

## **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:**

KSB – Pumpy+Armatury, s.r.o.

**Address:**

Klicova 2300/6  
149 00 Praha 4

**Contact Person:**

Mr. Josef Skrivanek

**Phone:**

+420 241 090 211

**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

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.

## 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<br>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

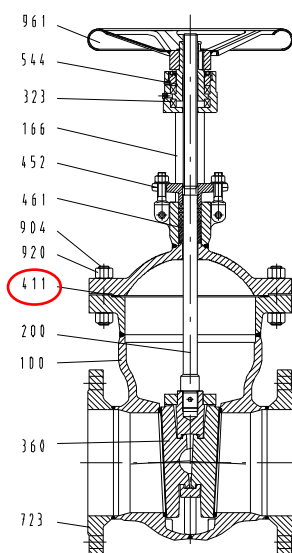
<sup>1)</sup> In acc. with EN 1092/1 temperature range down to -10 °C

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

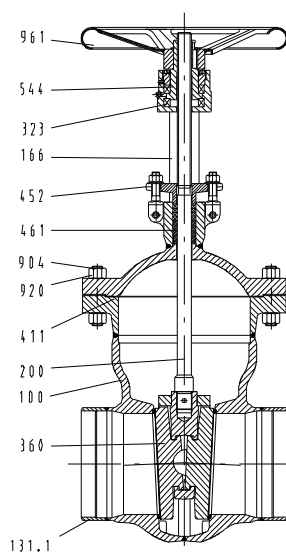
<sup>3)</sup> previously: H II

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

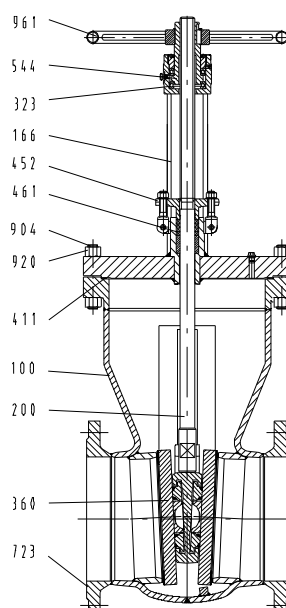
**PN 10-25:**  
DN 250-400



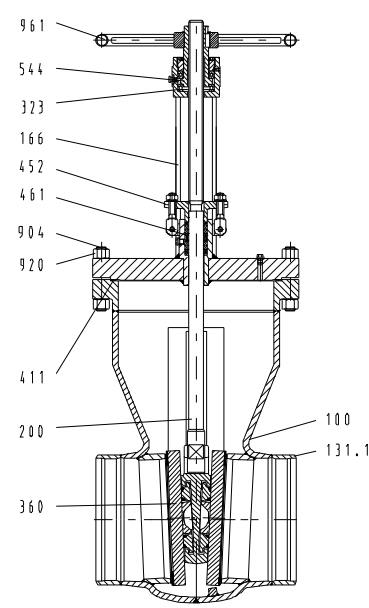
AKD



AKDS



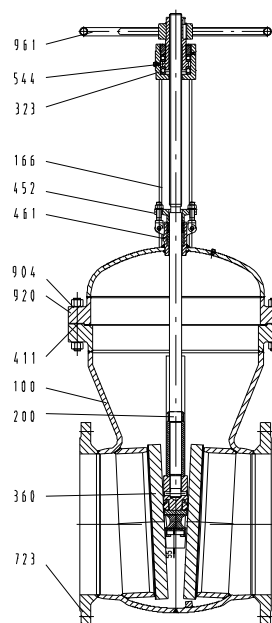
AKD



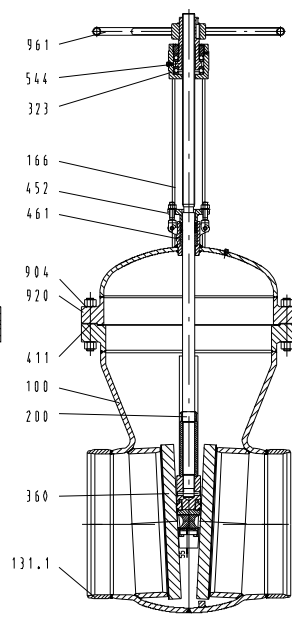
AKDS

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

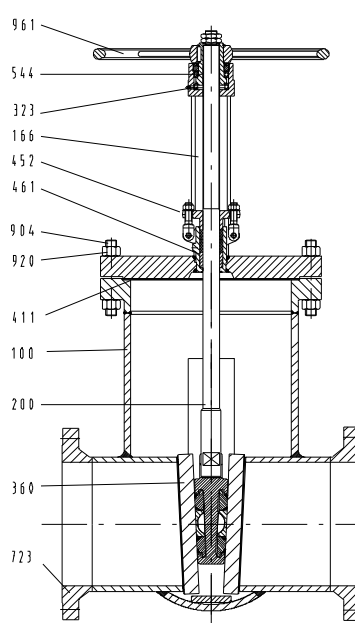
**PN 40:**  
DN 250-800



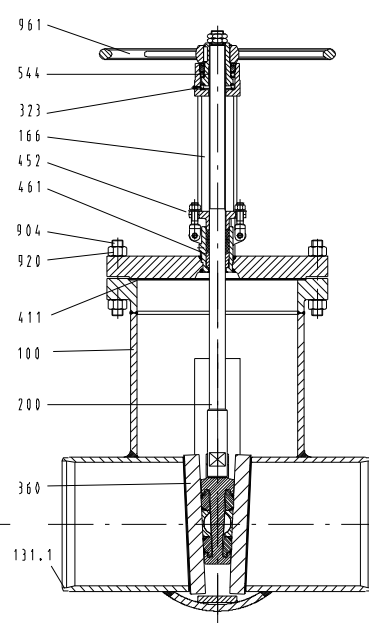
AKD



AKDS



AKD



AKDS

## Materials

| Part No.         | Description       | Materials                           | Notes             |
|------------------|-------------------|-------------------------------------|-------------------|
| 100              | Body              | P 250 GH 1.0460<br>P 265 GH 1.0425  | ≥ DN 250          |
| 131.1            | Connecting branch | P 235 GH 1.0305<br>P 265 GH 1.4250  | ≥ DN 500          |
| 166              | Yoke              | P 250 GH 1.0460<br>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<br>P 265 GH 1.0425  | ≥ DN 250          |
| 367 *)           | Wedge holder      | P 250 GH 1.0460<br>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

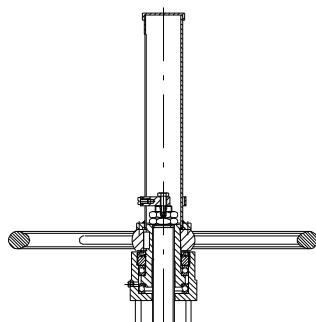
## Installation

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

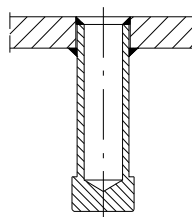
If a bypass line is required or requested for other reasons, a NORI 40 globe valve as per type leaflet 7621.1 should be used as bypass valve, depending on the nominal diameter of the gate valve:

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

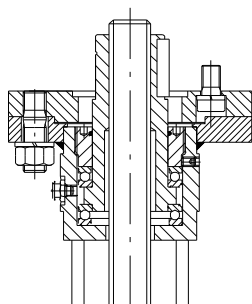
## Variants



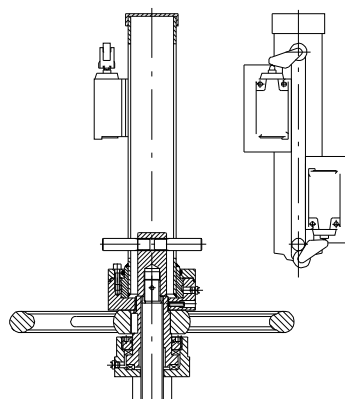
Stem protecting tube with position indicator



Drain branch



Actuator installation kit



Stem protecting tube with position switch