

Globe Valve

BOA-H/HE/HV/HEV

Type Series Booklet



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Type Series Booklet BOA-H/HE/HV/HEV

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Globe Valves

Bellows-type Globe Valves to DIN/EN

BOA-H/HE/HV/HEV



Main applications

- Process engineering
- Chemical industry
- Petrochemical industry
- Sugar industry
- Heat recovery systems
- Boiler recirculation
- Boiler feed applications

Fluids handled

- Water
- Steam
- Thermal oil
- Other non-aggressive fluids such as gas or oil on request.

Operating data

Table 1: Operating properties

Characteristic	Value
Nominal pressure	PN 25/40
Nominal size	DN 10 - 350 ¹⁾
Max. permissible pressure [bar]	40
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +450

Selection as per pressure/temperature ratings (⇒ Page 5)

Valve body materials

Table 2: Overview of available materials

Material	Material number	Temperature limit
P 250 GH	1.0460	≤ 450 °C

Model with flanged ends (DN 10 - 40) and model with butt weld ends (DN 10 - 50)

Table 3: Overview of available materials

Material	Material number	Temperature limit
GP 240 GH+N	1.0619+N	≤ 450 °C

Model with flanged ends (DN 50 - 350) and model with butt weld ends (DN 65 - 350)

Design details

Design

- Straight-way pattern
- On/off disc
- Seat/disc interface made of wear-resistant and corrosion-resistant chrome (Cr) steel or chrome nickel (CrNi) steel
- Outside screw
- Back seat
- Stem sealed by double-walled bellows and back-up gland packing
- EC type-tested (Module B), component mark TÜ.A./AR-291
- Exterior coating: blue, RAL 5002
- TA-Luft-compliant design to VDI 2440

Variants

- Throttling plug
- Balanced plug for DN 250-350 (for DN 125-200 NORI 40)
- Position indicator (standard for DN 250-350)
- Studs and nuts made of A4-70 (low-temperature steel)
- Cap
- Oil and grease free (wetted parts)
- Other flange designs or butt weld end designs
- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification

Product benefits

- Reliable sealing. Bonnet gasket fully confined to prevent creep.
- Improved energy efficiency of the system. Short, easy-to-insulate bonnet minimises heat losses.
- Additional stem seal for emergency operation and blow-out protection by standard back seat as well as back-up gland packing made of pure graphite.
- Hard-faced valve seat made of wear-resistant and corrosion-proof materials for long service life and high functional reliability.
- Easy to repair due to corrosion-protected bolts/screws and nuts

¹ DN 250-350 Type BOA-HV/HEV

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per Directive 2014/34/EU (ATEX)

The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zone 2+22) to ATEX 2014/34/EU.

Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

Product information as per UK Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016

The valves do not have a potential internal source of ignition and can be used in accordance with the UK's Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zone 2+22).

Product information as per UK Pressure Equipment (Safety) Regulations 2016

The valves satisfy the safety requirements of the UK Pressure Equipment (Safety) Regulations 2016 (PER) for fluids in Groups 1 and 2.

Related documents

Table 4: Information/documents

Document	Reference number
NORI 40 ZXLB/ZXSB type series booklet (globe valves for mounting actuators)	7165.1
Operating manual	0570.82
Typical tender for BOA-H/HE/HV/HEV	7150.524

Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

1. Type
2. Nominal pressure
3. Nominal size
4. Operating pressure
5. Differential pressure
6. Operating temperature
7. Fluid handled
8. Pipe connection
9. Variants
10. Reference number

Pressure/temperature ratings

Table 5: Permissible operating pressure [bar] (to EN 1092-1)

PN		Material	[°C]								
			RT ²⁾	100	150	200	250	300	350	400	450
25		P 250 GH - 1.0460 GP 240 GH+N - 1.0619+N	25,0	23,2	22,0	20,8	19,0	17,2	16,0	14,8	8,2
40			40,0	37,1	35,2	33,3	30,4	27,6	25,7	23,8	13,1
40	DN 250-350 ³⁾		27,0	27,0	23,0	22,0	21,0	19,0	18,0	17,0	13,0

²⁾ RT: room temperature (-10 °C to +50 °C)

³⁾ Values deviating from EN 1092-1

Materials

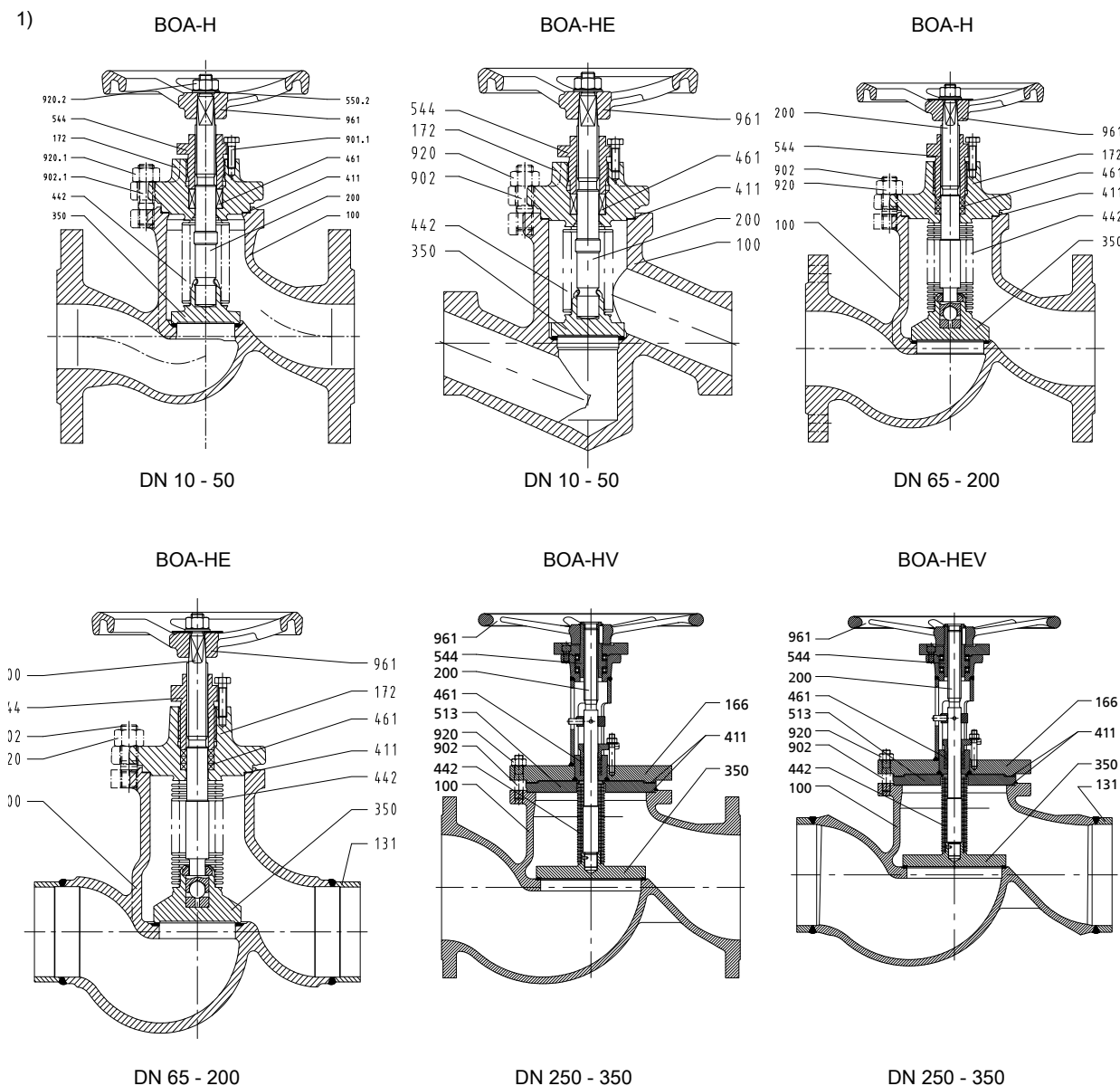


Fig. 1: Sectional drawings; 1) DN 10 - 40 with forged body

Table 6: Parts list

Part No.	Description	Material	Material number	Note	
100	Body	P 250 GH	1.0460	-	Hard-faced with stainless steel (1.4370)
		GP 240 GH+N	1.0619+N	BOA-H $\geq$ DN 50, BOA-HE $\geq$ DN 65	
131	Connection branch	P 235 GH	1.0305	$\geq$ DN 65	-
166	Yoke	P 250 GH	1.0460	DN 250	-
		P 265 GH	1.0425	$\geq$ DN 300	-
172	Bonnet	P 250 GH	1.0460	-	-
200 ⁴⁾	Stem	X 20 Cr 13	1.4021	Nitrided (DN 10 - 100)	-
350 ⁴⁾	Valve disc	X 20 Cr 13	1.4021	-	-
		P 250 GH	1.0460	$\geq$ DN 125	Hard-faced (1.4115)
442 ⁴⁾	Bellows	X 6 CrNiMoTi 17-12-2	1.4571	-	-
544 ⁴⁾	Threaded bush	11 SMn 30+C	1.0715	Nitrided	-
		X 39 CrMo 17-1	1.4122	Nitrided, $\geq$ DN 250	-

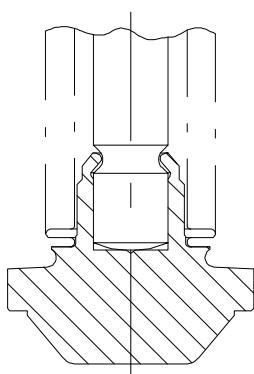
⁴ Recommended spare parts

Part No.	Description	Material	Material number	Note	
411 ⁴⁾	Joint ring	CrNi steel/graphite	-	-	-
461 ⁴⁾	Gland packing	Graphite	-	-	-
513	Insert ring	P 250 GH	1.0460	≥ DN 250	-
902	Stud	21 CrMoV 5-7	1.7709	-	Olive-chromated
920	Hexagon nut	25 CrMo 4	1.7218	-	
961	Handwheel	EN-GJL-200	5.1300	-	-

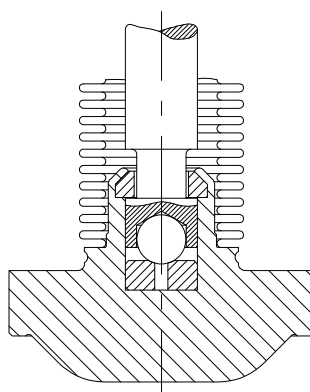
Variants

BOA-H/HE

1)

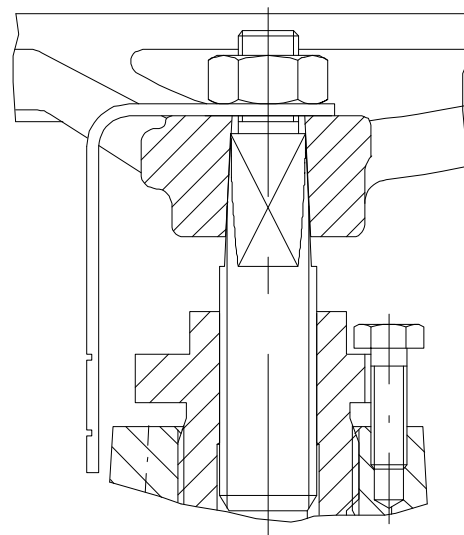


DN 10 - 50



DN 65 - 200

2)

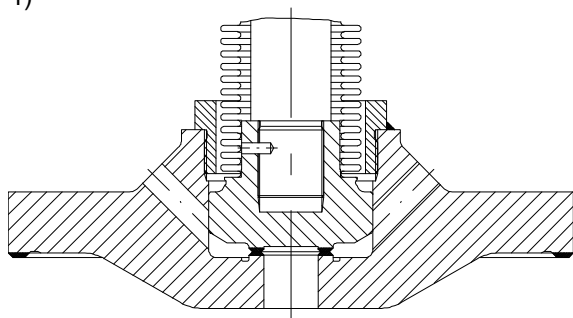


DN 10 - 200

Fig. 2: 1) Throttling plug; 2) Position indicator

BOA-HV/HEV

1)



2)

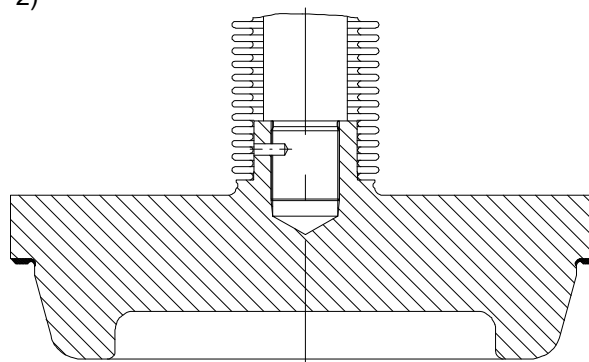


Fig. 3: 1) Balanced plug; 2) Throttling plug

Dimensions and weights

Dimensions and weights of BOA-H

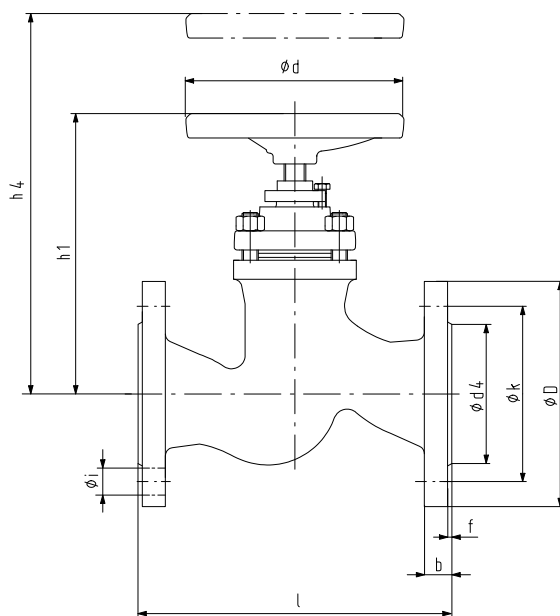


Fig. 4: Sectional drawing of BOA-H

Table 7: Dimensions and weights

PN	DN	l	ø D	ø k	Number of bolt holes z	Bolt hole dia. i	ø d ₄ × f	b	h ₁ ⁵⁾	h ₄ ⁶⁾	Travel	ø d	[kg]
		[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
25/40	10	130	90	60	4	14	40 × 2	16	140	210	4,0	125	3,8
	15	130	95	65	4	14	45 × 2	16	140	210	4,0	125	3,3
	20	150	105	75	4	14	58 × 2	18	165	260	6,5	125	4,8
	25	160	115	85	4	14	68 × 2	18	165	260	6,5	125	5,4
	32	180	140	100	4	18	78 × 2	18	190	290	8,0	160	9,1
	40	200	150	110	4	18	88 × 3	18	200	300	10,0	160	10,2
	50	230	165	125	4	18	102 × 3	20	220	330	12,5	160	13,2
	65	290	185	145	8	18	122 × 3	22	270	420	16,5	200	19,8
	80	310	200	160	8	18	138 × 3	24	305	480	20,0	200	27
	100	350	235	190	8	22	162 × 3	24	345	550	25,0	250	41,7
	125	400	270	220	8	26	188 × 3	26	395	580	31,5	315	66
	150	480	300	250	8	26	218 × 3	28	430	620	37,5	315	88
25	200	600	360	310	12	26	278 × 3	30	500	760	47,5	400	144,6
40	200	600	375	320	12	30	285 × 3	34	500	760	47,5	400	175

Mating dimensions as per standard

Face-to-face length: EN 558-1/1, ISO 5752/1
 Flanges: Mating dimensions to
 DIN EN 1092-1, ISO 7005
 Flange facing: DIN EN 1092-1, type B

Other flange designs

- E.g. groove (type D), tongue (type C), recess (type F), spigot (type E) to EN 1092-1 at both ends
- Other flange designs on request

⁵ Open

⁶ Vertical clearance for removal

Dimensions and weights of BOA-HE

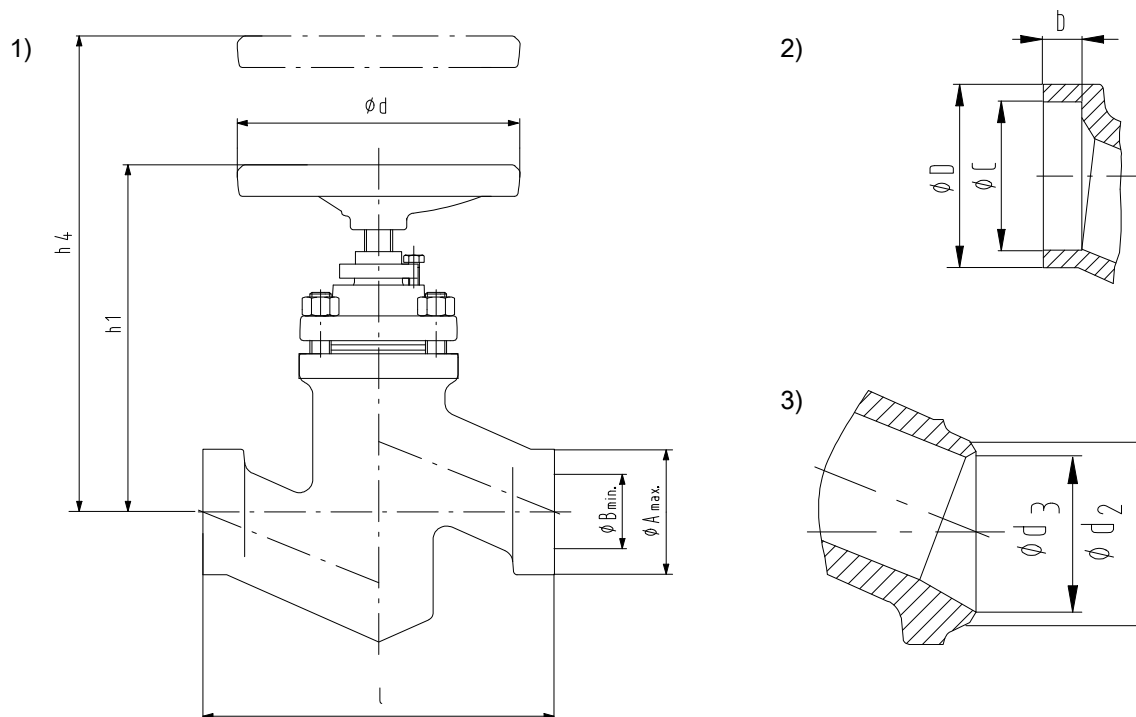


Fig. 5: 1) Sectional drawing of BOA-HE; 2) Socket weld ends; 3) Butt weld ends

Table 8: Dimensions and weights

PN	DN	I	Butt weld ends, unmachined		Butt weld ends to DIN EN 12627			Socket weld ends to DIN EN 12760			h ₁ ⁷⁾	h ₄ ⁸⁾	Travel	ø d	[kg]
			ø A _{max.}	ø B _{min.}	ø d ₂	ø d ₃	Associated pipe dimensions	ø D _{-0,5}	ø C ^{+0,2}	b _{min.}					
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
25/40	10	130	37	10	18	13	17,2 × 2,0	25	17,6	10	165	260	4,0	125	3
	15	130	37	15	22	17	21,3 × 2,0	30,5	21,7	10	165	260	4,0	125	2,9
	20	130	37	20	28	22	26,9 × 2,3	36,5	27,1	13	165	260	6,5	125	3,3
	25	130	37	24	34	28,5	33,7 × 2,6	44,5	33,8	13	165	260	6,5	125	3,2
	32	160	60	33	43	37	42,4 × 2,6	53,5	42,5	13	200	290	8,0	160	5,5
	40	180	60	38	49	43	48,3 × 2,6	60,5	48,7	13	200	300	10,0	160	5,5
	50	210	73	48	61	54	60,3 × 3,2	73,5	61,1	16	220	330	12,5	160	8,3
	65	290	76,1	64,9	76,1	69	76,1 × 3,6				270	420	16,5	200	17
	80	310	88,9	79,9	88,9	81	88,9 × 4,0				305	480	20,0	200	30
	100	350	114,3	100,1	114,3	104	114,3 × 5,0				345	550	25,0	250	40
	125	400	139,7	125,5	139,7	130,5	139,7 × 4,5				395	580	31,5	315	60
	150	480	168,3	148,3	168,3	156,5	168,3 × 5,6				430	620	37,5	315	80
	200	600	219,1	199,1	219,1	204,5	219,1 × 7,1				500	760	47,5	400	130

Mating dimensions as per standard

Face-to-face length: EN 12982/64
Butt weld ends: DIN EN 12627 Figure 2
Socket weld ends: DIN EN 12760

Different designs of butt weld ends, socket weld ends and welding groove types are possible, but only within the dimensions A_{max.} and B_{min.}.

Butt weld ends to DIN 3239, type 1, or socket weld ends to ASME B16.11/DIN 3239/2 possible.

⁷ Open

⁸ Vertical clearance for removal

Dimensions and weights of BOA-HV

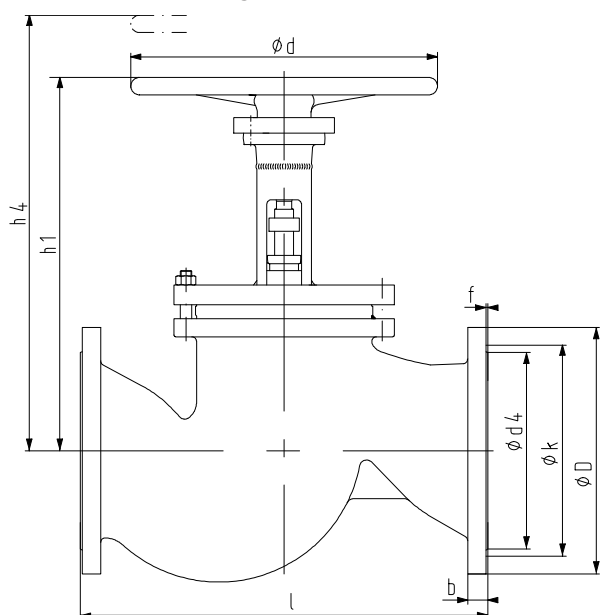


Fig. 6: Sectional drawing of BOA-HV

Table 9: Dimensions and weights

PN	DN	l	ø D	ø k	Number of bolt holes z	Bolt hole dia. i	ø d ₄ x f	b	h ₁ ⁹⁾	h ₄ ¹⁰⁾	ø d	[kg]
		[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
25	250	730	425	370	12	30	335 x 3	32	705	1035	500	270
	300	850	485	430	16	30	395 x 4	34	785	1145	630	385
	350	980	555	490	16	33	450 x 4	38	950	1400	800	630
40	250	730	450	385	12	33	345 x 3	38	705	1035	500	300
	300	850	515	450	16	33	410 x 4	42	785	1145	630	430
	350	980	580	510	16	36	465 x 4	46	950	1400	800	660

Mating dimensions as per standard

Face-to-face length: EN 558-1/1, ISO 5752/1
 Flanges: Mating dimensions to
 DIN EN 1092-1, ISO 7005
 Flange facing: DIN EN 1092-1, type B

Other flange designs

- E.g. groove (type D), tongue (type C), recess (type F), spigot (type E) to EN 1092-1 at both ends
- Other flange designs on request

⁹ Open

¹⁰ Vertical clearance for removal

Dimensions and weights of BOA-HEV

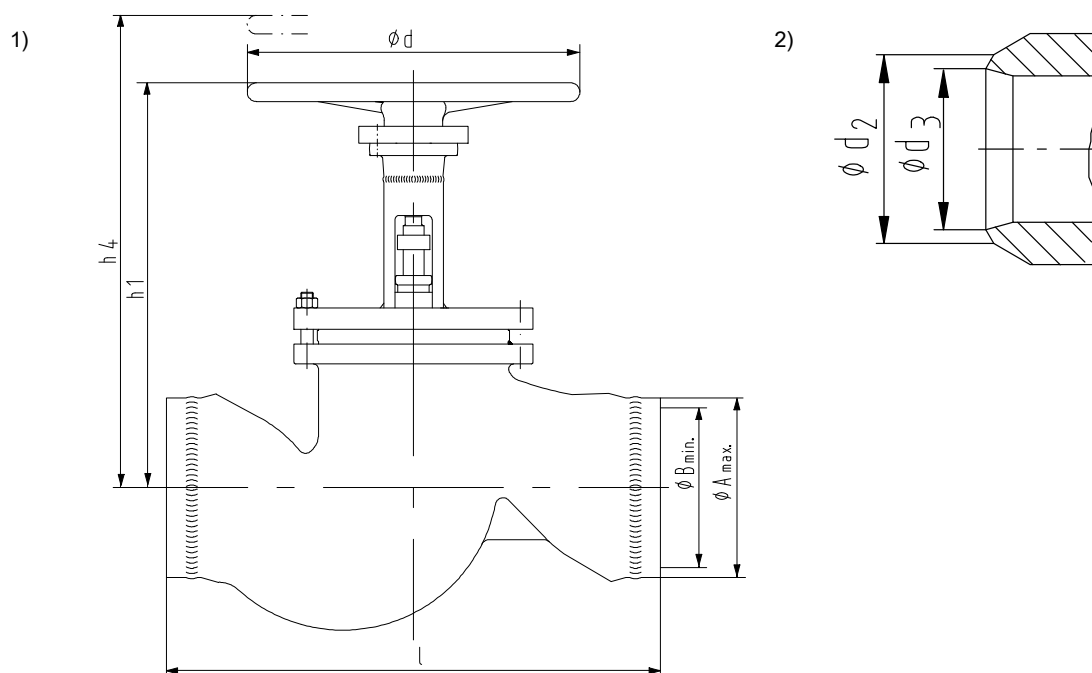


Fig. 7: 1) Sectional drawing of BOA-HEV; 2) Butt weld ends

Table 10: Dimensions and weights

PN	DN	I	Butt weld ends, unmachined		Butt weld ends to DIN EN 12627			$h_1^{11)}$	$h_4^{12)}$	$\varnothing d$	[kg]
			$\varnothing A_{max.}$	$\varnothing B_{min.}$	$\varnothing d_2$	$\varnothing d_3$	Associated pipe dimensions				
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
25/40	250	730	273	251	273	256,5	273,0 × 8,0	705	1035	500	260
	300	950	345	305	323,9	306,5	323,9 × 8,8	785	1145	630	290
	350	1100	385	335	355,6	336,5	355,6 × 10,0	950	1400	800	600

Mating dimensions as per standard

Face-to-face lengths: EN 12982/64 (for DN 250)
or as per table (for DN 300/350)

Butt weld ends: DIN EN 12627 Figure 2

Different designs of butt weld ends, socket weld ends and welding groove types are possible, but only within the dimensions $A_{max.}$ and $B_{min.}$.

¹¹ Open

¹² Vertical clearance for removal

Dimensions and weights of lead-sealable cap

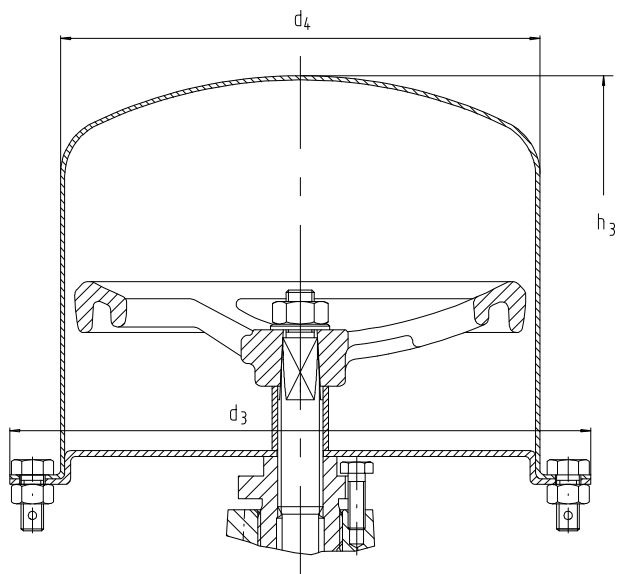


Fig. 8: Lead-sealable cap (prevents unauthorised closing)

Table 11: Dimensions and weights

DN	d ₃	d ₄	h ₃		[kg]
			BOA-H	BOA-HE	
	[mm]	[mm]	[mm]	[mm]	
10	165	130	185	205	0,8
15	165	130	185	205	0,8
20	165	130	205	205	0,8
25	165	130	205	205	0,8
32	205	170	265	275	1,6
40	205	170	275	275	1,6
50	205	170	295	295	1,6
65	256	220	385	385	2,5
80	256	220	415	415	2,5
100	390	340	455	455	6,5
125	390	340	495	495	6,5
150	390	340	520	520	6,5
200	470	420	550	550	9,0

Installation information

Install shut-off globe valves in such a way that the fluid enters the valve beneath the valve disc and flows out above the valve disc. Installation in piping with alternating flow is also possible.

If the max. permissible differential pressures for shut-off are exceeded for valves from DN 125 to 350, a balanced plug design is required. In this case the valve must be installed in such a way that the pressure to be sealed off lies above the valve disc.

The balanced plug works on the bypass principle and can only serve its purpose if backpressure builds up after opening, so that the max. permissible differential pressures for shut-off (see table) are not exceeded.

If a balanced plug design is required for DN 125 to 200, a NORI 40 ZXLBV/ZXSBBV or NORI 40 ZXLB/ZXSBB globe valve must be used.

Table 12: Differential pressures [bar] (standard valve disc)

DN	Δp
125	33
150	21
200	14
250	9
300	6
350	4,5

For globe valves with throttling plug, detailed information about the operating mode is required for optimum valve selection.



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