
 EUROPE ASIA PIPELINE CO	Project	Ashkelon LPG Tank Farm - New LPG Tanks 16,17		
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ASHKELON TERMINAL

LPG Tank Farm

Specification for Ball Valve

Spec. No. : 4966.5-078

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Attachments:

A. Attachment A – list of valves , diameters, end description

1. GENERAL

This specification covers the requirements for the design and supply of Ball Valves, with either pneumatic and manual operators, or only hand operated, to be installed at the EAPC Ashkelon for LPG service on the bulk LPG terminal.

2. SCOPE OF SUPPLY

- 2.1. Ball valves with pneumatic actuators according to data sheet attachment A.
- 2.2. The valves shall be trunnion or any other arrangement that allows replacement of axle seal without taking the valve offline.
- 2.3. The actuator shall meet the requirements of paragraph 5.

3. DUTY

Either one of the following ways will actuate the remote-controlled valves:

- 3.1. Remote actuation (ON-OFF from control room) by means of an electrical signal to a compressed air solenoid (explosion proof) that controls a pneumatic On-Off actuator.
- 3.2. The Hand Valves should have either a suitable handle or a mechanical gear for easy opening or closing

4. DESIGN REQUIREMENTS

- 4.1. Media: LPG liquid and gas.
- 4.2. Pressure design body at least 40 bars
- 4.3. Site Conditions
 - Eastern Mediterranean inland terminal, close to sea
 - Operating temperature: 0°C to + 45 °C
 - Humidity: up to 90%
- 4.4. Area classification – ATEX Zone 2.
- 4.5. Connections – According to attachment A
- 4.6. Installation Position - vertical or horizontal.

4.7. Technical requirements

- 4.7.1. Valves up to and including 2" shall be with carbon steel body to ASTM A 105 with 316 stainless steel ball rated at 800# fire safe to API 607 socket weld, as per attachment A, and shall meet the requirements of API 6D. The seal arrangement of the axle should be replaceable without taking the valve offline (under LPG vapor pressure). The axle should be resistant to fatigue and assure at least 10,000 cycles of operation.
- 4.7.2. Hand operated valves above 2" shall be with carbon steel body to ASTM A 105 with a suitable ball and ball seal to assure at least 10,000 cycles of operation with flanged ends to ANSI B16.5, rated as per attachment A, fire safe to API 607. Valves shall meet the requirements of API 6D. The axle should be resistant to fatigue for the same number of operations as the seal. The axle seal should be replaceable without taking the valve offline (under LPG vapor pressure).
- 4.7.3. Remote operated valves of any diameter shall be carbon steel body to ASTM A 105 with a suitable ball valve and seal material as to assure 100,000 cycles of operation without failure. Valves shall meet the requirements of API 6D, fire safe to API 607, with either flanged ends rated #300 as per ASME B16.5, or beveled ends for butt weld as per attachment A. The axle should be fatigue resistant and the axle seal should permit seal replacement (for axle) without the need of taking the valve off-line (under LPG vapor pressure). The actuator should be pneumatic and fully serviceable without the need of taking the valve off line and shall permit a normally close posture without energy activation (no air pressure shall determine actuator closure of the valve)
- 4.7.4. Operating conditions – see attachment A

4.8. Materials:

- Body: Cast Carbon Steel ASTM 216-WCB.
- Ball and seals – suitable for LPG service

5. ACTUATION

- 5.1. Actuators – where specified, actuators shall be air operated (pneumatic). Air shall be dry with a dew point of – 20 °C. Air pressure shall normally be 6 barg. Minimum air pressure shall be 4 barg.
- 5.2. Pneumatic actuators will be supplied complete with 48VDC solenoid explosion proof valve.
- 5.3. Each actuator will be equipped with at least two end dry contacts (passive NO/NC

contacts max 2A 230Vac\dc) to enable transmission of valve position (both close and open) to be indicated in control room. The dry contacts will be seated in an EEX enclosure (zone 1) equipped with SKINTOP® MS-M ATEX, anti-static brass cable gland with cold impact resistance and maximum reliability, explosion-proof or similar for cable 2x2x16 AWG Individual and overall shielded, outer Diameter (mm nom) – 11.1

5.4. Instrumentation Cable

5.5. Each actuator air supply shall include an air filter in accordance with the actuator manufacturer's recommendations.

5.6. Water proof enclosure, IP-68, ATEX zone 2

5.7. Cable entry: SKINTOP® MS-M ATEX, anti-static brass cable gland with cold impact resistance and maximum reliability, explosion-proof or similar for cable 2x2x16 AWG Individual and overall shielded, outer Diameter (mm nom) – 11.1

5.8. Hand wheel and clutch for manual override

5.9. External position indicator visible from at least 10 m distance

6. APPROVALS AND LISTING

The proposed valves (without actuator) shall be listed or approved for the dedicated application international well-known organization.

7. TESTING

7.1. The testing shall be in accordance with standard listed above.

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

8. PAINTING

8.1. All external surfaces shall be epoxy painted or powder coated according to manufactures standard, and to meet site conditions as specified.

8.2. The specification of the paint system shall be submitted with proposal.

9. ASSEMBLY OF COMPONENTS

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

10. NAMEPLATE

One 16-gauge 304 type stainless steel nameplate containing the following data shall be fixed to each valve:

- EAPC equip. No.:
- Name of manufacturer and year of manufacture
- Order number
- Manufacturer's serial of reference number
- Model number
- Design data (size, rating, pressure, flow rate)

11. DATA TO BE SUBMITTED WITH OFFER

- Data sheet.
- A general layout drawing with final dimensions and configurations.
- Assembly drawing with complete and detailed technical description including all spare parts, list of recommended spare parts for a 5 years maintenance period
- Materials of construction.
- Electrical and Instrumentation elements, their manufacturers and models.
- Pressure loss curve versus flow rate.
- Complete installation, operation and maintenance Manual.
- Catalogues.
- Copies of Approvals and Listings
- Paint specification.
- Installation requirements

12. GUARANTEE

- 12.1. The supplier guarantees that the equipment furnished is free from faults in design, workmanship and material, and is of sufficient size and capacity to meet the requirements of this specification.
- 12.2. Should any defect in design, material, workmanship, installation or operating characteristics develop during the first year of operation, the supplier agrees to make all necessary or desirable alterations, repairs and replacement of equipment, free of charge.
- 12.3. Vendor is required to keep in stock a sufficient number of spare parts for all components.
- 12.4. Vendor is required to supply spare parts for service within 24 hours upon request.

Attachment A – List of valves

No	Valve description	Operational tag / tags	left end	right end	Operation	Diam. Nom.	supply quantity	EAPC catalogue
1	Main liquid supply container valve	3695 / 3795	buttweld bevelled	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	10"	2	7228101225
2	Operational liquid supply valve	365 / 375	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	10"	2	7228102225
3	Separation liquid supply valve	3652 / 3752	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Hand Valve	10"	2	7228102215
4	Main liquid intake container valve	369 / 379	buttweld bevelled	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	8"	2	7228081225
5	Operational liquid intake valve	360 / 370	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	8"	2	7228082225
6	Minimum flow return valve	361 / 371	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	4"	2	7228042225
7	Main Vapor output valve	3691 / 3791	buttweld bevelled	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	8"	2	7228181225
8	Vapor output operational valve	363 / 373	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	6"	2	7228062225
9	Vapor equilibrium operational valve	364 / 374	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	6"	2	7228162225
10	Vapor equilibrium over EFV valve	366 / 375	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	2"	2	7228022225
11	Main Vapor return valve (from compressor)	3692 / 3792	buttweld bevelled	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	6"	2	7228061225

No	Valve description	Operational tag / tags	left end	right end	Operation	Diam. Nom.	supply quantity	EAPC catalogue
12	Vapor return operational valve (from compressor)	362 / 372	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Pneumatic actuator with hand override	3"	2	7228032225
13	East level gage separation valve	3694 / 3794	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Hand Valve	3"	2	7228032215
14	West level gage separation valve	368 / 378	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Hand Valve	3"	2	7228132215
15	Pressure gage separation valve	3693 / 3793	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Hand Valve	1 1/2"	2	7228112215
16	Main Drain valve	367 / 377	flanged RF to ASME B16.5 #300	flanged RF to ASME B16.5 #300	Hand Valve	2"	2	7228022215