Ball valve specification

1. GENERAL REQUIREMENTS

- Type –Trunnion mounted Ball valve 3 pcs.
- Design Standard – API 6D (DB&B - DIB2), API Monogram required.
- Seats – SPE (on the upstream side) & DPE (on the downstream side).
- The valves shall be manufactured, tested, marked and delivered in accordance with the requirements of the API 6D – Pipeline Valves, (Steel Gate, Plug, Ball, and check Valves) last edition

  API 6FA - Fire test for valves.

  API Monogram required.
- Flanges (Class Range):

  The valves shall have flanged ends.

  End connections shall be according to ANSI B16, #150, #300 or #600.

  The flanges shall be a RF type.
- Port – full bore.
- Operation – Rotork.
- Valve shall be equipped With Lift lugs.

2. SERVICE

A. **Liquid** - Different types of distillate fuel: Diesel Fuel, Kerosene, Gasoline - Temp. Max. 60 °C.

B. Liquid with high degree of particles & sand.

Pressure Rating:

Maximum differential pressure according to installation location:

For class #150: 285 psi.

For class #300: 740 psi.

For class #600: 1440 psi.

C. **Environment** – valve will be installed at a sea conditions area – high humidity.

3. MATERIAL

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

The manufacture will be North American or Western European only (including processing, assembly and testing).

A. All valve's materials shall be presented in the proposal.

B. 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).

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

Each valve must have two identical identification plates (containing technical details and the serial number). One plate should be permanently attached to the valve body, and a second, identical plate must be attached to the exterior of the shipping crate.

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.

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**.

F. Suitable for valve operation under max differential pressure with 25% over sizing of torque, opening/closure time of valve 60 sec min., 90 sec max.

G. Valve will be supplied with actuator & gear installed and calibrated at **the valve manufacturer factory.**

Additional Technical Requirements:

- Material: Stainless Steel 316 nameplate.
- Cable Sealing: Sealed cable plugs included.
- Display: UV-protected Rotrock indicator screen.
- Valve Actuation Speed: Mechanical actuation speed up to 8 inches per minute.
- Cable Glands Included:
    - *2 X M20 cable glands*
    - *1 X M25 cable gland*

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, ether 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) Functional actuator test:

a) Stroking time from open to close/close to open @ Max ΔP.

b) Torque valve opening during @ Max ΔP.

c) Torque valve opening during @ Max ΔP.

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

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.

E. IOM (Hard Copy & Digital):

    i. Hard Copy: printed IOM (Installation, Operation, and Maintenance) manual inside the crate for each valve, corresponding to its specific serial number.
    ii. Digital Copy: separate digital copy of the IOM for each valve, clearly identified by its serial number.