

## BBF/ELF/ESF-V-HE

BALL VALVE FOR VENTING AND  
DRAINING WITH FLANGE  
AND WELDING END

DN 25-100 | PN 25

FULL BORE

### INFORMATION

**Ball valve for venting and draining with flange and welding end**

/// Operating temperature up to +150 °C

/// Flanges drilled and dimensioned according to EN 1092 - pressure rating PN25

### MATERIALS

Body	Stainless Steel 1.4581
Anschweißende	Steel
Flansche	Steel
Ball	Stainless Steel
Ball Seals	PTFE
Stem Seals	EPDM

### OPTIONS

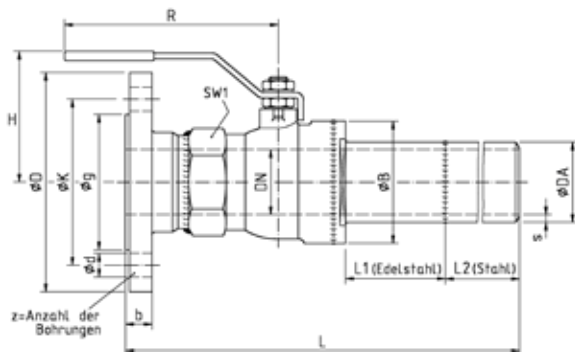
- /// Suitable for steam
- /// Further options for this ball valve according to the list on the „Options“ supplementary sheet
- /// For deviating operating conditions please send us a written request stating the fluids, as well as the pressure and temperature range.



Fully insulated drain and vent ball venting ball valves made of Steel can be found on our website



For simplified assembly of the flange connection in confined conditions in road caps, we offer counter lugs as an accessory. One counter lug replaces 2 nuts so that there is no need to hold the nuts underneath the flange connection.



DN [mm]	PN [bar]	DA [mm]	s [mm]	L [mm]	L1 [mm]	L2 [mm]	D [mm]	B [mm]	H [mm]	R [mm]	SW1 [mm]	Weight [kg]	Article-No.
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 <sup>1</sup>	25	88.9	4.0	1000	250	486	200	140	155	300	---	18.0	050.0198
100 <sup>1</sup>	25	114.3	3.6	1000	250	566	235	171	170	300	---	30.0	050.5050

<sup>1</sup>This version is made of the housing material 1.4571.



# COUNTER FLAP

FOR SIMPLIFIED ASSEMBLY  
OF FLANGE CONNECTIONS

DN 25-100 | PN 10 - 40

## INFORMATION

**Counter lugs for flange connections in directly buried drain and vent ball valves.**

/// For simplified assembly of flange connections in directly buried pipeline construction, the counter lugs provide assistance for the assembly personnel.

/// The use of the counter lugs eliminates the need for counter-holding when bolting the flange connection, which is difficult due to limited space.

/// The counter brackets replace the need to hold the flange in place with tools by mutually securing 2 bolted connections.



## MATERIAL

Stainless Steel

DN [mm]	Pressure ratings				Quantity per Flange connection	Article-No.
	PN 10	PN 16	PN 25	PN 40		
25	X	X	X	X	2	050.9502
50	X	X	X	X	2	050.9500
80	X	X	X	X	4	050.9501
100			X	X	4	050.9504

# OPTIONS

	Underground Ball valves HE					Standard Ball valves HS						
	KSF V KSF R	ELF/ESF V	EMG/ESF V	KSF V KSF R Tie-in ball valve	KSF V (Hot tapping ball valve)	KSF V KSF R	FSK V FSK R	FSL V	FSL/KSF V + FSK/KSF V FSL/KSF R + FSK/KSF R	KSG/KSF V	KSG V	KSF V (Hot tapping ball valve)
Special lengths	✓	✓	✓			✓		✓	✓	✓		
Variable stem extensions for underground installation <sup>2</sup>	✓											
Stem extension 60 mm /100 mm						✓	✓	✓	✓	✓	✓	✓
Spigot for drain and vent ball valve	✓											
Test connection from DN150 (with plug or ball valve)						✓	✓	✓				
greater wall thicknesses for extreme axial loads or corrosion surcharges	✓											
With Flange/Weld end from DN125					✓							✓
Suitable for steam	✓			✓	✓	✓	✓	✓			✓	

<sup>2</sup>Variable spindle extensions for buried installation:

We recommend using additional extensions from our accessories list on to compensate for height differences.

Tender specification texts are available for download on our website.

# TECHNICAL INFORMATION

## Wall thicknesses for ball valves for underground installation

The pipe ends used for BÖHMER inground district heating ball valves comply with the requirements of AD-Merkblatt B9 for the necking of pipes. Necking for drain and vent lines can be carried out on these pipes without falling below the mi-

nimum wall thickness requirements of EN488. The following wall thicknesses refer to the pipe material used. These are machined at the weld preparation by wall thickness adjustment.

DN	20	25	32	40	50
Pipe dimensions	26,9 x 3,2	33,7 x 3,2	42,4 x 3,2	48,3 x 3,6	60,3 x 3,6
DN	65	80	100	125	150
Pipe dimensions	76,1 x 4,0	88,9 x 4,5	114,3 x 4,5	139,7 x 4,5	168,3 x 5,0
DN	200	250	300	350	400
Pipe dimensions	219,1 x 6,3	273,0 x 7,1	323,9 x 8,0	355,6 x 8,0	406,4 x 8,8

## Flange dimensions

For all ball valves the standard for flange connections EN1092 is complied with. Below you will find an overview of the flange connection dimensions for pressure ratings PN10 - PN40, which

were not listed in the data sheets for reasons of clarity. The flange sheet thicknesses may deviate upwards from the dimensions required in the standard for manufacturing reasons.

DN	PN10	PN16	PN25	PN40	D	g	K	b	z	d
10	X	X	X	X	90	40	60	16	4	14
15	X	X	X	X	95	45	65	16	4	14
20	X	X	X	X	105	58	75	18	4	14
25	X	X	X	X	115	68	85	18	4	14
32	X	X	X	X	140	78	100	18	4	18
40	X	X	X	X	150	88	110	18	4	18
50	X	X	X	X	165	102	125	20	4	18
65	X	X			185	122	145	22	4	18
65			X	X	185	122	145	22	8	18
80	X	X	X	X	200	138	160	24	8	18
100	X	X			220	158	180	20	8	18
100			X	X	235	162	190	24	8	22
125	X	X			250	188	210	22	8	18
125			X	X	270	188	220	26	8	26
150	X	X			285	212	240	22	8	22
150			X	X	300	218	250	28	8	26
200	X				340	268	295	24	8	22
200		X			340	268	295	24	12	22
200			X		360	278	310	30	12	26
200				X	375	285	320	34	12	30
250	X				395	320	350	26	12	22
250		X			405	320	355	26	12	26
250			X		425	335	370	32	12	30
250				X	450	345	385	38	12	33
300	X				445	370	400	26	12	22
300		X			460	378	410	28	12	26
300			X		485	395	430	34	16	30
300				X	515	410	450	42	16	33
350	X				505	430	460	26	16	22
350		X			520	438	470	30	16	26
350			X		555	450	490	38	16	33
350				X	580	465	510	46	16	36
400	X				565	482	515	26	16	26
400		X			580	490	525	32	16	30
400			X		620	505	550	40	16	36
400				X	660	535	585	50	16	39

# TENSILE AND COMPRESSIVE FORCES, DRAG COEFFICIENTS

## Permissible tensile and compressive forces

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	25/50	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

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

Full Bore			Reduced Bore		
DN	K <sub>v</sub> [m <sup>3</sup> /h]	ζ(-)	DN/LW	K <sub>v</sub> [m <sup>3</sup> /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	65/60	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

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: ζ=1.4 Kv=85  
 DN 200: ζ=0.8 Kv=1.790  
 DN 500: ζ=0.63 Kv=12.613