

Bharat Heavy Electricals Limited

Heavy Plates & Vessels Plant

Visakhapatnam – 530 012

Andhra Pradesh, INDIA

PAN - AAACB4146P, GST - 37AAACB4146P7Z8



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INVITATION TO TENDER

Ref: OS/25-26/DAPG/HDR/5619/09/009

Date: 09.08.2025

Sub: Manufacturing of Header components for Compact Heat Exchangers of LCA-Tejas Mk1A Aircraft against S.O. No. 5619 at Vendor works with free issue materials

Dear Sir,

Sealed tenders are invited for the subject job in **two-part bid** system from the **Vendors** who are experienced in execution of similar jobs **subject to the following eligibility criteria:**

1. ELIGIBILITY CRITERIA:

- (1) Bidder must have an experience in execution of similar jobs with strict dimensional compliance i.e. CNC Machining, Milling, Turning, Drilling, Precision Pressing etc., in Defence / Aero-space for Customers like ADA, BDL, DARE, DRDO, HAL, ISRO, Defence Forces etc., during the past 7 Years as on 31.07.2025. Bidders shall enclose Work Order, Work Completion Certificate and/or other relevant documents like Inspection Reports / Delivery Challans (duly acknowledged by Customer or Authorized Inspection Agency) in support of their experience in successful execution of similar jobs. The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.
- (2) Bidders must have requisite CNC facilities for Cutting, Drilling, Milling, Pressing, Surface Grinding operations etc., for machining & processing of high precision jobs and List of Machines & Facilities available with the bidder to be enclosed with the offer.
- (3) Bidder shall also enclose the documents of Registration of Firm/ Certificate of Incorporation/ Factory License, Udyam Registration (if registered with MSME), PAN & GSTIN Registration.
- (4) Any Bidder falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc., in support of the same along with their Techno-commercial offer.

Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)
Micro			
Small			

Note: Tick (✓) mark in the applicable box and mention "NA" wherever not applicable.

If the bidder does not furnish the above in the tender, offer shall be processed construing that the bidder is not falling under MSE category.

2. LOCATION OF WORK SPOT:

The subject work is to be carried out at **Vendor Works**.

3. VENDOR SCOPE OF WORK:

- a) Manufacturing of Header components for Compact Heat Exchangers which involves CNC Cutting, Machining, Milling, Turning, Drilling, Precision Pressing, Grinding etc., with free issue materials as per the applicable drawings, standards & specifications. The Details of the components to be manufactured are given in the Annexure-I.
- b) The raw materials required for Header tools to be arranged by the Vendor at their own cost. All the tools and dies shall be handed over to BHEL after successful completion of the order.
- c) The Raw materials as mentioned at Annexure-I which are required for fabrication of Header components shall be free issue by BHEL-HPVP. Free issue materials shall be collected within 3 days from the date of intimation by DAPG / Outsourcing dept. without any failure.
- d) Headers are to be formed without weld joints.
- e) Cold Air Inlet duct at SOQ Sl. no. 11 shall be formed in two pieces and to be matched to fulfill the drawing requirement.
- f) All the manufactured components shall conform to the dimension/standards mentioned in respective drawings.

- g) Flatness / Tolerance (Angular/Linear/Positional) / Surface Finish to be maintained strictly as per the drawings. All sharp corners to be rounded off.
- h) The manufactured components shall be free from burrs and surface marks.
- i) Dimensions and Run outs to be ensured by tools.
- j) Tolerances indicated are non-cumulative.
- k) Engraving of equipment details e.g., 1) Manufacturer, 2) Part number, 3) Heat Number
- l) All the required tools to be arranged by the Vendor at their own cost.
- m) Vendors shall have to strictly follow the dimensions and tolerances mentioned in the drawings.
- n) Calibrated Surface Table, Digital measuring instruments like Vernier Calipers, Height Gauges, Go - No Go Thread Gauges, Radius Gauges etc., shall be made available for inspection of finished components.
- o) The finished components shall be securely packed in suitable lots and are to be delivered by the vendor to Manager (DAPG), BHEL-HPVP, Visakhapatnam on door delivery basis.
- p) Any modification work due to revision of drawings during manufacturing is to be carried out by the vendor without any extra cost. Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of work of vendor without any price implication.

4. TRANSPORTATION:

Collection & Transportation of free issue raw materials from BHEL - HPVP, Visakhapatnam to Vendor works and Transportation of Finished items along with Header Tools from Vendor works to DAPG Dept., BHEL – HPVP, Visakhapatnam is in Vendor's scope.

5. BHEL SCOPE:

The following shall be provided by BHEL:

- a) Issue of applicable Drawings & reference Documents, if any.
- b) Free issue raw materials at BHEL-HPVP, Visakhapatnam
- c) Cutting and Welding of Joints wherever applicable as shown in the respective drawings

6. INSPECTION:

Pre-dispatch inspection shall be carried out at Vendor works by M/s BHEL - HPVP (QC) and / or by BHEL appointed TPI agency / Customer. Instruments required for inspection of finished components are to be arranged by the vendor along with the calibration certificates. All the documentation related to inspection such as BHEL / TPI / Customer Clearance, Generation of Inspection Reports, Preparation of Final Documents as per BHEL standard formats etc., is in the scope of vendor and soft copy as well as hard copy of the same are to be submitted to BHEL-QA.

7. DELIVERY:

Finished components along with relevant inspection documents and all other certificates are to be delivered to Manager (DAPG Dept.), BHEL-HPVP, Visakhapatnam within **90 Days** from the date of issue of free issue raw materials at BHEL - HPVP, Visakhapatnam.

Note:

- a) In case the delivery period offered by the vendor is more than the tender delivery, Price quoted by the bidder shall be loaded for the additional delivery period @ 0.5 % per week or part thereof for the purpose of evaluation of Bidder Status.
- b) The delivery period will be calculated from the date of issue of Raw materials at BHEL-HPVP, Visakhapatnam to the date of receipt of finished items and Header Tools at DAPG dept., BHEL – HPVP Visakhapatnam against respective components. Date of issue and date of receipt will be considered for computation of delivery period.

8. PRICE:

- a) The price shall be quoted in the **Price Bid** as per the Schedule of Quantities & Rates for the detailed scope of work and the quoted price shall be inclusive of all applicable taxes & duties except GST.
- b) **Part quotation is not acceptable and such offers shall be rejected.** All the components are to be quoted.
- c) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- d) Income tax shall be deducted at applicable rates from the vendor's bills. GST shall be reimbursable to the vendor as per applicable guidelines.

9. GOODS & SERVICES TAX (GST):

Bidders shall make a note of the following points of GST before submission of their offer:

- a) Vendors shall have to mention their GSTIN no. (15 Digits) in their Technical Bid. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering their offer.
- b) Semi-finished goods are to be delivered by the Vendors in BHEL, HPVP premises within a maximum period of one year from the date of issue of the material, failing which the whole transaction will be considered as Supply and Sale and GST is required to be paid along with interest (calculated @ SBI Base Rate + 6%) along with penalty, if any, from the date of Challan on the whole value of materials. Hence vendors shall have to ensure that materials issued to them are returned within 365 days.
- c) After fabrication, the vendors shall have to deliver the Semi-Finished Goods by fulfilling the following formalities:
 - i) GST invoice should be raised by the vendors by paying GST on job work charges at applicable rates and by incorporating the HPVP GSTIN no. in the invoice for availing the reimbursement of GST from HPVP.
 - ii) The vendor shall also have to enter in their GST Return -1 (GSTR-1) the details of invoice raised for payment of GST so as to enable HPVP to avail input credit.

10. REVERSE AUCTION:

BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the eligible techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V. Refer Guidelines for Reverse Auction which are available on our website, www.bhel.com → supplier registration → Guidelines for Reverse Auction, before submission of their offer.

Sealed envelope / Electronic Price bids of all the techno-commercially qualified bidders shall be opened and the same shall be considered as initial bids of the bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope / Electronic price bid along with applicable loading, if any, shall be considered for ranking.

BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding. The bidders participating in the Reverse Auction shall have to necessarily submit '**Process Compliance Form**' (PCF) to the designated Service Provider.

Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

11. VALIDITY OF OFFER:

The offer shall be valid for a period of **3 months** from the date of Reverse Auction.

12. RISK PURCHASE:

In case the contractor fails to execute the work within the scheduled time or due to any other reasons, BHEL – HPVP reserves the right to get the same completed through some other party at the risk & cost of the contractor and any additional expenditure incurred due to the same shall be charged to the contractor. Non-performance of contractor attracts penal provisions in line with BHEL Guidelines for Suspension of Business Dealings.

13. GENERAL:

- a) The bidder shall study the Tender documents, Drawings, Quality Documents and all other relevant documents in detail for understanding the scope of work and the processes involved before submission of offer. Bidder shall get clarifications, if any, from concerned officials on the scope of work (or) any other details of the tender document, over phone between 09:00 AM and 04:00 PM on any working day or through e-mail.
- b) Drawings, Clarifications, other reference documents etc., shall be sent to the bidder's e-mail address upon their written / e-mail request.
- c) **Conditional / Partial Price Bids** and any other deviations to the tender terms & conditions are not acceptable and BHEL reserves the right to reject such offer without further correspondence. Bidder shall confirm their acceptance to all the terms & conditions of the tender enquiry in the Techno-commercial Bids.
- d) BHEL reserves the right to modify or cancel the tender enquiry at any stage without assigning any reasons thereof.

- e) The General Terms & Conditions, if any, contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.
- f) Other Terms & Conditions, whichever are applicable, shall be as per Annexure – III enclosed.
14. The following documents shall form part of the tender enquiry including this Notice Inviting Tender:

PART - 1: TECHNO-COMMERCIAL BID

- a) Schedule of Quantities : Annexure - I
- b) AS9100 Guidelines for Machining Components : Annexure - II
- c) General Terms & Conditions : Annexure - III
- d) Acceptance to Tender terms & conditions : Annexure - IV
- e) Business Rules for Reverse Auction : Annexure - V
- f) GST Compliance for Indigenous Suppliers : Annexure - GST
- g) Drawings

PART - 2: PRICE BID

- h) Price Bid (Schedule of Quantities & Rates)

15. TENDER SUBMISSION (Through e-Procurement system):

- a) The tender completed in all respects shall be submitted in **Two parts** (Techno-commercial bid and Price Bid) through online e-procurement portal (<https://eprocurebhel.co.in>) latest by **13:00 Hrs. on 20.08.2025**.

Note: Techno-commercial bid along with all the tender documents shall be duly signed & stamped by the bidder on all pages.

- b) Submission of offer by the bidder implies that all the tender documents were read by the bidder and the bidder is aware of the scope and specifications of the job.

c) OFFERS SENT IN ANY OTHER FORM WILL BE TREATED AS INVALID AND WILL BE SUMMARILY REJECTED.

16. TENDER OPENING:

- a) Techno-commercial Bids will be opened on **20.08.2025 at 15:00 Hrs.** in online e-procurement portal.
- b) After evaluation of the Techno-commercial Bids, intimation regarding date & procedure of conducting Reverse Auction shall be given by the service provider to all the eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,

[Signature]
09/08/2025
D. N. MURTHY
Manager (OS)
Bharat Heavy Electricals Ltd
BVP Visakhapatnam-530 011

SCHEDULE OF QUANTITIES

Tender Enquiry Ref: OS/25-26/DAPG/HDR/5619/09/009

Date: 09.08.2025

Sub: Manufacturing of Headers components for Compact Heat Exchangers of LCA-Tejas Mk1A Aircraft against S.O. No. 5619 at Vendor works with free issue materials

Sl. No.	Part No.	Description of Item	Drawing No. & Rev. No.	Raw Material Size & Specn.	Total Qty. (No.)
1	101	Bleed Air In/Out Header	RD-41015301-P-101, Rev 1	1.6 mm Thk MDN 347 A Sheet	114
2	107	Charge Air In/Out Header	RD-41013905-P-107, Rev 3	1.6 mm Thk MDN 347 A Sheet	162
3	113	Charge Air Return Header	RD-41013905-P-113, Rev 3	1.6 mm Thk MDN 347 A Sheet	80
4	107	Charge Air In/Out Header	RD-41011201-P-107, Rev 3	3 mm Thk AA 5083 Sheet	82
5	109	Charge Air Return Header	RD-41011201-P-109, Rev 3	3 mm Thk AA 5083 Sheet	41
6	115	F T P Air I/O Header	RD-41011201-P-115, Rev 3	3 mm Thk AA 5083 Sheet	82
7	117	F T P Air Return header	RD-41011201-P-117, Rev 3	3 mm Thk AA 5083 Sheet	41
8	120	Return Header R.F. Pad	RD-41011201-P-120, Rev 2	3 mm Thk AA 5083 Sheet	41
9	102	Cold Air In/Out Header	RD-41013909-P-102, Rev 3	3 mm Thk AA 5083 Sheet	72
10	105	Hot Air Inlet Header	RD-41013909-P-105, Rev 2	3 mm Thk AA 5083 Sheet	72
11	102	Cold Air Inlet duct	RD-410113907-P-102, Rev 2	3 mm Thk AA 5083 Sheet	96
12	104	Cold Air Exit Header	RD-410113907-P-104, Rev 3	3 mm Thk AA 5083 Sheet	88
13	106	Hot Air inlet/Outlet Header	RD-410113907-P-106, Rev 3	3 mm Thk AA 5083 Sheet	176
14	103	Fuel Inlet Header-Hyd	RD-410113911-P-103, Rev 2	3 mm Thk AA 5083 Sheet	106
15	104	Fuel Return Header	RD-410113911-P-104, Rev 3	3 mm Thk AA 5083 Sheet	106
16	105	Fuel Outlet Header-IDG	RD-410113911-P-105, Rev 3	3 mm Thk AA 5083 Sheet	106
17	106	Hyd oil Inlet/Outlet header	RD-410113911-P-106, Rev 2	4.76 mm Thk AA 6061 Sheet	200
18	107	IDG oil Inlet/Outlet Header	RD-410113911-P-107, Rev 2	3 mm Thk AA 5083 Sheet	200
19	103	Fuel Inlet Header-GBX	RD-410113912-P-103, Rev 3	3 mm Thk AA 5083 Sheet	100
20	104	Fuel Return Header	RD-410113912-P-104, Rev 3	3 mm Thk AA 5083 Sheet	100
21	105	Fuel Outlet Header-Hyd	RD-410113912-P-105, Rev 3	3 mm Thk AA 5083 Sheet	100
22	106	GBX oil Inlet/Outlet header	RD-410113912-P-106, Rev 3	3 mm Thk AA 5083 Sheet	200
23	107	HYD oil Inlet/Outlet Header	RD-410113912-P-107, Rev 2	4.76 mm Thk AA 6061 Sheet	200
24	--	Tools (Punch & Die) for Headers mentioned at Sl. nos. 1 to 23	Respective component drawings	Vendor's scope	23
		Total			2588

Notes:

- L1 status shall be evaluated based on the total quoted value.**
- The quantity indicated above is tentative and may vary slightly subject to the requirement at the time of ordering / execution. However, payment shall be made for the actual quantity only.
- The quoted price shall be inclusive of all applicable taxes & duties **except GST** and Income tax will be deducted from Vendor's bills at applicable rates. However, GST shall be reimbursed by BHEL on submission of proof of GST payment.
- The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.
- The bidders are advised to go through all the drawings & documents before quoting the tender.
- The evaluation currency for this tender shall be **INR**.

Signature of the Bidder with Stamp

Terms & Conditions to Comply AS9100 Guidelines for Machining Components

1. THE SUPPLIER SHOULD HAVE A QUALITY MANAGEMENT SYSTEM.
2. SUPPLIER SHOULD PREVENT USE OF COUNTERFEIT PARTS.
3. SUPPLIER SHALL NOTIFY BHEL OF ANY PRODUCT, PROCESS OR SERVICE CHANGE INCLUDING CHANGES MADE BY THEIR SUPPLIERS OR CHANGE IN LOCATION OF MANUFACTURE AND OBTAIN APPROVAL.
4. SUPPLIER SHALL FLOW DOWN TO THEIR SUPPLY CHAIN TO IMPLEMENT REQUIREMENTS OF BHEL BY SHARING THE SPECIFICATION
5. RETENTION PERIOD OF ALL RECORDS SHALL BE 10 YEARS.
6. SUPPLIER SHALL KEEP RECORDS OF ALL INTERACTION WITH BHEL.
7. SUPPLIER SHALL ENSURE AWARENESS OF THE FOLLOWING TO ALL THE PEOPLE AT SUPPLIER PREMISES:
 - a) CONTRIBUTING TO PRODUCT OR SERVICE CONFORMITY
 - b) CONTRIBUTING TO PRODUCT SAFETY
 - c) IMPORTANCE OF ETHICAL BEHAVIOUR

Signature of the Bidder with Stamp

GENERAL TERMS & CONDITIONS**1. TECHNICAL DELIVERY CONDITIONS:**

The work should conform to the technical data given in our drawings, GMS, Shipping List Specifications, QAP, WPS etc.

2. PARTY'S SCOPE:

The scope of the party shall be as follows: -

- a) All welding equipments, baking oven, tools, jigs and fixtures, measuring instruments duly calibrated, handling facilities, testing facilities etc.
- b) All materials other than those mentioned under "Free Issue Materials", which are required for completion of the work.
- c) All consumables such as electrodes, gases, grinding wheels etc.

Note: Electrodes of specification mentioned in the drawings / WPS and of BHEL approved brands only shall be used and MTCs of the same shall be submitted to BHEL for verification before use.

3. REVISION OF DRAWINGS:

There may be minor changes in the drawings during execution. In such a case, party should accommodate the same without any extra claim.

4. WELDING QUALIFICATION: Qualification of required number of Welders is party's responsibility at their cost.**5. X-RAY:**

All welding shall be of X-ray quality where specified on drawings. Inspection would specify the quantum of X-ray based on drawings / code requirement. Party should strictly follow the WPS and QAP issued by BHEL during welding. Getting the welds radiographed and getting them cleared by inspection is the responsibility of the party.

6. RECTIFICATIONS / REJECTIONS:

Any rectification due to defective work, if required, shall be done by the party free of charge with a suitable technology approved before hand by BHEL in writing. The cost of material, if any used for rectification work / rejection work, will be estimated by BHEL and the same shall be debited to party's account. In case any rectification / rework is to be carried out due to defective material supplied by BHEL, the replacement material and consumables will be supplied by BHEL free of Cost.

7. SECURITY DEPOSIT:

- a) Vendors shall have to submit a Bank Guarantee for **25%** of the material cost towards Security Deposit and safe custody of free issue materials within 15 days from the date of intimation by Outsourcing dept. The BG shall be valid for the entire contract period with a claim period of 12 months. This Bank Guarantee shall be released to the contractor after completion of work and on acceptance of the same by BHEL. Bidder agrees to submit performance security required for execution of the contract within the time period mentioned above. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT/contract, from the bills along with due interest.

- b) **MODE OF DEPOSIT:** Security Deposit 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 Contractor, a/c BHEL).
- 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).

8. PERFORMANCE BANK GUARANTEE:

Vendors shall have to submit Performance Bank Guarantee (claim period of 12 months) for 10% of the order value covering for the defects liability period. If PBG is not submitted, 10% of the order value shall be deducted towards PBG from the final bill and shall be refundable after performance guarantee period, if no defects are found during this period.

9. RAW MATERIALS ISSUE:

Raw materials shall be issued with appropriate processing allowance and invisible wastage over the theoretical requirement of raw materials (**Plates, Sheets, Sections and Pipes**).

10. TRANSFER / RETURN OF LEFT OVER MATERIALS:

Party should maintain proper records for receipt & use of all free issue materials. The left over materials & scrap as per the material accounting statement shall be returned to HPVP stores along with finished job. Material Transfer Vouchers (MTV) from one order to another or from one vendor to another and Material Return Vouchers should be submitted immediately after transfer / return. The material reconciliation statement shall be submitted by the contractor after verification and certification by BHEL along with the final bill **within 30 days from the date of completion of work**. Otherwise, recovery for the balance materials shall be made from any of their pending bills without further intimation.

11. MATERIAL RECONCILIATION:

Cutting & Process Allowance: Maximum of 10% on the requirement of materials (**Sheets, Plates, and Rods**) is admitted towards **cutting & process allowance and invisible wastage**.

Rejection: Maximum 5% of rejection is allowed, rejected component shall also be supplied to BHEL, failing which material cost for the rejected components shall be recovered by BHEL from vendor bills. Quantity of rejected components shall be replaced with acceptable quantity without any extra cost.

Milling & Machining Scrap: Quantity of scrap generated from Milling & Machining shall be as per applicable drawings. However, quantity of scrap shall be approved by BHEL at the time of material reconciliation. Milling & Machining scrap shall be returned to BHEL at the time of Final bill submission.

If rejection and scrap is beyond above limits / applicable drawing requirements, it should be fully justified with cutting diagrams etc., which are to be approved in advance by BHEL. **Otherwise, the cost of raw materials beyond approved limits will be recovered from the contractor bills as per BHEL recovery rates including applicable taxes & duties.**

Material reconciliation including return of balance materials, off-cuts and scrap is to be completed within 20 days from the date of completion of the order. The material reconciliation statement shall be submitted by the contractor after verification and certification by BHEL-HPVP along with the final bill **within 30 days from the date of completion of work**. Otherwise, recovery for the balance materials shall be made from any of their pending bills without further intimation.

Repeated occurrence of inordinate delays in returning and settling the material accounting will entail BHEL the right to terminate the contract forthwith or impose a temporary suspension on further loading at the discretion of BHEL.

12. SCRAP & OFF-CUT NORMS:

Sl. No.	Description	Scrap Size (in mm)	Off-Cut (in MM)
1.	MDN & Aluminium Sheets & Plates	Below 50 × 50	50 × 50 & above
2.	Rolled sections Rod, angles etc. (other than -tubes, pipes)	Below 50 mm length	50 & above
3.	Tubes & Pipes	Below 40	40 & above

Note: Scrap & Off-cut mentioned above should be returned to BHEL and the same should be part of material reconciliation.

Minimum 80% of the material issued should be returned back to BHEL in the form of finished component, off-cut & scrap.

13. INSPECTION:

Party shall contact our Quality Control Dept. for stages of inspection before commencement of job and should strictly follow the stages of inspection as per QAP.

14. WORKMANSHIP GUARANTEE:

The vendors should give workmanship guarantee for fabricated items for a period of 18 months from the date of last delivery of the order. Any defects due to incomplete work, faulty workmanship found in the fabricated items after delivery during the defects liability period shall be rectified / replaced by the vendor free of cost. Otherwise, the expenditure incurred towards the same will be recovered from the pending bills of vendors.

15. WORK PROGRESS:

The fabricator shall furnish a weekly report on the progress of work along with the status of availability of free issue materials and requirement of further materials, if any.

Outsourcing dept. personnel will visit vendor's works from time to time to assess and review the work progress. Free access shall be provided to BHEL or its inspection agency at all reasonable times of the day / night.

In case the progress is not satisfactory or supplies are delayed abnormally beyond the contractual delivery date, BHEL-HPVP, Visakhapatnam reserves the right to cancel the order in part or full or get the balance job in as is where is condition completed elsewhere by another agency at the risk and cost of Fabricator. The value of the work carried out by the party will be assessed by BHEL and the same shall be final. No compensation will be given to the fabricator in case of cancellation of order or diversion of balance job even if the jobs have been processed partly.

16. DELIVERY:

Finished items should be handed over to BHEL-HPVP on party's delivery challans along with Job completion certificate / Final Inspection Report from inspection agency / HPVP-QC department.

17. PENALTY:

Penalty calculations will be done on DU wise (Dispatchable Unit) delivery. If delivery exceeds the stipulated delivery schedule, penalty @ 1/2 % of the value of each DU per week (or) part thereof subject to a maximum of 10% of the value of each DU will be levied. However, time taken for the following will not be considered as delay on the part of the Sub-Contractor.

- 1) Intermediate operations, if any, carried out by BHEL.
- 2) Waiting time for BHEL / Third party Inspection beyond a normal time of 3 days.

18. PAYMENT TERMS:

Payment shall be made against RA Bills within 45 days for MSE (Micro & Small Enterprise), 60 days for Medium Enterprise and 90 days for non-MSEs from the date of submission of Bill.

90% payment will be made after handing over of the finished items along with all inspection documents to BHEL-HPVP, DAPG Dept. duly inspected & cleared by Inspection authority. Balance 10% payment shall be made along with the Final Bill against completion of total order in all respects including documentation.

Vendors shall have to submit the bills in the formats specified by HPVP-Outsourcing and the bills submitted in the specified format along with necessary supporting documents are only admitted for processing. The following documents shall be submitted along with the Final Bill: -

1. No Claim Certificate from the contractor
2. No Dues Certificate from BHEL
3. Work Completion Certificate from BHEL
4. Material Reconciliation Statement submitted by the Contractor and certified by concerned authority of BHEL (if applicable)
5. Workmanship Guarantee certificate from the contractor

19. SECRECY:

All the documents of BHEL inclusive of Drawings, GMS and Standards made available to the fabricator should be kept in strict confidence and under no circumstance be made available to others or allow others to make use of them. Such documents shall be returned to BHEL on demand after completion of the job. This secrecy clause is binding on the employees of the fabricators also. Violation of the same may lead to suspension of business with the vendor and necessary legal action.

20. SUB-LETTING:

In general, sub-letting of jobs will not be permitted. But in special circumstances, this may be allowed. In such case, the party should obtain written approval from BHEL-HPVP, Visakhapatnam before sub-letting.

21. FACTORY RULES AND REGULATIONS:

Party shall abide by all the rules and statutory regulations in force from time to time as per factories act. It shall be party's responsibility to ensure the safety of their workmen and fulfilling the ESI, PF and other relevant statutory regulations.

22. SAFETY:

- a) Contractor shall adhere to safe construction practices, guard against hazardous & unsafe working conditions and shall comply with the safety rules of BHEL and local authorities. He shall maintain First Aid facilities for all his employees and labour. Contractor's responsibility includes supply of welder kit, all safety items such as safety belts, white and colour glasses, goggles, safety helmets, safety shoes etc.
- b) Contractor and his employees shall follow all fire & safety, security regulations of BHEL.

23. HOUSE KEEPING:

During execution of work, the contractor at all times keep the working place and storage area clean and free from accumulation of waste materials, rubbish etc.,

24. ACCIDENT / DAMAGE / CONDUCT ETC.:

Contractor will be held responsible for any disorderly conduct / misconduct, indiscipline, theft, smoking etc., on the part of his men. He will ensure summarily eviction of such men from his premises failing which BHEL would remove them from the factory on his responsibility. Any damage to and or loss of equipment, machinery, building etc., to BHEL or BHEL employees, visitors or other contractors resulting from his own or any of his men's negligence shall be liable to be made good by him. Contractor shall be solely responsible for any accident in which you or your men or your equipment may be involved during the execution of contract on account of any reason what so ever.

25. TERMINATION OF CONTRACT:

In the event of any failure on the part of the contractor, BHEL reserves the right to terminate the contract by giving a notice of 2 weeks for any of the following lapses and contractual violations: -

- a) Failure to make labour payments in time as per the rules
- b) Failure to progress the job according to the agreed schedule
- c) Failure to mobilize adequate man power, tools & tackles and consumables in time
- d) Failure to adhere to Quality Standards of BHEL
- e) Refused to co-operate with other agencies working in the same area
- f) Failure to resolve labour disputes like strikes etc., within 7 days of occurrence
- g) Failure to comply with statutory regulations applicable at BHEL

BHEL shall also be free to intervene and take necessary remedial measures. All costs incurred with interest and overheads shall be recovered from contractor by such foreclosing or off-loading any part of the contract work.

26. CONFLICT OF INTEREST AMONG BIDDERS / AGENTS:

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:

- a) they have controlling partner (s) in common; **or**
- b) they receive or have received any direct or indirect subsidy / financial stake from any of them; **or**
- c) they have the same legal representative / agent for purposes of this bid; **or**
- 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**
- 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**
- 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,
- 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 sisters' common business/ management units in same/ similar line of business".

27. TAXES & DUTIES:

- a) BOCW Cess if applicable is to be paid by Contractor.
- b) In addition to existing taxes, any new taxes, cess, duties, levies imposed by Central/ State Govt. shall be borne by the contractor.
- b) In case, any new tax is imposed instead of existing tax, difference of the amount shall be reimbursed/ recovered on submission of documentary evidence.
- c) Any new tax is imposed by Central/ State Govt. (or) there is any variation in taxes after expiry of delivery / contract period, the same shall be borne by contractor only.
- d) All terms & conditions of the contract in respect of taxes & duties are subject to new taxation laws introduced from time to time by Govt. and Terms & conditions will deemed to be modified in accordance with the provisions of New Laws.

28. CONTRACTOR'S MATERIAL:

Security of Contractor's Equipment, Tools & Tackles, Machinery etc., is in the scope of Contractor. BHEL is not responsible for the same.

29. RETURNING OF BHEL MATERIAL:

All Materials, machinery, equipment etc., of BHEL sent to site from BHEL-HPVP for execution of the Order are to be returned back to BHEL by the Contractor.

30. OVER RUN COMPENSATION (ORC) / IDLE CHARGES:

The contractor shall not be entitled to claim and the company shall not be liable to pay any amount on account of overrun compensation and idle charges, the overrun/ idling may be for whatsoever reasons.

31. DISPUTES:

Head of BHEL- HPVP Unit will be the final authority for any disputes arising out of this contract. The disputes / arbitration / settlement of contractual or legal issues shall be under the Jurisdiction of Visakhapatnam Court.

- 32.** For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of Contract / PO / WO against this NIT.

In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and / or local content in respect of this procurement, same shall be applicable.

- 33.** 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 extant policies/ guidelines.

34. ORDER ACCEPTANCE:

If the order acceptance is not received within 03 days from the date of release of Sub-contract order, it shall be assumed that the same has been accepted by you thereof.

Signature of the Bidder with Stamp

Acceptance to Tender Terms & Conditions

I / We hereby confirm that the Tender documents, Drawings, Quality documents etc. have been studied in detail and we have fully understood the scope of work.

I / We accept to all the Terms and Conditions of the Tender Enquiry and the prices quoted are in accordance with the same.

I / We give our acceptance to participate in Reverse Auction for this tender.

Tender documents duly signed on all the pages by the Owner / authorized representative of the bidder are attached herewith.

Signature of the bidder with Stamp

BUSINESS RULES FOR REVERSE AUCTION (RA)

This has reference to tender no. **OS/25-26/DAPG/HDR/5619/09/009, dated 09.08.2025**. BHEL shall finalise the Rates for **Manufacturing of Headers components for Compact Heat Exchangers of LCA-Tejas Mk1A Aircraft against S.O. No. 5619 at Vendor works with free issue materials** through Reverse Auction mode. BHEL has made arrangement with an authorized Service provider (details will be shared before reverse auction) for conducting RA. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enquiry No. **OS/25-26/DAPG/HDR/5619/09/009, dated 09.08.2025**, (b) Bidders' technical & commercial bid (in case of two-part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning:

- i) Price bids of all techno-commercially qualified bidders shall be opened.
- ii) **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii) The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv) Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v) After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi) Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

2. Schedule for reverse auction: The Reverse Auction schedule will be intimated to the techno-commercially qualified bidders at a later stage.

3. Auction extension time: If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes, for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc. The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

4. Bid price: The Bidder has to quote the {...} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).

5. Bidding currency and unit of measurement: Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications mentioned in the tender.

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for 90 days from the date of reverse auction. These shall not be subjected to any change whatsoever.
7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction.
Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
11. Reverse auction shall be conducted by BHEL (through M/s {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {Service provider} is responsible for such eventualities.

12. Proxy bids: Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

13. Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc. from M/s. {Service provider}.

14. M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.
15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. **OS/25-26/DAPG/HDR/5619/09/009, dated 09.08.2025**. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.
21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com)*, shall be initiated by BHEL.

Signature of the Bidder with Stamp

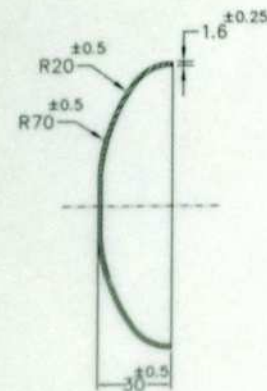
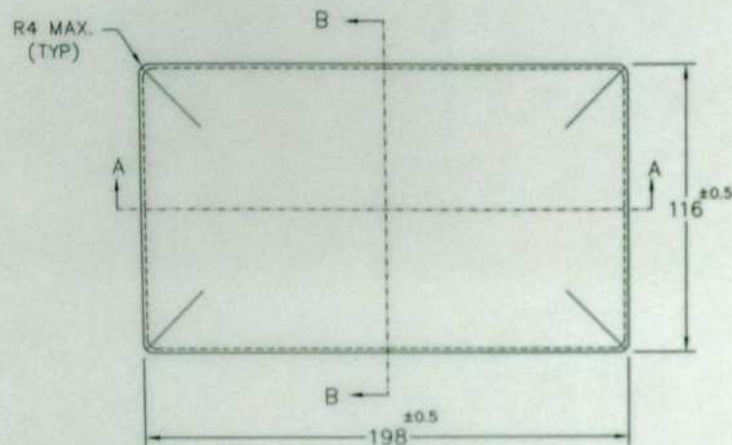
GST COMPLIANCE FOR INDIGENOUS SUPPLIERS

1. In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GSTIN which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
2. Supplier shall mention their GSTIN in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.
3. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).
4. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.
5. All documents like Test Certificate, LR copy, Guarantee/Warrantee certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment where ever applicable. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.
6. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.
7. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.
8. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.
9. This is to inform that GST portion of invoice, shall be released only upon Vendor declaring such invoice in his GSTR-1 and receipt of goods and Tax invoice by BHEL and Confirmation of payment of GST thereon by vendor on GSTN portal. Alternatively, BG of appropriate value may be obtained from vendor which shall be valid At least one month after the confirmation of date of payment of GST by vendor on GSTN portal and receipt of Tax invoice and receipt of goods, whichever is later. Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.
10. That in case vendor 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 as per GST law shall be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

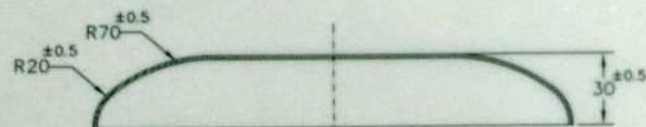
Note: The above will be followed strictly for processing vendor payments to ensure GST Compliance.

DRAWING NOT TO BE SCALED

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



SECTION-BB



SECTION-AA

101	BLEED AIR I/O HEADER	2	MDN 347A	0.80
P.No.	DESCRIPTION	QTY.	MATERIAL	WT(KG)



BHARAT HEAVY PLATE & VESSELS LTD.

(A Subsidiary of Bharat Yantra Nigam Limited)
VISAKHAPATNAM - 530 012 (A.P.)

DRN	28.03.05	RESEARCH & DEVELOPMENT				
CHD	29-03-05	CUSTOMER : ADA, BANGALORE				
APPROVED	29.03.05	PRECOOLER BLEED AIR I/O HEADER				
SCALE	NTS					
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		WORK ORDER NO :		NO OFF:		
		YEAR OF ORDER	SIZE	DRAWING No.		REV
		2004	A3	RD-41015301-P-101		1

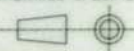
REF. DRG.

RD-41015301-A-100

1 --- MATERIAL SPECIFICATION REVISED.

REV.NO ZONE BRIEF RECORD

PPD CHD APD



8

7

6

5

4

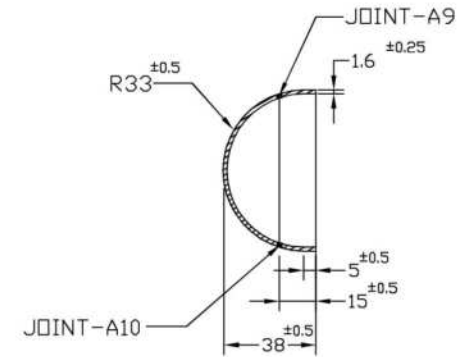
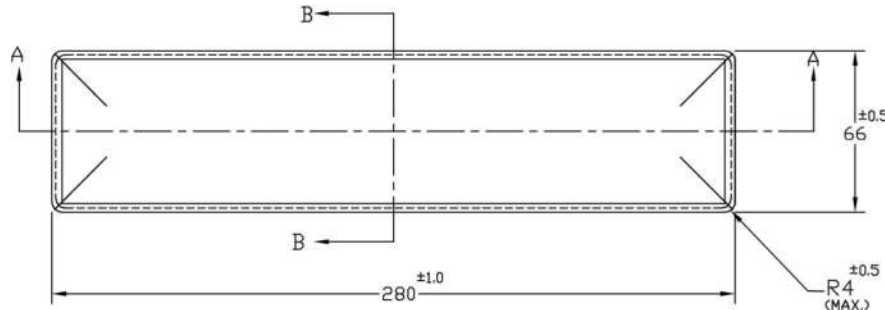
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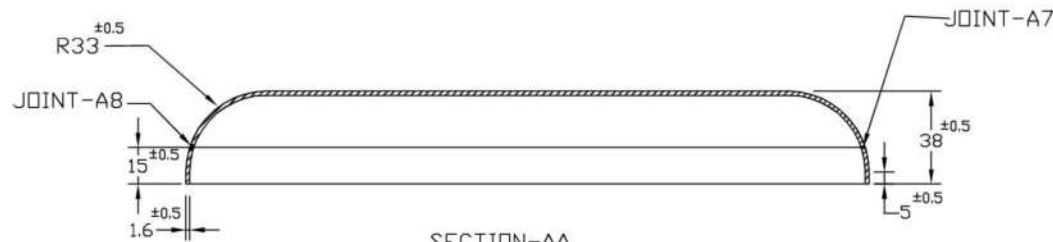
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DRAWING NOT TO BE SCALED

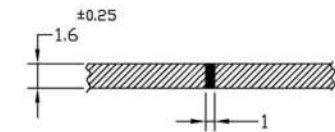
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



SECTION-BB



SECTION-AA



DETAILS OF JOINTS - A7, A8, A9, A10

107	CHARGE AIR I/O HEADER	2	MDN 347A	0.9
P.No.	DESCRIPTION	QTY.	MATERIAL	WT(KG)

BHARAT HEAVY PLATE & VESSELS LTD.

(A Subsidiary of Bharat Yantra Nigam Limited)

VISAKHAPATNAM – 530 012 (A.P.)

DRN		RESEARCH & DEVELOPMENT		
CHD		CUSTOMER : ADA, BANGALORE		
APPROVED		PRIMARY HEAT EXCHANGER		
SCALE	1:2	<u>CHARGE AIR I / O HEADER</u>		
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		WORK ORDER NO :		NO OFF:
		YEAR OF ORDER	SIZE	DRAWING No.
		1996	A3	RD-41013905-P-107
				3

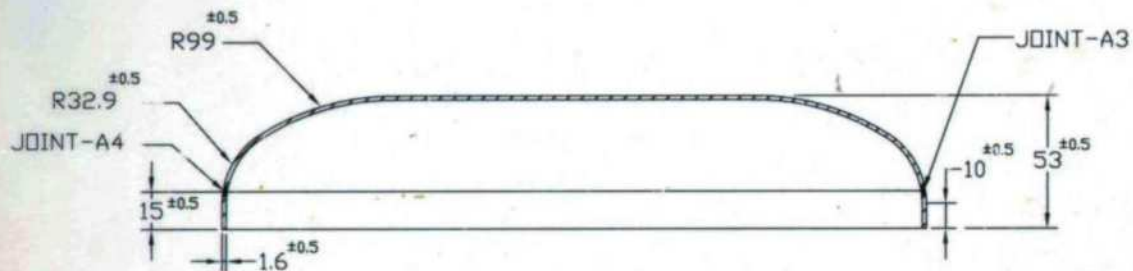
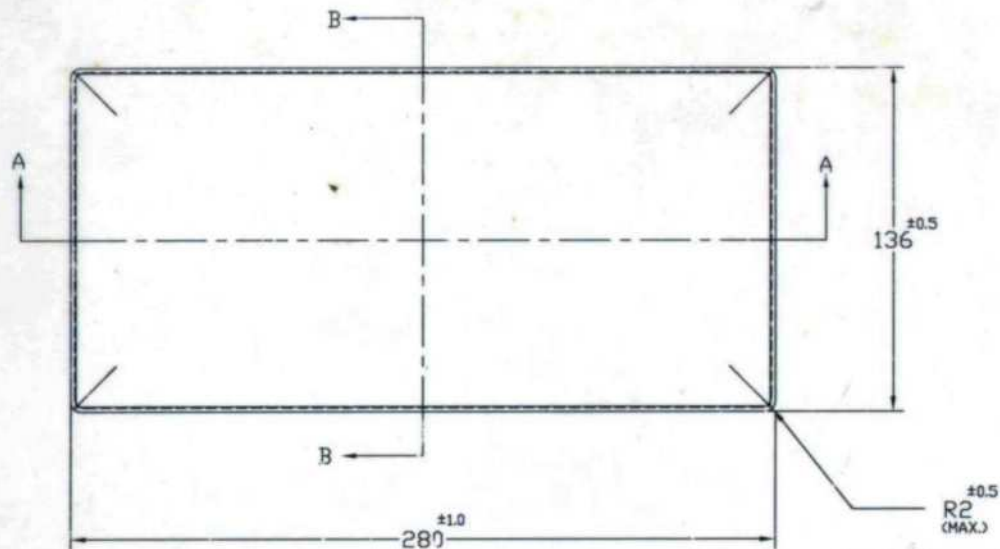
REF. DRG.

RD-41013905-A-100

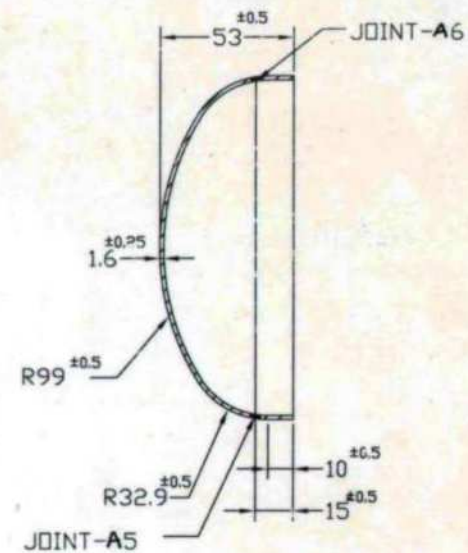
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2	---	INCORPORATED DETAILS NOT SHOWN EARLIER	KSSR	AP	AP
1	B1-B2	MATRL.SPEC. REVISED & WT ADDED	KSSR	AP	AP
REV.NO	ZONE	BRIEF RECORD	PPD	CHD	APD

DRAWING NOT TO BE SCALED

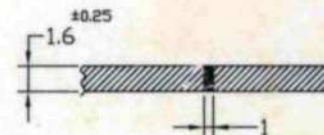
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



SECTION-AA



SECTION-BB



DETAILS OF JOINTS-A3,A4,A5,A6

113	CHARGE AIR RETURN HEADER	1	MDN 347A	0.80
P.No.	DESCRIPTION	QTY.	MATERIAL	WT(KG)



BHARAT HEAVY PLATE & VESSELS LTD.

(A Subsidiary of Bharat Yantra Nigam Limited)
VISAKHAPATNAM - 530 012 (A.P.)

DRN	B. Uma 15/10/98	RESEARCH & DEVELOPMENT		
CHD	U. S. R.	CUSTOMER : ADA, BANGALORE		
APPROVED	A. S. R.	PRIMARY HEAT EXCHANGER		
SCALE	1 : 2	CHARGE AIR RETURN HEADER		
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		WORK ORDER NO :	NO OFF:	
YEAR OF ORDER		SIZE	DRAWING No.	REV
1996		A3	RD-41013905-P-113	3

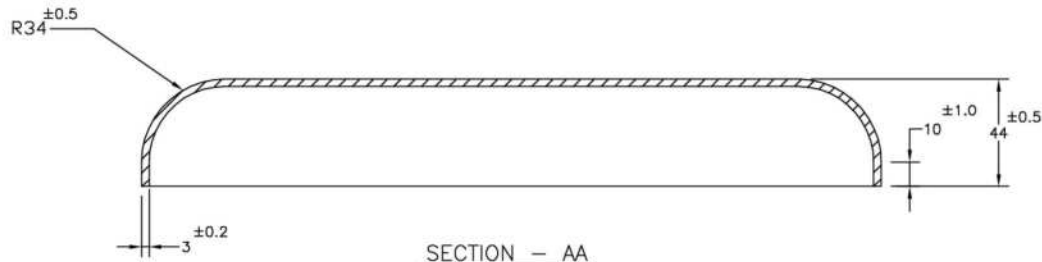
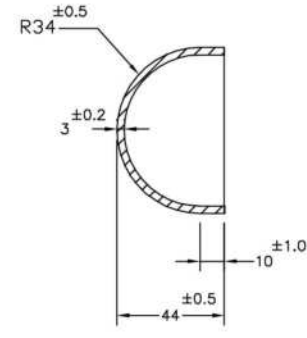
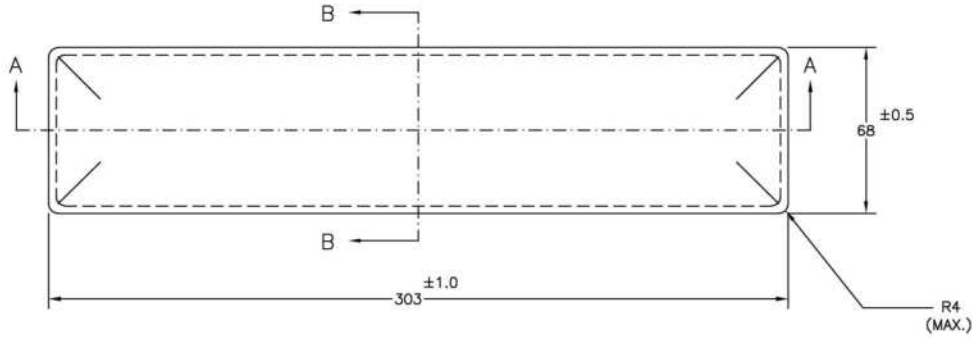
REF. DRG.

RD-41013905-A-100

REV.NO	ZONE	BRIEF RECORD	PPD	CHD	APD
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2	---	INCORPORATED DETAILS NOT SHOWN EARLIER	KSSR	AP	AP
1	BI-B3	MATRL.SPEC. REVISED & WT ADDED	KSSR	AP	AP

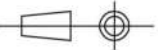
DRAWING NOT TO BE SCALED

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



SECTION - AA

SECTION - BB

107	CHARGE AIR I/O HEADER	2	AA 5083/AA 5086	0.598
P.No.	DESCRIPTION	QTY. (NOS)	MATERIAL	WT(KG)
 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA				
DRN	B.Uma 14.11.1998	RESEARCH & DEVELOPMENT		
CHD	K.S.S.Red 14.11.1998	CUSTOMER :		
APPROVED	AP 20.11.1998	SECONDARY HEAT EXCHANGER CHARGE AIR I/O HEADER		
SCALE	1:2	WORK ORDER NO : _____ NO OFF: _____		
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		YEAR OF ORDER	SIZE	DRAWING No.
			A3	RD-41011201-P-107
				REV
				3

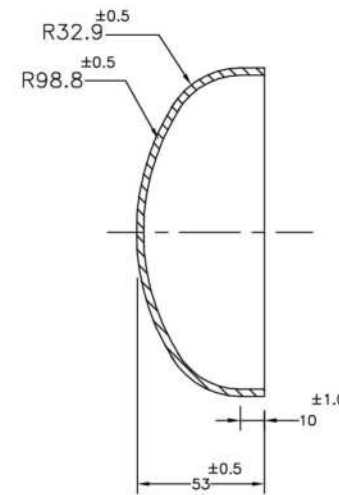
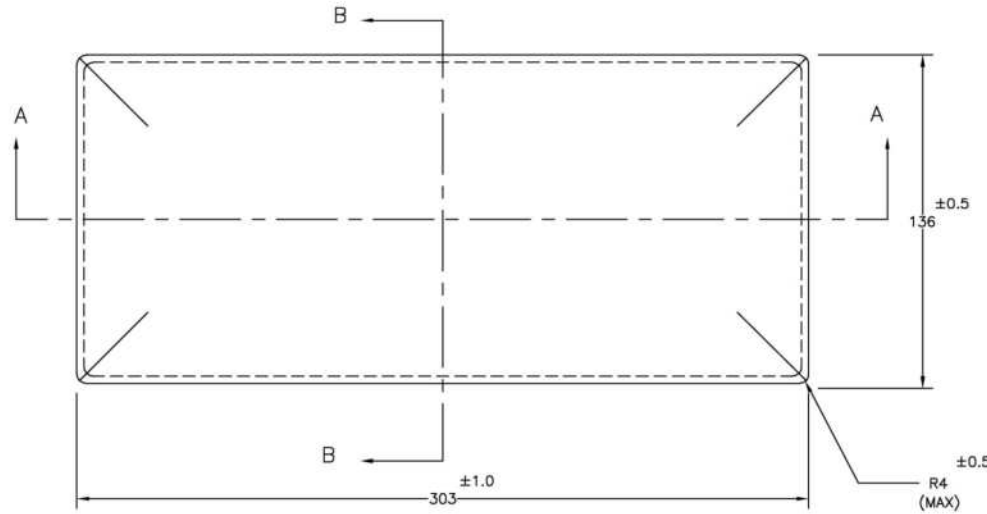
REF. DRG.
RD-41011201-A-100

REV.NO	ZONE	BRIEF RECORD	PPD	CHD	APD
3	---	MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No. MOD/CHE/001			
2	---	TOLERANCES CORRECTED	B.UMA 19.07.03	KVR 19.07.03	AP 19.07.03
1	---	INCORPORATED DETAILS NOT SHOWN EARLIER	B.UMA 03.04.02	KSR 03.04.02	AP 04.04.02

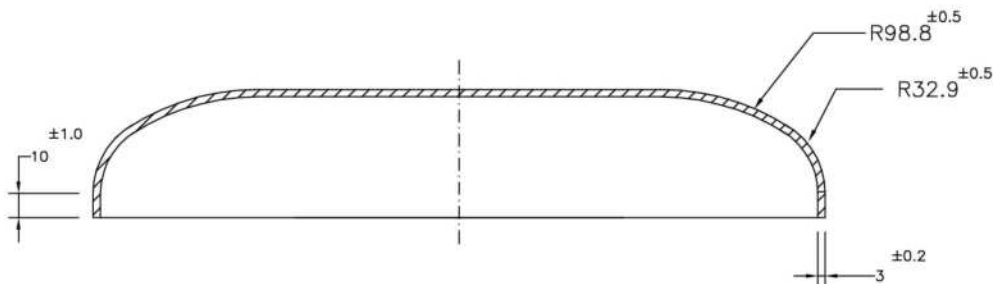
8 7 6 5 4 3 2 1

DRAWING NOT TO BE SCALED

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



SECTION - BB



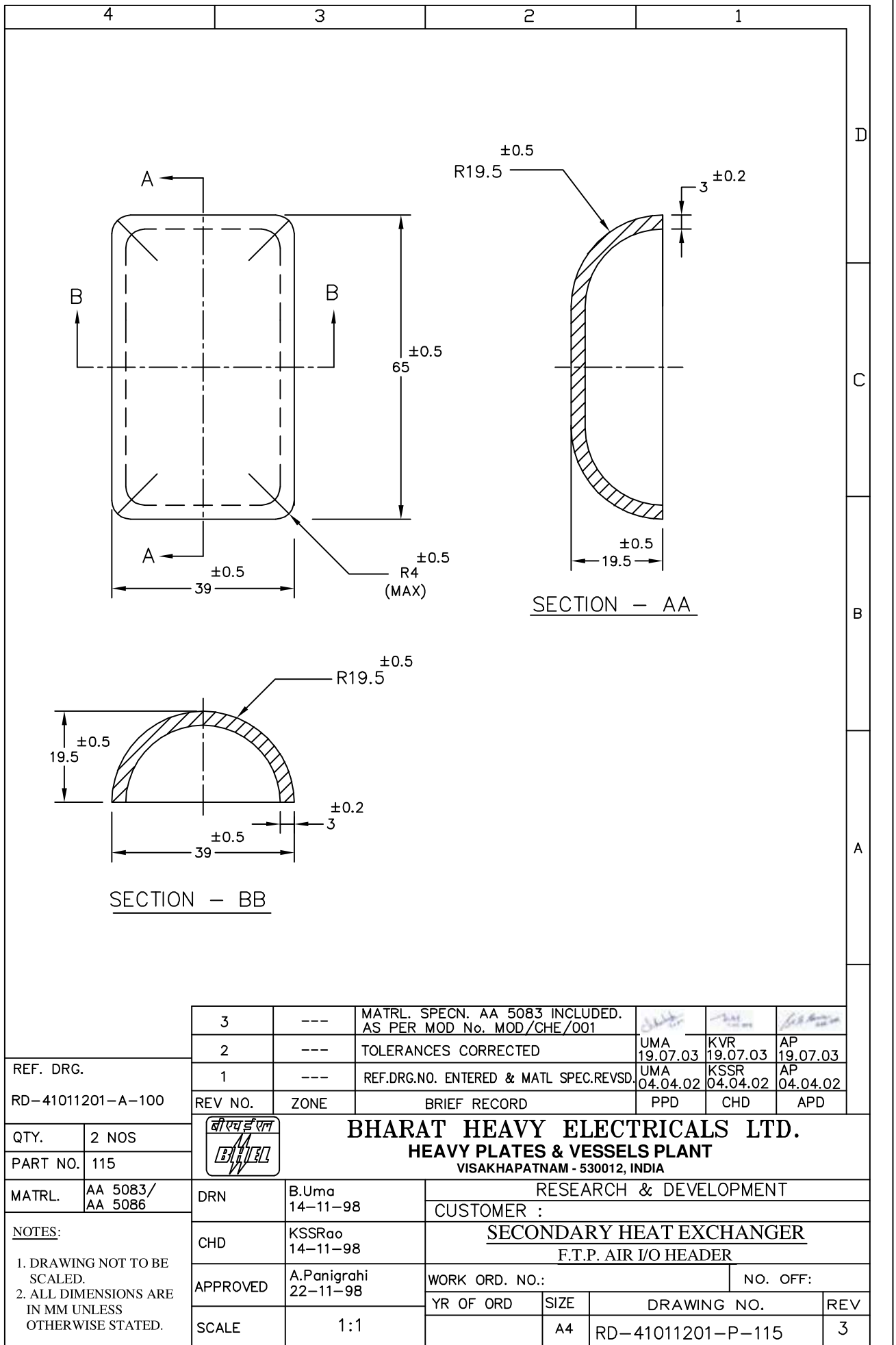
SECTION - AA

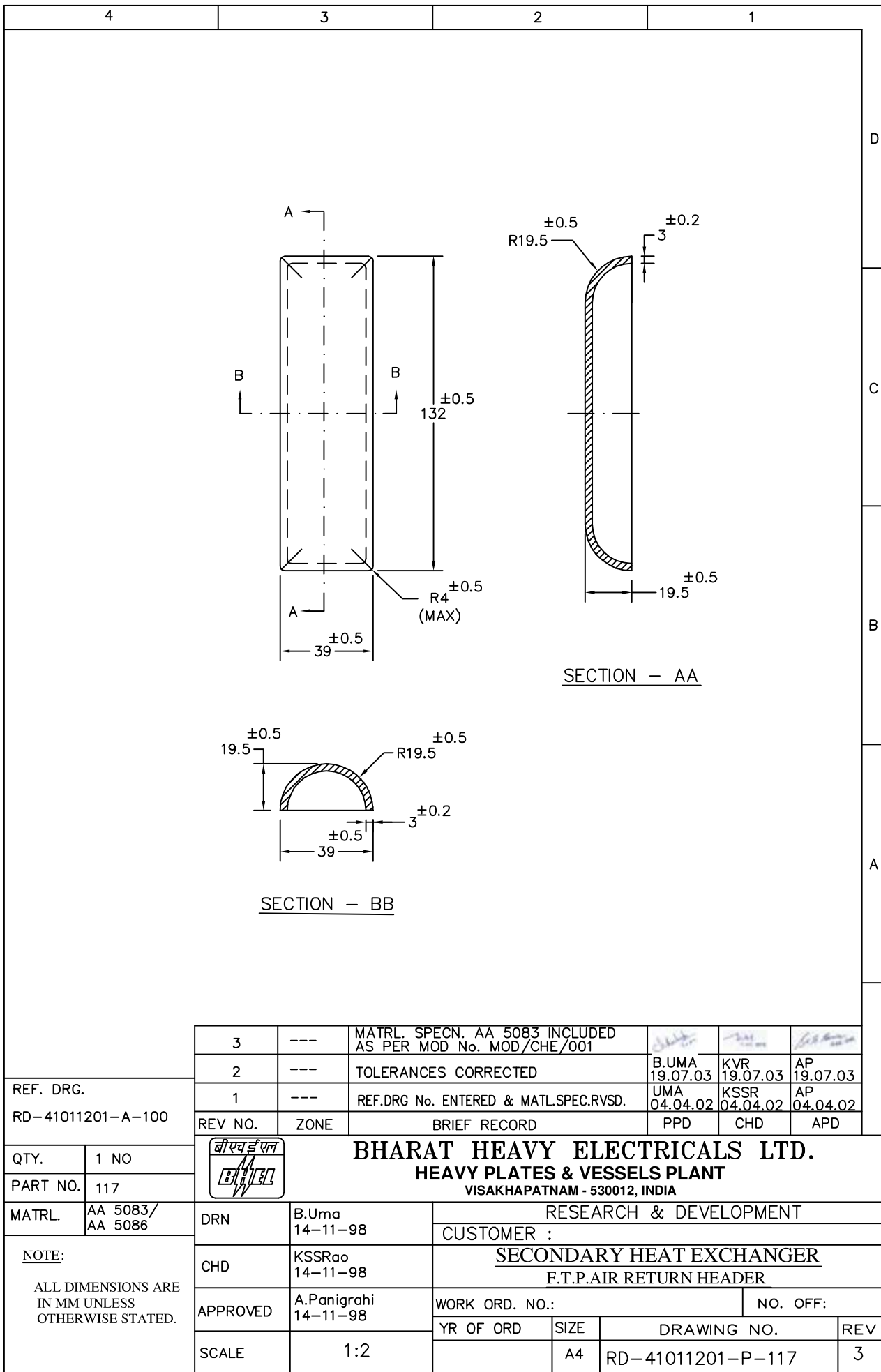
109	CHARGE AIR RETURN HEADER	1	AA 5083/AA 5086	0.525
P.No.	DESCRIPTION	QTY. (NOS)	MATERIAL	WT(KG)
बी एच ई एल BHEL BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA MATRL. SPECN. OF 5083 IS INCORPORATED				
DRN	B.Uma 14.11.1998	RESEARCH & DEVELOPMENT		
CHD	K.S.S.Rao 14.11.1998	CUSTOMER :		
APPROVED	AP 20.11.1998	SECONDARY HEAT EXCHANGER CHARGE AIR RETURN HEADER		
SCALE	1:2			
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		WORK ORDER NO :		NO OFF:
		YEAR OF ORDER	SIZE	DRAWING No.
			A3	RD-41011201-P-109
				REV 3

REF. DRG.

RD-41011201-A-100

REV.NO	ZONE	BRIEF RECORD	PPD	CHD	APD
3	---	MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No. MOD/CHE/001			
2	---	TOLERANCES CORRECTED	UMA 19.07.03	KVR 19.07.03	AP 19.07.03
1	---	INCORPORATED DETAILS NOT SHOWN EARLIER	UMA 03.04.02	KSSR 03.04.02	AP 04.04.02

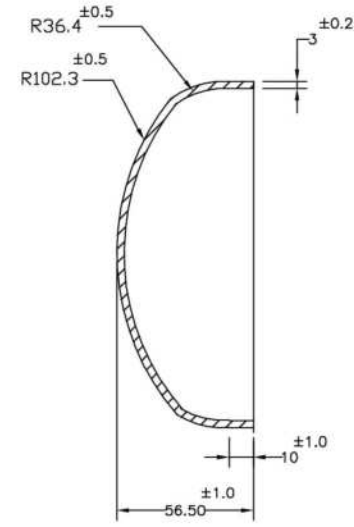
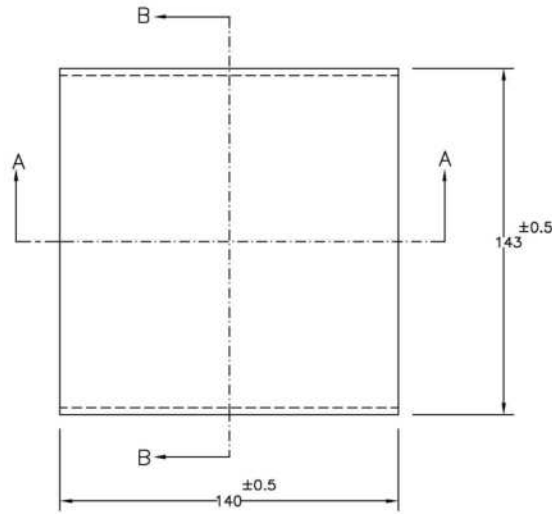




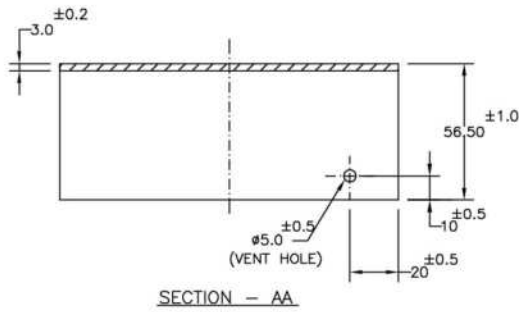
8 7 6 5 4 3 2 1

DRAWING NOT TO BE SCALED

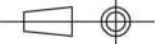
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



SECTION - BB



SECTION - AA

120	RETURN HEADER R.F.PAD	1	AA 5083/AA 5086	0.312
P.No.	DESCRIPTION	QTY. (NOS)	MATERIAL	WT(KG)
 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA				
DRN	B.Uma 29.07.00	RESEARCH & DEVELOPMENT		
CHD	K.S.S.Rao 29.07.00	CUSTOMER :		
APPROVED	A.Panigrahi 31.07.2K	<u>SECONDARY HEAT EXCHANGER</u> <u>RETURN HEADER R.F.PAD</u>		
SCALE	1:2			
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		WORK ORDER NO : NO OFF:		
		YEAR OF ORDER	SIZE	DRAWING No.
			A3	RD-41011201-P-120
				REV 2

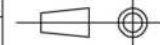
REF. DRG.
RD-41011201-A-100

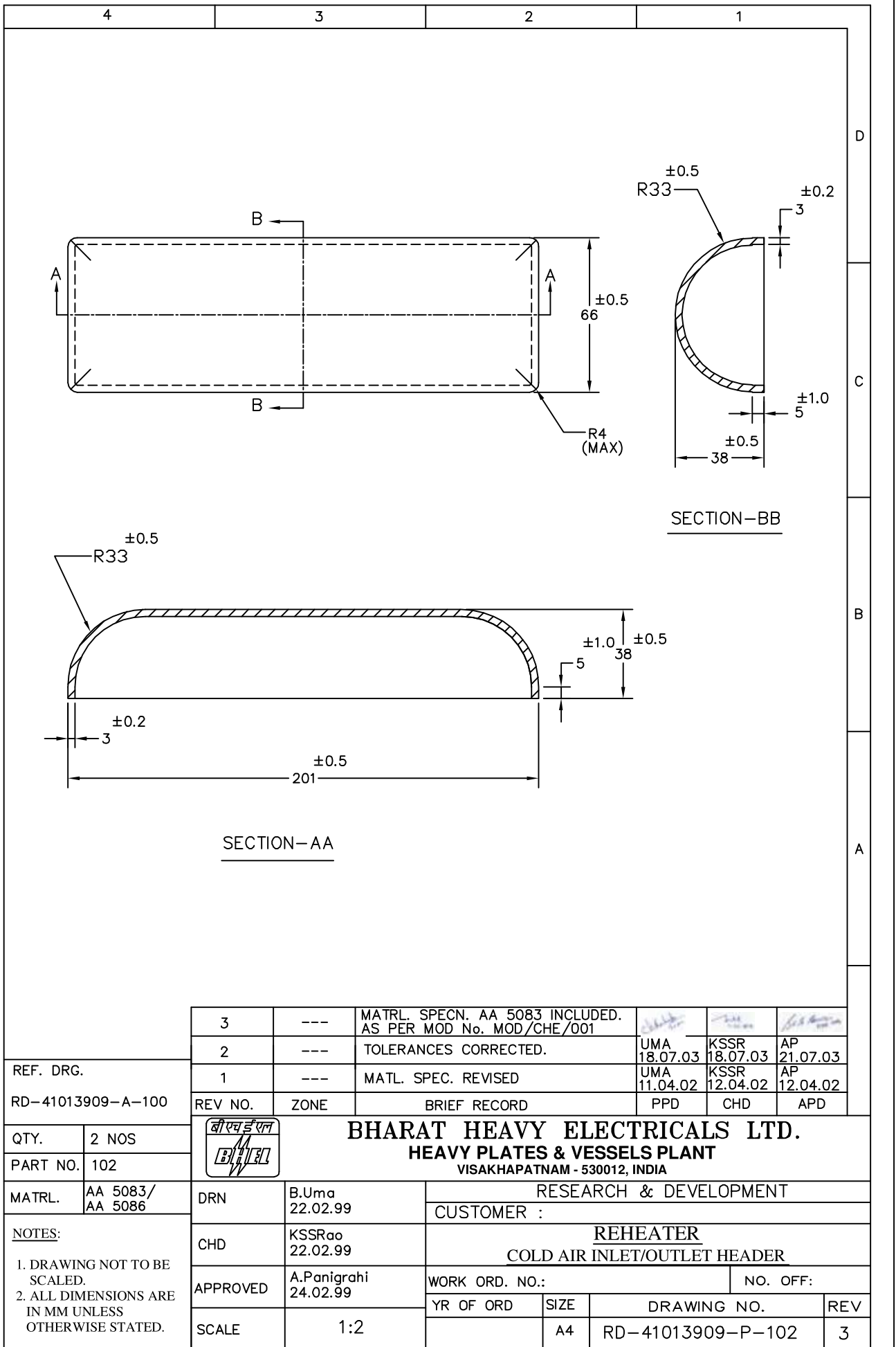
2 --- MATL SPECN. AA 5083 INCLUDED
AS PER MOD No. MOD/CHE/001
1 --- TOLERANCES CORRECTED, VENT HOLE ADDED

B.UMA
19.07.03
KVR
19.07.03
AP
19.07.03

PPD CHD APD

BRIEF RECORD



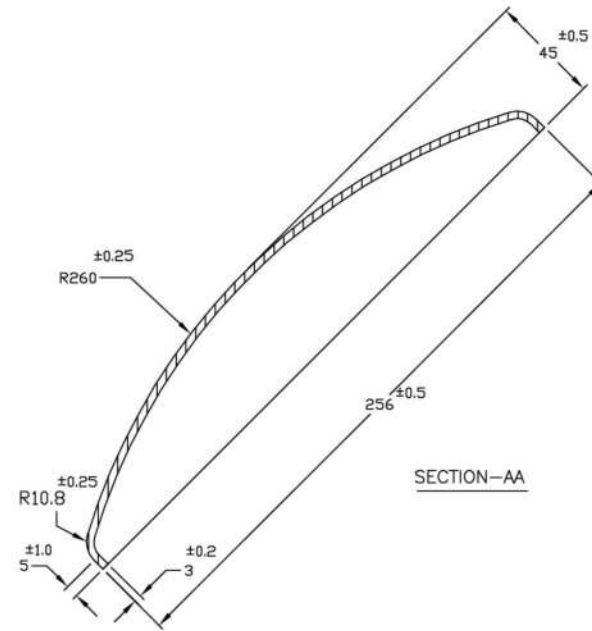
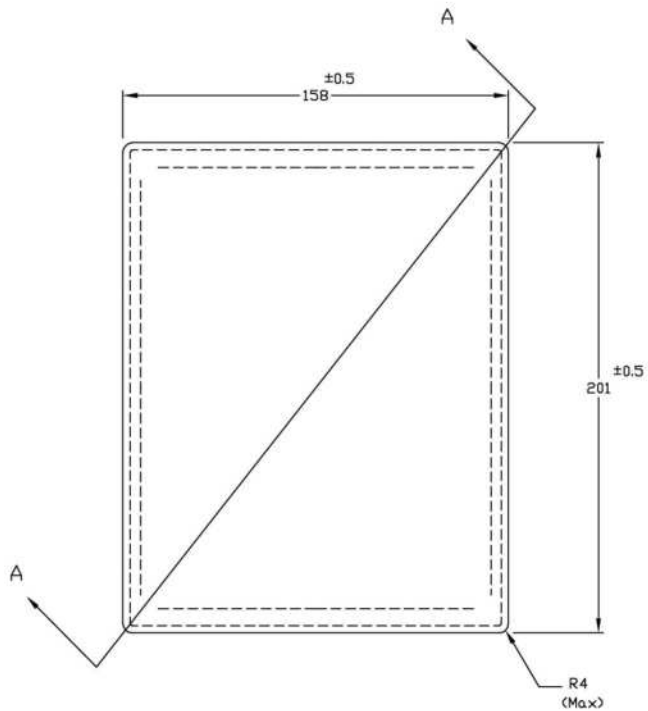
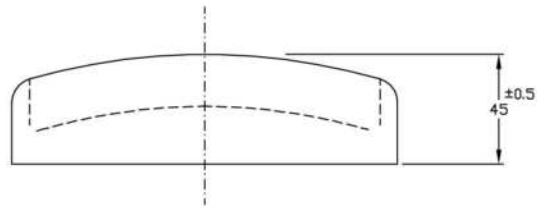


FORM NO. 0421/O

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SECTION-AA

105	HOT AIR INLET HEADER	1	AA 5083/AA 5086	0.359
P.No.	DESCRIPTION	QTY. (NOS)	MATERIAL	WT(KG)
 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA				
DRN	B.Uma 22.02.99	RESEARCH & DEVELOPMENT		
CHD	K.S.S.Rao 22.02.99	CUSTOMER:		
APPROVED	AP 24.02.99	REHEATER HOT AIR INLET HEADER		
SCALE	1:2	WORK ORDER NO :		
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		NO OFF:		
PPD		CHD	APD	REV
B.Uma 18.07.03		KVR 18.07.03	AP 21.07.03	2
REV.NO		ZONE		DRAWING No.
8		7		A3
REF. DRG.		RD-41013909-A-100		RD-41013909-P-105

FORM NO. 0421/0

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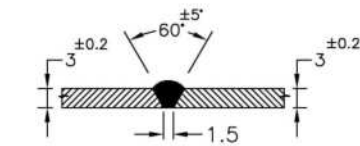
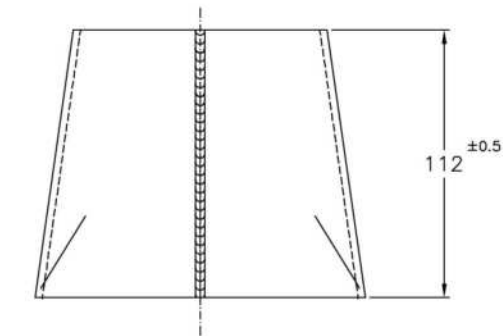
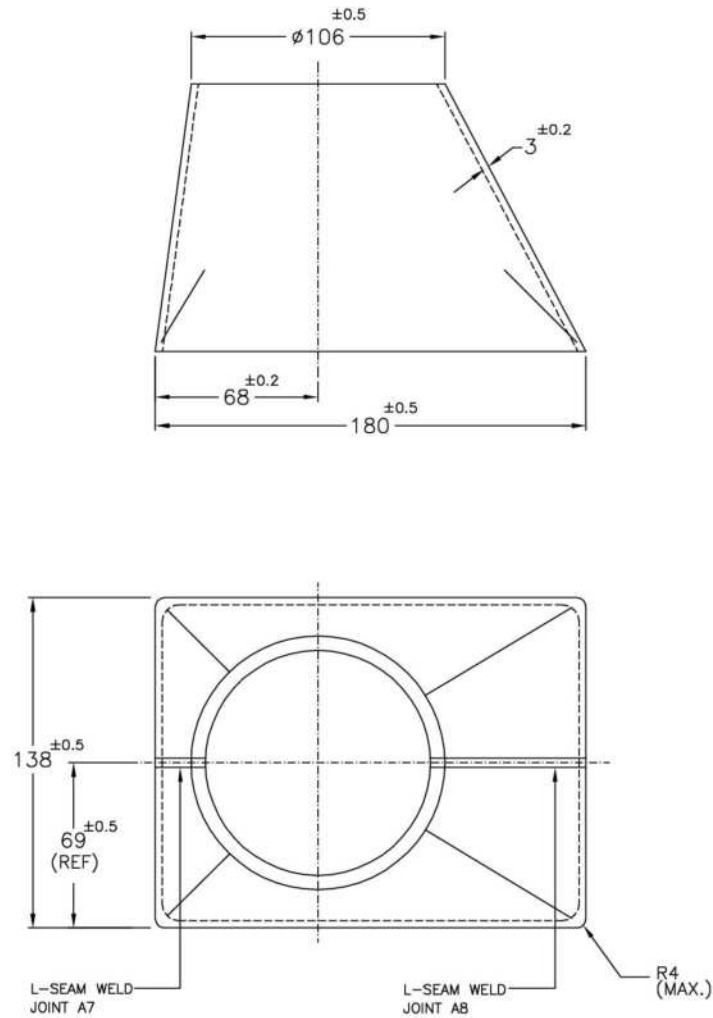
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2

1

DRAWING NOT TO BE SCALED

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED



DETAILS OF L-SEAM WELD JOINTS A7,AB

NOTE:

1. THE PART MAY BE FORMED IN NOT MORE THAN TWO PIECES.
2. ALL L-SEAMS SHALL BE WELDED AFTER RECEIPT AT BHEL-HPVP

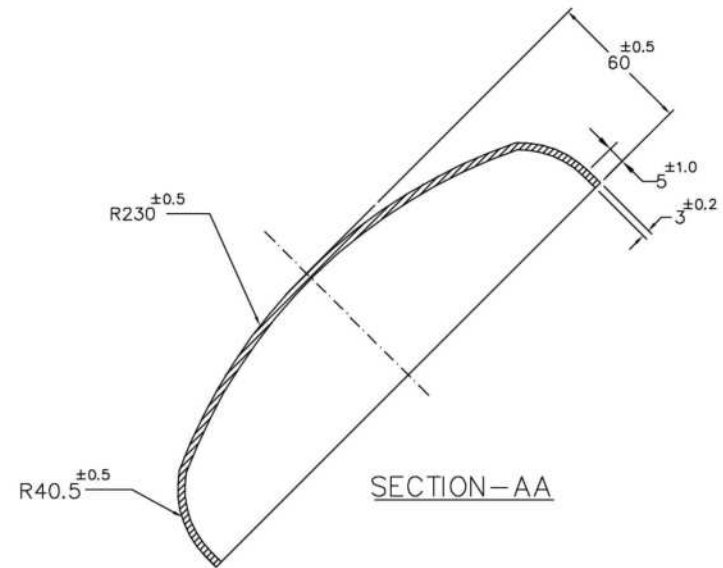
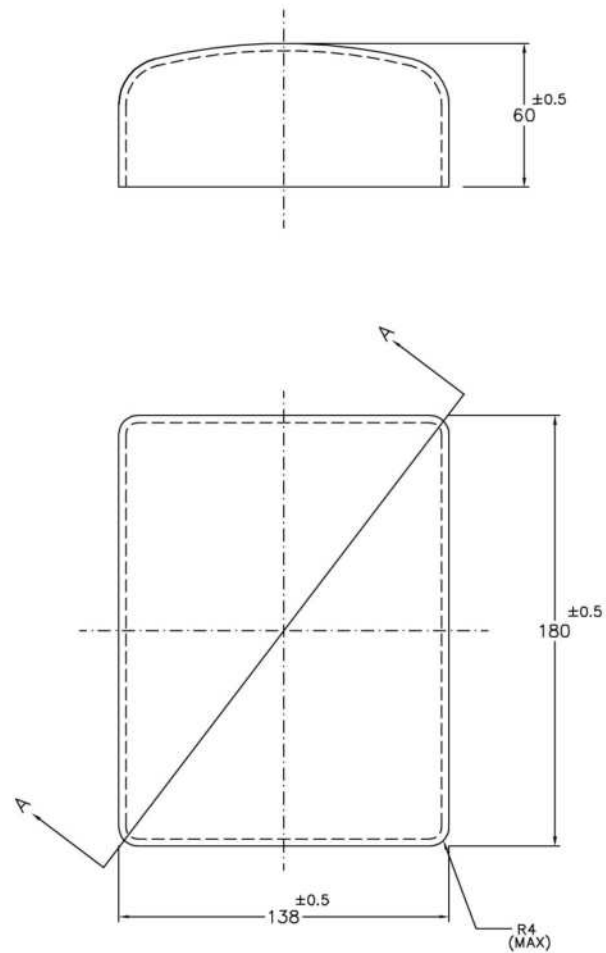
102	COLD AIR INLET DUCT	1	AA 5083/AA 5086	0.435
P.No.	DESCRIPTION	QTY. (NOS)	MATERIAL	WT(KG)
 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA				
DRN	B.Uma 08.03.99	RESEARCH & DEVELOPMENT		
CHD	K.S.S.Rao 15.03.99	CUSTOMER:		
APPROVED	A.Panigrahi 19.03.99	<u>CONDENSER</u>		
SCALE	1:2	<u>COLD AIR INLET DUCT</u>		
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED				
WORK ORDER NO :			NO OFF:	
YEAR OF ORDER	SIZE	DRAWING No.		REV
	A3	RD-41013907-P-102		2

FORM NO. 0421/0

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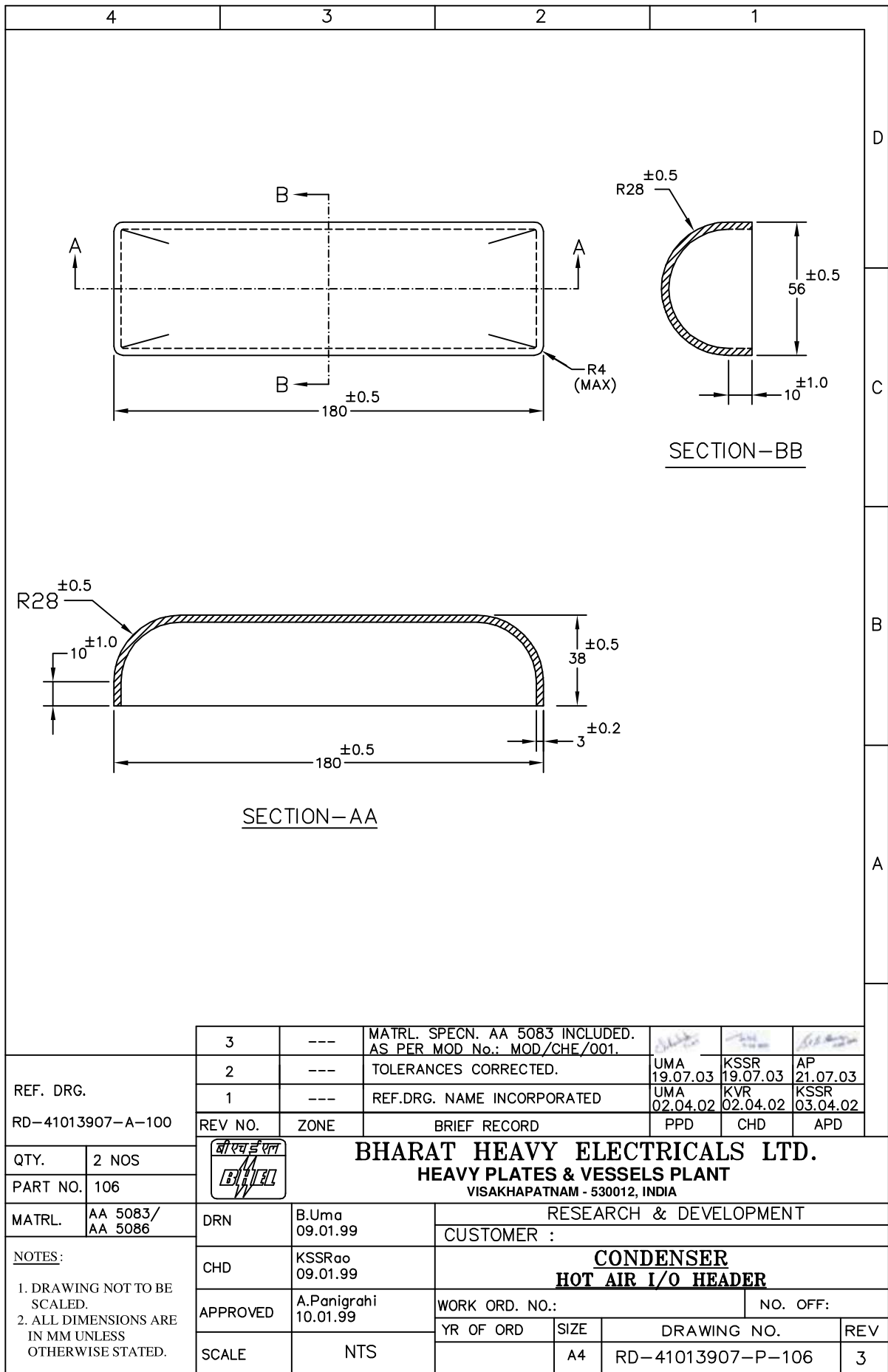
SECTION-AA

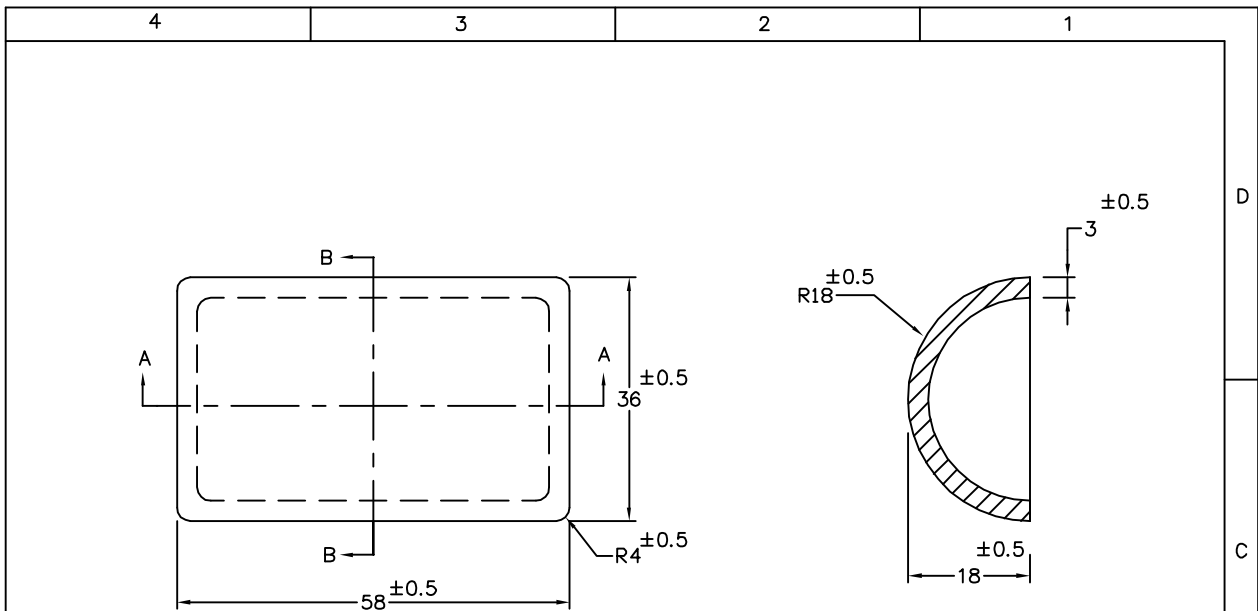
REF. DRG.

RD-41013907-A-100

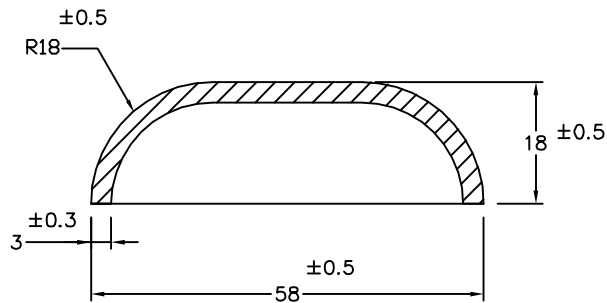
REV.NO	ZONE	BRIEF RECORD	PPD	CHD	APD
3	---	MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No.:MOD/CHE/001			
2	---	TOLERANCES CORRECTED.	UMA 17.07.03	KVR 17.07.03	AP 21.07.03
1	---	INCORPORATED TOLERANCES & DETAILS NOT SHOWN EARLIER	UMA 10.04.02	KVR 10.04.02	KSSR 10.04.02

104	COLD AIR EXIT HEADER	1	AA 5083/AA 5086	0.375
P.No.	DESCRIPTION	QTY. (NOS)	MATERIAL	WT(KG)
 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA				
DRN	B.Uma 05.01.99	RESEARCH & DEVELOPMENT		
CHD	KVR 09.01.99	CUSTOMER:		
APPROVED	AP 13.01.99	<u>CONDENSER</u>		
SCALE	1:2	<u>COLD AIR EXIT HEADER</u>		
ALL PROJECTIONS ARE FIRST ANGLE UNLESS OTHERWISE SPECIFIED		WORK ORDER NO : NO OFF: 		
YEAR OF ORDER		SIZE	DRAWING No.	REV
		A3	RD-41013907-P-104	3



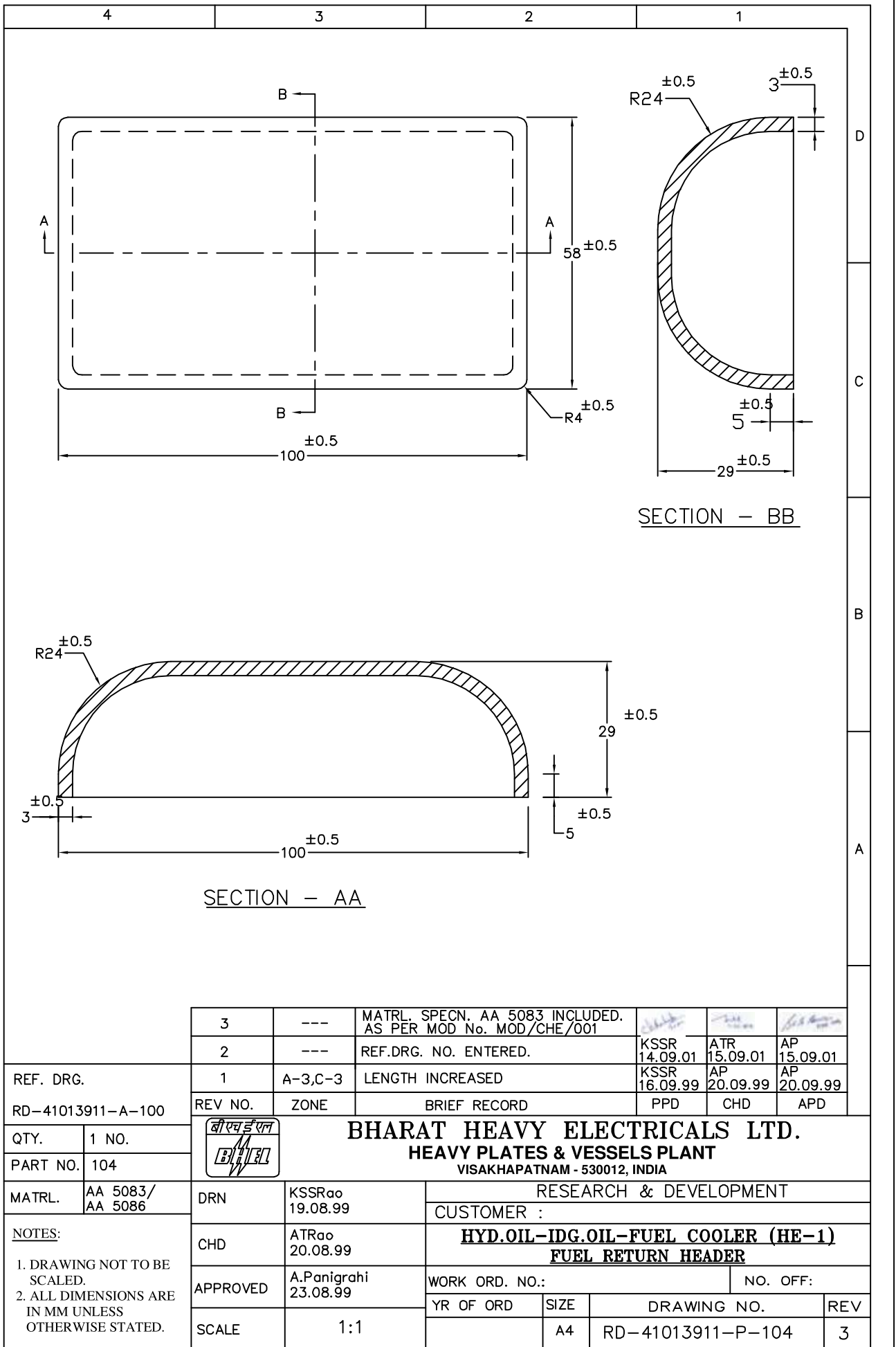


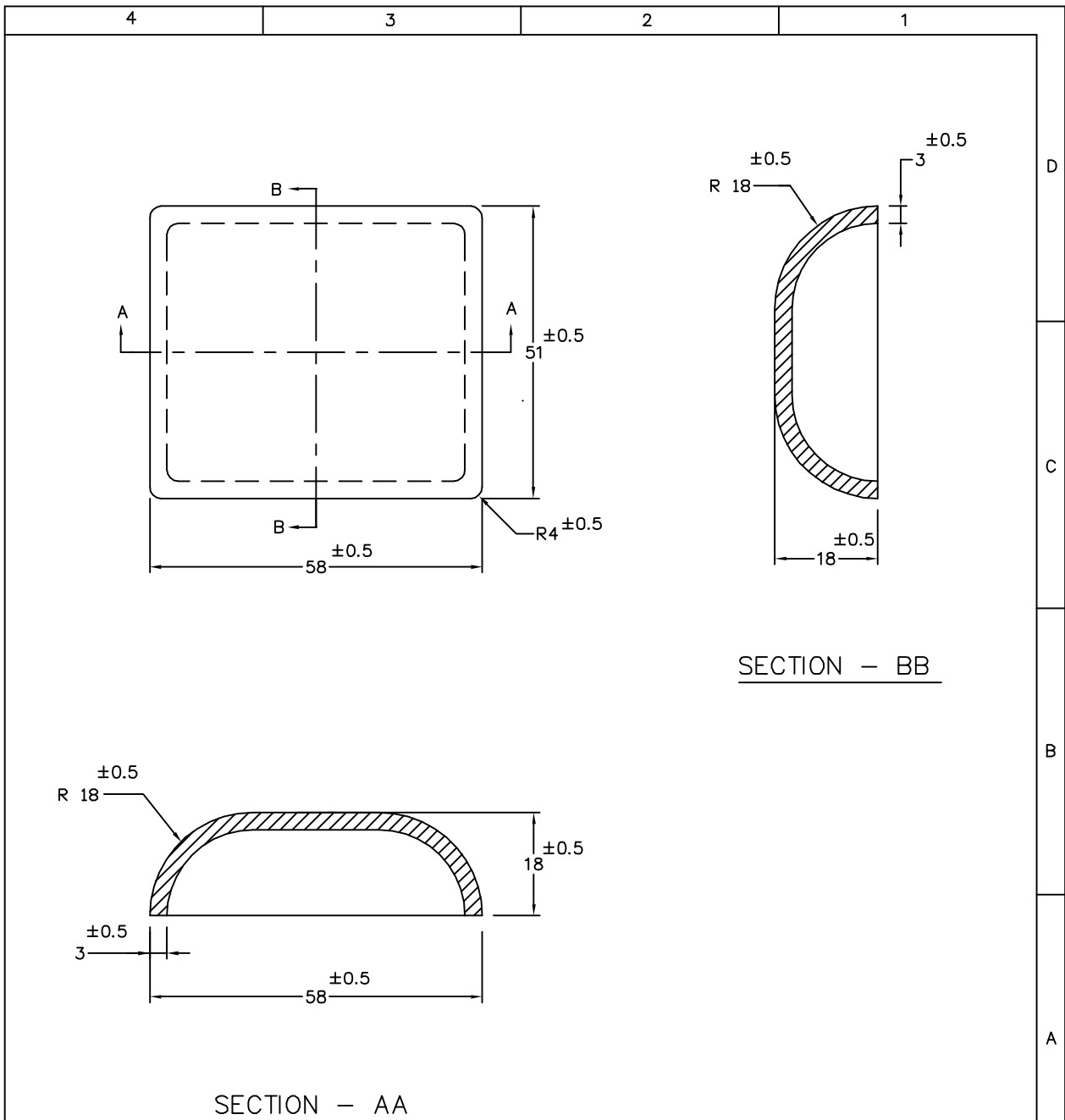
SECTION - BB



SECTION - AA

		2	---	MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No. MOD/CHE/001					
REF. DRG.		1	---	REF.DRG. NO. ENTERED		KSSR 14.09.01	ATR 15.09.01	AP 15.09.01	
RD-41013911-A-100		REV NO.	ZONE	BRIEF RECORD		PPD	CHD	APD	
QTY.	1 NO.	बीएचईएल BHEL BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA							
PART NO.	103								
MATRL.	AA 5083/ AA 5086	DRN	KSSRao 19.08.99	RESEARCH & DEVELOPMENT					
NOTES: 1. DRAWING NOT TO BE SCALED. 2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.				CUSTOMER :					
		CHD	ATRao 20.08.99	HYD.OIL-IDG.OIL-FUEL COOLER (HE-1) FUEL INLET HEADER-HYD					
		APPROVED	A.Panigrahi 23.08.99	WORK ORD. NO.:				NO. OFF:	
		SCALE	1:1	YR OF ORD	SIZE	DRAWING NO.			REV
					A4	RD-41013911-P-103			2





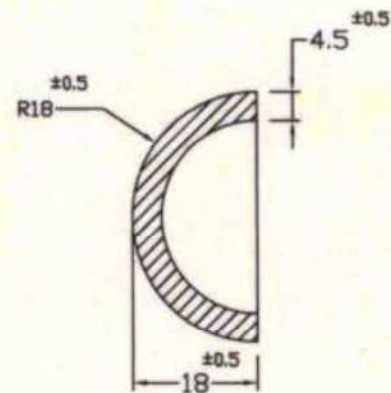
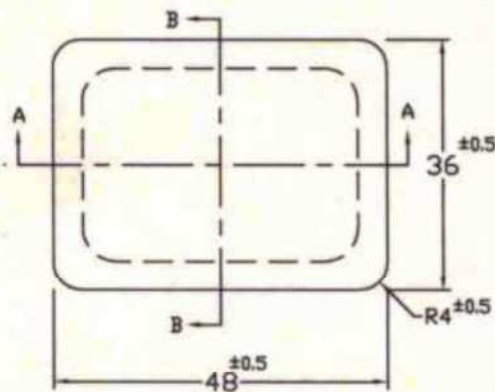
		3	---	MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No. MOD/CHE/001				
		2	---	REF.DRG. NO. ENTERED		KSSR 14.09.01	ATR 15.09.01	AP 15.09.01
REF. DRG.		1	B-4,D-1	CROWN RADIUS ELIMINATED		KSSR 16.09.99	AP 20.09.99	AP 20.09.99
RD-41013911-A-100		REV NO.	ZONE	BRIEF RECORD		PPD	CHD	APD
QTY.	1 NO.	बी एच ई एल BHEL BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA						
PART NO.	105							
MATRL.	AA 5083/ AA 5086	DRN	KSSRao 19.08.99	RESEARCH & DEVELOPMENT				
NOTES: 1. DRAWING NOT TO BE SCALED. 2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.				CUSTOMER :				
		CHD	ATRao 20.08.99	<u>HYD.OIL-IDG.OIL-FUEL COOLER (HE-1)</u> <u>FUEL OUTLET HEADER-IDG</u>				
		APPROVED	A.Panigrahi 23.08.99	WORK ORD. NO.:			NO. OFF:	
		SCALE	1:1	YR OF ORD	SIZE	DRAWING NO.		REV
					A4	RD-41013911-P-105		3

4

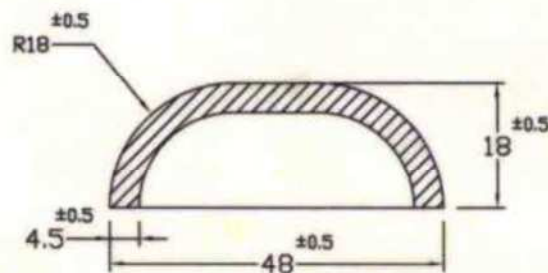
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2

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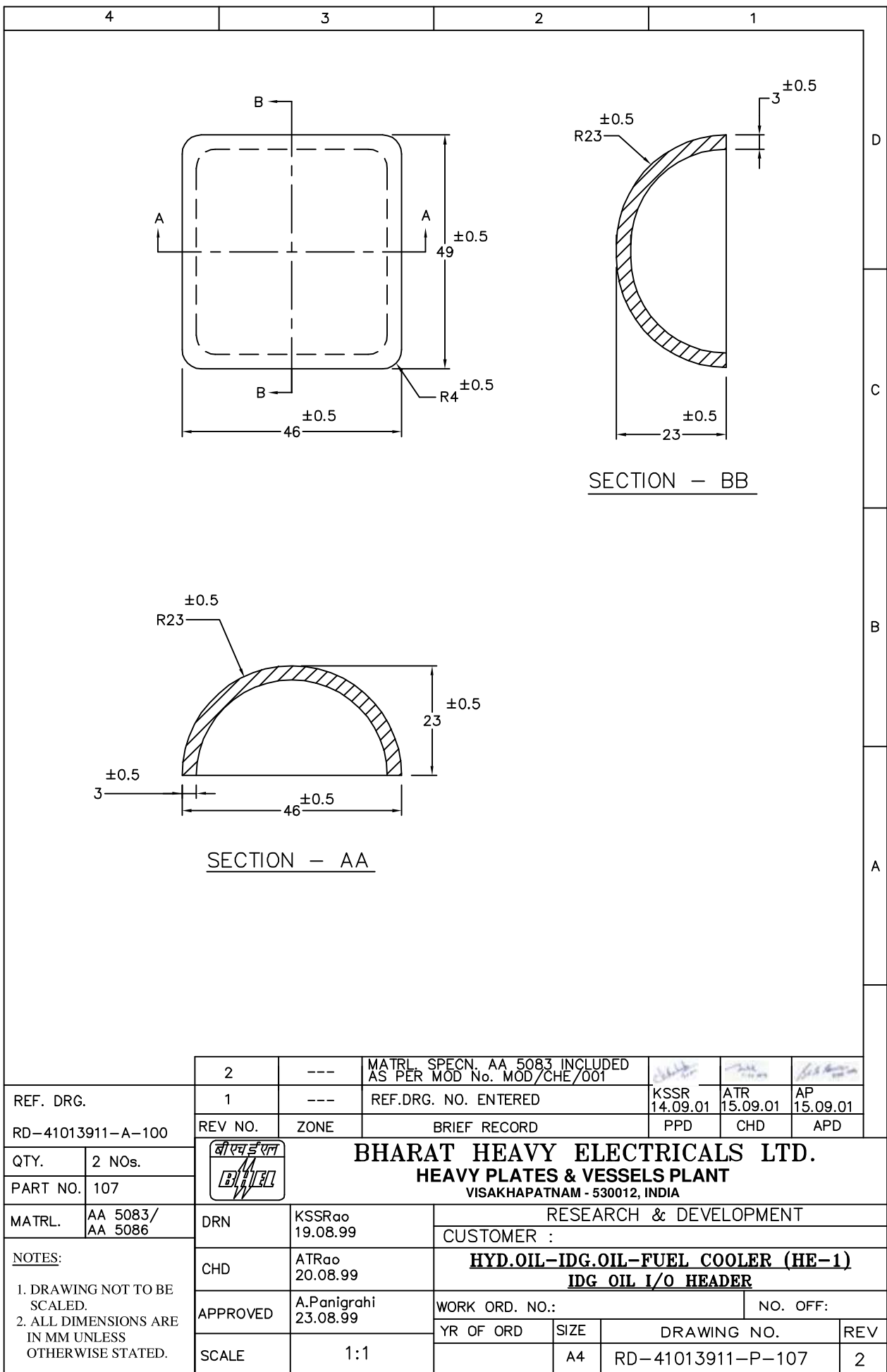


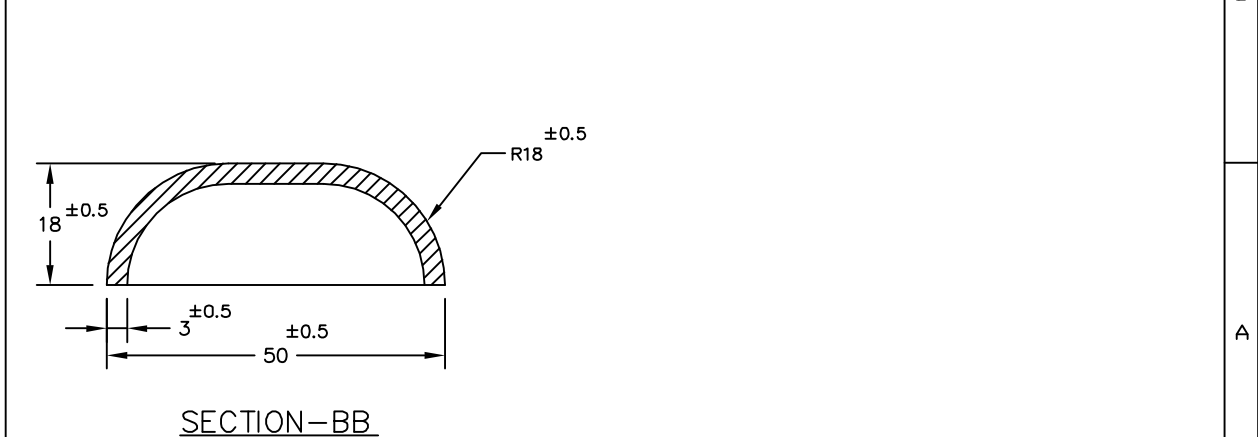
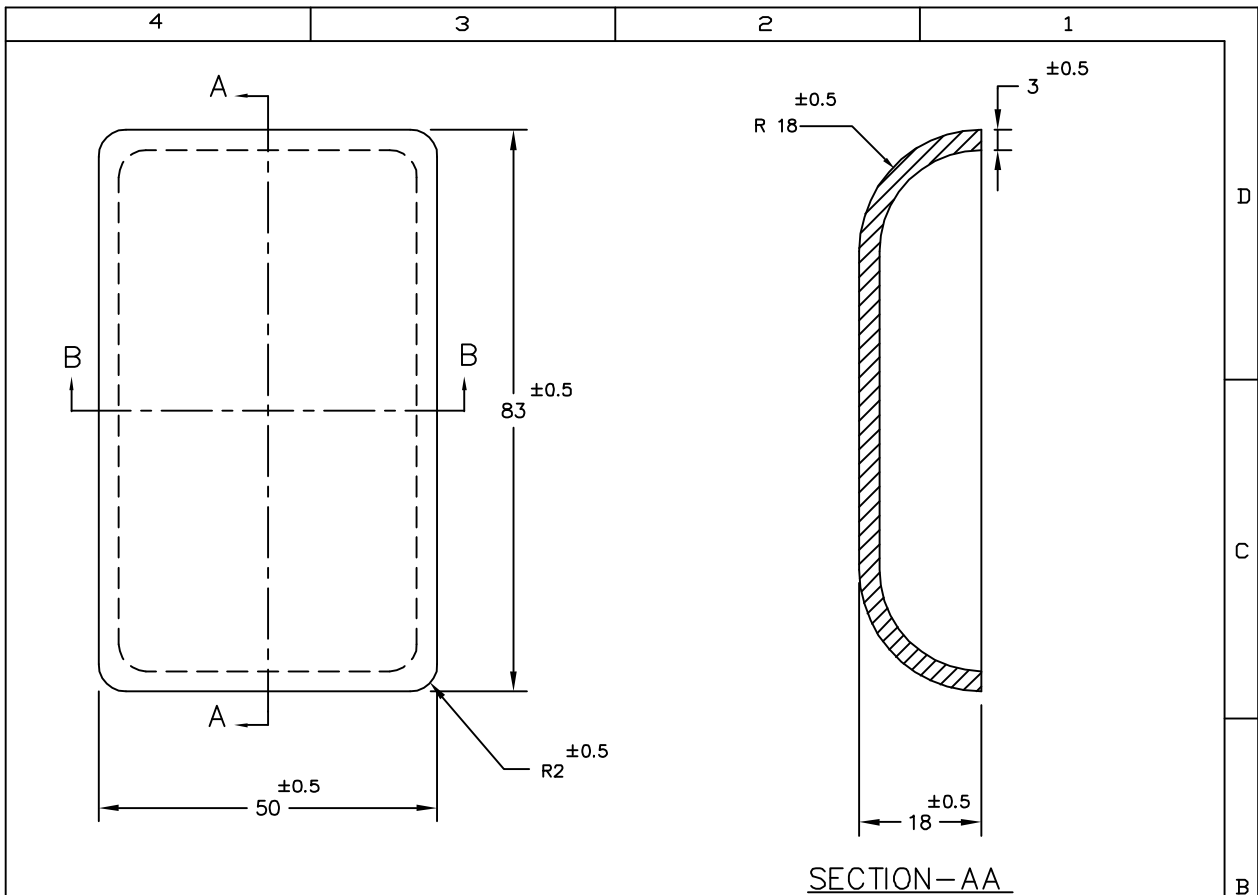
SECTION - BB



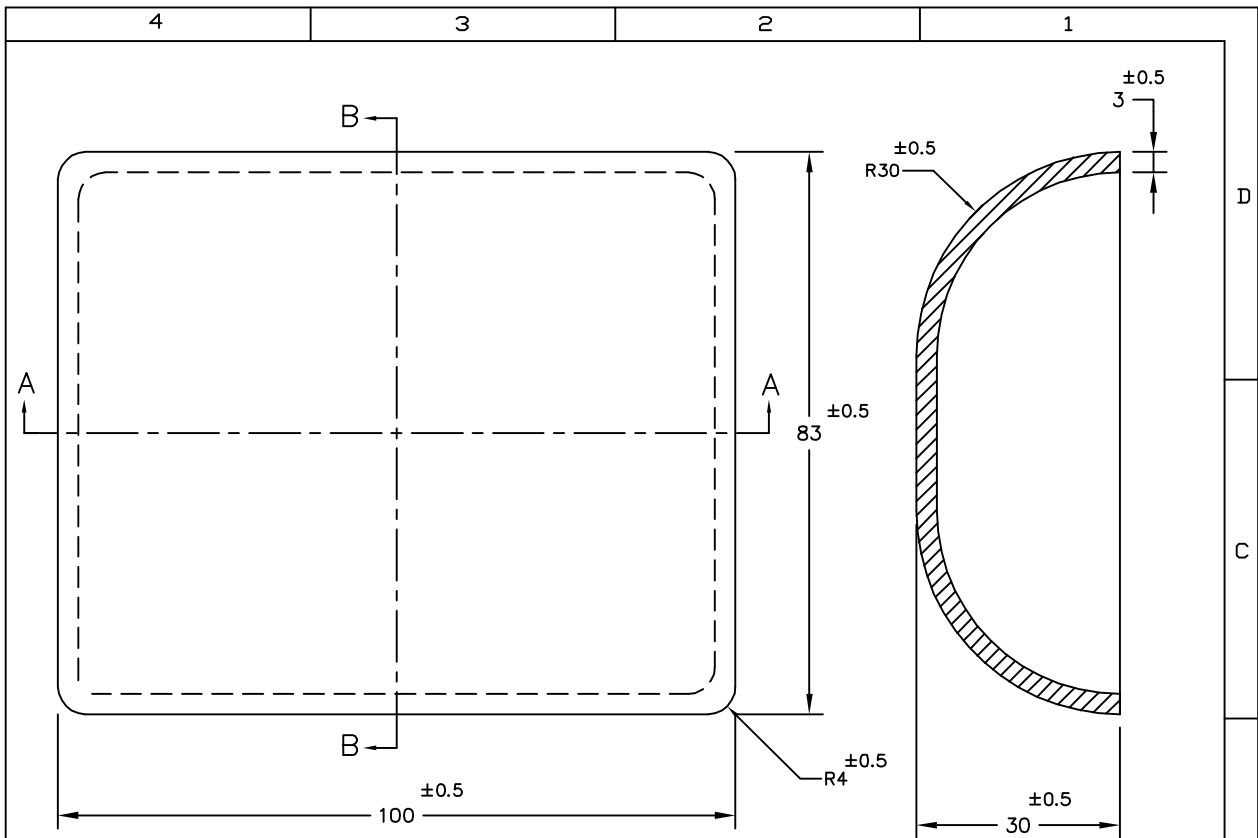
SECTION - AA

REF. DRG. RD-41013911-A-100		2	---	REF.DRG. ENTERED	C.R.D. 14-09-01	AP	AP
QTY. 2 Nos.		1	---	MATERIAL SPECN. CHANGED	KSR 16.09.99	AP 20.09.99	AP 20.09.99
ITEM No. 106		REV NO.	ZONE	BRIEF RECORD	PPD	CHD	APD
MATRL. AA 6061		BHARAT HEAVY PLATE AND VESSELS LTD. VISAKHAPATNAM - 530 012, INDIA					
NOTES: 1. DRAWING NOT TO BE SCALED 2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.		DRN.	C.R.D. 19-08-99	RESEARCH & DEVELOPMENT			
		CHKD.	A. 20/09/99	CUSTOMER : M/s A.D.A., BANGALORE			
		APPROVED	A. 23/08/99	HYD OIL-IDG OIL-FUEL COOLER(HE-1)			
		SCALE	N.T.S.	HYD OIL I/O HEADER			
				WORK ORD. NO. 410 139 11	NO. OFF		
				YR OF ORD	SIZE	DRAWING NO.	REV
				1999	A4	RD-41013911-P-106	2

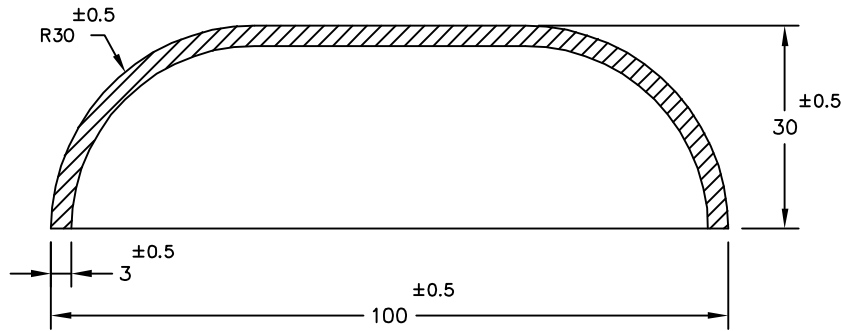




REF. DRG.		3	MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No. MOD/CHE/001	KSSR	ATR	AP
RD-41013912-A-100		2	REF. DRG ENTERED	18.09.01	18.09.01	19.09.01
QTY. 1 NO.		1	B-3,D-2 CROWN RADIUS ELIMINATED	KSSR	AP	AP
PART NO. 103		REV NO.	ZONE	PPD	CHD	APD
MATRL. AA 5083/AA 5086		Bharat Heavy Electricals Ltd. Heavy Plates & Vessels Plant Visakhapatnam - 530012, India				
NOTES:		DRN	KSSRao 20.08.99	RESEARCH & DEVELOPMENT		
1. DRAWING NOT TO BE SCALED.		CHD	ATRao 21.08.99	CUSTOMER :		
2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.		APPROVED	A.Panigrahi 23.08.99	GBX OIL-HYD.OIL-FUEL COOLER (HE-2) FUEL INLET HEADER-GBX		
		SCALE	1:1	WORK ORD. NO.:	NO. OFF:	
				YR OF ORD	SIZE	DRAWING NO.
					A4	RD-41013912-P-103
						3

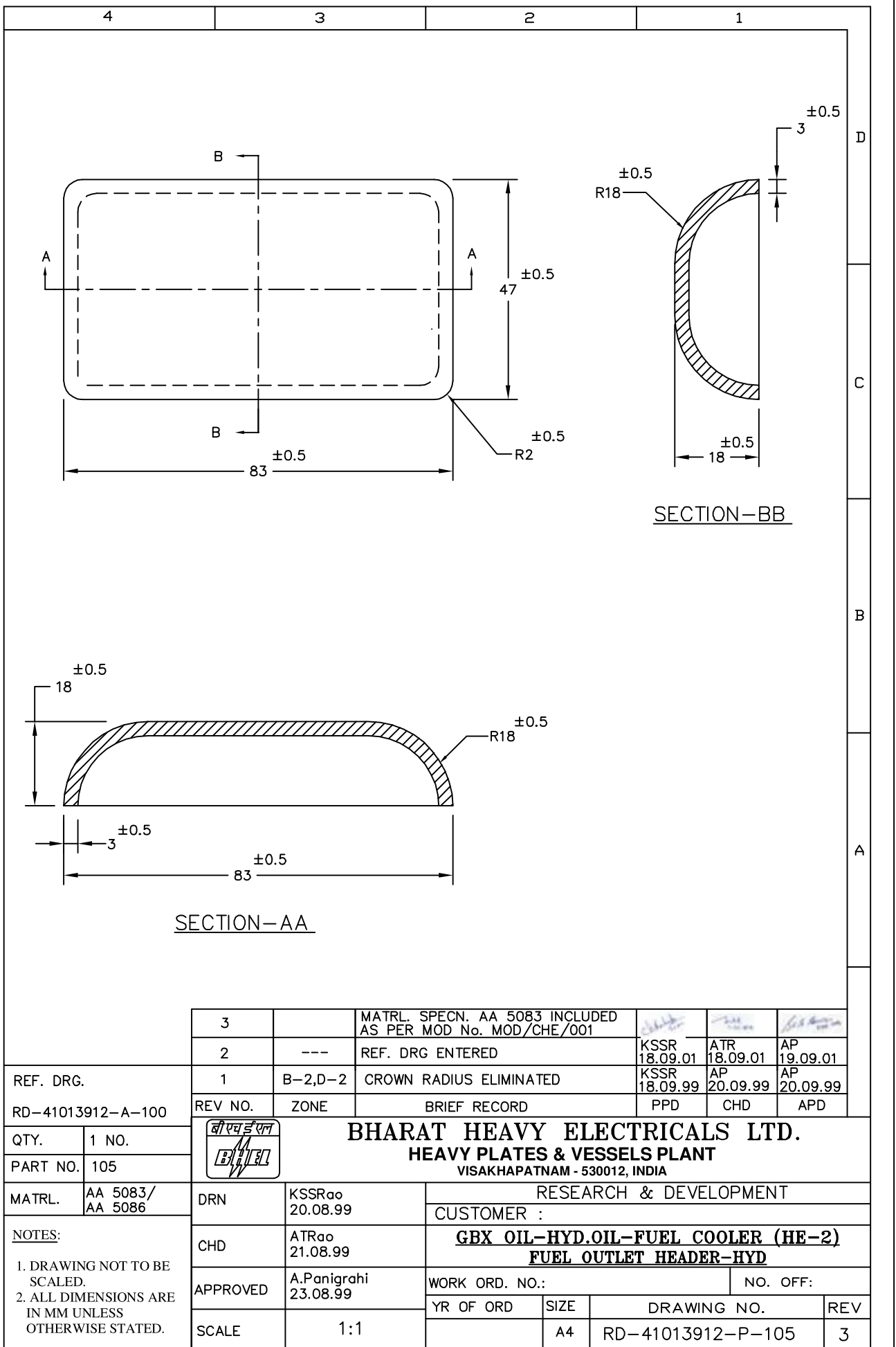


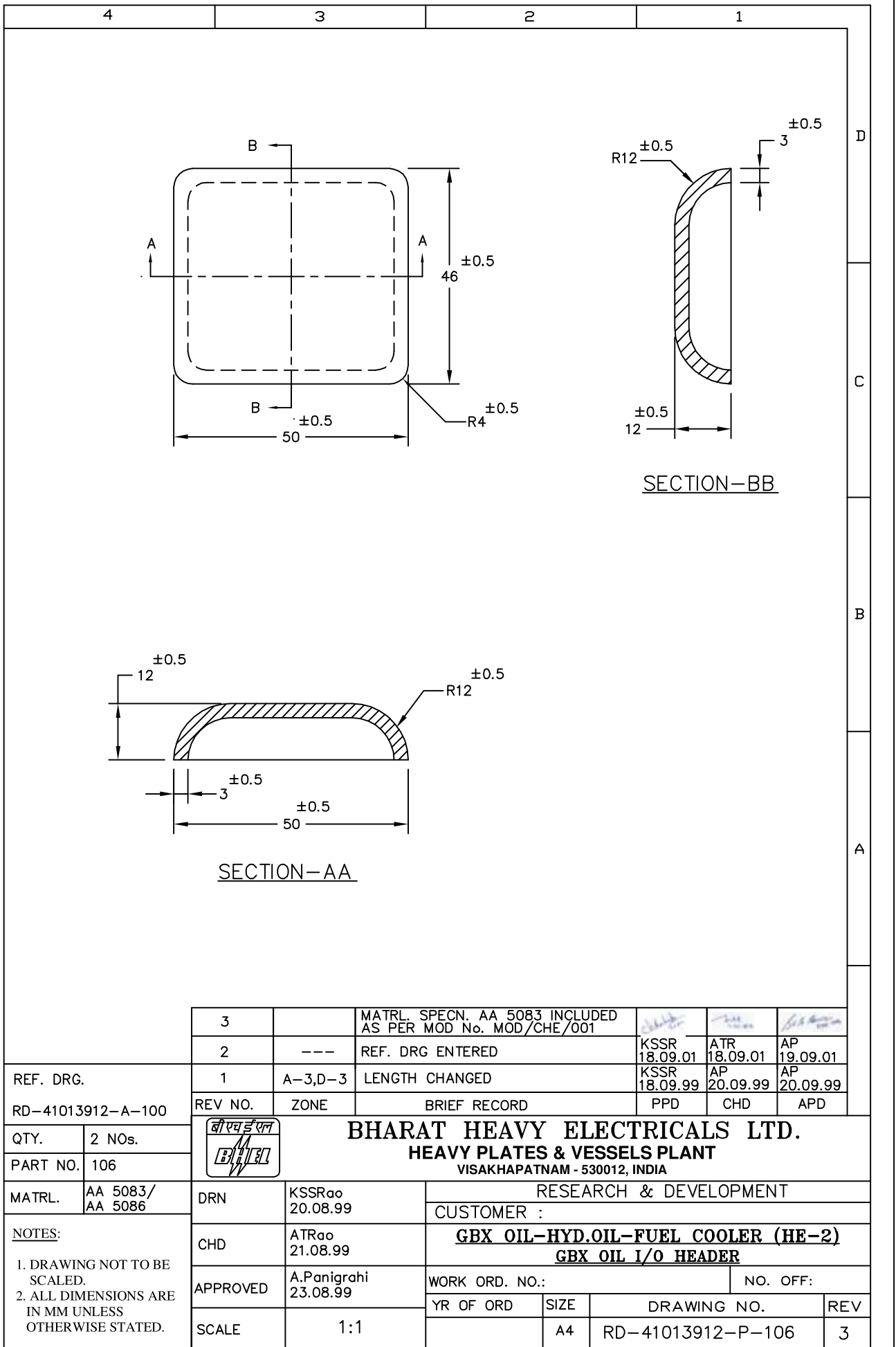
SECTION-BB



SECTION-AA

		3		MATRL. SPECN. AA 5083 INCLUDED AS PER MOD No. MOD/CHE/001				
		2	---	REF. DRG ENTERED		KSSR 18.09.01	ATR 18.09.01	AP 19.09.01
REF. DRG.		1	A-3,B-3 B-4,D-2	LENGTH CHANGED. CROWN RADIUS ELIMINATED		KSSR 18.09.99	AP 20.09.99	AP 20.09.99
RD-41013912-A-100		REV NO.	ZONE	BRIEF RECORD		PPD	CHD	APD
QTY.	1 NO.	 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA						
PART NO.	104							
MATRL.	AA 5083/ AA 5086	DRN	KSSRao 20.08.99	RESEARCH & DEVELOPMENT				
<u>NOTES:</u> 1. DRAWING NOT TO BE SCALED. 2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.				CUSTOMER :				
		CHD	ATRaao 21.08.99	<u>GBX OIL-HYD.OIL-FUEL COOLER (HE-2)</u> <u>FUEL INLET HEADER-GBX</u>				
		APPROVED	A.Panigrahi 23.08.99	WORK ORD. NO.:				NO. OFF:
		SCALE	1:1	YR OF ORD	SIZE	DRAWING NO.		REV
					A4	RD-41013912-P-104		3



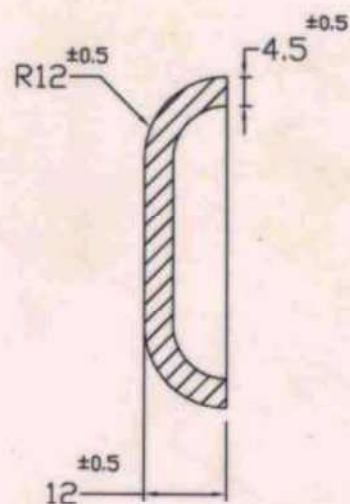
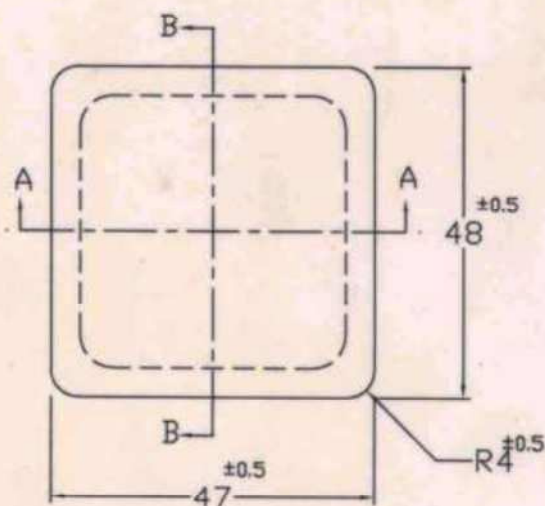


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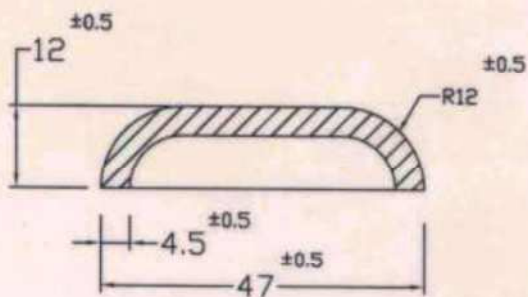
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2

1



SECTION - BB



SECTION - AA

REF. DRG. RD-41013912-A-100	2	---	REF.DRG. ENTERED	KSR	AP	AP
	1	---	MATERIAL SPECN. CHANGED	KSR	AP	AP
	REV NO.	ZONE	BRIEF RECORD	PPD	CHD	APD
QTY.	2 Nos	BHARAT HEAVY PLATE AND VESSELS LTD.				
ITEM No.	107	VISAKHAPATNAM - 530 012, INDIA				
MATL.	AA 6061	DRN.	20-08-99	RESEARCH & DEVELOPMENT		
NOTES: 1. DRAWING NOT TO BE SCALED 2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.	CHKD.	A. S. 2	21/9/99	CUSTOMER : M/s ADA, BANGALORE		
	APPROVED	A. S. 2	23/8/99	GBX OIL-HYD OIL-FUEL COOLER (HE-2)		
	SCALE	NTS		HYD OIL I/O HEADER		
				WORK ORD. NO.	410 139 12	NO. OFF 8
				YR OF ORD	SIZE	DRAWING NO.
				1999	A4	RD-41013912-P-107
				REV 2		