



BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
FAX NO: 0091 1334 226462
PHONE NO: 0091 1334 284142

Enq. No.: T/T212/2015/5407M/1

Date of issue : 30/01/2016

M/S.....

Sub: BHEL-HEEP/OPEN-TENDER (C&F)/2015

Dear Sir,

The Heavy Electricals Equipment Plant (HEEP) located in Haridwar, India is one of the major manufacturing plants of Bharat Heavy Electricals Ltd. The core business of HEEP includes design and manufacture of large steam and gas turbines, turbo generators and so on.

Sealed tenders with the Tender No. and opening date clearly super scribed on the cover are invited from the manufacturers (registered as well as unregistered) for the supply of the following items:-

S. No.	Tender No.	Description of Item	Qty. (No.)
1	T/T212/2015/5407M/1	W91311401032 DRG: 11140102902, REV 04 CASTING FOR ESV SERVOMOTOR CASING (R/M) SPEC: HW19799, REV 01	2 Nos
2		W91311401059 DRG: 21140109901, REV 01 CASTING FOR PISTON (R/M) SPEC: HW19799, REV 01	2 Nos
3		W91311401067 DRG: 01140109901, REV 06 CASTING FOR ESV SERVOMOTOR CASING (R/M) SPEC: HW19799, REV 01	3 Nos
4		W91311403051 DRG: 21140309902, REV 03 CASTING FOR PISTON (R/M) SPEC: HW19799, REV 01	2 Nos
5		W91311403060 DRG: 01140309901, REV 03 CASTING FOR IV SERVOMOTOR CASING (R/M) SPEC: HW19799, REV 01	2 Nos
6		W91311404066 DRG: 01140405850, REV 04 CASTING FOR IPCV SERVOMOTOR COVER SPEC: HW19799, REV 01	1 No
7		W91311404074 DRG: 0114040580100, REV 08 CASTING FOR IPCV SERVOMOTOR CASING (R/M) SPEC: HW19799, REV 01	2 Nos
8		W91311402160 DRG: 0114020820105, REV 02 CASTING FOR SERVOMOTOR CASING (R/M) SPEC: HW19799, REV 01	1 No
9		W91311402179 DRG: 01140224151, REV 01 CASTING FOR SERVOMOTOR COVER (R/M) SPEC: HW19799, REV 01	1 No
10		W91311402098 DRG: 01140205801, REV 07 CASTING FOR HPCV SERVOMOTOR CASING SPEC: HW19799, REV 01	3 Nos

The details with required delivery are given in **Annexure-2**.

The tender documents can be downloaded from our web site www.bhel.com or www.bhelhwr.co.in or www.tenders.gov.in, after downloading the tender documents from web site, while submitting the tender as detailed in "Instruction to Bidders", intending vendors must remit tender fee of Rs. 2,000.00 for indigenous vendors (or equivalent amount in foreign currency for foreign vendors) against each tender if documents (in hard copies) are required from BHEL. Vendors must also remit the requisite EMD Rs 60,000/- (Rupees Sixty Thousand) in the form of Cash (as permissible under Income Tax Act) / Pay Order / Demand draft. **If EMD is not submitted along with offer, then the offer may be outrightly rejected.** As per notification reference no. NSIC/HO/GP/15(4)/2013-14 dated 07.07.2013 Micro & Small Enterprises (MSEs) are not required to submit tender fees. A certificate issued from competent authority shall be submitted in support of Micro & Small Enterprises (MSEs). BHEL will not be responsible for any type of postal delay / incomplete information from vendor.

Central / State – PSUs / Government departments are exempted from submission of EMDs subject to approval by BHEL management.

PMD vendors registered with HEEP, Haridwar for above mentioned material code vide vendor code M06024, M28127 & M41137 are exempted from submitting of EMD.

The date for opening of tender shall be 29.02.2016. Tenders will be received up to 1.45 P.M. on **29.02.2016** and opened on the same day at 2.00 P.M. in the Tender Room. **Please note that tender received after due date & time (1.45 PM on 29.02.2016) will not be REPEAT will not be opened.** BHEL will not be responsible for any type of postal / courier delay.

Specifications & Drawing of the above items are available on our above mentioned website. Other cross referred documents can either be physically collected from BHEL, Haridwar or can be obtained by email sachin_m@bhelhwr.co.in, r_kumar@bhelhwr.co.in or jainv@bhelhwr.co.in against proof of draft of the tender fee in favor of BHEL, Haridwar. This draft is to be submitted along with offer. Amendments/Corrigendum, if any, will be hosted on our web site only. Other terms and conditions will be as per tender documents.

The total quantity may undergo change at the time of ordering.

Any vendor who is under hold (for the item)/ delisted/ banned with BHEL on the date of opening of Part – 1 should not quote for this tender. In case their offer is received, it may be outrightly rejected.

Documents submitted with the offer/bid by the bidder (original registered supplier) shall be ink signed and stamped in each page by authorized representative of the bidder. Documents not signed and stamped in each page by the authorized signatory of the bidder, shall not be accepted and considered for evaluation of the bid.

Please submit your Techno-Commercial offer only for the above requirement subject to our terms and conditions.

BIDS shall be opened at 2 PM on the due date in the presence of authorized representative of the bidders who may like to be present. The authorized representative should bring authority letter from their parent company (Manufacturer) for the specific tender no. attending the bid opening.

BHEL will forfeit the EMD if, the successful bidder / vendor refuses to honor the order after award of the same on him and / or withdraws his bid and / or unilaterally changes the offer and / or any of its terms & conditions within the validity period.

KINDLY READ "INSTRUCTIONS TO BIDDERS." QUOTATION NOT IN ACCORDANCE WITH THE INSTRUCTIONS ARE LIABLE TO BE DISQUALIFIED AND IGNORED.

INSTRUCTIONS TO BIDDERS FOR OPEN TENDER

1.0 DEFINITION

Registered Vendors - Are those who are registered with BHEL, Haridwar for Megawatt rating/ Size/ Weight of tendered components in respective steel grade or machining of such components.

Un-registered Vendors - Are those who are not registered with BHEL, Haridwar for Megawatt rating/ Size/ Weight of tendered components in respective steel grade or machining of such components.

2.0 TECHNICAL QUALIFICATION

- Enclosed format – Annexure-3 to be submitted. It is a mandatory requirement. Offer of Vendors not meeting these requirements may not be considered.

3.0 ESSENTIAL INSTRUCTIONS

1. All un-registered vendors shall be approved by BHEL, if found suitable, on the basis of data furnished by them in Supplier Registration Form (SRF) Foreign Vendors or Indigenous Vendors. Vendor (s) shall not be considered for ordering if not approved by BHEL.
2. BHEL team may visit the vendor (s) works for verification of capability and capacity claimed in tender documents/offer (s).
3. The tenders shall be submitted in three parts as described below on or before the due date. Vendor Registration Form shall be submitted by unregistered vendors only.

i. Part I (Envelop I) – A. EMD & Tender Fee

or

Valid certificate towards exemption of EMD & tender fee, applicable for Micro and small Enterprises, as mentioned below:

MSE Suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (format {Annexure-1} enclosed where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part I in case of three part bid). Non submission of such documents will lead to disqualification of their offer. Documents should be notarized or attested by a Gazetted Officer.

B. Pre-Qualifying Requirement (PQR) – refer Annexure – 3.

C. Vendor Registration Form (SRF documents to be placed separately in part-I and not to be mixed with other documents).

ii. Part II (Envelop II) - Techno -Commercial Bid

iii. Part III (Envelop III) - Price Bid

4. The Quotation should be from the Principal / Original Manufacturer, failing which the quotation is likely to be ignored. However, if OEM / Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer / supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer / supplier or the manufacturer / supplier could bid directly but not both. In case bids are received from both, the manufacturer / supplier and the agent, bid received from the agent shall be ignored. In Case the quotation is submitted through agent, the quotation must accompany original authorization letter from the Principal / Original Manufacturer.
5. The bidders will have to submit ink-signed & stamped offer on each page / bid in original directly to BHEL. **Unsigned bids shall be ignored.**
6. The suppliers or their authorized persons may be allowed to attend the tender opening, if duly authorized by their principals, through a specific letter for a particular enquiry or for specific price bid opening on that particular day. General authorization letter is not acceptable

7. Any corrections / amendments shall be properly & fully authenticated with signature. No overwriting is acceptable.
8. Compliance of technical/ commercial terms and conditions as per Annexure-4
9. Part-I will be opened on the date and time specified in the tender notice in the presence of those vendors who wish to attend.
10. Part-II bid will be opened of the vendors who successfully qualify the PQR requirements and have submitted tender fees & EMD or valid certificate towards exemption of EMD & tender fee, applicable for Micro and small Enterprises.
11. Part – III (Price Bids) along with supplementary price bids, if necessary, will be opened at a later date of only those bidders whose techno-commercial bid has been found acceptable.
12. Vendor to quote best possible deliveries in the offer. Offers of those vendors may not be considered if it is not found suitable to BHEL requirement.
13. Currency exchange rate will be applicable on the date of opening of Part-I for evaluation purpose.
14. Depending upon the delivery suitability, BHEL reserves the right to split order on more than one vendor.
15. Evaluation of Bid: - The bid shall be evaluated
 - a. Cost to BHEL basis. (Basic Cost + Insurance + Transportation + Duty)
 - b. The loading, if any, on account of LD penalty, payment terms or any other cost determined at later stage, which shall be communicated to the vendor.
16. Tenders when finalized shall be in the name of the bidder only and change of name during tender evaluation (without certificate from registrar of company) and after submission of the tender is liable to make the offer ineligible for participation.
17. All test certificates / Guarantee certificates to be submitted in TRIPLICATE along with dispatch documents.
18. BHEL reserves the right to open the price bid (part-II) along with the opening of techno-commercial offer at its option and in that case vendor will be informed accordingly.
19. BHEL reserves the right to go for reverse auction. Vendors are requested to give their best price. In case of failure of reverse auction the paper bids shall be processed. Bidder should clearly indicate their acceptance for reverse auctioning in Annexure-3. The bids of those vendors who do not agree for reverse auction may not be considered. The Terms & Condition for Reverse Auctioning are given below.
20. Total weight -- /Gross / Net in Kg. & also package size essentially should be indicated if not exact then approximate.
21. BHEL will evaluate the technical bids against essential criteria/requirements. BHEL may seek clarifications, if required, from the qualified bidders only. These clarifications will be communicated to the eligible vendors. The offers of those bidders, who are unable to respond in specified time frame, are likely to be ignored.
22. SETTLEMENT OF DISPUTES
 - Indigenous Vendors: In all cases of dispute the matters shall be referred for arbitration to any arbitrator to be appointed by the Executive Director or any officer who is the administrative head of Bharat Heavy Electricals Ltd., at Haridwar. The venue of arbitration shall invariably be Ranipur Haridwar. The award of the arbitrator shall be final and binding on both the parties. The arbitrator shall have the power to extend, from time to time, the time for making his award with the consent of the parties.
 - Foreign Vendors: In the event of any dispute or difference arising between the parties to this contract regarding execution of same or their respective rights and liabilities there under, the same shall except as otherwise expressly provided herein, be referred to the arbitration of the two arbitrators, one to be appointed by each party; or in the case of the said arbitrators not agreeing then an umpire to be appointed by the two arbitrators in writing before entering on that reference and provisions of the Indian Arbitration Act ,1940 or any statutory notification, or re-enactment therefore and rules framed there under from time to time shall apply to such arbitration . If the two arbitrators do not agree on the appointment of umpire, the nomination of the umpire shall be done by the International Chamber of Commerce, Paris(France).The decision of arbitrators, or in case of their not agreeing, that of the said umpire shall be binding both on seller and purchaser. The venue of the arbitration invariably be New Delhi.
23. JURISDICTION

All question, dispute or differences arising under, out of or in connection with the purchase order shall be subject to the exclusive jurisdiction of Haridwar courts.
24. OVER RIDING CLAUSE

All stipulations made in any correspondence other than those exchanged in regards to “instruction” in our tender documents / enquiry for submission of your offer, if at all shall be void to the extent they are repugnant to the conditions contained herein above and in the purchase order.
25. FINALITY OF MANAGEMENT DECISION

At all places in the preceding clauses BHEL Management’s decision shall be final.

4.0 GENERAL INSTRUCTIONS

PART-I (EMD & tender fees (or exemption certificate), POR and SRF in envelope - I) shall comprise of following documents:

- a. Annexure-3 for Pre-qualification requirement. Point wise reply to all the points mentioned in Pre-Qualifying Requirement specified in the tender. Relevant documents as requested in Pre-Qualifying Requirement must be attached.
- b. Vendor Registration Form (SRF)
(Kindly follow the link and follow instructions: <http://supplier.bhel.in/>)
The SRF duly filled up will be assessed for manufacturing capability quality systems being followed, organizational soundness and financial worthiness. The same shall be submitted with Part-I by un-registered vendor only with BHEL, HEEL, Haridwar or the pro of of submission through online portal. BHEL registered vendors (registered with permanent code M, N, S) need not to submit SRF.
For vendors registered with T code, SRF is to be submitted essentially along with the offer.
- c. Non-disclosure agreement as per Annexure 5. The agreement shall be duly stamped & signed.

PART-II (Technical clarification in envelope - II) shall comprise of following documents:

- a. Complete technical offer.
- b. Annexure-4 for compliance of technical/ commercial terms and conditions.
- c. Complete technical offer as per specification, drawings, technical requirement along with un-priced bid indicating C & F rate, separate Lloyd's/BV/TUV inspection charges (for Foreign vendors) and delivery schedule.
- d. Validity of offer to be indicated.
- e. Deviation with reference to specification/drawing, if any, should be clearly indicated on a separate sheet.
- f. Copy of price Bid (without prices).
- g. Confirmation of QP- "QA/CF/QP/311, Rev 02 (Annexure-6). Final inspection shall be by Third party inspection agency (LRS/TUV/BV) for foreign suppliers and by BHEL nominated inspection agency "TUV" for indigenous suppliers.
- h. Any additional documents.

PART -III (Price Bid)

- a. Price bid with prices to be submitted as part-III of the tender.
- b. If price bid is not submitted along with Part-I bid, the offer will be rejected outrightly.
- c. In case of foreign vendors, prices to be quoted on C&F Mumbai seaport basis. However, for air shipment the rates to be quoted on CP T Mumbai port basis. And air freight charges to be indicated separately in price bid. Further non-availability of flight will not be accepted for rescheduling the delivery or waiver of penalties on account of delayed delivery.
- d. In case of Indigenous vendor, prices must be quoted on FOR-Destination-CPS-HEEL-BHEL basis. However, the insurance will be arranged by BHEL. Vendor can dispatch good through any BHEL/Indian Bank Association approved transporters having their branch at Haridwar / destination. For the convenience name and address of transporters approved by IBA and BHEL are posted at website www.bhelhwr.co.in. Further, non-availability of BHEL/ Indian Bank Association approved transporter will not be accepted for rescheduling of delivery or waiver of penalties.
- e. In case of foreign vendors, third party (Lloyd's/BV/TUV) inspection charges to be quoted separately as third party inspection (Lloyd's/BV/TUV) is in vendor's scope. For Indian vendors, inspection shall be by TUV/ BHEL nominated inspection agency. Prices shall be loaded by 0.238% on account of TUV/ BHEL nominated inspection agency inspection charges. Third Party inspection shall be in BHEL scope.
- f. Prices should remain firm till the execution of the order. However, in case vendor prefers to maintain the iron P VC formula, they can do so. Vendors must give upper & lower cap. However, lower cap has to be either equal or more in percentage point than the upper cap from base prices. This is **must** for evaluation purpose. **Upper price limit** will be considered for evaluation purpose.

- g. Insurance during transportation shall be taken care of by BHEL.
- h. Applicable sales Tax, Excise duty, service tax, educational cess and any other statutory levy should be indicated separately and clearly in the quotation..
- i. **Prices are to be written in both Figures & Words. In case of any difference between the two, If there is a discrepancy between words and figures, the amount in words shall prevail for evaluation and establishing L1 status..**
- j. **LD Penalty shall be applicable at the rate of ½% (half percent) per week or part thereof subject to a maximum of 10% of the value of delayed portion of the order. In case of any variation in LD penalty acceptance, your prices shall be loaded to the extent LD penalty not accepted by you. If**
- k. Payment term shall be “100% payment against dispatch documents, through irrevocable LC (for foreign vendors) with bank charges as either side’ and 100% after receipt and acceptance of material (for indigenous vendors)”. **BHEL as a rule do not agree to release advance payment.**
- l. Irrevocable LC is opened for one quarter (3 months) & is established 30 days prior to delivery schedule. The charges of establishing the LC are on either side i.e. charges in India to be borne by BHEL and charges outside of India to be borne by vendor. If any vendor insists for LC for more than one quarter, vendor has to essentially bear all charges (Within & Outside India) for the period exceeding one quarter.
- m. **BHEL does not open confirmed LC even if vendor agrees to bear the confirmation charges.**
- n. **The comparison between foreign and indigenous bids shall be done based on the Total Landed cost at Destination basis.**

Note:

After tender opening (Part-I), if it is found that:

- The bidder has not submitted the requisite Tender Fee and EMD (If applicable)
- The bidder has claimed to be an MSE vendor but no supporting documents have been submitted in this regard.

In both the above cases the offer of the bidder may be rejected and no correspondence from the bidder in this regard shall be entertained.

However, offer of the bidder shall be treated as per the guideline in case the bidder has claimed to be an MSE vendor and submitted requisite MSE documents.

BHEL reserves the rights to place order for tendered quantity on more than one vendor

Superscription on envelopes:

The following shall be superscribed on the envelopes:

PART-I

1. TENDER NO. AND ITEMS DESCRIPTION
2. DUE DATE FOR OPENING.
3. TENDER FEE, EMD (IF APPLICABLE) OR MSE CERTIFICATE TOWARDS EXEMPTION OF EMD & TENDER FEE
4. PRE- QUALIFYING REQUIREMENT (PQR)
5. SUPPLIER REGISTRATION FORM (SRF)
6. NON-DISCLOSURE AGREEMENT (NDA)

PART-II

1. TENDER NO. AND ITEMS DESCRIPTION
2. DUE DATE FOR OPENING OF PART-I.
3. TECHNO-COMMERCIAL BID

PART-III

1. TENDER NO. AND ITEMS DESCRIPTION
2. DUE DATE FOR OPENING OF PART-I
3. PRICE BID

The part-I, part-II & part-III shall be individually sealed and super scribed as indicated above and shall be enclosed further in the envelop duly sealed and super scribed as :

“TENDER FOR (ITEM NAME) AGAINST TENDER NO.----- DUE ON -----
-----CONTAINING PART-I, PART-II & PART-III O F THIS OFFER.” Vendor’s full name and address s
should be clearly mentioned on the envelope and shall be addressed to:

To,
Head of Materials Management,
Heavy Electrical Equipment Plant,
BHEL,
Hardwar- 249403

Envelopes not marked as above are liable to be ignored and will not be opened.

**IN CASE YOU ARE NOT MAKING AN OFFE R A GAINST THIS ENQUIRY, THEN PLEASE
ARRANGE TO SEND A LE TTER OF REGRET IF YOU HAVE COL LECTED THE TENDER
DOCUMENTS FROM BHEL.**

TERMS AND CONDITIONS OF REVERSE AUCTIONING

Against this enquiry for the subject item /system with detailed scope of supply as per enquiry specifications, BHEL may resort to “REVERSE AUCTION PROCEDURE” i.e., ON LINE BIDDING ON INTERNET.

- For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
- BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on-line bidding on internet.
- BHEL will inform the vendor in writing in case of reverse auction, the details of Service Provider to enable them to contact & get trained.
- Business rules like event date, time, start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
- Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to participate in the event.
- BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
- Reverse auction will be conducted on scheduled date & time.
- At the end of Reverse Auction event, the lowest bidder value will be known on the network.
- The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
- Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
- In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL’s standard practice.
- In case BHEL decides to go for reverse auction, the H1 bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant



Annexure- 2

S. No.	Tender No.	Description of Item	Delivery required	Qty. (No.)
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10		W91311402098 DRG: 01140205801, REV 07 CASTING FOR HPCV SERVOMOTOR CASING (R/M) SPEC: HW19799, REV 01	31/03/2016	3 Nos

- Vendor should quote best delivery.

Annexure – 3

PRE – QUALIFICATION REQUIREMENTS

Minimum qualification requirement for Casting for ESV Servomotor Casing, C/F Piston Casting for IV Servomotor Casing (R/M) as per HW19799 (EN-GJS-400-18U-RT (GGG 40.3))

Following are the mandatory requirements (1, 2 & 3). Offers of vendors not meeting these requirements will not be considered.

1. Vendor must have manufactured and supplied at least 10 SG Iron castings in past 3 years, in material grade GGG40 or GGG 40.3 as per En1563 or equivalent.

Casting at least 1300 Kg. in material grade EN-GJS-400-18U-RT (GGG 40.3) or GGG 40 or GGG 50, Out of these at least one casting (single piece) must be of weight 1300 Kg or higher in the above material grades.

In support of above, the vendor has to furnish details of the above supplies in the following format:

SI No.	Item	Wt	Material Grade	Purchase order number/Name of Customer /Year of Supply

Out of the above, complete test certificates duly certified by third party inspection agency for three of the above mentioned PO's including at least one for the casting wt ≥ 1300 Kg. are to be submitted with offer.

The test certificates must have details of Mechanical testing, hardness testing, NDT reports and Heat treatment (If carried out)

2. Equipment details w.r.t. : Melting, handling, moulding, Casting, Heat treatment, machining, testing (Destructive & Non-Destructive) including kerosene testing shall be furnished.

Details provided shall be ink signed by authority.

Details of in-house testing facilities are to be submitted with offer. In case of outsourcing of any test, Vendor to agree to carry out testing at Government accredited labs only.

In case Vendor does not have in-house m/c facility, vendor shall confirm to carry out machining at BHEL approved vendors.

List of BHEL approved machining vendors are as under:

➤ **For Pistons:**

M/s PTC Lucknow, M/s Scope Engg Hardwar, M/s Jay Pee Machining Industry Hardwar, M/s New S.K. Industries Hardwar, M/s Nirmal Engineering Hardwar, M/s Amco Industries Hardwar, M/s Saini Engg Works Hardwar, M/s Paper-Tech Engineers Faridabad

➤ **For Servo Motor Casings & Cylinder:**

M/s Kalyani Engineering works Ghaziabad, M/s M.P.K. Machine tools Ghaziabad, M/s A.R. Engineering works, New Delhi

➤ **For Servo Motor Covers:**

M/s ISGEC Heavy Engineering Yamunanagar, M/s Kalyani Engineering works Ghaziabad, M/s M.P.K. Machine tools Ghaziabad, M/s A.R. Engineering works, New Delhi

3. Vendor to confirm supply shall be as per BHEL enquiry drawing and specification. Deviation from Enquiry drawing and specification is not acceptable. Clause wise acceptance of specification HW19799 and drawing has to be submitted with offer.

4. Note:

Colored photographs of castings (with similar complexity/texture) (if available) may also be furnished in support of evidence of experience.

ANNEXURE- 4

COMPLIANCE SHEET FOR TECHNICAL/COMMERCIAL TERMS AND CONDITIONS FOR THREE PART TENDER

PLEASE FILL THIS ANNEXURE & ATTACH WITH YOUR TECHNO-COMMERCIAL BID.

You are requested to kindly confirm /clarify the following:-

S.No.	Description	Your Confirmation
1.	Vendor to confirm that they meet each & every clause of our Specifications/Drawings.	
2.	If “No” to serial number 1, vendor to specify each deviated clause & submit in a separate sheet.	
3.	Vendor to list out on a separate sheet any activity which is outsourced. Please furnish details of out sourced vendor.	
4.	Validity: confirm that validity of the offer shall be 90 days from the date of tender opening	
5.	Confirm that un-priced part of price bid is enclosed with technical commercial offer.	
6.	Confirm that prices have been quoted on C & F basis (For Foreign vendors)	
7.	Confirm that Loading Port has been mentioned (For Foreign vendors).	
8.	Confirm that prices have been quoted on FOR BHEL Haridwar basis. (For Indigenous vendor)	
9.	Confirm that prices shall be firm and fixed throughout delivery period.	
10.	Confirm that preferably payment term shall be “100% payment after receipt and acceptance of material”.	
11.	LD Penalty shall be applicable at the rate of ½ % (half percent) per week or part thereof subject to a maximum of 10% of the value of unexecuted portion of the order. Incase of any variation in LD penalty, your prices shall be loaded to the extend LD penalty not accepted by you.	
12.	Confirm that all test certificates / Guarantee certificates to be submitted as per BHEL specification. in TRIPLICATE along with dispatch documents	
13.	Right of acceptance – BHEL reserves the right to reject any or all quotations without assigning any reasons thereof. BHEL also reserves the right to increase or decrease the tendered quantities. Vendors should be prepared to accept order for reduced quantities without any extra charges. Vendor should also be prepared for giving discount in case of increase in quantity.	
14.	Confirm specifically that material shall be supplied as per tender documents.	
15.	No grace period in delivery is acceptable. Please quote delivery accordingly.	
16.	Ink signed order acceptance shall be furnished within 15 days of order placement.	
17.	Confirm if there is Indian agency commission included in your price.	
18.	Please confirm your acceptance for Reverse Auctioning of these items.	
19.	In case of PO (if any), Invoices against goods and services have to be submitted immediately after supply of goods and services but not later than 30 days from the invoice date. In case of any delay, consequential losses like loss of input credit and non-availability of concessional forms etc., shall be to the vendor’s account (For Indigenous vendor)	
20.	Confirm that third party inspection charges (LRS/BV/TUV) quoted separately or mention that third party inspection charges are included in the quoted prices of the offer. If vendor do not quote third party inspection charges or not mention that third party inspection charges are included in quoted prices, then it shall be presumed that third party inspection charges are included in the quoted prices of the offer. No further clarification shall be asked in this regard after opening of techno-commercial bid part-1	

Annexure-5

NON-DISCLOSURE AND PROPRIETARY INFORMATION AGREEMENT

BETWEEN

_____ (**Name of the Vendor**), having its registered offices in _____ (**Address of Vendor**), registered under the no. _____ of the Companies' register of _____ (**Name of Place and Country**), capital stock of _____ (**Value**), with a place of business in _____ (**Name of Place and Country**) (hereinafter referred to as "**_____ (Name of Vendor)**");

AND

Bharat Heavy Electricals Ltd a company incorporated under the Indian Companies Act 1956 having its registered offices at BHEL House, Siri Fort, New Delhi -110 049 and having one of its works at Heavy Electrical Equipment Plant, Ranipur, Haridwar-249403 (Uttarakhand), India registered under the No. 4281 of 1964-65 of the companies register of Delhi, capital stock of Rs 4895.2 million with a place of registered office in New Delhi (hereinafter referred to as "BHEL") hereinafter also referred to individually as "the Party" or collectively as "the Parties".

BACKGROUND

This Agreement sets forth the rights and obligations of the Parties with respect to the use, handling, protection and safeguarding of Proprietary Information that is disclosed by and between the Parties.

WHEREAS

A) the Parties wish to pursue exploratory discussions concerning a possible collaboration between them in relation to the Program defined in Exhibit 1;

B) during the ensuing discussions and negotiations it may occur that either Party discloses to the other technical, financial or business information of a proprietary or confidential nature, which the Parties intend to protect against, making it available, by any means to any third person, and other unauthorized use and/or further disclosure by the recipient, in accordance with the terms and conditions set forth herein;

NOW, THEREFORE, the Parties have agreed as follows:

1. The term “Proprietary Information” shall mean any information or data of whatsoever kind of a confidential or proprietary nature, including but not limited to, commercial information, know how and technical information in the form of designs, drawings, concepts, requirements, specifications, software, interfaces, components, processes, or the like, that have been or will be disclosed by either Party to the other pursuant to this Agreement, either in writing, orally or other form, which is designated as “Proprietary” or “Confidential” by the disclosing Party by means of formal declaration or an appropriate stamp, legend or any other written or orally notice .
2. Proprietary Information may be conveyed, without limitation, through any written or printed documents, samples, models, electronic form on disk, tape, other storage media or any other means of disclosing such Proprietary Information that either Party may elect to use during the life of this Agreement, but if an originating Party originally discloses information orally or visually, the receiving Party will protect such information as Proprietary Information to the extent that the originating Party :
 - identifies the Information as Proprietary at the time of original disclosure,
 - summarizes the Proprietary Information in writing .

Information stored in electronic form on disk, tape, other storage media will be adequately marked if a proprietary legend displays when the information originally runs on a computer system and when the information is printed from its data file.

Proprietary Information also includes any information which can be obtained by examination, testing or analysis of any hardware or material substance or any component part of such hardware or material substance provided by the Disclosing Party even though the requirements in Clause 1 for marking and designation have not been fulfilled.

3. Each Party, to the extent of its rights to do so, shall disclose to the other only the Proprietary Information which the disclosing Party deems appropriate to fulfil the objectives of this Agreement. The Parties hereby represent that the disclosure of Proprietary Information by and between themselves shall be made in compliance with, and subject to the laws and regulations of the Disclosing Party's country.

4. The receiving Party hereby agrees and covenants that, from the effective date of this Agreement until the expiry date as per article 11 and the following period as per article 12, the Proprietary Information that either Party receives from the other shall:
 - a) be protected and kept in strict confidence by the receiving Party which must use the same degree of care it uses to protect its own confidential information and in no case less than a reasonable care;

 - b) be only disclosed to and used by those persons within the receiving Party's organization or that of its parent or controlled companies who have a need to know and solely for the purposes specified in this Agreement, and be treated by such persons or entities with the same degree of care and subject to the same restrictions;

 - c) to procure that each third party to whom Proprietary Information is disclosed under this Agreement is made aware of the provisions of this Agreement prior to such disclosure to it and that each such third party is

bound by obligations of confidentiality which are no less onerous than those contained in this Agreement;

- d) neither be disclosed nor caused to be disclosed or made available, either directly or indirectly, to any third Party or persons other than those mentioned in subparagraph b) above or other persons upon which both of the contractual Parties shall agree in an amendment to this Agreement;
- e) not to copy, reproduce or reduce to writing any part of such Proprietary Information except as may be reasonably necessary for the purpose referred to in the Recitals of this Agreement

PROVIDED THAT the Receiving Party shall be entitled to make any disclosure required by court order or government or regulatory requirement of the Disclosing Party's Proprietary Information subject to notifying the Disclosing Party as soon as possible of such requirement

- 5. Any Proprietary Information and copies thereof disclosed by either Party to the other shall remain the property of the disclosing Party and shall be immediately returned or destroyed by the receiving Party upon request.
- 6. The receiving Party shall have no obligations or restrictions with respect to any Proprietary Information for which the receiving Party can prove that:
 - a) is in or which comes into the public domain otherwise than as a result of a breach of this Agreement by any person to whom a disclosure of Proprietary Information is made as permitted under this Agreement or of any other duty of confidentiality relating to the Proprietary Information of which the Receiving Party has knowledge; or
 - b) it has been in its possession without restriction at the time of the disclosure, as evidenced by written documentation in its files; or
 - c) it has been lawfully received from a third Party without breach of this Agreement; or

- d) it has been or is published without violation of this Agreement; or
 - e) it has been independently developed in good faith by employees of the receiving Party who did not have access to the Proprietary Information; or
 - f) it has not been properly declared, designated or confirmed as Proprietary or Confidential; or
 - g) the protection period has expired according to articles 11 and 12 of this Agreement.
7. With respect to any exchange of Proprietary Information which may occur as a result of this Agreement, it is expressly understood and agreed that the persons listed in Exhibit 2 shall, on behalf of their respective Parties, be the exclusive individuals authorized to receive from and transmit to the other Party Proprietary Information under this Agreement. Each Party may replace at any time its respective authorized individuals identified in such Exhibit 2, with in its own organization. Any such new designation by a Party shall be made by written notice to the other at the address indicated in such Exhibit 2.
8. Any Proprietary Information which is identified as "Classified Information", or whose export is subject to an export license, shall be identified as such by the disclosing Party at the time of disclosure and the disclosure, protection, use and handling thereof, shall remain subject to the security procedures and restrictions imposed by the disclosing Party's Government.
9. The disclosure of Proprietary Information under this Agreement by either Party to the other shall not be construed as granting to the receiving Party any right, whether express or implied by licence or otherwise, on the matters, inventions or discoveries to which such information pertains, or as granting any trademark, patents, copyrights, trade secret right or other form of intellectual property right.

10. Nothing in this Agreement may be construed as an obligation of either Party to disclose any Proprietary Information to the other, or to enter into any subsequent contractual relationship with such other Party.
11. This Agreement covers the exchange of Proprietary Information which may be made by either Party to the other until ten years from signing of the agreement or any extension thereto which may be agreed upon by the Parties in writing. Proprietary information relevant to the Program detailed in Exhibit 1, already made available to the other contractual Party before the effective date, shall also be protected under this Agreement.

It is understood by the parties that, prior to disclosure, the Disclosing Party shall have obtained any government authorisation needed for the export of the Proprietary Information

12. The expiry of the period contemplated in Article 11 of this Agreement shall not relieve the receiving Party from complying with the obligations imposed by Article 4 here above with respect to the use and protection of the Proprietary Information, received prior the date of such expiry, for a period of ten (10) years after such expiry.
13. The Parties are independent contractors. Each will bear all costs and expenses in connection with this Agreement. This Agreement is intended to facilitate only the exchange of Proprietary Information and is not intended to be, and shall not be construed to create a teaming agreement, joint venture, association, partnership, or other business organisation or a agency arrangement and no Party shall have the authority to bind the other without the other Party's separate prior written agreement.
14. This Agreement shall be governed by and shall be interpreted in accordance with the substantive federal laws of Switzerland excluding its choice of law rules.

Irrespective of the foregoing each Party shall remain bound by the provisions of its own national laws and regulations with respect to the transfer or use of Classified Information or information whose export is subject to an export license.

15. All disputes among the Parties, in connection with or arising out of the existence, validity, construction, performance and termination of this Agreement (or any terms thereof), which the Parties are unable to resolve among themselves, shall be finally settled by an Arbitration. The Arbitration shall be held in Geneva (CH) in English language, in accordance with the rules of the ICC – International Chamber of Commerce by three arbitrators appointed in accordance with said rules.
16. The foregoing constitutes the entire Agreement among the Parties with respect to the subject matter hereof and supersedes and cancels all prior representations, negotiations, commitments, undertakings, communications, either oral or written, acceptances, understandings and agreements among the Parties with respect to or in connection with any of the matters to which such Agreement applies or refers.
17. Notices to _____ **(Name of Vendor)** shall be made at the following address:

(Complete Address of Vendor)

Attention: Mr. _____ **(Name of the Authorised Person of Vendor)**

Notices to BHEL shall be made at the following address:

BHARAT HEAVY ELECTRICALS LIMITED,

HEAVY ELECTRICAL EQUIPMENT PLANT,

Ranipur, Haridwar-249403 (Uttarakhand), India

Attention: Shri B.M.Bansal, General Manager- Materials Management

18. The effective date of this Agreement shall be the date of the last signature appearing herein.

IN WITNESS WHEREOF, each of the Parties has caused this Agreement, to be executed by its duly authorized officer.

Date :

Signed for and on behalf of

Signed for and on behalf of

(Name of Vendor)

BHEL

By:

By:

Title:

Title:

Signature:

Signature:

EXHIBIT 1

to the

NON-DISCLOSURE AGREEMENT

between

_____ **(Name of Vendor)**

and

BHARAT HEAVY ELECTRICALS LIMITED

dated:

The Non Disclosure Agreement covers the exchange of Proprietary Information which may occur during the discussions and negotiations in view of a possible co operation between the Parties in the following programs:

-Description of Material or Services for which the order is placed

_____ **(Name of Vendor)** list of products that require an exchange of Proprietary Information which may be occur during the discussions and negotiations in view of a possible cooperation for the above programs :

EXHIBIT 2

to the

NON-DISCLOSURE AGREEMENT

between

_____ **(Name of Vendor)**

and

Bharat Heavy Electricals Ltd.

dated:

Personnel of the Parties authorized to receive and/or transmit Proprietary Information under this Agreement:

For **(Name of Vendor)**

(Name of Person)

Tel.

Fax

Address.

For Bharat Heavy Electricals Ltd.

(Name of Person)

Tel.

Fax

Address.

(Name of Person)

Tel.

Fax

Address.

(Name of Person)

Tel.

Fax

Address.

QUALITY PLAN			DESCRIPTION		LEGENDS		PAGE 1 OF 1				
BHEL	QP NO.	QA/CF/QP/311	REV	02	NODULAR CASTINGS		P- PERFORMED BY				
	SPEC. NO.	AS PER P.O.	REV.	AS PER PO			1- BHEL REP				
	DRG. NO.	AS PER PO	REV.				2- VENDOR				
SL. NO.	COMPONENT OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY	REMARKS	
									P	W	V

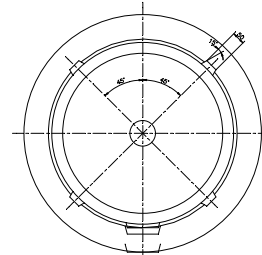
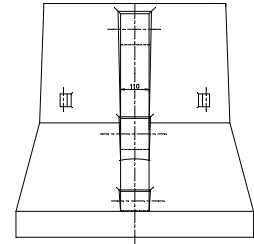
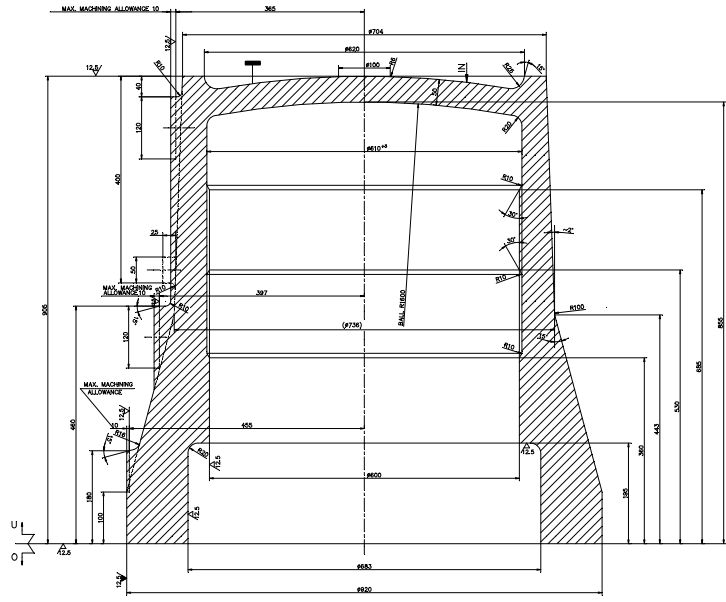
1.	MELTING	CHEMISTRY	MAJOR	CHEMICAL TEST	EACH HEAT	BHEL SPEC	BHEL SPEC	TC	2	1	
2.	FERRITIZING & ANNEALING	TEMP. & TIME	MAJOR	HT RECORD	EACH BATCH	MANUFACTURE PRACTICE		TIME TEMP RECORDS, GRAPH	2	1	
3.	MARKING	IDENTIFICATION OF CASTING & KEEL BLOCK	MAJOR	VISUAL	100%	BHEL SPEC	BHEL SPEC		2	1	PHOTO/ SKETCH OF TEST-coupon TO BE MADE PART OF TCS
4.	ROUGH MACHINING	DIMENSION	MAJOR	DIMENSIONAL	100%	DRAWING	DRAWING	DIMENSION RECORD	2	1	
5.	MECHANICAL TESTING	MECHANICAL PROPERTIES	MAJOR	TENSILE, IMPACT, MICRO STRUCTURE, HARDNESS	AS PER SPEC	BHEL SPEC	BHEL SPEC	TC	2	1	
6.	FINAL NDT	NDT	MAJOR	UT & MPI	100%	SPEC & BHEL APPROVED NDE PLAN	BHEL SPEC	TC	2	1	
7.	LEAK TEST (IF CALLED FOR IN DRAWING)	LEAK PROOFNESS	MAJOR	KEROSENE TEST	100%	DRAWING	DRAWING	TC	2	1	
8.	IDENTIFICATION, PACKING & FORWARDING TO M/C SHOP	CHECKING & RETRACE OF DOCUMENTS	CRITICAL	CHECKING	100%	PO, SPEC, DRG, & QP	PO, SPEC, DRG, & QP	SL NO 1 TO 7 CERTIFICATES	2		

*** WITNESSING NOT REQUIRED IN CASE OF SEPERATELY POURED KEEL BLOCK (IF PERMITTED BY ORDERING SPECIFICATION)**

NOTES:

1. Weldings are only allowed after approval from BHEL in written form (refer clause for 'Rectification Welding' in specification).
2. Keel blocks will accompany castings during all HT processes.
3. Only qualified NDT operators will be employed

Signature
18/11/16
Signature

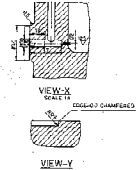
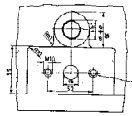
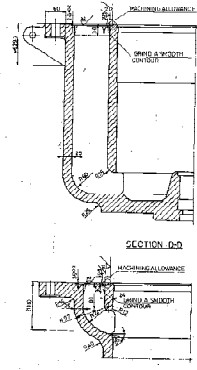
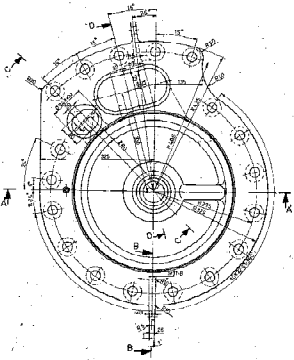
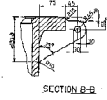
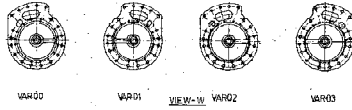
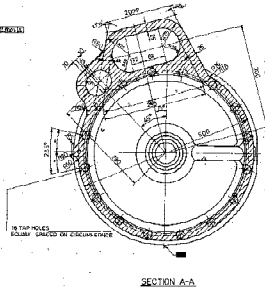
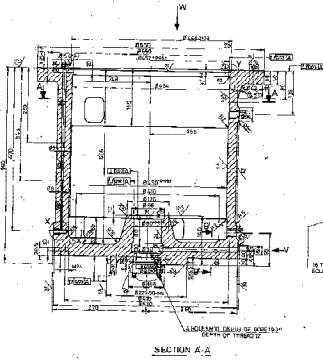


- TECHNICAL REQUIREMENTS: -
- 1- THE CASTING SHALL BE SUPPLIED IN ROUGH MACHINED CONDITION WITH 30%MIN. ALLOWANCE ON EACH SURFACE MARKED WITH THE MACHINING SYMBOL. SURFACE MARKED TO BE FINISHED MACHINED LEAVING NO FURTHER MACHINING ALLOWANCE.
 - 2- THE CASTING SHALL BE DELIVERED TO MEET FULLY THE REQUIREMENTS AS PER ISM 13709.
 - 3- ITEM IDENTIFICATION MARKS SHALL BE CAST ON AT THE LOCATION SHOWN IN SUPPLIER'S EMBLEM & DRG. NO. SHALL BE CAST ON AT THE LOCATION SHOWN AS
 - 4- CASTING SHALL BE SUBMITTED TO REPRESSURE OIL TESTING TO ENSURE LEAK PROOFNESS AS PER SPECIFICATION NO. 0288-008.

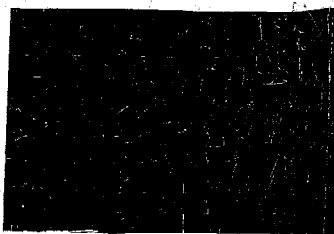
GRADE OF UNITS/LAW 100% 100% 100%		TYPE OF PRODUCT NAME OF CUSTOMER/PROJECT STEAM TURBINE	
NO. OF WORKING DAYS 100% 100% 100%		COMPANY SHANT NARAY ELECTRICALS LTD. PUNE, INDIA	
DATE OF ORDER 10/01/2010		NO. OF REV. 01	
DRAWN BY S.K.		CHECKED BY S.K.	
DESIGNED BY S.K.		APPROVED BY S.K.	
DATE OF ISSUE 10/01/2010		PROJECT NO. 114427010	
CHANGES AS PER CHANGE ORDER NO. 01/2010		SCALE 1:5	
SUPERSEDES THE OLD DRAWING NO. 01-1401-09901		NO. OF REV. 01	
CASTING FOR ESV SERVO MOTOR (ROUGH MACHINED)		DRAWING NO. 01-1401-09901	
DATE OF ISSUE 10/01/2010		SHEET NO. 01 OF 01	

FORM 2091-G

FAY JANGLE PROSECTOR ALL DIMENSIONS ARE IN INCHES



- TECHNICAL REQUIREMENTS:-**
1. THE CASING SHALL BE SUPPLIED IN SUCH MANUFACTURED CONDITION WITH 100% ALLOWANCE ON ALL TOLERANCES INDICATED THEREON.
 2. THE CASING SHALL BE SUPPLIED TO MEET EXACT REQUIREMENTS AS FOR MATERIALS.
 3. THE CASING SHALL BE SUBJECTED TO HYDRAULIC TESTING AT 1.25 X DESIGN PRESSURE FOR 30 MINUTES AFTER FINISH WORKING OF THIS ITEM AND ACCEPTANCE THEREOF THE SUPPLIER SHALL UNDERTAKE NECESSARY REPAIRS TO THE CASING.
 4. THE SUPPLIER'S MARKING AND IDENTIFICATION SHALL BE MADE ON THE CASING AS PER REQUIREMENTS OF THE DRAWING.
 5. IDENTIFICATION MARKING SHALL BE MADE AT A PLACE MARKED ON THE DRAWING AREA BY DIMENSION LINE AND SHALL BE ENGRAVED WITH PERMANENT MARKING.



REV	DESCRIPTION	DATE	BY	CHECKED	APPROVED
001	ISSUED FOR FABRICATION	15/05/57	...	...	...
002	...	...	...	...	...
003	...	...	...	...	...

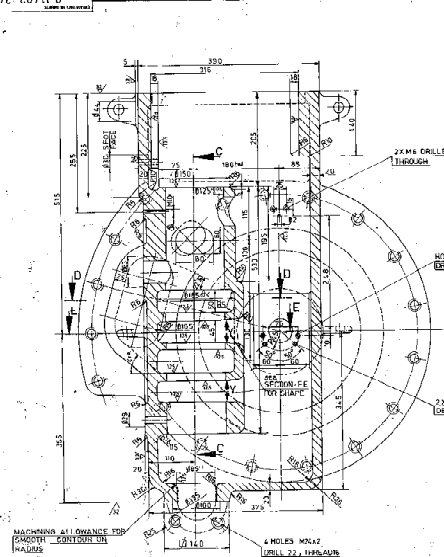
DESIGNER	DATE OF DESIGN	DATE OF CHECK	DATE OF APPROVAL
...

ITEM NO.	REV.	DATE	BY	CHECKED	APPROVED
...

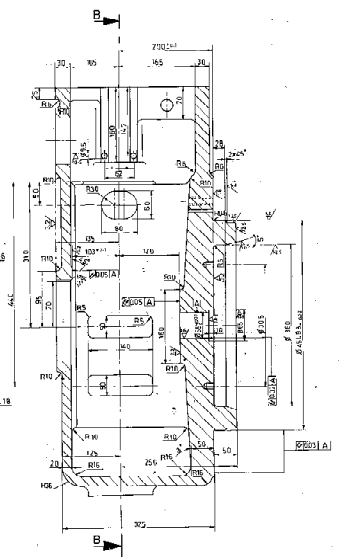
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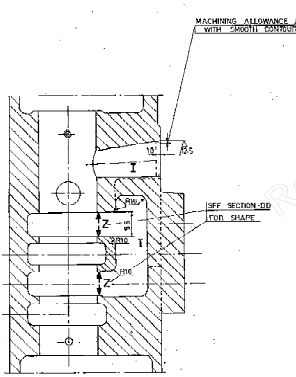
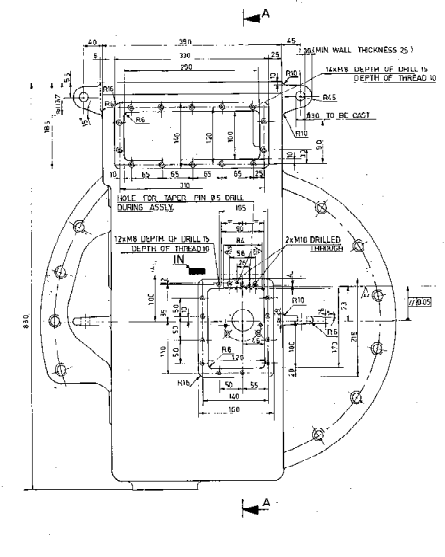
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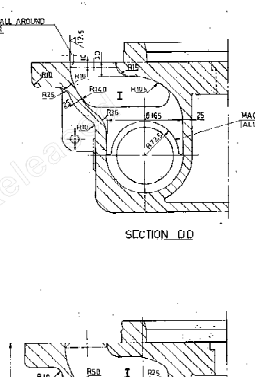
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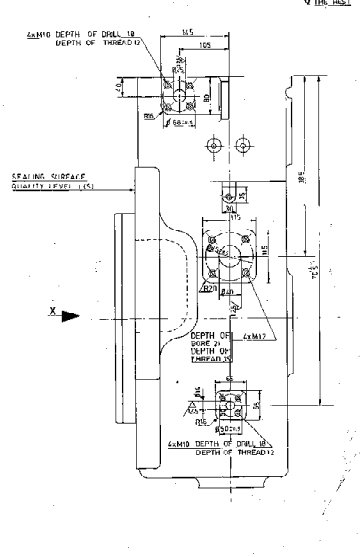
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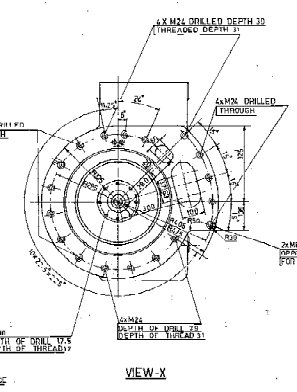
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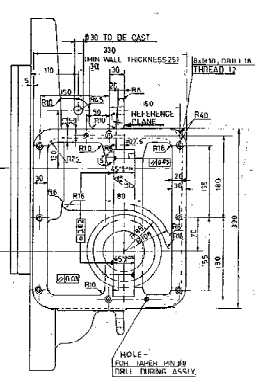
SECTION-EE



- TECHNICAL REQUIREMENTS**
1. THE CASTING SHALL BE SUPPLIED IN READY MACHINED CONDITION WITH DIMM ALLOWANCE ON ALL SURFACES MARKED WITH MACHINING SYMBOLS.
 2. THE CASTING SHALL BE SUPPLIED TO MEET FULLY THE REQUIREMENTS OF HW8709.
 3. THE CASTING SHALL BE SUBJECTED TO HYDRAULIC TESTING AT CHAMBERS-I AT 1.5X BAR FOR 30 MINUTES PER HOUR AFTER FINISH MACHINING AT APPLICABLE HARDWARE ALONG WITH ITS CASTING. THE SUPPLIER SHALL TAKE NECESSARY PRECAUTION TO AVOID LEAKAGE OF CASTING DURING HYDRAULIC TESTING.
 4. THE SUPPLIER'S EMBLEM AND DRG NO SHOULD BE PAINTED AND THE CASTING IDENTIFICATION NO. SHALL BE PAINTED AT A PLACE MARKED WITH 'X' ON THE DRG AS PER STANDARD AND SHALL BE ENGRAVED WITH PAINT.
 5. HOLES LESS THAN 3.00 SHALL NOT BE MACHINED BY SUPPLIER.
 6. ALL INNER SPACES ARE DR SPACES AND SHOULD BE THOROUGHLY CLEANED BY CASTING CERTIFICATES.
 7. REFERENCE PLANE: II IS THE DATUM PLANE FOR MEASUREMENT.



VIEW-X



REFERENCE PLANE

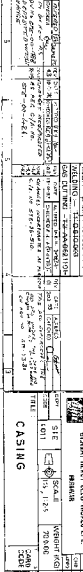
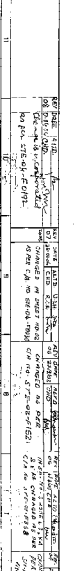
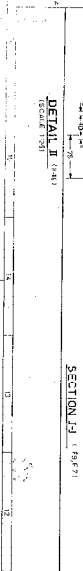
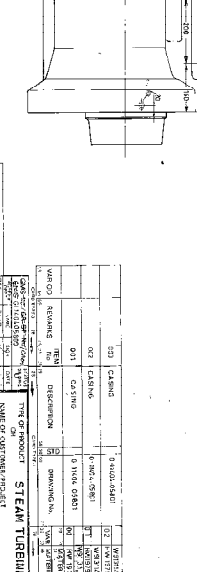
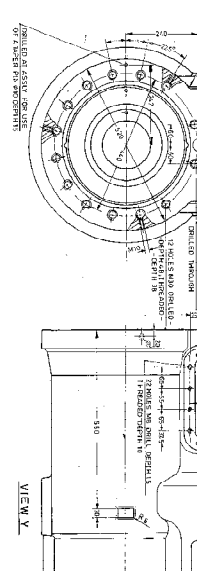
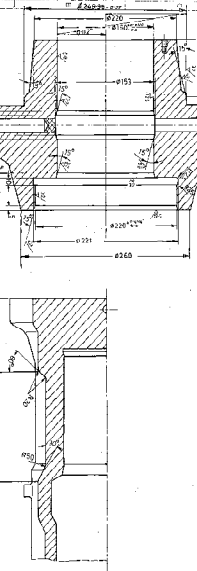
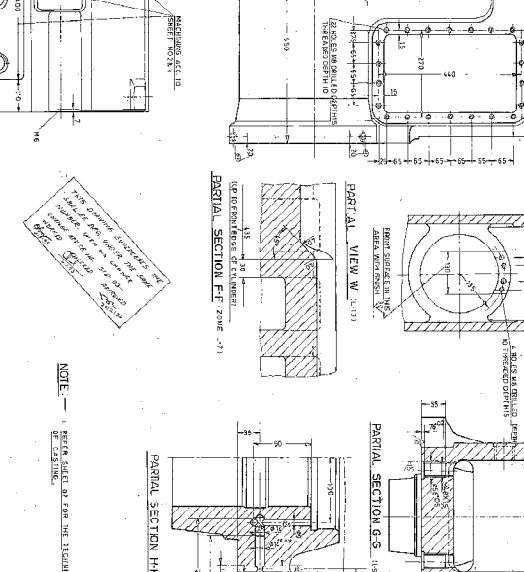
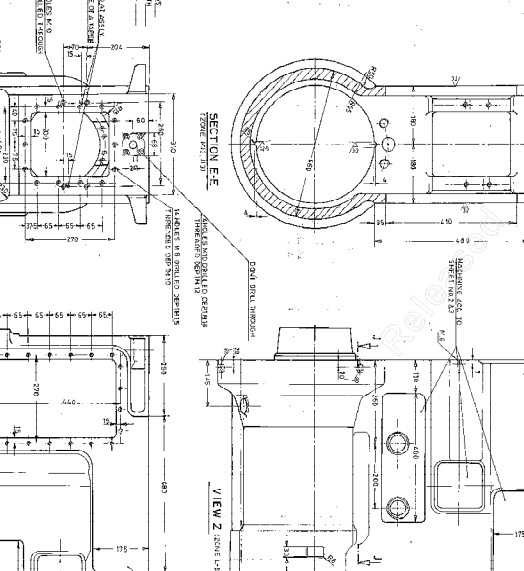
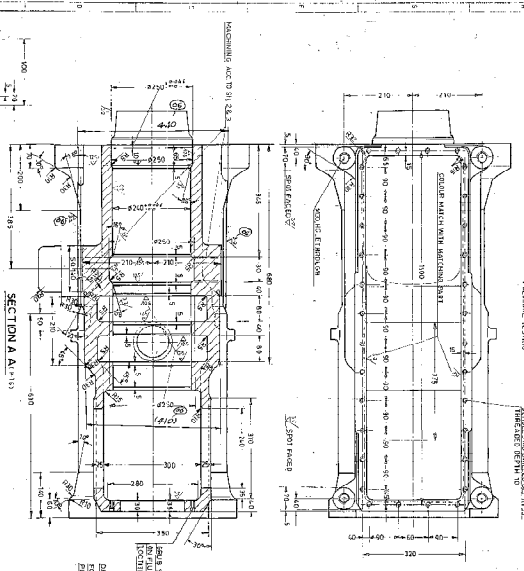
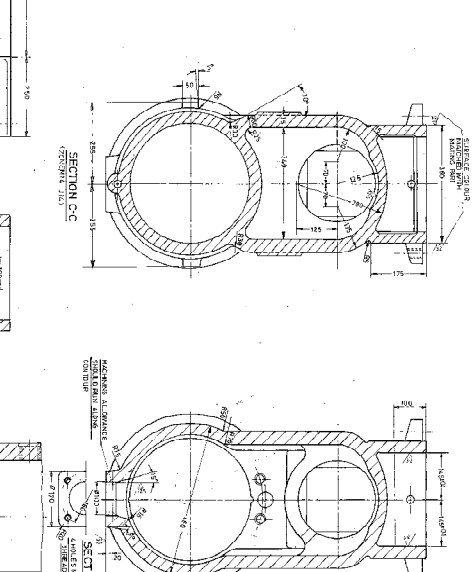
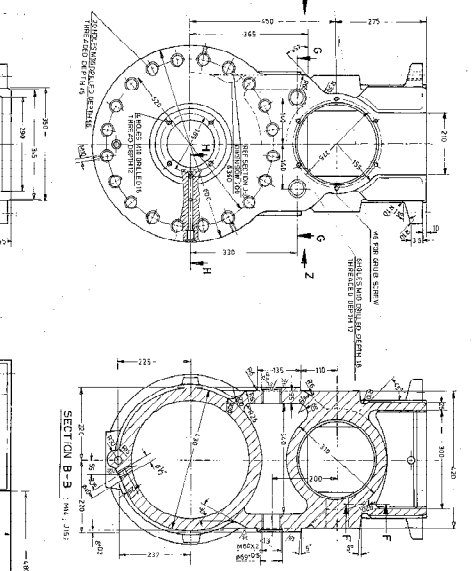
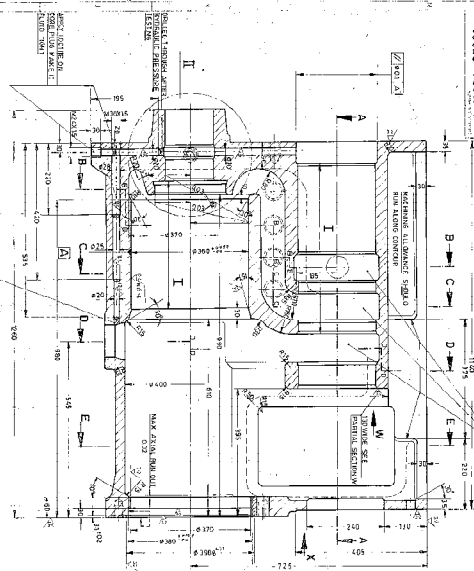
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001	001	MANUFACTURE	011402-24151	REVISED	011402-24151
002	002	DESCRIPTION	SERVO MOTOR COVER	REVISED	011402-24151
003	003	REMARKS		REVISED	011402-24151
<p>DATE RECEIVED: 01/14/02 DATE CHECKED: 01/14/02 NAME OF CUSTOMER: SHARAJI ELECTRONICS LTD TYPE OF PRODUCT: SERVO MOTOR COVER SCALE: 1:1 DRAWN BY: [Name] CHECKED BY: [Name] DATE CUTTING: 01/14/02 DATE: 01/14/02 FILE: SERVO MOTOR COVER Dwg No: 011402-24151</p>					

10650 70211 0

PART AND DIMENSIONS / ALTERNATE PART NAME

FIG. 02-13



NOTE: THIS DRAWING IS A PART OF THE TECHNICAL DRAWINGS OF THE STEAM TURBINE CASING. IT IS TO BE USED IN CONNECTION WITH THE OTHER DRAWINGS OF THE SET.

NOTE: REFER SECT. A-A FOR THE TECHNICAL DRAWINGS OF THE CASING.

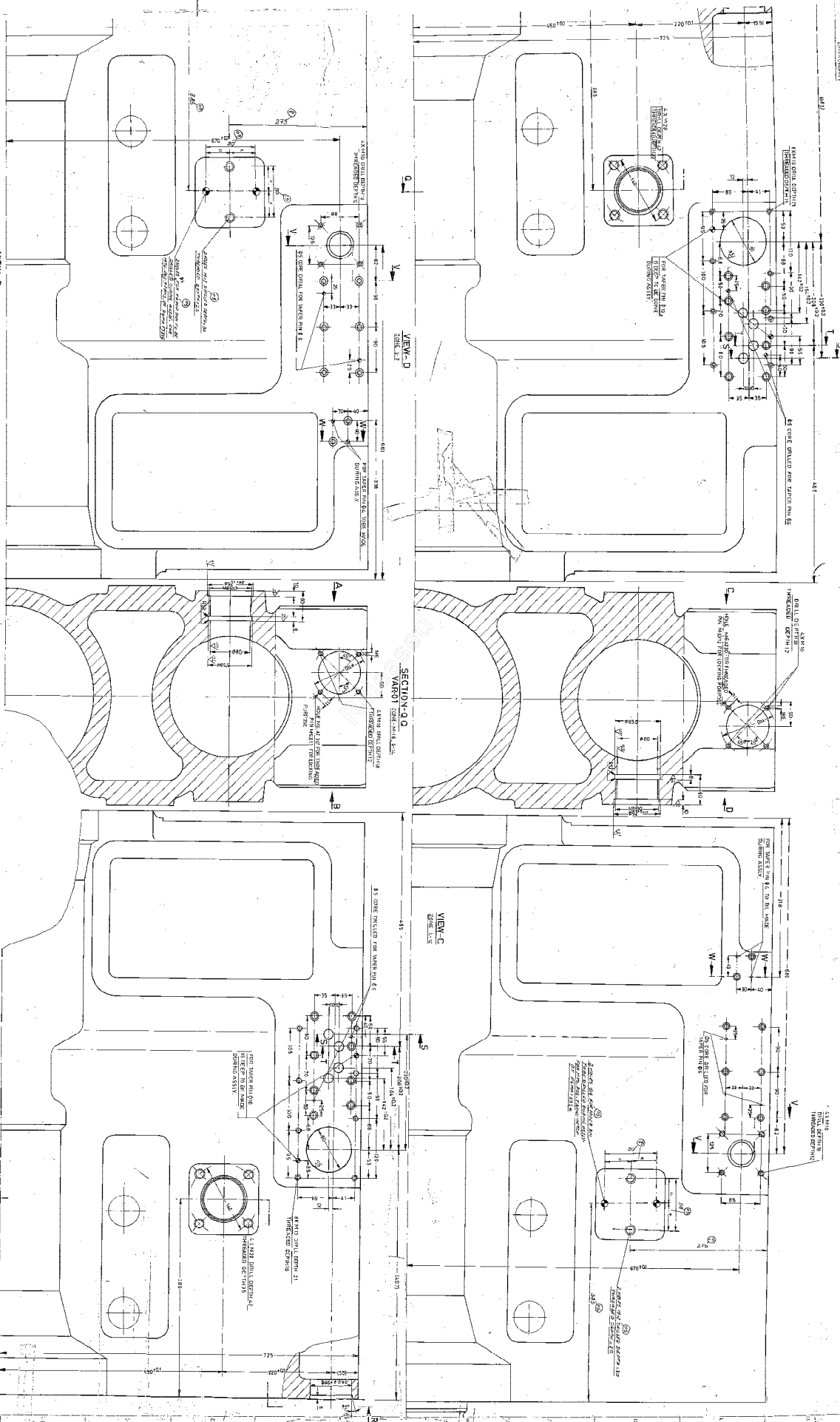
REVISIONS		DATE		BY		CHECKED		APPROVED	
NO.	DESCRIPTION	DATE	BY	DATE	BY	DATE	BY	DATE	BY
001	ISSUED FOR CONSTRUCTION	1950	J. J. ...						
002	REVISION	1951	J. J. ...						
003	REVISION	1952	J. J. ...						
004	REVISION	1953	J. J. ...						
005	REVISION	1954	J. J. ...						

STEAM TURBINE CASING

0-111-01-05891

880-9011-0

THIS DRAWING IS THE PROPERTY OF GEORGE EASTMAN COMPANY. IT IS TO BE KEPT IN CONFIDENCE AND NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF GEORGE EASTMAN COMPANY.



SECTION-SS ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-TT ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-VV ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-WW ZONED SECTION ZONED SECTION ZONED SECTION
VIEW-B ZONED SECTION ZONED SECTION ZONED SECTION	VIEW-C ZONED SECTION ZONED SECTION ZONED SECTION	VIEW-D ZONED SECTION ZONED SECTION ZONED SECTION	VIEW-E ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-RR VAR 02 ZONED SECTION	SECTION-AA ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-BB ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-CC ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-DD ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-EE ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-FF ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-GG ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-HH ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-II ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-JJ ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-KK ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-LL ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-MM ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-NN ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-OO ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-PP ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-QQ ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-RR ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-SR ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-TT ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-VV ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-WW ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-XX ZONED SECTION ZONED SECTION ZONED SECTION
SECTION-YY ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-ZZ ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-AA ZONED SECTION ZONED SECTION ZONED SECTION	SECTION-BB ZONED SECTION ZONED SECTION ZONED SECTION

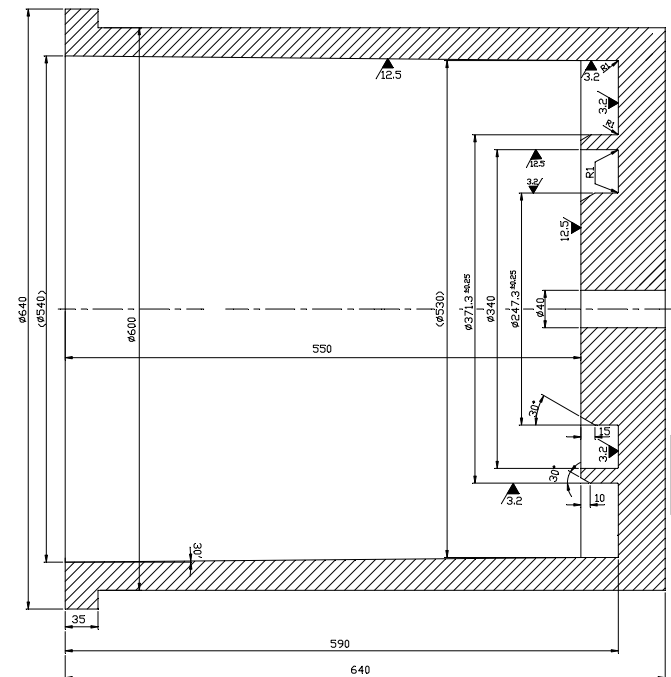
REVISIONS	DESCRIPTION
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2	REVISION TO SECTION-SS
3	REVISION TO SECTION-TT
4	REVISION TO SECTION-VV
5	REVISION TO SECTION-WW
6	REVISION TO SECTION-RR
7	REVISION TO SECTION-AA
8	REVISION TO SECTION-BB
9	REVISION TO SECTION-CC
10	REVISION TO SECTION-DD
11	REVISION TO SECTION-EE
12	REVISION TO SECTION-FF
13	REVISION TO SECTION-GG
14	REVISION TO SECTION-HH
15	REVISION TO SECTION-II
16	REVISION TO SECTION-JJ
17	REVISION TO SECTION-KK
18	REVISION TO SECTION-LL
19	REVISION TO SECTION-MM
20	REVISION TO SECTION-NN
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22	REVISION TO SECTION-PP
23	REVISION TO SECTION-QQ
24	REVISION TO SECTION-RR
25	REVISION TO SECTION-SR
26	REVISION TO SECTION-TT
27	REVISION TO SECTION-VV
28	REVISION TO SECTION-WW
29	REVISION TO SECTION-XX
30	REVISION TO SECTION-YY
31	REVISION TO SECTION-ZZ

STEAM TURBINE	CASING
MANUFACTURED BY	GEORGE EASTMAN COMPANY
DATE	1950
SCALE	AS SHOWN
DRAWN BY	J. H. BROWN
CHECKED BY	R. L. SMITH
APPROVED BY	W. E. JONES

10660-10#11-2 DRG. NO. ON 5991

12.5 / ALL OVER EXCEPT OTHERWISE STATED.

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TECHNICAL REQUIREMENTS:-

- 1- THE CASTING SHALL BE SUPPLIED IN ROUGH MACHINED CONDITION WITH 3 ±1 mm ALLOWANCE ON ALL SURFACES MARKED WITH MACHINING SYMBOL AND SURFACE MARKED WITH WILL HAVE NO EXTRA MACHINING ALLOWANCE.
- 2- THE CASTING SHALL BE DELIVERED TO MEET FULLY THE REQUIREMENTS AS PER HW19799
- 3- THE SUPPLIER'S EMBLEM, DRAWING NO. AND IDENTIFICATION NO. SHALL BE PUNCHED AT A PLACE MARKED ON THE DRAWING AND SHALL BE ENCIRCLED WITH PAINT.
- 4- THE CASTING SHALL BE SUBJECTED TO KEROSENE TESTING AS PER BHEL SPECIFICATION NO. 0939.008 TO ENSURE LEAK PROOF NESS.
- 5- DIMENSIONS IN BRACKETS (----) ARE FOR REFERENCE ONLY.
- 6- MACHINING SURFACE MARKED WITH WILL BE WITHOUT ANY EXTRA MACHINING ALLOWANCE.

SUPERSEDES THE OLD DRG. UNDER THE SAME NO.

VAR.00	REMARKS	ITEM NO.	CASTING FOR PISTON (R/M)	2-11401-09901	W/91311401059 HW19799	470.00
			DESCRIPTION	DRAWING NO.	MATERIAL CODE	UNIT WT.
					SPEC	

GMS NO./GR.SP.NB-01140105000	STATUS OF DRG.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	
01140105000		STEAM TURBINE 500MW.	
GRADE OF UNTOL. DIM.-	DESIGN NAME	NAME OF CUSTOMER/PROJECT	
M/CG-VY/M/F AA 0230208	S/T S.SARKAR	BHARAT HEAVY ELECTRICALS LTD. HARDWAR	
WELDING-A/B/C/D-AAG2104	SG/-	17.01.03	
GAS CUTTING-T3AAG21104	SG/-	18.01.03	
REV. DATE	ALTERED	CHECKED	APPD
01 18.01.03		ASHEK	G.N.T.
SUPERSEDES THE OLD DRG. NO. UNDER THE SAME NO.-C/ADVICE NO.-MTE-B-02-50			
DEPT. MTE	GRADE OF TOL. DIM. C/M/F	SCALE	WEIGHT (KG)
4300		1:2.5	470.00
TITLE CASTING FOR PISTON (R/M)		CARD CODE	DRAWING NO. 2-11401-09901
			SHEET NO. 01 NO. OF SHEETS 01

21140109901

SIZE A2

Released

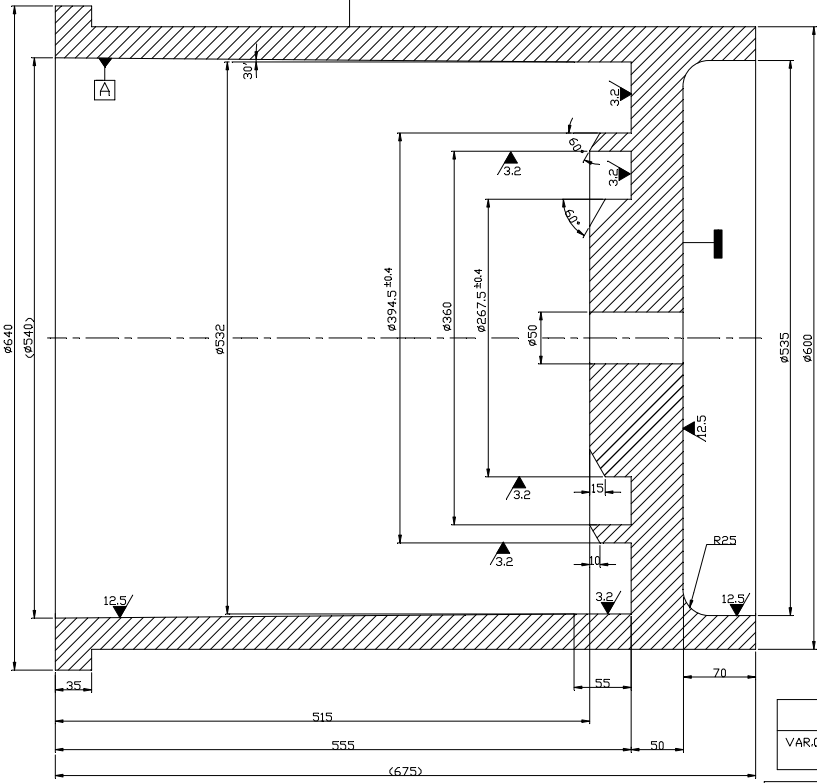
DRG. NO. 2-11403-09902

12.5

12.5 / ALL OVER EXCEPT OTHERWISE STATED.

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INVENTORY NO. SIGN. AND DATE FOR USE BY CLASS-0201




TECHNICAL REQUIREMENTS:-


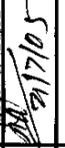
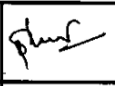
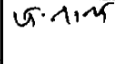
- 1- THE CASTING SHALL BE SUPPLIED IN ROUGH MACHINED CONDITION WITH 3 ±1 mm. ALLOWANCE ON ALL SRFACES MARKED WITH MACHINING SYMBOL 12.5 / .
- 2- THE CASTING SHALL BE DELIVERED TO MEET FULLY THE REQUIREMENTS AS PER HW19799
- 3- THE SUPPLIER'S EMBLEM, DRAWING NO. AND IDENTIFICATION NO. SHALL BE PUNCHED AT A PLACE MARKED ON THE DRAWING AND SHALL BE ENCIRCLED WITH PAINT.
- 4- THE CASTING SHALL BE SUBJECTED TO KERDSENE TESTING TO ENSURE LEAK-PROOFNESS, AS PER SPEC. NO. 0939.008.
- 5- SURFACE MARKED WITH SYMBOL ARE TO BE SUPPLIED WITHOUT ANY EXTRA MACHINING ALLOWANCE .
- 6- DIMENSIONS IN BRACKETS (----) ARE FOR REFERENCE ONLY.



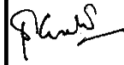
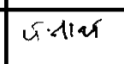
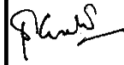
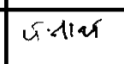
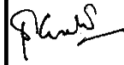
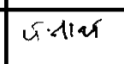
SUPERSEDES THE OLD DRG. UNDER THE SAME NO.


VAR.00	REMARKS	ITEM NO.	CASTING FOR PISTON RING (R/M)	2-11403-09902	W91311403051 HW19799	395.00
			DESCRIPTION	DRAWING NO.	MATERIAL CODE A	UNIT WT. C
					VAR MATERIAL SPEC C	



GMS. NO./GR.SP.NO.		STATUS OF DRG.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STEAM TURBINE 500MW.					
DESIGN NAME	SGN	DATE									
R. AGARWAL	SGZ	10.10.00									
SIT	ALDK SHUKLA	SGZ	10.10.00								
GRADE OF UNTOL. DIM.-				BHARAT HEAVY ELECTRICALS LTD.							
M/CG-V/C/M/F AA 0230208				DRG. NAME							
WELDING-AZ/3/2/3-AA6-21104				SIGN. TANDON							
GAS CUTTING-43/AA6-21104				DATE							
				26.09.00							
				NO. OF							
				27.09.00							
				VAR.							
				10.10.00							
REV.	DATE	ALTERED	CHECKED	APPD	DEPT.	GRADE OF TOL. DIM.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO. OF ITEMS
03	10.10.00	ASHOK	SSG	GNT	0300	C/M/F	1:2.5	395.00	-		
SUPERSEDES THE OLD DRG. NO. UNDER THE SAME NO.-C/ADVICE NO. MTE-B-00-33											
				TITLE CASTING FOR PISTON (R/M)				DRAWING NO. 2-11403-09902			
								SHEET NO. 01 NO OF SHEETS 01			
								SIZE A2			

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (डीप - हार्डवयर)			HW 19799	
		PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)			पृष्ठ का Page 1 of 6	
सामग्री सूची संख्या INVENTORY NO. P-2008	सुपरसेडेस INVENTORY NO.	NODULAR GRAPHITE IRON CASTING EN-GJS-400-18U-RT(GGG40.3) WITH IDENTIFICATION NUMBER .				
स्वत्वाधिकार एवं गोपनीय इस दस्तावेज में दी गई सूचना भारत हेतु इलेक्ट्रिकल्स की सम्पत्ति है। इसका प्रयोग एवं अभ्रंशक रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	सामग्री सूची संख्या को अधिकृतित करना है	<p>1. GENERAL</p> <p>This specification governs the quality of nodular cast iron of grade EN-GJS-400-18U-RT according to EN 1563 (Material No. 0.7043) .</p> <p>2. APPLICATION</p> <p>This material specification is valid for small castings of cast iron with nodular graphite.</p> <p>3. CONDITION OF DELIVERY</p> <p>The casting shall be delivered to the condition as stated in ordering drawing.</p> <p>4. REFERENCED DOCUMENTS</p> <p>EN 1563, DIN 1685-1, EN 1370, BNIF 359-01, MSS-SP-55, EN 10204, HW0980829 (PA 11.61) , HW0980831(PA 11.70)</p> <p>Equivalent standard can also be used after approval from BHEL</p> <p>5. DIMENSION & TOLERANCE</p> <p>5.1 Casting shall be supplied to the dimension shown on the drawing accompanying the order.</p> <p>5.2 Tolerance: General tolerances as per DIN1685 part-1, accuracy degree GTB18 are applicable.</p> <p>6. MANUFACTURE</p> <p>6.1 The method of manufacture is left to the discretion of the supplier unless otherwise mutually agreed. The supplier shall examine the suitability of casting with respect to ordering drawing. In case of any change required or for testing any modification required, the supplier shall discuss with the BHEL for approval.</p> <p>If additional material thickness for dross is retained in delivery condition, this shall be agreed with the purchaser.</p> <p>6.2 The manufacturer shall forward manufacturing plan and Non destructive Test plan, for approval, to BHEL before the commencement of production. BHEL reserves the right to inspect the production documents of the manufacturer. If a standard plan is available with the manufacturer this can be considered instead of individual manufacturing Plan.</p>				
हस्ताक्षर एवं दिनांक SIGN & DATE 20/11/05	हस्ताक्षर एवं दिनांक SIGN & DATE	हस्ताक्षर एवं दिनांक SIGN & DATE	हस्ताक्षर एवं दिनांक SIGN & DATE	हस्ताक्षर एवं दिनांक SIGN & DATE	हस्ताक्षर एवं दिनांक SIGN & DATE	हस्ताक्षर एवं दिनांक SIGN & DATE
सहमत विभाग AGREED DEPT	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	अनुवादक TRANSLATED BY	निर्माणकर्ता WORKED BY	जांचकर्ता CHECKED BY	पर्यवेक्षणकर्ता SUPERVISED BY
			TSX MEMBER KISHAN LAL N.R.De	SSG	P.NATH	VB ARORA
			QAX N.K.MANWAN			
APPROVED : संस्थान मानक समिति PLANT STANDARDS COMMITTEE			APPROVED : PLANT STANDARDS COMMITTEE			
REV 01			निर्माण PREPARED : MTE	जारी ISSUED : STANDARDS DIVISION	दिनांक DATE : 14-12-05	
11.6.05						

दिनांक एवं हस्ताक्षर SIGN & DATE 	संस्थान क्रय विनिर्देश (हीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19799 पृष्ठ का Page 2 of 6	
	SUPERSEDES INVENTORY NO. सामग्री सूची संख्या को अधिकृत करता है	7. HEAT-TREATMENT The casting ordered according to this specification shall have material with assured notch impact work and deformability. If the casting requires, according to the experience of the manufacturer, a ferritising heat-treatment for achieving the properties required in clause 10, or when the required properties are not achieved without heat treatment, and the necessity of ferritising heat treatment is felt, manufacturer shall inform the detailed process to BHEL.		
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	8. CHEMICAL COMPOSITION The chemical composition is to be selected by manufacturer to satisfy the required properties.			
	9. SELECTION OF TEST SAMPLES 9.1 The mechanical properties as given in clause 10.1 are to be determined for each casting with identification number. It is permitted in case of a delivery of a batch of casting with individual rough casting weight upto 500 kg to prove the properties on casting per heat per heat-treatment batch (if heat-treatment is carried out). All the casting of that heat and heat-treatment batch are subjected to hardness test and values reported in acceptance test certificate. For casting on which it is difficult to carried out direct hardness test, a test on integrally cast block of $\phi 30 \times 30$ may be agreed. Cast on samples shall only be separated (by cold method) after heat treatment where this applies. The parting surface should be ground and hardness measured on it.			
स्वत्वाधिकार एवं गोपनीय इस दस्तावेज में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं आवरण बना से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	9.2 The mechanical properties as per clause 10.1 are to be proved on the integrally cast keel block as per EN 1563 , fig-6 type 1 or 2 (depending upon the wall thickness in the zones of casting carrying pressure). In case of separately cast keel block, dimension of keel block should match the wall thickness of the casting body or as agreed in manufacturing plan.			
	9.3 The integral keel block shall be large enough so that the required specimens for testing of mechanical properties can be taken out in adequate number including repeat testing.			
हस्ताक्षर एवं दिनांक SIGN & DATE 	9.4 The standardised keel block shall be located on the casting as per foundry technological consideration and left to the manufacturer.			
	9.5 The location of keel block on casting is to be recorded by photography or on a sketch, which is to be delivered along with the acceptance test certificate.			
INVENTORY NO. P-2008	9.6 After internal testing and release by supplier, two keel blocks shall be left on the casting or separated, packed and sent to BHEL for control testing. If not earlier, the keel block shall be cut after ferritising heat treatment in case it is to be carried out to get ferrite structure.			
	9.7 Any deviation from the above shall be indicated by the supplier in the manufacturing plan for prior approval from BHEL.			
INVENTORY NO. P-2008	REV 01	DATE 11.6.05	निर्माणकर्ता WORKED BY 	SSG 1517
			जाँचकर्ता CHECKED BY P.NATH	

रिनक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (डीप - हरद्वार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19799 पृष्ठ का Page 3 of 6																		
सामग्री सूची संख्या को SUPERSEDES INVENTORY NO. अधिकृतित करता है	10. MECHANICAL PROPERTIES In the delivery conditions the casting shall have the following properties on integrally cast or separately cast keel block at room temperature: 10.1 For wall thickness <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"></td> <td style="width:35%; text-align: center;"><u>From 30 to 60mm</u></td> <td style="width:35%; text-align: center;"><u>above 60 to 200mm</u></td> </tr> <tr> <td>0.2% Proof Stress*</td> <td style="text-align: center;">: ≥ 250 N/mm²</td> <td style="text-align: center;">≥ 240 N/mm²</td> </tr> <tr> <td>Tensile strength</td> <td style="text-align: center;">: ≥ 390 N/mm²</td> <td style="text-align: center;">≥ 370 N/mm²</td> </tr> <tr> <td>Elongation (l₀=5d₀)</td> <td style="text-align: center;">: ≥ 15%</td> <td style="text-align: center;">≥ 12%</td> </tr> <tr> <td>Redn. in area</td> <td style="text-align: center;">: for information</td> <td style="text-align: center;">for information</td> </tr> <tr> <td>Impact**</td> <td style="text-align: center;">: ≥ 14J ***</td> <td style="text-align: center;">≥ 12J ****</td> </tr> </table> <p>* Determination of yield limit instead of 0.2% ps is permitted. ** Mean of three ISO-V samples. *** Smallest value should be minimum 11 J. **** Smallest value should be minimum 9 J</p>				<u>From 30 to 60mm</u>	<u>above 60 to 200mm</u>	0.2% Proof Stress*	: ≥ 250 N/mm ²	≥ 240 N/mm ²	Tensile strength	: ≥ 390 N/mm ²	≥ 370 N/mm ²	Elongation (l ₀ =5d ₀)	: ≥ 15%	≥ 12%	Redn. in area	: for information	for information	Impact**	: ≥ 14J ***	≥ 12J ****
	<u>From 30 to 60mm</u>	<u>above 60 to 200mm</u>																			
0.2% Proof Stress*	: ≥ 250 N/mm ²	≥ 240 N/mm ²																			
Tensile strength	: ≥ 390 N/mm ²	≥ 370 N/mm ²																			
Elongation (l ₀ =5d ₀)	: ≥ 15%	≥ 12%																			
Redn. in area	: for information	for information																			
Impact**	: ≥ 14J ***	≥ 12J ****																			
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	11 RECTIFICATION WELDING <u>Weldings are only allowed after approval by the purchaser in a written form.</u> If approved welding will be performed, the vendor shall fulfill following requirement. 11.1 Precondition: The supplier shall submit the following data and keep them up to date for approval and subsequent order. - Record of qualification of welder. - Report on procedure testing or a corresponding welding test on same material. The supplier shall prepare detail welding plan and submit to BHEL for approval. The data for pre and post treatment shall also be given in this plan. 11.2 Preparation of welding Complete removal of defects shall be done by grinding / gauging up to defect free base material and ensured by MPI/DPT as per HW0980829 (S1). All rectification portion shall be documented in the form of sketch indicating the location and dimension and shall be sent to BHEL prior to welding. The welding operation shall be performed only by the qualified welders according to approved welding plan. 11.3 Testing of weld spots All the rectification welding are subjected to magnetic particle or dye penetration test for determination of surface crack after grinding (and if agreed upon, after heat treatment).																				
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं आरक्षण रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।																					
हस्ताक्षर एवं रिनक SIGN & DATE 																					
सामग्री सूची संख्या INVENTORY NO. P-2008	REV 01	DATE 11.6.05	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">निर्माणकर्ता WORKED BY</td> <td style="width:15%;">SSG</td> <td style="width:20%; text-align: center;">  </td> <td style="width:15%; text-align: center;">11/7/05</td> </tr> <tr> <td>जांचकर्ता CHECKED BY</td> <td>P.NATH</td> <td style="text-align: center;">  </td> <td></td> </tr> </table>	निर्माणकर्ता WORKED BY	SSG		11/7/05	जांचकर्ता CHECKED BY	P.NATH												
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जांचकर्ता CHECKED BY	P.NATH																				

दिनांक एवं इस्पात संख्या & DATE		<p style="text-align: center;">संस्थान क्रय विनिर्देश (डीप - हरिद्वार)</p> <p style="text-align: center;">PLANT PURCHASE SPECIFICATION</p> <p style="text-align: center;">(HEEP - HARDWAR)</p>	<p style="text-align: right;">HW 19799</p> <p style="text-align: right;">पृष्ठ का Page 4 of 6</p>	
सामग्री सूची संख्या को अधिकृतिक करना है	SUPERSEDES INVENTORY NO.	<p>A volume test shall be conducted for weld portion with a depth of greater than 50% of wall thickness. The cracks in the rectified areas as well as surrounding area is not permissible. Quality level of repaired zone shall be same as the quality level of casting in that zone.</p>		
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical, Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत डीपी इलेक्ट्रिकल्स की सम्पत्ति है इस्तेमाल के इच्छा के बिना इस जानकारी का प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	<p>12 NDT AT SUPPLIER'S WORKS</p> <p>12.1 General</p> <p>The basis for NDT are plant standard HW0980829 (PA 11.61) and HW0980831 (PA11.70).</p> <p>As far as there are no stronger requirements on the quality levels in the additional ordering data, e.g. drawings, the general quality level for the casting is quality level 4, i.e. S4 and V4. The surfaces of the castings shall be clean and allow for visual inspection as per MSS SP 55. If NDT is performed, the surfaces shall be fit for testing, e.g. ground over.</p> <p>12.2 Scope of Inspection</p> <p>Following NDT shall be performed in delivery condition :</p> <p>a) Visual inspection of all outer and inner surfaces.</p> <p>b) MPI on following areas:</p> <ol style="list-style-type: none"> 1) areas with quality level S3 or better (see order drawing). According to HW0980829 (PA 11.61) e.g. especially the transition to the body of casting. <p>In case of excess material in the testing areas which will be machined off in the final shape, MPI can be omitted.</p> <ol style="list-style-type: none"> 2) Lifting elements like lifting lugs etc., especially the transition to the body of the casting. 3) Welded areas, if any. <p>On faces being inaccessible for a proper MPI, DPT may be performed instead.</p> <p>c) Volume examination by Ultrasonic testing on following areas according to HW0980831 (PA 11.70):</p> <ul style="list-style-type: none"> • Supports, guiding areas. • Lifting elements like lifting lugs etc. • Positions with grouted bolts. • Convex sealing areas • Areas with special requirements marked in the drawing or in a sketch. • Welded areas, if any. 		
		दिनांक एवं इस्पात संख्या DATE	01	DATE 11.6.05
सामग्री सूची संख्या INVENTORY NO.	P-2008	जांचकर्ता CHECKED BY P.NATH	P.NATH	[Signature]

दिनांक एवं हस्ताक्षर SIGN & DATE		<p style="text-align: center;">संस्थान क्रय विनिर्देश (डीप - हरिद्वार)</p> <p style="text-align: center;">PLANT PURCHASE SPECIFICATION</p> <p style="text-align: center;">(HEEP - HARDWAR)</p>	<p style="text-align: right;">HW 19799</p> <p style="text-align: right;">पृष्ठ का Page 5 of 6</p>			
सामग्री सूची संख्या को अतिरिक्त करता है SUPERSEDES INVENTORY NO.	<p>12.3 Criteria for Registration and Decision :</p> <p>a) Visual Inspection</p> <p>Criteria of standard MSS SP-55, Type I, III to VII, IX, X, XII shall be applied. Surface according to sketches a) and b) are acceptable.</p> <p>b) Surface crack inspection</p> <p>As far as there is no higher requirements mentioned in the drawing - generally criteria of standard HW0980829 (PA 11.61), quality class S4 shall be applied . For areas with special requirements, quality class S3 and for Sealing areas quality class S1 shall be applied.</p> <p>Remarks:</p> <p>In case of excess material on sealing areas or flange faces which will be machined off, the quality classes V1 to V4 approved by UT instead of the quality class S1 to S4 shall be applied accordingly</p> <p>c) Volume examination</p> <p>Criteria of standard HW0980831 (PA 11.70) shall be applied for recording. As far as there are no higher requirements mentioned in the drawing - generally criteria of standard HW0980831 (PA 11.70) , quality class V4 and for Sealing areas quality class V1 shall be applied for decision.</p> <p>Recordable indications, located in machining areas, can be judged individually by BHEL.</p>					
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	<p>13. TEST CERTIFICATE</p> <p>The supplier shall furnish 4 copies of test certificate 3.1B according to EN10204 to BHEL unless otherwise specified on the order. The test certificate shall contain the following, which must reach BHEL before or along with the casting.</p> <p>a. BHEL Reference:</p> <ul style="list-style-type: none"> - Material specification. - Order number. - Name and drawing number of the casting. - Identification No. <p>b. Supplier's Reference:</p> <ul style="list-style-type: none"> - Name or emblem. - Melt number and grade EN-GJS-400-18U-RT. - Method of melting. 					
	स्वत्वाधिकार एवं गोपनीय इस दस्तावेज में दी गई सूचना भारत देशी इलेक्ट्रिकल्स की संपत्ति है. इसका प्रयोग अथवा प्रसारण के बिना इस दस्तावेज को न किया जाए।					
दिनांक एवं हस्ताक्षर SIGN & DATE 9/17/05	REV 01	DATE 11.6.05	निर्माणकर्ता WORKED BY SSG	जांचकर्ता CHECKED BY P.NATH	 1513	

रिनक एवं हस्ताक्षर SIGN & DATE		<p style="text-align: center;">संस्थान क्रय विनिर्देश (हीप - हरिद्वार)</p> <p style="text-align: center;">PLANT PURCHASE SPECIFICATION</p> <p style="text-align: center;">(HEEP - HARDWAR)</p>	HW 19799 पृष्ठ का Page 6 of 6		
सामग्री सूची संख्या को SUPERSEDES INVENTORY NO. अधिकारित करना है	<ul style="list-style-type: none"> - Photograph of sketch of the location of the keel block. - Heat treatment details including actual temperature, holding times and cooling rates should be presented in the form of a sketch, if carried out. - Photograph of sketches with complete view showing the weld repair on the entire casting. - Reference to the list of qualified welders and to the approved welding procedure. <p>c. Test results:</p> <ul style="list-style-type: none"> - Melt analysis. - Mechanical test and its individual value including hardness test - Test report on magnetic particle inspection/dye penetration examination/ultrasonic. <p>d. Certification that the casting conform to the specified quantity level.</p> <p>e. Dimensional Report.</p>				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited It must not be used directly or indirectly in any way detrimental to the interest of the company	<p>14. CLEARANCE FOR DELIVERY</p> <p>14.1 BHEL evaluates the total results with regard th the intended operational requirements of the casting and judges according to admissibility of deviations, if any, form the properties required in this specification.</p> <p>14.1 The clearance does not release the supplier from the responsibility for hidden defects which are detected at later stage of manufacturing.</p> <p>15. IDENTIFICATION MARKING</p> <p>The identification numbers shown in the order and the standardised material designation EN-GJS-400-18U-RT are to be cast on the location shown in the ordering drawing. Other identification mark such as the seal of the customer, the inspector of the supplier of third party agency or works internal details are to be put directly near the identification no. All the keel blocks shall be clearly indentified with the identification number.</p>				
स्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रकाश एवं आरक्षण रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में अधिकारक हो न किया जाए।	<p>16. PACKING</p> <p>Each casting shall be suitably protected from corrosion and damage during transit by anticorrosive paint HE 1707 (Produced by Central Insulation Technology BHEL Bhopal) or Petrolatom (product of Bharat Petroleum). The overseas suppliers may use Tectyle 506 (produced by M/s Vololine, Germany).</p>				
हस्ताक्षर एवं रिनक SIGN & DATE 					
सामग्री सूची संख्या INVENTORY NO. P-2008	REV 01	DATE 11.6.05	निर्माणकर्ता WORKED BY SSG		1573
			जांचकर्ता CHECKED BY P.NATH		