



BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
FAX NO: 0091 1334 226462
PHONE NO: 0091 1334 281561

Enq. No. : T/T212/2017/5599/M

M/s.....

Sub: BHEL-HEEP/OPEN-TENDER (Turbine Component) / 2018

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 :-

SL. NO.	MATERIAL CODE	DESCRIPTION	SPECIFICATION NO.	QTY (No.)	DELIVERY SCHEDULE
1	W91310601038	Casting for IP Outer Casing Upper Half (R/M) Drg No. 01060156901 Rev:00	HW19791 Rev:01	1	30.05.2019
2	W91310601046	Casting for IP Outer Casing Lower Half (R/M) Drg. No. 01060156901 Rev:00	HW19791 Rev:01	1	30.05.2019

SPECIAL INSTRUCTIONS:

- VENDOR TO OFFER AS PER DRAWINGS/SPECIFICATION (Annexure-2) HERE ENCLSD.
- BHEL STANDARD PAYMENT TERM i.e "PAYMENT AFTER RECEIPT AND ACCEPTANCE OF MATERIAL/ITEM AT HEEP, BHEL-STORE" AS **PER GENERAL INSTRUCTION AND STANDARD TERMS & CONDITION (GISTC), VERSION JUNE 2017, Rev:01** SHALL BE APPLICABLE.
- THE QUOTATION SHALL BE VALID FOR A **MINIMUM PERIOD OF 120 DAYS**, EFFECTIVE FROM THE DATE OF TENDER OPENING.
- VENDOR TO CONFIRM THAT THEIR QUOTED RATES ARE NOT MORE THAN THOSE QUOTED FOR ANY OTHER CUSTOMER INCLUDING OTHER BHEL UNITS.
- Casting for IP Outer casing Upper half (U/H) and lower half (L/H) shall be procured from same source.**
- Inspection by third party (LRS/TUV/BV) as per quality plan no. **"QA/CF/QP/108, Rev00"**.
- Date of BL/GR will be treated as date of delivery for all purposes including penalty for Late Delivery. In case, vendor quotes date of final inspection as date of delivery then date of BL/GR should be between 15 days of date of final inspection otherwise penalty for late delivery would be applicable.
- Foreign vendors to either quote third party inspection charges (LRS/BV/TUV) separately in their offer or vendor to 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 If vendor do not quote third party inspection charges or not mention that third party inspection charges are included in quoted prices, then it shall be presumed that third party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.

9. Late delivery penalty will be applicable @ 0.5% per week or part thereof subject to maximum of 10% of unexecuted portion of the order. However, material code W91310601038, qty. 1 no. & W91310601046, qty. 1 no. will be considered as a single lot for late delivery. The remaining terms shall be as per **GENERAL INSTRUCTION AND STANDARD TERMS & CONDITION (GISTC), VERSION JUNE 2017, Rev:01**
10. EARLY DELIVERY IS ALSO ACCEPTABLE. VENDOR TO OFFER BEST DELIVERY SCHEDULE.
11. THE TOTAL QUANTITY MAY UNDERGO CHANGE AT THE TIME OF ORDERING.

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 submit **Tender Fee of Rs. 2,000/- (Rupees two thousand only)** in the form of Pay Order / Demand Draft (drawn in favor of ‘BHEL HARIDWAR’) only. It may be noted that if hard copy of any tender document is required, then the same may be collected against copy of Pay Order / Demand Draft of requisite tender fee (while original to be submitted with Part-I). **However, if no hard copy of any tender document is required from BHEL, no tender fee is required to be submitted.**

Vendors must also remit the requisite **EMD (Earnest Money Deposit) of Rs. 2, 00,000/- (Rupees two lakhs only)** in the form of Pay Order / Demand draft (drawn in favor of ‘BHEL HARIDWAR’). In case of foreign bidders e-payment may also be accepted as EMD. **If EMD is not submitted along with the offer (Part-I) then the offer shall be out rightly rejected.**

HEEP BHEL Hardwar PMD: ST046 approved vendors M70085 (M/s Dalian KSK), M72609(Ergocast Guss), S73105(M/s Hanwa),M72827(Friedrich Wilhelm),M79073(M/s AF Cividle),M70055(M/s Kocel Machinery)&M70070(M/s Dalian Huarui) for material codes W91310601038 & W91310601046 are exempted for submission of requisite EMD against this tender enquiry. PMD: ST046 vendors i.e.M04175(M/s Vimal Alloy), M11099 (M/s ISGEC Heavy), M41137 (M/s R.V. Casting),M72147 (M/s Siemens),M82051(M/s Bilfinger),M72887 (M/s Ludwig Lehner),M72888(C/Leipert Jung), M72889 (M/s Horst Jung),M72890(M/s G.M.W. Praezisions),R79118(M/s M.P.C. SRL) & M22745(M/s Walchandnager) are not exempted for submission of EMD.

Please submit separate drafts for EMD and tender fee in an envelope super-scribed with bold letters “EMD & Tender Fee” to be submitted with Part-I.

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 EMD & tender fee subjected to comply the following instruction:

As per GOI (Ministry of Finance) Office Memorandum dated 28th Feb-2018 it is mandatory from 01-04-2018 to register the Udyog Adhar Memorandum (UAM) of all MSME vendors on Central Public Procurement Portal (CPPP), failing which such MSME bidders shall not be able to avail the benefits available to MSEs as contained in Public Procurement Policy for MSEs Order-2012. All the MSME Vendors are advised to comply the same and confirmation for this should be mentioned in their offer / bids mandatorily.

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.

Tenders will be received in Tender Box kept in Tender Room and should be addressed to:

**THE HEAD OF MATERIAL MANAGEMENT,
Heavy Electrical Equipment Plant,
Bharat Heavy Electricals Limited,
HARIDWAR-249403 (Uttarakhand), INDIA.**

The date for opening of tender shall be 30.05.2018. Tenders will be received up to 1.45 P.M. on **30.05.2018** and opened on the same day at 2.00 P.M. in the Tender Room. **Please note that tender received after due date & time (1.45PM on 30.05.2018) will not be REPEAT will not be opened.** BHEL will not be responsible for any type of postal / courier delay.

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.

Amendments/Corrigendum, if any, will be hosted only on the websites mentioned above. Other terms and conditions will be as per tender documents.

Foreign and Indigenous bidders against open tender will necessarily have to obtain class – III DSCs. Procedure for application is available on www.bhel.com.

Documents submitted with the offer/bid by the bidder (original supplier) shall be 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 neither be accepted nor considered for evaluation of the bid.

Vendors operating from BHEL quarters, unauthorized colonies on BHEL land and Dharamshalas/ hotels shall not be considered, hence such vendors need not apply. Any vendor who is under hold (for the item)/ delisted/ banned with BHEL on date of opening of Part – 1 will not be allowed to quote for this tender. In case their offer is received, it may be out rightly rejected.

Please submit your offer only for the above requirement subject to our **GENERAL INSTRUCTIONS AND STANDARD TERMS & CONDITIONS (GISTC), Version June 2017, Rev: 01**. Please visit our site www.bhelhwr.co.in for **General Instructions and Standard Terms & Conditions (GISTC), Version June 2017, Rev: 01** for Tender Enquiries. All the bidders/vendors must ensure compliance of these GISTC.

Unregistered vendors may please visit our site www.bhel.com for filing up the Supplier Registration Form. Copy of filled Supplier Registration Form (SRF) may be submitted along with the offer.

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

Definition

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

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

ESSENTIAL INSTRUCTIONS

* Un-registered vendors may be approved by BHEL, if found suitable, on the basis of data furnished by them in Supplier Registration Form (SRF) for Foreign Vendors or Indigenous Vendors (as applicable).

* BHEL team may visit the vendor (s) works for verification of capability and capacity claimed in tender Documents/offer (s).

* The tenders shall be submitted in **two parts** in separate sub-envelopes clearly super scribing type of bid, tender no., due date and the name of vendor with full contact details.

Part I –

- Tender fee (if hard copy insisted from BHEL) & EMD
- Point wise reply/confirmation to **Pre-qualifying requirement (PQR)** as per Annexure-1 along with all necessary supporting documents in one go. **Noncompliance of this may lead to rejection offer.**
- Techno- Commercial Bid - it should be replica of price bid (copy of price bid without price part) in line with technical requirement as per drawings/Specifications. (Annexure-2).
- Quality plan (Annexure-3)

Part-II -

- Price Bid

All the sub-envelopes (Part-I & Part-II) to be put in a single covering envelope indicating tender no., due date and the name of vendor, e-mail id, with full contact details. Offer should be complete in all respect (i.e. Part-I & Part- II). BHEL may decide to ignore the offer in case of submission of incomplete offer

* Please submit your offer according to **General Instructions and Standard Terms & Conditions (GISTC), Version: June 2017 Rev: 01** for Tender Enquiries. Please visit our site www.bhelhwr.co.in for GISTC. All the bidders/vendors must ensure compliance of these **GISTC (VERSION: June-17, REV. 01).** **GISTC (VERSION: June- 17, REV. 01)** can also be referred by login to B2B Portal for Vendors.

REFERENCES:

Annexure-1 (Pre-Qualification Requirement)

Annexure-2 (Applicable Drawings and Specification HW19791)

Annexure-3(Quality plan)

ENQUIRY NUMBER T/212/17/5599/M

Indent no. 20175599

Pre-Qualification Requirements for IPOC Castings (Grade: GGG40.3)

Clauses 1-4 are mandatory requirements. Offers of vendors not meeting these requirements will not be considered.

1. Vendor should have experience of having supplied Casing castings in nodular Cast Iron, material grade GGG 40.3 or GGG40 or higher grade of minimum weight of 38 Tons (single piece- as cast weight, without any fabrication) for steam turbine applications. In support of this, vendor shall furnish experience details as per table at "a" below:

a. Table:

Sl. No.	Weight (kg)	Material Grade	Qty.	PO No.	Name & Address of customer	Date of supply

- b. Vendor to furnish documents like unpriced PO/Test Certificates/Invoice/dispatch note etc. of the castings listed in table 1 a. The test certificates (TC's) shall be certified by third party Inspection Agency. The weight of the supplied Casing casting shall be clearly indicated in the submitted documents and the PO/TC's/Dispatch note/Invoice etc must be clearly correlated.
2. a. The vendor must confirm to have suitable in-house manufacturing facilities for enquiry Items w.r.t. handling, melting, and heat treatment to meet the requirements of the enquiry specification and drawing.
 - b. Vendor shall furnish details (size, range, capacity etc.) of above facilities - handling, melting, casting and heat treatment, available in-house.
 - c. Vendor to furnish the schematic diagram (with weights at different stages) of the melting, handling and pouring of the enquiry items
3. a. Vendor to provide details of in-house facilities for carrying out destructive and non-destructive testing.
 - b. In case the above testing facilities are not available in-house, outsourcing of these tests from Govt. /NABL accredited labs is also acceptable. List of tests outsourced and details of accredited labs to be provided.
4. Vendor must provide clause wise confirmation of the enquiry specification and drawing. All documents shall be in English language and shall be Ink signed
5. Other Information

Vendor shall also provide the photographs/drawings of the castings furnished in the experience list at clause 1a, if available.

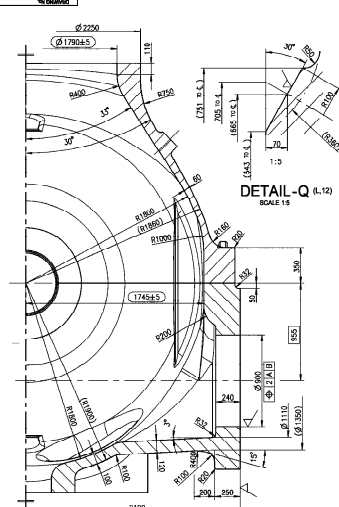

TS Gopalkrishnan
AGM/MTE


12/4/2018
Sujeet Kumar
Dy. Manager/ MTE

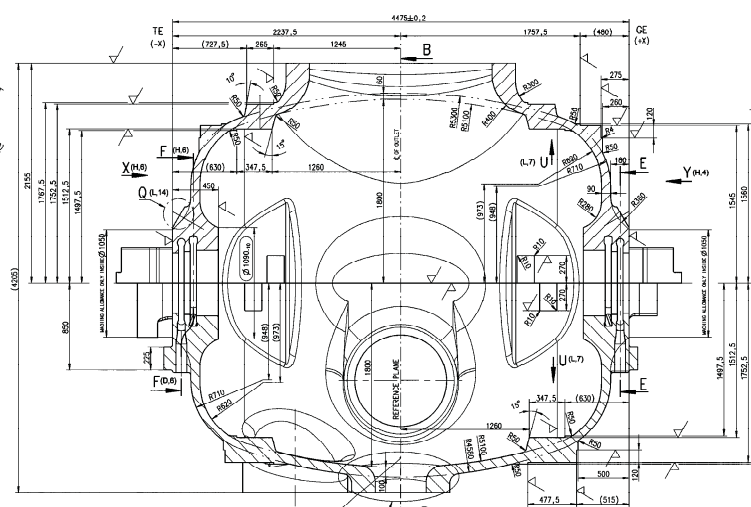
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

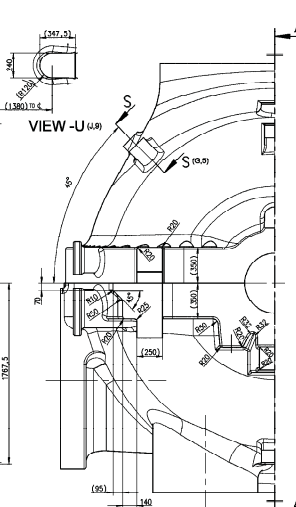
L0695-10901-0



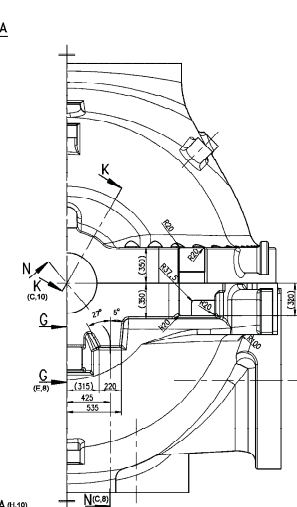
SECTION B-B (H.10)



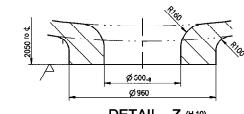
SECTION A-A (H.15)



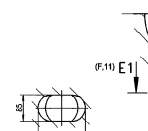
VIEW-U (H.15)



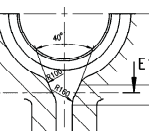
VIEW-Y (H.15)



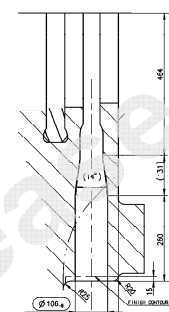
DETAIL-Z (H.10)



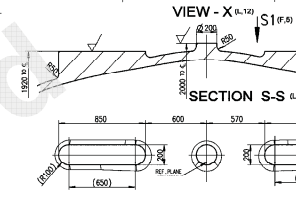
SECTION E1-E1 (H.10)



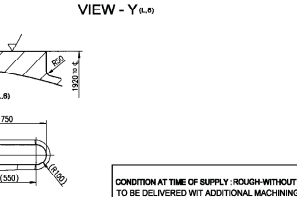
SECTION A-A (H.15)



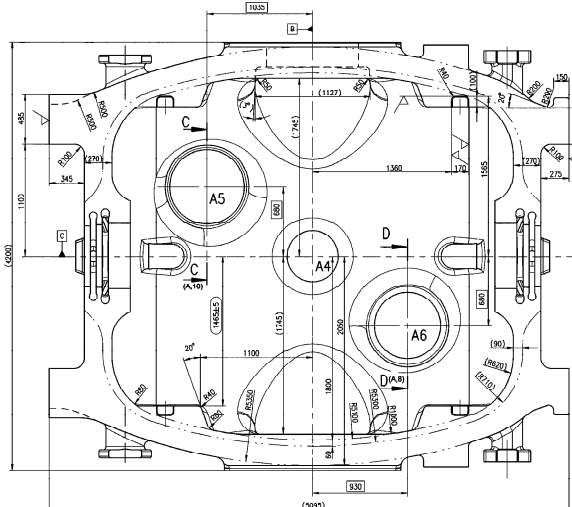
SECTION G-G (H.15)



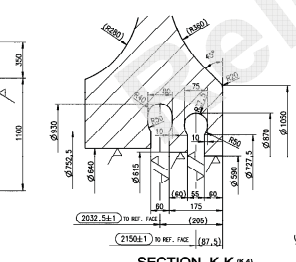
VIEW-S1 (H.15)



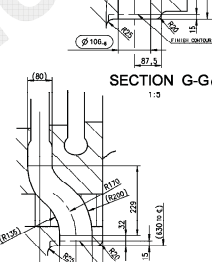
SECTION S-S (H.15)



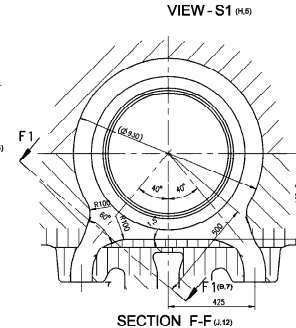
VIEW ON THE JOINT OF THE LOWER PART



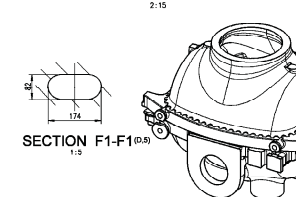
SECTION K-K (H.15)



SECTION N-N (H.15)



VIEW-F (H.15)



SECTION F1-F1 (H.15)

CONDITION AT TIME OF SUPPLY: ROUGH WITHOUT MACHINING, SURFACE MARKED WITH ✓ TO BE DELIVERED WITH ADDITIONAL MACHINING ALLOWANCE OF APPROX 15mm OVER DRAWING DIMENSIONS.
IDENTIFICATION NO.: CAST IDENTIFICATION NO. AT [REDACTED]
IN RAISED CHARACTERS.
TAPER OF PATTERN: +
DIN EN 12980

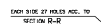
THEORETICAL EXACT DIMENSION NOT TO DIM 400 PART 11
DATE OF DRAWING: 11/05/2011
LATEST DATE: 11/05/2011

QTY.	REMARKS	ITEM NO.	DESCRIPTION	DRAWING NO.	MATERIAL CODE	UNIT WEIGHT
002	CASTING FOR IP OUTER CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001048	000001	00
003	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
004	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
005	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
006	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
007	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
008	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
009	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
010	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
011	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
012	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
013	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
014	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
015	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
016	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
017	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
018	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
019	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
020	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
021	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
022	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
023	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
024	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
025	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
026	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
027	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
028	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
029	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
030	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
031	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
032	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
033	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
034	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
035	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
036	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
037	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
038	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
039	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
040	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
041	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
042	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
043	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
044	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
045	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
046	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
047	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
048	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
049	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
050	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
051	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
052	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
053	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
054	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
055	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
056	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
057	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
058	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
059	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
060	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
061	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
062	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
063	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
064	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
065	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
066	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
067	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
068	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
069	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
070	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
071	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
072	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
073	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
074	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
075	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
076	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
077	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
078	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
079	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
080	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
081	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
082	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
083	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
084	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
085	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
086	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
087	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
088	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
089	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
090	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
091	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
092	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
093	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
094	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
095	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
096	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
097	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
098	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
099	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00
100	CASTING FOR IP CASING (H.15) (ROUGH)	0-10601-56901	IP	W1131001038	000001	00

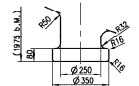
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

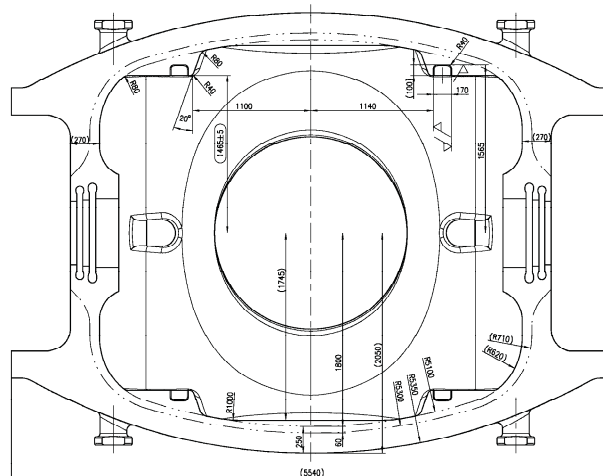
FORM DO 48 (F)



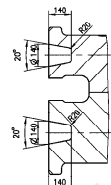
VIEW TO THE UPPER PART



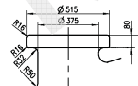
DETAIL -X1 (G,14)
1:10



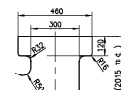
VIEW TO THE JOINT OF THE UPPER PART



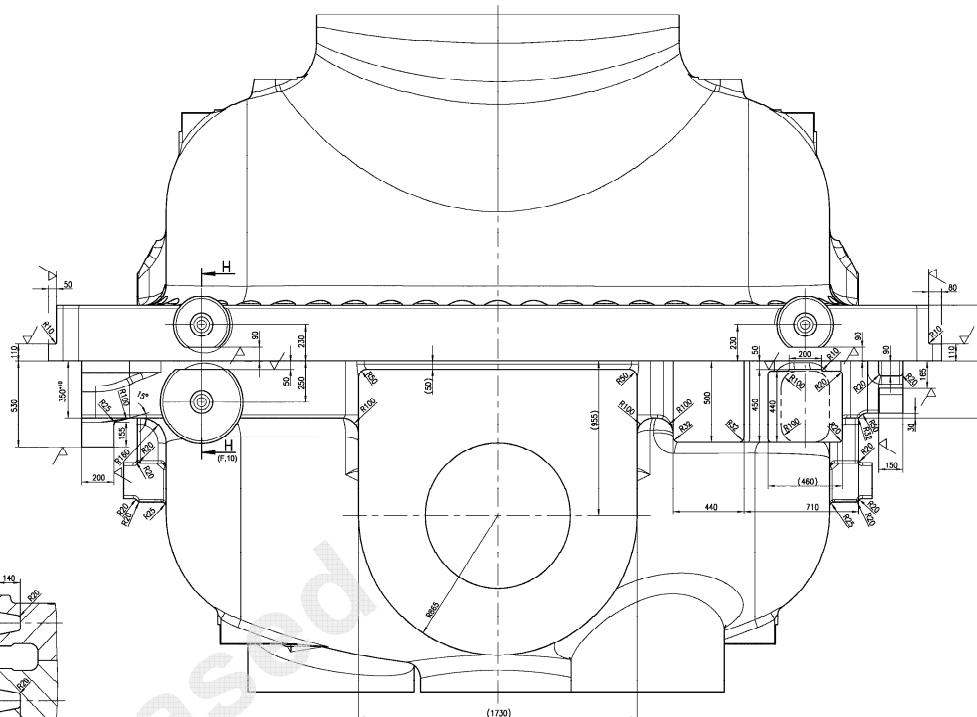
SECTION H-H (11.8)
1:10



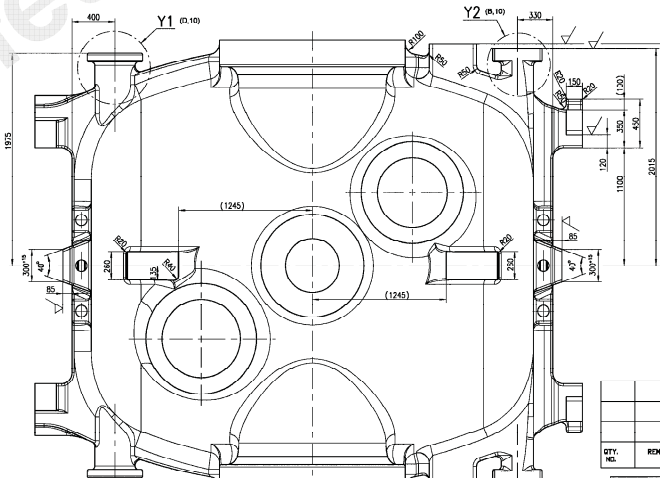
DETAIL - Y1 (E,8)
1:10



DETAIL - Y2 (F.S.)
1:10



VIEW - W (G,13)



VIEW TO THE LOWER PART

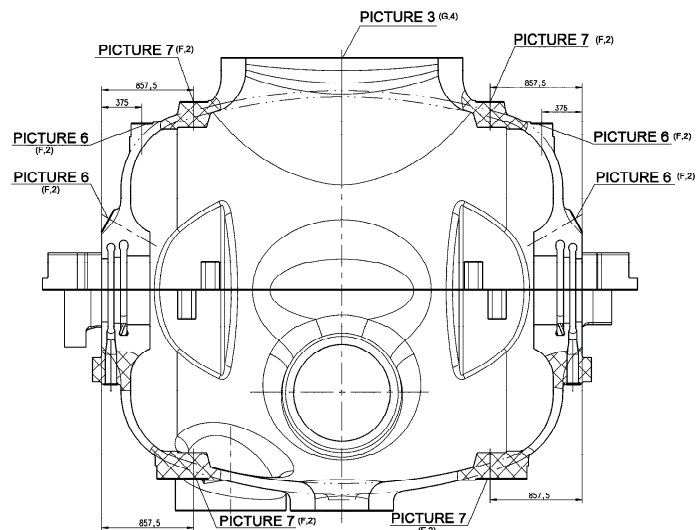
[illegible]

AD 50

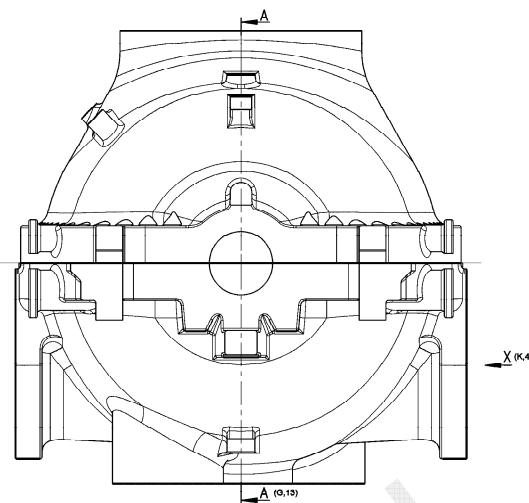
10695-10901-0

FIRST ANGLE PROJECTION

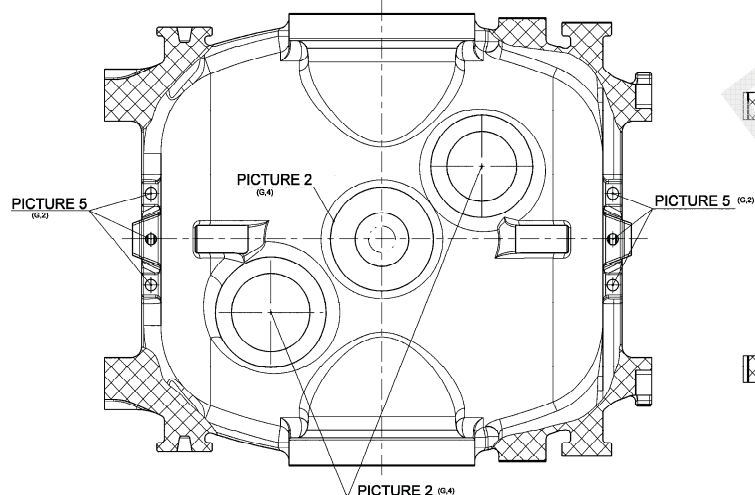
(ALL DIMENSIONS ARE IN mm)



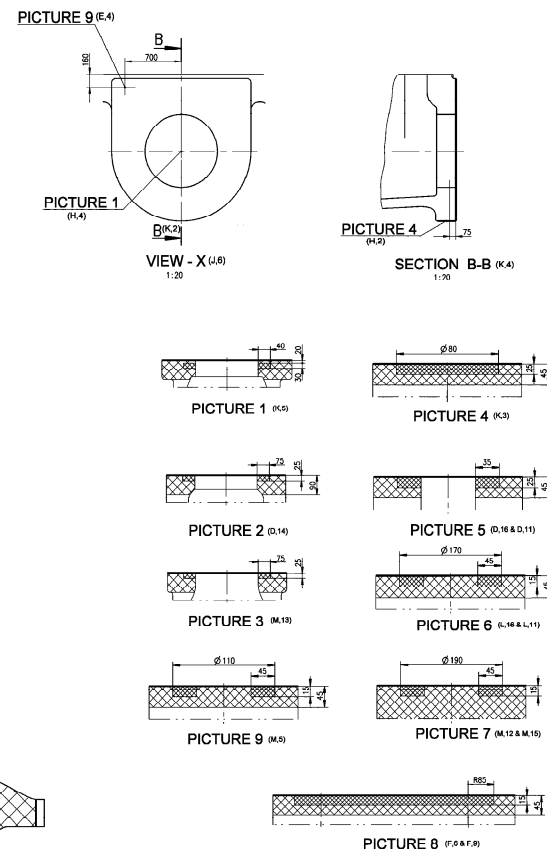
SECTION A-A (H.8)



VIEW AT THE UPPER PART



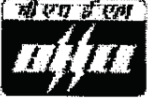
VIEW AT THE LOWER PART



IN THIS ZONE : QUALITY LEVEL S4,V4 (S3,V2,V1) ACC. TO ORDERING SPECIFICATION.
IN THIS AREA QUALITY LEVEL - S3-V2 ACC. TO ORDERING SPECIFICATION.
IN THIS AREA QUALITY LEVEL - V1 ACC. TO ORDERING SPECIFICATION.
FINANCE SURFACE: IN THE ZONE THREAD 1/8" PT.
(INFORMATION FOR THE CAST SUPPLIER)

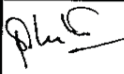
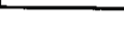
QTY.	REMARKS	ITEM	DESCRIPTION	DRAWING NO.	VNM	MATERIAL SPEC.	UNIT WEIGHT
002	CASTING FOR IP OUTER CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
003	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
004	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
005	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
006	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
007	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
008	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
009	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901
010	CASTING FOR IP CASING (L.H.) (ROUGH)	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901	0-10601-56901

GRADE OF UNIFORM	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
WELDING: A507 / A502 / 1104	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
GAS CUTTING: T2A0021101	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
WELDING: A507 / A502 / 1104	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
GAS CUTTING: T2A0021101	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
WELDING: A507 / A502 / 1104	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
GAS CUTTING: T2A0021101	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
WELDING: A507 / A502 / 1104	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
GAS CUTTING: T2A0021101	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE
WELDING: A507 / A502 / 1104	TYPE OF PRODUCT	NAME OF CUSTOMER/PROJECT	STEAM TURBINE

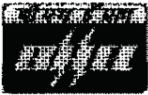
दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हार्डवयर) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19791 पृष्ठ का Page 1 of 6																			
		MODULAR GRAPHITE IRON CASTING EN-GJS-400-18U-RT (GGG-40.3) WITH IDENTIFICATION NUMBER																					
सामग्री सूची संख्या को SUPERSEDES INVENTORY NO.	सामग्री सूची संख्या को अधिकृत करता है	1. GENERAL This specification governs the quality of nodular cast iron of grade EN-GJS-400-18U-RT according to EN 1563 (Material no: 0.7043) .																					
		2. APPLICATION This material specification is valid for turbine components such as turbine casing (inner- and outer casings), valve casing etc.																					
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		3. CONDITION OF DELIVERY The casting shall be delivered to the condition as stated in ordering drawing.																					
		4. REFERENCED DOCUMENTS EN 1563, DIN 1685-1, EN 1370, BNIF 359-01, MSS-SP-55, EN 10204, HW0980829 (PA 11.61) , HW0980831(PA 11.70) Equivalent standard can also be used after approval from BHEL																					
स्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।		5. DIMENSION & TOLERANCE 5.1 Casting shall be supplied to the dimension shown on the drawing accompanying the order. 5.2 Tolerance: General tolerances as per DIN1685 part-1, accuracy degree GTB18 are applicable.																					
		6. MANUFACTURE 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. If additional material thickness for dross remains in delivery conditions, this shall be agreed with the purchaser. Therefore, in case of a prototype manufacturing, i. e. a casting which the supplier supplies to the purchaser for the first time, the supplier shall initiate a quality meeting with the purchaser.																					
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		<table border="1"> <thead> <tr> <th>नाम NAME</th> <th>दिनांक एवं हस्ताक्षर SIGNATURE & DATE</th> </tr> </thead> <tbody> <tr> <td>TSX</td> <td>KISHAN LAL</td> </tr> <tr> <td>MEMBER P.S.E.</td> <td>N. K. De</td> </tr> <tr> <td>GAX</td> <td>N.K. MANWANI</td> </tr> <tr> <td>सहमत विभाग AGREED DEPTT</td> <td>नाम NAME</td> </tr> <tr> <td></td> <td>दिनांक एवं हस्ताक्षर DATE & SIGNATURE</td> </tr> <tr> <td colspan="2"> स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE </td> </tr> <tr> <td>निर्माण PREPARED : MTE</td> <td>जाँची : मानक विभाग ISSUED : STANDARDS DIVISION</td> </tr> <tr> <td>11.6.05</td> <td>DATE : 10-02-2000</td> </tr> </tbody> </table>				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE	TSX	KISHAN LAL	MEMBER P.S.E.	N. K. De	GAX	N.K. MANWANI	सहमत विभाग AGREED DEPTT	नाम NAME		दिनांक एवं हस्ताक्षर DATE & SIGNATURE	स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE		निर्माण PREPARED : MTE	जाँची : मानक विभाग ISSUED : STANDARDS DIVISION	11.6.05	DATE : 10-02-2000
नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE																						
TSX	KISHAN LAL																						
MEMBER P.S.E.	N. K. De																						
GAX	N.K. MANWANI																						
सहमत विभाग AGREED DEPTT	नाम NAME																						
	दिनांक एवं हस्ताक्षर DATE & SIGNATURE																						
स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE																							
निर्माण PREPARED : MTE	जाँची : मानक विभाग ISSUED : STANDARDS DIVISION																						
11.6.05	DATE : 10-02-2000																						
सामग्री सूची संख्या INVENTORY NO.	दिनांक एवं हस्ताक्षर SIGN & DATE	11.6.05																					

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19791 पृष्ठ का Page 2 of 6	
		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.			
सामग्री सूची संख्या को SUPERSEDES INVENTORY NO. अपडेट किया है	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	6.3 Chaplet and inner iron chills are only allowed to be used after approval by the purchaser in a written form.			
		7. HEAT-TREATMENT 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.			
स्वत्वधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।		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 . 9.2 For the main casing wall the mechanical properties shall be determined on test coupons according to EN 1563, table 6, geometry I or II, depending on the wall thickness where the test coupons are attached. For cross sections > 200 mm, e.g. the joint flange area, the mechanical properties shall be determined on test coupons which shall have the area 100 x 250 mm. The test coupons shall be attached to the casting according to casting specific criteria. Their position shall be documented by sketches or photos.			
9.3 Before cutting off the test coupons shall be identified by the authorised inspector with the ID-No. and an appropriate issue showing the position on the casting. The test coupons must be heat treated together with the casting at every heat treatment.		9.4 The specimens for the determination of the mechanical properties shall be taken from the test coupon as near as possible to the cutting face. Two test coupons (one from the main wall and one from the joint flange area) shall be sent to the purchaser for his material receipt inspection. For castings having a weight <= 10,000 kg one test coupon is adequate.			
		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		Below 60mm	above 60 to 200mm	above 200mm (joint flange)	
0.2% Proof Stress* : $\geq 250 \text{ N/mm}^2$		$\geq 240 \text{ N/mm}^2$	$\geq 220 \text{ N/mm}^2$		
Tensile strength : $\geq 390 \text{ N/mm}^2$		$\geq 370 \text{ N/mm}^2$	$\geq 350 \text{ N/mm}^2$		
Elongation ($l_0 = 5d_0$) : $\geq 15\%$		$\geq 12\%$	$\geq 10\%$		
सामग्री सूची संख्या INVENTORY NO. P-3461	REV 01	DATE 11.6.05		निर्माणकर्ता WORKED BY SSG	10/31/05
				जांचकर्ता CHECKED BY P.NATH	10/31/05

समग्री सूची संख्या INVENTORY NO. P-3461	हस्ताक्षर एवं दिनांक SIGN & DATE 11/07/05	स्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग जो कि कंपनी के हित में हानिकारक हो न किया जाए ।	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	समग्री सूची संख्या को अधिप्रेषित करना है SUPERSEDES INVENTORY NO.	निर्माक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19791 पृष्ठ का Page 3 of 6	
					Redn. In area : for information Impact** : $\geq 14J$ ***	for information $\geq 12J$ ****	for information $\geq 10J$ *****		
* 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 ***** Smallest value should be minimum 8 J									
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 be 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). 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.									
12 NDT AT SUPPLIER'S WORKS									
12.1 General The basis for NDT are plant standard HW0980829 (PA 11.61) and HW0980831 (PA11.70).									
REV		DATE		निर्माणकर्ता		SSG			
01		11/07/05		WORKED BY				15/3	
				जांचकर्ता		P.NATH		11/07/05	
				CHECKED BY					

दिनांक एवं हस्ताक्षर SIGN & DATE			संस्थान क्रय विनिर्देश (डीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19791 पृष्ठ का Page 4 of 6		
समग्री सूची संख्या को अधिकारित करता है	SUPERSEDES INVENTORY NO.	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.					
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		12.2 Scope of Inspection Following NDT shall be performed in delivery condition : a) Visual inspection of all outer and inner surfaces. b) MPI on following areas: 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. In case of excess material in the testing areas which will be machined off in the final shape, MPI can be omitted. 2) Lifting elements like lifting lugs etc., especially the transition to the body of the casting. 3) Welded areas, if any. On faces being inaccessible for a proper MPI, DPT may be performed instead. c) Volume examination by Ultrasonic testing on following areas according to HW0980831 (PA 11.70): • 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.					
		12.3 Criteria for Registration and Decision : a) Visual Inspection 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. b) Surface crack inspection 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 or better be applied. Remarks: 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					
समग्री सूची संख्या INVENTORY NO.	P-3461	REV 01	DATE 11.6.05	निर्माणकर्ता WORKED BY	SSG		1973
				जांचकर्ता CHECKED BY	P.NATHI		

Annexure-2

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हार्डवयर) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 19791 . पृष्ठ का Page 5 of 6	
सामग्री सूची संख्या INVENTORY NO.	सुपरसेड्स INVENTORY NO.	c) Volume examination 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 shall be applied for decision. Recordable indications, located in machining areas, can be judged individually by BHEL.			
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.		13. TEST CERTIFICATE The supplier shall furnish 4 copies of test certificate B according to DIN 50049 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.			
स्वतंत्राधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं आशुतक रूप से किसी भी तरह प्रयोग को कि कंपनी के हित में हानिकारक हो न किया जाए ।		a. BHEL Reference: - Material specification. - Order number. - Name and drawing number of the casting. - Identification No. b. Supplier's Reference: - Name or emblem. - Melt number and grade EN-GJS-400-18U-RT. - Method of melting. - 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. c. Test results: - Melt analysis. - Mechanical test and its individual value including hardness test - Test report on magnetic particle inspection/dye penetration examination/ultrasonic. d. Certification that the casting conform to the specified quantity level. e. Dimensional Report.			
दिनांक एवं हस्ताक्षर SIGN & DATE		14. CLEARANCE FOR DELIVERY 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.			
सामग्री सूची संख्या INVENTORY NO.	REV	DATE	निर्माणकर्ता WORKED BY	SSG	1973
P-3461	01	11/6/05	जाँचकर्ता CHECKED BY	P.NATH	5-11-05

Annexure-2

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप - हार्डवार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)	HW 19791. पृष्ठ का Page 6 of 6			
सुपरसेड्स INVENTORY NO. सामग्री सूची संख्या को अतिरिक्तित करता है	14.1 The clearance does not release the supplier from the responsibility for hidden defects which are detected at later stage of manufacturing.					
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	15. IDENTIFICATION MARKING 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.					
	16. PACKING 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).					
सामग्री सूची संख्या INVENTORY NO. 9-3461	REV 01	DATE 11.6.05	निर्माणकर्ता WORKED BY जांचकर्ता CHECKED BY	SSG P.NATH		15/3

MANUFACTURER'S NAME AND ADDRESS				QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL	
VENDOR'S NAME		ITEM	CASTING FOR IP OUTER CASING		QIP NO.	QACF/QP/108					
BHEL		DRG. NO.	As per PO		REV	00					
SPEC.		HW19791									
REV		AS PER PO									
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY	REMARKS	
1	2	3	4	5	6	7	8	9	10	11	
1	MELT ANALYSIS	CHEMICAL COMPOSITION	CRITICAL	CHEMICAL	EACH HEAT	HW19791	HW19791	TC	P	V	
2	FERRITIZING & ANNEALING	TIME-TEMP. CONTROL	MAJOR	TIME-TEMP. CHART	100%	MANUFACTURER'S PRACTISE		TC	P	V	TO BE CARRIED OUT IF REQUIRED.
3	MARKING	IDENTIFICATION OF CASTING & KEEL BLOCK	MAJOR	VISUAL	100%	HW19791	HW19791		P	W	PHOTO/ SKETCH OF TEST-coupon TO BE MADE PART OF TCS
4	MECHANICAL TESTING	TENSILE, IMPACT	MAJOR	MECHANICAL	PER CASTING	HW19791	HW19791	IR	P	V	
5	PRELIMINARY NDT	MPI & UT	MAJOR	NDT	100%	HW19791 & DRAWING	HW19791 & DRAWING	IR	P	-	
6	FINAL INSPECTION										
6.1		VISUAL	MAJOR	VISUAL	100%	HW19791 & DRAWING	HW19791 & DRAWING	TC	P	W	
6.2		MPI, UT	MAJOR	NDT	100%	HW0980829 HW0980831 DRAWING		TC	P	W	
6.3		MECHANICAL TEST INCLUDING HARDNESS	MAJOR	MECHANICAL	EACH CASTING	BHEL APPROVED NDT SCAN PLAN HW19791		TC	P	W	
6.4		DIMENSIONS & WALL THICKNESS CHECK BY UT	MAJOR	MEASUREMENT	100%	DRAWING	DRAWING	TC	P	W	
7	IDENTIFICATION, RUST PREVENTION AND PACKING		MAJOR	PHYSICAL		HW19791	HW19791		P	-	

Signature

MANUFACTURER/SUBCONTRACTOR		LEGEND: I RECORDS IDENTIFIED WITH 'I' TICK SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER		FOR CUSTOMER USE		APPROVED BY	
----------------------------	--	---	--	------------------	--	-------------	--

MANUFACTURER'S NAME AND ADDRESS				QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL			
VENDOR'S NAME		ITEM	CASTING FOR IP OUTER CASING		QP NO.	QACE/QP/108							
BHEL		DRG. NO.	As per PO		REV	00							
SPEC.		HW19791											
REV		AS PER PO											
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY		REMARKS		
1	2	3	4	5	6	7	8	9	D	M	B	N	11
8	FINAL CLEARANCE	COMPLETENESS OF RECORDS	MAJOR	VISUAL	100%	HW19791	HW19791	TCS	P	V			KEEL BLOCKS (IDENTIFIED AND STAMPED BY THIRD PARTY INSPECTION AGENCY) TO BE SENT TO BHEL AS PER HW19791

NOTES:

1. Weldings are only allowed after approval from BHEL in written form (refer clause for 'Rectification Welding' in specification). If it is carried out, a fresh Quality plan to be furnished.
2. Only qualified NDT operators will be employed

Approved
13/01/18
Approved

MANUFACTURER/SUBCO NTRACTOR		LEGEND:		FOR CUSTOMER USE		APPROVED BY	
		! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL * NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER					