

MARITZA EAST I Power Station

Maintenance Manual

Maintenance Manual Number:

KKS Code:

01 HAH30 AA251

Equipment Description:

Valves KSB – Type Nori 500 ZXSV
DN 32

Supplier

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High-pressure globe valves

with gland packing

with butt or socket
weld ends

PN 250-500
DN 10-65

Applications

- In industrial plants, power stations, process engineering and marine engineering
- For water, steam, gas, oil and other non-aggressive media
- Other fluids on request

Operating data

- Maximum allowable pressure 550 bar
- Maximum allowable temperature 650 °C
- Selection as per pressure-temperature ratings (see following page)

Materials

• 16 Mo 3	1.5415	up to 530 °C
• 13 CrMo 4-5	1.7335	up to 550 °C
• 10 CrMo 9-10	1.7380	up to 580 °C
• 15 NiCuMoNb 5	1.6368	up to 450 °C
• X 10 CrMoVNb 9-1	1.4903	up to 650 °C
• X 11 CrMoWVNb 9-1-1	1.4905	up to 650 °C

Other materials on request

Design

- Straight-way pattern with vertical bonnet
- Throttling valve disc
- Forged body and yoke
- Single-piece valve body, without bonnet
- Stem sealed by a confined gland
- Non-rotating stem
- Position indicator
- Threaded bush (no non-ferrous heavy metals) with spring support
- Seat/disc interface made of wear-resistant and corrosion-proof stellite
- Yoke suitable for mounting electric and pneumatic actuators (DIN ISO 5210/5211)
- Component-tested to TRD 110, TRB 801 No. 45 TÜ.A. 331

The valves meet the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.



Standard variants

- Shut-off disc DN 32-65
- Gland with scraper ring
- Position switch
- Valve combination
- Special gland
- Weldneck flange
- Screw-down non-return valve
- Angle pattern
- Locking device
- Parts for actuator installation
- Electric and pneumatic actuators
- Other weld end designs
- Acceptance tests to technical codes such as TRD/TRB/AD2000 or customer specification

Additional information

- NORI® 320 globe valves, type ZXSV, with single-piece body, without bonnet, see type series booklet 7640.1
- NORI®-A globe valves, type ZXLX/ZXSR, with bolted bonnet and back seat, see type series booklet 7655.1
- NORI®-A non-return valves, type RXLR/RXSR, see type series booklet 7693.1
- Operating instructions: 0570.82

On all enquiries / orders please specify

1 Type	7 Material
2 PN	8 Fluid
3 DN	9 Flow rate
4 Working pressure	10 Pipe connection
5 Differential pressure *)	11 Variants
6 Operating temperature	12 Type series booklet number

When ordering spare parts please specify original serial No. and year of manufacture.

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 (zones 2+22) according to ATEX 94/9/EC.



Pressure-temperature ratings

Nom. pressure	Material	Material No.	Permissible working pressures in bar at temperatures in °C 1)																									
			up to 250	300	350	400	425	450	475	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650			
Weld ends machined PN 320	15Mo 3	1.5415	320	320	318	298	293	288	283	179	136	107	86															
	13CrMo 4-5	1.7335	320	320	320	320	320	320	315	274	229	181	148	119	93													
	10CrMo 9-10	1.7380	320	320	320	320	320	320	320	286	250	217	188	162	138	119	102	88										
Weld ends not machined	15Mo 3	1.5415	550	500	484	453	445	437	429	290	231	184	146															
	13CrMo 4-5	1.7335	550	550	550	531	515	500	493	428	362	293	243	190	153													
	10CrMo 9-10	1.7380	550	550	550	550	550	546	531	421	368	321	281	243	212	181	159	137										
	15NiCuMoNb 5	1.6368	550	550	550	550	550																					
	X10CrMoVNB 9-1	1.4903										550	550	550	506	453	406	359	318	281	243	212	181	159	137			
	X11CrMoWVNb 9-1-1	1.4905													550	550	521	478	413	396	359	318	281	250	203			

1) The valves can be used down to -10 °C
Operating pressures to EN 1092/1 are also permissible

Installation

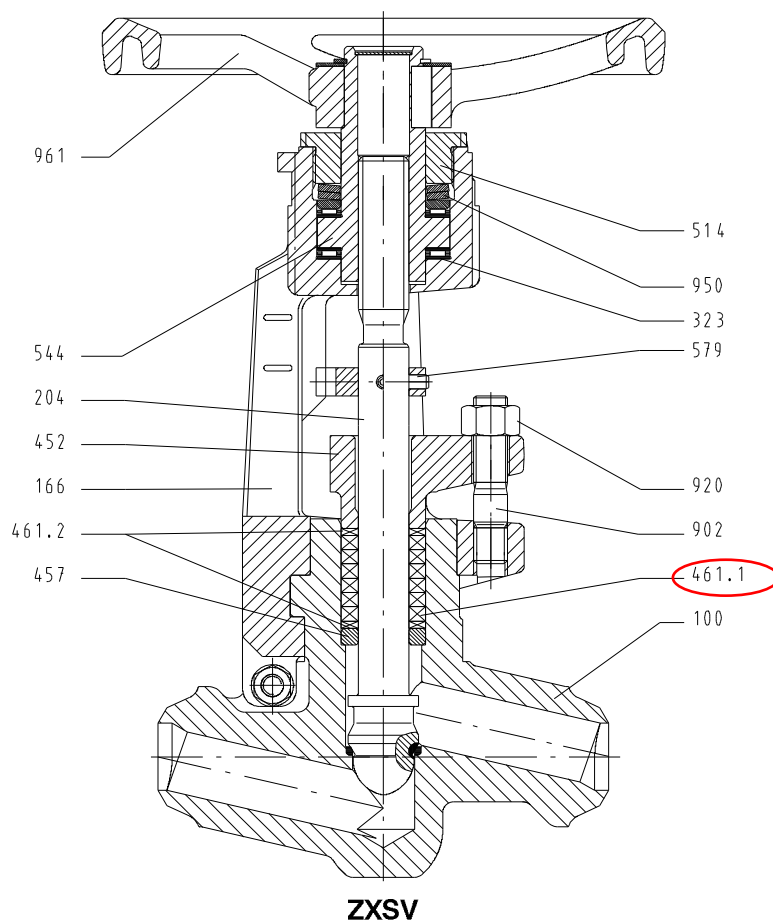
Globe valves are installed in the line so that the fluid enters the valve beneath the disc and flows out above it. They can also be installed in lines with alternating flow directions.

Screw-down non-return valves are installed in the line so that the fluid enters the valve beneath the disc and flows out above it.

Note:

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

When installed as a throttle valve, it is recommended to have the pressure above the disc. Detailed information on the operating conditions is required for optimum selection.



Materials

Part no.	Description	Temperature °C	Material	Notes
100	Body	up to 450	15 NiCuMoNb 5	Die-forged Stellited seat/disc interface
		up to 530	16 Mo 3	
		up to 550	13 CrMo 4-5	
		up to 580	10 CrMo 9-10	
		up to 650	X 10 CrMoVNb 9-1	
		up to 650	X 11 CrMoWVNb 9-1-1	
166	Yoke	up to 580	13 CrMo 4-5	Die-forged
		up to 650	X 10 CrMoVNb 9-1	
204 *)	Throttling disc stem	up to 580	X 39 CrMo 17-1	Stellited seat/disc interface
		up to 650	X 8 CrNiMoBNb 1616	
323	Thrust needle bearing		St	
452	Gland		13 CrMo 4-5	Die-forged
457 *)	Gland ring		G-X70 CrMo 292	
461.1 *)	Packing	up to 600 **)	Pure graphite	Confined
461.2 *)				
514	Threaded ring		9SMn28K	
544 *)	Threaded bush		C45N	Nitrided
579 *)	Stop		S 275 JR	
902	Stud		21 CrMo V 5-7	
920	Hex. nut		25 CrMo 4	
950 *)	Cup spring		50 CrV 4	
961	Handwheel		JM 1130	

*) Recommended spare parts

**) for temperatures > 600 °C selection of material according to requirement

Dimensions for “Valve combination” variant

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

Nom. size	Valve combination		
DN	I 3	L	appr. kg
10	60	360	13
15	60	360	13
20	100	420	19
25	100	420	19
32	60	560	41
40	60	560	41
50	60	560	41
65	100	700	68

