



INVITATION TO TENDER

Ref : OS/20-21/R&D/5611/21/073

Date : 22.12.2020

Sub : Manufacture of Components for Air to Liquid Heat Exchanger against S.O. 5611 at Vendor works

Dear Sir,

Sealed tenders are invited for the subject work **through e-mail** in **Two part bid** system from the **Vendors** who are experienced in execution of similar jobs subject to the following eligibility criteria:

- (1) Bidders must have an experience in execution of similar jobs i.e. CNC Machining, Milling, Drilling, Pressing etc. in the past 7 Years as on 30.11.2020. Bidders shall enclose Work Orders, Work Completion Certificates and all other relevant documents in support of their experience in execution of similar job for at least one project.
- (2) Bidders shall have to enclose the documents of Registration of Firm/ Certificate of Incorporation/ Factory License, Udyog Aadhar Memorandum, PAN & GSTIN Registration.
- (3) The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.

1. LOCATION OF WORK SPOT :

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

2. VENDOR'S SCOPE OF WORK :

- a) Fabrication of Components for Air to Liquid Heat Exchanger of ACM based LCS system which involves CNC Machining, Milling, Drilling, Welding & Precision Pressing of free issue materials as per the drawings listed in Annexure-II, applicable standards & specifications. Details of the components to be manufactured are given in the Annexure . II.
- b) All the manufactured components shall conforms to the dimension/standards mentioned in respective drawings.
- c) The manufactured components shall be free from burrs and surface marks.
- d) Tolerances indicated are non-cumulative.
- e) Tools required for the manufacture of Headers are to be made by Vendor with their own materials and same is to be handed over to BHEL-HPVP along with other components.
- f) Bidders shall have requisite facilities like CNC Turning & Milling Machines, Surface Grinding Machine etc. for machining of high precision jobs up to tolerances of ± 0.01 to ± 0.5 mm.
- g) Bidders shall have Calibrated Surface Table, Digital measuring instruments like Vernier Calipers, Height Gauges, Go - No Go Thread Gauges, Radius Gauges etc. required for inspection of finished components.
- h) Vendors shall have to strictly follow the dimensions and tolerances mentioned in the drawings.
- i) The finished components shall be securely packed in suitable lots and are to be delivered by the vendor to Sr.Manager (R&D), BHEL-HPVP, Visakhapatnam on door delivery basis.
- j) Any modification work due to revision of drawings during fabrication 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.

3. BHEL's SCOPE :

The following shall be provided by BHEL :

- a) Issue of applicable Drawings & reference Documents
- b) Free issue raw materials
- c) Liquid Penetrant Examination

4. TRANSPORTATION :

Collection & Transportation of raw materials from HPVP, Visakhapatnam to Vendor's works and Transportation of Finished Items from Vendor's works to R&D Dept., BHEL . HPVP, Visakhapatnam is in Vendor's scope.

6. DELIVERY :

Finished components along with relevant inspection documents and all other certificates are to be delivered to Sr. Manager (R&D), BHEL-HPVP, Visakhapatnam within **4 weeks** from the date of issue of free issue raw materials at BHEL - HPVP.

The delivery period will be calculated from the date of issue of materials at BHEL-HPVP, Visakhapatnam to the date of dispatch of finished items from Vendor's works. Date of issue and date of dispatch will be considered for computation of delivery period.

Free issue materials shall be collected within 5 days from the date of intimation by R&D / Outsourcing dept. without any failure. Any delay beyond 5 days shall be considered for levy of LD.

7. PRICE :

The prices shall be quoted as per Annexure – I for the detailed scope of work mentioned in the tender document. The quoted price shall be **inclusive of all applicable taxes & duties except GST and Income tax** shall be deducted at applicable rates from the vendor's bills. GST shall be reimbursable to the vendor as detailed in Clause . 8 and as per Annexure - GST.

The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.

8. GOODS & SERVICES TAX (GST) :

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

- a) Vendors registered under GST Act 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 :

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.

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.

9. REVERSE AUCTION :

BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Guidelines of Reverse Auction are given as Annexure . V and are also available on our website, www.bhel.com.

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 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.

10. VALIDITY OF OFFER :

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

11. RISK PURCHASE :

In case the vendor 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 vendors at the risk & cost of the vendor and any additional expenditure incurred due to the same shall be charged to the vendor's account.

12. Other Terms & Conditions, whichever applicable, shall be as per Annexure . III enclosed.

13. GENERAL :

- a) The bidders 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. For any clarifications required on this tender document, scope of work etc., the bidders can get clarifications through e-mail or over phone between 09:00 AM and 04:00 PM on any working day.
- b) **Bidders shall confirm their acceptance to all the terms & conditions of the tender enquiry.** Any deviations to the tender terms & conditions are not acceptable and BHEL reserves the right to reject such offers without further correspondence.
- c) BHEL-HPVP reserves the right to opt for Reverse Auction or for negotiation with the L1 bidders as per applicable guidelines.
- 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 followed.

14. The following documents shall form part of the tender enquiry :

- a) Schedule of Rates : Annexure - I
- b) Details of applicable drawings & free issue materials : 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

15. TENDER SUBMISSION :

Techno-commercial bids along with the **tender document duly signed by the bidder on all pages** and a covering letter on Company's Letter Head addressed to DGM (Outsourcing), BHEL . HPVP, Visakhapatnam shall be sent through an e-mail to **technicalbid-hpvp@bhel.in**. Price bids shall also be sent through e-mail to **another e-mail ID pricebid-hpvp@bhel.in**.

Both the bids completed in all respects along with the supporting documents shall be sent through an e-mail only **latest by 14.00 Hrs. on 01.01.2021** duly mentioning the Name of Work, Tender Ref. No. & Date and Technical Bid / Price Bid in the subject of the e-mail.

TENDERS RECEIVED AFTER THE DUE DATE & TIME ARE NOT ACCEPTABLE.

Note : Offers sent in any other form will be treated as invalid and will be summarily rejected.

16. TENDER OPENING :

Techno-commercial Bids will be opened on **01.01.2021 at 14.00 Hrs.** The bidders may depute their representatives at the time of opening of Technical bids. After evaluation of the Techno-commercial Bids, Intimation regarding the date and procedure of conducting Reverse Auction shall be given to the techno – commercial qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,


22/12/2020

(D.N.Murthy)
Dy.Manager (OS)

Schedule of Rates

Sub : Manufacture of Components for Air to Liquid Heat Exchanger against S.O. 5611 at Vendor works

Ref : OS/20-21/R&D/5611/21/073

Date : 22.12.2020

Sl. No.	S.O. No.	Part No.	Description of Work	Unit	Total Qty.	Unit Rate in Rs.	Total Amount in Rs.
	5611		Manufacture of Components for Air to Liquid Heat Exchanger which involves CNC Machining, Milling, Drilling, Welding & Precision Pressing etc., of free issue raw materials as per the drawings listed in Annexure-II and as per the detailed scope of work mentioned in the tender.				
1		206	Side Bar Air Side	No.	54		
2		208	Side Bar ECG Side	No.	60		
3		210	Inlet Header including Punch & Die	No.	3		
4		212	Outlet Header including Punch & Die	No.	3		
5		213	Mounting Angle	No.	3		
6		214	Baffle Plate	No.	3		
7		215	Partitioner for Header Welding	No.	3		
		216	Return Header including Punch & Die	No.	3		
8		220	Adaptor	No.	6		
			Total		138		
Total Amount in Words :							

Notes : L1 status shall be evaluated based on the total quoted value.

- 1 The quantity indicated above is tentative and may vary on both sides subject to the requirement at the time of ordering / execution. However, payment shall be made for the actual quantity only.
- 2 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.
- 3 The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.
- 4 The bidders are advised to go through all the drawings & documents before quoting the tender.
- 5 The evaluation currency for this tender shall be **INR**.
- 6 Tenderer should quote the amount in figures & words. It may be noted that corrections, overwriting etc. are not allowed. If there is a discrepancy between amount in figures & words, the amount in words shall prevail unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. If there is an error in the total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and total shall be corrected accordingly.

In case of mismatch between rate and amount in figures, rate in figures shall be taken into consideration for further evaluation and processing.

Signature of the Bidder with Stamp

ANNEXURE - II

LIST OF APPLICABLE DRAWINGS & RAW MATERIALS TO BE ISSUED

Ref : OS/20-21/R&D/5611/21/073

Date : 22.12.2020

Sl. No.	S.O.	Part No.	Description of Item	Drawing No. & Rev. No.	Material Spec.	Total Qty. (Nos.)	Materials to be issued
1	5611	206	Side Bar Air Side	RD-41016601-P-206, Rev. 0	AA3003	54	Plate 6.35 mm
2		208	Side Bar ECG Side	RD-41016601-P-208, Rev. 0	AA3003	60	Plate 4 mm
3		210	Inlet Header including Punch & Die	RD-41016601-P-210, Rev. 0	AA5086	3	Sheet 1.6 mm
4		212	Outlet Header including Punch & Die	RD-41016601-P-212, Rev. 0	AA5086	3	Sheet 1.6 mm
5		213	Mounting Angle	RD-41016601-P-213, Rev. 0	AA5086	3	Plate 25 mm
6		214	Baffle Plate	RD-41016601-P-214, Rev. 0	AA5086	3	Sheet 1.6 mm
7		215	Partitioner for Header Welding	RD-41016601-P-215, Rev. 0	AA5086	3	Plate 10 mm
8		216	Return Header including Punch & Die	RD-41016601-P-216, Rev. 0	AA5086	3	Sheet 2 mm
9		220	Adaptor	RD-41016601-P-220, Rev. 0	SS304	6	Round Dia 45 mm
		Total				138	

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 supplied 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 : Vendors shall have to submit a Bank Guarantee for **10%** of the order value in case of HPVP site or **25%** of the material cost in case of Vendor works towards Security Deposit and safe custody of materials within one week from the date of issue of Order. The BG shall be valid for the 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 / Customer and on submission of Performance BG (with 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.****8. RAW MATERIAL 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**).****9. TRANSFER / RETURN OF LEFT OVER MATERIAL : 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.****10. MATERIAL RECONCILIATION : Orders issued to the vendors have to be completed in all respects including Material Accounting within a maximum of **180 days** from the **date of issue of the first material** from BHEL - HPVP stores..**

Maximum of 15 % on the requirement of materials (Plates, Sheets and Rods**) is admitted towards process allowance and invisible wastage.**

Scrap quantity is permissible up to a **maximum of 60% on Side Bars and Partitioner (Plates), 15% for Headers (Sheets), 85% on Mounting Bars and Angles, Supports and Clamping Blocks (Plates), 20% on Baffle Plates** on the theoretical requirement of materials.

If wastage and scrap is beyond the above limits, 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 as per BHEL recovery rates including applicable taxes & duties.

Material reconciliation including return of balance materials, off-cuts 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.

11. SCRAP & OFFCUT NORMS :

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

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

13. 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.

14. 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.

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

16. PENALTY : If delivery exceeds the stipulated delivery schedule, penalty 1/2 % of the total value of order per week or part thereof subject to a maximum of 10% on the total value of the order 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.

17. PAYMENT TERMS :

Payment shall be made against RA Bills within 45 days 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 HPVP shops / Logistics dept. / ADM site, 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

18. 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.

19. 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.

20. 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.

21. 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.

22. 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.,

23. 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.

24. 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.

25. 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.

- 26. 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.
- 27. 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

Signature of the Bidder with Stamp

ANNEXURE – IV

Ref : OS/20-21/R&D/5611/21/073

Date : 22.12.2020

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/20-21/R&D/5611/21/073, dated 22.12.2020**. BHEL shall finalise the Rates for the **Manufacture of Components for Air to Liquid Heat Exchanger against S.O. 5611 at Vendor works** through RA 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/20-21/R&D/5611/21/073, dated 22.12.2020**, (b) Bidders' technical & commercial bid (in case of two-part bid) and (c) subsequent correspondence between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning

- i. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA.
- ii. **Online Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii. If BHEL decides the lowest sealed envelope price bid as the starting price, then 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 online reverse auction, the Closing Price (CP) 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 all 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 Online 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 except GST 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 Online 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. MSEs and Bidders qualified under PPP-MII, Order 2017 would see their category at all time in their login. Purchase preference, however, is subject to falling within the purchase preference criteria.

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 intimated to 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 online sealed bid & Online 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. Computerized 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 Online 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 tender enquiry no. **OS/20-21/R&D/5611/21/073, dated 22.12.2020**. 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 Online 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 P0, 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.

Signature of the Bidder with Stamp



BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES & VESSELS PLANT-VISAKHAPATNAM-530012
WELDING TECHNOLOGY
WELDING PROCEDURE SPECIFICATION

Page 1 of 2

WPS No. : T.8.8.35 Date : 07 / 10 / 2019 Supporting SSMDN347A/002M
 Rev No. : 001 Date : PQR No.

Welding Process : GTAW Type : Manual
 (Auto/Semi-Auto/Manual/Machine)
 Application : Groove welding of P8 Group 1 components with P8 Group 1 components & For all Fillet
 welds of P8 Group 1 materials.

JOINTS (QW-402)

Joint Design : Groove as per Production drawing
 Backing (Yes/No) : GTAW : No
 Backing Material (Type) : GTAW : Nil
 (Metal/Non fusing metal/ Non metallic/Others)

BASE METAL (QW-403)

P. No. : 8 Group No : 1 TO P. No. : 8 Group No : 1
 Spec. Type & Grade : N.A.
 Chem. Analysis & Mech. Prop : N.A.
 Thickness Range (T) Groove : 1.5 to 3.2mm Fillet : N.A.
 Maximum Pass Thickness \leq 13mm (Yes) : Yes (No) :
 Others : None

FILLER METALS (QW-404)

	<u>GTAW</u>	Size of filler metal : Refer Table
AWS No. (Class)	: ER347	Filler Metal Product Form : N.A.
Specn. No. (SFA)	: 5.9	Flux trade name : N.A.
F. No.	: 6	Electrode-flux (Class) : N.A.
A. No.	: 8	Consumable insert : N.A.
<u>Deposited weld</u>		
<u>metal thickness range (t)</u>		
Groove	: Max. 3.2mm (Max. 1.6 mm/pass)	
Fillet	: All	
Others	: None	

POSITION (QW-405)

Position(s) of Groove : 1G
 Position(s) of Fillet : All
 Weld Progression : N.A
 Others : None

PREHEAT (QW-406)

Preheat Temp. (min) : 25 °C
 Interpass Temp. (max) : NA
 Preheat Maintenance : During welding
 Others : None

PWHT (QW-407)

Temp. Range : NA
Time Range : NA
Others : None

GAS (QW - 408)		<u>Gases</u>	<u>Mix %</u>	<u>Flow Rt.(lpm)</u>
Shielding	Argon	99.995	8-10	
Trailing	None	----	----	
Backing	Argon	99.995	6-8	

ELECTRICAL CHARACTERISTICS (QW - 409)

Current (AC/DC)	: Refer Table	Polarity	: Refer Table
Amps (Range)	: Refer Table	Volts	: Refer Table
Tungsten Electrode type and size	: EWTh2 and ϕ 1.6mm		
Mode of Metal transfer for GMAW	: N.A.		
Electrode wire feed speed range	: N.A.		
Pulsing current (GTAW)	: None		
Heat input (max.)	: N.A.		

TECHNIQUES (QW-410)

String or Weave Bead	: String
Oscillation	: N.A.
Initial and Interpass Cleaning	: Wire brushing
Method of Back Gouging	: Grinding
Orifice or Gas cup size	: 10mm (I.D)
Contact tube to work distance	: N.A
Multiple or single pass (per side)	: Single
Multiple or single Electrode	: Single
Electrode spacing	: N.A
Travel Speed Range	: N.A.
Peening	: None
Use of thermal processes	: None
Others	: None

Weld Layer(s)	Process	Filler Metal		Current		Volt Range V	ROL/ Travel speed Range	Others
		Class	Dia. (mm)	Type	Amps.			
L1	GTAW	ER347	1.6	DCEN	40-60	8-10	80-100 mm per minute	Nil

Prepared by:

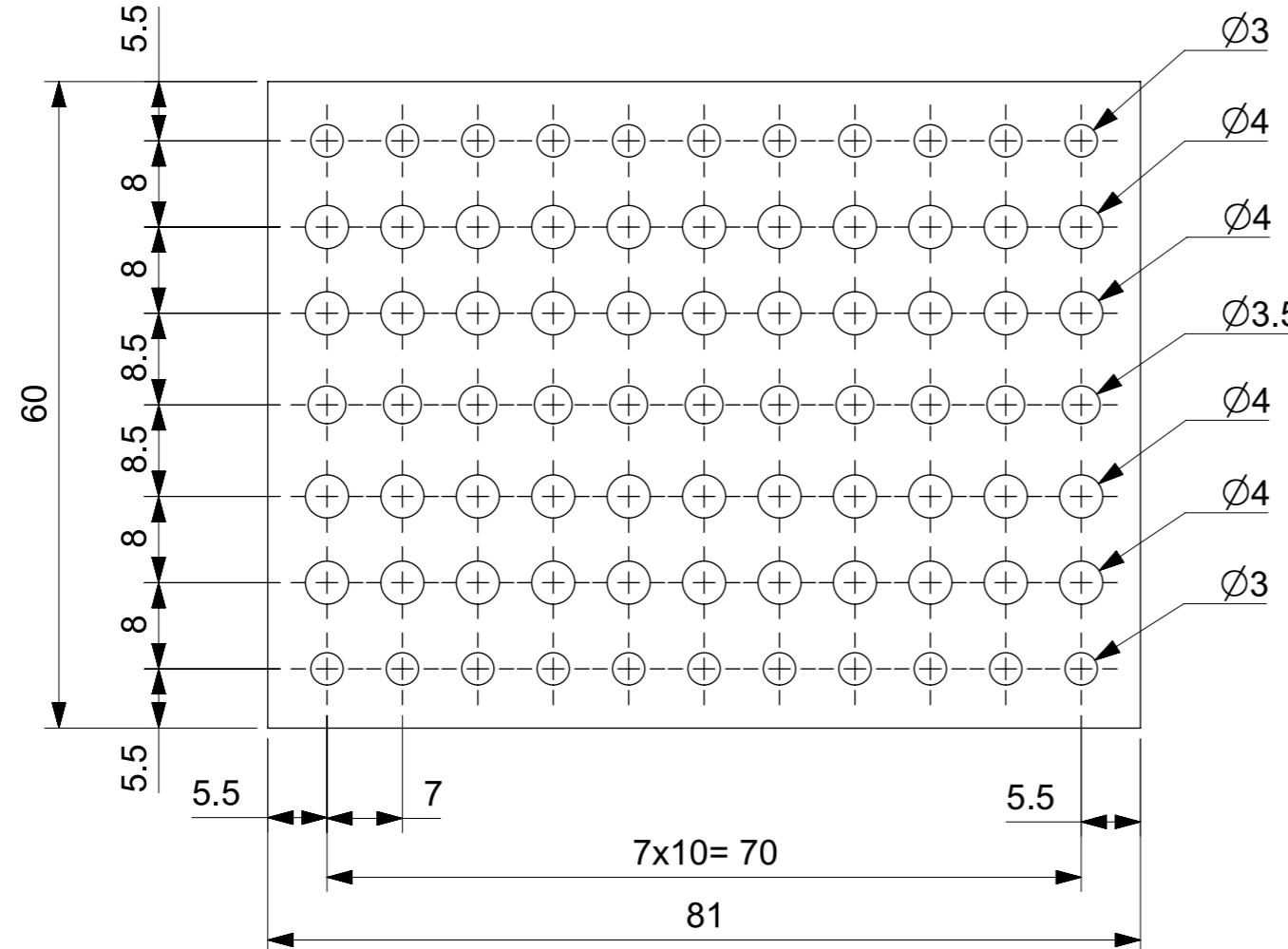
V. Deepak Naidu 7/10/19

V. Deepak Naidu
Dy. Engineer / W.T

Approved by:

P V D Ramesh 7/10/19

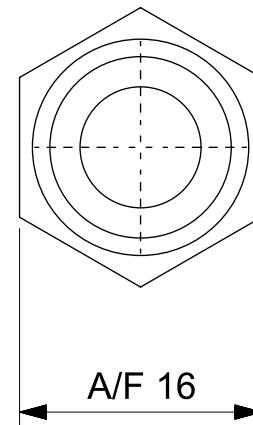
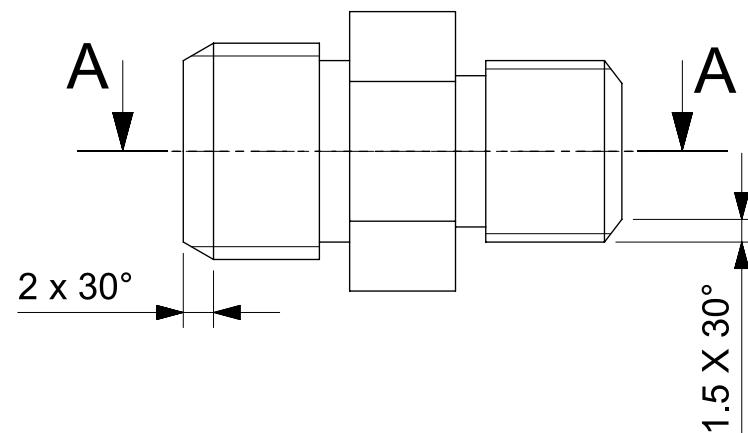
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Dy. Manager / W.T

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D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="5" style="text-align: center;">UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE</td> </tr> <tr> <td rowspan="2" style="text-align: center;">LINEAR</td> <td style="text-align: center;">RANGE</td> <td style="text-align: center;">5 - 50</td> <td style="text-align: center;">51 - 250</td> <td style="text-align: center;">> 250</td> </tr> <tr> <td style="text-align: center;">TOL (MM)</td> <td style="text-align: center;">±0.5</td> <td style="text-align: center;">±1.5</td> <td style="text-align: center;">±2.5</td> </tr> <tr> <td rowspan="2" style="text-align: center;">ANGULAR</td> <td colspan="4" style="text-align: center;">± 1.5°</td> </tr> <tr> <td rowspan="2" style="text-align: center;">SURFACE FINISH</td> <td style="text-align: center;">SYMBOL</td> <td style="text-align: center;">VVV</td> <td style="text-align: center;">VV</td> <td style="text-align: center;">V</td> </tr> <tr> <td style="text-align: center;">TOL (um)</td> <td style="text-align: center;">0.025 to 1.6</td> <td style="text-align: center;">1.6 to 8</td> <td style="text-align: center;">8 to 25</td> <td></td> </tr> </table>			UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE					LINEAR	RANGE	5 - 50	51 - 250	> 250	TOL (MM)	±0.5	±1.5	±2.5	ANGULAR	± 1.5°				SURFACE FINISH	SYMBOL	VVV	VV	V	TOL (um)	0.025 to 1.6	1.6 to 8	8 to 25		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="text-align: center;">REV</td> <td style="text-align: center;">DATE</td> <td style="text-align: center;">ALTERED</td> <td colspan="2"></td> </tr> <tr> <td></td> <td></td> <td colspan="2">CHD/APPD</td> </tr> <tr> <td rowspan="2" style="text-align: center;">ZONE</td> <td colspan="4" rowspan="2"></td> </tr> <tr> <td></td> </tr> </table>			REV	DATE	ALTERED					CHD/APPD		ZONE					
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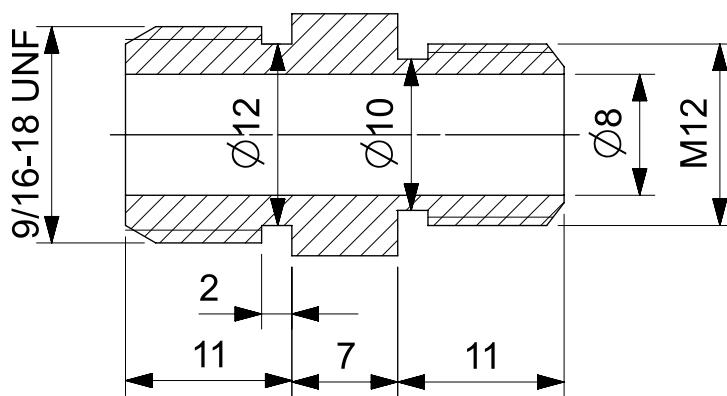
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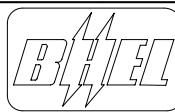
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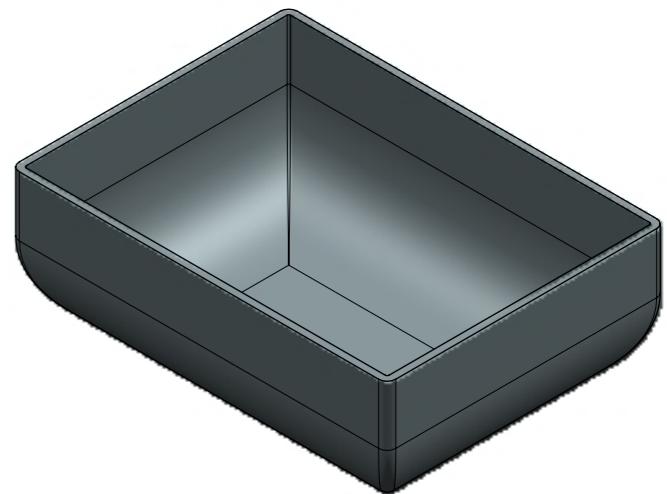
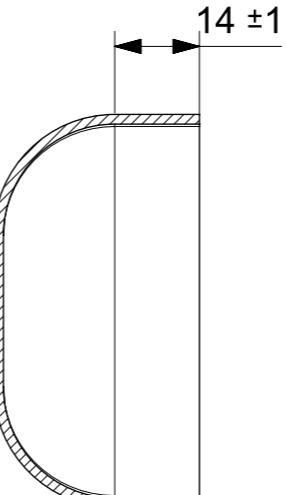
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ZONE				ZONE			
PART NO	220				BHARAT HEAVY ELECTRICALS LTD		
MATERIAL	STAINLESS STEEL				HEAVY PLATES & VESSELS PLANT		
QTY	02				VISAKHAPATNAM - 530012, INDIA.		
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE				DRAWN	ANAND	RESEARCH AND DEVELOPMENT	
LINEAR	RANGE	5 - 50	51 - 250	CHECKED	S MANDAL	CUSTOMER	DARE BANGALORE
	TOL (MM)	±0.5	±1.5	APPROVED	S MANDAL		
ANGULAR		± 1.5°		SCALE	1:1	TITLE	ADAPTOR
SURFACE FINISH	SYMBOL					REF DRAWING NO	RD-41016601-A-200
	TOL (um)	0.025 to 1.6	1.6 to 8	ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED		YEAR OF ORDER	DRAWING NUMBER
						2019	REV.
						RD-41016601-P-220	00
						SHEET 1 OF 1	SIZE: A4

1

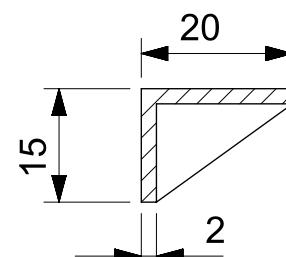
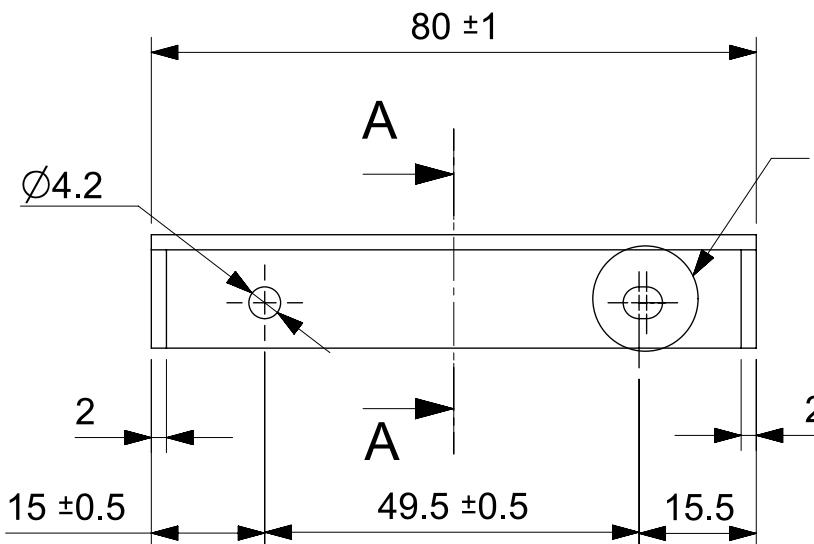
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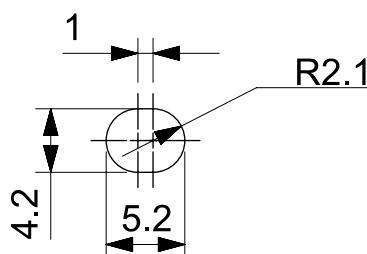
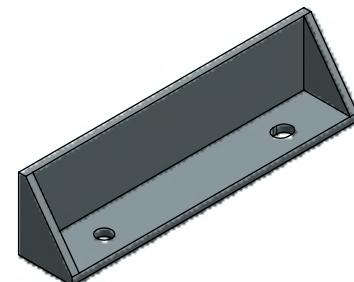
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	DRG NO:	RD-41016601-P-210											
A				A	A								
B				B	B								
C				C	C								
D				D	D								
SECTION A-A		SECTION B-B		NOTES: 1. ALL THE JOINTS ARE WELDED AS PER WPS No. T.8.8.35, Rev No. 1 2. LIQUID PENETRANT EXAMINATION TO BE DONE AS PER PROC No. : BHEL-NDT-PT-07026, REV No. 1									
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE				BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA.									
LINEAR ANGULAR SURFACE FINISH	RANGE $\pm 1.5^\circ$ SYMBOL	5 - 50 ± 0.5 TOL (MM)	51 - 250 ± 1.5 TOL (MM)	> 250 ± 2.5 TOL (MM)	REV DATE ZONE	ALTERED CHD/APPD	REV DATE ZONE	ALTERED CHD/APPD	DRAWN CHECKED APPROVED	ANAND S MANDAL SVS SRINIVAS	RESEARCH AND DEVELOPMENT CUSTOMER TITLE	DARE BANGALORE INLET HEADER	
									SCALE ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED	1:1	REF DRAWING NO YEAR OF ORDER 2019	RD-41016601-A-209	DRAWING NUMBER RD-41016601-P-210
1		2		3		4		5		6			

1

2



SECTION A-A

DETAIL B
SCALE 2:1

B

B

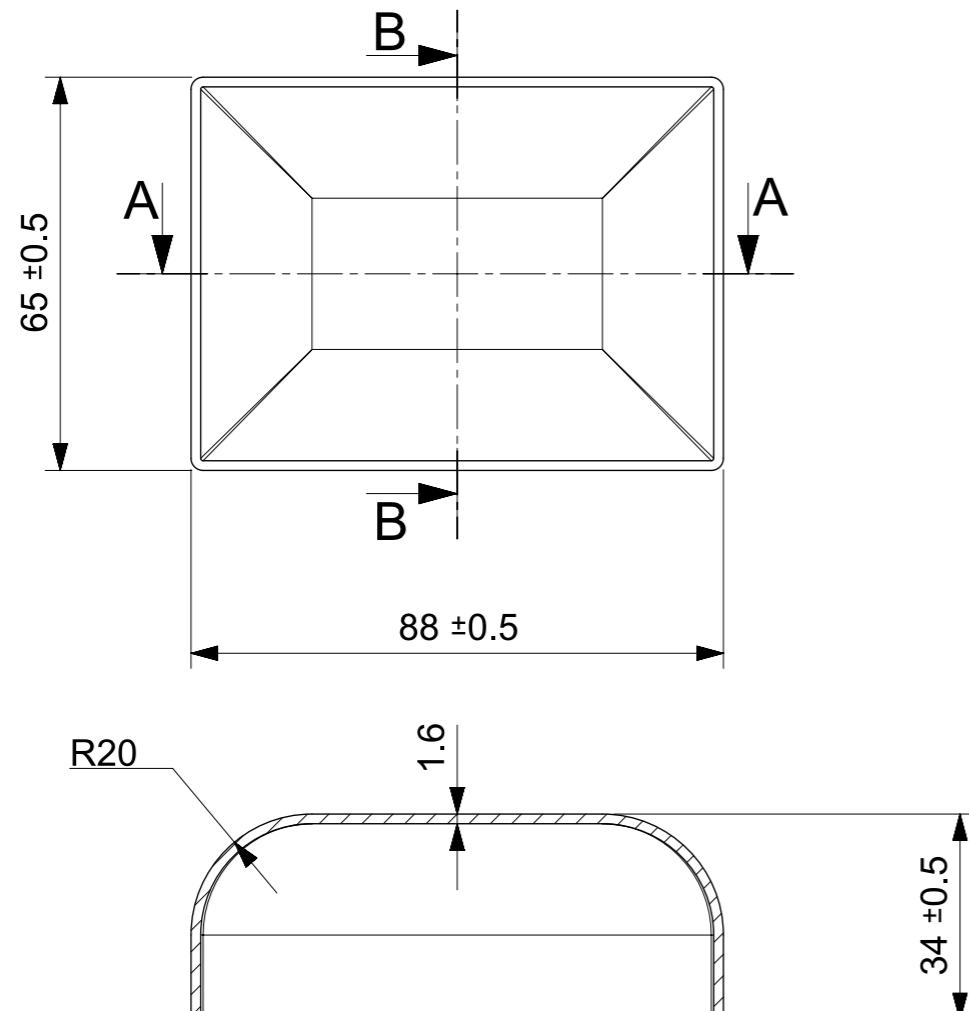
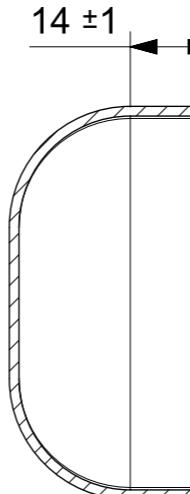
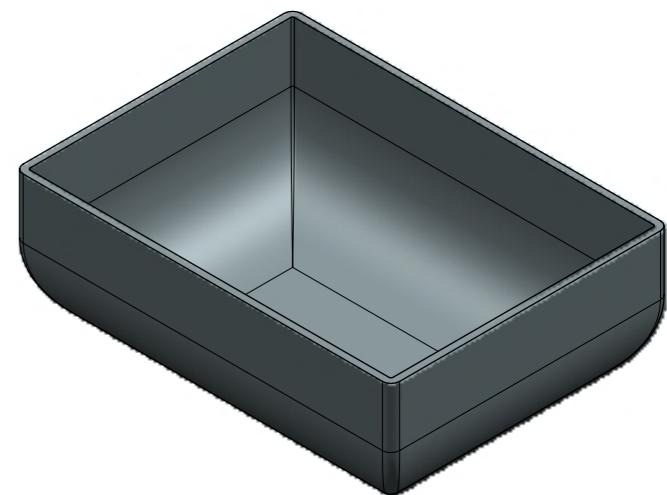
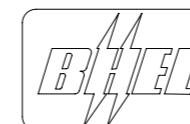
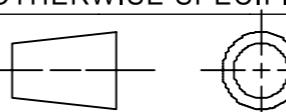
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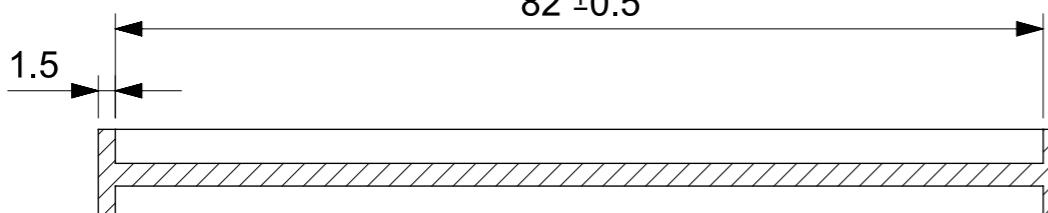
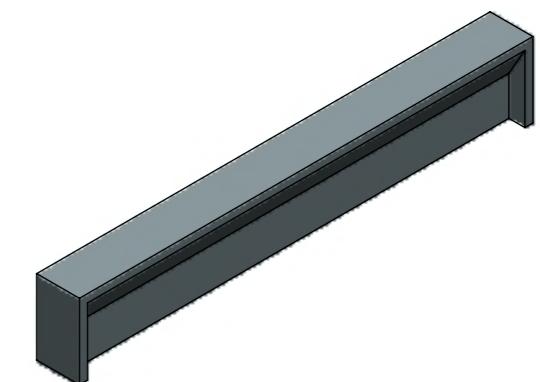
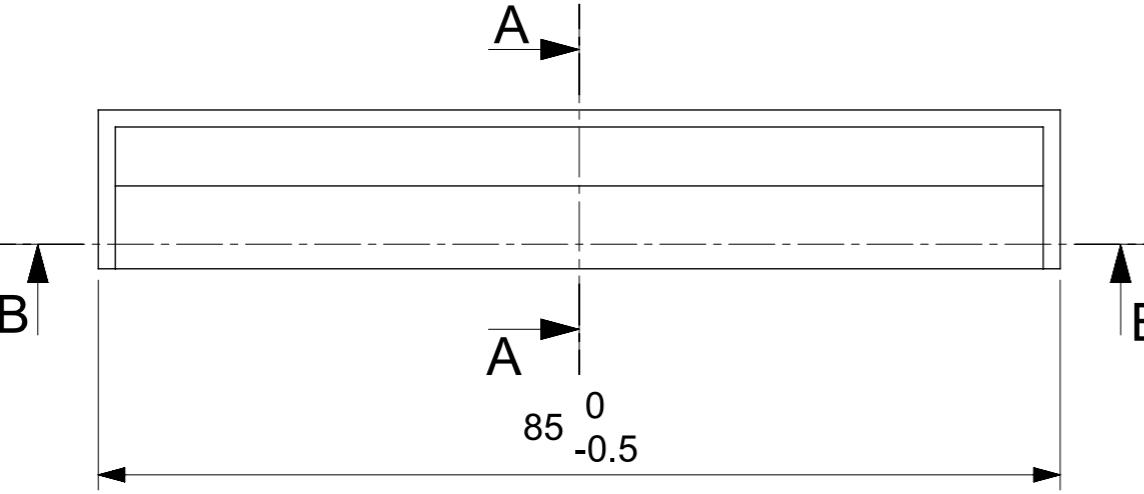
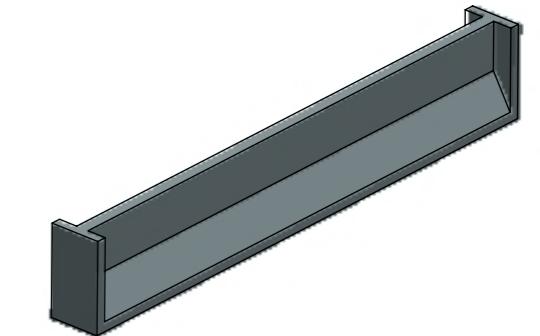
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REV	DATE	ALTERED	REV	DATE	ALTERED
CHD/APPD			CHD/APPD		
ZONE			ZONE		
PART NO	213				
MATERIAL	AA5086/5083				
QTY	01				
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE			DRAWN	ANAND	RESEARCH AND DEVELOPMENT
LINEAR	RANGE	5 - 50	CHECKED	S MANDAL	CUSTOMER
	TOL (MM)	±0.5	APPROVED	S MANDAL	DARE BANGALORE
ANGULAR	± 1.5°		SCALE	1:1	TITLE
SURFACE FINISH	SYMBOL		ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED		MOUNTING BRACKET
	TOL (um)	0.025 to 1.6	2019	RD-41016601-P-213	00
		1.6 to 8			
		8 to 25			
				SHEET 1 OF 1	SIZE: A4

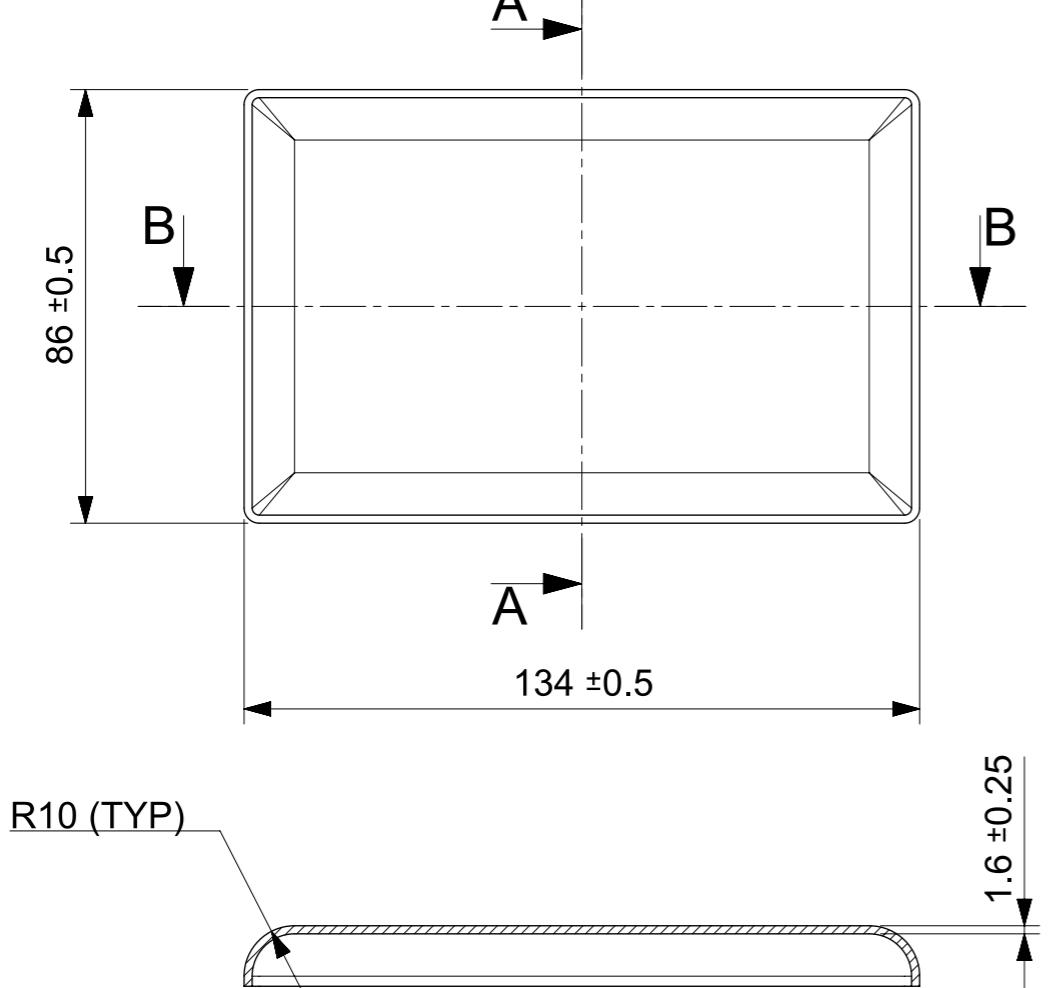
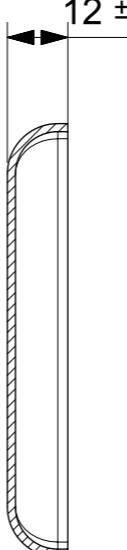
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1	2	3	4	5	6
DRG NO:	RD-41016601-P-212				
A				A	A
B		SECTION B-B		B	B
C	SECTION A-A			C	C
D	UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE	REV DATE ALTERED CHD/APPD	REV DATE ALTERED CHD/APPD	ZONE	BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA.  DRAWN ANAND RESEARCH AND DEVELOPMENT CHECKED S MANDAL CUSTOMER DARE BANGALORE APPROVED SVS SRINIVAS SCALE 1:2 TITLE OUTLET HEADER ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED REF DRAWING NO RD-41016601-A-211 YEAR OF ORDER 2019 DRAWING NUMBER RD-41016601-P-212 REV. 00  SHEET 1 OF 1 SIZE: A3
	LINEAR RANGE 5 - 50 51 - 250 > 250	TOL (MM) ±0.5 ±1.5 ±2.5			
	ANGULAR ± 1.5°				
	SURFACE FINISH SYMBOL VVV VV V	TOL (um) 0.025 to 1.6 1.6 to 8 8 to 25			
1	2	3	4	5	6

	1	2	3	4	5	6																													
	DRG NO: RD-41016601-P-215																																		
A																																			
B																																			
C																																			
D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="5" style="text-align: center;">UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE</td> </tr> <tr> <td rowspan="2" style="text-align: center;">LINEAR</td> <td style="text-align: center;">RANGE</td> <td style="text-align: center;">5 - 50</td> <td style="text-align: center;">51 - 250</td> <td style="text-align: center;">> 250</td> </tr> <tr> <td style="text-align: center;">TOL (MM)</td> <td style="text-align: center;">±0.5</td> <td style="text-align: center;">±1.5</td> <td style="text-align: center;">±2.5</td> </tr> </table>			UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE					LINEAR	RANGE	5 - 50	51 - 250	> 250	TOL (MM)	±0.5	±1.5	±2.5	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="text-align: center;">REV</td> <td style="text-align: center;">DATE</td> <td style="text-align: center;">ALTERED</td> <td colspan="2"></td> </tr> <tr> <td></td> <td></td> <td colspan="2">CHD/APPD</td> </tr> <tr> <td rowspan="2" style="text-align: center;">ZONE</td> <td colspan="5"></td> </tr> </table>			REV	DATE	ALTERED					CHD/APPD		ZONE					
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE																																			
LINEAR	RANGE	5 - 50	51 - 250	> 250																															
	TOL (MM)	±0.5	±1.5	±2.5																															
REV	DATE	ALTERED																																	
			CHD/APPD																																
ZONE																																			
				REV	DATE	ALTERED																													
						CHD/APPD																													
			ZONE																																
ANGULAR	± 1.5°																																		
	SURFACE FINISH	SYMBOL	VVV	VV	V																														
TOL (um)		0.025 to 1.6	1.6 to 8	8 to 25																															

 BHARAT HEAVY ELECTRICALS LTD. HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA. | | || DRAWN | | ANAND | | | RESEARCH AND DEVELOPMENT | |
CHECKED		S MANDAL			CUSTOMER		
APPROVED		SVS SRINIVAS			TITLE	DARE BANGALORE	
SCALE		1:1			PARTITIONER FOR HEADER WELDING		
ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED		REF DRAWING NO		RD-41016601-A-200			
YEAR OF ORDER		DRAWING NUMBER		REV.			
2019		RD-41016601-P-215					
SHEET 1 OF 1		SIZE: A3					

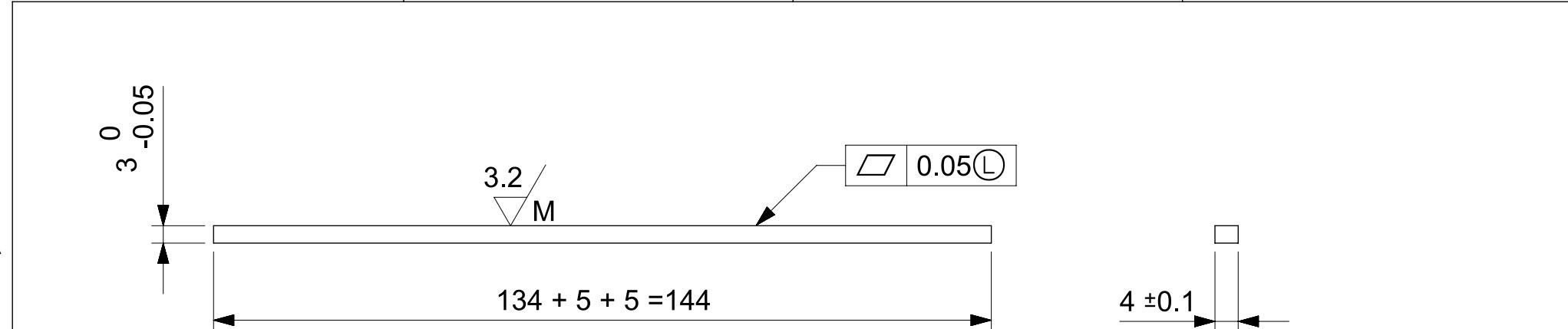
	1	2	3	4	5	6																																																																										
	DRG NO:	RD-41016601-P-216																																																																														
A																																																																																
B																																																																																
C																																																																																
D	<p>UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 10%;">LINEAR</td> <td style="width: 10%;">RANGE</td> <td style="width: 10%;">5 - 50</td> <td style="width: 10%;">51 - 250</td> <td style="width: 10%;">> 250</td> </tr> <tr> <td>TOL (MM)</td> <td>±0.5</td> <td>±1.5</td> <td>±2.5</td> </tr> </table> <p>ANGULAR</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="5" style="width: 100%;">± 1.5°</td> </tr> </table> <p>SURFACE FINISH</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 10%;">SYMBOL</td> <td style="width: 10%;">VVV</td> <td style="width: 10%;">VV</td> <td style="width: 10%;">V</td> <td style="width: 10%;"></td> </tr> <tr> <td>TOL (um)</td> <td>0.025 to 1.6</td> <td>1.6 to 8</td> <td>8 to 25</td> <td></td> </tr> </table>			LINEAR	RANGE	5 - 50	51 - 250	> 250	TOL (MM)	±0.5	±1.5	±2.5	± 1.5°					SYMBOL	VVV	VV	V		TOL (um)	0.025 to 1.6	1.6 to 8	8 to 25		<p>NOTES:</p> <ol style="list-style-type: none"> ALL THE JOINTS ARE WELDED AS PER WPS No. T.8.8.35, Rev No. 1 LIQUID PENETRANT EXAMINATION TO BE DONE AS PER PROC No. : BHEL-NDT-PT-07026, REV No. 1 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">  </td> <td colspan="3" style="text-align: center;">BHARAT HEAVY ELECTRICALS LTD.</td> </tr> <tr> <td colspan="4" style="text-align: center;">HEAVY PLATES & VESSELS PLANT</td> </tr> <tr> <td colspan="4" style="text-align: center;">VISAKHAPATNAM - 530012, INDIA.</td> </tr> <tr> <td style="text-align: center;">DRAWN</td> <td style="text-align: center;">ANAND</td> <td style="text-align: center;">27/07/2020</td> <td colspan="2" style="text-align: center;">RESEARCH AND DEVELOPMENT</td> </tr> <tr> <td style="text-align: center;">CHECKED</td> <td style="text-align: center;">S MANDAL</td> <td style="text-align: center;">27/07/2020</td> <td style="text-align: center;">CUSTOMER</td> <td style="text-align: center;">DARE- BANGALORE</td> </tr> <tr> <td style="text-align: center;">APPROVED</td> <td style="text-align: center;">S MANDAL</td> <td style="text-align: center;">27/07/2020</td> <td rowspan="2" style="text-align: center;">TITLE</td> <td colspan="2" rowspan="2" style="text-align: center;">RETURN HEADER</td> </tr> <tr> <td style="text-align: center;">SCALE</td> <td colspan="2" style="text-align: center;">1:2</td> </tr> <tr> <td colspan="3" rowspan="3" style="text-align: center;">ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED</td> <td style="text-align: center;">REF DRAWING NO</td> <td colspan="2" style="text-align: center;">RD-41016601-A-200</td> </tr> <tr> <td style="text-align: center;">YEAR OF ORDER</td> <td colspan="2" style="text-align: center;">DRAWING NUMBER</td> <td rowspan="2" style="text-align: center;">REV.</td> </tr> <tr> <td style="text-align: center;">2019</td> <td colspan="2" style="text-align: center;">RD-41016601-P-216</td> </tr> <tr> <td colspan="4" style="text-align: center;">SHEET 1 OF 1</td> <td colspan="2" style="text-align: center;">SIZE: A3</td> </tr> </table>				BHARAT HEAVY ELECTRICALS LTD.			HEAVY PLATES & VESSELS PLANT				VISAKHAPATNAM - 530012, INDIA.				DRAWN	ANAND	27/07/2020	RESEARCH AND DEVELOPMENT		CHECKED	S MANDAL	27/07/2020	CUSTOMER	DARE- BANGALORE	APPROVED	S MANDAL	27/07/2020	TITLE	RETURN HEADER		SCALE	1:2		ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED			REF DRAWING NO	RD-41016601-A-200		YEAR OF ORDER	DRAWING NUMBER		REV.	2019	RD-41016601-P-216		SHEET 1 OF 1				SIZE: A3	
LINEAR	RANGE	5 - 50	51 - 250		> 250																																																																											
	TOL (MM)	±0.5	±1.5	±2.5																																																																												
± 1.5°																																																																																
SYMBOL	VVV	VV	V																																																																													
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	BHARAT HEAVY ELECTRICALS LTD.																																																																															
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			YEAR OF ORDER	DRAWING NUMBER		REV.																																																																										
			2019	RD-41016601-P-216																																																																												
SHEET 1 OF 1				SIZE: A3																																																																												
	1	2	3	4	5	6																																																																										

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NOTES:

1. Side bars should be free from burrs and surface marks.
2. Maximum deviation acceptable in flatness is 0.05mm along the entire length on both the faces.

REV	DATE	ALTERED			BHARAT HEAVY ELECTRICALS LTD HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012, INDIA.						
ZONE					DRAWN	ANAND	RESEARCH AND DEVELOPMENT				
					CHECKED	S MANDAL	CUSTOMER	DARE BANGALORE			
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE											
LINEAR	RANGE	5 - 50	51 - 250	> 250	APPROVED	SVS SRINIVAS	TITLE	SIDE BAR ECG SIDE			
	TOL (MM)	±0.5	±1.5	±2.5	SCALE	1:1	REF DRAWING NO	RD-41016601-A-202			
ANGULAR	± 1.5°				ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED		YEAR OF ORDER	DRAWING NUMBER			
SURFACE FINISH	SYMBOL	▽▽▽	▽▽	▽			2019	RD-41016601-P-208			
	TOL (um)	0.025 to 1.6	1.6 to 8	8 to 25			REV.				
				SHEET 1 OF 1		SIZE: A4					

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4

10.2 0 -0.05

3.2 M

0.05(L)

90 + 5 + 5 = 100

4 ±0.1

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

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NOTES:

1. Side bars should be free from burrs and surface marks.
2. Maximum deviation acceptable in flatness is 0.05mm along the entire length on both the faces.

REV	DATE	ALTERED						
		CHD/APPD						
ZONE								
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DIMENSIONS ARE								
LINEAR	RANGE	5 - 50	51 - 250	> 250				
	TOL (MM)	±0.5	±1.5	±2.5				
ANGULAR	± 1.5°							
SURFACE FINISH	SYMBOL	▽▽▽	▽▽	▽				
	TOL (um)	0.025 to 1.6	1.6 to 8	8 to 25				



BHARAT HEAVY ELECTRICALS LTD

HEAVY PLATES & VESSELS PLANT

VISAKHAPATNAM - 530012, INDIA.

DRAWN	ANAND		RESEARCH AND DEVELOPMENT
CHECKED	S MANDAL		CUSTOMER
APPROVED	SVS SRINIVAS		DARE BANGALORE
SCALE	1:2	TITLE	SIDE BAR AIR SIDE
ALL PROJECTIONS ARE IN FIRST ANGLE UNLESS OTHERWISE SPECIFIED		REF DRAWING NO	RD-41016601-A-202
		YEAR OF ORDER	DRAWING NUMBER
		2019	REV.
SHEET 1 OF 1			00
			A4

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