



**FULLY WELDED
BALL VALVES**

**DISTRICT
HEATING AND
STEAM**

TEN ARGUMENTS IN FAVOUR OF BÖHMER BALL VALVES FOR DISTRICT HEATING

We know that our products deliver what they promise. To give you an idea of the numerous advantages of our ball valves, we have compiled the following list of some of the special features.

01 The solid **body components** ensure the highest level of operational safety even under extreme conditions.

02 The full **penetration of the weld seams** enables our ball valves to withstand even extreme stresses, thus ensuring safe operation of the valves.

03 The **elongated weld ends** fulfill more than the required standard, while machining operations ensure absolute roundness of the weld ends.

04 The **spring-supported ball seals** ensure longer service life and constitute the basis for fulfilling double block and bleed requirements.

05 The **trunnion-mounted ball** increases the service life of the valve by reducing stresses.





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06 The **solid ball** ensures top operational safety without the loss of flow.

07 The **separation of the bonnet** from the flow of hot water / steam reduces the thermal stress on the insulation.

08 The **enclosed limit stop** is not exposed to dirt and thus ensures exact positioning of the valve in its end positions.

09 The **BÖHMER position indicator** is designed with a two-flat header and a red-colored direction notch showing the exact position of the ball even after assembly of BÖHMER accessories.

10 The **redundant seal of the stem** ensures absolutely hermetic seal-off from the environment.

THE BÖHMER DISTRICT HEATING PROGRAM



Thanks to our comprehensive product portfolio, we are able to fulfill almost all customer demands and requests. In contrast to other manufacturers, we manufacture all our district heating ball valves according to a modular system which has proved its worth for decades, regardless of whether the ball valve is destined for pre-insulated underground installation or for above-ground installation.

Our district heating ball valves are certified according to international standards currently in force throughout the world and they excel in their minimum loss of pressure and high operational safety.



Specifications of our district heating ball valves

Nominal sizes:	DN 6 up to DN1200 (on request up to DN1400)
Pressure levels:	up to PN40
Temperature range:	up to +250°C (on request)
Body materials:	Forged steel, Stainless steel (V4A only)
Ball materials:	Forged steel, stainless steel
Stem materials:	Stainless steel
Seal materials:	EPDM, PTFE and special materials
Actuators:	Levers, gearboxes, pneumatic, electric and hydraulic actuators

BALL VALVES FOR INSTALLATION IN SHAFTS
HOT-TAPPING BALL VALVES
DRAIN AND VENTILATION BALL VALVES
HOUSEHOLD CONNECTION UNITS
PRE-INSULATED BALL VALVES
FOR UNDERGROUND INSTALLATION
BALL VALVES FOR ONE TIME OPERATION

Ball Valve with Weld Ends for underground installation

BBF/KSF-V-HE, DN 20-125, PN 25

Full Bore



Standard Materials:

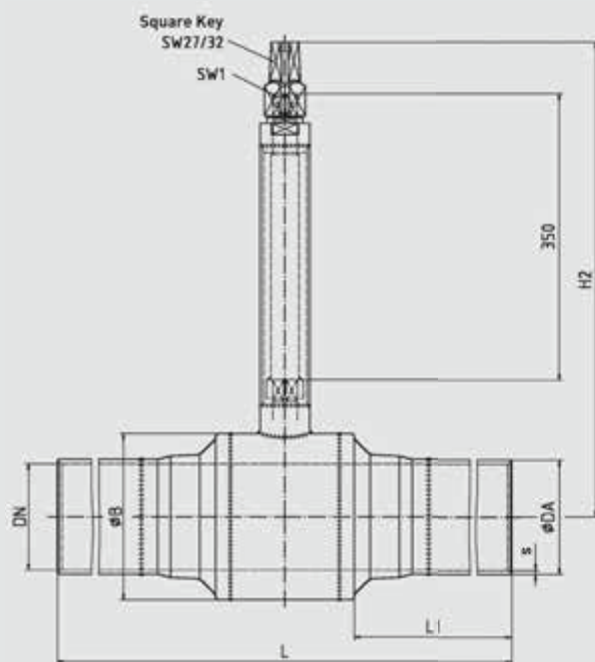
Body:	Forged Steel / Steel
Ball:	Stainless Steel
Stem:	Stainless Steel
Ball seals:	PTFE
Stem seals:	EPDM

Operating Temperature: up to +150 °C

Ball Valves fulfill the requirements of EN 488 and are suitable for the cold laying method

Design Features:

- From DN125 a trunnion mounted ball is standard.
- The square key is included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN	PN	DA	s*	L	L1	B	H2	SW1	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	mm	kg	
20	25	26,9	2,0	1500	715	44	462	16	7,5	076.0144
25	25	33,7	2,3	1500	717	54	465	16	8,0	076.0142
32	25	42,4	2,6	1500	708,5	64	488	16	9,3	076.0107
40	25	48,3	2,6	1500	706	76	493	16	11,0	076.0109
50	25	60,3	2,9	1500	705,5	89	501	16	14,0	076.0044
65	25	76,1	2,9	1500	691	121	515	16	19,0	076.0046
80	25	88,9	3,2	1500	688	140	549	22	25,0	076.0048
100	25	114,3	3,6	1500	680	171	562	22	34,0	076.0079
125	25	139,7	3,6	1500	665	203	581	22	45,0	076.0096

* The alignment of the wall thickness of the pipe end is carried out according to measurement „s“. The actual wall thicknesses used can be found in the table on page 13 of this catalogue.

Ball Valve with Weld Ends for underground installation

BBF/KSF-V-HE, DN 150-300, PN 25

Full Bore



Standard Materials:

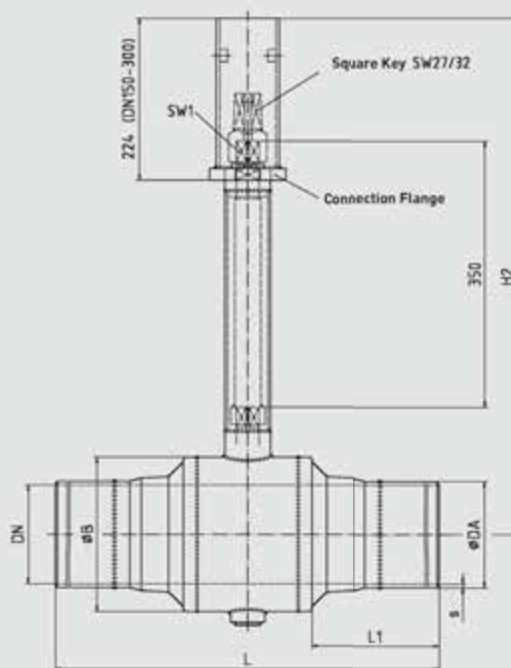
Body:	Forged Steel / Steel
Ball:	Stainless Steel
Stem:	Stainless Steel
Ball seals:	PTFE
Stem seals:	EPDM

Operating Temperature: up to +150 °C

Ball Valves fulfill the requirements of EN 488 and are suitable for the cold laying method

Design Features:

- The trunnion mounted ball is standard.
- For the operation of valves DN150 and above we recommend the use of a plug in gear box. The flange connection required for the use of the plug in gear box, as well as the square key is included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN	PN	DA	s*	L	L1	B	H2	SW1	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	mm	kg	
150	25	168,3	4,0	1500	640,5	254	725	32	85	076.0098
200	25	219,1	4,5	1500	616	324	760	32	129	076.0105
250	25	273,0	5,0	1500	567	407	900	32	285	076.0113
300	25	323,9	5,6	2000	771	508	942	32	510	076.0115

* The alignment of the wall thickness of the pipe end is carried out according to measurement „s“. The actual wall thicknesses used can be found in the table on page 13 of this catalogue.

Ball Valve with Weld Ends for underground installation

BBF/KSF-V-HE, DN 350-1200, PN 25

Full Bore



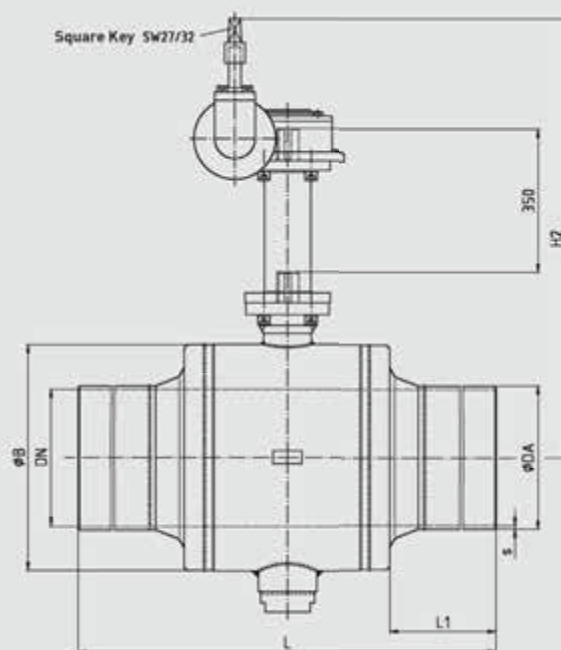
Standard Materials:

- Body:** Forged Steel / Steel
- Ball:** up to DN 400: Stainless Steel
from DN 450: Steel, chemically nickel plated (ENP)
- Stem:** Stainless Steel
- Ball seals:** PTFE
- Stem seals:** EPDM
- Operating Temperature:** up to +150 °C

Ball Valves fulfill the requirements of EN 488 and are suitable for the cold laying method

Design Features:

- The trunnion mounted ball is standard.
- The angular gear and the square key are included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN	PN	DA	s*	L	L1	B	H2	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	kg	
350	25	355,6	5,6	2000	745	559	1086	750	076.0117
400	25	406,4	6,3	2000	818	660	1121	1030	076.0119
450	25	457	6,3	2000	684	720	1215	1700	076.0123
500	25	508,0	6,3	2500	890	814	1256	2200	076.0125
600	25	610	7,1	1143	158	955	1389	apx. 3000	on request
700	25	711	8,0	1295	187	1116	on request	apx. 4500	on request
800	25	813	8,8	1397	430	1261	on request	apx. 5700	on request
900	25	914	10	1499	422	1396	on request	apx. 7400	on request
1000	25	1016	11	1800	576	1561	on request	apx.11000	on request
1200	25	1220	12,5	2400	955	1890	on request	apx.19000	on request

Ball Valves DN600 and above will be custom designed to meet order specifications. Please take note of the drawings submitted in case of an order.

* The alignment of the wall thickness of the pipe end is carried out according to measurement „s“. The actual wall thicknesses used can be found in the table on page 13 of this catalogue.

Ball Valve with Weld Ends for underground installation

BBF/KSF-R-HE, DN 25-150, PN 25



Standard Materials:

Body:	Forged Steel / Steel
Ball:	Stainless Steel
Stem:	Stainless Steel
Ball seals:	PTFE
Stem seals:	EPDM

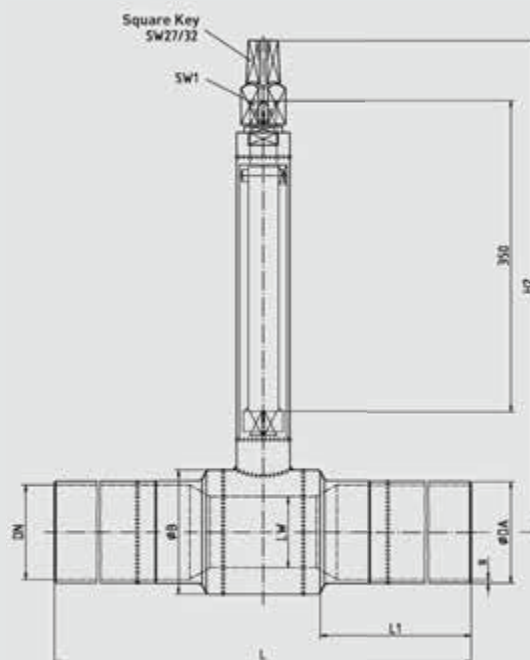
Operating Temperature: up to +150 °C

Reduced Bore

Ball Valves fulfill the requirements of EN 488 and are suitable for the cold laying method

Design Features:

- From DN150 a trunnion mounted ball is standard.
- The square key is included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN/LW	PN	DA	s*	L	L1	B	H2	SW1	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	mm	kg	
25/20	25	33,7	2,3	1500	715	44	462	16	7,0	076.0143
32/25	25	42,4	2,6	1500	715	54	465	16	9,0	076.0108
40/32	25	48,3	2,6	1500	712	64	488	16	11,0	076.0112
50/40	25	60,3	2,9	1500	710	76	493	16	12,5	076.0045
65/50	25	76,1	2,9	1500	705	89	501	16	17,0	076.0047
80/65	25	88,9	3,2	1500	694	121	515	16	22,0	076.0049
100/80	25	114,3	3,6	1500	688	140	549	22	30,0	076.0080
125/100	25	139,7	3,6	1500	680	171	562	22	39,5	076.0097
150/125	25	168,3	4,0	1500	667	203	581	22	51,3	076.0104

* The alignment of the wall thickness of the pipe end is carried out according to measurement „s“. The actual wall thicknesses used can be found in the table on page 13 of this catalogue.

Ball Valve with Weld Ends for underground installation

BBF/KSF-R-HE, DN200-400, PN25

Reduced Bore



Standard Materials:

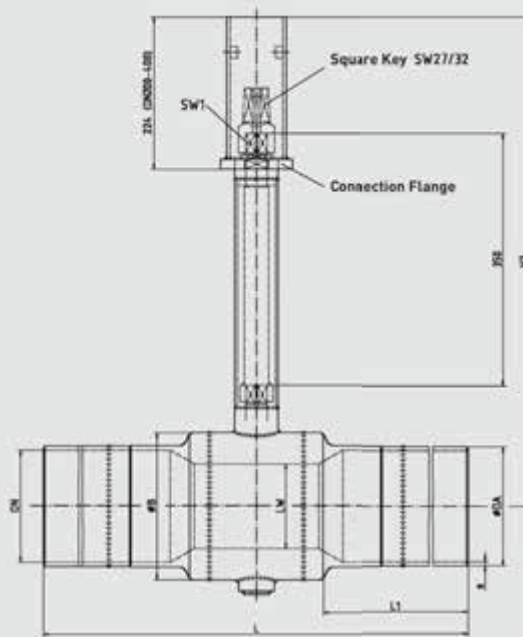
Body:	Forged Steel / Steel
Ball:	Stainless Steel
Stem:	Stainless Steel
Ball seals:	PTFE
Stem seals:	EPDM

Operating Temperature: up to +150 °C

Ball Valves fulfill the requirements of EN 488 and are suitable for the cold laying method

Design features:

- The trunnion mounted ball is standard.
- For the operation of valves DN200 and above we recommend the use of a plug in gear box. The flange connection required for the use of the plug in gear box as well as the square key is included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN/LW	PN	DA	s*	L	L1	B	H2	SW1	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	mm	kg	
200/150	25	219,1	4,5	1500	648	254	725	32	100	076.0106
250/200	25	273,0	5,0	1500	625	324	760	32	140	076.0114
300/250	25	323,9	5,6	2000	817	407	900	32	380	076.0116
350/300	25	355,6	5,6	2000	769	508	942	32	645	076.0118
400/300	25	404,6	6,3	2000	770	508	942	32	680	076.0154

* The alignment of the wall thickness of the pipe end is carried out according to measurement „s“. The actual wall thicknesses used can be found in the table on page 13 of this catalogue.

Ball Valve with Weld Ends for underground installation

BBF/KSF-R, DN 450-1200, PN 25



Standard Materials:

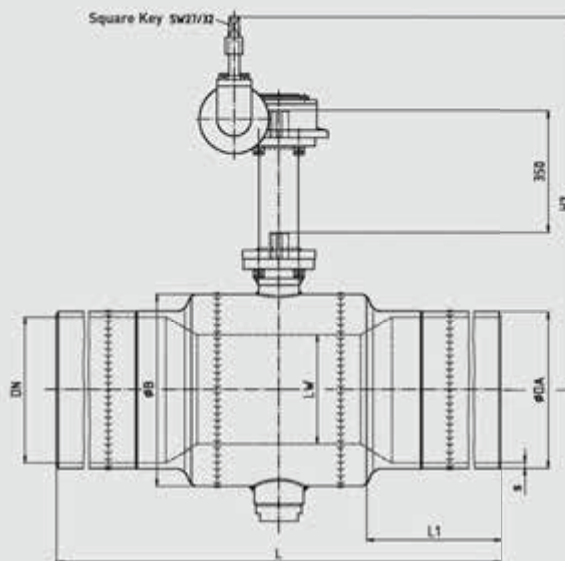
Body:	Forged Steel / Steel
Ball:	up to DN 500: Stainless Steel from DN 600: Steel, chemically nickel plated (ENP)
Stem:	Stainless Steel
Ball seals:	PTFE
Stem seals:	EPDM
Operating Temperature:	up to +150 °C

Reduced Bore

Ball Valves fulfill the requirements of EN 488 and are suitable for the cold laying method

Design features:

- The trunnion mounted ball is standard.
- The angular gear and the square key are included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN/LW	PN	DA	s*	L	L1	B	H2	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	kg	
450/400	25	457,0	6,3	2000	720	660	1122	1120	076.0124
500/400	25	508,0	6,3	2000	620	660	1122	1400	076.0126
600/500	25	610,0	7,1	2500	657	814	1280	2400	076.0128
700/600	25	711,0	8,0	1316	245	955	on request	ca. 3200	on request
800/700	25	813,0	8,8	1346	213	1116	on request	ca. 4700	on request
900/800	25	914,0	10,0	1727	595	1261	on request	ca. 6000	on request
1000/900	25	1016,0	11,0	1800	572	1396	on request	ca. 7700	on request
1200/1000	25	1220,0	12,5	2800	1076	1561	on request	ca. 12000	on request

Ball Valves DN700 and above will be custom designed to meet order specifications. Please take note of the drawings submitted in case of an order.

* The alignment of the wall thickness of the pipe end is carried out according to measurement „s“. The actual wall thicknesses used can be found in the table on page 13 of this catalogue.

Ball Valve for Venting and Draining with Flange and Weld End, Stainless Steel Design

BBF/ELF/ESF-V-HE, DN 25-80, PN 25

Full Bore



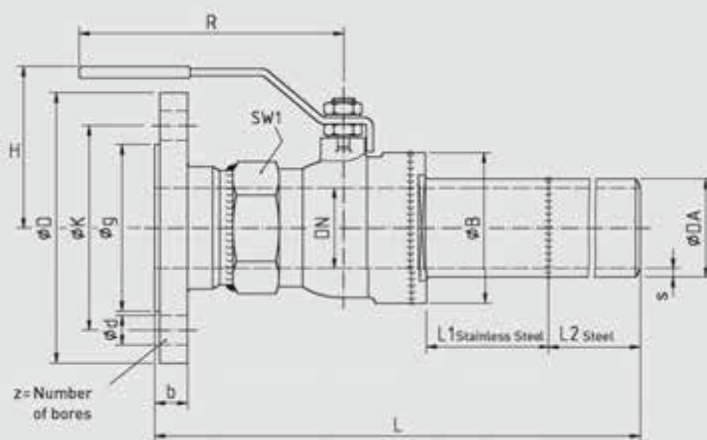
Standard Materials:

- Body:** Stainless Steel 1.4581
- Weld End:** Steel
- Ball:** Stainless Steel
- Stem:** Stainless Steel
- Ball seals:** PTFE
- Stem seals:** EPDM

Operating Temperature: up to +150 °C

Design features:

- Suitable blind flanges and gaskets can be delivered on request.
- Flanges drilled and sized in accordance with EN 1092 – Nominal Pressure PN25



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN	PN	Da	s	L	L1	L2	D	B	H	R	SW1	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
25	25	33,7	3,2	895	200	579	115	49	65	132	41	4,2	050.0004
32	25	42,4	3,2	1000	63	774	140	65	84	146	50	6,5	050.8241
40	25	48,3	3,2	963	50	771	150	75	85	146	55	8,5	050.0119
50	25	60,3	4,0	911	120	546	165	92	95	146	70	10,5	050.0120
80 ¹	25	88,9	4,0	1000	250	486	200	140	155	300	---	18,0	050.0198

¹Deviating from the above, the body for this valve is made from stainless steel 1.4571.

Ball Valve for Venting and Draining with Thread and Weld End, Stainless Steel Design

BBF/EMG/ESF-V-HE, DN 25-50, PN 40

Full Bore

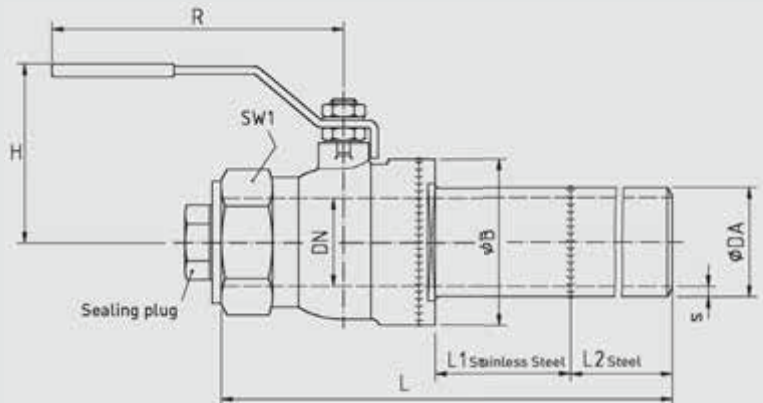


Standard Materials:

Body:	Stainless Steel 1.4581
Weld End:	Steel
Ball:	Stainless Steel
Stem:	Stainless Steel
Ball seals:	PTFE
Stem seals:	EPDM
Sealing plug:	Stainless Steel
Operating Temperature:	up to +150 °C

Design features:

- The sealing plug is included in the delivery.



For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.

Further options for these ball valves are listed on page 48.

DN	PN	Da	s	L	L1	L2	B	H	R	SW1	Weight	Item No.
mm	bar	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	
25	40	33,7	3,2	1095	148	852	49	65	135	41	3,4	050.5617
32	40	42,4	3,2	1000	63	774	65	84	155	50	5,2	050.0065
40	40	48,3	3,2	1000	50	771	75	85	155	55	6,2	050.0140
50	40	60,3	3,6	850	151	561	92	95	155	70	7,4	050.2897

OPERATING ACCESSORIES FOR BALL VALVES FOR UNDERGROUND INSTALLATION

The accessories for Böhmer ball valves for underground installation are of modular design.

These accessories can only be assembled in one position. The two-flat connector serves as the base for additional extensions and attachable flanges and is always parallel to the axis of the pipeline. Thanks also to the notch for the alignment pin in the square adapter, the position of the ball in every Böhmer ball valve for underground installation is always clearly visible on the top of the valve.



Plug-in gear unit

with 800 mm extension (standard)
Gear ratio 17:1

Attachable flange

Standard lengths 200 mm and 500 mm

Square key

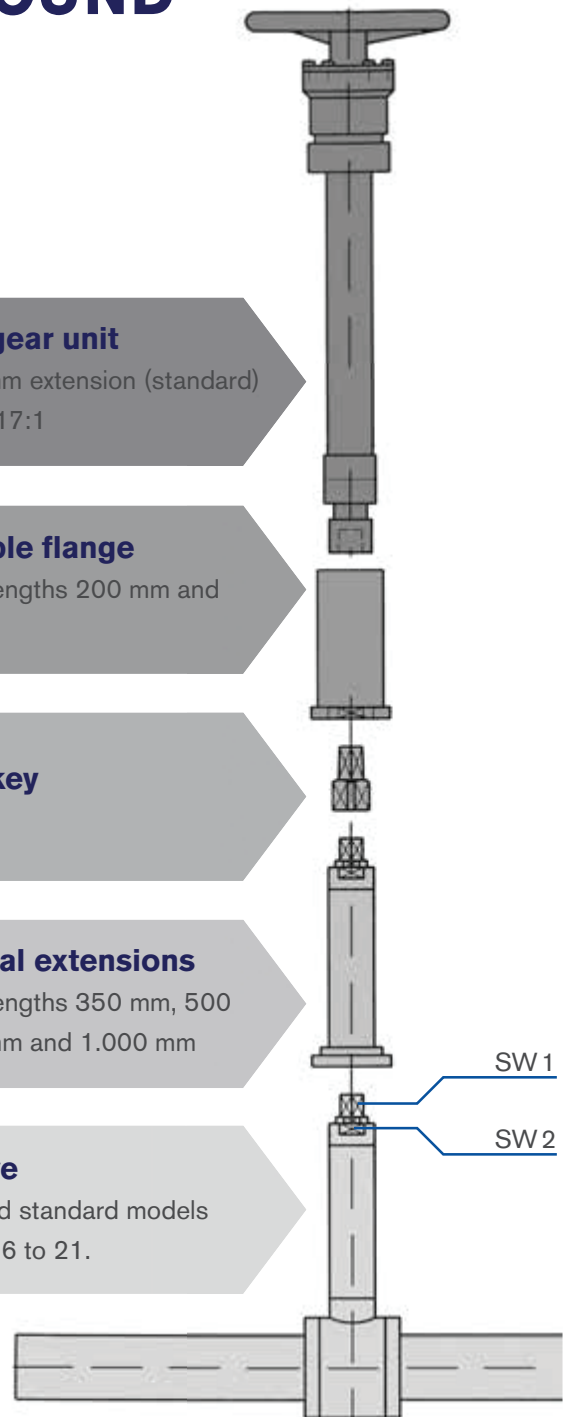
SW 27/32

Additional extensions

Standard lengths 350 mm, 500 mm, 750 mm and 1.000 mm

Ball Valve

You can find standard models on pages 16 to 21.



DN	DN	SW 1	SW 2	Attachable flange L 200 mm	Attachable flange L 500 mm	Yellow square key	Additional extension L 350 mm	Additional extension L 500 mm	Additional extension L 750 mm	Additional extension L 1000 mm	Plug-in gear unit MDS 3000 length 800 mm	T-key
full bore	reduced bore	mm	mm	Item No. /kg	Item No. /kg	Item No. /kg	Item No. /kg	Item No. /kg	Item No. /kg	Item No. /kg	Item No. /kg	Item No. /kg
20 - 65	25 - 80	16	40	075.7200 1,9	075.7201 4,8	628.2496 0,5	076.0736 2,5	076.0737 3,3	076.729 4,7	076.0947 6,2		
80 - 125	100 - 150	22	50	075.7202 2,3	075.7203 4,9	628.2497 0,8	076.0682 4,5	076.0738 5,4	076.0739 7,5	076.0805 9,1	075.9999 18,4	316.9999 6,0
150 - 300	200 - 400	32	80	075.7204 3,1	075.7205 5,6	628.2498 1,4	076.0623 10,5	076.0740 12,5	076.0640 17,5	076.0720 22,0		

Other lengths and designs are available on written request.

TENSILE AND COMPRESSIVE FORCES, DRAG COEFFICIENTS

Diameter of the connecting pipe		Examples of pre-heated pipes and "cold-laid" pipes	
Full bore DN [mm]	Reduced bore DN/LW [mm]	Tensile force at 130 K cooling [kN]	Compressive force at 130 K heating [kN]
20	20/16	26	41
25	25/20	37	60
32	32/25	53	86
40	40/32	61	99
50	50/40	85	139
65	65/50	109	177
80	80/65	140	228
100	100/80	204	332
125	125/100	251	480
150	150/125	337	547
200	200/150	495	804
250	250/200	686	1.116
300	300/250	913	1.484
350	350/300	1.004	1.632
400	400/300	1.291	2.098
450	450/400	1.454	2.364
500	500/400	1.619	2.423
600	600/500	2.192	3.087
700	700/600	2.880	3.926
800	800/700	3.624	4.761
900	900/800	4.629	6.144
1000	1000/900	5.661	7.439
1200	1200/1000	7.729	9.636

Permissible tensile and compressive forces for BÖHMER ball valves

The permissible tensile and compressive forces in the adjacent table correspond to the figures required by EN 488. The permissible tensile and compression forces listed here are valid for all fully-welded BÖHMER district heating ball valves.

Ball valves for greater forces are also available on written request.

Drag coefficients for BÖHMER ball valves

The drag coefficients were determined for ball valves with solid balls.

Hollow balls cause more resistance and thus result in higher drag coefficients. In order to determine the exact losses, it is necessary to distinguish between trunnion-mounted and floating hollow balls.

Since the use of trunnion-mounted balls depends partly on the operating pressure, it is not possible to determine generally-valid drag coefficients for hollow balls as a function of nominal sizes.

The following are drag coefficients of butterfly valves based on approximate figures according to Dubbel:

DN 50: $\zeta=1.4$ $K_v=85$

DN 200: $\zeta=0.8$ $K_v=1.790$

DN 500: $\zeta=0.63$ $K_v=12.613$

Full bore			Reduced bore		
DN	K_v [m ³ /h]	ζ (-)	DN/LW	K_v [m ³ /h]	ζ (-)
10-16	25	0.17	20/16	15	1.14
20	52	0.09	20/16	15	1.14
25	83	0.09	25/20	32	0.60
32	119	0.12	32/25	50	0.67
40	203	0.10	40/32	98	0.43
50	334	0.09	50/40	139	0.51
65	603	0.08	65/50	242	0.49
80	978	0.07	80/65	359	0.51
100	1.510	0.06	100/80	604	0.44
125	2.558	0.06	125/100	932	0.45
150	4.181	0.05	150/125	1.411	0.41
200	7.983	0.05	200/150	2.547	0.40
250	13.580	0.04	250/200	4.228	0.35
300	20.917	0.03	300/250	6.189	0.34
350	28.897	0.03	350/300	-	-
400	38.319	0.03	400/300	10.963	0.34
450	43.914	0.03	450/400	-	-
500	60.542	0.03	500/400	17.981	0.31
600	93.059	0.02	600/500	26.771	0.29
700	129.351	0.02	700/600	38.483	0.26
800	196.170	0.02	800/700	45.020	0.25
900	223.513	0.02	900/800	60.739	0.22
1000	283.612	0.02	1000/900	80.175	0.20
1200	439.598	0.01	1200/1000	82.375	0.22

ζ Drag coefficient [-]
 K_v Volume flow rate (m³/h) water (15°C) with 1 bar loss of pressure
 DN Nominal size [mm]
 LW Clear diameter [mm]

BÖHMER BALL VALVES IN OPERATION

We keep in step with time!

Thanks to our comprehensive product line, we are already able to fulfill almost every customer demand.

But we do not rest on our laurels!

In order to be able to satisfy all customers' wishes in the future, our highly qualified engineers and designers take meticulous care to develop the next generations of ball valves. As a result, we develop innovative solutions which are successful in fields such as district heating, the gas industry, pipeline construction, hydraulics, pneumatics, plant engineering and construction, chemicals, petrochemicals and subsea applications.



District heating



Oil, gas, petrochemicals



Shipbuilding



Power plants

As one of the world's leading manufacturers of ball valves, we are always conscious of our responsibilities to our customers.

Now and in the future, the name BÖHMER will continue to be a distinguished synonym for our comprehensive promise to perform.

BÖHMER
OUR EXPERIENCE - YOUR SAFETY



OUR EXPERIENCE - YOUR SAFETY

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