

Technical Specification

For:

**Double block-and-bleed
Plug valve 16”**

1. General

- 1.1. This specification covers the design, fabrication, testing, painting and supply of Plug valve 16" with electric actuator for Europe Asia Pipeline Co. (EAPC).
- 1.2. The valve is for installation on ASHKELON site. Condition as specified in paragraph 3.

2. Scope of supply

The scope of supply shall include the following:

- 2.1. 2 double block-and-bleed plug valve ASME pressure class 150 16" with "AUMA" Electric actuator. Opening/close time: 75 sec.
- 2.2. The bid shall include the list of recommended spare parts list including special tools for assembly / disassembly. For avoidance of any doubt, the information mentioned above is for information only and it will be not a part of a winner's selection process as specified in the RFP.

3. Design requirements

3.1. General:

- 3.1.1. Type: the valve should be zero-leakage double block-and-bleed plug valve.
- 3.1.2. Pressure class: ASME 150.
- 3.1.3. The valve design should provide a tight mechanical seal and shall be unaffected by pressure variations.
- 3.1.4. The valve shall be designed with positive stops that need no adjustment.
- 3.1.5. The valve design shall provide the option for repair the valve while in line (pressure removed and valve drained).
- 3.1.6. The valve should be supplied completely assembled, Valve & electric actuator and ready for installation.
- 3.1.7. The valve should be supplied with safety bleed and differential thermal relief (DTR) installed at the right side.
- 3.1.8. The valve shall be with position indicator.
- 3.1.9. All units shall be supplied completely assembled – ready for installation.
- 3.1.10. End connection: Flanged Raised Face according to ASME B16.5.

3.2. Dimension

- 3.2.1. Nominal size: 16".
- 3.2.2. Pressure class: #150.

3.3. Site condition

- 3.3.1. Eastern Mediterranean inland terminals.
- 3.3.2. Temperature: 5 – 55°C
- 3.3.3. Humidity: up to 90%
- 3.3.4. The site is very close to the sea shore with a corrosive industrial atmosphere – Extreme environment.

3.4. Process Conditions

- 3.4.1. Fluid :
 - 3.4.1.1. Gas oil (Diesel).
 - 3.4.1.2. Gasoline.
 - 3.4.1.3. Jet fuel oil with up to 15% MTBE and 70% aromatics at ambient temperature.
- 3.4.2. Temperature : +2°C to 55°C
- 3.4.3. Special Conditions: Sandstorms and dust.
- 3.4.4. Installation: underground Service.

3.5. Manufacturers

- 3.5.1. FRANKLIN or
- 3.5.2. CAMERON

3.6. Standards of Compliance

- 3.6.1. API 6D: Specification for pipeline and piping valves
- 3.6.2. API 622: Type Testing of Process Valve Packing for Fugitive Emissions
- 3.6.3. API 598: Valve Inspection and Testing
- 3.6.4. API 607: Fire test for soft-seated Plug valves, or API RP6F.
- 3.6.5. ASME B16.5 – 2017: Pipe flanges and flanged fitting.

3.7. Actuator

- 3.7.1. The valve shall be fitted with "AUMA" electric actuator, in a totally self-contained and sealed unit, complete with motor, integral pushbutton station and indicating lights station, switch control unit, hand-wheel and a totally enclosed gear-train as per below detailed description.
- 3.7.2. After order, the supplier will verify the actuator data and requirements through the local rep. of "AUMA" in Israel.
- 3.7.3. Reversing contactors and circuit breaker will be installed in a separate electrical panel.
- 3.7.4. Enclosure:
 - 3.7.4.1. Water proof IP68.
 - 3.7.4.2. Explosion proof approved for ZONE1: Enclosure protection EEXed IIB T3
 - 3.7.4.3. Cable entry: stopper plugs.
- 3.7.5. Wiring diagram
 - 3.7.5.1. Non integral control, double torque switch, 3 push buttons (open, stop, close).
 - 3.7.5.2. Local + remote + off switch key located in each position, with 3 additional contacts, one for each position, wired to terminals.
 - 3.7.5.3. The electrical wiring of the actuators to be prepared so that the electrical contractors will be outside the actuator in a separate electrical board that EAPC will supply.
 - 3.7.5.4. Wiring diagram shall be submitted for client approval.
- 3.7.6. Motor
 - 3.7.6.1. Power supply: 400V/3PH/50HZ.
 - 3.7.6.2. Motor operator mounted parallel to pipe line.
 - 3.7.6.3. Motor installation: class F
 - 3.7.6.4. Duty cycle: 15 min rating, 60 starts per hour

- 3.7.6.5. PTC type self-regulating anti-condensation space heater for motor and enclosure protection, externally fed (230VAC).
- 3.7.6.6. Motor overload thermostat (triple): imbedded in winding wired to terminals.
- 3.7.6.7. Operation under max differential pressure with 25% over sizing of torque.
- 3.7.6.8. Mechanical continuous position indicator showing valve position.
- 3.7.7. Control: 48VDC.
- 3.7.8. Ergonomically sized side-mounted hand-wheel for manual emergency operation with hand/auto lever and automatic de-clutching mechanism at motor starting. Hand-wheel should not rotate during motor operation.
- 3.7.9. Opening and closing time should be mentioned.
- 3.7.10. Maximum number of Successive cycles should be mentioned.

3.8. Materials of Construction

- 3.8.1. Body: Carbon steel ASTM A216 grade WCB or WCC chrome plated
- 3.8.2. Bonnet and lower plate: Carbon steel ASTM A216 grade WCB or ASTM A516 grade 70
- 3.8.3. Plug assembly: ASTM A216 grade WCB or WCC chrome or electroless nickel plated
- 3.8.4. Slips: Ductile iron ASTM A536 Gr 80-55-06, ASTM A395 60-40-18 or ASTM A516 Gr70
- 3.8.5. Gland packing: Graphite
- 3.8.6. Body fire seal: Graphite
- 3.8.7. Slip Seal Material: Viton
- 3.8.8. O-Rings Material: Viton
- 3.8.9. Fasteners: ASTM A193 Gr. B7/2H

4. Painting

- 4.1. Valve and actuator shall be coated in accordance with manufacturer standard and to meet site conditions as specified in para. 3.
- 4.2. Purchaser prefers powder coating. Vendor shall specify proposed coating in his quotation.

5. Testing

- 5.1. Test certificates shall be transmitted to purchaser in 3 copies.
- 5.2. Vendor shall furnish details of the extent of shop assembly and testing procedures he intends to follow.
- 5.3. The testing shall be in accordance with API 6D standard.
- 5.4. Test will be conducted only after installation of actuator. The manufacturer will supply complete tested equipment which includes valve tested with actuator.
- 5.5. Test procedure must include:
 - 5.5.1. Torque calibration both final positions acc. to manufacturer standard.
 - 5.5.2. Detailed test certificate for valve actuator to be supplied Minimum information:
 - 5.5.2.1. Serial numbers of valve and actuator to be indicated in test certificate
 - 5.5.2.2. Low and high limits of torque calibration.

- 5.5.2.3. Mechanical position indicator to be calibrated during test to achieve full compliance with plug position.
- 5.5.2.4. The calibration of both limit switch and torque switch must ensure that limit switch will have priority over torque switch.

6. Tagging

- 6.1. The actuator and the motor shall have permanent marking by means of a stainless steel nameplate, 16 gauge thick prominently positioned. The nameplate shall contain the following data:
 - 6.1.1. Name of manufacturer
 - 6.1.2. Size, rating and max. operating temperature
 - 6.1.3. Manufacturer type & serial number
 - 6.1.4. Calibration values for torque switch

7. Mechanical guarantee

- 7.1. Vendor will guarantee that the equipment furnished is free from faults in design, workmanship and materials, and is of sufficient size and design to satisfactorily fulfill the operating conditions specified.
- 7.2. If any defect in design, materials, workmanship or operating characteristics develop during the first year of operation (but not over twenty four (24) months from the date of shipment), the Vendor will make all necessary or desirable alternations, repairs and replacements of said defective equipment, free of charge and shall also pay transportation involved of the above mentioned to and from the plant.
- 7.3. If the defect or functional failure cannot be corrected, the Vendor agrees to replace promptly, free of charge, the faulty equipment.

8. Documentation

- 8.1. The following documents are to be transmitted in English:
 - 8.1.1. With bid:
 - 8.1.1.1. General arrangement drawings of valve and actuator with overall dimensions.
 - 8.1.1.2. Cross section showing construction details
 - 8.1.1.3. Material Specification
 - 8.1.1.4. List of recommended spare parts
 - 8.1.2. With Order:
 - 8.1.2.1. Installation, Operating and Maintenance Instruction, including full parts list and drawings explaining replacement of spares, wiring diagram
 - 8.1.2.2. 3D model for valve and actuator.