



Bharat Heavy Electricals Limited

Fabrication Stamping & Insulator Plant
Jagdishpur, Amethi – 227817(U.P.)

Office: 91(05361) 224119
Fax: 91(05361) 224243

MATERIAL MANAGEMENT

Notice Inviting Tender

Tender Enquiry No: TE-110

Dated: 06.06.2022

E-Tenders are invited in Two Part Bid system for the Supply of M S CASING FOR VARRIABLE ORIFICE ASLY (28") AS PER SPEC TFS 1011 AND DRG NO. 0-47-200-02732 REV 01 WITH WOODEN PACKING AS PER DRG 3 SK-1505 REV 00 and other technical documents.

(I) General:

1. The tender will be under Two-part bid system i.e PQR cum techno commercial bid and Price bid.
2. PQR is as below:

PQR For <u>M S CASING FOR VARRIABLE ORIFICE</u>	
1	For manufacturer:- Capabilities with respect to personnel, equipment(Lathe Machine, Welding machine, Grinding machine, etc.) and manufacturing Facilities. OR For Trader/Dealer/Agent etc. a. Authorization letter from their OEM/Principal/Manufacturer is mandatory
2	The supplier should have Average Annual Turnover should be at least Rs. 15 Lakhs in last three years (FY 2018-19 & FY 2019-20 & FY 2020-21). A copy of audited Balance Sheets and Profit Loss statements to be submitted by bidder as a documentary evidence.
3	Experience and past performance of Vendor for supplying similar/same fabrication item for past 02(Two) Years to reputed companies (From the last day of previous month of tender submission). Copies of purchase order/delivery challan is required to be submitted as a documentary proof.

3. **Mode of Submission of offer:** Mode of Submission of offer: Being e-tender, offer will be submitted online through e-tender portal:

<https://eprocurebhel.co.in/nicgep/app>

Important dates are given below:

EVENT	SCHEDULE
Last Date & Time for receipt of tender	Date : 16.06.2022 Time : 14.00 hrs (IST)
Tender Part I opening date & Time	Date : 16.06.2022 Time : 15.30 hrs (IST)

4. In case of any difficulty faced while registering on BHEL's e-Procurement portal developed by NIC, queries may be addressed to 0120-4001002, 0120-4001005 and 0120-6277787; email: support-eproc@nic.in. These details are also available on 'Contact Us' page of the portal
5. Offer to be submitted only on e-procurement portal. Hard copy/email offer is not required to be submitted to BHEL-FSIP. **Any offer received in Hard copy/Email shall not be accepted and straightway rejected by BHEL-FSIP**
6. The offer shall be submitted as per the instructions of tender documents and as detailed in this NIT. Non acceptance of any term may lead to rejection of quotation.
7. **Rate shall be firm and there is no Price Variation.**

8. Supplier has to quote prices in Rs per piece only.



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(II) **Item Description and Scope of Supply:** Supplier has to supply below items as per Drawings and technical documents.

Sl.No.	Material Code	Item Description	Qty (Nos)	Unit
1	702000008001	M.S CASING FOR VARRIABLE ORIFICE ASLY (28") AS PER SPEC TFS 1011 AND DRG NO. 0-47-200-02732 REV 01 WITH WOODEN PACKING AS PER DRG 3 SK-1505 REV 00	36	Nos.

(III) **Attachment to Tender Enquiry:**

Sl. No.	Description	Annexure/Enclosure
1	PQR cum Techno-Commercial Bid format	Annexure-IV
2	General Terms & Conditions	Annexure: II
3	Special terms and Conditions	Annexure: III
4	Drawings & Technical document	Attached

(IV) **Contact person details:**

Manmeet Kumar

Dy. Manager –MM

Phone: 05361 224126/9478471278

E-mail: manmeet@bhel.in



SPECIAL TERMS AND CONDITIONS OF ENQUIRY (TE -110, dated 06.06.2022)

Sl. No.	Description
1	Product Requirement
	Supplier has to supply material as per drawings and Technical documents. Applicable drawings and technical documents are attached.
2	Delivery time and term
	Within 90 days from date of PO. The rates quoted shall be on F.O.R- BHEL Stores basis without unloading charges. The rates shall be exclusive of unloading charges but inclusive of freight & Insurance. Early and Part Delivery (staggered delivery) is acceptable. Accordingly Penalty clause shall be applicable.
3	Distribution of Load Share
	100% quantity shall be given to L1 bidder. But distribution shall be as per MSE clause if applicable.
4	Tender Finalization
	Tender Finalization shall be through Reverse Auction after price bid opening.
5	Quantity Tolerance
	<i>Quantity variation is not allowed.</i>
6	Gaurantee/warrantee certificate is required:
	One year after receipt of BHEL with SRV Clearance
7	Test Certificate
	<i>Material test Certificate is required.</i>
8	Inspection
	<i>Pre dispatch Inspection is required and done by BHEL/TPI.</i>

PQR cum Techno-Commercial Format

Tender Enquiry No- TE-110

Annexure-IV

PQR cum Techno-Commercial Requirements

SI No	Description	BHEL's Requirement	Suppliers Remarks
1	For manufacturer:- Capabilities with respect to personnel, equipment(Lathe Machine, Welding machine, Grinding machine, etc.) and manufacturing Facilities. OR For Trader/Dealer/Agent etc. a. Authorization letter from their OEM/Principal/Manufacturer is mandatory	1.Machine,equipemnts details and personnel details. OR 2.Authorization letter.	Submitted (Yes/No)
2	The supplier should have Average Annual Turnover should be at least Rs. 15 Lakhs in last three years (FY 2018-19 & FY 2019-20 & FY 2020-21). A copy of audited Balance Sheets and Profit Loss statements to be submitted by bidder as a documentary evidence.	Audited Blance sheet (last three years),Profit and Loss statement.	Submitted (Yes/No)
3	Experience and past performance of Vendor for supplying similar/same fabrication item for past 02(Two) Years to reputed companies (From the last day of previous month of tender submission). Copies of purchase order/delivery challan is required to be submitted as a documentary proof.	PO Copies(Not earlier than 17.06.2020) must be submitted	Submitted (Yes/No)
4	Registraion Certificate under MSME Act if applicable	Registraion Certificate under MSME Act to be submitted	Submitted (Yes/No)
5	Udhyam Certificate if applicable	UDYAM to be submitted	Submitted (Yes/No)
6	CA certificate (Annexure I-page no.- 69 of GTC), If applicable	,CA (Chartered Accountant) Certificate - on Format attached in GTC "Annexure-I" to be submitted	Submitted (Yes/No)
7	Declaration by vendor for Sister Concern(format at page no.-70 of GTC)	Seal and signed on company letter head	Submitted (Yes/No)
8	Self-Declaration on Class I/Class II/Non Local under Make in India (format at page no.-71 of GTC)	Seal and signed on company letter head	Submitted (Yes/No)
9	MSE owned by SC/ST declration, if applicable	Yes/No, If Yes, Provide supporting document	Submitted (Yes/No)
10	MSE owned by Women declration, if applicable	Yes/No, If Yes, Provide supporting document	Submitted (Yes/No)
11	Acceptance of NIT, STC and GTC terms and conditions	Yes/No	Submitted (Yes/No)
	Remarks if any		

Seal and Signed by Bidder



GENERAL TERMS AND CONDITIONS OF ENQUIRY

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Sl. No.	Description
1	General:
A	These General Terms & Conditions (GTC) shall apply to all enquiries, notice inviting tenders, request for quotations concerning the supply of goods and / or rendering of services to Bharat Heavy Electricals Ltd., Jagdishpur (hereinafter referred to as BHEL or the Purchaser) or its Projects / Customers. Special / supplementary terms and conditions of enquiry, if any, will override the conditions in this annexure.
2	General Instructions - Common for Indigenous & Foreign enquiries
A	Through E- procurement-
	<ol style="list-style-type: none"> 1. Offer shall be submitted by the bidders in single / two parts as called in Tender enquiry. 2. Bid Part - I Technical cum Commercial bid Bid Part - II Price bid 3. Suppliers shall quote price on BHEL/authorised third party service provider e-procurement site. Any deviation from the price format shall be clearly brought out in the offer Bid part-I. <p>The offer shall be uploaded on BHEL e-procurement site using Class III digital signature. Bidders to put sign and seal on all the uploaded documents. The quotation should be uploaded on the site before due date and time.</p> <p>Part-I of the bid shall contain complete item-wise scope of supply as offered vis-à-vis the scope of supply as per enquiry, all commercial terms and conditions etc. It is expected that bidders shall meet all our technical and commercial requirements and shall not deviate from them.</p>
B	Through Tender Room
B1	Sealed bids are invited for scope of Supply / Services as detailed in the enquiry. The quotation should be neatly typed and free from over writing/ erasures. Any correction or addition must be authenticated. The bid should be submitted in English or Hindi language. Relevant enclosures, supporting documents, catalogue, samples, if any, as required as per Notice Inviting Tender (NIT) conditions shall be sent along with technical offer. Rate should be quoted in the units asked for in the enquiry. The rates should be quoted both in figures and words. In case of discrepancy in figures and words, the rates quoted in words shall be considered.
B2	Bids shall be submitted in a Sealed cover with Enquiry No., Due date and Bidder's name indicated on the cover. In case of Two part Bid, technical bid containing technical offer, mandatory documents filled-in & signed; and un-priced copy of the tender should be kept in one envelope. Price Bid containing only the price (as called for in the price format where required) should be kept in a separate envelope. Both envelopes indicating Part-I or Part-II as the case may be to be put in a bigger envelope, which should be addressed to In charge, Tender Box, Administrative Building BHEL FSIP, Industrial Area Jagdishpur, Dist. Amethi-227817, (U.P.) India. Enquiry No., due date and bidder's name must be mentioned on all envelopes. Offer must reach tender box of BHEL FSIP Jagdishpur by 15.00 PM IST on the enquiry due date.
B3	Offer received after 15.00 PM IST of the due date will be termed as "Late Tender" and shall not be considered.
B4	Bidder can also submit offer through email, if called for in the enquiry, at the email address indicated in the enquiry. Such email offers shall be sent only on designated email-id to reach before 15.00 PM IST on the tender due date. BHEL will not be responsible for incomplete offers and the ones delivered late through e-mail.
C	Commercial Conditions quoted by the vendor in any place including as stated in bidder's 'General Terms and Conditions' if any, shall not be binding on the Purchaser and the conditions contained in this annexure, including special conditions, if any, for this enquiry shall only prevail.
D	<p><u>Wherever Reverse Auction is called for</u></p> <p>REVERSE AUCTION (RA): "BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do (es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking."</p> <p><u>Wherever Reverse Auction is not called for</u></p> <p>PRICE BID OPENING: Tender shall be finalized via price bid opening of all the techno-commercially qualified bidders in place of RA.</p>



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	Price bid should contain only price of item. Anything other than price of item shall be invalid. <i>Tender finalization mode (RA or Price bid opening) shall be specified in Special / supplementary terms and conditions of enquiry.</i>
E	The goods offered shall confirm to BHEL specifications and / or National/International standards as mentioned in the Enquiry and the bidder is required to confirm his unconditional acceptance to the same. Vendors, seeking deviations from the specifications and any other conditions, may indicate the same clearly on a separate sheet, with reasons for such deviations. BHEL reserves the right to reject the offer with deviations or load the deviations suitably for evaluation.
F	Offers shall be submitted directly by vendor or his authorized agent only. Unsolicited offers shall be summarily rejected.
G	Bid in single part or techno-commercial bid in two-part system (as the case may be) will be opened on the due date. In case of two part bid, price bids of techno-commercially acceptable bidder(s) only shall be opened on the assigned date.
H	In case of changes in scope and / or technical specification and / or commercial terms & conditions, having price implication, techno-commercially acceptable bidders shall be asked by BHEL to submit the impact of such changes on their price bids. In case a bidder opts to submit revised price bid instead of impact called for, then latest price bid shall prevail.
I	The bidders will submit Integrity Pact, duly signed by its authorized signatory, where called for in the enquiry.
J	Wherever the enquiry is issued to unregistered vendor, the bidder shall visit ' www.bhel.com and online filled up "Supplier Registration Form" on BHEL link (http://supplier.bhel.in) along-with all the supporting documents to be submitted.
K	BHEL expects that the bidder must respond to the enquiry. Regret letter, with valid reasons for not participating in the tender will be submitted where the bidder is unable to submit offer. Repeated lack of response on the part of vendor (Four non responses) may lead to his deletion from BHEL's approved vendor list.
L	Goods shall be properly packed to avoid transit damage. Suitable markings shall be provided to identify the goods with that of the PO No. and the consignee details.
M	Goods shall be consigned to Store Officer, BHEL, FSIP, IA Jagdishpur Dist- Amethi (U.P.) India, unless otherwise specified in the PO.
N	All corrigenda, addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL website (www.bhel.com)/ https://eprocure.gov.in/epublish/app/ https://eprocurebhel.co.in/nicgep/app eProcurement website only.
O	In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders. In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss / draw of lots, in the presence of the respective L-1 bidder (s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.
P	The Purchaser can consider awarding tendered quantities among more than one bidder (after acceptance of L1 price by the other bidders) in the manner and proportion disclosed in the tender conditions. Purchaser can also consider awarding of part of the tendered quantity to other than L-1 bidder at L1 counter offered rates, if the quantity offered by the L-1 bidder is less than the quantity tendered for. BHEL can also award order to L1 bidder/counter offer accepted bidders in case any bidder is not supplying/delaying the supplies and in this case the distributed quantity shall not be considered in loading share. The loading of Order shares on suppliers will also be subject to their performance (Quality, Delivery and Service) for the supplies made against Purchase Orders. The suppliers with consistence good performance will be preferred over poor performance supplier and encouraged with more order share. Depending upon performance in supplies BHEL shall go to redistribute the pending orders/shares of poor performer to other suppliers whose performance in supplies is better.
Q	The bidder shall submit price bid strictly in the price format, wherever provided for, in the enquiry. Any attempt on the part of the bidder to alter the contents of the price bid format in any manner, which in the opinion of BHEL can vitiate the tendering process, will lead to rejection of the bid, <i>besides BHEL taking appropriate punitive action as deemed fit.</i>



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R	In case the bidder decides to sub-contract part of his activity / work to some of his vendors, details of such intended subcontracting shall be mentioned in the bid. This will however not absolve the bidder from his contractual obligations and responsibilities.
S	Wherever the minimum reserved capacity is called for in the tender, the offers of such bidders, who do not quote for the minimum reserved capacity, are liable to be rejected.
3	Delivery Terms
A	Indigenous Purchase
	Goods shall be delivered on 'FOR Destination' basis (with freight and insurance in bidder scope) to the named destination unless otherwise called for in the enquiry.
B	Foreign Purchase — Imports
B1	<ol style="list-style-type: none"> 1. Goods shall be despatched by Sea, unless stated otherwise in the enquiry or purchase order. 2. Terms of Delivery for Sea shipment shall be on CFR / CIF basis with 14 days' detention free period for FCL (Full Container Load) Cargo of GP & HC Containers. 3. For other cases - Other than GP & HC Containers, LCL Cargo shall be delivered at Nhava Sheva (JNPT) & Break-bulk Cargo at Mumbai (MPT). 4. For Air consignments, the terms of delivery shall be FCA at BHEL nominated Airport. 5. Freight amount shall be indicated separately in the offer in case of CIP/CFR/CIF. 6. The number of detention free days and destination charges payable to shipping line must be mentioned in your offer and also on the Bill of Lading. 7. Offer received on FOB basis may be considered on an exceptional basis. BHEL will load freight, marine insurance & shipping line port handling charges etc. to work out landed cost at Sea Port. 8. Please visit BHEL Bhopal website www.bhelbpl.co.in for details of named Air ports and Sea ports. Name of the gateway port so chosen by the Seller shall be indicated by the Bidder in his offer.
B2	<ol style="list-style-type: none"> 1. For delivery of FCL (Full Container Load) cargo, the Bidder shall provide minimum 14 days' detention free period from the date of delivery at Port of Discharge / Place of Delivery (in case of ICD). Wherever the detention free period offered is less than 14 days, the bids shall be loaded for the period short of 14 days' period. 2. <u>Port Congestion charges or any additional charges claimed by the shipping line at Port of Discharge / Place of Delivery shall be to the Seller's account.</u>
4	Vendor's particulars & logistics information (Bidder to give details against each of the provisions)
A	Name of the vendor's executive to deal with this tender / project
B	E-mail address of the contact person
C	Telephone no. of the contact person
D	Name of location from where the goods shall be offered for inspection and dispatch
5	Additional logistics information for Imports
A	Bid currency
B	Charges applicable at discharge port up to BHEL's CFS (Container Freight Station) to be indicated in your offer and on the B/L
C	Name of Airport in the country of dispatch for FCA delivery terms
D	Estimated number, type & size of containers for delivery of tendered



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	quantity (applicable where the goods are to be sent in FCL)	
E	No. of packages with cumulative gross weight and CBM volume (applicable for LCL & Break-bulk shipment)	
F	Approx. distance in km. from Vendor's works to Port of Loading	Sea port /Air port
6	Delivery Schedule & Completion date	
A	<ul style="list-style-type: none"> • Instead of writing specific date against delivery offered, bidder shall commit delivery period in number of days / weeks/ months to suit the delivery period indicated in the enquiry. • Commencement of delivery period shall be reckoned from the date of PO / LOI or any other agreed milestone. • Seller shall deliver the goods in the manner and schedule agreed under the Purchase order. • Goods shall be delivered within contractual period or any extension thereof, if any, granted by the Purchaser. • If delivery is linked to approval of documents, time for submission of such documents to be indicated and delivery period to be indicated from approval of documents. This delivery schedule will be considered for processing delivery extension, wherever applicable. • BHEL reserves the right to cancel the order if material is not delivered within PO scheduled delivery. • In case of unsatisfactory performance on quality / delivery BHEL will have right to discontinue the contract in part or full. 	
B	In case of foreign supplies, the date of Bill of Lading (B/L) or AWB shall be taken as actual date of delivery.	
C	In case of Indigenous bidders, the date of delivery at named destination in India shall be taken as contractual delivery completion date where delivery terms are FOR destination. In case of 'Ex-works' delivery terms, the date of LR / RR shall be the contractual delivery completion date.	
7	Transit Insurance	
	Except where delivery terms are agreed on CIF basis for Imports & FOR destination basis for indigenous purchases, transit insurance will be covered by BHEL under its Open Marine Transit Insurance Policy. Seller shall inform dispatch particulars with value of consignment to the Purchaser within 07 days of dispatch for BHEL to arrange insurance coverage in its policy. Failure on the part of seller to inform dispatch particulars will make him liable to pay for any transit damages / losses suffered by the Purchaser.	
8	Force Majeure	
	<p>Notwithstanding anything contained in the contract, neither the Seller nor the Purchaser shall be held responsible for total or partial non-execution of any of the contractual obligations, should the obligation become unreasonably onerous or impossible due to occurrence of a 'Force Majeure' which directly affects the obligations to be performed by the Purchaser or the Seller; Such events include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotions, insurgency, sabotage, acts of public enemy, fires, explosion, epidemics, quarantine restrictions, floods, earthquake, or acts of God, restrictions by Govt. authorities; over which the Seller or the Purchaser has no control.</p> <p>The party claiming to be affected by force majeure shall notify the other party in writing without delay, within two weeks on the intervention and on the cessation of such circumstance. Extension of time sought by the Seller along with supporting evidence and so granted by the Purchaser for the supply/ work affected, if any, shall not be construed as waiver in respect of remaining deliveries. Rescheduling of deliveries on account of force majeure conditions, if so agreed by the Purchaser, will not entail the Seller to claim any increase in the price on whatsoever account.</p> <p>Notwithstanding above provisions, Purchaser shall reserve the right to cancel the order/ Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements. If deemed necessary, Purchaser may takeover partly processed material at a mutually agreed price.</p>	
9	LD/Penalty for delayed performance.	
A	<p>Subject to force majeure conditions,</p> <p>I. LD shall be 0.5 % of the total order value per week of delay or part thereof subject to a maximum of 10% of the total order value.</p>	



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	<p>II. In case of staggered delivery schedule, LD shall be 0.5 % of the undelivered portion per week of delay or part thereof subject to a maximum of 10% of the total order value. However, even if a staggered delivery schedule for Capital Machine / BOPs is agreed, the LD cap will be levied on total order value and not undelivered portion of the order value.</p> <p>III. In case of any amendment/ revision, the LD shall be linked to the amended / revised PO value.</p> <p>Any deviation from the above LD clause shall be specified separately in the NIT. Any loading on LD/penalty clause shall be to the extent to which it is not agreed to by the bidder (at offered value). The same shall be intimated separately prior to price bid opening.</p> <p>Note: “Recovery of LD will include GST as applicable”.</p>
	In case the contractually agreed delivery date falls on a holiday in BHEL FSIP Jagdishpur, the next working day shall be taken as contractual delivery date for compliance and applicability of LD / penalty.
B	Risk Purchase
	If the material is not supplied within the agreed delivery period, BHEL reserves the right to cancel the order and purchase the material from alternate source (s) at the Risk and Cost of the Seller. In such an event, it shall be obligatory on the part of seller to make good any loss suffered by the purchaser.
10	Indian Agents and Agency commission
A	BHEL prefers to deal directly with Foreign vendor, wherever required, for procurement of Goods. However if the Foreign Principal desires to avail services of an Indian Agent, then the Principal should ensure compliance to "regulatory guidelines" which will require submission of an agency agreement.
B	The CFR / CIF price quoted will be deemed to be inclusive of Indian Agency commission. Agency commission as disclosed by the bidder in his quoted CFR / CIF price will be paid in Indian Rupees on receipt & acceptance of Materials or it's installation at destination, as the case may be. The lower of the 'TT buying rate prevailing on the date of technical bid opening or price bid opening shall be considered for computation of Agency commission.
C	In a tender either the Indian Agent on behalf of Principal / OEM or the Principal / OEM itself can bid, but both cannot bid simultaneously for same item / product in the same Tender. In case bids are received from both the Principal / OEM and the agent, bid received from the agent will be ignored.
D	If an agent submits Bid on behalf of the Principal / OEM, the same agent shall not submit bid on behalf of another Principal / OEM in the Tender, for the same Item / Product.
11	Documentation:
A	Indigenous Purchase
	Seller shall arrange to send to the consignee, Original Tax invoice (Buyer's copy and duplicate for Transporter), Commercial invoice in duplicate, consignee copy of LR & 2 sets each of Packing list, Test certificate, Guarantee / Warranty certificate, O & M manuals (where applicable), immediately on despatch of the goods. The distribution of such documents will be specified in the Purchase order.
B	Foreign Purchase — Imports
	<p>A. Vendor to share immediately Bill of lading with Import Invoice and packing list of material at mssea@bhel.in and incorporate following detail in the bill of lading:</p> <p>a. Import & export Code (IEC) of importer;</p> <p>b. GST Identification No (GSTIN) of importer;</p> <p>c. Official email id of importer (to be used for correspondence by shipping lines and Customs) – mssea@bhel.in to be included.</p> <p>B. Seller shall send 1 set of following documents, in English, within 7 days of B/L date / 1 day of AWB date by courier to the Purchaser.</p> <p>1. Express / Original 'Clean on board' Bill of Lading / AWB.</p> <p>2. One set of Commercial Invoice, Packing list indicating container-wise Gross weight, Net weight, CBM volume, No. of packages with Dimensions of each package.</p>



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	<p>3. Original Certificate of Country of Origin issued by Chamber of Commerce.</p> <p>4. One set of Original Test Certificates and O&M Manual where called for.</p> <p>5. Fumigation / Phyto Sanitary Certificate wherever cargo is packed in wooden packing or packing of plant origin material is used.</p> <p>6. Supplier should additionally forward 2 sets of original documents mentioned at point 1 to 5 along with original bill to Lading through any international courier service / registered airmail or AWB by captain's mail within three days of obtaining the same directly to the following:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>(i) AGM (M.S) Regional Operations Division BHEL 14th Floor Centre-1 World Trade Centre, Cuffe Parade Colaba, Mumbai 400 005 INDIA E-mail: mssea@bhel.in</p> </td> <td style="width: 50%; vertical-align: top;"> <p>(ii) SDGM (FIN) Administrative Bldg. BHEL, FSIP, IA Jagdishpur Amethi, 227817, UP, India E-mail : shashi.kumari@bhel.in</p> </td> </tr> </table> <p>And confirm forwarding details to DGM (MM), BHEL, FSIP, IA Jagdishpur 227817, Amethi , UP, India at nasaifi@bhel.in /pk Yadav@bhel.in/vjain@bhel.in.</p> <p>7. In case the Seller decides to negotiate all 3 originals of B/L / AWB along with all original documents through negotiating Bank, non-negotiable documents (NNDs) consisting of copy of B/L / AWB & documents mentioned at Sl. no. 11- B2 to B5 will be sent by e-mail to the Purchaser at his e-mail address given in the PO with one copy to be mailed at nasaifi@bhel.in & vjain@bhel.in (for sea shipment). Other documents, as required, will be separately indicated in the Purchase Order. Additional expenditure, if any, incurred by the Purchaser by way of detention / demurrage, resulting out of delay attributable to the Seller in providing Negotiable documents, will be recovered from the Seller.</p> <p>In case any discrepancy is raised by bankers / BHEL with respect to documents submitted, vendor to facilitate clearance of goods through Delivery Order.</p>	<p>(i) AGM (M.S) Regional Operations Division BHEL 14th Floor Centre-1 World Trade Centre, Cuffe Parade Colaba, Mumbai 400 005 INDIA E-mail: mssea@bhel.in</p>	<p>(ii) SDGM (FIN) Administrative Bldg. BHEL, FSIP, IA Jagdishpur Amethi, 227817, UP, India E-mail : shashi.kumari@bhel.in</p>
<p>(i) AGM (M.S) Regional Operations Division BHEL 14th Floor Centre-1 World Trade Centre, Cuffe Parade Colaba, Mumbai 400 005 INDIA E-mail: mssea@bhel.in</p>	<p>(ii) SDGM (FIN) Administrative Bldg. BHEL, FSIP, IA Jagdishpur Amethi, 227817, UP, India E-mail : shashi.kumari@bhel.in</p>		
C	General		
	<p>1. For Hazardous chemicals, the materials safety data sheet (MSDS) is to be submitted.</p> <p>2. All certificates as called must be sent. BHEL may test any goods supplied and their decision is final irrespective of supplier's certificates. If test certificate and guarantee certificate are not received along with the document and stipulated in these specifications, BHEL reserves the right to get the material tested and recover the expenses from the supplier without awaiting supplier's confirmation</p>		
12	Pricing Terms:		
	Prices once quoted shall remain firm within the validity or any extension thereof for placement of order, till complete execution of the order, without any escalation / increase for any reason, whatsoever, unless specifically provided for in the Enquiry & PO. In case of foreign vendors, the quoted price shall be taken as inclusive of Third Party Inspection and testing charges as called for in the NIT.		
13	Price Validity :		
	Unless stated otherwise in the enquiry, offer shall be valid for a period of 90 days from the date of Techno- commercial (Part-I) bid opening date.		
14	Taxes & Duties - Indigenous Purchase:		
A	Vendor to ensure timely remittance of SGST, CGST, IGST as applicable in time as per law.		
B	Vendor to ensure compliance to filing of monthly GST sales return including BHELs supplies by 10 th of next calendar month in the online GST portal wherever applicable.		
C	Vendors to declare filing of timely returns and GST remittance / likely remittance / ITC adjustment along with invoice.		
D	Vendor to submit invoices compliant with GST invoice Rules		
E	Vendors to comply with all statutory provisions as may be applicable at the time of despatch / sale. Any additional financial liability to BHEL on account of non-compliance by vendors shall be borne by them and shall be adjusted / recovered from the vendors. BHEL reserves the right to review the existing offers / contracts for any revision in terms, which may arise due to change in any statutory provisions to ensure that the benefit accrues to BHEL.		



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F	Vendor to ensure TAX INVOICE submission along with consignment
G	<p>In respect of cases where the liability to discharge GST is on BHEL under reverse charge mechanism, vendors have to ensure timely submission of invoices and delivery of material / services to BHEL, so that there is no mismatch on both activities. In case there is any additional financial liability on BHEL on account of default on the part of the vendor on submission or delivery of material / services the same shall be passed on to them.</p> <p>In respect of free issue material by BHEL, vendors have to return the processed material within the time line as per the provisions of GST. In case of any additional tax liability on BHEL on account of non-compliance by the vendor, the additional financial implications on BHEL shall be passed on to the vendor.</p>
H	Vendors to provide the applicable HSN / SAC codes as called for in the enquiry
15	Taxes & Duties - Foreign Purchase — Imports
	The offered prices shall be inclusive of all the Taxes and duties as applicable in the country of bidder / country of dispatch for the quoted CFR / CIF price.
16	Payment Terms-
A	Indigenous: 100% payment in 90 days of receipt (45 days for MSE including NSIC / Udyog Aadhar/UDYAM/EM-II/DIC along with valid CA certificate, registered suppliers as per relevant act in force), subject to acceptance of material at BHEL, on direct presentation of the documents. In case of despatch of material to site directly, site certification for receipt of materials is required unless otherwise provided for in the PO.
B	Foreign: 100% direct Payment payable on 90 th day of B/L / AWB.
	<p>Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded as per below point:</p> <p>(i) 'Base rate of SBI (as applicable on the date of bid opening; Techno-commercial bid opening in case of two part bids) + 6%' shall be considered for loading for the period of relaxation sought by bidders.</p> <p>(ii) Wherever LC payment terms are not offered in NIT and the same is insisted by bidder(s), all LC related bank charges to be incurred by BHEL shall also be loaded.</p> <p>(iii) In case of deviation w.r.t. LC payment terms offered in NIT, the loading shall be done for all LC related bank charges to be incurred by BHEL.</p>
C	<p>Foreign vendors to submit declaration of Permanent Establishment and Business Connection (PEBC) for remittances purpose. Declaration to be submitted in formats in either Annexure A or B whichever is applicable as per their transaction entered into with BHEL.</p> <p>In the absence of certificates from the vendor, withholding tax at applicable rates along with surcharge and cess will be recovered at the time of remittance to the vendor.</p>
D	Foreign vendors to submit Tax Residency Certificate (TRC) & Form 10 F (for obtaining DTAA benefits) as per Annexure C in respect of services. The TRC (tax residency certificate) is to be issued by the authorities of the government of vendor's country. If the informative part of the format (other than residency) is not furnished by the authorities the same may be furnished by the vendor as a declaration.
17	Inspection of Goods
A	The Seller shall give adequate notice, of 1 week or as mutually agreed period, in writing to the Purchaser (in case Customer inspection is involved) or BHEL appointed TPIA about the date and place at which the goods will be ready for inspection/ testing, as provided for in the contract.
B	<p>Purchaser or his authorized representative shall be entitled to carry out inspection of material and Workmanship / Surveillance Audit at Seller's premises or at his sub-contractor's premises at all reasonable times during execution of contract; Such inspection, examination and testing, if made, shall not absolve the Seller from his obligations under the contract.</p> <p>Wherever required, BHEL may carry out testing at BHEL's testing Lab and in case of any rejection during such testing, replacement / rectification, as required, will have to be done by Supplier.</p> <p>If BHEL carries out any rectification of such rejected material, such cost will be recovered from Supplier's Bills.</p> <p>In case of Customer inspection as Supplier's Works, inspection clearance to be obtained from Customer and submitted to BHEL.</p>



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C	BHEL's representative from unit or Corporate Quality (CQ) is authorised to carry out audits along with TPIA at vendor's works before clearing the items for despatch.
D	All costs related to inspections and re-inspections shall be borne by the Seller. In case of inspection by BHEL and / or BHEL's customer, the cost of to & fro passage and Boarding & Lodging shall be borne by the Purchaser / Customer, unless otherwise specifically agreed. In case of foreign vendors, the cost of third party inspection, where called for, shall be deemed to be included in the quoted price. Seller shall be responsible to provide assistance such as labour, materials, electricity, fuels, stores, apparatus, instruments at his cost, as may be required and as may be reasonably demanded to carry out such tests effectively.
E	<p>REJECTION: If any goods are rejected, BHEL shall be at liberty to take action as per following at the risk and cost of supplier:</p> <ul style="list-style-type: none"> a) Allow the supplier, wherever mutually agreed, to rectify the rejected goods at BHEL's works within reasonable time as fixed by BHEL. or b) Allow the supplier to make free replacement within a specified period. Rejected goods can be lifted by the supplier there after. or c) In case payment has been done, allow supplier to refund equivalent value of rejected material by NEFT / RTGS or furnish Bank Guarantee for same amount before lifting the rejected goods. Fresh replacement shall be regulated as per terms and condition of the original Purchase Order. In case payment has not been done, allow the supplier, wherever mutually agreed, to rectify the rejected goods at supplier's works within reasonable time as fixed by BHEL. or d) Take alternate procurement action from elsewhere and recover the difference in total cost to BHEL including services, if any, incurred by BHEL in this regard from the supplier. The supplier shall not be entitled to any gain on repurchase. or e) Terminate the contract either in part or in whole at the discretion of BHEL and recover the loss, if any, from the supplier. or f) Any goods rejected by BHEL must be removed by the supplier after making payment through NEFT / RTGS within 45 days from the date of intimation of rejection or 30 days after receipt of the intimation of rejection whichever is earlier. If vendor fails to lift or allow despatch of rejected material at his cost within 90 days from the intimation of rejection, his claim on rejected material shall cease.
	<p>REJECTION: The supplier shall arrange replacement/repair within one month from the date of rejection intimation upon failure on supplier's part to comply. BHEL will take whatever appropriate action they may think fit in addition to repair/return of rejected material at the cost and risk of the supplier.</p>
18	Guarantee / Warranty and corresponding Repairs / Replacement of Goods
	<p>Manufacturer's works test / infection certificates shall be furnished along with the guarantee that material conforms strictly to the specification for general & special conditions as laid down in the purchase order. Goods shall comply with the specifications for material, workmanship and performance. The warranty shall be for a period of 12 months from the date of receipt. If the delivery is found non-compliant during the warranty period, leading to rejection, the Seller shall arrange free replacement / repair of goods, within one month from the date of intimation or any mutually agreed period. The rejected goods shall be taken away by the Seller at his cost and replaced on Delivered Duty Paid (DDP) (FOR - BHEL Stores / designated destination basis) within such period. In the event of the Seller's failure to comply, Purchaser may take action as appropriate, including Repair / Replenish rejected goods & disposal of rejections, at the risk & cost of the Seller. In case the defects attributable to Seller are detected during processing of the goods at purchasers/ his subcontractor's works, the Seller shall be responsible for free replacement / repair of the goods as required by the purchaser.</p>
19	Evaluation and Loading Criteria:



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	<p>Evaluation of the tender shall be on the basis of delivered cost, i.e. 'total cost to BHEL' w.r.t the technical scope and commercial conditions finalized after techno-commercial clarifications (after considering, inter alia, Customs Duty and GST / Other taxes as applicable). Exchange rate (TT selling rate of State Bank of India) applicable on the date of Part-I bid opening shall be considered for evaluation of foreign bids. If the relevant day happens to be a bank holiday in India, then the FOREX rate as on the previous bank working day shall be taken for evaluation.</p> <p>Foreign suppliers shall ensure that the benefits as applicable under Comprehensive Economic Partnership Agreement (CEPA) with Government of India are disclosed in the bid & relevant documents such as Certificate of Country of Origin, issued by the appropriate authority in the country of Export is provided by the vendor along with dispatch documents. Bids shall be evaluated with such applicable benefits. In the event of Seller failing to provide appropriate documents for Purchaser to avail disclosed concessional duty benefits in India, financial loss, so incurred, will be to the Seller's account.</p>
	The evaluation currency for this tender shall be INR.
20	Variation of orders
	No variation to the Purchase order is permitted unless authorised in writing and signed by or on behalf of purchase executive, BHEL Jagdishpur.
21	Sub-contract
	BHEL's order or part there off, if further to be subcontracted in exceptional circumstances the details of subcontracting and to whom to be subcontracted shall be furnished to BHEL and written permission shall be obtained from BHEL. However, it shall not absolve the supplier of the responsibility of fulfilling BHEL order requirements.
22	Recovery / deductions of amount from supplier
	<p>A) Any amount on account of recovery from consignor / supplier under any condition shall be liable to be adjusted against any amount payable to the consignor / supplier against bills.</p> <p>B) For any deficiency in supplies where deduction is involved, an amount as decided by BHEL, shall be deducted from supplier's bills.</p>
23	Safety clause for Purchase Orders
	<p>The vendors shall maintain and ensure sufficient safety measures as required for inspections and test like HV test. Pneumatic test, Hydraulic test Spring test, Bend test, Material handling and safe working environment etc. to enable Inspection Agency for performing inspection.</p> <p>The vendor shall ensure that all the safety precautions specified in factories Act 1948 chapter-IV Section-21 to 41 are complied with respect to equipment's to be inspected.</p> <p>If any test equipment is found not complying with proper safety requirement, then the inspection agency may withhold inspection, till such time the desired safety requirements are met.</p>
24	Non-Disclosure Agreement
	<p>All Drawing and technical documents relating to the product or it's manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. <u>BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for anv infringement of the provisions contained herein.</u></p>
	<p>DRAWINGS, PATTERNS & TOOLS: All drawings, patterns & tools supplied by BHEL or made at BHEL's expense are BHEL's property. These cannot be used or referred to any other party and must only be used in the execution of BHEL's orders. These should be preserved at the supplier's cost for a period of not less than 5 years. Patterns & tools should be returned to BHEL within 90 days of issue of the same.</p>
25	Settlement of Disputes & Arbitration
A	All questions / interpretations regarding subject matter of the Contract shall be decided by the Purchaser on the request of the Seller and the decision of the Purchaser shall be final.
B	In case of dispute, steps shall be taken by the parties to the contract to settle the same through negotiations.



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C	In case, dispute is not settled in negotiations, it shall be referred to Conciliator appointed by the competent authority of the Purchaser.
D	<p>Except as provided elsewhere in this Contract, in case amicable settlement is not reached between the Parties, in respect of any dispute or difference; arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the Parties; or in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract, then, either Party may, by a notice in writing to the other party refer such dispute or difference to the sole arbitration of an arbitrator appointed by Head of the BHEL Unit/Region/Division issuing the Contract. The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the Parties. Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or Statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be Lucknow.</p> <p>The cost of arbitration shall be borne as per award of the Arbitrator.</p> <p>Subject to the arbitration in terms of Clause above, the Courts at Lucknow shall have exclusive jurisdiction over any matter arising out of or in connection with this Contract.</p> <p>Notwithstanding the existence or any dispute or differences and / or reference for the arbitration, the Contractor shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.</p>
	<p>In case of Contract with Public Sector Enterprise (PSE) or Government Department, the following shall be applicable: In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred by either Party for arbitration to the sole arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the arbitrator shall be binding upon the Parties to the dispute, provided, however, any Party aggrieved by such award may make further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by Law Secretary, whose decision shall bind the Parties hereto finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.</p>
E	The Seller shall continue to perform the contract, pending settlement of dispute(s).
26	Applicable Laws and Jurisdiction of Courts
	Indian laws both substantive and procedural, for the time being in force, including modifications thereto, shall govern the Contract including Arbitration proceedings. The competent Courts at Lucknow in the State of Uttar Pradesh, India shall have sole jurisdiction.
27	RIGHT OF REJECTION /NON- PLACEMENT OF PO: BHEL reserves the right to accept the offers in part or in full, or cancel the Tender enquiry without assigning any reason.
28	Performance Bank Guarantee (PBG) / Security Deposit (SD)-(If applicable)
A	Wherever PBG/SD (covering equipment / system / work performance guarantee) is called for in the Notice Inviting Tender (NIT) deviation shall not be accepted.
B	Bank Guarantee wherever called for, shall be in the BHEL prescribed format. In case the order is to be placed in foreign currency, the BG must also be in Foreign currency, so specified by the Purchaser.
C	Wherever Security Deposit (covering contract performance) is called for in the NIT, deviation shall not be accepted.
D	Composite 'Contract Performance Bank Guarantee' of matching value / validity, where both Security Deposit and Performance Bank Guarantee are required, shall not be construed as deviation.
E	Wherever the contract is for supply of Goods processed on labour basis from BHEL supplied materials, the materials shall be issued against a suitable Bank guarantee as specified in the Enquiry.
29	Benefits earmarked for Purchase from Micro & Small Enterprises (MSEs) — Indigenous Purchase
A	MSE bidders shall submit along with bid relevant documents w.r.t. their respective MSE status as per extant norms. Date to be reckoned for determining the deemed validity will be the last date of Technical bid submission. Non- submission of such document will lead to consideration of their bid, at par with other bidders and MSE status of such bidders shall be shifted to Non- MSE supplier till the supplier submit these documents.



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B	<p>In tender, participating MSEs quoting price within price band of L1+15% shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE and such MSE shall be allowed to supply up to 25% of total tendered value. In case of more than one such MSE, the supply shall be shared proportionately. A quantum of 6.25% out of 25% quantity, so earmarked, will be reserved for MSE's owned by SC / ST entrepreneurs who submit their bid with relevant documents provided that in event of failure of such MSE(s) to participate in tender process or meet tender requirements and L1 price, 6.25% sub-target for procurement earmarked for MSE(s) owned by SC or ST entrepreneurs shall be met from other MSE(s).</p> <p>Special provision for Micro and small enterprises owned by Women in following cases: - 3% reservation for women owned MSEs under following conditions</p> <ol style="list-style-type: none"> i. In case of Proprietary MSE, proprietor is woman. ii. In case of partnership MSE, the woman partner is holding at least 51% share in the unit. iii. In case private limited companies, at least 51% share is held by woman promoters. <p>In case of indivisible tender the full quantity shall be awarded to L1.</p>
C	<p>If an enterprise falling under MSE category as defined in the MSMED Act 2006, graduates to a higher category from its original category or beyond the purview of the Act, it shall continue to avail all non-tax benefits of its original category notified by the Ministry of Micro, Small and Medium Enterprise for a period of three years from the date of such graduation to the higher category.</p>
D	<p>MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (As per BHEL Format, where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefits shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer</p>
30	<p>Integrity Pact (IP) — Independent external monitors (IEM) For tenders in which integrity pact is applicable, following points stand valid :</p>
A	<p>IP is a tool to ensure that activities and transactions between the company and its bidders / contractors are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.</p> <p>The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno commercial bid. Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this pact would be a preliminary qualification.</p> <p>Name : ----- Address : ----- mail : ----- } As indicated in NIT / enquiry :201__</p>
B	<p>Please refer section 8 of the IP for roles and responsibilities of IEMs. In case of any complaint arising out of tendering process, the matter may be referred to the IEM mentioned in the tender.</p> <p>NOTE: No routine correspondence shall be addressed to the IEM (phone / post / e-mail) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarifications / issues shall be addressed directly to the tender issuing (procurement) department.</p>
31	<p>Fraud Prevention Policy : The Bidder along with its associate / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.</p>
32	<p>GSTN nos. of vendors as well as GSTN No of BHEL must be mentioned on the invoices/bills of the materials. Please note that correct HSN code as well as rate of GST be mentioned in the invoice/bills.</p>
33	<p>BHEL FSIP GSTIN Reg. No: 09AAACB4146P22C State Code: 09 (Uttar Pradesh)</p>



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34	<p>(a) Right of Acceptance: BHARAT HEAVY ELECTRICALS LIMITED JAGDISHPUR reserves the right to reject any or all the bids/quotations without assigning any reason thereof. BHEL also reserves the right to increase or decrease the tendered quantities. Bidders should be prepared to accept order for reduced quantity without any extra charges.</p> <p>(b) Right of Rejection /Non- Placement of PO: BHEL reserves the right to accept the offers in part or in full or cancel the Tender enquiry/PO without assigning any reason.</p> <p>(c) Wherever BHEL business interest will contradict with any supplier, offer of that supplier may be rejected.</p>
35	<p>Integrity Commitment: The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website www.bhel.com. Integrity commitment, performance of the contract and punitive action thereof :</p>
A	<p>Commitment by BHEL : BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all bidder's in a transparent and fair manner, and with equity.</p>
B	<p>Commitment by bidder / Supplier / Contractor :</p> <ul style="list-style-type: none"> - The bidder / supplier / contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal code, 1860 or any other law in force in India. - The bidder / supplier / contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by govt. of India / BHEL - The bidder / supplier / contractor will perform / execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business / money / reputation to BHEL.
C	<p>If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award / execution / post execution stage indulges in mal-practices, cheating, bribery, fraud or / and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then action may be taken against such bidder / supplier / contractor as per the extant guidelines of the company available on www.bhel.com and / or under applicable legal provisions.</p>
d	<p>Defaulter suppliers shall be treated as per Guidelines for Suspension of the Business Dealing with suppliers/contractors.</p>
36	<p>Deviation: Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the tender. Otherwise, it will be treated as that all those terms and conditions as mentioned in the tender are acceptable in Toto.</p>
37	<p>Benefits earmarked to suppliers for Purchase under ' MAKE IN INDIA'</p>
	<p>Compliance to MAKE IN INDIA circular issued by GOI: "For this procurement, the local content to categorize a supplier as a Class I local supplier / Class II local supplier / Non-Local Supplier and purchase preference to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part II bids against this NIT" (Format Attached).</p>
	<p>As part of minimizing import content, Government of India, vide order no P-45021/2/2017-B.E.-II dated 15.06.2017, under the subject – Public Procurement (Preference to Make in India) -- has set the initiatives to encourage and promote indigenously manufactured goods within India and services provided by sources within India. . In line with this, bidders who manufacture the goods and provide services within India (otherwise referred as local suppliers) are given purchase preference and are entitled to benefits in the tender</p>
A	<p>Definitions</p>
(i)	<p>Local content means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value , in percent . Presently, the minimum local content required is</p>



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	50%. The nodal ministry may prescribe a higher or lower percentage in respect of any particular item and may also prescribe the manner of calculation of local content.
(ii)	Local supplier means a supplier or service provider whose product or service offered for procurement meets the minimum local content as prescribed
(iii)	Margin of Purchase Preference means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference. Presently the margin of Purchase preference is 20%.
B	Conditions under which preference is given
(i)	In procurement of goods in respect of which the Nodal ministry has communicated that there is sufficient local capacity and local competition, and where the estimated value of procurement is Rs 50 lakhs or less, only local suppliers shall be eligible. If the estimated value of procurement of such goods is more than Rs 50 lakhs, provisions of 37(B) (ii) and 37(B)(iii) shall apply.
(ii)	If the procurement of goods are not covered by 37(B)(i) and are divisible in nature, the following procedure shall be followed :
a	If L1 is a local supplier, the order for full quantity shall be awarded to local supplier
b	If L1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the local suppliers, shall be invited to match the L1 price for the remaining 50% quantity, subject to the local supplier's quoted price falling within the margin of purchase preference, and the order for that quantity shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price or accepts less than offered quantity, the next higher local supplier within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and the order shall be awarded accordingly. In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.
iii	If the procurement of goods are not covered by 37(B)(ii) and are not divisible in nature, and in procurement of services where the bid is evaluated on the price alone, the following procedure shall be followed :
a	If L1 is a local supplier, the order shall be awarded to local supplier
b	If L1 bid is not from a local supplier, then the lowest bidder among the local suppliers, will be invited to match the L1 price, subject to the local supplier's quoted price falling within the margin of purchase preference, and the order shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price, the local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on, and the order shall be awarded accordingly. In case none of the local suppliers within the margin of preference match the L1 price, then the order may be awarded to the L1 bidder.
C	Exemption of small purchases
	Notwithstanding anything contained at clause 37B above, procurements where the estimated value of procurement is less than Rs 5 lakhs are exempt and purchase preference shall not be accorded in such cases.
D	Verification of local content
(i)	The local supplier, at the time of tender, bidding or solicitation, shall be required to provide self-certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.
(ii)	In cases of procurement for a value in excess of Rs 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.



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(iii)	False declarations shall be in breach of code of integrity and shall invite action as per guidelines for Suspension of Business dealings with Suppliers
E	In case of any disputes / clarifications, the extant guidelines of Government of India shall prevail.
38	Model Clauses for Tenders
I	Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
II	"Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
III	"Bidder from a country which shares a land border with India" for the purpose of this Order means: -
a	An entity incorporated, established or registered in such a country; or
b	A subsidiary of an entity incorporated, established or registered in such a country; or
c	An entity substantially controlled through entities incorporated, established or registered in such a country; or
d	An entity whose beneficial owner is situated in such a country; or
e	An Indian (or other) agent of such an entity; or
f	A natural person who is a citizen of such a country; or
g	A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
IV	The beneficial owner for the purpose of (iii) above will be as under:
1	In case of a company or limited liability Partnership, the beneficial owner is the natural person (s) who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means. Explanation –
A	"Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. Of shares or capital or profits of the company
B	"Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholder's agreements of voting agreements;
2	In case of a partnership firm, the beneficial owner is the natural person (s) who, whether acting alone or together, or through one or more juridical of capital or profits of the partnership;
3	In case of an unincorporated association or body of individuals, the beneficial owner is the natural person (s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property of capital of profits of such association or body of individuals;
4	Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
5	In case of trust, the identification of beneficial owner (s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
V	An agent is a person employed to do any act for another, or to represent another in dealings with third person.
39	Conciliation
	BHEL and bidder agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the terms & conditions of order, which the parties are unable to settle mutually), arise inter-se the parties, the same may, be referred by either party to Conciliation to be



GENERAL TERMS AND CONDITIONS OF ENQUIRY

GTC/FSIP/PUR/01 Rev:01

	<p>conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL panel of Conciliators</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators. 2. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators. <p>The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof. The details of Conciliations shall be governed by the BHEL Conciliation scheme 2018.</p>
40	Clause for Suspected Cartel Formation
	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.
41	<i>Important Note: The bidder will, when presenting his bid, declare whether other family firms or sister concern affiliates/subsidiary firms are participating in same tender, so as to eliminate the possibility of cartel formation. Format for declaration is attached.</i>
42	Submission of Performance Security for execution of the contract
	Bidder agrees to submit performance security required for execution of the contract within the time period mentioned. In case of delay in submission of performance security, enhanced performance security which would include interest (SB/ 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 I contract, from the bills along with due interest.
43	<u>If supplier does not mention against any terms of "General Terms and conditions", "Special/supplementary terms and conditions" and NIT terms. It shall be summarily concluded that respective terms are acceptable to supplier and no further clarification shall be asked.</u>

PREFERENCES/BENEFITS FOR MSEs:

Following preferences/benefits shall be given to MSEs in line with Public procurement policy for Micro and Small Enterprises (MSEs), 2012:

1. The tender documents shall be issued free of cost to MSEs.
2. MSEs are exempted from payment of Earnest Money Deposit (EMD).
3. In tender, Micro and Small Enterprises quoting within the price band of L1+15% shall be allowed to supply the requirement up to 25% of the tender quantity subject to condition that such Enterprises bring down their price to L1 price where L1 price is from other than a Micro and Small Enterprise. If L1 offer is from a Micro / Small Enterprise, this provision will not be applicable. In case more than one Micro and Small Enterprise is there within this span, the supply shall be shared proportionately to the tender quantity. For availing the advantage of L1+15%, bidder to provide the MSME certificate prior to price bid opening.

Under above following provision is categorised as below:

- **Special provision for Micro and small enterprises owned by SC or ST: -**

Sub target of 25% (i.e. 6.25% out of 25%) would be earmarked for procurement from Micro and Small Enterprises owned by the Scheduled Caste or Scheduled Tribe Entrepreneurs provided that in event of failure of such Micro and Small Enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 6.25% sub-target for procurement ear-marked MSE owned by Scheduled Caste or Scheduled Tribe Entrepreneurs shall be met from other MSE Enterprises.

- **Special provision for Micro and small enterprises owned by Women in following cases: - 3% reservation for women owned MSEs under following conditions**
 - i. In case of Proprietary MSE, proprietor is woman.
 - ii. In case of partnership MSE, the woman partner is holding at least 51% share in the unit.
 - iii. In case private limited companies, at least 51% share is held by woman promoters.

MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM-II certificate having deemed validity (Five years from date of issue of acknowledgement in EM-II) or valid NSIC certificate/ DIC certificate/ Udyog aadhar or EM-II certificate along with attested copy of a CA certificate (format enclosed as per annexure-I where deemed validity of EM-II certificate of 5 years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (part-I in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. MSE status of such suppliers shall be shifted to non MSE supplier till the supplier submits the documents. This provision for MSE will apply subject to the condition that the participating MSE meets the tender requirements.

ANNEXURE- I

Certificate by Chartered Accountant on Letter Head

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

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

I. For Manufacturing Enterprises: Investment in plant and machinery (i.e. original cost excluding land and
 building and the items specified by the Ministry of Small Scale Industries vide its notification
 No.S.O.1722(E) dated October 5, 2006 :

Rs.Lacs

2. For Service Enterprises: Investment in equipment (original cost excluding land and building and furniture,
 fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act,
 2006:

RsLacs

(Strike off whichever is not applicable)

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

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable)
 and the date of graduation of such enterprise from its original category is ----- (dd/mm/yyyy) which is
 within the period of 3 years from the date of graduation of such enterprise from its original category as notified
 vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of
 MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

DECLARATION BY VENDOR

We declare that the following family firms or sister concern affiliates/subsidiary firms are participating in the tender No

1.

2.

3.

.....

I, hereby declare on behalf of M/s and the family firms or sister concern affiliates/subsidiary firms listed above that we are not indulging in cartel formation for enquiry No

(.....)

For M/s

(Seal & Sign)

Self-Declaration on Class I/Class II/Non Local under Make in India
(Valid for tender value greater than or equal to 5 Lakhs and Less than or equal to 10 Crores)

I, hereby declare on behalf of M/s that my firm is under Class I ()/Class II ()/Non Local () as per Make in India Government Preferences.

(.....)

For M/s

(Seal & Sign)

WELDING AND PAINTING PROCEDURE

1. WELDING PROCEDURE:

1.1 The welding procedure outlined will be followed to ensure uniform and good quality welding.

1.2 The welding must be Arc / Flux cored after maintaining proper fit up.

1.3 The material specification of welding electrodes/Flux core wire to be as below:

A Electrode: MS - E 6013

Arc welding (2.5 mm , 3.15 mm or 4.0 mm):- make

Advani- Oerlikon: Overcords	D&H : Medio	Rockweld: V-117	I.O.L/ESAB: Vordian/Ferrospeed plus
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Electrode: SS - E 7018

Arc welding (2.5 mm , 3.15 mm or 4.0 mm) : - make

Advani-Oerlikon: Supercito	D & H : Supra Therme	ESAB: Ferro Weld-2 / ESAB 36 H
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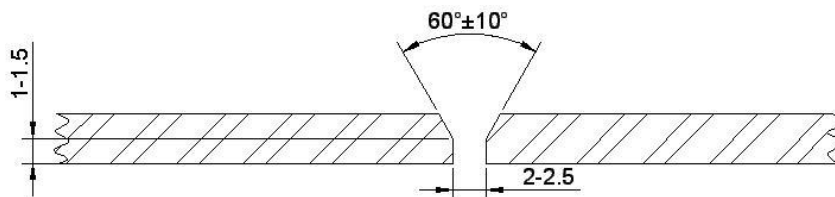
B MIG WELDING:- (Flux core wire 1.6 mm or 1.8 mm)

Solid wire core for MS -- ER 70S-6

For SS-- ER-308 L /ER309 L

Make- Ador /D&H/Esab/D&H Sechron/Cotmac

1.4 Edges to be prepared as per following sketch:



1.5 Root pass welding to be carried out buy using 2.5 mm welding electrodes ,further filling may be done either by 3.15 mm or 4.0 mm electrodes/Root pass welding to be carried out by 1.2 mm to 1.8 mm dia flux core wire ,further filling by 1.2 mm to 1.8 mm flux core wire.

- 1.6 Ensure root weld is uniform and penetration is proper.
- 1.7 Between two passes, remove slag and clean weld surfaces.
- 1.8 In case of undercut grind the weld surface smooth and fill up with 2.5 mm welding electrode/wire core.
- 1.9 Employ down hand method for welding.

2. CHECK POINTS:

Audit checks are conducted for the quality of welding of every ceralin item. The Die Penetration test is to be carried as per E&D:331 after each root pass.

The visual examination of welding is to be carried out as per detail below:

1. The weld shall be free of cracks.
2. The face of weld shall be flush with the surface of base metal & weld shall merge smoothly with base metal. Undercut shall not exceed 1 mm & welding reinforcement shall not exceed 3 mm.
3. The root of weld shall be inspected & there shall be no evidence of cracks, incomplete fusion or inadequate joint penetration.
4. The weld shall be free from overlap.
5. The weld shall be free from accumulated slag the sum of the greatest dimensions of which shall not exceed 6 mm.
6. Grinding is not allowed on weld bead.
7. Grinding of all gas cut portion to be ensured (including lifting lug)

3. Welder Qualification: Welder qualification test to be done strictly for each welder as per AWS D-1.1 by a third party NABL accredited lab once in a year.

4. PAINTING PROCEDURE:

4.1 This procedure covers the requirements of primer and Final paint for M. S. Casing for inland applications/costal region/export

4.2 This procedure specifies the painting requirements to provide adequate surface

protection.

4.3 SPECIFICATION OF PRIMER/PAINT:-

Type of paint	Specification	Make
Alkyd Red Oxide Zinc Phosphate Primer	As per IS:12744 –DFT 30 Mic /coat	Berger ,Asian Paint , Dulux
General Purpose Aluminium Paint	As per IS:2339-DFT 30 mic/coat	Berger ,Asian Paint , Dulux
For costal region /Export / Special items ,paint type to be specified by the customer	As per specification provided by the customer	Berger ,Asian Paint , Dulux

SURFACE PREPARATION:-

4.3.1 Surface of component shall be thoroughly cleaned before the application of primer paint by either Power Tool cleaning (SSPC-SP3) or Abrasive Blast cleaning. The surface shall be free from dust, rust, weld, slag, spatters, oil, grease etc.

4.4 APPLICATION OF PAINT:-

4.4.1 Surface prepared as mentioned above shall be applied with one coat of Alkyd Red Oxide Zinc Phosphate primer (as per IS:12744) where no special primer is mentioned for M.S. Casing.

4.5 GENERAL:-

4.5.1 Paint make Berger /Dulux / Asian shall be used as supplied by the supplier without any addition of thinner.

4.5.2 Primer shall be thoroughly stirred before application. Primer can either be applied on surface by brushing or spraying using compressed air uniformity. The thickness of the primer shall not be less than 30 microns/coat (where no other specifications are mentioned).

4.5.3 Adequate drying time is to be allowed after each coat before next coat of paint.

- 4.5.4 No painting is required in case of Stainless Steel components, unless otherwise specified.
- 4.5.5 For all machined components, rust preventive fluids shall be used (where no other specifications are mentioned).
- 4.5.6 Rusting of received material at BHEL IP will be treated as use of poor paint / process and the same will be out rightly rejected or repainting will be done on the risk and cost of supplier on the discretion of BHEL.

4.6 Inspection:-

- 4.6.1 Surface preparation, primer coating shall be checked at appropriate stages by executing agency before proceeding to next operation.

DYE PENETRATION TEST PROCEDURE

1.0 Scope:

This procedure shall be used for colour contrast (visible dye) method of liquid penetrant examination of materials for detecting discontinuities in welded joints of MS casings/ rings/ Cones.

2.0 METHOD AND MATERIALS:

A visible dye penetrant which can be easily seen in natural light or in artificial light shall be used (Solvent removable penetrant and Non Aqueous suspended type developer)

3.0 SURFACE PREPARATION:

3.1 In general, satisfactory results may be obtained in the as welded, as forged, as cast and as rolled condition. Machining and grinding may be required when surface irregularities would otherwise mask the indications of unacceptable discontinuities.

3.2 Prior to penetrant examination the surface shall be carefully examined. Surface shall be free from dirt, grease, lint, scale, welding flux, spatters or any extraneous matter which may be tend to cover. Surface openings or otherwise interfere with proper evaluation of test result.

3.2.1 Adjacent areas to a minimum length of 25mm on either side of the weld shall be prepared as specified in 3.2.

3.2.2 Surfaces shall be thoroughly cleaned using acetone before applying penetrant.

3.2.3 Surface shall be dried at least 3 minutes prior to application of penetration.

4.0 PENETRATION APPLICATION:

4.1 The penetrant shall be applied by dipping, brushing or spraying. If the penetrant is applied by spraying, using compressed air. type apparatus, a filter shall be placed at the air inlet to preclude contamination of penetrant by oil, water or dirt that might have collected in the air lines.

4.2 The temperature of the penetrant and the surface of the part to be processed shall not be below 16°C nor above 52°C throughout the examination period.

4.3 Minimum penetration time shall be 15 minutes.

5.0 EXCESS PENETRANT REMOVAL:

5.1 After the penetrant time specified above in column 4.3 has elapsed any penetrant remaining on the surface shall be removed, taking care to minimize removal of penetrant from the discontinuities.

5.2 Penetrant shall be removed by wiping with a clean lint free dry cloth. The operation should be repeated until most traces of penetrants are removed. A clean dry cloth moist with solvent (cleaner) shall then be used to wipe the surface lightly. Extreme care shall be taken to prevent over cleaning as over cleaning can and does remove penetrant from discontinuities. Under no circumstances cotton waste shall be used for removing penetrant.

6.0 DEVELOPER APPLICATION:

6.1 After cleaning, developer shall be applied by spraying, prior to applying the developer It must be thoroughly agitated to ensure adequate dispersion of the suspended particles. A uniform thin coating of developer must be applied. Conversely avoid the formation of parts of developer in the cavities since heavy coatings may mask indication.

6.2 Allow 5 minutes for the developer to dry before the start of inspection and a maximum of 30 minutes to complete the interpretation of results of the examination.

7.0 EVALUATION OF INDICATION:

7.1 Discontinuities open to the surface will be indicated by the bleeding out of the penetrant. Localized surface imperfection which occur from machining marks, or surface irregularities shall be ignored as non-relevant indication.

7.1.1 Non—relevant indication and broad areas of pigmentation, which would mask indication of defects, shall be reprocessed and retested.

7.2 Relevant indications are those, which result from discontinuities open to surfaces. Linear indications are those indications in which the length is more than three times the width. Rounded indications are circular or elliptical with length lesser than three times the width.

8.0 ACCEPTANCE CRITERIA:

No cracks are permitted on any surface.

8.1 WELDS :

8.1.1 The following indications are not acceptable:

- a) Only indications with major dimensions greater than 1.6mm shall be considered as relevant.
- b) Unless otherwise specified the following relevant indications are unacceptable:
 1. Any cracks or linear indications.
 2. Rounded indications with dimensions greater than 4.8mm.
 3. Four or more rounded indications in a line separated by 1.6mm or less edge to edge.
 4. Ten or more rounded indications in any 3870 Sq. mm (6 Sq. in)of surface with the major dimension of this area not to exceed 152 Sq. mm with the area taken in the most unfavourable location relative to the indications being evaluated.

9.0 POST EXAMINATION CLEANING:

9.1 As soon as practical, after completion of the penetrant examination the completed parts shall be cleaned to remove residual penetrants materials.

Annexure C

**SPECIFICATION FOR MANUAL
VARIABLE ORIFICE OF PULVERIZED COAL PIPING**

1.0 SCOPE

The scope covers manufacturing, testing, certification, marking, identification and packing of manually operated variable orifice for pulverized coal pipes as per BHEL drawing mentioned in the drawing.

Sl.no	Variant	Description	BHEL drawing no.
1	01	Variable orifice 26"- Coupling type end connection	0-47-200-02648
2	02	Variable orifice 26"- Flanged type end connection	0-47-200-02628
3	03	Variable orifice 28"- Flanged type end connection	0-47-200-02732
4	04	Variable orifice 30"- Flanged type end connection	0-47-200-02635

2.0 EXTENT OF SUPPLY

The following extent of supply given is not necessarily exhaustive and shall not relieve the contractor of his responsibility to provide equipment and services necessary to satisfy the defect free product and guarantees specified elsewhere.

3.0 TERMINAL POINTS

The terminal points for the orifices must be suitable to mount the orifices in coal pipes by means of pipe coupling or flanges as per BHEL drawing. For the pipe size and collar or flange dimensions such as FACE TO FACE DIMENSION refer BHEL drawing.

4.0 TECHNICAL REQUIREMENTS – DESIGN AND CONSTRUCTION**4.1 NEED FOR VARIABLE ORIFICE**

There are four/ eight coal pipes from each pulverizer. The coal pipes transfer the pulverized coal and primary air mixture from pulverizer to burners. Burners are located at four corners of a tangentially fired boiler.

The variable orifices are to be mounted either vertically or horizontally on the coal pipes. Coal pipe variable orifice shall be designed to be installed in each burner coal line to adjust and balance the coal flow in each pipe for the associated pulverizer.

The coal particles are pulverized to the tune of 75-300 microns in the pulverizer and this coal dust is carried through the coal pipes by the primary air. Flow through the pipes is a dilute two phase (solid-gas) flow. Pulverized coal – air mixture at a

temperature of 80°C to 120°C flows through these orifices at a velocity range of 15 to 30 m/sec.

All orifices shall be capable of safe, reliable operation and shall comply with the requirements of NFPA 85 and the strength requirements shall comply in particular with the sub-section 6.4.6.1 of NFPA 85.

4.2 ORIFICE OPERATION

The variable orifice is designed with a suitable mechanism to vary the orifice opening (and hence the flow area). Changing the orifice open area in the variable coal pipe orifice is performed while the mill is operating, providing an immediate change to the coal flow and burner performance. The orifice shall be smooth to operate and opening or closing of the valve shall be provisioned through suitable hand wheels. The operation shall be smooth both in horizontal & vertical pipe installations.

The operating mechanism shall be shielded from the coal stream to provide long term ease of operation.

The orifice plate is shaped in such a way that full closure of the orifice will not result in complete stoppage of coal so as to ensure minimum coal flow even when the variable orifice is fully closed i.e., at fully closed status of the variable orifice the available opening area shall be approx.40% area of full coal pipe area.

The adjusting mechanism shall be equipped with a gauge to indicate the degree of orifice opening from 100% (full open with no obstructions) to 40% maximum reduction. Gauge shall have indication as “full open” against 100% and as “full close” against 40%.

Inspection and maintenance of the orifice can be easily performed without removing the orifice housing from the coal line.

4.3 OPERATING ENVIRONMENT

The equipment will be operating in dust laden pulverized coal-air mixture, which can be expected to settle on the orifice components during normal operation.

The leading edge of the Orifice element blade have provision to eject out the accumulated dust and clean the blade guides during closing or opening.

As the coal particles are highly erosive in nature, suitable measures to combat erosion in orifice internals are provided. To ensure the same, orifice shall be ceramic lined with minimum thickness of 15 mm.

5.0 DOCUMENTATION

Supplier shall submit QP covering fabrication, testing & assembly of orifice and ceramic coating for BHEL's review and approval.

Approval for QP by BHEL will be given after placement of PO.

It is expected that Quality plan shall encompass the Supplier's standard inspection to satisfy all applicable design code and its testing requirements and will involve, as a minimum,

- the visual examination of raw materials & their test certificates review,
- dimensional checks on parts and sub-assemblies,
- examination by visual and/or other methods for welds and material surfaces, chemical (especially Alumina content) & other properties of wear protection ceramics and their testing, baffle plate & wear protection properties,
- 100% air leakage test at pressure of 0.2 kg/cm²(g),
- functional test of completed assembly,
- surface cleaning,
- painting (shade, no. of coats & thickness),
- identification on name plate including flow direction).

6.0 INSPECTION AND TESTING

6.1 During inspection, functional test of variable orifice free opening and closing shall be demonstrated in horizontal and vertical positions.

6.2 Hydro test of the body

6.3 100% air leak test for complete assembly to be conducted.

6.4 Tests on healthiness of alumina including hardness and jet erosion test.

6.5 Vendor to guarantee operational life 25000 hours & shall confirm for free replacement during the guarantee period. The guarantee period is deemed to start from the date of commissioning i.e., commencement of coal firing.

The Purchaser's inspecting authority is to be allowed reasonable access to the Supplier's works during manufacture/ testing before delivery, in accordance with the approved Quality plan.

If the variable orifice is manufactured for the first time by a vendor, vendor shall produce first piece for BHEL inspection before proceeding for bulk manufacture. Also the first piece shall be subjected to hydro test 5 kg/sq.cm (g) in the first piece.

All required facilities/accessories for conducting the air leak test and/or hydro test is under the scope of vendor.

7.0 PACKING PAINTING AND DESPATCH

Surface Preparation & Painting

SSPC – SP3/Power Tool Cleaning

Red Oxide Zinc Phosphate Primer (Alkyd Base) To IS 12744 DFT= 30 Microns per Coat; 2 Coats

Syn. Enamel Paint (Long Oil Alkyd) To IS 2932 DFT = 20 Microns per Coat; 2 Coats

Final Shade: Smoke Grey Shade No: 692 Of IS5

Total DFT: 80 Microns minimum

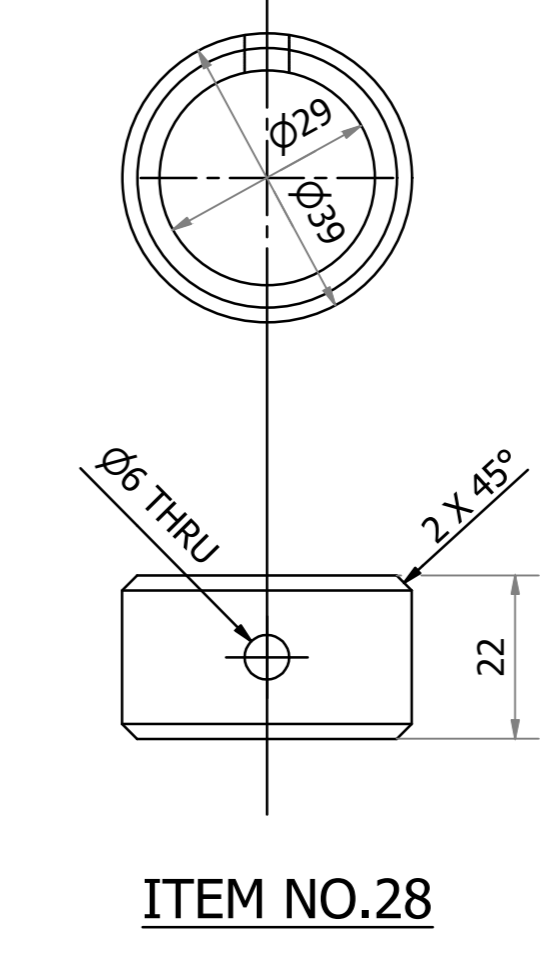
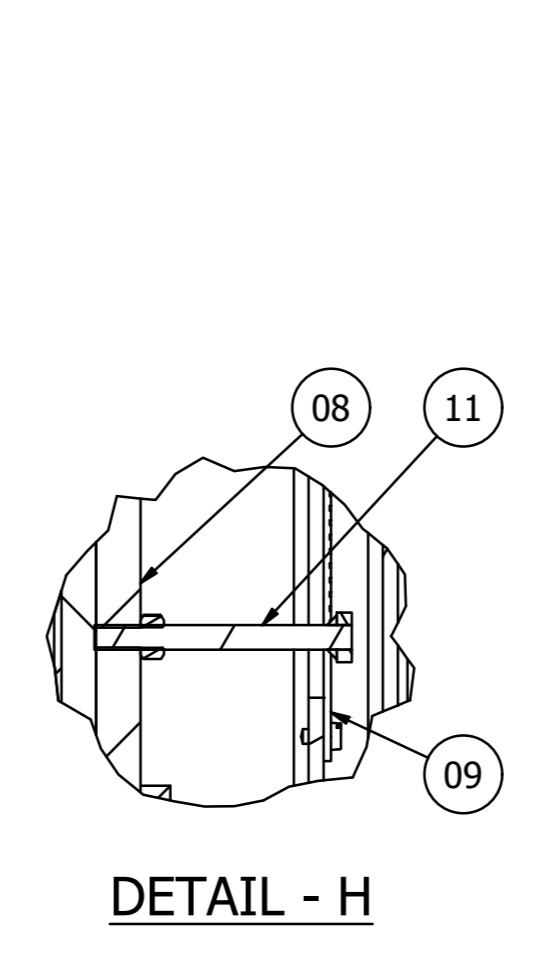
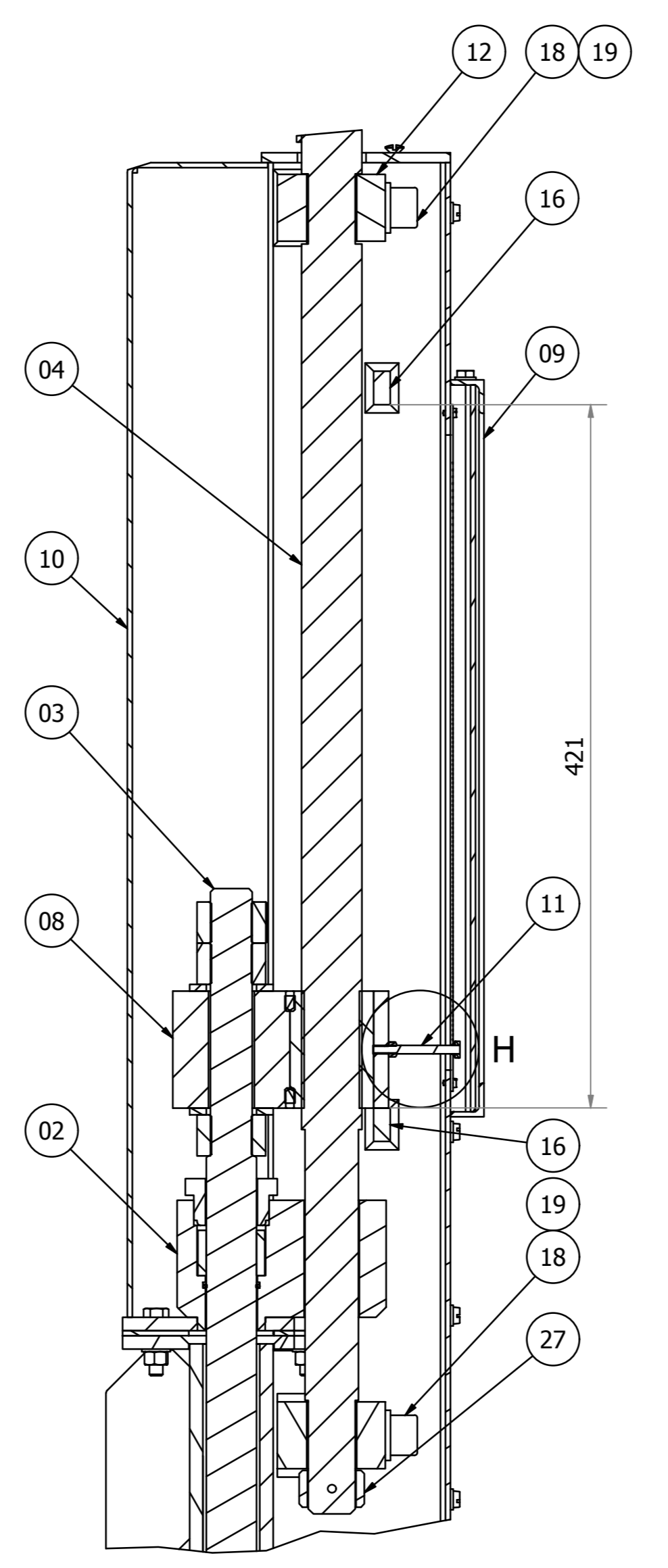
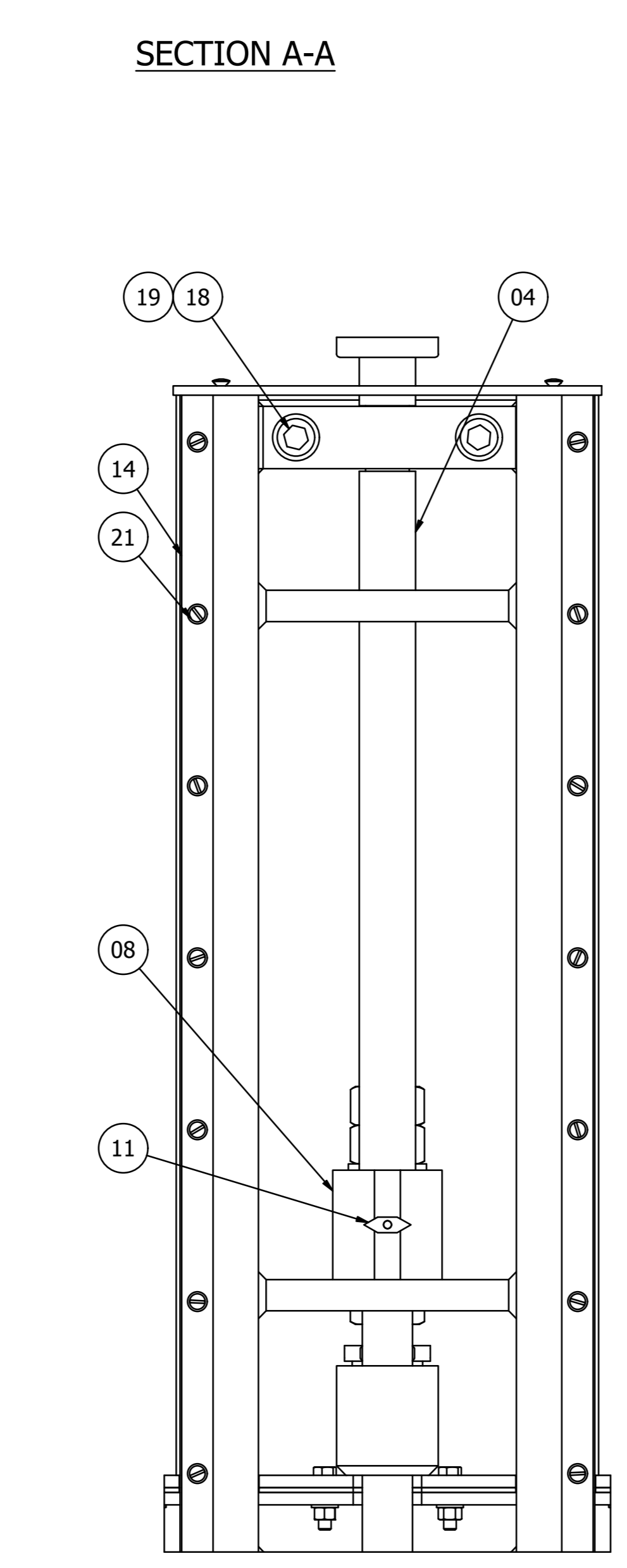
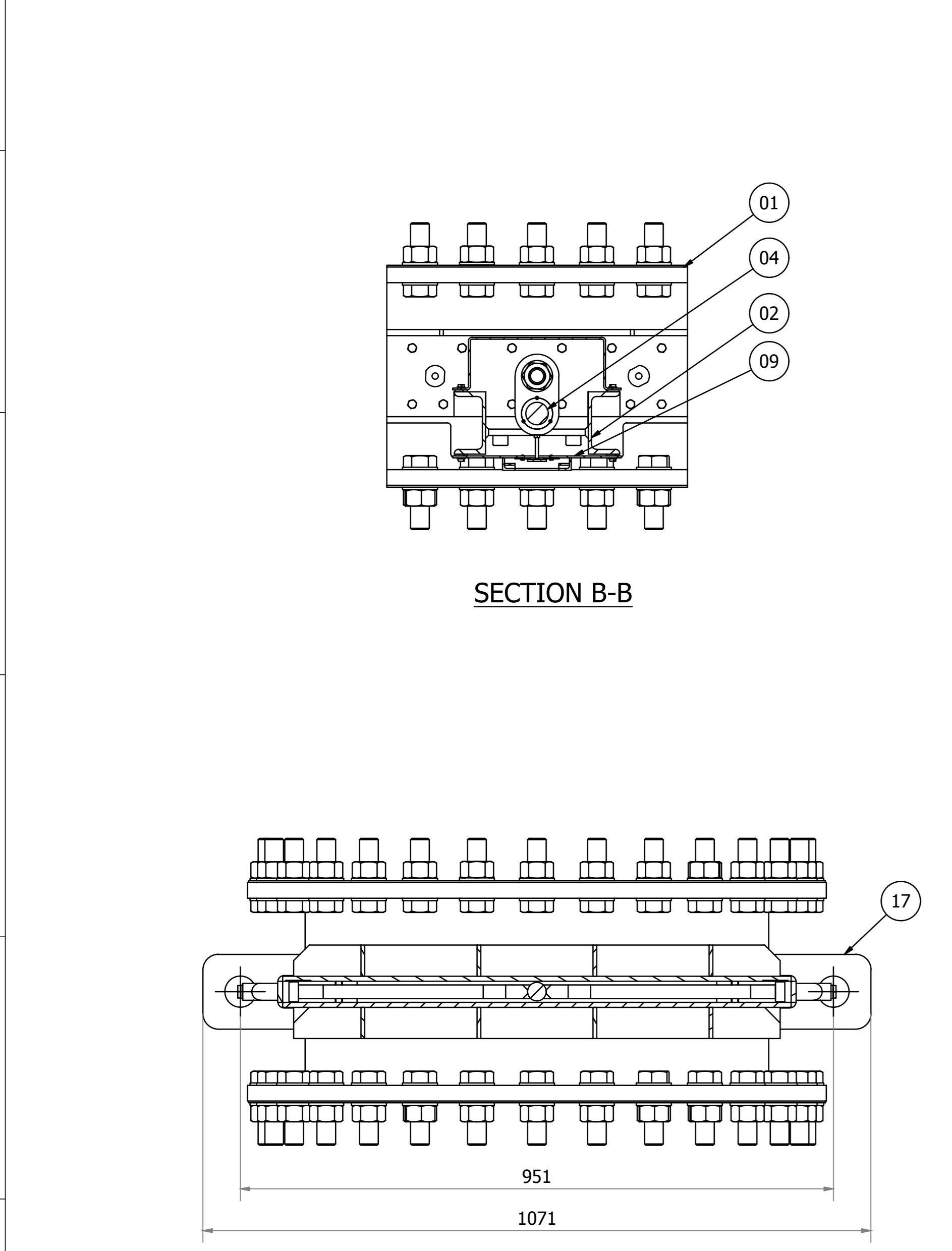
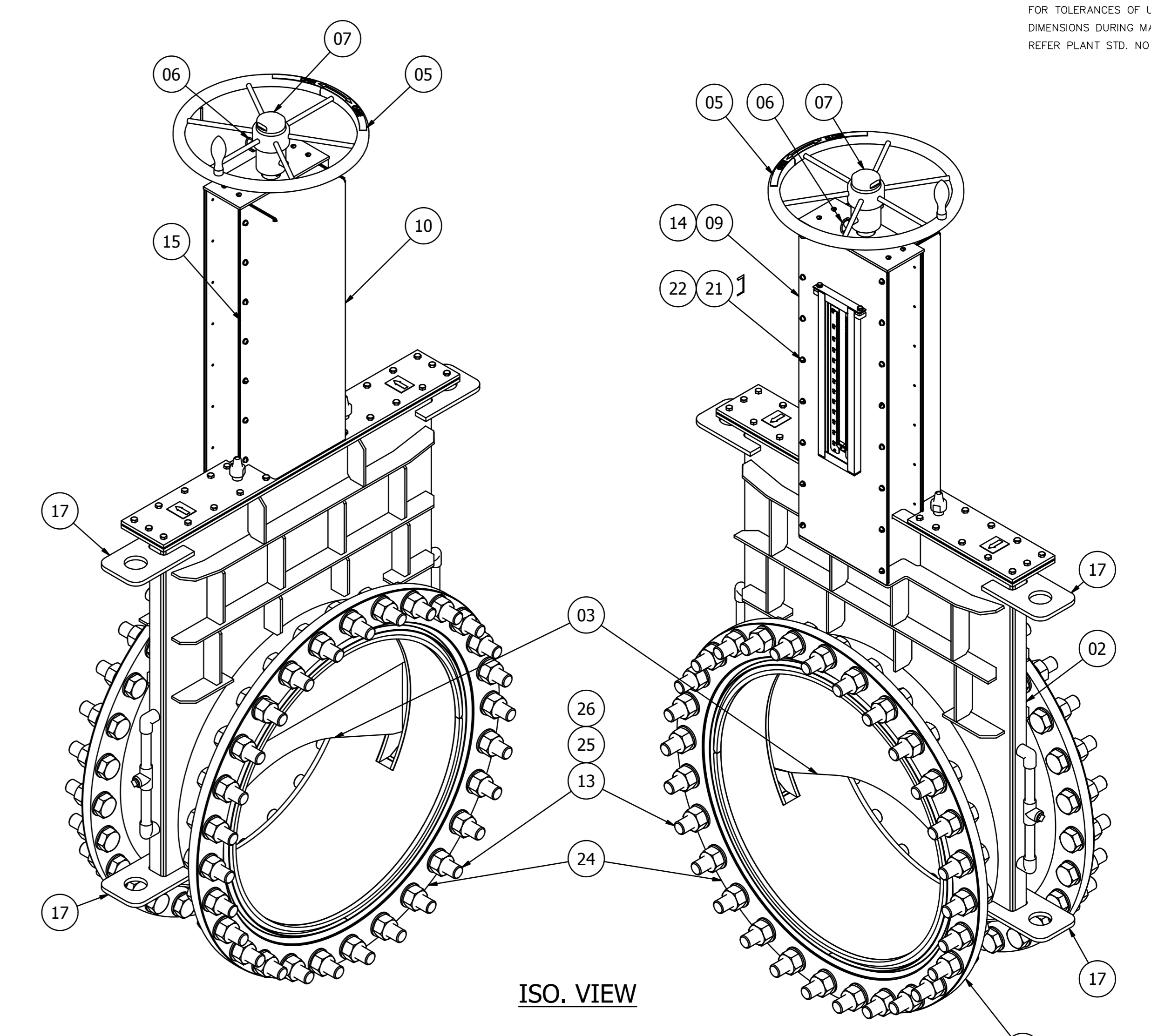
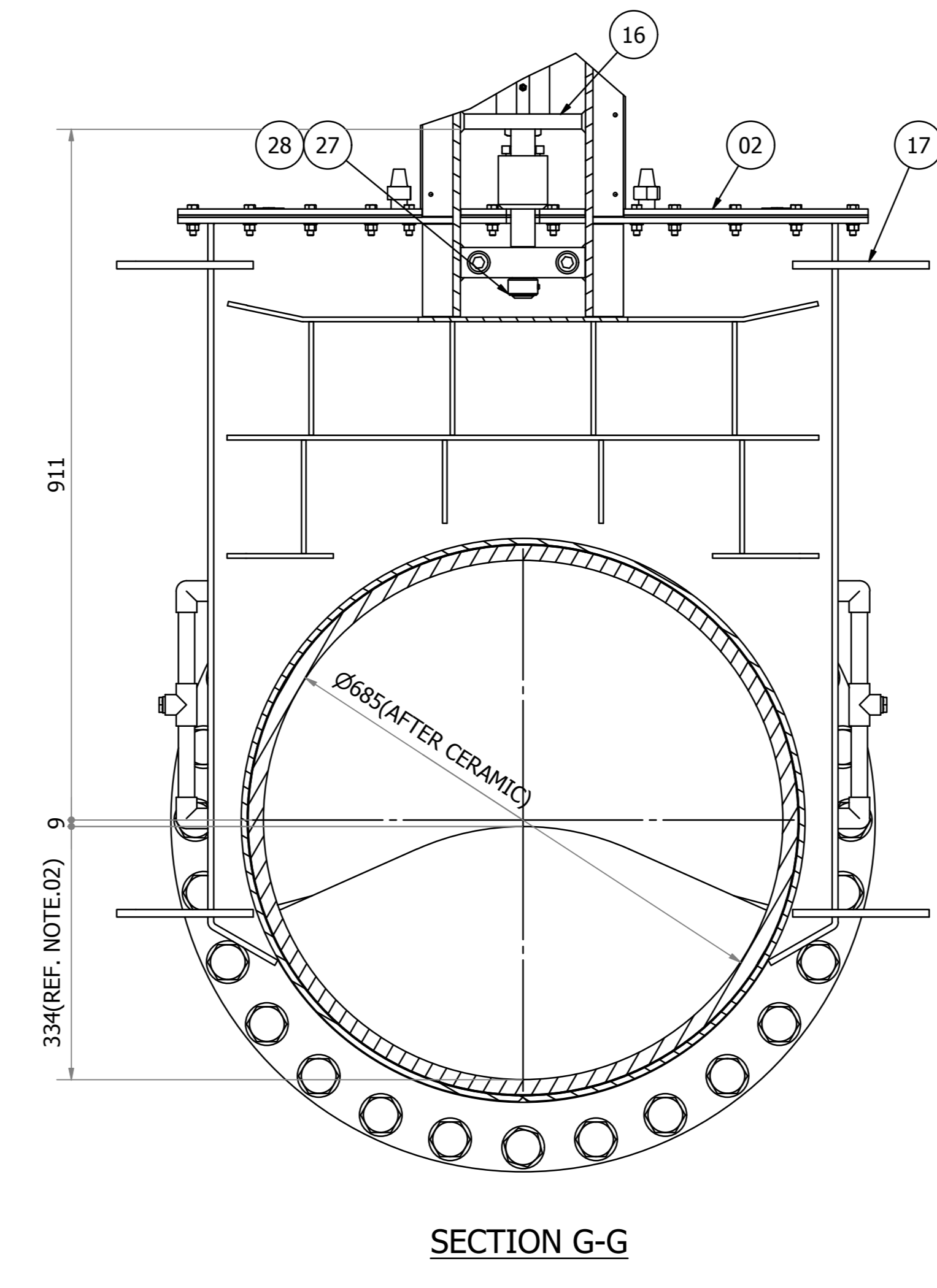
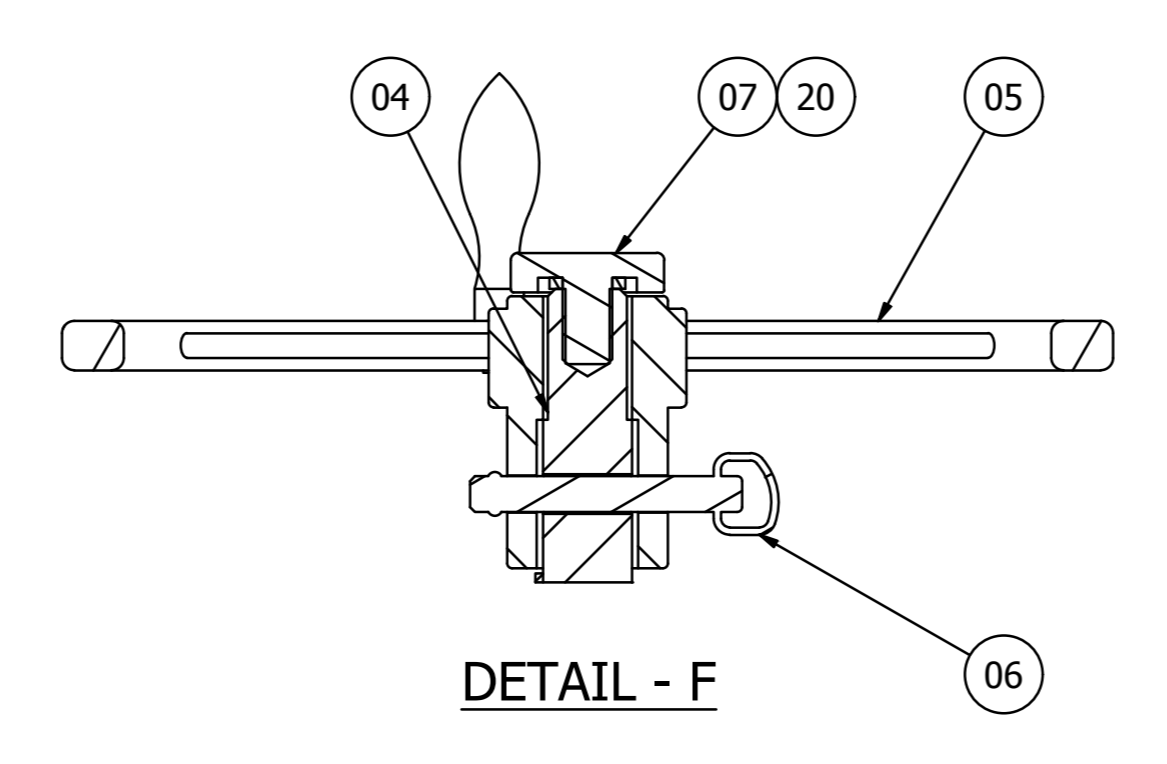
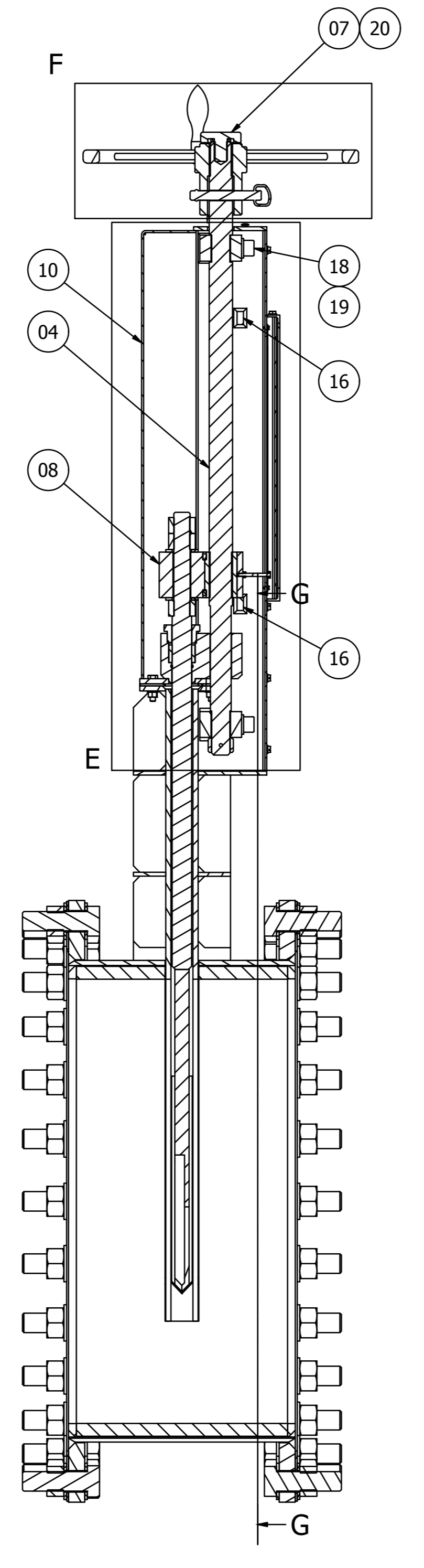
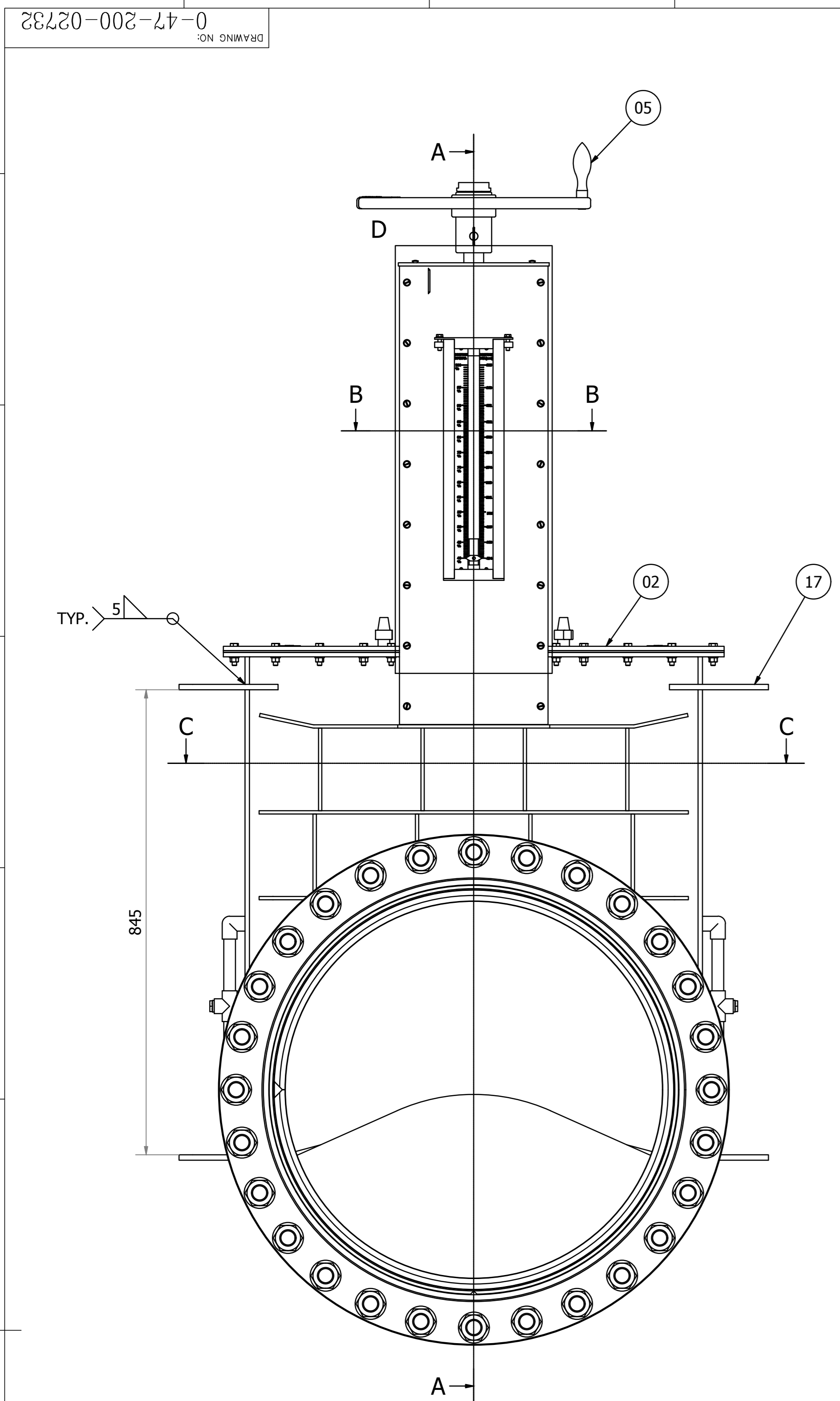
The following details to be painted on the orifice
“FRAGLE MATERIAL- HANDLE CAREFULLY”

The ends of the variable orifice shall be covered suitably to avoid transit damage. Suitable wooden packing shall be given to avoid any transit damage.

After inspection, the assembly shall be cleaned, prepared and suitably protected for despatch in such a way as to minimize the possibility of damage and deterioration during transit and storage.

8.0 GUARANTEE

Vendor shall guarantee that the product is free from any manufacturing defects. Also vendor shall confirm for acceptance of liability to correct the manufacturing defect, if any, at his/her own cost found at later stage during erection and commission of the product.



ORIFICE AT FULLY OPENED POSITION TO BE PACKED AND DISPATCHED IN WOODEN BOX.

- NOTES:**
- STOPPER BAR (ITEM NO.16) SHALL BE PLACED AFTER MATCHING WITH SCALE OPEN CLOSED POSITION.
 - DIMENSION SHOWN AS FULLY CLOSED POSITION BEFORE CERAMIC LINING, AND THE DIMENSION SHOULD BE 356.5 AFTER CERAMIC LINING.
 - BLIND FLANGE DRG NO. 4-47-200-02055, MAY BE USED FOR HYDROTEST / LEAK-TEST AT SHOP.
 - SMOOTH OPERATION OF GATE TO BE ENSURED BEFORE DISPATCH.
 - ITEM NO.25 (2 NUMBERS PER ORIFICE) TO BE SUPPLIED ALONG WITH THE VARIABLE ORIFICE WITH PROCTED CONDITION TO SITE.
 - ITEM NO.02, REMOVE TOP FLANGE SCREWS TO MOUNT THE GATE PLATE.

ITEM NO	DESCRIPTION	STD	DRAWING NUMBER	ITEM VAR NO	MATERIAL CODE	MATERIAL SPECN	QTY	UNIT	WEIGHT (kg)	ZONE
28	GRAB SCREW IS 2388 - M6 x 20A				IS 2388		NO	0.004	01	
27	LOCK CAP				SA515GR70		NO	0.085	01	
26	M24 WASHER						NO	0.055	56	
25	M24X110 BOLT				ISO 7089		NO	0.829	56	
24	PIPE FLANGE GASKET	4-47-200-02054			220300900000 TP23294		NO	4.801	2	
23	CHAIN; L=200MM				530131080002		NO	0.104	1	
22	WASHER M6				ISO 7089		NO	0.001	30	
21	PAN HEAD SCREW M6X12				ISO 1580		NO	0.008	30	
20	SPRING WASHER M20				414120002000 ISE735-SQ		NO	0.012	1	
19	WASHER M16						NO	0.012	4	
18	SOCKET HD CAP SCREW M16X70						NO	0.154	4	
17	LIFTING LUG PL 10X120X180	4-47-200-02056			152110980000 IS 2062E250A		NO	1.279	4	
16	STOPPER BAR PL 10X20X164				152110980000 IS 2062E250A		NO	0.235	2	
15	GASKET FOR REAR COVER SH 3X25X697				220300900000 TP23294		NO	0.073	2	
14	GASKET FOR FRONT COVER SH 3X25X891				220300900000 TP23294		NO	0.093	2	
13	M24 NUT						NO	0.283	56	
12	LEAD SCREW MOUNTING BRACKET TOP	4-47-200-02015			150423470000 SA515GR70		NO	1.416	1	
11	POINTER ASSLY	3-47-200-01751			ASSLY		NO	0.015	1	
10	REAR COVER	3-47-200-01883			150118920000 IS10790		NO	7.282	1	
09	FRONT COVER ASSLY.	2-47-200-01924			ASSLY		NO	6.831	1	
08	THRUST BEARING ASSLY	3-47-200-01918			ASSLY		NO	4.090	1	
07	HAND WHEEL LOCKING SCREW	3-47-200-01740			150391440000 SA105		NO	0.392	1	
06	QUICK RELEASE PIN	4-47-200-02053				STAINLESS STEEL	NO	0.149	1	
05	HAND WHEEL	2-47-200-01861			01 ASSLY		NO	8.866	1	
04	LEAD SCREW	3-47-200-01882			150391160000 SA193B7		NO	6.726	1	
03	GATE PLATE ASSLY.	2-47-200-01923			ASSLY		NO	44.631	1	
02	BODY ASSLY.	0-47-200-02731			ASSLY		NO	117.729	1	
01	PIPE ASSLY.	3-47-200-01870			ASSLY		NO	134.211	1	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: Bharat Heavy Electricals Ltd. UNIT: HIGH PRESSURE BOILER PLANT TRUCHIRAPALLI - 620014

DATE: 14.12.2015

DESIGNED BY: RAVI SRINIVAS PRASAD

CHECKED BY: GANGADHAR M CH S

DATE: 14.12.2015

APPROVED BY: SARAVANAKUMAR G

DATE: 14.12.2015

PROJECTION: N.T.S.

SCALE: N.T.S.

WEIGHT (kg): 414.349

REF TO ASSY / OLD DRG: 0-47-200-02732

TITLE: VARIABLE ORIFICE ASSLY(28)

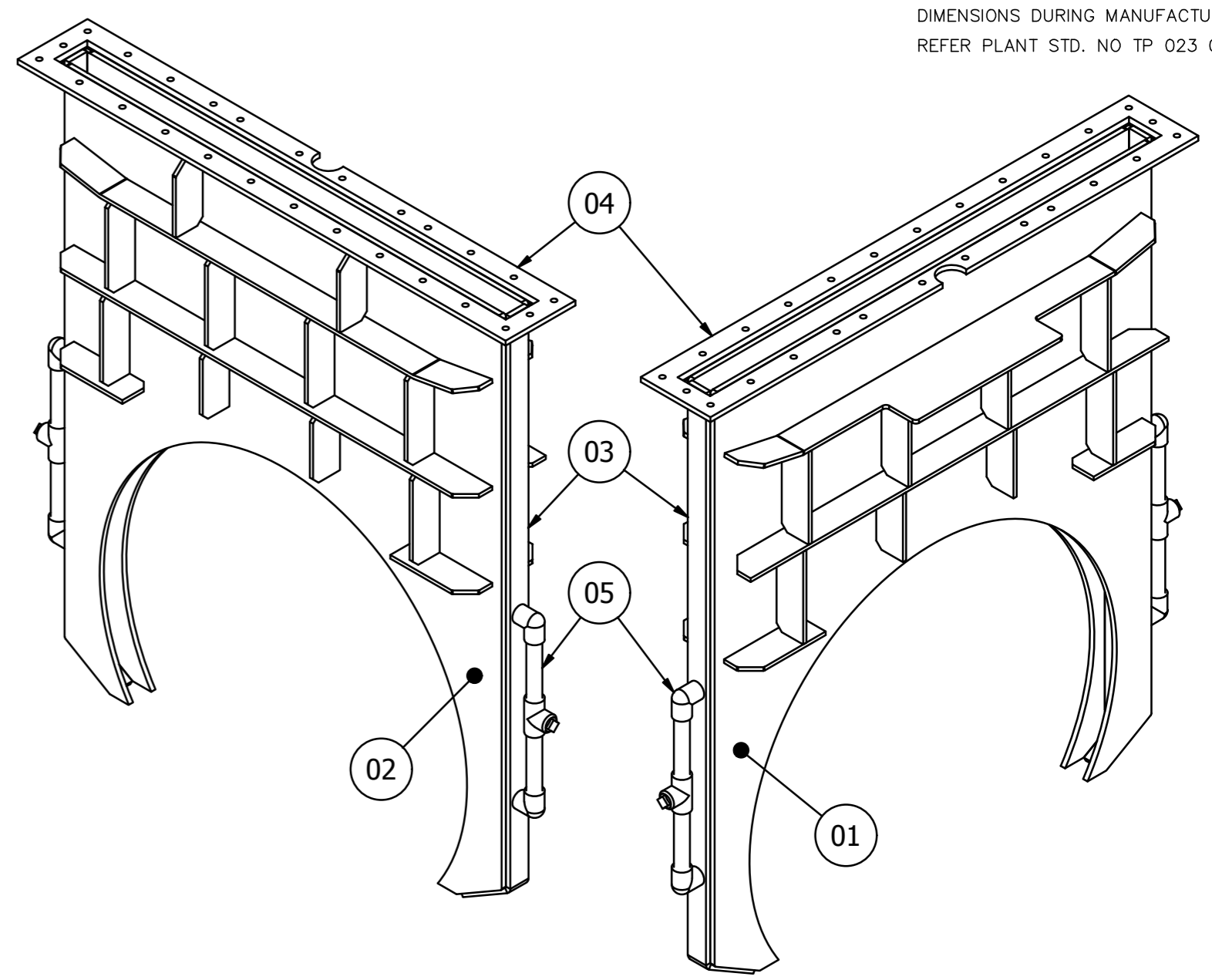
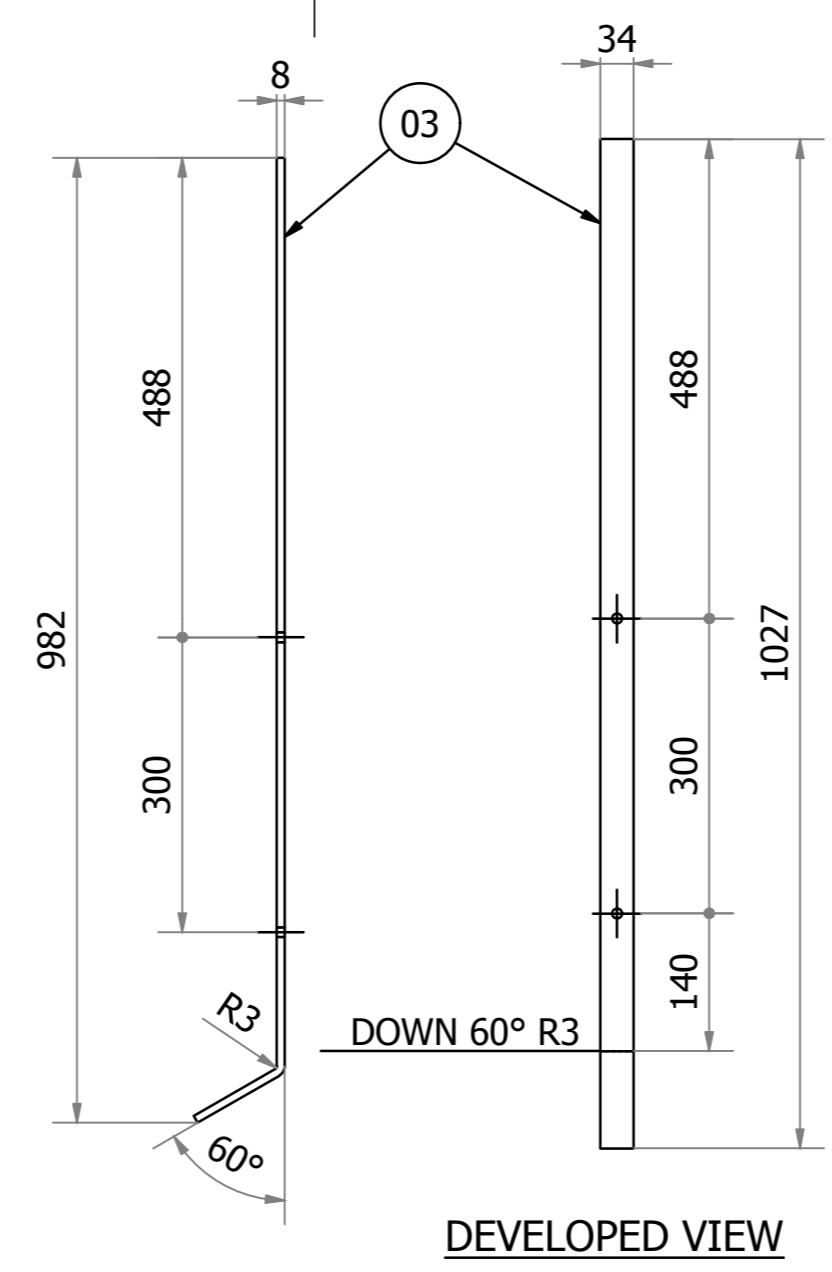
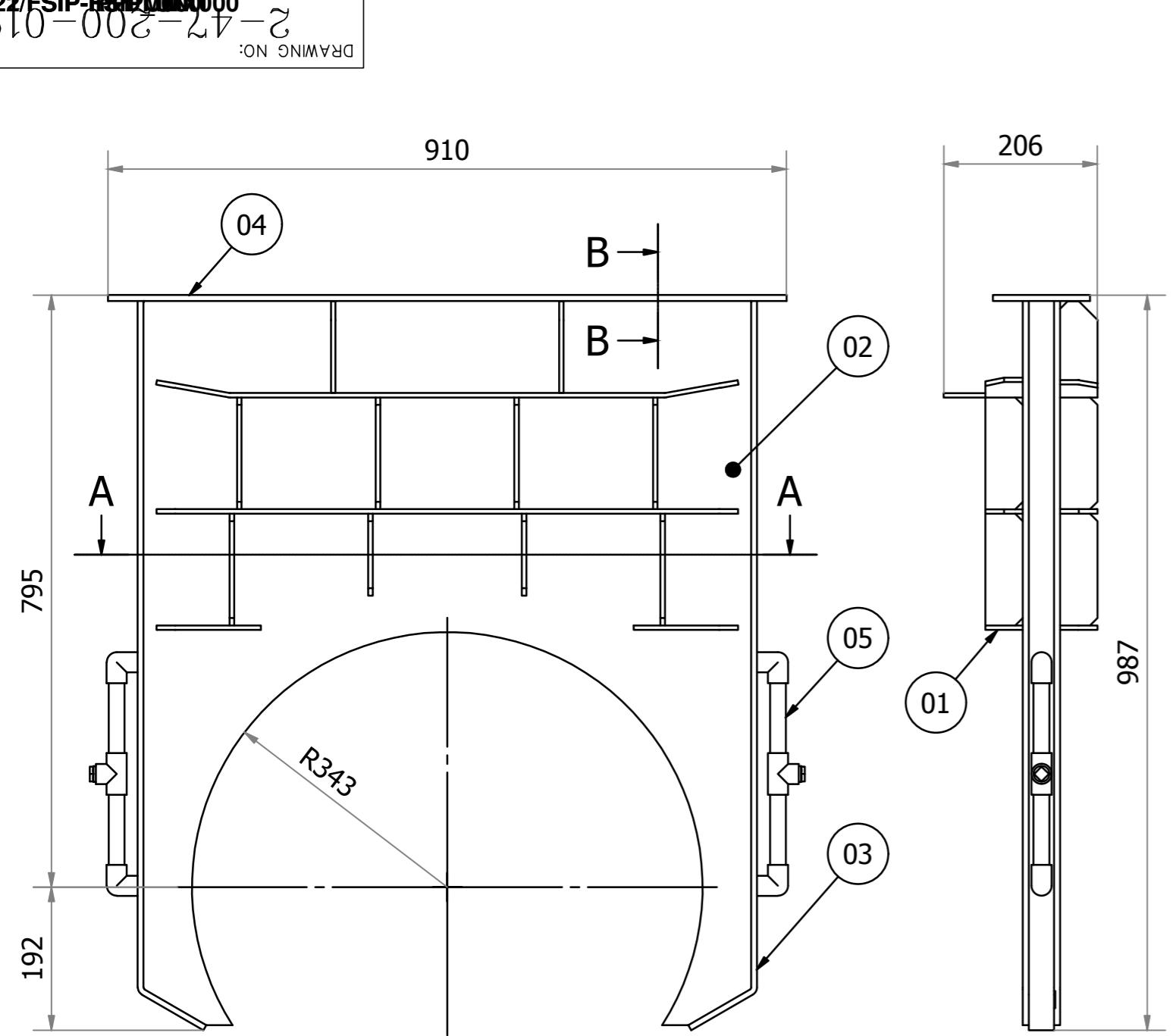
DRAWING NO: 0-47-200-02732

REV: 01

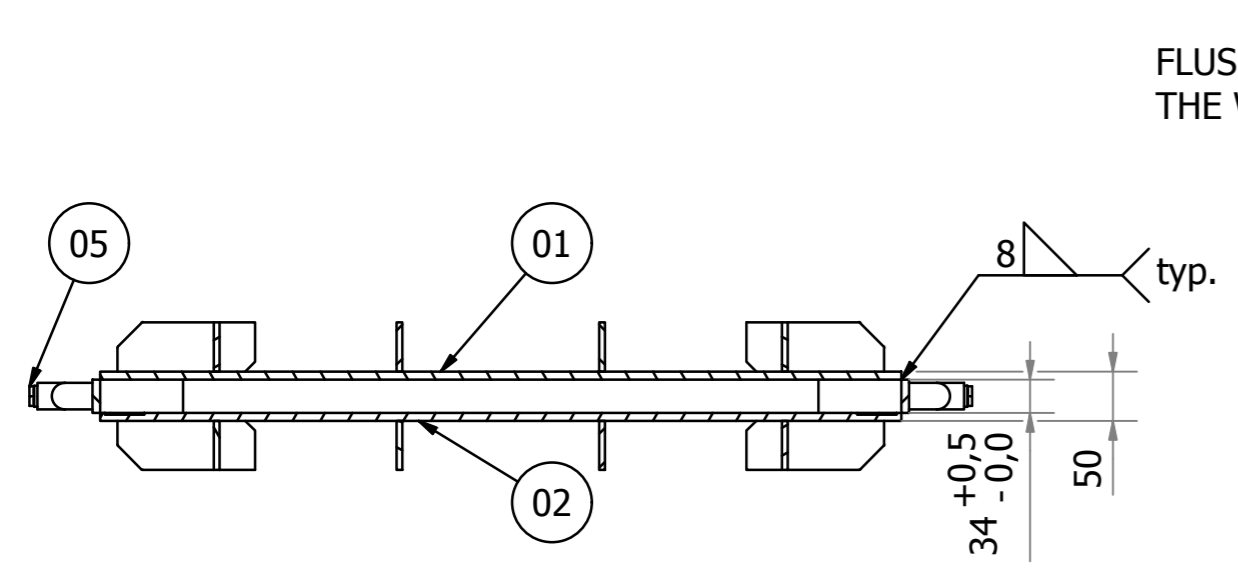
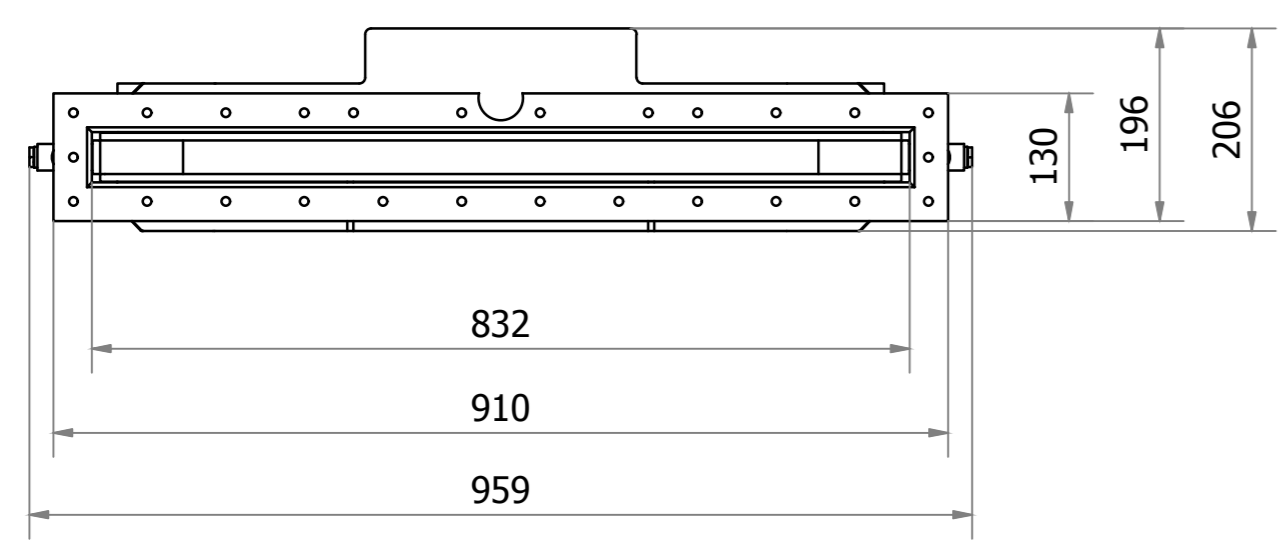
REV	DATE	ALTERED BY	REASON
01	21/12/2015	CHD & APPD	CHD & APPD

881073/2022/FSIP-REAR/000000
 22610-002-27-2
 DRAWING NO. 22610-002-27-2

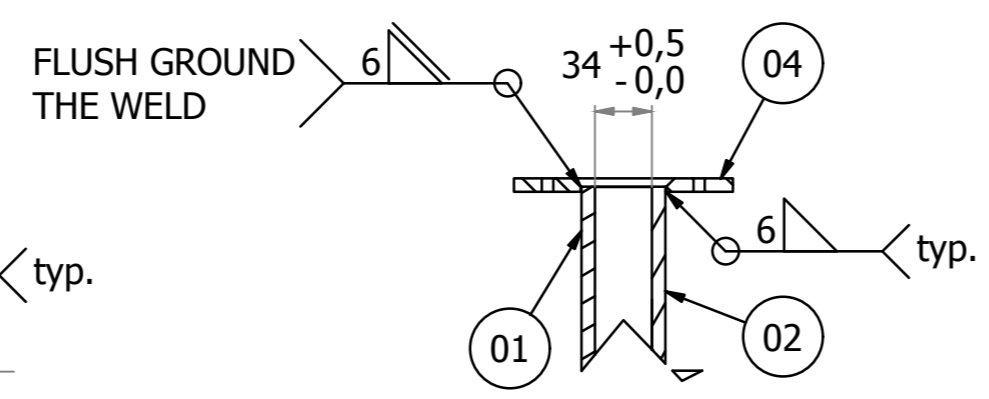
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



ISO. VIEW



SECTION-A-A



SECTION-B-B

NOTE:

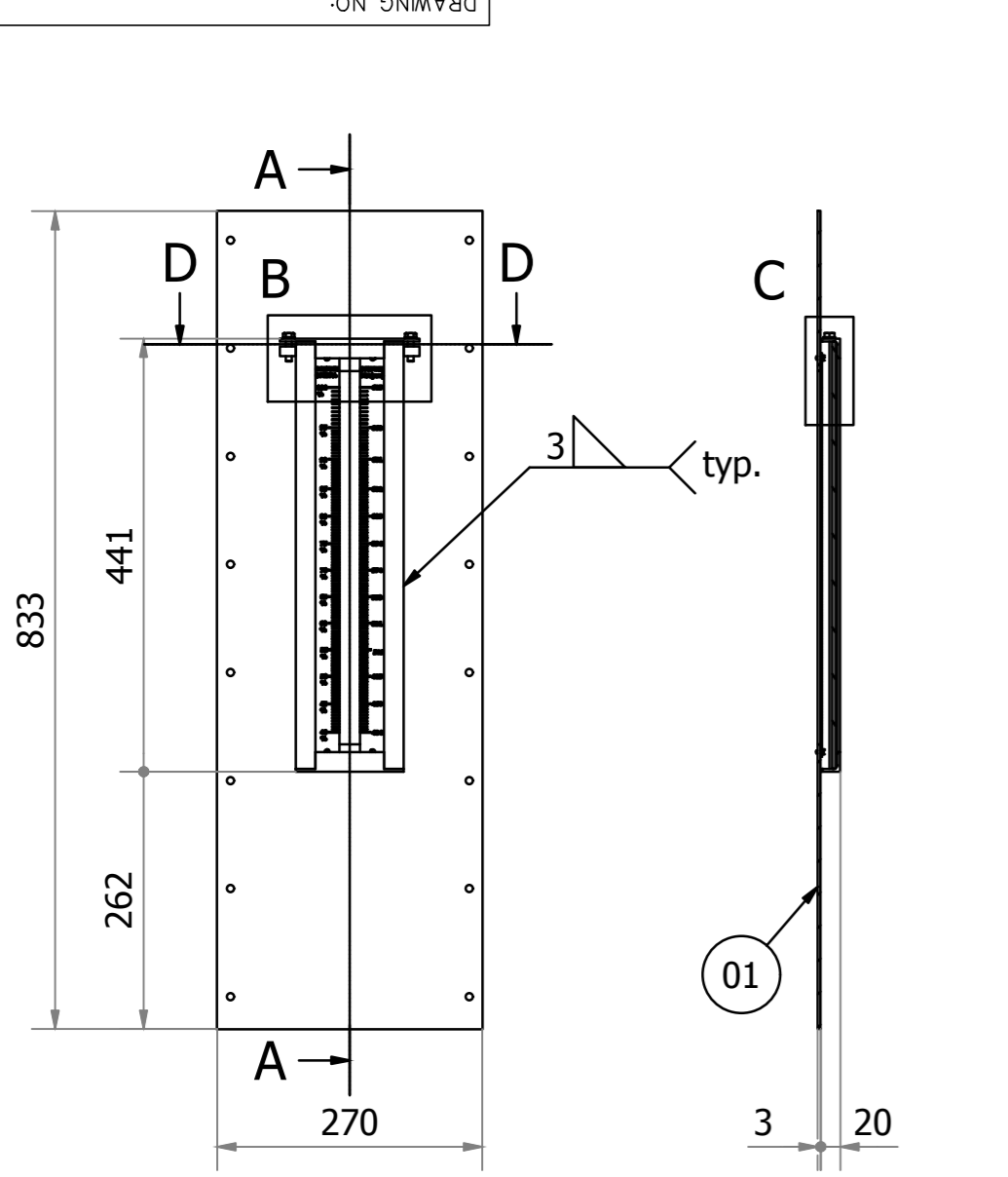
- WELD ITEM NO.04 WITH ITEM NO.01 AND THEN WELD WITH ITEM NO.02

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO		MATERIAL SPECN					DI	QUANTITY			
	05	SIDE PURGE AIR ASSLY		3-47-200-01806				NO	0.778		
						ASSLY		2			
	04	BODY FLANGE		3-47-200-01877				NO	4.028		
								1			
	03	PL 8X34X1178				150110270000			2.184		
						IS2062FE410GRA		NO	2		
	02	BODY PLATE ASSEMBLY REAR		3-47-200-01876				NO	37.957		
								1			
	01	BODY PLATE ASSEMBLY FRONT		3-47-200-01875				NO	38.095		
								1			

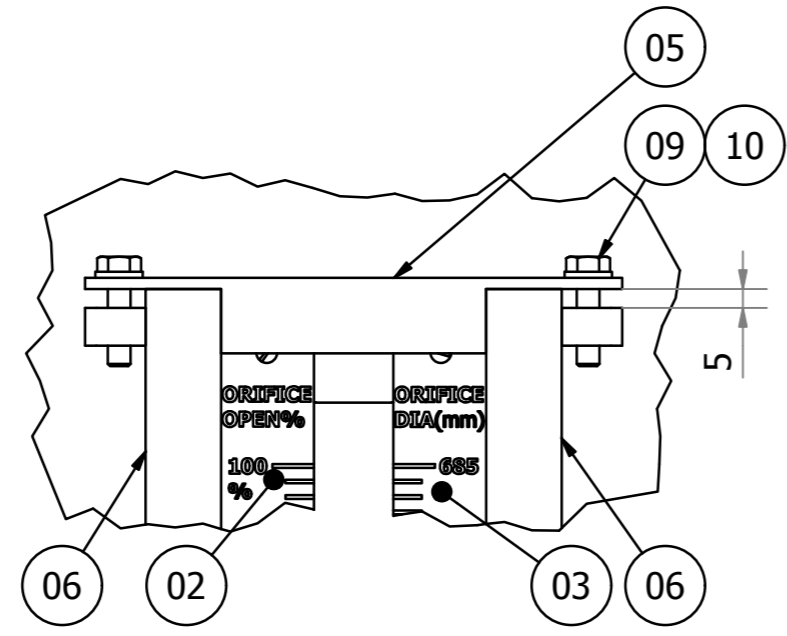
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		SIGNATURE	DATE
	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		Ravi Shankar Prasad		-sd-	10.04.2018
			Gangadhar M Ch S		-sd-	10.04.2018
	DEPT: FS(FB) CODE: 129		ALL DIMENSIONS ARE IN MM PROJECTION:	SCALE: N.T.S	WEIGHT (Kg): 86.004	REF TO ASSY / OLD DWG
TITLE: BODY OF VARIABLE ORIFICE (28" V.O.)					DRAWING NO: 2-47-200-01922 00	
REV 01					REV 00	

881071/2022/FSIP-RSIP/000000
 2-47-200-01924
 DRAWING NO. 2-47-200-01924

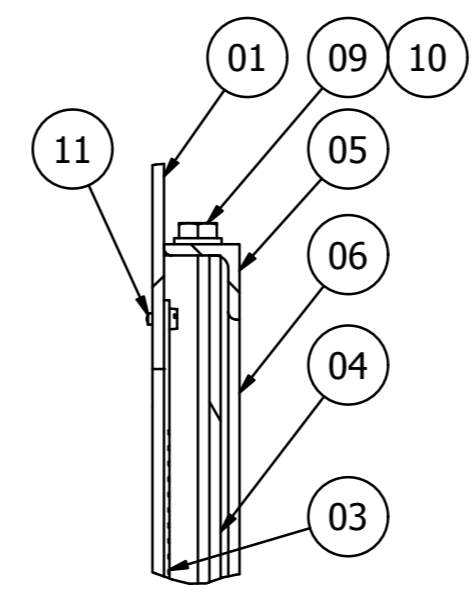
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



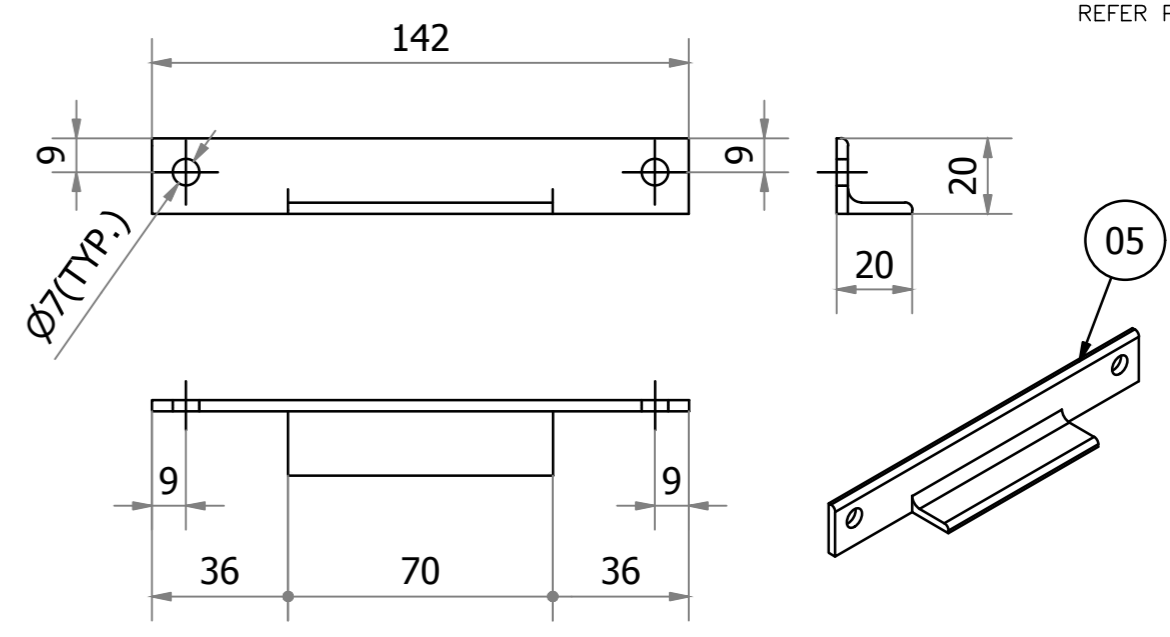
SECTION A-A



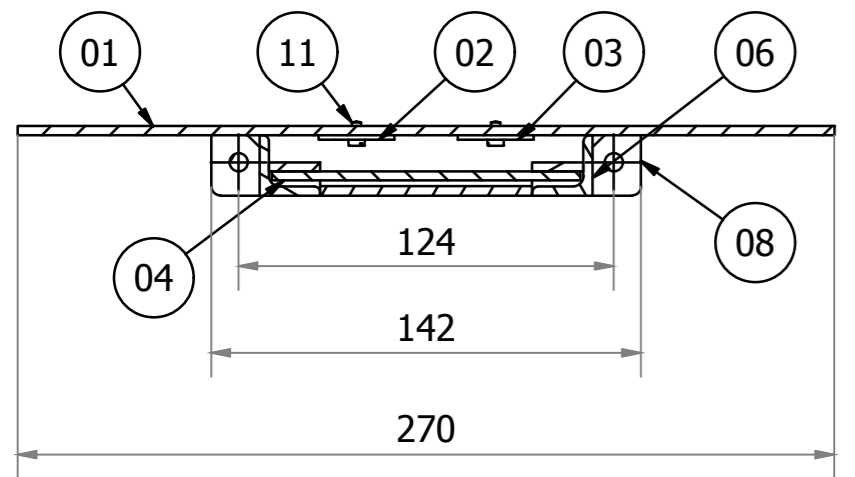
DETAIL-B



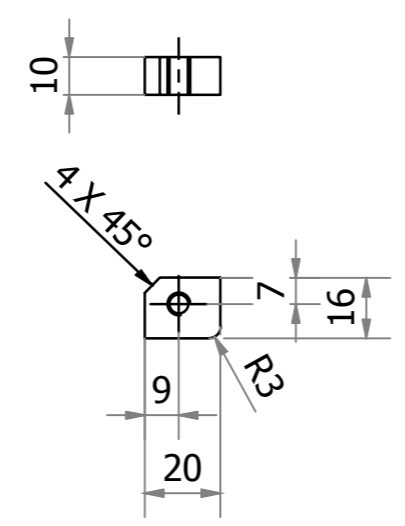
DETAIL-C



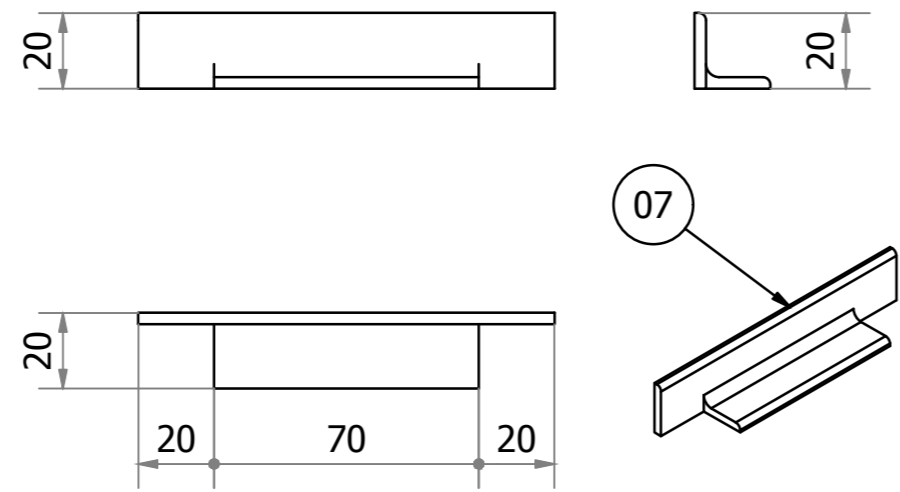
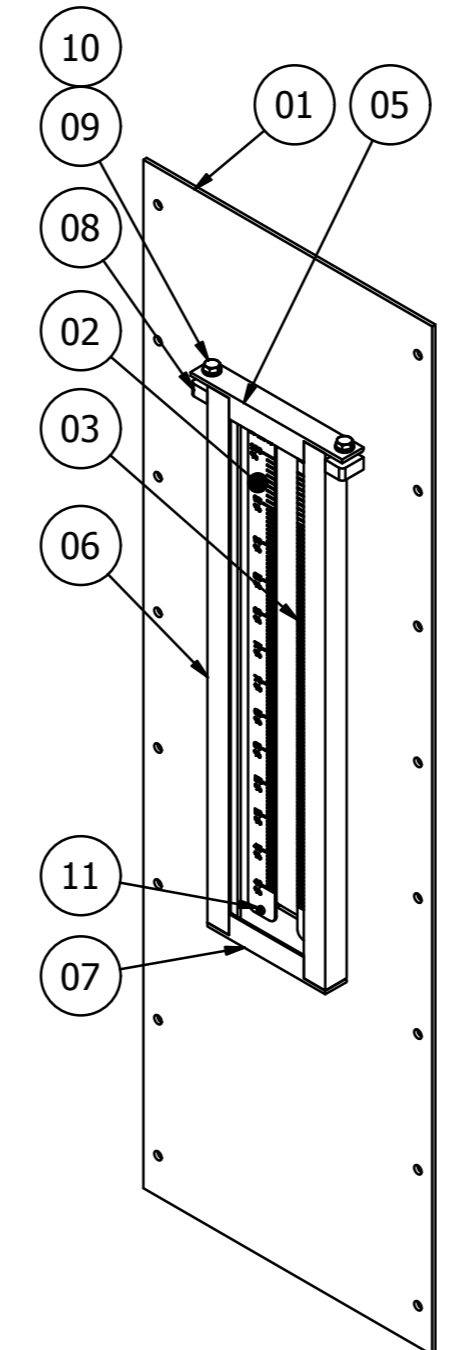
ITEM NO.05



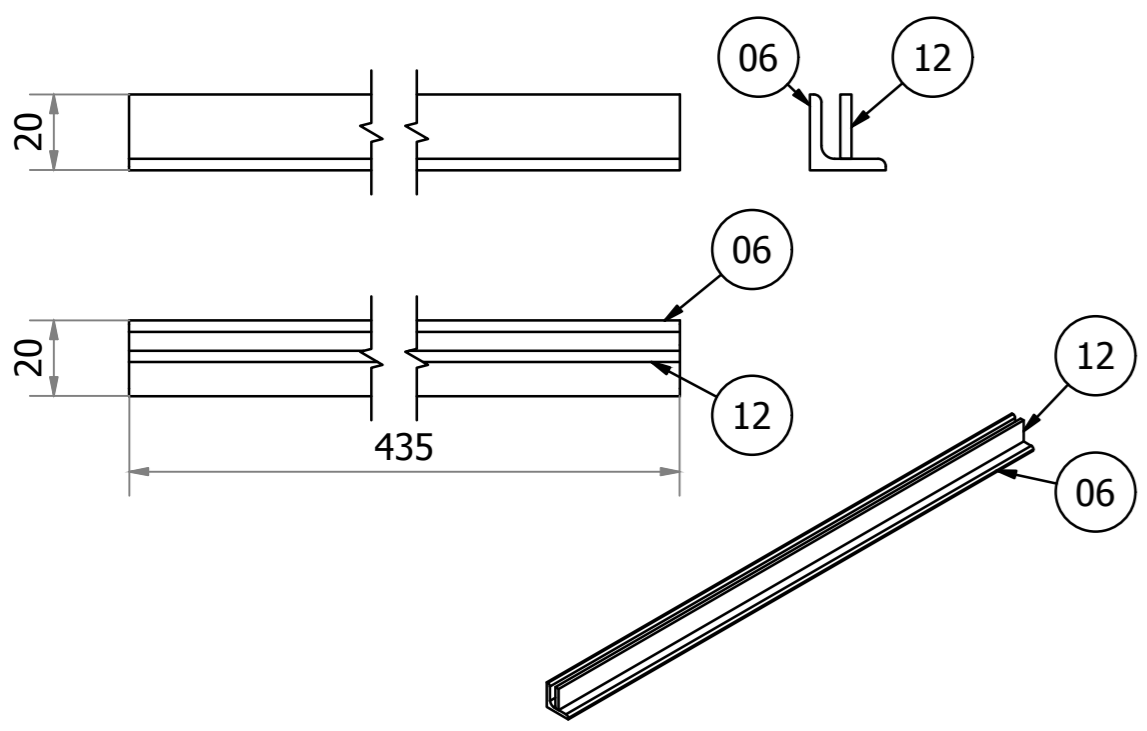
SECTION D-D



ITEM NO.08



ITEM NO.07



REF DWG.: VARIABLE ORIFICE ASSY (28" V.O.) 0-47-200-02732

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO		MATERIAL SPECN					DI	QUANTITY			
	12	PL 3X17X435				159110370000			0.174		
						IS2062E350C		2			
	11	SCREW M3X10				412010391000			0.001		
						IS1366-GALV	NO	4			
	10	WASHER M6				414080000600			0.001		
						IS: 2016/LATEST	NO	2			
	09	SOCKET HD CAP SCREW M6X25				412020693000			0.007		
						IS: 2269CAD	NO	2			
	08	NUT PL10X16X20				152110980000			0.023		
						IS2062E250A(Fe410W)	NO	2			
	07	BOTTOM ANGLE ISA 20X20X3; 110L				150111820000		M	0.105		
						IS1079D	NO	1			
	06	SIDE ANGLE ISA 20X20X3; 435L				150111820000		M	0.382		
						IS1079D	NO	2			
	05	TOP ANGLE ISA20X20X3; 142L				150111820000			0.093		
						IS1079D	NO	1			
	04	TRANSPARENT FIBER GLASS SH3X102X435							0.290		
						REF STANDARD	NO	1			
	03	GRADUATION SCALE SH1.6X25X492		3-47-200-01885		150113500000			0.120		
						02 SA240TP304	NO	1			
	02	GRADUATION SCALE SH1.6X25X492		3-47-200-01885		150113500000			0.120		
						01 SA240TP304	NO	1			
	01	FRONT COVER SH3X270X833		3-47-200-01884		150111820000			4.925		
						IS1079D	NO	1			

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HIGH PRESSURE BOILER PLANT
 TIRUCHIRAPALLI - 620014

DRN	RAMI SHANKAR PRASAD	SIGNATURE	--sd--	DATE	12.04.2018
CHD	GANGADHAR M CH S	SIGNATURE	--sd--	DATE	12.04.2018
APPD	SARAVANAKUMAR G	SIGNATURE	--sd--	DATE	12.04.2018

DEPT: FS(FB) ALL DIMENSIONS ARE IN MM PROJECTION: SCALE: N.T.S WEIGHT (Kg): 6.831 REF TO ASSY / OLD DWG:

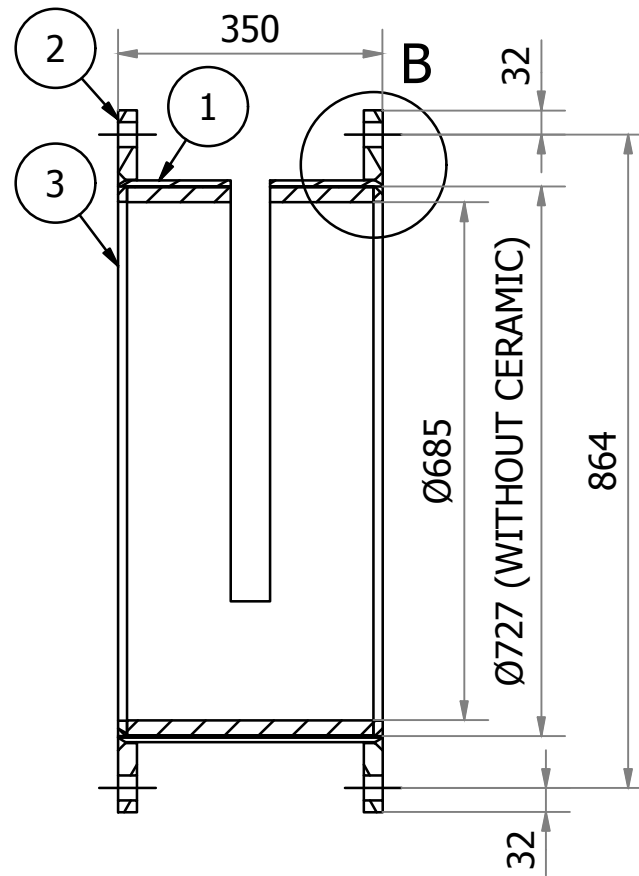
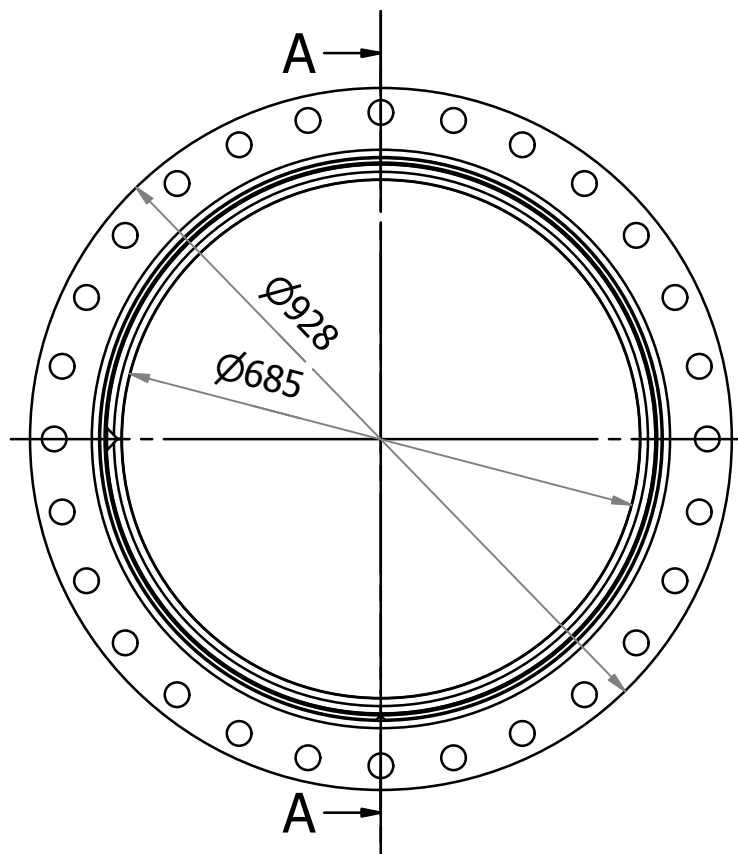
CODE: 129 TITLE: FRONT COVER ASSEMBLY (28" V.O.) DRAWING NO.: 2-47-200-01924 REV: 00

REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

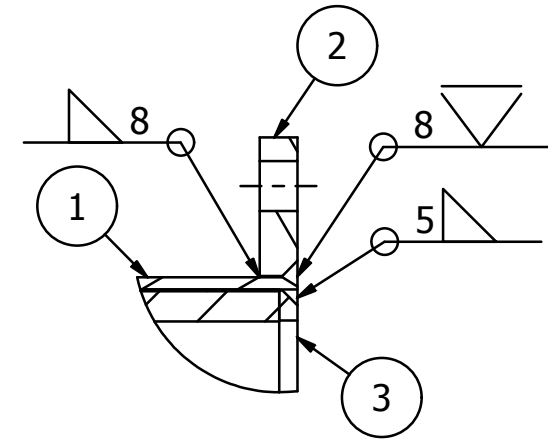
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2022/FSIP-FB/PLM000

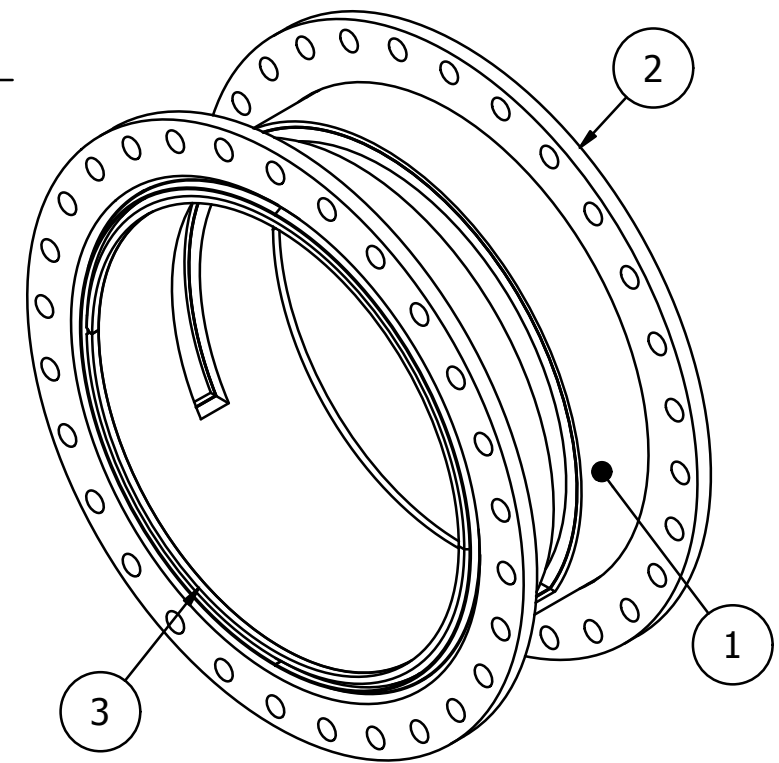
02810-002-27-3
DRAWING NO:



SECTION - A-A (1:10)



DETAIL - B (1:5)



ISO. VIEW

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	03	PL12X20X2210		3-47-200-01873		150110260000			3.279	
						IS2062FE250GRA			02	
	02	PIPE FLANGE PL25XØ928		3-47-200-01872		150110810000			41.563	
						IS2062E250GRBR			02	
	01	PL8X350X2306		3-47-200-01871		150110270000			44.527	
						IS2062E250GRA			01	

NOTE:

- 01. TOTAL WEIGHT GIVEN IS WITHOUT CERAMIC LINING.
- 02. ITEM NO.03 SHALL BE TACK WELD AT SHOP.
AFTER CERAMIC LINING FULL WELD TO BE DONE.

REF. DWG.

BODY ASSLY 0-47-200-02731

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

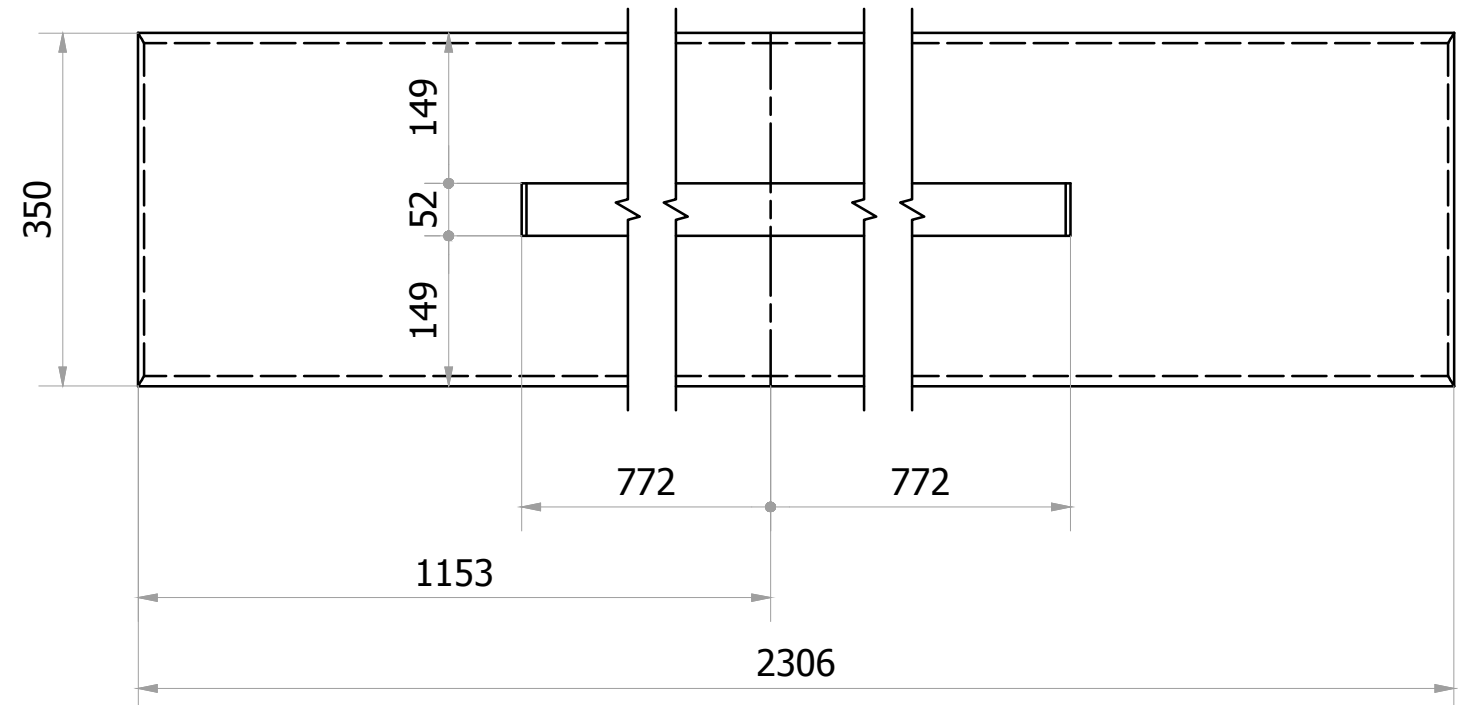
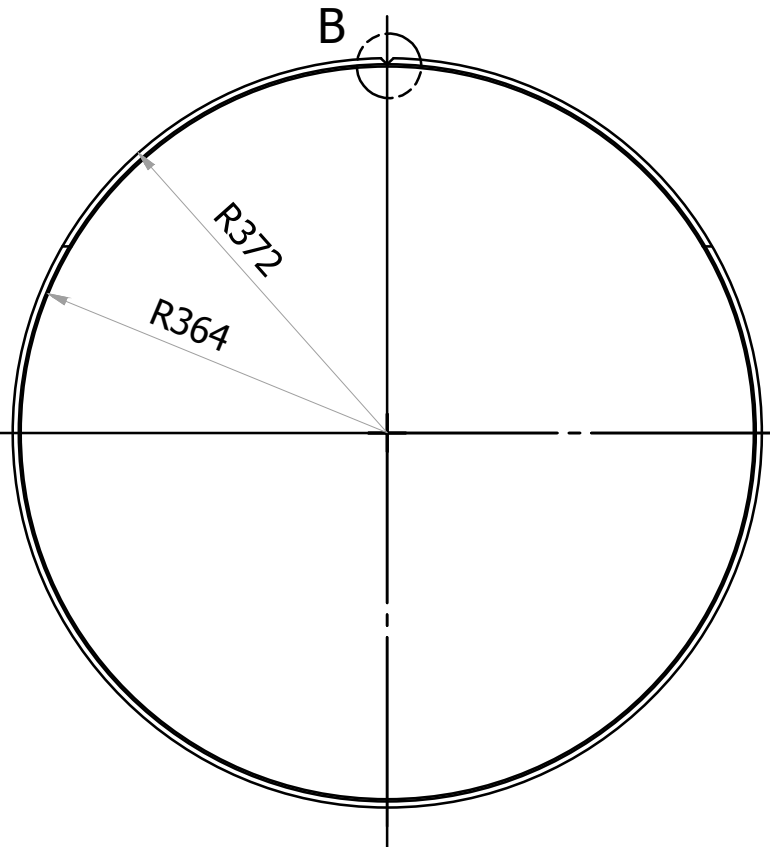
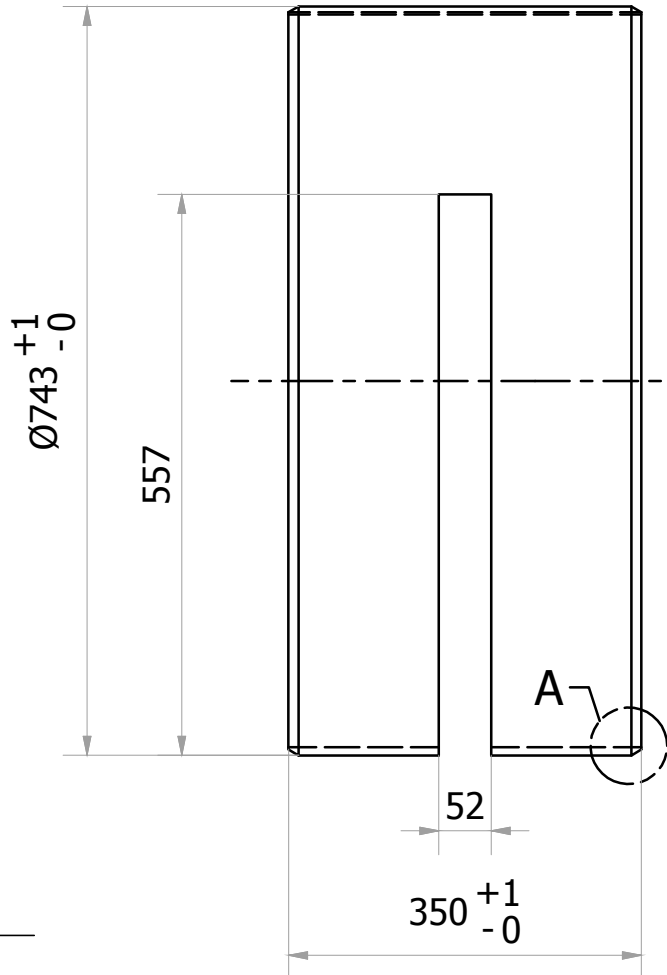
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		DEPT FS(FB) CODE 129		ALL DIMENSIONS ARE IN MM	
PROJECTION 		SCALE N.T.S		WEIGHT (Kg) 134.211	
TITLE CERAMIC PIPE ASSEMBLY (30" V.O.)		REF TO ASSY / OLD DWG			
		DRAWING NO : 3-47-200-01870			REV 00

Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 355-055	DRN	NAME RAVI SHANKAR PRASAD	SIGNATURE -sd-	DATE 13.05.2016
	CHD	GANGADHAR M CH S	-sd-	13.05.2016
	APPD	SARAVANAKUMAR G	-sd-	13.05.2016

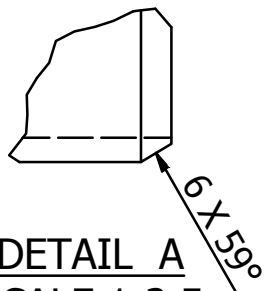
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2022/FSIP-BSIP/000000

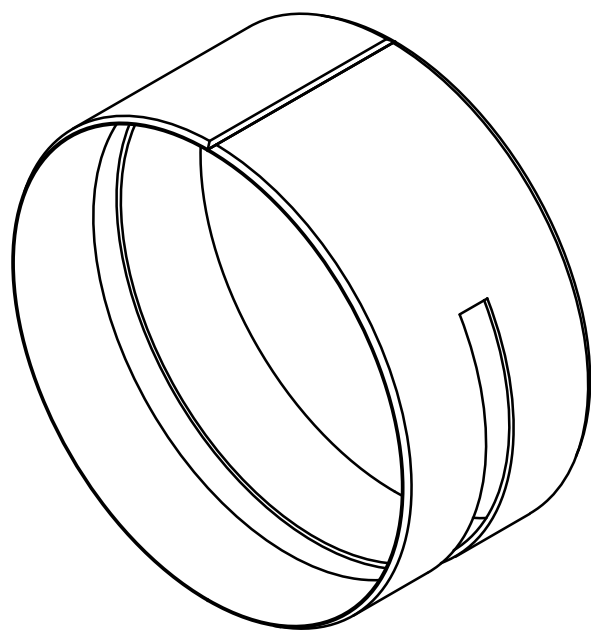
DRAWING NO: 3-47-200-01871



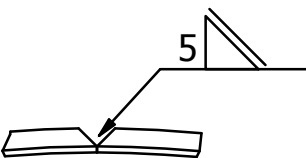
DEVELOPED VIEW



DETAIL A
SCALE 1:2.5



ISO. VIEW



DETAIL B
SCALE 1:2.5

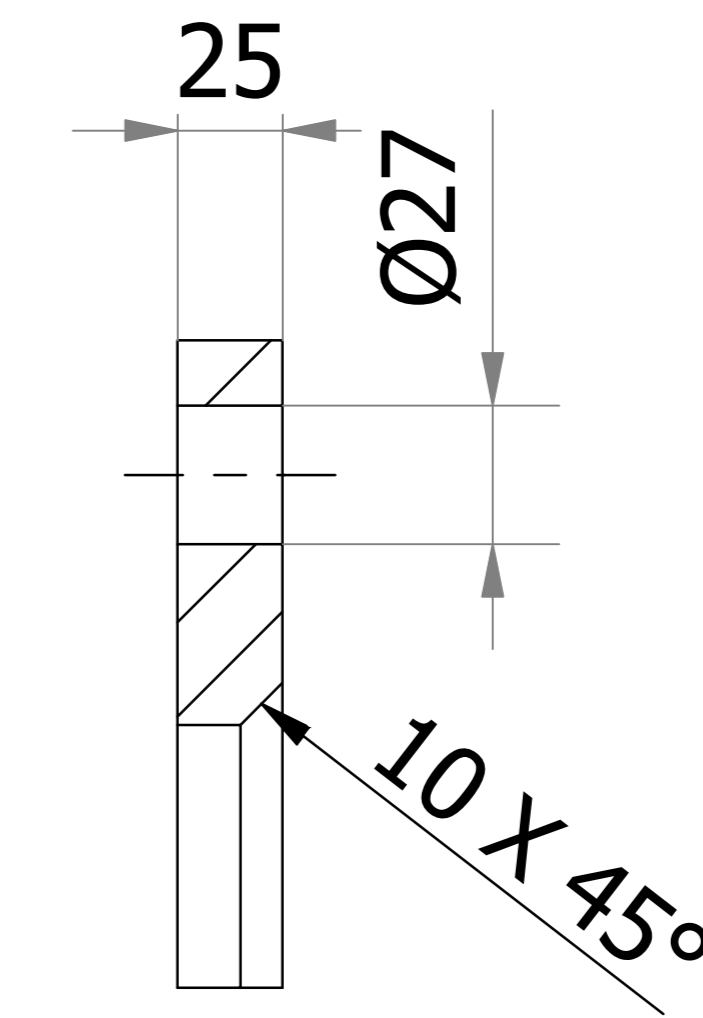
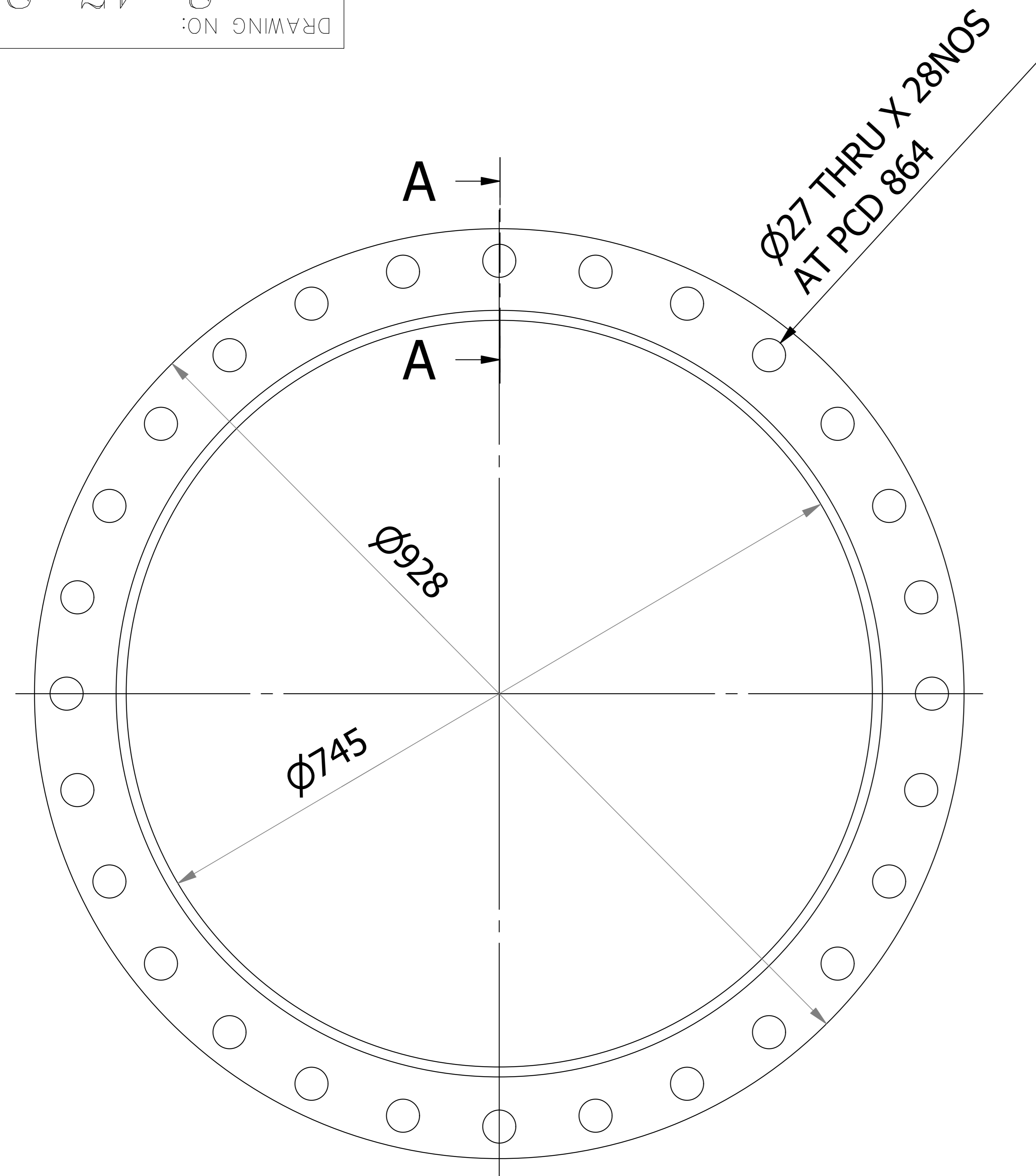
REF. DWG NO. 3-47-200-01870

VARIANT NUMBER	01	PL8X350X2306	STD	DRAWING NUMBER	150110270000	A/C/P	UNIT	44.527	CS
	ITEM NUMBER	DESCRIPTION			MATERIAL CODE			IS2062E250GRA	
	VAR NO				MATERIAL SPECN	DI		QUANTITY	

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DEPT FS(FB)		ALL DIMENSIONS ARE IN MM		PROJECTION		SCALE		WEIGHT (Kg)		SIGNATURE		DATE	
CODE 129				N.T.S		44.527		44.527		-sd-		07.04.2018	
TITLE				Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014				DRN RAVI SHANKAR PRASAD		-sd-		07.04.2018	
CASING PIPE OD743 (28" V.O.)				355-055				CHD GANGADHAR M CH S		-sd-		07.04.2018	
DRAWING NO :				3-47-200-01871				APPD SARAVANAKUMAR G		-sd-		07.04.2018	
REV 01				DATE				ALTERED : CHD & APPD:				REV 00	
ZONE													

3-47-200-01872
DRAWING NO:

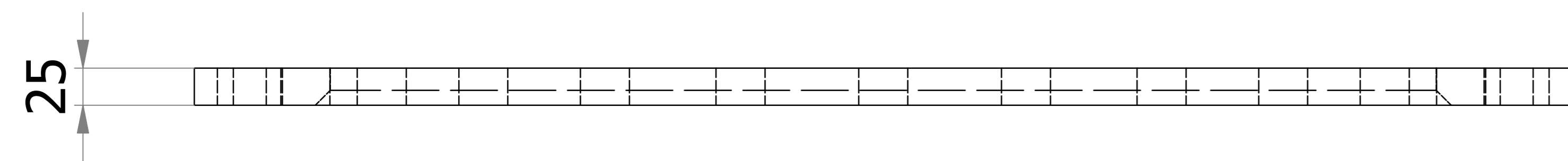
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



SECTION -A-A (1:5)

NOTE:
MAXIMUM THREE WELDS OF 120° APART ALLOWED PER FLANGE.

REF. DRG. NO.
PIPE ASSEMBLY: 3-47-200-01870

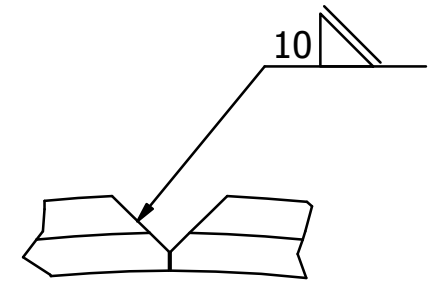
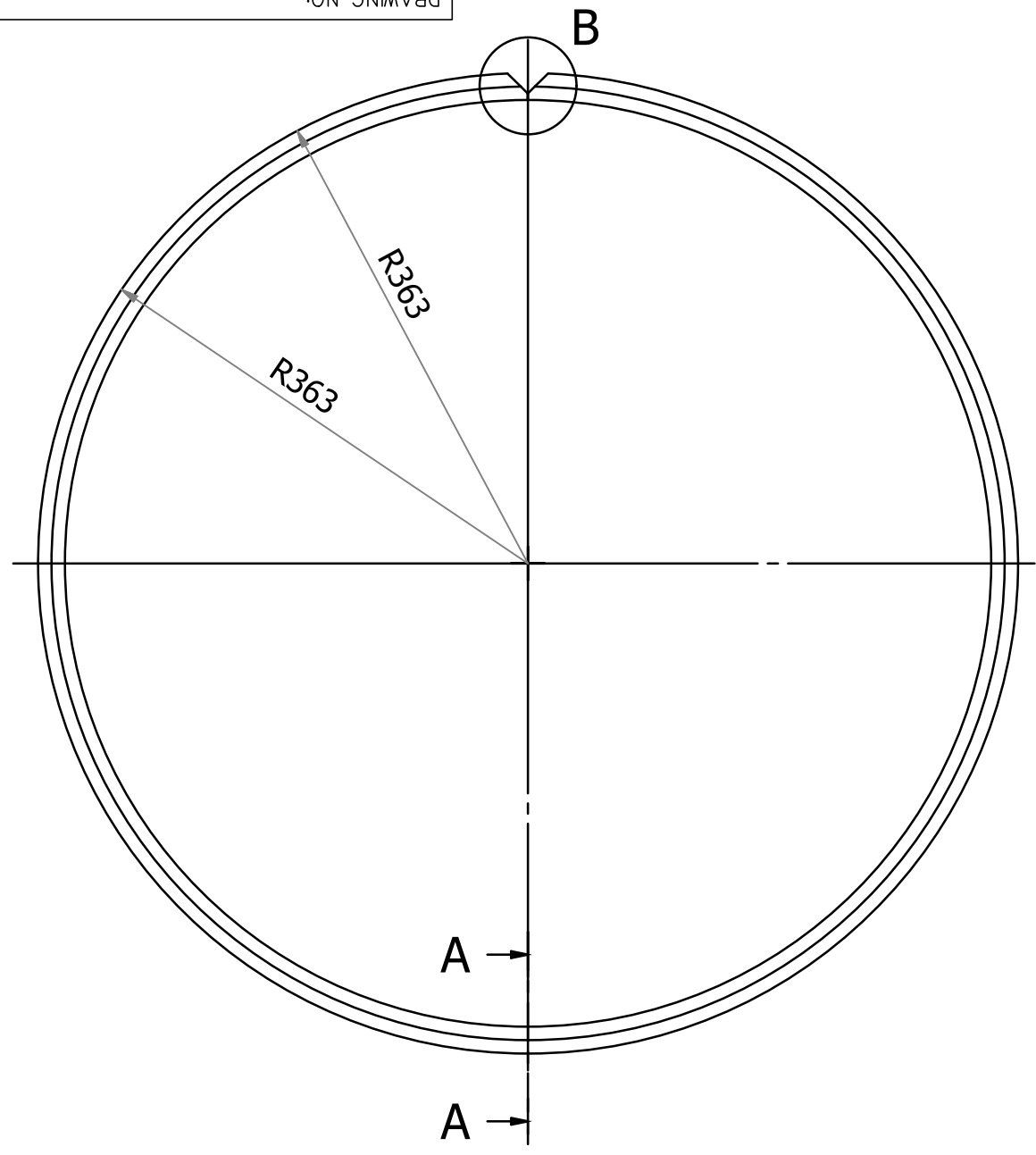


VARIANT NUMBER	01	PL25XØ928	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
ITEM NUMBER					VAR NO	MATERIAL SPECN	DI	QUANTITY		
						150110810000 IS2062E250GRBR			41.563	

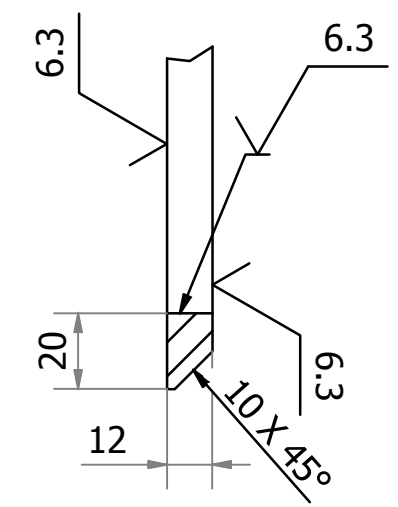
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
	DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	CHD	RAVI SHANKAR PRASAD	-sd-	07.04.2018
	CODE			N.T.S	41.563		APPD	GANGADHAR M CH S	-sd-	07.04.2018
	129							SARAVANAKUMAR G	-sd-	07.04.2018
REV	DATE	ALTERED :	TITLE		DRAWING NO :		REV			
01		CHD & APPD:	PIPE FLANGE #150 (28" V.O.)		3-47-200-01872		00			
ZONE										

3-47-200-01873
DRAWING NO:

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



DETAIL -B (1:2)



SECTION - A-A (1:2)

VARIANT NUMBER	01	DESCRIPTION	PL12X20 DEVELOPED LENGTH=2210	STD	DRAWING NUMBER	ITEM NO	150110260000	A/C/P	UNIT	UNIT WEIGHT	3.279
ITEM NUMBER						VAR NO	IS2062FE250GRA	DI	QUANTITY		
											CS

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

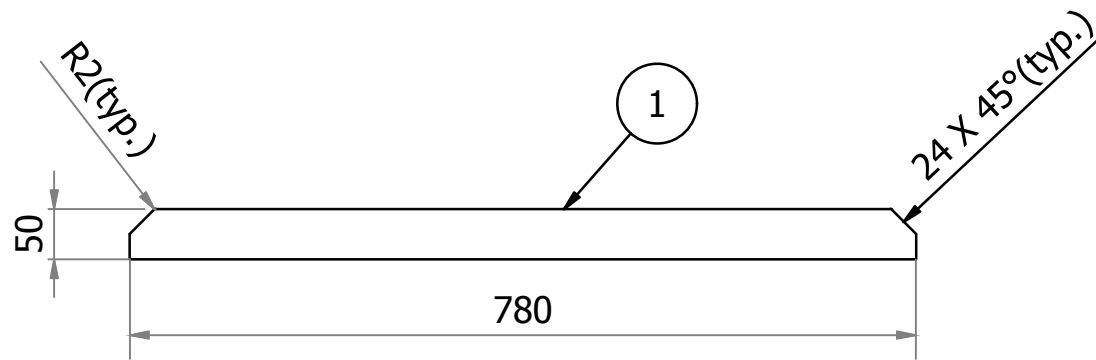
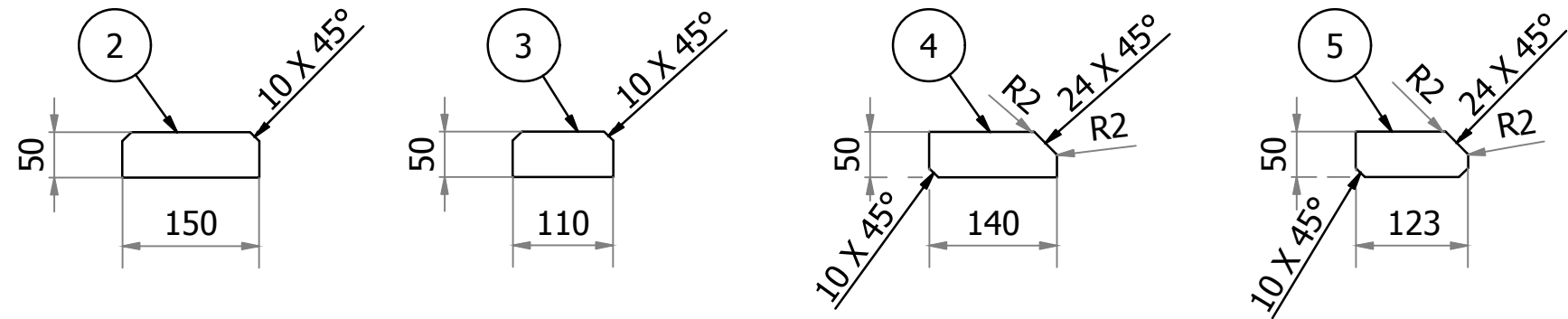
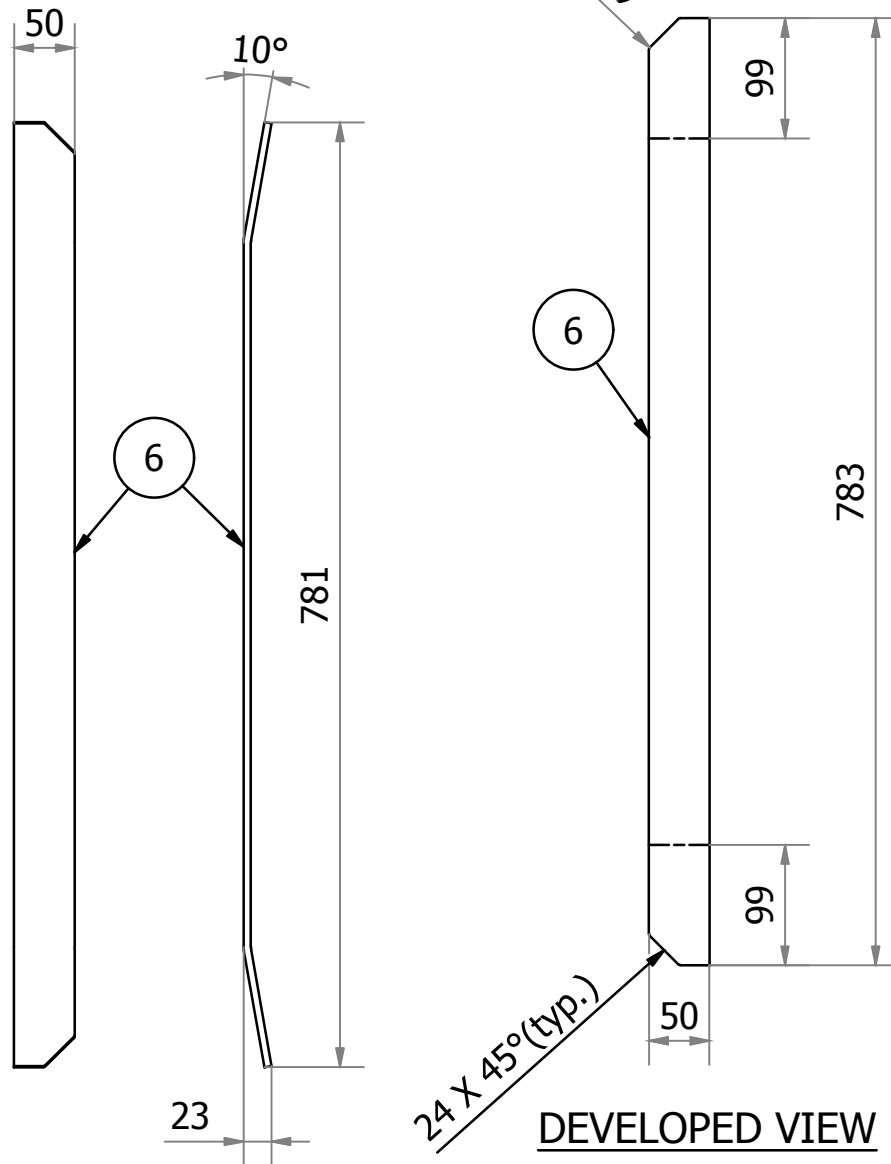
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014	
DEPT	FS(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION
CODE	129		
SCALE	N.T.S	WEIGHT (Kg)	3.279
TITLE		Retainer Ring (28" V.O.)	
DRN	RAVI SHANKAR PRASAD	SIGNATURE	-sd-
CHD	GANGADHAR M CH S	SIGNATURE	-sd-
APPD	SARAVANAKUMAR G	SIGNATURE	-sd-
DATE	07.04.2018	DATE	07.04.2018
DATE	07.04.2018	DATE	07.04.2018
DATE	07.04.2018	DATE	07.04.2018
REF TO ASSY / OLD DWG	DRAWING NO : 3-47-200-01873		
	REV 00		

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2021/FSIP-BSIP/000000

DRAWING NO: 3-47-200-01874



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN	DI	QUANTITY		
06	01	PL6X50X783				152110920000			1.815	
						IS 2062E250A				
05	01	PL6X50X123				152110920000			0.270	
						IS 2062E250A				
04	01	PL6X50X140				152110920000			0.313	
						IS 2062E250A				
03	01	PL6X50X110				152110920000			0.254	
						IS 2062E250A				
02	01	PL6X50X150				152110920000			0.349	
						IS 2062E250A				
01	01	PL6X50X780				152110920000			1.807	
						IS 2062E250A				

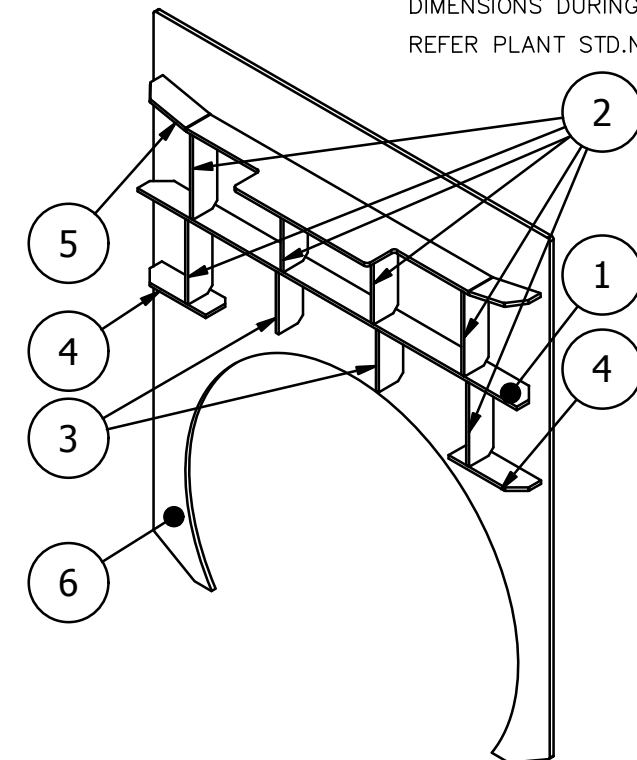
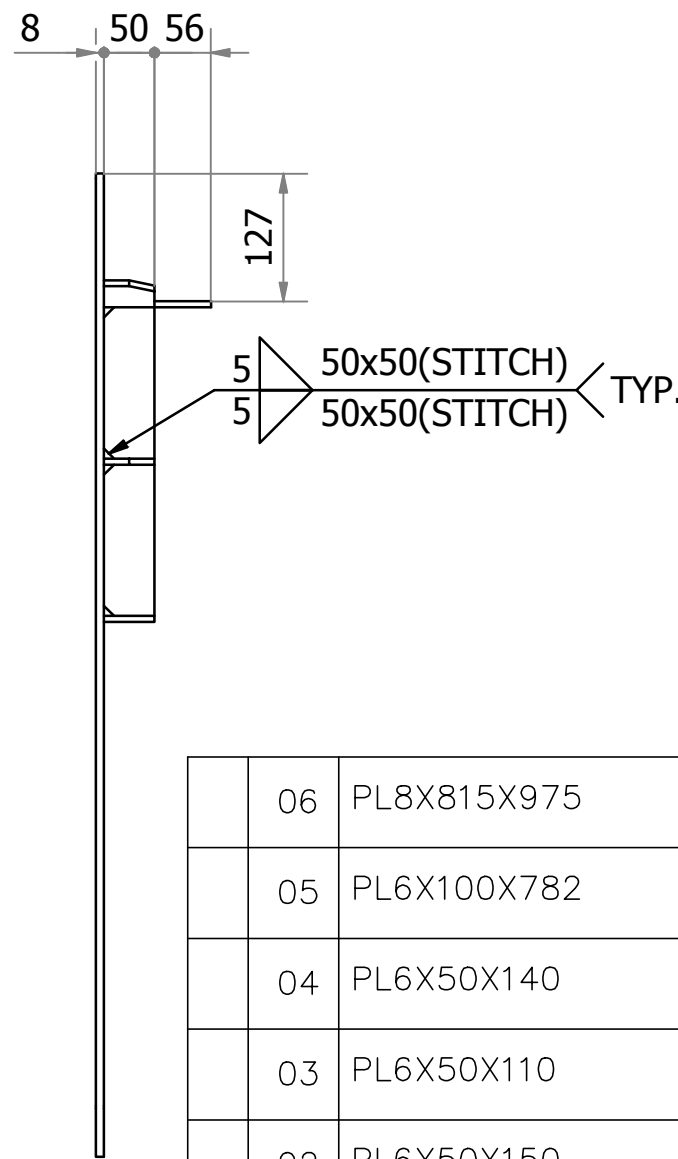
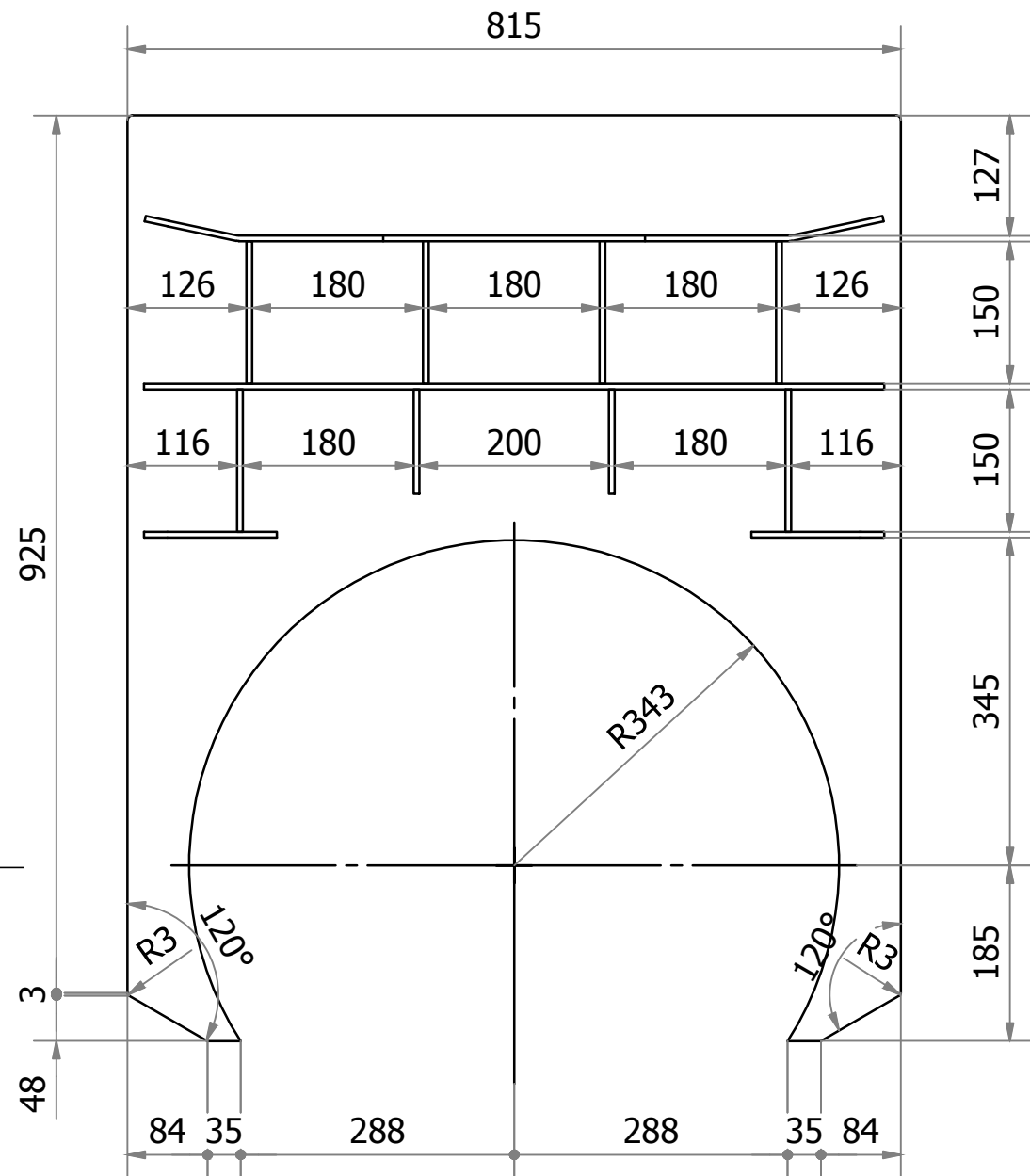
REF. DWG: BODY ASSY. 0-47-200-02731

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
DEPT FS(FB) CODE 129	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		NAME RAVI SHANKAR PRASAD
			SIGNATURE -sd-
			DATE 09.04.2018
		DRN CHD APPD	NAME GANGADHAR M CH S SARAVANAKUMAR G
		SIGNATURE -sd- -sd-	DATE 09.04.2018 09.04.2018
DEPT FS(FB) CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S
TITLE STIFFENER PLATE II (28" V.O.)		WEIGHT (Kg) ---	REF TO ASSY / OLD DWG
DRAWING NO : 3-47-200-01874			REV 00

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

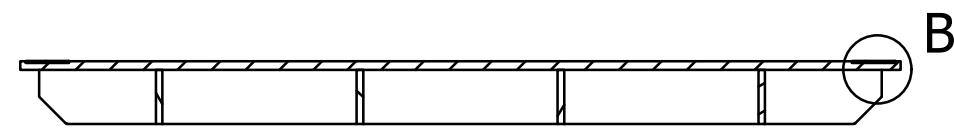
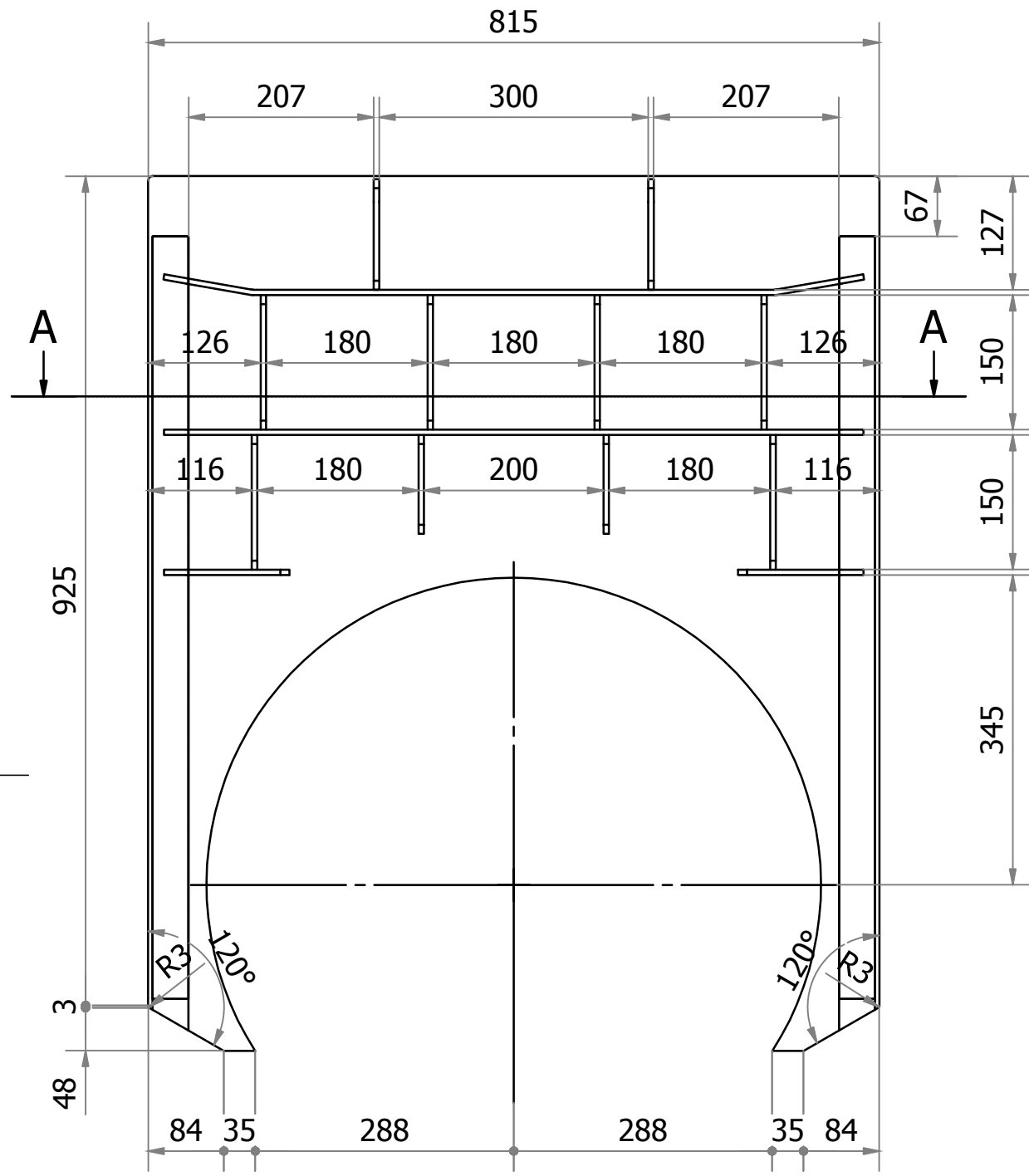


VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	06	PL8X815X975				150110270000			30.520	
						IS 2062E410A			01	
	05	PL6X100X782		4-47-200-02048	01	152110920000			2.540	
						IS 2062E250A			01	
	04	PL6X50X140		3-47-200-01874	04	152110920000			0.313	
						IS 2062E250A			02	
	03	PL6X50X110		3-47-200-01874	03	152110920000			0.254	
						IS 2062E250A			02	
	02	PL6X50X150		3-47-200-01874	02	152110920000			0.349	
						IS 2062E250A			06	
	01	PL6X50X780		3-47-200-01874	01	152110920000			1.807	
						IS 2062E250A			01	

REF. DWG: BODY ASSY. 0-47-200-02731

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014	
		DEPT FS(FB) CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE N.T.S
		DRN	NAME RAVI SHANKAR PRASAD	SIGNATURE -sd-	DATE 09.04.2018
		CHD	GANGADHAR M CH S	-sd-	09.04.2018
		APPD	SARAVANAKUMAR G	-sd-	09.04.2018
		REF TO ASSY / OLD DWG			
TITLE FRONT BODY PLATE ASSEMBLY (28" V.O.)				DRAWING NO : 3-47-200-01875	
				REV 00	



SECTION-A-A

REF. DWG: BODY ASSY. 0-47-200-02731

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

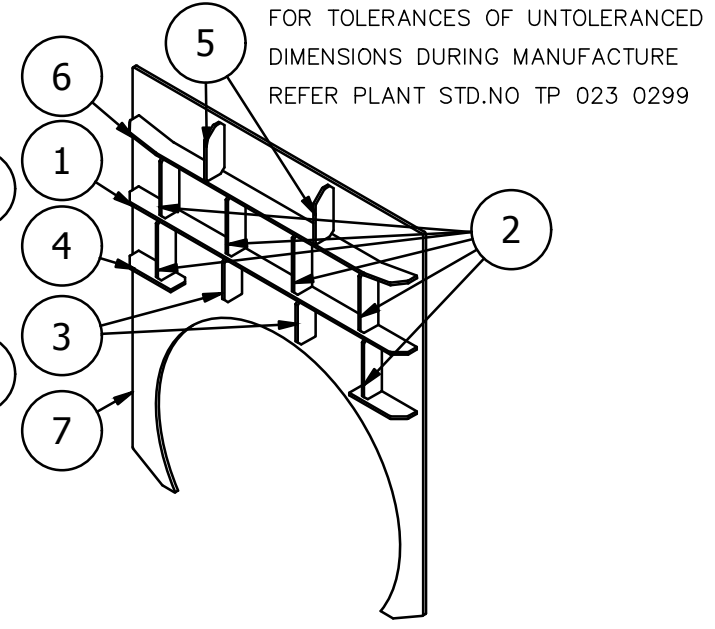
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014	
DEPT	FS(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION
CODE	129		
SCALE	N.T.S	WEIGHT (Kg)	37.957
TITLE		REAR BODY PLATE ASSEMBLY (28" V.O.)	
DRN	NAME	SIGNATURE	DATE
CHD	RAVI SHANKAR PRASAD	-sd-	11.05.2016
APPD	GANGADHAR M CH S	-sd-	11.05.2016
	SARAVANAKUMAR G	-sd-	11.05.2016
REF TO ASSY / OLD DWG		DRAWING NO :	
		3-47-200-01876	
		REV	
		00	

TACK WELD BOTH SIDE

50x50(STITCH)
50x50(STITCH) TYP.

DETAL-B



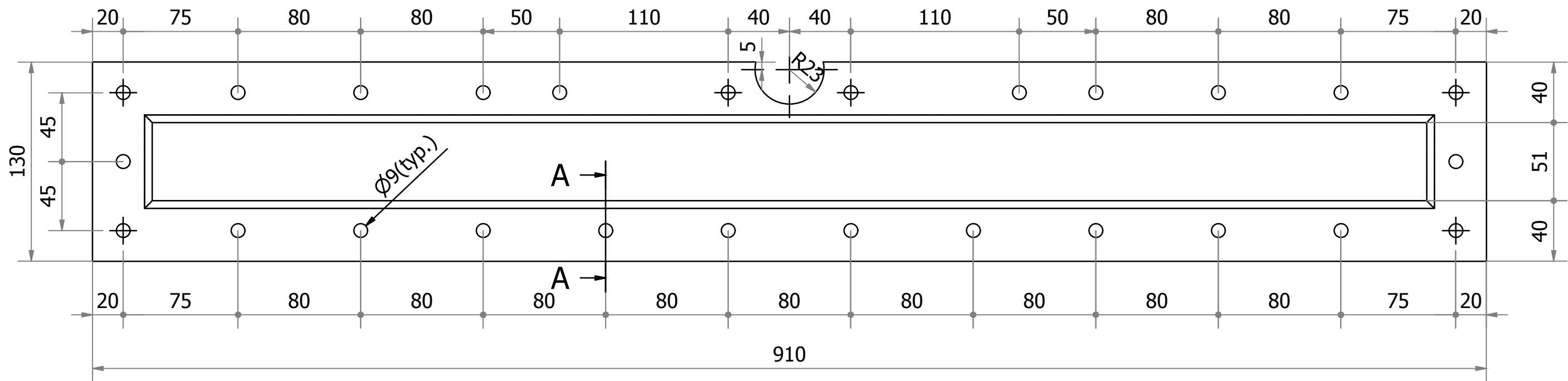
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN	DI	QUANTITY		
	08	PL1.6X40X850				150118730000 SA240TP310S		0.435	02	
	07	PL8X815X975				150110270000 IS 2062E410A		29.697	01	
	06	PL6X50X783	3-47-200-01874		06	152110920000 IS 2062E250A		1.815	01	
	05	PL6X50X123	3-47-200-01874		05	152110920000 IS 2062E250A		0.270	02	
	04	PL6X50X140	3-47-200-01874		04	152110920000 IS 2062E250A		0.313	02	
	03	PL6X50X110	3-47-200-01874		03	152110920000 IS 2062E250A		0.254	02	
	02	PL6X50X150	3-47-200-01874		02	152110920000 IS 2062E250A		0.349	06	
	01	PL6X50X780	3-47-200-01874		01	152110920000 IS 2062E250A		1.807	01	

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2022/FSIP-FB/PLM000

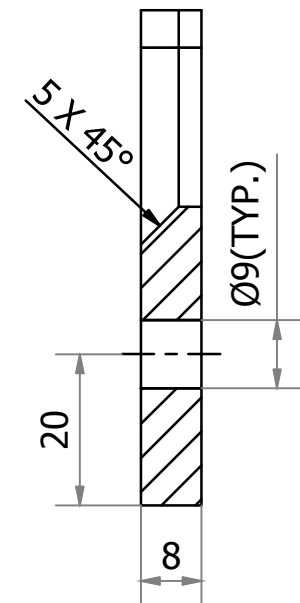
DRAWING NO: 3-47-200-01877



NOTE:

- HOLES POSITIONS OF THIS BODY FLANGE IS TO BE MACHINED WITH THE TOP FLANGE HOLE POSITION.. REF DWG NO 3-47-200-01878

VARIANT NUMBER	01	PL8X130X910	STD	DRAWING NUMBER	ITEM NO	150110270000	A/C/P	UNIT	4.028	CS
ITEM NUMBER					VAR NO	IS2062FE410GRA	DI	UNIT WEIGHT		
								QUANTITY		



SECTION-A-A

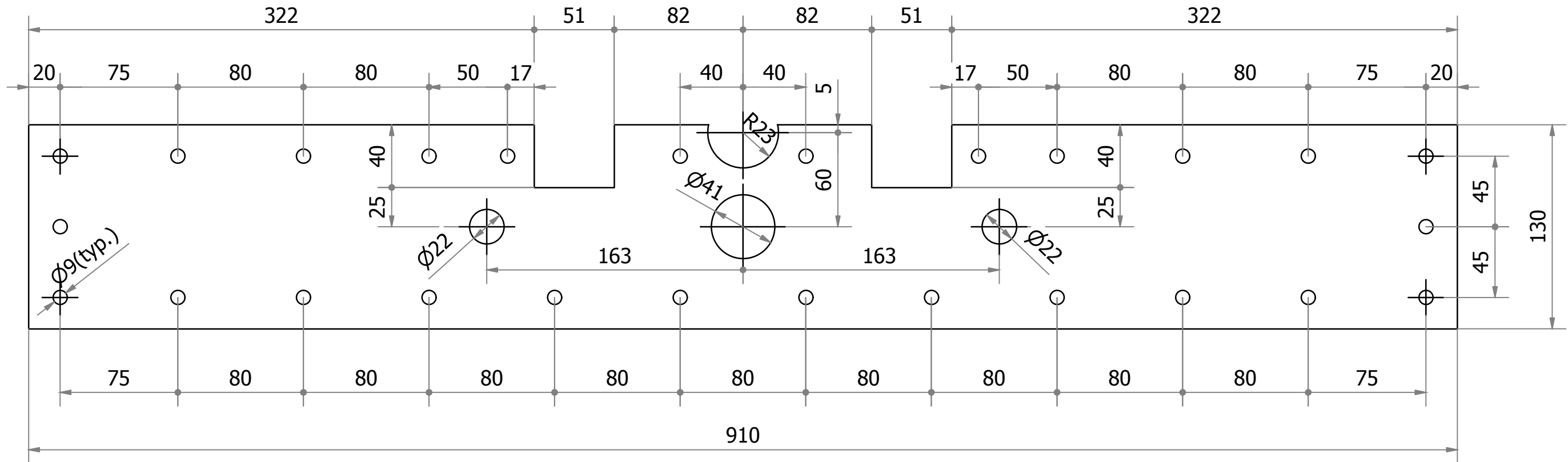
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FS(FB)	129		N.T.S	4.028		
TITLE	BODY FLANGE (28" V.O.)				DRAWING NO :	REV
					3-47-200-01877	00

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2021/FSIP-850110000



3-47-200-01878
DRAWING NO.:



NOTE:

1. HOLES POSITIONS OF BODY FLANGE IS TO BE MACHED WITH COVER FLANGE HOLE POSITION . . REF DWG NO. 3-47-200-01877.

VARIANT NUMBER	01	PL8X130X910	STD	DRAWING NUMBER	150110270000	A/C/P	UNIT	6.263	CS
	ITEM NUMBER				IS2062FE410GRA			DI	
		DESCRIPTION			ITEM NO	MATERIAL CODE		UNIT WEIGHT	
					VAR NO	MATERIAL SPECN		QUANTITY	

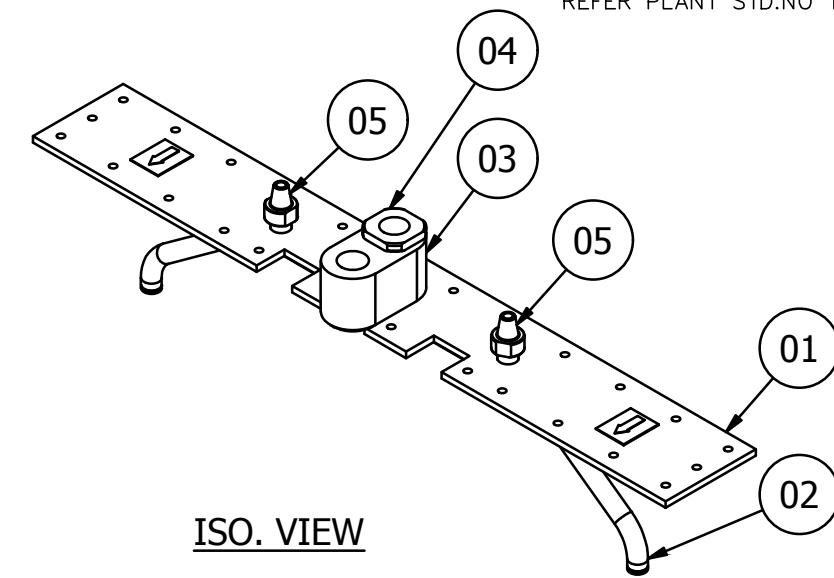
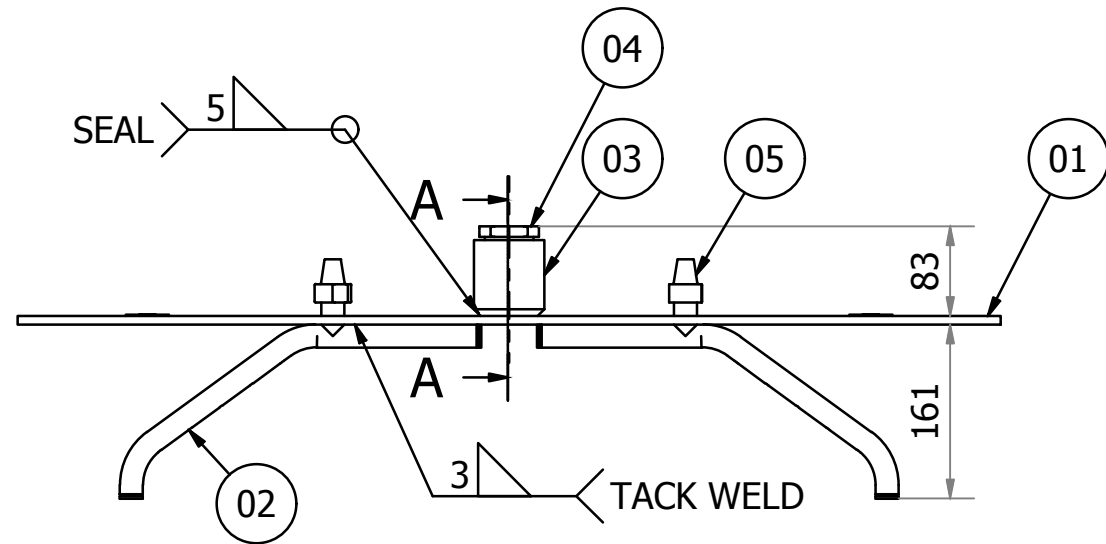
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
	 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		NAME RAVI SHANKAR PRASAD	SIGNATURE -sd-	DATE 10.04.2018	
		DEPT FS(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (Kg) 6.263	REF TO ASSY / OLD DWG
		CODE 129					
TITLE TOP COVER (28" V.O.)	DRAWING NO : 3-47-200-01878				REV 00		

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

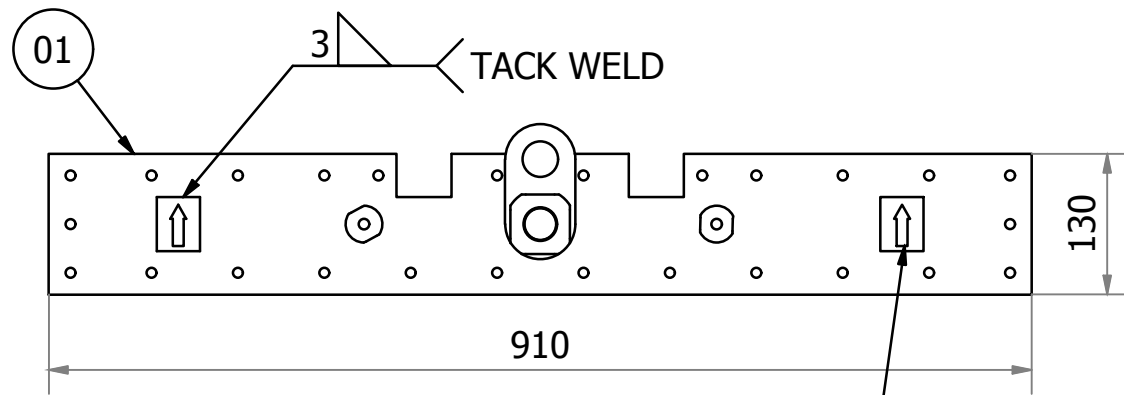
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2021/FSIP-REP/000000

3-47-200-01879-3
DRAWING NO:

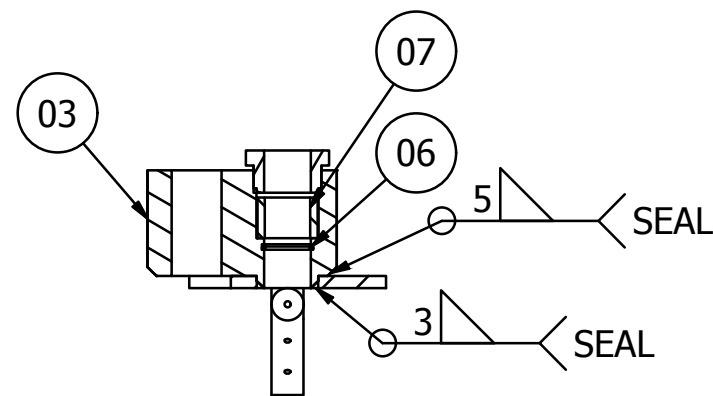


ISO. VIEW



FLOW DIRECTION (ARROW TO BE PLACED WITH PLATE)

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN	DI	QUANTITY		
	07	PACKING ROPE DIA 5MM				220300160000	MR		0.035	
						CARBON FIBRE/CERMC FIBRE			0.25	
	06	"O" RING ID19.6X2.4					NO		0.115	
									1	
	05	1/2" NPT NIPPLE		4-42-000-04127			NO		0.160	
									2	
	04	SEAL HOUSING COVER		4-47-200-02017		153391440000	NO		0.274	
						SA105			1	
	03	SEAL HOUSING		3-47-200-01805		153391440000	NO		2.826	
						SA105			1	
	02	PURGE AIR TUBE		3-47-200-01881			NO		0.544	
						WELDMENT			2	
	01	COVER PLATE PL8X130X910		3-47-200-01878		150110270000	NO		6.263	
						IS 2062E250A			1	



SECTION-A-A

REF. DWG.
BODY ASSY. 0-47-200-02731

NOTE:
FIRST WELD ITEM NO 02 WITH 01 AND THEN WELD ITEM NO 05 WITH 02.

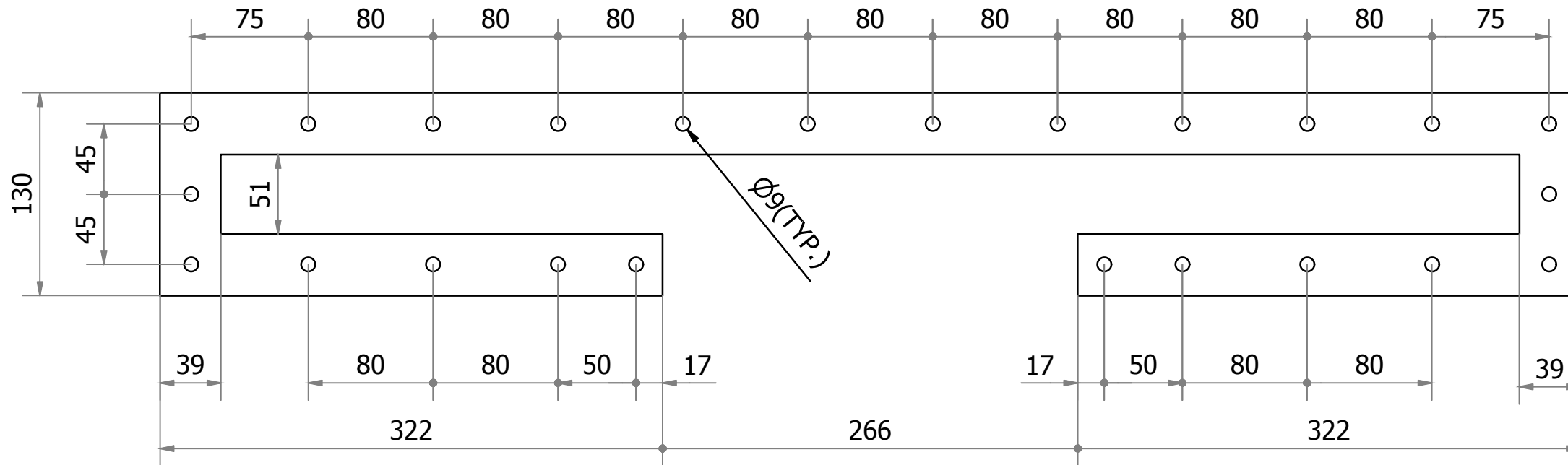
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 355-055		DRN	NAME RAVI SHANKAR PRASAD
DEPT FS(FB)		CHD	SIGNATURE -sd-
CODE 129		APPD	DATE 10.04.2018
ALL DIMENSIONS ARE IN MM		APPD SARAVANAKUMAR G	
PROJECTION	SCALE N.T.S	REF TO ASSY / OLD DWG	
WEIGHT (Kg) 10.895	DRAWING NO : 3-47-200-01879		
TITLE COVER ASSEMBLY (28" V.O.)		REV 00	

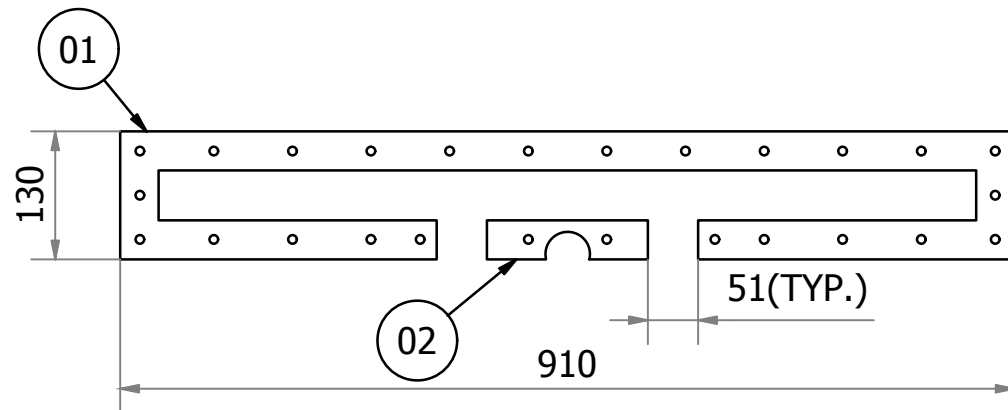
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2021/FSIP-FB/000000

3-47-200-01880
DRAWING NO. 08810

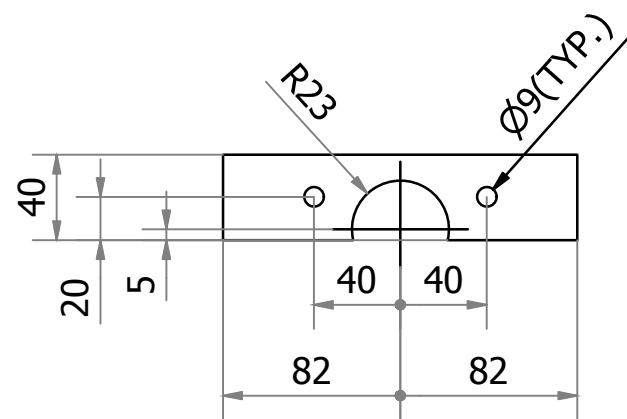


ITEM NO.01



HOLES DIA AND PITCHES TO BE CUT TO SUIT THE FLANGE HOLE REF DWG NO 3-47-200-01877 & 2-47-200-01922.



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	02	SH3X40X164		NON ASBESTOS GASKET		220300900000			0.022	
						TP23294			01	
	01	SH3X130X910		NON ASBESTOS GASKET		220300900000			0.340	
						TP23294			01	



ITEM NO.02

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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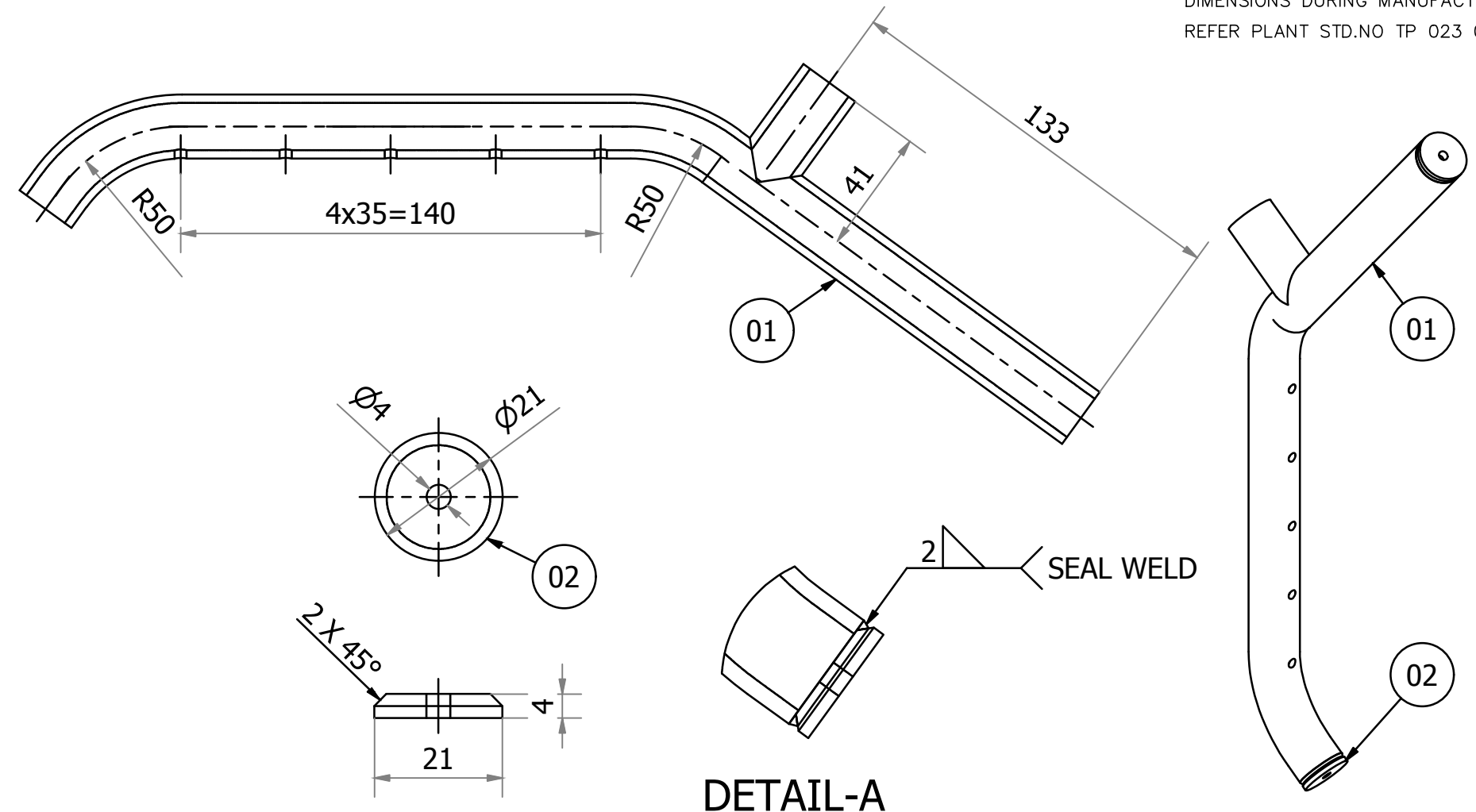
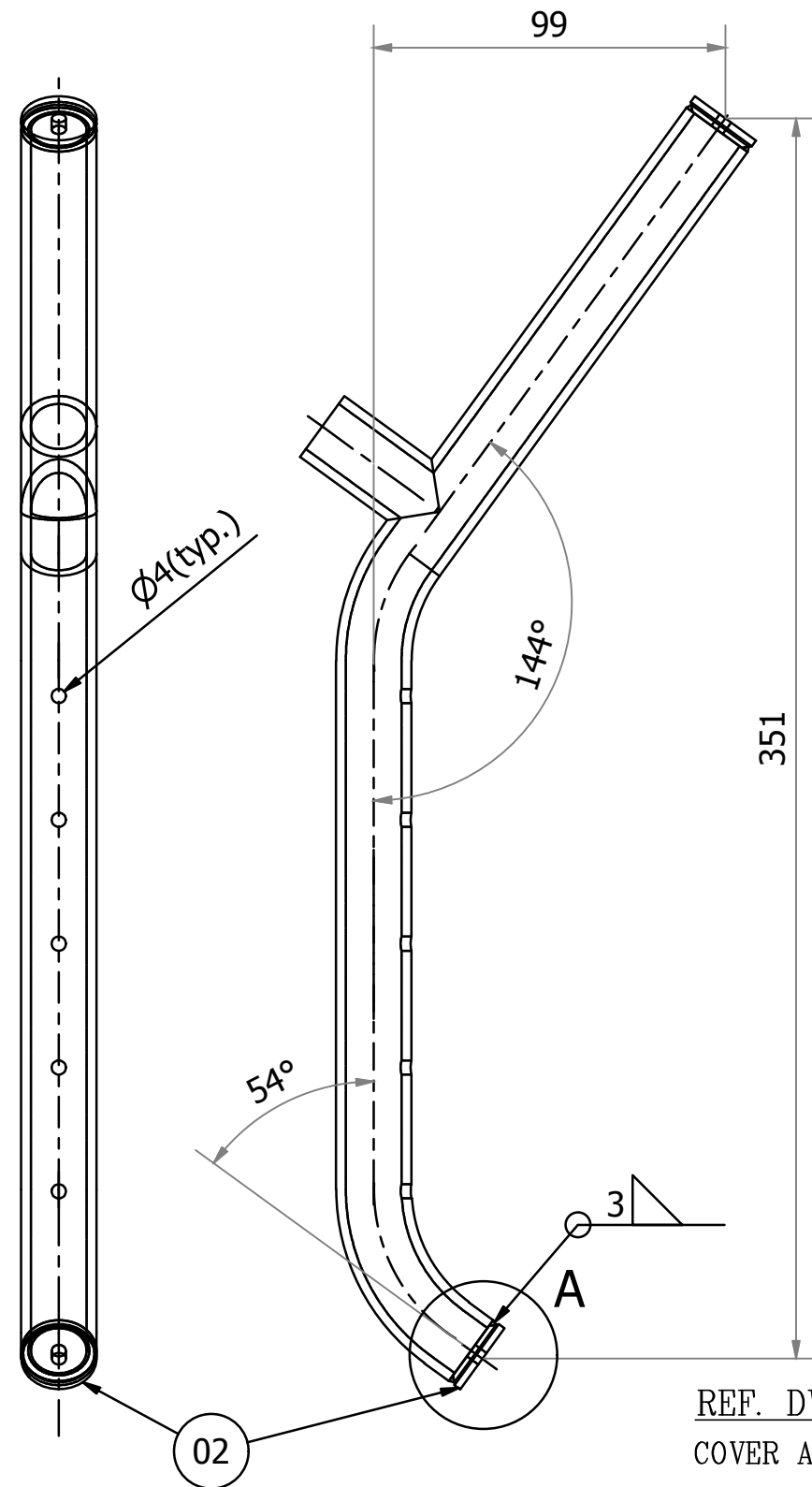
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				
 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN RAVI SHANKAR PRASAD SIGNATURE -sd- DATE 10.04.2018	
	DEPT FS(FB) CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S
	WEIGHT (Kg) 0.362	REF TO ASSY / OLD DWG		
TITLE			REV	
BODY FLANGE GASKET (28" V.O.)			DRAWING NO : 3-47-200-01880	

00

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2021/FSIP-RES/000000

3-47-200-01881
DRAWING NO.:





VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
	02	SH4X OD ϕ 21.3X ID ϕ 4				150113340000			0.010	
						IS1079D			02	
	01	TUBE ϕ 21.3X2.77X416				150820010000			0.524	
						SA106 GRB			01	
					VAR NO	MATERIAL SPECN		DI	QUANTITY	

REF. DWG.:
COVER ASSY.: 3-47-200-01879

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

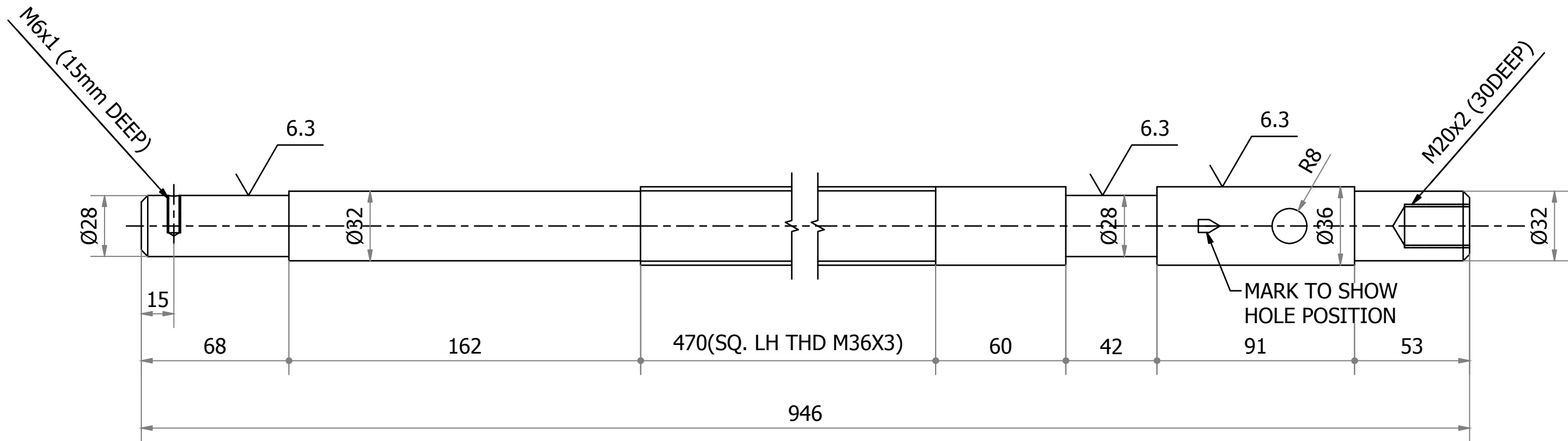
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				DRN	NAME	SIGNATURE	DATE
 Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 355-055				CHD	RAVI SHANKAR PRASAD	-sd-	10.04.2018
				APPD	GANGADHAR M CH S	-sd-	10.04.2018
				APPD	SARAVANAKUMAR G	-sd-	10.04.2018
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
FS(FB)			N.T.S	0.544			
CODE					DRAWING NO :		
129					3-47-200-01881		
TITLE						REV	
PURGE AIR TUBE (28" V.O.)						00	

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



861071/2021/FSIP-FB/000000

DRAWING NO: 3-47-200-01882



REF. DWG: VARIABLE ORIFICE ASSY. 0-47-200-02732

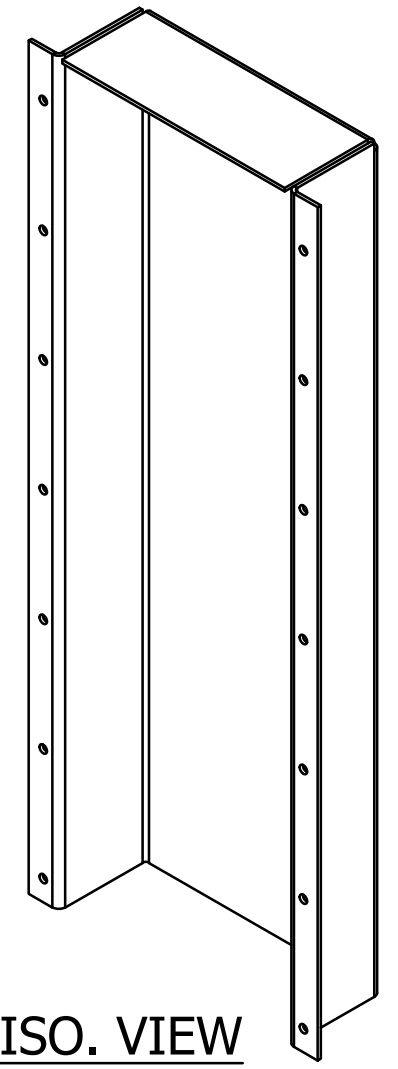
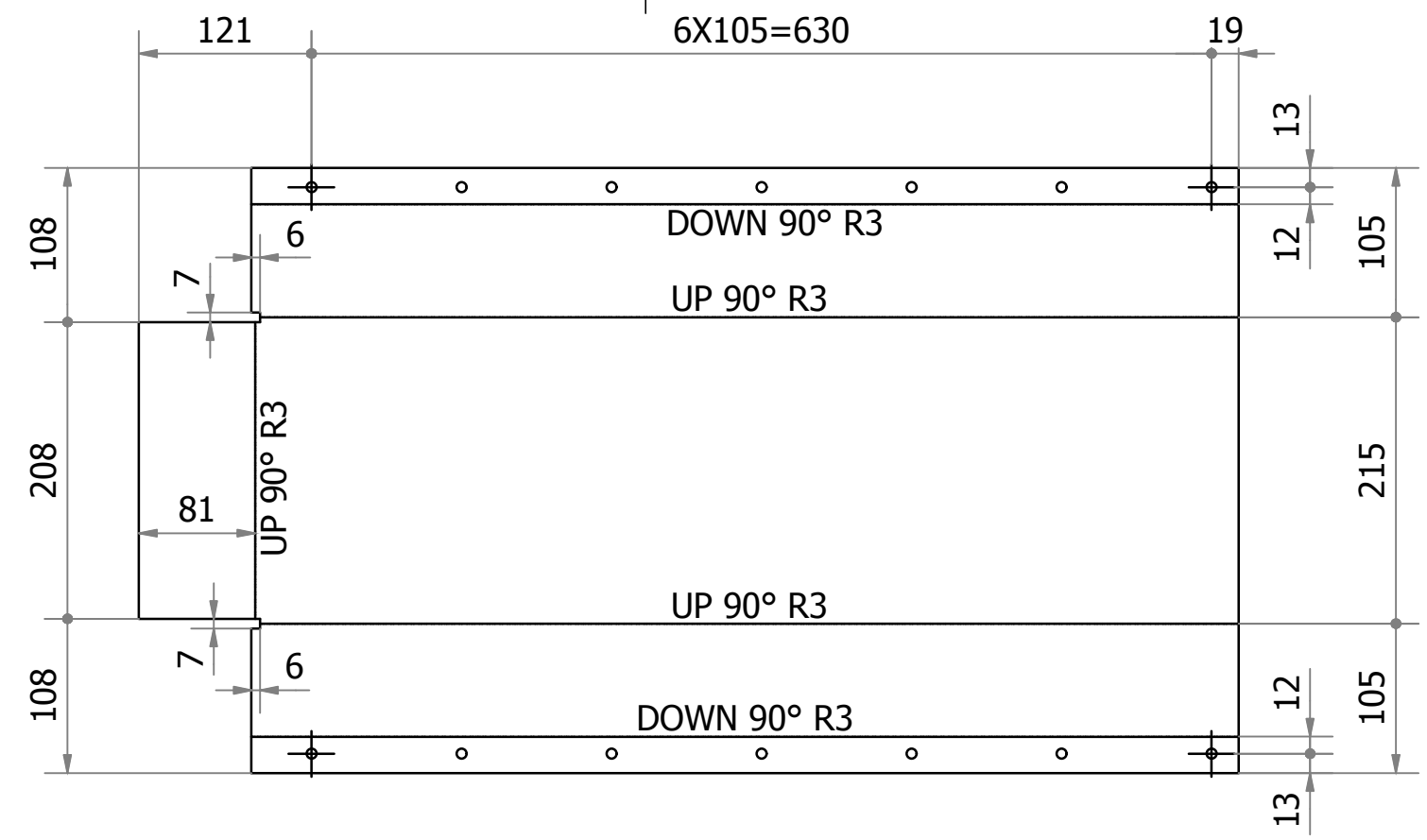
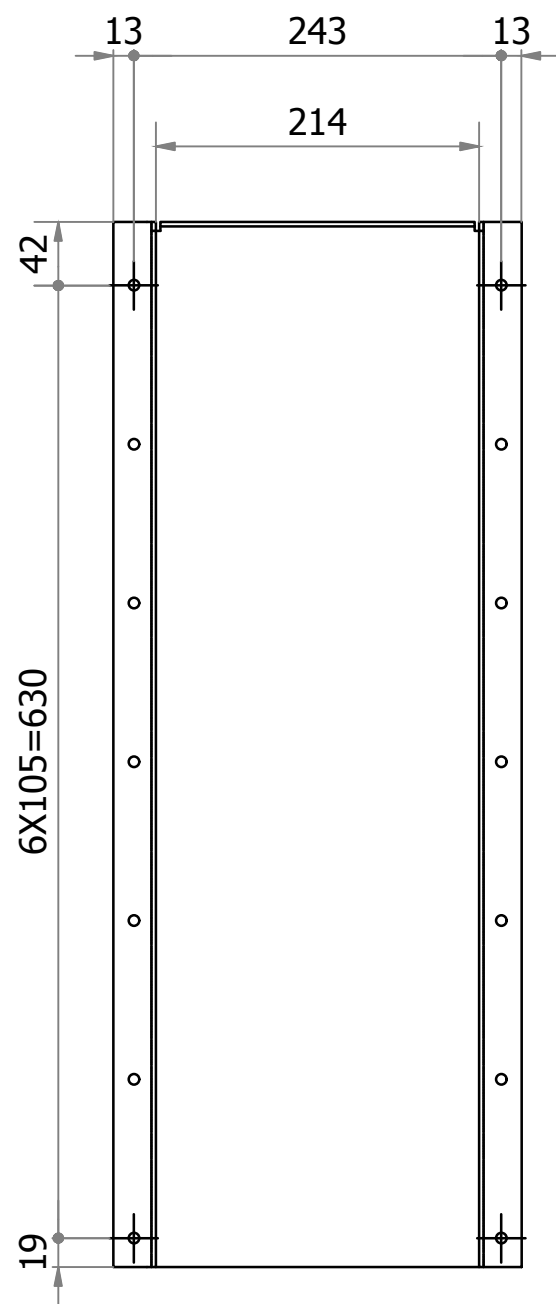
VARIANT NUMBER	01	ROD Ø42X946	STD	DRAWING NUMBER	150391160000	A/C/P	UNIT	6.726	CS
	ITEM NUMBER	DESCRIPTION			ITEM NO			MATERIAL CODE	
					VAR NO		DI	QUANTITY	

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
		 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
			CHD	GANGADHAR M CH S	-sd-	12.04.2018		
			APPD	SARAVANAKUMAR G	-sd-	12.04.2018		
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG			
FS(FB)			N.T.S	6.726				
CODE	TITLE				DRAWING NO :	REV		
129	LEAD SCREW (28" V.O.)				3-47-200-01882	00		

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

861071/2022/FSIP-REPAIR/0000
 3-47-200-01883
 DRAWING NO:

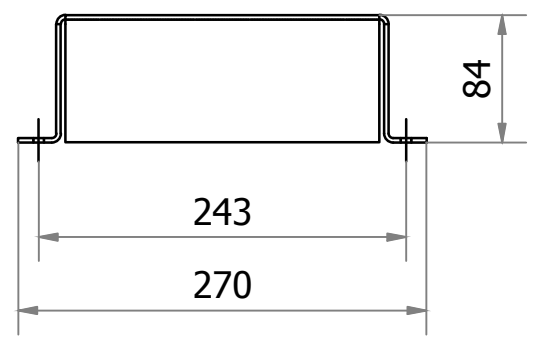
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



ISO. VIEW

REF DWG.: 0-47-200-02732

VARIANT NUMBER	01	PL3.15X424X770	STD	DRAWING NUMBER	ITEM NO	150111820000	UNIT	7.282	CS
ITEM NUMBER					VAR NO	IS1079D	DI	QUANTITY	
		DESCRIPTION				MATERIAL CODE		UNIT WEIGHT	
						MATERIAL SPECN		QUANTITY	

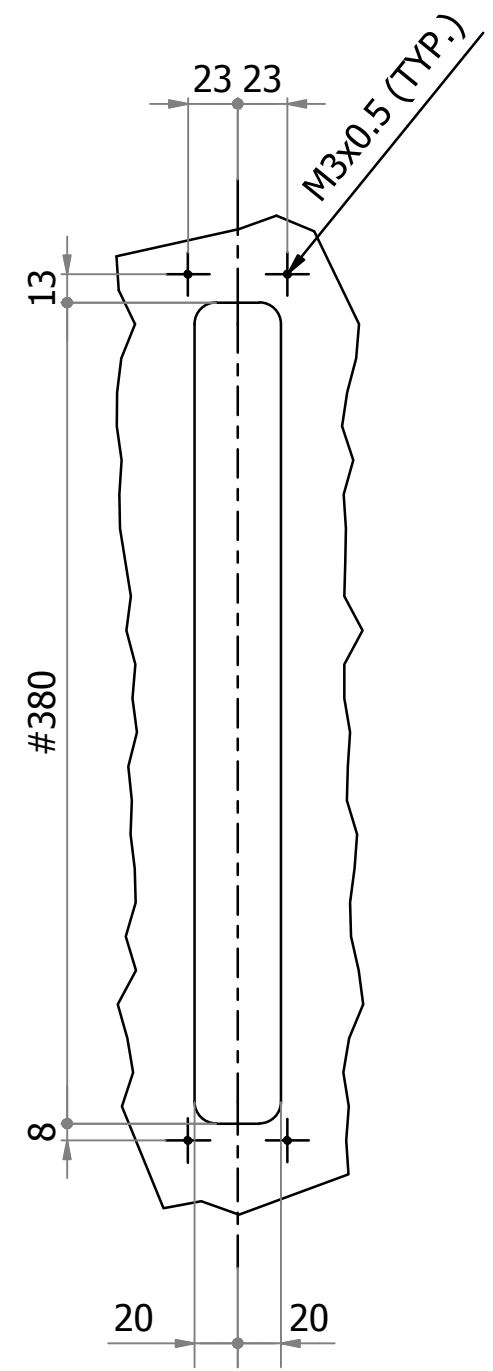
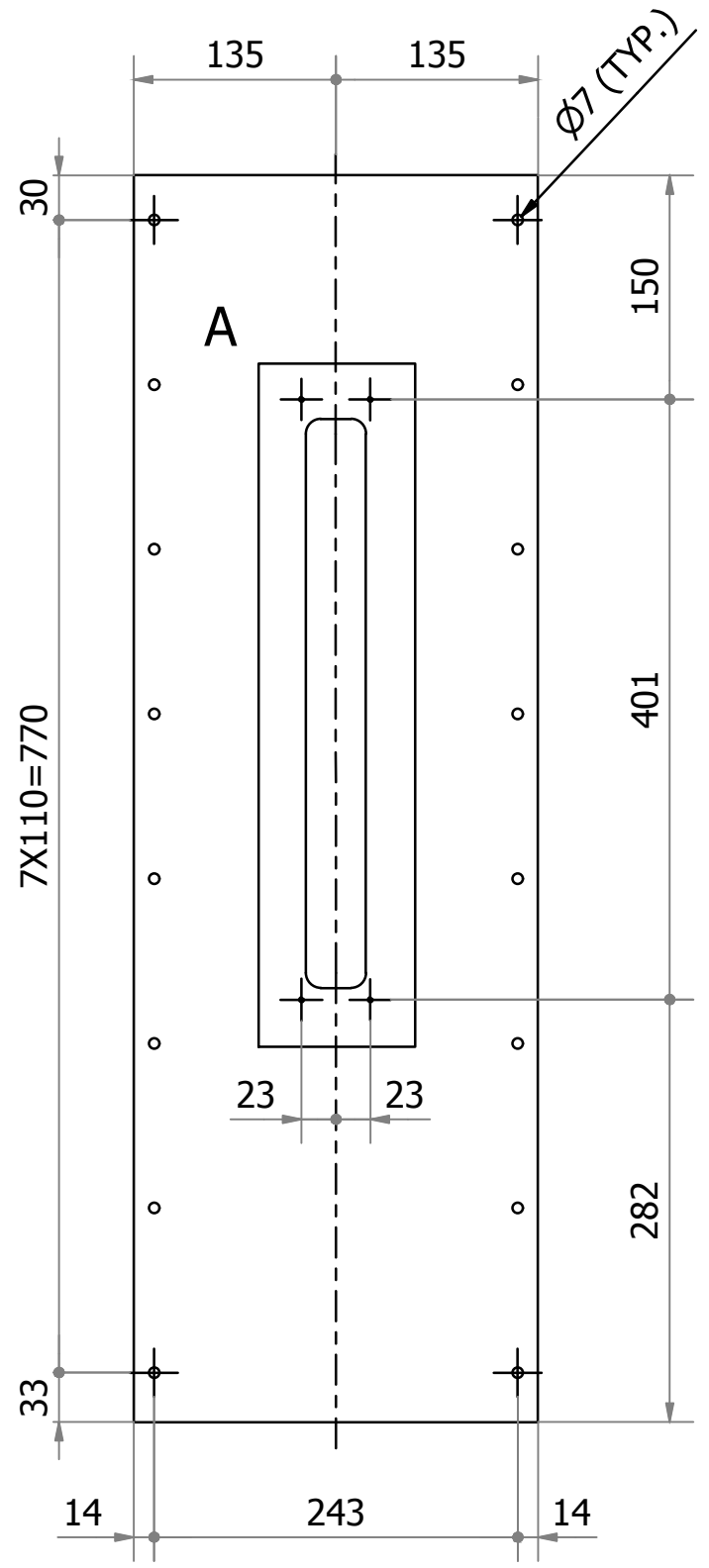


CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				REF TO ASSY / OLD DWG				
	DEPT FS(FB) CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (Kg) 7.282	DRN	NAME	SIGNATURE	DATE
						CHD	RAVI SHANKAR PRASAD	-sd-	12.04.2018
						APPD	GANGADHAR M CH S	-sd-	12.04.2018
Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 355-055						APPD	SARAVANAKUMAR G	-sd-	12.04.2018
TITLE REAR COVER PLATE (28" V.O.)						DRAWING NO :			REV
						3-47-200-01883			00

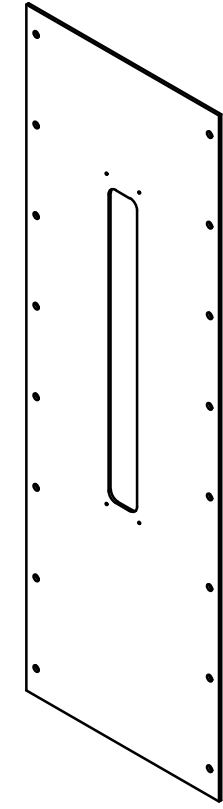
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

3-47-200-01884
DRAWING NO:

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



DETAIL -A



ISO. IVEW

VARIANT NUMBER	01	DESCRIPTION	PL3.15X270X833	STD	DRAWING NUMBER	150111820000	IS1079D	A/C/P	UNIT	UNIT WEIGHT	4.925	CS
ITEM NUMBER						VAR NO	MATERIAL SPECN	DI		QUANTITY		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	RAVI SHANKAR PRASAD	SIGNATURE	-sd-	DATE	12.04.2018
DEPT	FS(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG			
CODE	129			N.T.S	4.925				
TITLE						DRAWING NO :		REV	
FRONT COVER PLATE (30" V.O.)						3-47-200-01884		00	

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REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

HOLES SHALL BE MATCHED WITH SCALE HOLES.

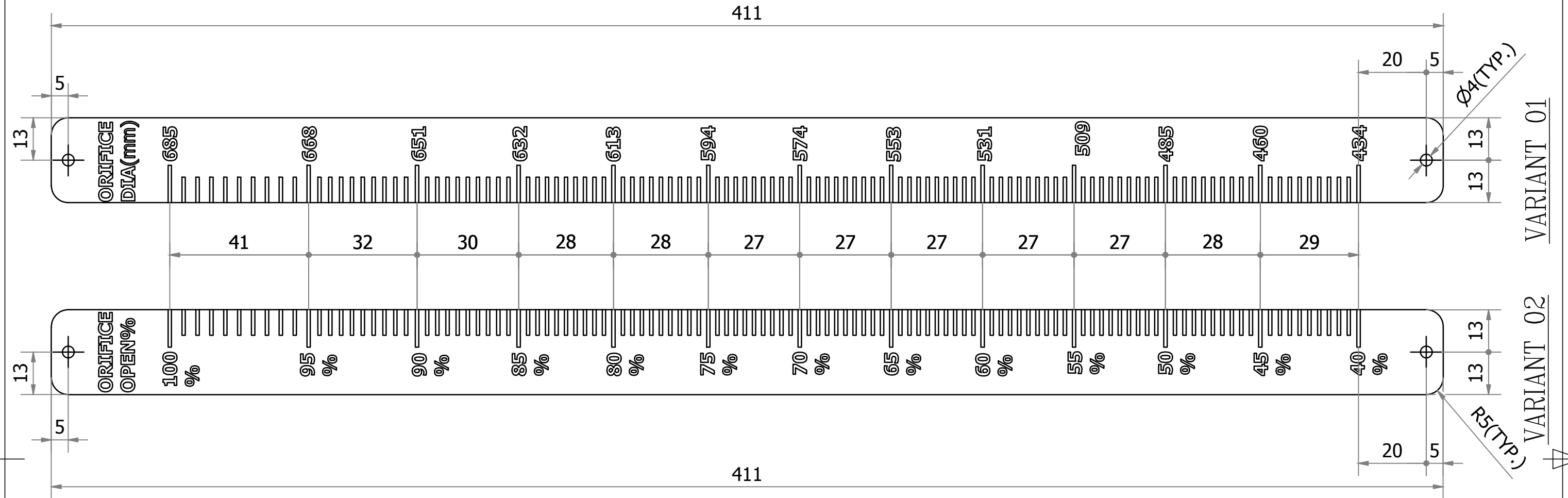
REF. DWG

GRADUATION SCALE - 3-47-200-01885
VARIABLE ORIFICE ASSY. -0-47-200-02732

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299

861071/2022/FSIP-REP/000000

3-47-200-01885
DRAWING NO. 3-47-200-01885




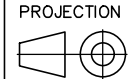
REF. DWG NO. 3-47-200-01884

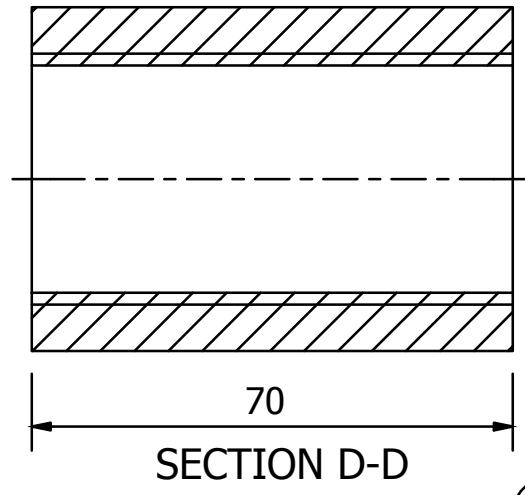
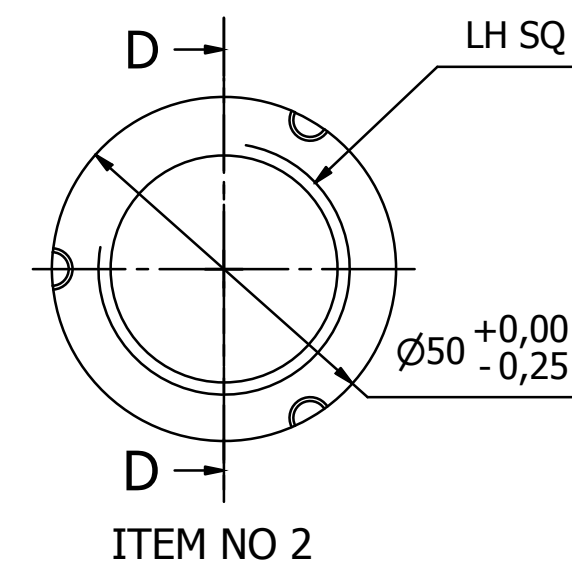
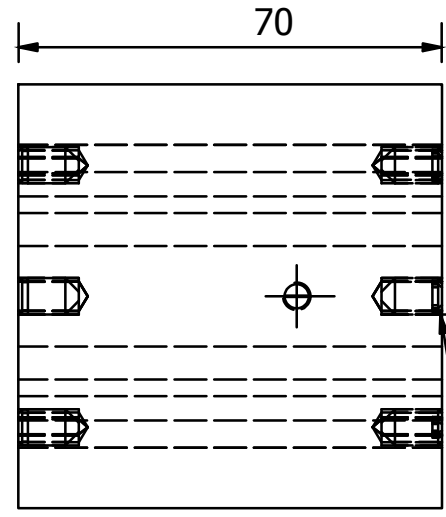
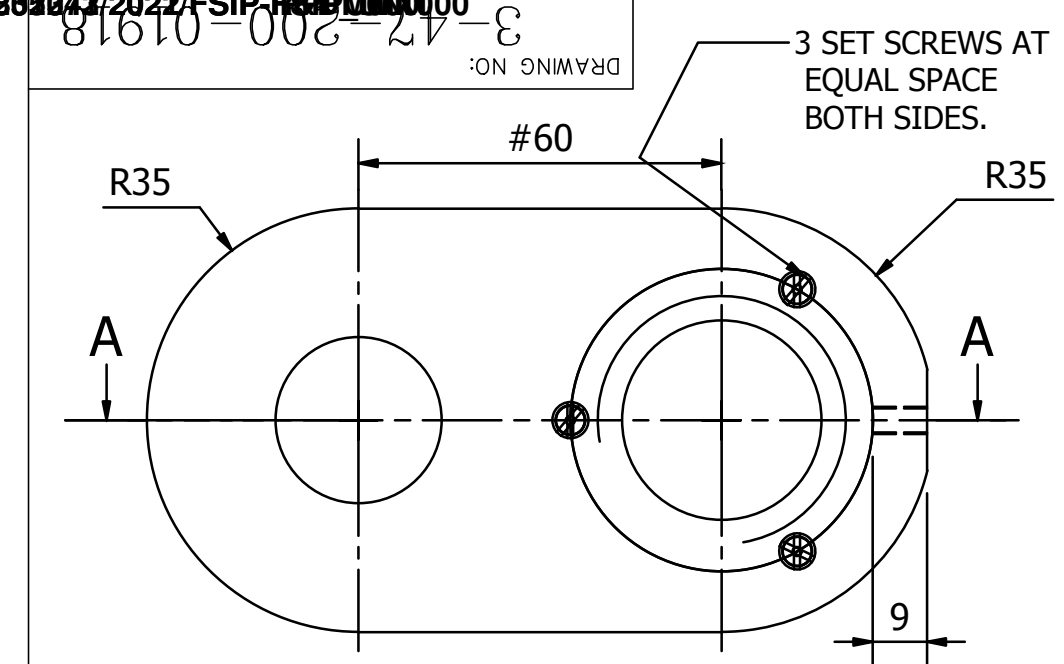
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
02	01	SH1.6X25X492				150113500000			0.120	
						SA240TP304				
01	01	SH1.6X25X492				150113500000			0.120	
						SA240TP304				
					VAR NO	MATERIAL SPECN		DI	QUANTITY	

NOTE:
EACH GRADUATIONS SHALL BE DIVIDED INTO 10 EQUAL PARTS AND MARK ACCORDINGLY

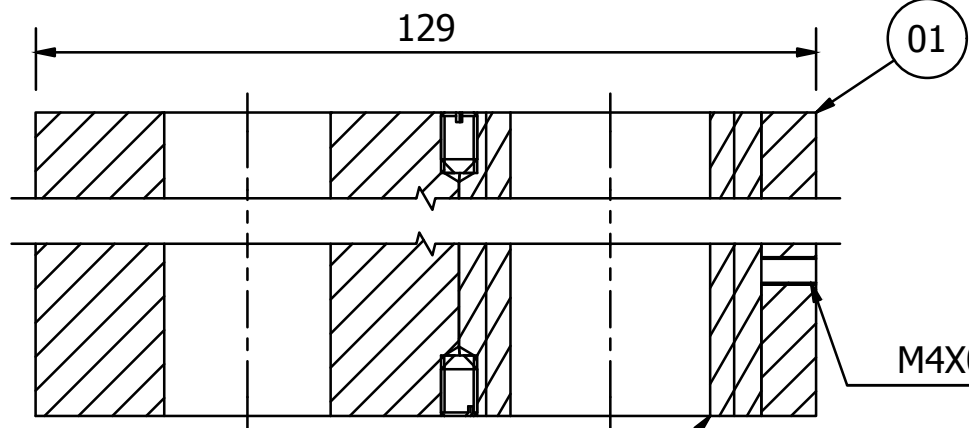
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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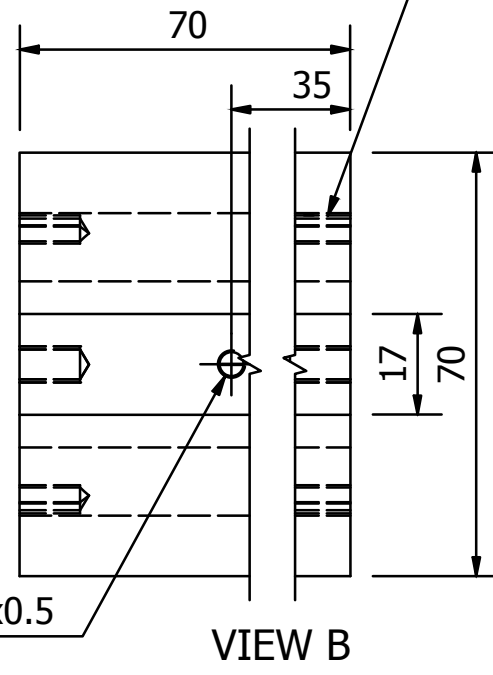
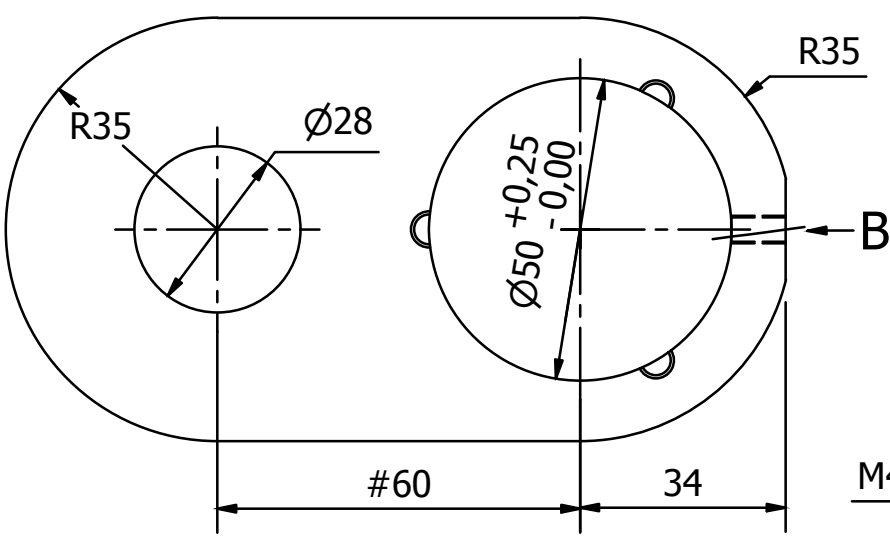
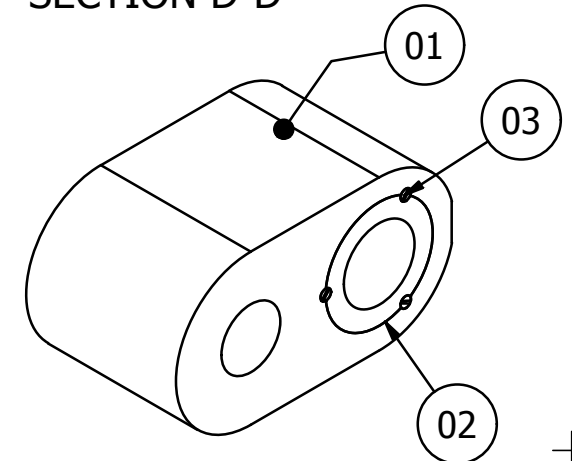
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					
 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		NAME RAVI SHANKAR PRASAD	SIGNATURE -sd-	DATE 12.04.2018
	DEPT FS(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)
	CODE 129			N.T.S	---
TITLE				REF TO ASSY / OLD DWG	
GRADUATION SCALE (28" V.O.)				DRAWING NO :	
				3-47-200-01885 00	
				REV	



FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



NOTE:
THE BRASS BUSHES ARE TO BE PUSH FIT AND TO LOCK BY GRAB SCREW ON BOTH SIDES. THRD. TO BE DONE AFTER PUSH FIT THE BUSH.
CRITICAL DIMENSION.



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
	03	SET SCREW				412350691000			0.002	
						IS6094		NO	6	
	02	NUT LH SQ THD 36 X 3 OD 50 X 70L				BRONZE		NO	0.683	
								NO	1	
	01	PL70X70X130				159421280000			3.396	
						SA515GR70		NO	1	
					VAR NO	MATERIAL SPECN		DI	QUANTITY	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

DGN: RAVI SHANKAR PRASAD
CHD: GANGADHAR M CH S
APPD: SARAVANAKUMAR G

NAME: RAVI SHANKAR PRASAD
SIGNATURE: -sd-
DATE: 27.08.2016

DEPT: FS(FB)
CODE: 129
ALL DIMENSIONS ARE IN MM

PROJECTION:
SCALE: N.T.S
WEIGHT (Kg): 4.090

TITLE: THRUST BEARING ASSEMBLY

DRAWING NO: 3-47-200-01918
REV: 00

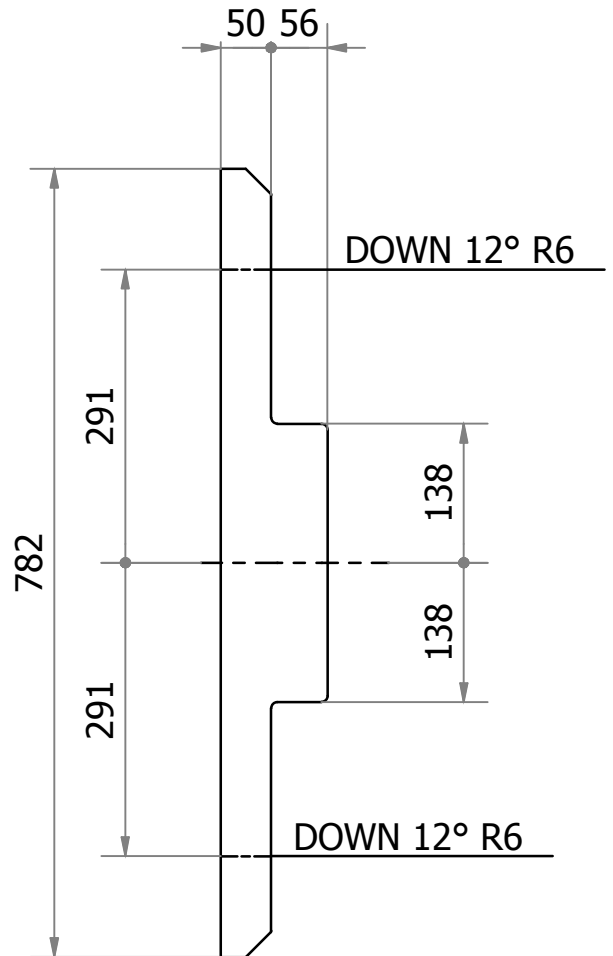
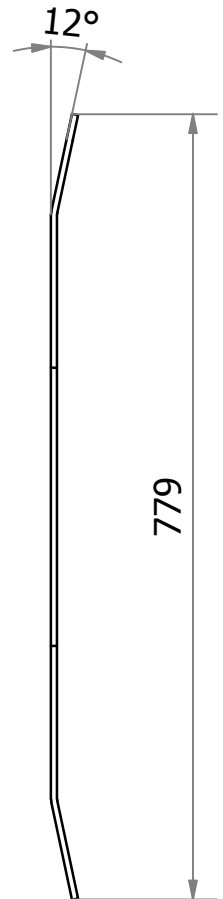
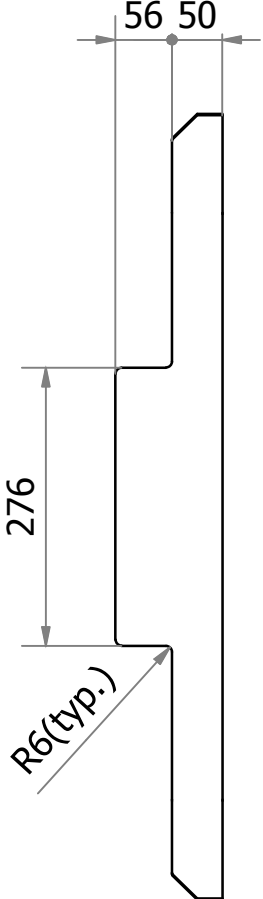
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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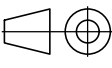
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



DEVELOPED VIEW

REF. DWG: BODY ASSY. 0-47-200-02731

VARIANT NUMBER	DESCRIPTION	STD	PL6 X 100 X 782	152110920000	A/C/P	UNIT	2.540
				IS 2062E250A			
			MATERIAL CODE				UNIT WEIGHT
			MATERIAL SPECN				QUANTITY

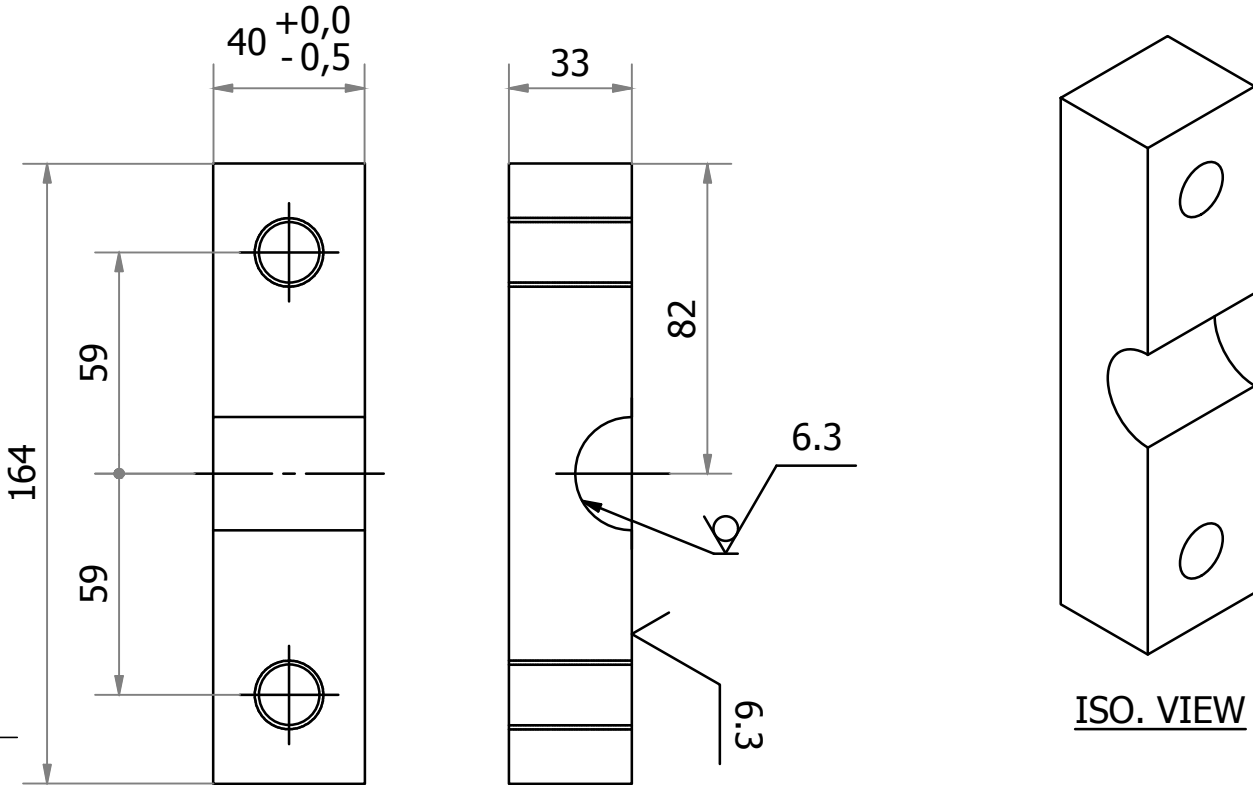
 355-056	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
			CHD	RAVI SHANAKAR PRASAD	-sd-	09.04.2018
			APPD	GANGADHAR M CH S	-sd-	09.04.2018
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FS(FB)			N.T.S	2.540		
CODE						
129						
TITLE				DRAWING NO :		REV
STIFFENER PLATE I (28" V.O.)				4-47-200-02048		00

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REV	DATE	ALTERED :
01		CHD & APPD :


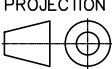
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



NOTE:

POSITION THREADED HOLES CONCENTRIC WITH MOUNTING BRACKET TOP DWG NO 0-47-200-02731.

01	PL32X40X164	150423470000	SA515GR70	1.460		
VARIANT NUMBER	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

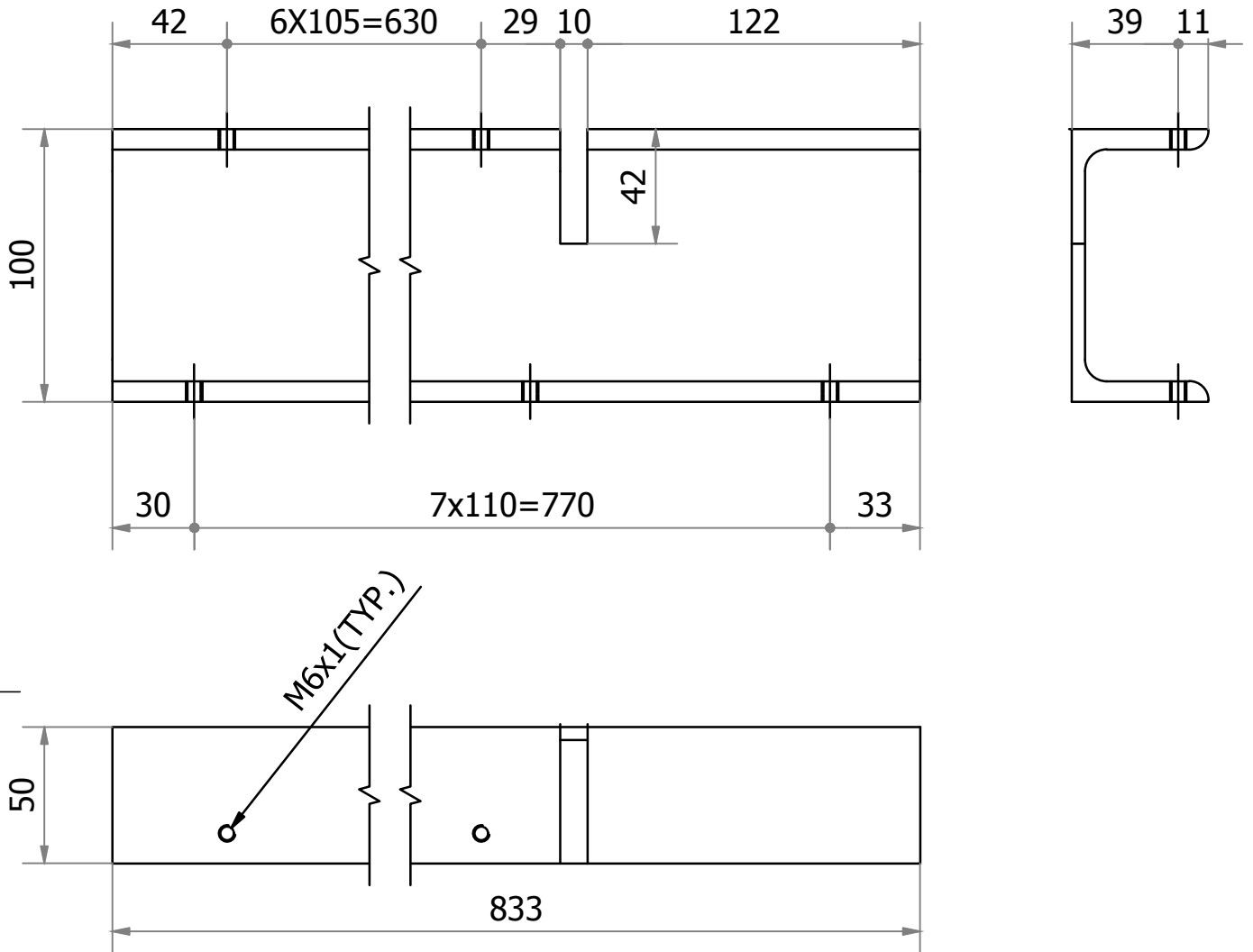
 355-056	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
			CHD	RAVI SHNAKAR PRASAD	-sd-	10.04.2018
			APPD	GANGADHAR M CH S	-sd-	10.04.2018
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FS			NTS	1.460		
CODE	129			DRAWING NO :		REV
TITLE				4-47-200-02049		00
LEAD SCREW MOUNTING BRACKET - BOTTOM						

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REV	DATE	ALTERED :
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FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



01	CHANNEL 100; L=833	150100030000			7.555	
		IS2062E250GRA				
VARIANT NUMBER	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			MATERIAL SPECN			QUANTITY



Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

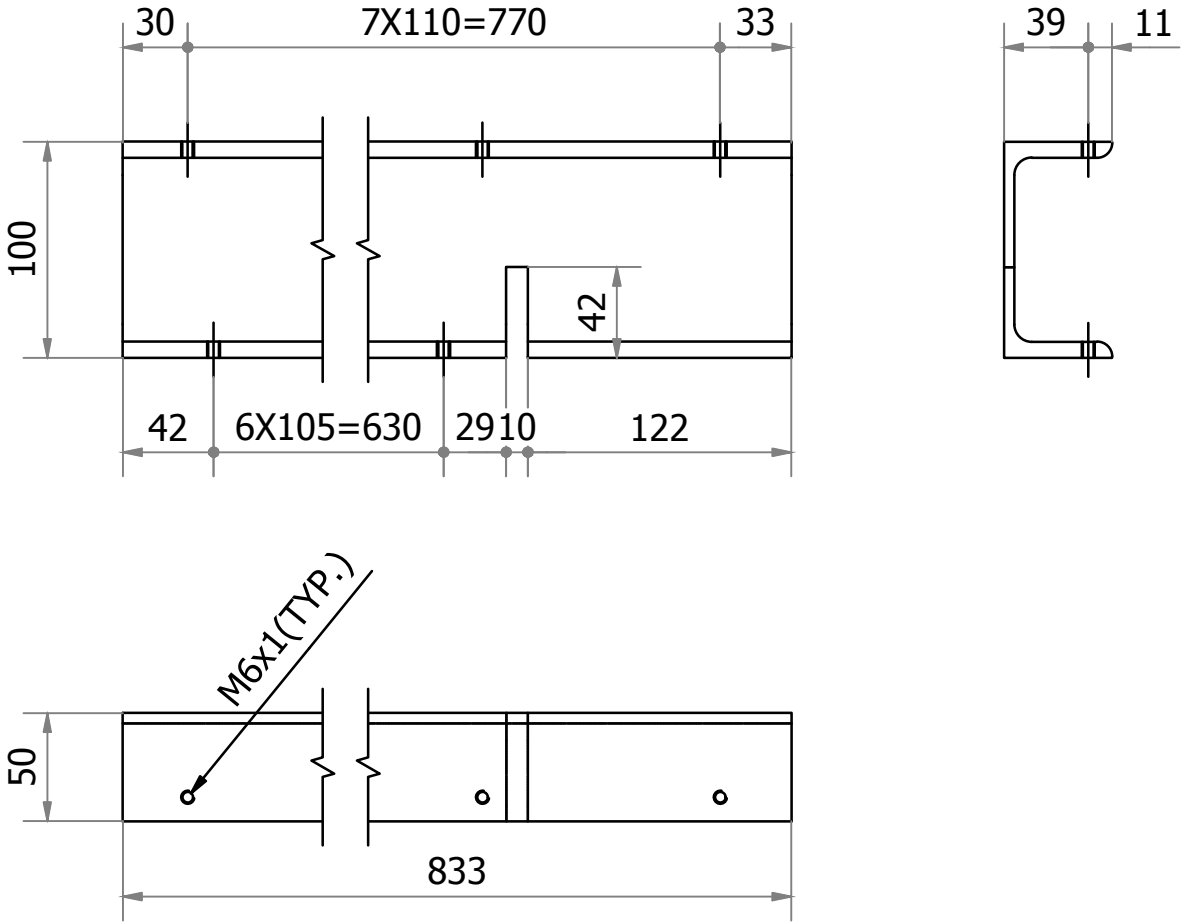
DRN	NAME	SIGNATURE	DATE
CHD	RAVI SHNAKAR PRASAD	-sd-	10.04.2018
APPD	GANGADHAR M CH S	-sd-	10.04.2018
	SARAVANAKUMAR G	-sd-	10.04.2018

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
FS			NTS	7.555	
CODE					
129					
TITLE			DRAWING NO :		REV
CHANNEL-1 (28" V.O.)			4-47-200-0205000		00

881071/2022/FSIP-REVISION000

REV	DATE	ALTERED BY
01		CHD & APPD :

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



01	CHANNEL 100; L=833	150100030000			7.555	
		IS2062E250GRA				
VARIANT NUMBER	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			MATERIAL SPECN			QUANTITY



Bharat Heavy Electricals Ltd
 UNIT: HIGH PRESSURE BOILER PLANT
 TIRUCHIRAPALLI - 620014

DRN	NAME	SIGNATURE	DATE
CHD	RAVI SHNAKAR PRASAD	-sd-	10.04.2018
APPD	GANGADHAR M CH S	-sd-	10.04.2018
	SARAVANAKUMAR G	-sd-	10.04.2018

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
FS			NTS	7.555	
CODE					
129					
TITLE			DRAWING NO :		REV
CHANNEL-2 (28" V.O.)			4-47-200-02051 00		

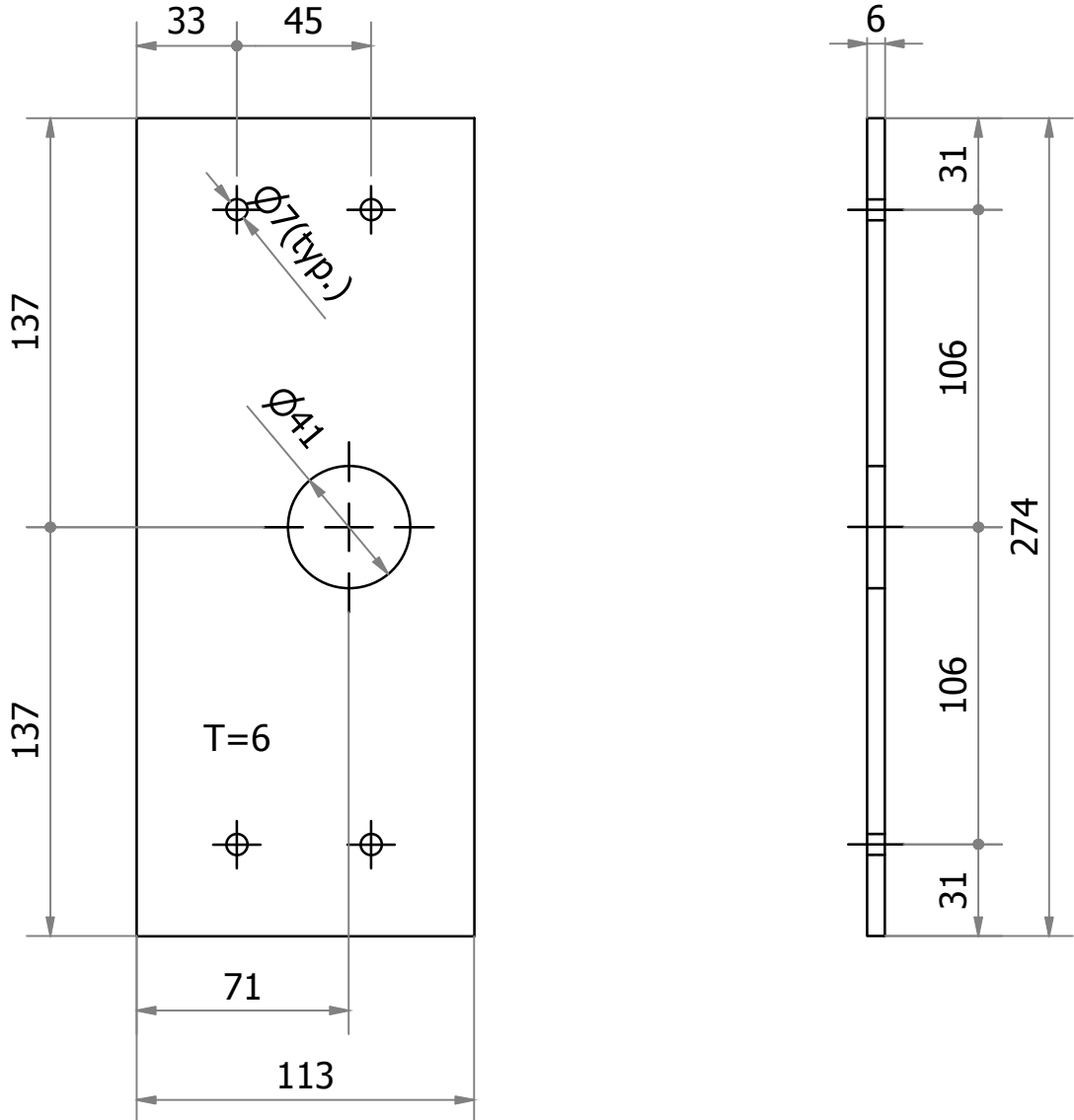
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REV	DATE	ALTERED :
01		CHD & APPD :

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



VARIANT NUMBER	DESCRIPTION	STD	152110920000	A/C/P	UNIT	1.389
			IS 2062E250A			
			MATERIAL CODE			UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

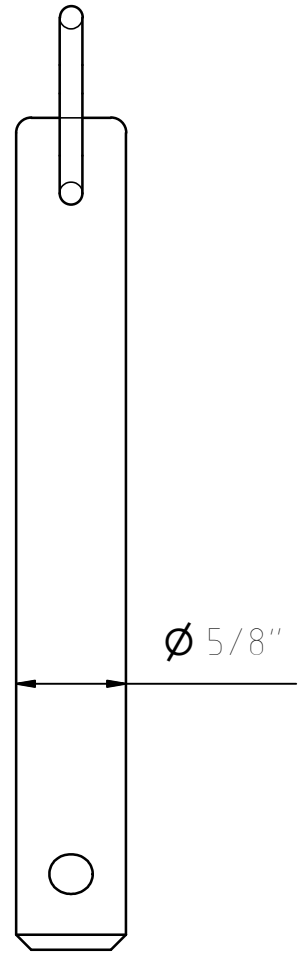
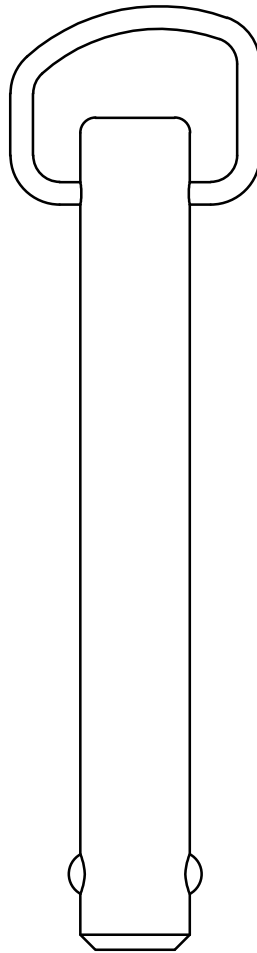
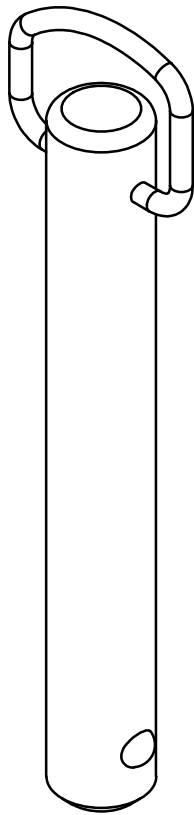
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			CHD	RAVI SHANKAR PRASAD	-sd-	10.05.2016
			APPD	GANGADHAR M CH S	-sd-	10.05.2016
		APPD	SARAVANAKUMAR G	-sd-	10.05.2016	
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FS(FB)			N.T.S	1.389		
CODE	129					
TITLE				DRAWING NO :		REV
Top Cover Plate				4-47-200-02052 00		

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REV	DATE	ALTERED :
01		CHD & APPD :

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299





CAUTION:

NOTE:

1. QUICK RELEASE BALL LOCK PINS SHALL BE USED AS LOCKING PIN FOR HANDWHEEL
2. PIN MATERIAL SHALL BE STAINLESS STEEL
3. PIN SHALL BE SELECTED TO PIN DIA 5/8" (15.875MM) AND FOR GRIP LENGTH OF 100MM .
4. PIN SHALL BE RING HEADED FOR QUICK & EASY OPERATION.

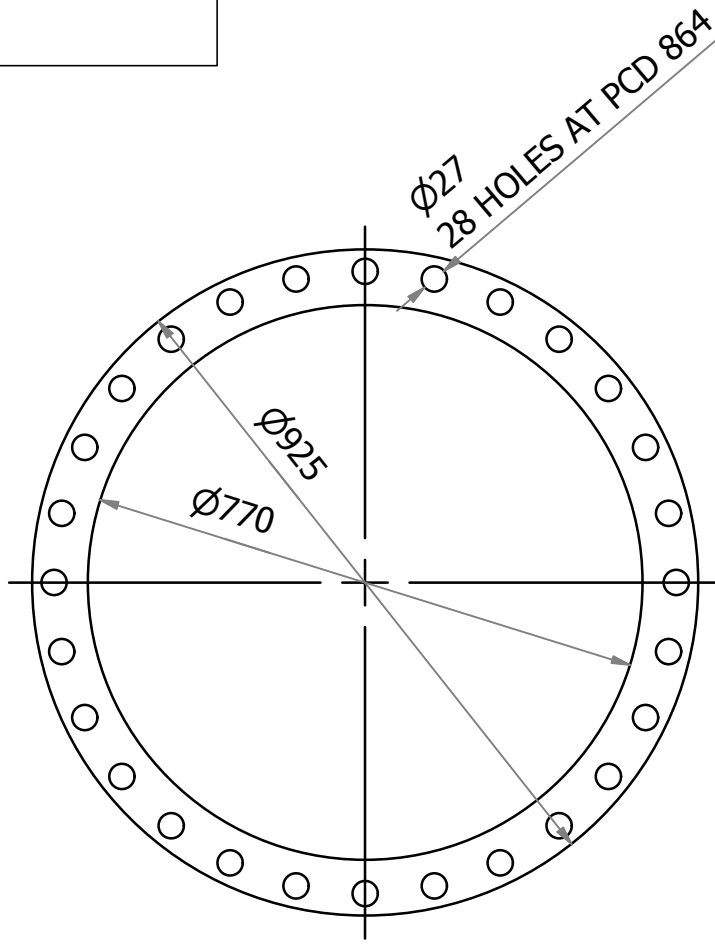
VARIANT NUMBER	RODØ16 X 100	STD	STAINLESS STEEL	A/C/P	UNIT	0.149
	DESCRIPTION		MATERIAL CODE			UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

 355-056	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
			CHD	RAVI SHANKAR PRASAD	-sd-	12.04.2018
			APPD	GANGADHAR M CH S	-sd-	12.04.2018
		APPD	SARAVANAKUMAR G	-sd-	12.04.2018	
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FS(FB)			N.T.S	0.149		
CODE	129					
TITLE				DRAWING NO :		REV
QUICK RELEASE PIN (28" V.O.)				4-47-200-02053		00

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REV	DATE	ALTERED :
01		CHD & APPD :

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



REF. DWG: CERAMIC PIPE ASSY. 3-47-200-01870

VARIANT NUMBER	DESCRIPTION	STD	A/C/P	UNIT	SH3XOD925XID770 NONASBESTOS COMPRESSED FIBER JOINTING 3MM	220300900000	4.801
					MATERIAL CODE	TP23294	UNIT WEIGHT
					MATERIAL SPECN		QUANTITY



Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620014

DRN	NAME	SIGNATURE	DATE
CHD	RAVI SHANAKAR PRASAD	-sd-	12.04.2018
APPD	GANGADHAR M CH S	-sd-	12.04.2018
	SARAVANAKUMAR G	-sd-	12.04.2018

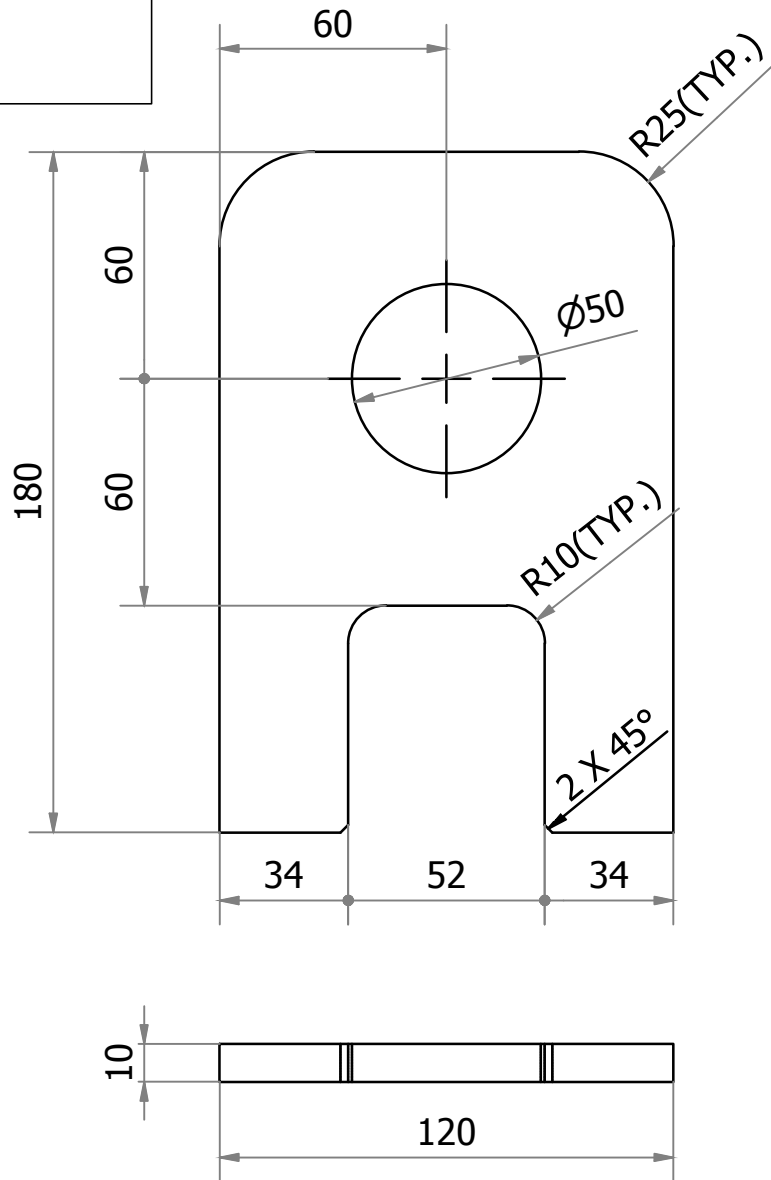
DEPT FS(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (Kg) 4.801	REF TO ASSY / OLD DWG
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TITLE PIPE FLANGE GASKET (28" V.O.)	DRAWING NO : 4-47-200-02054	REV 00
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881071/2022/FSIP-REVISION000


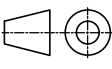
REV	DATE	ALTERED BY
01		CHD & APPD :

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



REF. DWG: CERAMIC PIPE ASSY. 0-47-200-02732

VARIANT NUMBER	PL10X120X180	STD	152110980000	A/C/P	UNIT	1.279
			IS2062E250GRA			
	DESCRIPTION		MATERIAL CODE			UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

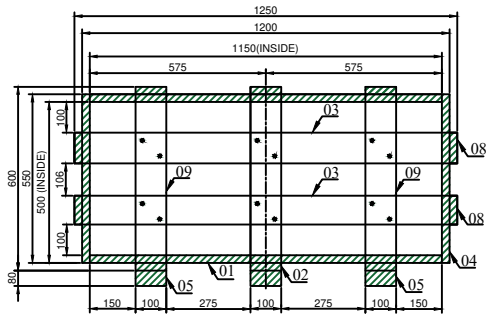
 355-056	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
			CHD	RAVI SHANAKAR PRASAD	-sd-	12.04.2018
			APPD	GANGADHAR M CH S	-sd-	12.04.2018
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FS(FB)			N.T.S	1.279		
CODE						
129						
TITLE				DRAWING NO :		REV
LIFTING LUG PL10X120X180				4-47-200-02056		00

प्रथम कोण प्रक्षेपण / FIRST ANGLE PROJECTION

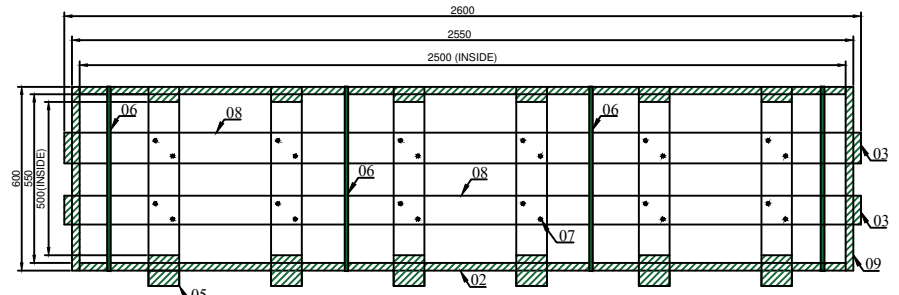
सभी विमाण मिलीमीटर में हैं / ALL DIMENSIONS ARE IN mm.

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3 SK-1505
 'ON SHIMMUR/Itzai harkijic

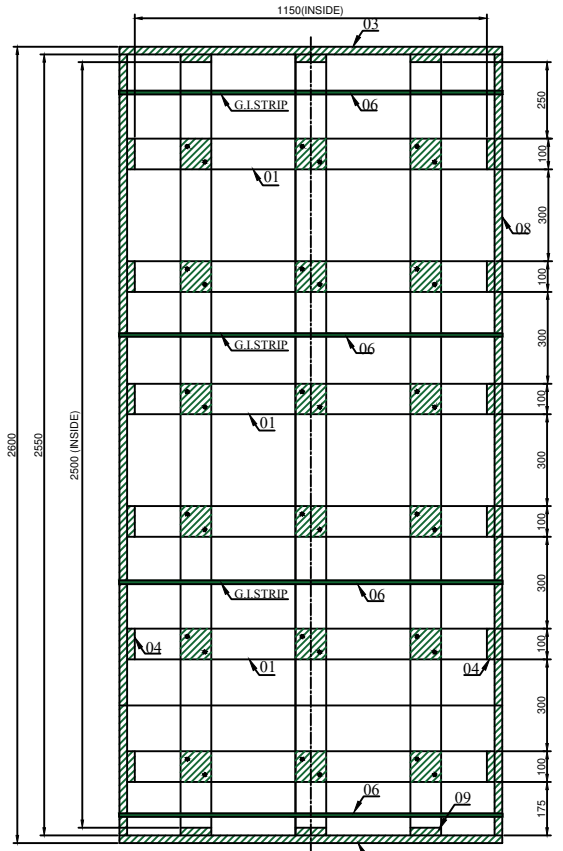


ELEVATION



SIDE VIEW

स्वयंसेवा पर ध्यान
 आ धारा में कि यह चूना मात्रा को उचित रूप से निर्दिष्ट की
 समिति है। इसका प्रयोग या अंतरण अन्य किसी भी तरह
 किया नहीं किया जाना चाहिए क्योंकि के प्रति नुकसान हो।



PLAN

DIMENSIONS TO BE CONTROLLED
 WITHIN LIMITS AS SHOWN
 MACHINING TOLERANCE ±0.25 mm
 UNLESS OTHERWISE SHOWN
 NON-MACHINING TOLERANCE ±0.5 mm

संशोधन संख्या
 REFERENCE DRG. NO.

हस्ताक्षर और तिथि/SCALE & DATE
 भार क्रि.गा.

नाम संख्या
 INVENTORY NO.

NOTES:-

- 01 LIGHT BUT SOFT WOOD CONFORMING MANGO / JUNGLE WOOD EXCEPT KANJOOR , MAHUA , GOOLER , BARGAD & PAKARIA
- 02 ALL JOINTS SHOULD BE SECURED BY ADEQUATE NUMBER OF WIRE NAILS.
- 03 DIMENSIONS INDICATED REFER TO POST SHINKAGE AND HENCE ARE MIN. DUE PROVISION FOR SHRINKAGE OF THE PLANKS BE MADE BY THE VENDOR WHILE CUTTING THE SHOOKS.
- 04 NAILS SHOULD BE DRIVEN AT 15 DEG. SLANT INSTEAD OF DRIVING VERTICALLY.
- 05 VOLUME OF WOOD REQUIRED PER BOX 0.1504 CU. MTRS.
- 06 REFER TABLE FOR SIZE OF PLANKS & BATTENS.
- 07 INSIDE DIMN. OF BOX: 1150 W X 500 HT. X 2500 LG.
- 08 MATERIAL TO BE ACCEPTED ACCORDING TO ACCEPTANCE NORM JP-TP-15/GEN.
- 09 EUCALYPTUS CRATE TO BE PROCURED FROM AUGUST TO MARCH ONLY.

ITEM NO.	DESCRIPTION	SIZE	MATEIAL	QTY.
09	VERTICAL PLANK	25 THK. X100 X 600 LG	WOOD	06
08	HORIZONTAL PLANK	25 THK. X100 X 2600 LG	WOOD	04
07	NAILS	DIA 2.8 X 50 LG.	STD.	170
06	HOOP IRON	12 MM. WIDE - 28 SWG.	STD.	-
05	BATTEN PLANK	80 THK. X100 X100 LG.	WOOD	18
04	VERTICAL PLANK	25 THK. X100 X 550 LG	WOOD	12
03	HORIZONTAL PLANK	25 THK. X100 X 1250 LG	WOOD	04
02	PLANK	25 THK. X100 X 2500 LG	WOOD	06
01	PLANK	25 THK. X100 X1150 LG	WOOD	12

उत्पाद का प्रकार या ग्राहक/परियोजना का नाम
 TYPE OF PRODUCT OR NAME OF
 CUSTOMER/PROJECT

भारत हेवी इलेक्ट्रिकल्स लिमिटेड, जगदीशपुर, अमैठी BHARAT HEAVY ELECTRICALS LIMITED, JAGDISHPUR, AMETHI	नाम/NAME	हस्ताक्षर/SIGN	दिनांक/DATE	संशोधन संख्या No. of Var.	
	सिग्नचर/DRG.	A.SINGH	Sd/-		28.05.20
	कलकता/CHK	V.K. RAM	Sd/-		
	संशोधन संख्या/APPD	G.S. SINGH	Sd/-		

संशोधन REV.	दिनांक DATE	कोशिकाएं ALTERED BY	विभाग DEPTT.	ऑफिस/ENGG.	कोड/400	पैमाना/SCALE N.T.S.	भार क्रि.गा. WEIGHT (KG)	असेम्बली अभिकल्प का संदर्भ REFER TO ASSLY. DRG.	नग क्रमांक	संग की संख्या NO. OF ITEMS
शीर्षक/TITLE							कार्ड कोड CARD CODE	अभिकल्प संख्या/DRAWING NO.		REV.
WOODEN PACKING FOR VARIABLE ORRIFICE "28"								3 SK- 1505		00
							पृष्ठ संख्या/Sheets No.	01	पृष्ठों की संख्या/No. of Sheets	01