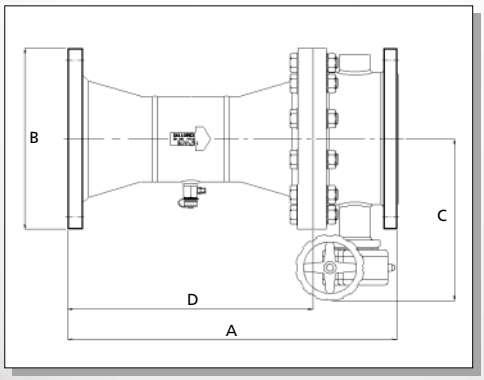
Welding

DN	A	B	C	D	E	Ordering no.	K_{VS}
65	274	76	227	165	234	3915000-605005	50
80	294	89	256	180	237	3925000-605005	87
100	334	114	282	209	242	3935000-605005	150
125	383	140	282	284	242	3935300-605005	150
150	462	168	445	298	540	3935500-605005	335



Flange mounting

DN	A	B	C	D	E	Flange holes	Ordering no.	K_{VS}
65	290	185	227	173	234	4	3915100-605005	50
80	310	200	256	188	237	8	3925100-605005	87
100	350	220	282	217	242	8	3935100-605005	150
125	400	250	282	242	242	8	3935400-605005	150
150	480	285	445	307	540	8	3935600-605005	335



Flange mounting

DN	A	B	C	D	Flange holes	Ordering no.	K_{VS}
200	600	340	295	448	12	3935800-605009	1568
250	730	405	355	565	12	3936000-605009	1600
300	850	460	410	672	12	3936200-605009	3165

BALLOREX® S – DN 10 - 50

Dimensioning of the valve

If the water flow (Q) through the valve and the pressure drop (Δp) over the valve are known, the Kv-value of the valve can be calculated according to the Kv-formular:

$$K_v = 36 \times \frac{Q\ [l/s]}{\sqrt{\Delta p}\ [kPa]}\ [m^3/h] \quad or \quad K_v = 10 \times \frac{Q\ [m^3/h]}{\sqrt{\Delta p}\ [kPa]}\ [m^3/h]$$

From this the valve size and the setting can be selected from the table on this page detailing valve flow rates. As an alternative the water flow and the pressure drop can be filled in the Kv-graph on the pages 11 through 13.

Example Given: Water flow (Q) = 1,3 m³/h
Pressure drop (Δp) = 16 kPa
Wanted: Valve size and setting

Fill in the two values in the graph on page 11 and connect the dots with a line. The readings of the value is 3,3 m³/h. From this dot draw a horizontal line that intersects the adjusting scale from DN 20 to DN 50. Select the smallest valve size or the one that fits the pipe size and read the setting. In this case: select DN 20 with setting 7,1.

Valve capacity (Kv)

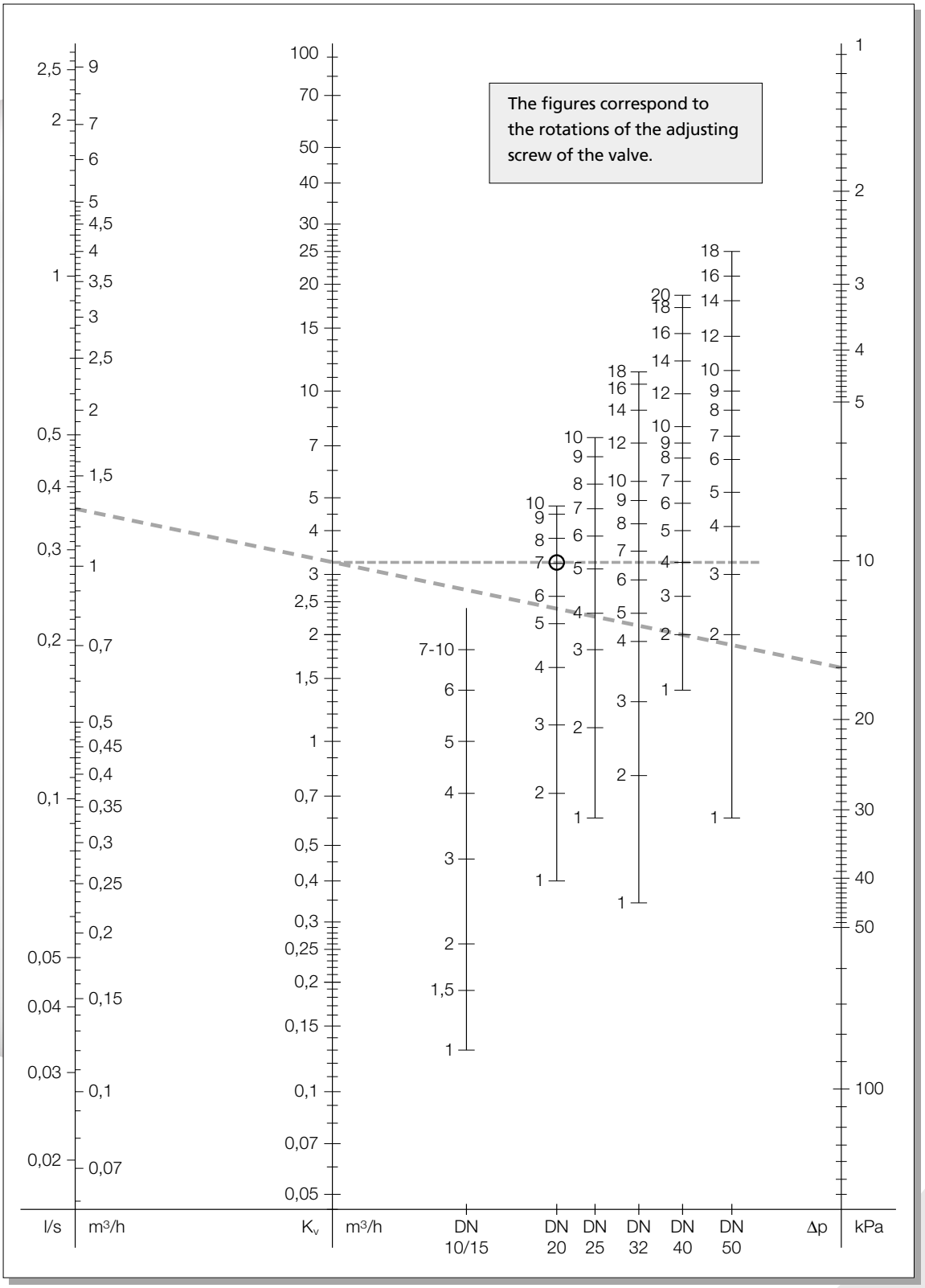
Nominal diameter DN Values stated in m³/h

Number of rotations on the adjustment screw	10/15	20	25	32	40	50	65	80	100/125	150
1	0,13	0,39	0,57	0,34	1,40	0,59	1,20	2,50	5,00	25
2	0,26	0,73	1,10	0,77	2,00	1,90	2,50	5,20	9,00	35
3	0,46	1,10	1,80	1,30	2,60	3,00	3,90	7,40	12,0	44
4	0,72	1,60	2,30	1,90	3,30	4,10	5,10	9,50	16,0	52
5	1,00	2,20	3,10	2,30	4,10	5,30	6,50	11,0	20,0	60
6	1,40	2,60	3,90	2,90	4,80	6,40	7,60	14,0	24,0	67
7	1,80	3,20	4,70	3,50	5,60	7,50	8,50	16,0	29,0	76
8	1,80	3,80	5,60	4,20	6,40	8,80	10,0	18,0	33,0	83
9	1,80	4,50	6,50	4,90	7,20	10,1	11,0	20,0	37,0	93
10	1,80	4,70	7,30	5,60	8,10	11,4	13,0	22,0	42,0	102
11	—	—	—	6,30	9,00	12,8	14,0	25,0	46,0	112
12	—	—	—	7,10	10,1	14,3	15,0	28,0	52,0	120
13	—	—	—	8,00	11,1	15,9	16,0	31,0	58,0	130
14	—	—	—	8,80	12,2	17,6	18,0	34,0	64,0	138
15	—	—	—	9,70	13,4	19,4	20,0	36,0	72,0	150
16	—	—	—	10,6	14,6	21,1	21,0	39,0	80,0	160
17	—	—	—	11,3	15,8	22,9	23,0	42,0	88,0	174
18	—	—	—	11,3	17,1	24,8	25,0	46,0	96,0	186
19	—	—	—	—	17,1	—	27,0	49,0	105,0	200
20	—	—	—	—	18,4	—	29,0	52,0	110,0	211
21	—	—	—	—	—	—	30,0	56,0	120,0	225
22	—	—	—	—	—	—	32,0	60,0	130,0	237
23	—	—	—	—	—	—	34,0	64,0	140,0	251
24	—	—	—	—	—	—	36,0	69,0	150,0	264
25	—	—	—	—	—	—	38,0	75,0	—	279
26	—	—	—	—	—	—	40,0	80,0	—	292
27	—	—	—	—	—	—	43,0	87,0	—	307
28	—	—	—	—	—	—	45,0	—	—	320
29	—	—	—	—	—	—	48,0	—	—	335
30	—	—	—	—	—	—	50,0	—	—	—

Presumption
Δp = 1 bar
Ambient temperature = 20°C

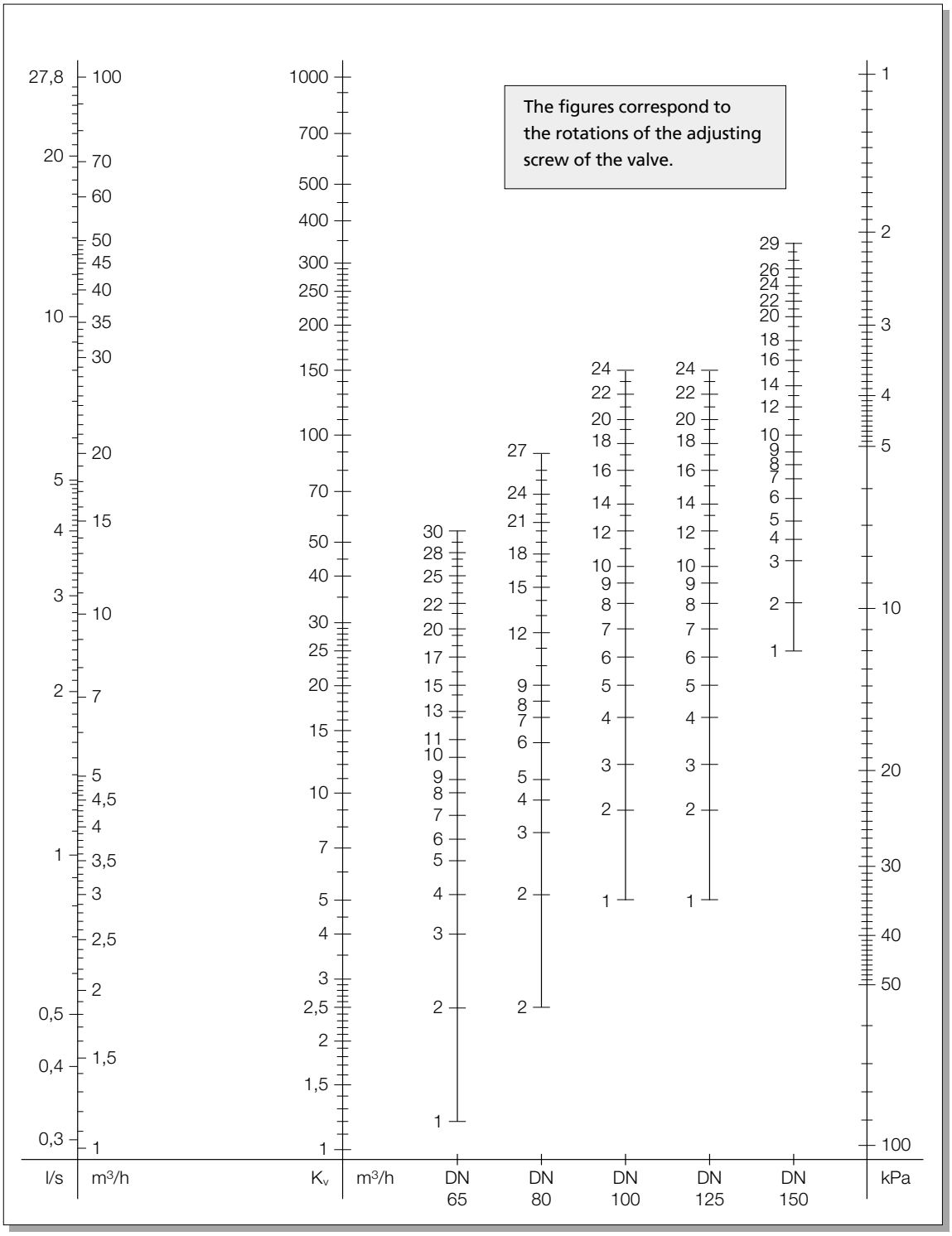
BALLOREX® S – DN 10 - 50

Rating graph



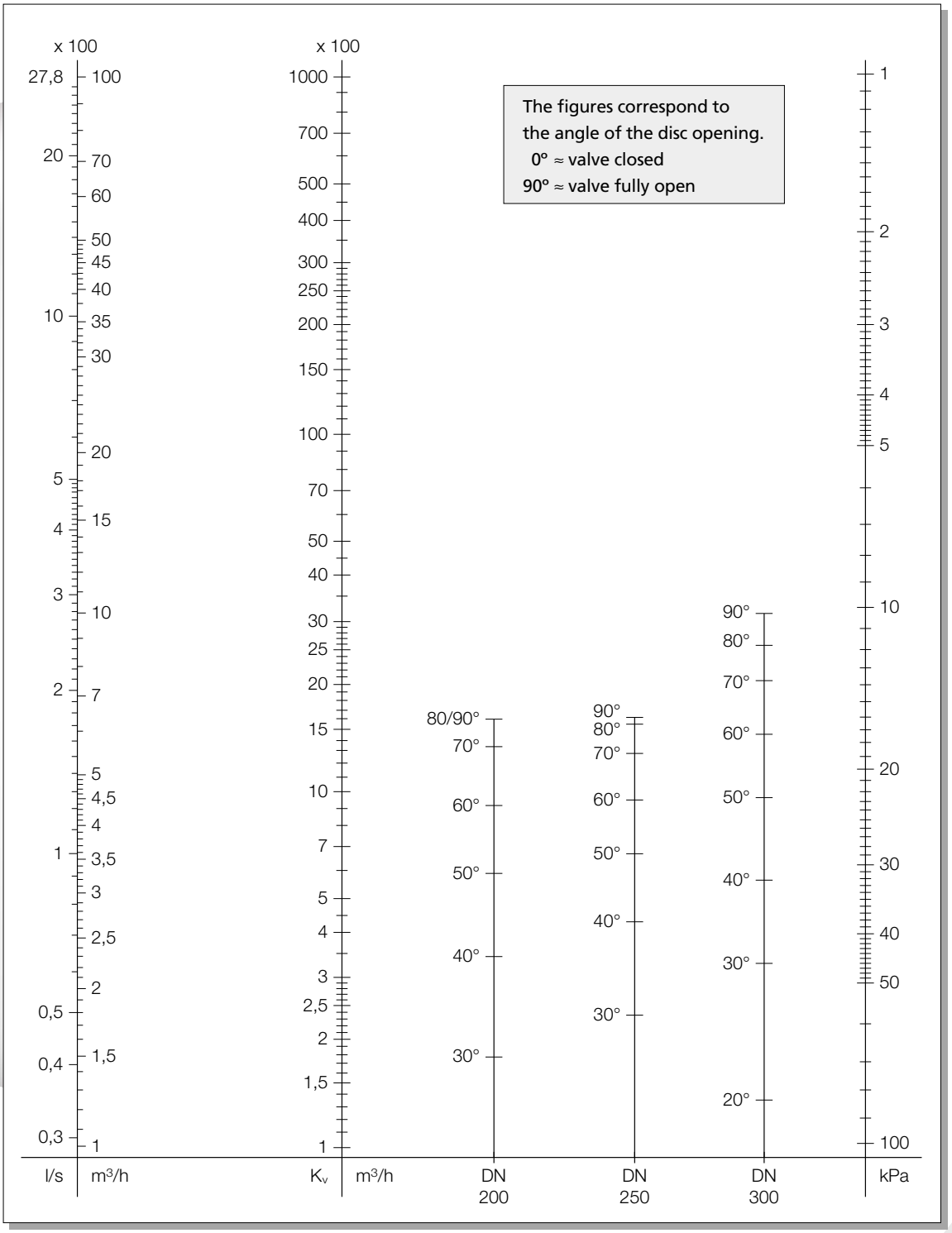
BALLOREX® S – DN 65 - 150

Rating graph



BALLOREX® S – DN 200 - 300

Rating graph



If the preset quantity of water causes a valve opening smaller than 30°, you must select a smaller valve having a setting bigger than 30°.

BALLOREX® S – DN 10 - 300

Installation

1. The valves can be installed in **any position**. I.e. with measurement port facing up or down.

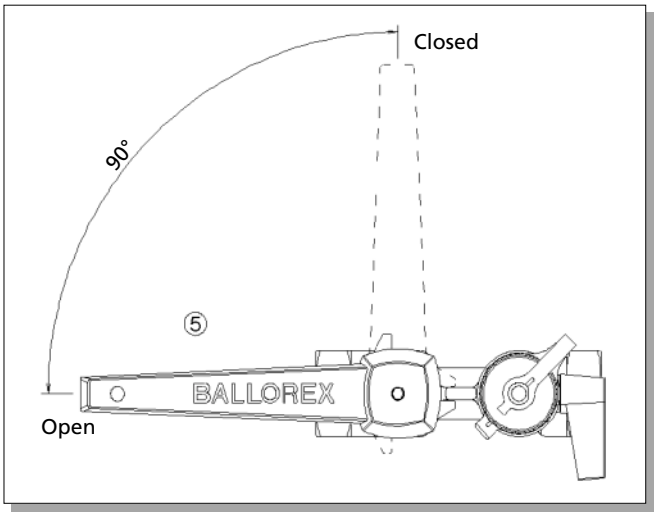
2. The valve should be installed with the **flow** in the **direction** of the arrow stamped/glued on the valve body.

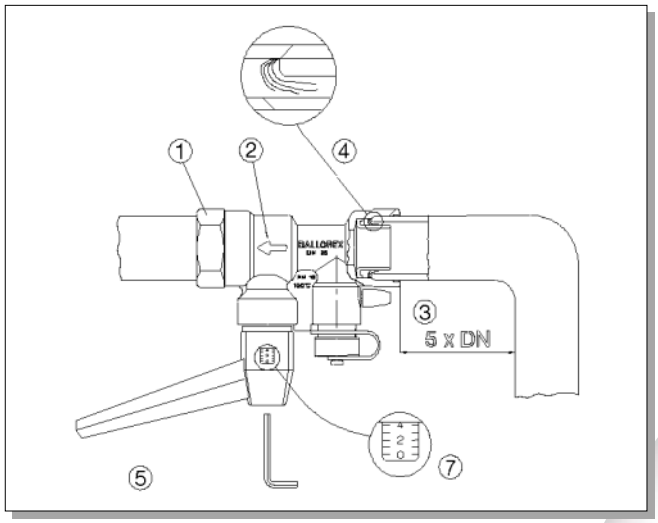
3. A straight run of pipework with a **minimum length** of 5 x DN should be allowed up stream the valve.
   A straight run of pipework with a **minimum length** of 10 x DN is required if a pump is mounted prior to the valve.

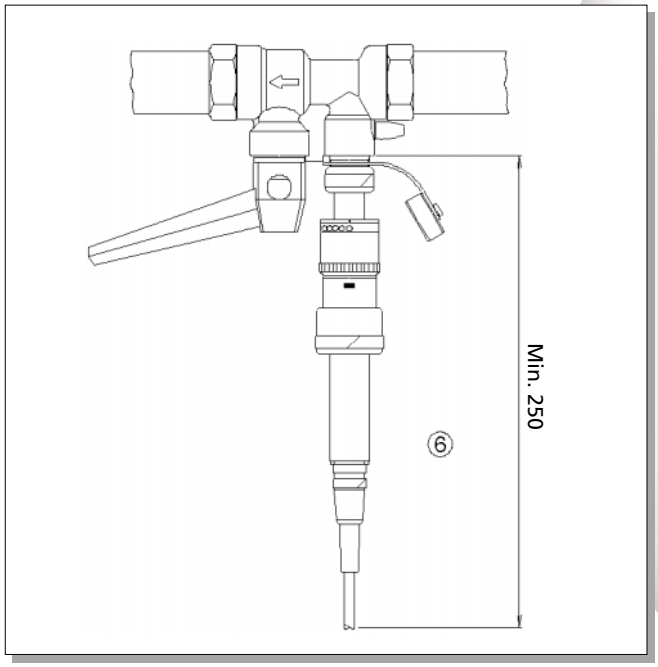
4. The plastic insert on female x female valve protects the **measuring probe** against jointing compound entering the valve body when the flow is measured (DN10-50).

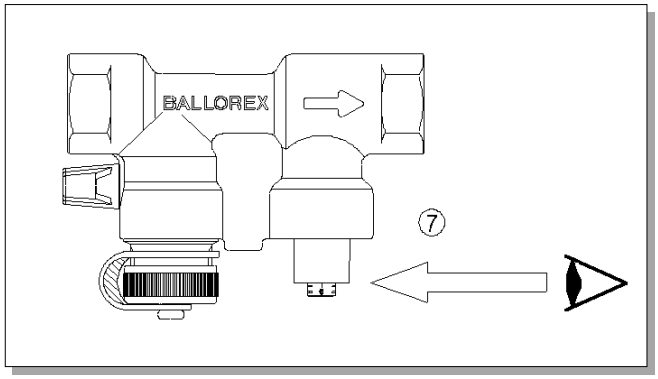
5. The **isolation handle** requires the following area to allow for 90° rotation:

DN 10-25:	100 mm
DN 32-50:	170 mm
DN 65-125:	250 mm
DN 150:	540 mm
DN 200-300:	0 mm









6. Free space of min. 250 mm, radially from the drain nipple, is required for installation of the **measuring probe**.

7. **Adjustment of flow**
   For DN 10 - 150: The setting of the regulating needle is read where the position indication is level with the top of the valve body. The setting can be changed with an Allen-key.

   For DN 200-300: The setting is read on the gearbox, where changes of the setting also take place.

BALLOREX® S – DN 10 - 50

Marking

The valve is marked with BALLOREX® name, DN size, PN rating, max. temperature and date-code.

Non-dezincifiable valves are embossed with "DZR".

When using in cooling systems

The BALLOREX®-valve can be used in cooling systems with glycol media as long as you consider the viscosity of the media and make the necessary corrections. Contact your supplier to learn about the correction factors.

Service and maintenance

- Draining of water/medium from the system.
- Impurities in the valve. The shutting off ball can be turned 180°.
- Replacement of the adjustment needle having full media pressure on the system (however not for valves larger than DN 50).
- Adjustment of the water flow.

The BROEN Group, whose headquarters are on the island of Fuenen, Denmark, has subsidiaries and dealers in more than 25 countries around the world.

BROEN

- a reliable partner

BROEN ApS were established in 1948 and are today one of the world's leading manufacturers of ball valves.

BROEN constantly works on clean and more environmentally friendly technologies both internally and externally. In order to achieve this it is necessary to be able to trace all production stages. Therefore BROEN is certified to ISO 9001 and the company constantly has its products and methods monitored by internationally acknowledged institutes and organisations.

This and many other facets make BROEN a reliable and environmentally responsible partner.

BROEN

BROEN ApS · Skovvej 30 · DK-5610 Assens · Denmark
Tel. +45 64 71 20 95

www.broen.com