

1x700MW BELLARY UNIT-3

VOLUME – IIB

TECHNICAL SPECIFICATION


FOR

DUAL PLATE CHECK VALVES

SPECIFICATION NO. PE-TS-367-100-M013



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

	PREAMBLE	SPECIFICATION NO. PE-SS-999-100-Q001	
		VOLUME	
		SECTION	
		REV. NO.	DATE: 12/07/2013
		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 Dual Plate Check valves complete with all accessories as per the requirements mentioned in different sections of the specification for 1X700MW BELLARY UNIT-3.


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 CI Gate/ globe/non return valves shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of Dual Plate Check 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


	TECHNICAL SPECIFICATION DUAL PLATE CHECK VALVES 1x700MW BELLARY III	SPECIFICATION NO. PE-TS-387-100-M013	
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PROJECT INFORMATION

The proposed 1 x 700 MW Bellary Super Thermal Power Project would be set up by Karnataka Power Corporation Ltd at Kudatini Village, Bellary Dist, Karnataka state INDIA.


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 bidding on BHEL/OWNER. All relevant site data/information as may be necessary shall have to be obtained/collected by the bidder.

Sl. No.	FEATURES	DETAILS
1	Owner	Karnataka Power Corporation Ltd
2	Site Location	Kudatini Village, Bellary Dist, Karnataka state INDIA.
3	Altitude	478 Mt above MSL
4	Annual mean of temp daily max.	42.5°C
	Annual mean of temp daily min.	19.5°C
5	Relative humidity	Varies between 11% and 70%
6	Average Annual rainfall	492 to 846 mm most of which occurs during August to October
7	Maximum mean wind speed	19 km / hr in the month of July.
8	Seismic data as per IS 1893: 2002 a) Zone b) Importance factor (I)	Zone-III 1.5 (as per latest IS1893)

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	1X700MW BELLARY UNIT-3		SECTION: C	
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SECTION-C

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFIC TECHNICAL REQUIREMENTS DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3	SPECIFICATION NO. PE-TS-367-100-M013	
		SECTION: C	
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1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the standard technical specifications, 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 sheets 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 sheets 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 sheets 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.
 - i) Lifting arrangement provision for handling i.e., lifting lugs, eye bolts etc.
- 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.
- 2.5 Finish paints for touch-up painting of equipment after erection at site in sealed containers.
- 2.6 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.

	SPECIFIC TECHNICAL REQUIREMENTS DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3		SPECIFICATION NO. PE-TS-367-100-M013
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5 PACKING INSTRUCTIONS:

- a) 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.
- b) The valve shall be dispatched in total assembled form.
- c) Discs of all valves shall be properly secured while dispatching so that there is no risk of damage to the disc & seat.
- d) Body ends shall be suitably sealed to protect them against damage during transit and storage.
- e) 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.
- f) Valve Tag Nos. shall be incorporated in all the dispatch documents.
- g) Proper care shall be taken to avoid damage to the painted surface during transit.
- h) 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 SPARES

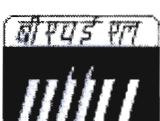
- a) **Mandatory Spares:** NIL.
- b) **Recommended Spares:** NIL
- c) Order for the spares may be placed simultaneously or otherwise at the option of purchaser.

7 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.

	TECHNICAL SPECIFICATION DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3	SPECIFICATION NO. PE-TS-367-100-M013	
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SECTION-D

STANDARD TECHNICAL SPECIFICATIONS FOR VALVES

DATA SHEET – C

	TITLE: TECHNICAL SPECIFICATION FOR DUAL PLATE CHECK VALVES (CI, CS & SS & AUS DI ASTM A439 Gr. D2)		SPECIFICATION NO. PE-SS-999-100-M013	
			VOLUME II-B	
			SECTION D	
			REV. NO. 02	DATE: 03-08-2009
			SHEET 1	OF 3

1.0 General and Scope of Supply.

1.1 This standard specification covers the design, material, constructional features, manufacturing & testing at the vendor's and /or his sub vendor' works, suitable painting & packing requirements of dual plate check valves.

1.2 Scope of Supply.

Dual Plate Check Valves as per this specification shall be selected as per the "Requirements of Dual Plate Check Valves" as specified in the Attached Data sheet-A or in Sec-C of Vol. IIB.


1.3 **RECOMMENDED SPARES:-** In addition to "requirements of Dual Plate Check valves" at 1.2 above, the bidders is required to submit an offer for Recommended Spares for Dual Plate Check valves for valves for 5 years operation with unit rates of validity for 5 years for future ordering by the purchaser. Bidders are required to indicate description of each spare part of the valve along with the quantity of each individual spare part as recommended by the bidder for each size/type/ rating of main valves as mentioned in the Annexure-A/ or Sec-C Vol IIB for the above-mentioned periods. Details of these each spares shall be clearly indicated along with separate price of each spares as order for these spares shall be separate.

2.0 Codes & standard

2.1 Valve design & testing Standard shall be API 594 . Valves shall be dual disc flanged/wafer/lugged type with torsion spring induced closure as per the design parameters indicated in the above mentioned Data sheet-A/ Sec- C of Technical Specification.

2.2 Material of construction of the valves shall be as below
Hinge pin & stop pin should not be of casting

SL. NO	PART NAME	MATERIAL REQUIRED			
1	BODY (short body)- double flanged/wafer/lugged	IS 210 Gr. FG 260/ ASTM Gr.A126B /BS 1452 Gr.250 (2%Ni / Rubber Lined, if called in Annexure-A/ Sec-C of Vol IIB of specific requirements)	A216 WCB	A351 CF8M	AUSTENITIC DUCTILE IRON as per ASTM-A-439 D2-Ni / ASTM A743 CF8M as called in Ann. A (internally epoxy painted)
2	SEAT(bonded to body)	Buna-N	Buna-N	Buna-N	Buna-N
3	Disc plates	- ASTM A351 CF8 UPTO SIZE 300 NB - ASTM A216 Gr. WCB FOR SIZE 350 & ABOVE	- ASTM A351 CF8 UPTO SIZE 300 NB - ASTM A216 FOR SIZE 350 & ABOVE	A351 CF8M	ASTM A 439 Gr. D2/ ASTM A743 CF8M with SS316L overlay only on Seating surfaces as called in ANN. A
4	Disc seat	Integral/ SS304 weld overlay only on A216 Gr.WCB	Integral/ SS304 weld overlay only on A216 Gr.WCB	Integral	Integral/ SS316L weld overlay on A439 Gr. D2
5	Hinge pin	ASTM A479 TYPE 316	ASTM A479 TYPE 316	ASTM A479 TYPE 316	ASTM A 182 Gr. F316 L
6	Spring	SS 316 as per ASTM A313	SS 316 as per ASTM A313	SS 316 as per ASTM A313	SS 316L as per ASTM A313L
7	Plate bearing, sleeve bearing & spring bearing	SS316	SS316	SS316	SS316L

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8	Washer	Buna	Buna	Buna	Buna
9	Stop pin	SS316	SS316	SS316	SS316L
10	Hinge pin retainer & sleeve	SS316	SS316	SS316	SS316L
12	Lifting lug	Steel (for sizes 150 NB & above)		SS 316	SS316
13	NAME PLATE	SS316 (2 MM THICK)			


- 2.3 The body of valve shall be of one piece construction incorporating a vulcanized synthetic seal/body seat. The seal design must allow positive seating at both high & low pressures. This shall be achieved by a minimal seal contact at low pressure with progressively increased contact point at high pressures. The disc shall fully overlap the synthetic seal preventing pressure indentations.
- 2.4 Opening and closing of valve must utilize a lift & pivot action to prevent seal wear & ensure long life.
- 2.5 The stop & pivot pins shall be stabilized by the use of synthetic spheres to prevent wear due to vibrations during operating conditions. The design shall incorporate a raised seat and 0.5 inch body wall to disc clearance to ensure proper operation after long periods inactivity and potential corrosion buildup.
- 2.6 Disc stabilization shall be provided by the use of a stop pin
- 2.7 Valves with heavy weight shall be provided with lifting lug.
- 2.8 Purchaser's Valve tag nos & service description shall be incorporated in the name plate(SS 2 mm thick material) to be provided on to the Valve Body. This is in addition to labels/ rating plates being fixed by supplier for material ,rating, size etc as per their standard practice.
- 3.0 BHEL / Customer (jointly or separately) shall witness Inspection and testing of the valves .**

4.0 PAINTING:

CI & CCS body Valves shall be painted externally after the necessary testing has been carried out. Just before the painting, valve bodies and other items shall be thoroughly cleaned with wire brush/hand tool(Sa1/St2/St3 as applicable).The valves shall be first painted with two coats of primer red oxide/zinc chromate (alkyd/medium) as per IS:2074 each coat of DFT shall be minimum 25 to 35 microns. Finish paint shall be of two coats of synthetic enamel(alkyd medium) as per IS 2932 & each coat DFT shall be 20-35 microns & the total DFT of primer & finish paint shall be 150 microns minimum. Finished paint shade shall be shade no. 217 of IS:5 or Grey as per RAL 9002.

5.0 CLEANING AND PROTECTION FOR DESPATCH & STORAGE AT SITE

- 5.1 Each valve shall be drained, cleaned, prepared and suitably protected in such a way so as to minimise the possibility of damage and deterioration during transit and storage.
- 5.2 Discs of all valves shall be properly secured while dispatching so that there is no risk of damage to the disc & seat
- 5.3 Body ends shall be suitably sealed to protect them against damage during transit and storage.
- 5.4 Valve Tag Nos. shall be incorporated in all the dispatch documents.

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6.0 Requirements of drawings/documents to be furnished after the award of contract

6.1 Relevant drawings/leaflets for the offered 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 IS/BS/ASTM standards to which the materials conform to.

6.2 Flow coefficient values


6.3 Relevant catalogue

6.4 Operation & maintenance manual for valves. (one copy of this shall be enclosed with the packing slip/wooden cases so that at receiving end, care can be taken for proper storage & commissioning).

6.5 Quality Plan.

6.6 List of recommended spares for 3 years trouble free operation of valves

6.7 Drawings/documents submission schedule



DATA SHEET - A

DUAL PLATE CHECK VALVES

1X700MW BELLARY UNIT-3

SPECIFICATION NO. PE-TS-367-100-M013

VOL II B

SECTION D

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SL NO.	1	2	3	4	5	6		7	8	9	11	12			13	14		15	16	
		TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN	PRESSURE KG/CM2(G)	TEMP (DEG C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY MATERIAL	DISC PLATE MATERIAL (other material of construction) +++	TRIM MATERIAL **	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN		MAIN VALVES QTY (NOS.)	MANDATORY SPARES	
1		ACW-4, ACW-5, ACW-6	DPCV	600	-		7.5	60	ACW SYSTEM	CL 150 of API 594 TESTING AS PER API 598 (Internally Epoxy painted)	ASTM A 743 Gr. CF8M	ASTM A 743 Gr. CF8M	ASTM A479 TYPE 316L	ASME B16.5 CL150 F/F	-		610	8	3	NIL
																		TOTAL	3	NIL

NOTES:

1. DESIGN OF SPRINGS SHALL BE SAME AS THAT OF DRY CYCLE TESTED SPRING (LIFE CYCLE TEST FOR SPRING).


2. +++FOR DETAILED MATERIALS OF CONSTRUCTION, REFER DATA SHEET A, Sheet 2 of 2. OF ATTACHED TECHNICAL SPECIFICATIONS

DPCV - DUAL PLATE CHECK VALVE

	TITLE: DATA SHEET A 1X700MW BELLARY-III TPS SPECIFICATION FOR SS DPCV FOR COOLING WATER SYSTEM	SPECIFICATION NO. PE-TS-367-100-M013	
		VOLUME .	
		SECTION	
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MATERIAL DATA SHEET
(STAINLESS STEEL DUAL PLATE CHECK VALVE)

SL.NO	PART NAME	MATERIAL REQUIRED
1	BODY (SHORT BODY)- DOUBLE FLANGED/WAFER/LUGGED	ASTM A743 Gr. CF8M
2	SEAT (BONDED TO BODY)	BUNA - N
3	DISC PLATES	ASTM A743 Gr. CF8M
4	DISC SEAT	SS 316L
5	HINGE PIN	ASTM A 479 TYPE 316L
6	SPRING	AISI SS316 AS PER ASTM A 313
7	PLATE BEARING, SLEEVE BEARING & SPRING BEARING	AISI SS 316L
8	WASHER	BUNA - N
9	STOP PIN	ASTM A 479 TYPE 316L
10	HINGE PIN RETAILER AND SLEEVE	AISI SS 316L
11	LIFTING LUG	SS 316
12	NAME PLATE	SS316 (2 MM THICK)

<div></div> <div>PRICE SCHEDULE (MAIN VALVES) DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3</div>										SPECIFICATION NO. PE-TS-367-100-M013									
										VOL III									
										SECTION									
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PRICES TO BE QUOTED IN THIS FORMAT ONLY																			
1	SL NO.	2	3	4	5	6		7	8	9	11	12	13	14		15	16	17	
			TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN		SERVICE	RATING, DESIGN & TESTING CODE	BODY MATERIAL	DISC PLATE MATERIAL (other material of construction) +++	TRIM MATERIAL ..	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN		MAIN VALVES QTY (NOS.)	UNIT PRICE	TOTAL PRICE
						TEMP (DEG° C)	PRESSURE KG/CM2(G)								MM	MM			
1	ACW-4, ACW-5, ACW-6		DPCV	600	-	7.5	60	ACW SYSTEM	CL 150 of API 594 TESTING AS PER API 598 (internally Epoxy painted)	ASTM A 743 Gr. CF8M	ASTM A 743 Gr. CF8M	ASTM A479 TYPE 316L	ASME B16.5 CL150 F/F	-	610	8	3		
														TOTAL		3			
NOTES:																			
1. DESIGN OF SPRINGS SHALL BE SAME AS THAT OF DRY CYCLE TESTED SPRING (LIFE CYCLE TEST FOR SPRING).																			
2. +++FOR DETAILED MATERIALS OF CONSTRUCTION, REFER DATA SHEET A, Sheet 2 of 2, OF ATTACHED TECHNICAL SPECIFICATIONS																			
DPCV - DUAL PLATE CHECK VALVE																			


NOTES:

- DESIGN OF SPRINGS SHALL BE SAME AS THAT OF DRY CYCLE TESTED SPRING (LIFE CYCLE TEST FOR SPRING).
- +++FOR DETAILED MATERIALS OF CONSTRUCTION, REFER DATA SHEET A, Sheet 2 of 2, OF ATTACHED TECHNICAL SPECIFICATIONS
DPCV - DUAL PLATE CHECK VALVE

QUALITY PLAN				CUSTOMER : BECL		PROJECT: 2X250MW LIGNITE BASED TPP, BHAVNAGAR		SPEC.NO : PE-TS-356-100-M013				
				BIDDER/VENDER:		QAP NO: .PE-QP-356-100-M013		REV .00 dtd. 05.02.2013				
				SYSTEM WATER SYSTEM LP VALVES		ITEM: AUSTENITIC DUCTILE IRON (A439 GR. D2) DUAL PLATE CHECK VALVES		SECTION VOLUME				
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/ METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMATE OF RECORD	AGENCY	REMARKS		
									P	W	V	
1.	MATERIALS	1. MECH. PROP/ & CHEM. PROP.	MA	CHEM. / MECH. ANALYSIS	1 SAMPLE/ HEAT	APPD.DATA SHEET/DRG.	RELAVANT MTL.STD	TEST CERT.	3/2	2	1	1. Body & Plate will carry heat no. for co- relation with TC. 2. Only Mechanical test will be carried out for cast Iron. 3. As the pin will be machined all over, co- relation not possible. 4. As the spring has to be from wire co-relation not Possible.
1.2	SPRING	2. DIMENSIONS	MA	MEASURE- MENT VISUAL	100%	MFG DRG.	MFG DRG.	I.R	2	2	1	
		3. SURFACE FINISH	MA		100%	MSS SP 55	MSS SP 55	I.R	2	2	1	
		4. INTERNAL DEFECTS	CR	RT/UT	100%	ASTM B 16.34	ASTM B 16.34	T.C	3/2	2	1	5. RT for stainless steel & AUS DI GR D2 body & plates only and UT for hinge pin dia.>=40mm 6. Solution annealing for SS for other matl. as per Rel. Spec
1.2	SPRING	5. HEAT TREATMENT (SOLUTION ANNEALING)	CR	REVIEW OF HT RECORDS	100%	APPD.DRG.	RELAVANT STD.	H.T. INTERNAL INSP. RECORDS	3/2	2	1	
		1. SURFACE DEFECT	MA	D.P	100%	ASTM E 165	NO DEFECTS	I.R	3/2	2	1	
1.3	DEPOSIT ON PLATE SEAT	2. DRY CYCLE TEST (LIFE CYCLE TEST)	CR	CYCLE TEST FOR 1,00,000 CYCLES	One no. of each size, coil dia. and no. of active coils	MFG. STD	-NO DEFECTS/CRACKS -FULL & SMOOTH OPENING/CLOSING OF VALVE PLATES BY SPRING.	I.R	3/2	1*	1*	* IR for verification if dry cycle test is already carried out earlier for same size/ coil dia. & nos. of active coils for NTPC / any reputed customers.
		1. WELD DEPOSIT	MA	VISUAL	100%	MFG. STD.	NO DEFECTS	I.R	3/2	2	1	
		2. HARDNESS	MA	TESTING	100%	MFG. DRG.	MFG. STD	I.R	3/2	2	1	
		3. SUFACE DEFECTS	MA	PT TEST	100%	ASTME-165	NO DEFECTS	T.C	3/2	2	1	

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


QUALITY PLAN			CUSTOMER : BECL		PROJECT: 2X250MW LIGNITE BASED TPP, BHAVNAGAR		SPEC.NO : PE-TS-356-100-M013					
BIDDER/VENDER:			QAP NO: .PE-QP-356-100-M013		REV .00 dtd. 05.02.2013		SPEC.TITLE: DUAL PLATE CHECK VALVE					
SYSTEM WATER SYSTEM LP VALVES			ITEM: AUSTENITIC DUCTILE IRON (A439 GR. D2) DUAL PLATE CHECK VALVES		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	
2.0	IN PROCESS INSPECTION											
2.1	BODY & PLATE MACHINING	1. DIMENSIONS 2. SURFACE FINISH 3. SURFACE DEFECTS	MA MA MA	MEASURE- MENT VISUAL DP / MPI TEST	100% 100% 100%	MFG. STD. MFG. STD. ASTM-E165 / ASME B16.34	MFG. STD MFG. STD NO DEFECTS	I.R I.R T.C	2 2 3/2	2 2 2	1 1 1	On machined areas
2.2	BODY SEAT (NOT LINING) -BY RUBBER VULCANISING	1. TENSILE STRENGTH 2. ELONGATION 3. HARDNESS 4. BLEED RESISTANCE	MA MA MA MA	TESTING TESTING TESTING TESTING	1/SAMPLE/ BATCH -DO- -DO- -DO-	IS:3400 (PART-1) IS:3400 (PART-1) MFG. STD SAMPLE TO BE KEPT IN 33% HCL,DM WATER 48% Na OH FOR 72 HRS. MFG. STD	120Kg/CM ² (MIN) 250% (MIN) 70°± 5°(Shore-A) NO DISCOLOURATION, WEIGHT GAIN ± 0% TO +2%	I.R I.R I.R T.C	3/2 3/2 3/2 3/2	2 2 2 2	1 1 1 1	
		5. SURFACE FINISHING 6. OZONE RESISTANCE 7. AGEING TEST 8. HYDRAULIC STABILITY TEST AFTER AGEING	MA MA MA MA	VISUAL TESTING TESTING TESTING	100% 1/SAMPLE/ BATCH 1/SAMPLE/ BATCH 1/SAMPLE/ BATCH	ASTM D1149 ASTM D573/REL STD TECH SPEC/ AWWA A C504	MFG. STD NO CARCKS AT 50 ppm OZONE NO DETERIORATION TECH SPEC/ AWWA A C504	I.R T.C. T.C. T.C.	3/2 3/2 3/2 3/2	2 2 2 2	1 1 1 1	Water absorption by volume to be < 2%
3.0	FINAL INSPECTION ASSEMBLY											
3.1		1. DIMENSIONS 2. OVERALL FINISHING 3. FUNCTIONAL TEST	MA MA MA	MEASURE- MENT VISUAL MANUAL	100% 100% 100%	MFG. DRG MFG. STD	APPD. DRG MFG. STD	I.R I.R I.R	2 2 2	1 1 1	-- -- --	
BHEL			PARTICULARS		BIDDER/VENDER							
			NAME									
			SIGNATURE									
			DATE									
					BIDDER'S/VENDER'S COMPANY SEAL							

<div></div>		QUALITY PLAN				CUSTOMER : BECL		PROJECT: 2X250MW LIGNITE BASED TPP, BHAVNAGAR		SPEC.NO : PE-TS-356-100-M013	
				BIDDER/VENDER:				QAP NO: .PE-QP-356-100-M013		REV .00 dtd. 05.02.2013	
				SYSTEM WATER SYSTEM LP VALVES				ITEM: AUSTENITIC DUCTILE IRON (A439 GR. D2) DUAL PLATE CHECK VALVES		SPEC.TITLE: DUAL PLATE CHECK VALVE	
				SYSTEM WATER SYSTEM LP VALVES				SECTION		VOLUME	
				SYSTEM WATER SYSTEM LP VALVES				SECTION		VOLUME	
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				SYSTEM WATER SYSTEM LP VALVES							

NOTE: 1.All materials shall be as per material specific requirements only.
2. This QAP is applicable only after satisfactory Dry Cycle Test of 1,00,000 Cycle as per approved procedure on design of each type of spring.

ABBREVIATIONS: CHP = CUSTOMER HOLD POINT CR= CRITICAL ACTIVITY MA= MAJOR ACTIVITY PT= DYE PENETRATION TEST P= PERFORMED BY V= VERIFIED BY W= WITNESSED BY 1= PURCHASER (BHEL) 2= VENDOR 3= SUB VENDOR IR= INSPECTION REPORT
TC= TEST CERTIFICATE, UT= Ultrasonic test, MPI=magnetic particle inspection. DP/PT- liquid Dye Penetrant Test

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

	TECHNICAL SPECIFICATION		SPECIFICATION NO. PE-TS-367-100-M013	
	DUAL PLATE CHECK VALVES		VOLUME : IIB	
			SECTION: D	
			REV. NO.: 00	DATE: 12.07.2013
	1X700MW BELLARY UNIT-3		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 Relevant catalogue/leaflet of the actuators
- 1.3 Torque calculations for actuator selected.
- 1.4 Actuator data sheet with Wiring Diagram.
- 1.5 Quality Plan duly signed & stamped with bidder's seal.
- 2.0 Within the stipulated time period as per vendor's drawings/ documents schedule, the following shall be submitted 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)	12 Nos.	1 Nos.
3	O&M Manuals	12 Nos.	2 Nos.

1X700MW BELLARY UNIT-3

VOLUME – III

TECHNICAL SCHEDULES


FOR

DUAL PLATE CHECK VALVES

SPECIFICATION NO. PE-TS-367-100-M013



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

	DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3		SPECIFICATION NO. PE-TS-367-100-M013
			VOLUME : III
			SECTION:
			REV. NO.: 00
	DATE: 12.07.2013		
	SHEET	1	OF 1

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SL.NO	TITLE
1	COMPLIANCE SHEET
2	SCHEDULE OF DEVIATIONS
3	SCHEDULE OF DECLARATIONS
4	SCHEDULE OF PRICES

	COMPLIANCE SHEET DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3	SPECIFICATION NO.:PE-TS-367-100-M013	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 12.07.2013
		SHEET 1 OF 2	

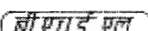
The bidder shall sign and return a copy of this compliance sheet along with his offer, indicating his compliance to the points specified herein:

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 DUAL PLATE CHECK VALVES 1X700MW BELLARY UNIT-3	SPECIFICATION NO.:PE-TS-367-100-M013	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 12.07.2013
		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) Prices for recommended spares (if any) for three year operation shall be furnished separately and not to be included in the base price.
- K) 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-367-100-M013

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-367-100-M013
		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

Authorised 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