



INVITATION TO TENDER

Ref: OS/22-23/7906/Assemblies/18/018

Date: 03.02.2023

Sub: Fabrication of Downspout Assembly, Bunker Emptying Chute, Feed Pipe with Mixing Box Assembly, Riffle Distributor Assembly and other components against S.O. 7906 at vendor's works with free issue materials

Dear Sir,

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

ELIGIBILITY CRITERIA:

- (1) Bidders should have an experience in successful & satisfactory execution of similar works i.e., Machining & Fabrication works for a minimum of one project during last 7 years as on 31st January 2023. Bidders shall have to enclose Work Order and Work Completion Certificate in support of the same.
 - (2) Bidders shall also have to enclose the documents of Registration of Firm/ Factory License/ Certificate of Incorporation, PAN, GSTIN, Udyam Registration (if registered with MSME).
 - (3) The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.
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1. LOCATION OF WORK SPOT:

- 1.1 The subject job is to be carried out at Vendor's works.

2. VENDOR'S SCOPE OF WORK:

- 2.1 The total quantity of Downspout assembly, Bunker emptying Chute, Feed Pipe with Mixing Box assembly and other components is **42 MT approx**. The details of items are given in Annexure-II.
 - 2.2 **Complete Fabrication of Downspout assembly, Bunker emptying Chute, Feed Pipe with Mixing Box assembly, Mixing Nozzle Orifice, Riffle Distributor assembly and other components** consisting of material specifications of **CS, SS & LAS** which involves fabrication and various machining operations e.g., Marking, Cutting / Shearing, Profile / Shape Cutting, Bending / Rolling, Edge Preparation / Chamfering, Drilling / Punching, Boring, Threading, Assembly, Welding, Trial Assembly wherever required, NDT, Surface Preparation by Power Tool / Grit Blast Cleaning, Painting etc., as per relevant drawings, Painting Schedule, QAP, Inspection Procedure, WPS, NDE procedures, Standards & Specifications etc., and it includes the following activities but not limited to the same:
 - (1) Collection & Transportation including Transit Insurance of Free Issue Raw materials, BOCs etc., from BHEL-HPVP stores to Vendor's works. **The Raw materials required for fabrication shall be free issue by BHEL-HPVP.**
 - (2) Transportation including Transit Insurance and Handing over of Fabricated/Finished items, excess/balance materials from Vendor's works to BHEL-HPVP, Visakhapatnam.
 - (3) Rectification of Raw materials such as straightening etc., if required.
 - (4) Fabrication of Plate formed Pipes, Elbows / Seg. Bends, Reducers, Caps, Studs, Bolts, Washers, Flanges, Threaded pieces, Adapter, Gear Reducer, Pinion etc., as per relevant drawings / GMS.
 - (5) Trial assembly of Fabricated items after fabrication wherever required as per Drawings / QAP.
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- (6) The fabricated items shall strictly conform to the dimensions and tolerances indicated in the drawings. It must be ensured that correct dimensions and deviations, if any, are recorded properly and is made available to BHEL officials or their authorized agencies.
- (7) Submission of economic cutting plans for all plate materials and sections etc. issued by BHEL and obtaining approval of competent authority is mandatory before taking up fabrication.
Wherever fabrication is done without proper approved cutting plans, any loss of materials arising due to the same will be recovered as per BHEL recovery rates.
- (8) Welding is to be carried out by the qualified welders only.
- (9) The work is to be executed as per the latest approved Drawings, Group Manufacturing Specification (GMS), Shipping List released for each PGMA, QAP, WPS, Standards & Specifications etc.
- (10) Any modification work due to revision of the drawings during fabrication is to be carried out by the vendor without any additional cost.
- (11) No extra rates are applicable for any additional joints made in Plates / Rolled sections etc.
- (12) All indirect materials, consumables like electrodes, filler wire, gases, grinding wheels etc., required for fabrication are in the scope of the Vendor.
- (13) Supply of all applicable Paints from reputed manufacturers like Asian paints, Berger paints, Kansai Nerolac, Akzo Nobel, Nippon paint, Shalimar paints etc., is in vendor's scope. Application of total no. of coats of Paints as per Painting Schedule after Power Tool / Grit blast cleaning is in vendor's scope. The Paint Manufacturer's certificates for the supply of paints shall be submitted to BHEL-HPVP.
- (14) Identification of all items shall be hard stamped by encircling with paint and stencilled in a specific format with details of Project name, Customer No., Work Order No., PGMA No., DU No., Qty., etc., for identification and dispatch as per the instructions of the concerned. Completed job without proper identification will not be accepted by HPVP - Stores / Logistics.
- (15) Free issue materials should be collected within 3 days from the date of intimation by Outsourcing without failure. Any delay beyond 3 days shall be considered for levying of LD.
- (16) Vendors shall have to return the excess / balance materials including off-cuts and total scrap available with them exclusive of process allowance & invisible wastage to HPVP Stores after material reconciliation but before submission of their final bill. In case the same is not returned by the vendor, Recovery shall be made as per BHEL Rates / MSTC rates plus applicable taxes, prevailing at the time of processing of the final bill.
- (17) Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of work of bidders.

3. BHEL SCOPE:

3.1 BHEL – HPVP shall provide the following as free issue:

- (1) Supply of Drawings, GMS, QAP, Inspection Procedure, NDE Procedures, WPS, Painting Schedule etc.
- (2) Raw materials like Plates as full/off-cuts as per requirement, Pipes, Rounds & Sections in running meters, BOCs etc., as per requirement.
- (3) Third party inspection shall be arranged by HPVP for inspection of Finished items at Vendor's works as per QAP.

4. INSPECTION:

- 4.1 Inspection shall be carried out by M/s. BHEL – HPVP / BHEL Authorized Inspection Agency (TPIA) at Vendor's works. Vendor shall have to offer for Final inspection and obtain necessary final clearances before proceeding for further operations.
- 4.2 Vendor shall be solely responsible for preparation and submission of all Inspection Reports & documents duly certified by Inspection Authority and soft copy & hard copy of total documentation shall be submitted to BHEL before submission of final bill.

5. DELIVERY:

- 5.1 Finished items shall be delivered within **8 weeks from the date of issue of First consignment of free issue materials or 4 weeks from the date of issue of Last consignment of materials, whichever is later.**

The delivery period will be calculated from the date of issue of First / Last consignment of materials to the date of delivery of finished items against respective DUs. The delivery period includes the time involved in cutting plan approval, handing over of finished items at HPVP- Logistics.

Note: In case the delivery period offered by the vendor is more than the tender delivery, Price quoted by the bidder shall be loaded for additional period @1/2 % per week or part thereof for the purpose of evaluation of Bidder Status.

6. PRICE:

- 6.1 The price shall be quoted as per the Schedule of Rates enclosed at Annexure – I for the detailed scope of work of each item and the quoted price shall be inclusive of all applicable taxes & duties except GST.
- 6.2 The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- 6.3 GST shall be reimbursable to the vendor as detailed in Clause – 7 and as per Annexure – GST.
- 6.4 Income tax will be deducted at applicable rates from RA & Final bills.

7. GOODS & SERVICES TAX (GST):

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

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

8. RISK PURCHASE:

In case the contractor fails to execute the work within the scheduled time or due to any other reasons, BHEL - HPVP reserves the right to get the same completed through some other party at the risk & cost of the contractor and any additional expenditure incurred due to the same shall be charged to the contractor.

9. REVERSE AUCTION:

- 9.1 BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V and Guidelines for Reverse Auction are available on our website, www.bhel.com → supplier registration → Guidelines for Reverse Auction 2021, before submission of their offer.
- 9.2 Sealed envelope / Electronic Price bids of all the techno-commercially qualified bidders shall be opened and the same shall be considered as initial bids of the bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope / Electronic price bid along with applicable loading, if any, shall be considered for ranking.

- 9.3 BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding. The bidders participating in the Reverse Auction shall have to necessarily submit '**Process Compliance Form**' (PCF) to the designated Service Provider.
- 9.4 Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

10. VALIDITY OF OFFER:

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

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

12. GENERAL:

- 12.1 The bidders shall study the Tender documents, Drawings, Quality Documents and all other relevant documents in detail for understanding the scope of work and the processes involved before submission of offer. Bidders shall get clarifications, if any, from concerned officials on the scope of work, clarifications related to welding or any other details of the tender document, over phone between 09:00 AM and 04:00 PM on any working day or through e-mail.
- 12.2 Drawings, QAP, Clarifications related to Welding, other reference documents etc., shall be sent to the bidder's e-mail address upon their written/e-mail request.
- 12.3 **Conditional / Partial Price Bids** and any other deviations to the tender terms & conditions are not acceptable and BHEL reserves the right to reject such offers without further correspondence. Bidders shall confirm their acceptance to all the terms & conditions of the tender enquiry in the Techno-commercial Bids and any deviations mentioned in the Price Bids shall not be considered.
- 12.4 BHEL reserves the right to modify or cancel the tender enquiry at any stage without assigning any reasons thereof.
- 12.5 The general terms & conditions, if any contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.
13. The following documents shall form part of the tender enquiry:
- a) Schedule of Rates : Annexure – I
 - b) Details of items to be fabricated : Annexure – II
 - c) General Terms & Conditions : Annexure – III
 - d) Acceptance to tender terms & conditions : Annexure – IV
 - e) Business Rules for Reverse Auction : Annexure – V
 - f) GST Compliance for Indigenous Suppliers : Annexure – GST

14. TENDER SUBMISSION (Through E – Mail only):

- 14.1 Techno-commercial bids along with the tender document duly signed & stamped by the bidder on all pages and a covering letter on Company's Letter Head addressed to SDGM (Outsourcing), BHEL-HPVP, Visakhapatnam shall be sent through an e-mail to the e-mail ID technicalbid-hpvp@bhel.in
- 14.2 Price bid (i.e., Annexure-I) shall be sent separately through an e-mail to the e-mail ID pricebid-hpvp@bhel.in
- 14.3 Offers completed in all respects along with all the supporting documents shall be sent to the above e-mails only **latest by 14.00 Hrs. on 13.02.2023** duly mentioning the Name of Work, Tender Ref. No. & Date and Technical Bid / Price Bid in the subject of the e-mail.

Note: Do not mark CC and BCC while submitting your offer as the system is designed to reject such mails having more than one recipient. Max. file size of the attachment shall be 20 MB only. In case the file size is more, bidder can submit their offer through multiple mails within the due date and time.

- 14.4 Bidders shall ensure correctness of the e-mail addresses while submitting their offer. There shall be no other e-mail address at the receiving end while submission of the above bids otherwise the system will reject such mails. Bidder shall be solely responsible for non-receiving of such mails at the above-mentioned e-mail addresses and no communication in this regard will be entertained.

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

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

15. TENDER OPENING:

15.1 Techno-commercial Bids will be opened at 14.00 Hrs. on 13.02.2023 in Customer Cell, Adm. Building, BHEL-HPVP Unit, Visakhapatnam-530012 (Andhra Pradesh). The bidders may depute their representatives at the time of opening of Technical bids.

15.2 After evaluation of the Techno-commercial Bids, intimation regarding date & procedure of conducting reverse auction shall be given by the service provider to all eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,

Murthy
03/02/2023

D. N. MURTHY
Dy. Manager (OS)
Bharat Heavy Electricals Ltd
HPVP, Visakhapatnam-530012

SCHEDULE OF RATES

Ref : OS/22-23/7906/Assemblies/ 18/018

Date: 03.02.2023

Sub : Fabrication of Downspout assembly, Bunker emptying Chute, Feed Pipe with Mixing Box assembly and other components against S.O. 7906 at Vendor's works with free issue materials

Sl. No.	S.O. No.	Description of Work	Unit	Qty.	Unit Rate (Rs.)	Total Amount (Rs.)
		Complete Fabrication of Downspout Assembly, Bunker Emptying Chute, Feed Pipe with Mixing Box Assembly, Mixing Nozzle Orifice, Riffle Distributor Assembly and other components consisting of material specifications of CS, SS & LAS which involves fabrication and various machining operations e.g., Marking, Cutting/ Shearing, Profile/ Shape Cutting, Bending/ Rolling, Edge Preparation/ Chamfering, Drilling/ Punching, Boring, Threading, Assembly, Welding, Trial Assembly (wherever required), NDT, Surface Preparation by Power Tool/ Grit Blast Cleaning, Supply & Application of total coats of Paint etc., as per relevant Drawings, Painting Schedule, QAP, Inspection Procedure, WPS, NDE procedures, Standards & Specifications etc. (All consumables are in Vendor's scope)				
1	7906	Fabrication of Downspout Assembly, Bunker Emptying Chute, Feed Pipe with Mixing Box Assembly and other components against S.O. 7906 as per Annexure-II	MT	42		
Total Amount in Words :						

Notes :

- 1) **L1 Status will be evaluated on the Total Quoted Amount.**
- 2) The quantity and weights indicated above are tentative and may vary on both sides depending upon the requirement at the time of ordering / execution. However, payment shall be made for the actual quantities & weights only.
- 3) The quoted price shall be inclusive of all applicable taxes & duties **except GST**. GST shall be reimbursable to the Vendor as per applicable rules. Income tax shall be deducted at applicable rates from the Vendor's bills.
- 4) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- 5) The bidders are advised to go through all the drawings & documents before quoting the tender.
- 6) The evaluation currency for this tender shall be **INR**.
- 7) Tenderer should quote the amount in figures & words. It may be noted that corrections, overwriting etc. are not allowed. If there is a discrepancy between amount in figures & words, the amount in words shall prevail unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. If there is an error in the total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and total shall be corrected accordingly.

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

Signature of the Bidder with Stamp

DETAILS OF ITEMS TO BE FABRICATED

Sub : Fabrication of Downspout Assembly, Bunker Emptying Chute, Feed Pipe with Mixing Box Assembly and other components against S.O. 7906 at Vendor's works with free issue materials

SL No.	S.O. No.	PGMA No.	DU No.	Item Description	DU UNIT	QTY. (No.)	Weight (Kgs)	Drawing No.	Rev. No.
1	7906	43005	001	FL TRANSITION (FAN.SUC)	NO	2	79.200	2-43-000-00132	02
2		43005	002	FL TRANSITION (FAN.DEL)	NO	2	74.200	2-43-000-00132	02
3		43005	003	PR. MEASURMENT 1/2" NPT	NO	40	313.360	3-43-000-00265	04
4		43005	004	SEG BEND 90 DEG NB 650	NO	8	1024.000	3-43-000-00301	00
5		43005	005	SEG BEND 90 DEG NB 450	NO	10	491.000	3-43-000-00300	00
6		43005	006	SEG BEND 90 DEG NB 250	NO	8	127.200	3-43-000-00300	00
7		43005	007	SEG BEND 90 DEG NB 150	NO	12	99.600	3-43-000-00300	00
8		43005	008	SEG BEND 90 DEG NB 125	NO	12	75.600	3-43-000-00300	00
9		43005	009	SEG BEND 90 DEG NB 65	NO	8	14.912	3-43-000-00299	00
10		43005	010	REDUCER NB 450/250	NO	4	86.400	2-43-000-00127	00
11		43104	006	FLANGE NB 300	NO	6	44.400	3-43-000-00281	00
12		43104	007	THRD.END COVER	NO	8	9.600	4-43-000-00541	06
13		43104	008	PLUG 1" NPT	NO	8	2.960	3-42-000-00876	02
14		43105	008	FLANGE NB 650	NO	8	152.000	3-43-000-00285	03
15		43105	009	FLANGE NB 650	NO	4	38.000	3-43-000-00284	05
16		43105	010	STUD M 20 X 280	NO	155	77.500	3-43-000-00292	06
17		43105	011	STUD M 27 X 220	NO	70	56.000	3-43-000-00292	06
18		43105	012	FLANGE NB 450	NO	8	87.200	3-43-000-00281	00
19		43105	013	FLANGE NB 250	NO	8	40.800	3-43-000-00281	00
20		43105	014	FLANGE NB 250	NO	12	54.000	3-43-000-00202	03
21		43105	015	FLANGE NB 150	NO	8	22.400	3-43-000-00281	00
22		43105	016	FLANGE NB 150	NO	4	21.200	3-43-000-00287	03
23		43105	017	FLANGE NB 125	NO	20	50.000	3-43-000-00270	06
24		43105	018	FLANGE NB 65	NO	4	6.800	3-43-000-00270	06
25		43105	020	ORIFICE	NO	4	12.800	3-43-000-00188	02
26		47953	001	TRANSITION PIECE	NO	4	2029.824	3-47-953-01937	00
27		47953	003	RIFFLE DISTRIBUTOE ASSEMBLY	NO	4	6627.616	1-47-953-02359	00
28		47953	004	RIFFLE DISTRIBUTOE ASSEMBLY	NO	8	5771.848	1-47-953-02360	00
29		67251	001	ELECTRICAL OPERATEDRAW COAL GATE 24"	NO	4	2251.288	0-67-252-00133	00
30		67251	002	FLANGE	NO	4	132.000	4-67-251-00244	04
31		67256	001	24" CHAIN OPERATEDRAW COAL GATE-FDR IN	NO	4	1962.048	0-67-256-00137	01
32		67256	008	SPACER	NO	4	296.000	3-67-256-00193	05
33		67283	001	FEEDER OUTLET ISOLATION GATE	NO	4	3433.884	0-67-283-00139	01
34		67283	002	STUD ASSY.	NO	16	142.720	3-67-283-00223	01
35		67283	003	AIR CYLINDER ASSY.	NO	4	1154.560	1-67-283-00091	09
36		67801	001	DOWN SPOUT	NO	4	1213.368	1-67-801-00848	00
37		67801	002	BUNKER EMPTYING CHUTE	NO	1	243.790	1-67-801-00849	00
38		67801	015	SPACER	NO	4	369.200	3-67-801-00525	00
39		67801	016	TRASITION CHUTE	NO	4	369.600	2-67-801-00419	00
40		67801	017	FLANGE PL.20XID 632 XOD820	NO	8	264.000	4-67-801-00385	00
41		67801	022	PL.8X240X275	NO	16	66.320	0-67-801-00443	00
42		67801	023	ISMC 150X150L	NO	16	40.320	0-67-801-00443	00
43		67801	024	PL.8X60X100	NO	32	10.080	0-67-801-00443	00

SL No.	S.O. No.	PGMA No.	DU No.	Item Description	DU UNIT	QTY. (No.)	Weight (Kgs)	Drawing No.	Rev. No.
44	7906	67801	025	PL.8X65X150	NO	16	9.792	0-67-801-00443	00
45		67801	026	PL.8X120X220	NO	16	26.528	0-67-801-00443	00
46		67801	027	PL.8X133X141	NO	16	12.704	0-67-801-00443	00
47		67802	001	PIPE WITH BOTTOM FLANGE	NO	1	299.894	2-67-802-00431	00
48		67802	002	FLANGE	NO	1	10.790	4-67-801-00356	00
49		67802	003	BOTTOM PIPE WITH FLANGE	NO	4	2221.232	2-67-802-00432	00
50		67802	004	FLANGE	NO	4	26.340	4-67-802-00440	00
51		67802	005	BEND - 40DEG.	NO	4	248.780	3-67-802-00529	00
52		67802	006	EMPTYING PIPE	NO	4	1086.104	3-67-802-00530	00
53		67802	007	COVER PLATE	NO	4	100.000	4-67-802-00386	00
54		67802	012	SQ. WASHER	NO	32	3.776	4-67-802-00352	02
55		67802	013	PL.20X250X1200	NO	4	188.400	0-67-802-00444	00
56		67802	014	PL.10X250X1200	NO	8	188.400	0-67-802-00444	00
57		67803	001	TRANSITION PIECE	NO	4	897.040	1-67-803-00190	00
58		67803	002	CYL PIECE & FLANGE (TRANSITION PIECE)	NO	4	86.000	1-67-803-00190	00
59		67803	003	MIXING BOX ASSY	NO	4	1806.840	0-67-803-00140	00
60		67803	004	FEED PIPE	NO	4	1257.040	2-67-803-00263	00
61		67803	005	FLANGE PL20XID477/OD617	NO	4	73.000	4-67-803-00389	00
62		67803	006	ITEMS IN FEED PIPE	NO	4	90.200	2-67-803-00263	00
63		67803	007	PRESSURE CHECK. DEVICE	NO	4	8.252	3-67-803-00350	01
64		67803	008	ANGLE 10X100X100..150L	NO	16	35.840	1-67-803-00395	00
65		67803	009	BOX WELDMENT	NO	8	47.360	1-67-803-00395	00
66		67803	010	SUPPORT BRACKET	NO	8	258.000	1-67-803-00395	00
67		67803	012	SPHERICAL ROCKER RODD125X70L	NO	16	115.520	1-67-803-00395	00
68		67803	013	SPRING SEAT	NO	16	50.752	3-67-803-00396	01
69		67803	017	FLANGE PL.32XOD165XID62	NO	8	29.040	4-67-803-00301	02

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

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

2. PARTY'S SCOPE:

The scope of the party shall be as follows: -

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

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

3. REVISION OF DRAWINGS:

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

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

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

6. RECTIFICATIONS / REJECTIONS:

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

7. SECURITY DEPOSIT:

Vendors shall have to submit a Bank Guarantee for **10%** of the order value in case of **HPVP ADM site** or **25%** of the material cost in case of Vendor works towards Security Deposit and safe custody of free issue materials within 15 days from the date of intimation by Outsourcing dept. The BG shall be valid for the contract period with a claim period of 12 months. This Bank Guarantee shall be released to the contractor after completion of work and on acceptance of the same by BHEL / Owner

Bidder agrees to submit performance security required for execution of the contract within the time period mentioned above. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT/contract, from the bills along with due interest.

8. PERFORMANCE BANK GUARANTEE:

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

9. RAW MATERIALS ISSUE:

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

10. TRANSFER / RETURN OF LEFT OVER MATERIALS:

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

11. MATERIAL RECONCILIATION:

Orders issued to the vendors have to be completed in all respects including Material Accounting within a maximum of **180 days** from the **date of issue of the first material** from BHEL - HPVP stores.

Maximum of 0.5 % on the requirement of materials (**Plates, Sections and Pipes**) is admitted towards **process allowance and invisible wastage**.

Scrap quantity is permissible up to a **maximum of 1% on Structural (Beams, Channels, Angles, Rods, Pipes etc.), 2% on Sheets, 3% for Plates** on the theoretical requirement of materials.

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

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

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

12. SCRAP & OFF-CUT NORMS:

Sl. No.	Description	Scrap Size (in mm)	Off-Cut (in MM)
1.	CS/AS Sheets & Plates	Below 500 × 250	500 × 250 & above
2.	Rolled sections Rod, angles etc. (other than -tubes, pipes)	Below 1000	1000 & above
3.	Tubes & Pipes	Below 500	500 & above
4.	Universal column	Below 1000	1000 & Above
5.	SS Sheets & Plates	Below 500 × 250	500 × 250 & above
6.	SS Structural, Rods, Tubes, Pipes	Below 250	250 & above
7.	Non – ferrous: sheets & plates, rods & tubes	Below 500 × 250 (S & PL), Below 250 (Rods & Tubes)	500 × 250 & above, 250 & above
8.	Big size Scrap	(2500 & above) × (150 to 249)	-

13. INSPECTION:

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

14. WORKMANSHIP GUARANTEE:

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

15. WORK PROGRESS:

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

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

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

16. DELIVERY:

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

17. PENALTY:

If delivery exceeds the stipulated delivery schedule, penalty 1/2 % of the total value of order per week or part there of subject to a maximum of 10% on the total value of the order will be levied. However, time taken for the following will not be considered as delay on the part of the Sub-Contractor.

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

18. PAYMENT TERMS:

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

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

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

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

19. SECRECY:

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

20. SUB-LETTING:

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

21. FACTORY RULES AND REGULATIONS:

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

22. SAFETY:

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

23. HOUSE KEEPING:

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

24. ACCIDENT / DAMAGE / CONDUCT ETC.:

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

25. TERMINATION OF CONTRACT:

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

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

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

26. CONFLICT OF INTEREST AMONG BIDDERS / AGENTS:

A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. ***The bidder found to have a conflict of interest shall be disqualified.*** A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a) they have controlling partner (s) in common; **or**
- b) they receive or have received any direct or indirect subsidy / financial stake from any of them; **or**
- c) they have the same legal representative / agent for purposes of this bid; **or**
- d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; **or**
- e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid; **or**
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent / dealer. There can be only one bid from the following:
 1. The principal manufacturer directly or through one Indian agent on his behalf, and
 2. Indian/foreign agent on behalf of only one principal,
- g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid, **or**
- h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister's common business/ management units in same/ similar line of business."

27. DISPUTES:

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

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

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

- 29.** The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

Signature of the Bidder with Stamp

Acceptance to the Tender Terms & Conditions

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

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

I / We give our acceptance to participate in reverse auction for this tender.

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

Signature of the Bidder with Stamp

BUSINESS RULES FOR REVERSE AUCTION (RA)

This has reference to tender no. **OS/22-23/7906/Assemblies/18/018, dated 03.02.2023**. BHEL shall finalize the Rates for **“Fabrication of Downspout Assembly, Bunker Emptying Chute, Feed Pipe with Mixing Box Assembly, Riffle Distributor Assembly and other components against S.O. 7906 at vendor’s works with free issue materials”** through Reverse Auction mode. BHEL has made arrangement with an authorized Service provider (details will be shared before reverse auction) for conducting RA. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enquiry No. **OS/22-23/7906/Assemblies/18/018, dated 03.02.2023**, (b) Bidders’ technical & commercial bid (in case of two-part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning:

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

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

The above process will continue till completion of Reverse Auction.

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

4. Bid price: The Bidder has to quote the {.....} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).**5. Bidding currency and unit of measurement:** Bidding will be conducted in **Indian Rupees per Unit** of the material as per the specifications mentioned in the tender.

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

6. **Validity of bids:** Price shall be valid for **3 months** from the date of reverse auction. These shall not be subjected to any change whatsoever.
7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction.
Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
11. Reverse auction shall be conducted by BHEL (through M/s {*Service Provider*}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

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

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

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

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

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

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

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

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

14. M/s. {*Service provider*}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {*Service provider*}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.
15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {*Service provider*} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. **OS/22-23/7906/Assemblies/18/018, dated 03.02.2023**. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.
21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {*Service provider*}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com)*, shall be initiated by BHEL.

Signature of the Bidder with Stamp

GST COMPLIANCE FOR INDIGENOUS SUPPLIERS

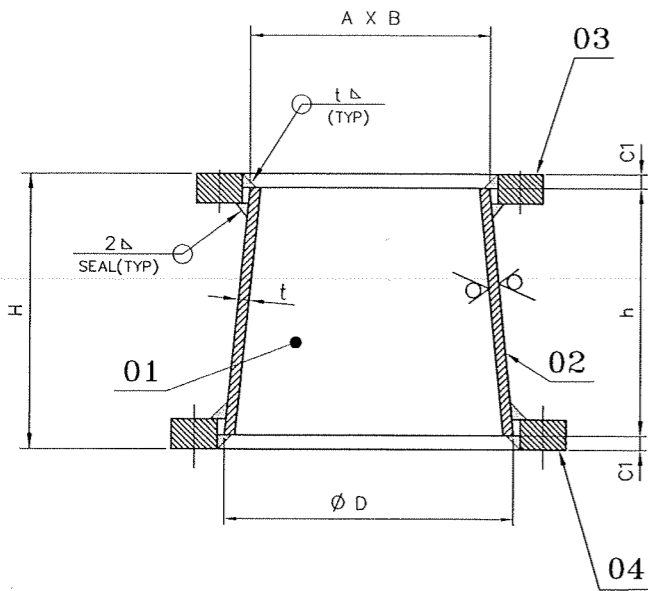
1. In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GSTIN which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
2. Supplier shall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

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

Signature of the Bidder with Stamp

DRAWING NO: 2-43-005-U0010
2-43-000-00132

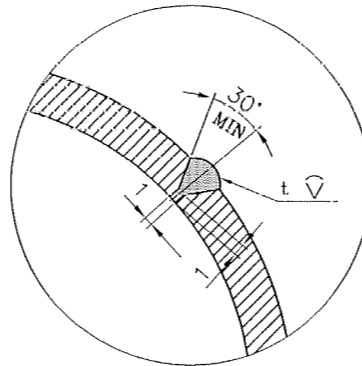
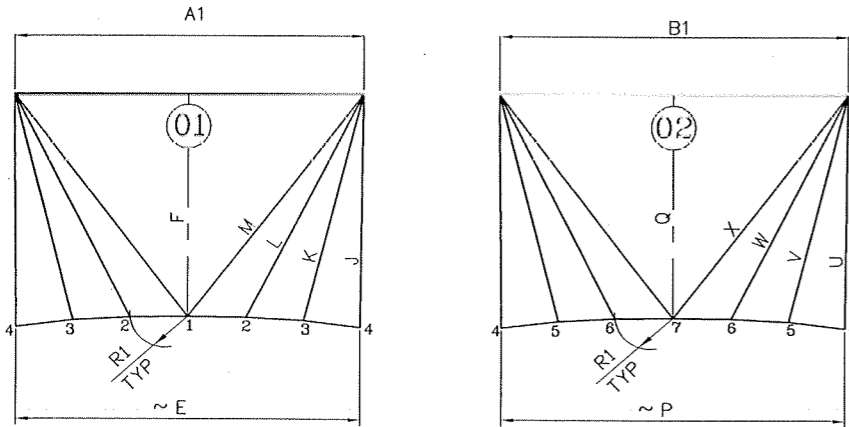
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD. NO TP 023 0299



12.5
/ / /

WELDING		
TYPE OF WELD	TYPE OF ELECTRODE	WELD LENGTH (M)
4 Δ	E 7018	5.00
2 Δ		5.00
4 ∩		0.50

WELDING DETAIL OF
ITEM NOS. 01 & 02



VAR NO.	D	A X B	t	h	C1	H	A1	~ E	F	J	K	L	M	R1	B1	~ P	Q	U	V	W	X	TOTAL WEIGHT
05	457	408 x 363	4	290	5	300	404	354	294	294	304	326	357	59	359	354	291	294	298	315	342	30.200
04	900	1015 x 388	4	500	5	510	1011	702	562	549	606	678	756	117	384	702	503	549	515	511	539	106.800
03	900	1421 x 483	4	500	5	510	1419	702	542	640	712	799	892	117	479	702	564	640	594	584	613	121.300
02	660	568 x 282	4	300	5	310	564	516	355	318	354	401	453	86	278	516	304	318	301	307	334	37.100
01	660	718 x 288	4	300	5	310	714	516	353	338	384	442	502	86	284	516	302	338	310	308	334	39.600

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	ZONE
VAR NO						MATERIAL SPECN		DI	QUANTITY	
05	04	FLANGE		3-43-000-00287	06	150110980000 IS2062FE410GRA			11.100	
05	03	FLANGE		3-43-000-00306	05	15011027000000 IS2062FE410GRA			5.500	
05	02	PLATE 4 X 359 X 294				150113340000 IS1079			3.300	
05	01	PLATE 4 X 404 X 294				150113340000 IS1079			3.500	
04	04	FLANGE		3-43-000-00231	13	150111500000 IS2062FE410GRA			45.000	
04	03	FLANGE		3-43-000-00306	04	15011027000000 IS2062FE410GRA			14.600	
04	02	PLATE 4 X 702 X 526				150113340000 IS1079			8.600	
04	01	PLATE 4 X 1011 X 562				150113340000 IS1079			15.000	
03	04	FLANGE		3-43-000-00231	13	150111500000 IS2062FE410GRA			45.000	
03	03	FLANGE		3-43-000-00306	03	150110270000 IS2062FE410GRA			19.300	
03	02	PLATE 4 X 702 X 632				150113340000 IS1079			10.500	
03	01	PLATE 4 X 1419 X 542				150113340000 IS1079			18.000	
02	04	FLANGE		3-43-000-00284	01	150111320000 IS2062FE410GRA			9.500	
02	03	FLANGE		3-43-000-00306	02	150081800000 IS2062FE410GRA			8.000	
02	02	PLATE 4 X 516 X 304				150113340000 IS1079			3.800	
02	01	PLATE 4 X 564 X 355				150113340000 IS1079			6.000	
01	04	FLANGE		3-43-000-00284	01	150111320000 IS2062FE410GRA			9.500	
01	03	FLANGE		3-43-000-00306	01	150081800000 IS2062FE410GRA			8.900	
01	02	PLATE 4 X 516 X 320				150113340000 IS1079			3.800	
01	01	PLATE 4 X 714 X 353				150113340000 IS1079			6.800	

HPVP CUSTOMER NO:7906

REV	DATE	ALTERED :	REV	DATE	ALTERED :
02	05.09.08	P.A.P.Muthu CHD & APPD :M.THANDAPANI	01	28.12.07	P.A.P.Muthu CHD & APPD :M.Anbazhagan
ZONE	VAR. No. 05 ADDED		ZONE	VAR. No.s 03 & 04 ADDED	

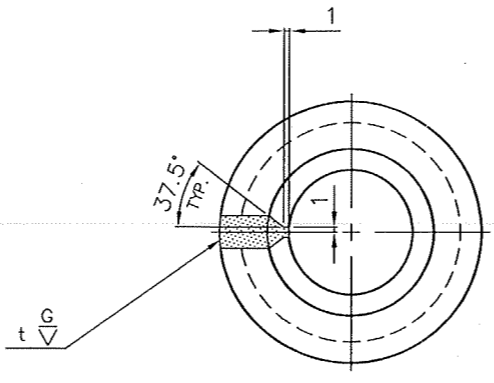
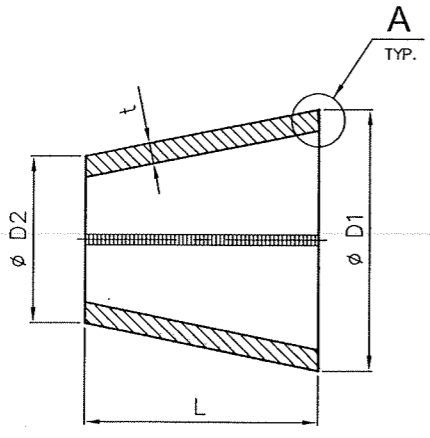
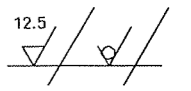
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012	
DRN	NAME B.R.SEKAR/P.A.P.M	SIGNATURE	DATE 15-03-07
CHD	J.V.VARUNAKUMAR		
APPD	Md.F.BASHA		
DEPT PE(FB)/FS CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION SCALE N.T.S.	WEIGHT (Kg) -
TITLE FLANGED TRANSITION		REF TO ASSY / OLD DWG -	
DRAWING NO : 2-43-000-00132 2-43-005-U0010		REV 02 /00	

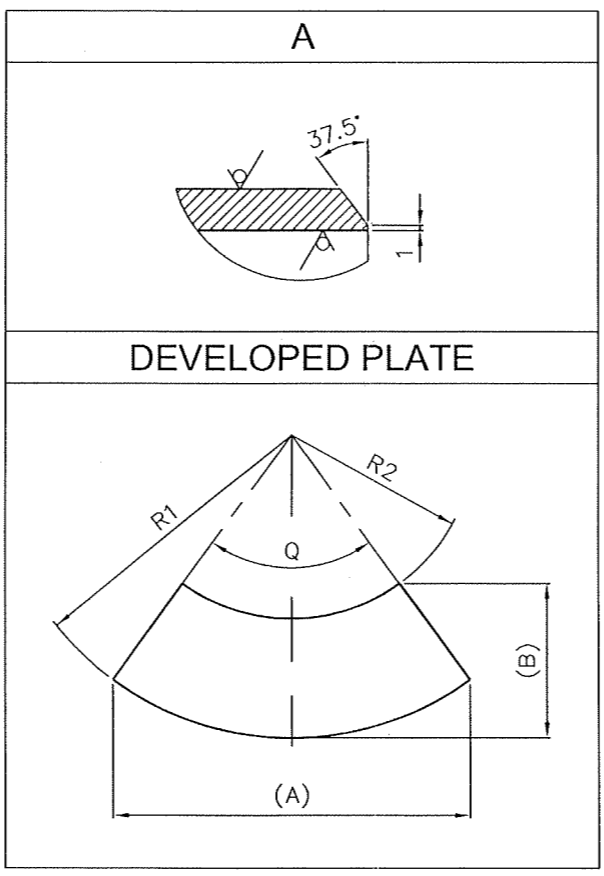
DRAWING NO: 2-43-005-U0012
2-43-000-00127

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

WELDING TABLE		
TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD (mm)
t ∇	E 7018	~ L



VARIANT NUMBER	Nb	D1	D2	L	Q	R1	R2	t	(A)	(B)
20	400/200	406.4	219.1	600	56°	1305	697	4	1216	688
19	400/250	406.4	273.1	400	59°	1224	819	4	1209	513
18	400/300	406.4	323.9	300	49°	1477	1174	4	1226	409
17	400/350	406.4	355.6	200	45°	1597	1395	4	1232	310
16	450/250	457.0	273.1	600	55°	1495	888	4	1370	706
15	450/300	457.0	323.9	400	59°	1380	975	4	1361	532
14	450/350	457.0	355.6	300	60°	1359	1055	4	1359	446
13	450/400	457.0	406.4	200	45°	1805	1603	4	1387	325
12	500/300	508.0	323.9	600	55°	1662	1055	4	1525	725
11	500/350	508.0	355.6	400	67°	1347	939	4	1494	565
10	500/400	508.0	406.4	300	60°	1509	1205	4	1512	467
09	500/450	508.0	457.0	200	46°	1992	1791	4	1542	342
08	600/350	610.0	355.6	700	64°	1695	983	4	1806	863
07	600/400	610.0	406.4	600	60°	1811	1203	4	1818	771
06	600/450	610.0	457.0	400	68°	1613	1206	4	1796	612
05	600/500	610.0	508.0	300	60°	1808	1504	4	1817	508
04	650/400	660.0	406.4	700	64°	1840	1129	4	1955	884
03	650/450	660.0	457.0	600	60°	1966	1358	4	1968	791
02	650/500	660.0	508.0	400	67°	1757	1350	4	1945	633
01	650/600	660.0	610.0	200	45°	2644	2443	4	2010	385



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/S/P	UNIT	UNIT WEIGHT	ZONE
VAR NO					VAR NO	MATERIAL SPECN	DI	QUANTITY		
20		Nb 400/200 PLATE 4 x 1216 x 688				150113340000 IS1079			18.500	
19		Nb 400/250 PLATE 4 x 1209 x 513				150113340000 IS1079			13.400	
18		Nb 400/300 PLATE 4 x 1226 x 409				150113340000 IS1079			10.800	
17		Nb 400/350 PLATE 4 x 1232 x 310				150113340000 IS1079			7.500	
16		Nb 450/250 PLATE 4 x 1370 x 706				150113340000 IS1079			21.600	
15		Nb 450/300 PLATE 4 x 1361 x 532				150113340000 IS1079			15.500	
14		Nb 450/350 PLATE 4 x 1359 x 446				150113340000 IS1079			12.000	
13		Nb 450/400 PLATE 4 x 1387 x 325				150113340000 IS1079			8.500	
12		Nb 500/300 PLATE 4 x 1525 x 725				150113340000 IS1079			24.700	
11		Nb 500/350 PLATE 4 x 1494 x 565				150113340000 IS1079			17.200	
10		Nb 500/400 PLATE 4 x 1512 x 467				150113340000 IS1079			13.600	
09		Nb 500/450 PLATE 4 x 1542 x 342				150113340000 IS1079			9.500	
08		Nb 600/350 PLATE 4 x 1806 x 863				150113340000 IS1079			33.600	
07		Nb 600/400 PLATE 4 x 1818 x 771				150113340000 IS1079			30.300	
06		Nb 600/450 PLATE 4 x 1796 x 612				150113340000 IS1079			21.300	
05		Nb 600/500 PLATE 4 x 1817 x 508				150113340000 IS1079			16.700	
04		Nb 650/400 PLATE 4 x 1955 x 884				150113340000 IS1079			37.200	
03		Nb 650/450 PLATE 4 x 1968 x 791				150113340000 IS1079			33.300	
02		Nb 650/500 PLATE 4 x 1945 x 633				150113340000 IS1079			23.300	
01		Nb 650/600 PLATE 4 x 2010 x 385				150113340000 IS1079			12.500	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

DR#	P.A.P.Muthu	SIGNATURE	-sd-	DATE	01-09-2006
CHD	M.Anbazhagan	SIGNATURE	-sd-	DATE	"
APPD	S.V.Sivaramulu	SIGNATURE	-sd-	DATE	"

DEPT: PE(FB)-FS
CODE: 129
ALL DIMENSIONS ARE IN MM
PROJECTION: NTS
SCALE: NTS
WEIGHT (Kg): -
REF TO ASSY / DTD DMC: -

TITLE: **REDUCER**

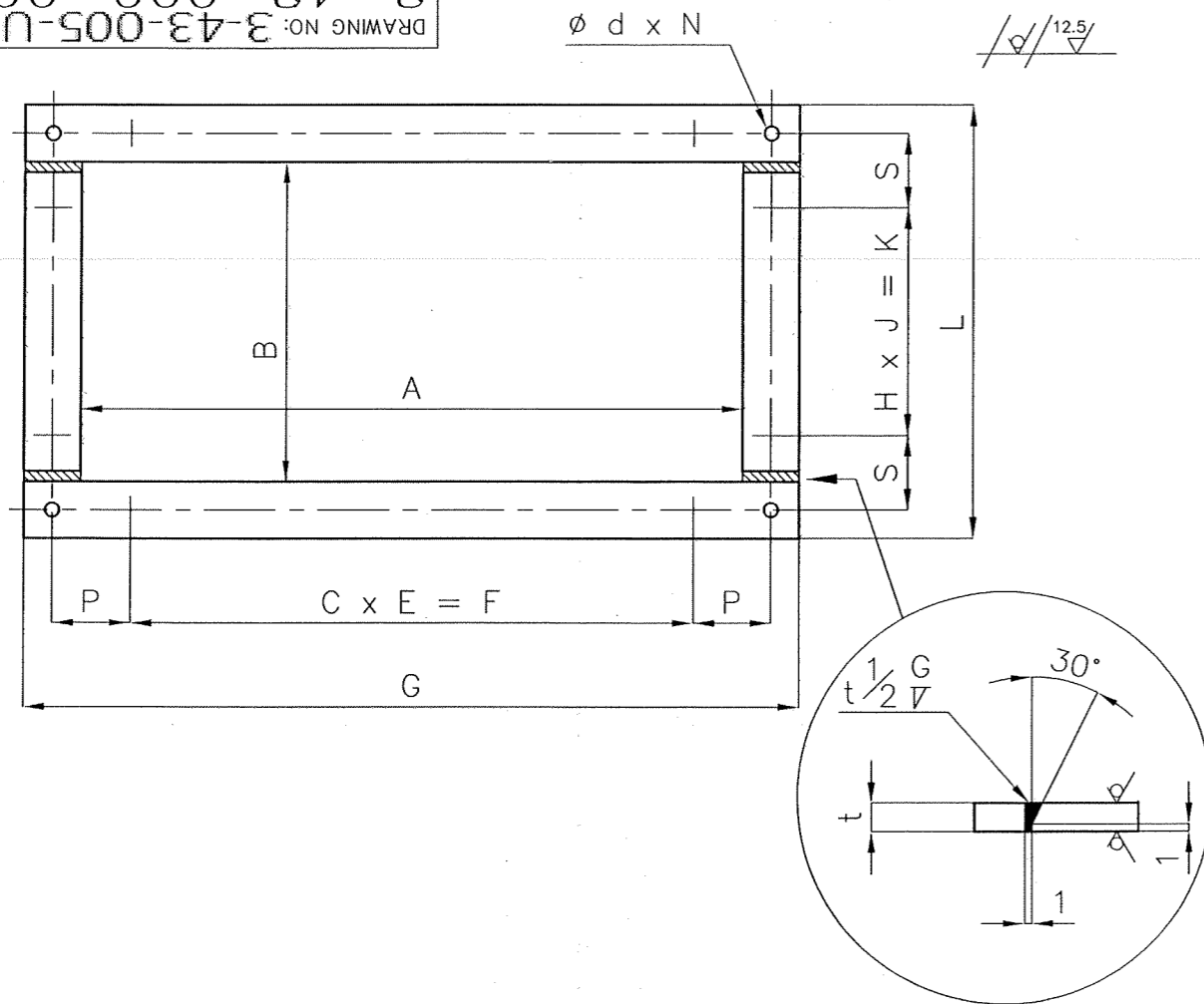
DRAWING NO: 2-43-000-00127
REV: 00
2-43-005-U0012

REV	DATE	ALTERED :
01		CHD & APPD :

HPVP CUSTOMER NO:7906

DRAWING NO: 3-43-005-U0066
3-43-000-00306

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



05	410	365	130	2	260	510	161	1	161	465	12	14	8	103	130
04	1017	390	160	5	800	1167	150	2	300	540	22	22	8	148.5	85
03	1423	485	160	7	1120	1573	150	2	300	635	18	26	8	191.5	132.5
02	570	284	160	3	480	700	150	1	150	414	18	16	8	80	102
01	720	290	160	3	480	850	150	1	150	420	18	16	8	155	105
VAR No.	A	B	C	E	F	G	H	J	K	L	d	N	t	P	S

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT	GS
VAR NO						MATERIAL SPECN	DI	QUANTITY	
05		PL 8 x 50 ;1750 L				150110270000		5.500	
						IS2062FE410GRA			
04		PL 8 x 75 ;3114 L				150110270000		14.600	
						IS2062FE410GRA			
03		PL 8 x 75 ;4116 L				150110270000		19.300	
						IS2062FE410GRA			
02		FL 65 x 8 ;1968 L				150081800000		8.000	
						IS2062FE410GRA			
01		FL 65 x 8 ;2204 L				150081800000		8.900	
						IS2062FE410GRA			

HPVP CUSTOMER NO:7906

REV 02	DATE 05.09.08	ALTERED : P.A.P.Muthu CHD & APPD: M.THANDAPANI	REV 01	DATE 28.12.07	ALTERED : P.A.P.Muthu CHD & APPD: M.Anbazhagan
ZONE	VAR. No. 05 ADDED		ZONE	VAR. No.s 03 & 04 ADDED	

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TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



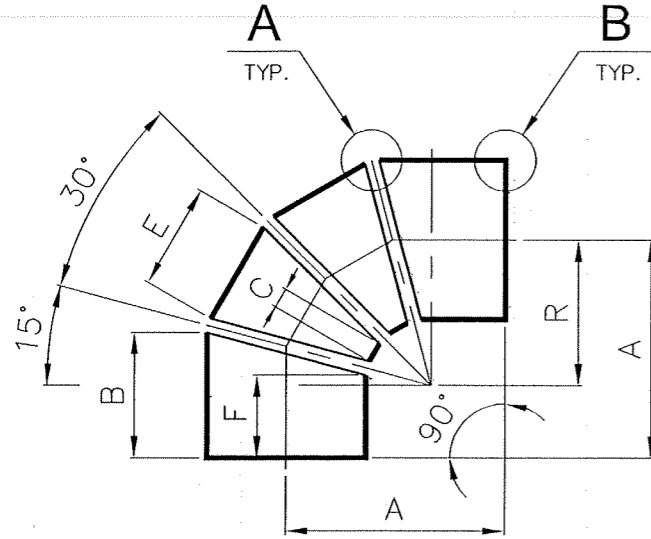
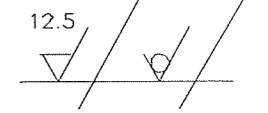
Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN	NAME B.R.SEKAR/P.A.P.M	SIGNATURE -sd-	DATE 15-03-07
CHD	J.V.V.ARUNKUMAR	-sd-	"
APPD	Md.F.BASHA	-sd-	"

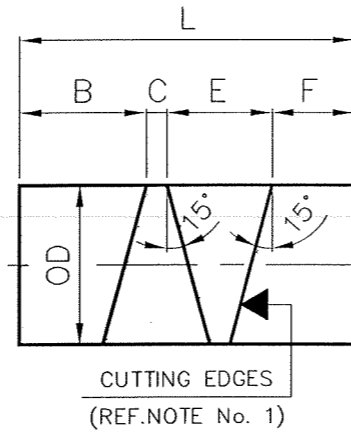
DEPT PE(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE NTS	WEIGHT (Kg) -	REF TO ASSY / OLD DWG -
CODE 129					
TITLE FLANGE					DRAWING NO : 3-43-000-00306 3-43-005-U0066
					REV 02 /00

DRAWING NO: 3-43-005-U0065
3-43-000-00301

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



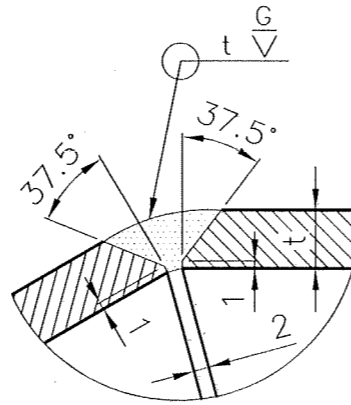
CUTTING PLAN



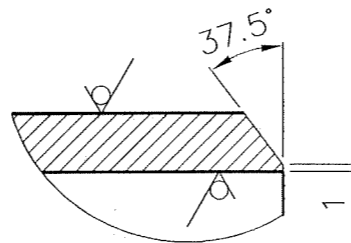
NOTE :-

1. CUTTING ALLOWANCE MAY BE ADDED TO THE LENGTH.

A



B



05	850	950	442	222	684	211	1559	850
04	800	900	422	208	644	204	1478	800
03	750	850	402	196	604	198	1400	750
02	700	800	382	182	564	191	1319	700
01	650	750	362	170	524	185	1241	650
VARIANT NUMBER	Nb	A	B	C	E	F	L	R

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN		DI	QUANTITY
05		Nb 850 ROLLED PIPE OD 863.6 x 6.0 ;1559 L		3-43-000-00296	04	150110920000 IS2062FE410GRA			197.900
04		Nb 800 ROLLED PIPE OD 812.8 x 6.0 ;1478 L		3-43-000-00296	03	150110920000 IS2062FE410GRA			176.600
03		Nb 750 ROLLED PIPE OD 762.0 x 6.0 ;1400 L		3-43-000-00296	02	150110920000 IS2062FE410GRA			156.700
02		Nb 700 ROLLED PIPE OD 711.2 x 6.0 ;1319 L		3-43-000-00296	01	150110920000 IS2062FE410GRA			137.700
01		Nb 650 ERW PIPE OD 660.0 x 6.4 ;1241 L				159386150000 API5LGRB			128.000

HPVP CUSTOMER NO: 7906

WELDING TABLE

TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD (mm)
t ∇	E 7018	~ OD x 9

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

355-055

DRN	P.A.P.Muthu	SIGNATURE	-sd-	DATE	06-05-2006
CHD	M.Anbazhagan	SIGNATURE	-sd-	DATE	"
APPD	S.V.Sivaramulu	SIGNATURE	-sd-	DATE	"

DEPT PE(FB)FS CODE 129

ALL DIMENSIONS ARE IN MM

PROJECTION

SCALE NTS

WEIGHT (Kg) -

REF TO ASSY / OLD DWG -

TITLE **SEG.BEND 90°**

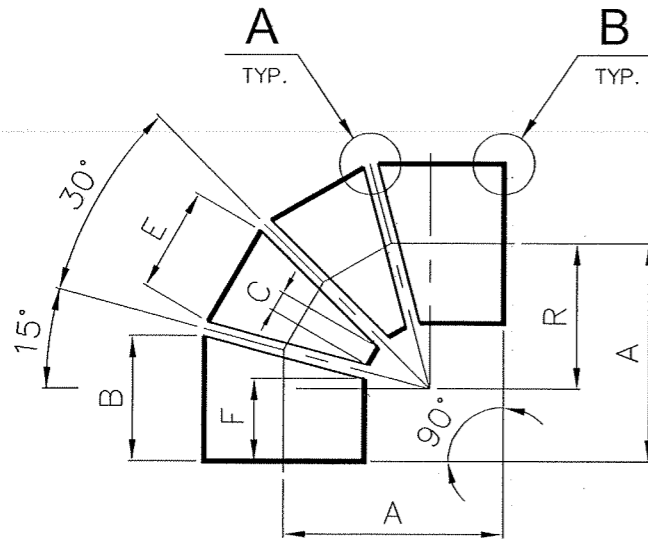
DRAWING NO : 3-43-000-00301
3-43-005-U0065

REV 00

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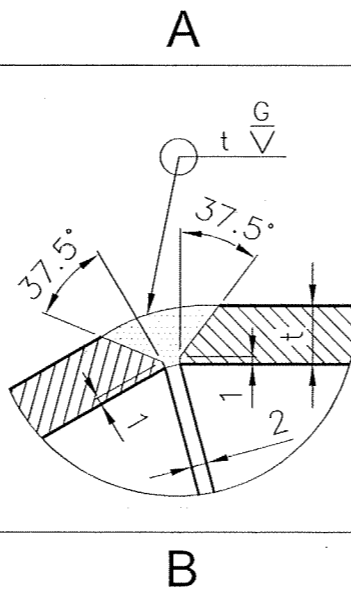
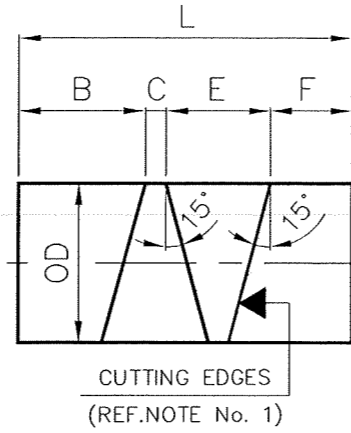
REV 01	DATE	ALTERED :
ZONE		CHD & APPD:

3-43-000-00300
DRAWING NO: 3-13-005-U0064



11	600	700	341	156	482	178	1157	600
10	500	600	301	130	402	165	998	500
09	450	550	281	116	362	158	917	450
08	400	500	261	104	322	152	839	400
07	350	450	240	90	280	145	755	350
06	300	400	223	72	246	136	677	300
05	250	350	203	58	206	129	596	250
04	200	300	182	46	164	123	515	200
03	150	250	162	34	124	117	437	150
02	125	225	151	28	102	114	395	125
01	100	200	141	22	82	111	356	100
VARIANT NUMBER	Nb	A	B	C	E	F	L	R

CUTTING PLAN



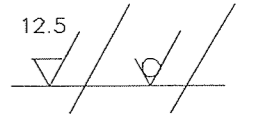
WELDING TABLE

TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD (mm)
t ∇	E 7018	~ OD x 9

NOTE :-

1. CUTTING ALLOWANCE MAY BE ADDED TO THE LENGTH.

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
					VAR NO	MATERIAL SPECN	DI	DI	QUANTITY
11		Nb 600 ERW PIPE OD 610.0 x 7.9; 1157 L				159386140000			135.800
						API5LGRB			
10		Nb 500 ERW PIPE OD 508.0 x 6.4 ; 998 L				159386100000			79.000
						API5LGRB			
09		Nb 450 ERW PIPE OD 457.0 x 4.8 ; 917 L				159386070000			49.100
						API5LGRB			
08		Nb 400 ERW PIPE OD 406.4 x 4.8 ; 839 L				159385040000			39.900
						API5LGRB			
07		Nb 350 ERW PIPE OD 355.6 x 6.4 ; 755 L				159386050000			41.600
						API5LGRB			
06		Nb 300 ERW PIPE OD 323.9 x 4.8 ; 677 L				159385030000			25.600
						API5LGRB			
05		Nb 250 ERW PIPE OD 273.1 x 4.0 ; 596 L				159386010000			15.900
						API5LGRB			
04		Nb 200 ERW PIPE OD 219.1 x 4.0 ; 515 L				159383000000			11.000
						API5LGRB			
03		Nb 150 ERW PIPE OD 166.5 x 4.8 ; 437 L				150386210000			8.300
						IS1239			
02		Nb 125 ERW PIPE OD 140.8 x 4.8 ; 395 L				150386200000			6.300
						IS1239			
01		Nb 100 ERW PIPE OD 113.9 x 3.6 ; 356 L				150386190000			3.500
						IS1239			

HPVP CUSTOMER NO: 7906

REV 01	DATE	ALTERED :
ZONE		CHD & APPD:

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

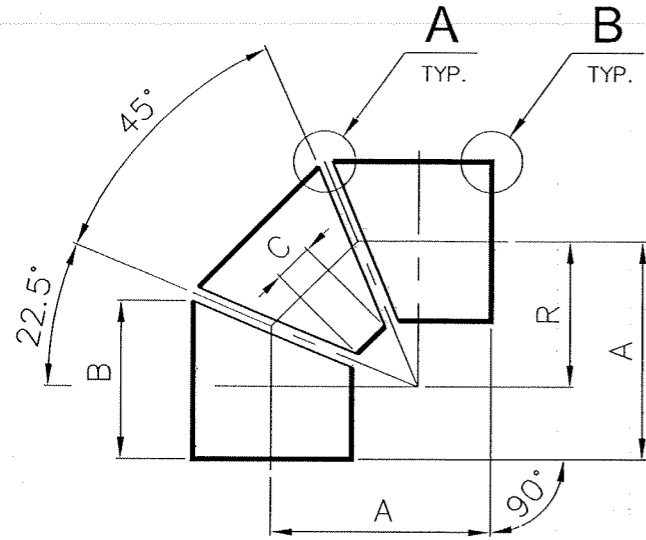


Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VIAKHPATNAM 530012

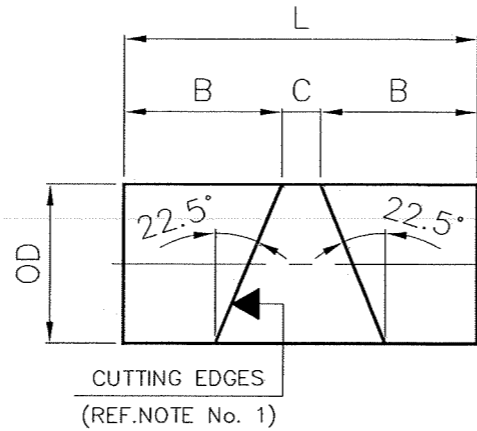
DRN	NAME	SIGNATURE	DATE
CHD	P.A.P.Muthu	-sd-	06-05-2006
APPD	M.Anbazhagan	-sd-	"
	S.V.Sivaramulu	-sd-	"

DEPT PE(FB)FS CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE NTS	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
TITLE					DRAWING NO :	REV
SEG.BEND 90°					3-43-000-00300	00
					3 43 005 U0064	

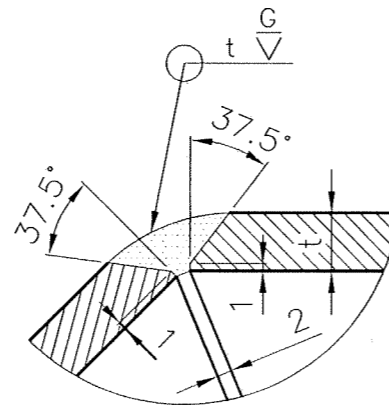
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DRAWING NO. 3 43 005 U0063



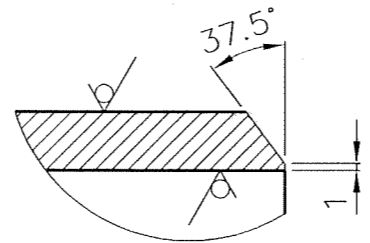
CUTTING PLAN



A



B



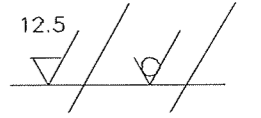
WELDING TABLE

TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD (mm)
t ∇	E 7018	~ OD x 6

NOTE :-

1. CUTTING ALLOWANCE MAY BE ADDED TO THE LENGTH.

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



VARIANT NUMBER	Nb	A	B	C	L	R
03	80	180	151	28	330	80
02	65	180	148	32	328	80
01	50	180	145	40	330	80

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY
03		Nb 80 ERW PIPE OD 89.5 x 4.80 ; 330 L				150386180000			3.300	
						IS1239				
02		Nb 65 ERW TUBE OD 76.0 x 3.25 ; 328 L				150380580000			1.900	
						IS1239				
01		Nb 50 TUBE OD 60.3 x 3.91 ; 330 L				151820300000			1.800	
						SA106GRB				

HPVP CUSTOMER NO: 7906

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		SIGNATURE		DATE	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM 530012 355-055		DRN	P.A.P.Muthu	-sd-	06-05-2006		
		CHD	M.Anbazhagan	-sd-	"		
		APPD	S.V.Sivaramulu	-sd-	"		
DEPT PE(FB)FS CODE	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
129		First Angle	NTS	-	-		
TITLE					DRAWING NO :	REV	
SEG.BEND 90°					3-43-000-00299 3-43-005-U0063	00	

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REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

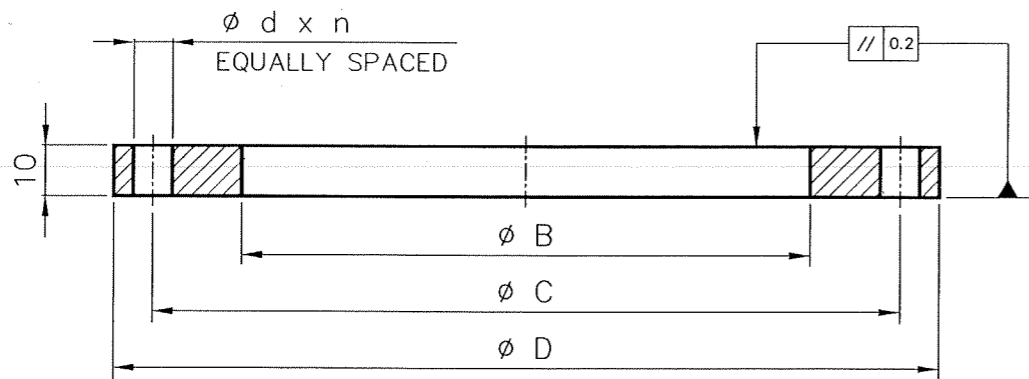
DRAWING NO: 3-43-000-00284
3-43-005-U0059

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

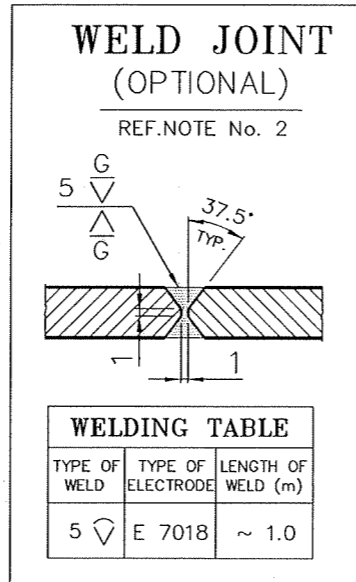
NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. MAXIMUM TWO OPTIONAL JOINTS ALLOWED.

12.5



VARIANT NUMBER	Nb	B	C*	D	d	n*	STANDARD
12	800	819	870	941	19	24	* ASME B16.47 CLASS 150 SERIES 'B'
11	900	921	1000	1057	24	44	
10	1300	1327	1437	1494	32	52	
09	1400	1172	1365	1422	18	40	
08	1200	1220	1385	1442	32	44	
07	1150	1172	1335	1392	32	44	
06	900	921	1009.7	1057	24	44	
05	850	870	957.3	1005	24	40	
04	800	819	900.2	941	23	48	
03	750	768	846.1	887	23	44	
02	700	717	795.3	837	23	40	
01	650	666	744.5	786	23	36	



DRG. APPLICABLE FOR AIR SYSTEM ONLY

SIZE	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	
32"	12		Nb 800 PLATE 10 x D 941				150111320000 IS2062FE410GRA			11.700	
36"	11		Nb 900 PLATE 10 x D 1057				150111320000 IS2062FE410GRA			15.100	
52"	10		Nb 1300 PLATE 12 x D 1494				150111320000 IS2062FE410GRA			26.740	
56"	09		Nb 1400 PLATE 10 x D 1422				150111320000 IS2062FE410GRA			39.180	
48"	08		Nb 1200 PLATE 10 x D 1442				150111320000 IS2062FE410GRA			36.641	
46"	07		Nb 1150 PLATE 10 x D 1392				150111320000 IS2062FE410GRA			32.000	
36"	06		Nb 900 PLATE 10 x D 1057				150111320000 IS2062FE410GRA			15.100	
34"	05		Nb 850 PLATE 10 x D 1005				150111320000 IS2062FE410GRA			14.200	
32"	04		Nb 800 PLATE 10 x D 941				150111320000 IS2062FE410GRA			11.700	
30"	03		Nb 750 PLATE 10 x D 887				150111320000 IS2062FE410GRA			10.800	
28"	02		Nb 700 PLATE 10 x D 837				150111320000 IS2062FE410GRA			10.100	
26"	01		Nb 650 PLATE 10 x D 786				150111320000 IS2062FE410GRA			9.500	

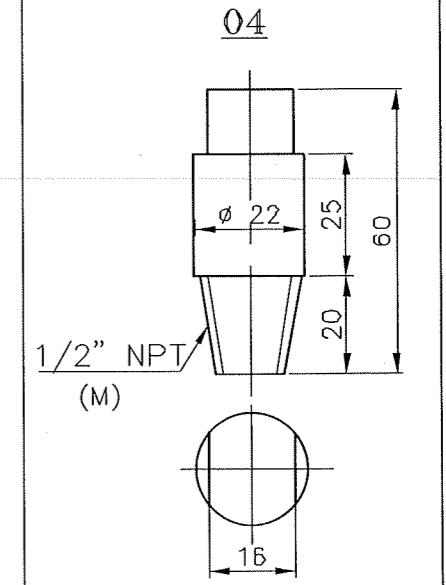
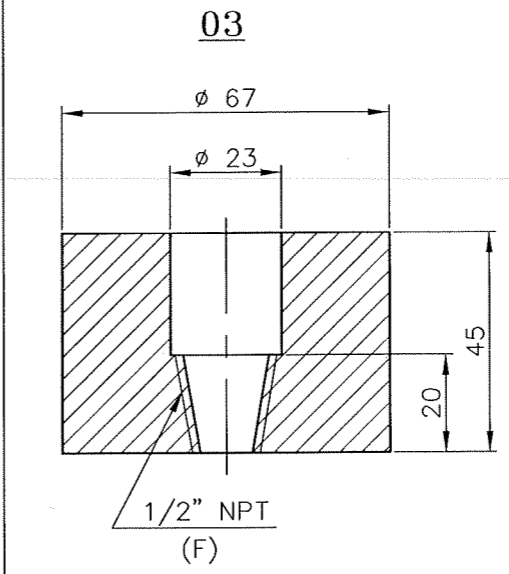
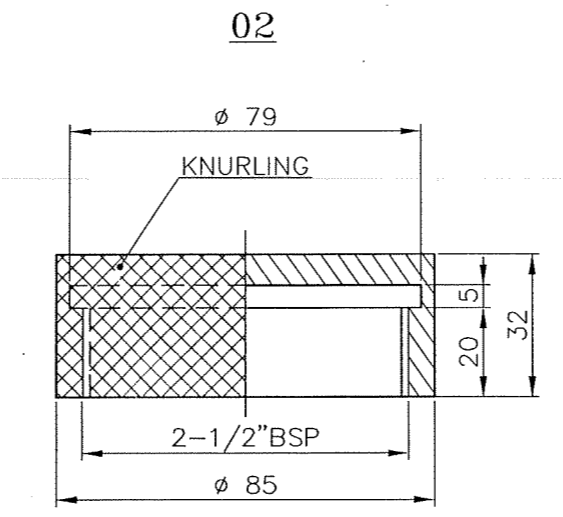
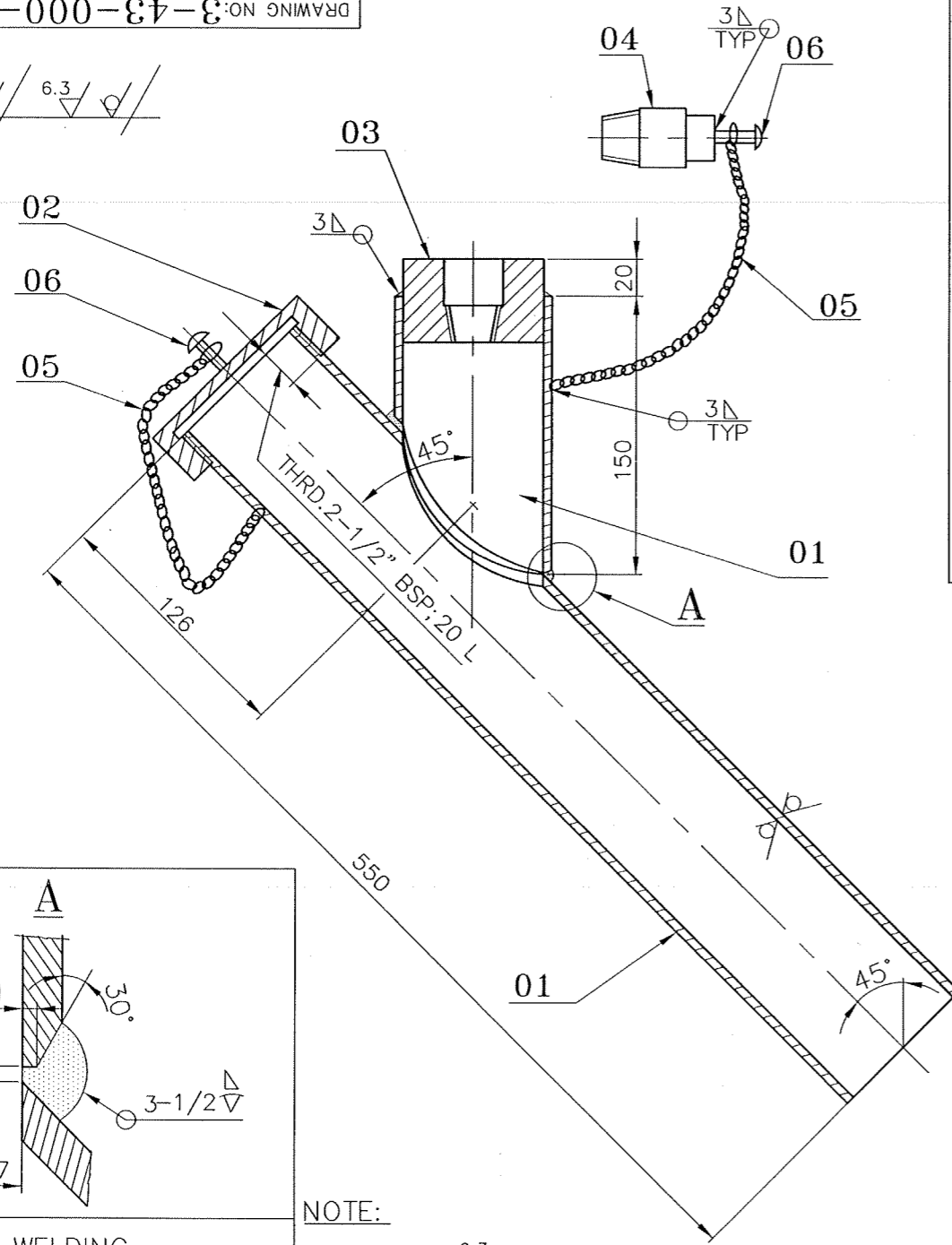
HPVP CUSTOMER NO: 7906

REV	DATE	ALTERED :	DATE	ALTERED :	DATE	ALTERED :	DATE	ALTERED :	DATE	ALTERED :	DATE	ALTERED :		
REV 03	20.5.2013	CHD & APPD: R.MANO HARAN	REV 04	10.11.14	CHD & APPD: GANGADHAR M CH S	REV 01	21.09.10	CHD & APPD: R M	REV 05	10.05.17	CHD&APPD: R.MANO	REV 02	13.07.12	CHD & APPD: GSK
ZONE	VAR 09 ADDED		ZONE	VAR 10 ADDED		ZONE	VAR 07 ADDED		ZONE	VAR 11 & 12 ADDED		ZONE	VAR 08 ADDED	
REV 05	10.05.17	CHD&APPD: R.MANO	REV 04	10.11.14	CHD & APPD: GANGADHAR M CH S	REV 01	21.09.10	CHD & APPD: R M	REV 05	10.05.17	CHD&APPD: R.MANO	REV 02	13.07.12	CHD & APPD: GSK
ZONE	VAR 11 & 12 ADDED		ZONE	VAR 10 ADDED		ZONE	VAR 07 ADDED		ZONE	VAR 11 & 12 ADDED		ZONE	VAR 08 ADDED	

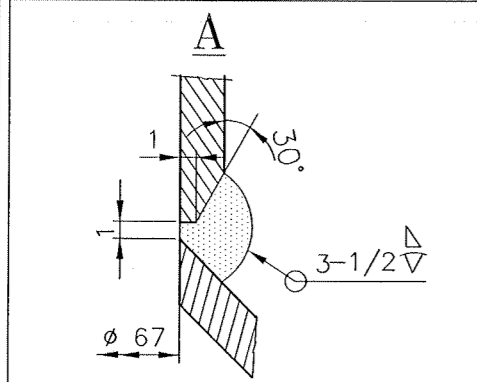
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		DRN	NAME	SIGNATURE	DATE
		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		CHD	P.A.P.Muthu	-sd-	01-01-2006
		355-055		APPD	M.Anbazhagan	-sd-	"
				APPD	S.V.Sivaramulu	-sd-	"
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)		REF TO ASSY / OLD DWG	
PE(FB)FS	129	1st Angle	NTS	-		-	
TITLE				DRAWING NO :		REV	
FLANGE (B10)				3-43-000-00284		05	
ASME CLASS 150 SERIES B				3-43-005-U0059		/00	

DRAWING NO: 3-43-000-00265
3-43-005-U0057

12.5 / 6.3



FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP D23 0299



NOTE:
1. MACHINE ∇ 6.3 FOR ALL THREADS.
2. FIX THE CHAIN ON TUBE, SUITABLY.

WELDING		
TY.OF WELD	TY OF ELECTRODE	WELD LENGTH (M)
3Δ	E 7018	1.0
3-1/2∇		0.5

REV	DATE	ALTERED : T.M.P
04	20.04.2013	CHD & APPD: M.Anbazhagan
02	12.11.09	CHD & APPD:Md.F.B
01	09.05.09	CHD & APPD: M.Anbazhagan

REV	DATE	ALTERED : T.M.P	REV	DATE	ALTERED : T.M.P	REV	DATE	ALTERED : R.Rajasekar/P.A.P.Muthu
03	14.10.10	CHD & APPD:Md.F.B	02	12.11.09	CHD & APPD:Md.F.B	01	09.05.09	CHD & APPD: M.Anbazhagan
ZONE ITEM No.05 SIZE & MATEL CODE/ WT. REVISED.			ZONE ITEM No.05 SIZE & MATEL CODE/ WT. REVISED.			ZONE ITEM No. 01 MATERIAL CODE AND ITEM Nos. 01,05 WEIGHT REVISED		

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
	06	SNAP HD RIVET 5 x 10				418010501000			0.002	
	05	CHAIN 3 x 17 x 12; 600 L				530131080002			0.200	
	04	ROUND D 22; 60 L				153391400000			0.200	
	03	ROUND D 67; 45 L				153391440000	SA105		1.000	
	02	ROUND D 85; 32 L				153391340000	SA105		0.500	
	01	TUBE D 76.1 x 4.5; 705 L				154841282151	SA192		6.010	
									1	

HPVP CUSTOMER NO:7906

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530017

DRN: M.Kalpana/PAPM
CHD: M.Anbazhagan
APPD: S.V.Sivaramulu

DATE: 20-08-04

DEPT PE(B)FS
CODE 129

ALL DIMENSIONS ARE IN MM

PROJECTION
SCALE: NTS

WEIGHT (Kg): 7.914

REF TO ASSY / OLD DWG: 3-43-000-00179

TITLE: **PR.MEASUREMENT**
1/2"NPT

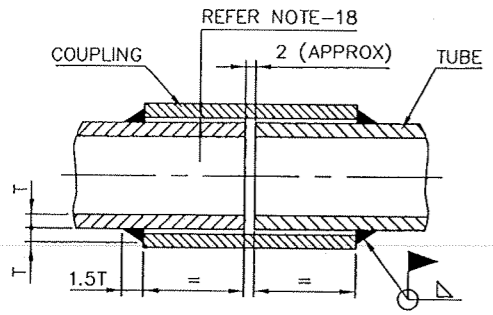
DRAWING NO: 3-43-000-00265
3-43-005-U0057

REV: 04/00

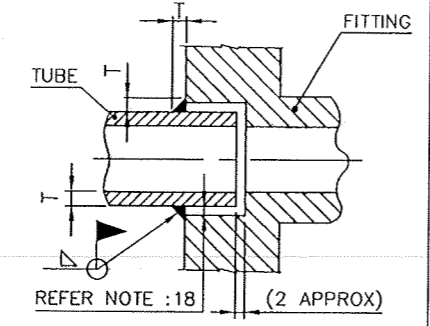
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

2-00-052-10106
DRAWING NO. 2-43-005-U0011

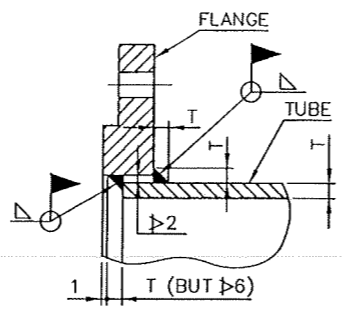
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD. NO TP 023 0299



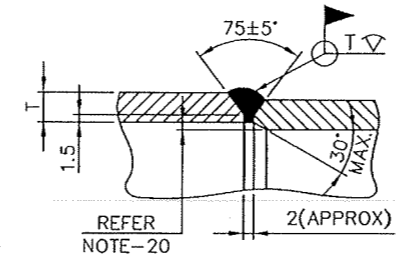
DETAIL-A
ST. BORE COUPLING



DETAIL-B
STD SW FITTINGS/VALVES
SW FLANGES



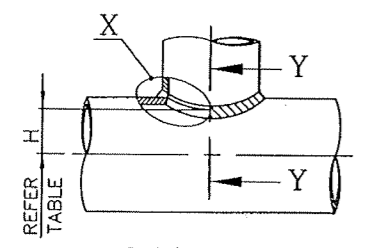
DETAIL-C
SLIP ON FLANGES



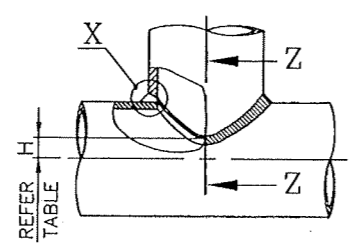
DETAIL-E
BUTT JOINT

NOTES:

- THE EQUIPMENT LAYOUT & ROUTING HAS BEEN DONE CONSIDERING SYSTEM REQUIREMENTS, SUCH AS, LEAST STAGNANT OIL AND STEAM LEGS. SHORTEST PIPING BETWEEN BURNER AND MAIN PIPES (CORNER RISERS & TIERS), DRAINABILITY, REDUCED PRESSURE LOSSES, MAINTENANCE SPACE, HEAD ROOM & LESS SITE WORK AND FOR THE BEST BURNER & IGNITOR PERFORMANCE FOLLOW THEM. IN CASE OF ANY UNFORESEEN MINOR INTERFERENCE, ALTER THE ARRANGEMENT WITH MINIMUM CHANGES KEEPING IN VIEW THE ABOVE REQUIREMENTS.
- EMPLOY QUALIFIED WELDERS FOR PRESSURE PARTS WELDING.
- USE FOLLOWING ELECTRODES OR THEIR EQUIVALENTS :
PIPE WELDING E-7018(CERT);
STRUCTURAL WELDING E7018; TIG ROOT RT 1/2 MO.
- THOROUGHLY CLEAN THE PIPES AND FITTINGS BEFORE WELDING ON TO THE LINES.
- UP TO 2.0" SIZE IN ALL PIPE LINES USE SOCKET WELDABLE(SW) FITTINGS, WHEREVER SUPPLIED AND ARC WELD THEM (DETAIL-B).
- PERFORM TIG ROOT WELDING ON BUTT & BRANCH JOINT OF LARGE BORE LINES; AND ALSO ON SMALL BORE LINES, IF SW FITTINGS ARE NOT AVAILABLE.
- ARC WELD THE SLIP ON WELDED PLATE FLANGES, REFER DETAIL-C.
- PREPARE EDGES FOR BUTT JOINTS REFER DETAIL-E.
- FABRICATE BRANCHES FOR ADDITIONAL REQUIREMENTS, IF ANY, REFER DETAIL-D.
- DO NOT FULL WELD THE COUNTER FLANGES OR UNIONS OF SOFT SEATED VALVES, WITH VALVES MOUNTED IN BETWEEN.
- CUT TO SIZE AND USE THE PIPES, FLATS Etc. WHICH ARE ISSUED IN RUNNING METERS, ALSO CUT THE STRAIGHT LENGTHS OF SMOOTH BENDS TO SUIT ASSY, IF REQUIRED.
- FOR ADDITIONAL BEND REQUIREMENTS OF SIZE 2.0" AND BELOW IF ANY MAKE BENTS WITH R=3 D.
- ARRANGE HFO DRAIN VALUES CLOSER TO THE MAIN PIPE; AND ALLOW LEAST HFO DEAD LEGS IN INSTRUMENT BRANCHINGS.
- STEAM / ELECTRIC TRACE AS PER INSTRUCTIONS ISSUED UNDER PGMA 42-xxx / 42-8xx / RESPECTIVE PGMA's.
- PERFORM HYDRAULIC TEST TO 1.5 TIMES OF MAX. OPERATING PR. AND AIR BY.
- STEAM BLOW THE LINES AND CLEAN BY OIL CIRCULATION AS PER STANDARD INSTRUCTIONS.
- FILL THE HFO LINE SEAL POTS WITH GLYCERIN OR GLYCOL & THE STEAM LINE CONDENSING LOOP WITH WATER.
- THE BORE AND THE PIPE SHOULD BE KEPT CONCENTRIC.
- THE GAP BETWEEN THE FLANGE BORE AND THE PIPE SHOULD NOT BE MORE THAN 2MM AT ANY POINT.
- I.D CHAMFERING IS NOT REQUIRED WHEN MISMATCH IS 2MM OR LESS.



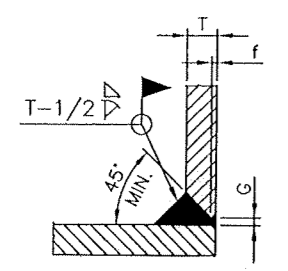
DETAIL-D
UN EQUAL BRANCH



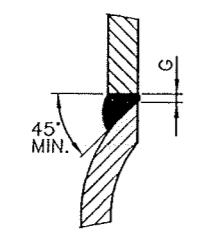
DETAIL-D
EQUAL BRANCH

		DIMENSION-H							
MAIN PIPE	BRANCH PIPE	219.1x6.35	168.3x7.11	114.3x6.02	88.9x5.49	60.3x3.91	48.3x3.68	33.4x3.38	21.3x2.77
		219.1x6.35	37.0	78.0	97.0	102.5	106.5	107.5	108.5
168.3x7.11		34.0	67.0	74.5	80.0	81.5	83.0	84.0	
114.3x6.02			25.5	42.0	51.0	53.5	55.5	56.5	
88.9x5.49				21.5	36.0	39.5	42.5	44.0	
60.3x3.91					15.0	22.0	27.0	29.0	
48.3x3.68						13.0	20.0	23.0	
33.4x3.38							10.0	14.5	
21.3x2.77								7.0	

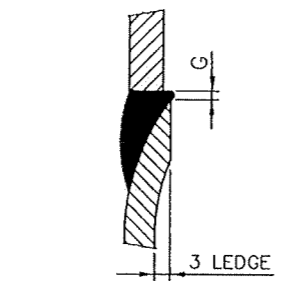
G = 1.7 TO 3.3 MM f = 0.8 TO 2.4 MM
DIMENSION 'H' AFTER ROUNDING THE SHARP CORNERS OF THE MAIN PIPE BORE.



DETAIL-X

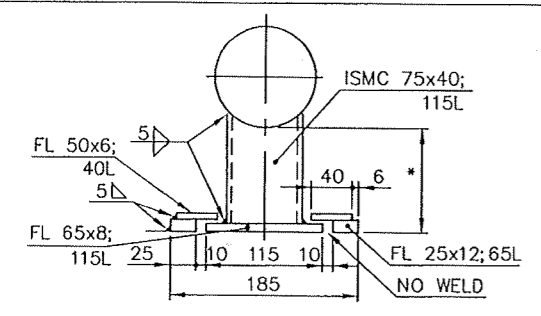


DETAIL-YY

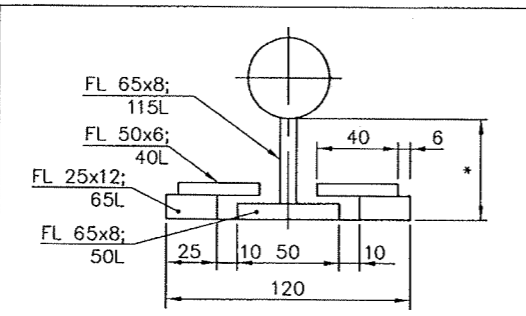


SECTION-ZZ

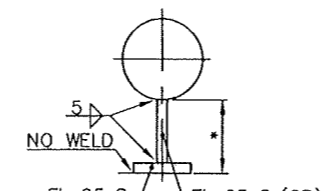
PIPE SUPPORTED DETAILS
(FOR INSULATED LINES)



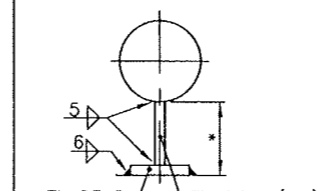
GUIDED SUPPORT
(LINE SIZE FROM 4.0" TO 32.0")



GUIDED SUPPORT
(LINE SIZE UP TO 3.0")



FREE SUPPORT



FIXED SUPPORT

HPVP CUSTOMER NO:7906

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **STANDARD**

DEPT	PE(FB)	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE	123			N.T.S		

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.		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012	NAME: S.KANDASWAMY SIGNATURE: -Sd- DATE: 25.11.1986
DRN: M.ANBZHAGAN CHD: S.K.SANTHANAM APPD: -Sd- DATE: 25.11.1986	DRAWING NO : 2-00-052-10106 2-43-005-U0011/00	REV: 02	TITLE: WELDING & ERECTION NOTES (F.O SYSTEM)

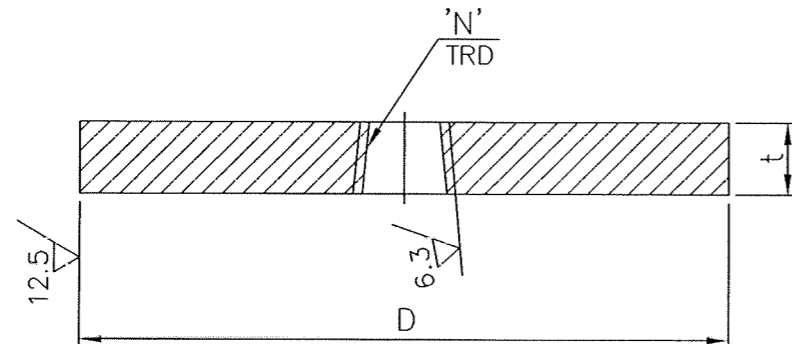
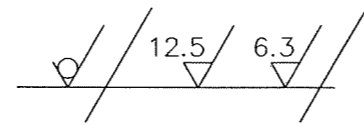
NOTE: - (FOR '*' DIM. REFER RESPECTIVE ERECTION DRAWING)

REV 02	DATE 02.11.'04	ALTERED : S.D.N CHD & APPD : K.S	REV 01	DATE	ALTERED : S.K.Swamy --Sd- CHD & APPD :
ZONE	DRAWING REDRAWN IN AUTOCAD.		ZONE	PIPE SUPPORTING DETAIL ADDED AS PER Q.C DECISION. REDRAWN.	

IT MUST NOT BE USED UNLESS SPECIFICALLY APPROVED BY BHEL IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.

REV 04	DATE 11.03.04	ALTERED : PAPM/-Sd-
CHD & APPD : MTP/-Sd-		
VAR. NO. 6 ADDED.		
REV 05	DATE 19.04.04	ALTERED : S.MANI
CHD & APPD : CPS		
REDRAWN AS AUTOCAD DRAWING		
REV 06	DATE 25.07.13	ALTERED : DHEERAJ
CHD & APPD : RAJMOHAN		
VAR NO. 07 ADDED.		

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



1" NPT	12	300
1" NPT	12	100
1" NPT	12	70
1" NPT	12	130
1/2" NPT	12	40
1" NPT	12	180
1" NPT	12	230
'N'	t	D

07	PL 12 x D 300	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			6.500
06	PL 12 x D 100	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			0.740
05	PL 12 x D 70	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			0.360
04	PL 12 x D 130	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			1.200
03	PL 12 x D 40	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			0.100
02	PL 12 x D 180	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			2.300
01	PL 12 x D 230	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			15 011 132			3.900
VARIANT NUMBER	DESCRIPTION	STD	MATERIAL SPECN	A/C/P	UNIT	QUANTITY

HPVP CUSTOMER NO : 7906

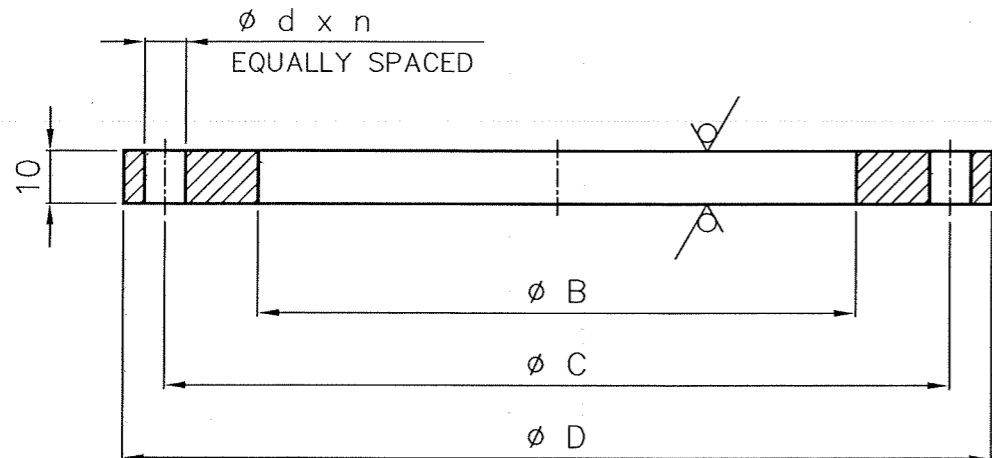
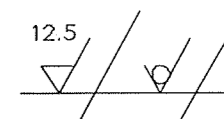
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANTS, VISAKHAPATNAM-530012 355-056	DRN	NAME PAP.MUTHU	SIGNATURE -Sd-	DATE 06.12.86
	CHD	GOPALASWAMY.C	-Sd-	"
	APPD	S.K.S	-Sd-	"
DEPT PE(B)/FS CODE 129	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE NTS	WEIGHT (Kg) -
TITLE THREADED COVER		REF TO ASSY / OLD DWG 4-43-000-00262		DRAWING NO : 4-43-000-00541 4-43-104-U0072
				REV 06 /00

DRAWING NO: 3-43-104-0069
18200-000-00281

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

NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. NO JOINT IS ALLOWED.



VARIANT NUMBER	Nb	B	C	D	d	n	STANDARD
11	600	616	749.3	813	33	20	* ASME B16.5 CLASS 150
10	500	513	635.0	700	30	20	
09	450	461	577.9	635	30	16	
08	400	410	539.8	597	27	16	
07	350	359	476.3	533	27	12	
06	300	327	431.8	483	23	12	
05	250	276	362.0	406	23	12	
04	200	222	298.5	343	23	8	
03	150	169	241.3	279	23	8	
02	125	143	215.9	254	23	8	
01	100	116	190.5	229	19	8	

SIZE	VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QUANTITY
24"	11		Nb 600 PLATE 10 x D 813				150110980000 IS2062FE410GRA			16.000	
20"	10		Nb 500 PLATE 10 x D 700				150110980000 IS2062FE410GRA			12.900	
18"	09		Nb 450 PLATE 10 x D 635				150110980000 IS2062FE410GRA			10.900	
16"	08		Nb 400 PLATE 10 x D 597				150110980000 IS2062FE410GRA			10.900	
14"	07		Nb 350 PLATE 10 x D 533				150110980000 IS2062FE410GRA			9.000	
12"	06		Nb 300 PLATE 10 x D 483				150110980000 IS2062FE410GRA			7.400	
10"	05		Nb 250 PLATE 10 x D 406				150110980000 IS2062FE410GRA			5.100	
8"	04		Nb 200 PLATE 10 x D 343				150110980000 IS2062FE410GRA			3.900	
6"	03		Nb 150 PLATE 10 x D 279				150110980000 IS2062FE410GRA			2.800	
5"	02		Nb 125 PLATE 10 x D 254				150110980000 IS2062FE410GRA			2.500	
4"	01		Nb 100 PLATE 10 x D 229				150110980000 IS2062FE410GRA			2.200	

DRG. APPLICABLE FOR AIR SYSTEM ONLY

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.

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT



Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELES PLANTS,
VIRAKHAPATNAM-FRONT 2
355-055

DRN	NAME	SIGNATURE	DATE
	P.A.P.Muthu	-sd-	01-01-2006
CHD	M.Anbazhagan	-sd-	"
APPD	S.V.Sivaramulu	-sd-	"

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
PE(FB)FS			NTS	-	-
CODE	129				

TITLE
FLANGE (C10)
ASME CLASS 150

DRAWING NO :
3-43-000-00281
3-43-104-0069

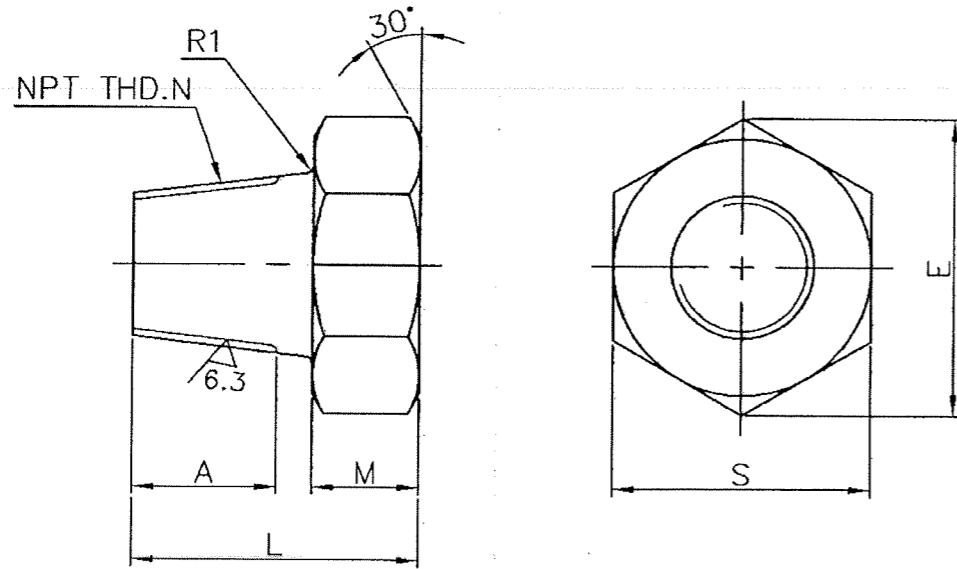
REV
00

HPVP CUSTOMER NO : 7906

3-42-000-00876
DRAWING NO: 3-43-104-00068

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

12.5/6.3



VAR. No.	NPT THD.N	A	M	L	E	S
01	1/8"	10	12	25	22	19
02	1/4"	15	12	30	22	19
03	3/8"	15	12	30	27.7	24
04	1/2"	20	12	35	34.6	30
05	3/4"	20	15	40	41.6	36
06	1"	25	15	45	47.3	41

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
06		SCREW PLUG 1"NPT ROD D 47.3 ; 45 L				15 339 142		C	0.370	
						SA 105				
05		SCREW PLUG 3/4"NPT ROD D 41.6 ; 40 L				15 339 142		C	0.240	
						SA 105				
04		SCREW PLUG 1/2"NPT ROD D 34.6 ; 35 L				15 339 141		C	0.140	
						SA 105				
03		SCREW PLUG 3/8"NPT ROD D 27.7 ; 30 L				15 339 140		C	0.080	
						SA 105				
02		SCREW PLUG 1/4"NPT ROD D 22 ; 30 L				15 339 139		C	0.050	
						SA 105				
01		SCREW PLUG 1/8"NPT ROD D 22 ; 25 L				15 339 139		C	0.040	
						SA 105				

HPVP CUSTOMER NO: 7906

REV	DATE	ALTERED : S.D.N	REV	DATE	ALTERED : S.JOHN -Sd-
02	20.10.04	CHD & APPD : K.S	01		CHD & APPD: SAMUVEL -Sd-
DRAWING REDRAWN IN AUTOCAD.			MACHINING SYMBOL ADDED.		

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TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

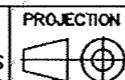


Bharat Heavy Electricals Ltd

UNIT: HEAVY PLATES & VESSELES PLANTS,
VEERHAIPTINAM-531117

DEPT FS
CODE 123

ALL DIMENSIONS ARE IN MM



SCALE

NTS

WEIGHT (Kg)

REF TO ASSY / OLD DWG

TITLE

NPT PLUGS

DRAWING NO :

3-42-000-00876 02
3 43 104 00068 00

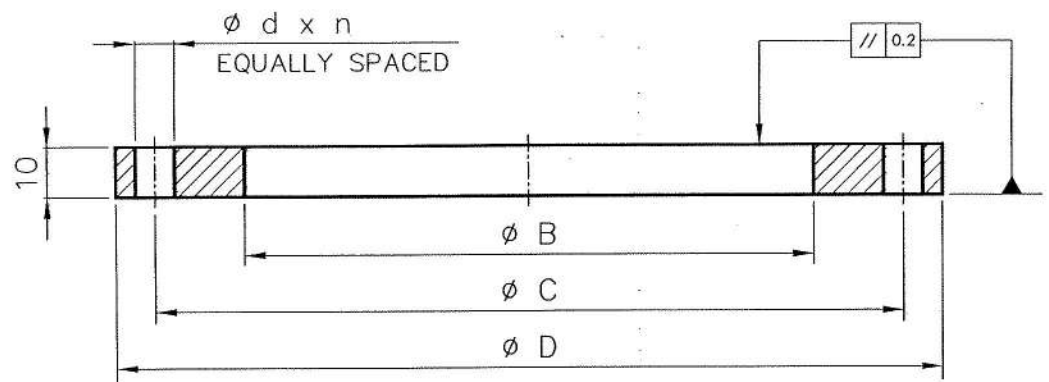
DRAWING NO: 3-43-000-00284
3-43-105-U0074

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

NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. MAXIMUM TWO OPTIONAL JOINTS ALLOWED.

12.5



12	800	819	870	941	19	24	
11	900	921	1000	1057	24	44	
10	1300	1327	1437	1494	32	52	
09	1400	1172	1365	1422	18	40	
08	1200	1220	1385	1442	32	44	
07	1150	1172	1335	1392	32	44	
06	900	921	1009.7	1057	24	44	
05	850	870	957.3	1005	24	40	
04	800	819	900.2	941	23	48	
03	750	768	846.1	887	23	44	
02	700	717	795.3	837	23	40	
01	650	666	744.5	786	23	36	
VARIANT NUMBER	Nb	B	C	D	d	n	STANDARD

* ASME B16.47
CLASS 150
SERIES 'B'

WELD JOINT (OPTIONAL)
REF.NOTE No. 2

WELDING TABLE

TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD (m)
5 V	E 7018	~ 1.0

DRG. APPLICABLE FOR AIR SYSTEM ONLY

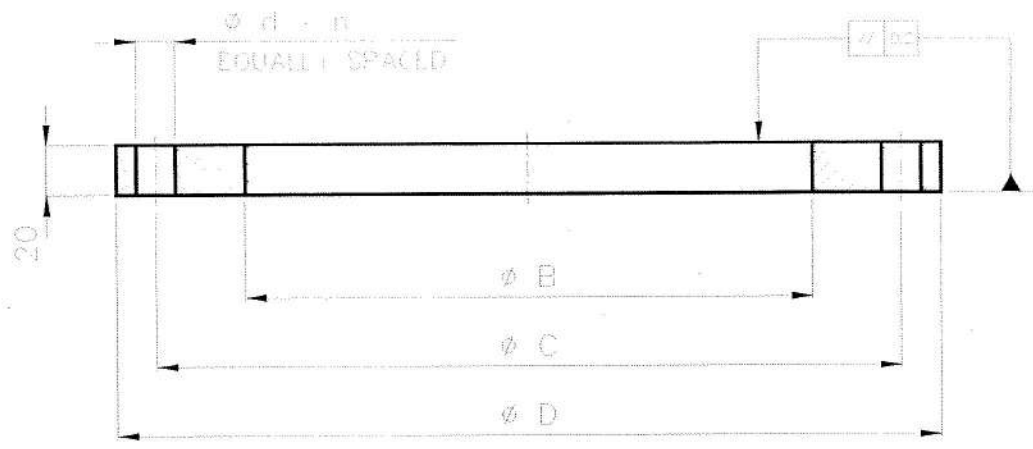
SIZE	VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNT	UNIT WEIGHT	GS
						VAR NO	MATERIAL SPECN		DI	QUANTITY	
32"	12		Nb 800 PLATE 10 x D 941				150111320000			11.700	
							IS2062FE410GRA				
36"	11		Nb 900 PLATE 10 x D 1057				150111320000			15.100	
							IS2062FE410GRA				
52"	10		Nb 1300 PLATE 12 x D 1494				150111320000			26.740	
							IS2062FE410GRA				
56"	09		Nb 1400 PLATE 10 x D 1422				150111320000			39.180	
							IS2062FE410GRA				
48"	08		Nb 1200 PLATE 10 x D 1442				150111320000			36.641	
							IS2062FE410GRA				
46"	07		Nb 1150 PLATE 10 x D 1392				150111320000			32.000	
							IS2062FE410GRA				
36"	06		Nb 900 PLATE 10 x D 1057				150111320000			15.100	
							IS2062FE410GRA				
34"	05		Nb 850 PLATE 10 x D 1005				150111320000			14.200	
							IS2062FE410GRA				
32"	04		Nb 800 PLATE 10 x D 941				150111320000			11.700	
							IS2062FE410GRA				
30"	03		Nb 750 PLATE 10 x D 887				150111320000			10.800	
							IS2062FE410GRA				
28"	02		Nb 700 PLATE 10 x D 837				150111320000			10.100	
							IS2062FE410GRA				
26"	01		Nb 650 PLATE 10 x D 786				150111320000			9.500	
							IS2062FE410GRA				

HPVP CUSTOMER NO : 7906

REV 03	DATE 20.5.2013	ALTERED : T.M.PERUMAL	CHD & APPD: R.MANOCHARAN	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 P.A.P.Muthu SIGNATURE -sd- DATE 01-01-2006							
REV 02	DATE 13.07.12	ALTERED : BIMAL.C	CHD & APPD: GSK											
REV 05	DATE 10.05.17	ALTERED : S.D.N.C	CHD&APPD: R.MANO	REV 01	DATE 21.09.10	ALTERED : M P	CHD & APPD: R M	DEPT PE(FB)FS CODE 129 ALL DIMENSIONS ARE IN MM PROJECTION SCALE NTS WEIGHT (Kg) - REF TO ASSY / OLD DWG -	TITLE FLANGE (B10) ASME CLASS 150 SERIES B	DRAWING NO : 3-43-000-00284 3-43-105-U0074	REV 05 /00			
ZONE	VAR 11 & 12 ADDED		ZONE	VAR 10 ADDED		ZONE	VAR 09 ADDED		ZONE	VAR 08 ADDED		ZONE	VAR 07 ADDED	

3-43-105-U0075
13-000-00285

FOR DIMENSIONS OF UNDETAILED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD 110 TP 625 0299



NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. MAXIMUM TWO OPTIONAL JOINTS ALLOWED.



VARIANT NUMBER	Nb	B	C	D	d	n	STANDARD
09	1300	1327	1436.6	1494	32	52	* ASME B16.47 CLASS 150 SERIES 'B'
08	1200	1224	1335	1392	32	44	
07	1200	1172	1335	1392	32	44	
06	900	921	1009.7	1057	24	44	
05	850	870	957.3	1005	24	40	
04	800	819	900.2	941	23	48	
03	750	768	846.1	887	23	44	
02	700	717	795.3	837	23	40	
01	650	666	744.5	786	23	36	

DRG APPLICABLE FOR
AIR SYSTEM ONLY

WELD JOINT (OPTIONAL)
REF. NOTE No 2

TYPE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD (mm)
10	E 7018	~ 1.0

SIZE	VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	QTY	UNIT WEIGHT
						VAR NO	MATERIAL SPECN	DI	QUANTITY
52"	09		Nb 1300 PLATE 20 x D 1494				150110810000 IS2062FE410GPB		51.525
48"	08		Nb 1200 PLATE 20 x D 1392				150110810000 IS2062FE410GPB		48.630
48"	07		Nb 1200 PLATE 20 x D 1392				150110810000 IS2062FE410GPB		63.930
36"	06		Nb 900 PLATE 20 x D 1057				150110810000 IS2062FE410GPB		30.200
34"	05		Nb 850 PLATE 20 x D 1005				150110810000 IS2062FE410GPB		28.400
32"	04		Nb 800 PLATE 20 x D 941				150110810000 IS2062FE410GPB		23.400
30"	03		Nb 750 PLATE 20 x D 887				150110810000 IS2062FE410GPB		21.600
28"	02		Nb 700 PLATE 20 x D 837				150110810000 IS2062FE410GPB		20.200
26"	01		Nb 650 PLATE 20 x D 786				150110810000 IS2062FE410GPB		19.000

HPVP CUSTOMER NO : 7906

REV	DATE	ALTERED	T.M. PERUMAL
02	12-05-11	CHD & APPD:	R MANOHARAN

REV	DATE	ALTERED	VIRAJ SETHI
03	09-06-14	CHD & APPD:	ANBAZHAGAN M

REV	DATE	ALTERED	M.P.
01	21-09-10	CHD & APPD:	R M

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANTS,
VIBAKHAPATNAM-530012
355-055

ORIN	NAME	SIGNATURE	DATE
ORIN	P A P Muthu	-sd-	01-01-2006
CHD	M. Anbazhagan	-sd-	**
APPD	S. V. Sivaramulu	-sd-	**

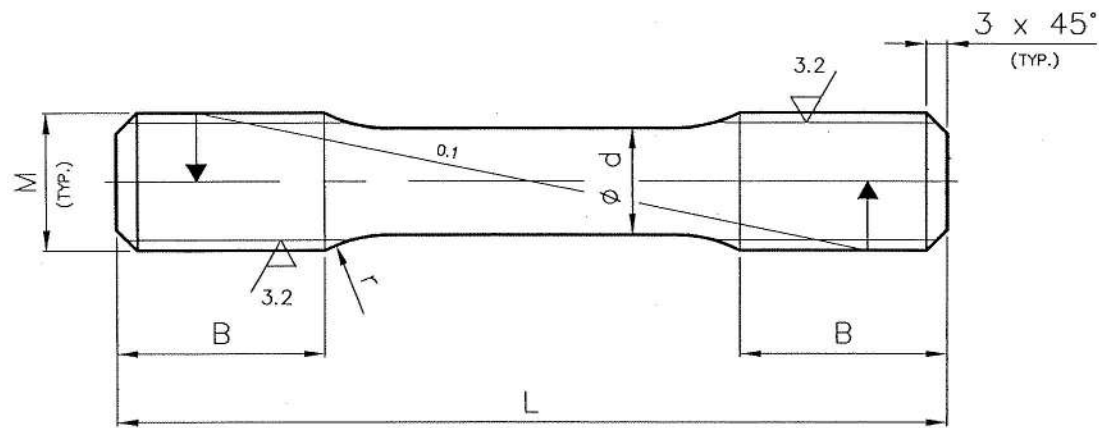
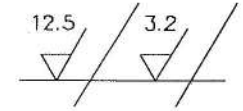
DERI: HELFDJFS ALL DIMENSIONS ARE IN MM PROJECT: WALE WEIGHT (Kg) REF TO ASS-7-160-DWG

CODE: 129

TITLE: **FLANGE (B20)**
ASME CLASS 150 SERIES B

DPA-BIG. NO : 3-43-000-00285
3 43 105 U0075 /00

REV: 03



NOTE :-

1. THREAD DETAILS & SPECIFICATION TO BE ASPER BPS (41106)

06	08	30	400	50	25	30
05	07	30	380	60	25	30
03	06	24	200	50	20	25
02	05	30	460	65	25	30
01	04	30	360	50	25	30
	03	27	220	50	21	30
	02	20	320	70	15	20
	01	20	280	60	15	20
VARIANT NUMBER	M	L	B	d	r	
	Thread Size					

06	08	ROUND D 30 ; 400 L			153391400000		1.667
					SA105		
05	07	ROUND D 30 ; 380 L			153391400000		1.5
					SA105		
	06	ROUND D 24 ; 200 L			153391390000		0.650
					SA105		
	05	ROUND D 30 ; 460 L			153391400000		1.992
					SA105		
04	04	ROUND D 30 ; 360 L			153391400000		1.5
					SA105		
	03	ROUND D 27 ; 220 L			153391400000		0.800
					SA105		
	02	ROUND D 20 ; 320 L			153391390000		0.600
					SA105		
	01	ROUND D 20 ; 280 L			153391390000		0.500
					SA105		
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT WEIGHT
					VAR NO	MATERIAL SPECN	QUANTITY

HPVP CUSTOMER NO : 7906

REV 06	DATE 21.08.19	ALTERED : DHEERAJ KUMAR CHD & APPD:GANGADHAR MCHS	REV 05	DATE 20.06.19	ALTERED : NIKHIL SANKAR CHD & APPD: SRINIVAS A	REV 04	DATE 27.07.17	ALTERED : PREETAM CHD & APPD: ARUL PRABU
ZONE	VAR NO 08 ADDED.		ZONE	VAR NO 07 ADDED.		ZONE	VAR NO 04 WEIGHT CORRECTED FROM 1.000 TO 1.50KG	
REV 03	DATE 24.04.2017	ALTERED:S.D.NEDUNCHEZHIAN CHD&APPD: R.MANOCHARAN	REV 02	DATE 27.07.2015	ALTERED: RAVI SHANKAR PRASAD CHD&APPD: GANGADHAR M CH S	REV 01	DATE 21.09.10	ALTERED : M.PERUMAL CHD & APPD: R.MANO
ZONE	VAR NO 06 ADDED		ZONE	VAR NO 05 ADDED		ZONE	VAR NO 04 ADDED	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANTS,
 355-055 VIBAKHAPATNAM-530012

DRN	NAME P.A.P.Muthu	SIGNATURE -sd-	DATE 01-01-2006
CHD	M.Anbazhagan	-sd-	"
APPD	S.V.Sivaramulu	-sd-	"

DEPT PE(FB)FS ALL DIMENSIONS ARE IN MM PROJECTION SCALE WEIGHT (Kg) REF TO ASSY / OLD DWG

CODE 129 NTS -

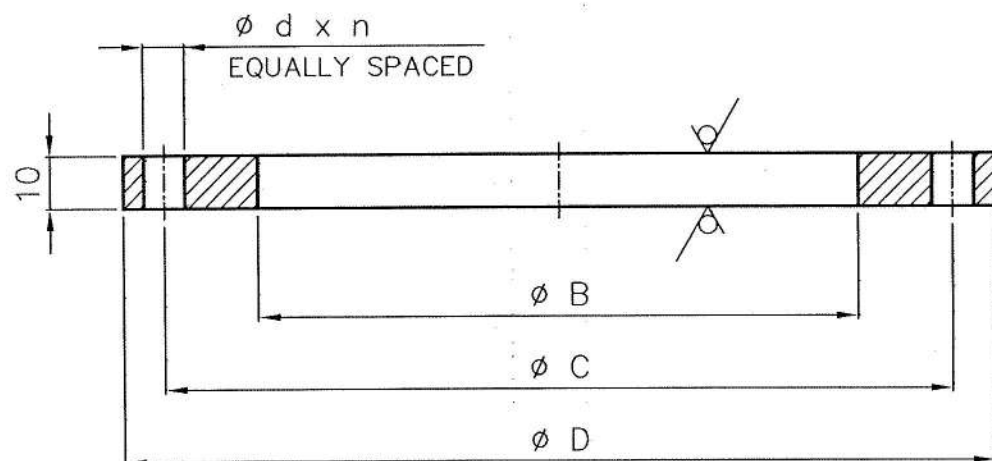
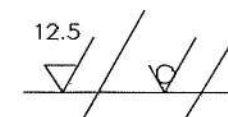
TITLE **STUD** DRAWING NO : 3-43-000-00292 REV 06 / 00
 3-13-105-U0077 / 00

DRAWING NO: 3-43-105-U0073
3-43-000-00281

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

NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. NO JOINT IS ALLOWED.



VARIANT NUMBER	Nb	B	C *	D	d	n *	STANDARD
11	600	616	749.3	813	33	20	* ASME B16.5 CLASS 150
10	500	513	635.0	700	30	20	
09	450	461	577.9	635	30	16	
08	400	410	539.8	597	27	16	
07	350	359	476.3	533	27	12	
06	300	327	431.8	483	23	12	
05	250	276	362.0	406	23	12	
04	200	222	298.5	343	23	8	
03	150	169	241.3	279	23	8	
02	125	143	215.9	254	23	8	
01	100	116	190.5	229	19	8	

SIZE	VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
						VAR NO	MATERIAL SPECN		DI	QUANTITY	
24"	11		Nb 600 PLATE 10 x D 813				150110980000			16.000	
							IS2062FE410GRA				
20"	10		Nb 500 PLATE 10 x D 700				150110980000			12.900	
							IS2062FE410GRA				
18"	09		Nb 450 PLATE 10 x D 635				150110980000			10.900	
							IS2062FE410GRA				
16"	08		Nb 400 PLATE 10 x D 597				150110980000			10.900	
							IS2062FE410GRA				
14"	07		Nb 350 PLATE 10 x D 533				150110980000			9.000	
							IS2062FE410GRA				
12"	06		Nb 300 PLATE 10 x D 483				150110980000			7.400	
							IS2062FE410GRA				
10"	05		Nb 250 PLATE 10 x D 406				150110980000			5.100	
							IS2062FE410GRA				
8"	04		Nb 200 PLATE 10 x D 343				150110980000			3.900	
							IS2062FE410GRA				
6"	03		Nb 150 PLATE 10 x D 279				150110980000			2.800	
							IS2062FE410GRA				
5"	02		Nb 125 PLATE 10 x D 254				150110980000			2.500	
							IS2062FE410GRA				
4"	01		Nb 100 PLATE 10 x D 229				150110980000			2.200	
							IS2062FE410GRA				

DRG. APPLICABLE FOR
AIR SYSTEM ONLY

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REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



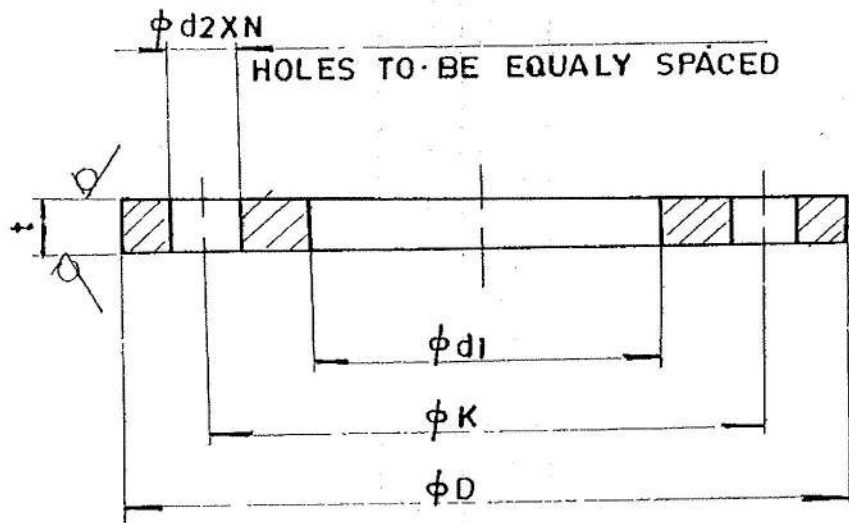
Bharat Heavy Electricals Ltd
UNIT: HEAVY FLATES & VESSELES PLANTS,
VIBAKHAPATNAM 530012

DEPT PE(FB)FS	ALL DIMENSIONS ARE IN MM	PROJECTION SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 129		NTS	-	
TITLE FLANGE (C10) ASME CLASS 150				DRAWING NO : 3-43-000-00281 3-43-105-U0073
				REV 00

HPVP CUSTOMER NO : 7906

DRAWING NO 3-43-105-U0071
3-43-000-00202

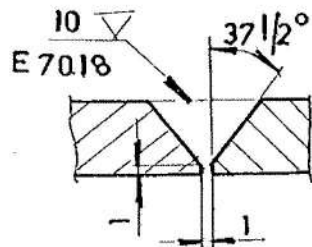
$\frac{1}{\phi} / 12.5$



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15	632	690	750	11	10	10	
14	814	880	940	13	20	10	
13	814	878	988	18	24	10	
12	168	241	280	4	4	5	
11	460	578	635	32	16	10	
10	274	362	406	26	12	10	
09	75	140	178	19	4	8	
08	169	241	279	22	8	10	ANSI B16.5 150 LB
07	358	476	533	28	12	10	
06	115	200	250	18	8	6	
05	115	145	185	18	4	8	
04	142	210	250	18	8	8	
03	275	350	395	23	12	10	
02	256	292	326	12	8	10	
01	230	300	343	22	8	10	
VAR NO.	d1	K	D	d2	N	t	REMARKS

FOR JOINTS



NOTE:
JOINTS ARE PREFERRED ONLY FOR 500 MM O.D. & ABOVE AND THE MAX NO OF JOINTS PERMISSIBLE IS THREE ONLY

15	Nb 625 PL 10 X D 750		15-011-098 IS2062 GR.A	10	000
14	Nb 800 PL 10 X D 940		15-011-098 IS2062 GR.A	13	500
13	Nb 800 PL 10 X D 938		15-011-098 IS2062 GR.A	13	000
12	Nb 150 PL 5 X D 280		15-011-029 IS2062 GR.A	1	500
11	Nb 450 PL 10 X D 635		15-011-098 IS2062 GR.A	10	804
10	Nb 250 PL 10 X D 406		15-011-098 IS2062 GR.A	5	000
09	Nb 65 PL 8 X D 178		15-011-027 IS2062 GR.A	1	200
08	Nb 150 PL 10 X D 279		15-011-098 IS2062 GR.A	2	800
07	Nb 350 PL 10 X D 533		15-011-098 IS2062 GR.A	9	000
06	Nb 100 PL 6 X D 210-250		15-011-092 IS2062 GR.A	1	200
05	Nb 100 PL 8 X D 185		15-011-027 IS2062 GR.A	1	000
04	Nb 125 PL 8 X D 250		15-011-027 IS2062 GR.A	2	000
03	Nb 250 PL 10 X D 395		15-011-098 IS2062 GR.A	4	500
02	Nb 250 PL 10 X D 326		15-011-098 IS2062 GR.A	2	500
01	Nb 200 PL 10 X D 343		15-011-098 IS2062 GR.A	4	000

VARIANT NO	ITEM NO	DESCRIPTION	STD	DRAWING NO	ITEM NO	MATL CODE	A/C	UNIT	UNIT WT	GS
VAR NO						MATL SPEC		DI	QTY	

HPWP CUSTOMER NO : 7906

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
JNT. HEAVY PLATES & VESSELS PLANTS,
V. BAKHAPATNAM-530012

DRN	NAME	SIGN	DATE	NO OF VAR
CHD	PAP. MUTHU	CV Rajagopal	15-5-90	
APPD	C.G.S.			

REV	DATE	ALTERED	REV	DATE	ALTERED
02	10/01/02	CHECKED	01	19-2-91	CHECKED
MATL SPEC CORRECTED			VAR. No 06 ALTERED		
			03	29-11-03	
			MATL SPECN. UPDATED		

DEPT	GRADE OF UNTOOL DIM	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DRG	ITEM NO
PE (FB)	01 M 11	NTS			
CODE					
123					
TITLE			CARD CODE	DRAWING NO	REV
FLANGE			U 01	3-43-000-00202 3 43 105 U0071	03 00

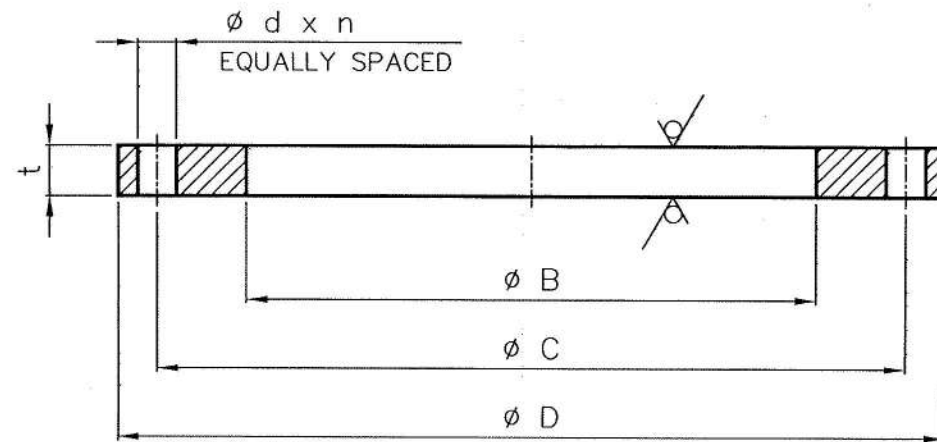
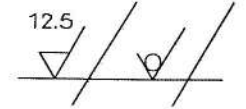
MATL UPDATED, VAR NO. 15, ON 29-11-03

DRAWING NO: 3-43-000-00287 3 43 105 U0076

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

NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. NO JOINT IS ALLOWED.



VARIANT NUMBER	Nb	B	C	D	d	n	t	REMARKS
10	150	170	270	318	23	12	10	ASME B16.5 CLASS 300
09	400	360	539.8	597	27	16	10	
08	200	222	300	343	23	8	10	
07	500	513	635.0	700	27	20	10	ASME B16.5 CLASS 150
06	450	461	577.9	635	27	16	10	
05	150	169	300	343	23	8	10	
04	150	169	240	280	23	8	10	
03	100	116	175	229	19	4	10	
02	80	91	150	190	19	4	10	
01	40	50	98.6	127	15	4	6	

DRG. APPLICABLE FOR AIR SYSTEM ONLY

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN	DI		QUANTITY
10		Nb 150 PLATE 10 x D 318				152110980000			4.070
						IS2062FE410GRA			
09		Nb 400 PLATE 10 x D 597				152110980000			13.300
						IS2062FE410GRA			
08		Nb 200 PLATE 10 x D 343				152110980000			3.954
						IS2062FE410GRA			
07		Nb 500 PLATE 10 x D 700				152110980000			13.100
						IS2062FE410GRA			
06		Nb 450 PLATE 10 x D 635				152110980000			11.100
						IS2062FE410GRA			
05		Nb 150 PLATE 10 x D 343				152110980000			5.300
						IS2062FE410GRA			
04		Nb 150 PLATE 10 x D 280				152110980000			2.900
						IS2062FE410GRA			
03		Nb 100 PLATE 10 x D 229				152110980000			2.300
						IS2062FE410GRA			
02		Nb 80 PLATE 10 x D 190				152110980000			1.600
						IS2062FE410GRA			
01		Nb 40 PLATE 6 x D 127				152110920000			0.500
						IS2062FE410GRA			

HPVP CUSTOMER NO : 7906

REV	DATE	ALTERED: S.D.Nedunchezian	REV	DATE	ALTERED : S.D.Nedunchezian	REV	DATE	ALTERED : B.CHOWDHURY
03	13.02.15	CHD&APPD: R.Manoharan	02	24.12.14	CHD & APPD: GANGADHAR M CH S	01	201212	CHD & APPD: G.SARAVANAKUMAR
ZONE	VARIANT 10 ADDED		ZONE	VARIANT 09 ADDED		ZONE	VARIANT 08 ADDED	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELES PLANTS,
 VISAKHAPATNAM-530012
 355-055

DRN	NAME	SIGNATURE	DATE
CHD	P.A.P.Muthu	-sd-	01-01-2006
APPD	M.Anbazhagan	-sd-	"
	S.V.Sivaramulu	-sd-	"

DEPT PE(FB)FS ALL DIMENSIONS ARE IN MM PROJECTION SCALE WEIGHT (Kg) REF TO ASSY / OLD DWG

129 NTS -

TITLE **FLANGE (G1)** (GENERAL)

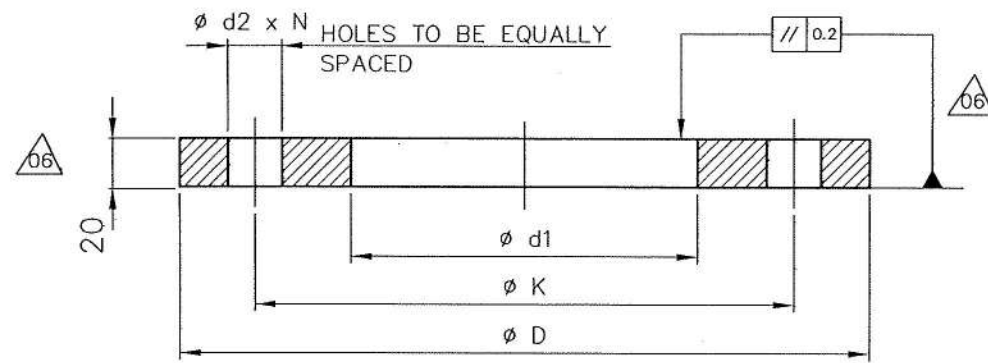
DRAWING NO : 3-43-000-00287 3-43-105-U0076

REV 03 / 00

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.

DRAWING NO: 3-43-000-00270
3 43 105 10072

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



NOTE :-

1. DEBURR CUT EDGES ; ROUND CORNERS WITH RADIUS 1 mm.
2. MAXIMUM TWO OPTIONAL JOINTS ALLOWED.

12.5
✓

09	904	1009.7	1057	24	44	10
08	438	488	538	12	12	10
07	78	145	185	18	4	10
06	143	210	250	18	8	10
05	717	795	837	23	40	10
04	717	795	837	23	40	20
03	664	745	786	23	36	20
02	664	730	830	14	20	10
01	168	300	343	23	8	10
VAR No.	d1	K	D	d2	N	t

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY
VAR NO						MATERIAL SPECN	DI		QUANTITY	
09		PLATE 10 x D 1057				150110980000			17.000	
						IS2062FE410GRA				
08		PLATE 10 x D 538				150110980000			6.000	
						IS2062FE410GRA				
07		PLATE 10 x D 185				150110980000			1.700	
						IS2062FE410GRA				
06		PLATE 10 x D 250				150110980000			2.500	
						IS2062FE410GRA				
05		PLATE 10 x D 837				150110980000			10.200	
						IS2062FE410GRA				
04		PLATE 20 x D 837				150111500000			20.400	
						IS2062FE410GRA				
03		PLATE 20 x D 786				150111500000			19.600	
						IS2062FE410GRA				
02		PLATE 10 x D 830				150110980000			15.000	
						IS2062FE410GRA				
01		PLATE 10 x D 343				150110980000			5.300	
						IS2062FE410GRA				

HPVP CUSTOMER NO : 7906

REV 06	DATE 17.5.2013	ALTERED: T.M.PERUMAL CHD & APPD: M.Anbazhagan	REV 05	DATE 27.02.09	ALTERED: R.Rajosekar-P.A.P.Muthu CHD & APPD: M.Anbazhagan
NOTE ADDED. M/c DETAIL ALTERED.			VAR.No. 09 ADDED.		
REV 04	DATE 05.09.08	ALTERED: P.A.P.Muthu CHD & APPD: M.Thandapani	REV 03	DATE 19.03.07	ALTERED: P.A.P.Muthu CHD & APPD: J.V.V.A.K
VAR.No. 08 ADDED.			VAR.Nos. 06 & 07 ADDED.		
REV 02	DATE 07.11.05	ALTERED: T.M.P CHD & APPD: P.A.P.Muthu	REV 01	DATE 14.10.05	ALTERED: P.A.P.Muthu CHD & APPD: D.V.K.
VAR.Nos. 04 & 05 ADDED.			VAR.Nos. 02 & 03 ADDED.		

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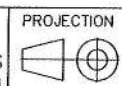
TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



Bharat Heavy Electricals Ltd
JNTU HEAVY PLATES & VESSELS PLANTS,
VISAKHAPATNAM 530012

DEPT
PE(FB)FS
CODE
129

ALL
DIMENSIONS
ARE IN MM



PROJECTION
SCALE
NTS

WEIGHT (Kg)

REF TO ASSY / OLD DWG

TITLE

FLANGE

DRAWING NO :

3-43-000-00270
3-43-105-10072

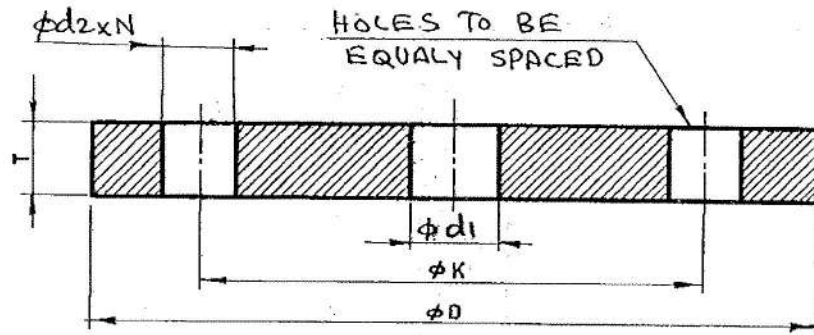
REV
06
/00

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

05-229/C

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12.5
✓



04	50	210	250	18	8	10	
03	150	476	533	29	12	10	
02	100	360	385	09	12	10	
01	100	450	470	10	12	10	
VARIANT NO	d1	K	D	d2	N	T	REMARKS

04		PL 10 x 250			15 011 098		3200
					IS 2062 GRA		
03		PL 10 x 533			15 011 098		15500
					IS 2062 GRA		
02		PL 10 X D 385			15 011 098		8500
					IS 2062 GRA		
01		PL 10 X D470			15 011 098		13000
					IS 2062 GRA		
VARIANT NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	ITEM NO.	MATL. CODE	UNIT WT.
					VAR. NO.	MATL. SPEC.	QTY.

HPVP CUSTOMER NO: 7906

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd.,
UNIT: HEAVY PLATES & VESSELS PLANTS
VIS AKHAPATNAM-530012.

DRN. NAME CR SIGN/ DATE 13.10.88 NO. OF VAR.

CHD. GOPALSAMY-C

APPD. S K S

DEPT. PE (EB2) GRADE OF UNTOL. DIM. 91M17 SCALE NTS WEIGHT (kg.) REF. TO ASSY./OLD DRG. ITEM NO.

TITLE **ORIFICE** CARD CODE U 01 DRAWING NO. 3 43 000 00188 3-43-105-U0070 REV. 02/00

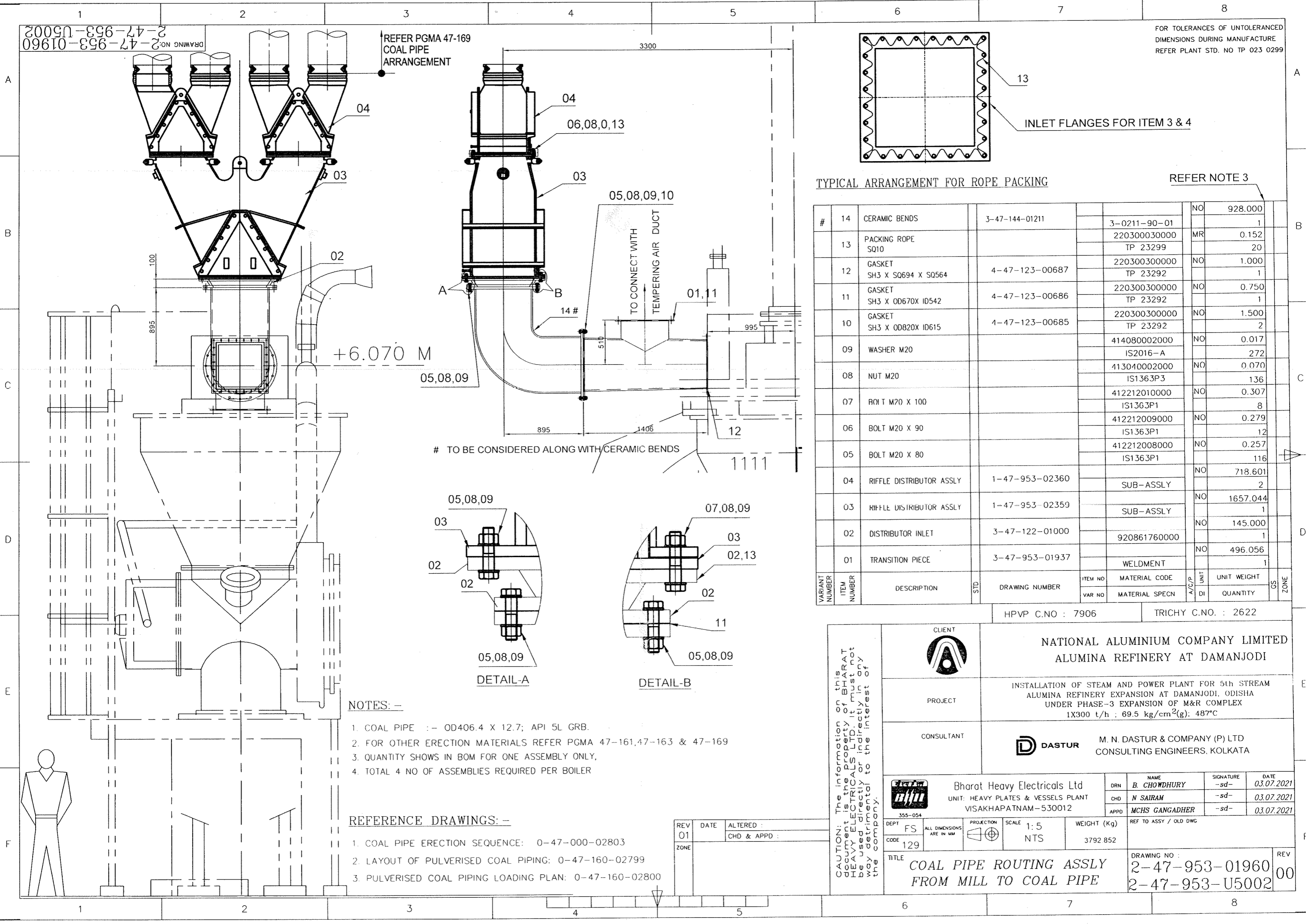
REV 02	DATE 24-03-04	ALTERED CHECKED	ALTERED	REV. 01	DATE 29/01/02	ALTERED CHECKED
MATL. UPDATED			MATL. SPEC. UPDATED.			

mup VAR No. 04

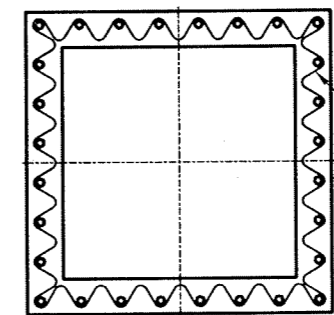
Size A3

20050-01960-953-47-953-01960
 DRAWING NO: 2-47-953-U5002

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



REFER PGMA 47-169
 COAL PIPE
 ARRANGEMENT



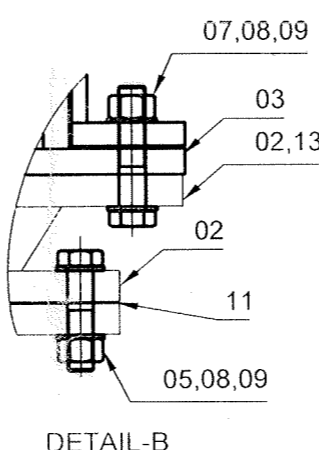
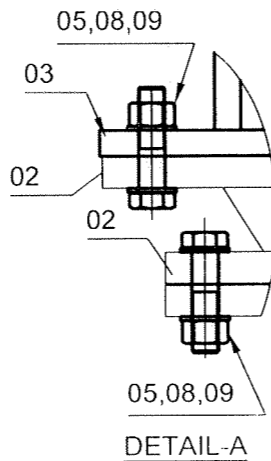
INLET FLANGES FOR ITEM 3 & 4

TYPICAL ARRANGEMENT FOR ROPE PACKING

REFER NOTE 3

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/S/B	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO	MATERIAL SPECN						DI	QUANTITY		
14	CERAMIC BENDS		3-47-144-01211		3-0211-90-01		NO	928.000		
					220300030000		MR	0.152		
					TP 23299			20		
13	PACKING ROPE SQ10				220300300000		NO	1.000		
					TP 23292			1		
12	GASKET SH3 X SQ694 X SQ564		4-47-123-00687		220300300000		NO	0.750		
					TP 23292			1		
11	GASKET SH3 X OD670X ID542		4-47-123-00686		220300300000		NO	0.750		
					TP 23292			1		
10	GASKET SH3 X OD820X ID615		4-47-123-00685		220300300000		NO	1.500		
					TP 23292			2		
09	WASHER M20				414080002000		NO	0.017		
					IS2016-A			272		
08	NUT M20				413040002000		NO	0.070		
					IS1363P3			136		
07	ROU T M20 X 100				412212010000		NO	0.307		
					IS1363P1			8		
06	BOLT M20 X 90				412212009000		NO	0.279		
					IS1363P1			12		
05	BOLT M20 X 80				412212008000		NO	0.257		
					IS1363P1			116		
04	RIFFLE DISTRIBUTOR ASSLY		1-47-953-02360		SUB-ASSLY		NO	718.601		
								2		
03	RIFFLE DISTRIBUTOR ASSLY		1-47-953-02359		SUB-ASSLY		NO	1657.044		
								1		
02	DISTRIBUTOR INLET		3-47-122-01000		920861760000		NO	145.000		
								1		
01	TRANSITION PIECE		3-47-953-01937		WELDMENT		NO	496.056		
								1		

TO BE CONSIDERED ALONG WITH CERAMIC BENDS



NOTES: -

1. COAL PIPE :- OD406.4 X 12.7; API 5L GRB.
2. FOR OTHER ERECTION MATERIALS REFER PGMA 47-161,47-163 & 47-169
3. QUANTITY SHOWS IN BOM FOR ONE ASSEMBLY ONLY,
4. TOTAL 4 NO OF ASSEMBLIES REQUIRED PER BOILER

REFERENCE DRAWINGS: -

1. COAL PIPE ERECTION SEQUENCE: 0-47-000-02803
2. LAYOUT OF PULVERISED COAL PIPING: 0-47-160-02799
3. PULVERISED COAL PIPING LOADING PLAN: 0-47-160-02800

REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

CLIENT

NATIONAL ALUMINIUM COMPANY LIMITED
ALUMINA REFINERY AT DAMANJODI

HPVP C.NO : 7906 TRICHY C.NO. : 2622

PROJECT: INSTALLATION OF STEAM AND POWER PLANT FOR 5th STREAM ALUMINA REFINERY EXPANSION AT DAMANJODI, ODISHA UNDER PHASE-3 EXPANSION OF M&R COMPLEX 1X300 t/h ; 69.5 kg/cm²(g); 487°C

CONSULTANT: **D DASTUR** M. N. DASTUR & COMPANY (P) LTD CONSULTING ENGINEERS, KOLKATA

DEPT: FS ALL DIMENSIONS ARE IN MM

CODE: 129

SCALE: 1:5 NTS

WEIGHT (Kg): 3792.852

NAME: B. CHOWDHURY

SIGNATURE: -sd-

DATE: 03.07.2021

CHD: N SAIRAM

APPD: MCHS GANGADHER

DATE: 03.07.2021

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.

TITLE: **COAL PIPE ROUTING ASSLY FROM MILL TO COAL PIPE**

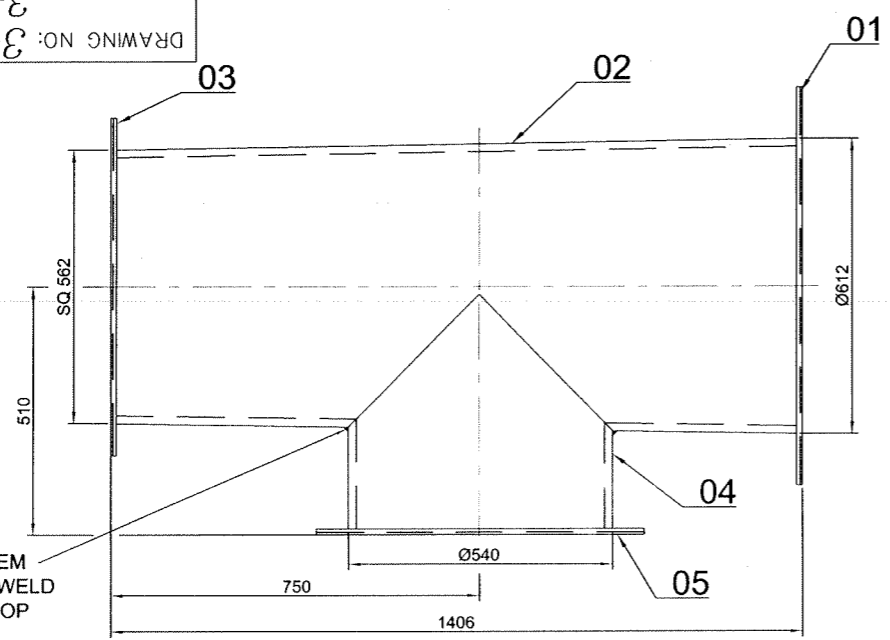
DRAWING NO : 2-47-953-01960

REV: 00

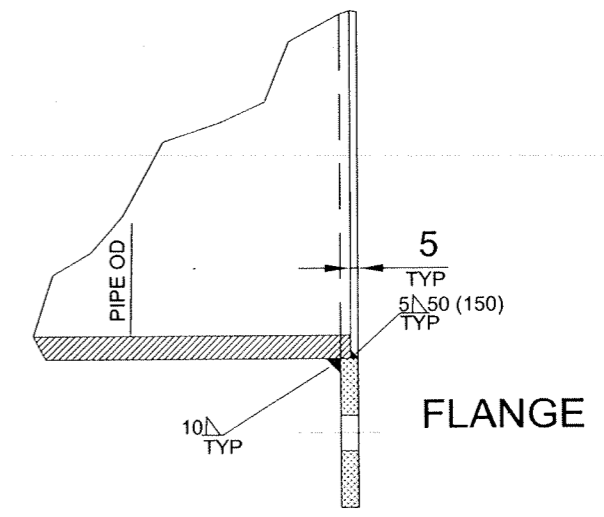
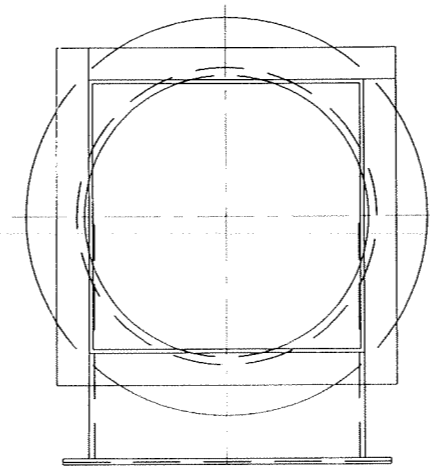
2-47-953-U5002

DRAWING NO: 3-47-953-01937
3-47-953-U5030

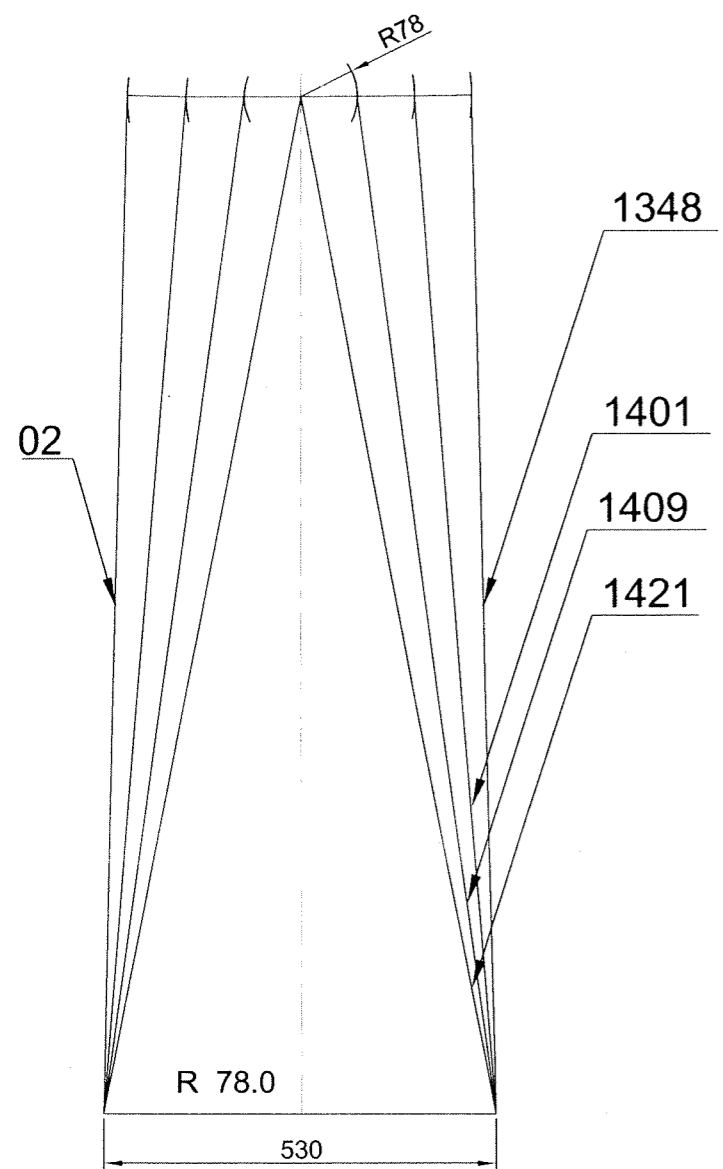
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



CUT A HOLE TO SUIT ITEM NO-4 ON ITEM NO-2. WELD ALL AROUND 10 AT SHOP



FLANGE WELDING DETAILS


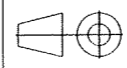


ITEM- 02

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	
	05	FLANGE PL.12 X ID542/OD670		4-47-122-00683		15-011-132 IS: 2062Fe410WA			11.5 1	
	04	PIPE ϕ 540 PL.12 X 500 X 1659				15-011-132 IS: 2062Fe410WA			78.20 1	
	03	FLANGE SQ: 694 X 564 X 12		4-47-122-00684		15-011-132 IS: 2062Fe410WA			15.2 1	
	02	PL.16X 530 X 1430				15-011-026 IS: 2062Fe410WA			95.5 4	
	01	FLANGE PL.12 X ID615/OD820		4-47-122-00682		15-011-132 IS: 2062Fe410WA			21.75 1	

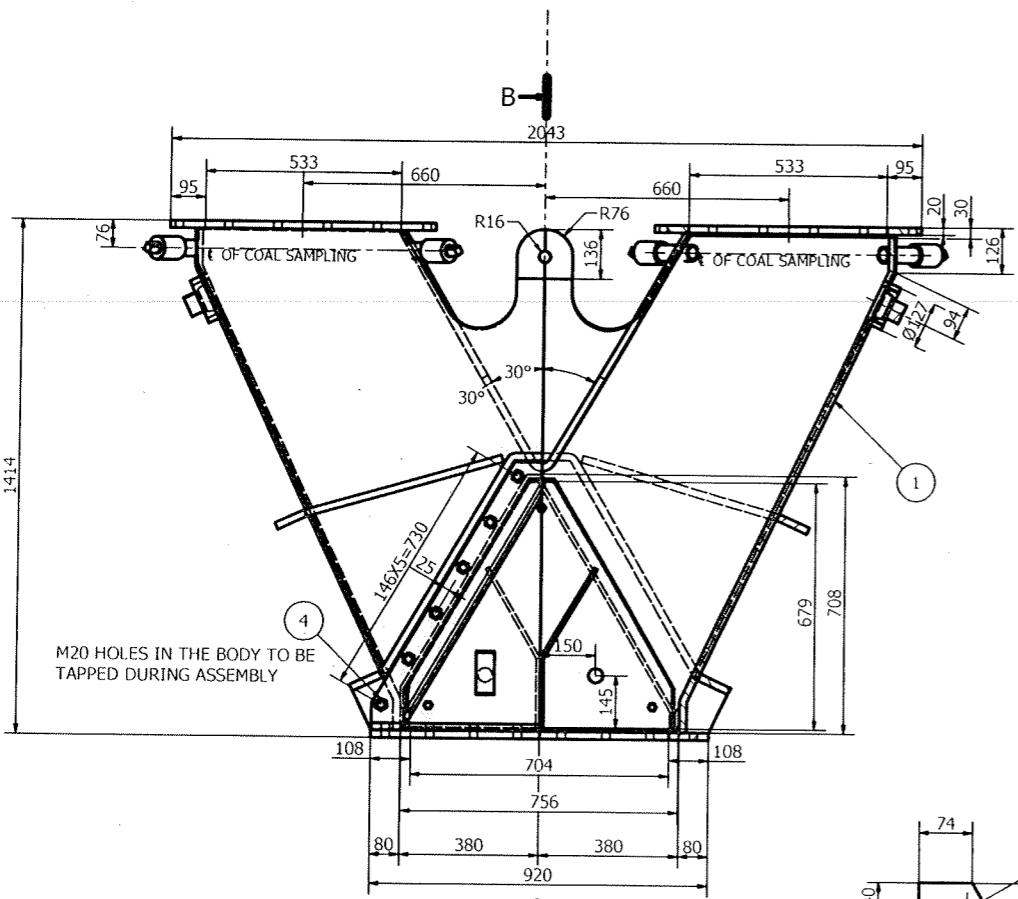
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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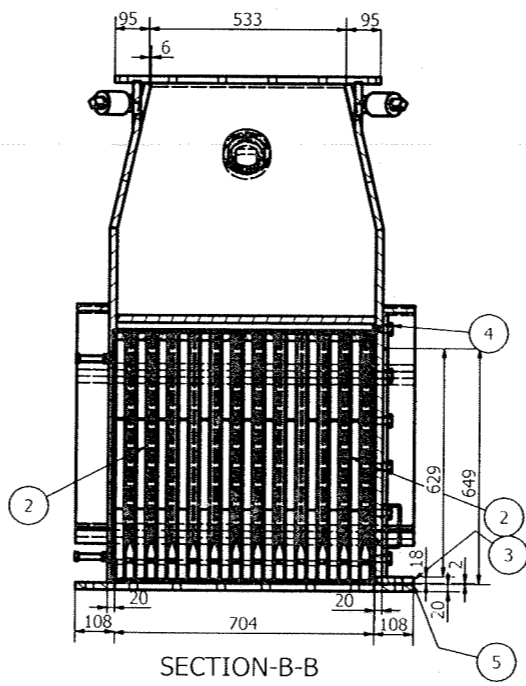
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012 355-055			
DRN	NAME	SIGNATURE	DATE
	T.BASKARAN	-Sd-	26.08.21
CHD	B.CHOWDHURY	-Sd-	26.08.21
APPD	MCHS.GANGADHAR	-Sd-	26.08.21
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE
FS			NTS
CODE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
129	508.65	3-47-122-00428	
TITLE			DRAWING NO :
TRANSITION PIECE			3-47-953-01937
			REV
			00
			3-47-953-U5030

10090-953-47-1
 1-47-953-02359
 02359
 DRAWING NO. 1-47-953-02359

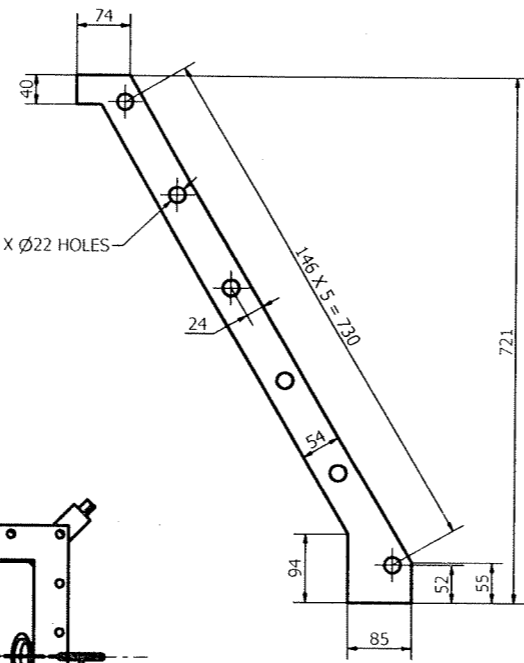
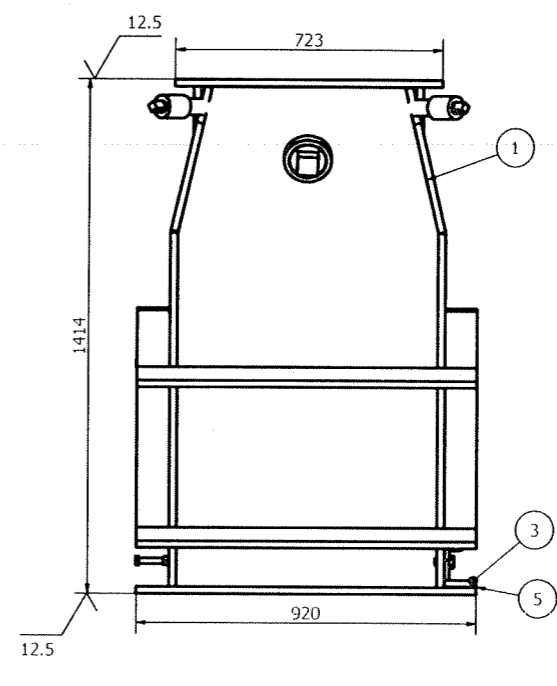
FOR TOLERANCES OF UNTOLERANCED
 DIMENSIONS DURING MANUFACTURE
 REFER PLANT STD. NO TP 023 0299



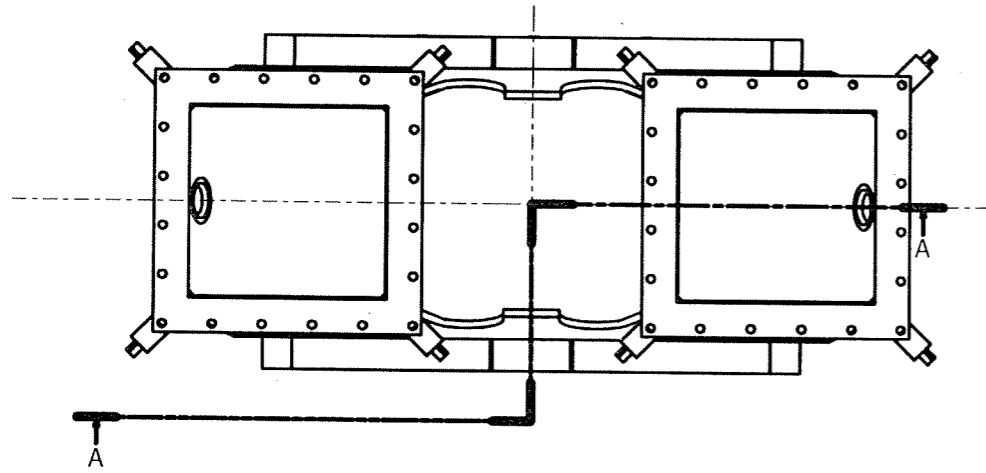
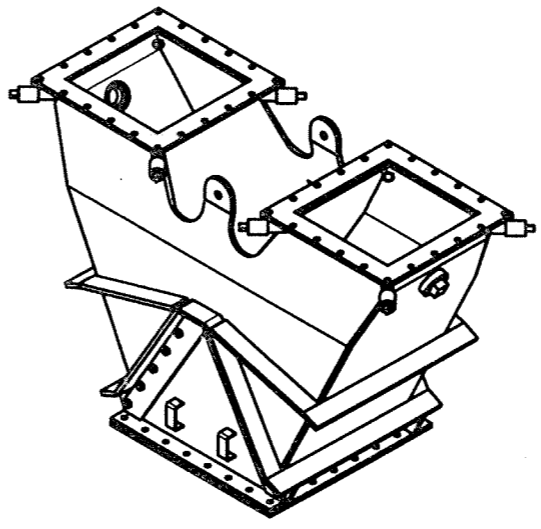
SECTION-A-A
 FLOW \square B



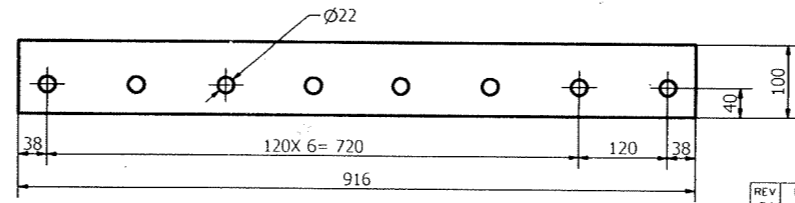
SECTION-B-B



ITEM -06



A



ITEM -05

TO SHIPPED LOOSE

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPECN	UNIT WEIGHT QUANTITY	ZONE
06	NON ASBESTOS GASKET 2 X 458 X 721				220300.300000 TP 23292	0.159 2	
05	NON ASBESTOS GASKET 2 X 100 X 916				220300.300000 TP 23292	0.140 1	
04	HEX BOLT M20 X 40		4-47-301-00029		15 539 141 SA 105	0.200 12	
03	SIDE PLATE		2-47-953-01961		WELDMENT	77.656 1	
02	RIFFLE ELEMENT (TWO SECTIONS)		2-47-953-01963		WELDMENT	337.846 1	
01	RIFFLE DISTRIBUTOR BLOCK		1-47-953-02362		WELDMENT	1238.684 1	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT HEAVY PLATES & VESSELS PLANT
 VISAKHAPATNAM-530012

DRN B CHOWDHURY
 CHD N SARAN
 APPD MCHS GANGADHER

NAME B CHOWDHURY
 N SARAN
 MCHS GANGADHER

SIGNATURE
 DATE 03.07.2021
 DATE 03.07.2021
 DATE 03.07.2021

DEPT FS
 CODE 129

ALL DIMENSIONS ARE IN MM
 PRODUCTION SCALE 1:5
 NTS

WEIGHT (Kg) 1657.044

REF TO ASSY / OLD DWG 04730100009-02

TITLE RIFFLE DISTRIBUTOR ASSEMBLY

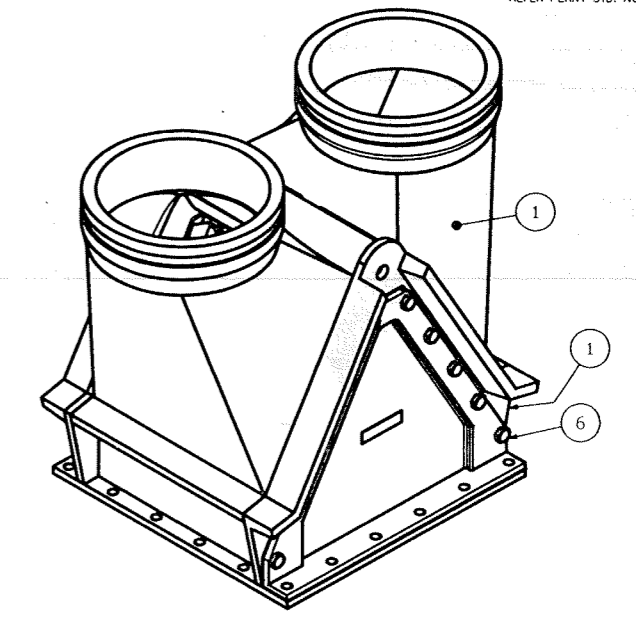
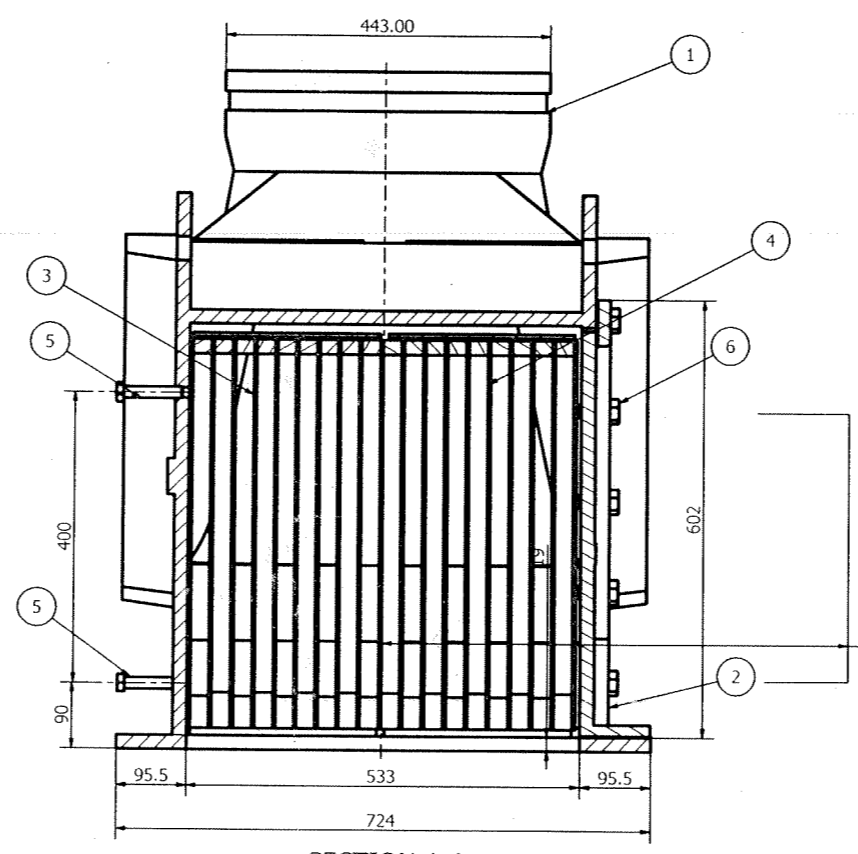
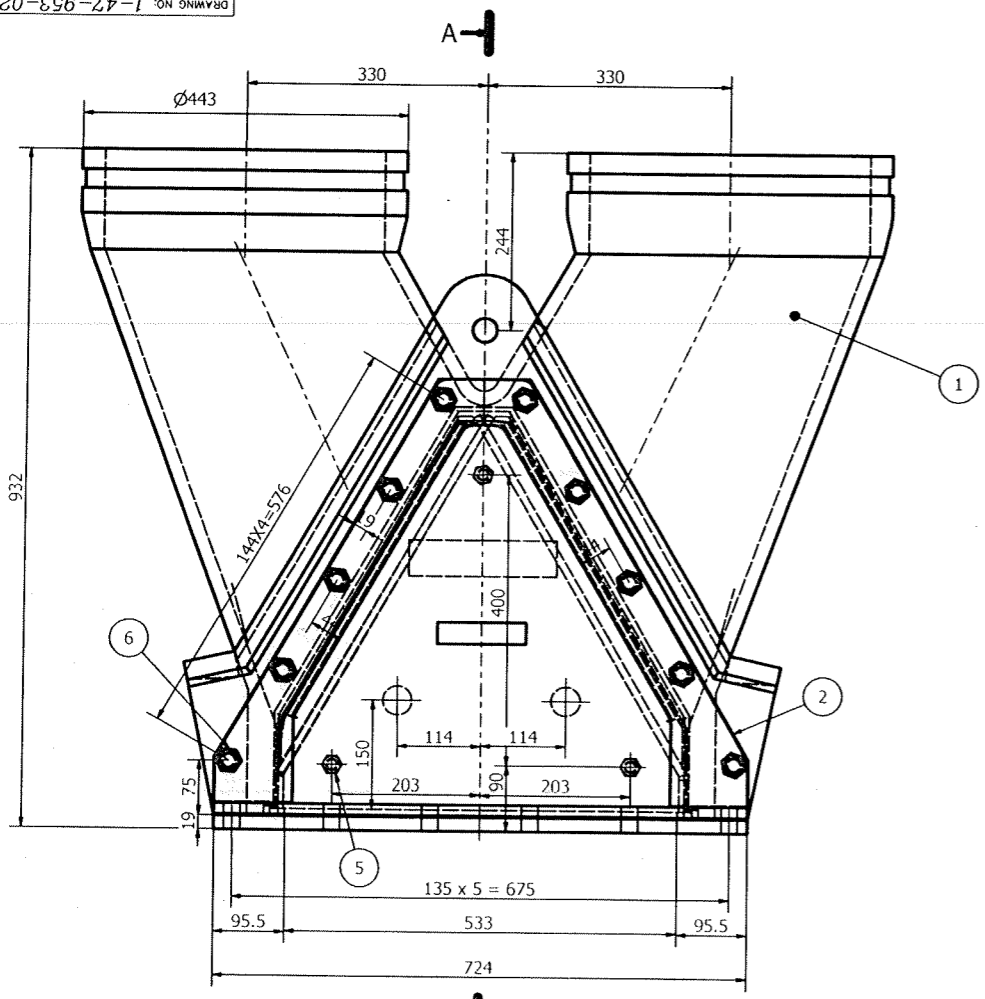
DRAWING NO. 1-47-953-02359
 1-47-953-U5001

REV 00

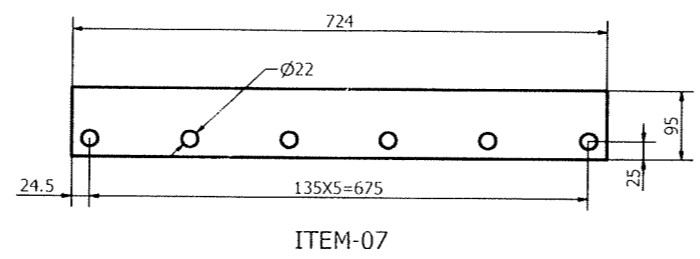
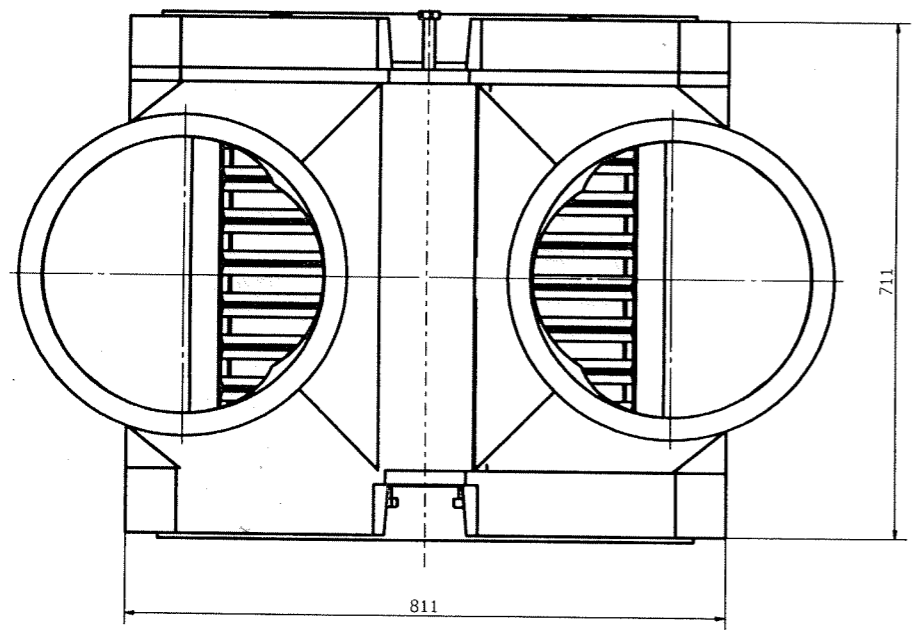
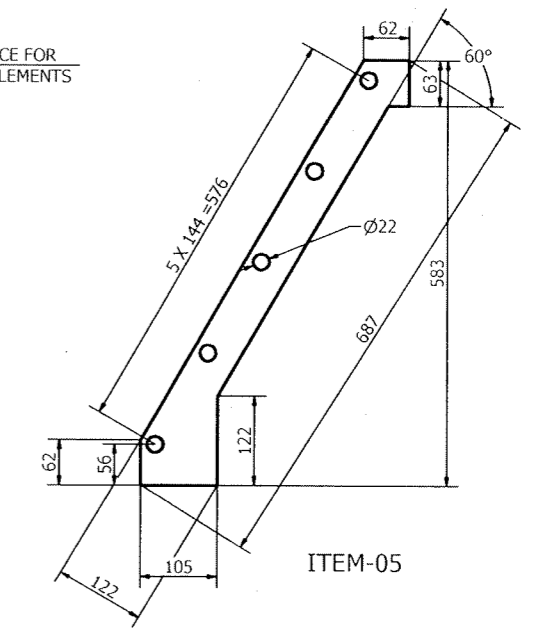
REV	DATE	ALTERED
01		CHD & APPD

DRAWING NO. 1-47-953-02360
 1-47-953-U5002

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



635 mm MIN CLEARANCE FOR REMOVAL OF RIFFLE ELEMENTS



ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT WEIGHT	QUANTITY	OS	ZONE
07	GASKET SH2 X 95 X 724				220300300000 TP 23292	0.120	1		
06	HEX SCREW, M16 X 75				412022008000 -IS2269	0.272	3		
05	GASKET SH2 X 122 X 700				220300300000 TP 23292	0.077	2		
04	HEX BOLT M20 X 40	4-47-301-00029			15 339 141 SA 105	0.200	10		
03	RIFFLE ELEMENTS (TWO SECTIONS)	2-47-953-01962			SUB ASSLY	164.511	1		
02	SIDE PLATE	3-47-953-01935			920250020000	54.000	1		
01	DISTRIBUTOR BLOCK	1-47-953-02361			920500010000	500.000	1		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

CAUTION: The information on this drawing is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the prior approval of the company.

REV 01	DATE	ALTERED	CHD & APPD
--------	------	---------	------------

DEPT FS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:5	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 129		NTS		722.601	1-45-180-00051

NAME: B. CHOWDHURY
 SIGNATURE: [Signature]
 DATE: 03.07.2021

NAME: N. SAIRAM
 SIGNATURE: [Signature]
 DATE: 03.07.2021

NAME: MCHS GANGADHER
 SIGNATURE: [Signature]
 DATE: 03.07.2021

355-053

UNIT: HEAVY PLATES & VESSELS PLANT
 VSAKHAPATNAM-530012

TITLE: RIFFLE DISTRIBUTOR ASSLY.

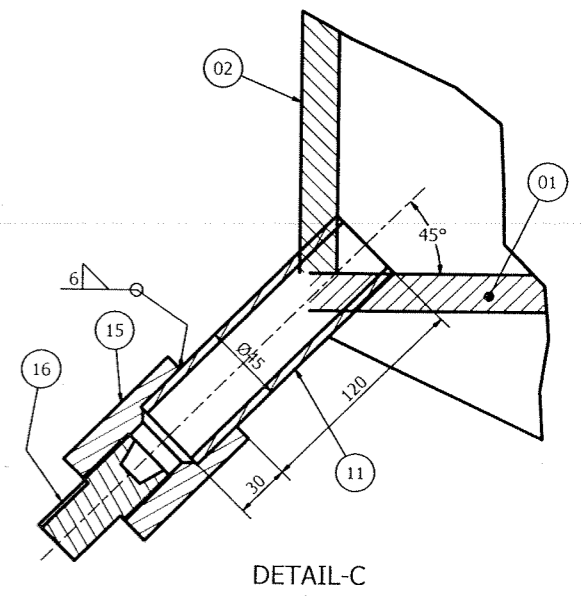
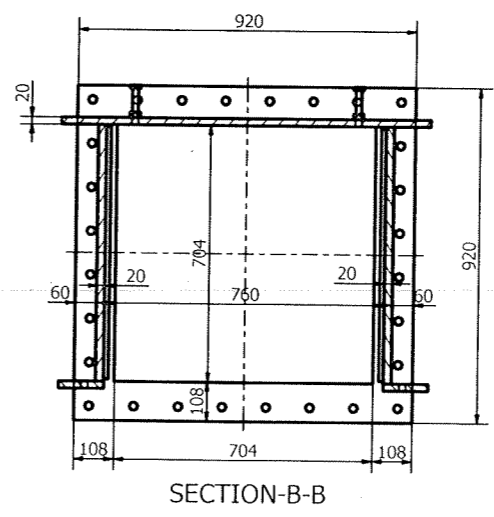
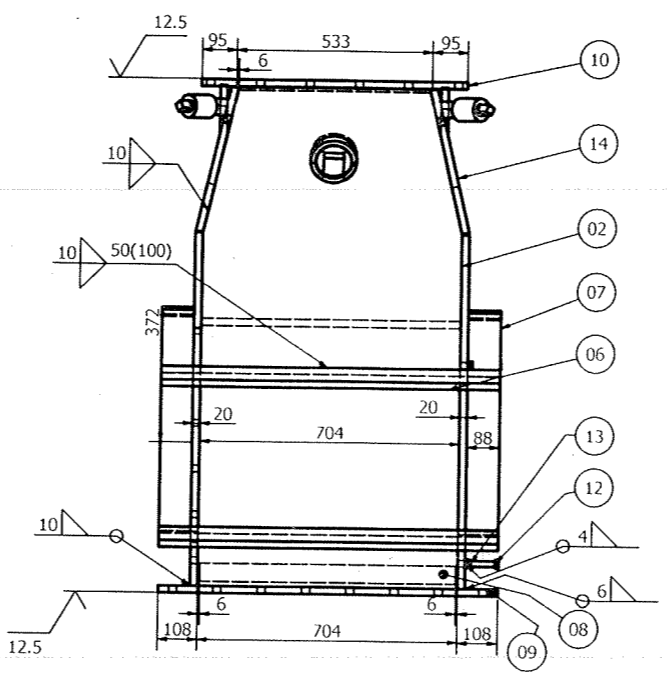
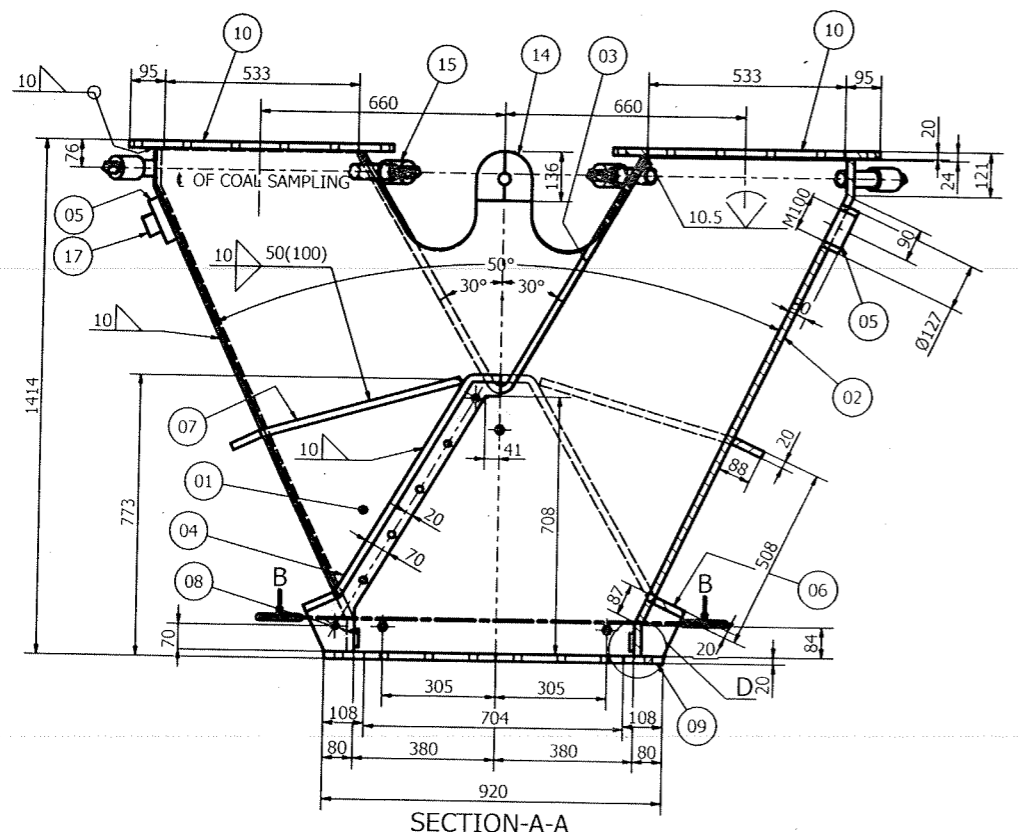
DRAWING NO. 1-47-953-02360
 1-47-953-U5002

REV 00

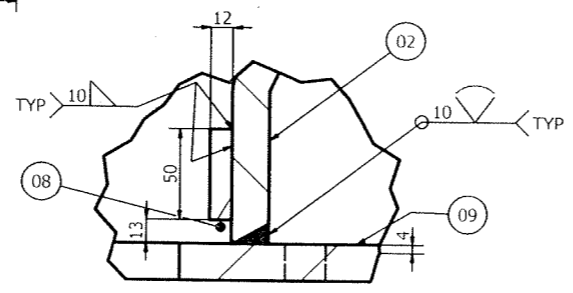
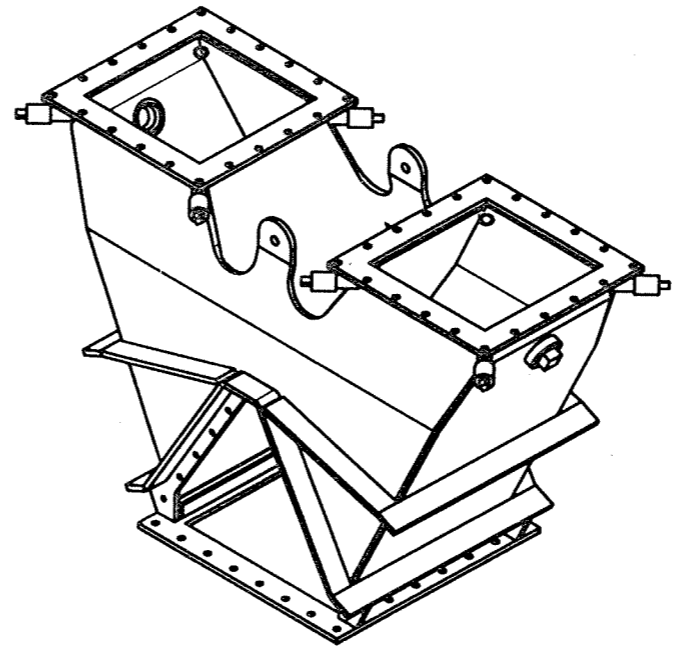
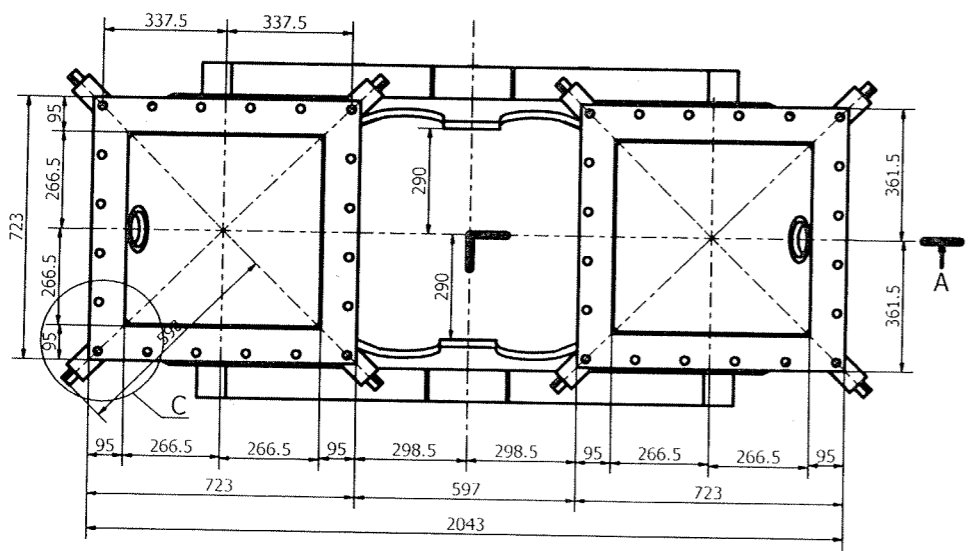


DRAWING NO. 1-47-953-02362
1-47-953-U5004

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



- NOTES:**
- REMOVE BURRS AND SHARP CORNERS WITH GRINDER.
 - TO BE WELDED AIR-TIGHT.



ITEM NUMBER	DESCRIPTION	QTY	DRAWING NUMBER	MATERIAL CODE	UNIT WEIGHT	QUANTITY	ZONE
17	PLUG M100 X 6 BAR #100 X 70L	2	0-47-953-02802	150391340000 SA105	2.159	2	
16	PLUG M33 BAR #36 X 70L	8	0-47-953-02802	150392800000 SA105	0.334	8	
15	SCREWED PIECE BAR #63 X 80L	8	0-47-953-02802	150391430000 SA105	1.318	8	
14	PL20 X 1382 X 1893	1	0-47-953-02802	159110010000 IS2062E450GRBR	275.233	1	
13	HEX NUT M16	3		413040001600 CL4-IS1363P3	0.030	3	
12	HEX SCREW M16X75	3		412221607500 4.6-IS1363P2	0.138	3	
11	TUBE, #44.5 X 150L	8		151860640000 SA210GRA1	0.714	8	
10	TOP FLANGE PL20 X 723 X 723	2	0-47-953-02802	159110010000 IS2062E450GRBR	36.273	2	
09	BOTTOM FLANGE PL20 X 920 X 920	1	0-47-953-02802	159110010000 IS2062E450GRBR	53.402	1	
08	PL12 X 50 X 692	2		150111320000 IS2062E250GRA	3.259	2	
07	PL20 X 88 X 555	4		159110010000 IS2062E450GRBR	7.668	4	
06	PL20 X 88 X 704	4		159110010000 IS2062E450GRBR	9.726	4	
05	THREADED PIECE #127 X 50L	2	0-47-953-02802	159119540000 IS2062E410GRBR	2.277	2	
04	STIFFENING PLATE PL20 X 88 X 1575	2	0-47-953-02802	159110010000 IS2062E450GRBR	21.411	2	
03	TOP V-BEND PLATE PL20 X 704 X 1509	1	0-47-953-02802	159110010000 IS2062E450GRBR	154.039	1	
02	SIDE COVER PLATE PL20 X 704 X 1495	2	0-47-953-02802	159110010000 IS2062E450GRBR	157.236	2	
01	FRONT COVER PLATE PL20 X 1382 X 1893	1	0-47-953-02802	159110010000 IS2062E450GRBR	221.772	1	

PL20

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT, HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

NAME: B. CHOMHURY
SIGNATURE: [Signature]
DATE: 03.07.2021

CHD: N. SARAM
DATE: 03.07.2021

APPO: MOHS GANGADHAR
DATE: 03.07.2021

DEPT: FS
CODE: 129
SCALE: 1:5
WEIGHT (Kg): 1238.664
REF TO ASSY / OLD DWG: 04730100008-04

TITLE: RIFFLE DISTRIBUTOR BLOCK

DRAWING NO: 1-47-953-02362
1-47-953-U5004

REV: 00

REV	DATE	ALTERED
01		CHD & APPO

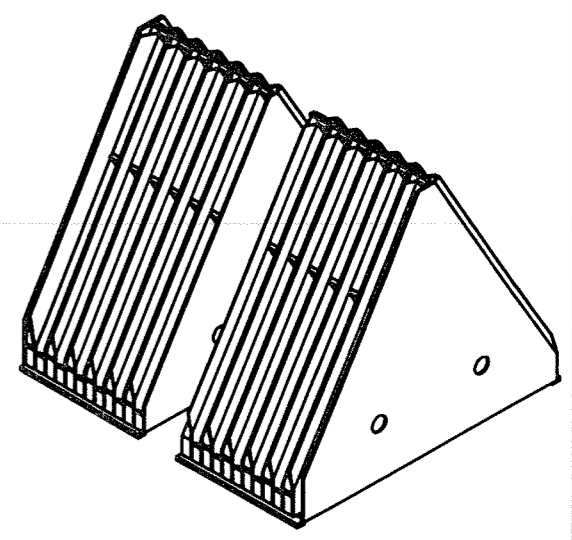
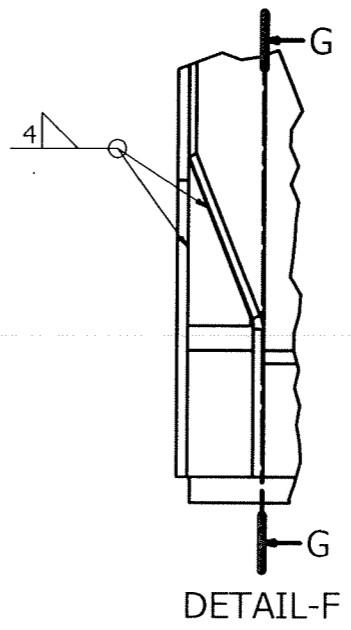
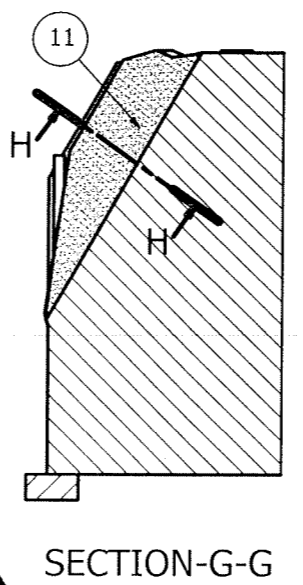
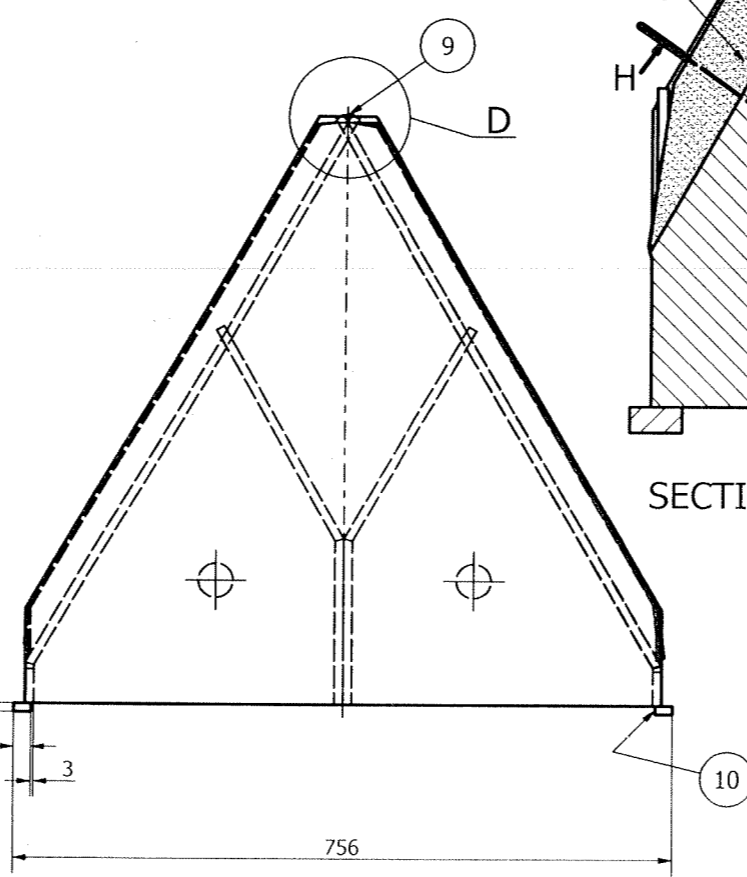
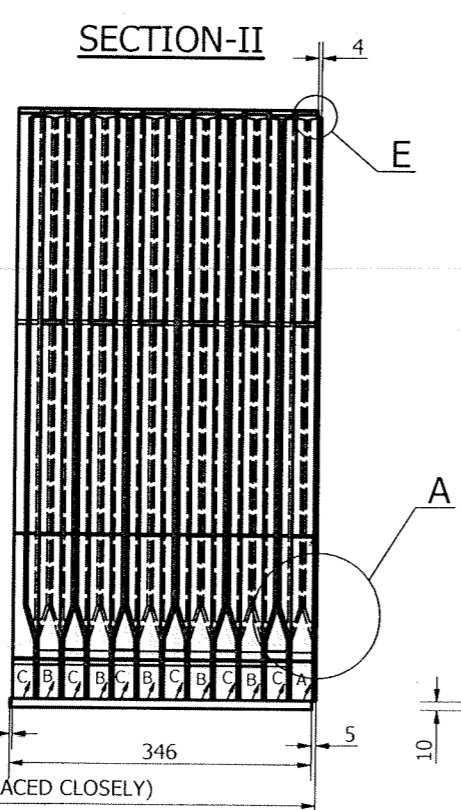
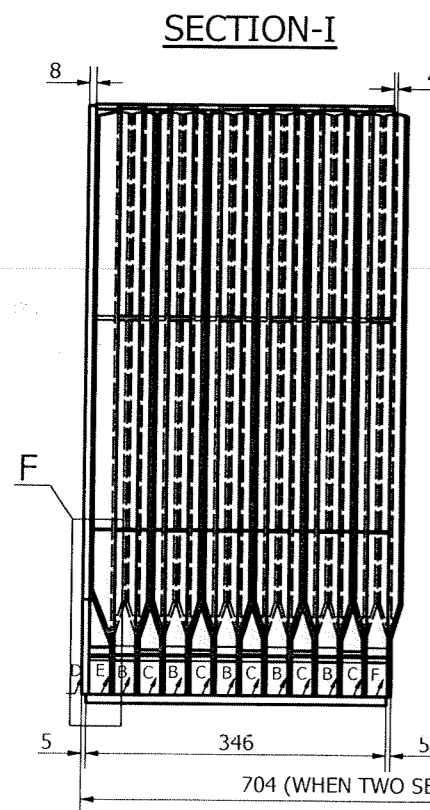
DRAWING NO: 2-47-953-01963
2-47-953-U5005

RIFFLE ELEMENTS ARRANGED IN TWO SECTIONS

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

A
B
C
D
E
F

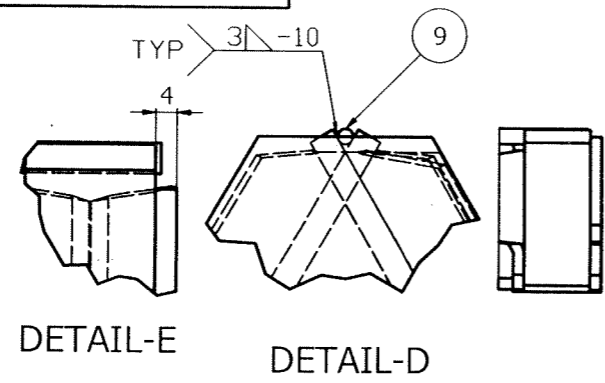
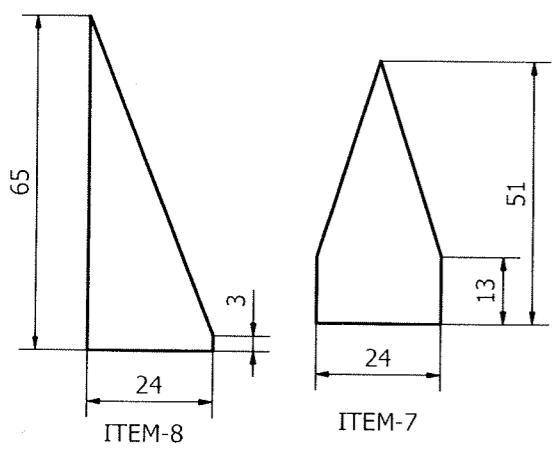
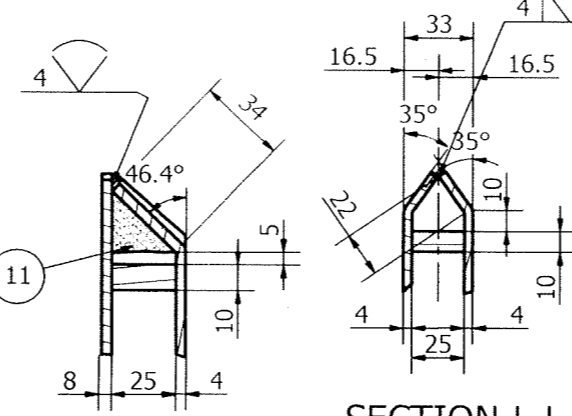
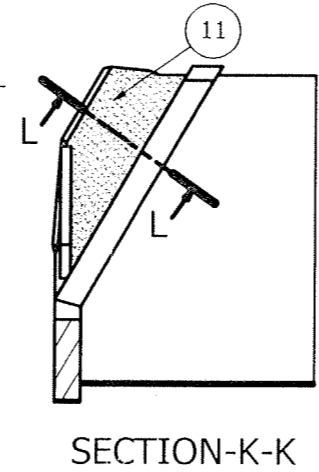
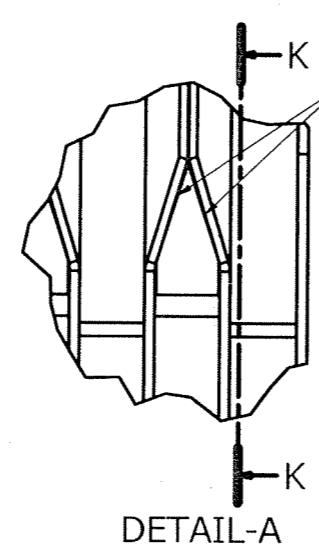
A
B
C
D
E
F



NOTES:

1. PLATES MUST BE STRAIGHT
2. EDGES OF STIFFENERS WHERE PLATES ARE CONNECTED TO BE SMOOTH & STRAIGHT.
3. PRESS THE STIFFENERS TO THE PLATES WHILE WELDING.
4. ALL THE DIMENSIONS TO BE KEPT UP BEFORE BENDING .
5. TO BE WELDED AIR TIGHT.
6. CUT ITEM 07 & WELD ACC. TO REQUIREMENT.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY	ZONE
	11	CEMENT M1 X 1:3							20.000	1	
	10	PL10 X 20 X 1500				152110980000			2.355	1	
						IS2062E250GRA			1		
	09	ROD Ø6 X 690				150040260000			0.153	1	
						IS2062E250GRA			1		
	08	SH 4 X 24 X 65				150113340000			0.026	1	
						IS1079D			1		
	07	SH4 X 24 X 51				150113340000			0.024	23	
						IS1079D			23		
	06	RIFFLE ELEMENTS TYPE-F		3-47-953-01947		WELDMENTS			12.224	1	
	05	RIFFLE ELEMENTS TYPE-E		3-47-953-01946		WELDMENTS			12.473	1	
	04	RIFFLE ELEMENTS TYPE-D SH 4X541X558		4-47-953-02070		150110270000			19.479	1	
						IS2062E250GRA			1		
	03	RIFFLE ELEMENTS TYPE-C		3-47-953-01945		WELDMENTS			12.303	11	
	02	RIFFLE ELEMENTS TYPE-B		3-47-953-01944		WELDMENTS			12.303	10	
	01	RIFFLE ELEMENTS TYPE-A		3-47-953-01943		WELDMENTS			12.221	1	



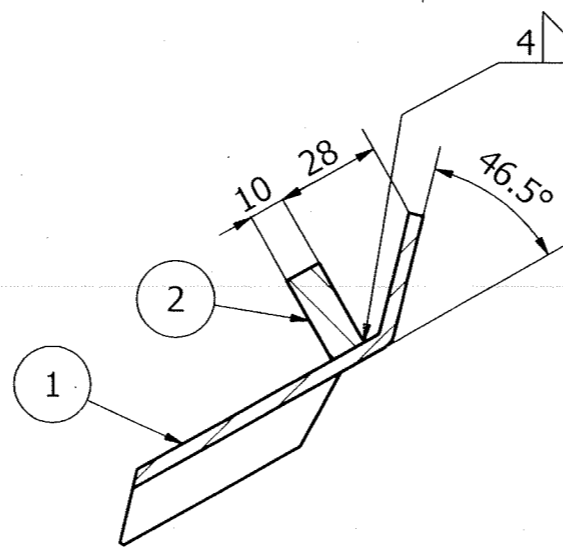
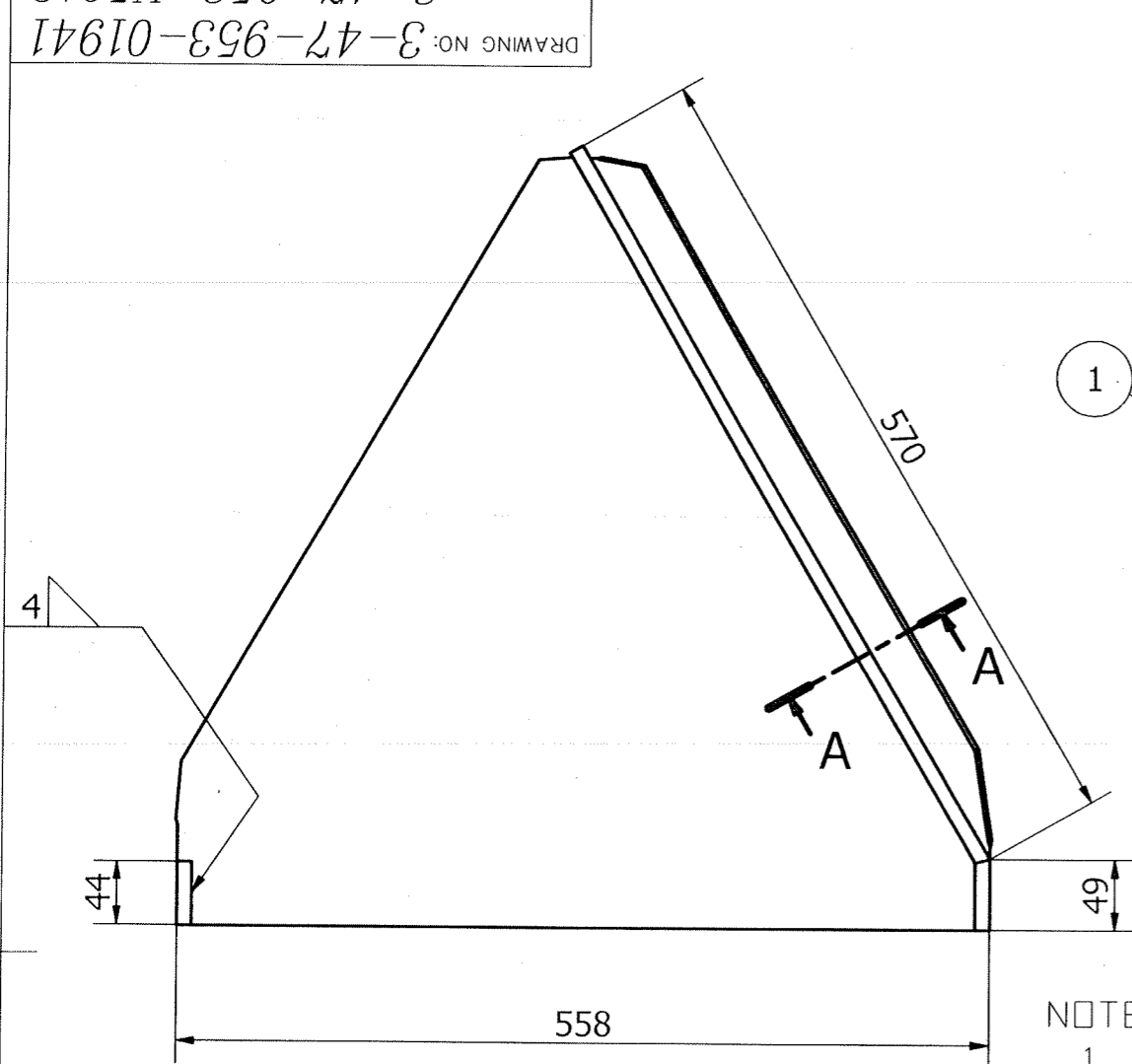
REV	DATE	ALTERED	B CHOWDHURY
01	20.09.21	CHD & APPD	MCHS GANGADHAR
DIMENSIONS AND WELDING TAG ADDED IN SECTION H-H AND L-L			
WELDING TAG ADDED IN DETAIL A			
DETAIL F			

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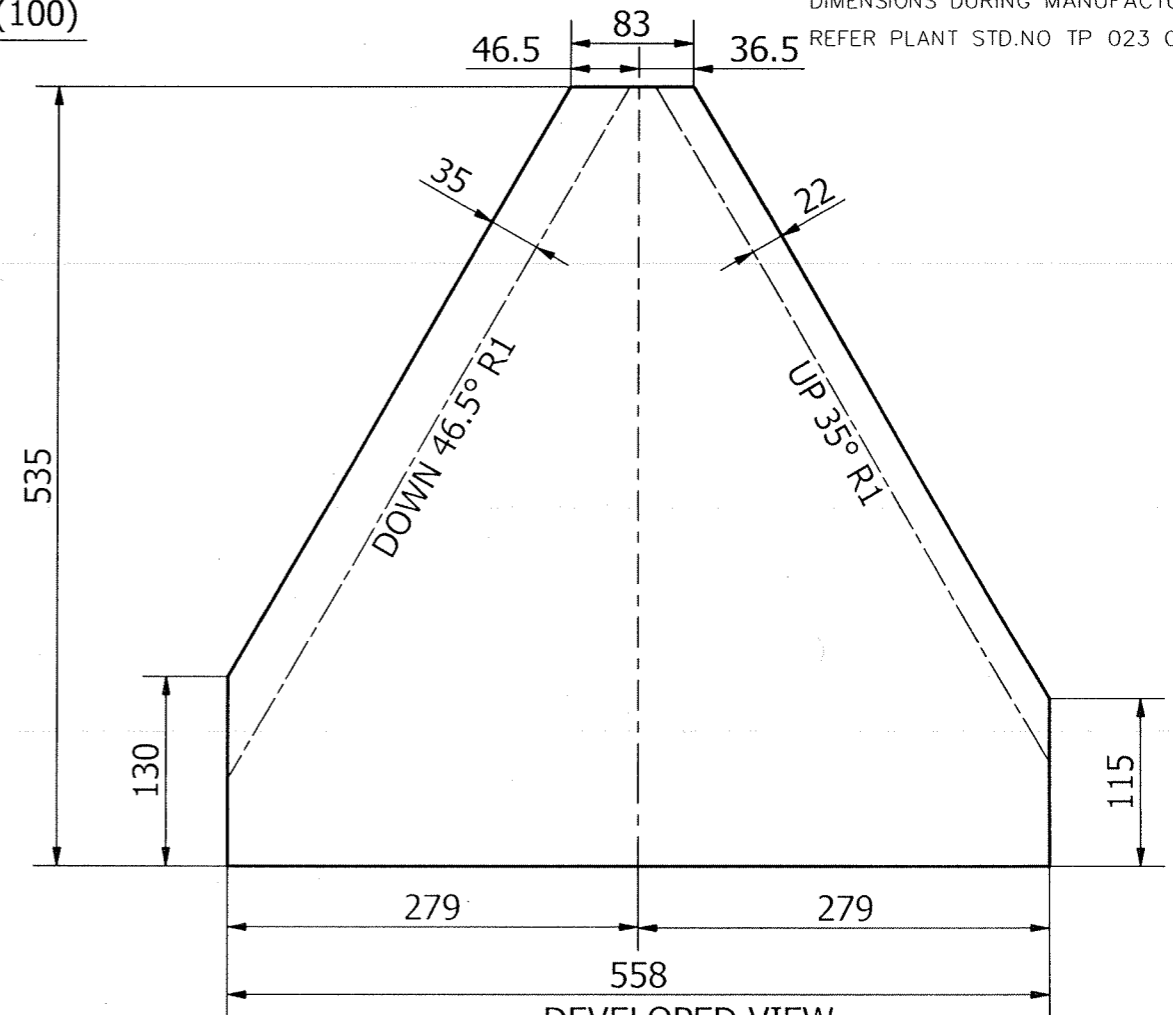
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012	
DEPT	FS	PROJECTION	SCALE
CODE	129	SCALE	NTS
WEIGHT (Kg)	337.846	REF TO ASSY / OLD DWG	1-47-301-00053
TITLE		RIFFLE ELEMENTS (TWO SECTION)	
DRAWING NO :		2-47-953-01963	
REV		01	
DRAWING NO :		2-47-953-U5005	
REV		/00	

DRAWING NO: 3-47-953-01941
3-47-953-U5018

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



SECTION-A-A



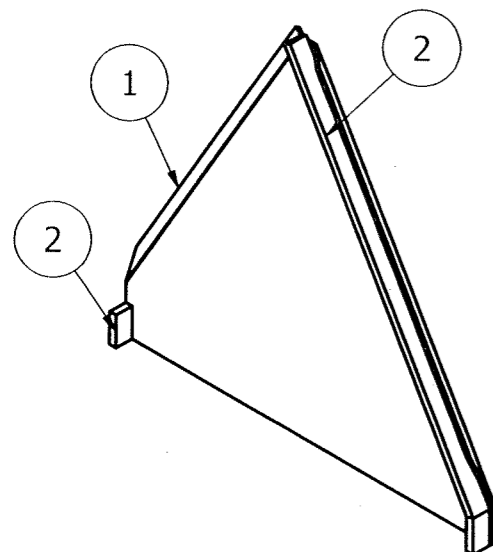
DEVELOPED VIEW
ITEM-01

NOTES:

- REFER DWG. NO 2-47-953-01962 FOR GENERAL NOTE

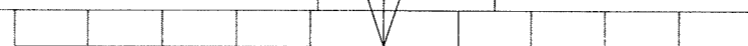


VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY
	02	PL 10X25X664				152110980000			1.303	
						IS2062E250GRA			1	
	01	SH 4X535X558				150113340000			6.302	
						IS1079D			1	



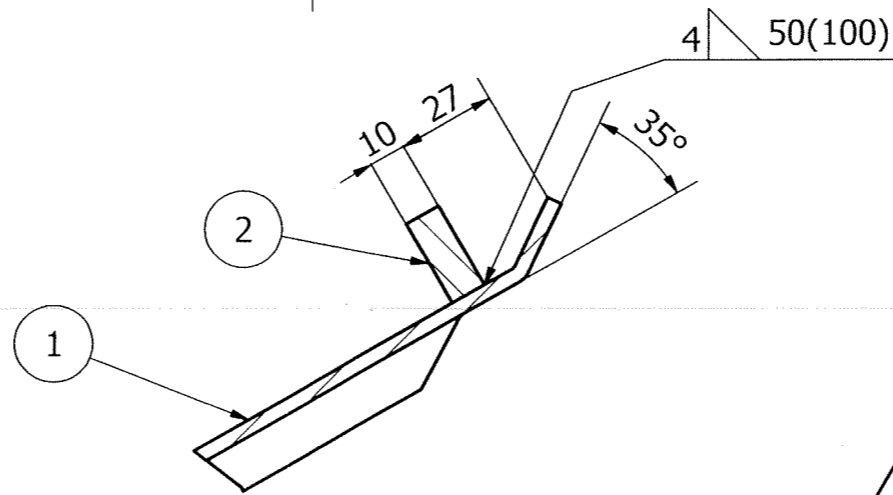
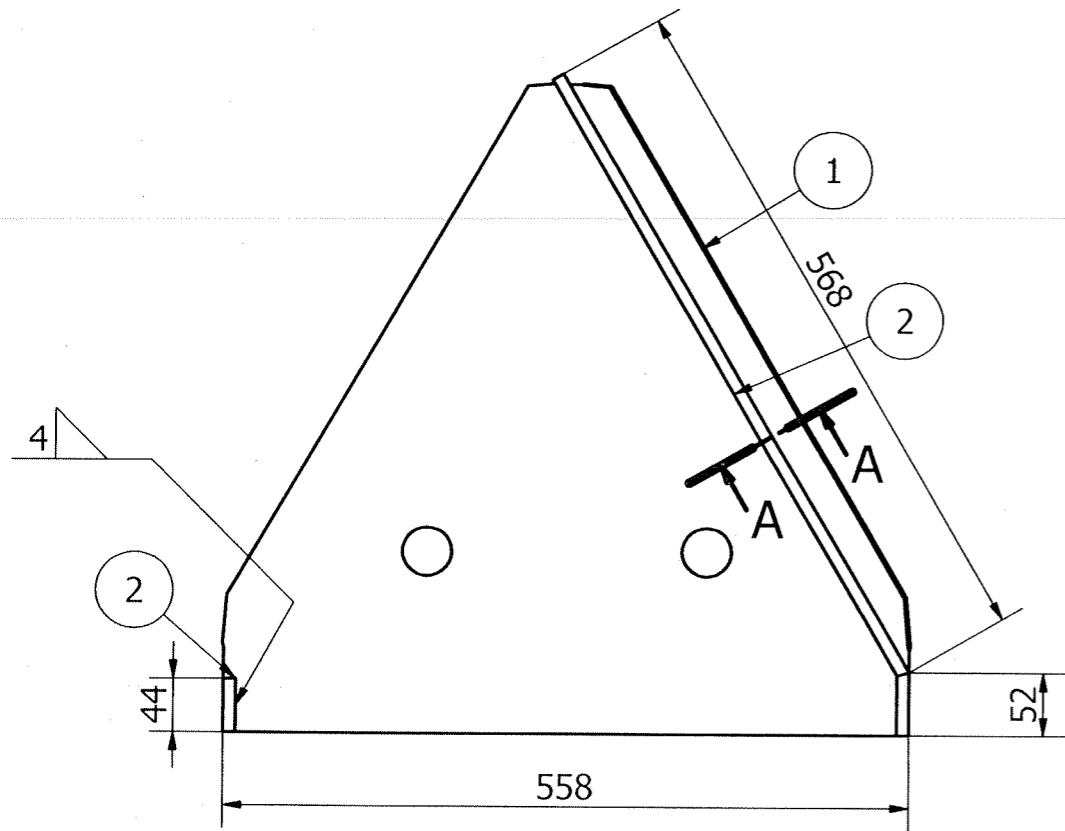
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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				Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012			
DEPT	FS	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
CODE	129	ALL DIMENSIONS ARE IN MM	NTS	7.605	1-47-301-00050		
TITLE					DRAWING NO :		
RIFFLE ELEMENTS TYPE - E					3-47-953-01941 3-47-953-U5018		
					REV		
					00		

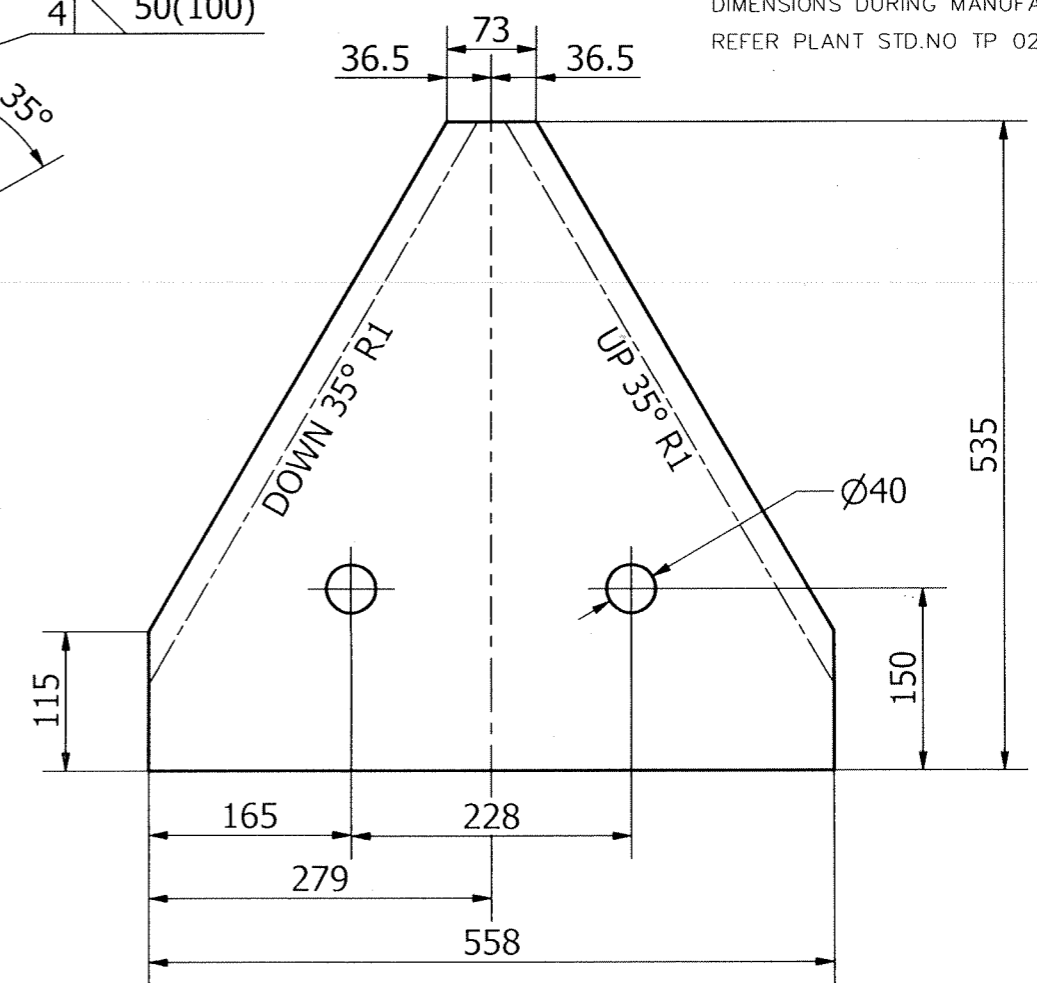


DRAWING NO. 3-47-953-01942
3-47-953-U5019

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



SECTION-A-A

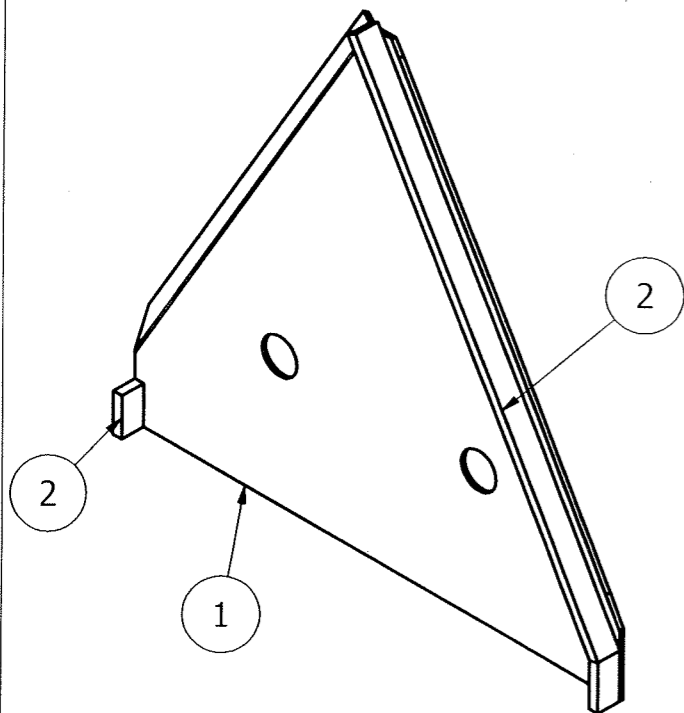
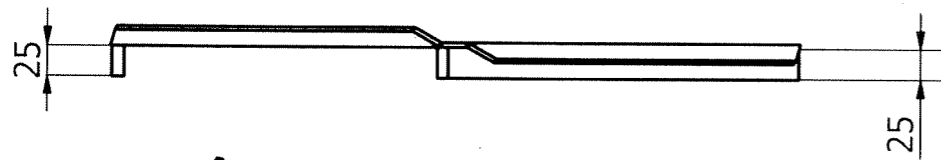


NOTES:

1.

REFER DWG. NO 2-47-953-01962 FOR GENERAL NOTE

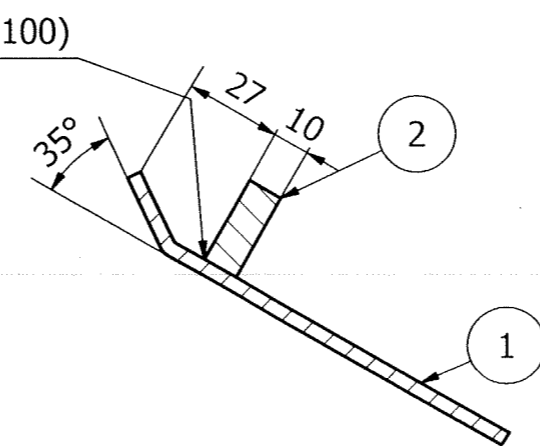
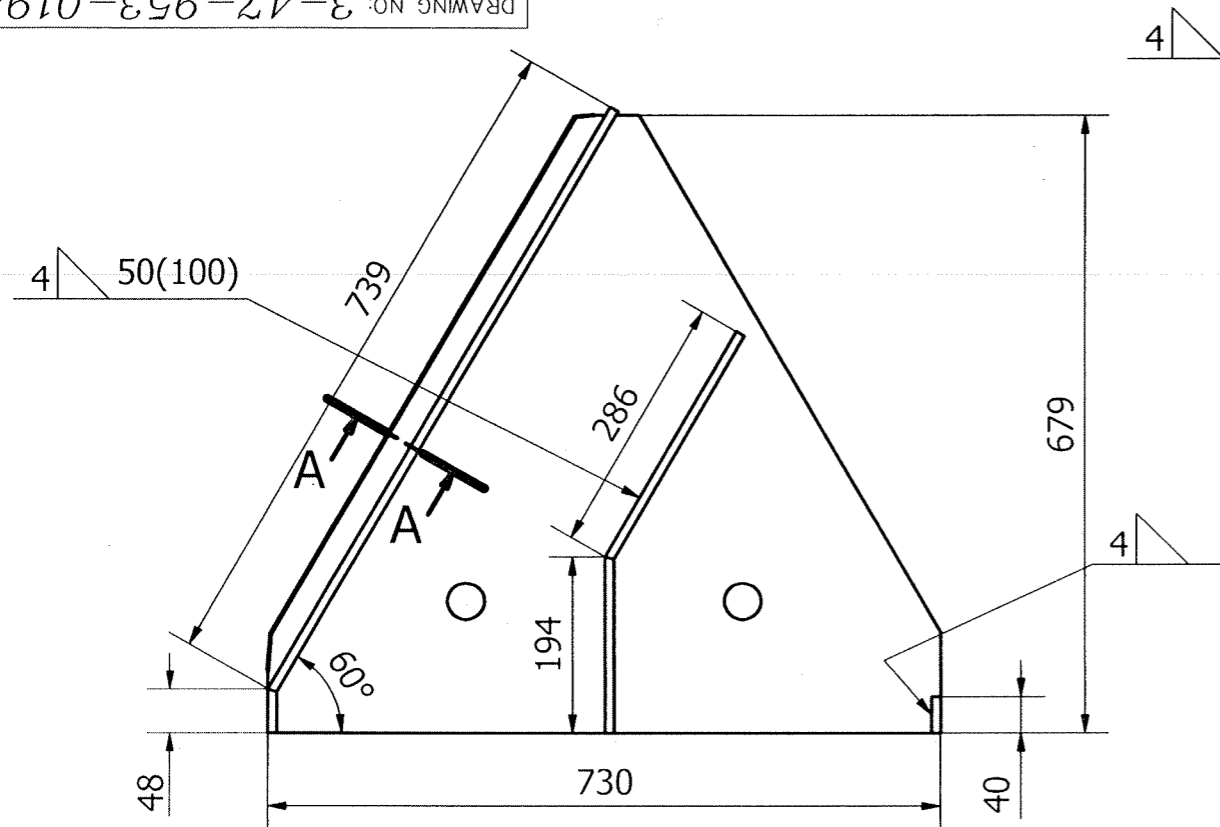
DEVELOPED VIEW
ITEM-01



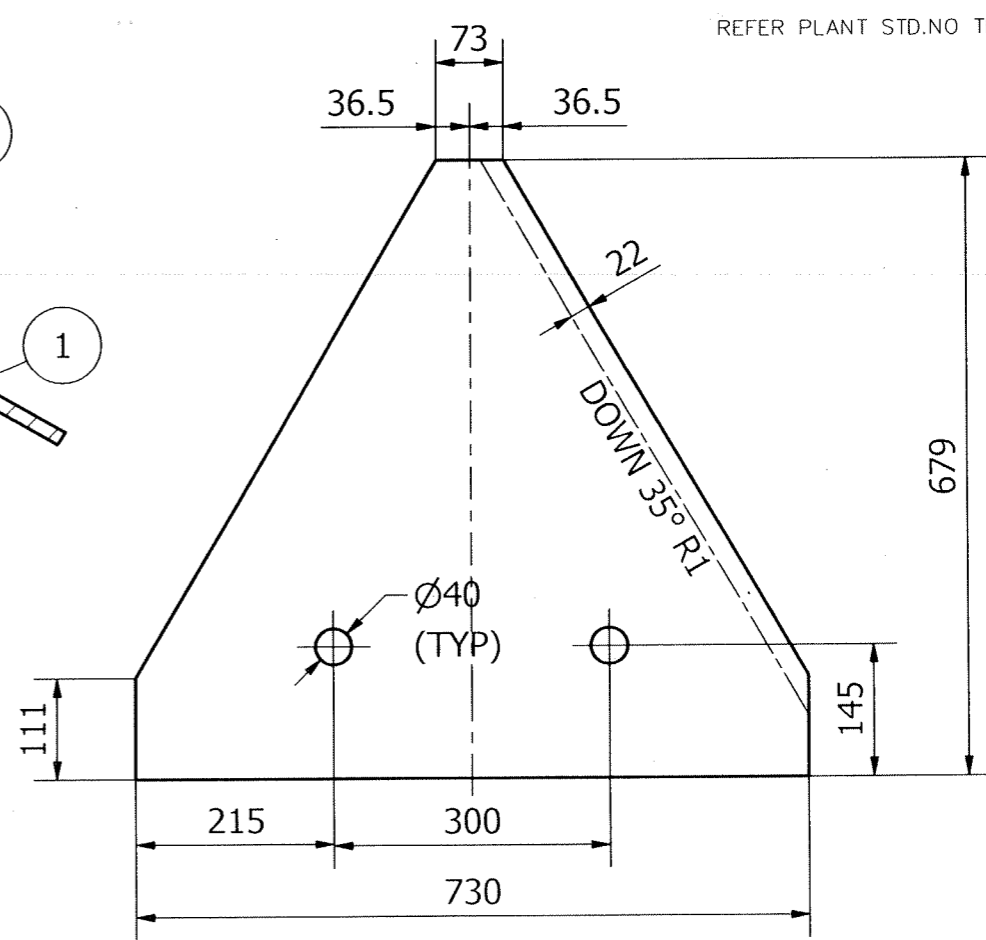
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
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						IS2062E250GRA			1	
	01	SH 4X535X558				150113340000			6.102	
						IS1079D			1	

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012			
DEPT	FS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)
CODE	129			NTS	7.405
TITLE	RIFFLE ELEMENTS TYPE - F				REF TO ASSY / OLD DWG
					1-47-301-00050
					DRAWING NO :
					3-47-953-01942
					3-47-953-U5019
				REV	00



SECTION-A-A

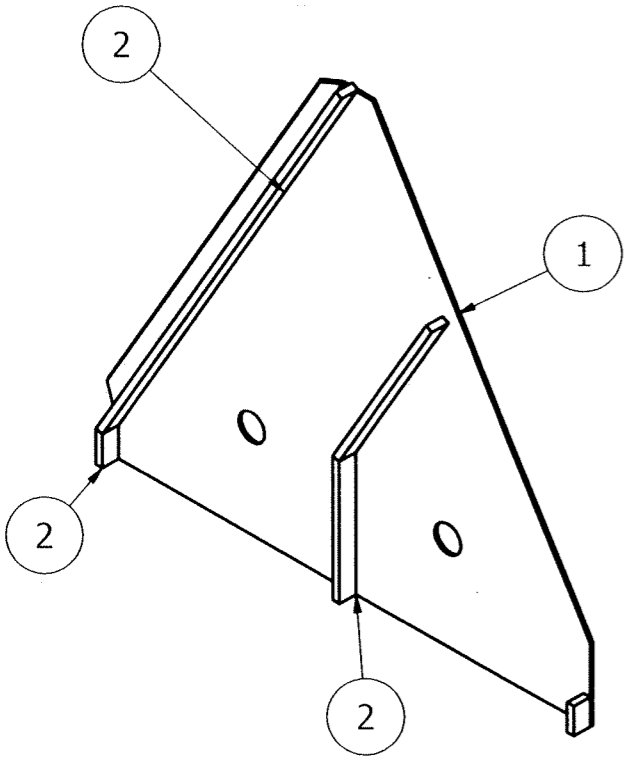


DEVELOPED VIEW
 (ITEM - 01)



NOTES:

- REFER DWG. NO 2-47-953-01963 FOR GENERAL NOTE



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY
	02	PL 10X25X1307				152110980000			2.591	
						IS2062E250GRA			1	
	01	SH 4X679X730				150113340000			9.630	
						IS2062FE410WA			1	

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT
 VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	T.BASKARAN	Sd	26.08.21
	B.CHOWDHURY	Sd	26.08.21
	MCHS.GANGADHAR	Sd	26.08.21

355-055

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
FS			NTS	12.221	1-47-301-00053
CODE	129				

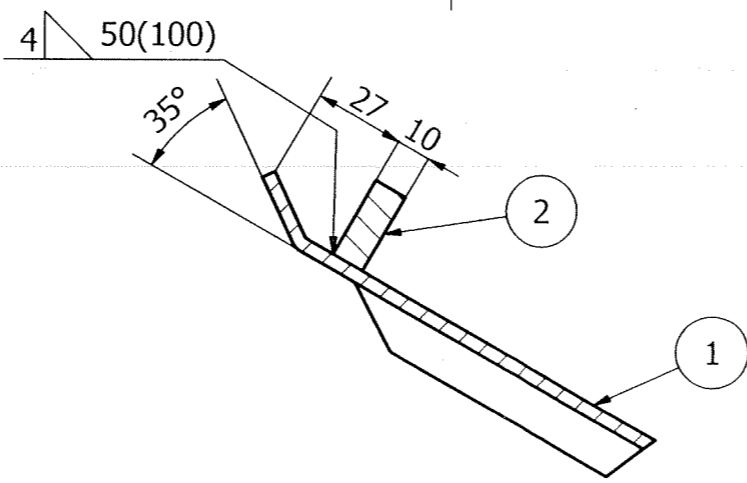
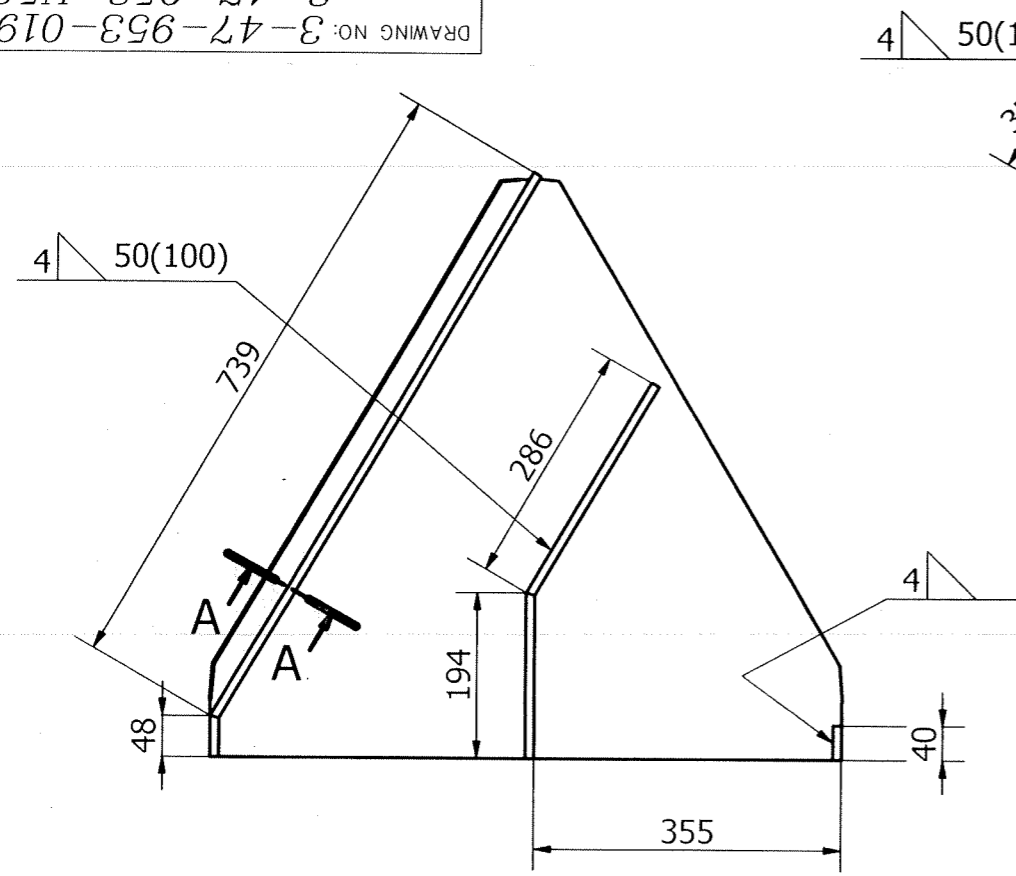
TITLE: **RIFFLE ELEMENTS TYPE-A**

DRAWING NO :
 3-47-953-01943
 3-47-953-U5020

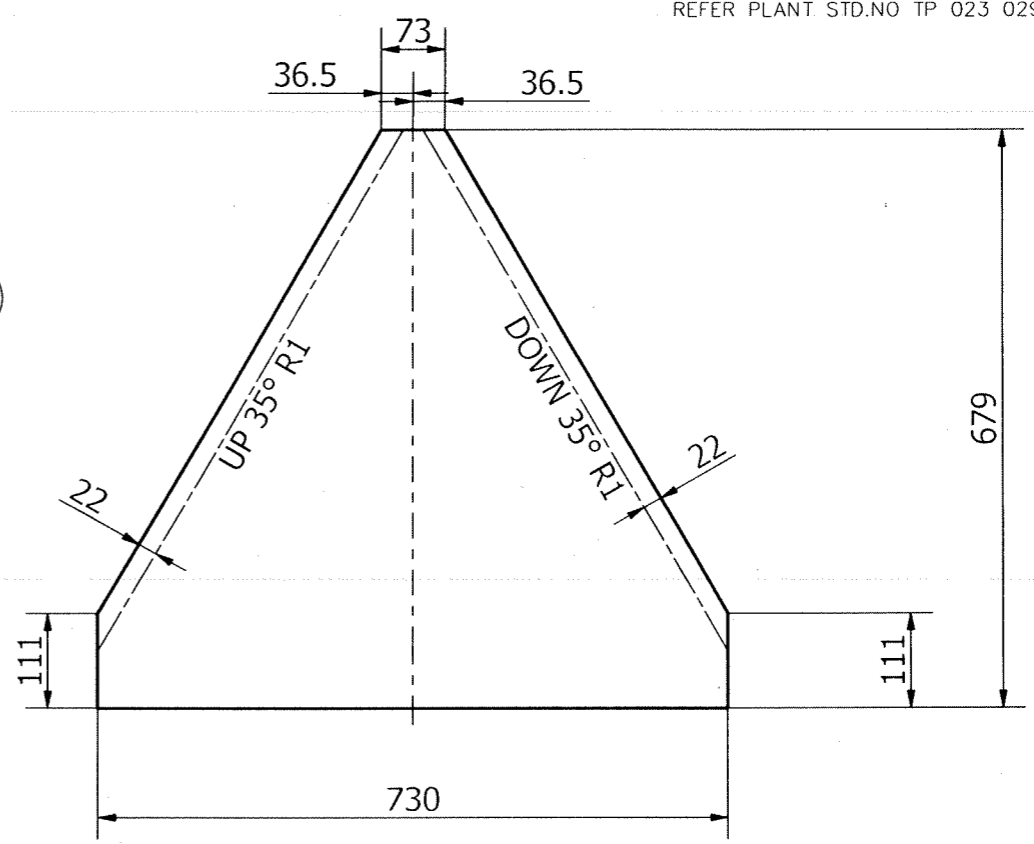
REV: 00

DRAWING NO: 3-47-953-01944
3-47-953-U5021

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



SECTION-A-A

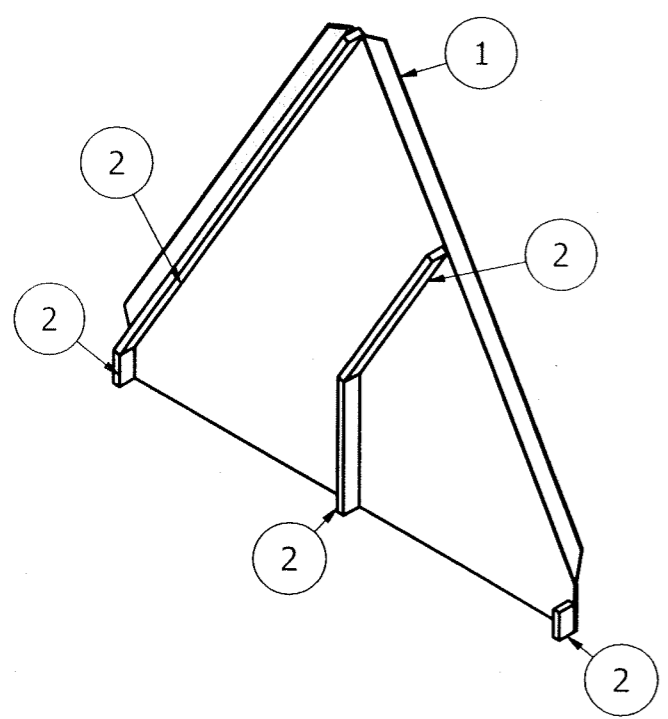


DEVELOPED VIEW (ITEM - 01)



NOTES:

- REFER DWG. NO 2-47-953-01963 FOR GENERAL NOTE



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	02	PL 10X25X1307				152110980000			2.591	
						IS2062E250GRA			1	
	01	SH 4X679X730				150113340000			9.712	
						IS2062FE410WA			1	

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	T.BASKARAN	Sd	26.08.21
CHD	B.CHOWDHURY	Sd	26.08.21
APPD	MCHS.GANGADHAR	Sd	26.08.21

355-055

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
ES			NTS	12.303	1-47-301-00053
CODE	129				

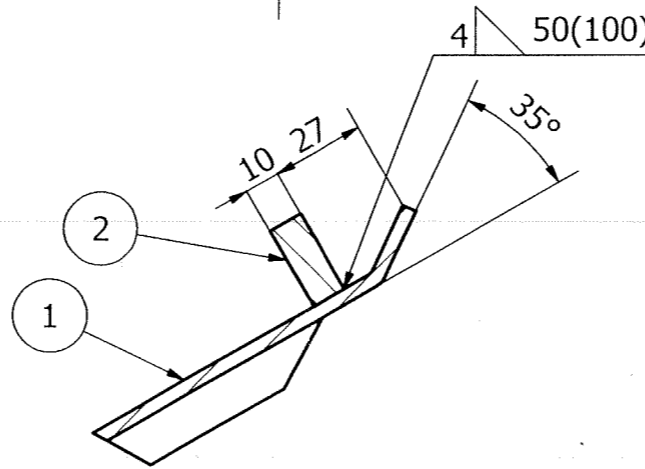
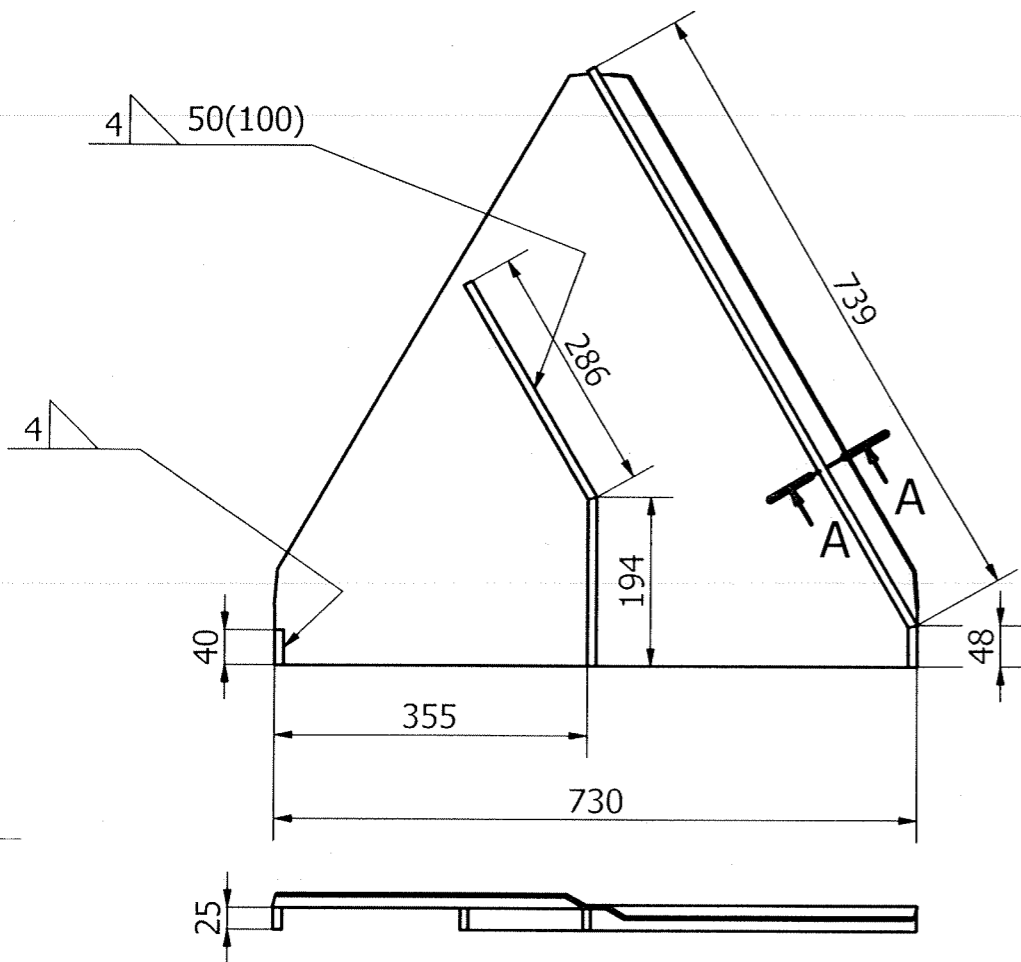
TITLE: **RIFFLE ELEMENTS TYPE-B**

DRAWING NO :
3-47-953-01944
3-47-953-U5021

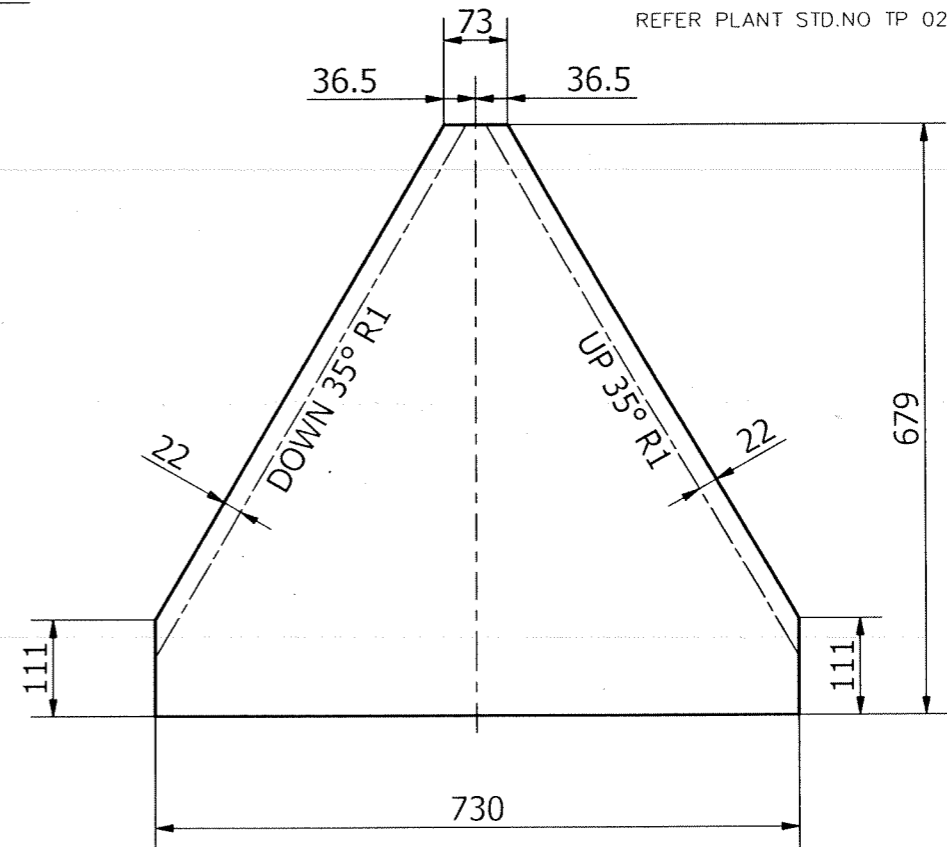
REV: 00

DRAWING NO: 3-47-953-01945
3-47-953-U5022

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



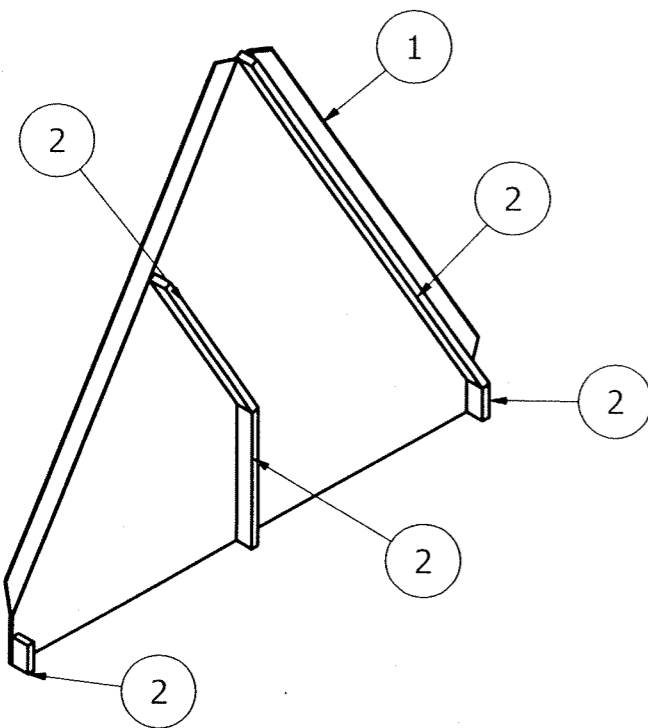
SECTION-A-A



DEVELOPED VIEW
(ITEM - 01)

NOTES:

- REFER DWG. NO 2-47-953-01963 FOR GENERAL NOTE



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	PL 10X25X1307				152110980000			2.591	
						IS2062E250GRA			1	
	01	SH 4X679X730				150113340000			9.712	
						IS2062FE410WA			1	

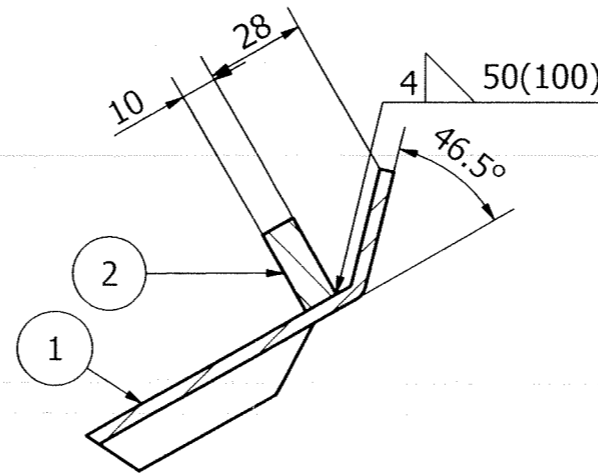
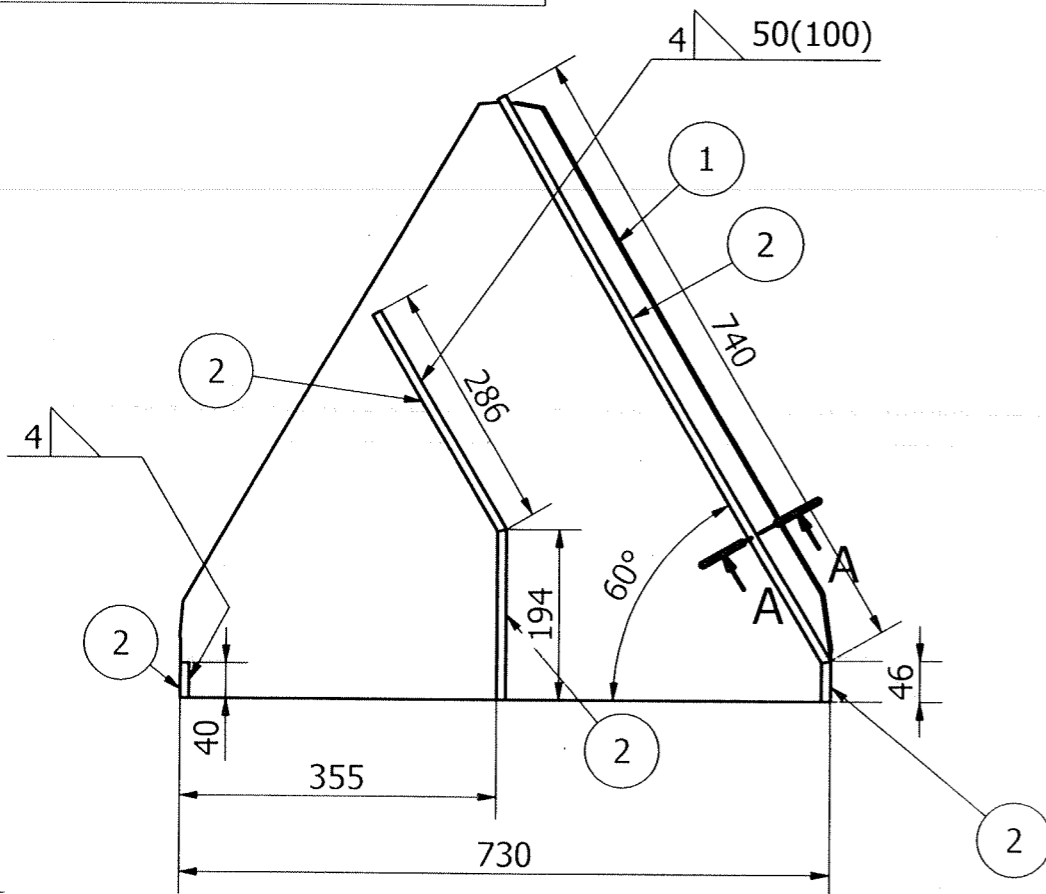
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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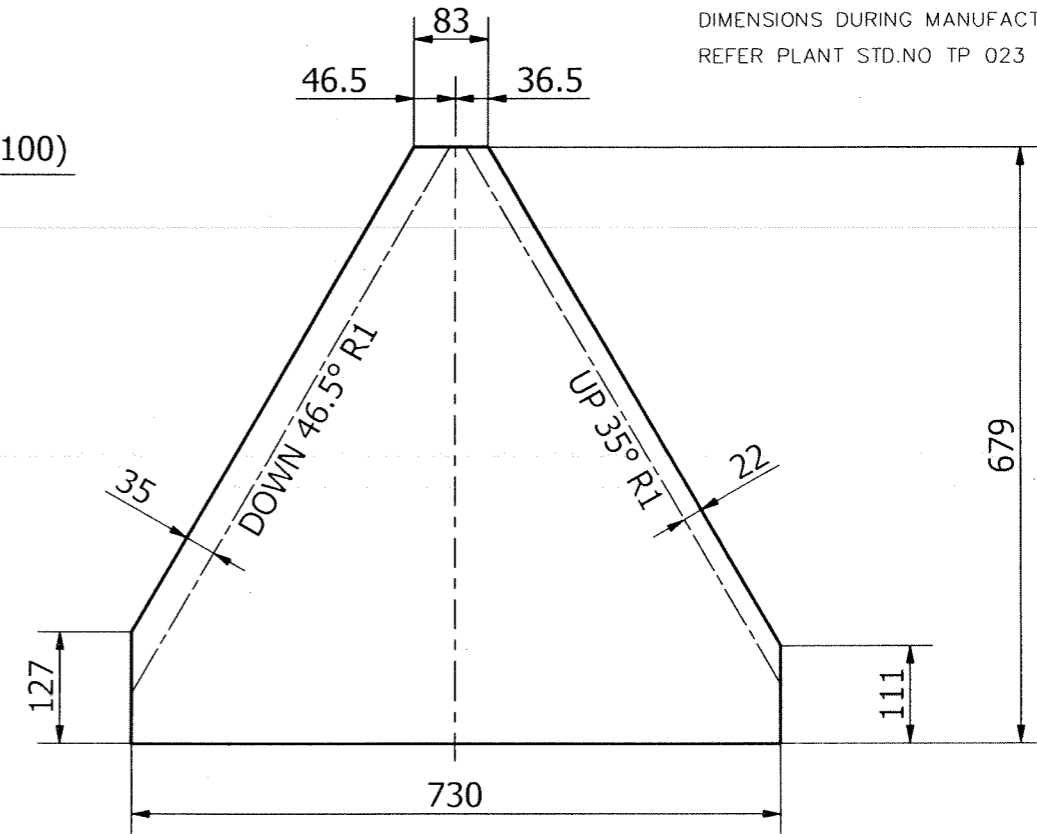
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012			
DEPT	FS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
CODE	129		NTS	12.303	1-47-301-00053		
TITLE						DRAWING NO :	REV
RIFLE ELEMENTS TYPE-C						3-47-953-01945 3-47-953-U5022	00

DRAWING NO: 3-47-953-01946
3-47-953-U5023

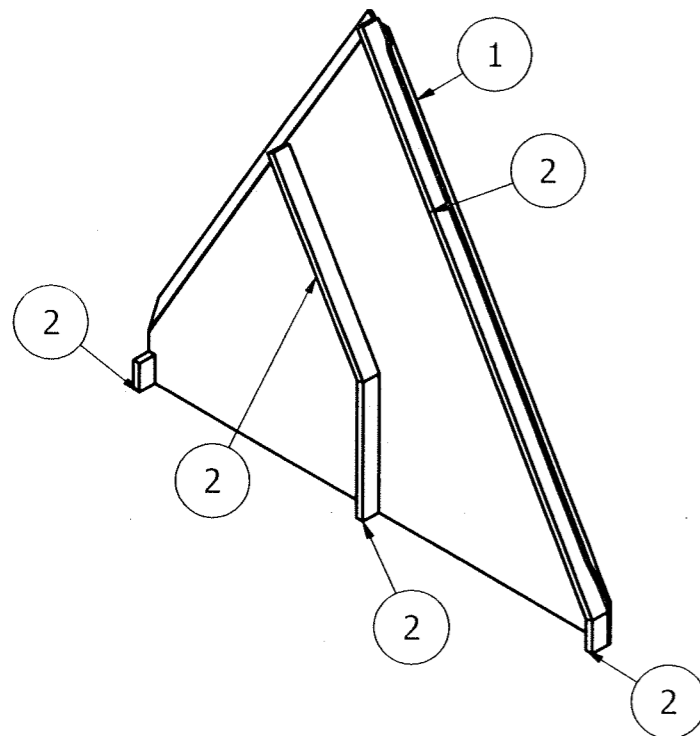
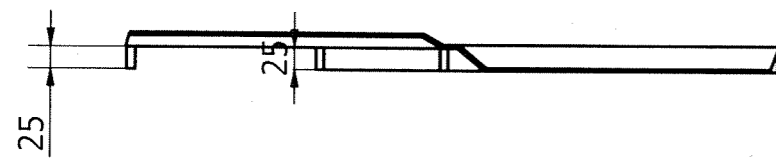
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD.NO TP 023 0299



SECTION-A-A



DEVELOPED VIEW
(ITEM - 01)




NOTES:

- REFER DWG. NO 2-47-953-01963 FOR GENERAL NOTE

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
02		PL 10X25X1306				152110980000			2.591	
						IS2062E250GRA			1	
01		SH 4X679X730				150113340000			9.882	
						IS2062FE410WA			1	

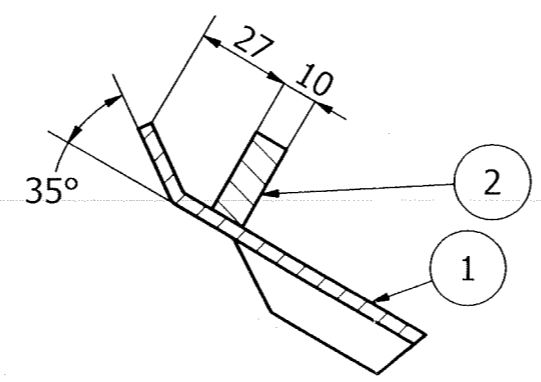
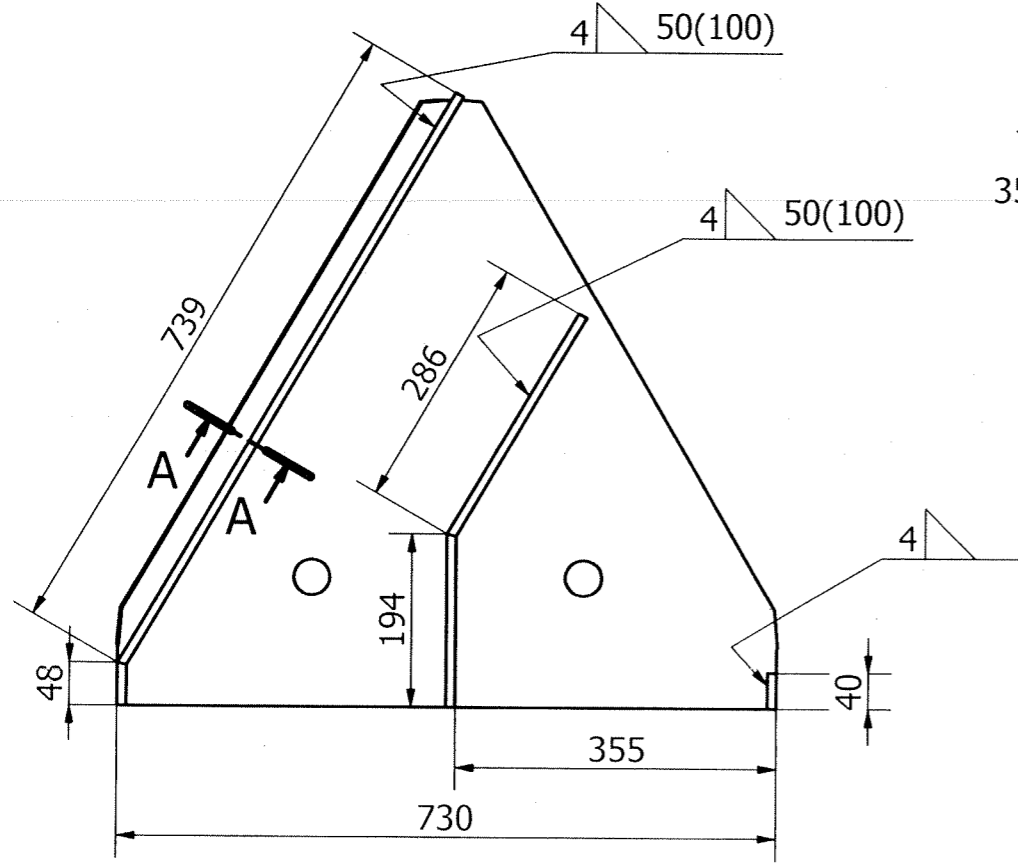
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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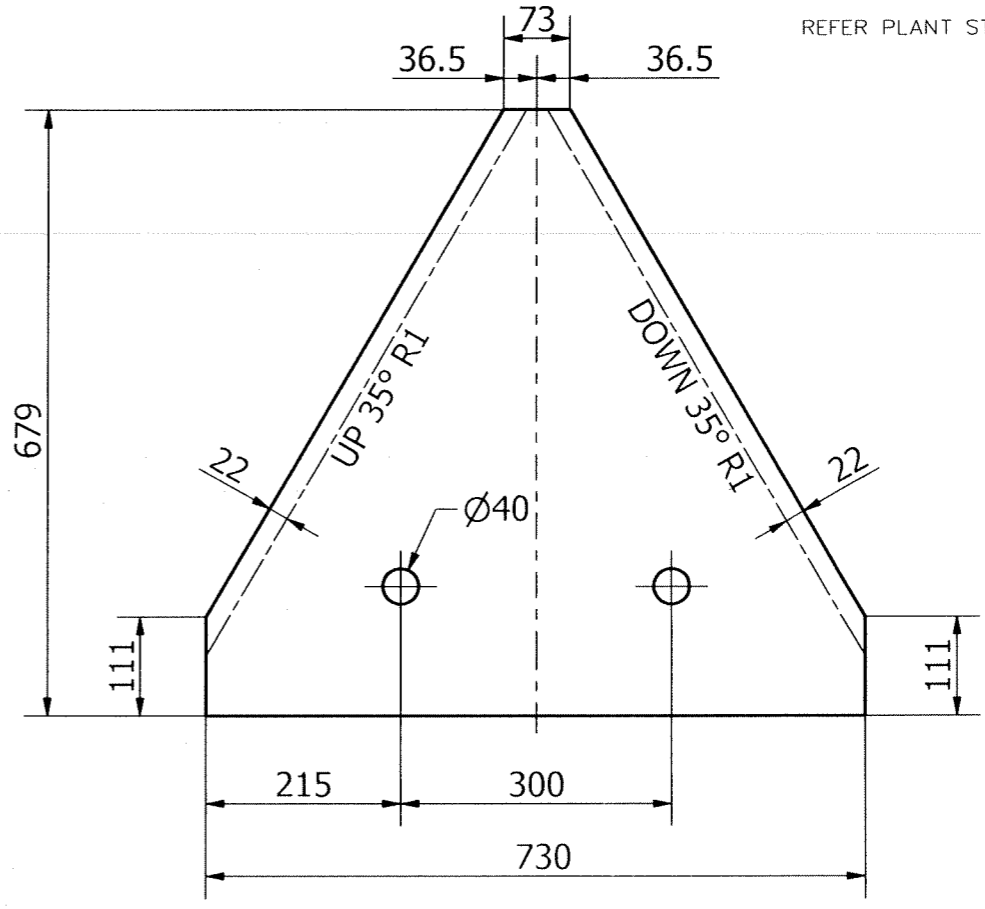
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012 355-055			
DEPT	FS	ALL DIMENSIONS ARE IN MM	PROJECTION
CODE	129		SCALE
TITLE		RIFLE ELEMENTS TYPE-E	SCALE
WEIGHT (Kg)		12.473	REF TO ASSY / OLD DWG
REF TO ASSY / OLD DWG		1-47-301-00053	DATE
DRAWING NO :		3-47-953-01946	SIGNATURE
REV		00	DATE
DRAWING NO :		3-47-953-U5023	SIGNATURE

DRAWING NO: 3-47-953-01947
3-47-953-U5024

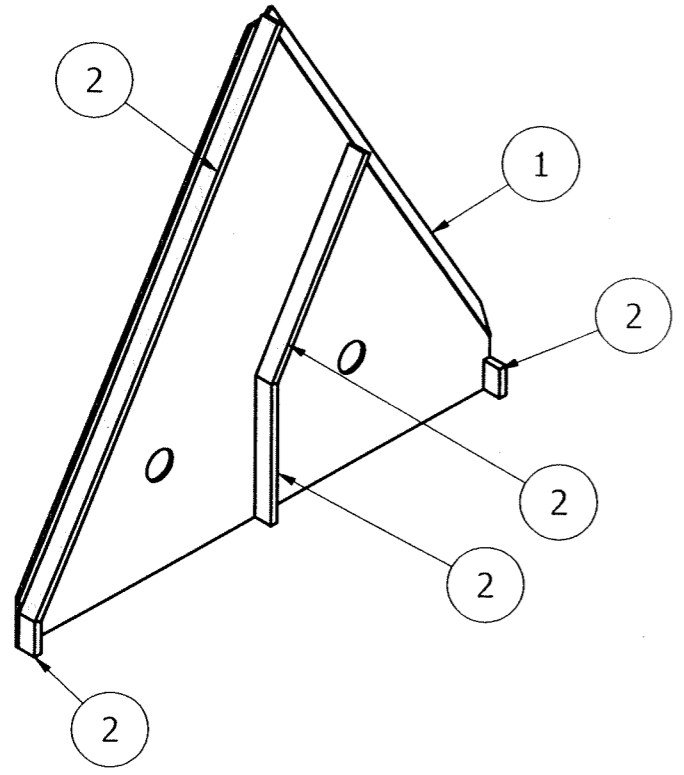
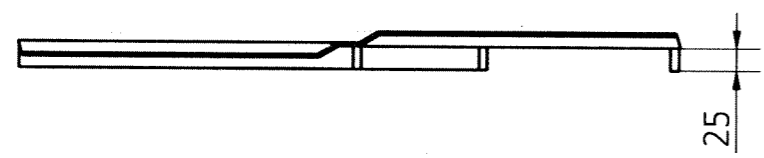
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD.NO TP 023 0299



SECTION-A-A



DEVELOPED VIEW
(ITEM - 01)



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	PL 10X25X1307				152110980000			2.591	
						IS2062E250GRA			1	
	01	SH 4X679X730				150113340000			9.633	
						IS2062FE410WA			1	

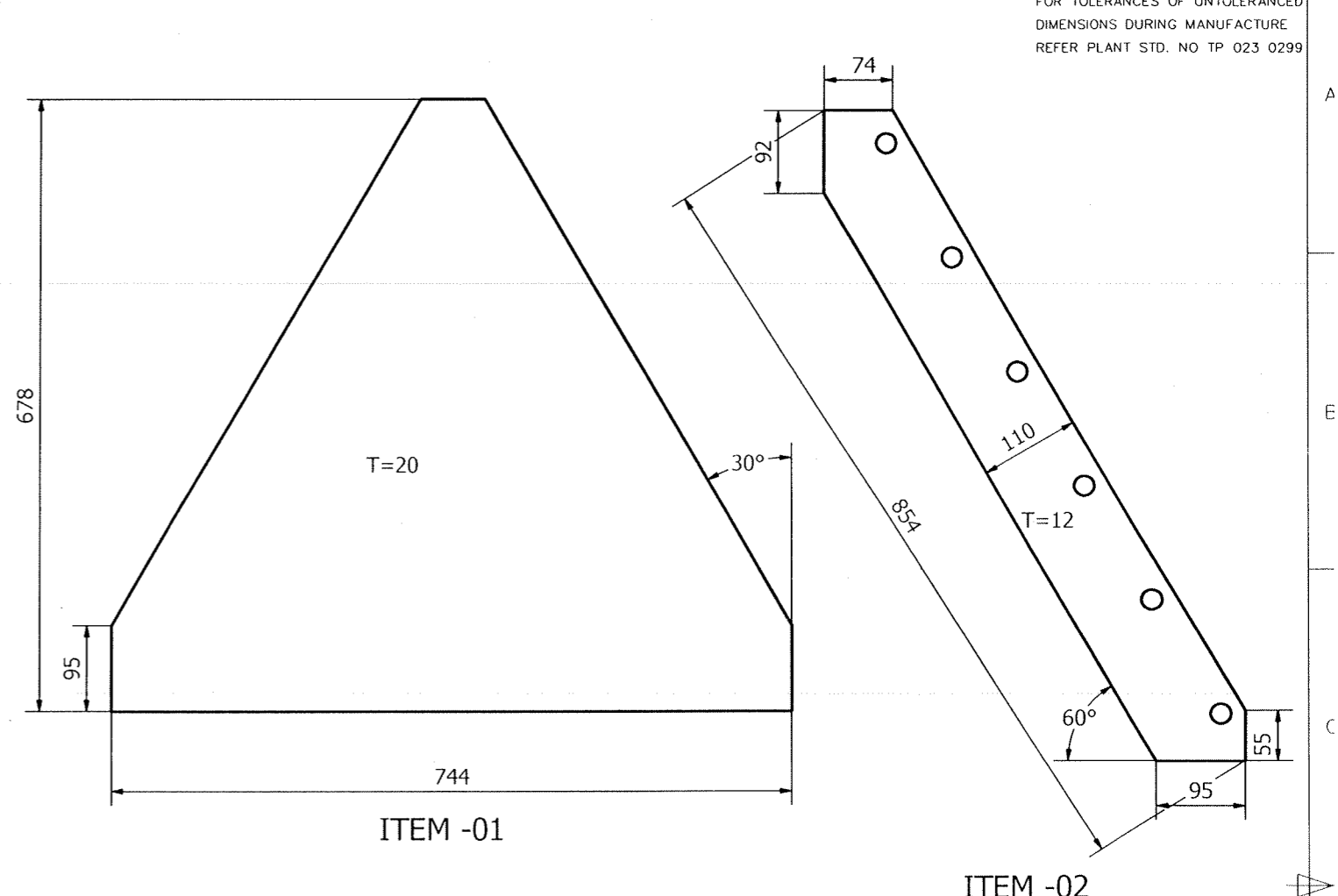
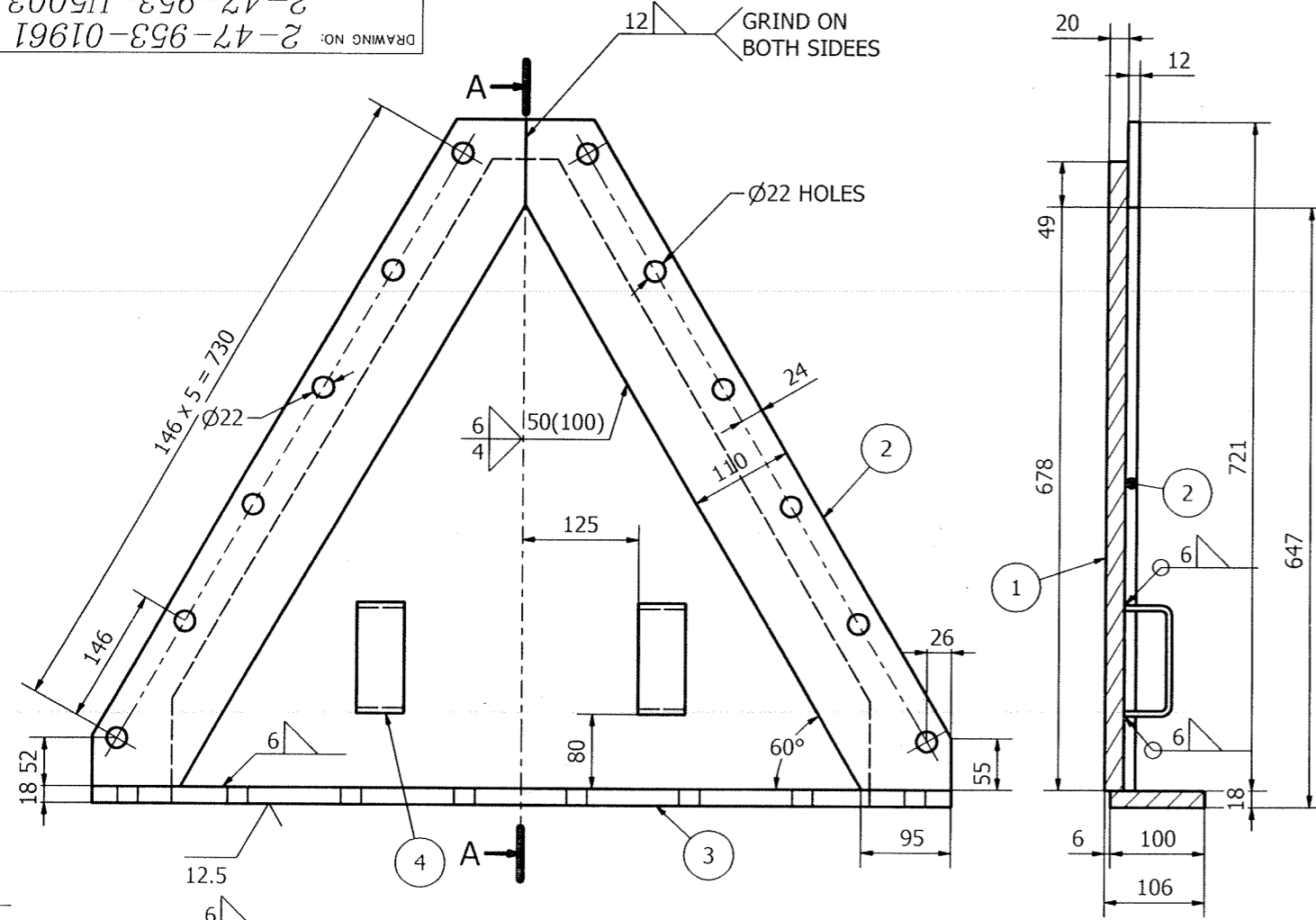
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012 355-055	DRN	NAME	SIGNATURE	DATE
	CHD	T.BASKARAN	Sd	26.08.21
	APPD	B.CHOWDHURY	Sd	26.08.21
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)
FS		1st Angle	NTS	12.224
CODE				REF TO ASSY / OLD DWG
129				1-47-301-00053
TITLE				DRAWING NO :
RIFFLE ELEMENTS TYPE-F				3-47-953-01947
				3-47-953-U5024
				REV
				00

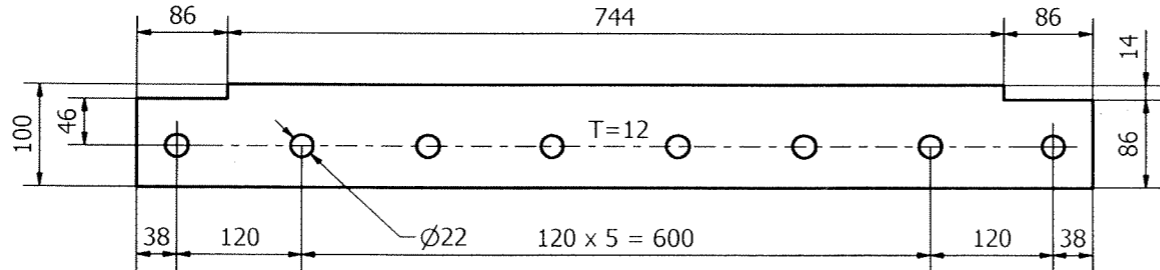
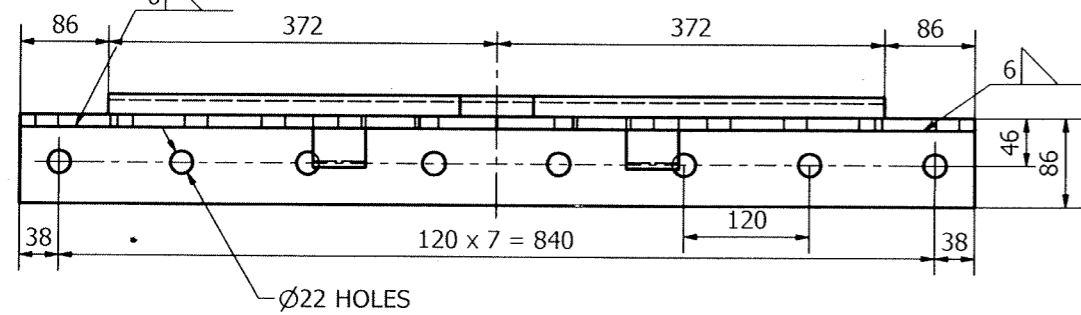
DRAWING NO. 2-47-953-01961
2-47-953-U5003

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

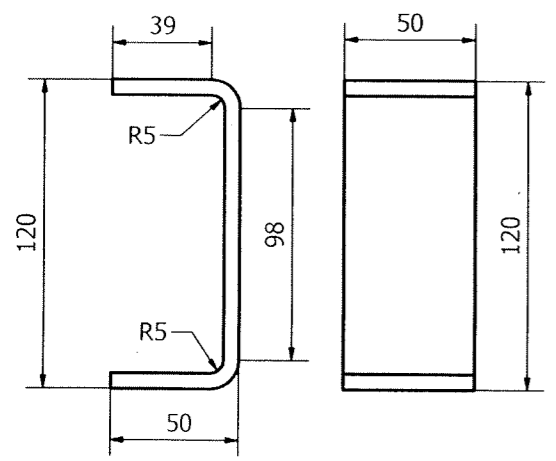


SECTION-A-A

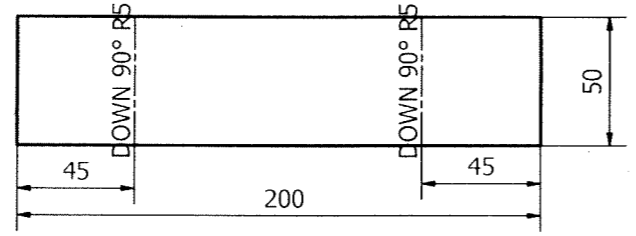
NOTES:
FLANGE TO BE STRAIGHTENED (IF NECESSARY) TO MAINTAIN PARALLEL FACES WITHIN $\pm 0^{\circ}45'$.



ITEM -03




ITEM -04
(FORMED VIEW)



ITEM -04
(DEVELOPED VIEW)

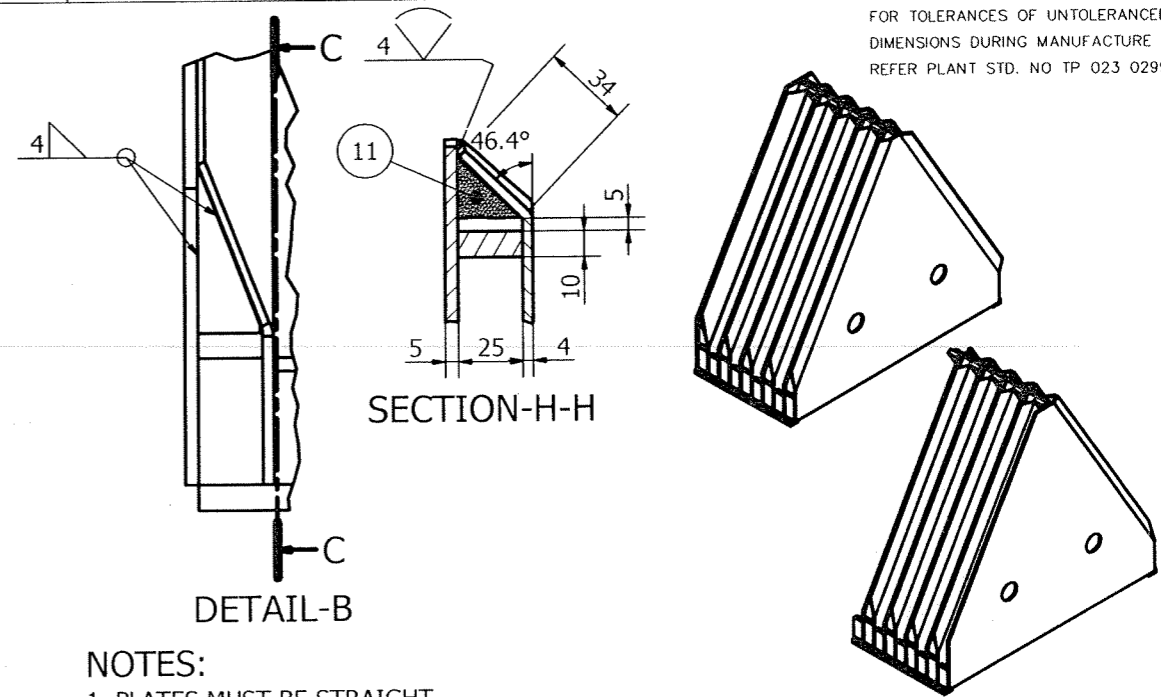
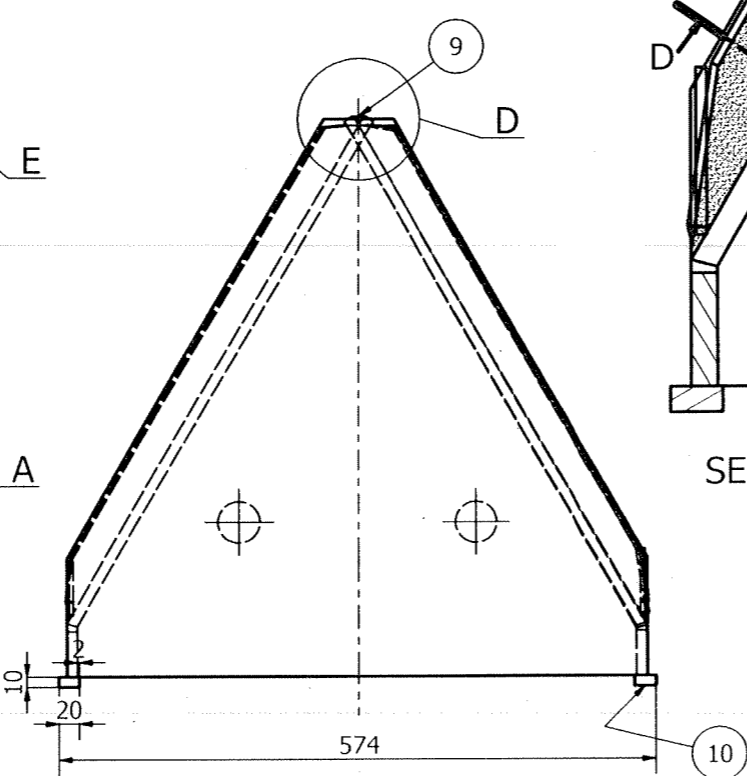
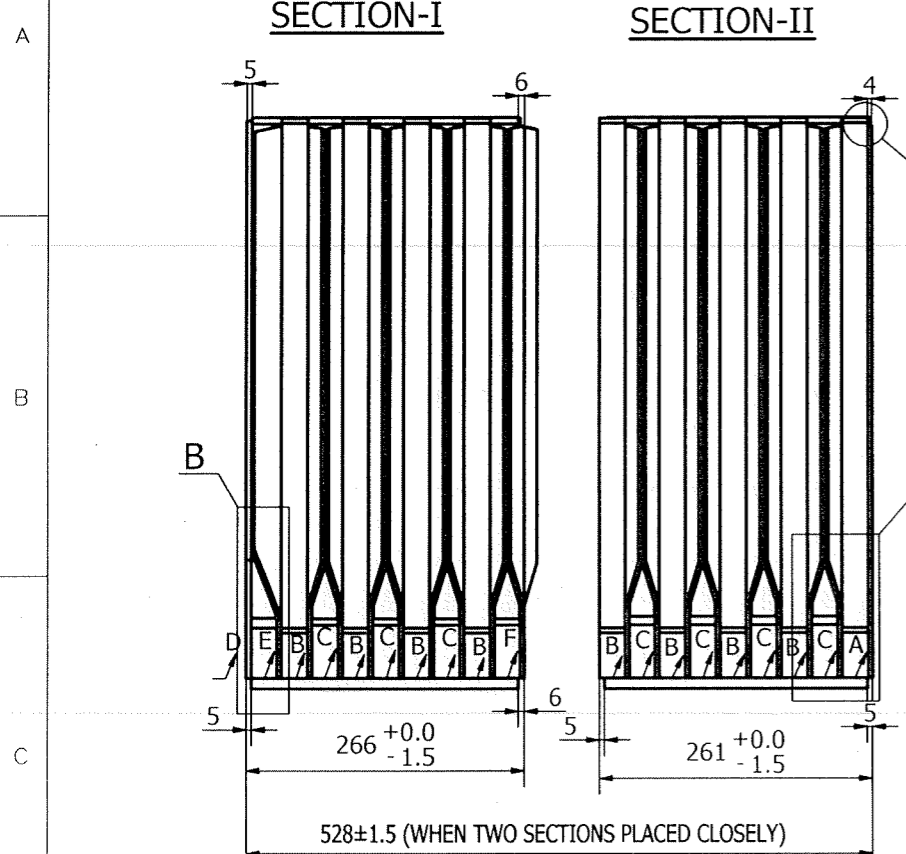
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
VAR NO		MATERIAL SPECN					DI	QUANTITY			
04		FLAT 50 X 6:200L				150080110000			0.471		
						IS2062FE 410GRA			2		
03		PL18 X 100 X 916				150110420000			12.137		
						IS2062E 350BR			1		
02		PL12 X 110 X 855L				150111270000			8.095		
						IS2062 E 350GRB0			2		
01		PL20 X 744 X 678				150110430000			48.387		
						IS2062E 350BR			1		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		SIGNATURE		DATE		
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM - 530012		DRN		B. CHOWDHURY		03.07.2021		
		CHD		N SAIRAM		03.07.2021		
		APPD		MCHS GANGADHER		03.07.2021		
DEPT	ES	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	1:5 NTS	WEIGHT (Kg)	77.656	
CODE	129					REF TO ASSY / OLD DWG	2-47-301-00005	
TITLE	SIDE COVER PLATE ASSLY						DRAWING NO :	2-47-953-01961
							2-47-953-U5003	
							00	

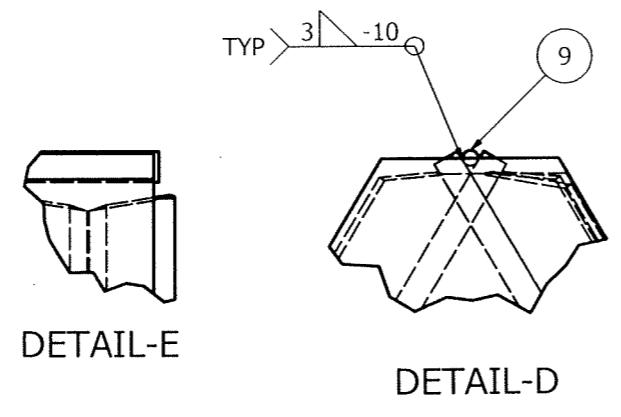
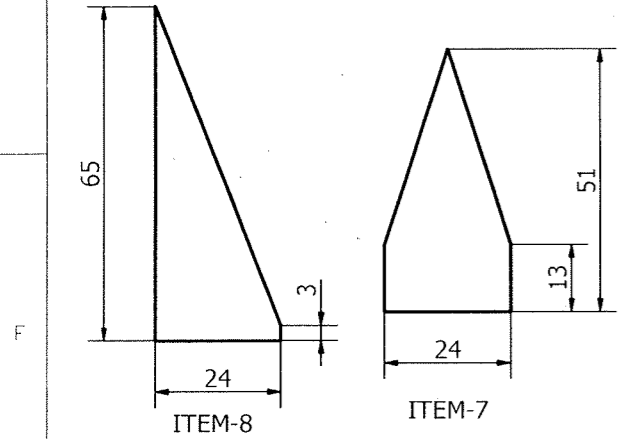
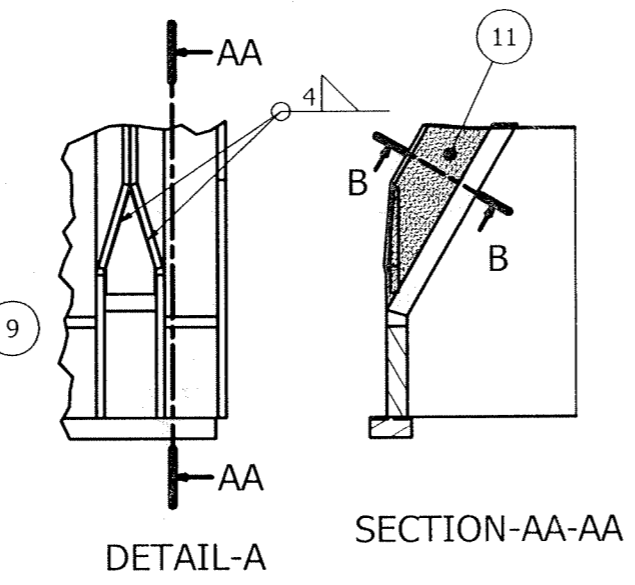
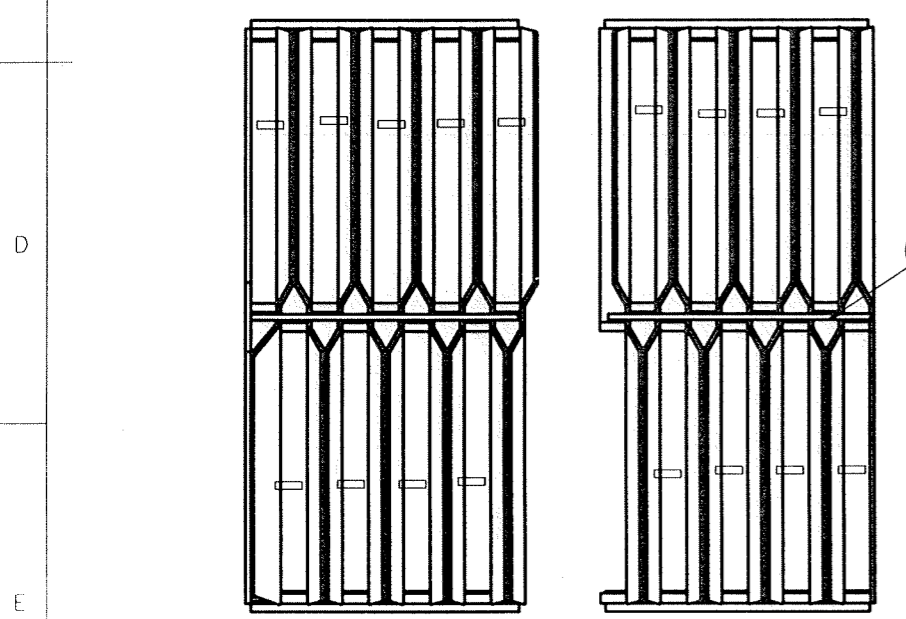
REV	DATE	ALTERED
01		CHD & APPD

RIFFLE ELEMENTS ARRANGED IN TWO SECTIONS

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



- NOTES:**
1. PLATES MUST BE STRAIGHT
 2. EDGES OF STIFFENERS WHERE PLATES ARE CONNECTED TO BE SMOOTH & STRAIGHT.
 3. PRESS THE STIFFENERS TO THE PLATES WHILE WELDING.
 4. ALL THE DIMENSIONS TO BE KEPT UP BEFORE BENDING .
 5. TO BE WELDED AIR TIGHT.
 6. CUT ITEM 07 & WELD ACC. TO REQUIREMENT.



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY	ZONE
	11	CEMENT M1 X 1:3							20.000	1	
	10	PL10 X 20 X 1020				152110980000			1.570	1	
	09	ROD Ø6 X 520				150040260000			0.115	1	
	08	SH 4 X 24 X 65				150113340000			0.026	1	
	07	SH4 X 24 X 51				150113340000			0.024	16	
	06	RIFFLE ELEMENTS TYPE-F	3-47-953-01942			WELDMENTS			7.405	1	
	05	RIFFLE ELEMENTS TYPE-E	3-47-953-01941			WELDMENTS			7.605	1	
	04	RIFFLE ELEMENTS TYPE-D SH 4X541X558	4-47-953-02069			150113340000			7.744	1	
	03	RIFFLE ELEMENTS TYPE-C	3-47-953-01940			WELDMENTS			7.484	7	
	02	RIFFLE ELEMENTS TYPE-B	3-47-953-01939			WELDMENTS			7.484	8	
	01	RIFFLE ELEMENTS TYPE-A	3-47-953-01938			WELDMENTS			7.402	1	

REV	DATE	ALTERED
01		CHD & APPD

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	T.BASKARAN	Sd	26.08.21
	B.CHOWDHURY	Sd	26.08.21
	MCHS.GANGADHAR	Sd	26.08.21

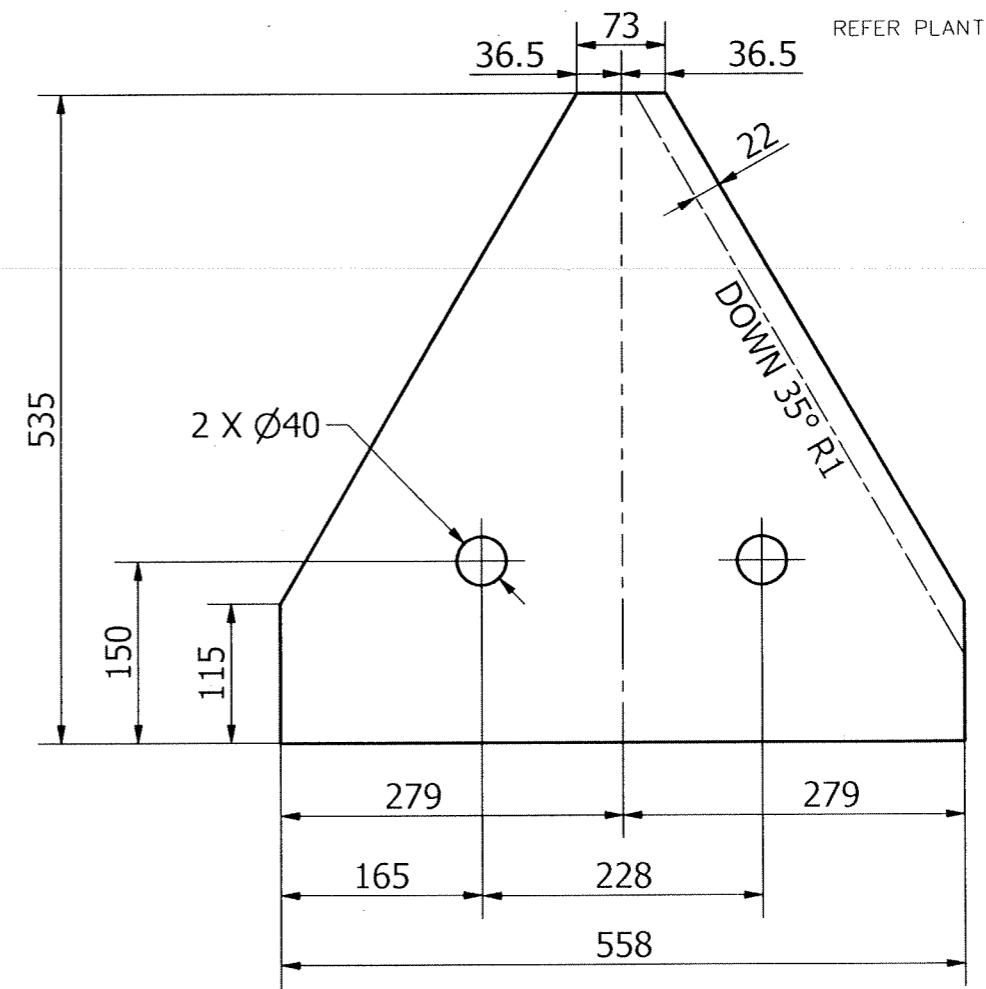
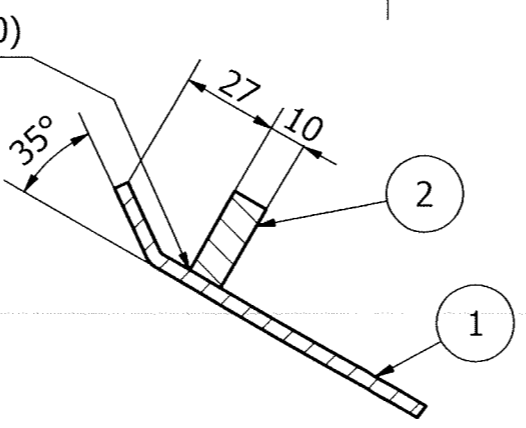
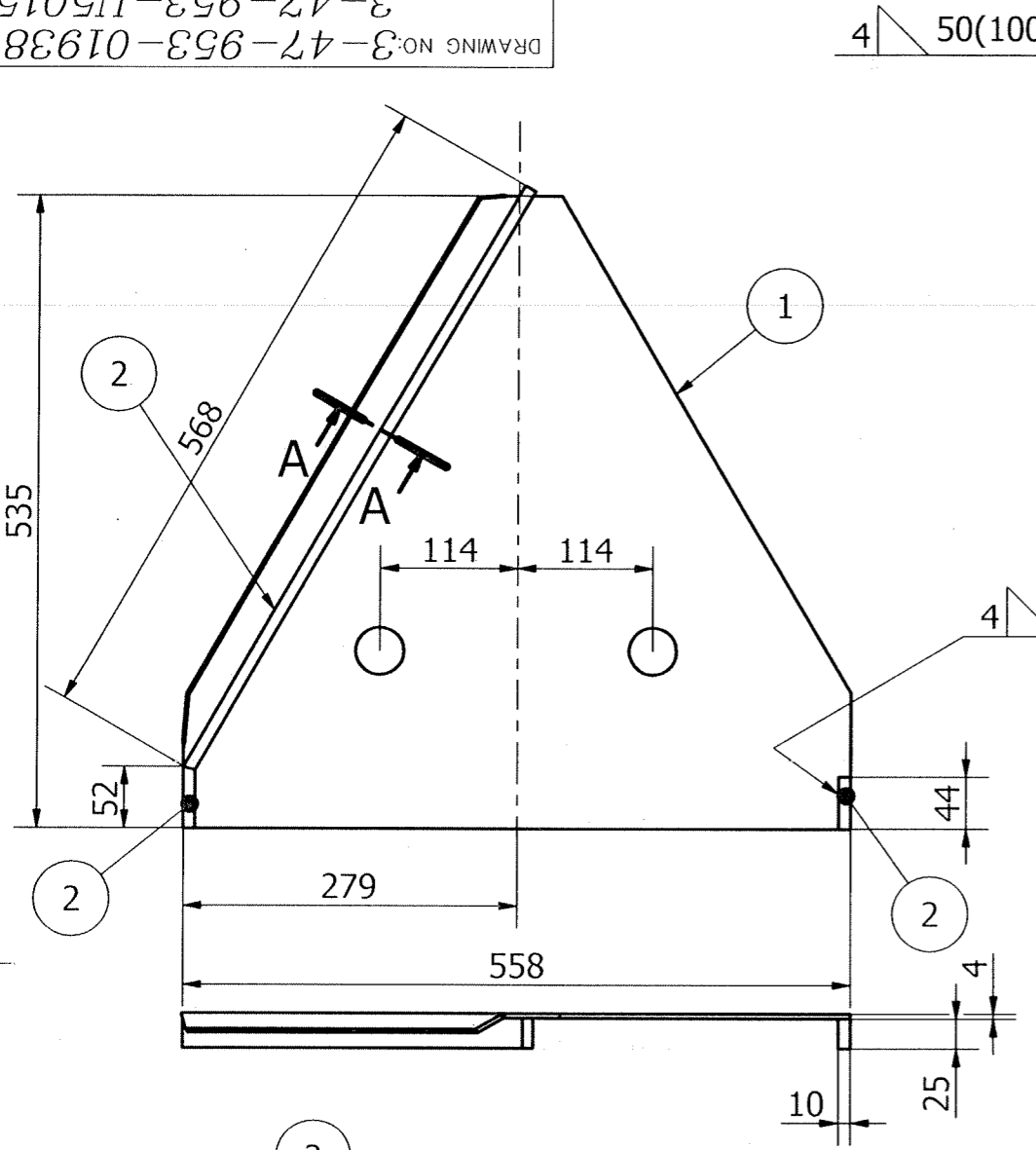
DEPT FS ALL DIMENSIONS ARE IN MM PROJECTION SCALE WEIGHT (Kg) REF TO ASSY / OLD DWG

CODE 129 NTS 164.511 1-47-301-00050

TITLE **RIFFLE ELEMENTS #5 (TWO SECTION)** DRAWING NO: 2-47-953-01962 2-47-953-U5004 REV 00

DRAWING NO: 3-47-953-01938
3-47-953-U5015

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

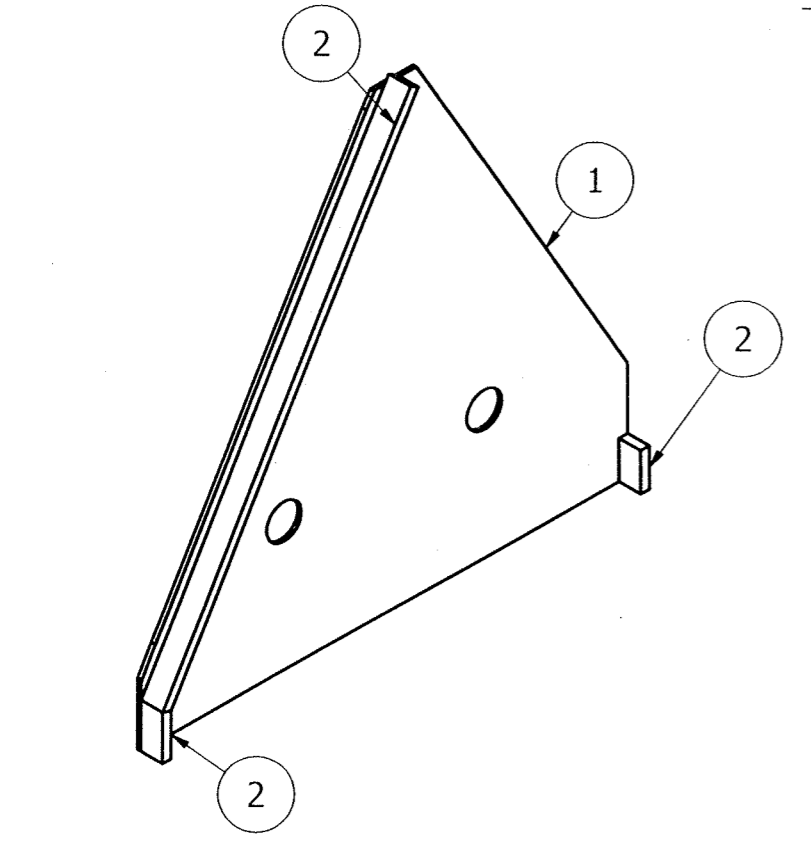


SECTION-A-A

DEVELOPED VIEW

NOTES:

- 1. REFER DWG. NO 2-47-953-01962 FOR GENERAL NOTE ITEM-01



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS
VAR NO					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	02	PL 10X25X664				152110980000			1.303	
						IS2062E250GRA			1	
	01	SH 4X535X558				150113340000			6.099	
						IS1079D			1	

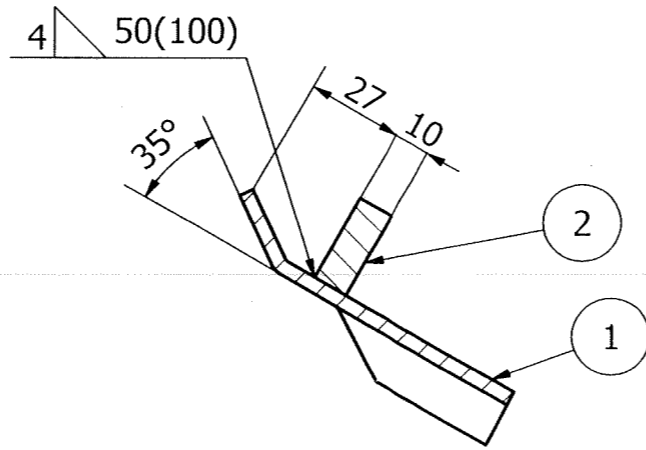
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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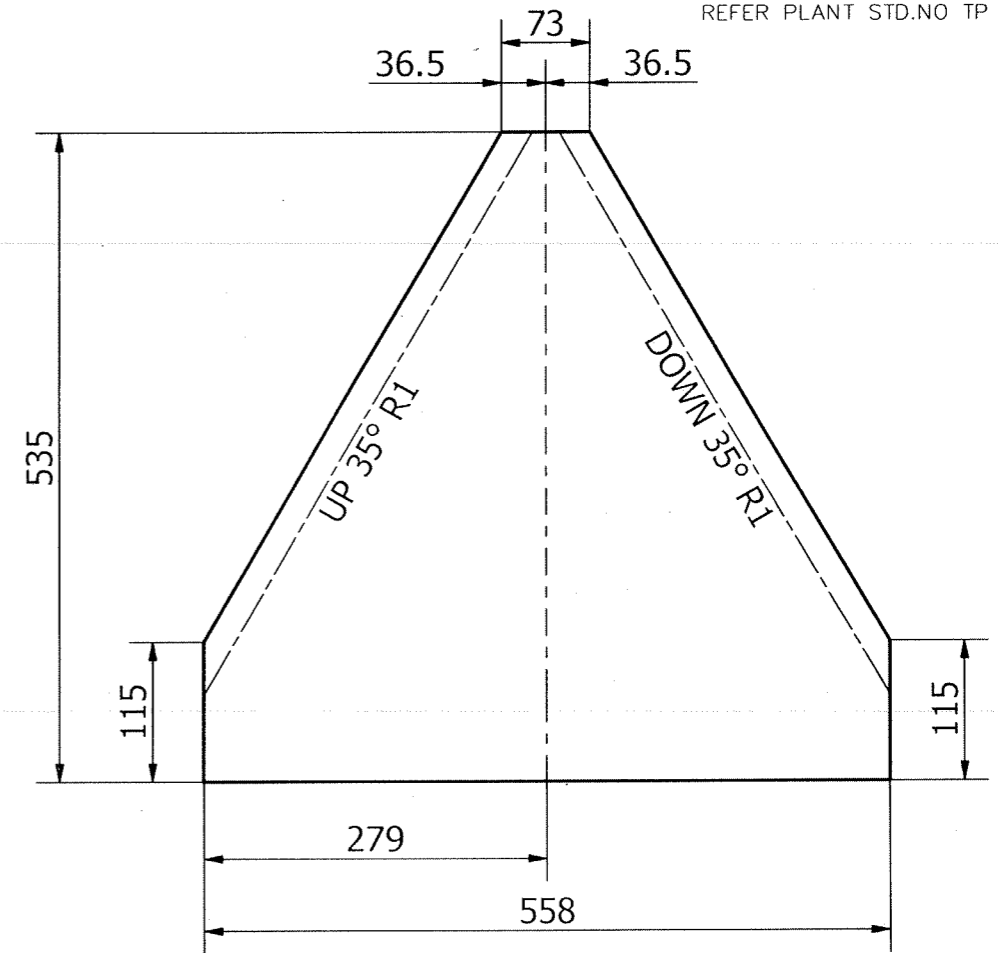
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		NAME T.BASKARAN		SIGNATURE Sd		DATE 26.08.21	
DEPT FS		ALL DIMENSIONS ARE IN MM		PROJECTION SCALE NTS		WEIGHT (Kg) 7.402		REF TO ASSY / OLD DWG 1-47-301-00050			
CODE 129		TITLE RIFLE ELEMENTS TYPE - A		DRAWING NO : 3-47-953-01938 3-47-953-U5015				REV 00			

DRAWING NO: 3-47-953-01939
3-47-953-U5016

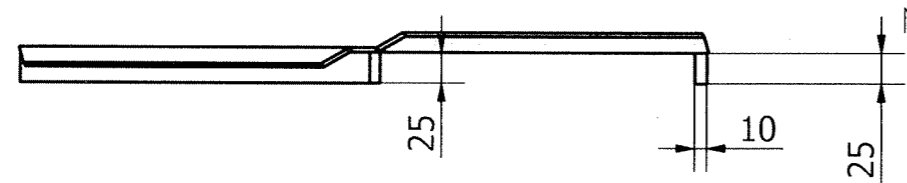
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



SECTION-A-A

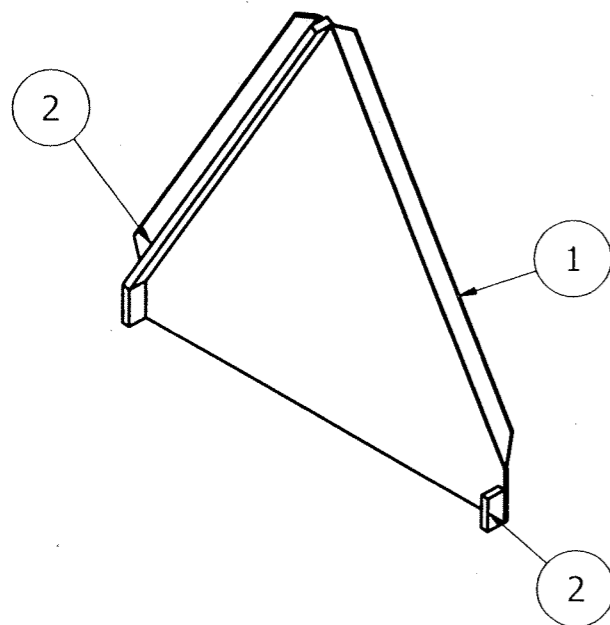


DEVELOPED VIEW



NOTES:

- REFER DWG. NO 2-47-953-01962 FOR GENERAL NOTE ITEM-01




type-B

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY
02		PL 10X25X664				152110980000			1.303	1
						IS2062E250GRA				
01		SH 4X535X558				150113340000			6.181	1
						IS1079D				

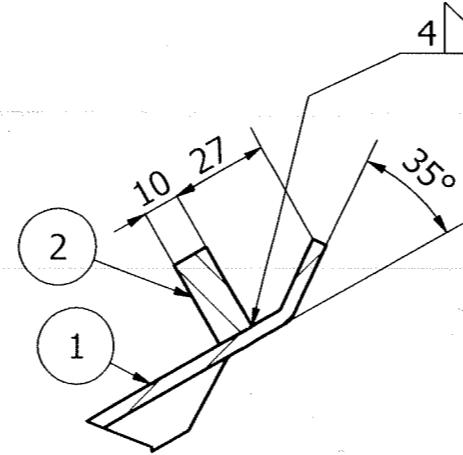
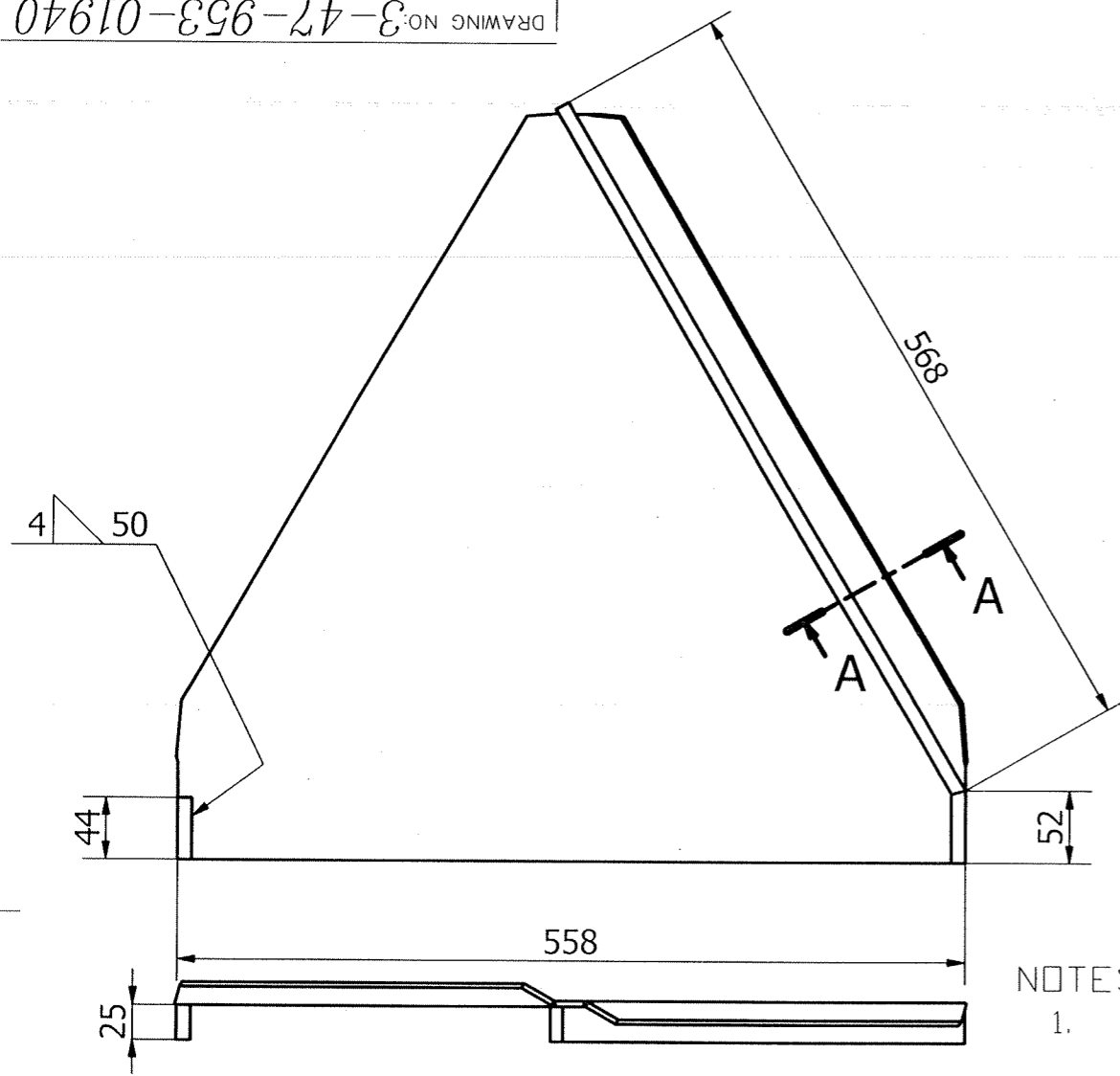
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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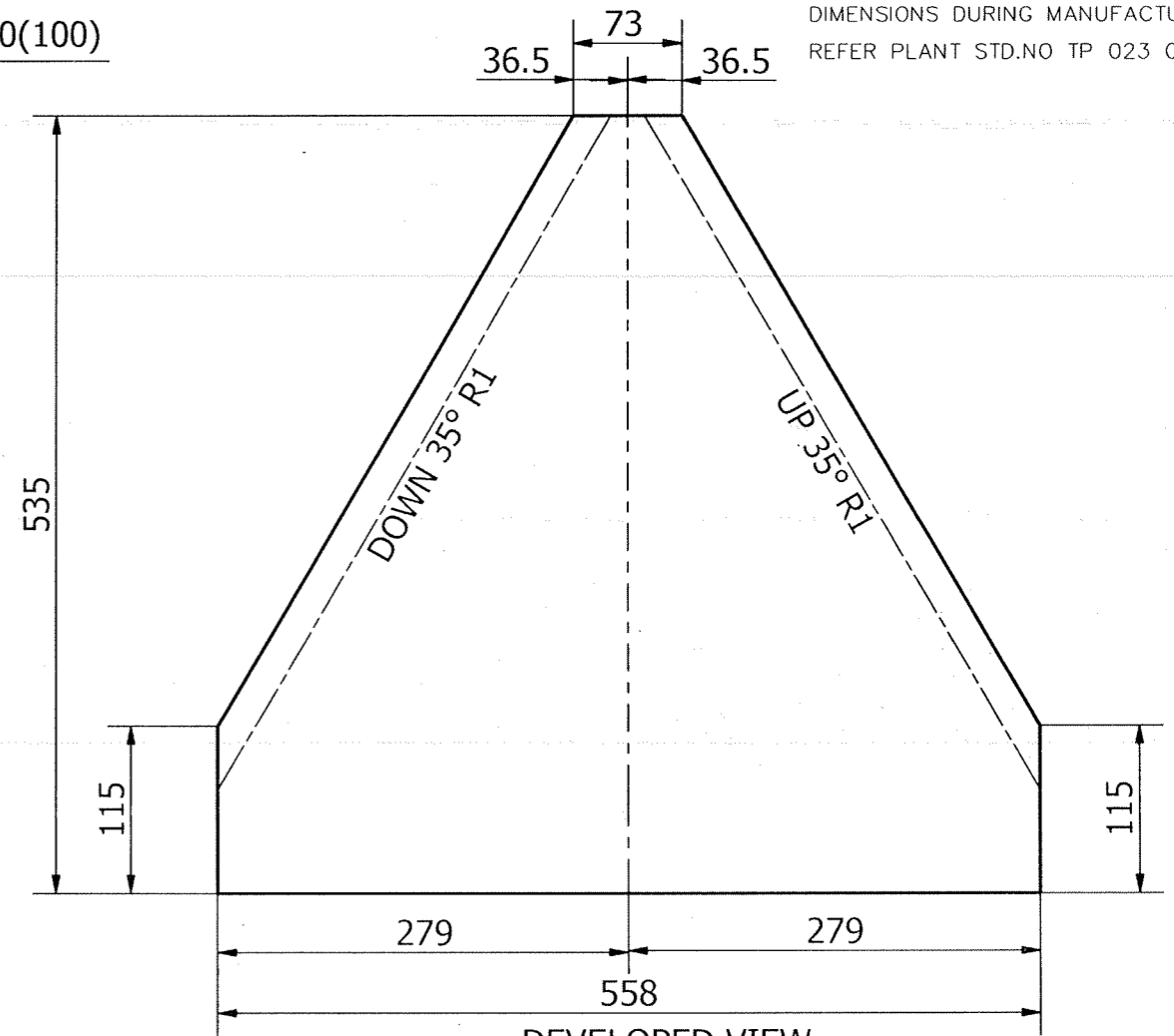
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012 355-055			
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE
FS		1st Angle	NTS
CODE	129		
WEIGHT (Kg)		REF TO ASSY / OLD DWG	
7.484		1-47-301-00050	
TITLE			REV
RIFFLE ELEMENTS TYPE - B			00
DRAWING NO :			
3-47-953-01939			
3-47-953-U5016			

DRAWING NO: 3-47-953-01940
3-47-953-U5017

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



SECTION-A-A

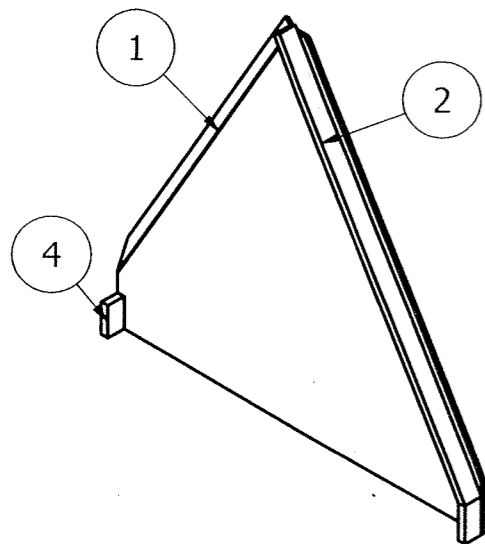


DEVELOPED VIEW
ITEM-01

NOTES:


- REFER DWG. NO 2-47-953-01962 FOR GENERAL NOTE

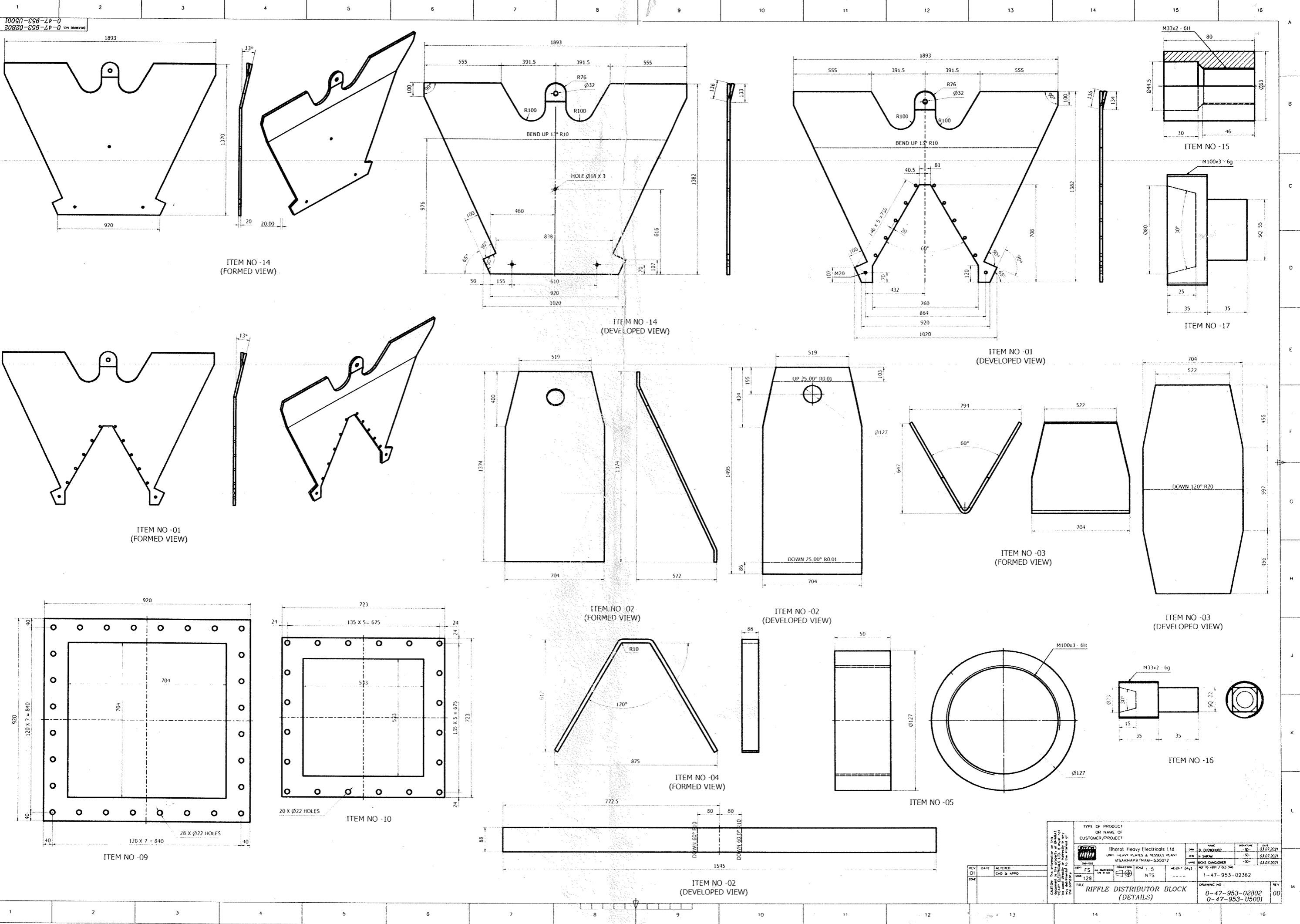
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QS
VAR NO						MATERIAL SPECN		DI	QUANTITY	
	02	PL 10X25X664				152110980000			1.303	
						IS2062E250GRA			1	
	01	SH 4X535X558				150113340000			6.181	
						IS1079D			1	



REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012 355-055			
DRN	T.BASKARAN	SIGNATURE	DATE
CHD	B.CHOWDHURY	Sd	26.08.21
APPD	MCHS.GANGADHAR	Sd	26.08.21
DEPT	FS	PROJECTION	SCALE
CODE	129	ALL DIMENSIONS ARE IN MM	NTS
WEIGHT (Kg)		REF TO ASSY / OLD DWG	
7.484		1-47-301-00050	
TITLE			REV
RIFFLE ELEMENTS TYPE - C			00
DRAWING NO :			
3-47-953-01940			
3-47-953-U5017			



10050-838-74-0
0-47-953-02802
2020-02-02

ITEM NO - 14
(FORMED VIEW)

ITEM NO - 14
(DEVELOPED VIEW)

ITEM NO - 01
(DEVELOPED VIEW)

ITEM NO - 01
(FORMED VIEW)

ITEM NO - 02
(FORMED VIEW)

ITEM NO - 02
(DEVELOPED VIEW)

ITEM NO - 03
(FORMED VIEW)

ITEM NO - 03
(DEVELOPED VIEW)

ITEM NO - 09

ITEM NO - 10

ITEM NO - 04
(FORMED VIEW)

ITEM NO - 02
(DEVELOPED VIEW)

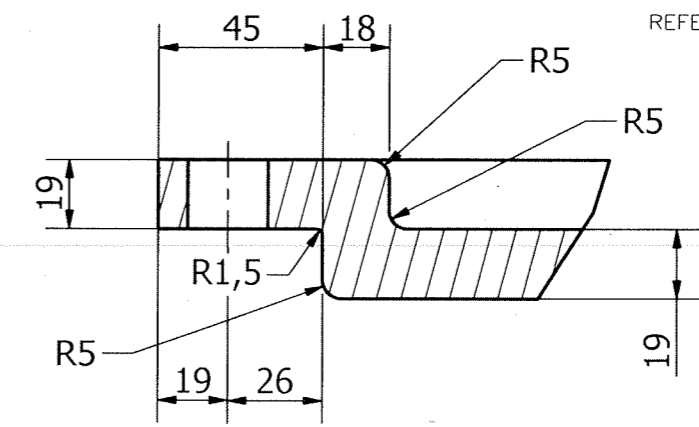
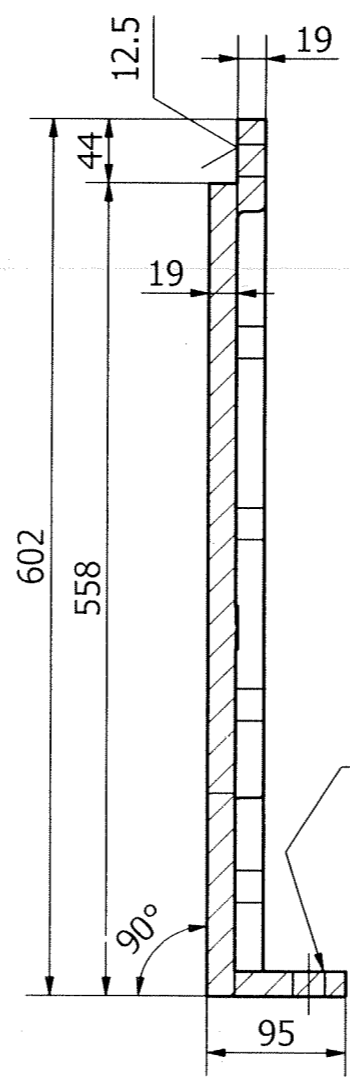
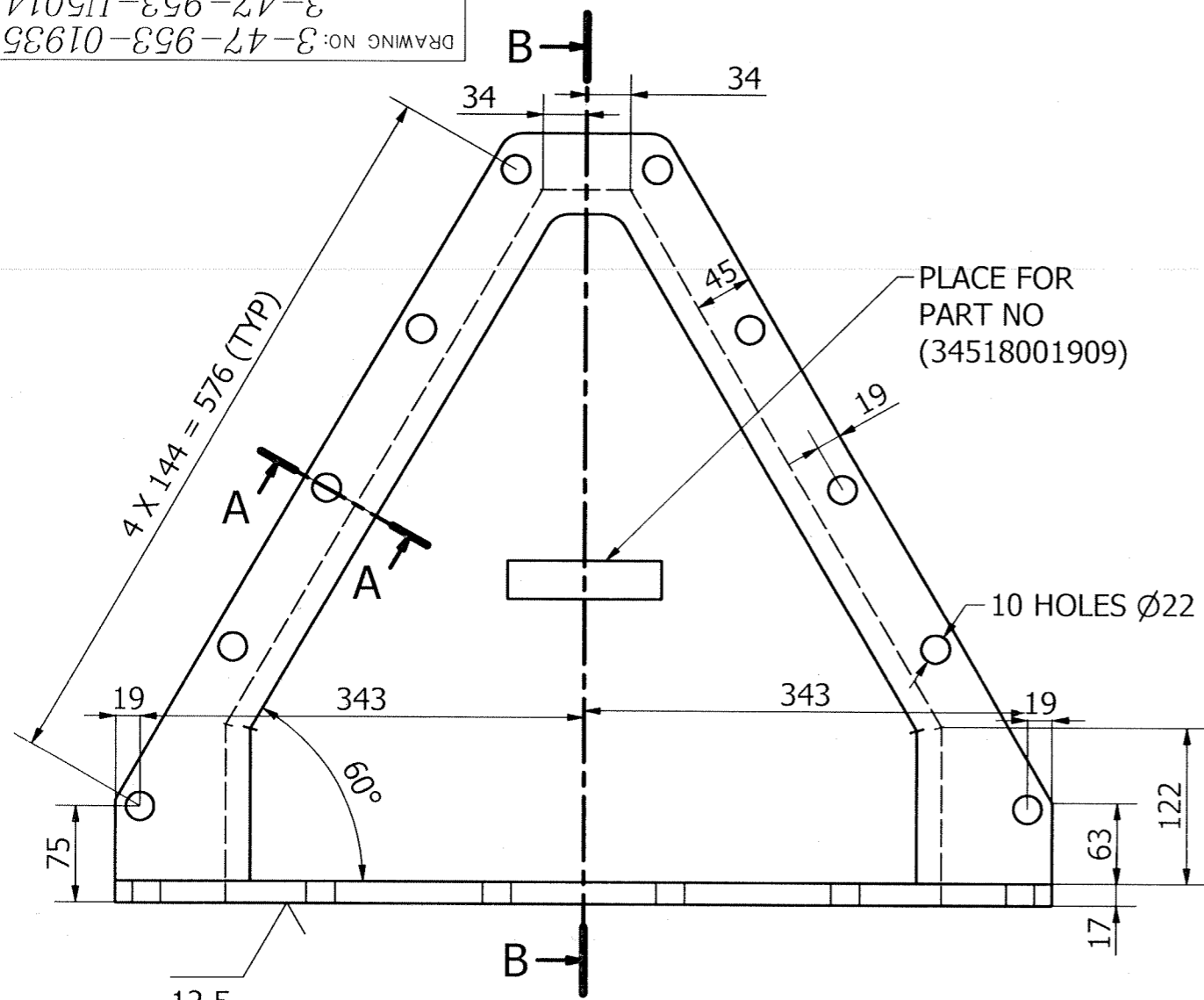
ITEM NO - 05

ITEM NO - 16

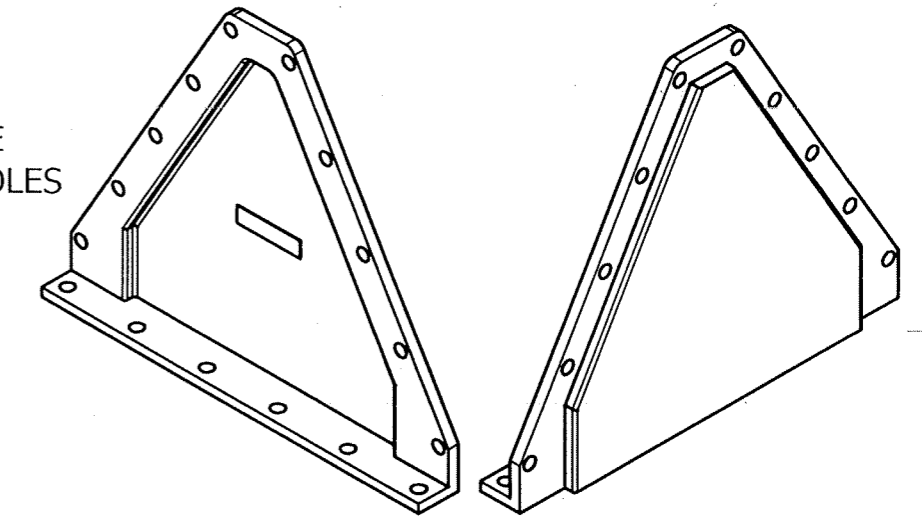
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012	
DESIGNED BY	DATE	CHECKED BY	DATE
DR		NS	03.07.2021
SCALE		SHEET NO	
1:5		1-47-953-02362	
DWT		REV	
129		00	
TITLE		DRAWING NO	
RIFFLER DISTRIBUTOR BLOCK (DETAILS)		0-47-953-02802	
		0-47-953-U5001	

DRAWING NO: 3-47-953-01935
3-47-953-U5014

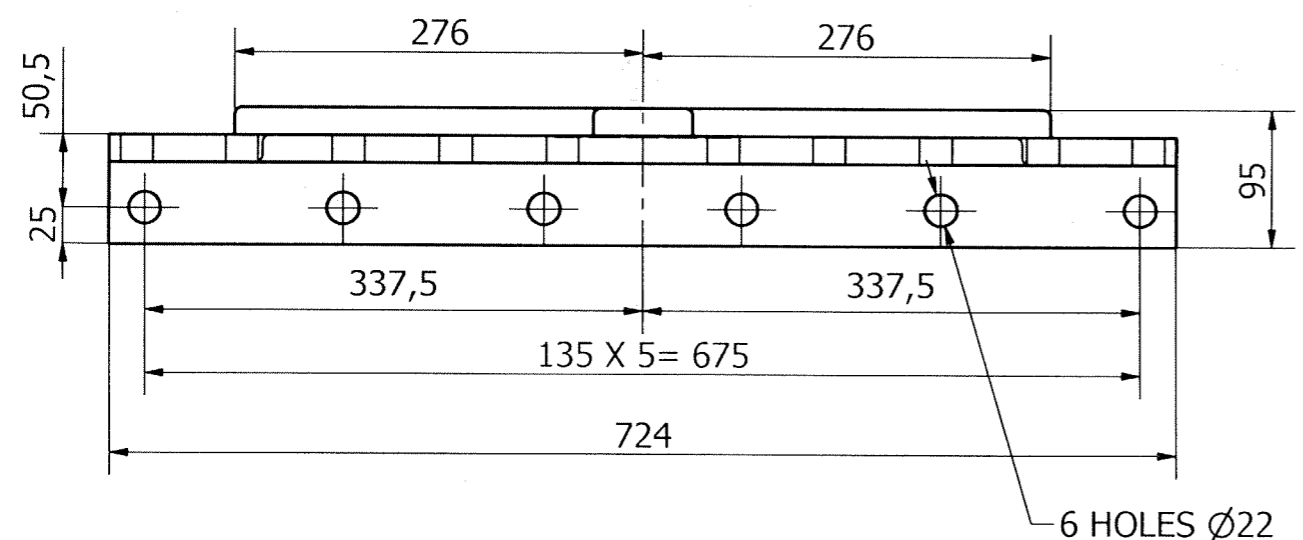
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD.NO TP 023 0299



SECTION-A-A



SECTION-B-B



NOTES:-

- 01. ALL CAST TOLERANCE TO BE ±0.5 UNLESS NOTED.
- 02. ALL FILLET & ROUNDS R0.5 UNLESS NOTED.
- 03. MATCH DRILL WITH RIFFLE DISTRIBUTOR BLOCK
DWG. NO 1-47-953-02361

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

VARIANT NUMBER	01	DESCRIPTION	SIDE PLATE(MACHINED)	STD	DRAWING NUMBER	920250020000	MATERIAL CODE	ASTM A536	A/C/P	UNIT	DI	UNIT WEIGHT	51.000	QUANTITY	CS
----------------	----	-------------	----------------------	-----	----------------	--------------	---------------	-----------	-------	------	----	-------------	--------	----------	----

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012 355-055				DRN	B. CHOWDHURY	SIGNATURE	-SD-	DATE	03.07.2021
DEPT	FS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	1:5	WEIGHT (Kg)	313.900	REF TO ASSY / OLD DWG	2-47-301-00004 1-47-953-02361
CODE	129				NTS			DRAWING NO :	3-47-953-01935 3-47-953-U5014
TITLE SIDE COVER PLATE (FOR 16" PIPE DISTRIBUTOR)								REV	00

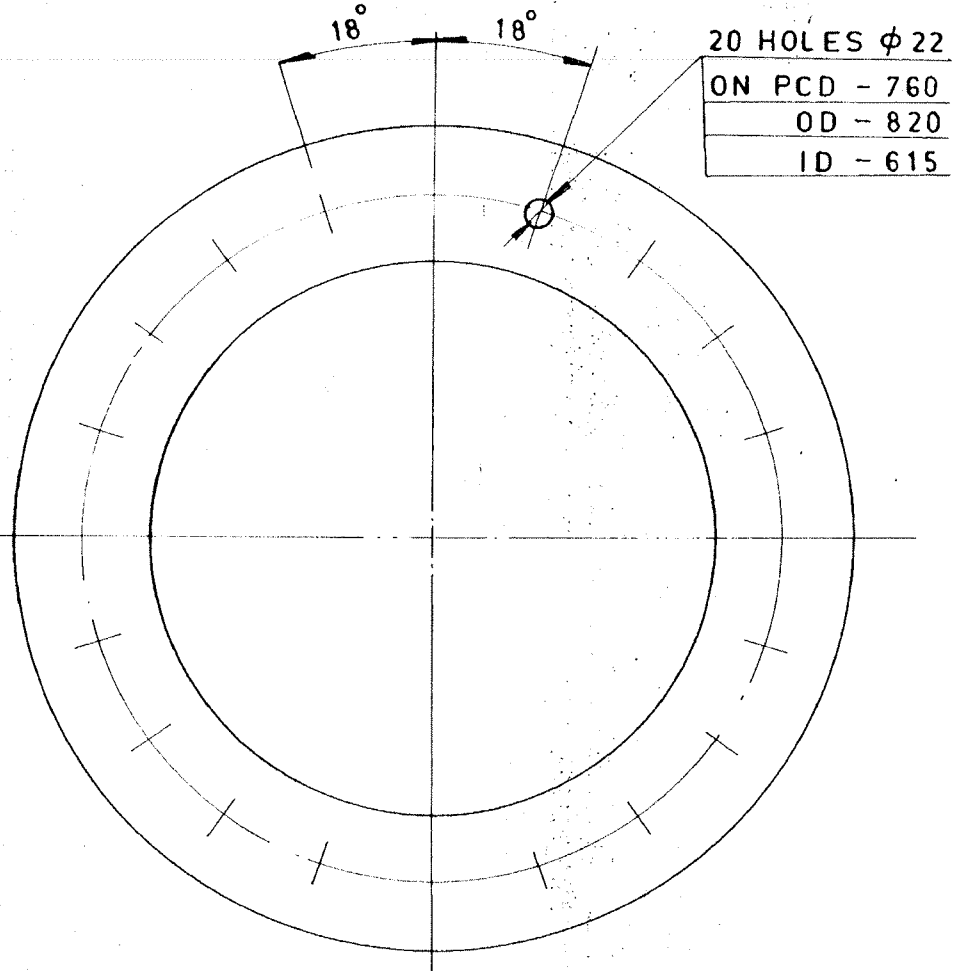
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

66-249/C

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REV 01	DATE 13-2-98	ALTERED	REV 02	DATE	ALTERED
		CHECKED			CHECKED

MATERIAL SPECN ALTERED



MF 735111

01	PL. 12 X D820 / 615	15 - 011 - 132	21.75
		15 2062 F2410W	1
MANUFACTURE NO.	DESCRIPTION	MATL CODE	UNIT WT
		MATL SPEC	QTY



Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT
 VISAKHAPATNAM-530012

DRN	NAME SIMON	SIGN	DATE
CHD	GOPAL		6.2.84
APPD	NAKKEERAN		6.2.84

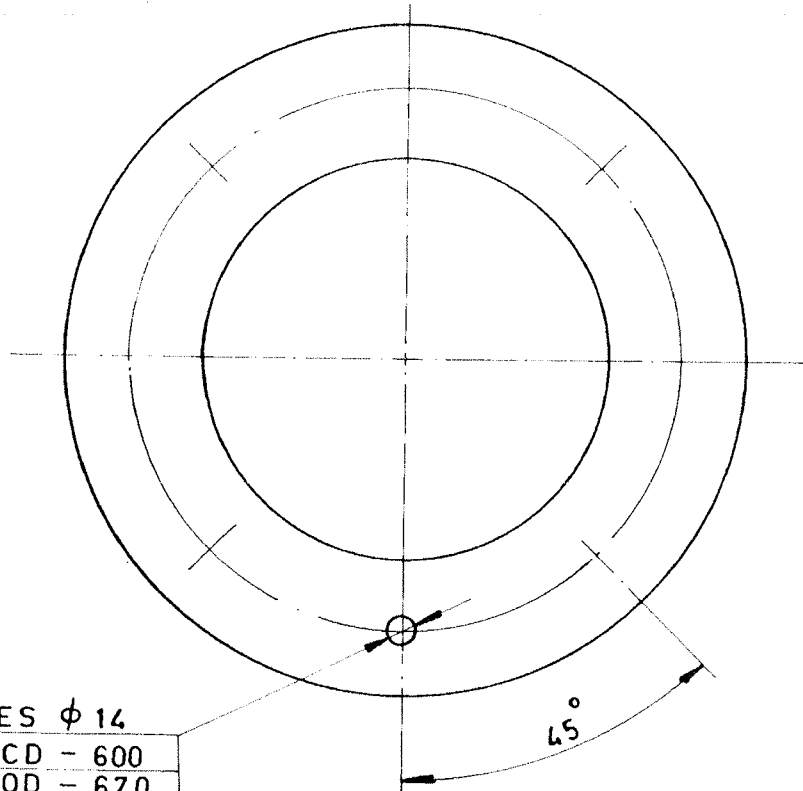
DEPT. CC	GRADE OF UNTO L DIM	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DRG	ITEM NO.
CODE 123	2/M/1	NTS	21.75		

TITLE	CARD CODE	DRAWING NO.	REV
FLANGE	U 01	4-47-122-00682 4-47-953-U5018	01 /00

88-249/C

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REV 01	DATE	ALTERED	REV 02	DATE	ALTERED
		CHECKED			CHECKED



8 HOLES $\phi 14$
 ON PCD - 600
 OD - 670
 ID - 542

23510

01	PL. 12 X D670 / 542	15 - 011 - 132		11.5
		BM - C20		1
ITEM NO.	DESCRIPTION	MATL CODE	A UNIT	UNIT WT
		MATL SPEC	C	QTY



Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT
 VISAKHAPTNAM-530012

DRN	NAME	SIGN	DATE
CHD	S. SIMON	<i>[Signature]</i>	6.3.84
APPD	Coopal	<i>[Signature]</i>	6.3.84
	NAKKERAN	<i>[Signature]</i>	6.3.84

DEPT. CC	GRADE OF UNTOL DIM	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DRW	ITEM NO.
123	ϕ /M/F	NTS	11.5		
TITLE			CARD CODE	DRAWING NO.	REV
FLANGE			U 01	4 - 47 - 122 - 00683 4-47-953-U5019	

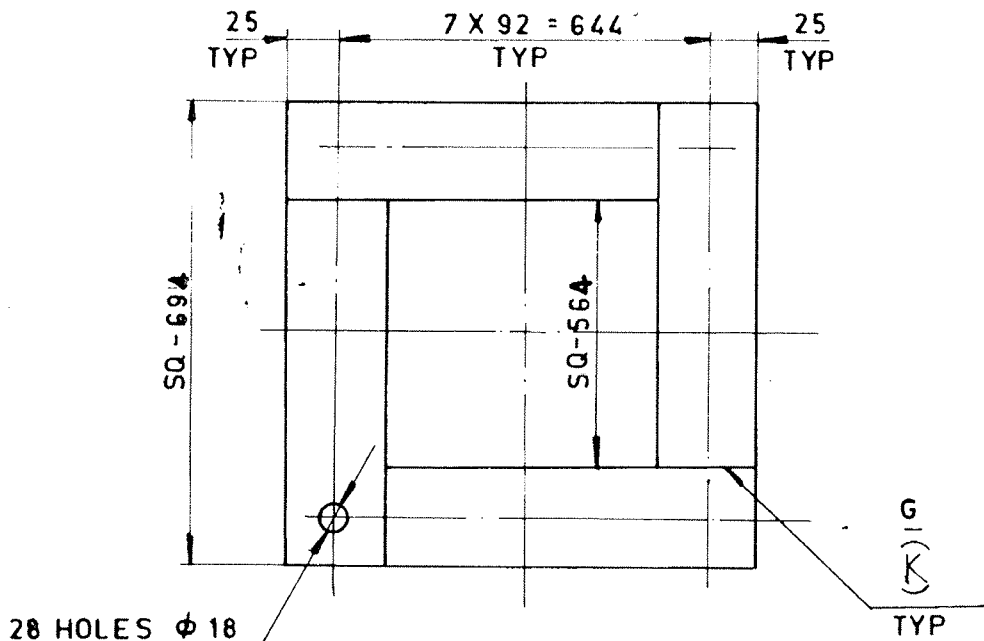
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FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

REV 01	DATE 13-27	ALTERED CHECKED	REV 02	DATE	ALTERED CHECKED
MATERIAL SPECN ALTERED					

MS-3404

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735409

01	PL. 12 X 65 X 629	15-011-132		3.80
		15:2062 FQ 410 W 8		4
VARIABLE NO.	DESCRIPTION	MTRL CODE	A	UNIT WT
			C	QTY



Bharat Heavy Electricals Ltd.,
UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

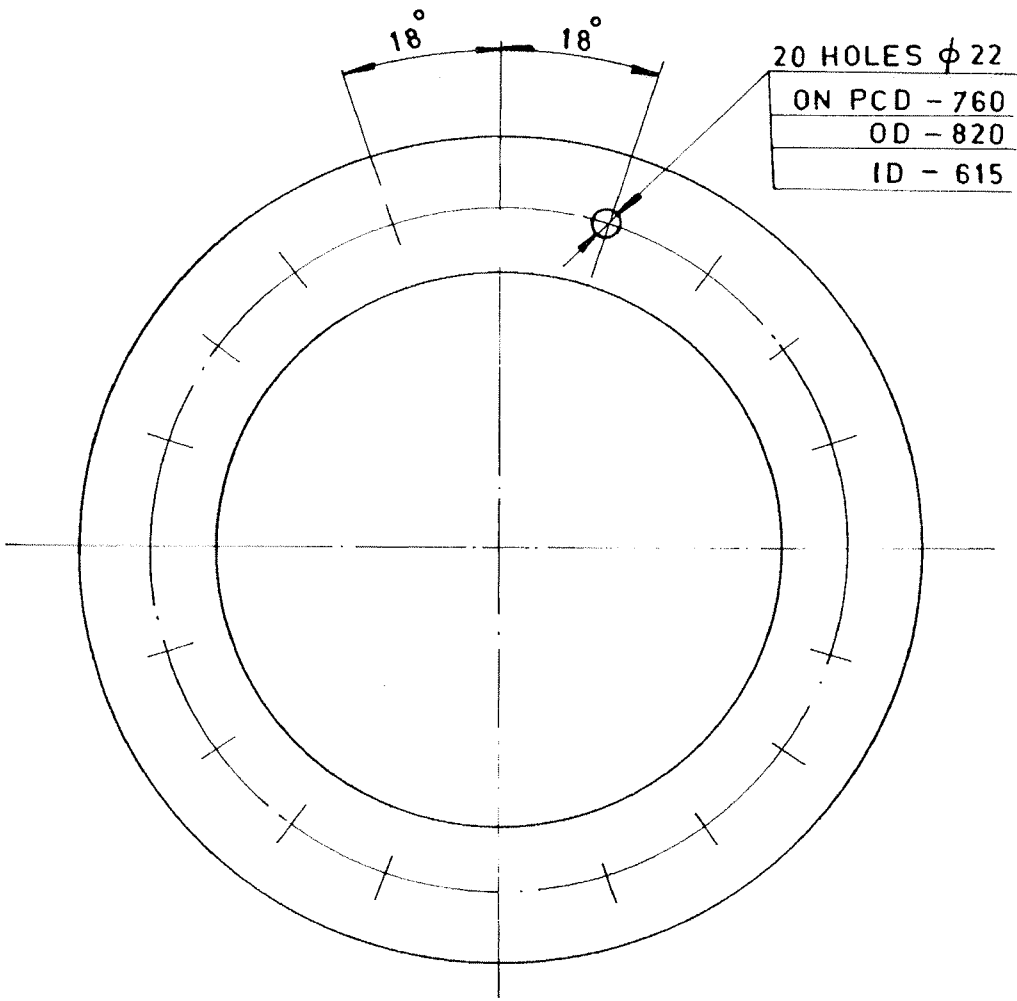
DRN	NAME SIMON	SIGN <i>[Signature]</i>	DATE
CHD	Gopal C	<i>[Signature]</i>	6.3.84
APPD	NAKKEERAN	<i>[Signature]</i>	6.3.84

DEPT. CC	GRADE OF UNTO. DIM E/M/R		SCALE NTS	WEIGHT (kg) 15.2	REF TO ASSY / OLD DRG	ITEM NO.
CODE 123	TITLE FLANGE			CARD CODE U 01	DRAWING NO. 4-47-122-00684 / 01 4-47-953-U5020 / 00	REV NO. 101

08-249/C

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REV 01	DATE	ALTERED	REV 02	DATE	ALTERED
		CHECKED			CHECKED



725108

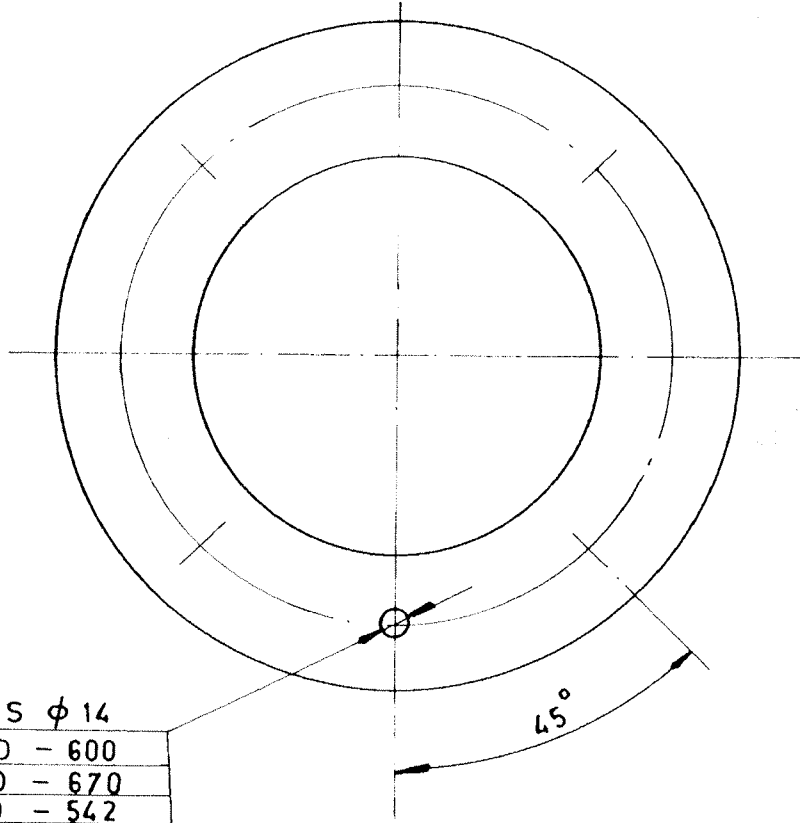
01	SH: 3 X D 820 / 615	22-020-461	1.5
		714100 Gr. A/O	1
VARIATION NO.	DESCRIPTION	MATL CODE	A UNIT
		MATL SPEC	C UNIT
			QTY

	Bharat Heavy Electricals Ltd., UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	NAME	DESIGN	DATE
			CHD	GOPAL	<i>Amey</i>	6.3.84
			APPD	NAKKERAN	<i>Nakkeran</i>	6.2.84
DEPT. CC	GRADE OF UNTOL DIM Q/M/P		SCALE	WEIGHT (kg)	REF TO ASSY / OLD DRG	ITEM NO.
CODE 123			NTS	1.5		<i>02</i>
TITLE			CARD CODE	DRAWING NO.	REV	
PACKING			U 01	4-47-123-00685 4-47-953-U5021		

05-249/C

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REV 01	DATE	ALTERED	REV 02	DATE	ALTERED
		CHECKED			CHECKED



8 HOLES ϕ 14
ON PCD - 600
OD - 670
ID - 542

735107

01	SH: 3X D 670 / 542	22 - 020 - 461	0.75
		714100 Gr. A/O	1
MATERIAL NO.	DESCRIPTION	MATL CODE	UNIT
		MATL SPEC	
			UNIT WT
			QTY



Bharat Heavy Electricals Ltd.,

UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

DRN	NAME	SIGN	DATE
CHD	GOPAL	<i>[Signature]</i>	6.3.84
APPD	NAKKEERAN	<i>[Signature]</i>	6.3.84

DEPT. CC	GRADE OF UNTOL DIM ϕ /M/F		SCALE NTS	WEIGHT (kg) 0.75	REF TO ASSY / OLD DRG	ITEM NO.
CODE 123						

TITLE PACKING	CARD CODE U 01	DRAWING NO. 4-47-123-00686 4-47-953-U5022	REV
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EC-009

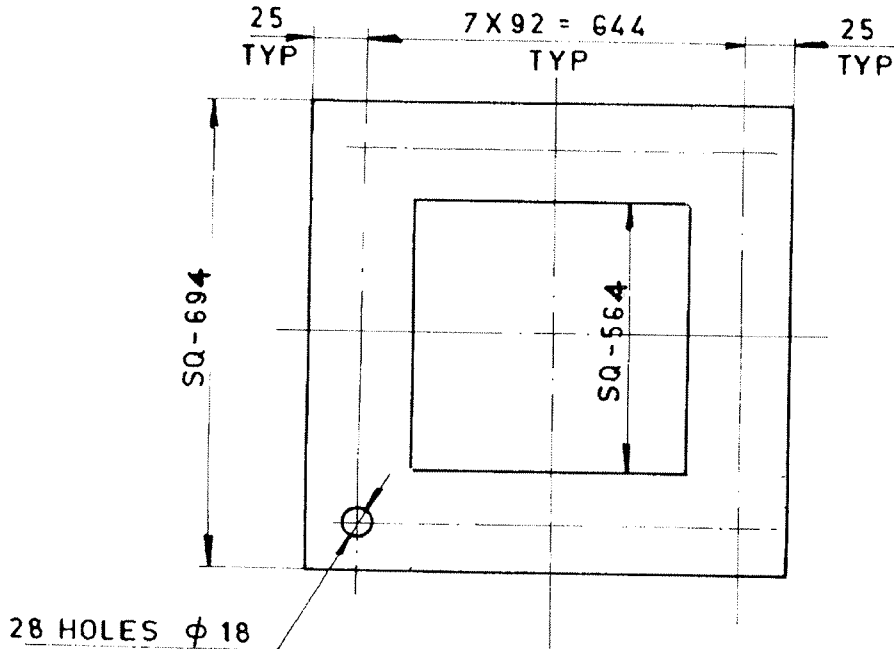
Size A4

06-249/C

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

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REV 01	DATE	ALTERED	REV 02	DATE	ALTERED
		CHECKED			CHECKED



735100

01	SH: 3 X SQ 694/564	22-020-461		1.00
		714100 Gr. A/O		1
UNIT NO.	DESCRIPTION	MATL CODE	A	UNIT WT
		MATL SPEC	C	QTY



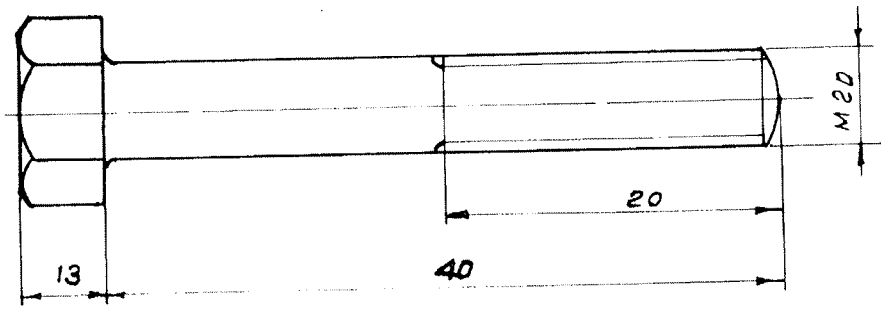
Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT
 VISAKHAPATNAM-530012

DRN	NAME	SIGN	DATE
CHD	COPAL	<i>[Signature]</i>	6-3-84
APPD	NAKKEERAN	<i>[Signature]</i>	

DEPT. CC	GRADE OF UNTOL DIM X/M/F		SCALE NTS	WEIGHT (kg) 1.0	REF TO ASSY / OLD DRG	ITEM NO.
-------------	--------------------------------	--	--------------	--------------------	-----------------------	-------------

TITLE PACKING	CARD CODE U 01	DRAWING NO. 4-47-123-00687 4-47-953-U5023	REV
-------------------------	----------------------	---	-----

01	DATE	ALTERED	<i>Surf</i>
	18.2.99	CHECKED	<i>(Signature)</i>
ZONE MATERIAL CODE AND SPEC HAVE BEEN ALTERED.			



TO BE MANUFACTURED ACC TO BPS : 412-21

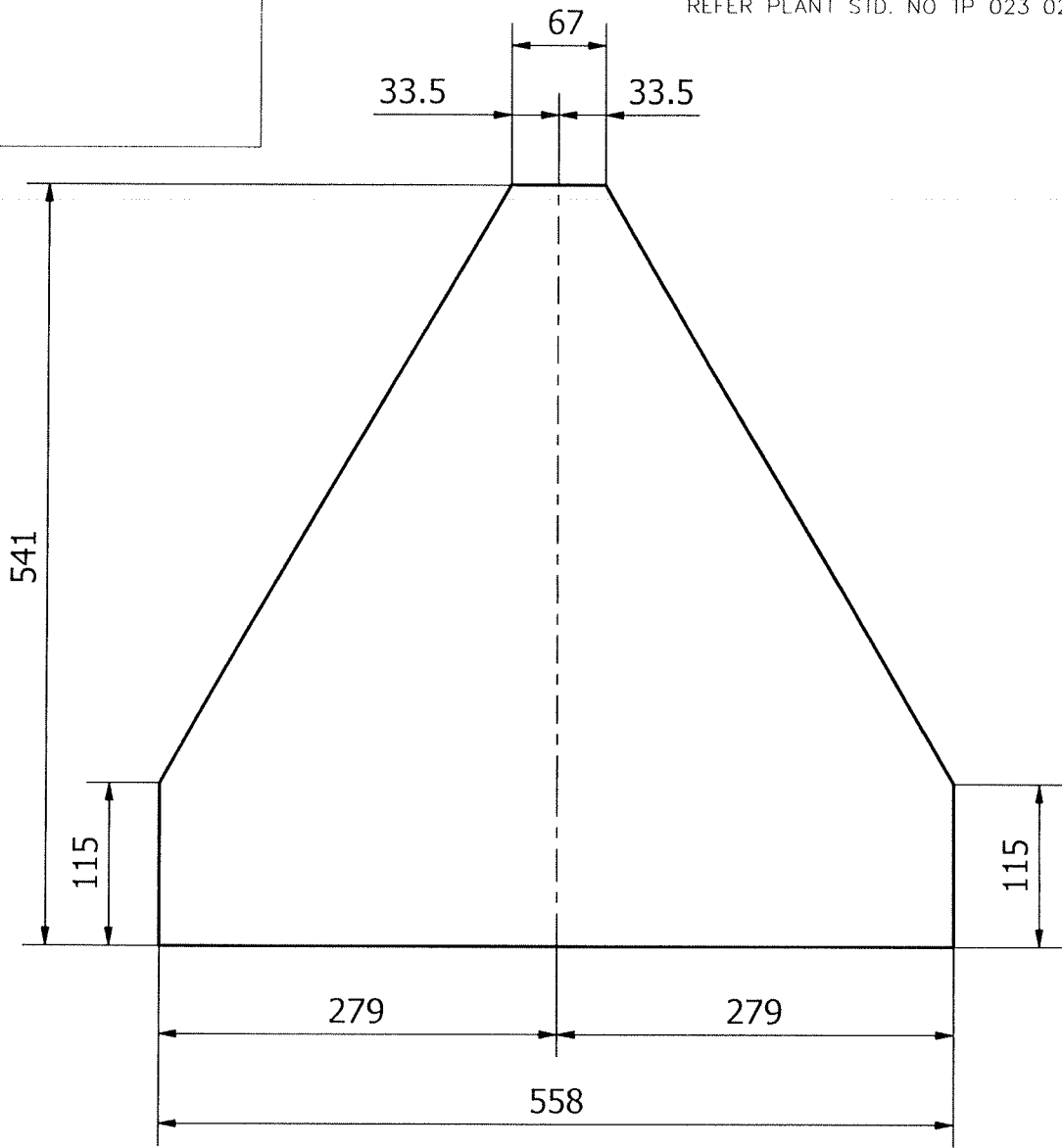
00445 178

15		17		20		21		14		56		57		63		68		75		76		20								
STYLE No.		ITEM No.		BPS		REF. DRG BPS No		RVN		A		C		UNIT wt. (Kg)		No. OFF		No.		No.		DESCRIPTION/REMARKS								
01						15 339 141		SA 105						20		1														
19																			CARD TYPE 1				19				CARD TYPE 2			
BILL OF MATERIAL No.																														
FIRST ANGLE				SCALE				DRAWN				TOTAL wt. (kg)																		
								<i>(Signature)</i>				TYPE																		
ALL DIMENSIONS IN MILLIMETRES				DATE				26-6-75				NEW/OLD DRG. No.																		
CAUTION												TITLE																		
<p>THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED, HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 AND SHALL NOT BE USED WITHOUT THEIR EXPRESS WRITTEN PERMISSION IN ANY FORM OR PART THEREOF FOR ANY OTHER PURPOSE THAN FOR WHICH IT IS SENT TO YOU.</p> <p>05-249</p>												BLACK HEX. BOLT M-20																		
												CARD CODE				DRAWING No.				REVISION										
U 01				4-47-301-00029				01				/00																		
				4-47-953-U5024																										


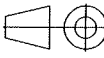
THE INFMN ON THIS DOCUMENT IS THE PROPERTY OF BHEL
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY
IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL

REV	DATE	ALTERED :
01		CHD & APPD :

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



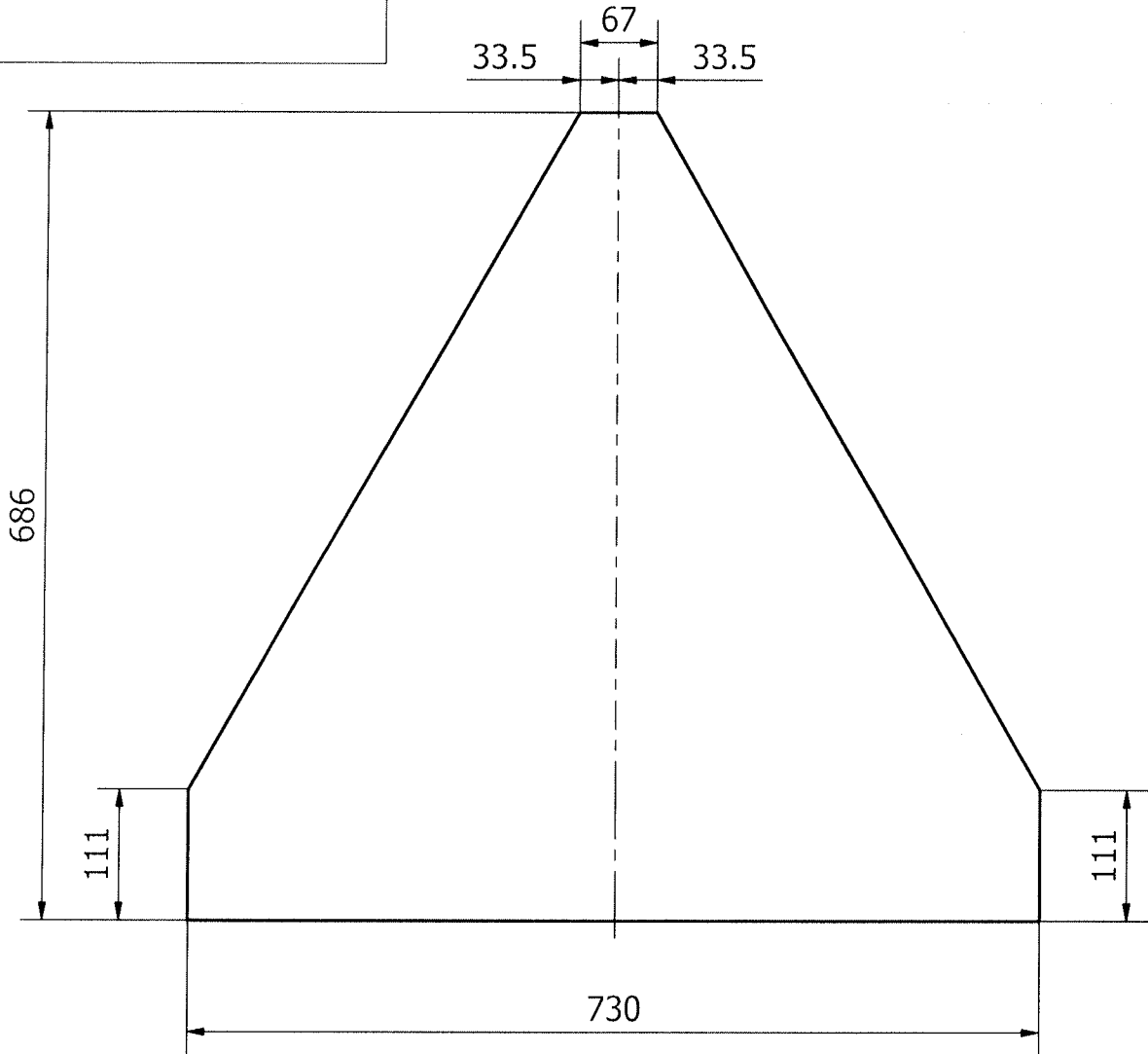
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		IS2062E250GRA			1	
VARIANT NUMBER	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

 355-056	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	NAME	SIGNATURE	DATE
			CHD	T.BASKARAN	Sd	26.08.21
			APPD	B.CHOWDHURY	Sd	26.08.21
DEPT	FS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE	129		NTS	REF. BOM	1-47-301-00050	
TITLE					DRAWING NO :	REV
RIFFLE ELEMENTS TYPE - D					4-47-953-02069 4-47-953-U5025	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



01	SH 8X686X730	150110270000		19.479
		IS2062FE410WA		
VARIANT NUMBER	DESCRIPTION	MATERIAL CODE	A/C/P	UNIT WEIGHT
		MATERIAL SPECN	UNIT	QUANTITY



355-056

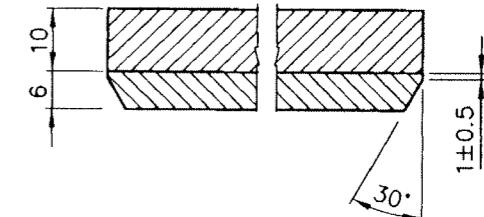
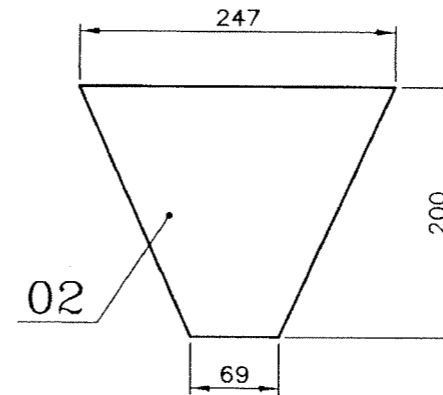
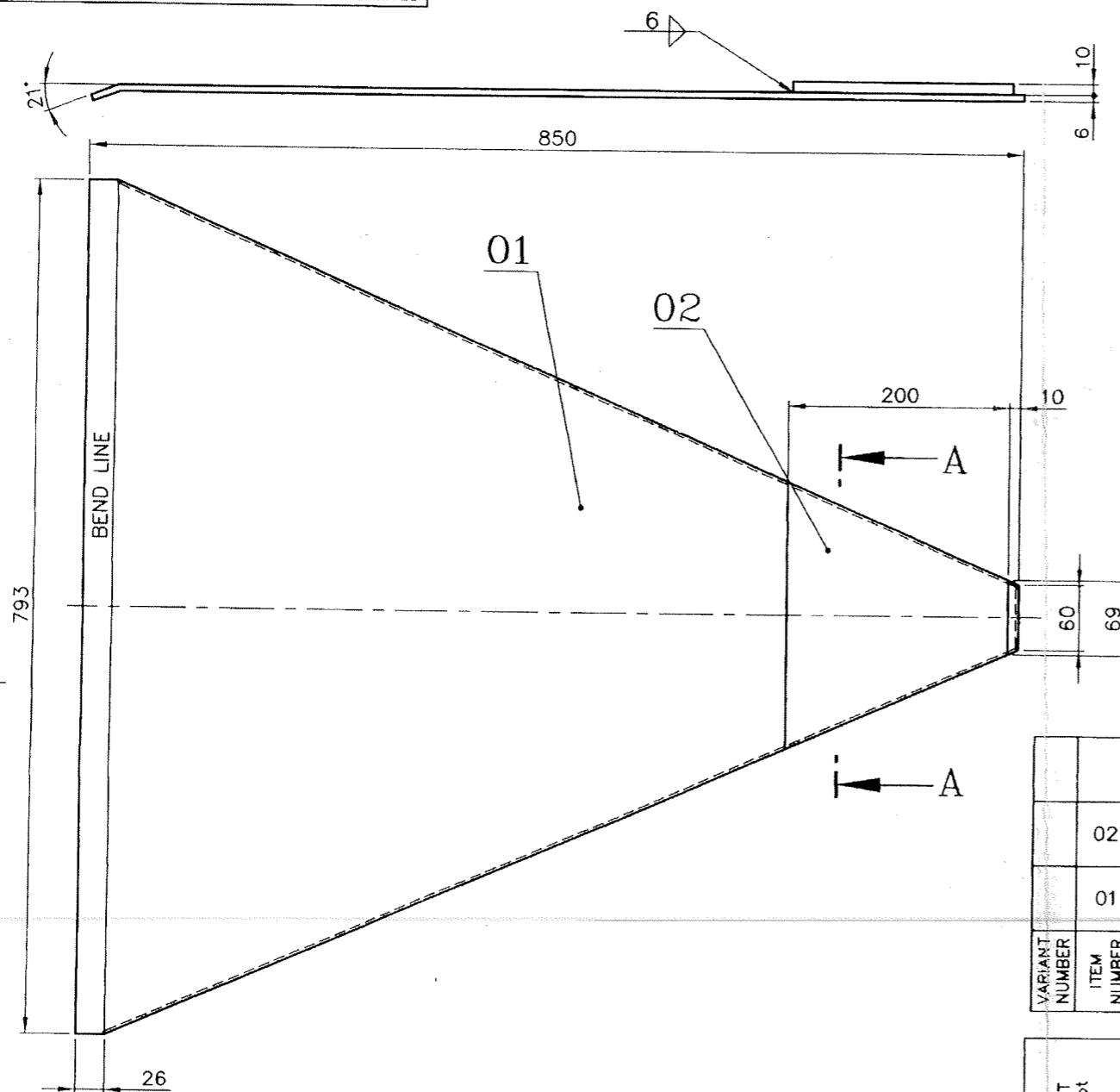
Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	T.BASKARAN	Sd	26.08.21
CHD	B.CHOWDHURY	Sd	26.08.21
APPD	MCHS.GANGADHAR	Sd	26.08.21

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
FS			NTS		
CODE				REF.BOM	1-47-301-00053
TITLE	RIFFLE ELEMENTS TYPE--D			DRAWING NO :	REV
				4-47-953-02070 4-47-953-U5026	00

3-67-252-00343
 3-67-256-U3331
 DRAWING NO.

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



SECTION-AA
 (SCALE=1:1)

NOTE:

ITEM No. 01 EP IS TYPICAL FOR THREE SIDE AS SHOWN.

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
VAR NO	MATERIAL SPECN						DI	QUANTITY	
02	PLATE 10x200x247				15-011-380			1.400	
					SA240 TYPE304			1	
01	PLATE 6x793x850				15-011-092			15.000	
					IS2062FE410WA			1	

REV 01	DATE 111200	ALTERED : DNC <i>D. N. Selva</i>
ZONE	CHD & APPD: SELVA	
DRAWING PREPARED IN CAD		

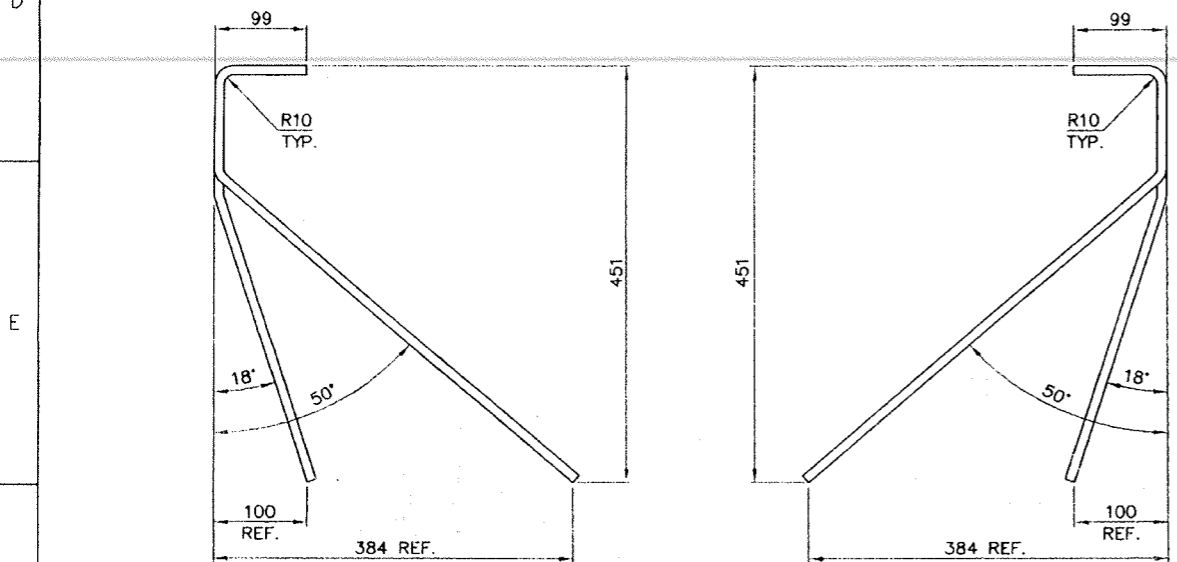
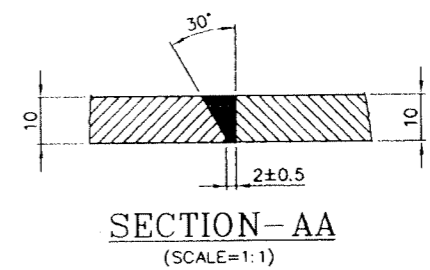
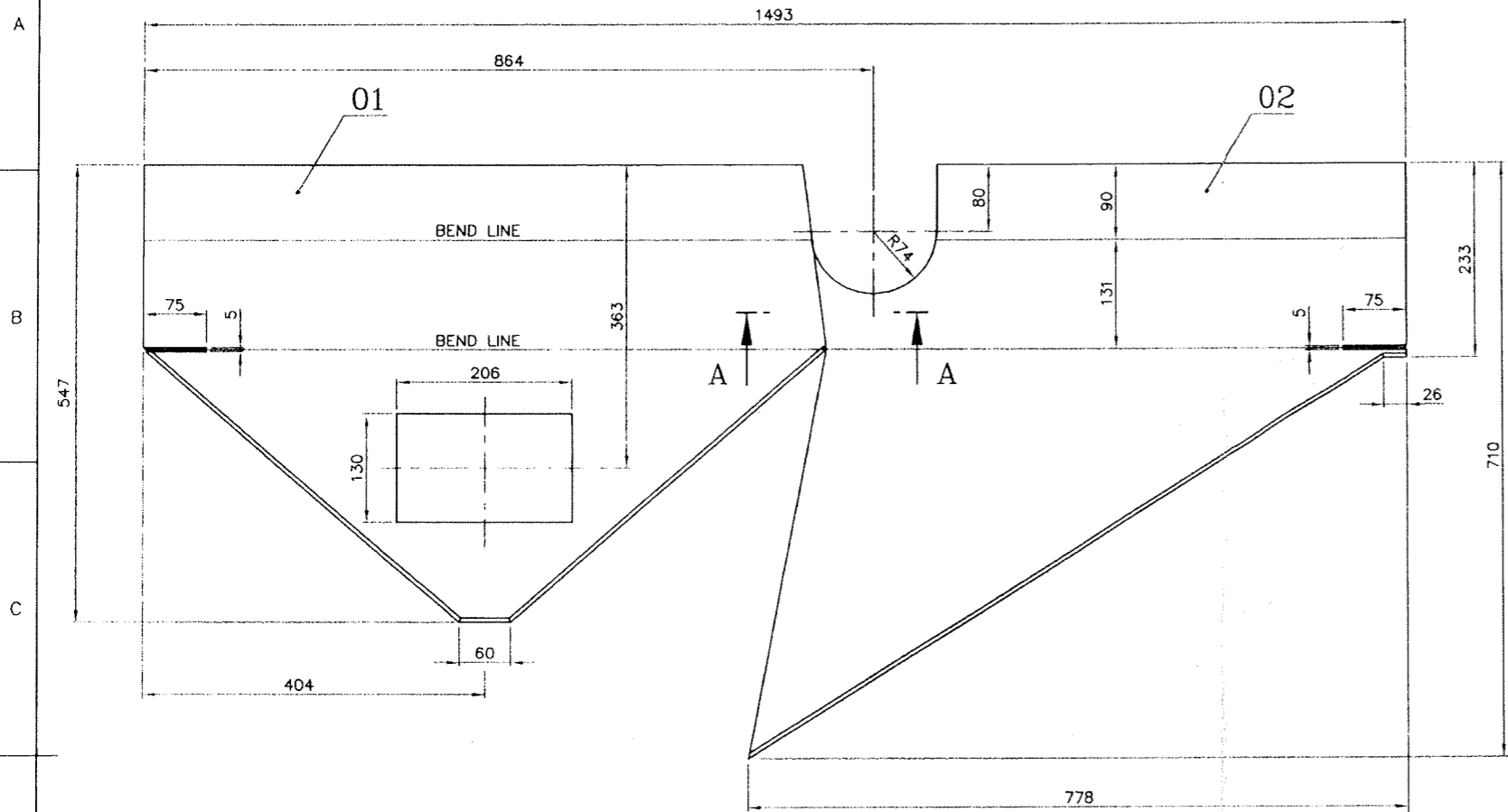
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				DRN	NAME	SIGNATURE	DATE
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-055				CHD	SELVA	-Sd-	30-03-99
				APPD	J.S.N	-Sd-	30-03-99
DEPT FEEDERS CODE 240	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:5 1:1	WEIGHT (kg)	REF TO ASSY / OLD DWG		
TITLE				355-055		16.400	
BOTTOM PLATE (FOR 24" RAW COAL GATE)				355-055		3-67-251-00187	
DRAWING NO :				3-67-252-00343		REV 01	
				3-67-256-U3331			

101

22-67-252-00252
 22-67-256-U3331
 ON DRAWING

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



VARIANT-01
 VARIANT-02
 SHAPE AFTER BENDING

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT WEIGHT	QTY	ZONE
02	02	WALL-II PLATE 10x710x778		3-67-252-00342	15-011-098	IS2062FE410WA	24.720	1	
02	01	WALL-I PLATE 10x547x808		3-67-252-00341	15-011-380	SA240 TYPE304	23.670	1	
01	02	WALL-II PLATE 10x710x778		3-67-252-00342	15-011-098	IS2062FE410WA	24.720	1	
01	01	WALL-I PLATE 10x547x808		3-67-252-00341	15-011-380	SA240 TYPE.304	23.670	1	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

DRN	D.N.C	SIGNATURE	DATE
CHD	S.S	-Sd-	26.03.99
APPD	J.S	-Sd-	30.03.99

365-054

DEPT FEEDERS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DNG
CODE 240			1:5 1:1	48.390	2-67-252-00189

TITLE: WALL WELDMENT

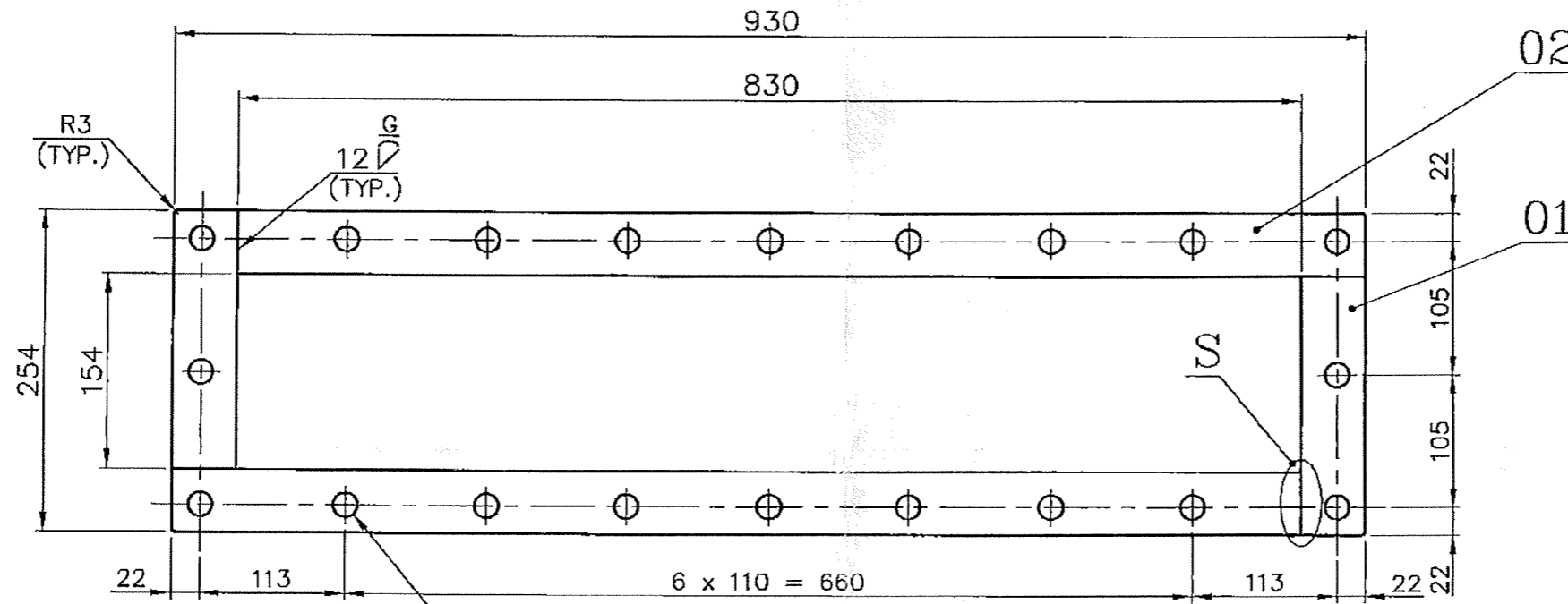
DRAWING NO: 2-67-252-00252
 2-67-256-U3331

REV 01

REV 01	DATE 10.01.01	ALTERED: M.A	CHD & APPD: S.G
ZONE	DRAWING PREPARED IN CAD.		

DRAWING NO. 3-67-252-00338
3-67-256-U3332

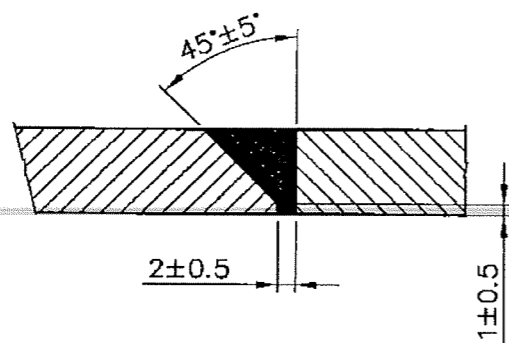
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD.NO TP 023 0299



20 HOLES $\phi 19$ AS SHOWN.

NOTE:

DEBURR ALL SHARP EDGES AND CORNERS.



DETAIL-S
(TYP.) (SCALE 1:1)

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	02	PLATE 12x50x878				15-011-132		NO	3.870	
						IS: 2062 Fe410WA			2	
	01	PLATE 12x50x202				15-011-132		NO	0.880	
						IS: 2062 Fe410WA			2	

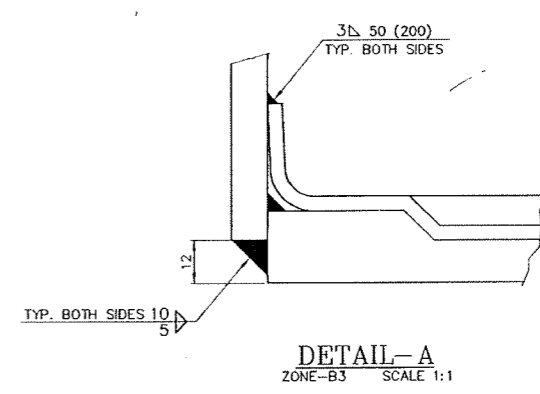
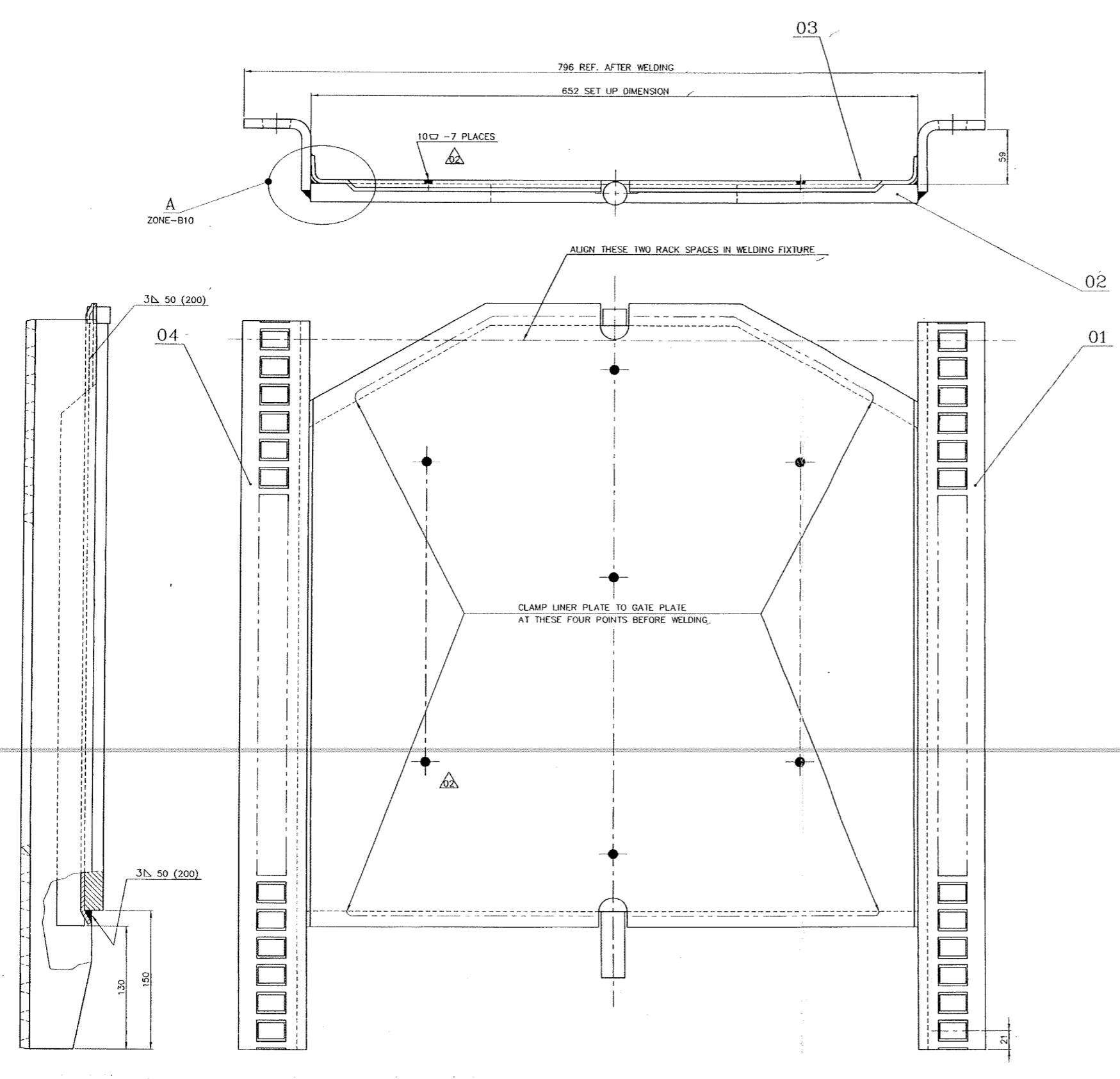
REV 01	DATE 19.2.01	ALTERED : N. Chidambaram
ZONE	DRAWING REDRAWN.	
	CHD & APPD: <i>[Signature]</i>	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				BOM	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME D.N.C	SIGNATURE -Sd-	DATE 26/03/99
		CHD	S.Selvaraju	-Sd-	30/03/99
		APPD	J.Swaminathan	-Sd-	30/03/99
DEPT FEEDER CODE 240	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:5	WEIGHT (Kg) 9.500	REF TO ASSY / OLD DWG 4-67-251-00246
TITLE END COVER FLANGE				DRAWING NO : 3-67-252-00338 3-67-256-U3332	
				REV 01	

1-67-251-00070
1-67-256-U3332
CHD & APPD

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	UNIT WEIGHT	QTY	ZONE
	04	GATE RACK L.H.		3-67-251-00192	15-011-098	IS: 2062 Fe410WA	5.600	1	B3
	03	LINER PLATE		2-67-251-00120	15-011-295	SA 240 TYPE 304	16.000	1	B6
	02	GATE PLATE		3-67-251-00190	WELDMENT		62.050	1	B8
	01	GATE RACK R.H.		3-67-251-00191	15-011-098	IS: 2062 Fe410WA	5.600	1	B8

REV	DATE	ALTERED	ZONE	REV	DATE	ALTERED	ZONE	REV	DATE	ALTERED	ZONE
03	22.12.24	CHD & APPD		02	25.11.94	S.G./-Sd- CHD & APPD: JSN/-Sd-		01	21.2.90	-Sd- CHD & APPD: -Sd-	

DRAWING REDRAWN.
 DRAWN TO SCALE.
 ITEM No.01 MATL. SPEC. UPDATED

RETRACED.
 PLUS WELDING SHOWN
 IN 7 PLACES.

VIEW ALTERED.
 ITEM No.02 WT. WAS 62,000Kg.
 TOT. WT. WAS 89,200Kg.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN: EC/Selvg
CHD: P.K.S
APPD: M.A

NAME: EC/Selvg
SIGNATURE: P.K.S
DATE: 04/06/88

SCALE: 2:5

WEIGHT (Kg): 89.250

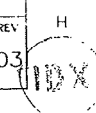
REF TO ASSY / CHD-DWG: 0-67-251-00071

DRAWING NO: 1-67-251-00070
1-67-256-U3332

TITLE: GATE WELDMENT

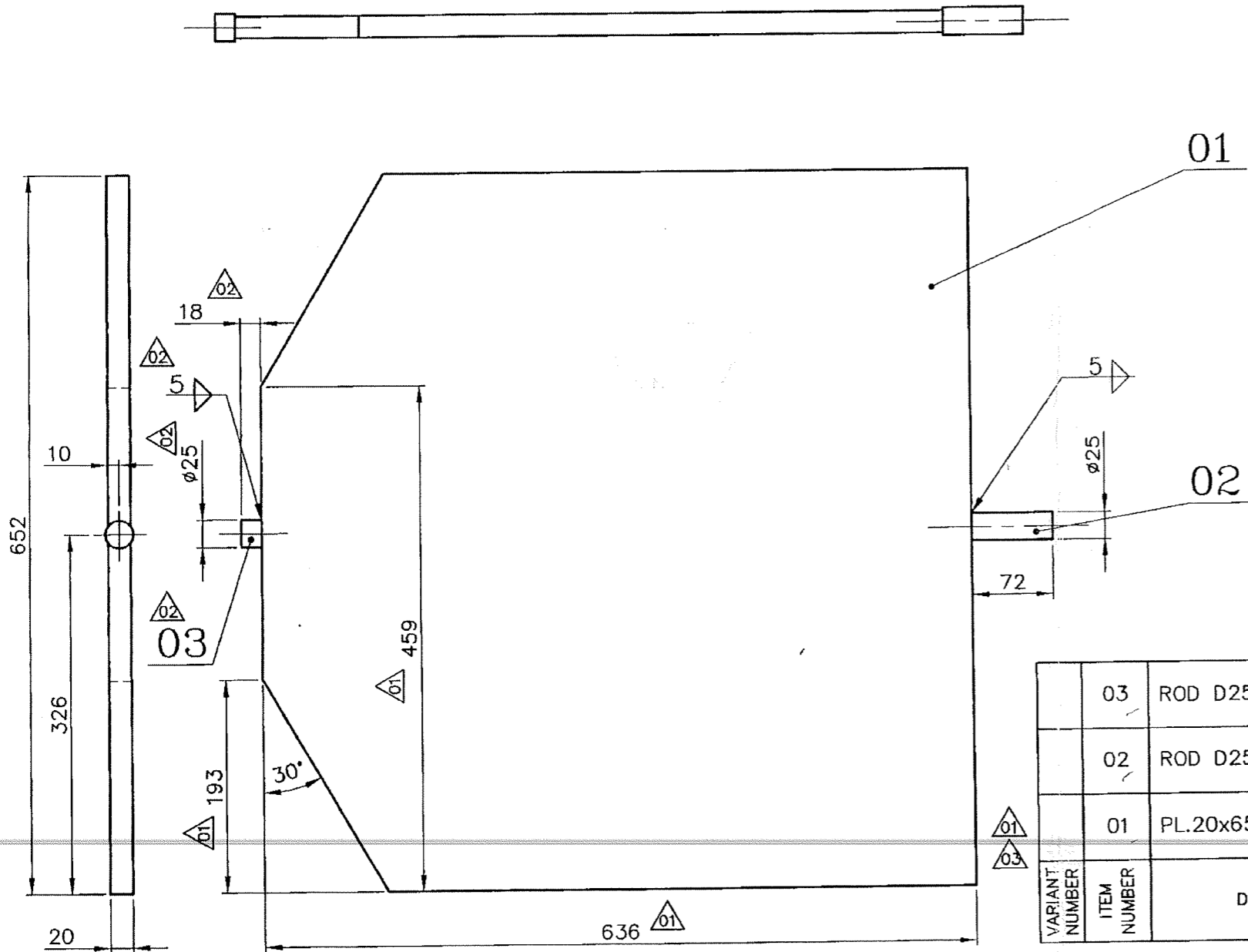
REV: 03

CAUTION: The information on this drawing is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the consent of the company.



DRAWING NO: 3-67-251-00190
3-67-256-U3333

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



BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/S/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	03	ROD D25 x 18L				15-339-139			0.050	
						SA 105			1	
	02	ROD D25 x 72L				15-339-139			0.200	
						SA 105			1	
	01	PL.20x652x636		PROFILE		15-011-150			61.800	
						IS: 2062 Fe410WA			1	

REV	DATE	ALTERED	ZONE	REV	DATE	ALTERED	ZONE
03	16.12.99	ALTERED: S.Manj / -Sd- CHD&APPD: P. V. Manj	DRAWING REDRAWN. ITEM No.01 MATL. SPEC. WAS IS: 2062 Fe410A	01	3.10.89	ALTERED: Selva / -Sd- CHD&APPD: JSN&MA / -Sd-	DIMENSIONS 459, 193 & 636 WERE 416, 236 & 661 RESPECTIVELY.
02	27.2.90	ALTERED: S.Manj / -Sd- CHD&APPD: SS&JSN / -Sd-	ITEM No. 03 ADDED. TOTAL Wt. WAS 62.000 Kg.				

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012
355-055

DRN	NAME	SIGNATURE	DATE
	EC/Selva	-Sd-	02/06/88
CHD	P.K.Sundaram	-Sd-	04/06/88
APPD	M.Alagarsamy	-Sd-	04/06/88

DEPT: MILLS
CODE: 240
ALL DIMENSIONS ARE IN MM
PROJECTION: SCALE: 1:5
WEIGHT (Kg): 62.050

REF TO ASSY / OLD DWG:
3-67-272-00155
Y - 577 - C (2-Y 557)

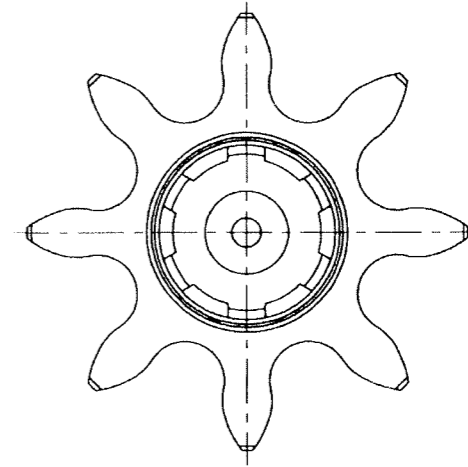
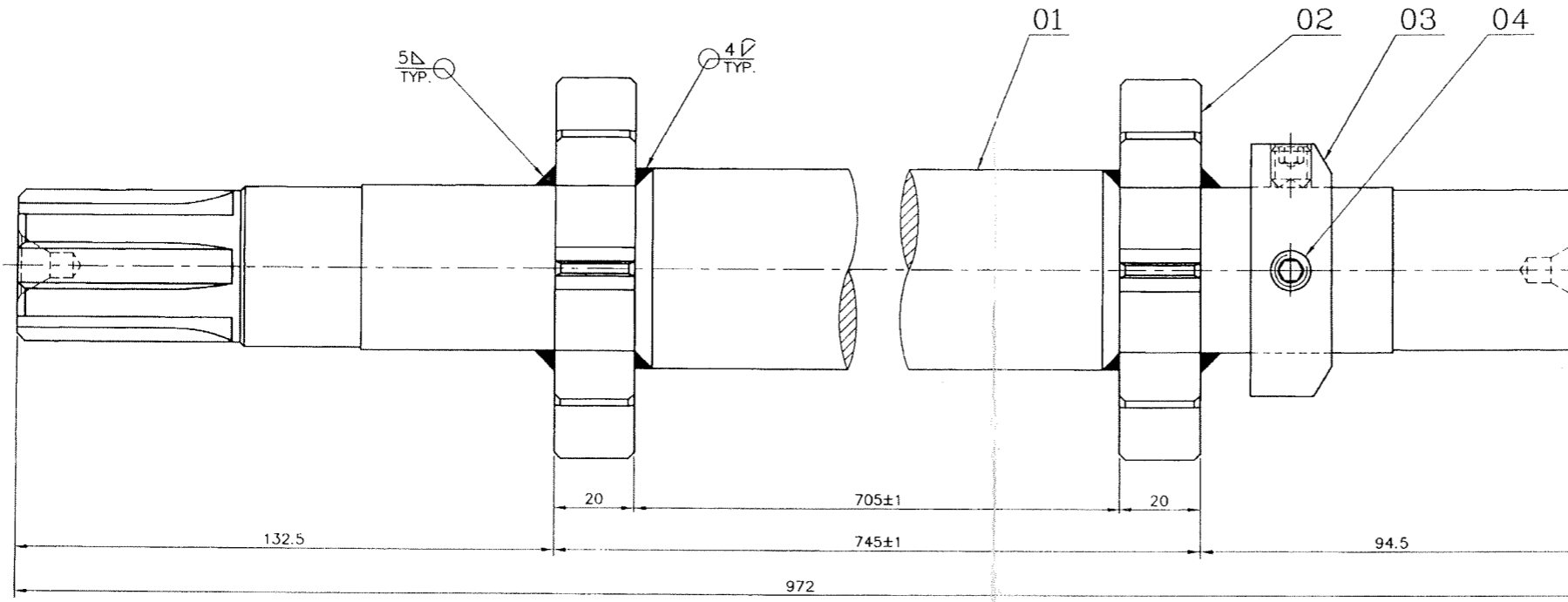
TITLE: **GATE PLATE**

DRAWING NO: 3-67-251-00190
3-67-256-U3333

REV: 03

2-67-252-00251
2-67-256-U3332
DRAWING NO.

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	QTY	UNIT	WEIGHT	ZONE
VAR NO	MATERIAL SPECN	A/C/P	DI	QUANTITY						
	04	HEX SOC SET SCREW M10x10		GF-240		96-424-210	0.005			
	03	SCREW COLLAR ROD D63x25L		4-67-272-00203		15-339-143 SA 105	0.240			
	02	VALVE PINION ROD D100x25L		4-67-272-00381		15-024-103 SA479 TYPE304	1.250			
	01	SHAFT ROD D50x972L		2-67-252-00250		15-339-142 SA 105	9.750			

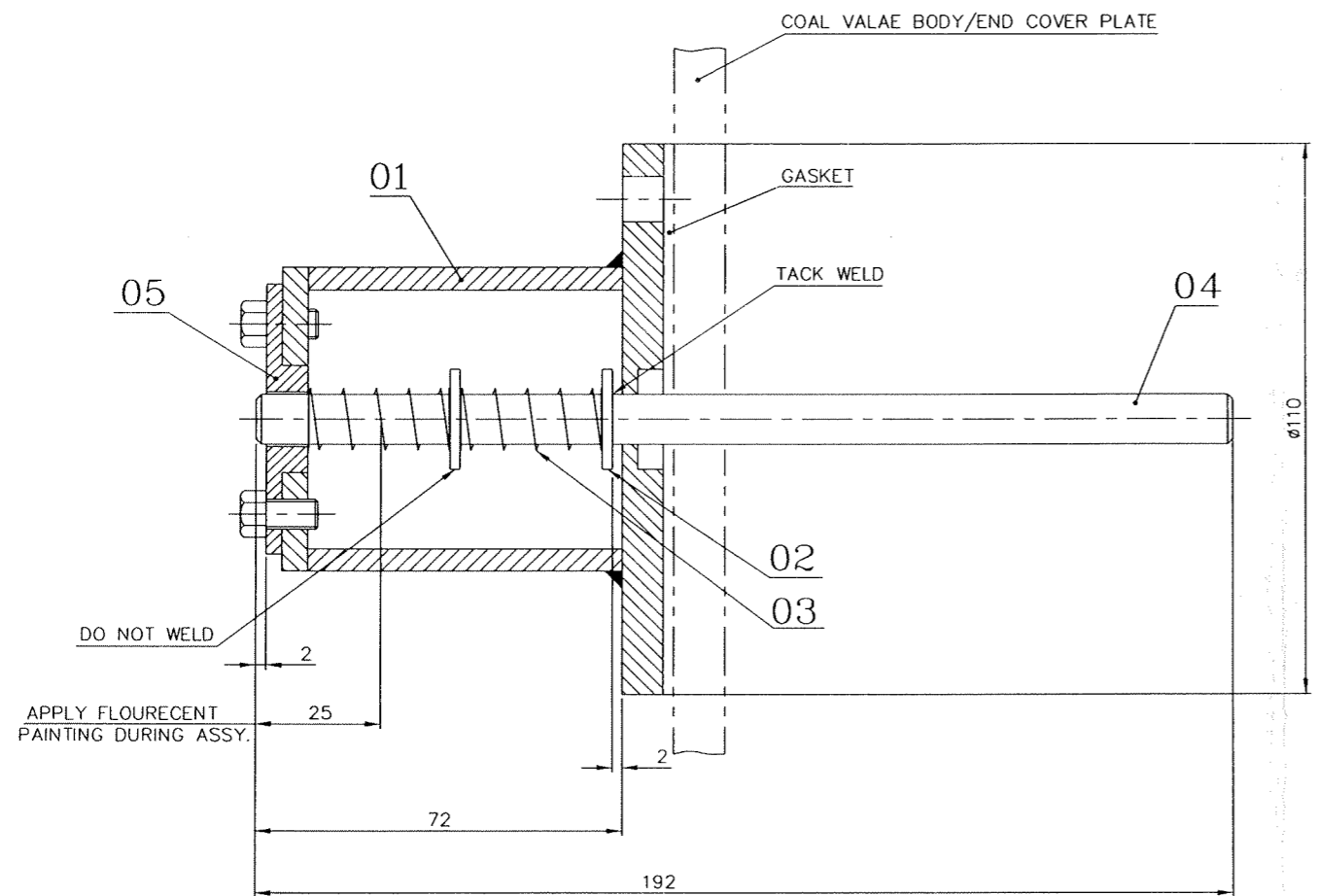
REV 01	DATE 090101	ALTERED : D.N.C. D. N. S.
ZONE	DRAWING PREPARED IN CAD.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN D.N.C.	SIGNATURE -Sd- DATE 26.03.99
355-054		CHD SELVA	-Sd- 30.03.99
DEPT FEEDERS		APPD J.S.N	-Sd- 30.03.99
CODE 240	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:1
WEIGHT (Kg) 12.500		REF TO ASSY / OLD DWG 2-67-272-00191	
TITLE SHAFT AND PINION WELDMENT			DRAWING NO : 2-67-252-00251 2-67-256-U3332
			REV 01

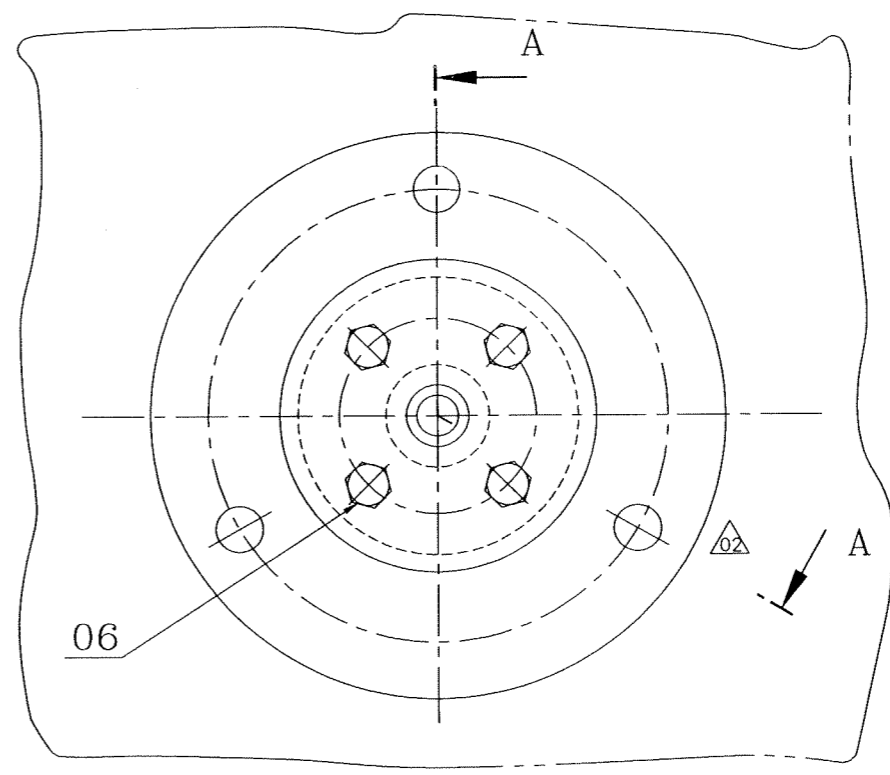
CAUTION: The information on this drawing is the property of BHARAT HEAVY ELECTRICALS and should not be used directly or indirectly in any way detrimental to the interest of the company.

2-67-276-00111
2-67-256-U3333
DRAWING NO.

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



SECTION-AA



BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	ZONE
					VAR NO	MATERIAL SPECN	DI	QUANTITY	GS	
03	06	HEX. HD SCRU M6X10-4.6(C)	S	IS: 1363(P-2)		41222 06910			0.004	C5
								4		
03	05	COVER PL.10XD60		4-67-276-00230		15 011 098	IS: 2062Fe410WA		0.060	B4
								1		
03	04	PUSH ROD ROUND D12X200		4-67-276-00231		15 004 030	IS: 2062Fe410WA		0.120	C3
								1		
04	03	SPRING		GF-005		96 425 005			0.081	C3
								2		
01	02	PNCHO WASHER A11(C)	S	IS: 2016		41408 00910			0.001	B2
								2		
	01	INDICATOR BOX		3-67-276-00182		WELDMNT			1.050	A2
								1		

REV	DATE	ALTERED : S.MANI	REV	DATE	ALTERED : SELVA/-Sd-	REV	DATE	ALTERED : D.N/-Sd-	REV	DATE	ALTERED : SELVA/-Sd-
04	13.01.06	CHD & APPD : DVK&SVS	03	17.04.98	CHD & APPD : JSN	02	08.07.93	CHD & APPD : SELVA&JSN	01	08.02.89	CHD & APPD : JSN & M.A
ZONE	ITEM No.03 MATL. CODE ADDED & Wt. WAS 0.100 Kg. TOT. Wt. 1.410 WAS 1.448 Kg DRG. REDRAWN IN AUTOCAD.		ZONE	ITEM Nos.02,04-06 DESCRIPTION, MATL. SPEC.& DRG.Nos. ALTERED/ADDED.		ZONE	FLANGE OF ITEM No. 01 No. OF HOLES WAS 4.		ZONE	ITEM No.02 WASHER SIZE WAS A6.	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

DRN	S.R.CHANDRAN	SIGNATURE	DATE
CHD	SELVA		24-03-88
APPD	M.A		29-03-88

DEPT: MILLS
CODE: 240

ALL DIMENSIONS ARE IN MM

PROJECTION:

SCALE: 1:1

WEIGHT (Kg): 1.410

REF TO ASSY / OLD DWG

TITLE: **INDICATOR BOX ASSY**

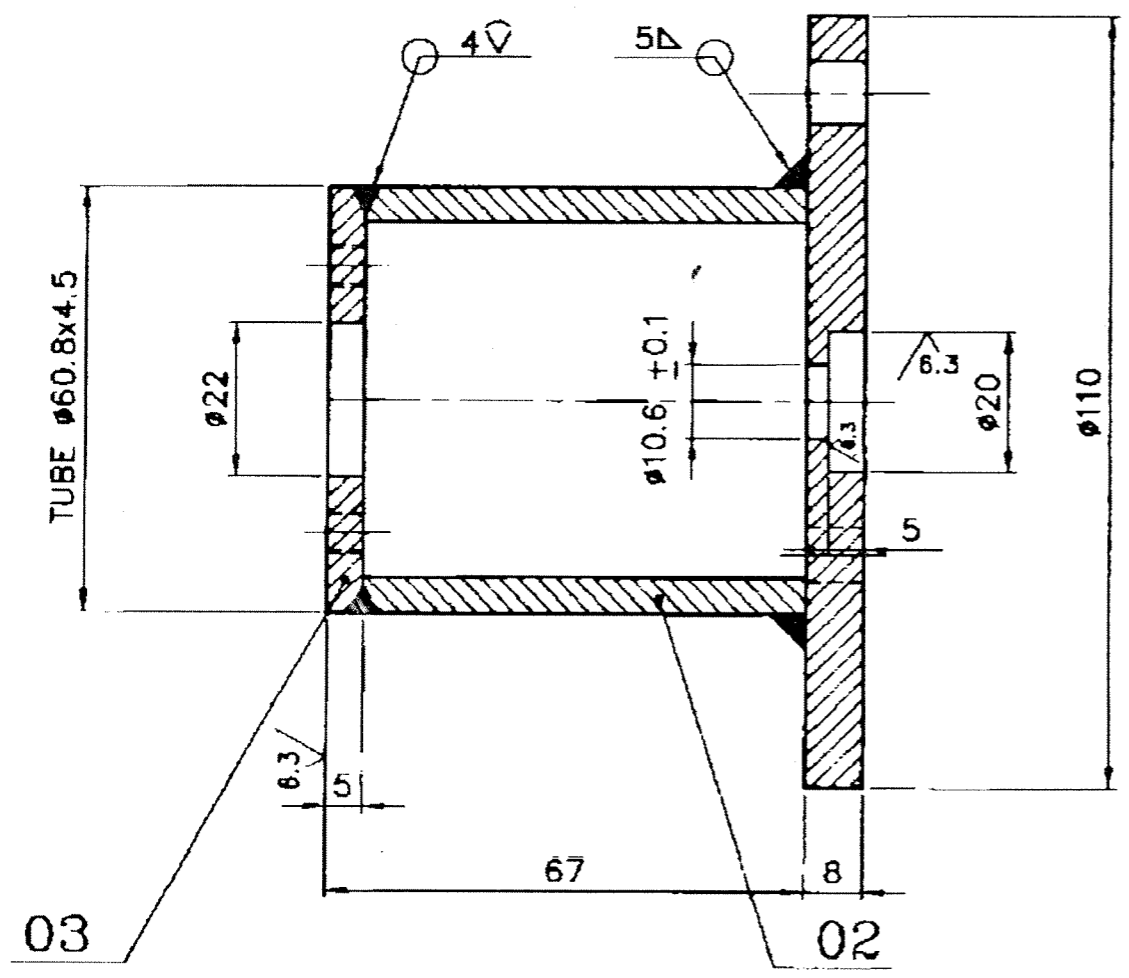
DRAWING NO : 2-67-276-00111
2-67-256-U3333

REV: 04

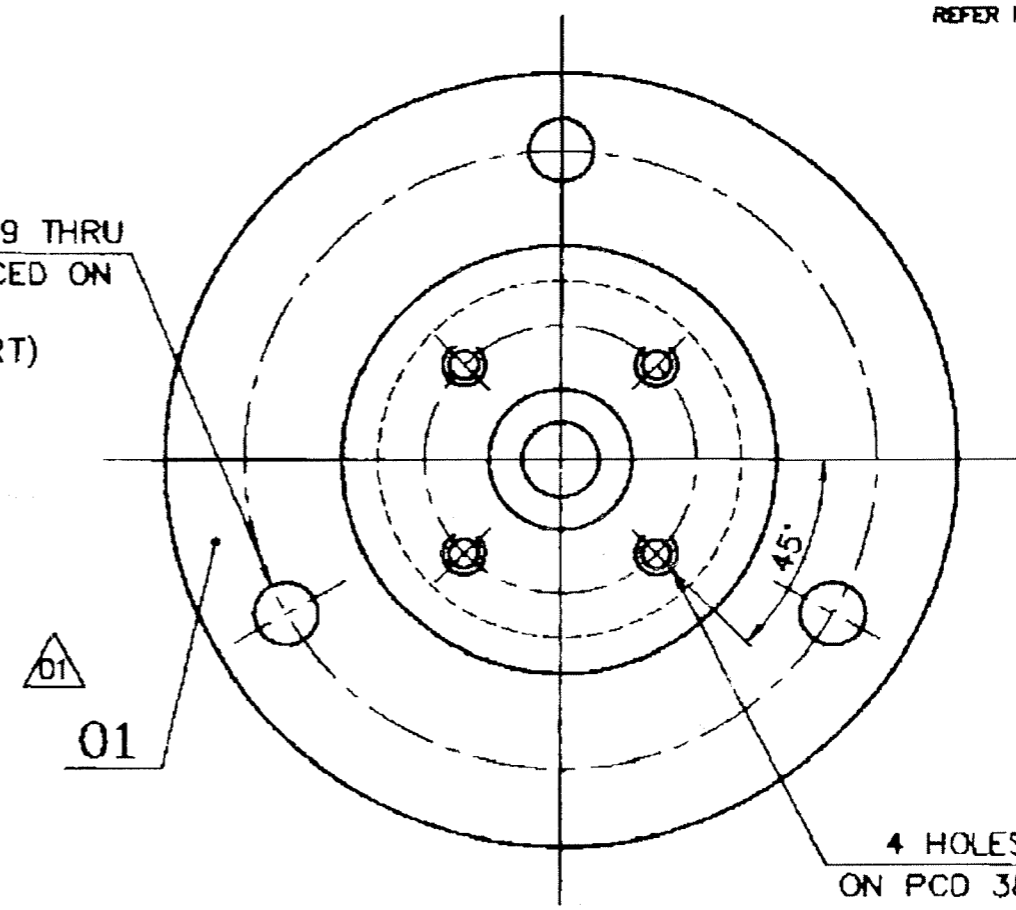
3-67-276-00182
3-67-256-U3334
DRAWING NO.

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

6.3/



3 HOLES #9 THRU EQUI. SPACED ON PCD 88 (120° APART)



4 HOLES M6 - TAPED ON PCD 38 EQUI. SPACED

02
04
02

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
03	PL. 6xD60				15-011-092			0.090
					IS2062Fe410WA			1
02	TUBE D60.8x4.5x62L				IS0386336000			0.390
					IS116YST240			1
01	PL. 8xD110				15-011-027			0.570
					IS2062Fe410WA			1

REV	DATE	ALTERED	SSR	REV	DATE	ALTERED	DNC
04	12.9.08	CHD & APPD: D.V.	-Sd-	03	13.11.00	CHD & APPD: JAK	-Sd-
02	17.04.98	CHD & APPD: JSN	-Sd-	01	07.07.93	CHD & APPD: JSN	-Sd-

ITEM NO. 02 MATL. CODE & SPEC. WAS 15-038-091 @ 15:1239.

DRAWING PREPARED IN CAD.

MATL. SPECN. FOR ITEM NOS. 01 & 03 WERE BMC 20.

NUMBER OF HOLES IN ITEM.01 WAS 4.

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

NAME	G.R.CHANDRAN	SIGNATURE	-Sd-	DATE	23.03.88
CHD	SELVA	SIGNATURE	-Sd-	DATE	29.03.88
APPD	M.A.	SIGNATURE	-Sd-	DATE	29.03.88

FEEDER CODE 240

ALL DIMENSIONS ARE IN MM

PROJECTION SCALE 1:1

WEIGHT (Kg) 1.050

REF TO ABBY / OLD DWD 2-67-276-00111

TITLE INDICATOR BOX

DRAWING NO: 3-67-276-00182
3-67-256-U3334

REV 04

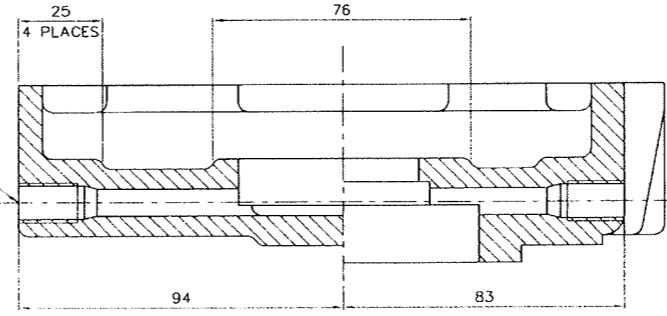
10X

1-67-272-00067
1-67-256-U3833

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

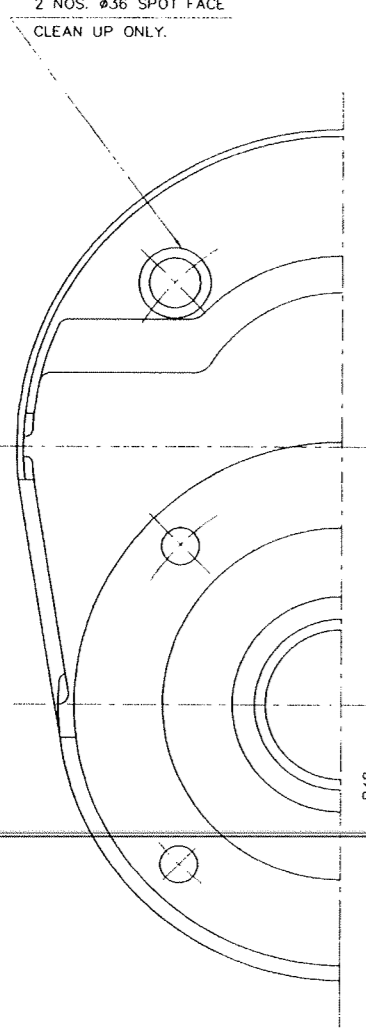
12.5 / 3.2

4 HOLES Ø8 DRILL THROUGH TAP M10x1 - 20 DEEP.

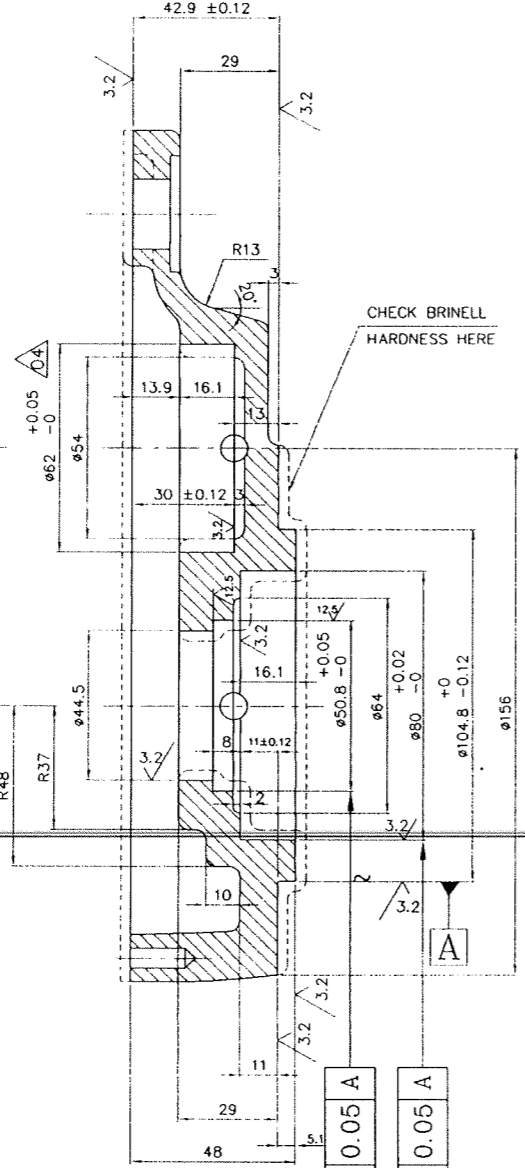


SECTION-CC
ZONE-E9

2 NOS. Ø36 SPOT FACE CLEAN UP ONLY.



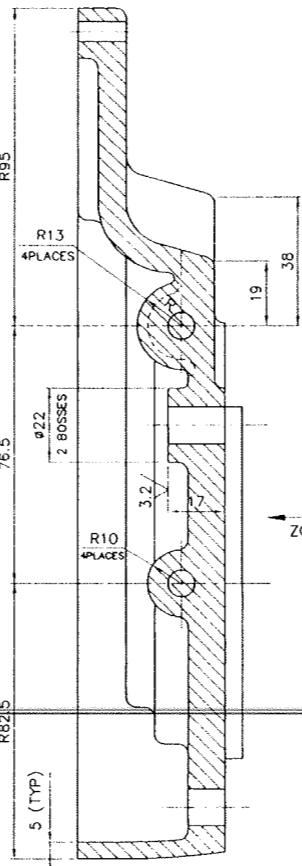
VIEW-P
ZONE-E6



SECTION-AA
ZONE-G8

0.05 A
0.05 A

CHECK BRINELL HARDNESS HERE

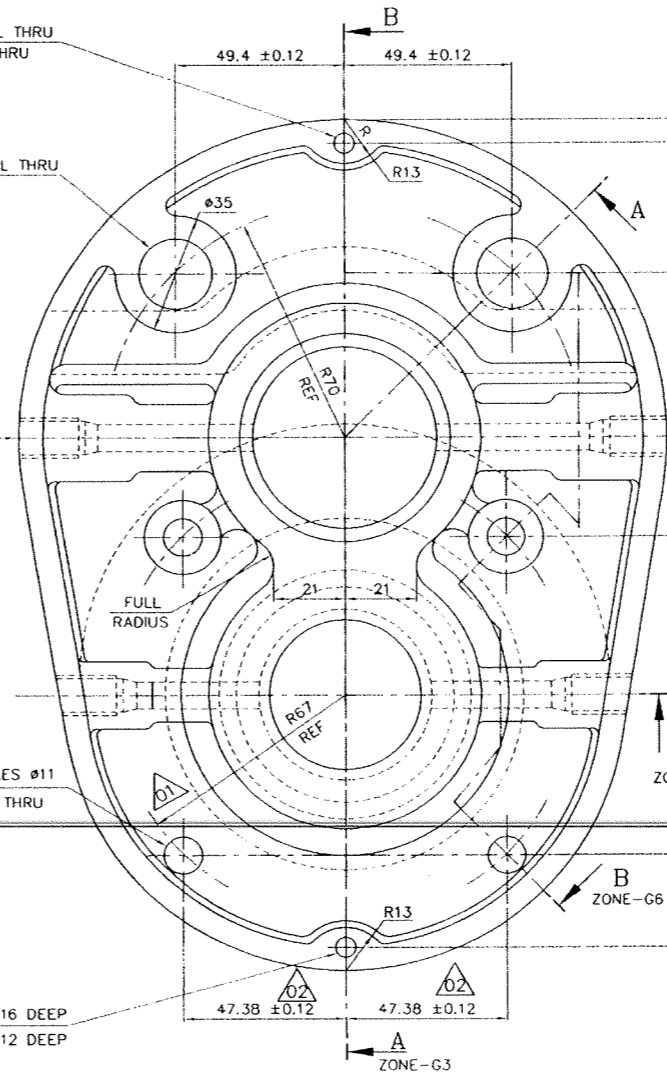


SECTION-BB
ZONE-F9

Ø6 DRILL THRU REAM THRU

Ø21 DRILL THRU 2 HOLES

Ø6 DRILL 16 DEEP & Ø6 REAM 12 DEEP



SECTION-G2
ZONE-G2

PATTERN NUMBER -- 1-67-272-00056

MACHINING NOTES: -

1. BREAK ALL SHARP CORNERS (1x45°) UNLESS OTHERWISE SPECIFIED.
2. PAINT UNFINISHED SURFACES.
3. PROTECT MACHINED SURFACES WITH GREASE OR RUST INHIBITOR DURING STORAGE.
4. FINISH MACHINING RADII 3MM UNLESS OTHERWISE SPECIFIED.

NOTES: -

CASTING WEIGHT 4.800Kg.
MATERIAL: CAST IRON ASTM A48 CL30A OR IS 210 Gr 25
PATTERN NUMBER: 1-67-272-00056

REV	DATE	ALTERED	NON N. CAL.	REV	DATE	ALTERED	SM	REV	DATE	ALTERED	SM	REV	DATE	ALTERED	SM
05	12.12.00	GHD & APPD	JAK	04	14.06.98	GHD & APPD	JSH	03	30.11.88	GHD & APPD	MA	02	29.09.88	GHD & APPD	MA
ZONE	DRAWING PREPARED IN CAD.		ZONE	DM 240±0.1 WAS 240±0.03	DM 165±0.1 WAS 165±0.03	DM 62 -0 WAS 62 -0	ZONE	SPOT FACE #36 WAS #29	DM 212.38±0.12 WAS 211±0.12	DM 47.38±0.12 WAS 46±0.12	DM 117.62±0.12 WAS 119±0.12	ZONE	R67 WAS R65		

CASTING	DESCRIPTION	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT WEIGHT
92-013-302	ASTM A48 CL30A				4.800

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT. VISAKHAPATNAM-530012	
DRN	NAME	SIGNATURE	DATE
01	J SWAMINATHAN	-Sd-	21.02.82
02	M ALAGARSAMY	-Sd-	11.04.88
SEPT	FEEDER	SCALE	WEIGHT (Kg)
240	240	1:1	4.800
TITLE		DRAWING NO	
GEAR REDUCER HOUSING		1-67-272-00067	
		1-67-256-U3833	

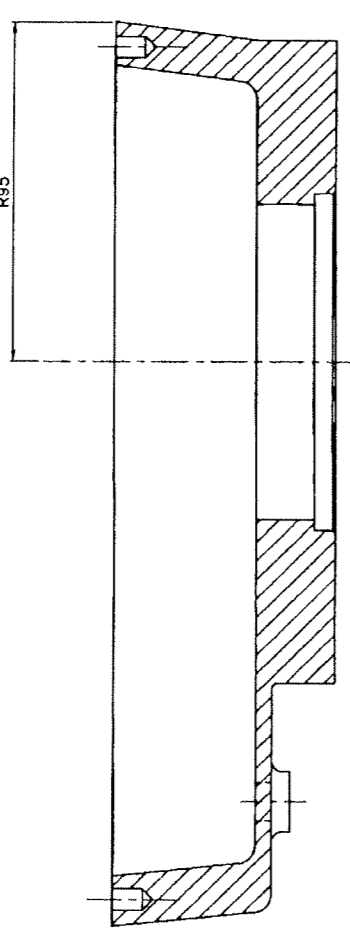
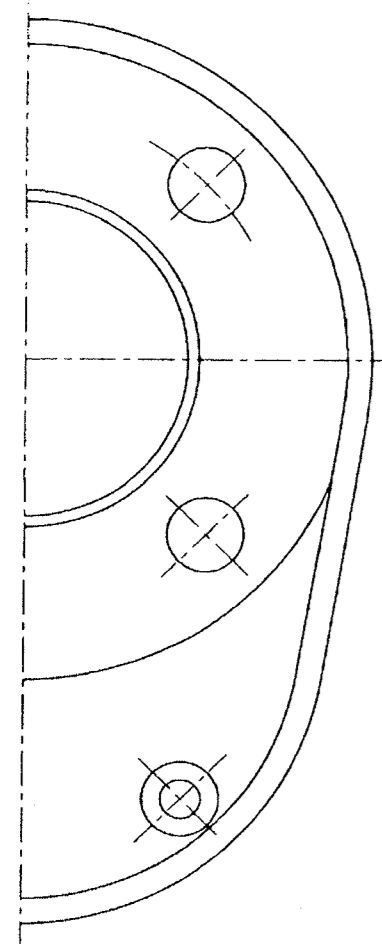
IDX

1-67-272-00067
1-67-256-U3833

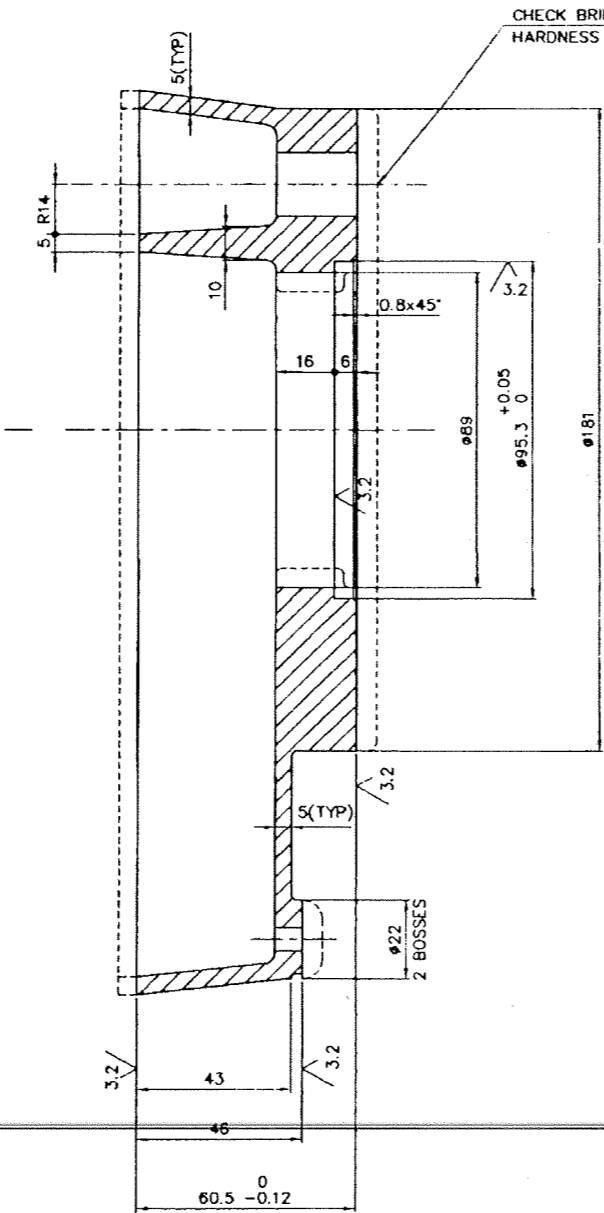
1-67-256-U3334
1-67-272-00072
1-67-256-U3334

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

3.2



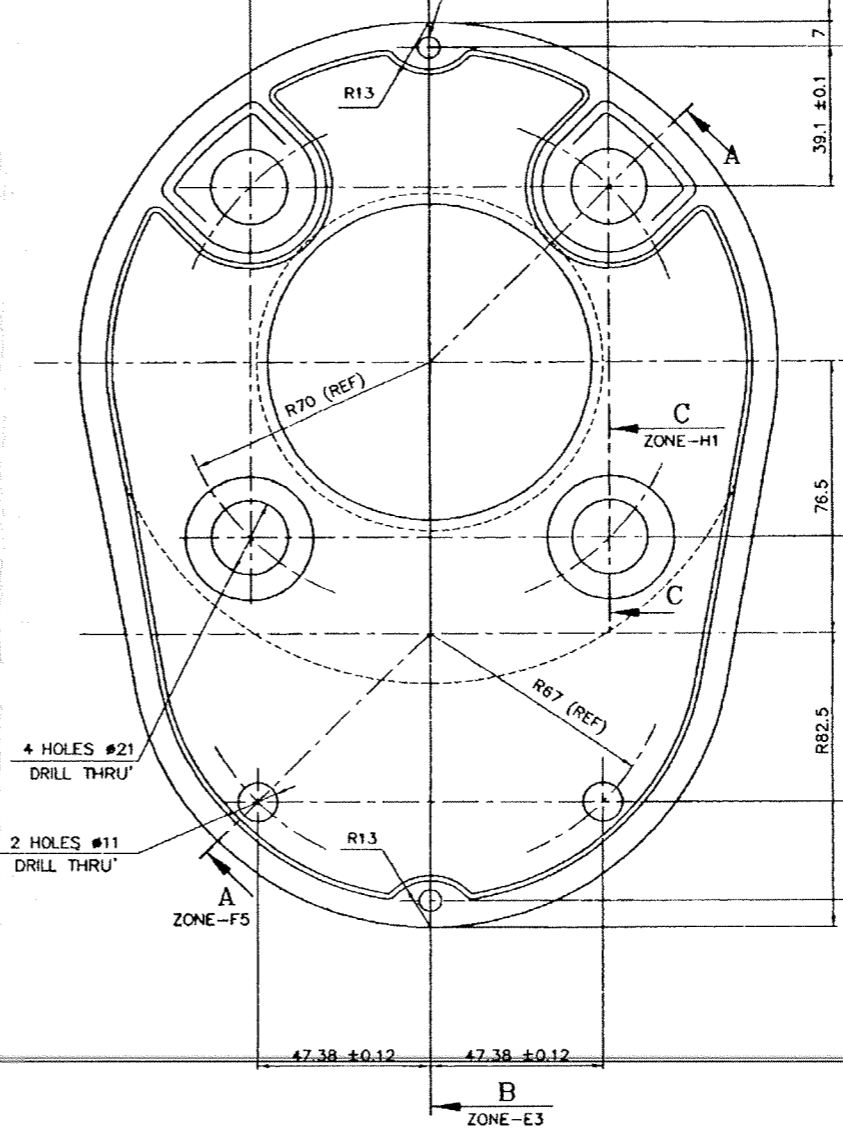
SECTION-BB
ZONE-EB



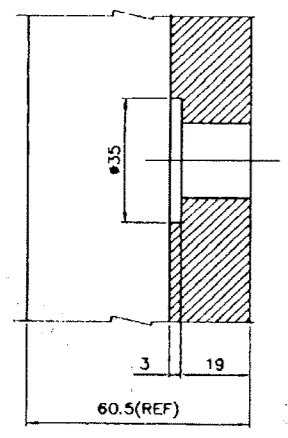
SECTION-AA
ZONE-E7

CHECK BRINELL HARDNESS HERE

2 HOLES #6 DRILL & REAM B DEEP.



ZONE-E3



SECTION-CC
ZONE-D9

MACHINING NOTES:

- BREAK ALL SHARP CORNERS (1x45°) UNLESS OTHERWISE SPECIFIED.
 - PAINT UNFINISHED SURFACES GRAY.
 - PROTECT UNFINISHED SURFACES WITH GREASE OR RUST INHIBITOR DURING STORAGE.
 - ALL RADII TO BE 0.8MM UNLESS OTHERWISE NOTED.
- MATERIAL: CAST IRON ASTM CLASS 30A OR IS: 210 GR.25
PATTERN NUMBER: 1-67-272-00057

PATTERN NUMBER
1-67-272-00057

ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO.	MATERIAL CODE	UNIT WEIGHT	QTY.
	CASTING				ASTM A48 CL30A	10.000	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012	
DATE	BY	DATE	BY
12.9.08	CHD	14.08.08	CHD
12.9.08	CHD	14.08.08	CHD
12.9.08	CHD	14.08.08	CHD
DRAWING NO.: 1-67-272-00072		REV: 04	
1-67-256-U3334			

REV	DATE	ALTERED BY	ALTERED FOR	REV	DATE	ALTERED BY	ALTERED FOR
01	12.9.08	CHD	APPROVING	02	14.08.08	CHD	APPROVING
02	12.9.08	CHD	APPROVING	03	14.08.08	CHD	APPROVING
03	12.9.08	CHD	APPROVING	04	14.08.08	CHD	APPROVING

104

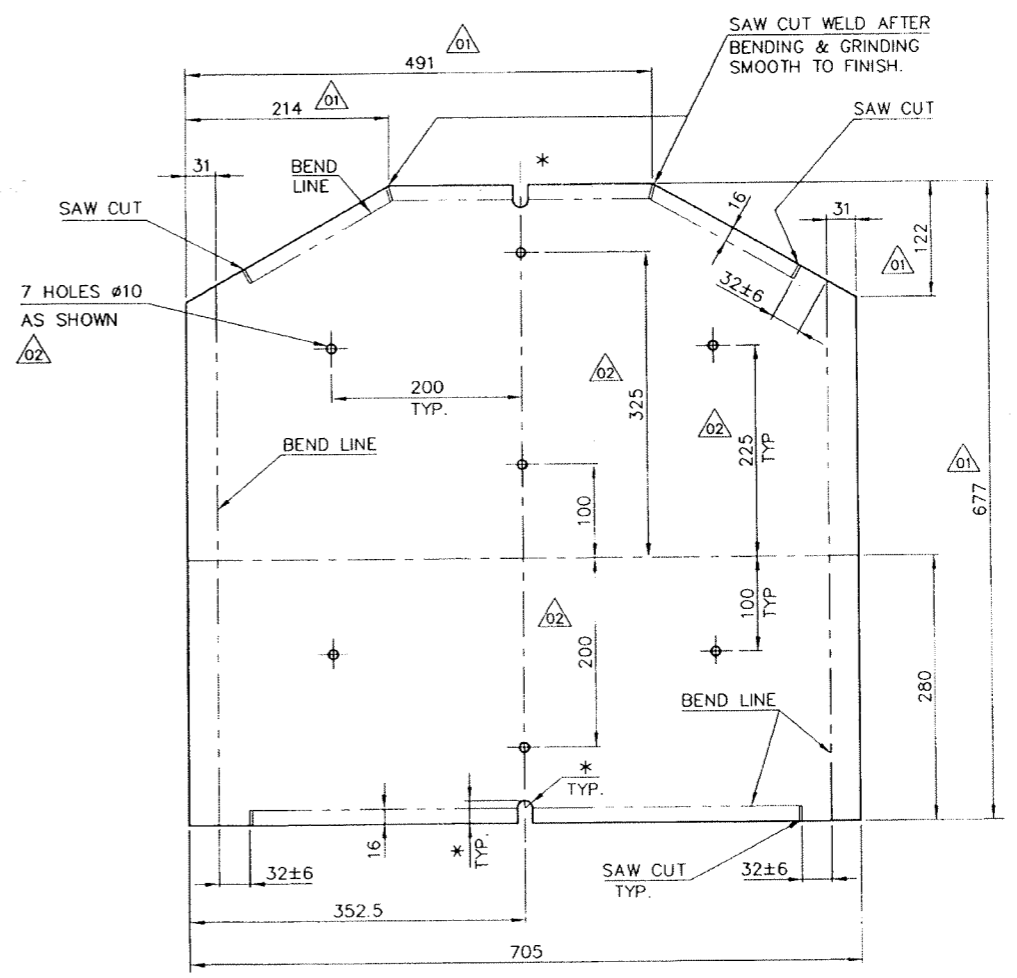
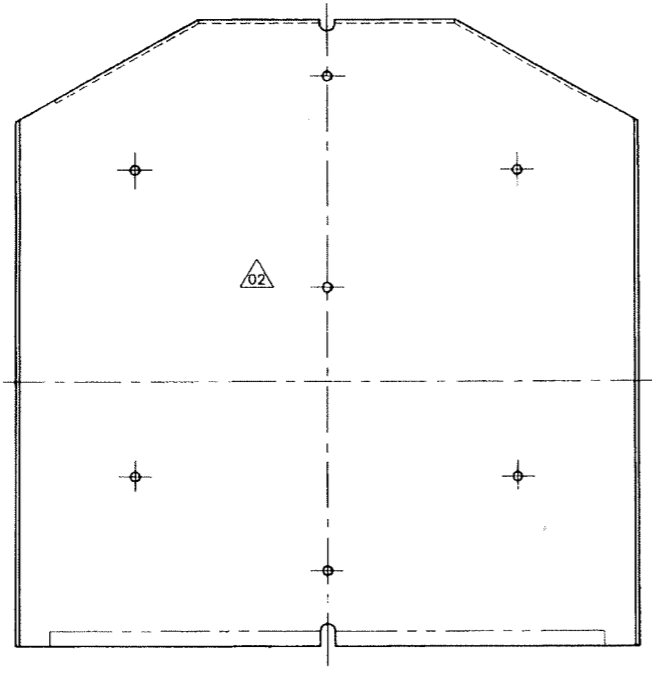
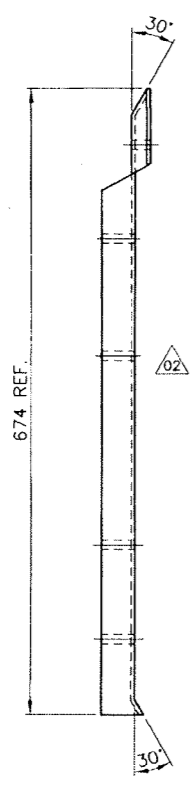
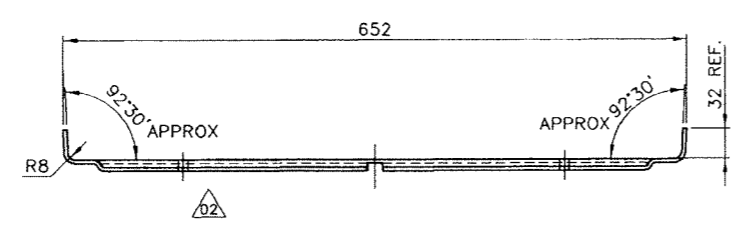
GEAR REDUCER HOUSING COVER

DRAWING NO.: 1-67-272-00072
1-67-256-U3334

REV 04

DRAWING NO. 2-67-251-00120
2-67-256-U3334

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



* GROOVE TO BE CUT TO SUIT INDICATOR PUSH ROD DURING ASSEMBLY-BOTH ENDS.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
		PLATE 4x677x705				15-011-295			16.000		
						SA 240 TYPE304					
					VAR NO	MATERIAL SPECN		DI	QUANTITY		

REV	DATE	ALTERED	BY	ZONE	REV	DATE	ALTERED	BY	ZONE	REV	DATE	ALTERED	BY	ZONE
03	060101	CHD & APPD	SELVA		02	071194	CHD & APPD	JSN		01	031089	CHD & APPD	JSN	
		DRAWING PREPARED IN CAD.					7 HOLES Ø10 AS SHOWN ADDED.					DIMENSIONS 214,491,122 & 677 WERE 257,447,147 & 702 RESPECTIVELY.		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN	EC/SELVA	SIGNATURE	-Sd-	DATE	02-06-88
CHD	P.K.S	P.K.S		DATE	04-06-88
APPD	M.A.SAMY	M.A.SAMY		DATE	04-06-88

DEPT: FEEDERS
CODE: 240

ALL DIMENSIONS ARE IN MM

PROJECTION:

SCALE: 1:5

WEIGHT (Kg): 16.000

REF TO ASSY / OLD DWG: 2-67-272-00094 Y-558-D

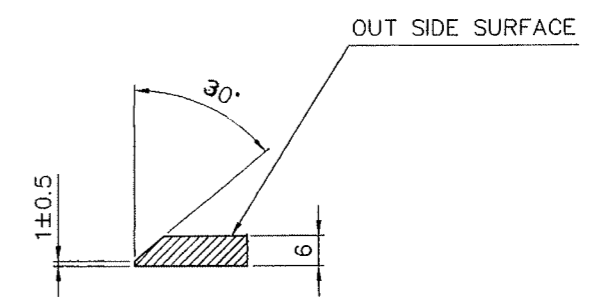
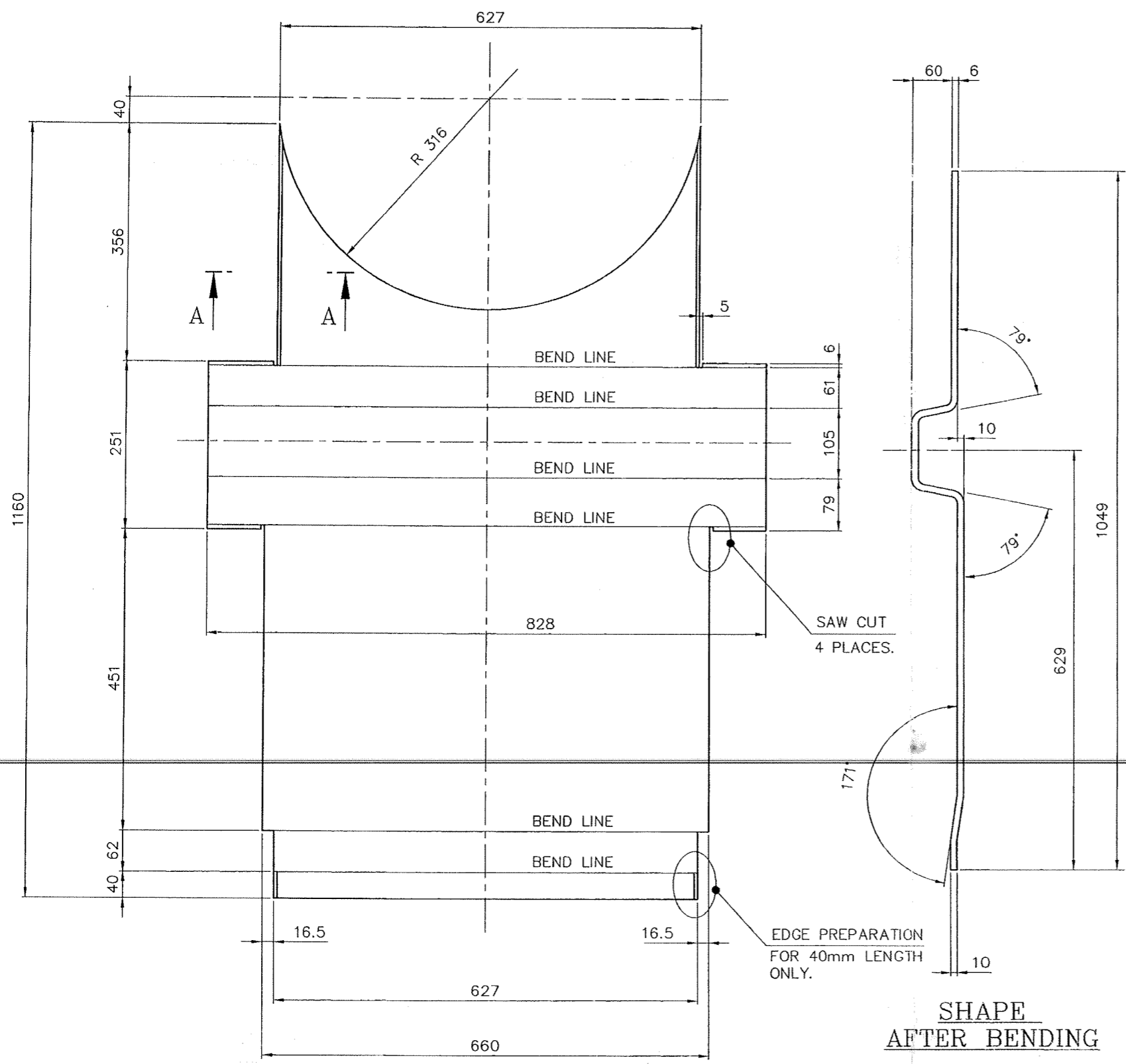
TITLE: LINER PLATE

DRAWING NO: 2-67-251-00120
2-67-256-U3334

REV: 03

22-67-252-00249
 22-67-256-U3335
 DRAWING NO.

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



SECTION-AA
 (TYPICAL) SCALE=1:1

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/Q/F	UNIT	UNIT WEIGHT	GS	ZONE
		PLATE 6X828X1160			15 011 092	IS2062FE410WA		NO	32.000		

SHAPE
 AFTER BENDING

DEVELOPMENT

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN D.N.C	SIGNATURE <i>D. N. C.</i>	DATE 13.3.99
DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION 1:5	SCALE	WEIGHT (Kg) 32.000	REF TO ASSY / OLD DWG 2-67-251-00119	
CODE 240						
TITLE TOP PLATE (FOR 24" RAW COAL GATE)				DRAWING NO : 2-67-252-00249 2-67-256-U3335		REV

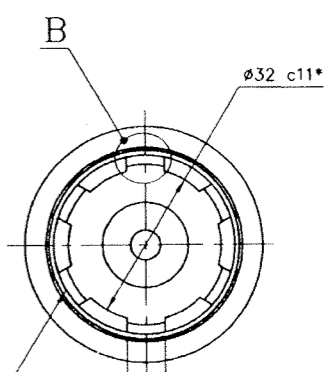
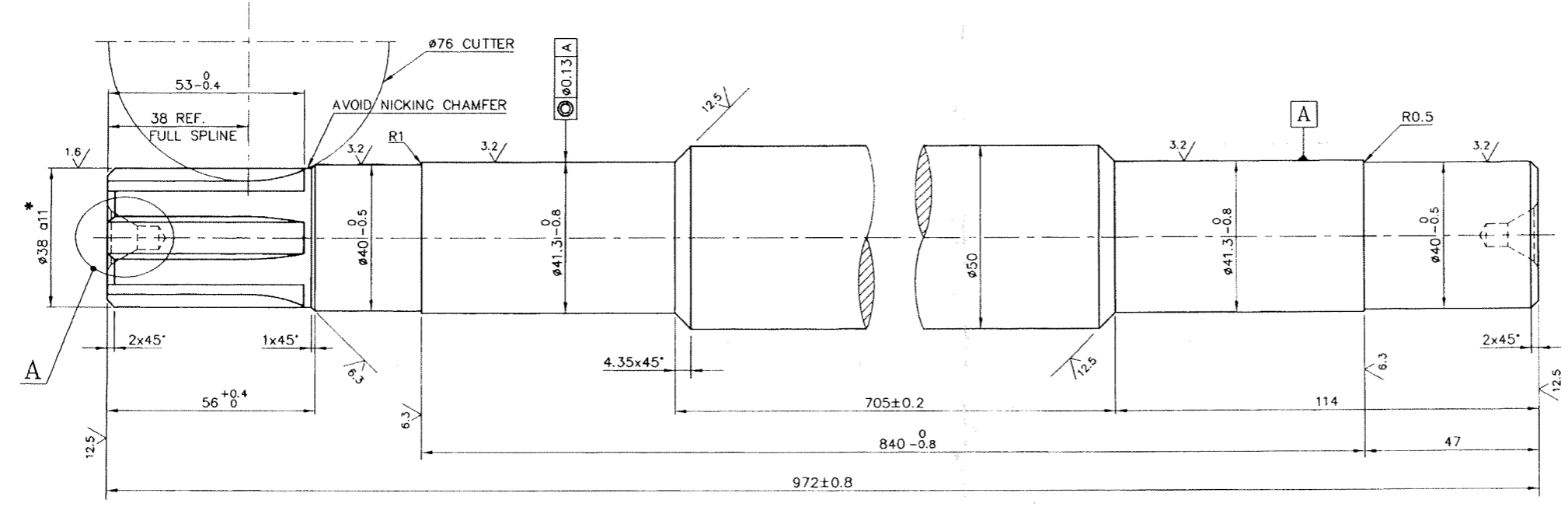
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REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

DRWG NO. 2-67-252-00250
 2-67-256-U3336

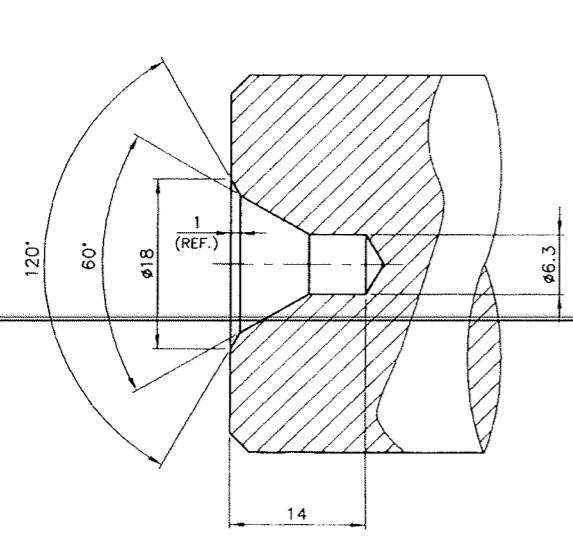
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

12.5/6.3/3.2/1.6/

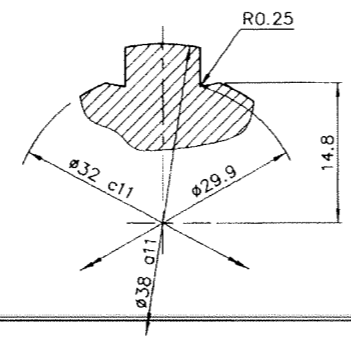


6x32x38 STRAIGHT SIDED SPLINE (EXTERNAL)
 PER IS: 2327&IS: 2610 STANDARDS
 SHAFT SLIDING INSIDE THE GEAR HUB
 (DRG.No. 2-67-272-00238)

* CRITICAL DIMENSIONS



DETAIL-A
 (TYPICAL BOTH ENDS)
 (SCALE=2:1)



DETAIL-B
 (SCALE=2:1)

TOLERANCE SYMBOL	BASIC DIMENSION	LIMITS
a11	38	-0.310 -0.470
c11	32	-0.120 -0.280
c11	8	-0.080 -0.170

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWNG NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT	Q'S	ZONE
		ROD D50x972L			15-339-142	SA 105		9.750		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
CHD	D.N.C	-Sd-	13.03.99
APPD	SELVA	-Sd-	30.03.99
	J.S.N	-Sd-	30.03.99

DEPT: FEEDERS
 CODE: 240

ALL DIMENSIONS ARE IN MM

PROJECTION: 1:1
 SCALE: 2:1

WEIGHT (Kg): 9.750

REF TO ASSY / OLD DWG
 2-67-272-00190
 2-67-272-00240

TITLE: SHAFT

DRAWING NO: 2-67-252-00250
 2-67-256-U3336

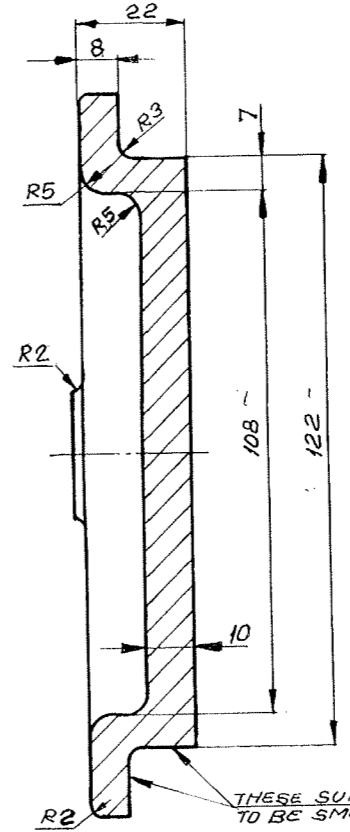
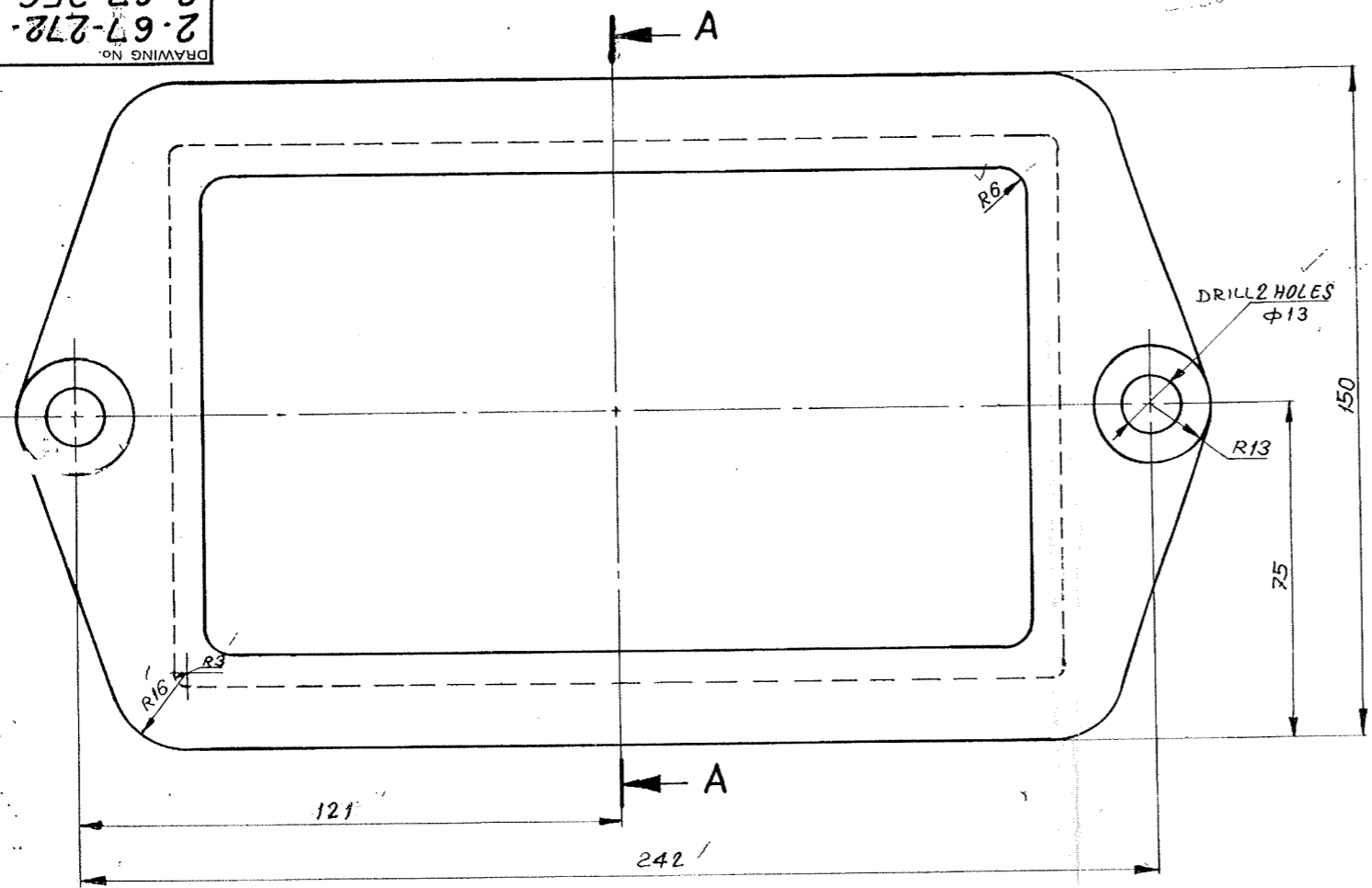
REV: 01

REV 01 DATE 090101 ALTERED: D.N.C
 CHD & APPD: SELVA
 DRAWING PREPARED IN CAD.

CAUTION: The information on this drawing 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.

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

2-67-272-00090
2-67-256-U3337
DRAWING NO.



CASTING NOTES:-

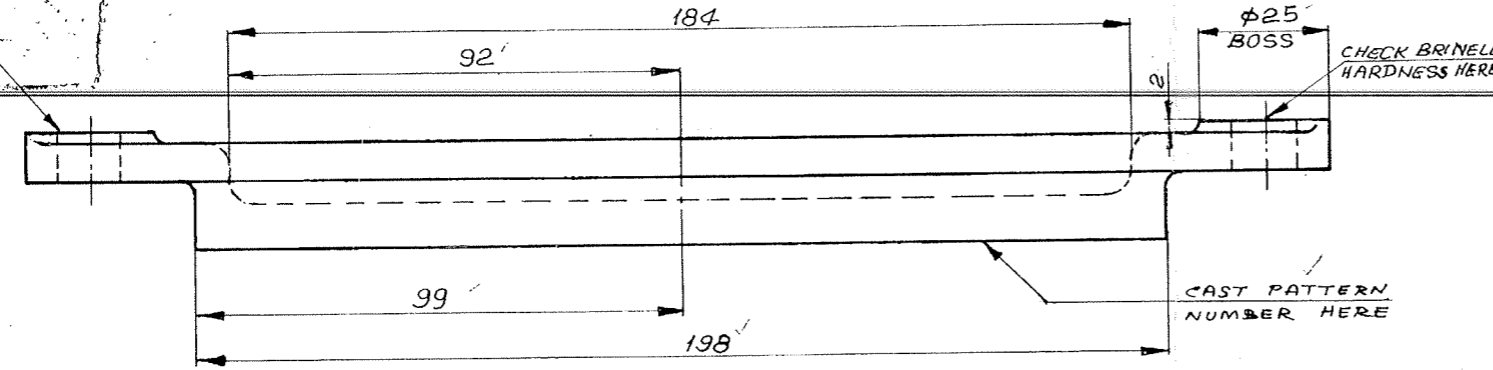
- MUST BE FREE FROM SAND, BURRS, SHRINKS AND CHILLED EDGES.
- SHOT BLAST WITH 330-360 SHOT BEFORE MACHINING.
- CASTING HARDNESS MUST BE 160-210 Bhn.

MACHINING NOTES:-

- BREAK ALL SHARP CORNERS (0.8 X 45°) UNLESS OTHERWISE SPECIFIED.
- PAINT ALL SURFACES.

SECTION-AA
(ZONE F-G)

TOP OF BOSS CAST
FLAT AND SMOOTH



VIEW-P
(ZONE C-G)

NOTE:-

- MATERIAL : GRAY IRON ASTM A48 CL25A OR IS 210 GR 20
- CASTING WEIGHT - 3.100 KG.
- PATTERN NO. 2-67-272-00090.

REV	DATE	ALTERED	CHECKED	ZONE
01				

CASTING	92-013-300	3.100
	ASTM A48 CL25A	
ITEM NO.	MATL CODE	UNIT WT.
VAR NO.	MATL SPEC	QTY.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd.
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN: N. ELANGOVAN
CHD: C. KATHIRVELU
APPD: PASNA

DATE: 18/08/87
SIGN: [Signature]
SCALE: 1:1
WEIGHT (KG): 3.100
REF TO ASSY FOLD DB: Y-156-K

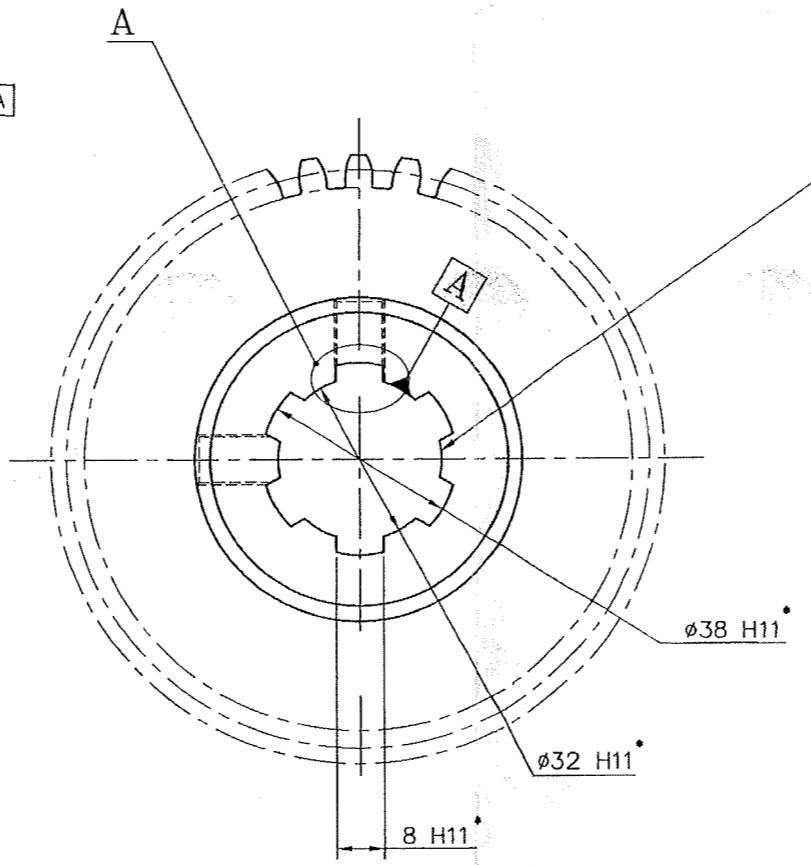
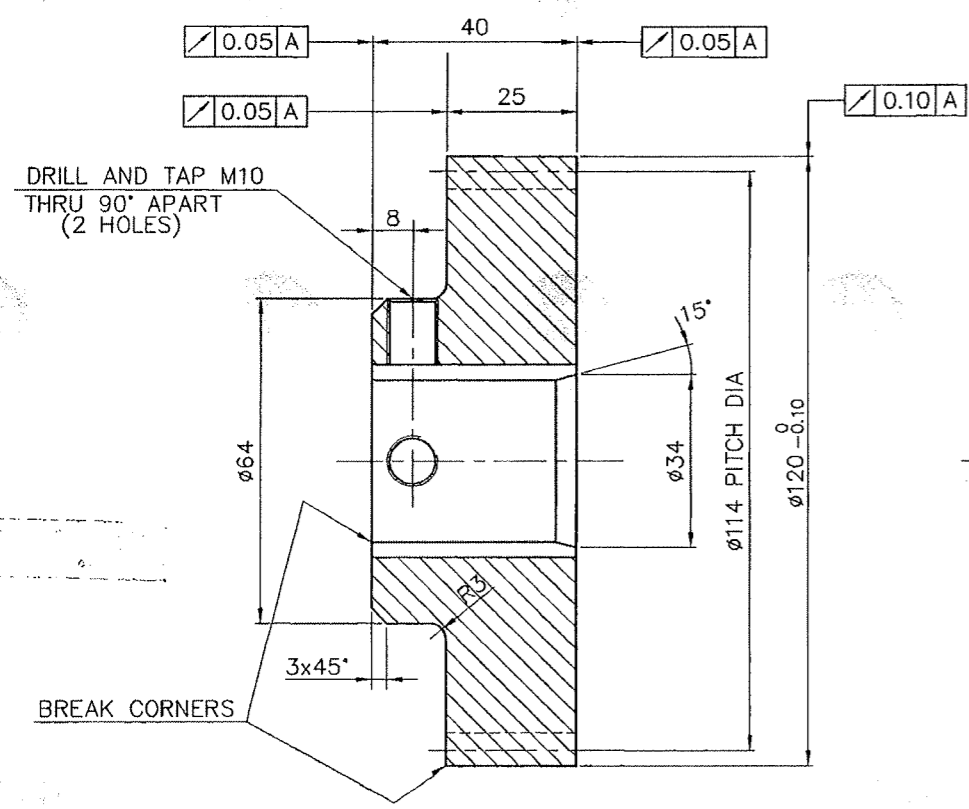
DRW NO: 2-67-272-00090
REV: U-01
DRAWING NO: 2-67-256-U3337

POKE HOLE COVER

6888U-992-79-2
272-00238
DRAWING NO.

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

3.2/



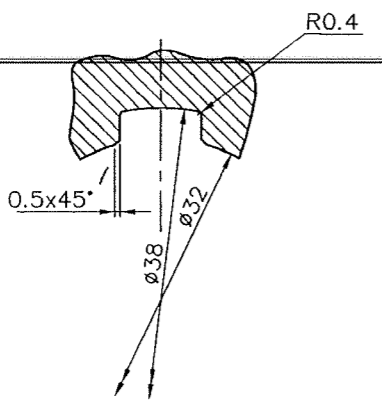
6X32X38 STRAIGHT SIDED SPLINE (INTERNAL)
PER IS: 2327 & IS: 2610 STANDARDS
GEAR HUB SLIDING ON THE MATING SHAFT
(DRG.NO: 2-67-272-00240)

GEAR TOOTH CUTTING DATA: -

38 TEETH- SPUR GEAR
3 MODULES
20° PRESSURE ANGLE
0.1 TO 0.2 BACKLASH AT 76.5 OPERATING C.D.
WITH MATING PINION
QLTY & TOLERANCE ZONE: 9c DIN 3967
CHORDAL DIMENSION OVER 5 TEETH LENGTH 41.45^{-0.051}_{-0.085}

NOTES

1. FINAL HARDNESS REQUIRED IS 28-33 HRC.
2. PROTECT MACHINED SURFACES WITH GREASE OR RUST INHIBITOR DURING STORAGE.



DETAIL-A
SCALE 2:1

TOLERANCE SYMBOL	BASIC DIMENSION	LIMITS
H11	38	+0.160 0
H11	32	+0.160 0
H11	8	+0.090 0

CRITICAL DIMENSIONS

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/S/P	UNIT	UNIT WEIGHT	QTY	ZONE
		ROD D125....50L			15 039 121	SA 193 B7			2.120		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	M.ALAGIRI	SIGNATURE	DATE
DEPT FEEDERS		ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
CODE	240			1:1	2.120	3-67-272-00161 STOCK REF. B-3431-D	
TITLE		GEAR - 3:1 GEAR REDUCER		DRAWING NO :		REV	
				2-67-272-00238			
				2-67-256-U3339			

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REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

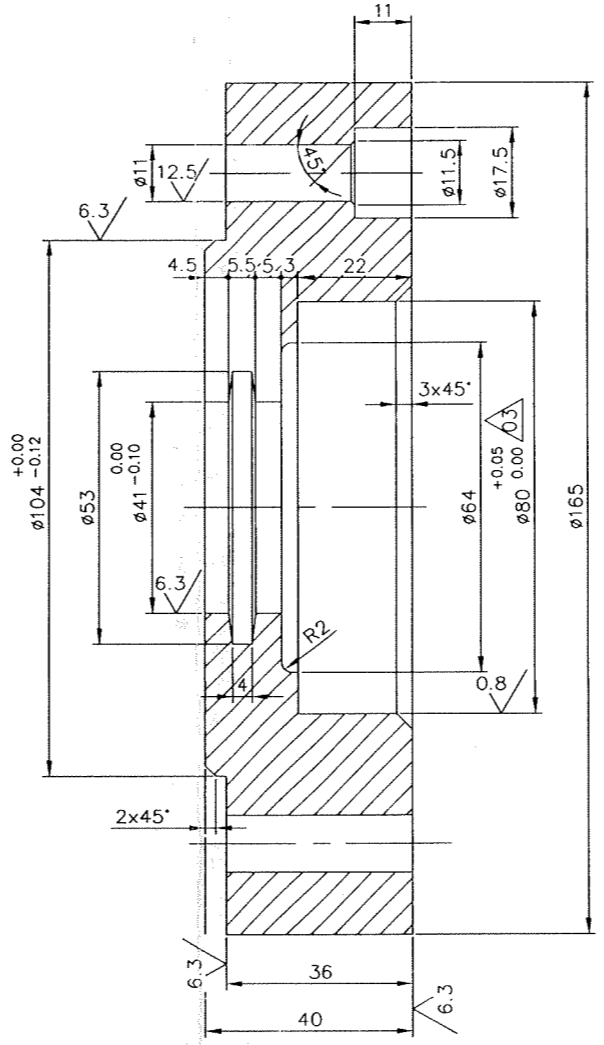
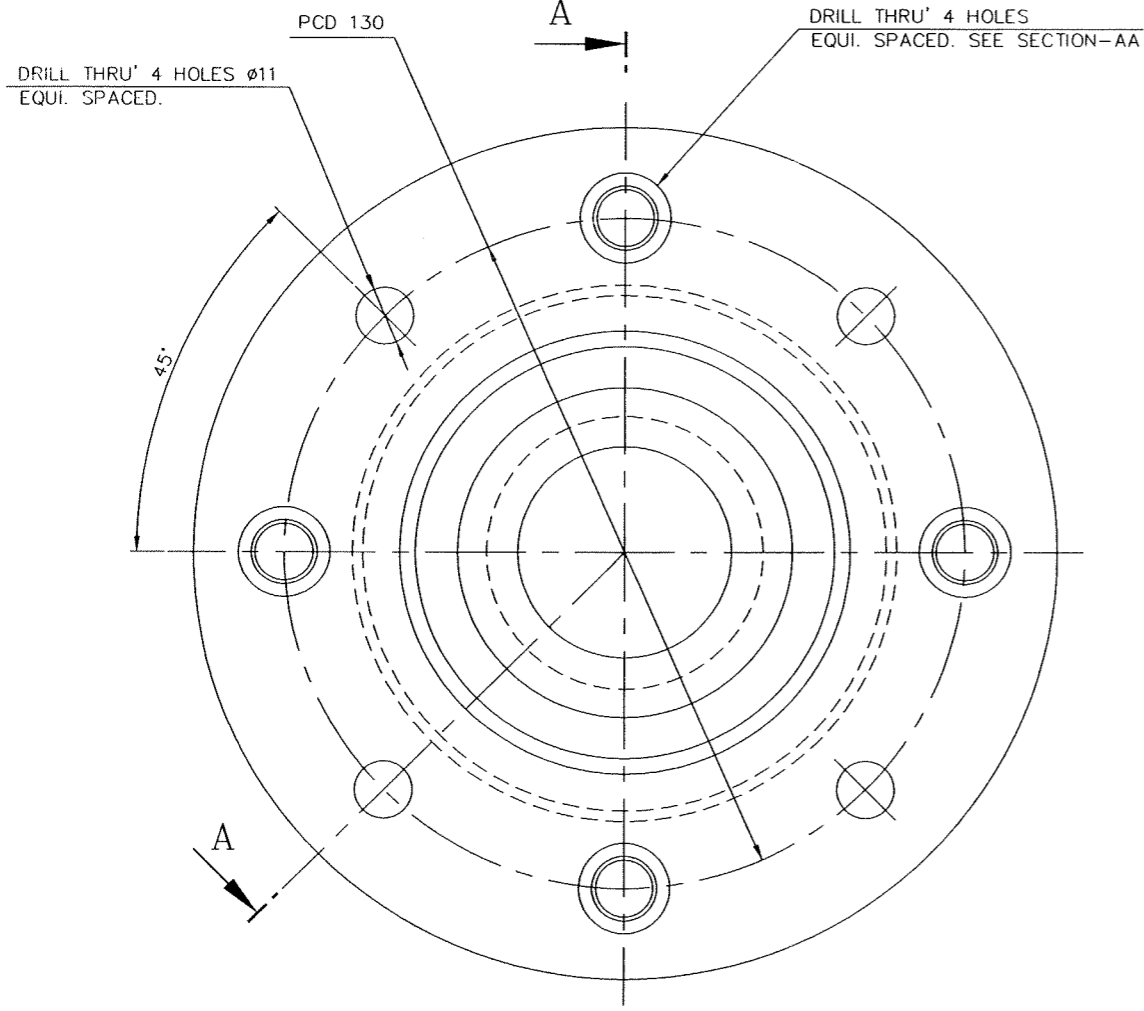
10X

DRAWING NO. :
 22-67-276-00107
 22-67-256-U3340

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

SECTION-AA

02
 04
 12.5/6.3/0.8



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	ZONE
		ROUND D165x50L			15-939-282	SA105			4.900	
									1	

REV	DATE	ALTERED	ZONE	REV	DATE	ALTERED	ZONE
04	10.01.09	S.MANIVANNAN CHD & APPD : D.VIJAYAKUMAR		03	14.06.98	M.ALAGIRI CHD & APPD : JSN	
		MATL. CODE WAS 15-339-282 DRG. PREPARED IN AUTOCAD DRAWN TO SCALE				+0.05 +0.02 DIM 080 0.00 WAS 080 0.00	
02	20.02.96	DNC CHD & APPD : JSN	A8	01	26.08.91	G.RAMACHANDRAN CHD & APPD : SELVA&JSN	
		MACHINING 12.5/ ✓ ADDED				MATL. CODE WAS 15-015-324 MACHINING WAS 12.5/ ✓	
		DIA WAS 200 MATL. CODE WAS 15-339-283					

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	S.MANIVANNAN	SIGNATURE	-Sd-	DATE	19.02.88
CHD	J.SWAMINATHAN	SIGNATURE	-Sd-	DATE	22.03.88
APPD	M.ALAGARSAMY	SIGNATURE	-Sd-	DATE	11.04.88

DEPT MILLS 355-054
 CODE 240
 ALL DIMENSIONS ARE IN MM
 PROJECTION
 SCALE 1:1
 WEIGHT (Kg) 4.900
 REF TO ASSY / OLD DWG

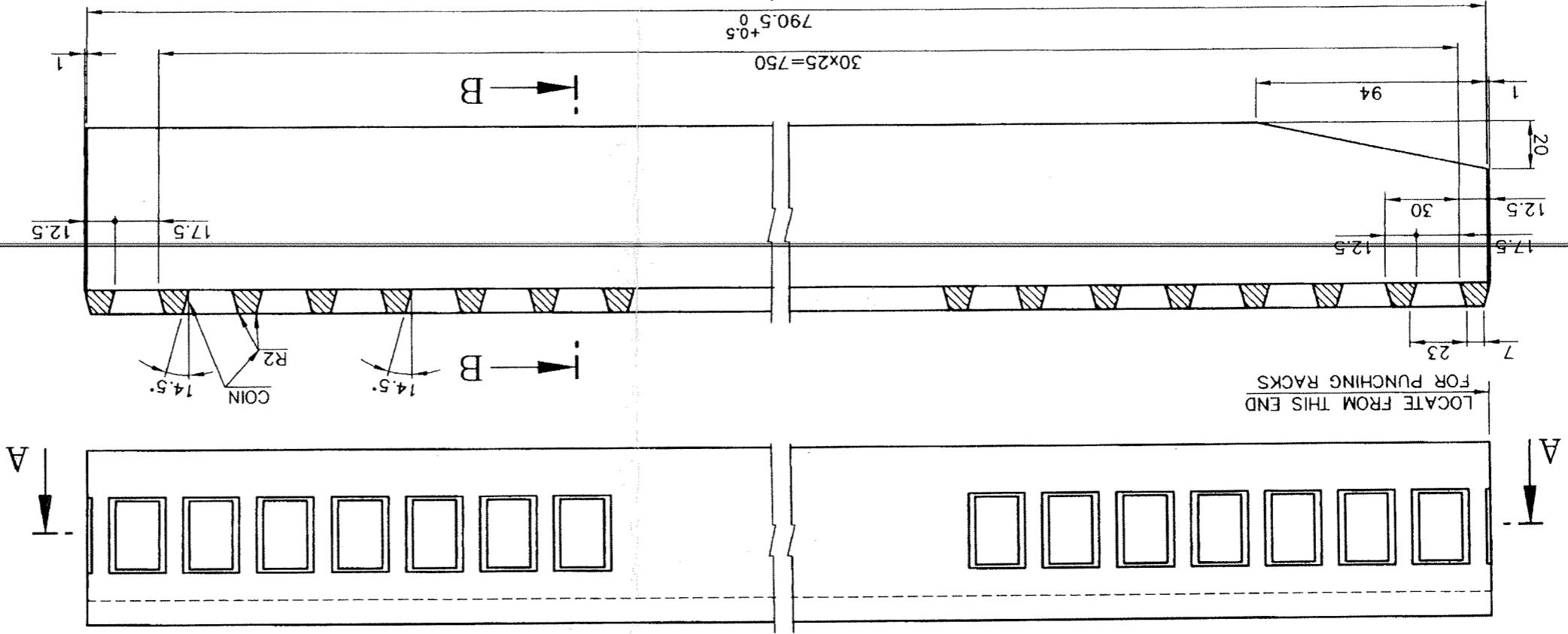
TITLE: BEARING HOUSING-I

DRAWING NO : 2-67-276-00107
 2-67-256-U3340

REV 04

DRAWING NO:
 7888U-956-79-3
 16100-251-00191
 3-67-251-00191

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



SECTION-AA

SECTION-BB

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	VAR NO	MATERIAL CODE	MATERIAL SPECN	A/C/P	DI	QUANTITY
		PLATE 10x132x792			15-011-098	IS2062FE410WA				5.600

REV	DATE	ALTERED :	D.N.C	SD
04	290200	CHD & APPD : SELVA		
03				
03	250399	CHD & APPD : SELVA		
01				
01	011188	CHD & APPD : J.S.N		
02	270796	CHD & APPD : D.V.K		

DIM. 15.5 WAS 14.5

DIM. 790.5 WAS 700.5

DRAWING PREPARED IN CAD.

MATL SPECN WAS BMC-20.

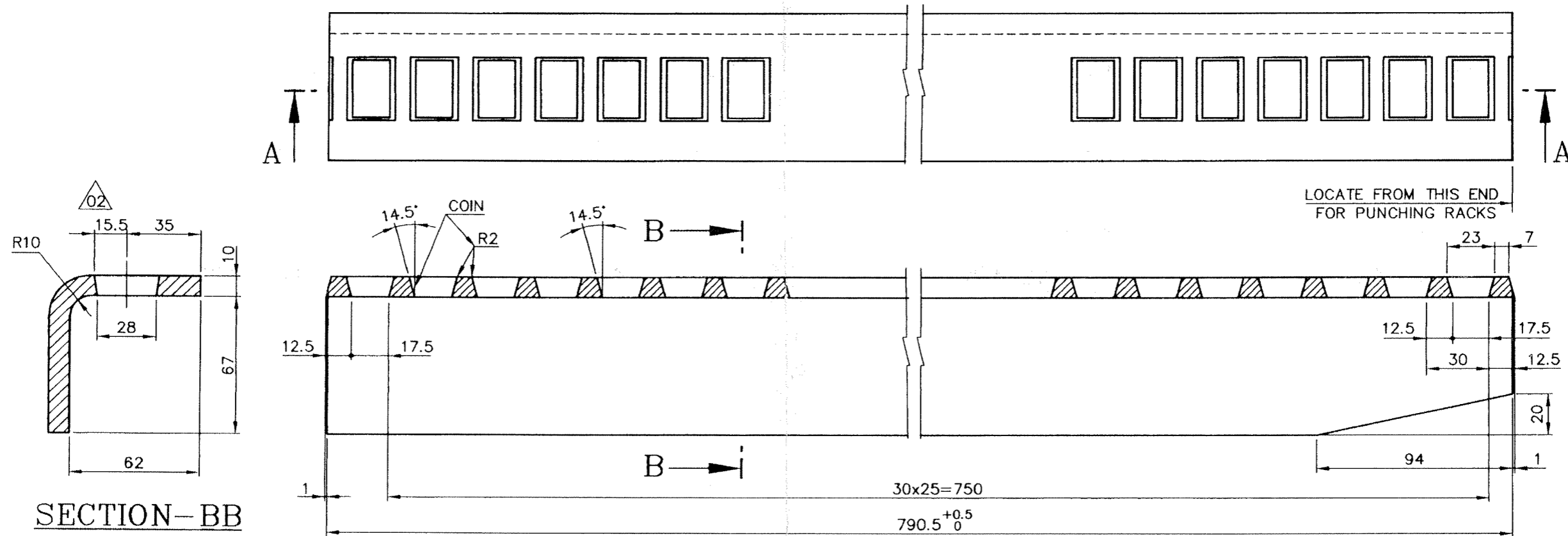
DIMNS. 10x132x702 WAS 10x145x702

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: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DEPT FEEDERS	355-055
NAME	SIGNATURE	DATE	ORH	CHD	APPD
EC/SELVA		04-06-88		P.K.S	
		04-06-88		M.A.S	
		04-06-88			
REF TO ASSY / OLD DWG		WEIGHT (kg)	SCALE	PROJECTION	ALL DIMENSIONS ARE IN MM
2-67-272-00093		5.600	1:2	1st	240
DRAWING NO:		TITLE			
3-67-251-00191		GATE RACK (R.H)			
3-67-256-U3337					
REV	04				

DRAWING NO. 3-67-251-00192
3-67-256-U3338

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



SECTION-BB

SECTION-AA

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
		PLATE 10x132x792				15-011-098			5.600
						IS2062FE410WA			
					VAR NO	MATERIAL SPECN		DI	QUANTITY

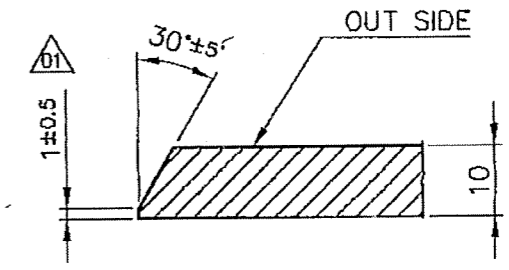
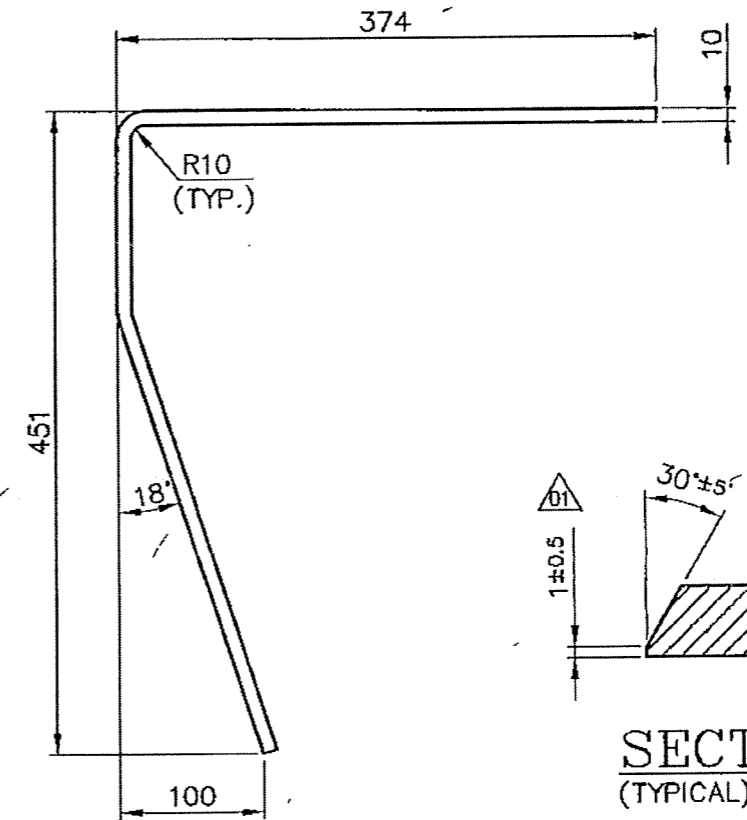
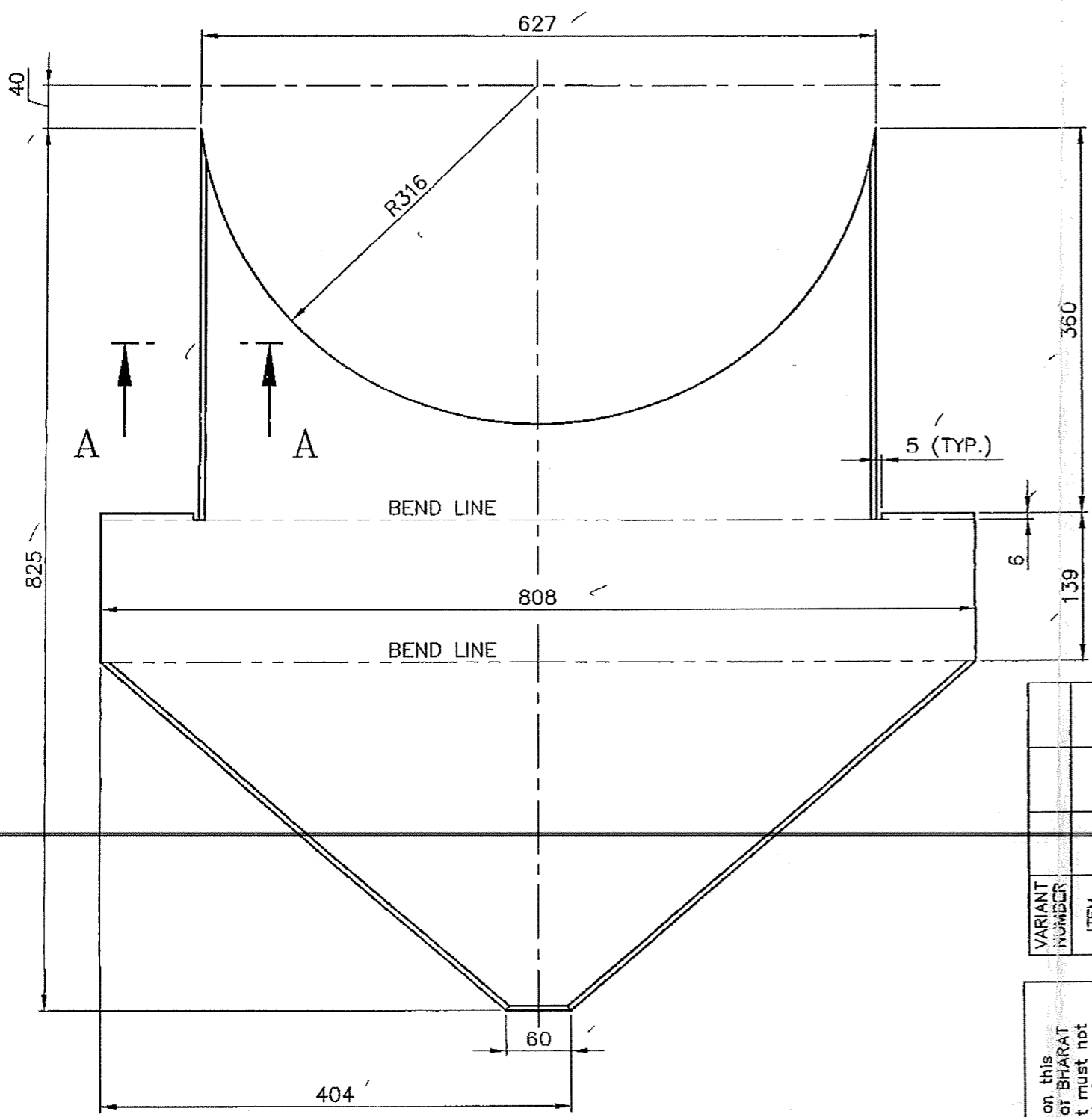
REV	DATE	ALTERED : D.N.C	REV	DATE	ALTERED : D.N.C
04	010300	CHD & APPD : SELVA	03	250399	CHD & APPD : SELVA
ZONE		DRAWING PREPARED IN CAD. DIMN. 790.5 WAS 700.5	ZONE		MATL. SPECN WAS BMC-20.
02	250397	CHD & APPD : S.G.R	01	011188	CHD & APPD : J.S.N
ZONE		DIM. 15.5 WAS 14.5	ZONE		DIMNS. 10x132x702 WAS 10x145x702

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				DRN	NAME	SIGNATURE	DATE
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012				EC/SELVA	-Sd-	04-06-88	
				P.K.S	-Sd-	04-06-88	
				M.A.S	-Sd-	04-06-88	
DEPT FEEDERS CODE 240	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:2	WEIGHT (Kg) 5.600	REF TO ASSY / OLD DWG 2-67-277-00101		
TITLE GATE RACK (L.H)				DRAWING NO : 3-67-251-00192		REV 04	
				3-67-256-U3338			

3-67-252-00339
 3-67-256-U3339
 DRAWING NO.


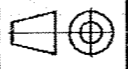
FOR TOLERANCES OF UNTOLERANCED
 DIMENSIONS DURING MANUFACTURE
 REFER PLANT STD.NO TP 023 0299



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN		DI	QUANTITY
		PL.10x808x825				SA240 TYPE 304			28.000
						15-011-380			28.000

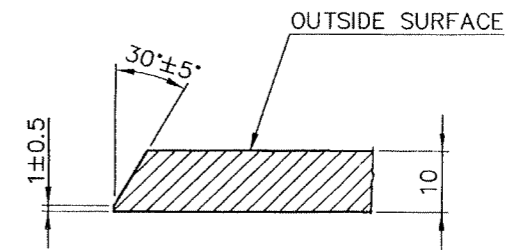
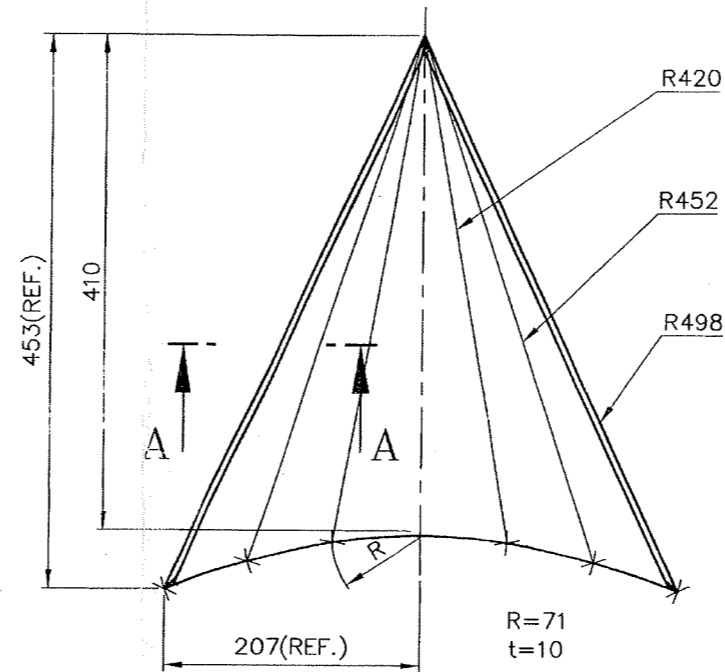
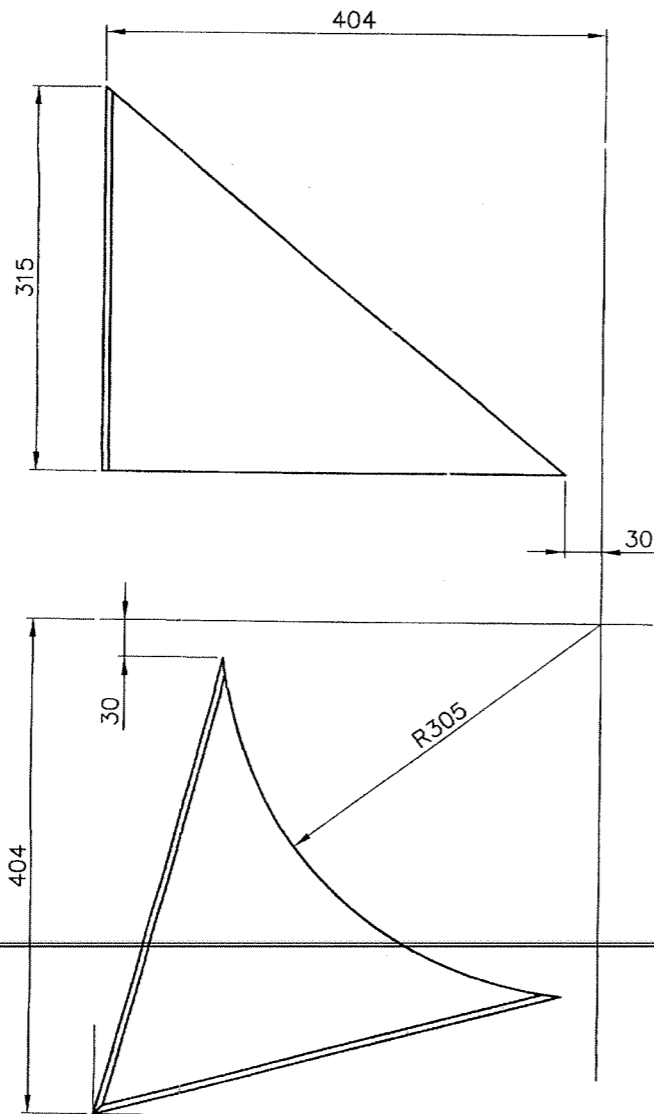
REV	DATE	ALTERED:
01	20.12.2k	GHD&APPD: <i>[Signature]</i>
DRAWING REDRAWN.		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				BOM			
		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME	SIGNATURE	DATE
355-055				CHD	S.Selvaraju	-Sd-	10/03/99
				APPD	J.Swaminathar	-Sd-	30/03/99
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
FEEDER	240		1:5	28.000	3-67-251-00188		
TITLE				DRAWING NO :		REV	
SIDE WALL (FOR 24" RAW COAL GATE)				3-67-252-00339 3-67-256-U3339		01	

3-67-252-00340
 3-67-256-U3340
 DRAWING NO.

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



SECTION-AA
 (SCALE=1:1)

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN	DI	QUANTITY	
		PLATE 10x414x453				15-011-380			6.500
						SA 240 TYPE304			

REV	DATE	ALTERED :	REV	DATE	ALTERED :
02	21.09.0	CHD & APPD: [Signature]	01	291100	DNC CHD & APPD:SELVA
ZONE	DEVELOPMENT OF PLATE UPDATED		ZONE	DRAWING PREPARED IN CAD	

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
FEEDERS	240	1st Angle	1:5 1:1	6.500	3-67-251-00189

TITLE: **CORNER PLATE**

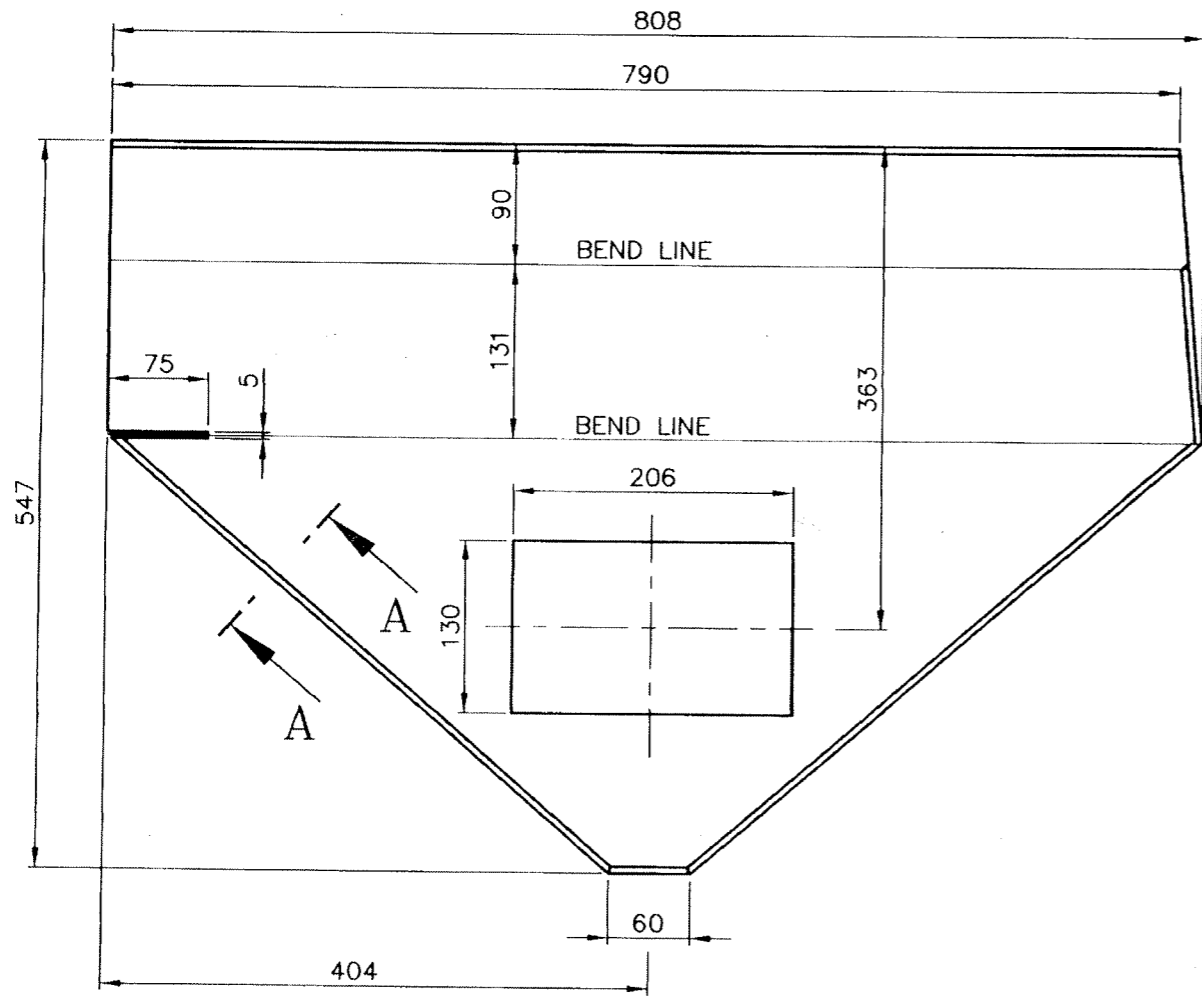
ORN	NAME	SIGNATURE	DATE
CHD	D.N.C	-Sd-	13-03-99
APPD	SELVA	-Sd-	30-03-99
	J.S.N	-Sd-	30-03-99

DRAWING NO :
 3-67-252-00340
 3-67-256-U3340

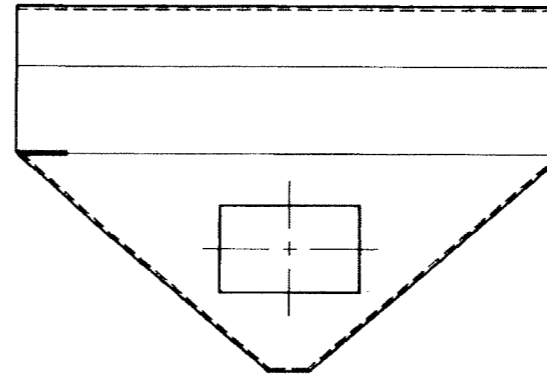
REV 02

DRAWING NO. 3-67-252-00341
 3-67-256-U3341

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

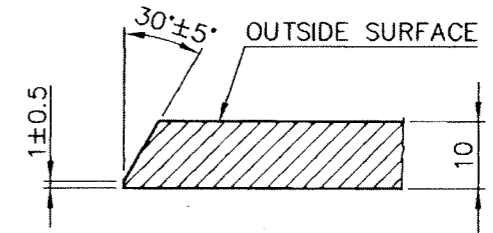


VARIANT-01



VARIANT-02

(SCALE=1:10)



SECTION-AA

TYPICAL (SCALE=1:1)

NOTE:

- 01. EDGE PREPARATION SHOWN IS FOR VARIANT-01.
- 02. FOR VARIANT-02 THE EP SHALL BE ON THE OPPOSITE SIDE.
- 03. ALL DIMENSIONS ARE APPLICABLE TO VARIANT-02 ALSO.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN		DI	QUANTITY
02		PLATE 10x547x808				15-011-380			23.670
						SA 240 TYPE304			
01		PLATE 10x547x808				15-011-380			23.670
						SA 240 TYPE304			

REV 01	DATE 111200	ALTERED : DNC <i>D. N. Selva</i>
ZONE	CHD & APPD: SELVA	
DRAWING PREPARED IN CAD		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT



Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

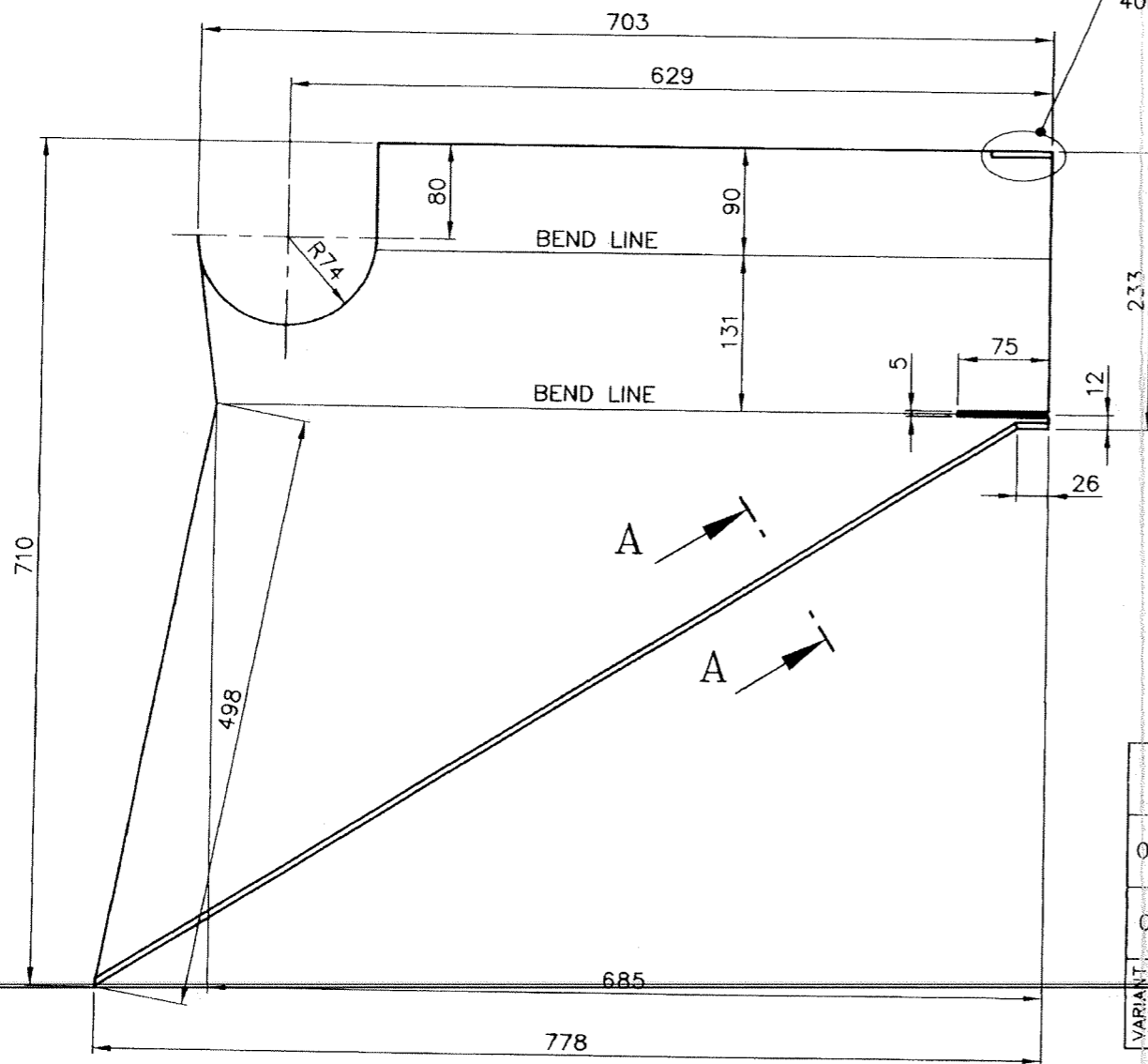
DRN	NAME D.N.C	SIGNATURE -Sd-	DATE 26-03-99
CHD	SELVA	-Sd-	30-03-99
APPD	J.S.N	-Sd-	30-03-99

DEPT FEEDERS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:5 1:1	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 240					3-67-252-00279

TITLE	DRAWING NO :	REV
WALL-I (FOR 24" RAW COAL GATE)	3-67-252-00341 3-67-256-U3341	01

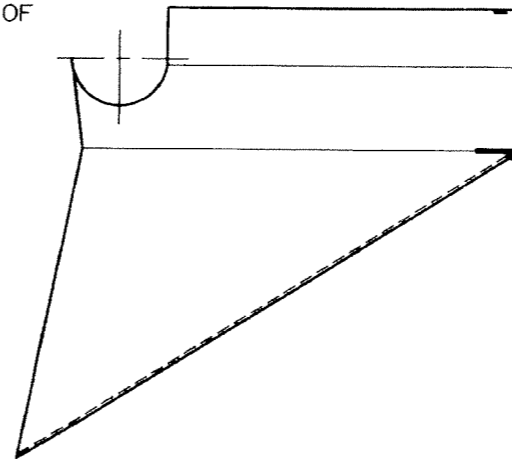
3-67-252-00342
 3-67-256-U3342

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



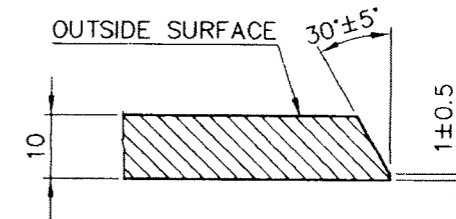
VARIANT-01

EP AS PER SECTION-AA
 FOR A LENGTH OF
 40mm ONLY.



VARIANT-02

(SCALE=1:10)



SECTION-AA

TYPICAL (SCALE=1:1)

NOTE:

- 01. EDGE PREPARATION SHOWN IS FOR VARIANT-01.
- 02. FOR VARIANT-02 THE EP SHALL BE ON THE OPPOSITE SIDE.
- 03. ALL DIMENSIONS ARE APPLICABLE TO VARIANT-02 ALSO.

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		PLATE 10x710x778				15-011-098 IS2062FE410WA			24.720	
01		PLATE 10x710x778				15-011-098 IS2062FE410WA			24.720	

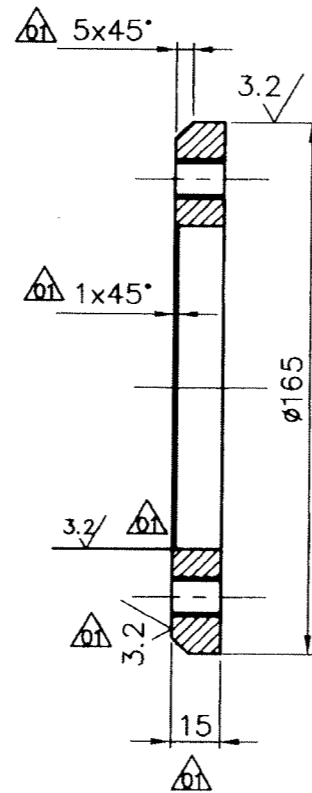
REV	DATE	ALTERED : DNC <i>D.N.C.</i>
01	111200	CHD & APPD:SELVA
ZONE	DRAWING PREPARED IN CAD	

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.

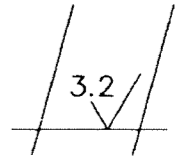
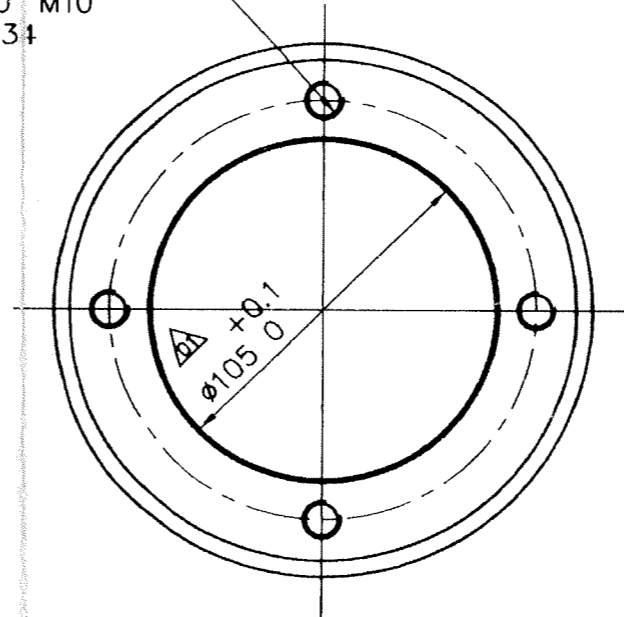
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, 355-055 VISAKHAPATNAM-530012			
DRN	NAME	SIGNATURE	DATE
CHD	D.N.C	-Sd-	26-03-99
APPD	SELVA	-Sd-	30-03-99
	J.S.N	-Sd-	30-03-99
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE
FEEDERS	240		1:5 1:1
TITLE	WALL-II (FOR 24" RAW COAL GATE)		WEIGHT (Kg)
			REF TO ASSY / OLD DWG
			3-67-252-00280
	DRAWING NO :	REV	
	3-67-252-00342	01	
	3-67-256-U3342		

DRAWING NO. 3-67-272-00152
3-67-256-U3343

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



4 HOLES DRILL & TAPPED
HOLES THRU' M10
ON P.C.D. 134



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	SS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
		PI 20xD175				IS: 2062Fe410WA			1.500	

REV	DATE	ALTERED	BY	ZONE	REV	DATE	ALTERED	BY	ZONE
04	11.11.00	ALTERED :NCN N. ch...			03	17.04.98	ALTERED :SGR	-Sd-	
		CHD & APPD: JAK					CHD & APPD: JSN	-Sd-	
		DRAWING PREPARED IN CAD.					MATL. SPECN. WAS BMC 20.		
02	13.09.88	ALTERED :SM	-Sd-		01	26.07.88	ALTERED :SM	-Sd-	
		CHD & APPD: MA	-Sd-				CHD & APPD: MA	-Sd-	
		P.C.D. WAS 130					MACHINING SYMBOL ADDED. 4 HOLES - M10 ADDED. CHAMFERING 1x45° & 5x45° ADDED. DIM 15 WAS 20. +0.1 105 0 WAS 100.		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	M.ALAGIRI	-Sd-	06.08.87
CHD	D.K.R.	-Sd-	06.08.87
APPD	M.A.S.	-Sd-	14.08.87

DEPT FEEDER CODE 240

ALL DIMENSIONS ARE IN MM

PROJECTION

SCALE 1:2

WEIGHT (Kg) 1.500

REF TO ASSY / OLD DWG X - 382 - U

TITLE **BEARING FLANGE RING**

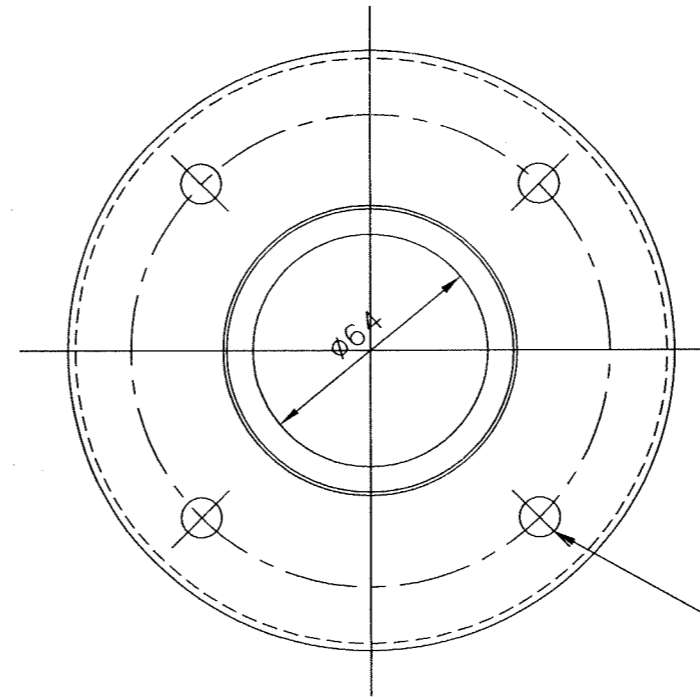
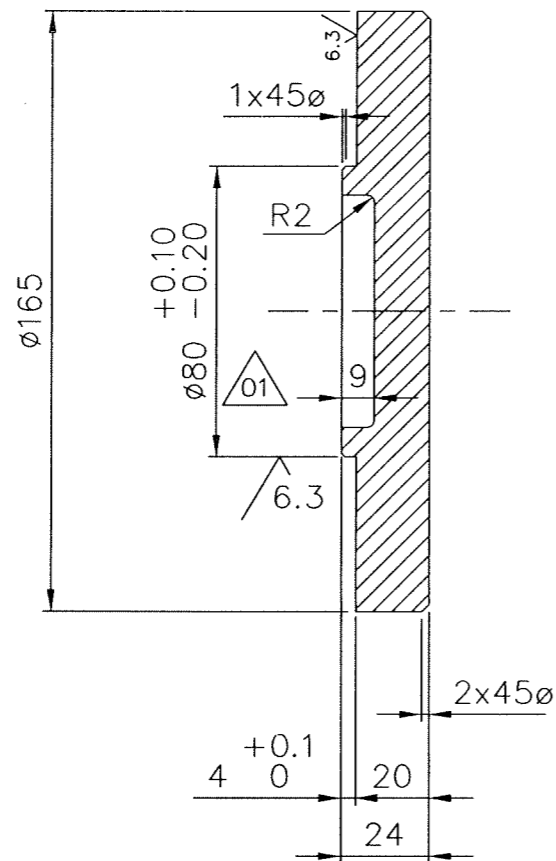
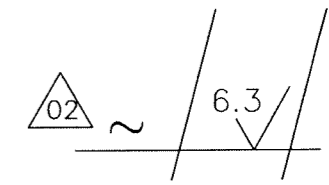
DRAWING NO : 3-67-272-00152
3-67-256-U3343

REV 04

X01

DRAWING NO: 3-67-276-00260
3-67-256-U3344

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



DRILL THRU' 4 HOLES $\phi 11$
ON PCD 130 EQUI. SPACED

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
		ROUND				15-939-282			3.600	
		D165x40L				SA 105				

REV	DATE	ALTERED	:S.MANI	-Sd-	REV	DATE	ALTERED	:NCN	
04	10.01.09	CHD & APPD:	D.V.K	-Sd-	03	11.11.00	CHD & APPD:	JAK	
ZONE		MATL. SPECN. WAS 15-339-282			ZONE		DRAWING PREPARED IN CAD.		
REV	DATE	ALTERED	:DNC	-Sd-	REV	DATE	ALTERED	:DNC	
02	20.02.96	CHD & APPD:	JSN	-Sd-	01	15.10.94	CHD & APPD:	JSN	
ZONE		DIA WAS 200 MATL. SPECN. WAS 15-339-283 MACHINING WAS 12.5			ZONE		DIM 9 ADDED.		

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TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN	NAME EC/DN	SIGNATURE -Sd-	DATE
CHD	SELVA	-Sd-	30.06.93
APPD	J.S.N.	-Sd-	02.07.93

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
FEEDER			1:2	3.600	3-67-276-00179
CODE	240				
TITLE					DRAWING NO :
BEARING HOUSING COVER-I					3-67-276-00260
					3-67-256-U3344
					REV 04

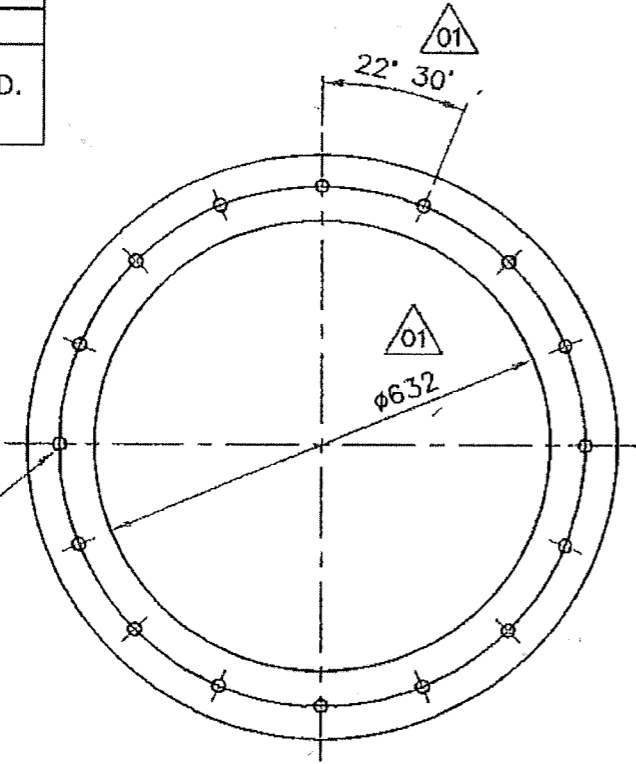
THE INFO ON THIS DOCUMENT IS THE PROPERTY OF BHEL. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.

REV	DATE	ALTERED : S.Selva/-Sd-
01	8.7.89	CHD & APPD : PKS&JSN
REV	DATE	ALTERED : S.Mani/-Sd-
02	26.12.89	CHD & APPD : SS&JSN
REV	DATE	ALTERED : S.G./-Sd-
03	1.11.94	CHD & APPD : SG&JSN
6.3/ MACHINED SURFACE REMOVED.		
RAW MATL. 20 WAS 25t.		

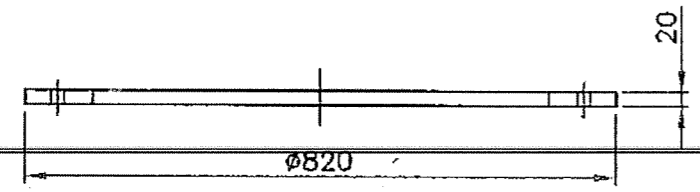
REV 04 18.12.20
 ALTERED : *Sofant*
 CHD & APPD : *Sofant*
 DRAWING REDRAWN.

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

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED.



16 HOLES Ø18 EQ.
 SPACED ON PCD 730.



03 01

VARIANT NUMBER	DESCRIPTION	STD	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QUANTITY
	PL.20xID632xOD820		15-011-150			33.000	
			IS: 2062 Fe410WA				
			MATERIAL SPECN				



Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	G.Ramachandrar	-Sd-	08/06/88
CHD	J.Swaminathar	-Sd-	17/06/88
APPD	M.Alagarsamy	-Sd-	18/06/88

DEPT	MHS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / -Dwg-
CODE	240			1:10	33.000	0-67-251-00070 09 0-67-251-00071 57

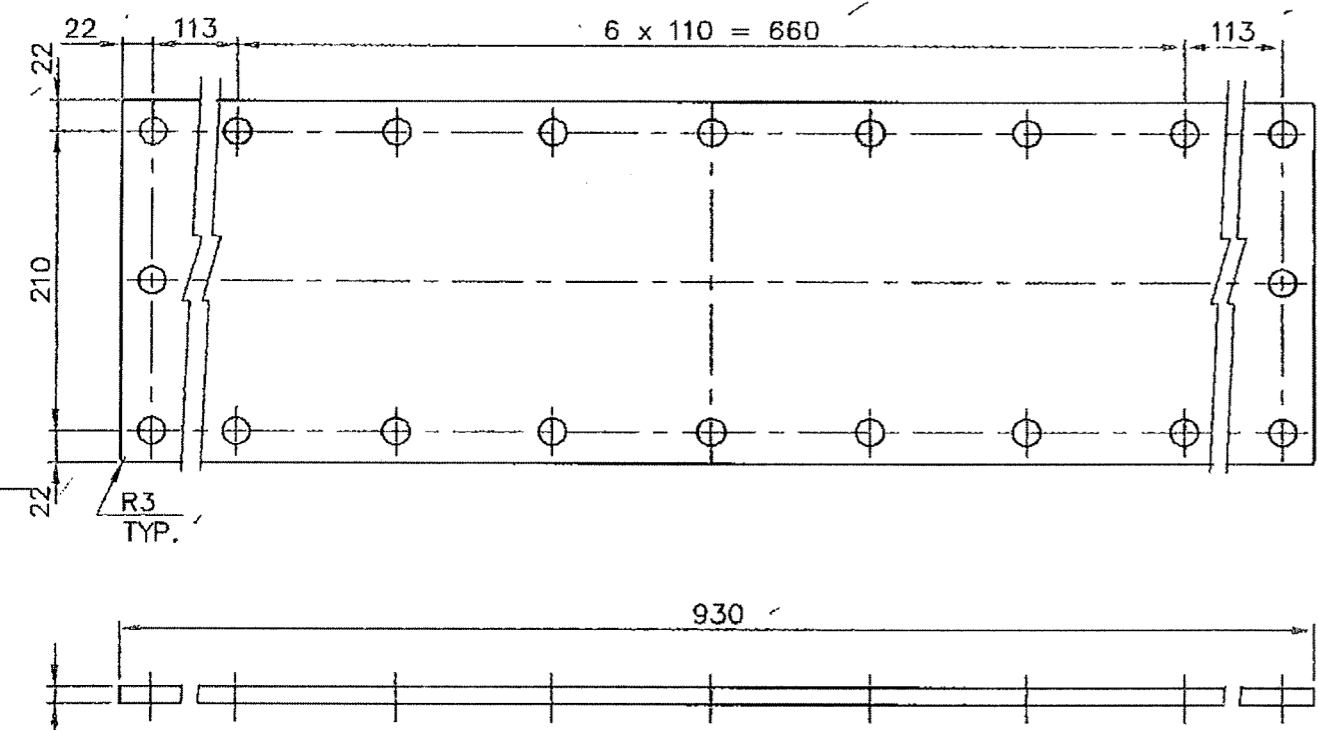
TITLE	DRAWING NO :	REV
FLANGE	4-67-251-00244 4-67-256-U3331	04

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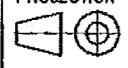
REV	DATE	ALTERED : D.N.C/-Sd-
01	25.3.99	CHD & APPD :Selva/-Sd-
MATL. SPECN. WAS BM C20		
REV	DATE	ALTERED : <i>S. Sani</i>
02	18.12.2k	CHD & APPD : <i>J. V. Sani</i>
DRAWING REDRAWN.		

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

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED.



VARIANT NUMBER	DESCRIPTION	STD	15-011-132	A/C/P	UNIT	21.700
			IS: 2062 Fe410WA			UNIT WEIGHT
			MATERIAL CODE			QUANTITY
			MATERIAL SPECN			

 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056		DRN	G.Ramachandrar	SIGNATURE	--Sd--	DATE	09/06/88
		CHD	J.Swaminathar	SIGNATURE	--Sd--	DATE	17/06/88
		APPD	M.Alagarsamy	SIGNATURE	--Sd--	DATE	18/06/88
DEPT	MHS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / GLD-DWG	
CODE	240			1:5	21.700	0-67-251-00071	31
TITLE			DRAWING NO :		REV		
END COVER PLATE			4-67-251-00245		02		
			4-67-256-U3332				

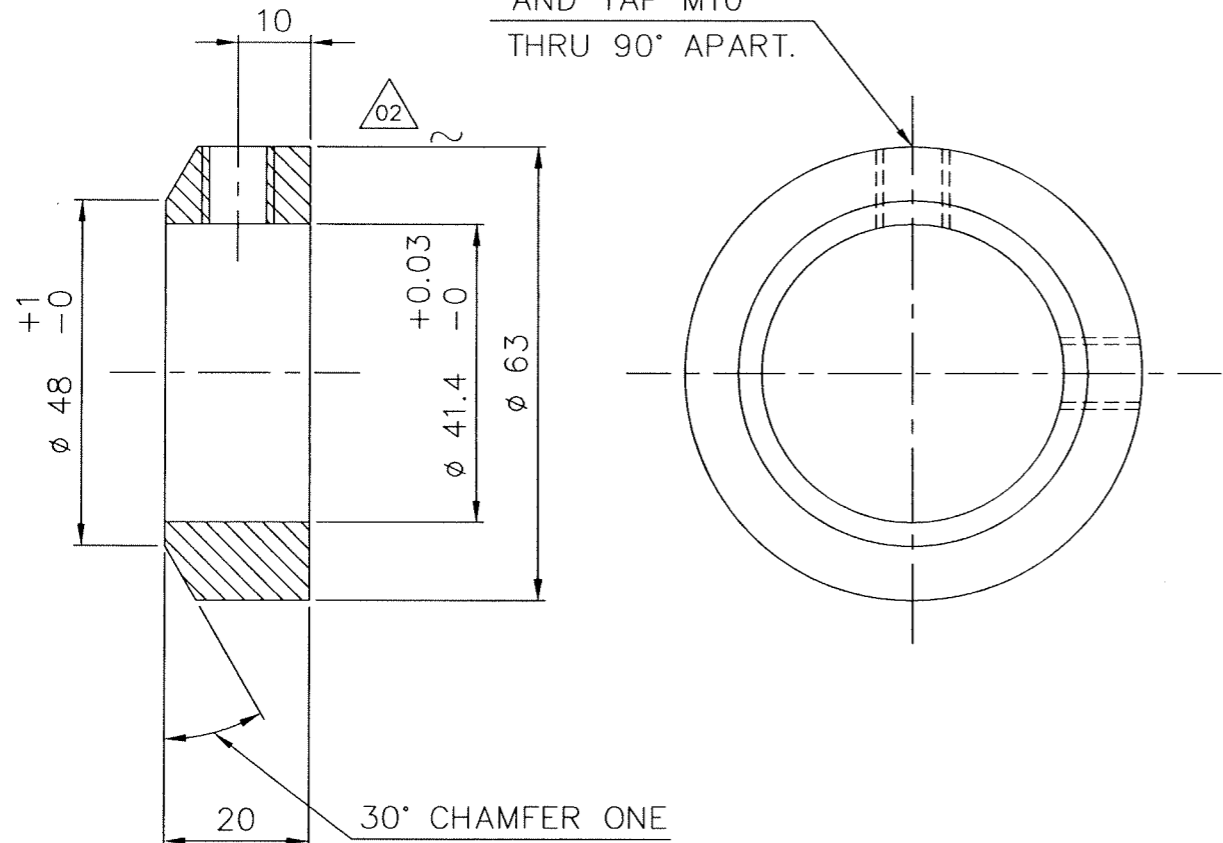
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REV	DATE	ALTERED : NCN -Sd-
01	09.11.00	CHD & APPD : JAK -Sd-
DRAWING PREPARED IN CAD.		
REV	DATE	ALTERED : M.A
02	09.07.02	CHD & APPD : D.V
~ SYMBOL ADDED.		

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

12.5/~/

2 HOLES DRILL AND TAP M10 THRU 90° APART.



30° CHAMFER ONE END AS SHOWN

VARIANT NUMBER	ROD DIA.63 x 25L	15-339-143	A/C/P	UNIT	0.240
		SA 105			
	DESCRIPTION	MATERIAL CODE			UNIT WEIGHT
		MATERIAL SPECN			QUANTITY

<p>Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056</p>	DRN	NAME	SIGNATURE	DATE
	CHD	D.K.R.	-Sd-	28.02.87
	APPD	M.A.SAMY	-Sd-	05.08.87

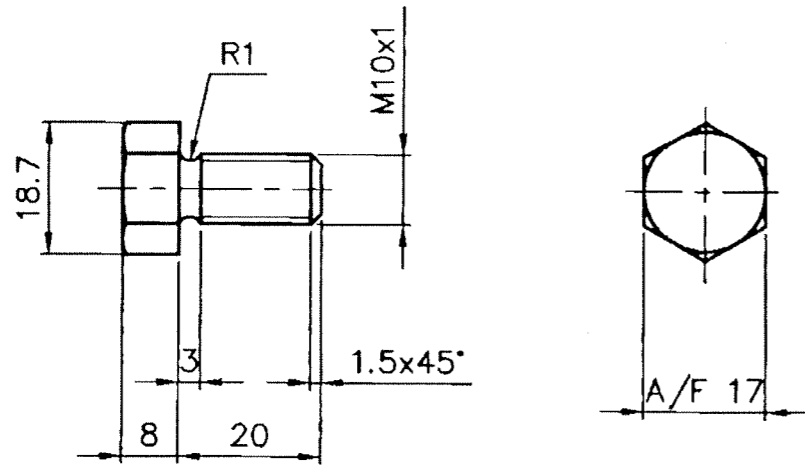
DEPT FEEDER CODE	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
240			1:1	0.240	A - 3853 - A

TITLE	DRAWING NO :	REV
SCREW COLLAR	4-67-272-00203 4-67-256-U3333	02

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REV	DATE	ALTERED :SGR	-Sd-
01	17.04.98	CHD & APPD :JSN	-Sd-
MATL. SPECN. WAS BM-CQ 45.			
REV	DATE	ALTERED :NCN N. Chidambaram	
02	10.11.00	CHD & APPD :JAK	
DRAWING PREPARED IN CAD.			

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



VARIANT NUMBER	ROD D22x35L	15-026-169	0.024
		IS: 1875CL-IV	
	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY



Bharat Heavy Electricals Ltd

UNIT: HEAVY PLATES & VESSELS PLANT,

VISAKHAPATNAM-530012

355-056

DRN	NAME	SIGNATURE	DATE
	R.RANGARAJAN	-Sd-	06.08.87
CHD	D.K.RAM	-Sd-	06.08.87
APPD	M.A.SAMY	-Sd-	14.08.87

DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 240			1:1	0.024	

TITLE	DRAWING NO :	REV
PLUG M10x1	4-67-272-00221	02
	4-67-256-U3334	

CAUTION: IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.

REV	DATE	ALTERED	SSR	-Sd-
01	14.12.93	CHD & APPD	:JSN	-Sd-

THD. LENGTH REDUCED TO 25MM FROM 140MM.

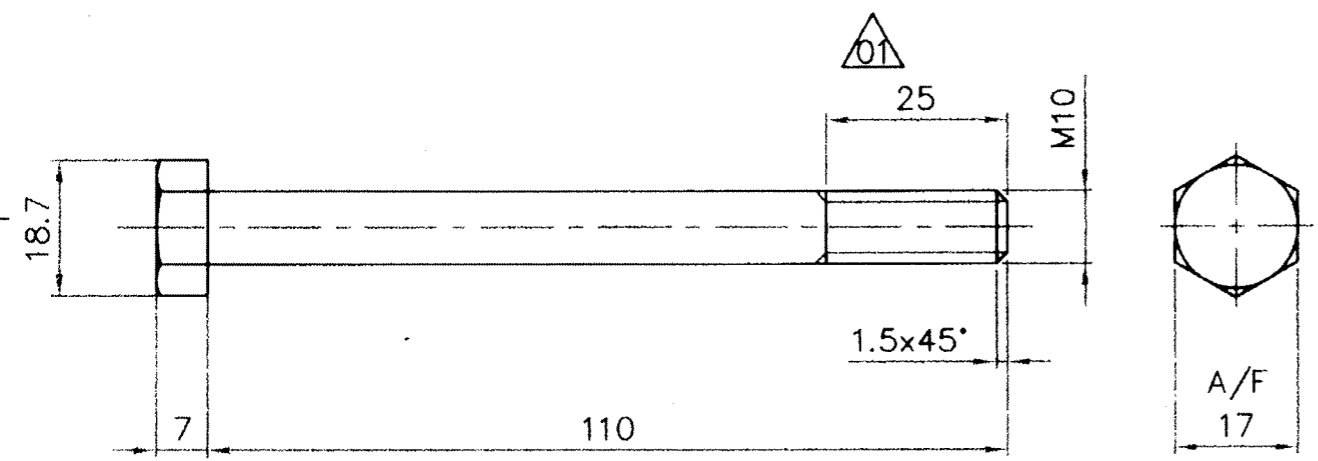
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

REV	DATE	ALTERED	:SGR	-Sd-
02	17.04.98	CHD & APPD	:JSN	-Sd-

MATL. SPECN. WAS BMCQ 45.

REV	DATE	ALTERED	:NCN	<i>[Signature]</i>
03	10.11.00	CHD & APPD	:JAK	<i>[Signature]</i>

DRAWING PREPARED IN CAD.



VARIANT NUMBER	ROD D22x125L	15-026-169	A/C/P	UNIT	0.072
		IS:1875CL-IV			
	DESCRIPTION	MATERIAL CODE			UNIT WEIGHT
		MATERIAL SPECN			QUANTITY



Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
CHD	R.RANGARAJAN	-Sd-	06.08.87
APPD	D.K.RAVI	-Sd-	06.08.87
	M.A.SAMY	-Sd-	14.08.87

DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
240			1:1	0.072	

TITLE	DRAWING NO :	REV
HEX. HD. SCREW	4-67-272-00223	03
	4-67-256-U3335	

101

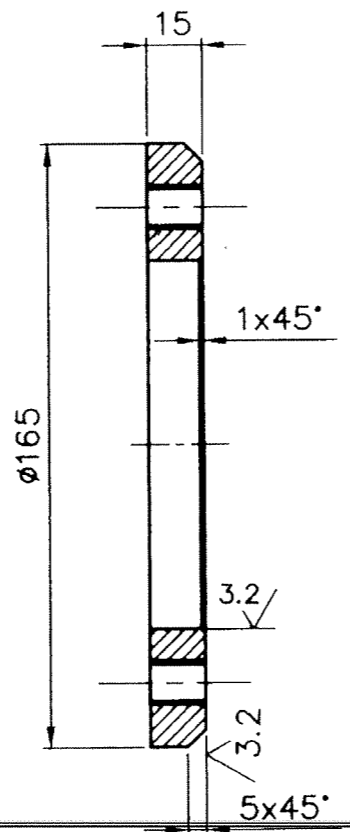
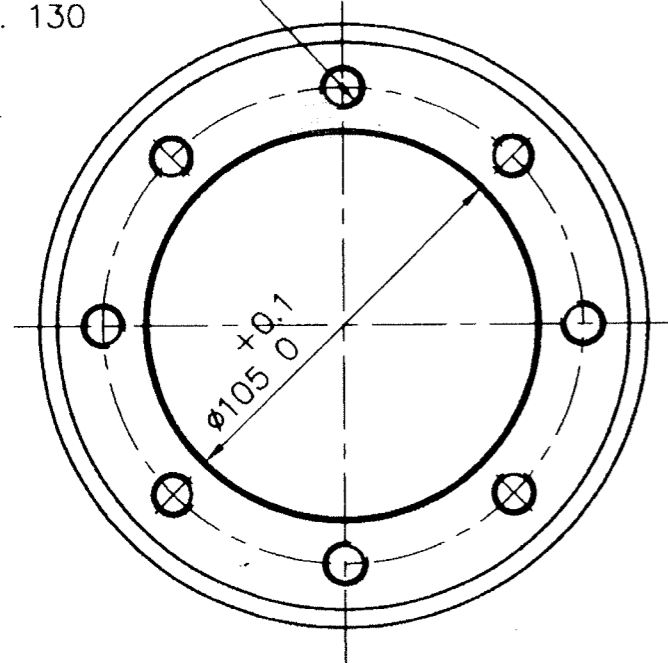
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REV	DATE	ALTERED :SGR	-Sd-
01	17.04.98	CHD & APPD :JSN	-Sd-
MATL. SPECN. WAS BMC 20.			
REV	DATE	ALTERED :NCN	<i>Chidambhar</i>
02	09.11.00	CHD & APPD :JAK	<i>JAK</i>
DRAWING PREPARED IN CAD.			

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

12.5 / 3.2

CAUTION: 8 HOLES THRU' M10
EQUI SPACED ON
P.C.D. 130



VARIANT NUMBER	PL. 20xD175	15-011-150	A/C/P	UNIT	1.500
	DESCRIPTION	STD			MATERIAL CODE
					QUANTITY

10x

<p>Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056</p>	DRN	NAME	SIGNATURE	DATE
	CHD	S.MANIVANNAN	-Sd-	27.07.88
	APPD	J.S.N.	-Sd-	30.07.88
		M.A.S.	-Sd-	01.08.88

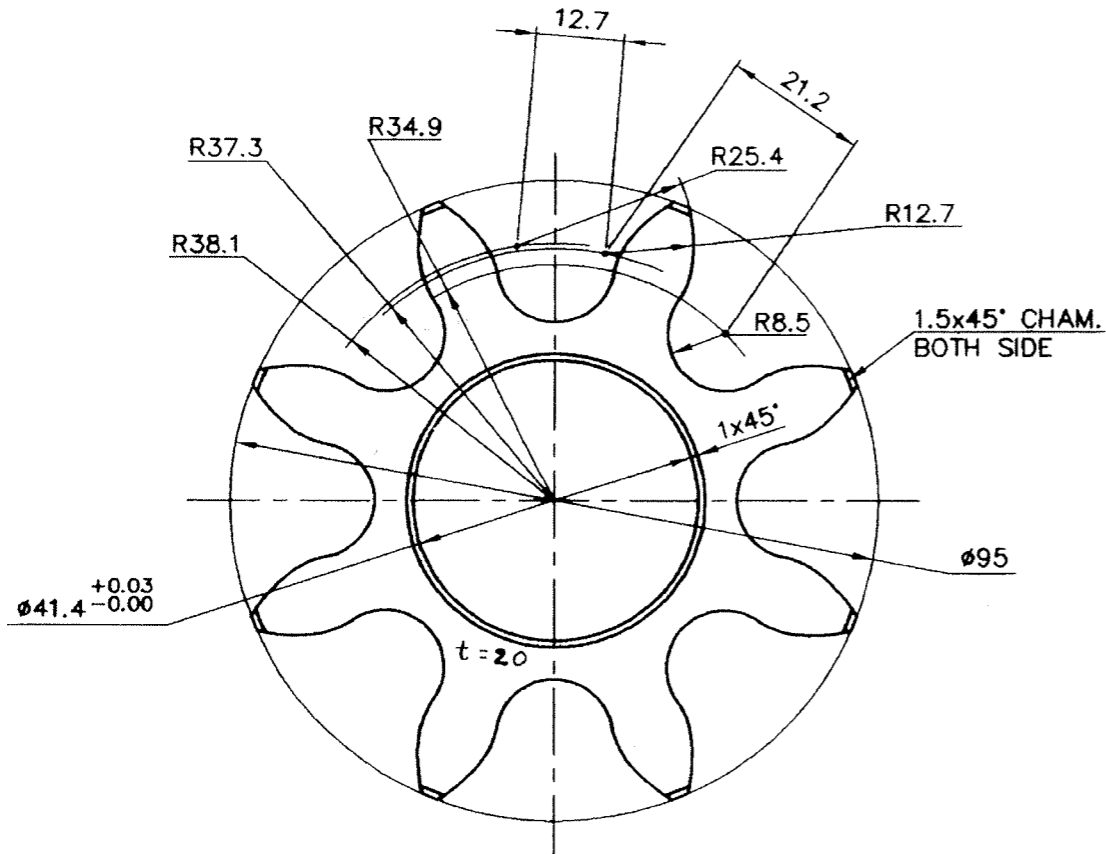
DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 240			1:2	1.500	
TITLE					REV
BEARING FLANGE RING					02
DRAWING NO :					
4-67-272-00247					
4-67-256-U3336					

THE MEAN ON THIS DOCUMENT IS THE PROPERTY OF BHEL. IT MUST NOT BE USED, DIRECTLY OR INDIRECTLY, IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.


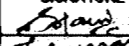
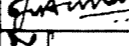
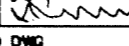

REV	DATE	ALTERED :
01		CHD & APPD :

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

3.2



	ROD D100x25L	15-024-109	1.250
		SA479 TYPE304	
VARIANT NUMBER	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056		NAME DRN S.Manivannan CHD J.V.V.A.Kumar APPD J.Swaminathan	SIGNATURE   	DATE 6/3/99 8.3.99 8.3.99
DEPT MHS	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:1	WEIGHT (Kg) 1.250	REF TO ASSY / OLD DWG A-3371 4-67-272-00217	
CODE 240	TITLE VALVE PINION			DRAWING NO : 4-67-272-00381 4-67-256-U3338	REV 00	

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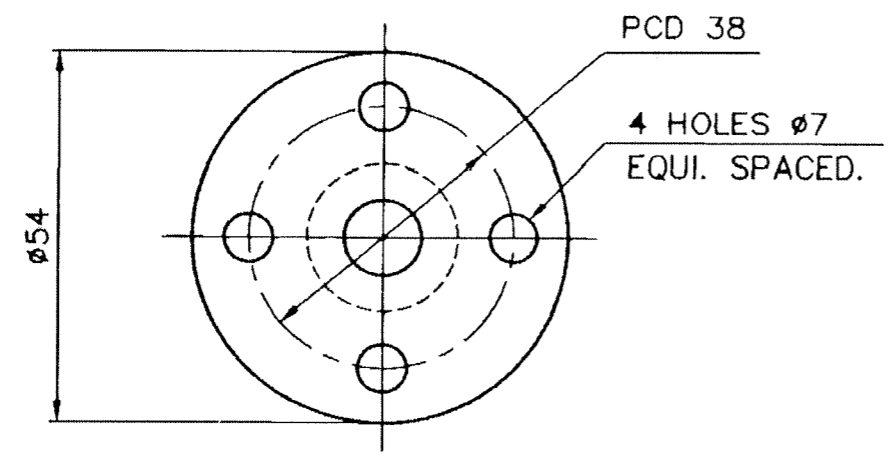
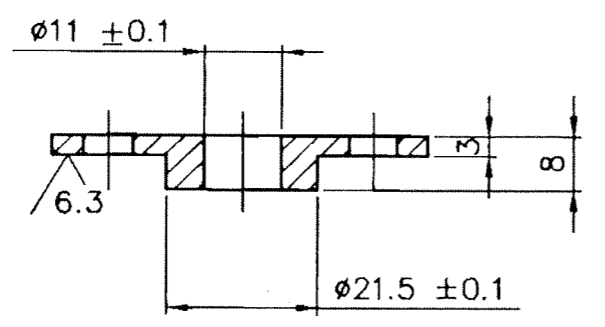
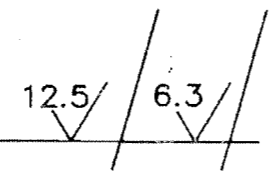
REV	DATE	ALTERED :SSR	-Sd-
01	17.04.98	CHD & APPD :JSN	-Sd-

MATL. SPECN. WAS BMC 20.

REV	DATE	ALTERED :NCN N. Chidambaram
02	09.11.00	CHD & APPD :JAK

DRAWING PREPARED IN CAD.

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



VARIANT NUMBER	PL. 10xD60	15-011-098	0.060
		IS2062Fe410WA	
	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

<p>Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056</p>	DRN	NAME	SIGNATURE	DATE
	CHD	G.R.CHANDRAN	-Sd-	22.03.88
	APPD	SELVA	-Sd-	29.03.88
		M.A.	-Sd-	29.03.88

DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 240			1:1	0.060	2-67-276-00111

TITLE	DRAWING NO :	REV
COVER	4-67-276-00230 4-67-256-U3339	02

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REV	DATE	ALTERED :SSR	-Sd-
01	17.04.98	CHD & APPD :JSN	-Sd-

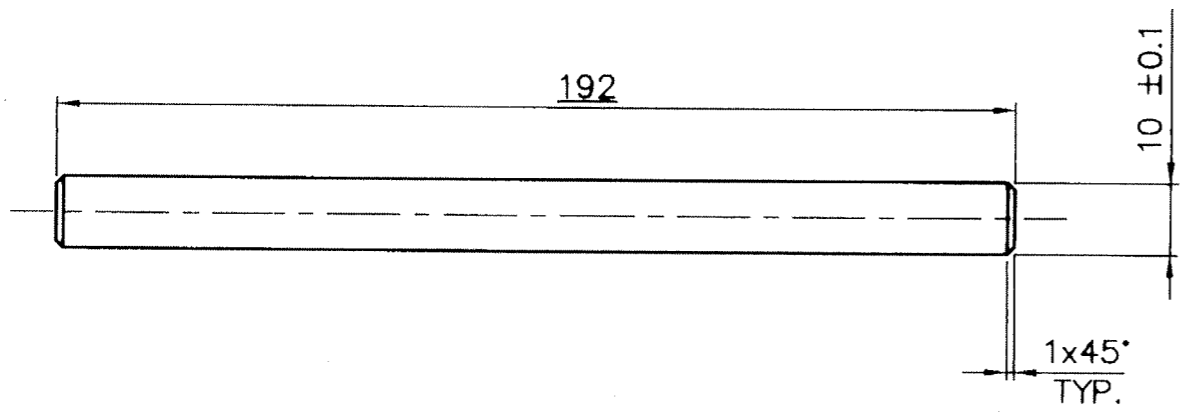
MATL. SPECN. WAS IS: 226.

REV	DATE	ALTERED :NCN N.	<i>[Signature]</i>
02	09.11.00	CHD & APPD :JAK	<i>[Signature]</i>

DRAWING PREPARED IN CAD.


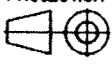
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

3.2 /



10x

△ 01	ROUND D12x200L	15-004-030	0.120
		IS2062Fe410WA	
VARIANT NUMBER	DESCRIPTION	STD MATERIAL CODE	A/C/P UNIT
		MATERIAL SPECN	UNIT WEIGHT
			QUANTITY

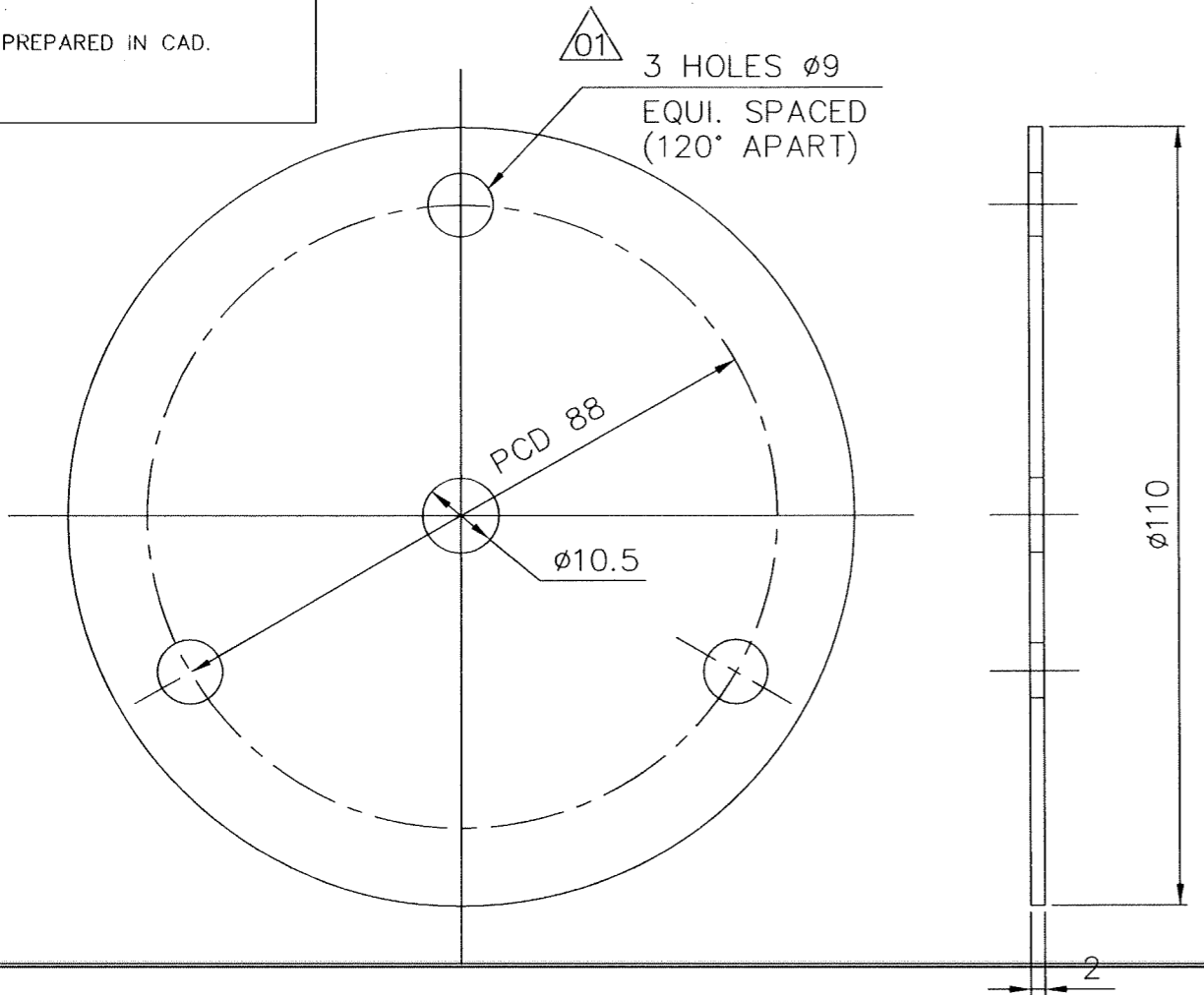
 355-056	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DWN G.R.CHANDRAN -Sd- 22.03.88	SIGNATURE -Sd- 22.03.88	DATE 22.03.88
			CHD SELVA -Sd- 29.03.88	-Sd- 29.03.88	29.03.88
			APPD M.A. -Sd- 29.03.88	-Sd- 29.03.88	29.03.88
DEPT FEEDER CODE 240	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:1	WEIGHT (Kg) 0.120	REF TO ASSY / OLD DWG 2-67-276-00111
TITLE PUSH ROD			DRAWING NO : 4-67-276-00231 4-67-256-U3340		REV 02

CAUTION: THE INFO ON THIS DOCUMENT IS THE PROPERTY OF BHEL. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.

REV 01	DATE 07.07.93	ALTERED :DNC CHD & APPD :JSN	REV 03	DATE 13.03.2015	ALTERED: RAM SHANKAR PRASAD CHD & APPD:GANGADHAR M CH S
NUMBER OF HOLES WAS 4			MATERIAL CODE ALTERED, ASBESTOS(220206380000) TO NON-ASBESTOS(220300200000).		

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

REV 02	DATE 09.11.00	ALTERED :NCN CHD & APPD :JAK
DRAWING PREPARED IN CAD.		



VARIANT NUMBER	NONASBESTOS COMPRESSED FIBER JOINTING; 2xD110	S	220300200000	0.058
	DESCRIPTION	STD	NONASBESTOS	UNIT WEIGHT
			MATERIAL SPECN	QUANTITY

<p>Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056</p>	DRN	NAME G.R.CHANDRAN	SIGNATURE -Sd-	DATE 23.03.88
	CHD	SELVA	-Sd-	29.03.88
	APPD	M.A.	-Sd-	29.03.88

DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:1	WEIGHT (kg) 0.058	REF TO ASSY / OLD DWG 0-67-276-00104
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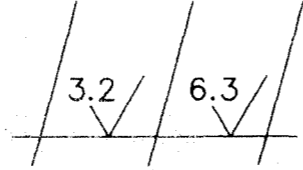
TITLE GASKET	DRAWING NO : 4-67-276-00232 4-67-256-U3341	REV 03
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CAUTION: THE INFO ON THIS DOCUMENT IS THE PROPERTY OF BHEL. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.

REV	DATE	ALTERED :SSR	-Sd-
01	17.04.98	CHD & APPD :JSN	-Sd-

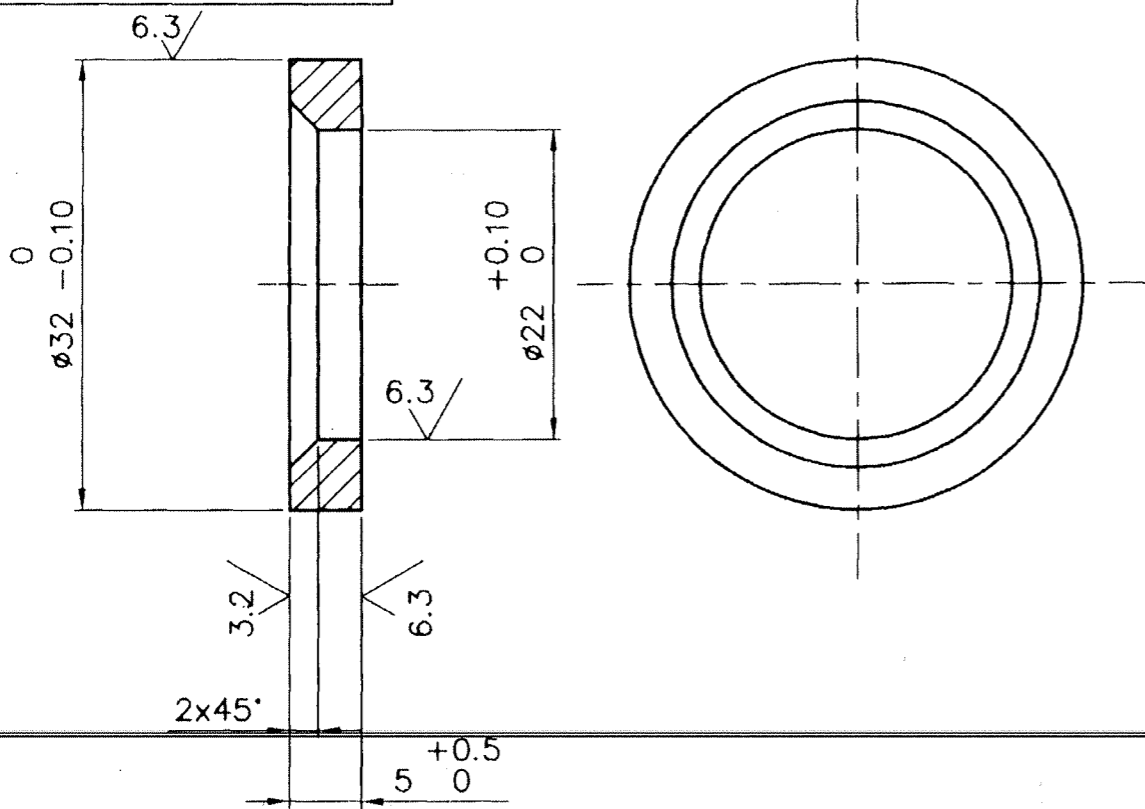
MATL. SPECN. WAS IS-1875

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



REV	DATE	ALTERED :NCN M.	<i>Chidambaram</i>
02	09.11.00	CHD & APPD :JAK	<i>Jaganmohan</i>

DRAWING PREPARED IN CAD.



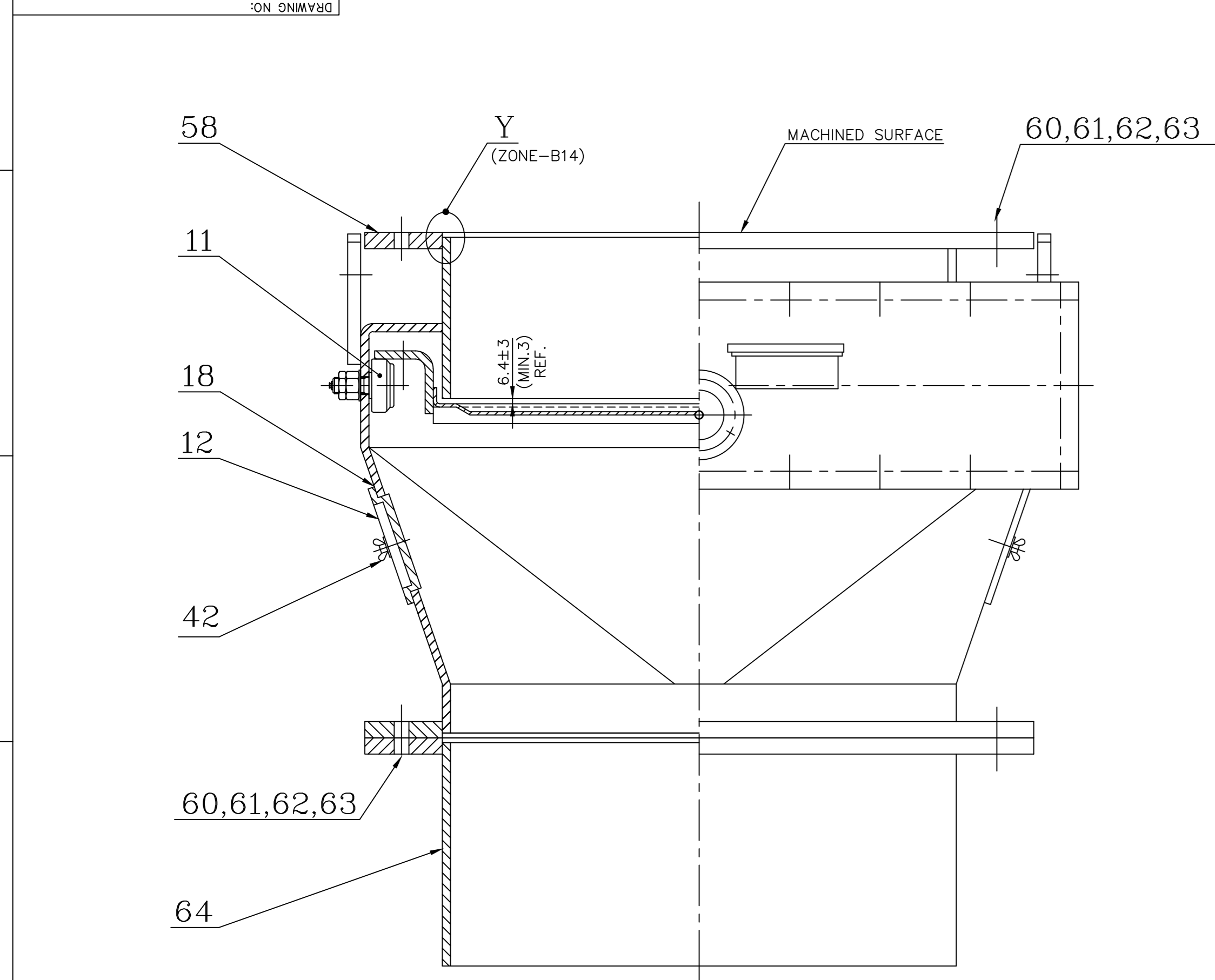
10X

01	ROUND	15-027-135	0.010
	D40x8L	IS-1875CL-IV	
VARIANT NUMBER	DESCRIPTION	STD	UNIT WEIGHT
		MATERIAL CODE	UNIT
		MATERIAL SPECN	QUANTITY

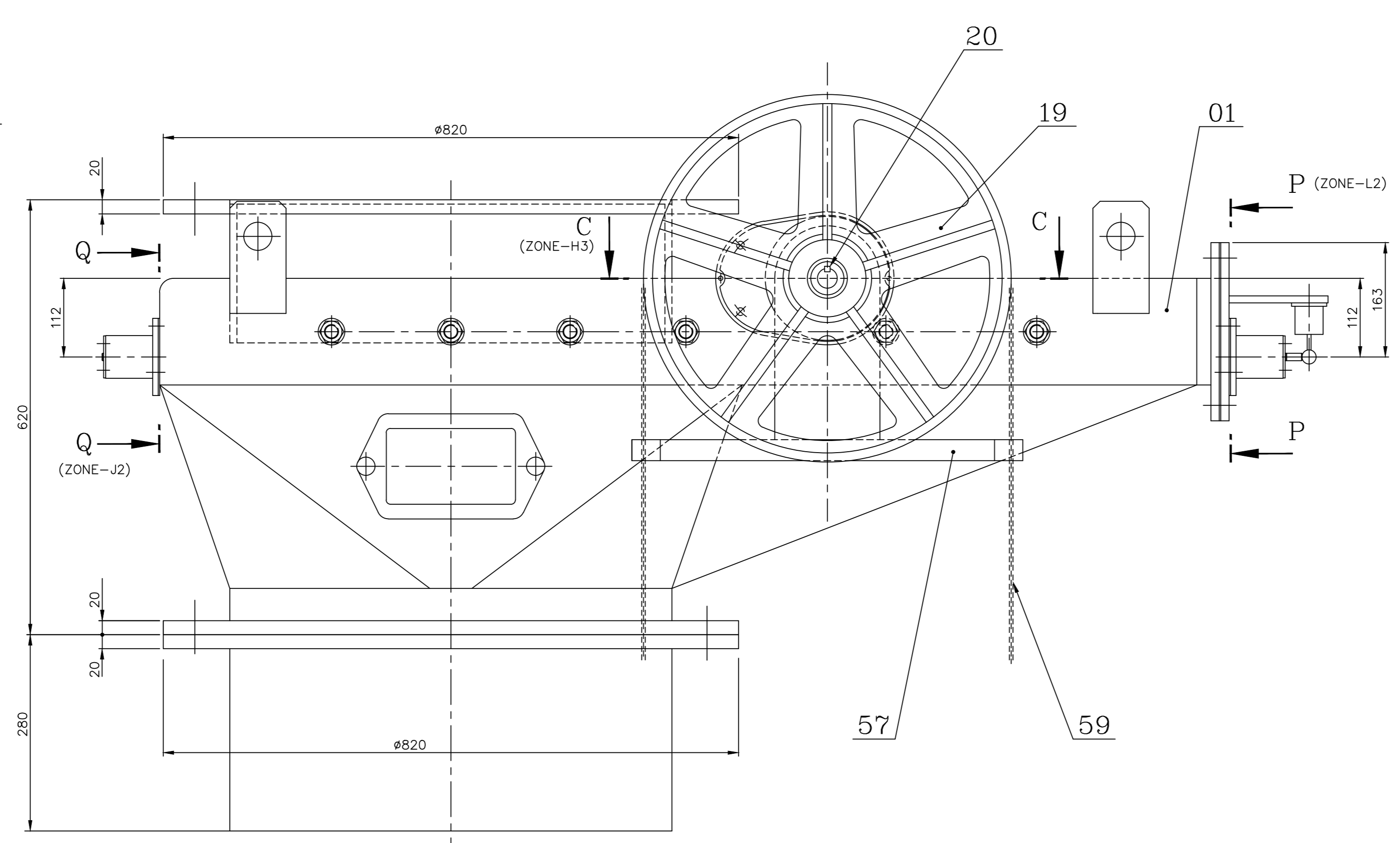
 355-056	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DWN	NAME	SIGNATURE	DATE
	CHD	S.GANESH	-Sd-	06.05.88		
	APPD	J.S.N.	-Sd-	24.05.88		
			APPD	M.A.	-Sd-	24.05.88

DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 2:1	WEIGHT (Kg) 0.010	REF TO ASSY / OLD DWG 4-67-213-00095
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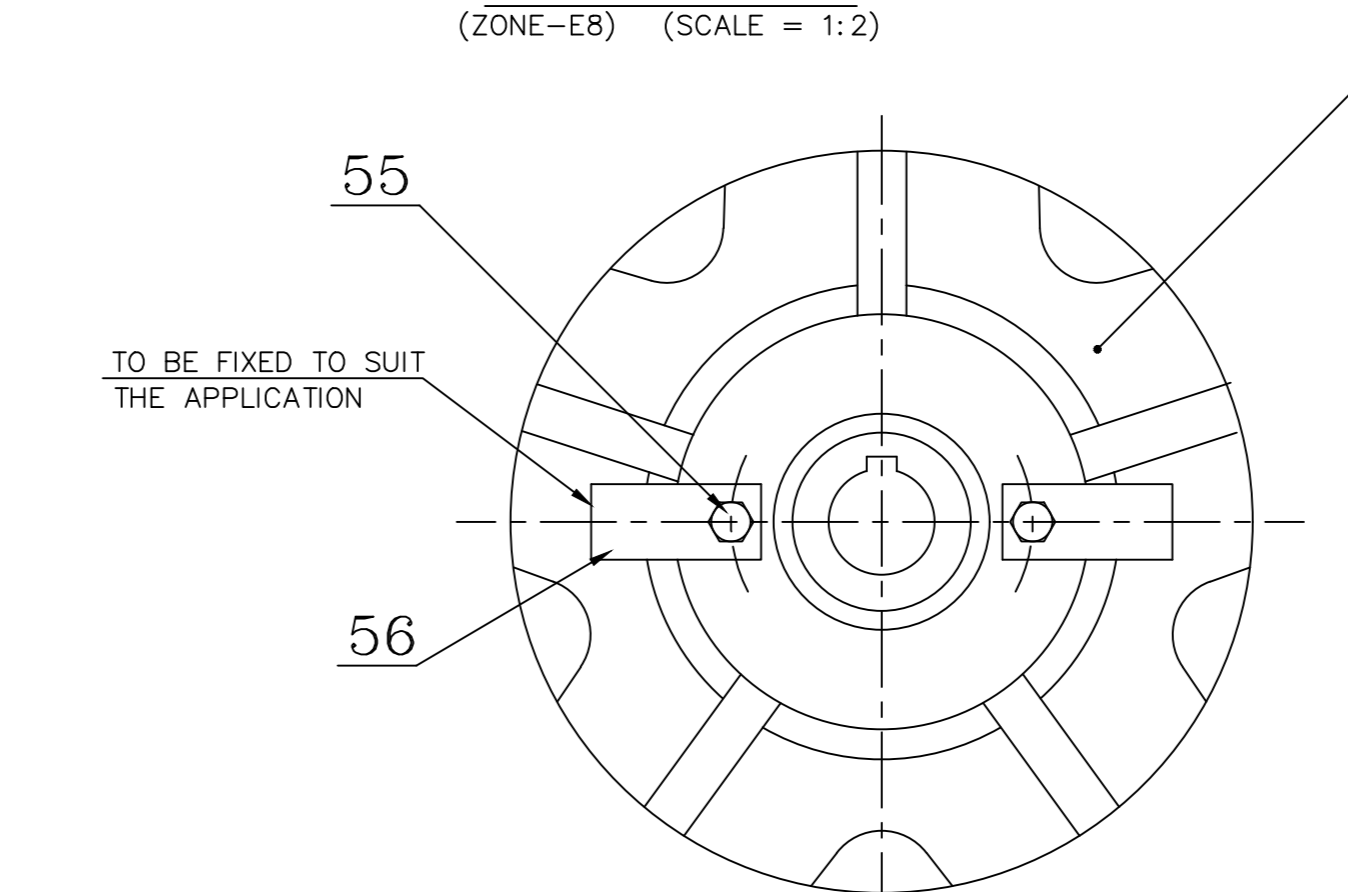
TITLE COLLAR	DRAWING NO : 4-67-276-00241 4-67-256-U3343	REV 02
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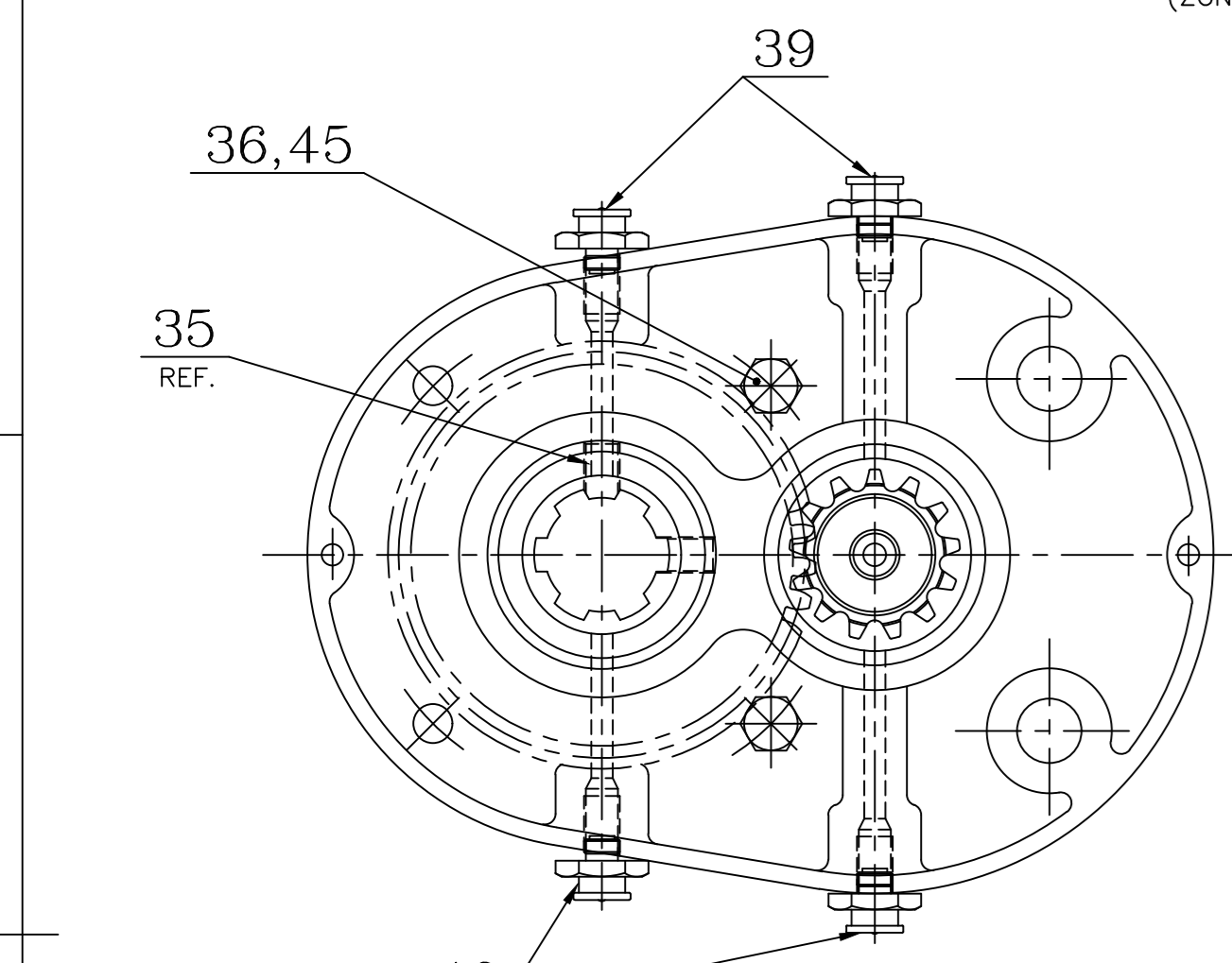
SECTION-AA
(ZONE-H7)



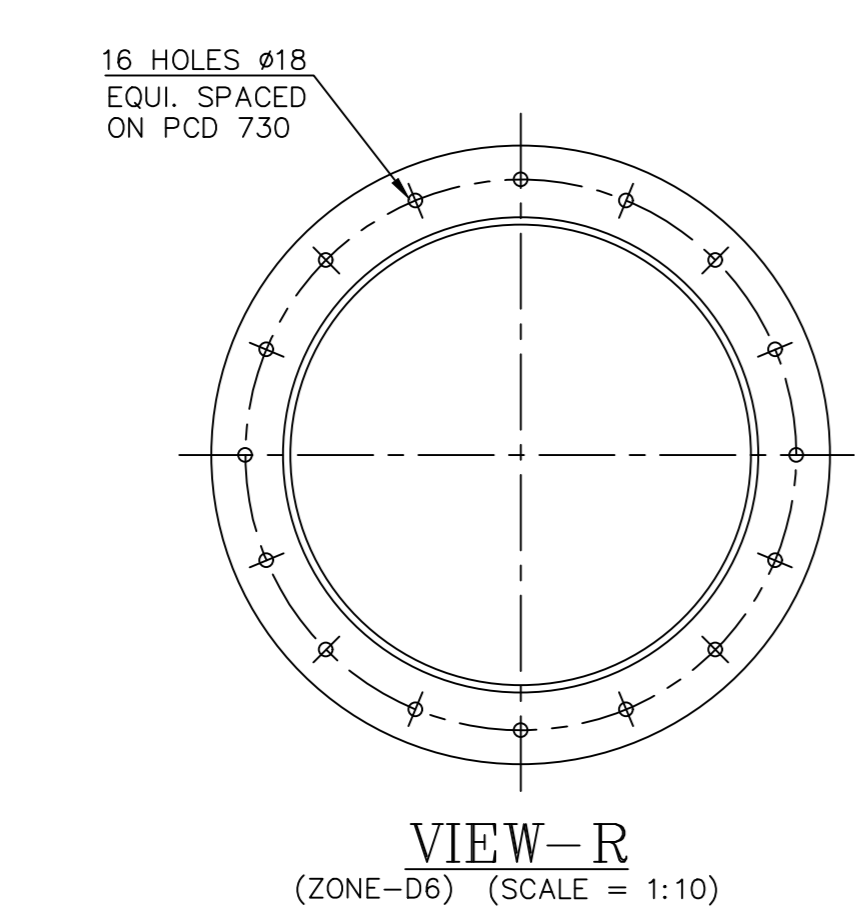
SECTION-BB
(ZONE-E8) (SCALE = 1:2)



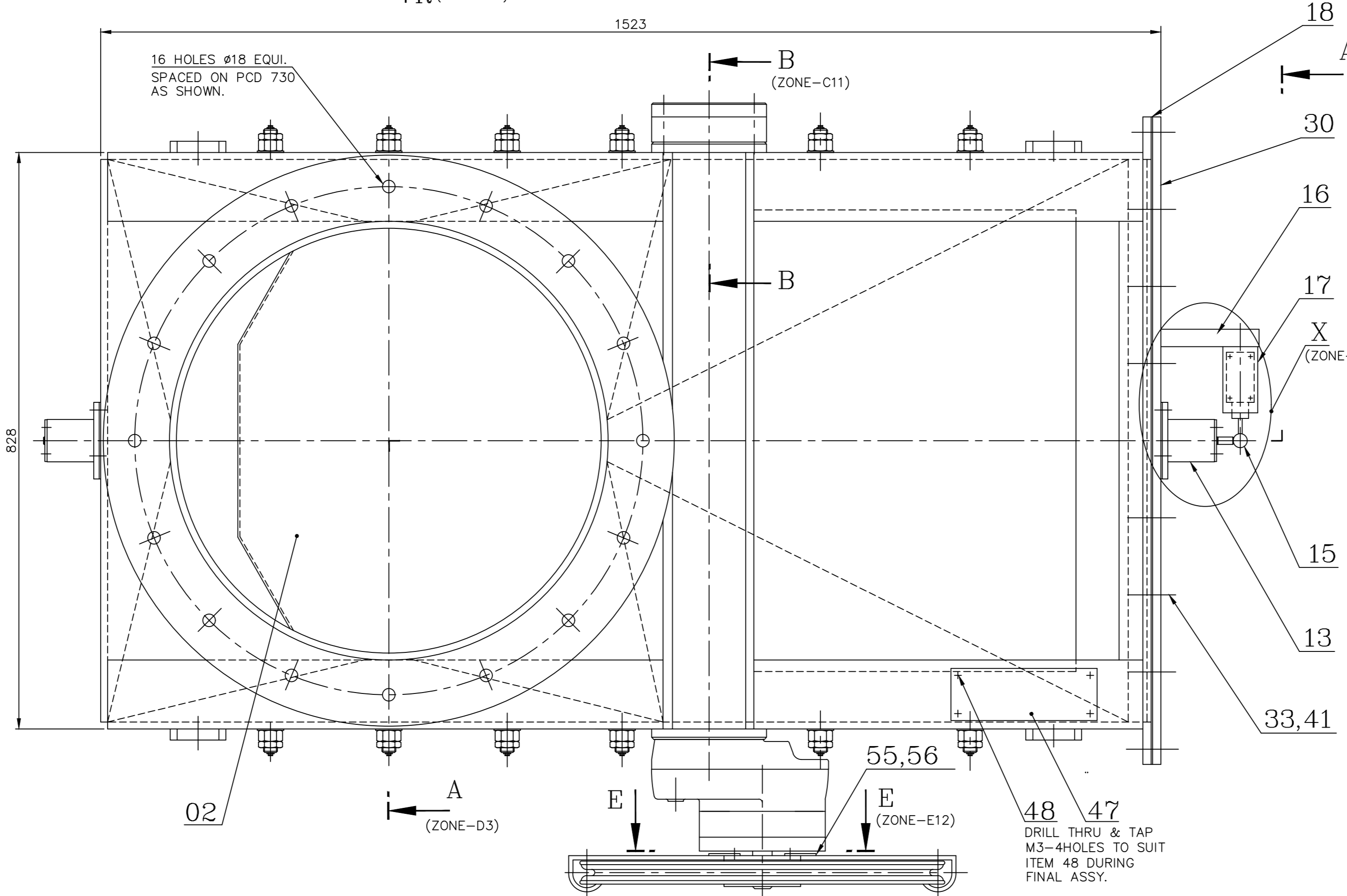
SECTION-EE
(ZONE-H8) (SCALE = 1:2)



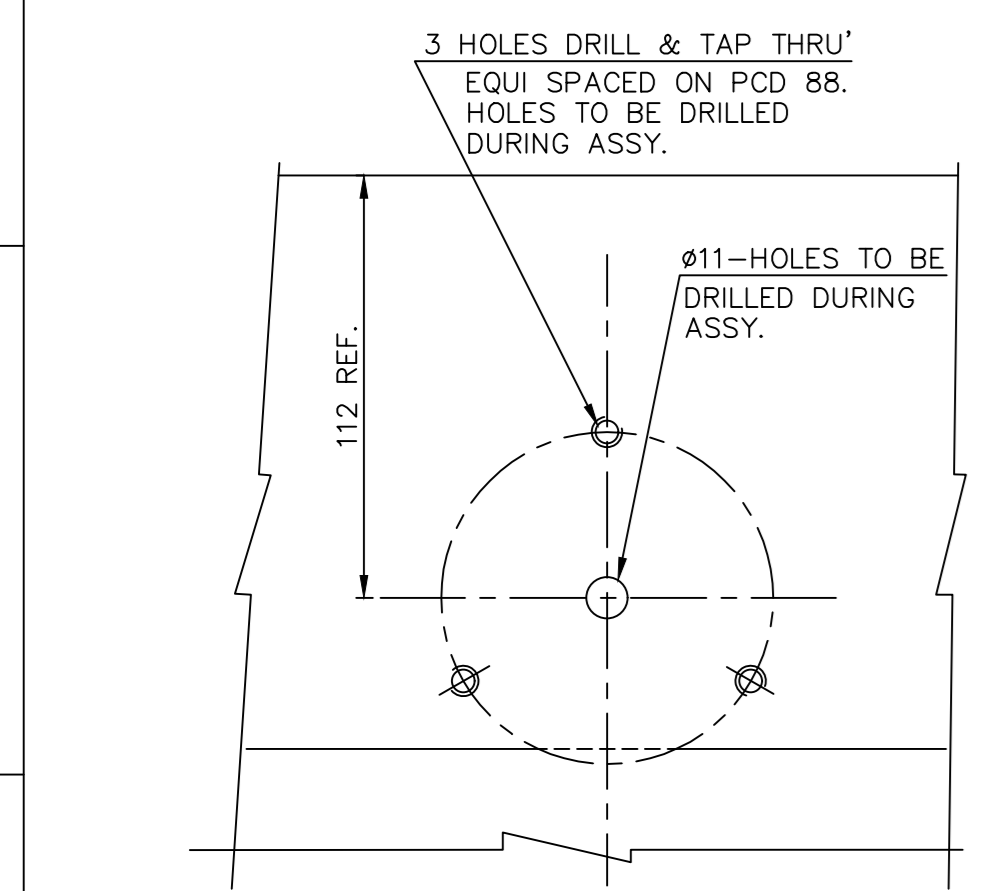
SECTION-DD
(ZONE-K3) (SCALE = 1:2)



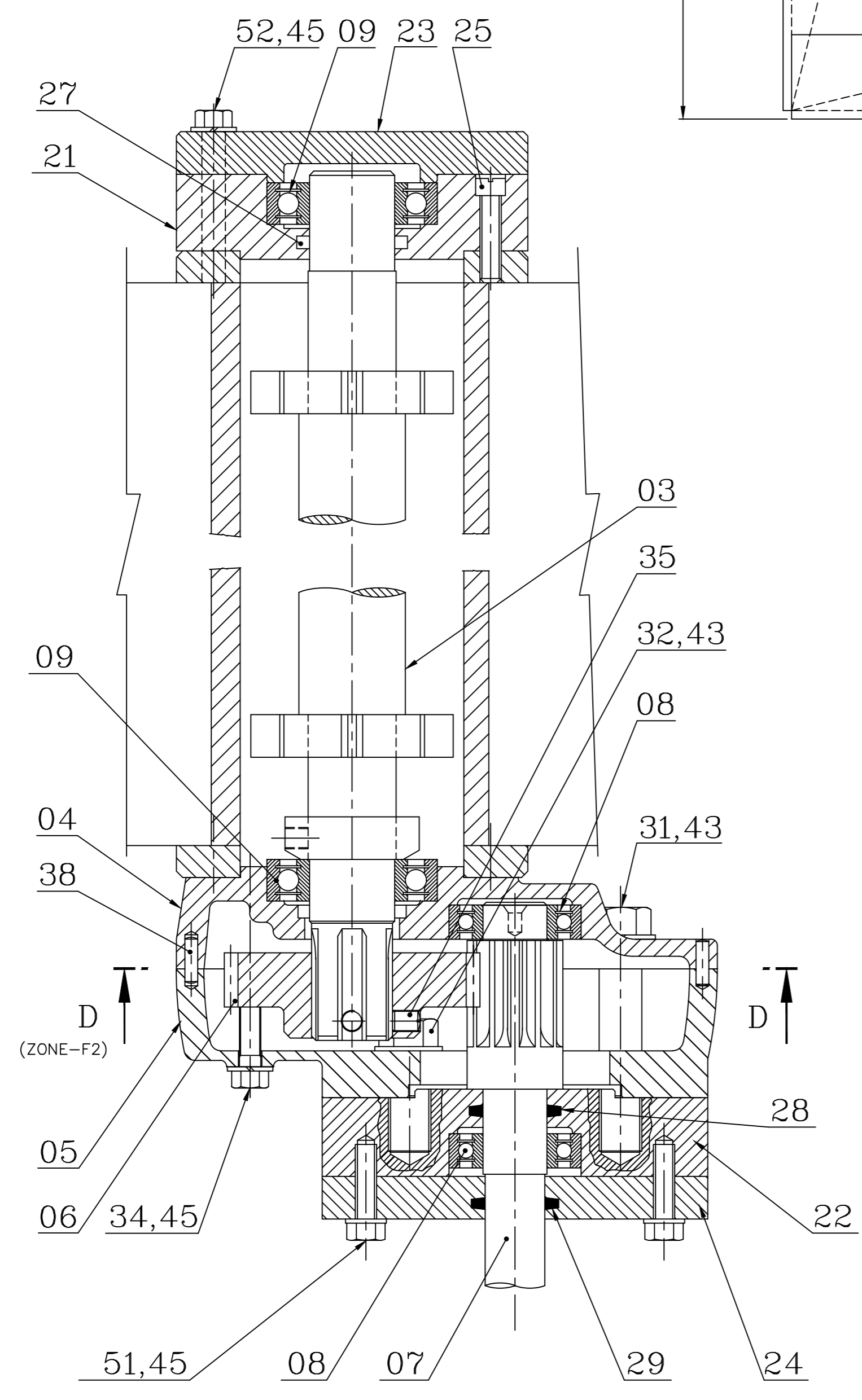
VIEW-R
(ZONE-D6) (SCALE = 1:10)



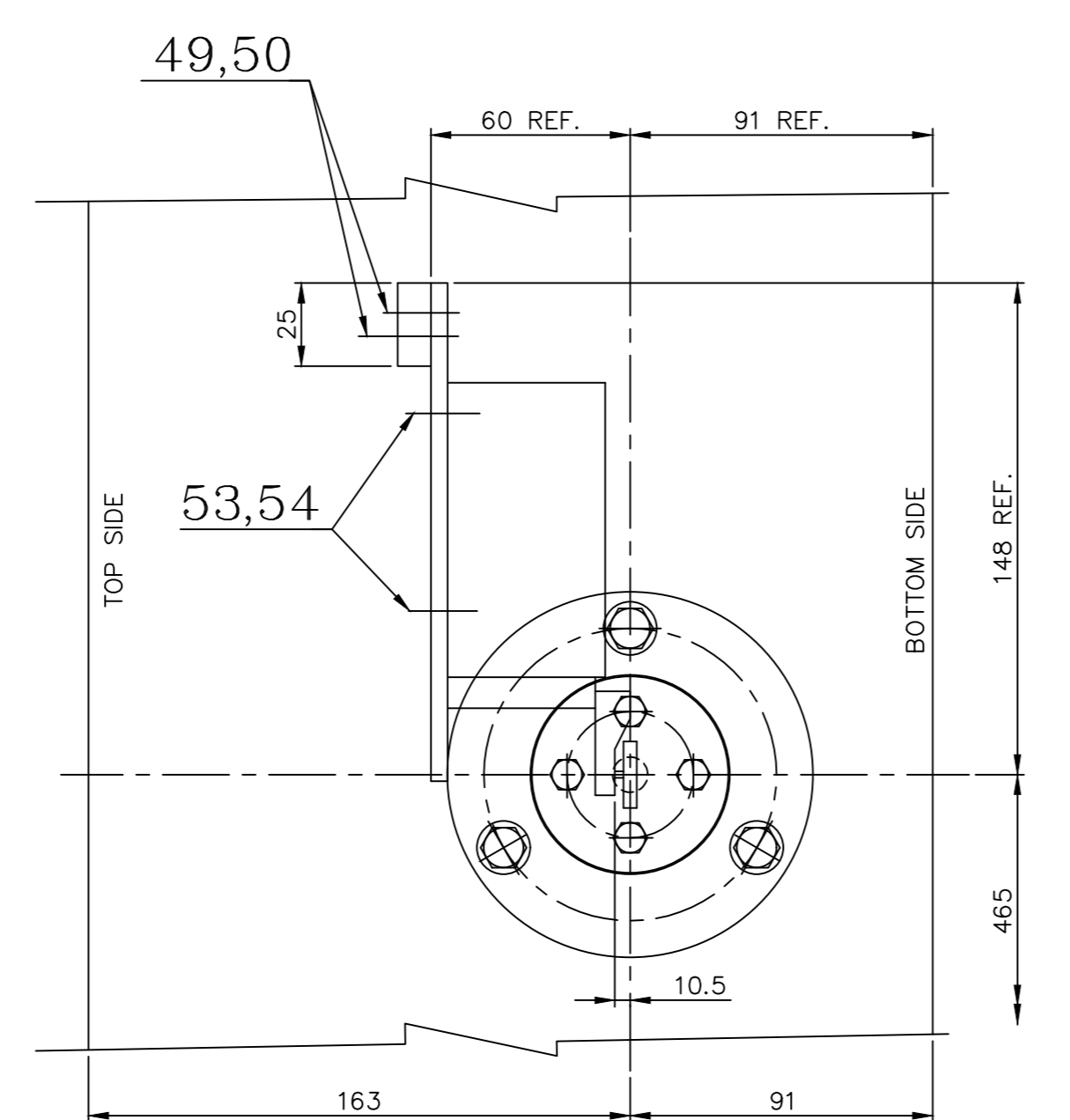
VIEW-T
(ZONE-K10) (SCALE = 1:2)



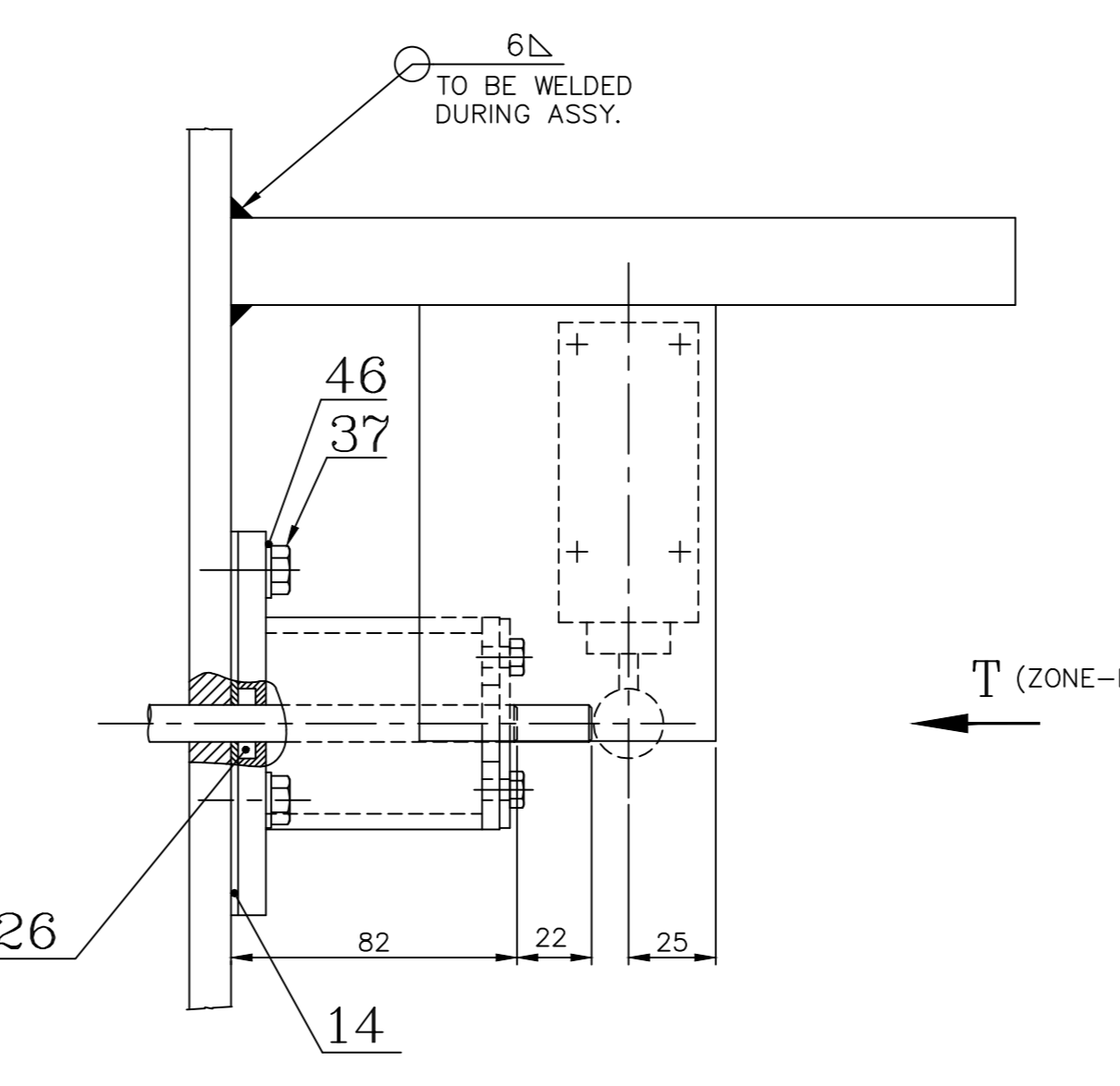
VIEW-QQ
(ZONE-D5) (SCALE = 1:2)



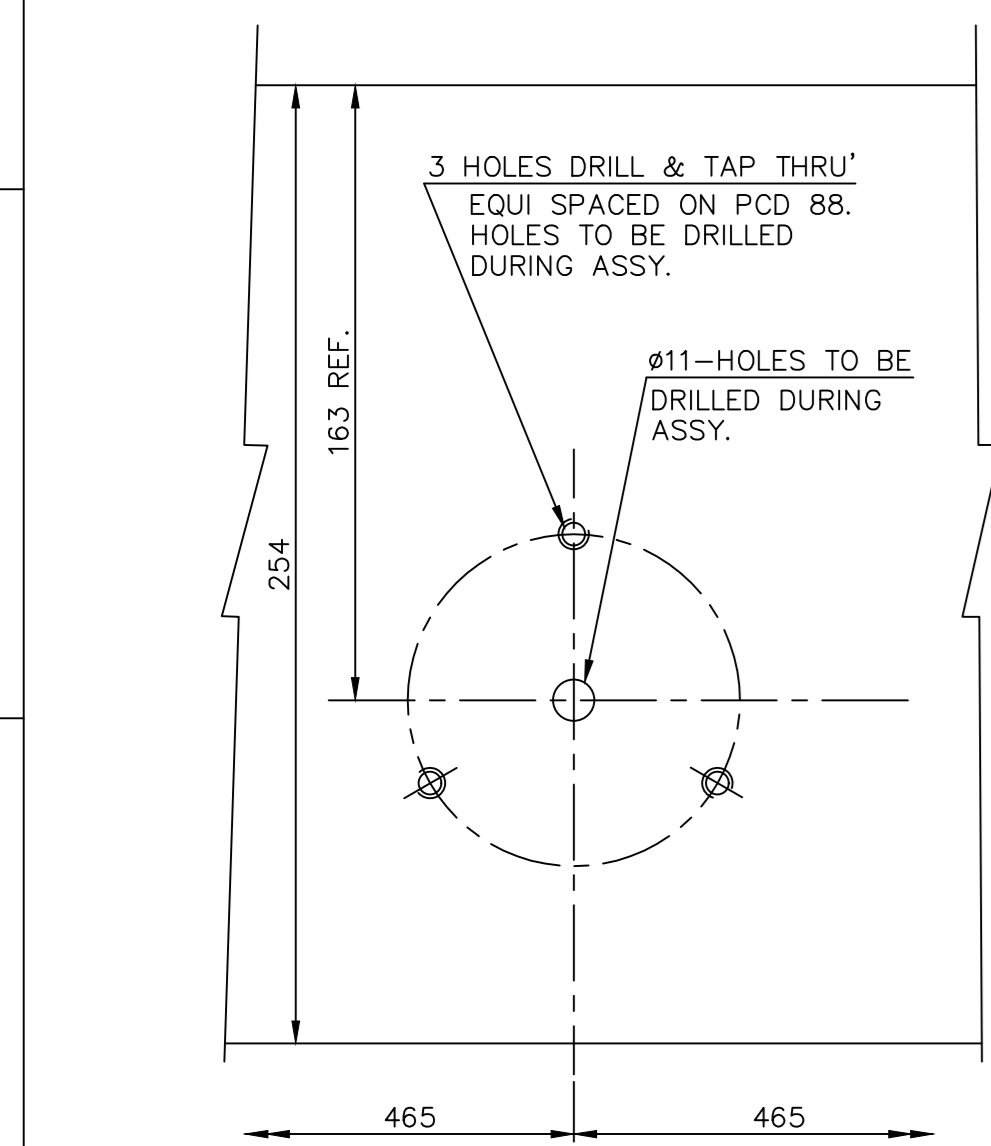
SECTION-CC
(ZONE-B7) (SCALE = 1:2)



VIEW-T
(ZONE-K10) (SCALE = 1:2)



DETAIL-X
(ZONE-F10) (SCALE = 1:2)



VIEW-PP
(ZONE-B10) (SCALE = 1:2)

- NOTE:**
- BEARINGS ARE WITH TWO SEALS LUBRICATED FOR LIFE. THESE BEARINGS ARE NOT TO BE WASHED OUT OR HEATED PRIOR TO MOUNTING.
 - INDICATOR BOX ASSEMBLY ITEM 13 TO BE FIXED TO SUIT THE REQUIREMENT DURING ASSEMBLY.
 - POSITIONING OF LIMIT SWITCH TO BE DECIDED DURING ASSEMBLY (ITEM NO.15) TO SUIT VARIOUS SOURCE OF SUPPLY.
 - ITEM NO. 16&17 SIZE AND HOLES ARE TO BE CUT TO SUIT LIMIT SWITCH.
 - TRIAL RUN TO BE CARRIED OUT BY MOVING THE GATE 10 TIMES(MAX.) FOR SMOOTH OPERATION.
 - APPLY PRESERVATIVE COATING TO ALL MACHINED SURFACES.
 - APPLY GREASE WITH ITEM 06&07 DURING ASSEMBLY.
 - FOR QUALITY REQUIREMENT REFER APPLICABLE OCP/OP.
 - USE STAINLESS STEEL ELECTRODE E309.
 - PACKING SHOULD BE DONE AS PER DRAWING 2-67-272-00115.
 - ALL FASTENERS COMING UNDER DU-001 MUST BE CADMIUM PLATED.
 - PAINTING SHALL BE AS PER APPLICABLE PAINTING SCHEDULE. IN THE ABSENCE OF SUCH SCHEDULE, PAINTING SHALL BE AS PER SIP22(LATEST REVISION).
 - THE GEAR BOX ORIENTATION MAY BE CHANGED IF NECESSARY DURING ASSEMBLY TO AVOID FOULING WITH GREASE NIPPLE.
- WARNING:**
OPERATION OF RAW COAL GATE IS NOT TO BE DONE WHEN COAL COLUMN IS ESTABLISHED(STATIC) IN THE DOWN SPOUT. RAW COAL GATE WILL NOT CLOSE THROUGH A STANDING COLUMN OF COAL.

ITEM NO.	DESCRIPTION	STD	DRAWING NUMBER	MATERIAL CODE	UNIT WEIGHT	QUANTITY
64	SPACER	3-67-256-00193		WELDMENT	74.000	1
63	PACKING ROPE WDA SQ 8x1000L	TP:21599	22 20 334		0.400	1
62	MCD WASHER 17	IS:2016		41406 00016	0.011	1
61	HEX NUT M16-4	IS:1364(P-3)		41304 00016	0.035	1
60	HEX HD SCRU M16x75-4.6	IS:1363 (P-2)		41222 16075	0.138	1
59	CHAIN D6x25000			53 013 014	17.000	1
58	FLANGE PL20xID632xOD820	4-67-251-00244		15 011 081 IS2062F410A	33.000	1
57	CHAIN GUIDE	3-67-276-00180		WELDMENT	3.085	1
56	PLATE SH.3.15x20x45	4-67-272-00248		15 011 182 IS1079FE330	0.020	1
55	HEX HD SCRU M6x25 -4.6(C)	IS:1363 (P-2)		41222 06925	0.006	2
54	HEX NUT M4-8(C)	IS:1364(P-3)		41320 00904	0.001	2
53	CHS SCRU M4x55-4.8(C)	IS:1366		41201 04955	0.005	2
52	HEX HD BOLT M10x70-8.8(C)	IS:1364 (P-1)		41237 10970	0.054	4
51	HEX HD SCRU M10x35 -4.6(C)	IS:1363 (P-2)		41222 10935	0.031	4

ITEM NO.	DESCRIPTION	STD	DRAWING NUMBER	MATERIAL CODE	UNIT WEIGHT	QUANTITY
50	HEX NUT M8-4(C)	IS:1363 (P-3)	41304 00908		0.005	2
49	HEX HD SCRU M8x30-4.6(C)	IS:1363 (P-2)	41222 08930		0.016	2
48	CHS SCRU M3x10-4.8(C)	IS:1366	41201 03910		0.001	6
47	NAME PLATE 75x210	BPS 0175140821	22 074 112		0.095	1
46	SPRING WASHER B8(C)	IS:3063	41405 00908		0.002	6
45	SPRING WASHER B10 (C)	IS:3063	41405 00910		0.003	12
44	MCD WASHER 21(C)	IS:2016	41406 00920		0.017	12
43	SPRING WASHER B16(C)	IS:3063	41405 00916		0.009	4
42	WNG NUT AM10(C)	IS:2636	41305 00910		0.033	4
41	HEX NUT M16-4(C)	IS:1363 (P-3)	41304 00916		0.034	26
40	PLUC M10x1 ROD D22 x 35L	4-67-272-00221	15 026 169 IS1875 CL 4		0.024	2
39	BH GREASE NIPPLE M10x1.0(C)	BPS:474502	96 424 1900000		0.020	14
38	PIN CYL RND END D6x20L	GF-239	96 424 215		0.005	2
37	HEX HD SCRU M8x20-8.8(C)	IS:1364 (P-2)	4123808 920		0.013	6
36	HEX HD SCRU M10x25-8.8(C)	IS:1364 (P-2)	41238 10925		0.025	2
35	HEX SOC GRUB SCR M10x10	GF-240	96 424 210		0.005	2
34	HEX SCR M 10x110 D 22 x 125L	4-67-272-00223	15 026 169 IS1875 CL 4		0.072	2
33	HEX HD SCRU M16x50-4.6(C)	IS:1363 (P-2)	41222 16950		0.108	26
32	HEX HD SCRU M12x50	GF-241	96 424 209		0.184	2
31	HEX HD BOLT M20x100-4.6(C)	IS:1363(P-2)	41221 20900		0.350	2
30	END COVER PLATE PL 12x254x930	4-67-251-00245	15 011 132 IS2062FE410A		21.700	1
29	FELT-III	GF-025	96 425 011		0.005	1
28	FELT-II	GF-024	96 425 010		0.005	1
27	FELT-I	GF-016	96 425 009		0.005	1
26	PACKING ROPE WDA SQ 6MM SOOL	TP:21599	22020 33300		0.005	2
25	HEX SOCHDCAPSCRU M10x40-8.8(C)	IS:2269	41202 10 940		0.033	4
24	BRG HSG COVER-II ROD D200x40L	2-67-276-00109	15 339 283 SA 105		3.800	1
23	BRG HSG COVER-I ROD D165 x 40L	3-67-276-00260	15 339 282 SA 105		3.600	1
22	BEARING HSG-II ROD D200x50L	2-67-276-00108	15 339 283 SA 105		6.200	1
21	BEARING HSG-I ROD D165 x 50L	2-67-276-00107	15 339 282 SA 105		4.900	1
20	KEY 8x7x45	4-67-276-00239	15 004 106 IS1875CL 4		0.018	1
19	CHAIN WHEEL D 500	2-67-272-00103	92 010 035 IS210Gr 20C		17.500	1
18	PACKING ROPE WDA SQ 8MMx600L	TP:21599	22020 33400		0.800	1
17	MTG BRACKET PL 5x85x150		15 011 029 IS2062F410A		0.320	1
16	SUPPORT PLATE PL 10x25x225		15 011 098 IS2062F410A		0.260	1
15	LIMIT SWITCH	GF-007		SD	0.600	1
14	GASKET 2 X D110 (INDICATOR BOX)	4-67-276-00232	22020 63800 ASBESTOS W/3		0.040	2
13	INDICATOR BOX ASSY	2-67-276-00111		ASSY	1.448	2
12	POKE HOLE COVER D40 X 8L	2-67-272-00090	92 013 300 ASTM A48CL25A		3.100	2
11	COLLAR	4-67-276-00241	15 027 135 IS 1875 CL 4		0.010	12
10	ROLLER WITH NUTS	GF-003	96 425 003		1.200	12
09	DEEP GROOVE BALL BEARING	GF-085	96 425 001		0.600	2
08	DEEP GROOVE BALL BEARING	GF-084	96 425 002		0.400	2
07	PINION FOR GEAR REDUCER	2-67-272-00248	15 039 118 SA 193 B7		3.600	1
06	GEAR REDUCER	2-67-272-00238	15 039 121 SA 193 B7		2.120	1
05	GEAR REDUCER HOUSING COVER	1-67-272-00072	92 013 301 ASTM A48CL30A		5.220	1
04	GEAR REDUCER HOUSING	1-67-272-00067	92 013 302 ASTM A48CL30A		4.800	1
03	SHAFT AND PINION WELDMENT	2-67-252-00251		WELDMENT	12.500	1
02	GATE WELDMENT	1-67-251-00070		WELDMENT	89.250	1
01	COAL VALVE BODY	1-67-252-00180		WELDMENT	290.234	1

24 INCH RAW COAL GATE CHAIN OPERATED-FEEDER INLET

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

DATE: 05/01/06
ALTERED BY: S.Selvaraju
CHKD & APPRO: S.Selvaraju

ITEM NO. 39 MATL CODE WAS 96 001 776
ITEM NO. 35 MATL CODE WAS 41223 06920

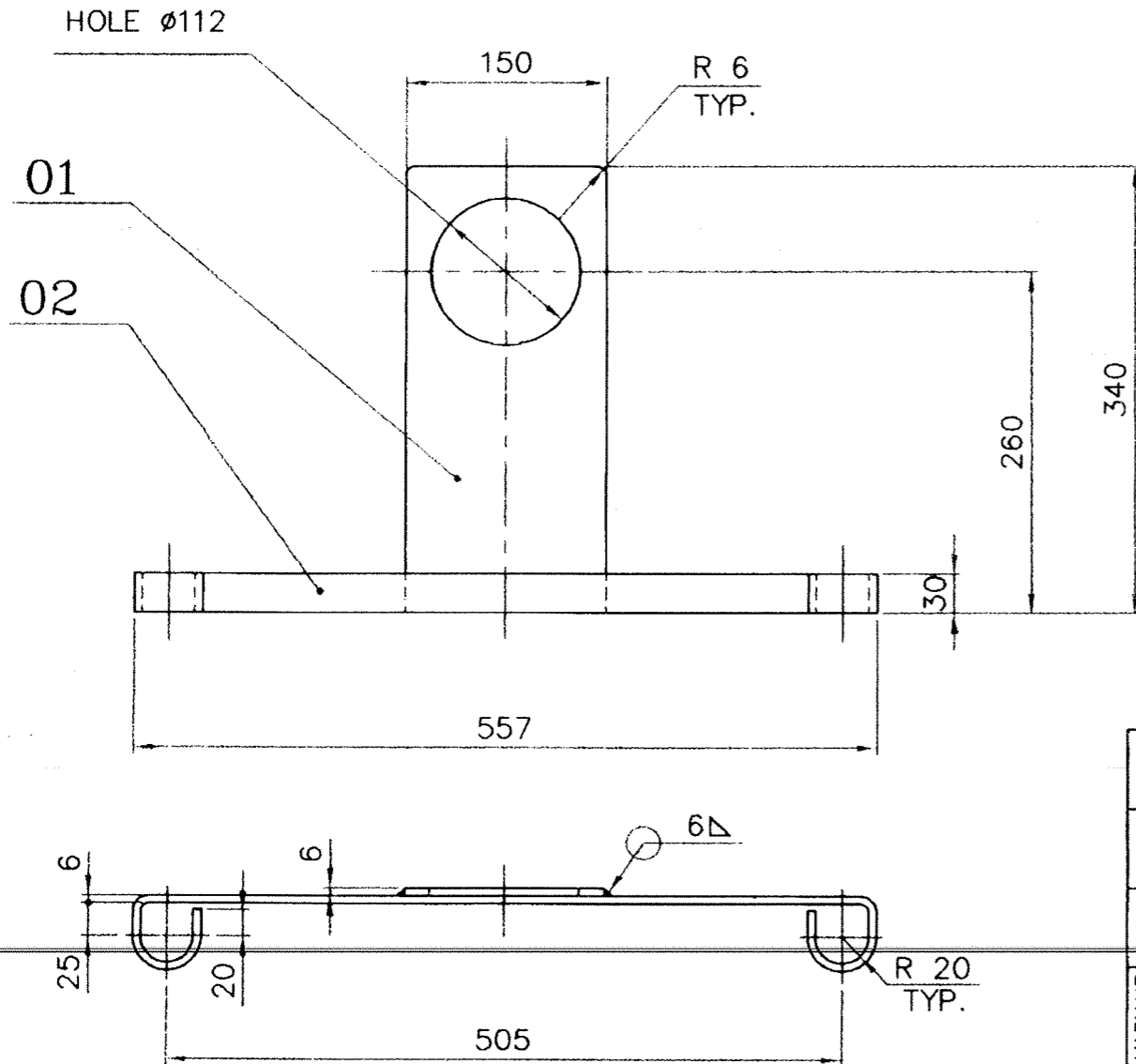
PRODUCTION SCALE: 1:5, 1:1, 1:2, 1:10
WEIGHT (Kg): 632.995

REF TO ASSY / OLD DWG: 0-67-251-00112

DRAWING NO: 0-67-256-00137
0-67-256-U3331

3-67-276-00180
 3-67-256-U3335
 DRAWING NO.

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		
	02	PL. 6x30x773			01	15-011-092 IS2062Fe410WA			1.110 1	
	01	PL. 6x150x340			01	15-011-092 IS2062Fe410WA			1.975 1	

REV	DATE	ALTERED : NCNN	REV	DATE	ALTERED : DVK
02	13.11.00	CHD & APPD: JAK	01	20.04.98	CHD & APPD: JSN
ZONE	DRAWING PREPARED IN CAD.		ZONE	ITEM NO.01 & 02 MATL. SPECN. WAS BMC 20.	

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: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
	S.MANIVANNAN	-Sd-	12.03.88
	J.SWAMINATHAN	-Sd-	20.03.88
	M.ALAGARSWAMY	-Sd-	11.04.88

355-055

DEPT FEEDER CODE	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
240			1:5	3.085	4-67-272-00224

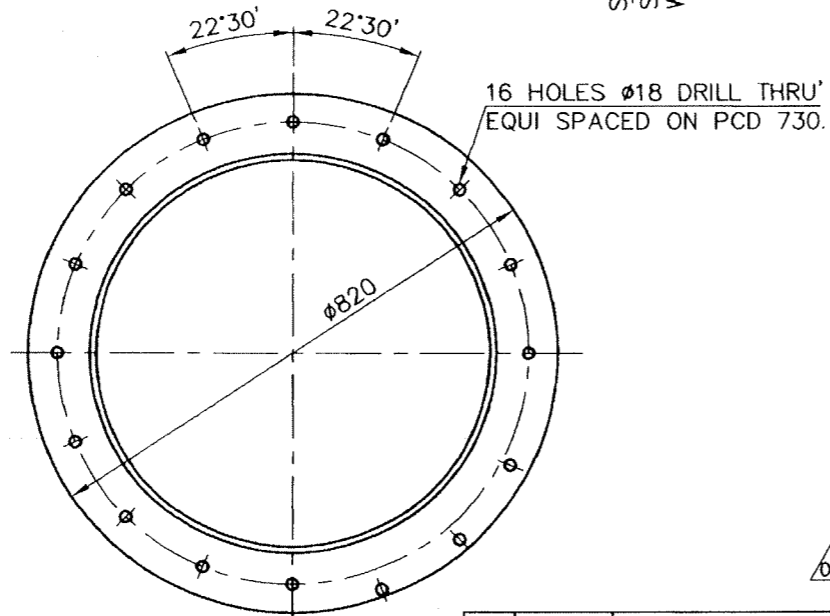
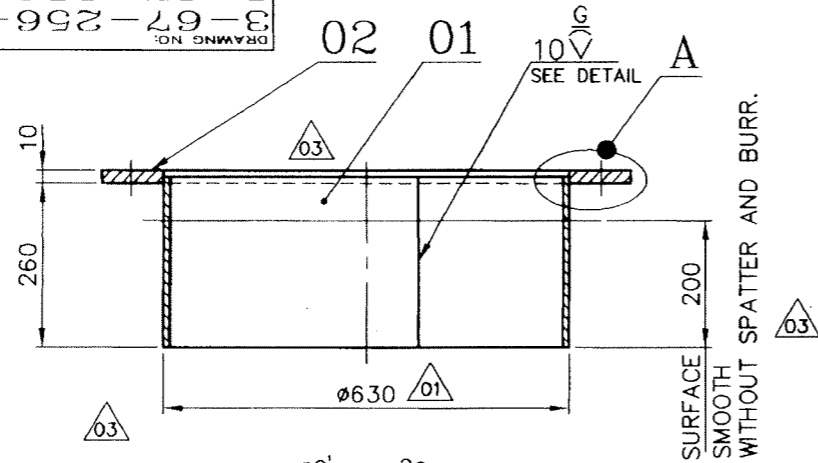
TITLE

CHAIN GUIDE

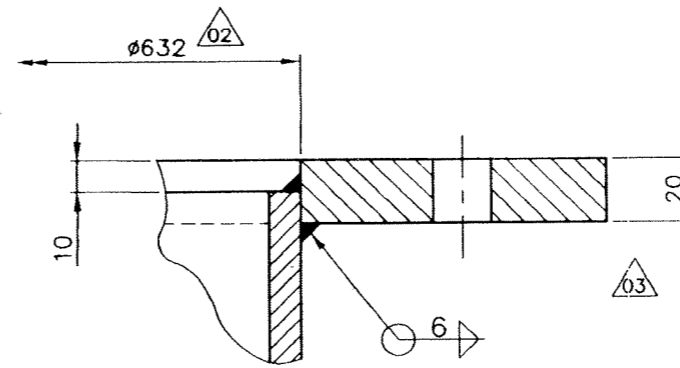
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 3-67-256-U3335

REV 02

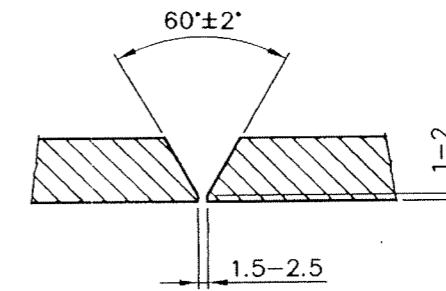
3-67-256-00193
 3-67-256-U3336
 DRAWING NO.



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



DETAIL-A
 (SCALE=1:2)



EDGE PREPARATION DETAIL OF ITEM-01
 (SCALE=1:1)

REV	DATE	ALTERED
05	271100	CHD & APPD :SELVA

DRAWING PREPARED IN CAD.

REV	DATE	ALTERED	REV	DATE	ALTERED
04	300399	CHD & APPD :SELVA -Sd-	03	191290	CHD & APPD : J.S.N -Sd-

ZONE IN ITEM No.02 MATL SPECN WAS IS226 FE410S.

ZONE H 0.10 REMOVED. 12.5 REMOVED. NOTE ALTERED. ITEM-02 WAS PL.25

REV	DATE	ALTERED	REV	DATE	ALTERED
02	191089	CHD & APPD : J.S.N -Sd-	01	240289	CHD & APPD: JSN -Sd-

ZONE DIMENSIONS 0632 ADDED.

ZONE DIM 0630 WAS 0632, ITEM No. 02 FLANGE I.D 0632 WAS 0634.

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
02	FLANGE PLATE 20xID632xOD820				15-011-150			33.000	
					IS2062FE410WA			1	
01	PLATE 10x270x1945				15-011-380			41.000	
					SA 240 TYPE304			1	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 355-055 VISAKHAPATNAM-530012

DRN	NAME G.R.N	SIGNATURE	DATE
CHD	J.S.N	-Sd-	27-06-88
APPD	M.A.SAMY	-Sd-	16-07-88

DEPT FEEDERS CODE 240 ALL DIMENSIONS ARE IN MM PROJECTION SCALE 1:10, 1:1, 1:2 WEIGHT (Kg) 74.000 REF TO ASSY / OLD DWG 1-67-256-00069

TITLE **SPACER**

DRAWING NO : 3-67-256-00193, 3-67-256-U3336

REV 05

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.

2-67-272-00103
2-67-256-U3338
SON DKKMPS

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

DRILL & TAP 2 HOLES M6x25 DEEP
180° APART ON PCD 80

VIEW-C
(SCALE 1:1)

DETAIL-B
(SCALE 2:1)

SECTION-AA

VIEW-D
(ZONE-C2)

PATTERN NO: -2-67-272-00100

MACHINING NOTES:-

1. BREAK ALL SHARP CORNERS (0.5x45°)
2. PAINT GRAY COLOR, EXCEPT BORE.
3. PROTECT BORE WITH GREASE OR RUST INHIBITOR DURING STORAGE.

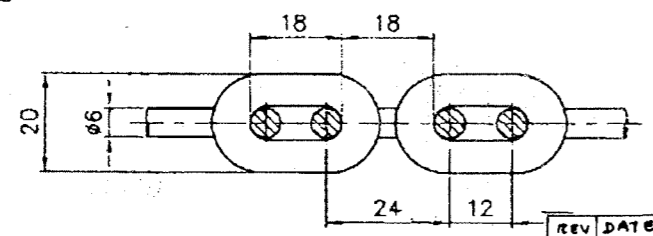
CAST PATTERN NUMBER HERE

REV	DATE	ALTERED	NON N. ch. d. m. l. e.
03	27.11.00	CHD & APPD	JAK
ZONE			
DRAWING PREPARED IN CAD.			

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	92-010-035	17.500	UNIT	QUANTITY	ZONE
					IS-210 Gr 20				
					ITEM NO	MATERIAL CODE			
					VAR NO	MATERIAL SPECN			

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: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012			
	DRW	NAME EC/DZ	SIGNATURE	DATE
	CHD	PASHA	-Sd-	22.03.98
APPD	M.A.SWAMY	-Sd-	11.04.98	
DEPT	PROJECT	SCALE	WEIGHT (Kg)	REF TO ASBY / OLD DWG
FEEDER	ALL DIMENSIONS ARE IN MM	1:2, 1:1 2:1	18.250	2-67-223-00029/02
CODE	240			
TITLE				DRAWING NO:
CHAIN WHEEL DIA 500				2-67-272-00103 2-67-256-U3338
				REV
				04

NO. OF TEETH = 44
USE CHAIN IS: 2429 d=6, t=18



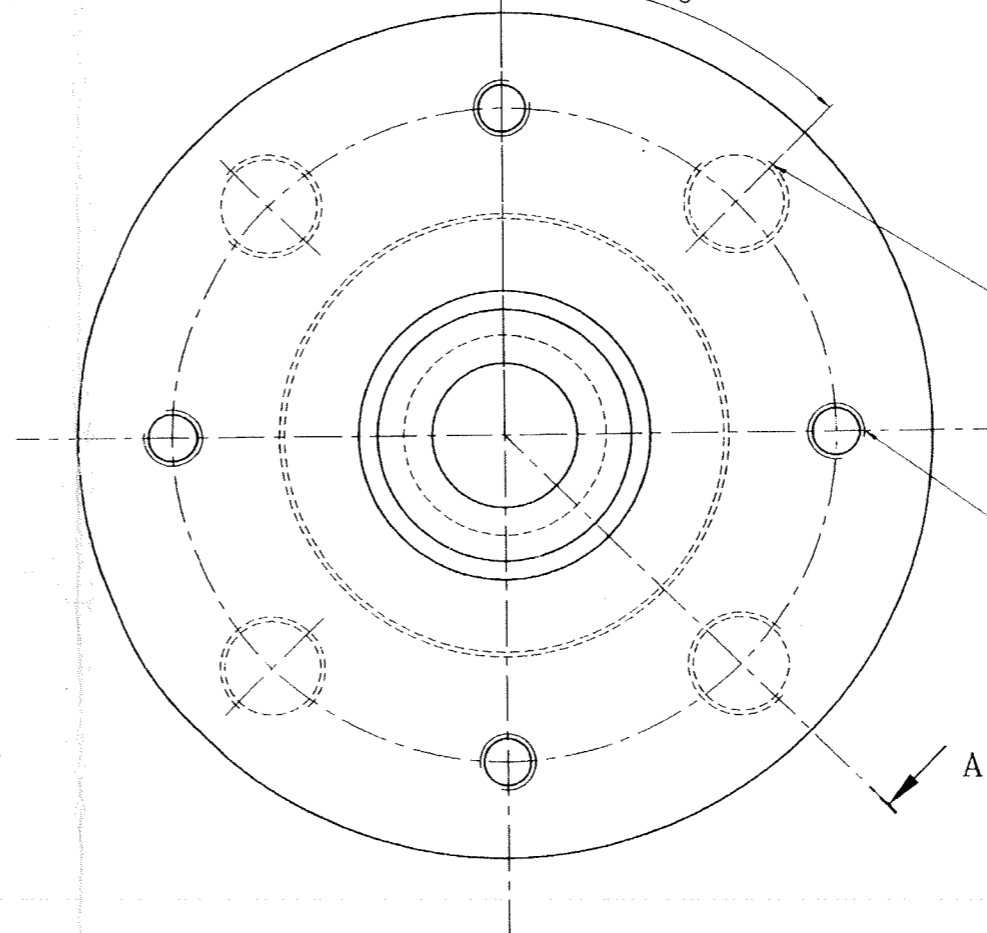
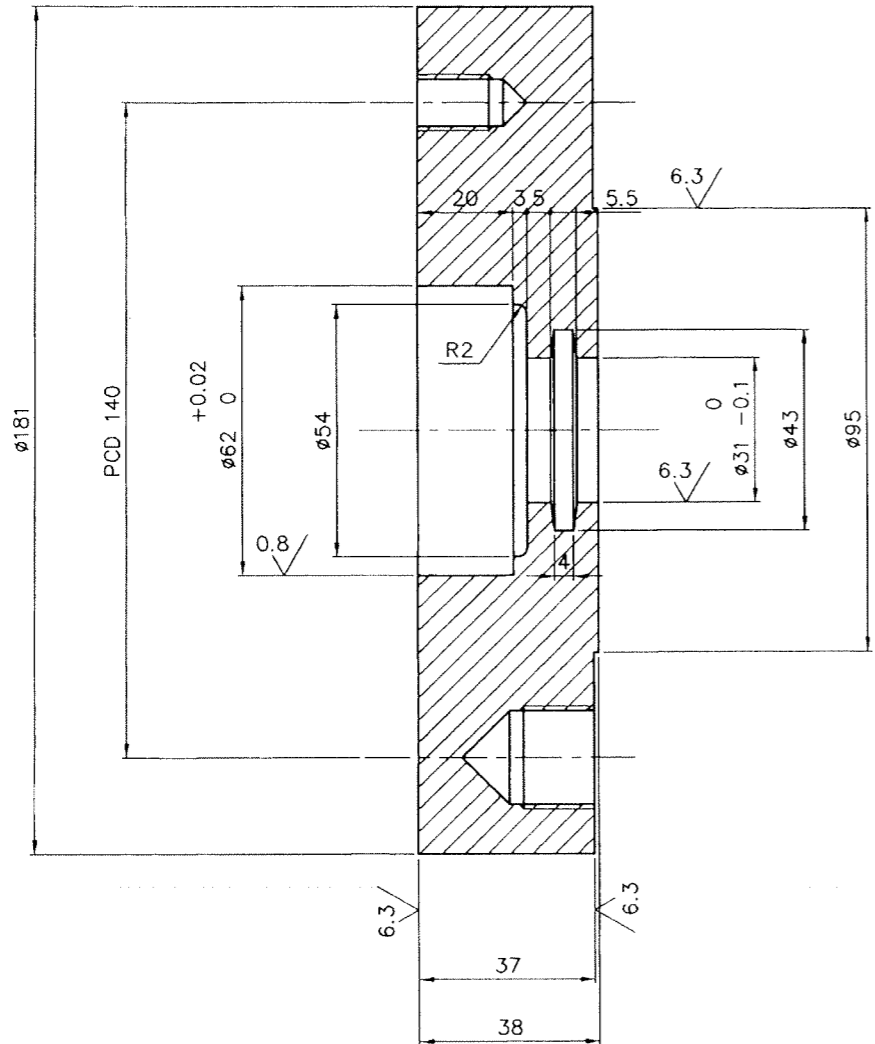
CHAIN DETAIL
(SCALE 1:1)

REV	DATE	ALTD	SM	REV	DATE	ALTERED	SM
04	17.9.08	CHD	DVIK	02	04.03.99	CHD & APPD	SSR
WEIGHT ALTERED ACCORDING TO SAP MASTER WEIGHT. WT. WAS 17.500KGS.				MACHINING VALUE ADDED. 2 HOLES M6x25 DEEP ADDED VIEW-D ADDED			
ZONE IS: 2429 WAS CSN 023213.				ZONE			

2-67-276-00108
2-67-256-U3341
DRAWING NO.

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

12.5 / 6.3 / 0.8



4 HOLES M20 - DEEP 25
EQUI SPACED - PCD 140

4 HOLES M10 - DEEP 15
EQUI SPACED PCD 140

SECTION-AA

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS	ZONE
		ROD D200x50			15-339-283	SA 105			6.200		
					VAR NO	MATERIAL SPECN		DI	QUANTITY		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRH	S.MANIVANNAN	SIGNATURE	-Sd-	DATE	10.03.88
CHD	J.SWAMINATHAN	SIGNATURE	-Sd-	DATE	23.03.88
APPD	M.ALAGARSAMY	SIGNATURE	-Sd-	DATE	11.04.88

DEPT: FEEDER
CODE: 240

ALL DIMENSIONS ARE IN MM

PROJECTION: SCALE: 1:1

WEIGHT (Kg): 6.200

REF TO ASSY / OLD DWG

TITLE: BEARING HOUSING-II

DRAWING NO: 2-67-276-00108
2-67-256-U3341

REV: 02

REV	DATE	ALTERED BY	ALTERED FOR	REV	DATE	ALTERED BY	ALTERED FOR
02	16.11.00	CHD & APPD: JAK		01	26.08.94	CHD & APPD: JSN	

DRAWING PREPARED IN CAD.

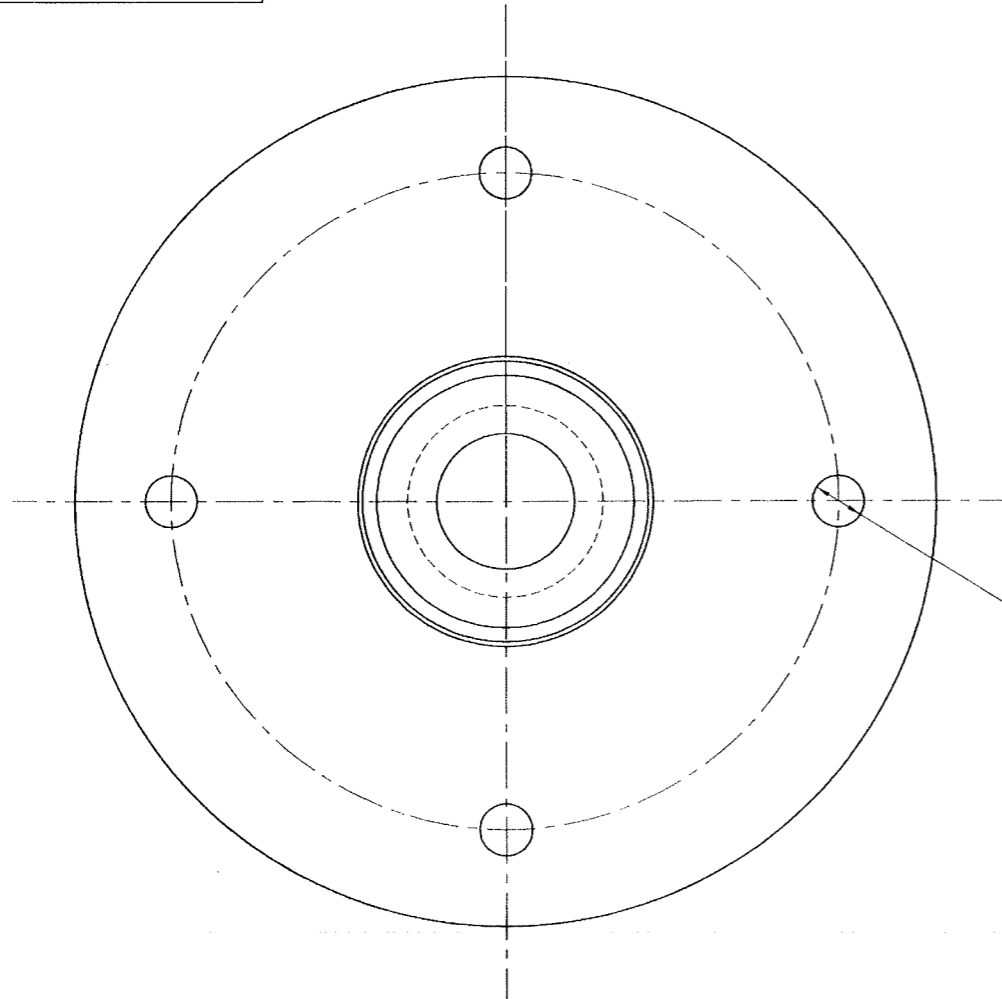
MATL. CODE WAS 15-015-324.

104

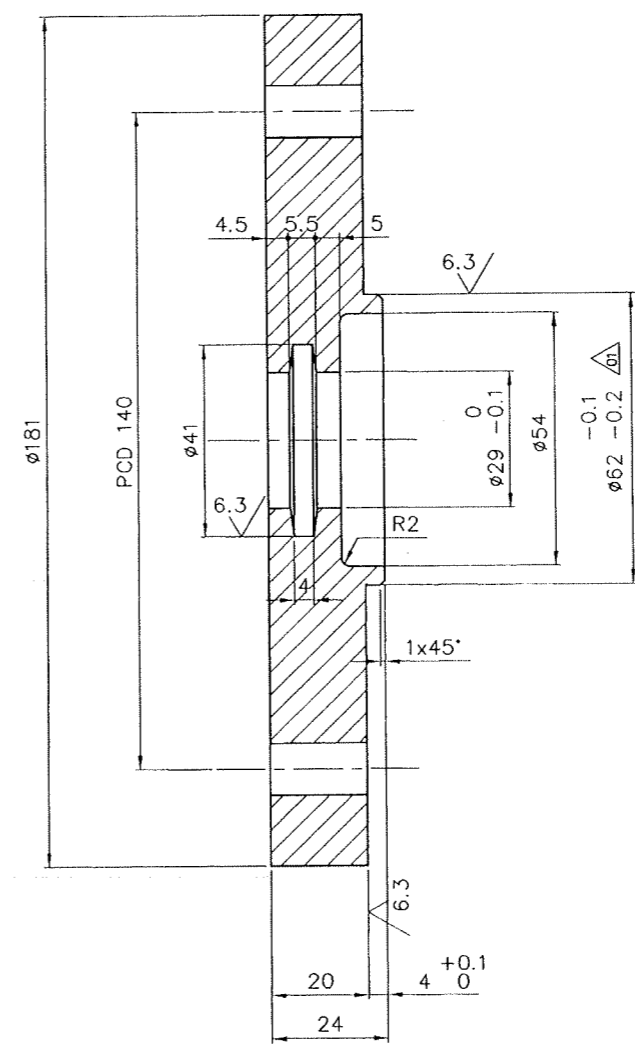
2-67-276-00109
2-67-256-U3342
DRAWING NO.

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

12.5/6.3



DRILL THRU' 4 HOLES Ø11 ON P.C.D. 140. EQUI. SPACED.



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS	ZONE
		ROD D200x40L				15-339-283			3.800		
					VAR NO	MATERIAL SPECN	DI	QUANTITY			

REV	DATE	ALTERED	BY
03	16.11.00	ALtered :NCN N. Chidambaram CHD & APPD :JAK	

DRAWING PREPARED IN CAD.

REV	DATE	ALTERED	BY
02	26.08.91	ALtered :GRC CHD & APPD :JSN	
01	20.05.88	ALtered :MA CHD & APPD :JSN	

MATL. CODE WAS 15-015-324
THE TOLERANCE WAS 0.12.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN	S.MANIVANNAN	SIGNATURE	-Sd-	DATE	11.03.98
CHD	J.SWAMINATHAN	SIGNATURE	-Sd-	DATE	23.03.88
APPD	M.ALAGARSAMY	SIGNATURE	-Sd-	DATE	11.04.88

DEPT FEEDER ALL DIMENSIONS ARE IN MM PREJECTION SCALE WEIGHT (Kg) REF TO ASSY / OLD DWG

DEPT CODE 240 SCALE 1:1 WEIGHT (Kg) 3.800

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TITLE: BEARING HOUSING COVER-II

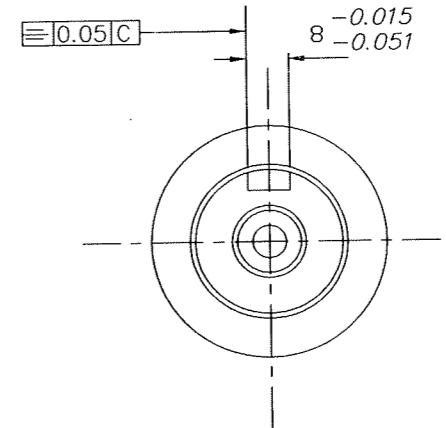
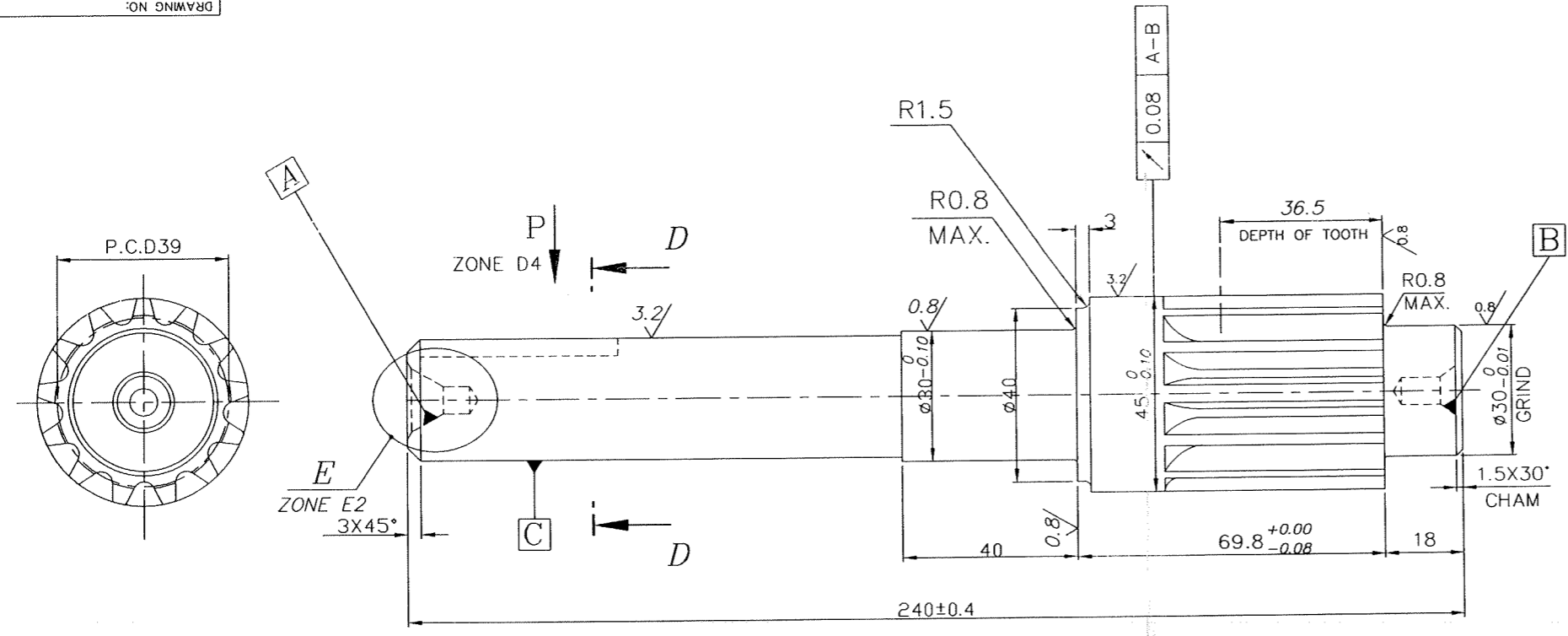
DRAWING NO: 2-67-276-00109
2-67-256-U3342

REV 03

DRAWING NO: 22-67-276-00248
22-67-276-00248

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

6.3/3.2/0.8/

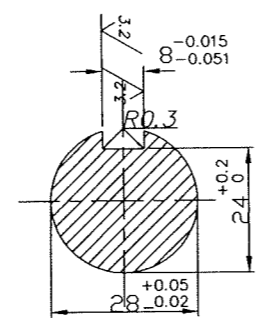
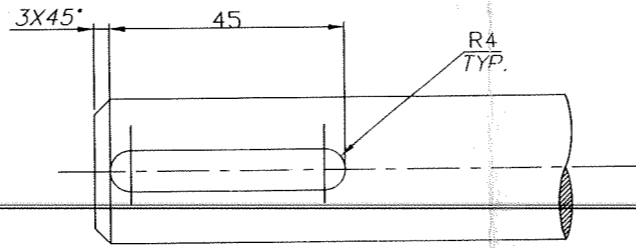
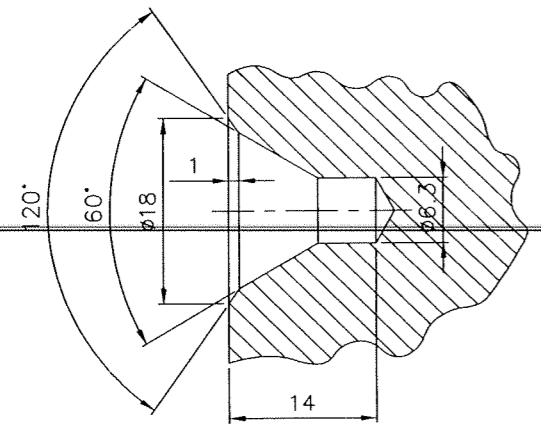


GEAR TOOTH CUTTING DATA: -

- 13 TEETH- SPUR GEAR
- 3 MODULES
- 20° PRESSURE ANGLE
- 0.1 TO 0.2 BACKLASH AT 76.5 OPERATING C.D.
- WITH MATING GEAR (2-67-276-00238/38 TEETH)
- QUALITY & TOLERANCE ZONE: 8e DIN 3967
- CHORDAL DIMENSION OVER 2 TEETH LENGTH 13.83 ^{-0.051}/_{-0.085}

NOTES: -

1. SURFACE HARDEN TEETH TO HRC 43 MINIMUM. CASE DEPTH 0.1-0.2 AFTER MACHINING.
2. BREAK ALL SHARP CORNERS 0.4X45°
3. ALL GROUND DIAMETERS TO HAVE 0.08 A-B



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY	ZONE
		ROD D63XL260				15-039-118			3.500		
						SA 193 B7					

<p>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.</p>		<p>TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT</p> <p>Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012</p>		<p>DRN M.ALAGIRI</p> <p>CHD J.V.V.A.KUMAR</p> <p>APPD J.Swaminathar</p>	<p>SIGNATURE -sd-</p> <p>DATE 06/03/99</p> <p>08/03/99</p> <p>08/03/99</p>
<p>DEPT MILLS</p> <p>CODE 240</p>	<p>ALL DIMENSIONS ARE IN MM</p>	<p>PROJECTION</p> <p>SCALE 1:1,2:1</p>	<p>WEIGHT (Kg)</p> <p>3.500</p>	<p>REF TO ASSY / OLD DWG</p> <p>2-67-276-00110</p> <p>X-1330-D</p>	
<p>TITLE</p> <p>PINION FOR GEAR REDUCER</p>				<p>DRAWING NO :</p> <p>2-67-276-00248</p> <p>2-67-256-U3343</p>	
				REV	01

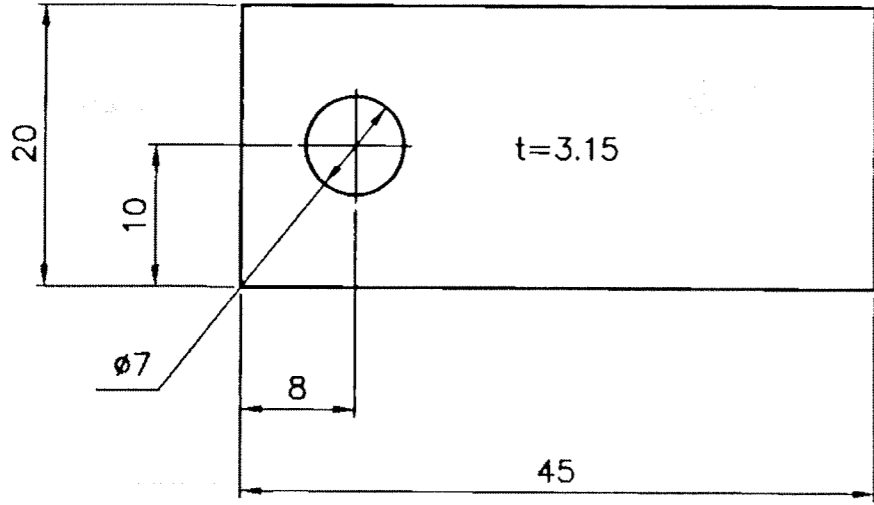
REV	DATE	ALTERED :	M.ALAGIRI
01	26/08/06	CHD & APPD :	J.V.V.A.KUMAR

NOTE -1 WAS "SURFACE HARDEN TEETH TO HRC 52-56"

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

REV	DATE	ALTERED	BY
01	20.04.98	DVK	-Sd-
		CHD & APPD	J.S.N. -Sd-
MATL. SPECN. WAS BMC 10.			
REV	DATE	ALTERED	BY
02	09.11.00	NCNA	<i>J.S.N.</i>
		CHD & APPD	JAKS <i>J.S.N.</i>
DRAWING PREPARED IN CAD.			



VARIANT NUMBER	SH. 3.15x20x45	15-011-182	0.020
		IS1079Fe330	
	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056		DRN S.MANIVANNAN -Sd- 27.07.88	SIGNATURE -Sd- 25.08.88	DATE 26.08.88
DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
CODE 240			2:1	0.020		
TITLE				DRAWING NO :		REV
PLATE				4-67-272-00248		02
				4-67-256-U3337		

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REV	DATE	ALTERED :DVK	-Sd-
01	20.04.98	CHD & APPD :JSN	-Sd-

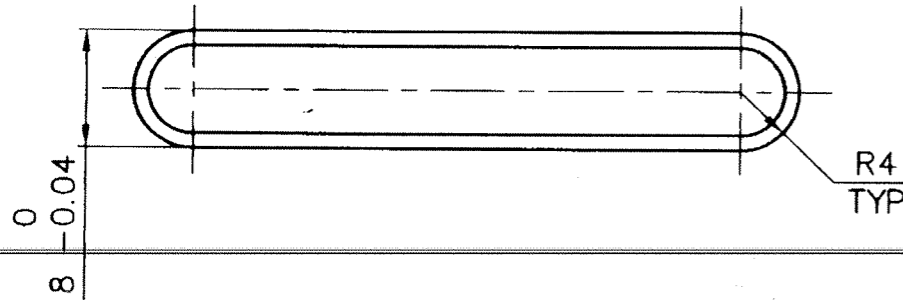
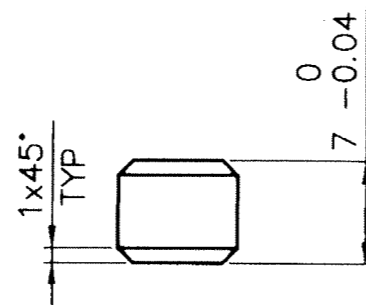
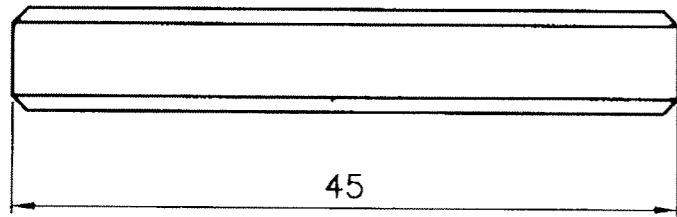
MATL. SPECN. WAS BM-CQ45.
CODE WAS 15-004-106

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

REV	DATE	ALTERED :NCN N. <i>Ch. Jambur</i>	
02	11.11.00	CHD & APPD :JAK <i>J. Kumar</i>	

DRAWING PREPARED IN CAD.

6.3 / ALL OVER



VARIANT NUMBER	ROUND Ø16x50	STD	15-004-121 IS: 1875CL-IV	A/C/P	UNIT	0.018
	DESCRIPTION		MATERIAL CODE			UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

101



Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

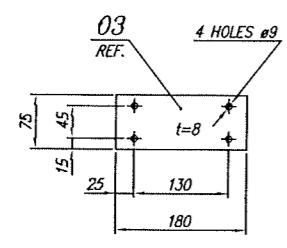
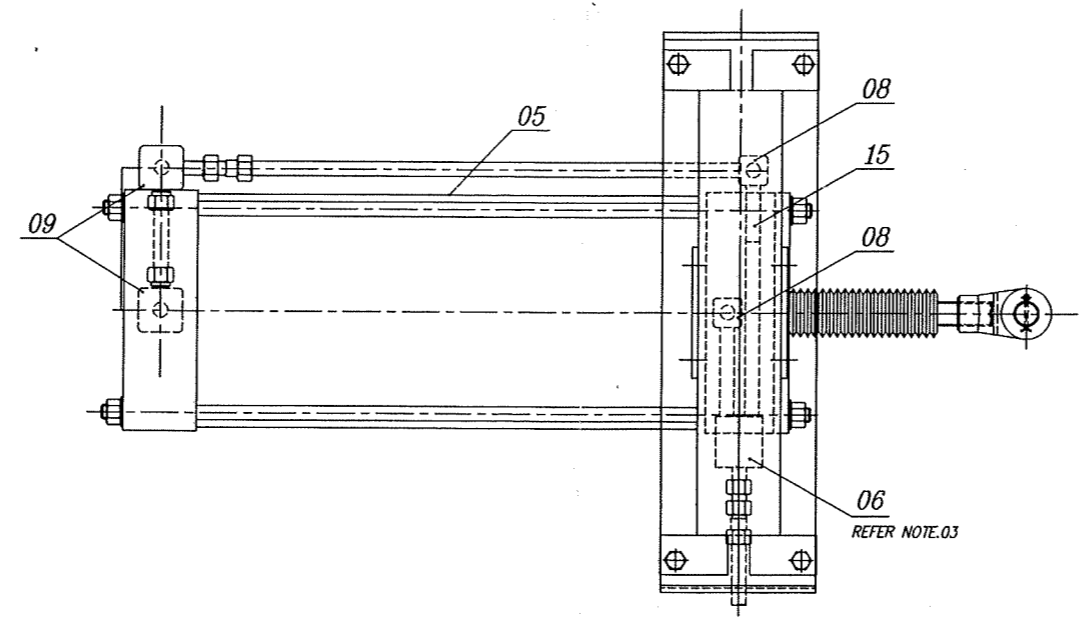
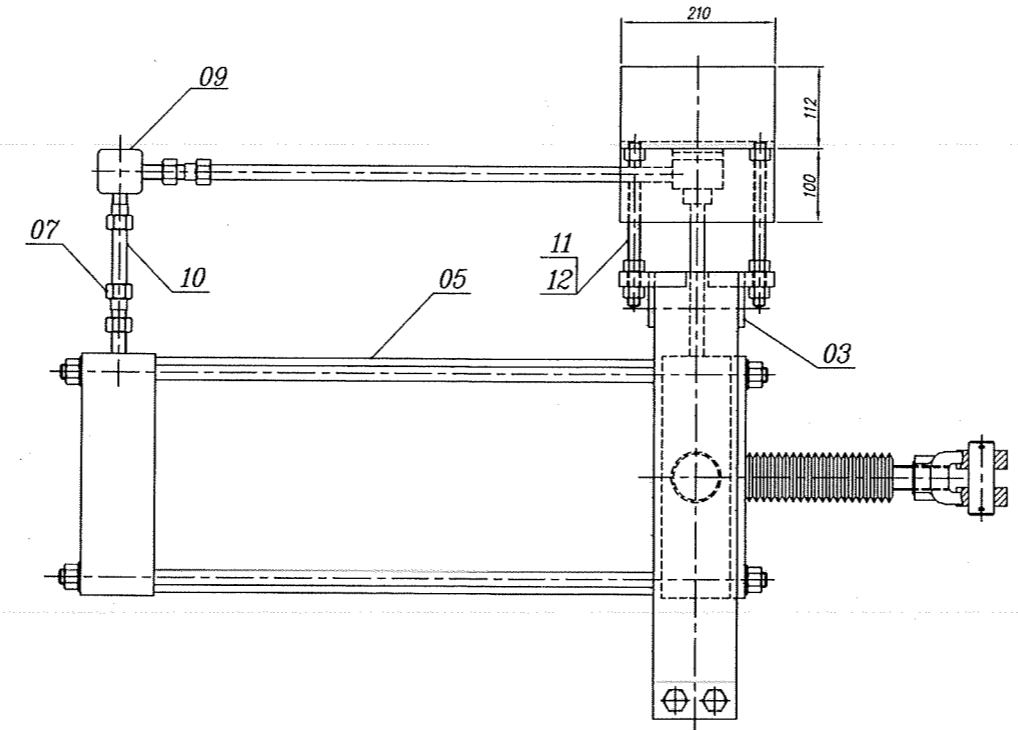
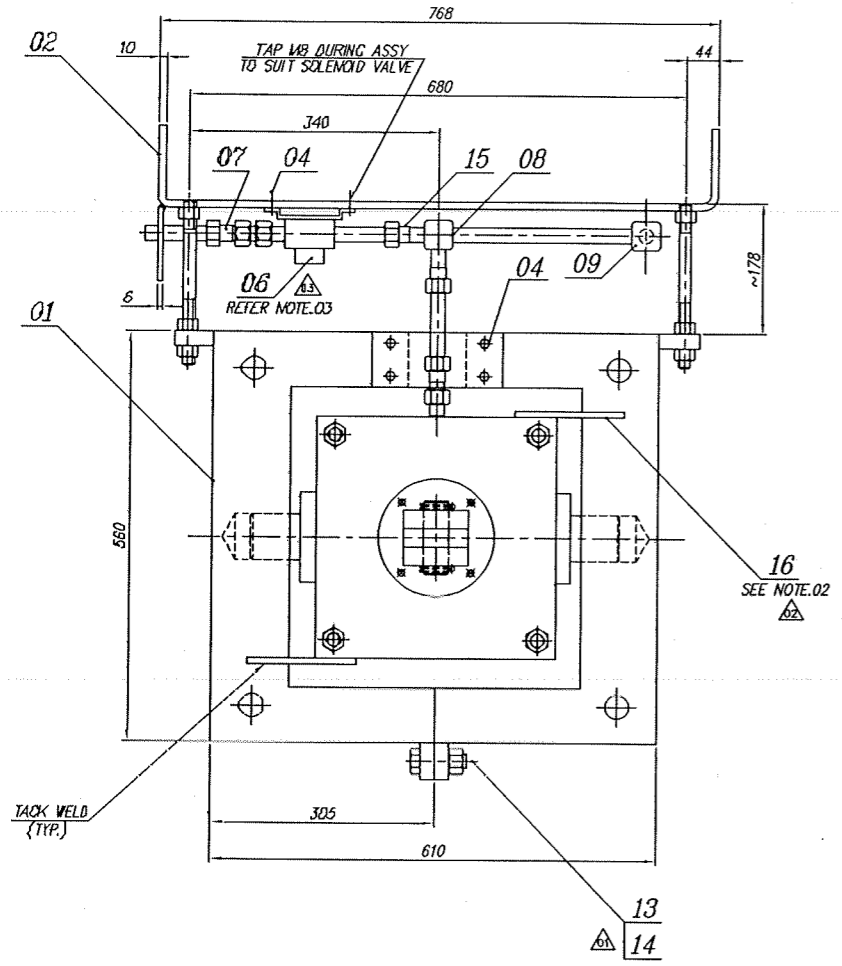
DRW	NAME	SIGNATURE	DATE
DRW	G.R.CHANDRAN	-Sd-	06.04.88
CHD	J.S.N.	-Sd-	08.04.88
APPD	M.A.	-Sd-	11.04.88

DEPT FEEDER	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 2:1	WEIGHT (Kg) 0.018	REF TO ASSY / OLD DWG
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TITLE KEY - 8x7x45	DRAWING NO : 4-67-276-00239 4-67-256-U3342	REV 02
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16000-283-0091
1-67-283-0091
FRAMING NO.

ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER RELEVANT QCP / QP



NOTE :

- ITEM 15 IS TO BE USED TO AVOID INTERFERENCE OF MALE STUD ELBOW EACH OTHER (ITEM 09) DURING ASSEMBLY.
- TACK WELD ITEM 16 (YELLOW PAINT) GIVEN FOR DESPATCH PURPOSE ONLY. TO BE REMOVED AT SITE DURING ERECTION.
- TYPICAL SOLENOID VALVE ARRANGEMENT IS SHOWN IN THE DRAWING POSITION OF SOLENOID VALVE MAY BE FIXED DURING SHOP ASSEMBLY TO SUIT THE REQUIREMENT.

04. SOLENOID VALVE VOLTAGE RATING

ITEM No.	STYLE No.	SPEC. No.	VOLTAGE RATING
06	03	GF-350	24V DC
06	02	GF-348	240V AC
06	01	GF-127	110V AC

05. MATERIAL CODE, WEIGHT & TOTAL WEIGHT.

STYLE No.	VOLTAGE RATING	MATL. CODE	Wt./ VALVE	Total wt.
03	24V DC	964250080000	15.500	288.347
02	240V AC	964250220000	9.500	282.347
01	110V AC	964250210000	15.500	288.347

ITEM NUMBER	DESCRIPTION	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT WEIGHT	QUANTITY	ZONE
16	SQ. ROD 8x8x150			156 015 436 IS:2062 Fe410WA	0.075	2	
15	NIPPLE ROD D40x150L	4-67-283-00347		15 339 141 SA 105	1.100	1	
14	HEX NUT Gr.B T425 M20 (C)	BPS:41319		41319 00920	0.006	2	
13	HEX HD SCRU M20x55-4.6 (C)	IS:1363 (P-2)		41222 20955	0.196	2	
12	HEX NUT M16-4 (C)	IS:1363 (P-3)		41304 00916	0.030	6	
11	STUD M16 ROUND D16x325 L	4-67-283-00282		15 004 121 IS:1875 CL.IV	0.412	2	
10	COPPER TUBE 3/4" 16G ; 2500L	CUT TO SUIT		160111856000 ASTM B75	1.975	1	
09	BULK HEAD UNION ELBOW	GF-129		96 425 024 S.D	0.250	2	
08	MALE STUD ELBOW	GF-128		96 425 023 S.D	0.350	2	
07	MALE STUD COUPLING	GF-130		96 425 025 S.D	0.350	3	
06	SOLENOID VALVE	REFER NOTE 4 & 5		S.D	0.000	1	
05	AIR CYLINDER	GF-132		S.D	100.000	1	
04	HEX HD SCRU M8x25-4.6 (C)	IS:1363 (P-2)		41222 08925	0.004	12	
03	PL.8x75x180			15 011 027 IS:2062 Fe410WA	0.800	2	
02	SUPPORT PLATE	2-67-283-00145		WELDMENT	16.836	1	
01	AIR CYLINDER BRACKET	2-67-283-00143		ASSY	73.740	2	

REV	DATE	ALTERED BY	REASON	REV	DATE	ALTERED BY	REASON	REV	DATE	ALTERED BY	REASON	REV	DATE	ALTERED BY	REASON	REV	DATE	ALTERED BY	REASON
09	14.07.2021	CHD & APPD: GANAGHUR	Item 09 quantity changed from 1 to 2. Table 5 & Plan view added.	08	06.05.98	CHD & APPD: JS -Sf-		07	21.01.94	ALTERED : D.N -Sf- CHD & APPD: M.A.S -Sf-		06	01.02.2001	CHD & APPD: S.G		05	18.01.2000	CHD & APPD: S.G -Sf-	
05	30.03.2007	CHD & APPD: S.Sahay		04	06.05.98	CHD & APPD: JS -Sf-		03	07.07.95	CHD & APPD: JS -Sf-		02	21.01.94	ALTERED : D.N -Sf- CHD & APPD: M.A.S -Sf-		01	21.03.92	CHD & APPD: JS -Sf-	
01	30.03.2007	CHD & APPD: S.Sahay	NOTE 04 ADDED.	01	06.05.98	CHD & APPD: JS -Sf-		01	07.07.95	CHD & APPD: JS -Sf-		01	21.03.92	CHD & APPD: JS -Sf-		01	21.03.92	CHD & APPD: JS -Sf-	

REV 09 DATE 14.07.2021 ALTERED BY CHD & APPD: GANAGHUR
ZONE Item 09 quantity changed from 1 to 2. Table 5 & Plan view added.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISA KHAPATNA M-530012

SCALE: 1:5

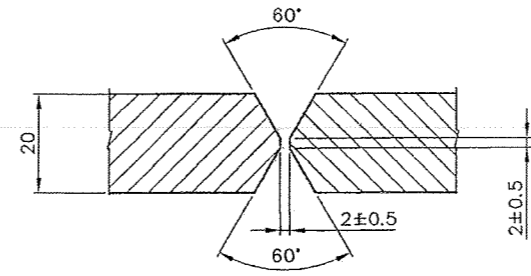
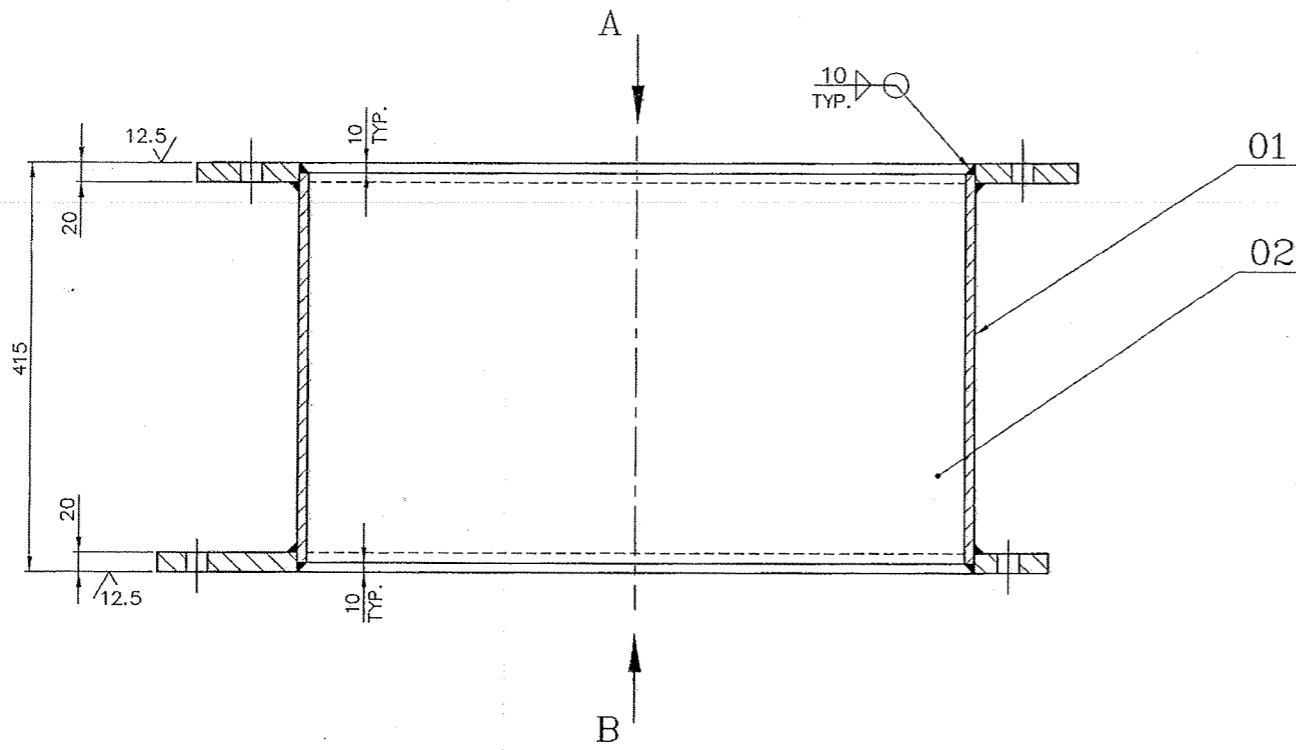
WEIGHT (KG): Refer table 5

DRAWING NO: 1-67-283-00091 09
1-67-283-00003 00

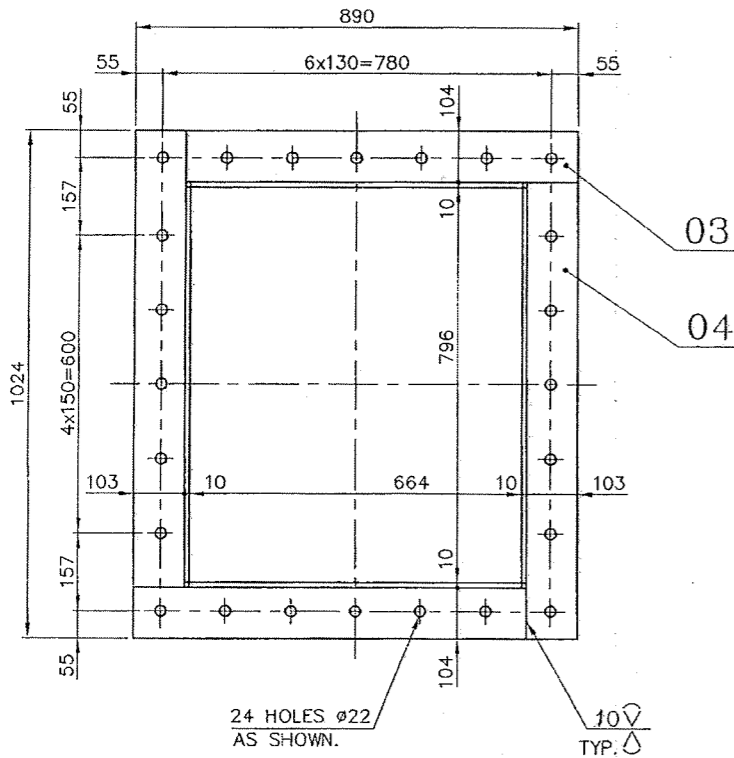
DRAWING NO: 2-67-283-0002
2-67-283-00257

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

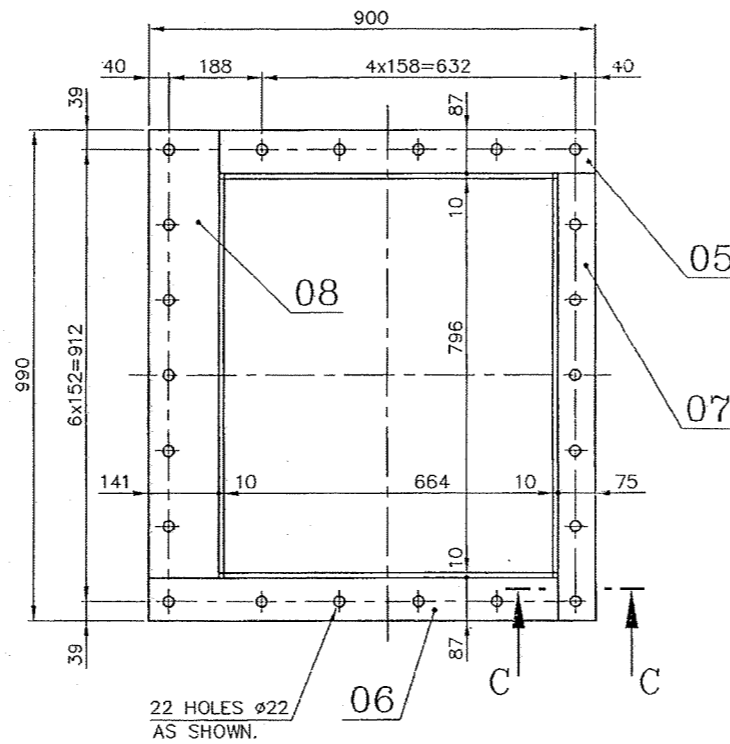
12.5



SECTION-CC



VIEW-A



VIEW-B

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	CS	ZONE
VAR NO	MATERIAL SPECN	DI	QUANTITY								
	08	PL 25x141x903 ✓				15-011-081			19.630		D, 4
						IS2062FE410WB			1		4
	07	PL 25x75x903 ✓				15-011-081			10.270		D, 5
						IS2062FE410WB			1		5
	06	PL 25x87x825 ✓				15-011-081			10.970		F, 4
						IS2062FE410WB			1		4
	05	PL 25x87x759 ✓				15-011-081			10.070		D, 5
						IS2062FE410WB			1		5
	04	PL 25x103x920 ✓				15-011-081			14.520		D, 3
						IS2062FE410WB			2		3
	03	PL 25x104x787 ✓				15-011-081			12.500		D, 3
						IS2062FE410WB			2		3
	02	PL 10x395x664 ✓				15-011-380			21.000		B, 5
						SA240 TYPE304			2		5
	01	PL 10x395x796 ✓				15-011-380			25.190		B, 5
						SA240 TYPE304			2		5

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TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530013

DRH	NAME D.N.Chezhiyan	SIGNATURE D. Meduri	DATE 120499
CHD	S.Selvaraju		14.05.99
APPD	J.Swaminathan		16.05.99

REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

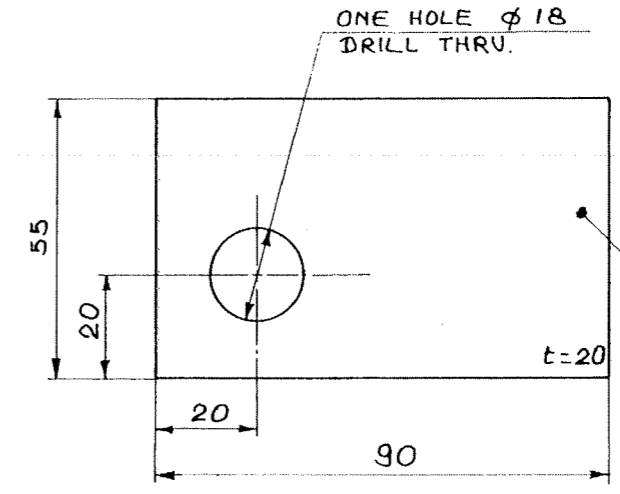
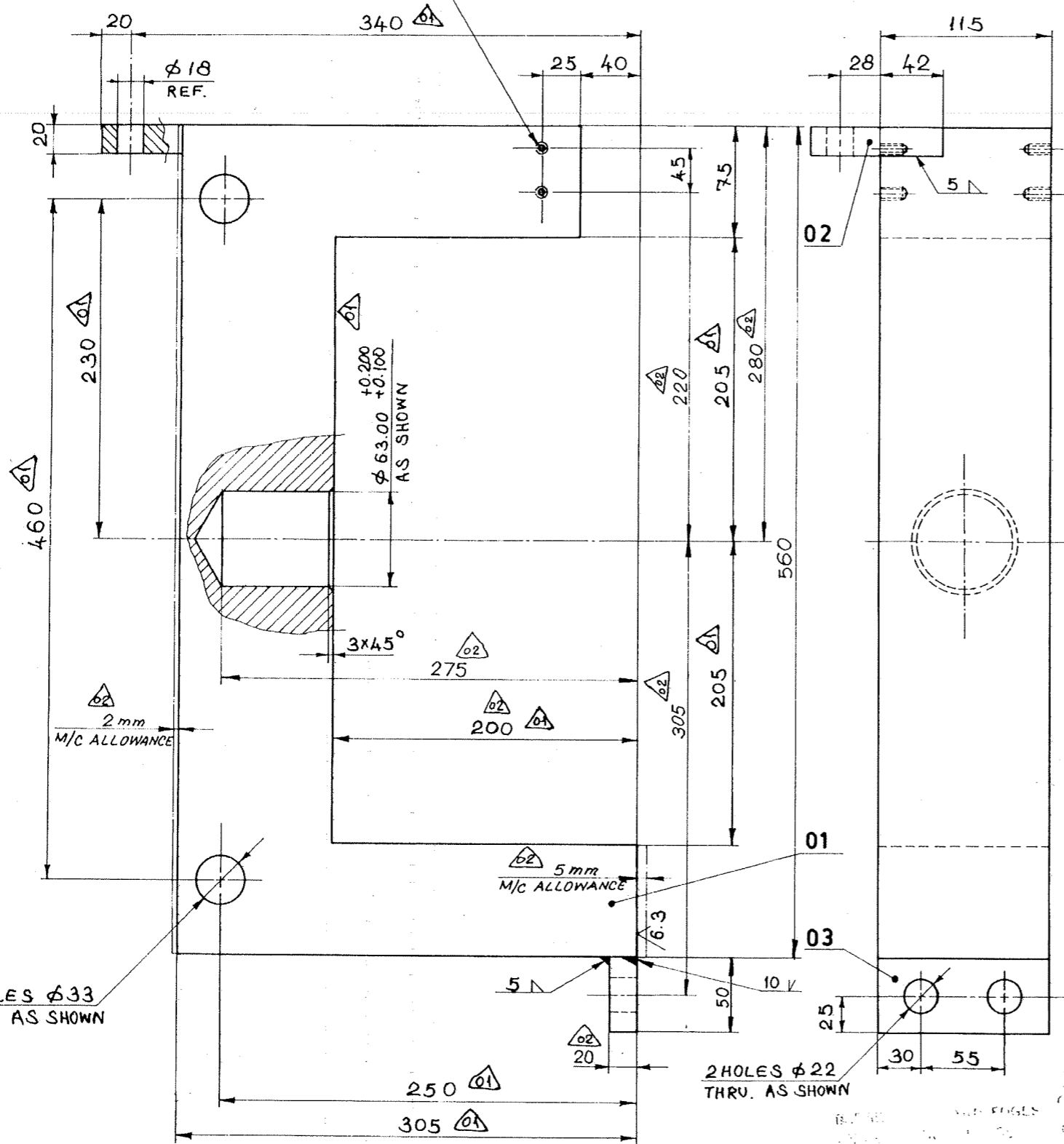
DEPT FEEDERS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE 1:5	WEIGHT (Kg) 197.360	REF TO ASSY / OLD DWG 1-67-283-00082
CODE 240					
TITLE FEEDER OUTLET CHUTE					DRAWING NO : 2-67-283-00257
					REV 00

2-67-283-00173
2-67-283-U0003

DRAWING NO.

4 HOLES M8x20
AS SHOWN

6.3
02



VARIANT NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	ITEM NO. VAR NO.	MATL. CODE	MATL. SPEL.	UNIT WT.	QTY.	ZONE
04	03	PLATE 20x50x115				15-011-150	IS2062Fe410WA	0.780	1	
04	02	PLATE 20x55x90				15-011-150	IS2062Fe410WA	0.740	1	
04	01	PLATE 115x312x560				15-011-419	ASTM-A36	72.220	1	

2 HOLES $\phi 33$
THRU. AS SHOWN

2 HOLES $\phi 22$
THRU. AS SHOWN

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd.,
UNIT: HEAVY PLATES & VESSELS PLANT,
WISAKHAPATNAM-530012

DATE: 15.3.90
NO. OF VAR.:
APPD: SELVA
APPD: JASON

REV.	DATE	ALTD.	CHD.	APPD.	REV.	DATE	ALTD.	CHD.	APPD.	REV.	DATE	ALTD.	CHD.	APPD.
04	3-5-98	CHD & APPD			03	21-10-94				02	11-09-90			
ZONE		MATL. SPECN. UPDATED			ZONE		DIM. M8x20 WAS M8x15			ZONE		DIM. 200 WAS 205 REF. DIM. 20 WAS 18 DIM. 275, 305, 220 & 280 ADDED M/C ALLOWANCE ADDED ITEM NO. 01 & 03 PLATE SIZE AD.		

DEPT: MILLS
GRADE OF UNTOOL DIM: PTMT
SCALE: 1:2.5
WEIGHT (KG): 73.740
DRAWING NO: 3-67-283-00176

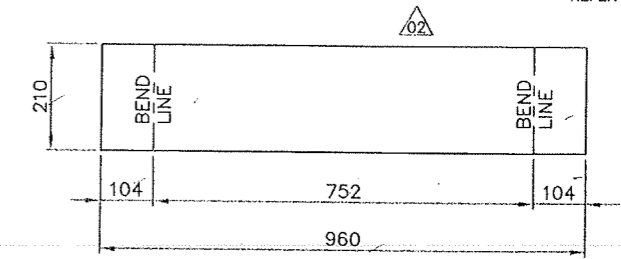
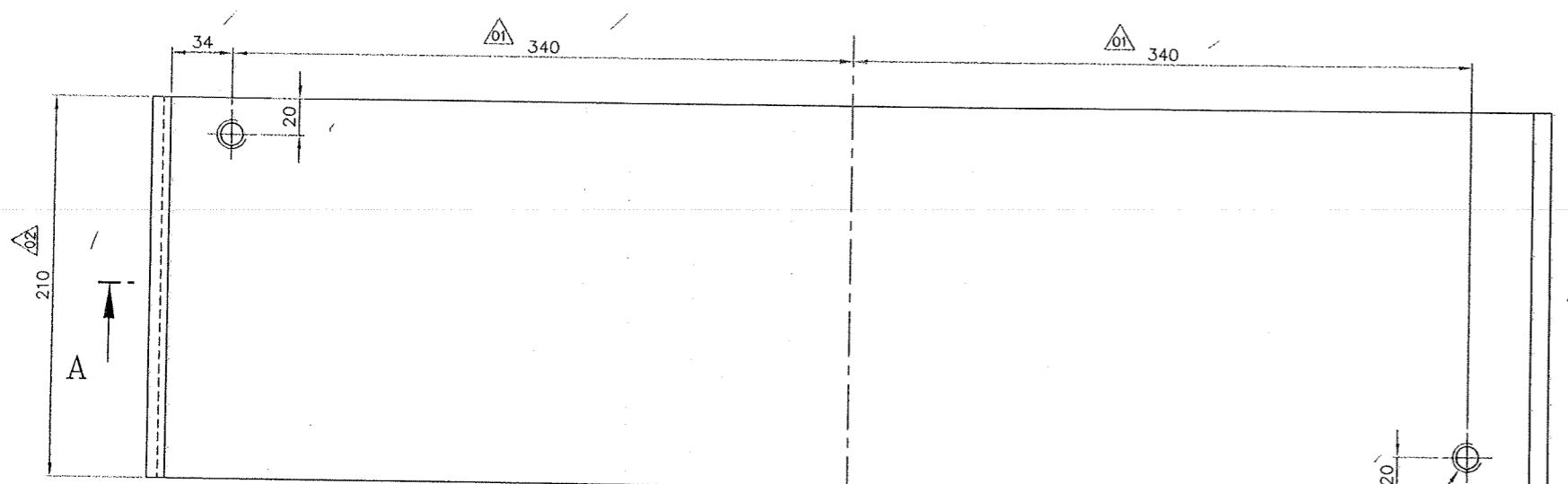
AIR CYLINDER BRACKET

CARD CODE: U 01
DRAWING NO: 2-67-283-00143
2-67-283-U0003

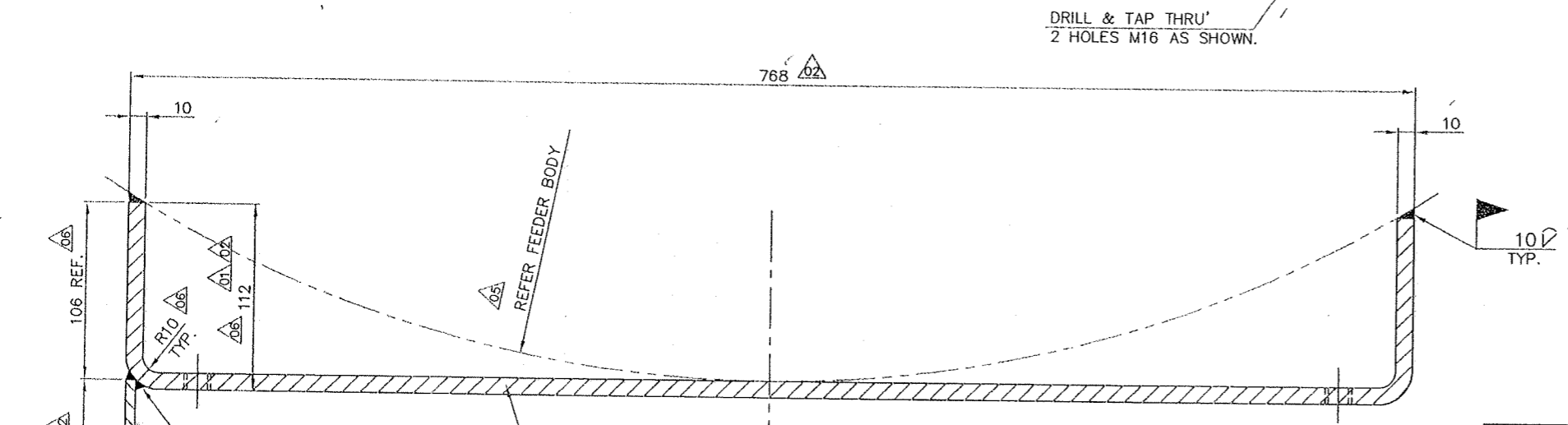
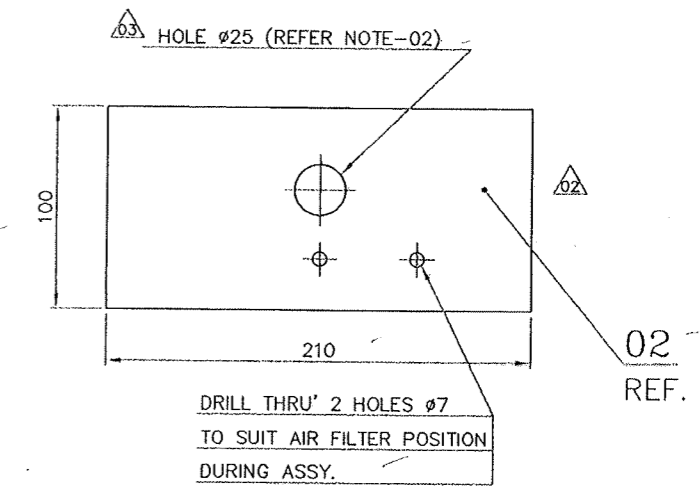
RETRACED

DRAWING No. 2-67-283-U0004
2-67-283-00145

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



DEVELOPMENT OF ITEM No.01



SECTION-AA

- NOTES:**
- 01. ITEM Nos. 03, 04 & 05 MAY BE USED TO SUIT AIR FILTER DURING ASSY. OR
 - 02. DRILL HOLE Ø25 IN ITEM No. 02 TO SUIT AIR FILTER DURING ASSY.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	QTY	ZONE
VAR NO	MATERIAL SPECN						DI	QUANTITY			
	05	MCD WASHER 6.4	S	IS:2016		4140600006			0.001	2	E2
	04	HEX NUT M6-4	S	IS:1363 (P-3)		4130400006			0.003	2	E2
	03	HEX HD SCRU M6X50-4.6	S	IS:1363 (P-2)		4122206050			0.014	2	E2
	02	PL.6x100x210				15-011-092			1.000	1	E2
	01	PL.10x210x960				15-011-09B			15.800	1	E3
						IS:2062 Fe410WA					
						IS:2062 Fe410WA					

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED.

REV	DATE	ALTERED :	D.N.C./-Sd-	REV	DATE	ALTERED :	D.N.C./-Sd-	REV	DATE	ALTERED :	S.Manl/-Sd-	REV	DATE	ALTERED :	S.Manl/-Sd-	REV	DATE	ALTERED :	W.Wilson/-Sd-
05	31.05.99	CHD & APPD : Selva/-sd-		04	03.05.98	CHD & APPD : JSN/-sd-		03	19.03.92	CHD & APPD : M.N&JSN/-sd-		02	25.01.91	CHD&APPD : SS&JSN/-sd-		01	15.03.90	CHD & APPD: SS&JSN/-Sd-	
ZONE	R737 REMOVED.			ZONE	MATL. SPECN.,DESCRIPTION & BPS No. UPDATED.			ZONE	NOTES ADDED. Ø25 HOLE ADDED.			ZONE	ITEM 01 PLATE WAS 16x130x740. DIM. 768 WAS 740. DIM. 112 WAS 93. DIM. 210 WAS 130. ITEM 02 & 03 REMOVED. ITEM 02 TO 05 NEWLY ADDED. SECTION-AA ALTERED. TOTAL WEIGHT WAS 14.280Kg.			ZONE	DIM. 340, 340, 740 & 93 WAS 300, 300, 660 & 73 RESPECTIVELY. ITEM 01 Wt. WAS 10.800Kg. ITEM 02 Wt. WAS 0.750Kg. TOTAL Wt. WAS 12.600Kg.		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT.
VISAKHAPATNAM-530012

DRN	S.M/W.W	SIGNATURE	DATE
CHD	S.Selvaraju	-Sd-	24/03/90
APPO	JASON	-Sd-	24/03/90

DEPT: MILLS
CODE: 240
ALL DIMENSIONS ARE IN MM
PROJECTION:
SCALE: 2:5
WEIGHT (Kg): 16.836
REF TO ASSY / OLD DWG

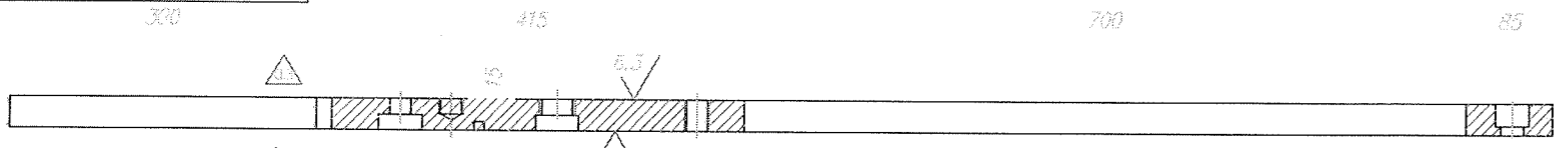
TITLE: **SUPPORT PLATE**

DRAWING NO : 2-67-283-00145
REV: 06
2-67-283-U0004/00

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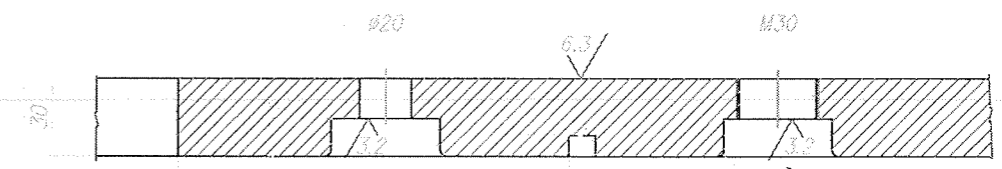
2-67-283-00157
2-67-283-U0006
DRAWING NO.

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

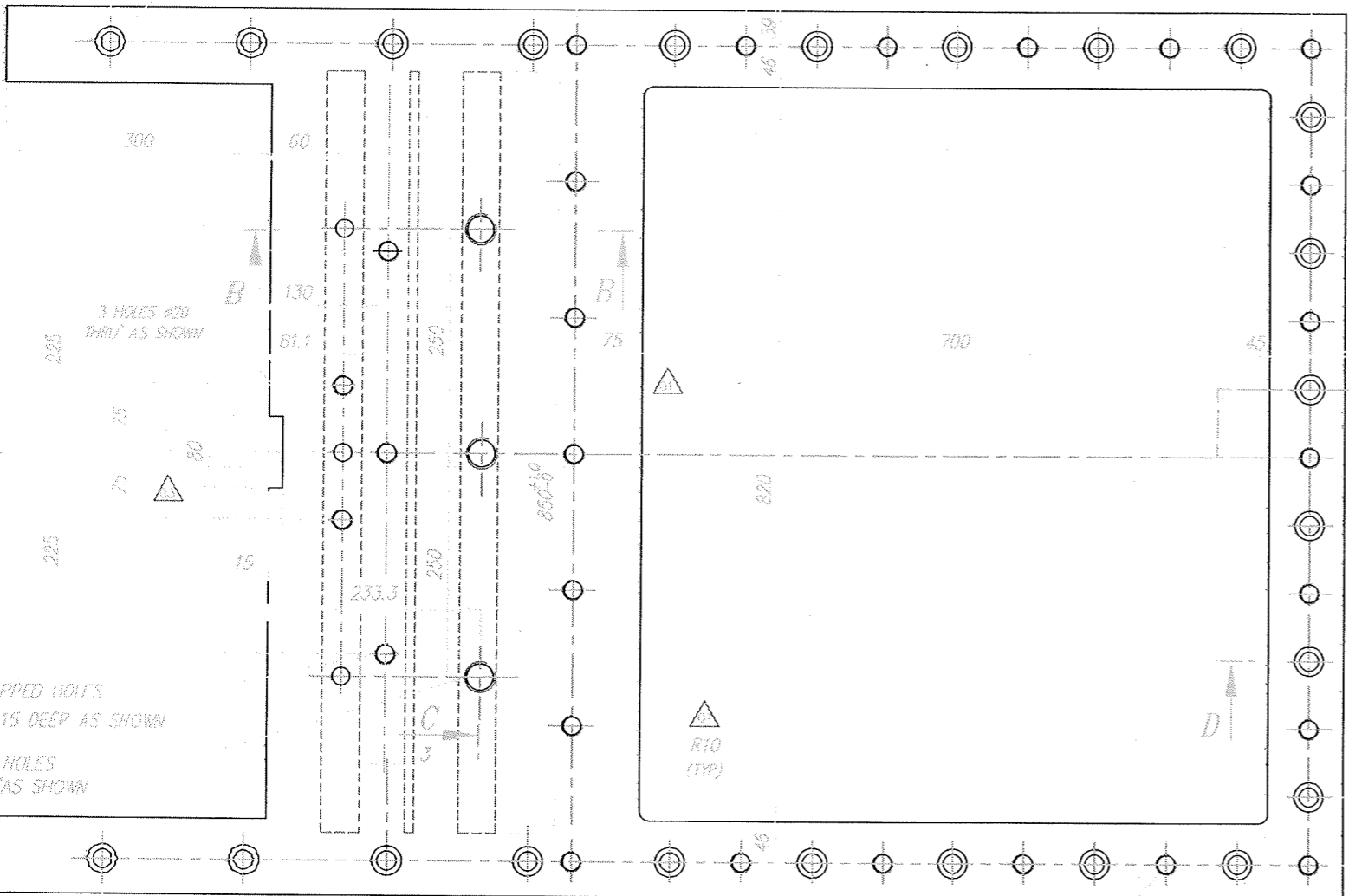


SECTION-AA

HARD CHROME PLATE TO A THICKNESS OF 0.075mm AND FINISH HARDNESS 60 HRC TO THIS SIDE ONLY (AFTER CHROME PLATING THE TOTAL THICKNESS SHALL BE .30)



SECTION-BB
SCALE 1:2



SECTION-CC
SCALE 1:2

SECTION-DD
SCALE 1:2

NOTES :-

1. ALL HOLES ARE TO BE DRILLED IN JIG.
2. ALL TAPPED HOLES ARE TO BE DRILLED IN JIG AND THEN TAPPED.
3. PROTECT ALL SURFACES.
4. TAKE CARE TO AVOID SCRATCH ON $\sqrt{0.8}$ SURFACE FINISH WHILE HANDLING.
5. GEOMETRICAL TOLERANCES ARE AS PER ANSI Y14.5 1982
6. TO BE MADE FROM A SINGLE PLATE.
7. SUITABLE COVER/MASK TO BE PROVIDED FOR ALL THE M20 TAPPED HOLES (22 Nos.) WHILE HARD CHROME PLATING.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	15 011 124	135.800	OS	ZONE
					IS:2062 Fe410WE			
					ITEM NO	MATERIAL CODE	A/C/P	UNIT
					VAR NO	MATERIAL SPECN	DI	QUANTITY

REV 07	DATE 22.01.2000	ALTERED : M.A	CHD & APPD: S.G	REV 06	DATE 03.05.98	ALTERED : D.H -Sd-	CHD & APPD: JS -Sd-
ZONE	DRG. REDRAWN. NOTE: MODIFIED IN SECTION-AA.			ZONE	MATEL. SPECN. WAS IS:2062 Fe410B.		

REV 05	DATE 17.01.97	ALTERED : M.A -Sd-	CHD & APPD: JS -Sd-	REV 04	DATE 15.10.94	ALTERED : D.H -Sd-	CHD & APPD: M.AS -Sd-	REV 03	DATE 25.01.92	ALTERED : S.W -Sd-	CHD & APPD: JS -Sd-	REV 02	DATE 21.11.91	ALTERED : S.W -Sd-	CHD & APPD: JS -Sd-	REV 01	DATE 16.05.91	ALTERED : S.W -Sd-	CHD & APPD: JS -Sd-
ZONE	NOTE: 07 ADDED			ZONE	1. DIM Ø50-Ø WAS Ø40-Ø AND CURVED PORTION REMOVED. 2. DIM 0.075mm WAS 0.10mm.			ZONE	Øx158-1264			ZONE	Ø.1mm WAS Ø.15mm.			ZONE	DIM R10 ADDED. REF. ADDED. SECTION DD WAS CC.		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
CHD	S.S	-Sd-	28.12.99
APPD	JS	-Sd-	07.01.01

DEPT FEEDERS CODE 240

ALL DIMENSIONS ARE IN MM

PROJECTION SCALE 1:5 1:2

WEIGHT (Kg) 135.800

REF TO ASSY / OLD DWG

TITLE TOP PLATE

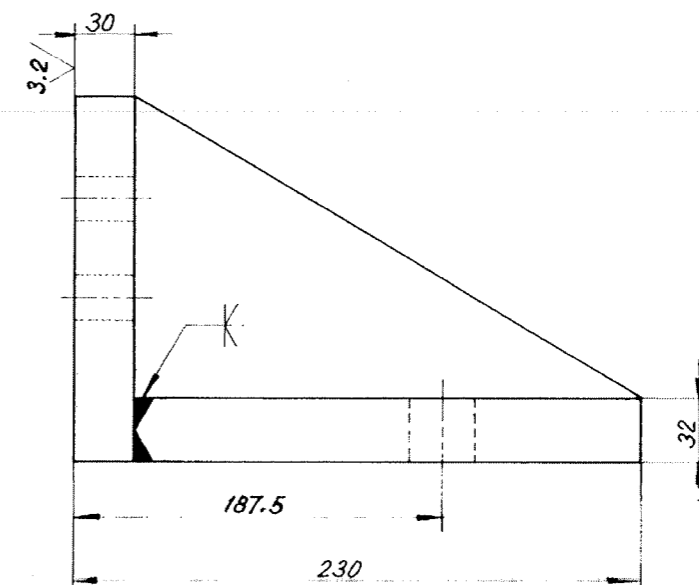
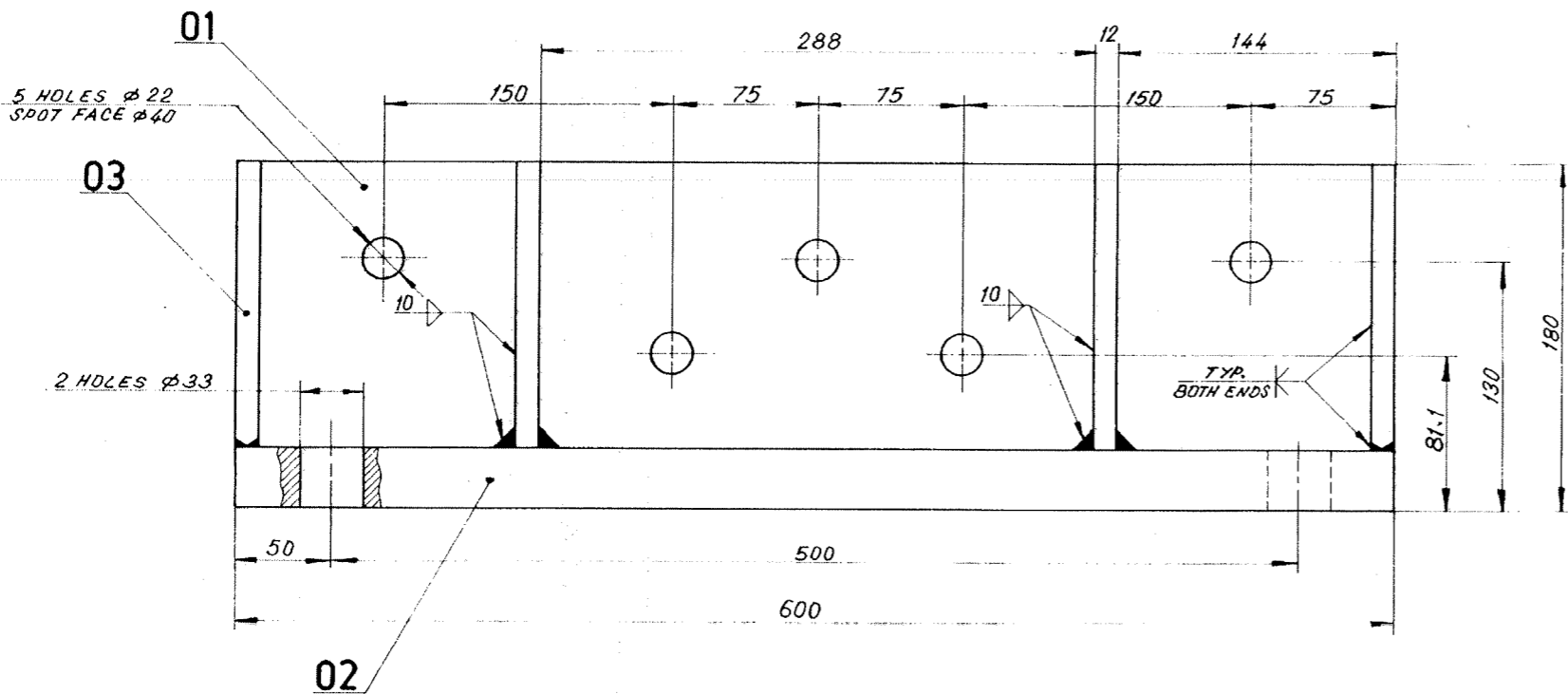
DRAWING NO : 2-67-283-00157 07
2-67-283-U0006 00

2-67-283-00146
 97100-882-79-2
 2-67-283-00002

DRAWING NO

3.2

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BREAK ALL SHARP EDGES
 AND CORNERS UNLESS
 OTHERWISE SPECIFIED

TOLERANCES UNLESS
 OTHERWISE SPECIFIED
 CASTING ± 1.6 mm
 DECIMAL ± 0.1 mm
 ANGULAR ± 5'
 WELDMENT ± 1.0 mm

VARIANT NO	ITEM NO	DESCRIPTION	STD	DRAWING NO	UNIT	QTY	UNIT WT
01	01	PL. 32x180x600			15-011-130	1	25.000
02	02	PL. 32x200x600			15-011-130	4	29.750
03	03	PL. 12x145x195 (PROFILE)			15-011-132	1	25.000
					IS 2062 Fe 410 WA		
					IS 2062 Fe 410 WA		
					IS 2062 Fe 410 WA		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DATE: 2.4.90
 NO OF VARI: 1
 S. Manivannan
 S. Selvaraju
 J. S. N.

REV 01 DATE 3-5-98
 CHD APPD: [Signature]
 MATL. SPECN. WAS 18:2062

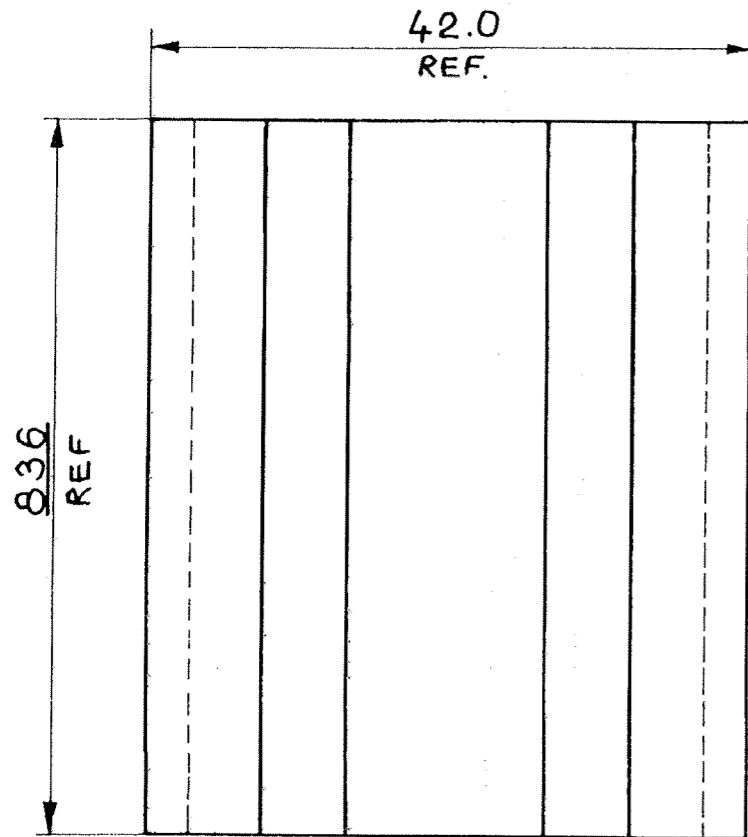
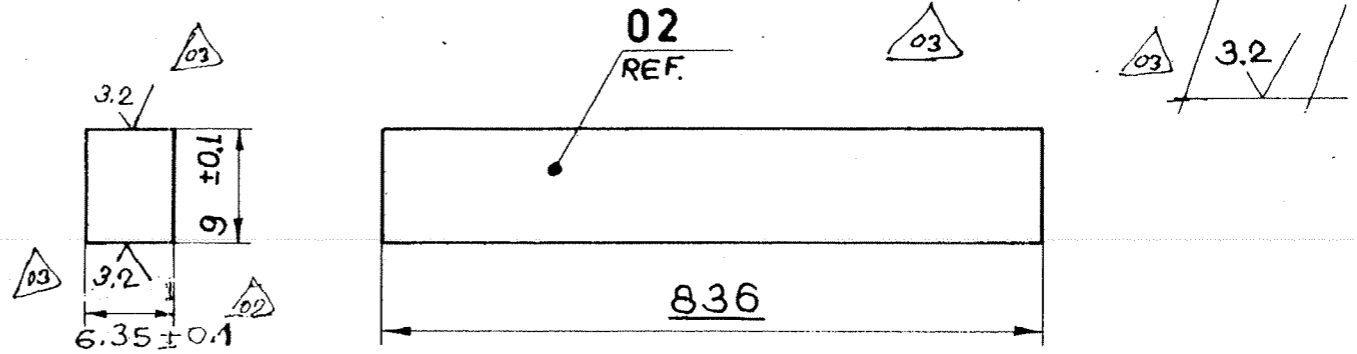
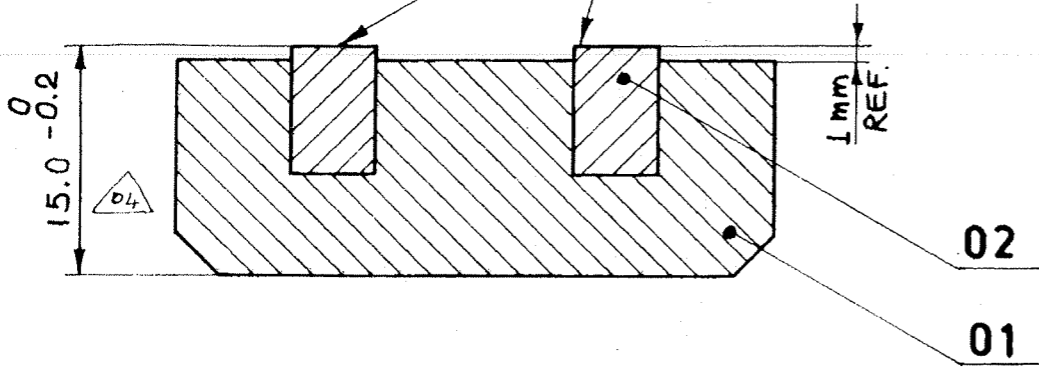
DEPT MILLS
 GRADE OF UNTOI DIM 240
 TITLE **BRACKET**
 WEIGHT 59.750
 SCALE 1:2.5
 DRAWING NO 2-67-283-00146
 REV 01

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

05-229/C

3-67-283-00213
3-67-283-00001
DRAWING NO.

GRIND IF NECESSARY AFTER ASSEMBLY OF ITEM 01 & 02.



TOLERANCES UNLESS OTHERWISE SPECIFIED

CASTING ± 0.6 mm
DECIMAL ± 0.1 mm
ANGULAR ± 0.5°
WELDMENT ± 1.5 mm

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

VARIANT NO.	ITEM NO.	DESCRIPTION	DWG NO.	ITEM NO.	MATL. SPEC.	UNIT WT.	QTY.
	02	GATE SCRAPER PL. 6.35x10 x 840		16-005-279	BRASS IS:410	0.350	2
	01	SEAL CARRIER	4-67-283-00273	15-011-440	SA 2407 YPE 304	3300	1

REV	DATE	ALTD	CHD	APPD
04	4.3.95	D.Ned.	Y	Y

DIM. 15.0 WAS 15.5

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

 Bharat Heavy Electricals Ltd., UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012	DRN	W.WILSON	SIGN	W.W.	DATE	13.3.90	NO. OF VAR
	CHD.	S.SELVA	SIGN	[Signature]	DATE	11.5.90	
	APPD	JASON	SIGN	[Signature]	DATE	11.05.90	

REV	DATE	ALTERED	CHD	APPD	REV	DATE	ALTERED	CHD	APPD
03	3-6-93	CHECKED	Y	APP	02	18-5-91	CHECKED	Y	APP

MACHINING SYMBOLS ALTERED AS SHOWN IN THE DRG.

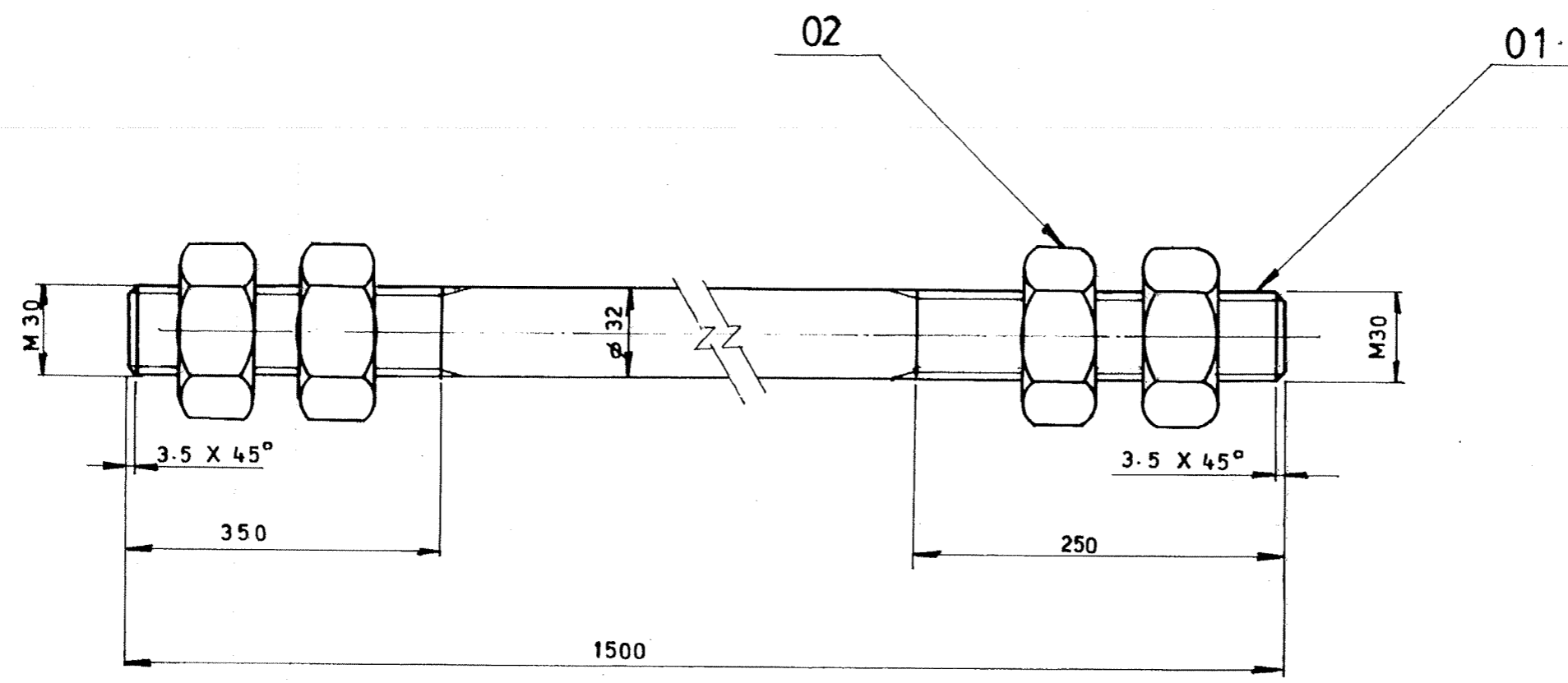
THE DIMENSION WAS 5.9 ± 0.1

MATERIAL WAS IS 226

DEPT	MILLS	GRADE OF UNTOL DIM.	FIMTY	SCALE	2:1	WEIGHT (kg.)	4.000	REF TO BOM (OLD BOM)	(3-67-283-00175/01)	ITEM NO.	
TITLE	SEAL ASSY.				CARD CODE	U 01	DRAWING NO.	3-67-283-00213		REV.	04
								3-67-283-00001			

DRAWING NO. 3-67-283-U0002
3-67-283-00223

ALL DIMENSIONS ARE IN MILLIMETRES



VAR NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	ITEM NO.	MATL CODE	A	UNIT	UNIT WT.	G.S
					VAR NO.	MATL SPECN	C	DI	QTY.	
	02	HEX NUT M30-6	S	IS:1364 (P-3)		41301 00030			0.230	
	01	STUD M 30 D 32 X 1500 L		4.67. 283- 00279		15 339 140 SA 105			8.000	

REV	DATE	ALTERED
01	30-4-98	CHD&APPD: <i>[Signature]</i>

DESCRIPTION & BPS NO.
UPDATED.

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **[BOM]**

	BHARAT HEAVY ELECTRICALS LTD.,		DRN	NAME	SIGN	DATE	NO. OF VAR.
	UNIT: HEAVY PLATES & VESSELS PLANT,		CHD	SELVA	<i>[Signature]</i>	27/06/91	
	VISAKHAPATNAM-530012		APPD	JASON	<i>[Signature]</i>	27/06/91	

DEPT MILLS	GRADE OF UNTOL DIM φ / M / P	SCALE 1:2	WEIGHT (KG). 8.920	REF. TO ASSY/OLD DRG.	ITEM NO.	NO. OF ITEMS
CODE 240						

TITLE: **STUD ASSY.**

CARD CODE U 01	DRAWING NO. 3-67-283-00223 3-67-283-U0002	REV 01 /00
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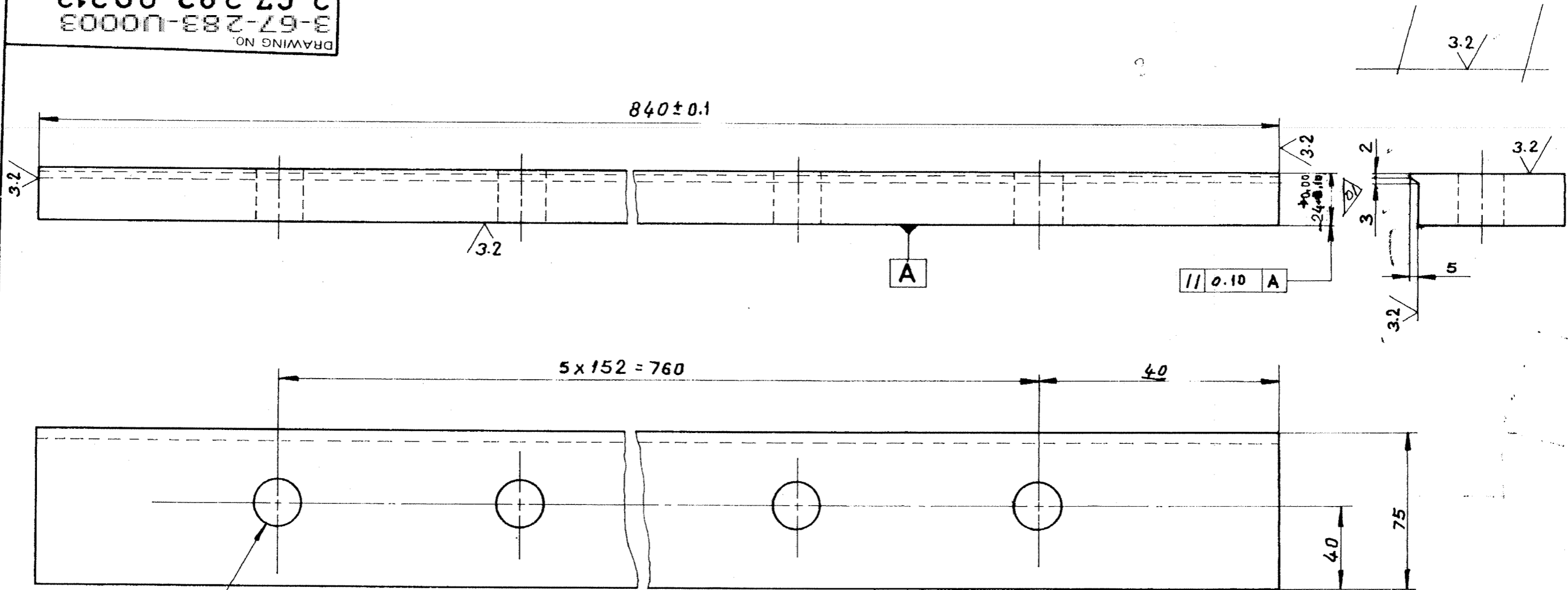
SCANNED

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

05-229/C

3-67-283-U0003
3-67-283-00212
DRAWING NO

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6 HOLES $\phi 22$
DRILL THRU.

BREAK ALL SHARP EDGES
AND CORNERS UNLESS
OTHERWISE SPECIFIED

TOLERANCES UNLESS
OTHERWISE SPECIFIED

CASTING ± 1.5
DECIMAL ± 0.1
ANGULAR ± 0.5
WELDMENT ± 1.5

VARIANT NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	ITEM NO.	MATL. CODE	A/C	UNIT	UNIT WT.	QTY.
		PL. 32 x 75 x 850			15 011 130	IS: 2062 Fe 410 WB			1.1000	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd., UNIT: HEAVY PLATES & VESSELS PLANT, VISA KHAPATNA M-53 0012		DRN.	G. R. CHANDRAN	SIGN.	G. R. Chd	DATE	14.02.90	NO. OF VAR.
		CHD.	SELVA	APPD.	JSN			DATE	11.5.98	
DEPT.	MILLS	GRADE OF UNTOL. DIM.	9.1 M/F	SCALE	1:2	WEIGHT (kg)	11.000	REF TO ASSY/OLD DRG		ITEM NO.
TITLE		SIDE WALL . III		CARD CODE	U 01	DRAWING NO.	3-67-283-U0003			02/100

REV.	DATE	ALTD:	D. N. Reddy	REV.	DATE	ALTERED	D. N. Reddy
02	30.4.98	CHD & APPD:	[Signature]	01	3.11.94	CHECKED	[Signature]
ZONE	MATL. SPECN. WAS IS 2062 Fe 410 B		DIMENSION WAS 25 ± 0.1				

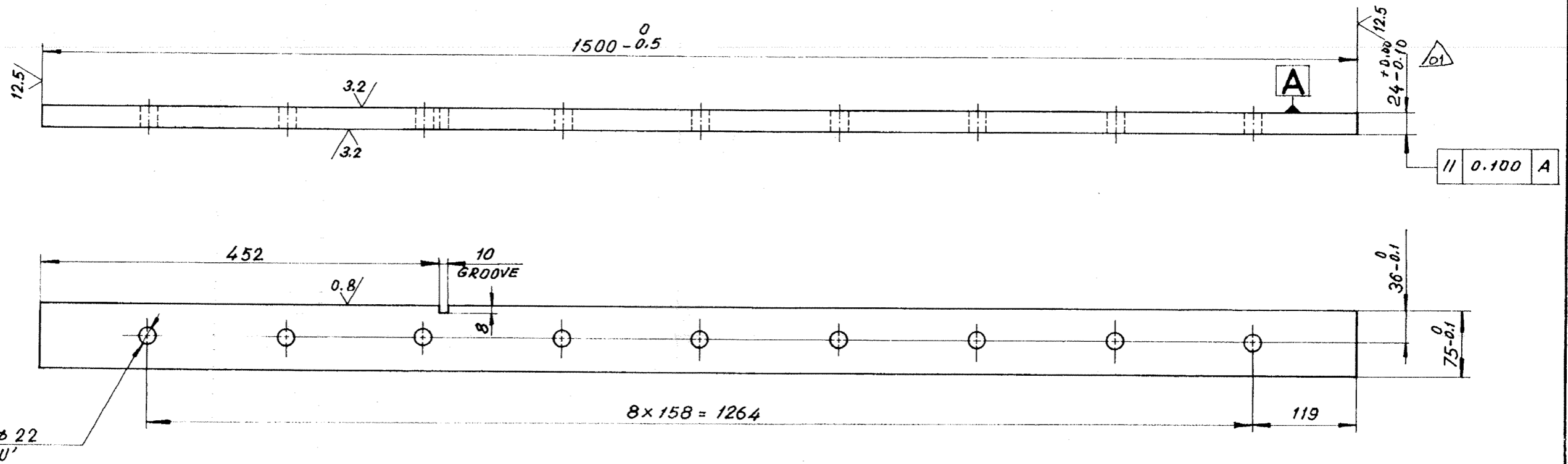
SCANNED Size A3

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

3-67-283-00220
3-67-283-U0004

DRAWING NO.

12.5/ 3.2/ 0.8/



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VARIANT NO.	ITEM NO.	DESCRIPTION	STD.	DRAWING NO.	ITEM NO.	MATL. CODE	A/C	UNIT	UNIT WT	GS
		PL. 32 x 80 x 1505				15-011-130			21,000	
						IS:2062 Fe 410WB				
								DI	QTY.	

TOLERANCES UNLESS OTHERWISE SPECIFIED
 CASTING ± 1.5 mm
 DECIMAL ± 0.1 mm
 ANGULAR ± 0.5°
 WELDMENT ± 0.5 mm

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **BHM**

Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	S. Manivannan	SIGN	S. Manivannan	DATE	21.12.90	NO. OF VAR.
CHD.	S. Selvaraju	SIGN	S. Selvaraju	DATE	2.1.91	
APPD.	J. S. N.	SIGN	J. S. N.	DATE	2/1/91	

DEPT	MILLS	GRADE OF UNTOL. DIM.	Ø / M / P	SCALE	1:5	WEIGHT (kg.)	21,000	REF. TO ASSY./OLD DRG.	ITEM NO.
CODE	240								
TITLE	SIDE WALL-1				CARD CODE	U 01	DRAWING NO.	3-67-283-00220	REV
							3-67-283-U0004		

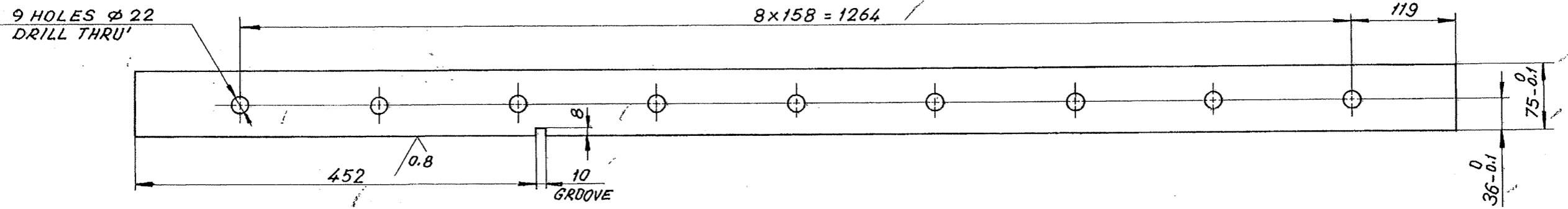
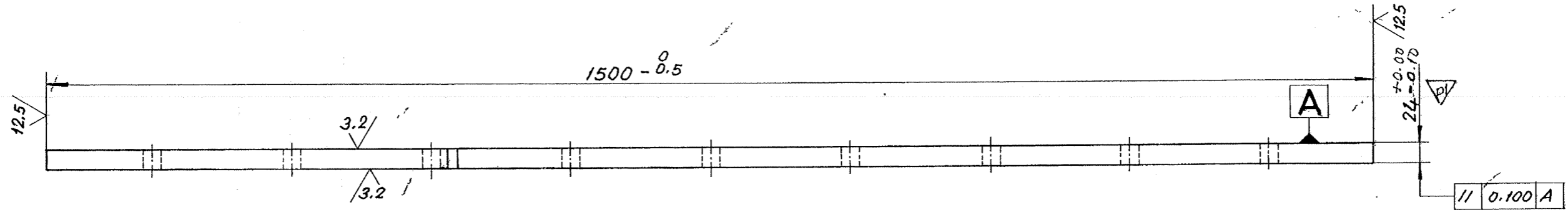
REV.	DATE	ALTD:	D. Nedun.	REV.	DATE	ALTERED	D. Nedun.
02	30.4.98	CHD APPD:	[Signature]	01	3.11.97	CHECKED	[Signature]
ZONE	MATL. SPECN. WAS IS2062 Fe410B		DIMENSION WAS 25 ± 0.1.				

05-229/C

3-67-283-00221
3-67-283-U0005

DRAWING NO.

12.5 / 3.2 / 0.8



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VARIANT NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	ITEM NO.	MATL. CODE	A/C	UNIT	UNIT WT
		PL. 32 x 80 x 1505				15-011-130			21000
						IS:2062 Fe410WB			

TOLERANCES UNLESS OTHERWISE SPECIFIED
 CASTING ± 1.6 mm
 DECIMAL ± 0.1 mm
 ANGULAR ± 0.5°
 WELDMENT ± 1.5 mm

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

<p>Bharat Heavy Electricals Ltd., UNIT: HEAVY PLATES & VESSELS PLANT, WISAKHAPATNAM-530012</p>	DRN	NAME	SIGN.	DATE	NO. OF VAR
	CHD.	S.Selvaraju	[Signature]	21.12.90	
	APPD	JSN	[Signature]	21/9	

REV. 02	DATE 30.4.98	ALTD: D.Nedun...	CHD+APPD: [Signature]	REV. 01	DATE 3.11.94	ALTERED: D.Nedun...	CHECKED: [Signature]
ZONE	MATL. SPECN. WAS IS2062 Fe410B		DIMENSION WAS 25 ± 0.1				

DEPT. MILLS	GRADE OF UNTOL DIM. 2/MIX	SCALE 1:5	WEIGHT (kg.) 21.000	REF TO ASSY./OLD DRG.	ITEM NO.
TITLE SIDE WALL-II			CARD CODE U 01	DRAWING NO. 3-67-283-00221	REV. 02
				3-67-283-U0005	100

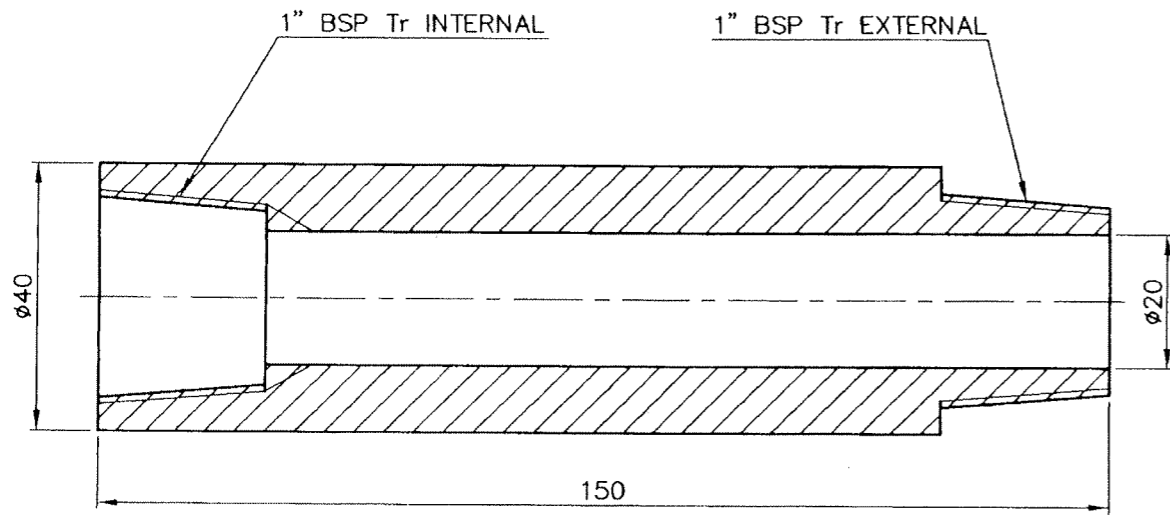
SCANNED Size A3

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REV	DATE	ALTERED : DNC <i>S. Gnanaraj</i>
01	281100	CHD & APPD : SELVA <i>Selva</i>

DRAWING PREPARED IN CAD.

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





NOTE:

BREAK ALL SHARP EDGES & CORNERS.

X 01

VARIANT NUMBER	ROD ø40x150L	15-339-141	1.150
		SA 105	
	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME	SIGNATURE	DATE
355-056		DRN	S.Gnanaraj	-Sd-	07-11-93		
		CHD	J.S.N	-Sd-	07-11-93		
		APPD	M.A.SAMY	-Sd-	07-11-93		
DEPT FEEDERS CODE	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
240			1:1	1.150			
TITLE			DRAWING NO :		REV		
NIPPLE			4-67-283-00347		01		
			4-67-283-U0008		/00		

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

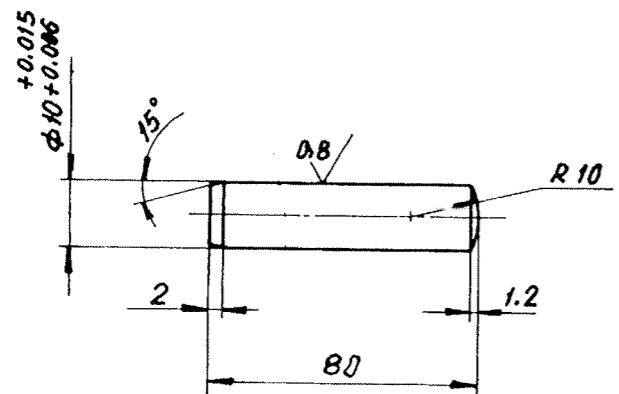
REV.	DATE	ALTERED	CHD.	APPD.	REV.	DATE	ALTERED	CHD.	APPD.
01	25-10-90	D. Madh...			02	30-4-90	D. Madh...		

DIM. 80 WAS 40. MATL. SPECN. WAS BMCA-45.

12.5 / 0.8

06-249/C

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BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

TOLERANCES UNLESS OTHERWISE SPECIFIED
 CASTING ± 0.6 mm
 DECIMAL ± 0.1 mm
 ANGULAR ± 0.5°
 WELDMENT ± 0.5 mm

ROUND	15-004-121	0.050
D 16 x 85L	151875 CL IV	
VARIANT NO.	DESCRIPTION	UNIT WT.
	MATL. CODE	QTY.
	MATL. SPEC.	



Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

NAME	SIGN.	DATE
DWN. S. Manivannan	[Signature]	04-06-90
CHD. P. Selva	[Signature]	06-06-90
APPD. JSN	[Signature]	06-06-90

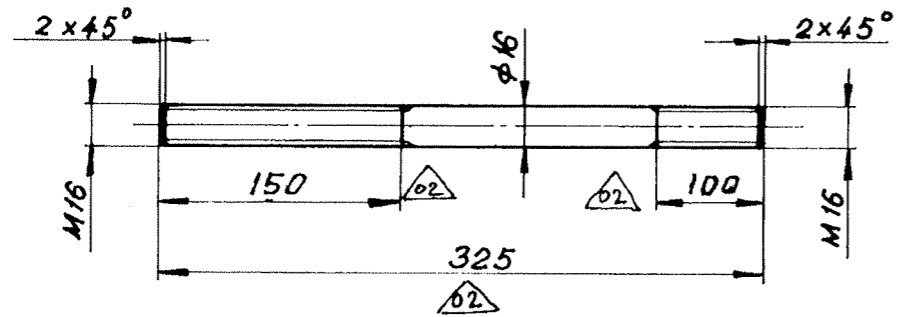
DEPT. MILLS	GRADE OF UNYOL DIM. #1MIF	SCALE NTS	WEIGHT (kg.) 0.050	REF. TO ASSY./OLD DRG.	ITEM NO.
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TITLE	CARD CODE	DRAWING NO.	REV.
CYLINDRICAL PIN	U 01	4-67-283.00283	02
		4-67-283-U0007	00

Size A4

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

REV.	DATE	ALTERED	REV.	DATE	ALTERED
01	30.4.90	D. Nedunthi	02	31.5.90	D. Nedunthi
CHD APPD: <i>[Signature]</i>		CHECKED APPD: <i>[Signature]</i>			
MATL. SPECN WAS IS:1875			DIM. ALTERED.		



TOLERANCES UNLESS OTHERWISE SPECIFIED

- CASTING ± 1.6 ■■ BREAK ALL SHARP EDGES
- DECIMAL ± 0.1 ■■ AND CORNERS UNLESS
- ANGULAR ± 0.5' OTHERWISE SPECIFIED
- WELDMENT ± 0.6 ■■

VARIANT NO.	DESCRIPTION	STD.	MATL. CODE	A/C	UNIT	UNIT WT.
	ROUND $\triangle 0.2$ D 16 x 325 L		15-004-121			0.412
			IS:1875 CL IV			1
			MATL. SPEC.	DI		QTY.



Bharat Heavy Electricals Ltd.,
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN.	NAME	SIGN.	DATE
	S. Manivannan	<i>[Signature]</i>	07.05.90
CHD.	S. Selvaraju	<i>[Signature]</i>	11.05.90
APPD.	JSN	<i>[Signature]</i>	11.5.90

DEPT.	GRADE OF UNTOL. DIM.	SCALE	WEIGHT (kg.)	REF. TO ASSY./OLD DRG.	ITEM NO.
MILLS	R/M/P	1:2.5	0.412		
CODE					
240					

TITLE	CARD CODE	DRAWING NO.	REV.
STUD M 16	U 01	4-67-283-00282	02
		4-67-283-U0006	100

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

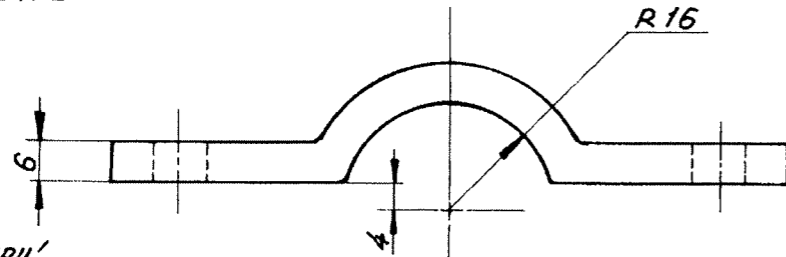
REV.	DATE	ALTERED	REV.	DATE	ALTERED
01	30.4.98	CHD: JSD	02		

MATL. SPECN. WAS IS:226

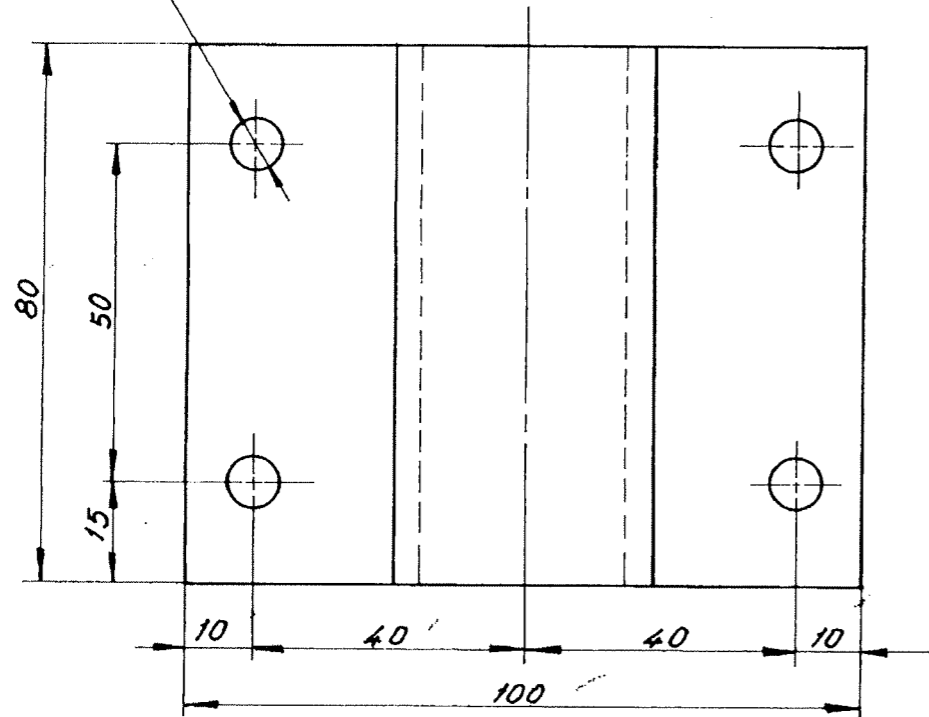
TOLERANCES UNLESS OTHERWISE SPECIFIED

- CASTING ± 1.6
- DECIMAL ± 0.1
- ANGULAR ± 0.5'
- WELDMENT ± 1.6

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED



DRILL THRU 4 HOLES Ø7



VARIANT NO.	DESCRIPTION	STD.	MATL. CODE	A/C	UNIT	UNIT WT.
	PL. 6 x 80 x 115		15-011-092			0.400
			IS2062 Fe410WA			1
			MATL. SPEC.	DI		QTY.



Bharat Heavy Electricals Ltd.,
UNIT: HEAVY PLATES & VESSELS PLANT,
VIZAGHAPATNAM-530012

DRN.	NAME	SIGN.	DATE
CHD.	S. Manivannan	[Signature]	18.04.90
APPD.	S. Selva	[Signature]	05.05.90
	JSN	[Signature]	07.05.90

DEPT	GRADE OF UNTOL DIM.	SCALE	WEIGHT (kg.)	REF TO ASSY./OLD DRG.	ITEM NO.
MILLS	RIMIF	1:1	0.400		
CODE	240				

TITLE	CARD CODE	DRAWING NO.	REV
CLAMP-II	U 01	4-67.283.00281	01
		4-67-283-U0005	100

05-249/C

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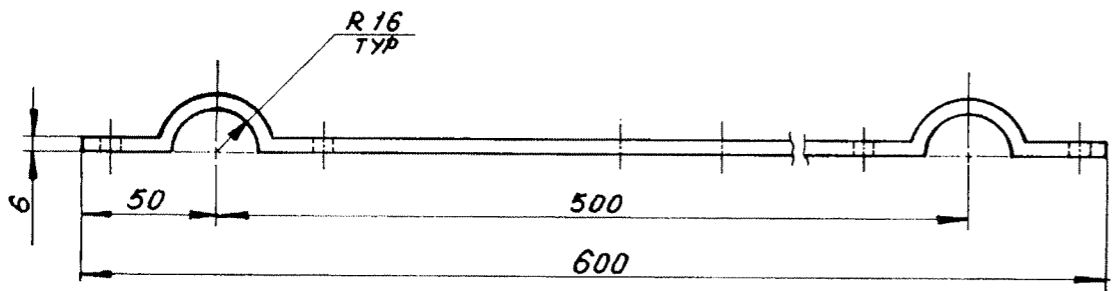
FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

REV.	DATE	ALTERED	REV.	DATE	ALTERED
01	30.04.78	CHD & APPD: <i>[Signature]</i>	02		CHECKED

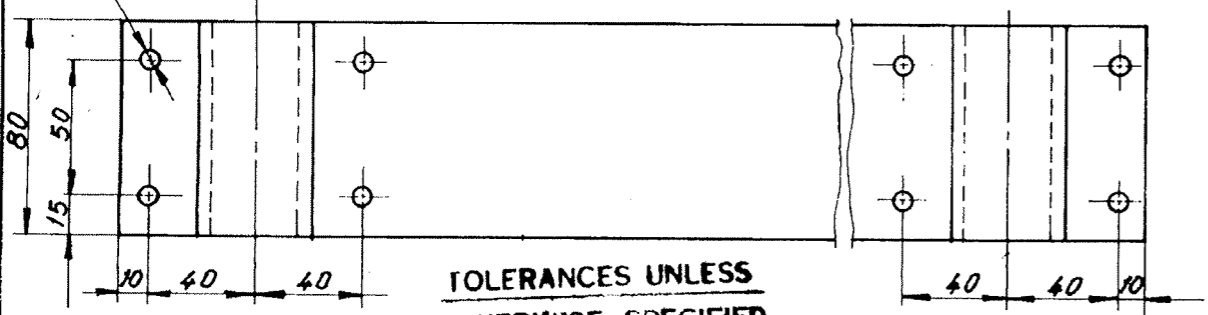
MATL. SPECN. WAS IS 226

05-249/C

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DRILL THRU 8 HOLES $\phi 7$



TOLERANCES UNLESS OTHERWISE SPECIFIED

- CASTING ± 1.6 mm
- DECIMAL ± 0.1 mm
- ANGULAR $\pm 0.5^\circ$
- WELDMENT ± 1.6 mm

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

VARIANT NO.	DESCRIPTION	STD.	MATL. CODE	A/C	UNIT	UNIT WT.
	PL. 6 x 80 x 645		15-011-092			2.400
			IS 2062 Fe 410WA			1
			MATL. SPEC.	DI		QTY.

<p>Bharat Heavy Electricals Ltd., UNIT: HEAVY PLATES & VESSELS PLANT, VIAKHPATNA M-530012.</p>	DRN.	NAME	SIGN.	DATE
	CHD.	S. Selva	<i>[Signature]</i>	18.04.90
	APPD.	JSN	<i>[Signature]</i>	05.05.90
				07.05.90

DEPT. MILLS	GRADE OF UNTOL. DIM. 1/M/F	SCALE 1:2.5	WEIGHT (kg.) 2.400	REF. TO ASSY./OLD DRG.	ITEM NO.
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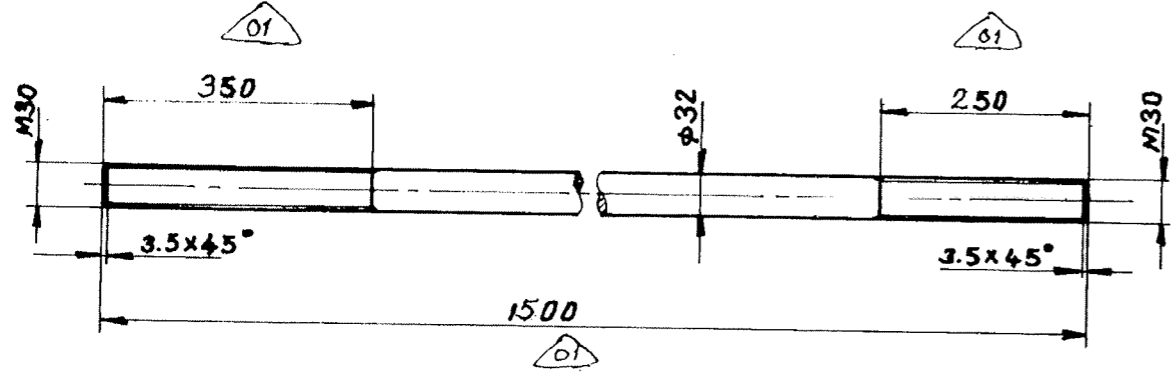
TITLE	CARD CODE	DRAWING NO.	REV.
CLAMP-I	U 01	4-67-283.00280	01
		4-67-283-U0004	100

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

REV.	DATE	ALTERED	REV.	DATE	ALTERED
01	04-02-1991	S. MANI	02		
CHECKED		APPD.		CHECKED	
DIM 350 WAS 250					
250 WAS 150					
1500 WAS 1300					

06-248/C

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TOLERANCES UNLESS OTHERWISE SPECIFIED
 CASTING ± 1.6 mm
 DECIMAL ± 0.1 mm
 ANGULAR ± 0°-5'
 WELDMENT ± 1.6 mm

BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

VARIANT NO.	ROUND	15 339 140	A	UNIT	8.000
	D 32x1500L	SA 105			DI
	DESCRIPTION	MATL. CODE			UNIT WT.
		MATL. SPEC.			QTY.

Bharat Heavy Electricals Ltd.,		DRN.	NAME	SIGN.	DATE
UNIT: HEAVY PLATES & VESSELS PLANT, VITSAKHAPATNAM-530012.		4-R. CHANDRAN	S. MANI	[Signature]	3-4-90
		CHD.	JELVA	[Signature]	5-5-90
		APPD.	JASON	[Signature]	7-5-90

DEPT.	GRADE OF UNTOLO. DIM.	SCALE	WEIGHT (kg.)	REF. TO ASSY./OLD DRG.	ITEM NO.
MILLS	P/M/P	1:5	8.000		
CODE					
240					

TITLE	CARD CODE	DRAWING NO.	REV.
STUD M 30	U 01	4-67-283-0027901	
		4-67-283-U0003/00	

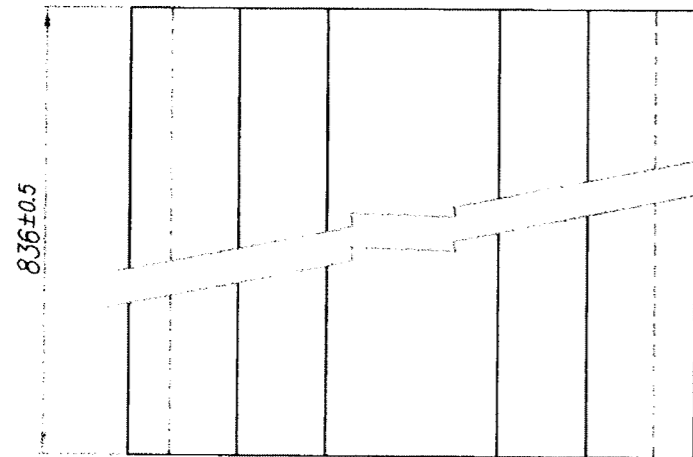
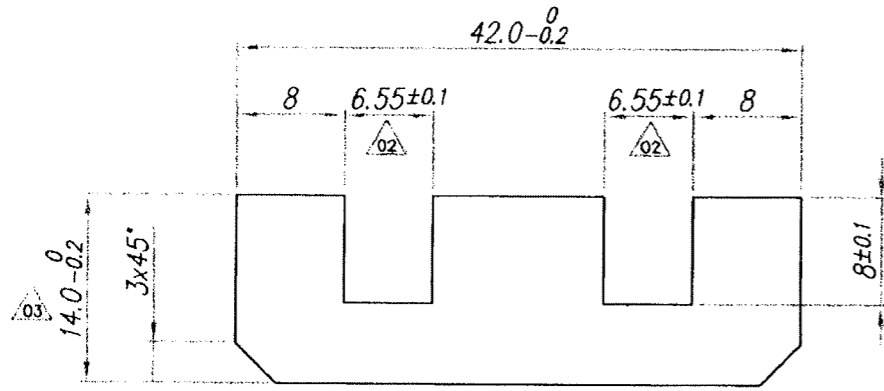
Size A4

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY
IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL

REV	DATE	ALTERED : S.M -Sd-	REV	DATE	ALTERED : D.N -Sd-
01	09.01.91	CHD & APPD : J.S -Sd-	02	18.05.92	CHD & APPD : J.S -Sd-
MATERIAL WAS 15-011-150 / IS:226.			THE DIMENSION WAS 6.1±0.1		
REV	DATE	ALTERED : D.N -Sd-	REV	DATE	ALTERED : M.A
03	04.03.95	CHD & APPD : J.S -Sd-	04	21.07.00	CHD & APPD : S.G JAP
DIM. 14.0 WAS 14.5			NOTE ADDED.		

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

3.2



NOTE :-

THE SLOT 6.55±0.1 TO BE
MACHINED TO SUIT ITEM.02
(6.0/6.35mm THICK) OF
DRG. 3-67-283-00213.

VARIANT NUMBER	DESCRIPTION	STD	15 011 440	A/S/P	UNIT	3.300
			SA 240 TYPE 304			UNIT WEIGHT
			MATERIAL CODE			QUANTITY
			MATERIAL SPECN			



Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
CHD	W. Wilson	-Sd-	13.03.90
APPD	S.S	-Sd-	06.05.90
	J.S	-Sd-	11.05.90

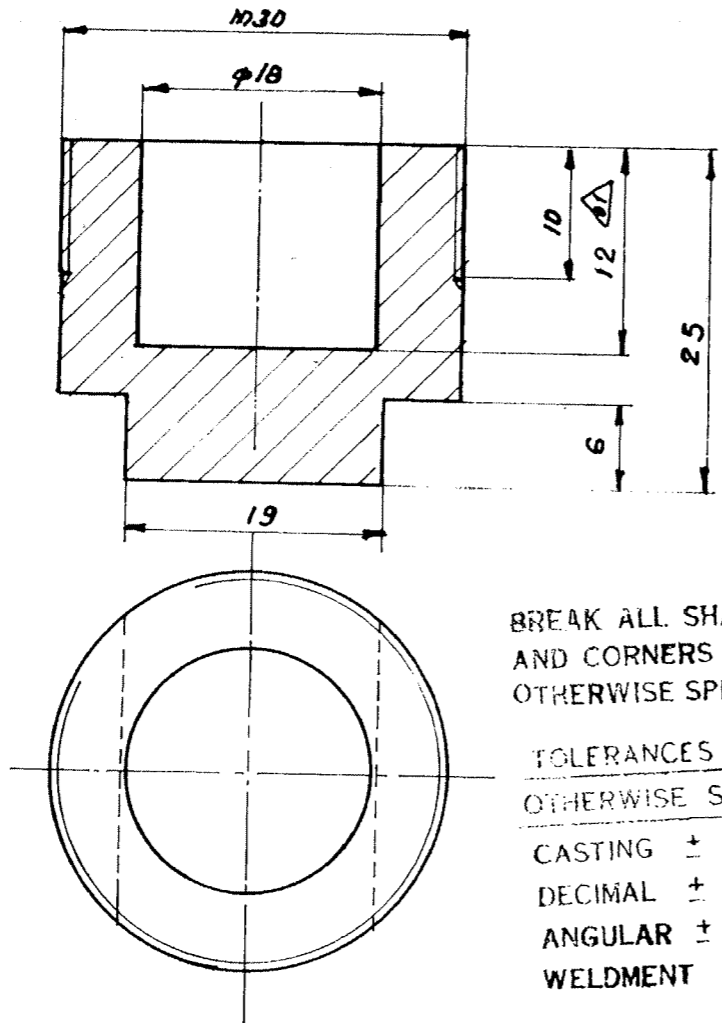
DEPT FEEDERS	ALL DIMENSIONS ARE IN MM	PROJECTION SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE 240		2:1	3.300	(4-67-283-00226/01) 3-67-283-00213

TITLE	DRAWING NO :	REV
SEAL CARRIER	4-67-283-00273 04 4-67-283-U0002 /00	

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MILLIMETRES)

REV.	DATE	ALTERED	CHKD.	APPD.	REV.	DATE	ALTERED	CHKD.	APPD.
01	19.9.87	CHECKED	PKS	PKS	02	11.11.93	CHECKED	PKS	PKS
DIMN. 12 WAS 16					RAW MATL. WAS PL. 32 X ϕ 32				

12.5
✓



BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE SPECIFIED

TOLERANCES UNLESS OTHERWISE SPECIFIED
 CASTING ± 1.6 mm
 DECIMAL ± 0.1 mm
 ANGULAR $\pm 0.5^\circ$
 WELDMENT ± 1.6 mm

VARIANT NO.	DESCRIPTION	STD.	MATL. CODE	A/C	UNIT	UNIT WT.
	ROD D32 X 30 L		15.338.140 SA 105			0.100
			MATL. SPEC.	DI		QTY.



Bharat Heavy Electricals Ltd.,
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN.	NAME	SIGN.	DATE
CHD.			
APPD.			
	S. GANGESH	PKS	5/4/88
	PKS	PKS	0704 88
	R.S	PKS	120488

DEPT.	GRADE OF UNTOL. DIM.	SCALE	WEIGHT (kg.)	REF. TO ASSY./OLD DRG.	ITEM NO.
MILL	F1 M1 F	2:1	0.100	0.67.283.00066	36

TITLE	CARD CODE	DRAWING NO.	REV.
ADAPTOR	U 01	4-67-283-00238 4-67-283-U0001	02 100

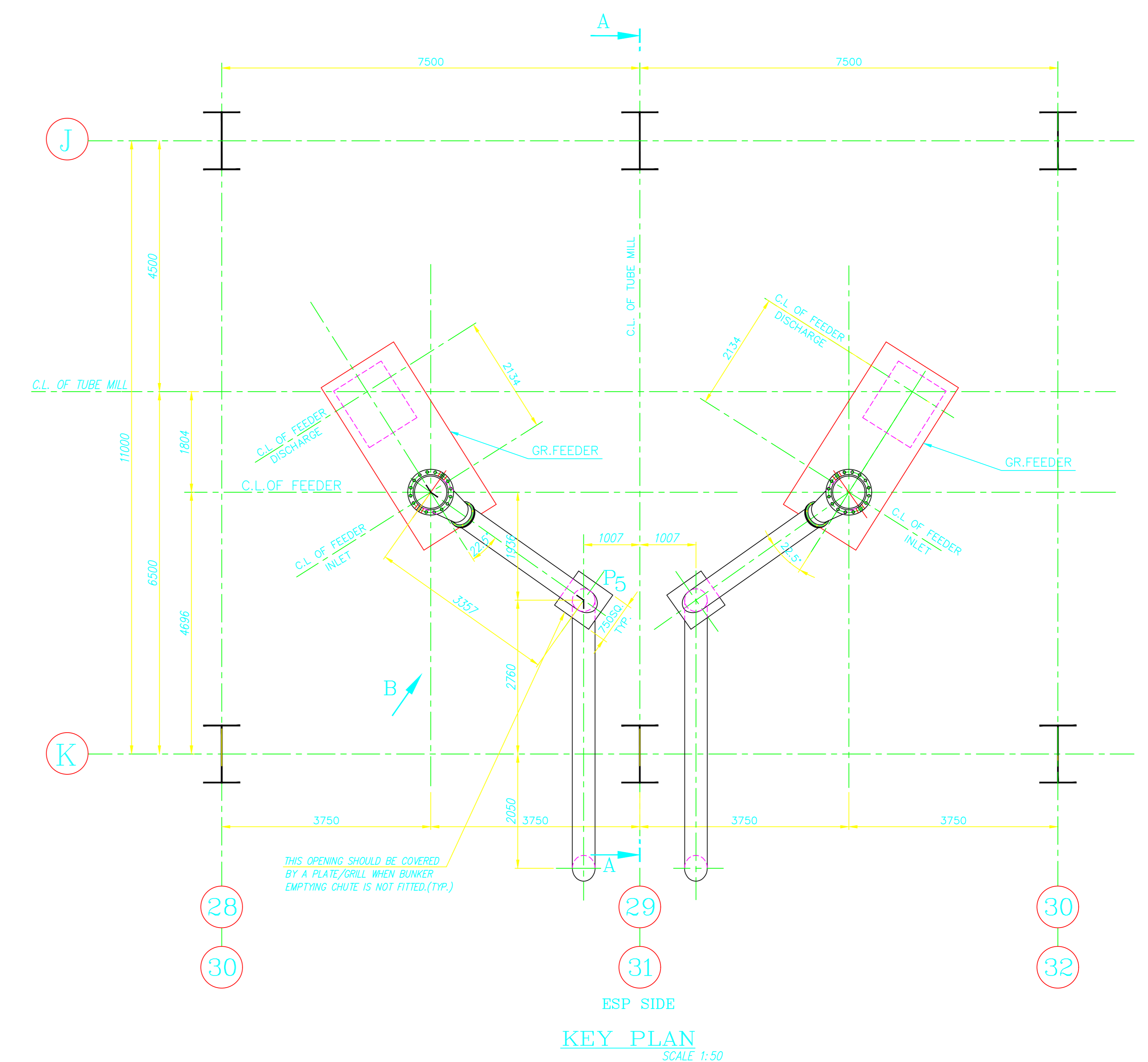
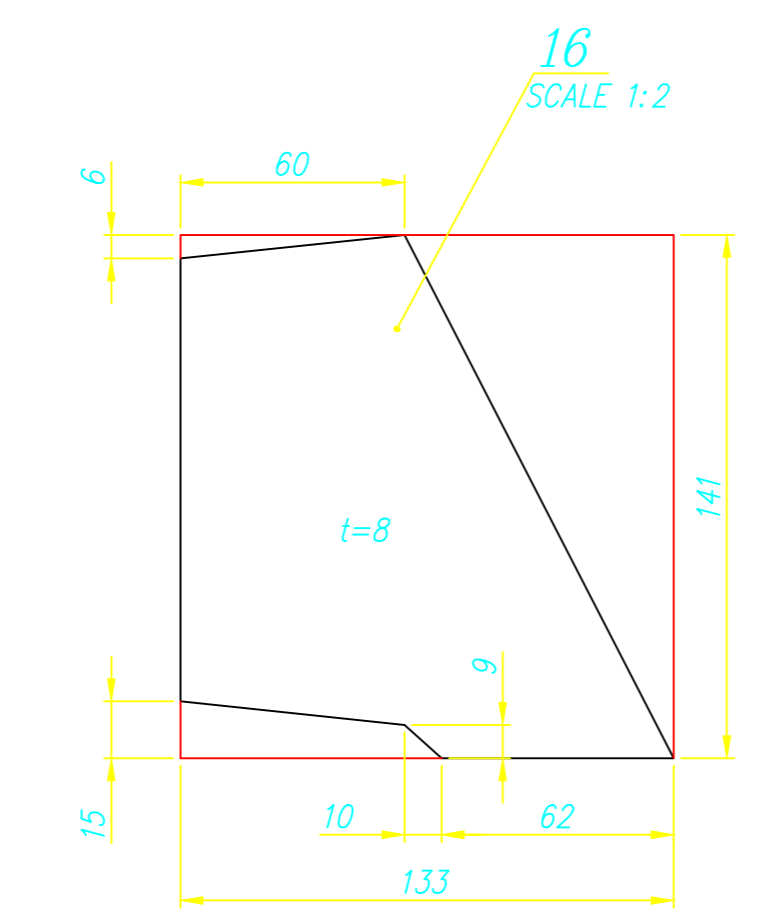
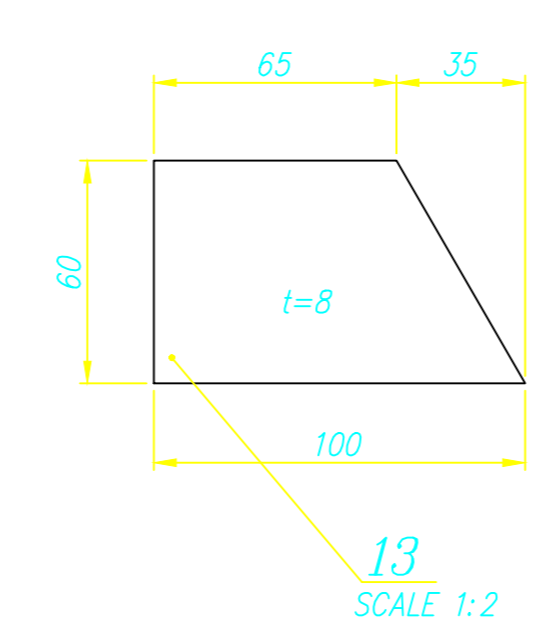
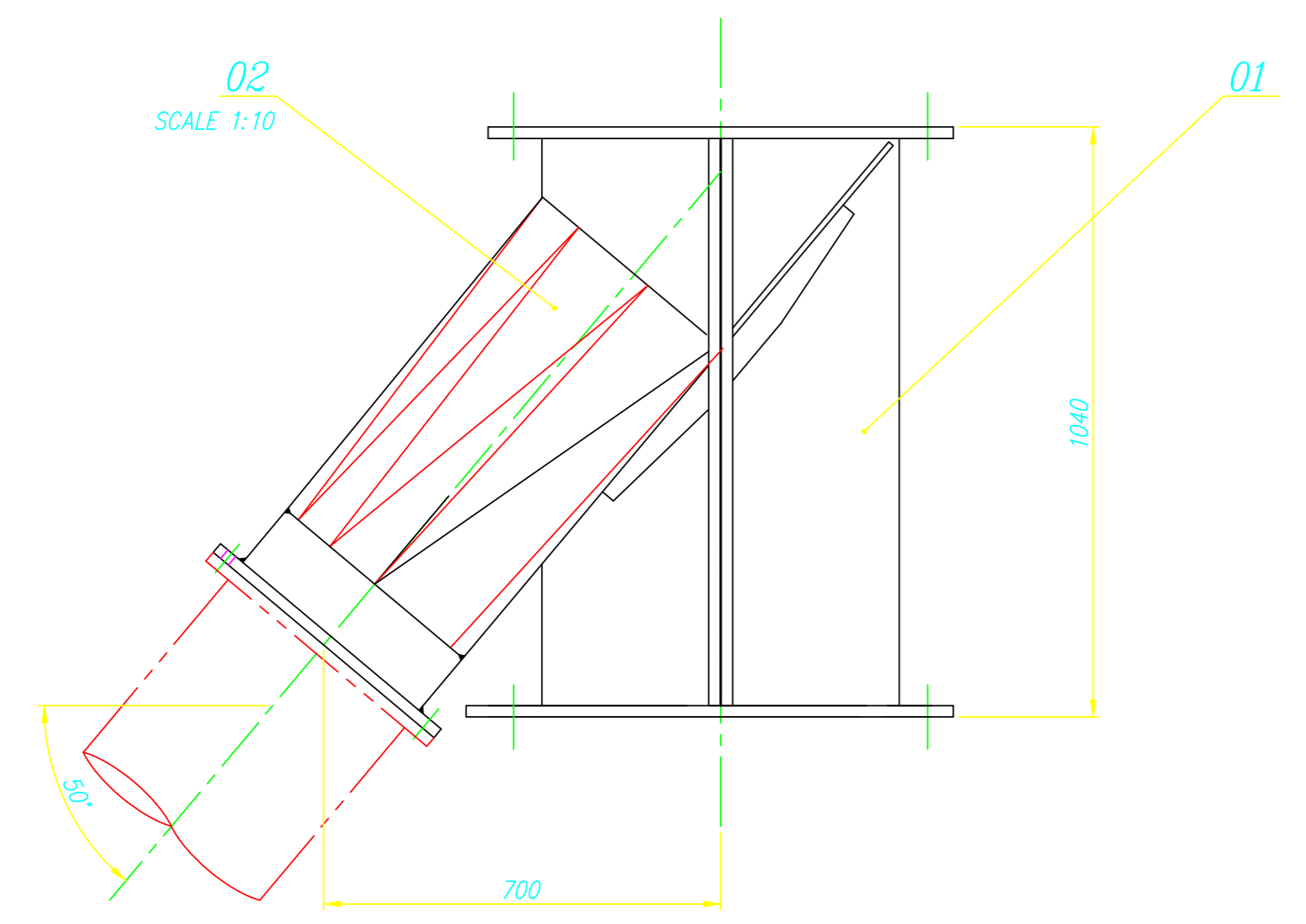
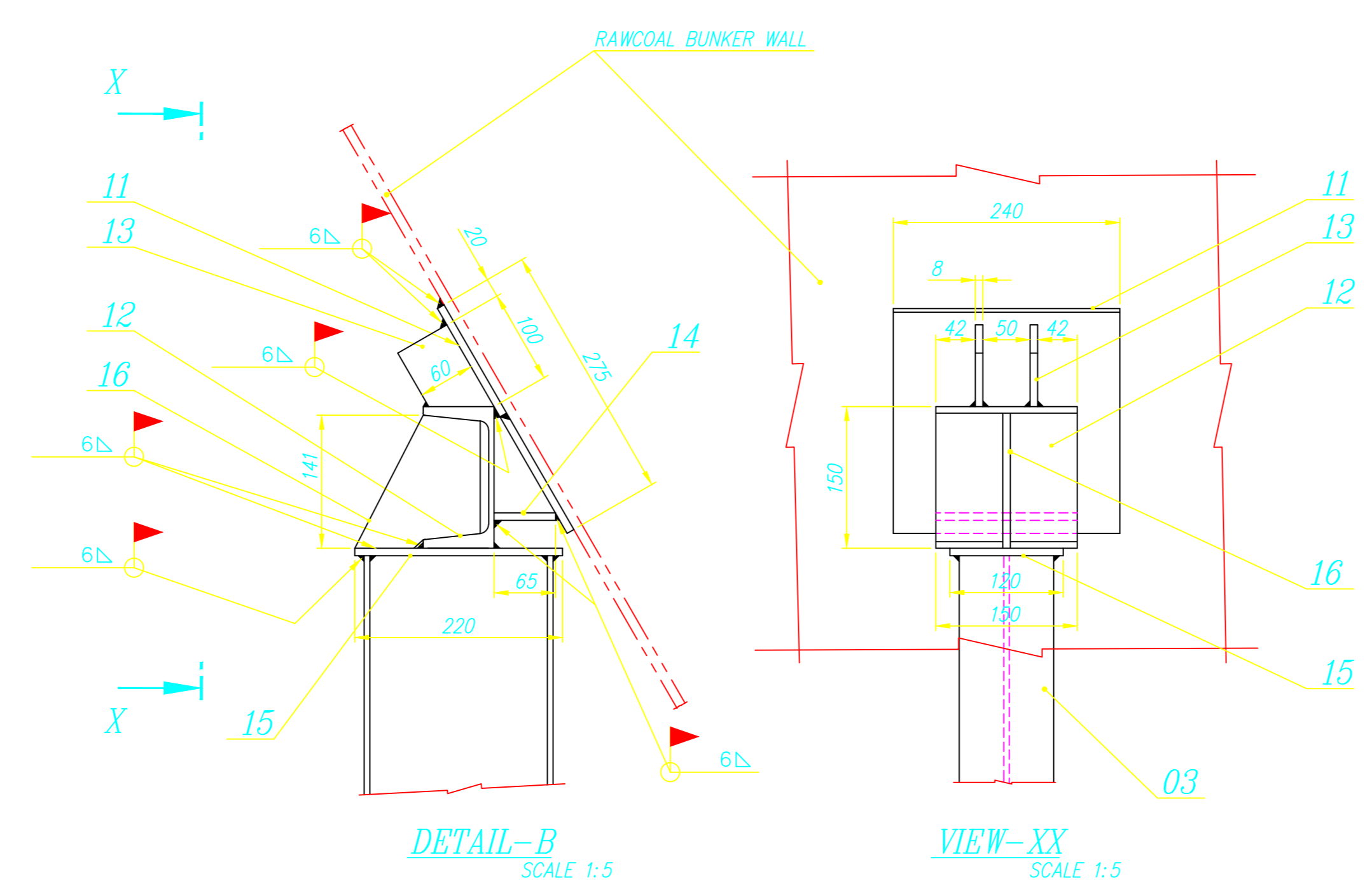
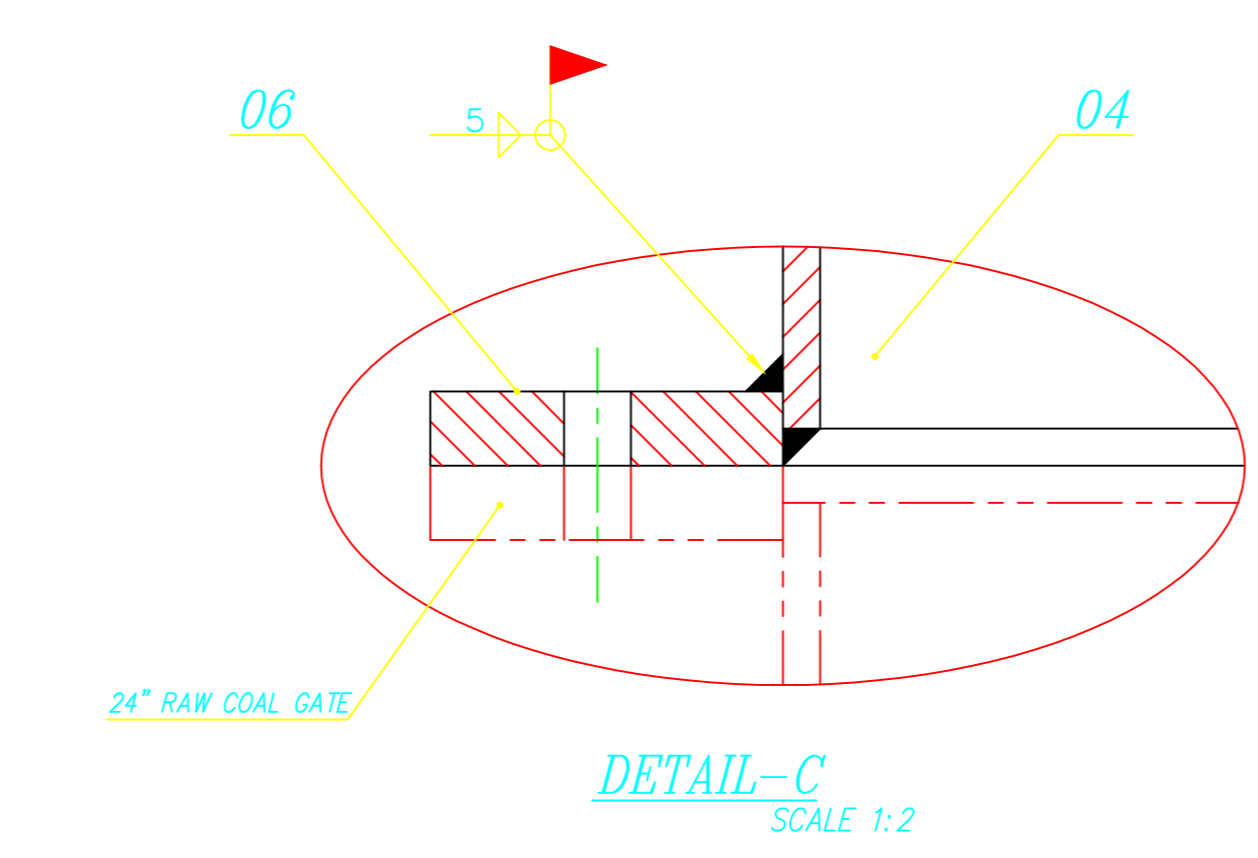
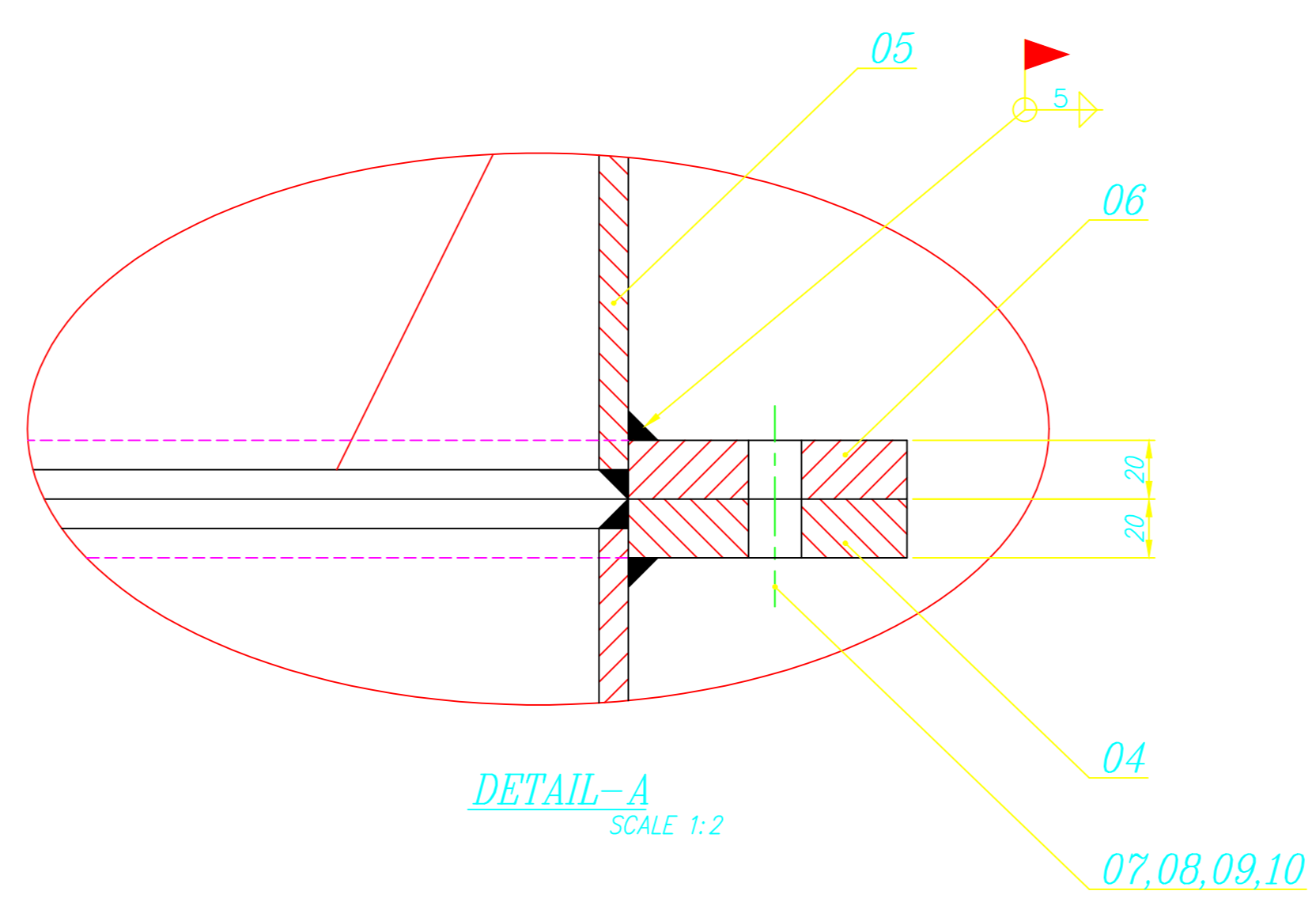
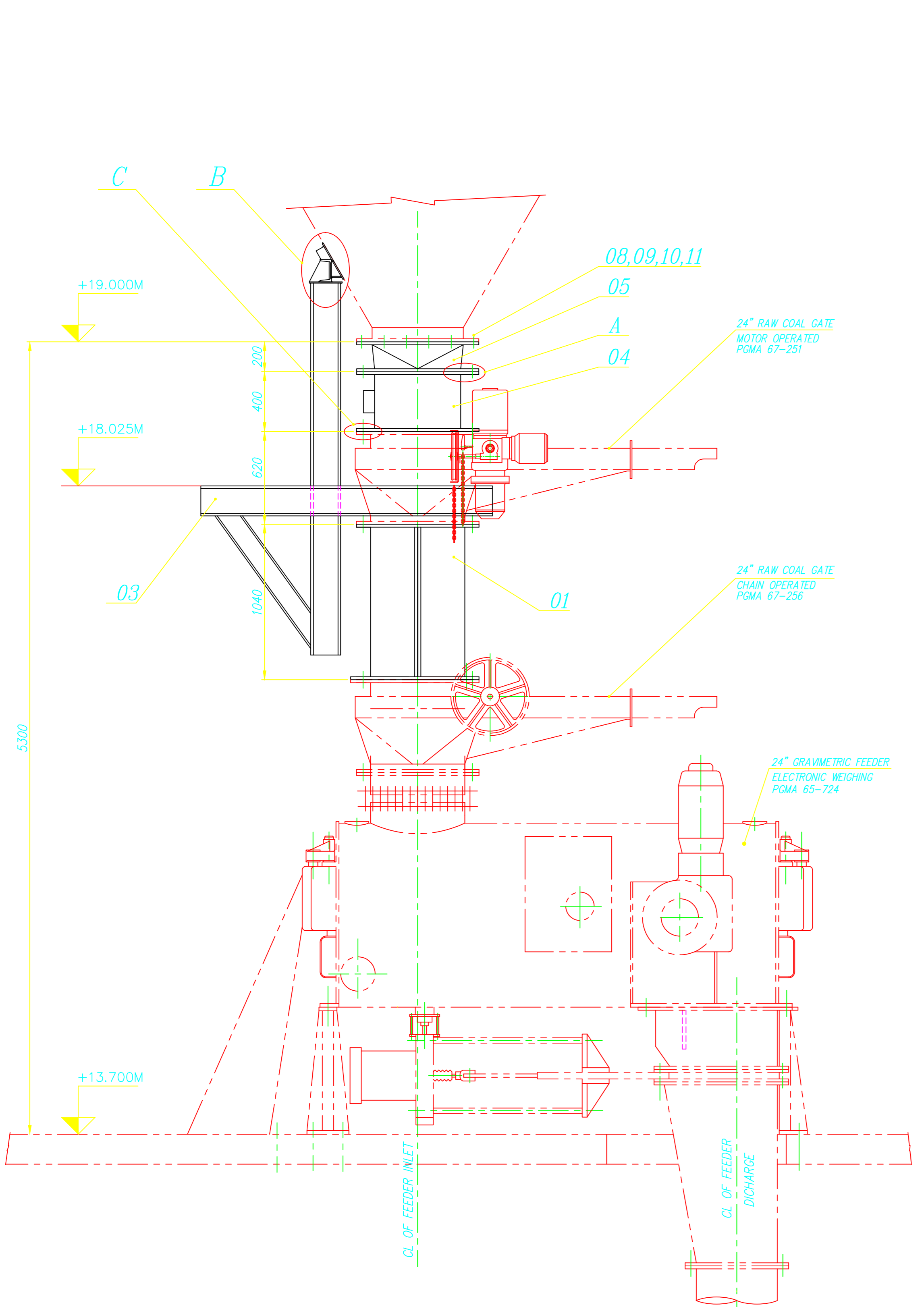
Size A4

05-248/C

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0-67-801-00443
0-67-801-03332

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



- NOTE :-**
1. QUANTITY SHOWN IS PER BOLLER REQUIREMENT.
 2. ITEM No. 02 IS TO BE FIXED AFTER REMOVING ONE HALF OF THE DOWN SPOUT WHEN REQUIRED.
 3. THE TOP & BOTTOM CONNECTING FASTENERS & PACKING ROPE ARE COVERED IN POMA 67-251 & 67-256.
 4. ITEM-11 IS TO BE SUITABLY LOCATED (CLEARING THE BUNKER STIFFENERS) AND WELDED TO THE BUNKER WALL.
 5. THE PLATFORM (ITEM 03) SUPPORT BEAMS ARE TO BE WELDED TO ITEM-15 AS SHOWN IN "DETAIL-B"
 6. REFER BUNKER TO FEEDER ARRANGEMENT DRG. 0-00-600-11219 FOR GENERAL ARRANGEMENT DETAILS.
 7. ITEM 02 TO BE MATCH ASSEMBLED & CHECK WITH ITEM 01 BEFORE DESPATCH.

ITEM NO	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT	QUANTITY
16	PL 8x133x141	IS: 2062 Fe410WA	0.794	16
15	PL 8x120x220	IS: 2062 Fe410WA	1.658	16
14	PL 8x65x150	IS: 2062 Fe410WA	0.612	16
13	PL 8x60x100	IS: 2062 Fe410WA	0.319	32
12	ISMC150x150L	IS: 2062 Fe410WA	2.520	16
11	PL 8x240x275	IS: 2062 Fe410WA	4.145	16
10	PACKING ROPE DA 50.6; L=10 M	TP 21599	0.400	8
09	PNCHD WASHER A18	IS: 2016	0.010	144
08	HEX NUT M16-4	IS: 1363 (P-3)	0.030	144
07	HEX HD SCRU M16x45-4.6	IS: 1363 (P-2)	0.105	144
06	FLANGE PL 20x0632x0820	4-67-801-00385	33.000	5
05	TRANSITION CHUTE	2-67-801-00419	92.400	4
04	SPACER	3-67-801-00525	92.300	4
03	MAINTENANCE PLATFORM	1-67-801-00850	1524.402	4
02	BUNKER EMPTYING CHUTE	1-67-801-00849	243.790	4
01	DOWN SPOUT	1-67-801-00848	303.342	4

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NATIONAL ALUMINIUM COMPANY LIMITED ; DAMANJODI UNDER PHASE-3 EXPANSION OF M&R COMPLEX 1X300 L/h ; 69.5 kg/cm (g); 487°C

Customer Number: 3622

Signature: [Signature] **Date:** 24.08.2021

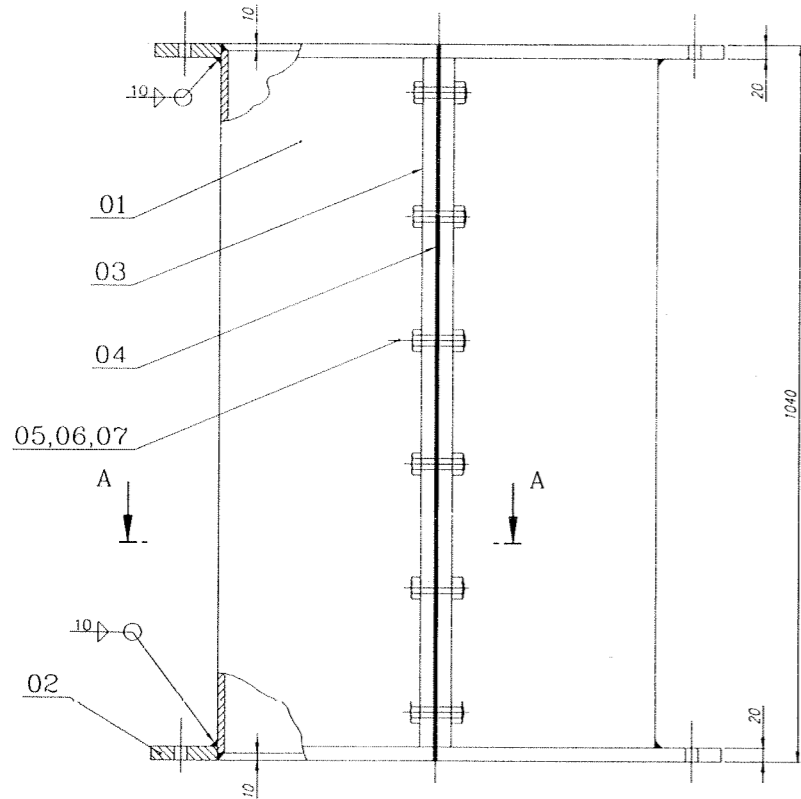
Scale: 1:20 (1/2, 1/5, 1/10, 1/50) **Weight (kg):** 8746.670

PROJECTION: 1st Angle

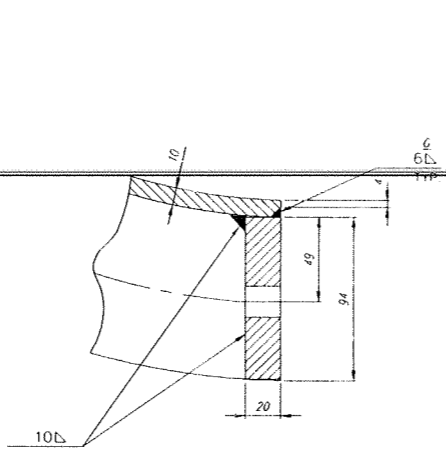
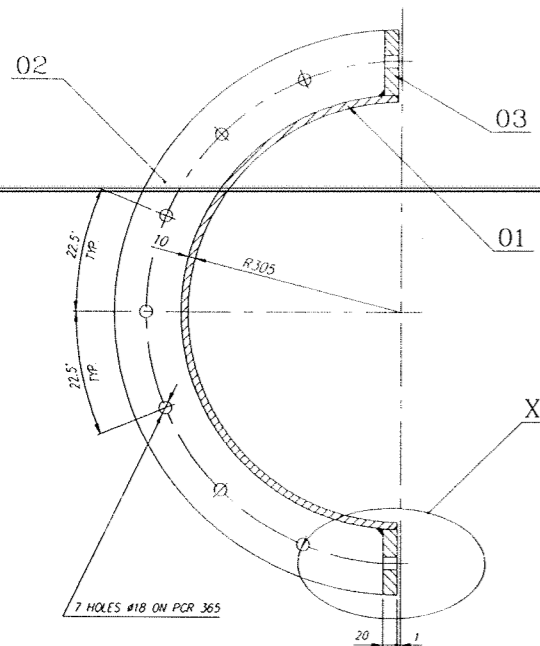
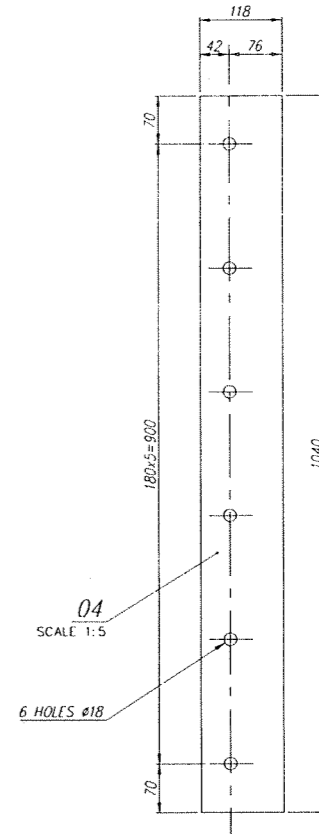
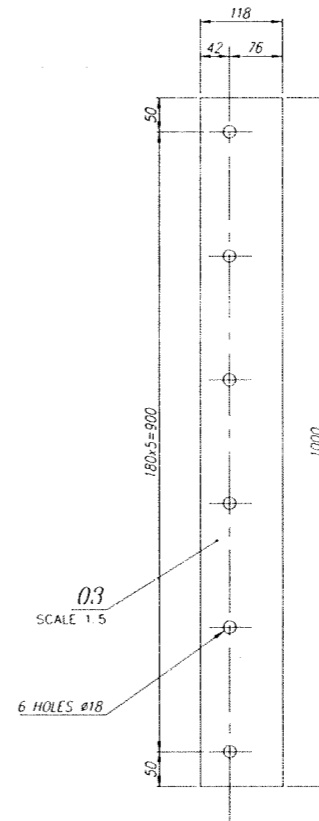
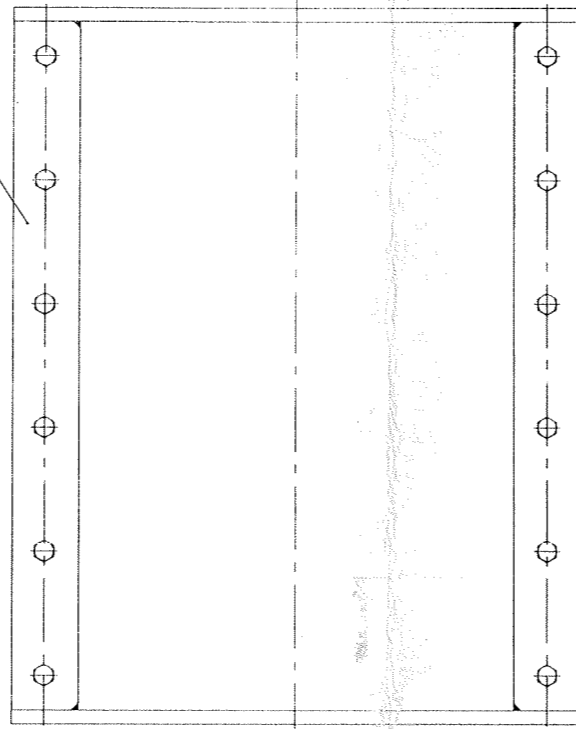
REF TO ASSY / OLD DRG: 0-67-801-00443, 0-67-801-U3332

1-67-801-00848
1-67-801-U3335
DRAWING NO.

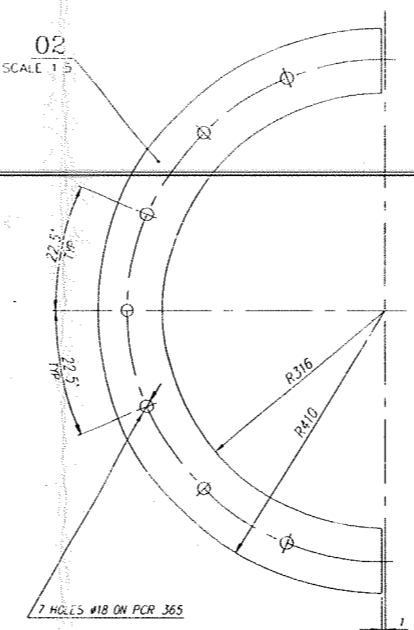
ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNGLERANCED
DIMENSIONS DURING MANUFACTURE
REFER RELEVANT DCP / QP



03
REF.



DETAIL-X
(SCALE 1:2)



NOTE :-
THIS ASSY IS TO BE CHECKED WITH BUNKER EMPTYING
CHUTE (DRC 1-67-801-00849) BEFORE DESPATCH

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT	QTY	ZONE
06	HEX NUT M16-4	S	IS:1363 (P-3)	41304	00016		0.030	12	
05	HEX HD BOLT M16 x 60-4.6	S	IS:1363 (P-1)	41221	16060		0.123	12	
04	SH. 3 x 118 x 1040	S	AA 21504	22 020	141	CAF W/1	0.701	2	
03	PL 20 x 118 x 1000			15 011	150		18.526	4	
02	PL 20 x 410 x 820			15 011	150	IS:2062 Fe410WA	16.800	4	
01	PL 10 x 972 x 1020			15 011	380	IS:2062 Fe410WA	79.400	2	
						SA240 TYPE 304			

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NATIONAL ALUMINIUM COMPANY LIMITED : DAMANJODI UNDER PHASE-3 EXPANSION OF M&R COMPLEX 1X300 t/h : 69.5 kg/cm (g). 487°C

Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
CHD	BIMAL CHOWHURY	-SD-	24.08.2021
APPD	SAIRAM N	-SD-	24.08.2021
	GANGADHAR MOHS	-SD-	24.08.2021

REV 01 DATE ALTERED: CHD & APPD

SCALE: 1:5 ; 1:2

WEIGHT (Kg): 303.342

REF TO ASSY / QWP DWG: 0-67-801-00443

TITLE: DOWN SPOUT

DRAWING NO: 1-67-801-00848
1-67-801-U3335

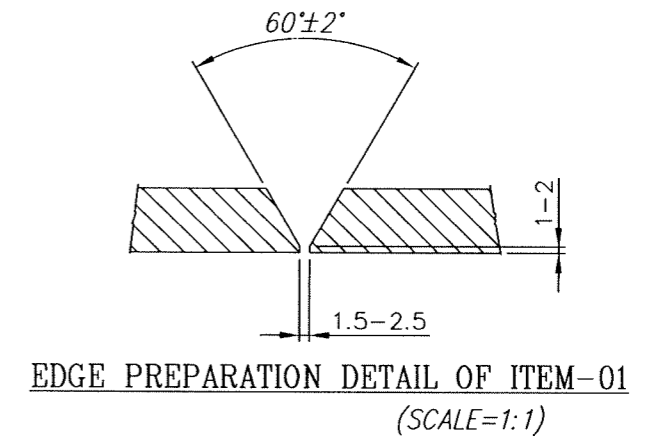
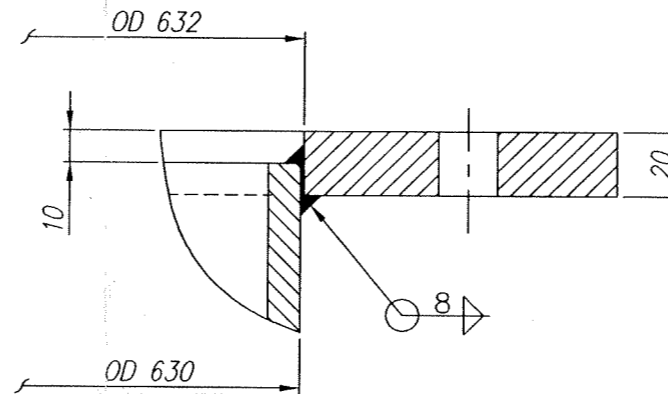
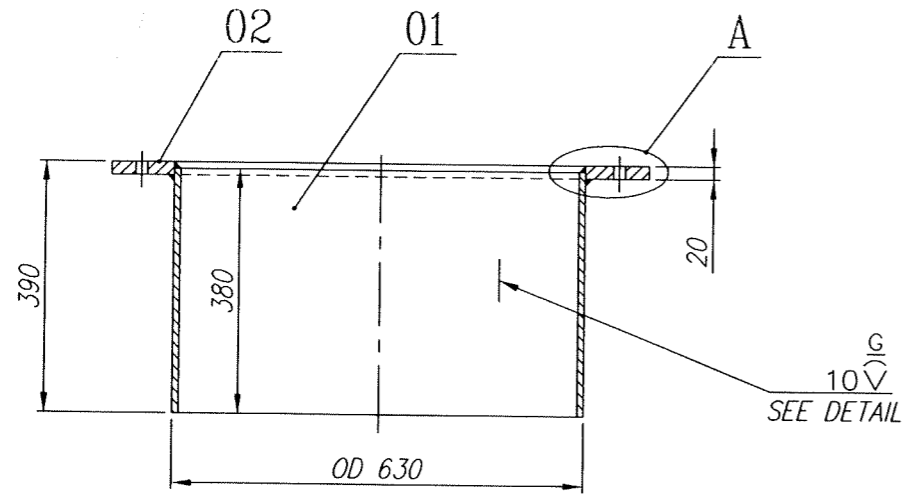
REV: 00

REV	DATE	ALTERED
01		CHD & APPD

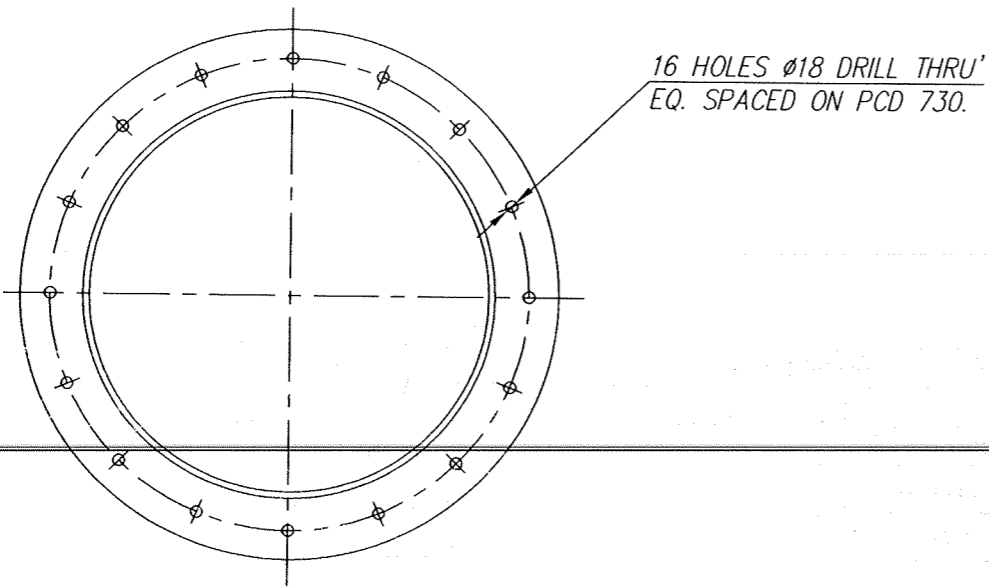
CUSTOMER NUMBER 2622

3-67-801-00525
 3-67-801-U3346
 DRAWING NO.

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



DETAIL-A
 (SCALE=1:2)



VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	02	FLANGE PLATE 20xID632xOD820		4-67-801-00385		15 011 150			33.000	
						IS: 2062 Fe410WA			1	
	01	PLATE 10x380x1948				15 011 380			59.300	
						SA 240 TYPE 304			1	

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-055	DRN	NAME <i>M. Alagiri</i>	SIGNATURE	DATE 02-11-'06
	CHD	<i>J. V. V. S. Kumar</i>		02-11-'06
	APPD	<i>Md. F. Basha. H.</i>		02-11-'06

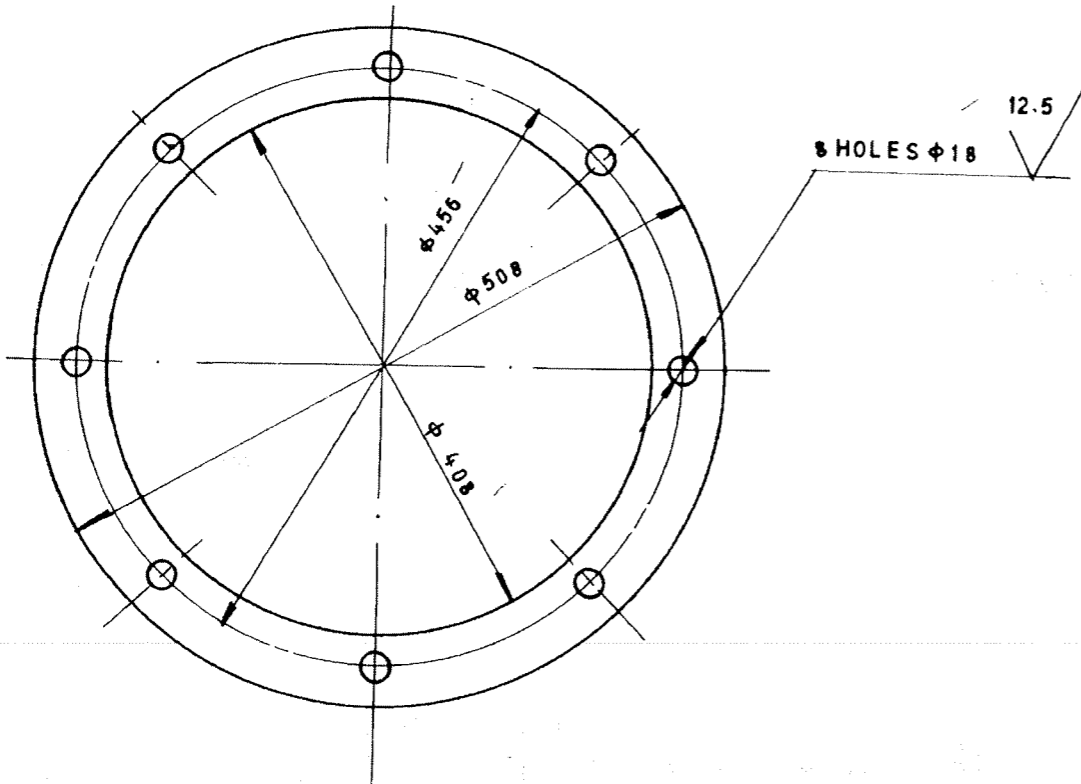
DEPT CODE FEEDERS 240	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:10 1:1 ; 1:2	WEIGHT (Kg) 92.300	REF TO ASSY / OLD DWG
-----------------------------	--------------------------	----------------	----------------------------	-----------------------	-----------------------

TITLE SPACER	DRAWING NO : 3-67-801-00525 3-67-801-U3346	REV 00
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REV	DATE	ALTERED
		CHECKED

ALL DIMENSIONS ARE IN MILLIMETRES
FOR TOLERANCES OF UN TOLERAN-
CED DIMNS. DURING MANUFAC-
TURE REFER RELEVANT OCP/QP



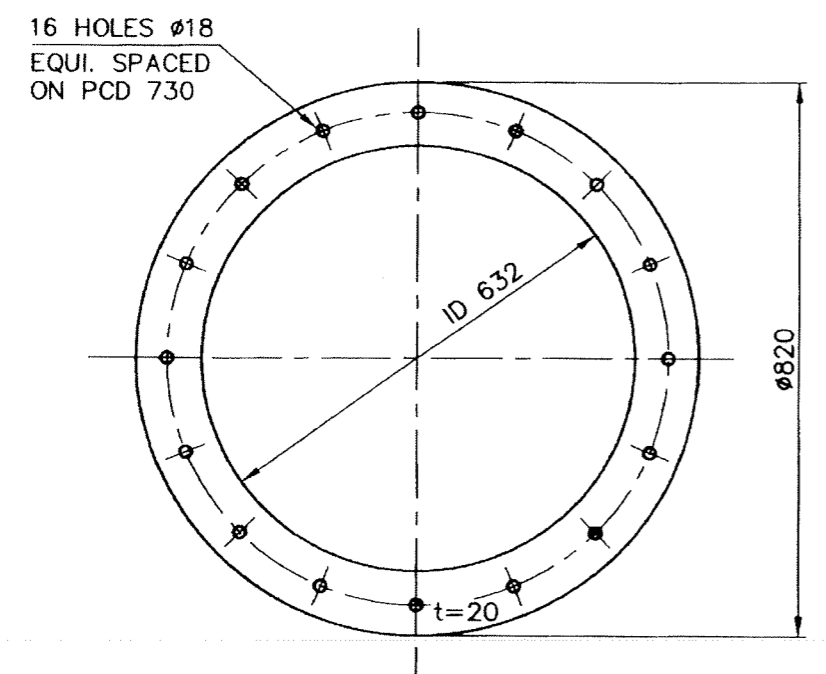
PL 20 X D 508 X D 408	15 - 011 - 150	1079		
	IS 2062 FE 410A	1		
VAR NO.	DESCRIPTION	MATL CODE	A UNIT	UNIT WT.
		MATL SPECN.	C DI	QTY

		BHARAT HEAVY ELECTRICALS LTD. UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME	SIGN	DATE	NO. OF VAR
DEPT	GRADE OF UNTOL DIM	SCALE	WEIGHT (KG)	REF. TO ASSY./OLD DRG.	ITEM NO.	NO. OF ITEMS		
CODE	240	1/1/1	10.79					
TITLE				CARD CODE	DRAWING NO.		REV	
FLANGE				U 01	4-67-801-00356			
					4-67-801-U3345			

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REV	DATE	ALTERED :
01		CHD & APPD :

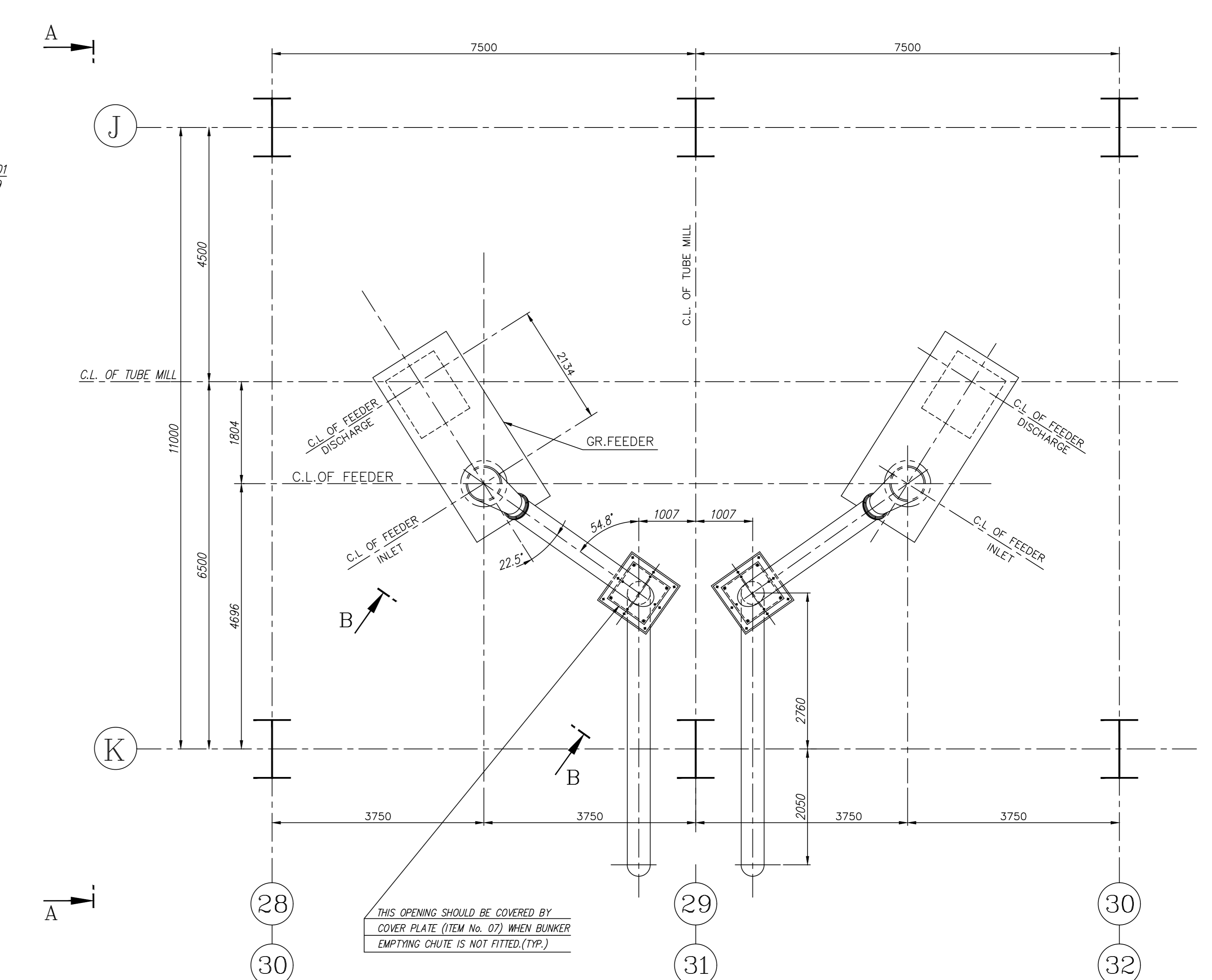
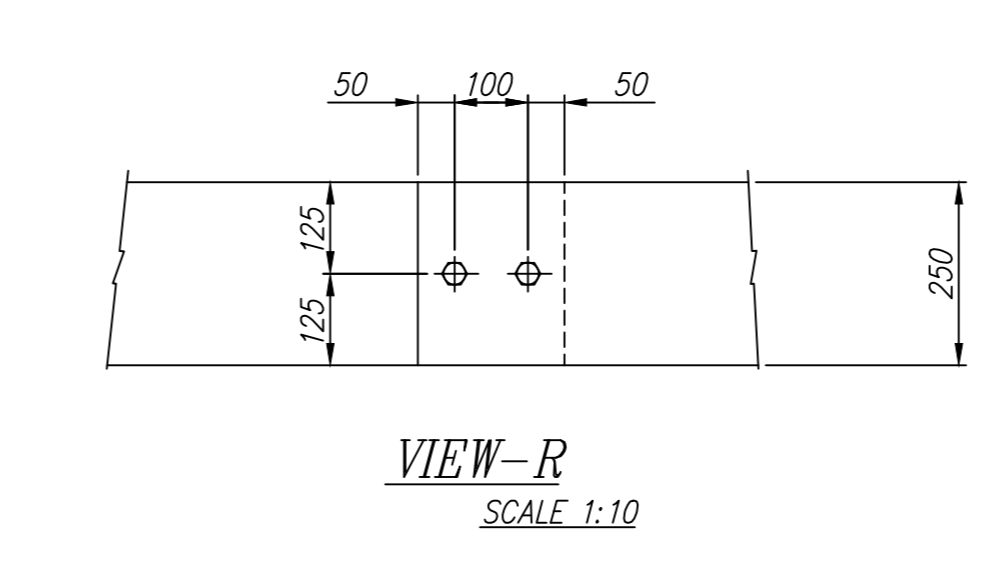
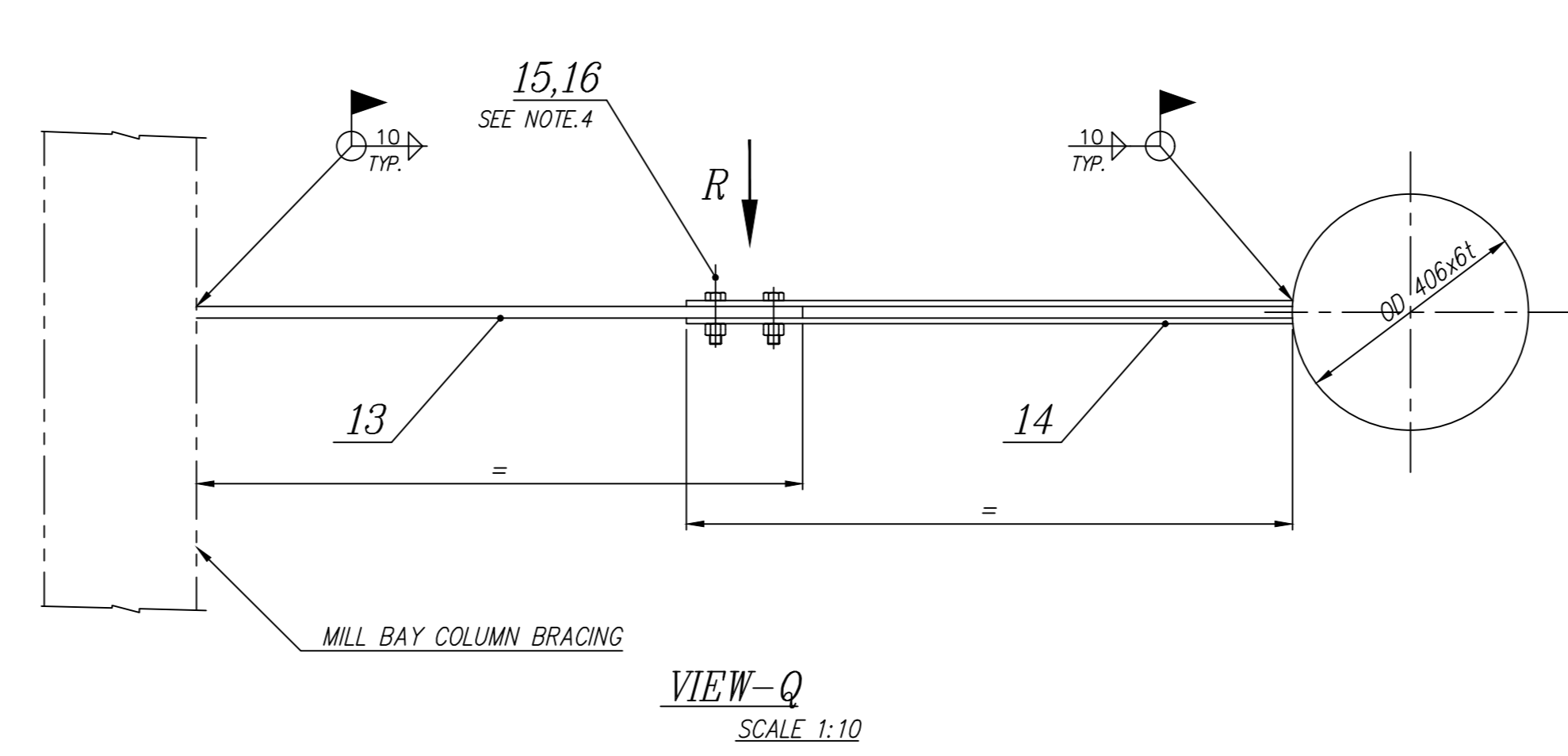
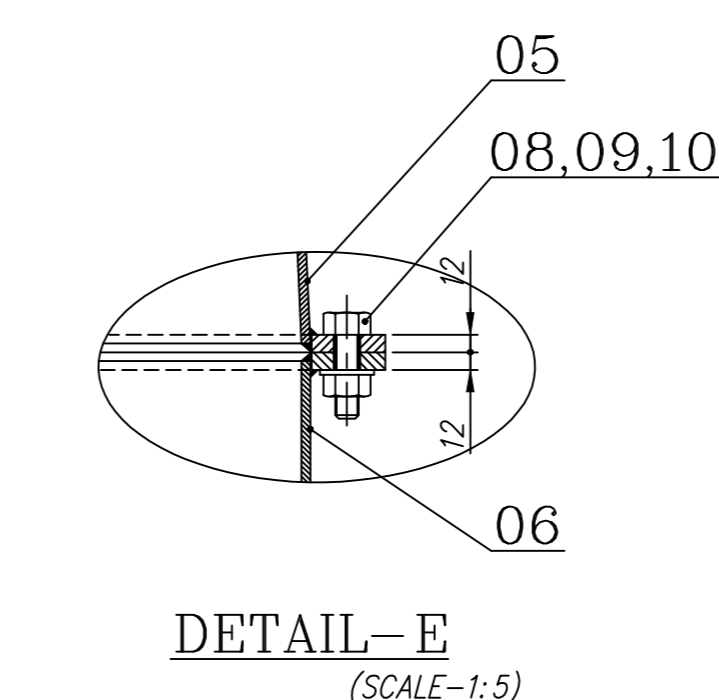
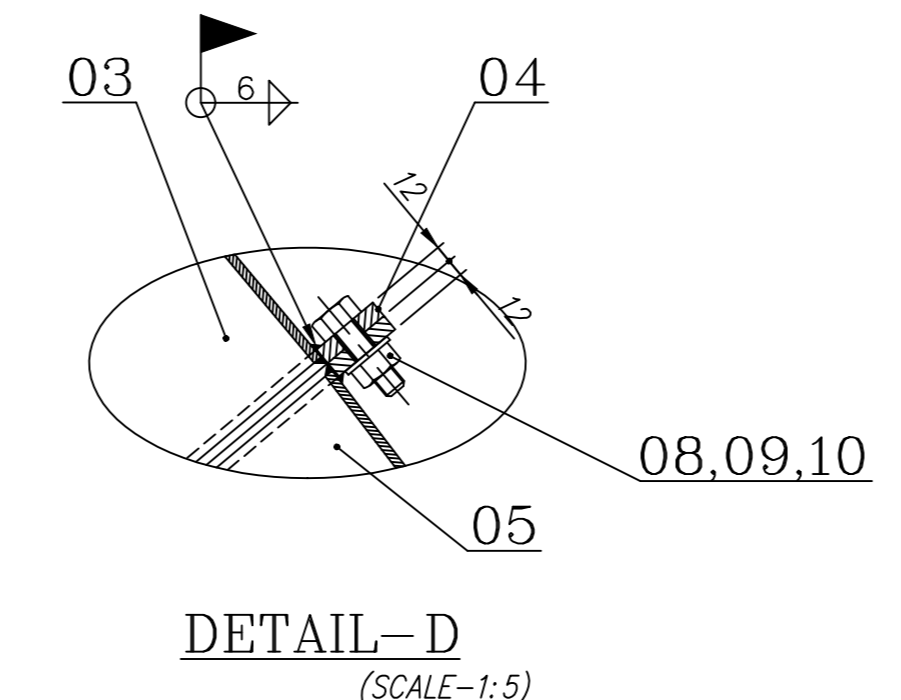
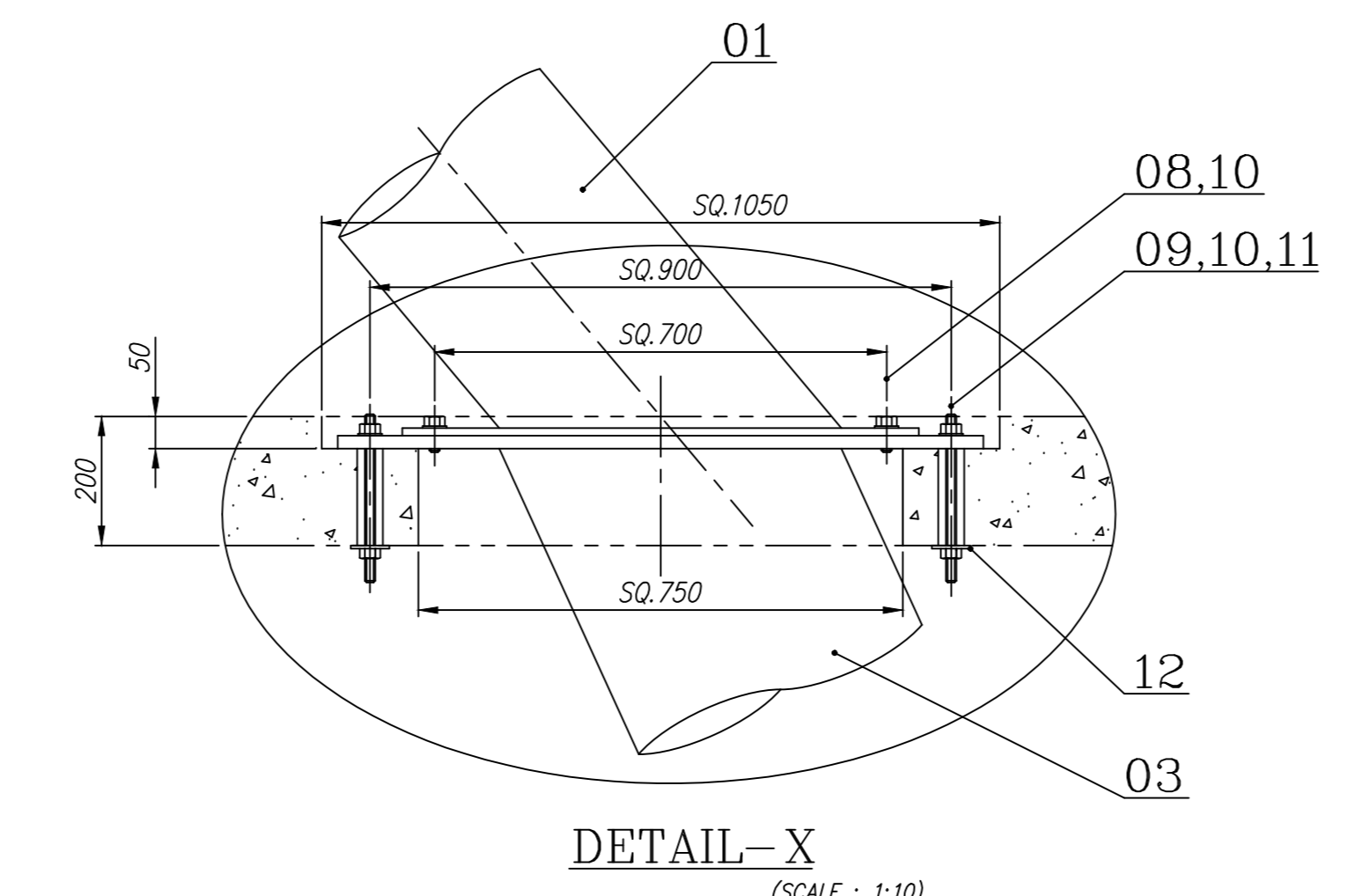
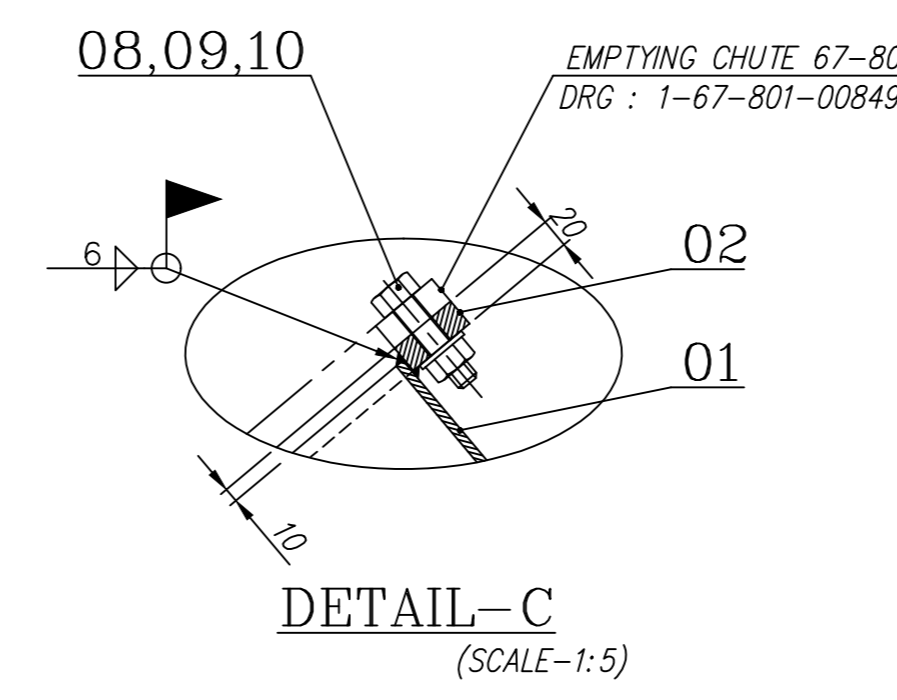
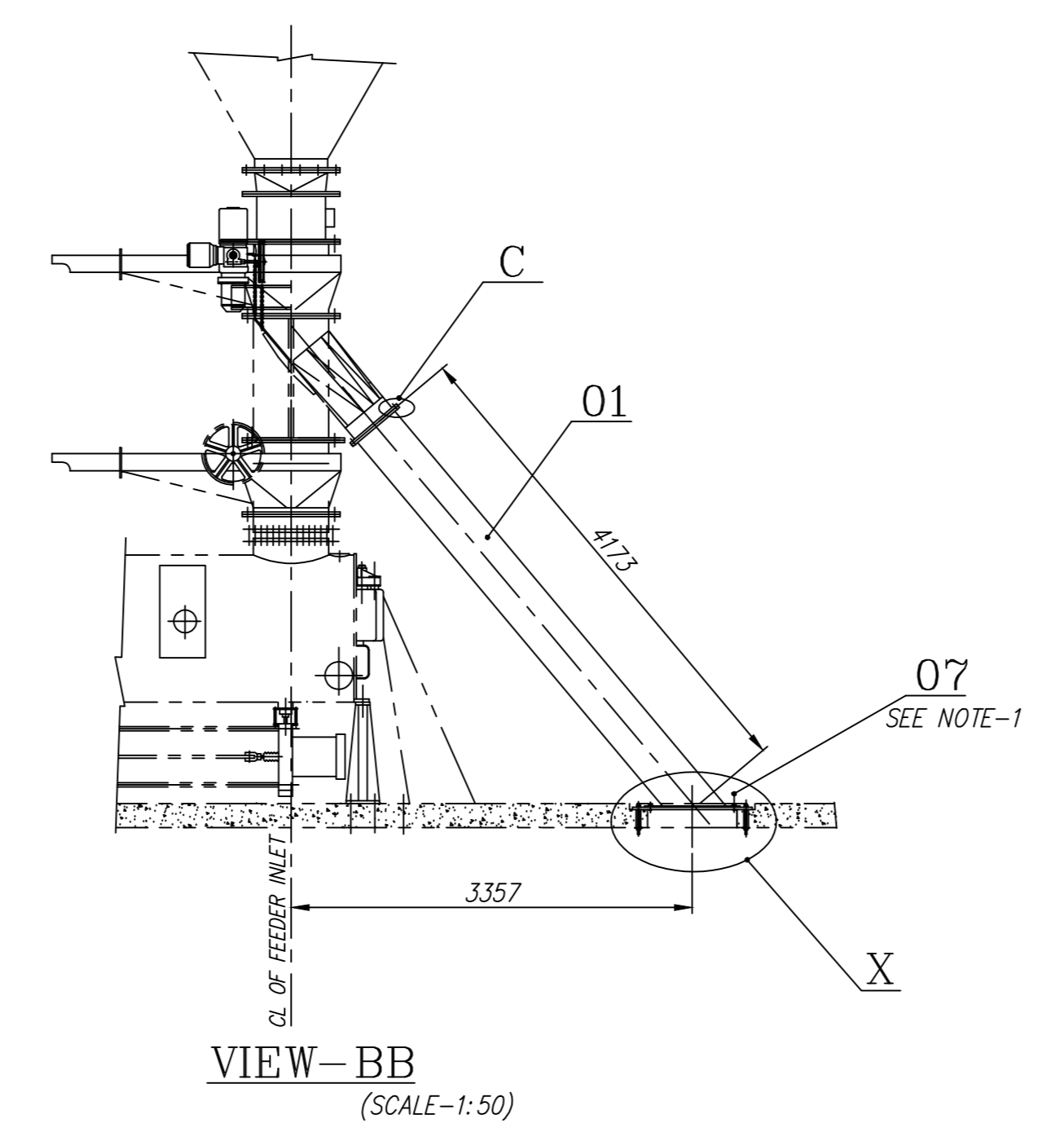
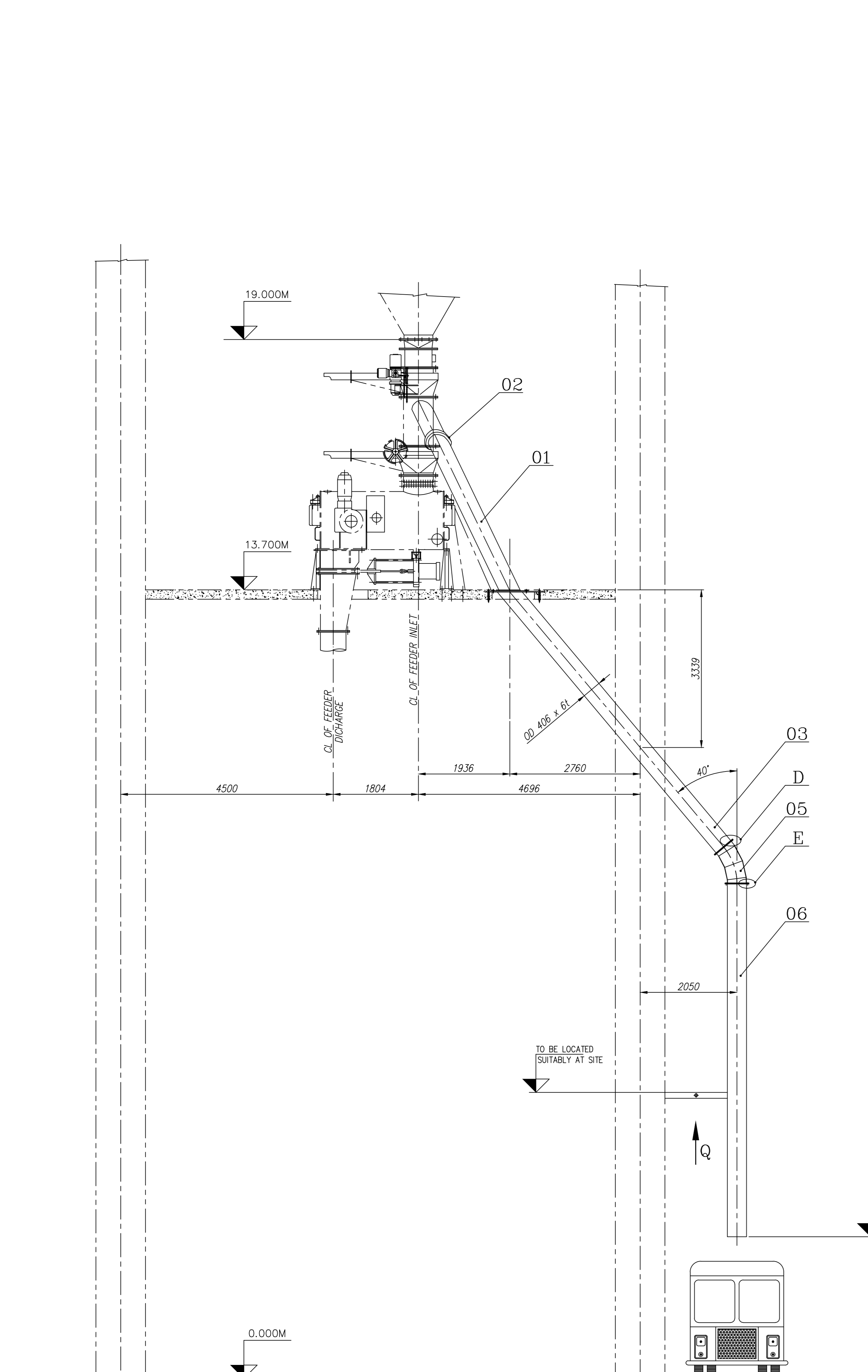
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



1DX

VARIANT NUMBER	DESCRIPTION	STD	PL.20xD632xD820	15 011 150	A/S/P	UNIT	33.000
				IS: 2062 Fe410WA			
			MATERIAL CODE				UNIT WEIGHT
			MATERIAL SPECN				QUANTITY

 355-056	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME	SIGNATURE	DATE
			CHD	S.Manivannan	<i>[Signature]</i>	06/04/99
			APPD	D.Vijayakumar	<i>[Signature]</i>	06/05/99
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
FEEDERS	240		1:10	33.000		
TITLE			DRAWING NO :		REV	
FLANGE			4-67-801-00385 4-67-801-U3346		00	



THIS OPENING SHOULD BE COVERED BY COVER PLATE (ITEM No. 07) WHEN BUNKER EMPTYING CHUTE IS NOT FITTED.(TYP.)

ESP SIDE

NOTE :-

- ITEM-07 TO BE USED WHEN ITEM 01 IS NOT IN POSITION.
- REF. DRG. 0-00-600-11220 - BUNKER EMPTYING ARRANGEMENT
- QUANTITY SHOWN IS PER BOILER REQUIREMENT.
- ITEMS 13 & 14 CAN BE CUT TO SUITABLE LENGTH AND HOLES #22 SHALL BE DRILLED DURING ERECTION AT SITE.

ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	MATERIAL CODE	UNIT WEIGHT (kg)	QUANTITY	ZONE
16	HEX NUT M20-4	IS:1363 (P-3)		41304 00020	0.070	8	
15	HEX HD BOLT M20x70-6.8	IS:1364 (P-1)		41215 20070	0.235	8	
14	PL.10x250x1200			15 011 099	23.550	8	
13	PL.20x250x1200			IS:2062F410WA 15 011 150	47.100	4	
12	SQ. WASHER	4-67-802-00352		IS:2062 F410WA 15 011 092	0.118	32	
11	STUD BOLT G-A 1425 M16x250	BPS: 41117		41117 16250	0.357	32	
10	PUNCHED WASHER A-18	IS:2016		41408 00016	0.010	160	
09	HEX. NUT M16-4	IS:1363 (P-3)		41304 00016	0.030	328	
08	HEX. HD. SCREW M16x45-4.6	IS:1363 (P-2)		41222 16045	0.100	128	
07	COVER PLATE	4-67-802-00386		15 011 181	25.000	4	
06	EMPTYING PIPE	3-67-802-00530		WELDMENT	271.526	4	
05	BEND 40DEG	3-67-802-00529		WELDMENT	62.195	4	
04	FLANGE	4-67-802-00440		15 011 132	6.585	4	
03	PIPE WITH FLANGE	2-67-802-00432		IS:2062 F410WA 15 011 150	555.308	4	
02	FLANGE	4-67-801-00356		IS:2062 F410WA 15 011 150	10.790	1	
01	PIPE WITH BOTTOM FLANGE	2-67-802-00431		WELDMENT	299.894	1	

CUSTOMER NUMBER: 2622

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NATIONAL ALUMINIUM COMPANY LIMITED ; DAMANJODI UNDER PHASE-3 EXPANSION OF MARK COMPLEX 1X300 1/2 x 69.5 kg/cm (6: 487°C

Customer: Bharat Heavy Electricals Ltd
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012

Signature: BIMAL CHANDHAR, SAIRAM N, GANAGHAR MOHSI

DATE: 26.08.2021, 26.08.2021, 26.08.2021

PRODUCTION SCALE: 1:50, 1:10, 1:5

WEIGHT (kg): 4405.820

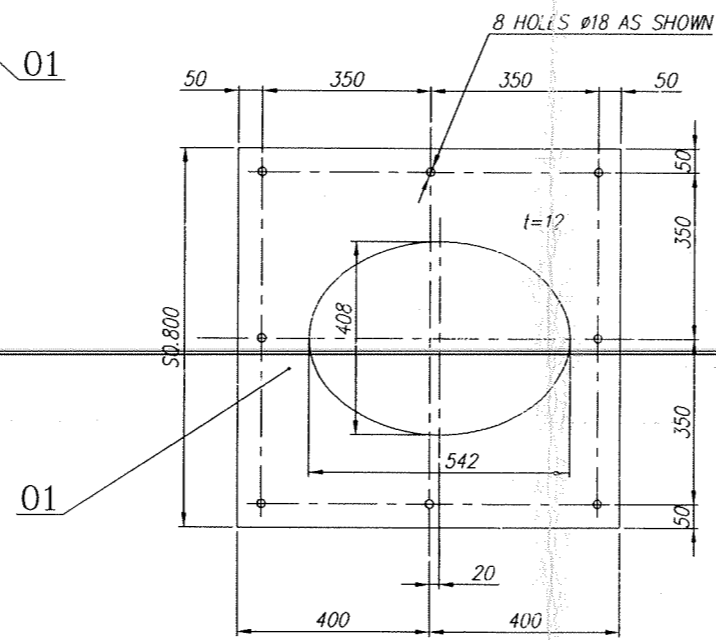
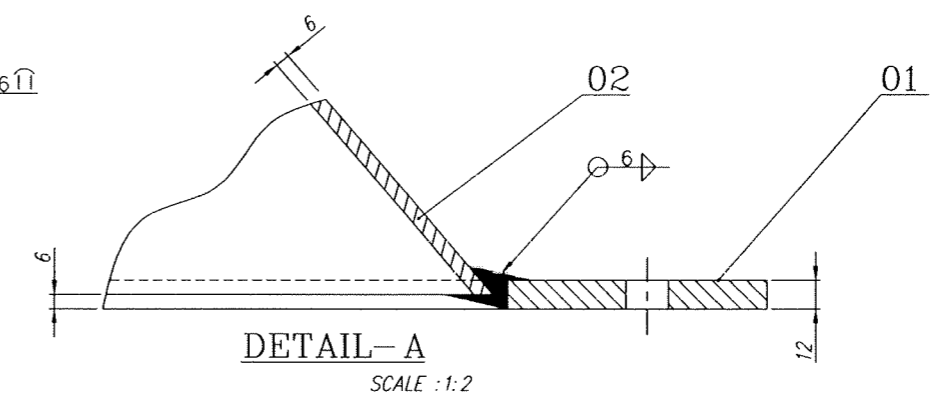
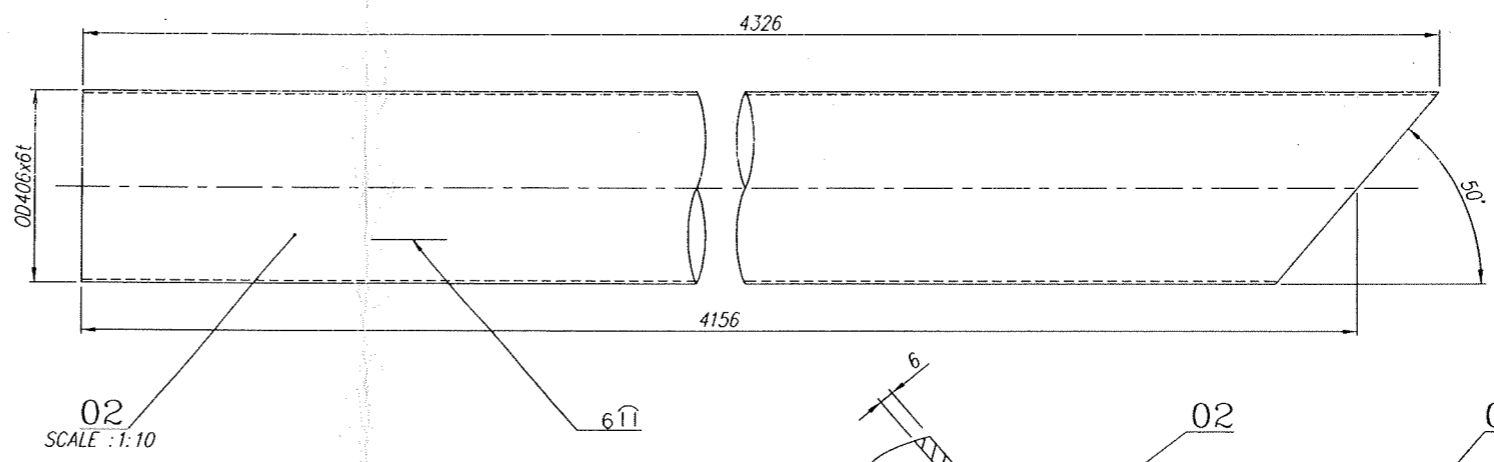
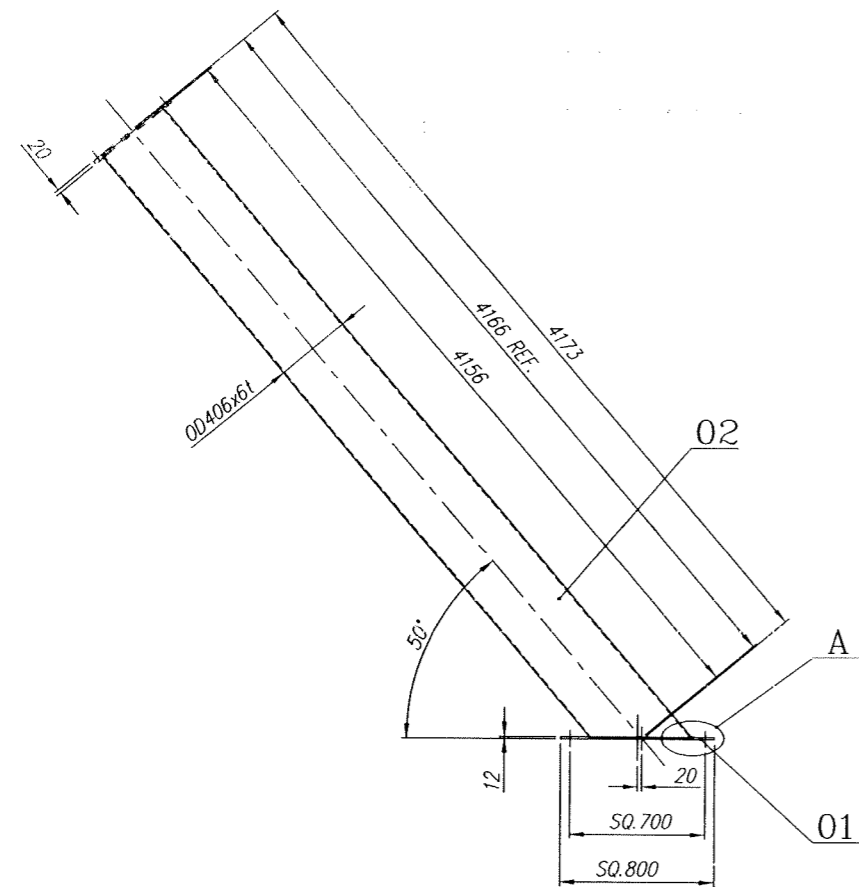
TITLE: BUNKER EMPTYING ASSEMBLY

DRAWING NO: 0-67-802-00444
0-67-802-U3333

REV	DATE	ALTERED BY	CHKD & APPD
01			

2-67-802-U3345
 2-67-802-00431
 DRAWING NO.

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	ZONE
VAR NO	MATERIAL SPECN	QUANTITY					DI			
02	PL.6 x 1257 x 4326				15 011 092	IS:2062 Fe410WA			256.120	
01	PL.12 x SQ.800				15 011 132	IS:2062 Fe410WA			43.774	

REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NATIONAL ALUMINIUM COMPANY LTD., 2nd PHASE EXPANSION - DAMAJODI - Cust.No.0488

Bharat Heavy Electricals Ltd
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM - 530012

DRN: M. Nagaraj
 CHD: J. V. A. Kumar
 APPD: M. P. Basha

DEPT: FEEDERS
 CODE: 240
 ALL DIMENSIONS ARE IN MM
 PROJECTION:
 SCALE: 1:25
 WEIGHT (Kg): 299.894
 REF TO ASSY / OLD DWG

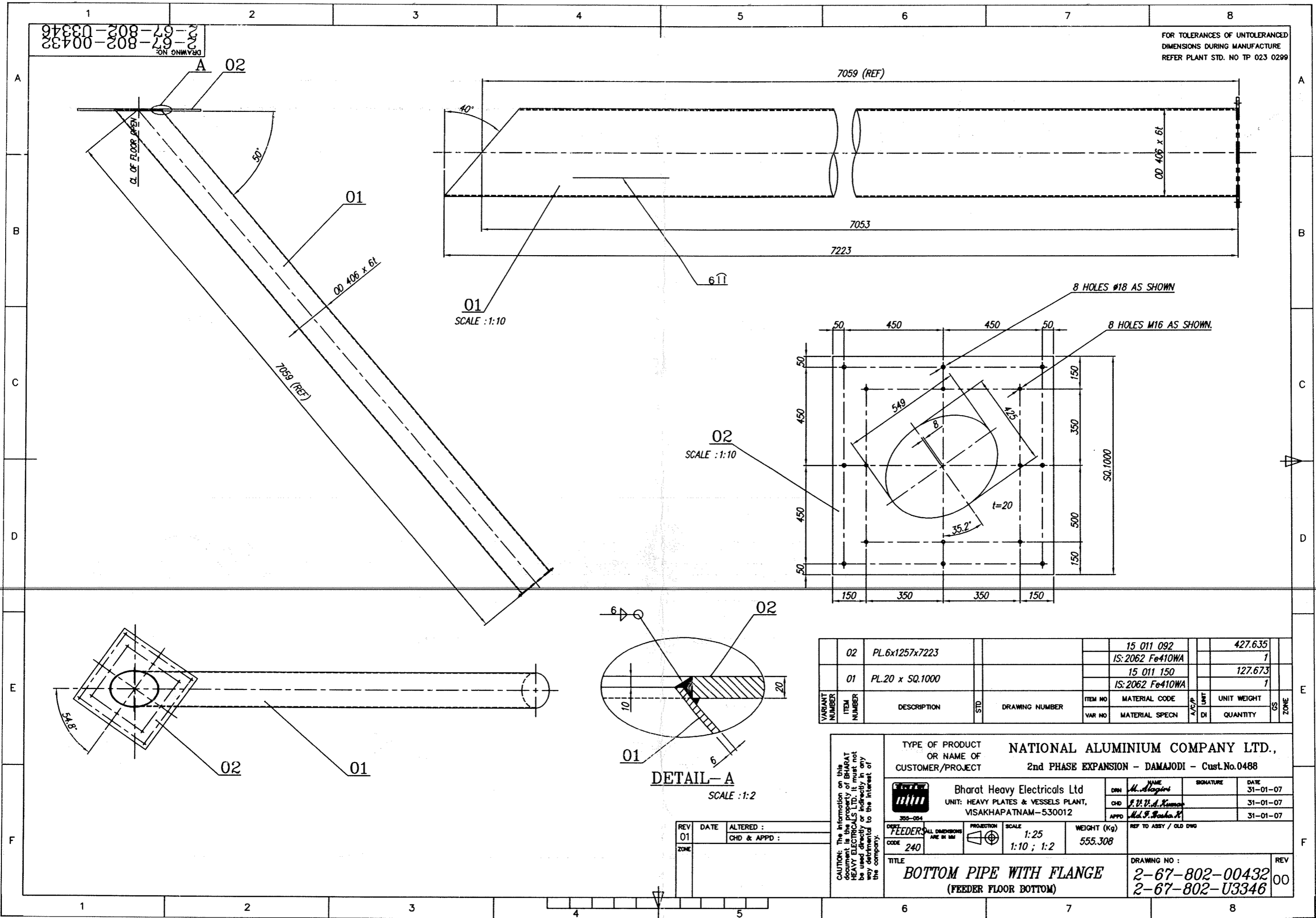
TITLE: PIPE WITH BOTTOM FLANGE (FEEDER FLOOR TOP)

DRAWING NO: 2-67-802-00431
 2-67-802-U3345

REV: 00

DRAWING NO. 2-67-802-00432
2-67-802-U3346

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



01
SCALE : 1:10

02
SCALE : 1:10

01
02
DETAIL - A
SCALE : 1:2

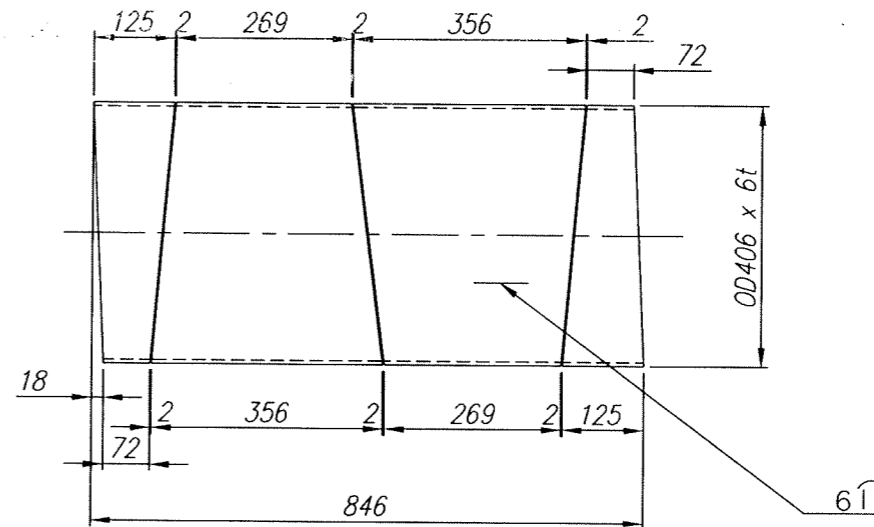
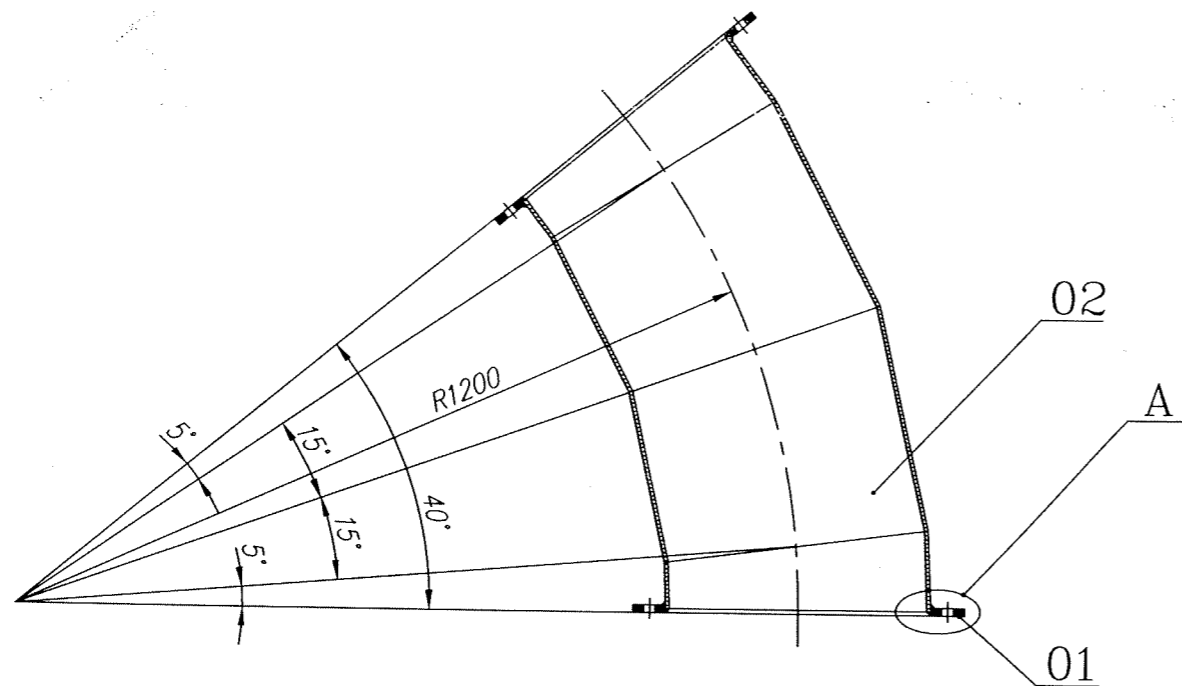
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT	QUANTITY	ZONE
02	PL.6x1257x7223				15 011 092	IS:2062 Fe410WA		427.635	1	
01	PL.20 x SQ.1000				15 011 150	IS:2062 Fe410WA		127.673	1	

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	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME	SIGNATURE	DATE
	FEEDER		SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
	CODE	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
TITLE		DRAWING NO :				REV
BOTTOM PIPE WITH FLANGE (FEEDER FLOOR BOTTOM)		2-67-802-00432				00
		2-67-802-U3346				

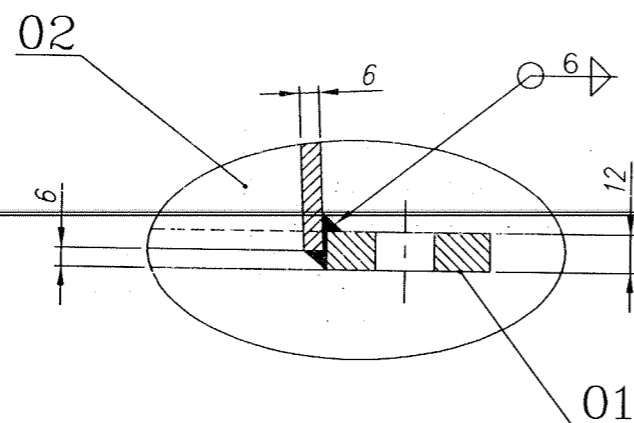
REV	DATE	ALTERED :
01		CHD & APPD :
ZONE		

3-67-802-00529
 3-67-802-U3347
 DRAWING NO:

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



ITEM-02 CUTTING PLAN



DETAIL-A

SCALE : 1:2

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
VAR NO						MATERIAL SPECN	DI	QUANTITY	
	02	PL.6x846x1257				15 011 092			49.025
						IS:2062 Fe410WA			1
	01	FLANGE		4-67-802-00440		15 011 132			6.585
						IS:2062 Fe410WA			2

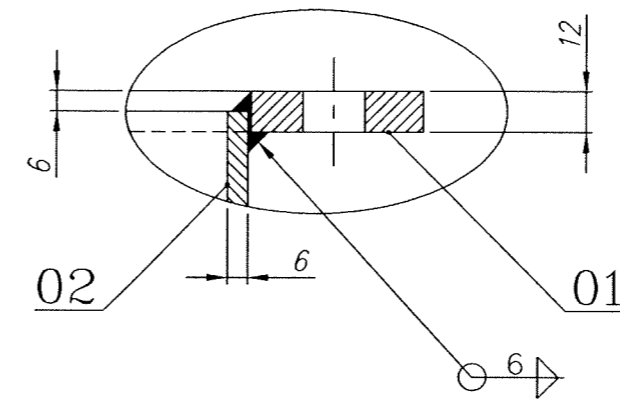
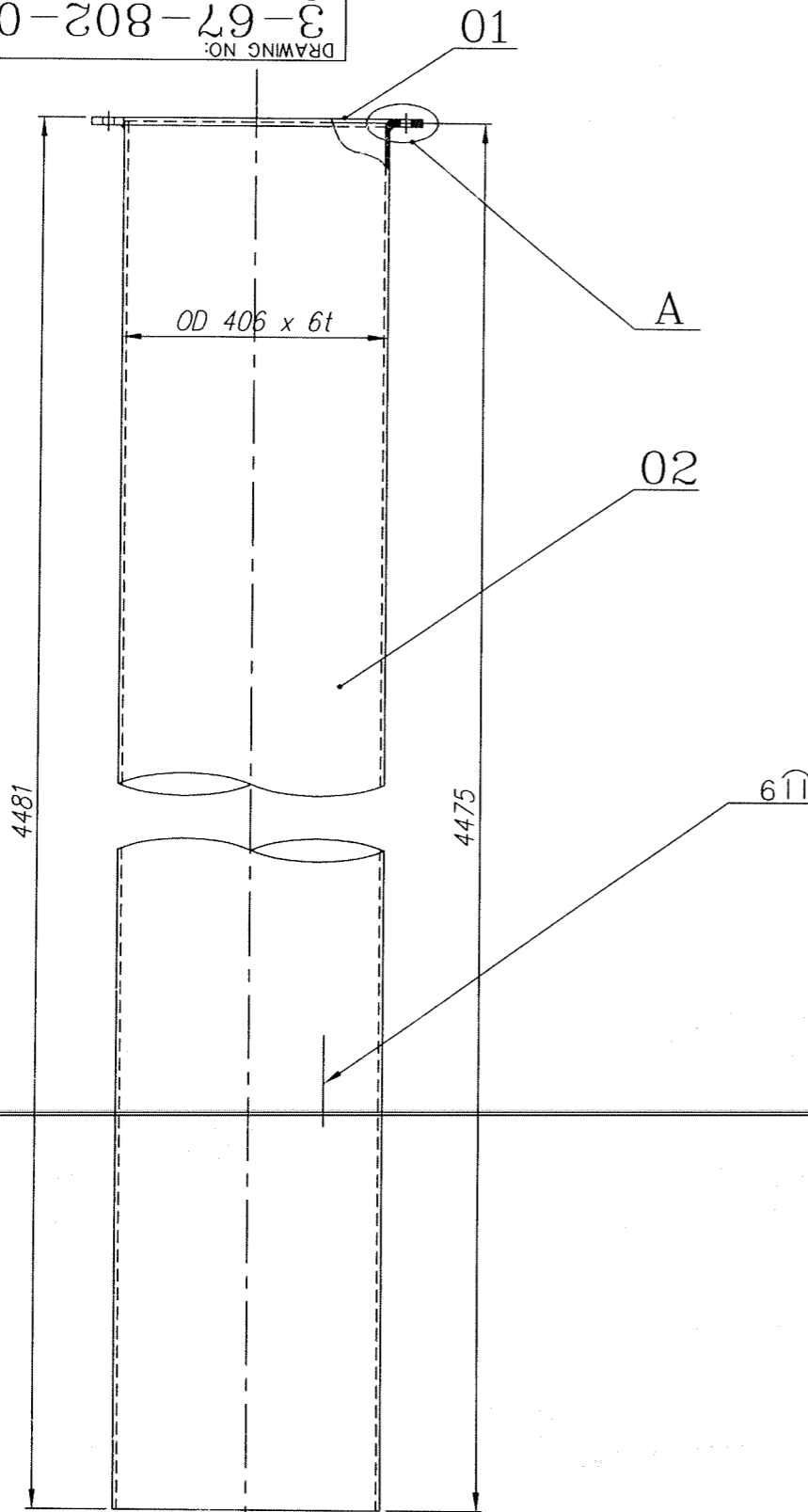
REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NATIONAL ALUMINIUM COMPANY LTD., 2nd PHASE EXPANSION - DAMAJODI - Cust.No.0488			
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-055		DRN	NAME	SIGNATURE	DATE
DEPT. FEEDERS			M. Alagiri		31-01-07
CODE 240		CHD	J. V. A. Kumar		31-01-07
ALL DIMENSIONS ARE IN MM		APPD	M. F. Basha. H		31-01-07
PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
1:10	1:2	62.195			
TITLE			DRAWING NO :		REV
BEND-40 DEG.			3-67-802-00529		00
			3-67-802-U3347		

3-67-802-00530
 3-67-802-U3348
 DRAWING NO.

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


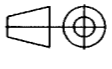


DETAIL-A
 SCALE : 1:2

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN	DI	QUANTITY	
	02	PL.6x1257x4475				15 011 092			264.941
						IS:2062 Fe410WA			1
	01	FLANGE		4-67-802-00440		15 011 132			6.585
						IS:2062 Fe410WA			1

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

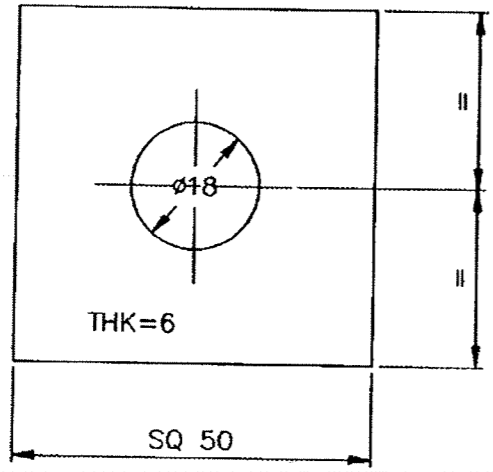
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NATIONAL ALUMINIUM COMPANY LTD., 2nd PHASE EXPANSION - DAMAJODI - Cust.No.0488				
 355-055	Bharat Heavy Electricals Ltd		DRN	NAME	SIGNATURE	DATE
	UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		CHD	J. V. V. A. Kumar		01-02-07
			APPD	Md. F. Basha. H		01-02-07
DEPT FEEDERS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
CODE 240			1:10 1:2	271.526		
TITLE					DRAWING NO :	
EMPTYING PIPE					3-67-802-00530 3-67-802-U3348	
					REV	00

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REV	DATE	ALTERED :
01	8/6/2004	CHD & APPD <i>[Signature]</i>
MTRL. SPECN. UPDATED.		
REV	DATE	ALTD :
02	29.9.05	CHD&APPD: <i>[Signature]</i>
WT. WAS 0.200 kg.		

ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER RELEVANT QCP / QP



02 01

VARIANT NUMBER	DESCRIPTION	STD	15-011-092	NO	0.118
			18: 2062 For 410WA		1
			MATERIAL CODE	A/C	UNIT WEIGHT
			MATERIAL SPECN		QUANTITY



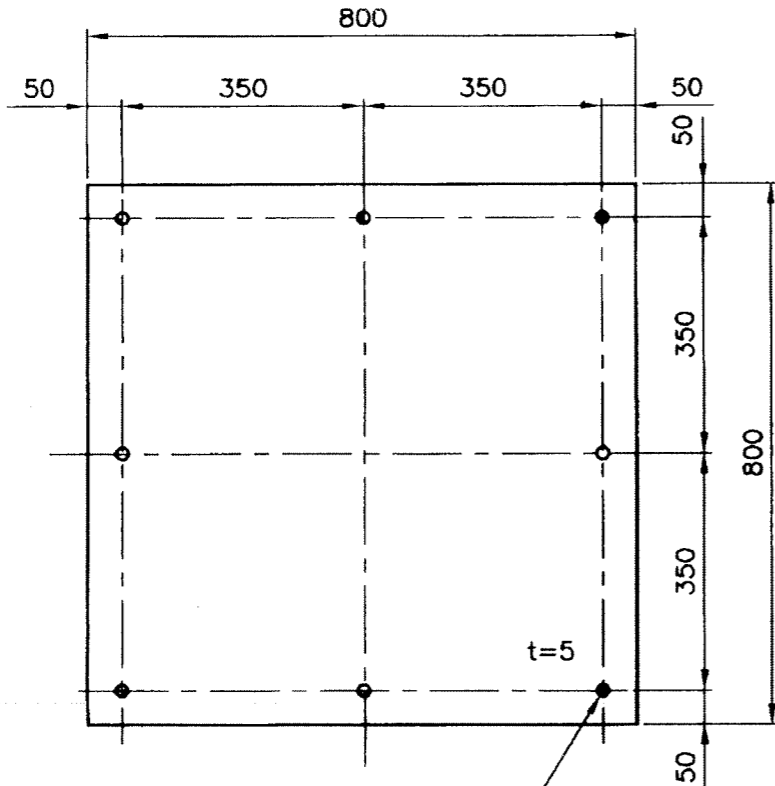
		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME SELVA	SIGNATURE <i>[Signature]</i>	DATE 25.4.95	NO. OF VAR
DEPT MILLS		SCALE	WEIGHT (Kg)	CHD	J.S	<i>[Signature]</i>	24.4.95	
CODE 240		1:1	0.118 ⁰²	APPD	M.A	<i>[Signature]</i>	26.4.95	
TITLE SQ WASHER			CARD CODE U 01	DRAWING NO : 4-67-802-00352 4-67-802-U3348			REV 02 00	

SCANNED

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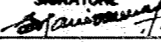
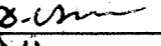
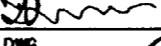
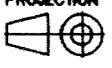
REV	DATE	ALTERED :
01		CHD & APPD :

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



DRILL THRU' 8 HOLES Ø18 AS SHOWN.

	CHEQ.PLATE 5X800X800	15 011 181		25.000
		IS: 3502		
VARIANT NUMBER	DESCRIPTION	STD	MATERIAL CODE	UNIT WEIGHT
			MATERIAL SPECN	QUANTITY

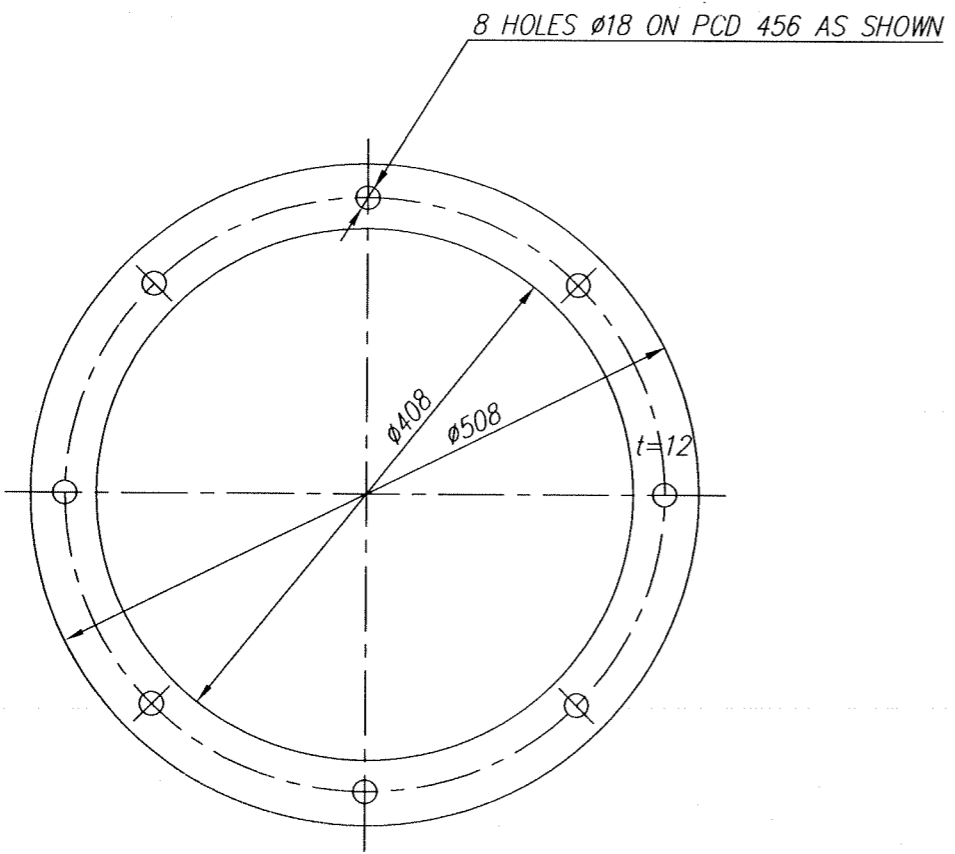
		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		NAME DRN S.Manivannan CHD D.Vijayakumar APPD J.Swaminathan	SIGNATURE   	DATE 15/04/99 12/05/99 12/05/95
DEPT FEEDERS CODE 240	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:10	WEIGHT (Kg) 25.000	REF TO ASSY / OLD DWG	
TITLE COVER PLATE				DRAWING NO : 4-67-802-00386 4-67-802-U3349		REV 00

IDX


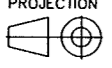
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REV	DATE	ALTERED :
01		CHD & APPD :

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

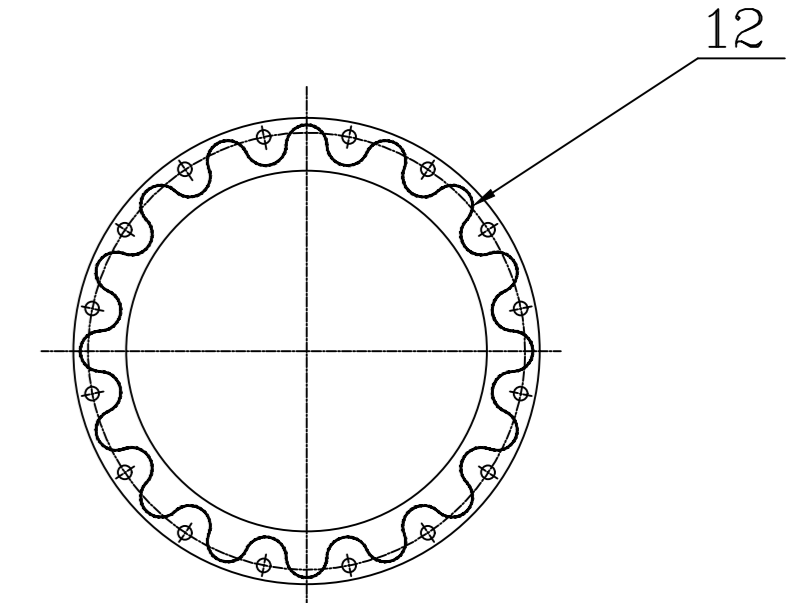
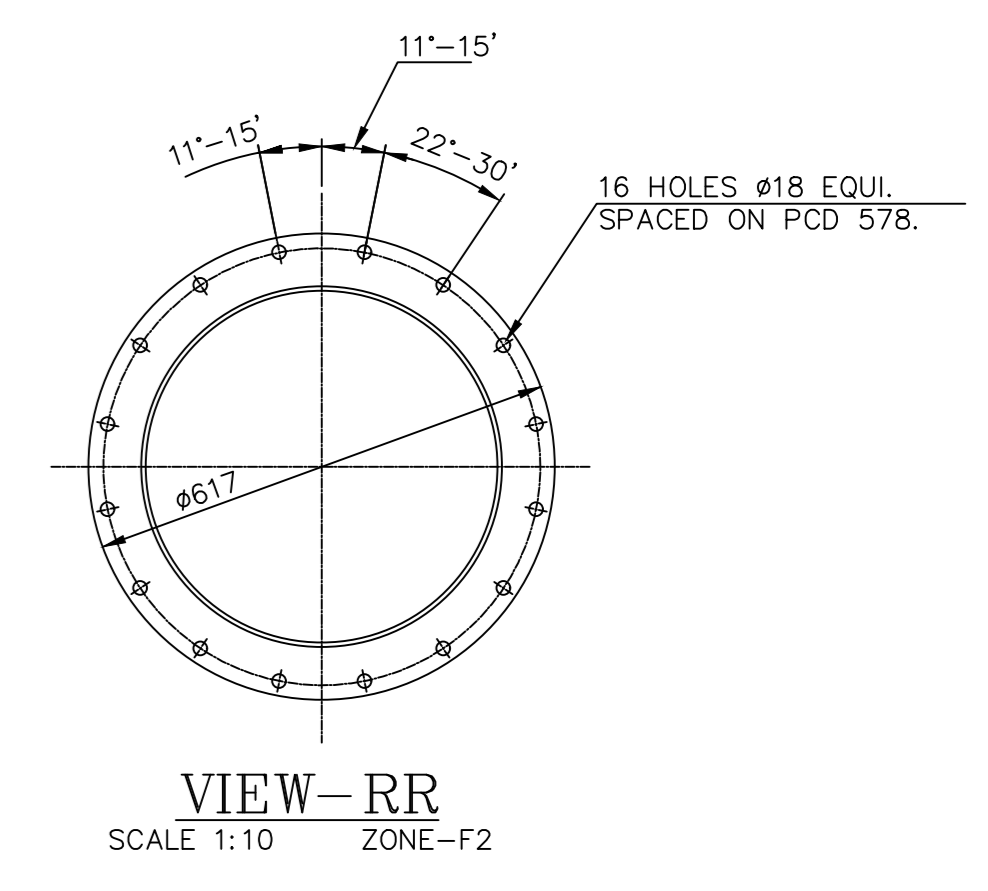
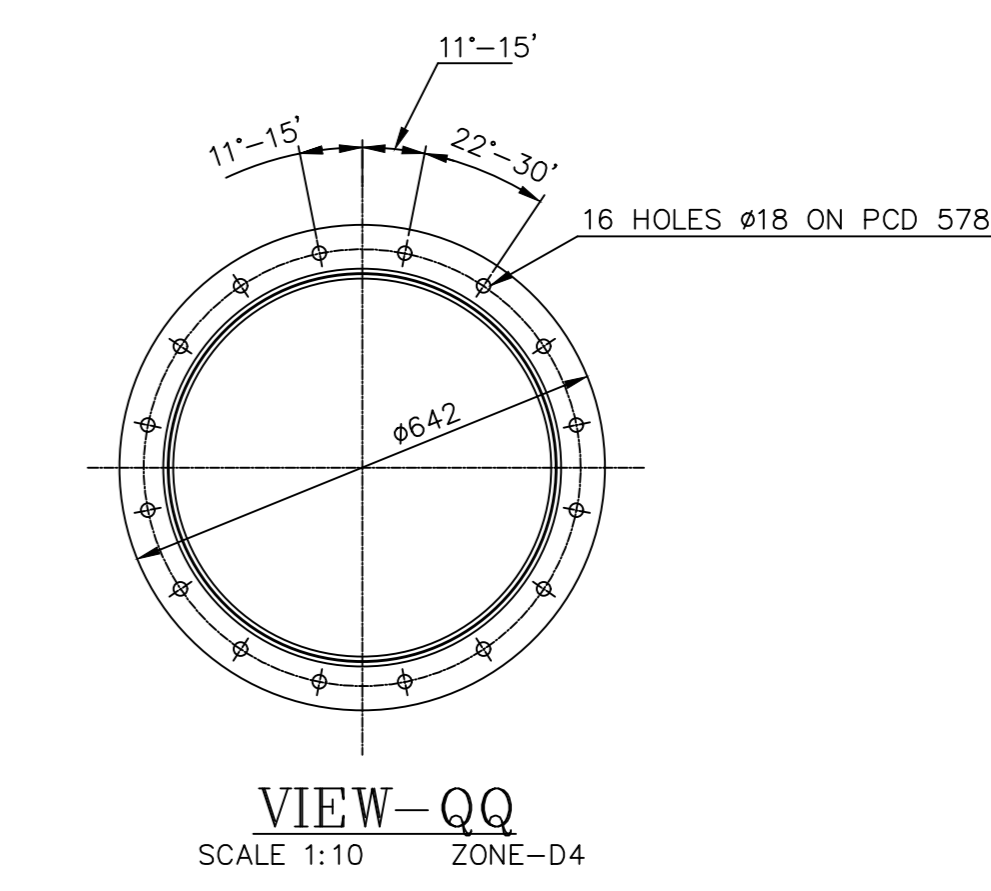
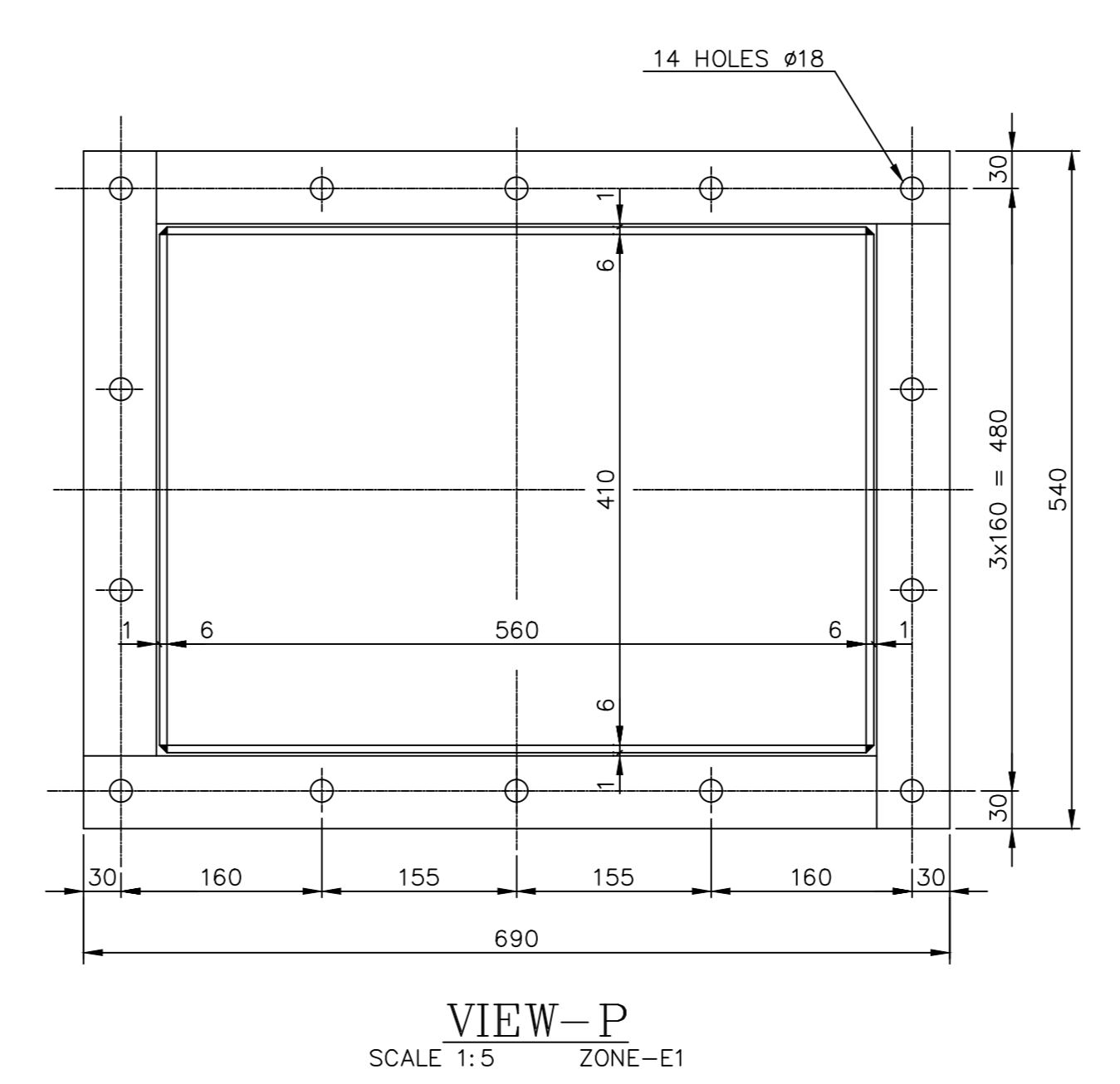
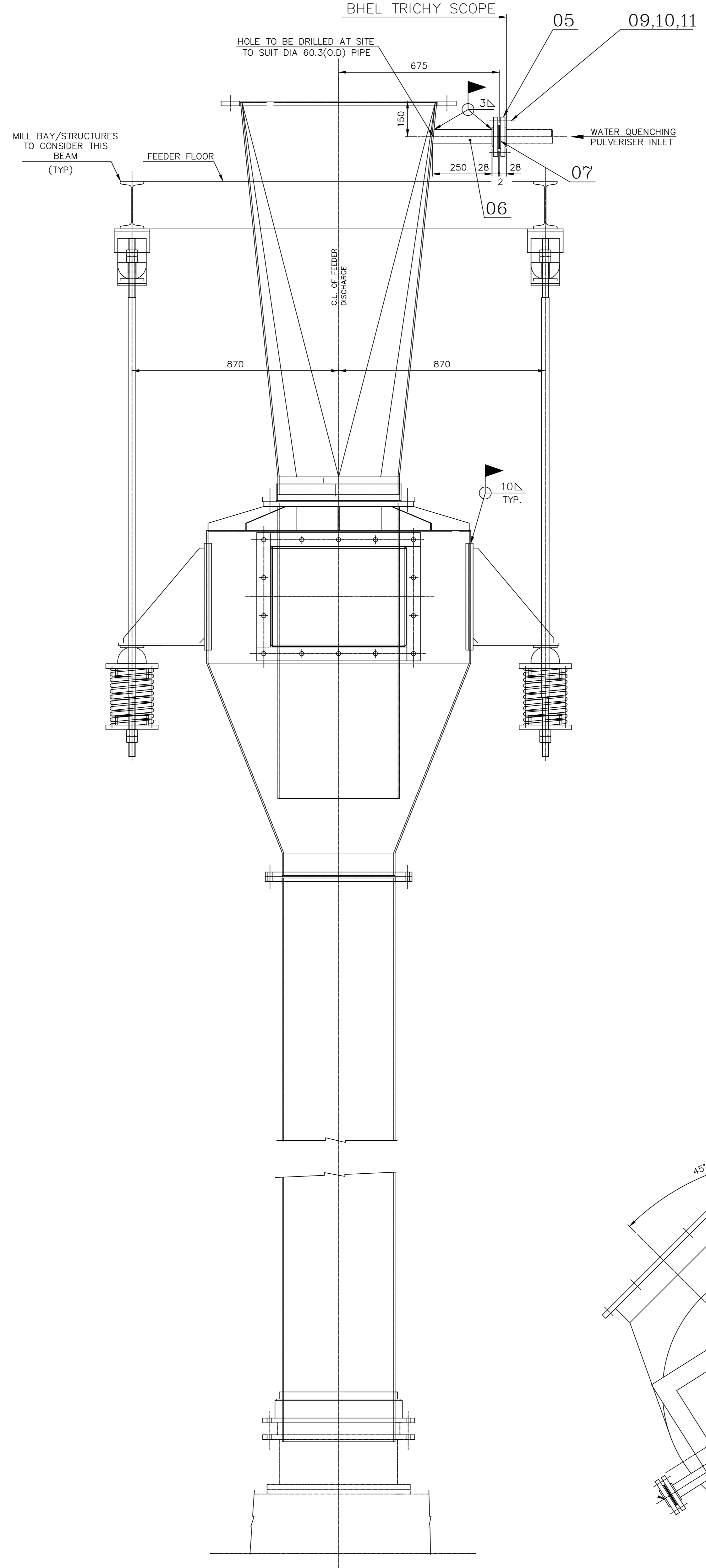
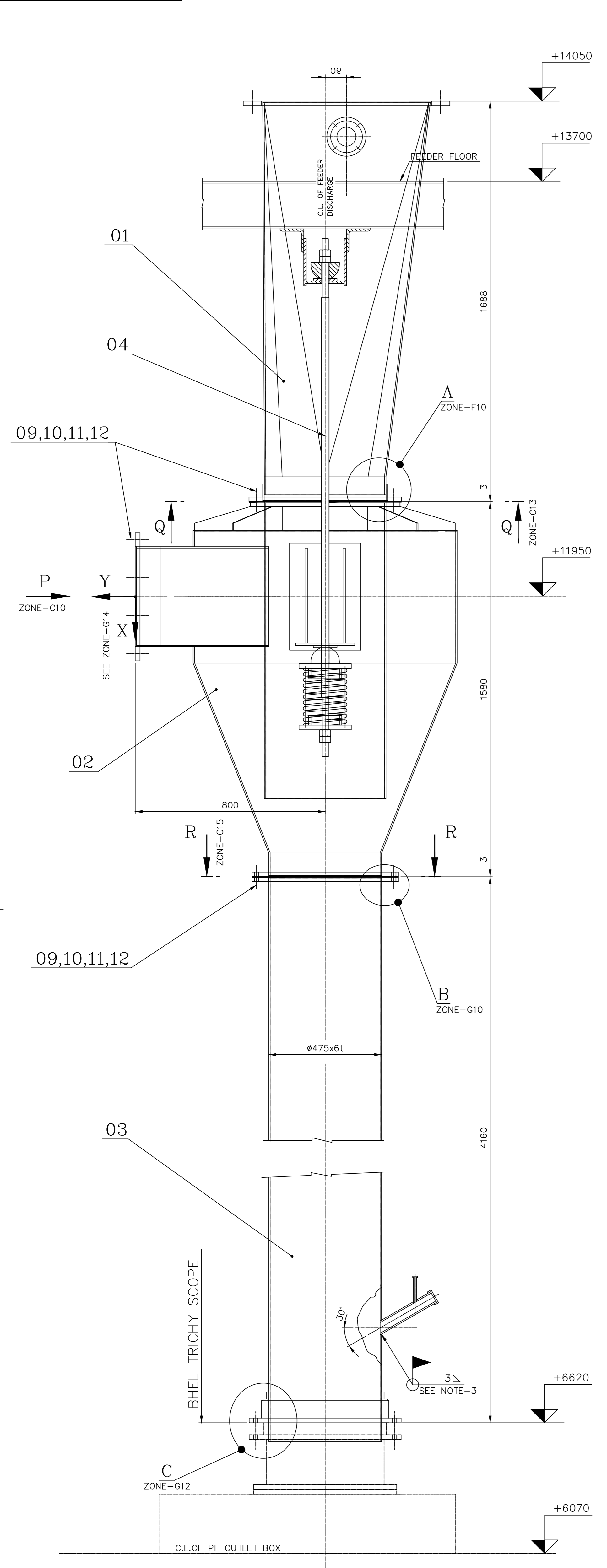


VARIANT NUMBER	DESCRIPTION	STD	15 011 132	A/C/P	UNIT	6.585
			IS: 2062 Fe410WA			UNIT WEIGHT
			MATERIAL CODE			QUANTITY
			MATERIAL SPECN			

		Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012 355-056		DRN <i>M. Alagiri</i>	SIGNATURE <i>M. Alagiri</i>	DATE 31-01-07
DEPT FEEDERS	ALL DIMENSIONS ARE IN MM CODE 240	PROJECTION 	SCALE 1:5	WEIGHT (Kg) 6.585	REF TO ASSY / OLD DWG	
TITLE FLANGE				DRAWING NO : 4-67-802-00440 4-67-802-U3344		REV 00

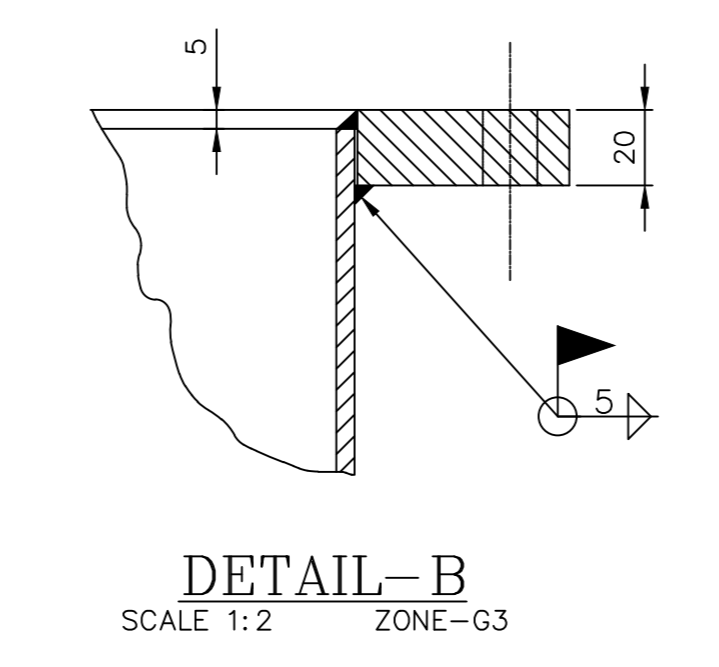
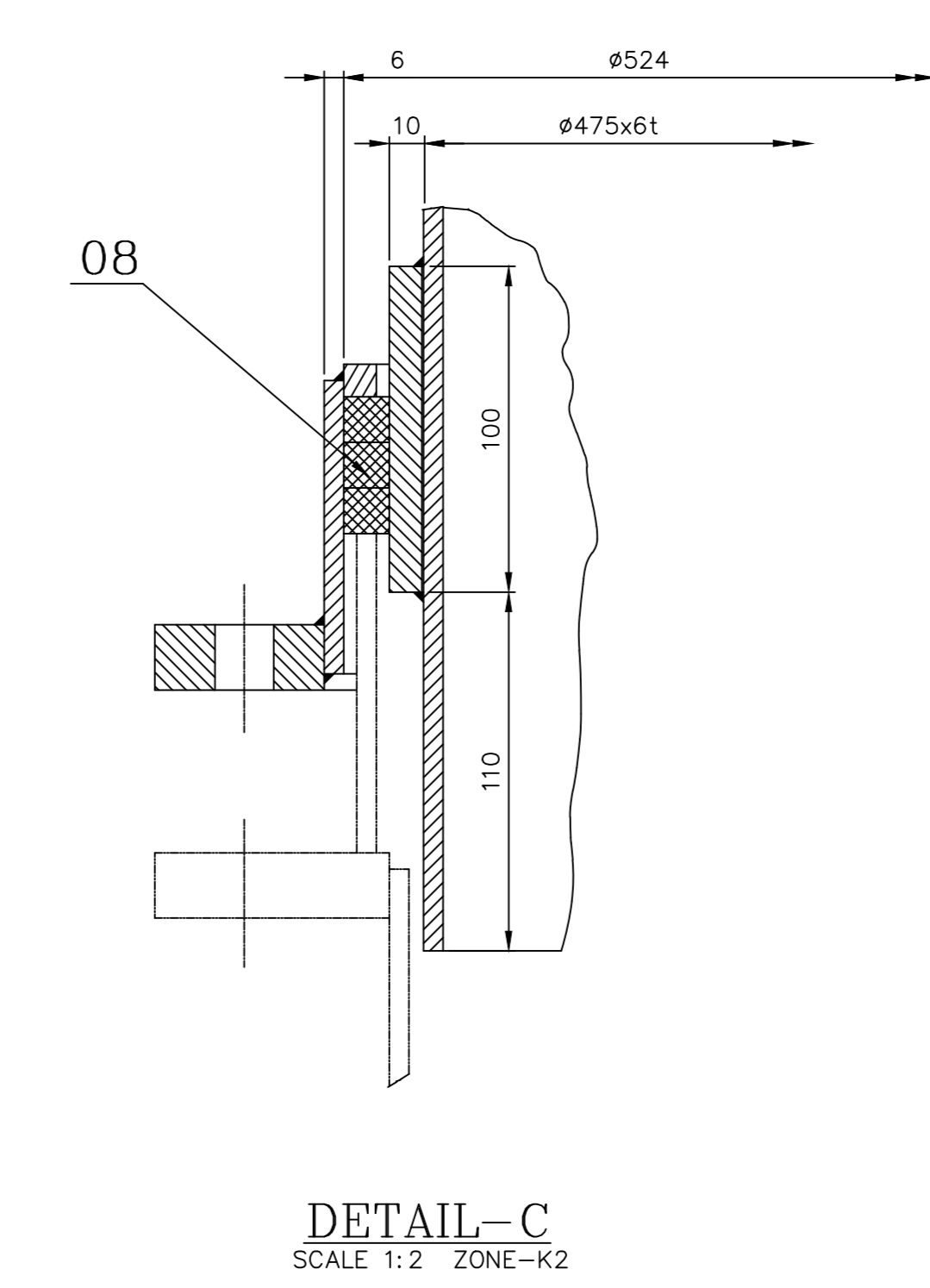
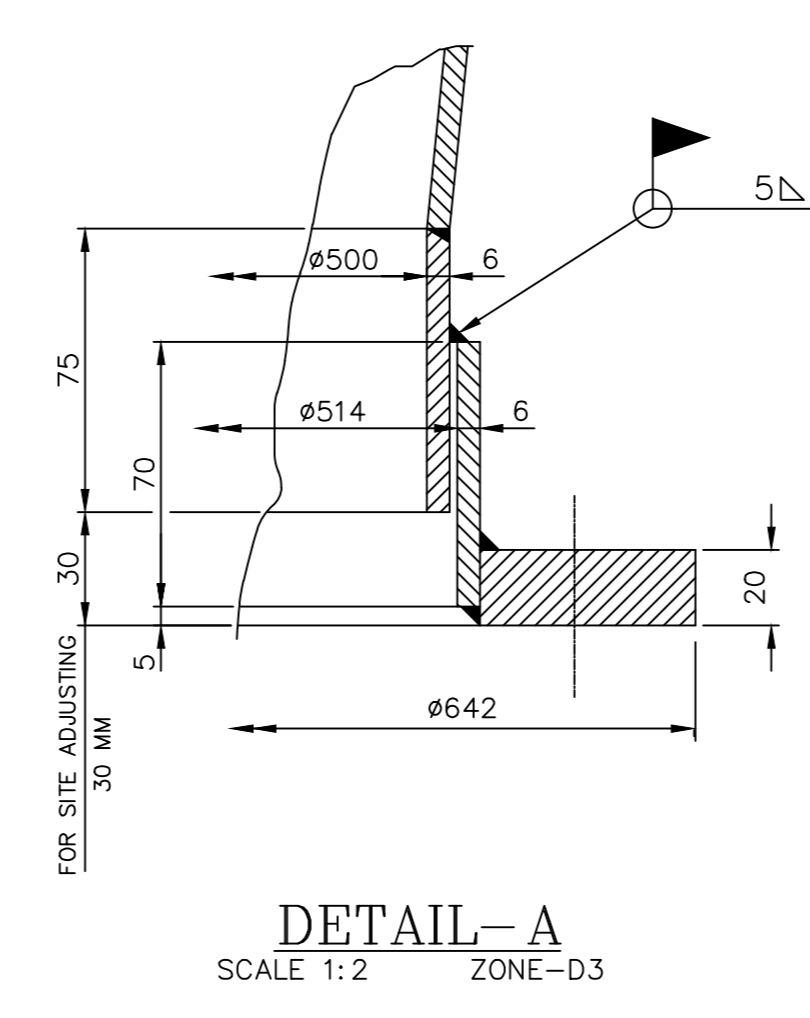
0-67-803-00445
0-67-803-U3335

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



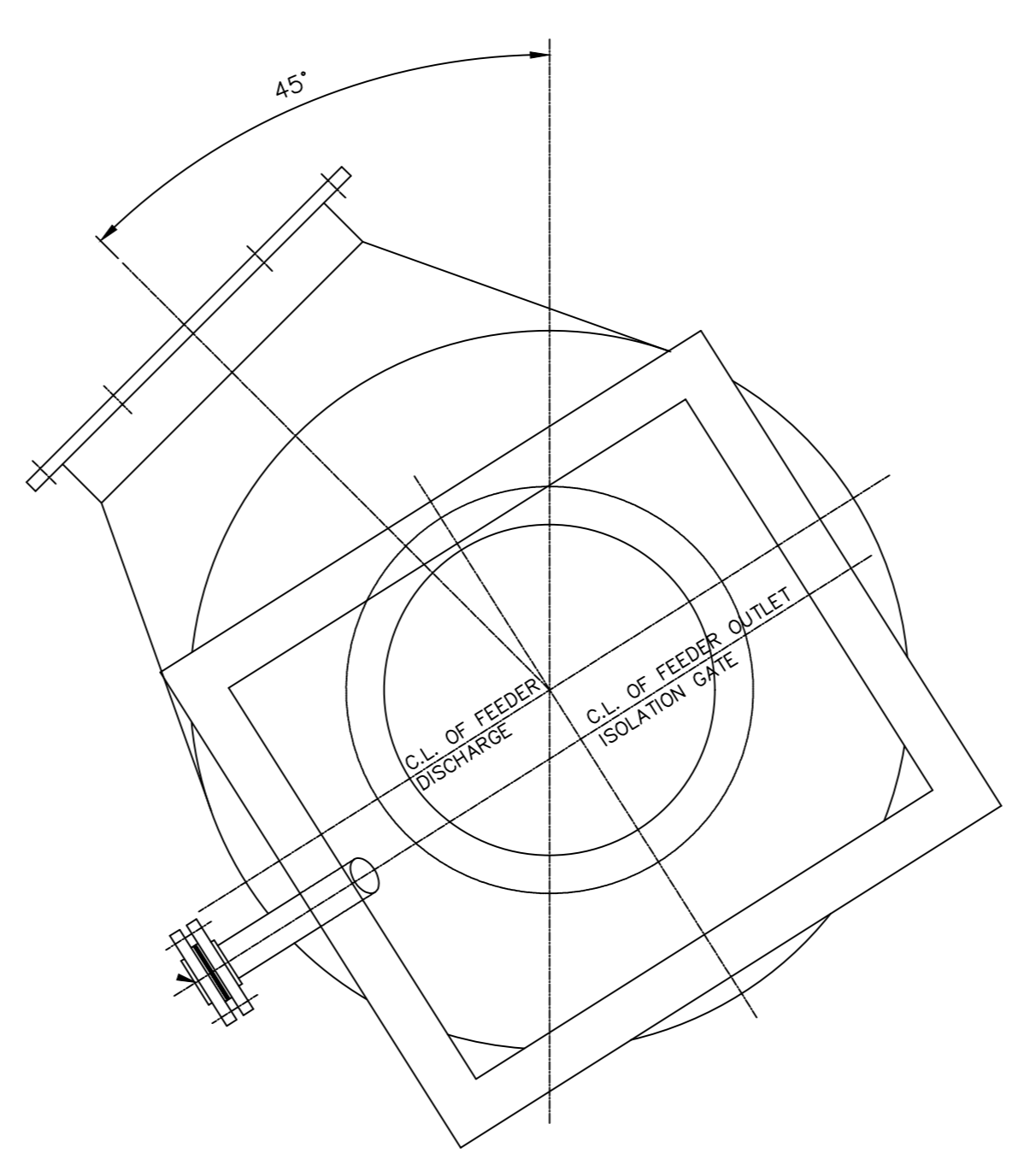
VALUES OF EXPANSION

ITEM	X	Y
	7.5 MM	3 MM

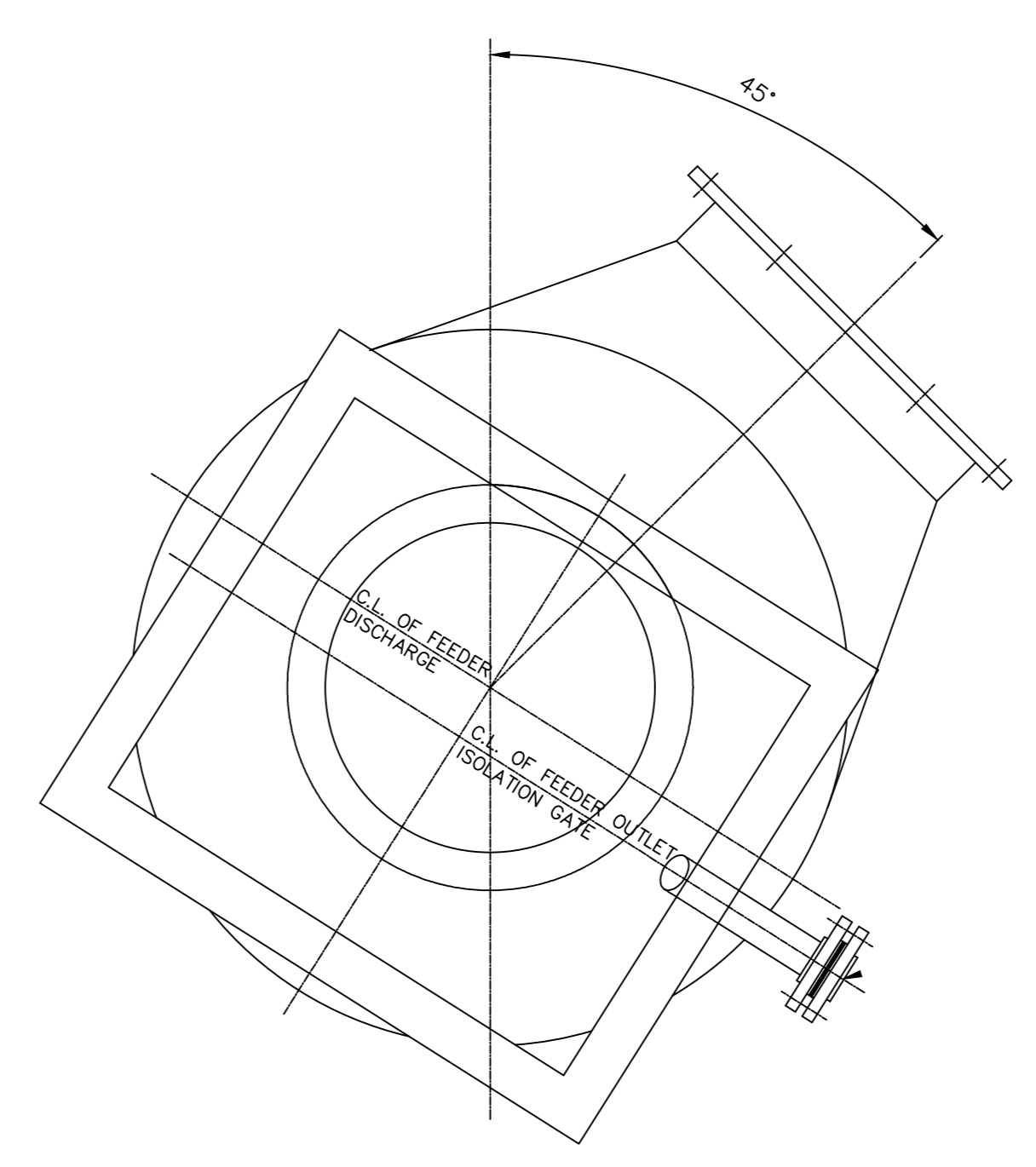


- NOTES:
- ASSEMBLY SHOWS TYPICAL ARRANGEMENT.
 - TWO NUMBERS AS PER VIEW DRAWN. TWO NUMBERS AS PER MIRROR IMAGE.
 - MILLBAY/STRUCTURES GROUP TO CONSIDER BEAM AS SHOWN IN ZONE B5&B8. REFER 0-00-600-11221 FOR LOADS.
 - REFERENCE DRAWINGS
(I) BUNKER TO FEEDER ARRANGEMENT - 0-00-600-11219
(II) BUNKER EMPTYING ARRANGEMENT - 0-00-600-11220
(III) FEED PIPE TO MILL ARRANGEMENT - 0-00-600-11221

1. QUANTITIES MENTIONED IN THIS BOM ARE PER BOILER REQUIREMENT.
2. ITEM 02-2 NOS. FOR DRIVE END OF 2 MILLS & 2 NOS. FOR NON-DRIVE END OF 2 MILLS
3. WEIGHT PER FEED PIPE TO MILL ASSEMBLY = 1231.375 KG



ORIENTATION
DRIVE END
SCALE 1:10
(ITEM-02-50% QTY FOR 2 MILLS)



ORIENTATION
NON-DRIVE END
SCALE 1:10
(ITEM-02-50% QTY FOR 2 MILLS)

REFER ORIENTATION

ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO.	MATERIAL CODE	UNIT WEIGHT	QUANTITY	ZONE
12	PACKING ROPE DA DIA.8x2000L	TP 21599		22020234	MR	0.100	80	D1
11	PNCHD WASHER A18	IS:2016		414080016	AR	0.010	200	G1
10	HEX NUT M16 -4	IS:1363(P-3)		413040016	L	0.030	200	G1
09	HEX HD BOLT M16x70 -4.6	IS:1363(P-1)		4122116070	AR	0.140	200	G1
08	PACKING ROPE DA SQ.15x800L	2150499959		2202052000	MR	0.217	32	E11
07	GASKET OD102xD62x2THK	2151702065		22 020 638	L	0.030	4	B8
06	PIPE OD60.3x3.91x250L	CAF		15 082 030	L	1.360	4	B7
05	FLANGE PL.32xOD165xD62	4-67-803-00301		15 011 130	L	3.630	8	A8
04	MIXING BOX SUPPORT	1-67-803-00395		IS2062FE410B	WELDMNT		77.698	C1
03	FEED PIPE	2-67-803-00263			WELDMNT		357.123	H1
02	MIXING BOX ASSY	0-67-803-00140			WELDMNT		451.710	F1
01	TRANSITION PIECE	1-67-803-00190			WELDMNT		245.760	B1

CUSTOMER NO.: 2622

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NATIONAL ALUMINIUM COMPANY LIMITED : DAMANJODI UNDER PHASE-3 EXPANSION OF M&R COMPLEX 1X300 t/h : 89.5 kg/cm (g); 487°C

CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It is to be used only for the purpose of the contract and is not to be used for any other purpose without the written consent of the company.

DEPT: 385-052	DESIGN: FS	SCALE: 1:10	WEIGHT (kg): 4925.500
CODE: 129	ALL DIMENSIONS ARE IN MM		

DATE: 29.09.2021
ALTERED: SAIRAM N
CHD & APPD: SAIRAM N

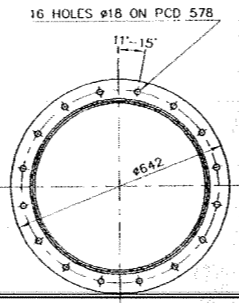
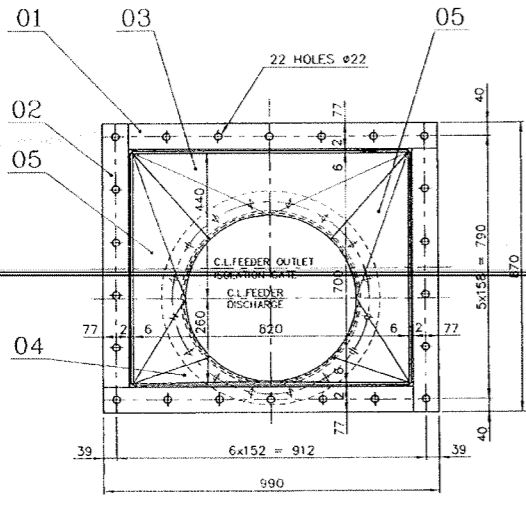
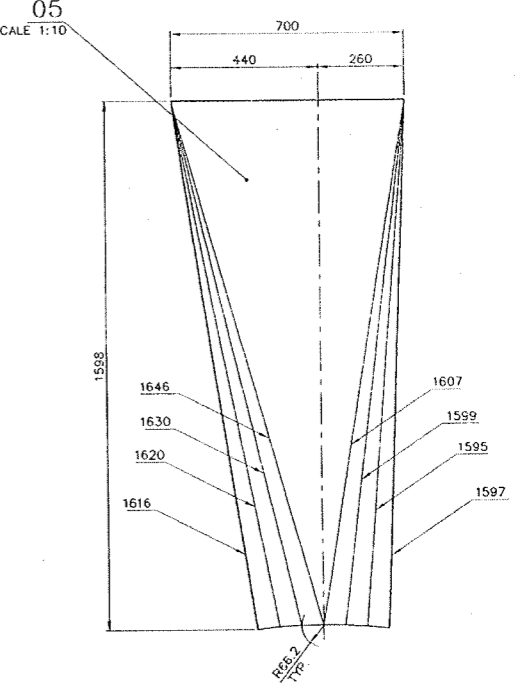
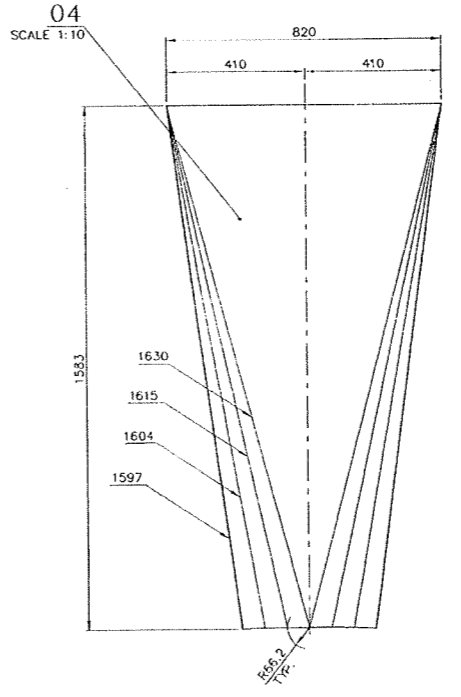
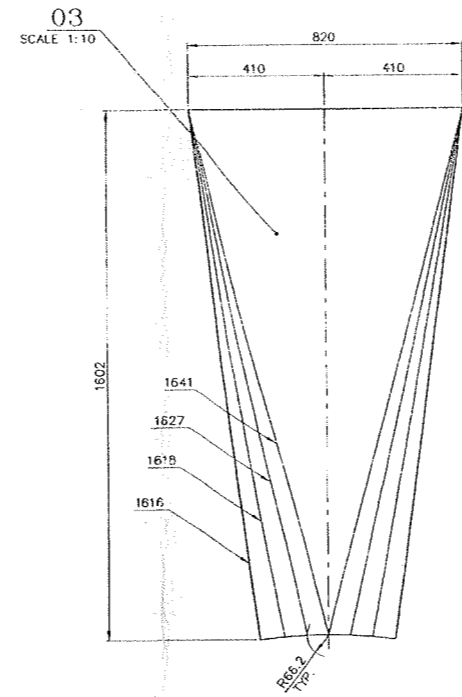
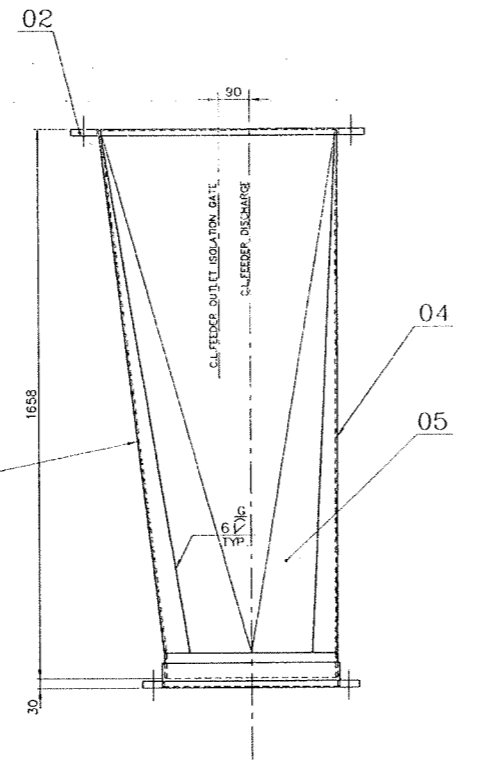
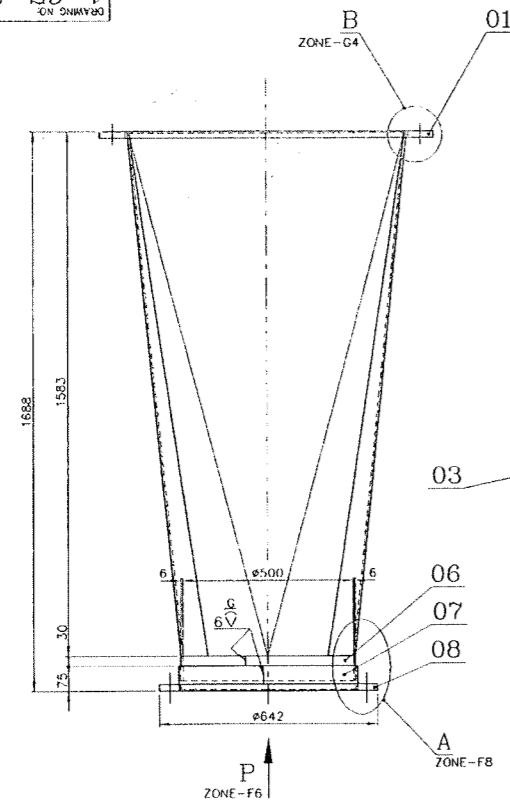
NAME: SAIRAM N
SIGNATURE: SAIRAM N
DATE: 29.09.2021

UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012
APPD: GANADHAR MOHSI
DATE: 29.09.2021

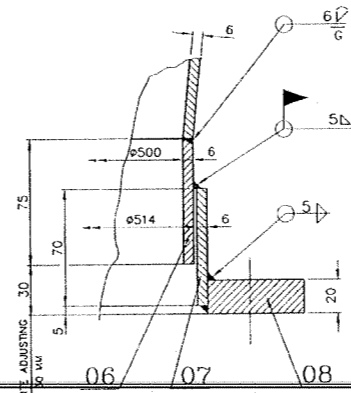
TITLE: FEED PIPE WITH MIXING BOX ASSEMBLY
DRAWING NO: 0-67-803-00445
REV: 00
0-67-803-U3335

1-67-803-00190
1-67-803-U3340
DRAWING NO.

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

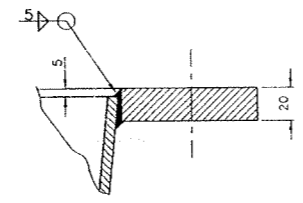


VIEW-P
SCALE 1:10 ZONE-D3

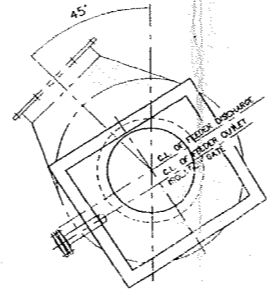


DETAIL-A
SCALE 1:2 ZONE-D3

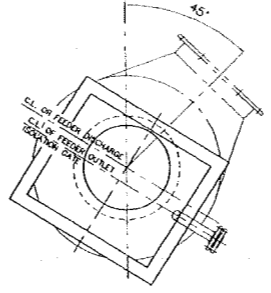
NOTE:
2 Nos. AS PER VIEW DRAWN.
2 Nos. AS PER MIRROR IMAGE.



DETAIL-B
SCALE 1:2 ZONE-A3



ORIENTATION
DRIVE END
SCALE 1:20



ORIENTATION
NON-DRIVE END
SCALE 1:20

ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO.	MATERIAL SPECN	UNIT	UNIT WEIGHT	QTY	ZONE
08	FLANGE PL.20X0528/D642		4-67-803-00392	15 011 150	IS:2062 Fe410WA	1	16.100	1	D3
07	CYLIN. PIECE PL.6X70X1634			15 011 092	IS:2062 Fe410WA	1	5.400	1	C3
06	CYLIN. PIECE PL.6X75X1590			15 011 206	SA240 TYPE 304	1	5.800	1	C3
05	PL.6x700x1598			15 011 206	SA240 TYPE 304	2	42.400	2	C6
04	PL.6x820x1583			15 011 206	SA240 TYPE 304	1	46.640	1	B6
03	PL.6x820x1602			15 011 206	SA240 TYPE 304	1	47.200	1	C3
02	PL.20x77x793			15 011 150	IS:2062 Fe410WA	2	9.230	2	A4
01	PL.20x77x913			15 011 150	IS:2062 Fe410WA	2	10.680	2	A4

CAUTION: The information on this drawing is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the prior written consent of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
BHARAT HEAVY ELECTRICALS LTD.
UNIT: HEAVY PLATES & VESSELS PLANT.
VISHAKHAPATNAM-510012

DATE: 22/05/99
NAME: S. Mani Varman
SIGNATURE: [Signature]
DATE: 22/05/99
NAME: D. Vijayakumar
SIGNATURE: [Signature]
DATE: 22/05/99
NAME: S. Swaminathan
SIGNATURE: [Signature]
DATE: 22/05/99

SCALE: 1:10
WEIGHT (Kg): 245.760

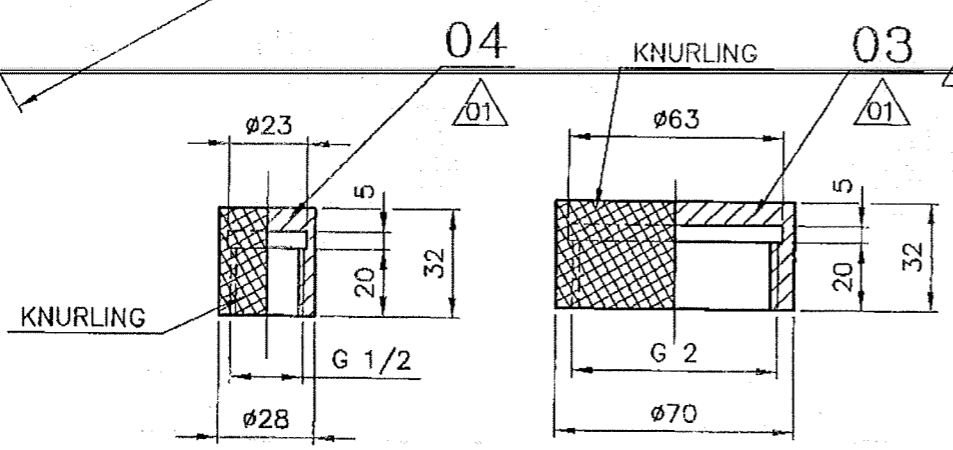
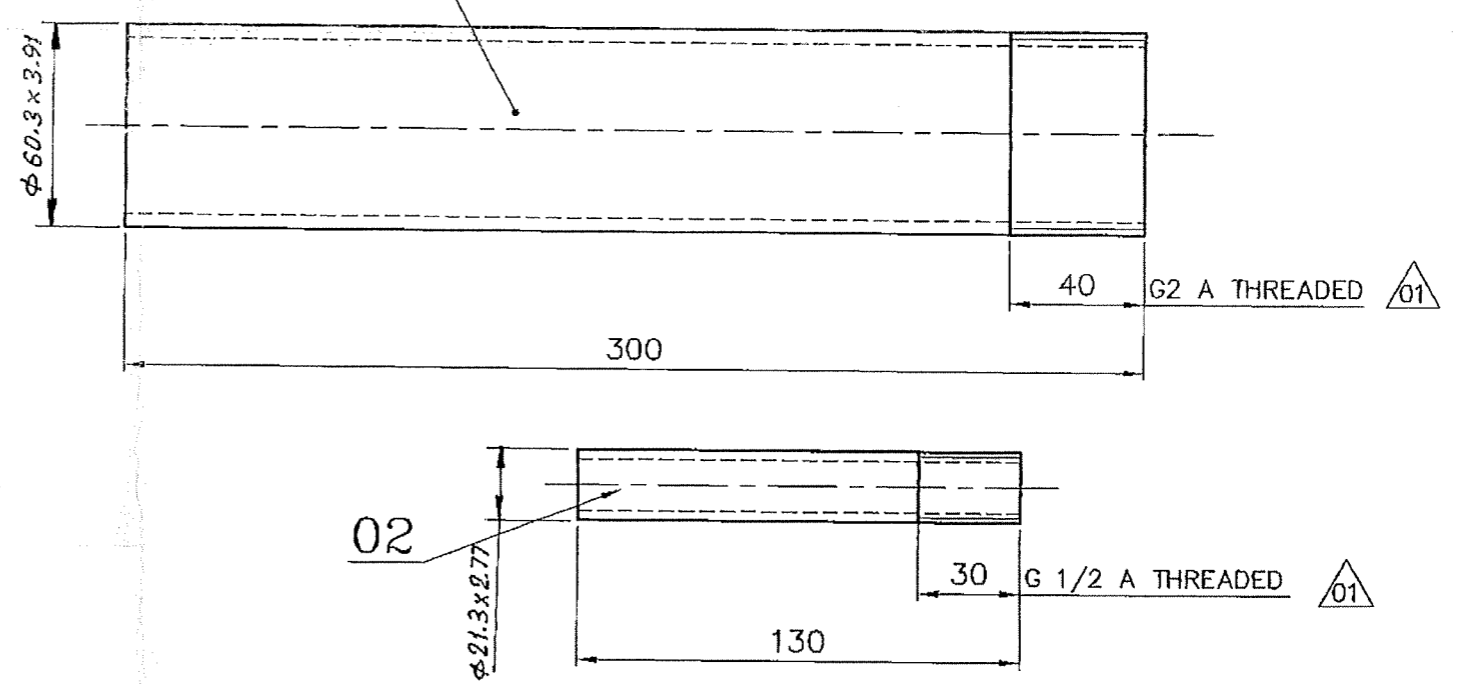
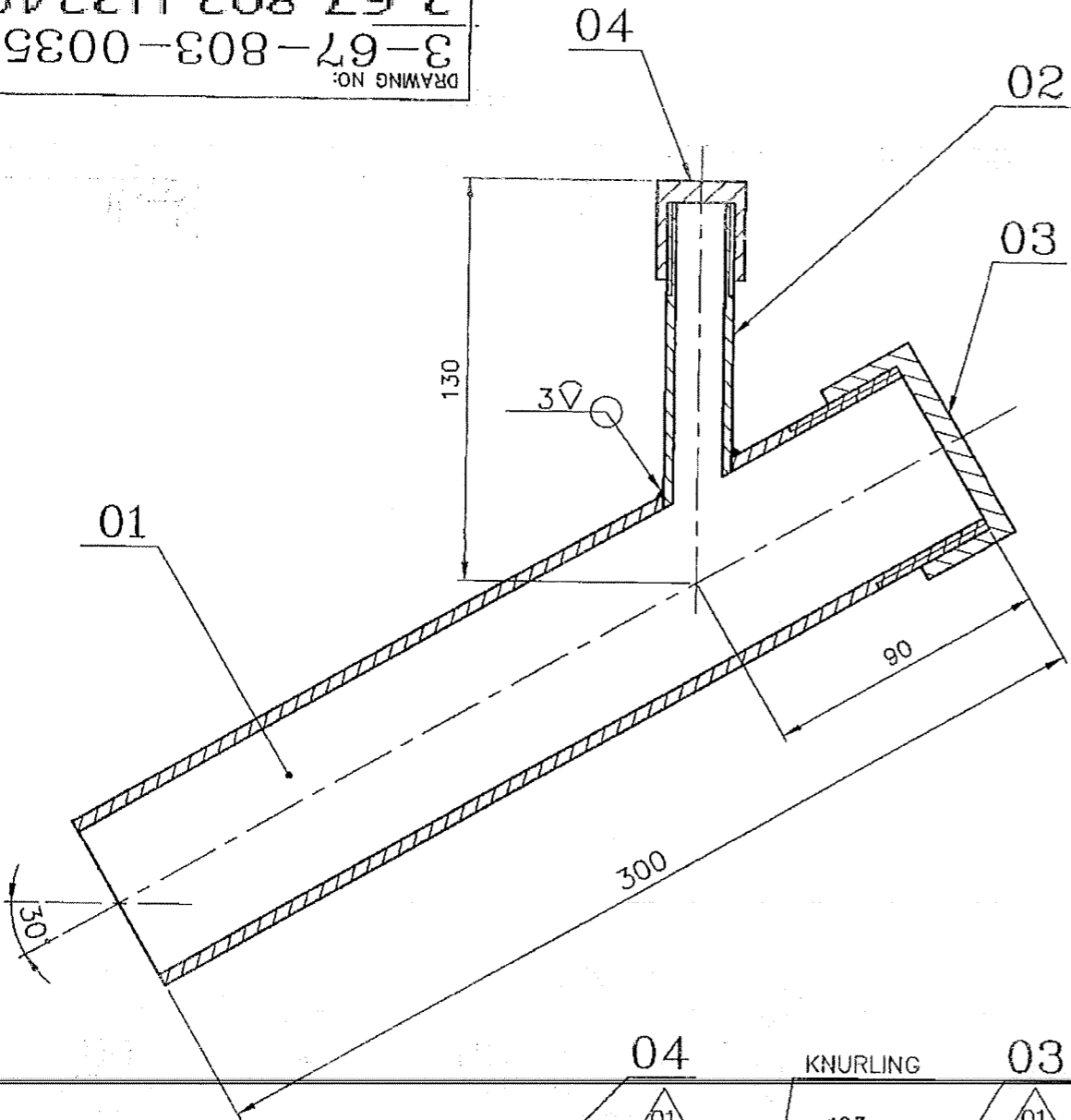
REV. DATE ALTERED: CHD & APPD:
ZONE:

TITLE: TRANSITION PIECE

DRAWING NO.: 1-67-803-00190
1-67-803-U3340

3-67-803-U3349
 3-67-803-00350
 DRAWING NO.

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	QUANTITY
01	04	ROUND CAP - 1/2"				15 339 140			0.043	1
		ROD D32x32L				SA 105				
01	03	ROUND CAP -2"				15 339 144			0.320	1
		ROD D80x32L				SA 105				
01	02	TUBE				15 082 001			0.100	1
		D21.3X2.77....130L				SA 106 Gr.B				
01	01	TUBE				15 082 030			1.600	1
		D60.3X3.91....300L				SA 106 Gr.B				

REV	DATE	ALTERED :
01	12/9/99	CHD & APPD: <i>[Signature]</i>

ZONE

THD. WAS FP 2" & FP 1/2".
 DETAIL ADDED FOR ITEM 03&04.
 ITEM 03&04 WAS BPS.
 ITEM 01 WAS TUBE 51x4THK.
 ITEM 02 WAS TUBE 14x2THK.

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.
 UNIT: HEAVY PLATES & VESSELS PLANT,
 VISAKHAPATNAM-530012

DRN	NAME	SIGNATURE	DATE
CHD	S.Manivannan	<i>[Signature]</i>	17/05/99
APPD	D.Vijayakumar	<i>[Signature]</i>	08/06/99
	J.Swaminathan	-sd-	10/06/99

DEPT FEEDERS CODE 240

ALL DIMENSIONS ARE IN MM

PROJECTION SCALE 1:2

WEIGHT (Kg) 2.063

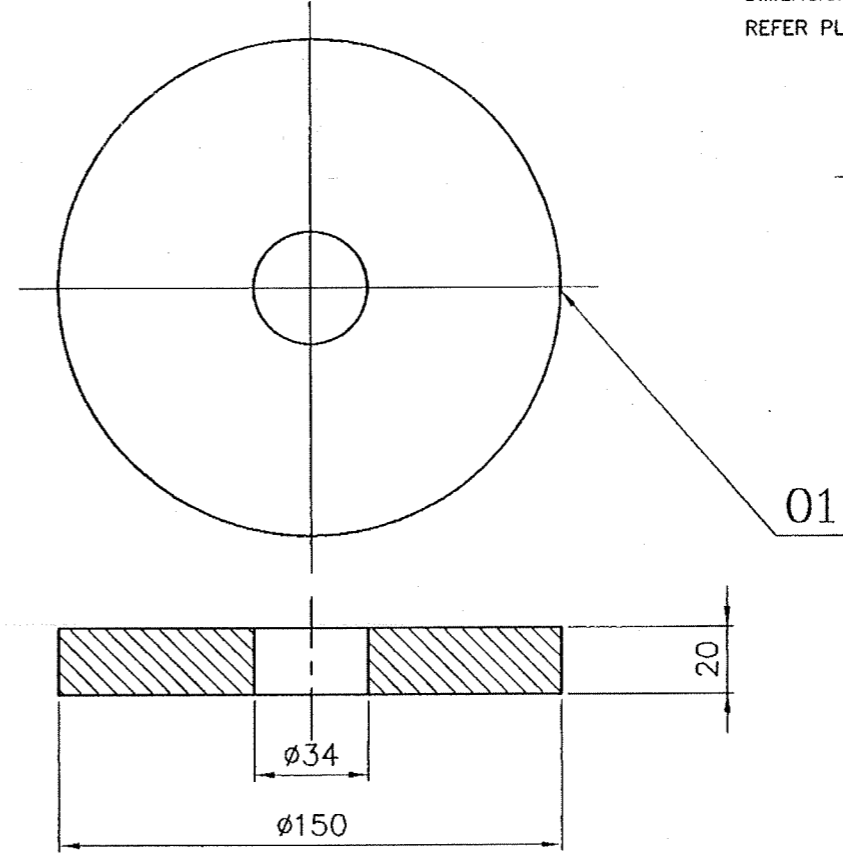
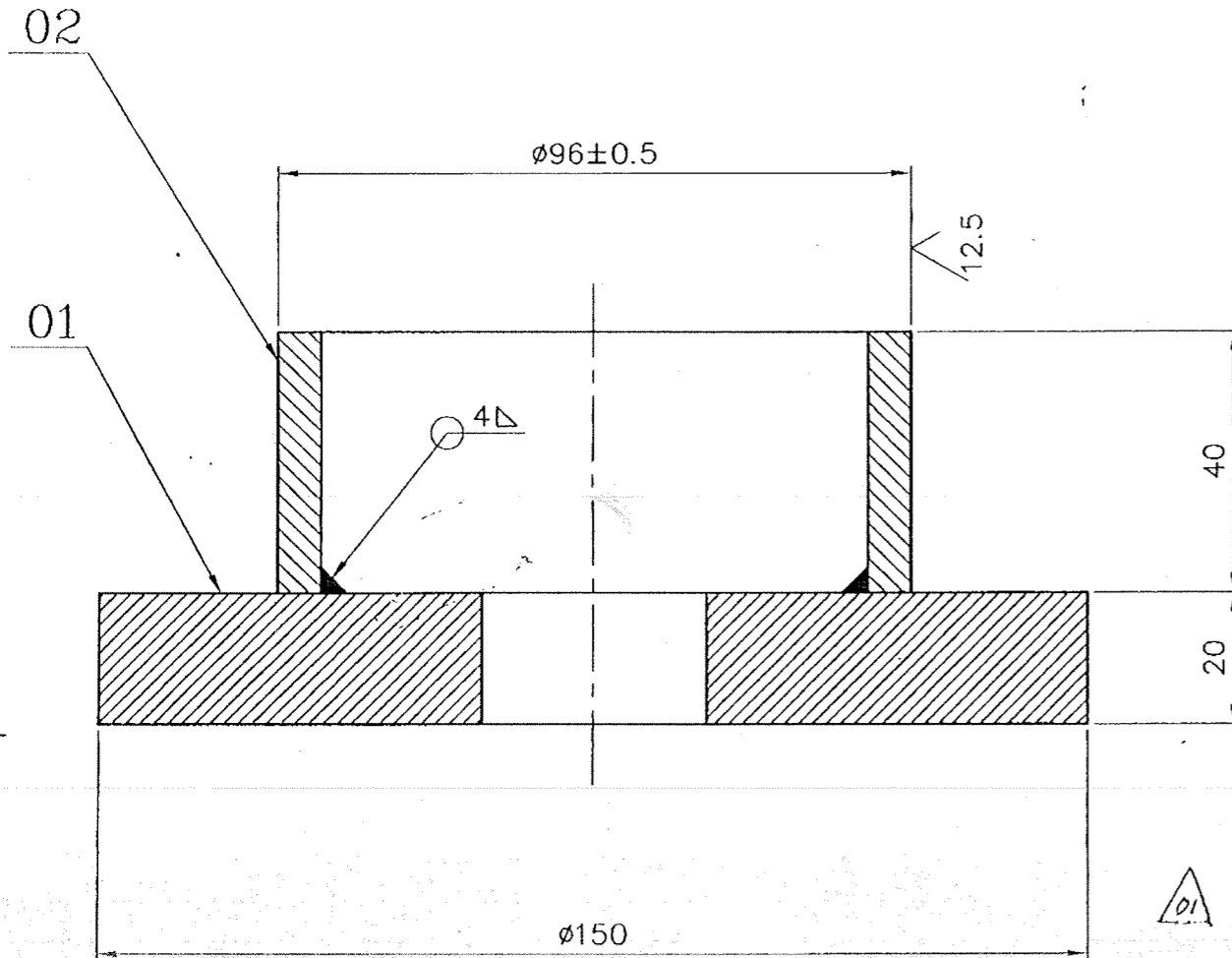
TITLE **PRESSURE CHECKING DEVICE**

DRAWING NO : 3-67-803-00350
 3-67-803-U3349

REV 01 /00

DRAWING NO:
3-67-803-00396
3-67-803-U3351

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	GS
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	02	TUBE 10D 108X12.5T..40L				15-182-160 SA106 GR.B			0.540 1	
	01	PLATE 20XOD150				15-011-150 IS2062Fe410WA			2.632 1	

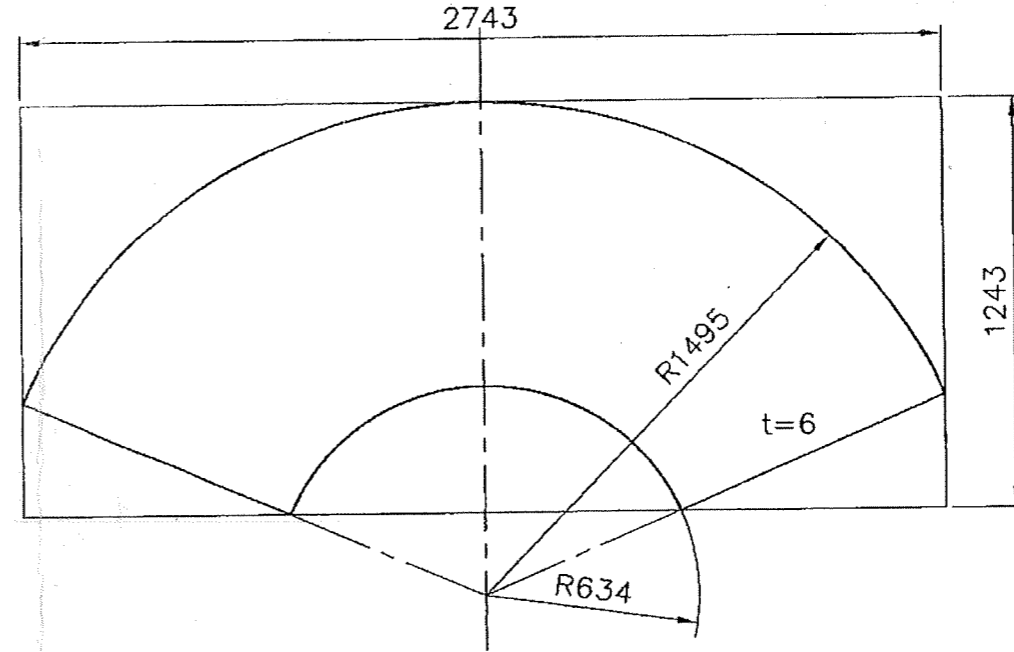
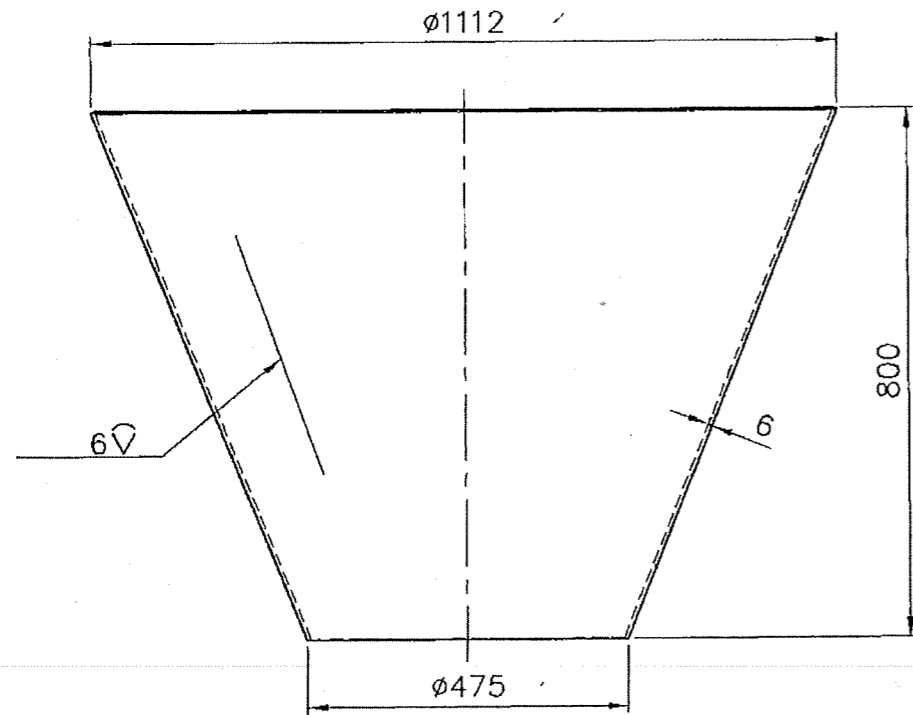
REV	DATE	ALTERED : M.A.
01	25.3.05	CHD & APPD: S.V.V.K.
ZONE	ITEM 02, M-CODE CORRECTED.	

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				100			
BHARAT HEAVY ELECTRICALS LTD.				DRN	S.MANI	SIGNATURE	DATE
UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012				CHD	SELVA	SIGNATURE	21/08/01
355-055				APPD	SVS	SIGNATURE	"
DEPT	FS	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
CODE	240			1:1	3.172	3-67-803-00285	
TITLE						DRAWING NO :	REV
SPRING SEAT						3-67-803-00396	01
						3-67-803-U3351	/00

DRAWING NO:
 3-67-803-U3350
 3-67-803-00352

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



DEVELOPMENT
 SCALE 1:20

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN	DI	QUANTITY	
	01	PL.6x1243x2743				SA240 TYPE304		1	103.000
						15 011 206			

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

BOM



BHARAT HEAVY ELECTRICALS LTD.

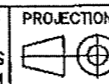
UNIT: HEAVY PLATES & VESSELS PLANT,

355-055

VISAKHAPATNAM-530012

DEPT
FEEDRS
CODE
240

ALL
DIMENSIONS
ARE IN MM



SCALE
1:10
1:20

WEIGHT (Kg)
103.000

REF TO ASSY / OLD DWG

TITLE

REDUCER

DRAWING NO :
 3-67-803-00352
 3-67-803-U3350

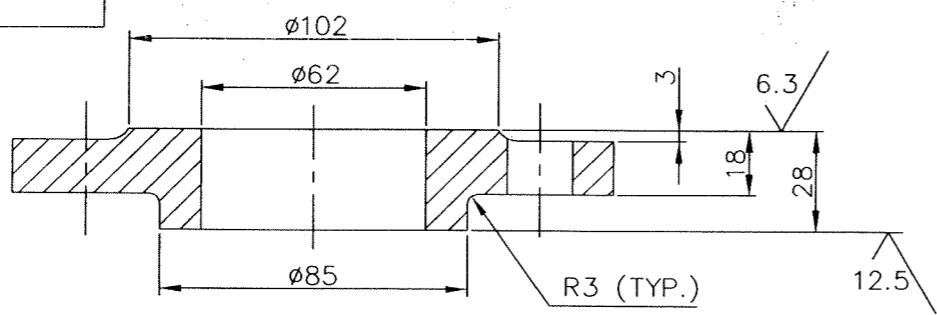
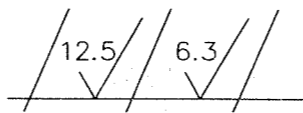
REV
00

104

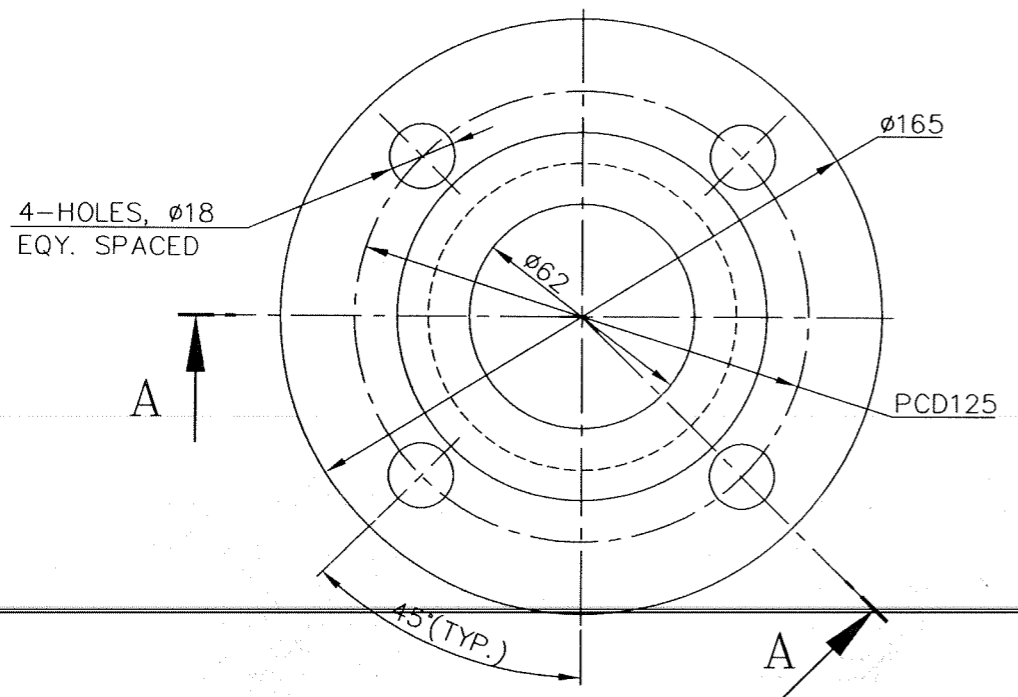
THE INFO ON THIS DOCUMENT IS THE PROPERTY OF BHEL. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL. CAUTION:

REV	DATE	ALTERED :	R.R.Rajan
01	02/02/98	CHD & APPD :	S.Selva.
MATERIAL SPECN. IS:2062 FE 410WB WAS IS: 2062 FE 410W.			
REV.	DATE	ALTERD	S.Mani.
02	20/11/02	CHD & APPD.	S.Selva.
DIMENSION 45° & SECTION-AA ADDED. DRAWING PREPARED IN AUTO CAD			

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



SECTION-AA



VARIANT NUMBER	PL. 32 x OD165 x ID62	15 011 130	3.630
		IS: 2062 FE 410WB	
	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

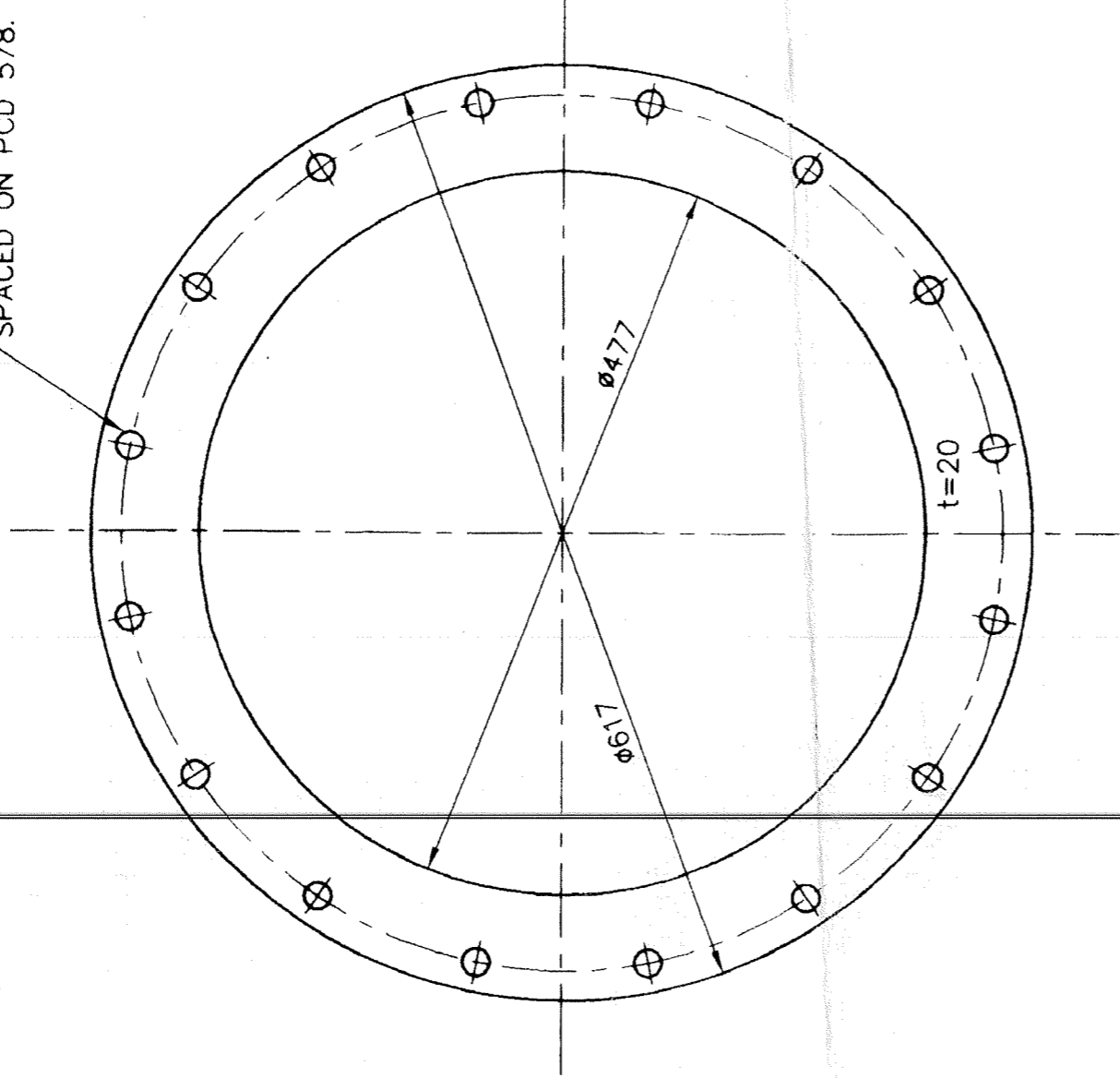
<p>Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012</p>		DRN	NAME EC/SELVA	SIGNATURE sd.	DATE 19/12/92
		CHD	J.S.N	sd.	19/12/92
		APPD	M.A	sd.	19/12/92
DEPT FS	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:2	WEIGHT (Kg) 3.630	REF TO ASSY / OLD DWG -
CODE 240					
TITLE FLANGE		DRAWING NO : 4-67-803-00301 4-67-803-U3350			REV 02 / 00

CAUTION: THE INFO ON THIS DOCUMENT IS THE PROPERTY OF BHEL. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.



REV	DATE	ALTERED :
01		CHD & APPD :

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

16 HOLES $\phi 18$ EQUI. SPACED ON PCD 578.



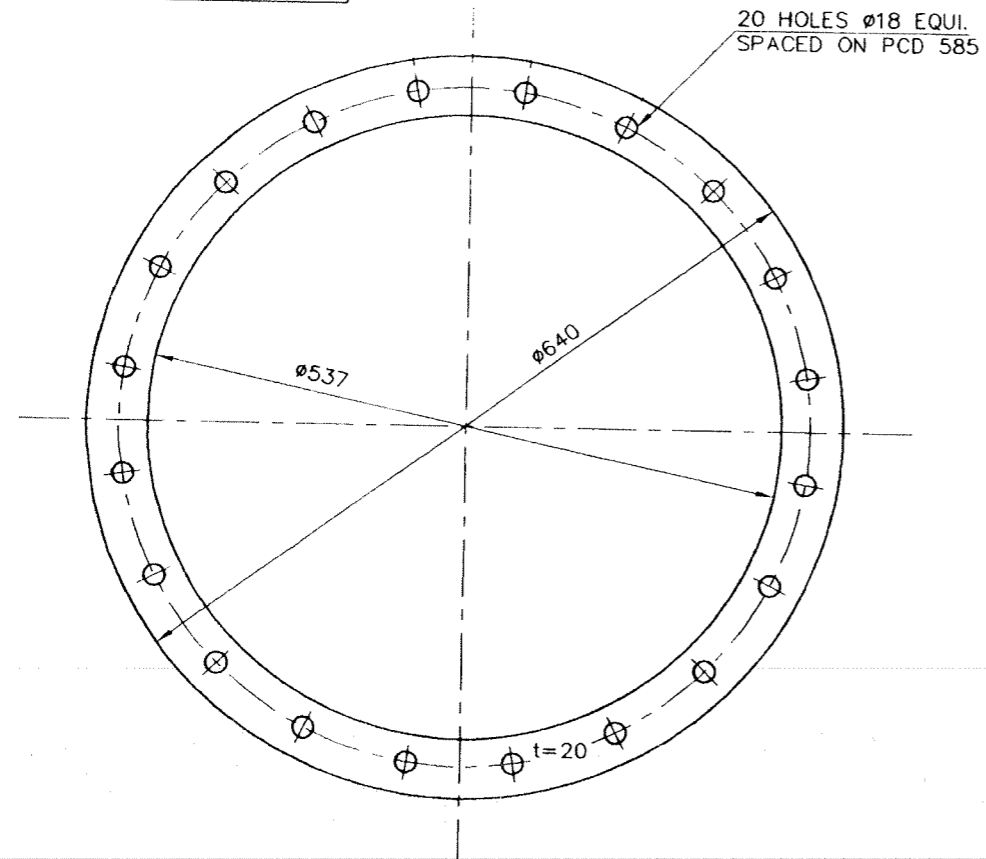
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DESCRIPTION	IS:2062 Fe410WA	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

 355-056		BHARAT HEAVY ELECTRICALS LTD., UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		DRN	NAME	SIGNATURE	DATE
DEPT FEEDERS CODE	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	CHD	D. Vijayakumar	<i>[Signature]</i>	17/05/99
240	1:5		WEIGHT (Kg)	APPD	J. Swaminathan	<i>[Signature]</i>	07/06/99
			18.250				10.6.99
TITLE		DRAWING NO :		REF TO ASSY / OLD DWG			
FLANGE		4-67-803-00389					
		4-67-803-U3351				REV 0.0	


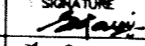
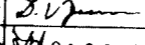

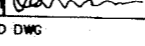
THE INTENT ON THIS DOCUMENT IS THE PROPERTY OF BHEL.
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY
IN ANY WAY DETRIMENTAL TO THE INTEREST OF BHEL.

REV	DATE	ALTERED :
01		CHD & APPD :

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



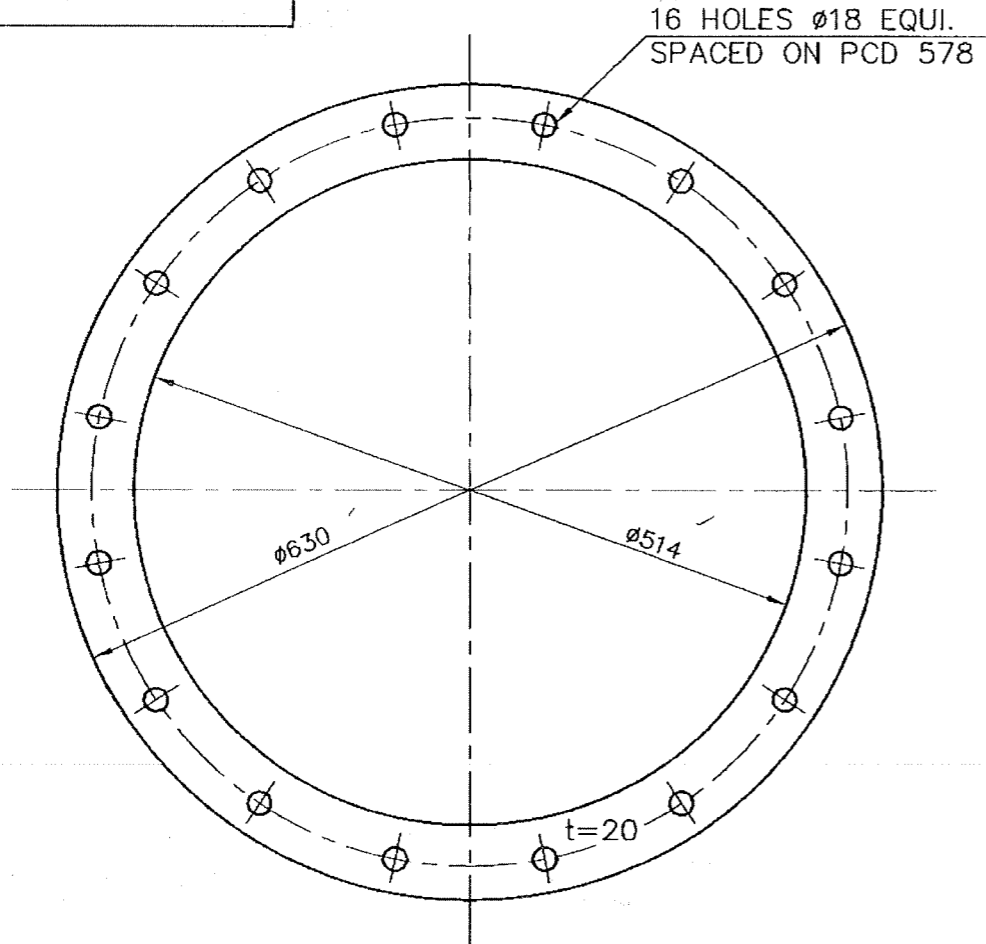
VARIANT NUMBER	DESCRIPTION	STD	15 011 150	A/C/P	UNIT	14.150
			IS: 2062 Fe410WA			UNIT WEIGHT
			MATERIAL SPECN			QUANTITY

		BHARAT HEAVY ELECTRICALS LTD. UNIT: HEAVY PLATES & VESSELS PLANT, VISAKHAPATNAM-530012		NAME S.Manivannan	SIGNATURE 	DATE 17/05/99
DEPT FEEDERS		ALL DIMENSIONS ARE IN MM		CHD D.Vijayakumar	SIGNATURE 	DATE 07/06/99
CODE 240		PROJECTION 	SCALE 1:5	APPD J.Swaminathan	SIGNATURE 	DATE 10-6-99
TITLE FLANGE			WEIGHT (Kg) 14.150		REF TO ASSY / OLD DWG	
				DRAWING NO : 4-67-803-00390 4-67-803-U3352		REV 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	PL.20xD514/D630	15 011 150	15.720
		IS:2062 Fe410WA	
	DESCRIPTION	MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY

		BHARAT HEAVY ELECTRICALS LTD. UNIT: HEAVY PLATES & VESSELS P. ANT. VISAKHAPATNAM-530012		NAME DRN S.Manivannan CHD D.Vijayakumar APPD J.Swaminathan	SIGNATURE 	DATE 05/06/99 07/06/99 10-6-99
DEPT FEEDERS	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:5	WEIGHT (Kg) 15.720	REF TO ASSY / OLD DWG	
TITLE FLANGE		DRAWING NO : 4-67-803-00391 4-67-803-U3353			REV 00	

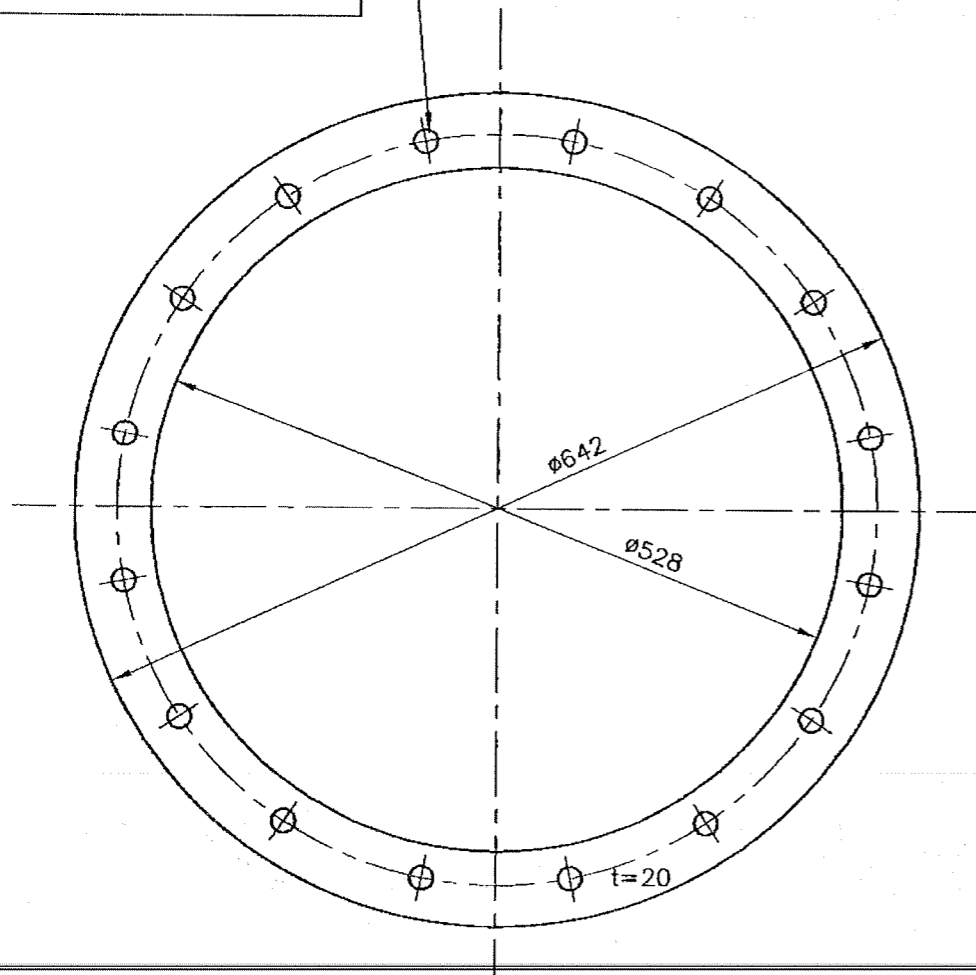
SCANNED

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REV	DATE	ALTERED :
01		CHD & APPD :

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

16 HOLES $\phi 18$ EQUI.
SPACED ON PCD 578



VARIANT NUMBER	PL.20XID528/OD642	15 011 150	16.100
	DESCRIPTION	IS: 2062 Fe410WA	
		MATERIAL CODE	UNIT WEIGHT
		MATERIAL SPECN	QUANTITY



BHARAT HEAVY ELECTRICALS LTD.
UNIT: HEAVY PLATES & VESSELS PLANT,
VISAKHAPATNAM-530012.

DRN	NAME	SIGNATURE	DATE
CHD	S.Manivannan	<i>S.Manivannan</i>	07/06/99
APPD	D.Vijayakumar	<i>D.Vijayakumar</i>	10/06/99
	J.Swaminathan	<i>J.Swaminathan</i>	10-6-99

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)
FEEDERS	240		1:5	16.100

REF TO ASSY / OLD DWG

TITLE	DRAWING NO :	REV
FLANGE	4-67-803-00392 4-67-803-U3354	00

SCANNED



Date:21/12/2021

PROJECT: NALCO DAMAJODI 18.5 MW BTG (UNIT-6) PROJECT
CONSULTANT: M N DASTUR & CO
TRANSMITTAL NO.: ID/PMG/552/HPVP/No.9/C

सेवा में /To
Shri Anirban Biswas (M N Dastur & Co)

महोदय/Sir,

विषय: दस्तावेज़/ड्राइंगप्रस्तुती
Sub: Drawings/Documents Submission.

निम्न सूची के दस्तावेज़/ड्राइंग संलग्न हैं :-

Please find the enclosed drawing/documents as per list given below:

क्रम संख्या Sr. No.	दस्तावेज़ / ड्राइंगसंख्या शीर्षक Document/Drawing Title	भेल दस्तावेज़ / ड्राइंग संख्या BHEL Document/Drawing No.	विषय Discipline	वर्ग CAT (A/I)	संशोधन संख्या Rev No.
1	Painting Schedule	PAINT-7906-DOC-00001	Mechanical	A	03
2					
3					
4					
5					
6					
7					

A :स्वीकृति/ APPROVAL I : सूचना/ INFORMATION

आपको धन्यवाद /Thanking you
Y Prasanna Kumar
Senior Manager
भारत हैवी इलेक्ट्रीकल्स लिमिटेड की ओर से
For Bharat Heavy Electricals Limited

BHARAT HEAVY ELECTRICALS LIMITED

HPVP UNIT - VISAKHAPATNAM - 530012



M/S. NALCO DAMANJODI (Unit-6) 18.5 MW CGPP-1x300 TPH COAL FIRED BOILER HPVP S.O. No. 7906 PAINTING SCHEDULE

Prepared by	Y. PRASANNA KUMAR Sr Manager/Engg.	Y. PRASANNA KUMAR Sr Manager/Engg.	Y. PRASANNA KUMAR Sr Manager/Engg.	Y. PRASANNA KUMAR Sr Manager/Engg.	
Reviewed by	L RAJASEKHAR DGM /HT-Engg.	S.K BISWAS AGM /HOD/Engg	S.K BISWAS AGM /HOD/Engg	S.K BISWAS AGM /Engg	
Approved by	S.K BISWAS AGM /HOD/Engg.	S.K BISWAS AGM /HOD/Engg	S.K BISWAS AGM /HOD/Engg	M.N Srinivasarao AGM /HOD/Engg	
Rev No	00	01	02	03	

RECORD OF REVISIONS

Document Ref no: PAINT-7906-DOC-00001/Rev03 Dated 21-12-2021

REVIEWED FOR REFERENCE	
SIGNATURE:	<i>K. Ramani</i>
LETTER REF.:	28812-MD-PWR03-275A
DATE:	24.12.2021
M. N. DASTUR & COMPANY (P) LTD KOLKATA	

Page 1 of 10

Rev. No	Date	Details of revision	Remarks
00	24.04.2021	New. Painting specification shall be read in conjunction with Annexure-III of Standard painting scheme document no: SIP: H: PP :22, dated:04.08.2018.	
01	07.08.2021	Shade of the paint for structural items (For SI No's 3&4) have been added based on the M/S NALCO suggestion.	
02	21.08.2021	PG-MA's of 66-100,66-200&66-300 have been added in the SI No:3 for coal Bunker and PG-MA of 34-610 has been added in the SI No:4.	
03	21.12.2021	Miscellaneous PG-MA's added in appropriate SI No's(Highlighted in Red colour).	

Nalco - Damanjodi – Painting schemes

Sl.No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT μm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1 1a	Drum (Except Internals), Drum suspension 04-116,04-210 ,04-146	SSPC – SP3 Power tool cleaning	Red oxide Zinc Phosphate Primer to IS 12744 DFT=30 μm per coat	2	--	--	--	--	--	60
2 5	Drum internals of both Upper and Lower Drums	SSPC-SP1/ or SSPC – SP3 Solvent / Power Tool Cleaning	Rust Preventive Fluid to PR: CHEM: 09 – 04 DFT=25 μm per coat	1	--	--	--	--	--	25

Sl.No.	PGMA / Description	Surface Prepn & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT μ m (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
3 1a	Buck stays, Boiler structures Galleries Stair-ways Walkways ID system structures, all the areas of Ducting except Hot air ducts & dampers, Piping and other components in Fuel firing area 08-101,08-107,08-400,08-900,19-901,21-600,21-601,21-700,24-346, 24-700 35-410,35-420,35-430,35-510, 35-520,35-610,35-611,35-612,35-700,35-810,35-820,35-991,36-210, 36-220,36-230,36-240,36-250,36-260,,36-390, 36-820,37-010,37-810, 37-510,38-010,38-110,38-210,38-310,38-410,38-510,38-610, 38-611, 38-993,39-010,39-110, 39-111,39-112,39-210,39-301,39-302,39-303, 39-700,41-390,41-500,41-988,42-010,42-020,42-988, 43-004,43-005,43-104, 43-105,43-200,47-141,47-143,47-149,48-012, 48-482,48-484,48-485,48-492,48-494,48-495, 48-535,48-532,48-700,48-993,48-392,48-997, 65-200,65-710,65-724,65-736,65-997,66-100,66-200,66-300,67-200,67-204,67-251,67-252,67-256,67-272,67-276, 67-283,67-710,67-801,67-802,67-803,67-997	SSPC-SP3/ Power Tool Cleaning	PVC copolymer based (or) synthetic enameling alkyd resin based paint with 30 DFT(At Shop)	2			PVC copolymer based (or) synthetic enameling alkyd resin based paint with 30 DFT(At Site)	2**	Smoke grey shade no. 692 of IS 5	120

Sl.No.	PGMA / Description	Surface Prepn &- Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT μ m (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
4 30	Structures 34-010,34-110,34-120,34-210,34-310,34-410,34-420,34-430,34-510,34-610,35-110,35-120,35-130,35-140,35-150 ,35-160,35-210,35-220,35-230 35-310,35-320,35-330,35-340,35-530 & 35-540 SEE NOTES BELOW	SSPC – SP3 Power tool cleaning	Red oxide Zinc Phosphate Primer to IS 12744 DFT=30 μ m per coat	2			High build epoxy polyamide anamel paint to a DFT of 40 μ m / coat (At Site)	2**	(shade of the paint is Light Grey for 1 st coat) (shade of the paint is Smoke grey shade no. 692 of IS 5 for 2 nd coat)	100
5 2	Loose tubes, SH & Eco.coils, 11-274,11-278 19-114,19-124	SSPC – SP3 Power tool cleaning	Red oxide Zinc Phosphate Primer to IS 12744 DFT=30 μ m per coat	2	-	--	--	--	--	60

6 3	WW, SH ,Eco Headers, SH & Eco lines & links Hot air ducts/dampers 05-137,05-147,05-155,05-175,06-400,06-611,06-631,06-637,06-647,06-651,06-655,06-997,07-101,07-200,07-201,07-211, 07-212,07-222,07-226,07-420, 07-401,07-601,07-993,07-997,10-174,10-178, 10-274,10-278, 12-803,12-850, 12-852,12-900,12-901, 12-993,12-997,18-001, 19-701,19-702,19-850,19-851,19-901,19-903,19-906,19-997,19-993,24-100,24-101,24-120,24-125,24-135,24-140,24-145,24-150,24-155,24-175,24-180,24-185,24-350,24-351,24-993,24-994,30-103,30-105,30-211,3-215,30-218,30-228,31-010,31-104,31-108,43-004,43-005,43-104,43-105,43-200,43-710,45-180,45-181	SSPC-SP3/ Power Tool Cleaning	Alkyd Base Red Oxide or Zinc phosphate pigments as Primer to IS 12744 DFT= 40 µm per coat	2	--	--	--	--	--	80
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** : To be applied at site

NOTE: ONLY SOME DUS OF THESE COMPONENTS UPTO 1 ST MBL SHALL BE APPLIED WITH THIS SPECIAL PAINT SYSTEM . FOR THE REST OF THE DUS, PAINT SYSTEM SPECIFIED IN SI.No. 3 SHALL BE APPLIED.

Sl.No.	PGMA / Description	Surface Prepn & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT μm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
7 3	32-010,32-110,32-120,32-310,32-410,32-510,32-520,32-530,33-975,35-993,36-993,39-993,41-350,42-001,42-002,42-005,42-010,42-020,42-030,42-046,42-065,42-070,42-120,42-128,42-150,42-152,42-154,42-157,42-158,42-200,42-300,42-358,42-700,42-710,42-858,42-988,42-997,45-200,45-802,45-805,45-858,45-997,47-200,47-141,47-143,47-149,47-161,47-301,47-163,47-953,47-710,47-858,48-012,48-014,48-015,48-019,48-112,48-114,48-115,48-141,48-142,48-144,48-145,48-200,48-202,48-204,48-205,48-207,48-212,48-214,48-222,48-224,48-232,48-234,48-382,48-384,48-385,48-432,48-434,48-435,48-462,48-464,48-465,48-662,48-664,48-667,48-862,48-864,48-867,48-993,95-088,97-084,97-088,97-282,97-298,97-283,97-590,97-090,97-100,97-591,97-577,97-59204-988,20-988,21-987,21-988,24-987,24-988,24-989,41-988,42-988,95-988	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc phosphate Primer (Alkyd Base) to IS 12744 DFT= 30 μm per coat	2	--	--	Red Oxide Zinc phosphate Primer (Alkyd Base) to IS 12744 DFT= 30 μm per coat	2	--	105

8.9	09-001,09-002,09-003,20-511,21-800,21-825,21-850,24-420,24-425,24-435,24-460,24-465,24-480,24-485,42-300,42-358,97-195	SSPC-SP3/ Power Tool Cleaning	Heat resistant Aluminium paint to IS 13183 Gr. II	2	--	--	--	--	--	40
9 1a	Floor Grills, Hand Rails etc 34-810,34-850,35-811,35-820,35-850,36-810, 36-850,38-810,38-850,39-810,39-850, 39-850	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zn PO4 Primer to IS 12744 DFT= 30 µm per coat	1	--	--	Synthetic Enamel to IS 2932	2**	Black	70

PAINTING SCHEME FOR VALVES

Sl.No.	PGMA / Description	Surface Prepara- tion & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
10	Cast carbon steel valves Cast alloy steel valves All API valves, QCNRV, SV & SRV Silencers	SSPC-SP3/ Power Tool Cleaning	Heat resistant Aluminum paint to IS 13183 Gr. I	2	--	--	Heat resistant Aluminum paint to IS 13183 Gr. I	2	Aluminum	80
	Forged valves	Phosphating	Coating weight 1500 mg per sq.ft.	--	--	--	--	--	--	--
	Soot Blower components 20-001,20-004,20-201,20-204,20-998	SSPC-SP6/ Comml. Blast Cleaning 35-50µm	Red oxide ZnPO4 Primer paint to IS 12744 DFT = 30 µm/coat	1	--	--	Syn. Enamel paint to IS 2932 DFT= 20µm per coat	2	Verdigris Green Shade No. 280 of IS5	70

	HP / LP system	SSPC-SP6/ Comml. Blast Cleaning 35-50µm	Heat Resistant Aluminium Paint to IS 13183 Gr.I	2	--	--	--	--	--	40
11	For CLH & VLH PGs 07,12,19,21,24,47,48 &80	Abrasive blast cleaning to Sa 2 ½ 35 50 microns	Alkyd Base Red Oxide or Zinc phosphate pigments as Primer to IS 12744 DFT= 40 µm per coat	2	--	--	-	-	Phirozi Blue Shade No. 176 of IS5	80

Painting Scheme – Details for procurement & application purposes

SL.No.	Generic nature of paint	Theoretical Covering Capacity Sq.m per Litre.	No. of pack	Volume solids, % (min)**	DFT in microns (min) per coat	Shade	Shade No. to IS5	Mode of appln.	Over coating interval, Hrs.
1	Inorganic zinc silicate coating (F9)	8	2	57	65	Phiroji Blue/ Required shade	176	Spray	12
2	Heat resistant Silicone Aluminium paint (F12)	15	1	-	18	--	--	Brush / Spray	24
3	Red oxide zinc phosphate primer paint as per IS 12744	10	1	As per IS 12744	30	Red Oxide	--	Brush / Spray	12
5	Epoxy zinc phosphate primer (P6)	8	1	49	15-20	Reqd. shade	Corrpd g. Shade no.	Brush / Spray	12
6	Temporary Rust preventive fluid to PR: CHE: 09 – 04	10	1	--	--	Amber	--	--	12

7	Epoxy high build coating (Polyamide cured epoxy resin medium suitably pigmented) F6B	10	2	57	30	Phiroji Blue	176	Spray	24
9	Acrylic Polyurethane finish paint (F2)	8	1	40	30	Phiroji Blue	176	Brush / Spray	12
10	Epoxy high build coating (Polyamide cured epoxy resin medium suitably pigmented) F6B	10	2	57		Light Orange	557	Spray/ Brush	12
11	Acrylic Polyurethane finish paint (F2)					Light Orange	557	Spray	24

Brush painting is accepted, if recommended by the Paint suppliers. The covering capacity of paints specified is only approximate. The paints and Rust Preventive fluid shall be procured from Customer's specific approved suppliers. ** Values are indicative.

NOTES:

1. Rust Preventive Coating should be given on HSFG Bolt threads.
2. Machined surfaces are to be applied with a coating of Temporary Rust Preventive oil.
3. All threaded and other surfaces of foundation bolts and its materials, insulation pins, Anchor channels, Sleeves shall be coated with Temporary Rust Preventive Fluid and during execution of civil works; the dried film of coating shall be removed using organic solvents.
4. All shade numbers are as per IS 5. Unless otherwise specified Colour / Shade of the finish coat shall be Smoke gray Shade No. 692 of IS 5.
5. PGMA's under Sub-Vendor items are not indicated. Please refer respective Engg. Document.
6. These Painting Schemes are valid for only Sale order No: 7906
07. No painting is required for Stainless Steel components.
08. Wherever inside surfaces of components under PGMA 48 – XXX, need protection till erection, two coats of Red-oxide zinc chrome primer paint to IS 12744 to a DFT of 60 microns shall be applied.
09. In components, wherever plates / sheets of thickness less than or equal to 5 mm and rods are used, power tool / hand tool cleaning to SSPC - SP3 / SP2 shall be followed and the painting shall be done as described in Scheme No: 05.
10. All PGMA s are deemed to have been included in relevant schemes. Any missing PGMA will be added to the relevant scheme, as and when required.