

## **MARITZA EAST I Power Station**

### **Maintenance Manual**

**Maintenance Manual Number:**

**KKS Code:**

01 LCN10 AA003

**Equipment Description:**

Valves KSB – Type STAAL 40 AKDS  
DN 80

**Supplier**

**Name:**

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**Supplier Document Number:**

**Revision Date:**

28.04.2009

## Gate valves

with bolted bonnet

flanged  
or  
with butt weld ends



AKD



AKDS

**PN 10-40**  
**DN 50-800**

## Fields of Application

- 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 40 bar
- Maximum permissible temperature 400 °C
- Selection as per pressure-temperature ratings (see overleaf)

## Materials

- DN 50-200 P 250 GH <sup>1)</sup> 1.0460
- DN 250-800 P 265 GH <sup>2)</sup> 1.0425

## Design

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

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

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

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

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## Standard Variants

- Stem protecting tube
- Stem protecting tube with position indicator
- Stem protecting tube with position switch
- Bypass with shut-off valve
- Drain branch
- Electrical actuators
- Installation kit for actuators and gearing
- Stellite sealing surfaces
- Other flange or butt weld end designs
- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification
- From DN 900 on request

## Additional Information

- STAAL® 40 swing check valves with bolted cover see type series booklet: 7365.1
- Operating instructions: 7364.8

## 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 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	Permissible operating pressures in bar at temperatures in °C <sup>1)</sup>							
		to 50	100	150	200	250	300	350	400
10	P 250 GH <sup>2)</sup> / P 265 GH <sup>3)</sup>	10	9,3	8,7	7,8	7,1	6,4	6,0	5,8
16		16	14,9	13,9	12,4	11,4	10,3	9,6	9,2
25		25	23,3	21,7	19,4	17,8	16,1	15,0	14,4
40		40	37,3	34,7	30,2	28,4	25,8	24,0	23,1

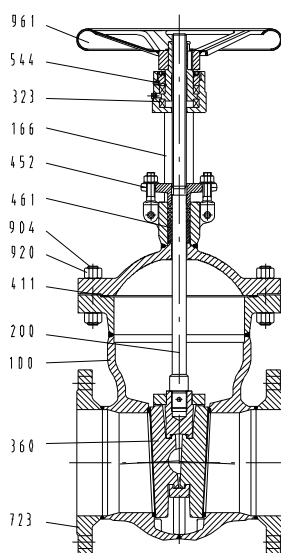
Operating pressures to DIN 2401 are also permitted

<sup>1)</sup> In acc. with EN 1092/1 temperature range down to -10 °C

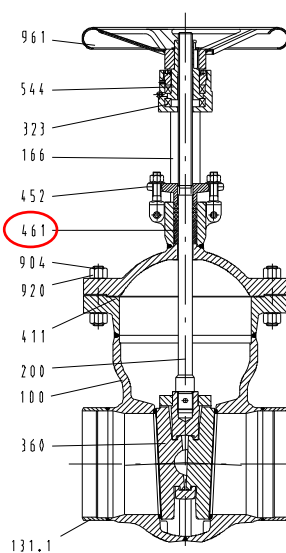
<sup>2)</sup> previously: C 22.8

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

**PN 10-40:**  
DN 50-200

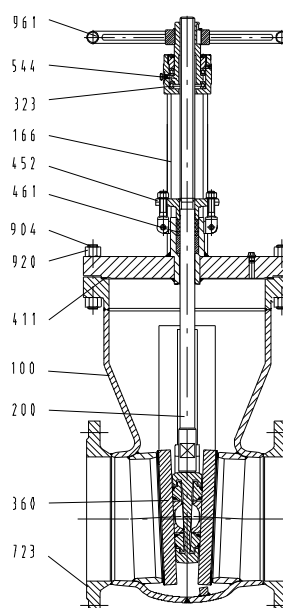


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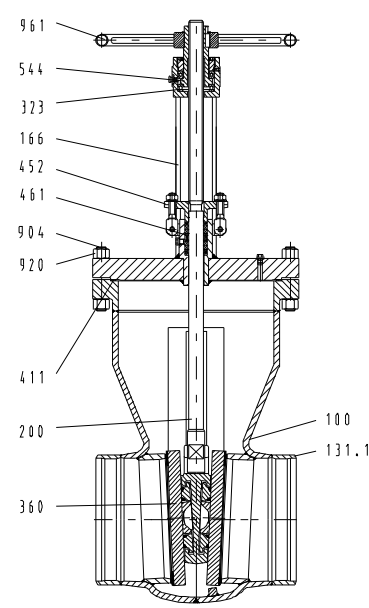


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**PN 10-25:**  
DN 250-400

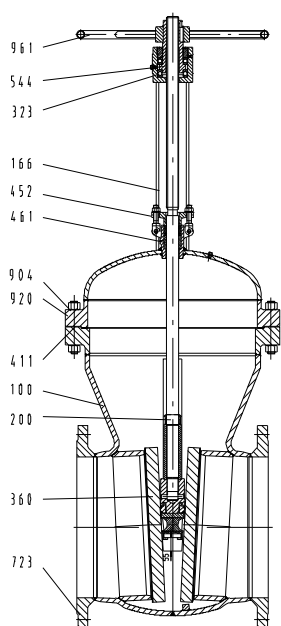


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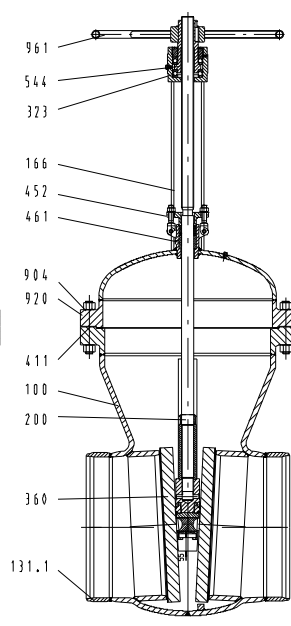


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**PN 10-25:**  
DN 450-800

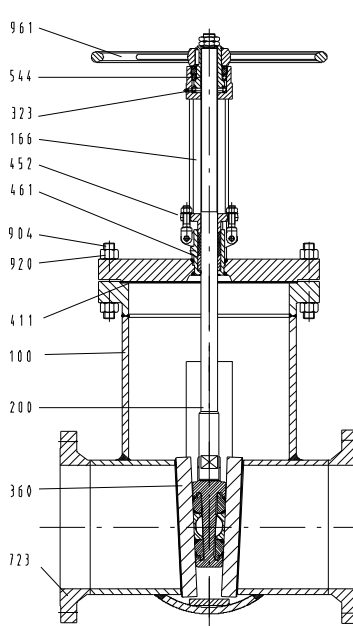


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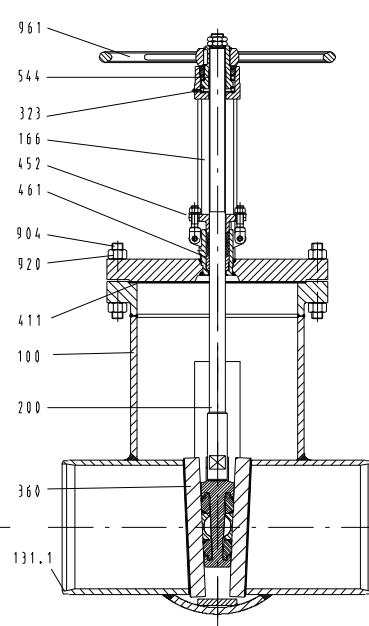


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**PN 40:**  
DN 250-800



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## Materials

Part No.	Description	Materials	Notes
100	Body	P 250 GH 1.0460 P 265 GH 1.0425	≥ DN 250
131.1	Connecting branch	P 235 GH 1.0305 P 265 GH 1.4250	≥ DN 500
166	Yoke	P 250 GH 1.0460 P 265 GH 1.0425	≥ DN 250
200 *)	Stem	X 20 Cr13 1.4021	
323 *)	Thrust bearing	St	
360 *)	Wedges	P 250 GH 1.0460 P 265 GH 1.0425	≥ DN 250
367 *)	Wedge holder	P 250 GH 1.0460 P 265 GH 1.0425	≥ DN 250
Sealing surfaces	Body	X 8 CrTi 18 1.4502	17 % chrome steel
	Wedges	X 20 CrMo 17 1 1.4115	
411 *)	Joint ring	Pure graphite	
452	Gland cover	P 250 GH / P 265 GH 1.0460 / 1.0345	
461 *)	Gland packing	Pure graphite	
544 *)	Threaded bush	9SMnPb 28 K 1.0718	nitrated
723	Flange	P 250 GH 1.0460	
904	Screw bolt	24 CrMo 5 1.7258	
920	Hex. nut	C 35 E 1.0501 / 1.1181	
961	Handwheel	Steel	

\*) Recommended spare parts

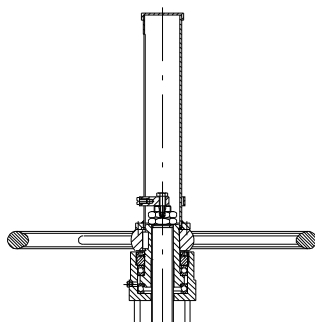
## Installation

**The gate valves are designed for a max. differential pressure equal to the permissible operating pressure.**

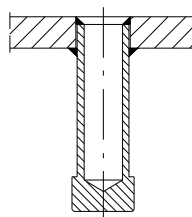
If a bypass line is required or requested for other reasons, a NORI 40 globe valve as per type leaflet 7621.1 should be used as bypass valve, depending on the nominal diameter of the gate valve:

Gate valve	Bypass
DN 150-200	DN 15
DN 250-350	DN 25
DN 400-600	DN 40
DN 700-800	DN 50

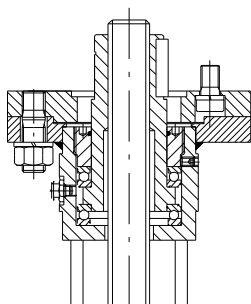
## Variants



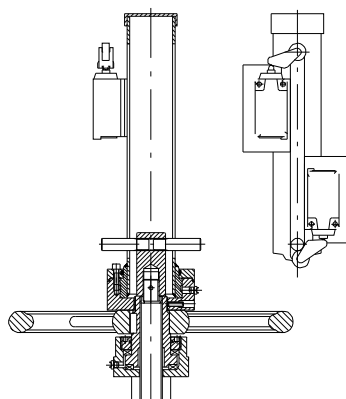
Stem protecting tube with position indicator



Drain branch



Actuator installation kit



Stem protecting tube with position switch