

## **MARITZA EAST I Power Station**

### **Maintenance Manual**

**Maintenance Manual Number:**

**KKS Code:**

01 HAN20 AA003

**Equipment Description:**

Valves KSB – Type STAAL 100 AKDS  
DN 150/150

**Supplier**

**Name:**

KSB – Pumpy+Armatury, s.r.o.

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**Supplier Document Number:**

**Revision Date:**

28.04.2009

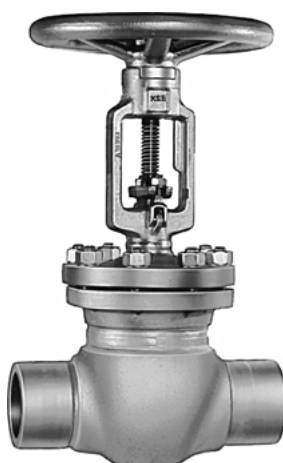
## Shut-off gate valves

with bolted bonnet

flanged  
or  
with butt weld ends



AKD



AKDS

**PN 63-100**  
**DN 50-500**

## Applications

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

## Operating Data

- Maximum permissible pressure 100 bar
- Maximum permissible temperature 530 °C
- Selection as per pressure-temperature ratings (see overleaf)

## Materials

- DN 50/50-250/200
  - P 250 GH <sup>1)</sup> 1.0460 up to 450 °C
  - 13 CrMo 4-5 1.7335 up to 530 °C
- DN 250/250-500/500
  - P 265 GH <sup>2)</sup> 1.0425 up to 400 °C
  - 16 Mo 3 1.5415 up to 500 °C
  - 13 CrMo 4-5 1.7335 up to 530 °C
- Other materials on request

## Design

- Body forged or of welded steel (boiler plate) construction
- Bolted bonnet
- Non-rotating stem with external screw
- Wedge-type
- Yoke head designed for mounting electrical and pneumatic actuators (DIN ISO 5210)

<sup>1)</sup> previously: C 22.8

<sup>2)</sup> previously: H II

## Standard Variants

- Stem protecting tube
- Stem protecting tube with position indicator
- Position switch
- Drain branch
- Hard-faced back seat
- Bypass with shut-off valve
- Threaded bush free of non-ferrous heavy metals
- Electric and pneumatic actuators
- Spur or bevel gear
- Actuating bush with connection for remote control
- Other flange or weld end designs
- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification
- Die-forged model for DN 250/250 and DN 300/250 on request
- >DN 500 on request

## Additional Information

- Swing check valves, STAAL® 100 type AKK/AKKS with bolted cover see type series booklet: 7371.1
- Operating instructions: 0570.81 (DN 50/50-250/200) and 7364.8 (DN 250/250-500/500)

## Purchase Order Data

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

When ordering spare parts, please indicate original works number and year of manufacture.

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

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

Nominal pressure PN	Material	Material No.	Permissible operating pressures in bar at temperatures in °C <sup>1)</sup>												
			up to 120	200	250	300	350	400	425	450	475	500	510	520	530
63	P 250 GH <sup>2)</sup>	1.0460	63	50	45	40	36	32	28	22					
	P 265 GH <sup>3)</sup>	1.0425	63	50	45	40	36	32							
	16 Mo 3	1.5415	63	63	63	56	50	47	46	45	43	31			
	13 Cr Mo 4-5	1.7335	63	63	63	63	61	58	57	56	53	47	40	32	25
100	P 250 GH <sup>2)</sup>	1.0460	100	80	70	60	56	50	45	34					
	P 265 GH <sup>3)</sup>	1.0425	100	80	70	60	56	50							
	16 Mo 3	1.5415	100	100	100	87	78	74	72	70	67	48			
	13 Cr Mo 4-5	1.7335	100	100	100	100	95	91	89	87	82	74	62	49	38

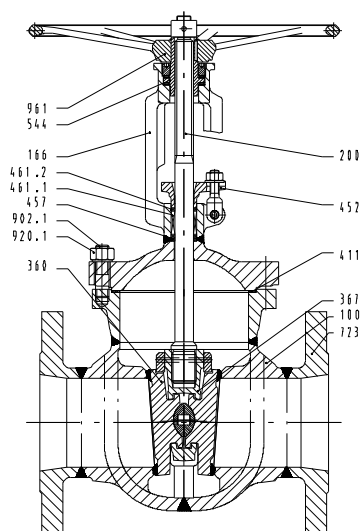
<sup>1)</sup> The valves are suitable for applications down to -10 °C

<sup>2)</sup> previously: C 22.8

<sup>3)</sup> previously: H II

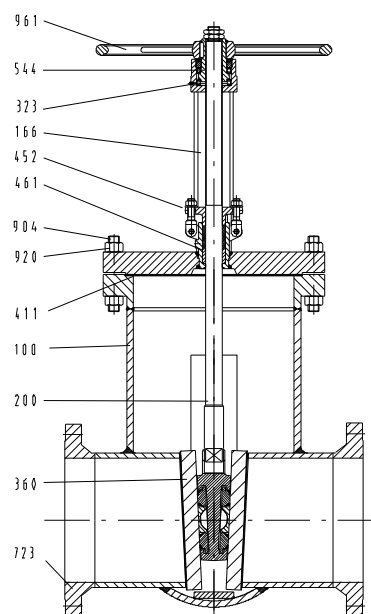
Operating pressures to EN 1092/1 are also permissible

DN 50/50-250/200

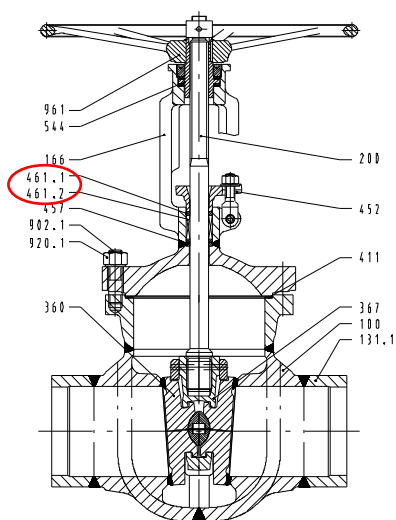


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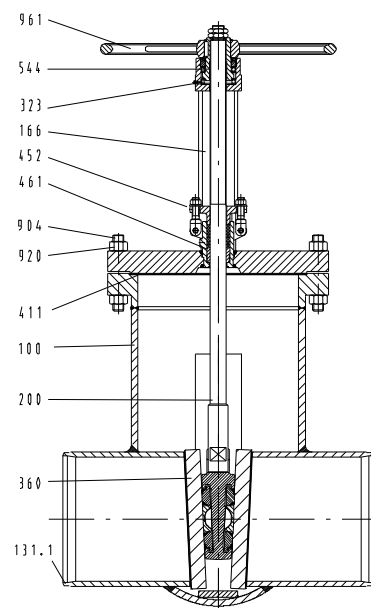
DN 250/250-500/500



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AKDS

## Materials

DN 50/50-250/200

Part No.	Description	Temperature	Materials	Notes
100	Body	up to 450 °C up to 530 °C	P 250 GH 1.0460 13 Cr Mo 4-5 1.7335	Body die-forged and welded
723	Flange			
131.1	Connecting branch			Material can be matched to pipeline material
360 *)	Wedges			
367 *)	Wedge holder			
166	Yoke			
Seat / disc interface	Body	up to 450 °C	X 20 CrMo 17-1 1.4115	Hard-faced
	Wedges	up to 530 °C	Stellite	
200 *)	Stem		X 39 Cr Mo 17-1 1.4122	
411 *)	Joint ring		1.4541-Graphite	Serrated gasket
452	Gland cover		P 250 GH 1.0460	
457 *)	Gland ring		G-X70 CrMo 292 1.4136	
461.1/2 *)	Gland packing	up to 530 °C	Graphite	Compression-moulded rings (confined)
544 *)	Threaded bush		Cu Zn 35 Ni 2 2.0540	on axial needle bearing
902.1	Stud		21 CrMoV 5-7 1.7709	
920.1	Hex. nut		25 CrMo 4 1.7218	
961	Handwheel		GG-25 0.6025	Non-rising

DN 250/250-500/500

Part No.	Description	Temperature	Materials	Notes
100	Body	up to 400 °C up to 500 °C up to 530 °C	P 265 GH 1.0425 16 Mo 3 1.5415 13 Cr Mo 4-5 1.7335	Body of welded steel (boiler plate) construction
723	Flange		P 250 GH / P 265 GH 1.0460 / 1.0425 16 Mo 3 1.5415 13 Cr Mo 4-5 1.7335	
131.1	Connecting branch		P 265 GH 1.0425 16 Mo 3 1.5415 13 Cr Mo 4-5 1.7335	Material can be matched to pipeline material
360 *)	Wedges			
367 *)	Wedge holder			
166	Yoke			
Seat / disc interface	Body	up to 400 °C	X 8 CrTi 18 1.4502	Hard-faced
		up to 530 °C	Stellite	
	Wedges	up to 400 °C	X 20 CrMo 17 1 1.4115	
		up to 530 °C	Stellite	
200 *)	Stem	up to 400 °C	X 20 Cr13 1.4021	
		up to 530 °C	X 39 Cr Mo 17-1 1.4122	
411 *)	Joint ring	up to 530 °C	1.4541-Graphite	Serrated gasket
452	Gland cover		P 250 GH / P 265 GH 1.0460 / 1.0425	
461 *)	Gland packing		Graphite	Compression-moulded rings (confined)
544 *)	Threaded bush		Cu Zn 35 Ni 2 2.0540	on axial bearing
904	Grub screw	up to 400 °C	25 Cr Mo 4 1.7218	
		up to 530 °C	21 CrMo V 57 1.7709	
920	Hex. nut	up to 400 °C	C 35 E 1.1181	
		up to 530 °C	25 Cr Mo 4 1.7218	
961	Handwheel	up to 530 °C	Steel	Non-rising

\*) Recommended spare parts