



Petroleum & Energy Infrastructures Ltd.
Oil Products Pipeline Ltd.

Engineering Department

Slab Gate valve specification

1. GENERAL REQUIREMENTS

- A. Size – 16"
- B. ANSI class 150
- C. Type – positive sealing SLAB gate valve
- D. Max length between pipe-center to bottom of the valve- 450mm
- E. Design Standard – API 6D (DB&B), API Monogram required.
- F. Seats – SPE
- G. End connection – Flange to ASME B 16.5 #150
- H. Port – full bore
- I. Operation – Electric actuator (Rotork) + Gear (if needed)
- J. 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. **Environment** – valve will be installed next to sea (environment with high corrosion)

3. MATERIAL

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

- A. Body : ASTM A216 GR. WCC
- B. Bonnet : ASTM A216 GR. WCC
- C. Gate and segment : ASTM A350 LF6 + ENP (75 microns)
- D. Stem : ASTM A182 F316
- E. Stem protector : ASME SA53
- F. Stem protector cap : MALLEABLE IRON
- G. Indicator rod : 316 Stainless steel
- H. Stud : ASTM A193 GR. B7M
- I. Yoke : ASTM A216 GR. WCC
- J. Vent & drain valves : Stainless steel

4. STEM PACKING

- A. Stem packing Design Shall Include:
 - 1) Chevron V rings.





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- 2) Graphite + PTFE/TFE rings.
 - 3) Lantern rings.
 - 4) Stem packing gland shall be threaded at an internal packing box. The stem seal shall be completely contained in the bonnet. Adjustable outside packing Gland with screw & nut are not allowed.
- B. 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**
- A. Suitable for service conditions (to be declare by manufacturer)
6. **INDICATION ROD**
- A. Valve will be equipped with indication rode 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.
8. **NAME PLATE**
- A. 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

- 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 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
 - 4) Functional actuator test:
 - a) Stroking time from open to close/close to open @ Max ΔP .
 - b) Torque valve opening during @ Max ΔP .





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c) Torque valve opening during @ Max ΔP .

13. Documentation

- A. Documentation shall be supplied in accordance with API 6D Annex J QSL 2 (but not limited to).
- B. Installation, operation and maintenance manuals will be sent to PEI for review after the PO submittal.
- C. The contactor will present to PEI the consideration taken for the actuator & gear selections for approval.
 - 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
 - a) Torque percentage @ open/close (open/close time & torque required).
 - b) Actuator Action mod (Limit/Torque) @ open/close.
 - 7) Mill test certification
 - 8) Valve drawings
 - a) As-Made after manufacture
 - b) Packing set drawing

