03. SCOPE OF SUPPLY AND TECHNICAL SPECIFICATIONS

3. SCOPE OF SUPPLY AND TECHNICAL SPECIFICATIONS

3.1. SCOPE OF SUPPLY - GENERAL

3.1.1. Supplier shall supply valves meeting the specifications.

3.1.2. The country of origin for the valves must be either European, USA, Japan, Canada, or South Korea.

3.1.3. The valve manufacturer must have a minimum of 10 years of experience in manufacturing Double Block and Bleed (DBB) valves in accordance with specified industry standards.

3.1.4. The delivery period shall be to reach Colombo Sea Port within Twenty-Eight (28) weeks from the date of establishment of the Letter of Credit.

3.1.5. 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 3.3.

3.1.6. All codes and standards for manufacture, testing, inspection etc. shall be of latest editions.

3.1.7. 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 contact with valve during pipeline flushing operations.

3.1.8. This specification covers the minimum requirements for the design, manufacture, Assembly, Inspection, testing, certification & delivery of Manual operated Double Block & Bleed Valves complete with all accessories.

3.1.9. Third part inspection facility.

3.1.10. Any special tools required for the installation, maintenance shall be supplied.

3.1.11. Operation, workshop, maintenance & service and spare parts manuals in English language. This shall include a set of reproducible and two sets of hard copies and soft copies.

3.1.12. Quantities of DBB valves shall be supplied as follows

#	Valve Type	Valve Size	Quantity
1.	Double Block and Bleed (DBB) Valve	6”	01
2.		8”	03
3.		10”	06
4.		12”	10

3.2. DOCUMENTATION

3.2.1. All documents shall be in English language and units shall be in SI system.

3.2.2. Vendor shall arrange to retain documents in his works as stipulated in API-6D.

3.2.3. In addition, Vendor shall arrange to submit following documents with the offer

i. Manufacturer's complete descriptive and illustrative catalogue/ literature.
ii. The manufacturer shall bear API-6D monogram and copy of valid license shall be submitted.
iii. Detailed dimensioned, cross section drawing of each size of valve being offered with parts/ material lists, weight etc. as manufacturer's / API / Other relevant applicable standard.
iv. Drawings for valves with accessories like gear operator, extension bonnet, extended stems with stands bypass etc. giving major salient dimensions.
v. Valve data sheets, Installation, operation and maintenance instructions/manuals Materials of construction, Pressure and other tests to be carried out and List of Spare parts.
vi. Past supply records of similar type valves to major projects during past five (10) years period shall be submitted with reference details. Failure to submit with the offer will be a cause to reject the bid.

3.2.4. Following supplementary documentation certified by a reputed third party inspection company approved by CPSTL is required to be provided in line with API-6D as given below:

i. NDE records;
ii. Hardness test report on pressure-containing parts;
iii. Heat treatment certification records (e. g. charts);
iv. Pressure test / Leak test (Valve seat & Fugitive) & other test reports, (Including pressure, test Duration, test medium and Acceptance Criteria);
v. Coating/plating certification;
vi. Material test certificates;
vii. Fire type-test certificates;

3.2.5. Upon placement of Letter of Acceptance/ Purchase Order, whichever is earlier, supplier shall submit drawings for approval mentioned above before start of supply.

3.3. TECHNICAL SPECIFICATIONS

3.3.1. Design and Construction

3.3.1.1. 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.

3.3.1.2. Flanges of valves shall be integral (except forged valves) with the valve body. Flange finish shall be serrated finish.

3.3.1.3. 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.

3.3.1.4. Material of construction of yoke shall be minimum equivalent to body/bonnet material.

3.3.1.5. Stem shall be forged or machined from forged / rolled bar. No casting is permitted.

3.3.1.6. Renewable seat ring may be seal welded.

3.3.1.7. The body of the valve shall be manufactured with high-quality workmanship.

3.3.1.8. Spiral wound bonnet gasket is to be provided with inner / outer ring except when encapsulated gasket type body bonnet joints are employed.

3.3.1.9. 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.

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

3.3.3. Valve Operation

3.3.3.1. Generally, the valves shall be provided with gear operation.

3.3.3.2. Gear operator shall be totally enclosed bevel gear in grease case with grease nipples/plugs with position indicators for open/ close positions.

3.3.3.3. 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.

3.3.3.4. Gear operator shall be so designed to operate the valve at break away torque as defined in API-6D. The maximum force required at the hand-wheel to apply the breakaway torque or thrust shall not exceed as defined in the standards and shall be provided with minimum number of turns for facilitating ergonomic and hustle free operation.

3.3.3.5. 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.

3.3.3.6. Hand wheel diameter shall not exceed 750 mm. effort to operate shall not exceed 360N at hand wheel periphery.

3.3.3.7. 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.

3.3.3.8. 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.

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

3.3.3.10. Valves shall be provided with lifting points. The valve manufacturer shall verify the suitability of the lifting points for the complete valve and operator assembly.

3.3.3.11. Valves shall be designed to ensure that the stem does not eject under any internal pressure condition or if the packing gland components and/or valve operator mounting components are removed.

3.3.4. Valve Data

3.3.5. Inspection and testing

General

Valve Type	: Twin Seal Double Block and Bleed expanding plug Valve
Valve Service	: Refined Petroleum Products
Operating Temperature	: 15°C to 60°C
Pipeline Orientation	: Horizontal
Installation.	: Above ground open atmosphere
Maximum Working Pressure	: 150 psi

Valve design

Standards	: API 6D
Face to Face Dimensions	: API 6D & ASME B 16.10
Pressure Class	: ASME B16.34 Class 150LB
End Flange	: ASME B16.5
Fire Safe Design	: API 6 FA & API 607
Marking on the valve	: As per API 6D, ANSI/MSS-SP-25
Bleed System	: Manual bleed and Thermal Relief upstream (fitted to the valve body)
Bore	: Reduced Bore
Flow Direction	: Single Direction or Both Directions
End Connection	: Raised Face Flange (Serrated)
Body / Bonnet Connection	: Bolted Bonnet
Stem	: Rising Stem
Stem Position	: Vertical
Drain Connection	: Plugged
Plug	: Dual Expanding
Slips	: Renewable & Retractable Slips - Slips with bonded and renewable resilient seals (Fluoroelastomer)
Operation	: Gear Box with Hand Wheel

Material

Body	: ASTM A216 WCB, WCC
Cover/Bonnet	: ASTM A216 WCB, WCC
Plug	: ASTM A216 WCB, WCC
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
Gland Packing	: Graphite packing
Fasteners	: ASTM A193 Gr. B7 & ASTM A194 Gr. 2H
Pressure Release Valve	: Stainless Steel Grade 316
Tubing / connectors /check /needle valves	: Stainless Steel Grade 316

Coating

Internal	: Sea Water and Abrasion Resistant corrosion protection coating, Manufacturer shall describe the specification of coating.
External	: UV and weather resistant corrosion protection coating

3.3.5.1. All valves must undergo third-party inspection testing at the manufacturer's premises. The manufacturer shall arrange all facilities to conduct the tests with the participation of third-party Inspection Company and two CPSTL engineers.

3.3.5.2. 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).

3.3.5.3. The list of such tests shall include the following as a minimum and reports shall be submitted as per clause 3.2.4:

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.

3.3.5.4. Third Parry 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

3.3.5.5. Supplier shall arrange all facilities (Return air tickets, visa, transportation, accommodation, meals and all relevant expenses) for two (02) CPSTL officers for witnessing the testing and inspection of valves attended by third party. All relevant expenses shall be borne by the supplier.

3.3.5.6. Please refer COC clause 2.3 for addition information.

3.3.6. Marking

3.3.6.1. 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.

3.3.6.2. Each valve shall have a corrosion resistant tag (austenitic stainless steel or equivalent) giving size, valve tag/ code no, securely attached on the valve.

3.3.6.3. Each valve shall be marked with API-6D Monogram.

3.3.6.4. 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.

3.3.7. Dispatch/Packing/Preparation for Shipment

3.3.7.1. Supplier shall arrange most suitable arrangements including followings for safe transportation to protect the valve internals and gasket surfaces during shipment. Valves shall be protected from rust, corrosion and any mechanical damage during Transportation, handling shipment and storage. The packages shall be sea-worthy.

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

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

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

3.3.7.5. 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.

3.3.8. After Sales Service/ warranty

3.3.8.1. Supplier shall submit a list of recommended spares list for five (05) years of service with prevailing unit costs in same currency quoted for valves.

3.3.8.2. 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.

3.3.8.3. 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.

3.3.8.4. Supplier shall give a manufacturer's warranty for all the equipment supplied by him for a minimum period of 18 months from date of dispatch or 12 months from date of receiving to CPSTL (Date of delivery to CPSTL). 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)**

3.4. COMPLIANCE / DEVIATIONS SHEET FOR TECHNICAL SPECIFICATIONS

*The **Manufacturer** shall indicate whether the required specifications are met by them by marking "(Yes)" if it meets the requirements/complies and "(No)" if it does not, in front of each requirement/specification in the relevant cell. Variations and/or deviations from the specifications, if any, shall be illustrated clearly in detail. Complete technical specification details shall be provided together with the following format.* ***The dully filled format shall be accompanied by the common company seal of the manufacturer.***

Description			Complied	Deviation	Relevant document to refer
		Example	**Yes**		**"Pg. no 23 of the product catalogue attached with the bid"**
General	Valve Type	Twin Seal Double Block and Bleed expanding plug Valve ~~a~~) 6", b)8'', c)10'', d)12''			
	Valve Service	Refined Petroleum Products			
	Operating Temperature	15°C to 60°C			
	Pipeline Orientation	Horizontal			
	Installation.	Above ground open atmosphere			
	Maximum Working Pressure	150 psi			
	Special tool requirement for maintenance	Mention			
	Country of origin	Europe, Japan, Canada, South Korea, USA			
	Country of manufacture	Mention			
Design	Standards	API 6D			
	Face to Face Dimensions	API 6D & ASME B 16.10			
	Pressure Class	ASME B16.34 Class 150LB			
	End Flange	ASME B16.5			
	Fire Safe Design	API 6 FA & API 607			

	Marking on the valve	As per API 6D, ANSI/MSS-SP-25			
	Bleed System	Manual bleed and Thermal Relief upstream (fitted to the valve body)			
	Bore	Reduced Bore			
	Flow Direction	Single Direction or Both Directions			
	End Connection	Raised Face Flange (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)			
	Operation	Gear Box with Hand Wheel			
	Locking Facility	Required/ Mention the Availability			
	Lifting Eyes	Required/ Mention the Availability			
	No of turns of the hand wheel for open/close	Mention the value			
	Break away torque	Mention the value			
	Position indicator	Mention the Availability			
	Hand wheel diameter	Mention the value			
	Maintainability on line	Mention the ability			
Materials	Body	ASTM A216 WCB, WCC			
	Cover/Bonnet	ASTM A216 WCB, WCC			

	Plug	ASTM A216 WCB, WCC			
	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			
	Gland Packing	Graphite packing			
	Fasteners	ASTM A193 Gr. B7 & ASTM A194 Gr. 2H			
	Pressure Release Valve	Stainless Steel Grade 316			
	Tubing / connectors /check /needle valves	Stainless Steel Grade 316			
Coating	Internal	Sea Water and Abrasion Resistant corrosion protection coating, Manufacturer shall describe the specification of coating.			
	External	UV and weather resistant corrosion protection coating			
Inspection Testing	Standard	API 598/API 6d			
	Third party inspection company	SGS, BV, Lloyds, ABS, TUV, DNV			
	Third party inspection testing	Mention the agreement to conduct for all valves as per COC clause 2.3			
	Facilitating for Third party inspection testing	Mention the agreement to facilitate as per clause as per COC clause 2.3			
	Reports	NDE records, Hardness test report on pressure-containing parts, Heat treatment certification records (e. g. charts), Pressure test / Leak test & other test reports, (Including pressure, coating/plating certification, Material test certificates; Fire type-test certificates			

Signature of the Manufacturer: …… Date:…… **(Common Company Seal)**