

## Ball valve specification

### 1. GENERAL REQUIREMENTS

- A. Size – 4" - 12" - according to bill of quantity.
- B. ANSI class 150# - #600 - according to bill of quantity.
- C. Type –Trunnion mounted Ball valve.
- D. Design Standard – API 6D (DB&B - DIB2), API Monogram required.
- E. Seats – SPE (on the upstream side) & DPE (on the downstream side).
- F. End connection –Flange to ASME B 16.5 150# - #600 RF - according to bill of quantity.
- G. Port – full bore.
- H. Operation – Rotork + Gear or Hand operated + Gear or pneumatic operated - according to bill of quantity.
- I. Valve shall be equipped With Lift lugs.

### 2. SERVICE

- A. **Liquid** - Different types of distillate fuel: Crude, gas oil, kerosene, gasoline, diesel oil, etc. - Temp. Max. 60 °C.
- B. Liquid with high degree of particles & sand.
- C. **Environment** – valve will be installed at a desert conditions area – low humidity, sand storms ext'.

### 3. MATERIAL

- **All row material will be USA/Europe origin.**

- A. The valve shall be manufactured from cast grade materials.
- B. All valve's materials shall be presented in the proposal.
- C. Vent & drain valves: 316 Stainless steel.

### 4. STEM PACKING

Design shall allow emergency replacement of stem packing in the event of a stem leak, while valve is connected to line and under pressure.

### 5. TRIM

Suitable for service conditions (to be advice by manufacturer).





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#### 6. POSITION INDICATION

Valve will be equipped with an external indication on its position, made of stainless Steel 316.

#### 7. VALVE BODY PRESSURE RELIEF

A. Valve shall be equipped with a self-relieving mechanism to relief excess pressure from body cavity, due to thermal expansion, to one of its sides.

#### 8. NAME PLATE

SS 316 (2 mm thickness) – Details accordance with API 6D

#### 9. VALVE PAINTING

- A. Surface preparation – SA 2.5
- B. Primer - Zinc rich epoxy 70 micron thick SSPC. Primer will contain over 80% zinc by weight of the dry film.
- C. Intermediate - tolerant epoxy mastic surface thick at 150 microns minimum, two layers as needed.
- D. Upper - polyurethane oval white 80 micron thick single layer or two separate layers of 40 microns each Ready Made. Hue of upper layers will be white matte, reflective level of about 84%
- E. Total dry thickness – at least 300 microns

#### 10. FITTINGS

- A. Secondary grease fitting for upstream & downstream seats - NPT
- B. Body drain valve – Ball NPT
- C. Body vent valve – Ball NPT
- D. Stem packing - NPT

#### 11. ACTUATOR – according to bill of material

- A. Valves shall be equipped with "ROTORK" electric actuator latest model, series IQ 3 or a pneumatic operation actuator.
- B. FM explosion proof.
- C. Power: 400V, 3phase, 50Hz.
- D. IP – 68
- E. Included WD100000/2000 for connection to "PAKSCAN" including board, **including cable glands.**





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- F. Suitable for valve operation under max differential pressure with 25% over sizing of torque, opening/closure time of valve 90 sec min., 120 sec max.
- G. Valve will be supplied with actuator & gear installed and calibrated at **the valve manufacturer factory.**

## 12. TESTING

- A. All tests shall be done at the manufacturer factory with actuator assembled and calibrated on the valve.
- B. PEI will have the right to have an audit at the contactor's premises, either by PEI's personal, or by an authorized 3th party inspector. The audit will include whole production & testing process.
- C. Valve test will be accordance to API 6D and include, but not limited, the following tests:
  - 1) Hydrostatic shell test
  - 2) Hydrostatic stem back seat test
  - 3) Hydrostatic seat tests:
    - a) Seat A
    - b) Seat B
    - c) Double Block & Bleed (DIB2 procedure)
  - 4) Functional actuator test:
    - a) Stroking time from open to close/close to open @ Max  $\Delta P$ .
    - b) Torque valve opening during @ Max  $\Delta P$ .
    - c) Torque valve opening during @ Max  $\Delta P$ .

## 13. Documentation

- A. Documentation shall be supplied in accordance with API 6D Annex J QSL 2 and will include the following (but not limited to):
  - 1) Hydrostatic test report





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- 2) MTRs (include trim materials)
  - 3) Certificate of compliance
  - 4) Material certification ER 10204 – 3.1
  - 5) Installation, operation and maintenance manuals
  - 6) Actuator setting
  - 7) Mill test certification
  - 8) Valve drawings
    - a) As-Made after manufacture.
    - b) Packing set drawing.
- B. Design drawings and considerations will be present to PEI for approval.
- C. Installation, operation and maintenance manuals will be sent to PEI for review after the PO submittal.
- D. The contactor will present to PEI the consideration taken for the actuator & gear selections for approval.

