

MARITZA EAST I Power Station

Maintenance Manual

Maintenance Manual Number:

KKS Code:

01 HAN10 AA003

Equipment Description:

Valves KSB – Type ZTS-C

DN 125/125

Supplier

Name:

KSB – Pumpy+Armatury, s.r.o.

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Supplier Document Number:

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Application

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

Operating data

- Maximum allowable pressure 600 bar
- Maximum allowable temperature 650 °C
- Pressure-temperature ratings see next side

Materials

- Body:

| | | |
|---------------------|--------|--------------|
| P 250 GH 1) | 1.0460 | up to 450 °C |
| 15 NiCuMoNb 5 | 1.6368 | up to 450 °C |
| 16 Mo 3 | 1.5415 | up to 530 °C |
| 13 CrMo 4-5 | 1.7335 | up to 550 °C |
| 10 CrMo 910 | 1.7380 | up to 570 °C |
| X 20 CrMo V 11-1 | 1.4922 | up to 600 °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

- Body die-forged
- Pressure-seal bonnet
- Non-rotating stem
- Wedges
- Yoke suitable for mounting electric and pneumatic actuators (DIN ISO 5210/5211)
- Seats made of wear-resistant and corrosion-proof stellite 6

1) previously: C 22.8

Standard variants

- Parallel discs
- Hard-faced back seat
- Drain connection
- Lantern ring in the gland
- Gland packing press-out device
- Cup-disc-spring-supported threaded bush
- Mechanical position indicator
- Position switch
- Spur gear or bevel gear
- Electric or pneumatic actuator
- Drive bushing for remote actuator
- Threaded bush free from non-ferrous metals
- Flange design
- Locking device
- Bypass
- Relief hole upstream of seat ring
- Acceptance tests to technical codes such as TRD/TRB/AD2000 or customer specification

Remarks

- Swing check valves, type ZRS with pressure seal bonnet, see type series booklet 7278.1
- Operating instructions 0570.81
- Pressure relief valve: 7300.1

On all enquiries / orders please specify

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

When ordering spares, indicate original factory number and year of manufacture.

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.



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

| Material | Comp. group | Max. test pressure bar *) | Working pressures in bar at temperatures in °C 1) | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|------------------|--------------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| | | | 20 | 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 |
| P 250 GH 1.0460 | C D E F | 290 440 580 710 | 212 323 426 521 | 202 308 407 496 | 181 277 366 446 | 161 246 325 397 | 141 215 284 347 | 126 192 254 310 | 105 161 213 260 | 85 130 172 210 | 76 115 152 186 | 66 100 132 160 | | | | | | | | | | | | | | | | | |
| 15NiCuMoNb5 1.6368 | C D | 585 900 | 429 660 | 407 618 | 394 598 | 380 578 | 367 558 | 365 539 | 341 518 | 327 498 | 314 476 | 242 374 | | | | | | | | | | | | | | | | | |
| 16Mo3 1.5415 | C D E F | 365 555 735 895 | 268 408 539 657 | 237 361 478 583 | 214 326 432 527 | 192 292 386 471 | 177 269 356 434 | 151 231 304 372 | 147 223 294 359 | 141 215 284 347 | 140 211 279 341 | 136 207 275 335 | 134 205 269 329 | 94 143 189 231 | 66 100 132 162 | 52 79 104 128 | 42 63 83 102 | | | | | | | | | | | | |
| 13CrMo4-5 1.7335 | C D E F | 365 555 735 895 | 268 408 539 657 | 243 369 488 596 | 228 346 457 558 | 213 323 407 521 | 202 308 376 459 | 187 269 355 434 | 177 254 335 409 | 167 246 325 385 | 162 238 315 378 | 157 235 310 378 | 155 211 277 341 | 138 178 236 288 | 118 145 191 233 | 95 119 158 193 | 79 93 124 151 | 61 75 100 121 | 49 75 100 121 | | | | | | | | | | |
| 10CrMo910 1.7380 | C D E F | 365 555 735 895 | 268 408 539 657 | 248 377 498 608 | 232 354 467 570 | 217 331 437 533 | 213 323 407 521 | 202 308 376 459 | 187 269 355 434 | 177 254 325 397 | 173 262 345 422 | 167 254 335 409 | 162 246 325 397 | 136 207 275 335 | 119 181 239 292 | 104 158 210 255 | 91 138 183 223 | 79 119 158 193 | 69 104 138 168 | 58 89 117 144 | 51 78 103 126 | | | | | | | | |
| X20CrMoV11-1 1.4922 | C D E F | | | | | | | | | | | | | 237 361 478 583 | 213 324 429 523 | 188 286 378 462 | 169 257 339 414 | 148 226 299 365 | 129 196 260 317 | 113 172 227 278 | 96 126 167 203 | 83 107 143 173 | 71 90 119 146 | 59 90 119 146 | | | | | |
| X10CrMoVNb 9-1 1.4903 | C D E F | | | | | | | | | | | | | | | 245 324 470 514 | 225 296 429 472 | 204 270 391 428 | 185 244 353 387 | 166 214 283 311 | 148 195 251 275 | 131 174 221 244 | 116 154 221 244 | 102 135 197 215 | 89 117 170 186 | 78 103 148 162 | 67 87 126 139 | 59 77 112 122 | 50 67 96 105 |
| X11CrMoWVNb 9-1-1 1.4905 | C D E F | | | | | | | | | | | | | | | | | | | 205 263 355 420 | 187 239 322 380 | 170 218 294 347 | 152 195 263 311 | 136 174 234 276 | 125 160 215 254 | 115 147 198 234 | 102 130 175 207 | 91 116 156 184 | 78 100 132 158 |

1) The valves can be used down to -60 °C

*) Max. test pressure = working pressure x 1,5 / 1,1

Operating pressures to EN 1092/1 are also permissible

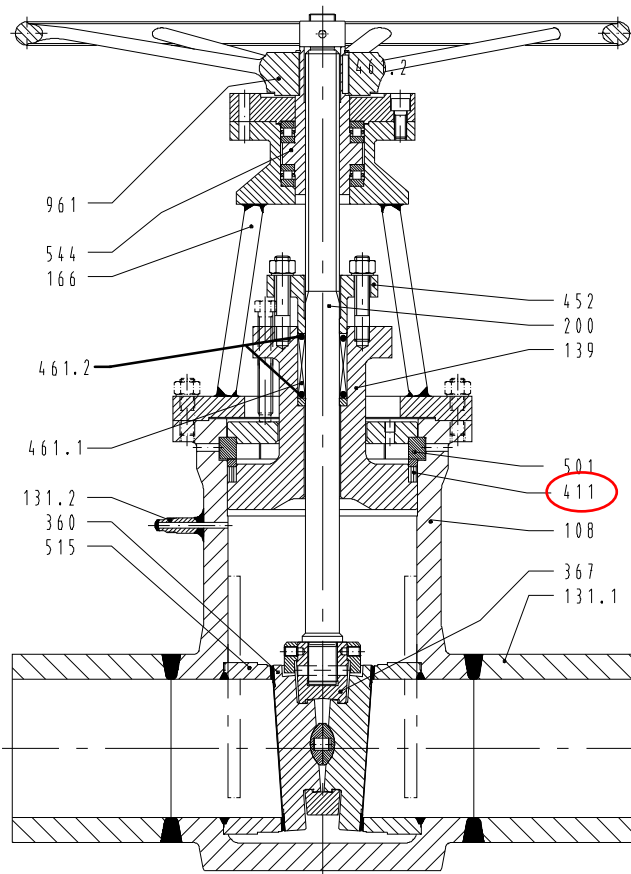
Materials

| Part no. | Name of parts | Materials for working temperatures up to °C | | | | | | |
|----------|--------------------------------------|---|-----------------------|---------------------|---------------------|--|---|---|
| | | 450 | | 530 | 550 | 570 | 600 | 650 |
| 101 | Body lower part | P 250 GH 1.0460 | | 16Mo3 1.5415 | 13CrMo4-5 1.7335 | 10CrMo910 1.7380 | | |
| 102 | Body upper part | | | | | | | |
| 108 | Body | | | | | | | |
| 131.1 | Connection branch | | | | | | | |
| 139 | Bonnet | 10CrMo910 1.7380 | 15NiCuMoNb5 1.6368 | 10CrMo910 1.7380 | | | X20CrMoV11-1 1.4922 | X10CrMoVNb 9-1 1.4903 X11CrMoWVNb 9-1-1 1.4905 |
| 501 *) | Split ring | | | | | | | |
| 360 *) | Wedges Hard-faced stellite 6 | | | | | | | |
| 368 *) | Slide discs Hard-faced stellite 6 | | | | | | | |
| 515 | Seat ring Hard-faced stellite 6 | 13CrMo4-5 1.7335 | | 13CrMo44 1.7335 | | 10CrMo910 1.7380 | | |
| 131.2 | Connection branch | 13CrMo4-5 1.7335 | | | | 10CrMo910 1.7380 X10CrMoVNb 9-1 1.4903 X11CrMoWVNb 9-1-1 1.4905 | | |
| 166 | Yoke | 13CrMo4-5 - 1.7335 C22 N - 1.0402 | | | | | 10CrMo910 - 1.7380 C22 N - 1.0402 | |
| 200 *) | Stem | X39CrMo17-1 1.4122 | | | | | X22CrMoV121 1.4923 X5NiCrTi2615 1.4980 | |
| 367 *) | Wedge holder | 13CrMo4-5 1.7335 | 15NiCuMoNb5 1.6368 | 10CrMo910 1.7380 | | | X10CrMoVNb 9-1 1.4903 | |
| 411.1 *) | Gasket | Pure graphite | | | | | | |
| 452 | Gland | 13CrMo4-5 - 1.7335 | | | | 10CrMo9-10 - 1.7380 | | |
| 461 *) | Packing | Pure graphite | | | | | | |
| 544 *) | Threaded bushing | Multi-alloy bronze / Multi-alloy bronze - C 22.8 (on ball bearings) | | | | | | |
| 961 | Handwheel | GG - 0.6025 / steel welded | | | | | | |

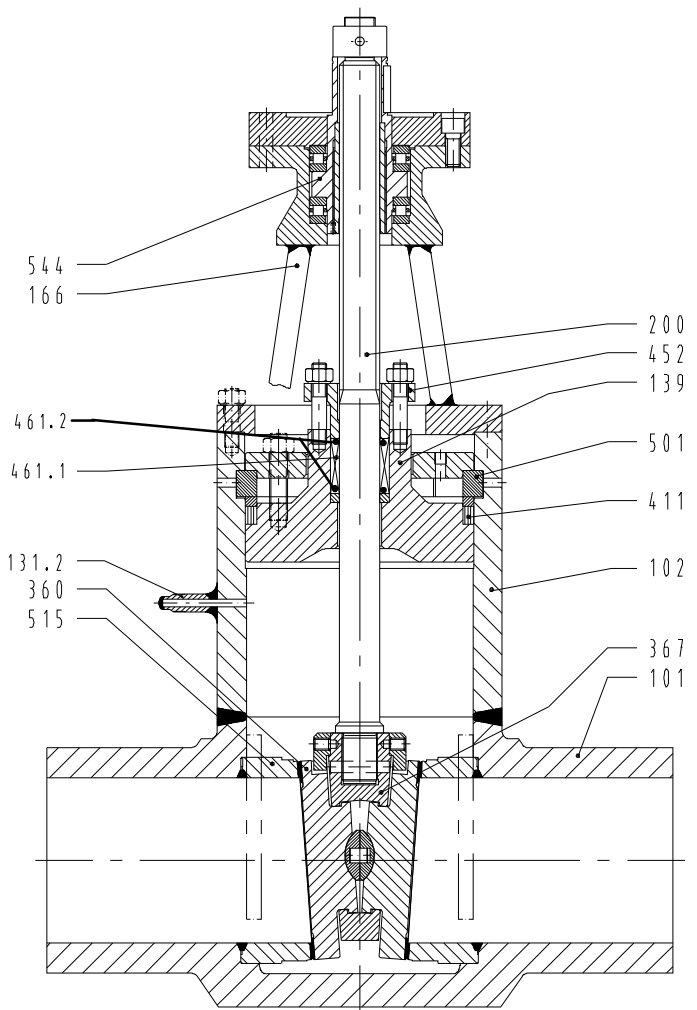
*) Recommended spare parts

DN 50/50 - 200/175

DN 200/200 - 500/450

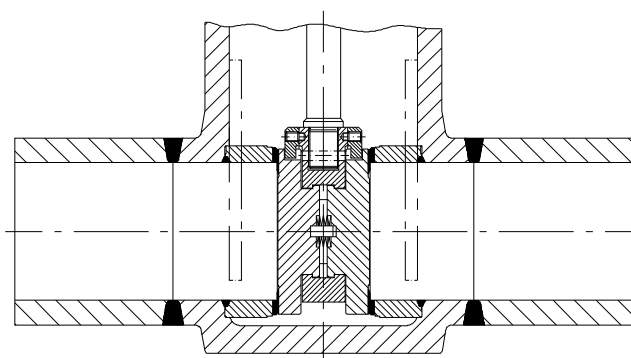


with connection branches

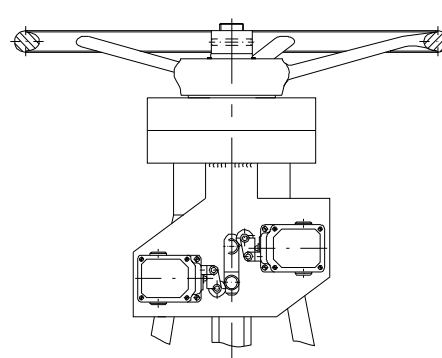


without connection branches

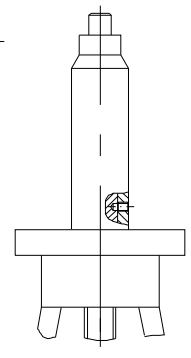
Variants



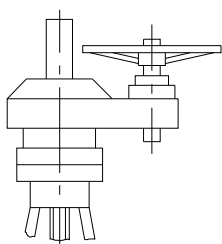
Slide discs



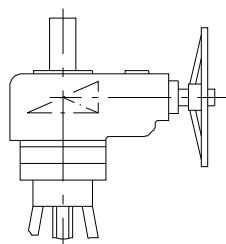
Position indicator
with position switch



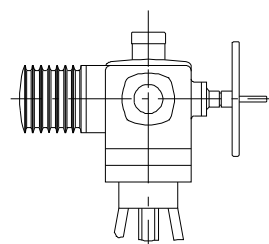
Drive bushing



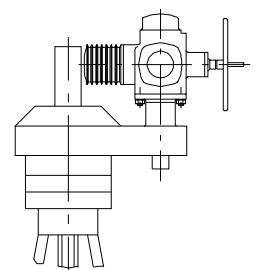
Spur gear with handwheel



Bevel gear with handwheel



Electr. actuator



Electr. actuator with spur gear