



# Bharat Heavy Electricals Limited

## Heavy Equipment Repair Plant

Tarna Shivpur Varanasi-221003

website: <https://herp.bhel.com>

Enquiry Number : **E-301-24-0125-62-1**    Date : **24/Oct/2024**

### Enquiry For Material :-

SI No	Material Description	Material Code	Quantity	Unit
1	FLANGE ASSEMBLY (HW-620.01)-- FULLY M/CD ITEM AS PER DRG. 21202456010 REV.01 WITH MATL. AS PER CBOM 21202456010 REV.01	RV1019433887	6.0	NOS

### Remarks

(A)SUPPLY CONDITION :

1. ITEM TO BE SUPPLIED AT BHEL HERP STORES.

2. PRE-DESPATCH INSPECTION WILL BE CARRIED OUT AS PER QUALITY PLAN AT PARTY'S WORKS BY BHEL REPRESENTATIVE AS GIVEN BELOW. HOWEVER PARTY MAY ARRANGE THE UST OF THE FORGING AT FORGING SUPPLIER WORKS.

FOR HW-614.01, HW-643.20, HW-643.21, HW-643.22, HW-643.23, HW-643.24, HW-643.25, HW-643.26, HW-643.27, HW-609.103, HW-609.104, HW-605.50, HW-614.02 & HW-681.00 :QP HW/MCD/008 REV.03;

FOR HW-604.11, HW-602.03, HW-602.06 & HW-657.01: QP RV/MCD/41 REV.00;

FOR HW-620.01: HW/MCD/042 REV.00.

FOR REVISION OF DRAWING/STANDARD/SPECIFICATION, PLEASE REFER THE ATTACHED DOCUMENT NO. "IND202411259", DURING INSPECTION.

(B)TECHNICAL DELIVERY CONDITION :

1. MATERIAL SHOULD BE AS PER SPECN./DRG. AS MENTIONED IN THE CBOM.

2. DIMENSIONS AND TOLERANCES TO BE MAINTAINED AS PER DRG.

3. ALL TECHNICAL REQUIREMENTS MENTIONED ON THE DRG. ARE TO BE FOLLOWED STRICTLY.

4. DIMENSION REPORT IS REQUIRED.

5. D.P. TEST FOR WELDED JOINTS SHALL BE PERFORMED AS PER SCOPE MENTIONED IN THE RESPECTIVE DRAWINGS.

6. ALL THE ITEMS SHOULD BE CO-RELATED WITH RESPECT TO SOURCE OF RAW MATL.

a) EITHER THROUGH MILL TC OF RAW MATL. SUPPLIER

b) IN CASE WHERE QUANTITY IS SMALL AND MILL TC IS NOT FEASIBLE. ITEM IS TO BE IDENTIFIED BY UNIQUE NO./HEAT NO. AND LAB TC SHALL BE PROVIDED FROM NABL APPROVED LABS ONLY.

7. THE DETAILS OF RAW MATL./UNIQUE NO. SHOULD BE PUNCHED ON THE ITEM AND ON TC. THE DETAIL FOR LINKING THE ITEM WITH RAW MATL. SOURCE TO BE MAINTAINED BY VENDOR.

=====

8. FOR FLANGE ASSLY. (HW-657.01): NOMINAL DIA 100 MM MARKED IN THE DRNG SHALL BE FINALISED BY PARTY AND FINAL SIZE TO BE MADE SHALL BE ASKED BY PARTY BEFORE FINAL MACHINING.

=====

9.FOR HW-605.50, ITEM SL.NO.-2(LIFTING ASSEMBLY,W97312037054) OF CBOM SHOULD BE PROCURED FROM APPROVED SOURCE ONLY AS MENTIONED BELOW.

M/S LISEGA INDIA PRIVATE LIMITED,PANCHMAHAL-GUJARAT.

10. RAW MATL. IS TO BE PROCURED FROM APPROVED SOURCE OF BHEL AS MENTIONED BELOW.

APPROVED SOURCES FOR ROD HW10673 (PMD ST09/15) ARE:

1 M/S STEEL AUTHORITY OF INDIA LIMITED NEW DELHI

2 M/S BGH EDELSTAHL FREITAL GMBH FREITAL

3 M/S BOHLER INTERNATIONAL GMBH VIENNA

- 4 M/S KALYANI CARPENTER SPECIAL STEEL LTD PUNE
- 5 M/S KISCO CASTINGS (INDIA) LTD MANDI GOBINDGARH
- 6 M/S LAXCON STEELS LIMITED AHMEDABAD
- 7 M/S MAHINDRA SANYO SPECIAL STEEL PRIVATE LIMITED RAIGAD
- 8 M/S MISHRA DHATU NIGAM LIMITED HYDERABAD
- 9 M/S STAR WIRE (INDIA) LIMITED BALLABGARH

APPROVED SOURCES FOR ROD HW10568 (PMD ST09/09) ARE:

- 1 M/S BGH EDELSTAHL FREITAL GMBH FREITAL
- 2 M/S BOHLER INTERNATIONAL GMBH VIENNA
- 3 M/S LAXCON STEELS LIMITED AHMEDABAD
- 4 M/S MAHINDRA SANYO SPECIAL STEEL PRIVATE LIMITED RAIGAD
- 5 M/S STAR WIRE (INDIA) LIMITED BALLABGARH
- 6 M/S STEEL AUTHORITY OF INDIA LIMITED NEW DELHI
- 7 M/S VISVESVARAYA IRON & STEEL LTD. NEW DELHI

APPROVED SOURCES FOR ROD HW10573 (PMD ST09/11) ARE:

- 1 M/S BGH EDELSTAHL FREITAL GMBH FREITAL
- 2 M/S BOHLER INTERNATIONAL GMBH VIENNA
- 3 M/s DIKSHA ENTERPRISES BHOPAL
- 4 M/S MAHINDRA SANYO SPECIAL STEEL PRIVATE LIMITED RAIGAD
- 5 M/S NAVRATNA METAL CORPORATION MUMBAI
- 6 M/s SANDOZ METALS (INDIA) MUMBAI
- 7 M/S STAR WIRE (INDIA) LIMITED BALLABGARH
- 8 M/S STEEL AUTHORITY OF INDIA LIMITED NEW DELHI
- 9 M/S VISVESVARAYA IRON & STEEL LTD. NEW DELHI

11. FOLLOWING MATL. WILL BE GIVEN AS FREE ISSUE MATERIAL PER ASSLY BY BHEL-HERP  
A) FOR HW-620.01; ITEM NO. 1 (HW10568), DIA =230MM, LENGTH=310MM (QPA-1 NO.)

(C) TEST CERTIFICATE : REQUIRED FOR

- i) CHEMICAL AND MECHANICAL PROPERTIES OF RAW MATERIAL AND OTHER TESTS AS MENTIONED IN RESPECTIVE MATERIAL SPECIFICATION.
- (ii) UST OF PLATES MORE THAN 40 MM FOR MATL. AA10119 & MORE THAN 25 MM FOR MATL. AA10401.
- (iii) DP TEST OF WELD JOINTS.
- (iv) DFT OF PAINT AND NO. OF COATS.

(D) GUARANTEE/WARRANTY CERTIFICATE :REQUIRED FOR 24 MONTHS AGAINST ANY MANUFACTURING DEFECTS.

(E) PACKING INSTRUCTION: ALL THE ITEMS TO BE SUPPLIED IN PROPERLY PACKED CONDITION IN WOODEN BOX OF 1" THICK PLANK WITH 1.5"X4" BKTS. FOR PAINTING AND PRESERVATION REFER SPECN. ST33004. MOBILUX GREASE SHOULD BE USED FOR PRESERVATION OF THREADS AND HOLES .

FOR HW-614.01, HW-614.02, HW-643.20, HW-643.21, HW-643.22, HW-643.23, HW-643.24, HW-643.25, HW-643.26, HW-643.27, HW-657.01, HW-620.01 & HW-681.00 ;  
ALL THE SURFACES TO BE PAINTED WITH LIGHT BROWN TRP(MIN. 2 COATS)

FOR HW-602.03 & HW-602.06:

- A.MACHINED SURFACE TO BE PAINTED AS-
  - 1. PRIMER PAINT YELLOW TRP ( MIN DFT 20 MICRONES - 1 COAT)
  - 2. FINISH PAINT STEEL BLACK TRP (MIN DFT 50 MICRONES - 2 COATS )
- B. UNMACHINED SURFACE TO BE PAINTED WITH LIGHT BROWN TRP (2 COATS).

FOR HW-609.103, HW-609.104 & HW-605.50:

- A.MACHINED SURFACE TO BE PAINTED AS-
  - 1. PRIMER PAINT YELLOW TRP ( MIN DFT 20 MICRONES - 1 COAT)
  - 2. FINISH PAINT STEEL BLACK TRP (MIN DFT 50 MICRONES - 2 COATS )
- B. UNMACHINED SURFACE TO BE PAINTED AS-
  - 1. EPOXY BASED ZINC RICH PRIMER PAINT (AA56114) ( MIN DFT 80 MICRONES - 2 COATS)
  - 2. INETRMEDIATE PAINT EPOXY TiO2 PIGMENTED POLYAMIDE CURATED PAINT (AA56112) (MIN DFT 70 MICRONES - 1 COAT)
  - 3. FINISH PAINT ALIPHATIC ACRYLIC POLYURETHANE (AA56142) (LIGHT BLUE RAL5012) (MIN DFT 60 MICRONES - 2 COATS)

FOR HW-604.11 ;

- A. MACHINED SURFACE TO BE PAINTED WITH LIGHT BROWN TRP (2 COATS)
- B. UNMACHINED SURFACE TO BE PAINTED WITH RED OXIDE PRIMER (AA56101) ( MIN DFT 80 MICRONES - 2 COATS)

(F) DELIVERY SHALL BE 5 MONTHS FROM THE DATE OF FREE ISSUED MATERIAL RECEIPT (WHERE FI IS INVOLVED).

(G) THE APPROXIMATE PRICE OF FI/ASSY IS GIVEN BELOW:  
FOR HW-620.01 = RS. 19268/-

(H) FOR RODS, IF VENDOR IS UNABLE TO PROCURE RAW MATL. FROM APPROVED SOURCE DUE TO SMALL QTY THEY MAY PROCURE IT FROM TRADER AND FURNISH NABL TC.

(I) ALL TERMS AND CONDITIOSN SHALL BE AS PER GTC AS ATTACHED.

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY  
(FOR INDIAN VENDORS)**

Amendment- 25  
ANNEXURE-A

**ITEM DESCRIPTION:  
ENQUIRY NO:**

Sl No	BHEL STANDARD TERMS & CONDITIONS	Confirmation of supplier (Yes/No)
1	A) OFFER MUST BE SUBMITTED IN TWO PART BID SYSTEM NAMELY TECHNO-COMMERCIAL BID & PRICE BID FOR THE ITEM AS PER ENQUIRY IN SEPARATE SEALED COVERS: (I) TECHNO – COMMERCIAL BID & (II) PRICE BID SHOULD BE CLEARLY SUPERSCRIBED THE ENQUIRY NO. AND DUE DATE ON THE ENVELOPES. (B) UN-PRICED OFFER WITH TECHNICAL BID IS REQUIRED TO BE FURNISHED BY THE VENDOR. TECHNICAL OFFER SHOULD CLEARLY REFLECT AT LEAST OUR MATERIAL CODE, ITEM DESCRIPTION & QUANTITY. (C) THE DIFFERENCE BETWEEN “UN-PRICED OFFER” AND “PRICED OFFER” SHOULD BE ONLY THE PRICES WHEREVER APPLICABLE. THE RATES AND AMOUNT SHOULD BE CLEARLY WRITTEN IN FIGURES AND WORDS BOTH WITHOUT ANY CUTTING / OVERWRITING. (D) <b>IMPORTANT POINT FOR VENDOR WHO HAVE NOT SUBMITTED THE SRF (SUPPLIER REGISTRATION FORM) SO FAR:</b> THE VENDORS, WHO HAVE NOT SUBMITTED THE SRF SO FAR, MUST SUBMIT THE SAME ALONG WITH PART- 1 BID. THE SRF TO BE DOWNLOADED FROM WWW.BHEL.COM OR <a href="https://herp.bhel.com">https://herp.bhel.com</a> .	
2	BID SHOULD BE FREE FROM CORRECTION, OVERWRITING, USING CORRECTIVE FLUID, ETC. ANY INTERLINEATION , CUTTING , ERASURE OR OVERWRITING SHALL BE VALID ONLY IF THEY ARE ATTESTED UNDER FULL SIGNATURE(S) OF PERSON(S) SIGNING THE BID ELSE BID SHALL BE LIABLE FOR REJECTION .	
3	YOUR TECHNO COMMERCIAL BID SHOULD MENTION THAT PRICE BID HAS BEEN SENT IN A SEPARATE ENVELOPE GIVING ITS REFERENCE.	
4	VENDOR TO ENSURE THAT ITEM & QUANTITY MENTIONED IN THE OFFERS ARE EXACTLY SAME AS PER ENQUIRY. IF ANY DEVIATION IS THERE PARTY MUST MENTION SPECIFIC HEREWITH OTHERWISE BHEL SHALL CONSIDER THAT ITEM & QUANTITY AS REQUIRED IN ENQUIRY.	
5	PLEASE MAKE SURE THAT THERE IS NO DISCREPANCY IN BETWEEN ACCEPTED TERMS & CONDITIONS MENTIONED IN THE CHECK LIST AND QUOTATION SUBMITTED BY VENDOR AND IF FOUND SO THEN THE TERMS & CONDITIONS WHICH ARE BENEFICIAL TO BHEL WOULD ONLY BE CONSIDERED.	
6	THE TENDER RECEIVED AFTER 14:00 HRS ON THE DUE DATE WILL NOT BE CONSIDERED.	
7	PART-I CONTAINING THE TECHNO-COMMERCIAL BID WILL BE OPENED ON THE DATE AND TIME SPECIFIED IN THE ENQUIRY, IN THE PRESENCE OF THOSE TENDERERS WHO WISH TO ATTEND. PART-II i.e., PRICE BID WILL BE OPENED ONLY OF THOSE BIDDERS WHO ARE FOUND TECHNO-COMMERCIALY SUITABLE AFTER SCRUTINY OF THEIR PART-I OFFERS.	
8	NO REVISED OFFERS WILL BE ACCEPTED UNLESS ASKED BY BHEL AFTER OPENING OF PART-1 BID IN ANY CASE.	
9	THE RATE OF GST SHOULD BE CLEARLY MENTIONED IN THE OFFER.	
10	VALIDITY OF OFFER SHOULD BE MINIMUM 90 DAYS FROM THE DATE OF TECHNO - COMMERCIAL BID OPENING OR 60 DAYS FROM THE REVERSE AUCTION DATE.	
11	BHEL RESERVES THE RIGHT TO REJECT THE OFFER, WHICH IS HAVING DEVIATIONS TO THE TERMS AND CONDITIONS GIVEN IN THE TENDER ENQUIRY.	
12	<b>PRICING TERMS:</b> PRICES ONCE QUOTED SHALL REMAIN FIRM WITHIN THE VALIDITY OR ANY EXTENSION THEREOF FOR PLACEMENT OF ORDER, TILL COMPLETE EXECUTION OF THE ORDER, WITHOUT ANY ESCALATION/INCREASE FOR ANY REASON, WHATSOEVER, UNLESS SPECIFICALLY PROVIDED FOR IN THE ENQUIRY & PO. IN CASE OF FOREIGN VENDORS, THE QUOTED PRICE SHALL BE TAKEN AS INCLUSIVE OF THIRD PARTY INSPECTION AND TESTING CHARGES AS CALLED FOR IN THE NIT.	
13	<b>BID EVALUATION:</b> UNLESS SPECIFIED IN THE TENDER, VENDOR MUST NOTE THAT BHEL WILL ARRIVE THE L1 STATUS FOR EACH ITEM ON LANDED COST BASIS. ACCORDINGLY, ORDER SHALL BE PLACED ON LOWEST BIDDER ON INDIVIDUAL ITEM BASIS ONLY, UNLESS BHEL ASK FOR TERMS OTHER THAN THIS ON EXCEPTION BASIS. IN THE COURSE OF EVALUATION, IF MORE THAN ONE BIDDER HAPPENS TO OCCUPY L-1 STATUS, EFFECTIVE L-1 WILL BE DECIDED BY SOLICITING DISCOUNTS FROM THE RESPECTIVE L-1 BIDDERS. IN CASE MORE THAN ONE BIDDERS HAPPENS TO OCCUPY THE L-1 STATUS EVEN AFTER SOLICITING DISCOUNT, THE L-1 BIDDER SHALL BE DECIDED BY A TOSS/DRAW OF LOTS, IN THE PRESENCE OF THE RESPECTIVE BIDDER(S) OR THEIR REPRESENTATIVE(S). RANKING WILL BE DONE ACCORDINGLY. BHEL'S DECISION IN SUCH SITUATION SHALL BE FINAL AND BINDING.	
14	<b>TERMS OF DELIVERY:</b> <b>I. FOR INDIGENOUS SUPPLIERS:</b> THE TERMS OF DELIVERY SHOULD BE QUOTED ON F.O.R. DESTINATION (BHEL HERP STORES VARANASI) BASIS ONLY (i.e. FREIGHT & INSURANCE ON VENDOR'S ACCOUNT ONLY). IF ANY BIDDER STILL QUOTES OTHER DELIVERY TERM IN PLACE OF BHEL HERP STORES, THEIR OFFER MAY NOT BE CONSIDERED FOR FURTHER PROCESSING. IT MUST BE SPECIFICALLY NOTED.	
15	IF ANY INDIAN SUPPLIERS ARRANGE SUPPLY FROM FOREIGN PRINCIPLES/WORKS, TERMS OF DELIVERY SHOULD BE QUOTED ON CIF JNPT MUMBAI (INDIA) SEA PORT BASIS ONLY (i.e. FREIGHT & INSURANCE ON VENDOR'S ACCOUNT UPTO JNPT MUMBAI (INDIA) SEA PORT) OR CFR MUMBAI AIRPORT. HOWEVER FREIGHT CHARGES AS PER BHEL TRANSPORT CONTRACT FROM JNPT MUMBAI SEAPORT/MUMBAI AIRPORT TO BHEL VARANASI FOR EACH ITEM WILL BE LOADED AT THE TIME OF TOTAL LANDED COST CALCULATION.	
16	INSURANCE CHARGES SHALL BE TO VENDOR'S ACCOUNT ONLY IF PRICE QUOTED ON BHEL HERP STORES BASIS. IN CASE PRICE QUOTED IS ON CIF JNPT MUMBAI BASIS/ CFR MUMBAI AIRPORT BASIS, INSURANCE UP TO CIF JNPT MUMBAI/ MUMBAI AIRPORT SHALL BE IN VENDOR ACCOUNT.	
17	<b>PAYMENT TERMS:</b> <b>I.FOR MSEs VENDORS:</b> 100% AGAINST SRV WITHIN 45 DAYS THROUGH EFT (ELECTRONIC FUND TRANSFER) FROM THE DATE OF RECEIPT OF MATERIAL (DATE OF SRV) AT BHEL HERP VARANASI STORES AS PER PO. <b>II.FOR MEDIUM ENTERPRISES VENDORS:</b> 100% AGAINST SRV WITHIN 60 DAYS THROUGH EFT (ELECTRONIC FUND TRANSFER) FROM THE DATE OF RECEIPT OF MATERIAL (DATE OF SRV) AT BHEL HERP VARANASI STORES AS PER PO. <b>III. FOR NON- MSME:</b> 100% AGAINST SRV WITHIN 90 DAYS THROUGH EFT (ELECTRONIC FUND TRANSFER) FROM THE DATE OF RECEIPT OF MATERIAL (DATE OF SRV) AT BHEL HERP VARANASI STORES AS PER PO. <b>IV.BHEL HERP WILL MAKE PAYMENTS IN TWO PARTS: -</b> <b>PART-I:</b> BASIC INVOICE VALUE AND ALL OTHER CHARGES (EXCEPT GST AMOUNT) WILL BE PAID AS PER P.O. PAYMENT TERMS. <b>PART-II:</b> GST PORTION OF INVOICE VALUE WILL BE PAID ONLY AFTER FULFILLING FOLLOWING CONDITIONS: <b>(A)</b> PAYMENT OF GST AMOUNT INTO GOVT. ACCOUNT BY SUPPLIER AGAINST INVOICE RAISED TO BHEL. <b>(B)</b> FILING OF GST RETURN <b>(C)</b> DISPLAY OF GST CREDIT AGAINST BHEL GSTIN NO.09AAACB4146P2ZC IN GSTR-2B ON GSTN PORTAL. Note: 1. PAYMENT WILL BE MADE AFTER ACCEPTANCE OF MATERIAL. 2. ADVANCE PAYMENT IS NOT ACCEPTABLE BY BHEL HERP VARANASI IN ANY CASE. 3. IF ANY SUPPLIER FALLS UNDER “NON MSE” OR “NON MEDIUM” CATEGORY, THEIR PAYMENT TERM WILL BE CONSIDERED AS NON MSME SUPPLIER PAYMENT WITHOUT ANY INTIMATION.	
18	<b>LOADING OF PAYMENT TERM:</b> IN CASE OF DEVIATION, LOADING OF INTEREST RATE @SBI MCLR RATE + 6% (AS ON PART-1 OPENING DATE) SHALL BE LOADED WHILE ARRIVING AT LANDED COST TO BHEL.	
19	<b>LIQUIDATED DAMAGES/ LATE DELIVERY (LD) PENALTY CLAUSE:</b> SUBJECT TO FORCE MAJEURE CONDITIONS, FAILURE TO SUPPLY WITHIN PURCHASE ORDER DELIVERY SCHEDULE WILL MAKE THE SUPPLIER LIABLE TO AN UNCONDITIONAL PENALTY OF 0.5 % PER WEEK OR PART THEREOF SUBJECT TO THE MAXIMUM OF 10% OF THE UNDELIVERED PURCHASE ORDER VALUE EXCLUDING TAXES & DUTIES. NO GRACE PERIOD SHALL BE GIVEN.	
20	<b>LOADING OF LIQUIDATED DAMAGES (LD):</b> DEVIATION TO ABOVE STANDARD PENALTY CLAUSE, MAXIMUM LOADING OF 10% (IN CASE OF NON ACCEPTANCE OF LD CLAUSE) OR PART THEREOF (IN CASE OF PART ACCEPTANCE OF LD) SHALL BE LOADED WHILE ARRIVING LANDED COST TO BHEL. <b>LOADING OF DELIVERY TERM:</b> FURTHER IF DEVIATION IS FOUND IN THE ACCEPTED DELIVERY TERM AS WELL AS ACCEPTED PENALTY TERM, SUITABLE LOADING BASED ON TRANSPORTATION TIME TO BE TAKEN SHALL BE LOADED WHILE ARRIVING LANDED COST TO BHEL HERP STORES WHICH MAY BE AS BELOW: (i) 1% OF THE BASIC COST FOR INDIAN SUPPLIERS,	

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY  
(FOR INDIAN VENDORS)**

Amendment- 25  
ANNEXURE-A

21	<b>DELIVERY PERIOD:</b> VENDOR SHOULD STRICTLY QUOTE THE DELIVERY PERIOD AS MENTIONED IN NIT.	
22	IF ANY VENDOR DOES NOT SUPPLY THE ITEM WITHIN THE PURCHASE ORDER DELIVERY PERIOD, BHEL MAY/MAY NOT ACCEPT THE SUPPLY AT ITS SOLE DISCRETION.	
23	<p><b>BANK GUARANTEE:</b> THE COST OF BHEL FREE ISSUE MATERIALS PER SET/PER ASSEMBLY AND TOTAL COST OF FIM FOR THE ENQUIRY ARE MENTIONED IN NIT. IN THIS REGARD:</p> <p>1 (a). PARTY WILL HAVE TO SUBMIT EQUAL AMOUNT OF SECURITY DEPOSIT (IN THE FORM OF 10% BG/FDR/DD/CHEQUE/BANK TRANSFER AND 90% INDEMNITY BOND) TOWARDS THE COST OF BHEL MATERIALS TO BE ISSUED TO THEM BEFORE THE ISSUE OF BHEL MATERIALS TO THEM. AT ANY POINT OF TIME, PROPORTIONATE SECURITY DEPOSIT OF TOTAL/CUMMULATIVE MATERIAL VALUE SHOULD BE MAINTENED.</p> <p>(b) IN CASE OF TRIAL/DEVELOPMENTAL ORDER, PARTY WILL HAVE TO SUBMIT 30% BG/FDR/DD/CHEQUE/BANK TRANSFER AND 70% INDEMNITY BOND TOWARDS THE COST OF BHEL FIM.</p> <p>2. BHEL MAY ASK THE SUPPLIER FOR SUBMISSION OF FULL SECURITY DEPOSIT AMOUNT OR PART DEPENDING UPON THE AVAILABILITY OF FREE ISSUE MATERIALS AT OUR END.</p> <p>3. PARTY MUST HAVE TO SUBMIT THE SAME WITHIN 02 WEEK TIME FROM THE DATE OF WRITTEN INTIMATION BY BHEL WITHOUT FAIL OTHERWISE IT WOULD TREATED AS FAILURE OF HONOURING PO TERMS AND ACCORDINGLY BHEL MAY CANCEL THE PURCHASE ORDER AND INITIATE ALTERNATE PROCUREMENT ACTION AT SUPPLIER RISK &amp; COST.</p> <p>4. IN CASE OF ABSENCE OF DESIRED SECURITY DEPOSIT AT BHEL END AND ALSO NON RESPONSE OF POINT NO. 03 AS ABOVE,</p> <p>I. BHEL MAY HOLD THE PENDING PAYMENTS OF SUPPLIER AVAILABLE AT BHEL ON THEIR CONSENT.</p> <p>II. IF NO PAYMENT IS PENDING AT BHEL END, ACTION FOR ALTERNATE PROCUREMENT ACTION MAY BE INITIATED.</p> <p>5. THE FORMAT OF BG AND IB SHALL BE PER ATTACHED ANNEXURE-BG/FIM AND IB-FIM RESPECTIVELY.</p>	
24	TRANSPORTATION CHARGES FOR SENDING BHEL FREE ISSUE MATERIALS (FIM) TO THE PARTY WORKS WILL BE BORNE BY BHEL ONLY. THE FREIGHT CHARGES FOR SENDING THE BHEL FIM FROM HERP STORES TO PARTY'S WORK FOR EACH ITEM WILL BE LOADED AS PER BHEL TRANSPORT CONTRACT AT THE TIME OF TOTAL LANDED COST CALCULATION. HOWEVER, VARANASI/LOCAL BASED VENDORS WILL LIFT THE FIM FROM BHEL STORES AND BORNE ITS TRANSPORTATION CHARGES.	
25	IF BHEL ISSUES FREE ISSUE MATERIALS TO THE SUPPLIER, IT MUST BE RETURNED WITHIN THE TIME LIMIT AS PRESCRIBED IN GST LAW (PRESENTLY 01 (ONE) YEAR FROM THE DATE OF FREE ISSUE DATE) TO COMPLY THE GST RULES. IF ANY VENDOR DOES NOT RETURN THE BHEL FREE ISSUE MATERIALS AS MENTIONED ABOVE, THE FINANCIAL IMPLICATION ON ACCOUNT OF THIS, IF ANY, SHALL BE RECOVERED FROM THE PARTY BILLS.	
26	<p><b>REVERSE AUCTION:</b> BHEL SHALL BE RESORTING TO REVERSE AUCTION (RA) (GUIDELINES AS AVAILABLE ON <a href="http://www.bhel.com">WWW.BHEL.COM</a>) FOR THIS TENDER. RA SHALL BE CONDUCTED AMONG ALL THE TECHNO-COMMERCIALY QUALIFIED BIDDERS.</p> <p>PRICE BIDS OF ALL TECHNO-COMMERCIALY QUALIFIED BIDDERS SHALL BE OPENED AND SAME SHALL BE CONSIDERED AS INITIAL BIDS OF BIDDERS IN RA. IN CASE ANY BIDDER(S) DO (ES) NOT PARTICIPATE IN ONLINE REVERSE AUCTION, THEIR SEALED ENVELOPE PRICE BID ALONG WITH APPLICABLE LOADING, IF ANY, SHALL BE CONSIDERED FOR RANKING.</p>	
27	IF ANY OF THE VENDORS DO NOT ACCEPT THE ABOVE POINT MENTIONED AT SL. NO. 26, THEIR OFFER MAY BE LIABLE FOR REJECTION WITHOUT INTIMATION.	
28	<p><b>RISK PURCHASE:</b> IN CASE OF DELAY IN SUPPLIES/ DEFECTIVE SUPPLIES/NON EXECUTION OF PURCHASE ORDER ETC. (FOR DETAILS, REFER GUIDELINES FOR RISK PURCHASE), BHEL MAY CANCEL THE ORDER IN FULL OR PART THEREOF/ MAY ALSO MAKE THE PURCHASE OF SUCH MATERIALS FROM ELSEWHERE/ALTERNATIVE SOURCES AT THE RISK &amp; COST OF SUPPLIER. BHEL MAY ALSO MANUFACTURE THE ITEM IN-HOUSE IN PART OR FULL DEPENDING UPON THE URGENCY OF THE ITEM.</p> <p>GUIDELINES FOR RISK PURCHASE IS AVAILABLE ON BHEL WEBSITE "<a href="https://herp.bhel.com">https://herp.bhel.com</a>" at "Notice". RESPECTIVE BIDDERS / SUPPLIERS MAY REFER THIS GUIDELINE BEFORE SUBMITTING THEIR OFFER AGAINST BHEL, HERP TENDER ENQUIRIES. IN CASE RISK PURCHASE IS APPLIED, BHEL SHALL TAKE ACTION AGAINST THE NON-PERFORMING AND/OR DEFAULTING SUPPLIERS/ CONTRACTORS IN LINE WITH THIS GUIDELINE ONLY.</p>	
29	BHEL MAY SHORT CLOSE/CANCEL AN ORDER AT ANY TIME DURING THE CURRENCY OF THE CONTRACT/PO IRRESPECTIVE OF THE PO DELIVERY DATE, IF	
	(I) THE WORK PROGRESS OF THE VENDOR IS POOR, OR	
	(II) THE DELIVERY REQUIREMENT OF THE ITEM IS VERY CRITICAL & NOT BEING MET BY THE VENDOR ON WHICH ORDER HAS BEEN PLACED, OR	
	(III) THERE IS NO RESPONSE FOR IMPROVEMENT IN DELIVERY AS PER BHEL REQUIREMENT,	
30	THE OFFERS OF THE BIDDERS WHO ARE ON THE BANNED LIST AND ALSO THE OFFER OF THE BIDDERS, WHO ENGAGE THE SERVICES OF THE BANNED FIRMS, SHALL BE REJECTED. THE LIST OF BANNED FIRMS IS AVAILABLE ON BHEL WEB SITE <a href="http://www.bhel.com">www.bhel.com</a>	
31	<b>RESERVATION RIGHTS OF BHEL:</b> – 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.	
32	<b>NON-DISCLOSURE AGREEMENT:</b> ALL DRAWINGS AND STANDARDS ARE PROPRIETARY OF BHEL. IT MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY. ALL SUPPLIERS SHALL FURNISH NDAS (NON-DISCLOSURE AGREEMENT) AGAINST USE OF DOCUMENTS FURNISHED BY BHEL TOWARDS UN-AUTHORIZED USE EXCEPT FOR THE PURPOSE IT HAS BEEN FURNISHED.	
33	<p><b>A. SETTLEMENT OF DISPUTES &amp; ARBITRATION:</b></p> <p>I. ALL QUESTIONS/INTERPRETATIONS REGARDING SUBJECT MATTER OF THE CONTRACT SHALL BE DECIDED BY THE BHEL ON THE REQUEST OF THE VENDOR AND THE DECISION OF THE BHEL SHALL BE FINAL.</p> <p>II. IN CASE OF DISPUTE, STEPS SHALL BE TAKEN BY THE PARTIES TO THE CONTRACT TO SETTLE THE SAME THROUGH NEGOTIATIONS.</p> <p>III. IN CASE, DISPUTE IS NOT SETTLED IN NEGOTIATIONS, IT SHALL BE REFERRED TO CONCILIATOR APPOINTED BY THE COMPETENT AUTHORITY OF THE BHEL. <i>THE CONCILIATION PROCEEDINGS WITH RESPECT TO A DISPUTE AS DEFINED IN THE BHEL CONCILIATION SCHEME, 2018 AND SUBSEQUENT REVISIONS CAN BE INITIATED UNDER THE SCHEME AT ANY STAGE WHETHER BEFORE, DURING OR EVEN AFTER THE COMMENCEMENT OF ARBITRATION PROCEEDINGS OR LITIGATION BEFORE COURTS. THIS CONCILIATION SCHEME IS AVAILABLE ON OUR WEBSITES <a href="https://herp.bhel.com">https://herp.bhel.com</a> AND <a href="http://www.bhel.com">www.bhel.com</a>.</i></p> <p>IV. IN CASE DISPUTE IS NOT SETTLED IN CONCILIATION PROCEEDINGS, THE SAME SHALL BE REFERRED TO ARBITRATION AS PER CORPORATE GUIDELINES OF THE BHEL AND THE ARBITRATION PROCEEDING SHALL BE CONDUCTED AS PER PROVISIONS OF THE ARBITRATION AND CONCILIATION ACT, 1996 READ WITH CORPORATE GUIDELINE AS AMENDED FROM TIME TO TIME.</p> <p>V. THE VENDOR SHALL CONTINUE TO PERFORM THE CONTRACT, PENDING SETTLEMENT OF DISPUTE(S).</p> <p><b>B. JURISDICTION:</b> ALL DISPUTES OR DIFFERENCES ARISING OUT OF OR IN CONNECTIONS WITH THE CONTRACT SHALL BE SUBJECT TO THE EXCLUSIVE JURISDICTION OF THE COURT AT VARANASI (U.P.) ONLY.</p>	
34	<b>SPECIAL NOTE FOR BIDDERS:</b> THE QUOTATION SHOULD BE FROM PRINCIPAL / ORIGINAL EQUIPMENT MANUFACTURER ONLY. THE OFFER OF THOSE OEM, AUTHORISING THEIR TRADER / DEALER / DISTRIBUTOR TO QUOTE AND TAKE ORDER IS LIABLE FOR DISQUALIFICATION. SINCE BHEL PREFER TO DEAL DIRECTLY WITH OEM AND NOT THROUGH DEALER / TRADER / DISTRIBUTOR OF OEM, THEREFORE, OEM MUST DIRECTLY QUOTE, TAKE ORDER AND DELIVER THE MATERIAL UNDER THEIR GUARANTEE / WARRANTEE.	
35	<p>I. FOLLOWING DOCUMENTS SHOULD BE ENCLOSED AND ADDRESSED TO DGM (FINANCE) AND SAME SHALL BE DISPATCHED TO MM DEPTT. BHEL, HERP, TARNA, SHIVPUR, VARANASI-221003 FOR PAYMENT PURPOSE:</p> <p>a) 05 (FIVE) COPIES OF GST INVOICES</p> <p>b) COPY OF GR/RR.</p> <p>c) TEST CERTIFICATE AND GUARANTEE/WARRANTEE CERTIFICATE AND PDI REPORT, IF APPLICABLE. (ONE COPY).</p> <p>II. FURTHER TO ABOVE, 02 (TWO) COMPLETE SETS OF DOCUMENTS (COPIES OF ABOVE MENTIONED DOCUMENTS AT SL. NO. I FOR INDIAN SUPPLIERS (UNDER THIS CLAUSE) SHALL BE SENT FOR PURCHASE AND QUALITY DEPARTMENTS. ORIGINAL COPIES OF TC, GC, PDI REPORTS &amp; OTHER QUALITY PAPERS SHALL BE ATTACHED IN THE SET OF DOCUMENTS FOR QUALITY DEPARTMENTS.</p> <p>III. THE VENDOR SHOULD PROVIDE BILLS &amp; OTHER DOCUMENTS COMPLETE IN ALL RESPECT AS PER PURCHASE ORDER ALONGWITH DESPATCH OF MATERIALS. BHEL SHALL SEEK CLARIFICATION(S) (IF ANY) RELATED TO PAYMENT DOCUMENTS IN ONE GO. THE VENDOR SHOULD PROVIDE ALL SUCH CLARIFICATION(S) IMMEDIATELY. ANY DELAY IN PROCESSING OF PAYMENT, DUE TO NON RECEIPT OF CLARIFICATION(S) SOUGHT BY BHEL, SHALL BE ATTRIBUTABLE COMPLETELY TO VENDOR.</p> <p>IV. DIGITALLY SIGNED INVOICE IS ALSO ACCEPTABLE FOR PROCESSING OF PAYMENT.</p>	

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY  
(FOR INDIAN VENDORS)**

Amendment- 25  
ANNEXURE-A

36	THE VENDOR SHALL ENSURE THAT THEIR BANK DETAILS ARE UPDATED WITH US FOR TIMELY PAYMENT THROUGH EFT (ELECTRONICS FUND TRANSFER).	
37	<b>GUIDELINES FOR SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS/ CONTRACTORS:</b> THE REVISED GUIDELINES FOR SUSPENSION OF BUSSINESS DEALINGS ARE AVAILABLE ON BHEL WEBSITE AT “www.bhel.com” on “SUPPLIER REGISTRATION PAGE”. RESPECTIVE BIDDERS / SUPPLIERS MAY REFER THIS BEFORE QUOTING AS PER THEIR REQUIREMENT. ACTION AGAINST THE DEFAULTED SUPPLIERS/ CONTRACTORS’ SHALL BE TAKEN AS PER THESE GUIDELINES ONLY.	
38	VENDOR MUST FOLLOW THE SEQUENTIAL DELIVERY SCHEDULE i.e. ITEMS TO BE SUPPLIED IN SUCH A MANNER THAT THE PURCHASE ORDER HAVING OLDER DELIVERY SCHEDULE SHOULD BE SUPPLIED EARLIER AND PURCHASE ORDER HAVING LATTER DELIVERY SCHEDULE TO BE SUPPLIED LATTER. IF ANY VENDOR DOES NOT FOLLOW THE SEQUENTIAL DELIVERY SCHEDULE ESPECIALLY FOR SAME ITEM, BHEL MAY ACCOUNT FOR THE ITEM IN SEQUENTIAL MANNER OR MAY RECOVER THE FINANCIAL IMPLICATION.	
39	ALL ABOVE ACCEPTED TERMS & CONDITIONS SHALL BE PART OF PURCHASE ORDER WITH OR WITHOUT MENTIONING IN THE PO/CONTRACT BASED ON YOUR ACCEPTANCE AND OFFER SUBMITTED.	
40	<b>IMPORTANT INSTRUCTION:</b> I.VENDORS ARE REQUESTED TO QUOTE THEIR RATE WITH DESCRIPTION MENTIONED IN THE ENQUIRY CONSIDERING ALL TECHNICAL TERMS & CONDITIONS OF THE ENQUIRY. ALSO RATES QUOTED SHOULD BE EXACTLY AS PER SL. NO. OF HARD COPY OF THE ENQUIRY (IF ENQUIRY HAS BEEN FLOATED THROUGH CONVENTIONAL MODE) OR AS PER SL. NO. APPEARING IN THE e-Procurement PORTAL (IF ENQUIRY HAS BEEN FLOATED THROUGH e-Procurement) ONLY. IT MUST BE FOLLOWED UP TO AVOID CONFUSION AT LATER STAGES. ALSO RATES TO BE SUBMITTED BOTH IN NUMERICS AS WELL AS IN WORD. IN CASE OF DISCREPENCY, RATES SUBMITTED IN WORDS SHALL BE CONSIDERED FOR FURTHER PROCESSING. II.DOCUMENTS SUBMITTED WITH THE OFFER SHOULD BE SIGNED AND STAMPED IN EACH PAGE BY AUTHORIZED REPRESENTATIVE OF THE BIDDER. II.II.IN CASE OF PDI, VENDOR SHALL RAISE ONLINE INSPECTION CALL IN ONLINE INSPECTION PORTAL/INTIMATE BHEL IN WRITTING (WHERE INSPECTION IS IN BHEL HERP SCOPE) AT LEAST 01 WEEK IN ADVANCE OR AS MUTUALLY AGREED PERIOD ABOUT THE DATE AND PLACE AT WHICH GOODS WILL BE READY FOR INSPECTION. IV.PURCHASER OR HIS AUTHORIZED REPRESENTATIVE SHALL BE ENTITLED TO CARRY OUT SURVEILLANCE INSPECTION OF MATERIAL AND WORKMANSHIP AT SELLER’S PREMISES OR AT HIS SUB-CONTRACTOR’S PREMISES AT ALL REASONABLE TIMES DURING EXECUTION OF THE CONTRACT. SUCH INSPECTION, EXAMINATION AND TESTING, IF MADE, SHALL NOT ABSOLVE THE SELLER FROM HIS OBLIGATIONS UNDER THE CONTRACT. V.SUCH PRE-DISPATCH INSPECTION, EXAMINATION AND TESTING, IF MADE, AT VENDOR’S WORKS SHALL NOT ABSOLVE THE SELLER FROM HIS OBLIGATIONS TO MANUFACTURE/MACHINING THE GOODS UNDER THE CONTRACT. IF DEFECTS ARE FOUND AT LATER STAGE, IT IS THE SOLE RESPONSIBILITY OF THE VENDOR TO REPLACE/RECTIFY THE SAME.	
41	<b>IMPORTANT CLAUSE FOR GST:</b> INPUT TAX CREDIT OF GST CAN BE AVAILED BY BHEL ONLY WHEN THE MATERIAL HAS BEEN PHYSICALLY RECEIVED AND GST INVOICE IS IN POSSESSION OF BHEL. THEREFORE, SUPPLIERS SHOULD ENSURE THE FOLLOWING IN RESPECT OF POS ISSUED BY BHEL: I. GST INVOICE SHOULD CONTAIN ADDRESS, GST NO. AND PAN NO. OF BHEL AS WELL AS OF SUPPLIER. APPLICABLE HSN CODE OF THE MATERIAL SHOULD BE INDICATED IN THE GST INVOICE. II. FIVE COPIES OF GST INVOICE AND LORRY RECEIPT MAY BE DESPATCHED ALONGWITH SHIPMENT OF THE GOODS IN ORDER TO AVOID ANY DELAY IN AVAILING INPUT CREDIT BY BHEL. III. DECLARE SUCH INVOICE IN HIS GSTR-1 RETURN FOR THE MONTH OF DESPATCH OF MATERIAL. IV. PAYMENT OF GST TO STATUTORY AUTHORITIES WITHIN PRESCRIBED TIME. V. IN CASE OF DISCREPANCY IN THE DATA UPLOADED BY THE BIDDER IN THE GSTN PORTAL VIS-A-VIS THE TAX INVOICE OR IN CASE OF ANY SHORTAGES OR REJECTION IN THE SUPPLY, THEN BHEL WILL NOT BE ABLE TO AVAIL THE TAX CREDIT. BIDDER HAS TO RECTIFY THE DATA DISCREPANCY IN THE GSTN PORTAL OR ISSUE CREDIT NOTE OR DEBIT NOTE (DETAILS ALSO TO BE UPLOADED IN GSTN PORTAL) FOR THE SHORTAGES OR REJECTIONS IN THE SUPPLIES OR ADDITIONAL CLAIMS FOR PROCESSING OF SUCH INVOICES. VI. GST TDS DEDUCTED AS PER GST ACT, IS UPLOADED IN GSTN PORTAL ALONG GSTR7. BIDDERS CAN DIRECTLY DOWNLOAD THE GST TDS CERTIFICATE FROM THE GSTN PORTAL.  IN CASE GST CREDIT IS DELAYED /DENIED TO BHEL DUE TO NON OR DELAYED RECEIPT OF GOODS AND OR TAX INVOICE OR EXPIRY OF TIMELINE PRESCRIBED IN GST LAW FOR AVAILING SUCH ITC OR ANY OTHER REASON NOT ATTRIBUTABLE TO BHEL, GST AMOUNT SHALL BE RECOVERABLE FROM VENDOR ALONG WITH INTEREST /PENALTY LEVIABLE ON BHEL.  IN CASE SUPPLIERS DELAYS DECLARING SUCH INVOICE IN HIS RETURN AND GST CREDIT AVAILED BY BHEL IS DENIED OR REVERSED SUBSEQUENTLY AS PER GST LAW, GST AMOUNT PAID BY BHEL TOWARDS SUCH ITC REVERSAL SHALL BE RECOVERABLE FROM SUPPLIER ALONGWITH INTEREST LEVIED/LEVIABLE ON BHEL.  IN CASE OF RAISING ANY SUPPLEMENTARY TAX INVOICE (DEBIT/ CREDIT NOTE), THE SUPPLIER SHALL ISSUE THE SAME CONTAINING ALL THE DETAILS AS REFERRED TO IN SECTION 34 READ WITH SECTION 31 OF GST ACT & RULES REFERRED THERE UNDER .	
42	<b>STATUTORY VARIATION CLAUSE :</b> ANY INCREASE IN THE RATE OF GST SHALL BE PAYABLE ONLY FOR DELIVERIES COMPLETED WITHIN THE SCHEDULED DELIVERY PERIOD, IN OTHER WORDS INCREASE IN THE RATE OF GST SHALL NOT BE PAYABLE FOR VALUE OF CONSIGNMENT DELIVERED AFTER THE SCHEDULED PURCHASE ORDER DELIVERY PERIOD.2.NEW TAXES AND DUTIES , IF IMPOSED SUBSEQUENT TO DUE DATE OF OFFER SUBMISSION, BY STATUTORY AUTHORITY DURING CONTRACT PERIOD (INCLUDING EXTENSION IF THE SAME IS NOT ATTRIBUTABLE TO BIDDER) SHALL BE REIMBURSED BY BHEL ON PRODUCTION OF RELEVANT SUPPORTING DOCUMENTS TO THE SATISFACTION OF BHEL . HOWEVER, BIDDER SHALL TAKE PRIOR APPROVAL OF BHEL BEFORE DEPOSITING NEW TAXES AND DUTIES.	
43	<b>IMPORTANT INSTRUCTION FOR MSEs SUPPLIERS:</b> I. “MSE SUPPLIERS CAN AVAIL THE INTENDED BENEFITS ONLY IF THEY SUBMIT ALONG WITH 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 CA CERTIFICATE (FORMAT ENCLOSED AS PER ANNEXURE-1 WHERE DEEMED VALIDITY OF EM-II CERTIFICATE OF FIVE YEARS HAS EXPIRED) APPLICABLE FOR THE RELEVANT F/Y (LATEST AUDITED).DATE TO BE RECKONED FOR DETERMINING THE DEEMED VALIDITY WILL BE THE DATE OF BID OPENING (PART -1 IN CASE OF TWO PART BID). NON SUBMISSION OF SUCH DOCUMENTS WILL LEAD TO CONSIDERATION OF THEIR BID AT PAR WITH OTHER BIDDERS. NO BENEFIT SHALL BE APPLICABLE FOR THIS ENQUIRY IF ANY DEFICIENCY IN THE ABOVE REQUIRED DOCUMENTS ARE NOT SUBMITTED BEFORE PRICE BID OPENING. IF THE TENDER IS TO BE SUBMITTED THROUGH e-procurement PORTAL, THEN THE ABOVE REQUIRED DOCUMENTS ARE TO BE UPLOADED ON THE PORTAL. DOCUMENTS SHOULD BE NOTARIZED OR ATTESTED BY A GAZETTED OFFICE. II.IN CASE OF ANY CHANGE IN THE MSE STATUS OF THE BIDDER, IT SHALL BE RESPONSIBILITY OF THE BIDDER TO NOTIFY THE CHANGE AS A PART OF THE BID DOCUMENT. IF AT A LATER DATE IT COMES TO NOTICE OF BHEL, THAT THE CHANGE IN THE STATUS HAS NOT BEEN INTIMATED BY THE BIDDER AND THE ORDER IS OBTAINED UNDER THE PREMISE OF AN MSE, THEN BHEL WOULD CANCEL THE PENDING ORDER AGAINST THIS TENDER AND TAKE NECESSARY ACTION SUSPENSION OF THE BUSSINESS DEALING WITH THE BIDDER AS PER PROCUREMENT POLICY OF BHEL. III.25 % OF THE TENDERED QUANTITY IS EARMARKED FOR MSE SUPPLIERS IN THIS TENDER. IV.OUT OF THIS 25% TENDERED QUANTITY RESERVED FOR MSE SUPPLIERS, 6.25% SHALL BE EARMARKED FOR PROCUREMENT FROM MSEs OWNED BY SC/ST ENTREPRENEURS. V.OUT OF THIS 25% TENDERED QUANTITY RESERVED FOR MSE SUPPLIERS, 3% SHALL BE EARMARKED FOR PROCUREMENT FROM MSEs OWNED BY WOMEN. VI.IN CASE MSE VENDOR PARTICIPATING IN THE TENDER QUOTES WITHIN THE PRICE BAND OF “L1+15%”, THEY WILL BE ALLOWED TO SUPPLY THE 25% PORTION OF THE REQUIREMENT SUBJECT TO ACCEPTANCE OF L1 PRICE (ON LANDED COST BASIS) BY MSE VENDOR. IN CASE OF MORE THAN ONE SUCH MSE VENDOR WITHIN THE “L1+15% PRICE BAND” THE SUPPLY SHALL BE SHARED PROPORTIONATELY (TO 25% TENDERED QUANTITY). VII.IF THE L1 VENDOR HAPPENS TO BE A MSE VENDOR AGAINST ANY ITEM CODE, THEN 100% OF THE TENDERED QTY (FOR RESPECTIVE ITEM CODE) SHALL BE PROPOSED TO ORDER ON THE L1 (MSE) VENDOR, EVEN THOUGH THERE MAY BE OTHER MSE VENDORS WITHIN THE “L1+15% PRICE BAND”. VIII.IN CASE AFTER OPENING OF PRICE BID, IT IS SEEN THAT NO MSE HAS BECOME L1, THEN DEPENDING ON THE NATURE OF THE ITEM, IF IT IS NOT POSSIBLE TO SPLIT THE TENDERED ITEMS/QUANTITIES ON ACCOUNT OF REASONS LIKE CUSTOMER CONTRACT REQUIREMENTS OF SUPPLYING ONE MAKE FOR A GIVEN PROJECT OR TECHNICAL REASONS LIKE TENDERED ITEMS BEING A SYSTEM etc. THEN BHEL WOULD NOT COUNTER OFFER THE L1 PRICES EVEN THOUGH THERE MAY BE MSE BIDDERS WITHIN THE “L1+15% PRICE BAND” OF L1.	
44	THE <b>STARTUPS</b> AS DEFINED IN THE GAZETTE OF INDIA NOTIFICATION NO.: G.S.R. 127 (E) DATED 19/02/2019 WILL BE EXEMPTED FROM FULFILLING THE CRITERIA, IF MENTIONED, IN THE PQR (PRE-QUALIFYING REQUIREMENT) REGARDING PRIOR TURNOVER AND PRIOR EXPERIENCE. HOWEVER, THERE MAY BE CIRCUMSTANCES (LIKE PROCUREMENTS OF ITEMS RELATED TO PUBLIC SAFETY, HEALTH, CRITICAL SECURITY OPERATIONS AND EQUIPMENTS ETC.) WHERE BHEL MAY PREFER THE VENDORS TO HAVE PRIOR EXPERIENCE RATHER THAN GIVING ORDER TO NEW ENTITIES. FOR SUCH PROCUREMENTS, BHEL MAY NOT RELAX THE CRITERIA OF PRIOR EXPERIENCE/TURNOVER FOR THE STARTUPS.	
45	<b>PURCHASE PREFERENCE FOR INDIAN VENDORS:</b> FOR THIS PROCUREMENT, THE LOCAL CONTENT TO CATEGORIZE A SUPPLIER AS A CLASS I LOCAL SUPPLIER / CLASS II LOCAL SUPPLIER /NON LOCAL – SUPPLIER AND PURCHASE PREFERENCE TO CLASS I LOCAL SUPPLIER, IS AS DEFINED IN PUBLIC PROCUREMENT (PREFERNE TO MAKE IN INDIA), ORDER	

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY  
(FOR INDIAN VENDORS)**

Amendment- 25  
ANNEXURE-A

	<p>2017 DATED 04.06.2020 ISSUED BY DPIIT. IN CASE OF SUBSEQUENT ORDERS ISSUED BY THE NODAL MINISTRY, CHANGING THE DEFINITION OF LOCAL CONTENT FOR THE ITEMS OF THE NIT, THE SAME SHALL BE APPLICABLE EVEN IF ISSUED AFTER ISSUE OF THIS NIT, BUT BEFORE OPENING OF PART –II BIDS AGAINST THIS NIT.</p> <p><b>MODEL CLAUSE FOR TENDER.</b></p> <p>I. ANY BIDDER FROM A COUNTRY WHICH SHARES A LAND BORDER WITH INDIA WILL BE ELIGIBLE TO BID IN THIS TENDER ONLY IF THE BIDDER IS REGISTERED WITH THE COMPETENT AUTHORITY.</p> <p>II. "BIDDER" (INCLUDING THE TERM 'TENDERER', 'CONSULTANT' OR 'SERVICE PROVIDER' IN CERTAIN CONTEXTS) MEANS ANY PERSON OR FIRM OR COMPANY, INCLUDING ANY MEMBER OF A CONSORTIUM OR JOINT VENTURE (THAT IS AN ASSOCIATION OF SEVERAL PERSONS, OR FIRMS OR COMPANIES), EVERY ARTIFICIAL JURIDICAL PERSON NOT FALLING IN ANY OF THE DESCRIPTIONS OF BIDDERS STATED HEREINBEFORE, INCLUDING ANY AGENCY BRANCH OR OFFICE CONTROLLED BY SUCH PERSON, PARTICIPATING IN A PROCUREMENT PROCESS.</p> <p>III. "BIDDER FROM A COUNTRY WHICH SHARES A LAND BORDER WITH INDIA" FOR THE PURPOSE OF THIS ORDER MEANS: -</p> <p>a) AN ENTITY INCORPORATED, ESTABLISHED OR REGISTERED IN SUCH A COUNTRY; OR</p> <p>b) A SUBSIDIARY OF AN ENTITY INCORPORATED, ESTABLISHED OR REGISTERED IN SUCH A COUNTRY; OR</p> <p>c) AN ENTITY SUBSTANTIALLY CONTROLLED THROUGH ENTITIES INCORPORATED, ESTABLISHED OR REGISTERED IN SUCH A COUNTRY; OR</p> <p>d) AN ENTITY WHOSE BENEFICIAL OWNER IS SITUATED IN SUCH A COUNTRY; OR</p> <p>e) AN INDIAN (OR OTHER) AGENT OF SUCH AN ENTITY; OR</p> <p>f) A NATURAL PERSON WHO IS A CITIZEN OF SUCH A COUNTRY; OR</p> <p>g) A CONSORTIUM OR JOINT VENTURE WHERE ANY MEMBER OF THE CONSORTIUM OR JOINT VENTURE FALLS UNDER ANY OF THE ABOVE</p> <p>IV. THE BENEFICIAL OWNER FOR THE PURPOSE OF (III) ABOVE WILL BE AS UNDER:</p> <p>1. IN CASE OF A COMPANY OR LIMITED LIABILITY PARTNERSHIP, THE BENEFICIAL OWNER IS THE NATURAL PERSON (S) WHO, WHETHER ACTING ALONE OR TOGETHER, OR THROUGH ONE OR MORE JURIDICAL PERSON, HAS A CONTROLLING OWNERSHIP INTEREST OR WHO EXERCISES CONTROL THROUGH OTHER MEANS.</p> <p>EXPLANATION –</p> <p>a. "CONTROLLING OWNERSHIP INTEREST" MEANS OWNERSHIP OF OR ENTITLEMENT TO MORE THAN TWENTY-FIVE PER CENT. OF SHARES OR CAPITAL OR PROFITS OF THE COMPANY</p> <p>b. "CONTROL" SHALL INCLUDE THE RIGHT TO APPOINT MAJORITY OF THE DIRECTORS OR TO CONTROL THE MANAGEMENT OR POLICY DECISIONS INCLUDING BY VIRTUE OF THEIR SHAREHOLDING OR MANAGEMENT RIGHTS OR SHAREHOLDER'S AGREEMENTS OF VOTING AGREEMENTS;</p> <p>2. IN CASE OF A PARTNERSHIP FIRM, THE BENEFICIAL OWNER IS THE NATURAL PERSON (S) WHO, WHETHER ACTING ALONE OR TOGETHER, OR THROUGH ONE OR MORE JURIDICAL OF CAPITAL OR PROFITS OF THE PARTNERSHIP;</p> <p>3. IN CASE OF AN UNINCORPORATED ASSOCIATION OR BODY OF INDIVIDUALS, THE BENEFICIAL OWNER IS THE NATURAL PERSON (S), WHO, WHETHER ACTING ALONE OR TOGETHER, OR THROUGH ONE OR MORE JURIDICAL PERSON, HAS OWNERSHIP OF OR ENTITLEMENT TO MORE THAN FIFTEEN PERCENT OF THE PROPERTY OF CAPITAL OF PROFITS OF SUCH ASSOCIATION OR BODY OF INDIVIDUALS;</p> <p>4. WHERE NO NATURAL PERSON IS IDENTIFIED UNDER (1) OR (2) OR (3) ABOVE, THE BENEFICIAL OWNER IS THE RELEVANT NATURAL PERSON WHO HOLDS THE POSITION OF SENIOR MANAGING OFFICIAL;</p> <p>5. IN CASE OF TRUST, THE IDENTIFICATION OF BENEFICIAL OWNER (S) SHALL INCLUDE IDENTIFICATION OF THE AUTHOR OF THE TRUST, THE TRUSTEE, THE BENEFICIARIES WITH FIFTEEN PERCENT OR MORE INTEREST IN THE TRUST AND ANY OTHER NATURAL PERSON EXERCISING ULTIMATE EFFECTIVE CONTROL OVER THE TRUST THROUGH A CHAIN OF CONTROL OR OWNERSHIP.</p> <p>V. AN AGENT IS A PERSON EMPLOYED TO DO ANY ACT FOR ANOTHER, OR TO REPRESENT ANOTHER IN DEALINGS WITH THIRD PERSON.</p> <p><b>CERTIFICATE:</b> IN ORDER TO AVAIL THE BENEFITS, VENDORS TO SUBMIT (ALONG WITH OFFER) THE SELF-CERTIFICATION THAT THE ITEM OFFERED MEETS THE CONTENT REQUIREMENT FOR CLASS-I/ CLASS-II LOCAL SUPPLIER AS THE CASE MAY BE, INDICATING THE PERCENTAGE OF LOCAL CONTENT. AND SHALL GIVE DETAILS OF LOCATION AT WHICH THE LOCAL VALUE ADDITION IS MADE (refer attached Make in India (Model Certificate no I).</p>	
46	<p><b>FORCE MAJEURE :</b> NOTWITHSTANDING ANYTHING CONTAINED IN THE CONTRACT, NEITHER THE VENDOR NOR THE BHEL SHALL BE HELD RESPONSIBLE FOR TOTAL OR PARTIAL NON-EXECUTION OF ANY OF THE CONTRACTUAL OBLIGATIONS, SHOULD THE OBLIGATION BECOME UNREASONABLY ONEROUS OR IMPOSSIBLE DUE TO OCCURRENCE OF A 'FORCE MAJEURE' WHICH DIRECTLY AFFECTS THE OBLIGATIONS TO BE PERFORMED BY THE BHEL OR THE VENDOR ; SUCH EVENTS INCLUDE WAR, MILITARY OPERATIONS OF ANY NATURE, BLOCKAGES, REVOLUTIONS, INSURRECTIONS, RIOTS, CIVIL COMMOTIONS, INSURGENCY, SABOTAGE, ACTS OF PUBLIC ENEMY, FIRES, EXPLOSION, EPIDEMICS, QUARANTINE RESTRICTIONS, FLOODS, EARTHQUAKE, OR ACTS OF GOD, RESTRICTIONS BY GOVT. AUTHORITIES; OVER WHICH THE VENDOR OR THE BHEL HAS NO CONTROL. THE PARTY CLAIMING TO BE AFFECTED BY FORCE MAJEURE SHALL NOTIFY THE OTHER PARTY IN WRITING WITHOUT DELAY, WITHIN TWO WEEKS ON THE INTERVENTION AND ON THE CESSATION OF SUCH CIRCUMSTANCE. EXTENSION OF TIME SOUGHT BY THE VENDOR ALONG WITH SUPPORTING EVIDENCE AND SO GRANTED BY THE BHEL FOR THE SUPPLY/ WORK AFFECTED, IF ANY, SHALL NOT BE CONSTRUED AS WAIVER IN RESPECT OF REMAINING DELIVERIES. RESCHEDULING OF DELIVERIES ON ACCOUNT OF FORCE MAJEURE CONDITIONS, IF SO AGREED BY THE BHEL, WILL NOT ENTAIL THE VENDOR TO CLAIM ANY INCREASE IN THE PRICE ON WHATSOEVER ACCOUNT. NOTWITHSTANDING ABOVE PROVISIONS, BHEL SHALL RESERVE THE RIGHT TO CANCEL THE ORDER/ CONTRACT, WHOLLY OR PARTLY, IN ORDER TO MEET THE OVERALL PROJECT SCHEDULE AND MAKE ALTERNATIVE ARRANGEMENTS. IF DEEMED NECESSARY, BHEL MAY TAKEOVER PARTLY PROCESSED MATERIAL AT A MUTUALLY AGREED PRICE.</p>	
47	<p><b>FRAUD PREVENTION POLICY :</b> THE BIDDER ALONG WITH ITS ASSOCIATE/ COLLABORATORS/ SUB-CONTRACTORS/ SUB-VENDORS/ CONSULTANTS/ SERVICE PROVIDERS SHALL STRICTLY ADHERE TO BHEL FRAUD PREVENTION POLICY DISPLAYED ON BHEL WEBSITE WWW.BHEL.COM AND SHALL IMMEDIATELY BRING TO THE NOTICE OF BHEL MANAGEMENT ABOUT ANY FRAUD OR SUSPECTED FRAUD AS SOON AS IT COMES TO THEIR NOTICE.</p>	
48	<p><b>SHORT SHIPMENTS/ WARRANTY/GUARANTEE REPLACEMENTS:</b> IN CASE OF ANY SHORT SHIPMENT DURING INITIAL SUPPLY WHICH IS SUBSEQUENTLY DISPATCHED BY THE VENDOR OR ANY GUARANTEE / WARRANTY REPLACEMENTS SHALL BE DISPATCHED ON "FOR-BHEL STORES/DESIGNATED DESTINATION" BASIS FOR INDIGENOUS ITEMS. TAXES, IF ANY PAID BY INDIGENOUS VENDOR FOR GUARANTEE /WARRANTEE REPLACEMENT, REPAIR ACTIVITY EXCLUDING SHORT SUPPLY SHALL BE TO VENDOR'S ACCOUNT ONLY. THE VENDOR HAS TO RAISE A CREDIT NOTE FOR SHORT SUPPLIED QUANTITY AS PER GST PROVISIONS.</p>	
49	<p><b>E WAY BILL:</b> THE SUPPLIER HAS TO ARRANGE FOR E WAY BILL AS APPLICABLE FOR ANY MOVEMENT OF GOODS ALONG WITH OTHER PRESCRIBED DOCUMENTS AS PER GST LAW. THE SUPPLIER HAS ALSO TO COMPLY WITH ANY AMENDMENT AS PRESCRIBED FROM TIME TO TIME UNDER E WAY BILL RULE. ANY FINANCIAL IMPLICATION ARISES ON BHEL DUE TO NONCOMPLIANCE OF E WAY BILL RULE WILL BE PASSED ON TO THE SUPPLIER.</p>	
50	<p>THE BIDDER DECLARES THAT THEY WILL NOT ENTER INTO ANY ILLEGAL OR UNDISCLOSED AGREEMENT OR UNDERSTANDING, WHETHER FORMAL OR INFORMAL WITH OTHER BIDDER (S). THIS APPLIES IN PARTICULAR TO PRICES, SPECIFICATIONS, CERTIFICATIONS, SUBSIDIARY CONTRACTS, SUBMISSION OR NON- SUBMISSION OF BIDS OR ANY OTHER ACTIONS TO RESTRICT COMPETITIVENESS OR TO INTRODUCE CARTELIZATION IN THE BIDDING PROCESS. IN CASE, THE BIDDER IS FOUND HAVING INDULGED IN ABOVE ACTIVITIES, SUITABLE ACTION SHALL BE TAKEN BY BHEL AS PER EXISTANT POLICIES / GUIDELINES.</p>	
51	<p>THE BIDDER SHALL REGISTER THEMSELVES ON GEM PORTAL AND SHALL QUOTE THEIR GEM SELLER ID IN THEIR OFFER. GEM SELLER ID IS MANDATORY FOR PLACEMENT OF PURCHASE ORDER EXCEPT IN CASES WHERE FREE ISSUE MATERIAL IS TO BE ISSUED BY BHEL .</p>	
52	<p><b>REJECTION/REPLACEMENT:</b></p> <p>THE SELLER SHALL ARRANGE REPLACEMENT / REPAIR UNDER ITS OBLIGATION UNDER THE CONTRACT. SELLER SHALL BE GIVEN GROUND RENT FREE PERIOD OF 90 DAYS FROM THE DATE OF REJECTION TO LIFT REJECTED MATERIAL. BEYOND 90 DAYS, A GROUND RENT OF 0.25% OF VALUE OF REJECTED MATERIAL PER WEEK WILL BE LEVIED FOR A MAXIMUM PERIOD OF 4 WEEKS. BEYOND THIS PERIOD SUPPLIER FORFEITS THEIR RIGHT TO THE MATERIALS.</p>	
53	<p><b>CONFLICT OF INTEREST AMONG BIDDERS/AGENTS:</b></p> <p>A BIDDER SHALL NOT HAVE CONFLICT OF INTEREST WITH OTHER BIDDERS. SUCH CONFLICT OF INTEREST CAN LEAD TO ANTI-COMPETITIVE PRACTICES TO THE DETRIMENT OF PROCURING ENTITY'S INTERESTS. THE BIDDER FOUND TO HAVE A CONFLICT OF INTEREST SHALL BE DISQUALIFIED. A BIDDER MAY BE CONSIDERED TO HAVE A CONFLICT OF INTEREST WITH ONE OR MORE PARTIES IN THIS BIDDING PROCESS, IF</p> <p>a) THEY HAVE CONTROLLING PARTNER (S) IN COMMON; OR</p> <p>b) THEY RECEIVE OR HAVE RECEIVED ANY DIRECT OR INDIRECT SUBSIDY FINANCIAL STAKE FROM ANY OF THEM; OR</p> <p>c) THEY HAVE THE SAME LEGAL REPRESENTATIVE/AGENT FOR PURPOSES OF THIS BID; OR</p> <p>d) THEY HAVE RELATIONSHIP WITH EACH OTHER, DIRECTLY OR THROUGH COMMON THIRD PARTIES, THAT PUTS THEM IN A POSITION TO HAVE ACCESS TO INFORMATION ABOUT OR INFLUENCE ON THE BID OF ANOTHER BIDDER; OR</p> <p>e) BIDDER PARTICIPATES IN MORE THAN ONE BID IN THIS BIDDING PROCESS. PARTICIPATION BY A BIDDER IN MORE THAN ONE BID WILL RESULT IN THE DISQUALIFICATION OF ALL BIDS IN WHICH THE PARTIES ARE INVOLVED. HOWEVER, THIS DOES NOT LIMIT THE INCLUSION OF THE COMPONENTS/ SUB-ASSEMBLY ASSEMBLIES FROM ONE BIDDING MANUFACTURER IN MORE THAN ONE BID; OR</p>	

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY  
(FOR INDIAN VENDORS)**

Amendment- 25  
ANNEXURE-A

	<p>f) IN CASES OF AGENTS QUOTING IN OFFSHORE PROCUREMENTS, ON BEHALF OF THEIR PRINCIPAL MANUFACTURERS, ONE AGENT CANNOT REPRESENT TWO MANUFACTURERS OR QUOTE ON THEIR BEHALF IN A PARTICULAR TENDER ENQUIRY. ONE MANUFACTURER CAN ALSO AUTHORISE ONLY ONE AGENT/DEALER. THERE CAN BE ONLY ONE BID FROM THE FOLLOWING: 1. THE PRINCIPAL MANUFACTURER DIRECTLY OR THROUGH ONE INDIAN AGENT ON HIS BEHALF; AND 2. INDIAN/FOREIGN AGENT ON BEHALF OF ONLY ONE PRINCIPAL; OR g) A BIDDER OR ANY OF ITS AFFILIATES PARTICIPATED AS A CONSULTANT IN THE PREPARATION OF THE DESIGN OR TECHNICAL SPECIFICATIONS OF THE CONTRACT THAT IS THE SUBJECT OF THE BID; OR h) IN CASE OF A HOLDING COMPANY HAVING MORE THAN ONE INDEPENDENTLY MANUFACTURING UNITS, OR MORE THAN ONE UNIT HAVING COMMON BUSINESS OWNERSHIP/MANAGEMENT, ONLY ONE UNIT SHOULD QUOTE. SIMILAR RESTRICTIONS WOULD APPLY TO CLOSELY RELATED SISTER COMPANIES. BIDDERS MUST PROACTIVELY DECLARE SUCH SISTER/ COMMON BUSINESS/ MANAGEMENT UNITS IN SAME/ SIMILAR LINE OF BUSINESS.</p>
54	<p>VENDOR MUST VISIT OUR WEBSITE <a href="https://herp.bhel.com">https://herp.bhel.com</a> REGULARLY FOR ENQUIRY/PO/CLARIFICATIONS/FOR ANY LATEST UPDATES.</p>
55	<p>MSME VENDORS CAN AVAIL BENEFITS OF PAYMENT THROUGH TREDS/RXIL.</p>
56	<p>"THE OFFERS OF THE BIDDERS WHO ARE UNDER SUSPENSION AS ALSO THE OFFERS OF THE BIDDERS, WHO ENGAGE THE SERVICES OF THE FIRMS DEBARRED ACROSS BHEL, SHALL BE REJECTED. THE LIST OF FIRMS DEBARRED ACROSS BHEL IS AVAILABLE ON BHEL WEBSITE WWW.BHEL.COM. 1.0 INTEGRITY COMMITMENT, PERFORMANCE OF THE CONTRACT AND PUNITIVE ACTION THEREOF: 1.1. COMMITMENT BY BHEL: BHEL COMMITS TO TAKE ALL MEASURES NECESSARY TO PREVENT CORRUPTION IN CONNECTION WITH THE TENDER PROCESS AND EXECUTION OF THE CONTRACT. BHEL WILL DURING THE TENDER PROCESS TREAT ALL BIDDER(S) IN A TRANSPARENT AND FAIR MANNER, AND WITH EQUITY. 1.2. COMMITMENT BY BIDDER/ SUPPLIER/ CONTRACTOR: 1.2.1. THE BIDDER/ SUPPLIER/ CONTRACTOR COMMIT TO TAKE ALL MEASURES TO PREVENT CORRUPTION AND WILL NOT DIRECTLY OR INDIRECTLY INFLUENCE ANY DECISION OR BENEFIT WHICH HE IS NOT LEGALLY ENTITLED TO NOR WILL ACT OR OMIT IN ANY MANNER WHICH TANTAMOUNT TO AN OFFENCE PUNISHABLE UNDER ANY PROVISION OF THE INDIAN PENAL CODE, 1860 OR ANY OTHER LAW IN FORCE IN INDIA. 1.2.2. THE BIDDER/ SUPPLIER/ CONTRACTOR WILL, WHEN PRESENTING HIS BID, DISCLOSE ANY AND ALL PAYMENTS HE HAS MADE, AND IS COMMITTED TO OR INTENDS TO MAKE TO AGENTS, BROKERS OR ANY OTHER INTERMEDIARIES IN CONNECTION WITH THE AWARD OF THE CONTRACT AND SHALL ADHERE TO RELEVANT GUIDELINES ISSUED FROM TIME TO TIME BY GOVT. OF INDIA/ BHEL. 1.2.3. THE BIDDER/ SUPPLIER/ CONTRACTOR WILL PERFORM/ EXECUTE THE CONTRACT AS PER THE CONTRACT TERMS &amp; CONDITIONS AND WILL NOT DEFAULT WITHOUT ANY REASONABLE CAUSE, WHICH CAUSES LOSS OF BUSINESS/ MONEY/ REPUTATION, TO BHEL. IF ANY BIDDER/ SUPPLIER/ CONTRACTOR DURING PRE-TENDERING/ TENDERING/ POST TENDERING/ AWARD/ EXECUTION/ POST-EXECUTION STAGE INDULGES IN MALPRACTICES, CHEATING, BRIBERY, FRAUD OR AND OTHER MISCONDUCT OR FORMATION OF CARTEL SO AS TO INFLUENCE THE BIDDING PROCESS OR INFLUENCE THE PRICE OR ACTS OR OMITS IN ANY MANNER WHICH TANTAMOUNT TO AN OFFENCE PUNISHABLE UNDER ANY PROVISION OF THE INDIAN PENAL CODE, 1860 OR ANY OTHER LAW IN FORCE IN INDIA, THEN, ACTION MAY BE TAKEN AGAINST SUCH BIDDER/ SUPPLIER/ CONTRACTOR AS PER EXTANT GUIDELINES OF THE COMPANY AVAILABLE ON WWW. BHEL.COM AND/OR UNDER APPLICABLE LEGAL PROVISIONS".</p>
57	<p><b>BID SECURITY OR EARNEST MONEY DEPOSIT (EMD):</b> TO SAFE GUARD AGAINST A BIDDER'S WITHDRAWING OR ALTERING ITS/ HIS BID DURING THE BID VALIDITY PERIOD, BID SECURITY [ALSO KNOWN AS EARNEST MONEY DEPOSIT (EMD)] SHALL BE OBTAINED FROM THE BIDDERS ALONG WITH THEIR BIDS (EXCEPT MICRO AND SMALL ENTERPRISES (MSE) OR STARTUPS AS RECOGNIZED BY DEPARTMENT FOR PROMOTION OF INDUSTRY AND INTERNAL TRADE (DPIIT)). THE AMOUNT OF EMD SHALL BE AS MENTIONED IN ENQUIRY. <b>1. MODES OF DEPOSIT</b> A) THE EMD MAY BE ACCEPTED ONLY IN THE FOLLOWING FORMS AND THE SAME MUST BE SUBMITTED BEFORE TENDER OPENING: (I) ELECTRONIC FUND TRANSFER CREDITED IN BHEL ACCOUNT. (II) BANKER'S CHEQUE/ PAY ORDER/ DEMAND DRAFT, IN FAVOUR OF BHEL. (III) FIXED DEPOSIT RECEIPT (FDR).(IN THE NAME OF " BIDDER'S NAME A/C BHEL") (IV) BANK GUARANTEE FROM ANY OF THE SCHEDULED BANKS. (V) INSURANCE SURETY BONDS. B) IN CASE THE EMD IS MORE THAN RUPEES TWO LAKH AND IN CASE OF FOREIGN BIDDERS, IT MAY BE IN THE FORM OF A BANK GUARANTEE (IN EQUIVALENT FOREIGN EXCHANGE AMOUNT, IN CASE OF FOREIGN BIDDERS) ISSUED/ CONFIRMED FROM ANY OF THE SCHEDULED COMMERCIAL BANK IN INDIA IN AN ACCEPTABLE FORM. THE EMD SHALL REMAIN VALID FOR A PERIOD OF 45 (FORTY-FIVE) DAYS BEYOND THE FINAL BID VALIDITY PERIOD. <b>2. FORFEITURE OF EMD</b> I) A BIDDER'S EMD WILL BE FORFEITED IF THE BIDDER WITHDRAWS OR AMENDS ITS/HIS TENDER OR IMPAIRS OR DEROGATES FROM THE TENDER IN ANY RESPECT WITHIN THE PERIOD OF VALIDITY OF THE TENDER OR IF THE SUCCESSFUL BIDDER FAILS TO FURNISH THE REQUIRED PERFORMANCE SECURITY WITHIN THE SPECIFIED PERIOD MENTIONED IN THE TENDER. (II) EMD BY THE TENDERER SHALL BE WITHHELD IN CASE ANY ACTION ON THE BIDDER IS ENVISAGED UNDER THE PROVISIONS OF EXTANT "GUIDELINES ON SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS/ CONTRACTORS" AND FORFEITED/ RELEASED BASED ON THE ACTION AS DETERMINED UNDER THESE GUIDELINES. <b>3. RETURN OF EMD</b> (I) BID SECURITIES OF THE UNSUCCESSFUL BIDDERS SHALL BE RETURNED TO BIDDER AT THE EARLIEST AFTER EXPIRY OF THE FINAL BID VALIDITY PERIOD AND LATEST BY THE 30TH DAY AFTER THE AWARD OF THE CONTRACT. HOWEVER, IN CASE OF TWO PACKET OR TWO STAGE BIDDING, BID SECURITIES OF UNSUCCESSFUL BIDDERS DURING FIRST STAGE I.E. TECHNICAL EVALUATION ETC. SHALL BE RETURNED WITHIN 30 DAYS OF DECLARATION OF RESULT OF FIRST STAGE I.E. TECHNICAL EVALUATION ETC. (II) BID SECURITY SHALL BE REFUNDED TO THE SUCCESSFUL BIDDER ON CONCLUSION OF THE ORDER/ RECEIPT OF A PERFORMANCE SECURITY (IF CALLED IN THE TENDER). (III) EMD SHALL NOT CARRY ANY INTEREST.</p>
58	<p><b>PERFORMANCE SECURITY (PS):</b> TO ENSURE DUE PERFORMANCE OF THE CONTRACT, PERFORMANCE BANK GUARANTEE (PBG) OR SECURITY DEPOSIT (SD), HEREAFTER REFERRED AS PERFORMANCE SECURITY SHALL BE OBTAINED FROM THE SUCCESSFUL BIDDER AWARDED THE CONTRACT. THE PERFORMANCE SECURITY OF REQUIRED AMOUNT IS TO BE SUBMITTED BY THE DATE SPECIFIED IN THE PO/CONTRACT. <b>1. MODES OF DEPOSIT:</b> A) PERFORMANCE SECURITY MAY BE FURNISHED IN THE FOLLOWING FORMS: (I) LOCAL CHEQUES OF SCHEDULED BANKS (SUBJECT TO REALIZATION)/ PAY ORDER/ DEMAND DRAFT/ ELECTRONIC FUND TRANSFER IN FAVOUR OF BHEL. (II) BANK GUARANTEE FROM SCHEDULED BANKS / PUBLIC FINANCIAL INSTITUTIONS AS DEFINED IN THE COMPANIES ACT. THE BANK GUARANTEE FORMAT SHOULD HAVE THE APPROVAL OF BHEL. (III) FIXED DEPOSIT RECEIPT ISSUED BY SCHEDULED BANKS / PUBLIC FINANCIAL INSTITUTIONS AS DEFINED IN THE COMPANIES ACT (FDR SHOULD BE IN THE NAME OF THE <b>CONTRACTOR, A/C BHEL</b>). (IV) SECURITIES AVAILABLE FROM INDIAN POST OFFICES SUCH AS NATIONAL SAVINGS CERTIFICATES, KISAN VIKAS PATRAS ETC. (HELD IN THE NAME OF CONTRACTOR FURNISHING THE SECURITY AND DULY ENDORSED/ HYPOTHECATED/ PLEDGED, AS APPLICABLE, IN FAVOUR OF BHEL). (V) INSURANCE SURETY BOND. (NOTE: BHEL WILL NOT BE LIABLE OR RESPONSIBLE IN ANY MANNER FOR THE COLLECTION OF INTEREST OR RENEWAL OF THE DOCUMENTS OR IN ANY OTHER MATTER CONNECTED THEREWITH) B) IN CASE OF GTE TENDERS, THE PERFORMANCE SECURITY SHALL BE IN THE SAME CURRENCY AS THE CONTRACT AND MUST CONFORM TO UNIFORM RULES FOR DEMAND GUARANTEES (URDG 75B) - AN INTERNATIONAL CONVENTION REGULATING INTERNATIONAL SECURITIES. (C) PERFORMANCE SECURITY IS TO BE FURNISHED WITHIN A SPECIFIED DATE (GENERALLY 14(FOURTEEN) DAYS AFTER NOTIFICATION OF THE AWARD) AND IT SHOULD REMAIN VALID FOR A PERIOD OF 60 (SIXTY) DAYS BEYOND THE DATE OF COMPLETION OF ALL CONTRACTUAL OBLIGATIONS OF THE SUPPLIER, INCLUDING WARRANTY OBLIGATIONS. <b>2. FORFEITURE OF PERFORMANCE SECURITY:</b> THE PERFORMANCE SECURITY WILL BE FORFEITED AND CREDITED TO BHEL'S ACCOUNT IN THE EVENT OF A BREACH OF CONTRACT BY THE SUPPLIER. <b>3. RETURN OF PERFORMANCE SECURITY (PS):</b> PS SHALL BE REFUNDED TO THE BIDDER WITHOUT INTEREST, AFTER HE DULY PERFORMS AND COMPLETES THE CONTRACT IN ALL RESPECTS BUT NOT LATER THAN 60(SIXTY) DAYS OF COMPLETION OF ALL SUCH OBLIGATIONS INCLUDING THE WARRANTY UNDER THE CONTRACT.</p>

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY**  
**(FOR INDIAN VENDORS)**

Amendment- 25  
ANNEXURE-A

	<b>4. THE PERFORMANCE SECURITY SHALL NOT CARRY ANY INTEREST.</b>	
59	<b>BREACH OF CONTRACT, REMEDIES AND TERMINATION:</b> IN CASE OF BREACH OF CONTRACT, WHEREVER THE VALUE OF SECURITY INSTRUMENTS LIKE PERFORMANCE BANK GUARANTEE AVAILABLE WITH BHEL AGAINST THE SAID CONTRACT IS ATLEAST 10% OF THE CONTRACT VALUE, THE SAME BE ENCASHED. IN CASE THE VALUE OF THE SECURITY INSTRUMENTS AVAILABLE IS LESS THAN 10% OF THE CONTRACT VALUE, THE BALANCE AMOUNT BE RECOVERED FROM OTHER FINANCIAL REMEDIES (I.E. AVAILABLE BILLS OF THE CONTRACTOR, RETENTION AMOUNT, ETC. WITH BHEL) OR LEGAL REMEDIES BE PURSUED. FURTHER, LEVY OF LIQUIDATED DAMAGES, DEBARMENT, TERMINATION, DE-SCOPING, SHORT-CLOSURE, ETC., SHALL BE APPLIED AS PER PROVISIONS OF THE CONTRACT.	

NOTE:

1. PLEASE FILL IN THIS FORMAT AND SEND COMPULSORILY ALONG WITH QUOTATION WITH VENDOR'S SEAL, SIGNATURE AND DATE.

**SIGNATURE ALONG WITH SEAL AND DATE:**

**PQR (Turbine Spares)**

	<b>PQR Ref No: PQR/24-25/ Turbine Spares</b>	<b>Date: 23.08.2024</b>
	<b>Rev No: 00</b>	<b>Review Date: 23.08.2024</b>
	<b>PQR Revision Date:</b>	
<b>Sl. No.</b>	<b>BHEL Terms</b>	<b>Supplier's Compliance YES/NO</b>
<b>1</b>	<b>Offers are accepted from:</b>	
1	Only Manufacturer's Offers shall be considered for the Tender Enquiry.	
<b>2</b>	<b>Supplier shall give list of In-House Facilities:</b>	
2.a	Vendor shall have in-House necessary Manufacturing facilities required for manufacturing and supply of the item/s as per drng/spec..	
2.b	BHEL reserves right to visit the Works of the Manufacturer for Physical verification of the Manufacturing facilities (as declared by them) and assessment of their Quality systems during Technical Evaluation of the Offers.	
<b>3</b>	<b>Experience:</b>	
3.a	Bidders shall submit the necessary documents proving their Experience in Supplying same or similar nature items to any Power Plant equipment Manufacturer ( OEM- Original Equipment Manufacturer) (worldwide or within India) in last three years from the date of Enquiry. Documentary evidences to be submitted in the form of Customer's Purchase Order copies / Matl.Acceptance Report and item drawings/specs.. Documentary evidences submitted shall strictly meet all the technical requirement of the NIT.	
3.b	BHEL reserves right to verify the details from the Bidder's customers based on Documents submitted as a part of past experience.BHEL may ask for other relevant documents in line with above to review the capacity and capability of vendor with respect to enquired items.	
<b>4</b>	<b>Manufacturing Process Plan:</b>	
4.a	Bidders shall submit detailed Manufacturing process Plan along with the Technical Offer.	
<b>5</b>	<b>Financial Capability:</b>	
5.a	<b>Turn Over:-</b> Turn over of Non-MSe vendors should be minimum 100% of tender value. Relaxation for MSe vendors/ Notified Start-UPs on turn over will be as per MSME guidelines. UDYAM certificate will be required for MSe status.	
5.b	Applicable only for Non-Mse vendors:  Audited balance Sheet and Profit and Loss account Statement of last three consecutive year (with UDIN ) required along with part-1 bid. Or A CA Certified Consolidated summary (with UDIN) for last 3 consecutive years having annual turn over and Profit and Loss to be enclosed along with Part-1 bid .  For Vendors having Turn over less than 1 crore in any of the financial year, CA certified Financial Turn over and Profit Loss (with UDIN) may be accepted for that year only.	
6	After placement of Purchase Order, Vendor shall submit Material Test Certificate before dispatching the Material to BHEL, for review and Dispatch clearance.	
<b>Note-1: Non Submission of the above requested documents/non compliance to the above points will result in rejection of the Offers without further Notice/Intimation to the Bidder and no correspondance will be entertained at later date.</b>		
Note-2: "Similar items" means items having same/similar manufacturing process,similar nature of use of item as that of enquired items etc.		

Enq.No.

Vendor Name

Quotation No.

Quotation Date

**TECHNICAL CONDITION**

Sl.No.	Description	Vendor Response	Comment
1	Technical condition as per NIT		
2	Acceptance of items and their quantity as per NIT		
3	Quoted for all the items of NIT		
4	Delivery Period as per NIT		
5	Submission of Guarantee/Warranty certificate as per NIT		
6	Submission of Test Certificate as per NIT		
7	Submission of Inspection Certificate as per NIT		
8	Acceptance of packing instruction/condition as per NIT		

**COMMERCIAL CONDITION**

Sl.No.	Description	Vendor Response	Comment
1	Delivery Term <i>(Insurance will be in vendor scope if delivery term is accepted as BHEL Store)</i>		
2	MSE Status		
3	Payment Term		
4	Validity of offer as per NIT		
5	GST Type		
6	LD Clause as per GTC		
7	Risk purchase as per NIT		
8	Firm Price : The quoted/finalized rates shall be firm till execution of supplies. <i>Offer with PVC (Price Variation Clause) will not be considered.</i>		
9	Submission of Bank Guarantee		
10	Acceptance of Reverse Auction clause of NIT		
11	I have read & understood all terms and conditions of GTC and hereby give my acceptance on the same		

**NOTE** Vendors have to write in "Comment" box only if their response is not available in drop down menu.

On Bidder's office letter pad

## Make in India (Model Certificate) Annexure-I

### Self-Declaration

Enquiry No.	
Enquiry Date	

In line with Government public procurement order Number P-45021/2/2017-B.E-II dated 15.06.2017, and further modified order dt. 28.05.2018, 29.05-2019 and 04.06.2020

I / We hereby declare that I / We are a "Local Supplier" meeting the requirement of minimum local content (.....%) defined in the above government notification for the goods against above mentioned enquiry Number.

Details of location at which local value addition will be made is as follows:

Door No.	
Street / Address 1	
Street / Address 2	
District	
State	
Country	
PIN Code	

We also understand that the false declarations will be considered as breach of Integrity and liable for action.

For Company Name:

Seal:

Signature:

Date:

Place:

(Please fill all Yellow color field )



संस्थान क्रय विनिर्देश ( हीप - हरिद्वार )  
**PLANT PURCHASE SPECIFICATION**  
 (HEEP - HARIDWAR)

0500.215

पृष्ठ का  
 Page 1 of 3

SUPERSEDES  
 INVENTORY NO.  
 TLV 9160 07 02/2012

**13 CrMo4-5 PLATES**

**1.0 GENERAL :**

This specification governs the quality of plates of Grade 13 CrMo4-5, Material No. 1.7335 as per EN 10028-2.

**2.0 APPLICATION :**

The plates shall be used in manufacturing of steam turbine and other components.

**3.0 CONDITION OF DELIVERY:**

The plates shall be delivered in heat treated condition.

**4.0 DIMENSION AND TOLERANCES :**

Plates shall be supplied to the dimensions as per purchase order.

Tolerance shall be as per EN 10029 Class C.

**5.0 MANUFACTURE :**

Plates shall be manufactured as per EN 10028-2.

**6.0 HEAT TREATMENT:**

Plates shall be delivered analogical to the following thickness (t) according to EN 10028-2 table A.1 in heat treated condition :

Normalizing / Austenitizing: 890 – 950°C

Tempering: 650 – 730°C

- 16 < t ≤ 100 mm: Normalized and Tempered
- 100 < t ≤ 150 mm: Normalized and Tempered or Quenched and Tempered
- 150 < t ≤ 250 mm: Quenched and Tempered

The heat treatment details in the standard are mandatory.

**7.0 CHEMICAL COMPOSITION:**

Heat analysis according to EN 10028-2 in weight %

C	Si	Mn	P	S	Mo	Cr	N	Cu
0.08 – 0.18	≤ 0.35	0.40 – 1.00	≤ 0.025	≤ 0.010	0.40 – 0.60	0.70 – 1.15	< 0.012	< 0.30

The Al-content shall be determined and shall be reported for information in Test certificate.

**8.0 MECHANICAL PROPERTIES:**

Mechanical properties in delivery condition shall be as per EN 10028-2.

Tensile test shall be performed at room temperature in transverse direction and in accordance with ISO 6892-1.

COPYRIGHT AND CONFIDENTIAL  
 The information on these 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 दस्तावेज में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है। इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि सम्पत्ती के हित में हानिकारक हो ना किया जाए

हस्ताक्षर एवं दिनांक  
 SIGN & DATE  
 02/06/14

हस्ताक्षर एवं दिनांक SIGN & DATE	नाम NAME	हस्ताक्षर एवं दिनांक SIGNATURE & DATE
TSX	P. RITWIK	
QAX	SUGANDH	अनुवादक TRANSLATED BY
STE	PRADEEP	निर्माणकर्ता WORKED BY
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE
		पर्यवेक्षणकर्ता SUPERVISED BY
सामग्री सूची संख्या INVENTORY NO.	स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE	
P-2049	REV 02	Supersedes
	निर्माण PREPARED : MTE	जारी : मानक विभाग ISSUED : STANDARDS DIVISION
3/6/14		दिनांक DATE : 28.05.98

Gr No  
2.60



संस्थान क्रय विनिर्देश ( हीप - हरिद्वार )  
**PLANT PURCHASE SPECIFICATION**  
(HEEP - HARIDWAR)

0500.215

पृष्ठ का  
Page 2 of 3

For product thickness more than 30 mm, circular test pieces have to be taken in accordance with EN 10028-1 Table 3.

The impact Test for the product thickness more than 11 mm has to be verified with transverse standard V-notch specimen in accordance with ISO 148-1.

In case of product thickness 6-11 mm. one of the following alternative for the test pieces width shall be used :

- 10 mm
- Largest obtainable width between 5 mm and 10 mm.
- 7.5 or 5 mm

The notch shall be perpendicular to the surface of the product.

Where subsidiary test pieces are used, the given minimum absorbed impact energy value shall be reduced in proportion to the cross-sectional area of the test piece.

For product thickness less than 6 mm, impact test is not required.

The required minimum absorbed energy values apply even if they are not to be verified in the case of product thickness less than 6 mm.

Following Mechanical properties shall be met at room temperature:

Plate Thickness (mm)	Yield Strength N/mm <sup>2</sup>	Tensile Strength N/mm <sup>2</sup>	Elongation (l <sub>0</sub> = 5d) (%)	Impact Energy (J)*
t ≤ 16	≥ 300	450 - 600	≥ 19	≥ 31
16 < t ≤ 60	≥ 290	450 - 600	≥ 19	≥ 31
60 < t ≤ 100	≥ 270	440 - 590	≥ 19	≥ 27
100 < t ≤ 150	≥ 255	430 - 580	≥ 19	≥ 27
150 < t ≤ 250	≥ 245	420 - 570	≥ 19	≥ 27

\*) Average of 3 Charpy V-notch specimens. Each tested specimen shall reach at least 70% of this average value.

## 9.0 OUTER AND INNER QUALITY / NDE:

### 9.1 Surface condition:

According to EN 10163-2, Class B, subgroup 3 (repair by welding is not permitted). Visual inspection of all plates shall be done.

### 9.2 Scope of Inspection:

Following NDE shall be performed in delivery condition:

- Material identity check for all plates

03/06/14

REV 02

निर्माणकर्ता  
WORKED BYDevdutt  
Singh

3.5.14

जांचकर्ता  
CHECKED BYAshish  
Ranjan

3.5.14

हस्ताक्षर एवं तिथि SIGN & DATE		संस्थान क्रय विनिर्देश ( हीप - हरिद्वार ) <b>PLANT PURCHASE SPECIFICATION</b> (HEEP - HARIDWAR)	<b>0500.215</b>	
SUPERSEDES INVENTORY NO. सामग्री सूची संख्या को प्रतिस्थापित करता है			पृष्ठ का Page 3 of 3	
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		<ul style="list-style-type: none"> <li>All plates thickness 25 and above shall be subjected to Ultrasonic test as per ASTM A578 Level B or equivalent and shall comply the acceptance standard mentioned therein.</li> </ul> <p><b>10.0 MARKING:</b> Each plate shall be marked by punch with 8-16mm height of letter on a surface free from scale with following details:</p> <ul style="list-style-type: none"> <li>Supplier's identification number, BHEL Specification number, Purchase order number, material grade, size, melt number and batch number. The marking is to be encircled with coloured square brackets.</li> </ul> <p><b>11.0 DOCUMENTATION:</b> Unless otherwise stated on the order, five copies of the Test Certificates shall be furnished by supplier given the following information:</p> <ol style="list-style-type: none"> <li>BHEL Order Number</li> <li>BHEL Specification Number</li> <li>Suppliers references &amp; Name</li> <li>Heat Number, Heat analysis, Melting process</li> <li>Test results of Mechanical properties, all individual values shall be reported,</li> <li>Details of Heat Treatment followed by the supplier</li> <li>Results of Ultrasonic testing</li> <li>Confirmation of visual inspection</li> <li>Dimensional results</li> <li>Confirmation of the material identity check.</li> </ol> <p><b>12.0 CLEARANCE FOR DELIVERY:</b> The total results of the tests carried out are the deciding factor for clearance for delivery. BHEL shall evaluate the total results taking into consideration the intended use of the material and examines accordingly the permissibility of deviation (if any) from the specified properties. The clearance however does not relieve the supplier of his responsibility for the hidden non-permissible defects, which are found later.</p> <p><b>13.0 CROSS REFERRED STANDARDS:</b> EN 10028, EN 10029, EN10163-2, EN 10204, ASTM A 578, ISO 148-1, ISO 6892-1.</p>		
स्वत्वधिकार एवं गोपनीय ; इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि सम्पत्ती के हित में हानिकारक हो या किया जाए				
हस्ताक्षर एवं तिथि 				
सामग्री सूची संख्या INVENTORY P-2049	REV 02	निर्माणकर्ता WORKED BY Devdutt Singh		3.5.14
		जांचकर्ता CHECKED BY Ashish Ranjan		3.5.14



संस्थान मानक (डीम - इस्त्रियर)

HW 0641099

PLANT STANDARD (HEEP - HARDWAR)

पृष्ठ का  
Page 1 of 17.

TECHNOLOGICAL INSTRUCTIONS FOR STRESS RELIEVING & HYDROGEN FREE ANNEALING

1.0 General:

The technological instructions covers the stress relieving process to be followed for the purpose of relieving residual stresses in components induced due to welding, machining, hardening, mechanical working etc at the different stages of manufacturing.

The stress relieving process specifications contains in detail about soaking temperature, holding time, heating and cooling rates of the components made of different grades of carbon, alloy and stainless steel.

2.0 Compliance with National / International Standard:

Based on FV100023, KUN 133.01 -1, KUN133.01-02 and KUN133.01-03, KUN133.01-04.

3.0 Application:

The technological instructions are applicable to:

3.1 The stress relieving of valve spindles, valve seats, valve cones, valve discs, levers, steam strainer, welded structures etc.

3.2 Stress relieving of carbon and alloy steels after welding, friction welded spindles, valve seats, valve cones and angle rings. The components requiring carburizing and nitriding are also to be stress relieved after machining prior to carburizing and nitriding operation as per this instruction. The components requiring machining are also to be stress relieved if it is mentioned on the drawing prior to final machining.

3.3 For post weld heat treatment of pressure vessels as per ASME code Sec VIII, Div1, refer standard No. IIW0980814.

3.4 Stress Relieving of Specific Components: The details regarding holding time, heating and cooling rates are to be obtained from Table 1 of this standard for the stress relieving of valve stems, guide bushings, valve cones, threaded angle rings and steam strainers.

P-2205  
27/8/08

				नाम NAME	दिनांक व हस्ताक्षर SIGNATURE & DATE
			अनुवादक TRANSLATED BY		
TSX	B. CHAUDHARY	26-08-08	निर्माता WORKED BY	ASHISH RANJAN	23.08.08
			जांचक CHECKED BY	P. NATII	27/8/08
			निर्देशक SUPERVISED BY	J.P. MEENA	27/8/08
संस्था विभाग AGREED DEPT	नाम NAME	दिनांक व हस्ताक्षर DATE & SIGNATURE	संस्थान मानक समिति APPROVED PLANT STANDARDS COMMITTEE		
REV. NO. 02			तैयार PREPARED	मानक विभाग STANDARDS DIVISION	दिनांक DATE 27/8/08
Di 26-08-08			MTE		

SIGN & DATE  
INVENTORY NO  
संस्था विभाग

The information on this document 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.

संस्थान मानक समिति के द्वारा तैयार किया गया है। इसका उपयोग केवल संस्थान के अंदर ही किया जा सकता है।

INVENTORY NO  
SIGN & DATE



संस्थान मानक (हीप - हार्डवेयर)

HW 0641099

PLANT STANDARD (HEEP - HARDWAR)

पृष्ठ का  
Page 2 of 17

INVENTORY N

INVENTORY N  
The information on this document is the property of Bharat Heavy Electricals Limited. It shall not be used directly or indirectly in any way detrimental to the interest of this company.

INVENTORY N  
The information on this document is the property of Bharat Heavy Electricals Limited. It shall not be used directly or indirectly in any way detrimental to the interest of this company.

INVENTORY NO  
SIGN & DATE  
0-2705  
Date 26-08-08

Table 1

Name of components	KWU Specification (for reference only)	Equivalent plant standard
Valve Spindles	FV 10001	HW0610199
Angle Rings	FV 100024	HW0653599
Paired Blades	FV 100025	-
Guide Bushes	FV 100030	HW 0652097
Valve Cones, discs	FV 100041	HW0610199
Steam Strainer	FV 100109	HW0990009
Inner Casing (GT)	FV 200078	-
INCONEL 617		

4.0 Stress Relieving Processes:

Annealing at adequately high temperature (in case of quenched and tempered steels, however, 10-30°C below the tempering temperature of the part supplied) with subsequent slow cooling so that internal stresses are largely relieved without any appreciable changes in the other properties. The annealing temperature for cast parts shall be taken from shop route card.

4.1 Stress relieving procedure can be broadly classified into two groups:-

- a) Furnace Stress Relieving and
- b) Local Stress Relieving

The stress relieving of components, that can not be accommodated in the furnace or stress relieving of the finished components after rectification are covered under the head of local stress relieving.

4.2 Local Stress Relieving: Two different procedures are generally followed for the purpose of local stress relieving:

- a) Stress Relieving by resistance heating
- b) Stress Relieving by induction heating.

4.3 Stress Relieving by resistance heating (annealing mats):

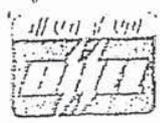
To the right and left of the weld, the area to be heated shall be at least three times the wall thickness of the part to be annealed. The width for stress relieving to be covered shall be as per figure 1. The gaps between mats shall not exceed 50mm. Figure 1 indicates diagrammatic arrangement at the welded spot with the application of annealing mats. The insulation width 'B' should be at least twice that of the heating area.

REV. NO. 02

Date 26-08-08

सिग्नेचर WORKED BY	ASHISH		13.08.08
सिग्नेचर CHECKED BY	P. NATHI		25.08.08

संस्था का नाम  
SIGN & DATE



संस्थान मानक (हीट - हार्डवयर)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099  
पृष्ठ का  
Page 3 of 17

संस्था का नाम  
INVENTORY NO

Glass fiber cloth, rock wool / ceramic mats and glass wool mats are used as insulating material. Insulation shall also be applied on the inside and to prevent occurrence of draught effect the opening shall be sealed off. The total electric power to be build up is given by the number of annealing mats required for covering the spot.

The following minimum heating width shall be taken into consideration.

HEATING WIDTH:

T (mm)	L (mm)
<15	60
>15-30	90
> 30-50	120
>50-100	160
>100	2 X L

COPYRIGHT AND CONFIDENTIAL  
This information on this document 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.

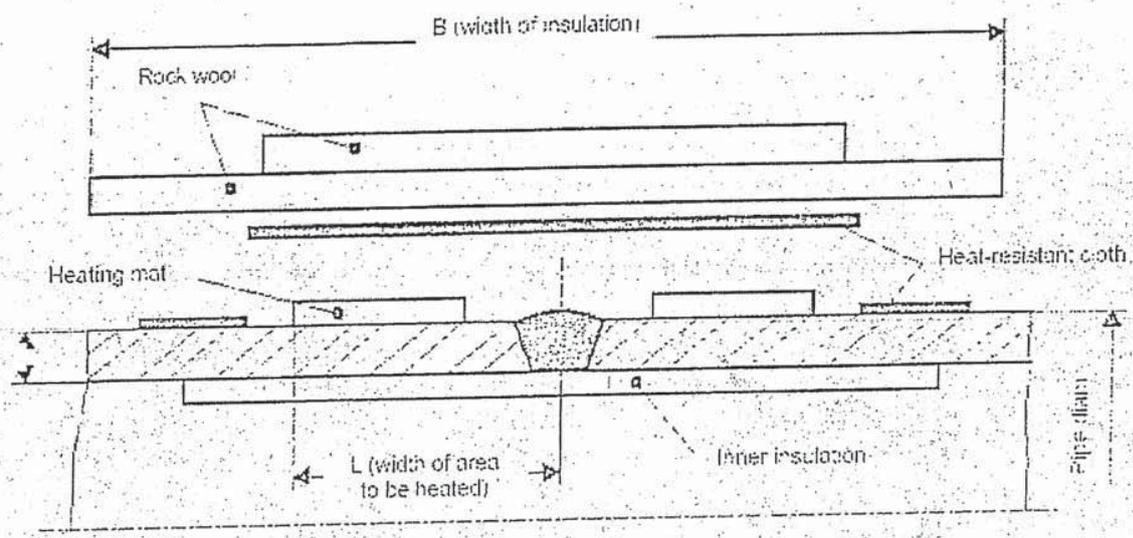


Figure 1. Setup of area to be annealed

संस्था का नाम  
SIGN & DATE

संस्था का नाम  
SIGN & DATE  
27/10/08

INVENTORY NO P-2205	REV-NO-02	प्रियंत्रण WORKED BY	ASHISTI	<i>[Signature]</i>	13.08.08
		जांचक CHECKED BY	P. NATH	<i>[Signature]</i>	25.08.08

SIGN &amp; DATE



संस्थान मानक (हीप - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641039

पृष्ठ का  
Page # of 17.

INVENTORY NO

अधिकार क्षेत्र

This document is the property of Bharat Incon. Electrical  
It should not be used directly or indirectly in any way other than the  
interest of the company.

यह दस्तावेज संस्थान की संपत्ति है। इसे बिना अनुमति के किसी भी  
उद्देश्य के प्रयोग में नहीं लाया जानना है।

DATE  
21/8/08

INVENTORY NO  
P-2205

#### 4.4 Stress Relieving by Induction heating:

The glass fiber cloth is wrapped around the welding spot to be stress relieved. Insulated hollow conductor cable is wrapped around 10-12 mm thick outer glass fiber cloth. The annealing cable in the weld region must in such a way that the distance between them is smaller than the wall thickness. The conductor cables shall be arranged in such a way that there is gradual temperature decrease from the center of the weld to the edge. In order to obtain a close electrical coupling the conductor cable must be wrapped without sagging. The hollow conductor cable is cooled with water in order to reduce the copper losses and the working temperature. Figure 2 shows the diagrammatic arrangements of insulation cable around the welding spot to be stress relieved. To prevent occurrence of the draft effect, the opening shall be sealed off. It is not necessary to apply a high number of windings to the work piece to achieve optimum heating thereof. The same results can also be obtained with a smaller number of windings, with the annealing cable spaced apart.

Large number of windings – high voltage

Small number of windings – high current

The windings shall be arranged in such a way that the beginning and end are always at the same height and there are no half or three quarter windings. The supply lines from the unit to the work piece shall run parallel to each other and not surround other parts. More uniform heating is achieved in tubular parts if the heating width is 8 to 10 times the thickness. On one side, the stress relieving width to be aimed for should be 50 to 200mm. For a stress relieving width of 200mm the winding width is 250 to 300mm.

The following formula shall serve as a guidelines for calculation of necessary power 'P' in kW for circular joints on tubular products for stress relieving width of 200mm

$$P = A \times D \times \sqrt{t} \quad \text{in kW}$$

D = Diameter of pipe in m

t = Wall thickness of pipe in mm

$$A = k \times (T/620)^2$$

k = Insulation value = 5 for inner and outer thermal insulation

= 10 for outer thermal insulation only

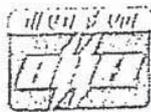
T = Stress relieving in °C

This formula applies regardless of the frequency and number of windings

REV-NO-02

निर्मितकर्ता WORKED BY	ASHISH		13.08.08
जांचकर्ता CHECKED BY	P. NATH		25.08.08

SIGN &amp; DATE



संस्थान मानक (डीप - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099

पृष्ठ का

Page 5 of 17

INVENTORY NO

अनुसंधान संख्या

The information on this document is the property of Bharat Heavy Electricals Limited. It is not to be used directly or indirectly in any way detrimental to the interest of the company.

यह सूचना कंपनी की संपत्ति है। इसे किसी भी रूप में प्रयोग करने से पूर्व कंपनी के अधिकारियों से परामर्श करना आवश्यक है।

INVENTORY NO  
P-2205  
SIGN & DATE  
27/8/08

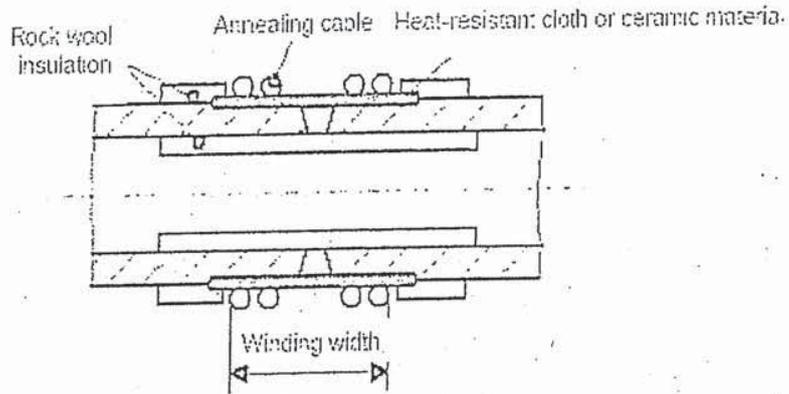


Figure 2: Setup of area to be annealed

### 5.0 Stress Relieving Process Parameters:

5.2 Stress relieving temperature of different grades of materials is given in Annexure 1, 2 & 3.

5.3 Holding Time (Soaking Period):

#### 5.2.1 Furnace Stress Relieving:

Stress Relieving: The hold time is 2 minutes per mm of the maximum wall thickness.

Max. wall thickness of component (mm)	Hold time (Minutes)---
< 30	60
> 30 - 60	120
> 60 - 90	180
> 90	240

Tempering: The hold time is at least 2 minutes per mm of wall thickness.

For the following materials the hold time shall be at least 4 minutes per mm of wall thickness:

X10 Cr Mo VNbN 9-1

GX 12 Cr Mo WVNbN 10-1-1

GX 12 Cr Mo VNbN 9-1

REV.NO. 02

निर्मितकर्ता  
WORKED BY

ASHISH

13.08.08

जांचकर्ता  
CHECKED BY

P. NATH

25.08.08

SIGN &amp; DATE



संस्थान मानक (हीप - हार्डवयर)

HW 0641099

पृष्ठ का

PLANT STANDARD (HEEP - HARDWAR)

Page 6 of 17

INVENTORY NO

अधिकारित व्यक्ति है

This document is the property of Bharat Heavy Electricals Ltd. It shall not be used directly or indirectly in any way detrimental to the interest of the company.

यह दस्तावेज भारत भारी बिजली के उपकरण लि. की संपत्ति है। इसका उपयोग किसी भी प्रकार से कंपनी के हितों के विरुद्ध नहीं होना चाहिए।

SIGN &amp; DATE

INVENTORY NO

5.3.2 Stress relieving by Induction: The minimum hold time for stress relieving by induction process shall be 30 minutes.

5.3.3 Stress relieving by resistance heating: The minimum hold time for stress relieving by resistance heating mats is 30 minutes.

#### 5.4 Heating and Cooling Rates:

The maximum heating rate is 80 K / hour. The maximum cooling rate shall be 50 K / hours. Controlled cooling is not specified for work piece temperature less than 300°C.

Recording of temperature in the time temperature chart can be switched off at temperature below 300°C. In case of resistance stress relieving the thermal insulation required for the stress relieving process shall remain on the stress relieved region until it has cooled below 300°C.

#### 6.0 Recording and Documentation:

For all stress relieving operation, a time temperature chart shall be generated. The details about stress relieving charge (e.g. drg. no, name of components, furnace reference, date, cycle no.) are to be entered in this chart. The time temperature chart shall be stored in the appropriate department in such a way that they are traceable to the stress relieving batch.

#### 7.0 Safety Precautions:

All the safety precautions as per instructions of safety department are to be observed during the process.

REV. NO. 02  
P-2205  
07/08/08

REV. NO. 02

निर्मितकर्ता  
WORKED BY

ASHISH

13.08.08

जांचकर्ता  
CHECKED BY

P. NATH

25.08.08

INVENTORY NO  
P-2205

DATE  
27/8/08

REV. NO. 02

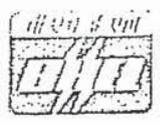
PLANT STANDARD (HEEP - HARDWAR)

संस्थान मानक (हीप - हरिद्वार)

HW 0641099

पृष्ठ का

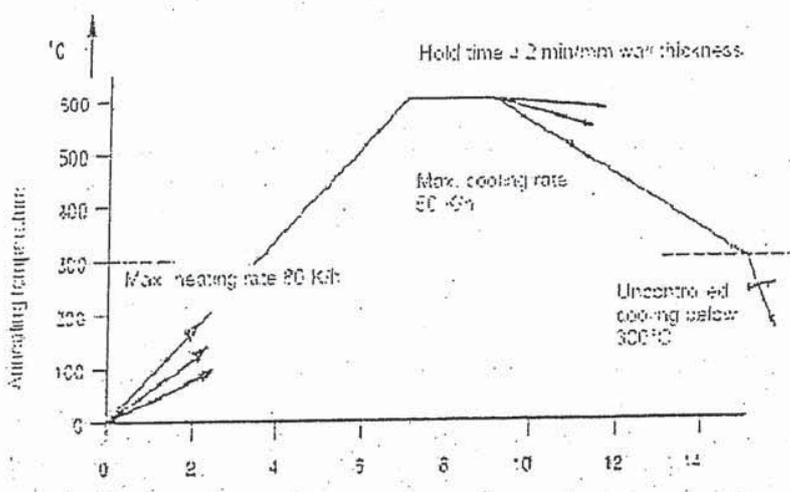
Page 7 of 7



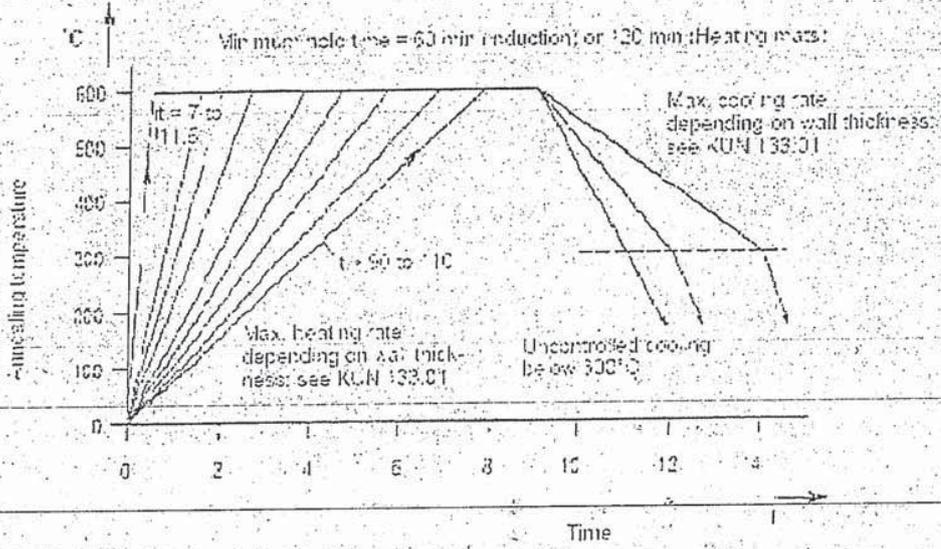
संस्थान मानक (हीप - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099  
पृष्ठ का  
Page 7 of 7

Furnace Annealing



Resistance Annealing (Heating Mats) or Induction Annealing



INVENTORY NO  
P-2205

REV. NO. 02

सिगनेचर WORKED BY	ASHISH	<i>Ashish</i>	13.08.08
जांचकर्ता CHECKED BY	P. NATH	<i>P. Nath</i>	25.08.08

SIGN &amp; DATE:



संस्थान मानक (हीप - हरिद्वार)

HW 0641099

PLANT STANDARD (HEEP - HARDWAR)

पृष्ठ का

Page 8 of 17

Annexure - 1

LOW STRESS ANNEALING TEMPERATURE OF DIFFERENT GRADES OF CARBON AND ALLOY STEELS (WELDING OF SIMILAR AND DISSIMILAR ROLLED & FORGED PRODUCTS)

Material Combinations		Temperature (°C)
1	2	3
P235G1TH (S135.8) S235JRG2(RS137-2)	S275J2G3 P235G1TH (S135.8) C22 (C22.3) S235JRG2 (RS137-2) P235GH (HII) P265GH (HII) S355J2G3(S152-3) S275JR	530 - 600
	P295GH (17Mn4) P310GH (19Mn5)	530 - 580
	16 Mo3	530 - 600
	10CrMo9-10 *	620-660
	X6CrNiTi18-10 X6CrNiMoTi17-12-2	
S355J2G3(S152-3)	C22 S235JRG2 (RS137-2) P235GH (HII) P265GH (HII) S355J2G3 (S152-3) P295GH (17Mn4) P310GH (19Mn5) 16Mo3	530 - 580
	C22	530 - 600
	P235GH (HII) P265GH (HII)	
	P295GH (17Mn4) P310GH (19Mn5)	530 - 580
	16Mo3	530 - 600
C22	C22 P235GH (HII) P265GH (HII)	
	P295GH (17Mn4) P310GH (19Mn5)	530 - 580
	16Mo3	530 - 600

\* Application subjected to approval.

REV.NO. 02

निर्माणावत

WORKED BY

ASHISH

13.08.08

जांचकर्ता

CHECKED BY

P. NATH

25.08.08

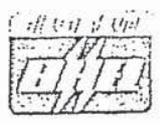
EXPL. NO. DATE: P-2705 13/08

The material in this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way without the written consent of the company.

SECTION NO:

DRAWING NO:

पृष्ठ संख्या  
SIGN & DATE



संस्थान मानक (हीप - हार्द्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099  
पृष्ठ का  
Page 9 of 17

सुपरसेडि  
INVENTORY NO

LOW STRESS ANNEALING TEMPERATURE OF DIFFERENT GRADES OF CARBON AND ALLOY STEELS (WELDING OF SIMILAR & DISSIMILAR ROLLED AND FORGED PRODUCTS)

COPYRIGHT AND CONFIDENTIAL  
This information is the property of Heavy Engineering Establishment. It must not be used directly or indirectly, in any way detrimental to the interest of the company.

Material Combinations		Temperature (°C)
1	2	3
P235GH (HI) P265GH (HII)	P235GH (HI) P265GH (HII) P295GH (17Mn4) P310GH (19Mn5) 16 Mo3	530 - 580
P295GH (17Mn4) P310GH (19Mn5)	P295GH (17Mn4) P310GH (19Mn5) 16 Mo3	530 - 580
16 Mo3	16 Mo3	580 - 620
	13CrMo4-5	580-620
	10CrMo9-10.*	620 - 660
	X6CrNiTi18-10 X6CrNiMoTi17-12-2	
13CrMo4-5	13CrMo4-5	600 - 700
	10CrMo9-10	660 - 700
15MnNi6-3	10CrMo9-10	Contact MITE

\* Application subjected to approval.

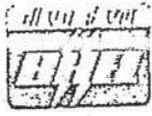
व्यक्तिगत व गोपनीय  
This document is the property of Heavy Engineering Establishment. It must not be used directly or indirectly, in any way detrimental to the interest of the company.

DATE  
08/07/18/08

INVENTORY NO  
D-2205

REV. NO. 02	निर्माणात WORKED BY	ASHISH	<i>Ashish</i>	13.08.08
	जांचणी CHECKED BY	P. NATH	<i>P. Nath</i>	25.08.08

REVISIONS INVENTORY NO.



संस्थान मानक (हीम - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099

पृष्ठ का  
Page 10 of 17

LOW STRESS ANNEALING TEMPERATURE OF DIFFERENT GRADES OF CARBON AND ALLOY STEELS (WELDING OF SIMILAR AND DISSIMILAR ROLLED AND FORGED PRODUCTS)

Material Combinations		Temperature (°C)
1	2	3
10CrMo9-10	10CrMo9-10, 21CrMoV5-7 21CrMoNiV4-7	680 - 720
	X20CrMoV12-1, X22CrMoV12-1	700 - 750
14MoV6-3	14MoV6-3	690 - 730
	21CrMoV5-7 21CrMoNiV4-7	680 - 730
21CrMoV5-7 21CrMoNiV4-7	21CrMoV5-7 21CrMoNiV4-7	680 - 730
	24CrMo5 / 25CrMo4	680 - 730
X3CrNiMo13-4 X4CrNi13-4	X3CrNiMo13-4 X4CrNi13-4	580 - 600
	X6CrAl13	580 - 600
X6Cr13	X6Cr13	650
X3CrNb17	X3CrNb17	740 - 750
X8CrNiNb16-13	X8CrNiNb16-13 X8CrNiMoNb16-16 X120Mn12 X6CrNiNb18-10 X6CrNi118-10	

REV.NO: 02

निष्पादक WORKED BY	ASHISHI	<i>Ashishi</i>	13.08.08
जांचकर्ता CHECKED BY	P. NATI	<i>P. Nati</i>	25.08.08

REV. NO. 02

INVENTORY NO

DATE

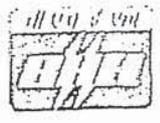
REV. NO.

INVENTORY NO

DATE

REV. NO.

INVENTORY NO



संस्थान मानक (हीम - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099  
पृष्ठ का  
Page 11 of 17

LOW STRESS ANNEALING TEMPERATURE OF DIFFERENT GRADES OF CARBON AND ALLOY STEELS (WELDING OF SIMILAR AND DISSIMILAR METAL)

Material Combinations		Temperature (°C)
1	2	3
X8CrNiMoNb 16-16	X8CrNiMoNb 16-16	
	X6CrNiTi 18-10	
X6CrNiTi 18-10	X5CrNi 18-10	
X6CrNiTiNb 18-10	X6CrNiTi 18-10,	
	X6CrNiNb 18-10	
	X6CrNiMoTi 17-12-2	
	X35Mn 18	
X6CrNiTi 18-10	X12CrNiTi 18-9	
X6CrNiMoTi 17-12-2	X35Mn 18, X129Mn 12	
	X6CrNiMoTi 17-12-2	
X10NiCrAlTi 32-20	X8CrNiNb 16-13	
	X8CrNiMoNb 16-16	
	X10NiCrAlTi 32-20	
X1NiCrMoCu 25-20-5	X1NiCrMoCu 25-20-5	
X20CrMoV 12-1	X20CrMoV 12-1	720 - 780
X22CrMoV 12-1	X22CrMoV 12-1 X20CrMoV 12-1	700 750
X10CrMoVNb 9-1	10CrMo 9-10	710 740
	X10CrMoVNb 9-1	
	X20CrMoV 12-1	720 - 740

REV. NO. 02

Prepared / WORKED BY	ASHISH	<i>Ashish</i>	13.08.08
Checked / CHECKED BY	P. NATH	<i>P. Nath</i>	25.08.08

COPYRIGHT AND CONFIDENTIAL

This document or its contents is the property of Bharat Heavy Electricals Limited. It shall not be used directly or indirectly in any way detrimental to the interest of the company.

संस्थान मानक

संस्थान मानक

संस्थान मानक

संस्थान मानक

INVENTORY NO. 8

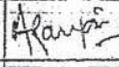
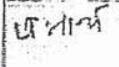
SUBJECT MATTER

LOW STRESS ANNEALING TEMPERATURE OF DIFFERENT GRADES OF CARBON AND ALLOY STEELS (WELDING OF SIMILAR AND DISSIMILAR METAL)

Material Combinations		Temperature (°C)
1	2	3
X10CrMoVNb9-1	X20CrMoV12-1	720 -- 740
X35Mn18 X120Mn12	X35Mn18, X120Mn12	
NiCr20Ti	NiCr20Ti	
NiCr23Co12Mo	NiCr23Co12Mo	

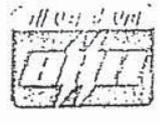
ALL INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF IAS. It is not to be used directly or indirectly in any way detrimental to the interest of the company.

TRANSMISSION SYSTEM  
 All information on this document is the property of IAS. It is not to be used directly or indirectly in any way detrimental to the interest of the company.

INVENTORY NO.	REV. NO-02		निर्मितकर्ता WORKED BY	ASHISH	 13.08.08
P-2205			जाँचकर्ता CHECKED BY	P. NATH	 25.08.08

DATE: 07/18/08

INVENTORY NO  
SIGN & DATE



संस्थान मानक (हीम - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099  
पृष्ठ का  
Page 13 of 17

INVENTORY NO

INVENTORY NO

ALL RIGHTS RESERVED. This document is the property of Hindustan Locomotive Works Limited. It is not to be used or reproduced in any way without the written consent of the company.

INVENTORY NO

INVENTORY NO  
REV. NO. 02

Annexure - 2

STRESS RELIEVING OF WELDED JOINTS OF CAST STEEL MATERIALS

Material Combinations		Temperature (°C)	
1	2	Pre Weld	Post Weld
GP 240 GH (GS - C25)	GP 240GH (GS-C25) G20Mo5 (GS-22Mo4)	100-150	580-620
G20Mo5(GS-22Mo4)	G20Mo5 (GS-22Mo4)	100-150	660-700
	G17CrMo5-5 (GS-17CrMo5-5)	200-300	660-700
G17CrMo5-5 (GS-17CrMo5-5)	G17CrMo5-5 (GS-17CrMo5-5)	200-300	660 - 700
	G17CrMo9-10 (GS-18CrMo9-10)		680 - 720
	G17CrMoV5-10 (GS-17CrMoV5-11)		
G17CrMo9-10 (GS-18CrMo9-10)	G17CrMo9-10 (GS-18CrMo9-10)	200-300	
	GX22CrMoV12-1 (GS-X22CrMoV12-1)	≤30mm 300-400 >30mm 220-260	680-720
G17CrMoV5-10 (GS-17CrMoV5-11)	G17CrMoV5-10 (GS-17CrMoV5-11)	200-300	680-720
	GX22CrMoV12-1 (GX-22CrMoV12-1)	≤30mm 300-400 >30mm 220-260	
G17CrMoV5-10 (GS-17CrMoV5-11)	GX12CrMoWVNb10-11 GX12CrMoVNb9-1	220-260	700-720
GX12CrMoWVNb10-11	GX12CrMoWVNb10-11 GX12CrMoVNb9-1	220-260	720-740
GX22CrMoV12-1 (GX-22CrMoV12-1)	GX22CrMoV12-1 (GX-22CrMoV12-1)	≤30mm 300-400 >30mm 220-260	700-750

REV. NO. 02

निर्मित WORKED BY	ASHISH	<i>Ashish</i>	13.08.08
जांच CHECKED BY	P. NATH	<i>P. Nath</i>	25.08.08



SIKSHAK

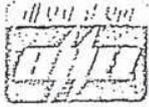
INVENTORY NO

DATE

PLANT STANDARD (JHEEP - HARDWAR)

STRESS RELIVING OF WELDED JOINTS OF CAST STEEL MATERIALS WITH ROLLED AND FORGED STEELS

REVISION NO. 02



संस्थान मानक (जीप - हरिद्वार)

PLANT STANDARD (JHEEP - HARDWAR)

HW 0641099

पृष्ठ का Page 15 of 17

STRESS RELIVING OF WELDED JOINTS OF CAST STEEL MATERIALS WITH ROLLED AND FORGED STEELS

Material Combinations		Temperature (°C)	
1	2	Pre Weld	Post Weld
G17CrMoV5-10 (GS-17CrMoV5-11)	P265GH (III), P235G1TH (ST35.8) *	200-300	660-700
	13CrMo4-5	200-300	
	10CrMo9-10	200-300	680-720
	14MoV6-3 21CrMoV5-7 21CrMoNiV4-7	200-300	680-720
	X10CrMoVNb9-1	220-260	710-720
	X20CrMoV12-1 X22CrMoV12-1	≤30mm 300-400 >30mm 220-260	
GX5CrNi13-4	S235JR (St 37-2) P265GH (III)	100-130	580-600
	X3CrNiMo13-4		
GX12CrMoWVNb10-1-1	X10CrMoVNb9-1	220-260	720-740
GX12CrMoVNb9-1			
GX23CrMoV12-1	X22CrMoV12-1	220-260	700-750
GX23CrMoV12-1	Build up weld	220-260	

\* Application subjected to approval.

07/18/08

REVISION NO. 02

निष्पादित WORKED BY	ASHISH	<i>[Signature]</i>	13.08.08
जांचासाठी CHECKED BY	P. NATH	<i>[Signature]</i>	25.08.08

SIGN &amp; DATE



संस्थान मानक (हीप - हरिद्वार)  
PLANT STANDARD (HEEP - HARDWAR)

HW 0641099

पृष्ठ का  
Page 16 of 17

INVENTORY NO

TABLE FOR MATERIAL GRADE AND NEAR EQUIVALENT BHEL SPECIFICATIONS

Material Grade	BHEL Specification No.	Material Grade	BHEL Specification No.
P235 G1 TH (St.35.2)	HW10293, IHW10298 AA10154, AA10445	X20CrMoV12-1	HW10683, HW19390
S235JR G2 (RS137-2)		X22CrMoV12-1	
S275J2G3	AA10119	14MoV6-3	
C22	HW19361, HW19381 AA19331	X8CrNiNb 16-13	HW10781, IHW10782 HW19475
P235GH (HI)		X3CrNiMo 13-4	HW10767
P265GH1 (IHM)	AA10401	X4CrNi13-4	
S355J2G3 (St 52-3)	AA10122, IHW10181	X6CrAl13	HW10788
S275 JR	AA10108	X6Cr13	AA10737
P 295 GH (17Mn4)	HW19380, HW10569	X3CrNb17	HW10787
P 310GH (19Mn5)	HW10590	X8NiMoNb16-16	
16Mo3	HW10564, IHW10568 HW10570, IHW19379 HW19484, IHW10567	24CrMo5/25CrMo4	HW10677, IHW10674 HW10665, IHW19388 HW18805
13 CrMo4-5	AA10656	X12Mn12	
10CrMo 9-10	IHW19387, IHW10675 IHW10685	X6CrNi118-10	AA10740, AA10725 AA10726, AA10755
15MnNi6-3		X6CrNiTiNb18-10	
21CrMoV5-7	HW10675, AA10620	X5CrNi18-10	AA10739

INVENTORY NO

REV. NO. 02

DATE

WORKED BY

ASTHISH

13.03.08

CHECKED BY

P. NATH

25.08.08

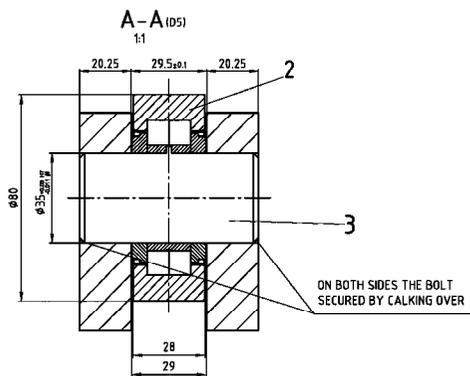
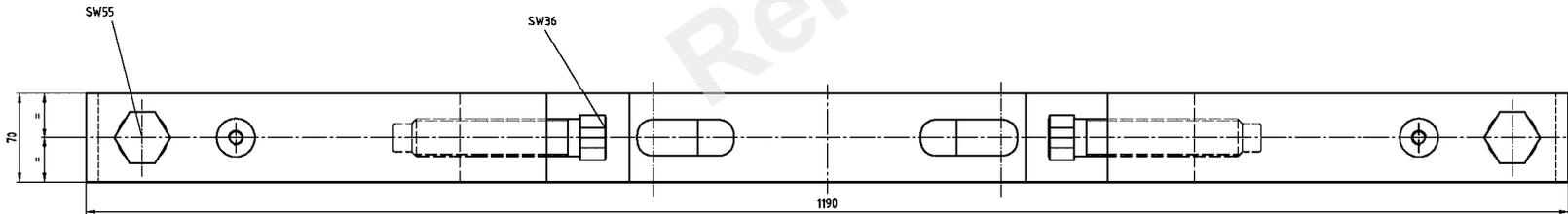
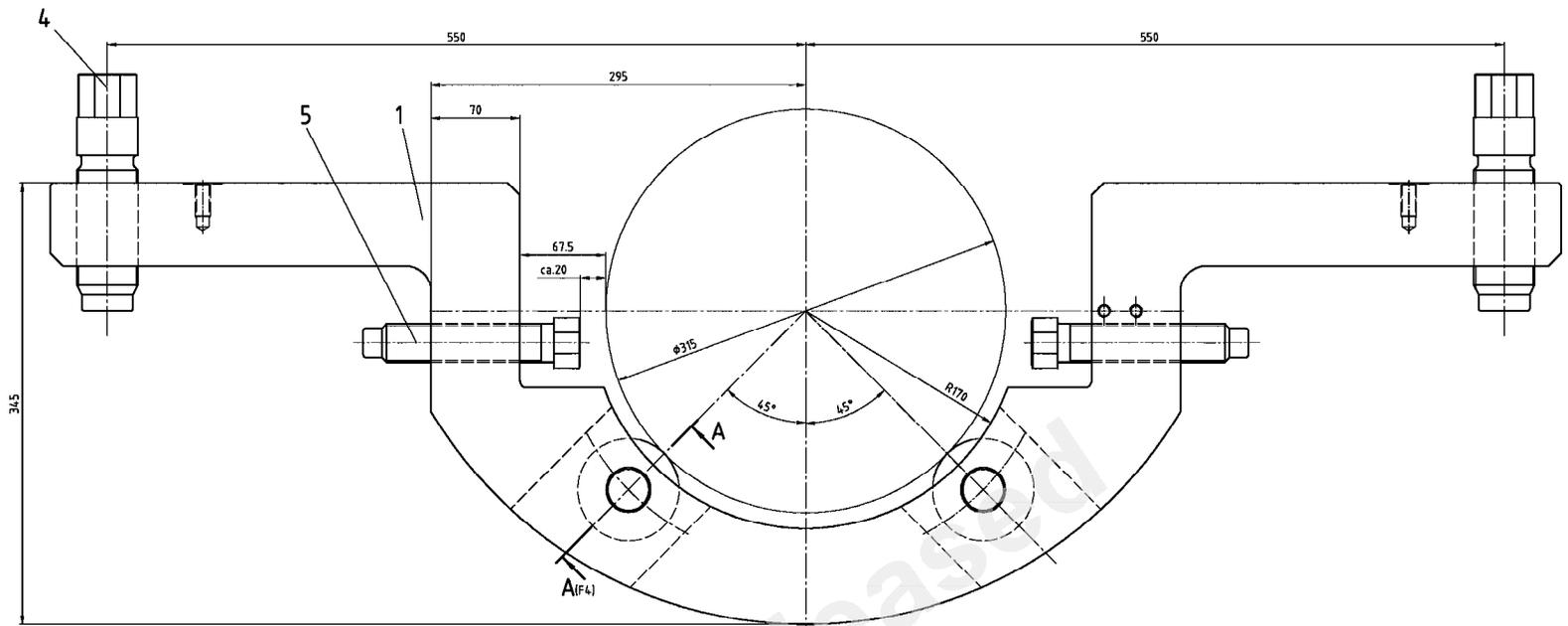
P-2205

18/08





00099-01-021-1



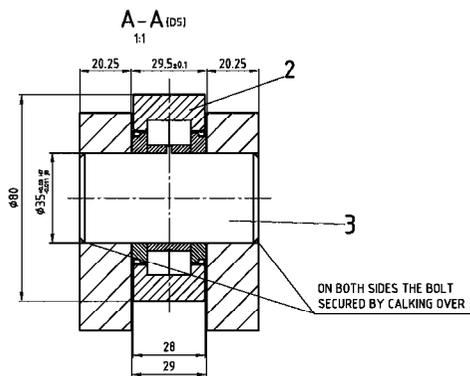
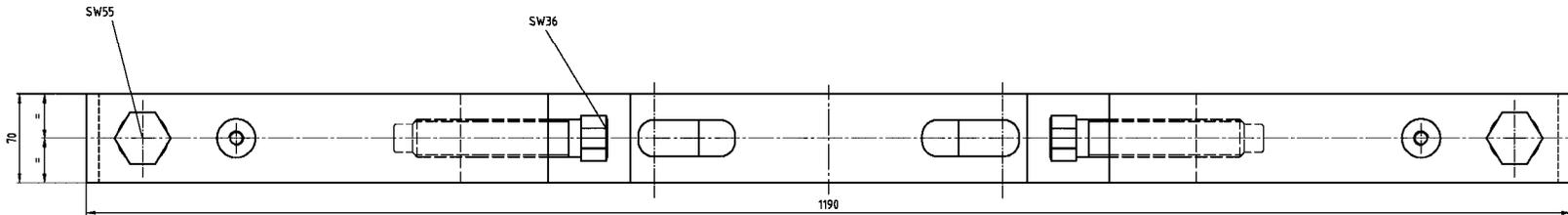
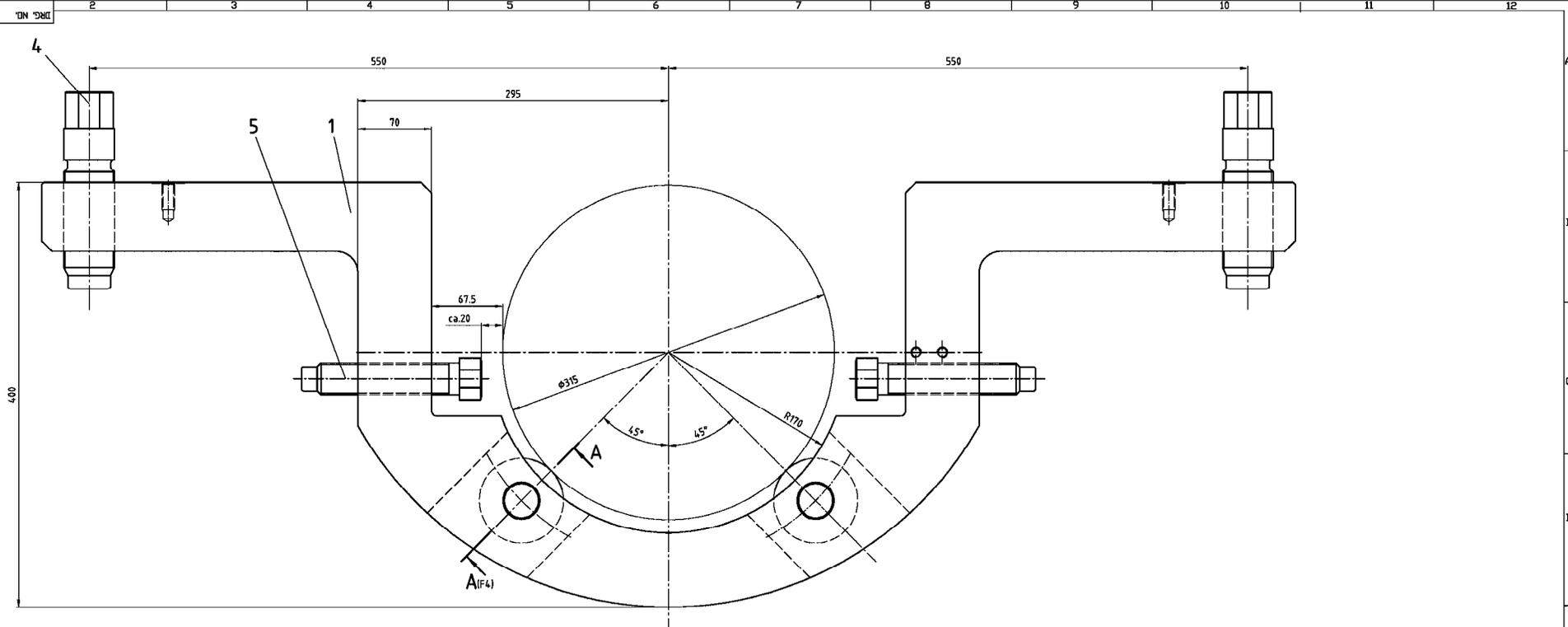
TECHNICAL REQUIREMENTS:-  
 1. IDENTIFICATION ACCORDING TO HW0400397

INVENTORY NO. SERIAL AND DATE  
 REF. DRA. NO. AND DATE  
 TR. NO. AND DATE

C.B.I.M. No. Q-12010-56000				STATUS OF Dwg		TYPE OF PRODUCT	
DESIGN	NAME	DATE	DATE	DATE	DATE	STEAM TURBINE	
TR	FL. BINGSI	SEP	04.12.2011			NAME OF CUSTOMER/PROJECT	
GRADE OF UNTOL.DIM				BHARAT HEAVY ELECTRICALS LTD			
M/CG.- A0230208				RANIPUR, HARDWAR			
WELDING-A0062104							
GAS CUTTING-T3-A0062104							
REV	DATE	ALTERED	REV	DATE	ALTERED	DEPT STE	SCALE
		CHECKED			CHECKED	4011	1:2
WEIGHT (KG)				REF. TO ASSY. DRG.		ITEM NO. OF SET	
67				0-12010-56000		3	
DRAWING NO.				CARD CODE			
1-12010-56300				7			
SHEET No.01				No. OF SHEETS 01			
AI SIZE							

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY INTRINSICAL TO THE INTEREST OF THE COMPANY

00999-01021-1 DRG. NO.



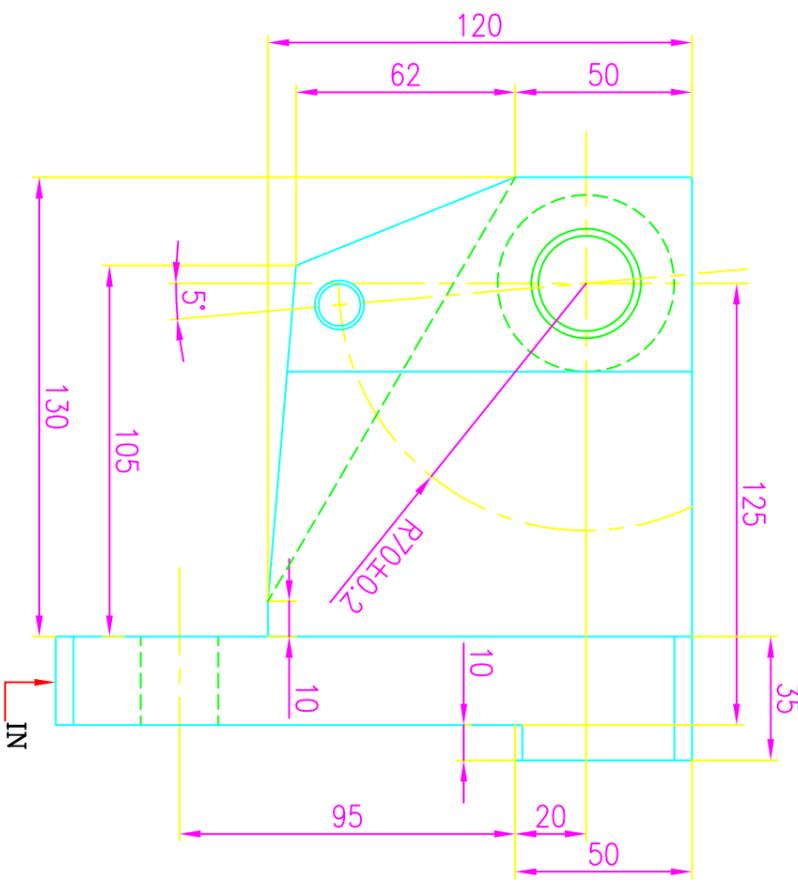
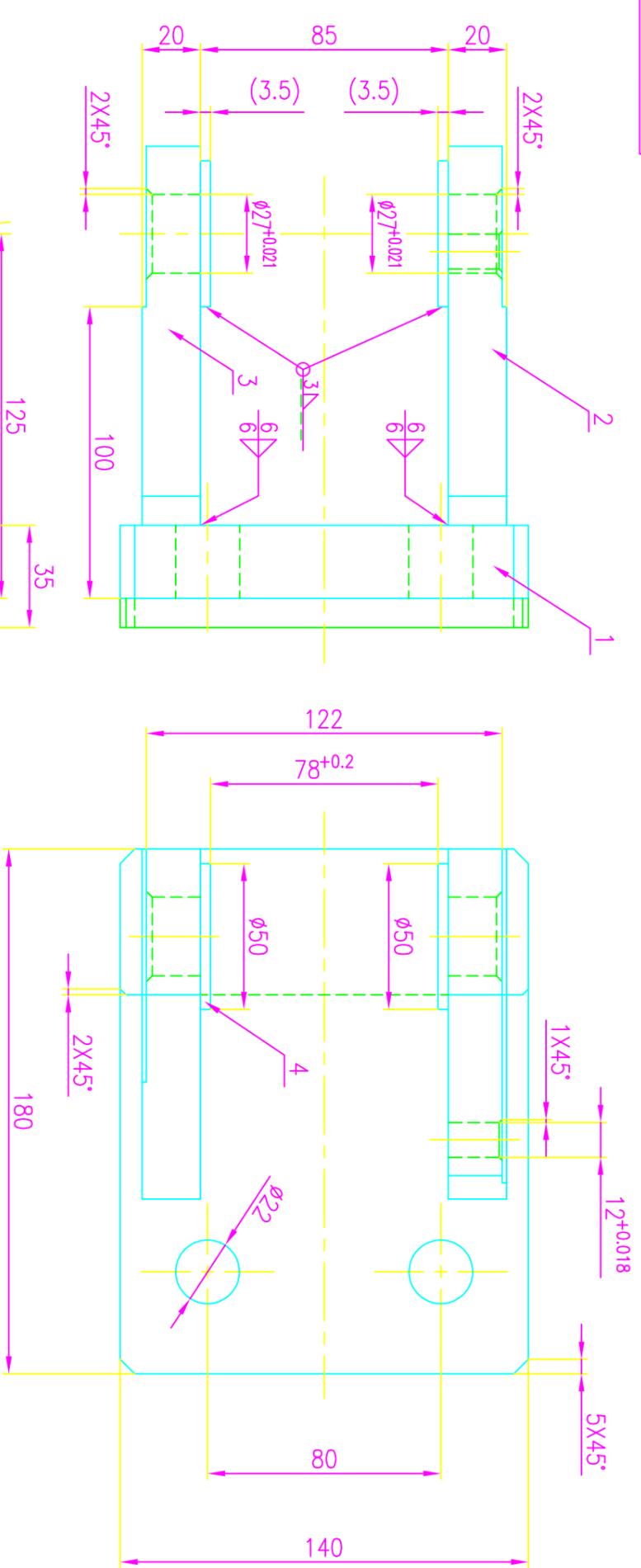
TECHNICAL REQUIREMENTS:-  
1. IDENTIFICATION ACCORDING TO HW0400397

INVENTORY NO. SERIAL AND DATE  
REF. DRG. NO. DEPT. PROJECT  
DWG. NO. PERSONNEL

C.B.O.M. No. 0-12010-58000		STATUS OF DRG.		TYPE OF PRODUCT																	
DESIGN	NAME	DATE	DATE	OR	STEAM TURBINE																
TR	R. SINGH	09-12-2011		NAME OF CUSTOMER/PROJECT																	
<table border="1"> <tr> <th>NAME</th> <th>SIGN</th> <th>DATE</th> <th>NO. OF</th> </tr> <tr> <td>DRN</td> <td>MUKUNAR</td> <td>-SD-</td> <td>12-09-2011</td> </tr> <tr> <td>CHK</td> <td>NEERAJ</td> <td>-SD-</td> <td>12-09-2011</td> </tr> <tr> <td>APPD</td> <td>D.KRAY</td> <td>-SD-</td> <td>25-12-2011</td> </tr> </table>						NAME	SIGN	DATE	NO. OF	DRN	MUKUNAR	-SD-	12-09-2011	CHK	NEERAJ	-SD-	12-09-2011	APPD	D.KRAY	-SD-	25-12-2011
NAME	SIGN	DATE	NO. OF																		
DRN	MUKUNAR	-SD-	12-09-2011																		
CHK	NEERAJ	-SD-	12-09-2011																		
APPD	D.KRAY	-SD-	25-12-2011																		
GRADE OF UNTOOL.DIM		DEPT	STE	SCALE	WEIGHT (KG)																
M/CG- AA0230208		4011		1:2	70.70																
WELDING-AA062104		REF. TO ASSY. DRG.		CARD	DRAWING NO.																
GAS CUTTING-T3-AA062104		0-12010-58000		CODE	1-12010-58600																
REV	DATE	ALTERED	REV	DATE	ALTERED																
		CHECKED			CHECKED																
TITLE		DRAWING NO.		SHEET No.01																	
BOW		1-12010-58600		No. OF SHEETS 01																	







**TECHNICAL REQUIREMENTS:-**

IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH **IN**

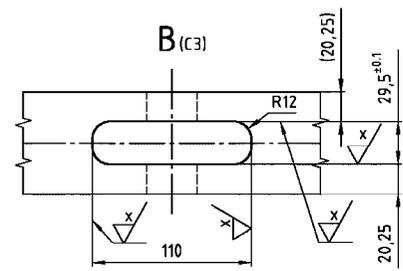
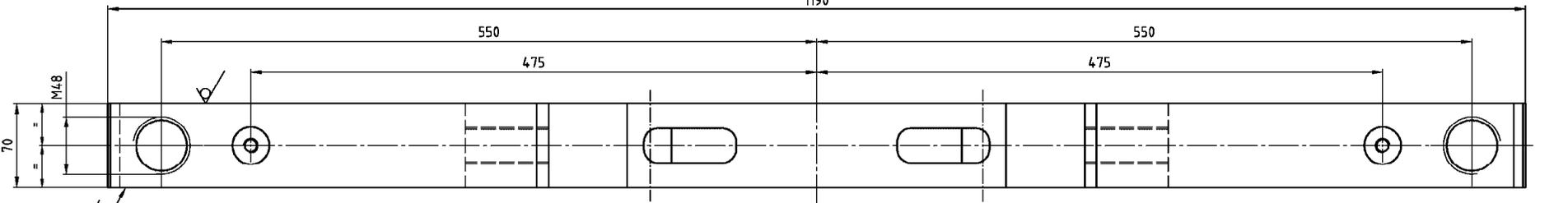
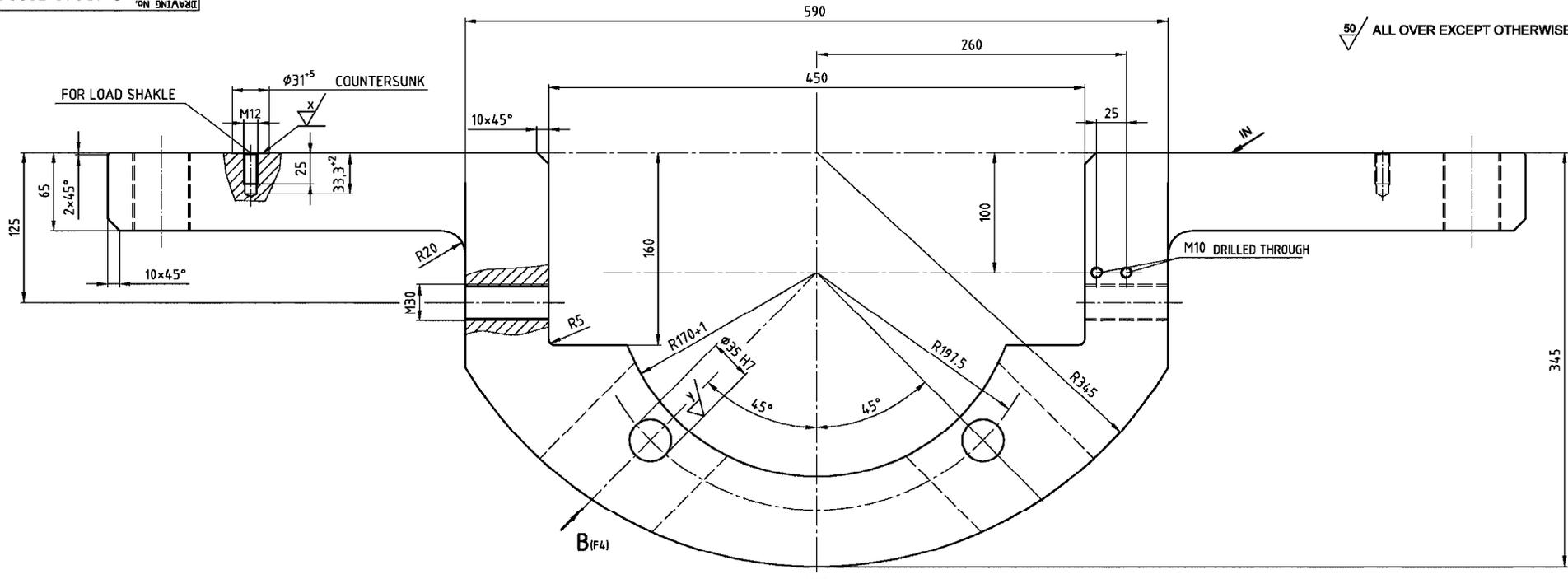
Inventory No.	Sign & Date	Ref.Drawing No>	A0171A8933
REV	DATE	ALTERED	CHECKED
1			
REV	DATE	ALTERED	CHECKED
2			
REV	DATE	ALTERED	CHECKED
3			
REV	DATE	ALTERED	CHECKED
4			
REV	DATE	ALTERED	CHECKED
5			
REV	DATE	ALTERED	CHECKED
6			

GRADE OF UNTOL. DIM		M/CG.- AA0230208 m		AGREED DEPT		NAME		SIGN		DATE	
WELDING-CLASS 'B' OF ISO13920:1996		WTX		S.THAKUR		SD/-		14.03.2015			
GAS CUTTING-TABLE 3 OF AA0621101		REV		DATE		ALTERED		CHECKED			
CBOM No.		STATUS of Dwg		TYPE OF PRODUCT		OR		NAME OF CUSTOMER/PROJECT			
BHARAT HEAVY ELECTRICALS LTD.		RANIPUR, HARDWAR		STEAM TURBINE		SCALE		WEIGHT (KG)			
DEPT		SITE		SCALE		WEIGHT (KG)		REF. TO ASSY. DRG.		ITEM No.	
CODE 4011		00		1:2		00		3-11506-56000		75	
TITLE :		BRACKET		DRAWING NO.		2-11506-56100		SHEET No.		22	
										24	

10895-01010-2  
2-12010-56301

DRAWING No.

50 / ALL OVER EXCEPT OTHERWISE STATED



TECHNICAL REQUIREMENTS:-  
1. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED IN

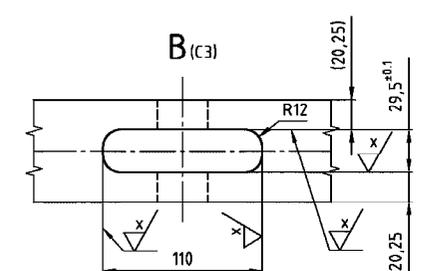
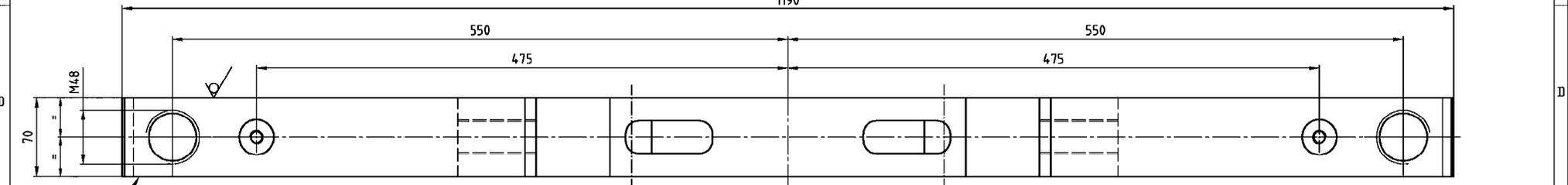
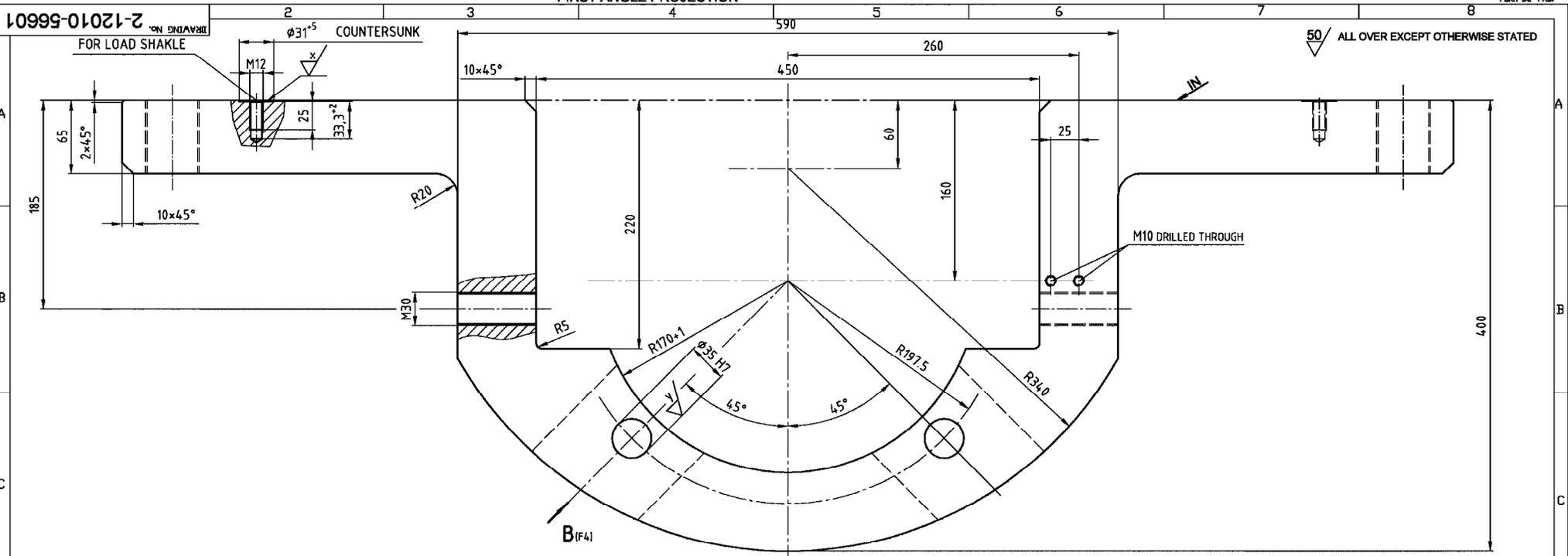
Inventory No. Sign & Date Ref. Drawing No. DSPPG-0073075 Tm No. PS0494232

$x/12.5$   $y/3.2$

GRADE OF UNTOL.DIM				CBDM No. 0-12010-56000				STATUS OF DRG			
M/CG-AA0230208				AGREED	NAME	SIGN	DATE	TYPE OF PRODUCT			
WELDING-AA0621104				TTX	R.BINGH	SDA	06-12-2011	OR			
GAS CUTTING-70AA0621104								NAME OF CUSTOMER/PROJECT			
								STEAM TURBINE			
								BHARAT HEAVY ELECTRICALS LTD.			
								RANIPUR, HARDWAR			
								DRN M.KUMAR -SD- 12-06-2011			
								CHD NEERAJ -SD- 12-06-2011			
								APPD B.K.RAY -SD- 23-12-2011			
								73 74			
								75 77			

DEPT	STE	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
4011		1:2.5	56	1-12010-56300	1	75 77
TITLE			CARD	DRAWING NO.		
BOW				2-12010-56301		
				SHEET No. 01 No. OF SHEETS 01		

10999-01021-2  
DRAWING NO. 2-121010-56601



$x/12.5$   $y/3.2$

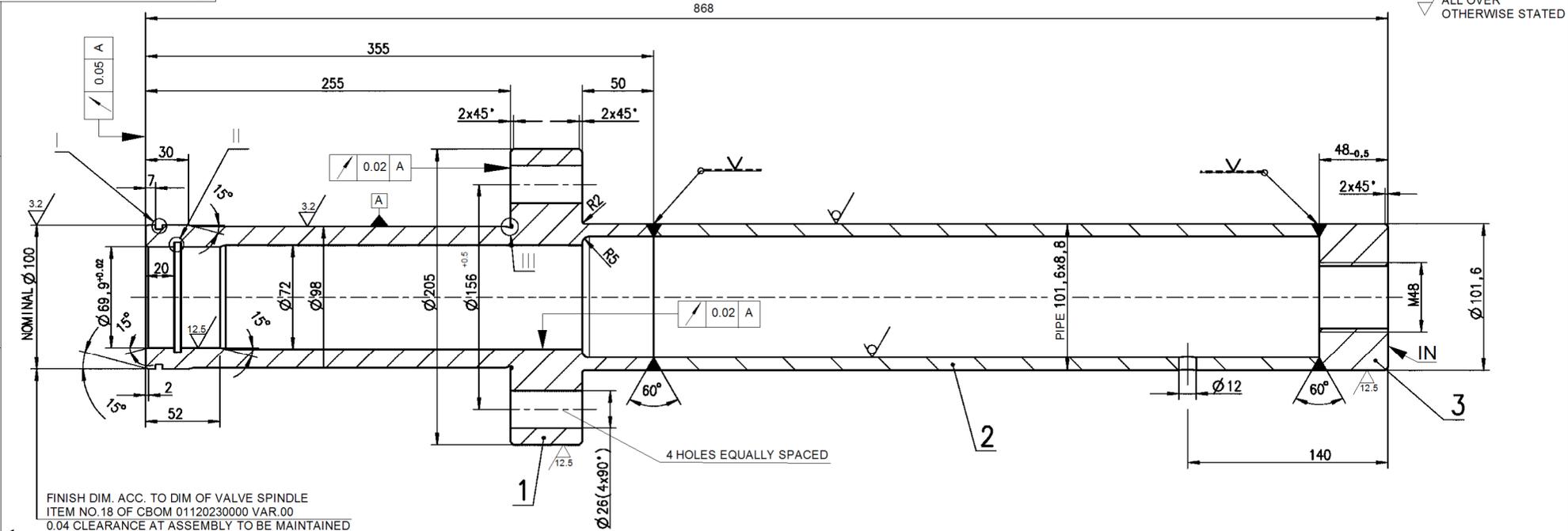
TECHNICAL REQUIREMENTS:-  
1. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED IN

Inventory No. \_\_\_\_\_  
Sign & Date \_\_\_\_\_  
Ref. Drawing No. DSPPG-0072920  
Tin No. PSK034K990

GRADE OF UNTOL.DIM		CBOM No. 0-12010-56000		STATUS OF DRG		TYPE OF PRODUCT		STEAM TURBINE			
M/CG-AA0230208		WELDING-AA0621104		GAS CUTTING-T3-AA0621104		NAME OF CUSTOMER/PROJECT		BHARAT HEAVY ELECTRICALS LTD RANIPUR, HARDWAR			
REV DATE ALTERED CHECKED		REV DATE ALTERED CHECKED		DEPT STE		SCALE		WEIGHT (KG)		REF. TO ASSY. DRG.	
				CODE 4011		1:2.5		60		1-12010-56600	
				TITLE :		BOW		CARD		DRAWING NO. 2-12010-56601	
										SHEET No. 01 No. OF SHEETS 01	

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT 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.

DRAWING NO. 2-12023-30010



3.2 ALL OVER OTHERWISE STATED

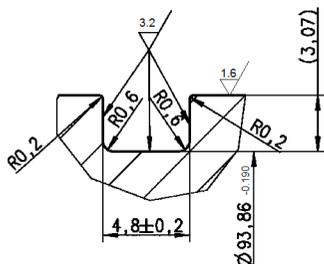
FINISH DIM. ACC. TO DIM OF VALVE SPINDLE  
ITEM NO.18 OF CBOM 01120230000 VAR.00  
0.04 CLEARANCE AT ASSEMBLY TO BE MAINTAINED

WELDING TABLE

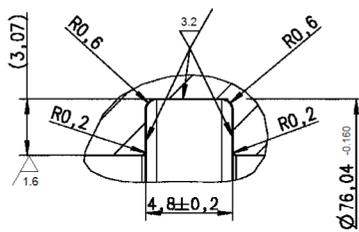
WELD SYMBOL AND SIZE OF WELD SEAM	
WELD SEAM LENGTH IN METRE	0.64
WEIGHT OF DEPOSITED METAL IN Kg.	0.27

TECH. REQUIREMENTS:

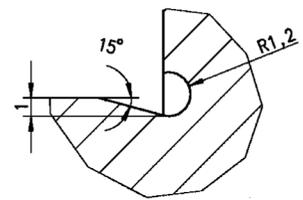
1. IDENTIFICATION AS PER HW 0400397 AT THE PLACE MARKED WITH IN.
2. ALL THE EDGES WHERE CHAMFERING IS NOT SPECIFIED SHALL BE CHAMFERED TO 0.5X45°.
3. WELD CLASSIFICATION GROUP ACCORDING TO HW0620099: AS/AK.
4. WELDING TEST SCOPE ACCORDING TO HW 0850199, CATAGORY OF SERVICE REQUIREMENT -1.
5. TO BE STRESS RELIEVED AFTER WELDING AS PER HW0641.099.



DETAIL-I



DETAIL-II



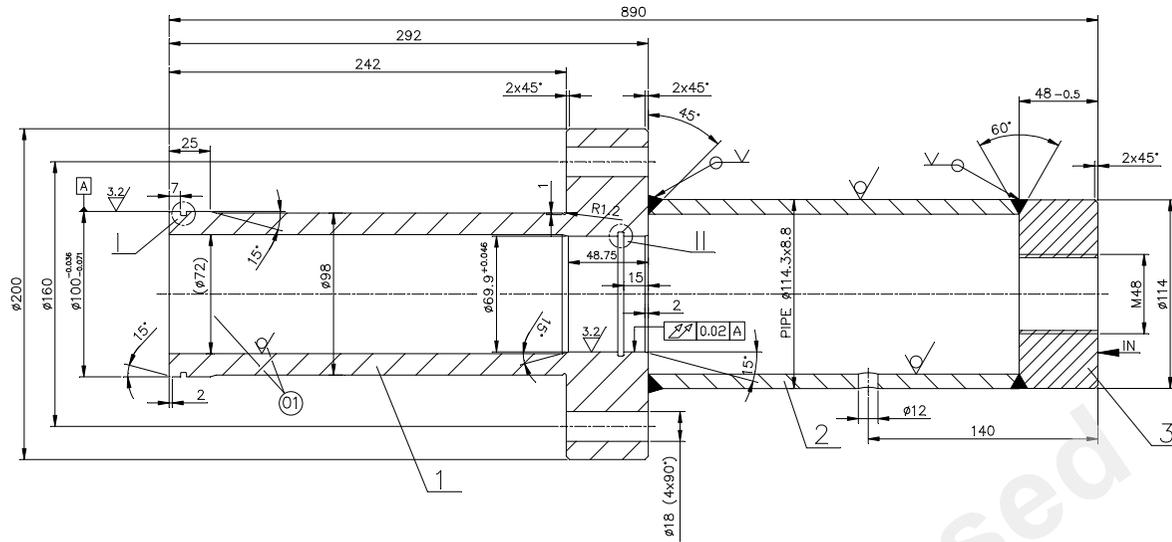
DETAIL-III

INVENTORY NO. SIGN & DATE DSPTG-0030451 10638-015586/001A' REF. DRG NO. 01

CBOM NO. 11202330000		STATUS OF DRG.		TYPE OF PRODUCT STEAM TURBINE OR NAME OF CUSTOMER/ PROJECT			
AGREED DEPT.	NAME	SIGN	DATE				
TTX	DILIP	SD/-	18.09.17				
WT	SK THAKUR	SD/-	18.09.17				
GRADE OF UNTOL. DIM. :-				NAME			
M/CG- V/C/M/P AA 0230208				DRN KJSS -SD- 18.07.17			
WELDING-A/B/C/D-AA621104				CHD VIKAS -SD- 19.09.17			
GAS CUTTING-T3-AA0621101				APD PKBANSAL -SD- 20.09.17			
REV. DATE ALTERED CHECKED				REV. DATE ALTERED CHECKED		DEPT. STE SCALE WEIGHT(Kg.) REF. TO ASSY. DRG. ITEM NO. OF SHEETS	
						CODE 4011 N.T.S 29.0 1-12023-30000 01	
				TITLE		DRAWING NO. NO. OF SHEETS	
				FLANGE ASSEMBLY		2-12023-30010 01	
						SHEET NO. 01 NO. OF SHEETS 01	

2-12024-56010  
DRAWING NO.

3.2/ ALL OVER UNLESS OTHERWISE STATED

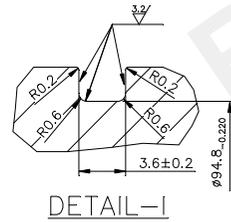
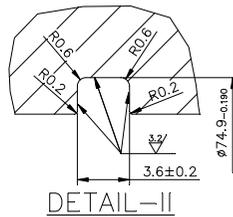


WELDING TABLE

WELD SYMBOL AND SIZE OF WELD SEAM	$\sqrt{5.8}$
WELD SEAM LENGTH IN METRE	0.68
WEIGHT OF DEPOSITED METAL IN Kg.	0.22

TECH. REQUIREMENTS:

1. IDENTIFICATION AS PER HW 0400397 AT THE PLACE MARKED WITH IN.
2. ALL THE EDGES WHERE CHAMFERING IS NOT SPECIFIED SHALL BE CHAMFERED TO 1X45°.
3. WELD CLASSIFICATION GROUP ACCORDING TO HW0620099: AS/AK.
4. WELDING TEST SCOPE ACCORDING TO HW 0850199, CATAGORY OF SERVICE REQUIREMENT -1.
5. TO BE STRESS RELIEVED AFTER WELDING AS PER HW0641.099.



The information on this document 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.

A0187A4461  
INVENTORY NO. SIGN & DATE REF. DRG. NO.

GMS NO./GRSP NO. :- CBOM NO. 1-12024-56000		STATUS OF DRG.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
AGREED BY: TTX		NAME: DILIP		SIGN: SD/-		DATE: 08.11.11				
WT		V.K.DHIMAN		SD/-		11.11.11				
GRADE OF UNTOL.DIM :- M/CG-Z/M/F AA0230208				WELDING-A/B/C/D AA0621104						
GAS CUTTING-T3-AA0621101				GAS CUTTING-T3-AA0621101						
REV. DATE	ALTERED CHECKED	REV. DATE	ALTERED CHECKED	DEPT. STE		SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO. OF SHEETS
01	19.09.17	01	19.09.17	STE 4011		N.T.S	32.1	1-12024-56000	01	01
ZONES				CHANGES MADE AS PER C/A. NO. STE-17-F0210.		TITLE		DRAWING NO.		REV.
ZONES				CHANGES MADE AS PER C/A. NO. STE-17-F0210.		FLANGE ASSLY.		2-12024-56010		-
ZONES				CHANGES MADE AS PER C/A. NO. STE-17-F0210.		FLANGE ASSLY.		2-12024-56010		-
ZONES				CHANGES MADE AS PER C/A. NO. STE-17-F0210.		FLANGE ASSLY.		2-12024-56010		-

<PART NUMBER> <PART REVISION NUMBER>

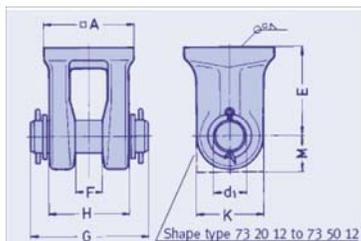
Released



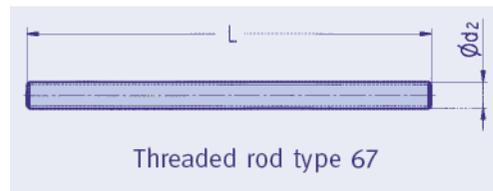
10995-73071-2  
2-12037-56051  
DRAWING No.

ITEM NO.01 :- WELD-ON CLEVIS TYPE 73

TYPE	□A	∅d1	E	F	G	H	K	M
73 30 12	170X175	70	150	60	245	165	170	75



ITEM NO. 3:- THREADED ROD  
∅d2xL=(M68X4)x1700



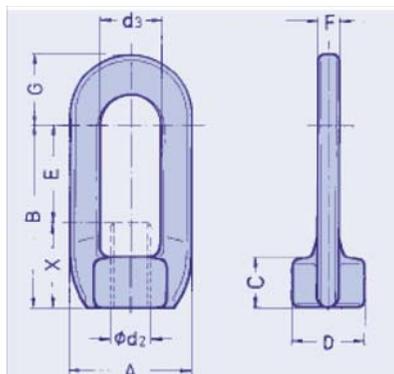
ITEM TABLE-1:

LIFTING ASSEMBLY COMPRISES OF FOLLOWING ITEMS:-

ITEM NO.	DESCRIPTION	TYPE OF M/S LISEGA'S CATALOGUE	MATERIAL	QUANTITY (NO.)	WEIGHT (kg.)	SIEMENS TIN
01	WELD-ON CLEVIS TYPE -73	733012	S355J2G3 DROP FORGED PIN-C35E+QT	1	37.00	PMOA67F43G52
02	EYE NUT TYPE-60	603012	P250GH DROP FORGED	1	9.3	PMOA67F43G60
03	THREADED ROD M68X4X1700	673013	S355JO	1	14.4	PMOA67F43G86
04	HEXAGON NUT M68X4	633028	GRADE 8	2	2.25	PMOA67F43H02

ITEM NO. 2:- EYE NUT TYPE 60

TYPE	A	B	C	D	∅d2	d3	E	F	G	X
60 30 12	160	230	70	110	M68X4	72	130	40	90	100



ITEM NO. 4:- HEXAGON NUT  
M68x4

A. NOTES:-

- SUPPLIER:  
M/S LISEGA KRAFT WERKS, GERMANY;  
OR EQUIVALENT.
- MATERIAL CODE FOR LIFTING ASSEMBLY (ITEM NO.1,2,3,& 4) : W97312037054

B. TECHNICAL REQUIREMENTS:

- OTHER TECHNICAL DELIVERY CONDITIONS SHALL BE AS PER ST34004.
- ALL THE ITEMS AS PER TABLE-1 ARE TO BE SUPPLIED SEPARATELY AND SHALL BE SUITABLY PACKED FOR SAFE TRANSPORTATION & STORAGE.
- IDENTIFICATION SHALL BE ACCORDING TO HW0400397.
- SUPPLIER TO PROVIDE CERTIFICATE OF COMPLIANCE FOR ABOVE ITEMS

NOTE : ALL DIMENSIONS ARE IN mm

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERMINAL TO THE INTEREST OF THE COMPANY.

LISEGA CATALOGUE Ref:Drawing No.

Sign & Date

Inventory No.

GMS No./ CBOM No. 01203756000		STATUS OF DRG		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STEAM TURBINE					
AGRD DEPT	NAME	SIGN	DATE	BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR		DRN RAJPAL	SIGN -sd-	DATE 01.11.11	NO. OF VAR		
GRADE OF UNTOL.DIM				WELDING-A/B/∅/∅ AA0621104		CHD A.K.SINGH	SIGN -sd-	DATE 21.05.12			
M/CG.-∅/M/∅ AA0230208				GAS CUTTING-'T3' AA0621101		APPD D.K.RAY	SIGN -sd-	DATE 09.07.12	73 74		
REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED
8			7			6			5		
DEPT STE		SCALE		WEIGHT (KG)		REF. TO ASSY. DRG.		ITEM No.		NO. OF	
CODE 4011		N.T.S.		-		0-12037-56000		051		75 77	
TITLE : LIFTING ASSEMBLY						DRAWING NO. 2-12037-56051		CARD CODE 7		NO. OF SHEETS 24	
						SHEET No. 01		No. OF SHEETS 01		SIZE A2	

7



Released

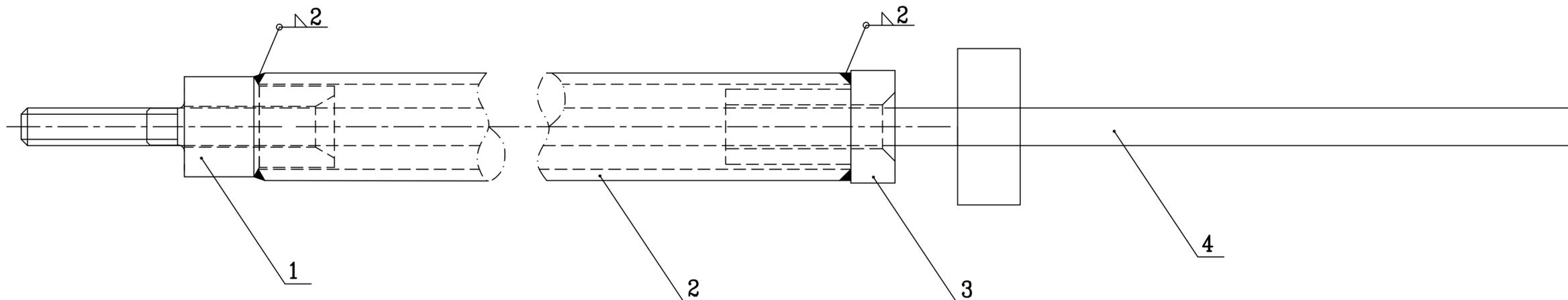
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

FORM DG 44(B)

00699-78021-2  
DRAWING No. 2-12087-56600

12.5/ ALL OVER UNLESS OTHERWISE STATED



TECHNICAL REQUIREMENTS:-  
IDENTIFICATION AS PER HW0400397.

VAR	NOMINAL DIM.	WT.
00	AM20X500	0.63
01	AM24X900	1.84
02	AM30X900	1.95

GRADE OF UNTOL.DIM		
M/CG.-C/M/F	AA0230208	
WELDING-A/B/C/D/	AA0621104	
GAS CUTTING-T3	AA0621101	

GMS No./ CBOM No.		STATUS OF DRG	
81208756500		U	
AGREED DEPT	NAME	SIGN	DATE
TTX	DILIP K	SD/-	16/10/17
WTX	S.THAKUR	SD/-	15/10/17

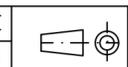
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

STEAM TURBINE

**BHARAT HEAVY ELECTRICALS LTD.**  
RANIPUR, HARDWAR

DRN	NAME	SIGN	DATE	NO. OF VAR
CHD	MONIKA SINGH	SD/-	26.07.2017	—
APPD	MM/PK	SD/-	26.07.2017	73
	D.K.RAY	SD/-	04.10.2017	74

DEPT STE



SCALE 2:1

WEIGHT (KG) SEE TABLE

REF. TO ASSY. DRG. 81208756500

TITLE : WRENCH FOR BALANCING WEIGHT

CARD CODE

DRAWING NO. 2-12087-56600  
SHEET No. 01 No. OF SHEETS 01

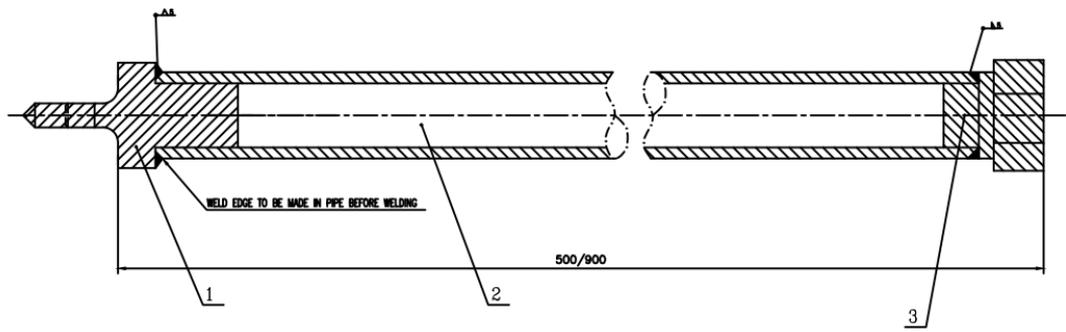
COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Inventory No. Sign & Date Ref. Drawing No.

REV	DATE	ALTERED CHECKED												

SIZE A2

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. AND IS TO BE KEPT STRICTLY CONFIDENTIAL IN ANY WAY DETERMINED TO THE INTEREST OF THE COMPANY.



VAR	NOMINAL DIM.	WT.
00	BM20X900	4.43
01	BM24X900	5.48
02	BM30X900	5.28

**TECHNICAL REQUIREMENTS:-**  
IDENTIFICATION AS PER HH0400397.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

| QMC No./ CDM No.<br><b>81208756700</b>  |    | STATUS OF Dwg<br><b>1</b>   | TYPE OF PRODUCT<br><b>STEAM TURBINE</b> |  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
|---|----|---|---|--|------|----|------|--------|--------------|----|------------|-----|-------|----|------------|--|---------|----|------------|--------|
| GRADE OF UNTOL DIM<br><b>MIG-C/MF AM230208</b>  |    | TTX<br><b>DILIP</b>   | SD<br><b>22.08.17</b>                   | NAME OF CUSTOMER/PROJECT<br><b>BHARAT HEAVY ELECTRICALS LTD.<br/>RANIPUR, HARDWAR</b>  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| WELDING- <del>YB/C/C</del> / AA0821104  |    | WTX<br><b>S.THAJUR</b>  | SD<br><b>15.08.17</b>                   | <table border="1"> <tr> <th>NAME</th> <th>SD</th> <th>DATE</th> <th>NO. OF</th> </tr> <tr> <td>MONIKA SINGH</td> <td>SD</td> <td>26.07.2017</td> <td>W/R</td> </tr> <tr> <td>MM/PK</td> <td>SD</td> <td>26.07.2017</td> <td></td> </tr> <tr> <td>D.K.RAY</td> <td>SD</td> <td>04.10.2017</td> <td>73, 74</td> </tr> </table> | NAME | SD | DATE | NO. OF | MONIKA SINGH | SD | 26.07.2017 | W/R | MM/PK | SD | 26.07.2017 |  | D.K.RAY | SD | 04.10.2017 | 73, 74 |
| NAME  | SD | DATE  | NO. OF                                  |  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| MONIKA SINGH  | SD | 26.07.2017  | W/R                                     |  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| MM/PK   | SD | 26.07.2017  |   |  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| D.K.RAY   | SD | 04.10.2017  | 73, 74                                  |  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| GAS CUTTING-T3AA0821101   |    | DEPT STE<br><b>CODE 4011</b>  |   | SCALE<br><b>2:1</b>  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| REV 02 DATE 3.10.20 ALTERED MONIKA SD/-<br>CHECKED PUNJIP K. SH/-<br>ON SH/WD TO BE SHOWN & WELDING EDGE TO BE CORRECTED IN DIM.<br>AS PER Q/A NO. SEE-19-F046. |    | REV 01 DATE 31.08.19 ALTERED MONIKA SD/-<br>CHECKED NANTAL SH/-<br>MONIKA ON SH/WD CHANGE DIM SH/WD AND BE CORRECTED IN W/R 73 AND 74.<br>AS PER Q/A NO. SEE-19-F046. |   | WEIGHT (KG)<br><b>SEE TABLE</b>  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| REF. TO ASSY. DRG.<br><b>21208756700</b>  |    | CARD CODE<br><b>2-12087-58700</b>   |   | DRAWING NO.<br><b>2-12087-58700</b>  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |
| SHEET No. 01  |    | No. OF SHEETS 01  |   | ITEM No. 75, 77  |      |    |      |        |              |    |            |     |       |    |            |  |         |    |            |        |





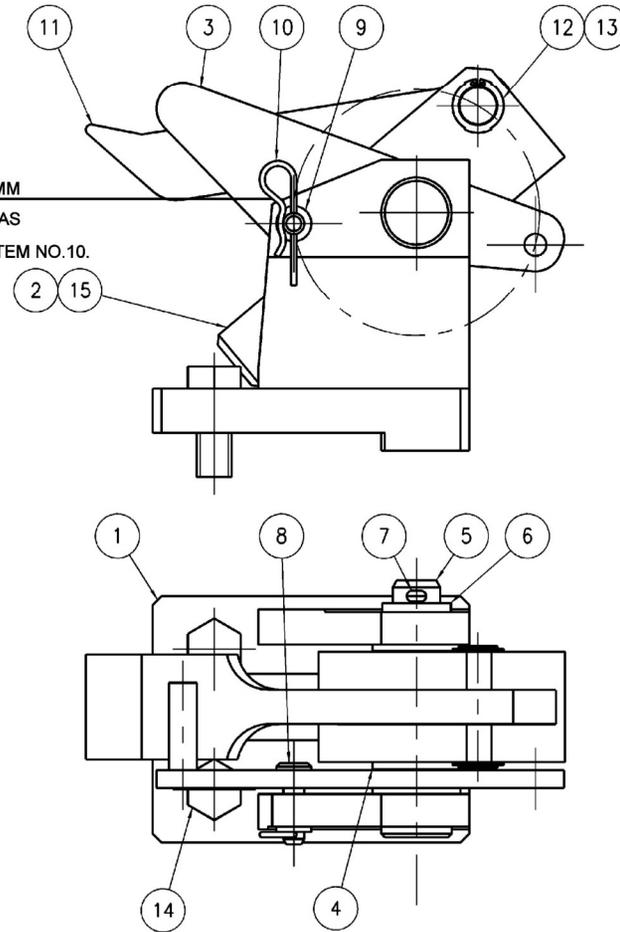
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

FORM DG 38(B)

00099-90911-3

DRAWING No.



TECHNOLOGICAL PIN OF DIA 2MM  
TO BE INSERTED/ASSEMBLED AS  
SHOW & TO CONSIDERED AS ITEM NO.10.

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERMINAL TO THE INTEREST OF THE COMPANY.

Inventory No.  
Sign & Date  
Ref. Drawing No.  
A0171A8910  
TIN NO.

|                              |
|------------------------------|
| GRADE OF UNTOL.DIM           |
| M/CG.-C/M/F AA0230208        |
| WELDING-A/B/C/D // AA0621104 |
| GAS CUTTING-T3'AA0621101     |

|                                    |           |                    |             |
|------------------------------------|-----------|--------------------|-------------|
| GMS No./ C B O M<br>3-11506-56000  |           | STATUS OF DRG<br>U |             |
| AGREED DEPT                        | NAME      | SIGN               | DATE        |
| TTX                                | DILIP     | SD/-               | 14.03.15    |
| WTX                                | S. THAKUR | SD/-               | 14.03.15    |
| REV                                | DATE      | ALTERED            | MANOJ SD/-  |
| 01                                 | 07.02.18  | CHECKED            | DINESH SD/- |
| CHANGES MADE AS PER CHANGE ADVICE. |           |                    |             |
| C/A NO.STE-18-F0011.               |           |                    |             |

|   |  |               |       |               |                    |               |              |
|---|--|---------------|-------|---------------|--------------------|---------------|--------------|
| TYPE OF PRODUCT<br>OR<br>NAME OF CUSTOMER/PROJECT |  | STEAM TURBINE |       |               |                    |               |              |
| DEPT  |  | STE           | SCALE | WEIGHT (KG)   | REF. TO ASSY. DRG. | ITEM No.      | NO. OF ITEMS |
| CODE 4011   |  |               | 1:2.5 | 00            | 3-11506-56000      | 76            | 75 77        |
| TITLE:  |  | CARD CODE     |       | DRAWING NO.   |                    | No. OF SHEETS |              |
| MANUAL TUR. GEAR FOR ERECTION                     |  | 7             |       | 3-11506-56000 |                    | 22 23 24      |              |
| SHEET No.   |  | No. OF SHEETS |       |               |                    |               |              |

SIZE A3

FIRST ANGLE PROJECTION

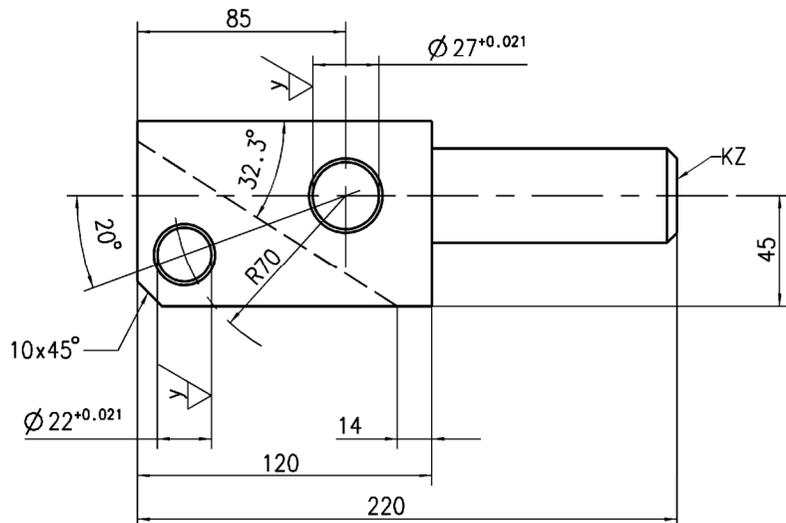
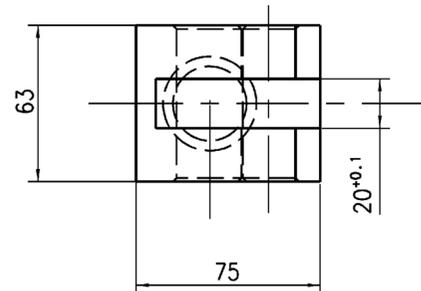
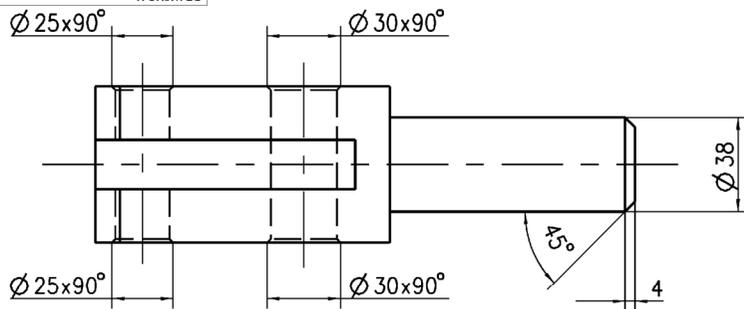
(ALL DIMENSIONS ARE IN mm)

FORM DG 38(B)

3-11506-56002

DRAWING No.

12.5/ ALL OVER EXCEPT OTHERWISE STATED



$$\left( \frac{y}{\sphericalangle} = \frac{3.2}{\sphericalangle} \right)$$

TECHNICAL REQUIREMENT:-

1-IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH IN →

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Inventory No. Sign & Date Ref Drawing No. A0171A8934 TIN NO.

|                                   |           |               |          |
|-----------------------------------|-----------|---------------|----------|
| GMS No./ C B O M<br>3-11506-56000 |           | STATUS OF DRG |          |
| AGREED DEPT.                      | NAME      | SIGN          | DATE     |
| TTX                               | DILIP     | SD/-          | 14.03.15 |
| WTX                               | S. THAKUR | SD/-          | 14.03.15 |
| GRADE OF UNTOL.DIM                |           |               |          |
| M/C/G.-C/M/F AA0230208            |           |               |          |
| WELDING-A/B/C/D // AA0621104      |           |               |          |
| GAS CUTTING-T3'AA0621101          |           |               |          |
| REV                               | DATE      | ALTERED       | REV      |
|                                   |           | CHECKED       | DATE     |
|                                   |           |               | ALTERED  |
|                                   |           |               | CHECKED  |

|   |              |  |             |                    |          |
|---|--------------|--|-------------|--------------------|----------|
| TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT |              | STEAM TURBINE                                  |             |                    |          |
| DEPT STE                                    |              | Bharat Heavy Electricals Ltd. Ranipur, Hardwar |             |                    |          |
| DRN   | NAME         | SIGN   | DATE        | NO. OF VAR         |          |
| CHD   | MONIKA SINGH | SD/-   | 06.02.2015  |                    |          |
| APPD  | RITESH KUMAR | SD/-   | 07.02.2015  |                    |          |
|   | D.K RAY      | SD/-   | 09.02.2015  | 73                 | 74       |
| CODE  | 4011         | SCALE  | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No. |
|   |              | 1:2  | 4.3         | 3-11506-56000      | 2        |
| TITLE:                                      |              | CARD CODE                                      |             | DRAWING NO.        |          |
| LEVER                                       |              | 7  |             | 3-11506-56002      |          |
|   |              | SHEET No.                                      |             | No. OF SHEETS      |          |
|   |              |  |             | 22 23 24           |          |

FIRST ANGLE PROJECTION

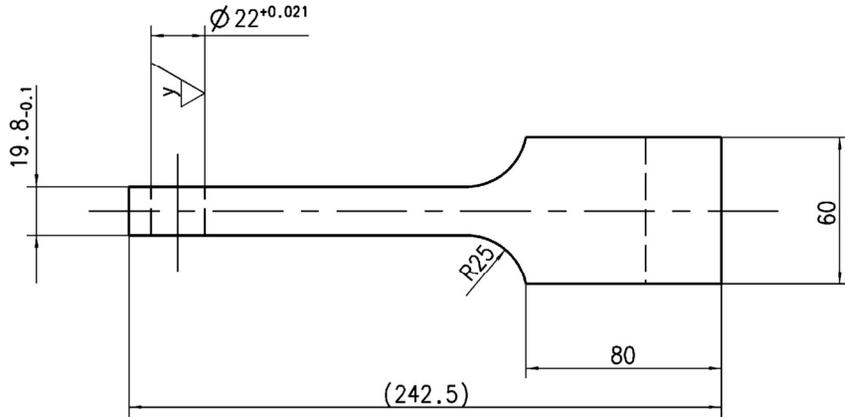
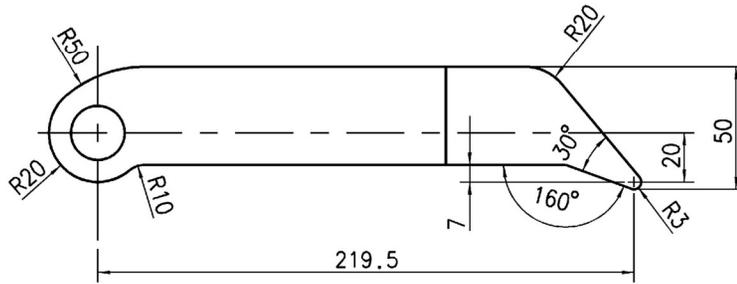
(ALL DIMENSIONS ARE IN mm)

FORM DG 38(B)

3-11506-56005

DRAWING No.

12.5/ ALL OVER EXCEPT OTHERWISE STATED



$$\left( \frac{y}{\sqrt{\quad}} = \frac{3.2}{\sqrt{\quad}} \right)$$

TECHNICAL REQUIREMENT:-

1-IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH IN .

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Inventory No. Sign & Date Ref. Drawing No. A0171A8935 TIN NO.

|                              |  |                  |           |               |          |
|------------------------------|--|------------------|-----------|---------------|----------|
| GRADE OF UNTOL.DIM           |  | GMS No./ C.B.O.M |           | STATUS OF DRG |          |
| M/CG.-C/M/F AA0230208        |  | 3-11506-56000    |           | U             |          |
| WELDING-A/B/C/D // AA0621104 |  | AGREED DEPT.     | NAME      | SIGN          | DATE     |
| GAS CUTTING-T3'AA0621101     |  | TTX              | DILIP     | SD/-          | 14.03.15 |
|                              |  | WTX              | S. THAKUR | SD/-          | 14.03.15 |

|                          |  |               |  |                    |               |
|--------------------------|--|---------------|--|--------------------|---------------|
| TYPE OF PRODUCT OR       |  | STEAM TURBINE |  |                    |               |
| NAME OF CUSTOMER/PROJECT |  |               |  |                    |               |
| DEPT                     |  | STE           |  | SCALE              | WEIGHT (KG)   |
| CODE 4011                |  |               |  | 1:2                | 2.2           |
| TITLE :                  |  | LATCH         |  | CARD CODE          |               |
|                          |  |               |  | REF. TO ASSY. DRG. | ITEM No.      |
|                          |  |               |  | 3-11506-56000      | 11            |
|                          |  |               |  | DRAWING NO.        | 22 23 24      |
|                          |  |               |  | 3-11506-56005      | 75 77         |
|                          |  |               |  | SHEET No.          | No. OF SHEETS |
|                          |  |               |  | 7                  |               |

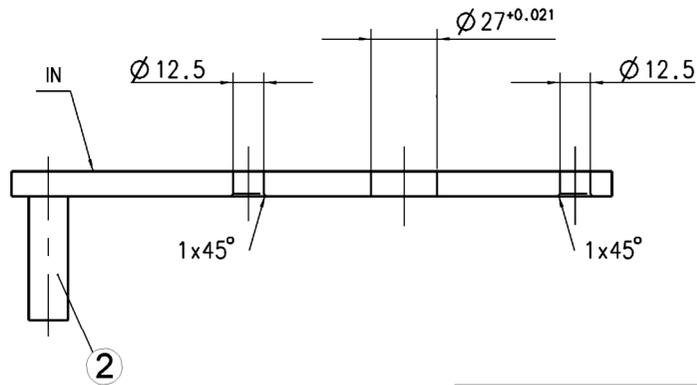
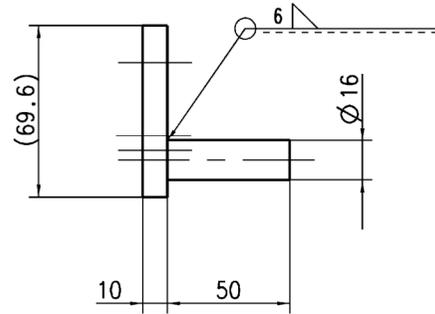
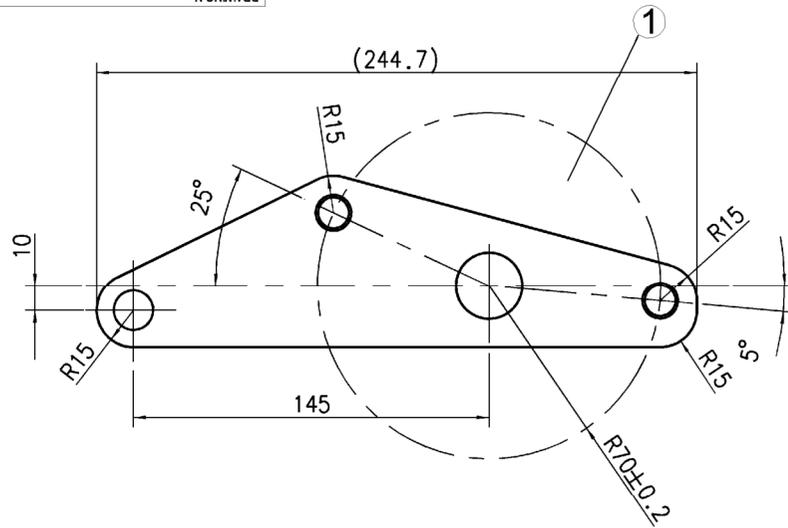
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

FORM DG 38(B)

3-11506-56200

DRAWING No.



TECHNICAL REQUIREMENT:-

1-IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH IN.

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

TIN NO.

Ref Drawing No-  
A0172A6738

Sign & Date

Inventory No.

| REV | DATE | ALTERED | REV | DATE | ALTERED | REV | DATE | ALTERED |
|-----|------|---------|-----|------|---------|-----|------|---------|
|     |      | CHECKED |     |      | CHECKED |     |      | CHECKED |

|                   |      |      |      |               |
|-------------------|------|------|------|---------------|
| GMS No./- C B O M |      |      |      | STATUS OF DRG |
| AGREED DEPT       | NAME | SIGN | DATE |               |
| TTX               |      | SD/- |      |               |

|                              |
|------------------------------|
| GRADE OF UNTOL.DIM           |
| M/CG.-C/M/F AA0230208        |
| WELDING-A/B/C/D // AA0621104 |
| GAS CUTTING-T3'AA0621101     |

TYPE OF PRODUCT **STEAM TURBINE**  
OR  
NAME OF CUSTOMER/PROJECT

 **BHARAT HEAVY ELECTRICALS LTD.**  
**RANIPUR, HARDWAR**

|      | NAME         | SIGN | DATE       | NO. OF VAR |
|------|--------------|------|------------|------------|
| DRN  | MONIKA SINGH | SD/- | 06.02.2015 |            |
| CHD  | RITESH KUMAR | SD/- | 07.02.2015 |            |
| APPD | D.K RAY      | SD/- | 09.02.2015 | 73 74      |

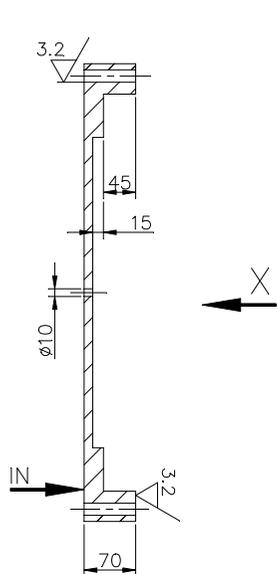
|        |      |       |             |                    |          |              |
|--------|------|-------|-------------|--------------------|----------|--------------|
| DEPT   | STE  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
| CODE   | 4011 | 1:2   | 0.95        | 11506-56000        | 3        | 75 77        |
| TITLE: |      |       | CARD CODE   | DRAWING NO.        |          |              |
| PLATE  |      |       | 7           | 3-11506-56200      |          |              |
|        |      |       | SHEET No.   | No. OF SHEETS      |          |              |
|        |      |       |             | 22 23 24           |          |              |

SIZE A3

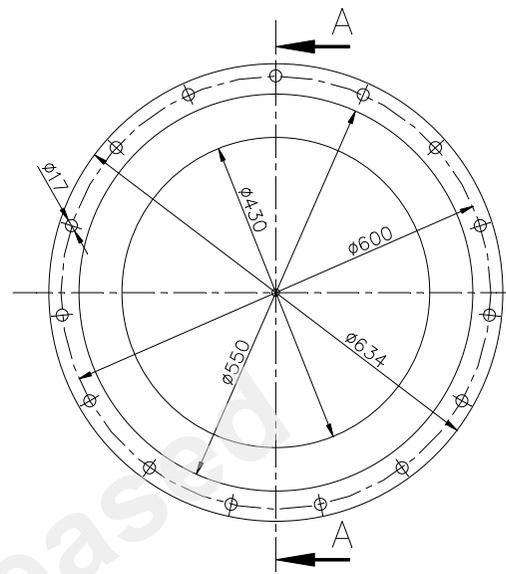
12.5 / ALL OVER UNLESS OTHERWISE STATED

DRAWING NO. 3-12026-56214

COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT 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.



SECTION A-A



VIEW-X

TECHNICAL REQUIREMENTS: -

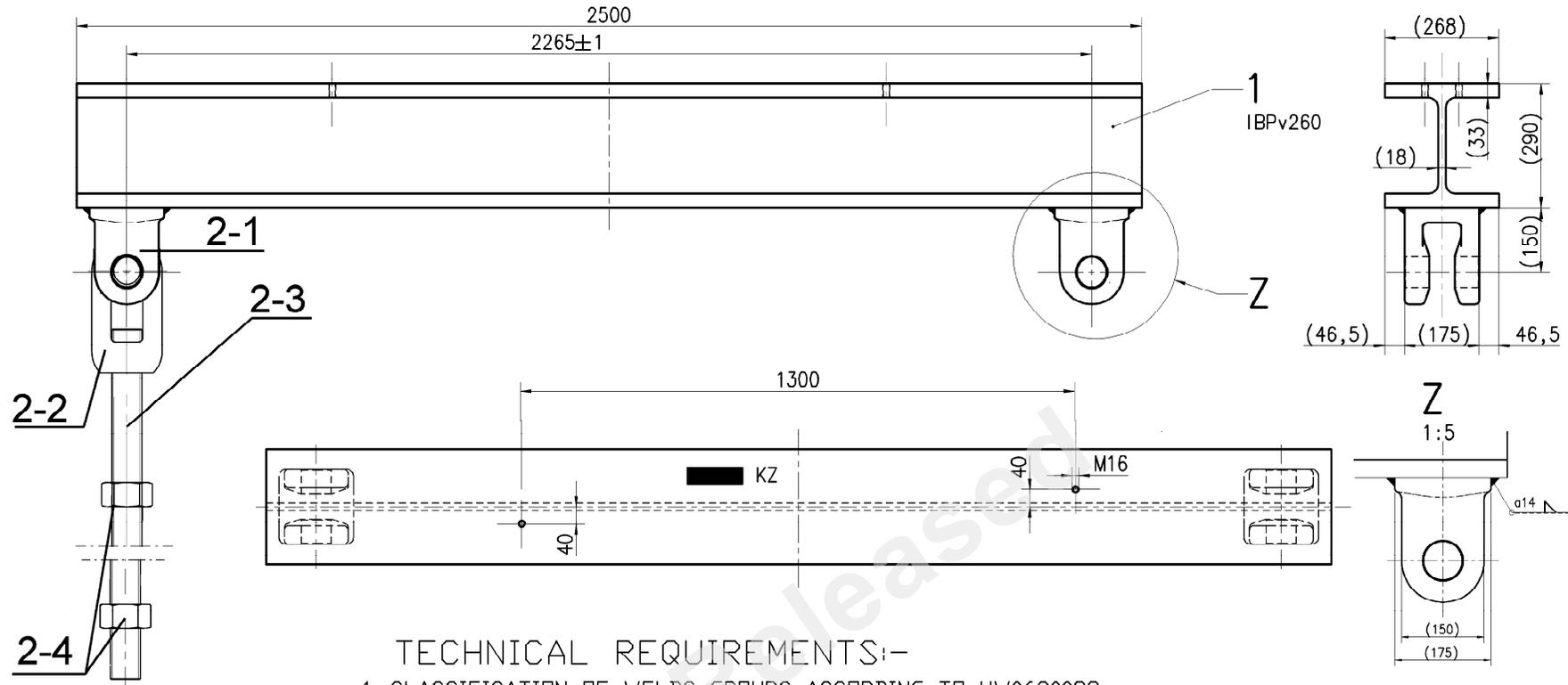
- 1. ALL SHARP EDGES ARE CHAMFERED WITH 0.5X45°.
- 2. IDENTIFICATION AS PER HW 0400397 AT THE PLACE MARKED WITH IN.
- 3. REFER FORGING DRG. 4-12026-56998.

INVENTORY NO. SIGN & DATE 801457300 REF. DRG NO.

|                           |        |                |          |
|---------------------------|--------|----------------|----------|
| GMS NO.                   |        | STATUS OF DRG. |          |
| CBOM NO. 01202656200      |        |                |          |
| AGREED DEPT.              | NAME   | SIGN           | DATE     |
| TTX                       | DILIP  | -SD-           | 12.03.16 |
| MTE                       | PANKAJ | -SD-           | 12.03.16 |
| GRADE OF UNTOL. DIM.: -   |        |                |          |
| M/CG- V/C/M/F AA 0230208  |        |                |          |
| WELDING-A/B/C/D-AA0621104 |        |                |          |
| GAS CUTTING-T3'AA0621101  |        |                |          |
| REV.                      | DATE   | ALTERED        | CHECKED  |
|                           |        |                |          |
| REV.                      | DATE   | ALTERED        | CHECKED  |
|                           |        |                |          |

|  |       |               |             |                    |          |
|--|-------|---------------|-------------|--------------------|----------|
| TYPE OF PRODUCT OR NAME OF CUSTOMER/ PROJECT |       | STEAM TURBINE |             |                    |          |
| BHARAT HEAVY ELECTRICALS LTD. HARDWAR        |       | DRN           | KJSS        | SD/-               | 24.02.16 |
|  |       | CHD           | SHIVAM      | SD/-               | 06.03.16 |
|  |       | APD           | PK BANSAL   | SD/-               | 14.03.16 |
| DEPT.  | S.T.E | SCALE         | WEIGHT(Kg.) | REF. TO ASSY. DRG. | ITEM NO. |
| CODE   | 4011  | N.T.S         | 53          | 0-12026-56200      | 11       |
| TITLE  |       | DRAWING NO.   |             | NO.OF ITEMS        |          |
| PROTECTING FLAP                              |       | 3-12026-56214 |             | 11                 |          |
|  |       | SHEET NO. 01  |             | NO.OF SHEETS 01    |          |

00895-7E021-3  
DRAWING No.



TECHNICAL REQUIREMENTS:-

1. CLASSIFICATION OF WELDS GROUPS ACCORDING TO HW0620099
2. WELD TEST SCOPE ACCORDING TO HW0850199 : CSR- 4 (1.)
3. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH KZ.

NOTE :-

1. ONLY ONE SIDE LIFTING ARRANGEMENT HAS BEEN SHOWN. SAME ARRANGEMENT SHALL BE IN OTHER SIDE ALSO.
2. REFER DRG. NO. 2-12037-56051 FOR ITEM NO. 2-1,2-2,2-3 AND 2-4

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT 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.

DSPPG-0057349  
1754-014300/050

Inventory No. Sign & Date Ref:Drawing No.

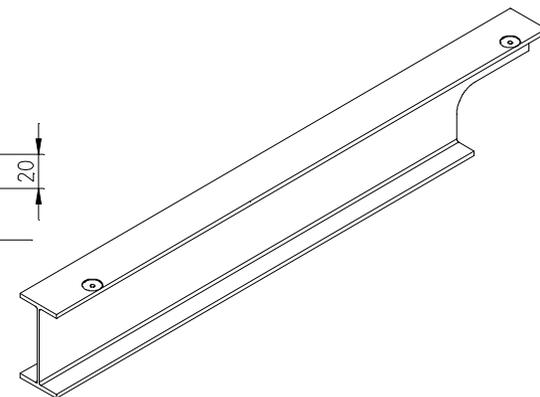
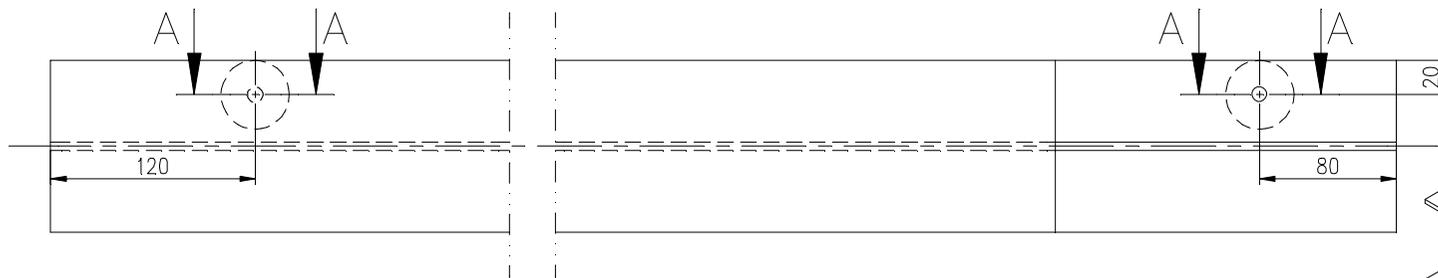
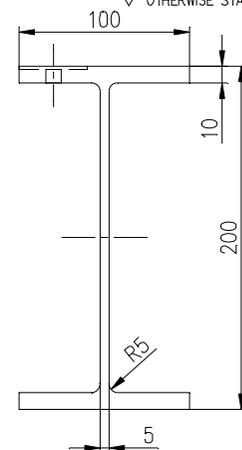
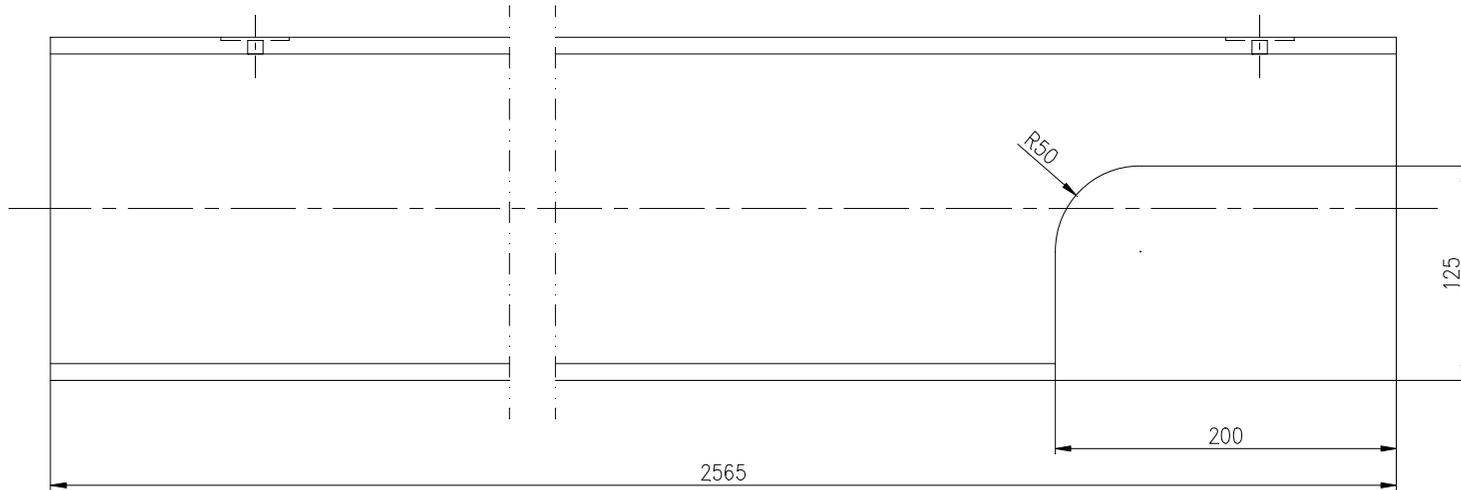
|                                  |          |         |          |               |
|----------------------------------|----------|---------|----------|---------------|
| GMS No./                         |          | C B O M |          | STATUS OF DRG |
| 01203756000                      |          |         |          | U             |
| AGREED DEPT                      | NAME     | SIGN    | DATE     |               |
| WT                               | SUSHANT  | sd/-    | 07.07.12 |               |
| TTX                              | SURINDER | sd/-    | 07.07.12 |               |
| GRADE OF UNTOL. DIM              |          |         |          |               |
| M/CG.- AA0230208 m               |          |         |          |               |
| WELDING-CLASS 'B' OF AA0621104   |          |         |          |               |
| GAS CUTTING-TABLE 3 OF AA0621101 |          |         |          |               |

|   |      |               |             |                    |               |
|---|------|---------------|-------------|--------------------|---------------|
| TYPE OF PRODUCT                                   |      | STEAM TURBINE |             |                    |               |
| OR  |      |               |             |                    |               |
| NAME OF CUSTOMER/PROJECT                          |      |               |             |                    |               |
| BHARAT HEAVY ELECTRICALS LTD,<br>RANIPUR, HARDWAR | DRN  | NAME          | SIGN        | DATE               | NO. OF VAR    |
|   | CHD  | A.K.SINGH     | -sd-        | 21.05.12           |               |
|   | APPD | D.K.RAY       | -sd-        | 09.07.12           |               |
| DEPT  | STE  | SCALE         | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.      |
| CODE  | 4011 | N.T.S.        | 479.00      | 0-12037-56000      | 50            |
| TITLE :   |      | GIRDER        |             | CARD CODE          | DRAWING NO.   |
|   |      |               |             | 7                  | 3-12037-56800 |
|   |      |               |             | SHEET No.          | No. OF SHEETS |
|   |      |               |             | 1                  | 1             |

3-12042-50101

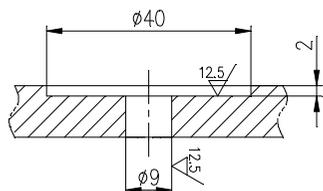
DRAWING No.

50/ALL OVER EXCEPT OTHERWISE STATED



TECHNICAL REQUIREMENTS: -

1. IDENTIFICATION ACCORDING TO HW0400397.



SECTION AA  
SCALE 1:1

|                   |        |               |          |
|-------------------|--------|---------------|----------|
| -GMS No./ C B O M |        | STATUS OF DRG |          |
| 01204250000       |        | U             |          |
| AGREED DEPT       | NAME   | SIGN          | DATE     |
| WT                | S.K.T. | -SD/-         | 29.01.19 |

TYPE OF PRODUCT STEAM TURBINE  
OR  
NAME OF CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

| DRN   | NAME     | SIGN  | DATE       | NO. OF VAR |
|-------|----------|-------|------------|------------|
| VIJAY |          | -SD/- | 30.11.2018 | —          |
| CHD   | M. KUMAR | -SD/- | 30.11.2018 | —          |
| APPD  | D.K. RAY | -SD/- | 29.01.2019 | 73 74      |

| Inventory No. | Sign & Date | REV     |  | DATE |  | ALTERED |  | REV | DATE | ALTERED |  |
|---------------|-------------|---------|--|------|--|---------|--|-----|------|---------|--|
|               |             | CHECKED |  |      |  | CHECKED |  |     |      |         |  |
|               |             |         |  |      |  |         |  |     |      |         |  |

|           |                  |                   |                                |                  |                    |
|-----------|------------------|-------------------|--------------------------------|------------------|--------------------|
| DEPT STE  | SCALE N.T.S      | WEIGHT (KG) 56.00 | REF. TO ASSY. DRG. 11204250100 | ITEM No. 101     | NO. OF ITEMS 75 77 |
| CODE 4011 | TITLE : I-GIRDER | CARD CODE 7       | DRAWING NO. 3-12042-50101      | 22 23 24         |                    |
|           |                  | SHEET No. 01      |                                | No. OF SHEETS 01 |                    |

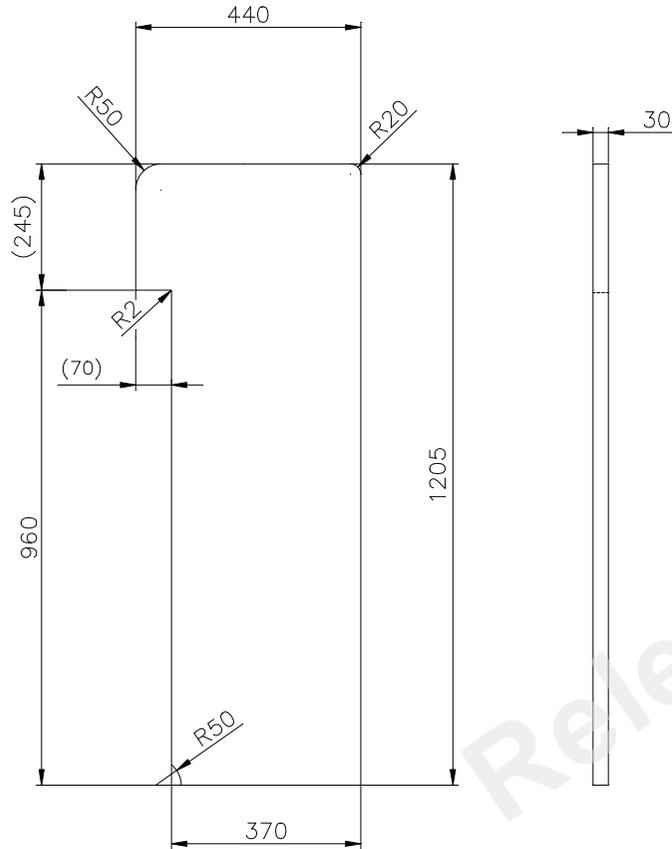
COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.



DRAWING No. 3-12052-56502

50/ ALL OVER EXCEPT OTHERWISE STATED



TECHNICAL REQUIREMENT: -

1. IDENTIFICATION ACCORDING TO HW0400397.

SHUSHANT SURINDER

GMS No. / C B O M STATUS OF DRG  
01205256000 U

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

STEAM TURBINE

| AGREED DEPT                 | NAME     | SIGN | DATE     |
|-----------------------------|----------|------|----------|
| WTX                         | SHUSHANT | sd/- | 24.04.12 |
| GRADE OF UNTOL.DIM          |          |      |          |
| M/CG. - Q/M/F AA0230208     |          |      |          |
| WELDING - A/B/C/D AA0621104 |          |      |          |
| GAS CUTTING - T3'AA0621101  |          |      |          |

 BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR

| DRN  | NAME      | SIGN | DATE     | NO. OF VAR |
|------|-----------|------|----------|------------|
|      | RAJPAL    | Sd/- | 16.01.12 |            |
| CHD  | A.K.SINGH | sd/- | 16.01.12 |            |
| APPD | D.K.RAY   | sd/- | 26.04.12 | 73 74      |

| DEPT | STE | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
|------|-----|-------|-------------|--------------------|----------|--------------|
| 4011 |     | 1:10  | 105.00      | 1-12052-56500      | 002      | 002          |

|                  |                |                              |          |
|------------------|----------------|------------------------------|----------|
| TITLE :<br>PLATE | CARD CODE<br>7 | DRAWING NO.<br>3-12052-56502 | 22 23 24 |
|------------------|----------------|------------------------------|----------|

SHEET No. 01 No. OF SHEETS 01

SIZE A3

COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

A0173A4294 10161-14300/003 Ref.Drawing No>

Sign & Date

Inventory No

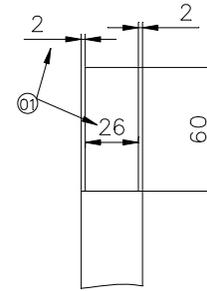
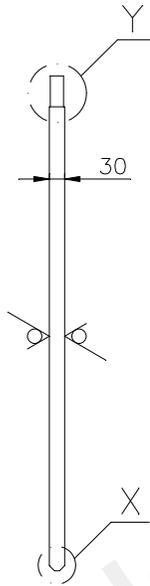
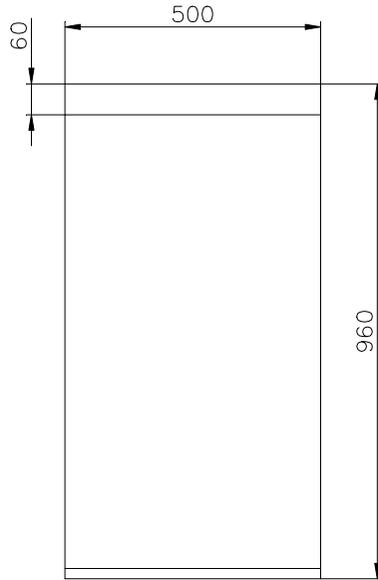
| REV | DATE | ALTERED | REV | DATE | ALTERED | REV | DATE | ALTERED |
|-----|------|---------|-----|------|---------|-----|------|---------|
|     |      | CHECKED |     |      | CHECKED |     |      | CHECKED |



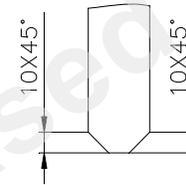
Released

DRAWING No. 3-12052-56503

50/ ALL OVER EXCEPT OTHERWISE STATED



DETAIL-Y  
(SCALE 1:2.5)



DETAIL-X  
(SCALE 1:2.5)

TECHNICAL REQUIREMENT: -  
1. IDENTIFICATION ACCORDING TO HW0400397.

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

A0173A4294  
10161-14300/003  
Ref. Drawing No.

Sign & Date

Inventory No.

|  |          |         |          |               |  |
|--|----------|---------|----------|---------------|--|
| GMS No./   |          | C B O M |          | STATUS OF DRG |  |
| 01205256000  |          |         |          | U             |  |
| AGREED DEPT  | NAME     | SIGN    | DATE     |               |  |
| WTX  | SHUSHANT | sd/-    | 24.04.12 |               |  |
| REV  | DATE     | ALTERED | MONIKA   | SD/-          |  |
| 01   | 09.04.18 | CHECKED | PRADEEP  | SD/-          |  |
| DIM 4 CHANGE TO DIM 2 & DIM 22 CHANGE TO DIM 26 IN DETAIL Y.<br>AS PER C/A NO. STE-18-F0067. |          |         |          |               |  |

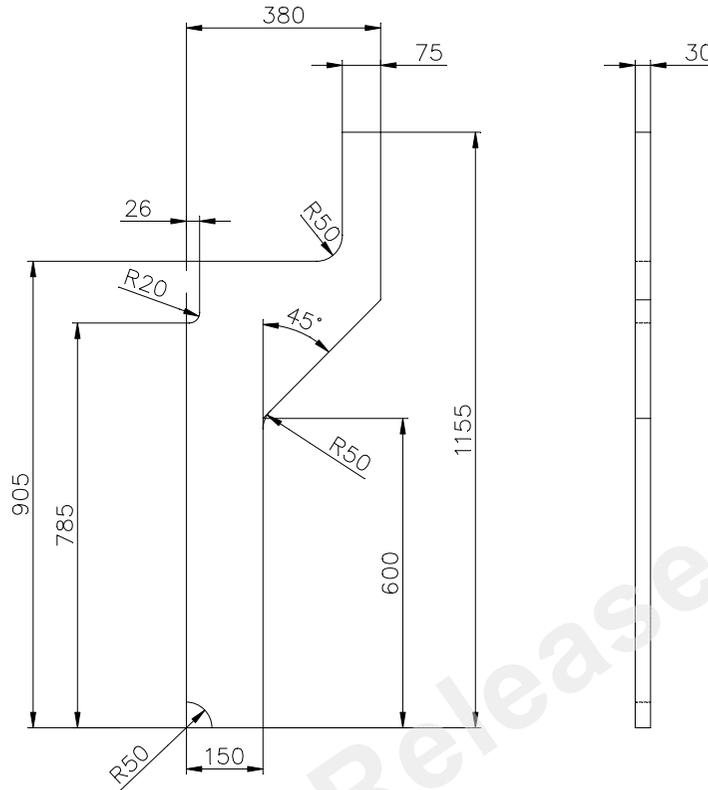
|                               |     |               |             |                    |            |
|-------------------------------|-----|---------------|-------------|--------------------|------------|
| TYPE OF PRODUCT               |     | STEAM TURBINE |             |                    |            |
| OR                            |     |               |             |                    |            |
| NAME OF CUSTOMER/PROJECT      |     |               |             |                    |            |
| BHARAT HEAVY ELECTRICALS LTD. |     | NAME          | SIGN        | DATE               | NO. OF VAR |
| RANIPUR, HARDWAR              |     | DRN RAJPAL    | Sd/-        | 16.01.12           |            |
|                               |     | CHD A.K.SINGH | sd/-        | 16.01.12           |            |
|                               |     | APPD D.K.RAY  | sd/-        | 26.04.12           | 73 74      |
| DEPT                          | STE | SCALE         | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.   |
| CODE 4011                     |     | 1:10          | 108.0       | 1-12052-56500      | 004        |
| TITLE :                       |     | CARD CODE     |             | DRAWING NO.        |            |
| PLATE                         |     | 7             |             | 3-12052-56503      |            |
|                               |     | SHEET No. 01  |             | No. OF SHEETS 01   |            |

Released



DRAWING No. 3-12052-56603

50/ ALL OVER EXCEPT OTHERWISE STATED



COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

TECHNICAL REQUIREMENT: -

1. IDENTIFICATION ACCORDING TO HW0400397.

A0173A4295 10161-14300/004 Ref.Drawing No>

Sign & Date

Inventory No

|                   |          |               |          |
|-------------------|----------|---------------|----------|
| -GMS No./ C B O M |          | STATUS OF DRG |          |
| 01205256000       |          | U             |          |
| AGREED DEPT       | NAME     | SIGN          | DATE     |
| WTX               | SHUSHANT | sd/-          | 24.04.12 |

TYPE OF PRODUCT STEAM TURBINE  
 OR  
 NAME OF CUSTOMER/PROJECT

|                           |  |  |  |
|---------------------------|--|--|--|
| GRADE OF UNTOL.DIM        |  |  |  |
| M/CG.-Q/M/F AA0230208     |  |  |  |
| WELDING-A/B/C/D AA0621104 |  |  |  |
| GAS CUTTING-T3'AA0621101  |  |  |  |

 BHARAT HEAVY ELECTRICALS LTD.  
 RANIPUR, HARDWAR

|      |           |      |          |                          |
|------|-----------|------|----------|--------------------------|
| DRN  | NAME      | SIGN | DATE     | NO. OF VAR<br>—<br>73 74 |
| CHD  | A.K.SINGH | sd/- | 16.01.12 |                          |
| APPD | D.K.RAY   | sd/- | 26.04.12 |                          |

|     |      |         |     |      |         |     |      |         |
|-----|------|---------|-----|------|---------|-----|------|---------|
| REV | DATE | ALTERED | REV | DATE | ALTERED | REV | DATE | ALTERED |
|     |      | CHECKED |     |      | CHECKED |     |      | CHECKED |

|           |       |             |                    |          |              |
|-----------|-------|-------------|--------------------|----------|--------------|
| DEPT STE  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
| CODE 4011 | 1:10  | 49.0        | 1-12052-56600      | 003      | 001          |

|         |           |               |
|---------|-----------|---------------|
| TITLE : | CARD CODE | DRAWING NO.   |
| PLATE   | 7         | 3-12052-56603 |
|         |           | 22 23 24      |

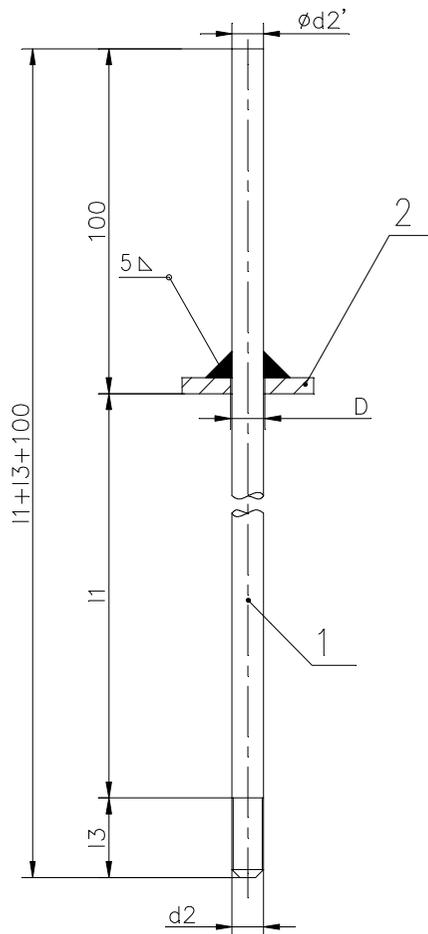
SHEET No. 01 No. OF SHEETS 01



Released

DRAWING No. 3-12087-56640

✓ ALL OVER UNLESS OTHERWISE STATED



| VAR | l1  | l3 | d2 | d2' | D   | Wt.  |
|-----|-----|----|----|-----|-----|------|
| 00  | 500 | 25 | M5 | 6   | 6.5 | 0.23 |
| 01  | 900 | 30 | M6 | 6   | 6.5 | 0.32 |
| 02  | 900 | 40 | M8 | 8   | 8.5 | 0.50 |
| 03  | 700 | 25 | M5 | 6   | 6.5 | 0.28 |

TECHNICAL REQUIREMENTS: -

1. CLASSIFICATION OF WELD GROUP CK:HW0620099.
2. WELD TEST SCOPE TO HW0850199.

COPYRIGHT AND CONFIDENTIAL

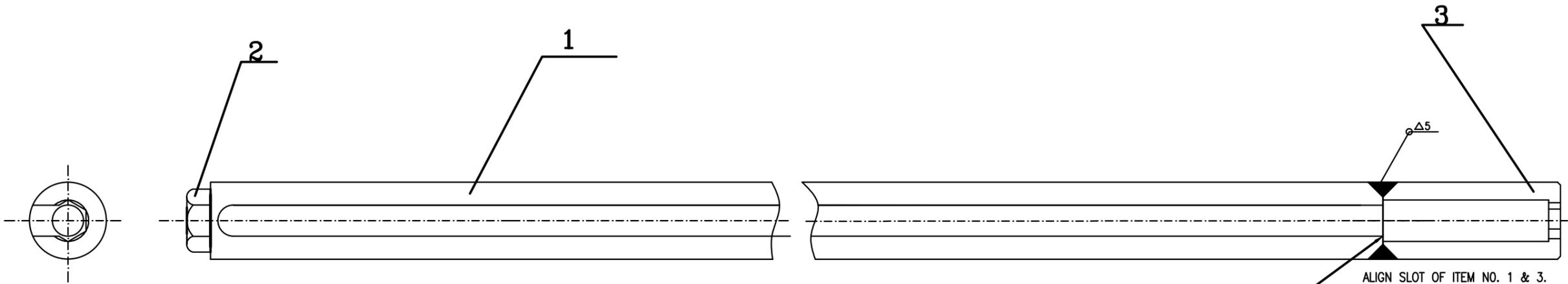
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                  |   |                 |        |               |   |        |               |  |           |             |                       |                                |              |                    |
|------------------|---|-----------------|--------|---------------|---|--------|---------------|--|-----------|-------------|-----------------------|--------------------------------|--------------|--------------------|
| Ref Drawing No > | -GMS No./- C B O M STATUS OF DRG<br>81208756500       |                 |        |               | TYPE OF PRODUCT STEAM TURBINE<br>OR   |        |               |  |           |             |                       |                                |              |                    |
|                  | AGREED DEPT NAME SIGN DATE<br>TTX DILIP SD/- 16.10.17 |                 |        |               | NAME OF CUSTOMER/PROJECT  |        |               |  |           |             |                       |                                |              |                    |
| Sign & Date      | GRADE OF UNTOL.DIM                                    |                 |        |               | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR   |        |               |  |           |             |                       |                                |              |                    |
|                  | M/CG.-C/M/F AA0230208                                 |                 |        |               | WELDING-A/B/C/D / AA0621104   |        |               |  |           |             |                       |                                |              |                    |
| REV              | DATE  | ALTERED CHECKED | REV 02 | DATE 31.01.24 | ALTERED MONIKA SD/- CHECKED G.ANAND SD/-  | REV 01 | DATE 31.05.19 | ALTERED MONIKA SD/- CHECKED M.MITTA SD/- | DEPT STE  | SCALE N.T.S | WEIGHT (KG) SEE TABLE | REF. TO ASSY. DRG. 21208756600 | ITEM No. --- | NO. OF ITEMS 75 77 |
|                  |   |                 |        |               |   |        |               |  | CODE 4011 | TITLE : ROD | CARD CODE 7           | DRAWING NO. 3-12087-56640      | SHEET No. 01 | No. OF SHEETS 01   |
| Inventory No.    | VAR.03 ADDED.<br>AS PER C/A NO. STE-24-F0012.         |                 |        |               | I1 DIM 500 CHANGE DIM 900 AND WT. CHANGED IN VAR 01 AND 02.<br>AS PER C/A NO. STE-19-F0162. |        |               |  |           |             |                       |                                |              |                    |

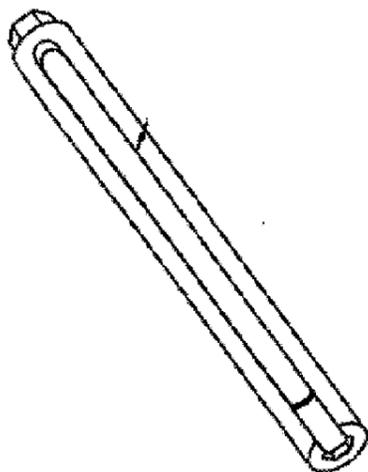




3-12087-56900  
DRAWING No.



COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.



**TECHNICAL REQUIRMENTS:-**

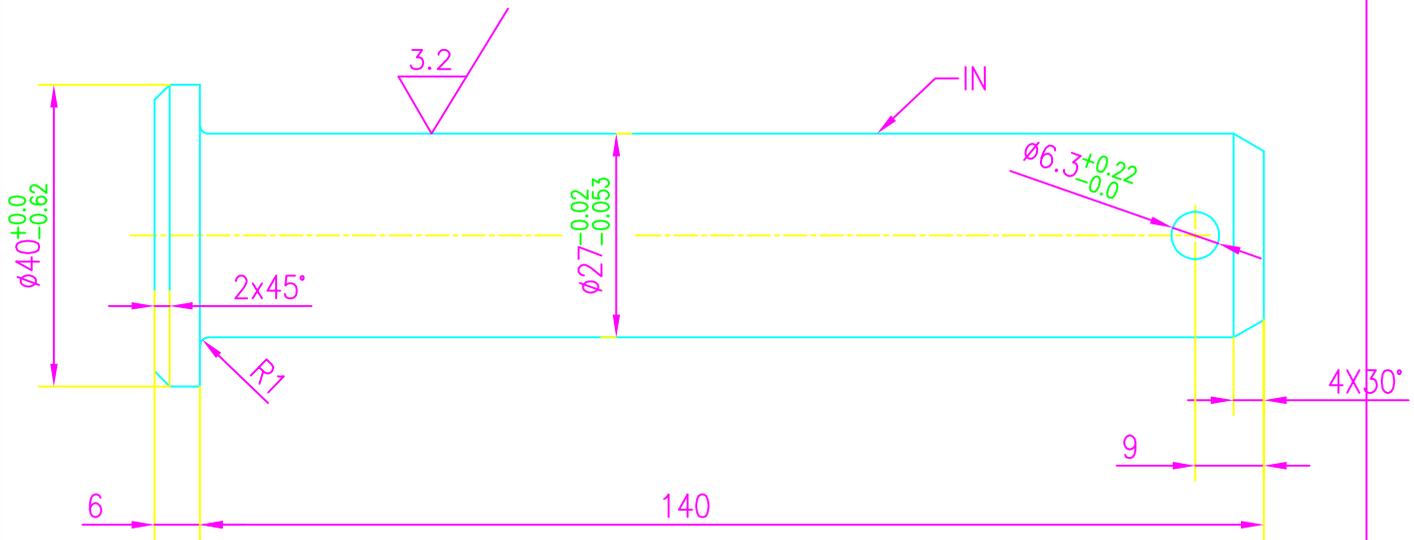
1. IDENTIFICATION USE TO HW 0400397 AT PLACED MARKED WITHN IN. →
2. WELD CLASSIFICATION ACCORDING TO HW 0620099 BS/BK.
3. WELDING TEST SCOP ACCORDING TO HW0850199 CSK:4 .

|   |             |                   |                                  |               |  |     |               |   |  |         |                               |                    |  |      |  |          |  |               |  |            |  |
|---|-------------|-------------------|----------------------------------|---------------|--|-----|---------------|---|--|---------|-------------------------------|--------------------|--|------|--|----------|--|---------------|--|------------|--|
| Inventory No.                           | Sign & Date | Ref. Drawing No-> | GMS No. / C B O M<br>81208756500 |               |  |     | STATUS OF DRG |   |  |         | TYPE OF PRODUCT STEAM TURBINE |                    |  |      |  |          |  |               |  |            |  |
|   |             |                   | GRADE OF UNTOL.DIM               |               |  |     | NAME          |   |  |         | OR                            |                    |  |      |  |          |  |               |  |            |  |
|   |             |                   | M/CG.- $\phi$ /M/F AA0230208     |               |  |     | DILIP         |   |  |         | NAME OF CUSTOMER/PROJECT      |                    |  |      |  |          |  |               |  |            |  |
| WELDING- $\phi$ /B/ $\phi$ /D AA0621104 |             |                   |                                  | S.THAKUR      |  |     |               | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |  |         |                               | DRN                |  | NAME |  | SIGN     |  | DATE          |  | NO. OF VAR |  |
| GAS CUTTING-'T3'AA0621101               |             |                   |                                  | TTX           |  |     |               |   |  |         |                               | SD/-               |  |      |  | ANOOP    |  | SD/-          |  |            |  |
| REV                                     |             | DATE              |                                  | ALTERED       |  | REV |               | DATE  |  | ALTERED |                               | REV                |  | DATE |  | ALTERED  |  | NO. OF ITEMS  |  |            |  |
|   |             |                   |                                  | CHECKED       |  |     |               |   |  | CHECKED |                               |                    |  |      |  | CHECKED  |  | 75 77         |  |            |  |
| DEPT STE                                |             |                   |                                  | SCALE         |  |     |               | WEIGHT (KG)                                       |  |         |                               | REF. TO ASSY. DRG. |  |      |  | ITEM No. |  | NO. OF SHEETS |  |            |  |
| CODE 4011                               |             |                   |                                  | N.T.S.        |  |     |               | 2.03  |  |         |                               | -----              |  |      |  | ---      |  |               |  |            |  |
| TITLE :                                 |             |                   |                                  | WRENCH        |  |     |               | CARD CODE   |  |         |                               | DRAWING NO.        |  |      |  | 22 23 24 |  |               |  |            |  |
| 7                                       |             |                   |                                  | 3-12087-56900 |  |     |               | SHEET No. 01                                      |  |         |                               | No. OF SHEETS 01   |  |      |  |          |  |               |  |            |  |

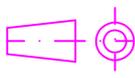
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                    |     |                     |                                |   |                                  |      |            |
|--------------------|-----|---------------------|--------------------------------|---|----------------------------------|------|------------|
| ALTERED            | REV | DATE                | ALTERED                        | GMS No./ C.B.O.M.- NO.<br>3-11506-56000 | STATUS OF DRG<br>U               |      |            |
| CHECKED            |     |                     | CHECKED                        |   |                                  |      |            |
|                    |     |                     | ZONE                           | AGREED DEPT                             | NAME                             | SIGN | DATE       |
|                    |     |                     |                                | TTX                                     | DILIP                            | SD/- | 14.03.2015 |
|                    |     |                     |                                | WTX                                     | S.THAKUR                         | SD/- | 14.03.2015 |
| GRADE OF UNTOL.DIM |     | M/CG. - AA0230208 m | WELDING-CLASS 'B' OF AA0621104 |   | GAS CUTTING-TABLE 3 OF AA0621101 |      |            |

12.5/ALL OVER EXCEPT  
▽ OTHERWISE STATED



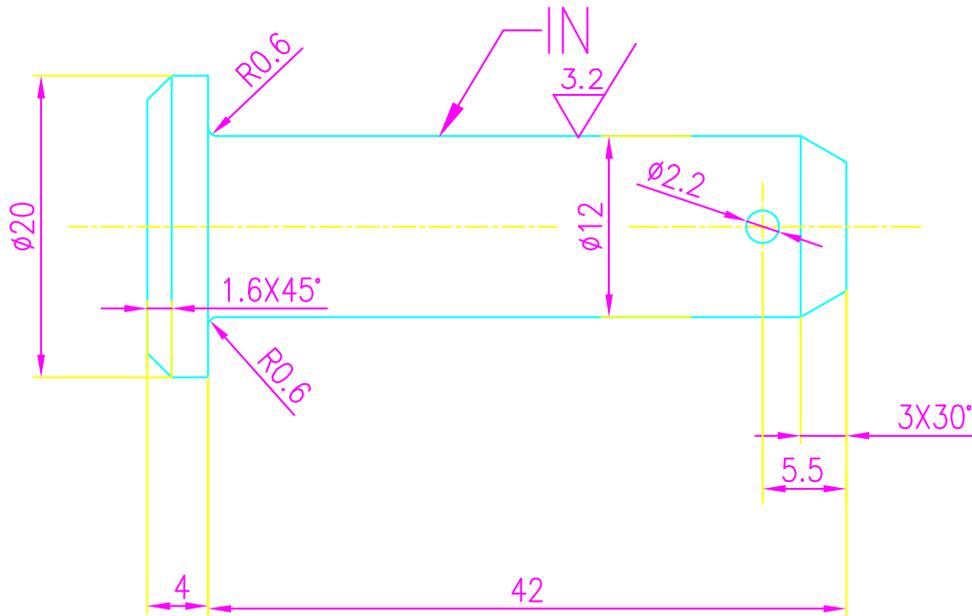
IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH IN

|  |  |   |       |             |                    |                                  |              |      |                                 |            |
|--|--|---|-------|-------------|--------------------|----------------------------------|--------------|------|---------------------------------|------------|
| Ref.Drawing No>  |  <b>BHARAT HEAVY ELECTRICALS LTD.</b><br>RANIPUR, HARDWAR |   |       |             |                    | DRN                              | NAME         | SIGN | DATE                            | NO. OF VAR |
|  |  |   |       |             |                    | CHD                              | RITESH       | Sd/- | 07.02.15                        |            |
| Sign & Date  | APPD   | D K RAY   | Sd/-  | 09.02.15    |                    |                                  |              |      |                                 |            |
| Inventory No.  | DEPT STE   |  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.                         | NO. OF ITEMS |      |                                 |            |
|  | CODE 4011  |   | 1:1   | 0.70        | 3-11506-56003      | 05                               | 03           |      |                                 |            |
| TITLE : <b>BOLT B- <math>\phi 27 \times 140</math></b> |  |   |       |             | CARD CODE          | DRAWING NO. <b>4-11506-56003</b> |              |      |                                 |            |
|  |  |   |       |             | 7                  | 22                               | 23           | 24   | SHEET No. 01   No. OF SHEETS 01 |            |

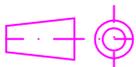
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                    |           |                     |                                |  |                       |            |
|--------------------|-----------|---------------------|--------------------------------|--|-----------------------|------------|
| ALTERED<br>CHECKED | REV<br>01 | DATE                | ALTERED<br>CHECKED             | GMS No./ C.B.O.M.- NO<br>3-11506-56000 | STATUS<br>OF DRG<br>U |            |
| ZONE               |           |                     | AGREED<br>DEPT                 | NAME                                   | SIGN                  | DATE       |
|                    |           |                     | TTX                            | DILIP                                  | SD/-                  | 14.03.2015 |
|                    |           |                     | WTX                            | S.THAKUR                               | SD/-                  | 14.03.2015 |
| GRADE OF UNTOL.DIM |           | M/CG. - AA0230208 m | WELDING-CLASS 'B' OF AA0621104 | GAS CUTTING-TABLE 3 OF AA0621101       |                       |            |

12.5/ALL OVER EXCEPT  
▽ OTHERWISE STATED



IDENTIFICATION ACC. TO HW0400397 AT THE PLACE MARKED WITH IN →

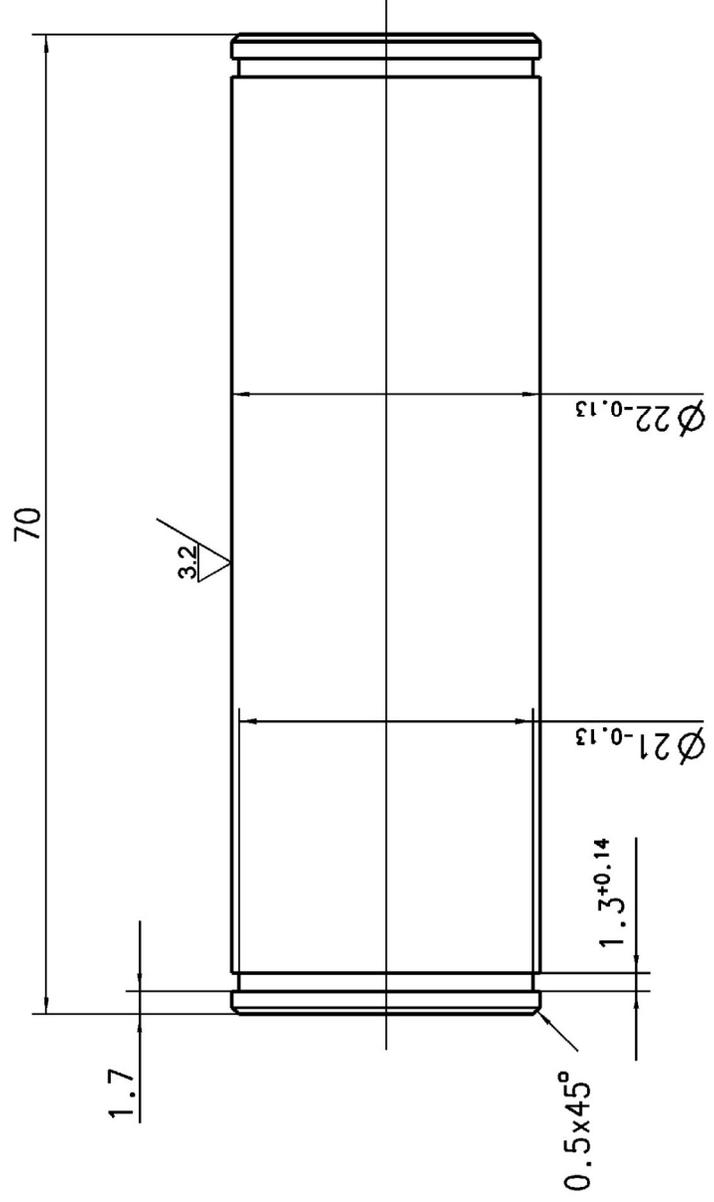
|                             |                         |  |              |                      |                                     |                  |                       |               |
|-----------------------------|-------------------------|--|--------------|----------------------|-------------------------------------|------------------|-----------------------|---------------|
| DIN 1444<br>Ref.Drawing No> | 14.11.90<br>Sign & Date |  <b>BHARAT HEAVY ELECTRICALS LTD.</b><br>RANIPUR, HARDWAR |              | DRN                  | NAME                                | SIGN             | DATE                  | NO. OF<br>VAR |
| 1-23067<br>Inventory No.    | DEPT STE<br>CODE 4011   |   | SCALE<br>2:1 | WEIGHT (KG)<br>0.040 | REF. TO ASSY. DRG.<br>3 11506 56000 | ITEM<br>No.<br>8 | NO. OF<br>ITEMS<br>03 |               |
|                             |                         |  |              |                      |                                     |                  |                       |               |
| TITLE :                     |                         | <b>BOLT B-Ø12X42</b>   |              | APPD                 | A.SHAH                              | Sd/-             | 09.02.15              |               |
|                             |                         |  |              | CARD<br>CODE         | DRAWING NO.<br><b>4-11506-56004</b> |                  |                       | 22 23 24      |
|                             |                         |  |              | SHEET No. 01         |                                     | No. OF SHEETS 01 |                       |               |

# FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|   |      |                    |      |      |                    |   |                    |          |
|---|------|--------------------|------|------|--------------------|---|--------------------|----------|
| REV   | DATE | ALTERED<br>CHECKED | REV  | DATE | ALTERED<br>CHECKED | GMS No./C.B.O.M.- NO.<br><b>3-11506-56000</b> | STATUS OF DRG<br>U |          |
| ZONE  |      |                    | ZONE |      |                    |   |                    | SIGN     |
|   |      |                    |      |      |                    | AGREED DEPT<br>TTX                            | SD/-               | 14.03.15 |
|   |      |                    |      |      |                    | WTX   | SD/-               | 14.03.15 |
| GRADE OF UNTOLD.DIM MICG.CIMF-AA0230208 WELDING ABIC/D AA0621104 GAS CUTTING-T3 AA0621101 |      |                    |      |      |                    |   |                    |          |

12.5/ ALL OVER EXCEPT OTHERWISE STATED



THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

COPYRIGHT AND CONFIDENTIAL

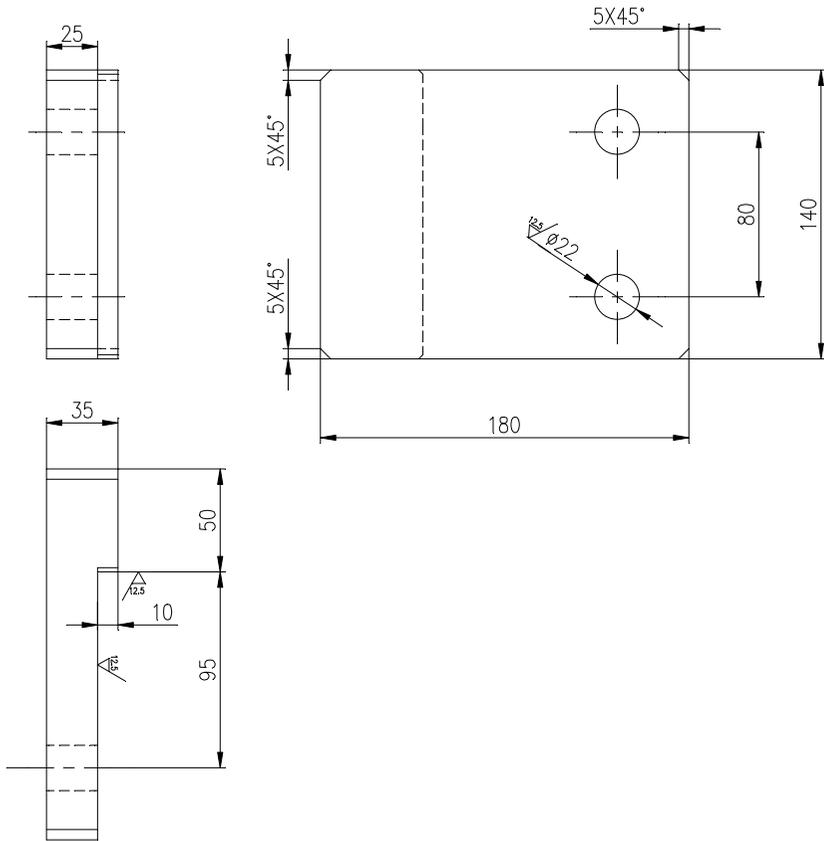
|               |                   |            |
|---------------|-------------------|------------|
| TIN NO.       | Ref: Drawing No > | A0171A9281 |
| Sign & Date   |                   |            |
| Inventory No. |                   |            |

|         |      |   |             |                        |               |            |              |
|---------|------|---|-------------|------------------------|---------------|------------|--------------|
|         |      | <b>BHARAT HEAVY ELECTRICALS LTD.</b><br><b>RANIPUR, HARDWAR</b> |             | NAME                   | SIGN          | DATE       | NO. OF VAR   |
| DEPT    | STE  | SCALE   | WEIGHT (KG) | DRN                    | SD/-          | 06.02.2015 |              |
| CODE    | 4011 | 2:1   | 0.2         | CHD                    | SD/-          | 07.02.2015 |              |
| TITLE : |      |   |             | APPD                   | SD/-          | 09.02.2015 |              |
|         |      |   |             | REF. TO ASSY. DRG.     |               | ITEM No.   | NO. OF ITEMS |
|         |      |   |             | 3-11506-56000          |               | 12         |              |
|         |      |   |             | DRAWING NO.            |               | 22 23 24   |              |
|         |      |   |             | 7 <b>4-11506-56006</b> |               |            |              |
|         |      |   |             | SHEET No.              | No. OF SHEETS | 01 01      |              |
|         |      |   |             | A4 SIZE                |               |            |              |

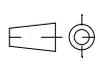
FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|                    |      |                     |      |                                    |         |   |                    |
|--------------------|------|---------------------|------|------------------------------------|---------|---|--------------------|
| REV                | DATE | ALTERED             | REV  | DATE                               | ALTERED | GMS No./ C.B.O.M.- NO.<br>3-11506-56000 | STATUS OF DRG<br>U |
|                    |      | CHECKED             |      |                                    | CHECKED |   |                    |
| ZONE               |      |                     | ZONE |                                    |         | AGREED DEPT                             | NAME               |
|                    |      |                     |      |                                    |         | TTX                                     | DILIP              |
|                    |      |                     |      |                                    |         | WTX                                     | S.THAKUR           |
|                    |      |                     |      |                                    |         | SIGN                                    | DATE               |
|                    |      |                     |      |                                    |         | SD/-                                    | 14.03.15           |
|                    |      |                     |      |                                    |         | SD/-                                    | 14.03.15           |
| GRADE OF UNTOL.DIM |      | M/CG. - AA0230208 m |      | WELDING-CLASS 'B' OF ISO13920:1996 |         | GAS CUTTING-TABLE 3 OF AA0621101        |                    |

12.5 / all over except otherwise stated.



COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                       |                 |   |              |                              |      |          |              |
|-----------------------|-----------------|---|--------------|------------------------------|------|----------|--------------|
| Sign & Date           | Ref.Drawing No> |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN          | NAME                         | SIGN | DATE     | NO. OF VAR   |
|                       |                 |   | CHD          | RITESH                       | SD/- | 07.02.15 |              |
| APPD                  | D.K.RAY         | SD/-  | 09.02.15     |                              |      |          |              |
| Inventory No.         | DEPT STE        |  SCALE 1:2   | WEIGHT (KG)  | REF. TO ASSY. DRG.           |      | ITEM No. | NO. OF ITEMS |
|                       | CODE 4011       |   | 5.00         | 3-11506-56100                |      | 1-1      |              |
| TITLE :<br>BASE PLATE |                 |   | CARD CODE    | DRAWING NO.<br>4-11506-56101 |      | 22 23 24 |              |
|                       |                 |   | SHEET No. 01 | No. OF SHEETS 01             |      |          |              |

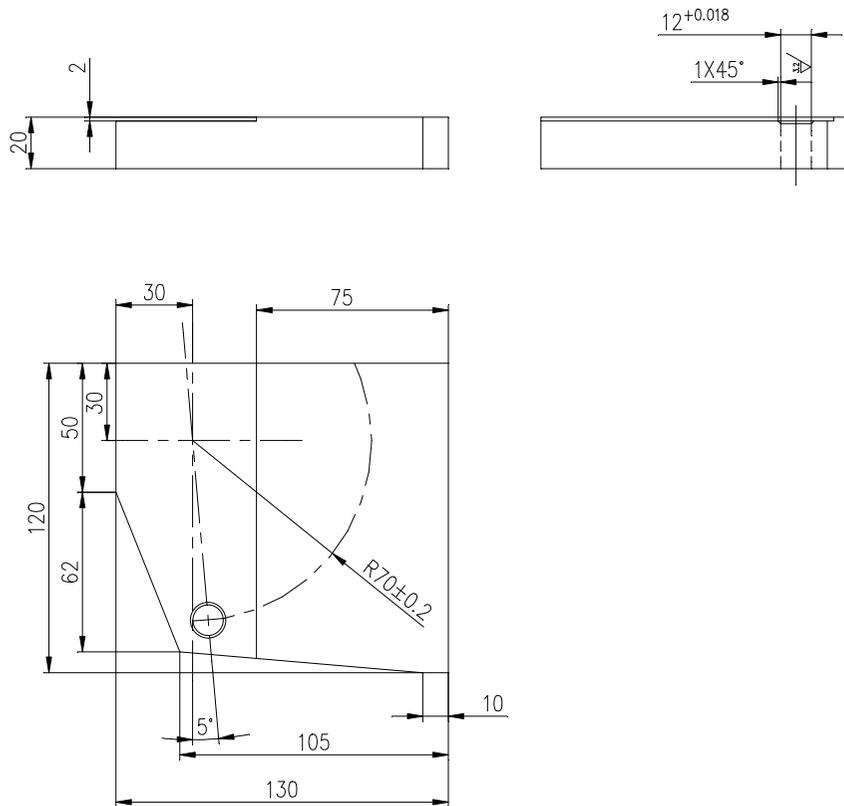


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|  |               |  |        |                                  |  |   |                    |
|--|---------------|--|--------|----------------------------------|--|---|--------------------|
| REV 02   | DATE 24.05.18 | ALTERED MONIKA SD/-<br>CHECKED RITESH SD/-               | REV 01 | DATE 09.04.18                    | ALTERED MONIKA SD/-<br>CHECKED P.K/RITESH SD/- | GMS No./ C.B.O.M.- NO.<br>3-11506-56000 | STATUS OF DRG<br>U |
| ZONE DIM 75 AND DIM 30 SHOWN IN DRG. AS PER C/A NO STE-18-F0129. |               | ZONE REMOVE HOLE Ø27 IN DRG. AS PER C/A NO STE-18-F0024. |        | AGREED DEPT                      | NAME   | SIGN                                    | DATE               |
|  |               |  |        | TTX                              | DILIP  | SD/-                                    | 14.03.15           |
|  |               |  |        | WTX                              | S.THAKUR                                       | SD/-                                    | 14.03.15           |
| GRADE OF UNTOL.DIM M/CG. - AA0230208 m                           |               | WELDING-CLASS 'B' OF ISO13920:1996                       |        | GAS CUTTING-TABLE 3 OF AA0621101 |  |   |                    |

125/ ALL OVER EXCEPT OTHERWISE STATED.



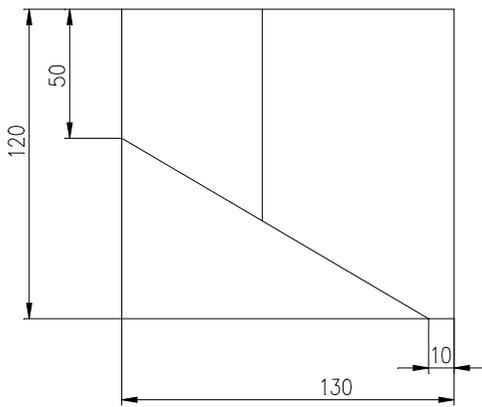
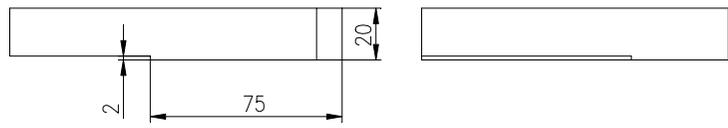
|               |   |           |                           |                                  |          |                 |              |
|---------------|---|-----------|---------------------------|----------------------------------|----------|-----------------|--------------|
| Sign & Date   | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN       | MONIKA                    | SD/-                             | 06.02.15 | NO. OF VAR<br>— |              |
|               |   | CHD       | RITESH                    | SD/-                             | 07.02.15 |                 |              |
| APPD          | D.K.RAY   | SD/-      | 09.02.15                  |                                  |          |                 |              |
| Inventory No. | DEPT STE  | SCALE 1:2 | WEIGHT (KG)               | REF. TO ASSY. DRG. 3-11506-56100 |          | ITEM No. 1-2    | NO. OF ITEMS |
|               | CODE 4011   |           | 2.3                       |                                  |          |                 |              |
|               | TITLE : LEG                                       | CARD CODE | DRAWING NO. 4-11506-56102 |                                  | —        |                 |              |
|               |   |           | SHEET No. 01              | No. OF SHEETS 01                 |          |                 |              |



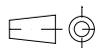
FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|                    |      |         |                     |  |                     |                                    |               |                                  |                         |
|--------------------|------|---------|---------------------|--|---------------------|------------------------------------|---------------|----------------------------------|-------------------------|
| REV                | DATE | ALTERED | REV                 | DATE   | ALTERED MONIKA SD/- | GMS No./ C.B.O.M.- NO.             | STATUS OF DRG |                                  |                         |
|                    |      | CHECKED |                     |  | 01                  |                                    |               | 09.04.18                         | CHECKED P.K/RITESH SD/- |
| ZONE               |      | ZONE    |                     | REMOVE HOLE Ø27 IN DRG.<br>AS PER C/A NO STE-18-F0024. |                     | AGREED DEPT                        | NAME          | SIGN                             | DATE                    |
|                    |      |         |                     |  |                     | TTX                                | DILIP         | SD/-                             | 14.03.15                |
|                    |      |         |                     |  |                     | WT                                 | S. THAKUR     | SD/-                             | 14.03.15                |
| GRADE OF UNTOL.DIM |      |         | M/CG. - AA0230208 m |  |                     | WELDING-CLASS 'B' OF ISO13920:1996 |               | GAS CUTTING-TABLE 3 OF AA0621101 |                         |

 of over except otherwise stated.



COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

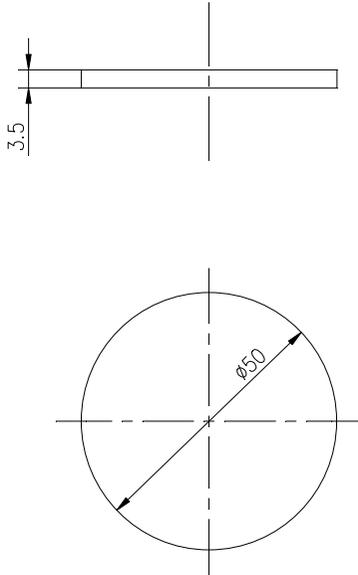
|                |                 |   |              |                              |                    |                 |              |
|----------------|-----------------|---|--------------|------------------------------|--------------------|-----------------|--------------|
| Sign & Date    | Ref.Drawing No> |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | NAME         | SIGN                         | DATE               | NO. OF VAR<br>— |              |
|                |                 |   | DRN          | MONIKA                       | SD/-               |                 | 06.02.15     |
| CHD            | RITESH          | SD/-  | 07.02.15     |                              |                    |                 |              |
| APPD           | D.K.RAY         | SD/-  | 09.02.15     |                              |                    |                 |              |
| Inventory No.  | DEPT STE        |    | SCALE        | WEIGHT (KG)                  | REF. TO ASSY. DRG. | ITEM No.        | NO. OF ITEMS |
|                | CODE 4011       |   | 1:2          | 1.7                          | 3-11506-56100      | 1-3             | —            |
| TITLE :<br>LEG |                 |   | CARD CODE    | DRAWING NO.<br>4-11506-56103 |                    | 22, 23, 24      |              |
|                |                 |   | SHEET No. 01 | No. OF SHEETS 01             |                    |                 |              |



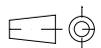
FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

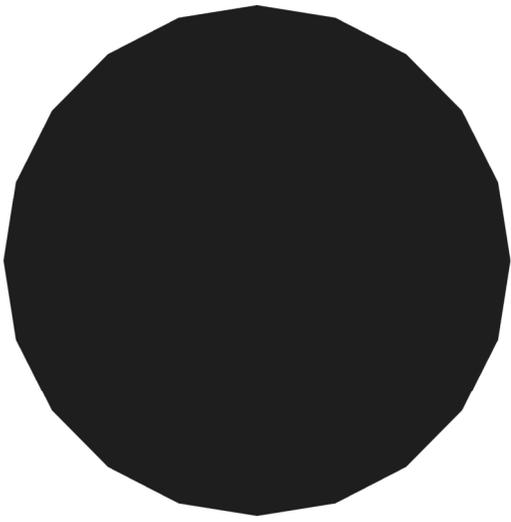
|                    |      |         |                     |             |                                    |   |                                  |          |
|--------------------|------|---------|---------------------|-------------|------------------------------------|---|----------------------------------|----------|
| REV                | DATE | ALTERED | REV                 | DATE        | ALTERED                            | GMS No./ C.B.O.M.- NO.<br>3-11506-56000 | STATUS OF DRG<br>U               |          |
|                    |      | CHECKED |                     |             | CHECKED                            |   |                                  |          |
| ZONE               |      | ZONE    |                     | AGREED DEPT |                                    | NAME                                    | SIGN                             | DATE     |
|                    |      |         |                     | TTX         |                                    | DILIP                                   | SD/-                             | 14.03.15 |
|                    |      |         |                     | WTX         |                                    | S.THAKUR                                | SD/-                             | 14.03.15 |
| GRADE OF UNTOL.DIM |      |         | M/CG. - AA0230208 m |             | WELDING-CLASS 'B' OF ISO13920:1996 |   | GAS CUTTING-TABLE 3 OF AA0621101 |          |

12.5 / ALL OVER EXCEPT OTHERWISE STATED

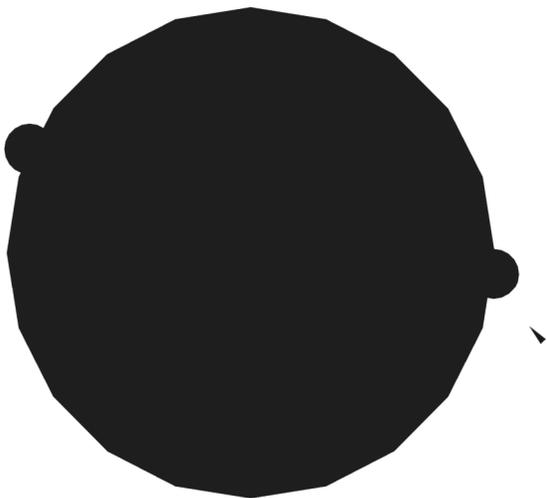


COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                  |   |   |                              |                    |            |            |              |
|------------------|---|---|------------------------------|--------------------|------------|------------|--------------|
| Sign & Date      |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN   | MONIKA                       | SD/-               | 06.02.15   | NO. OF VAR |              |
|                  |   | CHD   | RITESH                       | SD/-               | 07.02.15   |            |              |
| APPD             | D.K.RAY   | SD/-  | 09.02.15                     |                    |            |            |              |
| Inventory No.    | DEPT STE  |  SCALE 1:2 | WEIGHT (KG)                  | REF. TO ASSY. DRG. |            | ITEM No.   | NO. OF ITEMS |
|                  | CODE 4011   |   | .05                          | 3-11506-56100      |            |            |              |
| TITLE :<br>ROUND |   | CARD CODE   | DRAWING NO.<br>4-11506-56104 |                    | 22, 23, 24 |            |              |
|                  |   | SHEET No. 01  |                              | No. OF SHEETS 01   |            |            |              |







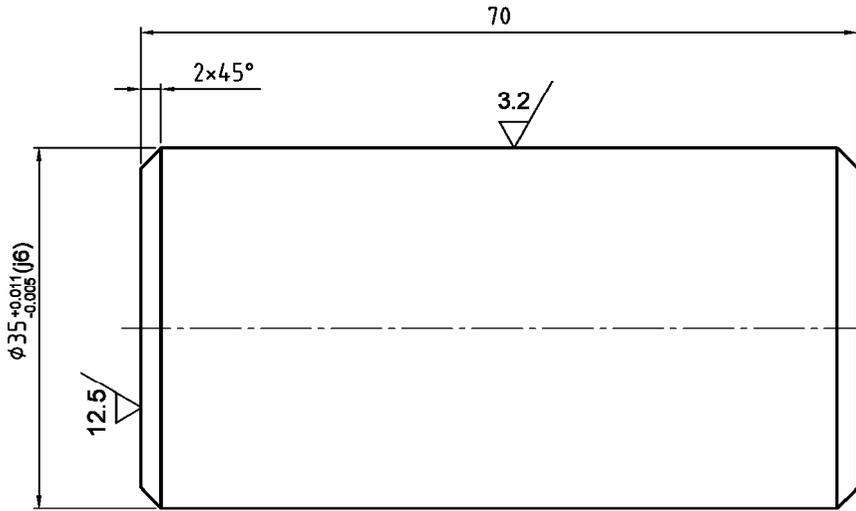
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39CB

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

| REV  | DATE | ALTERED | REV | DATE        | ALTERED | C.B.D.M.- NO. |          |  | STATUS OF DRG<br>U |
|------|------|---------|-----|-------------|---------|---------------|----------|--|--------------------|
|      |      | CHECKED |     |             | CHECKED | 0-12010-56000 |          |  |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN          | DATE     |  |                    |
|      |      |         |     | TTX         | R.SINGH | SD/-          | 06.12.11 |  |                    |

GRADE OF UNTOL.DIM M/CG. - AA10622



TECHNICAL REQUIREMENTS:-

1.IDENTIFICATION ACCORDING TO HW0400397

Inventory No. Sign & Date Ref.Drawing No. T/n No.



**BHARAT HEAVY ELECTRICALS LTD.**  
RANIPUR, HARDWAR

|      | NAME    | SIGN | DATE       | NO. OF VAR |
|------|---------|------|------------|------------|
| DRN  | M.KUMAR | -SD- | 12-09-2011 |            |
| CHD  | NEERAJ  | -SD- | 12-09-2011 |            |
| APPD | D.K.RAY | -SD- | 23-12-2011 |            |

|                    |  |       |              |                                |                  |              |
|--------------------|--|-------|--------------|--------------------------------|------------------|--------------|
| DEPT STE           |  | SCALE | WEIGHT (KG)  | REF. TO ASSY. DRG.             | ITEM No.         | NO. OF ITEMS |
| CODE 4011          |  | 2:1   | 0.53         | 1-12010-56300<br>1-12010-56600 | 3                |              |
| TITLE : <b>PIN</b> |  |       | CARD CODE    | DRAWING NO.                    |                  |              |
|                    |  |       | 7            | <b>4-12010-56303</b>           | 22               | 23           |
|                    |  |       | SHEET No. 01 |                                | No. OF SHEETS 01 |              |

A4 SIZE

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm > FORM DG 39CB)

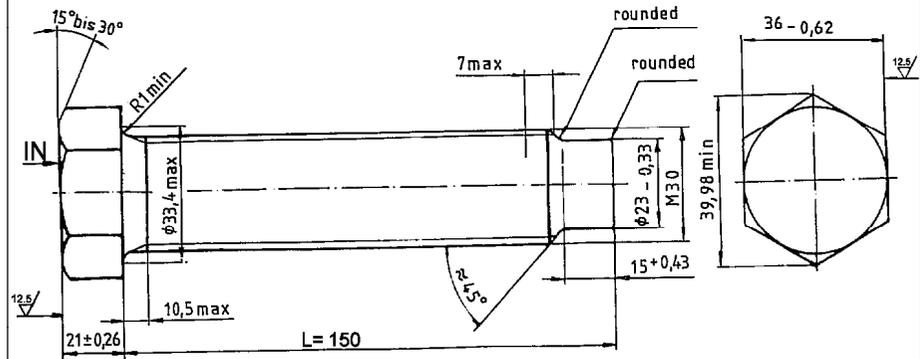
COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|      |      |         |      |      |         |               |         |                    |            |
|------|------|---------|------|------|---------|---------------|---------|--------------------|------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | C.B.O.M.- NO. |         | STATUS OF DRG<br>U |            |
|      |      | CHECKED |      |      | CHECKED | 0-12010-56000 |         |                    |            |
| ZONE |      |         | ZONE |      |         | AGREED DEPT   | NAME    | SIGN               | DATE       |
|      |      |         |      |      |         | TTX           | R.SINGH | SD/-               | 06.12.2011 |

GRADE OF UNTOL.DIM M/CG. - AA10622

6.3 All over except otherwise stated



Tin No. PM0A68B9C44

Ref. Drawing No. AO158A9764

Sign & Date

TECHNICAL REQUIREMENTS:-  
1. IDENTIFICATION ACCORDING TO HW0400397



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

|      | NAME    | SIGN | DATE       | NO. OF VAR |
|------|---------|------|------------|------------|
| DRN  | M.KUMAR | -SD- | 12-09-2011 |            |
| CHD  | NEERAJ  | -SD- | 12-09-2011 |            |
| APPD | D.K.RAY | -SD- | 23-12-2011 |            |

|               |                    |         |                 |                                  |                           |              |
|---------------|--------------------|---------|-----------------|----------------------------------|---------------------------|--------------|
| Inventory No. | DEPT STE           | SCALE % | WEIGHT (KG) 0.7 | REF. TO ASSY. DRG. 1-12010-56300 | ITEM No. 5                | NO. OF ITEMS |
|               | CODE 4011          |         |                 |                                  |                           |              |
| TITLE         | HEXAGON HEAD SCREW |         |                 | CARD CODE                        | DRAWING NO. 4-12010-56305 | 22 23 24     |
|               |                    |         |                 | SHEET No. 01                     | No. OF SHEETS 01          |              |

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm > FORM DG 39CB)

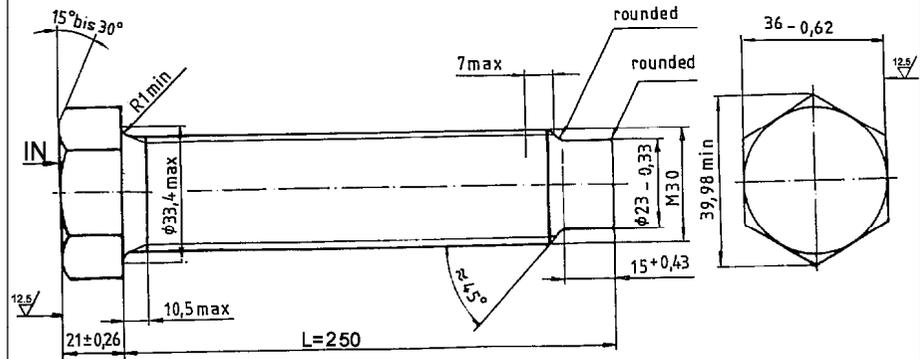
COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|      |      |         |      |      |         |                    |                 |                    |                    |
|------|------|---------|------|------|---------|--------------------|-----------------|--------------------|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | C.B.O.M.- NO.      |                 | STATUS OF DRG<br>U |                    |
|      |      | CHECKED |      |      | CHECKED | 0-12010-56000      |                 |                    |                    |
| ZONE |      |         | ZONE |      |         | AGREED DEPT<br>TTX | NAME<br>R.SINGH | SIGN<br>SD/-       | DATE<br>08.12.2011 |

GRADE OF UNTOL.DIM M/CG. - AA10622

6.3 All over except otherwise stated



Tin No. PSK043N625

Ref. Drawing No. AO158A9764

Sign & Date

TECHNICAL REQUIREMENTS:-  
1. IDENTIFICATION ACCORDING TO HW0400397



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

|      | NAME    | SIGN | DATE       | NO. OF VAR |
|------|---------|------|------------|------------|
| DRN  | M.KUMAR | -SD- | 12-09-2011 |            |
| CHD  | NEERAJ  | -SD- | 12-09-2011 |            |
| APPD | D.K.RAY | -SD- | 23-12-2011 |            |

Inventory No.

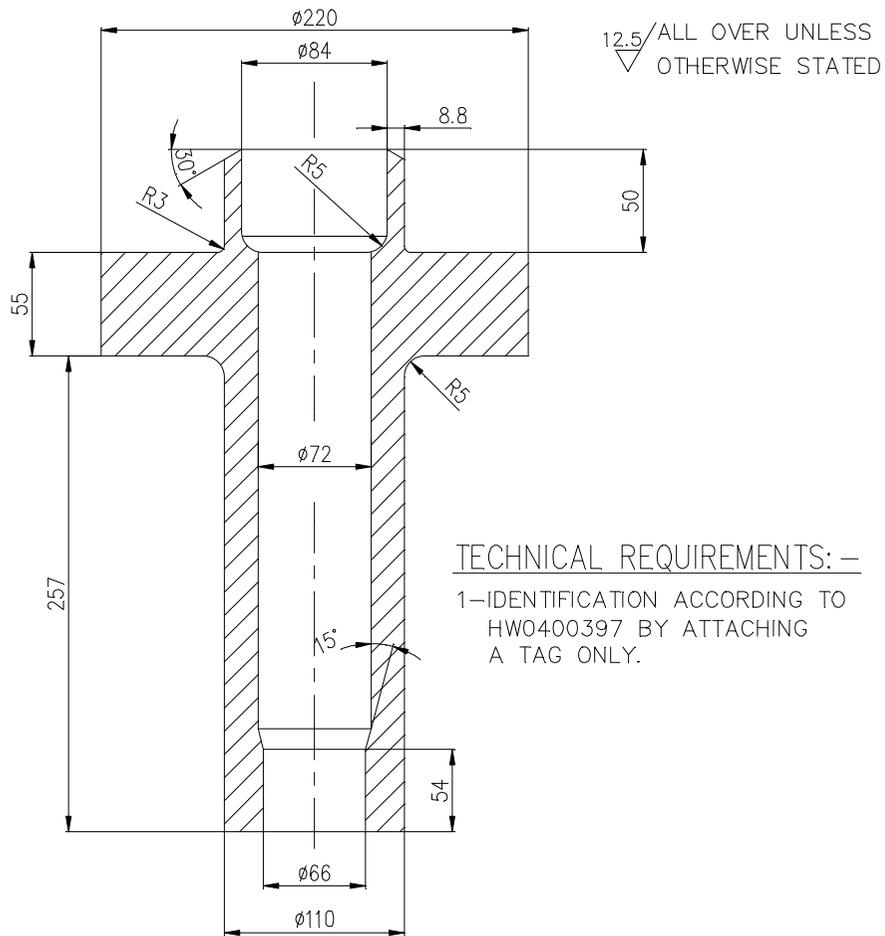
|                    |  |       |              |                    |          |              |
|--------------------|--|-------|--------------|--------------------|----------|--------------|
| DEPT STE           |  | SCALE | WEIGHT (KG)  | REF. TO ASSY. DRG. | ITEM NO. | NO. OF ITEMS |
| CODE 4011          |  | %     | 1.050        | 1-12010-56600      | 5        |              |
| TITLE              |  |       | CARD CODE    | DRAWING NO.        |          |              |
| HEXAGON HEAD SCREW |  |       | 7            | 4-12010-56605      | 22       | 23 24        |
|                    |  |       | SHEET No. 01 | No. OF SHEETS 01   |          |              |

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |     |             |          |  |                    |
|------|------|---------|-----|-------------|----------|--|--------------------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED  | GMS No./ C.B.O.M. - NO.<br>1-12023-30000 | STATUS OF DRG<br>U |
|      |      | CHECKED |     |             | CHECKED  |  |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME     | SIGN                                     | DATE               |
|      |      |         |     | WT          | SKTHAKUR | -sd-                                     | 18.09.17           |
|      |      |         |     | TTX         | DILIP    | -sd-                                     | 18.09.17           |

GRADE OF UNTOL.DIM M/CG. - AA0230208 m WELDING CLASS 'B' OF AA0621104 GAS CUTTING TABLE 3 OF AA0621101



TECHNICAL REQUIREMENTS: -

1-IDENTIFICATION ACCORDING TO HW0400397 BY ATTACHING A TAG ONLY.

COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT 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.

|               |           |       |             |                    |             |               |
|---------------|-----------|-------|-------------|--------------------|-------------|---------------|
| Inventory No. | DEPT STE  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.    | NO. OF ITEMS  |
|               | CODE 4011 |       |             |                    |             |               |
| Title :       | FLANGE    |       |             | CARD CODE          | DRAWING NO. |               |
|               |           |       |             |                    | 7           | 4-12023-30011 |
| SHEET No. 01  |           |       |             | No. OF SHEETS 01   |             |               |



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

|      |           |      |          |            |
|------|-----------|------|----------|------------|
| DRN  | NAME      | SIGN | DATE     | NO. OF VAR |
| KJSS |           | -sd- | 19.07.17 |            |
| CHD  | VIKAS     | -sd- | 19.09.17 |            |
| APPD | PK BANSAL | -sd- | 20.09.17 | -          |

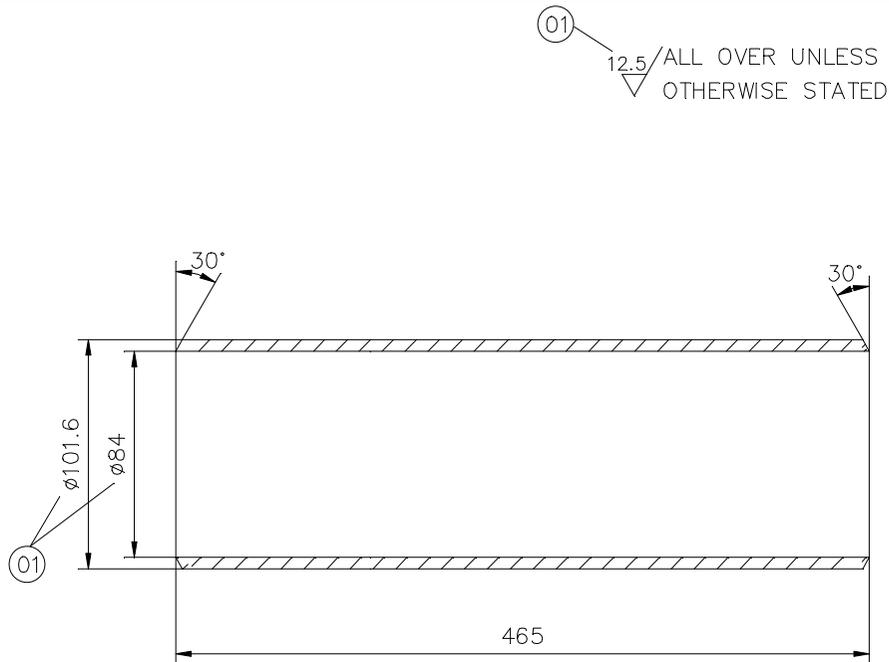
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |                                      |                    |                        |               |
|------|------|---------|------|--------------------------------------|--------------------|------------------------|---------------|
| REV  | DATE | ALTERED | REV  | DATE                                 | ALTERED            | GMS No./ C.B.O.M.- NO. | STATUS OF DRG |
|      |      | CHECKED | 01   | 10.08.19                             | UVERMA sd/-        | 1-12023-30000          | U             |
|      |      |         |      |                                      | CHECKED VIKAS sd/- |                        |               |
| ZONE |      |         | ZONE | CHANGED AS PER C.R NO. STE-19-F0249. |                    | AGREED DEPT            | NAME          |
|      |      |         |      |                                      |                    | WT                     | SK THAKUR     |
|      |      |         |      |                                      |                    |                        | -sd-          |
|      |      |         |      |                                      |                    |                        | DATE          |
|      |      |         |      |                                      |                    |                        | 18.09.17      |

GRADE OF UNTOL.DIM M/GG. - AA0230208 m WELDING-CLASS 'B' OF AA0621104 GAS CUTTING-TABLE 3 OF AA0621101

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.



**TECHNICAL REQUIREMENTS: -**  
 1-IDENTIFICATION ACCORDING TO HW0400397 BY ATTACHING A TAG ONLY.

|               |   |                |             |                    |                               |              |
|---------------|---|----------------|-------------|--------------------|-------------------------------|--------------|
| Sign & Date   | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN            | NAME        | SIGN               | DATE                          | NO. OF VAR   |
|               |   | CHD            | KJSS        | -sd-               | 18.07.17                      |              |
| Inventory No. | DEPT STE  | SCALE<br>N.T.S | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.                      | NO. OF ITEMS |
|               | CODE 4011   |                |             |                    |                               |              |
|               | TITLE :   | PIPE           |             | CARD CODE          | DRAWING NO. 4-12023-30012     |              |
|               |   |                |             |                    | SHEET No. 01 No. OF SHEETS 01 |              |

FIRST ANGLE PROJECTION

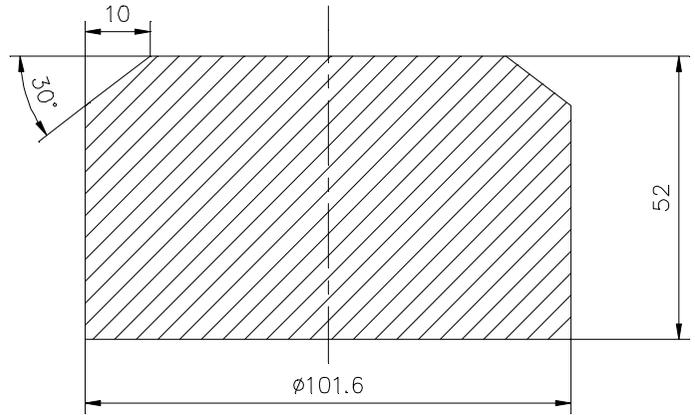
(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

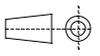
|      |      |         |     |             |         |   |                    |          |
|------|------|---------|-----|-------------|---------|---|--------------------|----------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M.- NO.<br>1-12023-30000 | STATUS OF DRG<br>U |          |
|      |      | CHECKED |     |             | CHECKED |   |                    |          |
| ZONE |      | ZONE    |     | AGREED DEPT |         | NAME                                    | SIGN               | DATE     |
|      |      |         |     | WT          |         | SKTHAKUR                                | -sd-               | 18.09.17 |
|      |      |         |     | TTX         |         | DILIP                                   | -sd-               | 18.09.17 |

GRADE OF UNTOL.DIM M/GG. AA0230208 m WELDING CLASS 'B' OF AA0621104 GAS CUTTING TABLE 3 OF AA0621101

12.5/ALL OVER UNLESS OTHERWISE STATED



IDENTIFICATION ACCORDING TO HW0400397 BY ATTACHING A TAG ONLY.  
**NOTE:-**  
HOLE OF M48 TO BE MADE AFTER ASSEMBLY ON FLANGE.  
(SEE DRG. 21202330010)

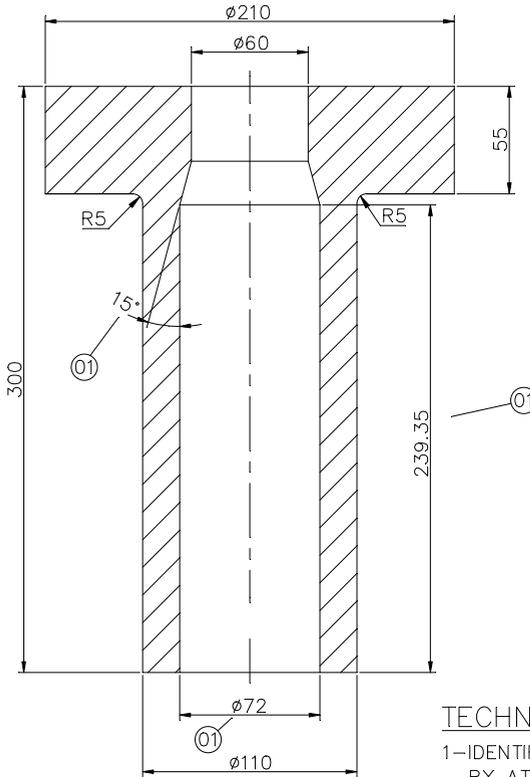
|                        |   |  |                              |                    |          |                 |                   |
|------------------------|---|--|------------------------------|--------------------|----------|-----------------|-------------------|
| Sign & Date            |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN  | NAME                         | SIGN               | DATE     | NO. OF VAR<br>- |                   |
|                        |   | CHD  | VIKAS                        | -sd-               | 19.09.17 |                 |                   |
| APPD                   | PK BANSAL   | -sd-   | 20.09.17                     |                    |          |                 |                   |
| Inventory No.          | DEPT STE  |  SCALE<br>N.T.S | WEIGHT (KG)                  | REF. TO ASSY. DRG. |          | ITEM No.        | NO. OF ITEMS<br>- |
|                        | CODE 4011   |  | 1.7                          | 2-12023-30010      |          | 03              |                   |
| TITLE :<br>ROUND PLATE |   | CARD CODE  | DRAWING NO.<br>4-12023-30013 |                    | -        |                 |                   |
|                        |   | SHEET No. 01   |                              | No. OF SHEETS 01   |          |                 |                   |

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|     |      |         |     |                        |                 |                 |          |
|-----|------|---------|-----|------------------------|-----------------|-----------------|----------|
| REV | DATE | ALTERED | REV | DATE                   | ALTERED         | GMS No/GRSP No. | STATUS   |
|     |      | CHECKED | 01  | 20.09.17               | LOKESH S.MITTAL | 1-12024-56000   | OF DRG   |
|     |      |         |     | CHANGES MADE AS PER    |                 | AGREED          | NAME     |
|     |      |         |     | C/A. NO. STE-17-F0210. |                 | DEPT.           | SIGN     |
|     |      |         |     |                        |                 | WT              | DATE     |
|     |      |         |     |                        |                 |                 | 01.12.11 |

GRADE OF UNTOL.DIMM/CGQ/M/F.AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101



12.5/ ALL OVER UNLESS OTHERWISE STATED

TECHNICAL REQUIREMENTS: -

1-IDENTIFICATION ACCORDING TO HW0400397 BY ATTACHING A TAG ONLY.

COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT 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.

A0187A4461 REF.DRG.No.

SIGN & DATE

INVENTORY No.

|   |          |             |                  |                |              |             |          |
|---|----------|-------------|------------------|----------------|--------------|-------------|----------|
| REMARKS   | ITEM No. | DESCRIPTION | VAR              | MATERIAL CODE  | A            | UNIT WEIGHT |          |
|   |          |             |                  | MATERIAL SPEC. | C            |             |          |
|  BHARAT HEAVY ELECTRICALS LTD<br>HARDWAR |          |             |                  | NAME           | SIGN         | DATE        |          |
|   |          |             |                  | DRN            | SHEKHAR      | -sd-        | 08.11.11 |
|   |          |             |                  | CHD            | SHIVAM       | -sd-        | 11.11.11 |
|   |          |             |                  | APD            | RCA          | -sd-        | 02.12.11 |
| DEPT. STE   | SCALE    | WEIGHT(Kg)  | REF.TO ASSY.DRG. | ITEM No.       | No OF ITEMS  |             |          |
| CODE 4011   | NTS      | 16.3        | 2-12024-56010    | 01             | ---          |             |          |
| TITLE FLANGE  |          |             | DRAWING No.      |                |              |             |          |
|   |          |             | 4-12024-56011    |                |              |             |          |
|   |          |             |                  | SHEET No. 01   | No.OF SHEETS | 01          |          |

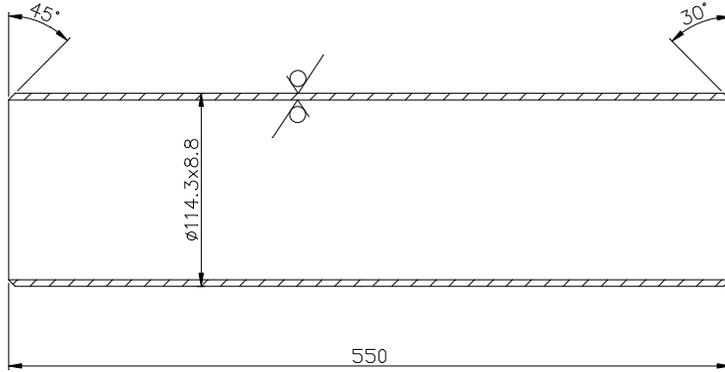
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|     |      |         |     |      |             |                 |          |
|-----|------|---------|-----|------|-------------|-----------------|----------|
| REV | DATE | ALTERED | REV | DATE | ALTERED     | GMS No/GRSP No. | STATUS   |
|     |      | CHECKED |     |      | CHECKED     | 1-12024-56000   | OF DRG   |
|     |      | AGREED  |     |      | NAME        | SIGN            | DATE     |
|     |      | DEPT.   |     |      | V.K. DHIMAN | -sd-            | 01.12.11 |
|     |      | WT      |     |      |             |                 |          |

GRADE OF UNTOOL/DIMM/CGZ/M/F.AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3-AA0621104

50/ ALL OVER UNLESS OTHERWISE STATED



TECHNICAL REQUIREMENT:-

1. IDENTIFICATION AS PER HW0400397 BY ATTACHING A TAG ONLY.

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT 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.

A0187A4461  
REF.DRG.No.

SIGN & DATE



BHARAT HEAVY ELECTRICALS LTD  
HARDWAR

|     | NAME   | SIGN | DATE     | NO. OF VAR |
|-----|--------|------|----------|------------|
| DRN | LOKESH | -sd- | 08.11.11 |            |
| CHD | SHIVAM | -sd- | 11.11.11 |            |
| APD | RCA    | -sd- | 02.12.11 | -          |

|               |               |                |                    |                                   |                |                  |
|---------------|---------------|----------------|--------------------|-----------------------------------|----------------|------------------|
| INVENTORY No. | DEPT. STE     | SCALE<br>N.T.S | WEIGHT(Kg)<br>12.6 | REF.TD ASSY.DRG.<br>2-12024-56010 | ITEM No.<br>02 | No OF ITEMS<br>- |
|               | CODE 4011     |                |                    |                                   |                |                  |
|               | TITLE<br>PIPE |                |                    | DRAWING No.<br>4-12024-56012      |                |                  |
|               |               |                | SHEET No. 01       |                                   | No.OF SHEETS   | 01               |

Released

:

Released



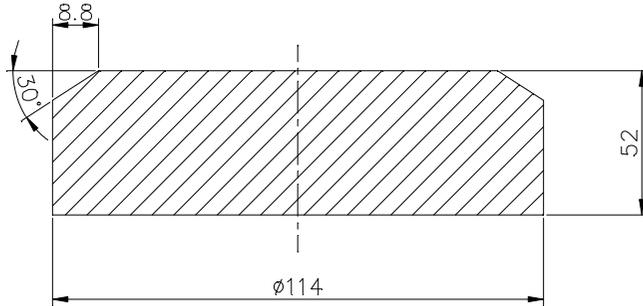
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|     |      |         |     |     |     |      |         |     |     |                 |          |
|-----|------|---------|-----|-----|-----|------|---------|-----|-----|-----------------|----------|
| REV | DATE | ALTERED | --- | --- | REV | DATE | ALTERED | --- | --- | GMS No/GRSP No. | STATUS   |
| --- | ---  | CHECKED | --- | --- | --- | ---  | CHECKED | --- | --- | 1-12024-56000   | OF DRG   |
|     |      |         |     |     |     |      |         |     |     | AGREED          |          |
|     |      |         |     |     |     |      |         |     |     | DEPT.           |          |
|     |      |         |     |     |     |      |         |     |     | NAME            |          |
|     |      |         |     |     |     |      |         |     |     | SIGN            |          |
|     |      |         |     |     |     |      |         |     |     | DATE            |          |
|     |      |         |     |     |     |      |         |     |     | WT              |          |
|     |      |         |     |     |     |      |         |     |     | V.K.DHIMAN      | -sd-     |
|     |      |         |     |     |     |      |         |     |     |                 | 01.12.11 |

GRADE OF UNTOL.DIMM/CGZ/M/F.AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621104

12.5/ ALL OVER UNLESS OTHERWISE STATED



TECHNICAL REQUIREMENTS: -

1. IDENTIFICATION AS PER HW9400397 BY ATTACHING A TAG ONLY.

A0187A44461  
REF.DRG.No.

SIGN & DATE



BHARAT HEAVY ELECTRICALS LTD  
HARDWAR

|     | NAME      | SIGN | DATE     | NO. OF VAR |
|-----|-----------|------|----------|------------|
| DRN | LOKESH    | -SD- | 08.11.11 |            |
| CHD | SHIVAM/RR | -SD- | 11.11.11 |            |
| APD | RCA       | -SD- | 02.12.11 | --         |

|               |                |        |            |                              |              |             |
|---------------|----------------|--------|------------|------------------------------|--------------|-------------|
| INVENTORY No. | DEPT.S.T.E.    | SCALE  | WEIGHT(Kg) | REF.TD ASSY.DRG.             | ITEM No.     | No OF ITEMS |
|               | CODE 4011      | N.T.S. | 3.2        | 2-12024-56010                | 03           |             |
|               | TITLE<br>PLATE |        |            | DRAWING No.<br>4-12024-56013 |              |             |
|               |                |        |            | SHEET No.01                  | No.OF SHEETS | 01          |

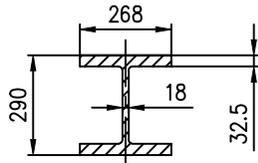
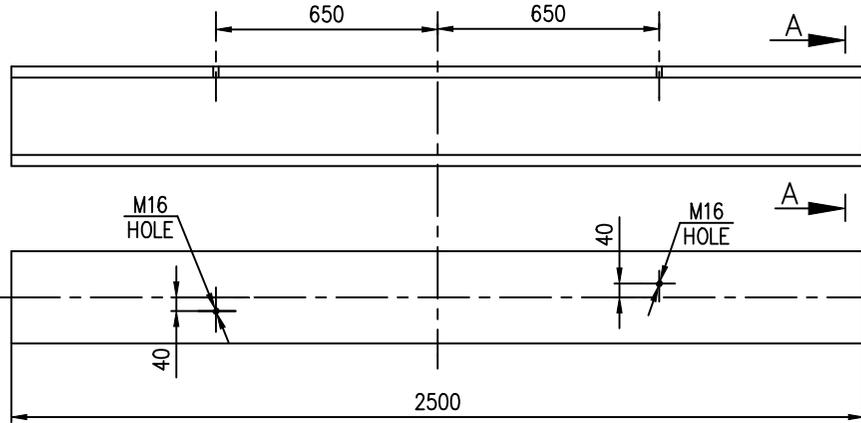
COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |   |                    |
|------|------|---------|------|------|---------|---|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M.- NO.<br>0 12037 56000 | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |   |                    |
| ZONE |      |         | ZONE |      |         | AGREED DEPT<br>WTX                      | NAME<br>SUSHANT    |
|      |      |         |      |      |         | SIGN<br>sd/-                            | DATE<br>07.07.12   |

GRADE OF UNTOL.DIM M/CG. - AA0230208 m WELDING-CLASS 'B' OF ISO13920:1996 GAS CUTTING-TABLE 3 OF AA0621101

50/ ALL OVER EXCEPT OTHERWISE STATED

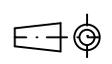


SECTION AA

IDENTIFICATION ACC.TO HW 0400397.

COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT 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.

Released

|                                    |                 |   |              |                              |          |              |            |
|------------------------------------|-----------------|---|--------------|------------------------------|----------|--------------|------------|
| Sign & Date                        | Ref.Drawing No> |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN          | NAME                         | SIGN     | DATE         | NO. OF VAR |
|                                    |                 |   | CHD          | A.K.SINGH                    | SD/-     | 21.05.12     |            |
| APPD                               | A.SHAH          | SD/-  | 09.07.12     |                              |          |              |            |
| Inventory No.                      | DEPT STE        |  SCALE 1:15  | WEIGHT (KG)  | REF. TO ASSY. DRG.           | ITEM No. | NO. OF ITEMS |            |
|                                    | CODE 4011       |   | 419.00       | 3-12037-56800                | 01       |              |            |
| TITLE : PROFILE IBPV<br>260 X 2500 |                 |   | CARD CODE    | DRAWING NO.<br>4-12037-56801 |          | 22 23 24     |            |
|                                    |                 |   | SHEET No. 01 | No. OF SHEETS 01             |          |              |            |

<PART NUMBER> <PART REVISION NUMBER>



Released



FIRST ANGLE PROJECTION

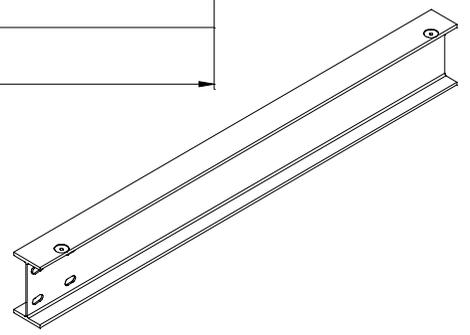
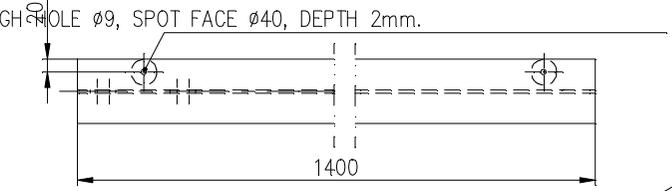
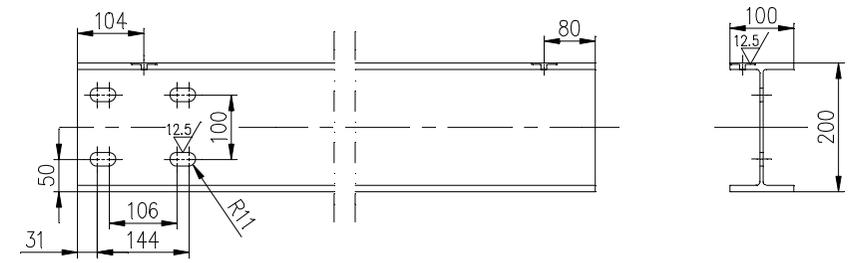
(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERMINENTAL TO THE INTEREST OF THE COMPANY.

|      |      |         |      |      |         |                        |        |                    |          |
|------|------|---------|------|------|---------|------------------------|--------|--------------------|----------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M.- NO. |        | STATUS OF DRG<br>U |          |
|      |      | CHECKED |      |      | CHECKED | 01204250000            |        |                    |          |
| ZONE |      |         | ZONE |      |         | AGREED DEPT            | NAME   | SIGN               | DATE     |
|      |      |         |      |      |         | WT                     | S.K.T. | -SD/-              | 29.01.19 |

GRADE OF UNTOL.DIM M/CG.  $\bar{O}/M/\bar{A}$  -AA0230208 WELDING  $\bar{A}/B/\bar{G}/\bar{D}$  AA0621104 GAS CUTTING-T3 AA0621101

50/ALL OVER EXCEPT  
 $\nabla$  OTHERWISE STATED



TECHNICAL REQUIREMENTS: -  
 1. IDENTIFICATION ACCORDING TO HW0400397.

|               |             |                 |   |             |                    |               |                  |              |            |
|---------------|-------------|-----------------|---|-------------|--------------------|---------------|------------------|--------------|------------|
| Inventory No. | Sign & Date | Ref:Drawing No> | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |             | DRN                | NAME          | SIGN             | DATE         | NO. OF VAR |
|               |             |                 | CHD   | M. KUMAR    | -SD/-              | 30.11.18      | APPD             | D.K. RAY     |            |
| DEPT STE      |             |                 | SCALE   | WEIGHT (KG) | REF. TO ASSY. DRG. |               | ITEM No.         | NO. OF ITEMS |            |
| CODE 4011     |             |                 | N.T.S   | 31.96       | 31204250310        |               | 1                |              |            |
| TITLE :       |             |                 | I-GIRDER  |             | CARD CODE          | DRAWING NO.   |                  | 22 23 24     |            |
|               |             |                 |   |             | 7                  | 4-12042-50311 |                  |              |            |
|               |             |                 |   |             | SHEET No. 01       |               | No. OF SHEETS 01 |              |            |

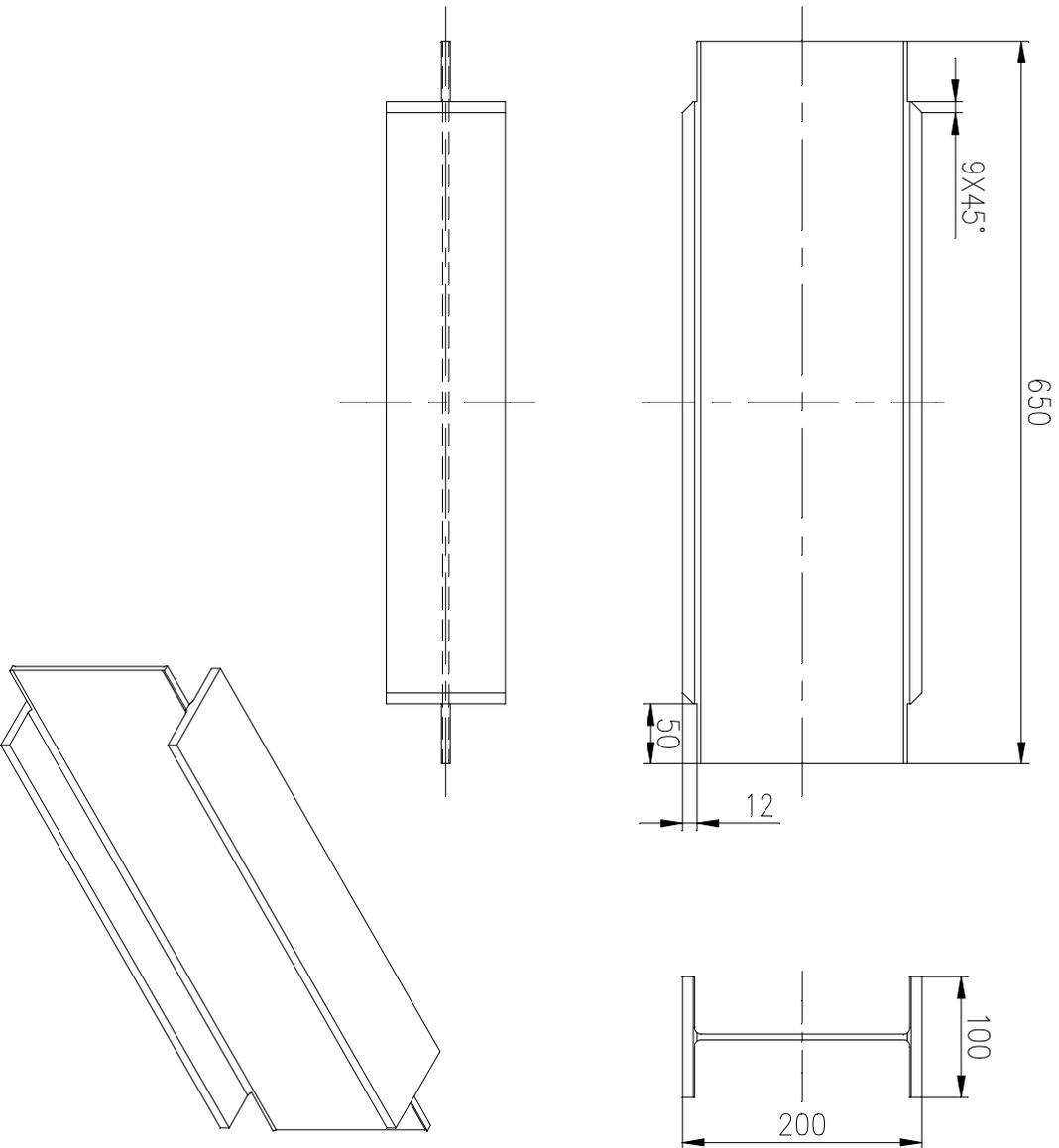
**FIRST ANGLE PROJECTION**

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |                          |               |
|------|------|---------|------|------|---------|--------------------------|---------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No- / C.B.O.M. - NO. | STATUS OF DRG |
|      |      | CHECKED |      |      | CHECKED | 01204250000              | U             |
| ZONE |      |         | ZONE |      |         | AGREED DEPT WT           | NAME S.K.T.   |
|      |      |         |      |      |         |                          | SIGN SIGN     |
|      |      |         |      |      |         |                          | DATE DATE     |
|      |      |         |      |      |         |                          | 29.01.19      |

GRADE OF UNTOL.DIM M/CG.  $\phi$ M/F \- AA0230208 WELDING X/B/X/D AA0621104 GAS CUTTING-T3 AA0621101

50/ ALL OVER EXCEPT OTHERWISE STATED



THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

COPYRIGHT AND CONFIDENTIAL

**TECHNICAL REQUIREMENTS: -**  
1. IDENTIFICATION ACCORDING TO HW0400397.

|  |             |                               |
|--|-------------|-------------------------------|
| Inventory No.  | Sign & Date | Ref.Drawing No>               |
|  |             |                               |
| <b>BHARAT HEAVY ELECTRICALS LTD.</b><br>RANIPUR, HARDWAR |             |                               |
| DEPT STE   | SCALE       | WEIGHT (KG)                   |
| CODE 4011  | N.T.S       | 13.30                         |
| TITLE :  | CARD CODE   | DRAWING NO.                   |
| I - GIRDER   |             | 4-12042-50312                 |
|  |             | SHEET No. 01 No. OF SHEETS 01 |
|  |             | 22 23 24                      |
|  |             | A4 SIZE                       |

| DRN     | NAME     | SIGN  | DATE     | NO. OF VAR |
|---------|----------|-------|----------|------------|
| CHD     | M. KUMAR | -SD/- | 30.11.18 |            |
| APPD.K. | RAY      | -SD/- | 29.01.19 |            |

|                    |          |              |
|--------------------|----------|--------------|
| REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
| 31204250310        | 2        |              |

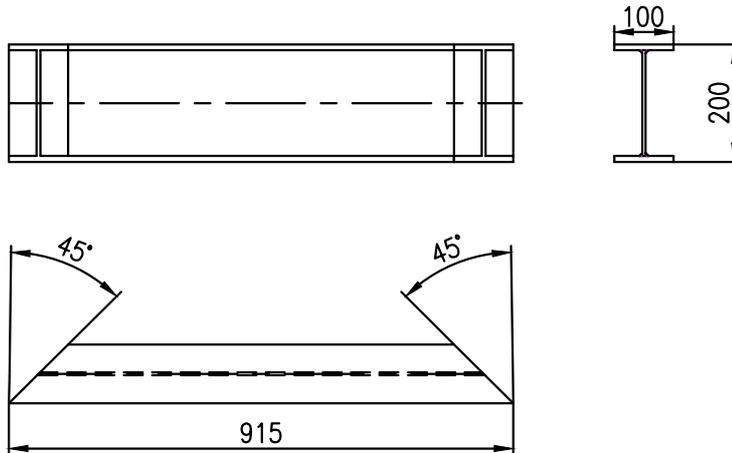
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |                                       |                    |
|------|------|---------|------|------|---------|---------------------------------------|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M.- NO.<br>01204250000 | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |                                       |                    |
| ZONE |      |         | ZONE |      |         | AGREED DEPT                           | NAME               |
|      |      |         |      |      |         | WT                                    | S.K.T.             |
|      |      |         |      |      |         |                                       | DATE               |
|      |      |         |      |      |         |                                       | 29.01.19           |

GRADE OF UNTOL.DIM M/CG.  $\frac{1}{2}$ /M/R -AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

50/ALL OVER EXCEPT OTHERWISE STATED



TECHNICAL REQUIREMENTS:-

IDENTIFICATION ACCORDING TO HW0400397.

Ref. Drawing No->



**BHARAT HEAVY ELECTRICALS LTD.**  
RANIPUR, HARDWAR

|      | NAME     | SIGN  | DATE     | NO. OF VAR |
|------|----------|-------|----------|------------|
| DRN  | VIJAY    | -SD/- | 30.11.18 | —          |
| CHD  | M. KUMAR | -SD/- | 30.11.18 | —          |
| APPD | D.K. RAY | -SD/- | 29.01.19 | —          |

Sign & Date  
Inventory No.

|           |  |       |              |                    |                  |              |
|-----------|--|-------|--------------|--------------------|------------------|--------------|
| DEPT STE  |  | SCALE | WEIGHT (KG)  | REF. TO ASSY. DRG. | ITEM No.         | NO. OF ITEMS |
| CODE 4011 |  | N.T.S | 18.69        | 31204250310        | 03               | —            |
| TITLE :   |  |       | CARD CODE    | DRAWING NO.        |                  |              |
| I-GIRDER  |  |       | 7            | 4-12042-50313      |                  | 22 23 24     |
|           |  |       | SHEET No. 01 |                    | No. OF SHEETS 01 |              |

A4 SIZE

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION

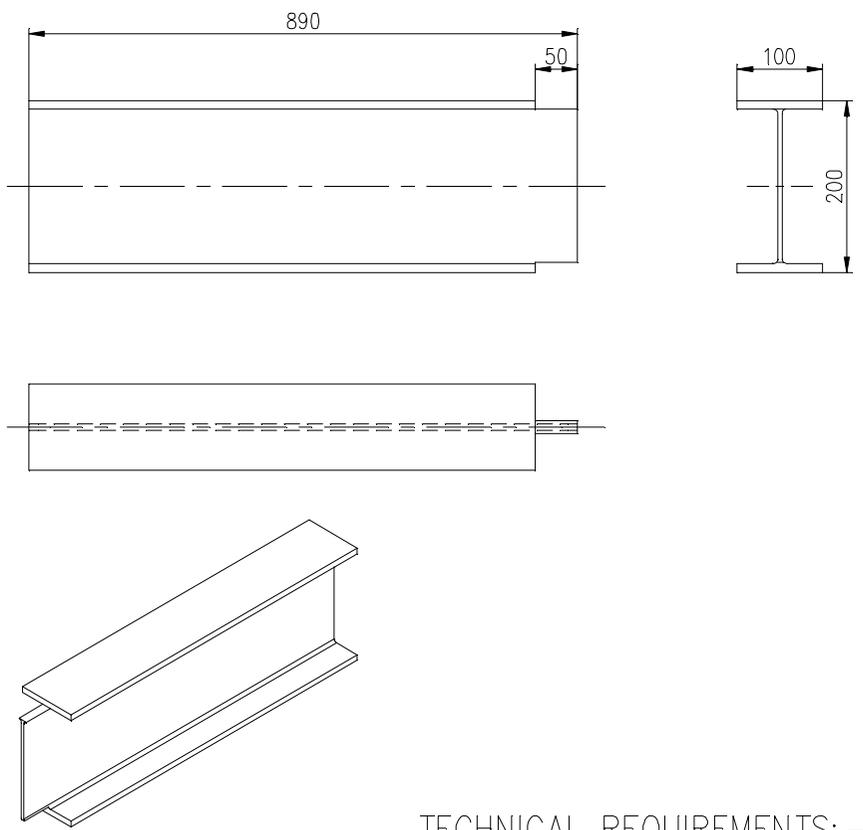
(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|      |      |         |     |             |         |                                       |                    |
|------|------|---------|-----|-------------|---------|---------------------------------------|--------------------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M.- NO.<br>01204250000 | STATUS OF DRG<br>U |
|      |      | CHECKED |     |             | CHECKED |                                       |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                                  | DATE               |
|      |      |         |     | WT          | S.K.T.  | -SD/-                                 | 29.01.19           |

GRADE OF UNTOL.DIM M/CG. Q/M/A -AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

50/ALL OVER EXCEPT OTHERWISE STATED



TECHNICAL REQUIREMENTS: -  
1. IDENTIFICATION ACCORDING TO HW0400397.

|               |             |                 |   |                |             |                              |                  |          |              |
|---------------|-------------|-----------------|---|----------------|-------------|------------------------------|------------------|----------|--------------|
| Inventory No. | Sign & Date | Ref:Drawing No> | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |                | DRN         | NAME                         | SIGN             | DATE     | NO. OF VAR   |
|               |             |                 | CHD   | M. KUMAR       | -SD/-       | 30.11.18                     |                  |          |              |
|               |             |                 | DEPT STE  | SCALE<br>N.T.S | WEIGHT (KG) | REF. TO ASSY. DRG.           |                  | ITEM No. | NO. OF ITEMS |
|               |             |                 | CODE 4011   |                | 19.62       | 41204250910                  |                  | 1        |              |
|               |             |                 | TITLE :<br>I-GIRDER                               |                | CARD CODE   | DRAWING NO.<br>4-12042-50911 |                  | 22 23 24 |              |
|               |             |                 |   |                |             | SHEET No. 01                 | No. OF SHEETS 01 |          |              |

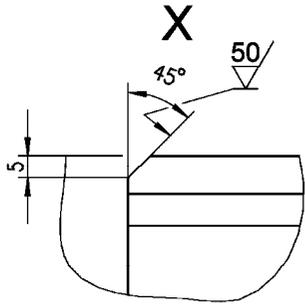
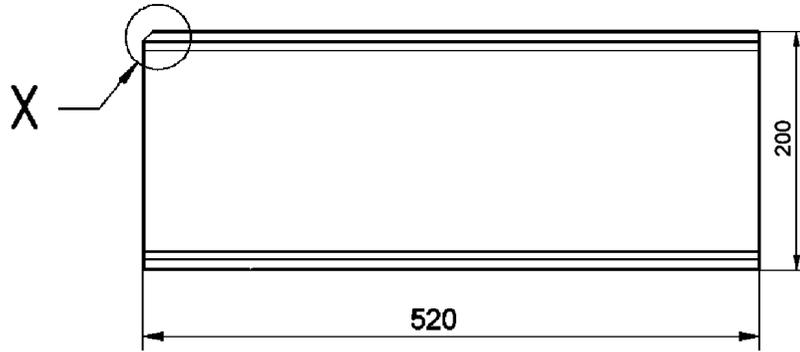
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm) FORM DG 39(CB)

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                    |      |         |      |      |                 |              |      |                    |      |
|--------------------|------|---------|------|------|-----------------|--------------|------|--------------------|------|
| REV                | DATE | ALTERED | REV  | DATE | ALTERED         | C.B.O.M.-NO. |      | STATUS OF DRG<br>U |      |
|                    |      | CHECKED |      |      | CHECKED         | 01204256000  |      |                    |      |
| ZONE               |      |         | ZONE |      |                 | AGREED DEPT  | NAME | SIGN               | DATE |
|                    |      |         |      |      |                 | TTX          |      | SD/-               |      |
| GRADE OF UNTOL.DIM |      |         |      |      | M/CG. - AA10622 |              |      |                    |      |



Released

Tin No.  
PSK049L905

Ref Drawing No.  
DSPPG-0144467

Sign & Date



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

|      |         |      |            |            |
|------|---------|------|------------|------------|
|      | NAME    | SIGN | DATE       | NO. OF VAR |
| DRN  | MAHI    | -SD- | 25-11-2011 |            |
| CHD  | MAHI    | -SD- | 25-11-2011 |            |
| APPD | D.K.RAY | -SD- | 30.05.2012 |            |

|                            |           |  |        |              |                                     |                  |              |
|----------------------------|-----------|--|--------|--------------|-------------------------------------|------------------|--------------|
| Inventory No.              | DEPT STE  |  | SCALE  | WEIGHT (KG)  | REF. TO ASSY. DRG.                  | ITEM No.         | NO. OF ITEMS |
|                            | CODE 4011 |  | N.T.S. | 11           | 11204256100                         | 103              |              |
| TITLE :<br><b>I-GIRDER</b> |           |  |        | CARD CODE    | DRAWING NO.<br><b>4-12042-56103</b> | 22 23 24         |              |
|                            |           |  |        | SHEET No. 01 |                                     | No. OF SHEETS 01 |              |

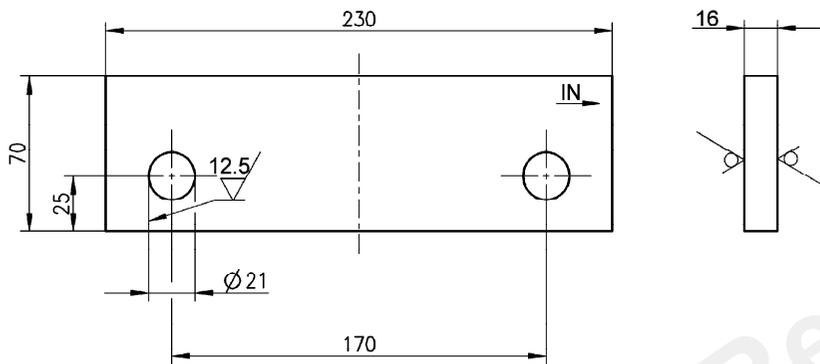
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |   |                    |
|------|------|---------|------|------|---------|---|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No / C.B.O.M. - NO.<br><b>0-12042-56000</b> | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |   |                    |
| ZONE |      |         | ZONE |      |         | AGREED DEPT<br>TTX                              | NAME               |
|      |      |         |      |      |         | SIGN<br>SD/-                                    | DATE               |

GRADE OF UNTOL.DIM M/CG. C/M/F-AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

50 / ALL OVER EXCEPT  
OTHERWISE STATED



TECHNICAL REQUIREMENT  
1-IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED IN

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERMINENTAL TO THE INTEREST OF THE COMPANY.

TIN NO.  
PSK049L908

Ref Drawing No.  
DSPPG-414469

Sign & Date



**BHARAT HEAVY ELECTRICALS LTD.**  
**RANIPUR, HARDWAR**

|      | NAME     | SIGN | DATE       | NO. OF VAR |
|------|----------|------|------------|------------|
| DRN  | RAVINDER | SD/- | 17.11.11   |            |
| CHD  | MAHENDRA | SD/- | 17.11.11   |            |
| APPD | D.K RAY  | SD/- | 30.05.2012 |            |

|                         |      |      |                |                    |                                     |               |              |
|-------------------------|------|------|----------------|--------------------|-------------------------------------|---------------|--------------|
| Inventory No.           | DEPT | STE  | SCALE<br>N.T.S | WEIGHT (KG)<br>1.8 | REF. TO ASSY. DRG.<br>1-12042-56100 | ITEM<br>104   | NO. OF ITEMS |
|                         | CODE | 4011 |                |                    |                                     |               |              |
| TITLE :<br><b>PLATE</b> |      |      |                | CARD CODE          | DRAWING NO.<br><b>4-12042-56104</b> |               |              |
|                         |      |      |                | SHEET No.          | 01                                  | No. OF SHEETS | 01           |

Released

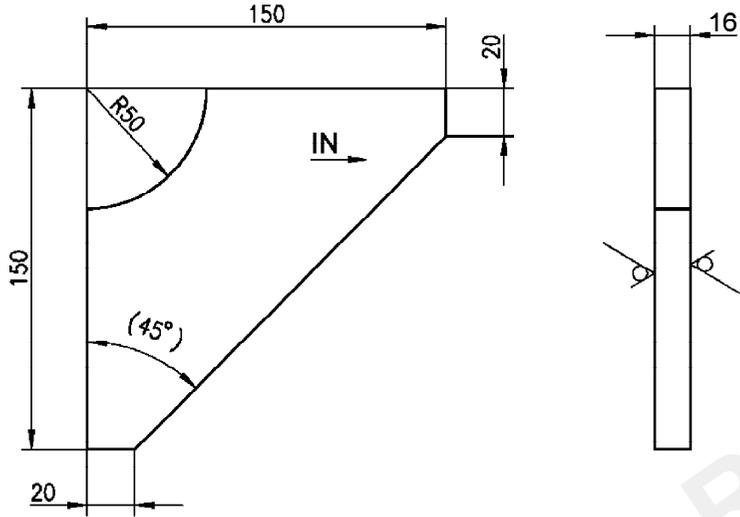
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |     |             |         |                        |      |                    |
|------|------|---------|-----|-------------|---------|------------------------|------|--------------------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M.- NO. |      | STATUS OF DRG<br>U |
|      |      | CHECKED |     |             | CHECKED | 0-12042-56000          |      |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                   | DATE |                    |
|      |      |         |     | TTX         |         | SD/-                   |      |                    |

GRADE OF UNTOL.DIM M/C.G. C/M/F -AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

50 / ALL OVER EXCEPT OTHERWISE STATED



TECHNICAL REQUIREMENT  
1-IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED IN.

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

TIN NO.  
PSK0491909

Ref Drawing No-  
DSPPG-044470

Sign & Date



**BHARAT HEAVY ELECTRICALS LTD.**  
**RANIPUR, HARDWAR**

|      | NAME     | SIGN | DATE       | NO. OF VAR |
|------|----------|------|------------|------------|
| DRN  | RAVINDER | SD/- | 17.11.11   |            |
| CHD  | MAHENDRA | SD/- | 17.11.11   |            |
| APPD | D.K.RAY  | SD/- | 30.06.2012 |            |

|                         |      |      |                |                    |                                     |               |              |
|-------------------------|------|------|----------------|--------------------|-------------------------------------|---------------|--------------|
| Inventory No.           | DEPT | STE  | SCALE<br>N.T.S | WEIGHT (KG)<br>0.8 | REF. TO ASSY. DRG.<br>1-12042-56100 | ITEM<br>105   | NO. OF ITEMS |
|                         | CODE | 4011 |                |                    |                                     |               |              |
| TITLE :<br><b>PLATE</b> |      |      |                | CARD CODE          | DRAWING NO.<br><b>4-12042-56105</b> |               |              |
|                         |      |      |                | SHEET No.          | 01                                  | No. OF SHEETS | 01           |

A4 SIZE

Released

FIRST ANGLE PROJECTION

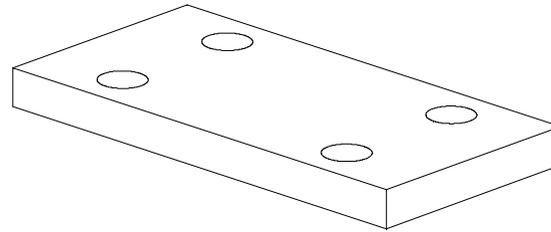
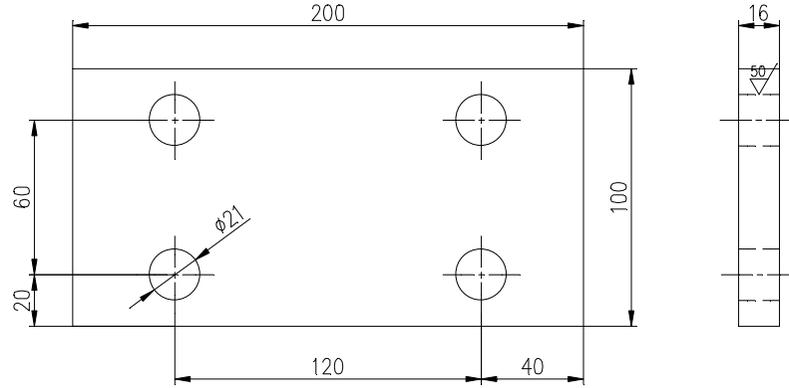
(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|      |      |         |     |             |         |                        |          |                    |
|------|------|---------|-----|-------------|---------|------------------------|----------|--------------------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M.- NO. |          | STATUS OF DRG<br>U |
|      |      | CHECKED |     |             | CHECKED | 01204259000            |          |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                   | DATE     |                    |
|      |      |         |     | WT          | S.K.T.  | -SD/-                  | 06.07.16 |                    |

GRADE OF UNTOL.DIM M/CG.  $\bar{O}/M/\bar{A}$  -AA0230208 WELDING  $\bar{A}/B/\bar{G}/\bar{D}$  AA0621104 GAS CUTTING-T3 AA0621101

50/ALL OVER EXCEPT  
 $\nabla$  OTHERWISE STATED



TECHNICAL REQUIREMENTS: -

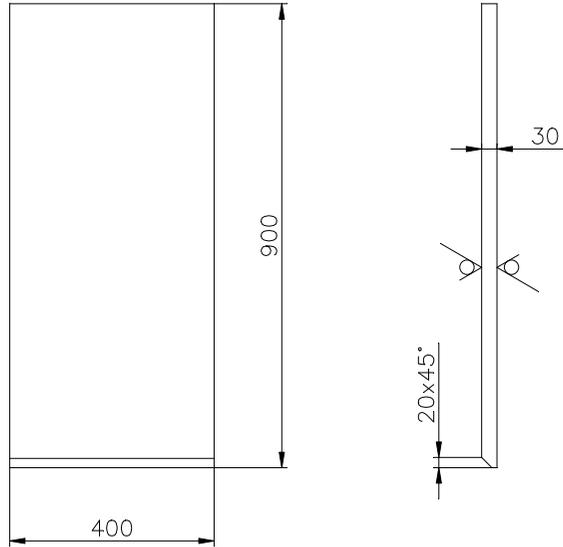
1. IDENTIFICATION ACCORDING TO HW0400397.

|                  |             |   |   |             |                    |                              |                  |      |      |      |            |
|------------------|-------------|---|---|-------------|--------------------|------------------------------|------------------|------|------|------|------------|
| Inventory No.    | Sign & Date | Ref:Drawing No>   |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |             |                    |                              | DRN              | NAME | SIGN | DATE | NO. OF VAR |
|                  |             |   | CHD   | M. KUMAR    | -SD/-              | 26.05.16                     |                  |      |      |      |            |
|                  |             |   | APPD  | D.K. RAY    | -SD/-              | 08.07.16                     |                  |      |      |      |            |
| DEPT STE         |             |  | SCALE   | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.                     | NO. OF ITEMS     |      |      |      |            |
| CODE 4011        |             |   | 1:2   | 2.35        | 41204259910        | 2                            |                  |      |      |      |            |
| TITLE :<br>PLATE |             |   |   |             | CARD CODE          | DRAWING NO.<br>4-12042-59912 |                  |      |      |      |            |
|                  |             |   |   |             | 7                  | 22                           | 23               | 24   |      |      |            |
|                  |             |   |   |             | SHEET No. 01       |                              | No. OF SHEETS 01 |      |      |      |            |

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|                    |      |                        |                           |             |                          |                                       |                    |
|--------------------|------|------------------------|---------------------------|-------------|--------------------------|---------------------------------------|--------------------|
| REV                | DATE | ALTERED                | REV                       | DATE        | ALTERED                  | GMS No./ C.B.O.M.- NO.<br>01205256000 | STATUS OF DRG<br>U |
|                    |      | CHECKED                |                           |             | CHECKED                  |                                       |                    |
| ZONE               |      | ZONE                   |                           | AGREED DEPT | NAME                     | SIGN                                  | DATE               |
|                    |      |                        |                           | WTX         | SHUSHANT                 | sd/-                                  | 24.04.12           |
| GRADE OF UNTOL.DIM |      | M/CG. 0/M/A -AA0230208 | WELDING X/B/D/D AA0621104 |             | GAS CUTTING-T3 AA0621101 |                                       |                    |

50/ALL OVER EXCEPT  
∇ OTHERWISE STATED

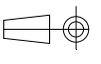


TECHNICAL REQUIREMENT: -

1. IDENTIFICATION ACCORDING TO HW0400397.

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT 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.

A0173A4294  
 10161-14300/003  
 Ref. Drawing No.

|                  |   |   |           |                               |                    |          |              |
|------------------|---|---|-----------|-------------------------------|--------------------|----------|--------------|
| Sign & Date      |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |   | DRN       | NAME                          | SIGN               | DATE     | NO. OF VAR   |
|                  |   |   | CHD       | A.K.SINGH                     | sd/-               | 16.01.12 |              |
| APPD             | D.K.RAY   | sd/-  | 26.04.12  |                               |                    |          |              |
| Inventory No.    | DEPT  | STE   | SCALE     | WEIGHT (KG)                   | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
|                  | 4011  |  | 1:10      | 83.00                         | 1-12052-56500      | 004      | 001          |
| TITLE :<br>PLATE |   |   | CARD CODE | DRAWING NO.<br>4-12052-56504  |                    |          |              |
|                  |   |   |           | SHEET No. 01 No. OF SHEETS 01 |                    |          |              |



Released



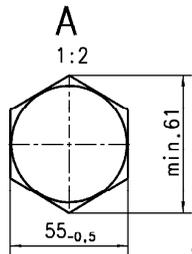
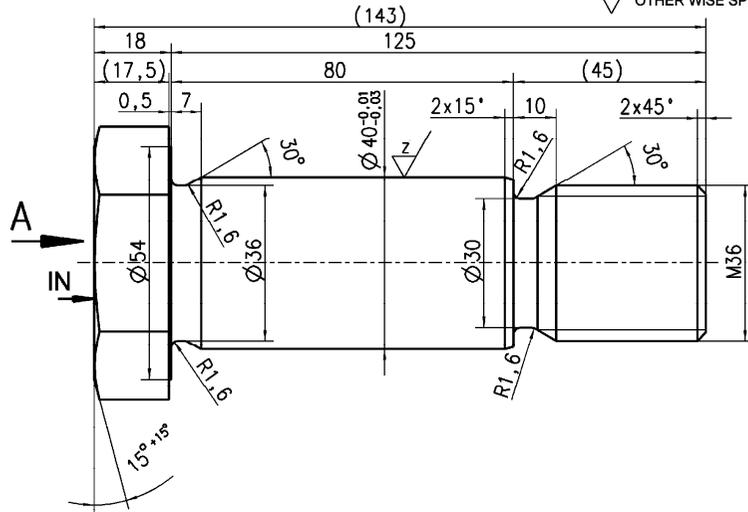
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |     |             |          |   |                    |
|------|------|---------|-----|-------------|----------|---|--------------------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED  | GMS No./C.B.O.M.- NO.<br><b>01205256000</b> | STATUS OF DRG<br>U |
|      |      | CHECKED |     |             | CHECKED  |   |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME     | SIGN  | DATE               |
|      |      |         |     | TTX         | SURINDER | sd/-  | 24.04.12           |

GRADE OF UNTOL.DIM M/C.G. C/M/F -AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

12.5 ALL OVER UNLESS OTHER WISE SPECIFIED



$$\left( \sqrt{z} = \sqrt{\begin{matrix} Rz4 \\ Rmax6 \end{matrix}} \right) = \sqrt{3.2}$$

TECHNICAL REQUIREMENT :-

1. IDENTIFICATION ACCORDING TO HW0400397 AT THE PLACE MARKED WITH IN.

A017344307  
10161014300089  
Ref.Drawing No.

Sign & Date



**BHARAT HEAVY ELECTRICALS LTD.**  
RANIPUR, HARDWAR

|      |           |       |          |            |
|------|-----------|-------|----------|------------|
|      | NAME      | SIGN  | DATE     | NO. OF VAR |
| DRN  | RAJPAL    | -sd/- | 16.01.12 |            |
| CHD  | A.K.SINGH | -sd/- | 16.01.12 |            |
| APPD | D.K.RAY   | -sd/- | 26.04.12 |            |

|           |     |       |             |                    |          |              |
|-----------|-----|-------|-------------|--------------------|----------|--------------|
| DEPT      | STE | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
| CODE 4011 |     | 1:1   | 1.5         | 1-12052-56500      | 007      | 001          |

|               |                     |           |                      |          |
|---------------|---------------------|-----------|----------------------|----------|
| Inventory No. | TITLE :             | CARD CODE | DRAWING NO.          |          |
|               | <b>BEARING BOLT</b> | 7         | <b>4-12052-56507</b> | 22 23 24 |
|               |                     | SHEET No. | No. OF SHEETS        |          |
|               |                     | 01        | 01                   |          |

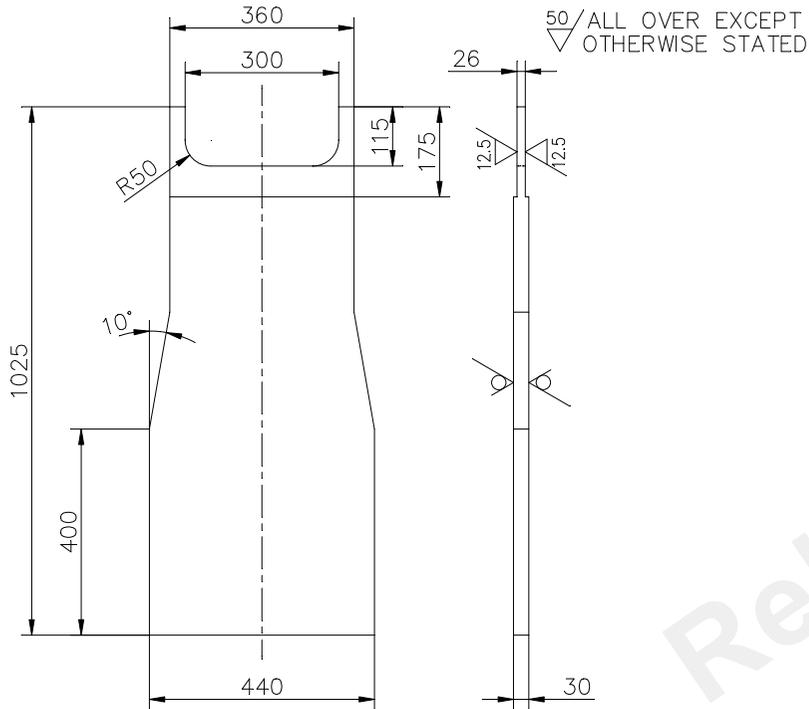
A4 SIZE

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Released

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|                    |      |                        |                           |             |                          |                                       |                    |
|--------------------|------|------------------------|---------------------------|-------------|--------------------------|---------------------------------------|--------------------|
| REV                | DATE | ALTERED                | REV                       | DATE        | ALTERED                  | GMS No./ C.B.O.M.- NO.<br>01205256000 | STATUS OF DRG<br>U |
|                    |      | CHECKED                |                           |             | CHECKED                  |                                       |                    |
| ZONE               |      | ZONE                   |                           | AGREED DEPT | NAME                     | SIGN                                  | DATE               |
|                    |      |                        |                           | WTX         | SHUSHANT                 | sd/-                                  | 24.04.12           |
| GRADE OF UNTOL.DIM |      | M/CG. O/M/A -AA0230208 | WELDING X/B/O/D AA0621104 |             | GAS CUTTING-T3 AA0621101 |                                       |                    |



COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT 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.

Released

A0173A4295  
 10161-14300/004  
 Ref. Drawing No.

TECHNICAL REQUIREMENT: -

- IDENTIFICATION ACCORDING TO HW0400397.

|               |   |      |       |             |                    |                              |              |
|---------------|---|------|-------|-------------|--------------------|------------------------------|--------------|
| Sign & Date   | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |      | NAME  | SIGN        | DATE               | NO. OF VAR                   |              |
|               |   |      | DRN   | RAJPAL      | sd/-               |                              | 16.01.12     |
|               |   |      | CHD   | A.K.SINGH   | sd/-               |                              | 16.01.12     |
| Inventory No. | DEPT  | STE  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.                     | NO. OF ITEMS |
|               | CODE  | 4011 | NTS   | 84.00       | 1-12052-56600      | 002                          |              |
|               | TITLE :   |      | PLATE |             | CARD CODE          | DRAWING NO.<br>4-12052-56602 |              |
|               |   |      |       | SHEET No.   | 01                 | No. OF SHEETS                | 01           |



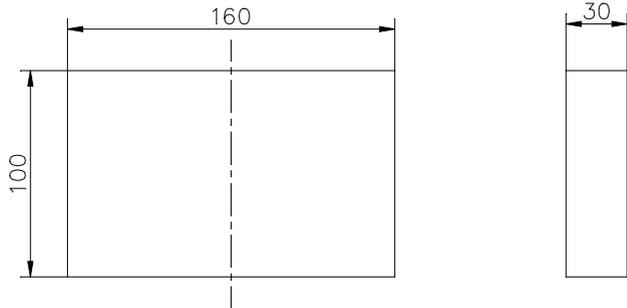
Released



FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|                    |      |                        |                           |             |                          |                                       |                    |
|--------------------|------|------------------------|---------------------------|-------------|--------------------------|---------------------------------------|--------------------|
| REV                | DATE | ALTERED                | REV                       | DATE        | ALTERED                  | GMS No./ C.B.O.M.- NO.<br>01205256000 | STATUS OF DRG<br>U |
|                    |      | CHECKED                |                           |             | CHECKED                  |                                       |                    |
| ZONE               |      | ZONE                   |                           | AGREED DEPT | NAME                     | SIGN                                  | DATE               |
|                    |      |                        |                           | WTX         | SHUSHANT                 | sd/-                                  | 24.04.12           |
| GRADE OF UNTOL.DIM |      | M/CG. 0/M/A -AA0230208 | WELDING X/B/D/D AA0621104 |             | GAS CUTTING-T3 AA0621101 |                                       |                    |

50/ ALL OVER EXCEPT  
OTHERWISE STATED



COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT 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.

Released

A0173A4295  
10161-14300/004  
Ref. Drawing No.

TECHNICAL REQUIREMENT: -

- IDENTIFICATION ACCORDING TO HW0400397.

|                      |   |      |                 |                              |                    |          |              |
|----------------------|---|------|-----------------|------------------------------|--------------------|----------|--------------|
| Sign & Date          | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |      | DRN             | NAME                         | SIGN               | DATE     | NO. OF VAR   |
|                      |   |      | CHD             | A.K.SINGH                    | sd/-               | 16.01.12 |              |
|                      |   |      | APPD            | D.K.RAY                      | sd/-               | 26.04.12 |              |
| Inventory No.        | DEPT  | STE  | SCALE<br>1: 2.5 | WEIGHT (KG)                  | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
|                      | CODE  | 4011 |                 | 6.00                         | 1-12052-56600      | 004      | 001          |
| TITLE :<br><br>PLATE |   |      | CARD CODE       | DRAWING NO.<br>4-12052-56604 |                    | 22 23 24 |              |
|                      |   |      | SHEET No.       | 01                           | No. OF SHEETS      | 01       |              |

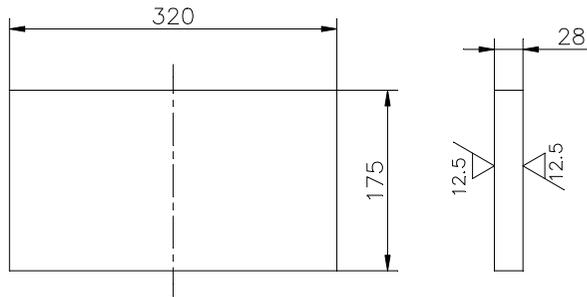


Released

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|                    |      |             |            |                 |           |                                       |                    |
|--------------------|------|-------------|------------|-----------------|-----------|---------------------------------------|--------------------|
| REV                | DATE | ALTERED     | REV        | DATE            | ALTERED   | GMS No./ C.B.O.M.- NO.<br>01205256000 | STATUS OF DRG<br>U |
|                    |      | CHECKED     |            |                 | CHECKED   |                                       |                    |
| ZONE               |      | ZONE        |            | AGREED DEPT     | NAME      | SIGN                                  | DATE               |
|                    |      |             |            | WTX             | SHUSHANT  | sd/-                                  | 24.04.12           |
| GRADE OF UNTOL.DIM |      | M/CG. O/M/A | -AA0230208 | WELDING X/B/O/D | AA0621104 | GAS CUTTING-T3 AA0621101              |                    |

50/ ALL OVER EXCEPT  
∇ OTHERWISE STATED



Released

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT 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.

A0173A4295  
10161-14300/004  
Ref. Drawing No.

TECHNICAL REQUIREMENT: -

- IDENTIFICATION ACCORDING TO HW0400397.

|               |   |       |           |              |                              |                  |              |
|---------------|---|-------|-----------|--------------|------------------------------|------------------|--------------|
| Sign & Date   |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |       | NAME      | SIGN         | DATE                         | NO. OF VAR       |              |
|               |   |       | DRN       | RAJPAL       | sd/-                         |                  | 16.01.12     |
|               |   |       | CHD       | A.K.SINGH    | sd/-                         |                  | 16.01.12     |
| Inventory No. | DEPT  | STE   | SCALE     | WEIGHT (KG)  | REF. TO ASSY. DRG.           | ITEM No.         | NO. OF ITEMS |
|               | CODE  | 4011  | 1:5       | 10.00        | 1-12052-56600                | 005              | 002          |
|               | TITLE :   |       | CARD CODE |              | DRAWING NO.<br>4-12052-56605 |                  |              |
|               |   | PLATE |           | SHEET No. 01 |                              | No. OF SHEETS 01 |              |



Released



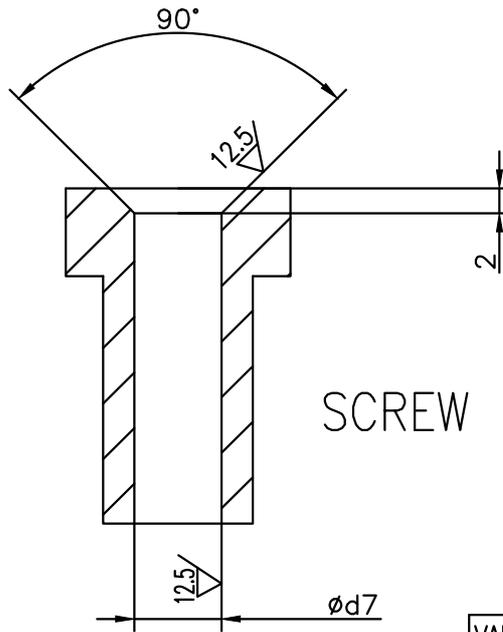
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |  |                    |
|------|------|---------|------|------|---------|--|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M. - NO.<br>81208756500 | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |  |                    |
| ZONE |      |         | ZONE |      |         | ACREED DEPT<br>TTX                     | NAME<br>DILIP      |
|      |      |         |      |      |         | SIGN<br>SD/-                           | DATE<br>04.10.17   |

GRADE OF UNTOL.DIM M/CG. C/M/F AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

✓ ALL OVER UNLESS OTHERWISE STATED



SCREW M12X20

| VAR | ød7 | WT.  |
|-----|-----|------|
| 00  | 7   | 0.03 |
| 01  | 7   | 0.03 |
| 02  | 9   | 0.03 |

TECHNICAL REQUIREMENTS:-

REWORK THE SCREW AS SHOWN PURCHASED AS PER AA7121123.

Copyright and Confidential  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                  |   |              |                          |                                   |                    |                     |                     |
|------------------|---|--------------|--------------------------|-----------------------------------|--------------------|---------------------|---------------------|
| Ref. Drawing No- | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |              | DRN                      | NAME                              | SIGN               | DATE                | NO. OF VAR          |
|                  | DEPT STE  |              | CHD                      | MM/PK                             | SD/-               | 26.07.2017          |                     |
|                  | CODE 4011   |              | SCALE                    | WEIGHT (KG)                       | REF. TO ASSY. DRG. | ITEM No.            |                     |
| Inventory No.    | TITLE :<br>SCREW                                  |              | CARD CODE                | DRAWING NO.<br>4-12087-56603      |                    |                     |                     |
| Sign & Date      |   | SCALE<br>2:1 | WEIGHT (KG)<br>SEE TABLE | REF. TO ASSY. DRG.<br>21208756600 |                    | NO. OF ITEMS<br>--- | NO. OF ITEMS<br>--- |
|                  |   |              |                          | SHEET No. 01                      |                    | No. OF SHEETS 01    |                     |

A4 SIZE

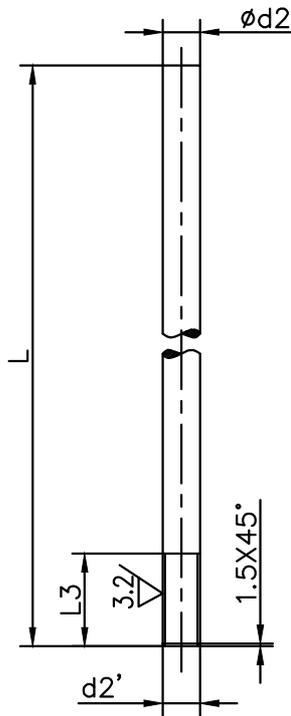
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|   |      |         |      |  |         |               |                                       |                    |              |                  |
|---|------|---------|------|--|---------|---------------|---------------------------------------|--------------------|--------------|------------------|
| REV   | DATE | ALTERED | REV  | DATE   | ALTERED | MONIKA SD/-   | GMS No./ C.B.O.M.- NO.<br>81208756500 | STATUS OF DRG<br>U |              |                  |
|   |      | CHECKED | 01   | 31.05.19   | CHECKED | M.MITTAL SD/- |                                       |                    |              |                  |
| ZONE  |      |         | ZONE | L DIM 630 & 790 CHANGE DIM 1030 & 1040 AND WT. CHANGED IN VAR 01 AND 02.<br>AS PER C/A NO. STE-19-F0162. |         |               | AGREED DEPT<br>TTX                    | NAME<br>DILIP      | SIGN<br>SD/- | DATE<br>04.10.17 |
| GRADE OF UNTOL.DIM M/CG. C/M/F AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101 |      |         |      |  |         |               |                                       |                    |              |                  |

12.5 ALL OVER UNLESS OTHERWISE STATED

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.



| VAR | I3 | L    | ød2 | d2' | Wt.   |
|-----|----|------|-----|-----|-------|
| 00  | 25 | 625  | 6   | M5  | 0.14  |
| 01  | 30 | 1030 | 6   | M6  | 0.23  |
| 02  | 40 | 1040 | 8   | M8  | 0.410 |

TECHNICAL REQUIREMENTS:-

1. IDENTIFICATION AS PER HW0400397.

|                  |   |              |                          |                                   |                              |                    |                    |
|------------------|---|--------------|--------------------------|-----------------------------------|------------------------------|--------------------|--------------------|
| Ref. Drawing No. | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |              | DRN                      | NAME<br>MONIKA SINGH              | SIGN<br>SD/-                 | DATE<br>26.07.2017 | NO. OF VAR<br>--   |
|                  | CHD   |              | MM/PK.                   | SD/-                              | 26.07.2017                   |                    |                    |
| APPD             |   | D.K.RAY      | SD/-                     | 04.10.2017                        |                              |                    |                    |
| Sign & Date      | DEPT STE  | SCALE<br>1:1 | WEIGHT (KG)<br>SEE TABLE | REF. TO ASSY. DRG.<br>01208756640 |                              | ITEM No.           | NO. OF ITEMS<br>-- |
|                  | CODE 4011   |              |                          |                                   | --                           |                    |                    |
| Inventory No.    | TITLE :<br>ROUND                                  |              |                          | CARD CODE<br>--                   | DRAWING NO.<br>4-12087-56641 |                    |                    |
|                  | SHEET No. 01                                      |              | No. OF SHEETS 01         |                                   | 22                           | 23                 | 24                 |

A4 SIZE

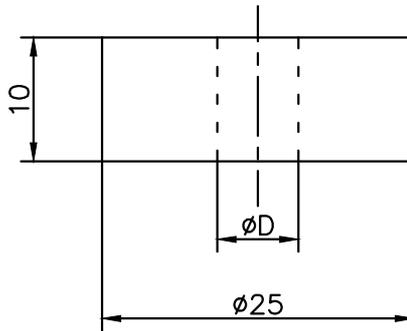
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |  |                    |
|------|------|---------|------|------|---------|--|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M. - NO.<br>81208756500 | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |  |                    |
| ZONE |      |         | ZONE |      |         | ACREED DEPT<br>TTX                     | NAME<br>DILIP      |
|      |      |         |      |      |         | SIGN<br>SD/-                           | DATE<br>04.10.17   |

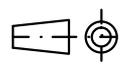
GRADE OF UNTOL.DIM M/CG. C/M/F AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

12.5/  ALL OVER UNLESS OTHERWISE STATED



| VAR | øD  | WT.  |
|-----|-----|------|
| 00  | 6.5 | 0.09 |
| 01  | 8.5 | 0.09 |

TECHNICAL REQUIREMENTS:-  
IDENTIFICATION AS PER HW0400397.

|               |             |                       |   |                              |                          |                                   |                 |                     |                  |   |   |      |                      |              |                    |                   |
|---------------|-------------|-----------------------|---|------------------------------|--------------------------|-----------------------------------|-----------------|---------------------|------------------|---|---|------|----------------------|--------------|--------------------|-------------------|
| Inventory No. | Sign & Date | DEPT STE<br>CODE 4011 |  | SCALE<br>2:1                 | WEIGHT (KG)<br>SEE TABLE | REF. TO ASSY. DRG.<br>31208756640 | ITEM No.<br>--- | NO. OF ITEMS<br>--- | Ref. Drawing No- |  | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR | DRN  | NAME<br>MONIKA SINGH | SIGN<br>SD/- | DATE<br>26.07.2017 | NO. OF VAR<br>--- |
|               |             |                       |   |                              |                          |                                   |                 |                     |                  |   |   | CHD  | MM/PK                | SD/-         | 26.07.2017         |                   |
|               |             |                       |   |                              |                          |                                   |                 |                     |                  |   |   | APPD | D.K.RAY              | SD/-         | 04.10.2017         |                   |
| TITLE :       | DISC        |                       | CARD CODE   | DRAWING NO.<br>4-12087-56642 |                          | SHEET No. 01                      |                 | No. OF SHEETS 01    |                  |   |   |      |                      |              |                    |                   |

A4 SIZE

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

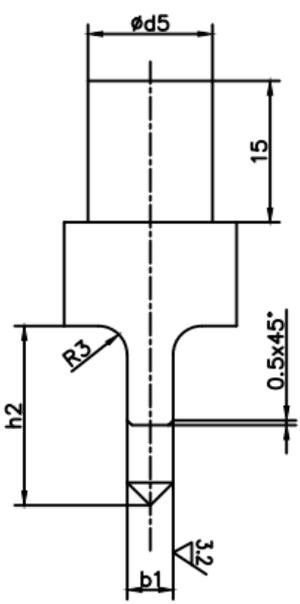
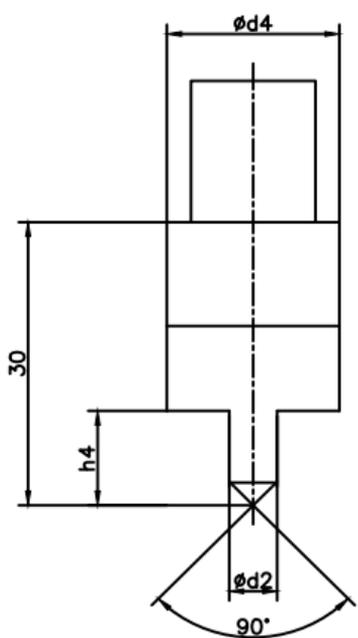
COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|         |    |          |                              |                |            |      |          |
|---------|----|----------|------------------------------|----------------|------------|------|----------|
| CHECKED | U1 | 15.10.20 | CHECKED                      | PRADIP K. SD/- | 0120070000 | U    |          |
| ZONE    |    | ZONE     | VIEW & TABLE UPDATED.        | AGREED<br>DEPT | NAME       | SIGN | DATE     |
|         |    |          | AS PER C/A NO. STE-20-F0245. | TTX            | DILIP      | SDI- | 22.09.17 |
|         |    |          |                              |                |            | SDI- |          |

GRADE OF UNTOL DIM M/C.G. C/M/F AA02/0208 WELDING A/B/C/D AA02/10A G/S CUTTING-T3 AA0621101

12.5 ALL OVER UNLESS OTHERWISE STATED



TABLE

| VAR | h4 | $\phi d2$ | h2 | b1  | $\phi d4$ | $\phi d5$ | WT.  |
|-----|----|-----------|----|-----|-----------|-----------|------|
| 00  | 5  | $\phi 5$  | 14 | 3.9 | 27        | 13        | 0.07 |
| 01  | 7  | $\phi 6$  | 16 | 4.9 | 36        | 21        | 0.10 |
| 02  | 10 | $\phi 8$  | 21 | 5.9 | 36        | 21        | 0.18 |

TECH. REQ.:-

IDENTIFICATION AS PER HW0400397.

Sign & Date  
Inventory No.

Ref. Drawing No.



**BHARAT HEAVY ELECTRICALS LTD.**  
RANIPUR, HARDWAR

|      |         |      |            |
|------|---------|------|------------|
| DRN  | NAME    | SIGN | DATE       |
| CHD  | MM/PK   | SDI- | 26.07.2017 |
| APPD | D.K.RAY | SDI- | 04.10.2017 |

NO. OF VAR  
---

DEPT STE  
CODE 4011



SCALE  
2:1

WEIGHT (KG)  
SEE TABLE

REF. TO ASSY. DRG.  
21208756700

ITEM NO.  
---

TITLE :  
**ROUND**

CARD CODE  
DRAWING NO.  
**4-12087-56701**

NO. OF ITEMS  
---

SHEET No. 01 No. OF SHEETS

A4 SIZE

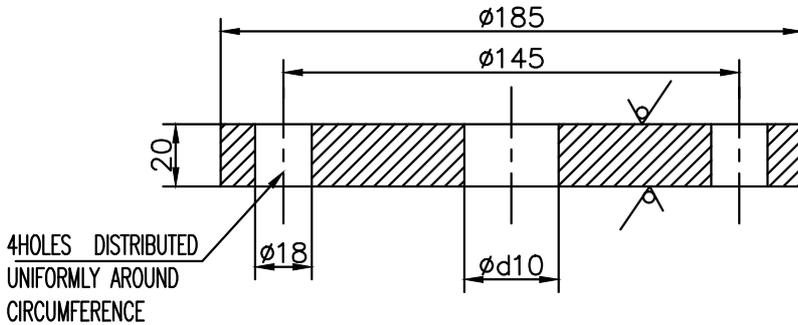
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |  |                    |
|------|------|---------|------|------|---------|--|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M. - NO.<br>81208756500 | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |  |                    |
| ZONE |      |         | ZONE |      |         | AGREED DEPT                            | NAME               |
|      |      |         |      |      |         | TTX                                    | DILIP              |
|      |      |         |      |      |         | WTX                                    | S.THAKUR           |
|      |      |         |      |      |         | SIGN                                   | DATE               |
|      |      |         |      |      |         | SD/-                                   | 22.09.17           |
|      |      |         |      |      |         | SD/-                                   | 15.09.17           |

GRADE OF UNTOL.DIM M/CG. C/M/F AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

12.5/ ALL OVER UNLESS OTHERWISE STATED



| VAR | ∅d10 | Wt. |
|-----|------|-----|
| 00  | 18   | 4   |
| 01  | 30   | 4   |

TECHNICAL REQUIREMENTS:-

REWORK THE SCREW AS SHOWN PURCHASED AS PER AA7121123.

|                  |              |  |  |             |                           |                  |          |              |                   |
|------------------|--------------|--|--|-------------|---------------------------|------------------|----------|--------------|-------------------|
| Ref. Drawing No. |              |  | <b>BHARAT HEAVY ELECTRICALS LTD.</b><br>RANIPUR, HARDWAR |             | DRN                       | NAME             | SIGN     | DATE         | NO. OF VAR<br>--- |
|                  |              |  |  |             | CHD                       | MM/PK            | SD/-     | 26.07.2017   |                   |
|                  |              |  |  |             | APPD                      | D.K.RAY          | SD/-     | 04.10.2017   |                   |
| Sign & Date      | DEPT STE     |  | SCALE  | WEIGHT (KG) | REF. TO ASSY. DRG.        |                  | ITEM No. | NO. OF ITEMS |                   |
|                  | CODE 4011    |  | 1:2  | SEE TABLE   | 21208756700               |                  | ---      |              |                   |
| Inventory No.    | TITLE : DISC |  |  | CARD CODE   | DRAWING NO. 4-12087-56704 |                  |          |              |                   |
|                  |              |  |  | --          | SHEET No. 01              | No. OF SHEETS 01 |          |              |                   |

A4 SIZE

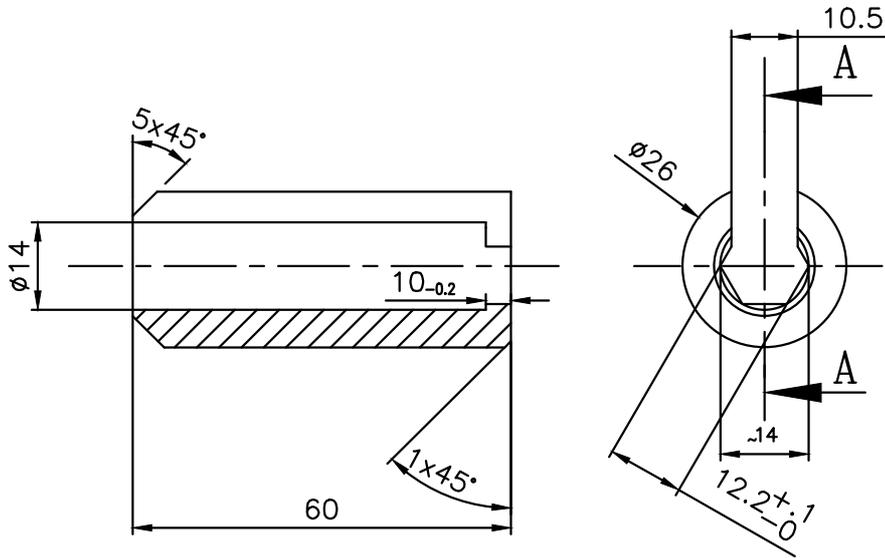
COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|                    |      |                        |      |                           |         |                                       |                    |
|--------------------|------|------------------------|------|---------------------------|---------|---------------------------------------|--------------------|
| REV                | DATE | ALTERED                | REV  | DATE                      | ALTERED | GMS No./ C.B.O.M.- NO.<br>81208756500 | STATUS OF DRG<br>U |
|                    |      | CHECKED                |      |                           | CHECKED |                                       |                    |
| ZONE               |      |                        | ZONE |                           |         | AGREED DEPT<br>TTX                    | NAME<br>DILIP      |
|                    |      |                        |      |                           |         | SIGN<br>SD/-                          | DATE<br>16.09.17   |
| GRADE OF UNTOL.DIM |      | M/CG. Q/M/R -AA0230208 |      | WELDING A/B/Q/D AA0621104 |         | GAS CUTTING-T3 AA0621101              |                    |

12.5/ ALL OVER EXCEPT OTHERWISE STATED



SECTION AA

IDENTIFICATION ACCORDING TO HW0400397.

|                   |   |  |        |             |                    |               |                  |          |            |    |
|-------------------|---|--|--------|-------------|--------------------|---------------|------------------|----------|------------|----|
| Inventory No.     | DEPT STE  |  | SCALE  | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No.      | NO. OF ITEMS     |          |            |    |
|                   | CODE 4011   |  | N.T.S. | 0.25        | 3-12087-56800      | —             | —                |          |            |    |
| Sign & Date       | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |  |        |             | DRN                | NAME          | SIGN             | DATE     | NO. OF VAR |    |
| Ref. Drawing No > |   |  |        |             | CHD                | M.M/P.K.      | SD/-             | 26.07.17 |            |    |
|                   |   |  |        |             | APPD               | D.K.RAY       | SD/-             | 04.10.17 |            |    |
| TITLE :           |   |  |        |             | CARD CODE          | DRAWING NO.   |                  |          |            |    |
| ROUND             |   |  |        |             | 7                  | 4-12087-56803 |                  | 22       | 23         | 24 |
|                   |   |  |        |             | SHEET No. 01       |               | No. OF SHEETS 01 |          |            |    |

A4 SIZE

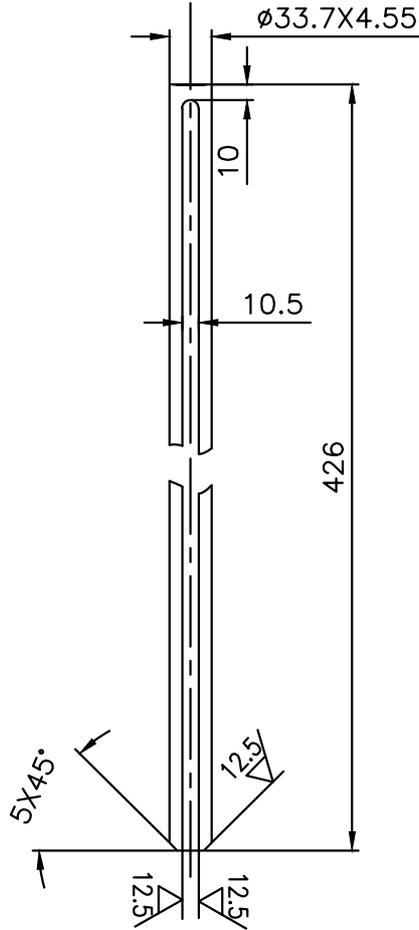
COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|                    |      |                        |      |                           |         |                                       |                    |      |          |
|--------------------|------|------------------------|------|---------------------------|---------|---------------------------------------|--------------------|------|----------|
| REV                | DATE | ALTERED                | REV  | DATE                      | ALTERED | GMS No./ C.B.O.M.- NO.<br>81208756500 | STATUS OF DRG<br>U |      |          |
|                    |      | CHECKED                |      |                           | CHECKED |                                       |                    |      |          |
| ZONE               |      |                        | ZONE |                           |         | AGREED DEPT                           | NAME               | SIGN | DATE     |
|                    |      |                        |      |                           |         | TTX                                   | DILIP              | SD/- | 16.09.17 |
|                    |      |                        |      |                           |         | WTX                                   | S.THAKUR           | SD/- | 15.09.17 |
| GRADE OF UNTOL.DIM |      | M/CG. Q/M/R -AA0230208 |      | WELDING A/B/Q/D AA0621104 |         | GAS CUTTING-T3 AA0621101              |                    |      |          |

✓ ALL OVER EXCEPT OTHERWISE STATED



COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                  |  |
|------------------|--|
| Ref. Drawing No. |  |
| Sign & Date      |  |
| Inventory No.    |  |

IDENTIFICATION ACCORDING TO HW0400397.



**BHARAT HEAVY ELECTRICALS LTD.**  
RANIPUR, HARDWAR

|      | NAME    | SIGN | DATE     | NO. OF VAR |
|------|---------|------|----------|------------|
| DRN  | ANOOP   | SD/- | 28.07.17 | —          |
| CHD  | M.M/P.K | SD/- | 28.07.17 | —          |
| APPD | D.K.RAY | SD/- | 04.10.17 | —          |

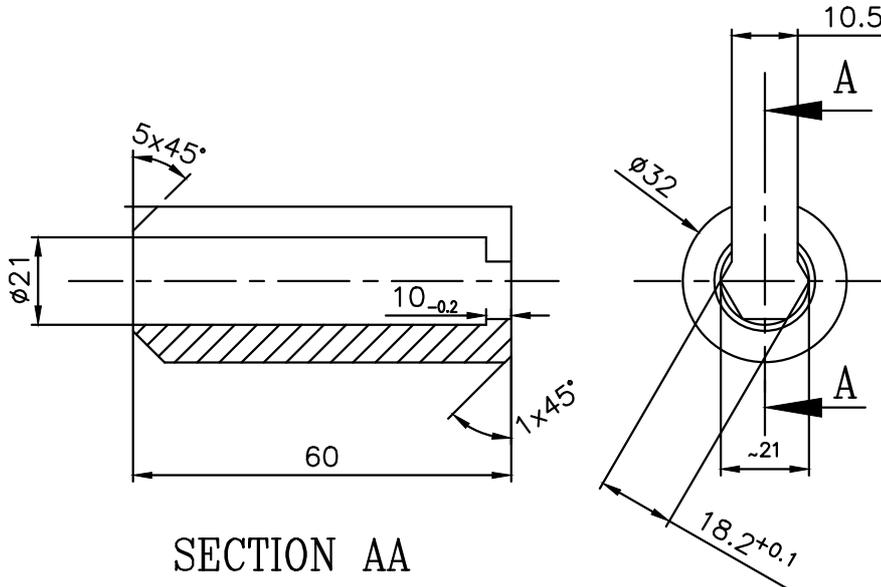
|              |  |                  |             |                           |          |              |
|--------------|--|------------------|-------------|---------------------------|----------|--------------|
| DEPT STE     |  | SCALE            | WEIGHT (KG) | REF. TO ASSY. DRG.        | ITEM No. | NO. OF ITEMS |
| CODE 4011    |  | N.T.S.           | 1.7         | 3-12087-56900             | —        | —            |
| TITLE : PIPE |  |                  | CARD CODE   | DRAWING NO. 4-12087-56901 |          |              |
|              |  |                  |             | 22   23   24              |          |              |
| SHEET No. 01 |  | No. OF SHEETS 01 |             |                           |          |              |

A4 SIZE

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|   |      |         |      |      |         |                                       |                    |
|---|------|---------|------|------|---------|---------------------------------------|--------------------|
| REV                                       | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M.- NO.<br>81208756500 | STATUS OF DRG<br>U |
|   |      | CHECKED |      |      | CHECKED |                                       |                    |
| ZONE                                      |      |         | ZONE |      |         | AGREED DEPT<br>TTX                    | NAME<br>DILIP      |
|   |      |         |      |      |         | SIGN<br>SD/-                          | DATE<br>16.09.17   |
| GRADE OF UNTOL.DIM M/CG. Q/M/R -AA0230208 |      |         |      |      |         | WELDING A/B/Q/D AA0621104             |                    |
|   |      |         |      |      |         | GAS CUTTING-T3 AA0621101              |                    |

12.5/ ALL OVER EXCEPT OTHERWISE STATED



SECTION AA

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                 |  |  |        |             |                                 |                              |              |
|-----------------|--|--|--------|-------------|---------------------------------|------------------------------|--------------|
| Ref. Drawing No |  |  |        |             |                                 |                              |              |
| Sign & Date     | IDENTIFICATION ACCORDING TO HW0400397. |  |        |             |                                 |                              |              |
| Inventory No.   | DEPT STE                               |  | SCALE  | WEIGHT (KG) | REF. TO ASSY. DRG.              | ITEM No.                     | NO. OF ITEMS |
|                 | CODE 4011                              |  | N.T.S. | 0.3         | 3-12087-56900                   | —                            | —            |
|                 | TITLE :<br><br>ROUND                   |  |        |             | CARD CODE                       | DRAWING NO.<br>4-12087-56903 |              |
|                 |  |  |        |             | SHEET No. 01   No. OF SHEETS 01 |                              |              |



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

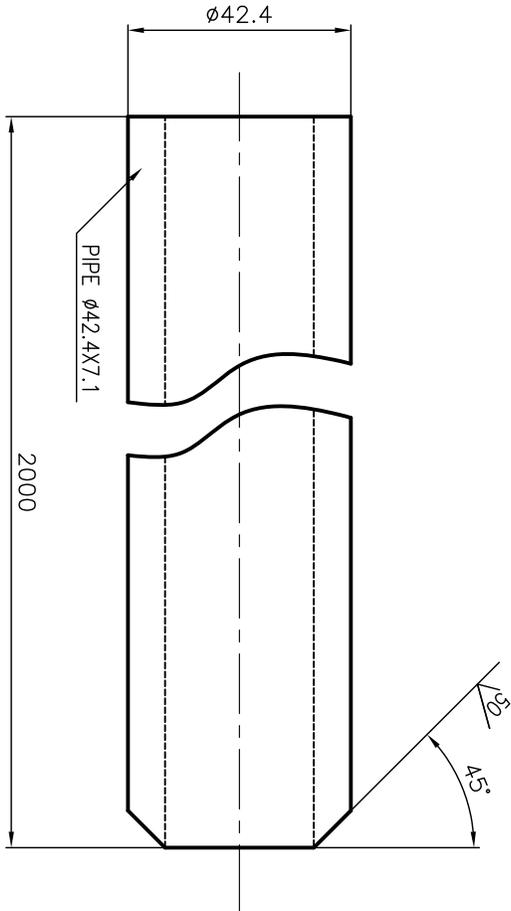
|       |          |      |          |            |
|-------|----------|------|----------|------------|
| DRN   | NAME     | SIGN | DATE     | NO. OF VAR |
| ANOOP |          | SD/- | 26.07.17 |            |
| CHD   | M.M/P.K. | SD/- | 26.07.17 |            |
| APPD  | D.K.RAY  | SD/- | 04.10.17 | —          |

A4 SIZE

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|   |         |          |         |                          |               |
|---|---------|----------|---------|--------------------------|---------------|
| REV DATE  | ALTERED | REV DATE | ALTERED | GMS No- / C.B.O.M. - NO. | STATUS OF DRG |
|   | CHECKED |          | CHECKED | 0-12096-50000            | U             |
| ZONE  |         | ZONE     |         | AGREED DEPT              | DATE          |
|   |         |          |         | TTX                      | 16.03.19      |
| GRADE OF UNTOLDIM M/CG. &M/K -AA0230208 WELDING X/B/&R AA0621104 GAS CUTTING-T3 AA0621101 |         |          |         | NAME                     | SIGN          |
|   |         |          |         | DK                       | SD/-          |

ALL OVER EXCEPT OTHERWISE STATED



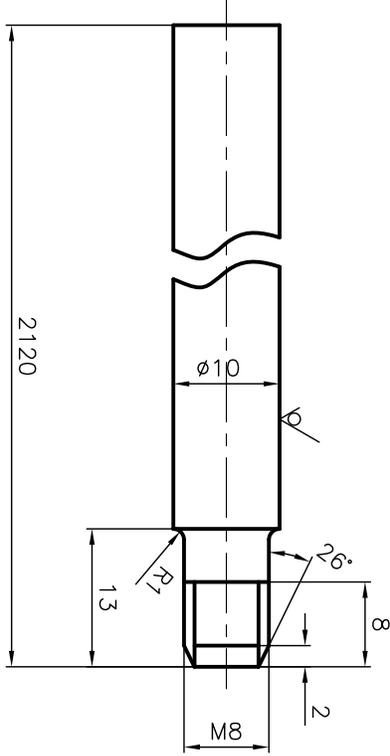
IDENTIFICATION ACCORDING HWO400397.

|                       |  |                          |
|-----------------------|--|--------------------------|
| Inventory No.         | Sign & Date  | Ref.Drawing No>          |
| DEPT STE<br>CODE 4011 | <p><b>BHARAT HEAVY ELECTRICALS LTD.</b><br/>RANIPUR, HARDWAR</p> | DRN<br>RITESH K          |
| SCALE<br>1:1          |  | SIGN<br>SD/-             |
| WEIGHT (KG)<br>16.2   | REF. TO ASSY. DRG.<br>2-12096-50100                              | DATE<br>13.03.19         |
| TITLE :<br>PIPE       | CARD CODE<br>4-12096-50102                                       | NO. OF VARS<br>13.03.19  |
|                       | DRAWING NO.<br>4-12096-50102                                     | NO. OF ITEMS<br>13.03.19 |
|                       | SHEET No. 01   | No. OF SHEETS 01         |

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|  |      |         |      |      |         |  |               |
|--|------|---------|------|------|---------|--|---------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No- / C.B.O.M. - NO.               | STATUS OF DRG |
|  |      | CHECKED |      |      | CHECKED | 0-12096-50000                          | U             |
| ZONE   |      |         | ZONE |      |         | AGREED DEPT                            | DATE          |
|  |      |         |      |      |         | TX DK                                  | 16.03.19      |
| GRADE OF UNTOL.DIM M/CG. &M/K -AA0230208 WELDING X/B/&R AA0621104 GAS CUTTING-T3 AA0621101 |      |         |      |      |         | 12.5/ ALL OVER EXCEPT OTHERWISE STATED |               |



IDENTIFICATION ACCORDING HWO400397.

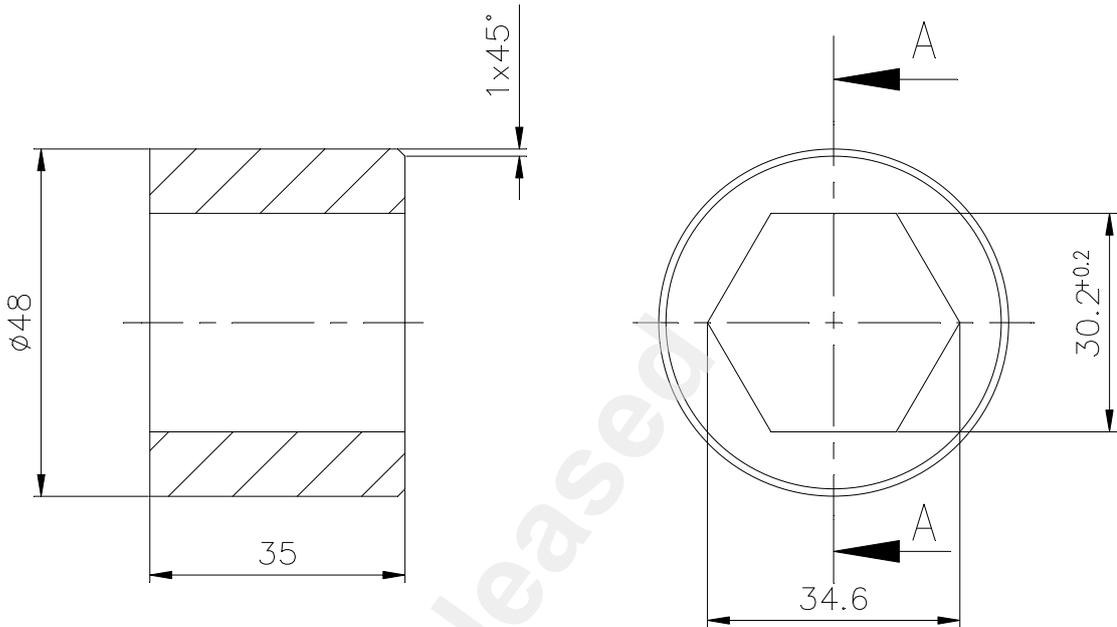
|                       |  |                  |
|-----------------------|--|------------------|
| Inventory No.         | Sign & Date  | Ref.Drawing No>  |
| DEPT STE<br>CODE 4011 |  <p><b>BHARAT HEAVY ELECTRICALS LTD.</b><br/>RANIPUR, HARDWAR</p> | DRN<br>RITESH K  |
| SCALE<br>2:1          |  | SIGN<br>SD/-     |
| WEIGHT (KG)<br>1.7    | REF. TO ASSY. DRG.<br>2-12096-50100  | DATE<br>13.03.19 |
| TITLE :<br>ROUND      | CARD CODE<br>4-12096-50104   | NO. OF<br>ITEMS  |
|                       | DRAWING NO.<br>4-12096-50104   | NO. OF<br>ITEMS  |
|                       | SHEET No. 01   | No. OF SHEETS 01 |

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |                         |      |                    |          |
|------|------|---------|------|------|---------|-------------------------|------|--------------------|----------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M. - NO. |      | STATUS OF DRG<br>U |          |
|      |      | CHECKED |      |      | CHECKED |                         |      |                    |          |
| ZONE |      |         | ZONE |      |         | AGREED DEPT             | NAME | SIGN               | DATE     |
|      |      |         |      |      |         | TTX                     | SKG  | SD/-               | 16.07.11 |

GRADE OF UNTOL.DIM M/CG.  $\sqrt{M/F}$  -AA0230208 WELDING  $\sqrt{B/C/D}$  AA0621104 GAS CUTTING-T3 AA0621101

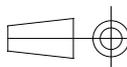
12.5/ ALL OVER EXCEPT  
 OTHERWISE STATED

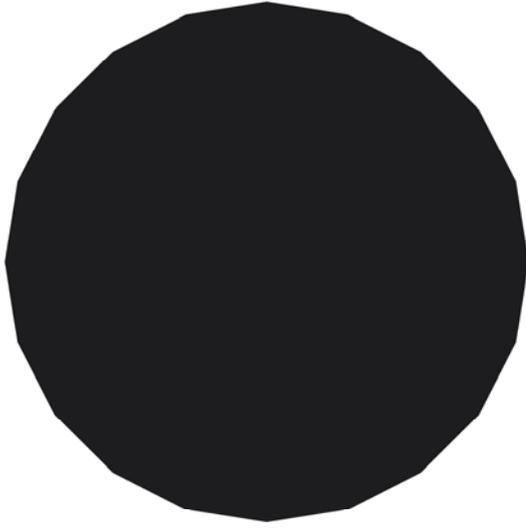


SECTION AA

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

|                 |   |   |          |              |   |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
|-----------------|---|---|----------|--------------|---|------------------|--------------|--|------|------|------|------------|-----|-------|------|----------|-----|-------|------|----------|--|------|--------|------|----------|
| Inventory No.   | DEPT STE  |  | SCALE    | WEIGHT (KG)  | REF. TO ASSY. DRG.  | ITEM No.         | NO. OF ITEMS |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
|                 | CODE 4011   |   | 1:1      | 0.30         | 3-12096-56100   | —                | —            |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
| Sign & Date     | IDENTIFICATION ACCORDING TO HW0400397.  |   |          |              | <table border="1"> <tr> <td></td> <td>NAME</td> <td>SIGN</td> <td>DATE</td> <td rowspan="3">NO. OF VAR</td> </tr> <tr> <td>DRN</td> <td>ASHOK</td> <td>SD/-</td> <td>08.06.11</td> </tr> <tr> <td>CHD</td> <td>AKASH</td> <td>SD/-</td> <td>08.06.11</td> </tr> <tr> <td></td> <td>APPD</td> <td>A.SHAH</td> <td>SD/-</td> <td>25.07.11</td> </tr> </table> |                  |              |  | NAME | SIGN | DATE | NO. OF VAR | DRN | ASHOK | SD/- | 08.06.11 | CHD | AKASH | SD/- | 08.06.11 |  | APPD | A.SHAH | SD/- | 25.07.11 |
|                 |   | NAME  | SIGN     | DATE         | NO. OF VAR  |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
| DRN             | ASHOK   | SD/-  | 08.06.11 |              |   |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
| CHD             | AKASH   | SD/-  | 08.06.11 |              |   |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
|                 | APPD  | A.SHAH  | SD/-     | 25.07.11     |   |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
| Ref.Drawing No> |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |   |          |              |   |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
| TITLE :         |   | ROUND   |          | CARD CODE    | DRAWING NO.   |                  |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
|                 |   |   |          | 7            | 4-12096-56101   |                  | 22 23 24     |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |
|                 |   |   |          | SHEET No. 01 |   | No. OF SHEETS 01 |              |  |      |      |      |            |     |       |      |          |     |       |      |          |  |      |        |      |          |



Released

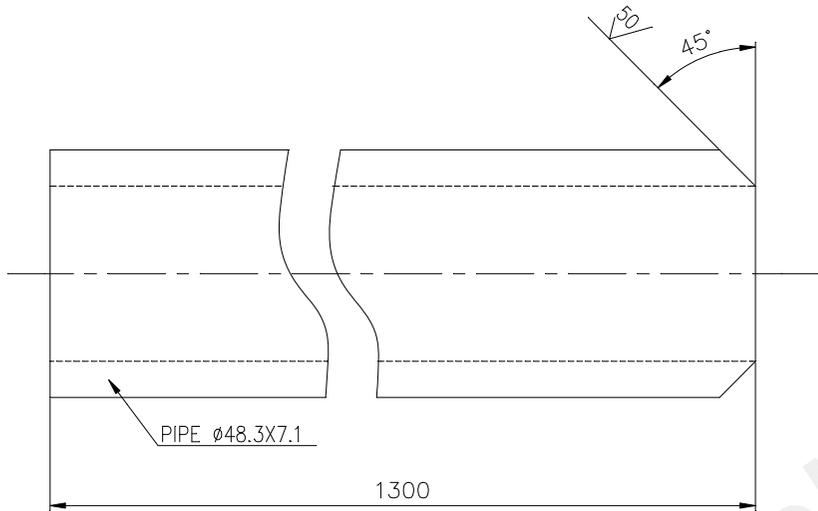


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M. - NO. | STATUS OF DRG U |
|------|------|---------|-----|-------------|---------|-------------------------|-----------------|
|      |      | CHECKED |     |             | CHECKED |                         |                 |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                    | DATE            |
|      |      |         |     | WT          | SKT     | SD/-                    | 07.07.11        |

GRADE OF UNTOL.DIM M/CG.  $\phi$ /M/ $\phi$  -AA0230208 WELDING  $\lambda$ /B/ $\phi$ / $\lambda$  AA0621104 GAS CUTTING-T3 AA0621101

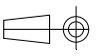
ALL OVER EXCEPT OTHERWISE STATED



COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT 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.

Released

IDENTIFICATION ACCORDING TO HW0400397.

|               |   |   |  |              |              |          |            |
|---------------|---|---|--|--------------|--------------|----------|------------|
| Sign & Date   | Ref. Drawing No   |   | IDENTIFICATION ACCORDING TO HW0400397. |              |              |          |            |
|               |  BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |   | DRN                                    | NAME         | SIGN         | DATE     | NO. OF VAR |
| Inventory No. | DEPT STE  |  SCALE 1:1 | CHD                                    | ASHOK        | SD/-         | 08.06.11 |            |
|               | CODE 4011   |   | WEIGHT (KG)                            | APPD         | AKASH        | SD/-     |            |
| TITLE : PIPE  |   | REF. TO ASSY. DRG.  | ITEM No.                               |              | NO. OF ITEMS |          |            |
| CARD CODE     |   | 3-12096-56100   | —                                      |              | —            |          |            |
| DRAWING NO.   |   | 4-12096-56102   |  | 22   23   24 |              |          |            |
| SHEET No. 01  |   | No. OF SHEETS 01  |  |              |              |          |            |

Released

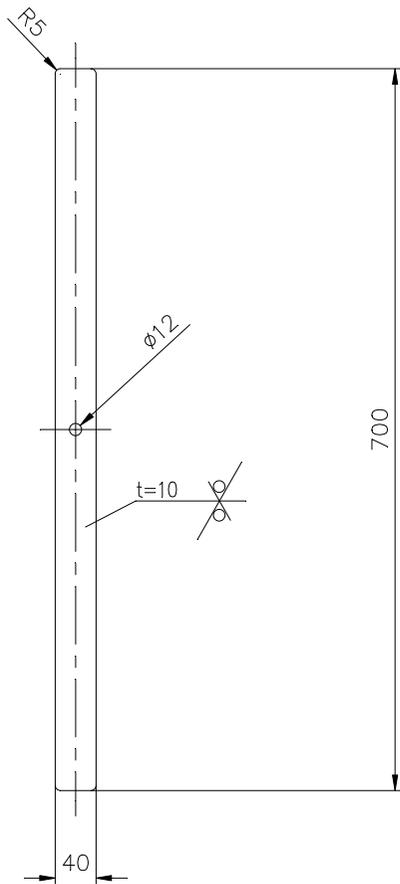


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ | C.B.O.M.- NO. | STATUS OF DRG<br>U |
|------|------|---------|-----|-------------|---------|----------|---------------|--------------------|
|      |      | CHECKED |     |             | CHECKED |          |               |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN     | DATE          |                    |
|      |      |         |     | WT          | SKT     | SD/-     | 07.07.11      |                    |

GRADE OF UNTOL.DIM M/CG.  $\phi$ /M/ $\phi$  -AA0230208 WELDING  $\lambda$ /B/ $\phi$ / $\lambda$  AA0621104 GAS CUTTING-T3 AA0621101

50/ ALL OVER EXCEPT OTHERWISE STATED



IDENTIFICATION ACCORDING TO HW0400397.

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Released

|               |   |           |       |              |                    |                  |              |              |            |
|---------------|---|-----------|-------|--------------|--------------------|------------------|--------------|--------------|------------|
| Inventory No. | DEPT STE  |           | SCALE | WEIGHT (KG)  | REF. TO ASSY. DRG. | ITEM No.         | NO. OF ITEMS |              |            |
|               | CODE 4011   |           | 5:1   | 2.20         | 3-12096-56100      | —                | —            |              |            |
| Sign & Date   | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |           |       |              | DRN                | NAME             | SIGN         | DATE         | NO. OF VAR |
|               | Ref. Drawing No                                   |           |       |              |                    | CHD              | ASHOK        | SD/-         |            |
|               |   |           |       | APPD         | AKASH              | SD/-             | 08.06.11     |              |            |
|               |   |           |       |              |                    | A.SHAH           | SD/-         | 25.07.11     |            |
| TITLE : FLAT  |   | CARD CODE |       | DRAWING NO.  |                    | 4-12096-56103    |              | 22   23   24 |            |
|               |   |           |       | SHEET No. 01 |                    | No. OF SHEETS 01 |              |              |            |

Released

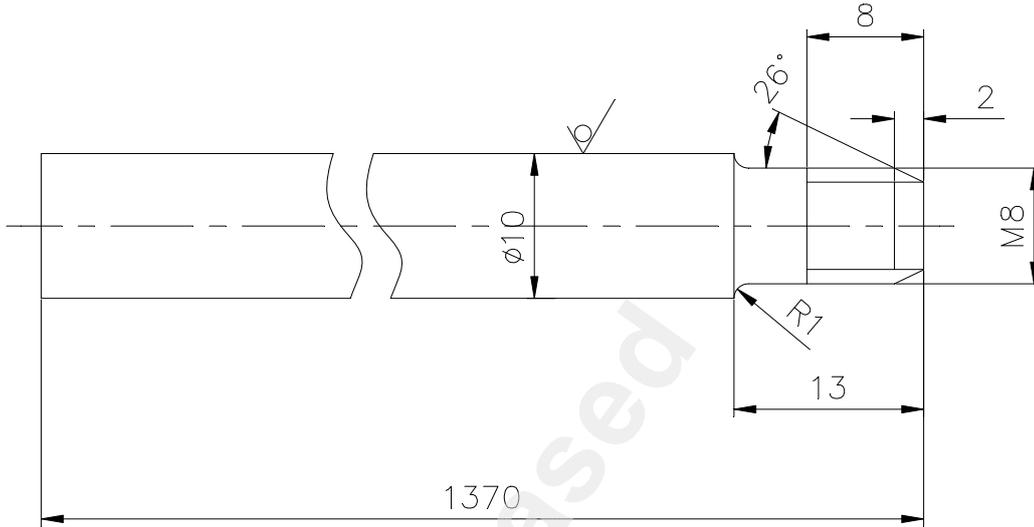


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

|      |      |         |      |      |         |                        |                    |
|------|------|---------|------|------|---------|------------------------|--------------------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M.— NO. | STATUS OF DRG<br>U |
|      |      | CHECKED |      |      | CHECKED |                        |                    |
| ZONE |      |         | ZONE |      |         | AGREED DEPT<br>TTX     | NAME<br>SKG        |
|      |      |         |      |      |         | SIGN<br>SD/-           | DATE<br>16.07.11   |

GRADE OF UNTOL.DIM M/CG.  $\checkmark$ M/ $\checkmark$ A -AA0230208 WELDING  $\checkmark$ B/ $\checkmark$ D AA0621104 GAS CUTTING-T3 AA0621101

12.5/ ALL OVER EXCEPT OTHERWISE STATED



COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Released

Ref.Drawing No>

Sign & Date

IDENTIFICATION ACCORDING TO HW0400397.



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

| DRN   | NAME   | SIGN | DATE     | NO. OF VAR |
|-------|--------|------|----------|------------|
| ASHOK | ASHOK  | SD/- | 08.06.11 |            |
| CHD   | AKASH  | SD/- | 08.06.11 |            |
| APPD  | A.SHAH | SD/- | 25.07.11 |            |

|               |           |  |       |             |                           |                  |              |
|---------------|-----------|--|-------|-------------|---------------------------|------------------|--------------|
| Inventory No. | DEPT STE  |  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG.        | ITEM No.         | NO. OF ITEMS |
|               | CODE 4011 |  | 2:1   | 0.9         | 3-12096-56100             | —                | —            |
| TITLE : ROUND |           |  |       | CARD CODE   | DRAWING NO. 4-12096-56104 |                  |              |
|               |           |  |       |             | 7                         | 22               | 23 24        |
|               |           |  |       |             | SHEET No. 01              | No. OF SHEETS 01 |              |

A4 SIZE

Released

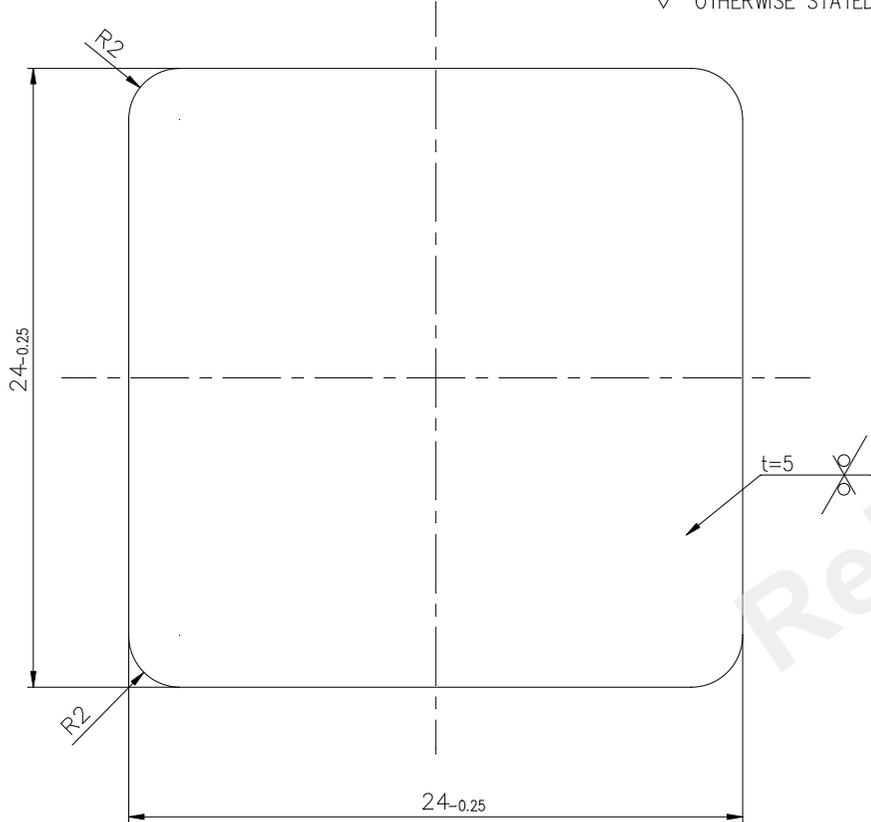


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M. - NO. | STATUS OF DRG U |
|------|------|---------|-----|-------------|---------|-------------------------|-----------------|
|      |      | CHECKED |     |             | CHECKED |                         |                 |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                    | DATE            |
|      |      |         |     | TTX         | SKG     | SD/-                    | 6.07.11         |

GRADE OF UNTOL.DIM M/CG.  $\phi$ /M/ $\phi$  -AA0230208 WELDING  $\lambda$ /B/ $\phi$ / $\lambda$  AA0621104 GAS CUTTING-T3 AA0621101

12.5/ ALL OVER EXCEPT OTHERWISE STATED



IDENTIFICATION ACCORDING TO HW0400397.



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

| DRN   | NAME   | SIGN | DATE     | NO. OF VAR |
|-------|--------|------|----------|------------|
| ASHOK |        | SD/- | 08.06.11 |            |
| AKASH |        | SD/- | 08.06.11 |            |
| APPD  | A.SHAH | SD/- | 25.07.11 |            |

| Inventory No. | DEPT STE  | SCALE | WEIGHT (KG) | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
|---------------|-----------|-------|-------------|--------------------|----------|--------------|
|               | CODE 4011 |       |             |                    |          |              |

|         |      |              |                              |
|---------|------|--------------|------------------------------|
| TITLE : | FLAT | CARD CODE    | DRAWING NO.<br>4-12096-56105 |
|         |      | SHEET No. 01 | No. OF SHEETS 01             |

COPYRIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

Released



Released

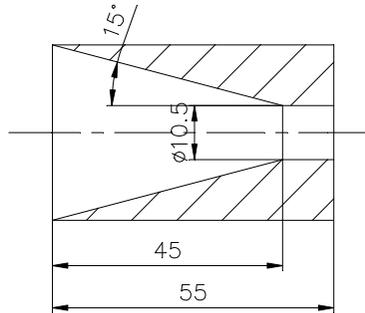


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|      |      |         |     |             |         |                        |                    |
|------|------|---------|-----|-------------|---------|------------------------|--------------------|
| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M.- NO. | STATUS OF DRG<br>U |
|      |      | CHECKED |     |             | CHECKED |                        |                    |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                   | DATE               |
|      |      |         |     | TTX         | SKG     | SD/-                   | 6.07.11            |

GRADE OF UNTOL.DIM M/CG.  $\phi$ /M/A -AA0230208 WELDING  $\lambda$ /B/ $\phi$ / $\lambda$  AA0621104 GAS CUTTING-T3 AA0621101

12.5/ ALL OVER EXCEPT OTHERWISE STATED



SECTION AA

IDENTIFICATION ACCORDING TO HW0400397.

|               |   |   |                              |                                     |               |                   |            |
|---------------|---|---|------------------------------|-------------------------------------|---------------|-------------------|------------|
| Inventory No. | DEPT STE  | SCALE<br>1:1                                      | WEIGHT (KG)<br>0.25          | REF. TO ASSY. DRG.<br>3-12096-56100 | ITEM No.<br>— | NO. OF ITEMS<br>— |            |
|               | CODE 4011   |   |                              |                                     |               |                   |            |
| Sign & Date   | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |   | DRN                          | NAME                                | SIGN          | DATE              | NO. OF VAR |
|               | Ref. Drawing No                                   | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |                              | CHD                                 | AKASH         | SD/-              |            |
|               |   | APPD  | A.SHAH                       | SD/-                                | 25.07.11      |                   |            |
| TITLE : GUIDE |   | CARD CODE   | DRAWING NO.<br>4-12096-56106 |                                     | 22            | 23                | 24         |
|               |   | SHEET No.   | 01                           |                                     | No. OF SHEETS | 01                |            |

COPYRIGHT AND CONFIDENTIAL  
THE INFORMATION ON THIS DOCUMENT 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.

Released

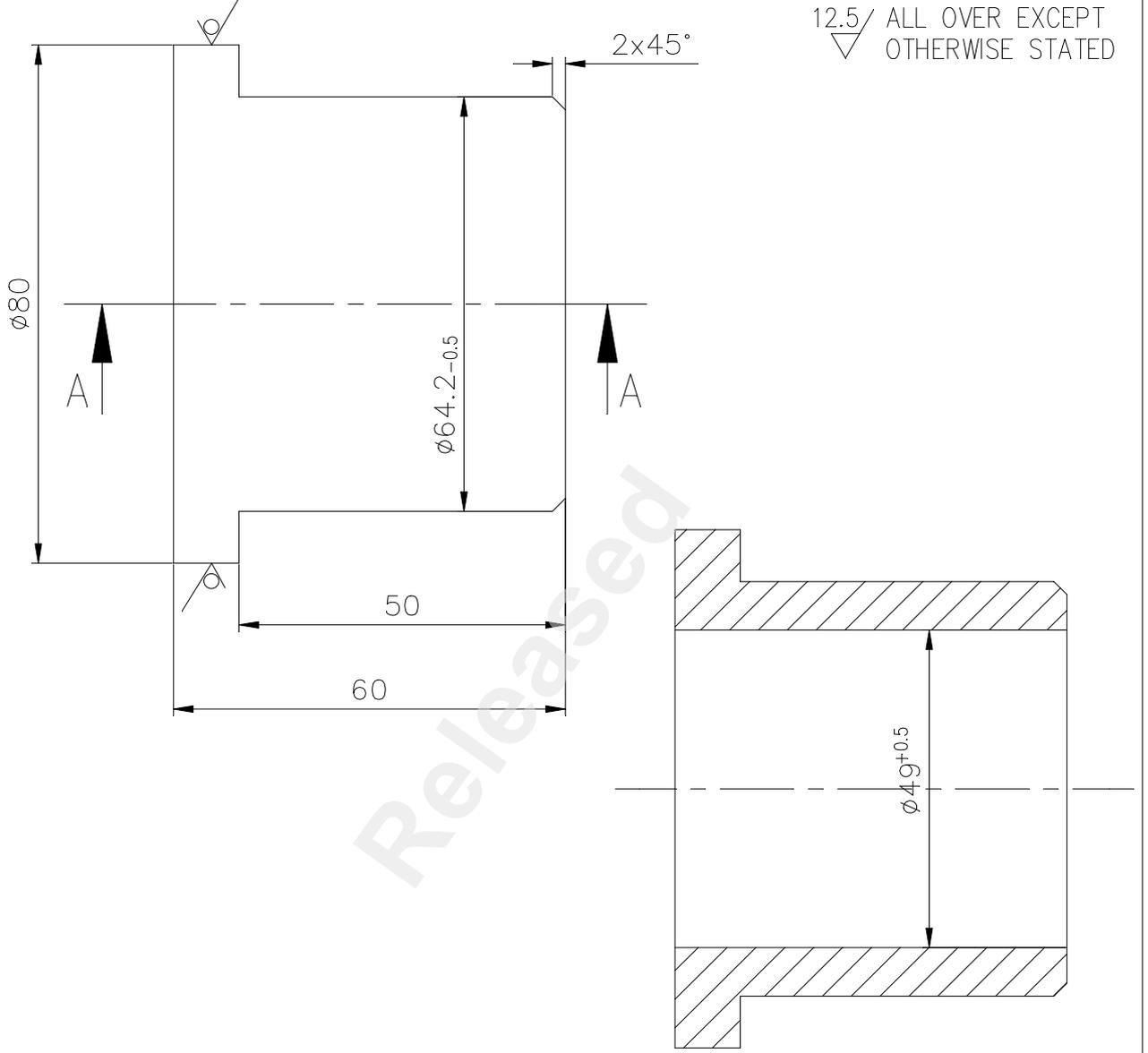


Released



|      |      |         |      |      |         |                         |      |                    |          |
|------|------|---------|------|------|---------|-------------------------|------|--------------------|----------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M. - NO. |      | STATUS OF DRG<br>U |          |
|      |      | CHECKED |      |      | CHECKED |                         |      |                    |          |
| ZONE |      |         | ZONE |      |         | AGREED DEPT             | NAME | SIGN               | DATE     |
|      |      |         |      |      |         | TTX                     | SKG  | SD/-               | 16.07.11 |

GRADE OF UNTOL.DIM M/CG.  $\sqrt{M/F}$  -AA0230208 WELDING  $\sqrt{B/C/D}$  AA0621104 GAS CUTTING-T3 AA0621101



SECTION AA

IDENTIFICATION ACCORDING TO HW0400397.

|                 |   |           |       |                           |                    |                  |              |          |            |
|-----------------|---|-----------|-------|---------------------------|--------------------|------------------|--------------|----------|------------|
| Inventory No.   | DEPT STE  |           | SCALE | WEIGHT (KG)               | REF. TO ASSY. DRG. | ITEM No.         | NO. OF ITEMS |          |            |
|                 | CODE 4011   |           | 1:1   | 0.77                      | 3-12096-56100      | —                | —            |          |            |
| Sign & Date     | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |           |       |                           | DRN                | NAME             | SIGN         | DATE     | NO. OF VAR |
|                 |   |           |       |                           | CHD                | ASHOK            | SD/-         | 08.06.11 |            |
| Ref. Drawing No |   |           |       |                           | APPD               | A.SHAH           | SD/-         | 25.07.11 |            |
| TITLE : GUIDE   |   | CARD CODE |       | DRAWING NO. 4-12096-56107 |                    |                  |              | 22 23 24 |            |
|                 |   |           |       | SHEET No. 01              |                    | No. OF SHEETS 01 |              |          |            |

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.



Released

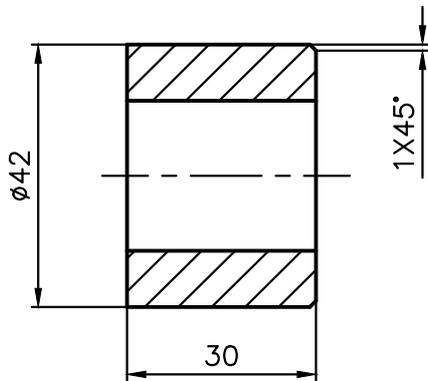


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm ) FORM DG 39(B)

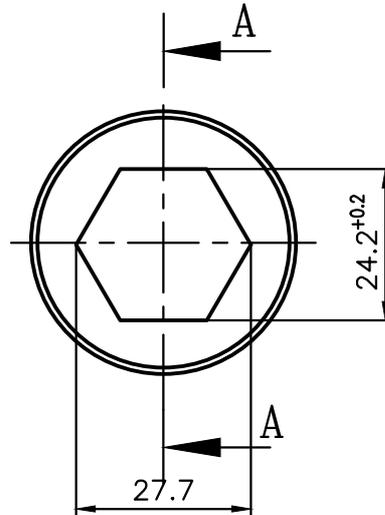
|      |      |         |      |      |         |                        |                    |      |          |
|------|------|---------|------|------|---------|------------------------|--------------------|------|----------|
| REV  | DATE | ALTERED | REV  | DATE | ALTERED | GMS No./ C.B.O.M.- NO. | STATUS OF DRG<br>U |      |          |
|      |      | CHECKED |      |      | CHECKED |                        |                    |      |          |
| ZONE |      |         | ZONE |      |         | AGREED DEPT            | NAME               | SIGN | DATE     |
|      |      |         |      |      |         | TTX                    | SKG                | SD/- | 16.07.11 |

GRADE OF UNTOL.DIM M/CG. Q/M/R -AA0230208 WELDING A/B/C/D AA0621104 GAS CUTTING-T3 AA0621101

12.5/ ALL OVER EXCEPT OTHERWISE STATED

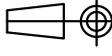


SECTION AA



COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.

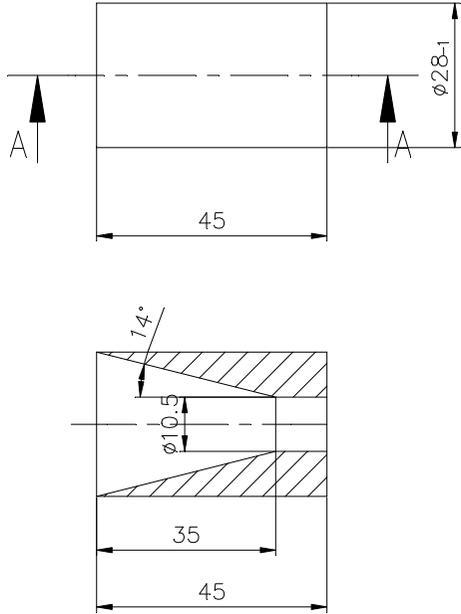
|                   |                                     |   |           |                                     |                    |          |              |
|-------------------|-------------------------------------|---|-----------|-------------------------------------|--------------------|----------|--------------|
| Ref. Drawing No > | IDENTIFICATION ACCORDING HW0400397. |   |           |                                     |                    |          |              |
|                   | Sign & Date                         |  <b>BHARAT HEAVY ELECTRICALS LTD.</b><br><b>RANIPUR, HARDWAR</b> | DRN       | NAME                                | SIGN               | DATE     | NO. OF VAR   |
| CHD               |                                     |   | ASHOK     | SD/-                                | 08.06.11           |          |              |
| APPD              | AKASH                               | SD/-  | 08.06.11  |                                     |                    |          |              |
| Inventory No.     | DEPT STE                            |    | SCALE     | WEIGHT (KG)                         | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
|                   | CODE 4011                           |   | 1:1       | 0.21                                | 3-12096-56200      | —        | —            |
|                   | TITLE :<br><b>ROUND</b>             |   | CARD CODE | DRAWING NO.<br><b>4-12096-56201</b> |                    | 22       | 23           |
|                   |                                     | SHEET No. 01  |           | No. OF SHEETS 01                    |                    |          |              |

A4 SIZE

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

|                    |      |         |       |             |                |                        |                    |
|--------------------|------|---------|-------|-------------|----------------|------------------------|--------------------|
| REV                | DATE | ALTERED | REV   | DATE        | ALTERED        | GMS No./ C.B.O.M.- NO. | STATUS OF DRG<br>U |
|                    |      | CHECKED |       |             | CHECKED        |                        |                    |
| ZONE               |      | ZONE    |       | AGREED DEPT | NAME           | SIGN                   | DATE               |
|                    |      |         |       | TTX         | SKG            | SD/-                   | 6.07.11            |
| GRADE OF UNTOL.DIM |      | M/CG.   | Q/M/A | -AA0230208  | WELDING        | X/B/D/D                | AA0621104          |
|                    |      |         |       |             | GAS CUTTING-T3 | AA0621101              |                    |

12.5/ ALL OVER EXCEPT OTHERWISE STATED



SECTION AA

IDENTIFICATION ACCORDING HW0400397.



BHARAT HEAVY ELECTRICALS LTD.  
RANIPUR, HARDWAR

|       |        |      |          |            |
|-------|--------|------|----------|------------|
| DRN   | NAME   | SIGN | DATE     | NO. OF VAR |
| ASHOK | ASHOK  | SD/- | 08.06.11 |            |
| CHD   | AKASH  | SD/- | 08.06.11 |            |
| APPD  | A.SHAH | SD/- | 25.07.11 |            |

|                  |           |  |              |                              |                    |          |              |
|------------------|-----------|--|--------------|------------------------------|--------------------|----------|--------------|
| Inventory No.    | DEPT STE  |  | SCALE        | WEIGHT (KG)                  | REF. TO ASSY. DRG. | ITEM No. | NO. OF ITEMS |
|                  | CODE 4011 |  | 1:1          | 0.17                         | 3-12090-56200      | —        | —            |
| TITLE :<br>GUIDE |           |  | CARD CODE    | DRAWING NO.<br>4-12096-56204 |                    |          |              |
|                  |           |  |              | 22   23   24                 |                    |          |              |
|                  |           |  | SHEET No. 01 | No. OF SHEETS 01             |                    |          |              |

COPYRIGHT AND CONFIDENTIAL  
 THE INFORMATION ON THIS DOCUMENT 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.

Released



Released

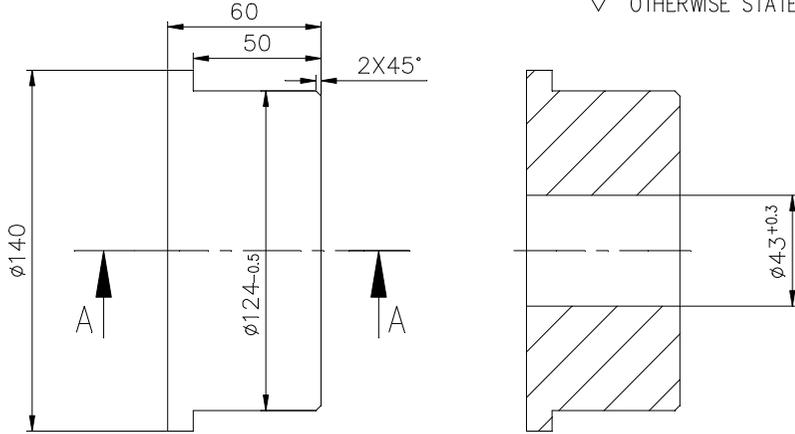


FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

| REV  | DATE | ALTERED | REV | DATE        | ALTERED | GMS No./ C.B.O.M.- NO. | STATUS OF DRG U |
|------|------|---------|-----|-------------|---------|------------------------|-----------------|
|      |      | CHECKED |     |             | CHECKED |                        |                 |
| ZONE |      | ZONE    |     | AGREED DEPT | NAME    | SIGN                   | DATE            |
|      |      |         |     | TTX         | SKG     | SD/-                   | 6.07.11         |

GRADE OF UNTOL.DIM M/CG.  $\phi$ /M/A -AA0230208 WELDING  $\lambda$ /B/ $\phi$ / $\lambda$  AA0621104 GAS CUTTING-T3 AA0621101

12.5/ ALL OVER EXCEPT OTHERWISE STATED



SECTION AA

COPYRIGHT AND CONFIDENTIAL

THE INFORMATION ON THIS DOCUMENT 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.

Released

|                 |   |              |                     |                                     |          |              |
|-----------------|---|--------------|---------------------|-------------------------------------|----------|--------------|
| Inventory No.   | DEPT STE  | SCALE<br>1:1 | WEIGHT (KG)<br>5.26 | REF. TO ASSY. DRG.<br>3-12090-56200 | ITEM No. | NO. OF ITEMS |
|                 | CODE 4011   |              |                     |                                     |          |              |
| Title :         | GUIDE   |              | CARD CODE           | DRAWING NO.<br>4-12096-56205        |          |              |
|                 |   |              |                     | 22   23   24                        |          |              |
| Ref. Drawing No | IDENTIFICATION ACCORDING HW0400397.               |              |                     |                                     |          |              |
| Sign & Date     | BHARAT HEAVY ELECTRICALS LTD.<br>RANIPUR, HARDWAR |              |                     | NAME                                | SIGN     | DATE         |
|                 |   |              |                     | DRN ASHOK                           | SD/-     | 08.06.11     |
|                 |   |              |                     | CHD AKASH                           | SD/-     | 08.06.11     |
|                 |   |              |                     | APPD A.SHAH                         | SD/-     | 25.07.11     |
|                 |   |              |                     |                                     |          | NO. OF VAR   |
| SHEET No. 01    |   |              |                     | No. OF SHEETS 01                    |          |              |



Released





# CORPORATE PURCHASING SPECIFICATION

AA10108

Rev No. 11

PAGE 1 of 2

## STRUCTURAL STEEL-STANDARD QUALITY (PLATES, SECTIONS, STRIPS, FLATS & BARS)

### (ORDERING DESCRIPTION)

#### 1.0 GENERAL:

This specification governs the quality requirements of structural steel plates, strips, flats, bars and sections such as angles, beams, channels and tees etc. of IS: 2062 – 2011, Gr: E250, Quality A

#### 2.0 APPLICATION:

For general engineering purpose.

#### 3.0 CONDITION OF DELIVERY:

Plates, Bars & Sections: Hot rolled in straight lengths without twists & Bends

#### 4.0 COMPLIANCE WITH NATIONAL STANDARDS:

Material shall comply with the requirements of IS: 2062 – 2011, Gr: E250, Quality A

Material offered to EN 10025-2:2004 Gr. S275JR is also acceptable. The tolerance on dimensions for plates shall comply with EN 10029.

#### 5.0 DIMENSIONS AND TOLERANCES:

##### 5.1 DIMENSIONS:

##### 5.1.1 Sizes

Material shall be supplied to the dimensions specified on BHEL Order.

##### 5.1.2 Length

Unless otherwise specified, hot rolled bars and sections shall be supplied in 3 to 6 metres length.

##### 5.2 Tolerances:

5.2.1 The tolerances on hot rolled material shall comply with IS: 1852. However, no plate shall be under the specified thickness at any point.

Revisions:  
As per Cl. No. 38.1 of MOM of MRC-S&GPS

**APPROVED:**  
INTERPLANT MATERIAL RATIONALISATION  
COMMITTEE – MRC(S&GPS)

|               |         |            |                 |          |                              |
|---------------|---------|------------|-----------------|----------|------------------------------|
| Rev No.11     | Amd No. | Reaffirmed | Prepared        | Issued   | Dt. of 1 <sup>st</sup> Issue |
| Dt:22-02-2014 | Dt:     | Year:      | HPEP, Hyderabad | Corp.R&D | July, 1976                   |

# CORPORATE PURCHASING SPECIFICATION



## 5.2.2 Straight for hot rolled bars:

Unless otherwise specified, the permissible deviation in straightness shall not exceed 5 mm in any 1000 mm length.

## 6.0 HARDNESS (BRINELL):

When tested in accordance with IS: 1500, the material shall show a brinell hardness in the range of 120-156 HB.

Note: Hardness test shall be conducted only when tensile test cannot be performed.

## 7.0 TEST CERTIFICATES:

Unless otherwise specified, three copies of test certificates shall be supplied.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information.

AA10108 Rev.11 / IS:2062 Grade: E250 Quality A / EN 10025-2 Gr. S275JR,

BHEL order no., Melt no. Size, Results of chemical analysis and Mechanical tests, Supplier's name, Identification no. TC no., Signature of competent authority etc.

## 8.0 PACKING AND MARKING:

Plates shall be transported suitably to avoid damage during transit.

For plates below 10 mm thick, each pile (preferably of 16 plates) and each plate 10 mm thick & over shall be marked with melt no. AA10108, BHEL order no., Supplier's name, Identification no., Size & weight on any one corner and encircled with paint preferably of white colour.

## 9.0 REFERRED STANDARDS (Latest publications including amendments):

1) IS: 1500

2) IS: 1852

3) EN 10029



**CORPORATE PURCHASE SPECIFICATION**

**AA 101 09**

**Rev. No. 03**

**PREFACE SHEET**

**HOT ROLLED CARBON STEEL BARS (CLOSE TOLERANCES)**

**FOR INTERNAL USE ONLY  
REMOVE THIS PREFACE SHEET BEFORE ISSUE TO SUPPLIERS**

**Comparable Standards:**

- 1. INDIAN : IS : 1570 (Part II, section 1)-1979  
(Reaffirmed 1998), Gr: 20C8(C20),  
Hot Rolled

**Suggested/Probable Suppliers And Grades:**

Refer plant vendors list.

**User Plant References:**

- 1. BHOPAL : BP 10197, PS 101 14
- 2. HEER, HARDWAR : HW 10191

COPYRIGHT AND CONFIDENTIAL  
The Information on this document 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.

12/5/14

CS-722

|  |                |                   |   |                                 |   |
|--|----------------|-------------------|---|---------------------------------|---|
| <b>Revisions :</b><br>CI 24.43 of MOM of MRC-S&GPS |                |                   | <b>APPROVED :</b><br><b>INTERPLANT MATERIAL RATIONALISATION<br/>COMMITTEE-MRC (S&amp;GPS)</b> |                                 |   |
| <b>Rev. No. 03</b>                                 | <b>Amd.No.</b> | <b>Reaffirmed</b> | <b>Prepared<br/>BHOPAL</b>  | <b>Issued<br/>Corp. R&amp;D</b> | <b>Dt. of 1 st Issue<br/>AUGUST, 1983</b> |
| <b>Dt: 15.01.2002</b>                              | <b>Dt :</b>    | <b>Year:2013</b>  |   |                                 |   |



**CORPORATE PURCHASE SPECIFICATION**

**AA 101 09**

**Rev. No. 03**

**PAGE 1 OF 4**

**HOT ROLLED CARBON STEEL BARS (CLOSE TOLERANCES)**

**1.0 GENERAL**

This specification governs the quality requirements of Hot Rolled Carbon Steel Bars having closed tolerances.

**2.0 APPLICATION :**

Production of machined parts (Note: AA 101 08 for general engineering purposes where close tolerances are not required).

**3.0 CONDITION OF DELIVERY :**

Hot Rolled .

Bars shall be supplied in straight lengths with ends square and true.

**4.0 COMPLIANCE WITH NATIONAL STANDARDS:**

The material shall comply with the requirements of the following National standard and also meet the requirements of this specification.

|                                 |    |  |
|---------------------------------|----|--|
| IS : 1570, (Part 2-Sec.1)-1979' | :  | Schedules for Wrought Steels- Part 2 :   |
| (Reaffirmed 1998)               | .. | Carbon Steels (Unalloyed Steels) -Sec.1:   |
| Gr : 20 C8 (C20), Hot rolled    | :  | Wrought products (other than wire) with specified Chemical Composition and related Properties. |

**5.0 DIMENSIONS AND TOLERANCES :**

**5.1 Dimensions:**

**5.1.1 Sizes:**

Bars shall be supplied to the dimensions specified on BHEL order.

**5.1.2 Length :**

Bars shall be supplied in lengths of not less than 2.5 metres.

Revisions :  
CI 24.43 of MOM of MRC-S&GPS

**APPROVED :**  
**INTERPLANT MATERIAL RATIONALISATION COMMITTEE-MRC (S&GPS)**

|                       |                |                   |                 |                      |                          |
|-----------------------|----------------|-------------------|-----------------|----------------------|--------------------------|
| <b>Rev. No. 03</b>    | <b>Amd.No.</b> | <b>Reaffirmed</b> | <b>Prepared</b> | <b>Issued</b>        | <b>Dt. of 1 st Issue</b> |
| <b>Dt: 15.01.2002</b> | <b>Dt :</b>    | <b>Year: 2013</b> | <b>BHOPAL</b>   | <b>Corp. R&amp;D</b> | <b>AUGUST, 1983</b>      |

COPYRIGHT AND CONFIDENTIAL  
The Information on this document 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.

12/3/14

CS-722

AA 101 09

Rev. No. 03

CORPORATE PURCHASE SPECIFICATION



PAGE 2 OF 4

5.2 Tolerances :

The tolerances on bars shall be as follows:

5.2.1 On Size:

| Diameter / width across flats, mm | Tolerance          |
|-----------------------------------|--------------------|
| Upto and including 20             | - 0<br>+ 0.38      |
| Above 20                          | - 0<br>+ 2 percent |

5.2.2 Straightness :

Unless otherwise agreed to, the permissible deviation in straightness, shall not exceed 5 mm in any 1000 mm length.

6.0 MANUFACTURE:

The steel shall be manufactured by the open hearth, electric, basic oxygen or a combination of these processes.

Material shall be manufactured from killed steel.

Sufficient discard shall be made from each ingot to ensure freedom from piping, harmful segregation and internal and surface defects.

7.0 FREEDOM FROM DEFECTS :

The bars shall be sound, straight and free from cracks, surface flaws, laminations, rough, jagged and imperfect wedges and internal & surface defects such as seams, laps and injurious imperfections. Bars shall be free from twists and bends.

8.0 CHEMICAL COMPOSITION :

The melt analysis of steel and the permissible variation in the composition of the material from the melt analysis shall be follows :

| Element    | Melt analysis, percent |       | Permissible variation, percent |
|------------|------------------------|-------|--------------------------------|
|            | Min.                   | Max.  |                                |
| Carbon     | 0.15                   | 0.25  | ± 0.02                         |
| Silicon    | 0.05                   | 0.35  | ± 0.03                         |
| Manganese  | 0.60                   | 0.90  | ± 0.04                         |
| Sulphur    | —                      | 0.045 | + 0.005                        |
| Phosphorus | —                      | 0.045 | + 0.005                        |

12/2/14  
CS-722



## CORPORATE PURCHASE SPECIFICATION

AA 101 09

Rev. No. 03

PAGE 3 OF 4

### 9.0 TEST SAMPLES :

#### 9.1 Tensile :

Bars from the same melt and of the same size shall be grouped in batches of 40,000 kg or part thereof. One tensile test piece shall be cut from a selected bar from each batch.

For bars of sizes upto and including 40 mm, the test pieces shall be machined concentrically from the bars selected for test. Alternatively the full cross-section of the bars may be tested.

For bars of sizes over 40 mm the longitudinal axes of the test pieces shall not be less than 12.5 mm from the surface of the bars selected for test.

Tensile test pieces shall have a gauge length equal to  $5.65 \sqrt{S_0}$ .

#### 9.2 Bend Test:

One bend test shall be carried out for every 40,000 kg or part thereof the bars of the same size and from the same melt.

The bend test pieces shall preferably be cut from bars already selected for tensile test.

Bars of sizes upto and including 20mm shall be tested full size and the edges may be rounded to a radius not exceeding 1.6mm.

Bars of sizes over 20mm shall be turned down to a diameter of 20mm.

### 10.0 MECHANICAL PROPERTIES :

#### 10.1 Tensile:

The test pieces shall show the following properties, when tested in accordance with IS:1608:

Tensile strength : 440 - 520 N/mm<sup>2</sup>

Elongation on  $5.65 \sqrt{S_0}$  gauge length : 24 percent , min.

#### 10.2 Bend:

Bend test shall be conducted in accordance with IS:1599. The test piece shall be bent through an angle of 180°, until the internal radius is equal to the size of the test piece. It shall not break and shall be free from cracks on the outside as seen by an unaided eye. No account need be taken of small cracks appearing at the edges.

#### 11.0 HARDNESS (BRINELL):

When tested in accordance with IS:1500, the material shall show a Brinell hardness in the range of 126 - 179 HB.

**Note:** Hardness test shall be conducted only when tensile test can not be performed.

12/3/14

CS-722

|             |
|-------------|
| AA 101 09   |
| Rev. No. 03 |
| PAGE 4 OF 4 |

**CORPORATE PURCHASE SPECIFICATION**



**12.0 TEST CERTIFICATES :**

Three copies of test certificates shall be supplied, unless otherwise stated on the order.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information :

AA 1011 09; Rev. No. 03

BHEL order No,

Supplier's Reference :

Name

Identification No.

Melt No.

Details of heat treatment.

Results of Tests :

Results of Dimensional inspection.

Results of chemical analysis and mechanical tests.

**13.0 PACKING AND MARKING :**

The material shall be suitably packed in bundles - hessian wrapped-to prevent sagging, corrosion and damage during transit. A suitable clear temporary rust preventive shall be applied on all the bars.

Each bar over 50 mm shall be stamped at one end with "AA 101 09", melt no., BHEL order No., at one end or on the end face.

Bars 50 mm and below shall be bundled together and tied with wire at 3 to 4 places along the length of the bars.

A metal label shall be securely attached to each bundle and shall bear the following information :

AA 101 09: Hot rolled carbon steel bars (Close tolerance).

BHEL Order No.

Consignment/Identification No.

Melt No.

Size and Weight.

Supplier's Name.

**14.0 REFERRED STANDARDS (Latest Publications Including Amendments):**

1. IS: 1500

2. IS : 1570, Part II, Sec.1

3. IS :1599

4. IS : 1608

12/03/14  
CS-722



# CORPORATE PURCHASING SPECIFICATION

AA10119

Rev No. 15

PAGE 1 of 2

## STRUCTURAL STEEL - WELDABLE QUALITY (PLATES, SECTIONS, STRIPS, FLATS AND BARS)

### ORDERING DESCRIPTION

#### 1.0 GENERAL:

The material shall conform to IS 2062 – 2011, E250-Gr.BR (with mandatory Impact Test) or DIN EN 10025-2:2005, Gr. S275JR and comply with following additional requirements.

#### 2.0 APPLICATION:

For general engineering purposes, suitable for welding.

#### 3.0 CONDITION OF DELIVERY:

3.1 Bars & Sections shall be supplied in Hot rolled in straight lengths without twists and bends.

3.2 The material shall be supplied as per IS: 2062 – 2011, E250 Gr.BR (with mandatory Impact Test) or as per DIN EN 10025-2:2005 Gr. 275JR.

3.3 Any other additional requirement as per BHEL Purchase order.

#### 4.0 DIMENSIONS AND TOLERANCES:

##### 4.1 Sizes:

Material shall be supplied to the dimensions specified in BHEL Order.

##### 4.2 Tolerances:

The tolerances on hot rolled material shall comply with IS: 1852 or any other equivalent national standard.

##### 4.3 Straightness for hot rolled bars:

Unless otherwise specified, the permissible deviation in straightness shall not exceed 5 mm in any 1000 mm length.

#### 5.0 TEST SAMPLES:

The selection of test pieces for all tests like Chemical, Mechanical etc. shall be as per IS: 2062, E250-Gr.BR or DIN EN 10025-2, Gr. S275JR.

Revisions:  
Clause No. 1, 3, 5 & 8 revised (as per MOM of 38th MRC meeting), Clause 10 added

**APPROVED:**  
INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(S&GPS)

|               |         |            |                 |          |                              |
|---------------|---------|------------|-----------------|----------|------------------------------|
| Rev No.15     | Amd No. | Reaffirmed | Prepared        | Issued   | Dt. of 1 <sup>st</sup> Issue |
| Dt:11-03-2014 | Dt:     | Year:      | HPEP, Hyderabad | Corp.R&D | June, 1976                   |

COPYRIGHT AND CONFIDENTIAL  
The Information on this document 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.

26/6/14

CS-72

# CORPORATE PURCHASING SPECIFICATION



## 6.0 ULTRASONIC EXAMINATION:

Plates shall be ultrasonically examined in accordance with BHEL standard AA0850120 (or ASTM-A435) as detailed below and shall comply with the acceptance standards specified therein.

### 6.1 For plates above 40 mm thick:

Shall be ultrasonically examined unless when otherwise specified in order.

## 7.0 TEST CERTIFICATES:

Unless otherwise specified, three copies of test certificates shall be supplied.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

AA10119 - Rev.No.15/ IS: 2062-Gr: BR (with mandatory Impact test) or DIN EN 10025-2, Gr. S275JR,

BHEL order No.

Melt No, Size & Quantity, Batch No with heat treatment details, Results of Chemical analysis,

Mechanical tests & NDT, Supplier's name, Identification No, TC No, Signature of Competent Authority, etc.

## 8.0 PACKING AND MARKING:

Plates shall be transported suitably to avoid damage during transit.

Each plate shall be marked with Melt No. Material grade and specification, BHEL Order No, Supplier's Name Identification No, Size & weight, on any one corner and encircled with paint preferably of white colour.

## 9.0 REJECTION AND REPLACEMENT

If the material does not comply with the requirements of this specification during receipt inspection at BHEL or if any defect is found during further processing of material, BHEL reserves the right to reject the whole consignment and the supplier shall replace the material free of cost. The rejected material shall be taken back by the supplier after fulfilling the commercial terms and conditions.

## 10.0 REFERRED STANDARDS (Latest publications including amendments):

1) IS: 1852

2) ASTM - A435

3) AA0850120

26/6/14

CS-721

**HOT ROLLED / FORGED CARBON STEEL BARS - H & T****1.0 GENERAL**

This specification governs the quality requirements of Hot Rolled / Forged Carbon Steel Bars, Hardened and Tempered.

**2.0 APPLICATION**

For general engineering purposes.

**3.0 CONDITION OF DELIVERY**

Hot Rolled / Forged hardened and tempered.

**Note:** Sizes upto 100mm in hot rolled  
>100 to 180mm in hot rolled or forged  
above 180mm in forged

The ends of bars shall be reasonably square and true.

The bars shall be supplied in straight lengths without twists and bends.

**4.0 COMPLIANCE WITH NATIONAL STANDARDS**

The material shall comply with the requirements of the following National standard and also meet the requirements of this specification.

|                                  |                         |
|----------------------------------|-------------------------|
| IS : 5517-1993 (Reaffirmed 1998) | Steel for               |
| Gr:40 C 8                        | Hardening and Tempering |
| Hardened & Tempered              |                         |

**5.0 DIMENSIONS AND TOLERANCES****5.1 Sizes**

The bars shall be supplied to the dimensions specified on BHEL order.

**5.2 Tolerances:****5.2.1 For Forged bars:**

The tolerances shall be + 8 mm - 0mm.

**5.2.2** Tolerances on hot rolled bars shall comply with those of Grade 2 of IS:3739: reproduced below:

Revisions :

CI 24.4.19 of MOM of MRC-S&GPS

**APPROVED : Interplant Material  
Rationalisation Committee-MRC (S&GPS)**

Rev. No. 07

Amd.No.

Reaffirmed

Prepared

Issued

Dt. of 1 st Issue

Dt.:15.01.2002

Dt :

Year :

BHOPAL

Corp. R&D

SEP. '76

**Round and Square Bars :**

| Nominal size. mm |                  | Tolerance, mm         |                      |
|------------------|------------------|-----------------------|----------------------|
| Over             | Upto & Including | Permissible deviation | Out of round/ square |
| ---              | 25               | $\pm 0.50$            | 0.50                 |
| 25               | 50               | $\pm 0.75$            | 0.75                 |
| 50               | 80               | $\pm 1.00$            | 1.00                 |
| 80               | 100              | $\pm 1.25$            | 1.25                 |
| 100              | 125              | $\pm 1.50$            | 1.50                 |
| 125              | 160              | $\pm 2.00$            | 2.00                 |
| 160              | 200              | $\pm 2.50$            | 2.50                 |
| 200              | 250              | $\pm 3.00$            | 3.00                 |

**5.2.3 On Straightness**

Unless otherwise agreed to, the permissible deviation in straightness, shall not exceed the following limits in any 1000 mm length of the bar.

|                                 |   |      |
|---------------------------------|---|------|
| Upto & incl. 40 mm size of bars | - | 6 mm |
| Above 40 mm size of bars        | - | 5 mm |

**5.3 Length**

Bars shall be supplied in 3 to 6 metres length or in multiples with maximum of 10% shorts down to 1 metre.

Forged bars shall be supplied in length of 1.5 to 3 metres.

**6.0 MANUFACTURE**

Material shall be manufactured from fully killed steel.

**7.0 HEAT TREATMENT**

The recommended heat treatment is as follows:

Harden in oil / water from a temperature of 830-860<sup>0</sup>C.

Temper at a suitable temperature between 550-660<sup>0</sup>C.

**8.0 FREEDOM FROM DEFECTS**

The bars shall be sound, straight and free from internal and surface defects, such as seams, laps, cracks or any other defects which may impair the end use.

**9.0 CHEMICAL COMPOSITION**

The melt analysis of steel and the permissible variation in the composition of the finished product from the melt analysis shall be follows:

| Element    | Melt analysis, percent, |       | Permissible variation, percent, in product analysis |
|------------|-------------------------|-------|---|
|            | Min.                    | Max.  |   |
| Carbon     | 0.35                    | 0.45  | ± 0.02  |
| Silicon    | 0.10                    | 0.35  | ± 0.03  |
| Manganese  | 0.60                    | 0.90  | ± 0.04  |
| Sulphur    | ---                     | 0.035 | + 0.005   |
| Phosphorus | ---                     | 0.035 | + 0.005   |

**10.0 TEST SAMPLES :**

**10.1** One sample shall be taken from each melt for chemical analysis.

**10.2** One sample shall be taken from each heat treatment batch for testing of mechanical properties. Test pieces for mechanical tests shall be taken in the longitudinal direction of the piece.

For ruling section up to & including 40mm, the test piece shall be machined coaxially from the test bars. For ruling section above 40mm the longitudinal axis shall be atleast 12.5 mm from surface of the test bars.

Test methods for determining mechanical properties shall be as per IS:1598 (For IZOD impact test)/IS:1757 (For impact test in ISO-V Charpy) and IS:1608 (For tensile test).

**10.3** For ruling section above 200mm, tensile test sample can be taken in tangential or transverse direction.

**11.0 MECHANICAL PROPERTIES (In Hardened and Tempered Condition)**

| Ruling section, mm | Tensile strength, N/mm <sup>2</sup> | 0.2%/PS/YS N/mm <sup>2</sup> , min | Y.E 5.65√So min | * IZOD impact J, min |
|--------------------|-------------------------------------|------------------------------------|-----------------|----------------------|
| ≤ 30               | 700 -850                            | 480                                | 17              | 35 (30)              |
| >30                | 600-750                             | 380                                | 18              | 41 (35)              |

- Average of 3 samples applicable for sizes above 16 mm ruling section only. Values in bracket are in ISO - V Charpy.



## 12.0 ULTRASONIC TEST

**12.1** Each bar above 100 mm shall be tested ultrasonically in accordance with BHEL standard AA 085 01 18 to ensure freedom from internal defects.  
The norms of acceptance shall be as per category 2 of the above standard.

**12.2 Optional tests:** If specified on order, each bar > 40 to 100mm shall be tested ultrasonically in accordance with BHEL standard AA 085 01 18 to ensure freedom from internal defects and the norms of acceptance shall be as per category 2.

## 13.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied, unless otherwise stated on the order.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information :

### BHEL References :

AA 102 18; (Rev. No. 07)

BHEL order No,

### Supplier's References :

Name

Identification No.

Melt No.

Details of heat treatment.

### Result of Tests:

Dimensional inspection.

Results of chemical analysis, mechanical and & Ultrasonic tests.

## 14.0 PACKING AND MARKING

The material shall be suitably packed in bundles hession wrapped to prevent sagging, corrosion and damage during transit.

A suitable clear temperature rust preventive shall be applied on all the bars.

Each bar  $\geq$  50 mm shall be stamped with 'AA 102 18'.

Bars below 50 mm shall be bundled together and tied with wire at 3 to 4 places along the length of the bars.

A metal label shall be securely attached to each bundle and shall bear the following information :

AA 102 18 : Hot Rolled / Forged Carbon Steel Bars - H & T.

BHEL Order No.

Consignment/Identification No.

Melt No.

Size and Weight.

Supplier's Name.

## 15.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1. IS : 1598

2. IS : 1608

3. IS : 1757

4. IS : 3739

5. IS: 5517

6. AA 085 01 18



**CORPORATE PURCHASING SPECIFICATION**

AA10401

Rev No.17

PREFACE SHEET

**CARBON STEEL PLATES - INTERMEDIATE AND HIGH TEMPERATURE**

FOR INTERNAL USE ONLY  
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

**Equivalent/Comparable Standards:**

- 1) INDIAN : IS : 2002 – 2009, Gr : 2, Normalised
- 2) EUROPEAN : EN 10028 – 2: 2017, Gr.:P265GH+N (Material No.1.0425)

**Probable / Suggested Suppliers and Grades:**

Refer plant vendors list

**User Plants and Replaced Plant Specifications/References:**

- 1) HEP, BHOPAL : PS10140
- 2) HEEP, HARDWAR : 0640.202

COPYRIGHT AND CONFIDENTIAL  
 The information on this document 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.

CPS - 1052  
 14/01/20

**Revisions:**

|               |         |            |
|---------------|---------|------------|
| Rev No.17     | Amd No. | Reaffirmed |
| Dt:07-01-2020 | Dt:     | Year:      |

**APPROVED:**  
INTERPLANT MATERIAL RATIONALISATION  
COMMITTEE – MRC(S&GPS)

|                            |                    |   |
|----------------------------|--------------------|---|
| Prepared<br>HEEP, Haridwar | Issued<br>Corp.R&D | Dt. of 1 <sup>st</sup> Issue<br>August 1976 |
|----------------------------|--------------------|---|



## CORPORATE PURCHASING SPECIFICATION

AA10401

Rev No. 17

PAGE 1 of 2

### CARBON STEEL PLATES - INTERMEDIATE AND HIGH TEMPERATURE

#### 1 GENERAL:

This specification governs the quality requirements of Carbon Steel Plates for Intermediate and High temperature service.

#### 2 APPLICATION:

For intermediate and high temperature applications requiring welding, cutting and cold and hot flanging.

#### 3 CONDITION OF DELIVERY:

Plates above 12mm thick shall be supplied in the normalized or equivalent condition. Plates of 25mm and above thickness shall be ultrasonically tested.

#### 4 COMPLIANCE WITH NATIONAL/INTERNATIONAL STANDARDS:

Material shall comply with the requirements of IS: 2002 – 2009, Grade 2.

Material offered as per EN 10028 – 2:2017, Grade: P265GH+N (Material number 1.0425) is also acceptable.

#### 5 DIMENSIONS AND TOLERANCES:

##### 5.1 Sizes:

Material shall be supplied to the dimensions specified on BHEL order.

##### 5.2 Tolerances:

The tolerance on hot rolled plates shall comply with IS/ISO 7452 Class C or EN 10029, Class C.

#### 6 MANUFACTURE: -

Material shall be manufactured from killed steel having a Carbon Equivalent of 0.44 max (melt analysed).

#### 7 HEAT TREATMENT:

Plates above 12mm thick shall be normalized. Normalizing can be replaced by equivalent temperature control during and after hot rolling.

#### 8 TEST SAMPLES:

As per IS: 2002 or EN 10028 – 2 as applicable.

#### 9 ULTRASONIC TEST:

Plates 25mm and above are to be ultrasonically tested as per IS:4225/ASTM A435/ASTM A578, Level B.

Revisions:

APPROVED:

INTERPLANT MATERIAL RATIONALISATION  
COMMITTEE – MRC(S&GPS)

Rev No.17

Amd No.

Reaffirmed

Prepared  
HEEP, Haridwar

Issued  
Corp.R&D

Dt. of 1<sup>st</sup> Issue  
August 1976

Dt:07-01-2020

Dt:

Year:

COPYRIGHT AND CONFIDENTIAL  
The Information on this document 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.

cps - 1052 # 14/01/20

|             |   |  |
|-------------|---|--|
| AA10401     | <b>CORPORATE PURCHASING SPECIFICATION</b> |  |
| Rev No. 17  |   |  |
| PAGE 2 of 2 |   |  |

**10 FREEDOM FROM DEFECTS:**

Plates shall be cleanly rolled to the dimensions specified. The finished material shall be free from excessive segregation of impurities and cracks, surface flaws, laminations, rough, jagged & imperfect edges and internal & surface defects.

Slight scale or shell may, however, be removed by such means as chisel, file, buff or shot blast or other suitable means provided that the thickness of the material is nowhere reduced below the specified thickness. Hammer dressing, patching or welding of defects is prohibited.

**11 TEST CERTIFICATES:**

Unless otherwise specified on the order, three copies of test certificates shall be supplied.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

AA10401 Rev.17 / IS: 2002 Gr.2 or EN 10028 – 2, Gr: P265 GH+N

BHEL Order No.

Melt No., Size & Quantity,

Batch no. with heat treatment details,

Results of Chemical analysis, Mechanical test as per applicable grade and Ultrasonic tests.

Supplier's name, Identification No, TC No, Signature of competent authority, etc.

**12 PACKING AND MARKING:**

Plates shall be transported suitably to avoid damage during transit.

For plates below 10 mm thick, each pile (preferably of 16 plates) and each plate 10mm thick & above shall be marked with the suppliers Identification No, Melt No. AA10401, BHEL order no., Suppliers name, Size & weight, on any one corner and encircled with paint preferably of white colour.

**13 REFERRED STANDARDS (Latest publications including amendments):**

1. IS/ISO 7452      3) EN 10029      4) IS: 4225      5) ASTM A435      6) ASTM A578

CPS-1052-14/01/20