

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
ISRO PROPULSION COMPLEX (IPRC)
MAHENDRAGIRI**

**Tender for Supply of Manual Globe valves, Electro pneumatic actuated
Globe valves & Globe control valves**

Bids to be submitted online

Tender No.: IPRC/PURGP1/IP202300046901 dated 08-05-2023

A. Tender Details

Tender No :	IPRC/PURGP1/IP202300046901
Tender Date :	08-05-2023
Tender Classification:	GOODS
Purchase Entity :	PURGP1
Centre :	ISRO PROPULSION COMPLEX (IPRC)

Supply of Manual Globe valves,Electro pneumatic actuated Globe valves & Globe control valves

This is a two-part bid. Price details shall NOT be mentioned in technical Bid/attachments, failing which the offer will be considered as invalid.

This is a TWO-PART tender i.e. Techno-Commercial Bid (Part-I) and Price Bid (Part-II) shall be submitted separately. All technical and commercial terms and conditions shall be furnished in the Techno Commercial Bid while price shall be indicated only in the Price Bid.

- 1.Foreign vendors are not permitted to quote.
- 2.Only Class-I and Class-II Local suppliers as per Make in India Policy are eligible to participate in the bid.
 - a. The percentage of local content with documentary should be specifically mentioned in the offer. Format for Self Certification under Preference to "MAKE IN INDIA" Policy is attached, without which it will be summarily rejected.
 - b. Preference will be given to Class-I Local Supplier and in their absence, Class-II Local Supplier will be considered.
- 3.MSME Preference is applicable only against the claim of the manufacturer and production of documentary evidence by the manufacturers for the registration of particular item under MSME.
- 4.Last minute clarification on tenders will not be entertained.
- 5.This is an E Tender. Hence Postal/Fax/Email tenders will not be accepted.

6. Acceptance of Guarantee / Warranty, PBG, SD & L.D are mandatory.

A.1 Tender Schedule

Bid Submission Start Date :	08-05-2023 17:00
Bid Clarification Due Date :	18-05-2023 10:00
Bid Submission Due Date :	07-06-2023 10:00
Bid Opening Date :	07-06-2023 10:05
Price Bid Opening Date :	09-06-2023 10:05

B. Tender Attachments

Technical Write-up/Drawings

Document : Special Conditions

Instructions To Vendors

2. STANDARD TERMS AND CONDITIONS (DOS PM:19)

1. Arbitration in the event of any dispute or difference arising under these terms & conditions or any condition contained in the Purchase Order or in connection with this Contract. (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of the Head of the Purchase Office or of some other person appointed by him, and the dispute further processed in terms of the Arbitration & Conciliation Act, 1996. There will be no objection that the arbitrator is a Government Servant that he had to deal with matter which the Contract relates to or that in the course of his duties as Government Servant has expressed views on all or any of the matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties of this Contract.

2. Corrections, if any, in the quotation must be attested. All amounts shall be indicated both in words as well as in figures. When there is difference between the amount quoted in words and figures, the amount quoted in words shall prevail.

3. Guarantee: The stores offered should be guaranteed for a minimum period of twelve months against defective stores design, operation or manufacture. For defects noticed during the guarantee period, replacement/repair should be arranged free of cost within a reasonable period of such notification. In cases where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.

4. If the arbitrator is a person appointed by the Head of the Purchase Office, In the event of his denying or neglecting or refusing to act, or resigning or being unable to act, for any reason, shall be lawful for the Head of the Purchase Office either to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator subject, as aforesaid, to the Arbitration and Conciliation Act, 1996, and the rules there under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding under the clause. The Arbitrator shall have the power to extend with the consent of the Purchaser and the Contractor the time for making and publishing the award. The venue of arbitration shall be the place as the Purchaser in his absolute discretion may determine. Work under the Contract shall, if reasonably possible, continue during Arbitration Proceedings.

5. If the arbitrator is the Head of the Purchase Office :

(i) In the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor in office either to proceed with the reference himself for to appoint another person as arbitrator, or In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Head of the Purchase Office to appoint another person as arbitrator.

6. Late Tenders will not be considered.

7. Packing and Forwarding: The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by rail, road, sea or air, to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense to the Contractor.

8. Payment terms are full payment within 30 days from the date of receipt and acceptance of material ordered. Our Bankers are State Bank of India, Mahendragiri.

9. Prices are required to be quoted according to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two systems of unit must be furnished.

10. Quotation should be valid for at least 90 days from the date of opening of the tender.

11. Sales Tax and/or other duties/levies, where legally leviable and intended to be claimed, should be distinctly shown separately in the tender.

12. Specifications: Stores offered should strictly conform to Purchaser's specifications. Deviations, if any, shall be clearly indicated by the tenderer in his quotation. The tenderer should also indicate the Make/Type number of the stores offered and provide catalogues, technical literature and samples, wherever necessary, along with the quotation. Test certificate, wherever necessary, should be forwarded along with supplies. Wherever options are called for in our specifications, the tenderer should address all such options, wherever specifically mentioned by us, and the tenderer could suggest changes to specifications with appropriate response for the same. Even in such case, the tenderer should state why he cannot meet our specifications and why he is suggesting the change.

13. Successful tenderer will have to furnish in the form of a Bank Guarantee or in any other form as called for by the Purchaser towards adequate security for the materials/property provided by the purchaser for the due execution for the Contract.

14. TERMS AND CONDITIONS OF TENDER:

Price quoted should be on the basis of FOR IPRC, Mahendragiri or delivery at site
The Purchaser will not pay separately for transit insurance, and the risk and cost during transit shall be exclusively the responsibility of the Contractor and the purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

15. The Contractor shall at all times indemnify the Purchaser against all claims which may be in respect of the stores for infringement of any right protected by Patent, Registration or design or Trade Mark and shall take all risks of accidents or damage which may cause a failure of the supply from whatever causes arising and the entire responsibility for the sufficiency of all means used by him for the fulfillment of the Contract.

16. The Purchaser reserves the right to accept or reject any quotation fully or partly without assigning any reason thereof.

17. The time for and the date of delivery of the stores stipulated in the Purchase Order shall be deemed to be the essence of the Contract and delivery must be completed not later than the date specified therein, and failure to do so, without adequate justification, may involve cancellation of the Contract at the discretion of the Purchaser.

18. Where counter terms and conditions/printed or cyclostyled conditions of sale have been offered by the tenders, the same shall not be deemed to have been accepted by the Purchaser unless the Purchaser's specific written acceptance thereof is obtained.

3. GENERAL TERMS AND CONDITIONS:

1. a) Facility of after sales service to be confirmed with details.
 - b) Permanent Account Number (PAN) allotted by Income-Tax authorities shall be furnished with documentary proof. Otherwise, documentary proof for having applied for PAN should be provided. Also PAN should be in the name of Company/Firm, if quoted by the Company/Firm and in the name of Individual, if quoted by individual.
 - c) GST No.
 - d) Local office in Tirunelveli / Nagercoil is preferable.
- Note: (b) to (d) are applicable for Indian Companies only.

2. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.

3. GST where legally leviable and intended to be claimed should be distinctly shown separately in the tender.

4. Guarantee / Warranty period as applicable shall be indicated, along with the quote.

Guarantee/Warranty shall commence from the date of installation and acceptance of the complete equipment supplied under the contract/purchase order.

5. If an Indian agent submits bid on behalf of the Principal/OEM, the same Indian agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product

6. In a tender, either the Indian Agent on behalf of the Principal/OEM or Principal/ OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

7. In case of imported items (stores), Ex-Works/FOB/FCA prices should be indicated. In case of indigenous stores the quotation should be on FOR-Destination / Door delivery basis.

8. In case the vendor falls in the category of Small Scale Industries (SSIs), who are registered with NSIC, Public Sector Undertakings (PSUs) and Micro & Small Enterprises (MSMEs) the same shall be mentioned in their quote for evaluation.

9. Indian Agents while quoting on behalf of their principals shall attach necessary authorization letter from their Principals along with the bid.

10. IPRC reserves the right to accept or reject any quotation in full or part thereof by recording the reasons.

11. IPRC shall not be responsible for failure of vendors in submitting bids online caused due to technical reasons at vendor end such as network or power failures, computer failure, internet-browser, mistakes / errors in filling the bids on line by vendor etc.

12. ISRO PROPULSION COMPLEX (IPRC) is exempted from payment of Customs Duty under Notification No. 50/2017-Customs dated 30.06.2017 and as amended by Notification No.5/18 Customs dt:25/1/18. For imported items IPRC will provide Customs Duty Exemption Certificate for availing Concessional CD and IGST.

13. Last minute request for the extension of the due date w.r.t. any technical issue at Vendors/Suppliers side will not be considered. You may submit your quotation online well in advance instead of waiting till the last date to ensure that Internet problem and network condition does not cause problem.

14. LIQUIDATED DAMAGES:Delivery is the essence of the contract. Items shall be delivered within stipulated period. If delivery is delayed beyond the stipulated delivery period mentioned in the purchase order or any extension thereof, an amount equal to 0.5% per week shall be recovered, subject to a maximum of 10% of the order value shall be deducted from your bills due.

15. Offers sent through post, telegram, fax, e-mail, courier will not be considered. Partially completed / incomplete tenders shall not be considered.

16. Only authorized dealers/agents or their accredited representatives for original manufacturers have to submit the quotation with documentary evidence.

17. PAYMENT: 100% through RTGS within 30 days from the date of receipt and acceptance of items at our site is the normal payment for Indigenous supply. In the case of direct Import, normal terms of payment are by Sight Draft / Wire Transfer after receipt of items. However, other terms of payment like establishment of Letter of Credit may be considered by the Purchaser on such terms and conditions as may be agreed upon.

18. PERFORMANCE BANK GUARANTEE :

The Supplier shall guarantee the successful and satisfactory performance/commissioning of equipment/machinery under the conditions specified in the Purchase Order. As a performance security, the SUPPLIER shall furnish a performance bank guarantee (in the prescribed format) from Nationalized Bank/Scheduled Bank for an amount equal to the sum of 3% of the order value ensuring the due performance of equipment/machinery in accordance with all the specifications and terms specified in the Purchase Order herein valid for the period of two months beyond warranty period. On due performance, the performance bank guarantee shall be automatically cancelled and returned to the Supplier within 30 days after expiry of the Warranty period.

19. SECURITY DEPOSIT : Security Deposit @ 3% of order value shall be submitted in the form of DD/FDR duly endorsed in favour of Accounts Officer, IPRC or by way of Bank Guarantee (in the prescribed format) within 30 days after receipt of order and valid up to the successful execution of the order.

20. The goods or material offered should be strictly as per our specifications. Change(s) in specifications, if any, should be clearly indicated by the supplier in his quotation. The supplier should also indicate make/type No. of the materials or equipment offered. Vague terms such as Best Indian, Best Indigenous and Imported make should not be used.

21. The offer should be valid for a minimum period of 120 days from the date of Technical bid opening & 90 days from the date of Price Bid opening (in case of two-part tender).

22. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portions of the quantity offered and the tenderer shall supply the same at the rates quoted.

23. Wherever the tenderer is asked to submit sample for evaluation of tenders, the same shall be submitted along with your quote.

4. STANDARD TERMS AND CONDITIONS (DOS PM: 20)

1. ACCEPTANCE OF STORES:

(a) The stores shall be tendered by the Contractor for inspection at such places as may be specified by the purchaser at the Contractor's own risk, expense and cost.

(b) It is expressly agreed that the acceptance of the stores Contracted for, is subject to final approval by the purchaser, whose decision shall be final.

(c) If, in the opinion of the purchaser, all or any of the stores do not meet the performance or quality requirements specified in the Purchase Order, they may be either rejected or accepted at a price to be fixed by the purchaser and his decision as to rejection and the prices to be fixed shall be final and binding on the Contractor.

(d) If the whole or any part of the stores supplied are rejected in accordance with Clause No. 1 (c) above, the purchaser shall be at liberty, with or without notice to the Contractor, to purchase in the open market at the expense of the Contractor stores meeting the necessary performance and quality Contracted for in place of those rejected, provided that either the purchase, or the agreement to purchase, from another supplier is made within six months from the date of rejection of the stores as aforesaid.

2. DELIVERY:

(a) The time for and the date of delivery of the stores stipulated in the Purchase Order shall be deemed to be the essence of the Contract and delivery must be completed on or before the specified dates.

(b) Should the Contractor fail to deliver the stores or any consignment thereof within the period prescribed for such delivery, the purchaser shall be entitled at his option either.

(i) to recover from the Contractor as agreed liquidated damages and not by way of penalty, a sum of 0.5% per week of the price of any stores which the Contractor has failed to deliver as aforesaid or during which the delivery of such store may be in arrears subject to a minimum of 10%, or

(ii) to purchase from elsewhere, without notice to the Contractor on the account and at the risk of the Contractor, the stores not delivered or others of a similar description (where others exactly complying with the particulars, are not, in the opinion of the purchaser, readily procurable, such opinion being final) without cancelling the Contract in respect of the consignment (s) not yet due for delivery, or

(iii) to cancel the Contract or a portion thereof and if so desired to purchase or authorise the purchase of stores not so delivered or others of a similar description (where others exactly if complying with the particulars are not, in the opinion of the purchaser, readily procurable, such opinion final) at the risk and cost of the Contractor.

In the event of action being taken under sub-clause (ii) & (iii) of clause 2 (b) above, the Contractor shall be liable for any loss which the purchaser may sustain on that account, provided that the re-purchase or if there is an agreement to re-purchase then such agreement is made within six months from the date of such failure. But the Contractor shall not be entitled to any gain on such re-purchase made against default. The manner and method of such re-purchase shall be at the discretion of the purchaser, whose decision shall be final. It shall not be necessary for the purchaser to serve a notice of such re-purchase on the defaulting Contractor. This right shall be without prejudice to the right of the purchaser to recover damages for breach of Contract by the Contractor.

3. DISPATCH:

The Contractor is responsible for obtaining a clear receipt from the Transport Authorities specifying the goods dispatched. The consignment should be dispatched with clear Railway Receipt/Lorry Receipt. If sent in any other mode, it shall be at the risk of the Contractor. Purchaser will take no responsibility for short deliveries or wrong supply of goods when the same are booked on "said to contain" basis. Purchaser shall pay for only such stores as are actually received by them in accordance with the Contract.

4. ERECTION OF PLANT & MACHINERY:

Wherever erection of a plant or machinery is the responsibility of the Contractor as per the terms of the Contract and in case the Contractor fails to carry out the erection as and when called upon to do so within the period specified by the purchaser, the purchaser shall have the right to get the erection done through any source of his choice. In such an event, the Contractor shall be liable to bear any additional expenditure that the purchaser is liable to incur towards erection. The Contractor shall, however, not be entitled to any gain due to such an action by the purchaser.

5. EXTENSION OF TIME:

As soon as it is apparent that the Contract dates cannot be adhered to, an application shall be sent by the Contractor to the purchaser. If failure, on the part of the Contractor, to deliver the stores in proper time shall have arisen from any cause which the purchaser may admit as reasonable ground for an extension of the time (and his decision shall be final) he may allow such additional time as he considers it to be justified by circumstances, of the case without prejudice to the purchaser's right to recover liquidated damages under clause 2 thereof.

6. GUARANTEE & REPLACEMENT:

- (a) The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance.
- (b) For a period of twelve months after the acceptance of the stores, if any defects are discovered therein or any defects therein found to have developed under proper use, arising from faulty stores design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the purchaser who shall state in writing in what respect the stores or any part thereof are faulty.
- (c) If, in the opinion of the purchaser, it becomes necessary to replace or renew any defective stores such replacement or renewal shall be made by the Contractor free of all costs to the purchaser, provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of 14 months from the date of acceptance thereof.
- (d) Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores.
- (e) The decision of the purchaser notwithstanding any prior approval or acceptance or inspection thereof on behalf of the purchaser, as to whether or not the stores supplied by the Contractor are defective or any defect has developed within the said period of 12 months or as to whether the nature of the defects requires renewal or replacement, shall be final, conclusive and binding on the Contractor.
- (f) To fulfill guarantee conditions outlined in clause 6 (a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser) from a Bank approved by the purchaser for an amount equivalent to 10% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.
- (g) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of the stores at purchaser site.
- (h) Even while the 12 months guarantee applies to all stores, in case where a greater period is called for by our specifications then such a specification shall apply in such cases the period of 14 months referred to in para 6 (b) & (c) shall be the guarantee period plus two months.

7. PACKING FORWARDING & INSURANCE:

The Contractor will be held responsible for the stores being sufficiently and properly packed for

transport by rail, road, sea or air to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packages shall be done by and at the expense of the Contractor. The purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the Contractor and the Purchaser shall pay only for such stores as are actually received in good condition in accordance with the Contract.

8. PRICES:

Tender offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotation with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variation/s.

9. REJECTED STORES:

Rejected stores will remain at destination at the Contractor risk and responsibility. If instructions for their disposal are not received from the Contractor within a period of 14 days from the date of receipt of the advice of rejection, the purchaser or his representative has, at his discretion, the right to scrap or sell or consign the rejected stores to Contractor's address at the Contractor's entire risk and expense, freight being payable by the Contractor at actuals.

10. SECURITY DEPOSIT(SD):

The Supplier shall provide Bank Guarantee for an amount equivalent to the 3% (Three PERCENT) of the total Order value towards Security Deposit for the due performance of the Purchase Order. The Security Deposit can be submitted in the form of Bank Guarantee (format enclosed) or Fixed Deposit receipt obtained from any Nationalized/ Scheduled Bank and it shall be kept valid for a period of sixty days beyond the date of completion of the Purchase Order. This Security Deposit will be returned to the Supplier only upon successful completion of all the contractual obligations or shall be adjusted/ forfeited against non-fulfilment of any of the contractual obligations. The Security Deposit shall be submitted within 30 days from the date of receipt of Purchase Order.

11. TEST CERTIFICATE:

Wherever required, test certificates should be sent along with the dispatch documents.

12. The Purchaser shall mean the President of India or his successors or assigns.

5. Format for Self Certification under Preference to MAKE IN INDIA Policy CERTIFICATE

1. In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017,

as amended from time to time and as applicable on the date of submission of tender, we hereby certify that we M/s. _____(supplier name) are local supplier meeting the requirement of minimum percentage of Local content _____ (class I/Class II) as defined in above orders for the materials against Tender No. _____

2. Details of locations at which local value addition will be made is as follows:

3. We also understand, false declarations will be in breach of the Code in Integrity under Rule 175(1) (i) (h) of the General Financial Rule for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

4. Seal and Signature of Authorized Signatory

6. Conditions for BIDDER FROM A COUNTRY WHICH SHARES LAND BORDER WITH INDIA

1. Any false declaration and non-compliance of the above would be a ground for immediate rejection of offer or termination of the contract and further legal action in accordance with the laws.

2. As per the Rule 144(xi) of General Financial Rule, 2017, any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the competent authority ie., Department for Promotion of Industry and Internal Trade (DPIIT).

3. Hence, Vendors or Agents of a Vendor (Indian or others) from a country sharing border with India shall submit copy of valid registration made with Department for Promotion of Industry and Internal Trade (DPIIT), Government of India along with the tender mandatorily, without which the offer will be treated as invalid.

4. Model Certificate for Tenders

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered

5. Validity of Registration: Registration should be valid at the time of submission of bids and should be valid at the time of placement of order.

C. Bid Templates

C.1 Technical Bid - Supply of Manual Globe valves, Electro pneumatic actuated Globe valves & Globe control valves

1. Manual Globe Valve:

Supply of Manual Globe valve (UVM 7300, 7301, 7303 & 7303S) as per Technical specification & Special conditions attached in Annexure-I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		
4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		

9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		
15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		

16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321/ Hastealloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		
25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stelliting for MAWP>20MPa	Yes / No / Explain		

27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		
35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		

36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

2. Manual Globe Valve:

Spares for Manual Globe valves (UVM 7300, 7301,7303 & 7303S) as per Technical specification & Special conditions attached in Annexure-I & IV respectively

3. Manual Globe Valve:

Supply of Manual Globe valve (UVM 7311, 7312, 7313,7318 & 7318S) as per Technical specification & Special conditions attached in Annexure-I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		

15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		
16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321 / Hastelloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		

25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stelliting for MAWP>20MPa	Yes / No / Explain		
27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

4. Manual Globe Valve:

Spares for Manual Globe valve (UVM 7311, 7312, 7313,7318 & 7318S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

5. Manual Globe Valve:

Supply of Manual Globe valve (UVM 7321, 7324, 7326 & 7326S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		

15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		
16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321 / Hastelloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		

25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stelliting for MAWP>20MPa	Yes / No / Explain		
27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

6. Manual Globe Valve:

Spares for Manual Globe valve (UVM 7321, 7324, 7326 & 7326S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

7. Manual Globe Valve:

Supply of Manual Globe valve (UVM 7305 & 7305S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		

15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		
16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321 / Hastelloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		

25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stelliting for MAWP>20MPa	Yes / No / Explain		
27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

8. Manual Globe Valve:

Spares for Manual Globe valve (UVM 7305 & 7305S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

9. Manual Globe Valve:

Supply of Manual Globe valve (UVM 7307 & 7314) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		

15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		
16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321 / Hastelloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		

25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stelliting for MAWP>20MPa	Yes / No / Explain		
27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

10. Manual Globe Valve:

Spares for Manual Globe valve (UVM 7307 & 7314) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

11. Manual Globe Valve:

Supply of Manual Globe valve (UVM 7316 & 7325) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		

15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		
16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of Construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321 / Hastelloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		

25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stelliting for MAWP>20MPa	Yes / No / Explain		
27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

12. Manual Globe Valve:

Spares for Manual Globe valve (UVM 7316 & 7325) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

13. Manual Globe Valve:

Supply of Manual Globe valve (DVM 602O, 602RO & 602SO) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

Item specifications for Manual Globe Valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF MANUAL GLOBE VALVES	As per Annexure-I	Yes / No / Explain		
2	Valve Type:	The Manual Globe valves are of the following 2 types as given in Table-1A. 1. Manual Gland sealed Globe valves - GSG. 2. Manual Bellow sealed Globe valves - BSG	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As given in Table-1A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Actuation	By Hand wheel operation (manual)	Yes / No / Explain		
6	Application	Shut-off/ isolation	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body: For Bellow sealed valves	1E-7 Pa-m ³ /s (1E-6 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across body: For Gland sealed valves	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
10	Permissible Helium leakage rate across seat	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
11	Guaranteed Cycle of operation	5000	Yes / No / Explain		
12	End connection:	BW: Butt welding ends as per ASME B 16.25 / 16.9. In case of valves with resilient seat, pipe stubs as per ASME B 36.10 / 36.19 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe size & schedule as per Table 1A.	Yes / No / Explain		
13	Style of construction: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
14	Bonnet For GSG & BSG valves	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		

15	Stem	Non-rotating, rising stem. The stem operation for high pressure valves may be assisted by requisite bearing for easy operation of valve stem with/without load.	Yes / No / Explain		
16	Stem (dynamic) seal: For Bellow sealed valves	By bellows with redundant gland packing. Between the bellows seal and the redundant gland packing, a tell-tale indicator pressure gauge shall be provided.	Yes / No / Explain		
17	Stem (dynamic) seal: For Gland sealed valves	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
18	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
19	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
20	Shut off Mode	Bi-directional shut off	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have bi-directional shut-off.	Yes / No / Explain		
22	Material of construction: Body and bonnet	ASTM A 182 F 304 / 316 / 304L / 316L / 321 (or) ASTM A351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
24	Bellows (for BSG valves)	Stainless steel 316L / 316Ti / 321 / Hastelloy C 276 / Inconel 600/ 625 / Incoloy	Yes / No / Explain		

25	Gland packing	PTFE/ Glass-filled PTFE/ PEEK/PCTFE (Kel-F)	Yes / No / Explain		
26	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel / PEEK for MAWP≤20MPa ASTM A 479 304L/316L with stellite for MAWP>20MPa	Yes / No / Explain		
27	Pipe stub	Seamless pipe - ASTM A 312 TP 304L/316L	Yes / No / Explain		
28	Bolts	ASTM A 193 Gr B 8	Yes / No / Explain		
29	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
30	Anti static feature	The valves shall be either inherently anti- static or provided with anti-static features.	Yes / No / Explain		
31	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
32	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
33	Tests: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

35	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
36	d. Bellows cyclic life test (For Bellow sealed valves):	3 Sample bellows drawn from each batch of the same size and type shall be subjected to (destructive) cyclic life (proto-type) test as per BS 5352/relevant standards. If the manufacturer of the bellows has already performed such test, copy of the certificate may be produced.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test (For BSG & GSG):	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test (For BSG & GSG):	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

39	g. Hydraulic/Pneumatic seat pressure test (For BSG & GSG):	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality.	Yes / No / Explain		
40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

41	i. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
42	j. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		
43	k. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
44	l. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
45	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

46	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
47	Quality Assurance Plan (QAP)	As per Table 1B	Yes / No / Explain		

Document : Technical specification of Manual Globe Valves

14. Manual Globe Valve:

Spares for Manual Globe valve (DVM 602O, 602RO & 602SO) as per Technical specification & Special conditions attached in Annexure- I & IV respectively

15. Electro-pneumatically operated 2-way Globe valve:

Supply of Electro pneumatic actuated Globe valve (UVP 7300) as per Technical specification & Special conditions attached in Annexure- II & IV respectively

Item specifications for Electro-pneumatically operated 2-way Globe valve

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF PNEUMATICALLY-ACTUATED GLOBE VALVES	The pneumatically-actuated Globe valve shall comprise valve, actuator and status switches.As per Annexure-II	Yes / No / Explain		
2	Valve Type	Pneumatically-actuated Gland Sealed Globe valve (GSG)	Yes / No / Explain		
3	Tag number, Quantity, Normal position, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As per Table 2A	Yes / No / Explain		

4	Pattern	Globe	Yes / No / Explain		
5	Application	Shut-off/ isolation/ on-off	Yes / No / Explain		
6	Actuation	Electro-pneumatic actuator	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		
9	Permissible leakage rate across Seat:	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
10	Guaranteed Cycle of operation	5000	Yes / No / Explain		
11	End connection	As given in Table 2A BW: Butt welding ends as per ASME B 16.9/ 16.25. In case of valves with resilient seat, pipe stubs as per ASME B 36.19/ 36.10 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe & schedule as per Table 2A.	Yes / No / Explain		
12	STYLE OF CONSTRUCTION: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
13	Bonnet	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		
14	Stem	Non-rotating, rising stem.	Yes / No / Explain		

15	Stem (dynamic) seal	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
16	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
17	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
18	Shut off mode	Bi-directional shut off	Yes / No / Explain		
19	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have Bi-directional shut-off.	Yes / No / Explain		
20	MATERIAL OF CONSTRUCTION: Body and bonnet	ASTM A 182 F 304 / 304L / 316 / 316L / 321 (or) ASTM A 351 CF 3/ 3M	Yes / No / Explain		
21	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
22	Gland packing	PTFE / Glass-filled PTFE / PEEK / PCTFE (Kel-F)	Yes / No / Explain		
23	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel/ PEEK	Yes / No / Explain		
24	Pipe stub	Seamless pipe- ASTM A 312 TP 304L / 316L	Yes / No / Explain		
25	Bolts	ASTM A 193 B 8	Yes / No / Explain		
26	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
27	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
28	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		

29	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
30	ACTUATOR: Type	Linear actuator, piston/ diaphragm type, single acting, spring return, fail- safe	Yes / No / Explain		
31	Normal position	As per Table - 2A	Yes / No / Explain		
32	Command gas	Gaseous Nitrogen at 0.6 to 0.8 MPa (g). (Wherever the command gas is less than 0.55 MPa (g) suitable filter regulator shall be installed for each valve. The actuator & Air filter Regulator shall be suitably connected with tubings.)	Yes / No / Explain		
33	Failure position	Close- Normally closed valves	Yes / No / Explain		
34	Response time (for both opening and closing strokes)	As per Table 2A If required, flow (volume) booster, necessary tubings and quick exhaust valve shall be incorporated to achieve the specified response time.	Yes / No / Explain		
35	End connection for command gas	DN 8 (1/4") NPT (F) to ASME B 1.10.1.	Yes / No / Explain		
36	Material	Carbon steel (enamel-painted)	Yes / No / Explain		
37	Test (along with valve assembly)	The response time taken for opening and closing of the valve shall be evaluated.	Yes / No / Explain		

38	STATUS SWITCHES	The valve shall be provided with a pair of non-contact type proximity status switches to indicate the "Open/Close" status of the valve. The status switches shall be mounted on the valve with such proper arrangement that does not require any adjustment/alignment for the specified cycles of operation of the valve.	Yes / No / Explain		
39	STATUS SWITCHES: Type	Cylindrical Inductive Type Proximity Sensor (switch) in accordance with NAMUR	Yes / No / Explain		
40	Sensing Distance	The sensing distance shall be suitably selected by the valve manufacturer according to the valve stroke length.	Yes / No / Explain		
41	Electrical Configuration	DC, 2 wire	Yes / No / Explain		
42	Nominal Voltage	8 V	Yes / No / Explain		
43	Operating Voltage	5 – 24 V	Yes / No / Explain		
44	Switching Frequency	0 to 500 HZ	Yes / No / Explain		
45	Reverse Polarity	Shall be Protected against reverse polarity	Yes / No / Explain		
46	Short-Circuit protection	Shall be Protected for short circuit	Yes / No / Explain		
47	Current Consumption	Not Sensing ≥ 3 mA, Sensing ≤ 1 mA	Yes / No / Explain		
48	Indication of switching state	LED	Yes / No / Explain		
49	Connection Type	2 metre long PVC Cable	Yes / No / Explain		
50	Ambient Temperature	- 25 deg.C to 80 deg.C	Yes / No / Explain		

51	Housing Material	Stainless Steel	Yes / No / Explain		
52	Protection Degree	IP 67	Yes / No / Explain		
53	Safety Aspects	Shall be intrinsically safe for Hydrogen (IIC) ambience	Yes / No / Explain		
54	Hazardous area Certification	The switches shall be intrinsically safe for Hydrogen environment in conformance with Ex ia IIC T6, Zone 1 of IEC/ATEX. The certificate of conformance to this effect from the accredited agency shall be provided.	Yes / No / Explain		
55	Status switch Certificate	1. Copy of Certificate matrix (including Make & Model) of the status switch shall be provided to the Department prior to procurement of status switches for its approval.	Yes / No / Explain		
56	Suggested Make:	a. PEPPERL&FUCHS-Germany, b. OMRON-USA, c. Rockwell Automation-USA, d. Long Vale Ltd-UK, e. Euroswitch-UK, f. Carlo Gavazzi, g. IFM electronic	Yes / No / Explain		
57	TESTS: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
58	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		

59	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subject to radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the butt welding joints & socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
60	d. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
61	e. Soundness test for castings (wherever applicable):	All the castings shall be subject to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
62	f. Pre-assembly hydraulic shell pressure test:	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
63	g. Pneumatic shell pressure test:	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		

64	h. Hydraulic / Pneumatic seat pressure test:	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality	Yes / No / Explain		
65	i. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/ outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		

66	j. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
67	k. Functional Test:	Each valve has to be subjected to functional test for verification of free operation of valves to the full stroke length.	Yes / No / Explain		
68	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		
69	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves and its response time.	Yes / No / Explain		

70	Quality Assurance Plan (QAP)	As per Table 2B	Yes / No / Explain		
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Document : Technical specification of Pneumatically actuated Globe Valves

16. Electro-pneumatically operated 2-way Globe valve:

Spares for Electro pneumatic actuated Globe valve (UVP 7300) as per Technical specification & Special conditions attached in Annexure- II & IV respectively

17. Electro-pneumatically operated 2-way Globe valve:

Supply of Electro pneumatic actuated Globe valve (UVP 735S) as per Technical specification & Special conditions attached in Annexure- II & IV respectively

Item specifications for Electro-pneumatically operated 2-way Globe valve

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	TECHNICAL SPECIFICATION OF PNEUMATICALLY-ACTUATED GLOBE VALVES	As per Annexure-II (The pneumatically-actuated Globe valve shall comprise valve, actuator and status switches.)	Yes / No / Explain		
2	Valve Type	Pneumatically-actuated Gland Sealed Globe valve (GSG)	Yes / No / Explain		
3	Tag number, Quantity, Normal position, Fluid medium, Working temperature range, Nominal size (mm) & Maximum Allowable Working Pressure (MAWP)	As per Table 2A	Yes / No / Explain		
4	Pattern	Globe	Yes / No / Explain		
5	Application	Shut-off/ isolation/ on-off	Yes / No / Explain		
6	Actuation	Electro-pneumatic actuator	Yes / No / Explain		
7	Valve coefficient	To be specified by the bidder in the quotation	Yes / No / Explain		
8	Permissible leakage rate across body	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) of GHe	Yes / No / Explain		

9	Permissible leakage rate across Seat:	1E-6 Pa-m ³ /s (1E-5 mbar l/s.) for resilient seated Globe valves. 1E-5 Pa-m ³ /s (1E-4 mbar l/s.) for hard seated Globe valves	Yes / No / Explain		
10	Guaranteed Cycle of operation	5000	Yes / No / Explain		
11	End connection	As per Table 2A BW: Butt welding ends as per ASME B 16.9/ 16.25. In case of valves with resilient seat, pipe stubs as per ASME B 36.19/ 36.10 of 100 mm length each shall be butt-welded to the body on either side, the ends of which shall be prepared for butt welding. The butt welding ends shall be suitable to mate with the interfacing pipe & schedule as per Table 2A.	Yes / No / Explain		
12	STYLE OF CONSTRUCTION: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
13	Bonnet	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc). The stem shall be of non rotating type.	Yes / No / Explain		
14	Stem	Non-rotating, rising stem.	Yes / No / Explain		
15	Stem (dynamic) seal	Gland packing with Live loaded spring shall be provided. (Also appropriate stopper for protection against excess torque shall be provided)	Yes / No / Explain		
16	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		

17	Seat	Renewable from body with seat insert. (Alternatively Seat may be integral with body provided that it is harder than the plug insert)	Yes / No / Explain		
18	Shut off mode	Bi-directional shut off	Yes / No / Explain		
19	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have Bi-directional shut-off.	Yes / No / Explain		
20	MATERIAL OF CONSTRUCTION: Body and bonnet	ASTM A 182 F 304 / 304L / 316 / 316L / 321 (or) ASTM A 351 CF 3/ 3M	Yes / No / Explain		
21	Stem, plug, seat, seat insert	ASTM A 479 304 / 316 / 304L / 316L / 321	Yes / No / Explain		
22	Gland packing	PTFE / Glass-filled PTFE / PEEK / PCTFE (Kel-F)	Yes / No / Explain		
23	Plug insert	PCTFE (Kel-F)/ Polycarbonate/ Vespel/ PEEK	Yes / No / Explain		
24	Pipe stub	Seamless pipe- ASTM A 312 TP 304L / 316L	Yes / No / Explain		
25	Bolts	ASTM A 193 B 8	Yes / No / Explain		
26	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
27	Anti static feature	The valves shall be either inherently anti-static or provided with anti-static features.	Yes / No / Explain		
28	Design code	BS5352 / BS 6364/ API 6-D/ ASME B16.34 or equivalent	Yes / No / Explain		
29	Test code	BS6755 / BS5155/ API 598/API 607 ASME B 16.34 or equivalent	Yes / No / Explain		
30	ACTUATOR: Type	Linear actuator, piston/ diaphragm type, single acting, spring return, fail-safe	Yes / No / Explain		
31	Normal position	As per Table - 2A	Yes / No / Explain		

32	Command gas	Gaseous Nitrogen at 0.6 to 0.8 MPa (g). (Wherever the command gas is less than 0.55 MPa (g) suitable filter regulator shall be installed for each valve. The actuator & Air filter Regulator shall be suitably connected with tubings.)	Yes / No / Explain		
33	Failure position	Close- Normally closed valves	Yes / No / Explain		
34	Response time (for both opening and closing strokes)	As per Table 2A If required, flow (volume) booster, necessary tubings and quick exhaust valve shall be incorporated to achieve the specified response time.	Yes / No / Explain		
35	End connection for command gas	DN 8 (1/4") NPT (F) to ASME B 1.10.1.	Yes / No / Explain		
36	Material	Carbon steel (enamel-painted)	Yes / No / Explain		
37	Test (along with valve assembly)	The response time taken for opening and closing of the valve shall be evaluated.	Yes / No / Explain		
38	STATUS SWITCHES	The valve shall be provided with a pair of non-contact type proximity status switches to indicate the "Open/Close" status of the valve. The status switches shall be mounted on the valve with such proper arrangement that does not require any adjustment/alignment for the specified cycles of operation of the valve.	Yes / No / Explain		
39	Type	Cylindrical Inductive Type Proximity Sensor (switch) in accordance with NAMUR	Yes / No / Explain		

40	Sensing Distance	The sensing distance shall be suitably selected by the valve manufacturer according to the valve stroke length.	Yes / No / Explain		
41	Electrical Configuration	DC, 2 wire	Yes / No / Explain		
42	Nominal Voltage	8 V	Yes / No / Explain		
43	Operating Voltage	5 – 24 V	Yes / No / Explain		
44	Switching Frequency	0 to 500 HZ	Yes / No / Explain		
45	Reverse Polarity	Shall be Protected against reverse polarity	Yes / No / Explain		
46	Short-Circuit protection	Shall be Protected for short circuit	Yes / No / Explain		
47	Current Consumption	Not Sensing ≥ 3 mA, Sensing ≤ 1 mA	Yes / No / Explain		
48	Indication of switching state	LED	Yes / No / Explain		
49	Connection Type	2 metre long PVC Cable	Yes / No / Explain		
50	Ambient Temperature	- 250C to 800C	Yes / No / Explain		
51	Housing Material	Stainless Steel	Yes / No / Explain		
52	Protection Degree	IP 67	Yes / No / Explain		
53	Safety Aspects	Shall be intrinsically safe for Hydrogen (IIC) ambience	Yes / No / Explain		
54	Hazardous area Certification	The switches shall be intrinsically safe for Hydrogen environment in conformance with Ex ia IIC T6,Zone 1 of IEC/ATEX.The certificate of conformance to this effect from the accredited agency shall be provided.	Yes / No / Explain		

55	Status switch Certificate matrix	1. Copy of Certificate matrix (including Make & Model) of the status switch shall be provided to the Department prior to procurement of status switches for its approval.	Yes / No / Explain		
56	Suggested Make:	a.PEPPERL&FUCHS-Germany,b.OMRON-USA, c.Rockwell Automation-USA, d.Long Vale Ltd-UK, e.Euroswitch-UK, f.Cario Gavazzi, g.IFM electronic	Yes / No / Explain		
57	TESTS: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
58	b. Dimensional Inspection:	All valves have to be subjected to dimensional inspection as per the approved drawings.	Yes / No / Explain		
59	c. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subject to radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the butt welding joints & socket welding joints shall be subject to dye-penetrant test.	Yes / No / Explain		
60	d. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe stubs.	Yes / No / Explain		
61	e. Soundness test for castings (wherever applicable):	All the castings shall be subject to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		

62	f. Pre-assembly hydraulic shell pressure test:	The valve shell, prior to assembly with the bellows, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
63	g. Pneumatic shell pressure test:	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		
64	h. Hydraulic / Pneumatic seat pressure test:	The valve, in closed position, shall be subjected to pressure test in forward and reverse directions with Water (with suitable corrosion inhibitor) or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class of the valve. The leak check in reverse direction shall be indicated depending on criticality	Yes / No / Explain		

65	i. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
66	j. MSLD seat leakage test:	The global leakage rate across seat shall be measured with gaseous Helium MSLD to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by pressurizing the inlet with gaseous Helium and by evacuating and connecting the outlet to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
67	k. Functional Test:	Each valve has to be subjected to functional test for verification of free operation of valves to the full stroke length.	Yes / No / Explain		

68	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		
69	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves and its response time.	Yes / No / Explain		
70	Quality Assurance Plan (QAP)	As per Table 2B	Yes / No / Explain		

Document : Technical specification of Pneumatically actuated Globe Valves

18. Electro-pneumatically operated 2-way Globe valve:

Spares for Electro pneumatic actuated Globe valve (UVP 735S) as per Technical specification & Special conditions attached in Annexure- II & IV respectively

19. Globe Control Valve Pressure Rating: Class 900 & Below:

Supply of Globe control valve (UVC 7300) as per Technical specification & Special conditions attached in Annexure- III & IV respectively

Item specifications for Globe Control Valve Pressure Rating: Class 900 & Below

Sl No	Specification	Value	Compliance	Offered Specification	Remark
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1	TECHNICAL SPECIFICATION OF GLOBE CONTROL VALVES	As per Annexure-III (The control valve shall comprise valve, actuator and smart positioner interconnected with SS tubing's.	Yes / No / Explain		
2	Valve Type	Pneumatically-actuated Gland sealed Globe (GSG) Control valve	Yes / No / Explain		
3	Tag number, Quantity, Fluid medium, Working temperature range, Inlet nominal pipe size x schedule number, Outlet nominal pipe size x schedule number, Maximum Allowable Working Pressure (MAWP) & Shut off pressure	As given in Table 3A	Yes / No / Explain		
4	Pattern	Globe	Yes / No / Explain		
5	Application	Opening variable from 0 to 100 %	Yes / No / Explain		
6	Actuation	By pneumatic actuator	Yes / No / Explain		
7	Orifice diameter / valve co-efficient (kv)	To be calculated and given by the bidder along with quotation	Yes / No / Explain		
8	Nominal size of valve	To be given in the quotation by the bidder	Yes / No / Explain		
9	Operating Conditions: Inlet temperature, Inlet pressure, Outlet pressure & Flow rate	As given in Table 3A	Yes / No / Explain		
10	Flow characteristic	Equal percentage	Yes / No / Explain		
11	Permissible Helium leakage rate across body	$\leq 1E-6$ Pa.m ³ /s of GHe (1E-5 mbar l/s) of GHe for Gland sealed valves	Yes / No / Explain		
12	Permissible leakage rate across seat	Soft seated: Class VI, FCI 70.2/ASME B 16.104 Metal seated : Class IV, FCI 70.2/ASME B 16.104	Yes / No / Explain		
13	Guaranteed cycle of operation	5000	Yes / No / Explain		

14	End connection	As given in Table 3A. Flanged: Serrated Raised Face (SRF) with serration flanges as per standard ANSI B 16.5 as given in Table 3A	Yes / No / Explain		
15	STYLE OF CONSTRUCTION: Body	With full port (standard bore) and in-line end connections	Yes / No / Explain		
16	Bonnet	Bolted or screwed to body with spring energized seals (Such as Helicoflex, Enerseal, etc).	Yes / No / Explain		
17	Stem	Non-rotating, rising stem	Yes / No / Explain		
18	Stem (dynamic) seal	Gland packing with Live loaded spring shall be provided.	Yes / No / Explain		
19	Plug	Renewable (replaceable) from stem with insert	Yes / No / Explain		
20	Seat	Renewable from body with seat insert. (Alternatively seat may integral with body provided that it is harder than the plug insert.)	Yes / No / Explain		
21	Flow direction	Flow-to-open (Flow-under-plug) and all the valves shall have Bi-directional shut-off	Yes / No / Explain		
22	MATERIAL OF CONSTRUCTION: Body and bonnet	ASTM A 182 F 304L / 316L / 321 /304 / 316 (or) ASTM A 351 CF 3 / 3M / CF 8 / 8M	Yes / No / Explain		
23	Stem, plug, seat, seat insert	ASTM A 479 304L / 316L / 321 /304 /316	Yes / No / Explain		
24	Gland packing	PTFE/ Glass-filled PTFE/ PEEK	Yes / No / Explain		
25	Plug insert	PCTFE (Kel-F) / Polycarbonate / Vespel / PEEK	Yes / No / Explain		
26	Pipe stub (end connection)	ASTM A 312 TP 304L / 316L	Yes / No / Explain		
27	Bolts	ASTM A 193 B8	Yes / No / Explain		

28	Nuts	ASTM A 194 Gr 8	Yes / No / Explain		
29	Design Code	ASME B16.34 or equivalent	Yes / No / Explain		
30	Test Code	ASME B 16.34/FCI 70.2 or equivalent	Yes / No / Explain		
31	Leak test code:	Soft seated : Class VI,FCI 70.2. Metal seated : Class IV,FCI 70.2	Yes / No / Explain		
32	Note:	1.The valves shall be either inherently anti-static or provided with anti-static features. 2.Alternative materials, if chosen as per manufacturer's standards, for any of the above parts the same shall get approved by the purchaser.	Yes / No / Explain		
33	TESTS: a. Material test certificates:	The material test certificates, detailing the physical and chemical properties, of the principal pressure-bearing parts shall be provided.	Yes / No / Explain		
34	b. Welding joint test (wherever applicable):	All butt welding joints in the valve (including the joints between the body and the pipe stubs) shall be subjected to dye-penetrant test and radiographic test with X-rays or gamma rays to 2-2T sensitivity as per Section IX, ASME. All the socket welding joints shall be subject to dye-penetrant test (DPT).	Yes / No / Explain		
35	c. Functional Test:	Each valve has to be subjected to functional test for free operation of valves to the full stroke length.	Yes / No / Explain		

36	d. Soundness test for castings (wherever applicable):	All the castings/Forgings/pipe/Machined pressure bearing components shall be subjected to soundness test with radiographic or ultrasonic technique for flaw detection.	Yes / No / Explain		
37	e. Pre-assembly hydraulic shell pressure test:	The valve shell, prior to assembly, in partially open position, shall be subjected to pressure test with Water (with suitable corrosion inhibitor) at 1.5 times the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		
38	f. Pneumatic shell pressure test:	The valve, upon final assembly including the bellows, in partially open position shall be subjected to pressure test with dry air or GN2 at 1.1 times the maximum rated working pressure of the particular pressure rating class.	Yes / No / Explain		
39	g. Pneumatic Seat Pressure test:	The valve, in closed position, shall be subject to pressure test at the maximum rated working pressure of the particular pressure rating class of the valve.	Yes / No / Explain		

40	h. MSLD shell leakage test:	The global leakage rate across body shall be measured with gaseous Helium Mass Spectrometer Leakage Detector (MSLD) to establish the permissible leakage rate values specified above by hood technique as per Article 10, Section V, ASME. The leakage test shall be performed by shrouding the entire outside surface of the valve with a plastic bag to hold gaseous Helium at a positive pressure and by evacuating and connecting the inlet/outlet port to MSLD. Leakage test by detector probe or tracer probe technique is not acceptable.	Yes / No / Explain		
41	i. Ultrasonic test:	100% ultrasonic test shall be conducted for the pipe subs.	Yes / No / Explain		
42	Cleanliness	All the interior flow surfaces of the valve shall be degreased and cleaned to Oxygen service standards as per CGA G-4.1 or MIL-C-52211 or ASTM G 93. The valves shall be dispatched with end connection sealed by suitable plastic plugs to avoid contamination during transportation.	Yes / No / Explain		

43	Marking	All the valves are assigned tag numbers for the sake of identification. The tag number for each valve, as indicated above, besides size, pressure rating class, valve coefficient, material of construction, etc, shall be legibly and indelibly engraved on the body of the valves.	Yes / No / Explain		
44	ACTUATOR: Type	Linear actuator, piston/ diaphragm type, single acting, spring return, fail-safe	Yes / No / Explain		
45	Normal position/ Failure position	As given in Table - 3A	Yes / No / Explain		
46	Command gas	Gaseous Nitrogen at suitable pressure supplied by the positioner.	Yes / No / Explain		
47	Response time (for both full opening and closing strokes)	As given in Table 3A If required, flow (volume) booster and quick exhaust valve shall be incorporated to achieve the specified response time.	Yes / No / Explain		
48	End connection for command gas	DN 8 (1/4") NPT (F) to ASME B 1.10.1.	Yes / No / Explain		
49	Material	Carbon steel (enamel-painted)	Yes / No / Explain		
50	Response time (for both full opening and closing strokes):	The response time taken for opening and closing of the valve shall be evaluated.	Yes / No / Explain		
51	Cv type test	Cv type test shall be carried out for all control valves and Cv type test certificate shall be provided.	Yes / No / Explain		
52	SMART VALVE POSITIONER: 1.Functional specifications: Type	Microprocessor based field programmable, Control Valve Positioner suitable for Linear actuator.	Yes / No / Explain		

53	Inputs signal	4-20mA, 2 wire. Max: 25mA/30V. Min: 3.6mA. Load voltage at 20mA >9.0 Vdc. Impedance at 20mA >400 ohms	Yes / No / Explain		
54	Power	Supplied by the 4- 20mA loop. No external supply required.	Yes / No / Explain		
55	Communication protocol	HART Protocol	Yes / No / Explain		
56	Protection against Reverse Polarity	To be provided	Yes / No / Explain		
57	Output	Range 0-6 bar (0-90 psi)	Yes / No / Explain		
58	Air supply	8 bar	Yes / No / Explain		
59	Output function	For single or double acting actuators. Configurable air is vented from actuators or actuators are blocked in case of electrical power failure.	Yes / No / Explain		
60	Travel limit	Min. and Max. Limits, Freely configurable within 0-100% of total travel.	Yes / No / Explain		
61	Action (signal): Direct	Signal 4-20mA = position 0-100%	Yes / No / Explain		
62	Action (signal): Reverse	Signal 20-4mA = position 100-0%	Yes / No / Explain		
63	Indication	Local display should be provided	Yes / No / Explain		
64	Flow Characterization	Linear, Equal Percentage, Quick Opening, 16 freely selectable points.	Yes / No / Explain		
65	Gain	Through software and also locally adjustable.	Yes / No / Explain		
66	Travel Time	Through software and also locally adjustable.	Yes / No / Explain		
67	2. Actual Position Sensing	4-20mA position feedback for continuous position monitoring.	Yes / No / Explain		

68	3.Performance Specifications: Resolution (A/D conversion)	>16000 steps	Yes / No / Explain		
69	Sample rate	20 msec.	Yes / No / Explain		
70	Influence of vibration	≤±1% up to 10g and 80 Hz.	Yes / No / Explain		
71	Tolerance band	0.3-10%, adjustable.	Yes / No / Explain		
72	Sensitivity, Repeatability & Hysteresis	0.1% of full scale	Yes / No / Explain		
73	Air Consumption	0.25 Nm ³ / hour at 1.4 bar supply pressure. 0.70 Nm ³ / hour at 5.6 bar supply pressure	Yes / No / Explain		
74	Output capacity	13.6 Nm ³ / hour at 5.6 bar supply pressure	Yes / No / Explain		
75	Ambient Temp. effect	≤0.5% / 10K	Yes / No / Explain		
76	Vibration effect	< 0.5%/g	Yes / No / Explain		
77	Supply pressure effect	Negligible	Yes / No / Explain		
78	EMI effect	To be designed to comply Indian or any International standards	Yes / No / Explain		
79	4.PHYSICAL SPECIFICATIONS: Electrical connection: Screw terminals	Max 1.0 mm ² for option, max 2.5 mm ² for analog signal.	Yes / No / Explain		
80	Cable entry	2 threads ½" –14 NPTF	Yes / No / Explain		
81	Pneumatic connection: Supply and output end connection	¼" -18 NPT	Yes / No / Explain		
82	Pressure Gauge	Pressure gauge of supply and output to be provided	Yes / No / Explain		
83	Weight	≤3 Kg (Approximately)	Yes / No / Explain		
84	Material of construction	316 stainless steel housing with Buna-N, O-rings on covers	Yes / No / Explain		

85	Mounting bracket	Mounting bracket Kit in 316 SS suitable for the valve is to be provided	Yes / No / Explain		
86	Mounting orientation	Any orientation allowed.	Yes / No / Explain		
87	5.CERTIFICATION: Hazardous location Certification	Explosion proof, group II C (Hydrogen environment) for valves in Table 3A only.	Yes / No / Explain		
88	Safe integrity level	SIL 2. Certificate to be provided.	Yes / No / Explain		
89	Accessories to be provided with smart valve positioners	1. Air Regulator unit for positioner, 2.Pressure gauge for input and output, 3.Hand held Communicator and its tools for configuration and calibration.	Yes / No / Explain		
90	Suggested Make	ABB, SAMSON, SEIMENS.	Yes / No / Explain		
91	QUALITY ASSURANCE PLAN	As given in Table 3B	Yes / No / Explain		

Document : Technical specification of Globe Control Valves

20. Globe Control Valve Pressure Rating: Class 900 & Below

Spares for Globe control valve (UVC 7300) as per Technical specification & Special conditions attached in Annexure- III & IV respectively

Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	1.Guarantee/warranty:	The valves shall be guaranteed/ warranted for satisfactory performance over a period of 18 months from the date of dispatch from the vendor's factory or 12 months from the date of commissioning at the purchaser's site, whichever is earlier.	Yes / No / Explain		

2	2.Inspection:	The Inspection of the valves shall be carried out by the Third Party Inspection (TPI) agency. The scope of inspection shall be as per the Quality Assurance Plan (QAP) given in Tables 1B, 2B & 3B and Technical specifications as given in Annexure I, II & III.	Yes / No / Explain		
3	TPI Agency	TPI agency shall be chosen from the following list only: a.Lloyds Register Industrial Services Pvt Ltd (LRIS) b.Bureau Veritas Industrial Services Pvt Ltd (BVIS) c.Det Norske Veritas (DNV) d.Technischer Uberwachungs Verein (TUV) e.Bax Counsel Inspection Bureau Pvt Ltd It shall be the responsibility of the vendor to arrange for and coordinate with the TPI agency.	Yes / No / Explain		
4	3.Spares:	The spare parts such as seals, gland packing etc and special tools required for operation and maintenance of the valves for 2 years shall be supplied. The detailed list of such spares with cost breakup for each item shall be mentioned in the quotation. It is our discretion to either select or delete the spares from the list.(Cost shall be quoted in Price bid only)	Yes / No / Explain		

5	4.Documentation:	The following documents (2 copies, in English) shall be provided by the vendor at the different stages specified thereupon: (The offer should contain two parts, Part-I Techno commercial bid & Part-II Price bid.)	Yes / No / Explain		
6	4.1 Techno Commercial Bid (Part-I):	Along with Techno Commercial Bid (Part-I): The following documents shall be provided. 4.1.1.Complete technical description of valves, including valve coefficient along with drawings, Make & model No. and catalogues of all the valves quoted. Sizing calculations for the control valves shall also be provided.	Yes / No / Explain		
7	Techno Commercial Bid (Part-I): continued	4.1.2.Deviations, if any, from the tender enquiry specification shall be explicitly spelt out. Otherwise it will be presumed that the offer is as per tender specification.	Yes / No / Explain		
8	Techno Commercial Bid (Part-I): continued1	4.1.3. If any of the details required as per tender are not provided the offer will be summarily rejected.	Yes / No / Explain		
9	Techno Commercial Bid (Part-I): continued2	4.1.4. The bidder strictly should not indicate the price details in Techno Commercial bid (Part-I). The bid will be invalid if price details are indicated in any form.	Yes / No / Explain		

10	Pre- Qualification Criteria (PQC):	4.1.5.The Bidder's capability shall be evaluated based on the following Pre- Qualification (PQ) criteria. The Bidders shall suitably fill-up the information solicited in "Item specification" and submit as part of the Techno- Commercial Bid (TCB). Those Bidders who comply with the PQ criteria only will be screened-in for opening and evaluation of Price Bid. The information to be submitted in the TCB shall be complete in all respects substantiated by attached documents and there shall not be any further opportunity for the Bidders to submit any information or document unless the Purchaser solicits so at their own discretion. Any lack of information or incomplete/ambiguous information or false information or information non-compliant with the PQ criteria shall be treated as sufficient cause to summarily reject such Bids.	Yes / No / Explain		
11	Pre- Qualification Criteria (PQC): Continued	4.1.5.1The Bidder must be a manufacturer. Manufacturer shall submit a self-declaration including ISO certification to that effect.	Yes / No / Explain		

12	Pre- Qualification Criteria (PQC): Continued1	4.1.5.2The Bidder must have successfully completed supply of globe valves for price(s) as follows during the last 7 years ending 31/03/2023. The claim shall be substantiated by purchase order(s) and inspection release note(s)/ acceptance certificate(s) by third-party inspection agency or client dated between 01/04/2016 and 31/03/2023. a. 1 work (single purchase order) of price equal to or more than Rs 74 Lakhs (or) b. 2 works with price of each work equal to or more than Rs 46 lakhs (or) c. 3 works with price of each work equal to or more than Rs 37 lakhs	Yes / No / Explain		
13	Pre- Qualification Criteria (PQC): Continued2	4.1.5.3 The Bidder must successfully completed supply of valve of at least DN 40 size and class 2500 pressure rating during the last 7 years ending 31/03/2023.The claim shall be substantiated by purchase order(s) and inspection release note(s)/ acceptance certificate(s) including by third-party inspection agency or client dated between 01/04/2016 and 31/03/2023.	Yes / No / Explain		

14	Pre- Qualification Criteria (PQC): Continued3	4.1.5.4 For being eligible to be considered for supply of bellow sealed globe valves under this tender enquiry, the bidder must have successfully completed supply of bellow sealed globe valve of at least DN 25 size and class 900 pressure rating during the last 7 years ending 31/03/2023. The claim shall be substantiated by purchase order(s) and inspection release note(s)/ acceptance certificate(s) including Bellows cyclic life test as per BS 5352 or equivalent by their client dated between 01/04/2016 and 31/03/2023.	Yes / No / Explain		
15	Pre- Qualification Criteria (PQC): Continued4	4.1.5.5 The Bidder must possess the facility for performing sensitive leak test of the valves using Helium Mass Spectrometer Leak Detector (MSLD). The claim shall be substantiated by Test report issued/ countersigned by Third-party inspection agency or client evidencing seat leakage rate equal to or finer than 1E-5 Pa.m ³ /s (1x10 ⁻⁴ mbar.l/s) for at least one valve of each type of valve during the period between 01/04/2016 and 31/03/2023.	Yes / No / Explain		
16	Pre- Qualification Criteria (PQC): Continued5	4.1.5.6 The Bidder shall confirm their willingness to accept part order irrespective of price or quantity out of the quantity enquired.	Yes / No / Explain		

17	Pre- Qualification Criteria (PQC): Continued6	4.1.5.7The Bidder shall confirm that there is no mention or indication of any element of price whatsoever, as sum or percentage, in the Techno-commercial bid. Such information is to be given in the Price bid only.	Yes / No / Explain		
18	Pre- Qualification Criteria (PQC): Continued7	4.1.5.8IPRC will assess and infer the capability of the bidder to meet the specifications based on the available information. In this regard, discretion of IPRC will be final.	Yes / No / Explain		
19	4.2Along with Price bid (Part-II):	The bidder shall indicate the price break-up details such as basic valve price, testing charges (Provide break up details. Specify included, if testing charges are included in basic cost of the item), TPI charges, Spares price for each size and pressure rating class of the valve for all Manual, Pneumatically actuated & Globe control valves (provide detailed list of spares for each item along with price), freight, taxes & duties, packing & forwarding charges, etc. (Cost shall be quoted in Price bid only)	Yes / No / Explain		

20	4.3 Documentation:	<p>Within 2 WEEKS from placement of purchase order, the following documents shall be provided. These documents are subject to review by the purchaser. Only upon receipt of the Purchaser's approval of these documents, the vendor shall proceed with manufacture of the valves. However, the purchaser's approval shall not absolve the vendor of their responsibility to comply with the specification of purchase order.</p> <p>4.3.1 General Arrangement (GA) drawing, indicating the overall dimensions of the product along with the accessories.</p>	Yes / No / Explain		
21	Documentation:continued 1	4.3.2 Detailed cross sectional/ fabrication drawing of the valve, indicating the dimensions and Material of Construction (MOC) of each trim/ part.	Yes / No / Explain		
22	Documentation:continued 2	4.3.3 Sizing calculations for control valves.	Yes / No / Explain		

23	4.4 Inspection:	Upon satisfactory inspection of the valves, the following documents shall be provided. The purchaser shall review these documents for compliance with the specification of the purchase order and issue "purchaser's delivery clearance". Only upon receipt of the same, the vendor shall proceed with delivery of the valves. 4.4.1 Certificates of tests specified in Annexure I, II & III shall be authorized by the inspector. 4.4.2 Inspection report by the inspector.	Yes / No / Explain		
24	4.5 Documents	Along with the consignment, the following documents shall be provided: 4.5.1 Instruction manual for installation, operation, maintenance and trouble-shooting. 4.5.2 Guarantee/ Warranty certificate.	Yes / No / Explain		
25	5. Delivery Period	The delivery period for supply of valves shall be within 9 months from the date of Purchase Order.	Yes / No / Explain		
26	6.Packing	Valves shall be properly packed in order to avoid damages during handling and transportation.	Yes / No / Explain		

Supporting Documents required from Vendor

1. The Bidder must be a Manufacturer. Documentary evidence for Manufacturing of Globe valves shall be as per clause 4.1.5.1 of Annexure IV
2. Documentary evidence for Supply of Globe valves for Price(s) as per clause 4.1.5.2 special conditions in Annexure-IV
3. Documentary evidence for sensitive leak test of valves using Helium Mass Spectrometer leak

Detector (MSLD) as per clause 4.1.5.5 of special conditions in Annexure-IV

4. Documentary evidence for Supply of Bellow sealed Globe valve of at least DN25 size & pressure rating Class 900.as per clause 4.1.5.4 of special conditions in Annexure-IV

5. Documentary evidence for Supply of Globe valve at least DN40 size & pressure rating Class 2500.as per clause 4.1.5.3 of special conditions in Annexure-IV

6. Complete Technical description of all valves,including valve coefficient

7. Deviations,if any from Tender specifications

8. Drawings and catalogues for all valves

9. Sizing Calculations for Control valve

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	Special Conditions as per Annexure IV	Yes / No / Explain	
2	Technical specification of Globe Control valves as per Annexure III	Yes / No / Explain	
3	Technical specification of Pneumatically-Actuated Globe valves as per Annexure II	Yes / No / Explain	
4	Technical specification of Manual Globe valves as per Annexure I	Yes / No / Explain	
5	Validity of Offer (specify)	Yes / No / Explain	
6	Delivery Period (specify)	Yes / No / Explain	
7	Delivery Terms: Normal delivery terms - FOR Destination (i.e., IPRC, Mahendragiri)	Yes / No / Explain	
8	Payment Terms: 100% within 30 days after receipt and acceptance of items (No advance payment is acceptable). Specify your Payment Terms.	Yes / No / Explain	
9	Security Deposit: The Supplier shall provide Bank Guarantee for an amount equivalent to the 3% (THREE PERCENT) of the total Order value towards Security Deposit for the due performance of the Purchase Order. The Security Deposit can be submitted in the form of Bank Guarantee or Fixed Deposit Receipt obtained from any Nationalized/ Scheduled Bank and it shall be kept valid for a period of sixty days beyond the date of completion of the Purchase Order. This Security Deposit will be returned to the Supplier only upon successful completion of all the contractual obligations or shall be adjusted/ forfeited against non-fulfilment of any of the contractual obligations. The Security Deposit shall be submitted within 30 days from the date of receipt of Purchase Order.	Yes / No / Explain	
10	Confirm: Conditions for BIDDER FROM A COUNTRY WHICH SHARES LAND BORDER WITH INDIA	Yes / No / Explain	

11	Liquidated Damages: The delivery period / completion period shall be the essence of the Purchase Order. If the Supplier fails to meet delivery date within the time specified above or any extension thereof, the Department will recover from the Supplier as Liquidated Damages (LD) a sum of 0.5% of the total order value for each calendar week of delay subject to a maximum of 10% of the total order value. Confirm your acceptance.	Yes / No / Explain	
12	Name of PRINCIPAL, Address, Contact No, E-mail Id etc. (specify):	Yes / No / Explain	
13	Name of INDIAN AGENT, Address, Contact No, E-mail Id etc. (specify):	Yes / No / Explain	
14	Currency quoted (specify)	Yes / No / Explain	
15	Warranty / Guarantee Period: (specify)	Yes / No / Explain	
16	Taxes and other costs, if any: (Specify).	Yes / No / Explain	
17	Performance Bank Guarantee: Performance Bank Guarantee (PBG) for 3% of the order value shall be submitted along with your Invoice/prior to final payment. It shall be valid till the warranty/ guarantee period and shall have an additional claim period of 60 days.	Yes / No / Explain	
18	Percentage of Local Content with documentary proof: (specify)	Yes / No / Explain	
19	If MSME, provide documentary proof: (specify)	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
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1	Manual Globe Valve: Supply of Manual Globe valve (UVM 7300, 7301,7303 & 7303S) as per Technical specification & Special conditions attached in Annexure-I & IV respectively	4.00 Nos.		-		
2	Manual Globe Valve: Spares for Manual Globe valves (UVM 7300, 7301,7303 & 7303S) as per Technical specification & Special conditions attached in Annexure-I & IV respectively	1.00 Sets		-		
3	Manual Globe Valve: Supply of Manual Globe valve (UVM 7311, 7312, 7313,7318 & 7318S) as per Technical specification & Special conditions attached in Annexure-I & IV respectively	5.00 Nos.		-		

4	Manual Globe Valve: Spares for Manual Globe valve (UVM 7311, 7312, 7313,7318 & 7318S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	1.00 Sets		-		
5	Manual Globe Valve: Supply of Manual Globe valve (UVM 7321, 7324, 7326 & 7326S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	4.00 Nos.		-		
6	Manual Globe Valve: Spares for Manual Globe valve (UVM 7321, 7324, 7326 & 7326S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	1.00 Sets		-		

7	Manual Globe Valve: Supply of Manual Globe valve (UVM 7305 & 7305S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	2.00 Nos.				
8	Manual Globe Valve: Spares for Manual Globe valve (UVM 7305 & 7305S) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	1.00 Sets				
9	Manual Globe Valve: Supply of Manual Globe valve (UVM 7307 & 7314) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	2.00 Nos.				
10	Manual Globe Valve: Spares for Manual Globe valve (UVM 7307 & 7314) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	1.00 Sets				

11	Manual Globe Valve: Supply of Manual Globe valve (UVM 7316 & 7325) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	2.00 Nos.		-		
12	Manual Globe Valve: Spares for Manual Globe valve (UVM 7316 & 7325) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	1.00 Sets		-		
13	Manual Globe Valve: Supply of Manual Globe valve (DVM 602O, 602RO & 602SO) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	3.00 Nos.		-		

14	Manual Globe Valve: Spares for Manual Globe valve (DVM 602O, 602RO & 602SO) as per Technical specification & Special conditions attached in Annexure- I & IV respectively	1.00 Sets		-		
15	Electro-pneumatically operated 2-way Globe valve: Supply of Electro pneumatic actuated Globe valve (UVP 7300) as per Technical specification & Special conditions attached in Annexure- II & IV respectively	1.00 Nos.		-		
16	Electro-pneumatically operated 2-way Globe valve: Spares for Electro pneumatic actuated Globe valve (UVP 7300) as per Technical specification & Special conditions attached in Annexure- II & IV respectively	1.00 Sets		-		

17	Electro-pneumatically operated 2-way Globe valve: Supply of Electro pneumatic actuated Globe valve (UVP 735S) as per Technical specification & Special conditions attached in Annexure- II & IV respectively	1.00 Nos.		-		
18	Electro-pneumatically operated 2-way Globe valve: Spares for Electro pneumatic actuated Globe valve (UVP 735S) as per Technical specification & Special conditions attached in Annexure- II & IV respectively	1.00 Sets		-		
19	Globe Control Valve Pressure Rating: Class 900 & Below: Supply of Globe control valve (UVC 7300) as per Technical specification & Special conditions attached in Annexure- III & IV respectively	1.00 Nos.		-		

20	Globe Control Valve Pressure Rating: Class 900 & Below Spares for Globe control valve (UVC 7300) as per Technical specification & Special conditions attached in Annexure- III & IV respectively	1.00 Sets		-		
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Common charges (Applicable for all items)

P & F	
Freight	
TPI charges (%)	
Testing charges (%)	
Other charges if any (%)	
3. Other Charges in Price (If any)	
1. Other Charges in Price (If any)	