

BHARAT HEAVY ELECTRICALS LIMITED

MM / RM / PURCHASE / C&F

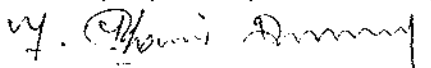
BHEL / TRICHY-620 014.

ANNEXURE-A**Open tender****Dt.29.11.2017****Enquiry Terms & Conditions for Supply of P91-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 423/09, Drawings. If there is any deviation, the same should be mentioned clearly in the offer itself. b) Size shall be as per BHEL drawings and tolerance on ID & OD shall be maintained throughout the surface as per Drawing. c) TC in FORM IIC, works TC, Raw Material TC, UT report, LPI report and other test certificates as called in TDC 423/09 shall be sent along with supply. d) Before start of production the manufacturer shall submit a Manufacturing and Inspection Plan (MIP) to BHEL product QA for approval (Being a New Supplier). e) Supply of Hemispherical Dished Ends shall be as per latest IBR amendment dt.15.04.15. f) Inspection by authorized inspection agency as listed in the annexure enclosed. g) Ends shall be protected with suitable End covers. h) Quantity shall be as given in enquiry.	
03	<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 offer shall be opened with prior intimation.	
04	<u>Authorization for participation in EPS portal through DSC:</u> i) <u>E-Tender Participation requirements</u> 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) <u>For foreign Principal</u> 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/ .	



B. IMPORTS:

- Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILO – 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” shall be specified clearly in the offer.

FOR CFR INCO TERMS – CONTAINERIZED CARGO

- a.) I) Indian Customs has imposed a penalty on late filing of Bill of Entries (Air/Sea Shipments) by the importer. The maximum free time allowed is 24 hrs from the time of arrival of cargo at final port of discharge. At present penalty is Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter).
- b.) Hence the supplier shall submit the Non-Negotiable Documents (Bill of Lading, Commercial Invoice, Packing List, Certificate of Origin, etc.) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge.
- c.) In case of any penalty due to late filing of Bill Of entry for reasons attributable to suppliers (as listed below), the same will be recovered from the bills of supplier:
 - d.) a. Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival
 - b. Discrepancy in documents
 - c. Short landing of Consignments (For shipments on CFR – Chennai Port)
- e.) II) All the shipments for the contracts (POs) finalized on CFR -Chennai Port basis
- f.) Delivery Orders involving multiple agencies like liners/freight forwarders are not allowed. To avoid any delay, BHEL prefers Single agency office at the final discharge Port (Chennai) for issuing the Delivery Order to BHEL.
- g.) The detention/demurrage charges arises due to the delay in collection of Delivery Orders from multiple agencies of liner/freight forwarder also whose offices are not at available Chennai, the same amount will be deducted from Vendor's bills only.
- h.) Apart from the Terminal Handling Charges, Container cleaning Charges & Delivery Order Charges at final port of discharge, any other charges will not be borne by BHEL.
- i.) The liner/freight forwarders shall be informed by the Vendor not to claim any additional charges (like charges listed below) for issuing Delivery Order. In case if the liner/freight forwarder claims such charges, the same amount will be deducted from the Vendor bills with/without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden charges are listed below.
 - a. CIC - Container Imbalance Charges/Surcharges
 - b. EIC - Equipment Imbalance Charge/Surcharges
 - c. CAF - Container/Currency Adjustment Factor
 - d. BAF - Bunker adjustment Factor
 - e. RDS - Rupee Depreciation Surcharge
 - f. CDS - Currency Depreciation Surcharge

09 Transport Conditions for Import:

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.

- a. 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.
- b. 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”.
- c. Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading.
- d. 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.

Handwritten signature: Y. P. ...

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Payment terms:**A. Indigenous:**

- i) BHEL Payment term is 100% direct EFT payment after 45 days from the date of receipt and acceptance of materials.
- 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.
- 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.
- iv) Offers of indigenous Suppliers with payment terms as LC / Advance Payment and payment through bank are liable for rejection.

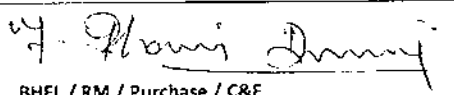
B. Imports:

- 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.
 - 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).
 - ii) 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.
 - 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.
- 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.
- 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.

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Liquidated Damage (Indigenous & Imports):

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). (If LD is not accepted on total order value, loading of 10% on the offered value will be done).
 4. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.
1. 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.



BHEL / RM / Purchase / C&F

12	<u>Risk Purchase clause :</u> 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.	
13	<u>Performance Bank Guarantee :</u> 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.	
14	<u>Warrantee / Guarantee:</u> 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.	
15	<u>Non-Disclosure Agreement(NDA):</u> The bidders shall enter into the Non-disclosure agreement totally voluntarily, with full knowledge of its meaning and without duress. (Format attached).	
16	<u>Patent Right:</u> 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.	
17	<u>Comprehensive Economic Partnership Agreement (CEPA):</u> 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.	
18	<u>Role of Agents:</u> a. BHEL's 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. 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.	
19	<u>Agency Commission :</u> ➤ 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.	
20	<u>Evaluation Criteria:</u> 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:	

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1) 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. (SGST, CGST, UGST & IGST) on (BASE PRICE+GST) 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 GST taxes, 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)

- A. Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LIFO – 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.
- B. Loading for non-acceptance to Inland transportation from Chennai port to CONCOR INTVT6
- 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.
- D. Incidental charges of 1.4% 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.
- 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.
- F. Loading for payment terms & Non-acceptance of Liquidated Damages (LD) will be added to the CFR value for arriving at the landed cost.

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General condition:

- 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.
- 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.
- c) We require the shipment of the Dished Ends to be as per the dates mentioned against the individual items in the enquiry.
- d) No revision of prices will be entertained after the tenders are opened.
- e) 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.
- f) BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.
- g) 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.
- h) 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.
- i) 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.

Y. Phani Doring

	j) Offer will be evaluated based on Landed cost to BHEL- Trichy on item basis. k) No payment will be made for the excess quantity. l) Offer should be submitted only as per the Unit of Measurement (UOM) specified in the enquiry. m) 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. n) 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. o) 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) 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, • https://bheleps.buyjunction.in • http://tenders.gov.in • http://eprocure.gov.in q) The bidder shall submit his response through bid submission to the tender on e-procurement platform at https://bheleps.buyjunction.in. 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.	
22	<u>Fraud Prevention Policy</u> "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."	
23	<u>Cartel Formation:</u> 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.	
24	<u>Integrity Pact (IP):</u> 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)	
25	<u>Resolution of Disputes:</u> 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.	

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	➤ 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	Enclosures: a) Enquiry b) TDC 423/09 c) PBG Format d) List of Consortium banks e) Pre-Qualification requirement (PQR)	e) NDA Format f) IBR Amendment g) Inspection Authorities list h) Drawings
	<i>U. Thambi Denny</i> M. THAMBIDURAI Dy. Engineer Purchase / MM / RM / C&F BHEL, TRICHY - 620 014. (On behalf of BHEL)	<u>SIGNED BY MANUFACTURER / MILL</u> Name of Mill: Designation / Department: Seal & Signature

BHARAT HEAVY ELECTRICALS LIMITED, TRICHY-14
MATERIALS MANAGEMENT

PQR: C&F: Rev.00 - YADADRI

Date: 11.12.2017

Pre-Qualification requirements (PQR) for the procurement of Grade 91 Dished Ends through Open Tender

(as per TDC: 0:423/09)

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. Product catalogue shall be submitted.
2. Suppliers shall submit filled in supplier facility report for forge shop (Format enclosed). 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.
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). The supplier shall confirm that the raw material test certificate/s will be furnished along with product test certificate/s.
4. Chemical, Mechanical testing shall be done in house or at Labs certified as per ISO 17025 or Government approved labs.
5. Suppliers shall submit a valid ISO 9001 certificate or Quality management system certificate or Written down procedure.
6. 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.
7. BHEL/End customer reserves the right to inspect the sample at vendor's works for giving clearance before bulk production.
8. BHEL reserves the right to visit supplier's works to audit and inspect to ensure the capability for technical evaluation

B) Technical Competence:

1. Point by point confirmation to the TDC requirements is mandatory for consideration of offer and signed TDC shall be submitted.
2. Suppliers shall submit manufacturing process flow chart (Raw material to finished product) & Manufacturing Quality Plan (MQP) to meet the TDC requirements along with technical bid.

 11/12/17

BHARAT HEAVY ELECTRICALS LIMITED, TRICHY-14
MATERIALS MANAGEMENT

PQR: C&F: Rev.00 - YADADRI

Date: 11.12.2017

3. Suppliers shall submit the experienced manpower details specific to Manufacturing, Quality and NDE requirements.

C) Past Experience/ Performance:

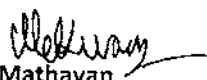
1. Suppliers shall indicate their annual installed capacity for the tendered specifications & it shall be more than the tendered quantity.
2. Suppliers shall have supplied Dished Ends in the tendered specification. Details of supplies made in recent past detailing the quantity, Specification, size & customer details, year wise along with the unpriced PO copies, proof of supply (such as invoice, bill of lading copies and test certificates) covering minimum and maximum sizes (Alloy steel either in Gr 91 / Gr 22 / Gr 12) meeting the tendered size requirements shall be submitted.

D) Financial Soundness:

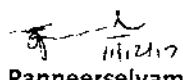
1. Indigenous suppliers shall submit Audited copies of annual reports (Balance Sheets), Profit & Loss statement for last four years (or from date of incorporation whichever is less). Proprietary and partnership firms shall submit IT returns for last four years (or from date of incorporation whichever is less).
2. Import suppliers shall submit latest reports from a reputed third party business rating agency like Dun & Bradstreet, Creditreform, etc.

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.


K.Mathavan
SDGM/MM/RM

MATHAVAN. K
Senior Deputy General Manager
MM / RM / Materials
BHEL / Trichy - 620 014


G.Panneerselvam
DGM/QA

G. PANNEER SELVAM
Dy. General Manager
Quality Assurance
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 Availability of in-house Heat Yes/No
Treatment facility
- 6.10.00 If yes: Type of heat treatment possible



FORGE SHOP

- 6.20.00 If no, 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.
- 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
- 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:

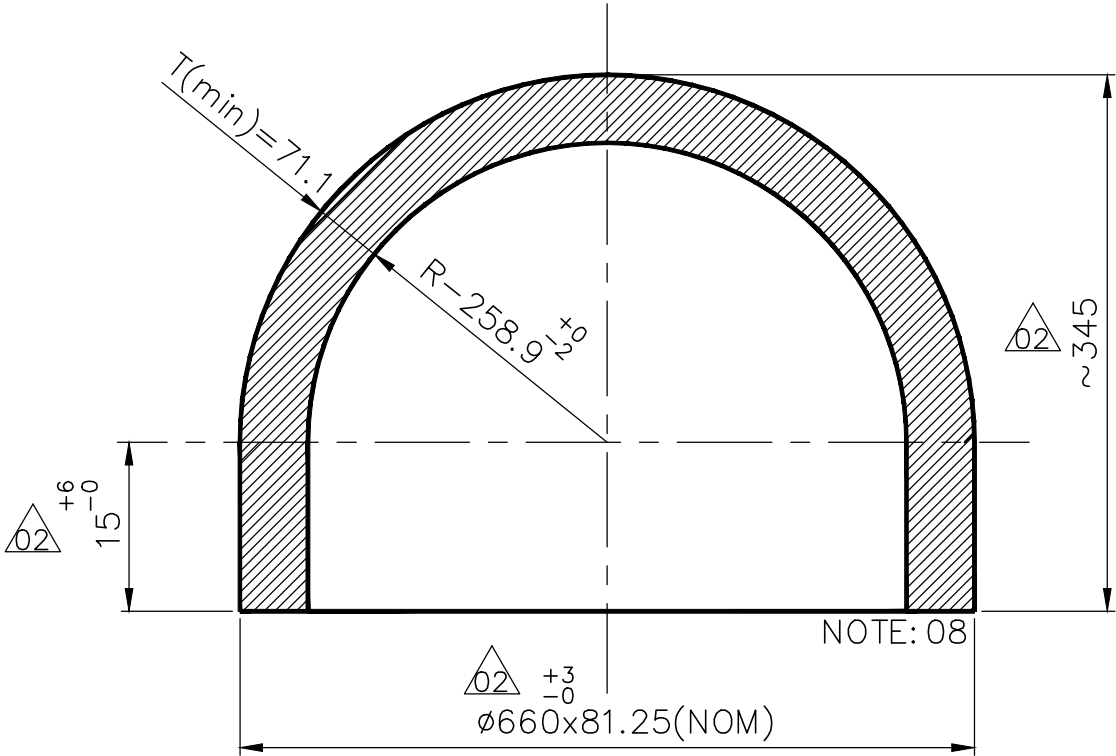
SIGNATURE WITH SEAL

DATE:

ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER RELEVANT QCP / QP

NOTES:

01. DESIGN MANUFACTURE AND INSPECTION AS PER IBR.
- 02
03. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
04. NORMALISING AND TEMPERING IS TO BE DONE AFTER HOT FORMING.
05. MAXIMUM THICKNESS SHALL NOT EXCEED THE NOMINAL THICKNESS.
BHEL APPROVAL.
06. FITTING SPECIFICATION : SA234 WP91
- 01
08. THE FORMED HEMISPHERICAL END COVER SHALL BE SUPPLIED WITH PLAIN END.

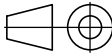


FITTING MATERIAL CODE:920841930000

		HS END COVER				SA 234 WP91	A	330.000	
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN	D1	QUANTITY	

REV 02	DATE 05.11.15	ALTERED :GUNA CHD & APPD: V.M.RAO	REV 01	DATE 31.07.12	ALTERED :K.S. CHD & APPD: RAJA.K.
ZONE	NOTE-2 DELETED AND DRAWING UPDATED.		ZONE	NOTE -7 DELETED.	

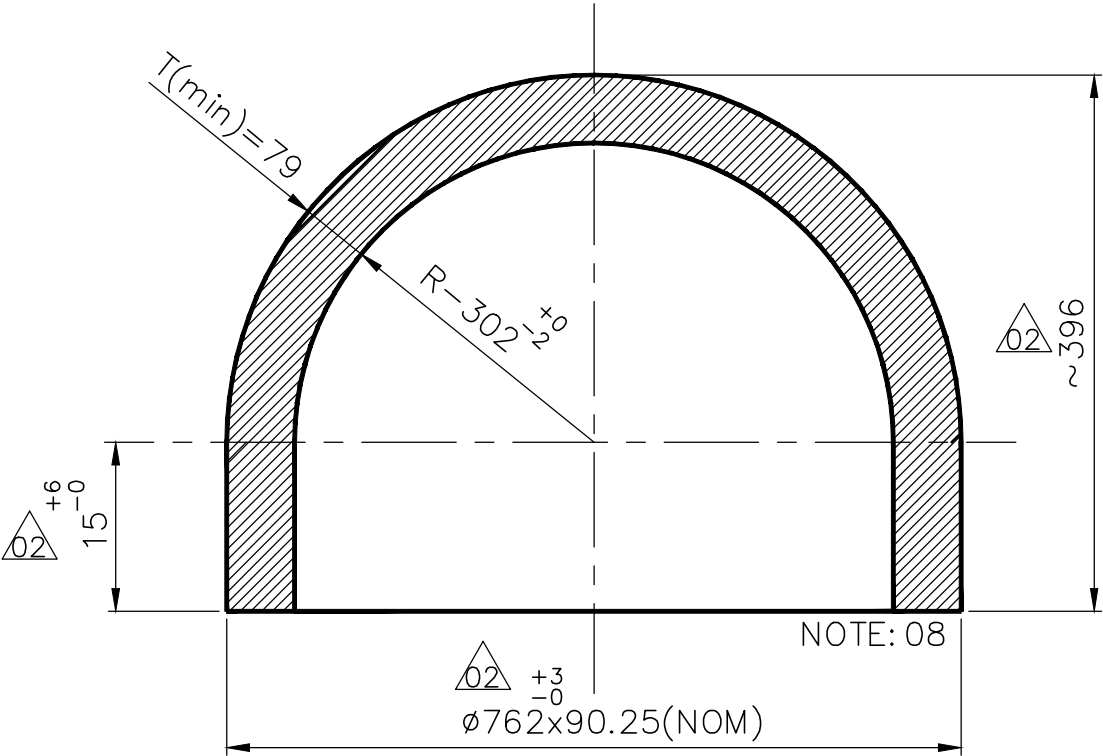
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI – 620014			DRN	NAME K.S	SIGNATURE	DATE 03.02.10	NO. OF VAR
					CHD	I.K.S		04.02.10	
					APPD	I.K.S		04.02.10	
DEPT PP			SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG			ITEM NO	No OF ITEMS
CODE 121			NTS	330.000	F-31				
TITLE				CARD CODE U 01	DRAWING NO :				REV
HEMISPHERICAL END COVER RAW FORMING D660x81.25(NOM)					3-04-321-02705 02				

ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER RELEVANT QCP / QP

NOTES:

01. DESIGN MANUFACTURE AND INSPECTION AS PER IBR.
- 02
03. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
04. NORMALISING AND TEMPERING IS TO BE DONE AFTER HOT FORMING.
05. MAXIMUM THICKNESS SHALL NOT EXCEED THE NOMINAL THICKNESS.
06. FITTING SPECIFICATION : SA234 WP91
- 01
08. THE FORMED HEMISPHERICAL END COVER SHALL BE SUPPLIED WITH PLAIN END.

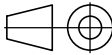


FITTING MATERIAL CODE: 920841940000

REV 02	DATE 05.11.15	ALTERED :GUNA CHD & APPD: V.M.RAO	REV 01	DATE 31.07.12	ALTERED :K.S. CHD & APPD: RAJA.K.
ZONE	NOTE-2 DELETED AND DRAWING UPDATED.		ZONE	NOTE -7 DELETED.	

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		DRN	NAME K.S	SIGNATURE	DATE 03.02.10	NO. OF VAR	
					CHD	I.K.S		04.02.10		
					APPD	I.K.S		04.02.10		
DEPT PP			SCALE	NTS	WEIGHT (Kg)	410.000	REF TO ASSY / OLD DWG		ITEM NO	No OF ITEMS
CODE 121							F-33			
TITLE HEMISPHERICAL END COVER RAW FORMING D762X90.25(NOM)					CARD CODE U 01	DRAWING NO : 3-04-323-02706				REV 02

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:423 Rev No: 09 Effective Date: 21/11/2017 Page: 1 of 5
Product: Machined (upto 4"), Formed & Forged Fittings		

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 Dt: 10/11/2012: Cl 1.0, 2.0 & 5.0 Modified for SS material.

Rev: 08: Dt: 22/09/2017 Title, Clauses 1, 2, 5 & 6 modified; Gr 92 fittings requirements included in Cl 1, 2, 5 & 6; Creep requirements added in Clause 3; Design proof test requirement, if not done earlier, added in general notes..

Rev: 09: Dt: 21/11/2017 - Cl. 3 & 6.a (15) modified.

1.0 MATERIAL SPECIFICATIONS:

All the codes, standards, specifications, drawings & procedures, etc., referred in this TDC shall be of latest revision as on the date of Enquiry/Purchase Order, whichever is earlier, unless specified otherwise.

- Fittings : Seamless Fittings only (Fittings made by welding are prohibited).
- ASME : Carbon Steel (CS): SA105, SA234; Alloy Steel(AS): SA 234,SA182, ASTM A234; Stainless Steel(SS): SA182, SA403⁹
- Additional Requirements : As listed below (Supplementary to above material specifications/ standards & grades)
- Grade, Size and Quantity : As per Purchase order &/ Drawing.

2.0 MANUFACTURING & TESTING REQUIREMENTS:

2.1 Machined Fittings (fittings machined from castings are prohibited; Max size permitted 4") – Reducers, Couplings & End caps

Starting material Rolled or Forged Bars, Killed steel	Heat treatment as per starting material specifications	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed
	NDE – UT ^d	To be done after Heat treatment. For size above 40 mm – to be done as per ASTM A388 Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4
Finished fitting (after machining to required size)	Heat Treatment	Not required.
	NDE (for all sizes)	• MT (100%)- Procedure - As per ASTM E709. No linear indications (surface NDE indication whose length is ≥ three times its width) are acceptable. For WP91/F91 & WP92/F92 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 at 5 cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.
	Hardness	WP5 - 217 HBW max. SA105 – 137 HBW to 187 HBW. WPB, WPC, WP11/F11, WP12/F12, WP22/F22 – 197 HBW max. WP91/F91 - 195 HBW to 248 HBW – 100% to be checked WP92/F92 – 191 HBW to 269 HBW – 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.

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:423 Rev No: 09 Effective Date: 21/11/2017 Page: 2 of 5
Product: Machined (upto 4”), Formed & Forged Fittings		

	AS, SS : <=1.5 times specimen thick.
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2.2 Seamless Formed Fittings – Elbows, Tees, Reducers, Dished End (End Cover/ Cap)

Starting material:	Heat treatment as per starting material specifications	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed				
1)Tube & Pipe	NDE – UT ^d	Shall be done as per - ASTM E213 with longitudinal notch of 5% wall thickness with min. 0.3 mm and max.1.5 mm. Actual measured notch depth to be specified in Test Certificate.				
2)Forged blank (For end covers)	NDE – UT ^d	For size above 40 mm UT shall be done as per - ASTM A388 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:				
		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	750-780	1/2	1
		AS-ASTM A234 WP 92	1040-1080	750-780	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 for all above materials except SS.				
	NDE (for all sizes) – Except for Plate formed Dished end	• MT (100%) - Shall be as per - ASTM E709 No linear indications are acceptable. For WP91 & WP92 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 at 5cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.				
NDE–for Plate formed Dished end	For Plate Formed Dished 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 E213 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 A388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4 If made form Plate shall be as per A578 Level-B					
Hardness	WP5 – 217 HBW max. WPB, WPC, WP11, WP12, WP22 – 197 HBW max. WP91 - 195 HBW to 248 HBW – 100% to be checked. WP92 – 191-269 HBW max. – 100% to be checked.					
Dimension	ASME B16.9 & ASME B16.11, As per Engineering drawing.					
Bend Test	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.					

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Product: Machined (upto 4”), Formed & Forged Fittings		

	(if starting material is forged blank) (for IBR items)	
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2.3 Forged Fittings – Elbows, Tees, Reducers, Couplings, Flanges & Dished End (End Cover / Cap)

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	Heat treatment as per starting material specifications	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed				
1)Tube & Pipe, forged pipe/hollow	NDE – UTd	Shall be done as per - ASTM E213 with longitudinal notch of 5% wall thickness with min. 0.3 mm and max.1.5 mm. Actual measured notch depth to be specified in Test Certificate.				
2)Forged blank (For end covers)	NDE – UTd	For size above 40 mm UT shall be done as per - ASTM A388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
3) Plate	NDE – UTd	For size above 10mm SA 578, Acceptance Level - B				
After forging (cold/hot forging)	Heat treatment	Shall be done as per SA105/SA182. 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- SA105	870-900	-	1/2	-
		AS- SA182 F11 & F12	920-950	655+- 15	1/2	1
		AS- SA182 F5 & F22	920-950	695+- 15	1/2	1
		AS- SA182 F91 & F92	1040-1080	750-780	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 for all above materials except SS.						
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)	• MT-(100%) Shall be done as per ASTM E709. No linear indications are acceptable. For F91 & F92 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 at 5cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.				
	Hardness	SA105 – 137 HBW to 187 HBW. F5 – 143-217 HBW; F9 – 179-217 HBW max. F11, F12 – 143 HBW to 207 HBW, F22 – 156-207 HBW max. F91 - 195 HBW to 248 HBW – 100% to be checked SA182 F92 – 191- 269 HBW max. – 100% to be checked.				
	Dimension	ASME B16.5 & ASME B16.11, As per engineering drawing.				

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Product: Machined (upto 4"), Formed & Forged Fittings		

	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.
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General requirements:

- Product analysis as per S50 of ASTM A960 is required.
- Carbon < or = 0.25% for WPB (all thickness), WPC and SA105 (thickness < or = 20mm)
- Carbon < or = 0.30% for WPC and SA105 (thickness > 20mm)
- If UT not done on the starting material, the same shall be done by the fitting manufacturers before forming / fabrication.
- Mechanical Testing including hardness testing: Quantum of testing as per IBR (except for hardness testing of Gr 91 & 92) – Test samples shall be tested in the Heat treatment of fitting delivered condition. For Gr 91 & 92 fittings, hardness testing shall be done on 100% of fittings being supplied (either on ends or surface).
- 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).
- Design proof test as per ASME B16.9 should be carried out for the geometric shape and size ordered if already not done.

3.0 *Creep testing shall be carried out as per SIP:RM:01 (latest revision) whenever indicated in the Enquiry/Purchase Order/Engineering Drawing.*

4.0 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.

5.0 MARKING, PRESERVATION AND PACKING:

The following details to be necessarily hot stamped 1. Heat number, 2. Inspecting Authority Seal 3. Specification Grade, code case (if applicable) 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.

6.0 INSPECTION AND CERTIFICATION:

- 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 with Form III-C (for all fittings except dished ends), Form III-I (for dished ends) as per IBR and additional MTC as given below.

Indigenously supplied IBR items: Director of Boilers/Chief Inspector of Boilers/Inspecting Authority approved by IBR, for the respective state in India with Form III-C (for all fittings except dished ends), Form III-I (for dished ends) as per IBR and additional MTC as given below.

Separate Manufacturer's Test certificate (MTC) in English language with following details, shall accompany all products:

- Purchase Order No.(BHEL),TDC No. & Test certificate number
- Specification, Grade with applicable year of code & code case (if applicable), Heat Number, Drawing No.,Quantity & Size
- Supplier of the steel used in making the finished product
- Forming process, Chemistry including incidental elements - Heat wise.
- Heat treatment details: temperature, soaking time, cooling medium (for quenching).
- Mechanical test results, Hardness, NDE test results with reference & acceptance standard.



Product: Machined (upto 4”), Formed & Forged Fittings

7. Detailed NDE reports for MT, LPI and UT shall be submitted along with MTC.
8. Photomicrograph at 400X magnification for F91, WP91, F92 & WP92 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.
15. *Creep test report as per SIP:RM:01 (latest revision) whenever indicated in the Enquiry/Purchase Order/Engineering Drawing.*

1. For CE-marking items the TCs with details specified above shall be submitted as per EN-10204 (latest)
For pressure parts test certificates of type 3.1 or 3.2 is acceptable.

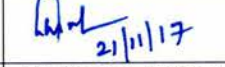
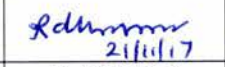
Type 3.1 – Suppliers shall have ISO 9001-2008/2015 (with validity as applicable) certification certified by Notified Body recognized by European community and test certificate certified by suppliers authorized inspection representative.

Type 3.2 – Components inspected and test certificates certified by both the supplier's authorized inspection representative and 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 this TDC.

- b. 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).

 21.11.2017	 21/11/17	 21/11/17	 21/11/17	 21.11.17	 21/11/17
Abdur Rahman	G. Panneer Selvam	M. Nadanakumar	R. Dharmar	N. Kirubakaran	Amit Roy
Sr.Engineer/QA	DGM/QA	AGM/MM	AGM/QC	SDGM/PE/FB	AGM/QA&BE
Prepared By	Reviewed By			Approved By	