

Europe Asia Pipeline Company LTD.

**SPECIFICATION FOR
GATE VALVE 42" #400 FOR CRUDE OIL
PIPELINE SERVICE**

P/N: 7104223005

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1. GENERAL

This specification covers the manufacture assembly, inspection, testing and supply of 42" #400 gate valve for EAPC Ltd.

The valve is for installation on 42" ASHKELON– EILAT pipeline, site condition specified in paragraph 3.

2. SCOPE OF SUPPLY

The scope of supply shall include the following:

2.1 One 42" Double Block & Bleed full bore SLAB gate valve with floating seats. Class (ANSI) 400. B.W. Ends per ASME B16.25. With "AUMA" Electric actuator.

2.2 Valve characteristics:

2.2.1 The valve shall be zero leakage.

2.2.2 Design as fire proof.

2.2.3 The antistatic device shall be tested accord. to API 6D.

2.2.4 Built in thermal pressure relief device for relief of oversize pressure from closed bonnet to side.

2.2.5 Full bore gate valve & Piggable.

2.2.6 B.W. ends.

2.2.7 Through conduit slab gate valve (ANSI/ASA 400).

2.2.8 The valve shall have outside screw and yoke with rising stem.

2.2.9 Buried installation.

2.2.10 The material for pressure-containing and pressure-controlling parts and bolting shall meet the requirements for sour service.

2.3 Drain, Vent and Sealant lines

2.3.1 Drain, Vent and sealant lines shall be provided. The lines shall be fastened to the valve and/or extensions and terminate close to the stem extension top works.

2.3.2 Drain and Vent block valves shall be provided

2.3.3 Valve body pressure relief device.

2.3.4 The drain line shall be 2" pipe.

2.3.5 The drain/vent/grease pipes shall be welded.

- 2.3.6 Injection points for sealant, lubrication or flushing shall be provided for seats and stem. The injection points shall incorporate a check valve and secondary means of isolation. For each injection points.
- 2.4 The valve shall be with indicating S.S. 316 rod show the open and the closed position of the gate.
- 2.5 The valve shall have lifting points.
- 2.6 The quotation shall include the list of recommended spare parts list including special tools for assembly / disassembly with P/N and prices.

3. **DESIGN REQUIREMENTS**

3.1 **General**

The gate valve should be double block and bleed full bore SLAB gate valve with floating seats. Valve design should provide a tight mechanical seal and shall be unaffected by pressure variations. The full-bore design shall provide the same pressure drop as an equivalent length of pipe and shall allow passage of all types of scrapers (pigs). The gate valve shall be designed with positive stops that need no adjustment. The valve design shall provide the option for repair the valve while in line (pressure removed and valve drained).

3.2 **Pipeline Data**

- 3.2.1 NPS Outside Diameter: 42"
- 3.2.2 Wall thickness :Range 0.375"- 0.5"
- 3.2.3 Standard: Range API 5L-X42 – X60

3.3 **Site Conditions**

- 3.3.1 Eastern Mediterranean inland terminals
- 3.3.2 Temperature: 5 – 55 °C
- 3.3.3 Humidity: up to 90%

3.4 **Process Conditions**

- Fluid : Crude oil (sour)
- Temperature : +2°C to 60°C
- Special Conditions : Sandstorm and dust
- Installation : Underground Service

3.5 **Standards of Compliance**

- 3.5.1 Basic design: API 6D
- 3.5.2 Test & inspection: API 6D
- 3.5.3 Fire Safe Conforms: API 6FA
- 3.5.4 Nondestructive Examination (NDE):
 - 3.5.4.1 Radiographic testing on 100% of critical areas of castings.
 - 3.5.4.2 Radiographic testing of weldments on 100% of welds.
 - 3.5.4.3 Magnetic-particle testing on 100% of weld bevels of welding ends after machining.

3.6 **Actuators**

3.6.1 General

- 3.6.1.1 Valve shall be fitted with "AUMA" electric actuators.
- 3.6.1.2 Opening/Closing time: 8m15s \pm 15s.
- 3.6.1.3 Reversing contactors and circuit breaker will be installed in a separate electrical panel.
- 3.6.1.4 Corrosion protection: Permanently exposed to aggressive chemical substances, AUMA order code KS.
- 3.6.1.5 Output drive isolation drive AUMA code IB3-14.2

3.6.2 Enclosure

- 3.6.2.1 Water proof IP68.
- 3.6.2.2 Explosion proof approved for ZONE1: Enclosure protection EEXed IIB T3.
- 3.6.2.3 Cable entry: stopper plugs.

3.6.3 Wiring diagram

- 3.6.3.1 Non integral control, double torque switch (1NC and 1NO) for each direction, 3 push buttons (open, stop, close).
- 3.6.3.2 Limits switching: triple switches (3NC and 3NO) for each position. Local + remote +off switch key located in each position, with 3 normally open additional contacts, one for each position, wired to terminals.
- 3.6.3.3 Wiring diagram shall be submitted for client approval.

3.6.4 Motor

3.6.4.1 Motor voltage: 400V/3PH/50HZ

3.6.4.2 Motor installation: class F, 15 min rating, 60 starts per hour

3.6.4.3 Heater: in switch compartment 24-48VDC

3.6.4.4 Control elements: push buttons OPEN-STOP-CLOSE, indication lights OPEN-FUALT-CLOSE, all the control elements should be with 24VDC.

3.6.4.5 Motor protection: thermos witches (NC)

3.6.4.6 Operation under max differential pressure with 25% over sizing of torque

3.6.5 Hand wheel for manual override

3.6.6 Position indication: mechanical position indicator.

3.6.7 Socket connector: AUMA code KES (Ex e)

4. **TESTING**

4.1 Test certificates shall be transmitted to purchaser in 3 copies.

4.2 Vendor shall furnish details of the extent of shop assembly and testing procedures he intends to follow.

4.3 The testing shall be in accordance with API 6D standard.

4.4 **Test will be conducted only after installation of actuator**; manufacturer will supply complete tested equipment which includes valve tested with actuator.

4.5 Test procedure must include:

4.5.1 Torque calibration both final positions acc. to manufacturer standard.

4.5.2 Detailed test certificate for valve and actuator to be supplied. Including Minimum information as follows:

4.5.2.1 Serial numbers of valve and actuator to be indicated in test certificate

4.5.2.2 Low and high limits of torque calibration.

4.5.2.3 Mechanical position indicator to be calibrated during test to achieve full compliance with gate position.

4.5.2.4 The calibration of both limit switch and torque switch must ensure that limit switch will have priority over torque switch.

5. PAINTING

- 5.1 Valve and actuator shall be coated in accordance with manufacturer standard and to meet site conditions as specified in para. 3.
- 5.2 The coating shall be suitable for underground installation.
- 5.3 Vendor shall specify proposed coating in his quotation.

6. ASSEMBLY OF COMPONENTS

All units shall be supplied completely assembled – ready for installation.

7. MARKING

- 7.1 The valve shall be marked in accordance with requirements of API 6D.
- 7.2 The nameplate shall contain at least the following data:
 - 7.2.1 Name of manufacturer.
 - 7.2.2 Size, rating and max. Operating temperature.
 - 7.2.3 End to End dimension.
 - 7.2.4 Body, stem, seats and seals materials.
 - 7.2.5 Manufacturer type & serial number
 - 7.2.6 Calibration values for torque switch
 - 7.2.7 Purchaser part number
 - 7.2.8 Date of manufacture

8. MECHANICAL GUARANTEE

Vendor will guarantee that the equipment furnished is free from faults in design, workmanship and materials.

Should 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.

If the defect or functional failure cannot be corrected, the Vendor agrees to replace promptly, free of charge, the faulty equipment.

9. **DOCUMENTATION**

The following documents are to be transmitted in English:

With bid:

- General arrangement drawings of valve and actuator with overall dimensions
- Cross section showing construction details
- Material Specification
- Stem Diameter @ Thread.
- Design calculation for pressure-containing parts and the drive train.

With Order:

- Installation, Operating and Maintenance Instruction/manuals, including full parts list and drawings explaining replacement of spares.
- Wiring diagrams.
- Certificate of conformance to NACE (sour service).
- NDE procedure and Records.
- Coating/plating certification.
- Material inspection certificates for: Seats, Stem, Gate, Body, Bonnet, Bolts and Nuts.

Eur1 certificate **or** US Certificate of Origin will be required.

10. **BILL OF QUANTITIES**

EAPC Pipeline - Gate valves design according to API 6D						
Item	Type	Size/Class/ Ends	Operation	Qty	Unit Price	Total Price
1	DB&B full bore SLAB gate valve with floating seats	42" ANSI 400 B.W	Electric actuator	1		