

Enquiry No. B/4066/7/6214/V1

PRE-QUALIFICATION REQUIREMENTS

Bidders are required to meet the pre-qualification requirements (PQR) for supply of Pneumatic Globe Valve as per criteria stipulated below:

Sl. No	Pre-Qualification Requirements	Vendor's confirmation Indicating page no. where documents are placed																									
1.	Vendor should have an experience of having designed, manufactured & supplied Pneumatic Globe Valve to minimum one thermal power plant/process plant in the last five (5) years for similar application and parameters & size etc. equal /higher than the parameters & size etc. mentioned in the following table. <table><tr><td>Valve Size</td><td>Nb40</td></tr><tr><td>Valve Type</td><td>2/2-way Coaxial Valve , Externally Control</td></tr><tr><td>Pressure</td><td>64 bar</td></tr><tr><td>Temperature</td><td>60°C</td></tr><tr><td>Connection</td><td>Flange RF 1.5" ANSI B16.5 CLASS 600</td></tr><tr><td>Function</td><td>Valve Normally Closed</td></tr><tr><td>Pressure range of control air</td><td>5-10 bar</td></tr><tr><td>Flow Medium</td><td>Condensate</td></tr><tr><td>Valve Material</td><td>Carbon Steel</td></tr><tr><td>Duty</td><td>Isolation</td></tr><tr><td>Valve Rating</td><td>CL300</td></tr></table>	Valve Size	Nb40	Valve Type	2/2-way Coaxial Valve , Externally Control	Pressure	64 bar	Temperature	60°C	Connection	Flange RF 1.5" ANSI B16.5 CLASS 600	Function	Valve Normally Closed	Pressure range of control air	5-10 bar	Flow Medium	Condensate	Valve Material	Carbon Steel	Duty	Isolation	Valve Rating	CL300				
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2.	The supplied valve(s) should have a minimum of 1 (one) year successful Operation in above Thermal/Process plant.																										
3.	Vendor must have supplied matching actuator of reputed make with a minimum of 1 (one) year successful Operation.																										
4.	Supplier needs to furnish copy of un-priced purchase orders (PO) along with relevant dispatch document not older than five (5) years in support of above and furnish data of above PO in following format. <table><tr><td>(Project/ Customer Name)</td><td>PO ref no. & date</td><td>Parameters (Pressure, Temperature. ,size & class) of supplied valve</td><td>Material of supplied valve</td><td>Contact details of customer (email, phone number, etc.)</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table>	(Project/ Customer Name)	PO ref no. & date	Parameters (Pressure, Temperature. ,size & class) of supplied valve	Material of supplied valve	Contact details of customer (email, phone number, etc.)																					
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5.	BHEL reserves the right to verify information submitted by vendor. In case the information is found false/ incorrect, the offer shall be rejected.																										

Notes:

1. BHEL would consider the offers and open the price bids of only those bidders, who fulfill the Pre-Qualification requirements (PQRs).

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Prepared: S K Sharma	Checked: S K Gupta	Approved: A B Gupta																																																																											
		Agreed: N K Manwani																																																																											

1 Scope of Application

This Technical Purchasing Specification covers supply of Pneumatic Glove valve with limit switch of DN40. This valve is used for isolation purpose in Condensate line. This valve shall be provided with limit switch for 100% open indication.

The requirements of this specification are valid as far as no other requirements are given in the enquiry.

2 Type-tested Valves

Valves with a valid type-testing certificate according to PED97/23/EC and to the corresponding VdTÜV-Merkblätter, of TRD 110 attachment 1 as well as accordingly to the registration of DIN-DVGW fulfill the requirements of this specification.

For these valves the requirements for manufacturing and testing agreed upon with the TÜVs respectively with the DVGW-federation shall be fulfilled (declaration of commitment).

3 Referenced Documents

- AD2000-W 0
- AD2000-W 7
- AD2000-HP 0
- AD2000-HP 5/3
- TRD 100
- EN 287-1
- DIN EN ISO 15607
- DIN EN ISO 15609-1
- DIN EN ISO 15614-1
- EN 1418
- EN 10028
- EN 10204
- EN 10213
- EN 10222
- EN 10273
- DIN 1690-10
- EN 1559-1
- EN 1559-2
- EN 12266-1/-2
- DIN 17175,
- PED 97/23/EC

In case of differences or contradictions of the referenced documents the higher requirements shall be applied.

4 Technical Data and Design

The criteria, e.g. fluid, pressure, temperature, material of the casing, etc., as well as other technical data are given in the enquiry.

5 Valves for vacuum and condensate:

For all valves for vacuum- and/or condensate systems a certificate of compliance 2.1 according to EN 10204 is sufficient.

5

6 QA-Requirements regarding the Valve Manufacturer and his Suppliers:

The valve manufacturer as well as his suppliers for the main components like e.g. pressure guiding components, instrumentation and control, shall have an introduced and well-working quality management system, e.g. according to EN ISO 9000 series or equivalent standard. Manufacturers of pressure guiding

Components shall have in addition a certificate according to AD2000-W 0 respectively TRD 100.

As far as welding will be performed on the valves, the weld shop shall be certified according to AD2000-HP 0.

7 Manufacturing and Inspection Plan (MIP)

The valve manufacturer shall prepare a Manufacturing and Inspection Plan containing sufficient information on the sequence and extent of the valve inspections as well as the main raw material and shall deliver this to the purchaser for review at the latest 4 weeks after order receipt, but at least 2 weeks before starting manufacturing.

8 Condition for Manufacturing

Manufacturing of the valve mentioned in point 7 shall not be started before the review for the design as well as for the MIP has been given by the purchaser. To prohibit any delay the valve manufacturer shall call for missing reviews and remind the purchaser on time.

By reviewing the MIP the purchaser does not take on any responsibility for processes or manufacturing details of the valve manufacturer or his suppliers, or for the valve itself.

9 Fabrication and Inspection

9.1 Steel Castings

Steel castings, e.g. valve casings, covers, etc., shall be manufactured and inspected according to EN 10213 and EN 1559 part 1 and part 2 and DIN 1690 part 10, and following minimum requirements:

- Analysis (chemical composition) per heat
- Mechanical properties per heat and heat treatment batch, for castings with an individual weight > 1000 kg testing per casting
- Amount of non-destructive testing according to DIN 1690 part 10:
 - Weld ends of valves without connection pieces: Quality class A with quality grades S1 + V1
 - Transition areas: quality class B with quality grades S2 + V2
 - Weld ends of valves with connection pieces: Quality class B with quality grades S2 + V2
- remaining areas of the casting: quality class D with quality grades S3 + V4; additionally for castings ≥ 500 kg or DN ≥ 400 mm each casting 100% volume inspection shall be performed.

9.2 Rolled or Forged Material

Rolled or forged material, e.g. connection piece, shall be manufactured and inspected according to the corresponding material standard, e.g. EN 10028, EN 10088, EN 10222, EN 10273, DIN EN 10216-2 and DIN 17440, etc. and following supplements:

- Analysis (chemical composition) per heat
- Mechanical properties per heat and heat treatment batch

9.3 Connecting Elements:

Connecting elements shall be manufactured and tested according to AD2000-W 7. As far as there is a requirement for a test certificate for grade properties, this shall be an inspection certificate 3.1 according to EN10204.

9.4 Welding

As far as welding will be performed on the valves (also in case of fabrication welding on castings):

- Welding shall be performed only by welders tested in line with EN 287 or mechanized welds by welding operators tested in line with EN 1418
- Corresponding welding procedure specifications and procedure approval records according to
 - DIN EN ISO 15607
 - DIN EN ISO 15609-1
 - DIN EN ISO 15614-1 shall be available.
- Fabrication welds on castings shall be inspected according to DIN 1690.
- Fabrication welds having a length ≥ 150 mm or a depth $\geq 40\%$ of the wall thickness or a depth ≥ 25 mm shall be recorded.
- Design welds shall be inspected according to AD2000-HP 5/3. In case of serial production manufacturer-specific inspection concepts may be applied with written agreement of the purchaser.
- If cast steel parts are subjected to heat treatment in the course of valve manufacture, all parts heated shall subsequently be subjected to a 100% surface crack examination.

9.5 Manufacturing Inspections

Manufacturing inspections shall be performed according to PED 97/23/EC / EN 12266. The PED 97/23/EC as a superior legislation shall be observed and applied. These are especially:

- a) Pressure test
 - Test P10 according to EN 12266 part 1
- b) Leak test
 - Test P11 + P12, leakage rate A according to EN 12266 part 1
- c) Functional test
 - Test F20 according to EN12266 part 2
- d) Verification of dimensions
 - Main dimensions
 - connecting dimensions

All tolerance ranges which are important for the function shall be recorded. as

 - Stem diameter
 - Diameters of guides and fits

10 Marking

Valves shall be marked as follows:

- The name and address or other means of identification of the manufacturer and, where appropriate, of his authorized representative established within the Community
- Nominal diameter
- Nominal pressure class
- Casing material
- Flow direction arrow
- Identification-no. (Also commission-no.)
- The year of manufacture
- Identification of the pressure equipment according to its nature, such as type, series or batch identification and serial number
- Essential maximum/minimum allowable limits
- CE marking

Valves with a total weight > 1000 kg shall be marked additionally with permanent information of the weight on the valve or on a safe name- plate.

The provisional KKS (valve tag no.)-Labels which are fabricated and properly sized are to be made of plastic or similar unbreakable material and attached to the component by wire. The lettering on the labels should include the KKS classification in black, permanent ink.

Marking of the materials for all pressure loaded casing components shall survive during all manufacturing processes according to AD2000-HP 0.

11 Surface Protection

Surface coating of non-stainless steel valves shall be applied as follows

Paint (Coat)	Paint Type	No. of coat	DFT*
Primer Paint	: Epoxy base Zinc rich primer paint	1 Coat	35
Intermediate Paint:	Epoxy TiO2 Pigmented Polyamide Cured Paint	1 Coat	70
Finish (Final) Paint:	Aliphatic Acrylic 2 Pack Polyurethane Finish paint	2 Coats	75

*DFT – Dry Film Thickness (final) in microns

- Shade as per RAL – Grey 9002

12 Documentation

All the documentation for the delivered valve shall remain with the valve manufacturer and shall be stored for at least 10 years. This documentation shall be labeled such as to ensure traceability and allocation to the corresponding valve and shall be marked as belonging to BHEL. The valve manufacturer shall check the documentation with respect to completeness and correctness before shipping the valve. The valve manufacturer shall certify this at the time of the delivery. It is the obligation of the valve manufacturer to hand over a copy of the total documentation to the purchaser on request and free-of-charge.

BHEL expects a documentation of the module/parts including all instructions which are necessary for service, installation and maintenance. Amendments will be requested separately.

In accordance to the Machinery Directive (98/37/EC) and Pressure Equipment Directive (97/23/EC) the following records and logs shall be provided to the purchaser in any case:

- manufactures declaration
- Declaration of conformity
- Material certificates
- Pressure test
- Non-destructive tests

The documentation - also that of the sub suppliers - shall be written in English language and shall contain at least:

- Test certificates of the prematerial (at least inspection certificate 3.1B according to EN 10204)
- Records of all inspections performed by the valve manufacturer or his sub suppliers during manufacturing:
 - Non-destructive inspections of e.g. weld areas or welds
 - Verification of dimensions
 - Pressure and leak tests
 - Functional tests
- Heat treatments performed
- The European Union guidelines and standards which are valid and can be used for the area of application (e.g. PED 97/23/EG, Low-Voltage Guideline 73/23/EEG, etc..) are to be designated in the declaration of conformity according to the remarks and applied quality modules, and shall include all relevant data (see e.g. appendix VII of Guideline 97/23/EG). Risk disclosure and danger analyses in accordance with EN 1050 are to be handed over to BHEL if necessary.
- If materials without European material approval are drawn on for the order (order papers/designs) (e.g. ANSI/ASME materials) appropriate substitute certificates from a designated authority shall be procured and documented accordingly. If the order pertains to a component of a total design group, then all certificates and certification of the component of the highest category of the total design group shall be made available.

13- Final inspection

The purchaser reserves the right to perform final inspections on his ordered parts in the shop of the valve manufacturer, as well as in the shop of his sub suppliers

14 - Delivery and Packing

Details regarding delivery are given in the order, however at least following details shall be given together with the delivered parts:

Actualization of standards and instructions

- Purchaser
- Order-no. / project
- Manufacturer commission-no. / Works-no.
- Specification
- Number of pieces
- Type / item
- Nominal diameter [DN]
- Maximum allowable pressure [PS]
- Maximum allowable temperature [TS]
- Fluid
- Manufacturer drawing-no.
- Identification-no. of the valve
- Piece weight

Together with the delivery of the valve the valve manufacturer shall hand over a certificate 2.1 according to EN 10204 in English, which confirms that the delivered valve fulfills the requirements given in the order and in this specification. Furthermore the valve manufacturer shall confirm that only materials as listed in the design bill of material have been used and that the documentation is available in his shop in line with Item 12 above and that he has checked the documentation carefully.

Packing of the valve shall be as follows:

- The valve shall be packed and locked that way, that in general case any damage will be prohibited.
- All openings shall be plugged.
- Detail parts respectively components shall be packed individually, however assignment shall be ensured.
- As far as necessary accessory devices for transportation purposes shall be attached to the valve and/or to the packing, e.g. lifting eyes and lifting signs.
- Bearing areas shall be marked, if necessary.

15 Guarantee

The supplier shall guarantee trouble free operation of the equipment for a period of 2 years after installation and commissioning or a period of 3 years from the date of dispatch of equipment whichever is earlier.

If during erection/commissioning and operation at site, any defect in any component is detected, purchaser's / owner's site representative shall prepare the assessment report and a copy of the same shall be forwarded to the supplier. The supplier shall replace / rectify the concerned items free of charge. The supplier, if he so desires, may depute his representative to site at his own cost otherwise the report of purchaser's / owner's site representative shall be binding on the supplier.

16 Spares

The offer of valves shall include the requirement of spares to be made available at the time of erection & commissioning. A separate offer of spares to be required for 3 to 5 years of operation shall also be separately enclosed along with main offer.

17 Special tools & tackles

Any special tools & tackles, required for erection, commissioning and maintenance of valves shall be included in main offer per set of valves.

18 Supplementary Requirements

The valve manufacturer shall send following documents in triplicate written in English language to the purchaser's department for records. Documents listed under a) and c) shall be delivered with the order acknowledgement:

- a) Part drawing showing the function of the valve and the design bill of material
- b) Operating and maintenance instruction
- c) Spare part list

19 Deviations

Any deviation from this purchasing specification has to be reported to the purchaser immediately.
Any deviation is accepted only if this has been approved or accepted by the purchaser in writing.
In case of any deviation from the specified properties, also if the proof by testing is not required, the purchaser has the right to reject the material.

TECHNICAL REQUIREMENTS (PNEUMATIC GLOBE Valve-Actuator & accessories)

- 1) General : 24V DC for on-off action.
Tolerance : (+10 & -15%)
Enclosure : IP 65
- 2) Solenoid valve
Connection : Plug and socket type
Energised time : constant rated
coil isolation : class F
Nominal current : $\leq 1A$
TYPE : BOSCH make, model 0 820 022 987, namur interface or equivalent
- 3) Proximity switch : - inductive
switching element : PNP close (normal open)
function : 3 pole
Connection : Plug and socket type
Shield : wired if available
Qty : 2 nos
TYPE : BALLUFF make, model BES-516 300 S321 NEX S4 D or equivalent
- 4) Pneumatic actuation : Pressure range 3-10 bar, G1/8"
a) Adaptor (with ferrule fitting for converting G1/2" air supply line to G1/8"): One no to be provided
b) Impulse line (G1/8") : Two meters to be provided along with adaptor G1/8" for connection to this valve.
- 5) Junction box : IP65/NEMa 4 to be provided
- 6) Normal operation : Valve close
- 7) Fail safe position : Valve close
- 8) Hook up diagram : To be provided
- 9) Write up on operation of valve: To be provided
- 10) The Limit Switches and Solenoid Valve of each globe valve are to be loosely supplied in the main package along with all cables/fittings for termination to the Junction Box.
- 11) The Limit Switches and Solenoid Valve shall be packed in separate wooden box/compartment to avoid breakage.
- 12) Proper Labeling such as 'item name', "P.O." etc. shall be clearly indicated on the loose package Box for identification in case of misplacement.

MANUFACTURER'S NAME AND ADDRESS						STANDARD QUALITY PLAN								TO BE FILLED BY BHEL							TO BE FILLED BY BHEL								
BHEL	VENDOR'S NAME				ITEM			QP NO.	DATED																				
					DRG. NO.	AS PER PO																							
					SPEC.	AS PER PO																							
					REV																								
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SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS			AGENCY			REMARKS															
													S	B	C														
1	2	3	4	5	6	7	8	9	D	10	11																		

[illegible]

		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. S: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY C: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	APPROVED BY
MANUFACTURER/SUBCONTRACTOR				