

03. TECHNICAL SPECIFICATIONS

The bidder shall indicate whether the required specifications are met by them by marking **(Yes)** if it meets the requirements/comply and **(No)** if it is not, in front of each requirement/specification in the right-hand corner of each item. Variations and/or deviations from specification, if any, shall be illustrated clearly in detail. Complete technical specification details shall provide together with following format for each size valve separately.

3.1 TECHNICAL SPECIFICATIONS

| | | |
|------------------|----------------------------|---|
| General | Valve Type | Twin Seal Double Block and Bleed expanding plug Valve a) 16" b) 18" |
| | Valve Service | Refined Petroleum Products & Sea Water |
| | Operating Temperature | 15°C to 60°C |
| | Pipeline Orientation | Horizontal |
| Design | Face to Face Dimensions | API 6D & ASME B 16.10 a) 16" Valve - 762 mm b) 18" Valve - 864 mm |
| | Bore | a) 16" Valve- Reduced Bore b) 18" Valve - Full Bore |
| | Pressure Class | ASME B16.34 Class 150LB (PN20) |
| | Bleed System | Manual bleed and Thermal Relief upstream (fitted to the valve body) |
| | Flow Direction | Single Direction or Both Directions |
| | End Connection | Raised Face Flange ASME B16.5 (Serrated) |
| | Body / Bonnet Connection | Bolted Bonnet |
| | Stem | Rising Stem |
| | Stem Position | Vertical |
| | Drain Connection | Plugged |
| | Pressure Relief Connection | Required |
| | Plug | Dual Expanding |
| | Slips | Renewable & Retractable Slips - Slips with bonded and renewable resilient seals (Fluoroelastomer) |
| | Lifting Eyes | Required |
| | Locking Facility | Required |
| Operation | Gear Box with Hand Wheel | |
| Materials | Body | ASTM A216 WCB, WCC, ASTM A105 or better |
| | Cover/Bonnet | ASTM A216 WCB, WCC or better |
| | Plug | ASTM A216 WCB, WCC or better |
| | Slip | Ductile Iron Slips with Bonded Resilient Seals-Fluoroelastomer |
| | Seals | Fluoroelastomer |
| | Gaskets | Fluoroelastomer/Graphite |
| | Stem | ASTM A182 Gr F304/316 Or ASTM A564 Gr 630 or better |
| | Gland Packing | Graphite packing or better |
| | Fasteners | ASTM A193 Gr. B7 & ASTM A194 Gr. 2H or Equivalent |

| | | |
|---|-------------------------------|---|
| Coating | Internal | Sea Water and Abrasion Resistant corrosion protection coating |
| | External | UV and weather resistant corrosion protection coating |
| Marking on the valve | As per API 6D, ANSI/MSS-SP-25 | |
| Codes and Standards (Complying All standards shall be their latest editions) | Design | API 6 D, API 600, API 599, ASME B 16.34 |
| | Face To Face Dimensions | API 6d or ASME B16.10 |
| | Flange Design | ASME B16.5 |
| | Inspection Testing Standard | API598/API 6d |
| | Fire Safe Design | API 6 FA & API 607 |

Signature of the Bidder: **Date:** **(Common Company Seal)**

3.2. SCOPE OF SUPPLY

3.2.1 General

- 3.2.1.1 Supplier shall supply valves meeting the specifications.
- 3.2.1.2 Supplier shall quote in strict accordance with the valve data sheets, technical specifications and all other enclosures to the requisitions. Deviations to the specifications/ data sheets and other enclosures of the requisitions, if any, shall be sought by the supplier as explained in clause 3.1.
- 3.2.1.3 All codes and standards for manufacture, testing, inspection etc. shall be of latest editions.
- 3.2.1.4 This specification establishes the technical requirements for Double Block & Bleed (DBB) valves to be used for positive isolation in oil pipe lines, handling refined petroleum liquid hydrocarbon products (Petrol, Diesel, Kerosene, Jet A-1, Naphtha and Fuel Oil). Sea water also in contact with valve during pipeline flushing operations.
- 3.2.1.5 This specification covers the minimum requirements for the design, manufacture, assembly, inspection, testing, certification & delivery of manual operated Double Block & Bleed (DBB) valves complete with all accessories.

3.2.2 Documentation

- 3.2.2.1 All documents shall be in English language and SI system of units.
- 3.2.2.2 Supplier shall submit with the offer the following:
 - i. Manufacturer's complete descriptive and illustrative catalogue/ literature.
 - ii. Detailed dimensioned, cross section drawing with parts/material list, weight etc. for the valves to manufacturer's standard.
 - iii. Drawings for valves with accessories like gear operator, extension bonnet, extended stems with stands bypass etc. giving major salient dimensions.
 - iv. Valve data sheets, Installation, operation and maintenance details, Materials of construction, Material, Pressure and other tests to be carried out.
 - v. Past supply records of similar type valves to major projects during past five (05) years period shall be submitted with reference details.
- 3.2.2.3 Upon placement of Letter of Acceptance/ Purchase Order, whichever is earlier, supplier shall submit drawings for approval mentioned above before start of supply.

- 3.2.2.4 Following supplementary documentation certified by the third-party inspection company approved by CPSTL is required to provide in line with API-6D as given below,
- i. NDE records
 - ii. Hardness test report on pressure-containing parts
 - iii. Heat treatment certification records
 - iv. Pressure test / leak test (Valve seat and Fugitive) and other test reports, (including pressure, test duration, test medium and acceptance criteria)
 - v. Coating/Plating certification
 - vi. Material test certification
 - vii. Fire type- test certification

3.2.3 Design and Construction

- 3.2.3.1 Valves shall be designed, manufactured, tested inspected and marked as per the manufacturing standard, design code and standards (latest edition) indicated in the respective valve technical specifications. Any conflict between the requisition, enclosure, specification sheets and referred standard codes shall be brought to the notice of CPSTL for clarification, but generally spec sheets and enclosures of the requisition including subject notes shall govern. No deviation to specification/Standards shall be permitted through supplier drawing approval. Approval of drawing shall be valid only for design features.
- 3.2.3.2 All flanged valves shall have flanges integral (except forged valves) with the valve body. Flange finish shall be serrated finish.
- 3.2.3.3 If an overlay weld-deposit is used for the body seat ring, seating surface, the seat ring base material shall be at least equal to the corrosion resistance of the material of the shell.
- 3.2.3.4 Material of construction of yoke shall be minimum equivalent to body/bonnet material.
- 3.2.3.5 Stem shall be forged or machined from forged / rolled bar. No casting is permitted.
- 3.2.3.6 Renewable seat ring may be seal welded.
- 3.2.3.7 Spiral wound bonnet gasket is to be provided with inner / outer ring except when encapsulated gasket type body bonnet joints are employed.
- 3.2.3.8 All non-corrosion –resistance parts of the valve shall be coated externally with corrosion resistance coating which can be withstand in extreme weather conditions and UV resistance. Flange faces and exposed stems shall not be coated. Parts and equipment that have bare metallic surface shall be protected with a rust preventative.

3.2.4 Operation

- 3.2.4.1 Generally, the valves shall be provided with gear operation.
- 3.2.4.2 Gear operator shall be totally enclosed bevel gear in grease case with grease nipples/plugs with position indicators for open/ close positions.
- 3.2.4.3 Gear operators shall be so designed to operate effectively with the differential pressure across the closed valve equal to the cold non-shock pressure rating.
- 3.2.4.4 Gear operator shall be provided with position indicator for open/close positions, with limit stop as per manufacture's design in line with API-6D. The operator shall be totally enclosed with weather protection.
- 3.2.4.5 Hand wheel diameter shall not exceed 750 mm. effort to operate shall not exceed 360N at hand wheel periphery.

3.2.4.6 DBB valves are to be provided with integral thermal relief system consisting of suitable valves and piping as per rating of the valves to relieve the pressure build up in the internal body cavity when the valve is closed. Relief valve shall discharge to upstream side of the valve. Thermal relief valves shall be externally placed in a way so that the same can be serviced without dismantling the main valve.

3.2.4.7 Manually operated bleed valves are to be provided on the DBB valve that can be opened to verify that the valves are not leaking when in the closed position.

3.2.4.8 Locking devices shall be design to lock in the open and/or closed position.

3.2.5 Inspection and Testing

3.2.5.1 Every valve, its components and auxiliaries shall be subjected by the manufacturer/supplier to all the mandatory tests and checks called for in the respective codes/data sheets/ specifications (to be submitted by the manufacturer after award of PO).

3.2.5.2 The list of such tests shall include the following as a minimum:

- i. Visual inspection of all the valves
- ii. Dimensional check on all valves.
- iii. Any mandatory or supplementary tests
- iv. Hydrostatic test – 100% for body and seat
- v. All valves shall be tested in accordance with API 598 and as per data sheet.

3.2.5.3 Third Party Pre-shipment Inspection shall be arranged by the supplier by one of the following third-party inspection institutions.

- i. DNV
- ii. SGS
- iii. BV
- iv. Lloyds
- v. ABS
- vi. TUV

3.2.5.5 Please refer COC clause 2.4 for addition information

3.2.6 Marking

3.2.6.1 Valve markings, symbols, abbreviations etc. shall be in accordance with API 6D, ANSI/MSS-SP-25 or the standard referred in specification sheet as applicable. Manufacturers name, valve rating, material designation, nominal size, direction of flow, (if any) etc. shall be integral on the body.

3.2.6.2 Each valve shall have a corrosion resistant tag giving size, valve tag/ code no, securely attached on the valve.

3.2.6.3 Paint or ink for marking shall not contain any harmful metal or metal salts such as zinc, lead or copper which causes corrosive attack on heating.

3.2.6.4 Carbon steel valves shall be blasted blast cleaned with grit to SSPC SA 2 ½ coated with two coats of zinc rich primer

3.2.7 Dispatch/Packing

3.2.7.1 Valves shall be dry, clean and free from moisture, dirt and loose foreign materials of any kind.

3.2.7.2 Valves shall be protected from rust, corrosion and any mechanical damage during transportation, shipment and storage.

3.2.7.3 Rust preventive on machined surface to be welded shall be easily removable with petroleum solvent or not harmful to welding.

3.2.7.4 Each end of flange face of valves shall be protected with wood, metal or plastic cover. End protectors to be used on flange faces shall be attached by at least three bolts or wiring through bolt holes and shall not be smaller than the outside diameter of the flange.

3.2.8 After Sales Service/Maintenance

3.2.8.1 The valve shall be maintainable on line, without having a need to remove the valve body from the piping system.

3.2.8.2 Supplier shall submit a list of recommended spares list for five (05) years of service and certification from the valve manufacturer to the effect that, all spares parts for the models offered, will be manufactured and be available for import for a minimum period of ten (10) years from the date of purchase.

3.2.8.3 Supplier shall submit list of any special tools required for the installation, maintenance of the valves which are to be provided along with the item.

3.2.8.4 Supplier shall give a manufacturer's warranty for all the equipment supplied by him for a minimum period of **twelve (12) months** from the date of delivery. Warranty conditions shall be clearly indicated in the bid. Any defect found during this warranty period shall be attended to by the supplier at his own cost (labour & spare parts) and any defective parts shall be replaced with new parts free of Charge.

Signature of the Bidder:

Date:

(Common Company Seal)