

1X800 MW WANAKBORI TPS EXT. UNIT-8

VOLUME – IIB

**TECHNICAL SPECIFICATION
FOR
BALL VALVES**

SPECIFICATION NO. PE-TS-408-100-M004



**BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA**

	TITLE:	SPECIFICATION NO. PE-SS-999-100-Q001	
	PREAMBLE	VOLUME	
		SECTION	
		REV. NO.	DATE: 26/08/2011
		SHEET	1 OF 1

1.0 The tender document contains three (3) volumes. The bidder shall meet the requirements of all the three volumes.

1.1 **Volume-I (CONDITIONS OF CONTRACT)**

This consists of four parts as below:-

- Volume-IA : This part contains instructions to bidders for making bids to BHEL.
- Volume-IB : This part contains general commercial conditions of the tender & includes provision that vendor is responsible for the quality of item supplied by their sub-vendors.
- Volume-IC : This part contains special conditions of contract.
- Volume-ID : This part contains commercial conditions for erection & commissioning site work, as applicable.

1.2 **Volume-II TECHNICAL SPECIFICATIONS**

Technical requirements are stipulated in Volume-II which comprises of :-

- Volume-IIA : General Technical Conditions
- Volume-IIB : Technical Specification including Drawings, if any.

1.2.1 **Volume-IIB**

This volume is sub-divided into following sections:-

- Section-A : This section outlines the scope of enquiry.
- Section-B : This section provides "Project Information".
- Section-C : This section indicates technical requirements specific to the contract, not covered in Section-D.
- Section-D : This section comprises of technical specifications of equipments complete with data sheet A, B and C.

Data Sheet - A Specifies data and other requirements pertaining to the Equipment.


Data Sheet - B Specifies data to be filled by the bidder (Data Sheet-B is contained in Volume-III).

Data Sheet -C Indicates data/documents to be furnished after the award of contract as per agreed schedule by the vendor (as applicable).

1.2.2 **Volume-III (TECHNICAL SCHEDULES)**

This volume contains technical schedules and Data Sheets-B, which are to be duly filled by the bidder and the same shall be furnished with the technical bid.

2.0 The requirements mentioned in Section-C / Data Sheets-A of section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-D

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SECTION-A

SCOPE OF ENQUIRY

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SCOPE OF ENQUIRY

1. SCOPE

This enquiry covers the Design, Manufacture, Inspection & Testing at vendor's and/or his sub-vendor's works, proper packing and delivery to site of Ball valves complete with all accessories as per the requirements mentioned in different sections of the specification for 1X800 MW WANAKBORI TPS EXT. UNIT-8


2. GENERAL TECHNICAL INSTRUCTIONS

- a) It is not the intent to specify herein all the details of design and manufacture. However the equipment shall conform in all respects to high standards of design, engineering and workmanship, and shall be capable of performing the required duties in a manner acceptable to Engineer/ Owner, who will interpret the meaning of drawing and specifications, and shall be entitled to reject any component or material, which in his judgement is not in full accordance herewith.
- b) The omission of specific reference to any component/ accessories necessary for the proper performance of Ball valves shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of Ball valves at quoted prices.
- c) Design/ drawings/ data sheets etc. shall be subject to approval of BHEL as per specification, in the event of order.
- d) BHEL's / customer's representative shall be given access to the shop in which the equipment are being manufactured or tested and all test records shall be made available to him.
- e) The equipment covered under this specification shall not be despatched unless the same have been finally inspected, accepted and shipping release issued by BHEL.

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SECTION-B

PROJECT INFORMATION

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PROJECT INFORMATION

The bidder shall acquaint himself by a visit to the site, if felt necessary, with the Conditions prevailing at site before submission of the bid. The information provided in this section will be for general guidance and shall not be contractually bidding on BHEL/OWNER. All relevant site data/information as may be necessary shall have to be obtained /collected by the bidder.

Project information mentioned below:

INTRODUCTION

The proposed 1x800 MW Supercritical Thermal Power Project would be set up by Gujarat State Electricity Corporation Limited (GSECL) at Kheda district of Gujarat. The proposed extension unit will be developed in the existing Wanakbori Thermal Power Station and will be located north east side of the existing plot in the Kheda District of Gujarat. The Bidder shall acquaint himself by a visit to the site, if felt necessary, with the conditions prevailing at site before submission of the bid. The information given here in under is for general guidance and shall not be contractually binding on the Owner. All relevant site data /information as may be necessary shall have to be obtained /collected by the Bidder.


APPROACH TO SITE

The proposed site is located in Kheda district about 13 kilometres from the nearest commercial town of Balasinor & 10 kilometres from Sevalia town. The National Highway, NH-08, connecting Dakor – Godhra is about 10 kilometres from the site. The State Highway SH – 59 connecting Balasinor –Sevalia is about 2 Kilometres from the site. Nearest railway station to the existing site is Sevalia, located about 8 kilometres from the site on Anand –Godhara main broad gauge line of Western Railway. Nearby Air Ports are Ahmedabad at a distance of about 110 kilometres from the site and Vadodara at a distance of about 85 kilometres from the site.

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SECTION-C

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFIC TECHNICAL REQUIREMENTS BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO. PE-TS-408-100-M004	
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1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the standard technical specification and Data sheet A of Section D. In addition, the requirements of this Section-C shall also be complied with. However, wherever the details given in standard technical specification of Section-D and Data sheet A are different, the requirements of Data sheet A shall prevail. Similarly in the event of contradictions between Section –C & Section –D/ Data sheet A, Section –C will prevail.
- 1.2 The technical requirements for valves shall, in general, be as per the attached standard Technical specification for Valves, and Data sheet A of Vol. II B Section D.

2. SCOPE OF SUPPLY

- 2.1 The valves complete with all accessories shall be supplied as per Data sheet A of Section D. For detail refer the same. Each valve (quantity and other details specified in Data Sheet-A) shall be complete with the following accessories.
- 2.2 Commissioning spares, if any.
- 2.3 Set of special tools and tackles if required for the maintenance, erection etc. of the equipment supplied.
- 2.4 Mandatory spares as per Datasheet-A.
- 2.5 Various drawings, datasheets, operation and maintenance manuals etc., as specified in Data Sheet-C.

3. EXCLUSIONS:

The following are excluded from the bidder's scope:


- a) Counter flanges and their nuts and bolts..
- b) Erection & Commissioning of equipment at site.

4. QUALITY ASSURANCE

The Quality Plans enclosed with this specification specify minimum quality control requirement. During contract stage vendor shall furnish these Quality Plans duly signed & stamped for their compliance. Quality plans shall be approved by BHEL and customer (If necessary). All inspection and testing shall be carried out by BHEL and CUSTOMER (if necessary). In case inspection is by both BHEL and CUSTOMER, then the inspection can be carried out jointly or separately, which will be informed later.

5. GALVANIZING REQUIREMENT

Carbon steel valve bodies and all other carbon steel valve parts including handle lever & lever adopter shall be degreased, thoroughly cleaned, pickled & rinsed as specified in IS: 2629. Then all these carbon steel body valves & parts shall be hot dip galvanized as per IS: 2629. The minimum thickness of galvanizing shall be 50 minimum microns.


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6 PACKING INSTRUCTIONS:

- 6.1 Each valve shall be drained, cleaned, prepared and suitably protected in such a way so as to minimize the possibility of damage and deterioration during transit and storage.
- 6.2 The valve shall be dispatched in total assembled form.
- 6.3 Body ends shall be suitably sealed to protect them against damage during transit and storage.
- 6.4 A thin sheet steel circular blanking plate of a diameter 6mm less than the bolt holes inner P.C.D. shall be firmly fixed to the flange faces by the application of adhesive after first ensuring that the flanges faces have been thoroughly degreased. A thin coat of adhesive shall be applied to the flange face and the blanking plate and then allowed to dry for 15-20 minutes. The coated face of the blanking plate should then be offered up to the face of the flange taking care that the plate is concentric with the flange. Firm pressure shall be applied to ensure intimate contact between plate and flange. A wooden blank should then be bolted to the flange using a minimum of 4 bolts.
- 6.5 Valve Tag Nos. shall be incorporated in all the dispatch documents.
- 6.6 Proper care shall be taken to avoid damage to the painted surface during transit.
- 6.7 All the valves shall be packed suitably in wooden cases in order to avoid damage during transit and also during storage at site in tropical climate conditions for a period of 15-18 months.
- 6.8 Vendor to provide soft copy of photos/snaps of duly packed valve. The soft copies to be provided by vendor after final inspection of valves. Clearance for despatch of valves will be given only after satisfactory packing conditions of valves from vendors work.

7 SPARES

- a) **Mandatory Spares:** These shall be as per Data Sheet-A.
- b) Order for the spares may be placed simultaneously or otherwise at the option of purchaser.
8. All valves and specialties shall be provided with brass Tag Discs indicating Tag numbers and nomenclature of the valve including duty or service intended and the function of the valves specialties.

	SPECIFIC TECHNICAL REQUIREMENTS BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO. PE-TS-408-100-M004	
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9 DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents (enclosed in Vol III) duly filled, signed and stamped along with the bid:


- a) Compliance sheet
- b) Schedule of Deviations if any.
- c) Schedules of Price & Unit Price for each project.
- d) Schedule of declaration.

The above are the only documents which will be used for technical evaluation unless other documents are asked for during technical clarifications. Any other technical document enclosed with the bid shall be ignored for the purpose of technical evaluation. All other documents attached with the specification are for information of the vendor and no comments shall be marked on these.

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SECTION-D

STANDARD TECHNICAL SPECIFICATION DATA SHEET – A QUALITY PLAN DATA SHEET – C

	STANDARD TECHNICAL SPECIFICATION FOR BALL VALVES	SPECIFICATION NO. PE-SS-999-100-M004	
		VOLUME. II B	
		SECTION D	
		REV. NO. 05	DATE. 22.08.2015
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1 GENERAL

This specification covers the design, materials, construction features, manufacture and testing of Ball valves at Vendor's or/ and sub-Vendor's works inclusive of painting and packing requirements.

2 CODES AND STANDARDS

- 2.1 The design, materials, construction features, manufacture, inspection and testing of valves shall conform to the latest applicable codes and standards.
- 2.2 The valves covered under this specification shall be designed and tested as per BSEN ISO 17292 (replaces BS: 5351).
- 2.3 In case of any conflict between the above codes/ standards and this specification, the latter shall prevail and in case of any further conflict in the matter, the interpretation of the specification by the Engineer shall be final and binding.

3 DESIGN REQUIREMENTS

- 3.1 These valves shall be used for non-corrosive media like compressed air systems (i.e. service air, instrument air etc) and shall be of non-fire safe design.
- 3.2 Valves shall be selected in the appropriate rating based on the pressure/temperature conditions and service media mentioned in Data sheet-A of Vol IIB Section D.
- 3.3 Valves with screwed/socket welding ends up to size of 50 NB shall be in 3 piece/2 piece construction and valves of size 65 NB and above with flanged/butt welding ends shall be short body design and shall be in 3 piece/2 piece construction.

4 Materials

- 4.1 The materials of construction of main parts Ball valves shall be as specified in Data Sheet-A.
- 4.2 The materials of construction of the remaining parts shall be as per the relevant standard governing the valves. These materials shall be subjected to approval.
- 4.3 Material used in manufacture of valve shall be of tested quality.

5 CONSTRUCTION FEATURES

- 5.1 All valves with screwed ends shall have female parallel threads as per IS: 554/ASME B 1.20.1
- 5.2 All valves with flanged ends shall have raised face flanges and drilling details as per ANSI B16.5
- 5.3 Valves with socket welded and butt welded ends shall have extended pieces. These extended pieces shall be connected through screwed ends on one side and the other end will be suited to match the pipe depending on the type of end details i.e. socket/butt welds ends. Socket ends and Butt weld ends shall be as per ASME B16.11 and ASME B16.25 respectively.
- 5.4 All valves up to 50 NB shall be of reduced port and 65mm and above shall be of full bore.
- 5.5 Valves of size 200 NB & above shall be gear operated.
- 5.6 Body seats shall be of renewable type and shall be of moulded PTFE completely contained and shall provide leak tightness in either direction and be suitable for service temperatures.
- 5.7 All the valves shall be provided with integral stop on body limiting quarter turn operation.
- 5.8 All the ball valves shall be of tight shut off type and the lever shall be designed such that lever is parallel to the flow direction when the valve is in open position.
- 5.9 All the ball valves fitted with a steel lever shall be closed by turning the lever in the clockwise direction. The direction of closing the valve and "Shut" position shall be marked on the valves. The lever shall have plastic covering. For gear operated valves the hand wheel shall clearly marked Open & Shut with arrows indicating the direction of rotation which they refer. Valves shall be closed by rotating the hand wheel in the clock wise direction when looking at the face of the hand wheel.

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5.10 Each lever / hand wheel of the valve shall be fitted with a circular/ rectangular nameplate of SS material indicating the purchaser's Valve Tag No. and service description.

6 MANUFACTURE OF VALVES

- 6.1 Valve castings shall be procured from foundries observing strict quality control and approved by reputed customers.
- 6.2 Particular care shall be taken to ensure that all foundry sand and loose material is properly removed from castings by fettling before the valve's manufacture is started.

7 TESTING AND INSPECTION

- 7.1 The items covered under this contract shall be subjected to inspection, testing and quality surveillance. The Inspection Agency shall, at all reasonable times have access to Vendor's works, Quality Control records and all facilities as reasonably required for carrying out the inspection and testing efficiently, and these shall be provided by the vendor free of cost.
- 7.2 The minimum NDT/testing and inspection requirements for valve shall be as per the attached Quality Plan. However, in case of order, final inspection and testing shall be carried out as per the final approved quality plan without any price implications.
- 7.3 Carbon steel valves shall be hydraulically tested for leak tightness before galvanizing the valve body and end pieces (pressure parts).
- 7.4 Hydrostatic/Air Tests
- a) All the valves shall be tested hydraulically for strength and tightness of seats at the pressures as mentioned in BSEN ISO 17292
- b) No leakage shall be allowed for any size of the valve covered under this specification.

7.5 Dimensional and functional checks shall be carried out.

7.6 Protection against corrosion.

For carbon steel valves, body and all other parts including handle lever & lever adopter shall be degreased, thoroughly cleaned, pickled & rinsed as specified in IS: 2629. Then all these carbon steel body valves & parts shall be hot dip galvanized as per IS: 2629. The minimum thickness of galvanizing shall be 50 microns minimum.

8 CLEANING AND PROTECTION FOR DESPATCH:

- 8.1 Valves with screwed and socket welding ends shall be protected by means of polythene caps/rubber and protectors to prevent damage to ends & also to avoid foreign material entering the valve while shipment & storage.
- 8.2 For valves with flanged ends, a thin sheet steel circular blanking plate of a diameter 6mm less than the bolt holes inner P.C.D. shall be firmly fixed to the flange faces by the application of adhesive after first ensuring that the flange faces have been thoroughly degreased. A thin coat of adhesive shall be applied to the flange face and the blanking plate and then allowed to dry for 15-20 minutes. The coated face of the blanking plate should then be offered up to the face of the flange taking care that the plate is concentric with the flange. Firm pressure shall be applied to ensure intimate contact between plate and flange. A wooden blank should then be bolted to the flange using a minimum of 4 bolts.
- 9 Valve Tag Nos. shall also be incorporated in all the dispatch documents.



**DATA SHEET-A
BALL VALVES
1X800 MW WANAKBORI TPS EXT. UNIT-8**

SPECIFICATION NO. PE-TS-408-100-M004

VOL II B

SECTION D

REV. NO.: 00 DATE: 29.09.2015

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1	2	3	4	5	6		7	8	9	10	11	12	13		14	15			16
					DESIGN PRESSURE KG/CM2(G)	TEMP (DEG ° C)							SERVICE	RATING, DESIGN & TESTING CODE		BODY MATERIAL	TRIM MATERIAL	END CONN	
MM	MM	BODY SEAL	STEM WASHER	STEM SEAL															
1	01-QEC-10-AA-72 to 01-QEC-10-AA-134 CONTINGENCY VALVES 25 NOS.	Ball	25	MAN	8	50	SERVICE AIR SYSTEM	CL.800 OF BSEN ISO 17292	FORGED CARBON STEEL AS PER ASTM A 105	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	HOT DIP GALVANIZED	34.2	4.00	88	9	9	9	1
2	01-QEC-10-AA-20 to 01-QEC-10-AA-34, CONTINGENCY VALVES 6 NOS.	Ball	50	MAN	8	50	SERVICE AIR SYSTEM	CL.800 OF BSEN ISO 17292	FORGED CARBON STEEL AS PER ASTM A 105	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	HOT DIP GALVANIZED	60.8	4.50	21	3	3	3	1
3	01-QEC-10-AA-01 to 01-QEC-10-AA-07, CONTINGENCY VALVES 2 NOS.	Ball	150	MAN	8	50	SERVICE AIR SYSTEM	CL.150 OF BSEN ISO 17292	CAST CARBON STEEL AS PER ASTM A216 Gr. WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED	166.5	5.40	9	2	2	2	1
4	01-QEA-10-AA-81 to 01-QEA-10-AA-174 CONTINGENCY VALVES 26 NOS.	Ball	15	MAN	8	50	INSTRUMENT AIR SYSTEM	CL.800 OF BSEN ISO 17292	FORGED STAINLESS STEEL AS PER ASTM A182 F304	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	-	21.3	2.77	120	12	12	12	1
5	01-QEA-10-AA-41 to 01-QEA-10-AA-71, CONTINGENCY VALVES 11 NOS.	Ball	25	MAN	8	50	INSTRUMENT AIR SYSTEM	CL.800 OF BSEN ISO 17292	FORGED STAINLESS STEEL AS PER ASTM A182 F304	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	-	33.4	3.38	42	5	5	5	1
6	01-QEA-10-AA-21 to 01-QEA-10-AA-29, CONTINGENCY VALVES 3 NOS.	Ball	50	MAN	8	50	INSTRUMENT AIR SYSTEM	CL.800 OF BSEN ISO 17292	FORGED STAINLESS STEEL AS PER ASTM A182 F304	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	-	60.3	3.91	12	2	2	2	1
7	01-QEA-10-AA-11 to 01-QEA-10-AA-18, CONTINGENCY VALVES 3 NOS.	Ball	80	MAN	8	50	INSTRUMENT AIR SYSTEM	CL.150 OF BSEN ISO 17292	CAST STAINLESS STEEL AS PER ASTM A351 CF8M	SS 316	FLANGED AS PER ASME B 16.5 R/F	-	88.9	3.05	11	2	2	2	1
8	01-QEA-10-AA-01 CONTINGENCY VALVES 1 NOS.	Ball	150	MAN	8	50	INSTRUMENT AIR SYSTEM	CL.150 OF BSEN ISO 17292	CAST STAINLESS STEEL AS PER ASTM A351 CF8M	SS 316	FLANGED AS PER ASME B 16.5 R/F	-	168.3	3.40	2	2	2	2	1
													TOTAL	305	37	37	37	8	


NOTES

1. IA - INSTRUMENT AIR MAN - MANUAL SA - SERVICE AIR MAN-MANUAL
2. COMMISSIONING SPARES FOR BALL VALVES:- ONE SET CONSISTS OF BODY SEAL, STEM WASHER & STEM SEAL.
3. FOR DETAIL MOC PLEASE REFER PAGE 2 OF DATASHEET-A
4. MANDATORY SPARE CONSISTS OF COMPLETE VALVE WITHOUT COMMISSIONING SPARES.
5. MANDATORY SPARE MENTIONED AS COMPLETE VALVE WITHOUT COMMISSIONING SPARES SHALL BE CONSIDERED AS IDENTICAL TO MAIN VALVE EXCLUDING COMMISSIONING SPARES.

	DATA SHEET-A BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO. PE-TS-408-100-M004	
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Materials of Construction

SL. NO.	PART NAME	MATERIAL (CARBON STEEL BODY)	MATERIAL (STAINLESS STEEL BODY)
1	BODY AND END PIECES	FORGED CARBON STEEL AS PER ASTM A 105 (UPTO 50 NB) (HOT DIP GALVANISED) CAST CARBON STEEL AS PER ASTM A 216 Gr. WCB (ABOVE 50 NB) (HOT DIP GALVANISED)	FORGED STAINLESS STEEL AS PER ASTM A182 F316 (UPTO 50 NB) CAST STAINLESS STEEL AS PER ASTM A 351 Gr.CF8M (ABOVE 50 NB)
2	BALL, STEM AND GLAND	STAINLESS STEEL AS PER AISI-316 (BALLMIRROR FINISH)	STAINLESS STEEL AS PER AISI-316 (BALLMIRROR FINISH)
3	SEAT RING	VIRGIN UNFILLED OIL FREE PTFE (Non Asbestos Type)	VIRGIN UNFILLED OIL FREE PTFE (Non Asbestos Type)
4	BODY SEAL, STEM SEAL AND STEM WASHER	VIRGIN UNFILLED OIL FREE PTFE (Non Asbestos Type)	VIRGIN UNFILLED OIL FREE PTFE (Non Asbestos Type)
5	BODY STUD	AISI 304	AISI 316
6	BODY NUT	AISI 304	AISI 316
7	GLAND NUT	AISI 304	AISI 316
8	LEVER	CARBON STEEL (HOT DIP GALVANISED) WITH PLASTIC SLEEVE GRIP	AISI316 WITH PLASTIC SLEEVE GRIP
9	LEVER ADOPTER	CARBON STEEL (HOT DIP GALVANISED)	AISI316
10	STOPPER PIN	AISI 316/AISI 304	AISI316
11	STEM WASHERS	SPRING STEEL	SPRING STEEL
12	NAME PLATE (FOR VALVE TAG NO.)	Brass	Brass
13	PAINTING	NO PAINTING NEEDS TO BE DONE AS ALL PARTS OF THE VALVES ARE GALVANISED.	NO PAINTING NEEDS TO BE DONE AS ALL PARTS OF STAINLESS STEEL

	QUALITY PLAN			CUSTOMER: GSECL			PROJECT: 1X800 MW WANAKBORI TPS UNIT-8			SPEC. NO : PE-TS-408-100-M004		
	SHEET 1 OF 2			BIDDER/VENDOR			QP NO: PE-QP-408-100-M004 REV 00 DT. 29-09-2015			SPEC. TITLE		
				SYSTEM : L.P.VALVES			ITEM: CARBON STEEL/ STAINLESS STEEL BALL VALVES SIZE 15 TO 50 NB / CLASS 800 & 65 TO 250 / CLASS 150			SECTION VOLUME		
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	

1.1	MATERIAL BODY, END PIECES BALL, SPIDNLE, GLAND, LEVER, FASTNERS	1. PHYSICAL, CHEMICAL PROPS. 2. HEAT TREATMENT 3. SURFACE DEFECTS	MA CR MA	PHYSICAL, CHEM, TESTING REVIEW OF H.T. RECORDS VISUAL	1/HEAT 100% 100%	APPD. DRG./ TECH.SPEC. -DO- MSS-SP-55	APPD. DRG./ TECH.SPEC. -DO- FREE FROM DEFECTS	T.C. H.T. INTERNAL INSPN. RECORDS INSPN. REPORT	3 3 3	2 2 2	1 1 1	CORELATION REQD. FOR BODY & END PIECES
1.2	BODY, END PIECES	1. SURFACE DEFECTS	CR	PENTRANT TEST	100%	ASTME 165	ANSI B 16.34	TEST REPORT	3/2	2	1	Applicable only for SS castings
2.0	IN PROCESS INSPECTION											
2.1	MACHINING OF ALL COMPONENTS	1. DIMENSIONS 2. SURFACE FINISH 3. SURFACE DEFECTS	MA MA CR	MEASUREMENT VISUAL PENTRANT TEST	100% 100% 100%	MFG. DRG. MFG. DRG. ASTME 165	MFG. DRG. MFG. DRG. ANSI B16.34	LOG BOOK LOG BOOK T.C.	3/2 3/2 3/2	- - 2	- - 1	FOR BALL, SPINDLE SEATS & MACHINED SURFACES
3.0	<u>BEFORE GALVANISING --SHELL TEST FOR PRESSURE PARTS.</u>											
3.1	BODY, END PIECES (PRESSURE PARTS)	LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	APPD. DRG.	NO LEAKAGE	T.C.	2	2	1	
4.0	GALVANIZING OF CARBON STEEL BODY, END PIECES AND ALL OTHER CARBON STEEL VALVE PARTS	1. FREEDOM FROM SURFACE DEFECTS 2. UNIFORMITY IN THICKNESS 3. ADHESION	MA MA MA	VISUAL THICKNESS KNIFE TEST	100% VALVE BODY AT RANDOM -DO-	IS:2629 IS:2629 IS:2629	IS:2629 IS:2629 IS:2629	INSPN REPORT INSPN REPORT INSPN REPORT	3/2 3/2 3/2	2 2 2	1 1 1	THICKNESS 50 MIN. MICRONS TO BE CHECKED WITH ELCOMETER

BHEL	PARTICULARS	BIDDER/VENDOR	
	NAME		
	SIGNATURE		
	DATE		BIDDER'S/ VENDOR'S COMPANY SEAL


	QUALITY PLAN		CUSTOMER: GSECL			PROJECT: 1X800 MW WANAKBORI TPS UNIT-8			SPEC. NO : PE-TS-408-100-M004			
			BIDDER/VENDOR			QP NO: PE-QP-408-100-M004		REV 00 DT. 29-09-2015		SPEC. TITLE		
	SHEET 2 OF 2		SYSTEM : L.P.VALVES			ITEM: CARBON STEEL/ STAINLESS STEEL BALL VALVES SIZE 15 TO 50 NB / CLASS 800 & 65 TO 250 / CLASS 150			SECTION VOLUME			
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	

5.0	<u>ASSEMBLY OF ALL VALVE AFTER GALVANISING</u>											
5.1	BALL AND SEAT	1. LAPPING	CR	MATCHING	100%	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE UNIFORM WITH SOFT SEAT		LOG BOOK	3/2	-	2,1	
6.0	<u>FINAL TESTING</u>											
6.1	ASSEMBLY	1. DIMENSIONS	MA	MEASUREMENT	100%	APPD. DRG.	APPD. DRG.	INSPN. REPORT	3/2	2, 1	-	
6.2	TESTING	2.OPENING/CLOSING	MA	OPERATION	100%	SMOOTH OPERATION OF VALVE		-DO-	3/2	2, 1	-	
6.2.1	BODY	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	APPD. DRG.	NO LEAKAGE	T.C.	3/2	2, 1	-	
6.2.2	SEAT	1. LEAK TIGHTNESS	CR	-DO-	100%	-DO-	-DO-	-DO-	3/2	2, 1	-	
		2. LEAK TIGHTNESS	CR	PNEUMATIC TEST	100%	-DO-	-DO-	-DO-	3/2	2, 1	-	
5.0	PACKING	AS PER BHEL TECH. SPEC.	MA	VISUAL	100%	AS PER BHEL TECH. SPEC.	AS PER BHEL TECH. SPEC.	(SOFT COPY OF PHOTOGRAPHS)	3/2	2	1	PHOTOGRAPHS OF VALVES AFTER PACKING TO BE VERIFIED BY BHEL BEFORE ISSUING MDCC

ABBREVIATIONS

CR = CRITICAL CHARACTERISTIC **P = PERFORMED BY** **W = WITNESSED BY** **V = VERIFIED BY**
MA = MAJOR CHARACTERISTIC **1 = PURCHASER (BHEL)** **2 = VENDOR** **3 = SUB VENDOR OF THE VENDOR**

BHEL	PARTICULARS	BIDDER/VENDOR	
	NAME		
	SIGNATURE		
	DATE		
			BIDDER'S/ VENDOR'S COMPANY SEAL

	TECHNICAL SPECIFICATION BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO. PE-TS-408-100-M004	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 29.09.2015
		SHEET 1 OF 1	

DATA SHEET - C

Drawings/documents distribution schedule to be followed by the successful bidder:

1.0 The successful bidder shall submit the following drawings/documents within two weeks after award of contact.

1.1 Relevant drawings/leaflets for the valves showing following information.

- i) Complete cross sectional arrangement of the valve.
- ii) Binding dimensions, dismantling clearances & weights.
- iii) Bill of material incorporating all the materials of construction of various parts along with BS/ASTM/IS standards to which the materials conform to.
- iv) Special features, if any, as called for in the specific requirement
- v) Type of oil/Grease wherever required and its annual consumption.

1.2 Quality Plan duly signed & stamped with bidder's seal.

2.0 The following shall be submitted within the stipulated time period as per vendor's drawings/ documents schedule, but not later than one month before first dispatch.

- a) Drawings of components & details as deemed necessary.
- b) Instruction manual for erection, operation and maintenance.
- c) Storage instructions.

3.0 Before dispatch of the equipment the vendor shall furnish the following.

- a) Material Test certificates.
- b) Shop test reports and certificates.

4.0 Distribution of drawings / documents for all projects:

After award of the contract the successful bidder shall furnish drawings/ documents as per following distribution schedule.

Sl. No.	Type of Document	No of Hard copies	No. of Soft copies
1	Documents submitted for Approval	2 Nos.	1 Nos.
2	Final Distribution(Approved Documents)	10 Nos.	4 Nos.
3	O&M Manuals	11 Nos.	4 Nos.

1X800 MW WANAKBORI TPS EXT. UNIT-8

VOLUME – III

TECHNICAL SCHEDULES


FOR

BALL VALVES

SPECIFICATION NO. PE-TS-408-100-M004




**BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA**

	BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO. PE-TS-408-100-M004	
		VOLUME : III	
		SECTION:	
		REV. NO.: 00	DATE: 29.09.2015
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3	SCHEDULE OF DECLARATIONS
4	SCHEDULE OF PRICES

	COMPLIANCE SHEET BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO.:PE-TS-408-100-M004	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 29.09.2015
		SHEET 1 OF 2	


The bidder shall sign and return a copy of this compliance sheet along with his offer, indicating his compliance to the points specified herein:

A) Technical Details: Bidder to tick whichever is applicable.

1.	Technical requirements as per Data sheet-A & Standard Technical Specification of Vol IIB Section-D	Accepted	Not Accepted
2.	Quality Plan	Accepted	Not Accepted
3.	Specific Technical requirements of Vol IIB Section-C	Accepted	Not Accepted
4.	Documentation requirement as per Data sheet-C of Vol IIB Section-D	Accepted	Not Accepted

- B) Deviations to the technical specification are not acceptable. However, if there are any deviations due to unavoidable reasons then the same to be clearly specified in the schedule of deviation. In case of no deviations, schedule of deviations to be filled as NIL by bidder.
- C) The offered materials should be either equivalent or superior to those specified. Also for components where material is not specified, the material used shall be suitable for intended duty.
- D) QP/ test procedures shall be submitted in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/Customer approval in the event of order & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. All Inspection/ testing shall be as per approved QP. The charges for 3rd party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the equipment by the bidder. This 3rd party inspection agency shall be approved by BHEL and will be decided in contract stage.
- E) All drawings/data – sheets etc. to be submitted during contract shall be subject to BHEL/Customer review/ approval.
- F) GA drawings, as submitted with offer at tender stage are for reference purpose only and shall be subject to approval during contract stage.
- G) The commissioning spares (if any) are supplied on ‘As Required Basis’ & prices for same shall be quoted in the price bid format. If the bidder has not quoted for commissioning spares at tender stage and if the same are actually required during commissioning, then the same shall be supplied by bidder without any cost to BHEL.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

	COMPLIANCE SHEET BALL VALVES 1X800 MW WANAKBORI TPS EXT. UNIT-8	SPECIFICATION NO.:PE-TS-408-100-M004	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 29.09.2015
		SHEET 2 OF 2	

- H) All drawings/documents in soft as well as hard copy shall be submitted within 2 weeks from placement of Purchase orders in the event of order. A technical representative of bidder shall come for meeting with BHEL along with revised documents within one week of receipt of BHEL comments to resolve all issues and incorporate all comments in the soft copy for further submission to customer if required. Further, on receipt of customer comments on the documents a technical representative from bidder shall come for meeting to resolve all issues and incorporate all comments in the soft copy at BHEL and resubmit the drawings /documents for CAT I approval and shall visit customer/customer's consultant if required for across the table approval of documents.
- I) Any special tools & tackles, if required, shall be in bidder's scope.
- J) The offered model design should be of bidder's proven model and they should have designed, manufactured, supplied and tested the equipment of similar type and rating in at least Two (2) projects and be in satisfactory operation for last two (2) years.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL



TITLE
*** SCHEDULE OF DEVIATIONS**
() From Technical Specifications (Volume –II B)

SPECIFICATION NO
PE-TS-408-100-M004

VOL III

SHEET..... OF.....

We the undersigned hereby certify that the above mentioned are the only deviations.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				COMPANY SEAL
NAME	DESIGNATION	SIGNATURE	DATE	

	TITLE *SCHEDULE OF DECLARATIONS	SPECIFICATION NO PE-TS-408-100-M004
		VOL III
		SHEET..... OF.....

* Bidder shall include this schedule both in technical and Price offers

DECLARATION

Icertify that all the technical data and information pertaining to this specification are correct and are true representation of the equipment/system covered by our format proposal number Dated and there is no deviation to the specification other than those listed in “Schedule of deviations” of this Vol III.

I hereby certify that I am duly authorized representative of the Bidder’s company whose name appears above my signature.

Bidder’s Company Name

Authorized representative’s
Signature

Name

Bidder’s Name The bidder hereby agrees to fully comply with the requirements and intent of this specification for the price indicated

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL