निविदा आमंत्रण सूचना
NOTICE INVITING TENDER (NIT)

Enquiry No.- 77/26/6016/SUM **Date -22-Apr-26**

BHEL invites offers from reputed Suppliers as per following terms and conditions -

1. Tender Type	**Open Tender (Domestic-Indian)**		
2. Package	**CONTROL VALVE – (OTHER THAN FDV)**		
3. Project	**Framework Agreement (Rate Contract) of CONTROL VALVE - (OTHER THAN FDV)**		
4. Executing Agency	**BHEL-PEM**		
5. Mode of Enquiry	**E - PROCUREMENT**		
6. Nature of Package (Divisible/Non-Divisible)	**Divisible**		
7. Numbers of Part bid	**2-Part bid (Techno-commercial and Price bid)**		
8. Due Date & Time	**For offer submission**	**02.05.2026**	**13:00 IST**
	For P-1 bid opening	**02.05.02026**	**16:00 IST**
9. Earnest Money Deposit (EMD)	Not Applicable	EMD Amount	NA
10. Tender Cost	NIL		
11. Eligibility of Local Supplier as per MII	**Only Class I Supplier (with local content 85% and above)**		
12. Technical Scope	As per Technical specification No: PE-TS-20-145-H104-B		
13. Pre-bid Clarification	NA		
14. Prequalification Requirements	Financial PQR- YES		Technical PQR- YES
15. Delivery terms for Supply	FOR Despatch Station		
16. Delivery Schedule:	Drawing/ documents submission & re-submission schedule shall be as per Technical Specification: PE-TS-20-145-H104-B		
A. Main Supply along with accessories (including Commissioning Spares, as required)	• 320 days from the date of PO (for Unit-1and common area). Additional 90 days for additional units i.e. 410 days in case of 2 units, 500 days in case of 3 units and 590 days in case of 4 units.		
B. Mandatory Spares	150 days from BHEL clearance date		
C. Supervision of E&C	Bidder to depute its service engineer for respective site activity within 15 days from BHEL's intimation.		

Notes:

a. Supplier to start Manufacturing/Supply only after getting the applicable Primary Engineering Drgs./docs approved from BHEL/End Customer.

b. Drawings /documents submission/re-submission schedule shall be as per Technical specification (PE-TS-20-145-H104-B) which shall be used for progress monitoring purpose and required course correction, if any.

c. The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet

the completion schedule.

d. The delivery conditions specified are for Contractual purposes. However, to meet project requirement, BHEL may ask for early deliveries without any compensation thereof.

2.0 Validity of Contract placed on basis of Framework Agreement (Rate Contract) for individual projects (PO rates, terms and conditions):

Supplier has to make supply of goods/services as per the delivery time mentioned above. However, due to unavoidable circumstances if delay happens in providing inputs/ clearances (inputs, Engineering approvals, deputing inspector for inspection, issuance of MDCC and any hold imposed owing to site issues etc.) for which delivery time extension is admissible as per point no.3, in such situation it shall be obligatory at Supplier part to execute the Contract at PO rates, terms and conditions where inputs/ clearances has been accorded within validity of Contract. Validity period for various activities shall be as defined below or as mentioned in the NIT.

2.1 Contract for main supply shall be valid for 410 ('C') days from the PO date. In case of more than 1 unit, validity period will be increased by supply time considered for subsequent units. However, delay at Supplier's end (if any) shall be added to the validity period and Contract validity shall get extended by the delay period at Supplier's end.

For example: Original Delivery period for main supply: A (in days)

Delay at Supplier's end: B (in days beyond "A" days)

Contract validity: C+B (in days)

2.2 Validity of the contract for Mandatory spares and Supervision of E&C: Validity of contract for Mandatory spares and Services (Supervision of E&C) shall be one year over and above contractual validity period for main supply including quantity variation (if any) as specified at point no. 2.1 above

Notes:

a. B is the Supplier delay days beyond original Contractual delivery period for main supply /extended delivery period owing to time taken by BHEL.

b. Main supply including quantity variation, mandatory spares/ services, applicable in the Contract released/ cleared for manufacturing within Contractual validity period, to be supplied by Supplier/Supplier at PO rates, terms and conditions.

c. Execution of the Contract quantities released beyond Contract validity period shall be decided on mutual consent basis at PO rates, terms and conditions.

3.0 Delivery Extension: Extension of Contractual delivery time:

Delivery time mentioned in the NIT includes Engineering completion time (time for drawing/document submission/resubmission by the Supplier and review/approval of the same by the BHEL/End customer), manufacturing, inspection, Packing and dispatch time. Due diligence is to be observed by the Supplier to ensure timely completion of engineering and supply.

During the execution of the Contract, time loss occurred owing to the reason attributable to BHEL besides force majeure shall be considered for delivery time extension to the Supplier as given below: -

i. Any Delay in providing comments/ approval on primary drawing/documents beyond the stipulated time as specified in NIT.
ii. Time Loss in approval of the drawing/document as a result of increase in the iteration not attributable to the Supplier (i.e. resubmission owing to end customer comments) as certified by BHEL. Time extension equivalent to the resubmission time noted in the tech. spec and consequential increase in the approval time in lieu of increase in iteration shall be applicable. However, for incomplete re- submission time loss shall be in Supplier account.
iii. Delay in providing engineering input/material by BHEL.
iv. Delay in deputing inspector for inspection and delay in release of MDCC in line with GCC terms
v. Any hold put by BHEL for whatever reasons during execution of Contract (within Contract validity period), time extension equivalent to hold period shall be admissible. However, in the event hold period continues for more than 30 days then, an additional fifteen days for the purposes of mobilization and demobilization of resources shall also be admissible.

Note: Extension in delivery period if any with or without imposition of LD shall be considered after detailed delay analysis based on provisions given above. However, no delay analysis will be applicable if Supply is completed within delivery schedule as specified in Purchase Order.

17. Liquidated Damages (LD):

Main Supply:

Buyer reserves the right to recover from the Supplier, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent of the undelivered portion of Contract price excluding GST per week or part thereof, subject to a maximum of ten (10) percent of total of Contract price excluding GST, if the Supplier fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

Supplier to essentially quote prices against each line item of the BOQ in the respective columns. 'NIL', 'Free of Cost', 'Zero' etc. shall not be mentioned for any line item of the BOQ. In such case, Liquidated Damages shall be levied on the Total order/ contract value instead of undelivered portion of the Order/ contract. Also, if price of any line item (X) is mentioned 'Included' in any other line item (Y), then in case of delay in delivery of item (X), LD shall be applicable on value of item (Y).

Mandatory Spares:

Buyer reserves the right to recover from the Supplier, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent of the undelivered portion of Contract price of Mandatory Spares excluding GST per week or part thereof, subject to a maximum of ten (10) percent of total of Contract price of Mandatory Spares excluding GST, if the Supplier fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

Supplier to essentially quote prices against each line item of the BOQ in the respective columns. 'NIL', 'Free of Cost', 'Zero' etc. shall not be mentioned for any line item of the BOQ. In such case, Liquidated Damages shall be levied on the Total order/ contract value instead of undelivered portion of the Order/ contract. Also, if price of any line item (X) is mentioned 'Included' in any other line item (Y), then in case of delay in delivery of item (X), LD shall be applicable on value of item (Y).

Service Portion:

LD shall be applicable @ ½ percent of the Undelivered Portion of Service Contract value excluding GST per week or part thereof.

Note- Total LD (Main supply+ Mandatory spares+ Supervision of E&C) shall be limiting to 10% of cumulative total contract value (main supply+ mandatory spares+ supervision of E&C) excluding GST.

- **Main Supply should include accessories and commissioning spares as required.**
- **All other terms and conditions of LD shall be as per GCC Rev. 07 and Corrigendum 01, 02 & 03 to GCC Rev. 07.**

18. Guarantee Terms: As per Clause No. 12.0 except Clause no. 12.2(b) of General Commercial Terms & Condition of GCC Rev. 07.

19. Validity of offer shall be as per Clause no. 7 (Instruction to Suppliers) of GCC Rev. 07.

20. PVC (Price Variation Clause): Not Applicable

21. CIF Content	Not Available
22. Integrity Pact Applicability	Yes

23. In line with cl. No. 12 of (ITB) of GCC Rev07, following Independent External Monitors (IEMs) have been appointed by BHEL.:

1. Dr. Sarat Kumar Acharya, Ex-CMD, NLC : *iem1@bhel.in;*
2. Shri R. Mukundan, IRPS (Retd.) : *iem2@bhel.in;*
3. Shri Madan Lal Meena, IAS (Retd.) : *iem3@bhel.in;*

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department officials whose contact details are provide in NIT

24. Tender Evaluation - Price will be finalized through RA. The evaluation currency for this tender shall be INR. Evaluation will be done on overall L1 (Total Package Price including Freight excluding taxes) basis with necessary loading as applicable.

In the course of evaluation, if more than one Supplier happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 Suppliers.

In case more than one Supplier happens to occupy the L-1 status even after soliciting discounts, the L-1 Supplier shall be decided by a toss/ draw of lots, in the presence of the respective L-1 Supplier (s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final & binding.

25. Payment Terms:

Main Supply: As per clause No. 9.1 of General Commercial Terms and Conditions of GCC Rev. 07 and Corrigendum 01, 02 & 03 to GCC Rev. 07.

Mandatory Spares: As per clause No. 9.1 of General Commercial Terms and Conditions of GCC Rev. 07 and Corrigendum 01, 02 & 03 to GCC Rev. 07.

CV Test Charges: 100% payment shall be released after successful completion of the activity on pro rata basis, certification by BHEL Engineering (after customer approval, if applicable)

Supervision of E&C: 100% payment shall be released after successful completion of the activity on pro rata basis, on Site certification/ certification by engineering as applicable

26. GST shall be payable extra at actual as per the HSN code finalized for the items during detailed BBU.

27. Reverse Auction:

BHEL shall be resorting to Reverse Auction (RA) (Guidelines for Reverse Auction - 2024, as available on www.bhel.com on "Supplier registration page") for this tender. RA shall be conducted among all the Techno-Commercially qualified Suppliers.

Price Bids of all the Techno-Commercially qualified Suppliers shall be opened and same shall be considered as initial bids of Suppliers in RA. In case any Supplier(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.

"The Suppliers has to quote the Single Price (i.e. Total Cost to BHEL) in Reverse Auction. Prices are to be inclusive of Packing & Forwarding charges, all as per tender scope, Freight as applicable, including loading (if any) but excluding GST. De-loading (if any) shall be done in line with NIT terms."

28. Supplier to note that this is a conditional Open Tender enquiry and price bid opening & Reverse Auction participation shall be subject to following condition:

a) Qualifying Technical Pre-Qualification Requirement and Financial Pre-Qualification Requirement
b) Techno-Commercial acceptance of offer by BHEL-PEM
c) Registration in BHEL-PEM for the Tender package

The Suppliers who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at https://Supplier.bhel.in/. All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

	PS Applicability	No Performance Security (PS) against the current enquiry for Framework Agreement

29. Performance Security (PS)		(Rate Contract) for Tender package. However, Suppliers to note that Performance Security shall be submitted for orders placed by the concerned Purchase Groups unit on the Framework Agreement (Rate Contract). Successful Supplier/s will have to submit Performance Security for each POs (irrespective of value) which will be placed under the Framework Agreement (Rate Contract) finalized through this tender considering FA (RC) as original Contract as per the format given in GCC Rev 07. Relevant details of the PS to be submitted on the basis of Framework Agreement (Rate Contract) are as following:
	I	Initially 10% of the Contract value (total Ex-works price). However, 5% of the Contract value (as above) will be released after completion of Main Supply based on certification by Purchasing Department of BHEL unit. Balance 5% of the Contract value (excluding PVC) will be released on completion of all Contractual obligations, including guarantee/warranty obligations based on certification by Purchasing Department of BHEL unit.
		OR
	II	5% of the Contract value (total Ex-works price). Additional 5% of the Contract value will be retained from first bill & subsequent bill(s) of the same Contract. The retention amount will be released after completion of main supply based on certification by Purchasing Department of BHEL unit. Balance 5% of the Contract value (excluding PVC) will be released on completion of all Contractual obligations, including guarantee/warranty obligations based on certification by Purchasing Department of BHEL unit.
	Validity of PS	As per clause no. 11.0 (except 11.4) of General Commercial Terms and Conditions of GCC Rev 07.
	PS Submission	PS should be in favour of BHEL-PEM. Supplier may opt any of the following for submission of Performance Security: -
	Modes of Deposit	Performance security may be furnished in the following forms:

		a) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL. b) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL. c) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Supplier, a/c BHEL). d) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Supplier furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL). e) Insurance Surety Bond. (Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith) Performance Security is to be furnished within 14 days from the date of PO and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all Contractual obligations of the Supplier, including warranty obligations.
	Remarks for PS:	a) The performance security will be forfeited and credited to BHEL's account in the event of a breach of Contract by the Supplier. b) Performance security should be refunded to the Supplier without interest, after he duly performs and completes the Contract in all respects but not later than 60 (sixty) days of completion of all such obligations including the warranty under the Contract. c) However, Performance Security validity is to be extended based on the actual delivery of package. The Performance Security shall not carry any interest.
30. Breach of Contract, Remedies and Termination (Tenderer to note that this clause will supersede any clause regarding recovery amount from Tenderer due to Breach on Contract mentioned anywhere in GCC Rev. 07 and its Corrigendum)		In case of Breach of Contract, BHEL shall recover 10% of the Contract value from the Supplier using following instruments: (i) Encashment of security instruments like EMD, Performance Security with executing agency (PEM) against the said Contract. (ii) Balance amount (if value of security instruments is less than 10% of the Contract value) from other Financial remedies i.e. available bills of the

	Supplier, retention amount etc. with executing agency (PEM). (iii) Balance amount from security instruments like EMD, Performance Security and other Financial remedies i.e. available bills of the Supplier, retention amount etc. with other units of BHEL. (iv) If recovery is not possible then legal remedies shall be pursued. However, Supplier shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.

31. Suppliers are requested to refer clause no 26.0 (Make in India) of Instructions to Bidder of GCC Rev. 07. Further, following shall be taken into consideration for submitting bids by Suppliers:

- For this procurement, the local content to categorize a Supplier as a Class I local Supplier/ Class II local Supplier/ Non-local Supplier and purchase preference to class I local Supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 19.07.2024 issued by DPIIT. In case of subsequent orders issued by the Nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after the issue of the NIT, but before opening of Part-II bids against the NIT.
- Minimum Local Content prescribed for CONTROL VALVE package by Nodal Ministry is **85%** and hence for this procurement, as per Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders issued by the nodal ministry, this package is reserved for only Class-I Supplier having Minimum local Content 85%. Class-II and Non-Local Suppliers are not eligible to quote for this enquiry.
- Suppliers are requested to go through the above-mentioned orders and submit their adherence to Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders.
- Local Content certificate (Make In India Certificate) from statutory/cost auditor of the company (in case of companies) or from a practicing Cost Accountant or practicing Chartered Accountant (in case of Suppliers other than companies), shall be essentially submitted by Supplier along with their offer as per clause No. 9 of Public Procurement (Preference to Make in India), Order 2017 dated 19.07.2024

32. Purchase preference to MSE Supplier: Yes.

33. **<u>Framework Agreement (Rate Contract) Order Splitting:</u>**

a. Framework Agreement (Rate Contract) is proposed for Two (02) years from placement of Framework Agreement (Rate Contract) Purchase Order with a provision for further extension after review on mutual consent.

b. Framework Agreement (Rate Contract) is to be done with 2 Suppliers in ratio of 70:30 value wise at L1 FOR Site Price (Ex-works + Freight) for this package. However, Purchase orders placed by BHEL units for a project on the basis of Rate Contract shall not be split. Details of Framework Agreement (Rate Contract) order splitting shall be as per following:

- GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order,2017 shall be applicable for order splitting (in the ratio of 70:30) and order finalization.
- L1 Rates (Ex-works + Freight) shall be counteroffered to all techno-commercially qualified Suppliers and order splitting in ratio of 70:30 shall be done in line with GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order,2017.
- In case acceptance of counteroffer is received from more than two Suppliers then acceptance shall be considered as per FINAL Reverse Auction Ranking (as applicable).
- If none of the Supplier accepts counter-offered L1 rates, then Contract shall be awarded to L1 Supplier

for 100% value.

c. Framework Agreement (Rate Contract) will be finalized on total lump sum basis instead of item wise evaluation so that the complete requirement against one project is not split amongst various Suppliers to minimize operational difficulty.

34. GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order,2017 shall be applicable for order splitting and order finalization.

35. The quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.

36. Overall (%) quantity variation: The variation on overall package value shall be limited to +30% of the Contract value.

37. Suppliers shall Quote for the entire Scope. Partial scope is not acceptable.

38. Suppliers to ensure that Third party/ Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/ certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and e - mail Id etc. Offer of only those Suppliers shall be considered further, who meets the PQR criteria. Suppliers to furnish latest verification details for checking veracity of document(s) by BHEL. In case the same found not available, Buyer has right to reject such document from evaluation. Format for the same is below: -

Sl. No.	Project Name	Customer Name, Contact Address, Phone No. & Email ID	Contract/ Order No.	Value of Contract/ Order	Brief of Work	Completion Date

39. Suppliers who fulfil Technical & Financial Pre-Qualification Requirement Criteria are eligible to participate in this tender. Bids of only those Suppliers shall be evaluated who meet the Technical as well as Financial Pre-Qualifying requirements.

Note: This item/Package/system falls under the list of items defined in Para 3 of Ministry of Finance guideline ref no.F.20/2/214-PPD(Pt.) dated 20-09-2016 (in respect of procurement of items related to public safety, health, critical security operations and equipment's, etc.) & hence criterion of prior experience shall be same for all Suppliers including startup/MSME. However, Annual Turnover Criteria shall not be applicable for Micro and Small Enterprises and Startups recognised by DPIIT.

40. All corrigenda, addenda, amendments, time extensions, clarifications, etc. to the tender will be hosted on BHEL website (www.bhel.com) & BHEL-PEM website (www.pem.bhel.com) and GePNIC portal. Suppliers should regularly visit websites to keep themselves updated.

41. If Supplier mentions Not Applicable/ Not required/ Not Quoted in BHEL price format, the same to be substantiated by the Supplier. If such item is required to be supplied for system completion in future, same will be supplied free of cost.

42. GeM Seller ID shall be mandatory before placement of order/award of Contract to the successful Supplier.

43. Supplier to quote non-zero Freight charges (anywhere in India) in percentage (%) of their quoted Total Ex-Works Prices of Supply.

44. All Suppliers to comply Govt. of India, Ministry of Power, order no-25-111612018-PG dtd 02/07/2020 regarding mandatory testing of all the imported items/equipment's/components.

45. Self-declarations/ Auditor's/ Accountant's Certificates submitted by the manufacturer/ Supplier may be verified randomly by the committee constituted as per MoP Order 28-07-2020. In case of false documents/misrepresentation

of the facts requisite action against such manufacturer/ Supplier will be taken based on the recommendation of the Committee.

46. All Suppliers to declare that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Supplier(s). This applies in particular to prices, specifications, certifications, subsidiary Contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

In case, the Supplier is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

47. The offers of the Suppliers who are under suspension as also the offers of the Suppliers, who engage the services of the firms debarred across BHEL, shall be rejected. The list of firms debarred across BHEL is available on BHEL web site www.bhel.com.

1.0 Integrity commitment, performance of the Contract and punitive action thereof:

1.1 Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the Contract. BHEL will during the tender process treat all Supplier(s) in a transparent and fair manner, and with equity.

1.2 Commitment by Supplier/ Supplier/ Supplier:

1.2.1 The Supplier/ Supplier/ Supplier commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

1.2.2 The Supplier/ Supplier/ Supplier will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

1.2.3 The Supplier/ Supplier/ Supplier will perform/ execute the Contract as per the Contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any Supplier/ Supplier/ Supplier during pre-tendering/ tendering/ post tendering/ award/ execution/ post- execution stage indulges in malpractices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such Supplier/ Supplier/ Supplier as per extant guidelines of the company available on www. bhel.com and/or under applicable legal provisions".

48. Conflict of **interest:** All Suppliers are required to submit the declaration regarding conflict of interest in the format enclosed with the NIT signed by the authorized signatory of the Supplier.

49. All the above terms and conditions, post-bid agreements/MoMs (during Techno- Commercial evaluation) shall automatically become a part of the Order/Contract after its finalisation.

50. Suppliers to note that offers shall be submitted strictly in accordance with the requirements of tender documents. Suppliers shall upload their complete offer meeting the requirements of the tender documents on e-procurement portal https://eprocurebhel.co.in/nicgep/app.

Following documents need to be uploaded:

- **Offer forwarding/ covering letter with Un-price bid, Deviation Sheet (Cost of Withdrawal)**
- **Documents required for meeting Technical PQR (Part of Tech. Spec.)**
- **Documents required for meeting Financial PQR**
- **Local Content Certificate in line with Make in India circular**
- **Land Border Certificate**
- **Integrity Pact**
- **Undertaking for Conflict of Interest**
- **Declaration by MSE Suppliers regarding ownership structure along with UDYAM certificate**
- **Price Bid on e-procurement portal - https://eprocurebhel.co.in/nicgep/app**

51. It shall be the responsibility of the Supplier to ensure that the tender complete in all respects is uploaded on or before the due date and time. Incomplete/late offers shall not be considered.

52. **Grievance Redressal Mechanism:**

To promote transparency and ensure fair treatment of all Suppliers, a structured Grievance Redressal Mechanism is in place to address any concerns or issues arising during the tendering process or in subsequent business dealings with the company.

Suppliers/Suppliers are requested to follow the below escalation process for grievance resolution:

1. First Level: Any grievance should initially be addressed to the designated Dealing Officer, whose contact details are provided in the Notice Inviting Tender (NIT)/Contract. For POs, placed on basis of Framework agreement by Project Groups of PEM, designated dealing officer shall be PO issuing executive.

2. Second Level: If the issue remains unresolved, it may be escalated by lodging a formal grievance through the SUVIDHA Portal: https://suvidha.bhel.in/suvidha/. Responses will be provided in accordance with the defined escalation matrix.

53. All Suppliers / Suppliers of BHEL are informed that the facility for **online invoice registration and document uploading** has been enabled in the **SUVIDHA Portal (https://suvidha.bhel.in/suvidha/)**. With effect from **01-October-2025**, it shall be mandatory for all Suppliers / Suppliers of BHEL to **register** their invoices to be **exclusively through the system** along with the requisite documents.

54. At Sl.no. 17 of ITB of GCC Rev.07, “Base rate of SBI on the date of bid opening, (Techno-commercial bid, in case of 2-part bids) + 6%” may be read as "Repo Rate on the date of bid opening, (Techno-commercial bid, in case of 2-part bids) + 4%".

55. All other **correspondence** thereof shall be addressed to the undersigned by name & designation and sent at the following address:

Kumar Suman Saurabh / Mgr-CMM **M/s Bharat Heavy Electricals Ltd.,** Project Engineering Management, 3rd Floor, BHEL SADAN Plot No 25, Sector-16 A, Noida-201301 E-mail: sumansaurabh@bhel.in Contact No.: 9718771765	**Manish Kumar Sinha / Sr. Manager-CMM** **M/s Bharat Heavy Electricals Ltd.,** Project Engineering Management, 3rd Floor, BHEL SADAN Plot No 25, Sector-16 A, Noida-201301 E-mail: manish.sinha@bhel.in Contact No.: 0120-2218541

56. Terms & Conditions: - The Terms & Conditions shall be as per enclosed Special Conditions of the Contract (copy enclosed), GCC Rev. 07 and Corrigendum 01, 02 & 03 to GCC Rev. 07 which is available on www.pem.bhel.com and other Terms and Conditions included in this Enquiry Letter.

57. All other terms and conditions shall be as per Special Conditions of Framework Agreement (Rate Contract), and GCC Rev 07 & Corrigenda-01, Corrigenda-02 and Corrigenda-03 to GCC Rev 07.

In the event of any contradiction in the terms and conditions mentioned, the order of preference shall be as mentioned in clause no. 36 of GCTC of GCC Rev. 07.

Note - In case you are not making an offer against this enquiry, you are requested to send a regret letter so as to reach us on or before the due date

Thanking You.
For and on behalf of BHEL

Kumar Suman Saurabh
Manager/ CMM/ PEM Noida

PROJECT: Framework Agreement (Rate Contract) of CONTROL VALVE – (OTHER THAN FDV)
PACKAGE: CONTROL VALVE – (OTHER THAN FDV)

Undertaking for Conflict of Interest

Treatment of cases regarding conflict of interest:

The Supplier notes that a conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations:

i) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or
execution process of the contract, which can affect the decision of BHEL directly or indirectly;

ii) The Supplier (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating;

iii) Procurement of goods directly from the manufacturers/ Suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ Supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ Supplier or the manufacturer/ Supplier could bid directly but not both. In case bids are received from both the manufacturer/ Supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorised distributor (with/ or without the OEM). from quoting equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.

iv) A Supplier participates in more than one bid in this tender process. Participation in any capacity by a Supplier (including the participation of a Supplier as a partner/ JV member or sub-Supplier in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of an entity as a sub-Supplier in more than one bid if he is not bidding independently in his own name or as a member of a JV.

The Supplier declares that they have read and understood the above aspects, and the Supplier confirms that such conflict of interest does not exist and undertakes that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Supplier{s), in this regard. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. **In case, the Supplier is found having indulged in above activities, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/ guidelines.**

Signature

TECHNICAL SPECIFICATION
FOR
CONTROL VALVE WITH ACCESSORIES
(Pneumatically Operated)
(FOR RATE CONTRACT)
(OTHER THAN FDV)

VOLUME II–B

SECTION C & D

SPECIFICATION No.

PE–TS–20–145–H104–B

	TITLE: TECHNICAL SPECIFICATION FOR CONTROL VALVES WITH ACCESSORIES (Pneumatically Operated) (FOR RATE CONTRACT)					DOC. NO. PE–TS–20–145–H104–B
BHEL	BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA			NAME	SIGN	DATE
		DEPT CODE I	DESN	RK		25.03.2026
			CHD	CM/MK/SCS		25.03.2026
			APPD	RT		25.03.2026

CONTENT

SECTION	DESCRIPTION	PAGE NO.
	Project Information & Scope	3
C	Specific Technical Requirements	6
	Customer's Specification	11
	Typical Process Parameters for valve services	12
	Datasheets-A	17
	Datasheets-C	103
	Quality Plan	106
	Bill of quantity – Control valve (WITHOUT FDV) (A)	115
	Bill of Quantity – Cv test for Control Valves without FDV (B)	119
	Bill of Quantity – Supervision of E&C (C & D)	120
	Bill of Quantity for VALVE TRIM (E)	121
	Bill of Quantity for valve components and accessories (F)	123
D	Equipment Specification	125
	Specification for Smart Positioner	132
	Hook-Up Diagram	134
	Guideline for Packing	140
	Suggestive Sub-Vendor List	143
	Documentation Requirement	145
	Compliance Certificate	147

PROJECT INFORMATION

SL.NO	DESCRIPTION	DETAILS
1	CUSTOMER	PROJECT SPECIFIC REQUIREMENT SHALL BE FURNISHED LATER
2	LOCATION	
2.1	COORDINATES	
2.2	NEAREST RAILWAY STATION	
2.3	NEAREST SEA PORT	
2.4	NEAREST AIRPORT	
2.5	NEAREST NATIONAL HIGHWAY	
3	METEOROLOGICAL DATA	
3.1	MAXIMUM TEMPERATURE	
3.2	MINIMUM TEMPERATURE	
3.3	RELATIVE HUMIDITY (FOR DESIGN)	
3.4	AVERAGE ANNUAL RAINFALL	
3.5	SEISMIC ZONE (AS PER IS 1893)	
3.6	HEIGHT ABOVE MSL	

SCOPE OF THIS PACKAGE COVERS THE FOLLOWING:

SL.NO	PARAMETERS	REQUIREMENT
1	Supply Including Design, Engineering, Manufacturing of	
a)	Main Supply	YES
b)	commissioning Spares	YES
2	Painting	YES
3	Inspection & Testing	YES
4	Packing	YES
5	Transportation & Delivery to Site	YES
6	Erection & Commissioning	NO
7	Supervision of Erection & Commissioning	YES
8	Performance Guarantee (PG) Test	NO
9	Mandatory Spares	YES
10	O & M Service	NO
11	O & M Spares	NO

SECTION – C

SPECIFIC TECHNICAL REQUIREMENTS

CUSTOMER'S SPECIFICATION

DATA SHEETS – A FOR CONTROL VALVES

DATA SHEETS – A FOR ACCESSORIES

DATA SHEETS – C FOR CONTROL VALVES (TO BE FILLED BY THE BIDDER AFTER THE AWARD OF CONTRACT)

DATA SHEETS – C FOR ACCESSORIES (TO BE FILLED BY THE BIDDER AFTER THE AWARD OF CONTRACT)

QUALITY PLAN

BILL OF QUANTITY (BOQ)

- CONTROL VALVES
- VALVE TRIMS
-CONTROL VALVE COMPONENTS & ACCESSORIES
- Cv TEST FOR CONTROL VALVES

SPECIFIC TECHNICAL REQUIREMENTS

SPECIFIC TECHNICAL REQUIREMENTS

1.0 This specification is intended for finalization of rate contract between BHEL-PEM and bidder. Standard technical detail as indicated in the specification shall be agreed upon between BHEL-PEM and bidder. Project specific technical detail, process parameters and test requirements shall be made available to bidder along with project specific enquiry after finalization of the rate contract.

2.0 The given requirement is bare minimum and equipment shall be designed/manufactured/ tested as per latest codes and standards. This specification covers the Design, Manufacture, Inspection and Testing at manufacturer's works, proper packing for transportation and delivery to site of the Control Valves assembly complete with Pneumatic Actuator and other accessories, as mentioned in different sections of this specification.

3.0 The bids shall be evaluated as per NIT. Ordering shall be done separately for each project based on finalization of the rate contract.

4.0 The quality plan enclosed forms the minimum requirement but not limited to be adhered to by the bidder. Project specific quality plan, shall be furnished to the bidder along with the project specific enquiry after finalization of rate contract, which shall be complied by the bidder in totality without any additional cost and delivery implication to BHEL.

5.0 TECHNICAL INSTRUCTIONS

I. It is not the intent here to specify all the details of design and manufacturing. However, the equipment shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to BHEL/Customer, who will interpret the meaning of drawing and specification and shall be entitled to reject any component or material which in their judgement is not in full accordance herewith.

II. The omission of specific reference to any component / accessory necessary for the proper performance of the equipment shall not relieve the supplier of the responsibility of providing such facilities to complete the supply within their quoted prices.

III. BHEL's/Customer's representatives shall be given access to the shop in which equipment are being manufactured or tested and all test records shall be made available to them.

IV. **The bidder to quote for items as per price format (SCHEDULE OF PRICES) attached. The quantity as mentioned in the BOQ is only for evaluation purpose. However actual ordered quantity may vary from project to project, which shall be finalized during project specific enquiry.**

V. List of tentative projects targeted for execution of this rate contract is mentioned elsewhere in the NIT. During rate contract in force; BHEL-PEM reserves the right to order control valves for projects other than the mentioned project list.

VI. During rate contract in force; any other unit of BHEL may also make use of these rates for ordering.

VII. Quality plan, attached herewith, is to be duly signed and stamped by the bidder and to be furnished along with the bid as a token of acceptance as a minimum requirement. Any deviation w.r.t specification and quality plan, shall not be acceptable and bid / offer shall be rejected.

VIII. Inspection shall be carried out in line with pre-approved project specific Quality Plan, drawings/data sheet/QP which shall be finalized during detailed engineering.

IX. Wherever in data sheet more than one options are marked, bidder to comply for all the options. However, bidder to note that any one option shall be selected by BHEL for a specific project and same shall be supplied by bidder within their quoted price as per SCHEDLUE OF PRICES included in the NIT.

X. Scope of supply shall include complete Control Valves with Pneumatic Actuator along with accessories, tubing as mentioned in different sections of this specification.

XI. Cv test – Cv test shall be carried out for each type of control valve (of same size, same Cv, same trim characteristics) for every project. During the project specific enquiry, bidder to inform the tag nos. of control valves for which the Cv tests have to be conducted. Cv test reports/ certificates conducted for same type of control valve shall also be acceptable subject to Customer's acceptance for a project. Bidder to note that only those Cv. test reports for same type of control valves shall be offered for verification which are not older than 5 years from the date of submission of bidder's technical un-priced offer for rate contract. The validity of Cv test certificates shall be verified during review of the project specific documents. In case valid Cv test certificates are not available or the test certificates are not acceptable to Customer, bidder to conduct the Cv test for those valves at Fluid Control Research Institute (FCRI, Palakkad) FCRI/laboratory approved by Govt. Of India/ BHEL approved laboratory. Bidder to quote for the Cv tests as per the price format for Cv test enclosed under the SCHEDLUE OF PRICES included in the NIT. Payment shall be made only if the Cv test is conducted by the bidder during project specific enquiry.

XII. Bidder shall offer control valves with sufficient number of discrete pressure drop turns(stages) & paths as per process requirement. The multiple stages & paths shall be selected by the bidder so as to limit the pressure drop in each stage up to 50% or less.

XIII. In addition to the above, bidder to consider following requirement during valve selection for one project with single unit:-
(i) FL factor >/= 0.985 for low flashing/cavitation service
(ii) FL factor >/= 0.995 for severe flashing/cavitation service

XIV. One(1) no. moisture separator unit, if required for a specific project; shall be considered per control valve as mentioned in hook-up diagram enclosed in this technical specification. Bidder to quote against these items as mentioned in the price format (SCHEDLUE OF PRICES) in addition to the main control valve's price.

XV. Valve Trim, Valve body –

(i) Trim material and body material has been specified in Datasheets-A. Bidder to offer trim material/body material combination, which is equivalent or better than the material specified in Datasheets-A. Wherever there is deviation from the datasheets, bidder to furnish a documentary proof for confirming superior trim material/body material selection along with their offer. If the offered material is not acceptable to the Customer, bidder to provide material as per the datasheet requirement without any commercial and delivery implication.

(ii) Valve sizes, with tentative Cv range has been indicated in the datasheet and the price format. The bidder may offer a higher valve size so as to meet Cv v/s % Lift requirement. The same may be accepted, however no commercial and delivery implication will be applicable.

(iii) For the top guided balanced type control valves (up to 3" size), material of the guide bush shall be harder and superior to the cage material offered by the bidder.

XVI. Noise level – Bidder to note that noise abatement shall be achieved through valve body and trim design & not by any external means. If the noise abatement (< 85 dBA) is not achieved only by the valve's design, bidder may offer a cartridge/low dB plate/diffuser of a suitable size subject to acceptance by the Customer. The expander between the valve and this cartridge shall also be provided by the bidder and shall be included in the quoted price of valve.

XVII. Bidder to include volume booster, if required, in their offer to achieve stroking time (travel time) < 10 secs. Volume booster wherever applicable shall be as per hook-up diagram enclosed in this technical specification whenever required within the main control valve assembly. Bidder to ensure that inclusion of Volume Booster should not lead to hunting of valve's position during it's operation.

XVIII. For tentatively 12 projects, all positioners shall be HART based. For the rest 9 projects, it will be a combination of HART as well as PROFIBUS based smart positioners. Bidder to quote for these smart positioners as per the SCHEDULE OF PRICES.

Bidder to offer Smart Positioners as per the "SPECIFICATIONS FOR MICROPROCESSOR BASED SMART POSITIONER" included elsewhere in this technical specification. Bidder to also refer hook-up diagrams included in this technical specification for both type of smart positioners as well as ON/OFF duty application.

XIX. Bidder to provide diagnostic software for communicating with the smart positioner and accessing the diagnostic features of the smart positioner accordingly for both type of smart positioners(HART as well as PROFIBUS) as per the project specific requirement. Bidder to offer latest version of calibration and diagnostic software which should be compatible with latest operating system at the time of commissioning of valve/positioner without any additional cost to BHEL. The offered software shall be compatible with the hardware of reputed makes like MTL, P&F etc. Bidder to also provide DTM/ other files required for PROFIBUS based smart positioner during detailed engineering, without any commercial and delivery implication to BHEL.

XX. A suggestive sub-vendor list for accessories/other items of the control valve assembly has been enclosed in this specification. Bidder may propose sub-vendors other than those listed in the specification, with supporting documents/credentials for their proven track record. However, sub-vendors are subjected to BHEL's and Customer's approval without any commercial and delivery implication to BHEL.

XXI. For the valves, manufactured and supplied from a foreign country, expenses for all inspection shall be included in bidder's quoted price.

XXII. Pneumatic tubing of the control valves will be SS tubing with SS fitting as per hook-up diagrams enclosed in this specification. The SS fittings shall be double compression type of SWAGELOK or equivalent make (subject to approval by end Customer).
Bidder to provide the required tubing & fitting for each control valve within their quoted price.

XXIII. Bidder may offer either spring diaphragm or piston cylinder type actuator as per their actuator design meeting the shut off pressure requirement, stroke length & travel time requirement for the control valve.

XXIV. Sea worthy packing – Sea worthy packing (if applicable) for a specific project shall be informed during the project specific order. The same shall be provided by the bidder without any commercial and delivery implication. Inspection of sea worthy packing shall be done as per project specific sea worthy packing specification by Customer/BHEL/BHEL appointed inspection agency.

XXV. Refer Section-D viz. “Equipment Specification” for Codes and Standards, Technical requirements, Tests & Inspection, Drawings and Documents, Packing, Marking & applicable Datasheets reference.

XXVI. The “Service” description indicated in the respective datasheet(s) is for reference only. The actual service description for respective datasheets and all inputs like pipe size, design/ process parameters & accessories requirements shall be informed during project specific order.

XXVII. SCHEDULE OF PRICES has to be duly filled by the bidder in all respects. Kindly also refer valve’s datasheet for further details. Bids incomplete in any form shall not be evaluated and shall be liable for rejection.

XXVIII. Typical process parameters for the various control valves services covered in the datasheets A1-A through A19 in Section-C of the specification. Actual process parameters shall be informed to bidder during project specific order. Bidder to perform the valve sizing/selection accordingly for all projects.

XXIX. e-Learning Module shall be provided by bidder for tentatively 3 projects as per details provided in project specific order which shall be placed after finalization of rate contract.

XXX. Bidder to also include visit to project sites for smoother installation and commissioning of the control valve assemblies and tuning of PROFIBUS/HART based smart positioners in their offer. Bidder to quote for same under SCHEDULE OF PRICES.

XXXI. The final documentation including the requisite number of operating manuals, maintenance and service manuals, component documentation, assembly documentation, drawings and listing, etc. shall be submitted in requisite quantities in English language and also in other language as per Customer’s requirement. This shall be informed during project specific order and bidder to comply to this requirement without any commercial and delivery implication to BHEL.

CUSTOMER'S SPECIFICATION

Same shall be informed by BHEL during project specific order

TYPICAL PROCESS PARAMETER

	TYPICAL PROCESS PARAMETER FOR CONTROL VALVE		Specification No.: PE-TS-20-145-H104-B Rev. No. 00 Date :25.03.2026			
1	**TAG NUMBER / SERVICE**		**ASV-8**		**D/A PEGGING FROM AUX. STEAM HEADER**	
	SERVICE CONDITIONS		FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	CASE-1	7.5 % BMCR	19	16	1.65	310
B	CASE-2	15 % BMCR(COLD)	37	16	1.65	310
C	CASE-3	15 % BMCR(HOT)	53	16	3.65	310
D	CASE-4	25 % BMCR(COLD)	62	16	1.65	310
E	CASE-5	40% COLD (CHECK CASE)	98	16	1.65	310
2	**TAG NUMBER / SERVICE**		**CRHV-6**		**D/A PEGGING FROM CRH LINE**	
	SERVICE CONDITIONS		FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	CASE-1	65% BYPASS	241.6	38.39	3.65	360
B	CASE-2	15 % BMCR	53	20	3.65	355
C	CASE-3	HOUSE LOAD	241.6	38.39	3.65	360
D	CASE-4	START UP	82	13	1.55	252.2
3	**TAG NUMBER / SERVICE**		**CDV-25**		**LOW LOAD CONDENSATE CONTROL**	
	SERVICE CONDITIONS		FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	CASE-1	Min. (10% TMCR flow)	165.37	20	4.9	48.7
B	CASE-2	30% TMCR	592.7	20	9.1	48.7
C	CASE-3	50% TMCR	812.7	20	12.6	47.9
D	CASE-4	65% TMCR	1028	20	15	47.5
E	CASE-5	80% TMCR (CHECK CASE)	1246	21.74	18.74	47.2
F	CASE-6	HP/LP BYPASS(CHECK CASE)	1656	34	25	47
4	**TAG NUMBER / SERVICE**		**CDV-39**		**GSC/CEP MIN. FLOW RECIRCULATION**	
	SERVICE CONDITIONS (LOAD)		FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	GSC Min Flow R/C		32.4	20	0.61	46.8
B	Min R/C at Max. speed		324	40	0.6	46.8
C	Max Capability(CHECK CASE)		640	20	0.6	46.8

	TYPICAL PROCESS PARAMETER FOR CONTROL VALVE	Specification No.: PE-TS-20-145-H104-B Rev. No. 00 Date :25.03.2026			
5	**TAG NUMBER / SERVICE**	**CDV-65,CDV-67,CDV-69**		**CEP MIN. FLOW RECIRCULATION**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	CEP Min flow R/C	32	21	0.6	46.3
B	Min Recir at Min. speed	318	21	0.6	46.3
C	Min Recir at Max. speed	318	42	0.6	46.3
6	**TAG NUMBER / SERVICE**	**CDV-43**		**EXCESS RETURN TO CST**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	MIN FLOW	41	20	1.8	48.2
B	MIN SPEED	410	20	1.79	48.2
C	MAX SPEED	410	42	1.8	48.2
D	CHECK CASE(FOR FLEXIBLE OPERATION)	900	25	1.8	48.2
7	**TAG NUMBER / SERVICE**	**CDV-72**		**CONDENSATE FOR VALVE GLAND SEALING**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	Min Condensate to Valve GS	4	20	1.1	47.3
B	MIN.	10	20	2.61	47.3
C	MAX.	10	42	2.61	47.3
8	**TAG NUMBER / SERVICE**	**CDV-84**		**CONDENSATE FOR FLASH TANK-B SPRAY**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	MIN. SPEED	10	20	0.2	47.3
B	MAX. SPEED	10	42	0.2	47.3
9	**TAG NUMBER / SERVICE**	**CDV-94**		**CONDENSATE FOR UNIT FLASH TANK SPRAY**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	CONDITION-1	10	3	1	33
10	**TAG NUMBER / SERVICE**	**DRV-53 & DRV59**		**HPH-9A/9B NORMAL DRAIN TO HPH-8A/8B**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	23.98	39.9	27.1	229.9
B	60% LOAD	37.3	57.3	39.1	251.8
C	100%LOAD	84.68	92.5	63.4	282.1
D	VWO	93.7	98.4	67.2	286.4
E	20% LOAD	14	23.4	17.4	200

	TYPICAL PROCESS PARAMETER FOR CONTROL VALVE	Specification No.: PE-TS-20-145-H104-B Rev. No. 00 Date :25.03.2026			
11	**TAG NUMBER / SERVICE**	**DRV-56 & DRV-62**		**HPH-9A/9B ALT. DRAIN TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	23.98	40.9	0.2	249
B	60% LOAD	37.3	58.1	0.2	271.5
C	100%LOAD	84.68	93.1	0.2	304.1
D	VWO	93.7	98.8	0.2	308.6
E	20%LOAD	14	23.4	0.2	218.1
12	**TAG NUMBER / SERVICE**	**DRV-2 & DRV-8**		**HPH-8A/8B NORMAL DRAIN TO HPH-7A/7B**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	63.54	27.6	11.46	185.9
B	60% LOAD	100.334	39.5	16.3	202.8
C	100% LOAD	216.257	63.6	26.2	227.7
D	VWO	236.9	67.3	27.7	230.9
E	20% LOAD	36.6	15.6	6.8	162.3
13	**TAG NUMBER / SERVICE**	**DRV-5 & DRV-11**		**HPH-8A/8B ALT. DRAIN TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	63.54	27.6	0.2	226.8
B	60% LOAD	100.334	39.5	0.2	247.5
C	100%LOAD	216.257	63.6	0.2	277.7
D	VWO	236.9	67.3	0.2	281.5
E	20%LOAD	36.6	15.6	0.2	198.2
14	**TAG NUMBER / SERVICE**	**DRV-15 & DRV-22**		**HPH-7A/7B NORMAL DRAIN TO DEAERATOR**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	79.65	9.2	6.3	163.2
B	60% LOAD	126.9	13.8	8.3	176
C	100%LOAD	265.6	23.3	12.2	198.1
D	VWO	290	24.8	12.8	200.9
E	20%LOAD	46.2	3.7	4	142.4
15	**TAG NUMBER / SERVICE**	**DRV-18 & DRV-25**		**HPH-7A/7B ALT. DRAIN TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	79.65	11.6	0.2	184.3
B	60% LOAD	126.9	16.2	0.2	200.6
C	100%LOAD	265.6	25.9	0.2	224.6
D	VWO	290	27.3	0.2	227.6
E	20%LOAD	46.2	6.5	0.2	160.8
16	**TAG NUMBER / SERVICE**	**DRV-82**		**LPH-5 NORMAL DRAIN TO LPH-4**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	26.54	2.7	1.6	111.4
B	60% LOAD	39.3	3.6	2.3	120.8
C	100%LOAD	74.41	5.3	3.3	135.3
D	VWO	80.25	5.5	3.5	136.6
E	20%LOAD	15.98	1.3	1.2	96.9

	TYPICAL PROCESS PARAMETER FOR CONTROL VALVE	Specification No.: PE-TS-20-145-H104-B Rev. No. 00 Date :25.03.2026			
17	**TAG NUMBER / SERVICE**	**DRV-85**		**LPH-5 ALT. DRAIN TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	26.54	2.7	0.2	129.1
B	60% LOAD	39.3	3.6	0.2	139.7
C	100%LOAD	74.41	5.3	0.2	155.1
D	VWO	80.25	5.5	0.2	157.1
E	20%LOAD	15.98	1.3	0.2	112.9
18	**TAG NUMBER / SERVICE**	**DRV-65**		**LPH-4 NORMAL DRAIN TO LPH-3**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	52.16	1.4	0.8	91.5
B	60% LOAD	76.81	2	1.2	99.7
C	100%LOAD	143.3	2.81	1.6	109.5
D	VWO	154.3	2.86	1.7	113.4
E	20%LOAD	31.2	0.8	0.7	79.5
19	**TAG NUMBER / SERVICE**	**DRV-68**		**LPH-4 ALT. DRAIN TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	52.16	1.4	0.2	91.5
B	60% LOAD	76.81	2	0.2	99.7
C	100%LOAD	143.3	2.81	0.2	109.5
D	VWO	154.3	2.86	0.2	113.4
E	20%LOAD	31.2	0.8	0.2	79.5
20	**TAG NUMBER / SERVICE**	**DRV-77**		**LPH-3 DRAIN D/S OF DRIP PUMP**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	82.2	26.7	10	90
B	60% LOAD	120.5	26.6	12.5	97.7
C	100% LOAD	222.1	25.4	18.3	109.2
D	VWO	238.8	24.9	19.3	110.7
E	20% LOAD	49.3	26.6	7.2	78.4
21	**TAG NUMBER / SERVICE**	**DRV-31**		**LPH-3 ALT. DRAIN TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	40% LOAD	82.2	0.7	0.2	90
B	60% LOAD	120.5	0.9	0.2	97.7
C	100%LOAD	222.1	1.3	0.2	109.2
D	VWO	238.8	1.3	0.2	110.7
E	20%LOAD	49.3	0.4	0.2	78.4

	TYPICAL PROCESS PARAMETER FOR CONTROL VALVE	Specification No.: PE-TS-20-145-H104-B Rev. No. 00 Date :25.03.2026			
22	**TAG NUMBER / SERVICE**	**DRV-48**		**DEAERATOR OVERFLOW TO F/T**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	MAX.-1 10% BMCR	256	14.93	0.26	190.3
B	MAX.-2 10% BMCR	256	5.7	0.26	138.2
23	**TAG NUMBER / SERVICE**	**DMV-43**		**NORMAL DM MU TO HOTWELL**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	MIN(0.5% MU)	12.8	8.2	0.9	33
B	1% MU	25.6	6.3	1.1	33
C	NORMAL(3% MU)	76.8	4.5	1.3	33
D	MAX(.5% MU)	128	3.5	1.6	33
24	**TAG NUMBER / SERVICE**	**DMV-78**		**EMERGENCY DM MU TO HOTWELL**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	MIN(5% MU)	128	8.5	0.9	33
B	NORMAL(10% MU)	256	7	1.1	33
C	MAX(PUMP CAPACITY)	300	6.5	1.3	33
25	**TAG NUMBER / SERVICE**	**ASV-16**		**DRAIN OF AUX STEAM FROM EXISTING UNIT HEADER TO UNIT F/T**	
	SERVICE CONDITIONS	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	MIN CONDENSATE	4	16	2.2	310
B	MIAX CONDENSATE	10	16	2.2	310
26	**TAG NUMBER / SERVICE**	**DMCW_SG AUX**		**DMCW SYSYTEM FOR SG AUX'S**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	NORMAL	810	7.8	4.4	38
B	MINIMUM	0	7.8	4.4	38
27	**TAG NUMBER / SERVICE**	**DMCW_TG_AUX**		**DMCW SYSYTEM FOR TG AUX'S**	
	SERVICE CONDITIONS (LOAD)	FLOW (T/HR)	INLET PR KG/CM2(A)	OUTLET PR. KG/CM2(A)	TEMP DEG. C
A	NORMAL	1110	5	2.6	38
B	MIMIMUM	0	5	2.6	38

SECTION-C

DATASHEET A

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**
		DOCUMENT NO.
		VOLUME II B
		SECTION C
		REV. NO. 00 / DATE: 25.03.2026

Data Sheet No. A1-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	DEA PEGGING FROM AUX. STEAM HEADER(ASV-8)		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	PIPE SIZE (inlet / outlet)	219.1X6.35/ 508X9.53 (Tentative)	273X9.27/ 508X9.53 (Tentative)	323X9.53/ 559X10 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	8“: 350 – 750 (Tentative)		
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■#300		
	BODY MATERIAL	■ A216 WCB/A216 WCC		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED		
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■< 150 m/sec (STEAM)		
	## REQUIRED LEAKAGE CLASS	■ IV ■ V		
	NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	☐ YES ■ NO		
	ANTI CAVITATION TRIM	☐ YES ■ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

Data Sheet No. A1-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP			
	MAX SHUT OFF PRESS **(KG/CM²g)**						20			
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						20		350	
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A1-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	DEA PEGGING FROM AUX. STEAM HEADER(ASV-8)		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	PIPE SIZE (inlet / outlet)	219.1X6.35/ 508X9.53 (Tentative)	273X9.27/ 508X9.53 (Tentative)	323X9.53/ 559X10 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	8“: 350 – 750 (Tentative)	10“: 500 – 1300 (Tentative)	
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■#300		
	BODY MATERIAL	■ A217 WC6		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED		
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■< 150 m/sec (STEAM)		
	## REQUIRED LEAKAGE CLASS	■ IV ■ V		
	NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	☐ YES ■ NO		
	ANTI CAVITATION TRIM	☐ YES ■ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

Data Sheet No. A1-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						20		
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						20		350
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 10") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A1-A(iii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	DEA PEGGING FROM AUX. STEAM HEADER(ASV-8)		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	PIPE SIZE (inlet / outlet)	219.1X6.35/ 508X9.53 (Tentative)	273X9.27/ 508X9.53 (Tentative)	323X9.53/ 559X10 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	10“: 500 – 1300 (Tentative)		
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■#300		
	BODY MATERIAL	■ A217 WC9		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED		
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■< 150 m/sec (STEAM)		
	## REQUIRED LEAKAGE CLASS	■ IV ■ V		
	NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	☐ YES ■ NO		
	ANTI CAVITATION TRIM	☐ YES ■ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

Data Sheet No. A1-A(iii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						20		
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						20		350
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 10") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A1-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	AUX. STEAM TO BFPT's (ASV-2)	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	□ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	219.1X6.35/ 273X6.35 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : □ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 200 – 250 (Tentative)	8 " : 300 – 400 (Tentative)
	END CONNECTION : RATING (ANSI)	■ BWE □ SWE □ FLANGED : ■ #300	
	BODY MATERIAL	■ A216 WCB/A216 WCC	
	PACKING MATERIAL : SINGLE / DOUBLE	□ PTFE ■ GRAFOIL : ■ DOUBLE □ SINGLE	
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED	
	*TRIM FORM	■ LINEAR □ EQ. PERCENTAGE □ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■< 150 m/sec (STEAM)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	□ YES ■ NO	
	ANTI CAVITATION TRIM	□ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN □ TO CLOSE □ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A1-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP			
	MAX SHUT OFF PRESS **(KG/CM²g)**						20			
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						20		350	
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A1-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	AUX. STEAM TO BFPT's (ASV-2)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	□ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	219.1X6.35/ 273X6.35 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : □ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 200 – 250 (Tentative)
	END CONNECTION : RATING (ANSI)	■ BWE □ SWE □ FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	□ PTFE ■ GRAFOIL : ■ DOUBLE □ SINGLE
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED
	*TRIM FORM	■ LINEAR □ EQ. PERCENTAGE □ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■< 150 m/sec (STEAM)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	□ YES ■ NO
	ANTI CAVITATION TRIM	□ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN □ TO CLOSE □ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A1-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						20		
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						20		350
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 6”) so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A2-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	DEA PEGGING FROM CRHV LINE(CRHV-6)	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	355.6X15.09/ 965X37 (Tentative)	406.4X21.44/ 965X38 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 672 GR B70 (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	10 " : 600 – 1000 (Tentative)	12 " : 700 – 1200 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■#600	
	BODY MATERIAL	■ A217 WC6	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	@ BONNET TYPE	■ STD ■ EXTENDED/FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■< 150 m/sec (STEAM)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	☐ YES ■ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A2-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP			
	MAX SHUT OFF PRESS **(KG/CM²g)**						75			
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						75		380	
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 12”) so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A2-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	DEA PEGGING FROM CRHV LINE(CRHV-6)	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	□ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	355.6X15.09/ 965X37 (Tentative)	406.4X21.44/ 965X38 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 672 GR B70 (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : □ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	10 " : 600 – 1000 (Tentative)	12 " : 700 – 1200 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE □SWE □FLANGED : ■#600	
	BODY MATERIAL	■ A217 WC9	
	PACKING MATERIAL : SINGLE / DOUBLE	□ PTFE ■ GRAFOIL : ■ DOUBLE □ SINGLE	
	@ BONNET TYPE	■ STD ■ EXTENDED/FINNED	
	*TRIM FORM	■ LINEAR □ EQ. PERCENTAGE □ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■< 150 m/sec (STEAM)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	□ YES ■ NO	
	ANTI CAVITATION TRIM	□ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	□ TO OPEN ■ TO CLOSE □ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A2-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						75		
	BODY DESIGN : PRESS **(KG/CM²g)**		**| TEMP (DEG. C)**				75		380
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (> 12") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A2-B

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	CRH STM TO BFPT's(CRHV-2)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	□ ON/OFF ■ MODULATING
	$$ PIPE SIZE (inlet / outlet)	219.1 x 12.7 / 323.9 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : □ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	8 " : 350 – 600 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE □SWE □FLANGED : ■#600
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	□ PTFE ■ GRAFOIL : ■ DOUBLE □ SINGLE
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED
	*TRIM FORM	■ LINEAR □ EQ. PERCENTAGE □ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■< 150 m/sec (STEAM)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	□ YES ■ NO
	ANTI CAVITATION TRIM	□ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	□ TO OPEN ■ TO CLOSE □ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A2-B

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						75		
	BODY DESIGN : PRESS **(KG/CM²g)** | **TEMP (DEG. C)**						75		380
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

6. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

7. If the bidder wishes to offer a higher valve size (> 8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

8. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A3

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	DRAIN OF AUX STEAM FROM EXISTING UNIT HEADER TO UNIT FLASH TANK (ASV-16)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	$$ PIPE SIZE (inlet / outlet)	60.3 X 5.54 / 88.9 X 5.49 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO. OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	2" : 20 – 50 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■#300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	@ BONNET TYPE	■ STD ■ EXTENDED/ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■< 150 m/sec (STEAM)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A3

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						20		
	BODY DESIGN : PRESS **(KG/CM²g)** | **TEMP (DEG. C)**						20		350
	IBR FORM III-C ■ REQUIRED ☐ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (>2") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication.

Data Sheet No. A4

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	CEP-A/B/C MIN. FLOW RECIRCULATION(CDV-65/67/69)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	168.3 x 7.11 / 168.3 x 7.11 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	!TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 60 – 100 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ■ EXTENDED/ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE +	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	##REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	■ YES ☐ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A4

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						■ CAVITATION ☐ FLASHING ■ HIGH DP			
	MAX SHUT OFF PRESS (**(KG/CM²g)**						50			
	BODY DESIGN : PRESS (**(KG/CM²g)**			**| TEMP (DEG. C)**			50/VACUUM		70	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A5

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	CONDENSATE SPRAY/SERVICE WATER TO FLASH TANK(CDV-47/CDV-84/CDV-94)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	■ ON/OFF ☐ MODULATING
	PIPE SIZE (inlet / outlet)	33.4x4.55 / 33.4x4.55 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	1“ : 3.5 – 15 (Tentative)
	END CONNECTION : RATING (ANSI)	☐ BWE ■SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ■ EXTENDED/ FINNED
	*TRIM FORM	☐ LINEAR ☐ EQ. PERCENTAGE ■ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	##REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	■ YES ☐ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	NOT REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A5

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			NA					
	LINEARITY			NA					
	SENSITIVITY			NA					
	ACCURACY (Overall)			NA					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						■ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						50		
	BODY DESIGN : PRESS **(KG/CM²g)**		**| TEMP (DEG. C)**				50/VACUUM	70	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet–A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (>1") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A6(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	DEARATOR OVERFLOW TO FLASH TANK(DRV-48/DRV-73)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	■ ON/OFF ☐ MODULATING
	PIPE SIZE (inlet / outlet)	219.1 x 6.35 / 323.9 x 9.53 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 100 - 450 (Tentative)
	END CONNECTION : RATING (ANSI)	■ BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	☐ LINEAR ☐ EQ. PERCENTAGE ■ QUICK OPEN
	TRIM MATERIAL : SEAT RING	■ SS 440C
	TRIM MATERIAL : PLUG	■ SS 440C
	TRIM MATERIAL : CAGE	■ SS 440C
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	##REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	NOT REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A6(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			NA						
	LINEARITY			NA						
	SENSITIVITY			NA						
	ACCURACY (Overall)			NA						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS **(KG/CM²g)**						20			
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**						20/VACUUM		200	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

4. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

5. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A6(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	DEARATOR OVERFLOW TO FLASH TANK(DRV-48/DRV-73)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	■ ON/OFF ☐ MODULATING
	PIPE SIZE (inlet / outlet)	219.1 x 6.35 / 323.9 x 9.53 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 100 - 450 (Tentative)
	END CONNECTION : RATING (ANSI)	■ BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	☐ LINEAR ☐ EQ. PERCENTAGE ■ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	##REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	NOT REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A6(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			NA						
	LINEARITY			NA						
	SENSITIVITY			NA						
	ACCURACY (Overall)			NA						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS **(KG/CM²g)**						20			
	BODY DESIGN : PRESS **(KG/CM²g)** | **TEMP (DEG. C)**						20/VACUUM		200	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

Data Sheet No. A7(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	GSC MIN. FLOW RECIRCULATION(CDV-40)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	219.1 X 12.7/ 219.1 X 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 90 – 250 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE +	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	##REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	■ YES ☐ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A7(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	■ CAVITATION ☐ FLASHING ■ HIGH DP
	MAX SHUT OFF PRESS (**(KG/CM²g)**	45
	BODY DESIGN : PRESS (**(KG/CM²g)** **| TEMP (DEG. C)**	45/VACUUM / 90
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED	

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

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6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A7(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	GSC MIN. FLOW RECIRCULATION(CDV-40)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	219.1 X 12.7/ 219.1 X 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 90 – 250 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE +	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	##REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	■ YES ☐ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A7(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						■ CAVITATION ☐ FLASHING ■ HIGH DP			
	MAX SHUT OFF PRESS (**(KG/CM²g)**						45			
	BODY DESIGN : PRESS (**(KG/CM²g)**			**| TEMP (DEG. C)**			45/VACUUM		90	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.

3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.

4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.

5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.

6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.

7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A8

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	CONDENSATE CONTROL VALVE(CDV-22/CDV-23/CDV-25)		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	$$ PIPE SIZE (inlet / outlet)	219.1X6.35/219.1X6.35 (Tentative)	323.9X9.53/323.9X9.53 (Tentative)	457X12.7/457X12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	6“ : 250 –400(Tentative)	10“ : 650 –1100(Tentative)	14“ :1000 – 2000(Tentative)
	END CONNECTION : RATING (ANSI)	■ BWE ☐ SWE ☐ FLANGED : ■ #300		
	BODY MATERIAL	■ A216 WCB/A216 WCC		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED		
	*TRIM FORM	☐ LINEAR ■ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)		
	## REQUIRED LEAKAGE CLASS	■ IV ■ V		
	^^NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	☐ YES ■ NO		
	ANTI CAVITATION TRIM	■ YES ☐ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ☐ TO CLOSE ■ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

Data Sheet No. A8

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	■ CAVITATION ☐ FLASHING ■ HIGH DP	
	MAX SHUT OFF PRESS (**(KG/CM²g)**	45	
	BODY DESIGN : PRESS (**(KG/CM²g)** **| TEMP (DEG. C)**	45	90
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1.@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.
2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4.##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>14") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A9

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	EXCESS RETURN TO CST(CDV-43)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	323.9X9.53 / 323.9X9.53 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	!TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 80 – 400 (Tentative)
	END CONNECTION : RATING (ANSI)	■ BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A216 WCB/WCC
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	☐ LINEAR ■ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	■ YES ☐ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A9

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						■ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS ((**KG/CM²g)**						45		
	BODY DESIGN : PRESS ((**KG/CM²g)**		**| TEMP (DEG. C)**				45		90
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A10

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	CONDENSATE FOR VALVE GLAND SEALING(CDV-72)
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	60.3 x 5.54 / 60.3 x 5.54 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Shall be furnished during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ■ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	1 " : 1 – 10 (Tentative)
	END CONNECTION : RATING (ANSI)	☐ BWE ■SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A216 WCB/WCC
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	☐ LINEAR ■ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A10

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ☐ FLASHING ■ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						45		
	BODY DESIGN : PRESS **(KG/CM²g)** | **TEMP (DEG. C)**						45		90
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet–A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>1") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A11-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-9A/9B NORMAL DRAIN TO HPH-8A/8B
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	168.3 X 10.97 / 168.3 X 10.97 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	4 " : 30 – 60 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #900
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A11-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP		
	MAX SHUT OFF PRESS **(KG/CM²g)**						110		
	BODY DESIGN : PRESS **(KG/CM²g)**			**| TEMP (DEG. C)**			110	290	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>4”) so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A11-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-9A/9B NORMAL DRAIN TO HPH-8A/8B
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	168.3 X 10.97 / 168.3 X 10.97 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	4 " : 30 – 60 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #900
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A11-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP	
	MAX SHUT OFF PRESS **(KG/CM²g)**	110	
	BODY DESIGN : PRESS **(KG/CM²g)** **| TEMP (DEG. C)**	110	290
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>4") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A11-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	HPH-8A/8B NORMAL DRAIN TO HPH-7A/7B	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 273 x 12.7 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	4 " : 60 – 90 (Tentative)	6 " : 70 – 250 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #600	
	BODY MATERIAL	■ A217 WC6	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	☐ YES ■ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A11-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP		
	MAX SHUT OFF PRESS ((**KG/CM²g)**						76.7		
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			76.7		240
	IBR FORM III-C	☐ REQUIRED		■ NOT REQUIRED					

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A11-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-8A/8B NORMAL DRAIN TO HPH-7A/7B
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 273 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	4 " : 60 – 90 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #600
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A11-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						76.7			
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			76.7		240	
	IBR FORM III-C		☐ REQUIRED		■ NOT REQUIRED					

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
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7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A11-C

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-7A/7B NORMAL DRAIN TO DEAERATOR
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 273 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 180 – 220 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A11-C

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS (**(KG/CM²g)**						32			
	BODY DESIGN : PRESS (**(KG/CM²g)**		**| TEMP (DEG. C)**				32		205	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
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	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A12-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	HPH-9A/9B ALTERNATE DRAIN TO F/T	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	219.1X12.7 / 219.1X12.7 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	4 " : 40 – 100 (Tentative)	6 " : 45 – 100 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #900	
	BODY MATERIAL	■ A217 WC9	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 440 C	
	# TRIM MATERIAL : PLUG	■ SS 440 C	
	# TRIM MATERIAL : CAGE	■ SS 440 C	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	☐ YES ■ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A12-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP	
	MAX SHUT OFF PRESS ((**KG/CM²g)**	110	
	BODY DESIGN : PRESS ((**KG/CM²g)** **| TEMP (DEG. C)**	110/VACUUM	310
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
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6. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A12-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-9A/9B ALTERNATE DRAIN TO F/T
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	219.1X12.7 / 219.1X12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 30 – 60 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #900
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A12-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP	
	MAX SHUT OFF PRESS ((**KG/CM²g)**	110	
	BODY DESIGN : PRESS ((**KG/CM²g)** **| TEMP (DEG. C)**	110/VACUUM	310
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6”) so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**	
		DOCUMENT NO.	
		VOLUME II B	
		SECTION C	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. A12-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	HPH-8A/8B ALTERNATE DRAIN TO F/T		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 12.7 (Tentative)		
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	4 " : 60 – 100 (Tentative)	6 " : 120 – 250 (Tentative)	8 " : 140 – 200 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #600		
	BODY MATERIAL	■ A217 WC9		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED		
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 440 C		
	# TRIM MATERIAL : PLUG	■ SS 440 C		
	# TRIM MATERIAL : CAGE	■ SS 440 C		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)		
	## REQUIRED LEAKAGE CLASS	■ IV ■ V		
	NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	☐ YES ■ NO		
	ANTI CAVITATION TRIM	☐ YES ■ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

Data Sheet No. A12-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP		
	MAX SHUT OFF PRESS ((**KG/CM²g)**						76.7		
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			76.7/VACUUM	285	
	IBR FORM III-C	☐ REQUIRED		■ NOT REQUIRED					

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
4. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
5. If the bidder wishes to offer a higher valve size (>8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
6. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A12-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-8A/8B ALTERNATE DRAIN TO F/T
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 120 – 250 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #600
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A12-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP
	MAX SHUT OFF PRESS ((**KG/CM²g)**	76.7
	BODY DESIGN : PRESS ((**KG/CM²g)** **| TEMP (DEG. C)**	76.7/VACUUM 285
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED	

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6”) so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A12-C(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	HPH-7A/7B ALTERNATE DRAIN TO F/T	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 12.7 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 130 – 300 (Tentative)	8 " : 150 – 475 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300	
	BODY MATERIAL	■ A217 WC9	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 440 C	
	# TRIM MATERIAL : PLUG	■ SS 440 C	
	# TRIM MATERIAL : CAGE	■ SS 440 C	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	☐ YES ■ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A12-C(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						32			
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			32/VACUUM		230	
	IBR FORM III-C	☐ REQUIRED		■ NOT REQUIRED						

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
4. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
5. If the bidder wishes to offer a higher valve size (>8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
6. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A12-C(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-7A/7B ALTERNATE DRAIN TO F/T
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 130 – 300 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A12-C(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP	
	MAX SHUT OFF PRESS ((**KG/CM²g)**	32	
	BODY DESIGN : PRESS ((**KG/CM²g)** **| TEMP (DEG. C)**	32/VACUUM	230
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
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6. If the bidder wishes to offer a higher valve size (>6”) so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A13-A

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-7A/7B NORMAL DRAIN TO HPH-6A/6B
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 273 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 150 - 300 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #600
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A13-A

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP	
	MAX SHUT OFF PRESS ((**KG/CM²g)**	73.1	
	BODY DESIGN : PRESS ((**KG/CM²g)** | **TEMP (DEG. C)**	73.1	240
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A13-B

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-6A/6B NORMAL DRAIN TO DEAERATOR
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 273 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 250 – 350 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 WC6
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A13-B

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						30			
	BODY DESIGN : PRESS ((**KG/CM²g)** | **TEMP (DEG. C)**						30		210	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A14

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	HPH-6A/6B ALTERNATE DRAIN TO F/T
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ■ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	6 " : 350 – 450 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A217 W9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 440 C
	# TRIM MATERIAL : PLUG	■ SS 440 C
	# TRIM MATERIAL : CAGE	■ SS 440 C
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	☐ YES ■ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A14

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP		
	MAX SHUT OFF PRESS ((**KG/CM²g)**						30		
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			30/ VACUUM		230
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
4. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
5. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
6. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A15-A

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	LPH-2 NORMAL DRAIN TO LPH-1, LPH-3 NORMAL DRAIN TO LPH-2	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 9.53 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	6“ : 100-400 (Tentative)	8“ : 400-700 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300	
	BODY MATERIAL	■ A217 WC6	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)	
	## REQUIRED LEAKAGE CLASS	■ IV ■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	■ YES ☐ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A15-A

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						3.5			
	BODY DESIGN : PRESS ((**KG/CM²g)** | **TEMP (DEG. C)**						3.5/VACUUM		110	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A15-B

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	LPH-3 DRAIN TO DRIP PUMP
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 12.7 / 323.9 x 9.53 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR C / SA 106 GR C (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	4“ : 80-175 (Tentative) / 6“ : 150-450 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	BODY MATERIAL	■ A216 WCB/WCC
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	## REQUIRED LEAKAGE CLASS	■ IV ■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A15-B

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP		
	MAX SHUT OFF PRESS ((**KG/CM²g)**						45		
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			45		130
	IBR FORM III-C	☐ REQUIRED		■ NOT REQUIRED					

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A16

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	LPH-4 NORMAL DRAIN TO LPH-3, LPH-5 NORMAL DRN TO LPH-4		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	PIPE SIZE (inlet / outlet)	219.1 x 6.35 / 219.1 x 12.7(Tentative)		
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	3 " : 50 – 120 (Tentative)	4 " : 60 – 150 (Tentative)	6":100–300(Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300		
	BODY MATERIAL	■ A217 WC6		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED		
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS		
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)		
	## REQUIRED LEAKAGE CLASS	■ IV ■ V		
	NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	■ YES ☐ NO		
	ANTI CAVITATION TRIM	☐ YES ■ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**
		DOCUMENT NO.
		VOLUME II B
		SECTION C
		REV. NO. 00 / DATE: 25.03.2026

Data Sheet No. A16

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ■ FLASHING ☐ HIGH DP	
	MAX SHUT OFF PRESS (**(KG/CM²g)**	7	
	BODY DESIGN : PRESS (**(KG/CM²g)** **| TEMP (DEG. C)**	7/VACUUM	155
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A 17-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage		
	SERVICE	LPH-2 ALT DRAIN TO FLASH TANK LPH-3 ALT DRAIN TO FLASH TANK		
	LOCATION	■ INDOOR ■ OUTDOOR		
	DUTY	☐ ON/OFF ■ MODULATING		
	PIPE SIZE (inlet / outlet)	273 x 6.35 / 323.9 x 12.7 (Tentative)		
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)		
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage		
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE		
	BODY SIZE : RANGE OF DESIGN Cv	6":100–250 (Tentative)	8":400–700 (Tentative)	10":175–1000 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300		
	^BODY MATERIAL	■ A217 WC9		
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE		
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED		
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN		
	# TRIM MATERIAL : SEAT RING	■ SS 440C		
	# TRIM MATERIAL : PLUG	■ SS 440C		
	# TRIM MATERIAL : CAGE	■ SS 440C		
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage		
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)		
	REQUIRED LEAKAGE CLASS	■ V		
	NOISE LEVEL (dBA)	LESS THAN 85 dBA		
	VACUUM SERVICE	■ YES ☐ NO		
	ANTI CAVITATION TRIM	☐ YES ■ NO		
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage		
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator		
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.		
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT		
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT		
ACCESSORIES	SMART POSITIONER	REQUIRED		
	AIR FILTER REGULATOR	REQUIRED		
	AIR LOCK RELAY	REQUIRED		
	POSITION LIMIT SWITCH	REQUIRED		
	SOLENOID VALVE	REQUIRED		
	JUNCTION BOX	REQUIRED		
	HAND WHEEL (SIDE MOUNTED)	REQUIRED		
	LOCAL POSITION INDICATOR	REQUIRED		

Data Sheet No. A17-A(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						7			
	BODY DESIGN : PRESS ((**KG/CM²g)** | **TEMP (DEG. C)**						7/VACUUM		135	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
4. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
5. If the bidder wishes to offer a higher valve size (>10") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
6. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A 17-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage
	SERVICE	LPH-2 ALT DRAIN TO FLASH TANK LPH-3 ALT DRAIN TO FLASH TANK
	LOCATION	■ INDOOR ■ OUTDOOR
	DUTY	☐ ON/OFF ■ MODULATING
	PIPE SIZE (inlet / outlet)	273 x 6.35 / 323.9 x 12.7 (Tentative)
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE
	BODY SIZE : RANGE OF DESIGN Cv	8“:400–700 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300
	^BODY MATERIAL	■ A217 WC9
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)
	REQUIRED LEAKAGE CLASS	■ V
	NOISE LEVEL (dBA)	LESS THAN 85 dBA
	VACUUM SERVICE	■ YES ☐ NO
	ANTI CAVITATION TRIM	☐ YES ■ NO
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT
ACCESSORIES	SMART POSITIONER	REQUIRED
	AIR FILTER REGULATOR	REQUIRED
	AIR LOCK RELAY	REQUIRED
	POSITION LIMIT SWITCH	REQUIRED
	SOLENOID VALVE	REQUIRED
	JUNCTION BOX	REQUIRED
	HAND WHEEL (SIDE MOUNTED)	REQUIRED
	LOCAL POSITION INDICATOR	REQUIRED

Data Sheet No. A17-A(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						7			
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			7/VACUUM		135	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A 17-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	LPH-4 ALT DRAIN TO FLASH TANK LPH-5 ALT DRAIN TO FLASH TANK	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	219.1 x 6.35 / 273 x 12.7 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	4":60–90 (Tentative)	6":70–250 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300	
	^BODY MATERIAL	■ A217 WC9	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 440C	
	# TRIM MATERIAL : PLUG	■ SS 440C	
	# TRIM MATERIAL : CAGE	■ SS 440C	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)	
	REQUIRED LEAKAGE CLASS	■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	■ YES ☐ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A17-B(i)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%						
	LINEARITY			± 1%						
	SENSITIVITY			± 0.5%						
	ACCURACY (Overall)			± 2%						
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**	
(Shall be furnished during project enquiry stage)										
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP			
	MAX SHUT OFF PRESS ((**KG/CM²g)**						7			
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			7/VACUUM		170	
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED									

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
4. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
5. If the bidder wishes to offer a higher valve size (>6") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
6. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A 17-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage	
	SERVICE	LPH-4 ALT DRAIN TO FLASH TANK LPH-5 ALT DRAIN TO FLASH TANK	
	LOCATION	■ INDOOR ■ OUTDOOR	
	DUTY	☐ ON/OFF ■ MODULATING	
	PIPE SIZE (inlet / outlet)	219.1 x 6.35 / 273 x 12.7 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 106 GR B / SA 106 GR B (Tentative)	
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage	
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE	
	BODY SIZE : RANGE OF DESIGN Cv	4":100–200 (Tentative)	6":150–450 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300	
	^BODY MATERIAL	■ A217 WC9	
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE	
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED	
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN	
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS	
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS	
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage	
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)	
	REQUIRED LEAKAGE CLASS	■ V	
	NOISE LEVEL (dBA)	LESS THAN 85 dBA	
	VACUUM SERVICE	■ YES ☐ NO	
	ANTI CAVITATION TRIM	☐ YES ■ NO	
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage	
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator	
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.	
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ☐ STAYPUT	
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT	
ACCESSORIES	SMART POSITIONER	REQUIRED	
	AIR FILTER REGULATOR	REQUIRED	
	AIR LOCK RELAY	REQUIRED	
	POSITION LIMIT SWITCH	REQUIRED	
	SOLENOID VALVE	REQUIRED	
	JUNCTION BOX	REQUIRED	
	HAND WHEEL (SIDE MOUNTED)	REQUIRED	
	LOCAL POSITION INDICATOR	REQUIRED	

Data Sheet No. A17-B(ii)

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS			± 1%					
	LINEARITY			± 1%					
	SENSITIVITY			± 0.5%					
	ACCURACY (Overall)			± 2%					
SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									
	VALVE TYPE						☐ CAVITATION ■ FLASHING ☐ HIGH DP		
	MAX SHUT OFF PRESS ((**KG/CM²g)**						7		
	BODY DESIGN : PRESS ((**KG/CM²g)**			**| TEMP (DEG. C)**			7/VACUUM		170
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED								

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>4") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A18

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage			
	SERVICE	DM WATER MAKE UP TO HOTWELL			
	LOCATION	■ INDOOR ■ OUTDOOR			
	DUTY	☐ ON/OFF ■ MODULATING			
	PIPE SIZE (inlet / outlet)	114.3x3.05/114.3x3.05 (Tentative)	168.3x7.11/168.3x7.11 (Tentative)	219.1x6/219.1x6 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	SA 312 TP 304 (ERW)			
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage			
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE			
	BODY SIZE : RANGE OF DESIGN Cv	3 " : 40 – 120 (Tentative)	4 " : 90 - 180 (Tentative)	6 " : 300 – 450 (Tentative)	8 " : 600 – 800 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■ #300			
	BODY MATERIAL	■ A351 CF8M			
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE			
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED			
	*TRIM FORM	☐ LINEAR ■ EQ. PERCENTAGE ☐ QUICK OPEN			
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS			
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS			
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS			
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage			
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)			
	REQUIRED LEAKAGE CLASS	■ V			
	NOISE LEVEL (dBA)	LESS THAN 85 dBA			
	VACUUM SERVICE	■ YES ☐ NO			
	ANTI CAVITATION TRIM	■ YES ☐ NO			
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage			
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator			
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.			
	VALVE POSN. ON SIGNAL AIR FAILURE	■ TO OPEN ☐ TO CLOSE ■ STAYPUT			
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT			
ACCESSORIES	SMART POSITIONER	REQUIRED			
	AIR FILTER REGULATOR	REQUIRED			
	AIR LOCK RELAY	REQUIRED			
	POSITION LIMIT SWITCH	REQUIRED			
	SOLENOID VALVE	REQUIRED			
	JUNCTION BOX	REQUIRED			
	HAND WHEEL (SIDE MOUNTED)	REQUIRED			
	LOCAL POSITION INDICATOR	REQUIRED			

Data Sheet No. A18

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A)**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	■ CAVITATION ☐ FLASHING ☐ HIGH DP
	MAX SHUT OFF PRESS ((**KG/CM²g)**	10
	BODY DESIGN : PRESS ((**KG/CM²g)** **| TEMP (DEG. C)**	10/VACUUM | 50
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED	

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>8") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

Data Sheet No. A19

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER)

GENERAL	PROJECT	Shall be furnished during project enquiry stage			
	SERVICE	DMCW RECIRCULATION(DMCW/ECW)			
	LOCATION	■ INDOOR ■ OUTDOOR			
	DUTY	☐ ON/OFF ■ MODULATING			
	PIPE SIZE (inlet / outlet)	323.9x6/323.9x6 (Tentative)	406.4x6/406.4x6 (Tentative)	457x6/457x6 (Tentative)	
	PIPE MATERIAL (inlet / outlet)	Carbon Steel as per IS:2062 GR B / Carbon Steel as per IS:2062 GR B			
BODY	MODEL NUMBER	Bidder to specify during project enquiry stage			
	TYPE OF BODY:GUIDING:NO.OF PORTS	■ GLOBE ☐ ANGLE : ☐ TOP ■ CAGE : ONE			
	BODY SIZE : RANGE OF DESIGN Cv	8 " : 280 – 800 (Tentative)	10": 600 – 1200 (Tentative)	12": 1000–1500 (Tentative)	14": 1500–2000 (Tentative)
	END CONNECTION : RATING (ANSI)	■BWE ☐SWE ☐FLANGED : ■#300			
	BODY MATERIAL	■ A216 WCB/A216 WCC			
	PACKING MATERIAL : SINGLE / DOUBLE	☐ PTFE ■ GRAFOIL : ■ DOUBLE ☐ SINGLE			
	BONNET TYPE	■ STD ☐ EXTENDED ☐ FINNED			
	*TRIM FORM	■ LINEAR ☐ EQ. PERCENTAGE ☐ QUICK OPEN			
	# TRIM MATERIAL : SEAT RING	■ SS 316 STELLITED ■ 17-4 PH SS			
	# TRIM MATERIAL : PLUG	■ SS 316 STELLITED ■ 17-4 PH SS			
	# TRIM MATERIAL : CAGE	■ SS 316 STELLITED ■ 17-4 PH SS			
	FLOW : TO CLOSE / TO OPEN	Bidder to specify during project enquiry stage			
	OUTLET VELOCITY	■ < 7 M/SEC (WATER)			
	## REQUIRED LEAKAGE CLASS	■ IV ■ V			
	NOISE LEVEL (dBA)	LESS THAN 85 dBA			
	VACUUM SERVICE	☐ YES ■ NO			
	ANTI CAVITATION TRIM	☐ YES ■ NO			
PNEUMATIC ACTUATOR	MODEL NO. & SIZE	Bidder to specify during project enquiry stage			
	CLOSE AT : OPEN AT (Kg / Cm^2g)	To suit actuator			
	** TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN	< 10 secs.			
	VALVE POSN. ON SIGNAL AIR FAILURE	☐ TO OPEN ■ TO CLOSE ☐ STAYPUT			
	VALVE POSN. ON SUPPLY AIR FAILURE	STAYPUT			
ACCESSORIES	SMART POSITIONER	REQUIRED			
	AIR FILTER REGULATOR	REQUIRED			
	AIR LOCK RELAY	REQUIRED			
	POSITION LIMIT SWITCH	REQUIRED			
	SOLENOID VALVE	REQUIRED			
	JUNCTION BOX	REQUIRED			
	HAND WHEEL (SIDE MOUNTED)	REQUIRED			
	LOCAL POSITION INDICATOR	REQUIRED			

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO. **PE-TS-20-145-H 104B**
		DOCUMENT NO.
		VOLUME II B
		SECTION C
		REV. NO. 00 / DATE: 25.03.2026

Data Sheet No. A19

DATA SHEET – A FOR CONTROL VALVE (WITH PNEUMATIC ACTUATOR)
(TO BE FILLED BY PURCHASER

PERFORMANCE OF VALVE	HYSTERSIS	± 1%
	LINEARITY	± 1%
	SENSITIVITY	± 0.5%
	ACCURACY (Overall)	± 2%

SERVICE CONDITION	**SL. NO.**	**LOAD**	**FLOW (T/HR)**	**INLET PR. (KG/CM² (A)**	**OUTLET PR. (KG/CM² (A))**	**TEMP DEG. C**	**CALCU-LATED CV**	**% VALVE LIFT**	**VALVE O/L VELOCITY**
(Shall be furnished during project enquiry stage)									

	VALVE TYPE	☐ CAVITATION ☐ FLASHING ■ HIGH DP	
	MAX SHUT OFF PRESS ((**KG/CM²g)**	10	
	BODY DESIGN : PRESS ((**KG/CM²g)** | **TEMP (DEG. C)**	10	60
	IBR FORM III-C ☐ REQUIRED ■ NOT REQUIRED		

NOTES:

1@Type of bonnet shall be selected by the bidder as per the body design temperature of the control valve. Extended/finned type bonnets shall be provided when design temperature of the fluid is greater than 280 deg. C unless otherwise specified in the project specific enquiry without any commercial and delivery implication to BHEL.

2. # BHEL will select either of trim material combination as per the options in the data sheet –A which shall be supplied by the bidder at the same price. However, alternative field proven trim material combination, superior to the specified trim material can be offered by the bidder subject to approval by the end Customer without any commercial and delivery implication to BHEL.
3. *If the bidder wishes to offer alternative trim form/trim characteristic so as to meet Cv. v/s % lift requirement, the same shall be subject to approval by the end Customer without any commercial and delivery implication to BHEL.
4. ##BHEL will select either of the Leakage class (IV or V) as per the project specific requirement. Bidder to provide the required leakage class accordingly without any commercial and delivery implication to BHEL.
5. ** Bidder to include volume booster, if required in their offer, to achieve the stroking time (travel time) < 10 secs. Volume booster shall be provided by the bidder as per the hook-up diagram enclosed in this technical specification whenever required without any commercial and delivery implication to BHEL.
6. If the bidder wishes to offer a higher valve size (>14") so as to meet the Cv. vs. % Lift requirement, the same shall be accepted without any commercial and delivery implication to BHEL.
7. Performance of the valve (Hysterisis, Linearity, Sensitivity & Accuracy) mentioned above in the datasheet is minimum requirement. Actual requirement may vary as per the project specific enquiry which has to be confirmed by the bidder without any commercial and delivery implication to BHEL.

SECTION-C

DATASHEET-A FOR ACCESSORIES

FORM NO. PEM-6666-0

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO.:**PE-TS-20-145-H104B** VOLUME **II-B** SECTION **C** REV. NO. 00 | DATE: 25.03.2026

Data Sheet No. B1

APPLICABLE FOR MAIN VALVES WHEREVER OPTION "REQUIRED" INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEETS

DATA SHEET – A FOR ACCESSORIES FOR CONTROL VALVE - MODULATING DUTY (TO BE FILLED BY PURCHASER)

SMART POSITIONER	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	BYPASS	GAUGES	ENCL. CLASS	■ YES ■ NO	■ TWO* ■ THREE*	■ IP-65
	INPUT SIGNAL			4-20 mA DC, HART		
	OUTPUT SIGNAL (Kg / Cm^2)			TO SUIT ACTUATOR		
	TYPE OF POSITION TRANSMITTER (INTEGRAL PART OF POSITIONER)			Electronic,2-Wire with 4-20 mA DC Output operated at 24 V DC(preferably non-contact type) / profibus		
AIR FILTER REGULATOR	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	AIR SUPPLY PRESS (Kg / Cm^2 g)			5.0 – 8.0		
	OUTPUT PRESS (Kg / Cm^2 g)			TO SUIT ACTUATOR		
	FILTER SIZE/ FILTER MATERIAL			5 MICRON/SINTERED BRONZE		
	OUTPUT GAUGE			■ REQUIRED ☐ NOT REQUIRED		
	AUTO DRAIN FEATURE			■ REQUIRED ☐ NOT REQUIRED		
AIR LOCK RELAY	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	SET PRESS (Kg / Cm^2)			3.5(tentative)		
	SUPPLY PRESS (Kg / Cm^2)			5.0 – 8.0		
	RESET TYPE			AUTO		
	VENT PLUG			REQUIRED		
LIMIT SWITCH	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	OPEN posn	INT posn	CLOSE posn	**1 NO.**	**---**	**1 NO.**
	CONTACT TYPE			SPDT 2 NO + 2 NC		
	RATING (AC / DC)			5A,240 V AC AND 0.2A,220 V DC		
	ENCLOSURE CLASS			IP 65		
SOLENOID VALVE	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	RATING			24V DC		
	TYPE			3-WAY (UNIVERSAL OPERATION TYPE)		
	QUANTITY			AS PER VALVE DATASHEET & HOOK-UP DIAGRAM		
	COIL INSULATION CLASS			CLASS – H (with temp rise limited to Class-B)		
	ENCLOSURE/BODY MATERIAL			■ SS ■ BRASS		
	ENCLOSURE CLASS			IP 65		
HANDWHEEL	ORIENTATION			SIDE MOUNTED		
JUNCTION BOX	NO. OF WAYS			36-Ways		
	TYPE OF TERMINAL BLOCKS			CAGE CLAMP		
	ELECTRICAL CONNECTION			■ THROUGH CABLE GLAND ■ PLUG-IN SOCKET		
	CABLE GLANDS (Qty/Type/Material)			As required /Double Compression Type/SS or Nickel Plated Brass		
	ENCLOSURE CLASS			IP 65		
	BODY MATERIAL			■ FRP ■ SHEET STEEL		
SS Tubing & Fittings / per CV	This is in addition to pneumatic Tubing and fittings which are integral part of CV			12 Meters of ¼ " SS Tubing, with 1 set of Fittings for each CV for connection to IA Header on one end and accessories on another end of CV.(Refer NOTE 3)		
PAINTING	COLOUR/SHADE			Shall be informed during project specific enquiry		
	THICKNESS (DFT) – in microns			Shall be informed during project specific enquiry		
	TYPE			EPOXY		

COMPANY SEAL
NAME
SIGNATURE
DATE

NOTES:

1.*All the single acting smart positioners shall be provided with two (02) no. of gauges. Double acting positioners shall be provided with three(03) gauges.
2. Wherever in data sheet more than one options are marked, bidder to comply for all the options. BHEL will select any one option for a specific project and the same shall be supplied by bidder without any commercial implication with respect to rate contract.
3. Where volume booster is envisaged, bidder may offer 1/2" tubing (for both inlet as well as output side) along with its required fittings.

	Technical specification for **Control Valves with Accessories** (Pneumatically Operated) **(RATE CONTRACT) OTHER THAN FDV**	SPECIFICATION NO.:**PE-TS-20-145-H104B**	
		VOLUME **II-B**	
		SECTION **C**	
		REV. NO. 00	DATE: 25.03.2026

Data Sheet No. B2

APPLICABLE FOR MAIN VALVES WHEREVER OPTION "REQUIRED" INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEETS

DATA SHEET – A FOR ACCESSORIES FOR CONTROL VALVE – ON/OFF DUTY (TO BE FILLED BY PURCHASER)

AIR FILTER REGULATOR	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	AIR SUPPLY PRESS (Kg / Cm^2 g)			5.0 – 8.0		
	OUTPUT PRESS (Kg / Cm^2 g)			TO SUIT ACTUATOR		
	FILTER SIZE/ FILTER MATERIAL			5 MICRON/SINTERED BRONZE		
	OUTPUT GAUGE			■ REQUIRED ☐ NOT REQUIRED		
	AUTO DRAIN FEATURE			■ REQUIRED ☐ NOT REQUIRED		
AIR LOCK RELAY	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	SET PRESS (Kg / Cm^2)			3.5(tentative)		
	SUPPLY PRESS (Kg / Cm^2)			5.0 – 8.0		
	RESET TYPE			AUTO		
	VENT PLUG			REQUIRED		
LIMIT SWITCH	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	OPEN posn	INT posn	CLOSE posn	**2 NO.**	**---**	**2 NO.**
	CONTACT TYPE			SPDT 2 NO + 2 NC		
	RATING (AC / DC)			5A,240V AC AND 0.2A,220V DC		
	ENCLOSURE CLASS			IP 65		
SOLENOID VALVE	MFR. & MODEL NUMBER			Bidder to specify during project enquiry stage		
	RATING			24V DC		
	TYPE			3-WAY (UNIVERSAL OPERATION TYPE)		
	QUANTITY			AS PER VALVE DATASHEET & HOOK-UP DIAGRAM		
	COIL INSULATION CLASS			CLASS – H (with temp rise limited to Class-B)		
	ENCLOSURE/BODY MATERIAL			■ SS ■ BRASS		
	ENCLOSURE CLASS			IP 65		
HANDWHEEL	ORIENTATION			SIDE MOUNTED		
JUNCTION BOX	NO. OF WAYS			36-Ways		
	SIZE			AS REQUIRED		
	TYPE OF TERMINAL BLOCKS			CAGE CLAMP		
	ELECTRICAL CONNECTION			■ THROUGH CABLE GLAND ■ PLUG-IN SOCKET		
	CABLE GLANDS (Qty/Type/Material)			As required /Double Compression Type/SS or Nickel Plated Brass		
	ENCLOSURE CLASS			IP 65		
	BODY MATERIAL			■ FRP ■ SHEET STEEL		
SS Tubing & Fittings / per CV	This is in addition to pneumatic Tubing and fittings which are integral part of CV			12 Meters of ¼ "SS Tubing, with 1 set of Fittings for each CV for connection to IA Header on one end and accessories on another end of CV.(Refer NOTE 2)		
PAINTING	COLOUR/SHADE			Shall be informed during project specific enquiry		
	THICKNESS (DFT) – in microns			Shall be informed during project specific enquiry		
	TYPE			EPOXY		

COMPANY SEAL
NAME
SIGNATURE
DATE

NOTES:

1. Wherever in data sheet more than one options are marked, bidder to comply for all the options. BHEL will select any one option for a specific project and the same shall be supplied by bidder without any commercial implication with respect to rate contract.
2. Where volume booster is envisaged, bidder may offer 1/2" tubing (for both inlet as well as output side) along with its required fittings.

SECTION-C

DATASHEET C

Data Sheet No. ACM

APPLICABLE FOR MAIN VALVES WHEREVER OPTION "REQUIRED" INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEETS

DATA SHEET – A FOR ACCESSORIES FOR CONTROL VALVE - MODULATING DUTY (TO BE FILLED BY PURCHASER)

SMART POSITIONER	MFR. & MODEL NUMBER					
	BYPASS	GAUGES	ENCL. CLASS			
	INPUT SIGNAL					
	OUTPUT SIGNAL (Kg / Cm^2)					
	TYPE OF POSITION TRANSMITTER (INTEGRAL PART OF POSITIONER)					
AIR FILTER REGULATOR	MFR. & MODEL NUMBER					
	AIR SUPPLY PRESS (Kg / Cm^2 g)					
	OUTPUT PRESS (Kg / Cm^2 g)					
	FILTER SIZE/ FILTER MATERIAL					
	OUTPUT GAUGE					
	AUTO DRAIN FEATURE					
AIR LOCK RELAY	MFR. & MODEL NUMBER					
	SET PRESS (Kg / Cm^2)					
	SUPPLY PRESS (Kg / Cm^2)					
	RESET TYPE					
	VENT PLUG					
LIMIT SWITCH	MFR. & MODEL NUMBER					
	OPEN posn	INT posn	CLOSE posn			
	CONTACT TYPE					
	RATING (AC / DC)					
	ENCLOSURE CLASS					
SOLENOID VALVE	MFR. & MODEL NUMBER					
	RATING					
	TYPE					
	QUANTITY					
	COIL INSULATION CLASS					
	ENCLOSURE/BODY MATERIAL					
	ENCLOSURE CLASS					
HANDWHEEL	ORIENTATION					
JUNCTION BOX	NO. OF WAYS					
	TYPE OF TERMINAL BLOCKS					
	ELECTRICAL CONNECTION					
	CABLE GLANDS (Qty/Type/Material)					
	ENCLOSURE CLASS					
	BODY MATERIAL					
Cu./SS Tubing & Fittings / per CV	This is in addition to pneumatic Tubing and fittings which are integral part of CV					
PAINTING	COLOUR/SHADE					
	THICKNESS (DFT) – in microns					
	TYPE					

COMPANY SEAL
NAME
SIGNATURE
DATE

NOTES:

1.*All the single acting smart positioners shall be provided with two(02) no. of gauges. Double acting positioners shall be provided with three(03) gauges.
2. Wherever in data sheet more than one options are marked, bidder to comply for all the options. BHEL will select any one option for a specific project and the same shall be supplied by bidder without any commercial implication with respect to rate contract.

Data Sheet No. ACO

APPLICABLE FOR MAIN VALVES WHEREVER OPTION "REQUIRED" INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEETS

DATA SHEET – A FOR ACCESSORIES FOR CONTROL VALVE – ON/OFF DUTY (TO BE FILLED BY PURCHASER)

AIR FILTER REGULATOR	MFR. & MODEL NUMBER				
	AIR SUPPLY PRESS (Kg / Cm^2 g)				
	OUTPUT PRESS (Kg / Cm^2 g)				
	FILTER SIZE/ FILTER MATERIAL				
	OUTPUT GAUGE				
	AUTO DRAIN FEATURE				
AIR LOCK RELAY	MFR. & MODEL NUMBER				
	SET PRESS (Kg / Cm^2)				
	SUPPLY PRESS (Kg / Cm^2)				
	RESET TYPE				
	VENT PLUG				
LIMIT SWITCH	MFR. & MODEL NUMBER				
	OPEN posn	INT posn	CLOSE posn		
	CONTACT TYPE				
	RATING (AC / DC)				
	ENCLOSURE CLASS				
SOLENOID VALVE	MFR. & MODEL NUMBER				
	RATING				
	TYPE				
	QUANTITY				
	COIL INSULATION CLASS				
	ENCLOSURE/BODY MATERIAL				
	ENCLOSURE CLASS				
HANDWHEEL	ORIENTATION				
JUNCTION BOX	NO. OF WAYS				
	SIZE				
	TYPE OF TERMINAL BLOCKS				
	ELECTRICAL CONNECTION				
	CABLE GLANDS (Qty/Type/Material)				
	ENCLOSURE CLASS				
	BODY MATERIAL				
Cu./SS Tubing & Fittings / per CV	This is in addition to pneumatic Tubing and fittings which are integral part of CV				
PAINTING	COLOUR/SHADE				
	THICKNESS (DFT) – in microns				
	TYPE				

COMPANY SEAL
NAME
SIGNATURE
DATE

NOTES:

1. Wherever in data sheet more than one options are marked, bidder to comply for all the options. BHEL will select any one option for a specific project and the same shall be supplied by bidder without any commercial implication with respect to rate contract.

SECTION-C

QUALITY PLAN

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 1 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
					M	B/C				D	M	B	C	
	2	3	4	5	6		7	8	9		**			
1.0	RAW MATERIAL													
1.1	Body & Bonnet castings/forgings ,plug,valve stem, seat ring/cage	Physical, Chemical properties	MA	Physical, Chemical tests	100%	10%	Approved drg/ datasheet	Approved drg/data sheet	Test Certificate	√	P/ W	V		
		Heat Treatment	MA	Review of H.T. Certificate	100%	10%	Approved drg/ datasheet	Approved drg/data sheet	Test Certificate	√	P/ W	V		1. Applicable for body /bonnet only 2. IBR certificate(if applicable) to be verified.
		Internal quality of castings/forgings	MA	RT for Body & UT for Bonnet	100%	10%	ASME B 16.34	ASME B 16.34	Test Report/ Film	√	P/ W	V		Applicable for body and bonnet for rating ANSI 900 and above.
		Surface Quality	MA	1.Visual	100%	10%	ANSI/ MSS-SP-55	ANSI/ MSS-SP-55	Inspection Report	√	P/ W	V		Applicable for body/bonnet only.
		Pressure Test for shell	MA	Hyd. Test	100%	10%	ISA-S-75.19	ISA-S-75.19	Inspection Report	√	P/ W	V		For Body and Bonnet after machining.

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN	SPEC. NO : --	DATE: --
	CUSTOMER :--	QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --	PO NO.: --	DATE: --
	ITEM: CONTROL VALVE / SYSTEM: S&CE		SHEET 2 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
	2	3	4	5	6		7	8	9	D	**			
					M	B/C					M	B	C	
1.2	Diaphragm	Surface Quality	MA	Visual	100%	10%	Mfr. standard	COC./Test Certificate	COC/Test Certificate	√	P/V	V		
		Hardness	MA	Measurement	100%	10%	Mfr. standard	COC/Test Certificate	COC/ Test Certificate	√	P/V	V		
		Endurance/ Life cycle	MA	Cyclic Test 10,000 cycles	One/ type	One/ type	Mfr. standard	No damage	COC/Test Certificate	√	P/V	V		
1.3	Spring	Composition	MA	Chemical-Analysis	One Sample/ Heat	One Sample/ Heat	Mfr. Standard	COC/Test Certificate	COC/Test Certificate	√	P/V	V		
		Mech. Properties	MA	Mech. Test	One Sample/ Heat	One Sample/ Heat	Mfr. Standard	COC/Test Certificate	COC/Test Certificate	√	P/V	V		
		Performance	MA	1.Stiffness Ratio	100%	10%	Mfr. standard	COC/Test Certificate	COC/Test Certificate	√	P/V	V		
				2.Scragging	100%	10%	Mfr. standard	COC/Test Certificate	COC/Test Certificate	√	P/V	V		
				3.Cyclic Test (Endurance)	One/ type	One/ type	Mfr. standard	COC/Test Certificate	COC/Test Certificate	√	P/V	V		

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 3 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
					M	B/C				D	M	B	C	
	2	3	4	5	6		7	8	9		**			
				4. Dimension (Measurement)	One sample/ Lot	One sample /Lot	Mfr. Standard	COC/Test Certificate	COC/Test Certificate	√	P/ V	V		
2.0	**IN PROCESS INSPECTION**													
2.1	After machining, i, Body ii Bonnet iii Plug iv Valve Stem v seat ring vi cage	Surface flaws	MA	Visual & MT/PT	100% (on accessible surfaces)	10%	ASME B 16.34	ASME B 16.34	Inspection Report	√	P/ W	V		Butt weld ends shall be included.
		Dimensional checks	MA	Measurement	100%	10%	Appd Drg.	Appd Drg.	Inspection Report	√	P/ W	V		
		Hard Facing (wherever applicable)	MA	Hardness Measurement	One sample/ Lot	One sample /Lot	Appd Datasheet	Appd Datasheet	Inspection Report	√	P/ W	V		

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK Digitally signed by CHETAN MALIK DN: cn=CHETAN MALIK, o=BHARAT HEAVY ELECTRICALS LIMITED, ou=PS-PEM, NOIDA, email=cheteonmalik@bhel.in, c=IN Date: 2024.01.04 15:32:41 +05'30'	Checked by:	SUMAN NAKWAL	Suman Nakwal Digitally signed by Suman Nakwal DN: cn=Suman Nakwal, o=BHEL, ou=PEM,Noida, email=mamsnakwal@bhel.in, c=IN Date: 2024.02.08 17:09:08 +05'30'			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma Digitally signed by Suresh Chand Sharma DN: cn=Suresh Chand Sharma, o=BHEL, ou=PEM, email=schsharma@bhel.com, c=IN Date: 2024.01.04 15:33:33 +05'30'	Reviewed by:	HARISH KUMAR	Harish Kumar Digitally signed by Harish Kumar DN: cn=Harish Kumar, o=PEM, ou=BHEL, email=Harish_kumar@bhel.in, c=IN Date: 2024.02.15 16:47:54 +05'30'			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani Digitally signed by Girish Bhagchandani DN: cn=Girish Bhagchandani, o=BHEL, ou=PEM, email=girishbhagchandani@bhel.in, c=IN									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 4 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
	2	3	4	5	6		7	8	9	*	**			
					M	B/C				D	M	B	C	
FINAL TESTING/INSPECTION														
3.0	**TESTS ON COMPLETED VALVE**													
3.1	Actuator Chamber	Leakage	MA	Pneumatic Test	100%	10%	Mfr. standard	No Leakage	Test Certificate	√	P/ W	W		
3.2	Body	Leakage (Body Mount Leakage)	MA	Hydro Test	100%	10%	ISA-S-75.19/	No Leakage	Test Certificate	√	P/ W	W		
3.3	Seat Leakage	Seat Leakage	MA	Pneumatic / WaterTest	100%	10%	FCI-70.2	Approved Datasheet	Test Certificate	√	P/ W	W		
4.0	**OPERATION TEST ON COMPLETED VALVE ASSEMBLY**	Valve Travel	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W		
		Opening / Closing Time	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W		
		Linearity / Cam characteristic	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W		
		Repeatability	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W		
		Hysterisis	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W		
		Sensitivity	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report	√	P/ W	W		

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 5 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
					M	B/C				D	M	B	C	
	2	3	4	5	6		7	8	9		**			
		Accuracy(Overall)	MA	Measurement	100%	10%	Approved datasheet	Approved Datasheet	Inspection Report					
		Control Valve characteristics / CV Test	MA	Measurement (Press. vs. discharge and discharge vs opening 0-100% in steps of 10%)	One per type	One per type	Mfr. Procedure	Approved Datasheet	Test Certificate	√	P/ W	V		
		Operation of limit switch & solenoids and other accessories	MA	Function	100%	10%	Mfr. Procedure	Approved Datasheet	Inspection Report	√	P/ W	W		On assembled Valve.
		Overall dimensions	MI	Visual and dimensional	100%	10%	Approved drg	Approved drg	Inspection Report	√	P/ W	W		
		Pre-defined valve position in case of air / signal failure	MI	Visual and dimensional	100%	10%	Approved data sheet	Approved data sheet	Inspection Report	√	P/ W	W		
		Stamping (for direction of flow), Tag No.	MA	Visual	100%	10%	Approved drg /datasheet	Approved drg /datasheet	Test Certificate	√	P/ W	W		

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 6 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
	2	3	4	5	6		7	8	9	*	**			
					M	B/C				D	M	B	C	
5.0	**AUXILIARY ITEMS(Performance test of auxiliary items shall be performed on the completely assembled valve) –** Refer NOTE-3													
5.1	Air Filter Regulator	Performance Test	MA	Measurement	Each type	Each type	Mfr. Standard	No leakage	--	√	P/ V	V		
		Overall leakage	MA	Visual(soap solution)	100 %	10%	Mfr. Standard	No leakage	--	√	P/ V	V		
5.2	Air lock relay	Performance Test	MA	Leakage test	100%	10%	Mfr. Standard	No leakage	--	√	P/ V	V		
5.3	Smart Positioner	Physical Verification Make/Model	MA	Visual	100%	10%	Approved drg/ datasheet	Approved drg/ datasheet	--	√	P/ V	V		
		Degree of Protection	MA	IP/NEMA test	Each type	Each type	Relevant Standard	Relevant Standard	--	√	P/ V	V		
		Calibration	MA	Measurement	Each type	Each type	Mfr. Standard	Mfr. Standard	--	√	P/ V	V		
5.7	**Electrical items** (i) Limit Switches	Routine Test	MA	HV, IR, Continuity function	100%	10%	Approved Data sheet	Approved Data sheet	--	√	P/ V	V		
		Degree of protection	MA	IP/NEMA Tests	One sample/ type	One sample/ Lot	Approved Data sheet	Approved Data sheet	--	√	P/ V	V		

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 7 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
	2	3	4	5	6		7	8	9	*	**			
					M	B/C				D	M	B	C	
	(ii) Solenoids	Routine Test	MA	HV, IR, Continuity function	100%	10%	Approved Data sheet	Approved Data sheet	--	√	P/ V	V		
		Degree of protection	MA	IP/NEMA Tests	One sample/ type	One sample /Lot	Approved Data sheet	Approved Data sheet	--	√	P/ V	V		
	(iii)Position Transmitter(if provided externally)	Routine Test	MA	HV, IR, Continuity function	100%	10%	Approved Data sheet	Approved Data sheet	--	√	P/ V	V		
		Degree of protection	MA	IP/NEMA Tests	One sample/ type	One sample /Lot	Approved Data sheet	Approved Data sheet	--	√	P/ V	V		
6.0	**PAINTING**	Paint Thickness	MA	Measurement DFT check	100%	10%	Approved drg/data sheet	Approved drg/data sheet	Inspection Report	√	P/ W	V		
7.0	**PACKING**	Soundness of Packing against transit damage	MA	Visual	100%	100%	Approved drg/data sheet	Approved drg/data sheet	Inspection Report	√	P/ W	V		

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

MANUFACTURER/BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : --	DATE: --
	CUSTOMER :--		QP NO.: PE-QP-999-145-H 006 REV 00	DATE: 04.01.2024
	PROJECT: --		PO NO.: --	DATE: --
	ITEM: CONTROL VALVE	SYSTEM: S&CE		SHEET 8 OF 8

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTIC CHECKED	CATE GORY	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
					M	B/C				D	M	B	C	
	2	3	4	5	6		7	8	9		**			

NOTES:

1. Cv test shall be conducted at FCRI/ laboratory approved by Govt. Of India/BHEL approved Laboratory. Alternatively, valid Cv test certificate for a similar control valve (same size, same Cv, same trim characteristics) can be accepted.
2. Copies of all TC's (Test Certificates) for materials duly correlated with Heat Nos., TC's for electrical items and mechanical tests(Leak/Operation), C.O.C's (Certificates of Conformance) shall be submitted to BHEL for verification and acceptance.
3. Valve manufacturer to arrange for COC (Certificates of Conformance) for the tests w.r.t. control valve accessories mentioned at Sl. No. 5 of the QAP.

LEGENDS:

*RECORDS, INDENTIFIED WITH "TICK"(√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION,

** **M**:SUPPLIER / MANUFACTURER/ SUB-SUPPLIER/SUB-CONTRACTOR, , **B**: BHEL/ BHEL NOMINATED THIRD PARTY INSPECTION AGENCY, **C**: CUSTOMER, **P**:PERFORM,**W**:WITNESS, **V**:VERIFICATION,AS APPROPRIATE **MA**:MAJOR,**MI**:MINOR,**CR**:CRITICAL,**RT-**RADIOGRAPHIC TEST,**UT-**ULTRASONIC TEST,**PT-**DYE PENETRANT TEST,**MT-**MAGNETIC PARTICLE TEST

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	CHETAN MALIK	CHETAN MALIK	Checked by:	SUMAN NAKWAL	Suman Nakwal			Reviewed by:			
Reviewed by:	SURESH CHAND SHARMA	Suresh Chand Sharma	Reviewed by:	HARISH KUMAR	Harish Kumar			Approved by:			
Approved by:	GIRISH BHAGCHANDANI	Girish Bhagchandani									

SECTION – C

BILL OF QUANTITY

BOQ FOR MAIN SUPPLY (A)								
A	B	C	D	E	F	G	H	I
Sl no.	Item no.	Item Description [CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB, INCLUDING COMMISSIONING SPARES (ONE SET OF PACKING AND GASKET)]	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)
1	CV1.1	Deaerator Pegging from Aux. Steam Header	A1-A(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	14
2	CV1.2	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	4
3	CV1.3	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	19
4	CV1.4	Deaerator Pegging from Aux. Steam Header	A1-A(iii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	1
5	CV1.5	Aux Steam to BFPT's	A1-B(i)	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	3
6	CV1.6	Aux Steam to BFPT's	A1-B(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10
7	CV1.7	Aux Steam to BFPT's	A1-B(ii)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2
8	CV2.1	Deaerator Pegging from CRH Line	A2-A(i)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	19
9	CV2.2	Deaerator Pegging from CRH Line	A2-A(i)	B1	12	WC6	SS316 STELLITED/ 17-4PH SS	15
10	CV2.3	Deaerator Pegging from CRH Line	A2-A(ii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	3
11	CV2.4	Deaerator Pegging from CRH Line	A2-A(ii)	B1	12	WC9	SS316 STELLITED/ 17-4PH SS	1
12	CV2.5	CRH Steam to BFPT's	A2-B	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	15
13	CV3.1	Drain to Aux Steam From Existing Unit Header to F/T	A3	B1	2	WC9	SS316 STELLITED/ 17-4PH SS	15
14	CV4.1	CEP A/B/C Minimum Recirculation	A4	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	60
15	CV5.1	Condensate Spray/Service Water to F/T	A5	B2	1	WC9	SS316 STELLITED/ 17-4PH SS	32
16	CV6.1	Deaerator Overflow	A6(i)	B2	6	WC9	440C	24
17	CV6.2	Deaerator Overflow	A6(ii)	B2	6	WC9	SS316 STELLITED/ 17-4PH SS	14
18	CV7.1	GSC min. flow recirculation	A7(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14
19	CV7.2	GSC min. flow recirculation	A7(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	24
20	CV8.1	Low Load Condensate Control	A8	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	14
21	CV8.2	Low Load Condensate Control	A8	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	19
22	CV8.3	Main Condensate Control	A8	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	29
23	CV9.1	Excess Return to CST	A9	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	37
24	CV10.1	Condensate for Valve Gland Sealing	A10	B1	1	WCB/WCC	SS316 STELLITED/ 17-4PH SS	37
25	CV11.1	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	64

BOQ FOR MAIN SUPPLY (A)								
A	B	C	D	E	F	G	H	I
Sl no.	Item no.	Item Description [CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB, INCLUDING COMMISSIONING SPARES (ONE SET OF PACKING AND GASKET)]	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)
26	CV11.2	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	2
27	CV11.3	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	4
28	CV11.4	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	66
29	CV11.5	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	4
30	CV11.6	HPH-7A/7B Normal Drain to Deaerator	A11-C	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	66
31	CV12.1	HPH-9A/9B Drain to F/T	A12-A(i)	B1	4	WC9	440C	6
32	CV12.2	HPH-9A/9B Drain to F/T	A12-A(i)	B1	6	WC9	440C	47
33	CV12.3	HPH-9A/9B Drain to F/T	A12-A(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	14
34	CV12.4	HPH-8A/8B Drain to F/T	A12-B(i)	B1	4	WC9	440C	8
35	CV12.5	HPH-8A/8B Drain to F/T	A12-B(i)	B1	6	WC9	440C	12
36	CV12.6	HPH-8A/8B Drain to F/T	A12-B(i)	B1	8	WC9	440C	28
37	CV12.7	HPH-8A/8B Drain to F/T	A12-B(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	26
38	CV12.8	HPH 7A/7B Drain to F/T	A12-C(i)	B1	6	WC9	440C	16
39	CV12.9	HPH 7A/7B Drain to F/T	A12-C(i)	B1	8	WC9	440C	32
40	CV12.10	HPH 7A/7B Drain to F/T	A12-C(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	26
41	CV13.1	HPH-7A/7B Drain to HPH-6A/6B	A13-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	8
42	CV13.2	HPH-6A/6B Drain to Deaerator	A13-B	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	8
43	CV14.1	HPH-6A/6B Drain to HPD F/T	A14	B1	6	WC9	440C	8
44	CV15.1	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	11
45	CV15.2	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	4
46	CV15.3	LPH-3 Drain D/S of Drip Pump	A15-B	B1	4	WCB/WCC	SS316 STELLITED/ 17-4PH SS	8
47	CV15.4	LPH-3 Drain D/S of Drip Pump	A15-B	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	25
48	CV16.1	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	3	WC6	SS316 STELLITED/ 17-4PH SS	26
49	CV16.2	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	8
50	CV16.3	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	36

BOQ FOR MAIN SUPPLY (A)								
A	B	C	D	E	F	G	H	I
Sl no.	Item no.	Item Description [CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB, INCLUDING COMMISSIONING SPARES (ONE SET OF PACKING AND GASKET)]	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)
51	CV17.1	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	6	WC9	440C	9
52	CV17.2	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	8	WC9	440C	20
53	CV17.3	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	10	WC9	440C	6
54	CV17.4	LPH-3/2 Alt. Drain to F/T	A17-A(ii)	B1	8	WC9	SS316 STELLITED/ 17-4PH SS	14
55	CV17.5	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	4	WC9	440C	9
56	CV17.6	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	6	WC9	440C	33
57	CV17.7	LPH-5/4 Alt Drain to F/T	A17-B(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	14
58	CV17.8	LPH-5/4 Alt Drain to F/T	A17-B(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	14
59	CV18.1	DM Water Make up to Hotwell	A18	B1	3	CF8M	SS316 STELLITED/ 17-4PH SS	2
60	CV18.2	DM Water Make up to Hotwell	A18	B1	4	CF8M	SS316 STELLITED/ 17-4PH SS	35
61	CV18.3	DM Water Make up to Hotwell	A18	B1	6	CF8M	SS316 STELLITED/ 17-4PH SS	21
62	CV18.4	DM Water Make up to Hotwell	A18	B1	8	CF8M	SS316 STELLITED/ 17-4PH SS	3
63	CV19.1	DMCW System for TG AUX'S/SG Aux's	A19	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	16
64	CV19.2	DMCW System for TG AUX'S/SG Aux's	A19	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	15
65	CV19.3	DMCW System for TG AUX'S/SG Aux's	A19	B1	12	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10
66	CV19.4	DMCW System for TG AUX'S/SG Aux's	A19	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	11
		TOTAL						1220

BOQ FOR Cv TEST (B)				
A	**B**	**C**	**D**	**E**
Sl no.	**Item no.**	**Item Description**	**Valve body size**	**Total Quantity (NOS.)**
1	TT1	CV test of control valve(1" to 2")	1" to 2"	50
2	TT2	CV test of control valve(3" to 6")	3" to 6"	350
3	TT3	CV test of control valve(8")	8"	80
4	TT4	CV test of control valve(10")	10"	50
5	TT5	CV test of control valve(12")	12"	15
6	TT6	CV test of control valve(14" and above)	14" and above	20
		Total		**565**

NOTES :-

1. Cv test shall be conducted at Fluid Control Research Institute(FCRI),Palakkad/laboratory approved by Govt. of India/BHEL approved laboratory.

BOQ FOR SUPERVISION OF E&C (C & D)				
Sr. No.	**Item code**	**Item Description**	**Unit**	**Total Quantity (NOS.)**
	SUPERVISION OF E&C			
1.0	CV-SUP_E&C-1	SUPERVISION OF E&C-VISIT	NOS	50
2.0	CV-SUP_E&C-2	SUPERVISION OF E&C-MANDAY	NOS	100

NOTES

1	THE VISIT CHAGRES SHALL BE INCLUSIVE OF CHARGES OF AIR FARE/TRAIN FARE , BOARDING/LODGING, LOCAL CONVEYANCE, MEDICAL , INSURANCE ETC.
2	AMOUNT PAYABLE FOR ENGINEER PER VISIT TO SITE = VISIT CHARGES AS PER SL. NO. **1.0** ABOVE + (MANDAYS CHARGES AS PER SL. NO. 2.0 ABOVE X NO. OF DAYS AT SITE) (TO BE CERTIFIED BY BHEL SITE).

BOQ FOR VALVE TRIM (E)								
A	B	C	D	E	F	G	H	I
Sl no.	Item no.	Item Description (CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB)	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)
1	TRIM1.1	Deaerator Pegging from Aux. Steam Header	A1-A(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	7
2	TRIM1.2	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	3
3	TRIM1.3	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	5
4	TRIM1.4	Deaerator Pegging from Aux. Steam Header	A1-A(iii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	1
5	TRIM1.5	Aux Steam to BFPT's	A1-B(i)	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	3
6	TRIM1.6	Aux Steam to BFPT's	A1-B(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	5
7	TRIM1.7	Aux Steam to BFPT's	A1-B(ii)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2
8	TRIM2.1	Deaerator Pegging from CRH Line	A2-A(i)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	10
9	TRIM2.2	Deaerator Pegging from CRH Line	A2-A(i)	B1	12	WC6	SS316 STELLITED/ 17-4PH SS	6
10	TRIM2.3	Deaerator Pegging from CRH Line	A2-A(ii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	1
11	TRIM2.4	Deaerator Pegging from CRH Line	A2-A(ii)	B1	12	WC9	SS316 STELLITED/ 17-4PH SS	1
12	TRIM2.5	CRH Steam to BFPT's	A2-B	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	9
13	TRIM3.1	Drain to Aux Steam From Existing Unit Header to F/T	A3	B1	2	WC9	SS316 STELLITED/ 17-4PH SS	5
14	TRIM4.1	CEP A/B/C Minimum Recirculation	A4	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	16
15	TRIM5.1	Condensate Spray to F/T	A5	B2	1	WC9	SS316 STELLITED/ 17-4PH SS	12
16	TRIM6.1	Deaerator Overflow	A6(i)	B2	6	WC9	440C	9
17	TRIM6.2	Deaerator Overflow	A6(ii)	B2	6	WC9	SS316 STELLITED/ 17-4PH SS	7
18	TRIM7.1	GSC min. flow recirculation	A7(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	7
19	TRIM7.2	GSC min. flow recirculation	A7(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	9
20	TRIM8.1	Low Load Condensate Control	A8	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	7
21	TRIM8.2	Low Load Condensate Control	A8	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	6
22	TRIM8.3	Main Condensate Control	A8	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	12
23	TRIM9.1	Excess Return to CST	A9	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	17
24	TRIM10.1	Condensate for Valve Gland Sealing	A10	B1	1	WCB/WCC	SS316 STELLITED/ 17-4PH SS	17
25	TRIM11.1	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	14
26	TRIM11.2	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	1
27	TRIM11.3	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	2
28	TRIM11.4	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14
29	TRIM11.5	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	2
30	TRIM11.6	HPH-7A/7B Normal Drain to Deaerator	A11-C	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14
31	TRIM12.1	HPH-9A/9B Drain to F/T	A12-A(i)	B1	4	WC9	440C	2
32	TRIM12.2	HPH-9A/9B Drain to F/T	A12-A(i)	B1	6	WC9	440C	9
33	TRIM12.3	HPH-9A/9B Drain to F/T	A12-A(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	7
34	TRIM12.4	HPH-8A/8B Drain to F/T	A12-B(i)	B1	4	WC9	440C	2
35	TRIM12.5	HPH-8A/8B Drain to F/T	A12-B(i)	B1	6	WC9	440C	9
36	TRIM12.6	HPH-8A/8B Drain to F/T	A12-B(i)	B1	8	WC9	440C	6
37	TRIM12.7	HPH-8A/8B Drain to F/T	A12-B(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	7
38	TRIM12.8	HPH 7A/7B Drain to F/T	A12-C(i)	B1	6	WC9	440C	10
39	TRIM12.9	HPH 7A/7B Drain to F/T	A12-C(i)	B1	8	WC9	440C	3
40	TRIM12.10	HPH 7A/7B Drain to F/T	A12-C(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	7

BOQ FOR VALVE TRIM (E)								
A	B	C	D	E	F	G	H	I
Sl no.	Item no.	Item Description (CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB)	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)
41	TRIM13.1	HPH-7A/7B Drain to HPH-6A/6B	A13-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2
42	TRIM13.2	HPH-6A/6B Drain to Deaerator	A13-B	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2
43	TRIM14.1	HPH-6A/6B Drain to HPD F/T	A14	B1	6	WC9	440C	2
44	TRIM15.1	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	4
45	TRIM15.2	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	4
46	TRIM15.3	LPH-3 Drain D/S of Drip Pump	A15-B	B1	4	WCB/WCC	SS316 STELLITED/ 17-4PH SS	4
47	TRIM15.4	LPH-3 Drain D/S of Drip Pump	A15-B	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10
48	TRIM16.1	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	3	WC6	SS316 STELLITED/ 17-4PH SS	14
49	TRIM16.2	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	6
50	TRIM16.3	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14
51	TRIM17.1	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	6	WC9	440C	5
52	TRIM17.2	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	8	WC9	440C	4
53	TRIM17.3	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	10	WC9	440C	5
54	TRIM17.4	LPH-3/2 Alt. Drain to F/T	A17-A(ii)	B1	8	WC9	SS316 STELLITED/ 17-4PH SS	12
55	TRIM17.5	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	4	WC9	440C	4
56	TRIM17.6	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	6	WC9	440C	4
57	TRIM17.7	LPH-5/4 Alt Drain to F/T	A17-B(Ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	10
58	TRIM17.8	LPH-5/4 Alt Drain to F/T	A17-B(iI)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	12
59	TRIM18.1	DM Water Make up to Hotwell	A18	B1	3	CF8M	SS316 STELLITED/ 17-4PH SS	5
60	TRIM18.2	DM Water Make up to Hotwell	A18	B1	4	CF8M	SS316 STELLITED/ 17-4PH SS	14
61	TRIM18.3	DM Water Make up to Hotwell	A18	B1	6	CF8M	SS316 STELLITED/ 17-4PH SS	6
62	TRIM18.4	DM Water Make up to Hotwell	A18	B1	8	CF8M	SS316 STELLITED/ 17-4PH SS	4
63	TRIM19.1	DMCW System for TG AUX'S/SG Aux's	A19	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	12
64	TRIM19.2	DMCW System for TG AUX'S/SG Aux's	A19	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10
65	TRIM19.3	DMCW System for TG AUX'S/SG Aux's	A19	B1	12	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10
66	TRIM19.4	DMCW System for TG AUX'S/SG Aux's	A19	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10
							Total	475

BOQ FOR FOR VALVE COMPONENTS AND ACCESSORIES (F)				
S.NO.	ITEM CODE	ITEM	ITEM CODE IN INDENT SARATHI	Total Quantity (NOS.)
1	AC5	**Diaphragms**	CV-AC5-DIAPHRAGM - upto 14 " size	**225**
2	AC6	**Diaphragms**	CV-AC6-DIAPHRAGM - 15 " to 18 " size	**140**
3	AC7	**Diaphragms**	CV-AC7-DIAPHRAGM-ABOVE 18 INCH	**75**
4	AC8	**Actuator**	CV-AC8-ACTUATOR ASSEMBLY for Diaphragm Actuator - upto 14" diaphragm size	**40**
5	AC9	**Actuator**	CV-AC9-ACTUATOR ASSEMBLY for Diaphragm Actuator - 15" to 18" diaphragm size	**40**
6	AC10	**Actuator**	CV-AC10-ACTUATOR ASSEMBLY for Diaphragm Actuator - > 18" diaphragm size	**40**
7	AC11	**Actuator**	CV-AC11-ACTUATOR ASSEMBLY for Piston Cylinder Actuator - upto 16" dia. Piston	**40**
8	AC12	**Actuator**	CV-AC12-ACTUATOR ASSEMBLY for Piston Cylinder Actuator - 16" to 20" dia. Piston	**25**
9	AC13	**Actuator**	CV-AC13-ACTUATOR ASSEMBLY for Piston Cylinder Actuator - > 20" dia. Piston	**30**
10	AC14	**Actuator Seal Kit/ O-rings/Actuator Soft Goods kit**	CV-AC14-'O' rings, seal kit for piston actuator - upto 16" dia. Piston	**180**
11	AC15	**Actuator Seal Kit/ O-rings/Actuator Soft Goods kit**	CV-AC15-'O' rings, seal kit for piston actuator - 17" to 20" dia. Piston	**75**
12	AC16	**Actuator Seal Kit/ O-rings/Actuator Soft Goods kit**	CV-AC16-'O' rings, seal kit for piston actuator - > 20" dia. dia. Piston	**40**
13	AC17	**Packing**	CV-AC17-PACKING SET	**300**
14	AC18	**Gasket**	CV-AC18-GASKETS SET	**300**
15	AC19	**Air Lock**	CV-AC19-AIR LOCK RELAY	**200**
16	AC20	**Air Filter Regulator**	CV-AC20-AIR FILTER REGULATOR	**230**
17	AC21	**Volume Booster**	CV-AC21-VOLUME BOOSTER	**85**
18	AC22	**Pressure Gauge**	CV-AC22-PRESSURE GAUGE	**90**
19	AC23	**Solenoid Valve**	CV-AC23-SOLENOID VALVE	**90**
20	AC24	**Limit Switch**	CV-AC24-LIMIT SWITCH ASSY	**150**
21	AC25	**FEED BACK LINKAGE**	CV-AC25-FEED BACK LINKAGE	**85**
22	AC27	**Positioner (Single Acting)**	CV-AC27-SMART POSNR - SINGLE ACT	**150**
23	AC28	**Positioner (Double Acting)**	CV-AC28-SMART POSNR -DOUBLE ACT	**90**
24	AC27A	**Positioner (Single Acting)**	CV-AC27A-SMART POSNR - SINGLE ACT-PROFIBUS	**40**
25	AC28A	**Positioner (Double Acting)**	CV-AC28A-SMART POSNR -DOUBLE ACT-PROFIBUS	**15**
26	AC29	**Seal Kit – Positioner**	CV-AC29-O RING KIT FOR SMART POSNR	**60**
27	AC31	**Actuator Piston (Equivalent for Diaphragm incase of Piston Actuator)**	CV-AC31-ACT PISTON WITH ROD & SEAL	**40**
28	AC33	**Tubing**	CV-AC33-1/4" SS OR PVC INSU CU TUBE	**1000**
29	AC39	**Fitting**	CV-AC39-SS CONN-1/2"NPT(M)X1/4"OD	**1400**
30	AC40		CV-AC40-SS CONN-1/4"NPT(M)X1/4"OD	**1400**
31	AC41		CV-AC41-SS TEE FOR 1/4" OD TUBE	**1000**
32	AC54	**Junction Box.**	CV-AC54-Junction Box	**20**
33	AC55	**Actuator stem**	CV-AC55-Actuator Stem	**35**
34	AC58	**Stem connector**	CV-AC58-STEM CONNECTOR/COUPLING	**70**
35	AC62	**Metal seat ring / Seat Ring**	CV-AC62-METAL SEAT RING/SEAT RING	**70**
36	AC63	**Soft Goods Kit Valve (Including Packing set, Gasket set, Plug seal ring)**	CV-AC63-SOFT GOOD KIT FOR VALVE	**35**
37	AC64	**Yoke**	CV-AC64-YOKE	**35**
38	AC65	**Moisture Separator**	CV-AC65-MOISTURE SEPARATOR	**50**
39	AC61A	**Valve stem**	CV-AC61-VLV SPINDLE -UPTO 6 INCH	**35**
40	AC37A	**Valve stem**	CV-AC37A-VLV SPINDLE -6 TO 8 INCH	**35**
41	AC37B	**Valve stem**	CV-AC37B-VLV SPINDLE -10 INCH	**35**
42	AC37C	**Valve stem**	CV-AC37C-VLV SPINDLE -12 INCH	**35**
43	AC37D	**Valve stem**	CV-AC37D-VLV SPINDLE -14 INCH	**35**

SECTION – D

- **EQUIPMENT SPECIFICATION**
- **SPECIFICATION FOR SMART POSITIONER**
- **HOOK-UP DIAGRAMS**
- **GUIDELINES FOR PACKING**
- **SUB-VENDOR LIST**
- **COMPLIANCE CERTIFICATE**

SECTION-D

EQUIPMENT SPECIFICATION

1.0 SCOPE

1.1 This specification covers the Design, Manufacture, Inspection and Testing at the manufacturer's works, proper packing for transportation and delivery to site of Control valve (with Pneumatic Actuator as identified in the datasheet-A) for use in Utility/Captive Power Station/Combined Cycle Station.

1.2 Expander/Reducer between valve body & pipe shall be in BHEL's scope of supply. However, any other expander/reducer required shall be in bidder's scope of supply.

2.0 CODES AND STANDARDS

2.1 As a minimum requirement, the latest revision/version of the following (or equivalent) standards shall be complied as a minimum requirement :-

Indian Boiler Regulation (IBR)		
Allowable Seat leakage	:	FCI-70.2
Pressure & Temperature ratings	:	ANSI-B16.34
Enclosure class	:	IEC-144 / NEMA / IS-13947
Control Valves Sizing	:	ISA S-75

3.0 TECHNICAL REQUIREMENTS

The Control valve, Actuator and the accessories shall be suitable for continuous operation under an ambient temperature of 0-60°C and Relative Humidity of 0-95% unless specified otherwise in volume IIB Section-B or Section-C.

3.1 Control Valve

The control valve shall be suitably designed for the process operating conditions and system characteristics as specified in the Data Sheet-A.

3.1.1 The control valve shall be of globe/angle body design, as per datasheet, with single port. Valve trim shall be cage guided balanced type for valve sizes $\geq$ 3" and above. The valve trim shall be suitable for quick replacement without any cutting or welding. Anti-cavitation trims shall be provided for valves with cavitation service and hardened trims for flashing services.

3.1.2 The trim material and body material has been specified in the Datasheet-A. Bidder to offer body material and trim material combination as per the datasheet. Wherever there is a deviation from the datasheets, bidder to furnish the documentary proof for confirming superior trim material/body material selection along with their offer. BHEL/Customer reserves the right to accept/reject any variation in the specification.

3.1.3 Main Condensate Control Valves –
Bidder to offer control valve with minimum 14" valve size. The plug-stem assembly for these valves shall preferably be a single-piece construction.

3.1.4 The valve bonnet and packing shall be suitable for the service conditions as in Data Sheet-A. Gland sealed type bonnets are not acceptable. Double packing is mandatory for applications involving vacuum service. For valves where downstream is subjected to vacuum, flow action shall be “flow to close” (over the seat). Bonnets having Teflon packing shall have valve stem finished to 2-4 microns. Packing material requiring lubrication will not be acceptable.

Asbestos shall not be used for the packing or any other component.

Type of bonnet shall be according to the service condition. Extension bonnets shall be provided when the maximum temperature of the flowing fluid is greater than 280 or unless otherwise specified.
Cast Steel (CS) yokes shall be offered. Cast Iron (CI) yokes are not acceptable for any service.

3.1.5 The valve end connection as specified in Data Sheet-A shall conform to ANSI B16.25 for Butt Weld connection, ANSI B16.11 for Socket Weld connection and ANSI B16.5 for flanged ends. Tolerances on end to end, center to center, center to face shall be in accordance with ASME B16.10. The end connections shall be Socket Welded for sizes up to 50 NB and Butt Welded for sizes above 50 NB.

3.1.6 The valve seat leakage shall be as per FCI-70.2. The leakage class shall be as per Data Sheet-A.

3.1.7 The valve body shall have the direction of flow embossed on all valves.

3.1.8 The sizing shall conform to the requirements of ISA S75.01, and the valve capacity shall be selected so as to meet the following:

Valve with Linear Characteristic	-	Normal Flow (Design Point)	:	70-75% valve lift.
	-	Max. Flow	:	85% valve lift.
	-	Min. Flow	:	>15% valve lift.
Valve with Equal percentage Characteristic	-	Normal Flow (Design Point)	:	75-85% valve lift.
	-	Max. Flow	:	85% valve lift.
	-	Min. Flow	:	>15% valve lift.
ON/OFF Quick open Characteristic	-	1.1 times the CV calculated on the basis of maximum flow condition.		

The valve offered shall be capable of handling 120 % of the required maximum flow.

3.1.9 Calculation for valve sizing, velocity and noise shall be subject to purchaser’s approval during contract stage. However, responsibility of proper selection and design for the duties specified lies with the vendor. Any modifications required to be done on the valves or actuators & accessories to achieve satisfactory performance of the control system shall be done without any commercial & delivery implication.

3.1.10 The valve outlet velocities shall be limited to the following values, unless otherwise specified in the Data sheet-A.

i)	Liquid service	<=	7 m/sec
ii)	Steam service	<=	150 m/sec
iii)	Flashing service	<=	50% of sonic velocity for flashing services.

3.1.11 For flashing duty, trim design shall be such that the vapour bubbles are kept away from valve body.

3.1.12 For cavitation service, the trim design shall be of multistage pressure drop type, so as to avoid cavitation altogether, instead of keeping cavitation away from valve parts.

3.1.13 The equivalent weighted sound level measured at 1.5 metres above floor level in elevation and 1 metre horizontally from the control valve expressed in decibels to a reference of 0.0002 microbar shall not exceed 85 dBA (without pipe insulation).The offer shall include noise prediction calculations for each valve.

3.1.14 In case of predicted noise level above 85 dBA, same shall be brought down to acceptable noise level i.e. below 85 dBA through Source treatment (proper valve trim & valve body selection). Path treatment (LNP/ Diffuser/ Cartridge/ Silencer etc.), if any shall be subject to Customer's/Owner's approval.

3.1.15 In case of wrong selection/ deviated behavior in operation of control valve assembly (including actuator, positioner & other accessories) during guarantee period, the bidder shall make replacement suitably with a modified/new valve design as approved by purchaser and all the expenses for replacement, rectification/modification including transportation both ways will be borne by bidder.

3.2 **ACTUATORS-** The control valves shall be operated pneumatically (with pneumatic actuator)

3.2.1 **Pneumatic Actuator**

The actuator shall be designed for a thrust of 120% of valve's shut-off pressure at an airline supply pressure of 5 Kg/Sq. cm.

The pneumatic actuators shall be employed for modulating or ON/OFF duty, as specified in Data Sheet-A. The bidder shall be responsible for proper selection and sizing of valve actuators in accordance with the pressure drops, shut off pressure and valve travel. The pneumatic spring opposed diaphragm actuator or piston actuator as the case may be for modulating duty shall be capable of positioning the associated valve at desired opening for all the operating conditions specified. If the project specific requirement calls for multi-spring opposed diaphragm actuator, the same shall be provided by the bidder without any commercial implication to BHEL.

3.2.2 The actuator design shall allow valve assembly to be mounted at 45° inclination on either side in the vertical plane.

3.2.3 The actuators shall be suitably sized to ensure that the associated valve travel time from full open to full closed position and vice versa is less than 10 seconds or as specified in the datasheet under the most stringent service conditions.

3.2.4 The actuator's hand wheel shall have OPEN & CLOSE direction marking and clockwise rotation as viewed from front shall close the valve.

3.2.5 Each actuator shall be provided with a mechanical pointer attached to stem, moving over a graduated scale with markings, for OPEN, 25%, 50%, 75%, CLOSE positions.

3.3 **Accessories for Control valve with Pneumatic Actuator**

The bidder shall offer all the accessories as specified in the Data Sheet - A for the Pneumatic Actuators under modulating or ON/OFF duty. The accessories specified shall be supplied duly mounted on the valve actuator and piped with SS tube and flare-less SS fittings etc. as per the hook up diagram enclosed in this specification.

3.3.1 Moisture Separator - Separate moisture separator unit, if required, shall be provided for ensuring dryness of air entering I/P as well as the pneumatic actuator/power cylinder shall be supplied with each control valve, as per the hook-up diagram enclosed in the specification. The moisture separator unit shall be based on coalescence/leverage & buoyancy/other equivalent principle for its operation.

3.4 **Painting** of the control valve assembly shall be as per the Customer's Painting Specification, to be furnished during project specific enquiry. In the absence of specification for painting, bidder to submit their standard painting procedure/specification for BHEL's approval.

Epoxy based paint (corrosion-resistant) to be provided for control valves for coastal environment. This shall be informed during the project specific enquiry and bidder to comply the same without any commercial implication to BHEL.

3.5 **Sub-vendor list** –
The sub-vendor list has been enclosed in this specification. Bidder may propose sub-vendors other than those listed in the specification, with supporting documents/credentials for their proven track record. However, all sub-vendors are subjected to BHEL's/Customer's approval without any commercial implication to BHEL.

4.0 TESTING AND INSPECTION

4.1 The testing and inspection of the equipment/items shall be in line with the approved QAP

4.2 The cost of all tests as per the approved QAP will be deemed to have been included in the bid.

4.3 In case, the bidder is supplying the valve from outside India, the third party inspection shall be arranged and considered by the bidder in their offer.

5.0 SPARES AND CONSUMABLES

5.1 **Start-up/Commissioning Spares**

The bidder shall include one set of packing and gasket (all types including body, bonnet) along with each control valve within the valve's quoted price.

5.2 **Parts of Control valve assembly, valve accessories**

The bidder shall quote for all the other items viz. Control valve sub-assembly items and other accessories in their offer, in the price format. The requirement shall be given during project specific enquiry.

6.0 DRAWINGS AND DOCUMENTS

6.1 The bidder shall furnish the following documents along with the bid : 4 Sets

6.1.1 Schedule of prices in the Price Format.

6.1.3 Quality Plan - duly signed & stamped.

6.1.4 Compliance certificate duly signed & stamped.

6.1.5 List of Alternate trim material offered against each datasheet - supported by documentary evidence authenticating superiority of trim material.

6.1.6 The following documents for low load feed control valve :-
(i) Credentials/proven track record of the valve model supplied by the bidder.
(ii) Catalog along with other required technical details of the valve model offered.

6.2 The successful bidder shall furnish the following documents to BHEL during the contract stage viz. after the award of contract :-

A) PRIMARY DOCUMENTS

- ✓ DATA SHEET, CALCULATION, BOQ/BOM, GA DRAWING, EDGE Preparation details & HOOK UP /INSTALLATION DRAWING for Control Valves
- ✓ QAP for Control Valves

B) SECONDARY DOCUMENTS

- ✓ O&M Manual for Control Valves

7.0 MARKING AND PACKING

7.1 **Marking**

A stainless steel metal nameplate should be permanently fixed on each equipment giving its tag number and technical specifications.

7.2 **Packing**

All equipment / materials shall be suitably packed and protected for the entire period of dispatch, storage and erection against impact, abrasion, corrosion, incidental damage due to vermin, sunlight, high temperature, rain, moisture, humidity, dust, sea water spray (where applicable) as well as rough handling and delays in transit and storage in open. Guidelines for packing are enclosed in the specification (Document no. PE-GL-999-145-H021).

8.0 APPLICABLE DATA SHEET FORMS

This document shall be read with one or more of the following data sheet forms:

- Data Sheet A for Control Valve with Pneumatic Actuator : Data Sheet No. AX; X=1 to 21
- Data Sheet A for Accessories (Modulating Duty) : Data Sheet No. B1
- Data Sheet A for Accessories (ON/OFF Duty) : Data Sheet No. B2

SECTION-D

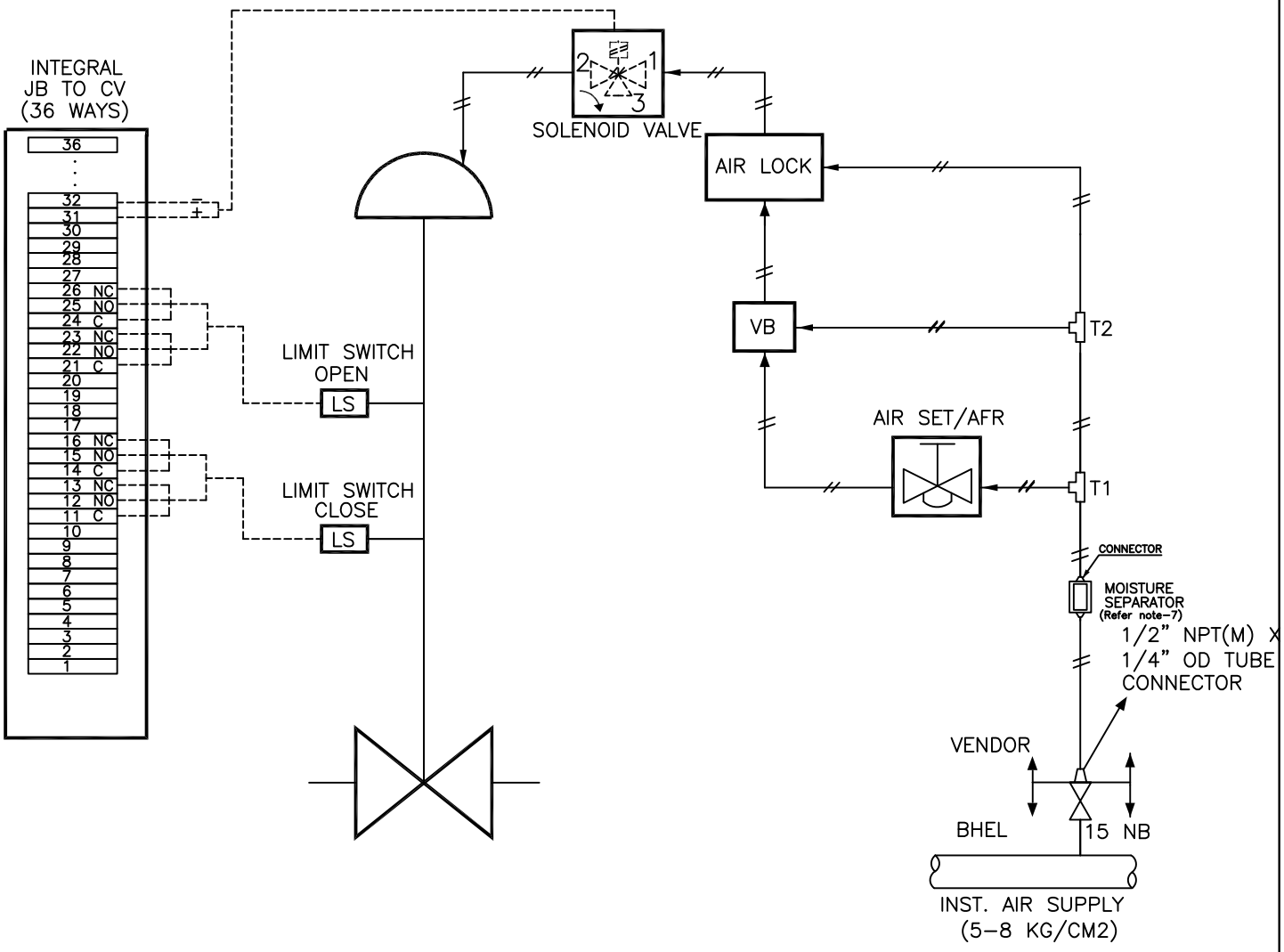
SPECIFICATION FOR SMART POSITIONER

		TECHNICAL SPECIFICATION & DATA SHEET FOR CONTROL VALVE WITH ACCESSORIES (PNEUMATICALLY OPERATED)	**Specification No.:** PE-TS-20-145-H104B **Rev. No. 00** **Date :** 25.03.2026
		SPECIFICATIONS FOR MICROPROCESSOR BASED SMART POSITIONER	
1	Electrical	a) Input Demand Signal	4-20 mA **for HART compatible; Soft Signal for Profibus**
		b) Power Supply	Loop Powered from the output card of Control System.
		c) HART / Profibus Protocol	Compatibility for Remote Calibration & Diagnostics (Super-imposed HART signal on input Signal 4-20 mA and Profibus
		d. Valve position sensing	Position sensing: 4-20 mA output signal for HART and soft signal for Profibus compatible
2	Environment	a) Operating temp.	(-)30 To 80 Deg. C
		b) Humidity	0-95 %
		c) Protection class	IP-65 Minimum
3	Software for Configuration and Diagnostics	Software	Software shall meet the requirements for Configuration, Diagnostics, Calibration and Testing of the actuator.
		Diagnostic/Test features	Advanced diagnostic features like Stroke counter or Travel counter, Leakage in actuators, Valve Signature analysis, Step Response test, Valve friction /Jamming detection etc to be provided.
4	Test reports/ Certificates	Factory Valve Signature Tests Reports (Pr Vs Valve travel and Travel Vs I/P signal) are to be provided.	
		Test certificates as per Manufacture Standard/Relevant Standard are to be submitted.	
5	Configuration/ Calibration.	Remote & Local Calibration, Auto & Manual Calibration shall be possible.	
6	Operating Range	Full range/ Split range.	
7	Modes	Valve Action	Direct / Reverse Valve Action
		Flow Characterization	Possible to fit Valve Characteristic Curves- Linear , Equal percentage etc.
8	Fail Safe/Fail Freeze	Fail Safe/Fail Freeze feature is to be provided. (In case the fail freeze feature is not intrinsic to the positioner, Bidder shall achieve the same externally through solenoid valve connected in the pneumatic circuit).	
9	Pneumatic	Air capacity	Sufficient to handle the valves & actuators selected/ Boosters to be supplied, if required.
		Air pressure	To suit the air supply pressure/quality available.
		Process connection	¼" NPT
10	Performance	Characteristic deviation	<=0.5 % of span.
		Ambient temp effect	<=0.01 %/ deg C or better.
11	EMC & CE Compliance	Required to International Standard like EN/IEC.	EN50081-2 & EN50082 or equivalent.
12	Accessories	In-built Operator Panel	Display with push buttons for configuration and display on the positioner itself (Password protected/Hardware lock).
		Press Gauge Block	For supply & output pressures, Air Filter Regulator and other accessories shall be provided on as required basis for making system complete.
		Electrical Cable Entry	1/2'"NPT, side or bottom entry to avoid water **ingress**
		Valves Mounting Assembly	**For Single acting/Double acting actuators on as required basis**

SECTION-D

HOOK-UP DIAGRAM

CONTROL VALVE HOOK-UP DIAGRAM
(FOR ON / OFF TYPE)

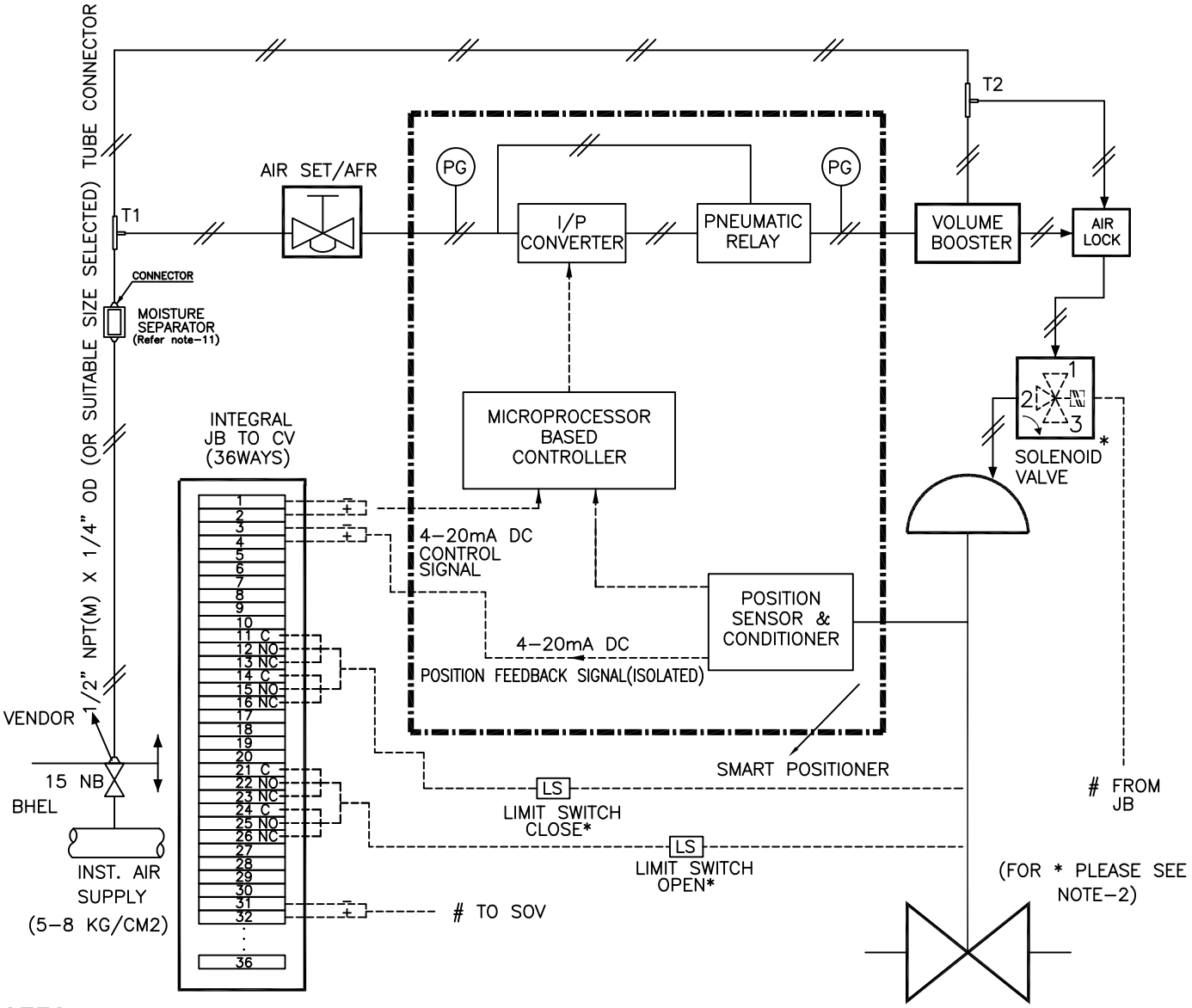


NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / ELECTRIC SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET.
2. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE–ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
3. MOUNTING ACCESSORIES AS REQUIRED.
4. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET.
5. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
6. 12 METERS 1/4" SS TUBING (AS PER ACCESSORIES DATA SHEET) & 1 SET OF SS FITTINGS TO BE SUPPLIED FOR EACH CONTROL VALVE FOR CONNECTION TO ISO VLV AT INST AIR HEADER ON ONE END AND TO AIR LOCK RELAY/AIR FILTER REGULATOR ON THE OTHER END. ALL THE SS FITTINGS SHALL BE DOUBLE COMPRESSION TYPE.
7. MOISTURE SEPARATOR TO BE PROVIDED FOR ONE OF THE PROJECTS. NECESSARY HARDWARE AND SUITABLE CONNECTOR FOR MOUNTING THE MOISTURE SEPARATOR SHALL ALSO BE PROVIDED BY THE BIDDER.

BHEL

CONTROL VALVE HOOK-UP DIAGRAM
(WITH SMART POSITIONER)

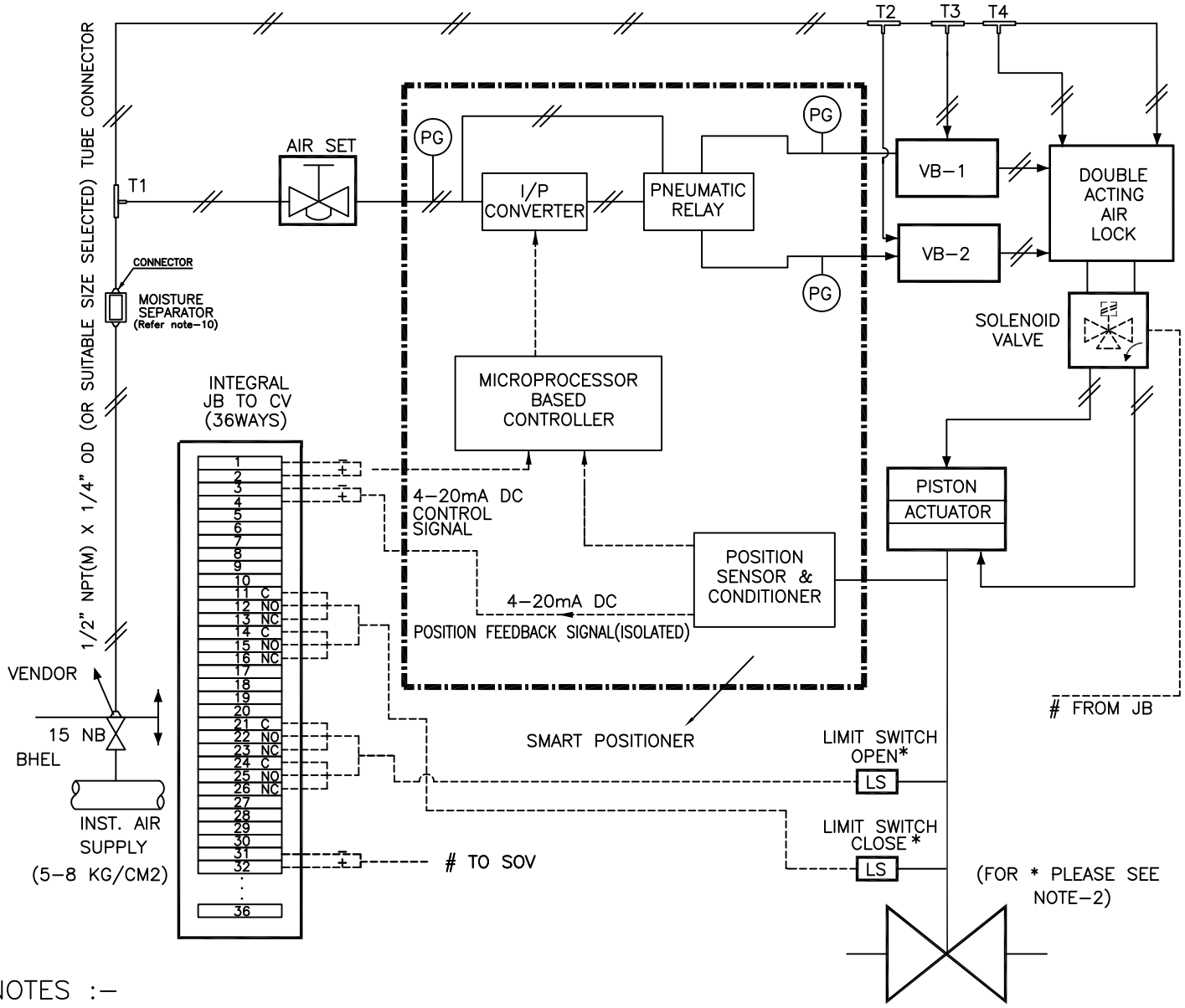


NOTES :-

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY IF INDICATED IN DATA SHEET OF PROJECT SPECIFIC ORDER.
3. SOLENOID VALVES PORTS CONDITION:
   PORT 1 AND 2 SHALL BE CONNECTED UNDER DE-ENERGISED CONDITION.
   PORT 2 AND 3 SHALL BE CONNECTED UNDER ENERGISED CONDITION.
4. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY AT INLET AND OUTLET OF SMART POSITIONERS.
5. MOUNTING ACCESSORIES AS REQUIRED.
6. POSITION FEEDBACK SIGNAL SHALL BE 2 WIRE 4-20mA ISOLATED SIGNAL.
7. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET.
8. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
9. TUBING AND FITTINGS TO BE PROVIDED AS FOLLOWS:-
   (a) TUBING: MATERIAL- SS316; SIZE- 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; LENGTH- 12 METER PER CV.
   (b) FITTINGS: MATERIAL- SS/BRASS, DOUBLE COMPRESSION TYPE; TUBE CONNECTOR- 1/2" NPT(M) X 1/4" OR SUITABLE SIZE SELECTED FOR EACH CONTROL VALVE ASSEMBLY; FITTINGS FOR CONNECTION TO AIR FILTER REGULATOR,AIR LOCK RELAY,IA HEADER ISOLATION VALVE AND EQUAL TEES.
10. VOLUME BOOSTER/DUMP VALVE AND ITS RELATED TUBING & CONNECTORS SHALL BE PROVIDED, IF REQUIRED TO ACHIEVE THE DESIRED TRAVEL TIME (<10Sec). AIR CONNECTION TO VOLUME BOOSTER/DUMP VALVE SHALL ALSO BE PROVIDED.
11. MOISTURE SEPARATOR TO BE PROVIDED FOR ONE OF THE PROJECTS. NECESSARY HARDWARE AND SUITABLE CONNECTOR FOR MOUNTING THE MOISTURE SEPARATOR SHALL ALSO BE PROVIDED BY THE BIDDER.

BHEL

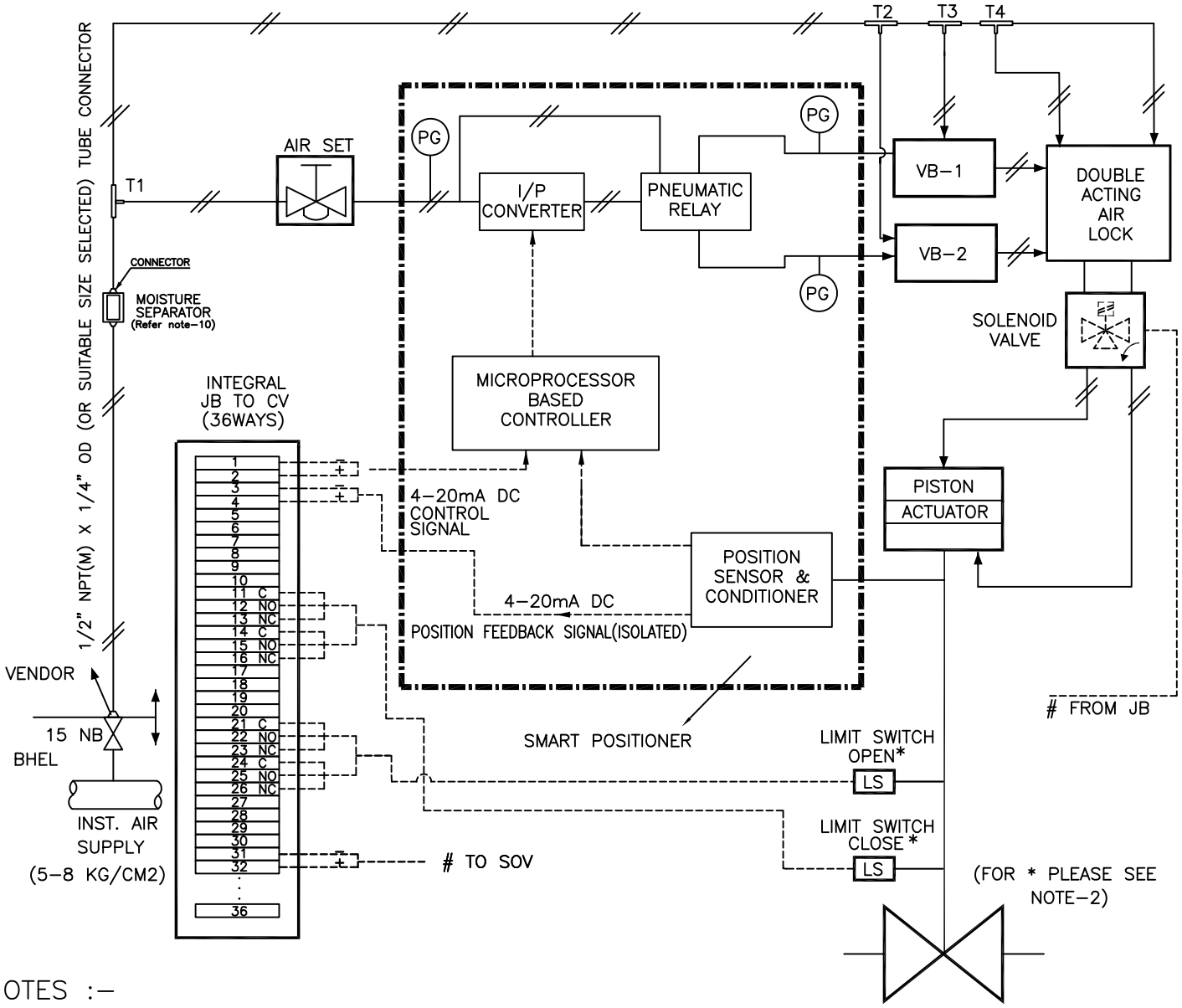
STANDARD CONTROL VALVE HOOK-UP DIAGRAM
(DOUBLE ACTING PISTON ACTUATOR WITH SMART POSITIONER)



NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET. AIR LOCK SHALL BE PROVIDED ACCORDINGLY.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY IF INDICATED IN DATA SHEET OF PROJECT SPECIFIC ORDER.
3. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY & OUTPUT(S).
4. MOUNTING ACCESSORIES AS REQUIRED.
5. POSITION FEEDBACK SIGNAL SHALL BE 2 WIRE 4–20mA ISOLATED SIGNAL.
6. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET
7. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
8. 12 METERS I/4" SS TUBING (AS PER ACCESSORIES DATA SHEET) & 1 SET OF SS FITTINGS TO BE SUPPLIED FOR EACH CONTROL VALVE FOR CONNECTION TO ISO VLV AT INST AIR HEADER ON ONE END AND TO AIR LOCK RELAY/AIR FILTER REGULATOR ON THE OTHER END. ALL THE SS FITTINGS SHALL BE DOUBLE COMPRESSION TYPE.
9. VOLUME BOOSTER (ALONG WITH TEE–T2 AND RELATED TUBING & CONNECTORS) SHALL BE PROVIDED IF REQUIRED. AIR CONNECTION TO VOLUME BOOSTER FROM TEE–T2 & TEE–T3 SHALL BE PROVIDED.
10. MOISTURE SEPARATOR TO BE PROVIDED FOR ONE OF THE PROJECTS. NECESSARY HARDWARE AND SUITABLE CONNECTOR FOR MOUNTING THE MOISTURE SEPARATOR SHALL ALSO BE PROVIDED BY THE BIDDER.

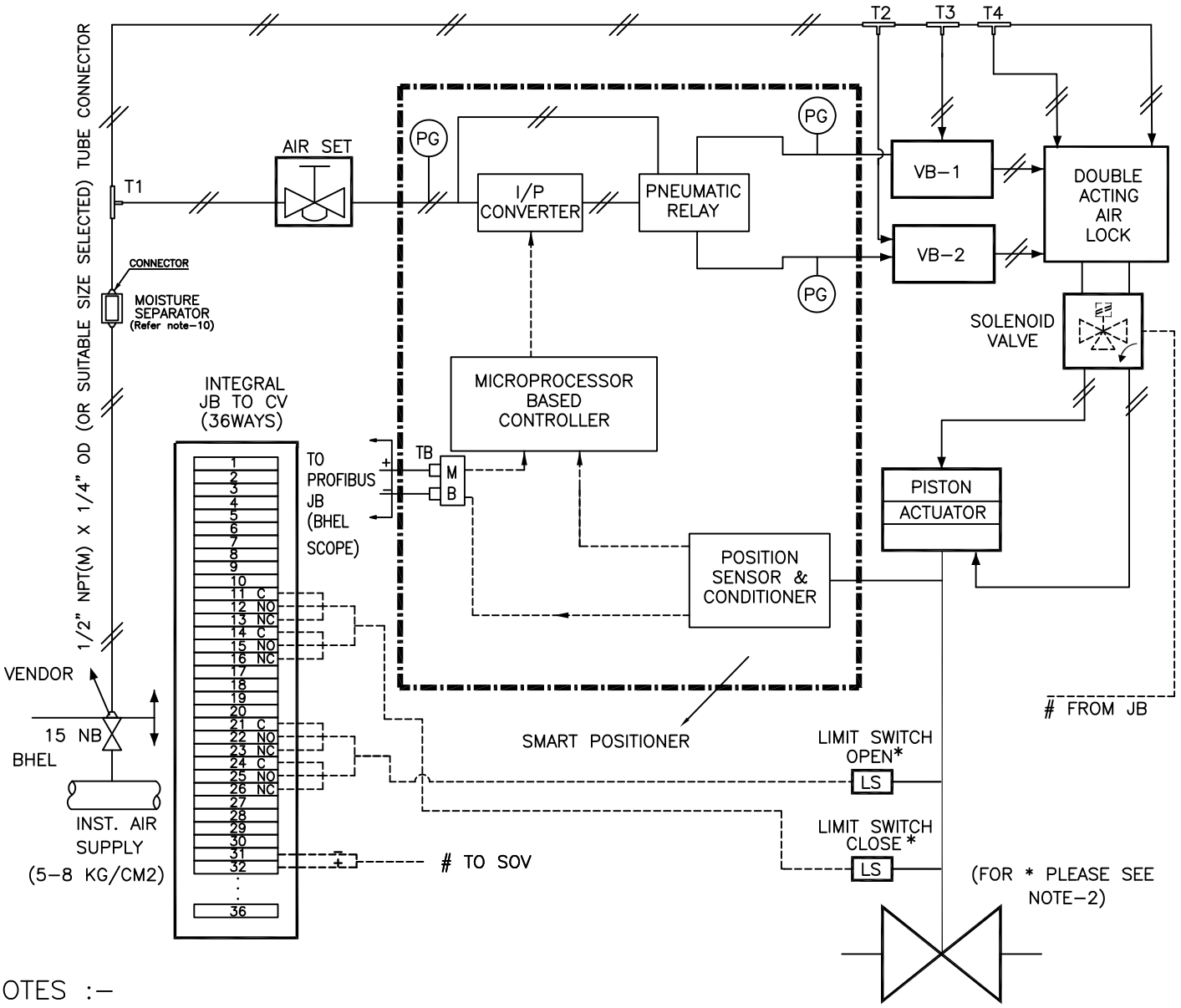
STANDARD CONTROL VALVE HOOK-UP DIAGRAM
(DOUBLE ACTING PISTON ACTUATOR WITH SMART POSITIONER)



NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET. AIR LOCK SHALL BE PROVIDED ACCORDINGLY.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY IF INDICATED IN DATA SHEET OF PROJECT SPECIFIC ORDER.
3. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY & OUTPUT(S).
4. MOUNTING ACCESSORIES AS REQUIRED.
5. POSITION FEEDBACK SIGNAL SHALL BE 2 WIRE 4–20mA ISOLATED SIGNAL.
6. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET
7. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
8. 12 METERS I/4" SS TUBING (AS PER ACCESSORIES DATA SHEET) & 1 SET OF SS FITTINGS TO BE SUPPLIED FOR EACH CONTROL VALVE FOR CONNECTION TO ISO VLV AT INST AIR HEADER ON ONE END AND TO AIR LOCK RELAY/AIR FILTER REGULATOR ON THE OTHER END. ALL THE SS FITTINGS SHALL BE DOUBLE COMPRESSION TYPE.
9. VOLUME BOOSTER (ALONG WITH TEE–T2 AND RELATED TUBING & CONNECTORS) SHALL BE PROVIDED IF REQUIRED. AIR CONNECTION TO VOLUME BOOSTER FROM TEE–T2 & TEE–T3 SHALL BE PROVIDED.
10. MOISTURE SEPARATOR TO BE PROVIDED FOR ONE OF THE PROJECTS. NECESSARY HARDWARE AND SUITABLE CONNECTOR FOR MOUNTING THE MOISTURE SEPARATOR SHALL ALSO BE PROVIDED BY THE BIDDER.

STANDARD CONTROL VALVE HOOK-UP DIAGRAM (DOUBLE ACTING PISTON ACTUATOR WITH SMART POSITIONER-PROFIBUS BASED)



NOTES :–

1. POSITION OF EACH VALVE ON SUPPLY AIR FAILURE / SIGNAL FAILURE SHALL BE AS PER SPECIFICATION / DATA SHEET. AIR LOCK SHALL BE PROVIDED ACCORDINGLY.
2. SOLENOID VALVE & LIMIT SWITCHES WILL BE PROVIDED ONLY IF INDICATED IN DATA SHEET OF PROJECT SPECIFIC ORDER.
3. PRESSURE GAUGES REQUIRED FOR AIR SUPPLY & OUTPUT(S).
4. MOUNTING ACCESSORIES AS REQUIRED.
5. PROFIBUS BASED SMART POSITIONER SHLL BE PROVIDED.
6. JB TERMINALS SHALL BE CAGE CLAMP TYPE SUITABLE FOR 2.5 SQ. MM COPPER WIRE. EXTERNAL CONNECTION, OF PLUG IN TYPE OR THROUGH CABLE GLAND, SHALL BE AS PER DATA SHEET
7. ALL APPLICABLE ACCESSORIES SHALL BE PROVIDED AS INDICATED IN THE INDIVIDUAL CONTROL VALVE DATA SHEET / ACCESSORIES DATA SHEET.
8. 12 METERS I/4" SS TUBING (AS PER ACCESSORIES DATA SHEET) & 1 SET OF SS FITTINGS TO BE SUPPLIED FOR EACH CONTROL VALVE FOR CONNECTION TO ISO VLV AT INST AIR HEADER ON ONE END AND TO AIR LOCK RELAY/AIR FILTER REGULATOR ON THE OTHER END. ALL THE SS FITTINGS SHALL BE DOUBLE COMPRESSION TYPE.
9. VOLUME BOOSTER (ALONG WITH TEE–T2 AND RELATED TUBING & CONNECTORS) SHALL BE PROVIDED IF REQUIRED. AIR CONNECTION TO VOLUME BOOSTER FROM TEE–T2 & TEE–T3 SHALL BE PROVIDED.
10. MOISTURE SEPARATOR TO BE PROVIDED FOR ONE OF THE PROJECTS. NECESSARY HARDWARE AND SUITABLE CONNECTOR FOR MOUNTING THE MOISTURE SEPARATOR SHALL ALSO BE PROVIDED BY THE BIDDER.
11. EXPANDER/REDUCER BETWEEN VALVE BODY AND PIPE SHALL BE PROVIDED BY BHEL.
12. EXPANDER/REDUCER BETWEEN VALVE BODY AND DIFFUSER/CARTRIDGE/SILENCER (IF APPLICABLE) SHALL BE PROVIDED BY BIDDER.

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SECTION – D

GUIDELINES FOR PACKING

Guidelines for Packing

- ✓ After inspection of control valves assembly. Smart Positioner along with Pressure Gauge shall be disassembled & packed separately.
- ✓ Packing shall ensure no deterioration in mechanical or functional integrity during transportation, storage, and handling until commissioning. Bidder shall be fully responsible for any damage arising due to inadequate packing or preservation.
- ✓ Valve stem shall be mechanically locked at mid-travel (approx. 40–50%) using travel locking devices.Free movement of valve stem or actuator during transportation shall not be permitted.
- ✓ Threaded connection of Smart Positioner & Pressure Gauge shall be shipped with threaded metallic or polymer plugs (end caps) fitted to avoid any damage.
- ✓ Instructions with sketch for mounting the Smart Positioner & Pressure Gauge shall be sent along with the aforesaid accessories.
- ✓ Packing of the control valves and Smart Positioner along with Pressure Gauge shall be done in separate wooden boxes/cases in order to avoid damage during transit and also during storage at site in tropical climatic conditions for a period of 18-24 months.
- ✓ Other items like PC and smart positioner's configuration/diagnostic software (as applicable), shall be duly packed in separate packaging boxes/cartons. Inner packing material shall consist of bubble wrap sheets to absorb moisture. Corners of these cartons shall be protected with foam/thermocol cushioning to avoid damage during transit.
- ✓ Proper care shall be taken to avoid damage to the painted surface during transit.
- ✓ All valves & smart positioner along with pressure gauges shall be packed properly with good quality wooden planks with proper wooden frame support. ESD-safe bubble wrap or foam sheets in Moisture Barrier Bags (MBBs) & desiccants in temper proof hard plastic boxes for Smart Positioner. Also, the valves are internally covered with polythene sheets to protect from the water and moisture entry. Humidity indicator card inside crate shall be provided.
- ✓ Stronger shock absorbing cover material like expanded Polyurethane which can take any direct impact on it shall be used for packing.
- ✓ Butt welded ends shall be protected by polythene caps/rubbers and protectors.
- ✓ Proper reaper support to be provided in the packing and Valve assembly to be aligned properly to avoid the damage of accessories during transit due to vibration effect.

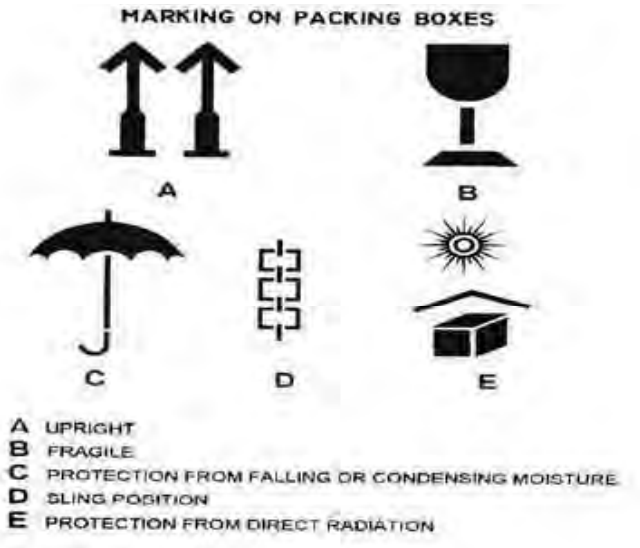
Smart Positioner Protection

Smart positioners shall be provided with:

- ✓ OEM protective covers or rigid protective shrouds
- ✓ Electrical conduit entries sealed with dummy glands
- ✓ Positioner feedback levers, cams, and linkages shall be rigidly immobilized to prevent relative movement.
- ✓ The positioner housing, shaft, or feedback arm shall not be subjected to any mechanical load.

Marking on the Packing Cases/ Boxes

✓ Marking for Fragile & Condensing environment shall be done on the packing box as indicated below :-



The Following Details are to be marked on the Packing Cases/boxes

- Address of consignee
- Purchase order no.
- Description of items or title of packing list(including valve tag nos., sl. No. of items as per Purchase Order)
- Weight
- Dimension of the Box
- Marking showing upright position
- Marking showing sling position
- Marking showing umbrella(i.e. for machines/components to be stored under covered storage)

SECTION-D

SUB-VENDOR LIST

SUB VENDOR LIST

(FOR ACCESSORIES)

Sl. No.	ITEM DESCRIPTION	SUB-VENDORS
1.	SMART POSITIONER	(a)SIEMENS,GERMANY (b)ABB, USA (c)EMERSON(FISHER ROSEMOUNT),USA (d)MASONEILAN(DRESSER),FRANCE (e)YAMATAKE, JAPAN (f)FLOW SERVE, USA (g)FOX BORO, GERMANY (h)METSO,USA
2.	AIR FILTER REGULATOR	(a)SHAVO-NORGREN, INDIA(MUMBAI) (b)FAIRCHILD, USA (c)SMC PNEUMATICS, INDIA(NOIDA) (d)PLACKA, INDIA(CHENNAI)
3.	AIR LOCK RELAY	(a)PLACKA, INDIA(CHENNAI) (b)SHAVO-NORGREN, INDIA(MUMBAI) (c)SCHRADER SCHORILL DUNCAN LTD., INDIA(MUMBAI) (d)FAIRCHILD, USA (e)SMC PNEUMATICS, INDIA(NOIDA)
4.	SOLENOID VALVE	(a)ASCO, USA (b)ROTEX, INDIA(VADODARA) (c)SCHRADER, INDIA(PUNE) (d)AVCON, INDIA(PUNE) (e)HERION-NORGREN, GERMANY (f)IMI-NORGREN, GERMANY (g)JAFFERSON, ARGENTINA
5.	VOLUME BOOSTER	(a) FAIRCHILD, USA (b) RK CONTROLS, INDIA(THANE)
6.	JUNCTION BOX	(a) K.S. INSTRUMENTS PVT.LTD., INDIA (Bangalore) (b) Shrenik & Company, INDIA(Ahmedabad) (c) SUCHITRA INDUSTRIES, INDIA (Bangalore) (d) FLEXPRO ELECTRICALS PVT. LTD., INDIA(Gujarat) (e) AJMERA INDUSTRIAL & ENGINEERING WORKS, INDIA(Mumbai)

SECTION-D

DOCUMENTATION REQUIREMENT

DOCUMENTATION REQUIREMENT

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY ALL THE BIDDERS ALONG WITH THE BID	
Sl. No.	**DOCUMENT TITLE**
1	PQR CREDENTIALS
2	COMPLIANCE CERTIFICATE

DRAWINGS & DOCUMENTS TO BE SUBMITTED BY SUCCESSFUL BIDDER AFTER AWARD OF CONTRACT ALONG WITH SUBMISSION SCHEDULE		
Sl. No.	**DOCUMENT TITLE**	**FIRST SUBMISSION SCHEDULE**
1	CONTROL VALVE DATA SHEETS, DIMENSION DRAWING, Cv & NOISE CALCULATION	Within 15 days from PO
2	Cv TEST REPORTS	Test Report to be submitted prior to final inspection
BHEL/Customer comments/approval and Vendor Resubmission schedule		
BHEL 1st Comment		Within 10 days of Vendor submission.
Vendor Resubmission		Within 10 days of BHEL/ Customer Comments.
BHEL /Customer Comment/Approval on subsequent revision		Within 18 days of Vendor submission/Resubmission

DRAWINGS & DOCUMENTS TO BE SUBMITTED AS FINAL/AS-BUILT DOCUMENT		
Sl. No.	**DOCUMENT TITLE**	**SUBMISSION SCHEDULE**
1	APPROVED DOCUMENTS	Along with dispatch
2	Cv TEST REPORT	
3	O&M MANUAL	
4	ALL TEST CERTIFICATES	

SECTION-D

COMPLIANCE CERTIFICATE

COMPLIANCE CERTIFICATE
For
Control Valve with accessories (OTHER THAN FDV)

(To be Signed & Stamped by the Bidder)

Specification no.: PE-TS-20-145-H104B

We shall comply with the following: -

1. It is hereby confirmed that the technical specification (including Quality plan) has been read and understood. We confirm compliance to the tender specification including any pre-bid clarification and amendments issued prior to techno-commercial bid opening without any deviation.

2. It is hereby declared that any technical submittals which was not specifically asked by BHEL in the NIT shall not to be considered as part of bid and shall not be evaluated by BHEL.

Signature of authorised Representative

Name and Designation:

Name & Address of the Bidder:

Date

PRE-QUALIFICATION REQUIREMENT

	CONTROL VALVES WITH ACCESSORIES (Pneumatically Operated) **(Other than FDV)** RATE CONTRACT	PE-PQ-999-145-H001	
		DATE	25.03.2026
		REV NO	00

1.0	Bidder should be Original equipment manufacturer (OEM) for CONTROL VALVES. In case bidder is not the OEM, evaluation shall be done as following :- (i) If bidder happens to be an Indian subsidiary of foreign OEM, then credentials of foreign OEM can be considered for meeting the PQR. (ii) If bidder happens to be authorised channel partner or has a valid collaboration agreement/licensing agreement with some other company or being a Joint Venture company, then the credentials of collaborator/licensing company/Principal company/JV partner can also be considered for meeting PQR as per the scope of work. The scope matrix shall include their respective roles including design vetting, manufacturing of critical component and warranty/ guarantee. If bidder qualifies on the basis of credentials of their principal/ JV partner/ Collaborator etc., then the principal/ JV partner/ Collaborator shall be responsible for overall design vetting and warranty/ guarantee of the package.
2.0	The Product being offered by the bidder should be in use successfully in power plant or any other industrial application for at least 1 (One) year. Bidder to submit either of following supporting documents for the product (control valve) with the following parameters :- (i) Minimum valve size = 4” (ii) Minimum pressure rating = ANSI #300 Copy of minimum 1 (One) Performance Certificate from end user / Customer certifying that product is running successfully for 1 (One) year from date of commissioning. The certificate should clearly indicate date of commissioning, date of issue of certificate and name/designation of the certificate issuer. Copy of purchase order & technical parameters to be attached along with the performance certificate. The date of satisfactory performance feedback certificate should not be later than the date of subject enquiry/NIT. OR Copy of repeat orders from minimum 2 (Two) different purchasers. Order received by supplier from same purchaser with a gap of minimum 2 (Two) years shall be considered as repeat order. Copy of technical parameters for each order to be attached. The date of repeat order should not be later than the date of subject enquiry/NIT.
3.0	Bidder to furnish experience list of last 5 years indicating customer name, purchase order reference, item supplied & year of supply to establish the continuity of business.
4.0	Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.
5.0	Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidders/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.
6.0	After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

SUB-VENDOR QUESTIONNAIRE

i.	***Item/Scope of Sub-contracting***	
ii.	***Address of the registered office***	***Details of Contact Person (Name, Designation, Mobile, Email)***
iii.	***Name and Address of the proposed Sub-vendor's works where item is being manufactured***	***Details of Contact Person: (Name, Designation, Mobile, Email)***
iv.	***Annual Production Capacity for proposed item/scope of sub-contracting***	
v.	***Annual production for last 3 years for proposed item/scope of sub-contracting***	
vi.	***Details of proposed works***	
1.	***Year of establishment of present works***	
2.	***Year of commencement of manufacturing at above works***	
3.	***Details of change in Works address in past (if any)***	
4.	***Total Area***	
	Covered Area	
5.	***Factory Registration Certificate***	***Details attached at Annexure – F2.1***
6.	***Design/ Research & development set-up (No. of manpower, their qualification, machines & tools employed etc.)***	***Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design) Details attached at Annexure – F2.2 (if applicable)***
7.	***Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)***	***Details attached at Annexure – F2.3***
8.	***After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)***	***Applicable / Not applicable Details attached at Annexure – F2.4***
9.	***Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any***	***Details attached at Annexure – F2.5***
10.	***Sources of Raw Material/Major Bought Out Item***	***Details attached at Annexure – F2.6***
11.	***Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing***	***Details attached at Annexure – F2.7***
12.	***Manufacturing facilities***	***Details attached at Annexure – F2.8***

SUB-VENDOR QUESTIONNAIRE

	(List of machines, special process facilities, material handling etc.)	
13.	*Testing facilities* *(List of testing equipment)*	*Details attached at Annexure – F2.9*
14.	*If manufacturing process involves fabrication then-* *List of qualified Welders* *List of qualified NDT personnel with area of specialization*	*Applicable / Not applicable* *Details attached at Annexure – F2.10* *(if applicable)*
15.	*List of out-sourced manufacturing processes with Sub-Vendors' names & addresses*	*Applicable / Not applicable* *Details attached at Annexure. –F2.11* *(if applicable)*
16.	*Supply reference list including recent supplies*	*Details attached at Annexure – F2.12* *(as per format given below)*

Project/ package	*Customer Name*	*Supplied Item (Type/Rating/Model /Capacity/Size etc)*	*PO ref no/date*	*Supplied Quantity*	*Date of Supply*

17.	*Product satisfactory performance feedback letter/certificates/End User Feedback (Refer Clause no. 2.0 of PRE-QUALIFICATION REQUIREMENT attached with specification)*	*Attached at annexure - F2.13*
18.	*Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)* *Note:- Reports need not to be submitted*	*Applicable / Not applicable* *Details attached at Annexure – F2.14* *(if applicable)*
19.	*Statutory / mandatory certification for the proposed product*	*Applicable / Not applicable* *Details attached at Annexure – F2.15* *(if applicable)*
20.	*Copy of ISO 9001 certificate* *(if available)*	*Attached at Annexure – F2.16*
21.	*Product technical catalogues for proposed item (if available)*	*Details attached at Annexure – F2.17*

Note:-

1) In case bidder is not the OEM, this questionnaire to be filled by OEM (Original Equipment Manufacturer).

Name:		*Desig:*		*Sign:*		*Date:*	

Company's Seal/Stamp:-

	SUB-VENDOR QUESTIONNAIRE

	PRE - QUALIFYING REQUIREMENTS
PROJECT:	**RATE CONTRACT**
PACKAGE:	**CONTROL VALVE**

CRITERIA FOR EVALUATION - FINANCIAL :

	Amount (in Rs.)
Average annual financial turnover value during any three out of last six Financial Years as on tender due date should not be less than	**10,69,00,000.00**

Rs.Ten Crore Sixty Nine Lakh only

Notes:-

a) The bidder has to submit financial accounts (audited, if applicable comprising of Audit report, Balance Sheet, Profit & Loss A/c Statement and Notes/Schedules pertaining to Turnover/Sales/Revenue), for any three out of last six Financial Years (or from the date of incorporation, whichever is less) as on tender due date to review the above criteria. In case the incorporation of vendor is less than 3 years, average annual financial turnover shall be calculated based on available information as below:-

i) If the accounts are available for <= 1 Financial Year, the Average Annual Turnover shall be calculated based on available information divided by 1 (One).

ii) If the accounts are available for >1 but < = 2 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 2 (Two).

iii) If the accounts are available for >2 but <= 3 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 3 (Three).

b) Foreign bidder is to submit a latest report from reputed third party business rating agency like Dun & Bradstreet, Credit reform etc. in addition to the documents mentioned at point (a) above for review of above criteria.

c) Other Income shall not be considered for arriving at Annual Turnover/Sales.For evaluation purpose,turnover figure excluding taxes shall be considered.

d) For evaluation of foreign bidder, exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two part bid) shall be considered.

e)Bidder who is 50% or above subsidiary of any other company including those registered outside India and does not meet any of the above Financial Criteria, such bidder may be qualified based on credentials of its holding company provided such holding company meets the above PQR criteria. In such case, the Bidder would be required to furnish a Letter of Support from its Holding Company, pledging unconditional and irrevocable financial support for the execution of the Contract by the Bidder in case of award.

f)In cases where audited results for the last financial year as on the date of Techno Commercial bid opening are not available, a Certificate would be required from CEO/CFO stating that the financial results of the Company are under audit as on the date of Techno-commercial bid opening and are not available.

SCHEDULE OF PRICES FOR RATE CONTRACT-CONTROL VALVES (OTHER THAN FDV)		
S. No.	**Description**	**Ex-Works (INR)**
1	MAIN SUPPLY (A)	#VALUE!
2	Cv TEST (B)	#VALUE!
3	SUPERVISION OF E&C-VISIT (C)	#VALUE!
4	SUPERVISION OF E&C-MANDAY (D)	#VALUE!
5	VALVE TRIM (E)	#VALUE!
6	VALVE COMPONENTS AND ACCESSORIES (F)	#VALUE!
7	**TOTAL EX-WORKS PRICE (G=A+B+C+D+E+F)**	**X**
8	**FREIGHT CHARGES (EXCLUDING GST) @ ____% OF TOTAL EX-WORKS (excluding CV Test, Supervsion of E&C)**	
9	**TOTAL EVALUATION PRICE**	#VALUE!

Notes

1	Bidder has to quote only Total Ex-Works Value 'X'. Based on this price, unit price for Main Supply, CV Test, Supervision of E&C-Visit, Supervision of E&C-Mandays,Valve Trim and Valve Components and Accessories, shall be derived for all items as per formula indicated in individual sheets.
2	Bidder to quote freight charges in percentage of their quoted Total Ex-works Prices. Bidder to give single % of freight charges considering delivery anywhere in India in the freight column. Bidder have to give same % of freight for each line item. Further, bidder to quote non-zero freight %.
3	GST shall be paid at actuals

SCHEDULE OF PRICES FOR MAIN SUPPLY (A)

A	B	C	D	E	F	G	H	I	J	K	L	M	
Sl no.	Item no.	Item Description [CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB, INCLUDING COMMISSIONING SPARES (ONE SET OF PACKING AND GASKET)]	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)	% Component for Unit (Ex-Works)	% Component for Total (Ex-Works)	Unit Price (Ex-Works) (INR)	Total Price (Ex-Works) (INR) ('I' X 'J')	FREIGHT CHARGES EXCLUDING GST (INR)
1	CV1.1	Deaerator Pegging from Aux. Steam Header	A1-A(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	14	0.000771620835397134	0.0108026916955599	=+J4*'Control Valve-Total'!$C$9	=+K4*'Control Valve-Total'!$C$9	=M4*'Control Valve-Total'!$C$10%
2	CV1.2	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	4	0.000907789218114275	0.0036311568724571	=+J5*'Control Valve-Total'!$C$9	=+K5*'Control Valve-Total'!$C$9	=M5*'Control Valve-Total'!$C$10%
3	CV1.3	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	19	0.00113473652264284	0.021559993930214	=+J6*'Control Valve-Total'!$C$9	=+K6*'Control Valve-Total'!$C$9	=M6*'Control Valve-Total'!$C$10%
4	CV1.4	Deaerator Pegging from Aux. Steam Header	A1-A(iii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	1	0.00130494700103927	0.00130494700103927	=+J7*'Control Valve-Total'!$C$9	=+K7*'Control Valve-Total'!$C$9	=M7*'Control Valve-Total'!$C$10%
5	CV1.5	Aux Steam to BFPT's	A1-B(i)	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	3	0.00057871562654785	0.00173614687964355	=+J8*'Control Valve-Total'!$C$9	=+K8*'Control Valve-Total'!$C$9	=M8*'Control Valve-Total'!$C$10%
6	CV1.6	Aux Steam to BFPT's	A1-B(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10	0.000771620835397134	0.00771620835397134	=+J9*'Control Valve-Total'!$C$9	=+K9*'Control Valve-Total'!$C$9	=M9*'Control Valve-Total'!$C$10%
7	CV1.7	Aux Steam to BFPT's	A1-B(ii)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2	0.000680841913585706	0.00136168382717141	=+J10*'Control Valve-Total'!$C$9	=+K10*'Control Valve-Total'!$C$9	=M10*'Control Valve-Total'!$C$10%
8	CV2.1	Deaerator Pegging from CRH Line	A2-A(i)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	19	0.00154150666184278	0.0292886265750127	=+J11*'Control Valve-Total'!$C$9	=+K11*'Control Valve-Total'!$C$9	=M11*'Control Valve-Total'!$C$10%
9	CV2.2	Deaerator Pegging from CRH Line	A2-A(i)	B1	12	WC6	SS316 STELLITED/ 17-4PH SS	15	0.00184980799421133	0.02774711991317	=+J12*'Control Valve-Total'!$C$9	=+K12*'Control Valve-Total'!$C$9	=M12*'Control Valve-Total'!$C$10%
10	CV2.3	Deaerator Pegging from CRH Line	A2-A(ii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	3	0.00177273266111919	0.00531819798335757	=+J13*'Control Valve-Total'!$C$9	=+K13*'Control Valve-Total'!$C$9	=M13*'Control Valve-Total'!$C$10%
11	CV2.4	Deaerator Pegging from CRH Line	A2-A(ii)	B1	12	WC9	SS316 STELLITED/ 17-4PH SS	1	0.00212727919334303	0.00212727919334303	=+J14*'Control Valve-Total'!$C$9	=+K14*'Control Valve-Total'!$C$9	=M14*'Control Valve-Total'!$C$10%
12	CV2.5	CRH Steam to BFPT's	A2-B	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	15	0.00123320532947422	0.0184980799421133	=+J15*'Control Valve-Total'!$C$9	=+K15*'Control Valve-Total'!$C$9	=M15*'Control Valve-Total'!$C$10%
13	CV3.1	Drain to Aux Steam From Existing Unit Header to F/T	A3	B1	2	WC9	SS316 STELLITED/ 17-4PH SS	15	0.000232430721026928	0.00348646081540392	=+J16*'Control Valve-Total'!$C$9	=+K16*'Control Valve-Total'!$C$9	=M16*'Control Valve-Total'!$C$10%
14	CV4.1	CEP A/B/C Minimum Recirculation	A4	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	60	0.00045702911293525	0.027421746776115	=+J17*'Control Valve-Total'!$C$9	=+K17*'Control Valve-Total'!$C$9	=M17*'Control Valve-Total'!$C$10%
15	CV5.1	Condensate Spray/Service Water to F/T	A5	B2	1	WC9	SS316 STELLITED/ 17-4PH SS	32	0.000107831440468305	0.00345060609498576	=+J18*'Control Valve-Total'!$C$9	=+K18*'Control Valve-Total'!$C$9	=M18*'Control Valve-Total'!$C$10%
16	CV6.1	Deaerator Overflow	A6(i)	B2	6	WC9	440C	24	0.000371067401079821	0.0089056176259157	=+J19*'Control Valve-Total'!$C$9	=+K19*'Control Valve-Total'!$C$9	=M19*'Control Valve-Total'!$C$10%
17	CV6.2	Deaerator Overflow	A6(ii)	B2	6	WC9	SS316 STELLITED/ 17-4PH SS	14	0.000278300550809866	0.00389620771133812	=+J20*'Control Valve-Total'!$C$9	=+K20*'Control Valve-Total'!$C$9	=M20*'Control Valve-Total'!$C$10%
18	CV7.1	GSC min. flow recirculation	A7(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14	0.000448581386528753	0.00628013941140254	=+J21*'Control Valve-Total'!$C$9	=+K21*'Control Valve-Total'!$C$9	=M21*'Control Valve-Total'!$C$10%
19	CV7.2	GSC min. flow recirculation	A7(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	24	0.000527742807680886	0.0126658273843413	=+J22*'Control Valve-Total'!$C$9	=+K22*'Control Valve-Total'!$C$9	=M22*'Control Valve-Total'!$C$10%
20	CV8.1	Low Load Condensate Control	A8	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	14	0.000466177399124235	0.00652648358773929	=+J23*'Control Valve-Total'!$C$9	=+K23*'Control Valve-Total'!$C$9	=M23*'Control Valve-Total'!$C$10%
21	CV8.2	Low Load Condensate Control	A8	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	19	0.000776962331873725	0.0147622843056008	=+J24*'Control Valve-Total'!$C$9	=+K24*'Control Valve-Total'!$C$9	=M24*'Control Valve-Total'!$C$10%
22	CV8.3	Main Condensate Control	A8	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	29	0.00108774726462322	0.0315446706740732	=+J25*'Control Valve-Total'!$C$9	=+K25*'Control Valve-Total'!$C$9	=M25*'Control Valve-Total'!$C$10%
23	CV9.1	Excess Return to CST	A9	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	37	0.000482782251301814	0.0178629432981671	=+J26*'Control Valve-Total'!$C$9	=+K26*'Control Valve-Total'!$C$9	=M26*'Control Valve-Total'!$C$10%
24	CV10.1	Condensate for Valve Gland Sealing	A10	B1	1	WCB/WCC	SS316 STELLITED/ 17-4PH SS	37	0.000202070946798701	0.00747662503155192	=+J27*'Control Valve-Total'!$C$9	=+K27*'Control Valve-Total'!$C$9	=M27*'Control Valve-Total'!$C$10%
25	CV11.1	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	64	0.00049827658454983	0.0318897014111891	=+J28*'Control Valve-Total'!$C$9	=+K28*'Control Valve-Total'!$C$9	=M28*'Control Valve-Total'!$C$10%
26	CV11.2	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	2	0.000573018072232304	0.00114603614446461	=+J29*'Control Valve-Total'!$C$9	=+K29*'Control Valve-Total'!$C$9	=M29*'Control Valve-Total'!$C$10%
27	CV11.3	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	4	0.000314430411595193	0.00125772164638077	=+J30*'Control Valve-Total'!$C$9	=+K30*'Control Valve-Total'!$C$9	=M30*'Control Valve-Total'!$C$10%
28	CV11.4	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	66	0.000471645617392789	0.0311286107479241	=+J31*'Control Valve-Total'!$C$9	=+K31*'Control Valve-Total'!$C$9	=M31*'Control Valve-Total'!$C$10%
29	CV11.5	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	4	0.000361594973334472	0.00144637989333789	=+J32*'Control Valve-Total'!$C$9	=+K32*'Control Valve-Total'!$C$9	=M32*'Control Valve-Total'!$C$10%
30	CV11.6	HPH-7A/7B Normal Drain to Deaerator	A11-C	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	66	0.000442171533108385	0.0291833211851534	=+J33*'Control Valve-Total'!$C$9	=+K33*'Control Valve-Total'!$C$9	=M33*'Control Valve-Total'!$C$10%
31	CV12.1	HPH-9A/9B Drain to F/T	A12-A(i)	B1	4	WC9	440C	6	0.000482542049393972	0.00289525229636384	=+J34*'Control Valve-Total'!$C$9	=+K34*'Control Valve-Total'!$C$9	=M34*'Control Valve-Total'!$C$10%
32	CV12.2	HPH-9A/9B Drain to F/T	A12-A(i)	B1	6	WC9	440C	47	0.000723813074090959	0.0340192144822751	=+J35*'Control Valve-Total'!$C$9	=+K35*'Control Valve-Total'!$C$9	=M35*'Control Valve-Total'!$C$10%
33	CV12.3	HPH-9A/9B Drain to F/T	A12-A(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	14	0.000542859805568219	0.00760003727795507	=+J36*'Control Valve-Total'!$C$9	=+K36*'Control Valve-Total'!$C$9	=M36*'Control Valve-Total'!$C$10%
34	CV12.4	HPH-8A/8B Drain to F/T	A12-B(i)	B1	4	WC9	440C	8	0.00051832951327794	0.00414663610622352	=+J37*'Control Valve-Total'!$C$9	=+K37*'Control Valve-Total'!$C$9	=M37*'Control Valve-Total'!$C$10%
35	CV12.5	HPH-8A/8B Drain to F/T	A12-B(i)	B1	6	WC9	440C	12	0.000777494269916909	0.00932993123900291	=+J38*'Control Valve-Total'!$C$9	=+K38*'Control Valve-Total'!$C$9	=M38*'Control Valve-Total'!$C$10%
36	CV12.6	HPH-8A/8B Drain to F/T	A12-B(i)	B1	8	WC9	440C	28	0.00103665902655588	0.0290264527435646	=+J39*'Control Valve-Total'!$C$9	=+K39*'Control Valve-Total'!$C$9	=M39*'Control Valve-Total'!$C$10%
37	CV12.7	HPH-8A/8B Drain to F/T	A12-B(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	26	0.000583120702437682	0.0151611382633797	=+J40*'Control Valve-Total'!$C$9	=+K40*'Control Valve-Total'!$C$9	=M40*'Control Valve-Total'!$C$10%
38	CV12.8	HPH 7A/7B Drain to F/T	A12-C(i)	B1	6	WC9	440C	16	0.000727861568064946	0.0116457850890391	=+J41*'Control Valve-Total'!$C$9	=+K41*'Control Valve-Total'!$C$9	=M41*'Control Valve-Total'!$C$10%
39	CV12.9	HPH 7A/7B Drain to F/T	A12-C(i)	B1	8	WC9	440C	32	0.000970482090753261	0.0310554269041043	=+J42*'Control Valve-Total'!$C$9	=+K42*'Control Valve-Total'!$C$9	=M42*'Control Valve-Total'!$C$10%
40	CV12.10	HPH 7A/7B Drain to F/T	A12-C(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	26	0.000545896176048709	0.0141933005772664	=+J43*'Control Valve-Total'!$C$9	=+K43*'Control Valve-Total'!$C$9	=M43*'Control Valve-Total'!$C$10%
41	CV13.1	HPH-7A/7B Drain to HPH-6A/6B	A13-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	8	0.000471645617392789	0.00377316493914231	=+J44*'Control Valve-Total'!$C$9	=+K44*'Control Valve-Total'!$C$9	=M44*'Control Valve-Total'!$C$10%
42	CV13.2	HPH-6A/6B Drain to Deaerator	A13-B	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	8	0.000442171533108385	0.00353737226486708	=+J45*'Control Valve-Total'!$C$9	=+K45*'Control Valve-Total'!$C$9	=M45*'Control Valve-Total'!$C$10%
43	CV14.1	HPH-6A/6B Drain to HPD F/T	A14	B1	6	WC9	440C	8	0.000635621578843304	0.00508497263074643	=+J46*'Control Valve-Total'!$C$9	=+K46*'Control Valve-Total'!$C$9	=M46*'Control Valve-Total'!$C$10%
44	CV15.1	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	11	0.000615528700170613	0.00677081570187674	=+J47*'Control Valve-Total'!$C$9	=+K47*'Control Valve-Total'!$C$9	=M47*'Control Valve-Total'!$C$10%
45	CV15.2	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	4	0.000820704933560817	0.00328281973424327	=+J48*'Control Valve-Total'!$C$9	=+K48*'Control Valve-Total'!$C$9	=M48*'Control Valve-Total'!$C$10%
46	CV15.3	LPH-3 Drain D/S of Drip Pump	A15-B	B1	4	WCB/WCC	SS316 STELLITED/ 17-4PH SS	8	0.000356828231982964	0.00285462585586371	=+J49*'Control Valve-Total'!$C$9	=+K49*'Control Valve-Total'!$C$9	=M49*'Control Valve-Total'!$C$10%
47	CV15.4	LPH-3 Drain D/S of Drip Pump	A15-B	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	25	0.000535242347974446	0.0133810586993611	=+J50*'Control Valve-Total'!$C$9	=+K50*'Control Valve-Total'!$C$9	=M50*'Control Valve-Total'!$C$10%
48	CV16.1	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	3	WC6	SS316 STELLITED/ 17-4PH SS	26	0.000273743702252738	0.00711733625857118	=+J51*'Control Valve-Total'!$C$9	=+K51*'Control Valve-Total'!$C$9	=M51*'Control Valve-Total'!$C$10%
49	CV16.2	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	8	0.00036499160300365	0.0029199328240292	=+J52*'Control Valve-Total'!$C$9	=+K52*'Control Valve-Total'!$C$9	=M52*'Control Valve-Total'!$C$10%
50	CV16.3	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	36	0.000547487404505475	0.0197095465621971	=+J53*'Control Valve-Total'!$C$9	=+K53*'Control Valve-Total'!$C$9	=M53*'Control Valve-Total'!$C$10%
51	CV17.1	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	6	WC9	440C	9	0.000564630483648916	0.00508167435284025	=+J54*'Control Valve-Total'!$C$9	=+K54*'Control Valve-Total'!$C$9	=M54*'Control Valve-Total'!$C$10%
52	CV17.2	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	8	WC9	440C	20	0.000752840644865222	0.0150568128973044	=+J55*'Control Valve-Total'!$C$9	=+K55*'Control Valve-Total'!$C$9	=M55*'Control Valve-Total'!$C$10%
53	CV17.3	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	10	WC9	440C	6	0.000941050806081527	0.00564630483648916	=+J56*'Control Valve-Total'!$C$9	=+K56*'Control Valve-Total'!$C$9	=M56*'Control Valve-Total'!$C$10%
54	CV17.4	LPH-3/2 Alt. Drain to F/T	A17-A(ii)	B1	8	WC9	SS316 STELLITED/ 17-4PH SS	14	0.000564630483648916	0.00790482677108483	=+J57*'Control Valve-Total'!$C$9	=+K57*'Control Valve-Total'!$C$9	=M57*'Control Valve-Total'!$C$10%
55	CV17.5	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	4	WC9	440C	9	0.000341654459099232	0.00307489013189309	=+J58*'Control Valve-Total'!$C$9	=+K58*'Control Valve-Total'!$C$9	=M58*'Control Valve-Total'!$C$10%
56	CV17.6	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	6	WC9	440C	33	0.000512481688648848	0.016911895725412	=+J59*'Control Valve-Total'!$C$9	=+K59*'Control Valve-Total'!$C$9	=M59*'Control Valve-Total'!$C$10%
57	CV17.7	LPH-5/4 Alt Drain to F/T	A17-B(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	14	0.000256240844324424	0.00358737182054193	=+J60*'Control Valve-Total'!$C$9	=+K60*'Control Valve-Total'!$C$9	=M60*'Control Valve-Total'!$C$10%
58	CV17.8	LPH-5/4 Alt Drain to F/T	A17-B(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	14	0.000384361266486636	0.0053810577308129	=+J61*'Control Valve-Total'!$C$9	=+K61*'Control Valve-Total'!$C$9	=M61*'Control Valve-Total'!$C$10%
59	CV18.1	DM Water Make up to Hotwell	A18	B1	3	CF8M	SS316 STELLITED/ 17-4PH SS	2	0.000429794802258785	0.000859589604517569	=+J62*'Control Valve-Total'!$C$9	=+K62*'Control Valve-Total'!$C$9	=M62*'Control Valve-Total'!$C$10%
60	CV18.2	DM Water Make up to Hotwell	A18	B1	4	CF8M	SS316 STELLITED/ 17-4PH SS	35	0.000573059736345046	0.0200570907720766	=+J63*'Control Valve-Total'!$C$9	=+K63*'Control Valve-Total'!$C$9	=M63*'Control Valve-Total'!$C$10%
61	CV18.3	DM Water Make up to Hotwell	A18	B1	6	CF8M	SS316 STELLITED/ 17-4PH SS	21	0.000859589604517569	0.018051381694869	=+J64*'Control Valve-Total'!$C$9	=+K64*'Control Valve-Total'!$C$9	=M64*'Control Valve-Total'!$C$10%
62	CV18.4	DM Water Make up to Hotwell	A18	B1	8	CF8M	SS316 STELLITED/ 17-4PH SS	3	0.00114611947269009	0.00343835841807028	=+J65*'Control Valve-Total'!$C$9	=+K65*'Control Valve-Total'!$C$9	=M65*'Control Valve-Total'!$C$10%
63	CV19.1	DMCW System for TG AUX'S/SG Aux's	A19	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	16	0.00061718019746971	0.00987488315951536	=+J66*'Control Valve-Total'!$C$9	=+K66*'Control Valve-Total'!$C$9	=M66*'Control Valve-Total'!$C$10%
64	CV19.2	DMCW System for TG AUX'S/SG Aux's	A19	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	15	0.000771475246837137	0.0115721287025571	=+J67*'Control Valve-Total'!$C$9	=+K67*'Control Valve-Total'!$C$9	=M67*'Control Valve-Total'!$C$10%
65	CV19.3	DMCW System for TG AUX'S/SG Aux's	A19	B1	12	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10	0.000925770296204565	0.00925770296204565	=+J68*'Control Valve-Total'!$C$9	=+K68*'Control Valve-Total'!$C$9	=M68*'Control Valve-Total'!$C$10%
66	CV19.4	DMCW System for TG AUX'S/SG Aux's	A19	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	11	0.00108006534557199	0.0118807188012919	=+J69*'Control Valve-Total'!$C$9	=+K69*'Control Valve-Total'!$C$9	=M69*'Control Valve-Total'!$C$10%
						COST OF CV (MAINSUPPLY)=						=SUM(M4:M70)	=SUM(N4:N69)

SCHEDULE OF PRICES FOR Cv TEST (B)								
A	B	C	D	E	F	G	H	I
Sl no.	Item no.	Item Description	Valve body size	Total Quantity (NOS.)	% component for Unit (Ex-Works)	% component for Total (Ex-Works)	Unit charges for Cv test (Ex-Works) (INR)	Total price (Ex-Works) (INR) ('E' X'F')
1	TT1	CV test of control valve(1" to 2")	1" to 2"	50	0.00262%	0.13102%	#VALUE!	#VALUE!
2	TT2	CV test of control valve(3" to 6")	3" to 6"	350	0.00262%	0.91713%	#VALUE!	#VALUE!
3	TT3	CV test of control valve(8")	8"	80	0.00709%	0.56709%	#VALUE!	#VALUE!
4	TT4	CV test of control valve(10")	10"	50	0.00709%	0.35443%	#VALUE!	#VALUE!
5	TT5	CV test of control valve(12")	12"	15	0.00709%	0.10633%	#VALUE!	#VALUE!
6	TT6	CV test of control valve(14" and above)	14" and above	20	0.00709%	0.14177%	#VALUE!	#VALUE!
		Total						#VALUE!

NOTES :-

1. Cv test shall be conducted at Fluid Control Research Institute(FCRI),Palakkad/laboratory approved by Govt. of India/BHEL approved laboratory.

SCHEDULE OF PRICES FOR SUPERVISION OF E&C (C & D)

Sr. No.	Item code	Item Description	Unit	Total Quantity (NOS.)	% Component for Unit (Ex-Works)	% Component for Total (Ex-Works)	Unit Price (Ex-Works) (INR)	Total Price (Ex-Works) (INR)
	SUPERVISION OF E&C							
1.0	CV-SUP_E&C-1	SUPERVISION OF E&C-VISIT (C)	NOS	50	0.00786%	0.39306%	#VALUE!	#VALUE!
2.0	CV-SUP_E&C-2	SUPERVISION OF E&C-MANDAY (D)	NOS	100	0.00393%	0.39306%	#VALUE!	#VALUE!

NOTES

1	THE VISIT CHAGRES SHALL BE INCLUSIVE OF CHARGES OF AIR FARE/TRAIN FARE , BOARDING/LODGING, LOCAL CONVEYANCE, MEDICAL , INSURANCE ETC.
2	AMOUNT PAYABLE FOR ENGINEER PER VISIT TO SITE = VISIT CHARGES AS PER SL. NO. **1.0** ABOVE + (MANDAYS CHARGES AS PER SL. NO. 2.0 ABOVE X NO. OF DAYS AT SITE) (TO BE CERTIFIED BY BHEL SITE).

SCHEDULE OF PRICES FOR VALVE TRIM (E)													
A	B	C	D	E	F	G	H	I	J	K	L	M	
Sl no.	Item no.	Item Description (CONTROL VALVE COMPLETE WITH ALL ACCESSORIES MOUNTED, TUBED AND TERMINATED ON JB)	Data Sheet No.	Accessory Data Sheet No.	Valve size (in Inch)	Body Material	Trim Material	Total Quantity (NOS.)	% Component for Unit (Ex-Works)	% Component for Total (Ex-Works)	Unit Price (Ex-Works) (INR)	Total Price (Ex-Works) (INR) ('J' x 'L')	FREIGHT CHARGES EXCLUDING GST (INR)
1	TRIM1.1	Deaerator Pegging from Aux. Steam Header	A1-A(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	7	0.01157%	0.08102%	#VALUE!	#VALUE!	#VALUE!
2	TRIM1.2	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	3	0.01362%	0.04085%	#VALUE!	#VALUE!	#VALUE!
3	TRIM1.3	Deaerator Pegging from Aux. Steam Header	A1-A(ii)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	5	0.01702%	0.08511%	#VALUE!	#VALUE!	#VALUE!
4	TRIM1.4	Deaerator Pegging from Aux. Steam Header	A1-A(iii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	1	0.01957%	0.01957%	#VALUE!	#VALUE!	#VALUE!
5	TRIM1.5	Aux Steam to BFPT's	A1-B(i)	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	3	0.00868%	0.02604%	#VALUE!	#VALUE!	#VALUE!
6	TRIM1.6	Aux Steam to BFPT's	A1-B(i)	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	5	0.01157%	0.05787%	#VALUE!	#VALUE!	#VALUE!
7	TRIM1.7	Aux Steam to BFPT's	A1-B(ii)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2	0.01021%	0.02043%	#VALUE!	#VALUE!	#VALUE!
8	TRIM2.1	Deaerator Pegging from CRH Line	A2-A(i)	B1	10	WC6	SS316 STELLITED/ 17-4PH SS	10	0.02312%	0.23123%	#VALUE!	#VALUE!	#VALUE!
9	TRIM2.2	Deaerator Pegging from CRH Line	A2-A(i)	B1	12	WC6	SS316 STELLITED/ 17-4PH SS	6	0.02775%	0.16648%	#VALUE!	#VALUE!	#VALUE!
10	TRIM2.3	Deaerator Pegging from CRH Line	A2-A(ii)	B1	10	WC9	SS316 STELLITED/ 17-4PH SS	1	0.02659%	0.02659%	#VALUE!	#VALUE!	#VALUE!
11	TRIM2.4	Deaerator Pegging from CRH Line	A2-A(ii)	B1	12	WC9	SS316 STELLITED/ 17-4PH SS	1	0.03191%	0.03191%	#VALUE!	#VALUE!	#VALUE!
12	TRIM2.5	CRH Steam to BFPT's	A2-B	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	9	0.01850%	0.16648%	#VALUE!	#VALUE!	#VALUE!
13	TRIM3.1	Drain to Aux Steam From Existing Unit Header to F/T	A3	B1	2	WC9	SS316 STELLITED/ 17-4PH SS	5	0.00349%	0.01743%	#VALUE!	#VALUE!	#VALUE!
14	TRIM4.1	CEP A/B/C Minimum Recirculation	A4	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	16	0.00686%	0.10969%	#VALUE!	#VALUE!	#VALUE!
15	TRIM5.1	Condensate Spray to F/T	A5	B2	1	WC9	SS316 STELLITED/ 17-4PH SS	12	0.00162%	0.01941%	#VALUE!	#VALUE!	#VALUE!
16	TRIM6.1	Deaerator Overflow	A6(i)	B2	6	WC9	440C	9	0.00557%	0.05009%	#VALUE!	#VALUE!	#VALUE!
17	TRIM6.2	Deaerator Overflow	A6(ii)	B2	6	WC9	SS316 STELLITED/ 17-4PH SS	7	0.00417%	0.02922%	#VALUE!	#VALUE!	#VALUE!
18	TRIM7.1	GSC min. flow recirculation	A7(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	7	0.00673%	0.04710%	#VALUE!	#VALUE!	#VALUE!
19	TRIM7.2	GSC min. flow recirculation	A7(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	9	0.00792%	0.07125%	#VALUE!	#VALUE!	#VALUE!
20	TRIM8.1	Low Load Condensate Control	A8	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	7	0.00699%	0.04895%	#VALUE!	#VALUE!	#VALUE!
21	TRIM8.2	Low Load Condensate Control	A8	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	6	0.01165%	0.06993%	#VALUE!	#VALUE!	#VALUE!
22	TRIM8.3	Main Condensate Control	A8	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	12	0.01632%	0.19579%	#VALUE!	#VALUE!	#VALUE!
23	TRIM9.1	Excess Return to CST	A9	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	17	0.00724%	0.12311%	#VALUE!	#VALUE!	#VALUE!
24	TRIM10.1	Condensate for Valve Gland Sealing	A10	B1	1	WCB/WCC	SS316 STELLITED/ 17-4PH SS	17	0.00303%	0.05153%	#VALUE!	#VALUE!	#VALUE!
25	TRIM11.1	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	14	0.00747%	0.10464%	#VALUE!	#VALUE!	#VALUE!
26	TRIM11.2	HPH-9A/9B Normal Drain to HPH-8A/8B	A11-A(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	1	0.00860%	0.00860%	#VALUE!	#VALUE!	#VALUE!
27	TRIM11.3	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	2	0.00472%	0.00943%	#VALUE!	#VALUE!	#VALUE!
28	TRIM11.4	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(i)	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14	0.00707%	0.09905%	#VALUE!	#VALUE!	#VALUE!
29	TRIM11.5	HPH-8A/8B Normal Drain to HPH-7A/7B	A11-B(ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	2	0.00542%	0.01085%	#VALUE!	#VALUE!	#VALUE!
30	TRIM11.6	HPH-7A/7B Normal Drain to Deaerator	A11-C	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14	0.00663%	0.09286%	#VALUE!	#VALUE!	#VALUE!
31	TRIM12.1	HPH-9A/9B Drain to F/T	A12-A(i)	B1	4	WC9	440C	2	0.00724%	0.01448%	#VALUE!	#VALUE!	#VALUE!
32	TRIM12.2	HPH-9A/9B Drain to F/T	A12-A(i)	B1	6	WC9	440C	9	0.01086%	0.09771%	#VALUE!	#VALUE!	#VALUE!
33	TRIM12.3	HPH-9A/9B Drain to F/T	A12-A(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	7	0.00814%	0.05700%	#VALUE!	#VALUE!	#VALUE!
34	TRIM12.4	HPH-8A/8B Drain to F/T	A12-B(i)	B1	4	WC9	440C	2	0.00777%	0.01555%	#VALUE!	#VALUE!	#VALUE!
35	TRIM12.5	HPH-8A/8B Drain to F/T	A12-B(i)	B1	6	WC9	440C	9	0.01166%	0.10496%	#VALUE!	#VALUE!	#VALUE!
36	TRIM12.6	HPH-8A/8B Drain to F/T	A12-B(i)	B1	8	WC9	440C	6	0.01555%	0.09330%	#VALUE!	#VALUE!	#VALUE!
37	TRIM12.7	HPH-8A/8B Drain to F/T	A12-B(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	7	0.00875%	0.06123%	#VALUE!	#VALUE!	#VALUE!
38	TRIM12.8	HPH 7A/7B Drain to F/T	A12-C(i)	B1	6	WC9	440C	10	0.01092%	0.10918%	#VALUE!	#VALUE!	#VALUE!
39	TRIM12.9	HPH 7A/7B Drain to F/T	A12-C(i)	B1	8	WC9	440C	3	0.01456%	0.04367%	#VALUE!	#VALUE!	#VALUE!
40	TRIM12.10	HPH 7A/7B Drain to F/T	A12-C(ii)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	7	0.00819%	0.05732%	#VALUE!	#VALUE!	#VALUE!
41	TRIM13.1	HPH-7A/7B Drain to HPH-6A/6B	A13-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2	0.00707%	0.01415%	#VALUE!	#VALUE!	#VALUE!
42	TRIM13.2	HPH-6A/6B Drain to Deaerator	A13-B	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	2	0.00663%	0.01327%	#VALUE!	#VALUE!	#VALUE!
43	TRIM14.1	HPH-6A/6B Drain to HPD F/T	A14	B1	6	WC9	440C	2	0.00953%	0.01907%	#VALUE!	#VALUE!	#VALUE!
44	TRIM15.1	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	4	0.00923%	0.03693%	#VALUE!	#VALUE!	#VALUE!
45	TRIM15.2	LPH-3/2 Normal Drain to LPH-2/1	A15-A	B1	8	WC6	SS316 STELLITED/ 17-4PH SS	4	0.01231%	0.04924%	#VALUE!	#VALUE!	#VALUE!
46	TRIM15.3	LPH-3 Drain D/S of Drip Pump	A15-B	B1	4	WCB/WCC	SS316 STELLITED/ 17-4PH SS	4	0.00535%	0.02141%	#VALUE!	#VALUE!	#VALUE!
47	TRIM15.4	LPH-3 Drain D/S of Drip Pump	A15-B	B1	6	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10	0.00803%	0.08029%	#VALUE!	#VALUE!	#VALUE!
48	TRIM16.1	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	3	WC6	SS316 STELLITED/ 17-4PH SS	14	0.00411%	0.05749%	#VALUE!	#VALUE!	#VALUE!
49	TRIM16.2	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	4	WC6	SS316 STELLITED/ 17-4PH SS	6	0.00547%	0.03285%	#VALUE!	#VALUE!	#VALUE!
50	TRIM16.3	LPH-5/4 Normal Drain to LPH-4/3	A16	B1	6	WC6	SS316 STELLITED/ 17-4PH SS	14	0.00821%	0.11497%	#VALUE!	#VALUE!	#VALUE!
51	TRIM17.1	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	6	WC9	440C	5	0.00847%	0.04235%	#VALUE!	#VALUE!	#VALUE!
52	TRIM17.2	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	8	WC9	440C	4	0.01129%	0.04517%	#VALUE!	#VALUE!	#VALUE!
53	TRIM17.3	LPH-3/2 Alt. Drain to F/T	A17-A(i)	B1	10	WC9	440C	5	0.01412%	0.07058%	#VALUE!	#VALUE!	#VALUE!
54	TRIM17.4	LPH-3/2 Alt. Drain to F/T	A17-A(ii)	B1	8	WC9	SS316 STELLITED/ 17-4PH SS	12	0.00847%	0.10163%	#VALUE!	#VALUE!	#VALUE!
55	TRIM17.5	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	4	WC9	440C	4	0.00512%	0.02050%	#VALUE!	#VALUE!	#VALUE!
56	TRIM17.6	LPH-5/4 Alt Drain to F/T	A17-B(i)	B1	6	WC9	440C	4	0.00769%	0.03075%	#VALUE!	#VALUE!	#VALUE!
57	TRIM17.7	LPH-5/4 Alt Drain to F/T	A17-B(Ii)	B1	4	WC9	SS316 STELLITED/ 17-4PH SS	10	0.00384%	0.03844%	#VALUE!	#VALUE!	#VALUE!
58	TRIM17.8	LPH-5/4 Alt Drain to F/T	A17-B(iI)	B1	6	WC9	SS316 STELLITED/ 17-4PH SS	12	0.00577%	0.06919%	#VALUE!	#VALUE!	#VALUE!
59	TRIM18.1	DM Water Make up to Hotwell	A18	B1	3	CF8M	SS316 STELLITED/ 17-4PH SS	5	0.00645%	0.03223%	#VALUE!	#VALUE!	#VALUE!
60	TRIM18.2	DM Water Make up to Hotwell	A18	B1	4	CF8M	SS316 STELLITED/ 17-4PH SS	14	0.00860%	0.12034%	#VALUE!	#VALUE!	#VALUE!
61	TRIM18.3	DM Water Make up to Hotwell	A18	B1	6	CF8M	SS316 STELLITED/ 17-4PH SS	6	0.01289%	0.07736%	#VALUE!	#VALUE!	#VALUE!

62	TRIM18.4	DM Water Make up to Hotwell	A18	B1	8	CF8M	SS316 STELLITED/ 17-4PH SS	4	0.01719%	0.06877%	#VALUE!	#VALUE!	#VALUE!
63	TRIM19.1	DMCW System for TG AUX'S/SG Aux's	A19	B1	8	WCB/WCC	SS316 STELLITED/ 17-4PH SS	12	0.00926%	0.11109%	#VALUE!	#VALUE!	#VALUE!
64	TRIM19.2	DMCW System for TG AUX'S/SG Aux's	A19	B1	10	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10	0.01157%	0.11572%	#VALUE!	#VALUE!	#VALUE!
65	TRIM19.3	DMCW System for TG AUX'S/SG Aux's	A19	B1	12	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10	0.01389%	0.13887%	#VALUE!	#VALUE!	#VALUE!
66	TRIM19.4	DMCW System for TG AUX'S/SG Aux's	A19	B1	14	WCB/WCC	SS316 STELLITED/ 17-4PH SS	10	0.01620%	0.16201%	#VALUE!	#VALUE!	#VALUE!
Total												#VALUE!	#VALUE!

SCHEDULE OF PRICES FOR VALVE COMPONENTS AND ACCESSORIES (F)

S.NO.	ITEM	ITEM CODE IN INDENT SARATHI	Total Quantity (NOS.)	% Component for Unit (Ex-Works)	% Component for Total (Ex-Works)	Unit Price (Ex-Works) (INR)	Total Price (Ex-Works) (INR)	FREIGHT CHARGES EXCLUDING GST (INR)
1	**Actuator**	CV-AC8-ACTUATOR ASSEMBLY for Diaphragm Actuator - upto 14" diaphragm size	**40**	0.00929%	0.37171%	#VALUE!	#VALUE!	#VALUE!
2	**Actuator**	CV-AC9-ACTUATOR ASSEMBLY for Diaphragm Actuator - 15" to 18" diaphragm size	**40**	0.01093%	0.43731%	#VALUE!	#VALUE!	#VALUE!
3	**Actuator**	CV-AC10-ACTUATOR ASSEMBLY for Diaphragm Actuator - > 18" diaphragm size	**40**	0.01257%	0.50291%	#VALUE!	#VALUE!	#VALUE!
4	**Actuator**	CV-AC11-ACTUATOR ASSEMBLY for Piston Cylinder Actuator - upto 16" dia. Piston	**40**	0.04172%	1.66870%	#VALUE!	#VALUE!	#VALUE!
5	**Actuator**	CV-AC12-ACTUATOR ASSEMBLY for Piston Cylinder Actuator - 16" to 20" dia. Piston	**25**	0.04908%	1.22698%	#VALUE!	#VALUE!	#VALUE!
6	**Actuator**	CV-AC13-ACTUATOR ASSEMBLY for Piston Cylinder Actuator - > 20" dia. Piston	**30**	0.05644%	1.69324%	#VALUE!	#VALUE!	#VALUE!
7	**Actuator Seal Kit/ O-rings/Actuator Soft Goods kit**	CV-AC14-'O' rings, seal kit for piston actuator - upto 16" dia. Piston	**180**	0.00142%	0.25470%	#VALUE!	#VALUE!	#VALUE!
8	**Actuator Seal Kit/ O-rings/Actuator Soft Goods kit**	CV-AC15-'O' rings, seal kit for piston actuator - 16" to 20" dia. Piston	**75**	0.00149%	0.11202%	#VALUE!	#VALUE!	#VALUE!
9	**Actuator Seal Kit/ O-rings/Actuator Soft Goods kit**	CV-AC16-'O' rings, seal kit for piston actuator - > 20" dia. dia. Piston	**40**	0.00157%	0.06289%	#VALUE!	#VALUE!	#VALUE!
10	**Air Filter Regulator**	CV-AC20-AIR FILTER REGULATOR	**230**	0.00037%	0.08474%	#VALUE!	#VALUE!	#VALUE!
11	**Air Lock**	CV-AC19-AIR LOCK RELAY	**200**	0.00066%	0.13102%	#VALUE!	#VALUE!	#VALUE!
12	**Diaphragms**	CV-AC5-DIAPHRAGM - upto 14 " size	**225**	0.00061%	0.13667%	#VALUE!	#VALUE!	#VALUE!
13	**Diaphragms**	CV-AC6-DIAPHRAGM - 15 " to 18 " size	**140**	0.00061%	0.08504%	#VALUE!	#VALUE!	#VALUE!
14	**Diaphragms**	CV-AC7-DIAPHRAGM-ABOVE 18 INCH	**75**	0.00061%	0.04556%	#VALUE!	#VALUE!	#VALUE!
15	**Actuator Piston (Equivalent for Diaphragm incase of Piston Actuator)**	CV-AC31-ACT PISTON WITH ROD & SEAL	**40**	0.00966%	0.38643%	#VALUE!	#VALUE!	#VALUE!
16	**Fitting**	CV-AC39-SS CONN-1/2"NPT(M)X1/4"OD	**1400**	0.00012%	0.16508%	#VALUE!	#VALUE!	#VALUE!
17		CV-AC40-SS CONN-1/4"NPT(M)X1/4"OD	**1400**	0.00012%	0.16508%	#VALUE!	#VALUE!	#VALUE!
18		CV-AC41-SS TEE FOR 1/4" OD TUBE	**1000**	0.00012%	0.11792%	#VALUE!	#VALUE!	#VALUE!
19	**Limit Switch**	CV-AC24-LIMIT SWITCH ASSY	**150**	0.00172%	0.25745%	#VALUE!	#VALUE!	#VALUE!
20	**Gasket**	CV-AC18-GASKETS SET	**300**	0.00181%	0.54242%	#VALUE!	#VALUE!	#VALUE!
21	**Packing**	CV-AC17-PACKING SET	**300**	0.00105%	0.31530%	#VALUE!	#VALUE!	#VALUE!
22	**Positioner (Single Acting)**	CV-AC27-SMART POSNR - SINGLE ACT	**150**	0.01639%	2.45858%	#VALUE!	#VALUE!	#VALUE!
23	**Positioner (Double Acting)**	CV-AC28-SMART POSNR -DOUBLE ACT	**90**	0.01821%	1.63905%	#VALUE!	#VALUE!	#VALUE!
24	**Positioner (Single Acting)**	CV-AC27A-SMART POSNR - SINGLE ACT-PROFIBUS	**40**	0.02188%	0.87521%	#VALUE!	#VALUE!	#VALUE!
25	**Positioner (Double Acting)**	CV-AC28A-SMART POSNR -DOUBLE ACT-PROFIBUS	**15**	0.02297%	0.34461%	#VALUE!	#VALUE!	#VALUE!
26	**FEED BACK LINKAGE**	CV-AC25-FEED BACK LINKAGE	**85**	0.00393%	0.33410%	#VALUE!	#VALUE!	#VALUE!

27	**Seal Kit – Positioner**	CV-AC29-O RING KIT FOR SMART POSNR	**60**	0.00262%	0.15722%	#VALUE!	#VALUE!	#VALUE!
28	**Pressure Gauge**	CV-AC22-PRESSURE GAUGE	**90**	0.00157%	0.14150%	#VALUE!	#VALUE!	#VALUE!
29	**Solenoid Valve**	CV-AC23-SOLENOID VALVE	**90**	0.00708%	0.63675%	#VALUE!	#VALUE!	#VALUE!
30	**Junction Box.**	CV-AC54-Junction Box	**20**	0.00183%	0.03669%	#VALUE!	#VALUE!	#VALUE!
31	**Actuator stem**	CV-AC55-Actuator Stem	**35**	0.00262%	0.09171%	#VALUE!	#VALUE!	#VALUE!
32	**Valve stem**	CV-AC61A-VLV SPINDLE-UPTO 6 INCH	**35**	0.00262%	0.09171%	#VALUE!	#VALUE!	#VALUE!
33	**Valve stem**	CV-AC37A-VLV SPINDLE-8 INCH	**35**	0.00262%	0.09171%	#VALUE!	#VALUE!	#VALUE!
34	**Valve stem**	CV-AC37B-VLV SPINDLE -10 INCH	**35**	0.00314%	0.11006%	#VALUE!	#VALUE!	#VALUE!
35	**Valve stem**	CV-AC37C-VLV SPINDLE -12 INCH	**35**	0.00393%	0.13757%	#VALUE!	#VALUE!	#VALUE!
36	**Valve stem**	CV-AC37D-VLV SPINDLE -14 INCH	**35**	0.00524%	0.18343%	#VALUE!	#VALUE!	#VALUE!
37	**Volume Booster**	CV-AC21-VOLUME BOOSTER	**85**	0.00393%	0.33410%	#VALUE!	#VALUE!	#VALUE!
38	**Stem connector**	CV-AC58-STEM CONNECTOR/COUPLING	**70**	0.00131%	0.09171%	#VALUE!	#VALUE!	#VALUE!
39	**Metal seat ring / Seat Ring**	CV-AC62-METAL SEAT RING/SEAT RING	**70**	0.00262%	0.18343%	#VALUE!	#VALUE!	#VALUE!
40	**Soft Goods Kit Valve (Including Packing set, Gasket set, Plug seal ring)**	CV-AC63-SOFT GOOD KIT FOR VALVE	**35**	0.02096%	0.73371%	#VALUE!	#VALUE!	#VALUE!
41	**Tubing**	CV-AC33-1/4" SS OR PVC INSU CU TUBE	**1000**	0.00012%	0.11792%	#VALUE!	#VALUE!	#VALUE!
42	**Yoke**	CV-AC64-YOKE	**35**	0.00393%	0.13757%	#VALUE!	#VALUE!	#VALUE!
43	**Moisture Separator**	CV-AC65-MOISTURE SEPARATOR	**50**	0.00393%	0.19653%	#VALUE!	#VALUE!	#VALUE!
					TOTAL		#VALUE!	#VALUE!

COST OF WITHDRAWAL									
PROJECT:-						Framework Agreement (Rate Contract)			
PACKAGE :-						CONTROL VALVE- (OTHER THAN FDV)			
TENDER ENQUIRY :-									
NAME OF THE BIDDER									
Sl. No.	Volume/ Section	Page No.	Clause No.	Technical Specification/Tender Document No	Complete Description of Deviation	Cost of withdrawal of deviation to be entered by the bidder in	Reference of price Schedule of which Cost of Withdrawal of Deviation is applicable	Nature of cost of withdrawal of deviation (Positive/Negative)	Reasons for quoting deviation
1	TECHNICAL DEVIATION								
1.01									
1.02									
1.03									
1.04									
1.05									
2	COMMERCIAL DEVIATION								
2.01									
2.02									
2.03									
2.04									
2.05									

Tentative List of projects for Framework Agreement (Rate Contract) of CONTROL VALVE (OTHER THAN FDV)	
Sno.	**Project**
1	1X800MW SIPAT EPC STAGE-III
2	2X800 MW Koderma Ph-II
3	1X800 MW SCCL
4	2X660 MW KORBA WEST
5	1X800 MW DARLIPALI
6	1X660 MW SATPURA
7	1X660 MW AMARKANTAK
8	3X800 MW Telangana
9	3X800 MW Meja
10	2X 660 MW RAGHUNATHPUR (TG)
11	2X800 MW ADANI KAWAI TPP Ph-II
12	2X800 MW MEL MAHAN TPP Ph-III
13	2X800 MW ADANI ANNUPUR Ph-I
14	2X800 MW ADANI KAWAI TPP Ph-III
15	2X800 MW ADANI ASSAM Ph-I
16	2X800 MW ADANI ASSAM Ph-II
17	1x800 MW Moser Bear Power
18	2X660 MW KORADI
19	1X800MW Ukai
20	3x800 MW NLCIL TALABIRA STPP
21	1X800 MW HPGCL YAMUNANAGAR
22	2X 660 MW RAGHUNATHPUR (SG)

BHEL / PEM / CMM

SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT) FOR CONTROL VALVE – OTHER THAN FDV

1. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of CONTROL VALVE - OTHER THAN FDV required at various BHEL project sites. Framework Agreement (Rate Contract) validity for ordering shall be two years from the purchase order for Rate Contract.

2. Framework Agreement (Rate Contract) shall be finalized only with Suppliers who are registered with BHEL-PEM. Suppliers who are not registered with BHEL-PEM (Suppliers already registered with other BHEL Units shall also be required to apply registration in BHEL PEM) needs to apply & get registered for subject package with PEM before Reverse Auction & hence they need to apply online for registration on PEM web portal & have to enclose acknowledgement with the bid documents else their bid may not be considered for evaluation.

The Suppliers who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at https://bhel.com/supplier-registration .

All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

3. Framework Agreement (Rate contract) is proposed to be done with 2 Suppliers in ratio of 70:30 value wise at L1 FOR Site Price (Ex-works + Freight) for this package. However, Order for a Project shall not be split.

4. Quantity variation shall be applicable as +30 % of the Contract value. Suppliers must note that the quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.

5. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of CONTROL VALVE - FDV required at various BHEL project sites. All Suppliers shall note the following: –

a) As and when requirement arises, the concerned Purchase Department/Project Group will place order directly on the supplier against the Framework Agreement (Rate Contract).

b) The drawings/ documents submission & approval, submission of Performance Security/ Performance Bank Guarantee, submission of invoices, processing and release of payment after supply of material, contractual dispute & commercial matters shall be dealt as per Framework Agreement (Rate Contract) contract terms & conditions directly by Purchase Department/Project Group which has placed Purchase Order against the Rate Contract.

6. Details of consignee and project site information for dispatch of material shall be intimated at the time of placement of PO for specific project after finalization of RC.

7. The items will be required against respective projects. Exact quantities and Project information shall be intimated while placing Purchase Order for a specific project based on the Rate Contract.

8. Price Variation shall not be applicable for the subject package.

9. Inspection of materials shall be carried out by BHEL/ CQA and or by Customer or by an Authorized Agency at manufacture's works before dispatch, if required. Dispatch of material to be done, only after receipt of BHEL/ Customer MDCC. It is responsibility of Supplier to obtain Material Dispatch Clearance Certificate (MDCC) from BHEL or Customer as required before dispatch of material.

10. Supplier shall give inspection call on BHEL-CQS web site to applicable inspection agency with a copy of inspection call to BHEL for arranging Customer participation (if applicable) in inspection / Joint inspection on the proposed date with an advance notice of 15 working days. Inspection charges shall be paid by BHEL.

11. Items have to be manufactured as per specification and supplied strictly in accordance with the approved BHEL/ Customer's Drawings & Quality Plan. The items/ test certificate of items, which for any reason are not acceptable to BHEL/ Customer, shall be required to be retested. No extra charge shall be payable on those account by BHEL.

12. Other terms and conditions shall be as per Standard Technical specification No. PE-TS-20-145-H104-B, GCC Rev. 07, Corrigenda 01, Corrigenda 02 & Corrigenda 03 to GCC Rev. 07 and Enquiry letter.

13. This Enquiry is subject to Conditions/ limits, if any imposed in BHEL-PEM PMD/ Supplier registration.

14. Tentative quantity for the package required for prospective projects is made part of tender enquiry. However, Suppliers to consider delivery anywhere in India while quoting for this enquiry. List of prospective projects is indicative only, BHEL may ask for delivery anywhere in India for any of the project added in the prospective projects/ existing projects during validity of Framework Agreement (Rate Contract) period.

15. Suppliers to submit offer for RC of said items ONLINE via BHEL-GePNIC Portal only. Suppliers to upload tender documents complete in all respects duly signed & stamped on each and every page by the authorized signatory of the Supplier as a token of acceptance of all the terms and conditions of tender.

16. The Supplier along with its associate/ collaborators/ sub-contractors/ sub-Supplier/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL web site http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud as soon as it comes to their notice.

BHEL / PEM / CMM

Declaration by MSE Suppliers regarding ownership structure along with UDYAM certificate

Any Supplier falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer.

Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)
Micro			
Small			

Note: If the Supplier does not furnish the above in the tender, offer shall be processed construing that the Supplier is not falling under MSE category.

Provide below details for recording your bid participation:

1.	PAN number:	
2.	Company Name:	
3.	Registered address:	
4.	Contact person name:	
5.	Contact person number:	
6.	Contact person email:	
7.	GeM ID:	
8.	Whether MSE supplier: If yes, Attach valid Udyam Certificate	(Y/N).

To be given on Letter head of Bidder

Ref: ……. Date: …….

To,

Bharat Heavy Electricals Limited

PEM, PPEI Building,

Plot No 25, Sector -16A

Noida (U.P)-201301

Reference:

Order no-F6/18/2019-PPD dated 23.07.2020 issued by Ministry of Finance.

Tender Enquiry No-……

Offer No-……..

Name of Package: …….

Dear Sir,

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India. I hereby certify that Company name, is not from such a country and is eligible to be considered.

Thanking You,

Yours faithfully,

(Company director seal and signature)

Format for Local Content Certificate as per MII order

Ref: …… Date: …….

To,

Bharat Heavy Electricals Limited

PEM, PPEI Building,

Plot No 25, Sector -16A

Noida (U.P)-201301

Reference: Tender Enquiry No-……

Name of Package: ……

Dear Sir,

We hereby certify that items of ……...(Package name)

for……(Project Name) offered by M/s ……(bidder's name)

having its works/office at …… has local content of ……%. Further,

it is also certified that the local content percentage (%) certified above is in line with definition of local content given in point no 2 of Public Procurement (Preference to Make in India), Order 2017- revision, having ref. no. P-45021/2/2017-PP(BE-II)-Part(4) Vol.II dated 04.06.2020 & 19.07.2024 an

M/s…….. qualifies as Class-I local supplier.

Further, cost of locally imported items (inclusive of taxes) sourced locally from resellers/ distributors

is Rs …… and cost of licence/royalty paid/technical expertise cost etc. source from outside of India

is Rs…….

Details of the location(s) at which the local value addition-

Yours very truly

……. (Signing Authority Name & Sign)

…… (Firm Name)

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No: ……

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____ through its Unit at……..(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at_____ hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No……dated …… valued at Rs…… (Rupees ----------)/FC……(in words……..) for …… (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to ……% (…. Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, …… (hereinafter referred to as the Bank), having registered/Head office at …….. and inter alia a branch at …… being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs ---------- (Rupees ----------) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the ……bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We ……..BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including…… and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the ……we shall be discharged from all liabilities under this guarantee thereafter.

This Bank Guarantee shall be governed, construed and interpreted in accordance with the laws of India.

Courts at …… shall alone have exclusive jurisdiction over any matter arising out of or in connection with this Bank Guarantee

We, …… BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed……
b) This Guarantee shall be valid up to ……
c) Unless the Bank is served a written claim or demand on or before _____ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated…….

Place of Issue…….

[1] *NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited*

[2] *NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.*

[3] *DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE*

[4] *CONTRACT VALUE*

[5] *PROJECT/SUPPLY DETAILS*
[6] *BG AMOUNT IN FIGURES AND WORDS*

[7] *VALIDITY DATE*

[8] *DATE OF EXPIRY OF CLAIM PERIOD*

Note:

1. Bank Guarantee should be refunded to the contractor without interest, after he duly performs and completes the contract in all respects but not later than 60 (sixty) days of completion of all such obligations including the warranty under the contract.

2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.

3. From Nationalized/Public Sector / Private Sector/ Foreign Banks can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.

Proforma of Insurance Surety Bond towards Security Deposit

(To be stamped in accordance with Stamp Act of India)

Insurance Surety Bond No.....
Date.....

To,

Bharat Heavy Electricals Limited,
Power Sector xxxxxxxxx Region,
xxxxxxxxxxxxxxxxxxxxxxxxxxx

Dear Sirs,

In consideration, to **Bharat Heavy Electricals Limited** (Hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns), for having awarded, **M/s … (Contractor's name) …** having its Registered /Head Office at **…xxxxxxxxxxx…** (Hereinafter referred to as the 'Contractor', which expression shall unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), a Contract by issue of Letter of Award No. **…xxxxxxxxxxx… dated ...dd/mm/yyyy…** and the same having been unequivocally accepted by the contractor, valued at **Rs. …xxxxxxxxxxx… (Rupees …xxxxxxxxxxx… only)** and the Contractor having agreed to provide Security Deposit towards fulfilment of any obligations in terms of the provisions of the contract equivalent to **….%** (percent) of the said value of the Contract to the Employer amounting **Rs. …xxxxxxxxxxx… (Rupees …xxxxxxxxxxx… Only).**

We **…*[Name & Address of the Insurer]*...** having its Head Office at **…xxxxxxxxxxx…** (hereinafter referred to as the 'Insurer', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Employer, on demand any and all amount payable by the Contractor in terms of the agreement to provide Security Deposit, to the extent of **Rs …xxxxxxxxxxx… (Rupees …xxxxxxxxxxx… Only)** as aforesaid at any time up to **…dd/mm/yyyy…** ***[#]*** without any condition, demur, reservation, contest, recourse or protest and/or without any reference to the Contractor. Any such demand made by the Employer on the Insurer shall be conclusive and binding notwithstanding any difference between the Employer and the Contractor or the Insurer and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Insurer undertakes not to revoke this Insurance Surety Bond during its currency and or any period extended under the contract, without prior consent of the Employer and further agrees that the guarantee herein contained shall be enforceable till **…dd/mm/yyyy…** ***[@]***.

The Employer shall have the fullest liberty, without affecting in any way the liability of the Insurer under this Insurance Surety Bond, from time to time to extend the performance of the Contract by the Contractor for the purpose of which, the Insurer shall be liable to extend the validity of the present Insurance Surety Bond without any demur, condition, protest and the Insurer shall at no point in time have an option of revoking the same, The

Proforma of Insurance Surety Bond towards Security Deposit

(To be stamped in accordance with Stamp Act of India)

Insurance Surety Bond No.....
Date.....

Employer shall have the fullest liberty, without affecting this Insurance Surety Bond, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the Employer and the Contractor or any other course or remedy or security available to the Employer. The Insurer shall not be released of its obligations under these presents by any exercise by the Employer of its liberty with reference to the aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Employer or any other indulgence shown by the Employer or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Insurer.

The Insurer also agrees and undertakes that the Employer at its option shall be entitled to enforce this Insurance Surety Bond against the Insurer as a Surety, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

Notwithstanding anything contained herein above our liability under this Insurance Surety Bond is restricted to **Rs. …xxxxxxxxxxx… (Rupees …xxxxxxxxxxx… Only)** and it shall remain in force up to and including **...dd/mm/yyyy...** ***[#]*** and shall be extended from time to time for such period, as may be desired by **M/s …(Contractor's name)…** on whose behalf this Insurance Surety Bond has been given.

Dated this..... day of..... 20 ..... at.....

WITNESS :

1. .....
(Signature)
.....
(Name)
.....
(Official Address)

.....
(Signature)
.....
(Name)
.....
(Designation with Insurer Stamp)

Authorised Vide Power of Attorney
No.....
Date.....

2. .....(Signature)
.....(Name)
.....(Official Address)

Notes:

1) **# Validity date**: The validity of Insurance Surety Bond towards Security Deposit shall be till actual completion work (Contract period) + Guarantee Period + 3 months.

2) **@ Date of Expiry of Claim Period**: The Claim period may be kept 3 to 6 months beyond the validity date.

3) The Insurance Surety Bond shall be from an Insurer as per guidelines issued by Insurance Regulatory and Development Authority of India (IRDAI).

4) The Employer shall be the Creditor, the Contractor shall be the Principal debtor and the Insurance company/Insurer shall be the Surety in respect of the Insurance Surety Bond to be issued by the Insurer.

5) The Insurance Surety Bond should be on Non-Judicial stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the state(s) where the Insurance Surety Bond is executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Bidder/Insurer issuing the Insurance Surety Bond.

Annexure-1

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____

_____
_____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Bharatiya Nyaya Sanhita (BNS) 2023 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Bharatiya Nyaya Sanhita (BNS) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process , terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above , the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be-entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee , whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years (to be reckoned from date of bid submission) with any other company in any country conforming to the anti-corruption approach in India that could justify his exclusion from the tender process. The date of such transgression, for the purpose of disclosure by the bidders in this regard, would be the date on which cognizance of the said transgression was taken by the competent authority. The transgression(s), for which cognizance was taken even before the said period of three years, but are pending conclusion, shall also be reported by the bidders.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.

6.2 In case of a joint venture, all the partners of the joint venture should sign the Integrity Pact. In case of Sub-contracting, the Principal Contractor shall be solely responsible for the adherence to the provisions of IP by the sub-contractor(s).

6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact on receipt of any complaint by them from the bidder(s).

8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as /Top Secret are not to be disclosed.

8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

8.5 The role of IEM is advisory and the advice of IEM is non- binding on the Organization. However, as IEMs are invariably persons with rich experience who have retired as senior functionaries of the government, their advice would help in proper implementation of the IP.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of the tendering process, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an examination, and submit their joint recommendations to the Management. In case the full panel is not available due to some unavoidable reasons, the available IEM(s) will conduct examination of the complaints. Consent of the IEM(s), who may not be available, shall be taken on record.

8.7 The IEMs shall examine all the representations/grievances/ complaints received by them from the bidders or their authorized representative related to any discrimination on account of lack of fair play in modes of procurement and bidding systems, tendering method, eligibility conditions, bid evaluation criteria, commercial terms & conditions, choice of technology/ specifications etc.

8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.

8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.

8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Bharatiya Nyaya Sanhita (BNS)/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs.

8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.

8.13 The word `Monitor' would include both singular and plural.

Section 9 - Pact Duration

9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.

10.2 Changes and supplements as well as termination notices need to be made in writing.

10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.

10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.

10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. If required, the Principal may adopt any mediation rules for this purpose. However, not more than five meetings shall be held for a particular dispute resolution. The fees/expenses on dispute resolution shall be equally shared by both the parties. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract.

KUMAR SUMAN SAURABH

Digitally signed by KUMAR SUMAN SAURABH
DN: c=IN, postalCode=201301, st=UTTAR PRADESH, street=GAUTAM BUDDHA NAGAR, l=GAUTAM BUDDHA NAGAR, o=BHARAT HEAVY ELECTRICALS LTD., ou=BHEL, PS-PEM, serialNumber=5ee389b2a515dd679b11a248e8891c15d93a538dcc190daf100048fdb5a2ec42, pseudonym=621a436d2a8c4662a05f1ae795645eb5, 2.5.4.20=1a762e39a18dd603c55b055d223fb86301c306189abd0e3846a5e6642d243477, email=SUMANSAURABH@BHEL.IN, cn=KUMAR SUMAN SAURABH
Date: 2026.04.22 10:09:08 +05'30'

For & On behalf of the Principal
(Office Seal)

Place _____

Date _____

Witness: _____
(Name & Address) _____

For & On behalf of the Bidder/ Contractor
(Office Seal)

Witness: _____
(Name & Address) _____
_____

Annexure-2

Clause on IP in the tender

Integrity Pact (IP)

(a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl	IEM	Email
1.	Dr. Sarat Kumar Acharya, Ex-CMD, NLC	iem1@bhel.in
2.	Shri R. Mukundan, IRPS (Retd.)	iem2@bhel.in
3.	Shri Madan Lal Meena, IAS (Retd.)	iem3@bhel.in

(b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

(c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the panel of IEMs. All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
Name:_____
Deptt: _____
Address: _____
Phone: (Landline/ Mobile)
_____
Email: _____
Fax: _____

(2)
Name:_____
Deptt: _____
Address: _____
Phone: (Landline/ Mobile)
_____
Email: _____
Fax: _____