



Bharat Heavy Electricals Limited

Heavy Equipment Repair Plant

Tarna Shivpur Varanasi-221003

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

Enquiry Number : **E-RC-304-22-0519-61-1** Date : **16/Jan/2023**

Enquiry For Material :-

Sl No	Material Description	Material Code	Quantity	Unit
1	M.S.B.LINER (HY-19.01) - FULLY M/CD GCI CASTING AS PER DRG. 36127600046/04 WITH MATL AS PER SPECN. AA19702/06	RV1970100010*	12.0	NOS.
2	M.S.B.LINER (HY-19.02) - FULLY M/CD GCI CASTING AS PER DRG. 36127600049/05 WITH MATL. AS PER SPECN. AA19702/06	RV1970100028	15.0	NOS.
3	M.S.B.LINER (HY-19.03) - FULLY M/CD GCI CASTING AS PER DRG. 36127600051/04 WITH MATL AS PER SPECN. AA19702/06	RV1970100036	15.0	NOS.
4	M.S.B.LINER 'VAR-01' (HY-19.04) - FULLY M/CD GCI CASTING AS PER DRG. NO. 36127600050/06 WITH MATL. AS PER SPECN. AA19702/06	RV1970100044	15.0	NOS.
5	TRUNNION BUSHING RETAINER- T.E. (HY-95.00) - FULLY M/CD GCI CASTING AS PER DRG. 36137600064/02 WITH MATL AS PER SPECN. AA19702/06	RV1970100133	252.0	NOS.
6	STAR WHEEL (HY-4.06) - FULLY M/CD GCI CASTING AS PER DRG. 46137600096/03 WITH MATL AS PER SPECN. AA19702/06	RV1970100257	55.0	NOS.
7	INSPECTION HOLE COVER (HY-167.1.10) - FULLY M/CD GCI CASTING AS PER DRG. 36148000347/02 WITH MATL AS PER SPECN. AA19702/06	RV1970100478	75.0	NOS
8	M.S.B.LINER VAR-01 (HY-305.01) - FULLY M/CD ITEM AS PER DRG. 26120000404/04 WITH MATL. AS PER SPECN. AA19702/06	RV1970100494	50.0	NOS
9	M.S.B.LINER VAR-01 (HY-305.02) - FULLY M/CD ITEM AS PER DRG. 26120000408/04 WITH MATL. AS PER SPECN. AA19702/06	RV1970100524	50.0	NOS
10	M.S.B.LINER 'VAR-01' (HY-305.03) - FULLY M/CD GCI CASTING AS PER DRG. 26120000397/04 WITH MATL AS PER SPECN. AA19702/06	RV1970100532	50.0	NOS
11	M.S.B.LINER 'VAR-01' (HY-305.04) - FULLY M/CD GCI CASTING AS PER DRG. 26120000399/04 WITH MATL AS PER SPECN. AA19702/06	RV1970100559	60.0	NOS
12	M.S.B.LINER 'VAR-03' (HY-305.05) - FULLY M/CD GCI CASTING AS PER DRG. 26120000397/04 WITH MATL AS PER SPECN. AA19702/06	RV1970100575	60.0	NOS
13	MILL SIDE INSP. DOOR (HY-209.01) FULLY M/CD GCI CASTING AS PER DRG. 36127600042/06 WITH MATL AS PER SPECN. AA19702/06	RV1970100591	15.0	NOS.
14	T.S.END CAP - FE (HY-903.03) - FULLY M/CD GCI CASTING AS PER DRG. 16108801034/03 WITH MATL. AS PER SPECN. AA19702/06	RV1970101091	30.0	NOS
15	TS END CAP -TE (HY-903.10) - FULLY M/CD GCI CASTING AS PER DRG. 16108801035/03 WITH MATL. AS PER SPECN. AA19702/06	RV1970101105	26.0	NOS
16	INSP. HOLE COVER - FULLY M/CD CASTING (HY-INSPECTION HOLE COVER (HY-960.01.A.10) - FULLY M/CD GCI CASTING AS PER DRG. 46149600358/02 WITH MATL AS PER SPECN. AA19702/06	RV1970101156	85.0	NOS
17	INSPECTION HOLE COVER (HY-390.08) - FULLY M/CD CASTING AS PER DRG. 36139600231/01 WITH MATL AS PER SPECN. AA19702/06	RV1970101164	12.0	NOS
18	M.S.B.LINER SET (HY-019.C) - FULLY M/CD CASTINGS AS PER DRG. HY-019.C WITH MATL AS PER SPECN. AA19702/06	RV1970101245	30.0	SET
19	LOWER BRG & PUMP HSG (HY-23.0) - FULLY M/CD GCI CASTING AS PER DRG. NO. 16117600083/04 WITH MATL AS PER SPECN. AA19703/06	RV1970200014	25.0	NOS.
20	SEP.BOTTOM LINER (VAR.03) (HY-029.03) FULLY M/CD GCI CASTING AS PER DRG. NO.36137600084/05 WITH MATL. AS PER SPECN. AA19703/06	RV1970200073	15.0	NOS.
21	UPPER JOURNAL HOUSING (HY-36.0) - FULLY M/CD GCI CASTING AS PER DRG. 26137690004/08 WITH MATL AS PER SPECN. AA19703/06	RV1970200081	227.0	NOS.
22	TRUNNION SHAFT END CAP (TE) (HY-38.00) - FULLY M/CD GCI CASTING AS PER DRG. 16137600018/04 WITH MATL AS PER SPECN. AA19703/06	RV1970200090*	95.0	NOS.
23	UPPER JOURNAL HSG.(HY-65.0) - FULLY M/CD GCI CASTING AS PER DRG. 36036000109/07 WITH MATL AS PER SPECN. AA19703/06	RV1970200170	45.0	NOS.

24	OIL COLLECTOR (HY-74.0) - FULLY M/CD OIL COLLECTOR AS PER DRG. 36117600012/05 WITH MATL AS PER SPECN. AA19703/06	RV1970200197	15.0	NOS.
25	THRUST BRG. HSG. CAP (HY-82.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600006/07 WITH MATL AS PER SPECN. AA19703/06	RV1970200219	21.0	NOS.
26	TRUNNION SHAFT END CAP (FE) (HY-93.00) - FULLY M/CD GCI CASTING AS PER DRG. 16137600019/04 WITH MATL AS PER SPECN. AA19703/06	RV1970200227	108.0	NOS.
27	THRUST BEARING HOUSING (HY-148.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600005/08 WITH MATL AS PER SPECN. AA19703/06	RV1970200251	28.0	NOS.
28	LOWER BRG.& PUMP HOUSING COVER (HY-150.00) - FULLY M/CD GCI CASTING AS PER DRG. 26117600001/09 WITH MATL AS PER SPECN. AA19703/06	RV1970200303	10.0	NOS.
29	UPPER BRG.HSG.(HY-158.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600023/03 WITH MATL AS PER SPECN. AA19703/06	RV1970200324	10.0	NOS.
30	RADIAL BRG.HSG. (HY-168.0) - FULLY M/CD GCI CASTING AS PER DRG. 26117600006/09 WITH MATL AS PER SPECN. AA19703/06	RV1970200340	25.0	NOS.
31	UPPER BRG. HSG. - TIGHT FIT (HY-158.A) - FULLY M/CD GCI CASTING AS PER DRG. 26118090077/05 WITH MATL AS PER SPECN. AA19703/06	RV1970200430*	15.0	NOS.
32	TRAMP IRON SPOUT BODY (HY-182.01) FULLY M/CD GCI CASTING AS PER DRG. 16157600029/03 WITH MATL AS PER SPECN. AA19703/06	RV1970200456	11.0	NOS.
33	TRAMP SPOUT ADAPTOR (HY-182.02) - FULLY M/CD GCI CASTING AS PER DRG. 26157600057/03 WITH MATL AS PER SPECN. AA19703/06	RV1970200464	10.0	NOS.
34	SEP.ACCESS DOOR (HY-171.C.10) - FULLY M/CD GCI CASTING AS PER DRG. 36137600060/05 WITH MATL AS PER SPECN. AA19703/06	RV1970200599	40.0	NOS.
35	TRANSITION PIECE (TY-342.00) FULLY M/CD ITEM AS PER DRG 24720000123/02 WITH MATL AS PER SPECN. AA19703/06	RV1970200715	16.0	NOS.
36	TRUNION BUSH. RET. (HY-311.A.39) - FULLY M/CD GCI CASTING AS PER DRG. 36100000523/01 WITH MATL AS PER SPECN. AA19703/06	RV1970200723	209.0	NOS.
37	TRAMP IRON SPOUT BODY (HY-350.01) - FULLY M/CD GCI CASTING AS PER DRG. 26110000566/05 WITH MATL AS PER SPECN. AA19703/06	RV1970200839	96.0	NOS.
38	T.S.END CAP-FE 'VAR-02' (HY-313.05.A) - FULLY M/CD GCI CASTING AS PER DRG. 16100000256/06 WITH MATL AS PER SPECN. AA19703/06 (WITH METRIC THREAD)	RV1970200898	64.0	NOS.
39	T.S.END CAP-TE 'VAR-01' (HY-313.04) - FULLY M/CD GCI CASTING AS PER DRG. 16100000257/05 WITH MATL AS PER SPECN. AA19703/06	RV1970200906	12.0	NOS.
40	T.S.END CAP-FE 'VAR-01' (HY-313.05) - FULLY M/CD GCI CASTING AS PER DRG. 16100000256/06 WITH MATL AS PER SPECN. AA19703/06	RV1970200914	12.0	NOS.
41	T.S.END CAP-TE 'VAR-02' (HY-313.04.A) - FULLY M/CD GCI CASTING AS PER DRG. 16100000257/05 WITH MATL AS PER SPECN. AA19703/06 (WITH METRIC THREAD)	RV1970200922	12.0	NOS.
42	T.S. END CAP - THRUST END (HY-1102.03) - FULLY M/CD GCI CASTING AS AS PER DRG. 16100401191/02 WITH MATL AS PER SPECN. AA19703/06	RV1970200973	21.0	NOS.
43	FULLY MACHINED T.S.END CAP -FREE END (HY-1102.10) AS AS PER DRG. 16100401192/01 WITH MATL. AS PER SPECN. AA19703/06	RV1970200981	25.0	NOS.
44	FULLY MACHINED TRUNION BUSHING RETAINER (HY-1102.09) AS AS PER DRG. 36100402324/01 WITH MATL AS PER SPECN. AA19703/06	RV1970200990*	60.0	NOS.
45	UPPER SKIRT ASSY (HY-24.0) - FULLY M/CD & ASSEMBLED GCI CASTING AS PER DRG. 26117600022/05 WITH MATL AS PER SPECN. AA19703/06	RV1970205130*	19.0	NOS.

Remarks

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(A) SCOPE OF SUPPLY:-

1. THIS INDENT HAS BEEN RAISED FOR ENTERING INTO FRAMEWORK AGREEMENT (VALUE WISE) WITH VENDORS FOR GCI CASTINGS. SEPARATE INDENTS WILL BE GIVEN TIME TO TIME AS PER REQUIREMENT FOR PLACING THE PO UNDER THIS RC. ITEM QUANTITY MENTIONED IN THE INDENT IS TENTATIVE & IT MAY INCREASE OR DECREASE AS PER OUR FINAL REQUIREMENT.

2.THE % WEIGHTAGE FOR CALCULATING TOTAL COST OF INDIVIDUAL ITEM HAS BEEN ARRIVED CONSIDERING INDIVIDUAL ITEM'S CONTENT IN TOTAL ESTIMATED COST OF ALL THE ENQUIRY ITEMS. THE % WEIGHTAGE WILL BE AS PER ANNEXURE-IV.

3. VALUE WISE MEANS FA WILL DONE ON SINGLE SET BASIS FOR ALL THE 45 ITEMS WITH THEIR FULL QUANTITY AND NOT QUANTITY OF INDIVIDUAL ITEM.

4. RATE FOR INDIVIDUAL ITEM WILL BE ARRIVED AS PER PERCENTAGE WEIGHTAGE MENTIONED IN ANNEXURE- ATTACHED.

5. RATES OF ITEMS AGAINST FA WILL BE FIRM & VALID FOR ORDERING FOR A PERIOD OF ONE YEAR FROM THE DATE OF AGREEMENT. PRICE VARIATION CLAUSE (PVC) IS NOT ACCEPTABLE.

6. VENDOR HAS TO QUOTE FOR ALL THE 45 ITEMS OF TENDER ENQUIRY COMPULSORILY. IN CASE, ANY VENDOR QUOTES FOR PART ITEM, THEIR OFFER WILL NOT BE CONSIDERED FOR FURTHER EVALUATION.

7. L-1 VENDOR WILL BE DECIDED ON TOTAL COST ON SET BASIS.

8. RC QTY AGAINST EACH ITEM IS INDICATIVE ONLY. PO WILL BE PLACED BASED ON ACTUAL REQUIREMENT IRRESPECTIVE OF RC QUANTITY NOT EXCEEDING THE TOTAL RATE CONTRACT VALUE.

AFTER FINALIZATION OF RATE CONTRACT, PO QUANTITY WILL BE PLACED AS PER REQUIREMENT.

(B) SUPPLY CONDITION :

1. ITEM TO BE SUPPLIED AT BHEL HERP STORES.

2. PRE-DESPATCH INSPECTION WILL BE CARRIED OUT AT PARTY'S WORKS BY BHEL REPRESENTATIVE AS PER QUALITY PLAN MENTIONED BELOW:-

a.)FOR ITEM SPEC. AA19702- AS PER QUALITY PLAN RV/C&F/12

b)FOR ITEM SPEC. AA19703- AS PER QUALITY PLAN RV/C&F/09

(C) TECHNICAL DELIVERY CONDITION :

1. MATERIAL SHOULD BE AS PER SPECIFICATION MENTIONED IN THE DESCRIPTION/DRG.

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

3. CASTING SHOULD BE FREE FROM ALL DEFECTS.

4. H.T CHART IS REQUIRED.

5. DIMENSION REPORT IS REQUIRED.

6. ALL TECHNICAL REQUIREMENT MENTIONED IN THE DRG MUST BE STRICTLY FULFILLED.

7. STANDARD FASTENERS SHOULD BE MADE OF 'TVS/UNBRAKO/LPS/CAPARO OR ITS EQUIVALENT ' MAKE ONLY.(WHERE APPLICABLE)

(D) TEST CERTIFICATE: REQUIRED FOR CHEMICAL & MECHANICAL PROPERTIES OF RAW MATL.

(E) GUARANTEE CERTIFICATE: REQUIRED FOR 12 MONTHS AGAINST ANY MANUFACTURING DEFECTS.

(F) PACKING INSTRUCTIONS: ITEM SHOULD BE PROPERLY PACKED IN WOODEN CRATE OF 1" THICK PLANK WITH 1.5"X4" BRACKET AFTER APPLYING GREASE AND RUST PREVENTIVE PAINT.

(G) RATE CONTRACT VALIDITY: FOR 1 (ONE) YEAR FROM THE RC-PO DATE.

(H) DELIVERY SCHEDULE:

1. WITHIN 03 MONTHS FROM THE DATE OF PO. EARLY DELIVERY IS ACCEPTABLE.

2. THERE WILL BE A MINIMUM GAP OF ONE MONTH BETWEEN THE SCHEDULE DELIVERY DATES OF TWO CONSECUTIVE LOTS.

3. ITEM WISE MAXIMUM QTY IN EACH LOT (WHICH MAY BE REQUIRED IN A PARTICULAR ORDER) WILL BE AS MENTIONED IN ANNEXURE--RC-LOT-BA17.

4.DUE TO LARGE QUANTITY & VALUE OF MILL SPARES, MORE THAN ONE SOURCE SHOULD BE CONSIDERED FOR MEETING OUR REQUIREMENT.

(I) CONDITION FOR QUANTITY SPLIT:

(a) SPLITTING WILL BE DONE WITH RESPECT TO TOTAL FA VALUE & NOT QUANTITY OF INDIVIDUAL ITEM.

(b) IN NO CASE THE HIGHEST QUOTED BIDDER (H-1) WILL BE GIVEN THE OPPORTUNITY OF THE QUANTITY SPLIT.

(c) THE EQUATED L-1 PRICE ON TOTAL COST BASIS TO BHEL WOULD BE COUNTER OFFERED TO THE NEXT HIGHER BIDDER IN ORDER OF THEIR RANKING AND THE FA VALUE SPLIT WOULD BE GIVEN TO THE BIDDER WHO ACCEPT THE EQUATED L-1 PRICE.

(d) IN CASE THE DISTRIBUTION IS DONE BETWEEN TWO OR ONE BIDDER, THEN THE FOLLOWING RATIO WILL BE FOLLOWED.

(1)FOR TWO VENDORS, RATIO WILL BE 60:40

(2)FOR SINGLE VENDOR, FA VALUE WILL BE DONE WITH L-1 VENDOR ONLY.

(J) AT ANY POINT OF TIME, IF THE PERFORMANCE OF ANY VENDOR IS FOUND UNSATISFACTORY, THE ABOVE DISTRIBUTION RATIO MAY BE CANCELLED OR CHANGED BY BHEL AND ITEMS MAY BE PROCURED FROM PERFORMING VENDORS.

(K) THE PROJECTED QUANTITY MENTIONED IN THE ENQUIRY IS TENTATIVE AND MAY INCREASE/DECREASE AS PER ACTUAL REQUIREMENT FROM TIME TO TIME DURING FRAMEWORK AGREEMENT/RATE CONTRACT PERIOD. ORDER WILL BE RELEASED AS PER ACTUAL REQUIREMENT FOR ANY ITEM FROM TIME TO TIME IN PART QUANTITY INLINE WITH FRAMEWORK AGREEMENT/RATE CONTRACT.

(L)REVERSE AUCTION:

(1) BHEL SHALL BE RESORTING TO REVERSE AUCTION (RA) (GUIDELINES AS AVAILABLE ON

<https://www.bhel.com/supplier-registration>). FOR THIS TENDER. PRICE BIDS OF ALL TECHNO-COMMERCIALY QUALIFIED BIDDERS SHALL BE OPENED AND SAME SHALL BE CONSIDERED AS INITIAL BIDS OF BIDDERS IN RA. IN CASE ANY BIDDER(S) DO(ES) NOT PARTICIPATE IN ONLINE REVERSE AUCTION, THEIR SEALED ENVELOPE PRICE BID ALONG WITH APPLICABLE LOADING, IF ANY, SHALL BE CONSIDERED FOR RANKING.

IF ANY OF THE VENDORS DO NOT ACCEPT THE ABOVE POINT, THEIR OFFER MAY BE LIABLE FOR REJECTION WITHOUT INTIMATION.

(2) RA WILL BE CARRIED OUT ON SINGLE SET BASIS CONSISTING OF ALL THE 45 ITEMS COVERED IN THE ENQUIRY AS MENTIONED IN ANNEXURE- IV i.e. VENDOR HAS TO QUOTE SINGLE RATE BY CONSIDERING ALL THE 45 ENQUIRED ITEMS AND THEIR QTYS. AFTER SUCCESSFUL COMPLETION OF RA, VENDORS WILL ARRIVE THE LANDED COST OF INDIVIDUAL ITEM ON THE BASIS OF PERCENTAGE WEIGHTAGE MENTIONED IN THE ANNEXURE - IV.

(3) IT IS FURTHER CLARIFIED THAT SINGLE RATE (LANDED COST) TO BE QUOTED BY VENDOR DURING REVERSE AUCTION IS NOTHING BUT TOTAL VALUE FOR ALL THE ENQUIRED ITEMS AND THEIR FULL QUANTITY AS PER TENDER ENQUIRY.

(M) OTHER TERMS AND CONDITIONS OF THIS ENQUIRY SHALL BE AS PER ATTACHED GTC.

(N) BIDDER HAVE TO FURNISHED INTEGRITY PACT ATTACHED WITH THIS ENQUIRY.

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Sl. No.	BHEL Terms	Supplier's Compliance YES/NO
1	Offers are accepted from:	
1.a	Only Manufacturer's Offers shall be considered for the Tender Enquiry.	
1.b	Vendors registered with BHEL for similar category items are eligible for the enquiry.	
1.c	Vendors not registered with BHEL should have in house facility like furnace, pattern making facility, H.T. Furnace, testing facilities etc. Technical evaluation of manufacturing facilities and Quality systems will be done by BHEL committee after Part -1 bid opening . Offers of only those vendors whose technically scrutiny will be cleared by BHEL committee will be considered for Part-2 Bid.	
2	Supplier shall give list of In-House Facilities:	
2.a	Vendor shall have in-House necessary Manufacturing facilities required for manufacturing and supply of the item/s as per drng/spec..	
2.b	BHEL reserves right to visit the Works of the Manufacturer for Physical verification of the Manufacturing facilities (as declared by them) and assessment of their Quality systems during Technical Evaluation of the Offers.	
3	Experience:	
3.a	Bidders shall submit the necessary documents proving their Experience in Supplying same or similar items to any government sector company/PSU in last five years from the date of Enquiry. Documentary evidences to be submitted in the form of Customer's Purchase Order copies / Matl.Acceptance Report and item drawings/specs. Documentary evidences submitted shall strictly meet all the technical requirement of the NIT.	
3.b	BHEL reserves right to verify the details from the Bidder's customers based on Documents submitted as a part of past experience.BHEL may ask for other relevant documents in line with above to review the capacity and capability of vendor with respect to enquired items.	
4	Manufacturing Process Plan:	
4.a	Bidders shall submit detailed Manufacturing process Plan along with the Technical Offer.	
5	Annual Turnover:	
5.a	Turnover of the supplier should be as per GeM (Government e-market place) guide lines (Maximum limit to be taken). Bidders should enclose Audited Balance sheets and Profit & Loss account statement of last three consecutive years in the Part I bid.	
6	After placement of Purchase Order, Vendor shall submit Material Test Certificate before dispatching the Material to BHEL, for review and Dispatch clearance.	
7	***BHEL HERP registered vendors (also not under Hold/Banned or C or D-category) in the enquired category need not to submit any of the above documents (If party is registered at HERP but in different category then party shall have to submit all the above documents).	
8	Bidder will supply item/s exactly as per enquiry.	
Note	<i>*** Under This Point HERP registered vendors (for enquired category) will be exempted from the documents submission as they have already gone through rigrous registration process and they have qualified for supply of such items (their document is already available with HERP/BHEL in the form of SRF and other documents). However they must continue to have required facility for manufacturing of the enquired item/s. In case due to any reasons they do not have manufacturing facility as on date then they shall mention 'No' at point no. 2.a.</i>	

Note: Non Submission of the above requested documents/non compliance to the above points will result in rejection of the Offers without further Notice/Intimation to the Bidder and no correspondance will be entertained at later date.

ESTIMATION SHEET SUMMARY

ANNEXURE-IV

S.No	MaterialCode	Description	Qty(Nos)	weightage %
1	RV1970100010*	M.S.B.LINER (HY-19.01) - FULLY M/CD GCI CASTING AS PER DRG. 36127600046/04 WITH MATL AS PER SPECN. AA19702/06	12	0.25%
2	RV1970100133	TRUNNION BUSHING RETAINER- T.E. (HY-95.00) - FULLY M/CD GCI CASTING AS PER DRG. 36137600064/02 WITH MATL AS PER SPECN. AA19702/06	252	0.92%
3	RV1970100257	STAR WHEEL (HY-4.06) - FULLY M/CD GCI CASTING AS PER DRG. 46137600096/03 WITH MATL AS PER SPECN. AA19702/06	55	0.08%
4	RV1970100478	INSPECTION HOLE COVER (HY-167.1.10) - FULLY M/CD GCI CASTING AS PER DRG. 36148000347/02 WITH MATL AS PER SPECN. AA19702/06	75	0.19%
5	RV1970100494	M.S.B.LINER VAR-01 (HY-305.01) - FULLY M/CD ITEM AS PER DRG. 26120000404/04 WITH MATL. AS PER SPECN. AA19702/06	50	0.62%
6	RV1970100524	M.S.B.LINER VAR-01 (HY-305.02) - FULLY M/CD ITEM AS PER DRG. 26120000408/04 WITH MATL. AS PER SPECN. AA19702/06	50	0.62%
7	RV1970100532	M.S.B.LINER 'VAR-01' (HY-305.03) - FULLY M/CD GCI CASTING AS PER DRG. 26120000397/04 WITH MATL AS PER SPECN. AA19702/06	50	0.72%
8	RV1970100559	M.S.B.LINER 'VAR-01' (HY-305.04) - FULLY M/CD GCI CASTING AS PER DRG. 26120000399/04 WITH MATL AS PER SPECN. AA19702/06	60	1.14%
9	RV1970100575	M.S.B.LINER 'VAR-03' (HY-305.05) - FULLY M/CD GCI CASTING AS PER DRG. 26120000397/04 WITH MATL AS PER SPECN. AA19702/06	60	0.87%
10	RV1970100591	MILL SIDE INSP. DOOR (HY-209.01) FULLY M/CD GCI CASTING AS PER DRG. 36127600042/06 WITH MATL AS PER SPECN. AA19702/06	15	0.41%
11	RV1970101091	T.S.END CAP - FE (HY-903.03) - FULLY M/CD GCI CASTING AS PER DRG. 16108801034/03 WITH MATL. AS PER SPECN. AA19702/06	30	1.89%
12	RV1970101105	TS END CAP -TE (HY-903.10) - FULLY M/CD GCI CASTING AS PER DRG. 16108801035/03 WITH MATL. AS PER SPECN. AA19702/06	26	1.64%
13	RV1970101156	INSPECTION HOLE COVER (HY-960.01.A.10) - FULLY M/CD GCI CASTING AS PER DRG. 46149600358/02 WITH MATL AS PER SPECN. AA19702/06	85	0.25%
14	RV1970101164	INSPECTION HOLE COVER (HY-390.08) - FULLY M/CD CASTING AS PER DRG. 36139600231/01 WITH MATL AS PER SPECN. AA19702/06	12	0.09%
15	RV1970101245	M.S.B.LINER SET (HY-019.C) - FULLY M/CD CASTINGS AS PER DRG. HY-019.C WITH MATL AS PER SPECN. AA19702/06	30	5.24%

16	RV1970200014	LOWER BRG & PUMP HSG (HY-23.0) - FULLY M/CD GCI CASTING AS PER DRG. NO. 16117600083/04 WITH MATL AS PER SPECN. AA19703/06	25	4.84%
17	RV1970200073	SEP.BOTTOM LINER (VAR.03) (HY-029.03) FULLY M/CD GCI CASTING AS PER DRG. NO.36137600084/05 WITH MATL. AS PER SPECN. AA19703/06	15	0.08%
18	RV1970200081	UPPER JOURNAL HOUSING (HY-36.0) - FULLY M/CD GCI CASTING AS PER DRG. 26137690004/08 WITH MATL AS PER SPECN. AA19703/06	227	22.11%
19	RV1970200090*	TRUNNION SHAFT END CAP (TE) (HY-38.00) - FULLY M/CD GCI CASTING AS PER DRG. 16137600018/04 WITH MATL AS PER SPECN. AA19703/06	95	3.84%
20	RV1970200170	UPPER JOURNAL HSG.(HY-65.0) - FULLY M/CD GCI CASTING AS PER DRG. 36036000109/07 WITH MATL AS PER SPECN. AA19703/06	45	1.64%
21	RV1970200197	OIL COLLECTOR (HY-74.0) - FULLY M/CD OIL COLLECTOR AS PER DRG. 36117600012/05 WITH MATL AS PER SPECN. AA19703/06	15	0.27%
22	RV1970200219	THRUST BRG. HSG. CAP (HY-82.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600006/07 WITH MATL AS PER SPECN. AA19703/06	21	1.90%
23	RV1970200227	TRUNNION SHAFT END CAP (FE) (HY-93.00) - FULLY M/CD GCI CASTING AS PER DRG. 16137600019/04 WITH MATL AS PER SPECN. AA19703/06	108	4.37%
24	RV1970200251	THRUST BEARING HOUSING (HY-148.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600005/08 WITH MATL AS PER SPECN. AA19703/06	28	4.24%
25	RV1970200303	LOWER BRG.& PUMP HOUSING COVER (HY-150.00) - FULLY M/CD GCI CASTING AS PER DRG. 26117600001/09 WITH MATL AS PER SPECN. AA19703/06	10	0.63%
26	RV1970200324	UPPER BRG.HSG.(HY-158.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600023/03 WITH MATL AS PER SPECN. AA19703/06	10	1.24%
27	RV1970200340	RADIAL BRG.HSG. (HY-168.0) - FULLY M/CD GCI CASTING AS PER DRG. 26117600006/09 WITH MATL AS PER SPECN. AA19703/06	25	4.72%
28	RV1970200430*	UPPER BRG. HSG. - TIGHT FIT (HY-158.A) - FULLY M/CD GCI CASTING AS PER DRG. 26118090077/05 WITH MATL AS PER SPECN. AA19703/06	15	1.87%
29	RV1970200456	TRAMP IRON SPOUT BODY (HY-182.01) FULLY M/CD GCI CASTING AS PER DRG. 16157600029/03 WITH MATL AS PER SPECN. AA19703/06	11	0.75%
30	RV1970200464	TRAMP SPOUT ADAPTOR (HY-182.02) - FULLY M/CD GCI CASTING AS PER DRG. 26157600057/03 WITH MATL AS PER SPECN. AA19703/06	10	0.25%

31	RV1970200599	SEP.ACCESS DOOR (HY-171.C.10) - FULLY M/CD GCI CASTING AS PER DRG. 36137600060/05 WITH MATL AS PER SPECN. AA19703/06	40	1.10%
32	RV1970200715	TRANSITION PIECE (TY-342.00) FULLY M/CD ITEM AS PER DRG 24720000123/02 WITH MATL AS PER SPECN. AA19703/06	16	2.20%
33	RV1970200723	TRUNION BUSH. RET. (HY-311.A.39) - FULLY M/CD GCI CASTING AS PER DRG. 36100000523/01 WITH MATL AS PER SPECN. AA19703/06	209	1.25%
34	RV1970200839	TRAMP IRON SPOUT BODY (HY-350.01) - FULLY M/CD GCI CASTING AS PER DRG. 26110000566/05 WITH MATL AS PER SPECN. AA19703/06	96	6.52%
35	RV1970200898	T.S.END CAP-FE 'VAR-02' (HY-313.05.A) - FULLY M/CD GCI CASTING AS PER DRG. 16100000256/06 WITH MATL AS PER SPECN. AA19703/06 (WITH METRIC THREAD)	64	4.79%
36	RV1970200906	T.S.END CAP-TE 'VAR-01' (HY-313.04) - FULLY M/CD GCI CASTING AS PER DRG. 16100000257/05 WITH MATL AS PER SPECN. AA19703/06	12	0.90%
37	RV1970200914	T.S.END CAP-FE 'VAR-01' (HY-313.05) - FULLY M/CD GCI CASTING AS PER DRG. 16100000256/06 WITH MATL AS PER SPECN. AA19703/06	12	0.90%
38	RV1970200922	T.S.END CAP-TE 'VAR-02' (HY-313.04.A) - FULLY M/CD GCI CASTING AS PER DRG. 16100000257/05 WITH MATL AS PER SPECN. AA19703/06 (WITH METRIC THREAD)	76	5.69%
39	RV1970200973	T.S. END CAP - THRUST END (HY-1102.03) - FULLY M/CD GCI CASTING AS AS PER DRG. 16100401191/02 WITH MATL AS PER SPECN. AA19703/06	21	2.10%
40	RV1970200981	FULLY MACHINED T.S.END CAP -FREE END (HY-1102.10) AS AS PER DRG. 16100401192/01 WITH MATL. AS PER SPECN. AA19703/06	25	2.50%
41	RV1970200990*	FULLY MACHINED TRUNION BUSHING RETAINER (HY-1102.09) AS AS PER DRG. 36100402324/01 WITH MATL AS PER SPECN. AA19703/06	60	0.30%
42	RV1970205130*	UPPER SKIRT ASSY (HY-24.0) - FULLY M/CD & ASSEMBLED GCI CASTING AS PER DRG. 26117600022/05 WITH MATL AS PER SPECN. AA19703/06	19	3.27%
43	RV1970100028	M.S.B.LINER (HY-19.02) - FULLY M/CD GCI CASTING AS PER DRG. 36127600049/05 WITH MATL. AS PER SPECN. AA19702/06	15	0.19%
44	RV1970100036	M.S.B.LINER (HY-19.03) - FULLY M/CD GCI CASTING AS PER DRG. 36127600051/04 WITH MATL AS PER SPECN. AA19702/06	15	0.30%
45	RV1970100044	M.S.B.LINER 'VAR-01' (HY-19.04) - FULLY M/CD GCI CASTING AS PER DRG. NO. 36127600050/06 WITH MATL. AS PER SPECN. AA19702/06	15	0.30%

ANNEXURE--RC-LOT-BA17

S.No	MaterialCode	Description	Qty(Nos)	LOT
1	RV1970100010*	M.S.B.LINER (HY-19.01) - FULLY M/CD GCI CASTING AS PER DRG. 36127600046/04 WITH MATL AS PER SPECN. AA19702/06	12	12
2	RV1970100133	TRUNNION BUSHING RETAINER- T.E. (HY-95.00) - FULLY M/CD GCI CASTING AS PER DRG. 36137600064/02 WITH MATL AS PER SPECN. AA19702/06	252	50
3	RV1970100257	STAR WHEEL (HY-4.06) - FULLY M/CD GCI CASTING AS PER DRG. 46137600096/03 WITH MATL AS PER SPECN. AA19702/06	55	55
4	RV1970100478	INSPECTION HOLE COVER (HY-167.1.10) - FULLY M/CD GCI CASTING AS PER DRG. 36148000347/02 WITH MATL AS PER SPECN. AA19702/06	75	25
5	RV1970100494	M.S.B.LINER VAR-01 (HY-305.01) - FULLY M/CD ITEM AS PER DRG. 26120000404/04 WITH MATL. AS PER SPECN. AA19702/06	50	25
6	RV1970100524	M.S.B.LINER VAR-01 (HY-305.02) - FULLY M/CD ITEM AS PER DRG. 26120000408/04 WITH MATL. AS PER SPECN. AA19702/06	50	25
7	RV1970100532	M.S.B.LINER 'VAR-01' (HY-305.03) - FULLY M/CD GCI CASTING AS PER DRG. 26120000397/04 WITH MATL AS PER SPECN. AA19702/06	50	25
8	RV1970100559	M.S.B.LINER 'VAR-01' (HY-305.04) - FULLY M/CD GCI CASTING AS PER DRG. 26120000399/04 WITH MATL AS PER SPECN. AA19702/06	60	30
9	RV1970100575	M.S.B.LINER 'VAR-03' (HY-305.05) - FULLY M/CD GCI CASTING AS PER DRG. 26120000397/04 WITH MATL AS PER SPECN. AA19702/06	60	30
10	RV1970100591	MILL SIDE INSP. DOOR (HY-209.01) FULLY M/CD GCI CASTING AS PER DRG. 36127600042/06 WITH MATL AS PER SPECN. AA19702/06	15	15
11	RV1970101091	T.S.END CAP - FE (HY-903.03) - FULLY M/CD GCI CASTING AS PER DRG. 16108801034/03 WITH MATL. AS PER SPECN. AA19702/06	30	10
12	RV1970101105	TS END CAP -TE (HY-903.10) - FULLY M/CD GCI CASTING AS PER DRG. 16108801035/03 WITH MATL. AS PER SPECN. AA19702/06	26	10
13	RV1970101156	INSPECTION HOLE COVER (HY-960.01.A.10) - FULLY M/CD GCI CASTING AS PER DRG. 46149600358/02 WITH MATL AS PER SPECN. AA19702/06	85	30
14	RV1970101164	INSPECTION HOLE COVER (HY-390.08) - FULLY M/CD CASTING AS PER DRG. 36139600231/01 WITH MATL AS PER SPECN. AA19702/06	12	12
15	RV1970101245	M.S.B.LINER SET (HY-019.C) - FULLY M/CD CASTINGS AS PER DRG. HY-019.C WITH MATL AS PER SPECN. AA19702/06	30	10

16	RV1970200014	LOWER BRG & PUMP HSG (HY-23.0) - FULLY M/CD GCI CASTING AS PER DRG. NO. 16117600083/04 WITH MATL AS PER SPECN. AA19703/06	25	10
17	RV1970200073	SEP.BOTTOM LINER (VAR.03) (HY-029.03) FULLY M/CD GCI CASTING AS PER DRG. NO.36137600084/05 WITH MATL. AS PER SPECN. AA19703/06	15	10
18	RV1970200081	UPPER JOURNAL HOUSING (HY-36.0) - FULLY M/CD GCI CASTING AS PER DRG. 26137690004/08 WITH MATL AS PER SPECN. AA19703/06	227	50
19	RV1970200090*	TRUNNION SHAFT END CAP (TE) (HY-38.00) - FULLY M/CD GCI CASTING AS PER DRG. 16137600018/04 WITH MATL AS PER SPECN. AA19703/06	95	25
20	RV1970200170	UPPER JOURNAL HSG.(HY-65.0) - FULLY M/CD GCI CASTING AS PER DRG. 36036000109/07 WITH MATL AS PER SPECN. AA19703/06	45	20
21	RV1970200197	OIL COLLECTOR (HY-74.0) - FULLY M/CD OIL COLLECTOR AS PER DRG. 36117600012/05 WITH MATL AS PER SPECN. AA19703/06	15	10
22	RV1970200219	THRUST BRG. HSG. CAP (HY-82.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600006/07 WITH MATL AS PER SPECN. AA19703/06	21	10
23	RV1970200227	TRUNNION SHAFT END CAP (FE) (HY-93.00) - FULLY M/CD GCI CASTING AS PER DRG. 16137600019/04 WITH MATL AS PER SPECN. AA19703/06	108	25
24	RV1970200251	THRUST BEARING HOUSING (HY-148.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600005/08 WITH MATL AS PER SPECN. AA19703/06	28	20
25	RV1970200303	LOWER BRG.& PUMP HOUSING COVER (HY-150.00) - FULLY M/CD GCI CASTING AS PER DRG. 26117600001/09 WITH MATL AS PER SPECN. AA19703/06	10	10
26	RV1970200324	UPPER BRG.HSG.(HY-158.0) - FULLY M/CD GCI CASTING AS PER DRG. 36117600023/03 WITH MATL AS PER SPECN. AA19703/06	10	10
27	RV1970200340	RADIAL BRG.HSG. (HY-168.0) - FULLY M/CD GCI CASTING AS PER DRG. 26117600006/09 WITH MATL AS PER SPECN. AA19703/06	25	10
28	RV1970200430*	UPPER BRG. HSG. - TIGHT FIT (HY-158.A) - FULLY M/CD GCI CASTING AS PER DRG. 26118090077/05 WITH MATL AS PER SPECN. AA19703/06	15	10
29	RV1970200456	TRAMP IRON SPOUT BODY (HY-182.01) FULLY M/CD GCI CASTING AS PER DRG. 16157600029/03 WITH MATL AS PER SPECN. AA19703/06	11	10
30	RV1970200464	TRAMP SPOUT ADAPTOR (HY-182.02) - FULLY M/CD GCI CASTING AS PER DRG. 26157600057/03 WITH MATL AS PER SPECN. AA19703/06	10	10
31	RV1970200599	SEP.ACCESS DOOR (HY-171.C.10) - FULLY M/CD GCI CASTING AS PER DRG. 36137600060/05 WITH MATL AS PER SPECN. AA19703/06	40	20

32	RV1970200715	TRANSITION PIECE (TY-342.00) FULLY M/CD ITEM AS PER DRG 24720000123/02 WITH MATL AS PER SPECN. AA19703/06	16	10
33	RV1970200723	TRUNION BUSH. RET. (HY-311.A.39) - FULLY M/CD GCI CASTING AS PER DRG. 36100000523/01 WITH MATL AS PER SPECN. AA19703/06	209	50
34	RV1970200839	TRAMP IRON SPOUT BODY (HY-350.01) - FULLY M/CD GCI CASTING AS PER DRG. 26110000566/05 WITH MATL AS PER SPECN. AA19703/06	96	25
35	RV1970200898	T.S.END CAP-FE 'VAR-02' (HY-313.05.A) - FULLY M/CD GCI CASTING AS PER DRG. 16100000256/06 WITH MATL AS PER SPECN. AA19703/06 (WITH METRIC THREAD)	64	20
36	RV1970200906	T.S.END CAP-TE 'VAR-01' (HY-313.04) - FULLY M/CD GCI CASTING AS PER DRG. 16100000257/05 WITH MATL AS PER SPECN. AA19703/06	12	12
37	RV1970200914	T.S.END CAP-FE 'VAR-01' (HY-313.05) - FULLY M/CD GCI CASTING AS PER DRG. 16100000256/06 WITH MATL AS PER SPECN. AA19703/06	12	12
38	RV1970200922	T.S.END CAP-TE 'VAR-02' (HY-313.04.A) - FULLY M/CD GCI CASTING AS PER DRG. 16100000257/05 WITH MATL AS PER SPECN. AA19703/06 (WITH METRIC THREAD)	76	25
39	RV1970200973	T.S. END CAP - THRUST END (HY-1102.03) - FULLY M/CD GCI CASTING AS AS PER DRG. 16100401191/02 WITH MATL AS PER SPECN. AA19703/06	21	10
40	RV1970200981	FULLY MACHINED T.S.END CAP -FREE END (HY-1102.10) AS AS PER DRG. 16100401192/01 WITH MATL. AS PER SPECN. AA19703/06	25	15
41	RV1970200990*	FULLY MACHINED TRUNION BUSHING RETAINER (HY-1102.09) AS AS PER DRG. 36100402324/01 WITH MATL AS PER SPECN. AA19703/06	60	20
42	RV1970205130*	UPPER SKIRT ASSY (HY-24.0) - FULLY M/CD & ASSEMBLED GCI CASTING AS PER DRG. 26117600022/05 WITH MATL AS PER SPECN. AA19703/06	19	10
43	RV1970100028	M.S.B.LINER (HY-19.02) - FULLY M/CD GCI CASTING AS PER DRG. 36127600049/05 WITH MATL. AS PER SPECN. AA19702/06	15	10
44	RV1970100036	M.S.B.LINER (HY-19.03) - FULLY M/CD GCI CASTING AS PER DRG. 36127600051/04 WITH MATL AS PER SPECN. AA19702/06	15	10
45	RV1970100044	M.S.B.LINER 'VAR-01' (HY-19.04) - FULLY M/CD GCI CASTING AS PER DRG. NO. 36127600050/06 WITH MATL. AS PER SPECN. AA19702/06	15	10
			2217	

On Bidder's office letter pad

Make in India (Model Certificate) Annexure-I

Self-Declaration

Enquiry No.	
Enquiry Date	

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

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

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

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

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

For Company Name:

Seal:

Signature:

Date:

Place:

(Please fill all the yellow color field)

INTEGRITY PACT**Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions:

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. 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.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to

demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/ Contractors / Sub-contractors

- 6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors:
- 6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

- 8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organisation.
- 8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.12 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.
- 9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal

(Office Seal)

Place-----

Date-----

Witness:_____

(Name & Address) _____

For & On behalf of the Bidder/

Contractor

(Office Seal)

Witness:_____

(Name & Address) _____

Clause on IP in the tender

Integrity Pact (IP)

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
3.	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
Name: _____
Deptt: _____
Address: _____
Phone: (Landline/ Mobile) _____

Email: _____
Fax: _____

(2)
Name: _____
Deptt: _____
Address: _____
Phone: (Landline/ Mobile) _____

Email: _____
Fax: _____

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

Amendment- 21
ANNEXURE-B

**ITEM DESCRIPTION:
ENQUIRY NO:**

Sl No	BHEL STANDARD TERMS & CONDITIONS	Confirmation of supplier (Yes/No)
1	A) OFFER MUST BE SUBMITTED IN TWO PART BID SYSTEM NAMEDLY TECHNO-COMMERCIAL BID & PRICE BID FOR THE ITEM AS PER ENQUIRY IN SEPARATE SEALED COVERS: (I) TECHNO – COMMERCIAL BID & (II) PRICE BID SHOULD BE CLEARLY SUPERSCRIBED THE ENQUIRY NO. AND DUE DATE ON THE ENVELOPES. (B) UN-PRICED OFFER WITH TECHNICAL BID IS REQUIRED TO BE FURNISHED BY THE VENDOR. TECHNICAL OFFER SHOULD CLEARLY REFLECT AT LEAST OUR MATERIAL CODE, ITEM DESCRIPTION & QUANTITY. (C) THE DIFFERENCE BETWEEN “UN-PRICED OFFER” AND “PRICED OFFER” SHOULD BE ONLY THE PRICES WHEREVER APPLICABLE. THE RATES AND AMOUNT SHOULD BE CLEARLY WRITTEN IN FIGURES AND WORDS BOTH WITHOUT ANY CUTTING / OVERWRITING. (D) IMPORTANT POINT FOR VENDOR WHO HAVE NOT SUBMITTED THE SRF (SUPPLIER REGISTRATION FORM) SO FAR: THE VENDORS, WHO HAVE NOT SUBMITTED THE SRF SO FAR, MUST SUBMIT THE SAME ALONG WITH PART- 1 BID. THE SRF TO BE DOWNLOADED FROM WWW.BHEL.COM OR https://herp.bhel.com .	
2	BID SHOULD BE FREE FROM CORRECTION, OVERWRITING, USING CORRECTIVE FLUID, ETC. ANY INTERLINEATION , CUTTING , ERASURE OR OVERWRITING SHALL BE VALID ONLY IF THEY ARE ATTESTED UNDER FULL SIGNATURE(S) OF PERSON(S) SIGNING THE BID ELSE BID SHALL BE LIABLE FOR REJECTION .	
3	YOUR TECHNO COMMERCIAL BID SHOULD MENTION THAT PRICE BID HAS BEEN SENT IN A SEPARATE ENVELOPE GIVING ITS REFERENCE.	
4	VENDOR TO ENSURE THAT ITEM & QUANTITY MENTIONED IN THE OFFERS ARE EXACTLY SAME AS PER ENQUIRY. IF ANY DEVIATION IS THERE PARTY MUST MENTION SPECIFIC HEREWITH OTHERWISE BHEL SHALL CONSIDER THAT ITEM & QUANTITY AS REQUIRED IN ENQUIRY.	
5	PLEASE MAKE SURE THAT THERE IS NO DISCREPANCY IN BETWEEN ACCEPTED TERMS & CONDITIONS MENTIONED IN THE CHECK LIST AND QUOTATION SUBMITTED BY VENDOR AND IF FOUND SO THEN THE TERMS & CONDITIONS WHICH ARE BENEFICIAL TO BHEL WOULD ONLY BE CONSIDERED.	
6	THE TENDER RECEIVED AFTER 14:00 HRS ON THE DUE DATE WILL NOT BE CONSIDERED.	
7	PART-I CONTAINING THE TECHNO-COMMERCIAL BID WILL BE OPENED ON THE DATE AND TIME SPECIFIED IN THE ENQUIRY, IN THE PRESENCE OF THOSE TENDERERS WHO WISH TO ATTEND. PART-II i.e., PRICE BID WILL BE OPENED ONLY OF THOSE BIDDERS WHO ARE FOUND TECHNO-COMMERCIALY SUITABLE AFTER SCRUTINY OF THEIR PART-I OFFERS.	
8	NO REVISED OFFERS WILL BE ACCEPTED UNLESS ASKED BY BHEL AFTER OPENING OF PART-1 BID IN ANY CASE.	
9	THE RATE OF GST SHOULD BE CLEARLY MENTIONED IN THE OFFER.	
10	VALIDITY OF OFFER SHOULD BE MINIMUM 90 DAYS FROM THE DATE OF TECHNO - COMMERCIAL BID OPENING OR 60 DAYS FROM THE REVERSE AUCTION DATE.	
11	BHEL RESERVES THE RIGHT TO REJECT THE OFFER, WHICH IS HAVING DEVIATIONS TO THE TERMS AND CONDITIONS GIVEN IN THE TENDER ENQUIRY.	
12	PRICING TERMS: PRICES ONCE QUOTED SHALL REMAIN FIRM WITHIN THE VALIDITY OR ANY EXTENSION THEREOF FOR PLACEMENT OF ORDER, TILL COMPLETE EXECUTION OF THE ORDER, WITHOUT ANY ESCALATION/INCREASE FOR ANY REASON, WHATSOEVER, UNLESS SPECIFICALLY PROVIDED FOR IN THE ENQUIRY & PO. IN CASE OF FOREIGN VENDORS, THE QUOTED PRICE SHALL BE TAKEN AS INCLUSIVE OF THIRD PARTY INSPECTION AND TESTING CHARGES AS CALLED FOR IN THE NIT.	
13	BID EVALUATION: UNLESS SPECIFIED IN THE TENDER, VENDOR MUST NOTE THAT BHEL WILL ARRIVE THE L1 STATUS FOR EACH ITEM ON LANDED COST BASIS. ACCORDINGLY, ORDER SHALL BE PLACED ON LOWEST BIDDER ON INDIVIDUAL ITEM BASIS ONLY, UNLESS BHEL ASK FOR TERMS OTHER THAN THIS ON EXCEPTION BASIS. IN THE COURSE OF EVALUATION, IF MORE THAN ONE BIDDER HAPPENS TO OCCUPY L-1 STATUS, EFFECTIVE L-1 WILL BE DECIDED BY SOLICITING DISCOUNTS FROM THE RESPECTIVE L-1 BIDDERS. IN CASE MORE THAN ONE BIDDERS HAPPENS TO OCCUPY THE L-1 STATUS EVEN AFTER SOLICITING DISCOUNT, THE L-1 BIDDER SHALL BE DECIDED BY A TOSS/DRAW OF LOTS, IN THE PRESENCE OF THE RESPECTIVE BIDDER(S) OR THEIR REPRESENTATIVE(S). RANKING WILL BE DONE ACCORDINGLY. BHEL'S DECISION IN SUCH SITUATION SHALL BE FINAL AND BINDING.	
14	TERMS OF DELIVERY: I. FOR INDIGENOUS SUPPLIERS: THE TERMS OF DELIVERY SHOULD BE QUOTED ON F.O.R. DESTINATION (BHEL HERP STORES VARANASI) BASIS ONLY (i.e. FREIGHT & INSURANCE ON VENDOR'S ACCOUNT ONLY). IF ANY BIDDER STILL QUOTES OTHER DELIVERY TERM IN PLACE OF BHEL HERP STORES, THEIR OFFER MAY NOT BE CONSIDERED FOR FURTHER PROCESSING. IT MUST BE SPECIFICALLY NOTED.	14
15	IF ANY INDIAN SUPPLIERS ARRANGE SUPPLY FROM FOREIGN PRINCIPLES/WORKS, TERMS OF DELIVERY SHOULD BE QUOTED ON CIF JNPT MUMBAI (INDIA) SEA PORT BASIS ONLY (i.e. FREIGHT & INSURANCE ON VENDOR'S ACCOUNT UPTO JNPT MUMBAI (INDIA) SEA PORT) OR CFR MUMBAI AIRPORT. HOWEVER FREIGHT CHARGES AS PER BHEL TRANSPORT CONTRACT FROM JNPT MUMBAI SEAPORT/MUMBAI AIRPORT TO BHEL VARANASI FOR EACH ITEM WILL BE LOADED AT THE TIME OF TOTAL LANDED COST CALCULATION.	15
16	INSURANCE CHARGES SHALL BE TO VENDOR'S ACCOUNT ONLY IF PRICE QUOTED ON BHEL HERP STORES BASIS. IN CASE PRICE QUOTED IS ON CIF JNPT MUMBAI BASIS/ CFR MUMBAI AIRPORT BASIS, INSURANCE UP TO CIF JNPT MUMBAI/ MUMBAI AIRPORT SHALL BE IN VENDOR ACCOUNT.	16
17	PAYMENT TERMS: I.FOR MSEs VENDORS: 100% AGAINST SRV WITHIN 45 DAYS THROUGH EFT (ELECTRONIC FUND TRANSFER) FROM THE DATE OF RECEIPT OF MATERIAL (DATE OF SRV) AT BHEL HERP VARANASI STORES AS PER PO. II.FOR MEDIUM ENTERPRISES VENDORS: 100% AGAINST SRV WITHIN 60 DAYS THROUGH EFT (ELECTRONIC FUND TRANSFER) FROM THE DATE OF RECEIPT OF MATERIAL (DATE OF SRV) AT BHEL HERP VARANASI STORES AS PER PO. III. FOR NON- MSME: 100% AGAINST SRV WITHIN 90 DAYS THROUGH EFT (ELECTRONIC FUND TRANSFER) FROM THE DATE OF RECEIPT OF MATERIAL (DATE OF SRV) AT BHEL HERP VARANASI STORES AS PER PO. IV.BHEL HERP WILL MAKE PAYMENTS IN TWO PARTS: - PART-I: BASIC INVOICE VALUE AND ALL OTHER CHARGES (EXCEPT GST AMOUNT) WILL BE PAID AS PER P.O. PAYMENT TERMS. PART-II: GST PORTION OF INVOICE VALUE WILL BE PAID ONLY AFTER FULFILLING FOLLOWING CONDITIONS: (A) PAYMENT OF GST AMOUNT INTO GOVT. ACCOUNT BY SUPPLIER AGAINST INVOICE RAISED TO BHEL. (B) FILING OF GST RETURN (C) DISPLAY OF GST CREDIT AGAINST BHEL GSTIN NO.09AAACB4146P22C IN GSTR-2B ON GSTN PORTAL. Note: 1. PAYMENT WILL BE MADE AFTER ACCEPTANCE OF MATERIAL. 2. ADVANCE PAYMENT IS NOT ACCEPTABLE BY BHEL HERP VARANASI IN ANY CASE. 3. IF ANY SUPPLIER FALLS UNDER “NON MSE” OR “NON MEDIUM” CATEGORY, THEIR PAYMENT TERM WILL BE CONSIDERED AS NON MSME SUPPLIER PAYMENT WITHOUT ANY INTIMATION.	17
18	LOADING OF PAYMENT TERM: IN CASE OF DEVIATION, LOADING OF INTEREST RATE @SBI MCLR RATE + 6% (AS ON PART-1 OPENING DATE) SHALL BE LOADED WHILE ARRIVING AT LANDED COST TO BHEL.	18
19	LIQUIDATED DAMAGES (LD): SUBJECT TO FORCE MAJEURE CONDITIONS, FAILURE TO SUPPLY WITHIN PURCHASE ORDER DELIVERY SCHEDULE WILL MAKE THE SUPPLIER LIABLE TO AN UNCONDITIONAL PENALTY OF 0.5 % PER WEEK OR PART THEREOF SUBJECT TO THE MAXIMUM OF 10% OF THE UNDELIVERED PURCHASE ORDER VALUE EXCLUDING TAXES & DUTIES. NO GRACE PERIOD SHALL BE GIVEN.	20
20	LOADING OF LIQUIDATED DAMAGES (LD): DEVIATION TO ABOVE STANDARD PENALTY CLAUSE, MAXIMUM LOADING OF 10% (IN CASE OF NON ACCEPTANCE OF LD CLAUSE) OR PART THEREOF (IN CASE OF PART ACCEPTANCE OF LD) SHALL BE LOADED WHILE ARRIVING LANDED COST TO BHEL. LOADING OF DELIVERY TERM: FURTHER IF DEVIATION IS FOUND IN THE ACCEPTED DELIVERY TERM AS WELL AS ACCEPTED PENALTY TERM, SUITABLE LOADING BASED ON TRANSPORTATION TIME TO BE TAKEN SHALL BE LOADED WHILE ARRIVING LANDED COST TO BHEL HERP STORES WHICH MAY BE AS BELOW: (i) 1% OF THE BASIC COST FOR INDIAN SUPPLIERS,	21

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

Amendment- 21
ANNEXURE-B

21	DELIVERY PERIOD: VENDOR SHOULD STRICTLY QUOTE THE DELIVERY PERIOD AS MENTIONED IN NIT.	22
22	IF ANY VENDOR DOES NOT SUPPLY THE ITEM WITHIN THE PURCHASE ORDER DELIVERY PERIOD, BHEL MAY/MAY NOT ACCEPT THE SUPPLY AT ITS SOLE DISCRETION.	23
23	<p>BANK GUARANTEE: THE COST OF BHEL FREE ISSUE MATERIALS PER SET/PER ASSEMBLY AND TOTAL COST OF FIM FOR THE ENQUIRY ARE MENTIONED IN NIT. IN THIS REGARD:</p> <p>1. PARTY WILL HAVE TO SUBMIT EQUAL AMOUNT OF SECURITY DEPOSIT (IN THE FORM OF 25% BG/FDR/DD/CHEQUE/BANK TRANSFER AND 75% INDEMNITY BOND) TOWARDS THE COST OF BHEL MATERIALS TO BE ISSUED TO THEM BEFORE THE ISSUE OF BHEL MATERIALS TO THEM. AT ANY POINT OF TIME, PROPORTIONATE SECURITY DEPOSIT OF TOTAL/CUMMULATIVE MATERIAL VALUE SHOULD BE MAINTAINED.</p> <p>2. BHEL MAY ASK THE SUPPLIER FOR SUBMISSION OF FULL SECURITY DEPOSIT AMOUNT OR PART DEPENDING UPON THE AVAILABILITY OF FREE ISSUE MATERIALS AT OUR END.</p> <p>3. PARTY MUST HAVE TO SUBMIT THE SAME WITHIN 02 WEEK TIME FROM THE DATE OF WRITTEN INTIMATION BY BHEL WITHOUT FAIL OTHERWISE IT WOULD TREATED AS FAILURE OF HONOURING PO TERMS AND ACCORDINGLY BHEL MAY CANCEL THE PURCHASE ORDER AND INITIATE ALTERNATE PROCUREMENT ACTION AT SUPPLIER RISK & COST.</p> <p>4. IN CASE OF ABSENCE OF DESIRED SECURITY DEPOSIT AT BHEL END AND ALSO NON RESPONSE OF POINT NO. 03 AS ABOVE,</p> <p>I. BHEL MAY HOLD THE PENDING PAYMENTS OF SUPPLIER AVAILABLE AT BHEL END WITHOUT ANY INTIMATION.</p> <p>II. IF NO PAYMENT IS PENDING AT BHEL END, ACTION FOR ALTERNATE PROCUREMENT ACTION MAY BE INITIATED.</p>	37
24	TRANSPORTATION CHARGES FOR SENDING BHEL FREE ISSUE MATERIALS TO THE PARTY WORKS WILL BE BORNE BY BHEL ONLY.	36
25	IF BHEL ISSUES FREE ISSUE MATERIALS TO THE SUPPLIER, IT MUST BE RETURNED WITHIN THE TIME LIMIT AS PRESCRIBED IN GST LAW (PRESENTLY 01 (ONE) YEAR FROM THE DATE OF FREE ISSUE DATE) TO COMPLY THE GST RULES. IF ANY VENDOR DOES NOT RETURN THE BHEL FREE ISSUE MATERIALS AS MENTIONED ABOVE, THE FINANCIAL IMPLICATION ON ACCOUNT OF THIS, IF ANY, SHALL BE RECOVERED FROM THE PARTY BILLS.	35
26	<p>REVERSE AUCTION: BHEL SHALL BE RESORTING TO REVERSE AUCTION (RA) (GUIDELINES AS AVAILABLE ON WWW.BHEL.COM) FOR THIS TENDER. RA SHALL BE CONDUCTED AMONG ALL THE TECHNO-COMMERCIALY QUALIFIED BIDDERS.</p> <p>PRICE BIDS OF ALL TECHNO-COMMERCIALY QUALIFIED BIDDERS SHALL BE OPENED AND SAME SHALL BE CONSIDERED AS INITIAL BIDS OF BIDDERS IN RA. IN CASE ANY BIDDER(S) DO (ES) NOT PARTICIPATE IN ONLINE REVERSE AUCTION, THEIR SEALED ENVELOPE PRICE BID ALONG WITH APPLICABLE LOADING, IF ANY, SHALL BE CONSIDERED FOR RANKING.</p>	24
27	IF ANY OF THE VENDORS DO NOT ACCEPT THE ABOVE POINT MENTIONED AT SL. NO. 26, THEIR OFFER MAY BE LIABLE FOR REJECTION WITHOUT INTIMATION.	25
28	<p>RISK PURCHASE: IN CASE OF DELAY IN SUPPLIES/ DEFECTIVE SUPPLIES/NON EXECUTION OF PURCHASE ORDER ETC. (FOR DETAILS, REFER GUIDELINES FOR RISK PURCHASE), BHEL MAY CANCEL THE ORDER IN FULL OR PART THEREOF/ MAY ALSO MAKE THE PURCHASE OF SUCH MATERIALS FROM ELSEWHERE/ALTERNATIVE SOURCES AT THE RISK & COST OF SUPPLIER.BHEL MAY ALSO MANUFACTURE THE ITEM IN-HOUSE IN PART OR FULL DEPENDING UPON THE URGENCY OF THE ITEM.</p> <p>GUIDELINES FOR RISK PURCHASE IS AVAILABLE ON BHEL WEBSITE "https://herp.bhel.com" at "Notice". RESPECTIVE BIDDERS / SUPPLIERS MAY REFER THIS GUIDELINE BEFORE SUBMITTING THEIR OFFER AGAINST BHEL, HERP TENDER ENQUIRIES. IN CASE RISK PURCHASE IS APPLIED, BHEL SHALL TAKE ACTION AGAINST THE NON-PERFORMING AND/OR DEFAULTING SUPPLIERS/ CONTRACTORS IN LINE WITH THIS GUIDELINE ONLY.</p>	26
29	BHEL MAY SHORT CLOSE/CANCEL AN ORDER AT ANY TIME DURING THE CURRENCY OF THE CONTRACT/PO IRRESPECTIVE OF THE PO DELIVERY DATE, IF	27
	(I) THE WORK PROGRESS OF THE VENDOR IS POOR, OR	
	(II) THE DELIVERY REQUIREMENT OF THE ITEM IS VERY CRITICAL & NOT BEING MET BY THE VENDOR ON WHICH ORDER HAS BEEN PLACED, OR	
	(III) THERE IS NO RESPONSE FOR IMPROVEMENT IN DELIVERY AS PER BHEL REQUIREMENT,	
30	THE OFFERS OF THE BIDDERS WHO ARE ON THE BANNED LIST AND ALSO THE OFFER OF THE BIDDERS, WHO ENGAGE THE SERVICES OF THE BANNED FIRMS, SHALL BE REJECTED. THE LIST OF BANNED FIRMS IS AVAILABLE ON BHEL WEB SITE www.bhel.com	28
31	RESERVATION RIGHTS OF BHEL: – BHEL RESERVES THE RIGHT TO REJECT ANY OR ALL QUOTATIONS WITHOUT ASSIGNING ANY REASONS THEREOF. BHEL ALSO RESERVES THE RIGHT TO INCREASE OR DECREASE THE TENDERED QUANTITIES. VENDORS SHOULD BE PREPARED TO ACCEPT ORDER FOR REDUCED QUANTITIES WITHOUT ANY EXTRA CHARGES. VENDOR SHOULD ALSO BE PREPARED FOR GIVING DISCOUNT IN CASE OF INCREASE IN QUANTITY.	29
32	NON-DISCLOSURE AGREEMENT: ALL DRAWINGS AND STANDARDS ARE PROPRIETARY OF BHEL. IT MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY. ALL SUPPLIERS SHALL FURNISH NDAS (NON-DISCLOSURE AGREEMENT) AGAINST USE OF DOCUMENTS FURNISHED BY BHEL TOWARDS UN-AUTHORIZED USE EXCEPT FOR THE PURPOSE IT HAS BEEN FURNISHED.	30
33	<p>A. SETTLEMENT OF DISPUTES & ARBITRATION:</p> <p>I. ALL QUESTIONS/INTERPRETATIONS REGARDING SUBJECT MATTER OF THE CONTRACT SHALL BE DECIDED BY THE BHEL ON THE REQUEST OF THE VENDOR AND THE DECISION OF THE BHEL SHALL BE FINAL.</p> <p>II. IN CASE OF DISPUTE, STEPS SHALL BE TAKEN BY THE PARTIES TO THE CONTRACT TO SETTLE THE SAME THROUGH NEGOTIATIONS.</p> <p>III. IN CASE, DISPUTE IS NOT SETTLED IN NEGOTIATIONS, IT SHALL BE REFERRED TO CONCILIATOR APPOINTED BY THE COMPETENT AUTHORITY OF THE BHEL. <i>THE CONCILIATION PROCEEDINGS WITH RESPECT TO A DISPUTE AS DEFINED IN THE BHEL CONCILIATION SCHEME, 2018 AND SUBSEQUENT REVISIONS CAN BE INITIATED UNDER THE SCHEME AT ANY STAGE WHETHER BEFORE, DURING OR EVEN AFTER THE COMMENCEMENT OF ARBITRATION PROCEEDINGS OR LITIGATION BEFORE COURTS. THIS CONCILIATION SCHEME IS AVAILABLE ON OUR WEBSITES https://herp.bhel.com AND www.bhel.com.</i></p> <p>IV. IN CASE DISPUTE IS NOT SETTLED IN CONCILIATION PROCEEDINGS, THE SAME SHALL BE REFERRED TO ARBITRATION AS PER CORPORATE GUIDELINES OF THE BHEL AND THE ARBITRATION PROCEEDING SHALL BE CONDUCTED AS PER PROVISIONS OF THE ARBITRATION AND CONCILIATION ACT, 1996 READ WITH CORPORATE GUIDELINE AS AMENDED FROM TIME TO TIME.</p> <p>V. THE VENDOR SHALL CONTINUE TO PERFORM THE CONTRACT, PENDING SETTLEMENT OF DISPUTE(S).</p> <p>B. JURISDICTION: ALL DISPUTES OR DIFFERENCES ARISING OUT OF OR IN CONNECTIONS WITH THE CONTRACT SHALL BE SUBJECT TO THE EXCLUSIVE JURISDICTION OF THE COURT AT VARANASI (U.P.) ONLY.</p>	31
34	SPECIAL NOTE FOR BIDDERS: THE QUOTATION SHOULD BE FROM PRINCIPAL / ORIGINAL EQUIPMENT MANUFACTURER ONLY. THE OFFER OF THOSE OEM, AUTHORIZING THEIR TRADER / DEALER / DISTRIBUTOR TO QUOTE AND TAKE ORDER IS LIABLE FOR DISQUALIFICATION. SINCE BHEL PREFER TO DEAL DIRECTLY WITH OEM AND NOT THROUGH DEALER / TRADER / DISTRIBUTOR OF OEM, THEREFORE, OEM MUST DIRECTLY QUOTE, TAKE ORDER AND DELIVER THE MATERIAL UNDER THEIR GUARANTEE / WARRANTEE.	32
35	<p>I. FOLLOWING DOCUMENTS SHOULD BE ENCLOSED AND ADDRESSED TO DGM (FINANCE) AND SAME SHALL BE DISPATCHED TO MM DEPTT. BHEL, HERP, TARNA, SHIVPUR, VARANASI-221003 FOR PAYMENT PURPOSE:</p> <p>a) 05 (FIVE) COPIES OF GST INVOICES</p> <p>b) COPY OF GR/RR.</p> <p>c) TEST CERTIFICATE AND GUARANTEE/WARRANTEE CERTIFICATE AND PDI REPORT, IF APPLICABLE. (ONE COPY).</p> <p>II. FURTHER TO ABOVE, 02 (TWO) COMPLETE SETS OF DOCUMENTS (COPIES OF ABOVE MENTIONED DOCUMENTS AT SL. NO. I FOR INDIAN SUPPLIERS (UNDER THIS CLAUSE) SHALL BE SENT FOR PURCHASE AND QUALITY DEPARTMENTS. ORIGINAL COPIES OF TC, GC, PDI REPORTS & OTHER QUALITY PAPERS SHALL BE ATTACHED IN THE SET OF DOCUMENTS FOR QUALITY DEPARTMENTS.</p> <p>III. THE VENDOR SHOULD PROVIDE BILLS & OTHER DOCUMENTS COMPLETE IN ALL RESPECT AS PER PURCHASE ORDER ALONGWITH DESPATCH OF MATERIALS. BHEL SHALL SEEK CLARIFICATION(S) (IF ANY) RELATED TO PAYMENT DOCUMENTS IN ONE GO. THE VENDOR SHOULD PROVIDE ALL SUCH CLARIFICATION(S) IMMEDIATELY. ANY DELAY IN PROCESSING OF PAYMENT, DUE TO NON RECEIPT OF CLARIFICATION(S) SOUGHT BY BHEL, SHALL BE ATTRIBUTABLE COMPLETELY TO VENDOR.</p> <p>IV. DIGITALLY SIGNED INVOICE IS ALSO ACCEPTABLE FOR PROCESSING OF PAYMENT.</p>	33
36	THE VENDOR SHALL ENSURE THAT THEIR BANK DETAILS ARE UPDATED WITH US FOR TIMELY PAYMENT THROUGH EFT (ELECTRONICS FUND TRANSFER).	53
37	GUIDELINES FOR SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS/ CONTRACTORS: THE REVISED GUIDELINES FOR SUSPENSION OF BUSSINESS DEALINGS ARE AVAILABLE ON BHEL WEBSITE AT " www.bhel.com " on "SUPPLIER REGISTRATION PAGE". RESPECTIVE BIDDERS / SUPPLIERS MAY REFER THIS BEFORE QUOTING AS PER THEIR REQUIREMENT. ACTION AGAINST THE DEFAULTED SUPPLIERS/ CONTRACTORS' SHALL BE TAKEN AS PER THESE GUIDELINES ONLY.	34

**GENERAL COMMERCIAL TERMS & CONDITIONS OF ENQUIRY
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**Amendment- 21
ANNEXURE-B**

38	VENDOR MUST FOLLOW THE SEQUENTIAL DELIVERY SCHEDULE I.e. ITEMS TO BE SUPPLIED IN SUCH A MANNER THAT THE PURCHASE ORDER HAVING OLDER DELIVERY SCHEDULE SHOULD BE SUPPLIED EARLIER AND PURCHASE ORDER HAVING LATTER DELIVERY SCHEDULE TO BE SUPPLIED LATTER. IF ANY VENDOR DOES NOT FOLLOW THE SEQUENTIAL DELIVERY SCHEDULE ESPECIALLY FOR SAME ITEM, BHEL MAY ACCOUNT FOR THE ITEM IN SEQUENTIAL MANNER OR MAY RECOVER THE FINANCIAL IMPLICATION.	
39	ALL ABOVE ACCEPTED TERMS & CONDITIONS SHALL BE PART OF PURCHASE ORDER WITH OR WITHOUT MENTIONING IN THE PO/CONTRACT BASED ON YOUR ACCEPTANCE AND OFFER SUBMITTED.	
40	<p>IMPORTANT INSTRUCTION:</p> <p>I.VENDORS ARE REQUESTED TO QUOTE THEIR RATE WITH DESCRIPTION MENTIONED IN THE ENQUIRY CONSIDERING ALL TECHNICAL TERMS & CONDITIONS OF THE ENQUIRY. ALSO RATES QUOTED SHOULD BE EXACTLY AS PER SL. NO. OF HARD COPY OF THE ENQUIRY (IF ENQUIRY HAS BEEN FLOATED THROUGH CONVENTIONAL MODE) OR AS PER SL. NO. APPEARING IN THE e-Procurement PORTAL (IF ENQUIRY HAS BEEN FLOATED THROUGH e-Procurement) ONLY. IT MUST BE FOLLOWED UP TO AVOID CONFUSION AT LATER STAGES. ALSO RATES TO BE SUBMITTED BOTH IN NUMERICS AS WELL AS IN WORD. IN CASE OF DISCREPENCY, RATES SUBMITTED IN WORDS SHALL BE CONSIDERED FOR FURTHER PROCESSING.</p> <p>II.DOCUMENTS SUBMITTED WITH THE OFFER SHOULD BE SIGNED AND STAMPED IN EACH PAGE BY AUTHORIZED REPRESENTATIVE OF THE BIDDER.</p> <p>II.IN CASE OF PDI, VENDOR SHALL RAISE ONLINE INSPECTION CALL IN ONLINE INSPECTION PORTAL/INTIMATE BHEL IN WRITTIING (WHERE INSPECTION IS IN BHEL HERP SCOPE) AT LEAST 01 WEEK IN ADVANCE OR AS MUTUALLY AGREED PERIOD ABOUT THE DATE AND PLACE AT WHICH GOODS WILL BE READY FOR INSPECTION.</p> <p>IV.PURCHASER OR HIS AUTHORIZED REPRESENTATIVE SHALL BE ENTITLED TO CARRY OUT SURVEILLANCE INSPECTION OF MATERIAL AND WORKMANSHIP AT SELLER'S PREMISES OR AT HIS SUB-CONTRACTOR'S PREMISES AT ALL REASONABLE TIMES DURING EXECUTION OF THE CONTRACT. SUCH INSPECTION, EXAMINATION AND TESTING, IF MADE, SHALL NOT ABSOLVE THE SELLER FROM HIS OBLIGATIONS UNDER THE CONTRACT.</p> <p>V.SUCH PRE-DISPATCH INSPECTION, EXAMINATION AND TESTING, IF MADE, AT VENDOR'S WORKS SHALL NOT ABSOLVE THE SELLER FROM HIS OBLIGATIONS TO MANUFACTURE/MACHINING THE GOODS UNDER THE CONTRACT. IF DEFECTS ARE FOUND AT LATER STAGE, IT IS THE SOLE RESPONSIBILITY OF THE VENDOR TO REPLACE/RECTIFY THE SAME.</p>	
41	<p>IMPORTANT CLAUSE FOR GST: INPUT TAX CREDIT OF GST CAN BE AVAILED BY BHEL ONLY WHEN THE MATERIAL HAS BEEN PHYSICALLY RECEIVED AND GST INVOICE IS IN POSSESSION OF BHEL. THEREFORE, SUPPLIERS SHOULD ENSURE THE FOLLOWING IN RESPECT OF POS ISSUED BY BHEL:</p> <p>I. GST INVOICE SHOULD CONTAIN ADDRESS, GST NO. AND PAN NO. OF BHEL AS WELL AS OF SUPPLIER. APPLICABLE HSN CODE OF THE MATERIAL SHOULD BE INDICATED IN THE GST INVOICE.</p> <p>II. FIVE COPIES OF GST INVOICE AND LORRY RECEIPT MAY BE DESPATCHED ALONGWITH SHIPMENT OF THE GOODS IN ORDER TO AVOID ANY DELAY IN AVAILING INPUT CREDIT BY BHEL.</p> <p>III. DECLARE SUCH INVOICE IN HIS GSTR-1 RETURN FOR THE MONTH OF DESPATCH OF MATERIAL.</p> <p>IV. PAYMENT OF GST TO STATUTORY AUTHORITIES WITHIN PRESCRIBED TIME.</p> <p>V. IN CASE OF DISCREPANCY IN THE DATA UPLOADED BY THE BIDDER IN THE GSTN PORTAL VIS-A-VIS THE TAX INVOICE OR IN CASE OF ANY SHORTAGES OR REJECTION IN THE SUPPLY, THEN BHEL WILL NOT BE ABLE TO AVAIL THE TAX CREDIT. BIDDER HAS TO RECTIFY THE DATA DISCREPANCY IN THE GSTN PORTAL OR ISSUE CREDIT NOTE OR DEBIT NOTE (DETAILS ALSO TO BE UPLOADED IN GSTN PORTAL) FOR THE SHORTAGES OR REJECTIONS IN THE SUPPLIES OR ADDITIONAL CLAIMS FOR PROCESSING OF SUCH INVOICES.</p> <p>VI. GST TDS DEDUCTED AS PER GST ACT, IS UPLOADED IN GSTN PORTAL ALONG GSTR7. BIDDERS CAN DIRECTLY DOWNLOAD THE GST TDS CERTIFICATE FROM THE GSTN PORTAL.</p> <p>IN CASE GST CREDIT IS DELAYED /DENIED TO BHEL DUE TO NON OR DELAYED RECEIPT OF GOODS AND OR TAX INVOICE OR EXPIRY OF TIMELINE PRESCRIBED IN GST LAW FOR AVAILING SUCH ITC OR ANY OTHER REASON NOT ATTRIBUTABLE TO BHEL, GST AMOUNT SHALL BE RECOVERABLE FROM VENDOR ALONG WITH INTEREST /PENALTY LEVIABLE ON BHEL.</p> <p>IN CASE SUPPLIERS DELAYS DECLARING SUCH INVOICE IN HIS RETURN AND GST CREDIT AVAILED BY BHEL IS DENIED OR REVERSED SUBSEQUENTLY AS PER GST LAW, GST AMOUNT PAID BY BHEL TOWARDS SUCH ITC REVERSAL SHALL BE RECOVERABLE FROM SUPPLIER ALONGWITH INTEREST LEVIED/LEVIABLE ON BHEL.</p> <p>IN CASE OF RAISING ANY SUPPLEMENTARY TAX INVOICE (DEBIT/ CREDIT NOTE), THE SUPPLIER SHALL ISSUE THE SAME CONTAINING ALL THE DETAILS AS REFERRED TO IN SECTION 34 READ WITH SECTION 31 OF GST ACT & RULES REFERRED THERE UNDER .</p>	
42	<p>STATUTORY VARIATION CLAUSE: ANY INCREASE IN THE RATE OF GST SHALL BE PAYABLE ONLY FOR DELIVERIES COMPLETED WITHIN THE SCHEDULED DELIVERY PERIOD, IN OTHER WORDS INCREASE IN THE RATE OF GST SHALL NOT BE PAYABLE FOR VALUE OF CONSIGNMENT DELIVERED AFTER THE SCHEDULED PURCHASE ORDER DELIVERY PERIOD.2.NEW TAXES AND DUTIES , IF IMPOSED SUBSEQUENT TO DUE DATE OF OFFER SUBMISSION, BY STATUTORY AUTHORITY DURING CONTRACT PERIOD (INCLUDING EXTENSION IF THE SAME IS NOT ATTRIBUTABLE TO BIDDER) SHALL BE REIMBURSED BY BHEL ON PRODUCTION OF RELEVANT SUPPORTING DOCUMENTS TO THE SATISFACTION OF BHEL . HOWEVER, BIDDER SHALL TAKE PRIOR APPROVAL OF BHEL BEFORE DEPOSITING NEW TAXES AND DUTIES.</p>	
43	<p>IMPORTANT INSTRUCTION FOR MSEs SUPPLIERS:</p> <p>I. "MSE SUPPLIERS CAN AVAIL THE INTENDED BENEFITS ONLY IF THEY SUBMIT ALONG WITH OFFER, ATTESTED COPIES OF EITHER EM-II CERTIFICATE HAVING DEEMED VALIDITY (FIVE YEARS FROM THE DATE OF ISSUE OF ACKNOWLEDGEMENT IN EM-II) OR VALID NSIC CERTIFICATE OR EM-II CERTIFICATE ALONG WITH CA CERTIFICATE (FORMAT ENCLOSED AS PER ANNEXURE-1 WHERE DEEMED VALIDITY OF EM-II CERTIFICATE OF FIVE YEARS HAS EXPIRED) APPLICABLE FOR THE RELEVANT F/Y (LATEST AUDITED).DATE TO BE RECKONED FOR DETERMINING THE DEEMED VALIDITY WILL BE THE DATE OF BID OPENING (PART -1 IN CASE OF TWO PART BID). NON SUBMISSION OF SUCH DOCUMENTS WILL LEAD TO CONSIDERATION OF THEIR BID AT PAR WITH OTHER BIDDERS. NO BENEFIT SHALL BE APPLICABLE FOR THIS ENQUIRY IF ANY DEFICIENCY IN THE ABOVE REQUIRED DOCUMENTS ARE NOT SUBMITTED BEFORE PRICE BID OPENING. IF THE TENDER IS TO BE SUBMITTED THROUGH e-procurement PORTAL, THEN THE ABOVE REQUIRED DOCUMENTS ARE TO BE UPLOADED ON THE PORTAL. DOCUMENTS SHOULD BE NOTARIZED OR ATTESTED BY A GAZETTED OFFICE.</p> <p>II.IN CASE OF ANY CHANGE IN THE MSE STATUS OF THE BIDDER, IT SHALL BE RESPONSIBILITY OF THE BIDDER TO NOTIFY THE CHANGE AS A PART OF THE BID DOCUMENT. IF AT A LATER DATE IT COMES TO NOTICE OF BHEL, THAT THE CHANGE IN THE STATUS HAS NOT BEEN INTIMATED BY THE BIDDER AND THE ORDER IS OBTAINED UNDER THE PREMISE OF AN MSE, THEN BHEL WOULD CANCEL THE PENDING ORDER AGAINST THIS TENDER AND TAKE NECESSARY ACTION SUSPENSION OF THE BUSSINESS DEALING WITH THE BIDDER AS PER PROCUREMENT POLICY OF BHEL.</p> <p>III.25 % OF THE TENDERED QUANTITY IS EARMARKED FOR MSE SUPPLIERS IN THIS TENDER.</p> <p>IV.OUT OF THIS 25% TENDERED QUANTITY RESERVED FOR MSE SUPPLIERS, 6.25% SHALL BE EARMARKED FOR PROCUREMENT FROM MSEs OWNED BY SC/ST ENTREPRENEURS.</p> <p>V.OUT OF THIS 25% TENDERED QUANTITY RESERVED FOR MSE SUPPLIERS, 3% SHALL BE EARMARKED FOR PROCUREMENT FROM MSEs OWNED BY WOMEN.</p> <p>VI.IN CASE MSE VENDOR PARTICIPATING IN THE TENDER QUOTES WITHIN THE PRICE BAND OF "L1+15%", THEY WILL BE ALLOWED TO SUPPLY THE 25% PORTION OF THE REQUIREMENT SUBJECT TO ACCEPTANCE OF L1 PRICE (ON LANDED COST BASIS) BY MSE VENDOR. IN CASE OF MORE THAN ONE SUCH MSE VENDOR WITHIN THE "L1+15% PRICE BAND" THE SUPPLY SHALL BE SHARED PROPORTIONATELY (TO 25% TENDERED QUANTITY).</p> <p>VII.IF THE L1 VENDOR HAPPENS TO BE A MSE VENDOR AGAINST ANY ITEM CODE, THEN 100% OF THE TENDERED QTY (FOR RESPECTIVE ITEM CODE) SHALL BE PROPOSED TO ORDER ON THE L1 (MSE) VENDOR, EVEN THOUGH THERE MAY BE OTHER MSE VENDORS WITHIN THE "L1+15% PRICE BAND".</p> <p>VIII.IN CASE AFTER OPENING OF PRICE BID, IT IS SEEN THAT NO MSE HAS BECOME L1, THEN DEPENDING ON THE NATURE OF THE ITEM, IF IT IS NOT POSSIBLE TO SPLIT THE TENDERED ITEMS/QUANTITIES ON ACCOUNT OF REASONS LIKE CUSTOMER CONTRACT REQUIREMENTS OF SUPPLYING ONE MAKE FOR A GIVEN PROJECT OR TECHNICAL REASONS LIKE TENDERED ITEMS BEING A SYSTEM etc. THEN BHEL WOULD NOT COUNTER OFFER THE L1 PRICES EVEN THOUGH THERE MAY BE MSE BIDDERS WITHIN THE "L1+15% PRICE BAND" OF L1.</p>	
44	<p>THE STARTUPS AS DEFINED IN THE GAZETTE OF INDIA NOTIFICATION NO.: G.S.R. 127 (E) DATED 19/02/2019 WILL BE EXEMPTED FROM FULFILLING THE CRITERIA, IF MENTIONED, IN THE PQR (PRE-QUALIFYING REQUIREMENT) REGARDING PRIOR TURNOVER AND PRIOR EXPERIENCE. HOWEVER, THERE MAY BE CIRCUMSTANCES (LIKE PROCUREMENTS OF ITEMS RELATED TO PUBLIC SAFETY, HEALTH, CRITICAL SECURITY OPERATIONS AND EQUIPMENTS ETC.) WHERE BHEL MAY PREFER THE VENDORS TO HAVE PRIOR EXPERIENCE RATHER THAN GIVING ORDER TO NEW ENTITIES. FOR SUCH PROCUREMENTS, BHEL MAY NOT RELAX THE CRITERIA OF PRIOR EXPERIENCE/TURNOVER FOR THE STARTUPS.</p>	
45	<p>PURCHASE PREFERENCE FOR INDIAN VENDORS: FOR THIS PROCUREMENT, THE LOCAL CONTENT TO CATEGORIZE A SUPPLIER AS A CLASS I LOCAL SUPPLIER / CLASS II LOCAL SUPPLIER /NON LOCAL – SUPPLIER AND PURCHASE PREFERENCE TO CLASS I LOCAL SUPPLIER, IS AS DEFINED IN PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 DATED 04.06.2020 ISSUED BY DPIIT. IN CASE OF SUBSEQUENT ORDERS ISSUED BY THE NODAL MINISTRY, CHANGING THE DEFINITION OF LOCAL CONTENT FOR THE ITEMS OF THE NIT, THE SAME SHALL BE APPLICABLE EVEN IF ISSUED AFTER ISSUE OF THIS NIT, BUT BEFORE OPENING OF PART –II BIDS AGAINST THIS NIT.</p> <p>MODEL CLAUSE FOR TENDER.</p> <p>I. ANY BIDDER FROM A COUNTRY WHICH SHARES A LAND BORDER WITH INDIA WILL BE ELIGIBLE TO BID IN THIS TENDER ONLY IF THE BIDDER IS REGISTERED WITH THE COMPETENT AUTHORITY.</p>	

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

**Amendment- 21
ANNEXURE-B**

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

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

Amendment- 21
ANNEXURE-B

	H) IN CASE OF A HOLDING COMPANY HAVING MORE THAN ONE INDEPENDENTLY MANUFACTURING UNITS, OR MORE THAN ONE UNIT HAVING COMMON BUSINESS OWNERSHIP/MANAGEMENT, ONLY ONE UNIT SHOULD QUOTE. SIMILAR RESTRICTIONS WOULD APPLY TO CLOSELY RELATED SISTER COMPANIES. BIDDERS MUST PROACTIVELY DECLARE SUCH SISTER/ COMMON BUSINESS/ MANAGEMENT UNITS IN SAME/ SIMILAR LINE OF BUSINESS.	
54	VENDOR MUST VISIT OUR WEBSITE https://herp.bhel.com REGULARILY FOR ENQUIRY/PO/CLARIFICATIONS/FOR ANY LATEST UPDATES.	

NOTE:

1. FOR FOREIGN SUPPLIERS: **CLAUSE NO. 09, 23,24,25,48,50,51, 56 & 58** ARE NOT APPLICABLE FOR 'FOREIGN SUPPLIERS'. IT IS APPLICABLE FOR ONLY INDIAN SUPPLIERS.
2. PLEASE FILL IN THIS FORMAT AND SEND COMPULSORILY ALONG WITH QUOTATION WITH VENDOR'S SEAL, SIGNATURE AND DATE.

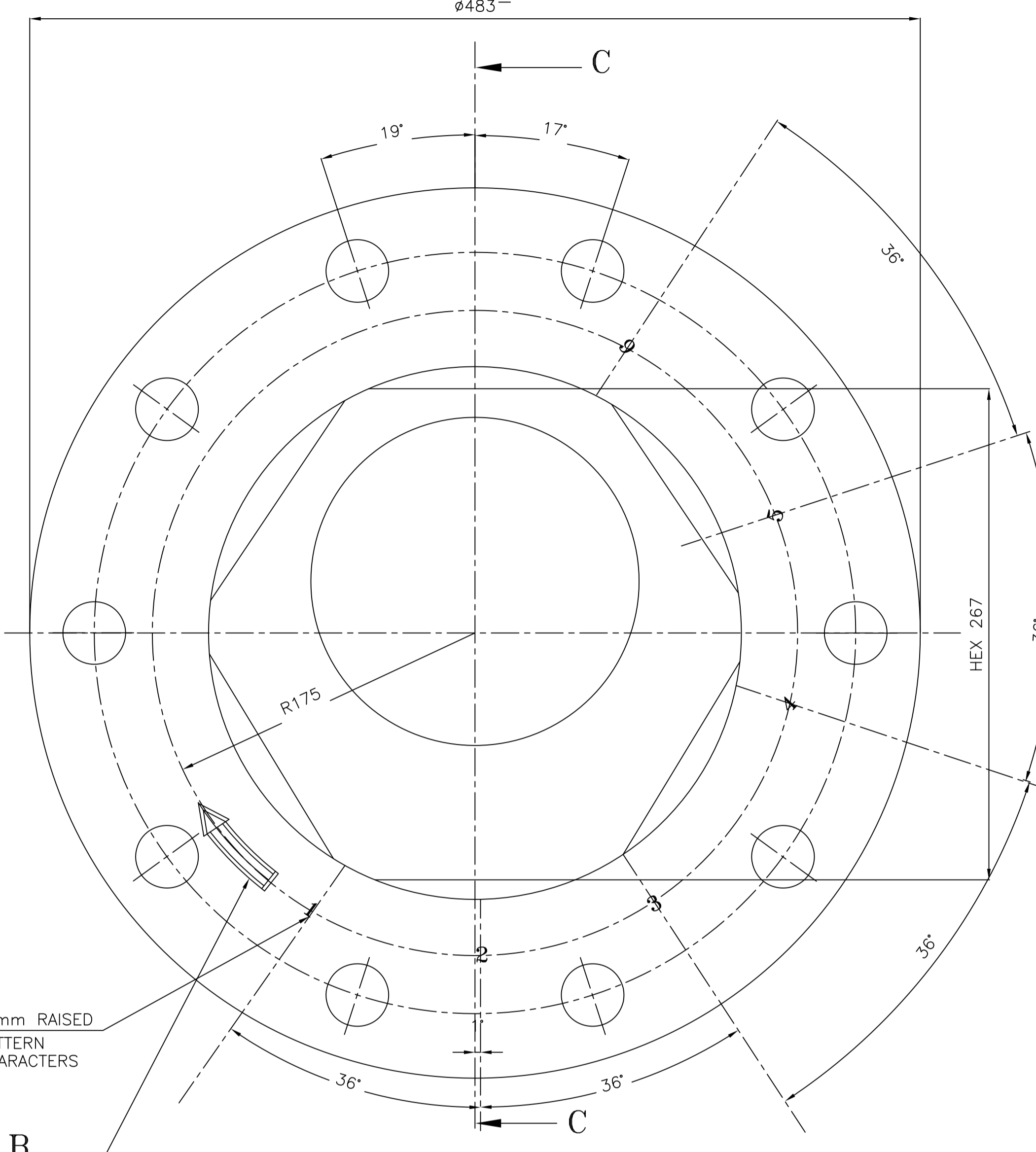
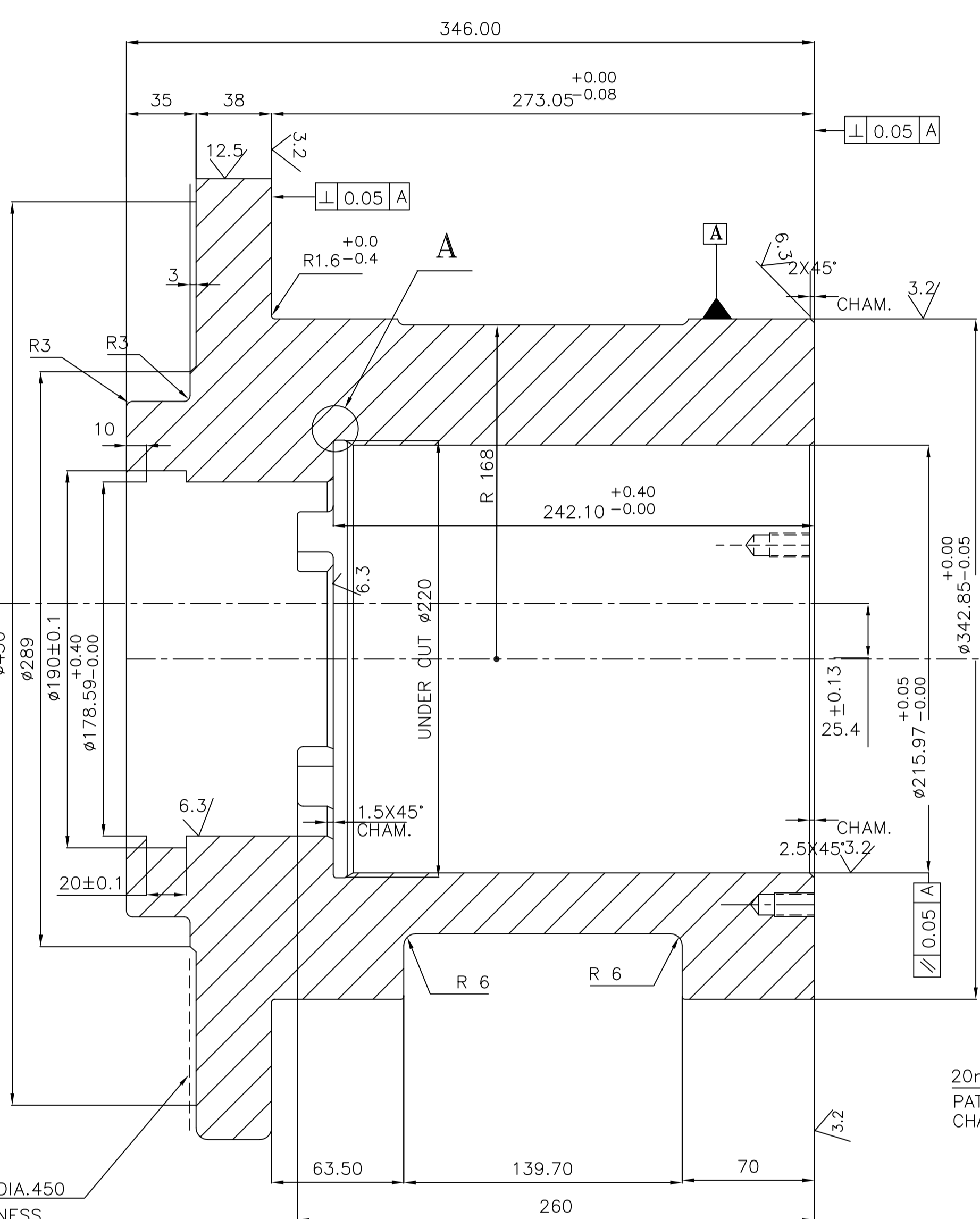
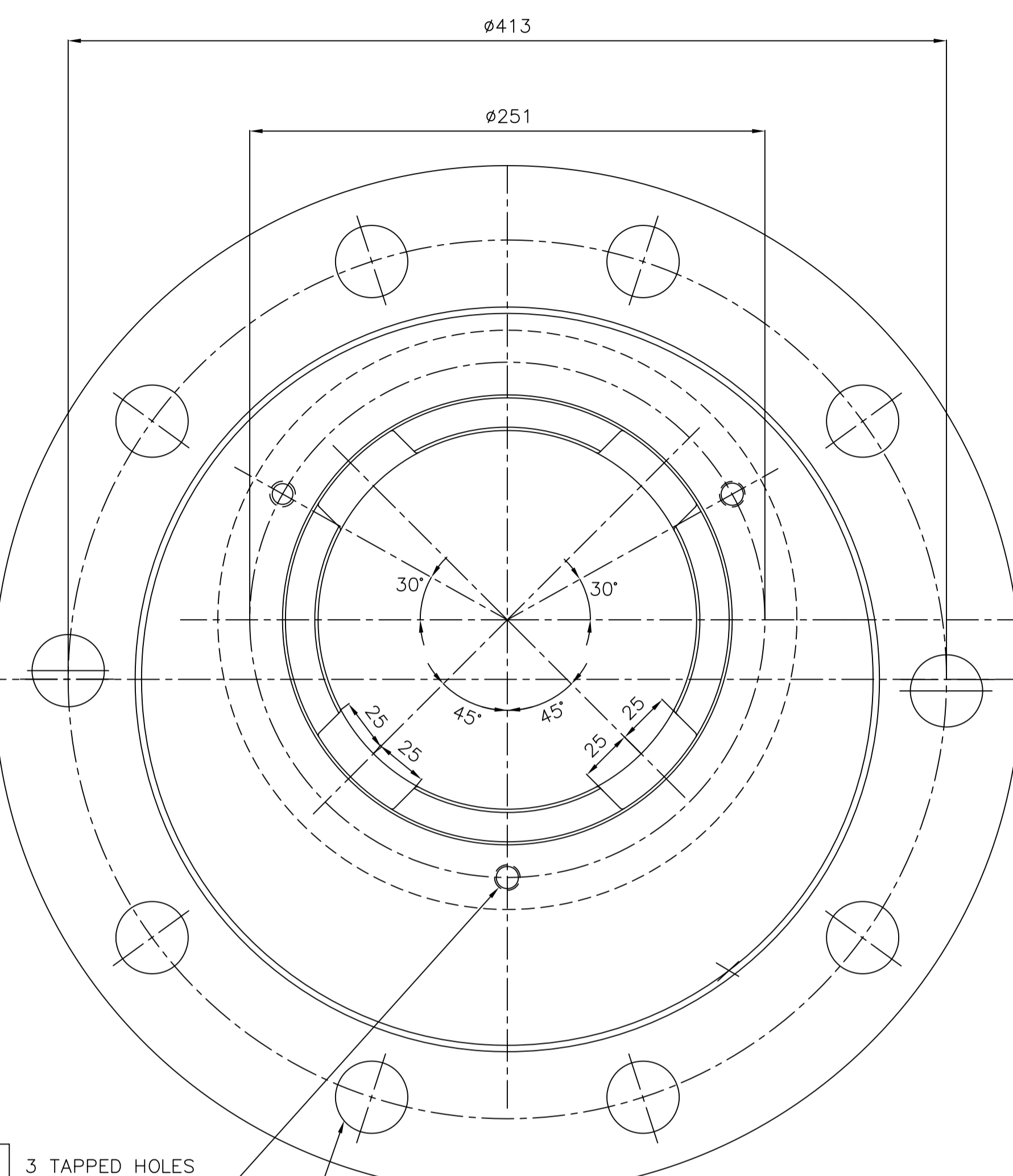
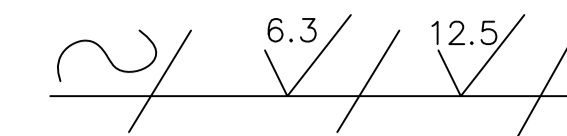
SIGNATURE ALONG WITH SEAL AND DATE:

DRG. NO. 1-61-000-00256

2 OF HS

SECTION-CC

SCALE 1:2



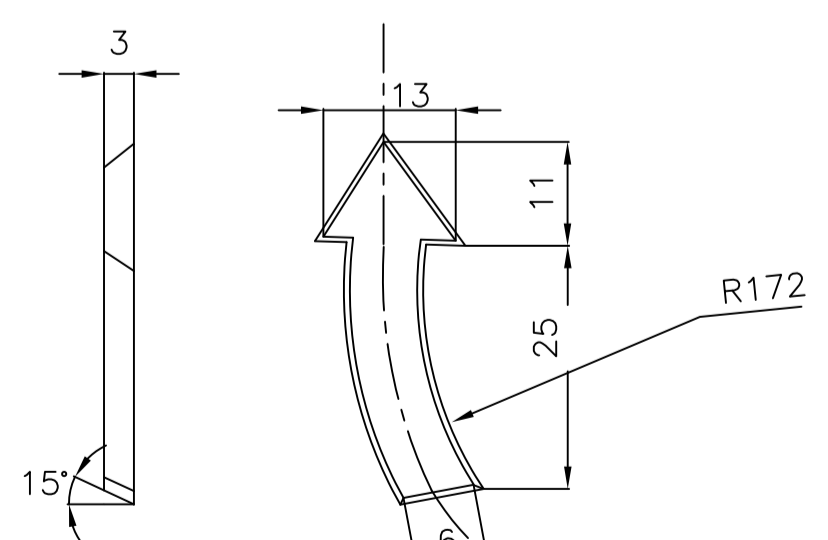
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

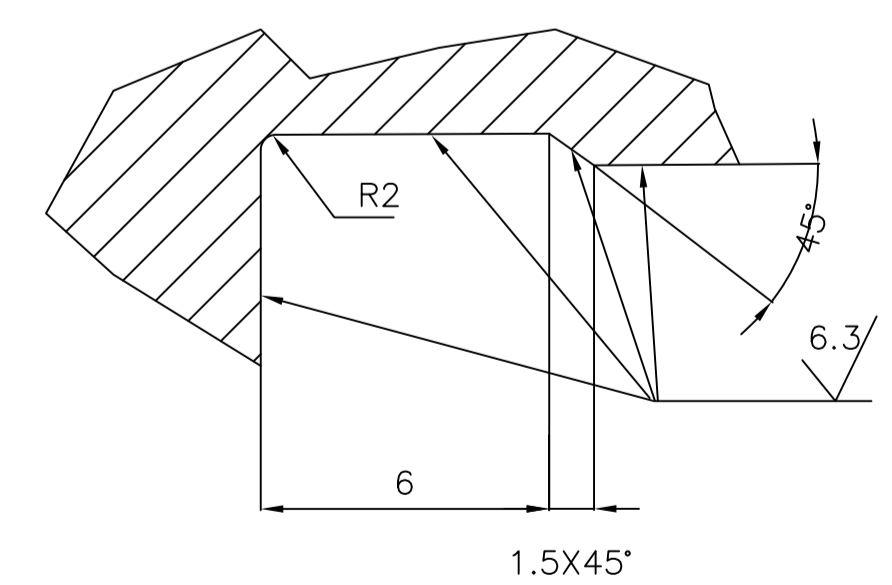
3 TAPPED HOLES SIZE-A (REF. VAR TABLE)
36 DIA DRILL 10 HOLES EQ. SPACED 6.3 SPOT FACE OPPOSITE SIDE (JIG)

12.5 SKIN CUT TO DIA.450 FLANGE THICKNESS SHALL NOT BE LESS THAN 35 AFTER SKIN CUT

20mm RAISED PATTERN CHARACTER



DETAIL-B



DETAIL-A

SIZE	VAR-01	VAR-02
A	1/2"-13 UNC2-1" DEEP	M12-28 DEEP

VAR-01 : INCH TAPPING FOR SINGRAULI-VII AND KORBA-VI
VAR-02 : METRIC TAPPING FOR OTHER PROJECTS

PATTERN NO. 1-61-000-00256

DATE	REV.	DATE	ALTERED	REV.	DATE	ALTERED
	06	09.01.06	CHD/APPD V.KUMAR	05	10.6.03	CHD/APPD
	ZONE VARIANT TABLE ADDED			ZONE GROOVE 20 X 190 AT 10 FROM EDGE ADDED.		

VARIANT NO	ITEM NO	DESCRIPTION	STD	DRAWING NO	ITEM NO	MATL CODE	UNIT WT
		CASTING			BA9110307060		150.00
					AA19703		

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN ON THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: 1003XRP BOWL MILL

BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD

NAME	SIGN.	DATE	NO.OF VAR.
DRN. N.D.S		15.4.99	
CHD. S.G		15.4.99	
APPD. K.M.RAO		15.4.99	

DEPT. PULVENGGR. DEPT.CODE 446

UNTO. DIMS. GR. 0/M/F

SCALE NTS

WEIGHT (KG) 150.00

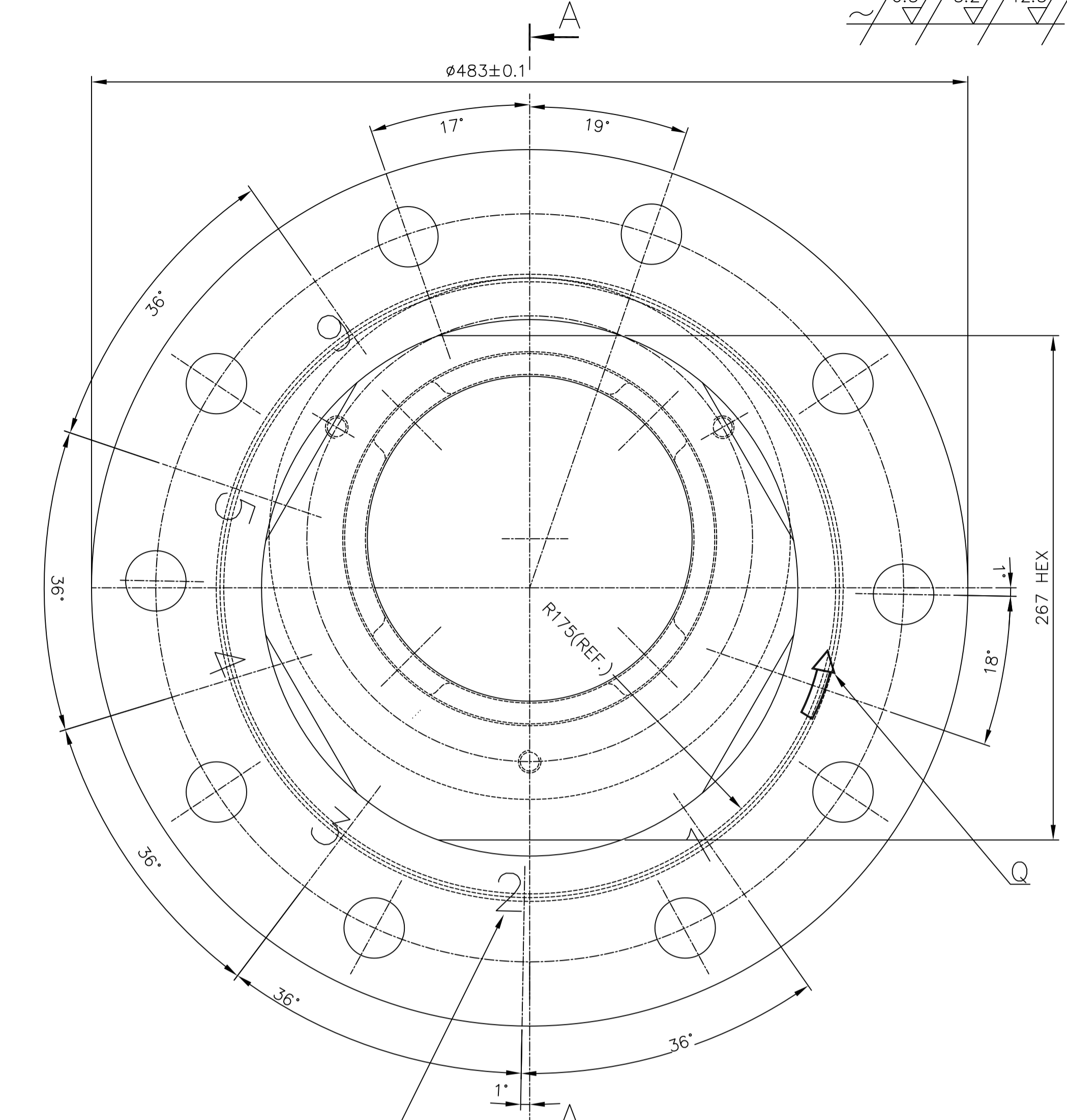
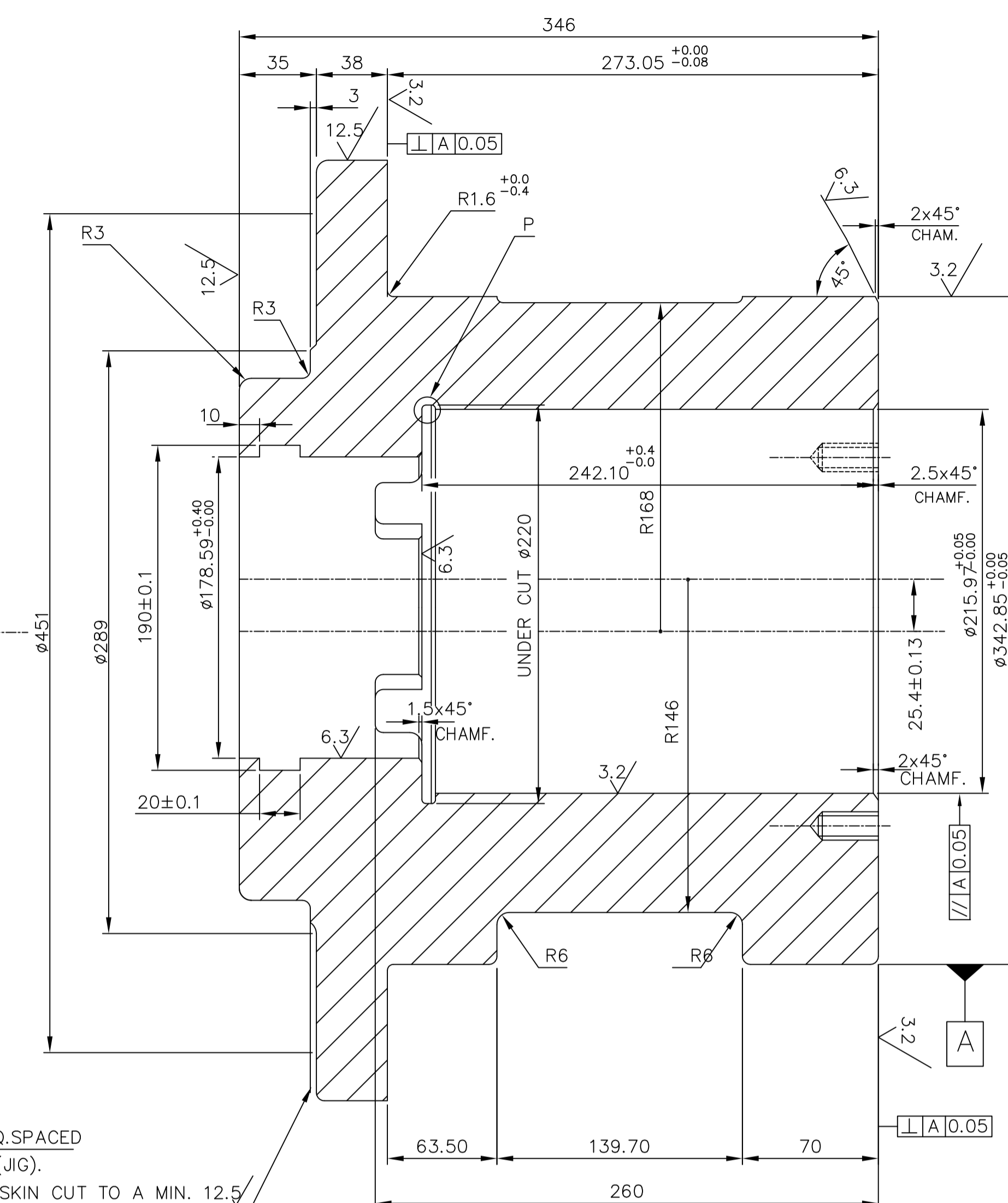
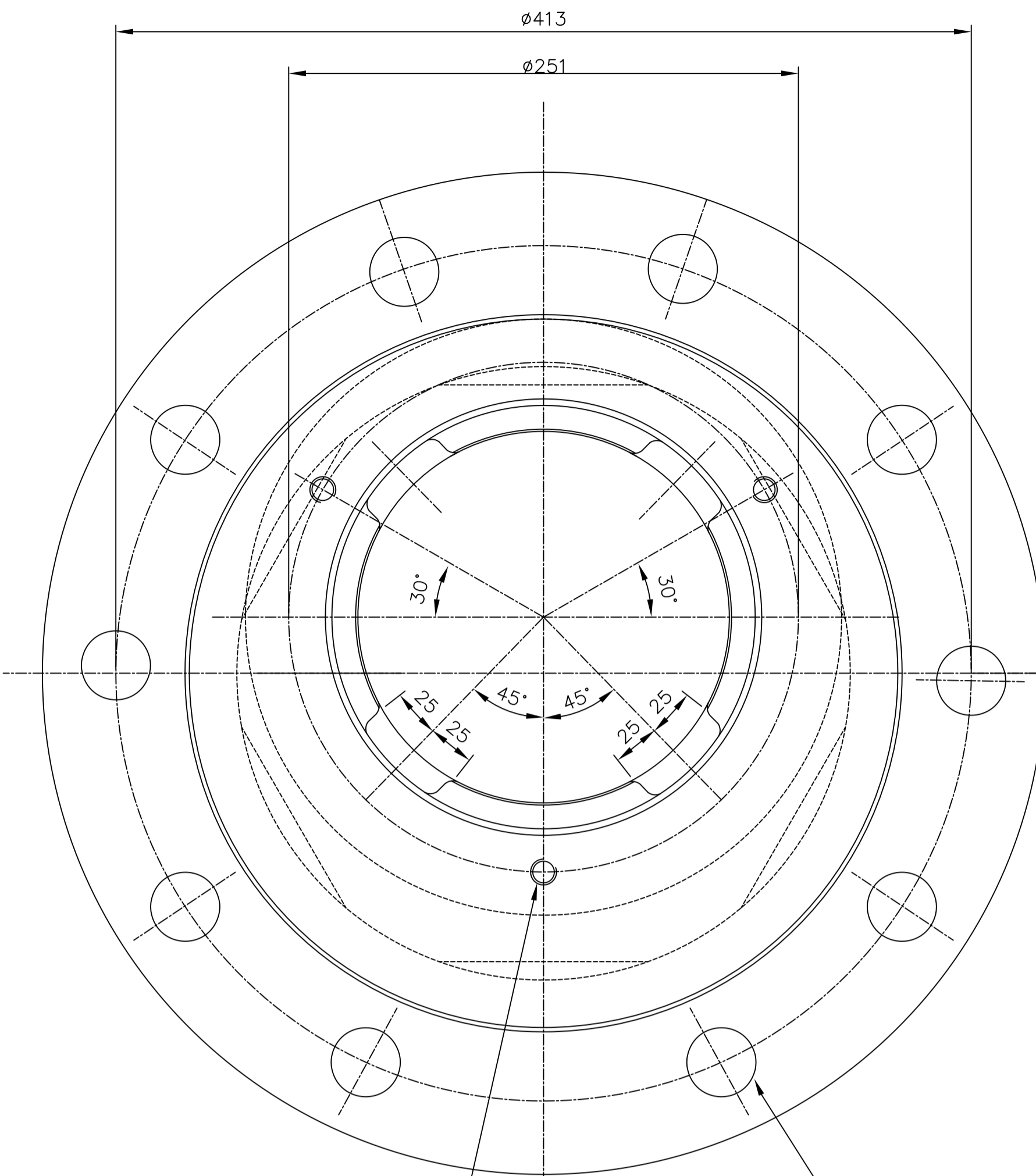
REF. TO ASSY. DRG. 1.61.000.01233 (D-101-00152-9)

ITEM NO. 03

DRAWING NO. 1-61-000-00256

REV. 06

SHT. No. NO. OF SHT.



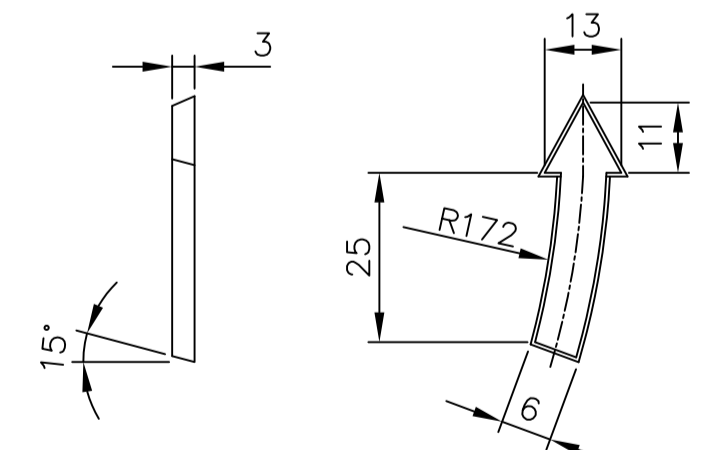
10 HOLES 36 DIA.DRILL EQ.SPACED
SPOT FACE Ø63 OPP.SIDE(JIG).

3 TAPPED HOLES SIZE-A
(REF. VAR TABLE)

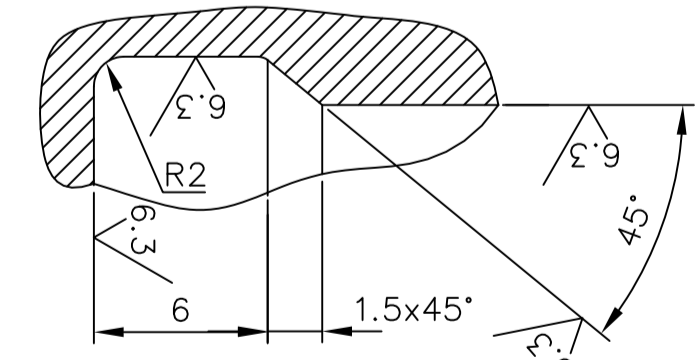
SKIN CUT TO A MIN. 12.5
TO Ø451.FLANGE THICKNESS
SHALL NOT BE LESS THAN 35
AFTER SKIN CUT

SECTION-AA

20MM RAISED PATTERN
CHARACTERS



DETAIL-Q
(SCALE 1:1)



DETAIL-P
(SCALE 1:1)

SIZE	VAR-01	VAR-02
	1/2"-13 UNC2- -1" DEEP	M12-28 DEEP

VAR-01 : INCH TAPPING FOR SINGRAULI-VII AND KORBA-VI
VAR-02 : METRIC TAPPING FOR OTHER PROJECTS

NOTE:-
1. PATTERN NO. 1-61-000-00257
2. BREAK ALL SHARP EDGES AND CORNERS
UNLESS OTHERWISE NOTED.

ITEM NO	DESCRIPTION	DRAWING NO.	MATERIAL CODE	MATERIAL SPECN.	NET WT.	GROSS WT.	QUANTITY
01	CASTING	AA 19703	BA9110307052		150.00		000

THE FOLLOWING CONDITIONS APPLY
EXCEPT OTHERWISE STATED...

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: 1003 XRP BM

DRG. N.D.S. 15.4.99
CHD. S.G. 15.4.99
APPD. K.M.RAO 15.4.99

DEPT. MILLS GRADE OF UNTOI. DIM. SCALE WEIGHT (KG) REF. TO ASSY DRG. ITEM NO. NO. OF ITEMS
CODE 240 1:2 150.00 0 61 000 00080 (D-101-00151-9) 46

TITLE TRUNNION SHAFT END CAP-THRUST END
DRAWING NO. 1-61-000-00257
SHEET NO. NO OF SHEETS

INVENTORY NO. SIGN. AND DATE. REF. DRG. NO. COMPUTER FILE NAME: 16100257.DWG

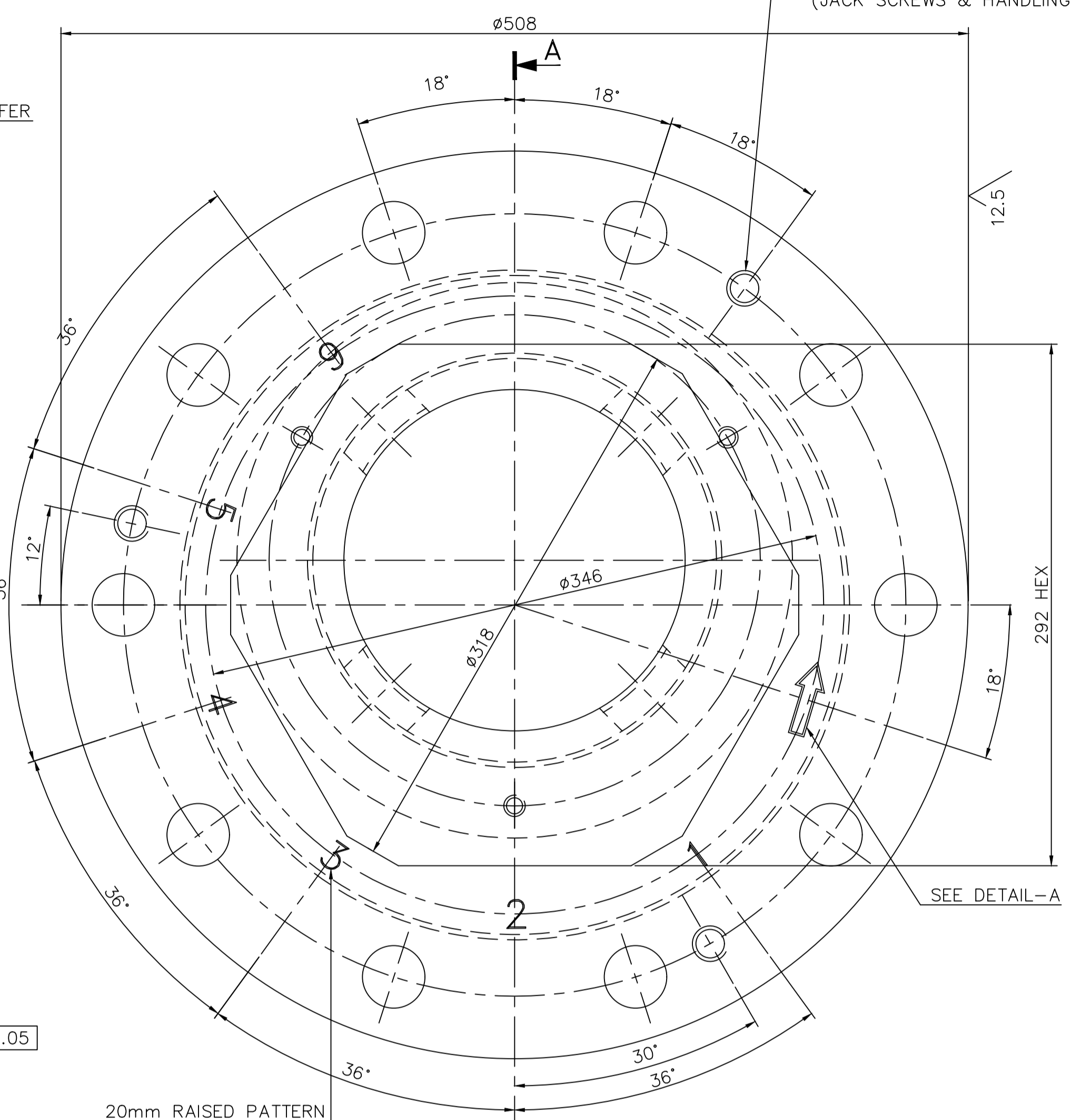
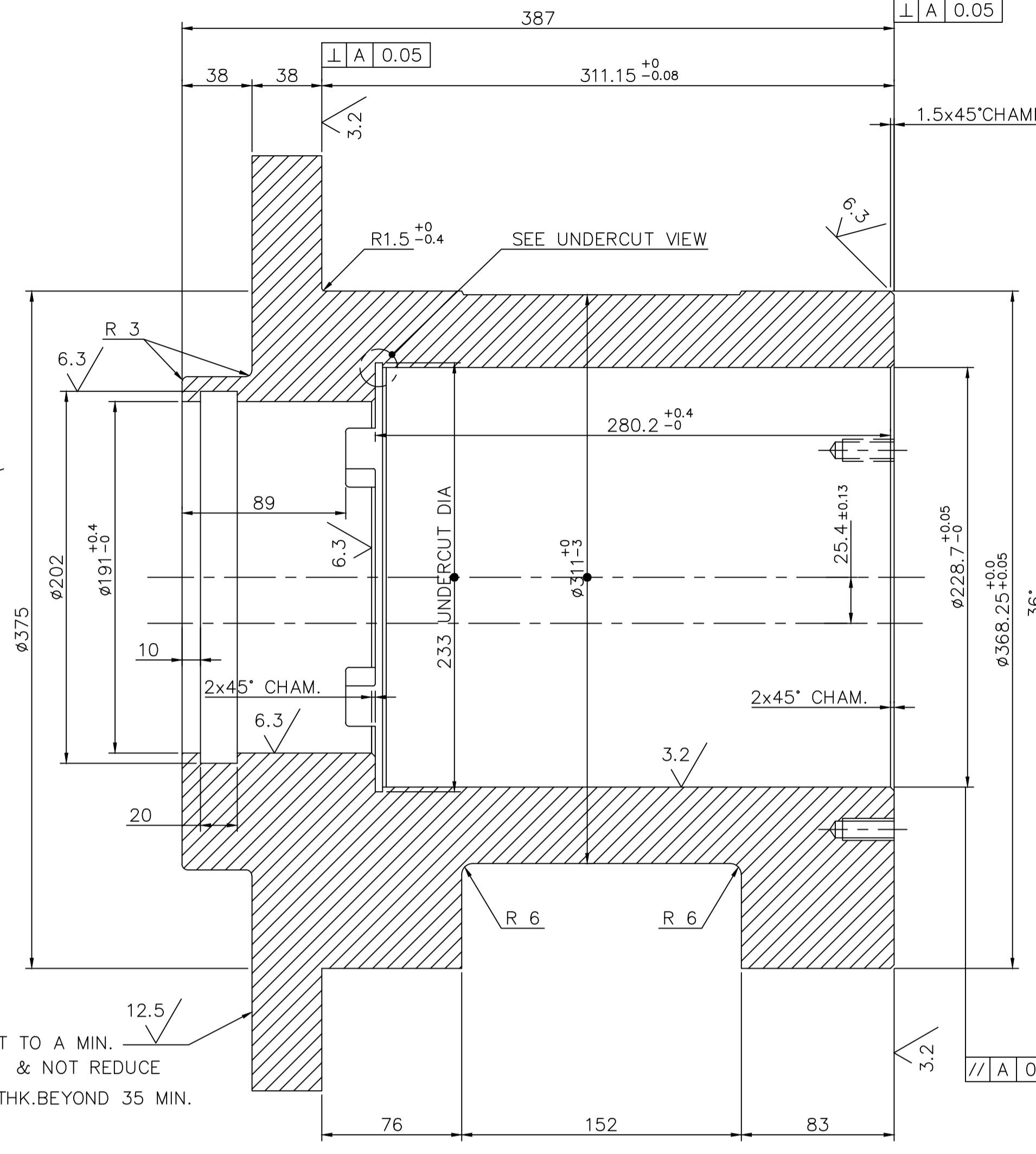
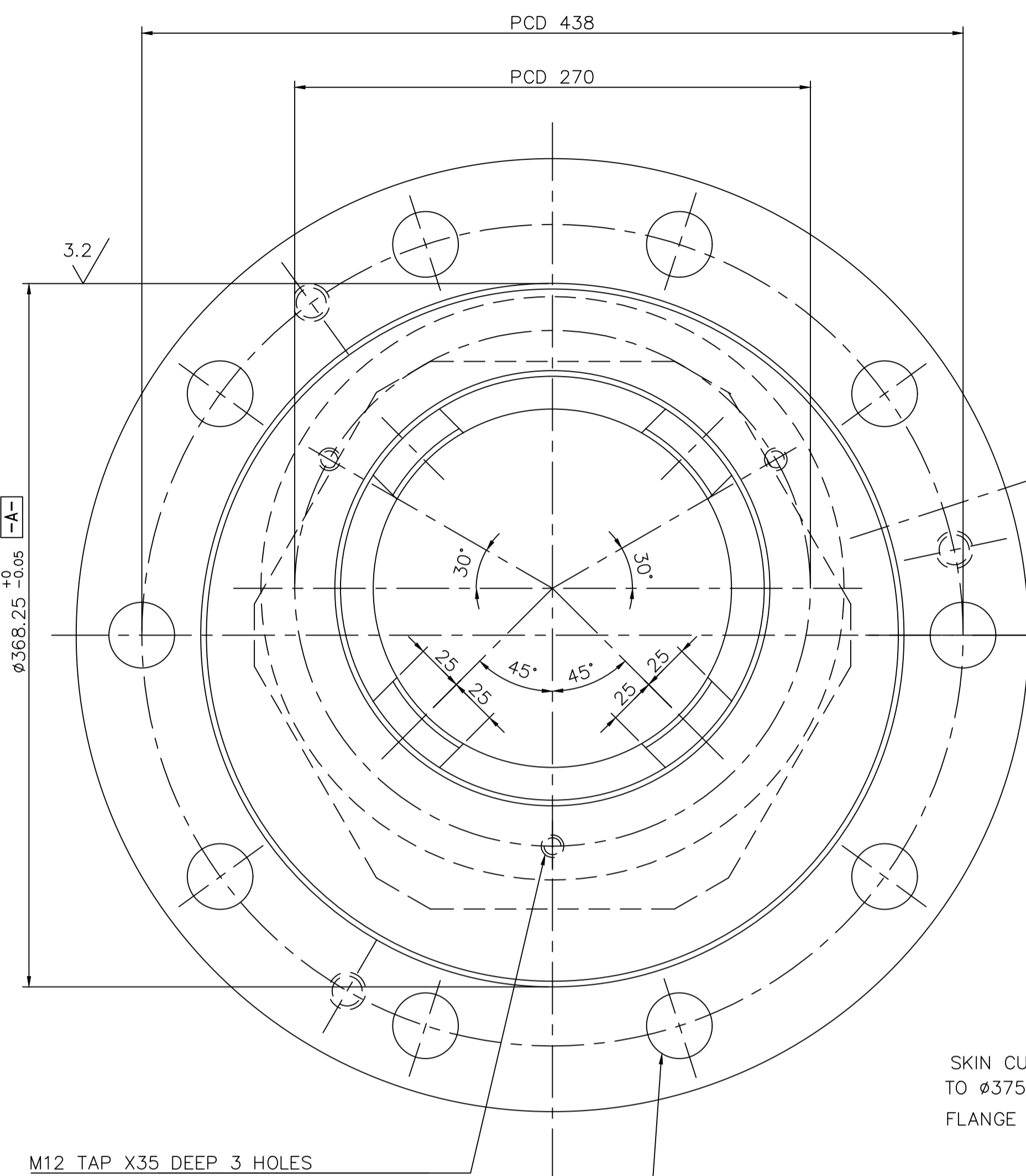
REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.				
1		CHECKED		3		CHECKED		4		CHECKED		5		CHECKED		6	09.01.06	CHECKED	Y.KUMAR	7	10.06.03	CHECKED	
										VARIANT TABLE ADDED					GROOVE Ø190 X 20 X 10 FROM EDGE ADDED.								

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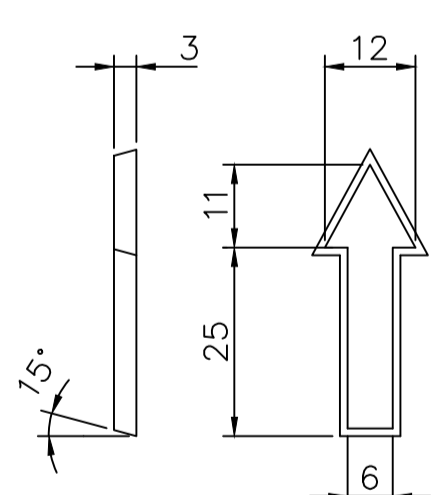
16110-700-19-1

ON DRN

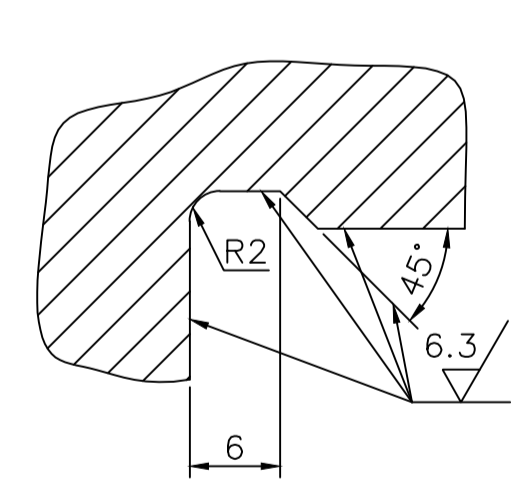
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SECTION A-A



DETAIL-A



UNDERCUT VIEW

- NOTES:-**
- BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE NOTED.
 - TOLERANCES UNLESS OTHERWISE NOTED.
CASTING ± 1.6 "
FORGING ± 0.1 "

F/M MAT CODE : BA9711031019

01	CASTING				BA9110353119	200.000
ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT. GROSS WT.
					MATERIAL SPECN.	QUANTITY

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

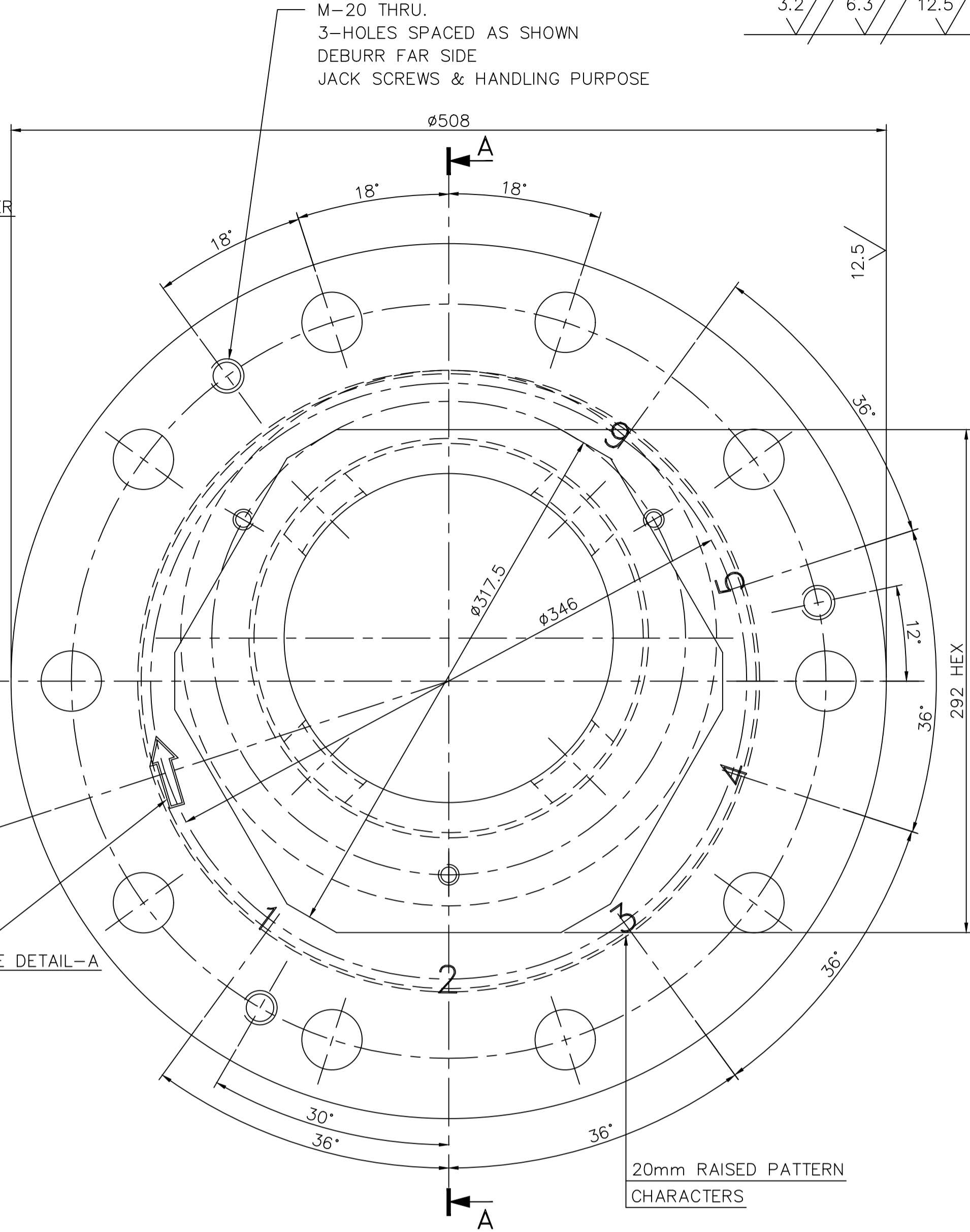
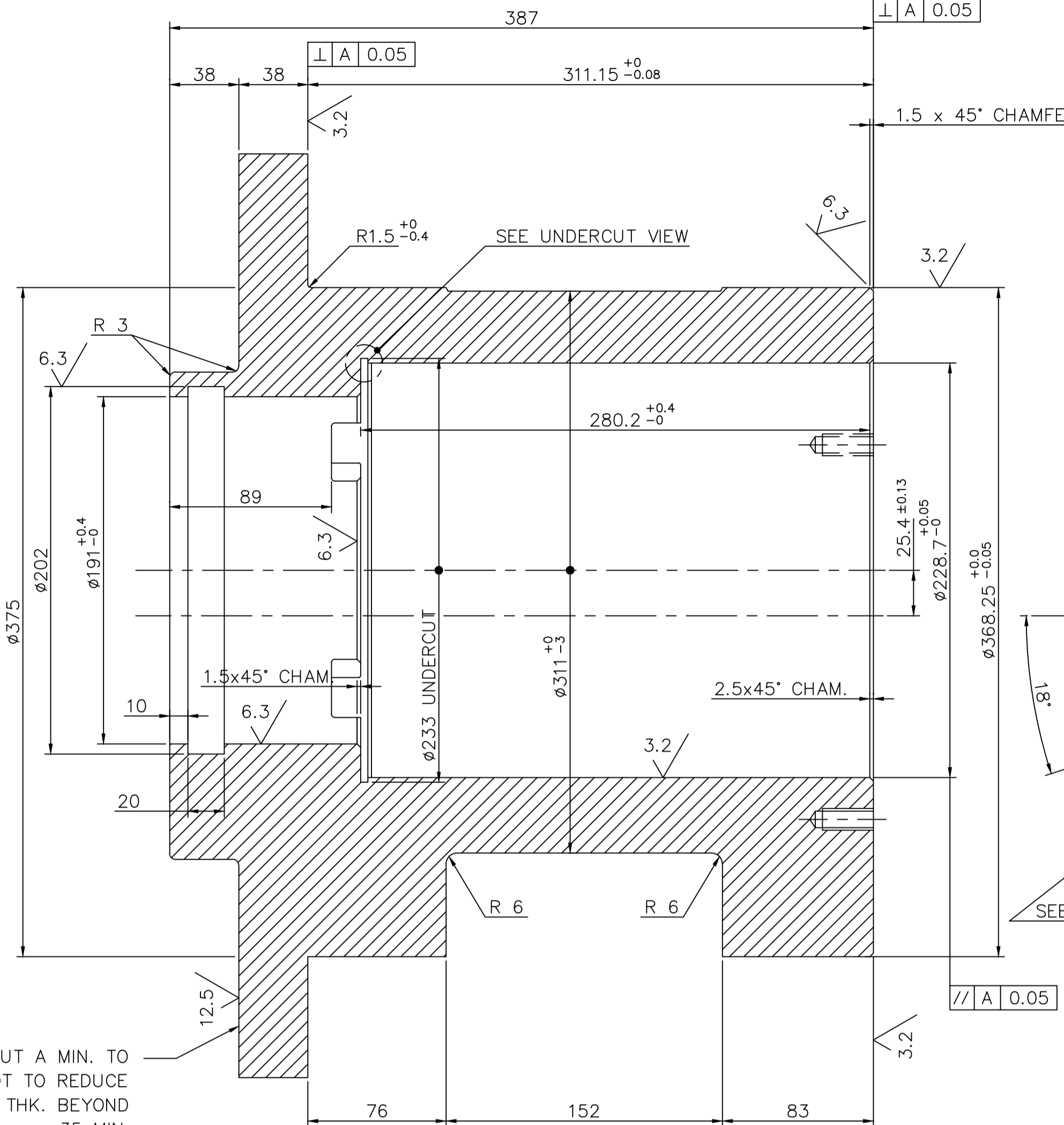
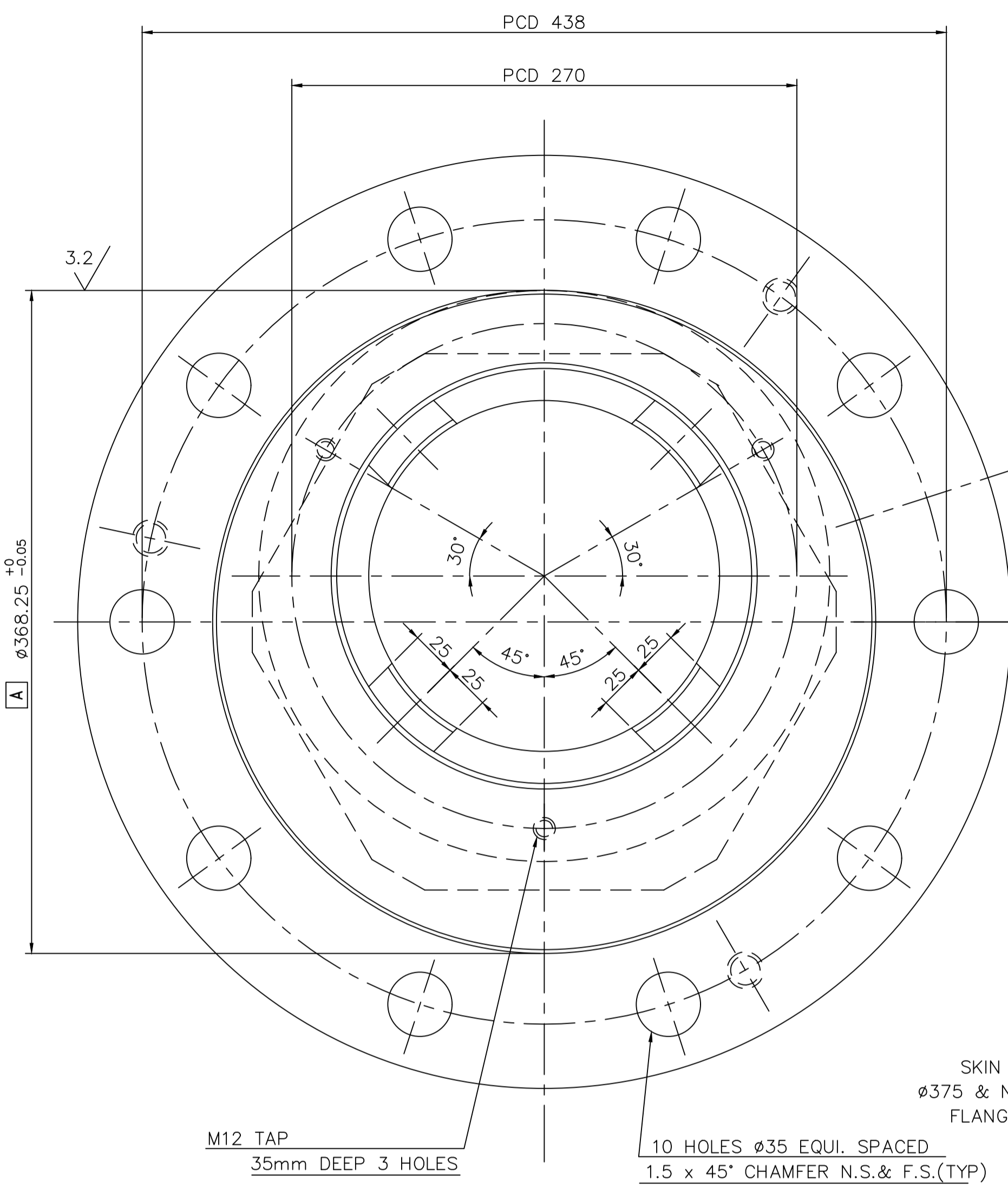
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT NAME OF CUSTOMER/PROJECT				1103 XRP BOWL MILL			
BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD				DRN.	C.C.S	SIGN.	DATE
				CHD.	ND.SAMUEL		4.6.99
				APPD.	S.GHATGE		4.6.99
DEPT.	UNTL DIMS. GR.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.			
PULV	Q/M/F	1:2	200.000	DRAWING NO.	ITEM NO.	NO. OF	REV.
446				0-61-004-00571	03	32	
TITLE				DRAWING NO.			
TRUNNION SHAFT END				1-61-004-01191			
CAP-THRUST END				SHEET NO. 01 NO OF SHEETS 01			

REV. 04	DATE 07.02.09	ALTERED CHD./APPD.	REV. 03	DATE 17.12.07	ALTERED CHD./APPD.	REV. 02	DATE 4.6.99	ALTERED CHD./APPD.
ZONE		GROOVE $\phi 202 \times 20$ WIDTH ADDED.	ZONE		F/M MAT CODE ADDED.	ZONE		DRAWING REDRAWN IN ACAD. INCORPORATING PREVIOUS REV. VARIANTS 01 & 02 ADDED.

INVENTORY NO. 0-61-004-00571
REF. DRG. NO. 0-61-004-00571
COMPUTER FILE NAME 16101191.DWG

Z6110-00-19-1
DRG. NO.

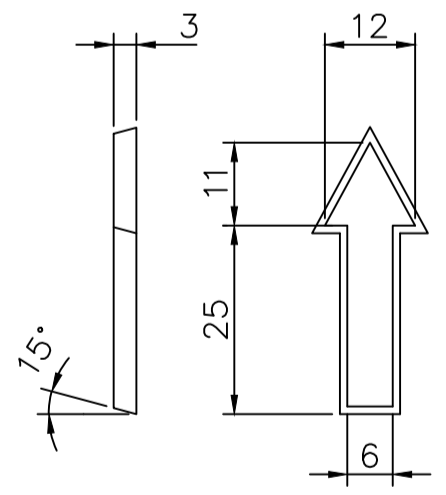


M12 TAP
35mm DEEP 3 HOLES

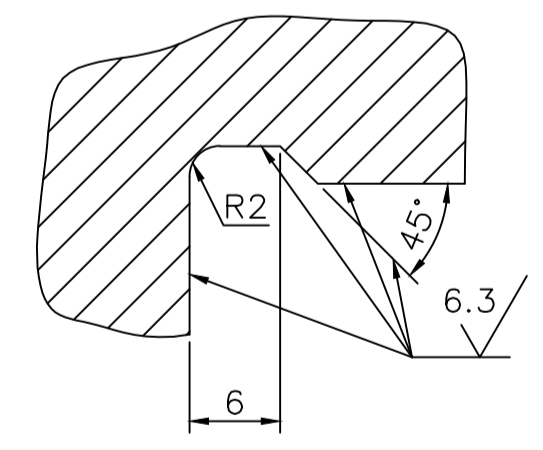
10 HOLES $\phi 35$ EQUI. SPACED
1.5 x 45° CHAMFER N.S. & F.S.(TYP)

SKIN CUT A MIN. TO $\phi 375$ & NOT TO REDUCE FLANGE THK. BEYOND 35 MIN.

SECTION-AA



DETAIL-A
FULL SCALE



UNDERCUT VIEW
DOUBLE SIZE

- NOTES:-
- BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE NOTED.
 - TOLERANCES $\pm 1.6''$
FORGING $\pm 0.1''$

F/M MAT CODE : BA9711031027

01	CASTING				BA9110353127	200.000
					AA 19703	
ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT. GROSS WT.
					MATERIAL SPECN.	QUANTITY

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

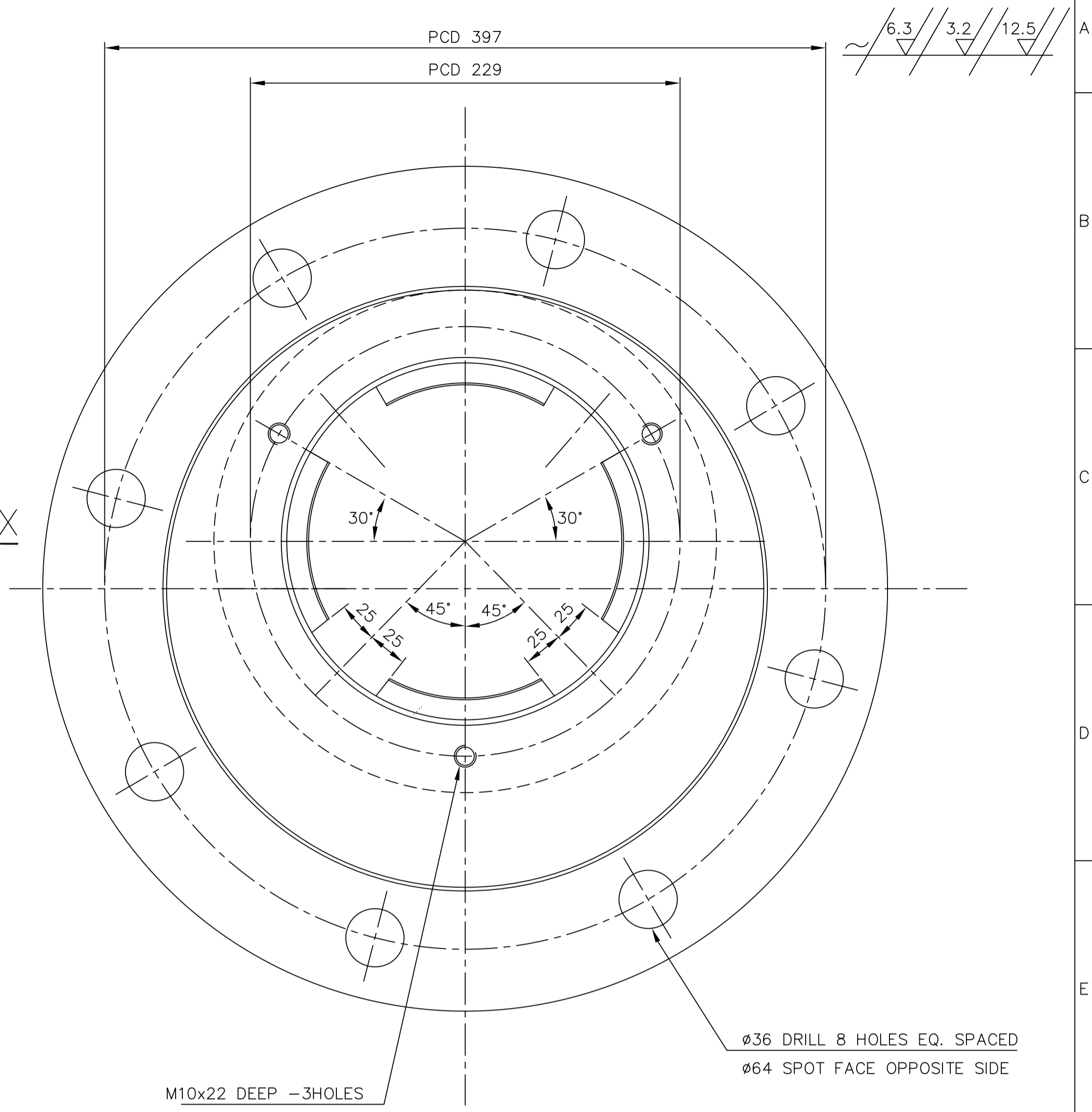
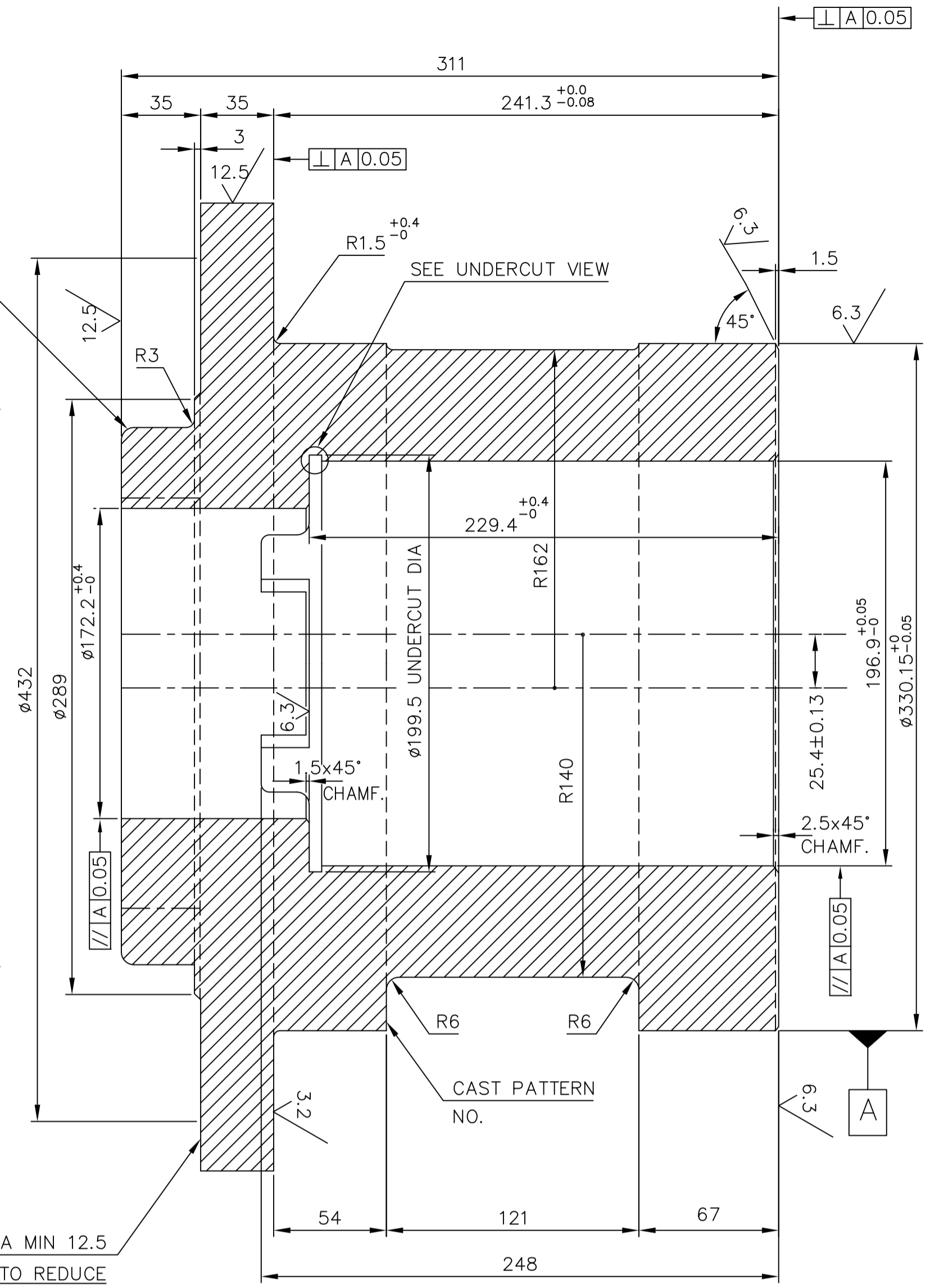
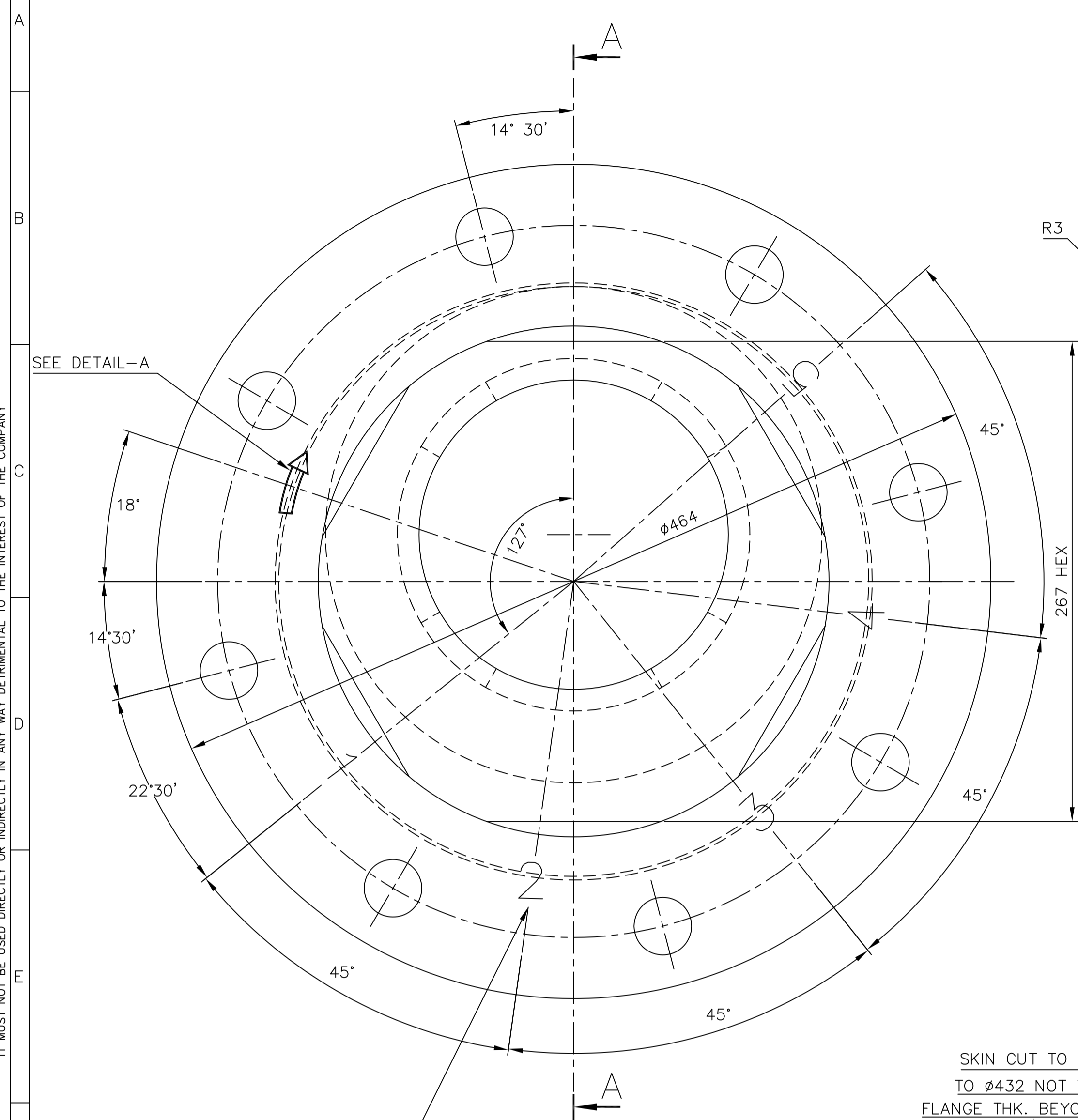
TYPE OF PRODUCT NAME OF CUSTOMER/PROJECT				1103 XRP BOWL MILL			
BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD				DRN.	C.C.S	SIGN.	DATE
				CHD.	N.D.SAMUEL		16.6.99
				APPD.	S.GHATGE		16.6.99
DEPT.	UNTL	DIMS	GR.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.
PULV				1:2	200.000	0-61-104-00571	10
CODE	446						32
TITLE				DRAWING NO.			
TRUNNION SHAFT END				1-61-004-01192			
CAP-FREE END				REV.			
				03			
SHEET NO. 01				NO OF SHEETS 01			

REV. 03	DATE 07.02.09	ALTERED CHD./APPD.	REV. 02	DATE 17.12.07	ALTERED CHD./APPD.	REV. 01	DATE 15.6.99	ALTERED CHD./APPD.
ZONE		GROOVE $\phi 202 \times 20$ WIDTH ADDED.	ZONE		F/M MAT CODE ADDED.	ZONE		DRAWING REDRAWN IN AUTOCAD. VARIANTS ADDED.

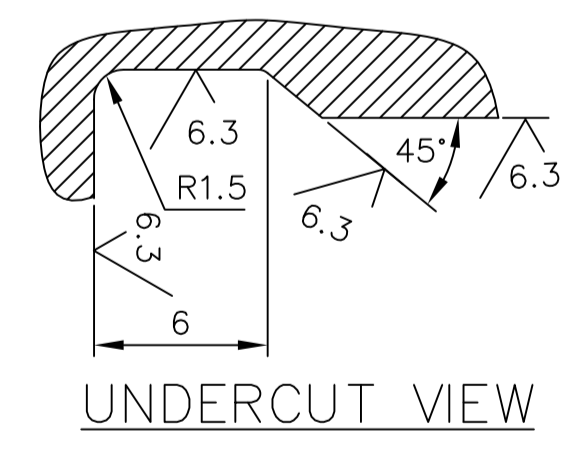
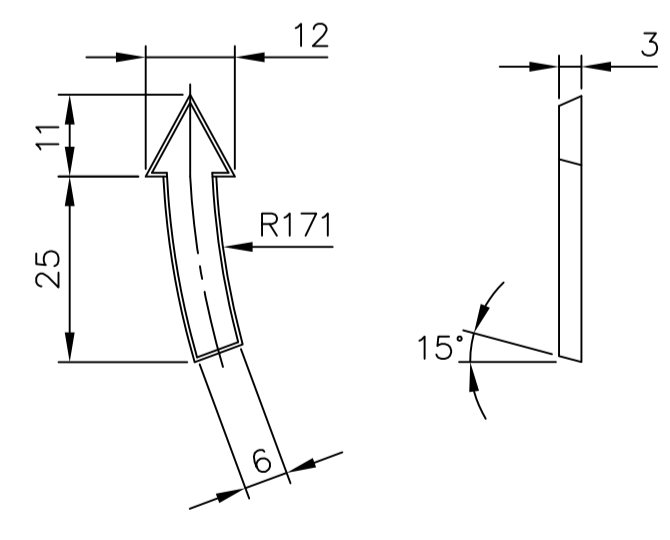
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INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME
D-110-00104-06 10041192.DWG

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SKIN CUT TO A MIN 12.5 TO Ø432 NOT TO REDUCE FLANGE THK. BEYOND 32 MIN



NOTE:-

- THIS IS A FINISH MACHINED DRAWING. CASTING SHALL BE SUPPLIED IN STRESS RELIEVED AND ROUGH MACHINED CONDITION WITH 5mm ALLOWANCE ON ALL MACHINED SURFACES.
- BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE NOTED.

01	CASTING		BA9110206582	120.00	
			AA19702		1
ITEM NO.	DESCRIPTION	DRAWING NO.	MATERIAL CODE	NET WT.	GROSS WT.
			MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...
 1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
 2. CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
 3. INTERNAL M/CD CORNER RADII 1 TO 0.7.
 4. THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT		883 XRP BOWL MILL				
OR NAME OF CUSTOMER/PROJECT						
	BHARAT HEAVY ELECTRICALS LTD.	DRN.	BSES	SIGN.	12.12.98	NO. OF VAR.
	HYDERABAD	CHD.	G.S.N.M.RAO	DATE	2.12.03	
DEPT. BMD	GRADE OF UNTOOL DIM.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO. OF ITEMS
CODE 446	1/ M / F	1:2	120.00	1.61.088.01022	03	24
TITLE TRUNNION SHAFT END CAP (FREE END)				DRAWING NO.	1-61-088-01034	REV. 03
				SHEET NO. 01	NO OF SHEETS 01	

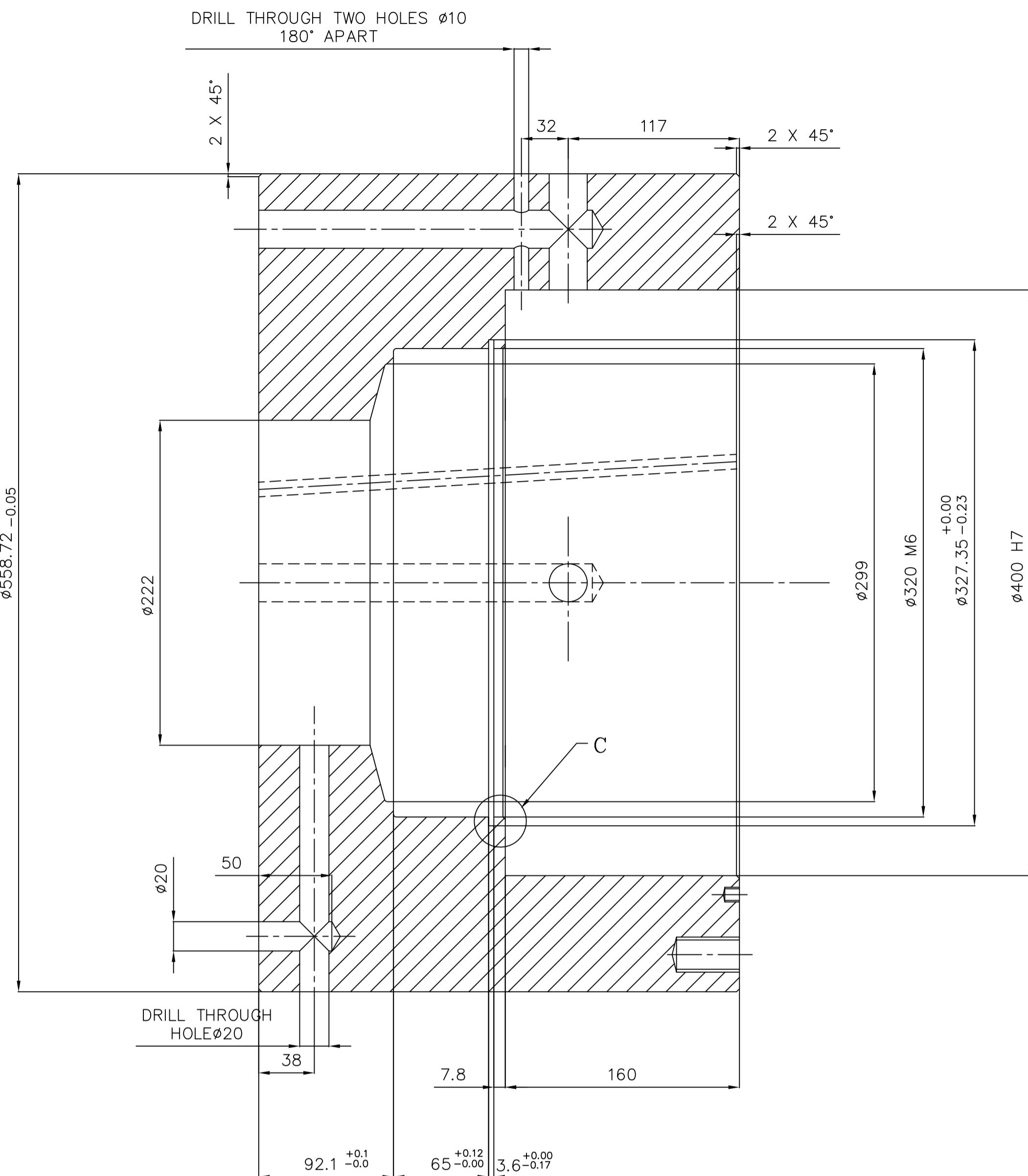
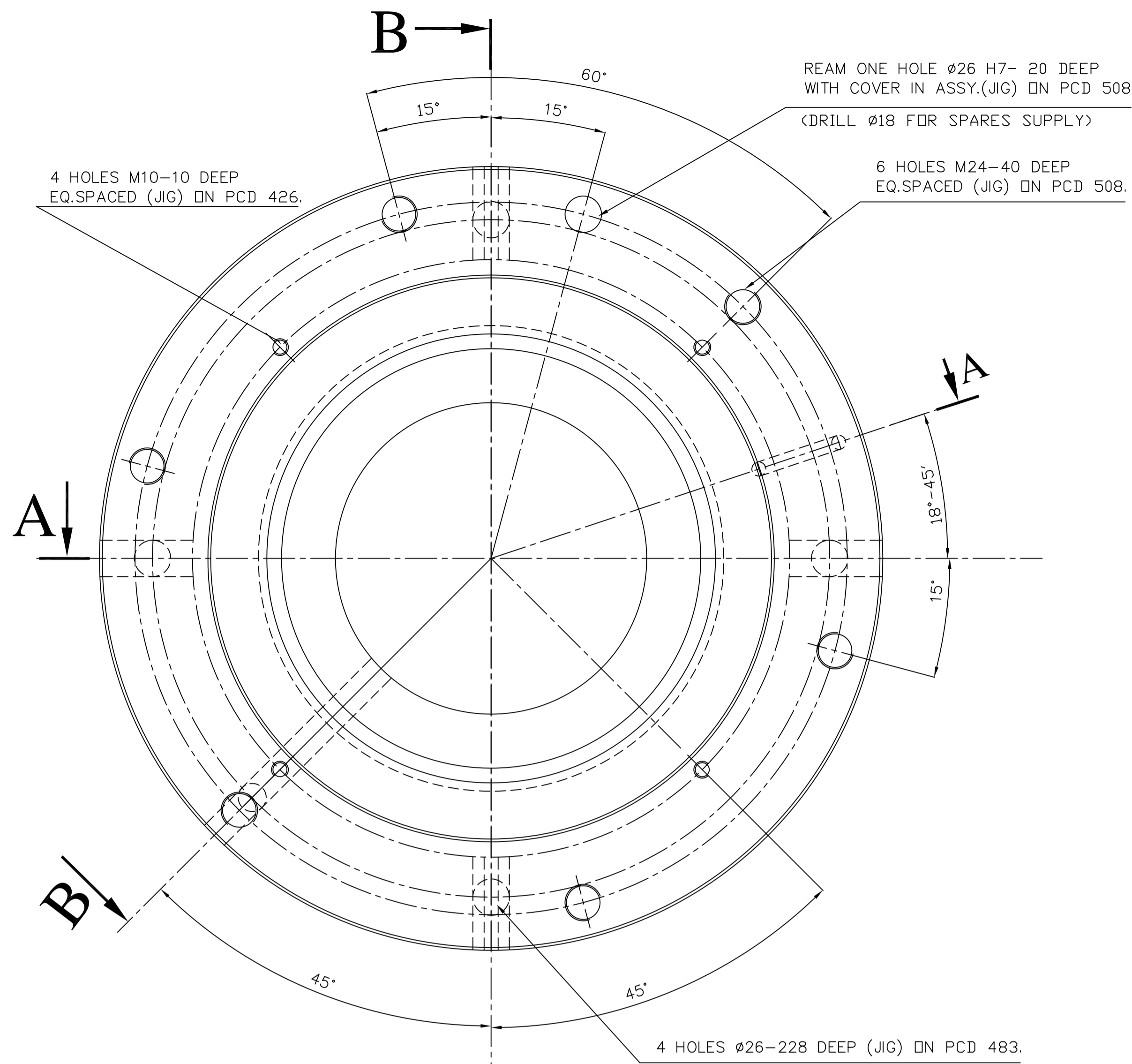
REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.
1		CHECKED		3		CHECKED		4		CHECKED		5		CHECKED		6		CHECKED		7		CHECKED	

INVENTORY NO

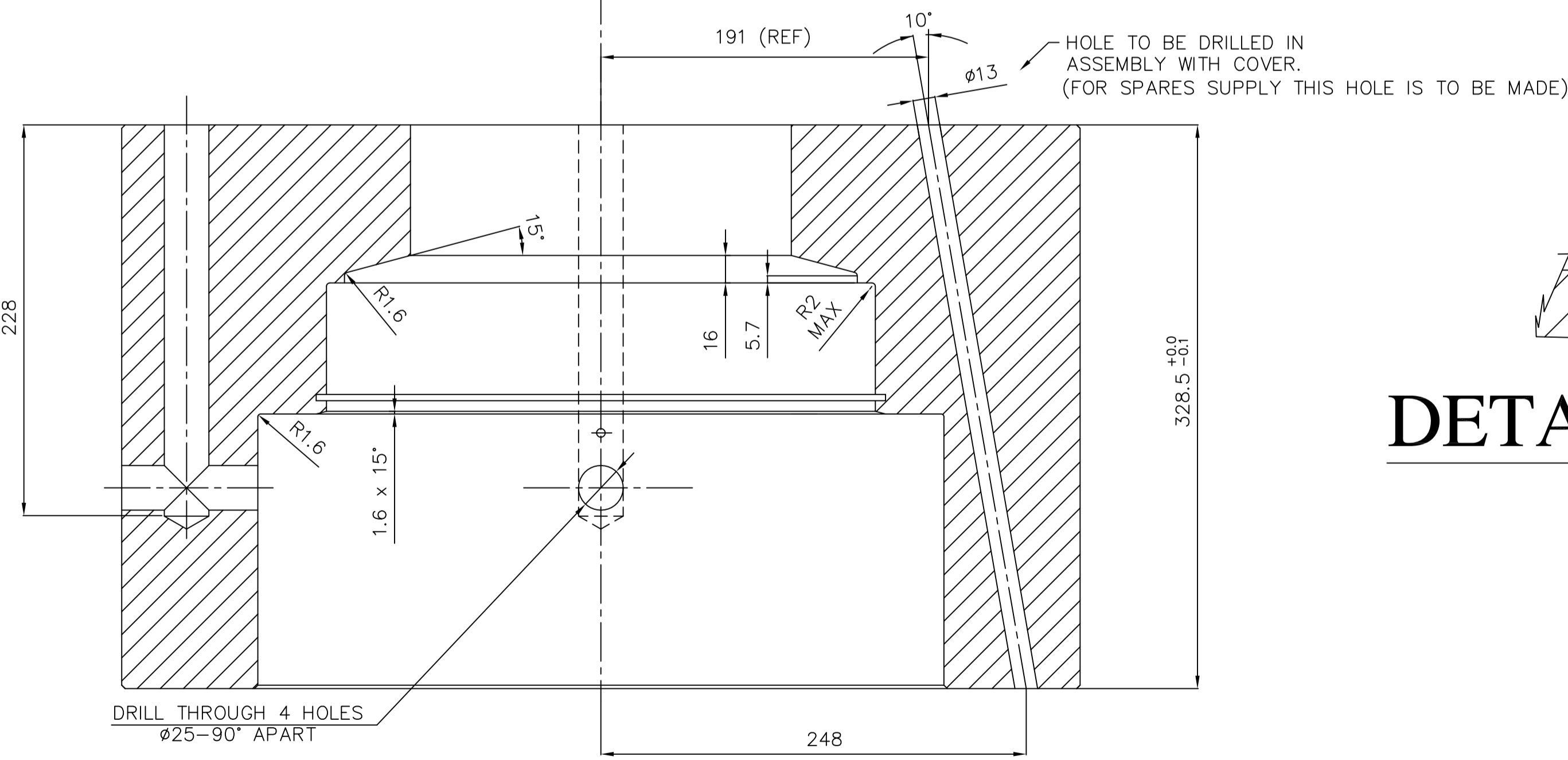
COMPUTER FILE NAME : 16101034.DWG

SIGN. AND DATE (D-94-146/5)

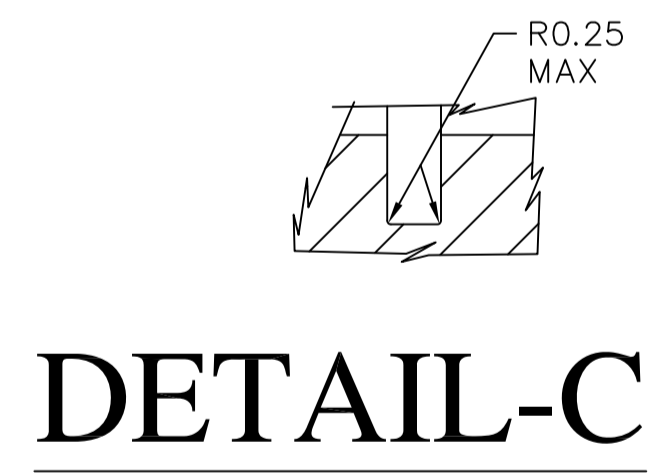
ZONE



SECTION- BB



SECTION- AA



DETAIL-C

M6	Ø320	-0.010	-0.046
H7	Ø26	+0.021	+0.000
H7	Ø400	+0.057	+0.000
TOL SYMBOL	NOM SIZE	UPPER	LOWER
LIMITS			

ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. DR FORGING DRG. NO.	MATERIAL CODE	NET WT.	GROSS WT.
	CASTING				BA9110321098 AA19703	388	1
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/C.D. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/C.D. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN BUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT
NAME OF CUSTOMER/PROJECT

DEPT. 446	UNTO. DIMS. GR. 0/M7	SCALE 2:5	WEIGHT (KG) 388.00	REF. TO ASSY DRG. 0-61-180-00625	ITEM NO. 16.03.04	NO. OF ITEMS 04
-----------	----------------------	-----------	--------------------	----------------------------------	-------------------	-----------------

DRG REDRAWN IN AUTOCAD NOTE FOR Ø13 HOLE TO BE DONE IN ASSEMBLY. ADDED.

DRN. E.M.ASHOK	SIGN. [Signature]	DATE 16.03.04	NO. OF VAR. 1
CHD. AMAN	SIGN. [Signature]	DATE 16.03.04	
APPD. S.G	SIGN. [Signature]	DATE 16.03.04	

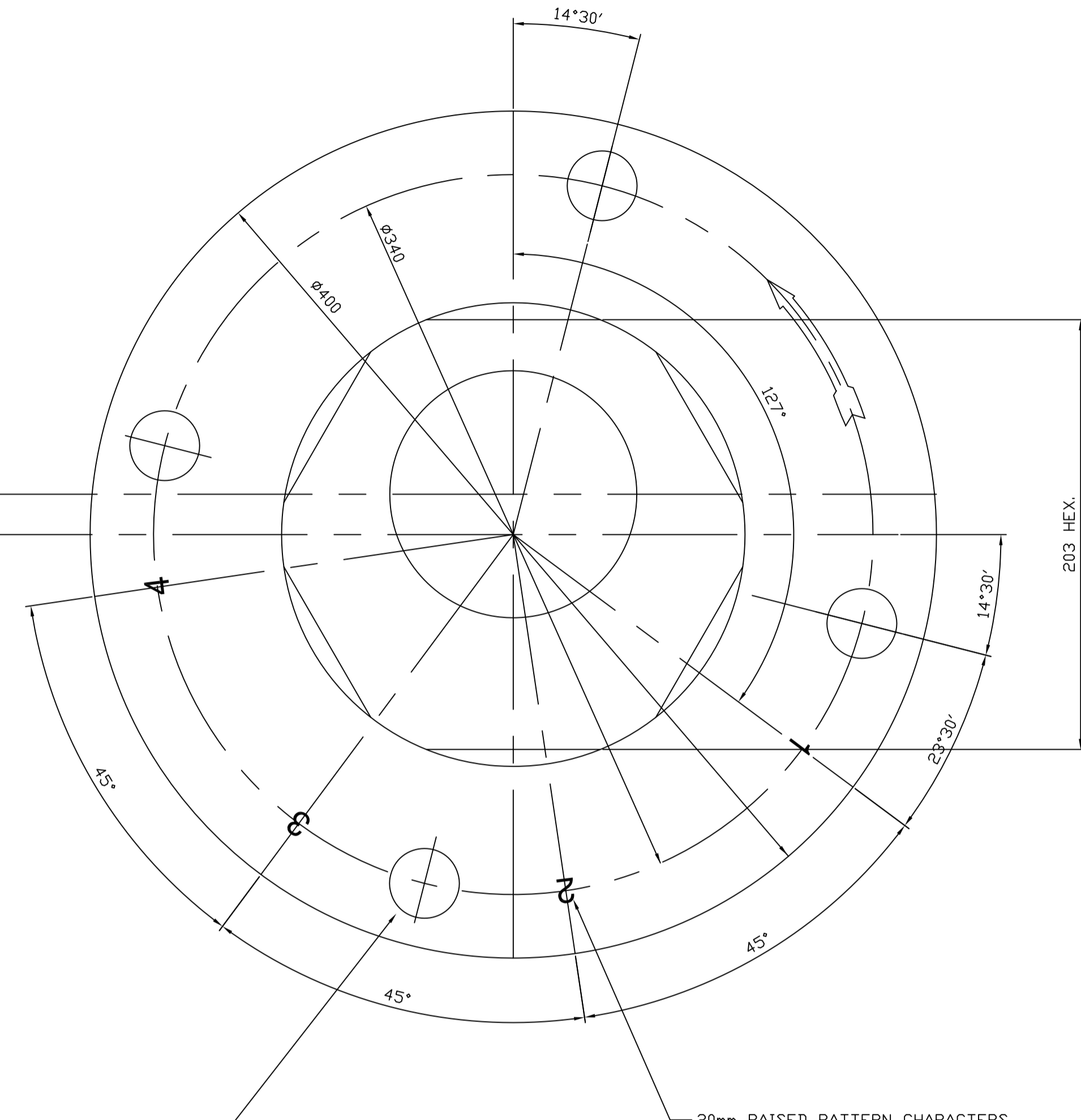
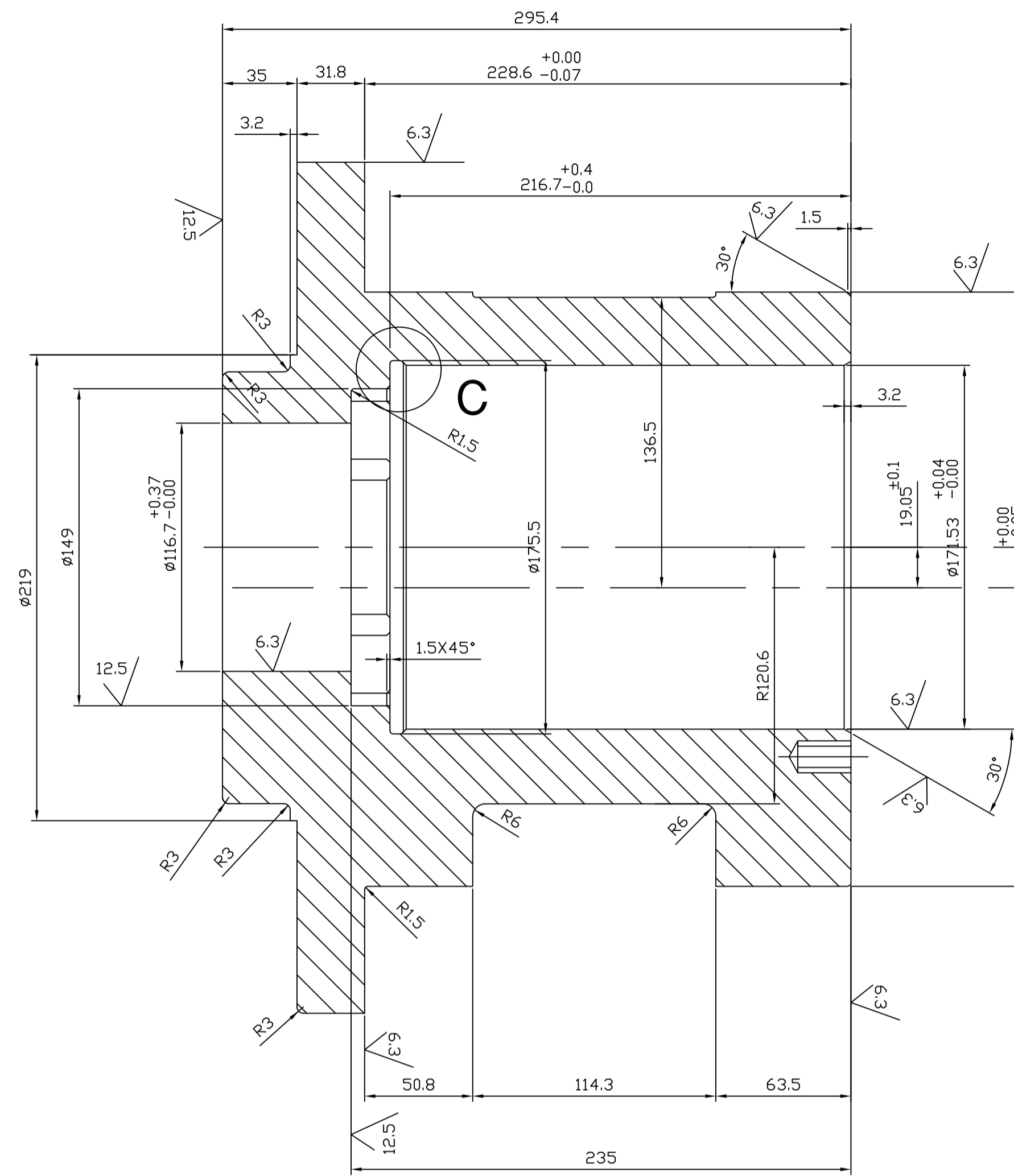
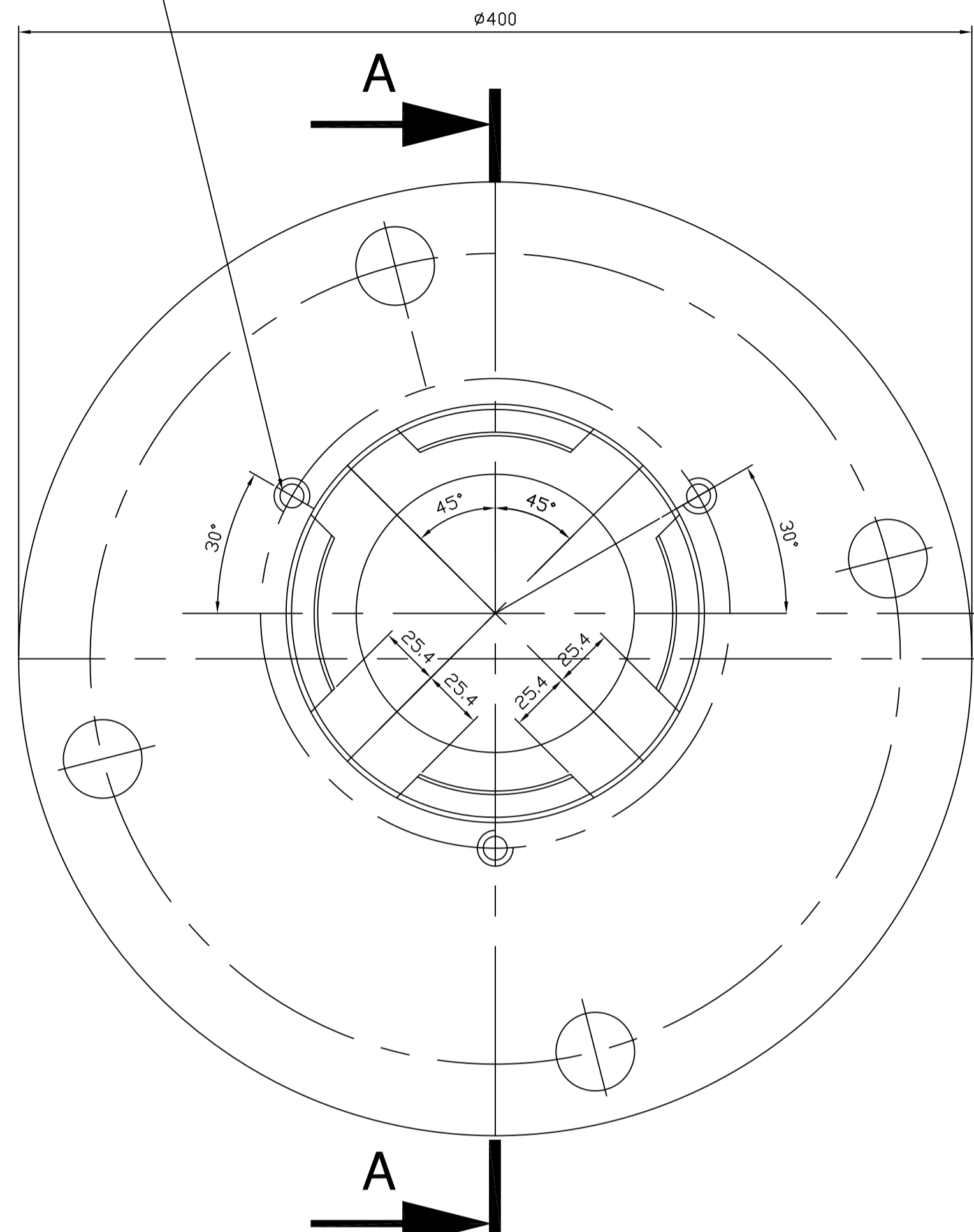
TITLE: LOWER BEARING AND PUMP HOUSING

DRAWING NO. 1-61-176-00083
SHEET NO. [] NO OF SHEETS []

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 INVENTORY NO. [] SIGN. AND DATE [] REF. DRG. NO. [] COMPUTER FILE NAME 16100083

81000-948-19-1 DRG. NO.

3 HOLES M10 X 25 DEEP ON PCD 197

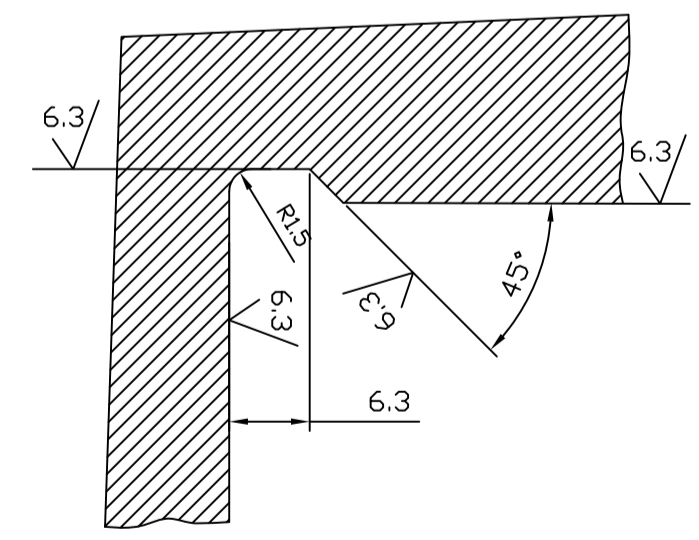


SECTION-AA

12.5/ 4 HOLES Ø33 THRU, SPOT FACE Ø58
CHAMFER EDGES OF BOLT HOLES TO 1X45°

NOTE

1. REMOVE ALL SHARP EDGES.
2. BOLT HOLES TO MATCH WITH MATING PARTS.
3. PATTERN NO. 10-F-002-011



DETAIL C

ITEM NO.	CASTING	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	BA9110307028	81.00
					AA19703	
					MATERIAL CODE	NET WT.
					MATERIAL SPECN.	QUANTITY

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.
 1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
 2. CHAMFER M/C.D. SHARP EDGES 1.2 TO 1.0 AT 45°.
 3. INTERNAL M/C.D. CORNER RADII 1 TO 0.7
 4. THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN BUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

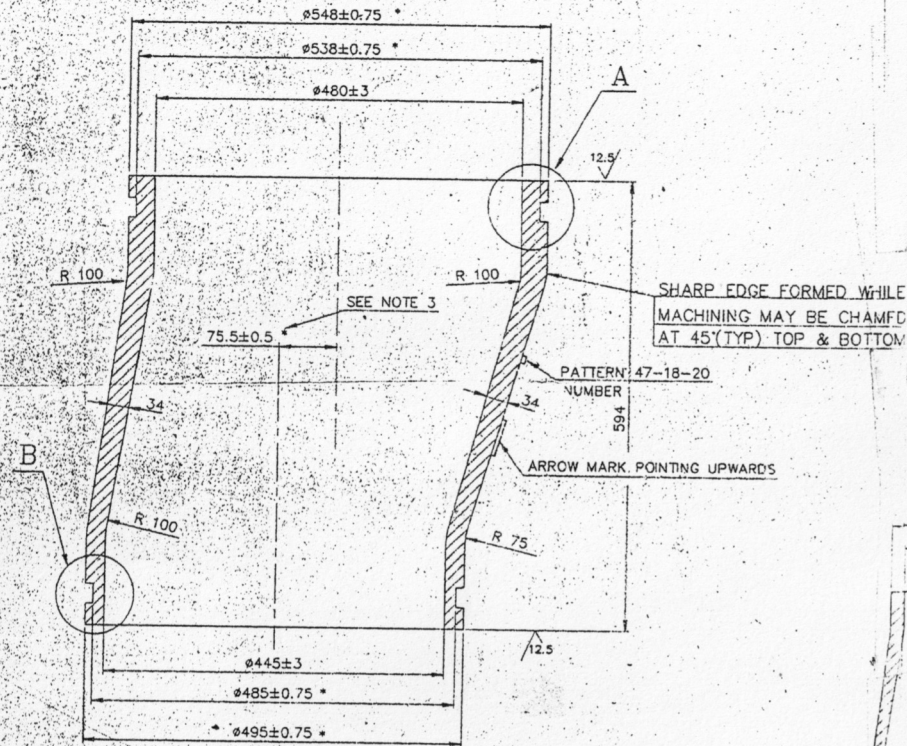
TYPE OF PRODUCT		803 XRP			
NAME OF CUSTOMER/PROJECT		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD			
DRN.	E.M.ASHOK	SIGN.		DATE	2-6-2K
CHD.	N.D.S				2-6-2K
APPD.	K.M.RAO				2-6-2K
DEPT.	446	UNTO. DIMS. GR.	G/M/F	SCALE	1:2 & 2:1
CODE	PULV.	WEIGHT (KG)	81.00	REF. TO ASSY DRG.	0-61-076-00022
TITLE	TRUNNION SHAFT END CAP (THRUST END)		CARD CODE	DRAWING NO.	1-61-376-00018
	SHEET NO.			NO OF SHEETS	

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
04	3.6.2K	E.M.ASHOK	04	3.6.2K	N.D.S	04	3.6.2K	N.D.S
DRAWING REDRAWN BY INCORPORATING ALL PREVIOUS REVISIONS.								

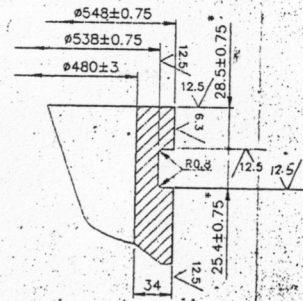
INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 81000-948-19-1

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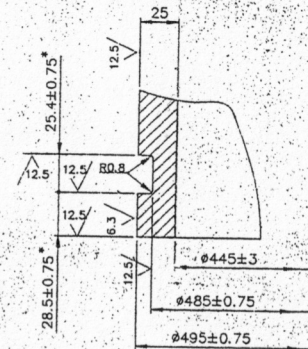
SECTION-CC



DETAIL-A



DETAIL-B



ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER RELEVANT OCP / OP

SHARP EDGE FORMED WHILE
MACHINING MAY BE CHAMFD.
AT 45°(TYP) TOP & BOTTOM

PATTERN NUMBER
47-18-20
594

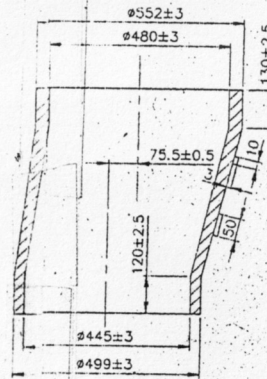
ARROW MARK POINTING UPWARDS

PATTERN NO. TO BE CAST
AS SHOWN AS RAISED FIGURE

ARROW MARK TO BE CAST AS A RAISED
SURFACE POSITIONED AS SHOWN OVER
THE HORIZONTAL AXIS

NOTES:

- ALL UNTOLERANCED DIMENSIONS IN CASTING ARE TO BE MAINTAINED AS PER CSN 014 470: DEGREE OF ACCURACY 3.
- DIMENSIONS SHOWN ARE FINAL DIMENSIONS TO BE MAINTAINED AFTER MACHINING
- CRITICAL DIMENSIONS



AS CAST DIMENSIONS

MASTER COPY

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	PATTERN NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT	QTY	ZONE
02		CASTING		47-18-20	92 043 143	A536 GR654512		272.000		
01		CASTING		47-18-20	92 043 104	✓ 1S210 GR.25		272.000		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: RETRACED ON 01-06-95

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

DRN: P.SUBRAMANIAN
C.N.RAVI
APPD: C.N.RAVI

SIGNATURE: Sd. Sd. Sd.

DATE: OCT-78

NO. OF VAP:

DPT: CC
CODE: 129

SCALE: NTS

WEIGHT (Kg): 272.000

REF TO ASSY / OLD DWG

ITEM NO

No. OF ITEMS

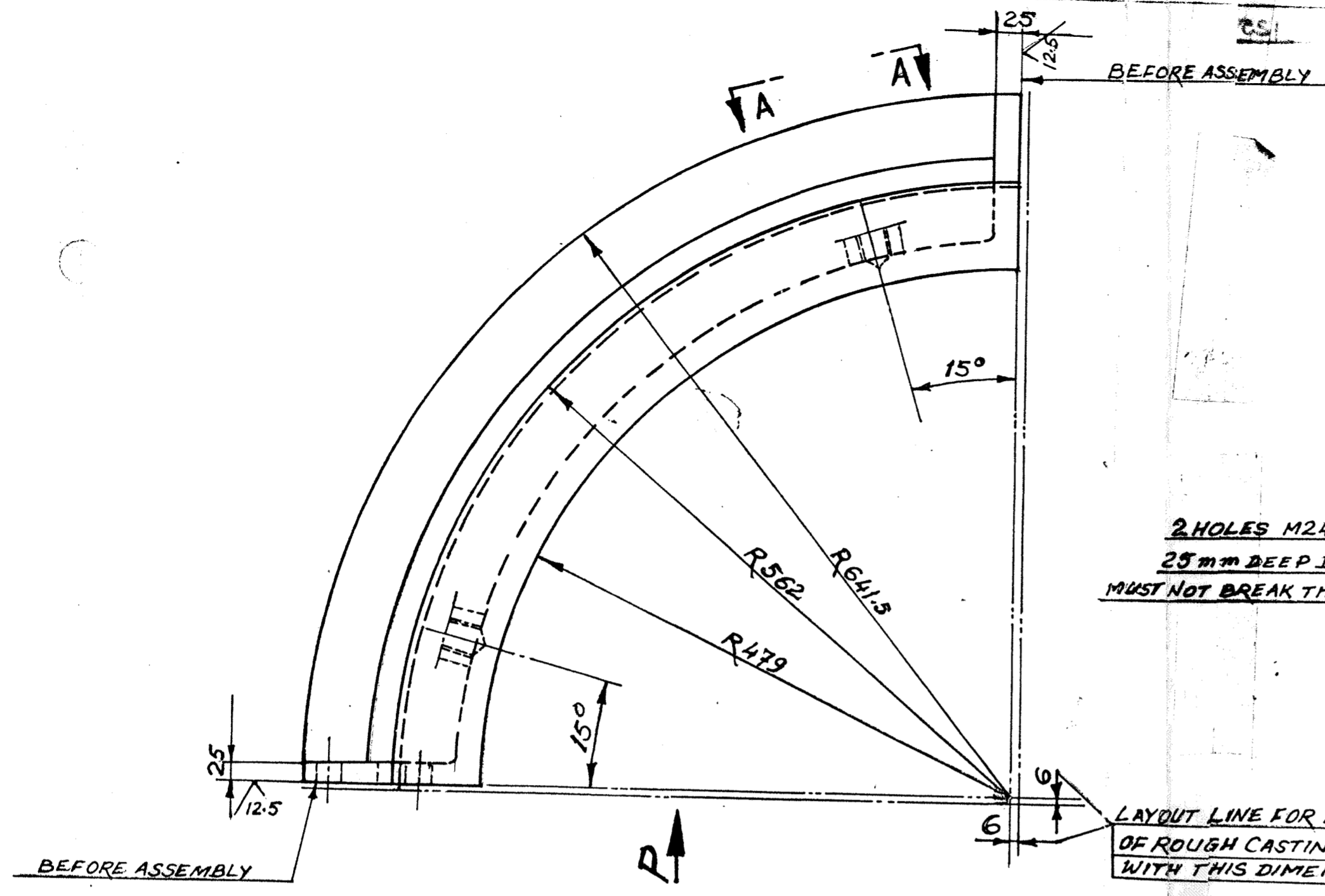
TITLE: TRANSITION PIECE

DWG NO: 2-47-200-00123

REV: 02

REV	DATE	ALTERED	BY	REV	DATE	ALTERED	BY
01	01-06-95	CHD & APPD: FAROOQ		01	17-09-81	CHD & APPD: C.N.RAVI	
02		VARIANT-02 ADDED				CHAMFER MACHINING INTRODUCED AT 45° DIMENSION 34 ENTERED IN DET-A	

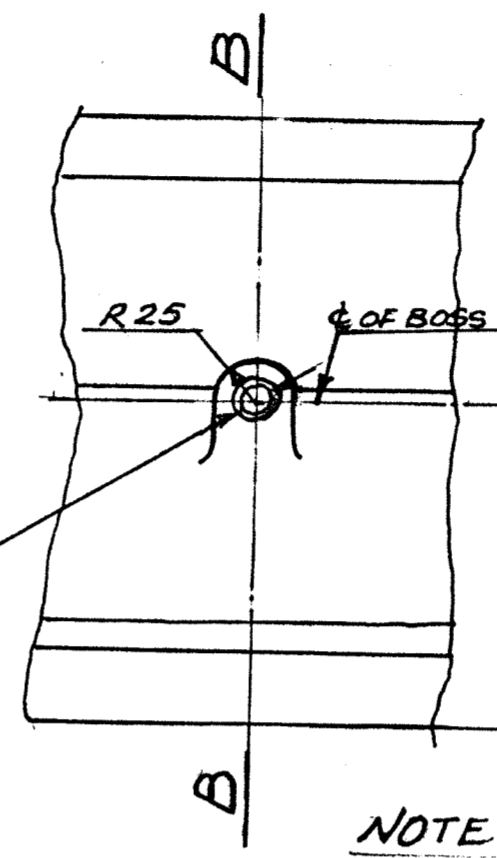
12.5



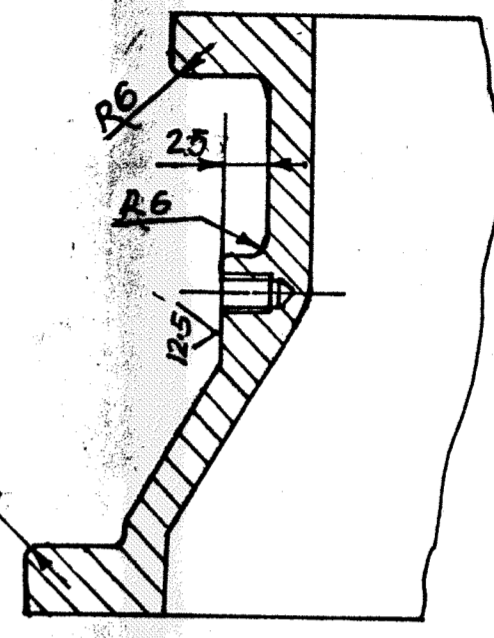
2 HOLES M24
25 mm DEEP DRILL
MUST NOT BREAK THRU.

LAYOUT LINE FOR MACHINING
OF ROUGH CASTING START
WITH THIS DIMENSIONS.

VIEW-A-A



SECTION-B-B



NOTE:-

ALL FINISHING OPERATIONS TO BE DONE IN ASSEMBLY
WITH MATING PARTS, EXCEPT AS NOTED.

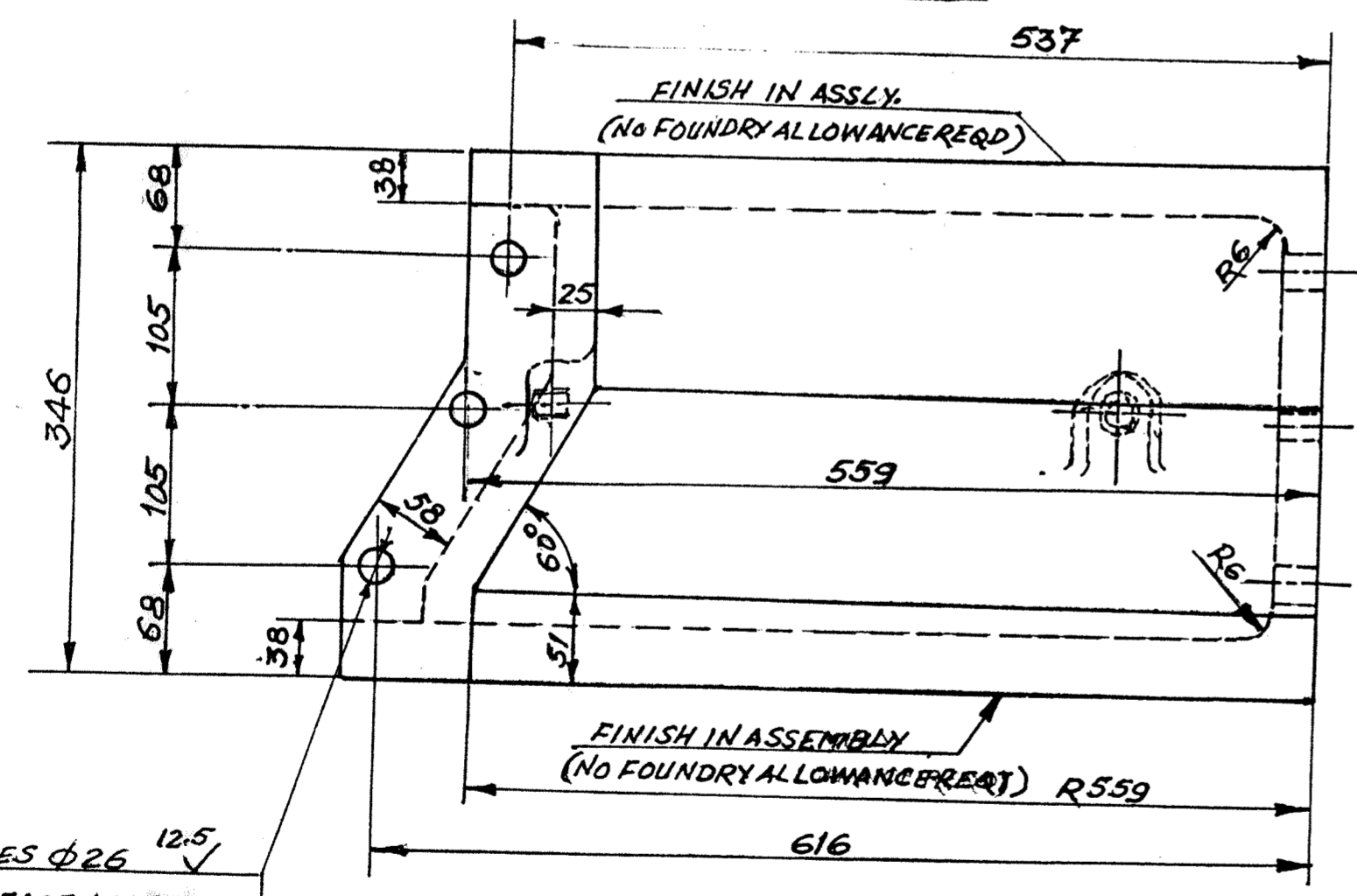
SEE ASSEMBLY DRG. NO. 2-61-176-00022.

BREAK ALL SHARP EDGES AND CORNERS UNLESS
OTHERWISE SHOWN.

REFER CASTING DRG. NO. 90-F-002-258

HYD. PATTERN NO. M-67-061.

VIEW-P



6 HOLES $\phi 26$ 12.5
SPOT FACE $\phi 41$ FOR SIDE
BEFORE ASSEMBLY.

		BAS110353046	85.0	CASTING
		AA 19703		
SL. NO.	REFER. / BPS No.	MATERIAL CODE	UNIT WEIGHT	DESCRIPTION
		MATERIAL SPECN	QTY	REMARKS

MASTER COPY

HY-24.02

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY EQUIPMENT REPAIR PLANT, SNIYAPUR, VARANASI.

FIRST ANGLE	SCALE	DRN.	D. BASAK	TOTAL WEIGHT	85.0
		CHD.	RAJENDRA PRASAD		
		APPD.			
ALL DIMENSIONS ARE IN M.M.		DATE	27.05.88		

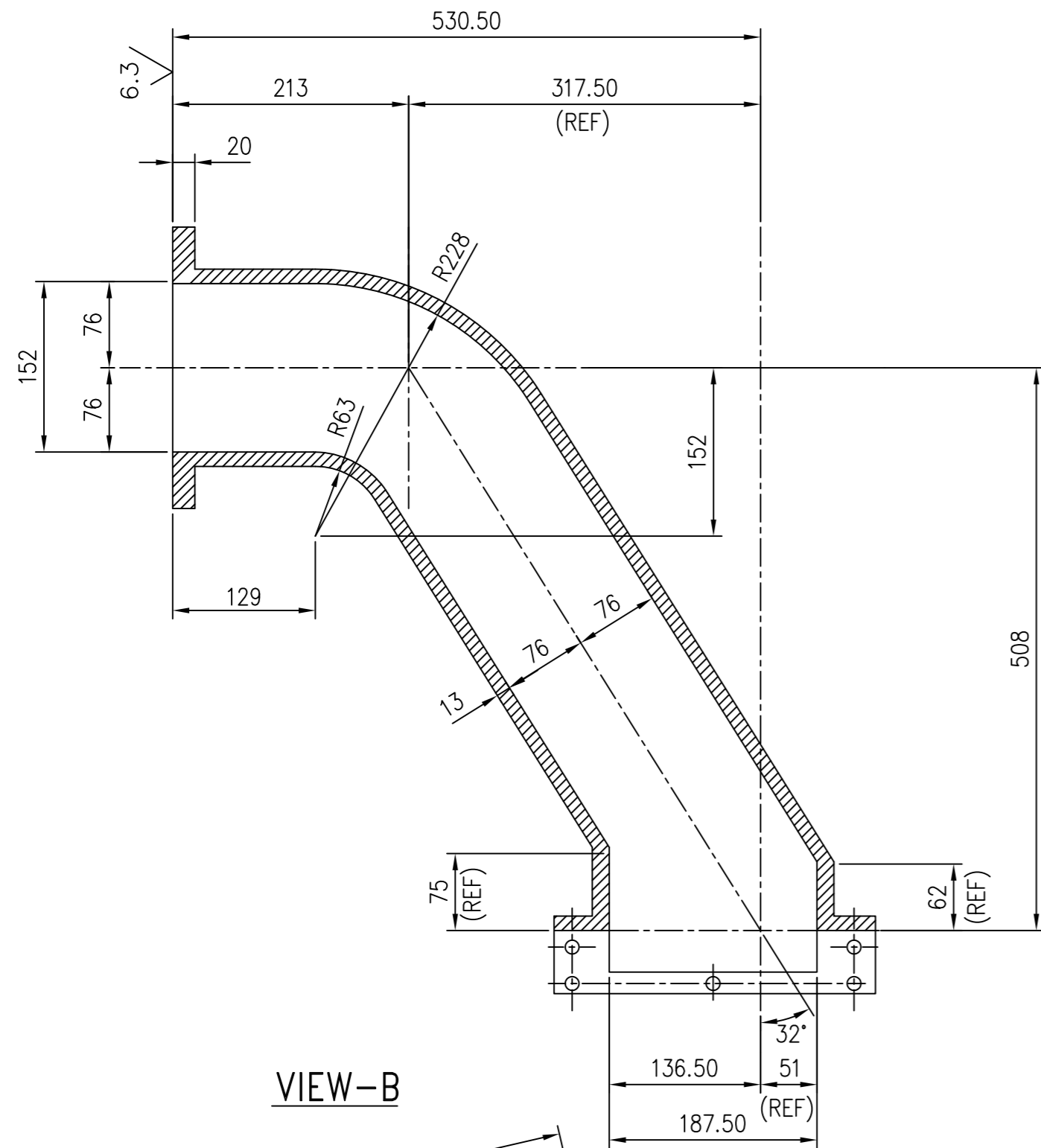
UPPER SKIRT
SEGMENT

DRG. NO.
2-61-176-00024

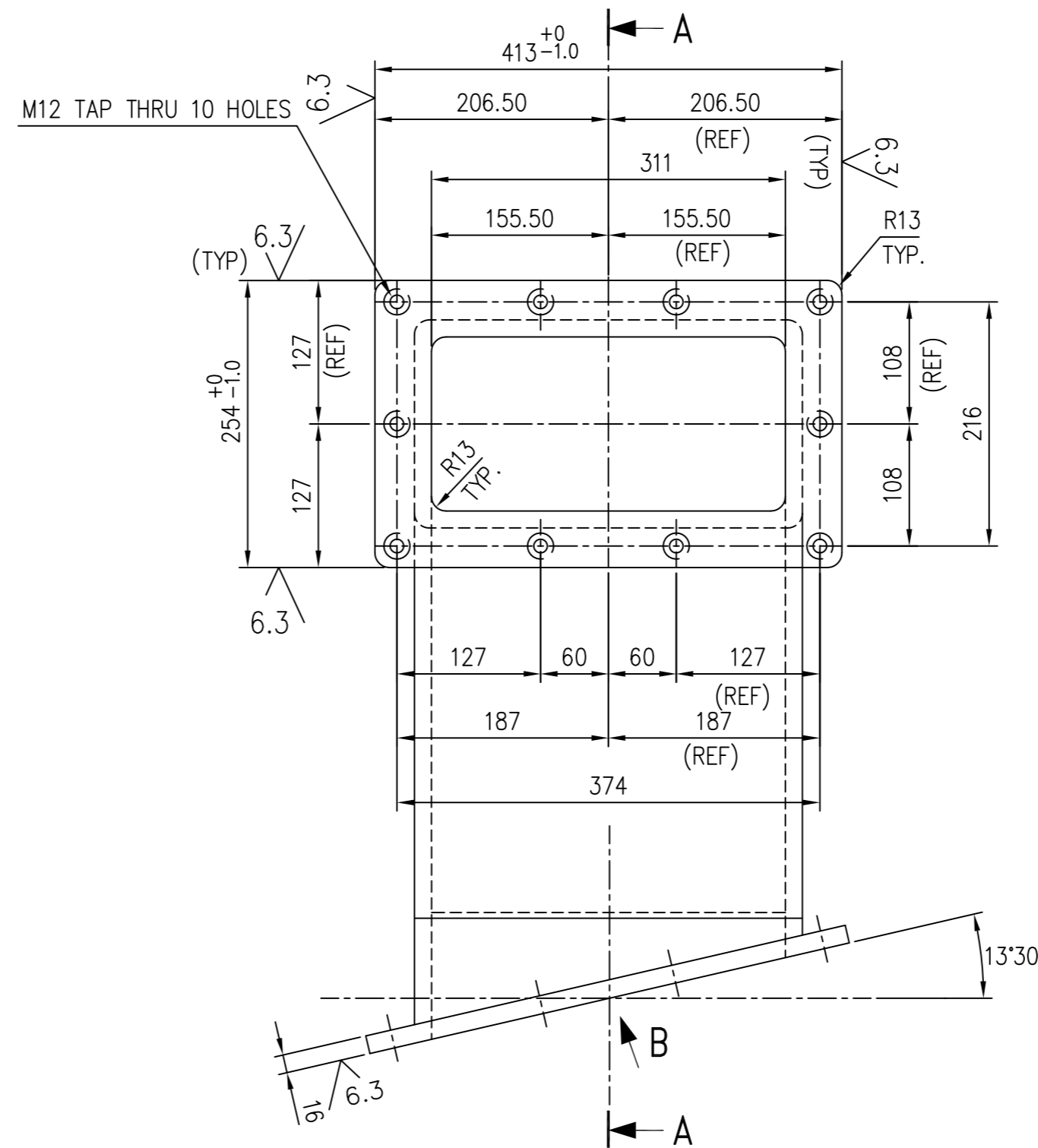
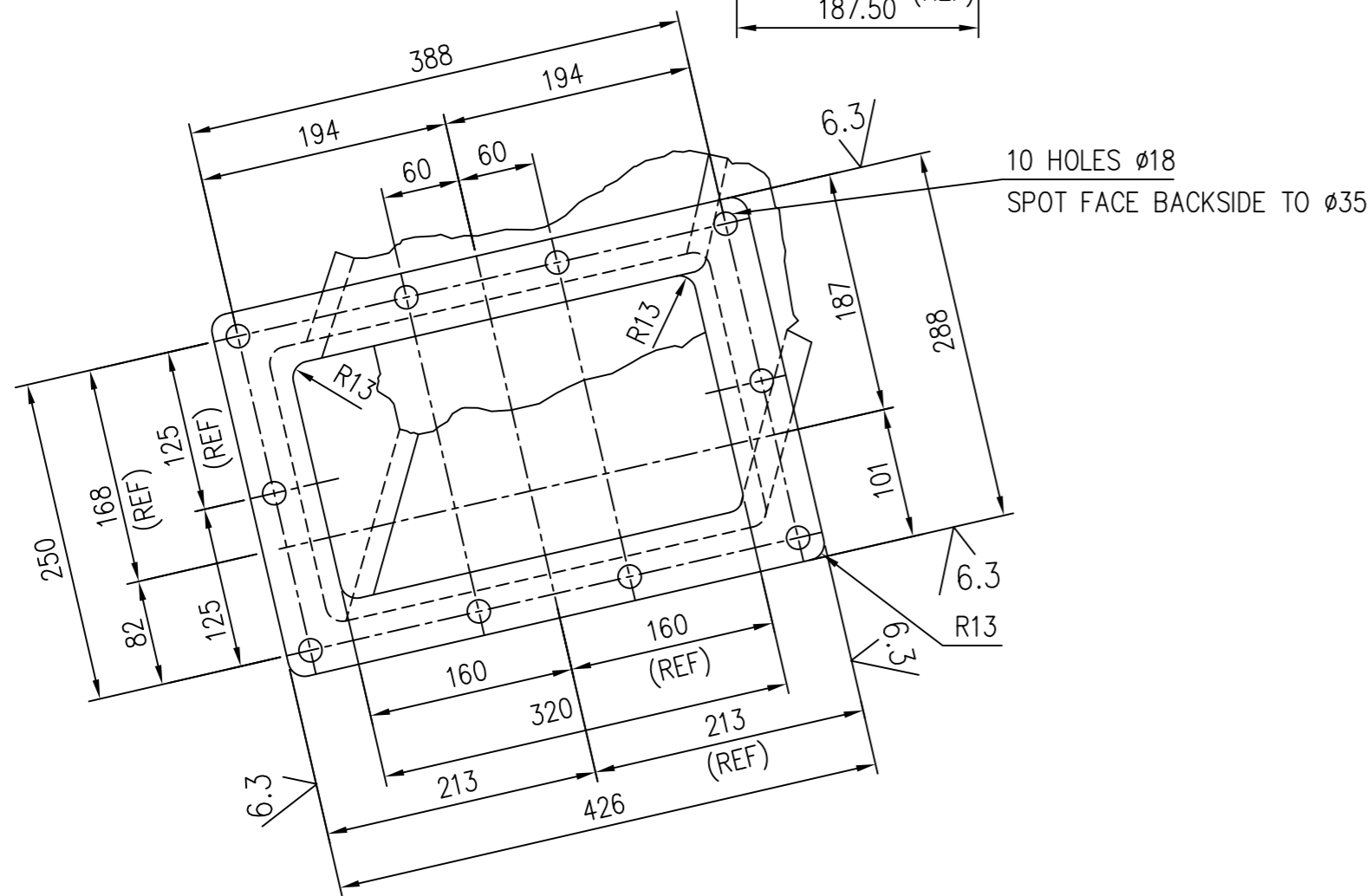
REV.
0A

99500-001-19-2 DRG. NO. 2-61-100-00566

SECTION A-A



VIEW-B



NOTES:

1. ALL FILLETS AND RADII TO BE 6mm UNLESS OTHERWISE SPECIFIED.

ITEM NO	CASTING	2-61-196-00224	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	BA9110303006 AA19703	99.20
					MATERIAL CODE	UNIT WT.
					MATERIAL SPECN.	QUANTITY

- THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...
1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
 2. CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
 3. INTERNAL M/CD CORNER RADII 1 TO 0.7.
 4. THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		1003 XRP BOWL MILL			
DEPT. PULV. ENGG. CODE 446		GRADE OF TOL. DIM. $\frac{E}{M/F}$		SCALE 1:5	WEIGHT(Kg) 99.20
REF. TO ASSY DRG. 2-61-196-00224		ITEM No. 28		NO. OF ITEMS -	
TITLE TRAMP IRON SPOUT BODY		DRAWING No. 2-61-100-00566		REV. 05	
SHEET No. 1		No. OF SHEETS 1			

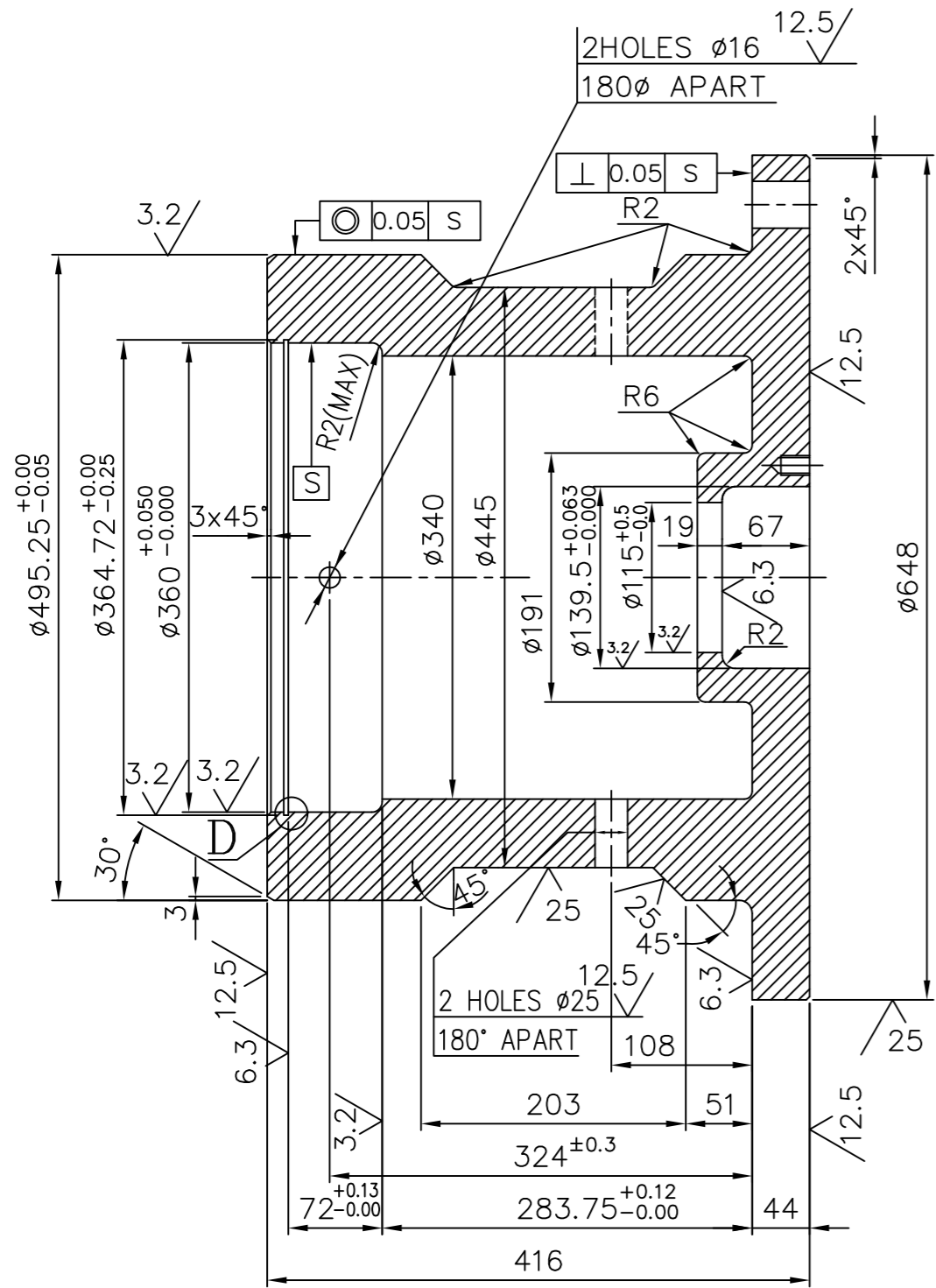
REV. 05	DATE 06.03.03	ALTERED E.M.ASHOK CHECKED NDS	APPD. S.G.	REV. 04	DATE 12.11.01	ALTERED E.M.ASHOK CHECKED NDS	APPD. S.G.	REV. 03	DATE 17.12.98	ALTERED CHECKED	APPD.
ZONE		ZONE	MACHINING ADDED ON DIMS. 426 AND 288.	ZONE		ZONE	TOLERANCE +0/-1.0 ADDED ON DIMS. 413 & 254.	ZONE		ZONE	DRAWING REDRAWN ON CAD INCORPORATING ALL THE PREVIOUS REVISIONS.

INVENTORY NO. REF. DRG. NO. 26100566.DWG COMP. FILE NAME THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

DRG. NO. 2-61-176-00006

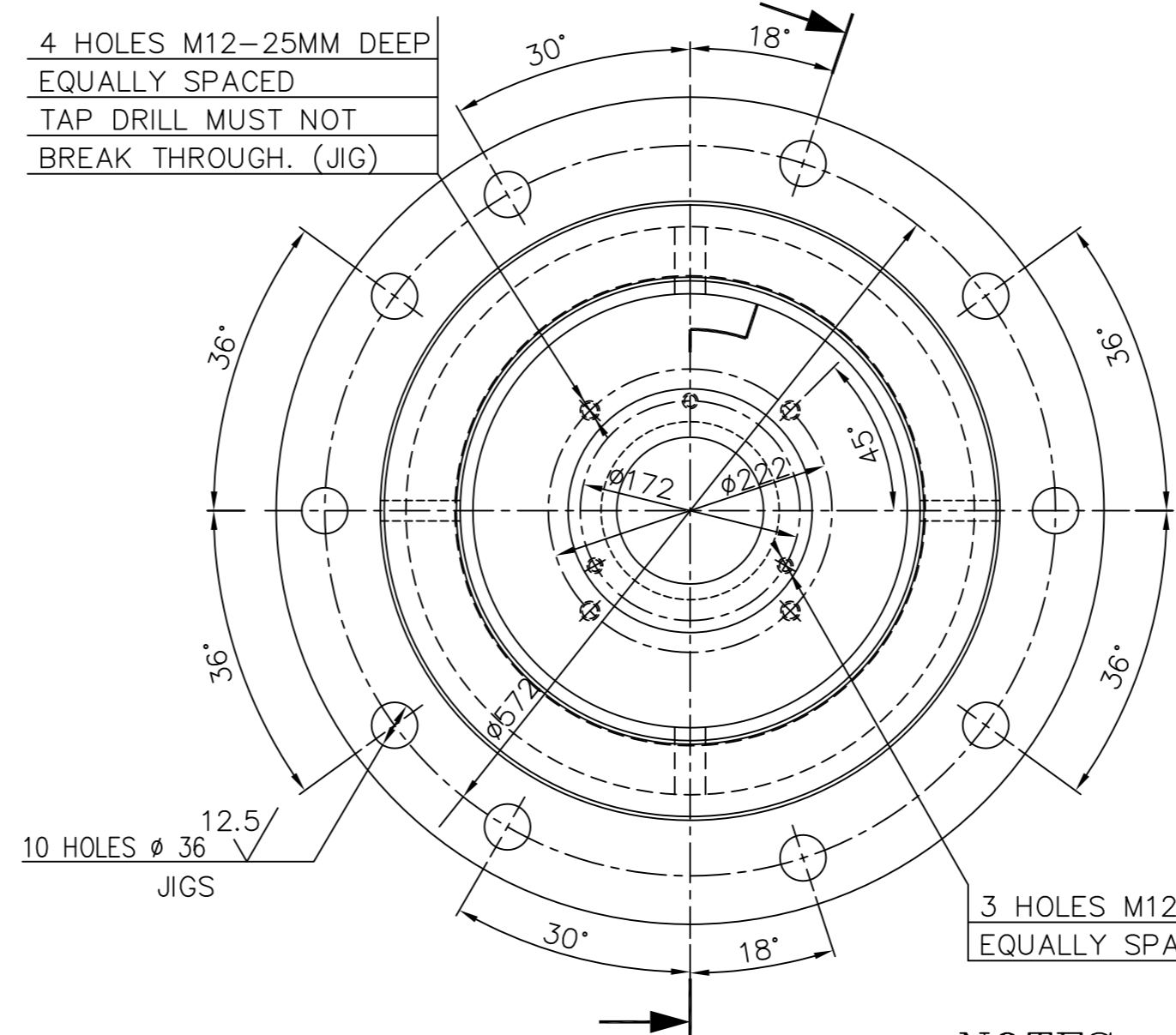
~ / 1.6 / 3.2 / 6.3 / 12.5 / 25 /

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. 261006.DWG/1135 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

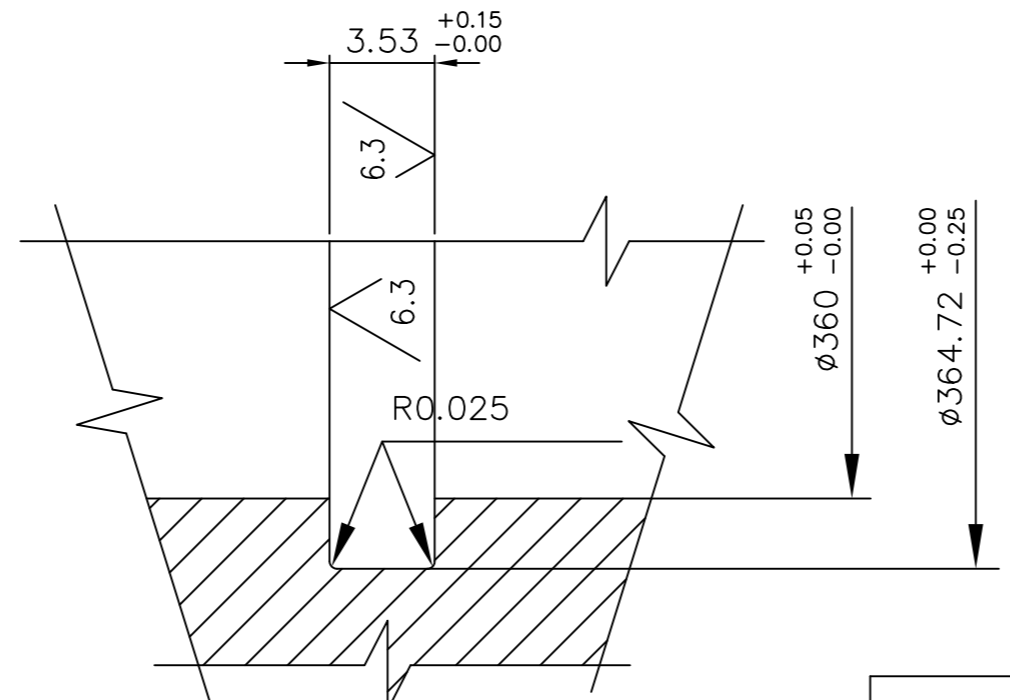


SECTION-AA

4 HOLES M12-25MM DEEP
EQUALLY SPACED
TAP DRILL MUST NOT
BREAK THROUGH. (JIG)



3 HOLES M12-15MM DEEP
EQUALLY SPACED (JIG)



DETAIL-D

NOTES: -

- REMOVE ALL SHARP EDGES
- SHOT BLAST ALL SURFACES AT FOUNDARY. INSIDE SURFACES MUST BE 100% FREE FROM SCALE & SAND. ALL INSIDE UNMACHINED SURFACES MUST BE COATED WITH ARM STRONG WHITE CRANK CASE SEALER(SYNTHETIC CASTING SEALER) OTHER SURFACE ARE TO BE PAINTED WITH RED OXIDE PAINT..

01	CASTING		BA9110321110	378.0
ITEM NO.	DESCRIPTION	DRAWING NO.	MATL CODE	UNIT WT.
			MATL SPECN	QTY

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REFER TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER MACHINED SHARP EDGES 1.2 TO 1.0 AT 45°
- INTERNAL MACHINE RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACKSLASH GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRAWING.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT **763, 783, 803 ,963, 983 & 1003**

	BHARAT HEAVY ELECTRICALS LIMITED		DRN.	NAME	SIGN.	DATE	NO.OF
	HYDERABAD		CHD.	P.V.RAO		06.12.96	VAR.
			APPD.	G.KISTIAH		06.12.96	01

DEPT. PULV-ENGG	GRADE OF TOL.DIM. z/M/P	SCALE 1 : 5	WEIGHT (KG) 378.00	REF. TO ASSY DRG.	ITEM NO.	NO.OF ITEMS
-----------------	-------------------------	-------------	--------------------	-------------------	----------	-------------

TITLE	CARD CODE	DRAWING NO.	REV.
RADIAL BEARING HOUSING		2-61-176-00006	09
SHEET NO. 01		NO OF SHEETS 01	

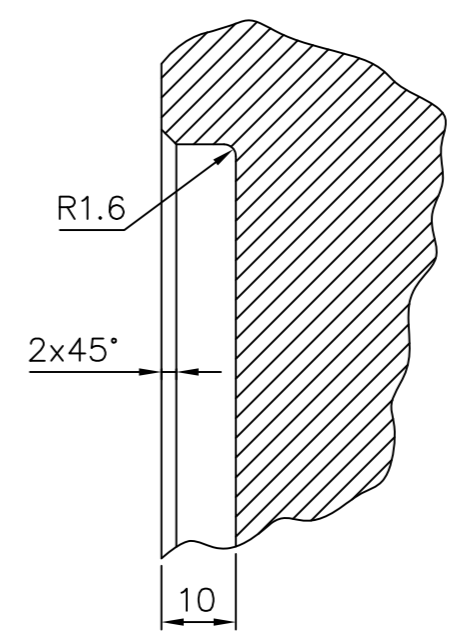
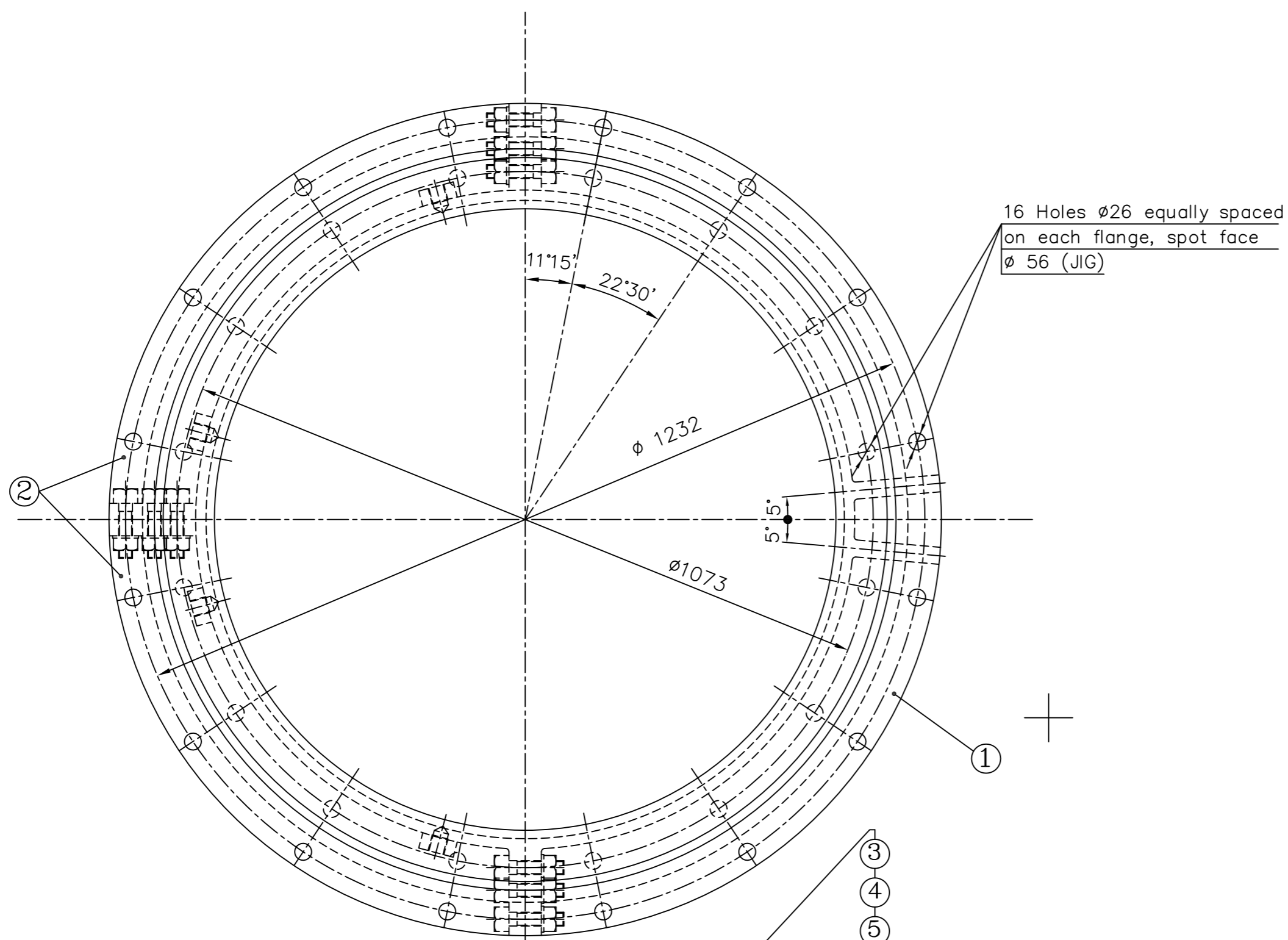
REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED
										09	06.12.96								
ZONE					ZONE					ZONE					ZONE				

DRAWING REDRAWN INCORPORATING ALL PREVIOUS ALL PREVIOUS REVISIONS.

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 26100022.DWG THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

DRG. NO. 2-61-176-00022 SH. 1 OF 1

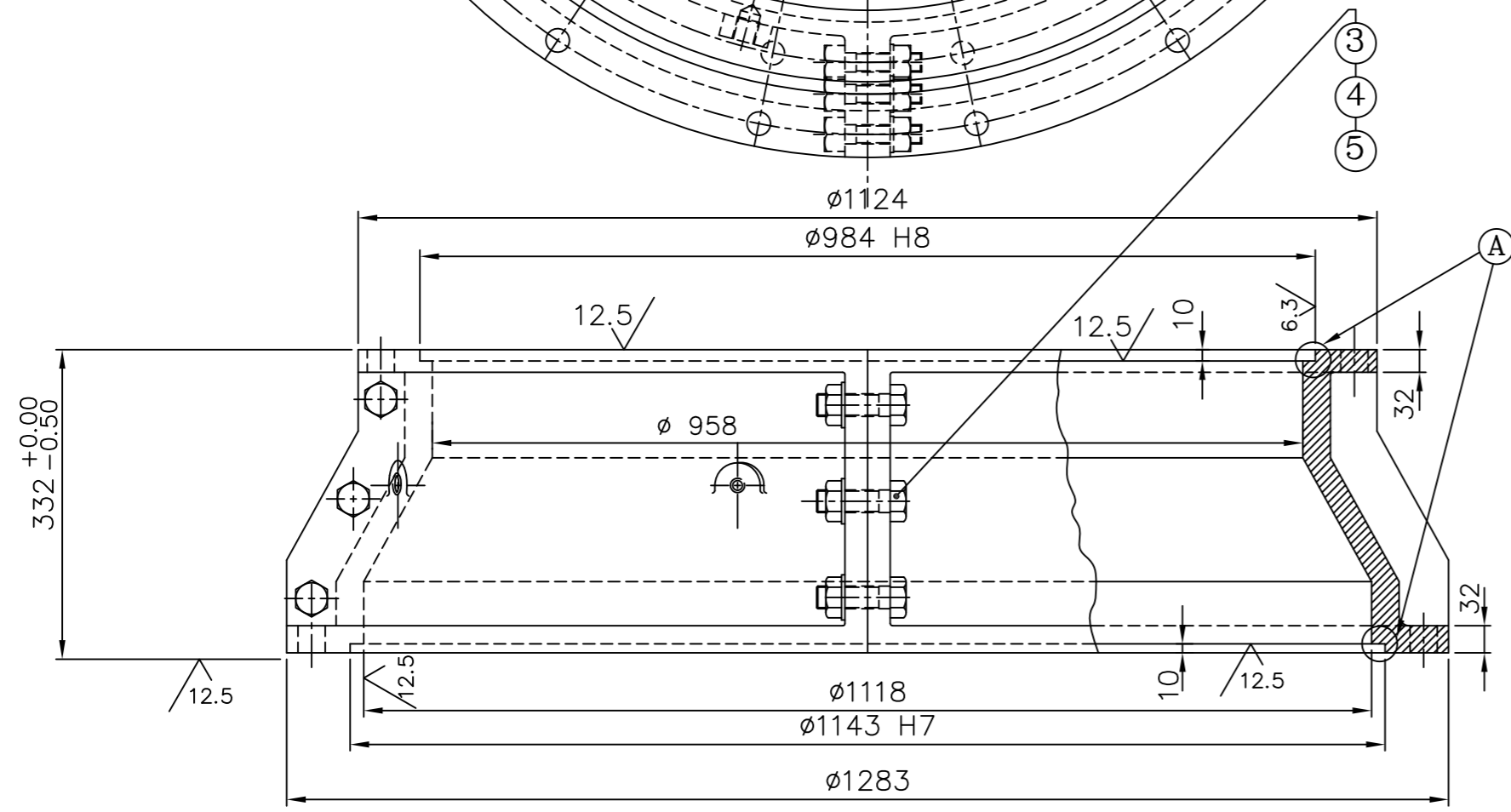
6.3/12.5



DETAIL-A
SCALE 1:1

NOTE: -
Break all sharp edges and corners unless otherwise shown.

H8	ø984	+0.140	-0.000
H7	ø1143	+0.105	+0.000
Tolerance Symbol	NOM. SIZE	UPPER LIMITS	LOWER LIMITS



REV.	DESCRIPTION	QTY.	MATERIAL CODE	MATERIAL SPEC.	UNIT
05	SPRING WASHER M24	9	AA7164002100		0.03
			AA7164002		9
04	HEX NUT M24	9	HY7151115989		0.11
			AA7151115		9
03	HEX BOLT M24x80	9	HY7111124898		0.40
			AA7111124		9
02	UPPER SKIRT SEGMENT	2	BA9110353046		85.00
			AA19703		2
01	UPPER SKIRT SEGMENT	1	BA9110353038		170.00
			AA19703		1

- THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
 - CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°
 - INTERNAL M/CD. CORNER RADII 1 TO 0.7
 - THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN ON THE TOP MOST RIGHT CORNER OF THE DRG.

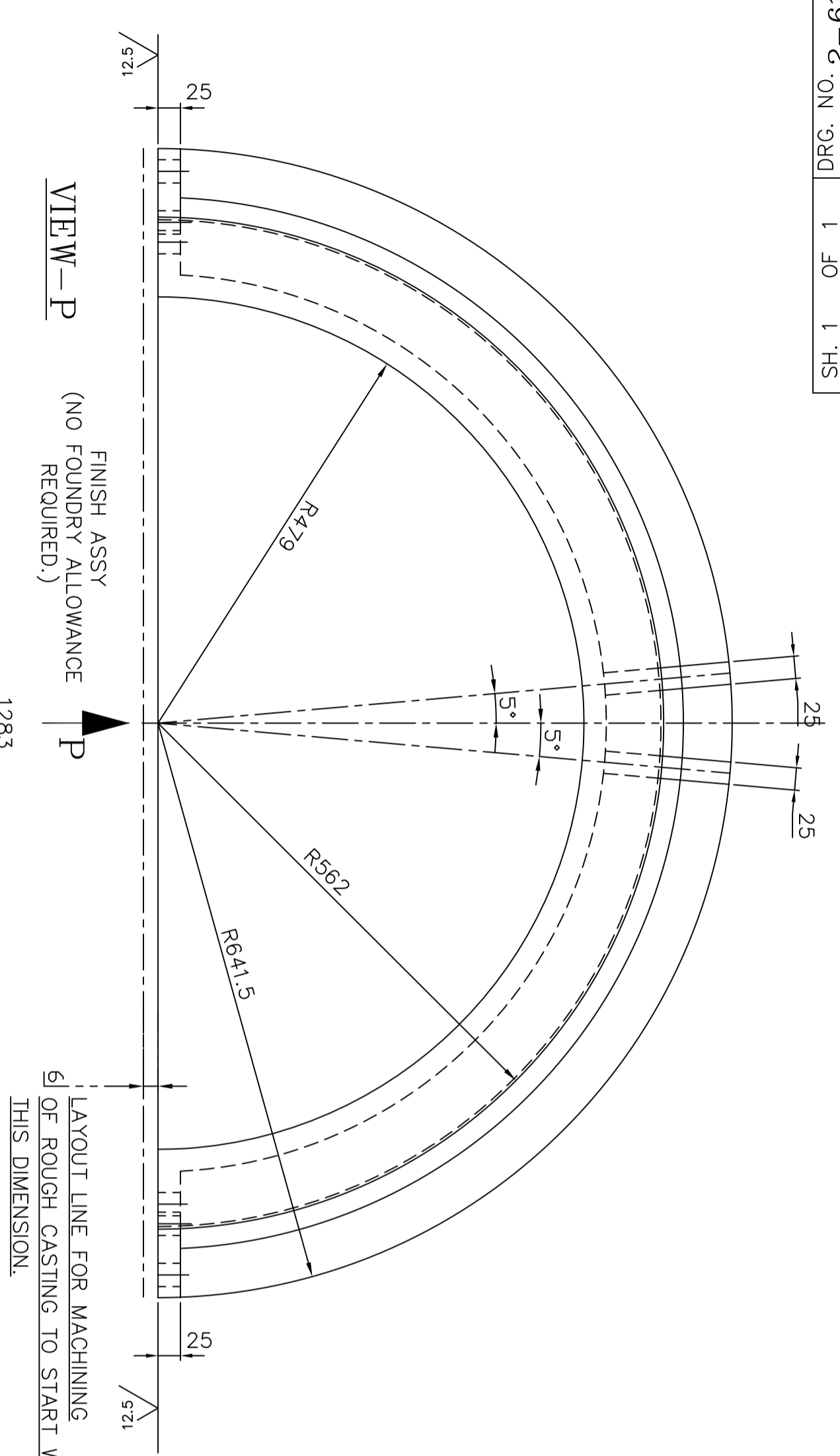
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **76" BOWL MILL**

	BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD		
	NAME	SIGN.	DATE
	DRN.		26.07.98
CHD.	NDS		26.07.98
APPD.	S GHATGE		26.07.98

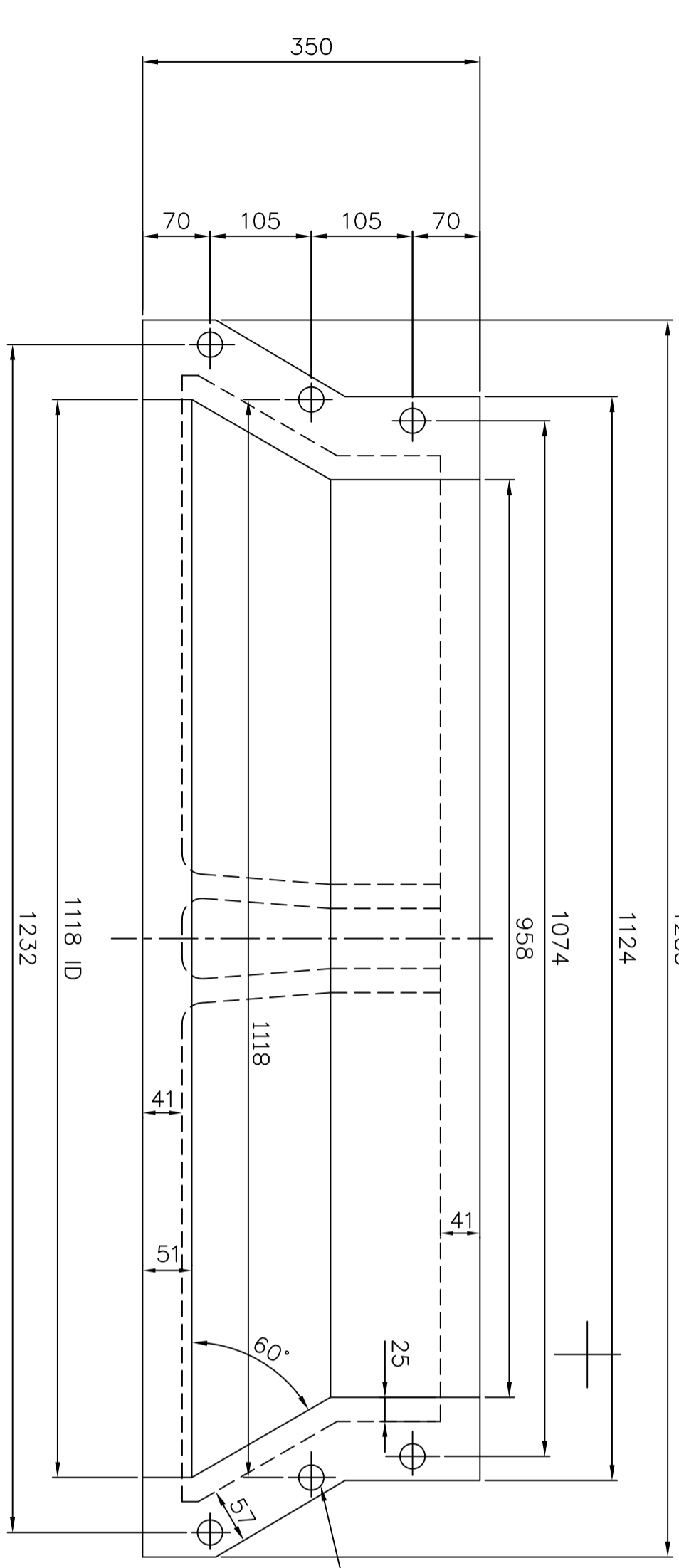
DEPT. BMD	UNTO. DIMS. GR. ø/M/f	SCALE 1:7, 1:1	WEIGHT (KG) 344.88	REF. TO ASSY. DRG. 1-61-180-90027	ITEM NO. 90	NO. OF ITEMS
TITLE: UPPER SKIRT ASSEMBLY				DRAWING NO. 2-61-176-00022	REV. 05	
				SHT. No 01	NO. OF SHT. 01	

REV.	DATE	ALTERED
05	26.07.98	CHD/APPD
ZONE		DRG. REDRAWN INCORPORATING ALL PREVIOUS REVISIONS

62000-941-19-2 CON. DRG. 1 FO 1 HS 1 2 3 4 5 6 7 8



NOTE:-
ALL FINISHING OPERATIONS TO BE DONE IN ASSEMBLY WITH MATING PARTS EXCEPT AS NOTED.



6 HOLES - Ø26 SPOTFACE FAR SIDE TO Ø41 BEFORE ASSY.

VARIANT NO.	REF.DWG/SPE. NO.	DESCRIPTION REMARKS	P/N	MATERIAL CODE	UNIT
02		CASTING	BA9110353038	AA19703	170

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: 623 XRP BOWL MILL

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°
- INTERNAL M/CD. CORNER RADI 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE SLASH GIVEN ON THE TOP MOST RIGHT CORNER OF THE DRG.

DEPT.	UNTO. DIMS.	SCALE	WEIGHT (KG)	NAME	SIGN.	DATE
BMD	GR.	NTS	170.00	S GHATGE		25.07.98
DEPT CODE	φ/M/Y			REF. TO ASSY. DRG.		25.07.98
446				APPD.		25.07.98

TITLE	DRAWING NO.	REV.
UPPER SKIRT SEGMENT	2-61-176-00023	04
	SHT. No 01	NO. OF SHT. 01

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
1		CHD/APPD	2		CHD/APPD	3		CHD/APPD	4	25.07.98	DRG. REDRAWN INCORPORATING ALL PREVIOUS REVISIONS

BHARAT HEAVY ELECTRICALS LIMITED
HYDERABAD

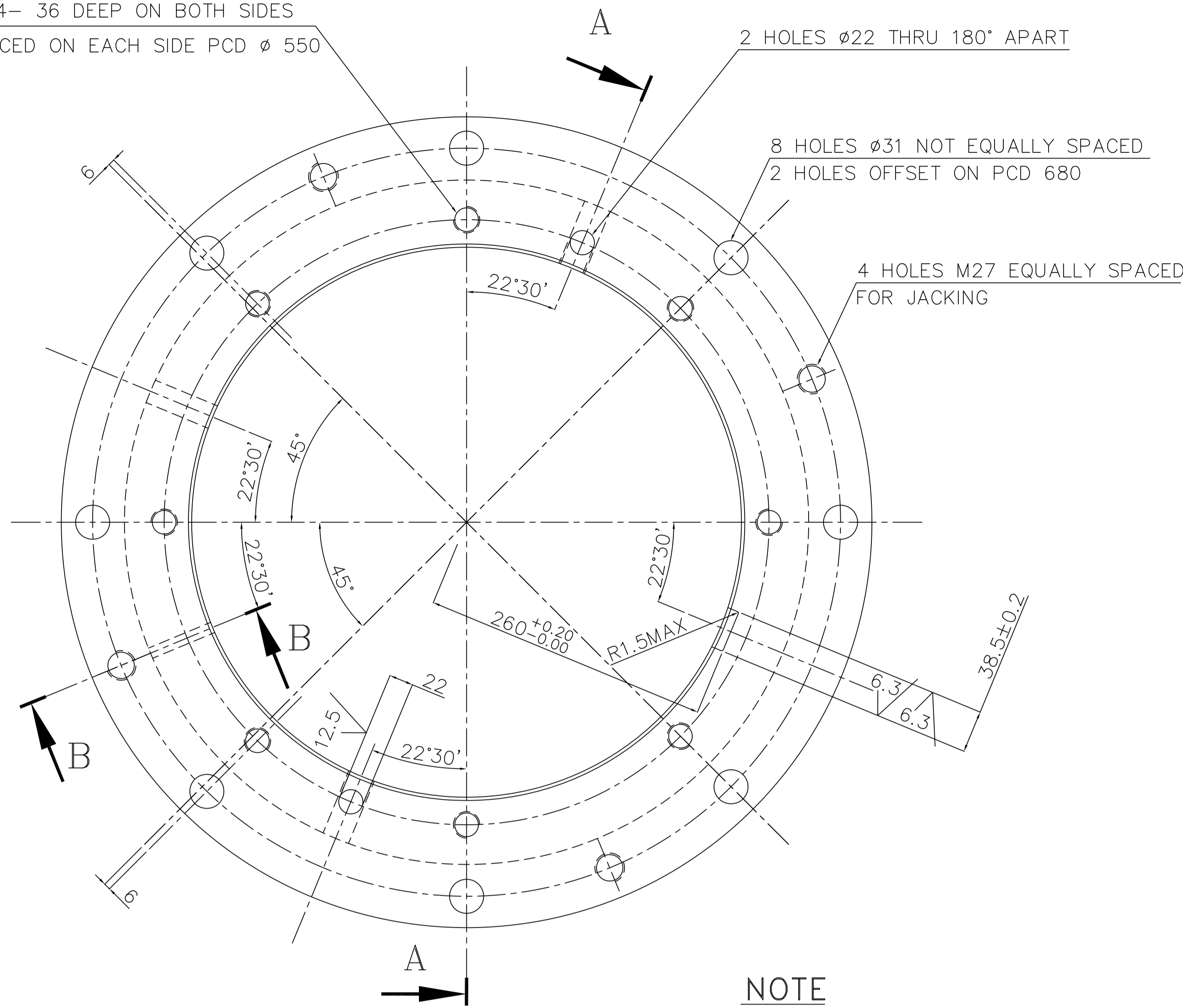
DRG. NO. 2-61-180-90077

8 HOLES M24- 36 DEEP ON BOTH SIDES
NOT EQUISPACED ON EACH SIDE PCD ϕ 550

2 HOLES ϕ 22 THRU 180° APART

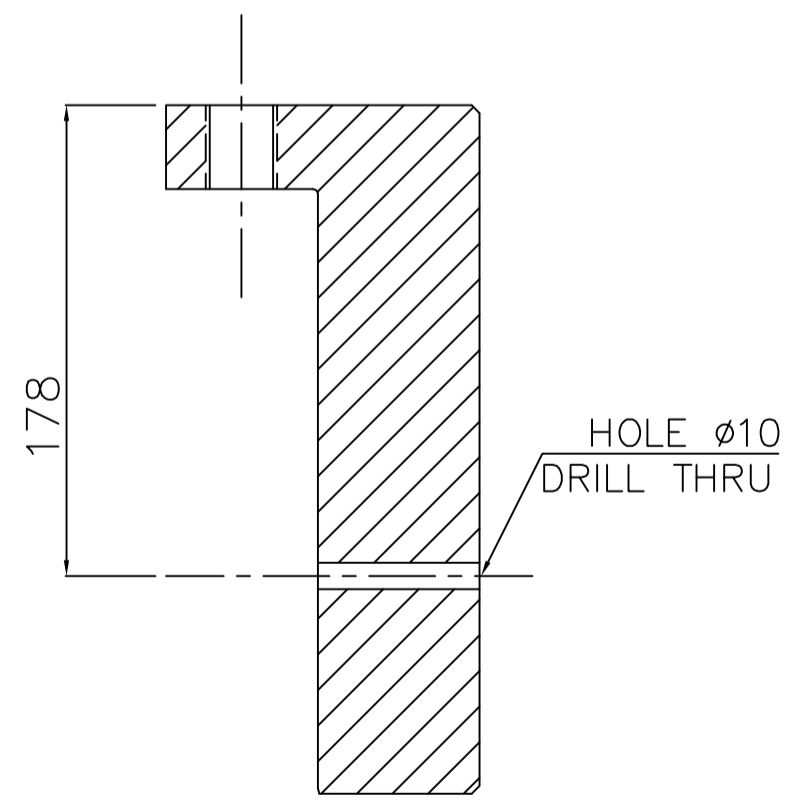
8 HOLES ϕ 31 NOT EQUALLY SPACED
2 HOLES OFFSET ON PCD 680

4 HOLES M27 EQUALLY SPACED
FOR JACKING



NOTE

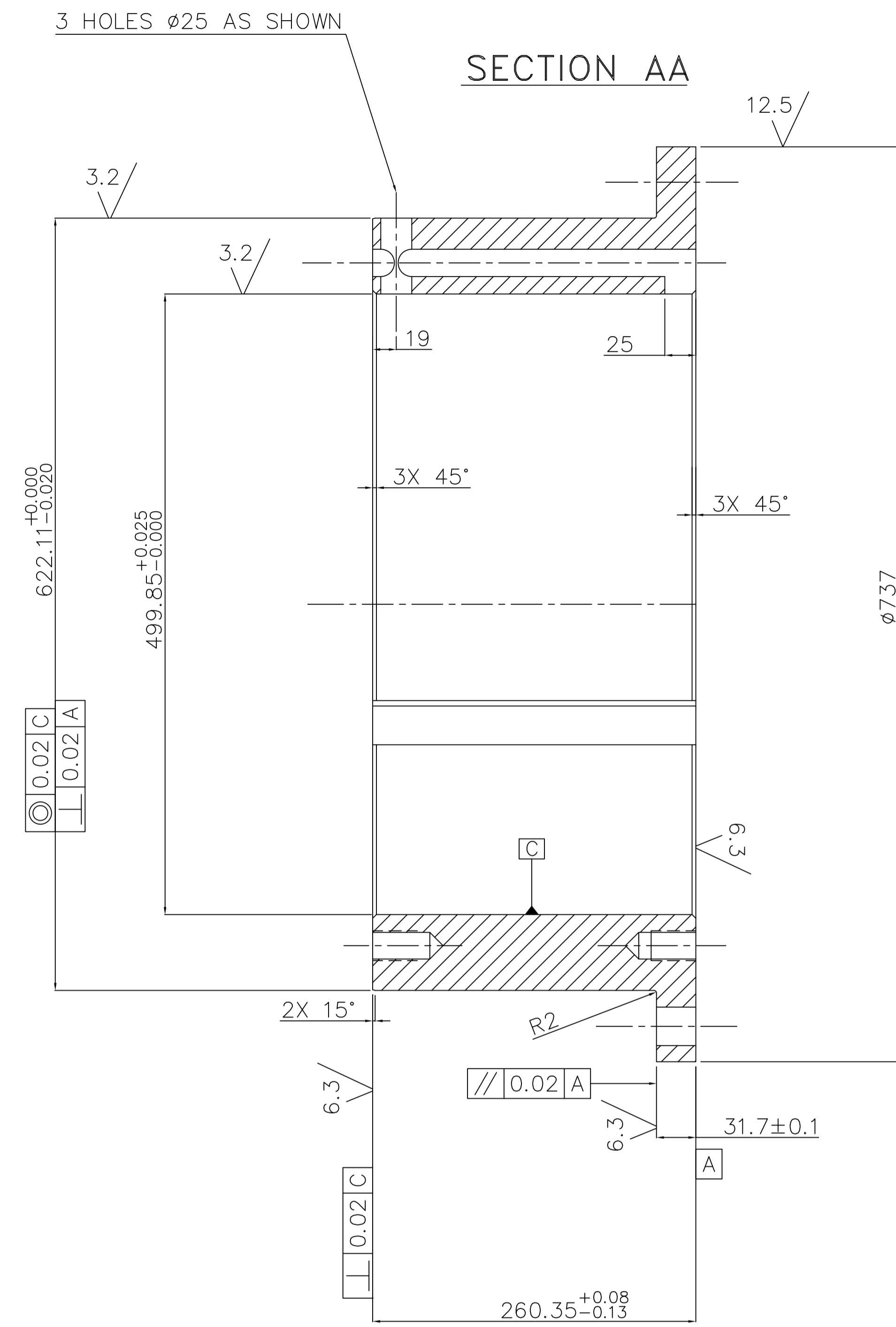
1. BREAK ALL SHARP EDGES
2. HYD PATTERN NO. M-67-056



SECTION BB
(ONE PLACE)

3 HOLES ϕ 25 AS SHOWN

SECTION AA



ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	BA9110321128 AA 19703	249.40	
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.				TYPE OF PRODUCT 803 XRP MILL																											
1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.				NAME OF CUSTOMER/PROJECT BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD																											
2. CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.				<table border="1"> <tr> <th>DRN.</th> <th>NAME</th> <th>SIGN.</th> <th>DATE</th> <th>NO.OF VAR.</th> </tr> <tr> <td></td> <td>N.D.SAMUEL</td> <td></td> <td>06.08.1998</td> <td></td> </tr> <tr> <td></td> <td>S.G</td> <td></td> <td>06.08.1998</td> <td></td> </tr> <tr> <td></td> <td>K.M.RAO</td> <td></td> <td>06.08.1998</td> <td></td> </tr> </table>				DRN.	NAME	SIGN.	DATE	NO.OF VAR.		N.D.SAMUEL		06.08.1998			S.G		06.08.1998			K.M.RAO		06.08.1998					
DRN.	NAME	SIGN.	DATE	NO.OF VAR.																											
	N.D.SAMUEL		06.08.1998																												
	S.G		06.08.1998																												
	K.M.RAO		06.08.1998																												
3. INTERNAL M/CD. CORNER RADII 1 TO 0.7				<table border="1"> <tr> <th>DEPT.</th> <th>UNTOL. DIMS. GR.</th> <th>SCALE</th> <th>WEIGHT (KG)</th> <th>REF. TO ASSY DRG.</th> <th>ITEM NO.</th> <th>NO.OF ITEMS</th> </tr> <tr> <td>PULV ENGG.</td> <td>ϕ/M/ϕ</td> <td>1:5</td> <td>249.40</td> <td></td> <td>33</td> <td></td> </tr> <tr> <td>CODE 446</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				DEPT.	UNTOL. DIMS. GR.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO.OF ITEMS	PULV ENGG.	ϕ /M/ ϕ	1:5	249.40		33		CODE 446									
DEPT.	UNTOL. DIMS. GR.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO.OF ITEMS																									
PULV ENGG.	ϕ /M/ ϕ	1:5	249.40		33																										
CODE 446																															
4. THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.				TITLE UPPER BRG.HSG. (TIGHT FIT)																											
<table border="1"> <tr> <th>REV.</th> <th>DATE</th> <th>ALTERED CHD.</th> <th>APPD.</th> <th>REV.</th> <th>DATE</th> <th>ALTERED CHD.</th> <th>APPD.</th> </tr> <tr> <td>05</td> <td>30.6.2006</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">DRAWING REDRAWN.</td> <td colspan="4">E.M.A CHD. AMAN</td> </tr> </table>				REV.	DATE	ALTERED CHD.	APPD.	REV.	DATE	ALTERED CHD.	APPD.	05	30.6.2006							DRAWING REDRAWN.				E.M.A CHD. AMAN				DRAWING NO. 2-61-180-90077 REV. 05 SHEET NO. 01 NO OF SHEETS 01			
REV.	DATE	ALTERED CHD.	APPD.	REV.	DATE	ALTERED CHD.	APPD.																								
05	30.6.2006																														
DRAWING REDRAWN.				E.M.A CHD. AMAN																											

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY
 COMPUTER FILE NAME 26190077
 REF. DRG. NO.
 SIGN. AND DATE
 INVENTORY NO

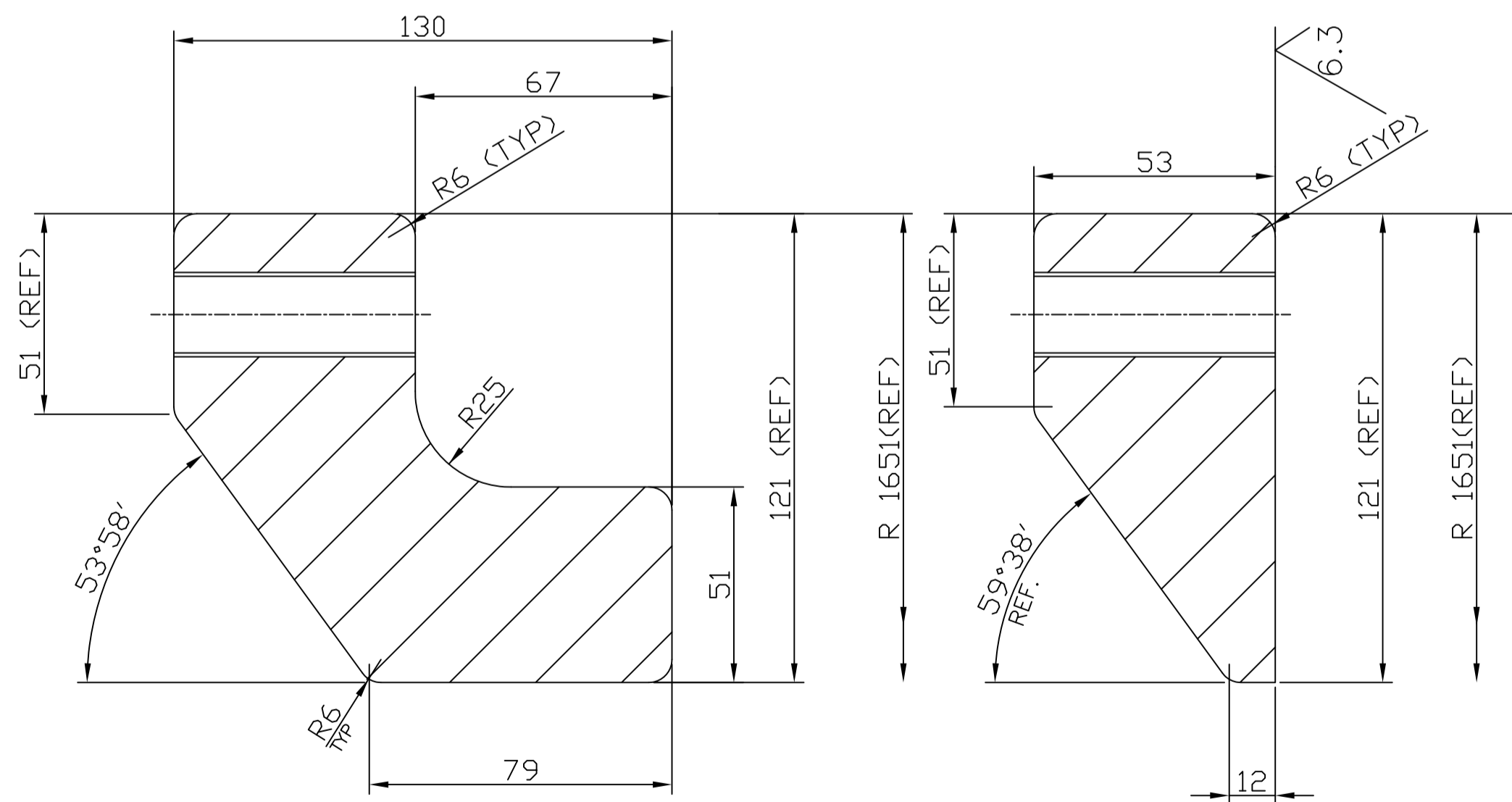
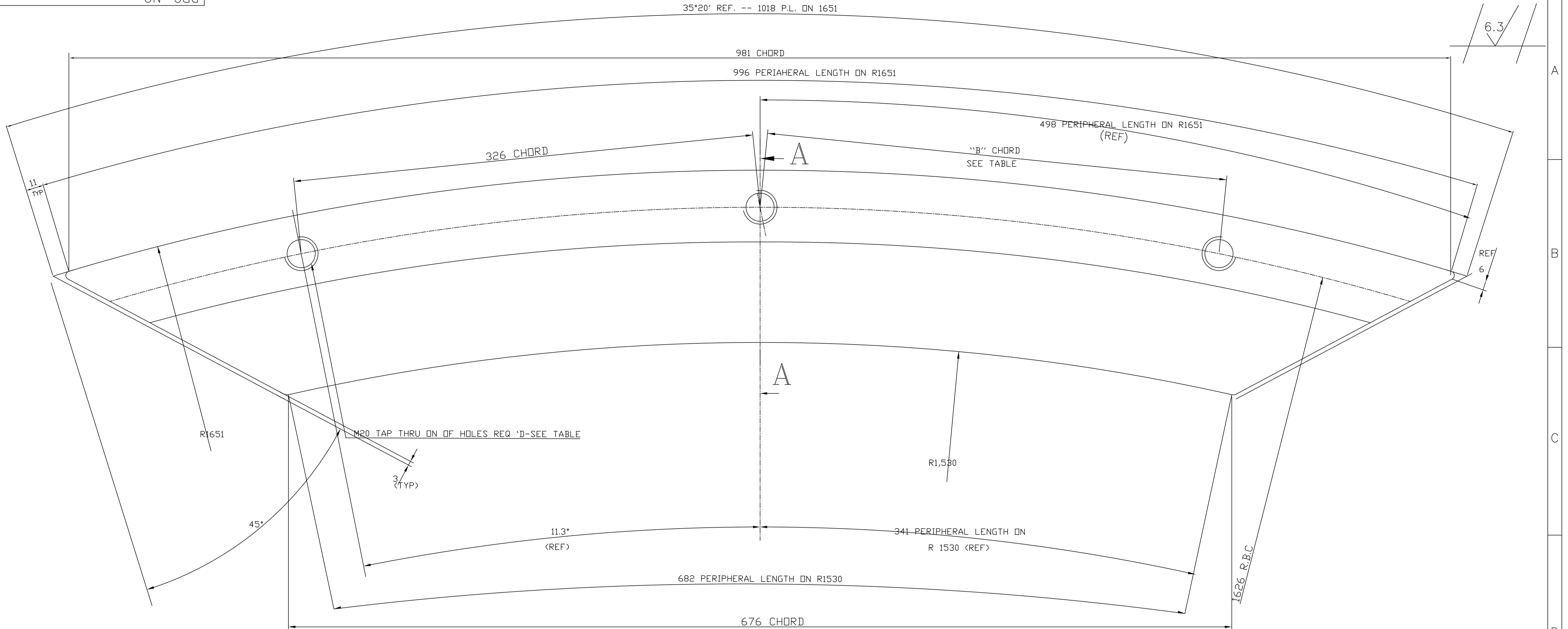
DRG. NO. 2-61-200-00397

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

COMPUTER FILE NAME
26100397

REF. DRG. NO.
SIGN. AND DATE

INVENTORY NO



PATTERN No. (VAR. No. 02) M-67-124
PATTERN No. (VAR. No. 04) M-67-125

VAR 01 & 03
SECTION-AA

VERIANT No.	No.OF HOLES REQ'D	"B" CHORD
01	2	0
02	2	0
03	3	326
04	3	326

NOTES:-
2. UNLESS OTHERWISE NOTED ALL INSIDE & OUTSIDE RADII TO BE R3.

ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT.	QUANTITY
	CASTING		04	M-67-125	BA9110233148	58.00	
					AA19702		
	CASTING		03	M-67-136	BA9110233202	28.5	
					AA19702		
	CASTING		02	M-67-124	BA9110233121	58.00	
					AA19702		
	CASTING		01	M-67-135	BA9110233199	28.5	
					AA19702		

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT: 1003XRPBM
NAME OF CUSTOMER/PROJECT: BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD

DRN.	E.M.ASHOK	SIGN.	[Signature]	DATE	18-2-99	NO.OF VAR.	
CHD.	S.GHATGE	SIGN.	[Signature]	DATE	18-2-99		
APPD.	K.M.RAO	SIGN.	[Signature]	DATE	18-2-99		

DEPT. PULV ENGG. CODE 446
UNTO. DIMS. GR. 4/M/P
SCALE 1:3
WEIGHT (KG) /

REF. TO ASSY DRG. 0.61.200.00584
ITEM NO. /
NO.OF ITEMS 20

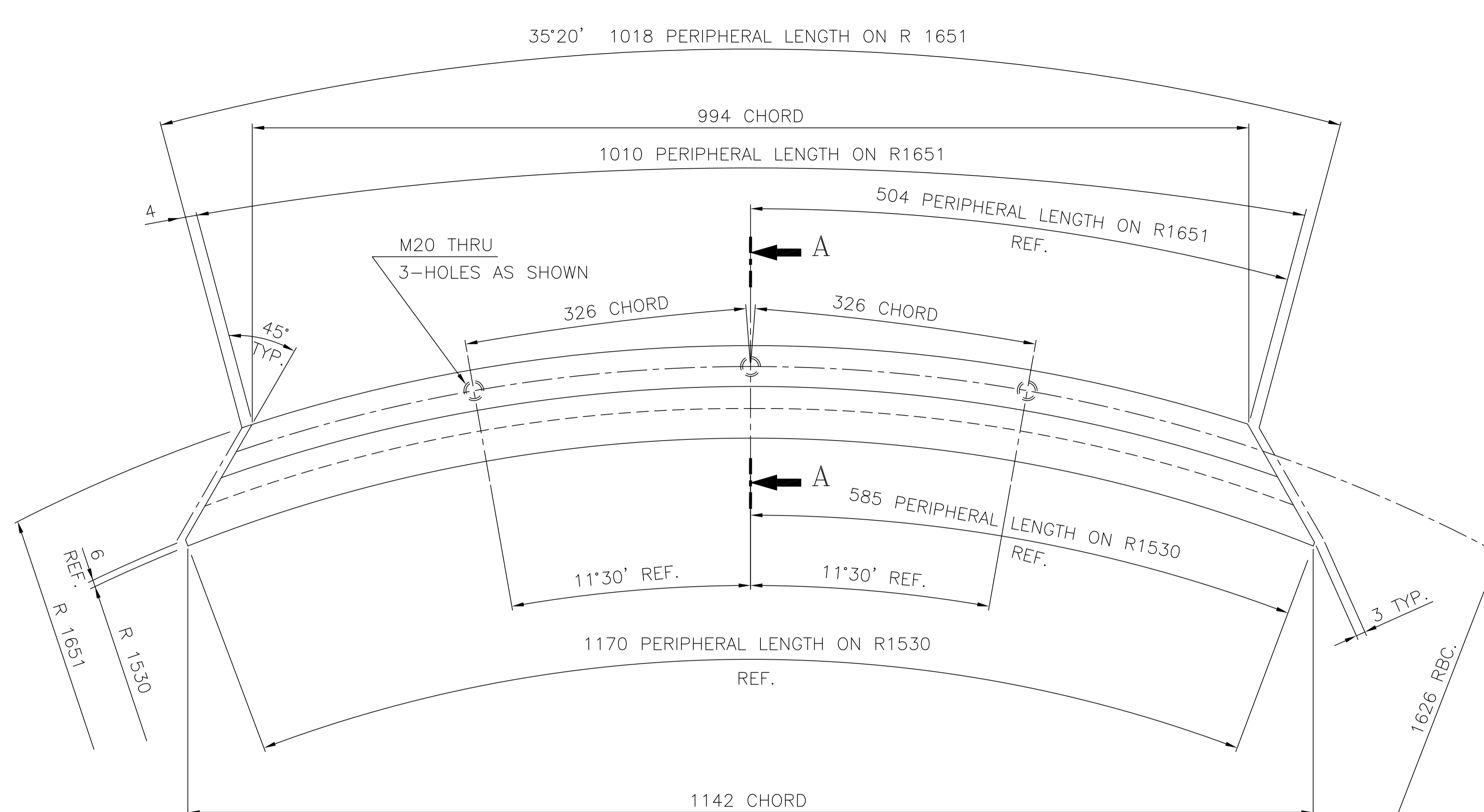
TITLE: **MILLSIDE LINER BOTTOM**
DRAWING NO. 2-61-200-00397
REV. 04
SHEET NO. 01 NO OF SHEETS 01

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.
04	1.3.2001	CHD.		03	18-02-99	CHD.		03	18-02-99	CHD.	

FOR VAR 01 & 03-DIMNS 53 & 59° 38' WERE 63 & 59°58' RESPLY. M/C 6.3 ADDED. WT. WAS 36.5.
DRG REDRAWN INCORPORATING ALL PREVIOUS REVISIONS. NOTE 1 DELETED.

DRG. NO. 2-61-200-00399

INVENTORY NO. REF. DRG. NO. COMP. FILE NAME. THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

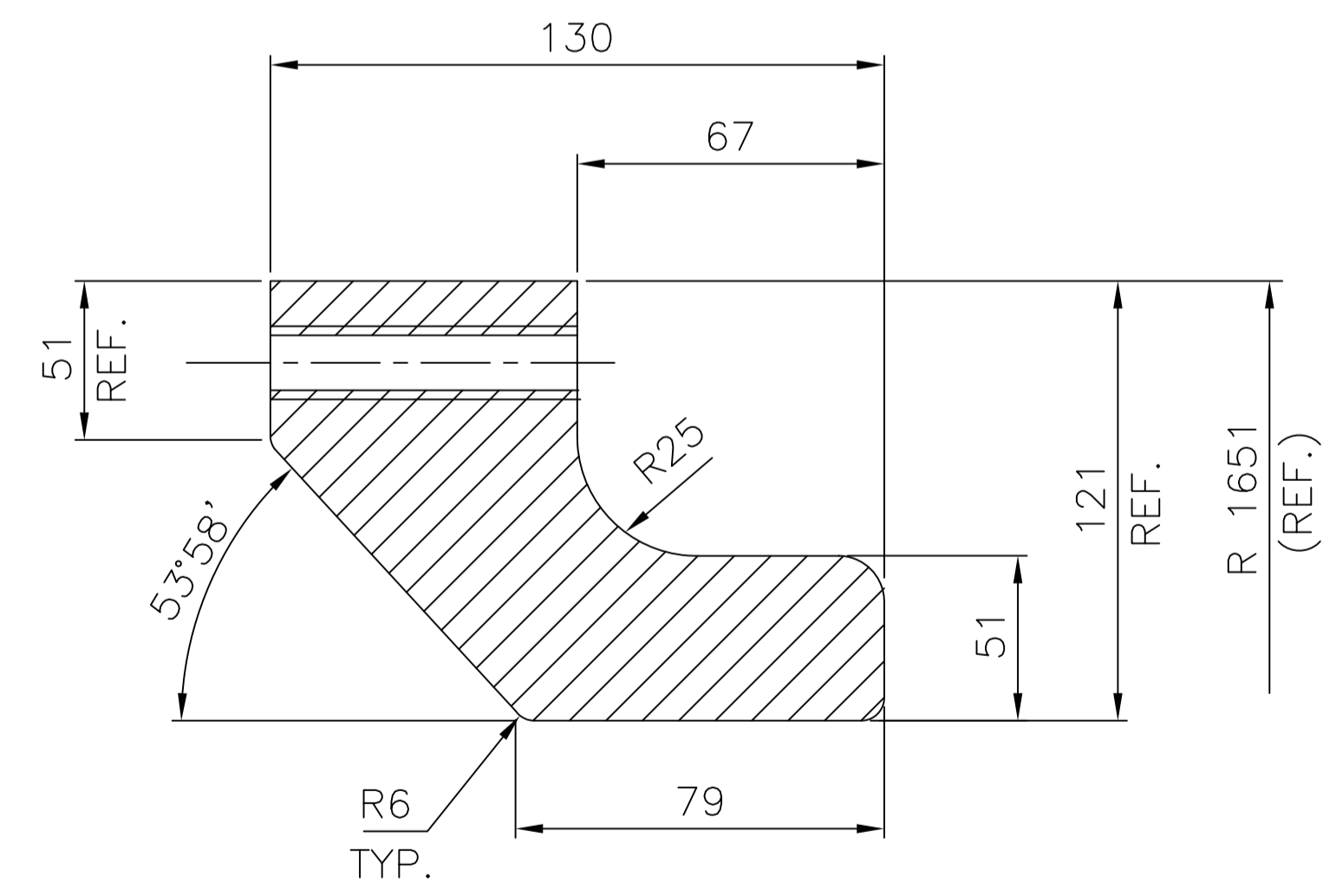


VARIANT.NO.	PATTERN NO.
01	M-67-137
02	M-67-123

NOTES :-

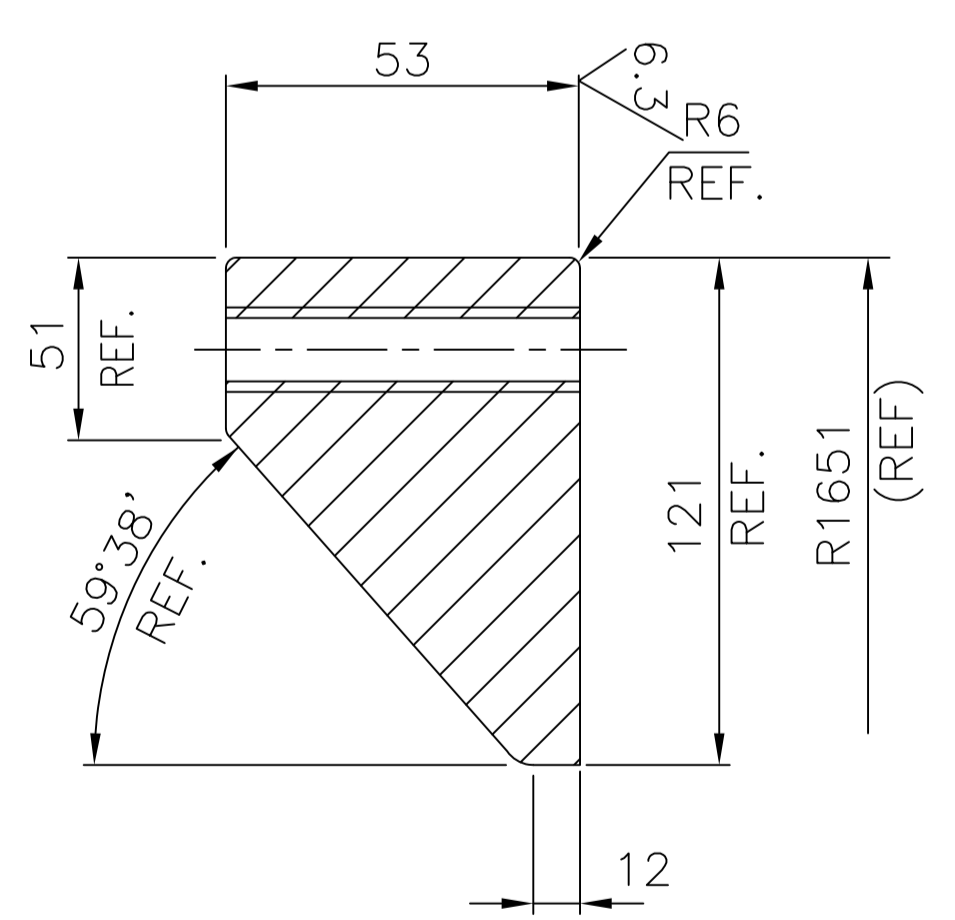
2. UNLESS OTHERWISE NOTED ALL INSIDE & OUTSIDE RADII TO BE R3

SECTION-AA



WITH SEP. BODY LINERS
(VARIANT NO.02)

SECTION-AA



WITH VANE WHEEL
(VARIANT NO.01)

PART NO. - SEE SECTION-AA
PART NO. - SEE SECTION-AA

ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL SPECN.	NET WT.	GROSS WT.	QUANTITY
02	CASTING				BA9110233130	75.00		
					AA19702			
01	CASTING				BA9110233210	38.00		
					AA19702			

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **1003 XRP BM**

DEPT. PULV.ENGG.	SCALE N.T.S	WEIGHT(Kg) SEE TABLE	REF. TO ASSY DRG. (C-101-01196-0) SEE TABLE	ITEM NO. -NA-	NO.OF ITEMS -NA-
------------------	-------------	----------------------	---	---------------	------------------

DRN. N.D.SAMUEL
CHD. S.GHATGE
APPD. K.M.RAO

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

TITLE: **MILL SIDE LINER-BOTTEM**

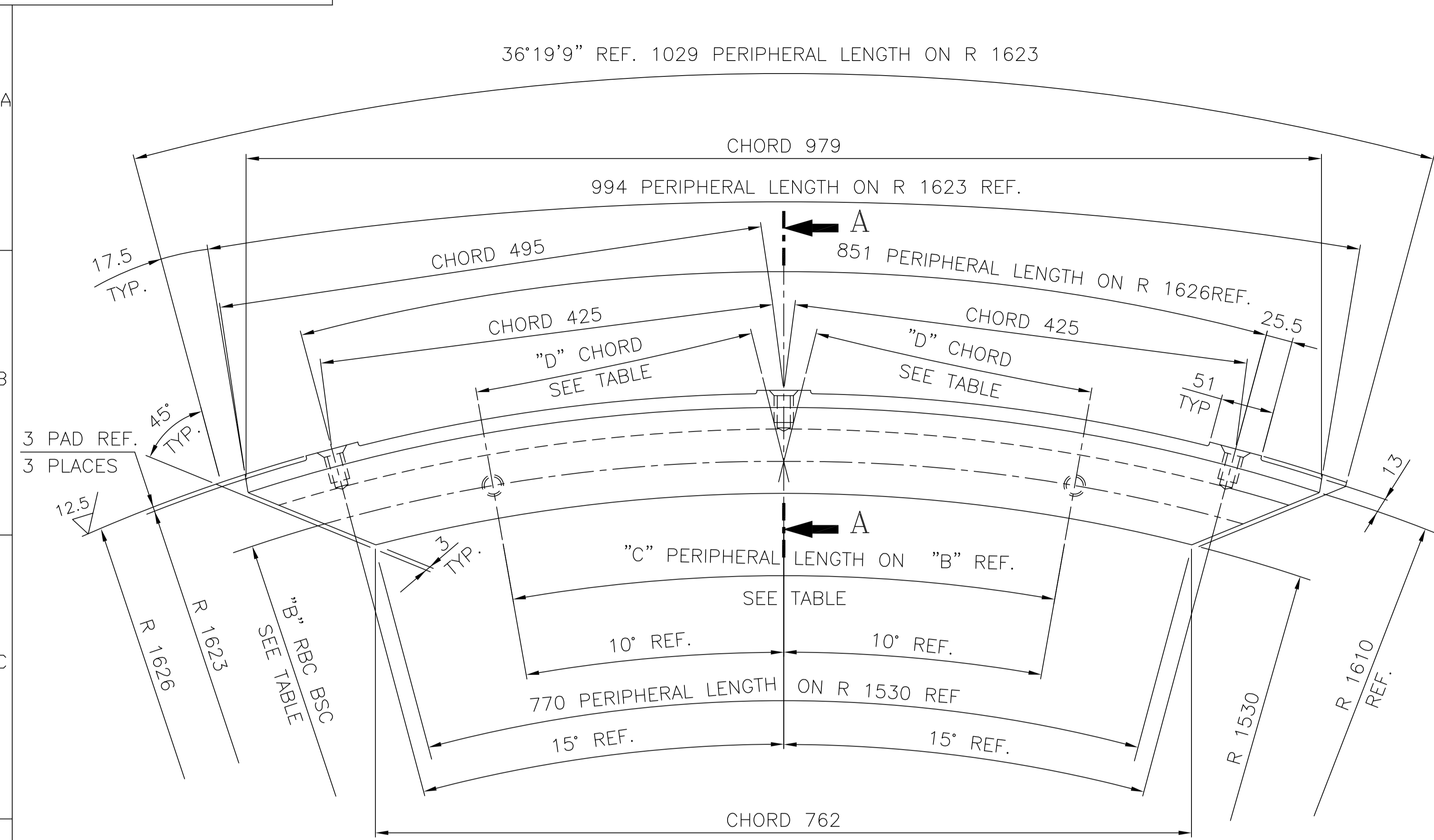
DRAWING NO. **2-61-200-00399** REV. **04**

SHEET NO. 01 NO OF SHEETS 01

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	
04	1.3.2001	CHECKED		03	2.1.98	CHECKED		02	3.12.96	CHECKED		01	7.3.85	CHECKED		
ZONE E4	FOR VAR 01, DIMNS 53 & 59°38' WERE 63&53°58' RESPLY. M/C 6.3 ADDED. WT. WAS 48.00				DRAWING RETRACED NOTE 1 DELETED.				M20 WAS 3/4" 10 UNC TAP				MAT.CODE, MAT SPEC. & PATTERN. NO. ADDED			

DRG. NO. 2-61-200-00404

INVENTORY NO. REF. DRG. NO. COMP. FILE NAME: 26100404.DWG

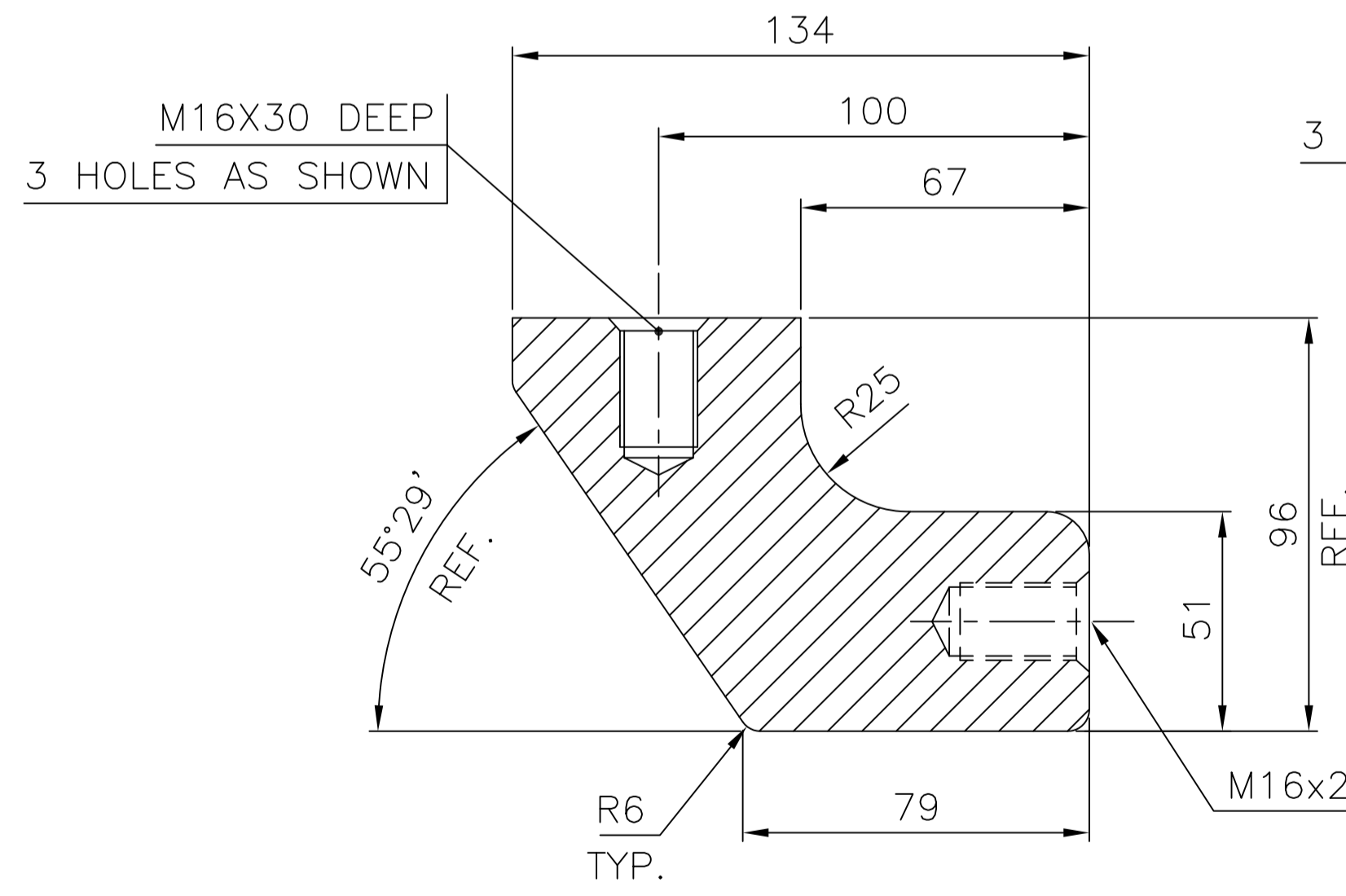


VARIANT.NO.	"B"	"C"	"D"
01	1572	549	274
02	1556	543	271

NOTES :-

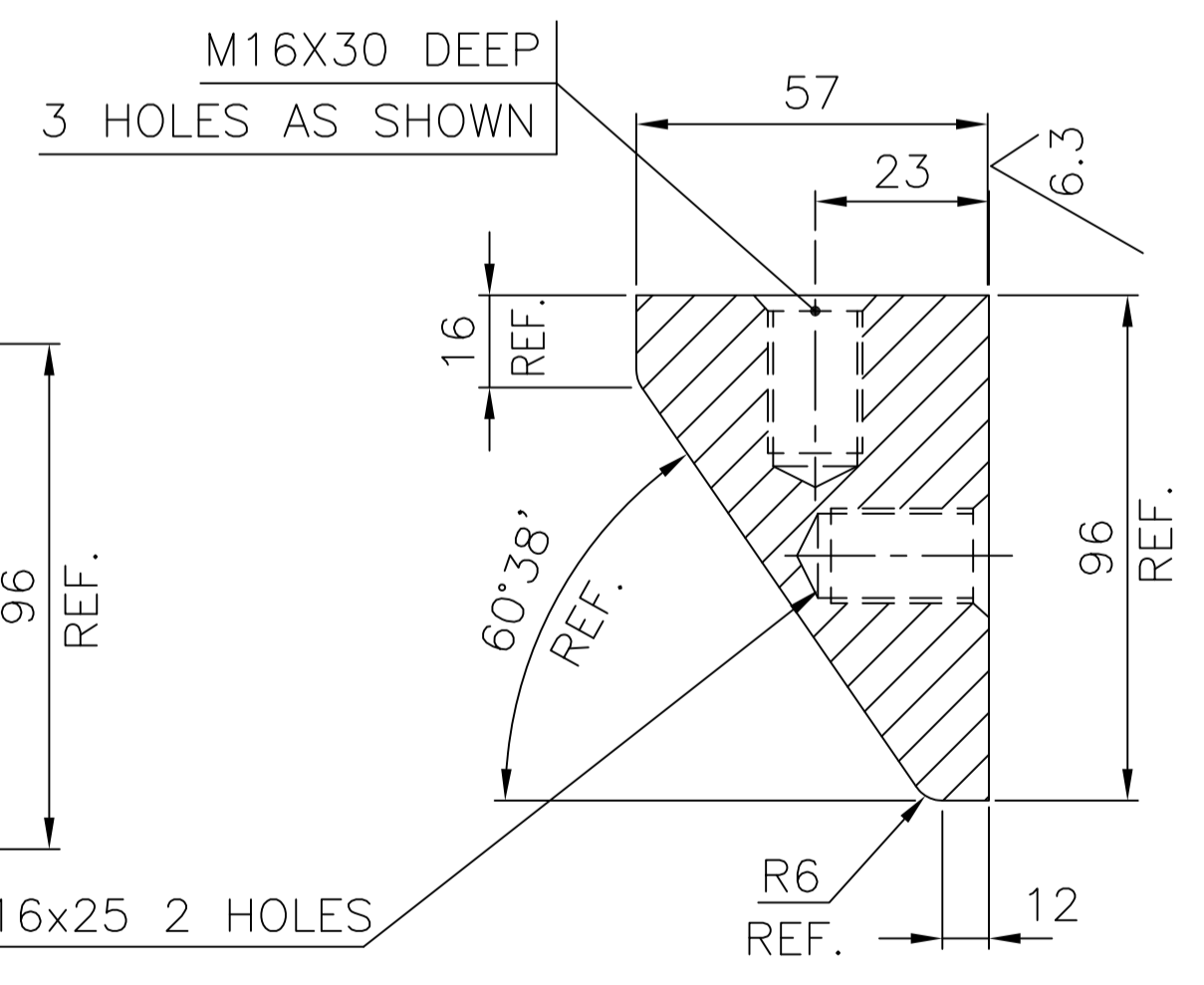
- UNLESS OTHERWISE NOTED ALL INSIDE & OUTSIDE RADII TO BE R3
- TAP DRILL MUST NOT BREAK THROUGH

SECTION-AA



WITH SEPERATOR BODY LINER (VARIANT NO.02)

SECTION-AA



WITH VANE WHEEL (VARIANT NO.01)

PATTERN NO. (VAR.NO.02) M-67-127
PATTERN NO. (VAR.NO.01) M-67-138

ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL SPECN.	NET WT.	GROSS WT.	QUANTITY
02	CASTING		02		BA9110233156	46.50		
					AA19702			
01	CASTING		01		BA9110233229	18.00		
					AA19102			

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **1003 XRP BM**

DEPT.	PULV. ENGG.	SCALE	WEIGHT(Kg)	REF. TO ASSY DRG. (C-101-01153-0) 0-61-200-00584	ITEM NO. -NA-	NO. OF ITEMS 02
CODE	446	N.T.S	SEE TABLE			

TITLE: **MILL SIDE LINER-BOTTEM**

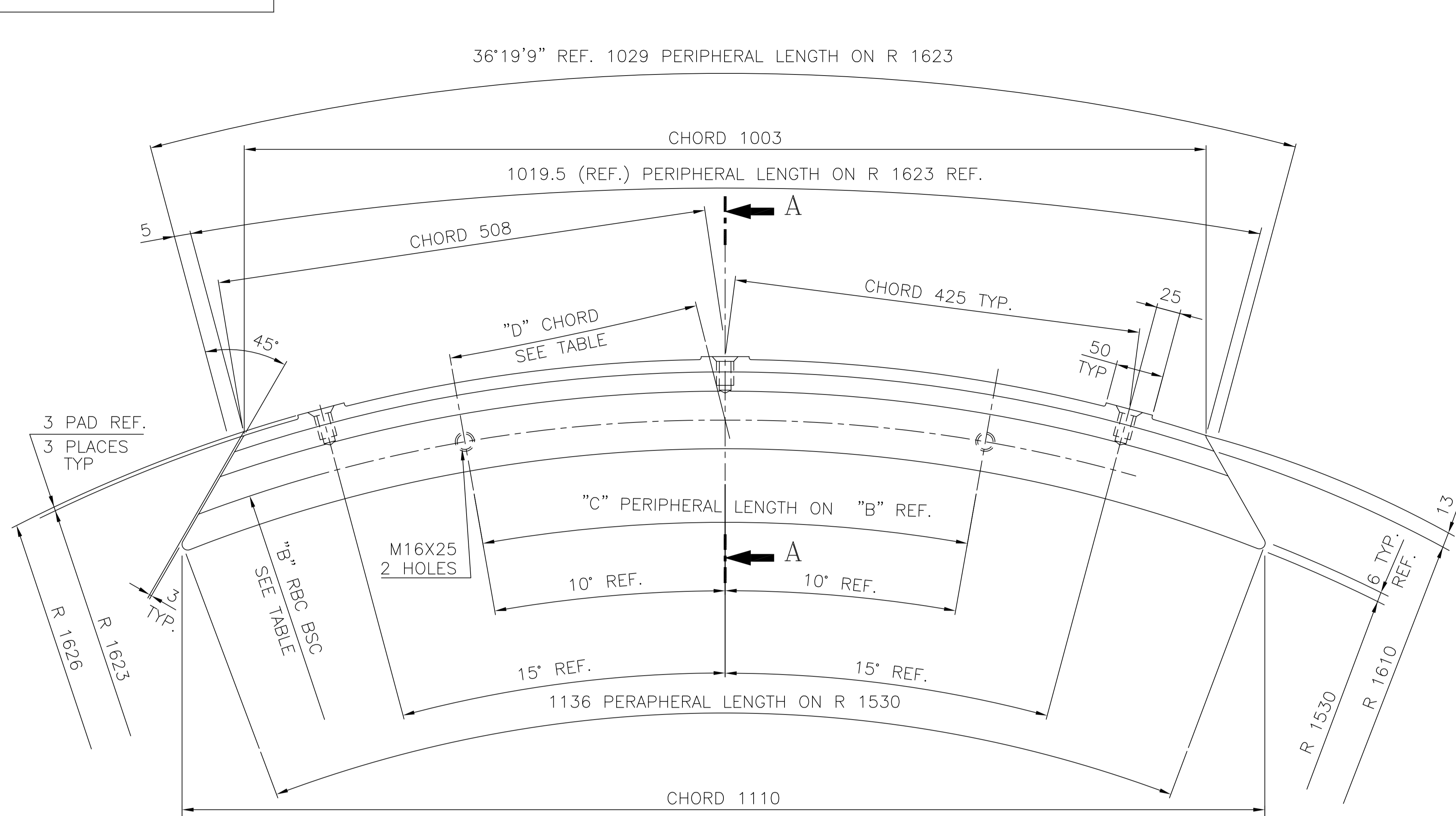
DRAWING NO. **2-61-200-00404** REV. **04**

SHEET NO. 01 NO OF SHEETS 01

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	
04	1.3.2001	CHECKED	APPD.	03	2.1.98	CHECKED	APPD.	02	3.12.96	CHECKED	APPD.	01	7.3.85	CHECKED	APPD.	
ZONE D4	FOR VAR 01, DIMNS 57,23&60'38' WERE 67,33&55'29' RESPLY M/C 6.3 ADDED. WT WAS 24.00.				DRAWING RETRACED NOTE 1 DELETED.				M16 WAS 5/8" ATTENTION NOTE DELETED				MAT.CODE, MAT SPEC. & PATTERN. NO. ADDED			

DRG. NO. 2-61-200-00408

INVENTORY NO. REF. DRG. NO. COMP. FILE NAME IT MUST NOT BE USED DIRECTLY OR INDIRECTLY TO THE INTEREST OF THE COMPANY.

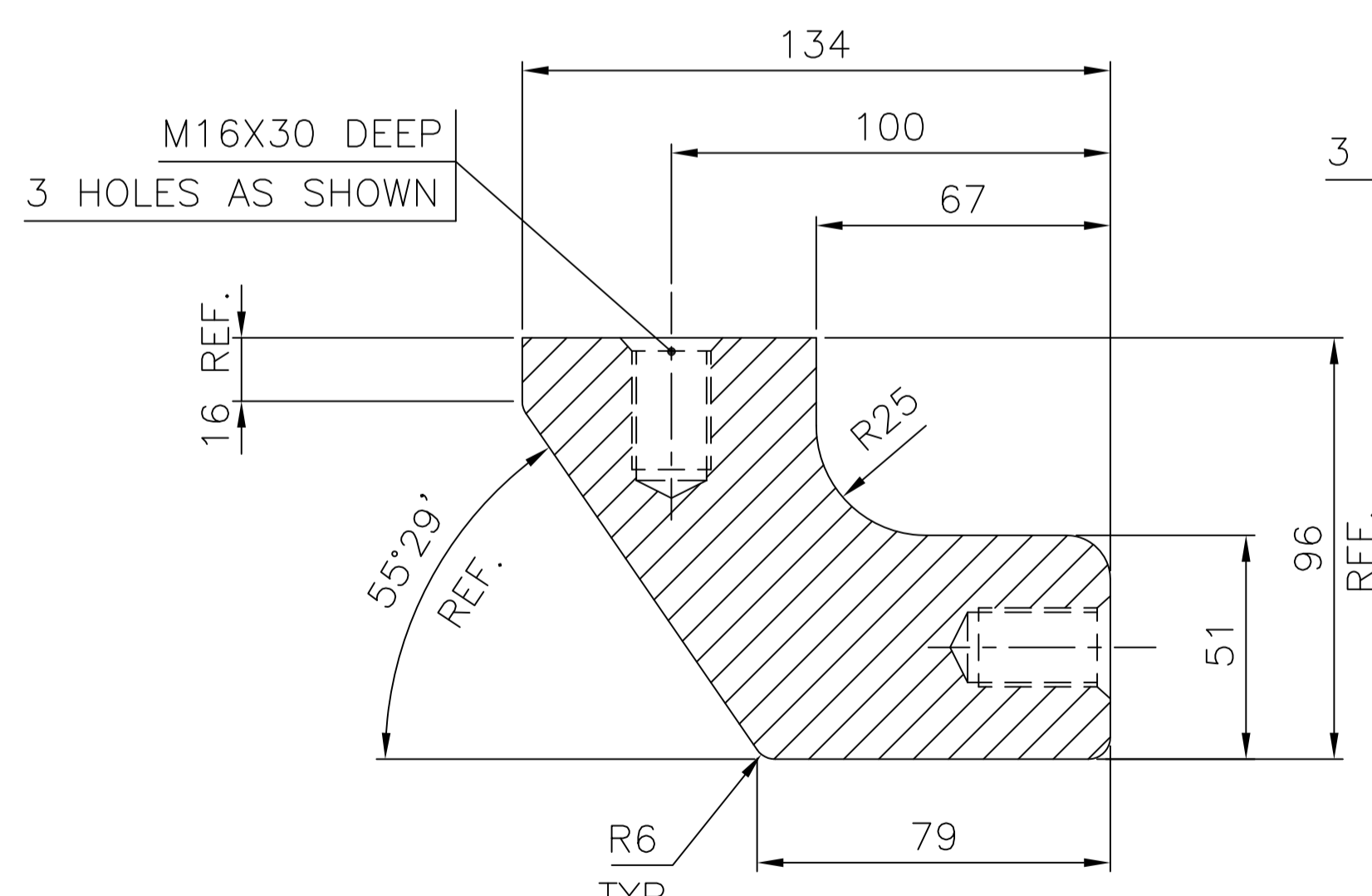


VARIANT.NO.	"B"	"C"	"D"
01	1572	549	274
02	1556	543	271

NOTES :-

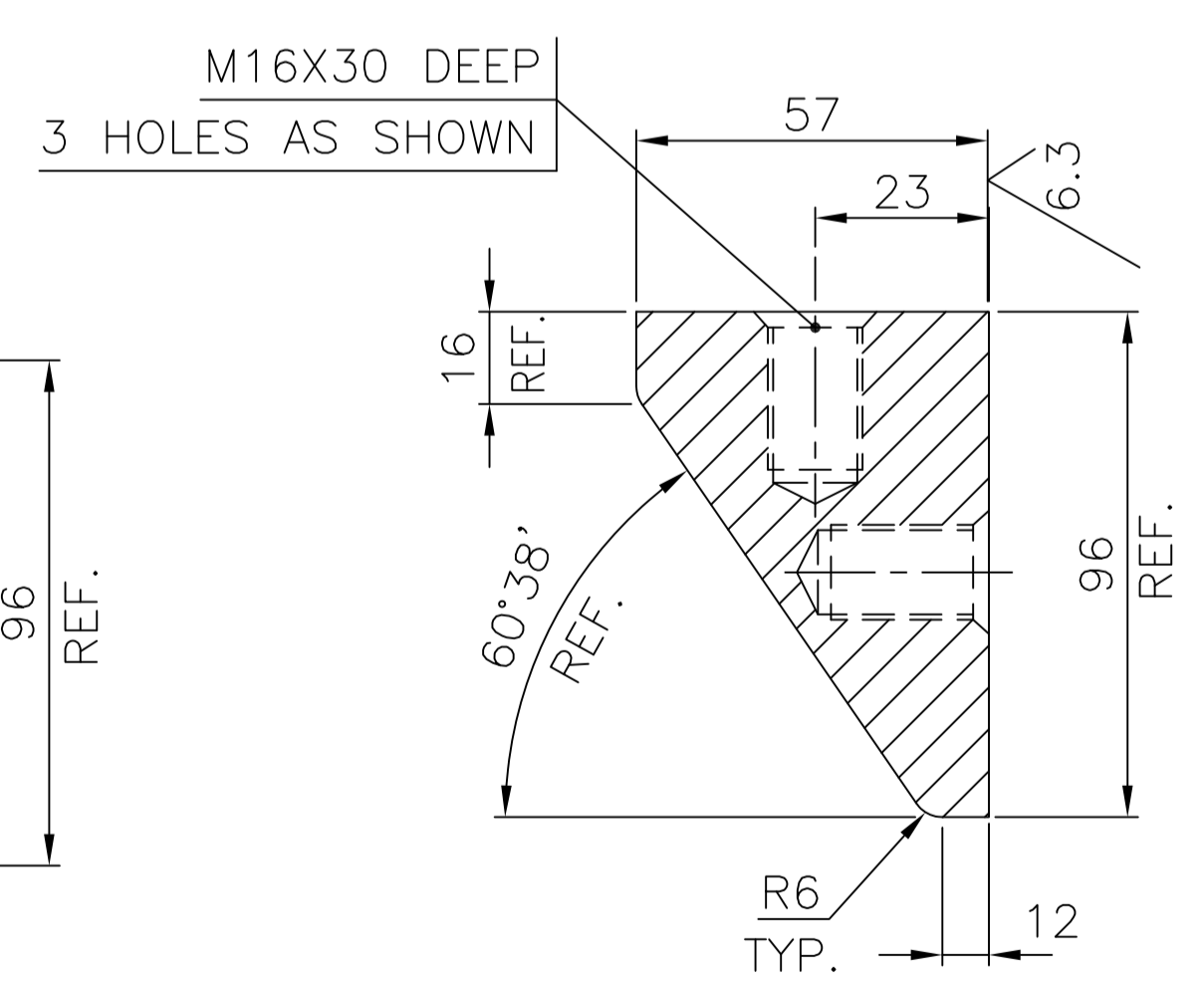
- UNLESS OTHERWISE NOTED ALL INSIDE & OUTSIDE RADII TO BE R3
- TAP DRILL MUST NOT BREAK THROUGH

SECTION-AA



WITH SEP BODY LINERS (VARIANT NO.02)

SECTION-AA



WITH VANE WHEEL (VARIANT NO.01)

PATTERN NO. (VAR.NO.02) M-67-126
PATTERN NO. (VAR.NO.01) M-67-139

ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.	QUANTITY
02	CASTING				BA9110233164	56.00		
					AA19702			
01	CASTING				BA9110233237	22.60		
					AA19702			

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

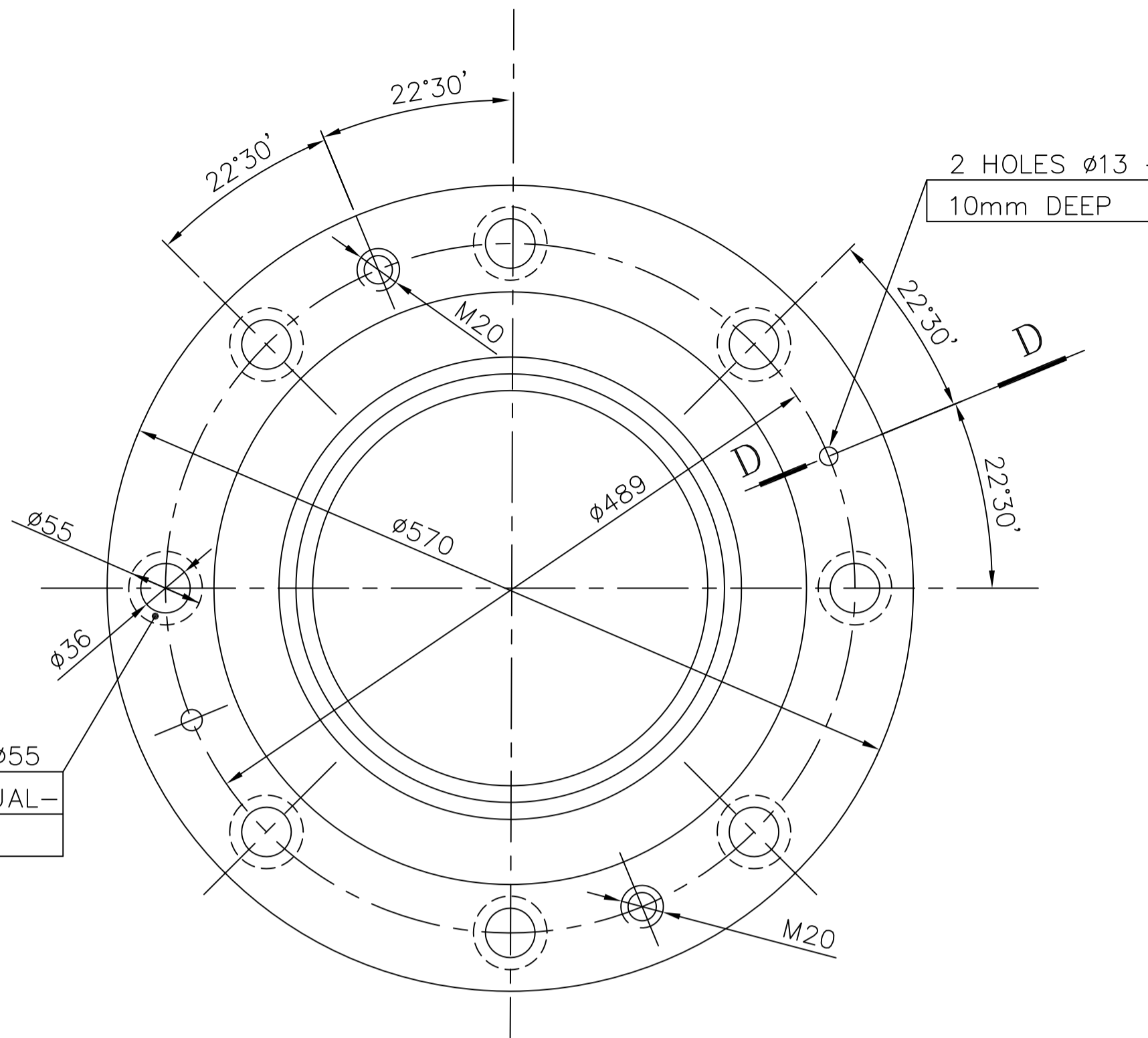
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT **1003 XRP BM**

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD	DRN.	N.D.SAMUEL	SIGN.	[Signature]	DATE	2.1.98	NO. OF VAR.	
	CHD.	S.GHATGE	SIGN.	[Signature]	DATE	2.1.98	NO. OF ITEMS	-NA-
	APPD.	K.M.RAO	SIGN.	[Signature]	DATE	2.1.98	NO. OF ITEMS	-NA-
DEPT.	PULV.ENGG.	SCALE	N.T.S	WEIGHT(Kg)	SEE TABLE	REF. TO ASSY DRG. (C-101-01168-0) 0-61-300-00584	ITEM NO.	-NA-
CODE	446	TITLE		DRAWING NO.		REV.		
				MILL SIDE BOTTOM-LINER		2-61-200-00408		04
				SHEET NO. 01		NO OF SHEETS 01		

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.								
04	1.3.2001	CHECKED	[Signature]	03	2.1.98	CHECKED	[Signature]	02	3.12.96	CHECKED	[Signature]	01	7.3.85	CHECKED	[Signature]								
ZONE		FOR VAR 01, DIMNS 57,23&60°38' WERE 67,33&55°29' RESPLY M/C 6.3 ADDED. WT. WAS 28.6				ZONE		DRAWING RETRACED NOTE 1 DELETED.				ZONE		M16 WAS 5/8" ATTENTION				ZONE		MAT.CODE, MAT SPEC. & PATTERN. NO. ADDED			

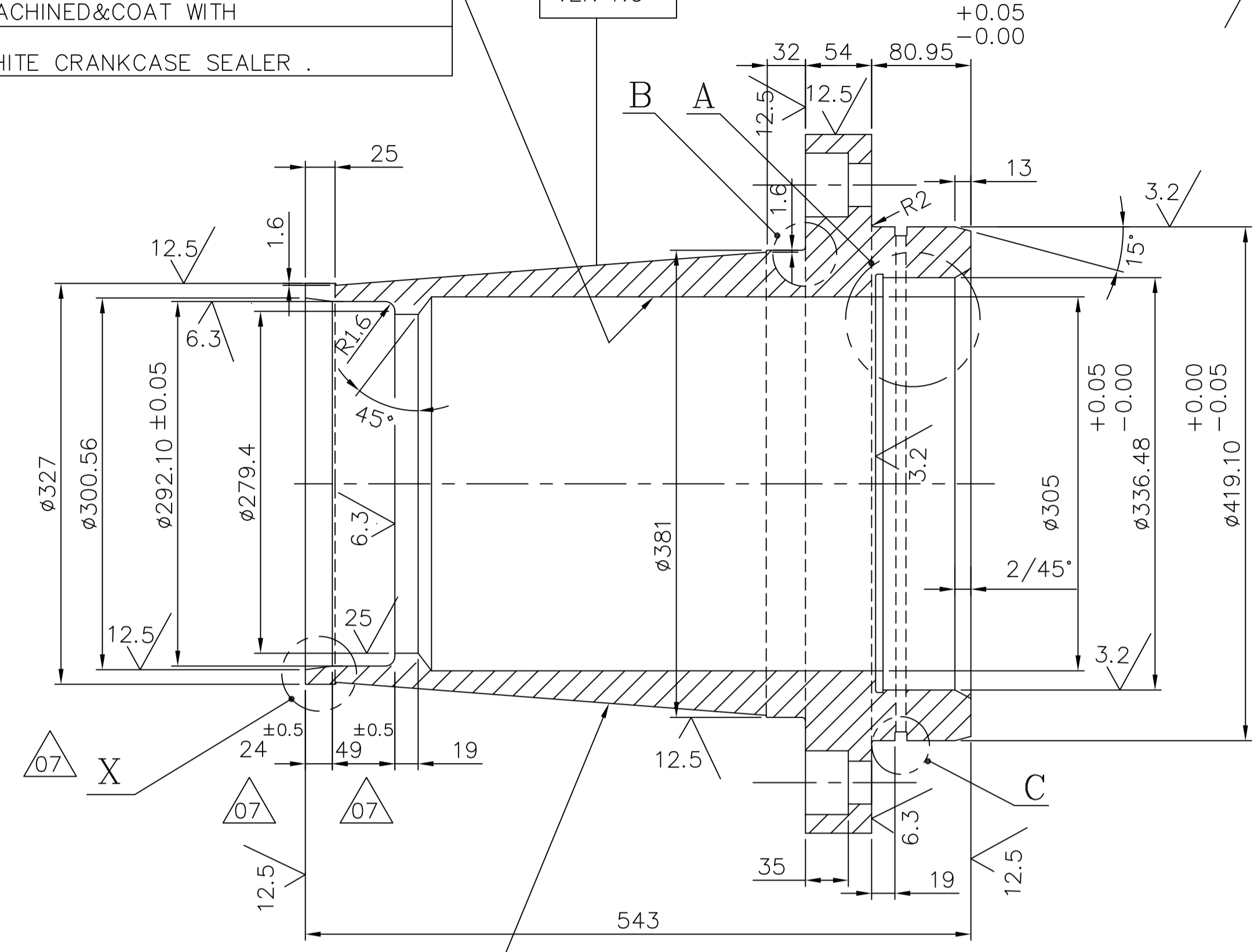
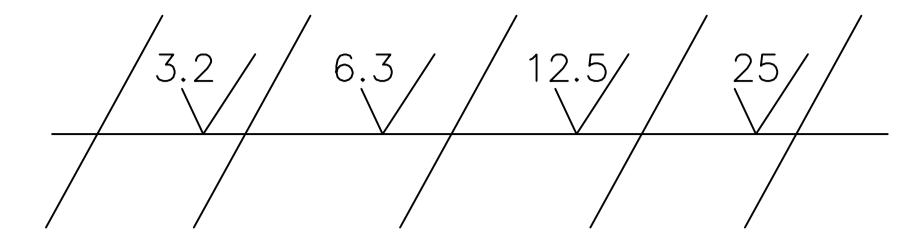
INVENTORY NO. REF. DRG. NO. COMP. FILE NAME THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY TO THE INTEREST OF THE COMPANY.



DRILL ø36 COUNTER BORE ø55
-35mm DEEP 8 HOLES EQUAL-
LY SPACED

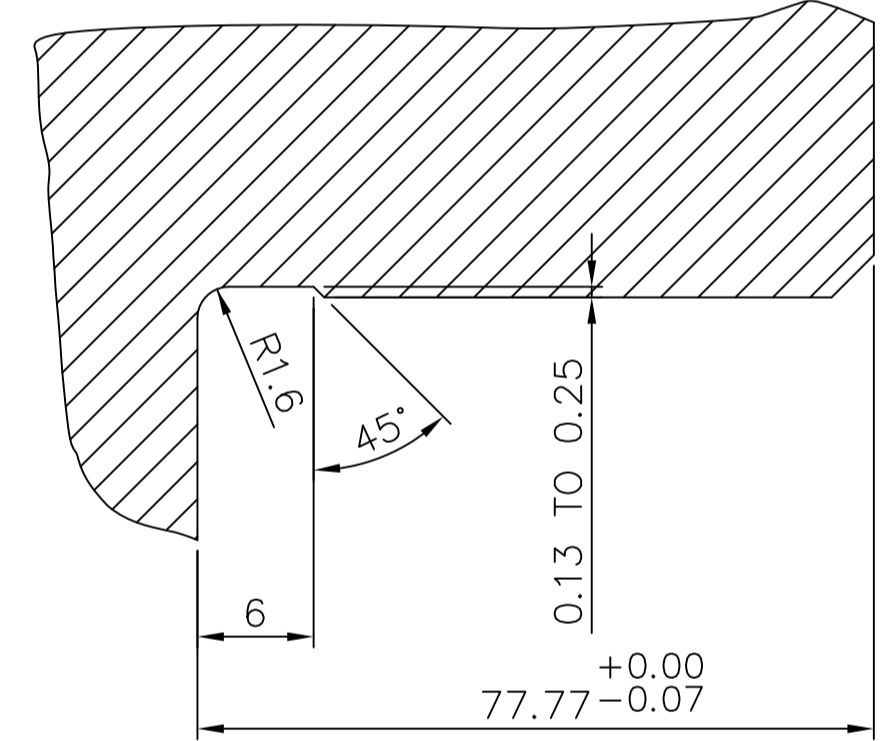
SANDBLAST INSIDE SURFACE NOT
MACHINED & COAT WITH
WHITE CRANKCASE SEALER.

P I R NO
VEN NO

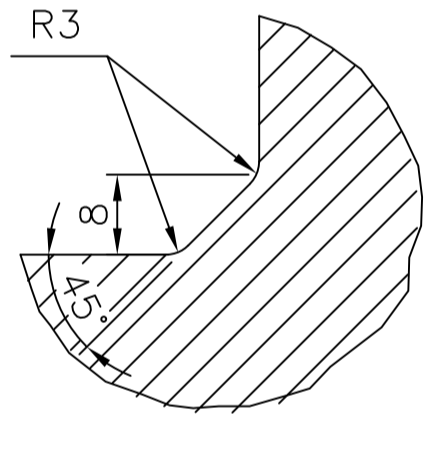


LOCATE HERE
SUPPLIER'S CODE
MELT NO
MAT. SPECN.
ATTESTATION DETAILS

CASTING DRG. NO: 30-FC-002-004
MATERIAL : CAST IRON

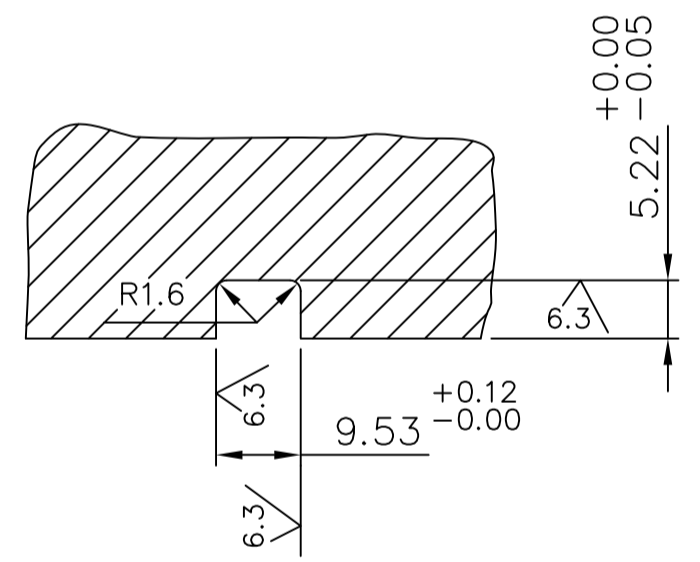


DETAIL-A



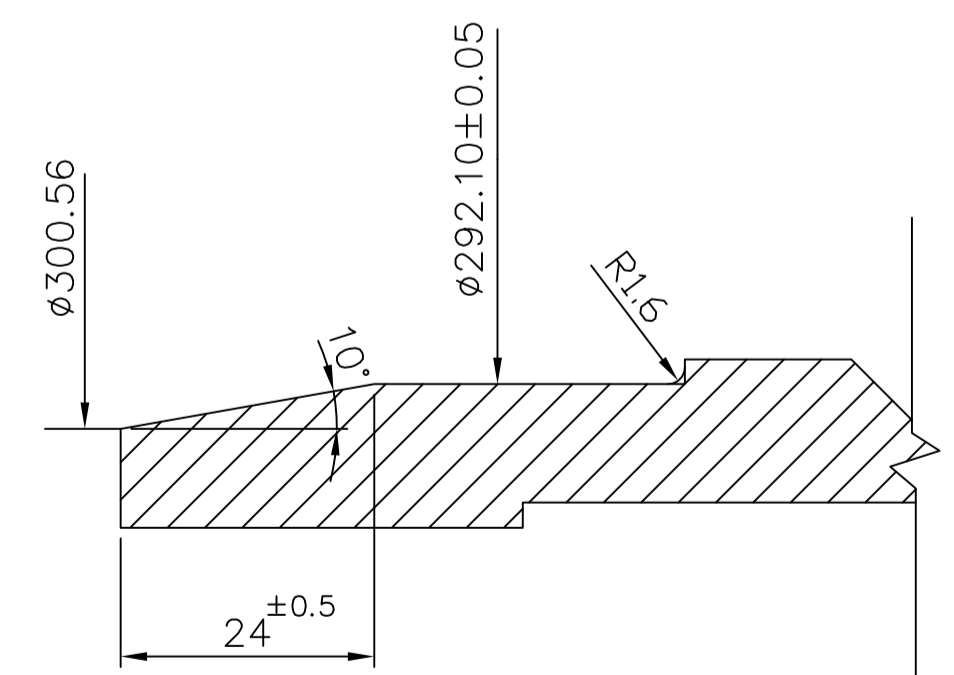
DETAIL-B

1:1



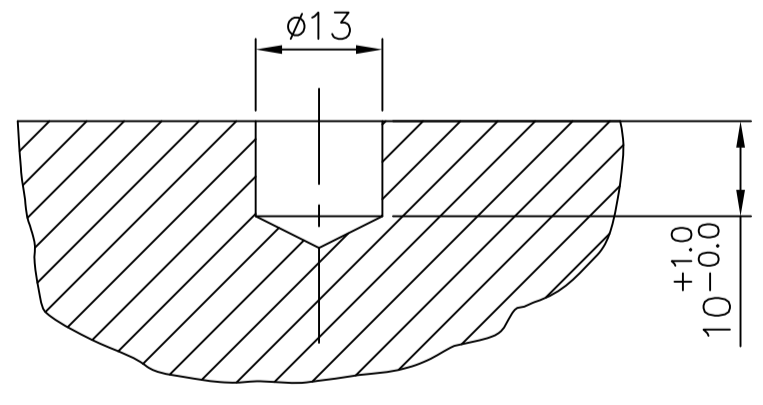
DETAIL-C

1:1



DETAIL-X

1:1



SECTION-DD

1:1

CASTING MUST WITHSTAND
HYDRO TEST OF 4KG/CM²
FOR 30 MINUTES WITH OUT LEAKAGE.
BREAK ALL SHARP EDGES.

ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	PATTERN NO. M-67-072	BA9110321144	195.00
01	CASTING					AA19703	1
						MATERIAL CODE	UNIT WT.
						MATERIAL SPECN.	QUANTITY

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

- REF. TO HYQ230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
76" BOWL MILL
MATERIAL ATTEST

DRN.	NDS	SIGN.	DATE	NO. OF VAR.
CHD.	S GHATGE		24.6.98	
APPD.	KMR		24.6.98	

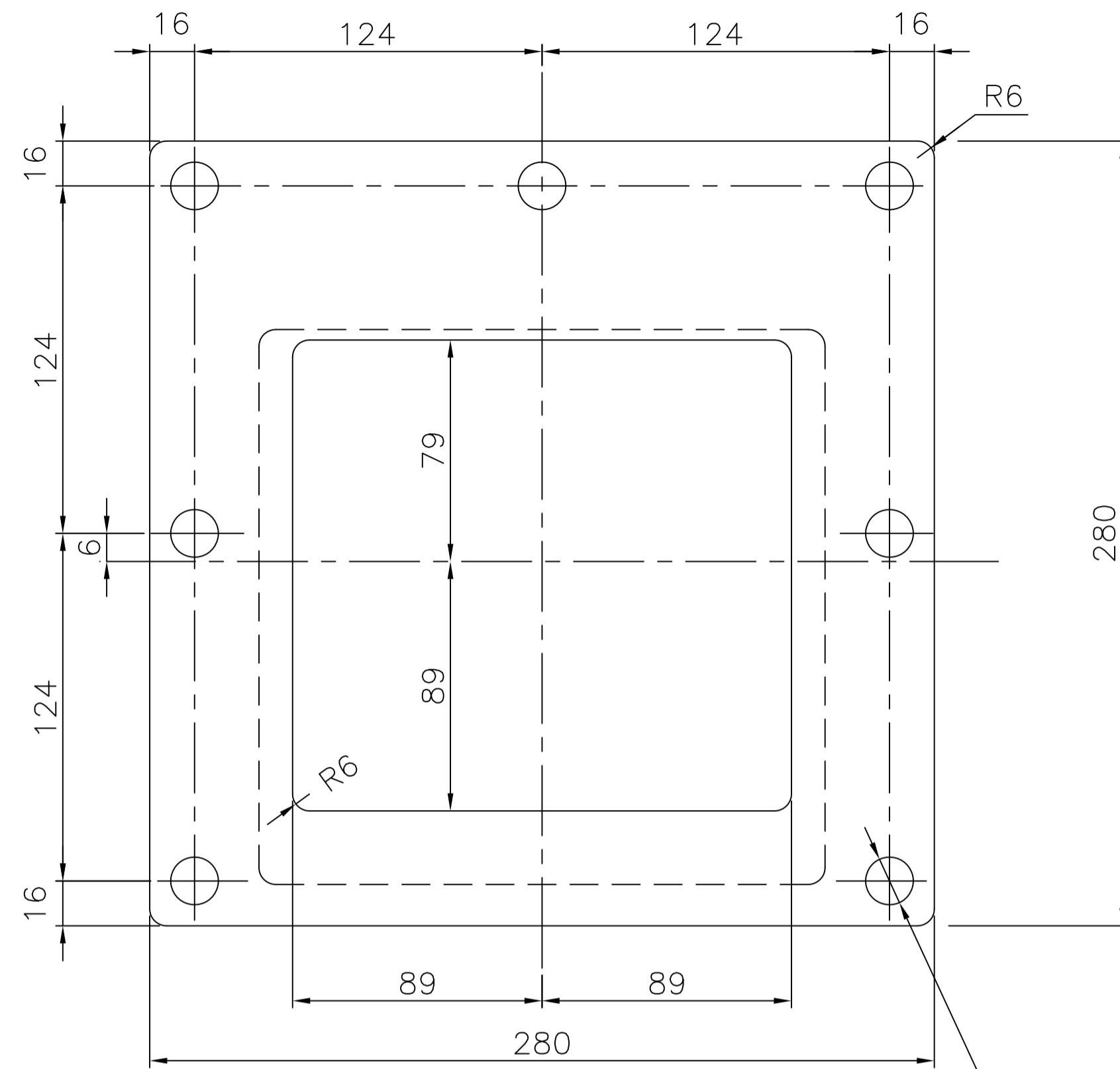
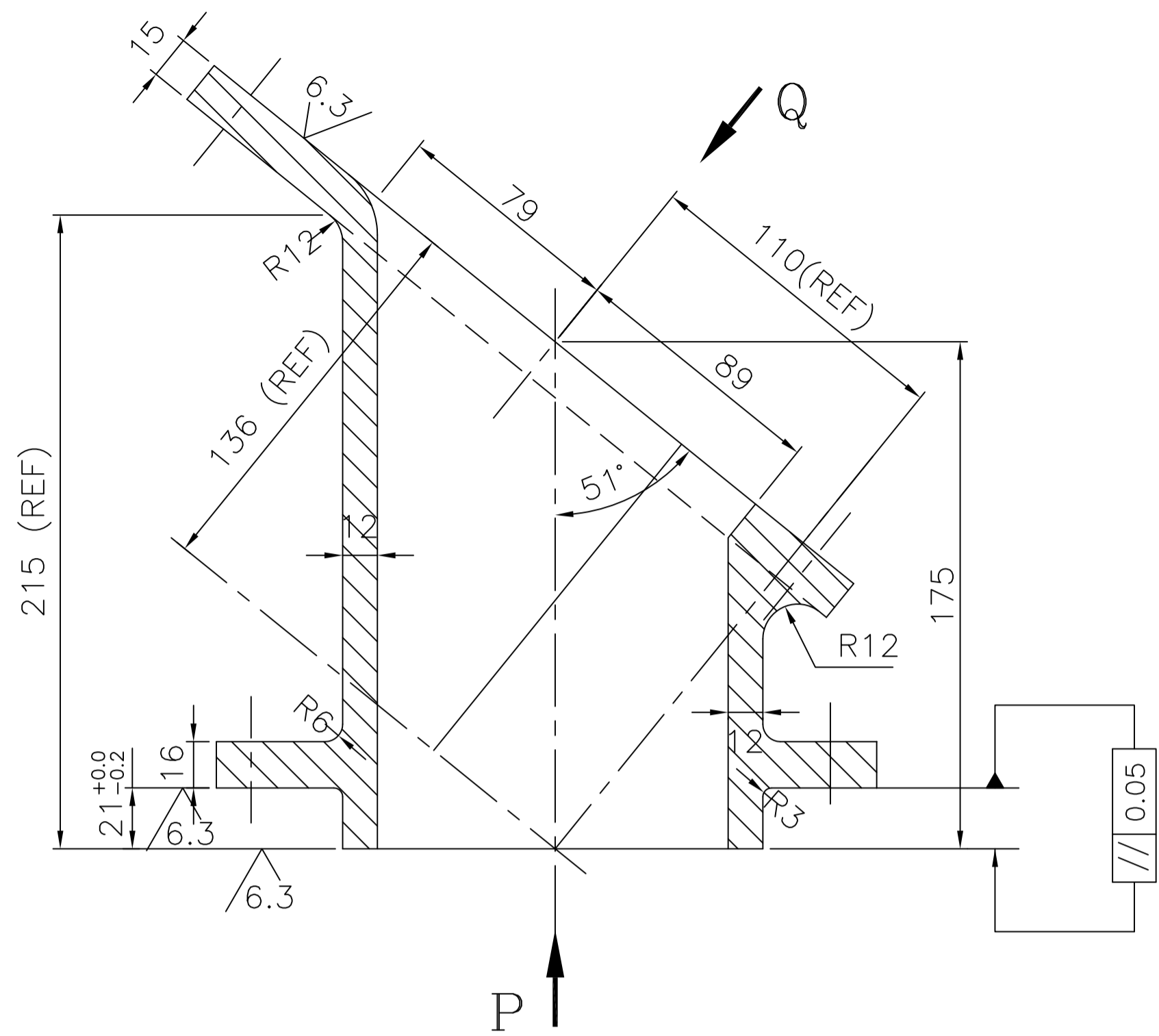
DEPT.	BMD	SCALE	WEIGHT(Kg)	REF. TO ASSY DRG.	ITEM NO.	NO. OF ITEMS
CODE	446	1:5 1:1,2:1	195.0	0-61-376-00007/01		

TITLE	DRAWING NO.	REV.
UPPER JOURNAL HOUSING	2-61-376-90004	08
SHEET NO.	NO OF SHEETS	

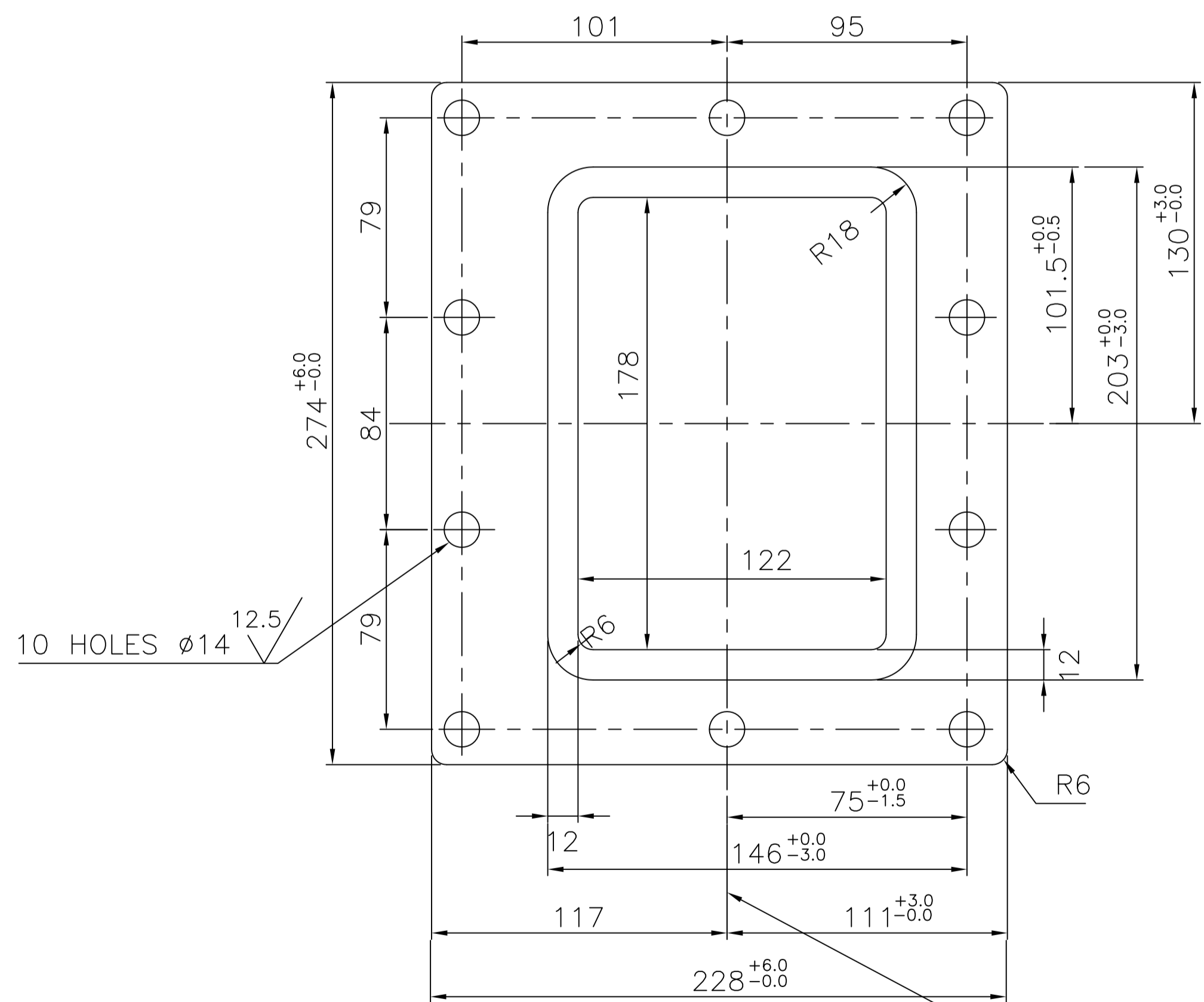
REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.
		CHECKED			08	26.9.06			07	25/6/98					
ZONE				ZONE		C'BORE ø55 WAS ø52.		ZONE		DWG REDRAWN INCORPORATING PREVIOUS REVISION. ø300.56 WAS ø303.20 CHAMFER 10° INTRODUCED ON DIA 300.56 DIMS. 24±0.5 AND 49±0.5 WERE 22 AND 51 RESPECTIVELY. DETAIL - X ADDED.					

SH. 01 OF 01 DRG. NO. 2-61-576-00057

~ / 12.5 / 6.3 /



NOTES:-
01. BREAK ALL SHARP EDGES & CORNERS UNLESS OTHERWISE SPECIFIED.



CASTING & HOLE PATTERN NOT SYMMETRICAL WITH BORE

ITEM NO.	CASTING	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	BA9110300007	22.00	
					AA19703		
					MATERIAL CODE	NET WT.	GROSS WT.
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT

NAME OF CUSTOMER/PROJECT

	DRN.	NAME	SIGN.	DATE	NO. OF VAR.
	CHD.	BHARAT HEAVY ELECTRICALS LIMITED	UNIC	24.1.97	NA
	APPD.	HYDERABAD	B.RAMANNA	99.3.3	

DEPT. PULV. ENGG. CODE 446	UNTO. DIMS. GR. 2/M/P	SCALE 1:4	WEIGHT (KG) 22.00	REF. TO ASSY DRG. 20-F-002-059	ITEM NO. NA	NO. OF ITEMS NA
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TITLE
TRAMP IRON SPOUT ADAPTER

CARD CODE	DRAWING NO. 2-61-576-00057	REV. 03
	SHEET NO. 01	NO OF SHEETS 01

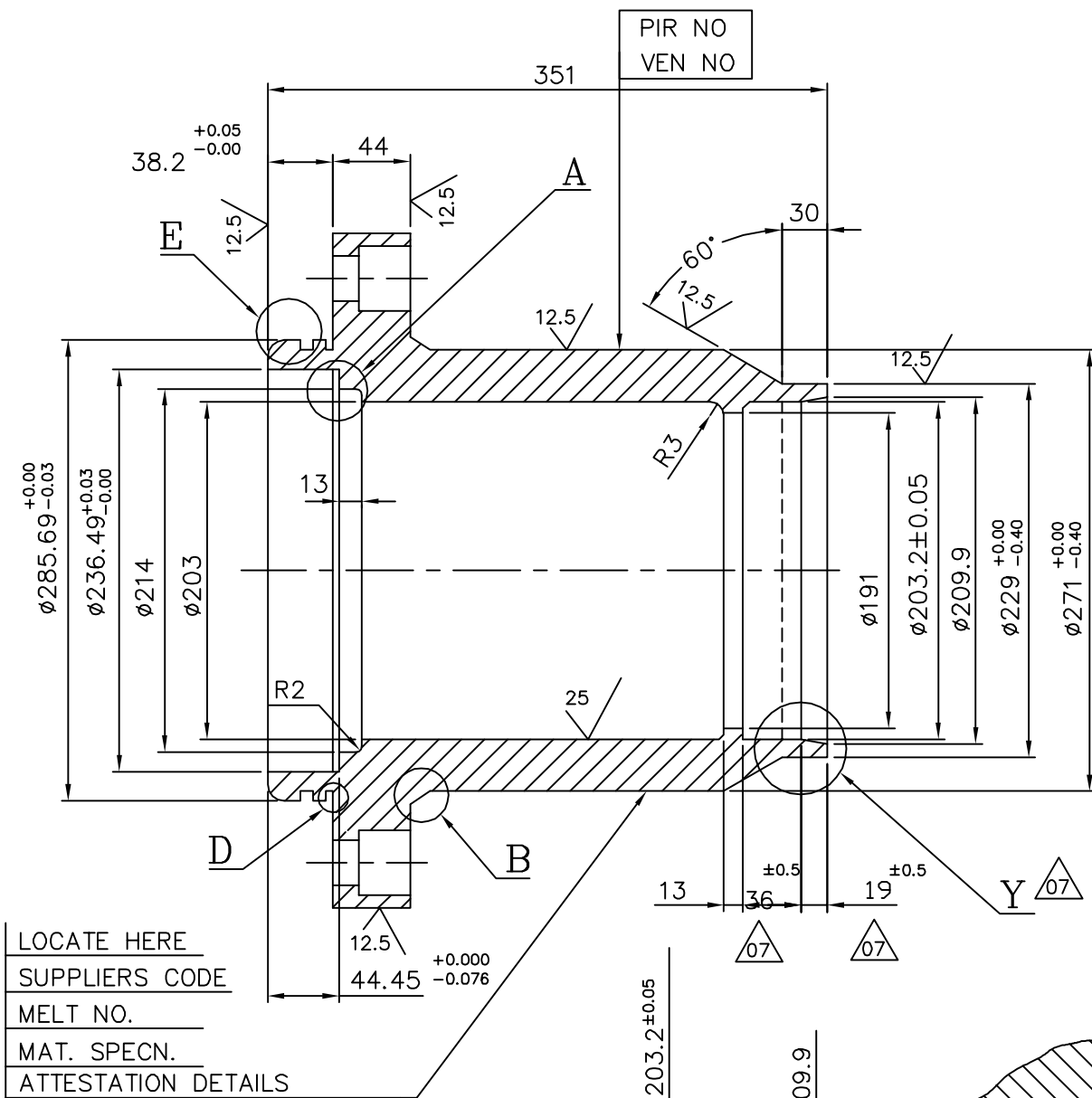
GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

REV.	DATE	ALTERED CHD.	APPD.	REV.	DATE	ALTERED CHD.	APPD.	REV.	DATE	ALTERED CHD.	APPD.
								03	99.03.03	UC	

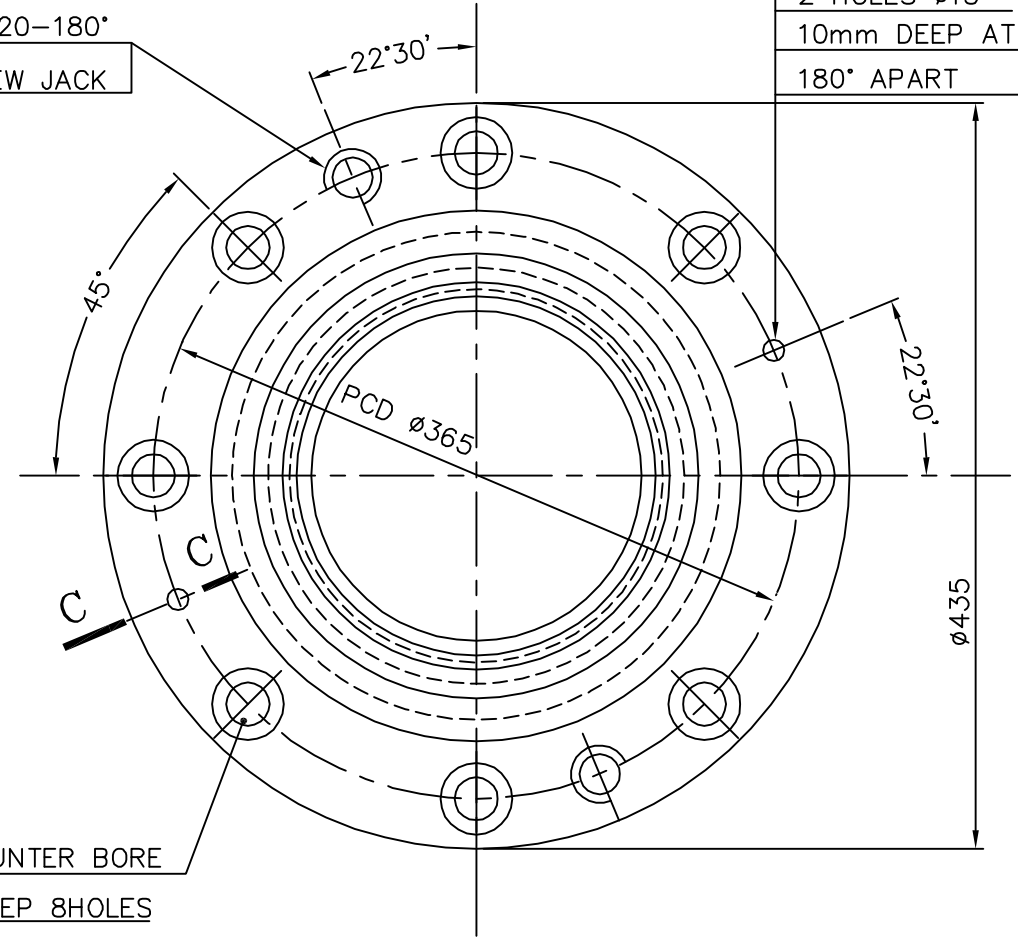
DRG REPLOTED.
DIMN 6 WAS 10, DIMN'S 130 & 150 DELETED
DIMN 89 SHOWN CORRECTLY

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 26100057.DWG THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

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.



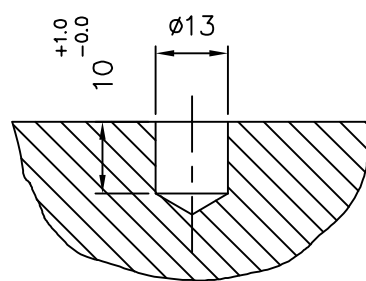
2 HOLES M20-180°
APART FOR SCREW JACK



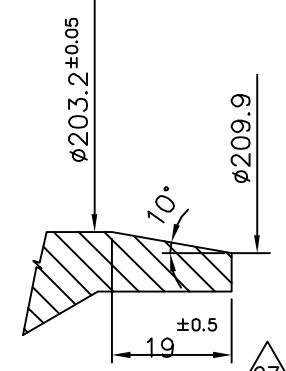
2 HOLES $\phi 13$
10mm DEEP AT
180° APART

DRILL $\phi 26$ -COUNTER BORE
 $\phi 40$ -28mm DEEP 8HOLES
EQUALLY SPACED.

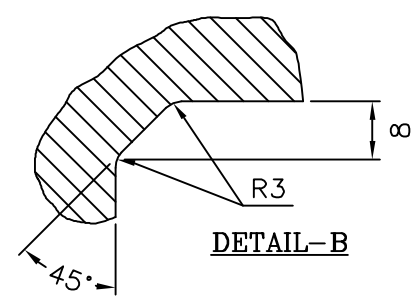
LOCATE HERE
SUPPLIERS CODE
MELT NO.
MAT. SPECN.
ATTESTATION DETAILS



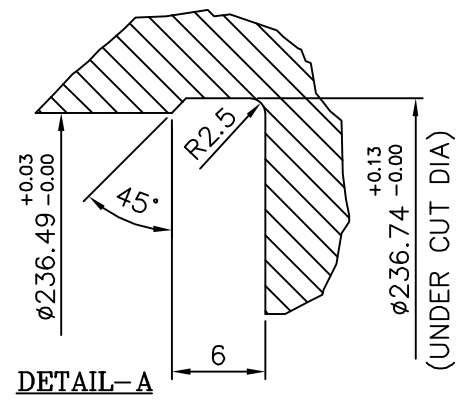
SECTION-CC



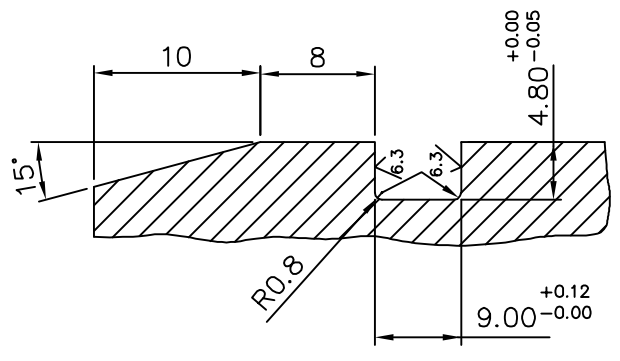
DETAIL-Y



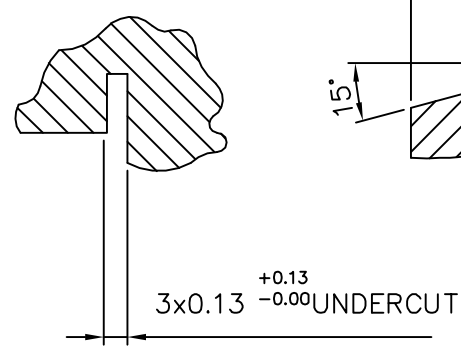
DETAIL-B



DETAIL-A



DETAIL-E



DETAIL-D

OLD PATTERN NO: 30F-002-206
NEW PATTERN NO: (REF) 3-60-360-00109
CASTING MUST WITHSTAND A HYDROTEST OF 4kg/cm² for
 $\phi 5$ MIN WITH OUT LEAKAGE

	BA9110321020		73.0		
	AA19703		1		
IT.NO	MATL CODE	A/C	UNIT	UNIT WT.	GS
VAR.	MATL SPECN			QTY.	ZONE
CARD TYPE-1					

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		MATERIAL ATTEST "60" BOWL MILL			
Bharat Heavy Electricals Ltd. HYDERABAD		DRN	NAME	SIGN	DATE
		CHD.			
		APPO			
DEPT.	GRADE OF UNTOL. DIM	SCALE	WEIGHT(KG)	REF. TO ASSY. DRG.	
446	ϕ /M/F	1:5	73.0	0-61-362-90008 0-60-360-00011	
TITLE			CARD CODE	DRAWING NO.	REV.
UPPER JOURNAL HOUSING				3-60-360-00109	07
				SHEET NO.	NO. OF SHEETS

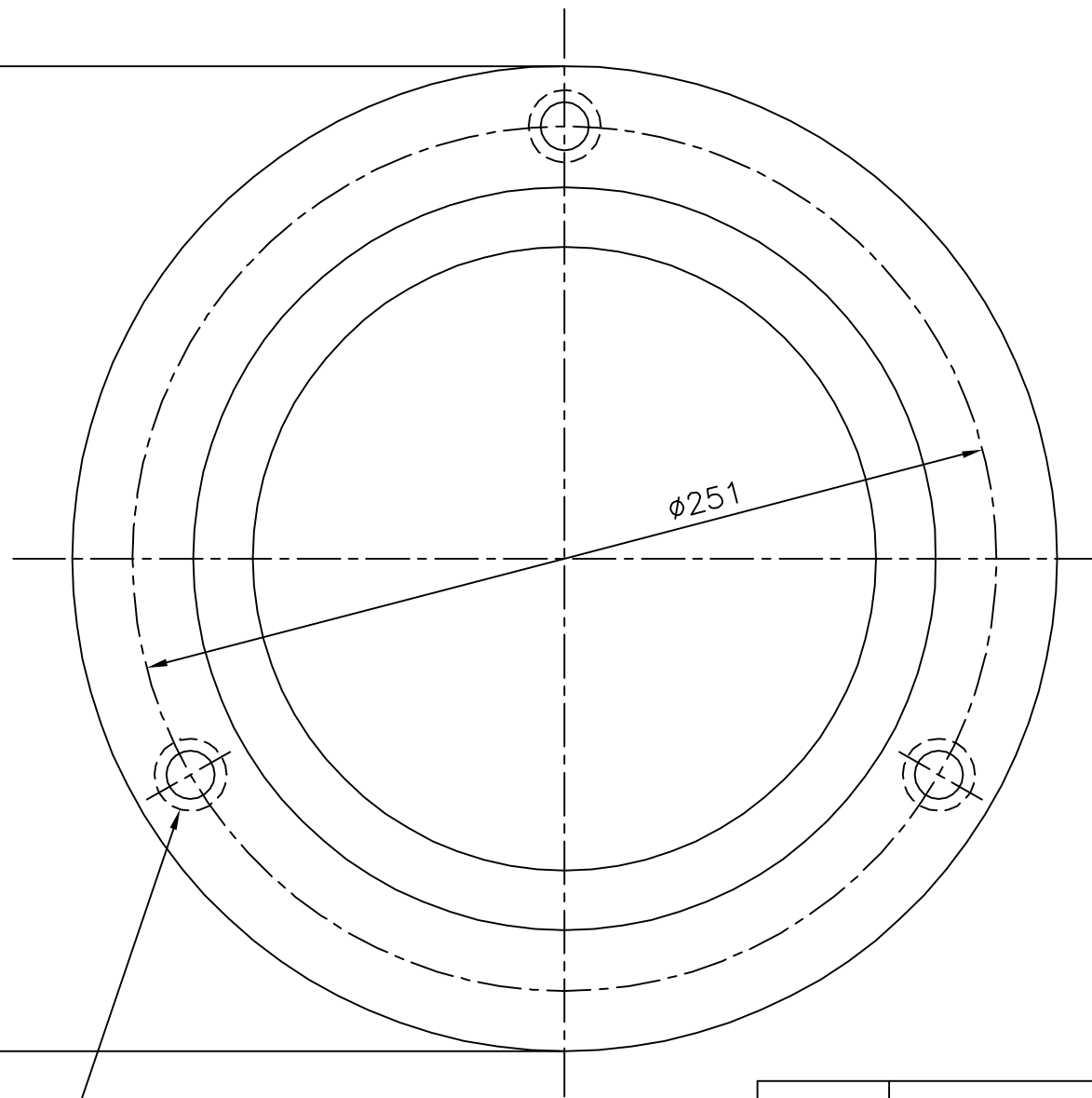
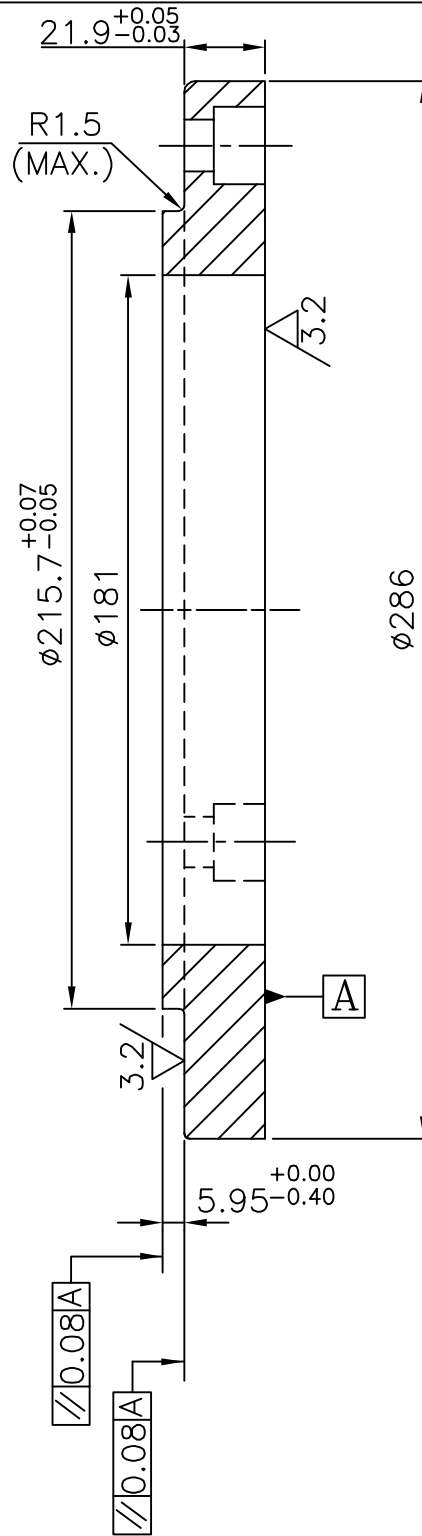
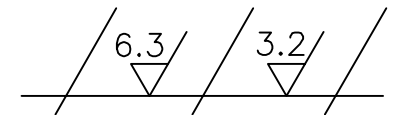
REV 07
ALTERED
CHECKED
DRG. REDRAWN INCORPORATING ALL PREVIOUS REVISIONS. $\phi 209.9$ WAS $\phi 206$. 10° CHAMFER ADDED ON DIA 203.2. DIMNS 36 \pm 0.5 AND 19 \pm 0.5 WERE 38 AND 17 RESPECTIVELY. DETAIL-Y ADDED.

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

SIGN. AND DATE REF. DRG. NO.

INVENTORY NO

DRG. NO. 3-61-000-19-3



3 HOLES $\phi 14$ DRILL THRU AND C' BORE
 $\phi 21$ TD 14MM DEEP EQUI. SPACED.
AS SHOWN

ITEM NO.	CASTING	STD.	DRAWING NO.	VAR. NO.	BA9110350012	7.000	
					AA19703		
					MATERIAL CODE	NET WT.	GROSS WT.
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

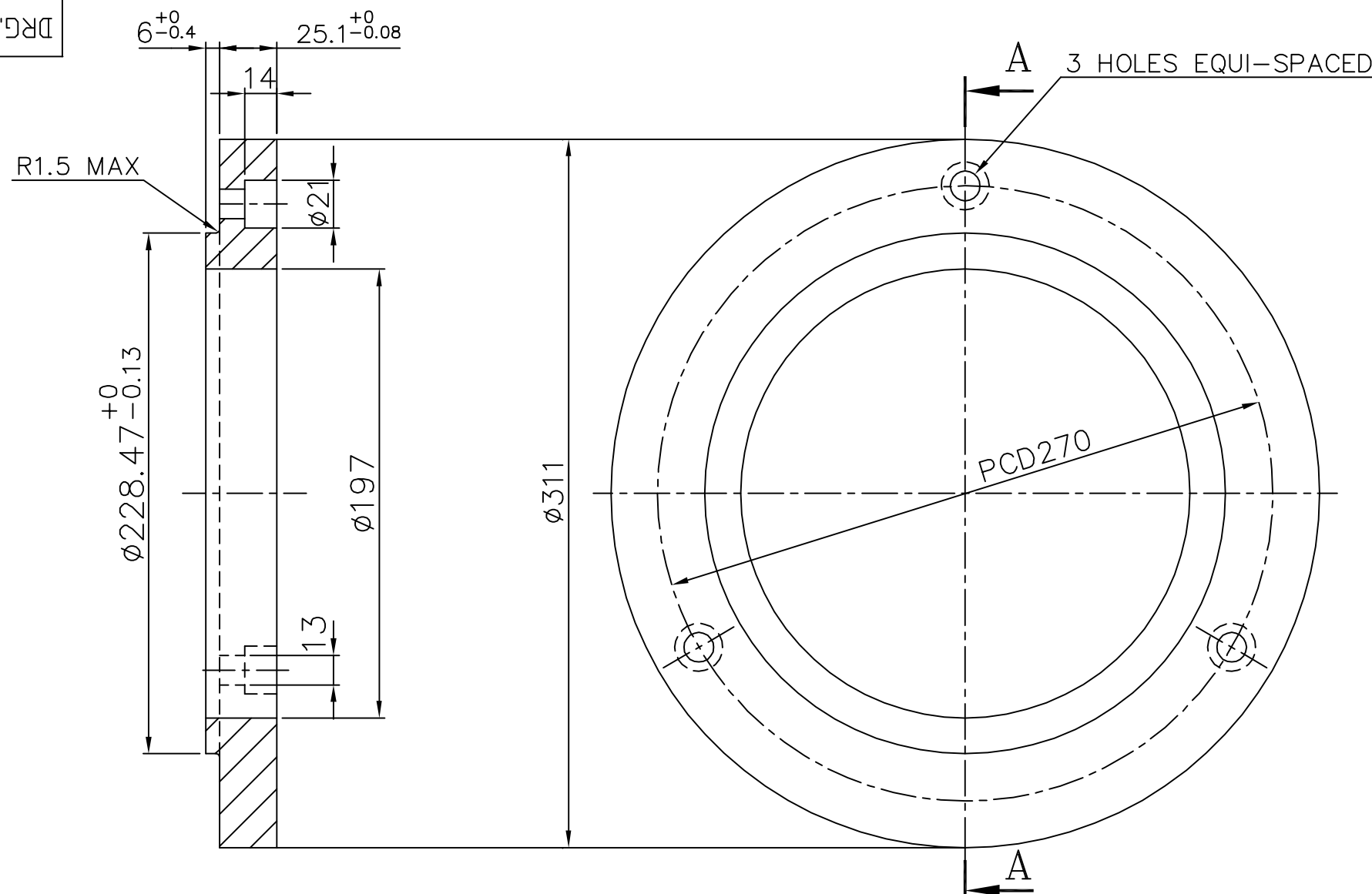
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		1003 XRP BOWL MILL				
BHARAT HEAVY ELECTRICALS LTD. HYDERABAD		DRN.	NAME	SIGN.	DATE	NO. OF VAR.
		CHD.	S.G	<i>[Signature]</i>	2.4.99	-NA-
		APPD.	K.M.RAO	<i>[Signature]</i>	2.4.99	
DEPT. PULV ENGG. CODE 446	UNTOL. DIMS. GR. ϕ /M/F	SCALE NTS	WEIGHT (KG) 7.000	REF. TO ASSY. DRG. B-101-00164-5 1-61-000-01233	ITEM NO. 05	NO. OF ITEMS -NA-
TITLE TRUNNION BUSHING RETAINER				DRAWING NO. 3-61-000-00523		REV. 01
			SHT. No 01	NO. OF SHT. 01		

REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD	01	2.4.99	CHD/APPD
ZONE			ZONE		DRAWING REDRAWN.

DRG. NO. 3-61-004-02324

6.3/



NOTES: -

- TOLERANCE UNLESS OTHERWISE NOTED:
CASTING=1.5
FRACTIONAL=0.4
- BREAK ALL SHARP EDGES AND CORNERS UNLESS OTHERWISE NOTED:

MACHINE ALL SURFACES TO 6.3/ UNLESS. OTHERWISE SHOWN ROUGHNESS RATINGS SHOWN ARE MAXIMUM.

SECTION-AA

		CASTING				BA9110350039	9.500	
						AA19703		1
UNIT OF QTY	VAR. No.	DESCRIPTION	ITEM No.	STD	DRAWING NO.	MATERIAL CODE	NET WT.	GROSS WT.
R.M.UNIT						MATERIAL SPECN.	QUANTITY	

INVENTORY NO. REF.DRG.NO. B-110-00316/01 COMP. FILE NAME 36102324.DWG

REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHECKED	01	23.5.99	CHECKED
		APPD.			APPD.
DRAWING REDRAWN IN AUTOCAD.					

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

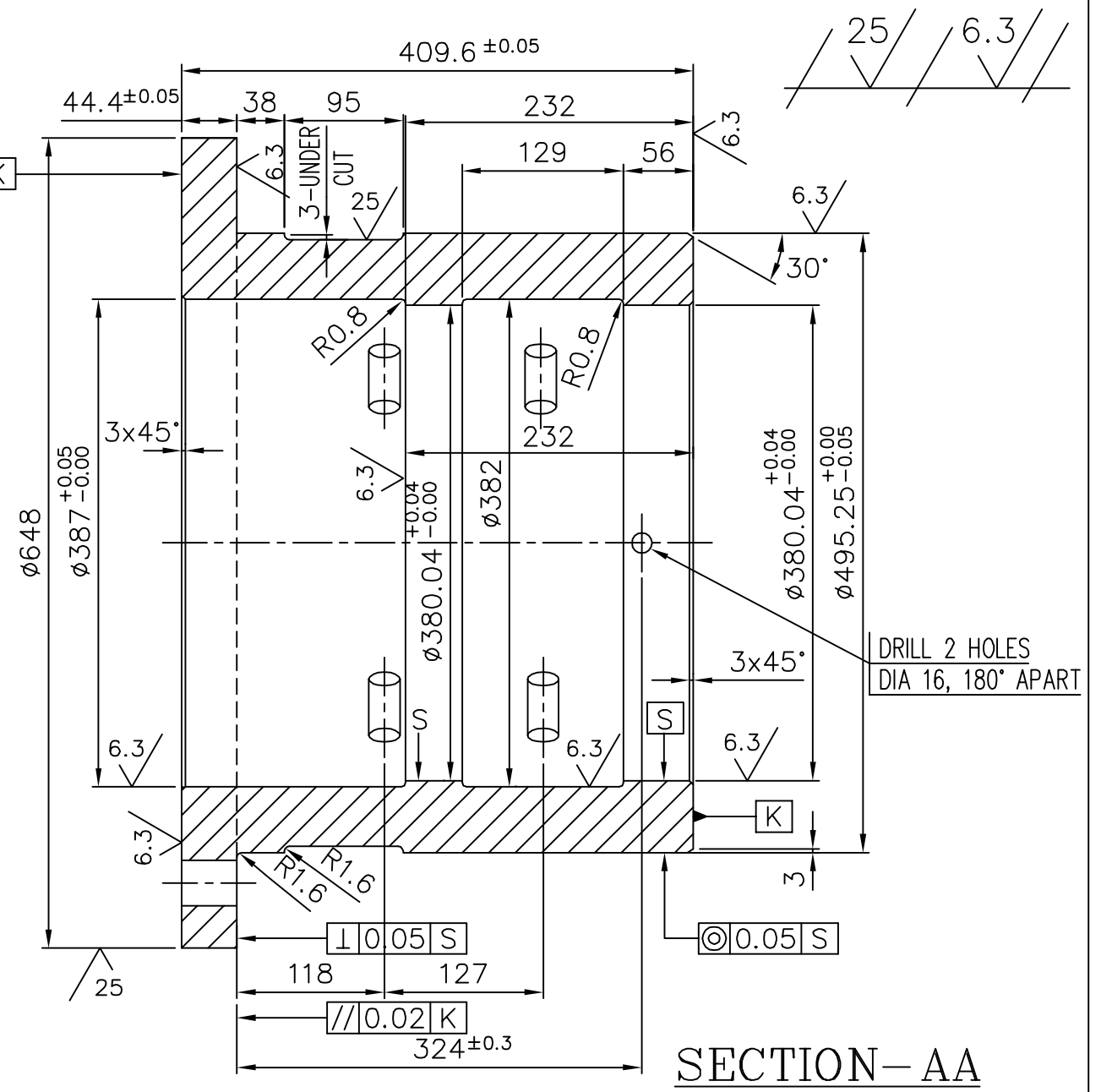
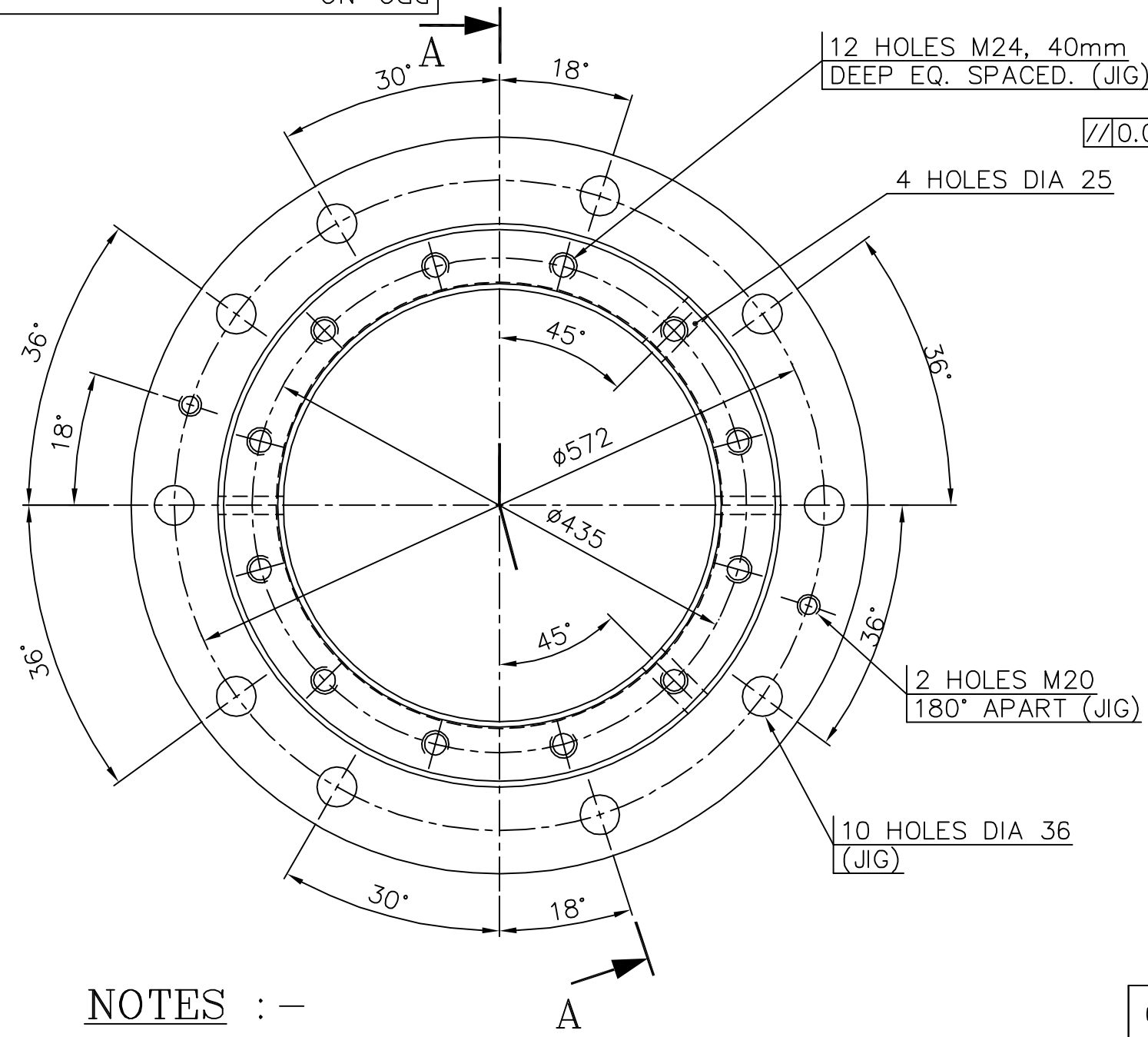
- REF.TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		1043 R.P. BOWL MILL CHANDRAPUR-500MW			
Bharat Heavy Electricals Ltd. Hyderabad		DRN.	J.C.S	SIGN.	DATE
		CHD.	E M A		22.05.99
		APPD.	K.M.RAO		22.05.99
DEPT.	BMD	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.
CODE	446	1:2.5	9.500	0-61-004-00571	09
TITLE			DRAWING NO.		REV.
TRUNNION BUSH RETAINER			3-61-004-02324		01
SHEET NO. 01		NO OF SHEETS 01			

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG. NO. 3-61-176-00005



NOTES :-

- REMOVE ALL SHARP EDGES.
- BEFORE UNLOADING THE JOB FROM THE MACHINE, PARALLELITY OF THE SURFACES SHOULD BE CHECKED.

01	THRUST BRG. HSG. CASTING	BA9110321101	303.00
ITEM NO	DESCRIPTION	DRAWING NO	UNIT WT.
			QTY.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

763 THRU 1003 XRP BOWL MILLS

BHEL	BHARAT HEAVY ELECTRICALS LIMITED. HYDERABAD	DRN. E.M.ASHOK	SIGN.	DATE 12-07-03	NO. OF VAR. 01
		CHD. AMAN		12-07-03	
		APPD. S.G		12-07-03	

DEPT. PULV. ENGG	GRADE OF TOL. DIM. φ/M/IT	SCALE 1:5	WEIGHT (KG) 303.00	REF. TO ASSY DRG. -----	ITEM NO. ---	NO. OF ITEMS ---
CODE 446						
TITLE THRUST BRG. HOUSING			CARD CODE N.A.	DRAWING NO. 3-61-176-00005		REV. 08
				SHEET NO. 01	NO OF SHEETS 01	

361005.DWG/1135

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. 30-F-002-127 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

REV.	DATE	ALTERED	CHECKED	APPD.	REV.	DATE	ALTERED	CHECKED	APPD.	REV.	DATE	ALTERED	CHECKED	APPD.
					08	12-07-03								
ZONE					ZONE					ZONE		DRAWING REDRAWN INCORPORATING ALL PREVIOUS REVISIONS.		

(ALL DIMENSIONS ARE IN mm)

FIRST ANGLE PROJECTION

90000-921-19-3 ON DRG

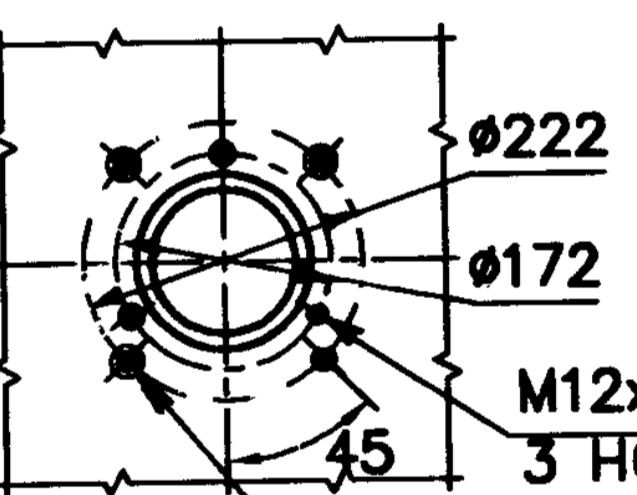
2CORED SLOTS
30 MM WIDTH AS SHOWN
CAST SMOOTH REFER NOTES

25/12.5/6.3/

10-HOLES Ø36

DRILL THROUGH 2 HOLES
Ø21 CTR BORE TO Ø31.20
DEEP 19MM (JIG)
180 APART

12 HOLES Ø27
30 DEEP EQ SPACED MAIN-
TAIN UNIFORM DEPTH EACH
PIECE WITHIN ±0.15 (JIG)
USE FLAT BOTTOM DRILL.

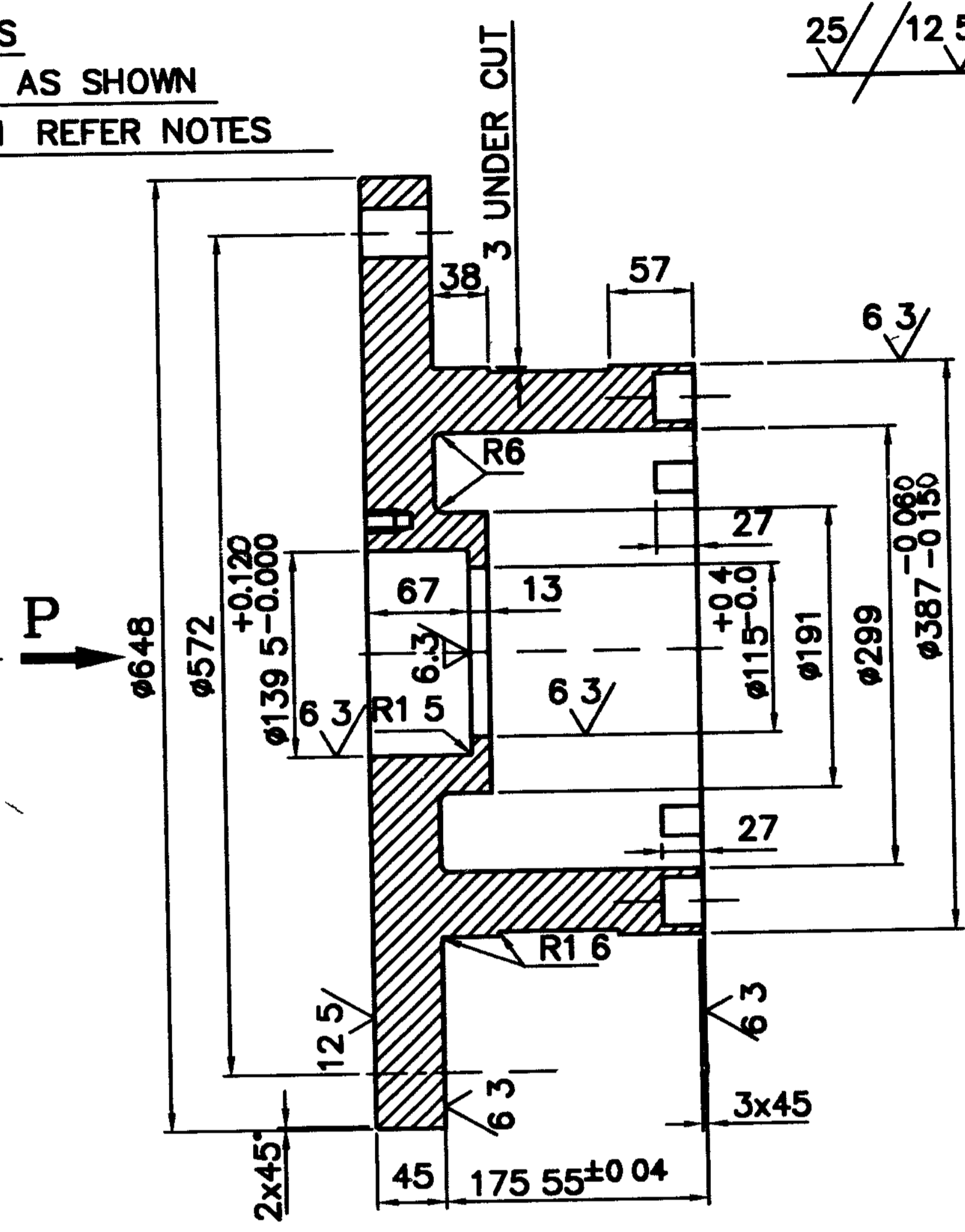
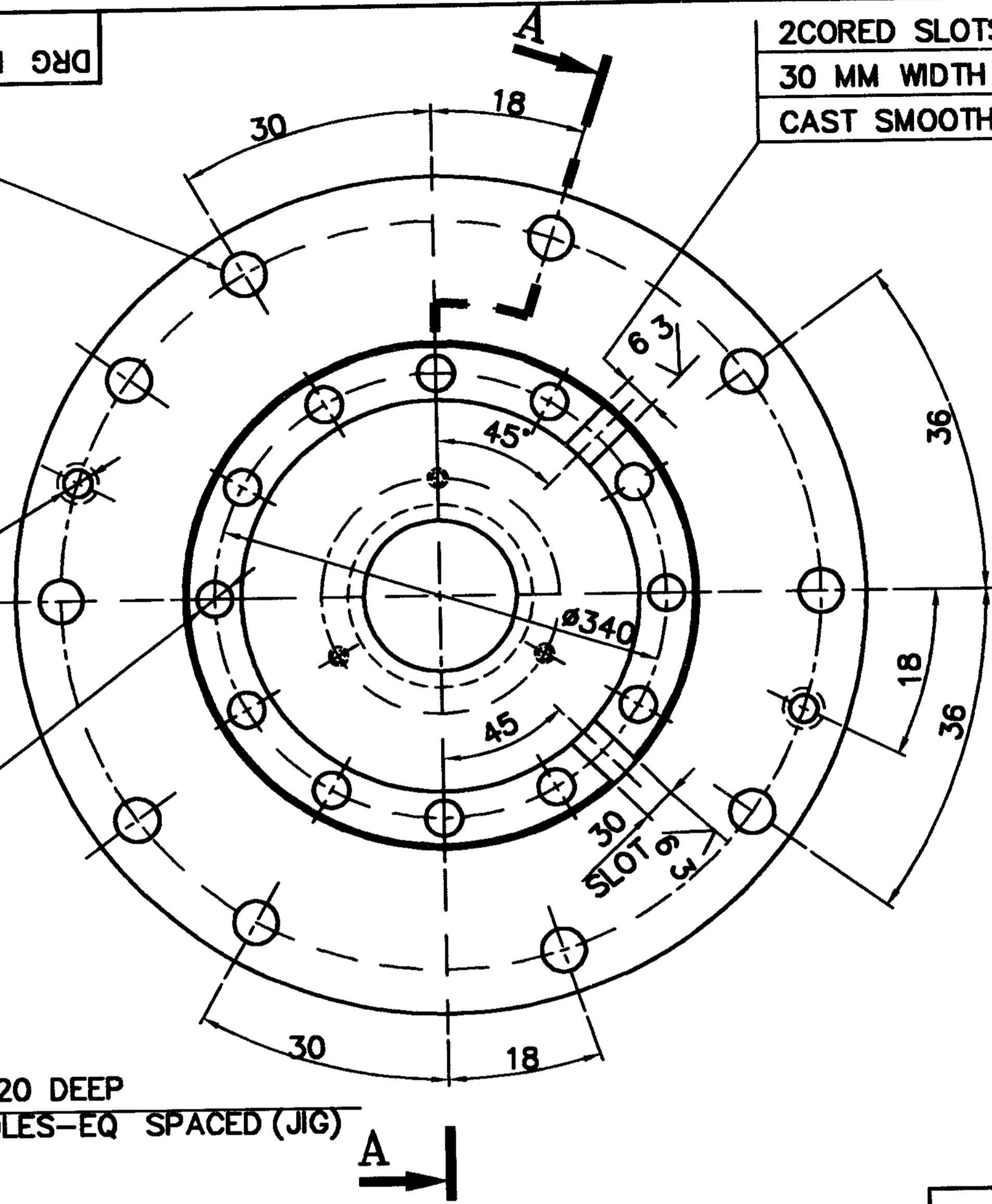


VIEW-P
SCALE-1.10

TAP DRILL MUST NOT BREAK THROUGH
4 HOLES M12x25 DEEP EQ SPACED (JIG)

NOTES.

- 1 BREAK ALL SHARP EDGES
- 2 SHOT BLAST ALL SURFACES AT FOUNDRY INSIDE SURFACES MUST BE 100% FREE FROM SCALE & SAND ALL INSIDE UNMACHINED SURFACES MUST BE COATED WITH ARMSTRONG WHITE CRANK CASE SEALER (SYNTHETIC CASTING SEALER)
- 3 BEFORE UNLOADING THE JOB FROM THE MACHINE PARALLELITY OF THE SURFACES MUST BE CHECKED



SECTION - AA

01	CASTING		BA9110307010	181 00
			AA19703	1
ITEM NO	DESCRIPTION	DRAWING NO	MATERIAL CODE	UNIT WT
			MATERIAL SPEC.	QTY.

TYPE OF PRODUCT 763 783 803 963 983 1003
OR
NAME OF CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LIMITED.		DRN	ACS/P/AVAN	SIGN	DATE	NO OF
	HYDERABAD		CH	P V RAO	<i>P V RAO</i>	06.12.96	VAR
			APPD	G KISTAIAH	<i>G KISTAIAH</i>	06.12.96	01

REV	DATE	ALTERED	CHECKE	APP	REV	ATE	ALTERE	C ECKED	APPD	REV	ATE	ALTERED	C ECKED	APPD
					07	6.12.96	<i>Paran</i>	<i>P V RAO</i>	<i>G KISTAIAH</i>					

DEPT	GRADE OF	SCALE	WEIGHT (KG)	REF TO ASSY DRG.	TEM	NO OF
PULV.ENGG	TOL.DIM.	1 5	181 00	---	NO	ITEMS
CODE						
446						
TITLE			CARD	DRAWING NO		REV
THRUST BRG HSG CAP			CODE	3-61-176-00006		07
				SHEET NO 01		NO OF SHEETS 01

361006 DWG/1069

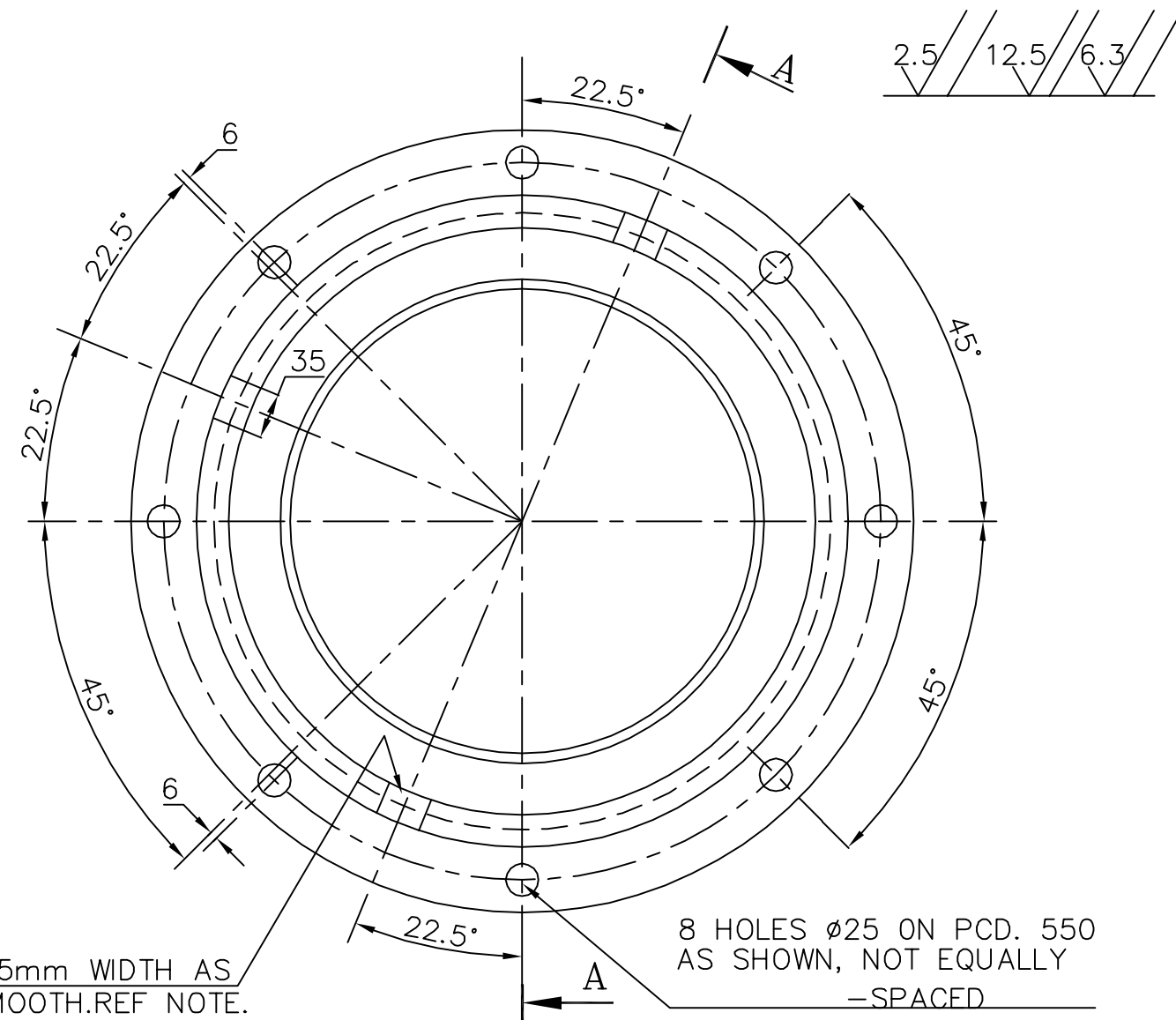
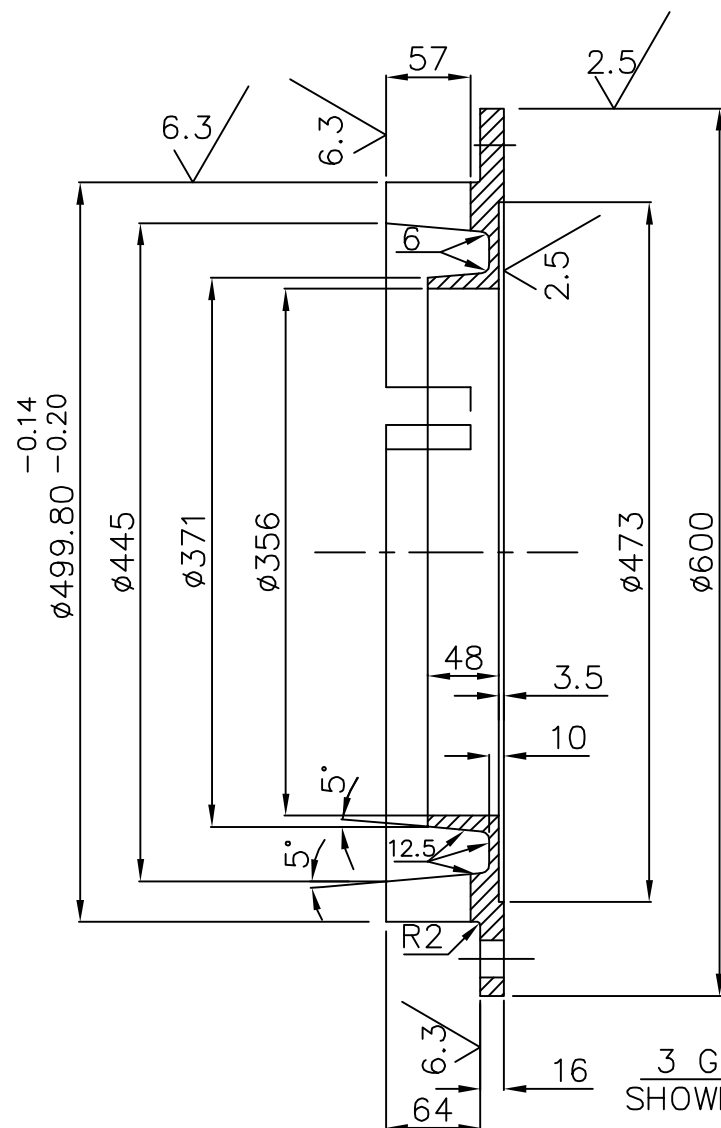
PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

1A3 1A4

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG.NO. 3-61-176-00012



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.

36100012.dwg
FILE NAME

REF. DRG. NO.

INVENTORY NO.

REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD.	05	13.6.06	CHD. AMAN
		APPD.			APPD. SG
ZONE			ZONE		DRILL JIG DELETED.

01	CASTING	PATTERN NO. M-67-052			BA9110306765	36.00	
					AA19703		1
ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.
						QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
763 XRP BOWL MILL

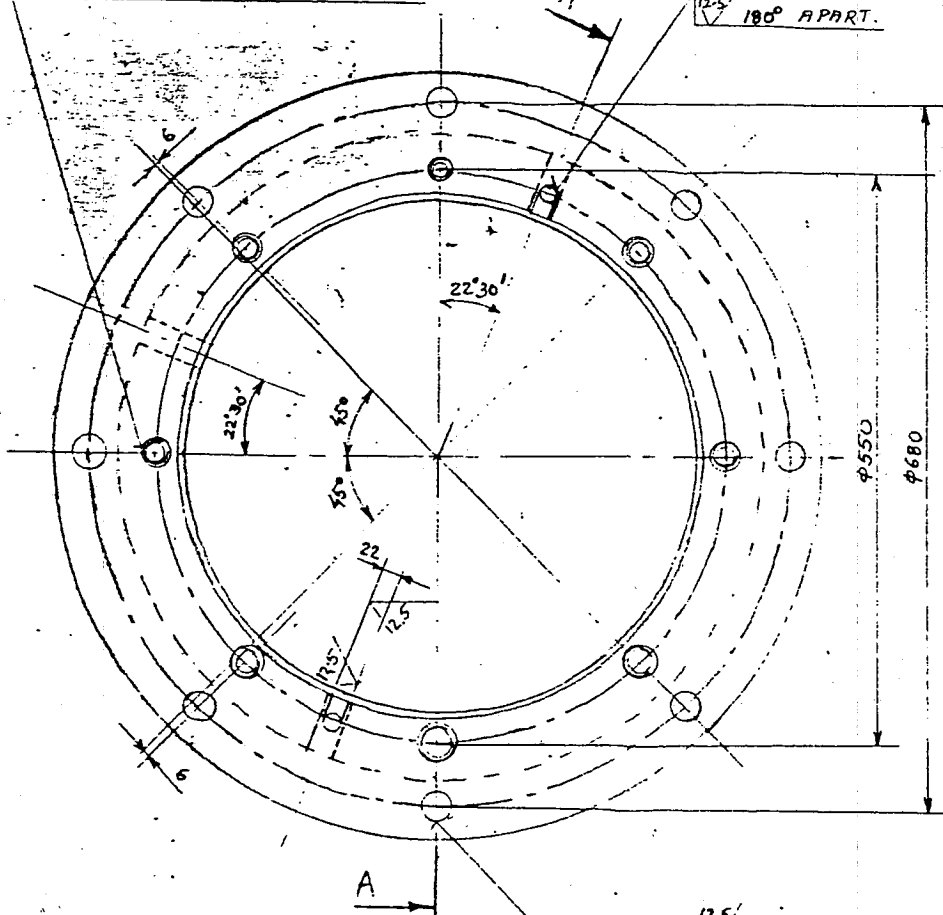


BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

DEPT. PULV ENGG.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO. OF ITEMS
CODE 446	1:5	36.00	06118000144	125	-
TITLE			DRAWING NO.	REV.	
OIL COLLECTOR			3-61-176-00012	05	
SHEET NO.		NO OF SHEETS			

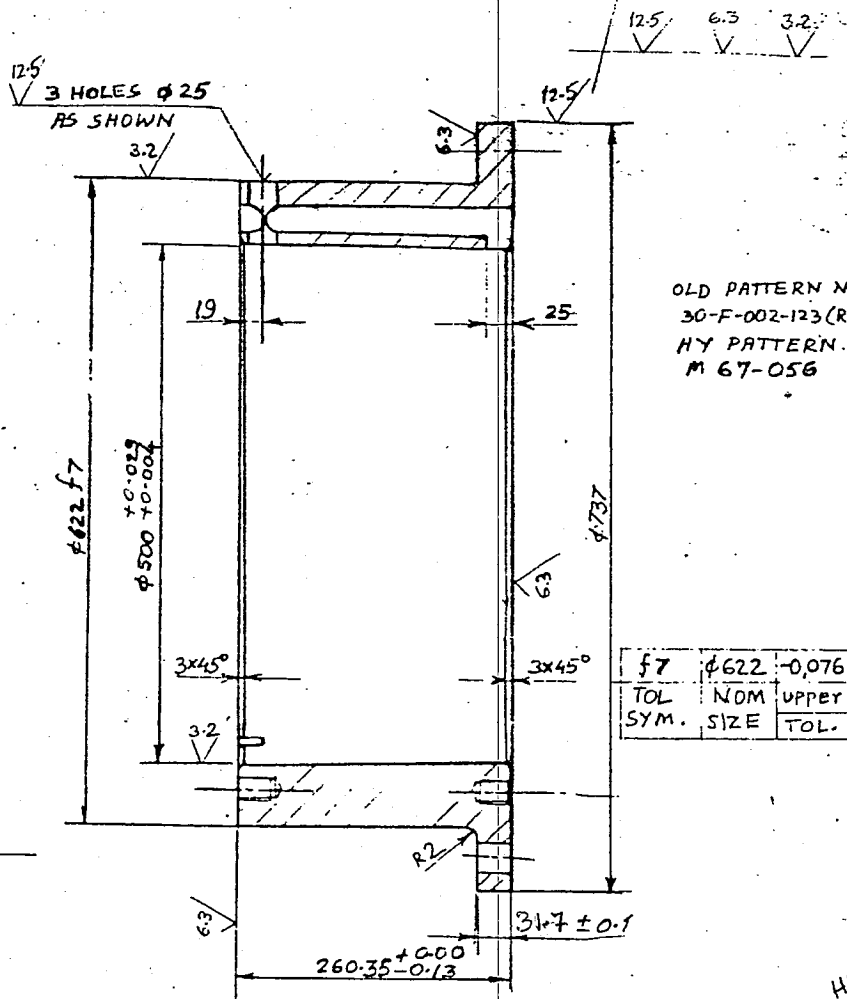
3 HOLES M24 - 35 mm DEEP ON BOTH SIDES NOT EQUALLY SPACED EACH SIDE

2 HOLES THROUGH $\phi 22$ 12.5° 180° APART.



8 HOLES $\phi 31$ 12.5° NOT EQUALLY SPACED 2 HOLES OFFSET

BREAK ALL SHARP EDGES
REFER CASTING DRG. NO. 90-F-002-245



OLD PATTERN NO 30-F-002-123 (REF.)
HY PATTERN NO M 67-056

f7	$\phi 622$	-0.076	-0.146
TOL SYM.	NOM SIZE	UPPER TOL.	LOWER TOL.

HY-158

JS 210 G, 25	BA9110321128	249	40	UPPER BEARING HOUSING
	AA19703			
	MATL CODE	UNIT WT. (KG.)		DESCRIPTION
	MATL. SPEC.	NO OFF		
BHARAT HEAVY ELECTRICALS LTD.				DRN
HEAVY EQUIPMENT REPAIR PLANT				CHD S.C. Rai
SHIVPUR VARANASI				APPD. S.C. Rai
				DATE 12.07.94
BHEL	UPPER BRG. HOUSING		3-61-176-00023/03	

REV 03	DATE 29.3.80	REV 02	DATE 19.10.79	REV 01	DATE 19.10.79
MATL. SPECN WAS C.I. A48-CL30. M.C. WAS 92/005/325		GROOVE DIMENSION 22 CORRECTED		2 X 45° CHAMFER ADDED	

Mooler Copy

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG.NO. 3-61-276-00042

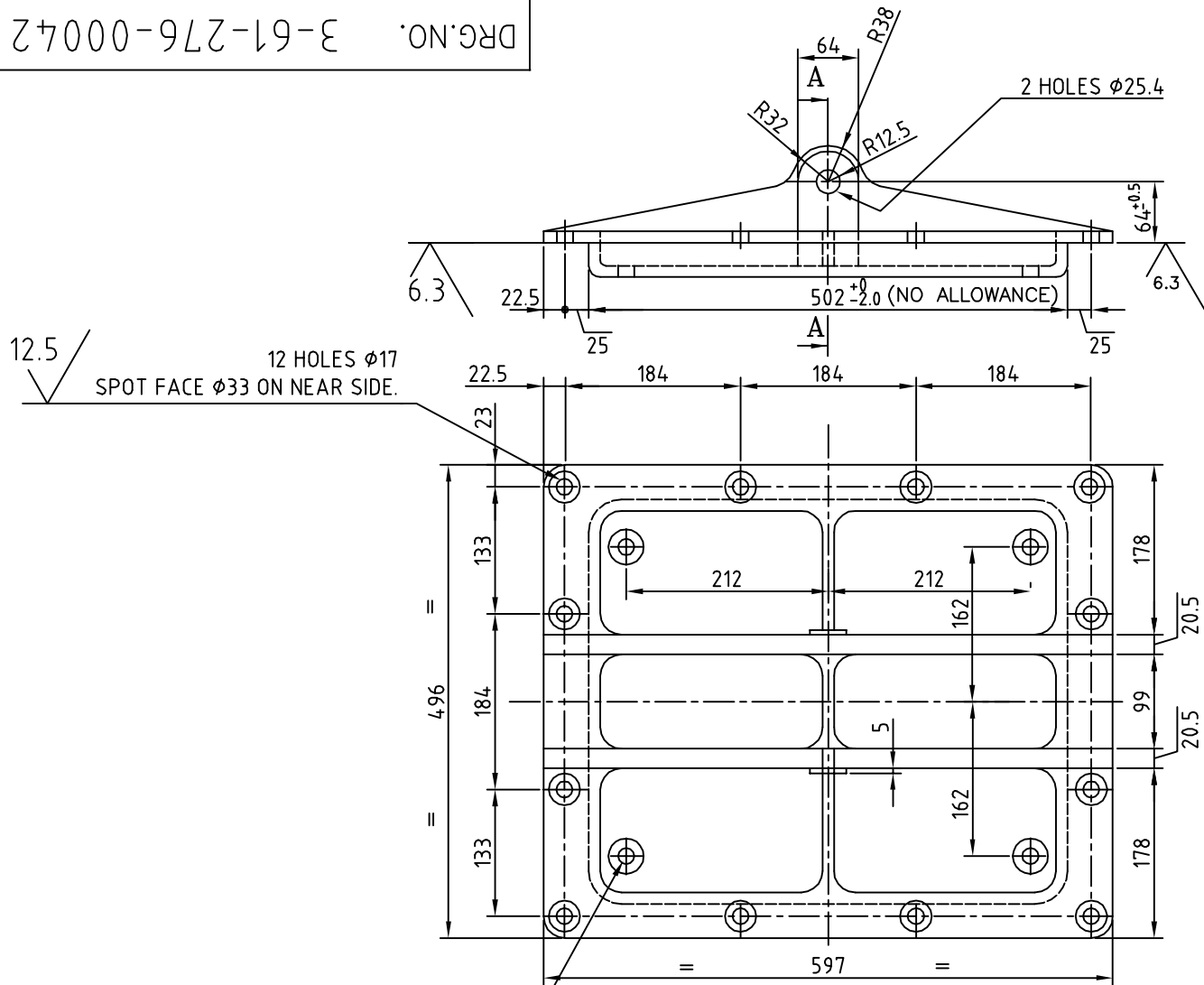
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

36100042

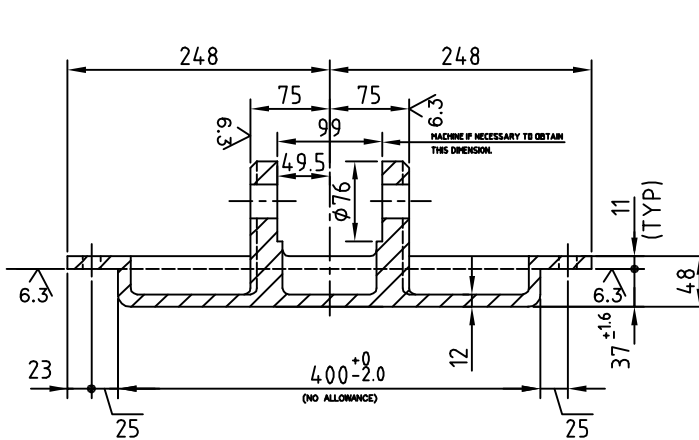
FILE NAME

REF.DRG.NO.

INVENTORY NO.



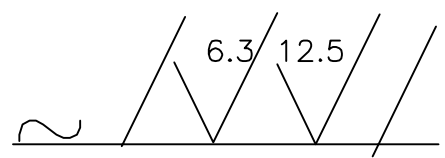
4 HOLES φ17 SPOT FACE φ48 ON NEAR SIDE.



SECTION-AA

NOTE:

1. PATTERN No.M-67-063
2. THIS IS A FINISH MACHINED DRAWING. CASTING SHALL BE SUPPLIED IN ROUGH MACHINED CONDITION WITH 5mm ALLOWANCE ON ALL MACHINED SURFACES.
3. BREAK ALL SHARP EDGES.



ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.
01	CASTING				BA9110209000	29.50	
					AA19702	1	
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

1. REF.TO HY0230261 FOR UNSPECIFIED TOLERANCES.
2. CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
3. INTERNAL M/CD CORNER RADII 1 TO 0.7.
4. THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT **763,783,803,883,963,983&1003 BOWL MILLS**

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD	NAME	SIGN.	DATE	NO.OF VAR.
	DRN. E.M.ASHOK		03-09-03	
	CHD. AMAN/NDS	<i>[Signature]</i>	03-09-03	
APPD. S GHATGE	<i>[Signature]</i>	05-01-04		

DEPT. PULVE.ENGG	SCALE 1:2	WEIGHT (KG) 29.5	REF. TO ASSY DRG. 2.61.288.02089	ITEM NO. 01	NO.OF ITEMS 18
CODE 446					

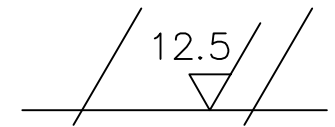
TITLE MILL SIDE INSPECTION DOOR	DRAWING NO. 3-61-276-00042	REV. 06
SHEET NO. 01	NO OF SHEETS 01	

REV. 06	DATE 3.9.03	ALTERED CHD.	APPD.	E.M.ASHOK
DRG REDRAWN ON AUTOCAD INCORPORATING ALL PREVIOUS REVISIONS.				

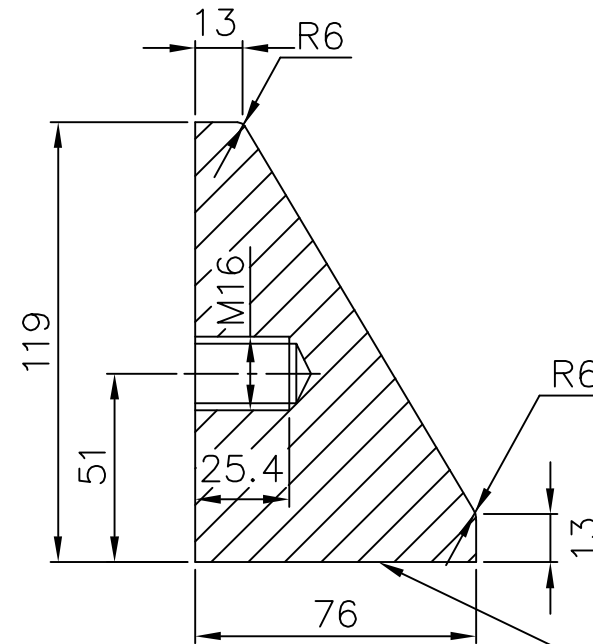
INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 36100046.DWG/1328 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

WELD SYMBOL	TYPE OF ELECTRODE	LENGTH OF WELD
3 ∇	E44 RNX	0.08M

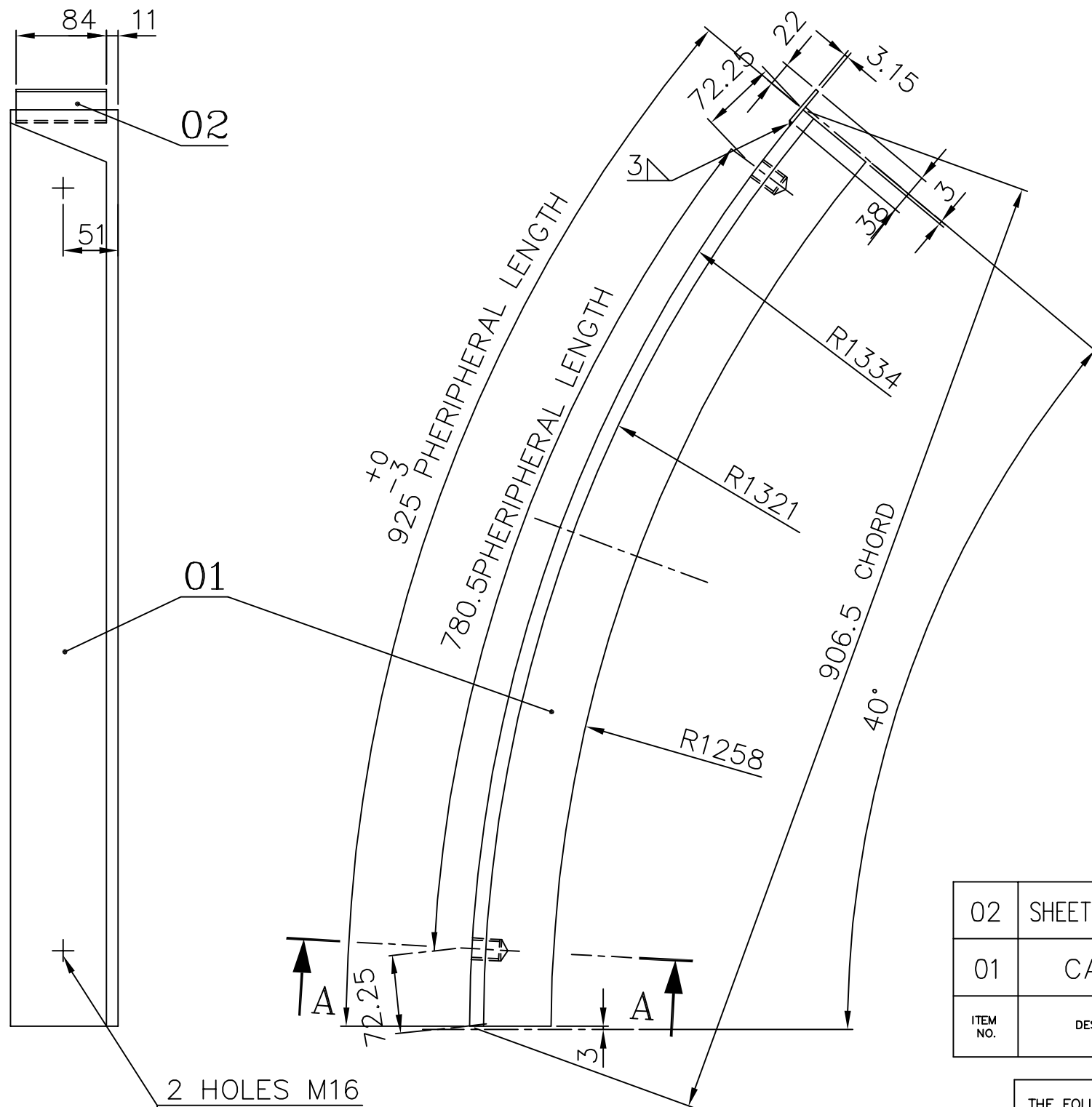
WPS: WE006



12.5 MACHINE ∇ IF NECESSARY



SECTION-AA



2 HOLES M16
25.4MM DEEP

ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT.	GROSS WT.
02	SHEET 3.15x38x84				AA1011711133		0.08
					AA10111		1
01	CASTING				BA9110233024		42.30
					AA19702		1
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT

NAME OF CUSTOMER/PROJECT

DRN.	NAME	SIGN.	DATE	NO.OF VAR.
ACS	BHARAT HEAVY ELECTRICALS LIMITED		12.12.01	
S.GHATGE	HYDERABAD		12.12.01	N.A.
K.M.RAO			12.12.01	

DEPT. PULV.ENG. CODE 446	UNTOL. DIMS. GR. ϕ M/T	SCALE 1:5, 1:2	WEIGHT (KG) 42.38	REF. TO ASSY DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.
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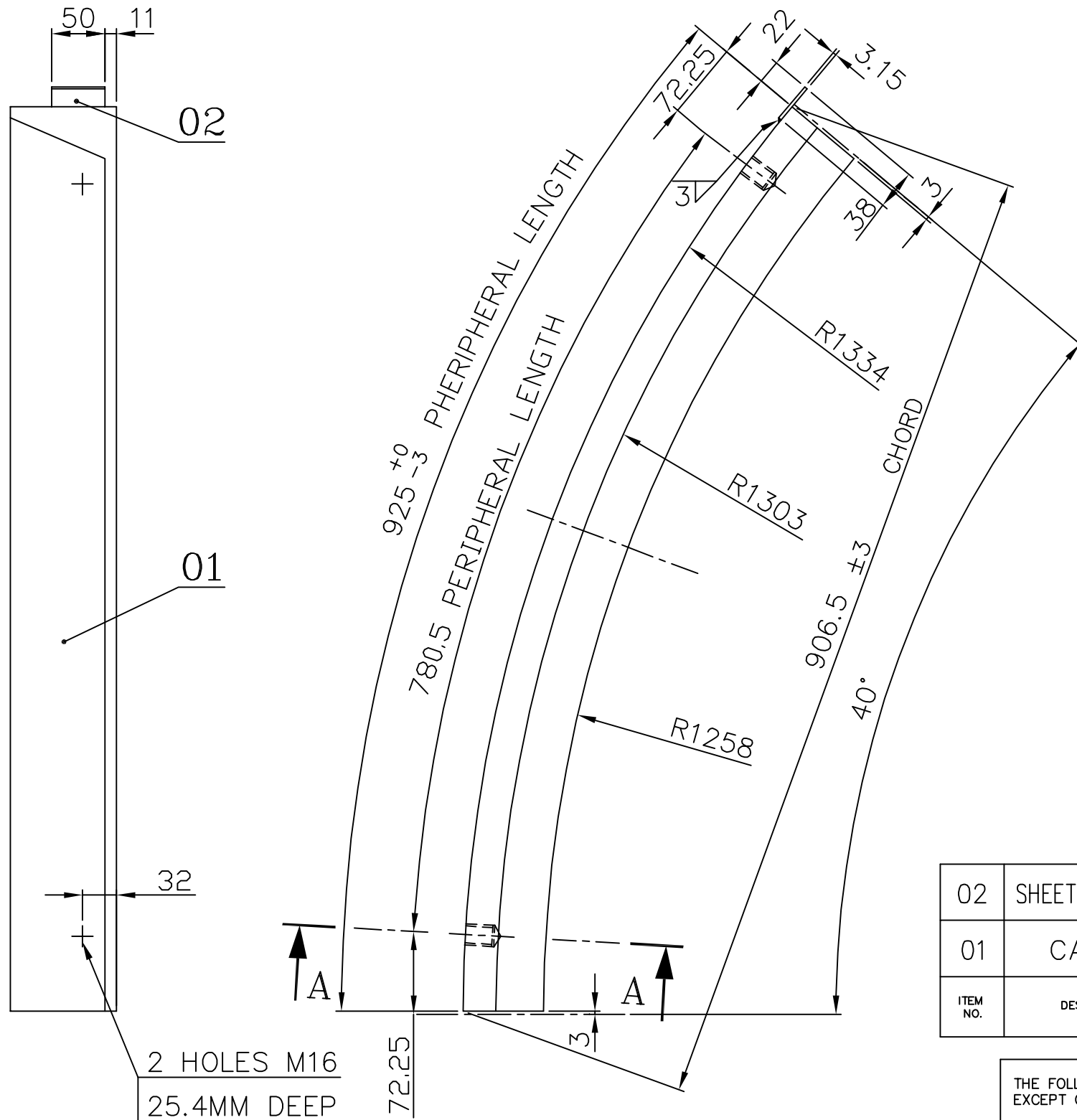
TITLE	CARD CODE	DRAWING NO.	REV.
MILL SIDE BOTTOM LINER	N.A.	3-61-276-00046	04
		SHEET NO. 1	NO OF SHEETS 1

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.
04	12.12.01	CHD.		03	13.5.98	CHD.	

TOLERANCE ON 925 WAS ± 3 M16 LOCATING DIMS ADDED

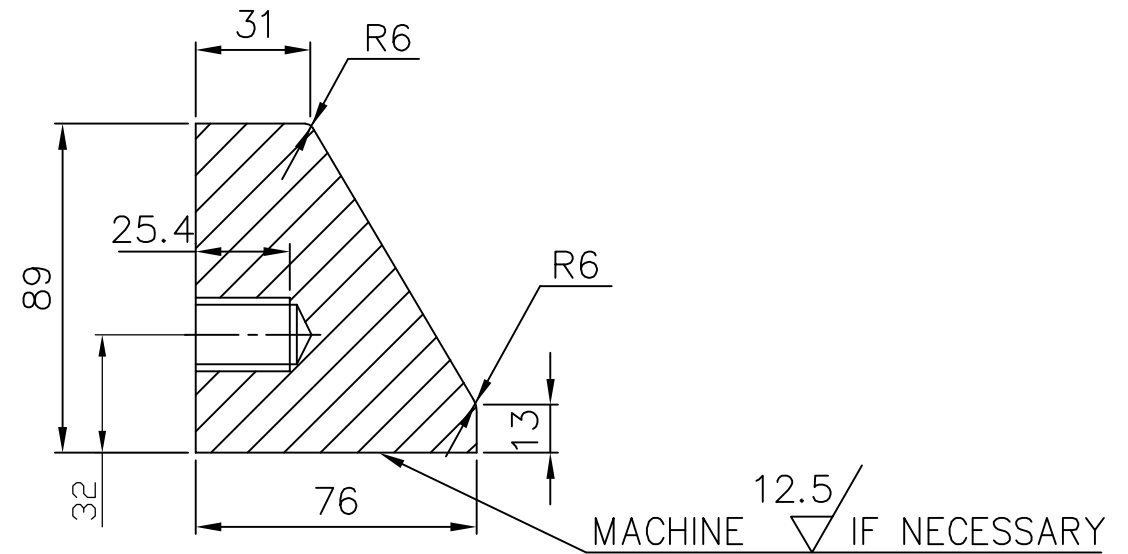
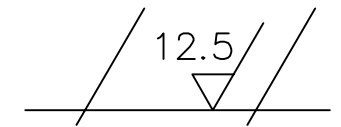
DRG. REVISED INCORPORATING ALL PREVIOUS REVISIONS DIMNS. 51, 72.25 & 780.5 DELETED. NOTE DRILL IN ASSY ADDED WPS ADDED.

INVENTORY NO SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 36100049.DWG/1328 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETERIMENTAL TO THE INTEREST OF THE COMPANY.



WELD SYMBOL	TYPE OF ELECTRODE	LENGTH OF WELD
3 ▽	E44 RNX	0.05M

WPS: WE006



SECTION-AA

ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT.	GROSS WT.
02	SHEET 3.15x38x50				AA1011711133		0.02
					AA10111		1
01	CASTING				BA9110233032		25.00
					AA19702		1
					MATERIAL SPECN.	QUANTITY	

2 HOLES M16
25.4MM DEEP

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT
NAME OF CUSTOMER/PROJECT

 BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD	DRN.	NAME	SIGN.	DATE	NO.OF VAR.	
	CHD.	S.GHATGE	[Signature]	12.12.01	0	
	APPD.	K.M.RAO	[Signature]	12.12.01		
DEPT. PULV.ENGG. CODE 446	UNTOL. DIMS. GR. f/m/t	SCALE 1:5, 1:2	WEIGHT (KG) 25.02	REF. TO ASSY DRG. B-80-330-2 F-002 30-F-002-032	ITEM NO. 10	NO.OF ITEMS 33
TITLE MILL SIDE BOTTOM LINER			CARD CODE N.A.	DRAWING NO. 3-61-276-00049		REV. 05
			SHEET NO. 1		NO OF SHEETS 1	

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.
05	12.12.01	CHD.		04	13.5.98	CHD.	

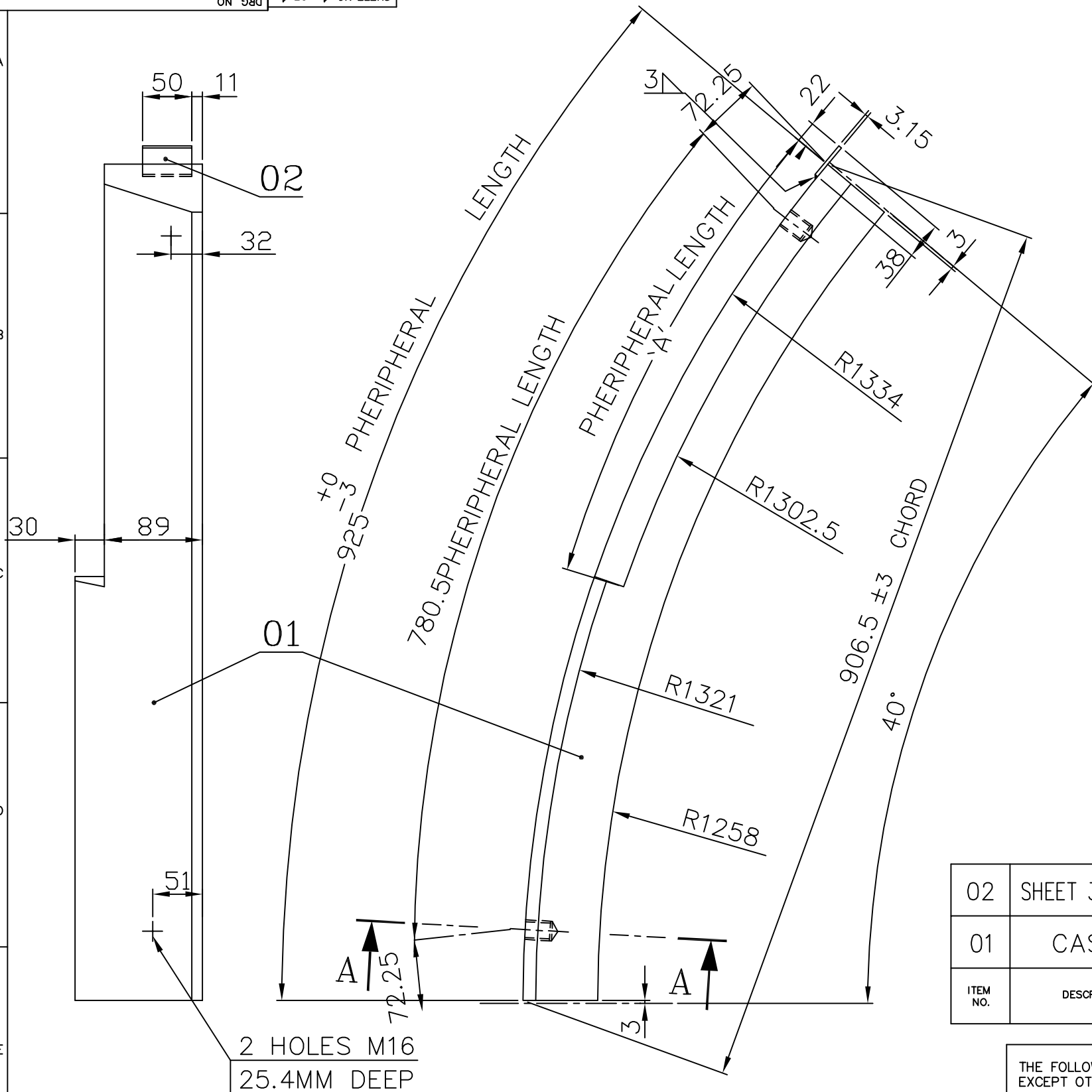
TOL. ON 925 WAS ±3
M16 LOCATING DIMS ADDED

DRG. REVISED INCORPORATING ALL PREVIOUS REVISIONS DIMNS. 32, 72.25 & 780.5 DELETED. NOTE DRILL IN ASSY ADDED WPS ADDED.

09000-9276-19-3

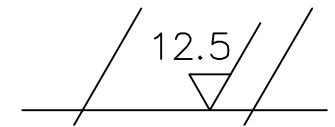
SHEET NO. 1 OF 1

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 36100050.DWG/1328 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.



WELD SYMBOL	TYPE OF ELECTRODE	LENGTH OF WELD
3 ∇	E44 RNX	0.05M

WPS: WE006



12.5 MACHINE ∇ IF NECESSARY

SECTION-AA

VAR	MILL	DIM 'A'	HYD. PATTERN NO.	* HYD. MAT. CODE
01	763	562	M-67-066	BA9110233040
02	783	588.4	M-67-504	BA9110233105
03	803	628.4	M-67-505	BA9110233113

02	SHEET 3.15x38x50			AA1011711133	0.02		
01	CASTING			*REFER TABLE AA19702	39.30 1		
ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT.	GROSS WT.
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT

NAME OF CUSTOMER/PROJECT

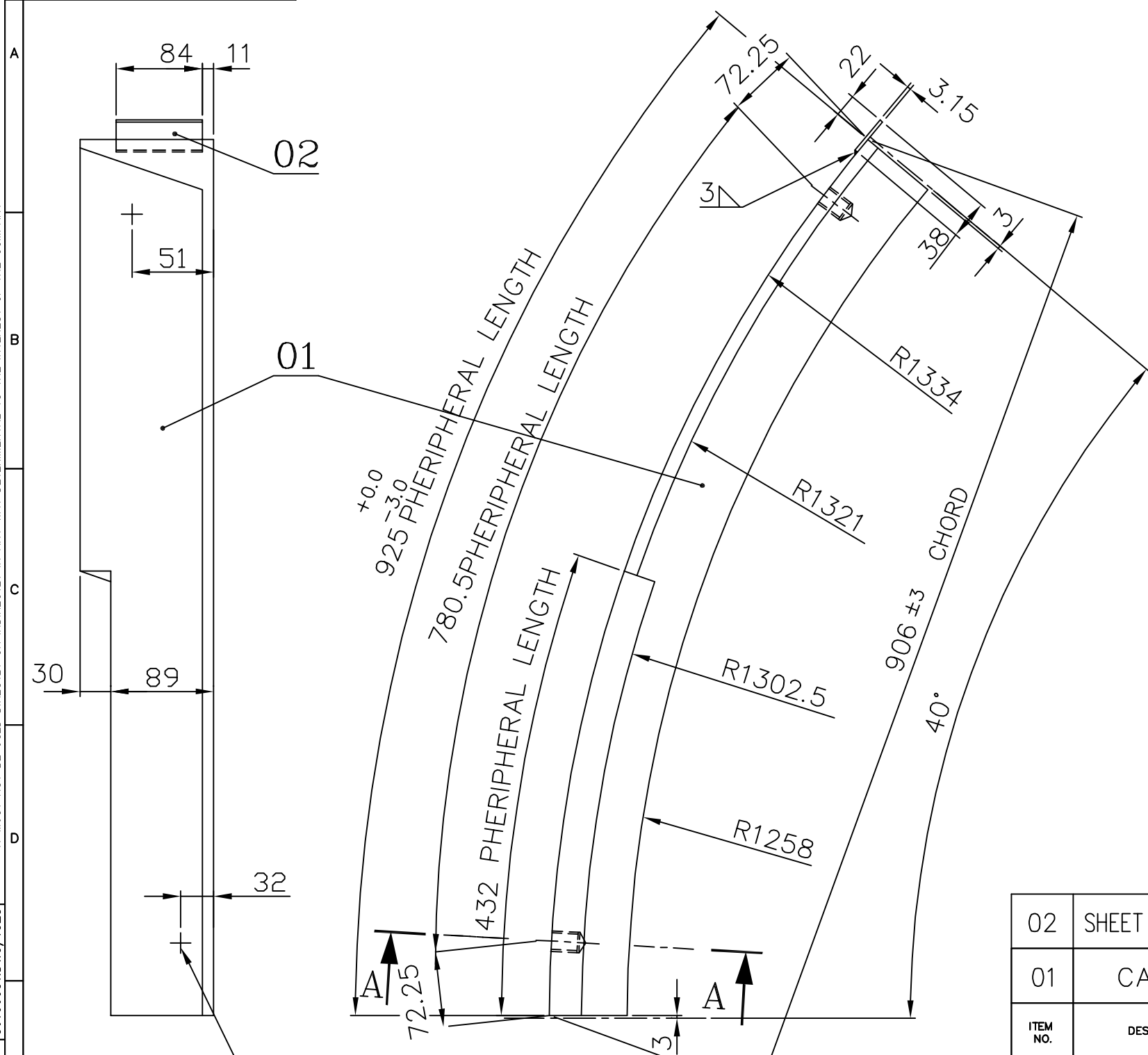
BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD	DRN.	NAME	SIGN.	DATE	NO.OF VAR.
	CHD.	S.GHATGE	ld	01.12.01	N.A.
	APPD.	K.M.RAO	RE	01.12.01	

DEPT. PULV.ENG. CODE 446	UNTOL. DIMS. GR. ϕ M/T	SCALE 1:5, 1:2	WEIGHT (KG) 39.32	REF. TO ASSY DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.
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TITLE	CARD CODE	DRAWING NO.	REV.
MILL SIDE BOTTOM LINER	N.A.	3-61-276-00050	06
SHEET NO. 1		NO OF SHEETS 1	

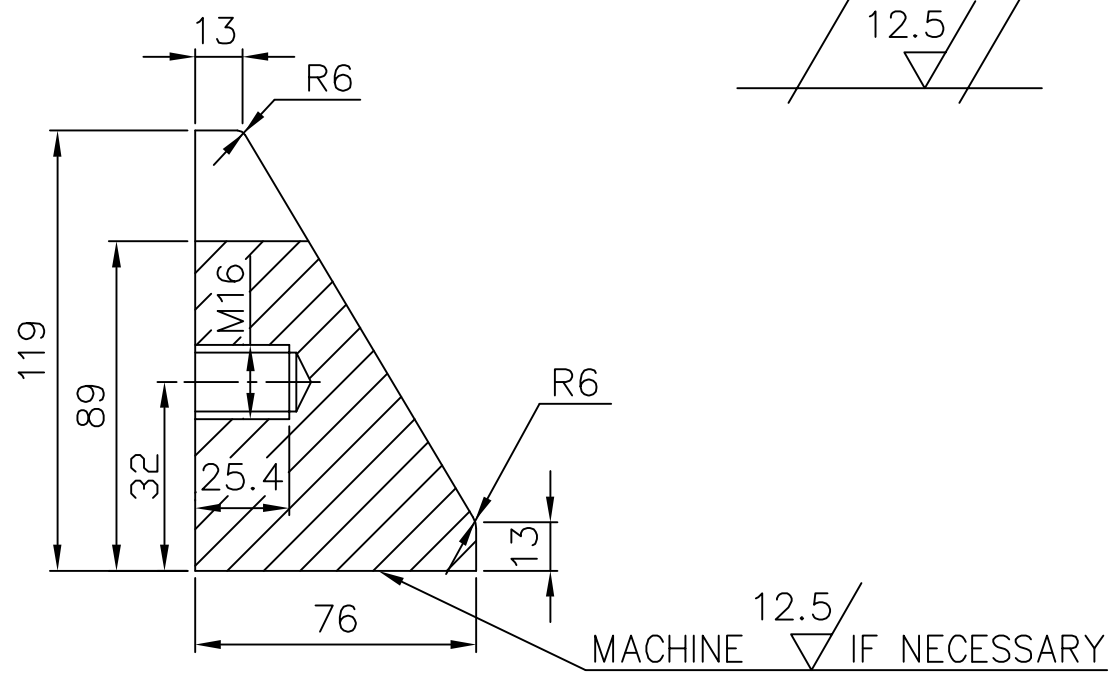
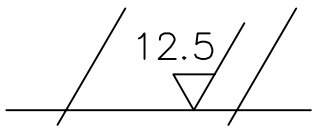
REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	M.A	APPD.	REV.	DATE	ALTERED	APPD.
ZONE		CHD.		ZONE		CHD.			ZONE		CHD.	
06	9.9.04	DIM 32 WAS 51. DIM 51 ADDED.		05	12.12.01	TOL. ON 925 WAS ± 3 M16 HOLES LOCATING DIMS ADDED			04	13.5.98	DRG. REVISED INCORPORATING ALL PREVIOUS REVISIONS DIMNS. 51, 72.25 & 780.5 DELETED. NOTE DRILL IN ASSY ADDED WPS ADDED.	

3-61-276-00051
SHEET NO. 1 OF 1
DRG. NO.



WELD SYMBOL	TYPE OF ELECTRODE	LENGTH OF WELD
3 ▽	E44 RNX	0.08M

WPS: WE006



SECTION-AA

ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FORGING DRG. NO.	MATERIAL CODE	NET WT.	GROSS WT.
02	SHEET 3.15x38x84				AA1011711133		0.08
					AA10111		1
01	CASTING				BA9110233059		39.2
					AA19702		1

- THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
 - CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°.
 - INTERNAL M/CD. CORNER RADII 1 TO 0.7
 - THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN OR THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT				NAME OF CUSTOMER/PROJECT				
BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD				DRN.	NAME	SIGN.	DATE	NO.OF VAR.
				CHD.	S.GHATGE		12.12.01	N.A.
				APPD.	K.M.RAO		12.12.01	
DEPT. PULV.ENG. CODE 446	UNTOL. DIMS. GR. ϕ M/T	SCALE 1:5, 1:2	WEIGHT (KG) 39.28	REF. TO ASSY DRG. N.A.	ITEM NO. N.A.	NO.OF ITEMS N.A.		
TITLE				DRAWING NO.		REV.		
MILL SIDE BOTTOM LINER				3-61-276-00051		04		
CARD CODE N.A.				SHEET NO. 1		NO OF SHEETS 1		

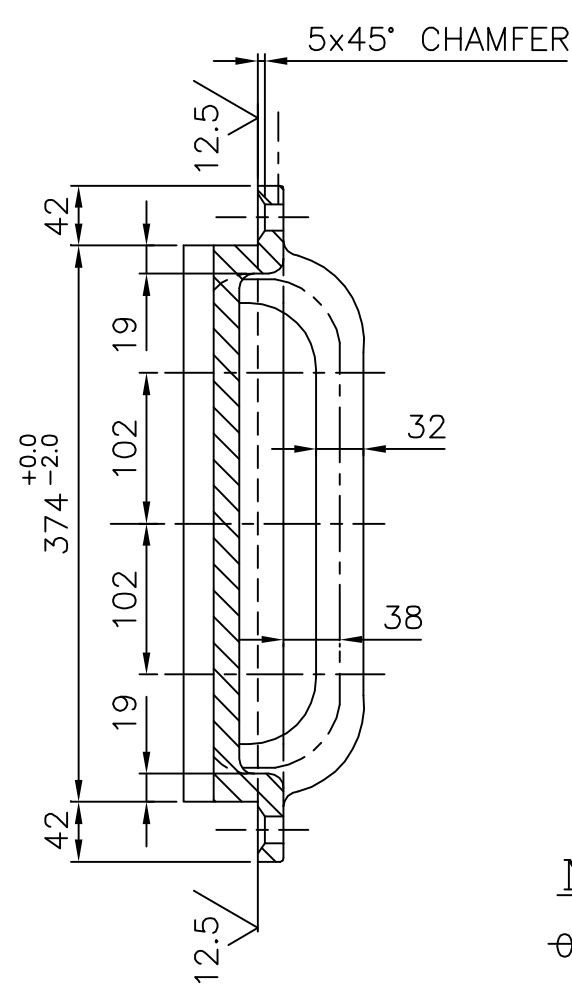
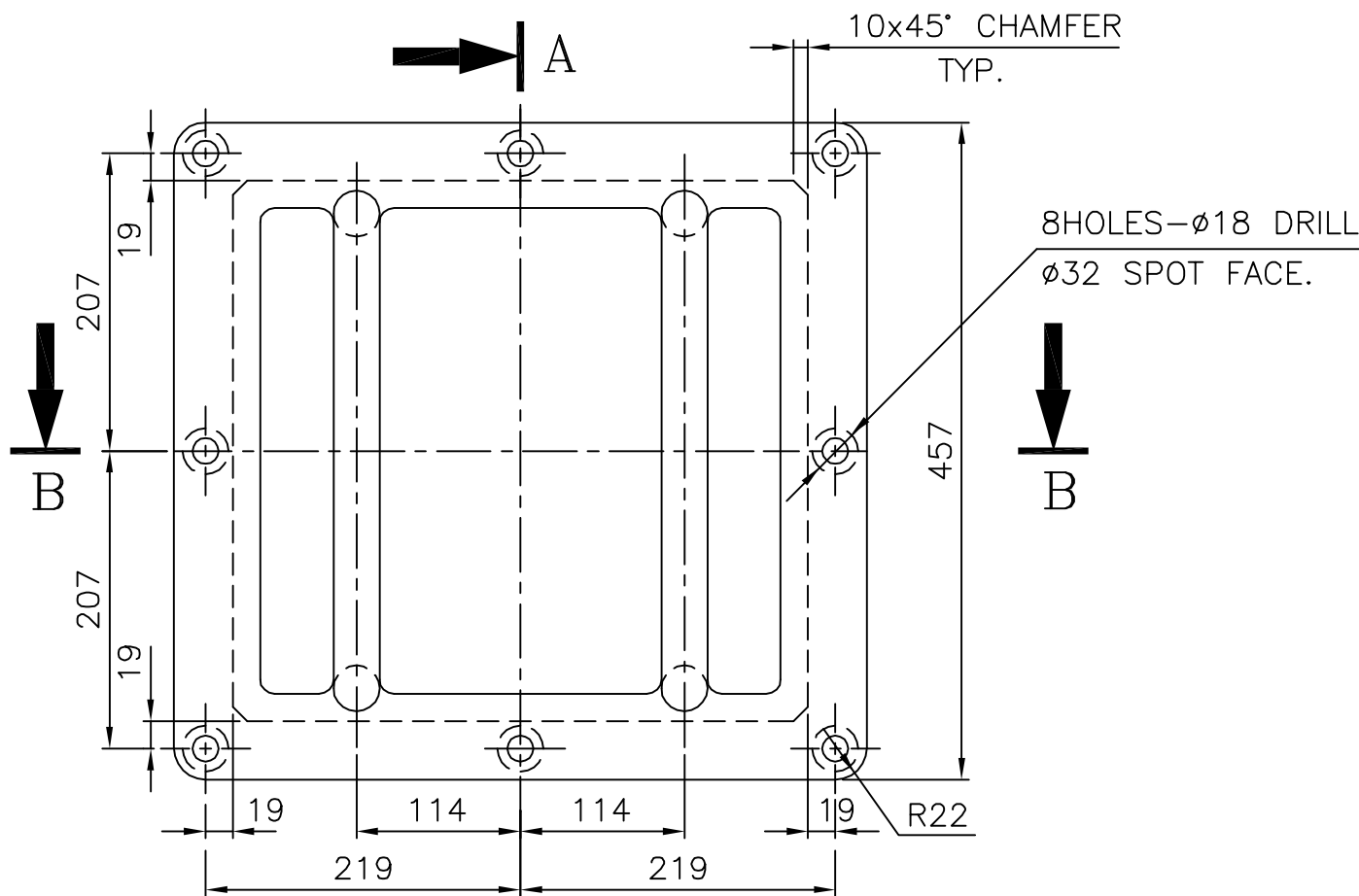
2 HOLES M16
25.4MM DEEP
DRILL IN ASSY.

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.
04	12.12.01	CHD.		03	13.5.98	CHD.		03	13.5.98	CHD.	
TOL. ON 925 WAS ±3.0 M16 HOLES LOCATING DIMS ADDED				DRG. REVISED INCORPORATING ALL PREVIOUS REVISIONS DIMNS. 32, 72.25 & 780.5 DELETED. NOTE DRILL IN ASSY ADDED WPS ADDED.							

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 36100051.DWG/1328 THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

DRG. NO. 3-61-376-00060

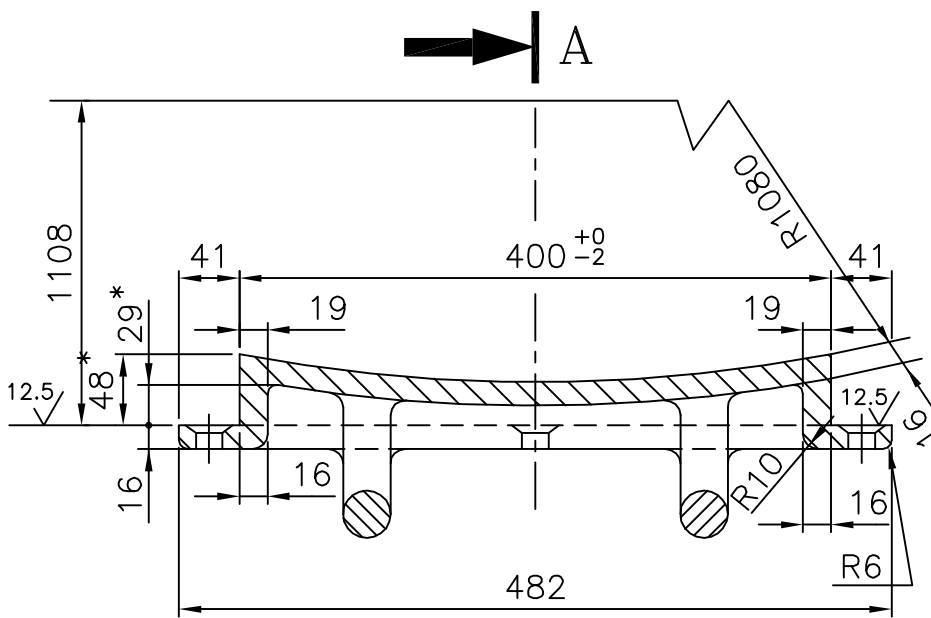
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.



SECTION-AA

NOTES:-

- 01. ~~CASTING DRG. No. 90-F-100-043~~
- 02. ~~PATTERN ON 3-61-396-00060~~
- * MAINTAIN WHEN MACHINING.



SECTION-BB

01	CASTING				BA9110309004	43.00	
					AA19703		
ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

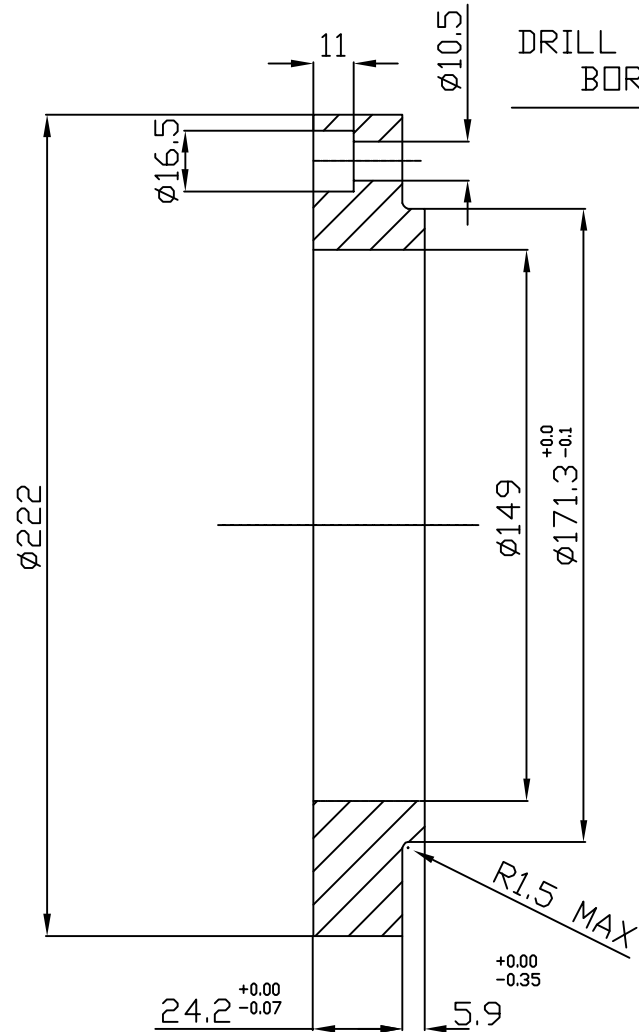
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		SIGN.	DATE	NO. OF VAR.
BHARAT HEAVY ELECTRICALS LTD. HYDERABAD		DRN.	UNIC/BMR		23.10.97	
		CHD.	NDSAMUEL		23.10.97	/
		APPD.	S.GHATGE		23.10.97	
DEPT. PULV ENGG.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.		ITEM NO.	NO. OF ITEMS
CODE 446		1:5	43.00	B-RJ-1106-0	/	/
TITLE			DRAWING NO.		REV.	
SEPARATOR ACCESS DOOR			3-61-376-00060		05	
			SHEET NO. 01	NO OF SHEETS 01		

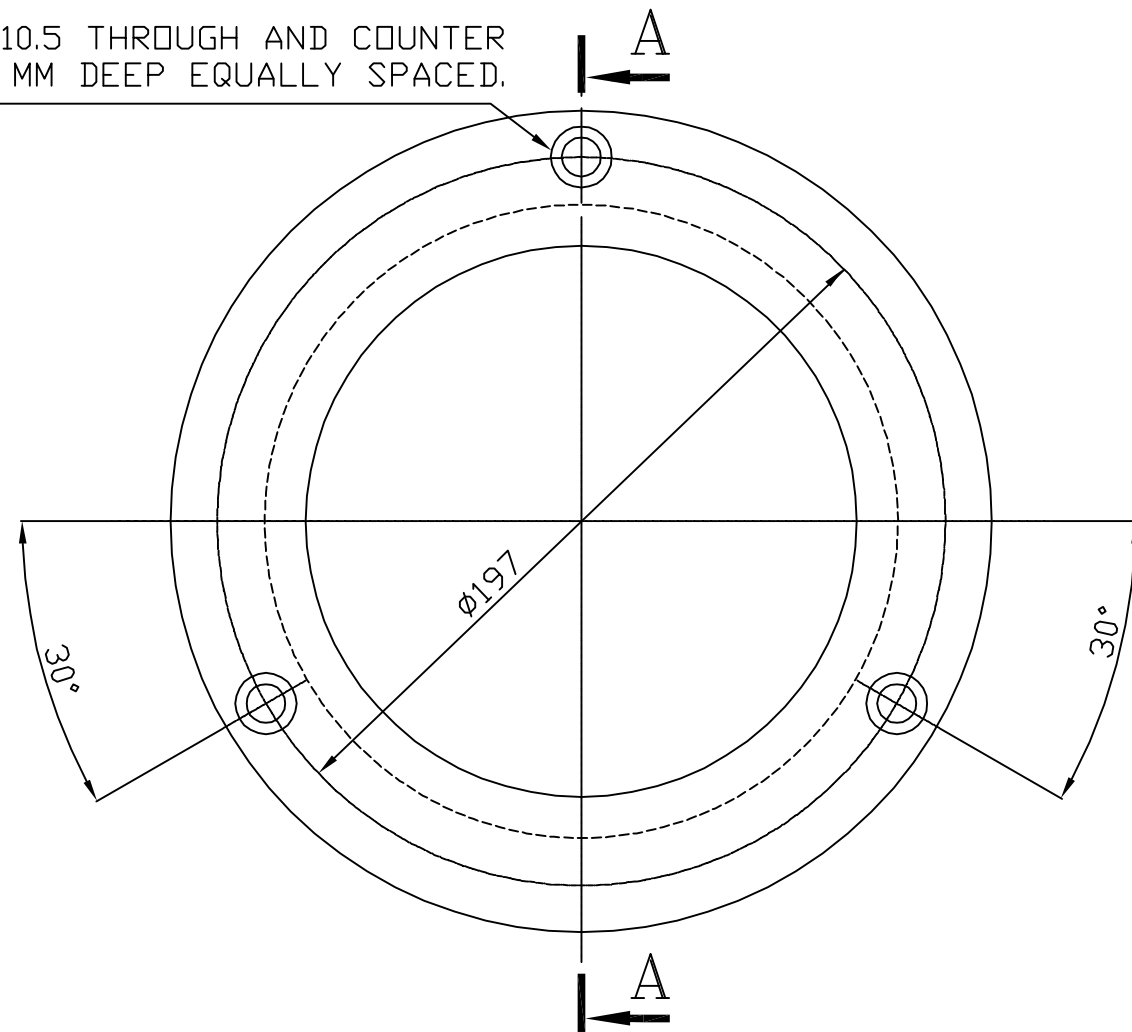
INVENTORY NO.	REV.	DATE	ALTERED	REV.	DATE	ALTERED	UC
			CHD.	05	23.10.97	CHD.	
ZONE				ZONE	DRAWING REDRAWN BY INCORPORATING ALL PREVIOUS REVS.		

DRG.NO. 3-61-376-00064

6.3



DRILL 3 HOLES $\phi 10.5$ THROUGH AND COUNTER BORE $\phi 16.5-11$ MM DEEP EQUALLY SPACED.



SECTION A-A

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36100064 FILE NAME

REF.DRG.NO.

INVENTORY NO.

FINISH ALL SURFACES TO FINISH RATING MAX ROUGHNESS RATING SHOWN ARE MAXIMUM BOLT HOLES TO MATING WITH MATING PARTS.

6.3

01	CASTING				BA9110250018	7.30	
					AA19702		1
ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.
					MATERIAL SPECN.	QUANTITY	

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

- REF.TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

DEPT. PULVE.ENGG	SCALE 1:2	WEIGHT (KG) 7.30	REF. TO ASSY DRG.	ITEM NO.	NO.OF ITEMS
CODE 446					
TITLE			DRAWING NO.	REV.	
TRUNION BUSHING RETAINER			3-61-376-00064	02	
SHEET NO. 01		NO OF SHEETS 01			

REV.	DATE	ALTERED	REV.	DATE	ALTERED	E.M.ASHOK
		CHD.	02	14.6.2K	CHD. C.N.Y	APPD. K.M.RAO
ZONE			ZONE		DRG. REDRAWN AT AUTOCAD	

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG.NO. 3-61-376-00084

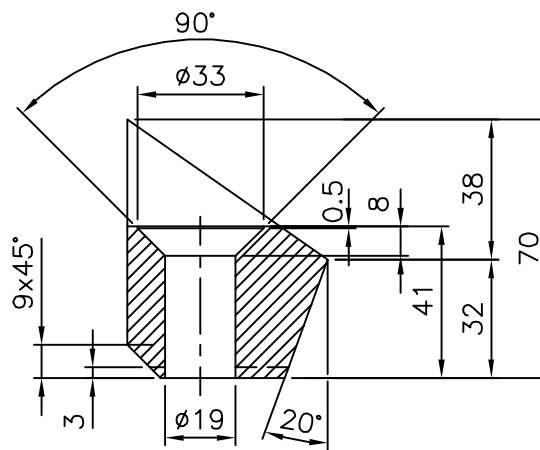
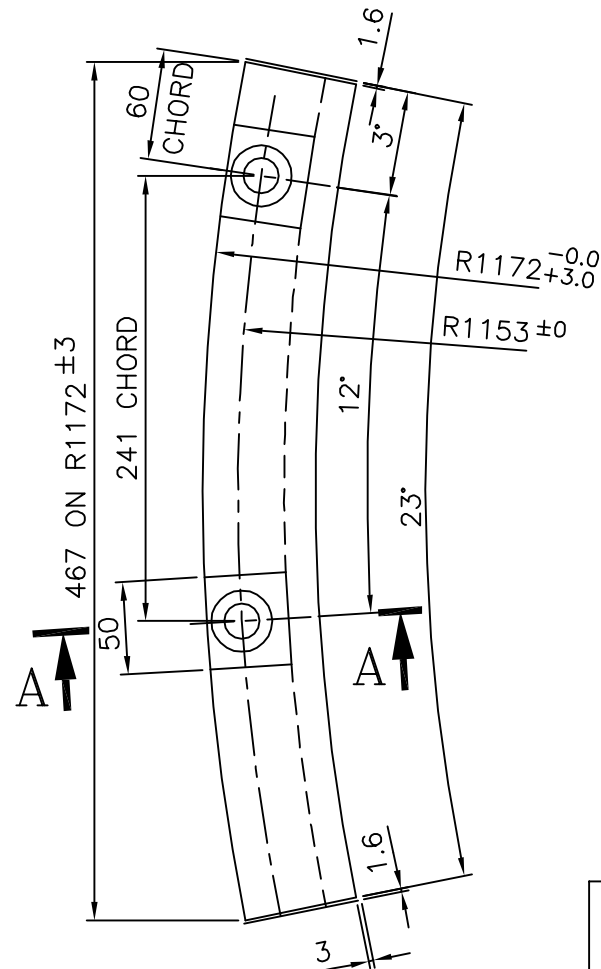
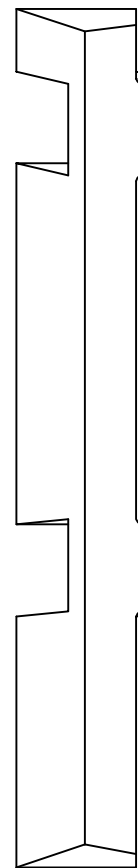
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

36100084.DWG
FILE NAME

REF.DRG.NO.

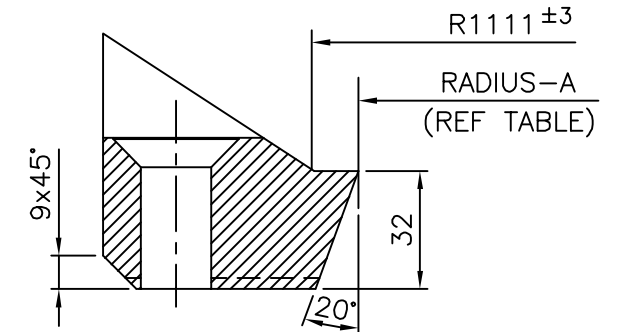
INVENTORY NO.

REV.	DATE	ALTERED	REV.	DATE	ALTERED UC
		CHD. APPD.	05	10.10.97	CHD. APPD.
ZONE			ZONE		DRAWING REDRAWN BY INCORPORATING ALL THE PREVIOUS REVISIONS.



FOR 763 MILL

PATTERN No: 30-F-002-014



FOR 783 AND 803 MILLS

PATTERN NO: 30-F-002-013/1&013/2

SECTION-AA

NOTE:-

01. ALL FILLETS AND RADII TO BE 3mm UNLESS OTHERWISE SPECIFIED.

VAR No.	MILL SIZE	C.E PART No.	RADESH.A	PATTEREN No.
01	763	80 421		10-F002-013/1
02	783	80 421 A	1099 ^{+3.0} / _{-0.0}	30-F002-013/1
03	803	80 421 B	1086 ^{+3.0} / _{-0.0}	30-F002-013/2

ITEM NO	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATERIAL CODE	NET WT.	GROSS WT.
					MATERIAL SPECN.	QUANTITY	
03	CASTING (IS 210,GR.25)		01		BA9110333045	9.60	
					AA19703		
02	CASTING (IS 210,GR.25)		01		BA9110333037	9.60	
					AA19703		
01	CASTING (IS 210,GR.25)		01		BA9110333029	9.60	
					AA19703		

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...

- REF.TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD SHARP EDGES 1.2 TO 1.0 AT 45°.
- INTERNAL M/CD CORNER RADII 1 TO 0.7.
- THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

DEPT. PULV ENGG.	SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.	NO.OF ITEMS
CODE 446	1:2 1:4	9.60	/	/	/
TITLE			DRAWING NO.	REV.	
SEPARATOR BOTTOM LINER			3-61-376-00084	05	
			SHEET NO. 01	NO OF SHEETS 01	

NAME	SIGN.	DATE	NO.OF VAR.
DRN. UNIC		10.10.97	/
CHD. B.M.R			
APPD.			

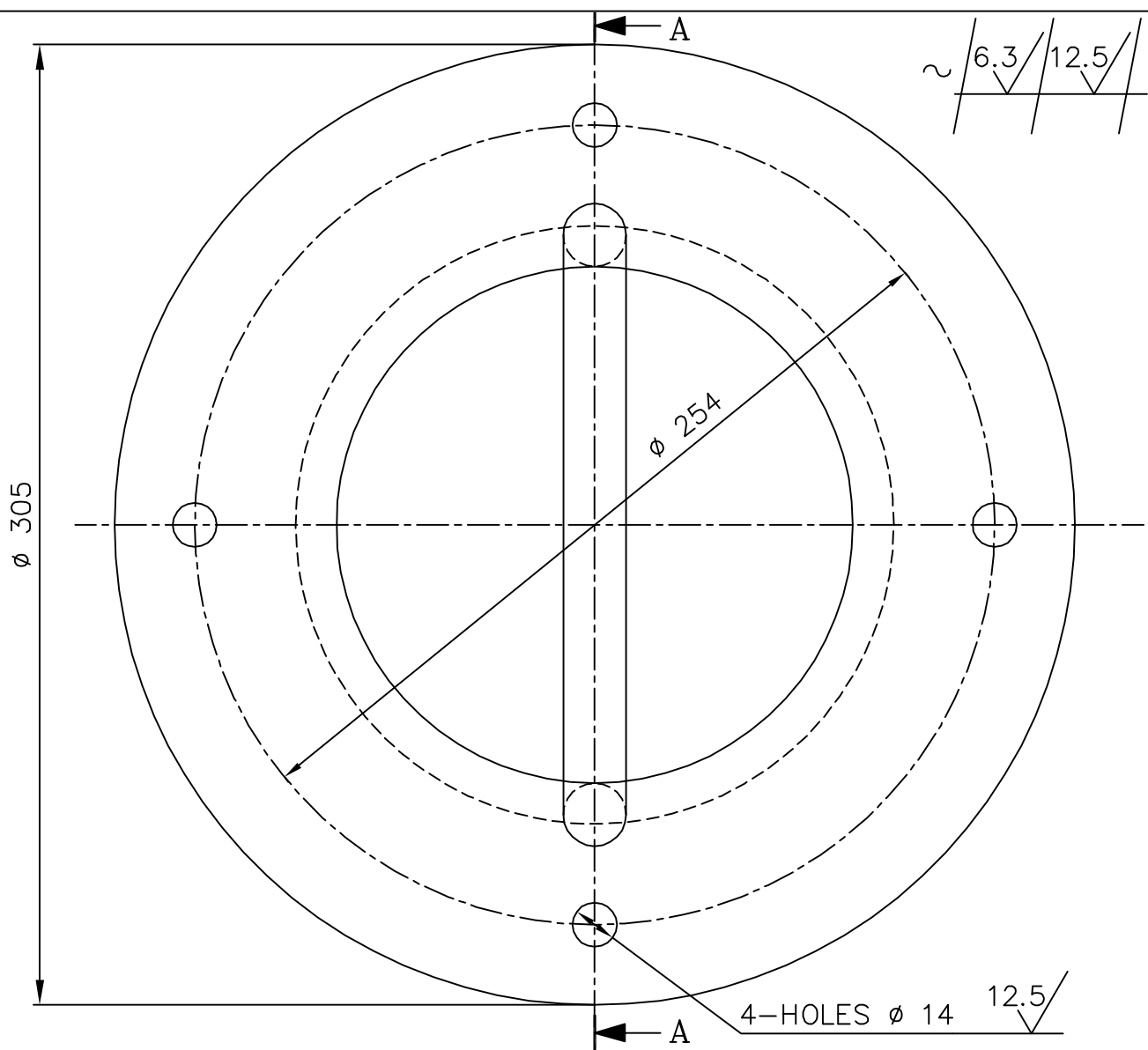
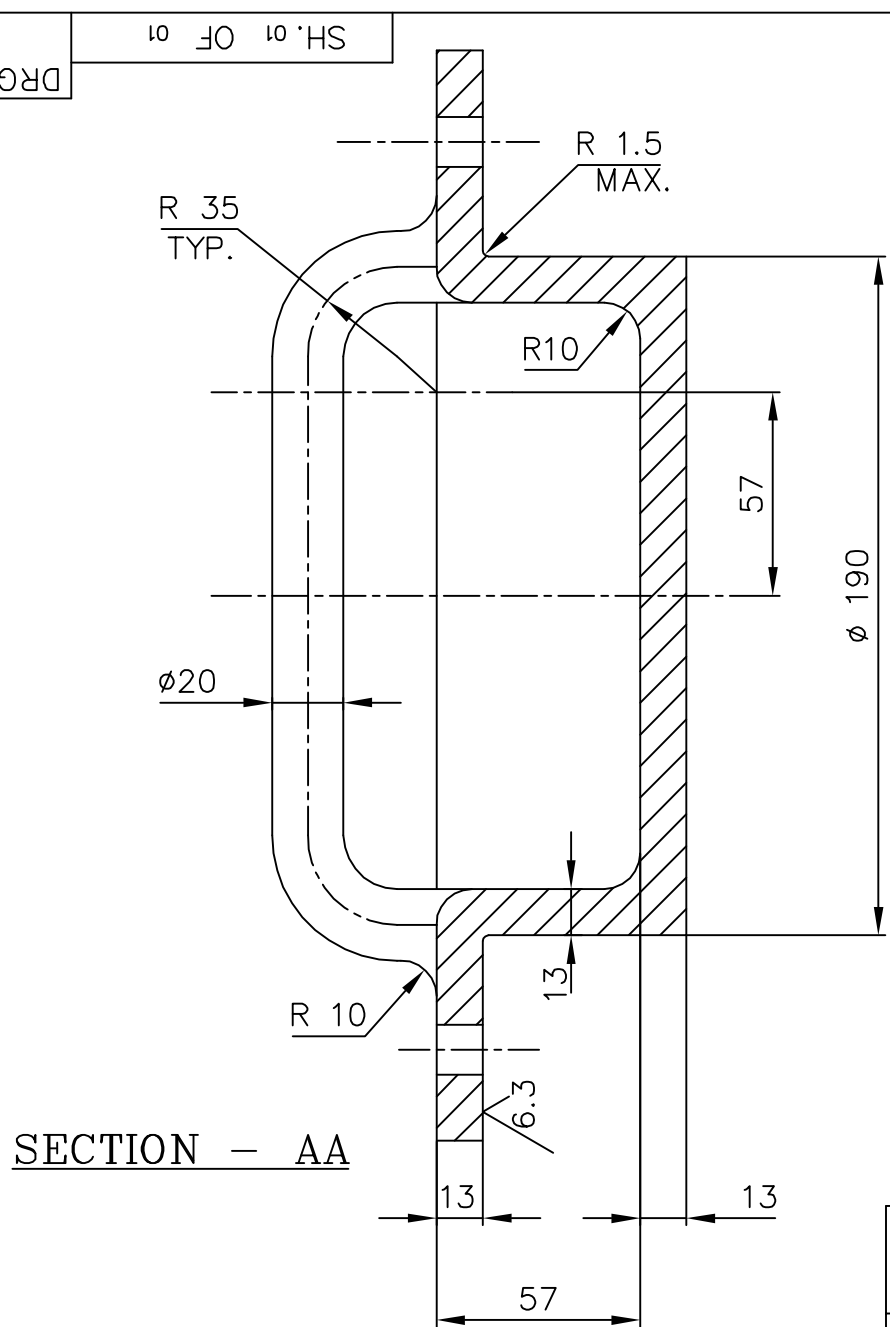
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

MES

DRG. NO. 3-61-396-00231

SH. 01 OF 01



ITEM NO.	DESCRIPTION	DRAWING NO	IT NO.	BA9110207040	11.20
			VAR NO	AA19702	
			MATL CODE		UNIT WT.
			MATL SPCN.		QTY

NOTES:

1. BREAK ALL SHARP EDGES & CORNERS
2. THIS IS A FINISH MACHINED DRG. CASTING SHALL BE SUPPLIED IN ROUGH MACHINED CONDITION WITH 5mm ALLOWANCE ON MACHINED SURFACES
3. BHEL HYD PATTERN NO: M-67-113

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
2. CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°
3. INTERNAL M/CD. CORNER RADII 1 TO 0.7
4. THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN ON THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
1003 XRP BOWL MILL

BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD	NAME	SIGN.	DATE	NO. OF VAR.
	DRN. ACAD		04.05.98	
	CHD. ND.SAMUEL	<i>[Signature]</i>	04.05.98	
	APPD. S.GHATGE	<i>[Signature]</i>	04.05.98	

DEPT. BMD	UNTOL. DIMS. GR. 4/M/F	SCALE 1:2	WEIGHT (KG) 11.20	REF. TO ASSY. DRG. 0-61-388-00577	ITEM NO. 15	NO. OF ITEMS 67
-----------	------------------------	-----------	-------------------	-----------------------------------	-------------	-----------------

TITLE
INSPECTION HOLE COVER
(JOURNAL OPENING FRAME)

DRAWING NO. **3-61-396-00231** REV. **01**

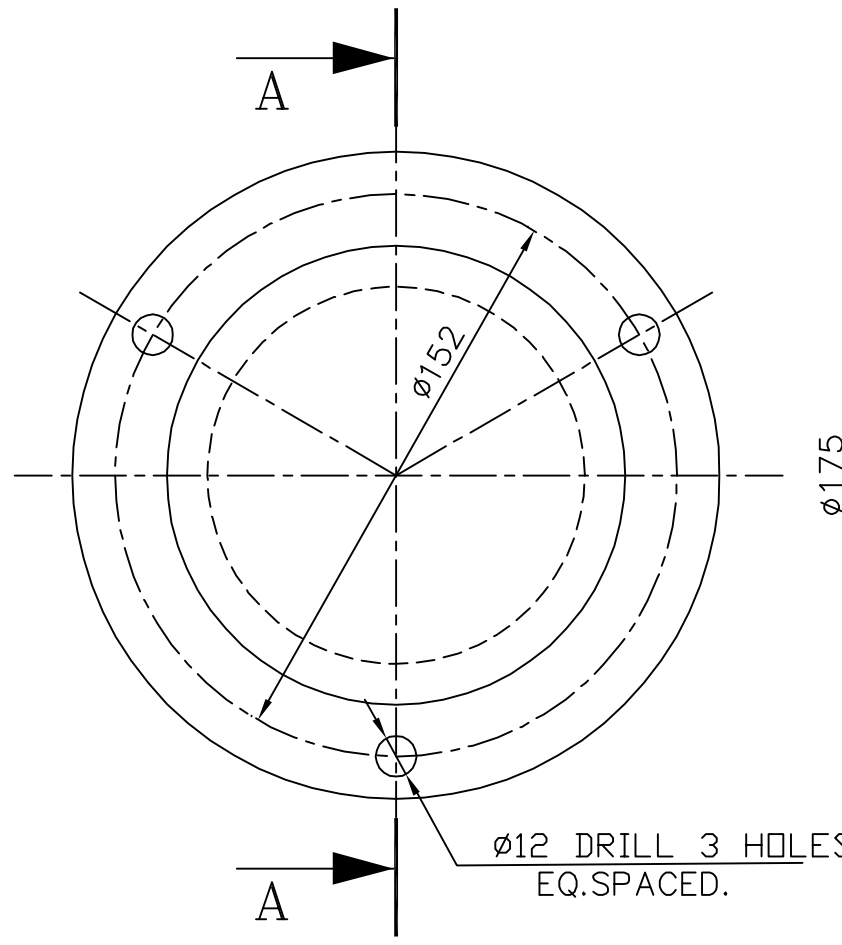
SHT. No 01 | NO. OF SHT. 01

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 COMPUTER FILE NAME 36100231.DWG
 REF. DRG. NO. B-101-00520-0
 SIGN. AND DATE
 GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261
 INVENTORY NO

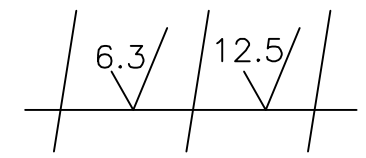
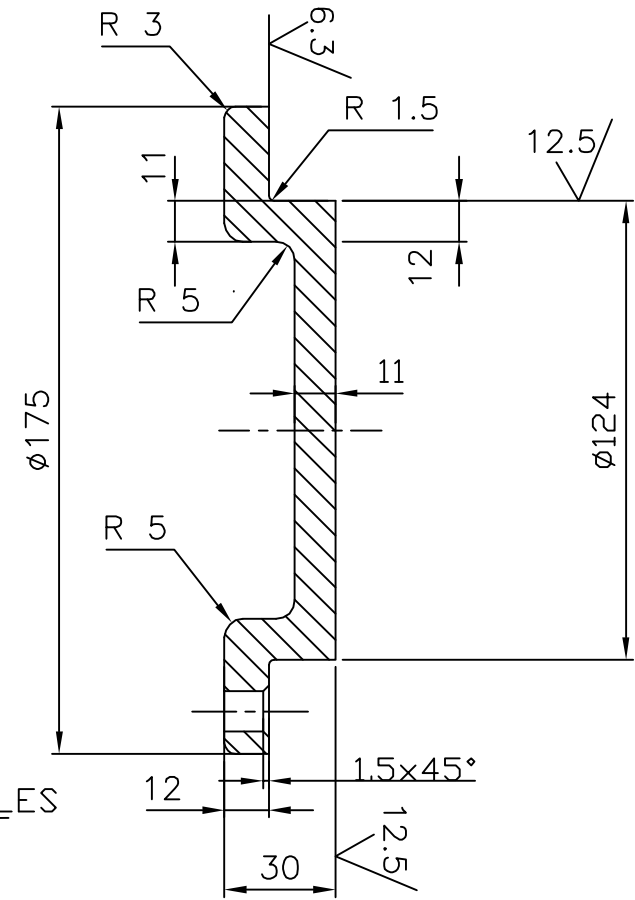
REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD	01	04.05.98	CHD/APPD
ZONE			ZONE		DRG. REDRAWN INCORPORATING ALL PREVIOUS REVISIONS NOTES 2 & 4 DELETED.

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 36100347.DWG THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY DRG. NO. 3-61-480-00347 SH. 01 OF 01

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261



SECTION-AA



Ø12 DRILL 3 HOLES
EQ.SPACED.

DEBURR SHARP EDGES AND CORNERS

	CASTING	HYD.PAT.NO M-67-132		BA9110207082	2.69
				AA19702	
ITEM NO.	DESCRIPTION	DRAWING NO	IT NO.	MATL CODE	UNIT WT.
			VAR NO	MATL SPCN.	QTY

THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED.

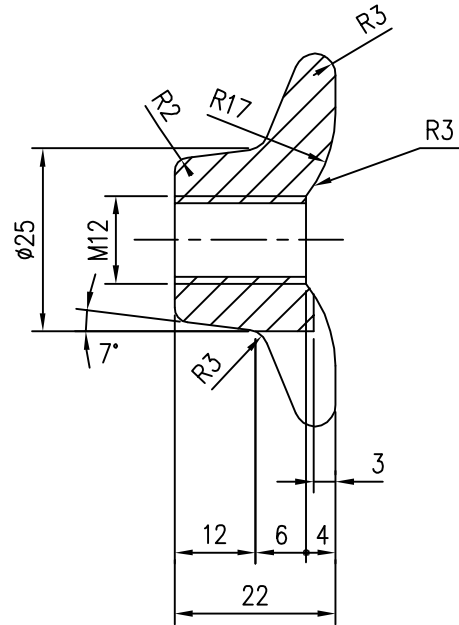
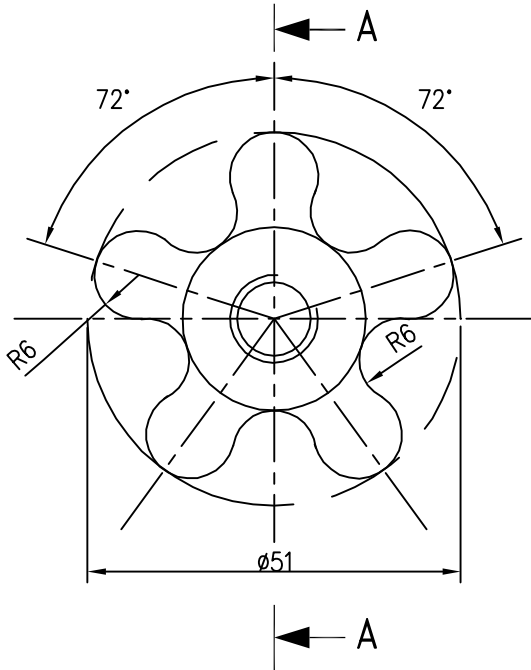
- REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.
- CHAMFER M/CD. SHARP EDGES 1.2 TO 1.0 AT 45°
- INTERNAL M/CD. CORNER RADII 1 TO 0.7
- THE SURFACE ROUGHNESS WHERE-EVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE THE BACK SLASH GIVEN ON THE TOP MOST RIGHT CORNER OF THE DRG.

TYPE OF PRODUCT OR								
NAME OF CUSTOMER/PROJECT								
	BHARAT HEAVY ELECTRICALS LIMITED			NAME	SIGN.	DATE	NO.OF VAR.	
	HYDERABAD			DRN.	N.D.S	22.05.98		NA
				CHD.	S.GHATGE	14.09.98		
			APPD.	K.M.R	14.09.98			
DEPT. BMD	UNTOL. DIMS. GR. Ø/M/Ø	SCALE 1:2	WEIGHT (KG) 2.69	REF. TO ASSY. DRG. NA	ITEM NO. NA	NO.OF ITEMS NA		
DEPT.CODE 446				DRAWING NO. 3-61-480-00347		REV. 02		
				SHT. No 01	NO. OF SHT. 01			

REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD	02	22.05.98	CHD/APPD
ZONE			ZONE		DRG. REDRAWN INCORPORATING ALL PREVIOUS REVISIONS

REV. 03	DATE 15.09.98	ALTERED N.D.S	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHECKED S.G			CHECKED			CHECKED
		APPROVED K.M.R			APPROVED			APPROVED
DRAWING REDRAWN ON CAD INCORPORATING ALL THE PREVIOUS REVISIONS.								

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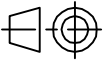
NOTE: -
1. DEBURR ALL SHARP EDGES.

SECTION A-A

INVENTORY NO. SIGN. & DATE REF. DRG. No. COMPUTER No. 46100096.DWG

CASTING			BA9110267026	0.09	
			AA19702		1
DESCRIPTION & DRG. No.	VAR No.	RAW MATERIAL SIZE OR CASTING DRG.NO. OR FORGING DRG.NO.	MATL. CODE	NET.WT.	GROSS WT
			MATL. SPECN.	QTY.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

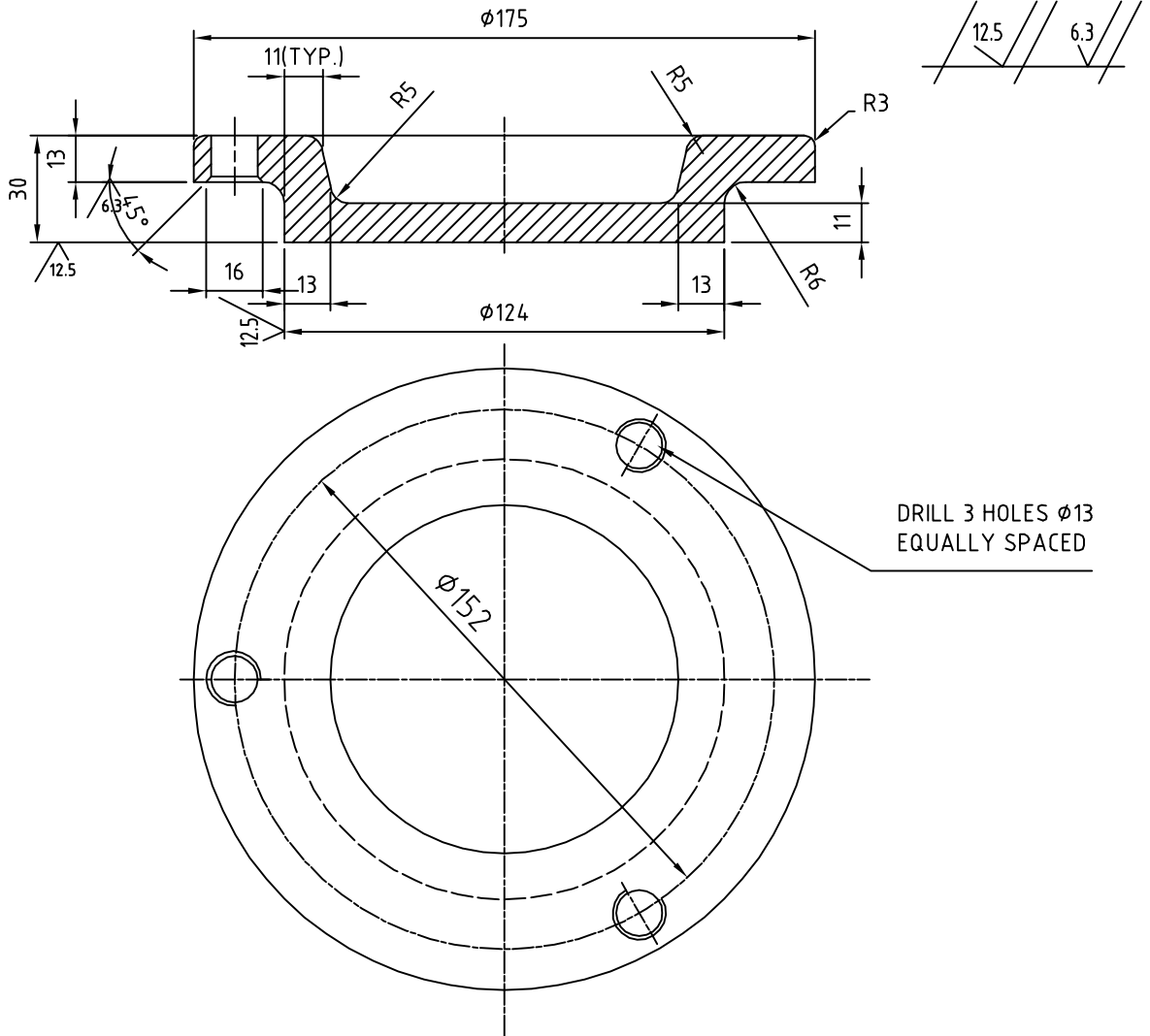
REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.	 BHARAT HEAVY ELECTRICALS LTD. HYDERABAD		NAME	SIGN	DATE	NO.OF VAR.	
	DRN.	N.D.S			15.9.98		-
	CKD.	S.G		<i>LMF</i>	15.9.98		
	APPD.	K.M.R		<i>K.M.R</i>	15.9.98		
DEPT. PULV. ENGG.	GRADE OF TOL. DIM.		SCALE	WEIGHT(K.G.)	REF.TO ASSY.DRG.	ITEM No.	No.OF ITEM
CODE 446	¢/M/¢		1:1	0.09	1-61-388-01036	22	23
TITLE					DRAWING No.		REV.
STAR WHEEL					4-61-376-00096		03
				SHT. No. 1	No. OF SHT. 1		

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN mm.

REV. 02	DATE 25-02-03	ALTERED CHECKED APPROVED	E.M.ASHOK AMAN S.G	REV.	DATE	ALTERED CHECKED APPROVED	REV.	DATE	ALTERED CHECKED APPROVED
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DRG REDRAWN IN AUTOCAD



DRILL 3 HOLES $\phi 13$ EQUALLY SPACED

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COMPUTER NO. 46100358.DWG
REF. DRG. NO.
SIGN. & DATE
INVENTORY NO.

CASTING	BA9110207023	2.93	
	AA19702	1	
DESCRIPTION & DRG.NO.	MATL. CODE	NET.WT.	GROSS WT
	MATL. SPECN.	QTY.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: 883 / 1003/1103 XRP BM

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD	DRN.	E.M.ASHOK	25-02-03	NO.OF VAR. NA
	CKD.	AMAN	25-02-03	
	APPD.	S.G	<i>S.G</i>	
DEPT. PULVE ENGG	SCALE 1:2	WEIGHT(K.G.) 2.93	REF.TO ASSY.DRG. 0-61-400-00586	NO.OF ITEM NA
CODE 446	TITLE INSPECTION HOLE COVER (FAN INTAKE SIDE)		DRAWING NO. 4-61-496-00358	REV. 02
REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.		SHT.NO. 01	NO.OF SHT. 01	



CORPORATE PURCHASING SPECIFICATION

AA10111

Rev No. 06

PAGE 1 of 4

HOT ROLLED CARBON STEEL SHEET (410 N/mm² Tensile)

1.0 GENERAL:

This specification governs the quality requirements of Hot Rolled Carbon Steel Sheet of thickness of 2.5 mm to 4.0 mm (both inclusive).

2.0 APPLICATION:

Suitable for cold forming / drawing / fabrication by welding.

3.0 CONDITION OF DELIVERY:

Sheets shall be supplied in hot rolled, decaled and oiled condition. Imported sheets shall be supplied in straight lengths. The edges shall be flattened and sheared. Mill edges are not acceptable. Sheets shall be free from waviness and shall have a uniformly dull (matt) finish.

Oil used for rust prevention should be free from pungent smell. The following oils are suggested:

- a) SERVO RP 125 of M/s. IOC.
- b) RUSTOP 387/388 of M/s. HPC
- c) Bharat TCPF of M/s. Bharat Petroleum
- d) Any other TRP conforming to IS: 1154

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

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

IS: 5986 – 2011, Gr.: 255: Hot rolled steel flat products for structural forming and flanging purposes - Specification.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes:

Hot rolled carbon steel sheets shall be supplied to the dimensions in BHEL order.

5.2 Tolerances:

The tolerances on sheets shall comply with the following:

5.2.1 Thickness (IS: 1852):

Thickness, mm	Tolerance, mm
2.50	± 0.20
3.15	± 0.22
4.0	± 0.25

Revisions:

As per Cl.No.38.1 of MOM of MRC – S&GPS

APPROVED:

INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(S&GPS)

Rev No.06

Amd No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:22-02-2014

Dt:

Year:

HEP, Bhopal

Corp.R&D

April, 1978

CORPORATE PURCHASING SPECIFICATION



5.2.2 Width, Length, Flatness, Edge chamber and Out of square tolerance for cut lengths:

As per IS:5986

6.0 MANUFACTURE:

Process of manufacture is left to the discretion of the manufacturer except Bessemer process.

Material shall be manufactured from semi killed or killed steel.

7.0 FREEDON FROM DEFECTS:

The sheets shall be free from harmful defects, twists, buckle, rust, scale and waviness and shall be reasonably smooth, flat and square.

8.0 CHEMICAL COMPOSITION:

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

Element	Melt analysis, percent, max.	Permissible variation, percent, max.
Carbon	0.15	0.03
Manganese	1.20	0.05
Sulphur	0.040	0.005
Phosphorus	0.040	0.005

Carbon equivalent (C.E.): 0.42 max.

9.0 TEST SAMPLES:

9.1 Tensile Test:

One sample shall be taken per thickness per consignment from each melt.

As far as possible test pieces shall be cut transverse to the direction of rolling and shall be of full thickness of the sheet rolled.

9.2 Bend Test:

One sample shall be taken per thickness per consignment from each melt.

Bend test pieces shall be cut so that the axis of the bend is parallel to the direction of rolling viz. transverse.

Note: When more than one thickness is rolled from the same melt, one additional test piece for each thickness shall be taken.

10.0 MECHANICAL PROPERTIES:

10.1 Bend:

When tested in accordance with IS: 1599, the test pieces shall be capable of being bent cold through 180° close. The outer convex surface of the test piece shall be free from cracks.

10.2 Tensile:

When tested as per IS : 1608, the test pieces shall show the following properties:

Tensile strength	: 410 – 520 N/mm ²
Yield strength	: 255 N/mm ² , min.
Elongation:	
For sheets up to & Incl. 3 mm, thick	: 15 %, minimum on 80 mm gauge length
For sheets above 3 mm, thick	: 24 %, minimum in $5.65 \sqrt{S_0}$ gauge length

11.0 TEST CERTIFICATES:

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

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

The test certificate shall bear the following information:

AA10111, Rev 06: HOT ROLLED CARBON STEEL SHEET (410 N/mm² Tensile)

BHEL Order No,

Supplier's name,

Identification No

Melt No,

Process of manufacture

Details of pickling, descaling and oiling

Results of dimensional inspection

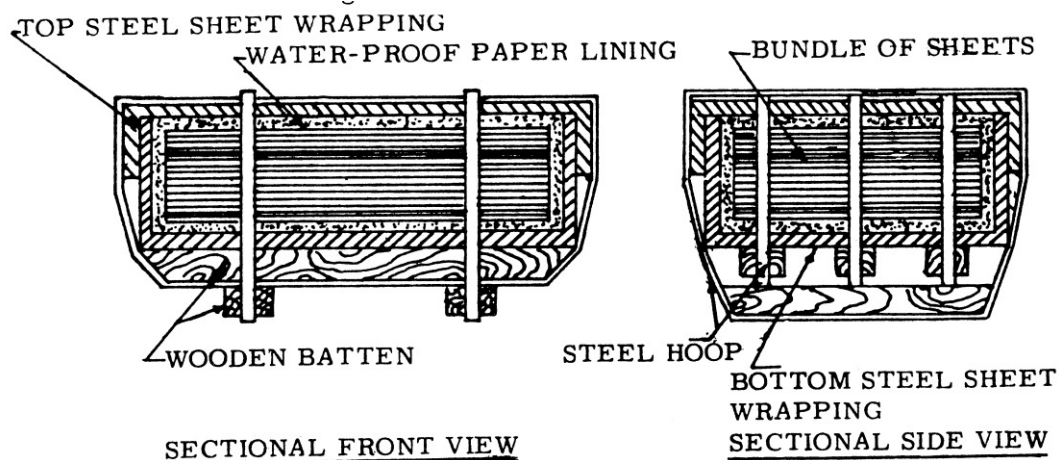
Results of Chemical analysis and Mechanical tests,

Note: Material procured, supplied and certified as AA10111 / IS: 5986, Gr.:255 and comply with the requirements of this specification is acceptable.

12.0 PACKING AND MARKING:

Steel sheets shall be supplied in bundles and shall be suitably packed in bundles to prevent corrosion and damage during transit.

The recommended packing for imported material shall be as shown below.



Note:

- a) Water proof paper lining shall be preferably Volatile Corrosion Inhibitor (V.C.I.) Coated Paper with additional polythene (100 micron) enveloped.
- b) Approximate weight of each bundle shall be 2 to 3 tonnes. Bundle weighing 2 metric tonnes is however preferred.

**CORPORATE PURCHASING
SPECIFICATION**

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

AA10111: HOT ROLLED CARBON STEEL SHEET (410 N/mm² Tensile)
BHEL Order No,
Supplier's Name & Identification No,
Size & Thickness of sheets
Weight

13.0 REFERRED STANDARDS (Latest publications including amendments):

1) IS: 1154

2) IS: 1599

3) IS: 1608

4) IS: 1852



CORPORATE PURCHASING SPECIFICATION

AA 197 02

Rev. No. 06

PAGE 1 OF 5

GREY IRON CASTINGS - Gr: FG 200

1.0 GENERAL

This specification governs the quality requirements of Grey Iron Castings having a tensile strength of 200 N/mm².

2.0 APPLICATION

Suitable for general engineering purposes.

3.0 CONDITION OF DELIVERY

As cast or cast and stress relieved or rough machined or rough machined and stress relieved as specified in BHEL order/drawing.

Castings shall not be painted.

4.0 COMPLIANCE WITH NATIONAL / INTERNATIONAL STANDARD

Castings shall comply with the following national standards and also meet the requirements of this specification.

IS: 210-1993 (RA-2004) : Grey Iron Castings
Gr: FG 200

5.0 DIMENSION AND TOLERANCES

Castings shall be true to the pattern / drawing.

Holes for machining up to and including 50mm in diameter are to be cast solid, unless otherwise stated in BHEL order / drawing.

Unless otherwise specified in BHEL order/ drawing, untoleranced dimensions for the casings shall be as per tolerance class 5 of BHEL standard AA 023 04 02.

6.0 MANUFACTURE

The castings shall be cast from the metal melted or refined in any suitable metallurgical plant other than an iron ore smelting furnace.

All castings above five tonnes shall be mould cooled. Under mould cooling process, the mould should not be disturbed until the hottest portion of the casting cools down to 300°C.

7.0 HEAT TREATMENT

Castings shall be artificially aged (stress relieving) by heating in a furnace to a temperature of 520 to 580°C (recommended), whenever specified.

Test pieces shall also be heat treated along with the castings they represent.

Revisions :

36th MOM of MRC-FCF+HTM

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COMMITTEE-MRC (FCF+HTM)

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Dt :

Year:04-11-2011

BHOPAL

Corp. R&D

December, 1977

**8.0 FINISH**

All castings shall be properly fettled and dressed and all surfaces shall be thoroughly cleaned. Whenever specified, the machined surfaces shall have the surface finish as indicated in the drawing.

9.0 FREEDOM FROM DEFECTS

Castings shall sound, clean, free from defects such as porosity, blow holes, sand inclusions, shrinkage's, cavities, hard spots, cold shuts, cracks, etc. which may adversely affect machining and utility of castings.

10.0 CHEMICAL COMPOSITION

The composition of iron is left to the discretion of the manufacturer. (But limit of sulphur and phosphorus may be specified by BHEL, if desired).

In case of special castings, the detailed chemical composition shall be as agreed between BHEL and the manufacturer.

11.0 TEST SAMPLES:**11.1 Provision of Test Bars :**

All the test bars shall be cast separately in sand moulds and the number of test bars required shall be as specified in clause 11.2 below. They shall be cast at the same time and from the same melt as the castings they represent..

The test bar material shall be identifiable with that of the castings represented.

When castings are subjected to heat treatment and the test bars shall be heat treated together with the castings they represent.

11.2 Frequency Of Testing:

The number of tests required for each melt or batch of castings shall be as laid in table 1 below.

Table 1: Number of Tests

Group	Mass of Individual Castings	Test Requirements	Test Samples
* 1	upto 12.5 kg	One test for every 500kg of castings or part thereof.	3
* 2	over 12.5 kg and upto 50 kg	One test for every 1 tonne of castings or part thereof.	3
* 3	over 50 kg and upto 500 kg	One test for every 2 tonnes of castings or part thereof.	3
* 4	over 500 kg and upto 1 tonne	One test for every 3 tonnes of castings or part thereof.	3
5	over 1 tonne	One test for every 4 tonnes of castings or part thereof or one test for every casting weighing 4 tonnes or more.	3

* In group 1, 2, 3 & 4 all castings represented by one test shall be poured from the same ladle or same heat as the bars provided for the test.

**11.3 Size of Test Bars:**

A test bar from which the tensile test piece is machined shall be cast as a uniform cylindrical bar of 30mm diameter. The tolerance on the diameter shall be + 2mm, - 0 mm.

The minimum length of the test bar shall be 230mm.

11.4 Dimensions of Test Pieces:

Test pieces shall conform to the dimensions as per IS:210.

Note: Test bars as specified above with proper identification and representative of the castings shall be supplied along with the consignment for testing at BHEL works.

12.0 MECHANICAL PROPERTIES**12.1 Tensile:**

The test pieces prepared in accordance with clause 11.0 shall show a tensile strength of 200 N/mm², minimum, when tested in accordance with IS:1608.

12.2 Hardness (Brinell)

Hardness shall be measured on actual casting at three different places. The castings shall have a Brinell Hardness in the range of 160 to 220 HB, when tested in accordance with IS 1500.

13.0 OPTIONAL TESTS

If specified in the drawing/order, the following tests shall be conducted.

13.1 Non-destructive Test**Magnetic Particle Inspection:**

Magnetic Particle Inspection as per BHEL standard AA 085 01 33 and norms of acceptance as per AA 085 01 34 at level 2.

13.2 Hydraulic:

Hydraulic test shall be conducted by the manufacturer. In case hydraulic testing as prescribed on the BHEL order/drawing is not carried out at the manufacturer's works, the same shall be carried out by BHEL after necessary machining. However, the manufacturer shall guarantee against any leakage when tested at BHEL's end.

Test pressure and duration of test shall be as specified in BHEL order/drawing.

14.0 RETEST

Retest shall be done as per IS:210.

15.0 REPAIR OF CASTINGS

Repair of castings shall not be carried out by the manufacturer without the prior permission of BHEL.

**16.0 SCOPE OF THIRD PARTY INSPECTION:**

Wherever, separate quality plan is not attached, the scope of third party inspection shall be as follows:

1. Review of supplier's declared chemical composition.
2. Selection of test samples for mechanical tests and witness of mechanical tests.
3. Witness of Non-destructive tests as applicable.
4. Review of HT charts.
5. Dimensional inspection.

17.0 TEST CERTIFICATES

Three copies of test certificates shall be supplied unless otherwise stated in order, preferably in the test certificate format annexed to this specification (Annexure -1).

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

The following details shall be furnished in the test certificate:

1. Dimensional inspection
2. Detail of heat treatment
3. Hardness value
4. NDT
5. Optional tests called for in the drawing/order.

18.0 PACKING AND MARKING

Castings shall be suitably packed to prevent corrosion and damage during transit. Machined surfaces shall be properly protected with anticorrosive compounds. Each package or casting (when supplied separately) shall be legibly marked with the following information.

AA 19702: Grey Iron Castings-Gr: FG 200
BHEL Order No.
Consignment/Identification No.
Melt No.
Weight
Supplier's Name

19.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1. IS: 210
2. IS:1500
3. IS:1608
4. AA 023 04 02
4. AA 085 01 33
5. AA 085 01 34



CORPORATE PURCHASE SPECIFICATION

AA 197 02

Rev. No. 06

PAGE 5 OF 5

ANNEXURE 1 - RECOMMENDED TEST CERTIFICATE FORMAT FOR CASTING

SUPPLIERS'S NAME AND ADDRESS											
1. Customer :						6. Cast No. & Date :					
2. TC No. & Date :						7. Batch No. :					
3. PO No. :						8. Heat Code :					
4. Process of Melting :						9. Spec. No. :					
5. Deoxidisation Process						10. Test Bar Size					
II. CASTING COVERED BY T.C.											
Sl. No.	Drawing No. & Item No.					Description	Quantity & Weight				
12. CHEMICAL COMPOSITION (PERCENT)											
Element	C	SI	Mn	S	P						
As per Min.											
Spec. Max.											
Actual Values.											
13. HEAT TREATMENT (To be accompanied by Recorder Chart, wherever called for)											
Condition	Temp. °C			Soaking Time, Hrs.			Cooling Medium				
14. MECHANICAL PROPERTIES											
	T.S. N/mm ²	Y.S. 0.5% 0.2% Proof N/mm ²	% E on GL 5.65 SO	% R.A. Min	Hardness BHN Min. 3 Values	Impact Value, Joules	Bend				
As per Min.											
Spec. Max.											
Actual Values.											
15. Surface Finish (When called for in the order/drg)											
16. DIMENSIONAL INSPECTION											
17. NON-DESTRUCTIVE TESTS											
Nature of Test	Acceptance Level	Instrument used	Range	Results	Any other details						
Ultrasonic											
Radiographic											
Dye Penetrant/ Magnetic Particle											
18. OTHER TESTS, IF ANY (MICRO- Scope, Hydraulic, Etc.)											
19. IDENTIFICATION ON CASTING AS PER CPS.											
We hereby certify that the items mentioned above have been tested and inspected in our presence and are found to be in accordance with the drawings, specifications and purchase order.											
Signature & Seal of the Inspecting Officer (Purchase Representative)						Signature and Seal of the Chief of Quality Control Chief Metallurgist of the Supplier.					
Date :						Date :					
INSTRUCTION:											
a) If steel is produced by LD or Oxygen process, Nitrogen content should be furnished and shall not exceed 0.009%											
b) Test Certificates are to be furnished as per Purchase Order and Specifications, in A4 Size transparent paper.											
c) All the entries including signature should be in black ink.											
d) If testing is done by outside agencies, the original TCs shall be furnished.											
e) The actual Test Certificate may run into more than one A4 size paper, if needed, to facilitate filling up of details.											



CORPORATE PURCHASING SPECIFICATION

AA 197 03

Rev. No. 06

PAGE 1 OF 5

GREY IRON CASTINGS - Gr: FG 260

1.0 GENERAL

This specification governs the quality requirements of Grey Iron Castings having a tensile strength of 260 N/mm².

2.0 APPLICATION

Suitable for general engineering purposes.

3.0 CONDITION OF DELIVERY

As cast or cast and stress relieved or rough machined or rough machined and stress relieved as specified in BHEL order/drawing.

Castings shall not be painted.

4.0 COMPLIANCE WITH NATIONAL / INTERNATIONAL STANDARD

Castings shall comply with the following national standards and also meet the requirements of this specification.

IS: 210-1993 : Grey Iron Castings
Gr: FG 260

5.0 DIMENSION AND TOLERANCES

Castings shall be true to the pattern / drawing.

Holes for machining up to and including 50mm in diameter are to be cast solid, unless otherwise stated in BHEL order / drawing.

Unless otherwise specified in BHEL order/ drawing, untoleranced dimensions for the casings shall be as per tolerance class 5 of BHEL standard AA 023 04 02.

6.0 MANUFACTURE

The castings shall be cast from the metal melted or refined in any suitable metallurgical plant other than an iron ore smelting furnace.

All castings above five tonnes shall be mould cooled. Under mould cooling process, the mould should not be disturbed until the hottest portion of the casting cools down to 300°C.

7.0 HEAT TREATMENT

Castings shall be artificially aged (stress relieving) by heating in a furnace to a temperature of 520 to 580°C (recommended), whenever specified.

Test pieces shall also be heat treated along with the castings they represent.

Revisions :

Cl: 30.5.2 of MOM of MRC-FCF+HTM

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Dt :

Year :

BHOPAL

Corp. R&D

December, 1977

**8.0 FINISH**

All castings shall be properly fettled and dressed and all surfaces shall be thoroughly cleaned. Whenever specified, the machined surfaces shall have the surface finish as indicated in the drawing.

9.0 FREEDOM FROM DEFECTS

Castings shall sound, clean, free from defects such as porosity, blow holes, sand inclusions, shrinkage's, cavities, hard spots, cold shuts, cracks, etc. which may adversely affect machining and utility of castings.

10.0 CHEMICAL COMPOSITION

The composition of iron is left to the discretion of the manufacturer. (But limit of sulphur and phosphorus may be specified by BHEL, if desired).

In case of special castings, the detailed chemical composition shall be as agreed between BHEL and the manufacturer.

11.0 TEST SAMPLES:**11.1 Provision of Test Bars :**

All the test bars shall be cast separately in sand moulds and the number of test bars required shall be as specified in clause 11.2 below. They shall be cast at the same time and from the same melt as the castings they represent..

The test bar material shall be identifiable with that of the castings represented.

When castings are subjected to heat treatment and the test bars shall be heat treated together with the castings they represent.

11.2 Frequency Of Testing:

The number of tests required for each melt or batch of castings shall be as laid in table 1 below.

Table 1: Number of Tests

Group	Mass of Individual Castings	Test Requirements	Test Samples
* 1	upto 12.5 kg	One test for every 500kg of castings or part thereof.	3
* 2	over 12.5 kg and upto 50 kg	One test for every 1 tonne of castings or part thereof.	3
* 3	over 50 kg and upto 500 kg	One test for every 2 tonnes of castings or part thereof.	3
* 4	over 500 kg and upto 1 tonne	One test for every 3 tonnes of castings or part thereof.	3
5	over 1 tonne	One test for every 4 tonnes of castings or part thereof or one test for every casting weighing 4 tonnes or more.	3

* In group 1, 2, 3 & 4 all castings represented by one test shall be poured from the same ladle or same heat as the bars provided for the test.



11.3 Size of Test Bars:

A test bar from which the tensile test piece is machined shall be cast as a uniform cylindrical bar of 30mm diameter. The tolerance on the diameter shall be + 2mm, - 0 mm.

The minimum length of the test bar shall be 230mm.

11.4 Dimensions of Test Pieces:

Test pieces shall conform to the dimensions as per IS:210.

Note: Test bars as specified above with proper identification and representative of the castings shall be supplied along with the consignment for testing at BHEL works.

12.0 MECHANICAL PROPERTIES

12.1 Tensile:

The test pieces prepared in accordance with clause 11 shall show a tensile strength of 260 N/mm², minimum, when tested in accordance with IS:1608.

12.2 Hardness (Brinell)

Hardness shall be measured on actual casting at three different places. The castings shall have a Brinell Hardness in the range of 180 to 230 HB, when tested in accordance with IS 1500.

13.0 OPTIONAL TESTS

If specified in the drawing/order, the following tests shall be conducted.

13.1 Non-destructive test

Magnetic Particle Inspection:

Magnetic Particle Inspection as per BHEL standard AA 085 01 33 and norms of acceptance as per AA 085 01 34 at level 2.

13.2 Hydraulic:

Hydraulic test shall be conducted by the manufacturer. In case hydraulic testing as prescribed on the BHEL order/drawing is not carried out at the manufacturer's works, the same shall be carried out by BHEL after necessary machining. However, the manufacturer shall guarantee against any leakage when tested at BHEL's end.

Test pressure and duration of test shall be as specified in BHEL order/drawing.

14.0 RETEST

Retest shall be done as per IS:210.

15.0 REPAIR OF CASTINGS

Repair of castings shall not be carried out by the manufacturer without the prior permission of BHEL.

CS-655

**16.0 SCOPE OF THIRD PARTY INSPECTION:**

Wherever, separate quality plan is not attached, the scope of third party inspection shall be as follows:

1. Review of supplier's declared chemical composition.
2. Selection of test samples for mechanical tests and witness of mechanical tests.
3. Witness of Non-destructive tests as applicable.
4. Review of HT charts.
5. Dimensional inspection.

17.0 TEST CERTIFICATES

Three copies of test certificates shall be supplied unless otherwise stated on order, preferably in the test certificate format annexed to this specification (Annexure -1).

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

The following details shall be furnished in the test certificate:

1. Dimensional inspection
2. Detail of heat treatment
3. Hardness value
4. NDT
5. Optional tests called for in the drawing/order.

18.0 PACKING AND MARKING

Castings shall be suitably packed to prevent corrosion and damage during transit. Machined surfaces shall be properly protected with anticorrosive compounds. Each package or casting (when supplied separately) shall be legibly marked with the following information.

AA 19703: Grey Iron Castings-Gr: FG 260

BHEL Order No.

Consignment/Identification No.

Melt No.

Weight

Supplier's Name

19.0 REFERRED STANDARDS (Latest Publications Including Amendments):

- | | | | |
|-----------------|-----------------|------------|-----------------|
| 1. IS: 210 | 2. IS:1500 | 3. IS:1608 | 4. AA 023 04 02 |
| 4. AA 085 01 33 | 5. AA 085 01 34 | | |



CORPORATE PURCHASE SPECIFICATION

AA 197 03

Rev. No. 06

PAGE 5 OF 5

ANNEXURE 1 - RECOMMENDED TEST CERTIFICATE FORMAT FOR CASTING

SUPPLIERS'S NAME AND ADDRESS													
1. Customer :						6. Cast No. & Date :							
2. TC No. & Date :						7. Batch No. :							
3. PO No. :						8. Heat Code :							
4. Process of Melting :						9. Spec.. No. :							
5. Deoxidisation Process						10. Test Bar Size							
II. CASTING COVERED BY T.C.													
Sl. No.	Drawing No. & Item No.					Description				Quantity & Weight			
12. CHEMICAL COMPOSITION (PERCENT)													
Element	C	SI	Mn	S	P								
As per Min.													
Spec. Max..													
Actual Values.													
13. HEAT TREATMENT (To be accompanied by Recorder Chart, wherever called for)													
Condition	Temp.°C				Soaking Time, Hrs..				Cooling Medium				
14. MECHANICAL PROPERTIES													
	T.S. N/mm2	Y.S. 0.5% 2% Proof N/mm2		% E on GL 5.65 SO	% R.A. Mn	Hardness BHN Mn. 3 Values	Impact Value, Joules	Bend					
As per Min.													
Spec. Max.													
Actual Values.													
15. Surface Finish (When called for in the order/drg)													
16. DIMENSIONAL INSPECTION													
17. NON-DESTRUCTIVE TESTS													
Nature of Test	Acceptance Level	Instrument used			Range	Results	Any other details						
Ultrasonic													
Rediographic													
Dye Penetrant/ Magnetic Particle													
18. OTHER TESTS, IF ANY (MICRO- Scopic, Hydraulic, Etc.)													
19. IDENTIFICATION ON CASTING AS PER CPS.													
<p>We hereby certify that the items mentioned above have been tested and inspected in our presence and are found to be in accordance with the drawings, specifications and purchase order.</p>													
Signature & Seal of the Inspecting Officer (Purchase Representative)							Signature and Seal of the Chief of Quality Control Chief Metallurgist of the Supplier.						
Date :							Date :						
INSTRUCTION: a) If steel is produced by LD or Oxygen process, Nitrogen content should be furnished and shall not exceed 0.009% b) Test Certificates are to be furnished as per Purchase Order and Specifications, in A4 Size transparent paper. c) All the entries including signature should be in black ink. d) If testing is done by outside agencies, the original TCs shall be furnished. e) The actual Test Certificate may run into more than one A4 size paper, if needed, to facilitate filling up of details.													



CORPORATE STANDARD

AA7111124

Rev No.07

PAGE 1 of 3

BOLTS, HEXAGON HEAD, PRODUCT Gr: 'A' COARSE PITCH, STEEL, PROPERTY CLASS 8.8 (M20 – M24)

1.0 DISIGNATION:

A product Gr.A, hexagon head, steel bolt to M20, length 80 mm, coarse pitch and conforming to property class 8.8 shall be designated as:

1.1 On drawings:

- i). Material specification column : AA7111124
- ii). Description column : BOLT HEX A M20 X 80 – 8.8

1.2 On indents: Bolt Hex A M20 X 80 – 8.8: AA7111124

1.3 For issuing enquiries and on purchase orders:

While issuing enquiries and purchase orders, delete BHEL standard number from above description and add the information given under clause 2.0

2.0 COMPLIANCE WITH STANDARDS:

2.1 Dimensions, Tolerances & General Requirements:

As per IS:1364, Part 1–2002, Reaffirmed 2007

2.2 Mechanical Properties:

To conform to property class 8.8, as specified in Table-3 of IS:1367, Part 3

2.3 Threads:

Pitch – Coarse to IS:4218, Part 2

Tolerance quality – Medium

Tolerance class – 6g

2.4 Identification Marking: As stated in clause 9 of IS:1367, Part 3

2.5 Surface Discontinuity: As per IS:1367, Part 9

2.6 Finish: Plated as specified in BHEL order.

Revisions:
Clause No. 31.4.0 of MOM of MRC-F

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(F)

Rev No.07	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt:02-07-2013	Dt:	Year:	HEEP, Haridwar	Corp.R&D	December1976

**3.0 NOTE:**

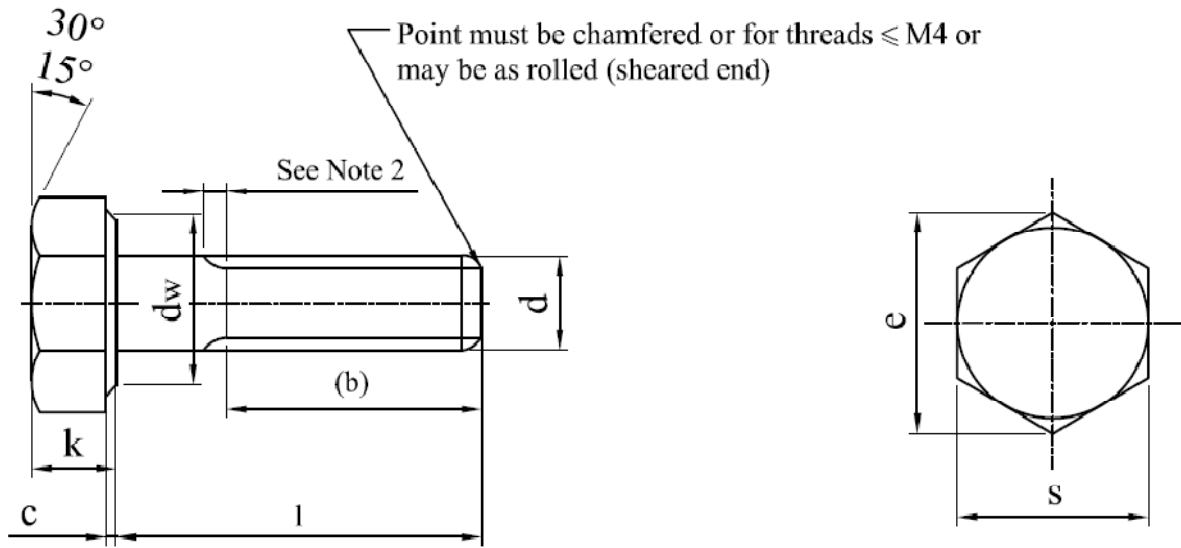
- 3.1** Length and diameter combination (refer Table 1 on page 3 of 3) between the bold lines should only be used.
- 3.2** For screw threads, general (Metric) refer to BHEL standard AA0231800
- 3.3** For tolerance grade, position and class refer to BHEL standard AA0230201
- 3.4** Bolts to this standard would be un-plated, divisions wishing to have plated bolts would have to get them plated.
- 3.5** Weights given in this standard are for general reference only and are not meant for commercial transactions.
- 3.6** When fasteners are to be tested with in BHEL, the sampling and acceptance plan shall be as per IS:1367, part 17

4.0 REFERRED STANDARDS (Latest publications including amendment):

- 1) AA0231850 2) IS:1367, Pt.3, 9 & 17 3) IS:4218, Pt.2
4) AA0231800 5) AA0230201

EXPLANATORY NOTE**The following changes have been made in this revision:**

- Clause 2.1 “Dimensions, Tolerances & General Requirements”, has been modified as “As per IS:1364, Part 1-2002, Reaffirmed 2007”
- Clause 2.2 “Mechanical properties” year “2002” of IS:1367, Part 3 has been removed.
- Clause 4.0 has been modified accordingly.
- Figure and Table -1 on page 3 of 3 have been updated.



Note:

- 1) Corporate code numbers are shown below.
- 2) For thread runout refer AA0231850
- 3) Weights have been shown in kg per 1000Nos
- 4) Symbol Δ denotes non-preferred size.

TABLE-1

(All dimensions are in 'mm')

Thread Size d	Head			Washer		Thread Length b		Nominal Length (l)											
	Flats s	Crns e	Tkns k	Dia. dw	Tkns c	For Nom. Length ≤ 125	For Nom. Length > 125 & ≤ 200	65	70	75	80	90	100	110	120	130	140	150	
	Max. Min.	Min.	Max. Min.	Min.	Max. Min.														
M 20	30.0	33.53	12.72	28.2	0.8	46	52	Sub Code	014 Δ	235 Δ	049 Δ	057	065	022	073	081		090	103
	29.67		12.28		0.2			Weight	220	232	243	255	282	307	331	356		392	428
M24	36.0	39.98	15.22	33.6	0.8	54	60	Sub Code	111 Δ			120 Δ	138	030	146	154	162		170
	35.38		14.78		0.2			Weight	330			384	419	455	490	526	560		629



CORPORATE STANDARD

AA7151115

Rev. No. 08

PAGE 1 of 3

NUTS, HEXAGON, PRODUCT GRADE 'A' COARSE PITCH, STEEL PROPERTY CLASS 8 (M1.6 - M16)

1.0 DESIGNATION

A product Gr.A, hexagon, Steel, nut thread M10, coarse pitch and conforming to property class 8 shall be designated as:

1.1 On drawings

- i) Material specification column : AA7151115
- ii) Description column : NUT HEX A M10 – 8

1.2 On indents

Nut Hex A M10 – 8; AA7151115

1.3 For issuing enquiries and on purchase orders

While issuing enquiries and purchase orders, delete BHEL standard number from the above description and add the information given under clause 2.0

2.0 COMPLIANCE WITH STANDARDS

2.1 Dimensions, Tolerances & General Requirements

As per IS: 1364, Part 3-2002, Reaffirmed 2007

2.2 Mechanical Properties

To conform to property class 8 as specified in Table-5 & 6 of IS: 1367, Part 6, Permissible Hardness 188 to 330 HB for sizes M3 to M10

2.3 Threads

- Pitch - Coarse to IS: 4218, Part 2
- Tolerance quality - Medium
- Tolerance class - 6H

2.4 Identification Marking

As stated in clause 9 of IS: 1367, Part 6

2.5 Surface Discontinuity

As per IS: 1367, Part 9

2.6 Finish

As specified in BHEL order.

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Revisions:
As per Clause 32.4.6 of MOM of MRC-F

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC (F)

Rev. No. 08	Amd. No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt: 06-09-2014	Dt:	Year:	HEEP, Haridwar	Corp. R&D	01-01-1977

3.0 NOTE

- 3.1** For nuts, hexagon, product Gr.A, coarse pitch, brass (M1.6 - M16) refer to BHEL standard AA7151113
- 3.2** For screw threads, general (Metric) refer to BHEL standard AA0231800
- 3.3** For tolerance grade, position and class refer to BHEL standard AA0230201
- 3.4** Nuts to this standard would be unplated, divisions wishing to have plated nuts would have to get them plated.
- 3.5** Weights given in this standard are for general reference only and are not for commercial transactions.
- 3.6** When fasteners are to be tested with in BHEL, the sampling and acceptance plan shall be as per IS: 1367, Part 17

4.0 REFERRED STANDARDS (Latest Publications including Amendments)

- 1) IS: 1367, Part 6, 9 & 17
- 2) IS: 4218, Part 2
- 3) AA0230201
- 4) AA0231800
- 5) AA7151113

EXPLANATORY NOTE

The following major changes have been made in the present revision

- Clause 2.1: "Reaffirmation 2007" has been added at end of the clause.
- Clause 2.2: The "Part 6-1994" has been modified as "Part 6"
- Clause 3.6: "Sampling Plan" has been modified in accordance with IS: 1367, Part 17
- Clause 4 has been modified accordingly.
- On Page-3: Table-1: The dimension of "Wrenching height" m' has been corrected from 2.32 to 2.3 for thread size M4 in accordance with IS: 1364, Part 3-2002, Reaffirmed 2007
- On Page-3: Table-1 & Fig.-1 have been modified and made more visible.

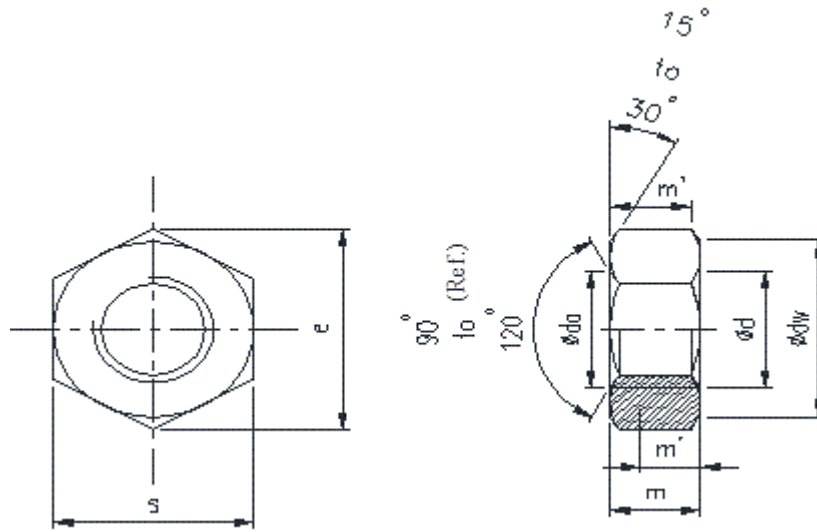


Table – 1

All dimensions in mm

Thread Size	Flats		Corners	Thickness		Wrenching Height				Sub-Code	Weight
	d	s		e	m		m'	dw	da		
Nom.	Max.	Min.	Min.	Max.	Min.	Min.	Min.	Min.	Max.		
M1.6	3.2	3.02	3.41	1.3	1.05	0.8	2.4	1.6	1.84	091	
M2	4.0	3.82	4.32	1.6	1.35	1.1	3.1	2.0	2.3	105	
M2.5	5.0	4.82	5.45	2.0	1.75	1.4	4.1	2.5	2.9	113	
M3	5.5	5.32	6.01	2.40	2.15	1.7	4.6	3.0	3.45	067	0.39
M4	7.0	6.78	7.66	3.2	2.90	2.3	5.90	4.0	4.6	075	0.82
M5	8.0	7.78	8.79	4.7	4.40	3.5	6.90	5.0	5.75	083	1.24
M6	10.0	9.78	11.05	5.20	4.90	3.9	8.90	6.0	6.75	016	2.52
M8	13.0	12.73	14.38	6.8	6.44	5.2	11.6	8.0	8.75	024	5.40
M10	16.0	15.73	17.77	8.4	8.04	6.4	14.6	10.0	10.8	032	11.69
M12	18.0	17.73	20.03	10.8	10.37	8.30	16.6	12.0	13.0	040	17.69
M16	24.0	23.67	26.75	14.8	14.1	11.3	22.5	16.0	17.3	059	33.58



CORPORATE STANDARD

AA7164002

Rev. No. 06

PAGE 1 of 3

WASHERS, SPRING LOCK, SINGLE COIL, RECTANGULAR SECTION, TYPE-B (WITH FLAT ENDS), STEEL

1.0 DESIGNATION

A single coil, rectangular section, spring lock washer, Type-B (with flat ends) for right hand threads, of nominal size 5 mm, and made of steel shall be designated as

1.1 On Drawings

- i) Material specification column - AA7164002
- ii) Description column - WASHER SPRING LOCK SC B5 - St

1.2 On Indents

Washer Spring Lock B5; AA7164002

1.3 For issuing enquiries and on purchase orders

While issuing enquiries and purchase orders, delete the BHEL Standard No. from the above description and add the information given under clause 2.0

2.0 COMPLIANCE WITH STANDARDS

2.1 Dimensions, Tolerances and General Requirements

To IS: 3063-1994, Reaffirmed 2010 Type-B (Table - 1A)

2.2 Material

Spring steel Gr.3 to Gr.6, as specified in IS: 4072

2.3 Heat Treatment and Hardness

Spring washer after coiling shall be suitably heat treated, so as to result in the finished washer having hardness in the range of 430-530 HV

2.4 Finish

Unplated.

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24/09/14

C.S- 881,

Revisions: As per clause 32.2 of MOM of MRC-F			APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE - MRC (F)		
Rev. No. 06	Amd. No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt: 06-09-2014	Dt:	Year:	HPEP, Hyderabad	Corp. R&D	01-01-1977



AA7164002
Rev. No. 06
PAGE 2 of 3

CORPORATE STANDARD

3.0 NOTE

- 3.1 For washers spring lock, Type-A refer BHEL Corporate Standard AA7164001
- 3.2 Lock washers to this standard would be unplated, divisions wishing to have plated washers would have to get them plated.
- 3.3 Weights given in this standard are for general reference only and are not meant for commercial transactions.
- 3.4 When the fasteners are to be tested within BHEL, the following sampling and acceptance plan based on IS: 6821 (Table-1) shall be followed as detailed below for physical properties.

Lot Size	Sample Size	Acceptance No.
Up to 1000	5	0
1001-3000	8	0
3001-10000	13	0
10001-35000	20	0
Over 35000	32	1

4.0 Referred standards (Latest Publications including Amendments)

- 1) IS: 4072
- 2) AA7164001
- 3) IS: 6821

Released

24/09/14

CS-881



CORPORATE STANDARD

AA7164002

Rev. No. 06

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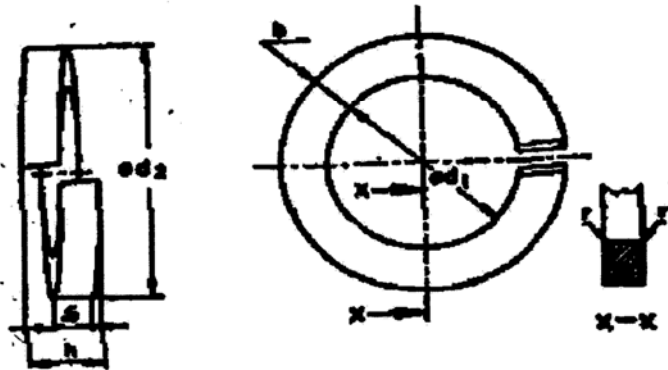


FIG-1

Note:

- 1) Corporate sub code numbers only are shown in Table-1
- 2) Weights have been shown in kg per 1000 Nos.

TABLE-1

All dimensions are in 'mm'

Nom size	Internal Dia. d_1		Outside Dia. d_2	Width b		Thickness s		Radius r	For Bolt, Nut or Screw size	Sub-Code	Weight
	Basic	Tol +	Max.	Basic	Tol ±	Basic	Tol ±	Nom.			
2	2.1	0.3	4.4	0.9	0.1	0.5	0.1	0.1	M2		0.033
2.2	2.3	0.3	4.8	1.0	0.1	0.6	0.1	0.1	M2.2		0.050
2.5	2.6	0.3	5.1	1.0	0.1	0.6	0.1	0.1	M2.5		0.053
3.0	3.1	0.3	6.2	1.3	0.1	0.8	0.1	0.2	M3	010	0.11
4.0	4.1	0.3	7.6	1.5	0.1	0.9	0.1	0.2	M4	029	0.18
5.0	5.1	0.3	9.2	1.8	0.1	1.2	0.1	0.2	M5	037	0.36
6.0	6.1	0.4	11.8	2.5	0.15	1.6	0.1	0.3	M6	045	0.83
8.0	8.1	0.4	14.8	3.0	0.15	2.0	0.1	0.5	M8	053	1.60
10.0	10.2	0.5	18.1	3.5	0.2	2.2	0.15	0.5	M10	061	2.53
12.0	12.2	0.5	21.1	4.0	0.2	2.5	0.15	1.0	M12	070	3.82
16.0	16.2	0.8	27.4	5.0	0.2	3.5	0.2	1.0	M16	088	8.91
20.0	20.2	1.0	33.6	6.0	0.2	4.0	0.2	1.0	M20	096	15.2
24.0	24.5	1.0	40.0	7.0	0.25	5.0	0.2	1.6	M24	100	26.2
30.0	30.5	1.2	48.2	8.0	0.25	6.0	0.2	1.6	M30	118	44.3
36.0	36.5	1.2	58.2	10.0	0.25	6.0	0.2	1.6	M36	126	67.3
42.0	42.5	1.2	68.2	12.0	0.25	7.0	0.25	2.0	M42		111
48.0	49.0	1.5	75.0	12.0	0.25	7.0	0.25	2.0	M48		123
52.0	53.0	1.5	83.0	14.0	0.25	8.0	0.25	2.0	M52		182
56.0	57.0	1.5	87.0	14.0	0.25	8.0	0.25	2.0	M56		193
60.0	61.0	1.5	91.0	14.0	0.25	8.0	0.25	2.0	M60		203
64.0	65.0	1.5	95.0	14.0	0.25	8.0	0.25	2.0	M64		218


CS-881 24/09/14

QUALITY PLAN

AA-19703

G.C.I.Gr.25

Fully Machined

Sl.No.	Component/Operation	Characteristic Checked	Type/Method of Check	Extent of Check	Reference Documents	Acceptance Norm	Format of Record	Agency			Remarks
								P	W	V	
1.0	Casting	i. Composition	Chemical Analysis	1 Sample per melt	Tech.Specn. AA19703	Tech.Specn. AA19703	T.C.	3	-	2	
		ii. Heat Treatment	H.T.Chart	1 Sample per H.T.batch	-do-	-do-	H.T.Chart	3	-	2	
		iii. Mechanical Properties	Mechanical Test	-do-	-do-	-do-	T.C.	3	-	2	
		iv. Surface Defects	Visual	100%	Free from Defects	Free from Defects	Inspection Report	3	2	-	
		v. Dimensions	Measurement	100% by VEND Random 10% by BHEL	Drawing	Drawing	Dimensional Report	3/	-	2	
2.0	In Process (After machining)	i. Dimensions	Measurement	100% by VEND Random 10% by BHEL	Drawing	Drawing	Dimensional Report	3/	-	2	
		ii. Tapped Holes check	with Plug Guage	100%	---	---	--do--	3/	-	2	
3.0	Final Inspection	i. Cleanliness	Visual	100%	---	---	Inspection Report	3	2	-	
		ii. Identification & Marking	Punching Heat No Po.No., Drg.No. & Inspector Seal	100%	---	---	Inspection Report	3	2	-	
		iii. Prevention (from rust)	Visual	100%	---	---	--do--	3	2	-	
Q.P.No	RV/C&F/09	Approved By	S.C.RAI			LEGEND :			P = PERFORM W = WITNESS V = VERIFY 3 = VENDOR/SUPPLIER 2 = BHEL		
DATE	18/05/94	Signature & Date	 H.S. PANDEY MANAGER (P & T) BHEL - HERP			TC = TEST CERTIFICATE HT = HEAT TREATMENT					
PageNo	1 of 1	BHEL	VARANASI								


B.H.E.L. H.E.R.P. VARANASI

QUALITY PLAN

AA-19702

G.C.I. Gr. 20

FULLY MACHINED

Sl.No.	Component/Operation	Characteristic Checked	Type/Method of Check	Extent of Check	Reference Documents	Acceptance Norm	Format of Record	Agency			Remarks
								P	W	V	
1.0	Casting	i. Composition	Chemical Analysis	1 Sample per melt	Tech.Specn. AA19702	Tech.Specn. AA19702	T.C.	3	-	2	
		ii. Heat Treatment	H.T.Chart	1 Sample per melt	-do-	-do-	H.T.Chart	3	-	2	
		iii. Mechanical Properties	Mechanical Test	-do-	-do-	-do-	T.C.	3	-	2	
		iv. Surface Defects	Visual	100%	Free from defects	Free from defects	Inspection Report	3	2	-	
		v. Dimensions	Measurement	100% by VEND Random 10% by BHEL	Drawings	Drawings	Dimensional Report	3/2	-	2	
2.0	In Process (After machining)	i. Dimensions	Measurement	100% by VEND Random 10% by BHEL	Drawings	Drawings	-do-	3/2	-	2	
		ii. Tapped Holes Check	with plug gauge	100%	---	---	-do-	3/2	-	2	
3.0	Final Inspection	i. Cleanliness	Visual	100%	---	---	Inspection Report	3	2	-	
		ii. Identification & Marking	Punching Heat No. Po.No., Drg.No. & Inspector Seal	100%	---	---	-do-	3	2	-	
		iii. Prevention (from rast)	Visual	100%	---	---	-do-	3	2	-	
Q.P.No.	RV/C&F/12	Approved By	S.C.RAI								
DATE	20/05/94	Signature & Date	 B. P. Singh S. Manager (P & D)								
PageNo.	1 of 1	BHEL	LEGEND : P = PERFORM W = WITNESS V = VERIFY 3 = VENDOR/SUPPLIER 2 = BHEL TC = TEST CERTIFICATE HT = HEAT TREATMENT								

S. Manager (P & D)
B. H. E. L. - H. E. R. P.
Shivpur, Vara



BHARAT HEAVY ELECTRICALS LIMITED

Ramachandrapuram, Hyderabad – 502 032, INDIA

QW – 482 WELDING PROCEDURE SPECIFICATION (WPS)

Welding Procedure Specification No.: WE006 Date: 02.08.86 Supporting PQR No.: 516, Dt : 11.05.10

Revision No.: 07

Date: 24.04.2016

Welding Process (es) : SMAW

Type (s) : MANUAL

JOINTS (QW 402)

Joint Design: As per manufacturing drawing (groove/fillet)

Root Spacing : As per manufacturing drawing

Backing (Yes) : for double side butt welds and backing strip joints

(No) : for single side welds

Backing Material (Type) : Base metal / Weld metal

Metal: Yes

Non-Fusing Metal: No

Retainer: No

BASE METALS (QW – 403)

P. No. : 1 Group No. : 1 & 2 TO P. No.: 1 Group No.: 1 & 2

OR

Specification type & grade: ----- to Specification type & grade : -----

OR

Chemical Analysis & Mechanical Properties: --- to Chemical Analysis & Mechanical Properties: ---

Thickness Range :

Base Metal : Groove: 5.0 mm to 38 mm ** Fillet : all sizes

Deposited pass thickness > 13mm – Not Permitted

Other : None

Filler Metals (QW – 404)

	SMAW
Spec. No. (SFA)	5.1
AWS NO (CLASS)	A5.1 (E 7018)
F. No.	4
A. No.	1
Size of Filler Metals	Dia 2.5, 3.15, 4.0, 5.0mm
Filler Metal Product Form	N.A
Supplemental Filler Metal	N.A
Deposited Weld Metal	
Thickness Range : Groove:	38 mm Max.
Fillet:	38 mm Max Throat
Electrode Flux (Class)	Basic
Consumable Insert	No
Max. Bead Thickness	5 mm

** Note : For Unequal thicknesses base material thickness qualified upto 50mm and weld metal thickness limited to 38mm max.

Rev : 07 – Note added regarding base material thickness

N.A – Not Applicable

Page 1 of 2

<p>POSITIONS (QW-405)</p> <p>Position(s) Groove : <u>ALL POSITIONS</u> Welding Progression: <u>UP for Vertical</u> <u>Down –Not permitted</u></p> <p>Position (s) Fillet: <u>ALL</u> Other : None</p>	<p>POSTWELD HEAT TREATMENT (QW-407)</p> <p style="text-align: center;"><u>Not Permitted</u></p> <p>Temperature Range: <u>NA</u></p> <p>Time Range: <u>NA</u> Other : None</p>																	
<p>PREHEAT (QW-406)</p> <p>Preheat Temp Min: <u>10 °C min for < 31mm</u> <u>100 °C min for 31mm and above</u></p> <p>Interpass Temp Max: <u>300 °C</u></p> <p>Preheat Maintenance: <u>Minimum specified temperature</u> <u>for every restart</u></p> <p>Other : None</p>	<p>GAS (QW - 408)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2" style="text-align: center;">Percentage Composition</th> </tr> <tr> <th style="text-align: center;">Gas(es)</th> <th style="text-align: center;">Mixture Flow Rate</th> </tr> </thead> <tbody> <tr> <td>Shielding :</td> <td style="text-align: center;">N.A</td> <td style="text-align: center;">- -</td> </tr> <tr> <td>Trailing :</td> <td style="text-align: center;">N.A</td> <td style="text-align: center;">- -</td> </tr> <tr> <td>Backing :</td> <td style="text-align: center;">N.A</td> <td style="text-align: center;">- -</td> </tr> <tr> <td>Other : None</td> <td></td> <td></td> </tr> </tbody> </table>		Percentage Composition		Gas(es)	Mixture Flow Rate	Shielding :	N.A	- -	Trailing :	N.A	- -	Backing :	N.A	- -	Other : None		
	Percentage Composition																	
	Gas(es)	Mixture Flow Rate																
Shielding :	N.A	- -																
Trailing :	N.A	- -																
Backing :	N.A	- -																
Other : None																		

ELECTRICAL CHARACTERISTICS (QW-409)

Weld Pass (es)	Process	Filler Metal		Current type & Polarity	Amps (Range)	Wire feed speed	Energy or Power (Range)	Volts (Range)	Travel speed	Other
		Classification	Diameter							
Root & Subsequent as required	SMAW	E 7018	2.5mm	DCEP	60 – 90A	N.A	N.A	22-34V	N.A	<i>String for horizontal; Others Weave (Max 3 times Electrode Core Dia)</i>
	-do-	-do-	3.15mm	-do-	100-150A	-do-	-do-	-do-	-do-	
	-do-	-do-	4.0mm	-do-	150-200A	-do-	-do-	-do-	-do-	
		-do-	5.0mm	-do-	200-260A	-do-	-do-	-do-	-do-	

Pulsing Current : NAHeat Input : NATungsten Electrode Size and Type : NAMode of Metal Transfer for GMAW (FCAW): NA

Others : None

TECHNIQUE (QW-410)String or Weave Bead: string and/or weaveOrifice or Gas Cup Size : NAInitial / Interpass Cleaning : chipping / brushing / grindingMethod of Back Gouging: grinding/gouging
if requiredOscillation : NAContact tube to work distance : NAMultiple or Single Pass : Multiple passMultiple or Single Electrodes : Single electrodeClosed to out chamber : NAPeening : Not allowedUse of thermal processes : NAOther : Clean weld area to remove oil, rust, grease, etc. prior to welding.

Prepared by



Welding Engineer

N.A – Not Applicable

Approved by



HEAD / Welding Engg

Page 2 of 2