

General Note: **BHARAT HEAVY ELECTRICALS LIMITED**

Page:1/2

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE : 2575329,7426
GRAMS : BHARATELEC
FAX NO: 0431-2520719
E-mail :
Web :

429-002/A

OFFICE COPY	Collective No.	Enquiry Date	Due Date For Quotation
	1401700015	08.04.2017	02.05.2017
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	920840240000 HSEC D660X90 (NOM) SA234WP91 HSEC D660X90(NOM) SA234WP91 3-04-321-03053	NO	24.000	24.00	30.09.17
20	920840250000 HSEC D762X100 (NOM) SA234WP91 HSEC D762X100(NOM) SA234WP91 3-04-323-03054	NO	12.000	12.00	30.09.17
30	920840260000 HSDE OD915.8X115 (MIN) SA234WP12CL1 HSDE OD915.8X115(MIN)SA234WP12CL1 3-07-125-13624	NO	6.000	6.00	31.10.17

General Note:

1. Supply of Hemispherical Dished Ends shall be strictly as per the material specification and drawings mentioned against each item of the enquiry.
2. Supply shall be as per TDC 423/07 & TDC 432/03.
3. Inspection by authorised Inspection Agency as listed in the attachment.
4. Tolerance on OD and ID shall be as mentioned in the drawing through out the surface.
5. All enquiry Conditions ANNEXURE-A Rev01 is attached along with the enquiry.
6. If any discrepancy in terms and conditions is noticed between the vendor's offer and BHEL Annexure A Rev01, then the terms and conditions mentioned in BHEL Annexure A Rev01 shall be considered final for evaluation.
7. Bidders shall sign and confirm against each point by point of "ANNEXURE-A Rev01" and submit along with the offer or else offer may not be consider.

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE
(FOSSIL BOILERS)



429-002/A

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
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THIRUCHIRAPALLI - 620014
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Page:2/2

1401700015 / 08.04.2017

23505

8. Offer (Including all enclosures) shall be signed and stamped in each page by authorized representative of the bidder or else offer may be liable for rejection.

Enclosures:

"LD clause has to be confirmed without fail."

The bidder along with its associate / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

PR Links

Material.	PR.No	PR.Item.	Quantity	Acc. Assign	Customer Number
920840240000	117503520	00010	8.000	U8/1821	U8/1821
920840240000	117503520	00020	8.000	U8/1822	U8/1822
920840240000	117444344	00010	8.000	U8/1818	U8/1818
920840250000	117503520	00030	4.000	U8/1821	U8/1821
920840250000	117503520	00040	4.000	U8/1821	U8/1821
920840250000	117444344	00020	4.000	U8/1818	U8/1818
920840260000	117493547	00010	2.000	U8/1818	U8/1818
920840260000	117493547	00020	2.000	U8/1821	U8/1821
920840260000	117493547	00030	2.000	U8/1822	U8/1822

list of suppliers

RFQ-5900000092

Open Tender Dummy Code

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

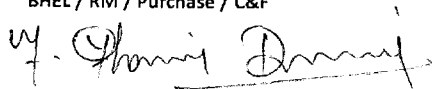
BHARAT HEAVY ELECTRICALS LIMITEDMM/RM/PURCHASE/C&F
BHEL / TRICHY-620 014.**ANNEXURE-A****Open tender****Enquiry Terms & Conditions for Supply of Hemispherical Dished Ends**

Note: This Annexure has to be mandatorily filled & signed by the manufacturer (or) mill and submitted along with Technical bid.

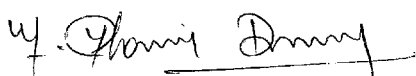
Any deviation to the below mentioned terms shall be stated specifically in the comments column for each term and also in case of acceptance to our terms, it will be construed that the whole term is understood and agreed in totality without any deviation. (If otherwise mentioned).

Sl No	BHEL Requirements	Supplier Comments
01.	<u>Material specification:</u> Supply Hemispherical Dished Ends shall be made strictly as per Specifications, Drawings and TDC as mentioned in the enquiry.	
02.	<u>Specification, Size & Quantity:</u> a) All the Hemispherical Dished Ends are to be supplied fully meeting the applicable TDC 423/07 & TDC 432/03, Drawings. If there is any deviation, the same should be mentioned clearly in the offer itself. b) TC in FORM IIIC, works TC, Raw Material TC, UT report, LPI report and other test certificates as called in TDC 423/03 shall be sent along with supply. c) Before start of production the manufacturer shall submit a Manufacturing and Inspection Plan (MIP) to BHEL product QA for approval (Being a New Supplier). d) Supply of Hemispherical Dished Ends shall be as per latest IBR amendment dt.15.04.15. e) Inspection by authorized inspection agency as listed in the annexure enclosed. f) Ends shall be protected with suitable End covers. g) Quantity shall be as given in enquiry.	
04	<u>Offer Submission:</u> ➤ Offer is to be submitted in TWO part bids system (Technical bid + Price bid) in the E-Procurement portal. Scan copy of the filled Annexure-A, Tender documents etc., shall be uploaded in the EPS portal. ➤ The offer is to be submitted within 2.00 P.M on or before the due date. ➤ After the scrutiny of technical bids, price bids of only techno-commercially qualified offers shall be opened with prior intimation.	
05	<u>Authorization for participation in EPS portal through DSC:</u> i) E-Tender Participation requirements Either Principal or authorized agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION). Suppliers are advised to go through the FAQ available in the web portal (https://bheleps.buyjunction.in). DSC shall be registered for the authorized person and all transaction done using that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally. ii) For foreign Principal In case of Principal (being foreigner), they may apply for DSC through Indian embassy at their country and can register with us for participating in E-tenders. Details of the applicable procedure is available in the webpage http://www.cca.gov.in/cca/ . iii) For Indian agent In case of agents participating/registering their DSC (of authorized person), it will be at the sole authorization of principal to their agents to participate on their behalf and all transactions done using that DSC against our tenders shall be known as valid communication and shall binding on principal and is legally valid.	
06	<u>Validity:</u> Offer/Price validity of 60 days is required after the price bid opening in case you are technically and commercially qualified.	
07	<u>Delivery:</u> The offer shall clearly indicate delivery period in fixed number of weeks/Months from the date of Purchase Order.	

08.	Terms of Delivery :	
	<p>A. <u>INDIGENOUS:</u></p> <ol style="list-style-type: none"> Bidders should submit their offer for FOR Destination -BHEL Stores, Trichy. The quote should be inclusive of all charges, including testing, packing & forwarding, inspection etc. Any other extra charges like ED, CST/VAT etc. are to be indicated clearly. The offer will be evaluated on total landed cost to BHEL Trichy. Service tax, Octroi, Entry tax etc. to be indicated in offer and is payable extra only on submission of documentary proof. CENVAT CREDIT: If any excise Duty is payable, the chapter head / sub-head reference and the rate of the duty should be quoted. If the tenderer is availing CENVAT credit for this input material, the effect of preformed credit should be passed on to the purchaser. Tenderer under CENVAT shall be preferred. The soft copies of the Invoice, LR copy & Test certificates shall be forwarded to BHEL immediately after dispatch. For interstate supplies C-Form will be issued. <p>B. <u>IMPORTS:</u></p> <ul style="list-style-type: none"> Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LIFO – Liner in Liner Out) basis. Port of loading should be indicated without fail. Port of discharge should be Chennai. The preferred shipment mode “Containerized Cargo or Break Bulk” shall be specified clearly in the offer. <p><u>FOR CFR INCO TERMS – CONTAINERIZED CARGO</u></p> <ol style="list-style-type: none"> For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LIFO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost. In case of shipment through Containers on CFR basis, the BL should bear the endorsement that “14 free days for Container Detention is applicable”. Place of delivery – INVT6 – CONCOR ICD should be clearly specified in the Bill of Lading. The place of delivery “CONCOR INVT6” should be mentioned in BL and the charges for the inland transportation of Containers (Chennai Port to CONCOR INVT6) shall be borne by Supplier by inclusion of same in the CFR rate. In the case of non-acceptance of any Supplier to include the charges for the inland transportation of Containers (Chennai Port to CONCOR INVT6), the same shall be paid by BHEL. But an amount of INR 300 per MT (in equivalent foreign currency as per the SBI TT selling exchange rate prevailing on the date of opening of technical bid) shall be loaded while commercial evaluation of the offer. However the Supplier shall ensure that the place of delivery “CONCOR INVT6” is mentioned in BL <p><u>BREAKBULK CARGO</u></p> <ol style="list-style-type: none"> For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LIFO (LINER IN LINER OUT) basis. The place of delivery “CONCOR INVT6” need not be mentioned in BL. The materials will be Custom cleared from Port itself. 	
09	<p><u>Transport Conditions for Import:</u></p> <p>The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment.</p> <ol style="list-style-type: none"> In the event of delayed submission of documents by the supplier, an amount up to 5% of the invoice value will be retained towards demurrage & other charges and the difference if any between actual charges and recovery will be settled separately through supplementary invoice. In such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a “Surrender Bill of Lading”. Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading. This is required to ensure avoidance of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller. 	



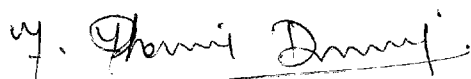
10.	<p><u>Payment terms:</u></p> <p>A. <u>Indigenous:</u></p> <p>i) BHEL Payment term is 100% direct EFT payment after 45 days from the date of receipt and acceptance of materials.</p> <p>ii) The duplicate copy of the invoice meant for the transporters should accompany the material as stipulated under C.E. rules 52a and 173c (or) 57gg. A Photostat copy of the above invoice for each Delivery Challan should be submitted along with the original bills routed through bank or submitted directly to BHEL finance department.</p> <p>iii) Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.</p> <p>iv) Offers of indigenous Suppliers with payment terms as LC / Advance Payment and payment through bank are liable for rejection.</p> <p>v) For new suppliers not registered with BHEL, Trichy for this product, payment shall be made 45 days after receipt and Acceptance of materials after testing at BHEL, Trichy lab. Please confirm your acceptance.</p> <p>B. <u>Imports:</u></p> <p>i) BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account.</p> <p>ii) Vendors supplying for first time to BHEL (not supplied any material earlier), the payment will be made after 45 days of receipt and acceptance of materials at BHEL store. (In case of foreign supplier, quoting for LC payment, first lot of mutually agreed quantity shall be supplied with payment as CAD basis after 45 days from the date of receipt & acceptance of material after testing at our Lab. After acceptance of first lot, LC may be opened for the remaining lot).</p> <p>iii) Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.</p> <p>iii) If the LC payment is insisted, TWO sets of original TCs to be submitted prior to dispatch and a certificate to that effect from BHEL should form a part of the documents to be negotiated. If this condition is not complied by the vendor, the offer is liable for rejection.</p> <p>Note: LC will be opened one month prior to material readiness. Hence supplier shall intimate the material readiness accordingly for opening of LC. LC validity period will be 90 days and for any extension, applicable charges will be to supplier's account.</p> <ul style="list-style-type: none"> ➤ In the case of Usance LC with 45 days credit, the loading will be considered @ 1.5% on the offered Value. Due date for payment will be considered from the date of receipt of documents at BHEL bank, as specified in PO. ➤ For LC at sight the loading will be considered @ 3.5% on the offered Value. ➤ Normally CAD at sight and Confirmed LCs are liable for rejection. 	
11.	<p><u>Liquidated Damage (Indigenous & Imports):</u></p> <ol style="list-style-type: none"> 1. LD shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value. 2. For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value. (Not applicable to this Tender) 3. Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value). 4. a) IMPORT: For CFR terms, BL date will be considered for LD calculation. b) INDIGENOUS: For "FOR Delivery terms", Lorry way bill date will be taken for LD calculation. 	
12.	<p><u>Risk Purchase clause :</u></p> <p>BHEL at its option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute thereof. The supplier shall be liable for any loss which BHEL may sustain by reason of such risk purchases in addition to LD at the maximum rate mentioned in the LD clause above. Confirm your acceptance.</p>	



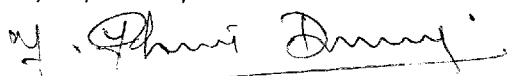
13.	<p>Performance Bank Guarantee : The Bidder, in the event of an order, should furnish a bank Guarantee from BHEL's consortium banks (List attached) or counter – guaranty by vendor's bank to BHEL's consortium banks, at no extra cost to BHEL, in a proforma prescribed by BHEL, provided along with the order, for an amount equivalent to 10% of the contract value. The BG shall be valid for period of 18 months from the date of last shipment or 12 months from the date of receipt / acceptance at BHEL, Trichy whichever is later, with a claim period of two months. PBG shall be strictly as per BHEL format and to be submitted before the dispatch/shipping of the materials.</p>	
14.	<p>Warrantee / Guarantee: Supplier to accept guarantee/warrantee of "18 months from dispatch or 12 months from commissioning, whichever is earlier". Any deviation to this may lead to rejection of the offer.</p>	
15.	<p>Non-Disclosure Agreement(NDA): The bidders shall enter into the Non-disclosure agreement totally voluntarily, with full knowledge of its meaning and without duress. (Format attached).</p>	
16	<p>Patent Right The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.</p>	
17	<p>Comprehensive Economic Partnership Agreement (CEPA): Foreign suppliers shall ensure that the benefits as applicable under comprehensive economic partnership agreement (CEPA) with government of India are disclosed in the bid and relevant documents such as certificate of country of origin, issued by the appropriate authority in the country of exports, is provided by the vendor along with dispatch documents. Bids shall be evaluated with such applicable benefits. In the event of seller failing to provide appropriate documents for purchasers to avail disclosed concessional duty benefits in India, financial loss, so incurred, will be to the seller's account.</p>	
18	<p>Role of Agents a. BHEL strongly discourages the engagement of Agents in India by foreign principals, to deal with BHEL, in BHEL's tenders. a. BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL. Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM. Hence in their own interests, prospective tenderers may check with BHEL. The list of banned firms is available on BHEL website www.bhel.com. b. In view of the requirement of BHEL, it is strongly suggested that in their own interest, foreign principals may desist from engaging any Indian agent and deal with BHEL directly and it is stressed that any Main producer proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk. BHEL shall in no way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions of their Indian agent.</p>	
19.	<p>Agency Commission : ➤ In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India, shall invariable be shown separately in the Performa invoice and this will be paid by us in India, in Indian rupees, on satisfactory completion of the contract. ➤ If overseas principal has any tie-up with any third party in respect of agency commission it should be declared while submitting offers. ➤ Copies of current agency agreement / authorization letter in respect of agency commission shall be furnished along with offer, if not made available earlier. ➤ For calculation of rupee equivalent agency commission, exchange rate as prevailing on the date of order will be taken.</p>	
20.	<p>Evaluation Criteria: The offers of both import vendors and indigenous vendors will be evaluated on total landed cost to BHEL, Trichy. The evaluation details with respect to the import & indigenous vendors is detailed below: I) Indigenous Vendors Total Landed cost = FOR Rate in INR (A) + Applicable Taxes (B) + Loading for payment term & LD (C) – Applicable input tax credit (D) A. Indigenous vendors submit offers on Free on Road (FOR), Trichy in INR. B. Excise Duty, CST or VAT on (BASE PRICE+ED) and any other charges quoted by indigenous vendors will be added to the base price. C. Loading for payment terms & non-acceptance of Liquidated Damages (LD) will be added to the FOR value for arriving the landed rate. D. However input credit is availed for ED, VAT & Service Tax, hence the same is excluded for arriving at the landed cost. II) Import Vendors Total Landed cost = CFR Rate in INR (A) + Loading for inland transportation of Containers to CONCOR INTVT6 (B)+ Applicable Duties (C) + Incidental Charges (D) + Loading for Container Shipment (E) + Loading for payment term & LD (F)</p>	

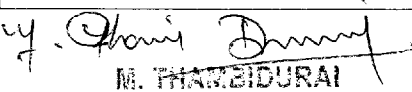
y. Shanti Dhanu

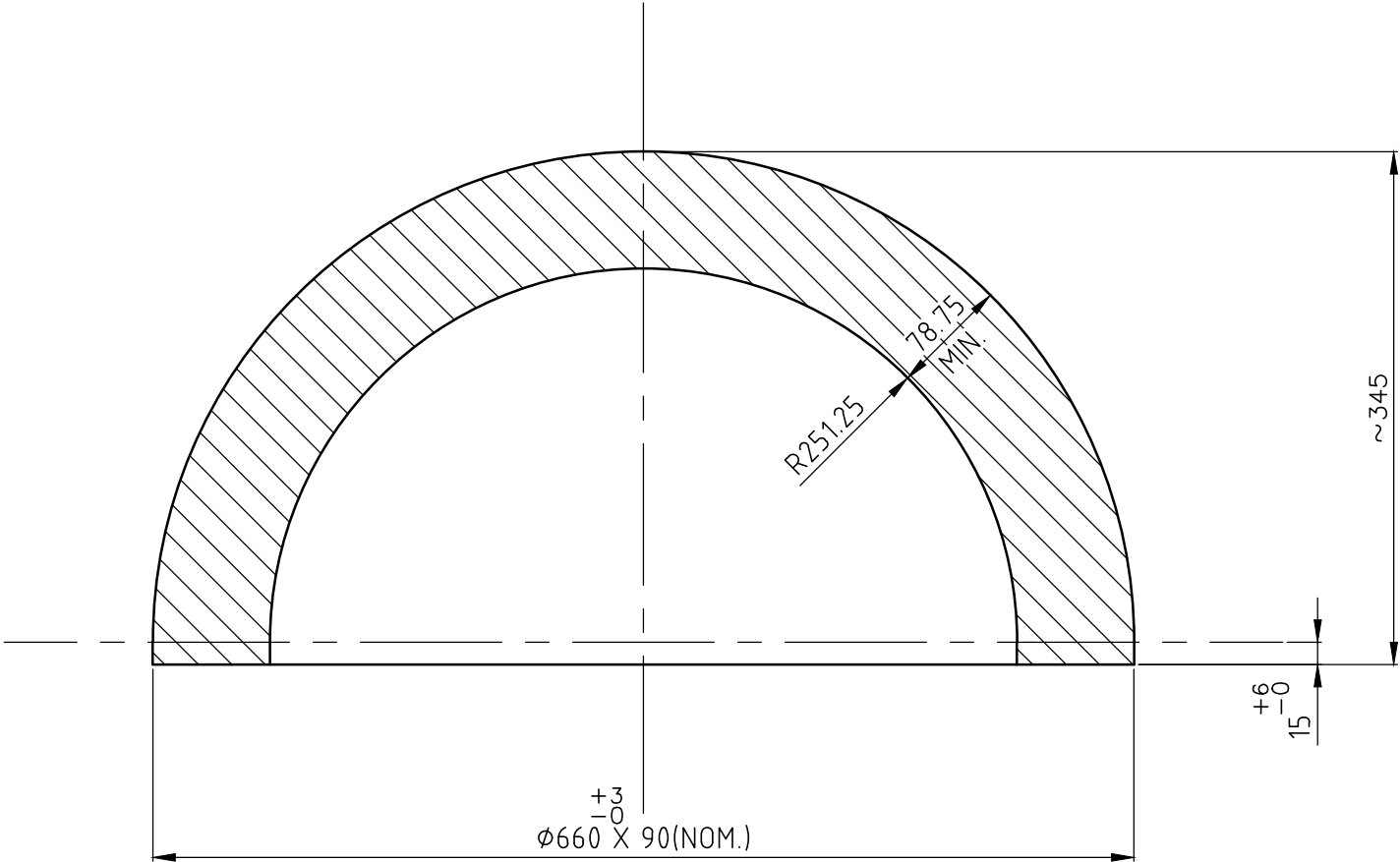
	<p>A. Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILO – Liner In Liner Out) basis in foreign currency, which will be converted to INR by multiplying with the Exchange rate (SBI TT Selling rate) as on the technical bid opening date.</p> <p>B. Loading for non-acceptance to Inland transportation from Chennai port to CONCOR INTVT6</p> <p>C. Customs duty, Safe guard duty (as per the notification No 02/2014-Customs (SG) dated 13th August 2014) and antidumping duty (as per the notification No 18/2016-Customs (ADD) dated 17.05.2016) as applicable will be added to the INR price.</p> <p>D. Incidental charges of 1.5% will be added to the CFR Value. The incidental charge is inclusive of Insurance, port handling charges, & freight charges for movement from Chennai port to BHEL, Trichy.</p> <p>E. In case of shipment through containers, If 14 free days for Container detention is not provided in the offer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost.</p> <p>F. Loading for payment terms & Non-acceptance of Liquidated Damages (LD) will be added to the CFR value for arriving at the landed cost.</p>	
21.	<p>General condition:</p> <p>a) In addition to TCs in relevant IBR forms corresponding mill TCs should also be provided along with dispatch of Hemispherical Dished Ends. Two sets of original and one copy of all such TCs are to be provided to BHEL, Trichy.</p> <p>b) Material is to be inspected by third party inspection agency as approved by IBR and test certificate are to be countersigned by respective inspection agency in case the Mill is not approved by IBR.</p> <p>c) Acceptance of Test Certificates by BHEL before dispatch is must.</p> <p>d) We require the shipment of the Hemispherical Dished Ends to be as per the dates mentioned against the individual items in the enquiry.</p> <p>e) Multiple PO may also be placed considering the applicable duty structure of the respective requirement/Qty.</p> <p>f) No revision of prices will be entertained after the tenders are opened.</p> <p>g) For the evaluation purposes, exchange rate (TT selling rate of SBI) as on schedule date of tender opening (Part I, i.e technical bid, in case of two part bid) shall be considered.</p> <p>h) BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.</p> <p>i) Lowest price received against BHEL tenders need not be the technically acceptable one and in that case, BHEL reserves the right not to consider the same.</p> <p>j) BHEL reserves the right to negotiate L1 rate or re-float the tender opened if L1 price is not the lowest acceptable price to them inter-alia other reasons.</p> <p>k) In the event of our customer order covering this tender being cancelled / placed on hold / otherwise modified, BHEL would be constrained to accordingly cancel / hold / modify the tender / your purchase order at any stage of execution.</p> <p>l) Offer will be evaluated based on Landed cost to BHEL- Trichy on item basis.</p> <p>m) Vendor should physically weigh the materials before stuffing them into container and incorporate the same in BL and packing slip</p> <p>n) No payment will be made for the excess quantity.</p> <p>o) Offer should be submitted only as per the Unit of Measurement (UOM) specified in the enquiry.</p> <p>p) The offers of the bidders who are on the banned list as also the offer of bidders who engage the services of the banned firms, shall be rejected. The list of banned firms is available on the BHEL website -www.bhel.com.</p> <p>q) All documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder.</p> <p>r) Documents not signed and stamped by the authorized signatory of the bidder shall not be accepted and considered for registration / evaluation of the bid etc.</p> <p>s) Any additional documents submitted by supplier / bidder, during processing of registration application / tender or after placement of order, shall not be accepted unless it is submitted with forwarding letter and duly signed and stamped as mentioned above.</p>	



	<p>t) BHEL may consider extending the due date/s for the tender openings. Sufficient notice would be given by BHEL for such extensions and it will be published as corrigendum in following websites,</p> <ul style="list-style-type: none"> ➤ https://bheleps.buyjunction.in ➤ http://tenders.gov.in ➤ http://eprocure.gov.in 	
22	<p><u>Fraud Prevention Policy</u></p> <p>"The bidder along with its associate/collaborators/sub-contractors /consultants/service providers shall strictly adhere to BHEL Fraud prevention policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about fraud or suspected fraud as soon as it comes to their notice."</p>	
23	<p><u>Cartel Formation:</u></p> <p>All the firms should desist from forming cartel as the practice is prohibited under Section 3(3) (a) & (d) of the competition Act 2002. If any such instance is observed during this tender will attract disciplinary action as per BHEL policies.</p>	
24	<p><u>Integrity Pact (IP):</u></p> <p>Signed Integrity pact should be furnished along with the offer. Offers without signed IP will not be considered for evaluation. IP should be signed by authorized official of the bidder / Vendor / Contractor. (Not applicable to this Tender).</p>	
25	<p><u>Resolution of Disputes:</u></p> <ol style="list-style-type: none"> a. If dispute or difference of any kind shall arise between the Purchaser/Consignee and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations. b. If the parties fail to resolve their dispute or difference by such mutual consultation within 30 days of its occurrence, then, unless otherwise provided in the contract, either the Purchaser/Consignee or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided the applicable arbitration procedure will be as per the Arbitration and Conciliation Act, 1996 of India. In the case of a dispute or difference arising between the Purchaser/Consignee and a domestic Supplier relating to any matter arising out of or connected with the contract, such dispute or difference shall be referred to the sole arbitration of an officer in BHEL Trichy, appointed to be the arbitrator by the General Manager/MM BHEL Trichy. The award of the arbitrator shall be final and binding on the parties to the contract subject to the provision that the Arbitrator shall give reasoned award in case the value of claim in reference exceeds Rupees One lakhs (Rs. 1,00,000/-) c. Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued, i.e., BHEL Trichy. d. Jurisdiction of the court will be from the place where the tender enquiry document has been issued, i.e., Trichy, India. 	
26	<p><u>In the event of Force Majeure:</u></p> <ol style="list-style-type: none"> a. Notwithstanding the provisions contained in other clauses, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure. For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees , lockouts excluding by its management, freight embargoes and Acts of GOD. b. If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. c. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side. d. In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs. 	
27	<p><u>Execution of the order:</u></p> <ol style="list-style-type: none"> a. BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s. The mere act of the pre-dispatch inspection (PDI) does not absolve the Supplier from giving the specifications as agreed upon in the Purchase Order. b. In the case of overseas suppliers Inspection call for carrying out the inspection shall be given 30 days before the scheduled contract delivery date. The Inspection date/s given by the Supplier shall be on firm basis. For local Suppliers the Notice period of inspection shall be 10 working days 	



	In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances at Indian Ports in the case of foreign suppliers.											
28	<p>Special Provisions for Micro and Small Enterprises (MSE) bidders registered as per MSME act: (Subject to participating MSE vendors should meet the tender requirements of BHEL)</p> <ul style="list-style-type: none">➤ 20% of the tendered quantity is earmarked for MSE suppliers in this tender.➤ Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.➤ In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE vendor within the "L1+15% price band", the supply shall be shared proportionately.➤ MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.➤ In case of any change in the MSE status of the bidder, it shall be the responsibility of the bidder to notify the change as a part of the bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the bidder and the order is obtained under the premise of an MSE, then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the bidder as per the procurement policy of BHEL.➤ In case after the bid opening, it is seen that no MSE has become L1, then depending on the nature of the item, if it is not possible to split the tendered items / quantities on account of reasons like customer contract requirements of supplying one make for a given project or technical reasons like tendered items being a system etc., then BHEL would not counter offer the L1 prices even though there may be MSE bidders within the L1+15% band.➤ If the L1 vendor happens to be a MSE vendor against any item code, then 100% of the qty (for the respective item code) shall be proposed to order on the L1 (MSE) vendor, even though there may be other MSE vendors within the "L1+15%" price band.											
29	Offers shall be submitted in TWO PART bids system (TECHNO-COMMERCIAL BID + PRICE BID).The bidder shall submit his response through bid submission to the tender on e-procurement platform at https://bheleps.buyjunction.in within 14:00 Hrs (GMT +05:30) of the due date of this tender. The bidder would be required to register on the e-procurement market place https://bheleps.buyjunction.in and submit their bids online. SEALED COVER BIDS/ E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED. Supplier shall upload any other tender documents in the E-Procurement Portal only.											
30	<p>Enclosures:</p> <table><tr><td>a) Enquiry</td><td>e) NDA Format</td></tr><tr><td>b) TDC 423/07 & TDC 432/03</td><td>f) IBR Amendment</td></tr><tr><td>c) PBG Format</td><td>g) Inspection Authorities list</td></tr><tr><td>d) List of Consortium banks</td><td>h) Drawings</td></tr><tr><td>e) Forging Facility report</td><td></td></tr></table>	a) Enquiry	e) NDA Format	b) TDC 423/07 & TDC 432/03	f) IBR Amendment	c) PBG Format	g) Inspection Authorities list	d) List of Consortium banks	h) Drawings	e) Forging Facility report		
a) Enquiry	e) NDA Format											
b) TDC 423/07 & TDC 432/03	f) IBR Amendment											
c) PBG Format	g) Inspection Authorities list											
d) List of Consortium banks	h) Drawings											
e) Forging Facility report												
<p> M. THAMBIDURAI Asst. Engineer - I Purchase / MM / RM / C&F BHEL, Tiruchengode-613004.</p>		<p>SIGNED BY MANUFACTURER / MILL</p> <p>Name of Mill: Designation / Department: Seal & Signature</p>										



NOTES:

- 1. DESIGN, MANUFACTURE AND INSPECTION AS PER IBR.
- 2. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
- 3. NORMALIZING AND TEMPERING NEEDS TO BE DONE AFTER HOT FORMING.
- 4. FITTING SPECIFICATION : SA234WP91.
- 5. THE FORMED DISHED END COVER SHALL BE SUPPLIED WITH PLAIN ENDS.
- 6. THE MAXIMUM THICKNESS SHALL NOT EXCEED 90mm AT ANY POINT ON THE DISHED END.

FITTING MATERIAL CODE: 920840240000

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
		HS END COVER				SA234WP91			347.000	
					VAR NO	MATERIAL SPECN		DI	QUANTITY	

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		


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TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

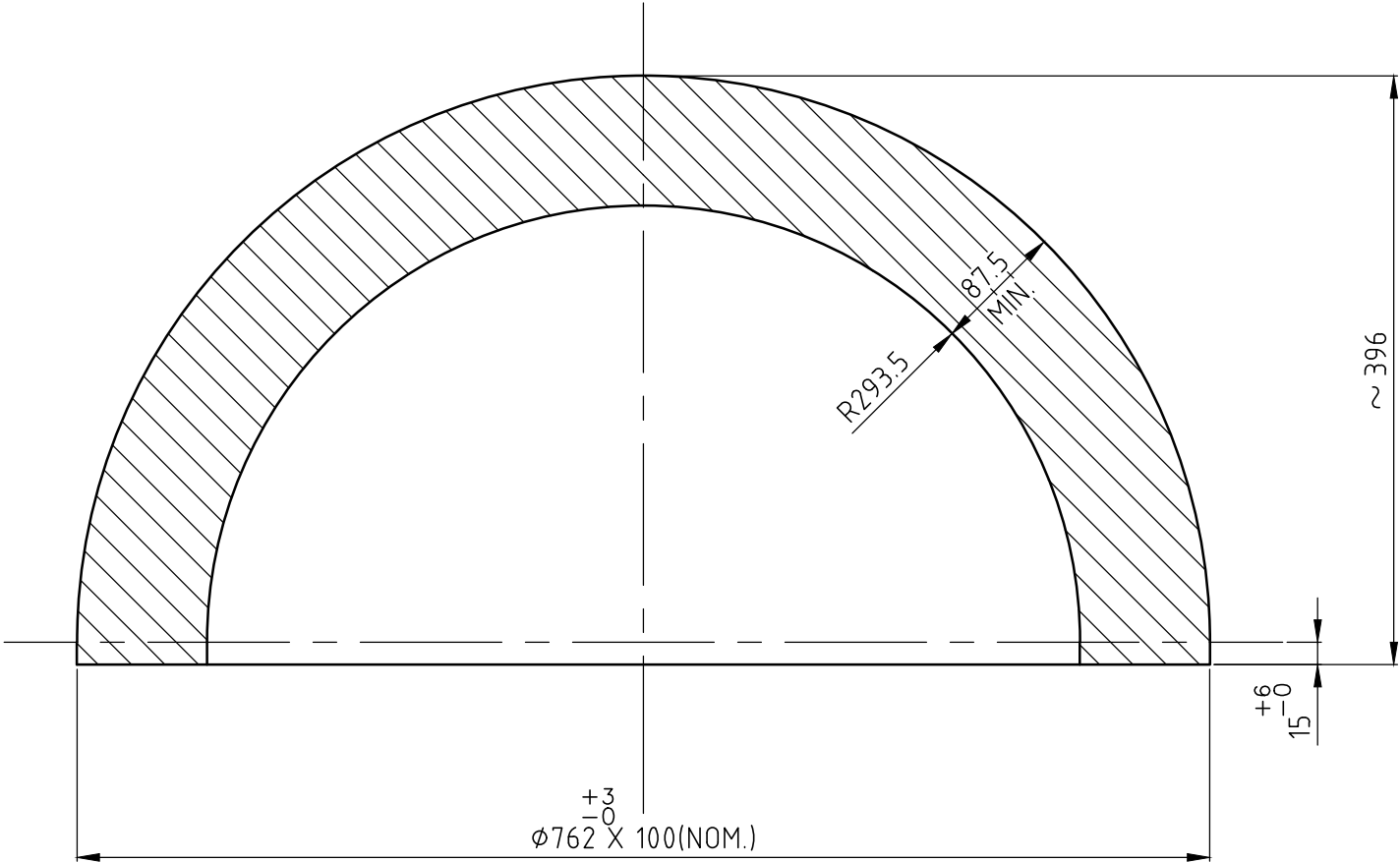


Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

DRN	NAME	SIGNATURE	DATE
CHD	NIRMAL		08-12-2016
APPD	KIRUBA		09-12-2016

DEPT	PP	ALL DIMENSIONS ARE IN MM		SCALE	WEIGHT (Kg)
CODE	121			N.T.S	
TITLE					
HSEC—RAW FORMING ø660X90(NOM.)					

DRAWING NO :	REV
3-04-321-03053	00



NOTES:

- 1. DESIGN, MANUFACTURE AND INSPECTION AS PER IBR.
- 2. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
- 3. NORMALIZING AND TEMPERING NEEDS TO BE DONE AFTER HOT FORMING.
- 4. FITTING SPECIFICATION : SA234WP91.
- 5. THE FORMED DISHED END COVER SHALL BE SUPPLIED WITH PLAIN ENDS.
- 6. THE MAXIMUM THICKNESS SHALL NOT EXCEED 100mm AT ANY POINT ON THE DISHED END.

FITTING MATERIAL CODE: 920840250000

VARIANT NUMBER	ITEM NUMBER	HS END COVER	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
						SA234WP91			515.000	
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	VAR NO	MATERIAL SPECN	A/C/P	DI	QUANTITY	GS

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

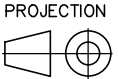
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

DEPT pp
CODE 121

ALL
DIMENSIONS
ARE IN MM



SCALE
N.T.S

WEIGHT (Kg)
515.000

REF TO ASSY / OLD DWG

TITLE
HSEC-RAW FORMING
ø762X100(NOM.)

DRAWING NO :
3-04-323-03054

REV
00

Pre-Qualification requirements (PQR) for the procurement of Dished Ends through Open Tender

(TDC: 432/03 & 423/07)

A) Organizational Capability:

1. Manufacturers having Dished Ends manufacturing facilities are only eligible to participate. Offer from traders, fabricators and stockists are not acceptable and will not be considered for evaluation. Vendor to indicate the nature of the firm.
2. Suppliers without basic manufacturing facilities in-house, shall not be considered for evaluation. In house facilities for Heat treatment & Non-Destructive Testing are mandatory requirements for consideration of the offer. Heat treatment furnace calibration certificate issued by government approved agency along with procedure for calibration shall be submitted.
3. If the supplier is not having steel making facility then source of raw material for the manufacturing shall be from IBR approved well known steel maker or certified by IBR approved inspecting authority (Form-IV to be attached). If the supplier is dependent on more than one source for steel making, all the sources should be indicated; and the supplies should be restricted to the indicated list of raw material suppliers. For the submitted raw material sources, the supplier shall confirm that the raw material test certificate/s will be furnished along with product test certificate/s.
4. The suppliers shall submit Creep test report for a minimum of 1,000 hours for the tendered material grade (In line with IBR). *For each raw material source, Temperature and stress value for the creep test for each grade of dished end shall be as indicated below. In case more than one source of raw material, test data for all the sources would be required.*

For Gr 12 & 22: temperature 550 deg C, Stress 100 Mpa of specimen size M10 round
For Gr 91 : temperature 600 deg C, Stress 120 Mpa of specimen size M10 round
5. Chemical, Mechanical testing shall be done in house or at Labs certified as per ISO 17025 or Government approved labs.
6. Suppliers shall submit a valid ISO 9001 certificate or Quality management system certificate or Written down procedure.
7. Suppliers shall submit filled in supplier facility report (Format enclosed).
8. BHEL/End customer reserve the right to inspect the item ordered at any stage at vendor's works and if found not meeting the stipulated conditions, material is liable for rejection.
9. BHEL/End customer reserves the right to inspect the first sample at vendor's works for giving clearance before bulk production.

B) Technical Competence:

1. Point by point confirmation to the TDC requirements is mandatory for consideration of offer.
2. Suppliers shall submit the list of facilities available at the mill, manufacturing process flow chart & manufacturing quality plan to meet the TDC and drawing requirements along with technical bid (Raw material to finished product).
3. Suppliers shall submit the experienced manpower details specific to Manufacturing, Quality and NDE requirements.

C) Past Experience/ Performance:

1. Suppliers shall indicate their annual installed capacity for the tendered specifications & it shall be more than the tendered quantity for each specification.
2. Suppliers shall have supplied Dished Ends in each of the tendered specification. Details of supplies made in recent past detailing the quantity, Specification, size & customer details, year wise along with the unpriced PO copies, proof of supply (such as invoice / bill of lading copies and sample test certificates) covering minimum and maximum sizes for the tendered specifications shall be submitted.

D) Financial Soundness:

1. Indigenous suppliers shall submit Audited copies of annual reports/complete set of annual accounts for the last four years (or from date of incorporation whichever is less).
2. Import suppliers shall submit latest D&B report.

Necessary supporting documents shall be submitted for meeting each of the above Pre-Qualification Criteria for evaluation of the offers.

BHEL reserves the right to consider/Not-consider the offers based on the evaluation of documents submitted for the above Pre-Qualification Criteria. BHEL also reserves the right to have on-site assessment of the facilities at supplier's works during the bid evaluation.


08104117
G. PANNEER SELVAM
Dy. General Manager
Quality Assurance
BHEL, TRICHY - 620 014.


MATHAVAN
Senior Deputy General Manager
MM / RM / Material Planning
BHEL / Trichy - 620 014.



FORGE SHOP

- 1.00.00 Name of Company, Address
- 2.00.00 Type & No. of Forging Press : Forging hammer
Capacity - (Tonnes)
- 3.00.00 Max. size of Material that can be handled
dimensions, weight and type of materials.
- 4.00.00 Production with relevant standards (for last three years)
Carbon Steel
Stainless Steel
Alloy steel
Inconel -
- 5.00.00 Heating Facilities -
- 5.10.00 Furnace - No. and capacity
- 5.10.10 Type - Oil Fired, Gas Fired, Electric
heating
- 5.10.20 Dimensions
- 5.10.30 Mode of Temperature control & extent
of automation.
- 5.10.40 Temperature recording facilities
- 5.20.00 Distance of heating furnace from Forging Press
- 5.30.00 Handling Facilities - Crane/Truck/Manual/ any other
indicate list of such facility.
- 6.00.00 Heat treatment facility
- 6.10.00 Type of heat treatment possible



FORGE SHOP

- 6.20.00 source of Heat Treatment with relevant details.
- 6.20.10 Annealing -
- 6.20.20 Normalising -
- 6.20.30 Stress Relieving -
- 6.20.40 Quenching: - Water/Oil
- Any other Heat treatment? -
- 6.20.50 Type & No. of Furnace -
- 6.20.60 Dimensions, Type of Temp. Control,
Temp - Time Recording facilities.
- 6.20.70 Calibration details of HT Furnace, Thermocouples & Recorders
- 7.00.00 Source of Raw Materials -
- Indigenous/imported (Indicate source and quantity of
material procured during last three years)
- 8.00.00 Machining Facilities -
- List of machines installed
- 9.00.00 Cutting facilities - Type & No. of Machine
- 10.00.00 Availability of testing facilities Yes/No
- 10.10.00 If no - Indicate source of testing with relevant details
- 10.20.00 If yes :-
- 10.20.10 Chemical Analysis: Method
- 10.20.20 Mech. Testing
- 10.20.21 Hardness testing
- 10.20.22 Metallorgraphy
- 10.20.23 Universal Tensile Testing M/C -
Ambient Low Temp.
- 10.20.24 Any other tests -
- 10.30.00 Non-destructive (Mandatory)
- 10.30.10 Radiography



FORGE SHOP

- 10.30.20 Ultrasonic Test
- 10.30.30 Dye Penetration
- 10.30.40 MPI
- 10.30.50 Any other NDE
- 11.00.00 Experience with Third Party/Statutory Agency:
Indicate the agency
- 12.00.00 Source of procurement of Dies & availability for
Machining of such dies.
- 13.00.00 Consistency in supply:
- 13.10.00 Has the vendor produced items of similar nature in
past?
- 13.20.00 Has the vendor maintained delivery commitments in
past?
- 13.30.00 Has there been frequent labor trouble in past?
- 13.40.00 Has there been major upset due to faulty
material management?
- 13.50.00 Is the system of planning & scheduling resilient
enough to overcome temporary setbacks & make
up lost time?
- 13.60.00 Has the vendor got standby arrangement for power?
- 13.70.00 Can the vendor quickly offload the work to other
reliable sub-vendor?
- 13.80.00 Total order booked till date.
- 14.00.00 Remarks:

PLACE:

SIGNATURE WITH SEAL

DATE:

BHEL, Tiruchirappalli – 620014.	Quality Assurance	Technical Delivery Conditions
Product: FORGED & FORMED FITTINGS		
Document No.: TDC:0:423	Rev. No.: 07	Effective date: 10/11/2012
		Page 1 of 4

Revision record:

Rev: 00: Supersedes TDC: 5:019 & can be used wherever the old TDC is specified.

Rev: 01: New materials, IGCsT added. UT, Hardness requirement modified. LPI, MPI requirement added.

Rev: 02: Flatness requirement added in clause no: 5.0

Rev: 03: TDC for, Pipe Fittings for NTPC contracts (TDC 0 427), Pipe fittings indigenous supply(TDC 0 422) has been merged with this TDC and named as Butt Welded formed pipe fittings. Cl. 2.0 General removed, scope limited to IBR only and other clauses renumbered. Limits of carbon modified. Aligned with NTPC requirements.

Rev: 04: Restriction in size below 2 in. removed based on Spares requirement.

Rev: 05: Cl: 2.0, 3.0, Revised.

Rev: 06: Product Heading changed. Cl 1.0 Scope and Raw material Sourcing added. Cl.2.0 & 3.0 merged and totally revised. Cl. 4.0, 5.0, 6.0 modified and renumbered.

Rev: 07: Cl 1.0, 2.0 & 5.0 Modified.

1.0 MATERIAL SPECIFICATION:

SCOPE

Fittings	:	Made by welding are prohibited.
ASME(Latest as on the Date of PO)	:	Carbon Steel (CS), Alloy Steel(AS): SA 234, Stainless Steel(SS): SA 403 ⁹
Additional Requirement	:	As listed below (supplementary to Specification)
Size Grade & Qty.	:	As per Purchase order (PO) / Drawing
Indigenous -		
Raw material for Alloy Steel & Stainless Steel	:	Shall be procured from IBR approved "Creep resistance steel makers"

2.0 MANUFACTURING & TESTING REQUIREMENTS:

2.1 Machined Fittings (Max size permitted 4") – Reducers, Couplings & End caps

Starting material	Heat treatment	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed
	NDE – UT ^d	To be done after Heat treatment. For size above 50mm – to be done as per ASTM A 388 Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4
Finished fitting (after machining)	HT	Not required
	NDE (for all sizes)	<ul style="list-style-type: none"> MT (100%)- Procedure - As per ASTM E709. No linear indications are acceptable For WP91 Wet MPI shall be done LPI – SS: Shall be done as per ASTM E165. No linear indications are acceptable. SS: Finished fittings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) or 1 micro Sievert.
	Hardness	Base material Hardness for WP5 - 217 BHN max. WPB, WPC, WP11, WP12, WP22 – 197 BHN max. WP91 - 191-241 BHN – 100% to be checked
	Dimension	ASME B16.9 & ASME B16.11, As per Engineering Drawing
	Bend Test (for IBR items)	Specimen: 19mm. Thickness (t) x 25.4mm width - cold bent 180 deg. over thin section without fracture, mandrel radius: CS : <=6.35 mm. AS, SS : <=1.5 times specimen thick.

BHEL, Tiruchirappalli – 620014.	Quality Assurance	Technical Delivery Conditions
Product: FORGED & FORMED FITTINGS		
Document No.: TDC:0:423	Rev. No.: 07	Effective date: 10/11/2012 Page 2 of 4

2.2 Seamless Formed Fittings – Ells, Tees, Reducers, End cover (Dished end)

Starting material:						
1)Tube & Pipe	NDE – UT ^d	Shall be done as per - ASTM E 213 with longitudinal notch of 5% wall thickness with max.1.5mm and min. 0.3mm. Actual measured notch depth to be specified in Test Certificate.				
2)Forged blank (For end covers)	NDE – UT ^d	For size above 50mm UT shall be done as per - ASTM A 388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
3) Plate	NDE – UT ^d	For size above 10mm SA 578, Acceptance Level - B				
Finished fitting (cold/hot forming)	Heat treatment after forming	Shall be done as per SA234/SA403. When Heat Treatment is required it shall be done as per the below table values: Stainless Steel: All grades - Solution Annealed: 1050-1100 Deg C Soaking time : ½ hr per inch with minimum 15 minutes				
		Material	Heat Treatment Temp,C		Soaking time, hr/in	
			Normalising	Tempering	Normalising	Tempering
		CS- WPB & WPC	870-900	-	1/2	-
		AS-WP11, WP12	920-950	655+- 15	1/2	1
		AS-WP5, WP22	920-950	695+- 15	1/2	1
	AS- WP91	1040-1080	746-774	1/2	1	
		Note 1.Normalising shall be done for a minimum time of 30 min while tempering to be done for a minimum time of 60 min.				
	NDE (for all sizes) – Except for Pl. formed D.end	<ul style="list-style-type: none">• MT (100%) - Shall be as per - ASTM E709 No linear indications are acceptable. For WP91 Wet MPI shall be done.• LPI – SS: Shall be done as per ASTM E165. No linear indications are acceptable.• SS: Finished fittings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) or 1 micro Sievert.				
	NDE–for Plate formed D.end	For Plate Formed D.End – 100% MT as per - ASTM E709 on both inner and outer surfaces of Knuckle radius and weld ends. No linear indications are acceptable.				
NDE – UT ^d For OD > or=219mm & W.T >or= 6mm	If made from Pipe & Tube – Shall be done as per - ASTM E 213 with longitudinal notch of 5% wall thickness with max.1.5mm and min. 0.3mm. Actual measured notch depth to be specified in Test Certificate.					
	If made from Forging Shall be as per - ASTM A 388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4					
	If made form Plate shall be as per A578 Level-B					
Hardness	Base material Hardness for WP5 – 217 BHN max. WPB, WPC, WP11, WP12, WP22 – 197 BHN max. WP91 - 191-241 BHN – 100% to be checked					
Dimension	ASME B16.9 & ASME B16.11, As per Engineering drawing.					
Bend Test (if starting material is forged blank) (for IBR items)	Specimen : 25.4 mm x 19 mm thick - cold bent 180 deg. over thin section without fracture, internal radius of bend: CS : <=6.35 mm. AS, SS: <=1.5 times specimen thick.					

BHEL, Tiruchirappalli – 620014.	Quality Assurance	Technical Delivery Conditions
Product: FORGED & FORMED FITTINGS		
Document No.: TDC:0:423	Rev. No.: 07	Effective date: 10/11/2012
		Page 3 of 4

2.3 Forged Fittings – Ells, Tees, Reducers, Couplings, and Flanges & End cover (Dished End)

Shall be forged to the shape with a minimum forge reduction ratio of 1:4. Fitting shall not be machined from a forged block.

Starting material: Rolled or forged Bars, blooms, billets and Killed steel	NDE – UT ^d	To be done for diameter or thickness above 50mm Procedure - As per ASTM A388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
After forging (cold/hot forging)	Heat treatment	Shall be done as per SA234/SA403. When Heat Treatment is required it shall be done as per the below table values:				
		Material	Heat Treatment Temp.C		Soaking time, hr/in	
			Normalising	Tempering	Normalising	Tempering
		CS- WPB & WPC	870-900	-	1/2	-
		AS-WP11, WP12	920-950	655+- 15	1/2	1
		AS-WP5, WP22	920-950	695+- 15	1/2	1
		AS-WP91	1040-1080	746-774	1/2	1
Stainless Steel: All grades - Solution Annealed: 1050-1100 Deg C Soaking time: ½ hr per inch with minimum 15 minutes. Note 1.Normalising shall be done for a minimum time of 30 min while tempering to be done for a minimum time of 60 min.						
Finished fitting	NDE – UT ^d For OD > or = 219mm	UT shall be done as per - ASTM A388 In Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
	NDE (for all sizes)	<ul style="list-style-type: none">MT-(100%) Shall be done as per ASTM E709. No linear indications are acceptable. For WP91 Wet MPI shall be done.LPI – SS: Shall be done as per ASTM E165. No linear indications are acceptable.SS: Finished fittings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) or 1 micro Sievert.				
	Hardness	Base material Hardness for WP5 & WP9 – 217 BHN max. WPB, WPC, WP11, WP12, WP22 – 197 BHN max. WP91 - 191-241 BHN – 100% to be checked				
	Dimension	ASME B16.5 & ASME B16.11, As per engineering drawing.				
	Bend Test (for IBR items)	Specimen: 19mm. Thickness (t) x 25.4mm width - cold bent 180 deg. over thin section without fracture. mandrel radius: CS : <=6.35 mm. AS, SS : <=1.5 times specimen thick.				

General requirements:

- Product analysis as per S50 of ASTM A960 is required.
- Carbon < or = 0.25% for WPB (all thickness) and WPC (thickness < or = 20mm)
- Carbon < or = 0.30% for WPC (thickness > 20mm)
- If UT not done on the starting material, the same shall be done by the fitting manufactures before forming / fabrication.
- Mechanical Testing – Test samples shall be tested in the Heat treatment of fitting delivered condition
- Pipe made from plate as a starting material and long seam welded should not be used.
- All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity. (Applicable for SS material only)

3.0 REPAIRS AND FINISH:

The products shall be free from injurious defects like crack,seam etc. with workman like finish. Repairs involving fusion welding is prohibited. Surface defects can be removed by mechanical means and the defective areas shall be merged with adjacent surface. Minimum thickness after repair shall meet the drawing / specification requirements. Flatness on curved surfaces of fittings shall be limited to 6% of nominal OD. Thickness : Outer Diameter and Transition : Variation shall be merged smooth to min 1:4 taper.

BHEL, Tiruchirappalli – 620014.	Quality Assurance	Technical Delivery Conditions
Product: FORGED & FORMED FITTINGS		
Document No.: TDC:0:423	Rev. No.: 07	Effective date: 10/11/2012
Page 4 of 4		

4.0 MARKING, PRESERVATION AND PACKING:

The following details to be necessarily hot stamped 1. Heat number, 2. Inspecting Authority Seal 3. Specification Grade and Size, 4. Company Seal and "B16"(for ANSI fittings).

The rest to be marked as per Specification.

Additionally The following to be painted :

for OD > 108mm : PO No., Sl. No., Specification, "BHEL-Tiruchirappalli", Drawing.No. & Weight

for OD ≤ 108mm : Sl. No., Specification

CS & AS fittings to be rust preventive coated after shot blasting inside & out side & packed to avoid damage.

SS fittings to be surface treated (Pickling, Passivation) as per ASTM A380 both inside and outside.

5.0 INSPECTION AND CERTIFICATION:

- a. Products must be inspected at works and the test certificates must be countersigned by the Inspecting Authority as indicated below:

Imported items: Inspecting Authority approved by IBR for the country of origin. (to be concurred by BHEL before PO) with Form III-C as per IBR and MTC as given below.

Indigenously supplied IBR items:

a) Boiler Inspectorate/Directorate of Boilers of respective State if supplier is not approved under IBR with Form III-C as per IBR and Manufacturers Test certificate as given below.

b) Form III-C as per IBR certified by the Manufacturer if approved under IBR and Manufacturers Test certificate (MTC) as given below.


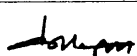
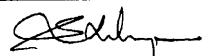
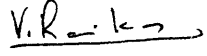
Indigenously supplied non IBR items: Manufacturers Test certificate as given below.

1. Purchase Order No.(BHEL),TDC No. & Test certificate number
2. Specification, Grade with applicable year of code, Heat Number, Drawing No.,Quantity & Size
3. Supplier of the steel used in making the finished product
4. Forming process, Chemistry including incidental elements - Heat wise.
5. Heat treatment details: temperature, soaking time, cooling medium (for quenching).
6. Mechanical test results, Hardness, NDE test results with reference & acceptance standard.
7. Detailed NDE reports for MT, LPI and UT shall be submitted along with MTC.
8. Micro for WP91 in final Heat treated condition of fittings.
9. PMI certification for all Alloy steels fittings.
10. Print of the stamp of Inspecting Authority, which is used in the fitting.
11. Dimensional reports for each product
12. Repair details if any.
13. Certified copy of TC for starting material.
14. Guarantee certificate for retainability of hydrostatic test pressure corresponding to that of matching pipe of equivalent material or Hydro static test report as applicable.

- b. For CE-marking items the TCs with details specified above shall be submitted as per EN-10204 (latest)

1. For pressure parts test certificates of type 3.1 or 3.2 is acceptable.
Type 3.1 – Suppliers shall have ISO 9001 certification certified by Notified Body recognized by European community and test certificate certified by suppliers authorized inspection representative.
Type 3.2 – Components inspected and test certificates certified by Notified Body recognized by European community.
2. For non pressure parts test certificates of type 2.2 is acceptable.
Type 2.2 – suppliers test certificates signed by suppliers authorized inspection representative with test results as required by TDC.

- c. For SS: Measured Radioactivity levels at 5cm from the surface of the fitting shall be reported in the Mill Test Certificate. (Not to be recorded in IBR Form)

			
C.Haritha	V.Kalyanaraman	Selvarajan.S	V.Ravikumar
Prepared By	Reviewed by		Approved By

Revision record: Rev 00 14/03/11: Fresh issue

Rev 01 03/04/11: Cl 1: CS grade modified in line with drawing, TDC for Alloy steel starting material clarified, Cl 2, 3, 4, 5: the term 'plates' modified by 'coupon/ plates', Cl 5: High temperature test values modified in line with ASME Sec II 2011a Addenda, Cl 10: Certification modified in line with SA234 Cl 17.

Rev 02: 03/04/13: Date of revision corrected – typographical error.

Rev 03: 01/12/14 – Cl 1 – Raw material TDC numbers removed and requirements added. CL.3,4 Temperature modified. Cl 5 – High temperature tensile test for AS modified. Bend test added. CL.7 Circularity tolerance added.

1. MATERIAL SPECIFICATION:

ASME (Latest as on PO Date): Carbon Steel (CS): SA299, Alloy Steel (AS): SA 234 WP12 CL.1

Additional Requirement:

Raw Material: SA299 (CS), SA 387 Gr 12 Cl 2 (AS) - All plates are of Fully Killed steel. Plates shall be of Vacuum Degassed (S1 of SA20).

Final rolling: lengthwise. Plate thickness (t) > 80mm to be made only from ingots. Plate of t ≤ 80mm, can be made from continuous cast slabs. Reduction ratio in thickness from slab/ingot to plate shall be 3:1. Sufficient 'Top of Ingot' to be discarded to ensure plates are free of segregation. After top discard the increase in Carbon content at the top-mid, width-mid thickness of the plate shall not exceed 20% of the reported ladle analysis value. This value shall be reported in Test Certificate.

Ladle analysis: 1 sample per cast, Product analysis: min.1 sample per plate as rolled. For CS - Max. Carbon: 0.28%, Max. Al: 0.05%, Carbon Equivalent for Carbon Steel: As per S20 of SA20.

CS: plates shall be Normalized, AS: Plates shall be normalized and tempered. UT as per SA578 with acceptance criterion Level B. Final certification in IBR Form IV, duly signed by IBR approved Inspection authority for that region/Boiler directorate (If not well known plate maker).

Material, Size and Qty: As per Purchase order (PO) / Drawing

2. FORMING:

Process: Hot Forming with Dies and tools clean of loose scale and sheet particles. The process details and drawing shall be submitted to BHEL for approval. Test coupon/plate: For each Product: size: 300mm X 300mm. (or, use extra portion of skirt). The test coupon/plate to accompany the product during all stages of heating and heat treatments of the product.

3. POST FORMING HEAT TREATMENT (HT): along with test coupon/plates after hot forming

Carbon Steel (CS): Normalize at 870-900°C, 0.5 hr./inch, Air cool.

Alloy Steel (AS): Normalize at 920-950°C, 0.5 hr/inch, Air cool & tempering at 650-680°C., 1hr/inch of thk.

4. SIMULATION HEAT TREATMENT for test coupon/plates:

For Carbon Steel: Stress Relieving at 615+/-10 deg.C, 3 hr./inch t, furnace cool to 400 deg.C.

For Alloy Steel : Stress Relieving at 665+/-15 deg.C, 3 hr./inch t, furnace cool to 400 deg.C.

Rate of heating /Rate of cooling: < 220 / t deg.C/hr (t in inch), but need not be slower than 55 deg.C/hr.

5. MECHANICAL TESTS: on Simulated Heat Treated test coupon/plates

Extent of test: One Per size/ per heat/ per HT batch.

Orientation of Specimen :Transverse to rolling direction.

(1)Tensile test: As per the specification (2) Hardness(max.):197 BHN

(3) High temperature tensile test as per S7 of SA20 – CS: Yield strength at 400°C: 19.10Kg/Sq.mm (Min).

AS: Yield strength at 500°C: 15.0 Kg/Sq.mm (Min)

(4)Bend Test: Angle of Bend: 180 Deg. Diameter of the mandrel: CS: 3 X Thickness of the Plate as rolled

AS: 2 x Thickness of the plate as rolled

6. NON DESTRUCTIVE TEST:

MPI: Both inside and outside surface of the Dished ends as per Appendix - 6 of ASME Sec.VIII Div.I.

7. DIMENSIONAL TEST:

Dimensions and Tolerances: As per the Drawing indicated in the Purchase Order.

Circularity: Difference between the Max. and Min. Inside diameter at skirt portion shall not exceed 1% of nominal diameter.

Profile Departure: The inner surface of the dished ends shall not deviate outwards from the specified shape by more than 1.25% of the Nominal inside Diameter and inwards by 5/8 % of nominal inside diameter specified. This shall be measured using a profile gauge having length not less than 1/4th of the internal Diameter of the Dished End.

8. FINISH AND REPAIRS:

The products shall be free from injurious defects and shall have a workman like finish. Repairs involving fusion welding is prohibited. Surface defects can be removed by mechanical means and the defective areas shall be merged with adjacent surface. Minimum thickness after merging shall meet the drawing / Specification requirements. Details shall be recorded.

9. MARKING, PRESERVATION AND PACKING:

Details to be stamped with low stress stamps sufficiently away from the knuckle radius on the Outside surface of each product.

1. Specification and grade 2.Melt number 3.Maker's emblem/code 4.Inspecting Authority's seal.

Details to be painted on the product: PO No., "BHEL-Tiruchirappalli", Drawing. No. & Weight. Products to be applied with 1 coat rust preventive & dispatched suitably to avoid damage in transit.


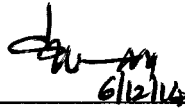
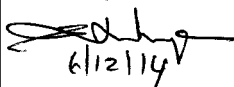
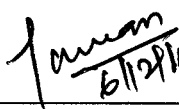
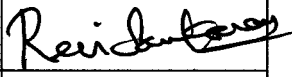
10. INSPECTION AND CERTIFICATION:

Products must be inspected at works by the Inspecting Authority approved by Indian Boiler Regulation. Test certificate (In English only) for each product as per IBR form III-C countersigned by the Inspecting Authority with the following details shall accompanied.

1. Purchase Order No. (BHEL), TDC No. & Test certificate number, Specification and Grade with applicable Year of code
2. Copy of the raw material Test Certificate
3. Quantity & Drawing No, Heat Number, Forming process, Seamless or welded.
4. Chemistry including incidental elements - Ladle and Product analysis. When the amount of an element is less than 0.02% the analysis for that element may also be reported.
5. HT details of material & test coupons: temperature, soaking time, ROH/ROC, medium etc.
6. Mechanical test results, Hardness including High temperature test results. Detailed NDE test results with reference & acceptance standard.
7. Print of the stamp of Inspecting Officer, which is used on the plate.
8. Repair details, if any, Dimensional reports for each product.
9. In the MTC a clause for certificate of compliance shall be added stating that – "The fitting was manufactured, sample tested and inspected in accordance with the specification and was found to meet the requirements."

11. AUDIT CHECKS AT BHEL :

BHEL reserves the right to reject any item found to be not meeting the requirements during check tests, or during subsequent processing at BHEL.

	 6/12/14	 6/12/14	 6/12/14	
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Prepared by	Reviewed by			Approved by