

2X660MW ENNORE SEZ STPP.

TECHNICAL SPECIFICATION FOR BALL VALVES

**SPECIFICATION NO. PE-TS-412-100-M004
REV. NO.: 00**



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

	TECHNICAL SPECIFICATION BALL VALVES 2X660MW ENNORE SEZ STPP.		SPECIFICATION NO. PE-TS-412-100-M004
			SECTION: -
	REV. NO.: 00		DATE: 11.05.2017
	SHEET 1 OF 1		

CONTENTS

S No.	SECTION	TITLE	NO. OF SHEETS
1.	SECTION-I	SPECIFIC TECHNICAL REQUIREMENTS	4
2.	SECTION-II	i) DATA SHEET-A	2
		ii) QUALITY PLAN	3
		iii) COMPLIANCE SHEET	1

	TECHNICAL SPECIFICATION BALL VALVES 2X660MW ENNORE SEZ STPP.		SPECIFICATION NO. PE-TS-412-100-M004
			SECTION: -
		REV. NO.: 00	DATE: 11.05.2017
		SHEET 1 OF 1	

SECTION-I

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFICATION NO. PE-TS-412-100-M004	
	SECTION: I	
	REV. NO.: 00	DATE: 11.05.2017
	Sheet 1 of 4	

1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the requirements of Section-I and Data sheet-A of Section-II. However, in the event of contradictions between Section-I & Section-II/Data Sheet-A, Data Sheet-A will prevail.
- 1.2 The technical requirements for valves shall, in general, be as per the attached Data sheet- A of Section-II.

2. SCOPE OF SUPPLY

- 2.1 The valves complete with all accessories shall be supplied as per Data sheet-A of Section-II. 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 applicable depending upon the project requirement.

3. CODES AND STANDARDS

- 3.1 The design, materials, construction features, manufacture, inspection and testing of valves shall conform to the latest applicable codes and standards.
- 3.2 The valves covered under this specification shall be designed and tested as per BSEN ISO 17292 (replaces BS: 5351).
- 3.3 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.

4. DESIGN REQUIREMENTS

- 4.1 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.
- 4.2 Valves shall be selected in the appropriate rating based on the pressure/temperature conditions and service media mentioned in Data sheet-A of Section-II.
- 4.3 Valves with screwed/ socket welding ends up to size of 50NB shall be in 3 piece/ 2 piece construction and valves of size 65NB and above with flanged/butt welding ends shall be short body design and in 3 piece/ 2 piece construction.

5. Materials

- 5.1 The materials of construction of main parts Ball valves shall be as specified in Data Sheet-A.
- 5.2 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.
- 5.3 Material used in manufacture of valve shall be of tested quality.

6. CONSTRUCTION FEATURES

- 6.1 All valves with screwed ends shall have screwed female parallel pipe threads as per IS: 554/ASME B 1.20.1.
- 6.2 All valves with flanged ends shall have raised face flanges and drilling details as per ANSI B16.5.

	SPECIFIC TECHNICAL REQUIREMENTS BALL VALVES 2X660MW ENNORE SEZ STPP.	SPECIFICATION NO. PE-TS-412-100-M004	
		SECTION: I	
		REV. NO.: 00	DATE: 11.05.2017
		Sheet 2 of 4	

- 6.3 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.
- 6.4 All valves up to 50mm NB shall be of reduced port and 65mm and above shall be of full bore.
- 6.5 Valves of size 200 NB & above shall be gear operated.
- 6.6 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.
- 6.7 All the valves shall be provided with integral stop on body limiting quarter turn operation.
- 6.8 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.
- 6.9 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.
- 6.10 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.
- 6.11 Limit switch shall be provided as per Data Sheet-A for monitoring of end position in DDCMIS/DCS/PLC. Switches shall have not less than two normally open and two normally closed contacts in both open and close directions. Electrical rating of the limit switch contacts shall be 240V AC, 5 amp or 220V DC, 0.5 amp. The enclosures of the limit switches shall be as per NEMA-4 Standard. Limit switches shall be constructed to withstand the temperatures encountered in the actual service. Explosion proof construction shall be furnished where required by applicable code or these specifications. Limit switches shall be factory mounted on the valves with provisions for adjusting the mounting.
- 6.12 Bidder to include following table in Ball valve (with LS) GA drawing at the time of approval stage.

LIMIT SWITCH	MFR.& MODEL NUMBER			BIDDER TO INDICATE			TO BE FILLED-UP BY BIDDER
	OPEN posn	INT posn	CLOSE posn	1NO.	—	1NO.	
	CONTACT TYPE			SPDT 2 NO+2NC			
	RATING(AC/DC)			5A 240V AC AND 0.2A 220V DC			
	ENCLOSURE CLASS			IP65			

7. MANUFACTURE OF VALVES

- 7.1 Valve castings shall be procured from foundries observing strict quality control and approved by reputed customers.
- 7.2 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.

	SPECIFICATION NO. PE-TS-412-100-M004	
	SECTION: I	
	REV. NO.: 00	DATE: 11.05.2017
	Sheet 3 of 4	

8. QUALITY ASSURANCE, TESTING & INSPECTION

- 8.1 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.
- 8.2 The Quality Plan enclosed with this specification specify minimum quality control requirement. During contract stage vendor shall furnish this Quality Plan duly signed & stamped for BHEL approval. Quality plans shall be approved by BHEL and customer. All inspection and testing shall be carried out by BHEL/ BHEL representative and customer (as applicable). In case inspection is by both BHEL and their customer, then the inspection can be carried out jointly or separately, which will be informed later. In case of the foreign bidder, inspection shall be carried out by reputed third party.
- 8.3 The charges for third party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the item by the bidder. This third party agency shall be approved by BHEL. Bidder to inform the same in the offer and mention the same in Quality Plan.
Note: There may be minor changes in quality plan depending on customer/consultant comments which will have to be accommodated by vendor at no extra cost. 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.
- 8.4 Carbon steel valves shall be hydraulically tested for leak tightness before galvanizing the valve body and end pieces (pressure parts).
- 8.5 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.
- 8.6 Dimensional and functional checks shall be carried out.

9. GALVANIZING REQUIREMENT (FOR CARBON STEEL):

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.

10. CLEANING, PROTECTION AND PACKING FOR DESPATCH:

- 10.1 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.
- 10.2 The valve shall be dispatched in total assembled form.
- 10.3 Body ends shall be suitably sealed to protect them against damage during transit and storage.
- 10.4 Valves with screwed and socket welding ends shall be protected by means of polythene caps/ rubber and protectors to prevent damage of ends & also to avoid foreign material entering the valve while shipment & storage.
- 10.5 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

	SPECIFICATION NO. PE-TS-412-100-M004	
	SECTION: I	
	REV. NO.: 00	DATE: 11.05.2017
	Sheet 4 of 4	

**SPECIFIC TECHNICAL REQUIREMENTS
BALL VALVES
2X660MW ENNORE SEZ STPP.**

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.

- 10.6 Valve Tag Nos. shall be incorporated in all the dispatch documents.
- 10.7 Proper care shall be taken to avoid damage to the painted surface during transit.
- 10.8 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.
- 10.9 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 dispatch of valves will be given only after satisfactory packing conditions of valves from vendor's work.

11. SPARES

- a) **Mandatory Spares:** Not applicable.
- b) Order for the spares may be placed simultaneously or otherwise at the option of purchaser.

12. DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents duly filled, signed and stamped along with the bid:

- a) Compliance sheet
- b) Documents as per the list indicated in the NIT.

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.

13. 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

	TECHNICAL SPECIFICATION BALL VALVES 2X660MW ENNORE SEZ STPP.	SPECIFICATION NO. PE-TS-412-100-M004	
		SECTION: -	
		REV. NO.: 00	DATE: 11.05.2017
		SHEET 1 OF 1	

SECTION-II

- DATA SHEET – A
- QUALITY PLAN
- COMPLIANCE SHEET

 DATA SHEET- A BALL VALVES 2 X660MW ENNORE SEZ STPP															SPECIFICATION NO. PE-TS-412-100-M004		
															VOL II		
															REV. NO.: 00 DATE: 11.05.2017		
															SHEET 01 OF 03		
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN		SERVICE	BODY RATING	BODY MATERIAL	TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE		MAIN VALVES QTY. (NOS.)	COMMISSIONING SPARES (ONE SET CONSISTS OF BODY SEAL, STEM WASHER & STEM SEAL) (SETS)	REMARKS
					PRESSURE KG/CM ² (G)	TEMP (DEG° C)							OD	THKN			
1	IA-61 to IA-145 (for each unit), Qty. of contingency valves:15 nos.	Ball	15	MAN	8.5	50	IA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	—	21.8	3.2	185	19	
2	SA-15,SA-29 SA-33 to SA-38 SA-40 to SA-100 (common for both units), Qty. of contingency valves:11 nos.,IA-39 to IA-42,IA-151,IA-51,IA-56,IA-60(for each unit), IA-35, IA-43 (common for both units), Qty. of contingency valves:4 nos.	Ball	25	MAN	8.5	50	IA/SA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	—	34.2	4	102	11	
3	IA-36 to IA-38, IA-44 (common for both units),IA-58 & IA-59(One no. for each units)	Ball (With LS)	25	MAN	8.5	50	IA/SA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	VALVES TO BE PROVIDED WITH LIMIT SWITCH	34.2	4	8	2	
4	SA-30 to SA-32(common for both units),Qty. of contingency valve:2 no.	Ball	40	MAN	8.5	50	IA/SA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	—	48.8	4	5	2	
5	IA-31(common for both units)	Ball (With LS)	40	MAN	8.5	50	IA/SA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	VALVES TO BE PROVIDED WITH LIMIT SWITCH	48.8	4	1	2	
6	SA-11 to SA-13,SA-16 to SA-28(common for both units) ,IA-23 to IA-26(for each unit), Qty. of contingency valve:3no.	Ball	50	MAN	8.5	50	IA/SA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	—	60.8	4.5	27	3	
7	IA-21 & IA-22(common for both units).	Ball (With LS)	50	MAN	8.5	50	IA/SA	PN-16 AS PER BSEN ISO 17292	GM AS PER IS318 GR LTB2	GM AS PER IS318 GR LTB2	SCREWED AS PER IS-554 FEMALE PARALLEL	VALVES TO BE PROVIDED WITH LIMIT SWITCH	60.8	4.5	2	2	
8	SA-9 to SA-10(common for both units), Qty. of contingency valve: 2no.	Ball	80	MAN	8.5	50	IA/SA	CL 150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A 216 Gr. WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED	89.5	4.8	4	2	

1	2	3	4	5	6		7	8	9	10	11	12	13		14	15	16
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN PRESSURE (KG/CM ² G)	TEMP (DEG C)	SERVICE	BODY RATING	BODY MATERIAL	TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN	MM	MAIN VALVES QTY. (NOS.)	COMMISSIONING SPARES (ONE SET CONSISTS OF BODY SEAL, STEM WASHER & STEM SEAL) (SETS)	REMARKS
9	IA-15 (common for both unit)	Ball (With LS)	80	MAN	8.5	50	IA/SA	CL. 150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A 216 Gr.WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED + VALVE TO BE PROVIDED WITH LIMIT SWITCH	89.5	4.8	1	2	
10	100NB ball valve (Qty. of contingency valve:1 no.)	Ball	100	MAN	8.5	50	IA/SA	CL. 150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A 216 Gr.WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED	115.0	5.4	1	2	
11	IA-11 (for each unit)	Ball (With LS)	100	MAN	8.5	50	IA/SA	CL. 150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A 216 Gr.WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED + VALVE TO BE PROVIDED WITH LIMIT SWITCH	115.0	5.4	2	2	
12	SA-1 to SA-6(common for both units), Qty. of contingency valve: 2no.	Ball	150	MAN	8.5	50	IA/SA	CL. 150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A 216 Gr.WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED	166.5	5.4	8	2	
13	IA-1 to IA-4(common for both units)	Ball (With LS)	150	MAN	8.5	50	IA/SA	CL. 150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A 216 Gr.WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	HOT DIP GALVANIZED + VALVE TO BE PROVIDED WITH LIMIT SWITCH	166.5	5.4	4	2	
													TOTAL		350	53	

NOTES

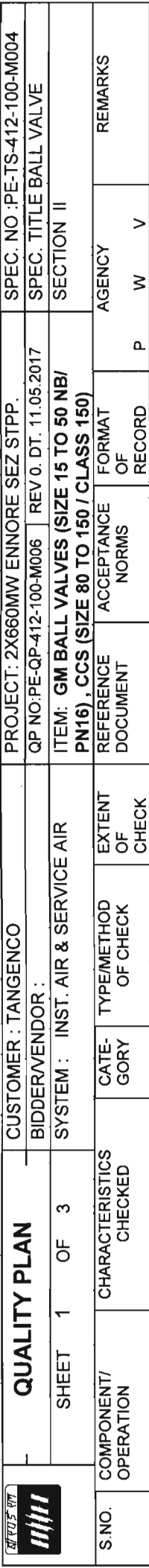
1. IA - INSTRUMENT AIR MAN - MANUAL SA - SERVICE AIR LS- LIMIT SWITCH
2. COMMISSIONING SPARES FOR BALL VALVES- ONE SET CONSISTS OF BODY SEAL, STEM WASHER & STEM SEAL.
3. FOR MATERIALS OF CONSTRUCTION REFER ATTACHED MATERIAL DATA SHEET -A(SHEET 02 OF 02)
4. BIDDER IS REQUIRED TO QUOTE UNIT PRICE OF EACH COMMISSIONING SPARES SEPARATELY AND INDIVIDUALLY.

Signature of the bidder with name, designation, date and company's seal

	DATA SHEET-A BALL VALVES 2X660MW ENNORE SEZ STPP	SPECIFICATION NO. PE-TS-412-100-M004	
		SECTION : II	
		REV. NO.: 00	DATE: 11.05.2017
		Sheet 3 of 3	

Materials of Construction

SL. NO.	PART NAME	MATERIAL (CARBON STEEL BODY)	MATERIAL (GUN METAL BODY)
1	BODY AND END PIECES	CAST CARBON STEEL AS PER ASTM A 216 Gr. WCB (ABOVE 50 NB) (HOT DIP GALVANISED)	GUN METAL AS PER IS:318 Gr. LTB2 (UPTO 50NB)
2	BALL, STEM AND GLAND	STAINLESS STEEL AS PER AISI 316 (BALL MIRROR FINISH)	GUN METAL AS PER IS:318 Gr. LTB2, IS:320 HT2 (STEM)
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 GLAND PACKING	VIRGIN UNFILLED OIL FREE PTFE (Non-Asbestos Type)	VIRGIN UNFILLED OIL FREE PTFE (Non-Asbestos Type)
5	BODY STUD	AISI 316	AISI 316
6	BODY NUT	AISI 316	AISI 316
7	GLAND NUT	AISI 316	AISI 316
8	LEVER	CARBON STEEL (HOT DIP GALVANISED) WITH PLASTIC SLEEVE GRIP	CARBON STEEL (HOT DIP GALVANISED) WITH PLASTIC SLEEVE GRIP
9	LEVER ADAPTER	CARBON STEEL (HOT DIP GALVANISED)	CARBON STEEL (HOT DIP GALVANISED)
10	STOPPER PIN	AISI 316	AISI 316
11	STEM WASHERS	SPRING STEEL	SPRING STEEL
12	NAME PLATE (FOR VALVE TAG NO.)	SS 316 (2 MM THICK)	SS 316 (2 MM THICK)
13	PAINTING	NO PAINTING NEEDS TO BE DONE AS ALL PARTS OF THE VALVES ARE HOT DIP GALVANISED	NO PAINTING REQUIRED



	MATERIAL											
1.												
1.1	BODY ,END PIECES BALL, SPIDNLE, GLAND, LEVER, FASTNERS	1. PHYSICAL , CHEMICAL PROPS. 2. HEAT TREATMENT	MA CR	PHYSICIAL,CHEM, TESTING REVIEW OF H.T. RECORDS	1/HEAT 100%	APPD. DRG./ TECH.SPEC. -DO-	APPD. DRG./ TECH.SPEC. -DO-	T.C. H.T. INTERNAL INSPN. RECORDS INSPN. REPORT	3 2 2	2 1	1	CORELATION REQD . FOR BODY & END PIECES
1.2	BODY,END PIECES	3. SURFACE DEFECTS	MA	VISUAL	100%	*MSS-SP-55	FREE FROM DEFECTS	INSPN. REPORT	3	2	1	
2.0	IN PROCESS INSPECTION	1. SURFACE DEFECTS	CR	PENTRANT TEST	100%	ASTME 165	ANSI B 16.34	TEST REPORT	3/2	2	1	Applicable only for SS castings
2.1	MACHNING OF ALL COMPONENTS	1. DIMENSIONS 2. SURFACE FINISH	MA MA	MEASUREMENT VISUAL	100% 100%	MFG. DRG. MFG. DRG.	MFG. DRG. MFG. DRG.	LOG BOOK LOG BOOK	3/2 3/2	- -	- -	
		3. HARDNESS (FOR BALL AND SPDINLE)	MA	HARDNESS TESTING	100%	APPD. DRG./ TECH.SPEC.	APPD. DRG./ TECH.SPEC.	T.C.	3/2	-	2,1	
		4. SURFACE DEFECTS	CR	PENTRANT TEST	100%	ASTME 165	ANSI B16.34	T.C.	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. INIFORMITY IN THICKNESS	MA MA	VISUAL THICHNESS	100% VALVE BODY AT RANDOM	IS:2629 IS:2629	IS:2629 IS:2629	INSPN REPORT INSPN REPORT	3/2 3/2	2 2	1 1	THICKNESS 50 MIN. MICRONS TO BE CHECKED WITH ELCOMETER
		3. ADHESION	MA	KNIFF TEST	-DO-	IS:2629	IS:2629	INSPN	3/2	2	1	

BHEL  Gaurav K. Morye	PARTICULARS	BIDDER/VENDOR	BIDDER'S/ VENDOR'S COMPANY SEAL
	NAME		
	SIGNATURE		
	DATE	11.03.17	

	QUALITY PLAN			CUSTOMER : TANGENCO		PROJECT: 2X660MW ENNORE SEZ STPP.		SPEC. NO :PE-TS-412-100-M004		
	SHEET 2 OF 3			BIDDER/VENDOR :		QP NO:PE-QP-412-100-M006		SPEC. TITLE BALL VALVE		
	CHARACTERISTICS CHECKED			SYSTEM : INST. AIR & SERVICE AIR		REV 0. DT. 11.05.2017		SECTION II		
	COMPONENT/ OPERATION			CATE-GORY		TYPE/METHOD OF CHECK		EXTENT OF CHECK		
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	

ASSEMBLY OF ALL VALVE										
5.0	BALL AND SEAT	1. MIRROR FINISH(BALL)	CR	BUFFING/ GRINDING/ MACHINING	100%	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE UNIFORM CONTACT WITH SOFT SEAT	LOG BOOK	3/2	-	2,1
6.0	FINAL TESTING	1. DIMENSIONS	MA	MEASUREMENT	100%	APPD. DRG.	INSRN. REPORT	3/2	2, 1	#
6.1		2.OPENING/CLOSING	MA	OPERATION	100%	SMOOTH OPERATION OF VALVE	-DO-	3/2	2, 1	#
6.2		1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	APPD. DRG.	T.C.	3/2	2, 1	#
6.2.1		1. LEAK TIGHTNESS	CR	-DO-	100%	-DO-	-DO-	3/2	2, 1	#
6.2.2		2. LEAK TIGHTNESS	CR	PNEUMATIC TEST	100%	-DO-	-DO-	3/2	2, 1	#
5.0	PACKING IN WOODEN CASES AND MARKING	AS PER BHEL TECH. SPEC.	MA	VISUAL	100%	TECHNICAL SPEC.	SOFT COPY OF PHOTOGRA PHS	3/2	2	1
										PHOTOGRAPHS OF WOODEN CASES HAVING DULY PACKED VALVES TO BE FURNISHED TO BHEL-PEM FOR VERIFICATION TO OBTAIN MDCC.

BHEL		BIDDER/VENDOR	
Approved by: <i>K.R. MOYE</i> <i>[Signature]</i>		PARTICULARS NAME SIGNATURE DATE	
11.05.17		BIDDER'S/ VENDOR'S COMPANY SEAL	

		QUALITY PLAN		CUSTOMER : TANGENCO BIDDER/VENDOR :		PROJECT: 2X660MW ENNORE SEZ STPP. QP NO:PE-QP-412-100-M006 REV 0. DT. 11.05.2017		SPEC. NO :PE-TS-412-100-M004 SPEC. TITLE BALL VALVE	
SHEET 3 OF 3		CHARACTERISTICS CHECKED		SYSTEM: INST. AIR & SERVICE AIR		ITEM: GM BALL VALVES (SIZE 15 TO 50 NB/ PN16) , CCS (SIZE 80 TO 150 / CLASS 150)		SECTION II	
S.NO.	COMPONENT/ OPERATION	CATE-GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
								P W V	

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

WITNESS 'W' SHALL BE 100% BY VENDOR AND 10% BY BHEL/ CUSTOMER AT RANDOM FOR EACH SIZE, TYPE & RATING (OR) MIN. 02 NOS., WHICHEVER IS HIGHER.

BHEL		PARTICULARS		BIDDER/VENDOR	
Signed for. <i>moye</i>		NAME			
<i>[Signature]</i>		SIGNATURE			
11.05.17		DATE			
				BIDDER'S/ VENDOR'S COMPANY SEAL	

	COMPLIANCE SHEET BALL VALVES 2X660MW ENNORE SEZ STPP.		SPECIFICATION NO. PE-TS-412-100-M004	
			SECTION : II	
	REV. NO.: 00		DATE: 11.05.2017	
	Sheet 1 of 1			

I hereby comply/not comply (*) to all the requirements of this technical specification in totality.

* In case the bidder does not comply to the technical specification, the deviations shall be explicitly listed in the technical deviation sheet of GCC. Deviations listed in technical deviation sheet shall only be considered.

Name of Bidder / Authorized Representative :-

Designation :-

Signature :-

Company Seal :-

Date :-

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