

Globe Valve

NORI 500 ZXSV

Type Series Booklet



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Type Series Booklet NORI 500 ZXS V

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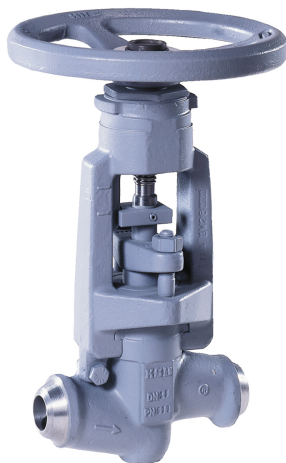
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Globe Valves

Globe Valves to DIN/EN with Gland Packing

NORI 500 ZXSV



Main applications

- Fossil-fuelled power stations
- Boiler feed applications
- Process engineering
- Petrochemical industry
- Chemical industry
- Shipbuilding
- Paper industry / pulp industry
- Sugar industry
- Descaling units
- Mining
- Nuclear power stations

Fluids handled

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

Operating data

Table 1: Operating properties

Characteristic	Value
Nominal pressure	PN 250 - 500
Nominal size	DN 10 - 65
Max. permissible pressure [bar]	600
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +650

Selection as per pressure/temperature ratings (⇒ Page 6)

Valve body materials

Table 2: Overview of available materials

Material	Material number	Temperature limit
16 Mo 3	1.5415	≤ 530 °C
13 CrMo 4-5	1.7335	≤ 550 °C
10 CrMo 9-10/ 11 CrMo 9-10	1.7380/ 1.7383	≤ 580 °C
15 NiCuMoNb 5	1.6368	≤ 450 °C
X 10 CrMoVNb 9-1	1.4903	≤ 650 °C
X 10 CrWMoVNb 9-2	1.4901	≤ 650 °C
X 3 CrNiMoBN 17-13-3	1.4910	≤ 650 °C

Other materials on request.

Design details

Design

- Straight-way pattern
- Throttling plug
- Forged body and yoke
- Bonnetless, with single-piece body
- Stem sealed by gland packing with packing end rings
- Non-rotating stem
- Position indicator
- Disc spring supported threaded bush
- Lubricating nipple for T ≥ 600 °C
- Seat/disc interface made of wear-resistant and corrosion-proof Stellite
- Yoke head suitable for mounting electric and pneumatic actuators (DIN ISO 5210)
- EC type tested (Module B), component mark TÜ.A. 331

Variants

- On/off disc DN 32 - 65
- Stepped throttling
- Gland follower with scraper ring
- Spring-loaded gland packing (live loading)
- Limit switch(es)
- Valve combination with connecting pipe
- Special gland packing
- Weldneck flanges (type ZXLV)
- Combined non-return/shut-off valve
- Angle valve
- Locking device
- Threaded bush free from non-ferrous metals
- Lubricating nipple for T < 600 °C
- Actuator installation kit
- Electric actuators
- Pneumatic actuators
- Other butt weld end versions
- Other socket weld end versions

- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification
- Globe valve with back seat, PN 250-500, DN 10-50, NORI 500 ZXLR/ZXSR, on request
- Lift check valve with bolted cover, PN 250-500, DN 10-50, NORI 500 RXLR/RXSR, on request

Product benefits

- Additional safety by bearing supported and disc spring supported threaded bush. Absolutely tight shut-off, also in the event of temperature fluctuations.
- Easy to assemble and disassemble with bayonet-type body/ yoke connection
- Service-friendly design with single-piece body. No bonnet bolting that needs to be retightened.
- Actuator easy to mount on yoke head with bayonet connection.
- Additional features ensure safe sealing to atmosphere:
 - Risk of leakage is reduced by valve design without bonnet gasket.
 - Graphite gland packing with packing end rings, protected against oxidation by metal caps.
- One model for shut-off and throttling thanks to standard throttling plug for all nominal sizes. Reduces numbers of spares and spare parts stock.
- Stem with burnished shank for long service life and high functional reliability of the gland packing
- Hard-faced valve seat made of wear-resistant and corrosion-proof Stellite.

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 3: Information/documents

Document	Reference number
NORI 320 ZXSV type series booklet (globe valves, bonnetless, with single-piece body)	7640.1
Operating manual	0570.82

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. Material
8. Fluid handled
9. Flow rate
10. Pipe connection
11. Variants
12. Reference number

Always indicate the original serial number and the year of construction when ordering spare parts.

Pressure/temperature ratings

Socket weld ends (to DIN EN 12760) and butt weld ends (to DIN EN 12627), machined

Table 4: Permissible operating pressure [bar]¹⁾

PN	Material		[°C]																											
	Designation	Number	Up to 100	150	200	250	300	350	400	425	450	475	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650		
250	16 Mo 3	1.5415	250,0	250,0	250,0	244,0	214,2	202,3	186,9	179,7	172,6	141,6	110,7	88,0	70,2	55,9	-	-	-	-	-	-	-	-	-	-	-	-	-	
	13 CrMo 4-5	1.7335	250,0	250,0	250,0	250,0	250,0	238,0	225,0	217,8	210,7	185,2	163,0	138,0	111,9	92,8	72,6	58,3	-	-	-	-	-	-	-	-	-	-	-	
	10 CrMo 9-10 / 11 CrMo 9-10	1.7380 / 1.7383	250,0	250,0	250,0	250,0	250,0	244,0	232,1	226,0	220,2	190,4	160,7	140,4	122,6	107,1	92,8	80,9	69,0	60,7	52,3	-	-	-	-	-	-	-	-	-
	15NiCuMoNb 5	1.6368	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	X10CrMoVNb 9-1	1.4903 ³⁾	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	239,2	217,8	197,6	178,5	159,5	142,8	126,1	111,9	98,8	86,9	77,3	66,6	58,3	-	-
	X10CrWMoVNb 9-2	1.4901	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	250,0	240,4	222,6	204,7	186,9	169,0	151,1	134,5	119,0	103,5	89,2	77,3	66,6	-	-
X3CrNiMoBN 1 7-13-3	1.4910	250,0	250,0	238,0	225,0	211,9	203,5	195,2	193,1	191,0	188,9	186,9	186,1	185,4	184,7	184,0	183,3	182,6	181,9	181,1	180,4	167,8	151,1	135,7	121,4	109,5	98,8	-	-	
320	16 Mo 3	1.5415	320,0	320,0	320,0	312,3	274,2	259,0	239,2	230,0	220,9	181,3	141,7	112,7	89,9	71,6	-	-	-	-	-	-	-	-	-	-	-	-	-	
	13 CrMo 4-5	1.7335	320,0	320,0	320,0	320,0	320,0	304,7	288,0	278,8	269,7	237,1	208,7	176,7	143,2	118,8	92,9	74,6	-	-	-	-	-	-	-	-	-	-	-	
	10 CrMo 9-10 / 11 CrMo 9-10	1.7380 / 1.7383	320,0	320,0	320,0	320,0	320,0	312,3	297,1	289,5	281,9	243,7	205,7	179,8	156,9	137,1	118,8	103,6	88,3	77,7	67,0	-	-	-	-	-	-	-	-	
	15NiCuMoNb 5	1.6368	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	X10CrMoVNb 9-1	1.4903 ³⁾	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	306,2	278,8	252,9	228,5	204,1	182,8	161,5	143,2	126,4	111,2	99,0	85,3	74,6	-	-
	X10CrWMoVNb 9-2	1.4901	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	320,0	307,8	284,9	262,0	239,2	216,3	193,5	172,1	152,3	132,5	114,2	99,0	85,3	-	-
X3CrNiMoBN 1 7-13-3	1.4910	320,0	320,0	304,7	288,0	271,2	260,5	249,9	247,2	244,5	241,9	239,2	238,3	237,4	236,4	235,5	234,6	233,7	232,8	231,9	231,0	214,8	193,5	173,7	155,4	140,1	126,4	-	-	

Butt weld ends, machined to customer specifications

Table 5: Permissible operating pressure [bar]¹⁾

PN	Material		[°C]																											
	Designation	Number	Up to 100	150	200	250	300	350	400	425	450	475	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650		
400	16 Mo 3	1.5415	400,0	400,0	400,0	390,4	342,8	323,8	299,0	287,5	276,1	226,6	177,1	140,9	112,3	89,5	-	-	-	-	-	-	-	-	-	-	-	-	-	
	13 CrMo 4-5	1.7335	400,0	400,0	400,0	400,0	400,0	380,9	360,0	348,5	337,1	296,3	260,9	220,9	179,0	148,5	116,1	93,3	-	-	-	-	-	-	-	-	-	-		
	10 CrMo 9-10 / 11 CrMo 9-10	1.7380 / 1.7383	400,0	400,0	400,0	400,0	400,0	390,4	371,4	361,8	352,3	304,7	257,1	224,7	196,1	171,4	148,5	129,5	110,4	97,1	83,8	-	-	-	-	-	-	-	-	
	15NiCuMoNb 5	1.6368	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	X10CrMoVNb 9-1	1.4903 ³⁾	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	382,8	348,5	316,1	285,7	255,2	228,5	201,9	179,0	158,0	139,0	123,8	106,6	93,3	-	-
	X10CrWMoVNb 9-2	1.4901	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	400,0	384,7	356,1	327,6	299,0	270,4	241,9	215,2	190,4	165,7	142,8	123,8	106,6	-	-
X3CrNiMoBN 1 7-13-3	1.4910	400,0	400,0	380,9	360,0	339,0	325,7	312,3	309,0	305,7	302,3	299,0	297,9	296,7	295,6	294,4	293,3	292,1	291,0	289,9	288,7	268,5	241,9	217,1	194,2	175,2	158,0	-	-	

Butt weld ends, unmachined and machined to customer specifications

Table 6: Permissible operating pressure [bar]¹⁾³⁾

PN	Material		[°C]																											
	Designation	Number	Up to 100	150	200	250	300	350	400	425	450	475	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650		
500	16 Mo 3	1.5415	550,0	550,0	547,7	508,6	443,4	417,3	391,2	384,7	378,2	371,7	242,6	193,0	153,9	122,6	-	-	-	-	-	-	-	-	-	-	-	-		
	13 CrMo 4-5	1.7335	550,0	550,0	550,0	550,0	534,7	495,5	469,5	456,4	443,4	436,9	357,3	302,5	245,2	203,4	159,1	127,8	-	-	-	-	-	-	-	-	-	-		
	10 CrMo 9-10 / 11 CrMo 9-10	1.7380 / 1.7383	550,0	550,0	550,0	550,0	550,0	532,1	498,2	481,2	464,2	449,9	352,1	307,8	268,6	234,7	203,4	177,4	151,3	133,0	114,8	-	-	-	-	-	-	-	-	
	15NiCuMoNb 5	1.6368	600,0	600,0	600,0	600,0	600,0	600,0	600,0	600,0	600,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	X10CrMoVNb 9-1	1.4903 ³⁾	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	524,2	477,3	432,9	391,2	349,5	313,0	276,5	245,2	216,5	190,4	169,5	146,1	127,8	-	-
	X10CrWMoVNb 9-2	1.4901	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	550,0	526,8	487,7	448,6	409,5	370,4	331,2	294,7	260,8	226,9	195,6	169,5	146,1	-	-
X3CrNiMoBN 1 7-13-3	1.4910	550,0	550,0	521,6	492,9	464,2	446,0	427,7	423,2	418,6	414,0	409,5	407,9	406,3	404,8	403,2	401,7	400,1	398,5	397,0	395,4	367,7	331,2	297,3	266,0	239,9	216,5	-	-	

i In the case of machined weld ends, the permissible operating pressures are governed by the actual dimensions obtained.

- The valves are suitable for temperatures down to -10 °C.
- Up to max. 580 °C/114.8 bar: Yoke made of 1.7335. Can only be used within the pressure/temperature ratings for 1.7380/1.7383 with PN 500 Above 580 °C: Yoke made of 1.4903 or 1.4910.
- The values specified in the table are permissible for all sizes from DN 10 to 65. Higher values expressed as percentages are permissible for DN 10 to 50: DN 10 (+12.2 %), DN 15 (+6.9 %), DN 20 (+6.0 %), DN 25 (+5.0 %), DN 32 (+5.9 %), DN 40 (+2.4 %), DN 50 (+2.4 %). However, the increased value must not exceed 550 bar.

Materials

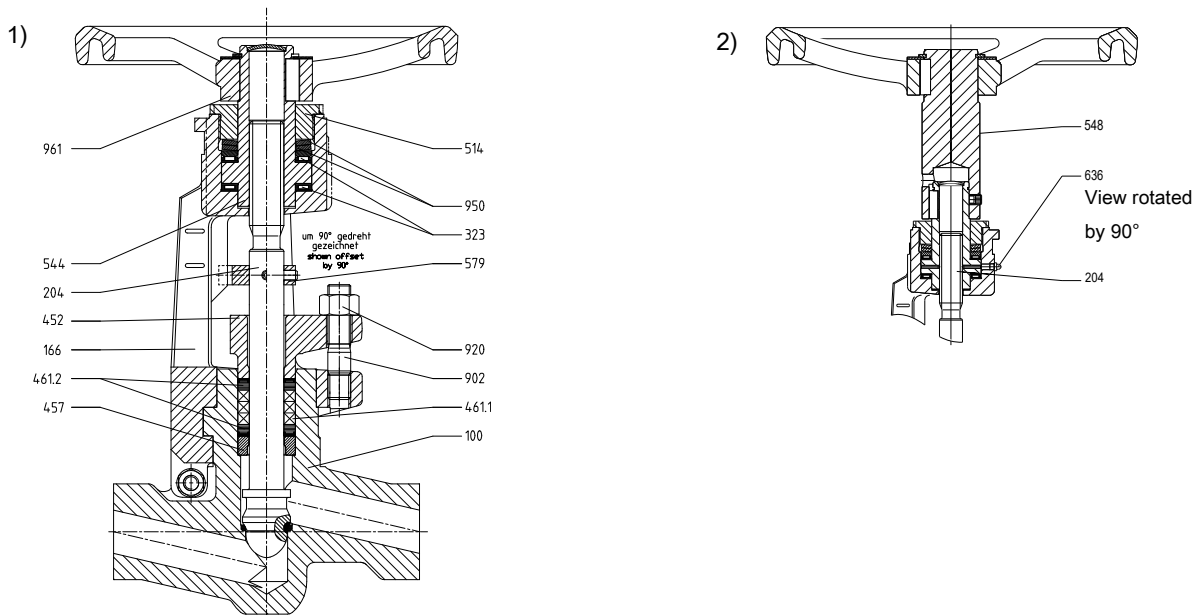


Fig. 1: Sectional drawings; 1) ZXS 2) High-temperature designs

Table 7: Parts list

Part No.	Description	Temperature [°C]	Material	Material number	Note	Seat/disc interface
100	Body	≤ 450	15 NiCuMoNb 5	1.6368	Die-forged	Stellited
		≤ 530	16 Mo 3	1.5415		
		≤ 550	13 CrMo 4-5	1.7335		
		≤ 580	10 CrMo 9-10 / 11 CrMo 9-10	1.7380 / 1.7383		
		≤ 650	X 10 CrMoVNb 9-1	1.4903		
		≤ 650	X 10 CrWMoVNb 9-2	1.4901		
		≤ 650	X 3 CrNiMoBN 17-13-3	1.4910		
166	Yoke	≤ 580	13 CrMo 4-5	1.7335	Die-forged	-
		≤ 650	X 10 CrMoVNb 9-1 / X 3 CrNiMoBN 17-13-3	1.4903 / 1.4910		
204 ⁴⁾	Stem and throttling plug assembly	≤ 580	X 39 CrMo 17-1	1.4122	Single-piece	Stellited
		≤ 600	X 22 CrMoV 12-1	1.4923 ⁵⁾	Single-piece	Stellited
		≤ 650	X 7 CrNiMoBNb16-6	1.4986 ⁶⁾	Two-piece	Stellited
323 ⁴⁾	Thrust needle bearing	≤ 600 ⁷⁾	Steel	-	-	-
452	Gland follower		13 CrMo 4-5	1.7335 ⁷⁾	-	-
457 ⁴⁾	Neck ring	≤ 580	G X 70 CrMo 29-2	1.4136	-	-
		≤ 650	X 20 CrMo 12-1	1.4922	Plasma-nitrided	-
461.1 ⁴⁾	Packing ring	≤ 650	Pure graphite	-	Anti-extrusion design with packing end rings/ stainless steel cap	-
461.2 ⁴⁾	Packing end ring		Graphite / 1.4571	-		-
514	Threaded ring	≤ 560	9 SMn 28 K	1.0718	-	-
		≤ 650	X 39 CrMo 17-1	1.4122	-	-
544 ⁴⁾	Threaded bush	≤ 600 ⁷⁾	CW713R	2.0550	-	-
548	Actuating bush	> 600	C45	1.0503	200-mm extension	-
579	Stop	≤ 600 ⁷⁾	S 275 JR	-	-	-
636	Lubricating nipple	≤ 650	Steel	-	Standard for T ≥ 600 °C Variant for T < 600 °C	-
902	Stud	≤ 600 ⁷⁾	21 CrMoV 5-7	1.7709	-	-
920	Hexagon nut		25 CrMo 4	1.7218	-	-

4 Recommended spare parts

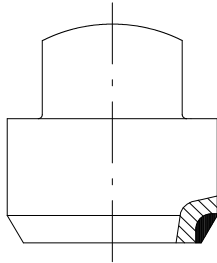
5 Two-piece stem of 1.4986 with plug material 1.4913 available on request.

6 Two-piece stem with plug material 1.4913 (X 19 CrMoNbVN11-1)

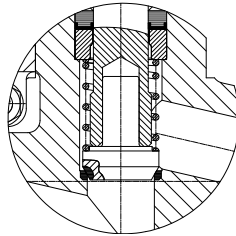
7 Designs for temperatures > 600 °C are selected according to requirements.

Part No.	Description	Temperature [°C]	Material	Material number	Note	Seat/disc interface
950	Disc spring	≤ 600 ⁷⁾	50 CrV 4	1.8159	-	-
961	Handwheel		EN -GJS-400-15	5.3106	-	-

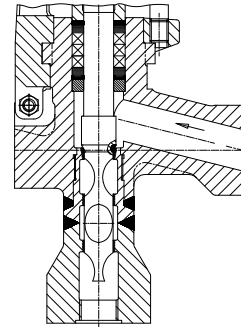
Variants



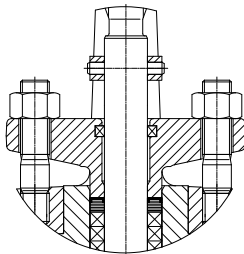
On/off disc



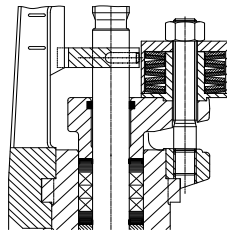
Combined non-return / shut-off valve



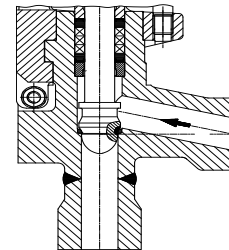
Stepped throttling
Up to PN 320. Higher selection data on request.



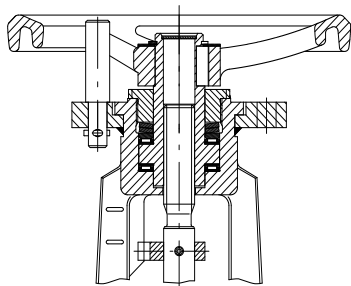
Gland follower with scraper ring



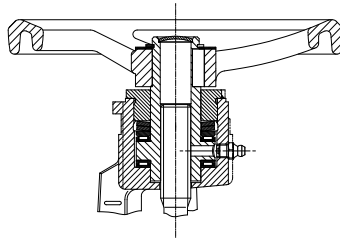
Spring-loaded gland packing



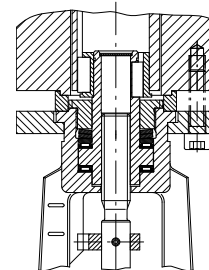
Angle pattern, type ZJSV



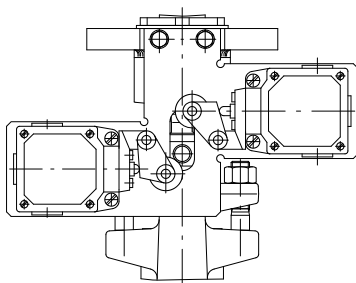
Locking device



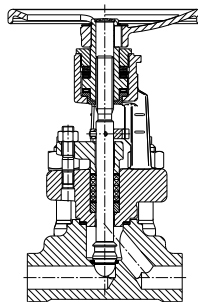
Lubricating nipple



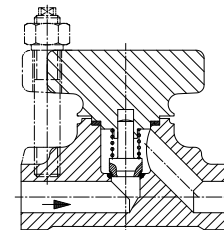
Mounting of electric actuators



Limit switches



Globe valve with back seat,
PN 250 - 500, DN 10 - 50,
NORI 500 ZXLR/ZXSR



Lift check valve with bolted bonnet,
PN 250 - 500, DN 10 - 50,
NORI 500 RXLR/RXSR

Dimensions and weights

Dimensions and weights of NORI 500 ZXSV

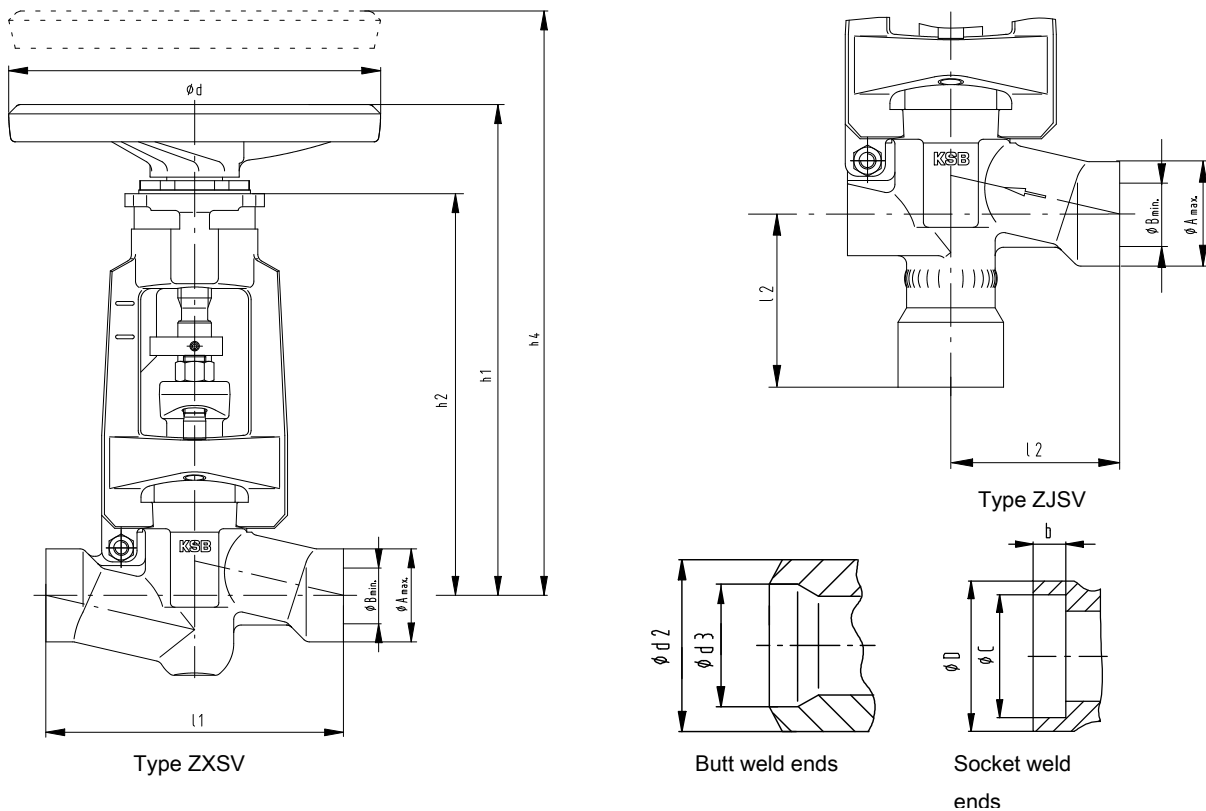


Fig. 2: NORI 500 ZXSV

Table 8: Dimensions and weights

PN	DN	l ₁	l ₂	Butt weld ends, unmachined PN 500		Butt weld ends to DIN EN 12627						Socket weld ends to DIN EN 12760 PN 320 ⁸⁾			h ₁ ⁹⁾	h ₂	h ₄ ¹⁰⁾	Travel	ø d	[kg]
				ø A _{max.}	ø B _{min.}	ø d ₂	PN 250		ø d ₂	PN 320		ø D _{-0.5}	ø C ^{+0.2}	b _{min.}						
							ø d ₃	Pipe dimension s		ø d ₃	Pipe dimension s									
250	10	150,0	75,0	35,0	9,0	18,0	12,0	17,2 × 2,6	18,0	11,5	17,2 × 2,9	27,0	17,6	10,0	244,0	200,0	335,0	9,5	160,0	6,0
320	15	150,0	75,0	35,0	14,0	22,0	16,0	21,3 × 2,6	22,0	15,0	21,3 × 3,2	32,5	21,8	10,0	244,0	200,0	335,0	9,5	160,0	6,0
400	20	160,0	80,0	50,0	19,0	28,0	20,0	26,9 × 3,6	28,0	19,0	26,9 × 4,0	39,5	27,2	13,0	264,0	216,0	375,0	18,0	200,0	8,5
500	25	160,0	80,0	50,0	22,0	35,0	26,5	33,7 × 3,6	35,0	24,0	33,7 × 5,0	48,0	33,9	13,0	264,0	216,0	375,0	18,0	200,0	8,5
	32	250,0	125,0	78,0	30,0	44,0	34,0	42,4 × 4,5	44,0	30,5	42,4 × 6,3	57,5	42,7	13,0	345,0	295,0	485,0	25,0	250,0	20,0
	40	250,0	125,0	78,0	35,0	50,0	39,0	48,3 × 5,0	50,0	36,0	48,3 × 6,3	65,5	48,8	13,0	345,0	295,0	485,0	25,0	250,0	20,0
	50	250,0	125,0	78,0	35,0	62,0	48,0	60,3 × 6,3	62,0	46,5	60,3 × 7,1	77,0	61,2	16,0	345,0	295,0	485,0	25,0	250,0	20,0
	65	300,0	150,0	95,0	44,0	78,0	62,0	76,1 × 7,1	78,0	58,5	76,1 × 8,8	-	-	-	415,0	350,0	590,0	35,5	315,0	33,0

Mating dimensions as per standard

- Face-to-face lengths: See table
- Butt weld ends: DIN EN 12627 figure 2, type B
- 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 3239/1 and/or socket weld ends to ASME B16.11 and DIN 3239/2 are possible.

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⁸ DN 50: PN 250 only; socket weld ends for higher pressures and DN 65 on request
⁹ Open
¹⁰ Vertical clearance for removal

Dimensions and weights of valve combination

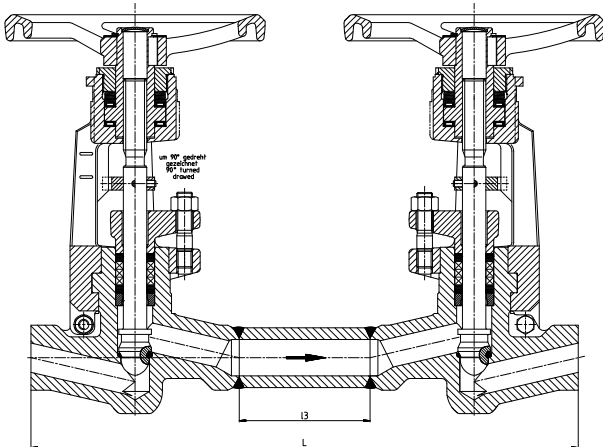


Fig. 3: Valve combination¹¹⁾

Table 9: Dimensions and weights

DN	Valve combination		
	l ₃ [mm]	L [mm]	[kg]
10	60	360	13,0
15	60	360	13,0
20	100	420	19,0
25	100	420	19,0
32	60	560	41,0
40	60	560	41,0
50	60	560	41,0
65	100	700	68,0

Installation instructions

Globe valves must be installed in the line so as to ensure that the fluid enters the valve beneath the valve disc and flows out above the valve disc. They can also be installed in lines with alternating flow.

Combined non-return/shut-off valves must always be installed in the line so as to ensure that the fluid enters the valve beneath the valve disc and flows out above the valve disc.

For globe valves with throttling plug, detailed information about the operating mode is required for optimum valve selection. For throttling valves, it is recommended to have the pressure above the valve disc.

¹¹ Drain lines, vent lines or manual start-up lines are normally fitted with valve combinations consisting of a shut-off valve (pressure beneath the valve disc) and a throttling valve (pressure above the valve disc).



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