



**Bharat Heavy Electricals Limited**  
Industrial Valves Plant  
Goindwal Sahib (Punjab)

**Enquiry No.**  
**2223-051E**

**Date:**  
**28.10.2022**

**NOTICE INVITING TENDER (NIT)**

Dear Sir / Madam,

BHEL Goindwal Sahib (Punjab) invites offers from interested bidders / suppliers for submission of their offer through e-procurement mode at <https://eprocurebhel.co.in/>. Offers in any other mode will not be accepted. In case of any difficulty faced while registering on BHEL's e-Procurement portal developed by NIC, queries may be addressed to 0120-4001002, 0120-4001005 and 0120-6277787; email: [support-eproc@nic.in](mailto:support-eproc@nic.in). These details are also available on 'Contact Us' page of the portal.

<b>Tender enquiry no. &amp; date</b>	2223-051E dated 28.10.2022
<b>Form of contract</b>	Supply
<b>Tender / Item description</b>	Procurement of CF3M castings
<b>Material standard / Drawings</b>	As per attached TDC(s) & Sample Drawings
<b>Location(s) of Supply / Work</b>	BHEL, Industrial Valve Plant, Goindwal Sahib, Dist. Tarn Taran -143422 (Punjab)
<b>Earnest Money Deposit (EMD)</b>	Not Applicable
<b>Quotation parts</b>	Two Part Bid
<b>Tender download / Bid submission start date</b>	<b>28.10.2022 (17:30 Hrs. IST)</b>
<b>Tender download / Bid submission end date</b>	<b>09.11.2022 (12:00 Hrs. IST)</b>
<b>Tender / Bid opening date</b>	<b>09.11.2022 (15:30 Hrs. IST)</b>
<b>Make in India local content</b>	20 %
<b>Validity of offer (In days)</b>	75 days from the actual date of techno commercial bid opening(Part I)
<b>Reverse auction</b>	Applicable
<b>Non-disclosure agreement</b>	Applicable
<b>Contact person details</b>	Sumeet Bansal, Sr. Manager 01859-224 628, <a href="mailto:sbansal@bhel.in">sbansal@bhel.in</a>  Sahil Malhotra, Dy. Manager 01859-224 603, <a href="mailto:sahil@bhel.in">sahil@bhel.in</a>

**PART-I (TECHNO-COMMERCIAL BID)****(To be filled & signed by bidder & submit with offer as 'PDF' file only)**

<b>Tender enquiry no. &amp; date</b>	<b>2223-XXE dated 26.10.2022</b>
<b>Tender description</b>	<b>Supply of CF3M castings</b>
<p>Bidder must note following points:</p> <ol style="list-style-type: none"> <li>1. This workbook is protected, except for cells where comments / confirmation is to be given by bidder.</li> <li>2. Bidder is advised not to unprotect / tamper the sheet / alter the terms mentioned in the sheet.</li> <li>3. Any alteration to terms mentioned by BHEL will be considered as tampering and bidder's offer shall be liable for rejection.</li> <li>4. Bidders are advised to only fill the unprotected cells (shaded cells) by dropdown or writing the comments as applicable as their confirmation. Bidders are advised to upload duly filled &amp; signed 'PDF' file as techno-commercial (Part-I) bid'. Failure on the part of bidder in not returning this duly filled-up techno-commercial bid and / or submitting incomplete replies may lead to rejection of bidder's quotation.</li> <li>5. All the commercial terms and conditions shall be indicated by vendor in this format only and nowhere else in his quotation. However, in case the space for vendor's reply is not sufficient against a particular question, the vendor shall furnish same by way of separate annexure / sheet attached to this questionnaire, indicating cross-reference of respective clauses.</li> </ol>	

**TECHNICAL CONDITION DETAIL**

<b>Sl no.</b>	<b>Elements</b>	<b>Response</b>	<b>Remarks</b>
1	Technical : Supply of CF3M castings as per tender documents (if selected 'Accepted with deviation', please mention the deviation clearly)	Select from the drop down list	

**COMMERCIAL CONDITIONS & DETAILS**

<b>Sl no.</b>	<b>Elements</b>	<b>Response</b>	<b>Remarks (if any)</b>
1	<b>Delivery destination:</b> FOR, BHEL, Stores Industrial Valves Plant 433, Industrial Complex Goindwal Sahib- 143 422 District: Tarn Taran (Punjab), India (refer tender terms & conditions for details)	Select from the drop down list	
2	IGST supply (%)	Select from drop down list	
3	SGST supply (%)	Select from drop down list	
4	CGST supply (%)	Select from drop down list	
5	Delivery period: Within 90 days from date of of PO. (refer tender terms & conditions for detail)	Select from the drop down list	
6	Validity: 75 days from techno commercial bid opening(Part I). (Refer tender terms & conditions for details)	Select from the drop down list	
7	LD clause: Penalty for late delivery will be applicable @ 0.5% per week or part thereof subject to a maximum of 10.0 %. (Refer tender terms & conditions for details)	Select from the drop down list	
8	Risk purchase: If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL will be entitled to terminate the contract and to Purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the delivery period mentioned in the Purchase Order. (Refer tender terms & conditions for details)	Select from the drop down list	
9	Firm Price: The rates quoted shall be firm and fixed. No price variation is proposed and allowed	Select from the drop down list	
10	You are manufacturer of quoted item/s.	Select from the drop down list	
11	Are you registered under MSMED act 2006 as Micro or Small.	Select from the drop down list	
12	If you are registered under MSMED act 2006 as Micro or small, please attach valid MSE certificate as per tender terms & conditions	Select from the drop down list	
13	Due payment against supplies shall be made after receipt and acceptance of material as below: a) Micro & Small Enterprises (MSEs) - 45 days b) Medium Enterprises - 60 days c) Non - MSME - 90 days (Refer tender terms & conditions for details)	Select from the drop down list	
		Name	

**PART-I (TECHNO-COMMERCIAL BID)**

**(To be filled & signed by bidder & submit with offer as 'PDF' file only)**

<b>Tender enquiry no. &amp; date</b>		<b>2223-XXXE dated 26.10.2022</b>	
<b>Tender description</b>		<b>Supply of CF3M castings</b>	
14	<b>Contacts:</b> Details of contact person's name, designation, department with complete postal and email address along with phone and fax numbers to be mentioned	Designation (Proprietor/ Partner/Director/ Authorised Signatory)	
		Email ID	
		Mobile No	
		Address	
15	Minimum percentage of Local content should be 20% local supplier as per latest Make in India Order issued before issue date of this tender.	Please mention percentage of Local Content here	
16	I have thoroughly gone through the attached tender terms & conditions and understood the above techno-commercial requirements	Select from the drop down list	

We further, confirm that we have quoted the rates in the tender considering Inter-alia the

1. Tender Document(s)
2. Additional Document(s) (if any)
3. BOQ Document (Price Bid Format)
4. Corrigendum (if any)
5. Pre Bid Meeting Minutes (if any)

We hereby certify that we have fully read and thoroughly understood the tender requirements and accept all terms and conditions of the tender including all corrigendum/addendum issued (if any). Our offer is in confirmation to all the terms and conditions of the tender including all corrigendum/addendum (if any) and minutes of the pre-bid meeting (if any). In the event our offer is found acceptable and Order is placed /Contract is awarded to us, the complete tender document shall be considered for constitution of Order / Contract Agreement.

Authorised signatory with seal

[Validate](#)[Print](#)[Help](#)[Wise BoQ](#)

Tender Inviting Authority: BHEL IVP Goindwal Sahib

Name of Work: Supply of CF3M castings

Contract No: 2223-XXXE dated 28.10.22

Name of the Bidder/ Bidding Firm / Company :

**PRICE SCHEDULE**

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	BASIC RATE In Figures To be entered by the Bidder in Rs. /Kg	TOTAL AMOUNT excluding taxes in Rs. P	TOTAL AMOUNT In Words
1	2	4	5	7	11	13
1	CF3M- UPTO C500 CASTING	1942	KG		0.00	INR Zero Only
2	CF3M CASTING (<500KG) with IGC testing	8481	KG		0.00	INR Zero Only



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GOINDWAL SAHIB

## SPECIAL TERMS AND CONDITIONS

Rate Contract tender enquiry no. 2223-051E Dated 28.10.2022 Due date 09.11.2022

Tender Description: Supply of CF3M castings

This tender is through e-procurement mode. Tender documents can be downloaded from <https://eprocurebhel.co.in>

### S1 SCOPE OF SUPPLY

Material shall be supplied as per the applicable latest Technical Delivery Conditions (TDC)/ Material Standard requirements/Drawings/RT Shooting sketch and other requirements as given in the Purchase Order. The applicable TDC for 1) Indian vendors is TDC:0412 Rev27 (or latest applicable), 2) Wherever tolerances are not specified in drawing, for untoleranced dimensions in castings VL:STDC:023 Rev 00 3) IGC testing is required for various material codes. Therefore, for IGC material codes, TDC 412/27 is to be followed with addition of following as 5(c) clause of TDC 412/27 :

5(c) Inter Granular Corrosion (IGC) test shall be conducted for all austenitic stainless steels as follows:

- ASTM A262 Practice 'B' with acceptance criteria of '60 mils/year(max)'.  
• For the IGC test as described above, two sets of samples to be drawn from each solution annealing lot. One set shall correspond to the highest Carbon content and the other to the highest-pressure rating

TDC(s) and RT shooting sketch are enclosed herewith. Sample drawings are attached herewith. Item wise rate schedule details are as following:

Material Code	Description	Qty (Kg)
G92110280000	CF3M CASTING - UPTO 500 Class	1942
G92110410000	CF3M CASTING - UPTO 500 Class with IGC testing	8481

The tender quantity may vary by  $\pm 10\%$  (weight wise).

# Rate schedule given above represents all castings under respective class range. This rate schedule is for tendering purpose only. Actual PO will be released as per material codes and unit weights given in [TABLE I] given below. List of items is a probable list. New material codes can be added from time to time for similar type of castings in this list. For the new material codes, purchase order shall be released on the successful L1 bidder on mutual consent basis.



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## SPECIAL TERMS AND CONDITIONS

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Tender Description: Supply of CF3M castings

[TABLE I]

Sr. No.	MATL_NO	DESCRIPTION	Drw. No.	IGC /Non IGC	Tender qty.	Unit SAP/ Established Weight	Total Wt
1	922062260000	ARM_2_C150_FV_CF3M (IGC)-Z137	2V000014084R	IGC	2	0.75	1.50
2	922062200000	BODY_2_C150_FV_FL_CF3M (IGC)-Z	2V000006391R	IGC	2	20.8	41.60
3	922062280000	COVER_2_C150_FV_CF3M (IGC)-Z13	3V000024280R	IGC	2	8.2	16.40
4	922062240000	FLAP_2_C150_FV_CF3M (IGC)-Z137	3V000095062R	IGC	2	1.03	2.06
5	922062310000	ROD DIA40X26-CF3M (IGC)-UB17	4V000027472R	IGC	20	0.26	5.20
6	922062220000	SEAT RING_2_C150_FV_CF3M (IGC)	3V000035217R	IGC	2	0.9	1.80
7	922062270000	ARM_3_C150_FV_CF3M (IGC)-UB17	2V000014084R	IGC	18	0.9	16.20
8	922039640000	ARM_3_C150_FV_CF3M-Z120	2V000014084R		1	0.9	0.90
9	922038840000	BODY_3_C150_FV_BW_CF3M-Z122	2V000013884R		1	31.83	31.83
10	922062210000	BODY_3_C150_FV_FL_CF3M (IGC)-U	2V000006131R	IGC	18	35.5	639.00
11	922062290000	COVER_3_C150_FV_CF3M (IGC)-UB1	4V000026236R	IGC	18	12.82	230.76
12	922038530000	COVER_3_C150_FV_CF3M-Z120	3V000017688R		1	12.82	12.82
13	922039630000	FLAP_3_C150/C300_FV_CF3M-Z120	3V000095062R		1	1.84	1.84
14	922062250000	FLAP_3_C150_FV_CF3M (IGC)-UB17	3V000095062R	IGC	18	1.84	33.12
15	922039650000	ROD DIA40X26-CF3M-Z120	4V000027472R		1	0.26	0.26
16	922062230000	SEAT RING_3_C150_FV_CF3M (IGC)	3V000035217R	IGC	18	1.16	20.88
17	922039620000	SEAT RING-3-C150-FV-CF3M-Z120	3V000035217R		1	1.16	1.16
18	922038940000	BODY_4_C150_FV_BW_CF3M-Z129	2V000013501R		1	46	46.00
19	922038930000	COVER_4_C150_FV_CF3M-Z129	3V000023268R		1	17.3	17.30
20	922039020000	ARM_8_C150/C300_FV_CF3M-Z124	2V000014084R		1	7.3	7.30
21	922038990000	BODY_8_C150_FV_BW_CF3M-Z124	2V000008500R		1	114	114.00
22	922039030000	COVER_8_C150_FV_CF3M-Z124	4V000026409R		1	50.7	50.70
23	922039000000	FLAP_8_C150/C300_FV_CF3M-Z124	3V000095062R		1	16.17	16.17
24	922039760000	ROD-CF3M-Z200	4V000027472R		6	2.94	17.64
25	922039010000	SEAT RING-8-C150-FV-CF3M-Z124	3V000035217R		1	5.7	5.70
26	922039050000	ARM_4_C150/C300_FV_CF3M-Z125	2V000014084R		2	2	4.00
27	922039040000	BODY_4_C300_FV_BW_CF3M-Z125	2V000007855R		1	54.8	54.80
28	922039060000	COVER_4_C300_FV_CF3M-Z125	3V000023269R		1	21	21.00
29	922039100000	FLAP_4_C150/C300_FV_CF3M-Z129	3V000095062R		2	3.39	6.78
30	922039780000	ROD-CF3M-Z125	4V000027472R		4	0.43	1.72
31	922039070000	BODY_6_C300_FV_BW_CF3M-Z126	2V000013504R		1	95	95.00
32	922038550000	COVER_6_C150/C300_FV_CF3M-Z121	3V000017688R		1	32.1	32.10
33	922039690000	ROD DIA70X40-CF3M-Z121	4V000027472R		1	1.2	1.20



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## SPECIAL TERMS AND CONDITIONS

Rate Contract tender enquiry no. 2223-051E Dated 28.10.2022 Due date 09.11.2022

Tender Description: Supply of CF3M castings

Sr. No.	MATL_NO	DESCRIPTION	Drw. No.	IGC /Non IGC	Tender qty.	Unit SAP/ Established Weight	Total Wt
34	922039080000	SEAT RING-6-C300-FV-CF3M-Z126	3V000035217R		1	3.7	3.70
35	922062710000	BACK SEAT BUSH-UB21 (IGC)	4V000027452R	IGC	50	0.26	13.00
36	922062380000	BODY_2_C150_GV_FL_CF3M (IGC)-U	2V000005873R	IGC	26	15.1	392.60
37	922062300000	SEAT RING 2-C300-GV-CF3M (IGC)	3V000035217R	IGC	100	0.9	90.00
38	922062410000	WEDGE_2_C150/C300_CF3M (IGC)-U	3V000006628R	IGC	50	1.7	85.00
39	922062390000	YOKE-BONNET_2_C150_GV_CF3M (IGC)	2V000006107R	IGC	26	9.2	239.20
40	922062430000	BODY_3_C150_GV_FL_CF3M (IGC)-U	2V000005872R	IGC	44	26.5	1166.0
41	922062440000	SEAT RING 3-C150-GV-CF3M (IGC)	3V000035217R	IGC	88	1.1	96.80
42	922062450000	WEDGE_3_C150_CF3M (IGC)-UB23	3V000006598R	IGC	44	3.08	135.52
43	922062460000	YOKE-BONNET_3_C150_GV_CF3M (IGC)	2V000005937R	IGC	44	12.7	558.80
44	922038760000	BODY_4_C150_GV_BW_CF3M-NK76	2V000007944R		4	36	144.00
45	922062470000	BODY_4_C150_GV_FL_CF3M (IGC)-U	2V000005877R	IGC	6	42.75	256.50
46	922062480000	SEAT RING-4-150-GV-CF3M (IGC)-	3V000035217R	IGC	12	1.73	20.76
47	922039320000	SEAT RING-4-150-GV-FL-HW-CF3M-	3V000035217R		4	1.73	6.92
48	922062490000	WEDGE_4_C150_CF3M (IGC)-UB24	2V000003379R	IGC	6	5.5	33.00
49	922039350000	WEDGE_4_C150_CF3M-NK77	2V000003379R		6	5.5	33.00
50	922062500000	YOKE-BONNET_4_C150_GV_CF3M (IGC)	2V000005925R	IGC	6	18.85	113.10
51	922038510000	YOKE-BONNET_4_C150_GV_CF3M-NK0	2V000005925R		4	18.85	75.40
52	922062720000	BACK SEAT BUSH-UB24 (IGC)	4V000027452R	IGC	66	0.26	17.16
53	922038790000	BODY_6_C150_GV_BW_CF3M-NP81	2V000014166R		3	45	135.00
54	922062510000	BODY_6_C150_GV_FL_CF3M (IGC)-U	2V000013591R	IGC	4	46.13	184.52
55	922062520000	SEAT RING-6-C150-GV-CF3M (IGC)	3V000035217R	IGC	8	2.6	20.80
56	922062530000	WEDGE_6_C150_CF3M (IGC)-UB25	2V000013610R	IGC	4	6.9	27.60
57	922039420000	WEDGE_6_C150_CF3M-NP81	2V000013610R		8	6.9	55.20
58	922062540000	YOKE-BONNET_6_C150_GV_CF3M (IGC)	2V000014171R	IGC	4	19.67	78.68
59	922038500000	YOKE-BONNET_6_C150_GV_CF3M-NP7	2V000014171R		3	19.67	59.01
60	922062730000	BACK SEAT BUSH-UB26 (IGC)	4V000027452R	IGC	28	0.88	24.64
61	922038800000	BODY_8_C150_GV_BW_CF3M-NP82	2V000014162R		1	62.1	62.10
62	922062550000	BODY_8_C150_GV_FL_CF3M (IGC)-N	2V000013609R	IGC	10	78	780.00
63	922062560000	SEAT RING-8-C150-GV-CF3M (IGC)	3V000035217R	IGC	20	1.8	36.00
64	922062580000	WEDGE_8_C150_CF3M (IGC)-UB26	2V000013624R	IGC	10	13.7	137.00



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## SPECIAL TERMS AND CONDITIONS

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Tender Description: Supply of CF3M castings

Sr. No.	MATL_NO	DESCRIPTION	Drw. No.	IGC /Non IGC	Tender qty.	Unit SAP/ Established Weight	Total Wt
65	922039430000	WEDGE_8_C150_CF3M-NP82	2V000013624R		1	13.7	13.70
66	922038860000	YOKE- BONNET_8_C150_GV_HO_CF3M-	2V000014163R		1	25.93	25.93
67	922062570000	YOKE- BONNET_8_C150_GV_HO_CF3M (IGC)-UB26	2V000014163R	IGC	10	25.93	259.30
68	922039550000	BACK SEAT-CF3M-NP76	4V000027452R		4	1.1	4.40
69	922038780000	BODY_10_C150_GV_BW_CF3M-NP83	2V000014151R		1	100	100.00
70	922039370000	SEAT RING-10-C150-GV-CF3M-NP83	3V000035217R		2	6.6	13.20
71	922039380000	WEDGE_10_C150_CF3M-NP83	2V000013687R		1	20.6	20.60
72	922039500000	YOKE- BONNET_10_C150_GV_HO_CF3M	2V000014152R		1	43.9	43.90
73	922062400000	BODY_2_C300_GV_FL_CF3M (IGC)-N	2V000006012R	IGC	24	22.7	544.80
74	922062420000	YOKE-BONNET_2_C300_GV_CF3M (IGC)	2V000006099R	IGC	24	12	288.00
75	922038830000	BODY_4_C300_GV_BW_CF3M-NK79	2V000006116R		1	46.7	46.70
76	922039360000	WEDGE_4_C300_CF3M-NK79	2V000003436R		1	6.3	6.30
77	922039570000	YOKE-BONNET_4_C300_GV_CF3M- NK7	2V000005935R		1	24.4	24.40
78	922062320000	BODY_2_C300_RV_FL_CF3M (IGC)-P	2V000008237R	IGC	12	23	276.00
79	922062630000	DISC_2_C300_CF3M (IGC)-P883	4V000027464R	IGC	12	2.38	28.56
80	922062590000	SEAT RING-2_C300_SV_CF3M (IGC)	3V000035217R	IGC	12	0.9	10.80
81	922062330000	YOKE-BONNET_2_C300_SV_CF3M- P88 (IGC)	2V000001776R	IGC	12	12	144.00
82	922038700000	BODY_3_C300_RV_BW_CF3M-P777	2V000007850R		2	34	68.00
83	922062340000	BODY_3_C300_RV_FL_CF3M (IGC)-U	2V000008245R	IGC	17	46.5	790.50
84	922062640000	DISC_3_C300_CF3M (IGC)-P884	4V000027464R	IGC	17	3.78	64.26
85	922062600000	SEAT RING-3_C300_SV_CF3M (IGC)	3V000035217R	IGC	17	2.93	49.81
86	922038430000	YOKE-BONNET_3_C300_RV_CF3M- P76	2V000014085R		2	23.43	46.86
87	922062350000	YOKE-BONNET_3_C300_SV_CF3M- UB1 (IGC)	2V000014085R	IGC	17	23.43	398.31
88	922039110000	BODY_4_C300_RV_BW_CF3M-P778	1V000005193R		1	49	49.00
89	922062360000	BODY_4_C300_RV_FL_CF3M (IGC)-U	1V000005148R	IGC	1	72	72.00
90	922062650000	DISC_4_C300_CF3M (IGC)-P885	4V000027464R	IGC	1	5.78	5.78
91	922062610000	SEAT RING-4_C300_SV_CF3M (IGC)	3V000035217R	IGC	1	4.2	4.20
92	922039140000	SEAT RING-4-C300-RV-CF3M-P778	3V000035217R		1	4.2	4.20



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93	922038410000	YOKE-BONNET_4_C300_RV_CF3M-P76	2V000003153R		2	27	54.00
94	922062370000	YOKE-BONNET_4_C300_SV_CF3M-UB2 (IGC)	2V000003153R	IGC	1	27	27.00
95	922039720000	BACK SEAT BUSH-P779	4V000027452R		1	1.17	1.17
96	922038890000	RING-CF3M-P779	4V000027466R		1	4.3	4.30
97	922060120000	BACK SEAT BUSH-P831	4V000027452R		1	1.93	1.93
98	922060080000	BODY_8_C300_RV_BW_CF3M-P831	1V000005210R		1	164.5	164.50
99	922060100000	DISC_8_C300_CF3M-P831	4V000027464R		1	26.5	26.50
100	922060130000	RING-CF3M-P831	4V000027466R		1	5.96	5.96
101	922060090000	SEAT RING-8-C300-SV-CF3M-P831	3V000035217R		1	9.66	9.66
102	922060110000	YOKE-BONNET_8_C300_RV_CF3M-P83	2V000002419R		1	92	92.00

### Pre-Qualification terms for participating in the Rate Contract:

1. Bidder should be a manufacturer for Stainless Steel Castings. Bidder to upload undertaking/ISO certificate/documentary evidence for being manufacturer.
2. Bidder shall submit "Well Known Foundry" recognition certificate under the Indian Boiler Regulations 1950 for manufacture of Boiler Quality Castings which shall be valid as on date of tender opening and bidder has to submit undertaking that they shall renew it from time to time. Well Known Foundries, which have applied for renewal on the date of tender opening, shall submit the expired "Well Known Foundry" certificate and documentary evidence/undertaking for renewal of the same.

However, in case the bidder is not having "Well Known Foundry" certificate, then he can supply castings after inspection from IBR approved inspection authorities for IBR items. Foundries which are not recognized as "Well Known Foundry" should have experience of supplying Boiler Quality Castings under Indian Boiler Regulations 1950 and shall have to submit purchase order and corresponding proof of Witness pouring by IBR approved inspecting authorities. Date of such purchase order shall be on or after 01.10.2019.

3. Bidder should have experience of supplying Radiography Tested (RT) castings and shall have to submit purchase order and corresponding proof of RT reports. Date of such purchase order shall be on or after 01.10.2019.
4. Bidder should have successfully manufactured and supplied steel castings. Bidder shall submit customer Purchase Orders and their invoices for supply of Stainless Steel Castings with minimum cumulative value of Rs. 25,00,000 (Rs. Twenty-five lakh only) as proof. For MSEs, the required cumulative value of POs and invoices shall be Rs. 12,50,000.00 (Rs. Twelve lakh fifty thousand



BHEL IVP  
GOINDWAL SAHIB

## SPECIAL TERMS AND CONDITIONS

Rate Contract tender enquiry no. 2223-051E Dated 28.10.2022 Due date 09.11.2022

**Tender Description:** Supply of CF3M castings

only). Date of Purchase Order/s date & corresponding invoices should be 01.10.2019 or afterwards and upto the date of actual bid opening. All mentioned values are net of taxes.

Start-ups shall be exempted from this criteria of Purchase order and invoice submission without any relaxation in quality standards or technical parameters as per D.O. No. 5(4)/2016-BE-I dated 15.02.2017. For claiming Start-Up exemption, vendors have to submit DPIIT (Dept. of Promotion of Industry and Internal Trade)/DIPP (Department for Industrial Policy and Promotion) recognition certificates.

**S2 PART-I: TECHNO-COMMERCIAL BID should contain all the documents/confirmations as per following details:**

- a) Acceptance of Techno-Commercial terms and conditions shall be attached along with bid document. This can be attached either by signing each page of terms and conditions or a confirmation statement.

*IF THE OFFER IS NOT ACCOMPANIED WITH ACCEPTANCE OF TERMS AND CONDITIONS, IT SHALL BE CONCLUDED THAT ALL THE TERMS AND CONDITIONS ARE ACCEPTABLE AND NO CLAIM WHATSOEVER SHALL BE ENTERTAINED LATER ON.*

- b) MSE vendors should submit **Udyam Registration Certificate/UAM** for availing applicable benefits for MSE vendors as per tender terms. Validity of document shall be considered as on date of Part I opening as per the latest available notification from Govt.
- c) Documents as per pre-qualification terms.
- d) Duly filled Annexure-A (Non-Disclosure Agreement)
- e) Duly filled Annexure - B MII Declaration content format

**S3 LOADING**

100% loading shall be done on the L1 bidder for the all material codes and corresponding quantity as mentioned on clause S1.

**S4 PRICE BASIS**

- a) Rates shall be quoted on **rate INR per kg basis & on FOR GOINDWAL basis. Evaluation shall be done for both the line items combined on total value basis and 100% quantity shall be loaded to L1 bidder for all the material codes.**
- b) **Rates shall be inclusive of pattern and development cost.** The pattern cost shall be borne by the vendor.
- c) Unloading of material at Main Stores of BHEL shall be arranged by BHEL.
- d) Order of enquiry item sl. no. shall be maintained in the quotation.

**S5 REVERSE AUCTION**

Reverse auction will be conducted in this tender enquiry.



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### **S6 SUBMISSION OF SUPPLIER REGISTRATION FORM (SRF)**

Bidders, who are not currently on registered list of BHEL IVP Goindwal and BHEL Trichy, may submit their application for vendor registration through online system on [www.bhel.com](http://www.bhel.com) in IVP Goindwal **material category 'GVCST'**. Direct link for online supplier registration is <https://supplier.bhel.in/>. This application submission can be done separately/immediately without waiting for the tender opening and finalization.

### **S7 DELIVERY SCHEDULE**

Delivery shall be within 90 days from date of Purchase Order.

*In case of special requirements, BHEL may ask vendor/s to supply with lesser delivery schedule, which shall be mentioned in the purchase orders. In such cases, delivery extension may be given to vendor for equal load in other pending purchase orders.*

### **S8 TEST CERTIFICATE**

It is the responsibility of successful vendor to ensure that all the castings are supplied with IBR TC or MTC as applicable.

### **S9 CASTING WEIGHTS**

Rate of any item shall be derived by multiplying unit weight with rate per kg for the period when PO is being released. For the unit weights please refer the [TABLE I] in clause S1. List of items for which weights are already established is enclosed with this tender enquiry.

### **S10 PROCEDURE FOR CASTING WEIGHT ESTABLISHMENT**

Rate of any item shall be derived by multiplying established weight with rate per kg for the period when PO is being released. Weights shall be established as per attached TDCs.

The established weights shall be applicable to all vendors. Weights of same patterns for different material grade castings shall be considered same. Weights shall be established again on revision of dimensions of component.

When a vendor is taking any item as a new development, if his weight is less than already established weight, this weight will be considered as new established weight and binding on all vendors. If his weight is more than already established weight, the already established weight shall be binding on the vendor. List of castings with already established weights is attached herewith.

For any new item, not established till date, the first verified weight by BHEL after complete dimensional verification and acceptance shall be declared as established weight (as per TDC). Payments shall be made on established weights only. Additional claim of any vendor due to his extra weight over and above the established weight shall not be entertained.



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Random verification of castings with already established weights will be done at BHEL stores on receipt of casting lot and in case, any discrepancy is noted between established weight and actual casting weight, then applicable deduction will be done from vendor invoices.

If any modification of pattern is done at vendor's end after establishment of weight of castings, then it is vendor responsibility to inform BHEL and in such cases, re-establishment of weights will be done.

### **S11 MSE and MII purchase preference**

MSE and MII purchase preference shall not be provided in this tender enquiry.

### **S12 Bid Validity**

75 days from the actual date techno commercial bid opening (Part I).

### **S13 RADIOGRAPHY**

Consistent radiography quality is to be ensured and to be maintained uniformly in bulk supply with adequate process and method controls. Since the required castings are of radiographic quality, BHEL reserves the right to conduct radiographic testing of sample pieces at its own arrangement and derive conclusion of soundness of casting supplied against the said lot/heat based on the results of such testing.

- Standard requirement of radiography of castings shall be as applicable TDC.
- Any additional requirement shall be specifically called for in PO.
- BHEL intends to get delivery of castings along with radiographed sets as ordered. The claim of vendor for payment of supplies against any PO can be put on hold if the requisite no. of radiographed sets has not been delivered. BHEL shall reserve the right to select any sample from a lot offered and get it radiographed at vendor's works.

Vendor will be required to submit radiographic films and test reports. BHEL will review and evaluate radiography films and RT reports and reserves the discretion to do so at the premises of the vendor.

Radiography procedure shall be as per ASME B 16.34 and as mentioned in BHEL's TDCs. All the radiography films shall be dispatched to BHEL without delay either before the castings are being dispatched or along with the castings. Vendor shall undertake radiography on new development as per applicable TDC.

**RT charges: Fixed RT charges @ Ir<sub>192</sub>: Rs 0.99 & Co<sub>60</sub>: Rs 1.50 per sq. cm shall be paid on actual verified film area.**

### **S14 INSPECTION REQUIREMENTS FOR CASTINGS**

1. For RT as well as non-RT castings, the seller shall give advance notice of minimum 03 working days for inspection to the purchaser. Inspection will be carried out within 03 working days from the proposed date of inspection.



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In case of time taken by BHEL is more than 03 working days, delivery extension on account of delay may be provided to seller for number of days beyond 03 working days for the delayed portion only.

2. All required tests (Physical properties, Chemical properties, Heat Treatment, NDE, Visual, Surface finish etc.) as called in referred material standard/BHEL/TDC/drawing etc shall be carried out by vendor at no extra cost. **BHEL may decide to inspect itself/arrange third party at vendors' works itself as and when necessary with prior intimation to the vendor.** No additional charges shall be claimed for such inspections. Third party inspection charges will be borne by BHEL.
3. Sample castings are to be identified by vendor in the delivery challan as "Sample" and the dimensional reports and RT reports are to be provided to BHEL along with supply. Also mention "Sample" on castings with white paint.
4. RT castings have to be mentioned "RT" on castings with white paint.
5. Material code as mentioned in PO is to be mentioned on all casting with paint.

### **S15 REPAIR OF CASTINGS**

- a) All castings shall be supplied free of defects like shrinkage, hot tears and process variable defects like sand inclusion, slag inclusion, gas entrapment etc. If any casting is found containing defects more than allowable limit, the same shall be upgraded at foundry itself before dispatch to BHEL with necessary documentation, enabling BHEL to make use of such castings immediately for production.
- b) If castings are found defective at different stages of manufacturing, the same shall be repaired at the defective area and the repaired castings shall be accepted after performing requisite NDT at vendor's cost. BHEL shall decide about the areas to be repaired in all such cases.
- c) Castings, that are found defective after receipt at BHEL, necessary repair of the castings will be carried out by BHEL and repair charges @ Rs. 24.20 per cc for Stainless Steel grades shall be deducted from any of the running bills of the vendor.
- d) In case of rejection of casting after machining/ assembly/testing due to defects more than allowable limits or major variation in dimensions etc. then the entire cost incurred till that stage shall be deducted from any of the running bills of the vendor.

### **S16 Payment Terms:**

1. Due payment against supplies shall be made after receipt and acceptance of material as per table below:

Type of bidder	Payment Terms (Number of days)
Micro & Small Enterprises (MSEs)	45
Medium Enterprises	60
Non MSME	90

In case of any deviation from standard payment term mentioned, BHEL at its discretion may load on the item price at "Base rate of SBI (as applicable on the date of bid opening; Techno-commercial bid opening) + 6% shall be considered for loading for the period of relaxation sought by bidders.

2. Documents to be submitted (if applicable)



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- a. Tax invoice (Invoice shall be GST compliant and should contains all the required information such as GST No, HSN code etc.)
  - b. Transporter copy along with material/consignment.
  - c. Material Test Certificates (MTC) and
  - d. Compliance Certificate.
3. GST registration number is to be submitted by qualified vendor as per GST law.
  4. It is mandatory to mention proper material codes in the invoices and separate invoices to be raised for different POs.
  5. BHEL releases payment through EFT mode ONLY. Necessary details may please be submitted by filling required format before release of payment.

**These Special terms & conditions and GCC collectively are the part of tender terms and conditions. Any term in special terms and conditions will supersede the GCC.**



## General Contract Conditions (GCC) of MM Tenders

### BHARAT HEAVY ELECTRICALS LIMITED

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## 1. INSTRUCTION TO BIDDER

Quotations shall be submitted before due date and time. Late offers are liable to be rejected, so please ensure to submit bid well within due date and time. Techno-commercial part will be opened on due date.

**Based on evaluation of techno-commercial offers, Price bids of bidders who qualify from techno-commercial evaluation shall be opened. BHEL may decide to open the Price bid same day at 1700 hrs. If not opened on the same day, all qualifying bidders shall be notified for date of opening of Price bids by email/fax/post/courier/E-procurement system generated email.**

### 1.1 Instruction to Bidder (In case of Non-E-Procurement / Paper/ Manual/ Hard Copy based tenders)

Sealed Tenders can be dropped in the tender box labeled as 'Tender box for MM contracts'. This tender box is located at the entrance of Admin block BHEL Goindwal. Quotations can also be submitted through e-mail at [tendermm\\_ivp@bhel.in](mailto:tendermm_ivp@bhel.in). Offers received in time shall be considered only when offers are complete in all respects. In case of bulky tenders, please handover quotation to Sh. Rakesh Kumar/ SDGM - Head-MM or Sh. Sumeet Bansal / Sr. Manager - MM [Contact: 01859 224 615 / 628]. Bid can be sent to following address:

**BHEL, Industrial Valve Plant,  
#433, Industrial Complex,  
Goindwal Sahib, Distt. Tarn Taran,  
Punjab-143422.**

### 1.2 Instruction to bidder (In case of E-Procurement)

- Interested bidders / suppliers shall submit their offer through e-procurement mode at <https://eprocurebhel.co.in/>.
- Offers in any other mode will not be accepted.**
- Procedure for submission of tender is available in the "Bidder Manual Kit" at e-tender portal <https://eprocurebhel.co.in/>.
- In case of any difficulty faced while registering on BHEL's e-Procurement portal developed by NIC, queries may be addressed to 0120-4001002, 0120-4001005 and 0120-6277787; email: [support-eproc@nic.in](mailto:support-eproc@nic.in). These details are also available on 'Contact Us' page of the portal.
- Before uploading scanned documents if any, the bidders shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity.
- Disclaimer clause:** Neither the Organization (Bharat Heavy Electricals Ltd.) nor the service provider is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.

## 2. SCOPE OF SUPPLY

Material shall be supplied as per the applicable latest Technical Delivery Conditions (TDC)/ Material Standard requirements/BPS/Drawing and other requirement as given in the Tender Enquiry. National





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& International material Standards shall have to be arranged by vendors themselves. Latest applicable revisions of standards/procedures to be referred.

All required tests as called in referred material standard/BHEL/TDC/drawing etc. shall be carried out by vendor at no extra cost. Material Test Certificates (MTC), inspection reports and Compliance/Guarantee Certificate are to be provided along with the supplies.

### 3. PRICE BASIS

1. Order of enquiry item sl. no. shall be maintained in the quotation.
2. The rates quoted shall be firm and fixed. No price variation is proposed and allowed.
3. Rates quoted should be FOR BHEL Goindwal basis. The offers quoted on other than FOR Goindwal basis are liable to be rejected.

In case bidder has quoted Ex-works prices, then he/she will be given an opportunity to accept price basis as FOR Goindwal either by accepting delivery as FOR Goindwal in same quoted price or by providing loading factor on his/her quoted ex-works prices to make them FOR prices.

**Variation in GST or any other statutory levies during contractual delivery period shall be to BHEL's account.**

### 4. DISCREPANCY IN WORDS AND FIGURES

1. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity}, the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
2. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
3. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.
4. If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.
5. Bids 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 shall be liable for rejection.
6. All overwriting/cutting, etc will be numbered by bid opening officials and announced during bid opening.

### 5. EVALUATION IN CASE OF MORE THAN ONE L-1 BIDDER

In the course of evaluation, if more than one bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 bidders.





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In case more than one bidder happens to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by a toss / draw of lots, in the presence of the respective L1 bidder(s) or their representative(s).

Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

#### 6. REVERSE AUCTION

In case, it is declared in special terms & conditions of tender enquiry that RA is applicable for the NIT, then RA will be conducted as per following clause:

BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on <https://www.bhel.com/>) for this tender. RA shall be conducted among the techno-commercially qualified bidders as per RA guidelines.

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

#### 7. VALIDITY OF OFFERS

The offers shall be kept open for acceptance 'for number of days mentioned in special terms and conditions' from the date of opening of the tender. In case of tender extension, the bid validity shall be considered from the date of tender opening.

#### 8. SUPPLIED MATERIAL ADJUSTMENT

Item/s pending in previous PO has to be billed in previous PO only. Otherwise, BHEL will be free to adjust the supplies in previous PO. Any implication of tax will be on supplier's account. For this it is desirable that vendor should reconcile the pending PO statement every month/frequently with BHEL. Vendor can also view these details at Portal (<https://trichy.bhel.com/mm/index.jsp>).

#### 9. DELIVERY SCHEDULE

Supplies shall be affected and completed as per schedule mentioned in special terms and conditions. **Further, BHEL may release delivery schedule from time to time based upon our requirement with mutual understanding.** Vendor shall be required to complete the order as per the BHEL schedule requested. Commencement of delivery period shall be reckoned from the date of PO / LOI or any other agreed milestone.

#### 10. LIQUIDATED DAMAGES (LD) FOR LATE DELIVERY

Time is the essence of the contract'. As such, delivery of goods specified in the Purchase Orders released under the scope of this contract shall be made within the time limit prescribed therein. Penalty for late delivery will be applicable @0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the undelivered portion.





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In case of Ex-works delivery terms for indigenous supplies, the document date (Invoice/Challan date) in Goods Receipt (GR) document shall be reckoned for LD deduction. In case of FOR Delivery terms for Indigenous supplies, the posting date in GR document shall be reckoned for LD deduction.

If any vendor does not accept LD ½% of the supply for each week of delay subject to a maximum of 5%, their offer is likely to be rejected by BHEL and the price bid shall not be opened. Bidders accepting for 10% LD shall not be loaded on account of LD. However, bidders who offer any other % LD [between 5% to 10%] shall be loaded @ % deviation from 10% and their accepted %. e.g. If a bidder accepts for a max of 7% LD only, their offer would be loaded @ 3% (10 – 7 = 3).

BHEL reserves the right to receive or not receive the material after the due date of PO. Applicable GST shall also be recovered from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.

### 11. PAYMENT TERMS

1. Due payment against supplies received shall be due after 30 days of receipt and acceptance of material and shall be paid within next 15 days' period. In case of any deviation from standard payment term mentioned, BHEL at its discretion may load on the item price at 'Base rate of SBI (as applicable on the date of bid opening; Techno-commercial bid opening) + 6% shall be considered for loading for the period of relaxation sought by bidders.
2. Documents to be submitted (if applicable)
  - i) Tax invoice (Invoice shall be GST compliant and should contains all the required information such as GST No, HSN code etc.)
  - ii) Transporter copy along with material/consignment.
  - iii) Material Test Certificates (MTC) and
  - iv) Compliance Certificate.
3. GST registration number is to be submitted by qualified vendor as per GST law.
4. It is mandatory to mention proper material codes in the invoices and separate invoices to be raised for different POs.
5. **BHEL releases payment through EFT mode ONLY. Necessary details may please be submitted by filling required format before release of payment.**

### 12. TAXES & DUTIES

Payment of GST portion will be released to vendor only upon completion of statutory requirement and further subject to following:

- a) Vendor declaring such invoice in his GSTR-1 and
- b) Receipt of goods and Tax invoice by BHEL and
- c) Confirmation of payment of GST thereon by vendor on GSTN portal.
- d) Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.

Following may please be noted for availing Input Tax Credit (ITC) by BHEL:





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1. Since ITC can be availed only when BHEL is in possession of GST Tax invoice and after receipt of goods. Thus, vendor to ensure timely dispatch of goods and Tax invoice. It may be noted that in case of any delay in receipt of Tax Invoice and/or receipt of goods, the ITC availment by BHEL will get delayed thus entailing additional cash outflow & may even get denied if ITC availment timelines are breached.
2. Further ITC can be availed only when vendor has declared such invoice in his outward supply Return GSTR-1 and after GST thereon has been paid by him at the time of filing of monthly Return.
3. If GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from vendor along with interest levied/leviable on BHEL.
4. Further, in case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/leviable on BHEL.

### 13. LIABILITY UNDER REVERSE CHARGE (RCM)

Any GST liability arising on BHEL under Reverse Charge (RCM) before actual receipt of goods and/or Invoice thereof would be subject to recovery of Interest leviable for the period between the date of such liability and actual date of eligibility of ITC based on receipt of goods, receipt of Invoices and other conditions specified in GST Law as applicable.

### 14. ACCESS TO MANUFACTURING PREMISES

While Purchase Orders placed on the vendor are under execution, authorized representatives of BHEL shall be allowed free access to the manufacturing facilities for the purpose of inspection or monitoring the progress of purchase orders. This access will also be extended to representatives of BHEL's customers accompanying the authorized representative/s of BHEL (which shall be intimated in advance), if our contractual requirements with our customers call for the same.

### 15. INSPECTION

1. The seller shall give adequate notice, of 1 week or as mutually agreed period, in writing to the Purchaser about the date and place at which the goods will be ready for inspection/ testing, as provided for in the contract.
2. Purchaser or his authorized representative shall be entitled to carry out inspection of material and workmanship/Surveillance Audit at Seller's premises or at his sub-contractor's premises at all reasonable times during execution of contract; Such inspection, examination and testing, if made, shall not absolve the Seller from his obligations under the contract. No additional charges shall be claimed for such inspections. Moreover, all required infrastructure (testing, tools etc) have to be arranged by supplier.
3. Any inspection carried out before supply by vendor/incoming stage at BHEL notwithstanding, if any defect/non-conformity is noted during processing, the same shall be attended/replaced by vendor at no extra cost.
4. BHEL representative from unit or CQ is authorized to carry out audits along with TPIA at vendor's works before clearing the items for dispatch.





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5. Necessary tooling including thread gauges etc. have to be arranged by vendor. Only in exceptional cases, based on BHEL discretions item/nature, BHEL may consider request to provide gauges if available with BHEL. But in no case this shall be linked with delivery of material.

#### 16. GUARANTEE / WARRANTEE AND CORRESPONDING REPAIR / REPLACEMENT OF GOODS

Goods shall comply with the specifications for material, workmanship and performance. Unless otherwise specified, vendor shall give a guarantee / warrantee for a period of 18 months from the date of receipt. In case of non-acceptance of this term, bid shall be liable for rejection.

If the delivery is found non-compliant during the warranty period, leading to rejection, the Seller shall arrange free replacement / repair of goods, within one month from the date of intimation or any mutually agreed period. Corresponding quantity shall be treated as unsupplied against respective purchase order till replacement is received at BHEL.. In the event of the Seller's failure to comply, Purchaser may take action as appropriate, including repair / replenish rejected goods, at the risk & cost of the Seller.

Lifting of rejected material is under Supplier's scope. BHEL will inform related invoice, quantity etc. to supplier. Supplier has to give advance intimation / plan (Transporter, Vehicle details) for the lifting of material. Further supplier has to provide requisite documents (such as Credit Note, e-Way Bill etc.) to lift the rejected material. Material should be lifted within one month from date of intimation. After one-month, BHEL will not be responsible for rejected material and BHEL shall have the right to dispose off such rejected material.

#### 17. LOI (LETTER OF INTENT)

BHEL may issue LOI prior to the PO for any reason whatsoever. The LOI in such cases is to be treated as PO for all practical purposes and all the Terms & Conditions of the tender shall be applicable from the date of issue of LOI.

#### 18. SUB-CONTRACT

The purchase order or any part thereof shall not be sub-contracted, assigned or otherwise transferred without previously obtaining the BHEL's consent in writing.

#### 19. RISK PURCHASE

Risk & Cost Clause, in line with Conditions of PO may be invoked in any of the following cases:

- i) Supplier's poor progress of the supply vis-à-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to supplier including unexecuted portion of supply that does not appear to be executable within balance available period
- ii) Withdrawal from or abandonment of the supply by contractor before completion as per contract.
- iii) Non-supply by the Supplier within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the supplier.





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- iv) Termination of Contract on account of any other reason (s) attributable to Supplier.
- v) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vi) Non-compliance to any contractual condition or any other default attributable to Supplier.

The value shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Supply (\*) as per rates of new contract

B= Value of Balance scope of Supply (\*) as per rates of old contract being paid to the supplier at the time of termination of contract i.e. inclusive of PVC, if any.

H = Overhead Factor shall be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

**\* Balance Scope of Supply:** Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Supply for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Recoveries from the supplier on whom Risk & Cost has been invoked shall be made from following:

- (i) Dues available in the form of Bills payable to supplier, SD, BGs against the same contract.
- (ii) Dues payable to supplier against other contracts in the same Unit of BHEL.
- (iii) Dues payable to supplier against other contracts in the different Regions / Units of BHEL.
- (iv) Legal options for recovery of dues payable by the supplier.

## 20. FORCE MAJEURE

If at any time during the continuance of the contract, the performance in which or in any part by either party of any obligations under the contract are prevented or delayed by reason of any war, hostilities, acts of public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine restrictions, or acts of God (hereinafter referred to "an events" then provided the notice of happening of any such event is given by either party to the other within 21 days of the occurrence thereof, neither party shall by reason of such event be entitled to terminate the contract nor shall either party have any claim for damages against the other in respect of such non-performance and delay in performance and delivery under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist. If the performance in whole or part of any obligation under the contract is prevented or delayed by reason of any such event, claims of extension of time shall be granted for periods considered reasonable by BHEL subject to prior notification by the vendor to BHEL of the particulars of the event and supply to BHEL, if required, of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed a waiver of time in respect of remaining deliveries.





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## 21. NON-DISCLOSURE AGREEMENT

All Drawing and technical documents relating to the product or it's manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. ***BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for any infringement of the provisions contained herein.***

## 22. CLARIFICATIONS

The correspondence exchanged against the tender from both tenderer and BHEL through email/e-procurement are considered as valid document legally though it is not signed. It is treated as valid confirmations made on behalf of the respective company and very much comes under the legal ambit of the business transaction and hence it is binding on both the parties to the business. Any transaction pertaining to the tender from both the parties of business done round the clock irrespective of the office or business hours of the companies, are valid legally and binding on both the parties. This applies to the extent only in such cases where deadline time for transaction is not specifically declared by either or both the parties to the business.

## 23. PREFERENCES FOR MICRO AND SMALL ENTERPRISES (MSEs)

Preferences as mentioned in “Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012” & “Public Procurement Policy for Micro and Small Enterprises (MSEs) Amendment Order, 2018”, or as per latest guidelines issued by government shall be given to Micro and Small enterprises.

Main points which are mentioned in the above orders are as follows:

- 25% Procurement of the tender value shall be made from MSE (Micro, Small Enterprises) firms.
- 25% of the 25% quantity (i.e. 6.25% of the tender quantity) offered to the MSE's shall be reserved for MSE's owned by SC/STs. Failure to participate by any MSE owned by SC/ST's; this 6.25% quantity shall be procured from other MSEs.
- 3% from within the 25% quantity offered to the MSE's shall be reserved for women owned MSE's. Failure to participate by any MSE owned by women; this 3% quantity shall be procured from other MSEs.
- EMD shall be exempted for MSE's. All these benefits are subject to production of all statutory documents





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- In tender, participating Micro and Small Enterprises quoting price within price band of L1+15 per cent shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprise and such Micro and Small Enterprise shall be allowed to supply up to 25 per cent of total tendered value. In case of more than one such Micro and Small Enterprise, the supply shall be shared proportionately (to tendered quantity).

MSE suppliers can avail the intended benefits only if they submit **Udyam Registration Certificate** along with the offer. No other document shall be considered for availing MSE benefits. Non-submission of such document 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 is not cleared before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required document is to be uploaded on the portal.

*Note: It may however be noted that MSE guidelines as on date (Date of Technical Bid Opening Part-I) shall prevail.*

#### 24. PREFERENCE TO MAKE IN INDIA

This procurement shall be governed by notification no. P-45021/2/2017-PP (BE-II) dated 16.09.2020 of Government of India issued by DPIIT and subsequent circulars issued afterwards. Accordingly, the minimum local content, the margin of purchase preference and the procedure for purchase preference to make in India shall be adhered.

#### 25. RESTRICTIONS UNDER RULE 144(XI) OF THE GENERAL FINANCIAL RULES (GFRs), 2017

All provisions of Order No. F.No.6/18/2019-PPD of Department of Expenditure (DoE) shall be applicable for this tender enquiry (Order copy is available at <https://doe.gov.in/procurementpolicy-divisions>). Accordingly, any bidder from a country which shares a land border with India (except the countries to which the Govt. of India has extended lines of credit or in which the Govt. of India is engaged in development projects for which list is available at <https://www.mea.gov.in/>) will be eligible to bid in this tender only if the bidder is registered with the Competent Authority as specified in Annex I of the said Order of DoE.

Updated list of the countries to which lines of credit have been extended or in which development projects are undertaken are available on the Ministry of External affairs website (<https://www.mea.gov.in/>)

For the purpose of this order, definition of Bidder from a country which shares a land border with India shall be same as defined in the Annex III of the said order.

Registration with the competent authority as stipulated in the said order is responsibility of bidder. **Bidder has to submit a certificate certifying following along with offer:**

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country,





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has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [*Where applicable, evidence of valid registration by the Competent Authority shall be Attached*].”

#### 26. DISPUTES

In the event of any dispute and/or difference arising between the Vendor and BHEL as to interpretation and/or execution of the contract and/or the respective rights and liabilities of the parties, such disputes and/or differences shall be referred to the sole arbitrator nominated by BHEL. The provisions of the Indian Arbitration Act and the rules there under shall apply to such arbitration. The award passed by the arbitrator shall be final and conclusively binding on all the parties.

#### 27. JURISDICTION

The court of the place from where the purchase order is issued shall alone have jurisdiction to decide any dispute arising out of or in connection with the purchase order.

#### 28. BANNED FIRMS

The offers of the bidders who are on the banned list as also the offer of the bidders, who engage in the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website <https://www.bhel.com/>.

#### 29. 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 <https://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.

#### 30. PREVENTIVE CHECKS TO ELIMINATE SUSPECTED CARTEL FORMATION

The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

#### 31. SUSPENSION OF BUSINESS DEALINGS WITH DEFAULTERS

The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site <https://www.bhel.com/>.

1.0 Integrity commitment, performance of the contract and punitive action thereof:

1.1. Commitment by BHEL:





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BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

#### 1.2. Commitment by Bidder/ Supplier/ Contractor:

1.2.1. The bidder/ supplier/ contractor commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

1.2.2. The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

1.2.3. The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extant guidelines of the company available on <https://www.bhel.com/> and/or under applicable legal provisions

## 32. GENERAL

1. BHEL will not be bound by any power of attorney granted by the vendors or by changes in the composition of the firm made subsequent to the execution of the contract. They may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the vendor concerned.
2. BHEL reserves the right to extend the due date of opening, which shall be informed. Validity of offer shall be deemed to be revised accordingly.
3. BHEL reserves the right to accept or reject any part or whole of the tender of a bidder by assigning a valid reason thereof. BHEL reserves the right to cancel the tender without assigning any reason thereof and without any obligation before any commitment.
4. Acceptance of all terms and conditions, in the form of signed copy of T&C or confirmation separately written, shall be submitted along with quotation. If nothing is mentioned, it shall be concluded that terms and conditions are acceptable.
5. BHEL may increase/decrease item/s based on BHEL requirement before price bid opening. Suitable price implication may be asked from suppliers.
6. BHEL may drop item/items from tender at any stage of tender before placing PO. BHEL may also delete PO with consent with supplier within delivery date of PO.





## General Contract Conditions (GCC) of MM Tenders

### BHARAT HEAVY ELECTRICALS LIMITED

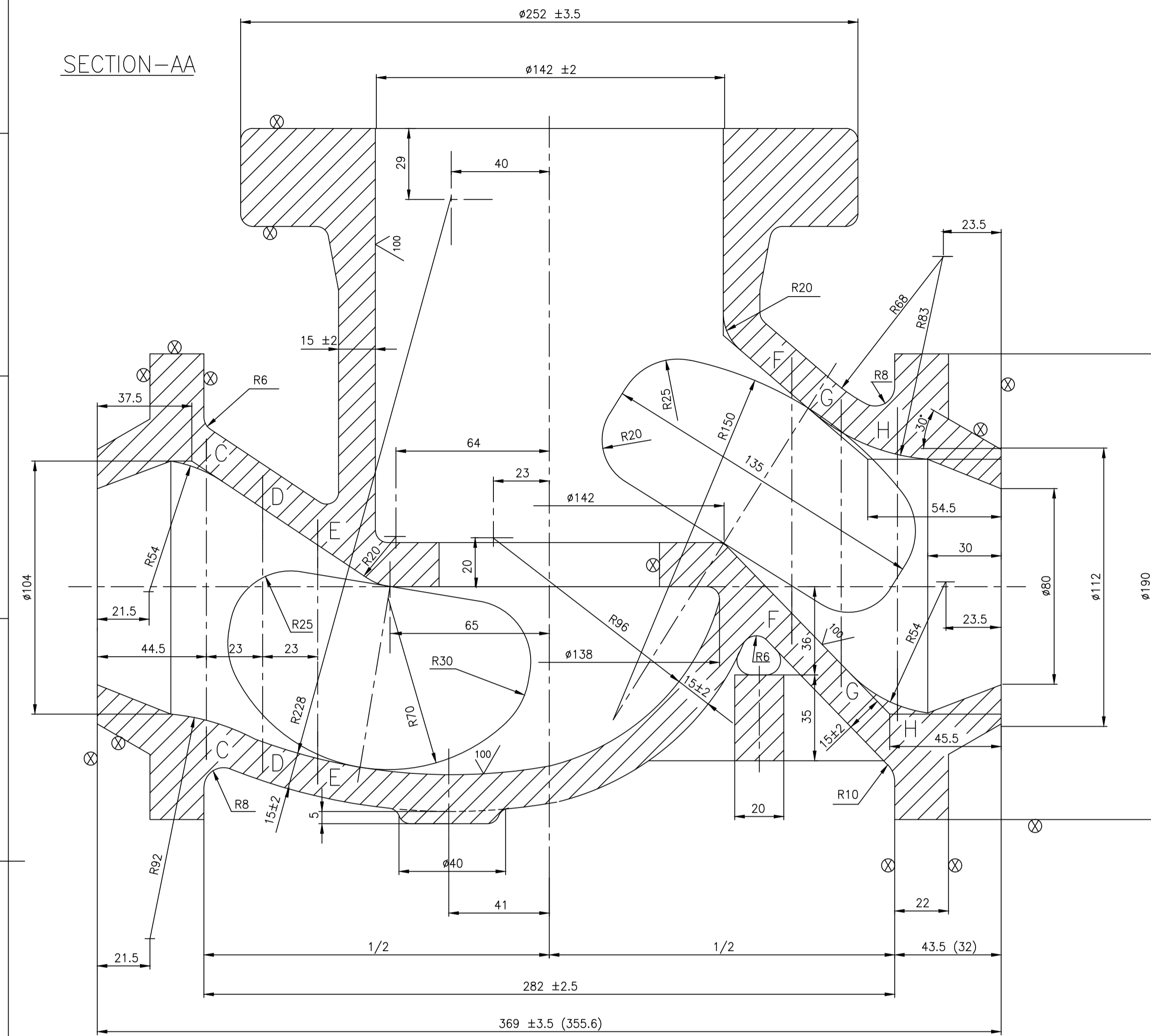
Industrial Valve Plant: 433, Industrial Complex,  
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7. After releasing PO, it is assumed that supplier has accepted PO if we do not receive acknowledgement from supplier within 5 days of date of PO.
8. In case of unscheduled holiday on opening day of tender, the next working day will be treated as scheduled prescribed day of opening of tender.
9. On the due date of tender opening, only technical bids will be opened. The opened technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. If no reply is received from the vendor for the clarification raised by BHEL with in the final cut-off date, those vendors offer will be processed with the documents available / submitted against this tender. Offers not meeting the required specification and technical condition will be summarily rejected. The price bids of technically suitable bidders will be opened on a later date with prior intimation to techno-commercially suitable bidders.
10. Ranking L-1, L-2 etc. shall be done for individual item for the techno-commercially acceptable offers on landed cost to BHEL, IVP Goindwal basis and BHEL reserves the right to place order for individual items with different vendors.
11. BHEL reserves the right to negotiate with L1 vendor or re-float the tender for items where, L1 price is not the lowest acceptable price; BHEL reserves the right to increase or decrease the tender quantity.
12. If supplier is mentioning delivery destination within state/ outside state depending upon his location of factory, Free on Road etc. these are assumed as on FOR Goindwal. If supplier is wishing to give delivery on Ex works basis, then he has to clearly mention about it.
13. The bidder has to keep track of any changes by viewing the addendum(s) / Corrigendum(s) issued by the Purchaser on time-to- time basis in the E-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.
14. Unregistered suppliers, who are techno-commercially qualified against the open tender, are requested to register with BHEL as permanent supplier by submitting the Supplier Registration Form (SRF). SRF is available at <https://www.bhel.com/supplier-registration>.
15. Any term in special tender terms and conditions will supersede the GCC.

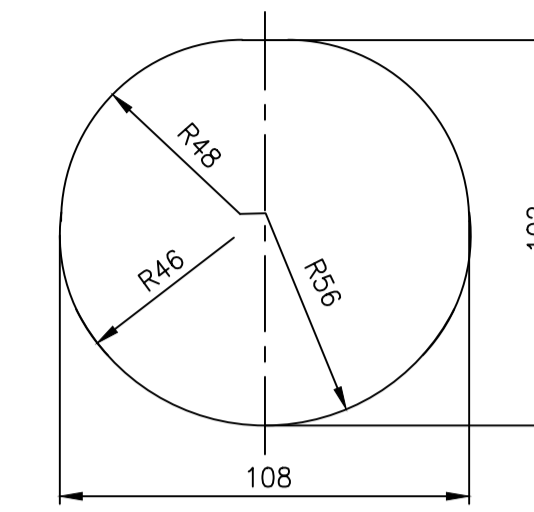
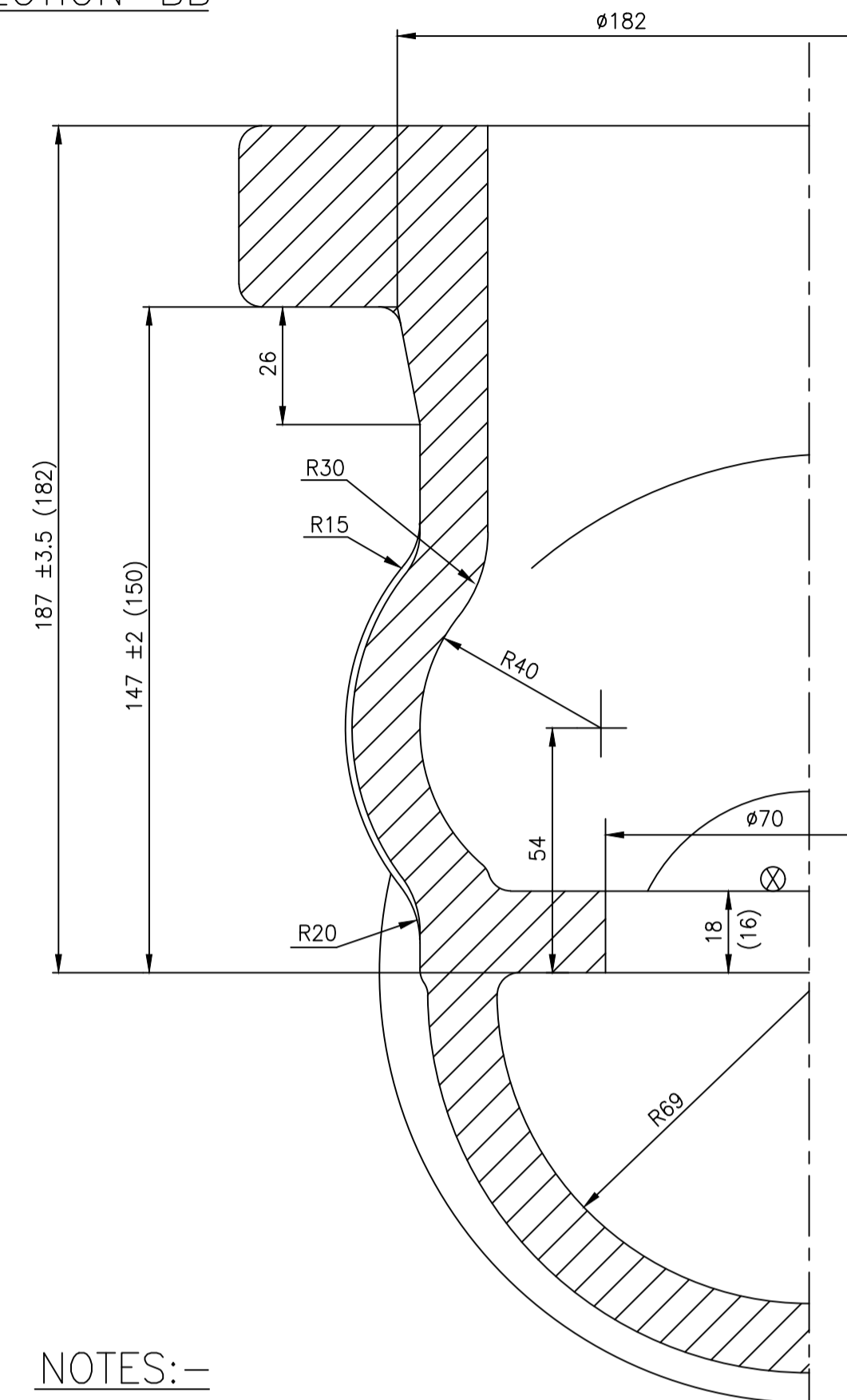




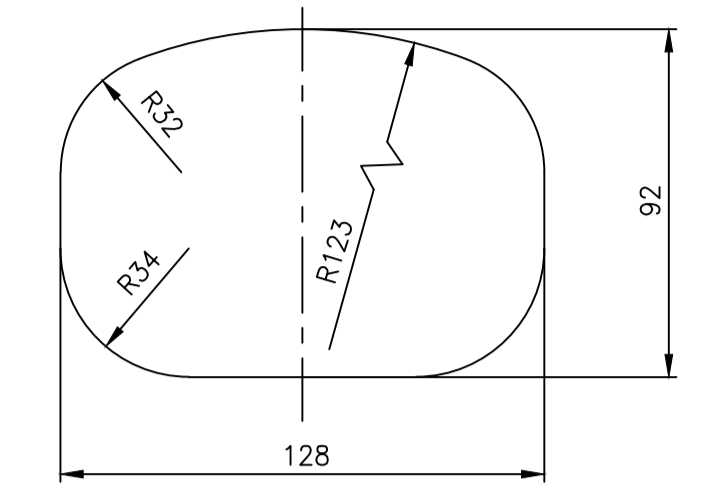
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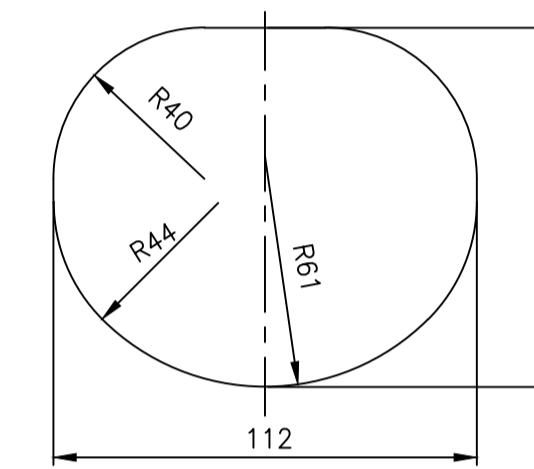
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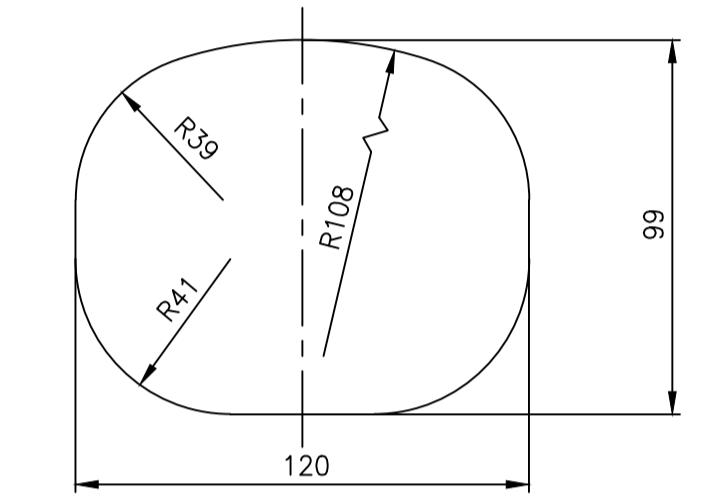
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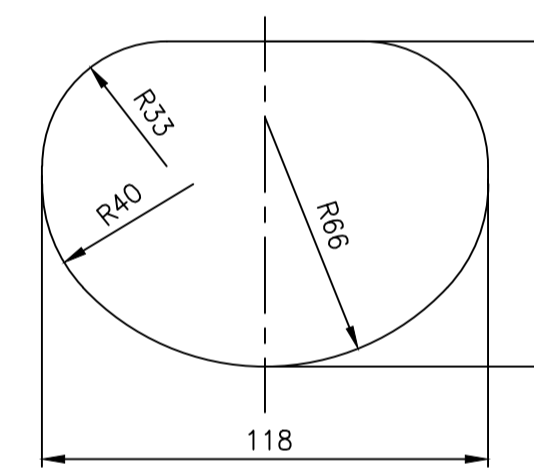
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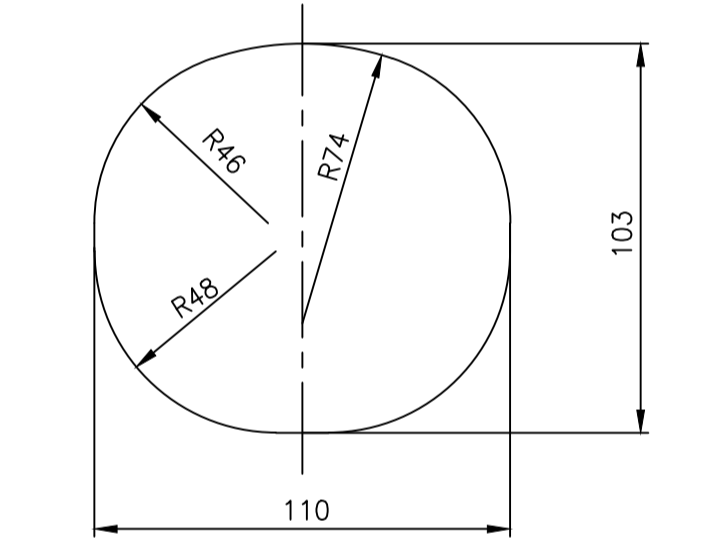
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SECTION-GG



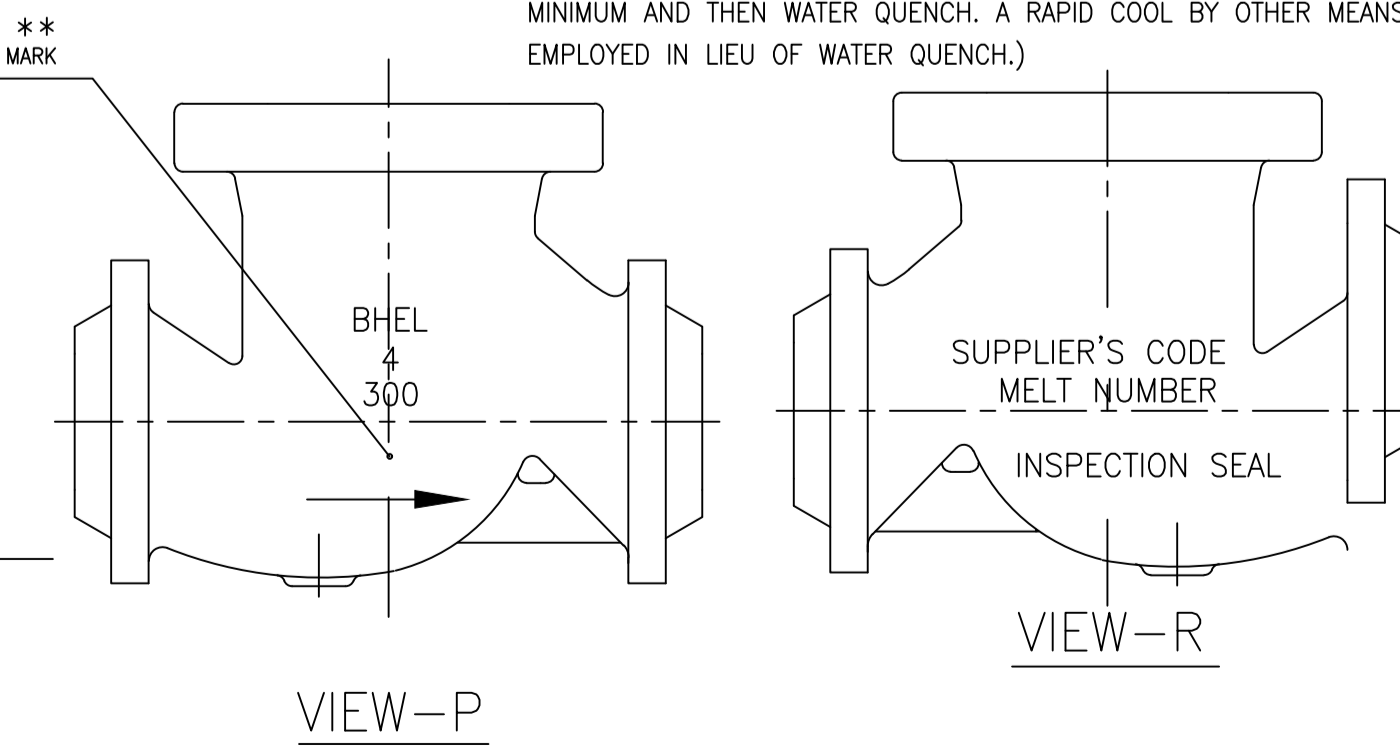
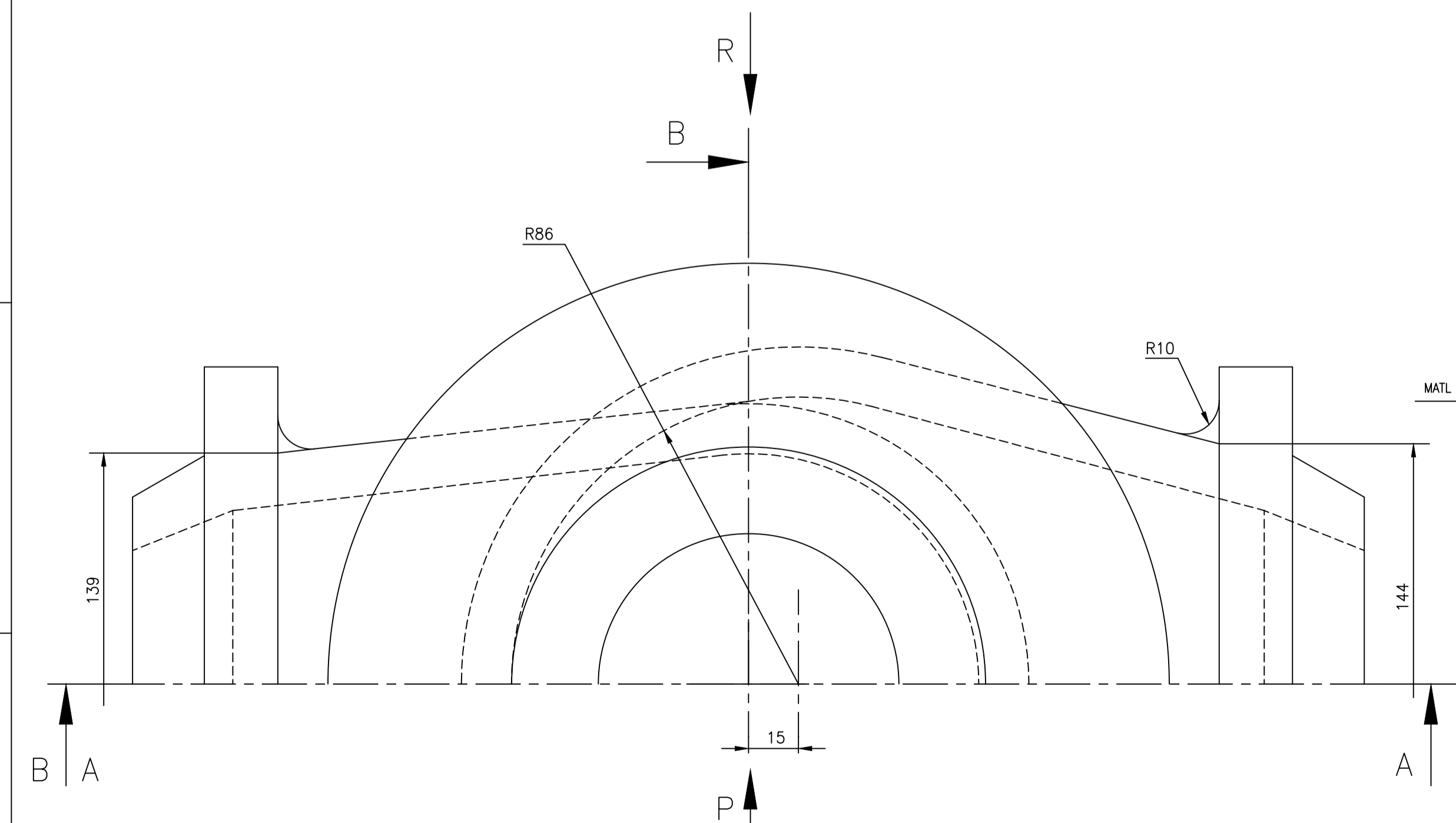
SECTION-EE



SECTION-HH

NOTES:-

- CASTINGS SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED IN THIS DRAWING ON ALL MACHINABLE SURFACES.
- ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
- 100 INDICATES THE CASTING SURFACES WHICH MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
- UNSPECIFIED CASTING RADII-R5 MAX.
- ALL DETAILS IN VIEW "P" & "R" EXCEPT MELT No. & INSPECTION SEAL ARE TO BE CAST. HEIGHT OF CASTING LETTERS-12MM.
- FINISH MACHINED DIMENSIONS INDICATED WITHIN BRACKETS ARE FOR INFORMATION ONLY.
- THIS DRAWING IS DIMENSIONALLY IDENTICAL TO THE DRAWING 1.V.2923.02664R IN ALL ASPECT EXCEPT THE MATL.SPECN.
- \* FOR THE SPECIAL CLASS VALVES EMBOSING SHALL BE '300 SPL'
- \* THIS SPECIAL CLASS CASTING IS TO BE SUBJECTED RT/UT ON ALL CRITICAL LOCATIONS.
- \* ALL EXTERIOR AND ACCESSIBLE INTERIOR SURFACES OF BODY SHALL BE MPI/LPI TESTED.
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)



REV	DATE	ALTERED	R.P.SINGH
04	08.09.19	CHD & APPD	SAB & SSK
SL No. 05 INCLUDED			
03	11.07.18	CHD & APPD	SSK & KRS
SL No.04 INCLUDED			
NOTES No. 12 INCLUDED			

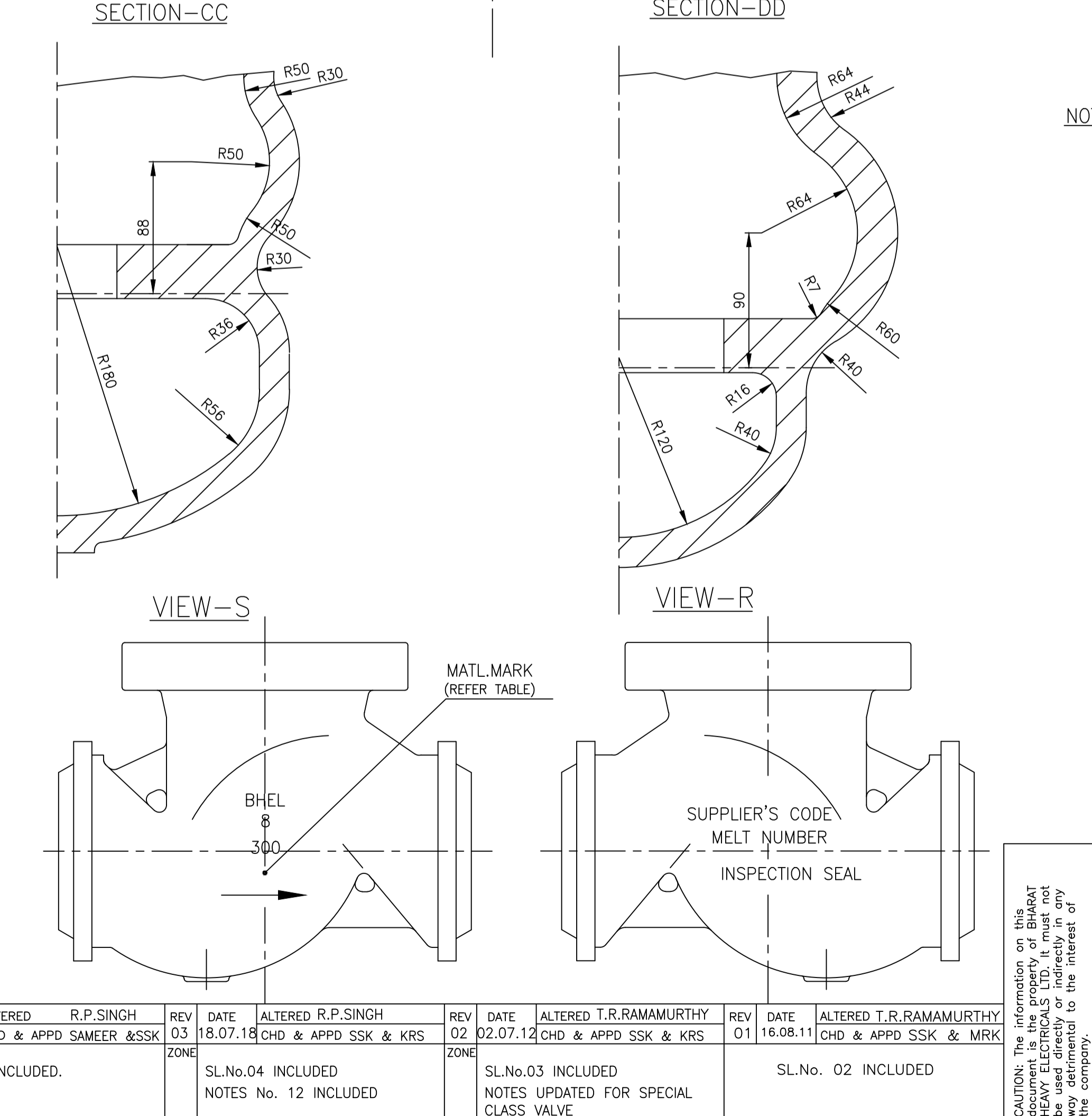
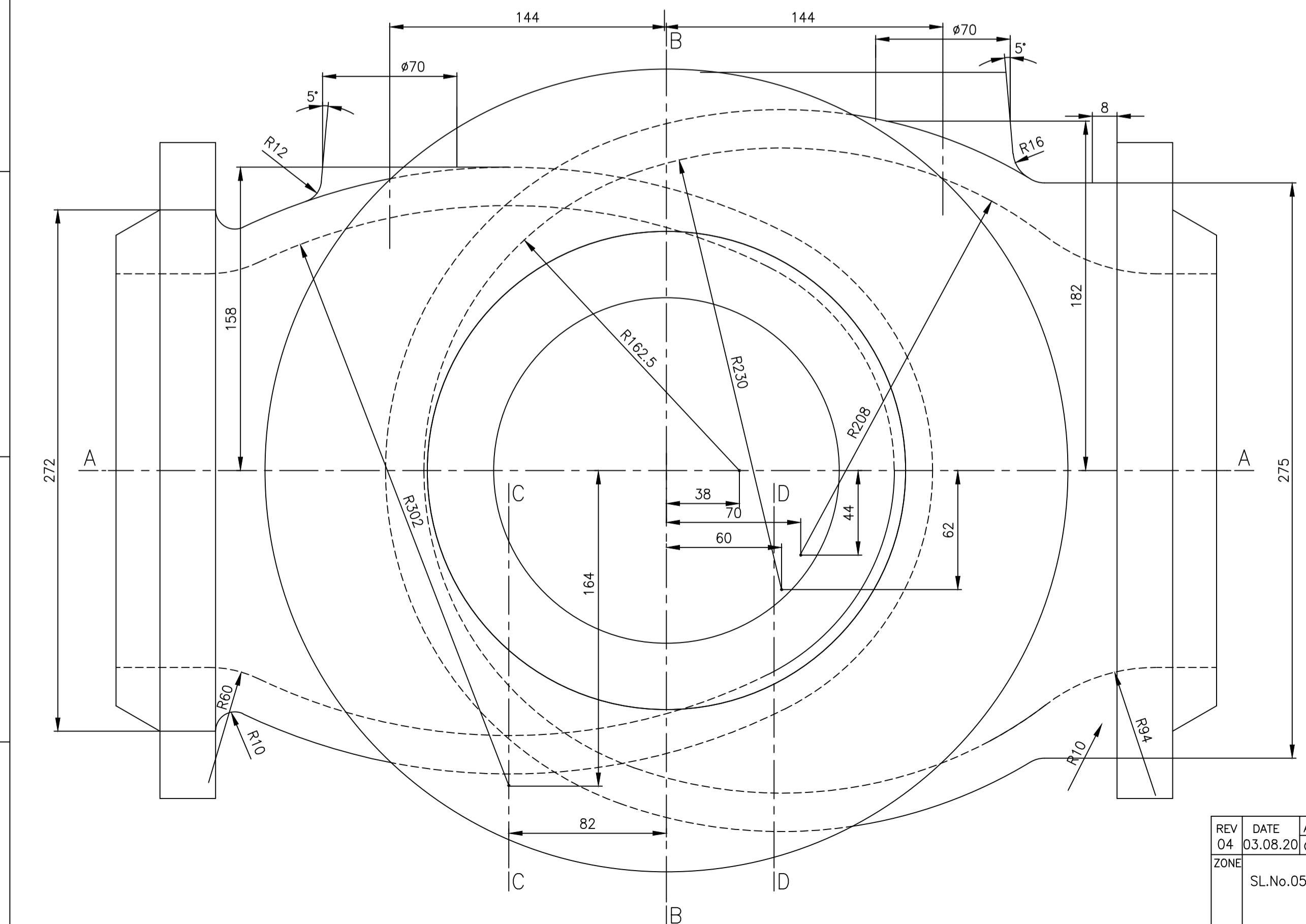
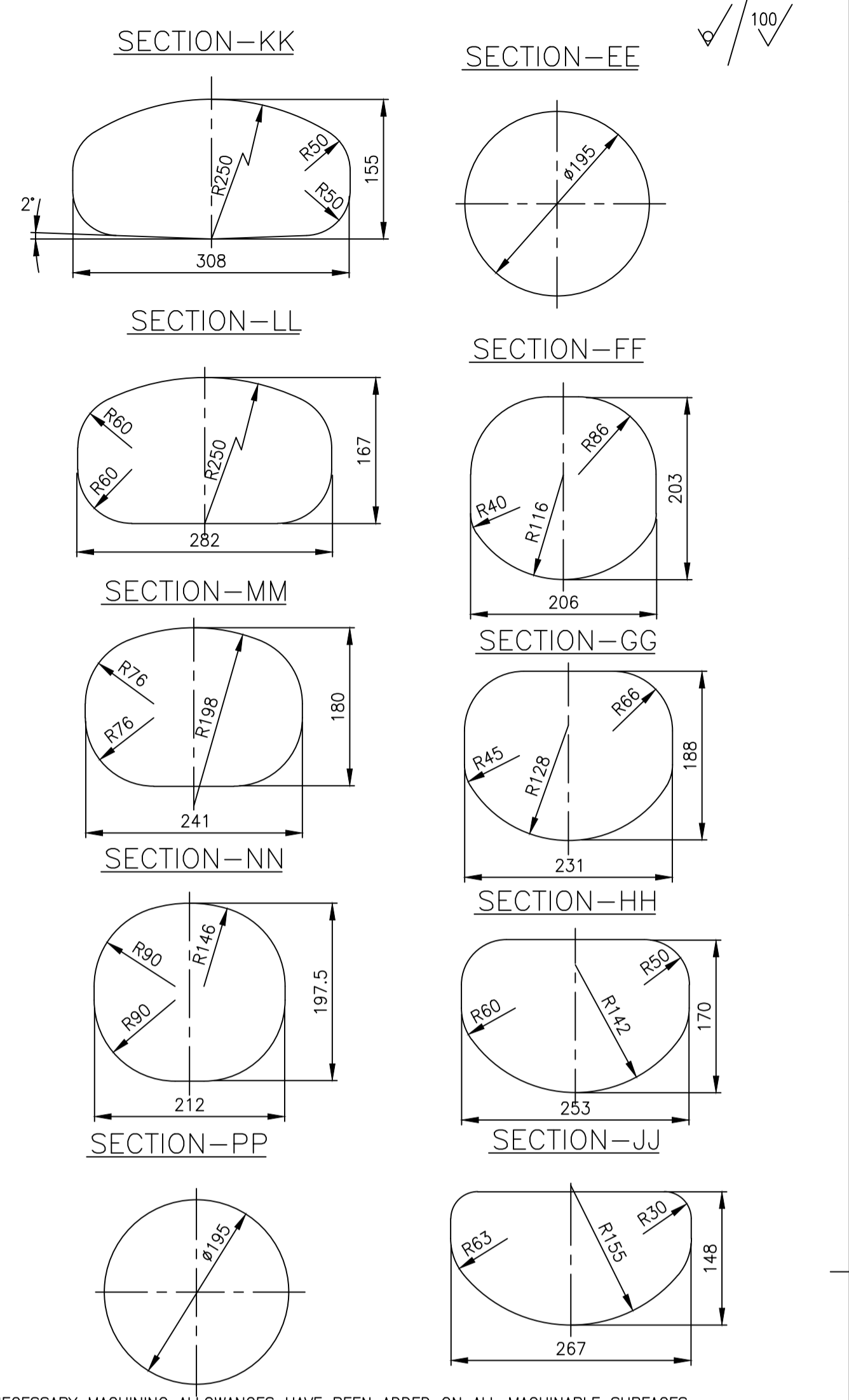
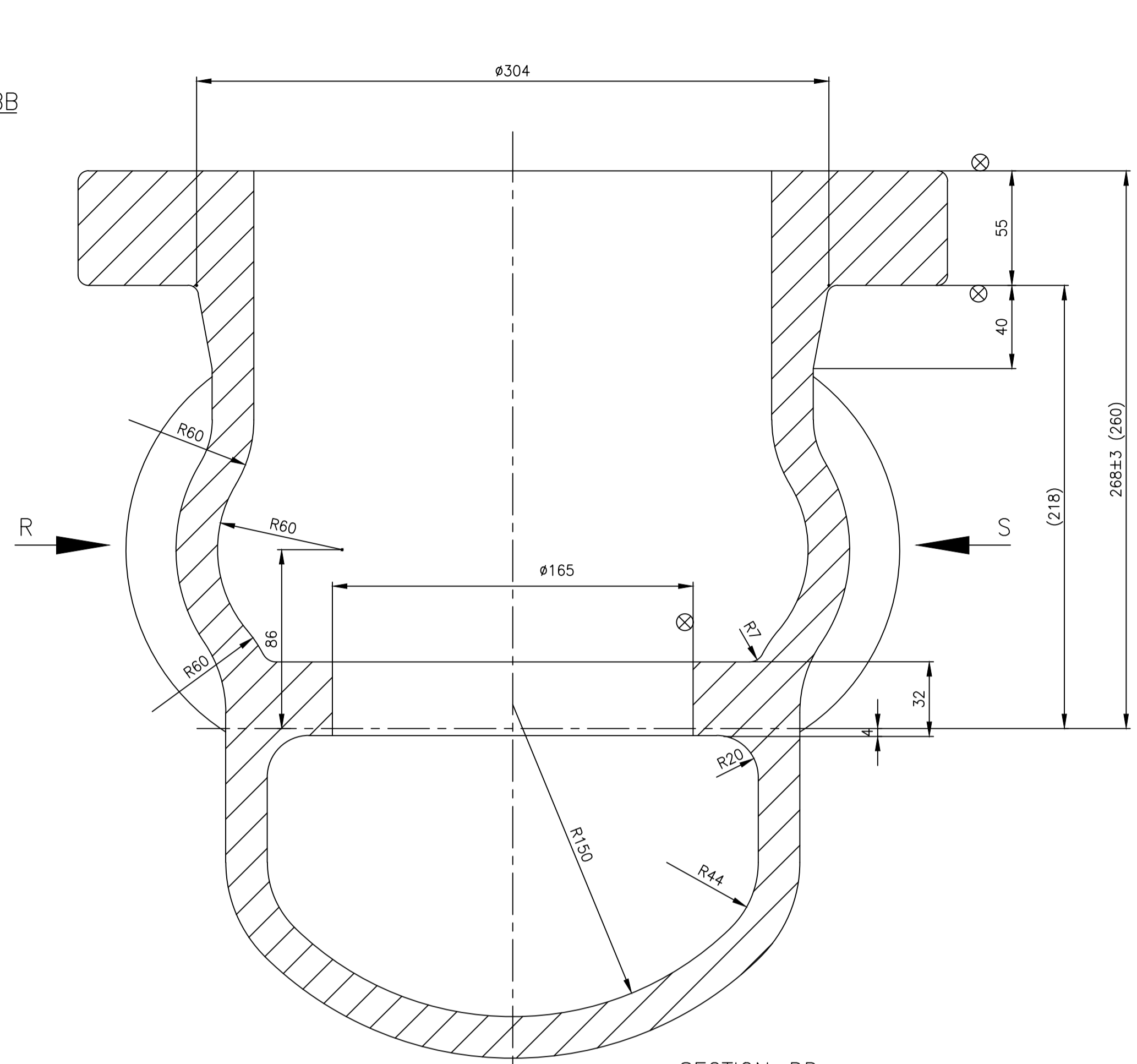
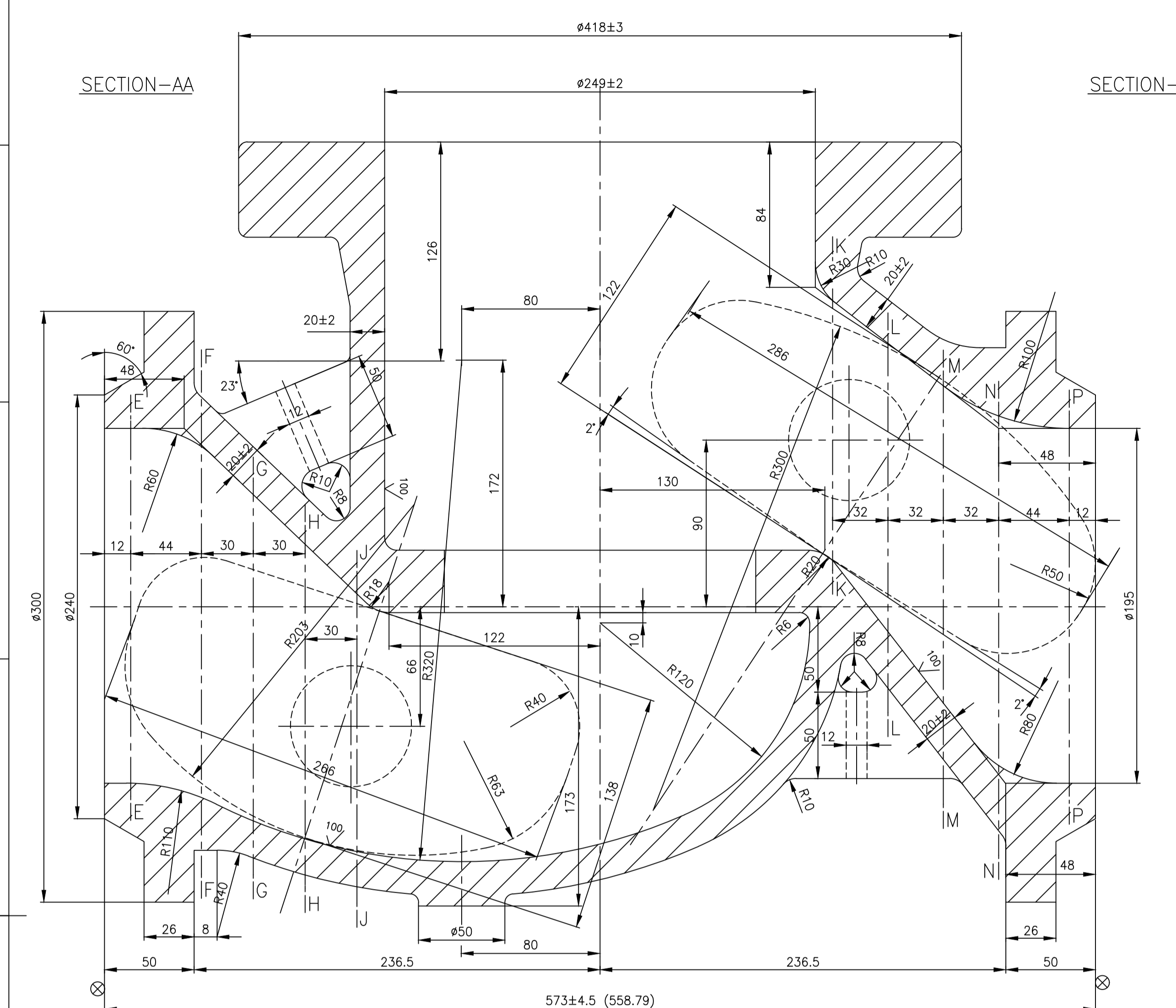
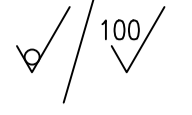
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CD3MN	04	CASTING	922036030000	SA995 CD3MN ATTEST	REFER NOTE	--	53.0	--	1.V.P725-05193R	001
WCB	03	CASTING	922032960000	SA216 WCB ATTEST	N R	--	53.0	--	1.V.P585-05193R	001
CF8M	02	CASTING	922030420000	SA351 CF8M ATTEST	S H	--	53.0	--	1.V.P572.05193R	001
CF8M	01	CASTING	922013670000	SA351 CF8M ATTEST	S H	--	53.0	--	1.V.P408.05193R	001

REV	DATE	ALTERED	R.P.SINGH
04	08.09.19	CHD & APPD	SAB & SSK
SL No. 05 INCLUDED			
03	11.07.18	CHD & APPD	SSK & KRS
SL No.04 INCLUDED			
NOTES No. 12 INCLUDED			

DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATIONS
365-119		NTS	53.0	CAD:C105193R
<b>BHARAT HEAVY ELECTRICALS LTD.,</b> UNIT: HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI 620014.				
NAME: K.P.LEON SIGN: P.Boomnathan DATE: 15.05.02		NAME: K.S.RAMAN SIGN: [Signature] DATE: 15.05.02		
TITLE: <b>BODY</b> (4"-300C)		DRAWING NO. 1-V-0000-05193R 04		



- NOTES**
- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
  - ⊗ THIS MARK INDICATES THE SURFACES TO BE MACHINED.
  - UNSPECIFIED CASTING RADII-R5 MAX.
  - FOR PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS REFER LATEST APPLICABLE QUALITY PROCEDURE.
  - CASTING SHALL GENERALLY COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE IN ALL RESPECTS.
  - 100/√ INDICATES THE CASTING SURFACES WHICH MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
  - FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
  - ALL DETAILS IN VIEW 'S' & 'R' EXCEPT MELT No. & INSPECTION SEAL ARE TO BE CAST HEIGHT OF CASTING LETTERS 20mm.
  - \* FOR THE SPECIAL CLASS VALVES EMBOSING SHALL BE '300 SPL'
  - \* THIS SPECIAL CLASS CASTING IS TO BE SUBJECTED RT/UT ON ALL CRITICAL LOCATIONS.
  - \* ALL EXTERIOR AND ACCESSIBLE INTERIOR SURFACES OF BODY SHALL BE MPI/LPI TESTED.
  - HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

SLNo	MATL MARK TO BE CAST	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
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04	CD3MN	92 203 589	SA995 CD3MN ATTEST	REFER NOTE	--	158	--	1.V.P727.05210R	01
*03	CF8M	92 203 055	SA351-CF8M ATTEST	SH	--	158	--	1.V.P576.05210R	01
02	WC9	92 203 003	SA217 WC9 ATTEST	N & T	--	158	--	1.V.P569.05210R	01
01	CF8M	92 201 549	SA351-CF8M ATTEST	SH	--	158	--	1.V.P462.05210R	01

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI 620014.

DRN: K.P.LEON  
APPD: T.R.RAMAMURTHY  
CHD: P.Boomnathan

NAME: T.R.RAMAMURTHY  
SIGN: P.Boomnathan  
DATE: 28.05.05

DEPT: VL  
SCALE: NTS  
WEIGHT (KG): 158.0  
REFERENCE INFORMATIONS: CAD:C105210R

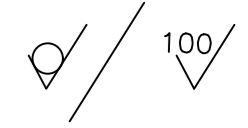
CODE 320  
TITLE: **BODY (8"-300C)**  
CARD CODE: U 01  
DRAWING NO.: 1-V-000-05210R  
REV: 04

REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	T.R.RAMAMURTHY	REV	DATE	ALTERED	T.R.RAMAMURTHY
04	03.08.20	CHD & APPD	SAMEER & SSK	03	18.07.18	CHD & APPD	SSK & KRS	02	02.07.12	CHD & APPD	SSK & KRS	01	16.08.11	CHD & APPD	SSK & MRK
SL.No.05 INCLUDED.				SL.No.04 INCLUDED NOTES No. 12 INCLUDED				SL.No.03 INCLUDED NOTES UPDATED FOR SPECIAL CLASS VALVE				SL.No. 02 INCLUDED			

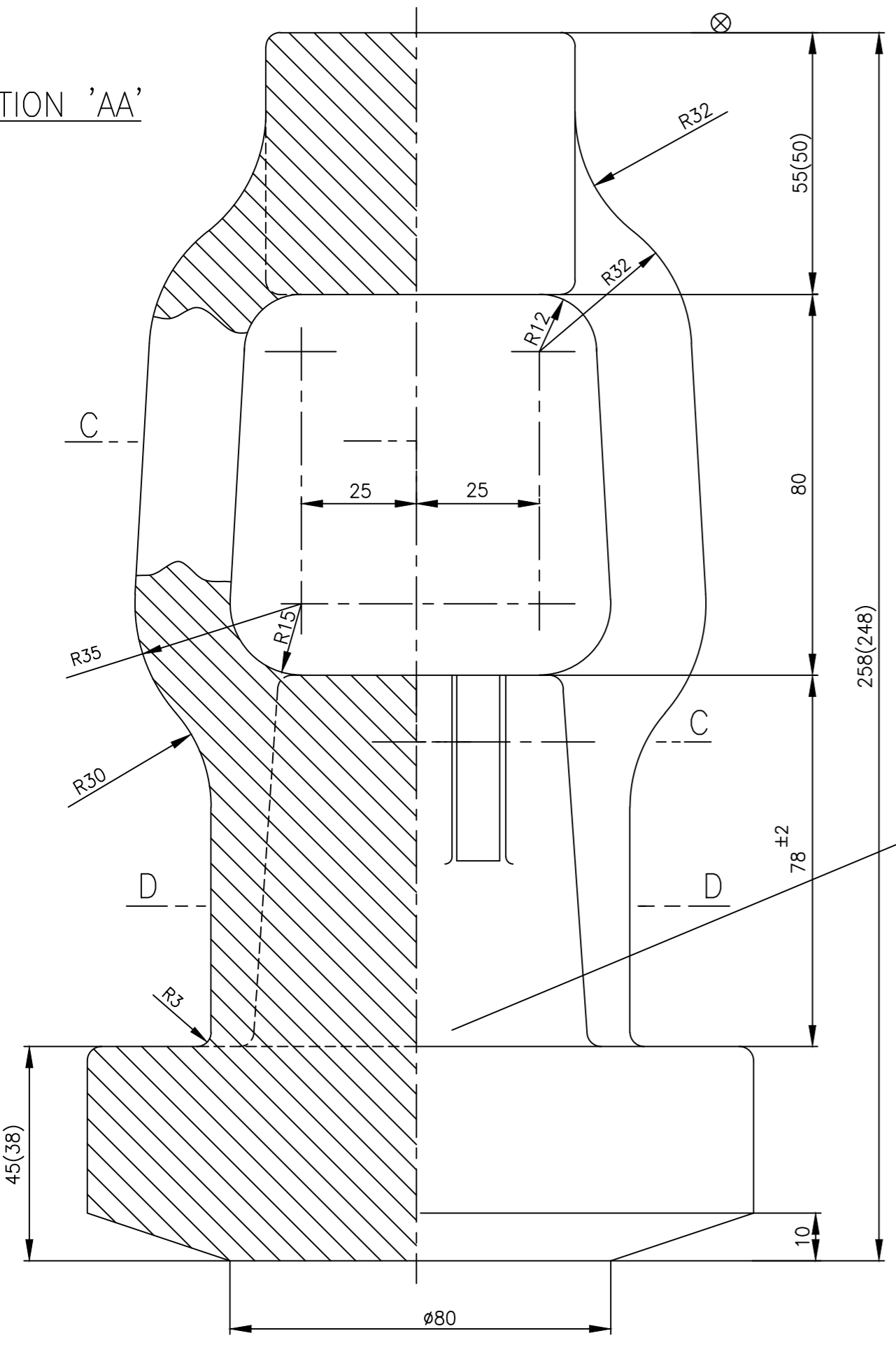
CAUTION: The information on this drawing is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

DRAWING NO. 2-V-0000-01776R

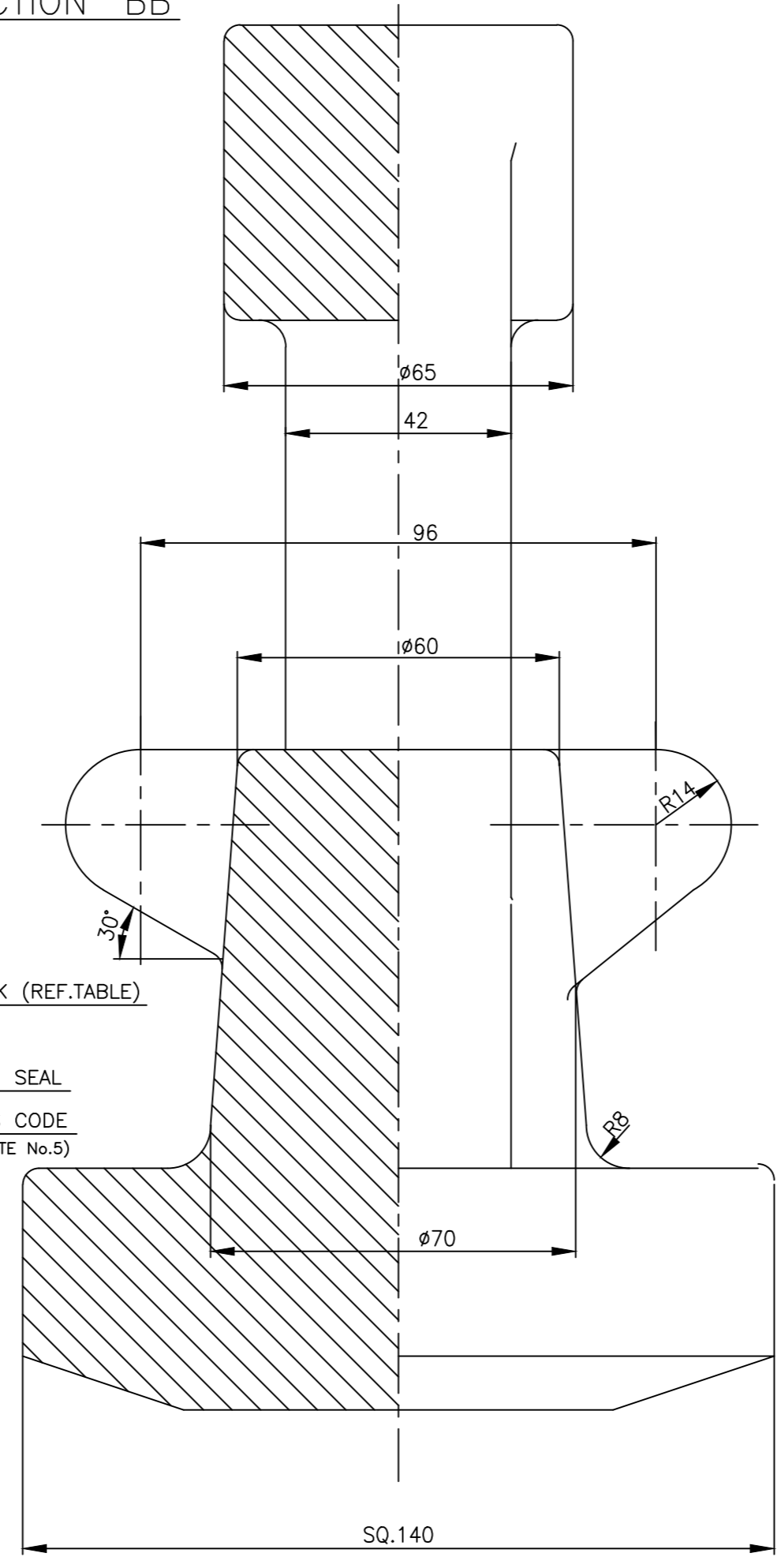
ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP



SECTION 'AA'



SECTION 'BB'

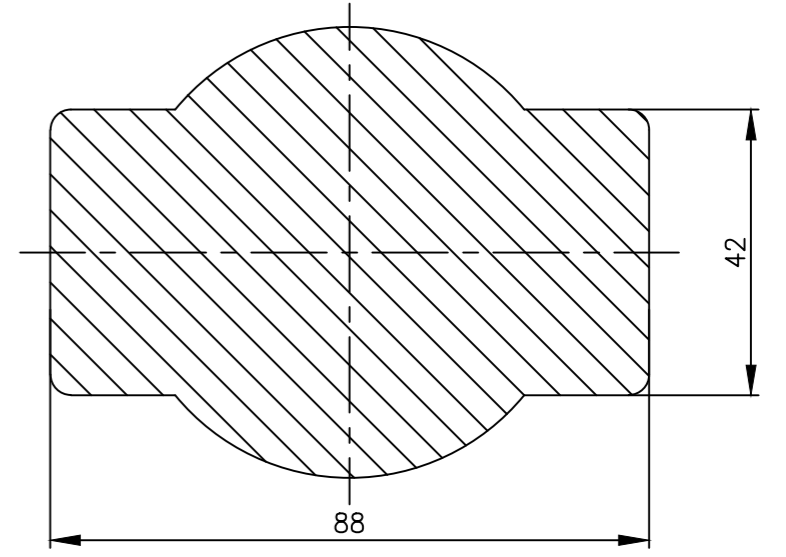


2"-300C  
 MATL. MARK (REF. TABLE)  
 MELT No.  
 INSPECTION SEAL  
 SUPPLIER'S CODE  
 (\* REFER NOTE No.5)

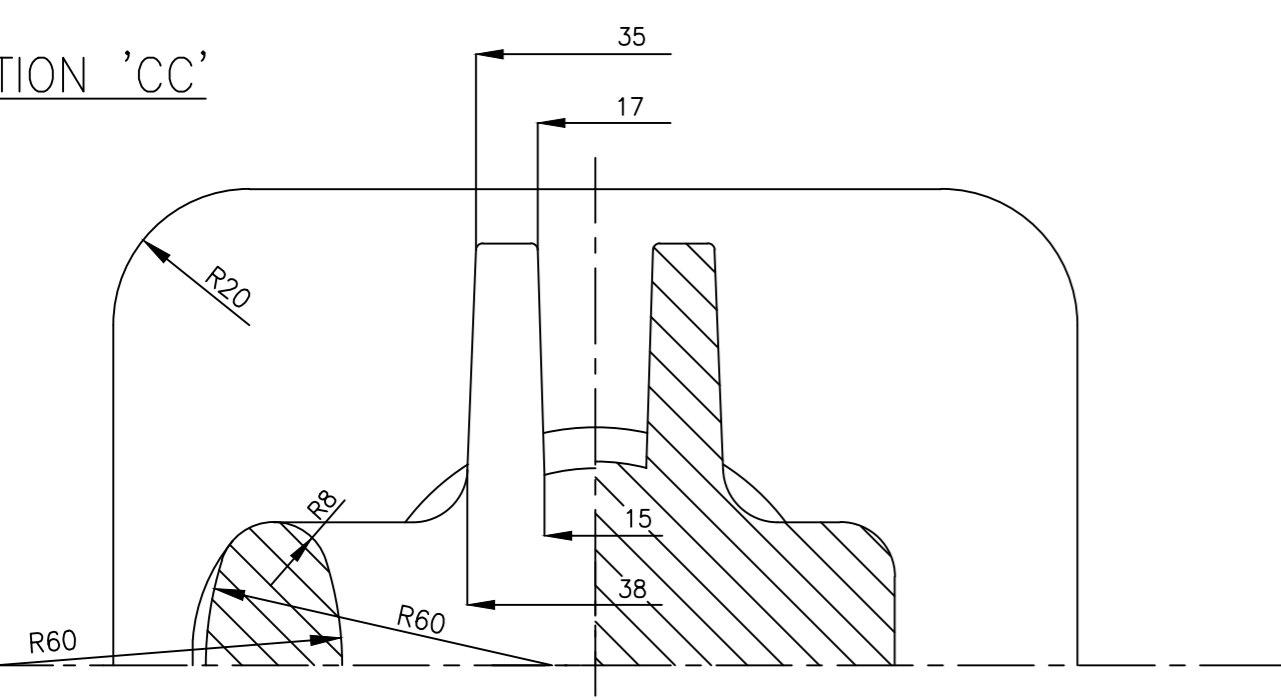
NOTES:-

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE TDC.
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- EXCEPT MELT NUMBER & INSPECTION SEAL ALL OTHER DETAILS ARE TO BE CAST.
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE TDC
- UNSPECIFIED CASTING RADII 3 - 5 MM
- HEIGHT OF CASTING LETTERS 20MM
- ⊗ SURFACES TO BE MACHINED
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

SECTION 'DD'



SECTION 'CC'

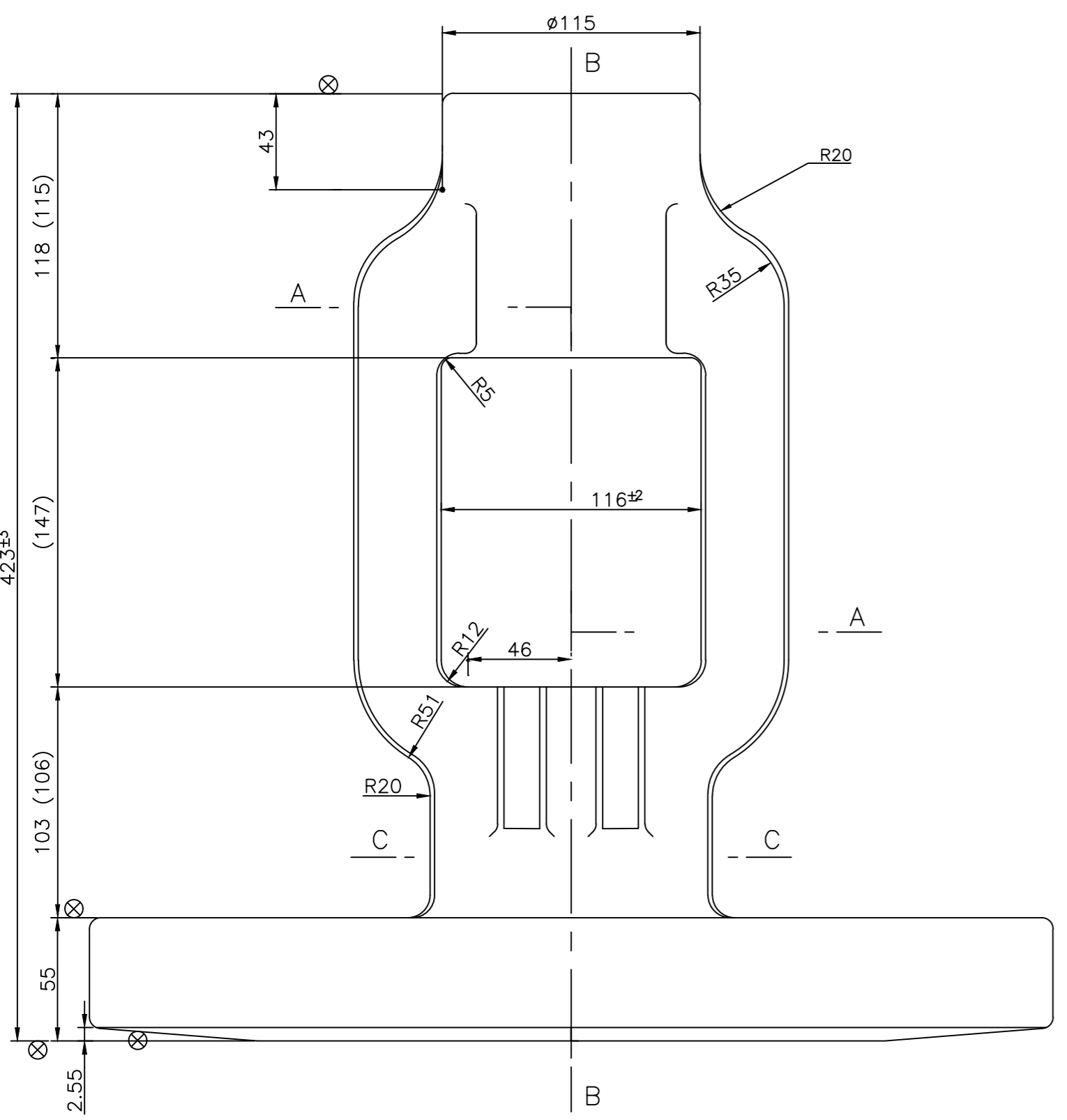


ITEM No	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
CF3M #08	CASTING	---	A351-CF3M CERTIFY	SH	---	14.0	---	2V.P883.01776R 92 206 233 0000	07
CF8M #07	CASTING	---	A351-CF8M CERTIFY	SH	---	14.0	---	2V.UB02.01776R 92 206 140 0000	07
CF8 #06	CASTING	---	A351-CF8 CERTIFY	SH	---	14.0	---	2V.U930.01776R 92 203 704 0000	07
WC9 05	CASTING	---	A217-WC9 CERTIFY	N & T	---	14.0	---	2V.P577.01776R 92 203 072 0000	07
CF8M 04	CASTING	---	A351-CF8M CERTIFY	SH	---	14.0	---	2V.P443.01776R 92 201 511 0000	07
WC6 03	CASTING	---	A217-WC6 CERTIFY	N & T	---	14.0	---	2V.P354.01776R 92 201 006 0000	07
CF8 02	CASTING	---	A351-CF8 CERTIFY	SH	---	14.0	---	2V.P339.01776R 92 200 955 0000	07
WCB 01	CASTING	---	A216-WCB CERTIFY	NR	---	14.0	---	2V.2476.01776R/01 92 008 248 0000	07

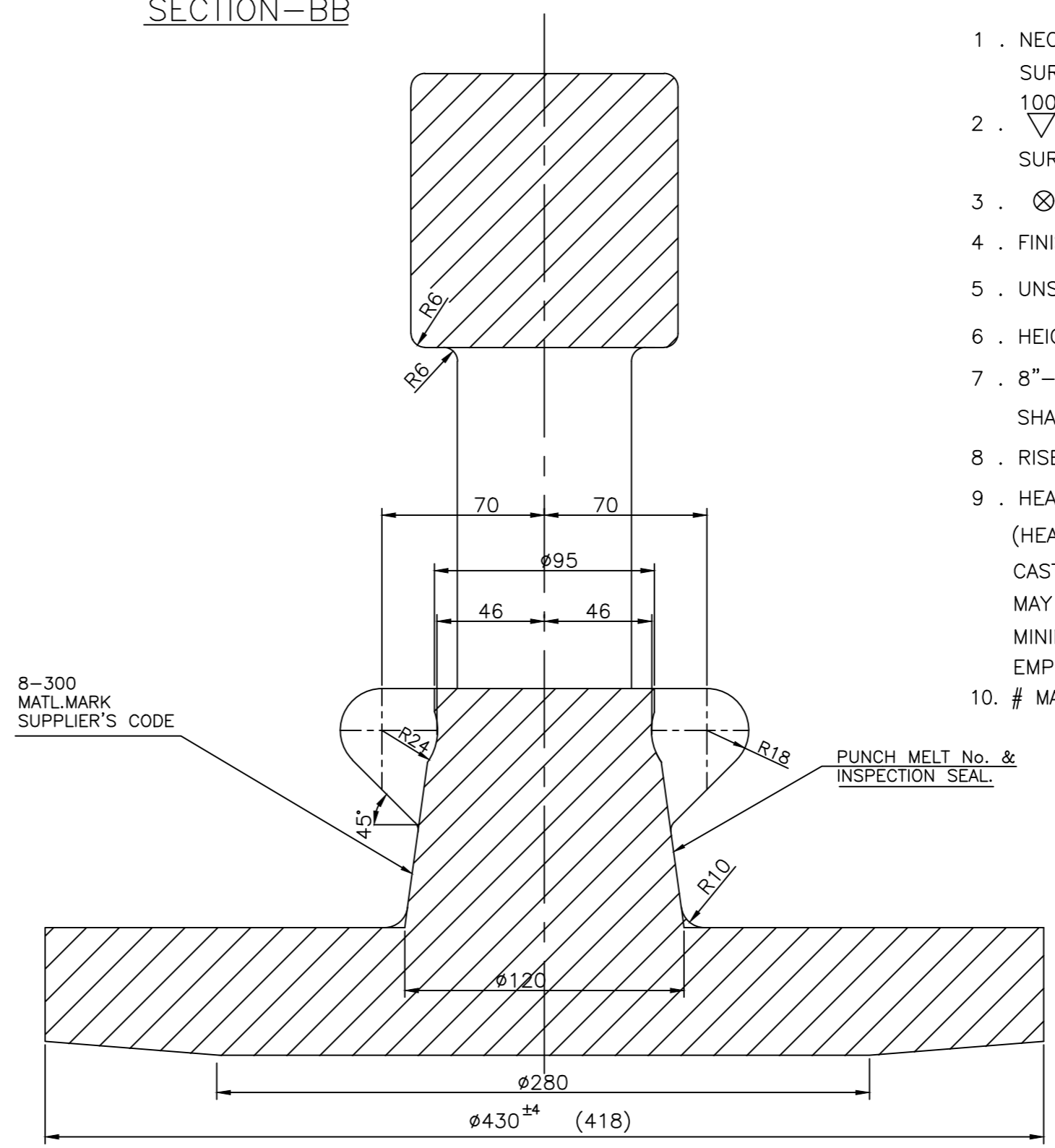
*MATL. MARK	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No																
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT																										
<table border="0"> <tr> <td rowspan="3">                       BHARAT HEAVY ELECTRICALS LTD.,                      UNIT: HIGH PRESSURE BOILER PLANT,                      TIRUCHIRAPALLI-620014.                 </td> <td>DRN</td> <td>K.P.LEON</td> <td>SIGN</td> <td>DATE</td> <td>NO.OF VAR.</td> </tr> <tr> <td>CHD</td> <td>T.R.RAMAMURTHY</td> <td></td> <td>02.08.04</td> <td>-</td> </tr> <tr> <td>APPD</td> <td>P.BOOMINATHAN</td> <td></td> <td>02.08.04</td> <td>-</td> </tr> </table>											 BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI-620014.	DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.	CHD	T.R.RAMAMURTHY		02.08.04	-	APPD	P.BOOMINATHAN		02.08.04	-
 BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI-620014.	DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.																					
	CHD	T.R.RAMAMURTHY		02.08.04	-																					
	APPD	P.BOOMINATHAN		02.08.04	-																					
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS			NO. OF ITEMS																			
CODE	320	NTS	---				-																			
TITLE	YOKE (CASTING)			CARD CODE	DRAWING NO.	REV																				
				U 01	2-V-0000-01776R	08																				

DCP No.	ALTD:	APPD:	DT:
-	RPS	SSK	27.09.22
REV 08	CHD: MK	DT:	
-			
SL. No. 08 INCLUDED			
ZONE			
-			
DCP No. <th>ALTD:</th> <th>APPD:</th> <th>DT:</th>	ALTD:	APPD:	DT:
-	TS	SSK	04.10.21
REV 07	CHD: RPS	DT:	
-			
SL. No. 07 INCLUDED			
ZONE			
-			
DCP No. <th>ALTD:</th> <th>APPD:</th> <th>DT:</th>	ALTD:	APPD:	DT:
-	RPS	KRS	01.11.18
REV 06	CHD: SSK	DT:	
-			
SL. No. 06 INCLUDED			
ZONE			
-			

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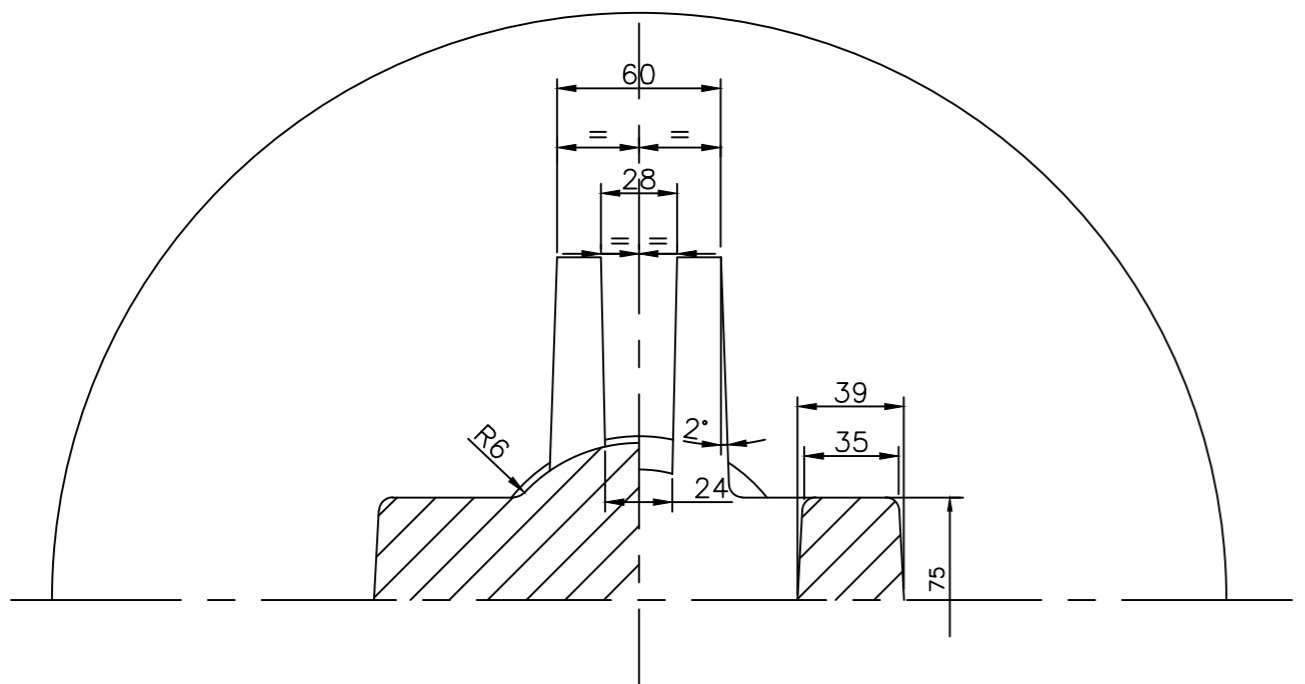
SECTION-BB



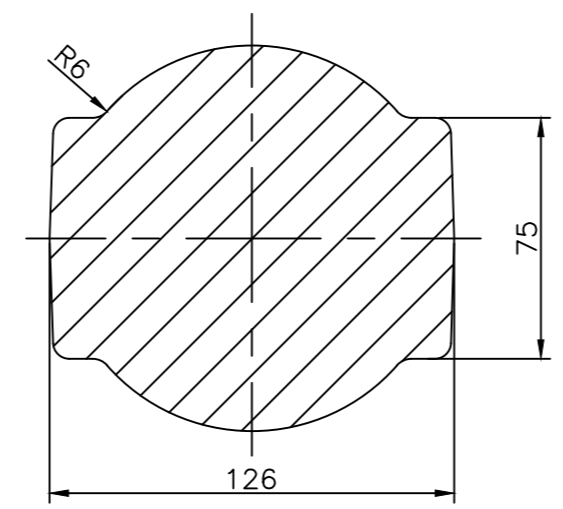
NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- $\nabla$  INDICATES THE CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- $\otimes$  INDICATES SURFACES TO BE MACHINED
- FINISHED M/CD DIMENSIONS ARE GIVEN IN BRACKETS(FOR INFORMATION ONLY)
- UNSPECIFIED CASTING RADII R3 TO R5mm
- HEIGHT OF CAST LETTERS- 20mm
- 8"-300,MATL.MARK & SUPPLIERS CODE TO BE CAST & ALL OTHER DETAILS SHALL BE PUNCHED.
- RISER REMAINS ARE TO BE COMPLETELY AND SUITABLY REMOVED.
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED

SECTION-AA



SECTION-CC



SL No	MATL. MARK TO BE CAST	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
08	--	92 206 011	A351 CF3M CERTIFY	SH	46	88	--	2.V.P831.02419R	06
#07	--	92 203 702	A351 CF8 CERTIFY	SH	46	88	--	2.V.U932.02419R	06
06	--	92 203 591	SA995 CD3MN CERTIFY	REFER NOTE	46	88	--	2.V.P727.02419R	06
05	--	92 203 004	A217 WC9 CERTIFY	N & T	20	88	--	2.V.P569.02419R	06
04	--	92 201 812	A216 WCC CERTIFY	NR	10	88	--	2.V.P532.02419R	06
03	--	92 201 550	A351 CF8M CERTIFY	SH	46	88	--	2.V.P462.02419R	06
02	--	92 200 930	A351 CF8 CERTIFY	SH	46	88	--	2.V.P338-02419R	06
01	--	92 008 310	A216 WCB CERTIFY	NR	10	88	--	2.V.2670.02419R/01	06

REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH
08	04.08.20	CHD & APPD	SAMEER & SSK	07	01.12.18	CHD & APPD	SSK & KRS	06	17.07.18	CHD & APPD	SSK & MRK
SL. No. 08 INCLUDED.				SL.No.07 INCLUDED NOTE No.10 INCLUDED				SL. No. 06 INCLUDED NOTE No. 9 INCLUDED			

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **CS** DRAWING REDRAWN WITH REV.06 ON 17.07.2018

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	T.R.RAMAMURTHY		28.05.05	
APPD	P.BOMINATHAN		28.05.05	

DEPT: 365-120 VL  
CODE: 320

SCALE: 1:2  
WEIGHT (KG): 88

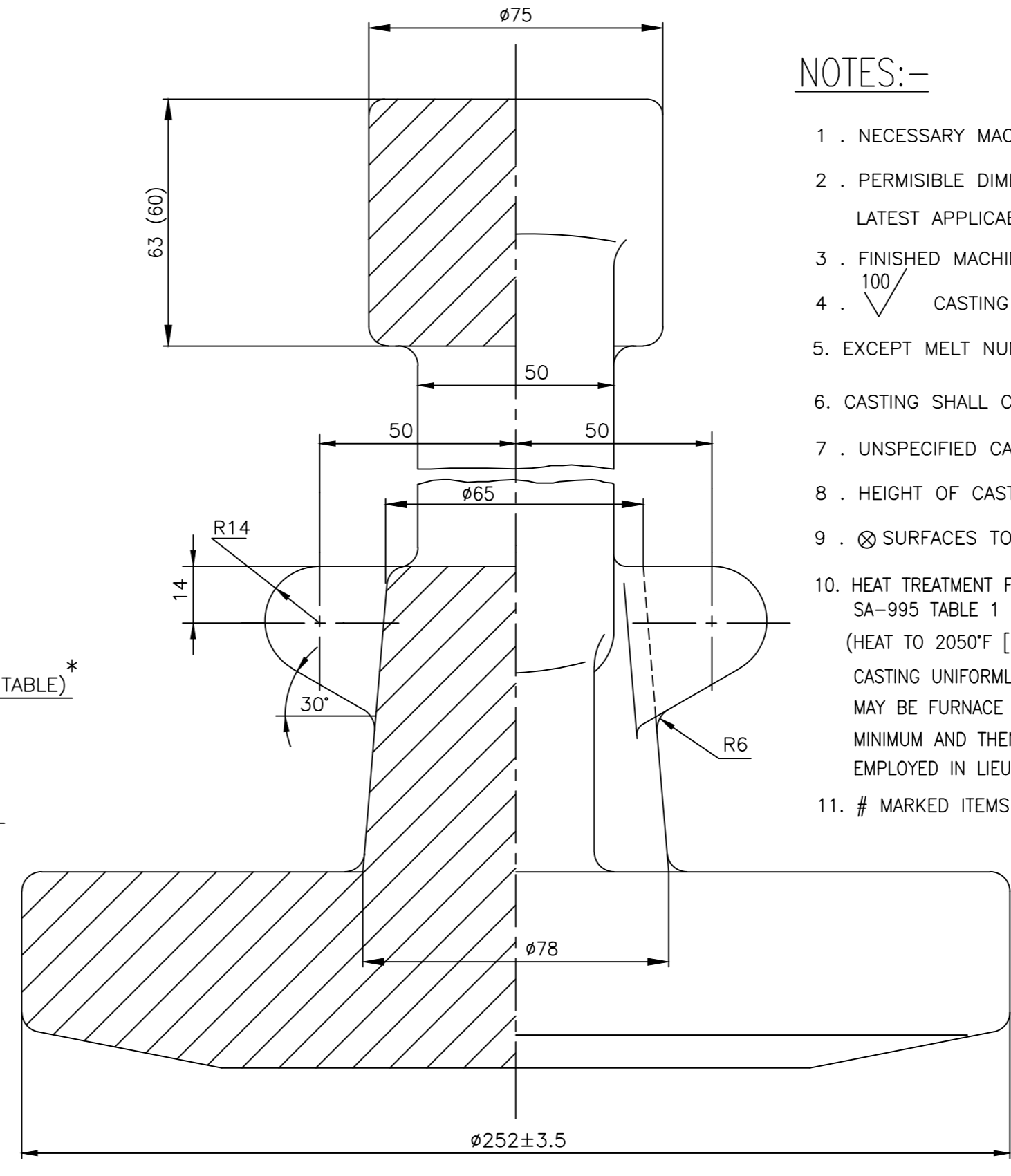
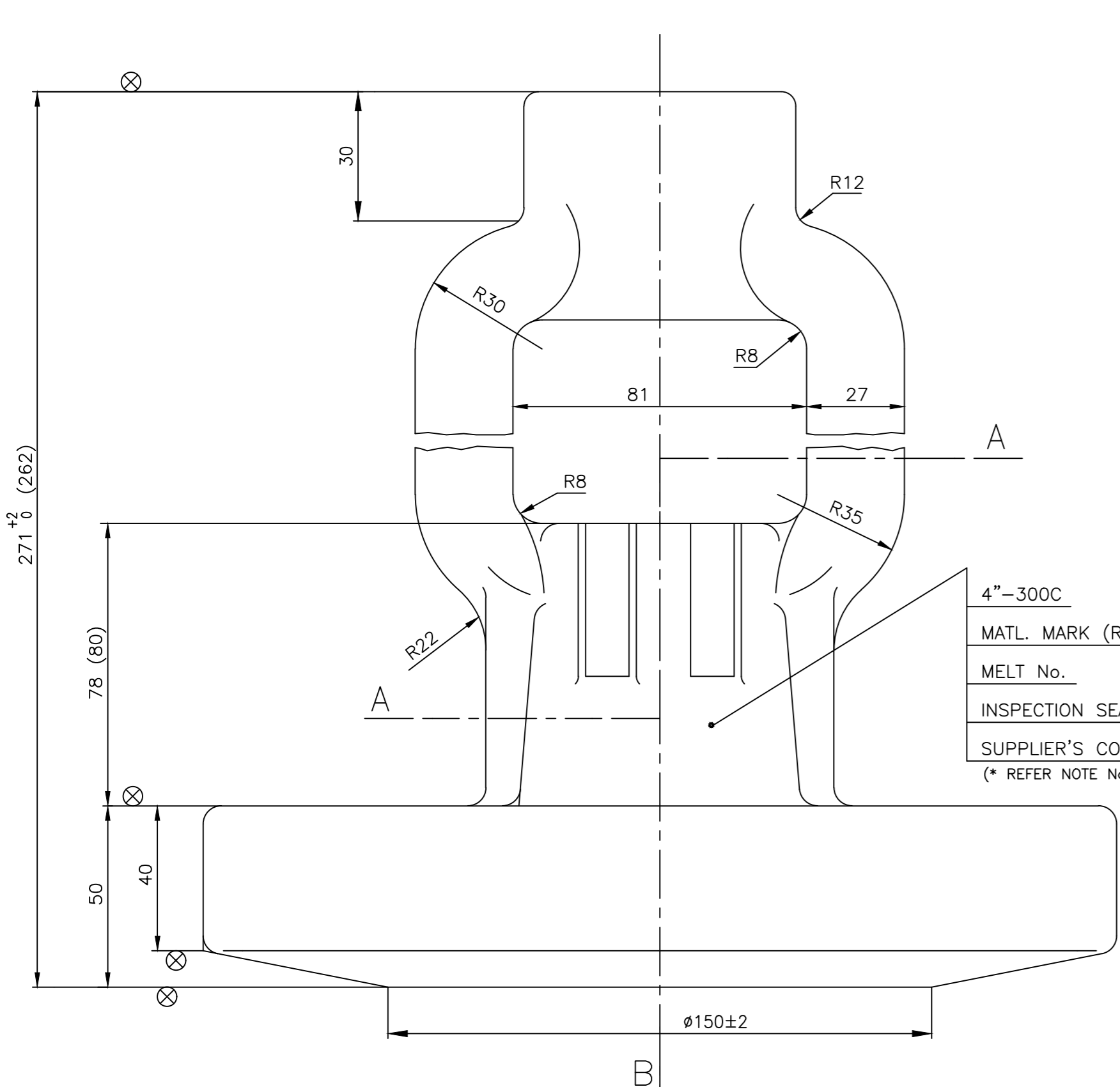
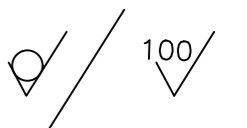
REFERENCE INFORMATIONS: CAD.REF.C202419R

TITLE: **YOKE (8"-300)**  
CARD CODE: U 01  
DRAWING NO.: 2-V-0000-02419R  
REV: 08

SECTION-BB

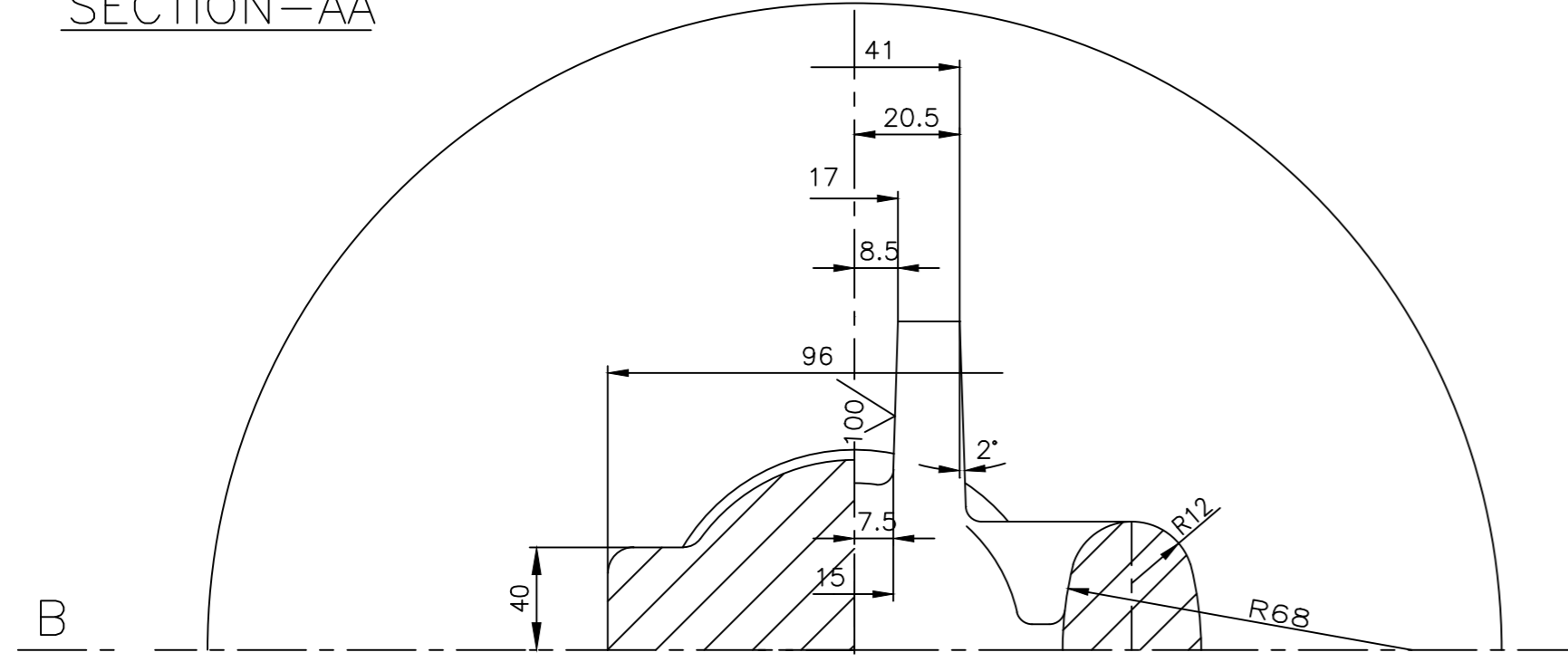
NOTES:-

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE QUALITY PROCEDURE.
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- EXCEPT MELT NUMBER & INSPECTION SEAL ALL OTHER DETAILS ARE TO BE CAST.
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE Q.P
- UNSPECIFIED CASTING RADII 3 - 5 MM
- HEIGHT OF CASTING LETTERS 20MM
- ⊗ SURFACES TO BE MACHINED
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED



4"-300C  
MATL. MARK (REF.TABLE)\*  
MELT No.  
INSPECTION SEAL  
SUPPLIER'S CODE  
(\* REFER NOTE No.5)

SECTION-AA



MATL.MARK *	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M #06		CASTING	-	A351-CF3M CERTIFY	S H	-	24.0	-	2.V.UB20.03153R 92 206 237 0000	006
CF3M 05		CASTING	-	A351-CF3M CERTIFY	S H	-	24.0	-	2.V.P768.03153R 92 203 841 0000	006
CF8 #04		CASTING	-	A351-CF8 CERTIFY	S H	-	24.0	-	2.V.U931.03153R 92 203 705 0000	006
CD3MN 03		CASTING	-	SA995 CD3MN CERTIFY	REFER NOTE	-	24.0	-	2.V.P725.03153R 92 203 602 0000	006
CF8M 02		CASTING	-	A351-CF8M CERTIFY	SOLUTION ANNEALED	-	24.0	-	2.V.P345.03153R/1 92 200 988 0000	006
CF8 01		CASTING	-	A351-CF8 CERTIFY	SOLUTION ANNEALED	-	24.0	-	2.V.2909.03153R/1 92 008 444 0000	006

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		14.05.98	-
APPD	K.S.RAMAN		15.05.98	-

DEPT VL / CODE 320 / TITLE YOKE CASTING

SCALE NTS / WEIGHT (KG) --- / REFERENCE INFORMATION

CARD CODE U 01 / DRAWING NO. 2-V-0000-03153R / REV 06

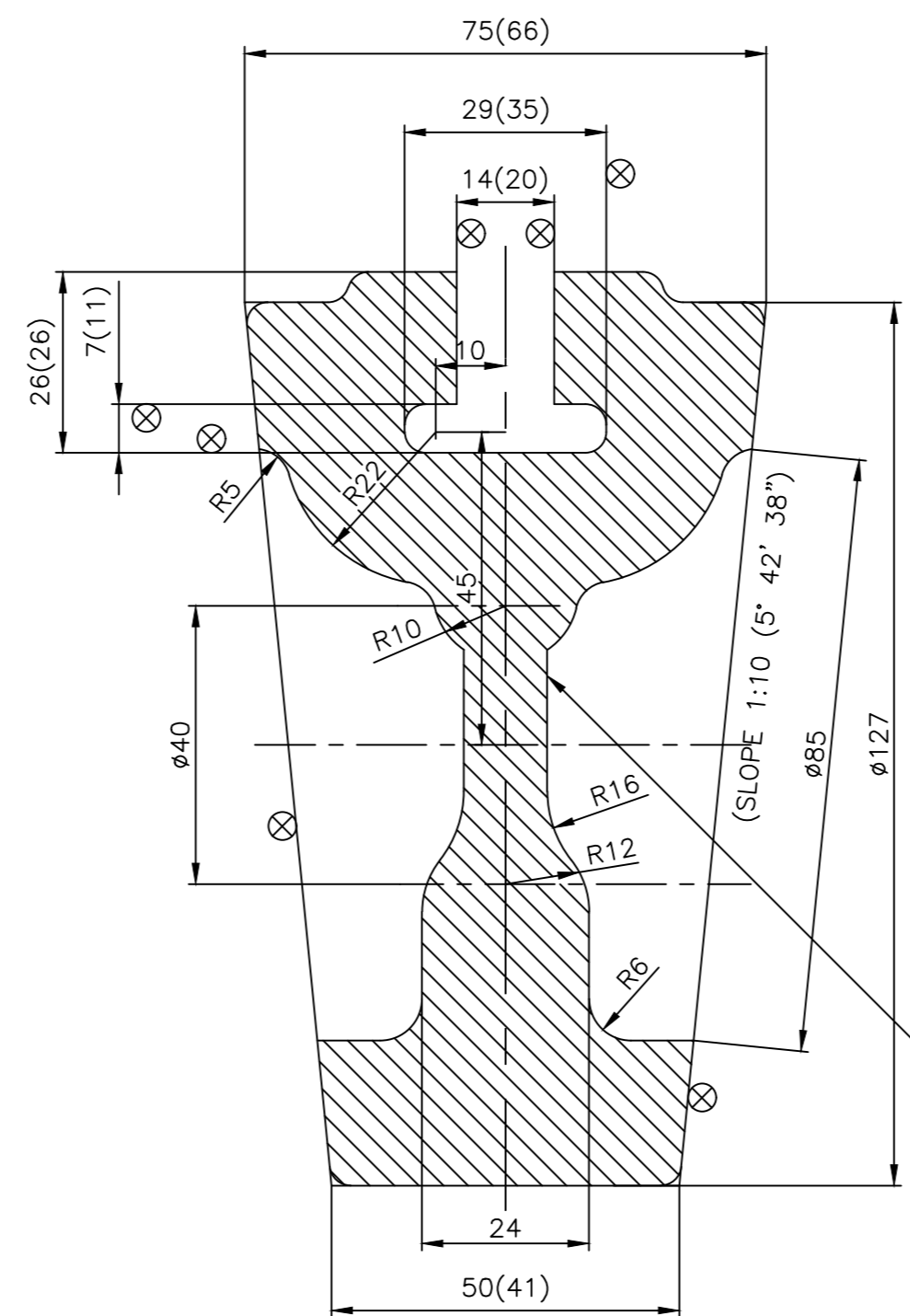
DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: KRS
-	CHD: MK	DT: 27.09.22	-	CHD: SSK	DT: 26.02.19
REV 06	SL. No. 06 INCLUDED		REV 05	SL. No. 05 INCLUDED	
ZONE -			ZONE -		

DRAWING NO. 2-V-0000-03379R

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

100/

SECTION-AA



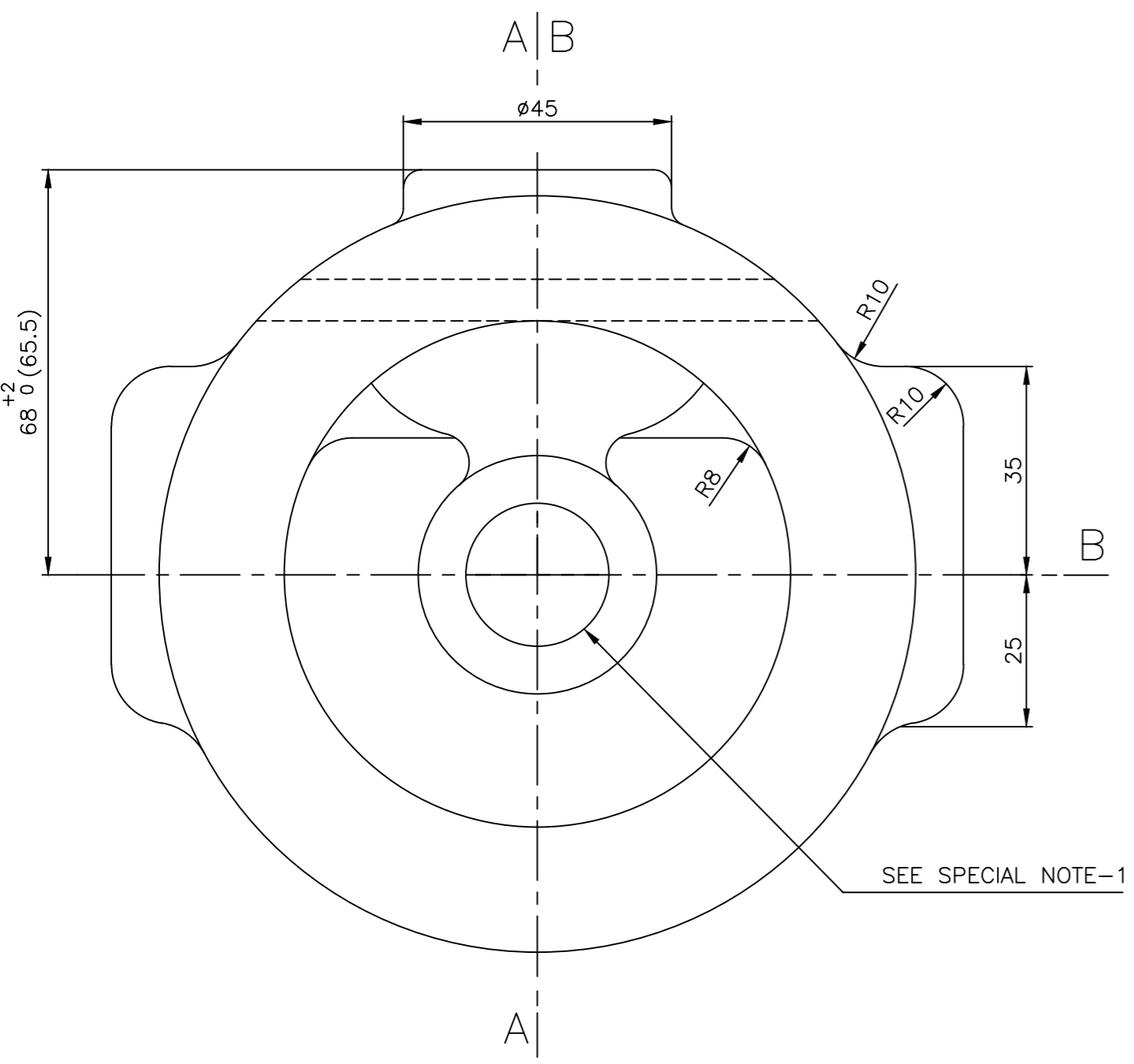
CAST 4"-150  
 MATL. MARK  
 MELT NO.  
 INSPECTION SEAL  
 SUPPLIERS CODE

SPECIAL NOTE:

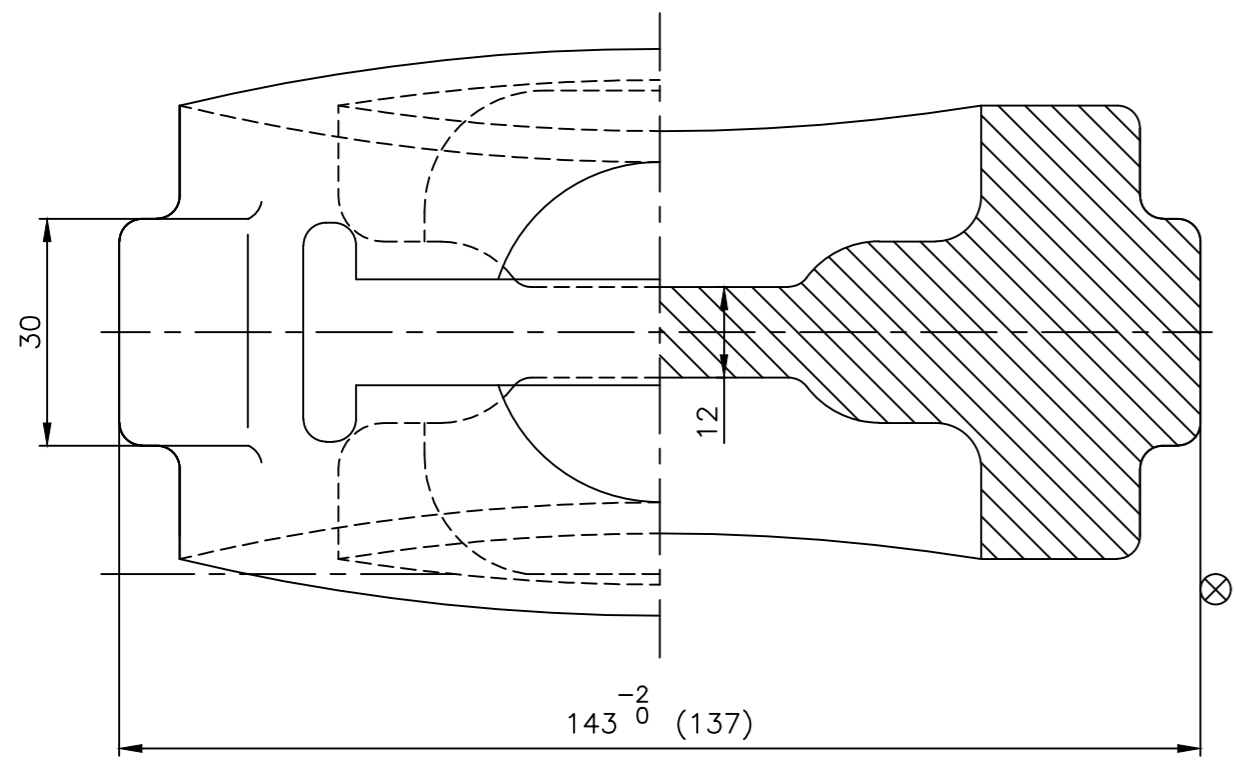
1. CAST PUNCH DETAILS TO BE MADE WITHIN THE CIRCLE  $\phi 60$ mm SHOWN.

NOTE:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- $\otimes$  SURFACES TO BE MACHINED.
- UNSPECIFIED CASTING RADII R3-R5
- $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BASKETS.
- CASTING SHALL MEET THE REQUIREMENTS OF APPLICABLE TDC (WITH LATEST REVISION)
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED



SECTION-BB



ITEM NO.	QTY	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M #11	CASTING	A351 CF3M CERTIFY	SH	--	6.0	--	2.V.UB24.03379R	--	92 206 249 0000	--
CF8M #10	CASTING	A351 CF8M CERTIFY	SH	--	6.0	--	2.V.UA98.03379R	--	92 206 130 0000	--
CF3M 09	CASTING	A351 CF3M CERTIFY	SH	--	6.0	--	2.V.NK77.03379R	--	92 203 935 0000	--
CF8 #08	CASTING	A351 CF8 CERTIFY	SH	--	6.0	--	2.V.U936.03379R	--	92 203 755 0000	--
CD3MN 07	CASTING	A995 CD3MN CERTIFY	REFER NOTE	--	6.0	--	2.V.NK32.03379R	--	92 203 581 0000	--
WC9 06	CASTING	A217 WC9 CERTIFY	N & T	--	6.0	--	2.V.N297.03379R	--	92 201 636 0000	--
LCB 05	CASTING	A352 LCB CERTIFY	NR	--	6.0	--	2.V.M769.03379R/1	--	92 201 098 0000	--
WC6 04	CASTING	A217 WC6 CERTIFY	N & T	--	6.0	--	2.V.N296.03379R/2	--	92 201 097 0000	--
CF8M 03	CASTING	A351 CF8M CERTIFY	SH	--	6.0	--	2.V.N438.03379R/2	--	92 201 096 0000	--
CF8 02	CASTING	A351 CF8 CERTIFY	SH	--	6.0	--	2.V.N285.03379R/2	--	92 201 095 0000	--
WCB 01	CASTING	A216 WCB CERTIFY	NR	--	6.0	--	2.V.N033.03379R/2	--	92 201 094 0000	--

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

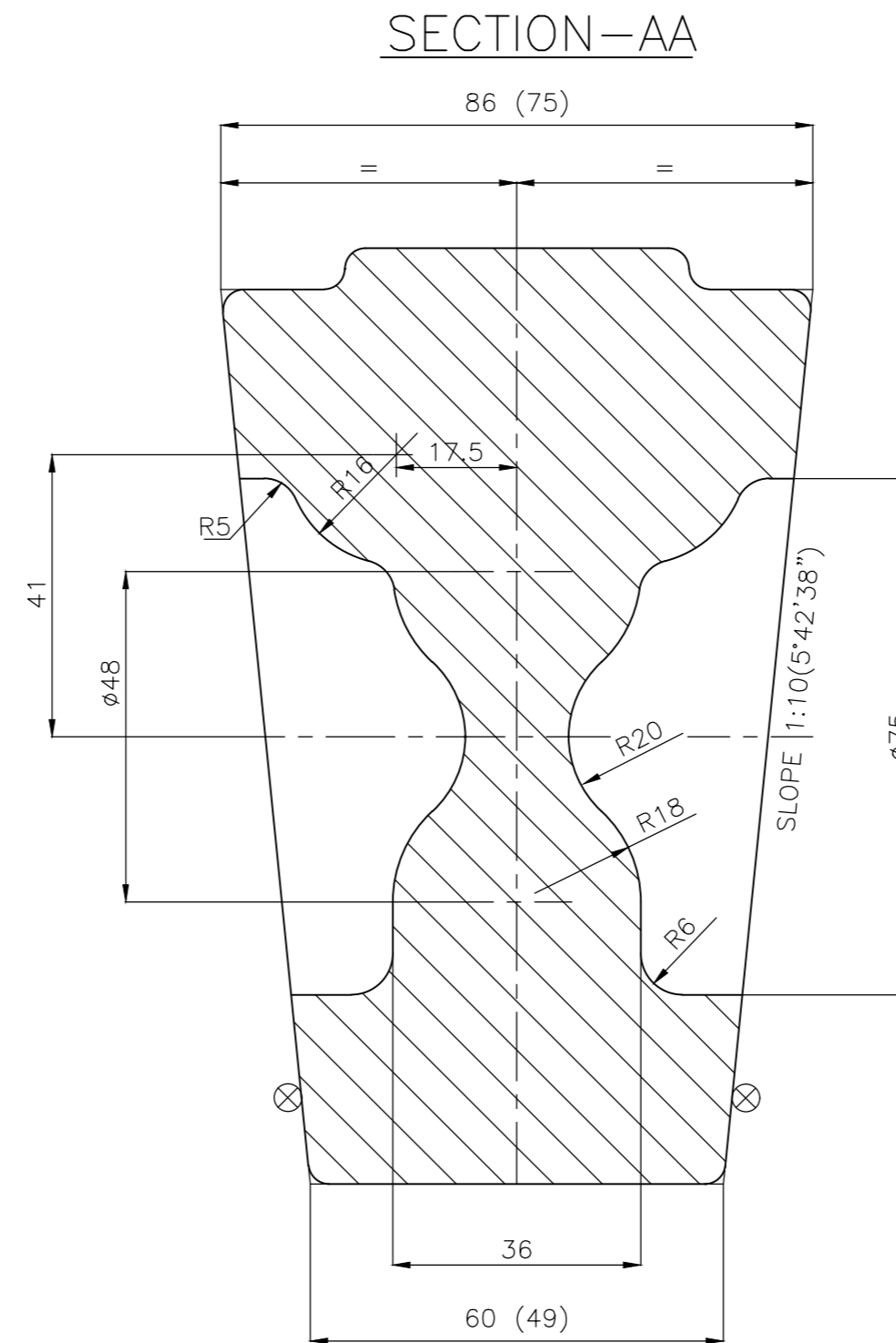
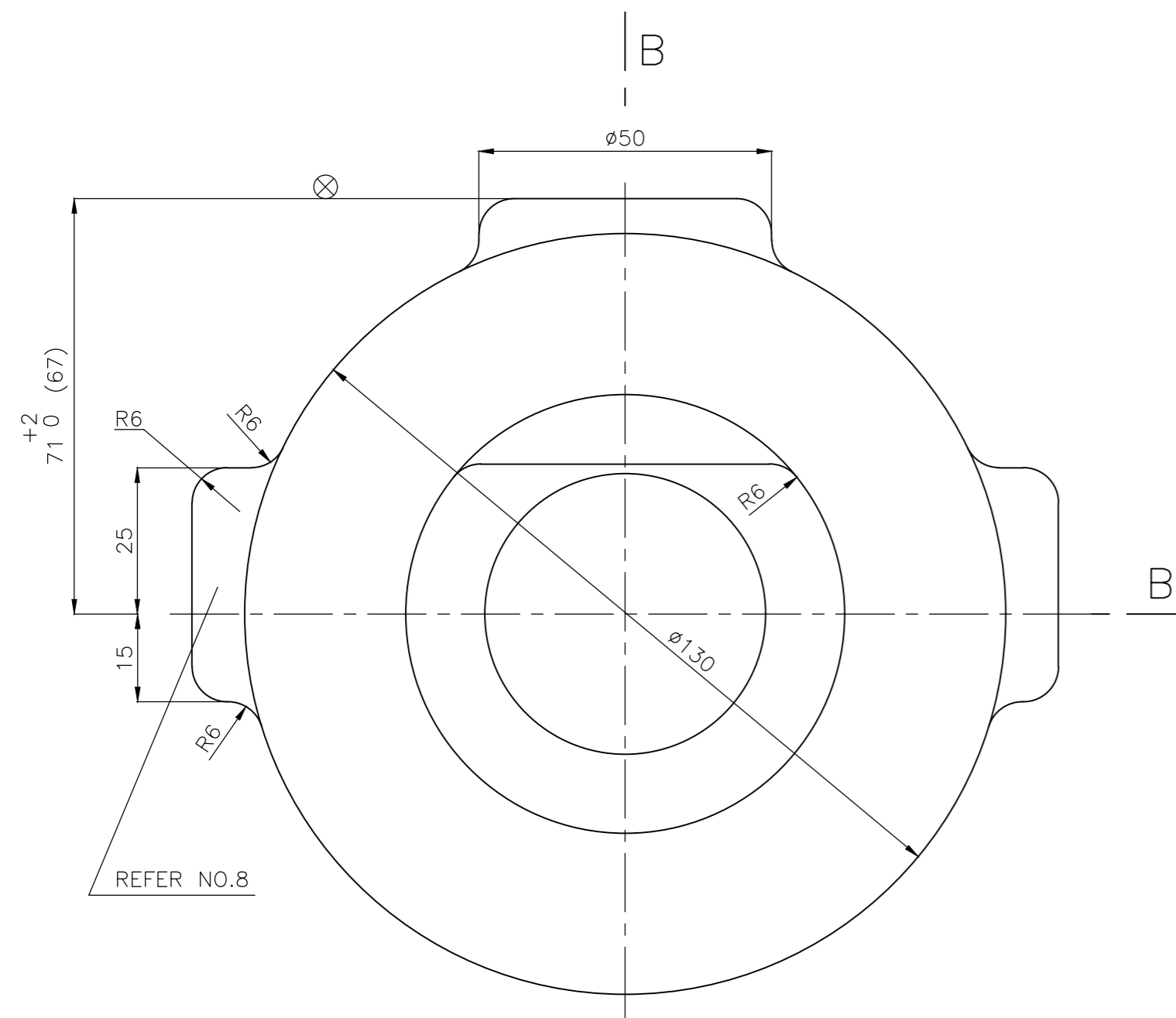
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRAWING REDRAWN WITH REV.07 ON 07.11.2006 (REFER DCN.CS:0662 & CS:1013)

DRN	A.S.PANDY	SIGN	DATE	NO. OF VAR.
CHD	T.R.RAMAMURTHY		07.11.06	--
APPD	P. BOOMINATHAN		07.11.06	--

DEPT: VL / CODE: 320 / TITLE: WEDGE (4"-C150)

SCALE: NTS / WEIGHT (KG): REF. TABLE / REFERENCE INFORMATION: CAD:C203379R / CARD CODE: U 01 / DRAWING NO.: 2-V-0000-03379R / REV: 11

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPD: SSK
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT: 05.10.21
REV 11	SL. No. 11 INCLUDED			REV 10	SL. No. 10 INCLUDED
ZONE -				ZONE -	

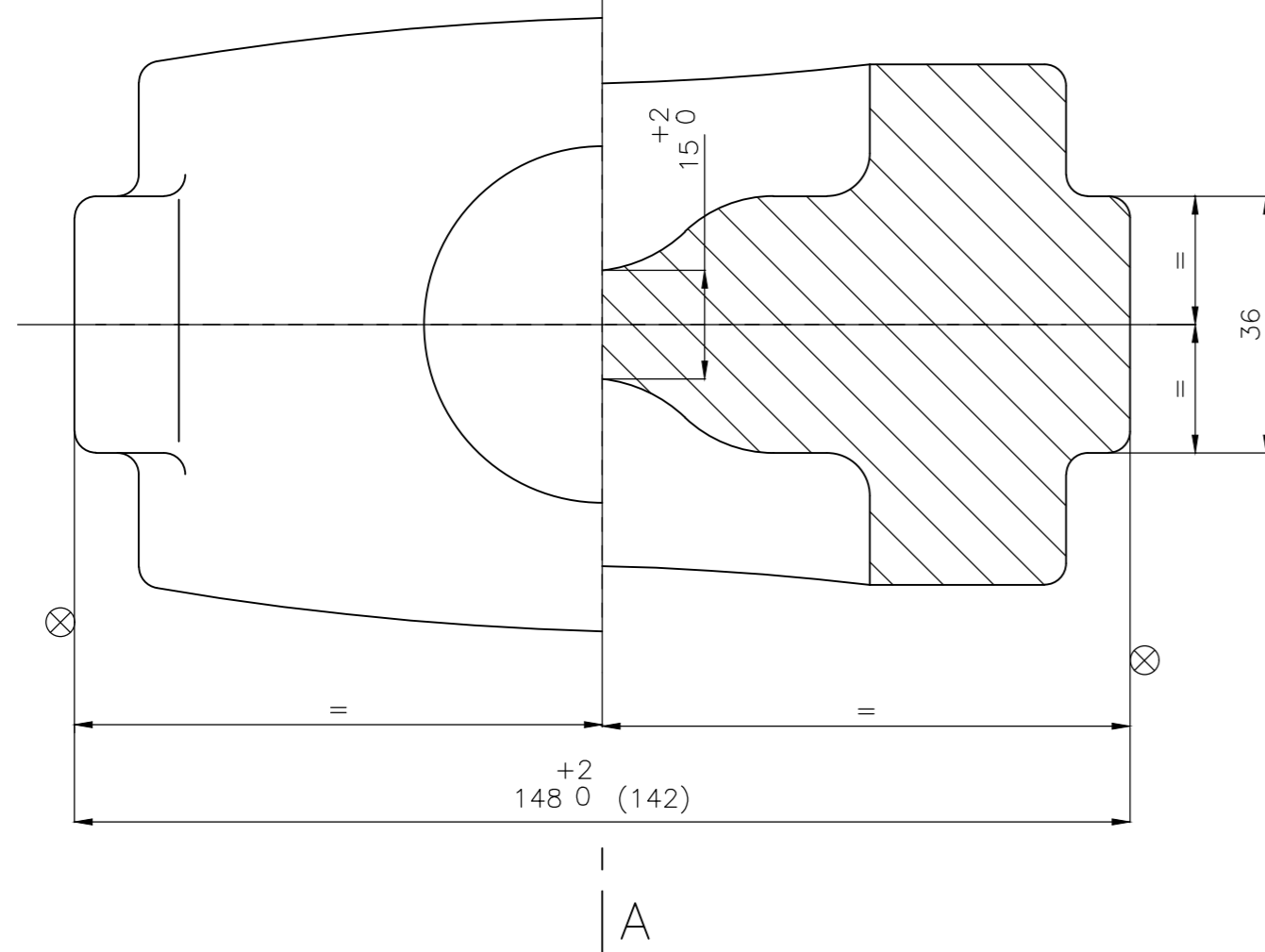


**NOTES:**

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- ⊗ SURFACES TO BE MACHINED
- UNSPECIFIED CASTING RADII R3-R5
- 100% CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS
- CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- HEIGHT OF THE CASTING LETTERS = 8mm
- THE FOLLOWING IDENTIFICATION MARKING TO BE PUNCHED IN THE ZONE SPECIFIED IN THE DRAWING

4"-300C  
MATL. MARK  
MELT NO  
SUPPLIERS CODE

**SECTION-BB**



REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	K.P.LEON
09	16.10.19	CHD & APPD	SAMEER & SSK	08	11.06.99	CHD & APPD	S.K.RAMAN
SL.No. 08 INCLUDED				RADIUS R18 INTRODUCED & NEW MATERIAL CODE GIVEN.			
				REFER DCN.CS:1013			

No	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
08	A351 CF3M	92 203 936	A351 CF3M CERTIFY	SH	--	5.0	--	2.V.NK79.03436R	--
07	LCB	92 201 125	A352 LCB CERTIFY	--	--	5.0	--	2.V.M772.03436R/01	--
06	A351 CF8M	92 201 124	A351 CF8M CERTIFY	SH	--	5.0	--	2.V.N450.03436R/02	--
05	A216 WCC	92 201 123	ASTM A216 WCC CERTIFY	NR	--	5.0	--	2.V.N252.03436R/02	--
04	A217 WC9	92 201 122	ASTM A217 WC9	N & T	--	5.0	--	2.V.N232.03436R/02	--
03	A217 WC6	92 201 121	ASTM A217 WC6	N & T	--	5.0	--	2.V.N228.03436R/02	--
02	A351 CF8	92 201 120	ASTM A351 CF8	SH	--	5.0	--	2.V.M357.03436R/02	--
01	A216 WCB	92 201 119	ASTM A216 WCB	NR	--	5.0	--	2.V.N097.03436R/02	--

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **CS** DRG. REDRAWN WITH REV.09 ON 16.10.2019

DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATIONS	NO. OF ITEMS
320		NTS	5.0	CAD: C303436R (REF. DCN.CS:0662)	

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI - 620014.

DRN	NAME	SIGN	DATE	NO. OF VAR.
CHD	P.LOGANATHAN		27.02.91	
APPD	P.LOGANATHAN		27.02.91	

TITLE: **WEDGE**  
(4"-C300)

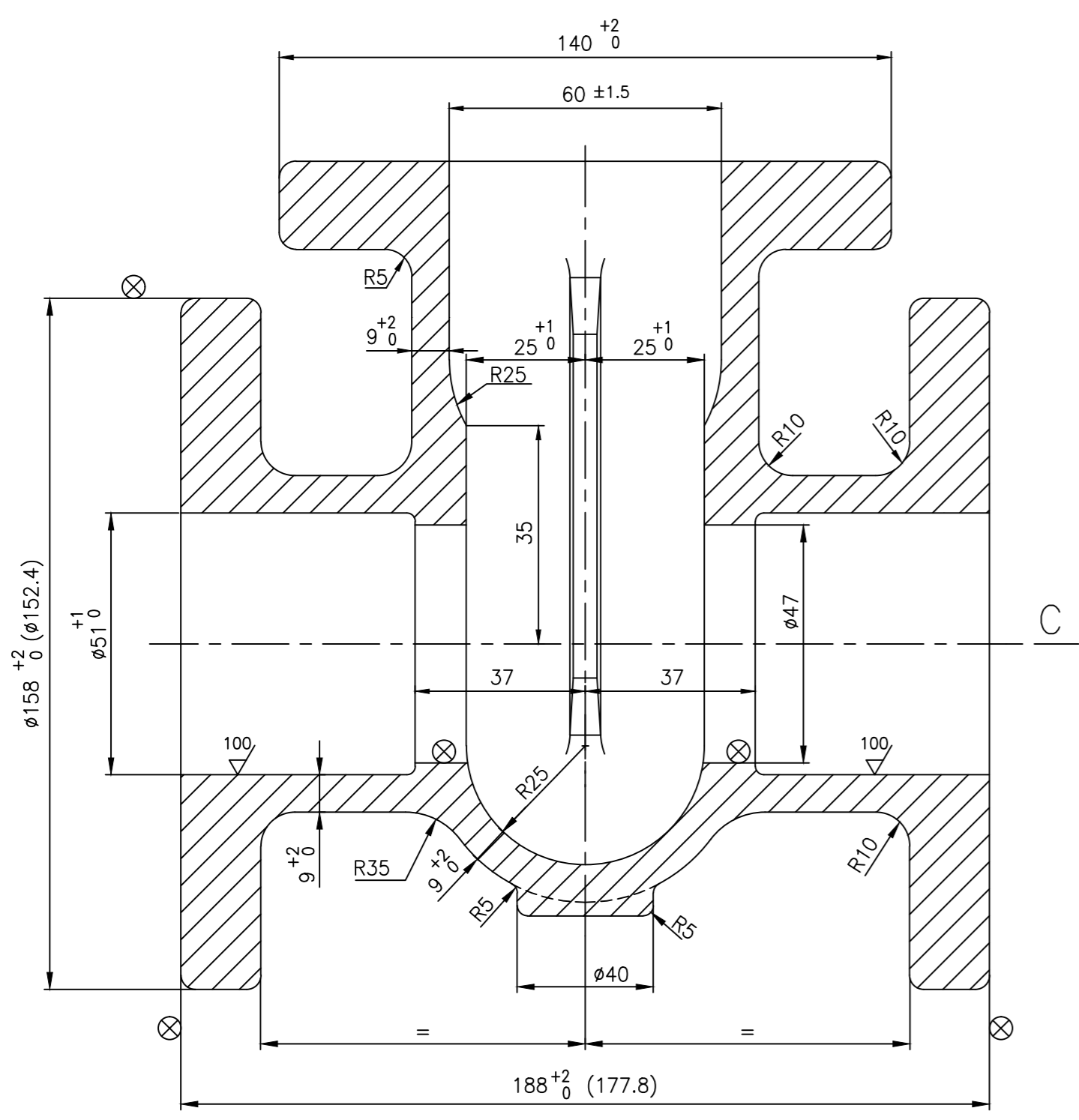
CARD CODE: U 01

DRAWING NO. **2-V-0000-03436R**

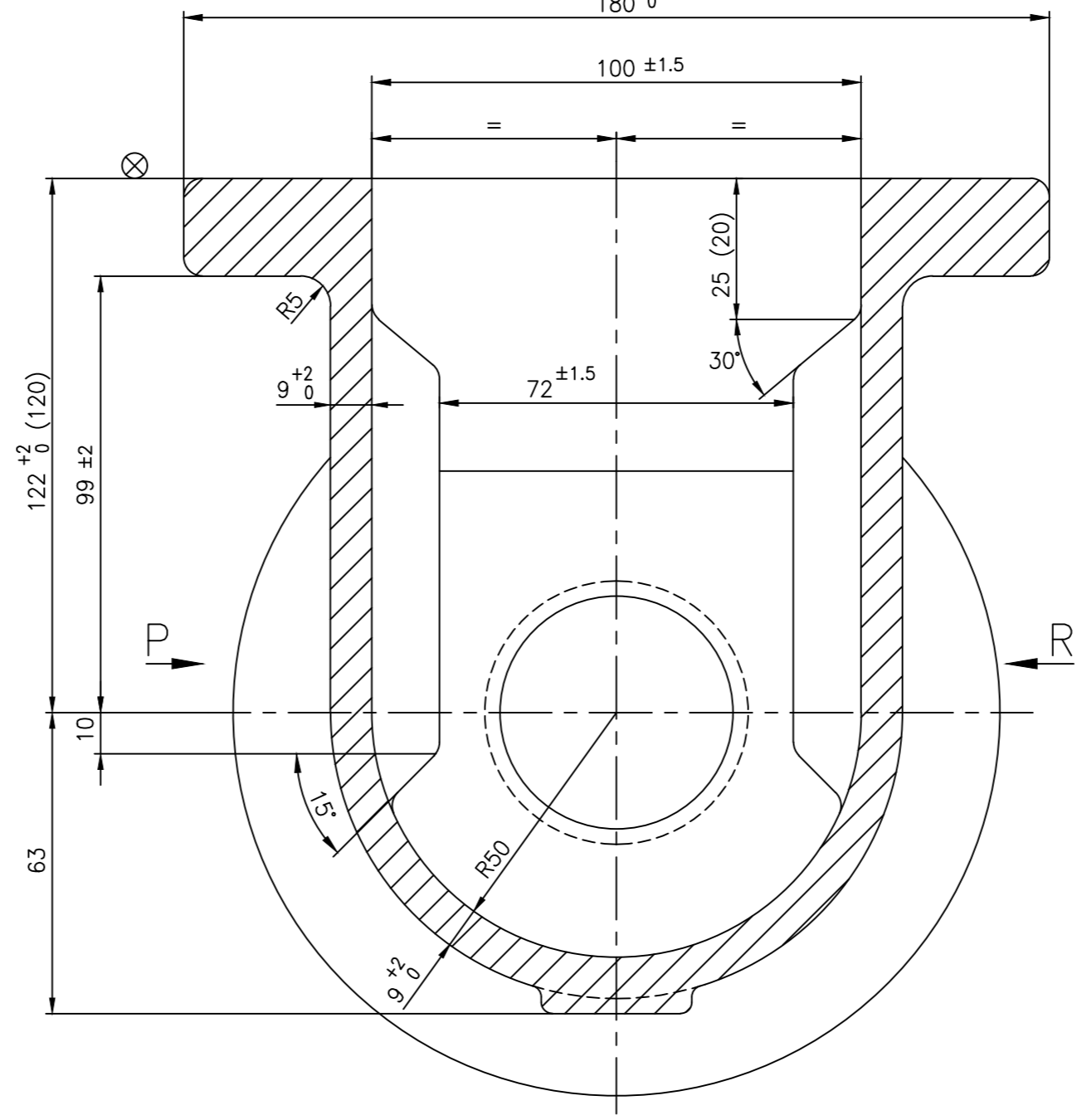
REV **09**



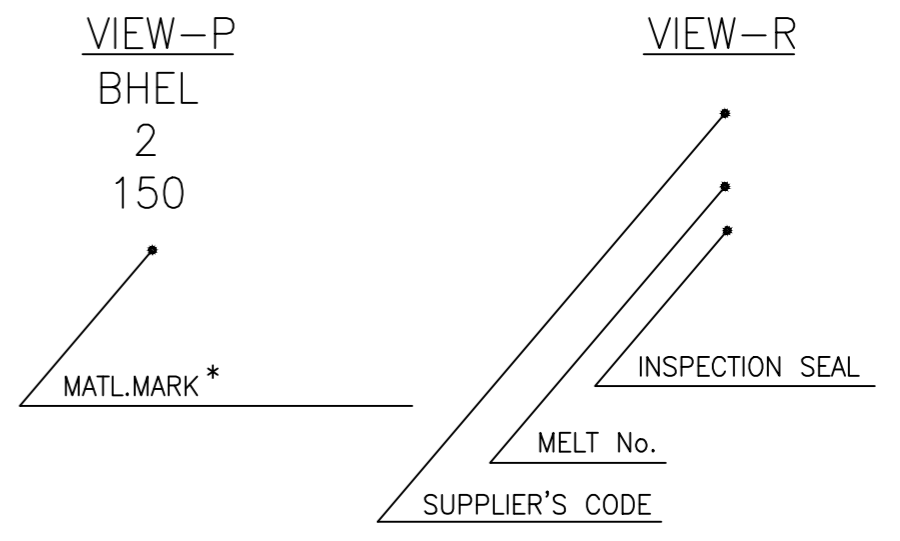
SECTION-AA



SECTION-BB



CAST IDENTIFICATION MARK



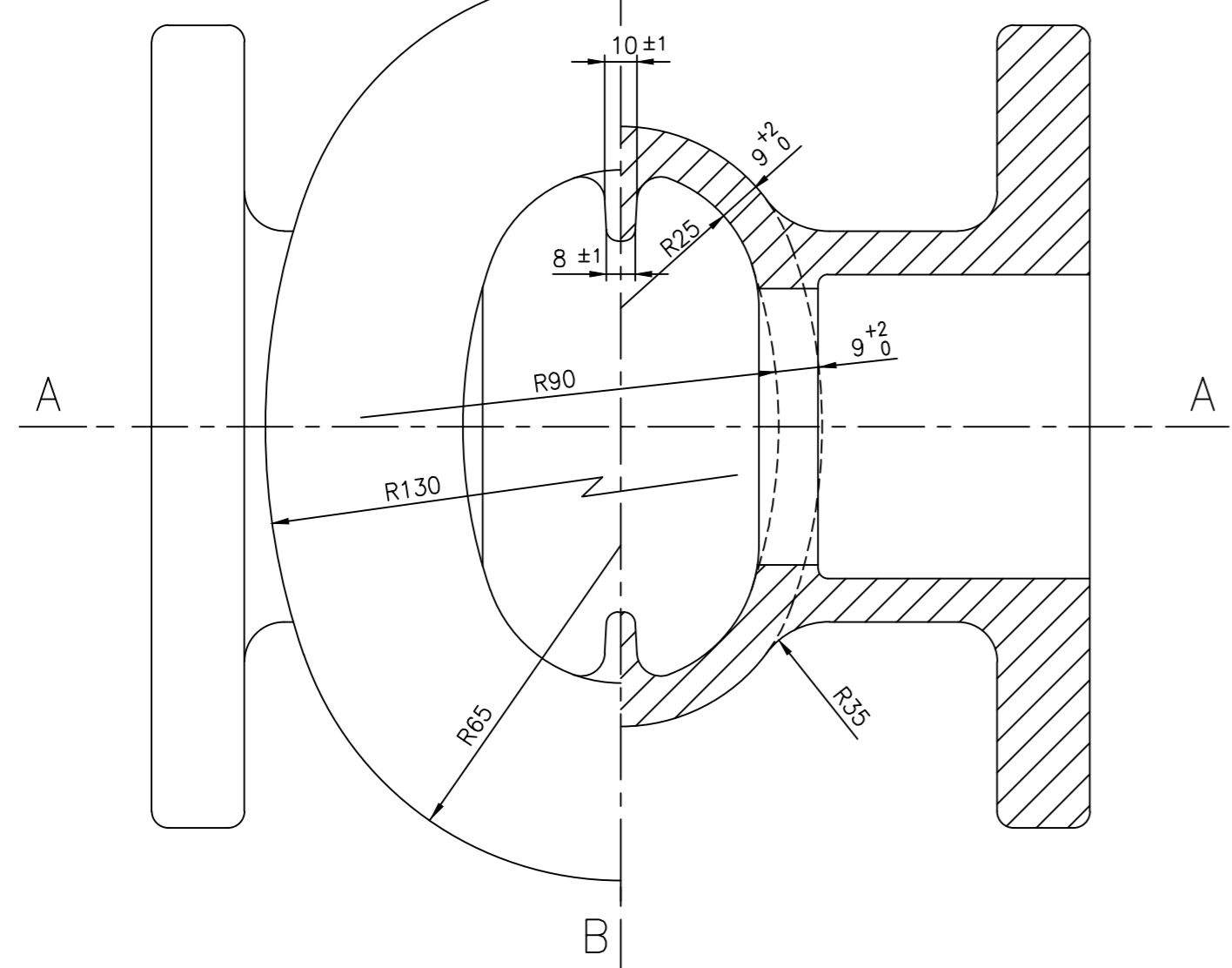
NOTES:-

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
- UNSPECIFIED CASTING RADII R3 TO R5.
- 100% CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
- HEIGHT OF CASTING LETTERS-12mm.
- ⊗ SURFACES TO BE MACHINED.
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS.
- RISER REMAINS ARE TO COMPLETELY REMOVED SUITABLY.
- CASTING SHALL COMPLY WITH REQUIREMENTS OF APPLICABLE TDC.
- MELT No. & INSPECTION SEAL TO BE PUNCHED REST OF THE DETAIL ARE TO CAST.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED

\* SPECIAL NOTES:-

- GUIDE RIB DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCES INDICATED
- BOTH GUIDE RIBS TO BE COPLANER AND TRUELY VERTICAL.
- PROPER MATCHING FOR GUIDE RIBS WITH MACHINED WEDGE TO BE ENSURED BEFORE ACCEPTING CAST BODIES PREFERABLE AT THE FOUNDRY.
- THIS DRAWING IS DIMENSIONALLY IDENTICAL TO 2-V-N073-03401R EXCEPT MATERIAL SPECIFICATION.

SECTION-CC



CF	REV	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M	#06	CASTING	-	SA351 CF3M ATTEST	SH	-	14.1	2.V.UB22.05873R	92 206 238 0000	01
CF8M	#05	CASTING	-	SA351 CF8M ATTEST	SH	-	14.1	2.V.UA96.05873R	92 206 116 0000	01
CF8	#04	CASTING	-	SA351 CF8 ATTEST	SH	-	14.1	2.V.U634.05873R/1	92 203 537 0000	01
CF3M	03	CASTING	-	SA351 CF3M ATTEST	SH	-	14.1	2.V.NK01.05873R/1	92 203 471 0000	01
CF8M	02	CASTING	-	SA351 CF8M ATTEST	SH	-	14.1	2.V.N472.05873R/1	92 200 555 0000	01
CF8	01	CASTING	-	SA351 CF8 ATTEST	SH	-	14.1	2.V.N277.05873R/1	92 200 293 0000	01

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRAWING REDRAWN WITH REV. 05 ON 27.09.2021

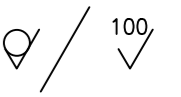
**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DRN: R.P.SINGH, SIGN: R.P.SINGH, DATE: 27.09.21, NO.OF VAR.: =  
 CHD: SAMEER BHAT, DATE: 27.09.21  
 APPD: S.SATHEES, DATE: 27.09.21

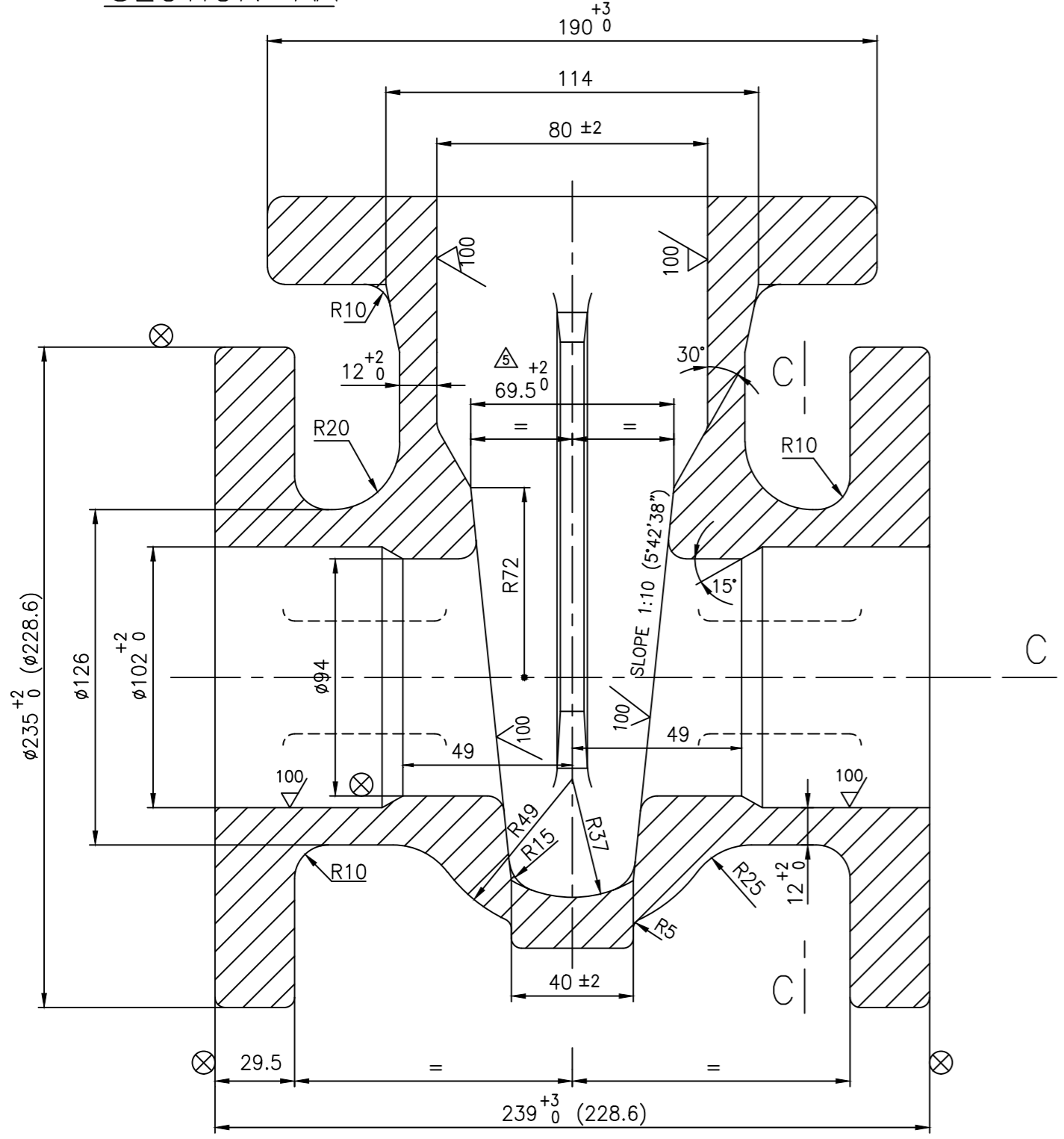
DEPT: VL, SCALE: NTS, WEIGHT (KG): -, REFERENCE INFORMATION: NO. OF ITEMS: -

TITLE: BODY (2"-C150 FL), CARD CODE: U 01, DRAWING NO.: 2-V-0000-05873R, REV: 06

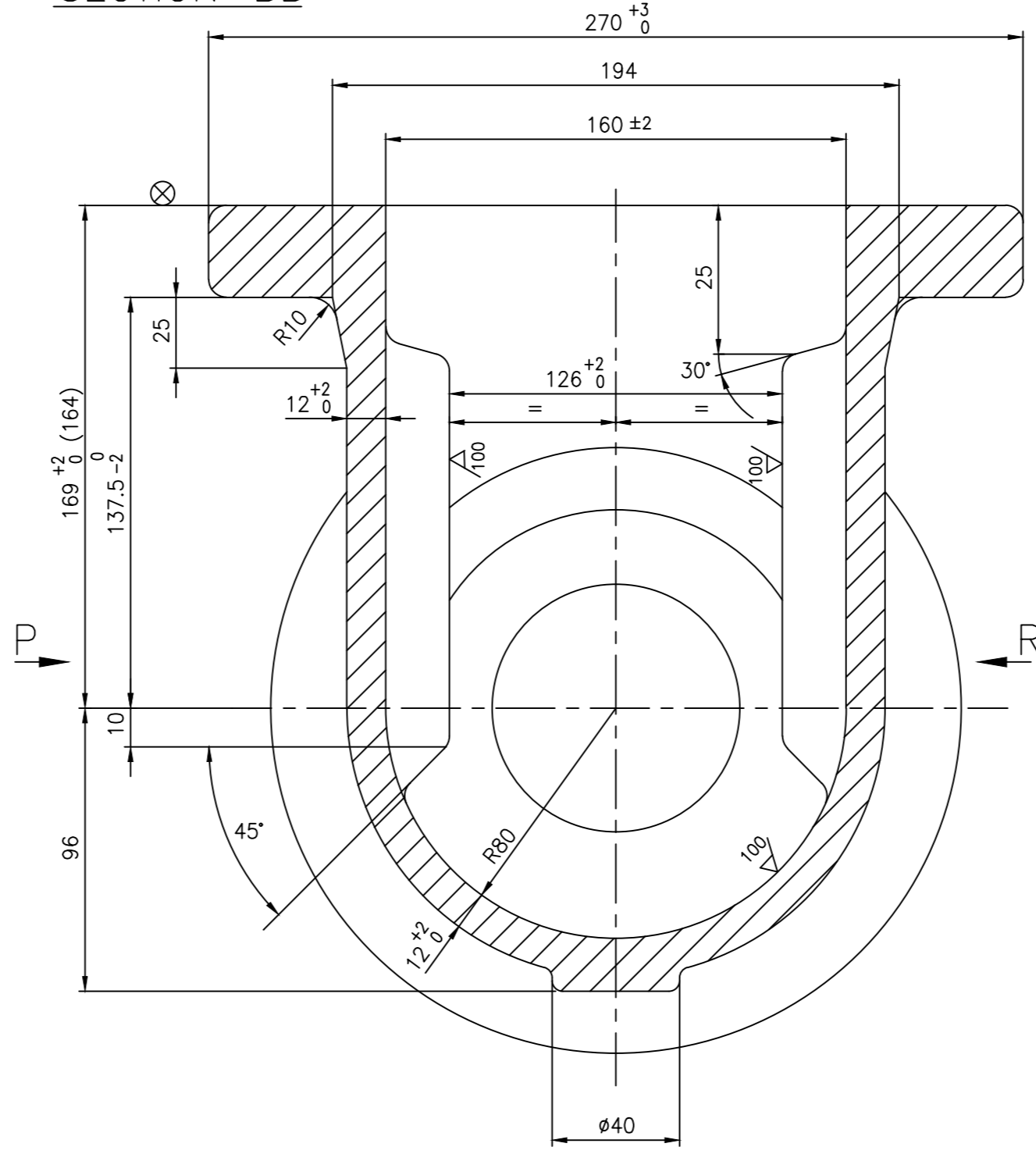
DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 27.09.22	-	CHD: SAB	DT: 27.09.21
REV 06	SL. No. 06 INCLUDED			REV 05	SL.No.05 INCLUDED
ZONE -				ZONE -	



SECTION-AA



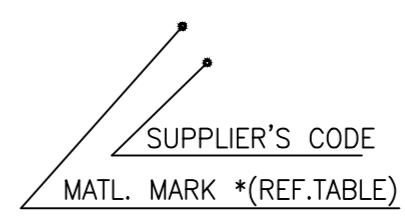
SECTION-BB



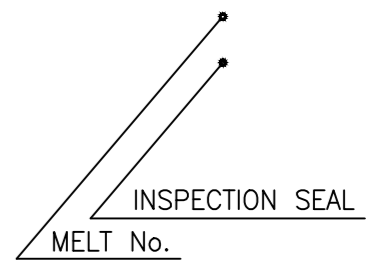
CAST IDENTIFICATION MARK

VIEW-P

BHEL  
4"  
150



VIEW-R



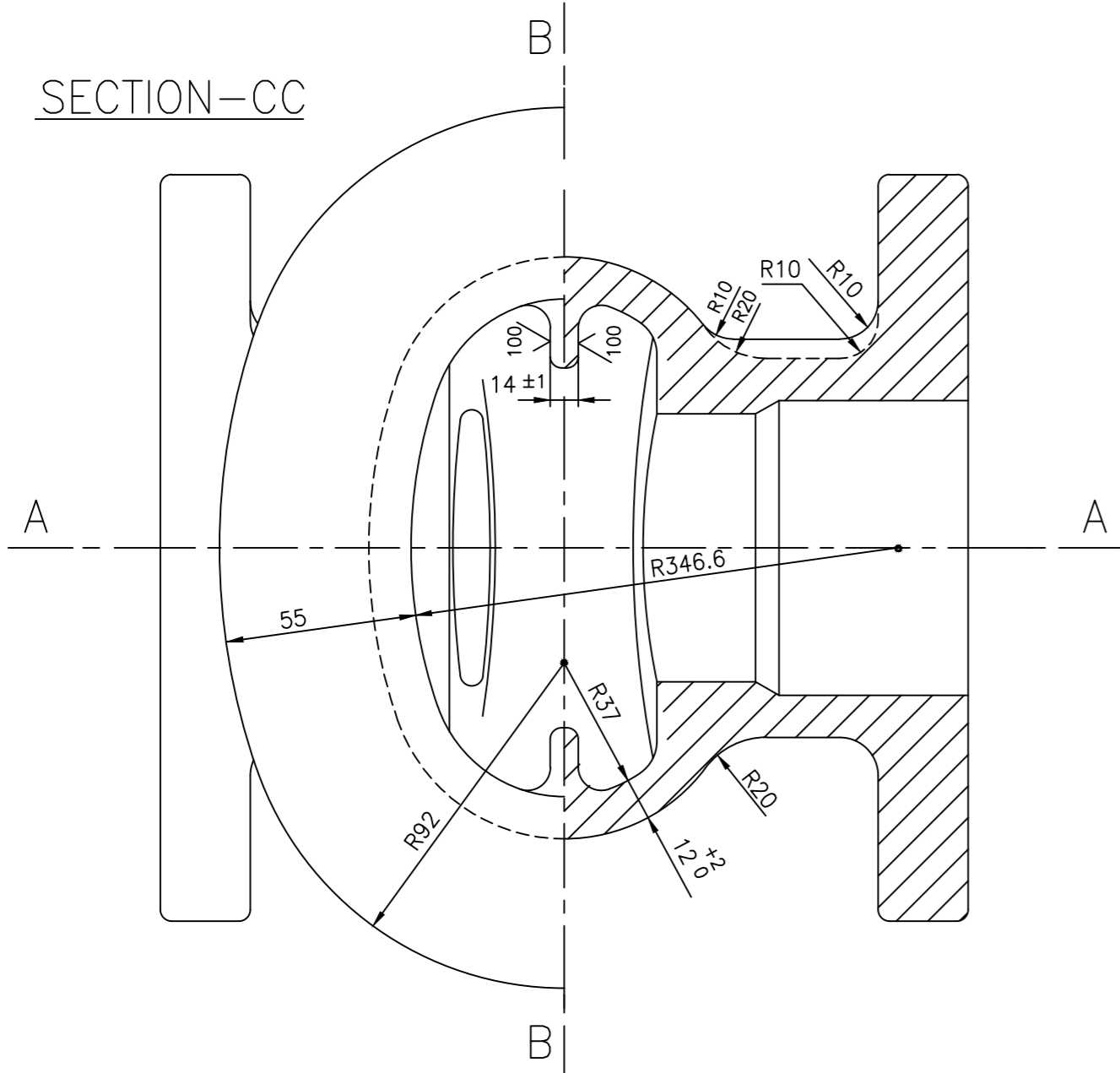
NOTES:-

1. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
2. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
3.  $\sqrt{100}$  CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
4. UNSPECIFIED CASTING RADII R3 TO R5.
5. HEIGHT OF CASTING LETTERS-20mm.
6.  $\otimes$  SURFACES TO BE MACHINED.
7. FINISH-MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS.
8. MELT No. & INSPECTION SEAL TO BE PUNCHED REST OF THE DETAILS ARE TO BE CAST.
9. RISER REMAINS ARE TO COMPLETELY REMOVED SUITABLY.

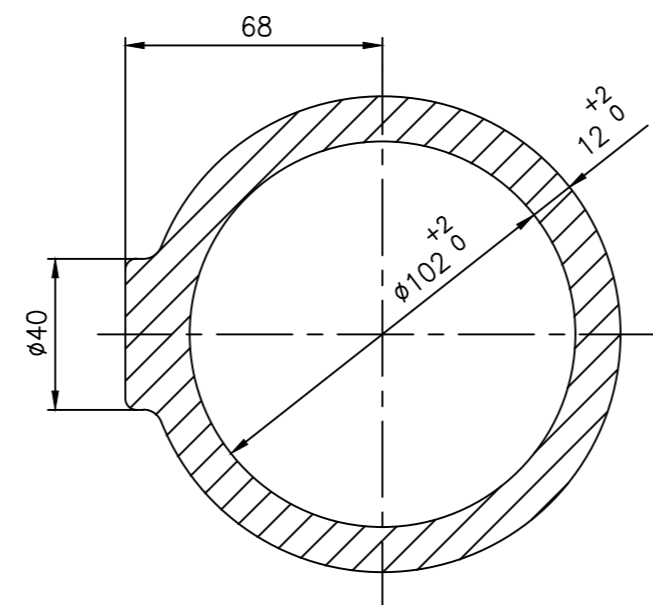
\* SPECIAL NOTES:-

1. GUIDE RIB DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCES INDICATED
2. BOTH GUIDE RIBS TO BE COPLANER AND TRULY VERTICAL.
3. PROPER MATCHING FOR GUIDE RIBS WITH MACHINED WEDGE TO BE ENSURED BEFORE ACCEPTING CAST BODIES PREFERABLE AT THE FOUNDRY.
4. THIS DRAWING IS DIMENSIONALLY IDENTICAL TO 1-V-0000-02864R EXCEPT MATERIAL SPECIFICATION.
5. # MARKED ITEMS ARE IGC TEST SHALL BE CONDUCTED.

SECTION-CC



SECTION-DD



CF3M #07	CASTING	-	SA351 CF3M ATTEST	SH	--	37.5	--	2.V.UB24.05877R	001	
CF8M #06	CASTING	-	SA351 CF8M ATTEST	SH	--	37.5	--	2.V.UA98.05877R	001	
CF8 #05	CASTING	-	SA351 CF8 ATTEST	SH	--	37.5	--	2.V.U936.05877R/1	001	
CF3M 04	CASTING	-	SA351 CF3M ATTEST	SH	--	37.5	--	2.V.NK02.05877R/1	001	
LCB 03	CASTING	-	SA352 LCB ATTEST	NR	--	37.5	--	2.V.N769.05877R/1	001	
CF8M 02	CASTING	-	SA351 CF8M ATTEST	SH	--	37.5	--	2.V.N438.05877R/1	001	
CF8 01	CASTING	-	SA351 CF8 ATTEST	SH	--	37.5	--	2.V.N285.05877R/1	001	
MATL. MARK	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 27.09.22

REV 07	SL. No. 07 INCLUDED
ZONE	

DCP No.	ALTD: TS	APPD: SSK
-	CHD: RPS	DT: 01.10.21

REV 06	SL. No. 06 INCLUDED
ZONE	

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: SAB	DT: 28.10.19

REV 05	DIMENSION 69.5 <sup>+2</sup> WAS 69.5±2.
ZONE	

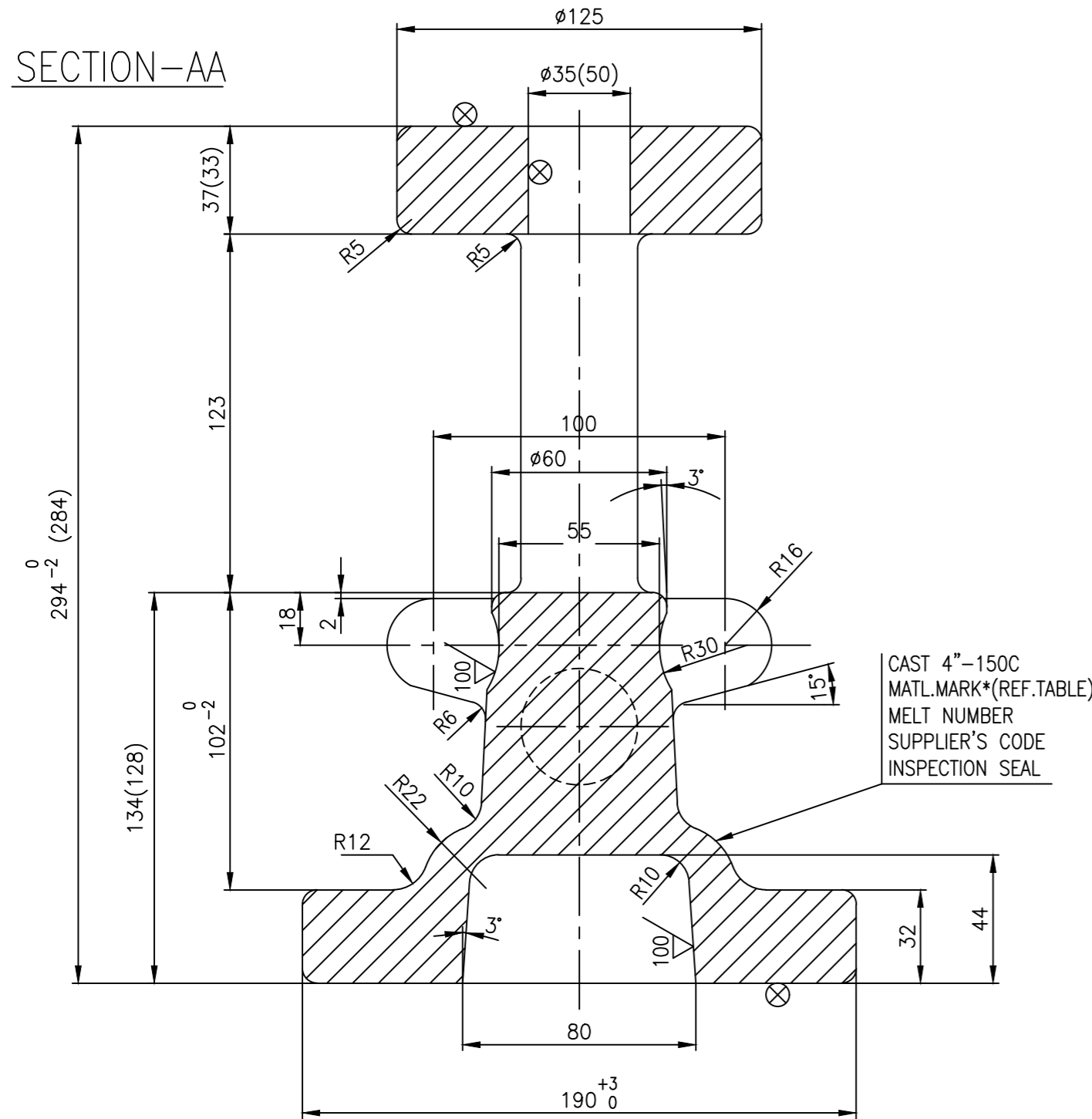
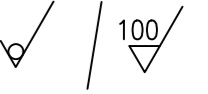
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DWG. REDRAWN WITH REV. 04 ON 03.12.18

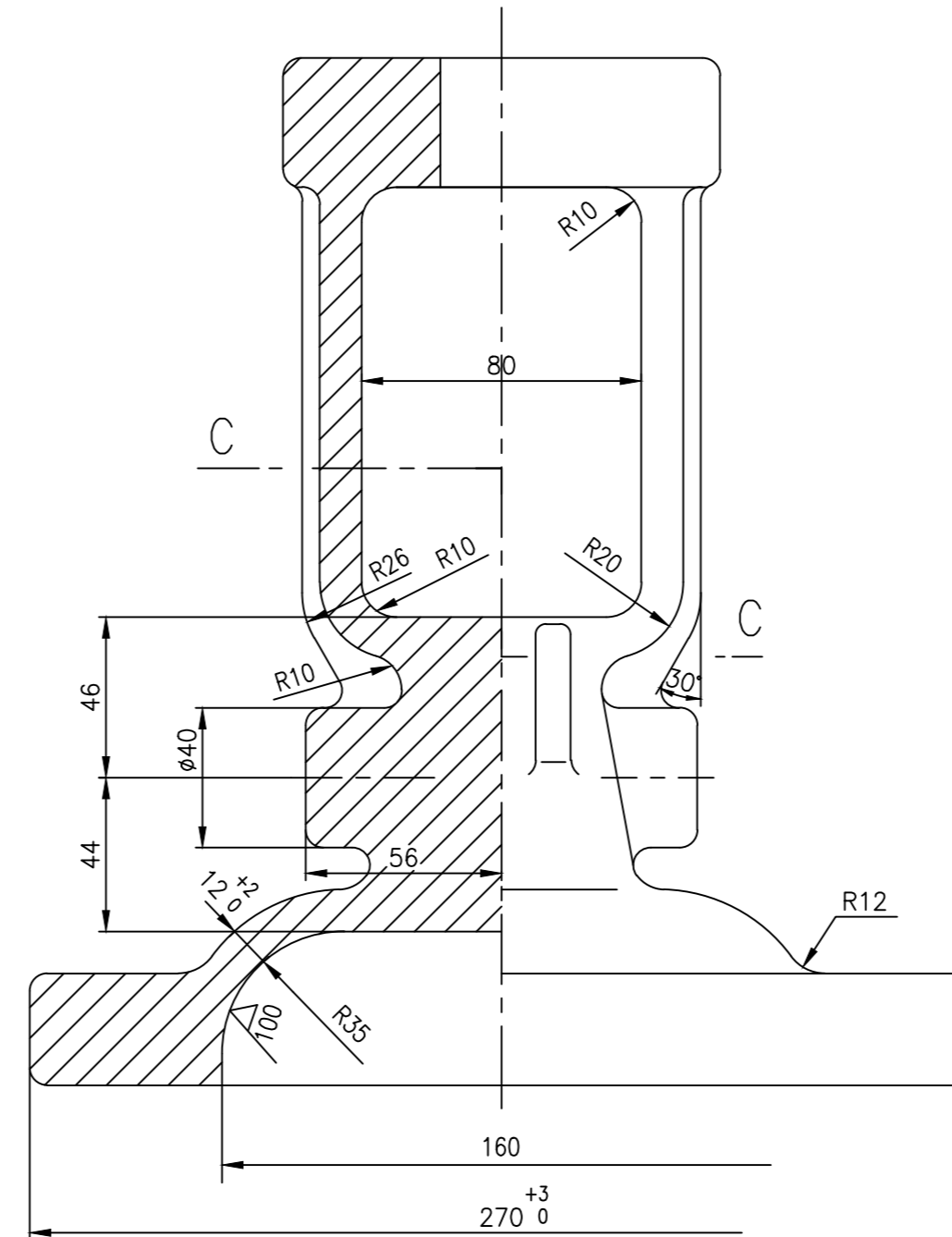
DRN	R.T.S.GNANAM	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		14.06.97	-
APPD	A.VISWANATHAN		14.06.97	-

DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS	NO. OF ITEMS
320		NTS	REF. TABLE	CAD:C205877R	-

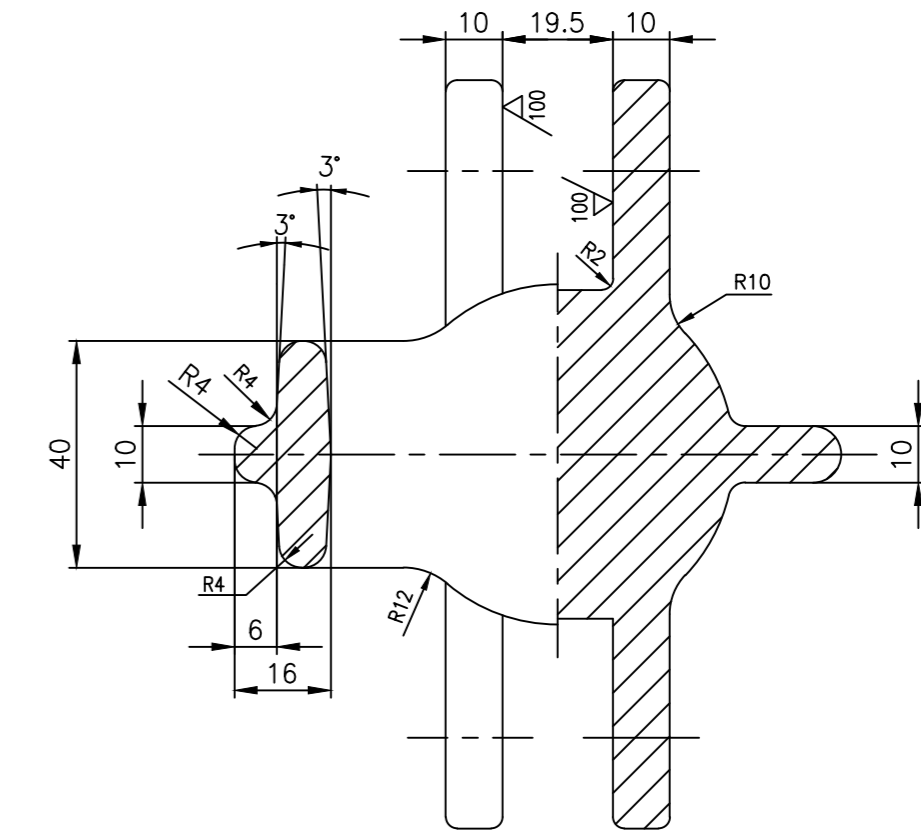
TITLE	CARD CODE	DRAWING NO.	REV
BODY (4"-C150)	U 01	2-V-0000-05877R	07



SECTION-BB

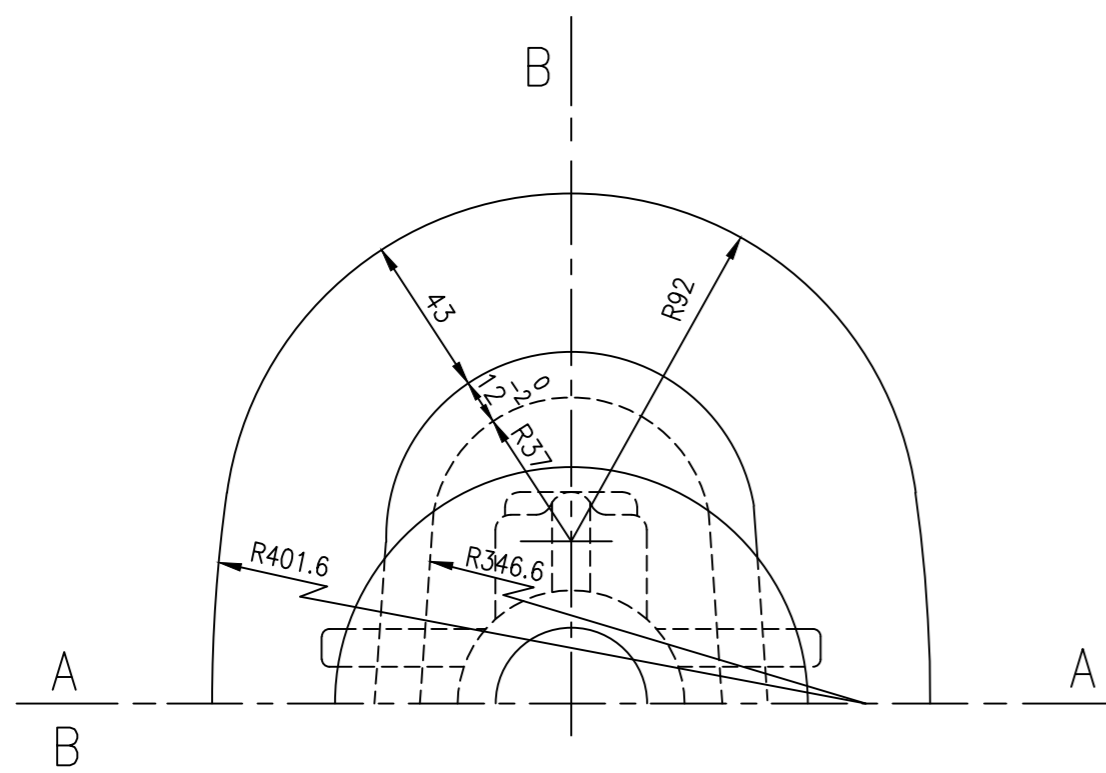


SECTION-CC



NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION.
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
- UNSPECIFIED CASTING RADII 3-5 MM
- HIGHT OF CASTING LETTERS 12MM
- SURFACES TO BE MACHINED
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE QUALITY PROCEDURE.
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
- # MARKED ITEMS ARE IGC TEST SHALL BE CONDUCTED



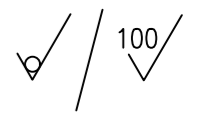
MATL. MARK*	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M	# 12	CASTING	--	A351 CF3M CERTIFY	SH	--	--	11.2	2.V.UB24.05925R 92 206 250 0000	05
CF8M	# 11	CASTING	--	A351 CF8M CERTIFY	SH	--	--	11.2	2.V.UA98.05925R 92 206 137 0000	05
CF3M	10	CASTING	--	A351 CF3M CERTIFY	SH	--	--	11.2	2.V.NK02.05925R 92 203 851 0000	05
CF8	#09	CASTING	--	A351 CF8 CERTIFY	SH	--	--	11.2	2.V.U936.05925R 92 203 756 0000	05
CD3MN	08	CASTING	--	A995 CD3MN CERTIFY	REFER NOTE	--	--	11.2	2.V.NK32.05925R 92 203 580 0000	05
LCB	07	CASTING	--	A352 LCB CERTIFY	NORMALISED	--	--	11.2	2.V.M769.05925R/01 92 200 895 0000	05
CF8M	06	CASTING	--	A351 CF8M CERTIFY	SH	--	--	11.2	2.V.N438.05925R/01 92 200 597 0000	05
CF8	05	CASTING	--	A351 CF8 CERTIFY	SH	--	--	11.2	2.V.N285.05925R/01 92 200 596 0000	05
WC9	04	CASTING	--	A217 WC9 CERTIFY	N & T	--	--	11.2	2.V.N378.05925R/01 92 200 595 0000	05
WC6	03	CASTING	--	A217 WC6 CERTIFY	N & T	--	--	11.2	2.V.N377.05925R/01 92 200 594 0000	05
WCC	02	CASTING	--	A216 WCC CERTIFY	NORMALISED	--	--	11.2	2.V.N376.05925R/01 92 200 593 0000	05
WCB	01	CASTING	--	A216 WCB CERTIFY	NORMALISED	--	--	11.2	2.V.N317.05925R/02 92 200 355 0000	05

DCP No. ALTD: RPS APPD: SSK CHD: MK DT: 27.09.22		DCP No. ALTD: TS APPD: SSK CHD: RPS DT: 01.10.21		DCP No. ALTD: RPS APPD: KRS CHD: SSK DT: 31.05.19	
REV 08	SL. No. 12 INCLUDED				
REV 07	SL. No. 11 INCLUDED				
REV 06	SL. No. 10 INCLUDED				

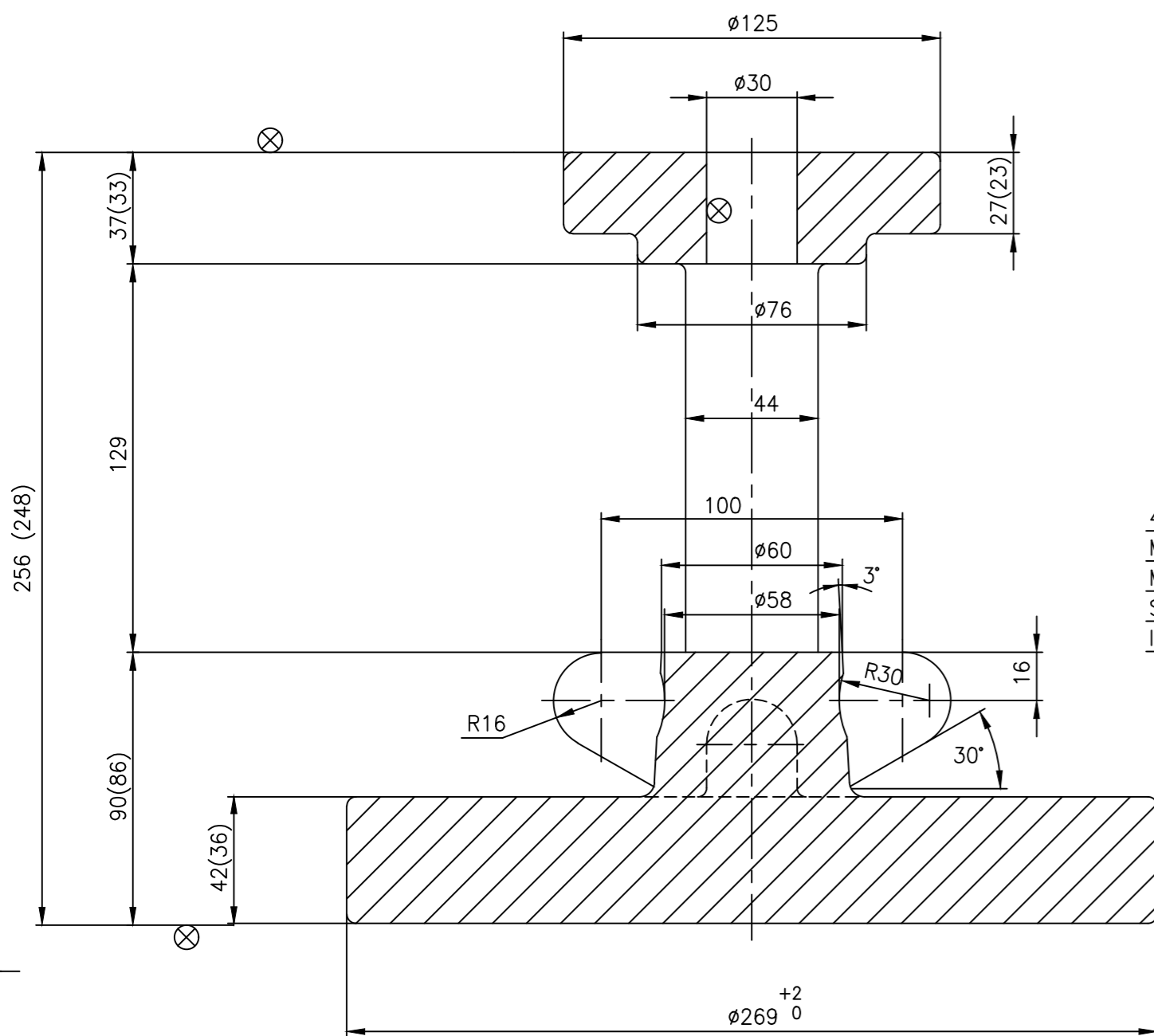
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.		DRN	R.T.GNANAM	SIGN	DATE	NO. OF VAR.
CHD	N.DHANAPAL		17.06.97			
APPD	A.V.NATHAN		17.06.97			

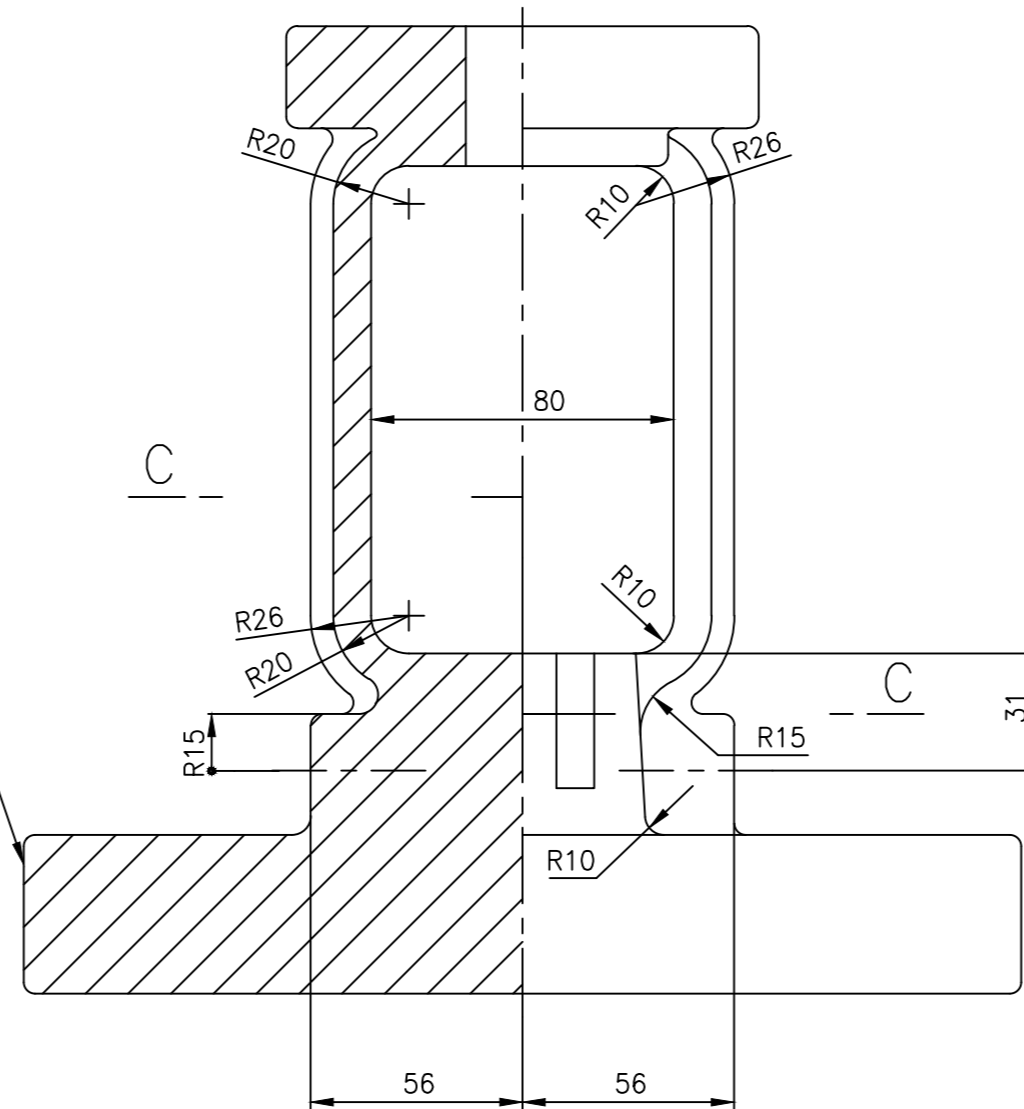
DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320	NTS	-	CAD REF: C205925R	-
TITLE	YOKE COVER (4"-150C SG GV)		CARD CODE	DRAWING NO.	REV
			U 01	2-V-0000-05925R	08



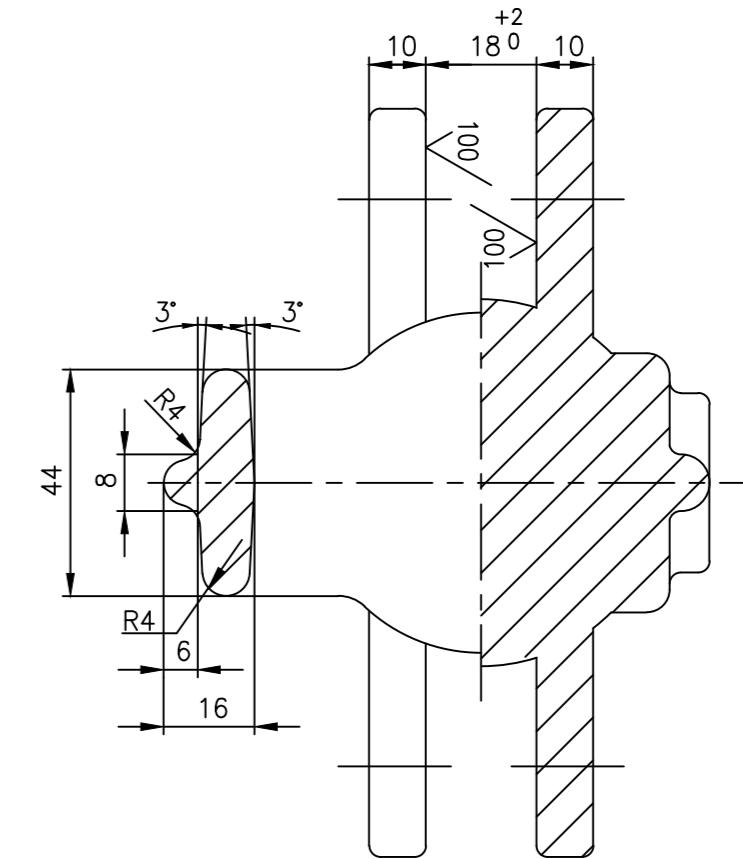
SECTION-AA



SECTION-BB



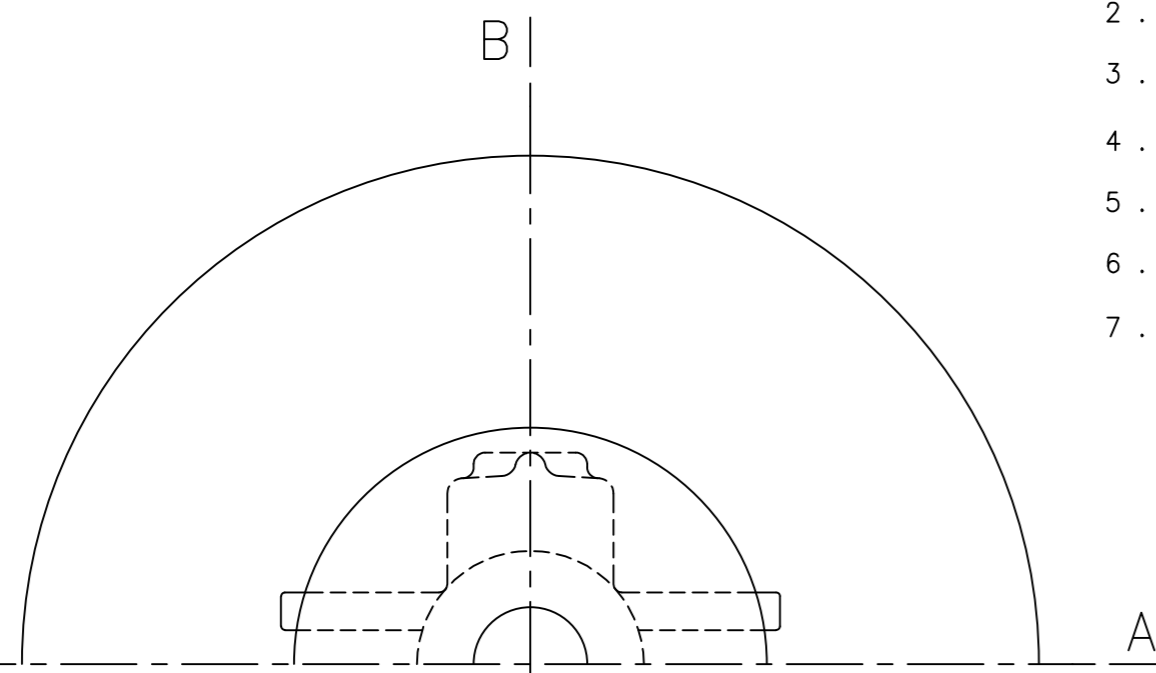
SECTION-CC



4"-300C  
MATL. MARK \*  
MELT NUMBER  
SUPPLIER'S CODE  
INSPECTION SEAL

NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION
- 100/ CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- UNSPECIFIED CASTING RADII 3 - 5 MM
- HEIGHT OF CASTING LETTERS 12MM
- ⊗ SURFACES TO BE MACHINED
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.



REV	DATE	ALTERED	BY	ZONE	REV	DATE	ALTERED	BY	ZONE
08	CF3M	92 203 957	A351 CF3M CERTIFY	SH	46	--	23.0	2.V.NK79.05935R	05
07	LCB	92 200 853	A352 LCB CERTIFY	NORMALISED	10	--	23.0	2.V.M357.05935R/02	05
06	CF8M	92 200 569	A351 CF8M CERTIFY	SH	46	--	23.0	2.V.N450.05935R/02	05
05	CF8	92 200 568	A351 CF8 CERTIFY	SH	46	--	23.0	2.V.N439.05935R/02	05
04	WC9	92 200 381	A217 WC9 CERTIFY	N & T	20	--	23.0	2.V.N254.05935R/02	05
03	WC6	92 200 380	A217 WC6 CERTIFY	N & T	20	--	23.0	2.V.N253.05935R/02	05
02	WCC	92 200 379	A216 WCC CERTIFY	NORMALISED	10	--	23.0	2.V.N252.05935R/02	05
01	WCB	92 200 358	A216 WCB CERTIFY	NORMALISED	10	--	23.0	2.V.N324.05935R/03	05

REV	DATE	ALTERED	BY	ZONE	REV	DATE	ALTERED	BY	ZONE
04	26.07.97	ALTERED N.DHANAPAL	CHD & APPD A.VISWANATHAN		03	04.03.97	ALTERED N.DHANAPAL	CHD & APPD A.VISWANATHAN	
		1.R.15 INCLUDED FOR SEALED GLAND BOSS					SL.No.07 INCLUDED		
		2.REFER DCN.NO.CS:0730							
06	11.11.19	ALTERED R.P.SINGH	CHD & APPD SAMEER & SSK		05	22.12.97	ALTERED T.R.RAMAMURTHY	CHD & APPD K.S.RAMAN	
		SL.No. 08 INCLUDED.					DIMN.R16 INCLUDED		
02	29.03.96	ALTERED S.SENTHIL KUMAR	CHD & APPD A.VISWANATHAN		01	19.07.95	ALTERED K.P.LEON	CHD & APPD A.VISWANATHAN	
		SL.NUMBERS 05 & 06 INCLUDED					TOP FLANGE 125 WAS 80		
							SL. NUMBERS 02,03&04 ADDED		
							REFER DCN NUMBER CS:0494		

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

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

DRN	K.P.LEON	SIGN		DATE	13.09.95	NO.OF VAR.	
CHD	N.DHANAPAL				18.09.95		
APPD	A.VISWANATHAN				18.09.95		

DEPT VL: 365-120  
CODE 320

SCALE: NTS  
WEIGHT (KG): -  
REFERENCE INFORMATIONS: CAD REF: C205935R

TITLE: **YOKE CUM BONNET (4"-300C GV)**  
CARD CODE: U 01  
DRAWING NO.: 2-V-0000-05935R  
REV: 06

DRAWING NO: 2-V-0000-05937R

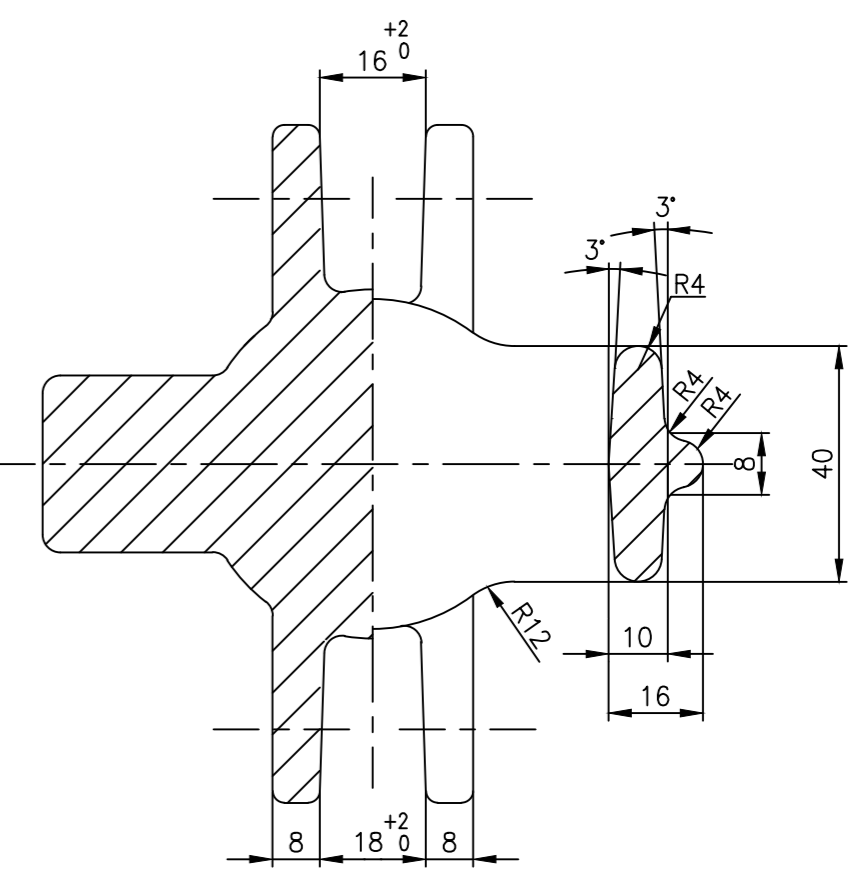
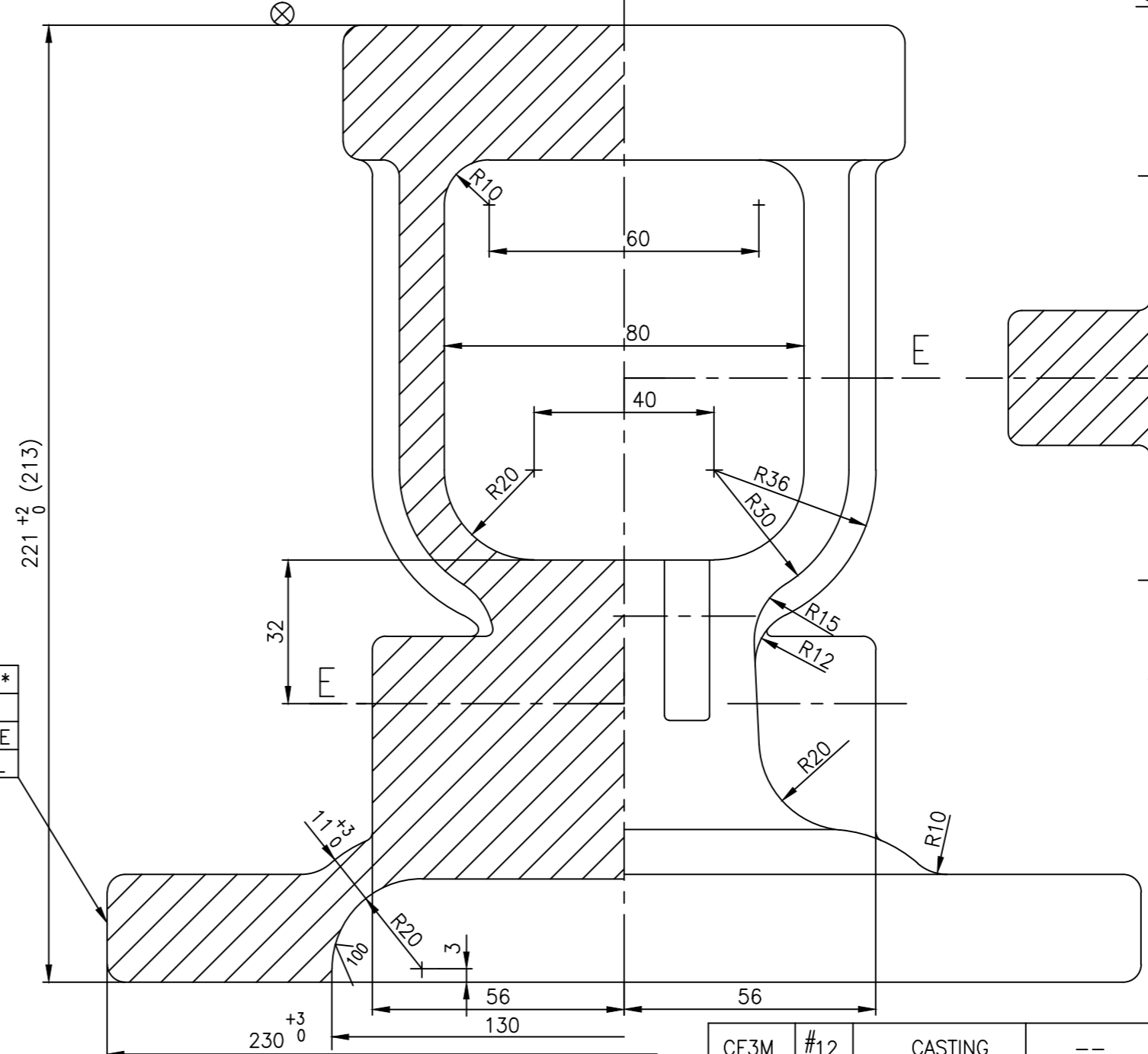
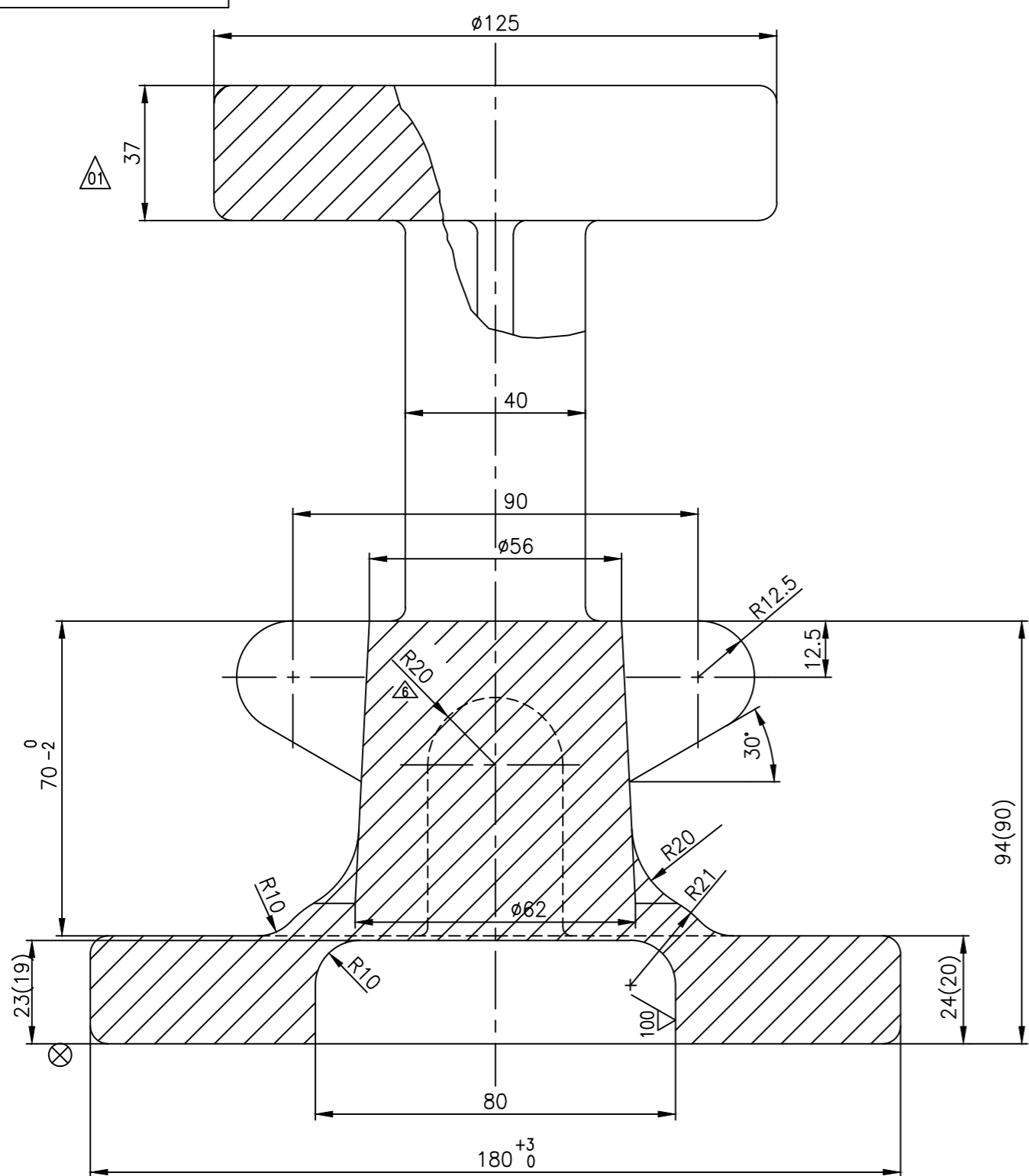
SECTION-AA

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

SECTION-BB

SECTION-EE

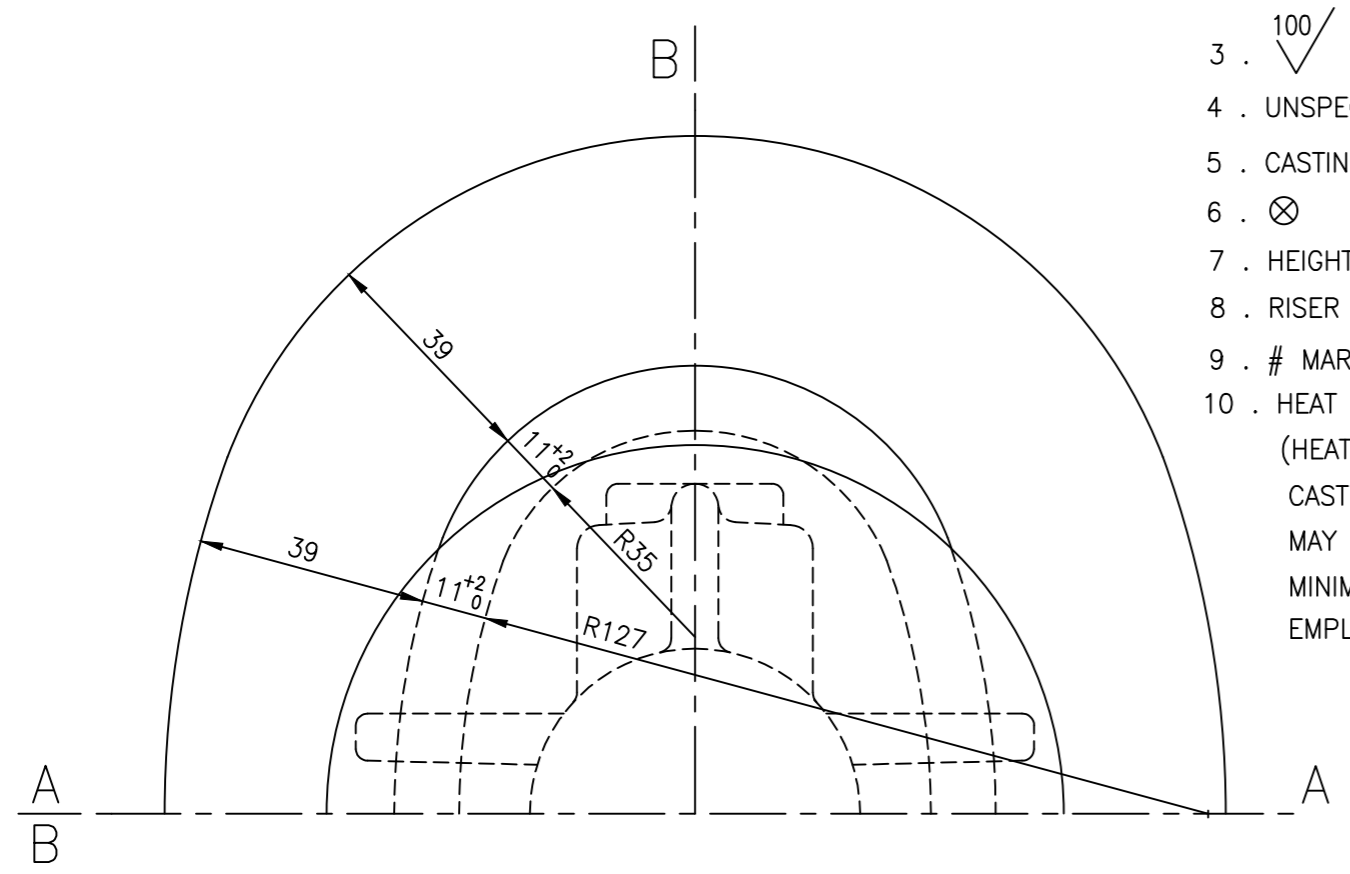
100



3"-150C  
MATERIAL MARK \*  
MELT NUMBER  
SUPPLIER'S CODE  
INSPECTION SEAL

NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION
- 100/ CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- UNSPECIFIED CASTING RADII 3 - 5 MM
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- ⊗ SURFACES TO BE MACHINED
- HEIGHT OF CAST LETTERS 12 MM
- RISER REMAINS ARE TO BE COMPLETELY REMOVED SUITABLY.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.
- HEAT TREATMENT FOR ASTM 995 CD3MN AS PER ASTM STANDARD ASTM-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)



CF3M	#12	CASTING	--	A351 CF3M CERTIFY	SH	--	--	--	2.V.UB23.05937R	05
CF8M	#11	CASTING	--	A351 CF8M CERTIFY	SH	--	--	--	2.V.UA97.05937R	05
CD3MN	10	CASTING	--	SA995 CD3MN CERTIFY	REF. NOTE	--	--	--	2.V.NK66.05937R/1	05
CF3M	09	CASTING	--	A351 CF3M CERTIFY	SH	--	--	--	2.V.NK61.05937R/1	05
CF8	#08	CASTING	--	A351 CF8 CERTIFY	SH	--	--	--	2.V.U635.05937R/1	05
LCB	07	CASTING	--	A352 LCB CERTIFY	NR	--	--	--	2.V.M768.05937R/1	05
CF8M	06	CASTING	--	A351 CF8M CERTIFY	SH	--	--	--	2.V.N338.05937R/1	05
CF8	05	CASTING	--	A351 CF8 CERTIFY	SH	--	--	--	2.V.N286.05937R/1	05
WC9	04	CASTING	--	A217 WC9 CERTIFY	N & T	--	--	--	2.V.N391.05937R/1	05
WC6	03	CASTING	--	A217 WC6 CERTIFY	N & T	--	--	--	2.V.N390.05937R/1	05
WCC	02	CASTING	--	A216 WCC CERTIFY	NORMALISED	--	--	--	2.V.N389.05937R/1	05
WCB	01	CASTING	--	A216 WCB CERTIFY	NORMALISED	--	--	--	2.V.N313.05937R/2	05
*MATL. MARK	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 27.09.22	-	CHD: SAB	DT: 24.06.20
REV 08	SL. No. 12 INCLUDED				
ZONE	-				
REV 07	SL. No. 11 INCLUDED. WEIGHT UPDATED.				
ZONE	-				
REV 06	DIMENSION R20 INCLUDED. REFER DCP: 802577				
ZONE	-				

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

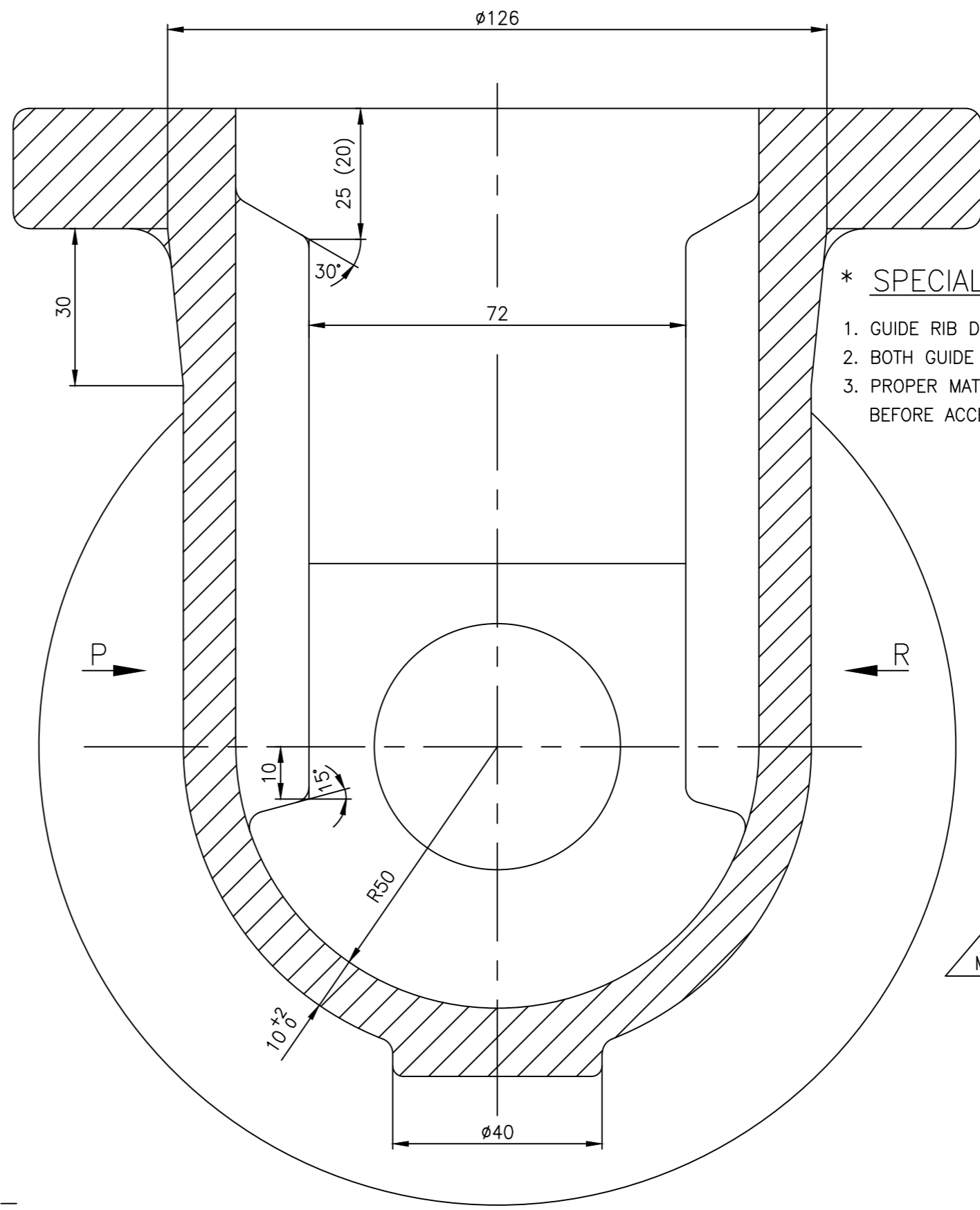
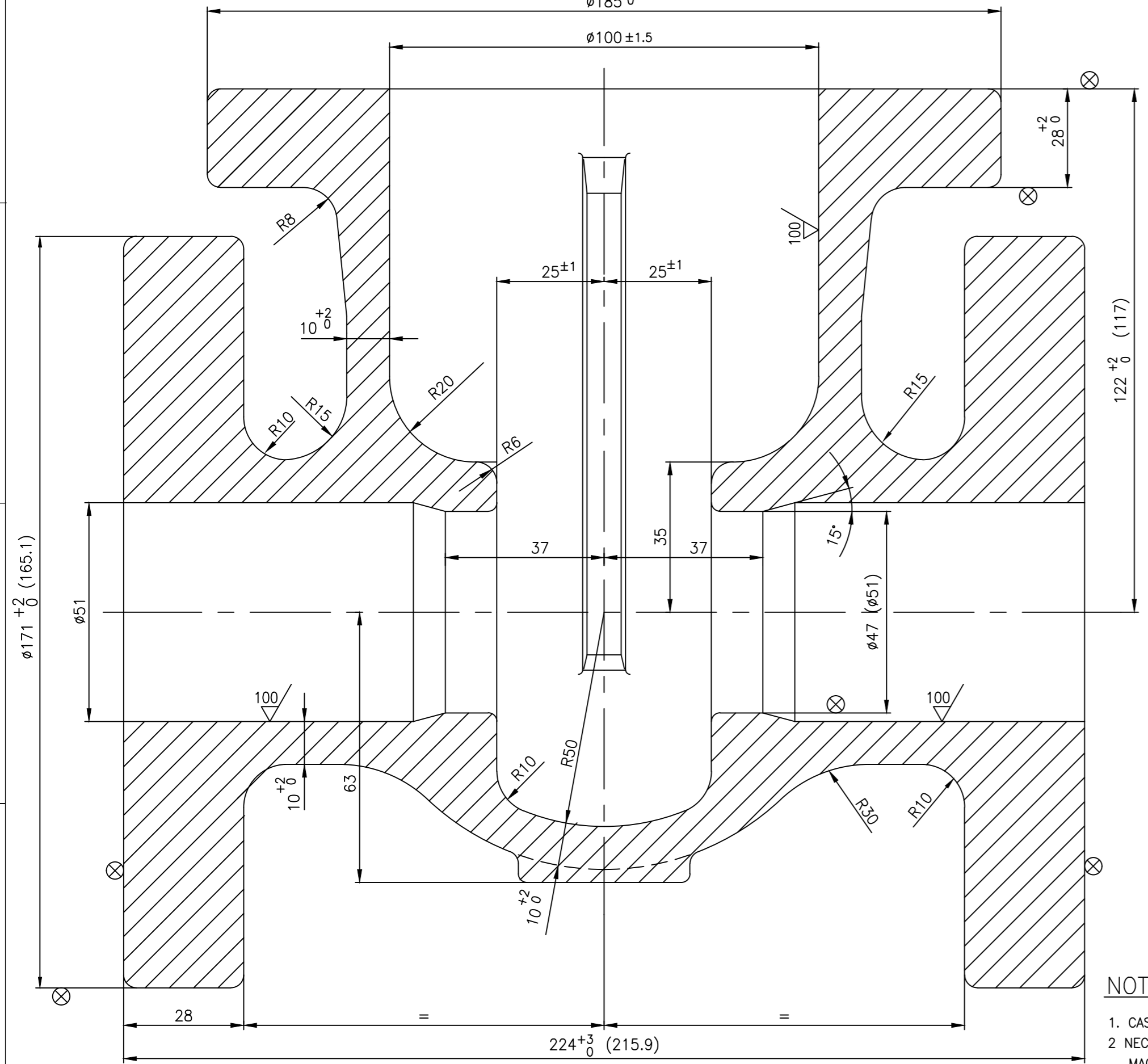
DRN	R.T.S.GNANAM	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		17.06.97	-
APPD	A.VISWANATHAN		17.06.97	-

DEPT VL / CODE 320 / TITLE YOKE CUM BONNET (3"-150C GV SG)

SCALE NTS / WEIGHT (KG) 12.7 / REFERENCE INFORMATION CAD REF: C205937R / DRAWING NO. 2-V-0000-05937R / REV 08

DRAWING NO: 2-V-000-06012R

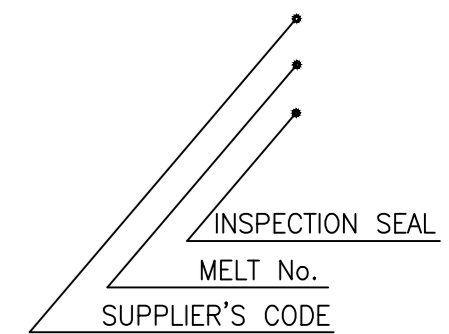
ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP



- \* SPECIAL NOTES:-**
1. GUIDE RIB DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCES INDICATED
  2. BOTH GUIDE RIBS TO BE COPLANER AND TRUELY VERTICAL.
  3. PROPER MATCHING FOR GUIDE RIBS WITH MACHINED WEDGE TO BE ENSURED BEFORE ACCEPTING CAST BODIES PREFERABLE AT THE FOUNDRY.

VIEW-P  
BHEL  
2"  
300

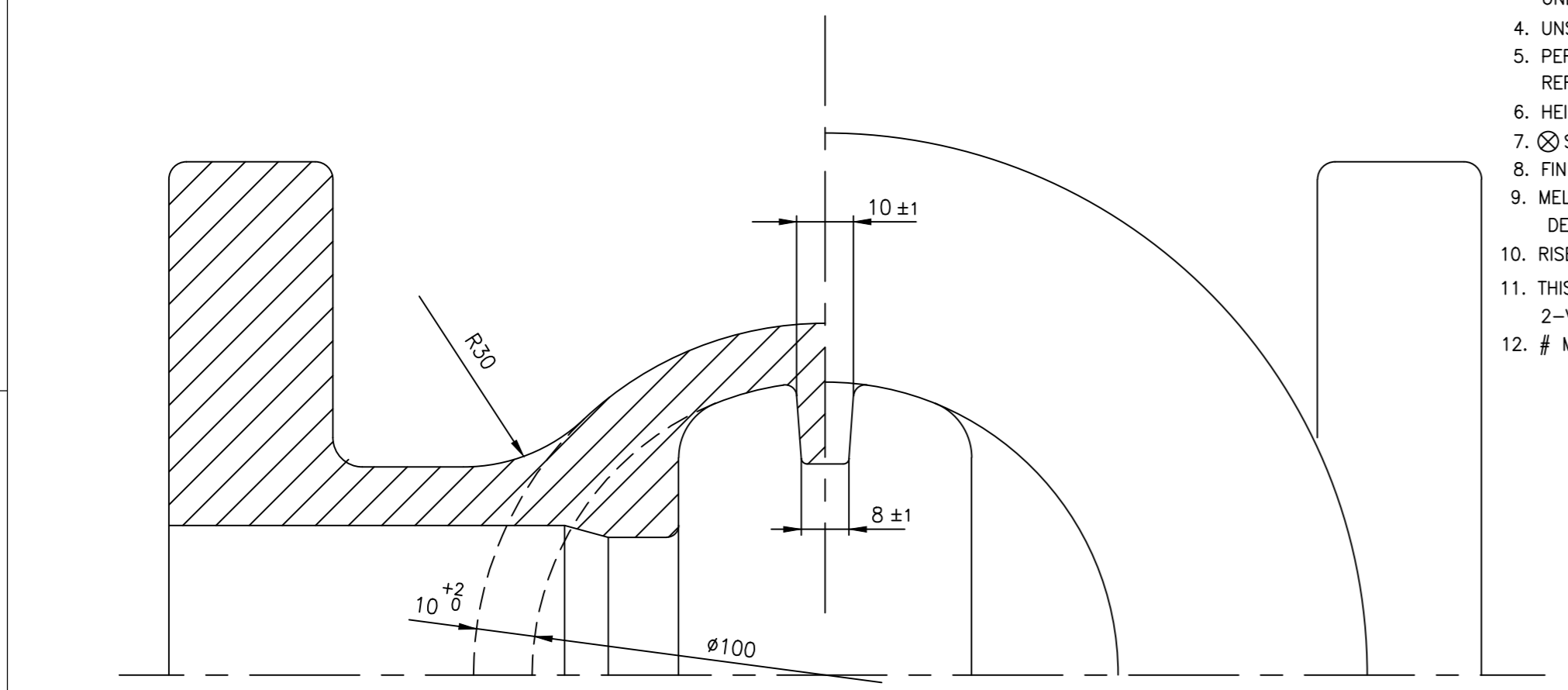
VIEW-R



MATL. MARK \*(REF.TABLE)

**NOTES:-**

1. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE TDC
2. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
3.  $\sqrt{100}$  CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
4. UNSPECIFIED CASTING RADII R3 TO R5.
5. PERMISSIBLE DEVIATIONS OF NON-TOLERANCED CASTING DIMENSIONS REFER LATEST APPLICABLE TDC
6. HEIGHT OF CASTING LETTERS-20mm.
7.  $\otimes$  SURFACES TO BE MACHINED.
8. FINISH-MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS.
9. MELT No. & INSPECTION SEAL TO BE PUNCHED REST OF THE DETAILS ARE TO BE CAST.
10. RISER REMAINS ARE TO COMPLETELY REMOVED SUITABLY.
11. THIS DRAWING IS DIMENSIONALLY IDENTICAL TO THE DRAWING 2-V-N081-03404R EXCEPT MATERIAL SPECIFICATION.
12. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.



CF3M	#03	CASTING	-	SA351 CF3M ATTEST	SH	-	-	19.5	2-V-NL97-06012R	01
CF8M	#02	CASTING	-	SA351 CF8M ATTEST	SH	-	-	19.5	2-V-UB01-06012R	01
CF8M	01	CASTING	-	SA351 CF8M ATTEST	SH	-	-	19.5	2-V-N374-06012R/01	01

*MATL. MARK	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT DRG.REDRAWN WITH REV. No.03 ON 24.09.2021										
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.				DRN	R.P.SINGH	SIGN	24.09.21	NO.OF VAR.	-	
				CHD	SAMEER BHAT		24.09.21			-
				APPD	S.SATHEES		24.09.21			-
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION			NO. OF ITEMS			
CODE	320	NTS	-	CAD:C206012R			-			
TITLE							CARD CODE	DRAWING NO.		REV
BODY (2"-C300)							U 01	2-V-0000-06012R		04

DCP No.	ALTD:RPS	APPD:SSK
-	CHD:MK	DT: 27.09.22
REV	SL. No. 03 INCLUDED	
04		
ZONE		

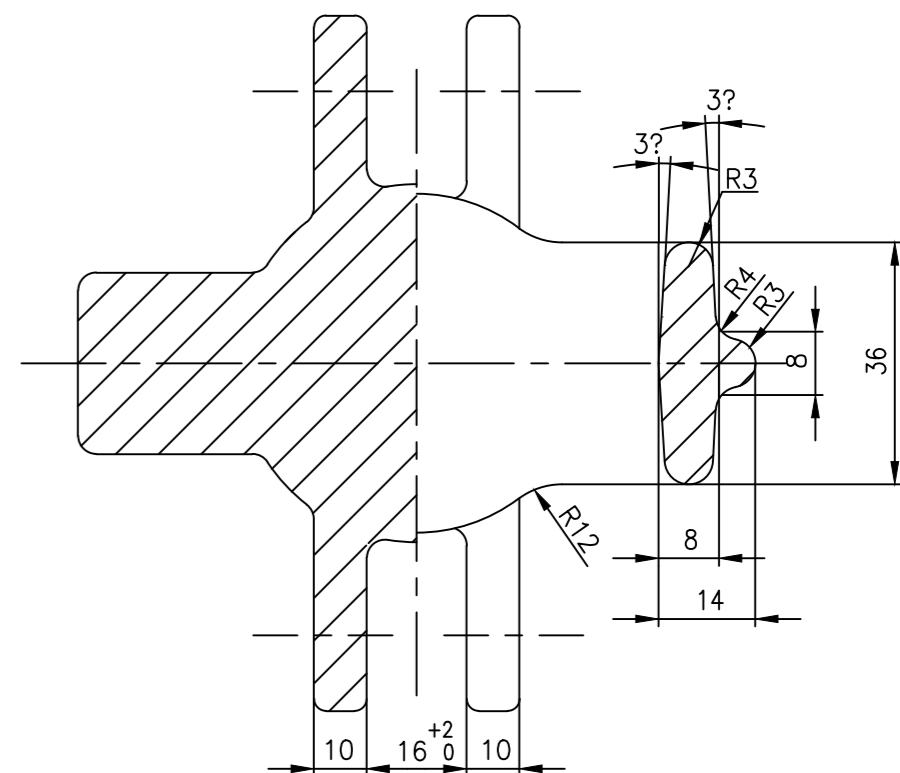
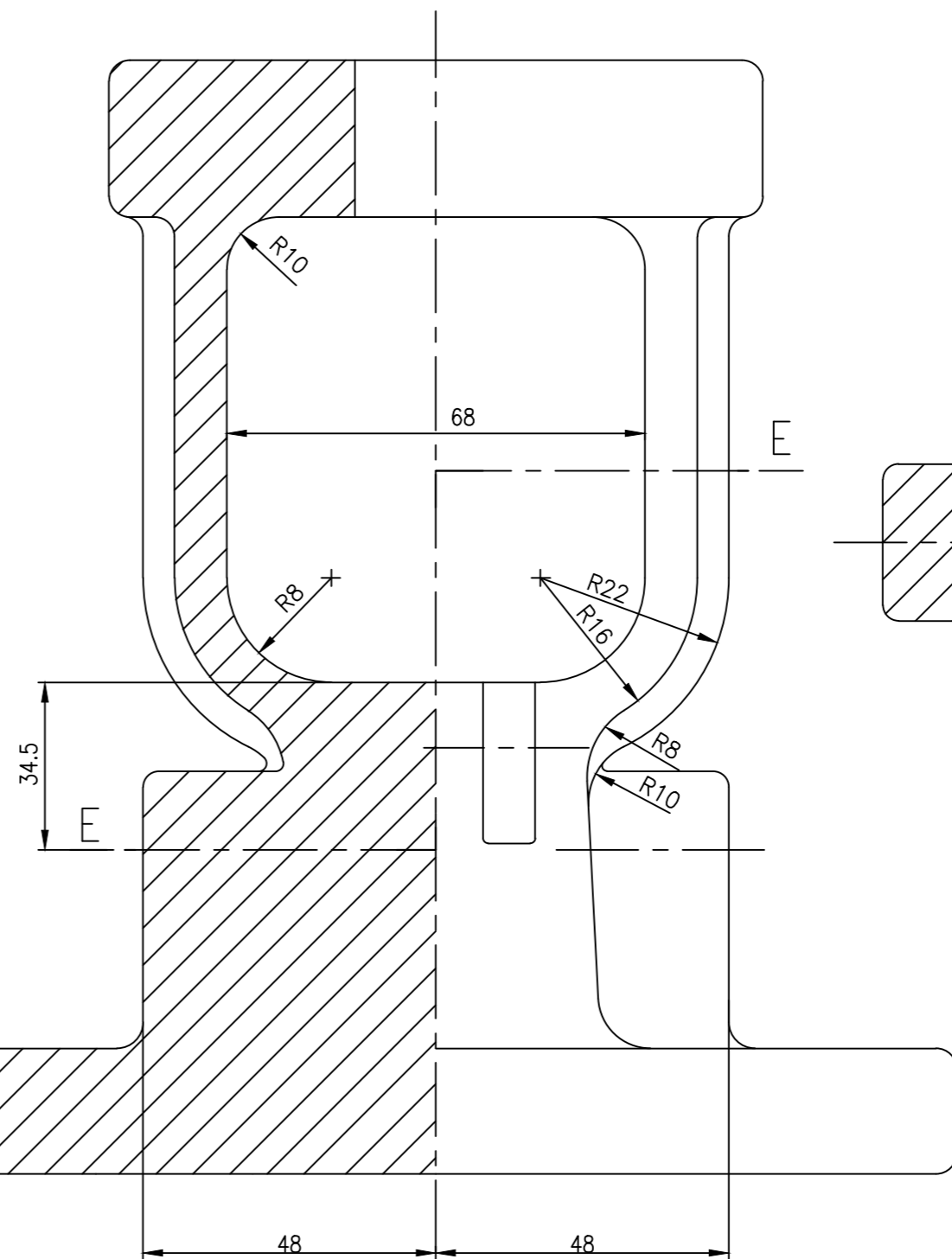
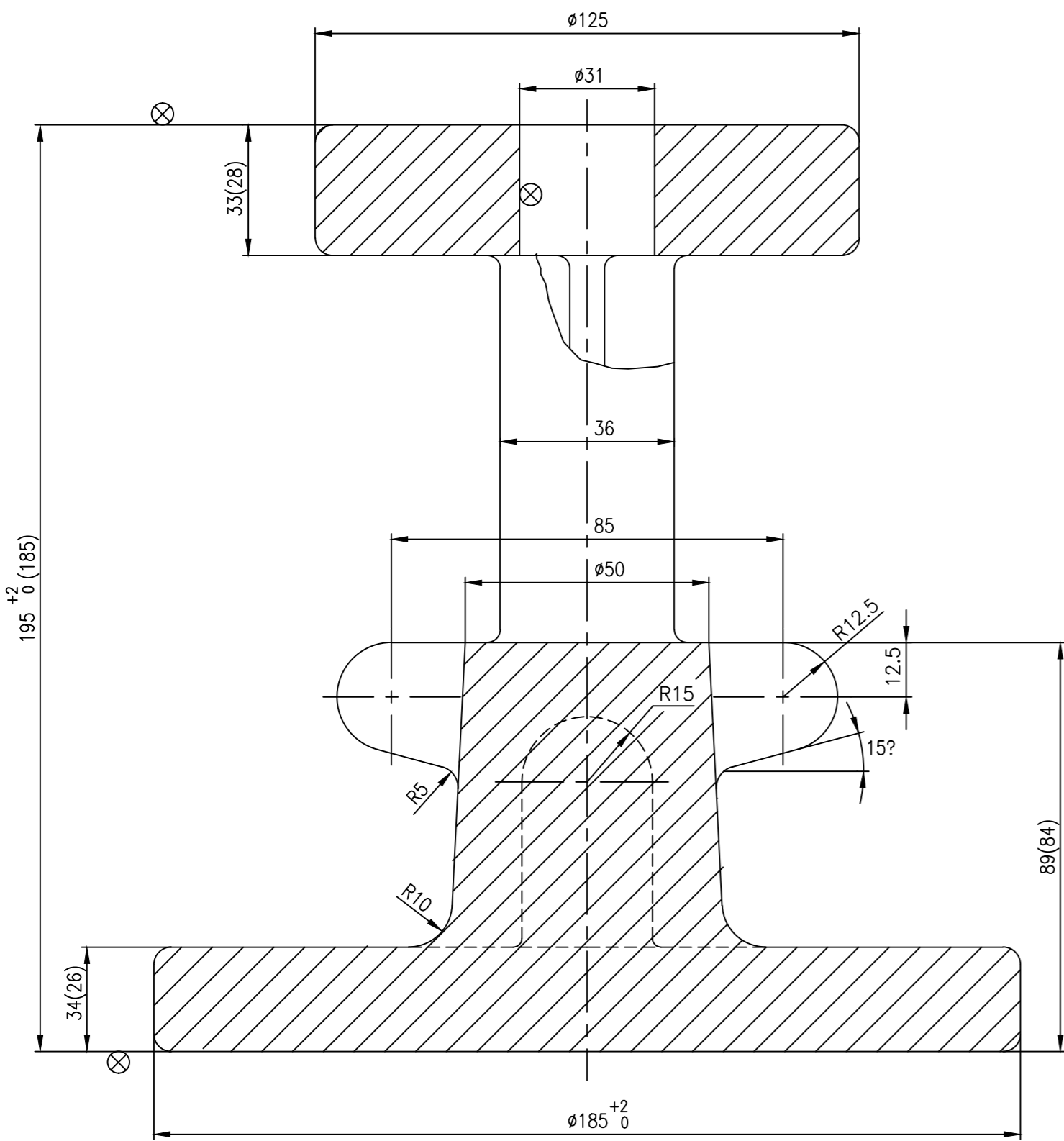
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

SECTION-AA

SECTION-BB

SECTION-EE

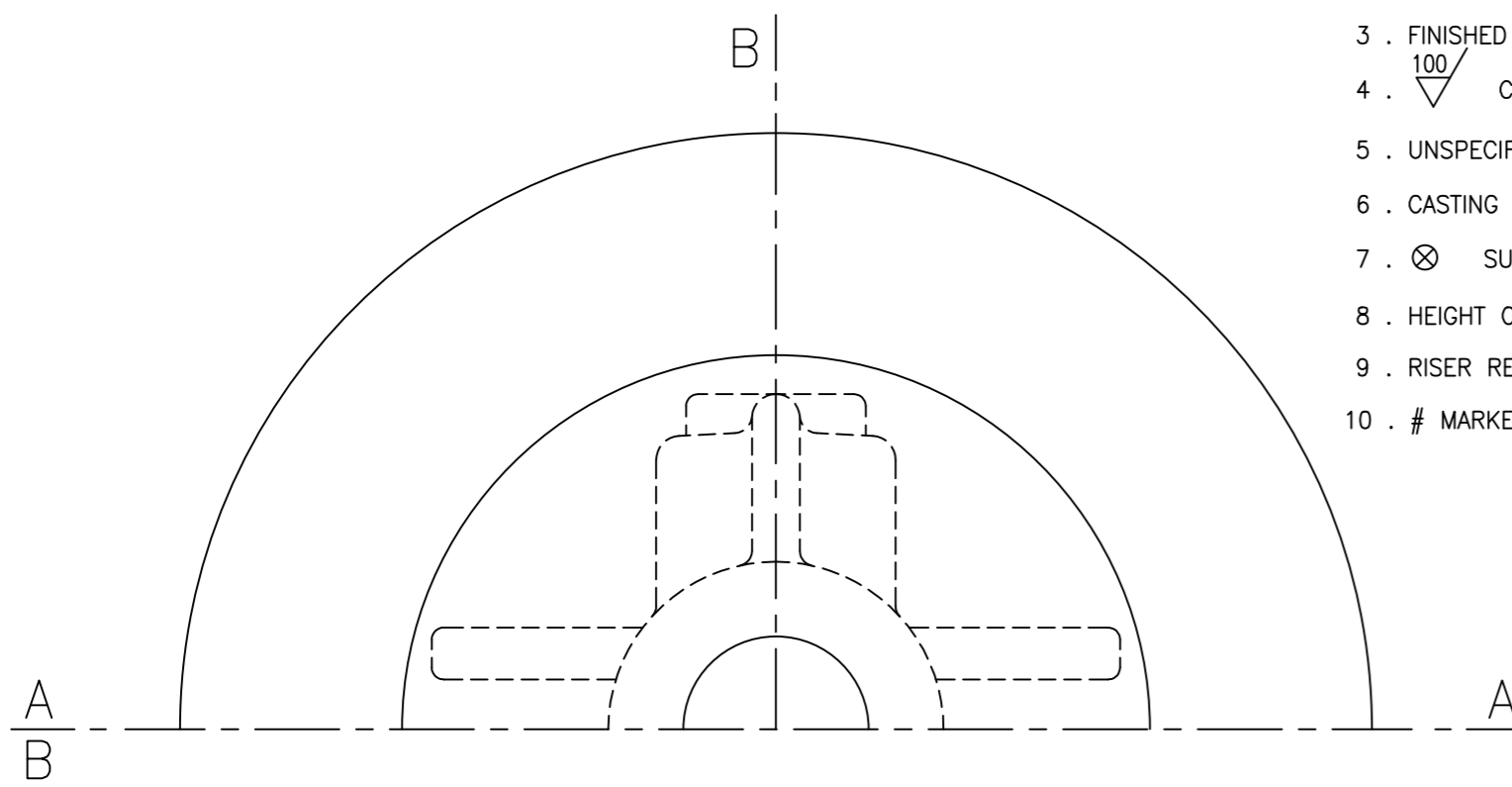
2"-300C  
MATERIAL MARK \*  
MELT NUMBER  
SUPPLIER'S CODE  
INSPECTION SEAL



✓/100

NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- PERMISSIBLE DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER APPLICABLE TDC WITH LATEST REVISION.
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- UNSPECIFIED CASTING RADII 3 - 5 MM
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE TDC WITH LATEST REVISION.
- ⊗ SURFACES TO BE MACHINED
- HEIGHT OF CAST LETTERS 12 MM
- RISER REMAINS ARE TO BE COMPLETELY REMOVED SUITABLY.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.



ITEM NO	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
05	CF3M #09 CASTING	--	A351 CF3M CERTIFY	SH	--	--	2.V.NL97.06099R 92 206 242 0000	05	
05	CF8M #08 CASTING	--	A351 CF8M CERTIFY	SH	--	--	2.V.UB01.06099R 92 206 139 0000	05	
05	CF8 #07 CASTING	--	A351 CF8M CERTIFY	SH	--	--	2.V.U636.06099R 92 203 554 0000	05	
05	CF8M 06 CASTING	--	A351 CF8M CERTIFY	SH	--	--	2.V.N374.06099R/01 92 200 579 0000	05	
05	CF8 05 CASTING	--	A351 CF8 CERTIFY	SH	--	--	2.V.N363.06099R/01 92 200 578 0000	05	
05	WC9 04 CASTING	--	A217 WC9 CERTIFY	N & T	--	--	2.V.N262.06099R/01 92 200 513 0000	05	
05	WC6 03 CASTING	--	A217 WC6 CERTIFY	N & T	--	--	2.V.N261.06099R/01 92 200 512 0000	05	
05	WCC 02 CASTING	--	A216 WCC CERTIFY	NORMALISED	--	--	2.V.N260.06099R/01 92 200 511 0000	05	
05	WCB 01 CASTING	--	A216 WCB CERTIFY	NORMALISED	--	--	2.V.N328.06099R/01 92 200 510 0000	05	

REV	ZONE	DESCRIPTION	DATE	APPD	DT
05		SL. No. 09 INCLUDED		SSK	27.09.22
04		SL. No. 08 INCLUDED	04.10.21	SSK	10.04.18
03		SL. No. 07 INCLUDED		KRS	10.04.18

DCP No.	ALTD	APPD	DCP No.	ALTD	APPD
-	RPS	SSK	-	RPS	KRS
-	MK		-	SSK	

DEPT	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
VL	NTS	12.02	CAD REF: C206099R	-
320				

DRN	NAME	SIGN	DATE	NO. OF VAR.
R.P.SINGH	R.P.SINGH		10.04.18	-
S.SATHEESKUMAR	S.SATHEESKUMAR		10.04.18	-
K.RAJASEKARAN	K.RAJASEKARAN		10.04.18	-

TITLE	CARD CODE	DRAWING NO.	REV
YOKE COVER (2"-300C GV SG)	U 01	2-V-0000-06099R	05

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

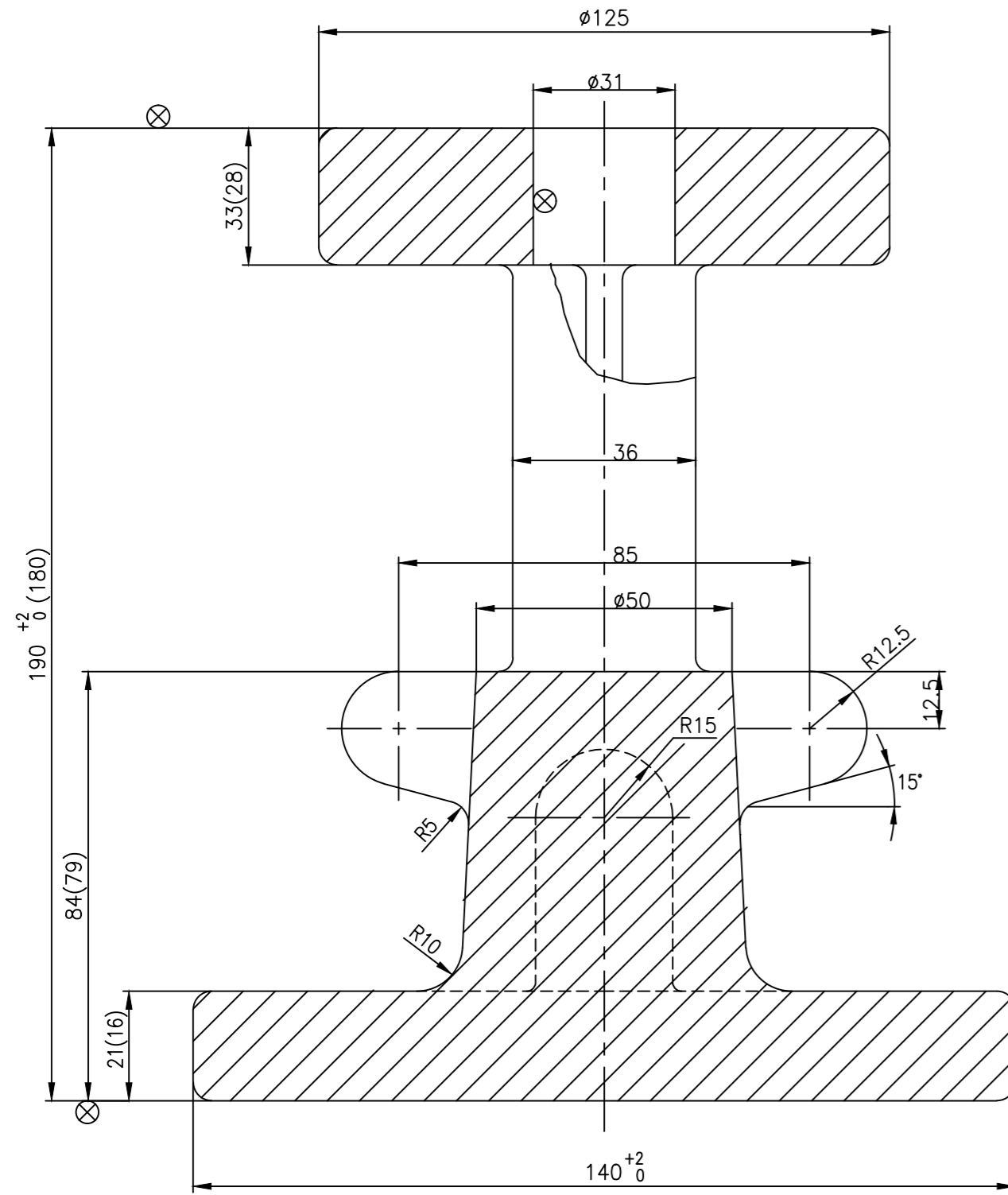
DEPT: VL  
SCALE: NTS  
WEIGHT (KG): 12.02  
REFERENCE INFORMATION: CAD REF: C206099R

DRAWING NO. 2-V-0000-06099R  
REV 05

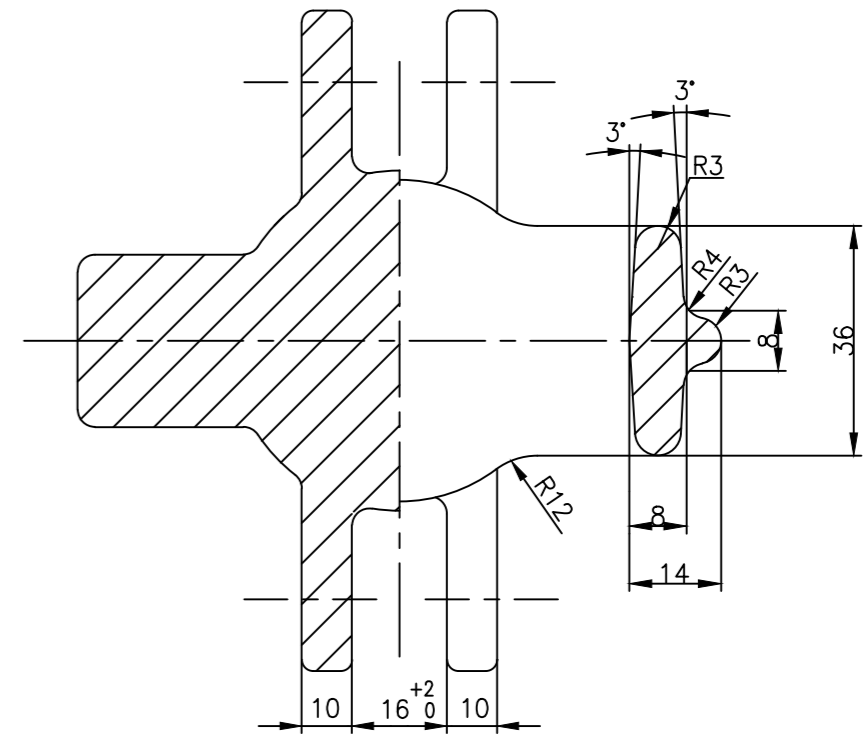
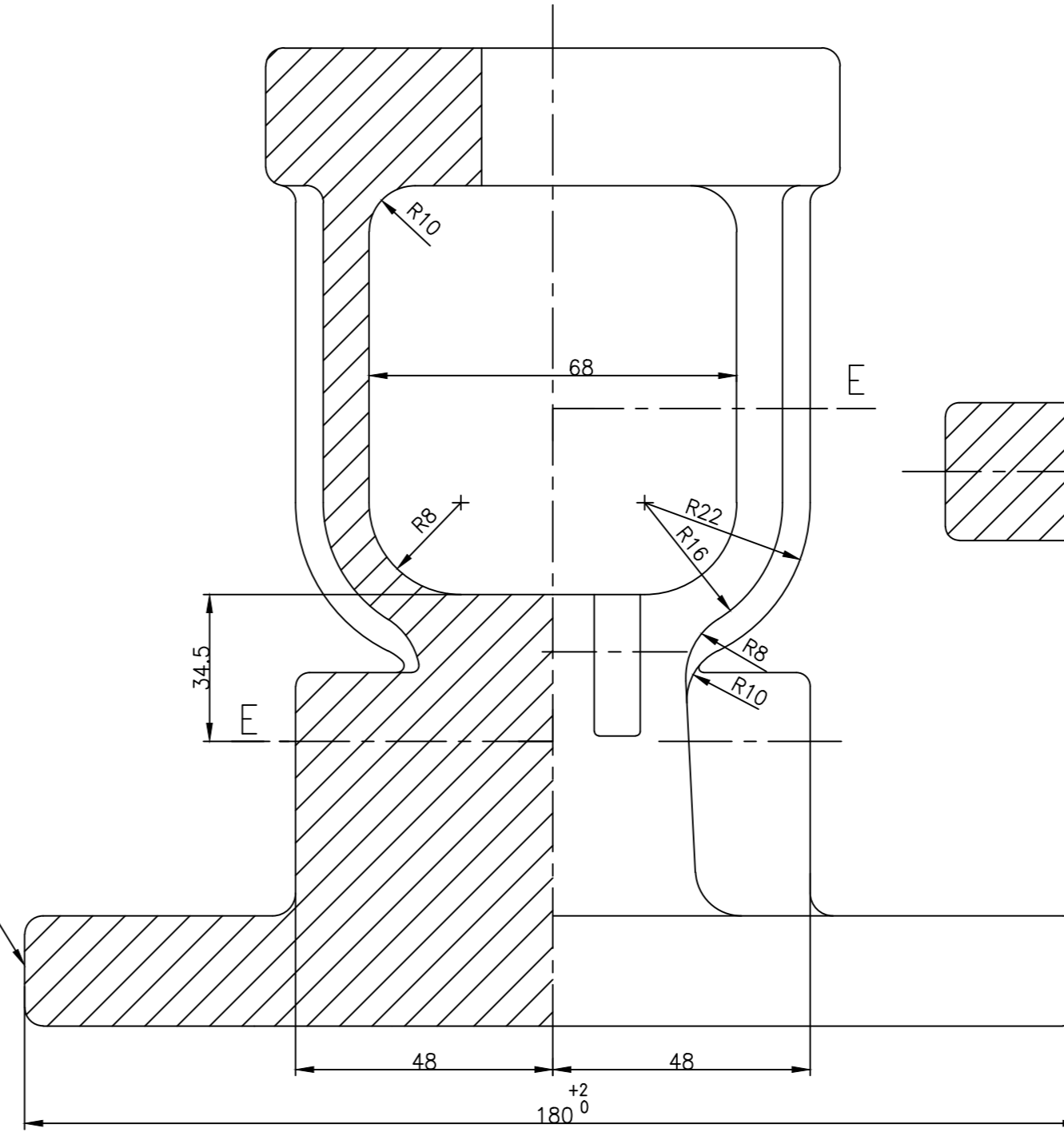
SECTION-AA

SECTION-BB

SECTION-EE



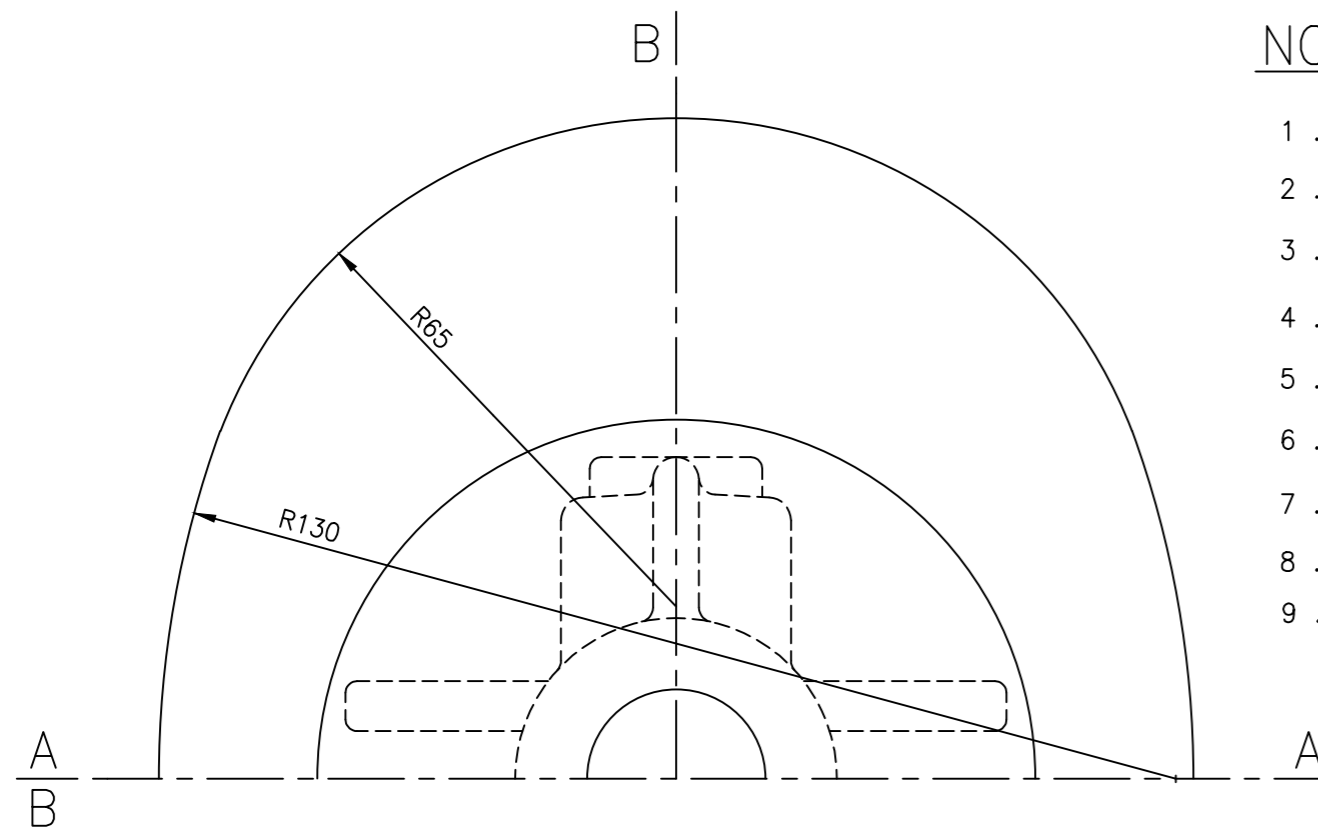
2"-150C  
MATERIAL MARK \*  
MELT NUMBER  
SUPPLIER'S CODE  
INSPECTION SEAL



✓/100

NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- UNSPECIFIED CASTING RADII 3 - 5 MM
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST QUALITY PROCEDURE.
- ⊗ SURFACES TO BE MACHINED
- HEIGHT OF CAST LETTERS 12 MM
- RISER REMAINS ARE TO BE COMPLETELY REMOVED SUITABLY.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.



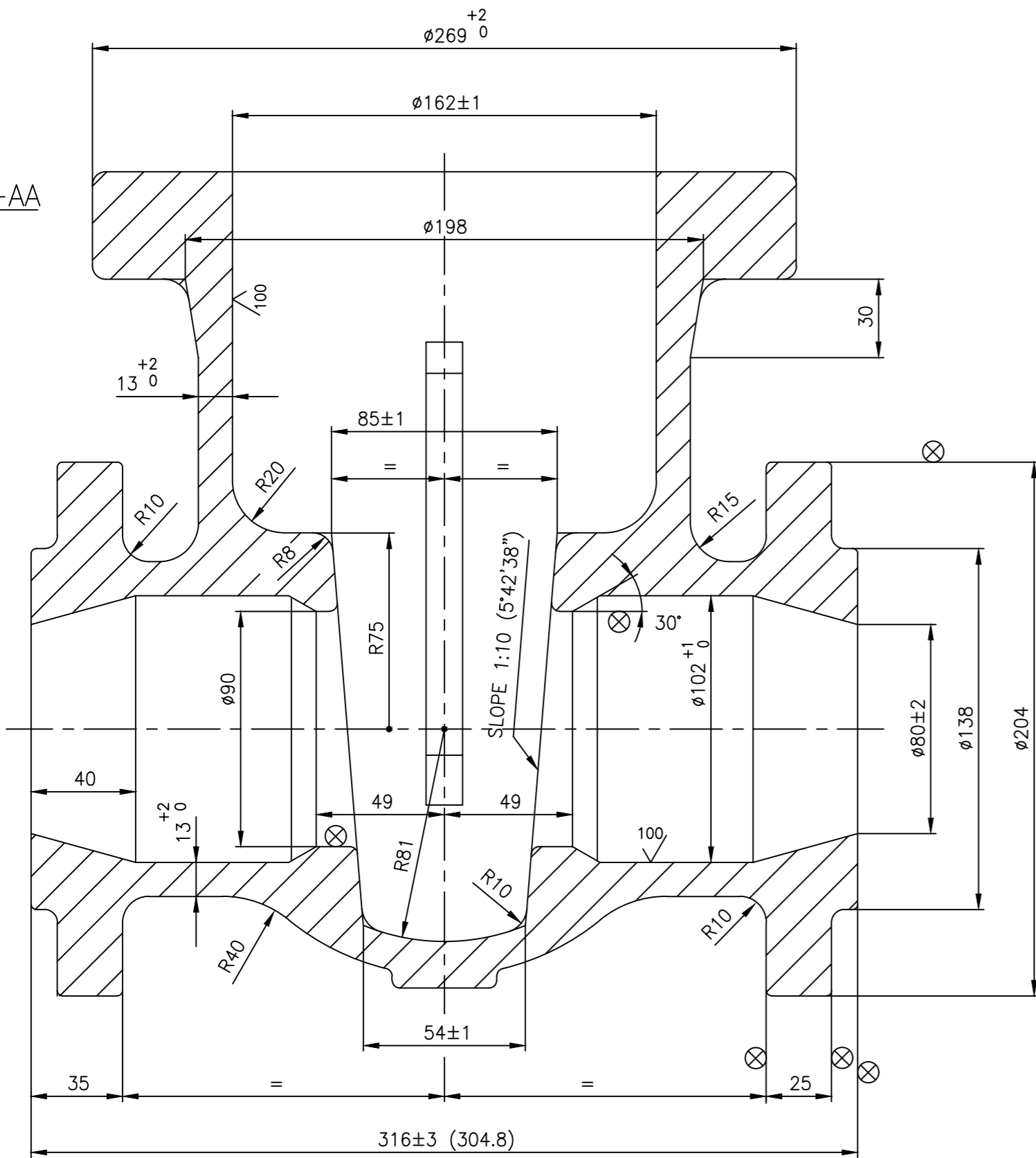
CF3M	# 10	CASTING	--	A351 CF3M CERTIFY	SH	--	--	--	2.V.UB22.06107R	05
CF8M	# 09	CASTING	--	A351 CF8M CERTIFY	SH	--	--	--	2.V.UA96.06107R	05
CF3M	08	CASTING	--	A351 CF3M CERTIFY	SH	--	--	--	2.V.NK01.06107R	05
CF8	# 07	CASTING	--	A351 CF8 CERTIFY	SH	--	--	--	2.V.U634.06107R	05
CF8M	06	CASTING	--	A351 CF8M CERTIFY	SH	--	--	--	2.V.N472.06107R/01	05
CF8	05	CASTING	--	A351 CF8 CERTIFY	SH	--	--	--	2.V.N277.06107R/01	05
WC9	04	CASTING	--	A217 WC9 CERTIFY	N & T	--	--	--	2.V.N301.06107R/01	05
WC6	03	CASTING	--	A217 WC6 CERTIFY	N & T	--	--	--	2.V.N300.06107R/01	05
WCC	02	CASTING	--	A216 WCC CERTIFY	NORMALISED	--	--	--	2.V.N299.06107R/01	05
WCB	01	CASTING	--	A216 WCB CERTIFY	NORMALISED	--	--	--	2.V.N298.06107R/01	05

MATL MARK*	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT										
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.										
DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.						
CHD	N.DHANAPAL	SIGN	DATE	NO.OF VAR.						
APPD	A.VISWANATHAN	SIGN	DATE	NO.OF VAR.						
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION						
CODE	320	NTS	8.63	CAD REF: C206107R						
TITLE	YOKE COVER (2"-150C GV SG)			CARD CODE	DRAWING NO. 2-V-0000-06107R 06					

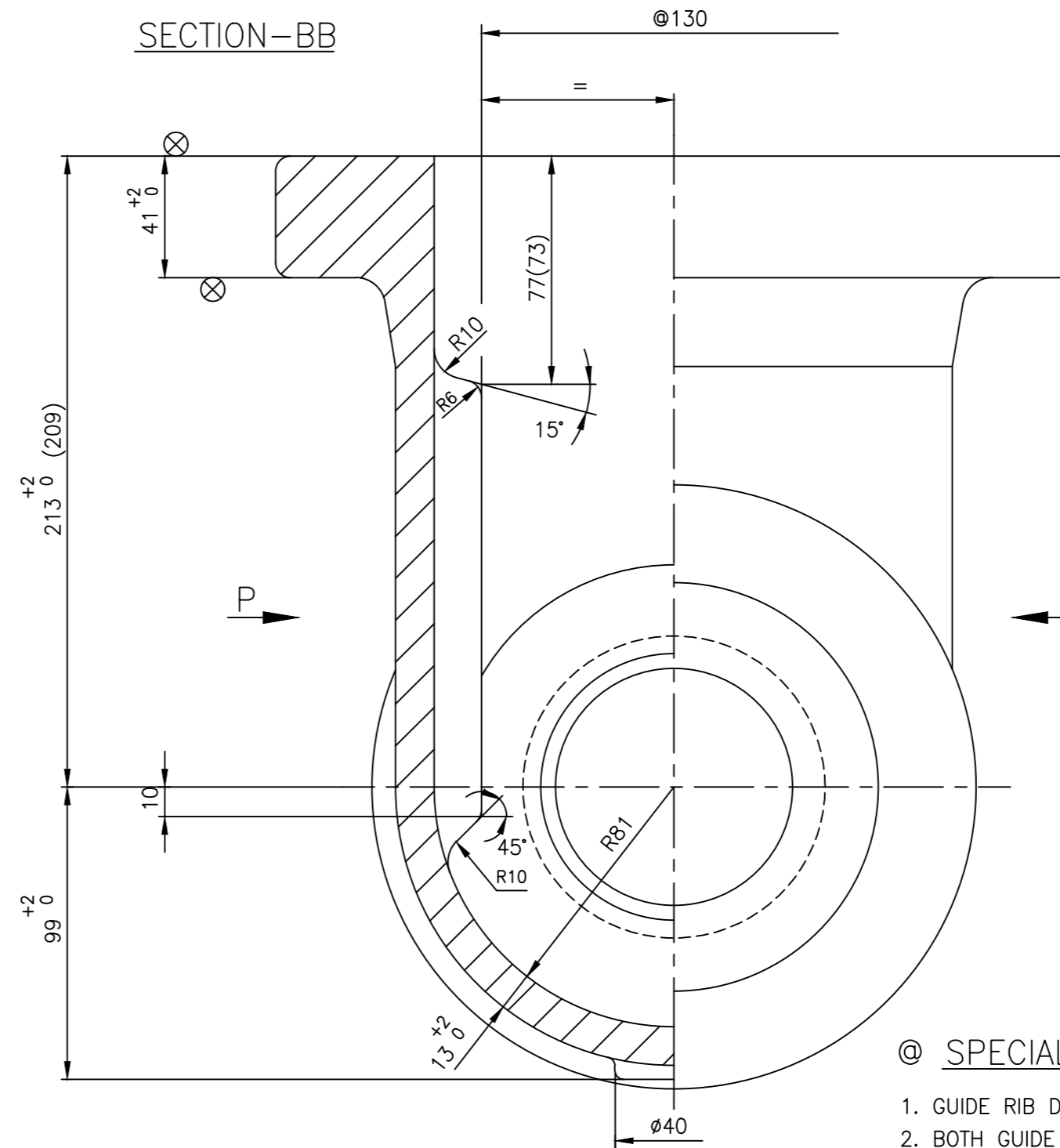
DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPD: SSK
-	CHD: MK	DT: 27.09.22	-	CHD: RPS	DT: 01.10.21
REV 06	SL. No. 10 INCLUDED			REV 05	SL. No. 09 INCLUDED.
ZONE -				ZONE	

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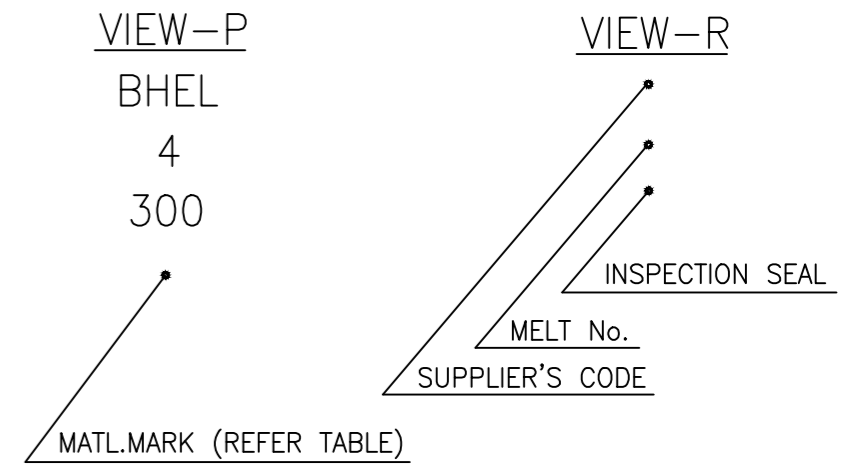
SECTION-AA



SECTION-BB



CAST IDENTIFICATION MARK



@ SPECIAL NOTES:-

1. GUIDE RIB DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCES INDICATED
2. BOTH GUIDE RIBS TO BE COPLANAR AND TRULY VERTICAL.
3. PROPER MATCHING FOR GUIDE RIBS WITH MACHINED WEDGE TO BE ENSURED BEFORE ACCEPTING CAST BODIES PREFERABLE AT THE FOUNDRY.
4. THIS DRG. IS DIMENSIONALLY IDENTICAL TO THE DRG. 2-V-0000-05865R EXCEPT MATERIAL SPECIFICATION.

NOTES:-

1. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
2. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
3.  $\sqrt{100}$  CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
4. UNSPECIFIED CASTING RADII R3 TO R5.
5. PERMISSIBLE DEVIATIONS OF NON-TOLERANCED CASTING DIMENSIONS REFER LATEST APPLICABLE TDC
6. HEIGHT OF CASTING LETTERS-20mm.
7.  $\otimes$  SURFACES TO BE MACHINED.
8. FINISH-MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS.
9. MELT No. & INSPECTION SEAL TO BE PUNCHED REST OF THE DETAILS ARE TO BE CAST.
10. RISER REMAINS ARE TO COMPLETELY REMOVED SUITABLY.
11. \* FOR THE SPECIAL CLASS VALVES EMBOSING SHALL BE '300 SPL'
12. \* THIS SPECIAL CLASS CASTING IS TO BE SUBJECTED RT/UT ON ALL CRITICAL LOCATIONS.
13. \* ALL EXTERIOR AND ACCESSIBLE INTERIOR SURFACES OF BODY SHALL BE MPI/LPI TESTED.

SL No	MATL. MARK * TO BE CAST	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
04	CF3M	922038830000	SA351 CF3M ATTEST	S H	46	51.5	--	2VNK7906116R	01
*03	CF8M	922030410000	A351 CF8M ATTEST	S H	46	51.5	--	2VNG8506116R	01
02	CF8M	922005250000	A351 CF8M ATTEST	S H	46	51.5	--	2VN45006116R	01
01	CF8	922005240000	A351 CF8 ATTEST	S H	46	51.5	--	2VN43906116R	01

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

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI - 620014.

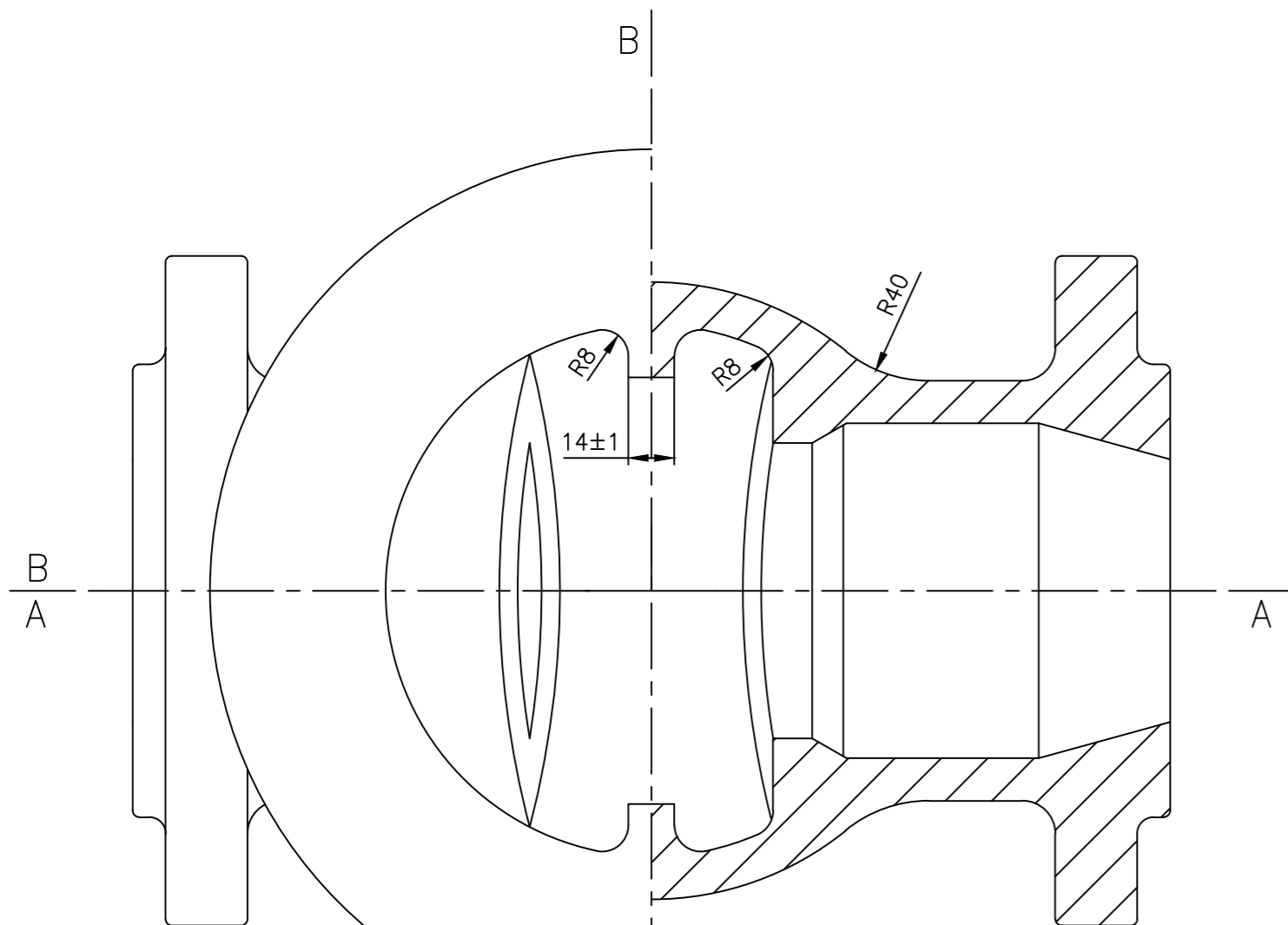
DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		17.01.96	-
APPD	A.VISWANATHAN		18.01.96	-

DEPT: 365-120  
VL: /  
CODE: 320  
SCALE: NTS.  
WEIGHT (KG): 51.5  
REFERENCE INFORMATIONS: CAD:C206116R  
TITLE: **BODY (4"-C300 BW)**  
CARD CODE: U 01  
DRAWING NO.: **2-V-0000-06116R**  
REV: **02**

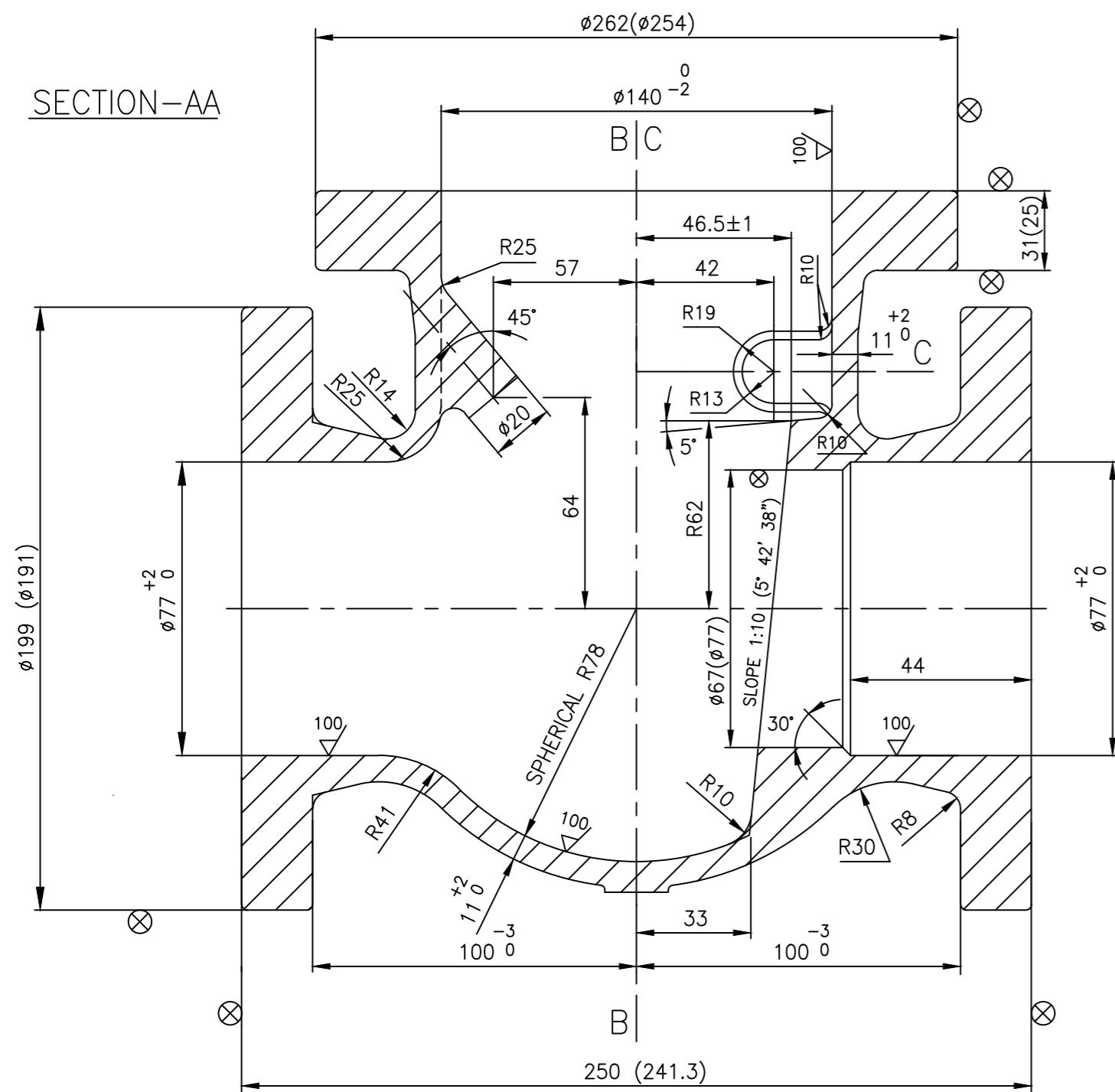
REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	T.R.RAMAMURTHY
02	03.08.19	CHD & APPD	SSK & KRS	01	20.04.12	CHD & APPD	SSK & MRK

SL.No.04 INCLUDED

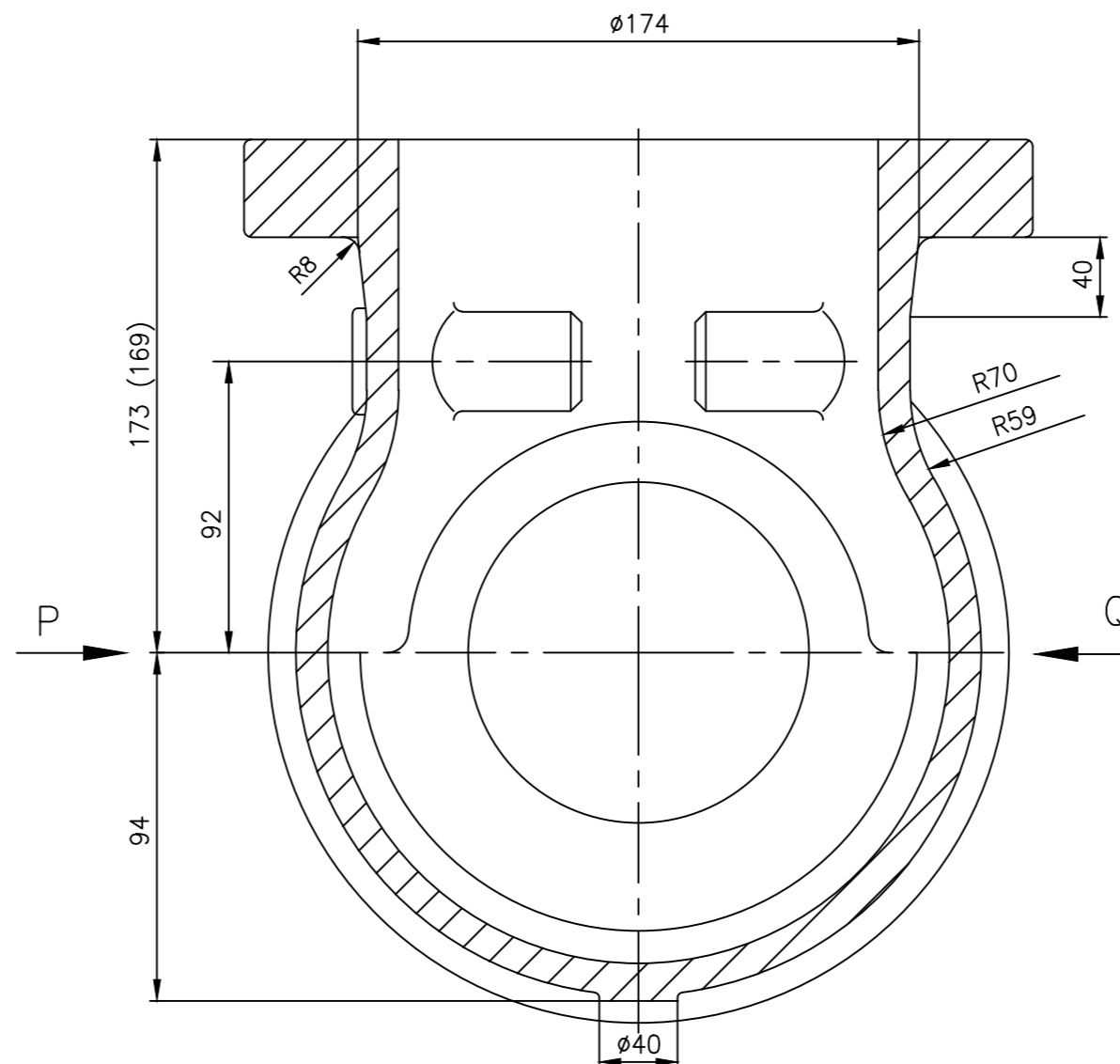
SL.No.03 INCLUDED



SECTION-AA



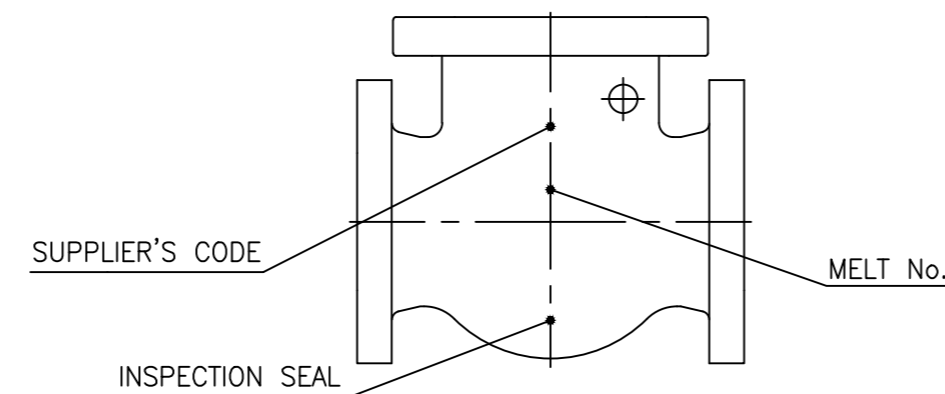
SECTION-BB



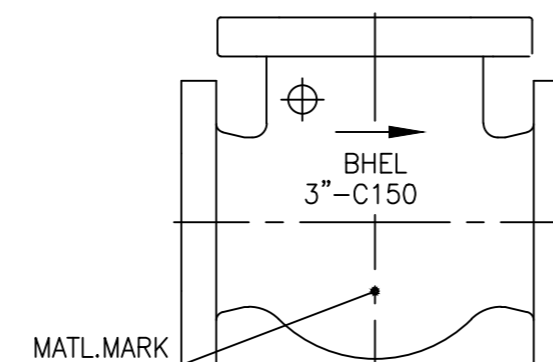
NOTES:-

1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
2. PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE TDC
3. FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4.  $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
5. ALL DETAILS SHOWN IN VIEWS P & Q, EXCEPT MELT No. AND INSPECTION SEAL, ARE TO BE CAST.
6. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE TDC
7. UNSPECIFIED CASTING RADII 3 - 7 MM
8. HEIGHT OF CASTING LETTERS 20MM
9.  $\otimes$  SURFACES TO BE MACHINED
10. THIS DRAWING IS DIMENSIONALLY IDENTICAL AND SIMILAR IN ALL RESPECTS TO THE DRAWING 1-V-5157-02777R EXCEPT MATERIAL SPECIFICATION.
11. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

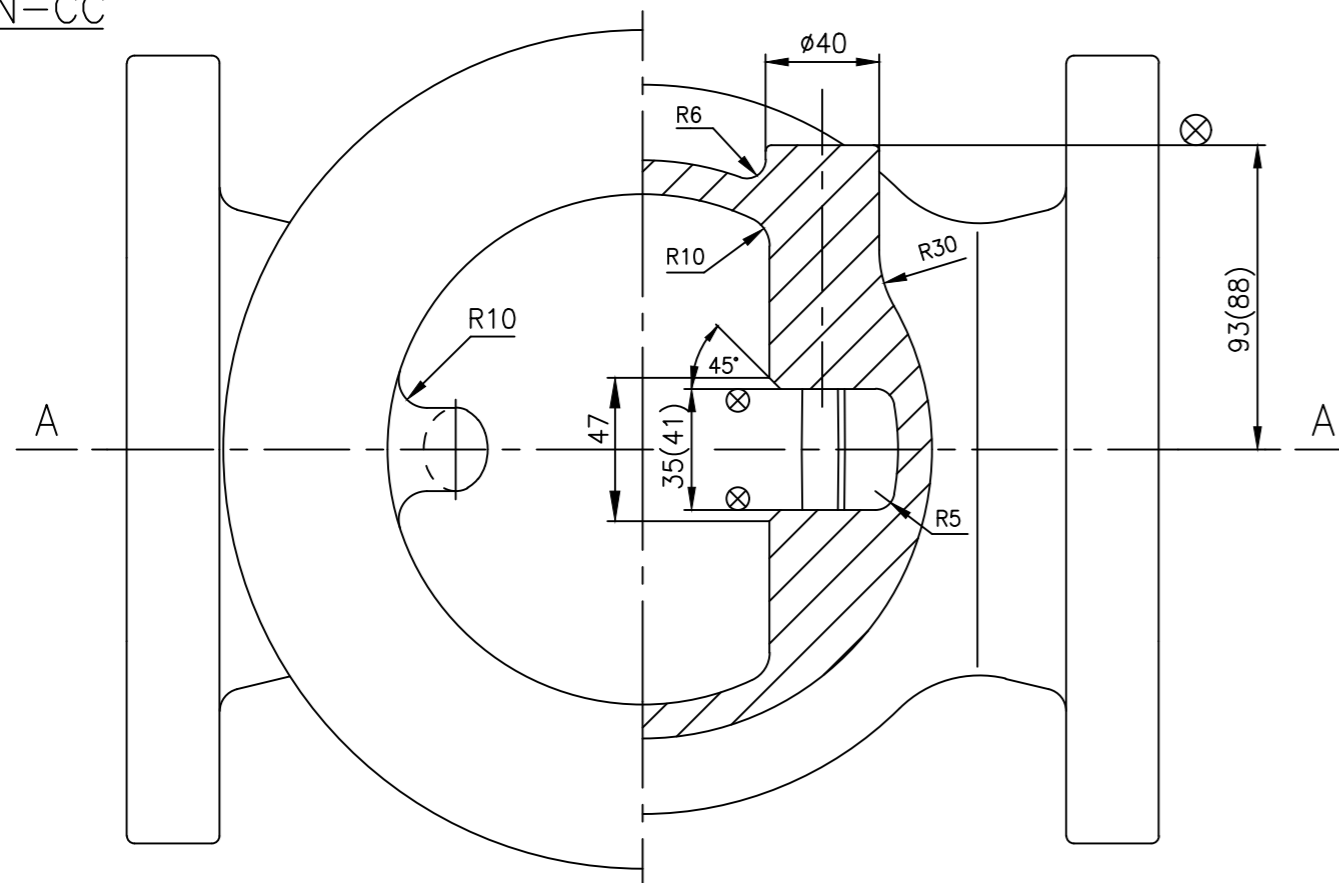
VIEW-Q



VIEW-P



SECTION-CC

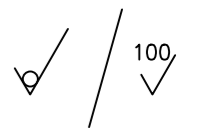


#	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
#04	BODY	-	SA351 CF3M (ATTEST)	SH	-	32	-	2.V.UB17.06131R 92 206 221 0000	01
03	BODY	-	SA351 CF3M (ATTEST)	SH	-	32	-	2.V.Z120.06131R 92 203 852 0000	01
#02	BODY	-	SA351 CF8 (ATTEST)	SH	-	32	-	2.V.U633.06131R 92 203 540 0000	01
01	BODY	-	SA351 CF8 (ATTEST)	SH	-	32	-	2.V.5199.06131R 92 200 539 0000	01

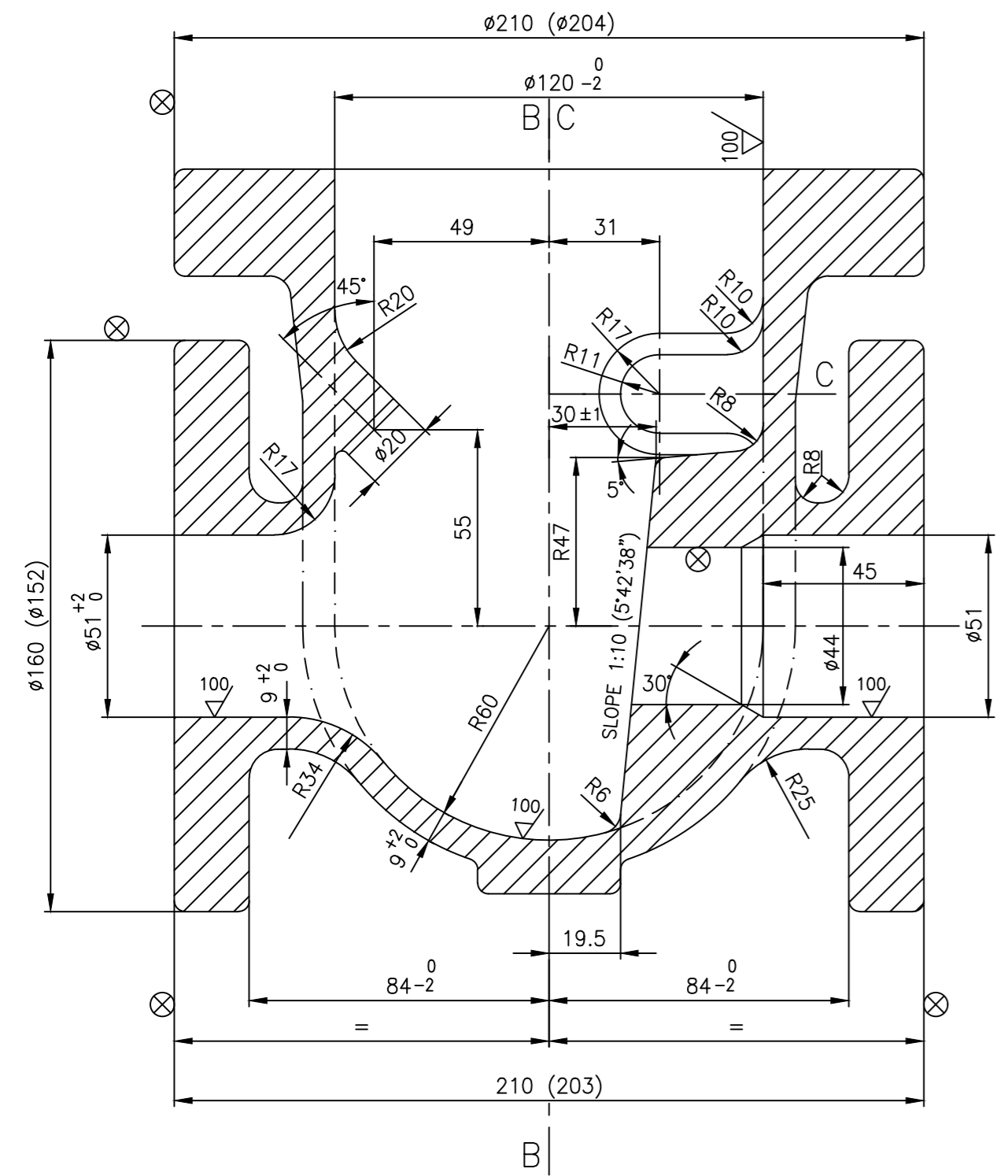
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
DRN	NAME	SIGN	DATE	NO.OF VAR.					
365-190 02.03.2021	BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.		29.01.96	-					
CHD	N.DHANAPAL		30.01.96	-					
APPD	A.VISWANATHAN		30.01.96	-					
DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS				
320		NTS	-	CAD:C206131R	-				
TITLE	CARD CODE	DRAWING NO.	REV						
BODY (3"-150C)	U 01	2-V-0000-06131R	03						

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: KRS
-	CHD: MK	DT: 27.09.22	-	CHD: SSK	DT: 31.05.19
REV	SL. No. 04 INCLUDED		REV	SL. No. 03 INCLUDED	
03			02		
ZONE			ZONE		
-			-		

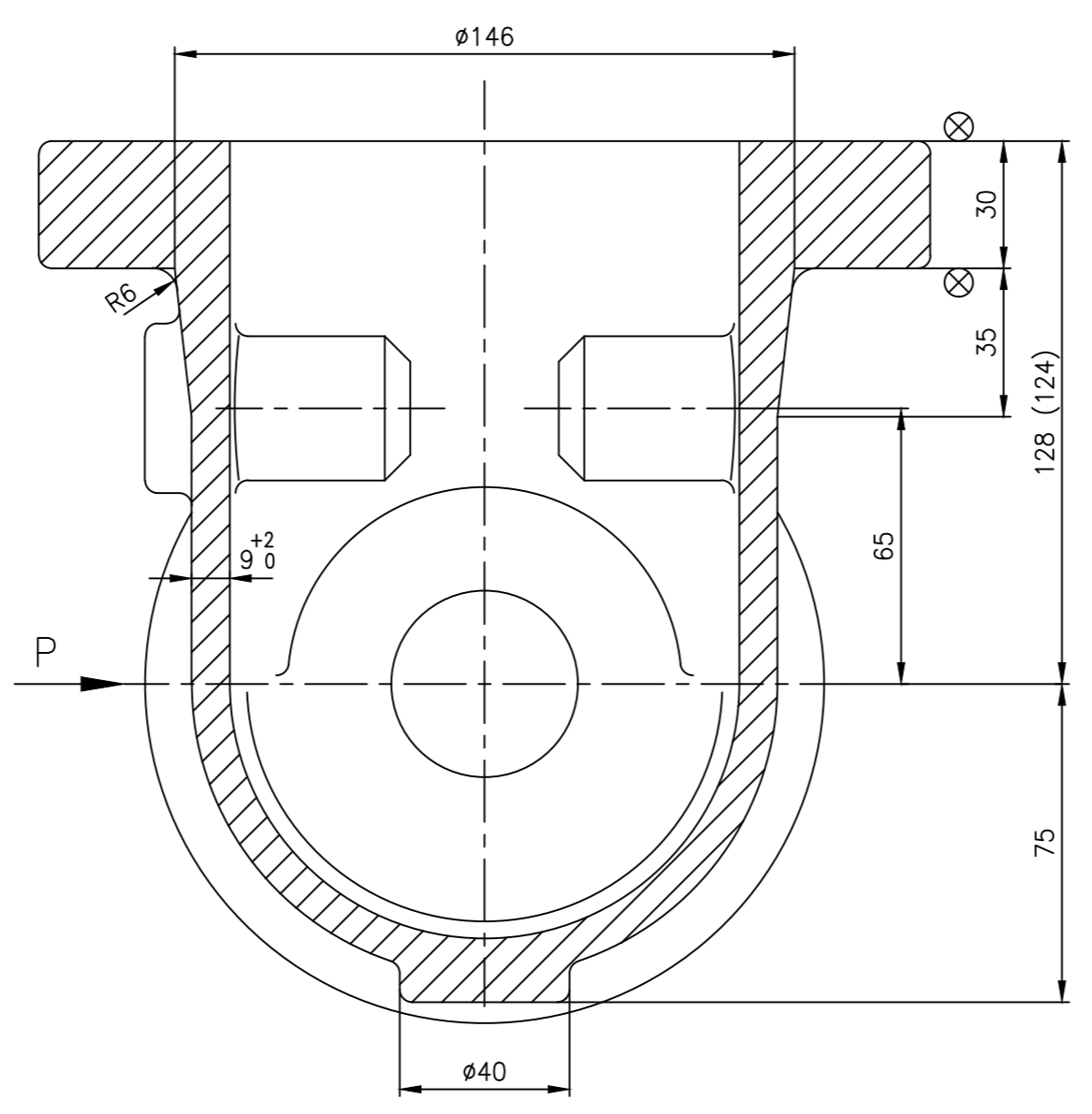
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.



SECTION-AA



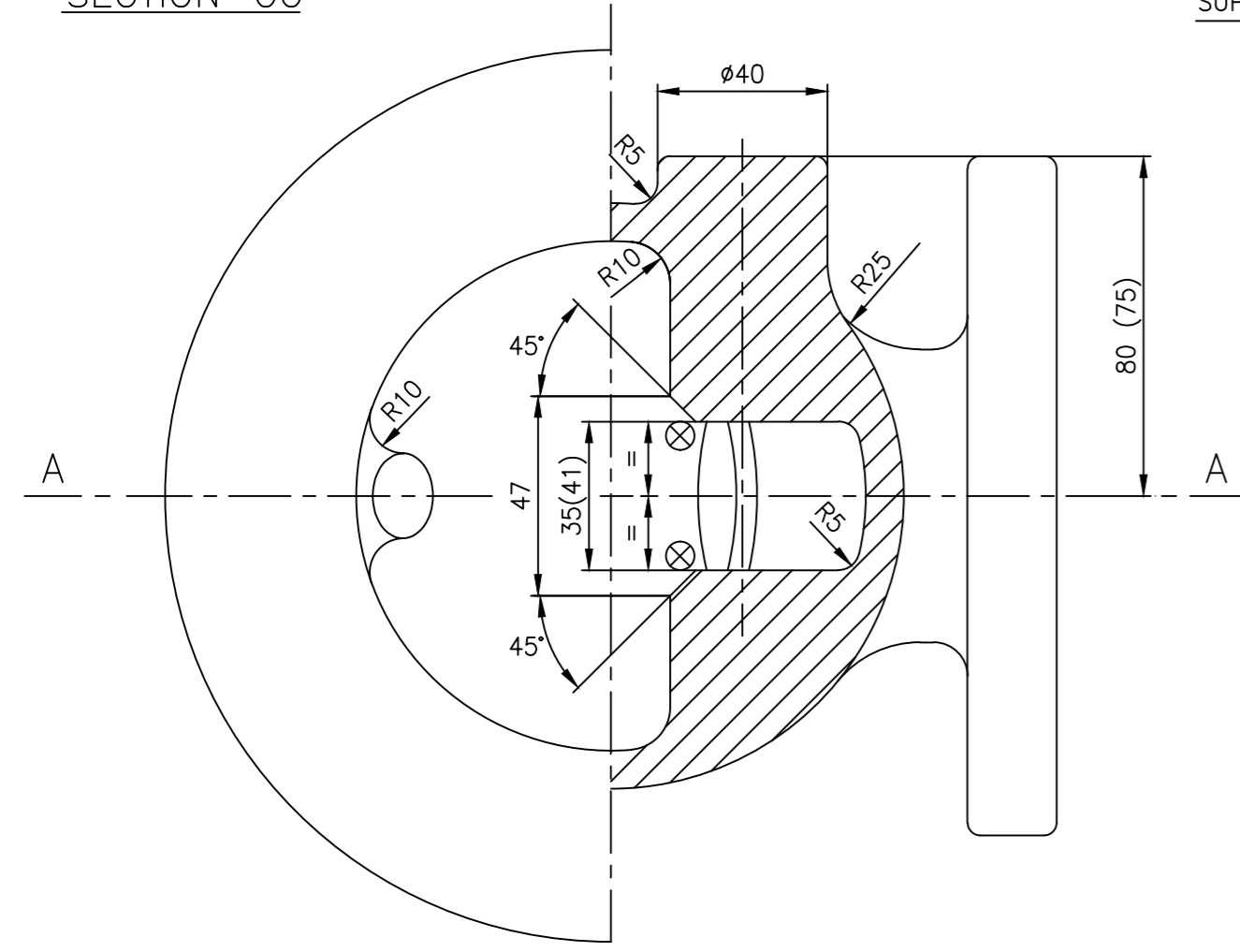
SECTION-BB



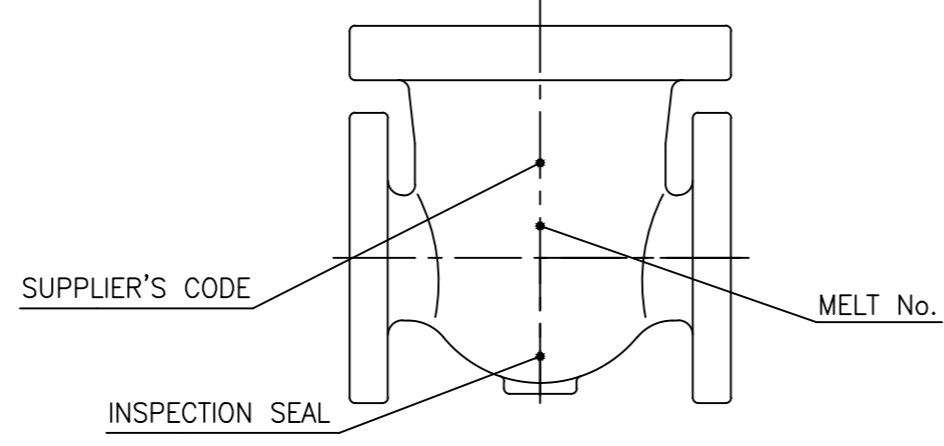
NOTES:-

1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
2. PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE TDC
3. FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4.  $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
5. ALL DETAILS SHOWN IN VIEWS P & Q, EXCEPT MELT No. AND INSPECTION SEAL, ARE TO BE CAST.
6. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE TDC
7. UNSPECIFIED CASTING RADII 3 - 7 MM
8. HEIGHT OF CASTING LETTERS 20MM
9.  $\otimes$  SURFACES TO BE MACHINED
10. THIS DRAWING IS DIMENSIONALLY IDENTICAL AND SIMILAR IN ALL RESPECTS TO THE DRAWING 1-V-5158-02778R EXCEPT MATERIAL SPECIFICATION.
11. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

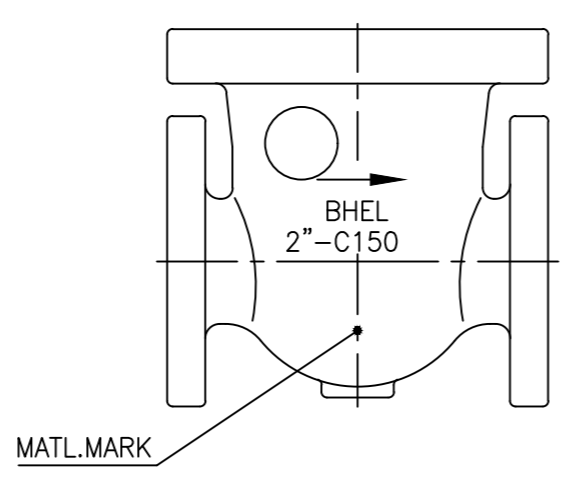
SECTION-CC



VIEW-Q



VIEW-P



MATL. MARK	#	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M	#05	CASTING	-	SA351 CF3M (ATTEST)	SH	-	18.8	92 206 220 0000	2-V-Z137-06391R	01
CF8M	#04	CASTING	-	SA351 CF8M (ATTEST)	SH	-	18.8	92 206 124 0000	2-V-UB04-06391R	01
CF8M	03	CASTING	-	SA351 CF8M (ATTEST)	SH	-	18.8	92 206 123 0000	2-V-Z131-06391R	01
CF8	#02	CASTING	-	SA351 CF8 (ATTEST)	SH	-	18.8	92 203 536 0000	2-V-U638-06391R	01
CF8	01	CASTING	-	SA351 CF8 (ATTEST)	SH	-	18.8	92 200 779 0000	2-V-Z004-06391R	01

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

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		09.11.96	-
APPD	A.VISWANATHAN		09.11.96	-

DEPT: VL  
CODE: 320  
TITLE: BODY (2"-150C)

SCALE: NTS  
WEIGHT (KG): 18.8  
REFERENCE INFORMATION: CAD:C206391R  
CARD CODE: U 01  
DRAWING NO.: 2-V-0000-06391R  
REV: 03

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPD: SSK	
-	CHD: MK	DT: 27.09.22	-	CHD: RPS	DT: 30.09.21	
REV 03	SL. No. 05 INCLUDED			REV 02	SL. No. 03 & 04 INCLUDED	
ZONE -				ZONE -		

DRAWING NO. 2-V-0000-07850R

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

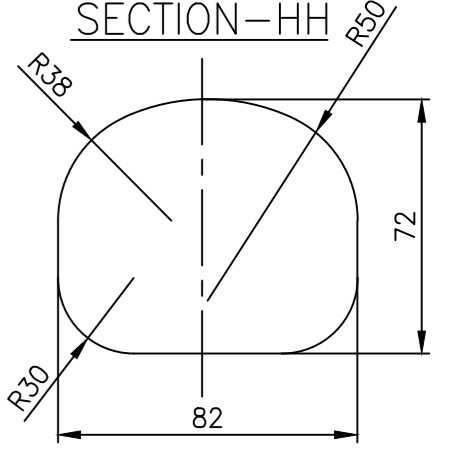
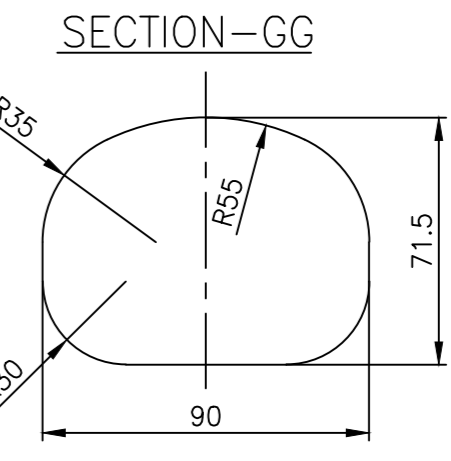
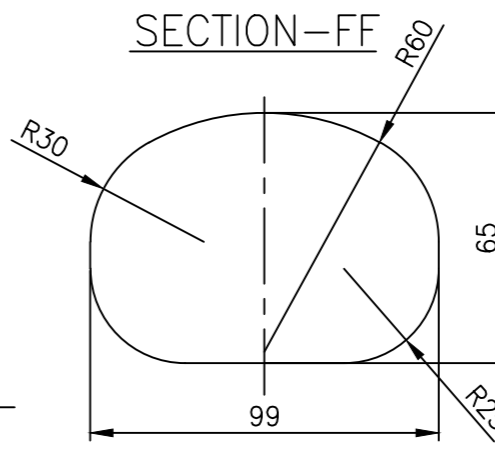
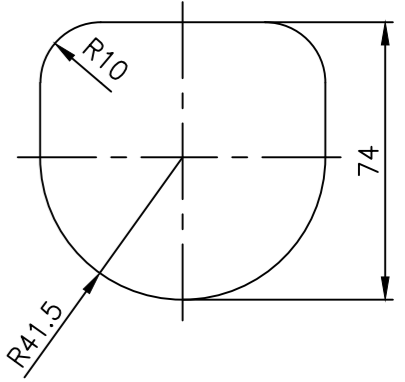
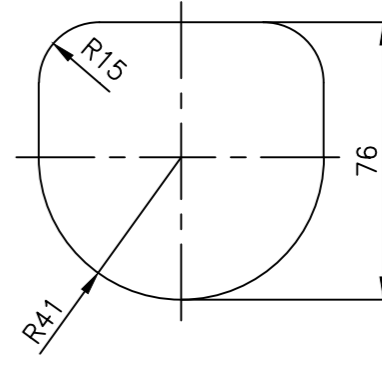
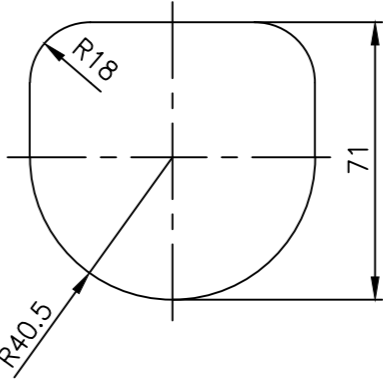
SECTION-AA

SECTION-BB

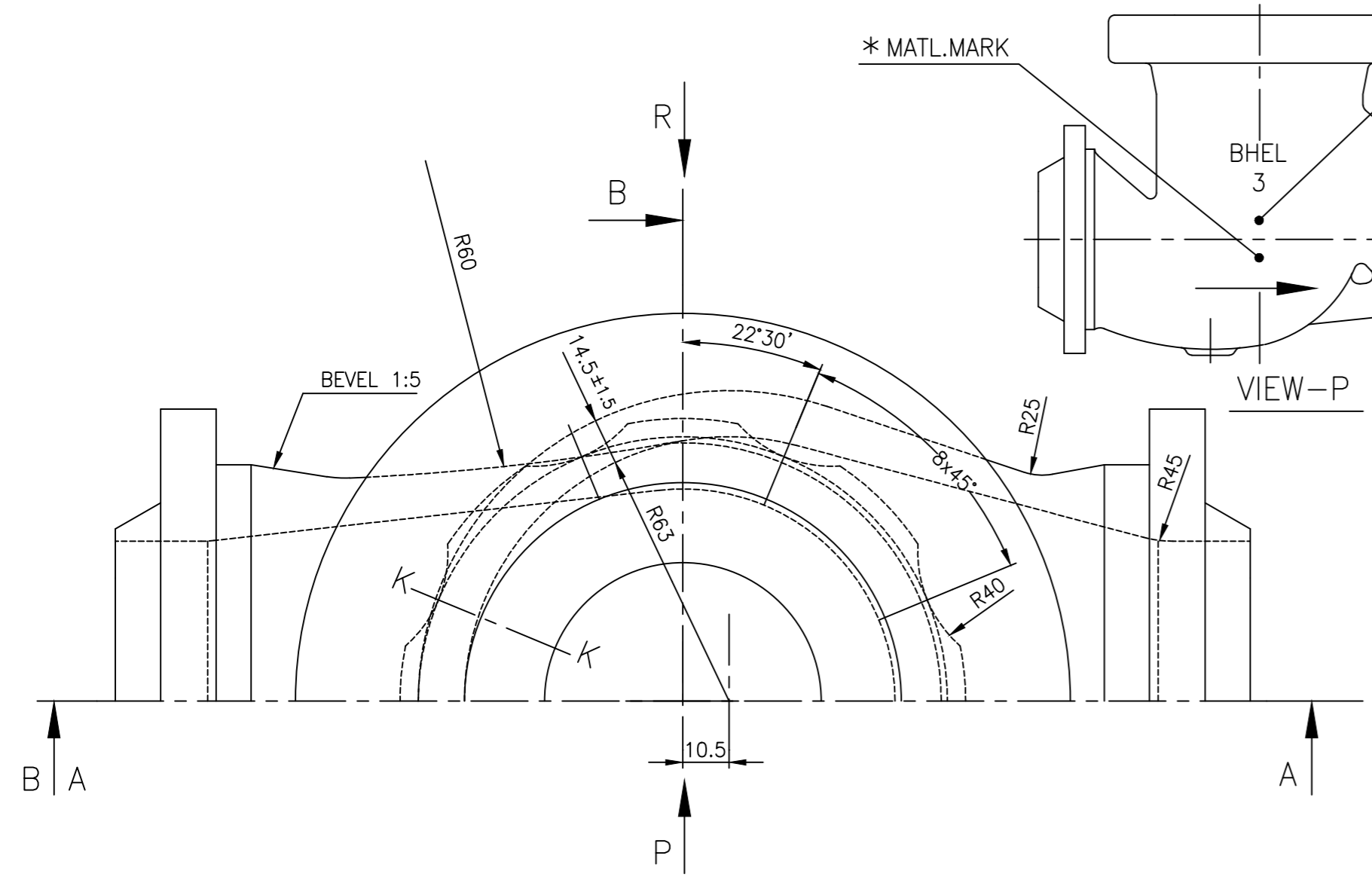
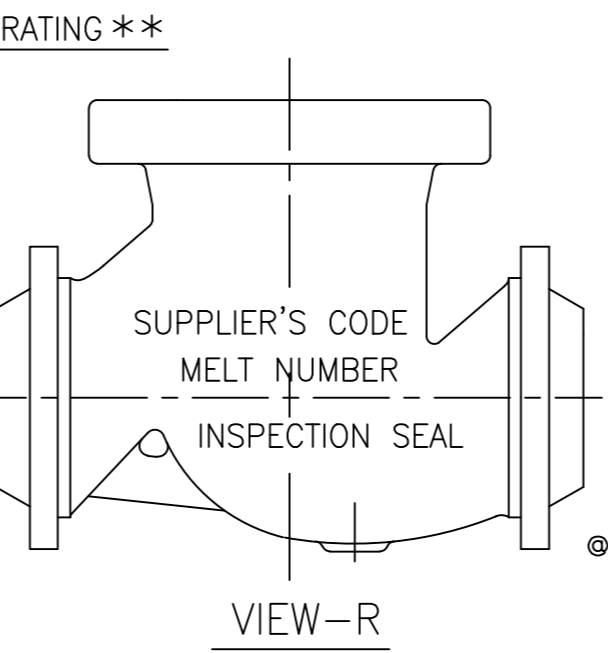
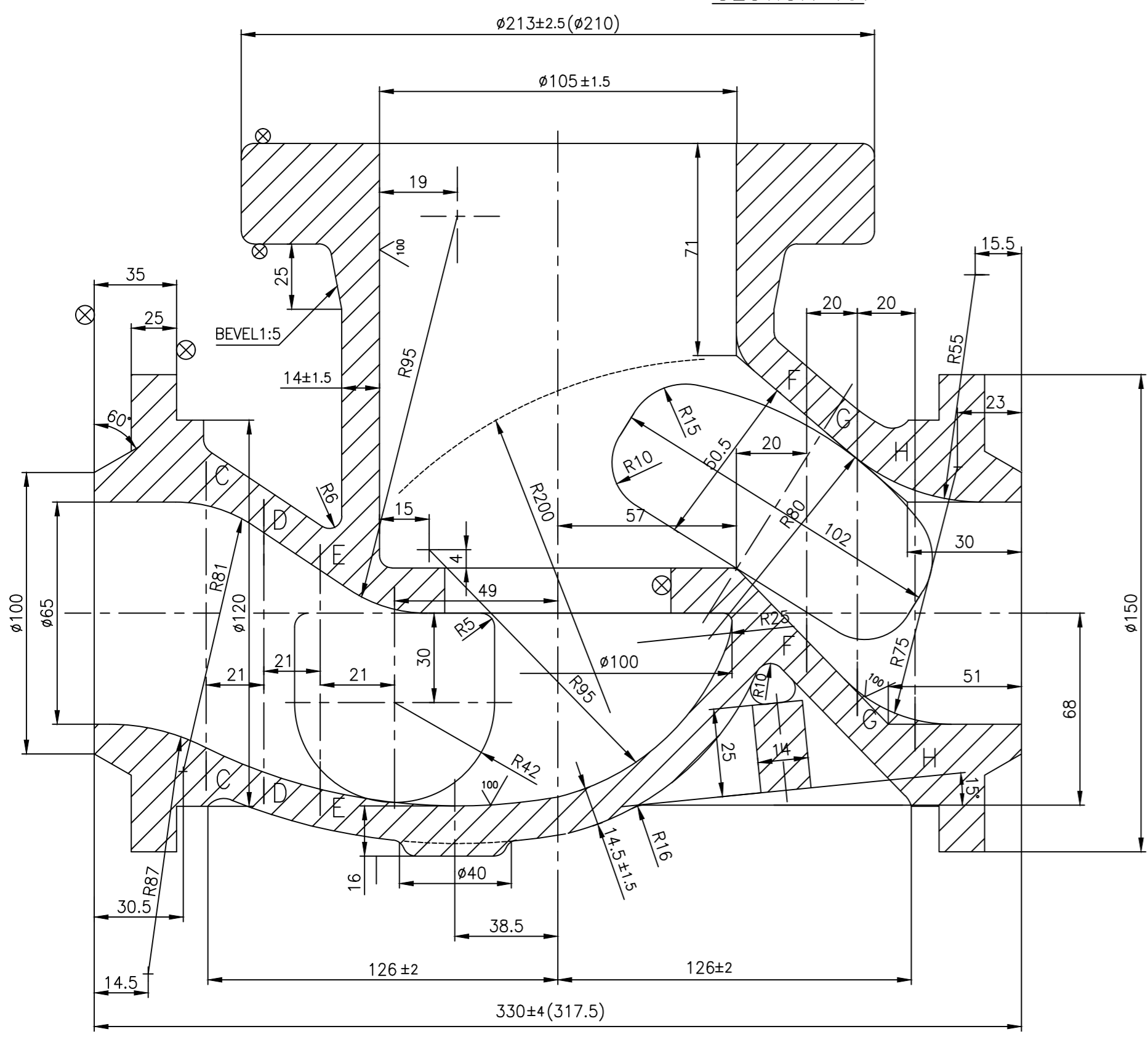
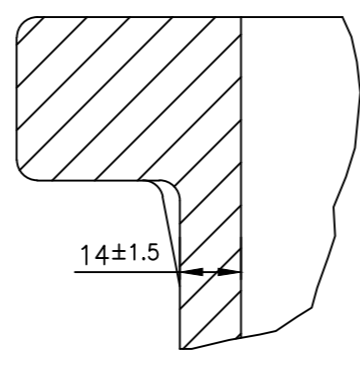
SECTION-CC

SECTION-DD

SECTION-EE



SECTION-KK



- NOTES:
- CASTINGS SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
  - NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED IN THIS DRAWING ON ALL MACHINABLE SURFACES.
  - FOR THE PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON-TOLERANCED CASTING DIMENSIONS REFER APPLICABLE TDC (LATEST REVISION).
  - ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
  - UNSPECIFIED CASTING RADII-R5 MAX.
  - ✓<sup>100</sup> INDICATES THE CASTING SURFACES WHICH MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
  - ALL DETAILS IN VIEW "P" & "R" EXCEPT MELT No. & INSPECTION SEAL ARE TO BE CAST. HEIGHT OF CASTING LETTERS-12MM.
  - FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS ARE FOR INFORMATION ONLY.
  - THIS DRAWING IS DIMENSIONALLY IDENTICAL TO 1-V-2885-02638R EXCEPT MATERIAL SPECIFICATION.

Ⓢ QUALITY PROCEDURE AS APPLICABLE FOR SPECIAL CLASS VALVES.

REV	DATE	ALTERED	R.P.SINGH	SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No COMPONENT CODE	ITEM No
C300	CF3M	03	CASTING	-	SA351 CF3M ATTEST	SH	-	-	-	33	2.V.P777.07850R 922038700000	001	
C300 SPL	WCB	02	CASTING	-	SA216 WCB ATTEST	NR	-	-	-	33	2.V.P584.07850R 922032340000	001	
C300	CF8M	01	CASTING	-	SA351 CF8M ATTEST	SH	-	-	-	33	2.V.P345.07850R/1 922009870000	001	

REV	DATE	ALTERED	S.SARANYA
03	05.08.19	CHD & APPD	SSK & KRS
SL.No. 03 INCLUDED.			
02	01.03.14	CHD & APPD	S.S.K & K.R.S
SL.No. 02 INCLUDED			

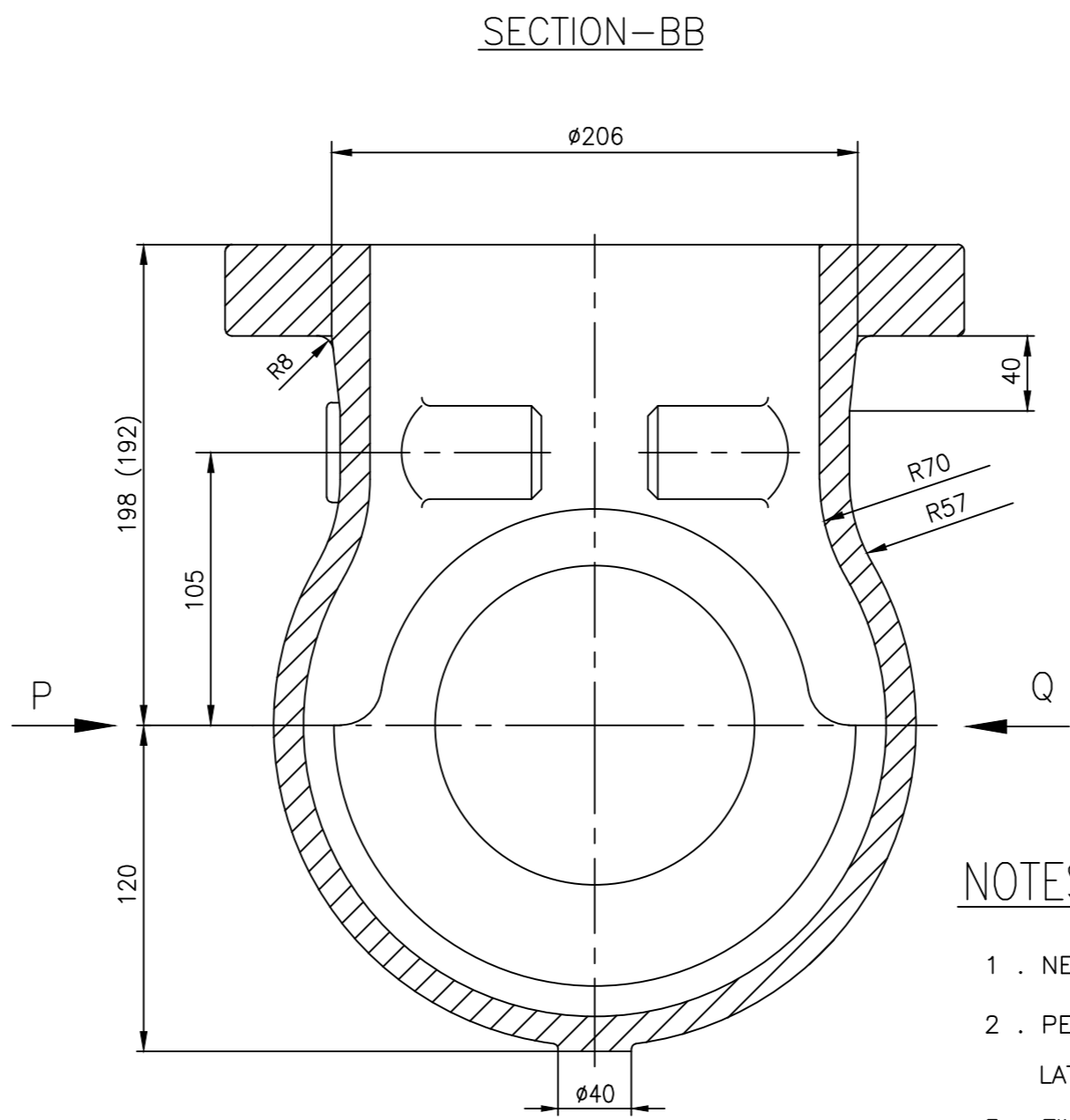
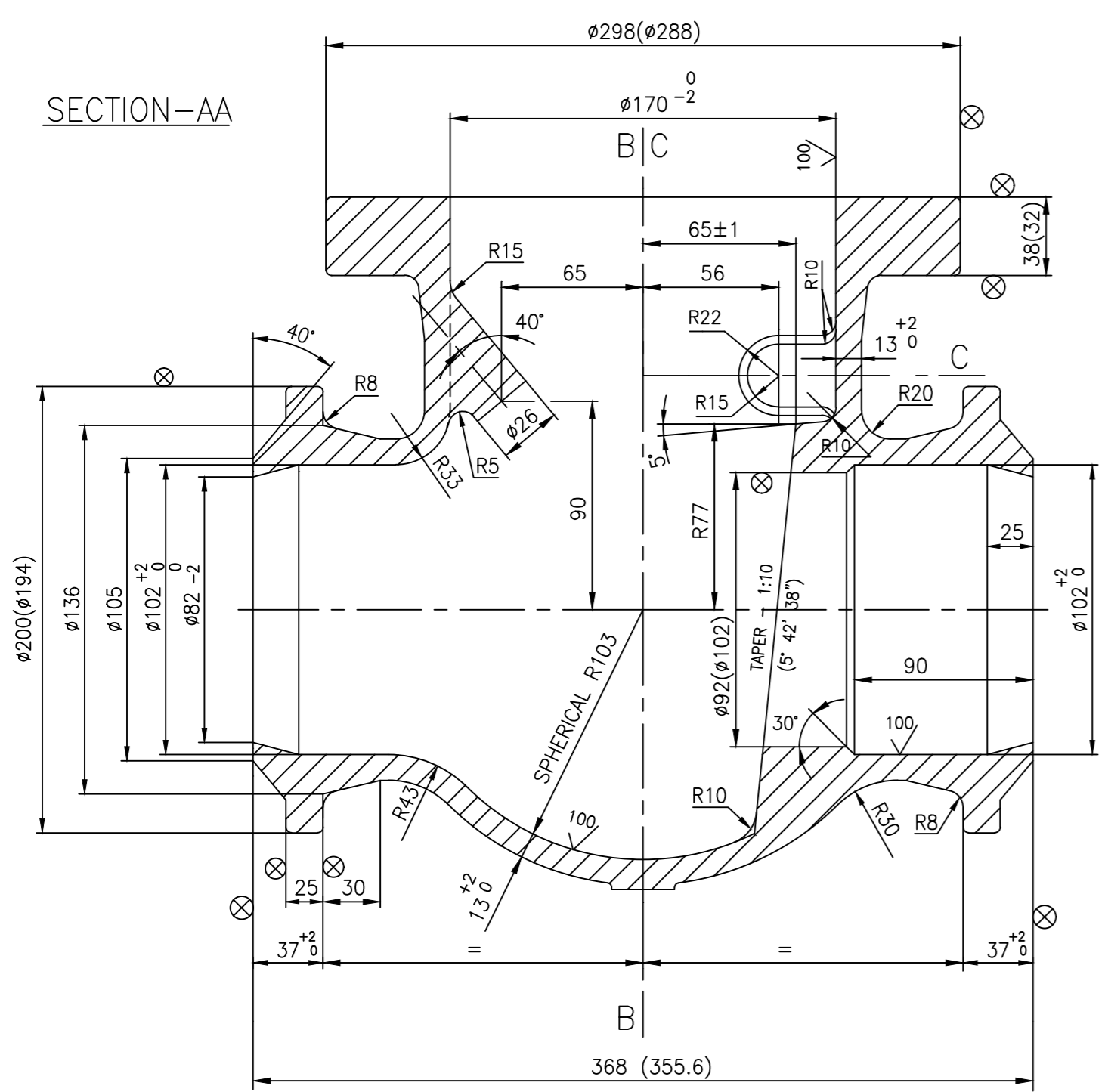
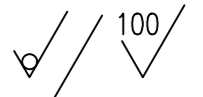
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI - 620014.

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		06.06.2K	
APPD	K.S.RAMAN		06.06.2K	

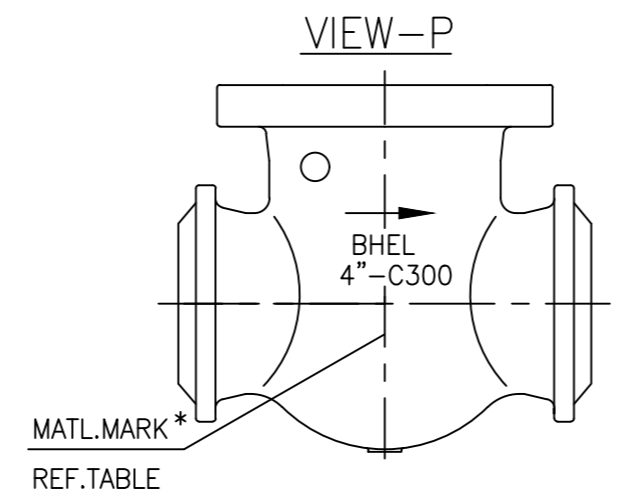
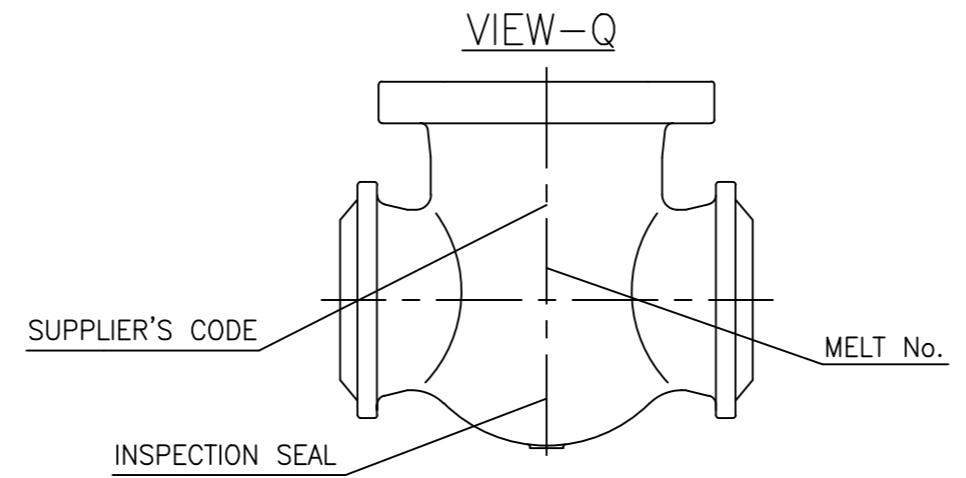
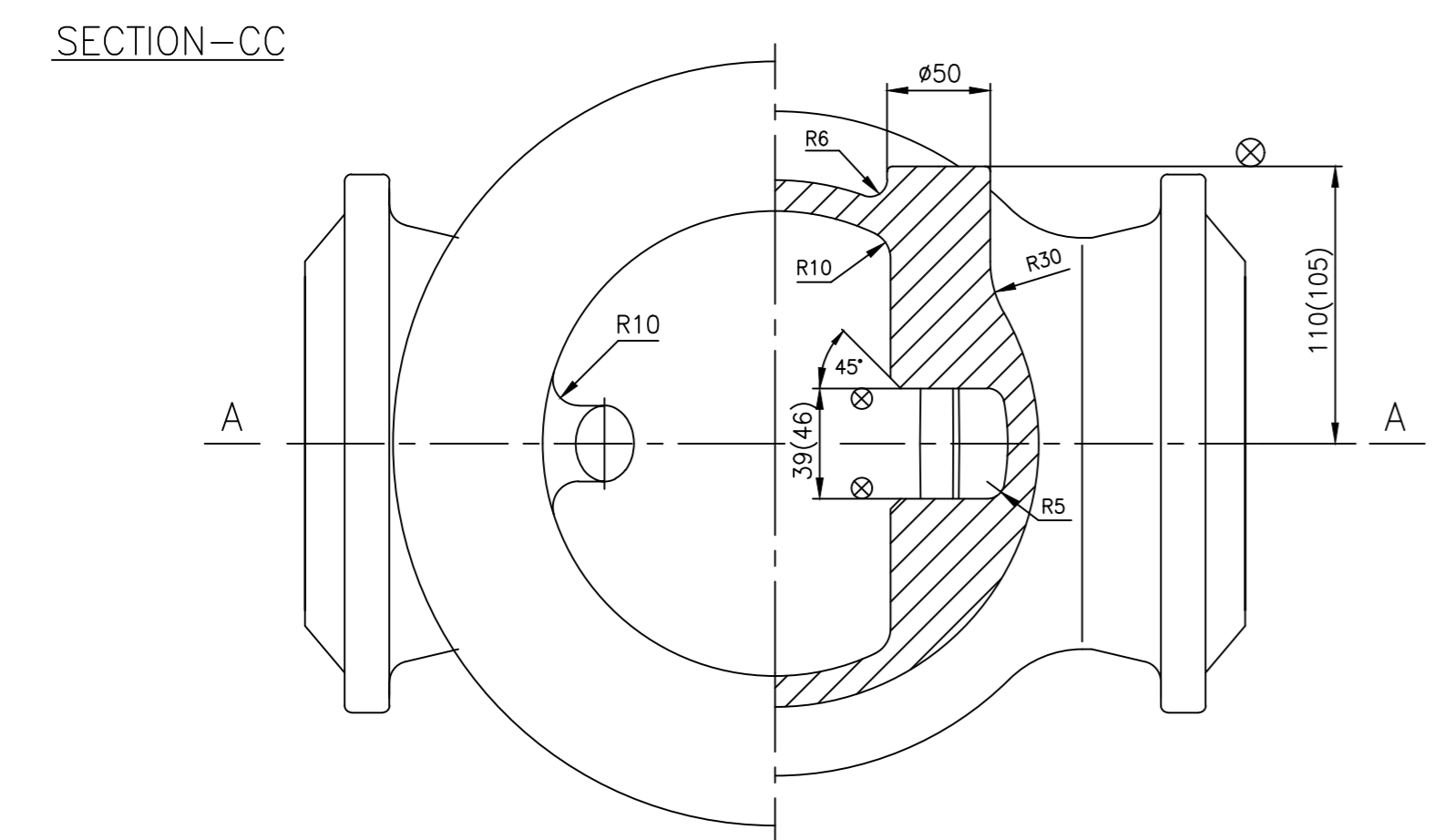
DEPT VL / CODE 320 / SCALE NTS / WEIGHT (KG) 33 / REFERENCE INFORMATIONS CAD REF:C207850R / TITLE BODY (3"-C300) / CARD CODE U 01 / DRAWING NO. 2-V-0000-07850R / REV 03

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.



NOTES:-

- 1 . NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- 2 . PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE TDC.
- 3 . FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
- 4 .  $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- 5 . ALL DETAILS SHOWN IN VIEWS P & Q , EXCEPT MELT No. AND INSPECTION SEAL , ARE TO BE CAST.
- 7 . CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE TDC
- 8 . UNSPECIFIED CASTING RADII 3 - 5 MM
- 9 . HEIGHT OF CASTING LETTERS 20MM
- 10 .  $\otimes$  SURFACES TO BE MACHINED



MATL MARK *	SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
CF3M	02	CASTING	92 203 904	SA351 CF3M ATTEST	SH	46	44.0	--	2-V-Z125-07855R 92 203 904 0000	01
CF8M	01	CASTING	92 200 996	SA351 CF8M ATTEST	SH	46	44.0	--	2-V-Z012-07855R 92 200 996 0000	01

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		CS	
DEPT		VL	
CODE		320	
TITLE		BODY (4"-C300 FV BW)	
SCALE		NTS.	
WEIGHT (KG)		44.0	
REFERENCE INFORMATIONS		DRAWING NO. 2-V-0000-07855R	
NO. OF ITEMS		01	

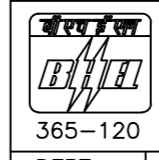
DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		06.05.98	-
APPD	K.SAKETHARAMAN		07.05.98	-

REV	DATE	ALTERED	R.P.SINGH
01	08.09.19	CHD & APPD	SAMEER & SSK
DRAWING TABULATED.			
SL. No. 02 INCLUDED.			

REV	DATE	ALTERED	R.P.SINGH
01	08.09.19	CHD & APPD	SAMEER & SSK
DRAWING TABULATED.			
SL. No. 02 INCLUDED.			

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



**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI - 620014.

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		06.05.98	-
APPD	K.SAKETHARAMAN		07.05.98	-

DEPT	VL
CODE	320

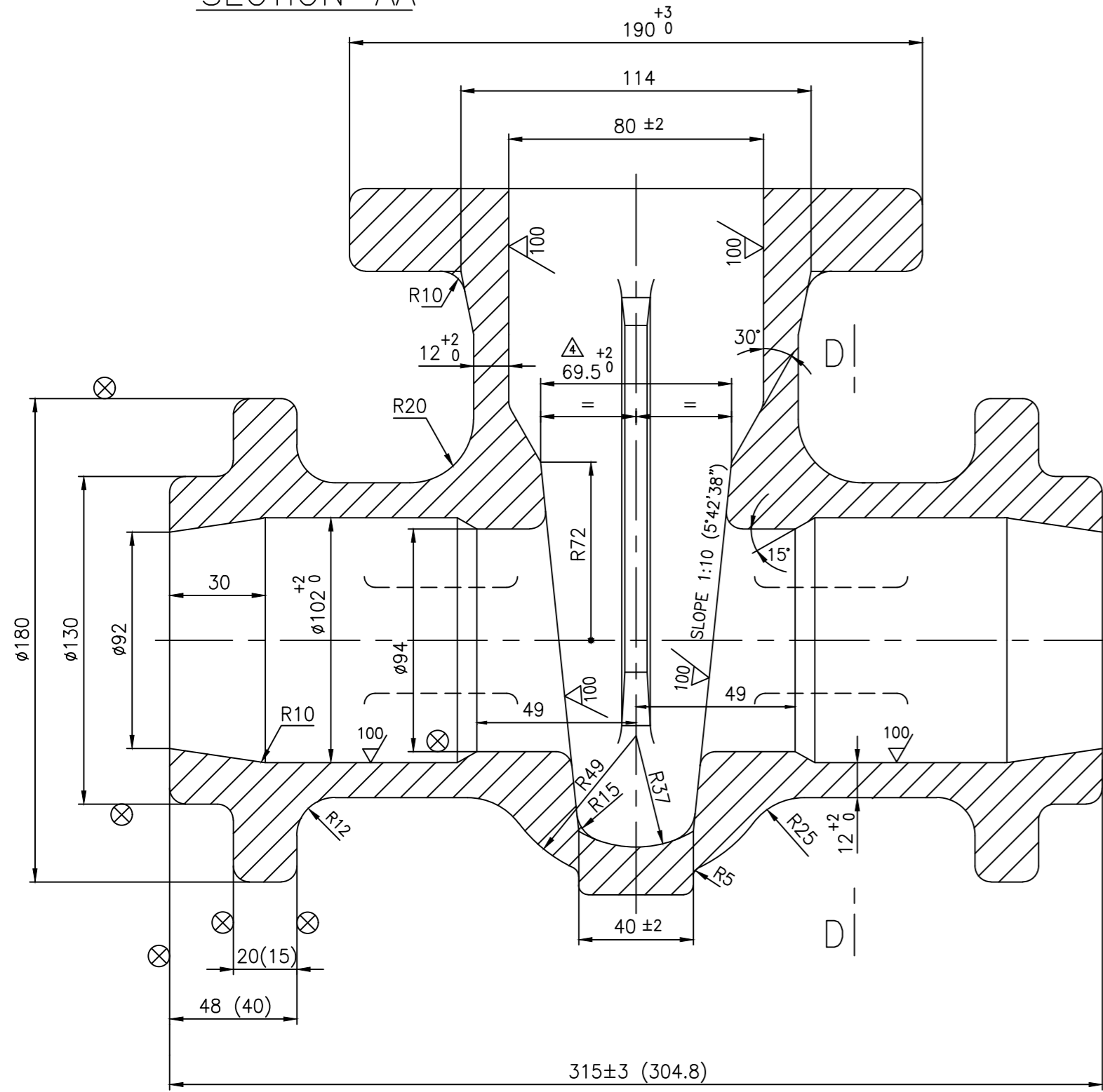
SCALE	NTS.
WEIGHT (KG)	44.0

REFERENCE INFORMATIONS	DRAWING NO.	REV
	2-V-0000-07855R	01

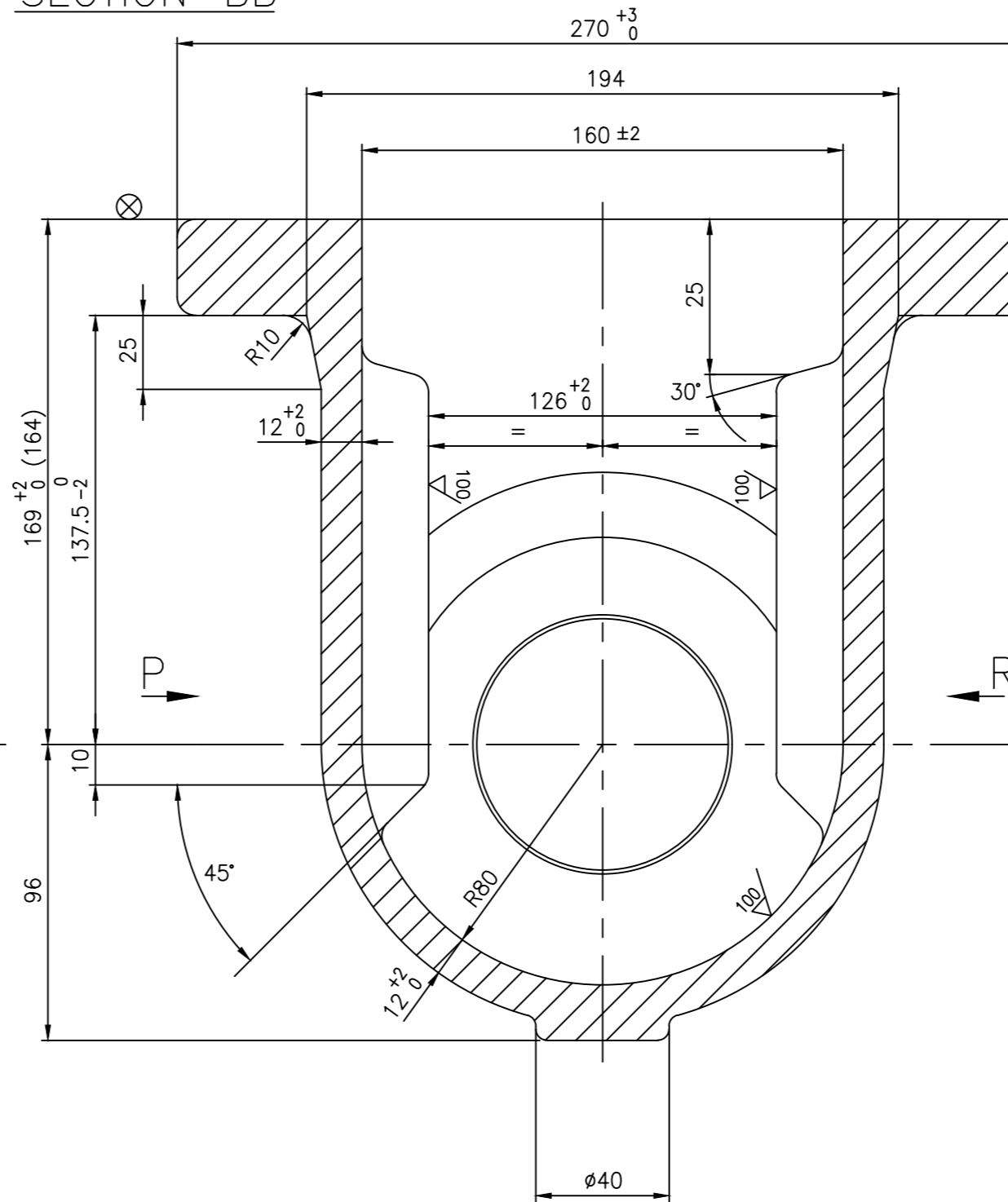
TITLE	CARD CODE
BODY (4"-C300 FV BW)	U 01

DRAWING NO.	REV
2-V-0000-07855R	01

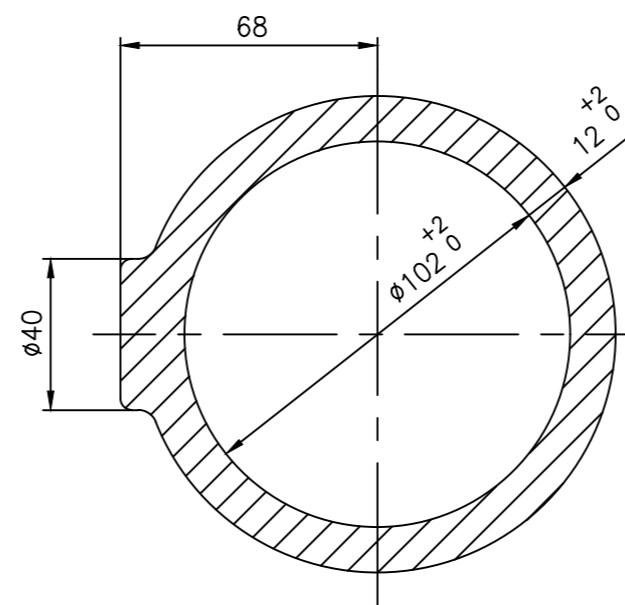
SECTION-AA



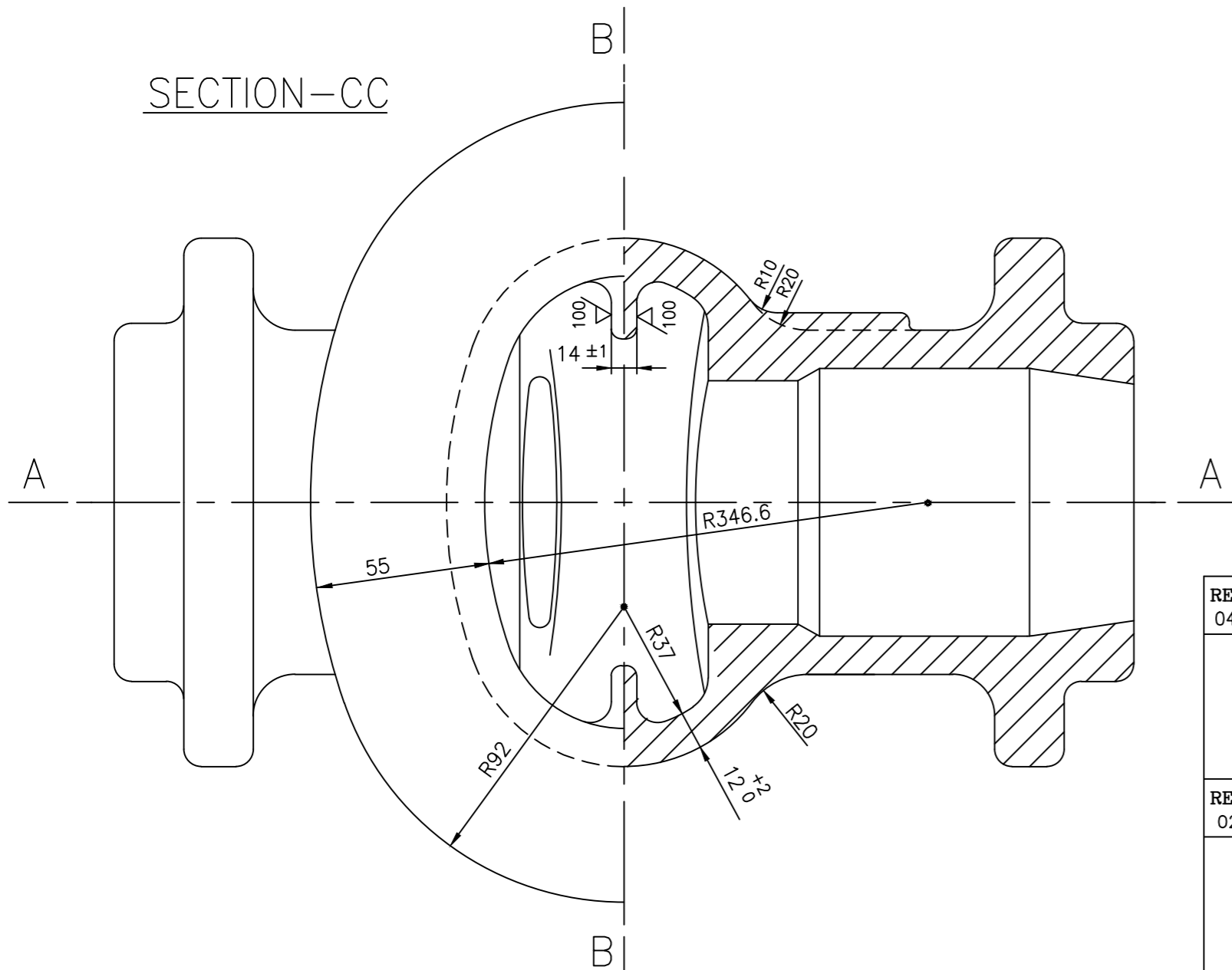
SECTION-BB



SECTION-DD



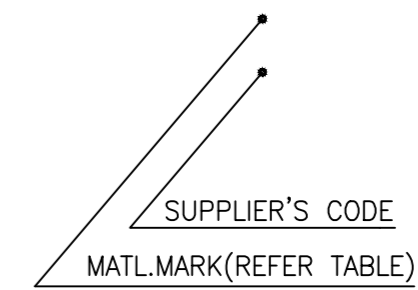
SECTION-CC



CAST IDENTIFICATION MARK

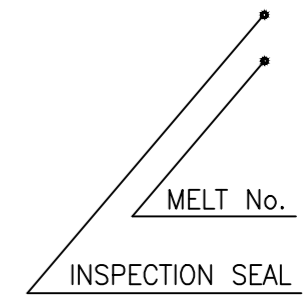
VIEW-P

4"  
150C



VIEW-R

BHEL



NOTES:-

- CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE
- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
- CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
- UNSPECIFIED CASTING RADII R3 TO R5.
- PERMISSIBLE DEVIATIONS OF NON-TOLERANCED CASTING DIMENSIONS REFER LATEST APPLICABLE QUALITY PROCEDURE
- HEIGHT OF CASTING LETTERS-20mm.
- SURFACES TO BE MACHINED.
- FINISH-MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS.
- MELT No. & INSPECTION SEAL TO BE PUNCHED REST OF THE DETAILS ARE TO BE CAST.
- RISER REMAINS ARE TO COMPLETELY REMOVED SUITABLY.
- HEAT TREATMENT FOR ASME 995 CD3MN AS PER ASME STANDARD ASME-995 TABLE 1

(HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

\* SPECIAL NOTES:-

- GUIDE RIB DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCES INDICATED
- BOTH GUIDE RIBS TO BE COPLANER AND TRULY VERTICAL.
- PROPER MATCHING FOR GUIDE RIBS WITH MACHINED WEDGE TO BE ENSURED BEFORE ACCEPTING CAST BODIES PREFERABLE AT THE FOUNDRY.

No OFF	MATL. MARK TO BE CAST	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
04	CF3M	92 203 876	SA351 CF3M ATTEST	S H	46	31	-	2.V.NK76.07944R/1	-
03	CD3MN	92 203 578	SA995 CD3MN ATTEST	REFER NOTE	46	31	-	2.V.NK32.07944R/1	-
02	CF8	92 200 934	SA351 CF8 ATTEST	S H	46	31	-	2.V.N680.07944R/1	-
01	CF8M	92 201 014	SA351 CF8M ATTEST	S H	46	31	-	2.V.N759.07944R/1	-

REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH
04	28.10.19	CHD & APPD	SAMEER & SSK	03	03.08.19	CHD & APPD	SSK & KRS
DIMENSION 69.5 <sup>+2</sup> <sub>0</sub> WAS 69.5±2.				SL.No. 04 INCLUDED			
02	29.08.18	CHD & APPD	SSK & KRS	01	23.10.98	CHD & APPD	K.S.RAMAN
SL.No. 03 INCLUDED NOTE No.11 INCLUDED				SL.No. 02 INCLUDED			

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT DRG.RETRACED WITH REV.01 ON 23.10.98

	<b>BHARAT HEAVY ELECTRICALS LTD.,</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI -620014.	DRN	K.P.LEON	SIGN		DATE	23.10.98	NO.OF VAR.	
		CHD	N.DHANAPAL				23.10.98		
		APPD	K.S.RAMAN				23.10.98		

DEPT VL 365-120  
CODE 320

SCALE NTS.  
WEIGHT (KG) 31.0

REFERENCE INFORMATIONS CAD:C207944R

TITLE **BODY**  
(4"-C150)

CARD CODE U 01

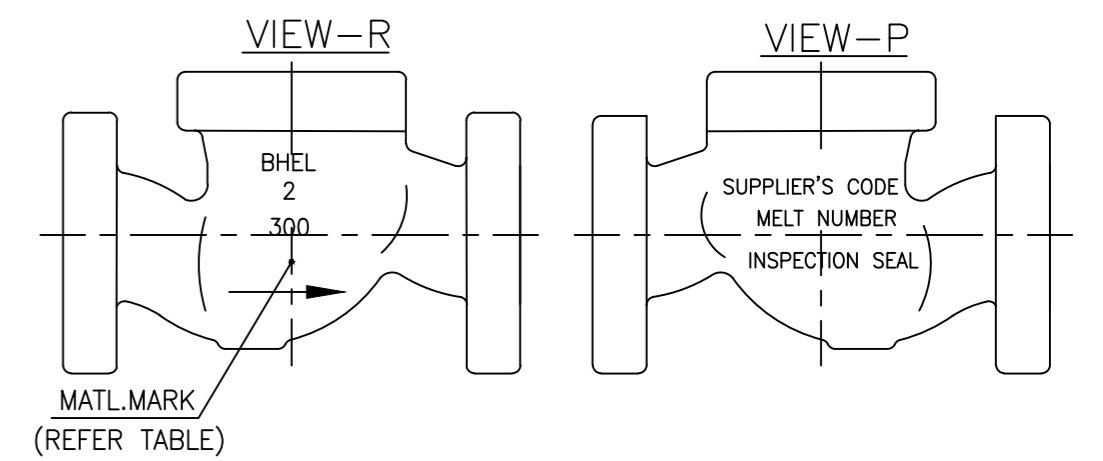
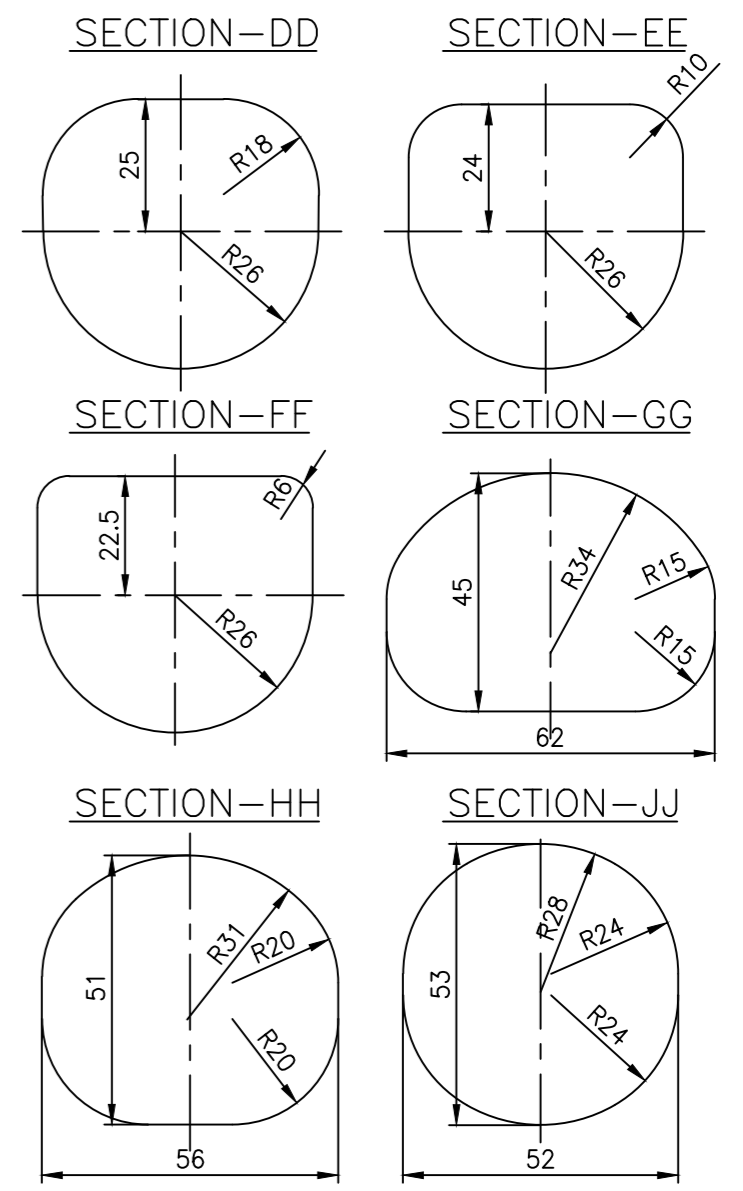
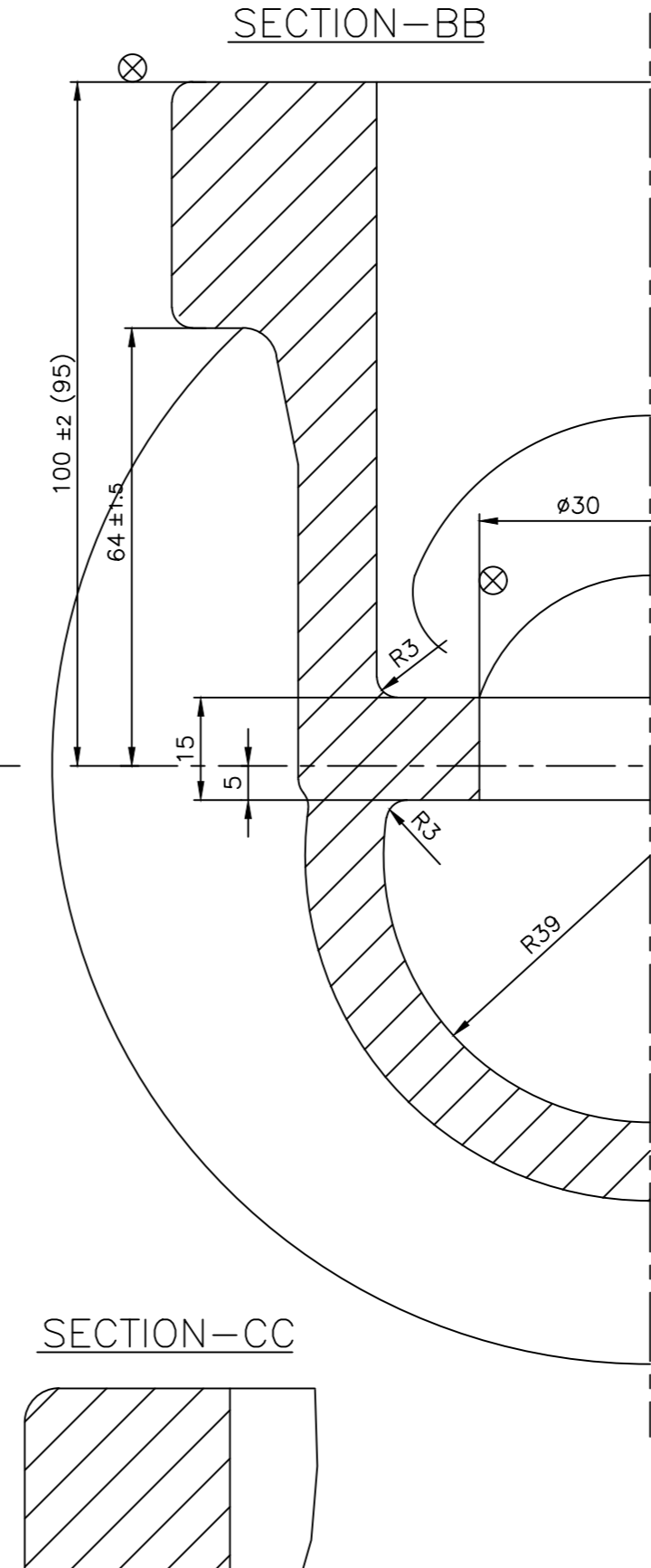
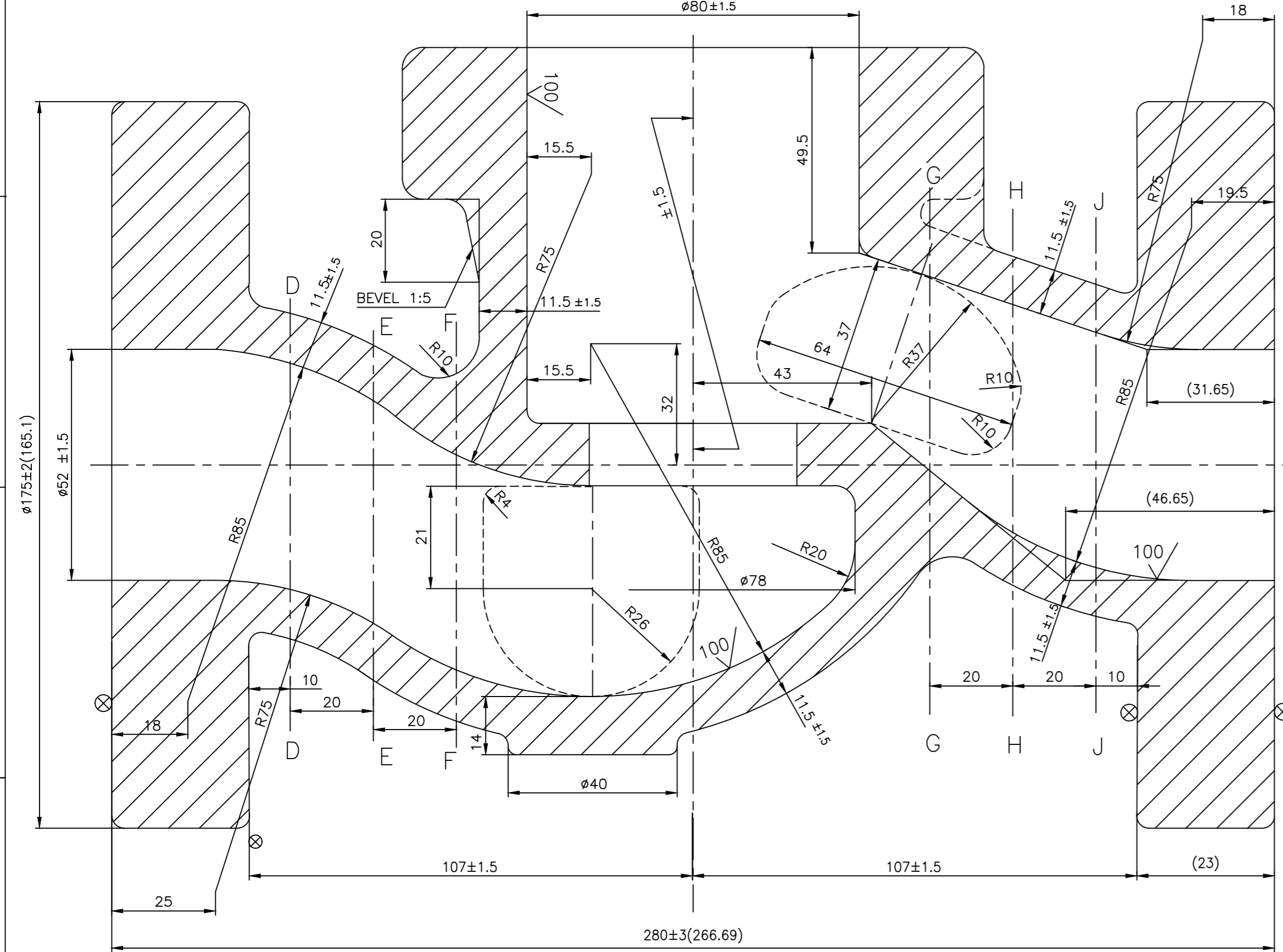
DRAWING NO. 2-V-0000-07944R

REV 04

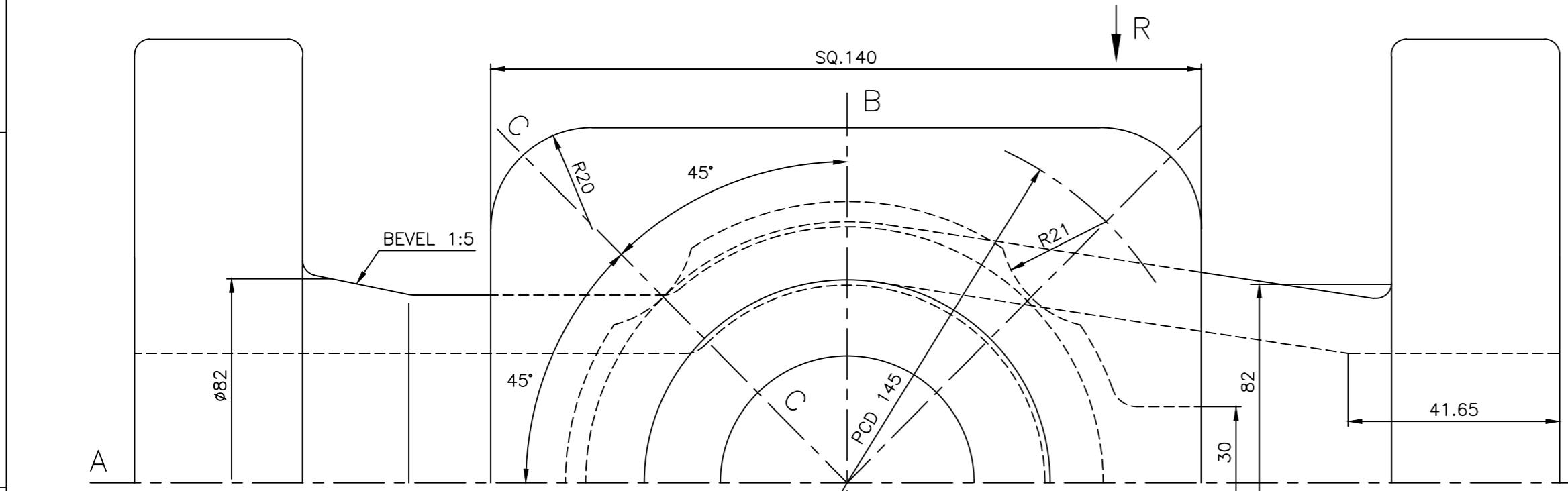
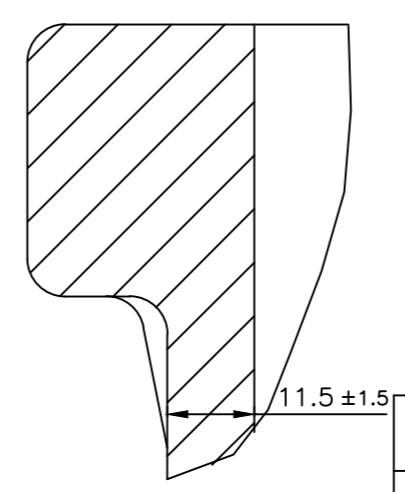
SECTION-AA

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

100



SECTION-CC



- NOTES:**
1. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
  2. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED IN THIS DRG. ON ALL MACHINABLE SURFACES.
  3. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
  4. 100 INDICATES THE CASTING SURFACES WHICH MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
  5. UNSPECIFIED CASTING RADII - R5 MAXIMUM.
  6. ALL DETAILS IN VIEW P&R EXCEPT MELT No. & INSPECTION SEAL ARE TO BE CAST. HEIGHT OF CASTING LETTERS=12mm.
  7. FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
  8. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

CF3M	#05	CASTING	-	SA351 CF3M ATTEST	SH	-	20	-	2.V.P883.08237R	-
CF8M	#04	CASTING	-	SA351 CF8M ATTEST	SH	-	20	-	2.V.UB02.08237R	-
CF8	#03	CASTING	-	SA351 CF8 ATTEST	SH	-	20	-	2.V.U930.08237R	-
CF8M	02	CASTING	-	SA351 CF8M ATTEST	SH	-	20	-	92 206 232 0000	-
CF8	01	CASTING	-	SA351 CF8 ATTEST	SH	-	20	-	92 206 121 0000	-
									92 203 703 0000	-
									92 202 086 0000	-
									92 201 206 0000	-
MATL. MARK *	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No

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

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

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	N.DHANAPAL		22.07.2k	-
APPD	K.S.RAMAN		22.07.2k	-

DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS	NO. OF ITEMS
CODE	320	NTS	20	CAD REF: C208237R	-
TITLE	BODY (2"-300C FL)		CARD CODE	DRAWING NO.	REV
			U 01	2-V-0000-08237R	04

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 26.09.22
REV	SL. No. 05 INCLUDED	
04		
ZONE		
-		

DRAWING NO. 2-V-0000-08245R

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

SECTION-AA

SECTION-BB

SECTION-CC

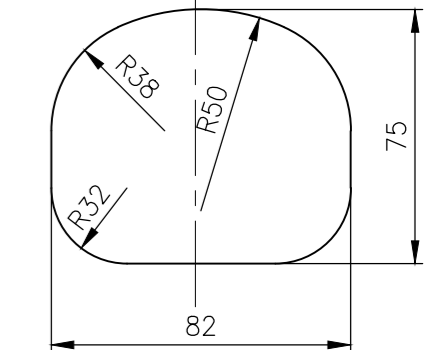
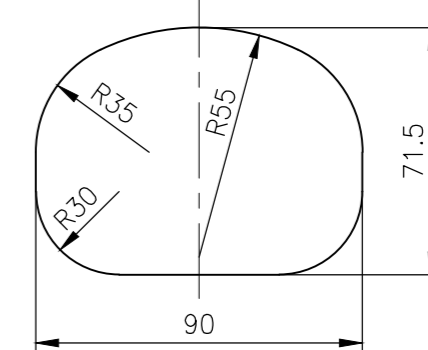
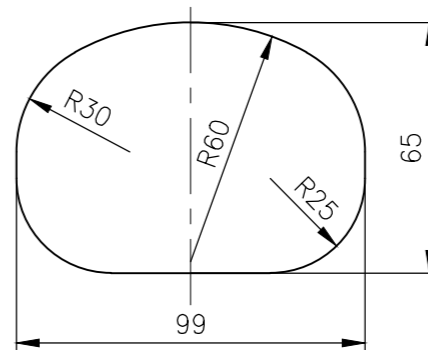
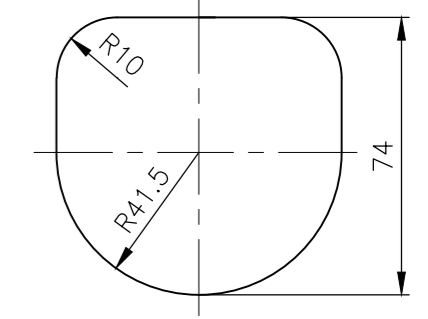
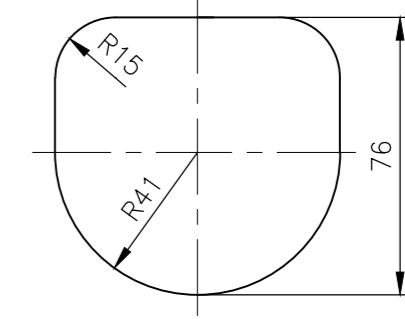
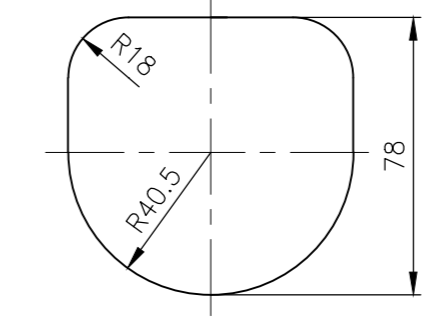
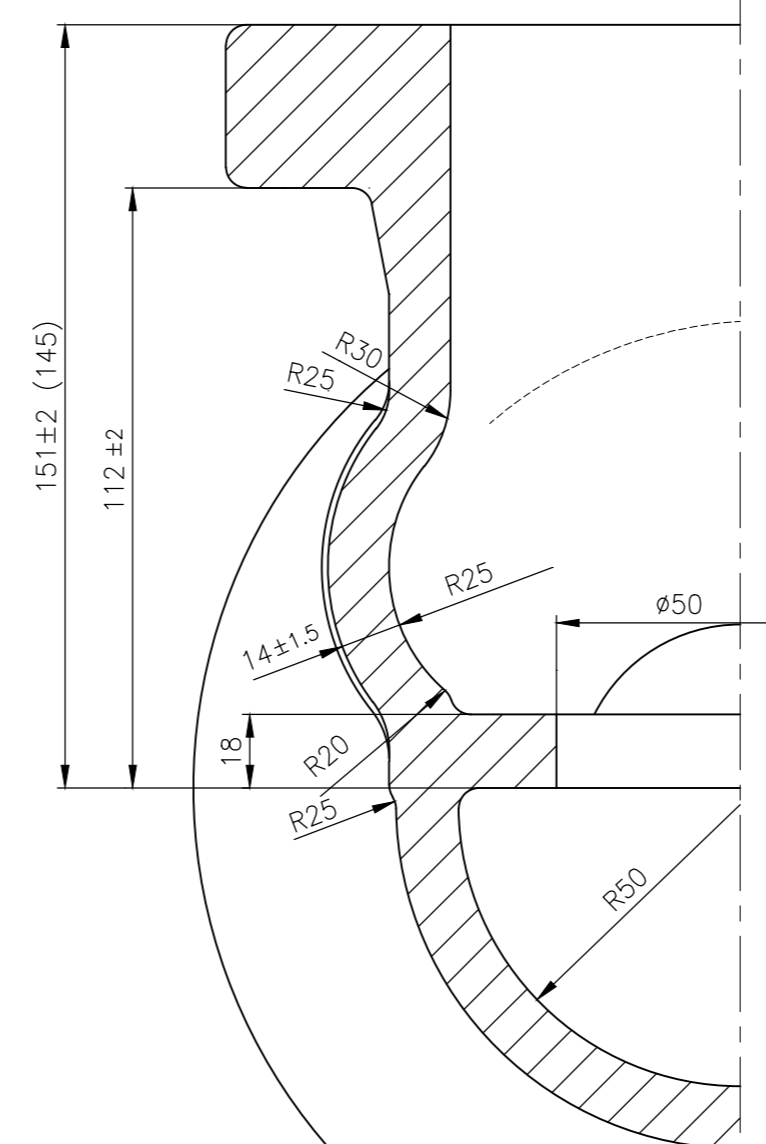
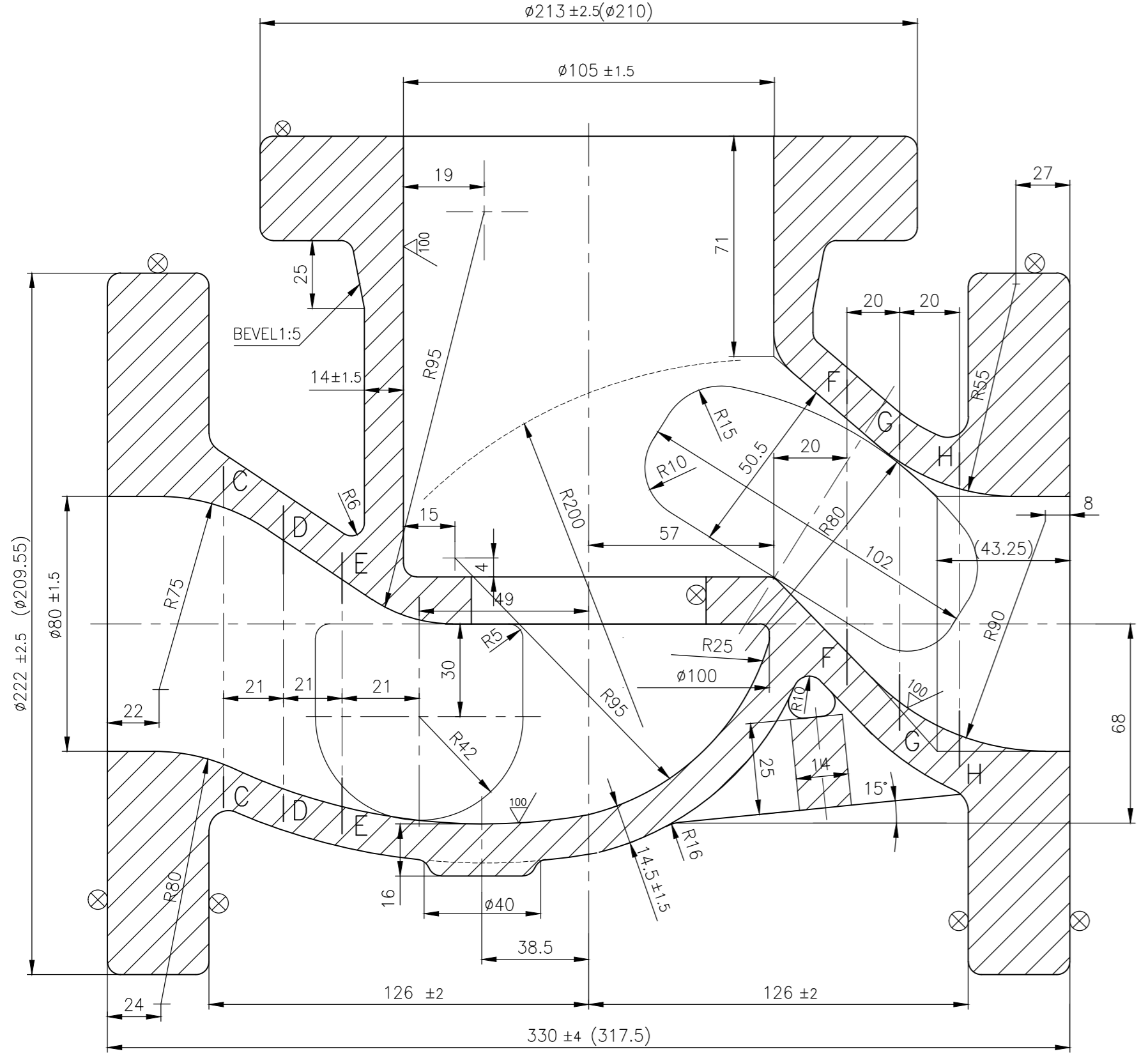
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SECTION-EE

SECTION-FF

SECTION-GG

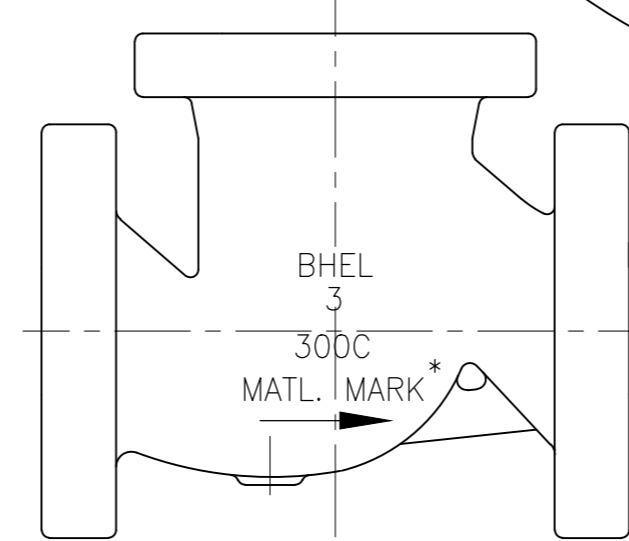
SECTION-HH



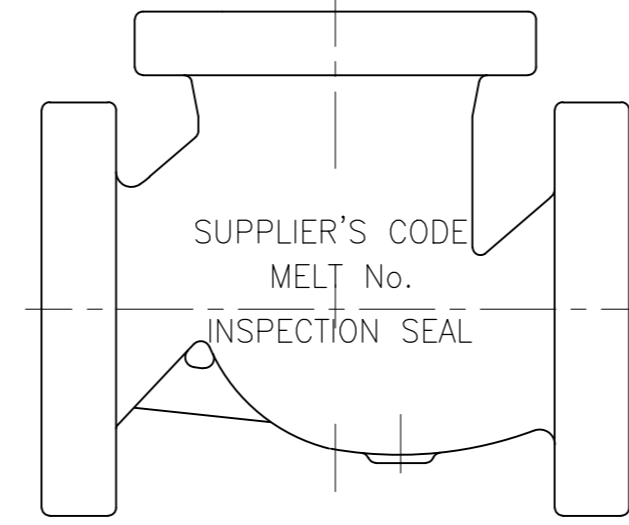
NOTES:

1. CASTINGS SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
2. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED IN THIS DRAWING ON ALL MACHINABLE SURFACES.
3. FOR THE PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON-TOLERANCED CASTING DIMENSIONS REFER APPLICABLE TDC (LATEST REVISION).
4. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
5. UNSPECIFIED CASTING RADII-R5 MAX.
6. ▽ INDICATES THE CASTING SURFACES WHICH MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
7. ALL DETAILS IN VIEW "P" & "R" EXCEPT MELT No. & INSPECTION SEAL ARE TO BE CAST. HEIGHT OF CASTING LETTERS-12MM.
8. FINISH MACHINED DIMENSIONS INDICATED WITHIN BRACKETS ARE FOR INFORMATION ONLY.
9. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

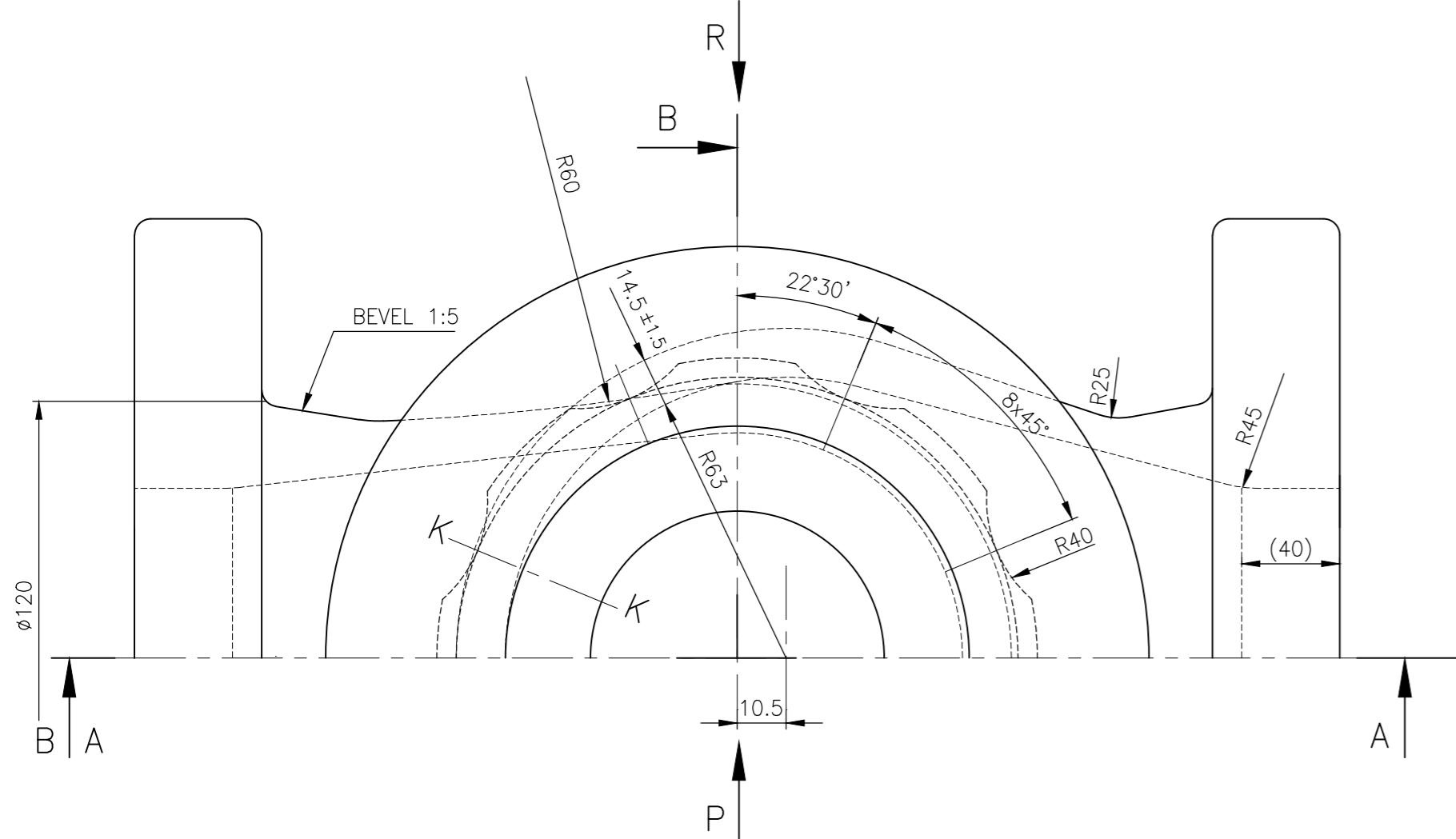
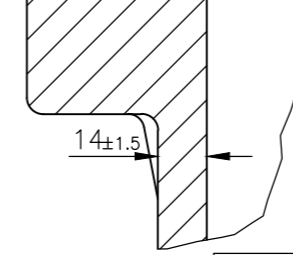
VIEW-P



VIEW-R



SECTION-KK

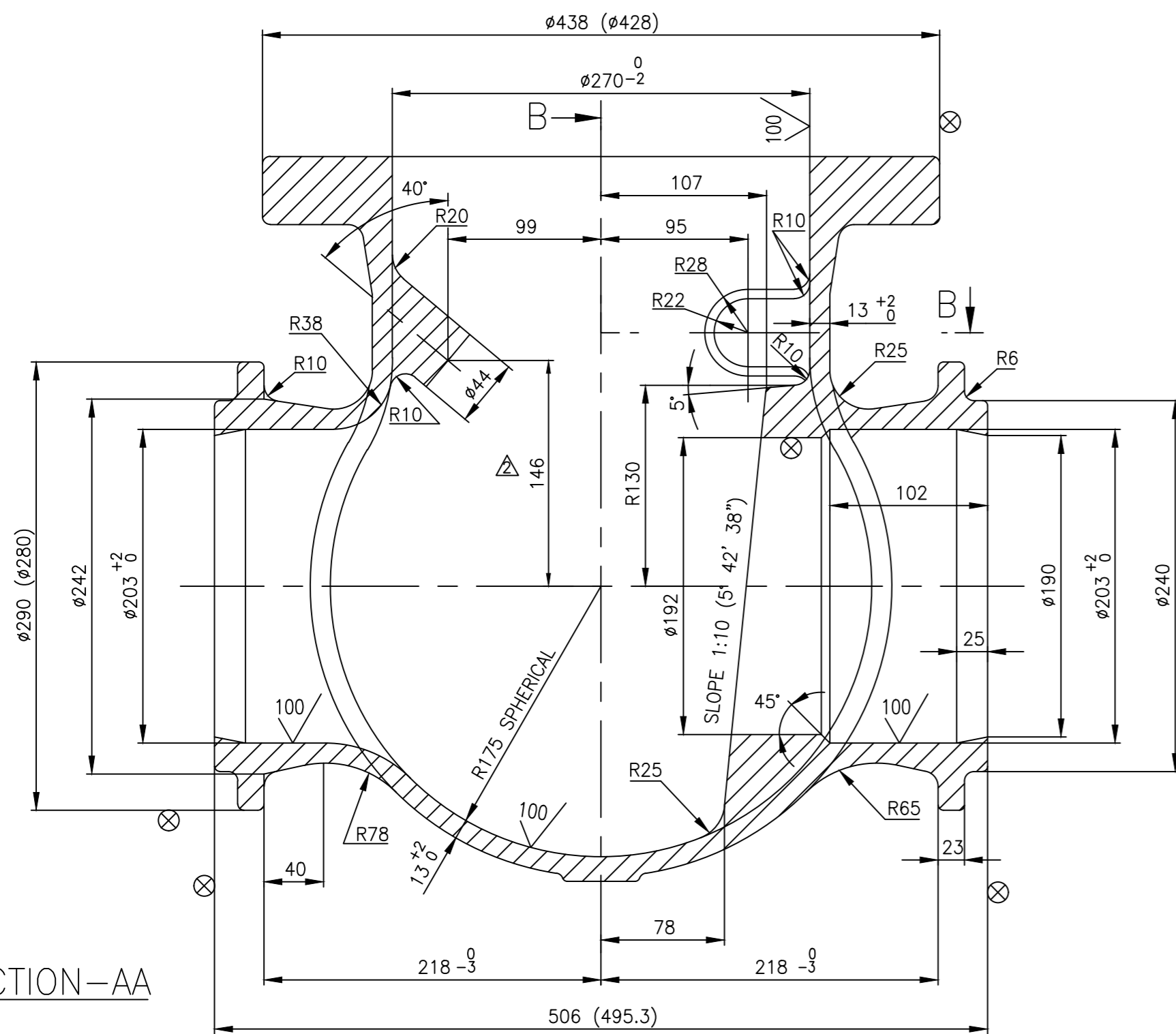


MATL. MARK *	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M	#05	CASTING	-	SA351 CF3M ATTEST	SH	--	41.0	92 206 234 0000	2.V.UB19.08245R	-
CF8M	#04	CASTING	-	SA351 CF8M ATTEST	SH	--	41.0	92 206 122 0000	2.V.UB03.08245R/01	-
CF3M	03	CASTING	-	SA351 CF3M ATTEST	SH	--	41.0	92 203 842 0000	2.V.P767.08245R/01	-
CF8	#02	CASTING	-	SA351 CF8 ATTEST	SH	--	41.0	92 203 776 0000	2.V.P760.08245R/01	-
CF8M	01	CASTING	-	SA351 CF8M ATTEST	SH	--	41.0	92 201 207 0000	2.V.P386.08245R/01	-

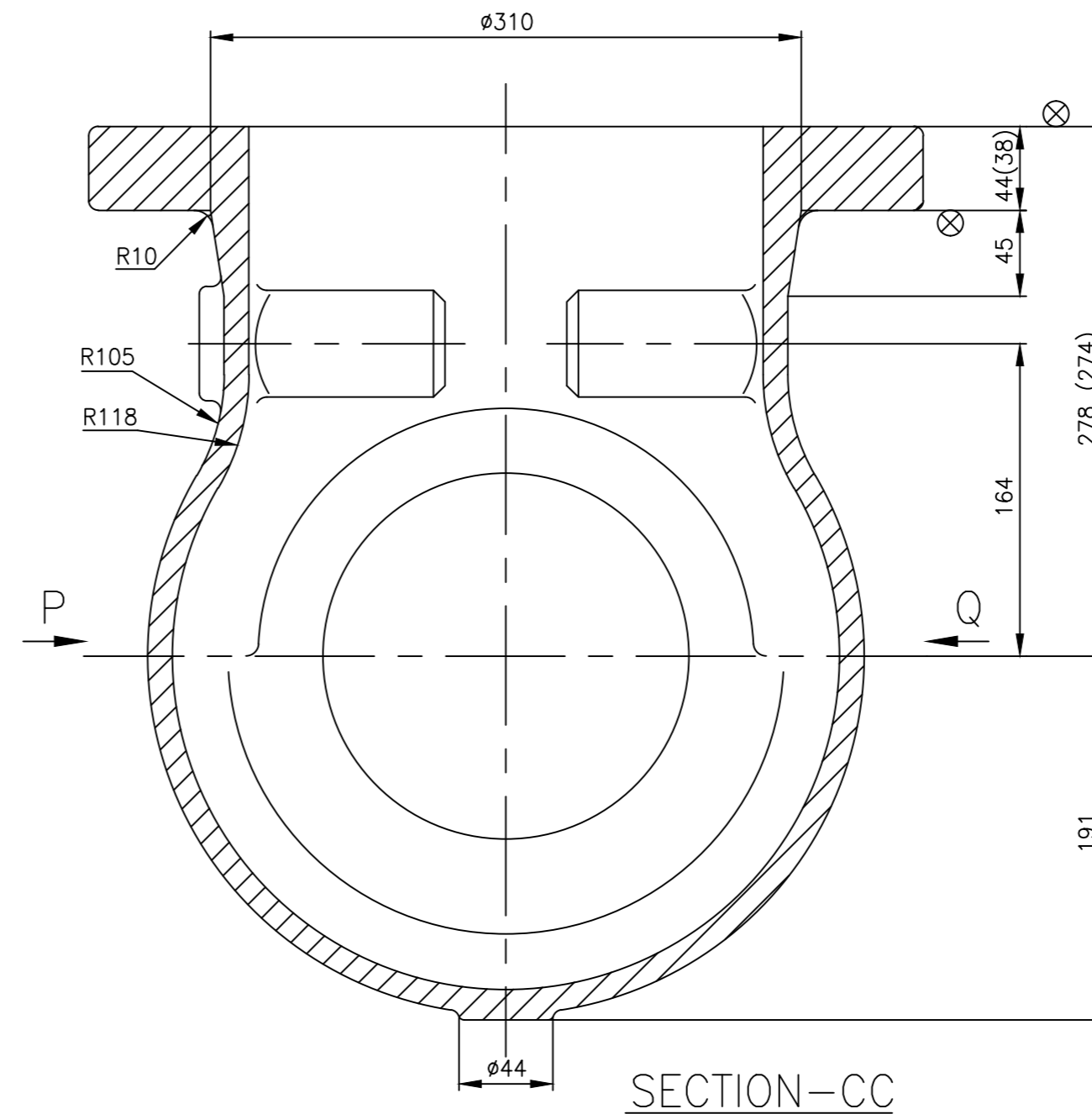
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				DRN	NAME	SIGN	DATE	NO. OF VAR.
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.				365-190	K.P.LEON		18.08.2k	-
				02.03.2021	N.DHANAPAL		18.08.2k	-
					K.S.RAMAN		18.08.2k	-
DEPT				VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
320					NTS	41.0	CAD:C208245R	-
TITLE				CARD CODE	DRAWING NO.		REV	
BODY (3"-C300 FL)				U 01	2-V-0000-08245R		05	

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 27.09.22
REV 05	SL. No. 05 INCLUDED.	
ZONE -		

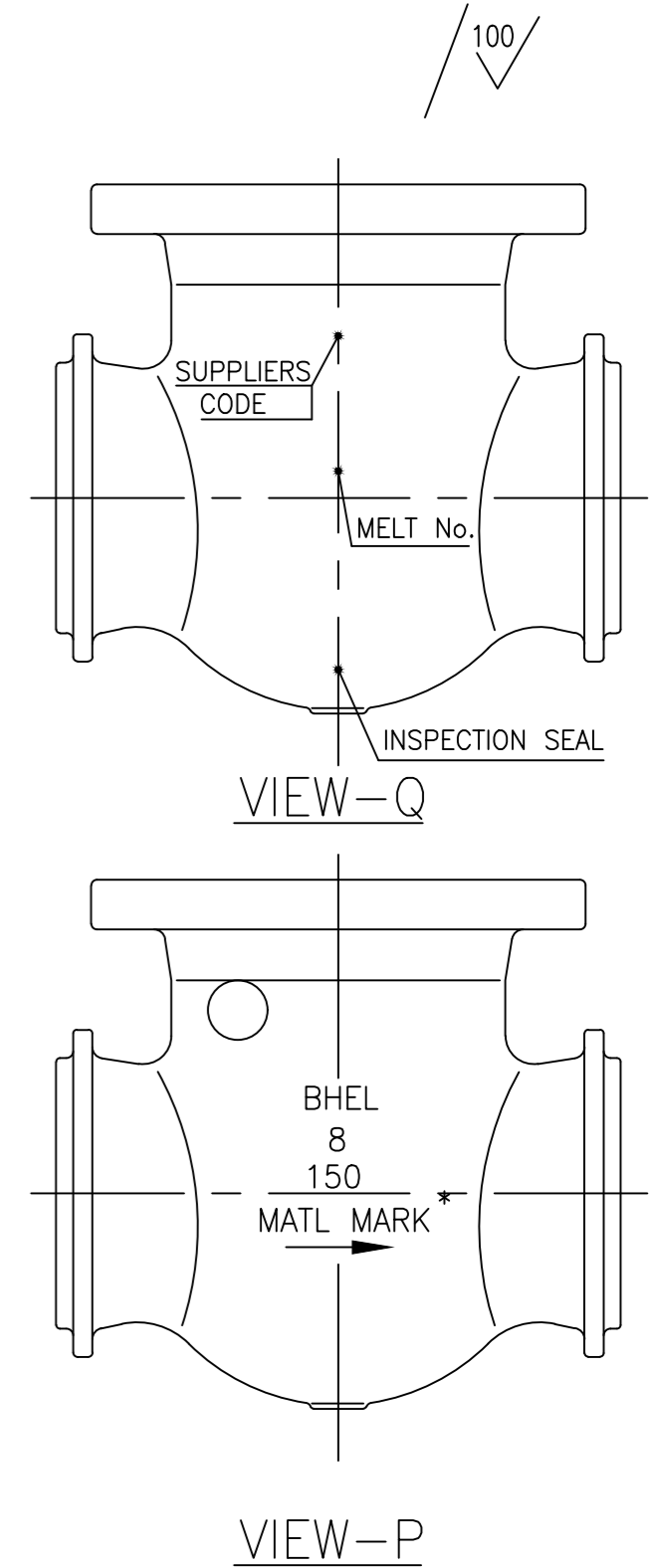
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.



SECTION-AA

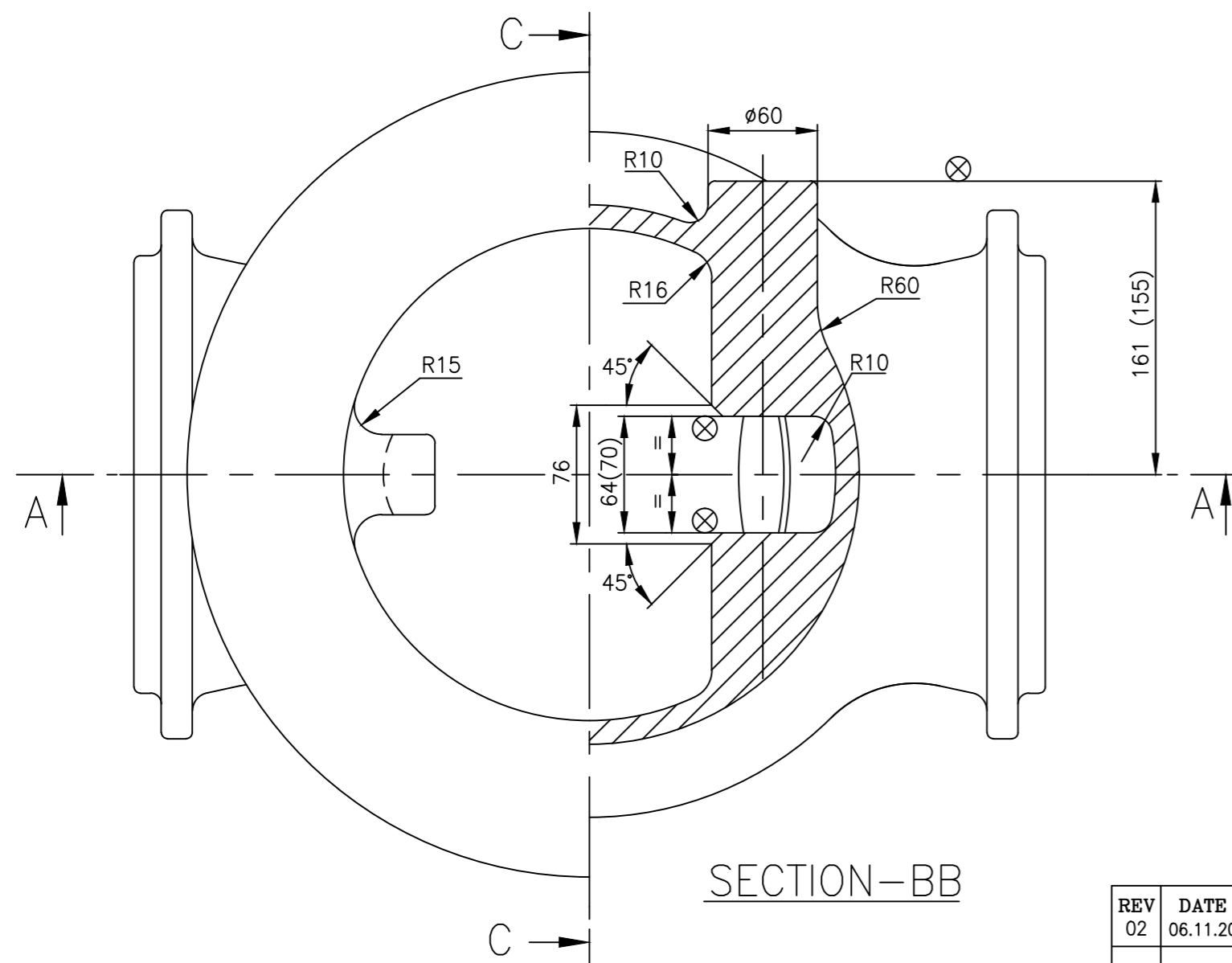


SECTION-CC



VIEW-P

VIEW-Q



SECTION-BB

NOTES:-

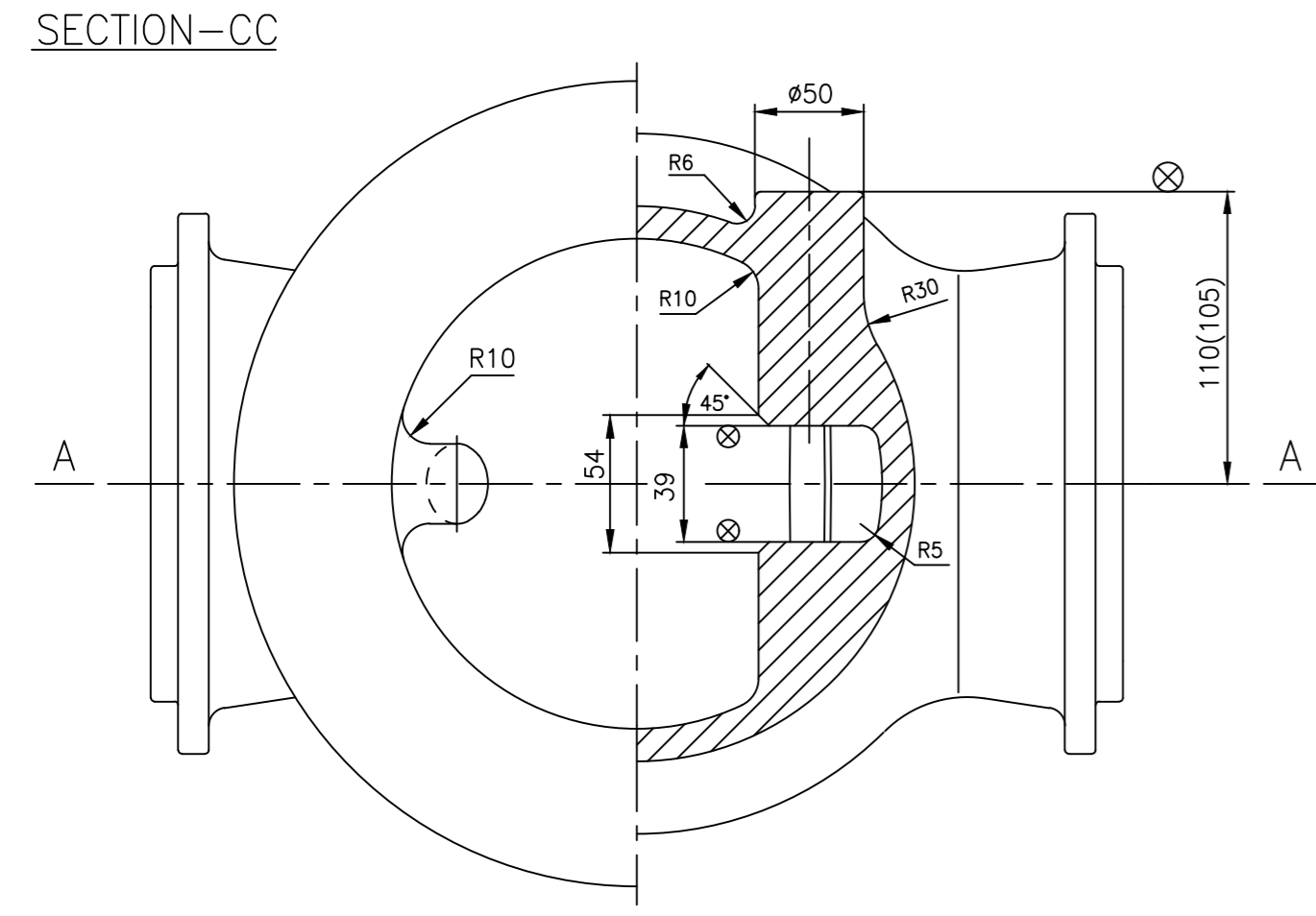
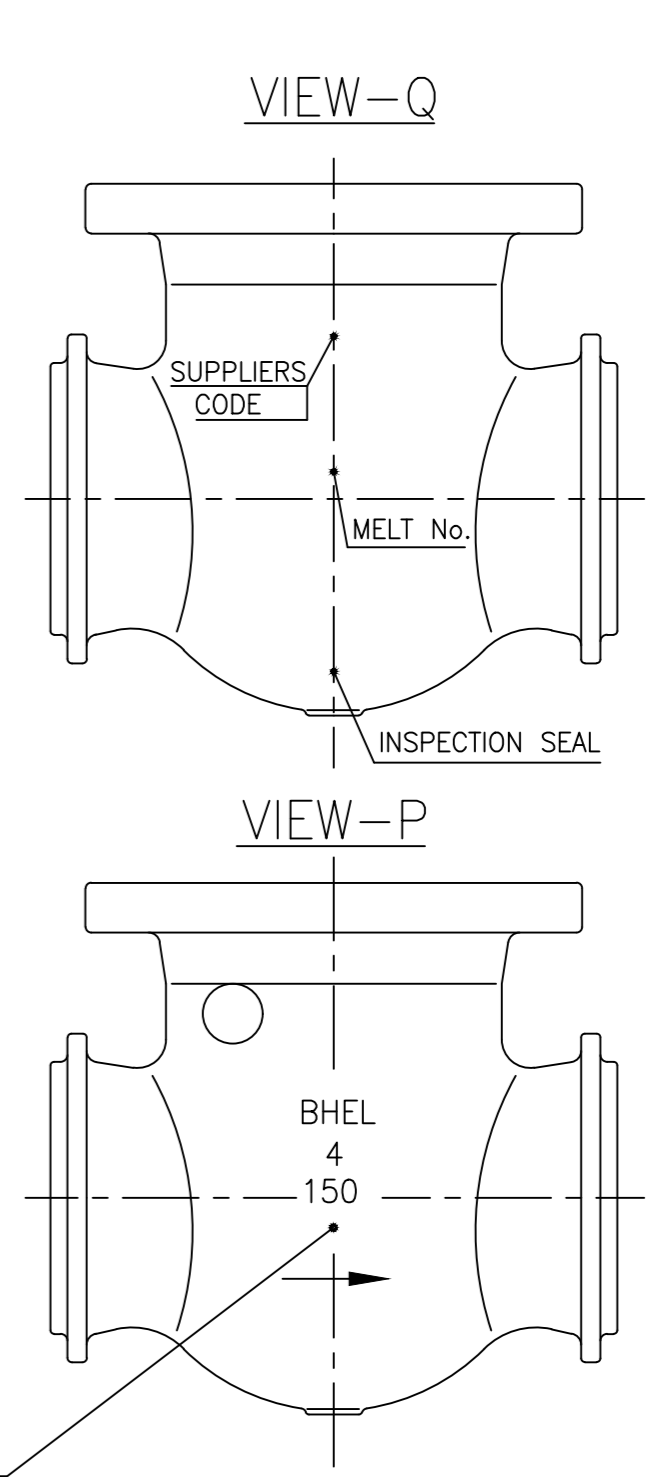
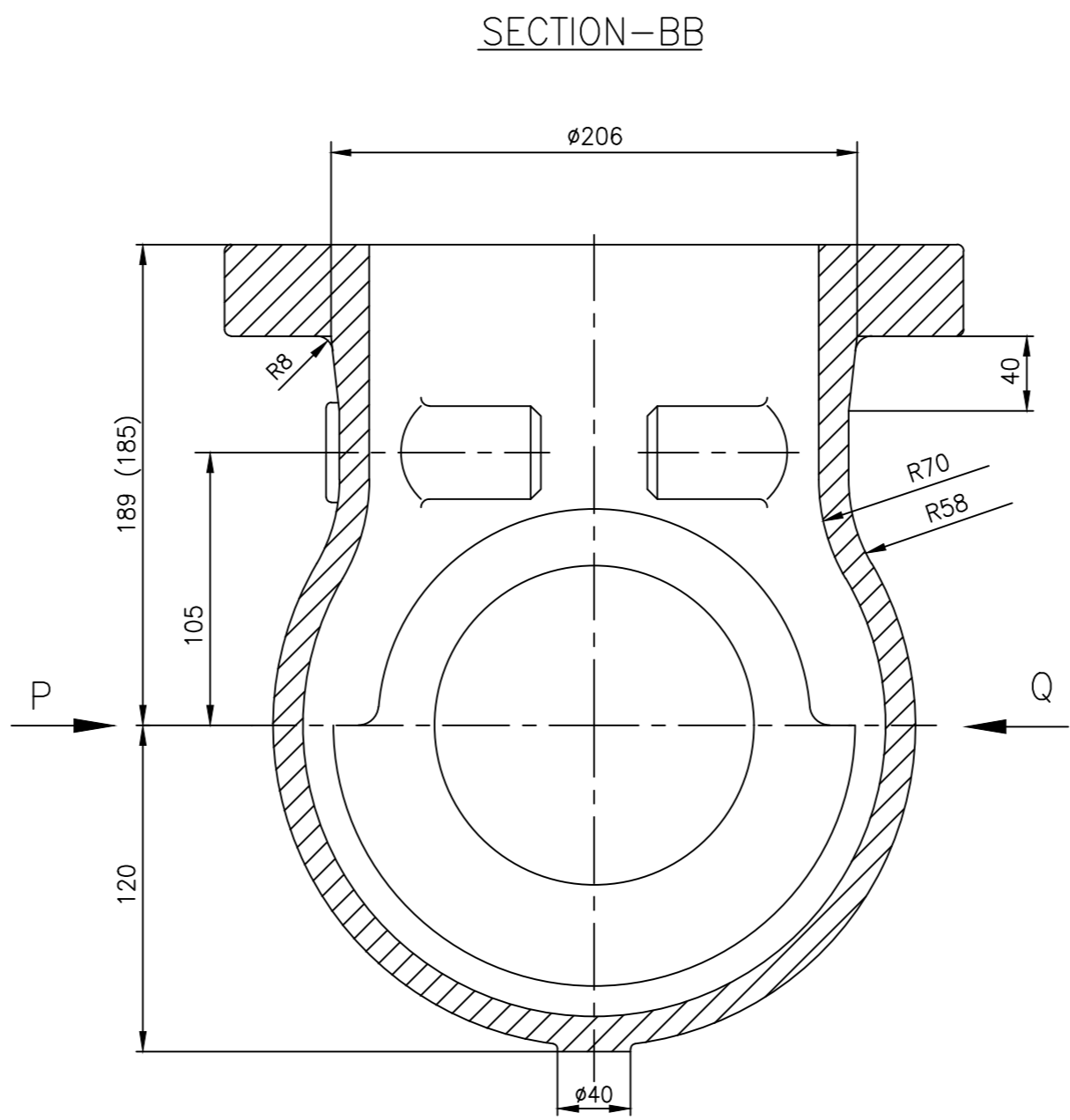
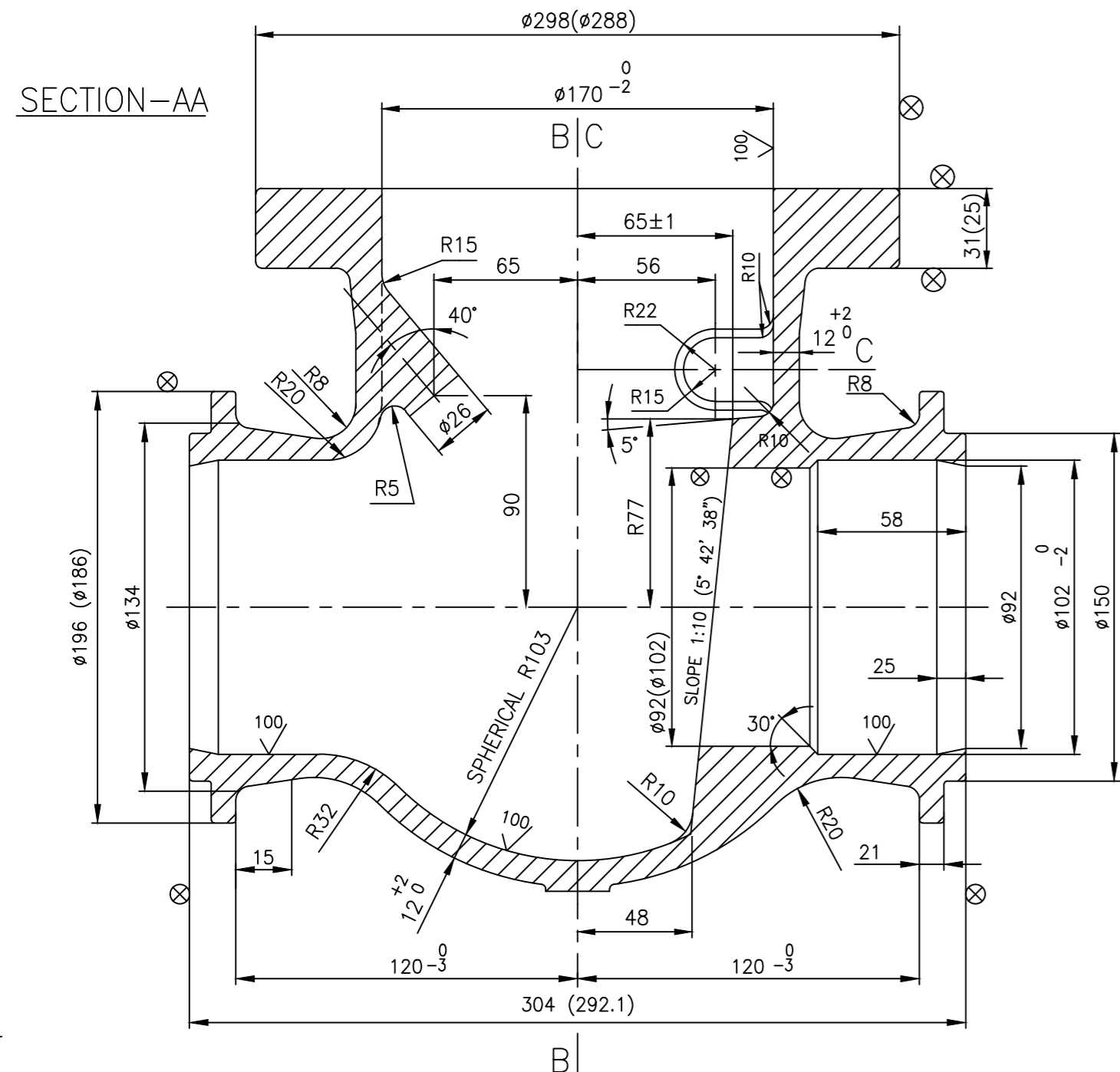
1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
2. PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE QUALITY PROCEDURE.
3. FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4.  $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
5. ALL DETAILS SHOWN IN VIEWS P & Q, EXCEPT MELT No. AND INSPECTION SEAL, ARE TO BE CAST.
6. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
7. UNSPECIFIED CASTING RADII 3 - 5 MM
8. HEIGHT OF CASTING LETTERS 20MM
9.  $\otimes$  SURFACES TO BE MACHINED

REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH
02	06.11.20	CHD & APPD	SAMEER & SSK	01	08.09.19	CHD & APPD	SAMEER & SSK
DIMN. 146 INCLUDED DCP No. 802602				DRAWING TABULATED. SL. No. 02 INCLUDED.			

MATL MARK	SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
CF3M	02	CASTING	92 203 899	SA351 CF3M ATTEST	SH	46	--	82.0	2-V-Z124-08500R/1 92 203 899 0000	01
CF8M	01	CASTING	92 201 382	SA351 CF8M ATTEST	SH	46	--	82.0	2-V-Z045-08500R/1 92 201 382 0000	01

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		CS			
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.	DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATIONS
	320		NTS	82.0	
	TITLE	CARD CODE	DRAWING NO.		
BODY (8"-150C FV BW)		U 01	2-V-0000-08500R 02		



NOTES:-

1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
2. PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE QUALITY PROCEDURE.
3. FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4.  $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
5. ALL DETAILS SHOWN IN VIEWS P & Q, EXCEPT MELT No. AND INSPECTION SEAL ARE TO BE CAST.
6. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
7. UNSPECIFIED CASTING RADII 3 - 5 MM
8. HEIGHT OF CASTING LETTERS 20MM
9.  $\otimes$  SURFACES TO BE MACHINED
10. HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1  
(HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

MATL.MARK(REFER TABLE)

SL No	MATL. MARK TO BE CAST	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
04	CF3M	92 203 894	SA351 CF3M (ATTEST)	SH	46	32.0	-	2.V.Z129.13501R	01
03	CD3MN	92 203 614	SA995 CD3MN (ATTEST)	REFER NOTE	46	32.0	-	2.V.Z113.13501R	01
02	CF8	92 203 039	SA351 CF8 (ATTEST)	SH	46	32.0	-	2.V.Z033.13501R	01
01	CF8M	92 201 385	SA351 CF8M (ATTEST)	SH	46	32.0	-	2.V.Z046.13501R	01

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

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

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	T.R.RAMAMURTHY		04.06.02	-
APPD	K.S.RAMAN		04.06.02	-

DEPT VL: 365-120  
CODE 320

SCALE: NTS.  
WEIGHT (KG): 32.0

REFERENCE INFORMATIONS: CAD:C213501R

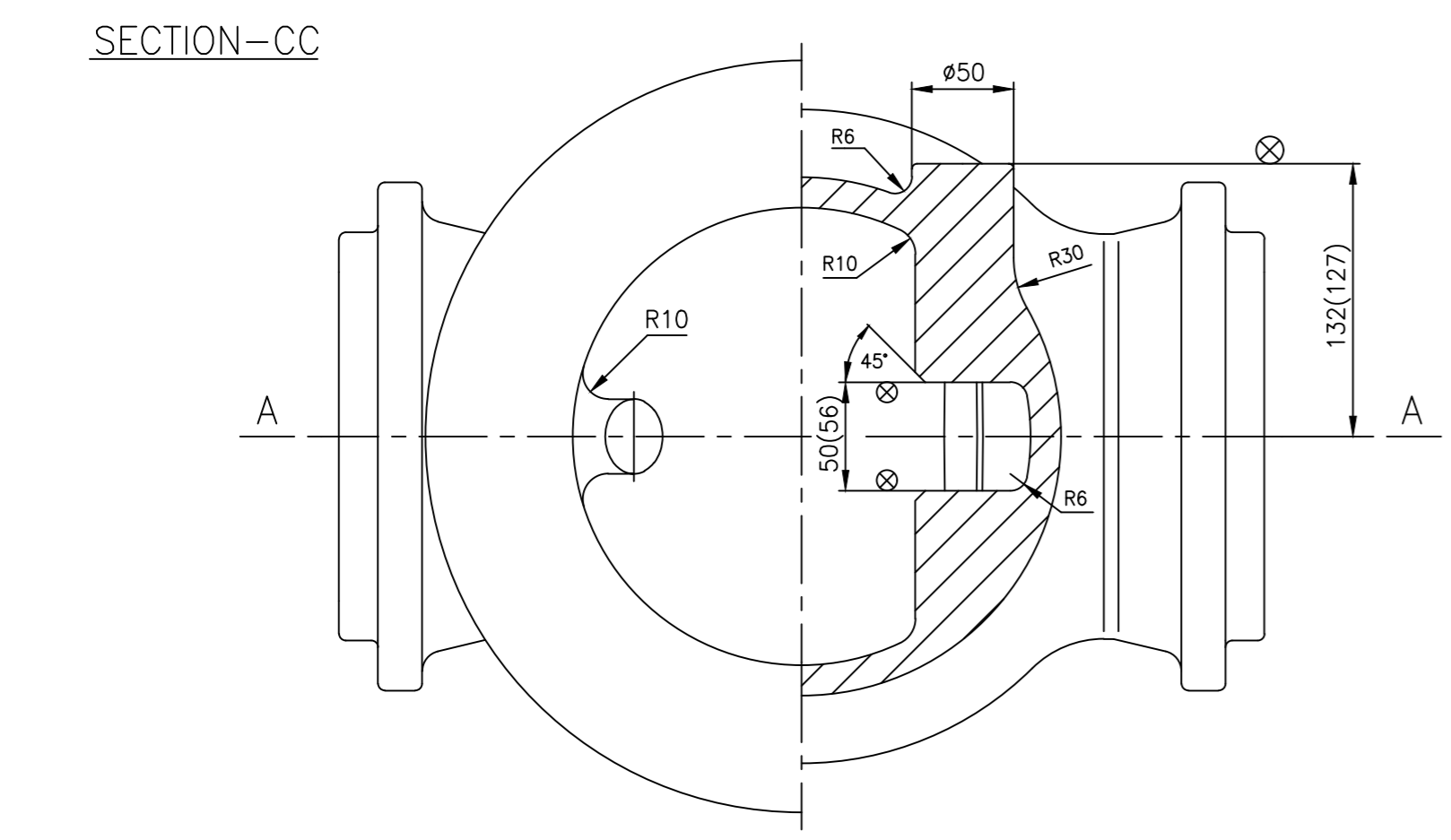
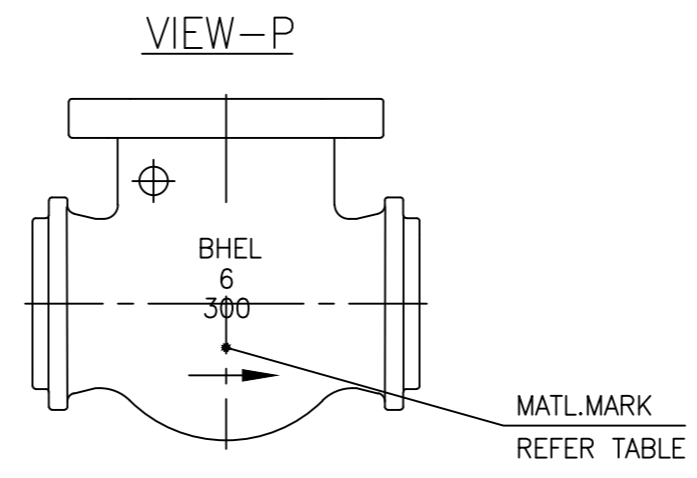
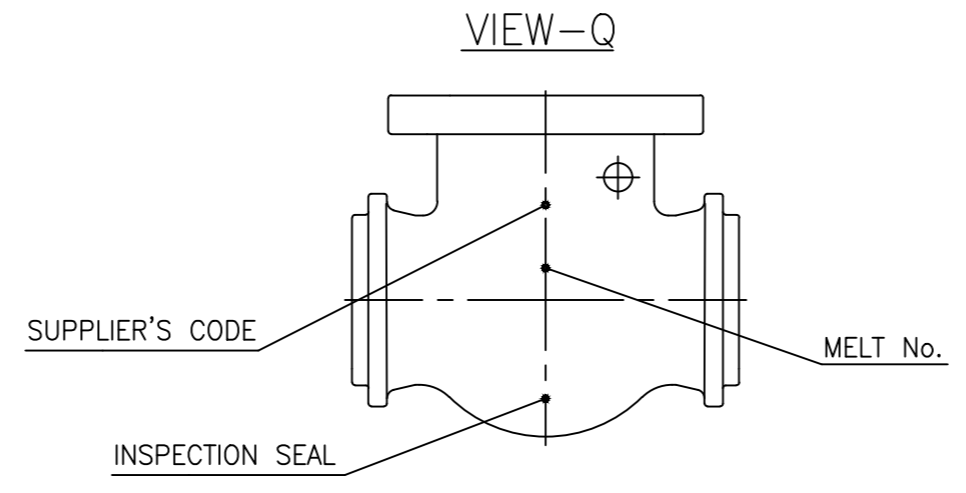
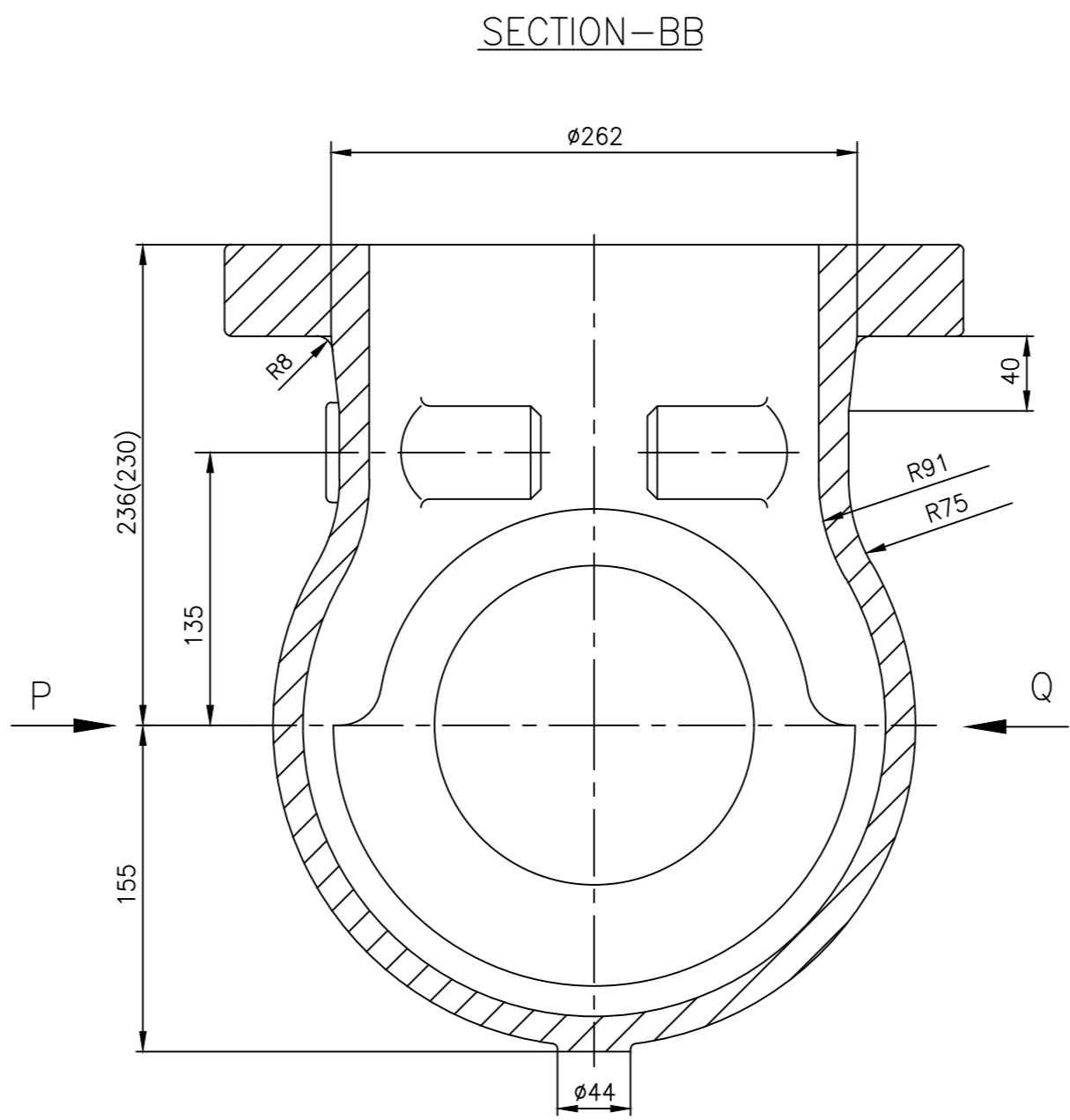
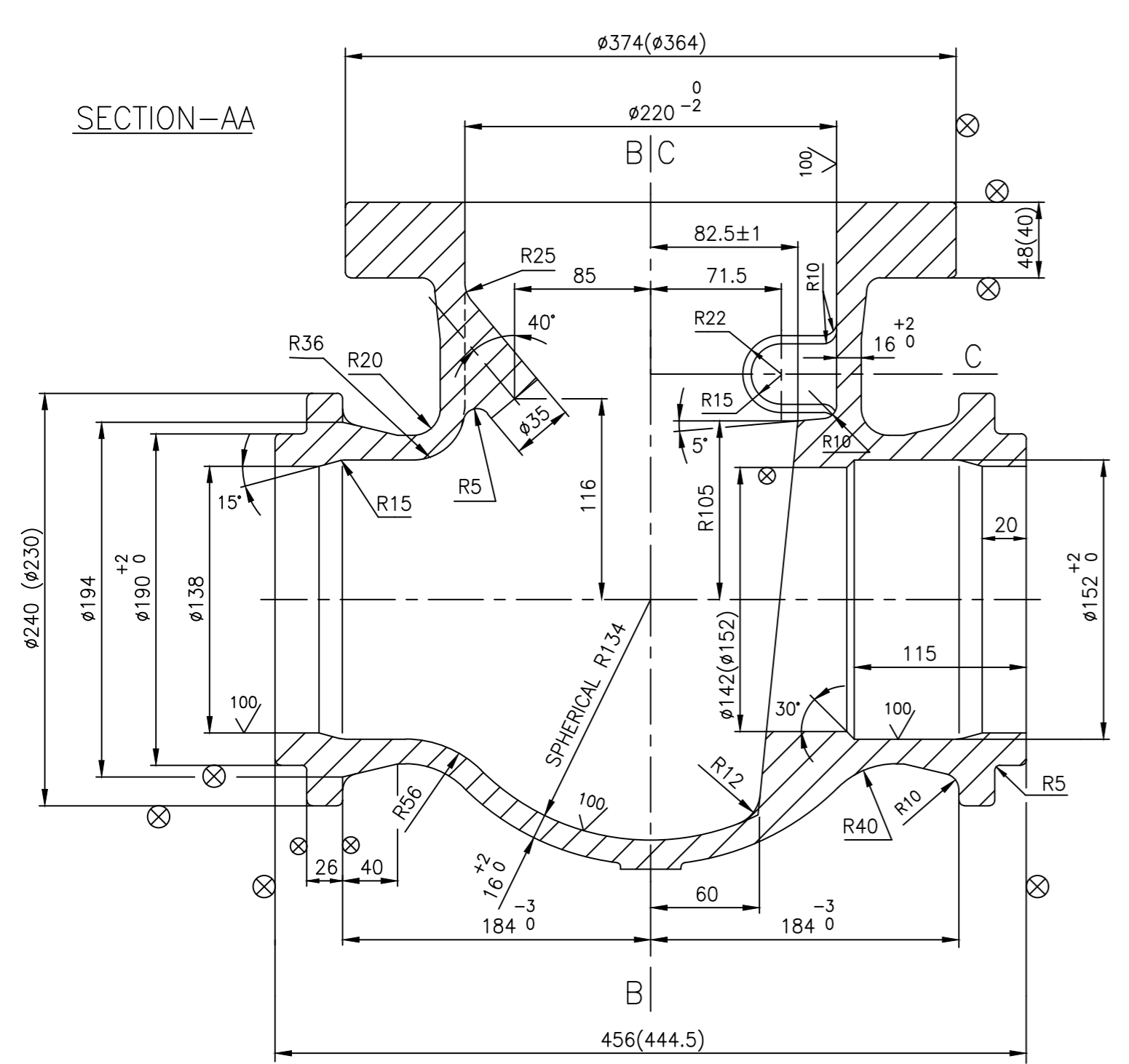
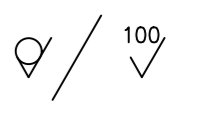
TITLE: **BODY**  
(4"-150C-BW-FV)

CARD CODE: U 01

DRAWING NO.: **2-V-0000-13501R03**

REV: 03

REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	T.R.RAMAMURTHY
03	13.09.19	CHD & APPD	SAMEER & SSK	02	05.09.18	CHD & APPD	SSK & KRS	01	08.02.12	CHD & APPD	SSK & KRS
SL. No. 04 INCLUDED.			SL. No. 03 INCLUDED			SL.No.02 INCLUDED			NOTES No. 10 INCLUDED		



NOTES:-

1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
2. PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE TDC
3. FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4.  $\sqrt{100}$  CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
5. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE TDC
6. UNSPECIFIED CASTING RADII 3 - 5 MM
7. HEIGHT OF CASTING LETTERS 20MM
8.  $\otimes$  SURFACES TO BE MACHINED
9. ALL DETAILS SHOWN IN VIEWS P & Q , EXCEPT MELT No. AND INSPECTION SEAL , ARE TO BE CAST.

SL No	MATL. MARK TO BE CAST	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
03	CF3M	92 203 907	SA351 CF3M ATTEST	SH	--	94.0	--	2.V.Z126.13504R	--
02	WC9	92 203 085	SA217 WC9 ATTEST	N & T	--	94.0	--	2.V.Z078.13504R	--
01	CF8M	92 201 400	SA351 CF8M ATTEST	SH	--	94.0	--	2.V.Z049.13504R	--

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

DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
CHD	P.BOOMINATHAN		01.07.02	-
APPD	A.VISWANATHAN		01.07.02	-

365-120

DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS	NO. OF ITEMS
320		NTS.	94.0	CAD:C213504R	-

TITLE: **BODY (150-C300-BW)**

CARD CODE: U 01

DRAWING NO. **2-V-0000-13504R**

REV: **02**

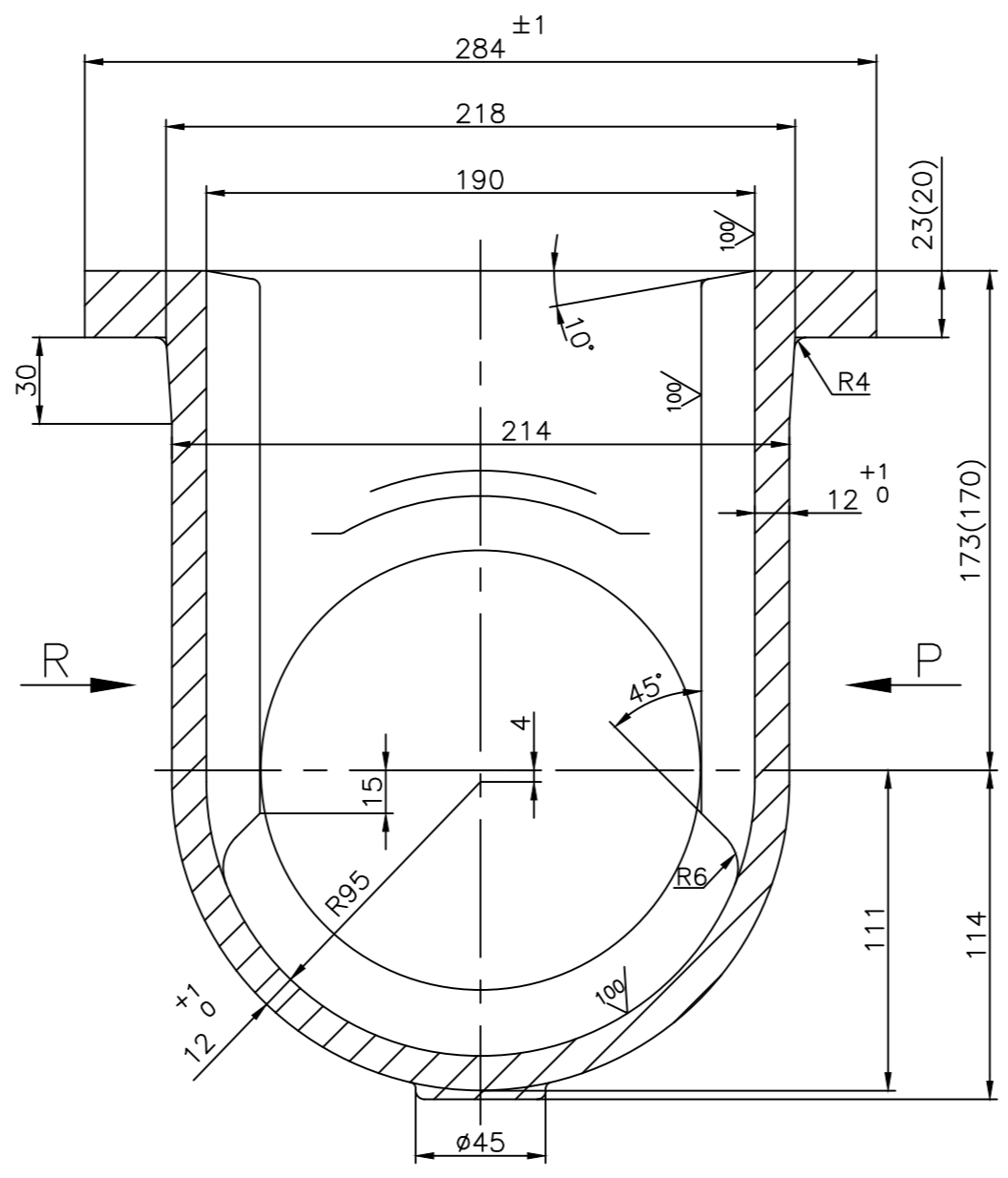
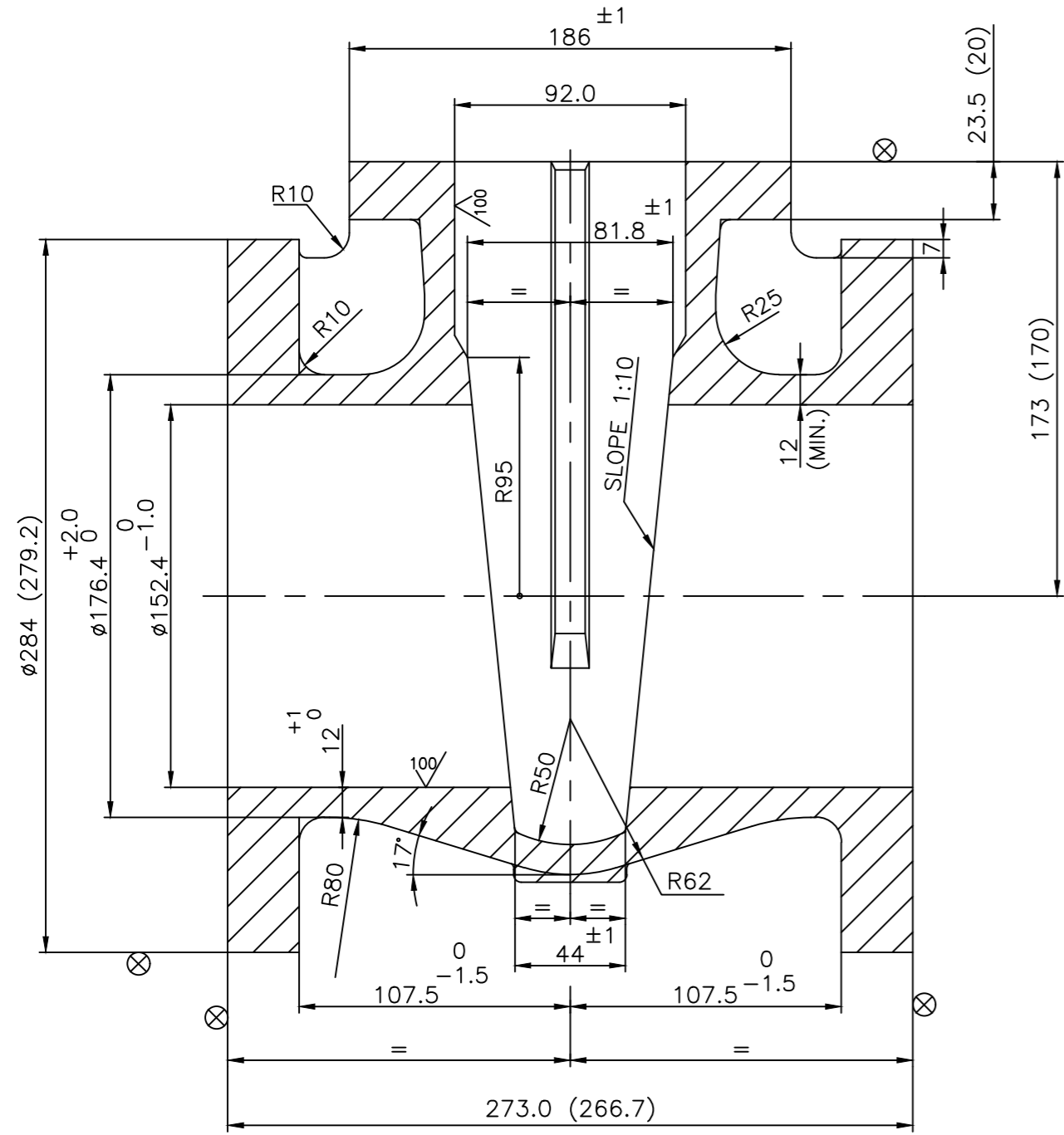
REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	T.R.RAMAMURTHY
02	08.09.19	CHD & APPD	SAB & SSK	01	01.11.12	CHD & APPD	SSK & KRS

SL. No. 03 INCLUDED

SL.No.02 INCLUDED

SECTION - BB

SECTION - AA

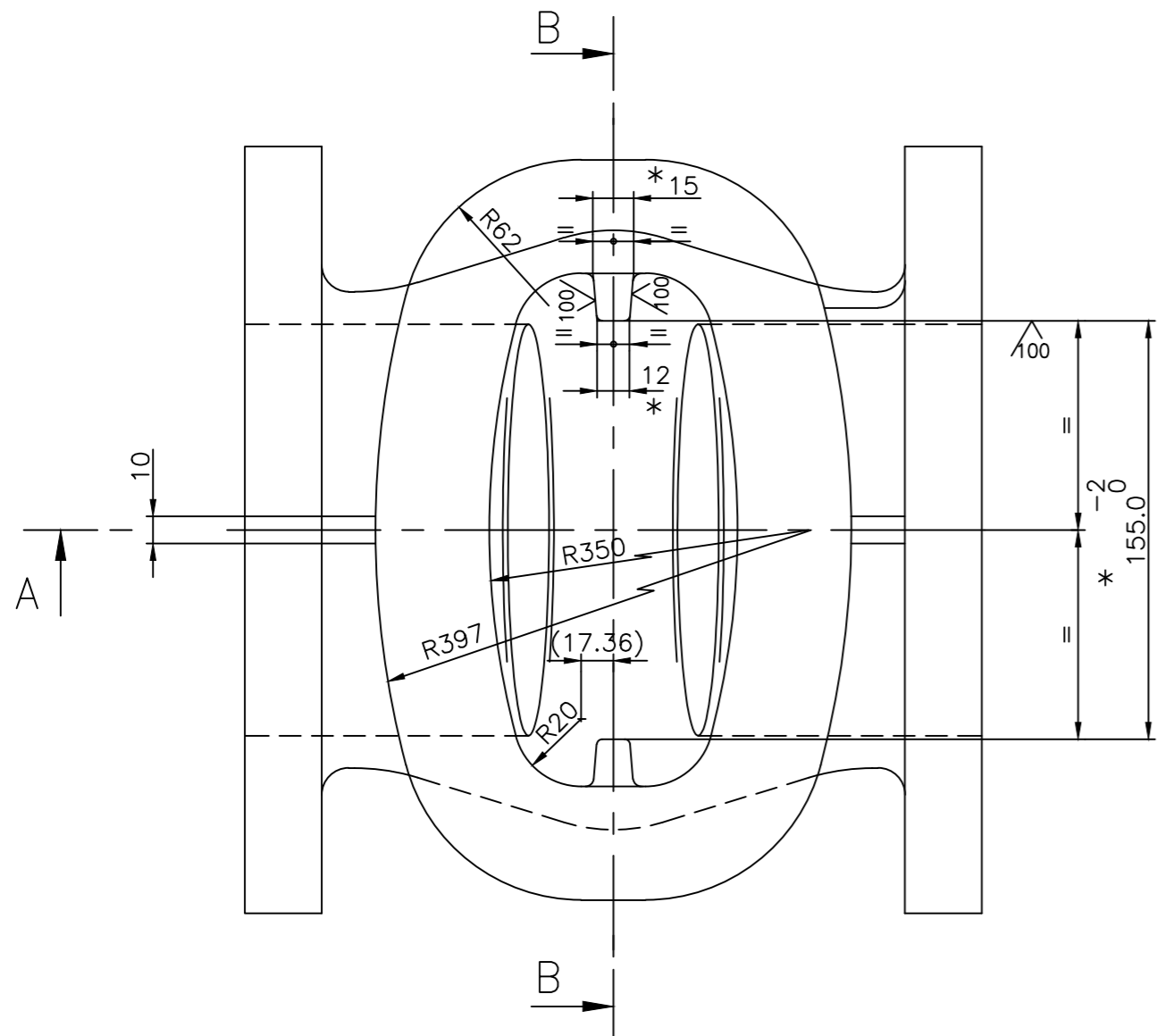
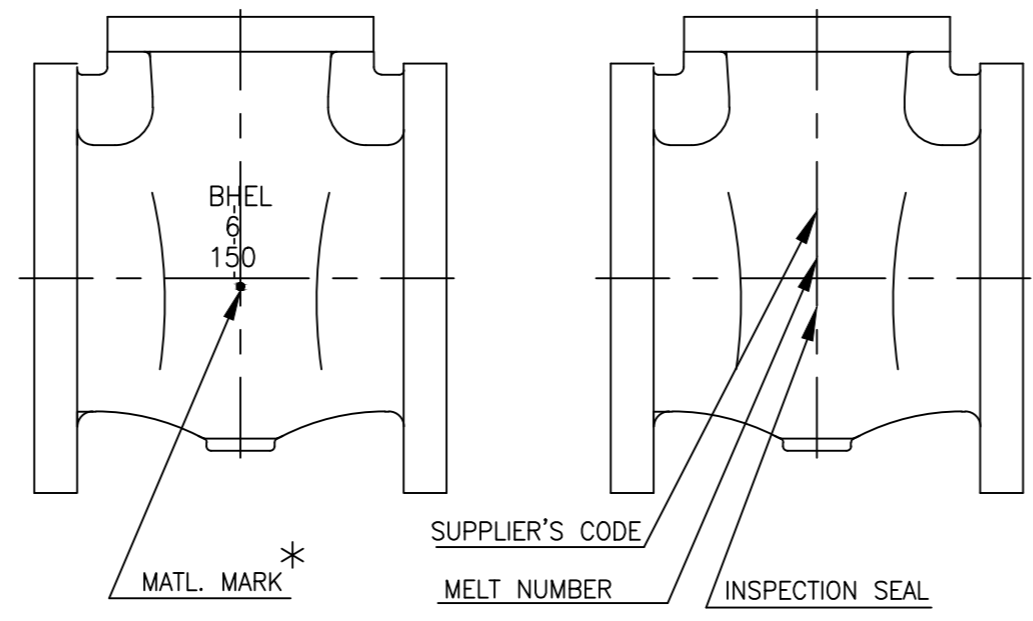


NOTE:-

01. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
02. PERMISSIBLE DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS REFER APPLICABLE TDC
03. FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
04. LETTERS- BHEL,SIZE,MATL.& SUPPLIERS CODE ARE TO BE CAST IN THE INDICATED ZONE.
05. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE SPECIFICATION.
06. UNSPECIFIED CASTING RADII = R2 TO R3
07. HEIGHT OF CASTING LETTERS = 12 mm
08. ⊗ INDICATES SURFACE TO BE MACHINED.
09. √ INDICATED CASTING SURFACES SHALL BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
10. HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1  
(HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.) SA351 CF8
11. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

VIEW - P

VIEW - Q



\* SPECIAL NOTE

01. GUIDE BAR DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCE INDICATED.
02. BOTH GUIDE RIBS TO BE COPLANAR AND TRUELY VERTICAL.

CF3M	#08	CASTING	-	SA351 CF3M ATTEST	SH	-	42.4	-	2-V-UB25-13591R	001
CF8M	#07	CASTING	-	SA351 CF8M ATTEST	SH	-	42.4	-	2-V-UA99-13591R	001
CF3M	06	CASTING	-	SA351 CF3M ATTEST	SH	-	42.4	-	2-V-NP76-13591R	001
CF8	#05	CASTING	-	SA351 CF8 ATTEST	SH	-	42.4	-	2-V-U937-13591R	001
CD3MN	04	CASTING	-	SA995 Gr.CD3MN PRODUCT ATTEST	REFER NOTE	-	42.4	-	2-V-NP33-13591R/1	001
CF8M	03	CASTING	-	SA351 CF8M ATTEST	SH	-	42.4	-	2-V-NP27-13591R	001
CF8	02	CASTING	-	SA351 CF8 ATTEST	SH	-	42.4	-	2-V-NP03-13591R	001
WCB	01	CASTING	-	SA216 WCB ATTEST	NORMALISED	-	42.4	-	2-V-NC06-13591R/2	001

DCP No.	ALTD: RPS	APPD: SSK	CHD: MK	DT: 27.09.22
REV 09	SL. No. 08 INCLUDED.			
ZONE				
DCP No.	ALTD: TS	APPD: SSK	CHD: RPS	DT: 30.09.21
REV 08	SL. No. 07 INCLUDED.			
ZONE				
DCP No.	ALTD: RPS	APPD: KRS	CHD: SSK	DT: 30.05.19
REV 07	SL. No. 06 INCLUDED.			
ZONE				

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

DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320	NTS	REF. TABLE	CAD :C213591R	-
TITLE	BODY ( 6" - C150-FL)			DRAWING NO.	REV
				2-V-0000-13591R	09

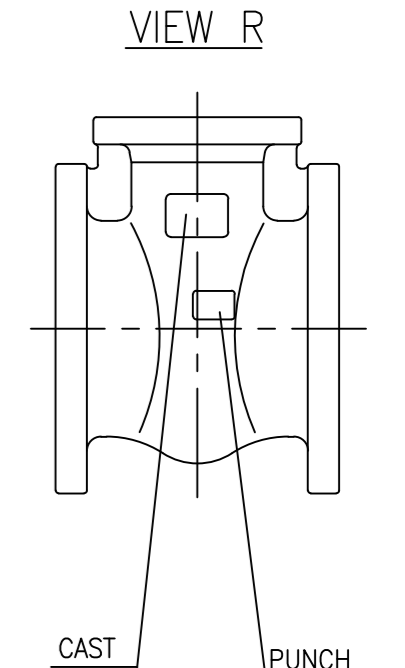
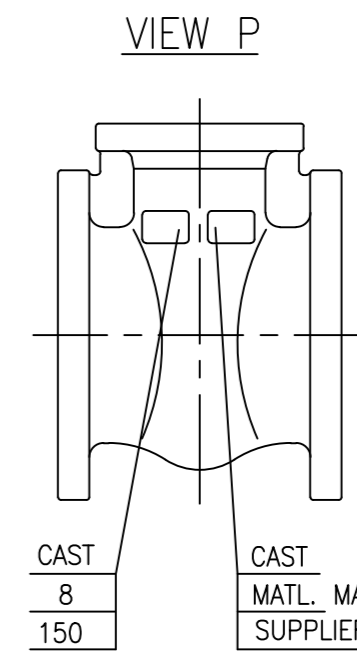
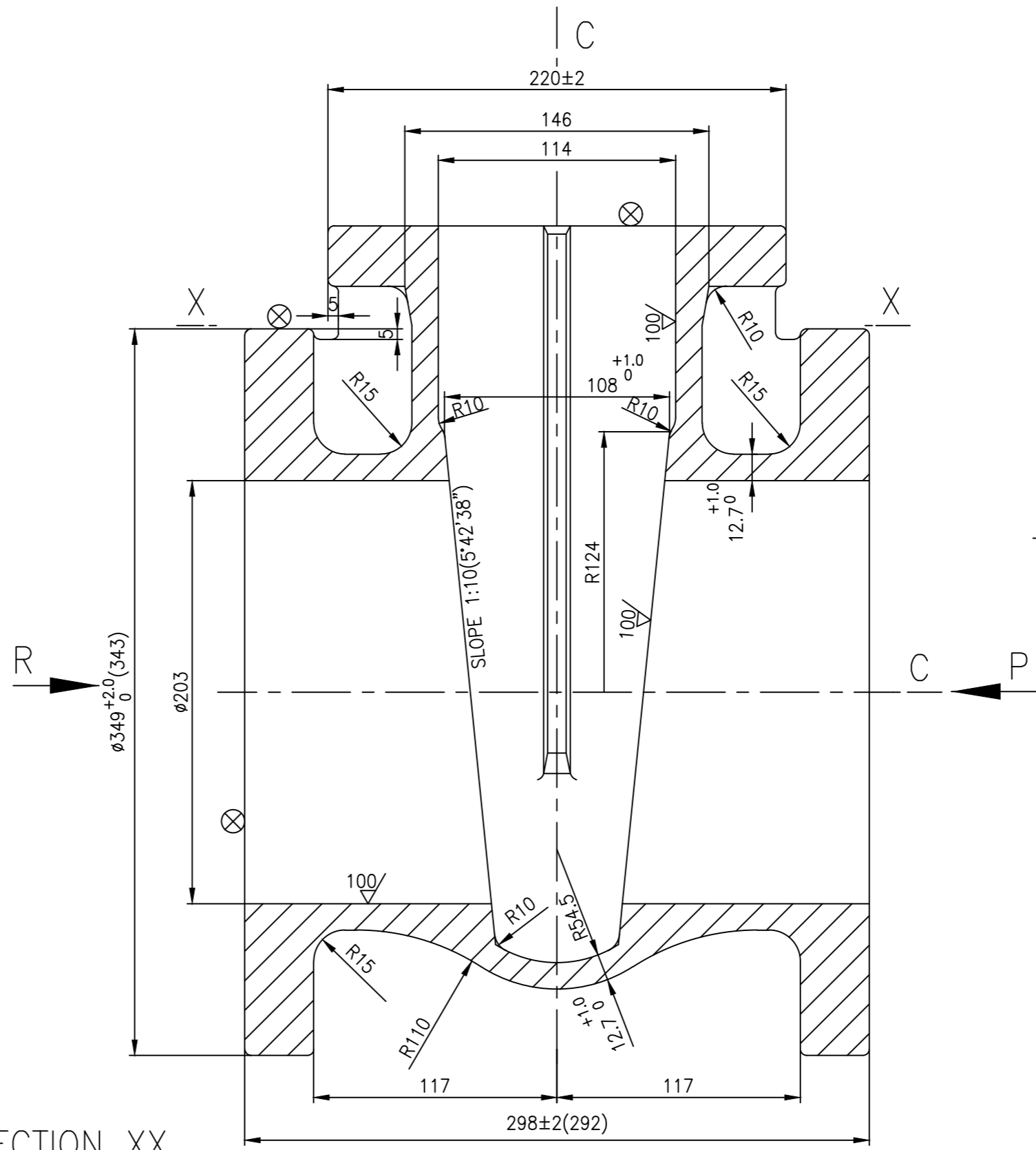
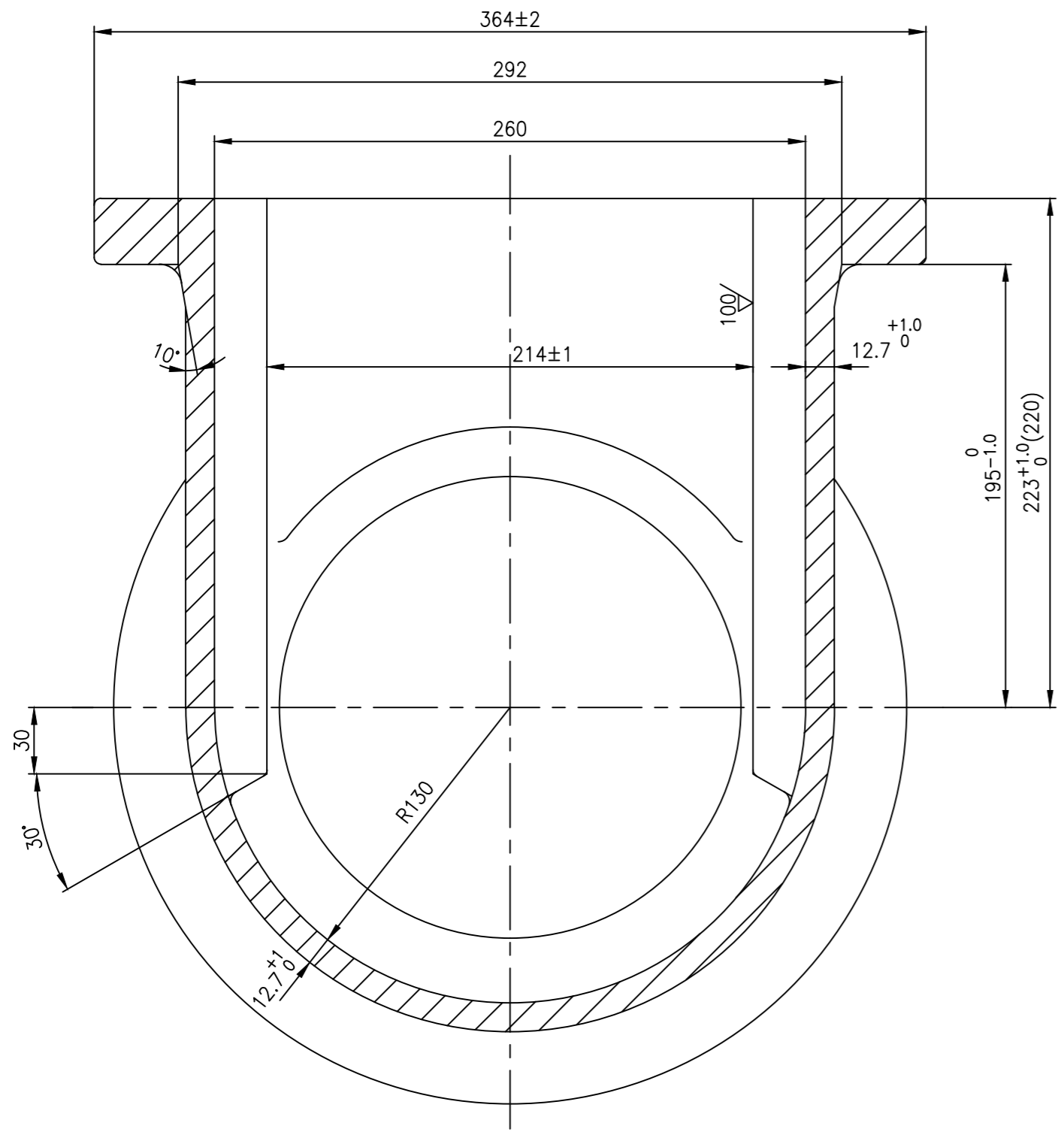
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRAWING REDRAWN WITH REV NO 05 ON 25.01.18

DRN	M.SRINIVASAN	SIGN	DATE	NO. OF VAR.
CHD	P.Boomnathan		15.03.04	-
APPD	K.S.RAMAN		15.03.04	-

SECTION BB

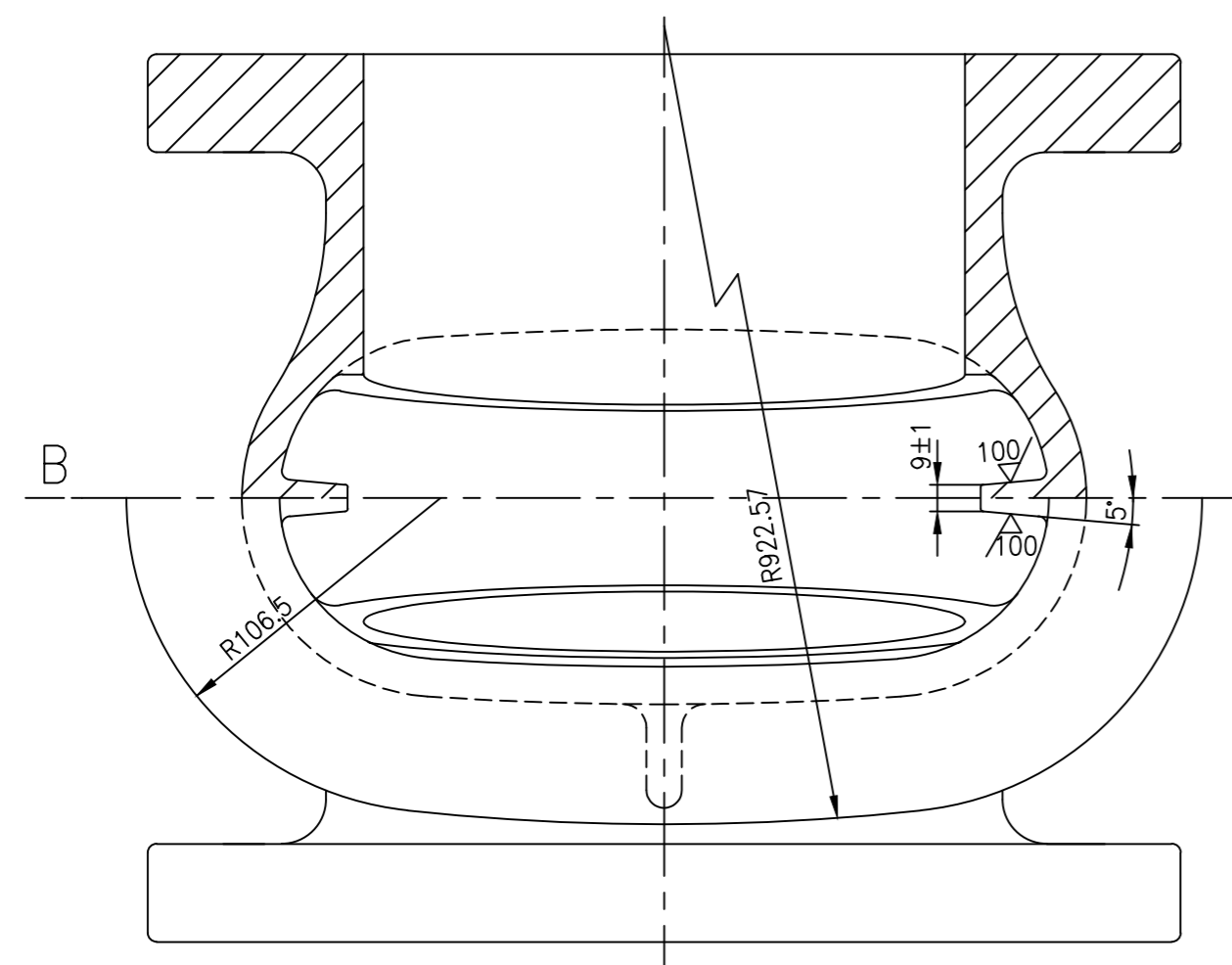
ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP

MARKING DETAILS ON CASTING

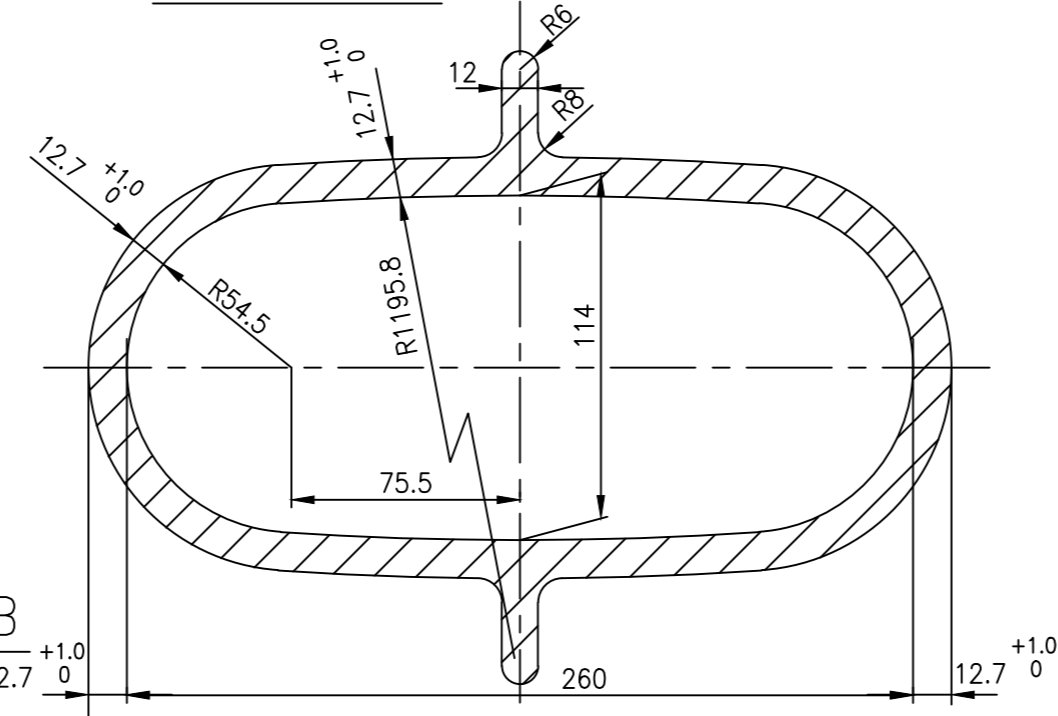


- NOTES:
- NECESSARY ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
  - PERMISSIBLE DIMENSIONAL DEVIATIONS OF CASTING SURFACES REFER LATEST APPLICABLE QUALITY WORK INSTRUCTION
  - FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION.
  - CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
  - UNSPECIFIED CASTING RADIUS 3mm.
  - SURFACE TO BE MACHINED.
  - HEIGHT OF CASTING LETTERS 30mm.
  - CASTING SHALL GENERALLY COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTION IN ALL RESPECTS.
  - PUNCHING DETAILS SHALL BE MARKED ONLY ON RAISED FLAT SURFACE GIVEN AT ZONE B8
  - HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1  
(HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
  - # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

SECTION CC



SECTION XX



CF3M	#	CASTING		SA351 CF3M ATTEST	SH	-	70.0	-	2-V-NQ93-13609R	001
									92 206 255 0000	
CF8	#	CASTING		SA351 CF8 ATTEST	SH	-	70.0	-	2-V-U951-13609R	001
									92 203 737 0000	
CF8	05	CASTING		SA351 CF8 ATTEST	SH	-	70.0	-	2-V-NP58-13609R	001
									92 203 733 0000	
CD3MN	04	CASTING		SA995 Gr.CD3MN PRODUCT ATTEST	REFER NOTE	-	70.0	-	2-V-NP35-13609R/1	001
									92 203 486 0000	
CF8M	03	CASTING		SA351 CF8M ATTEST	SH	-	70.0	-	2-V-NP12-13609R	001
									92 203 447 0000	
CF8	02	CASTING		SA351 CF8, ATTEST	SH	-	70.0	-	2-V-NJ28-13609R	001
									92 203 324 0000	
WCB	01	CASTING		SA216 WCB, ATTEST	NR	-	70.0	-	2-V-NC08-13609R	001
									92 201 433 0000	

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRAWING REDRAWN WITH REV NO 04 ON 25.01.18

DRN	V.BAIRAVAN	SIGN		DATE	26.3.03	NO.OF VAR.	
CHD	R.L.NARAYANAN				26.3.03		-
APPD	M.RAJAKUMAR				26.3.03		-

DEPT: 365-190 02.03.2021

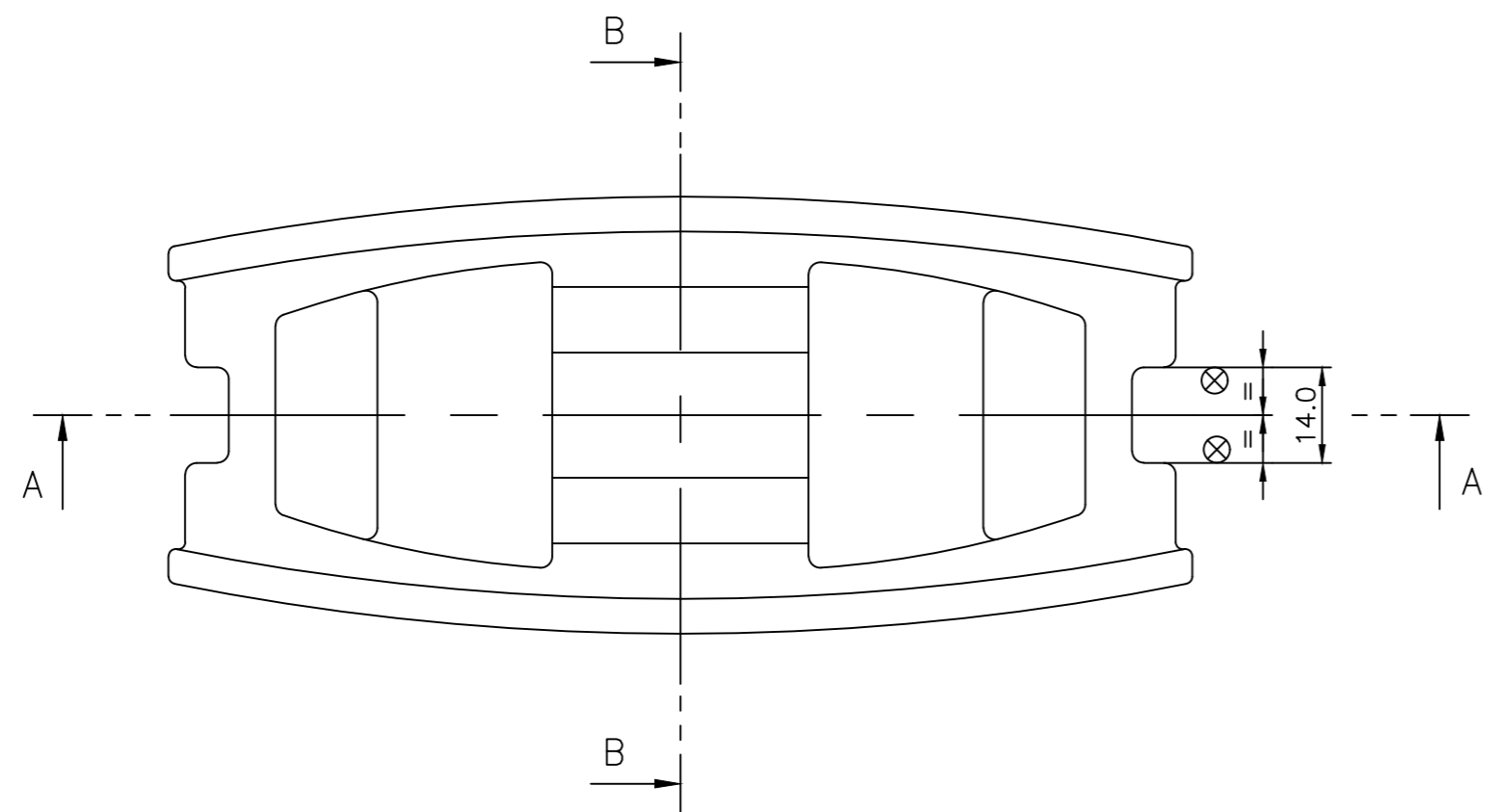
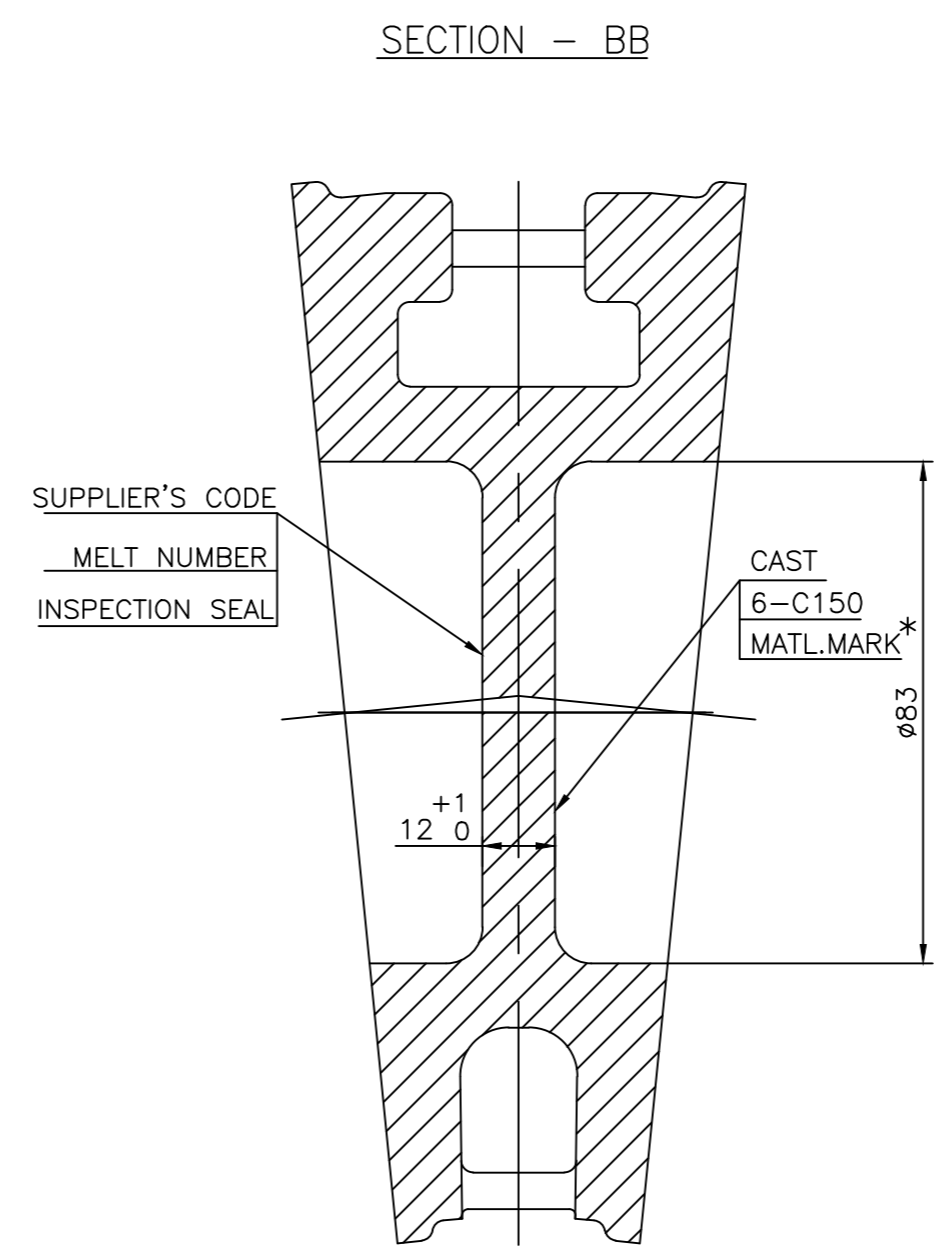
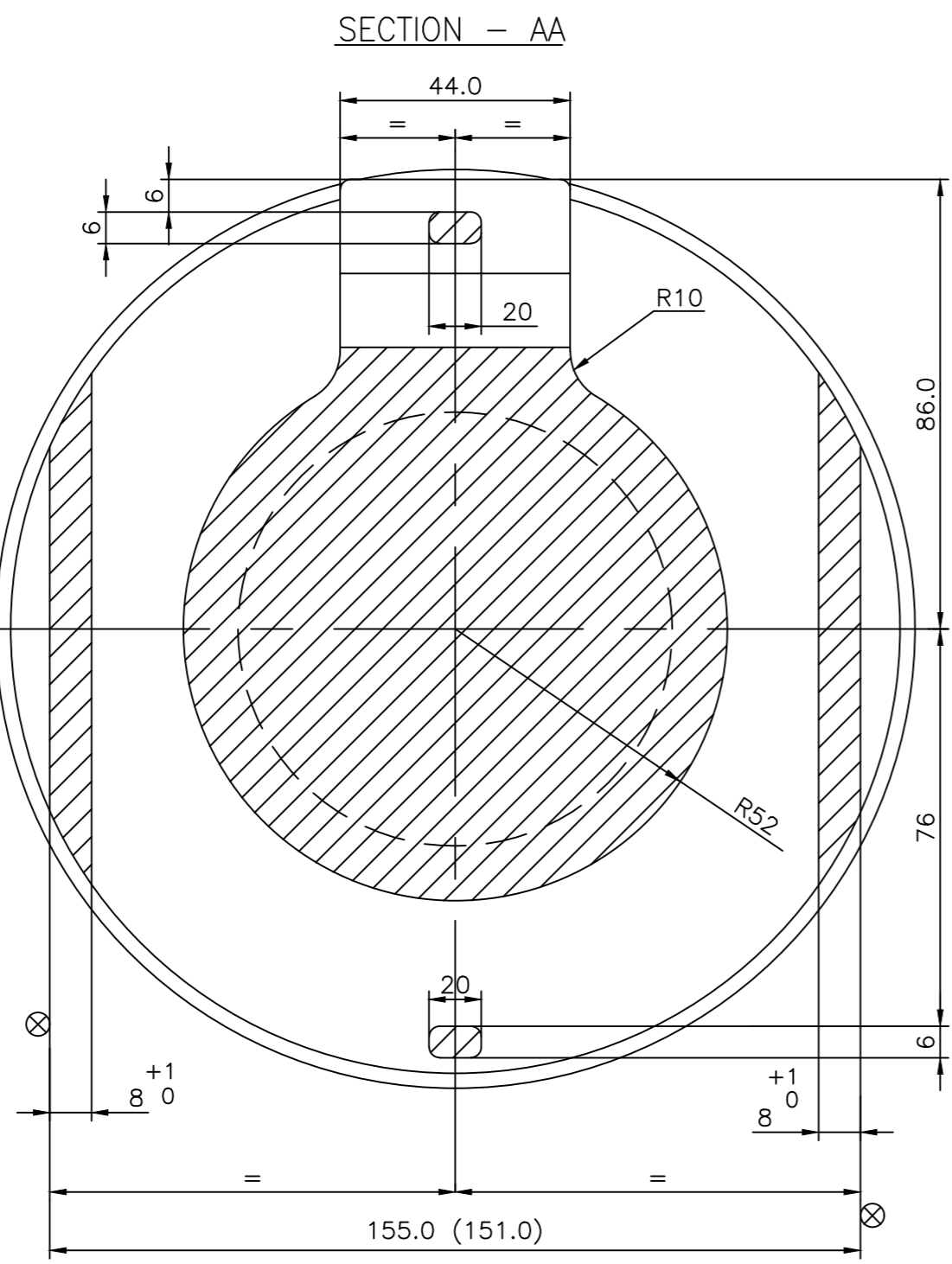
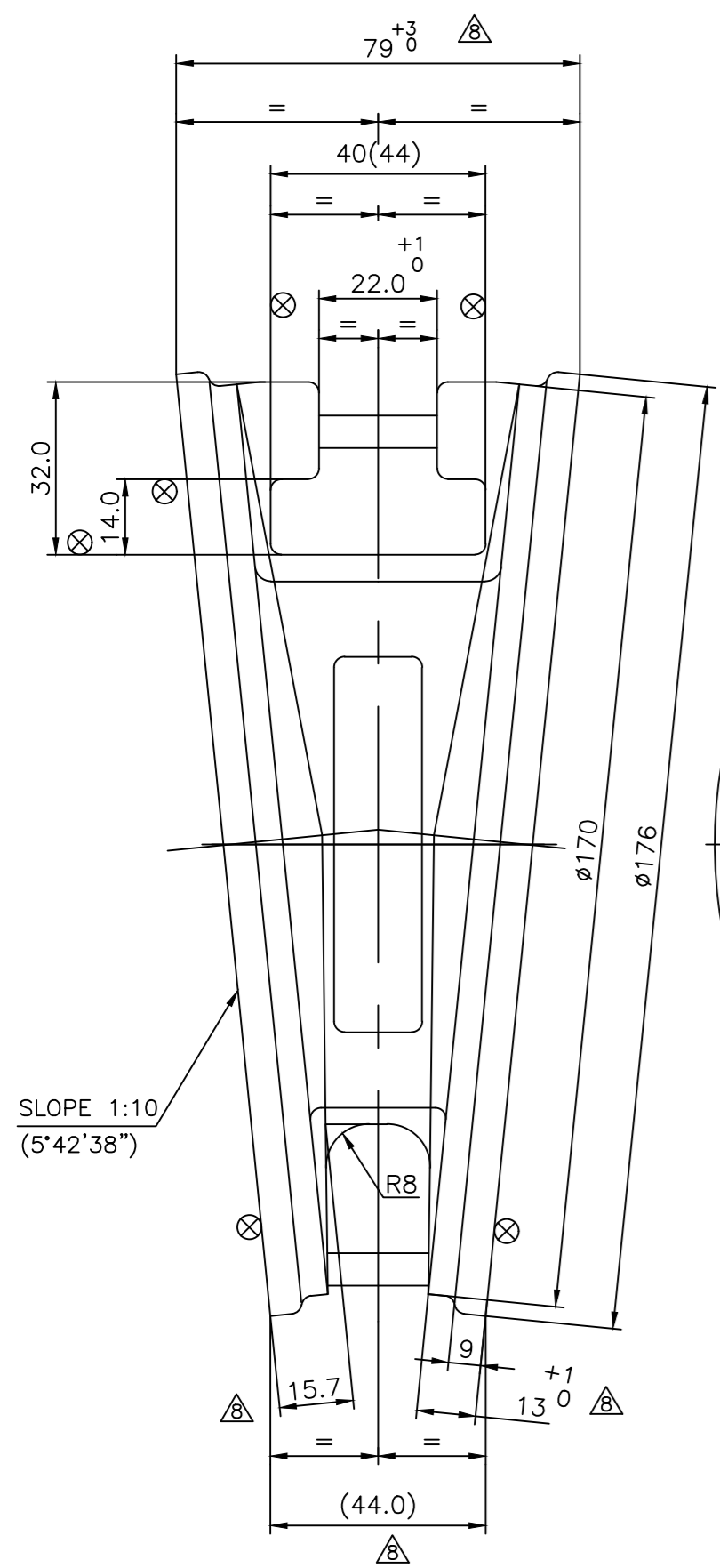
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI-620014.

SCALE: NTS, WEIGHT (KG): REF. TABLE, REFERENCE INFORMATION: CAD REF.C213609R

TITLE: BODY, CARD CODE: U 01, DRAWING NO.: 2-V-0000-13609R, REV: 06

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: KRS
-	CHD: MK	DT: 29.09.22	-	CHD: SSK	DT: 12.12.18

REV 06	SL. No. 07 INCLUDED.	REV 05	SL. No. 05 & 06 INCLUDED
ZONE -		ZONE -	NOTES No. 11 INCLUDED



**NOTE**

01. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
02. FOR PERMISSIBLE DEVIATIONS ON NON TOLERANCED CASTING DIMENSION REFER APPLICABLE TDC
03. FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
04. LETTERS- SIZE, MATL. & SUPPLIERS CODE ARE TO BE CAST IN THE INDICATED ZONE.
05. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE TDC
06. UNSPECIFIED CASTING RADII = R2 TO R3
07. HEIGHT OF CASTING LETTERS = 5 mm
08. ⊗ INDICATES SURFACE TO BE MACHINED.
09. HEAT TREATMENT FOR ASTM 995 CD3MN AS PER ASTM STANDARD ASTM-995 TABLE 1  
(HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
10. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

CF3M	#09	CASTING	-	A351 CF3M CERTIFY	SH	-	5.4	-	2.V.UB25.13610R/92 206 253 0000	004
CF8M	#08	CASTING	-	A351 CF8M CERTIFY	SH	-	5.4	-	2.V.UA99.13610R/92 206 131 0000	004
WC9	07	CASTING	-	A217 WC9 CERTIFY	NT	-	5.4	-	2.V.NQ29.13610R/92 206 023 0000	004
CF3M	06	CASTING	-	A351 CF3M CERTIFY	SH	-	5.4	-	2.V.NP81.13610R/192 203 942 0000	004
CF8	#05	CASTING	-	A351 CF8 CERTIFY	SH	-	5.4	-	2.V.U937.13610R/292 203 752 0000	004
CD3MN	04	CASTING	-	A995 Gr.CD3MN CERTIFY	REFER NOTE	-	5.4	-	2.V.NP33.13610R/392 203 495 0000	004
CF8	03	CASTING	-	A351 CF8 CERTIFY	SH	-	5.4	-	2.V.ND72.13610R/292 203 340 0000	004
CF8M	02	CASTING	-	A351 CF8M CERTIFY	SH	-	5.4	-	2.V.ND10.13610R/292 203 153 0000	004
WCB	01	CASTING	-	A216 WCB CERTIFY	NT	-	5.4	-	2.V.NC06.13610R/292 201 427 0000	004

MACHINING SYMBOLS		SCALE		WEIGHT (KG)		REFERENCE INFORMATION		NO. OF ITEMS	
DEPT	VL	SCALE	NTS	WEIGHT (KG)	REF. TABLE	CAD :C213610R		NO. OF ITEMS	
CODE	320	TITLE		CARD CODE	DRAWING NO.		REV		
WEDGE		( 6 - C150 )		U 01		2-V-0000-13610R		11	

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPD: SSK	DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT: 05.10.21	-	CHD: SAB	DT: 28.09.20	802553	CHD: SAB	DT: 15.02.20
REV 11	SL. No. 09 INCLUDED		REV 10	SL. No. 08 INCLUDED		REV 09	SL. No. 07 INCLUDED		REV 08	DIMN. 79 <sup>+3</sup> , (44.0), 15.7 & 13 <sup>+3</sup> WERE 75.0, (40.0), 13.7 & 11 <sup>+1</sup> RESPECTIVELY	
ZONE -			ZONE -			ZONE -			ZONE -		

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRG.REDRAWN WITH REV.08 ON 15.02.2020

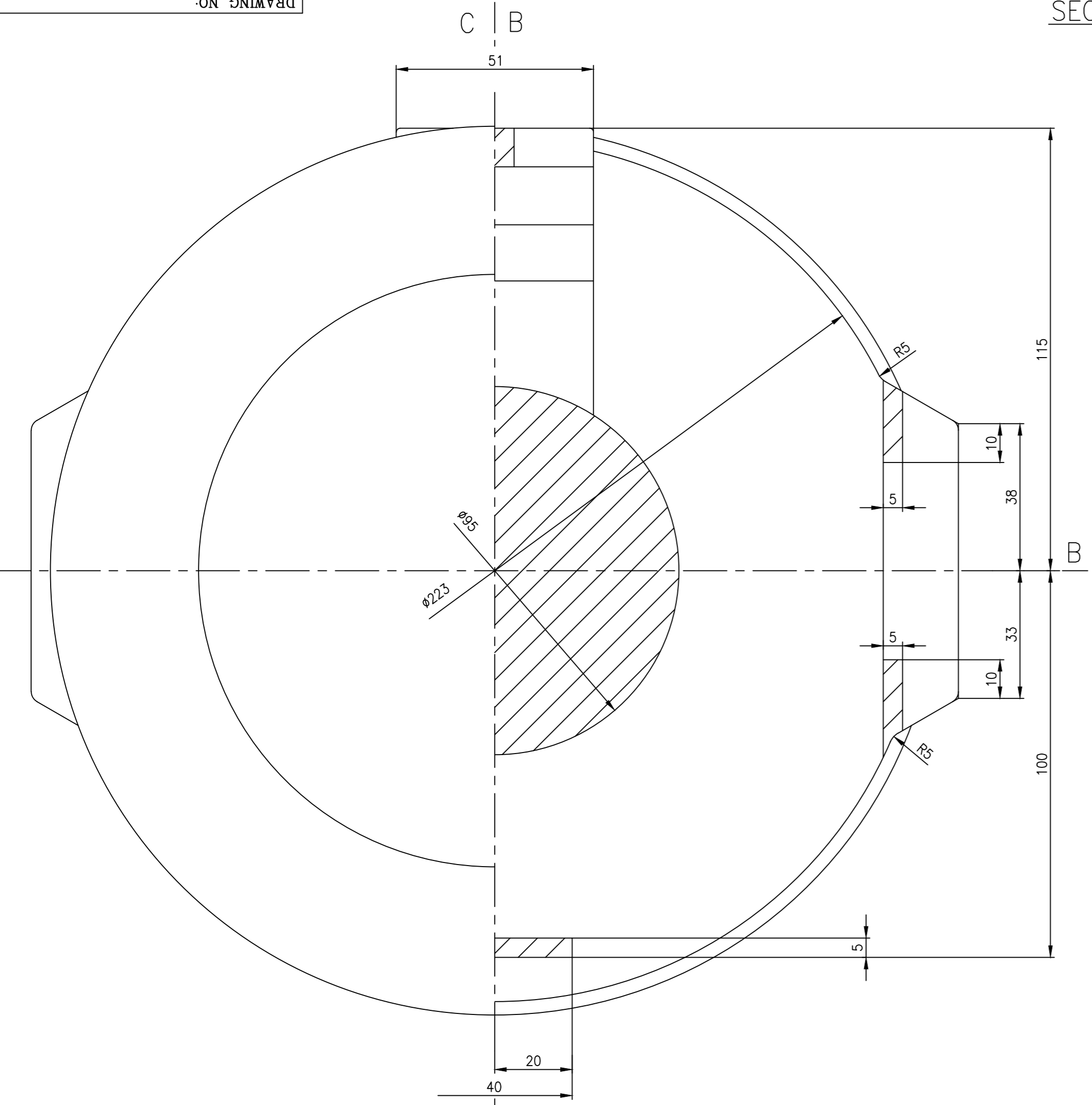
DRN	M.SRINIVASAN	SIGN	DATE	NO. OF VAR.
CHD	P.Boomnathan		04.04.03	-
APPD	K.S.RAMAN		04.04.03	-

DEPT	VL	SCALE	WEIGHT (KG)	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320	NTS	REF. TABLE	CAD :C213610R	-
TITLE		CARD CODE	DRAWING NO.		REV
WEDGE		U 01	2-V-0000-13610R		11

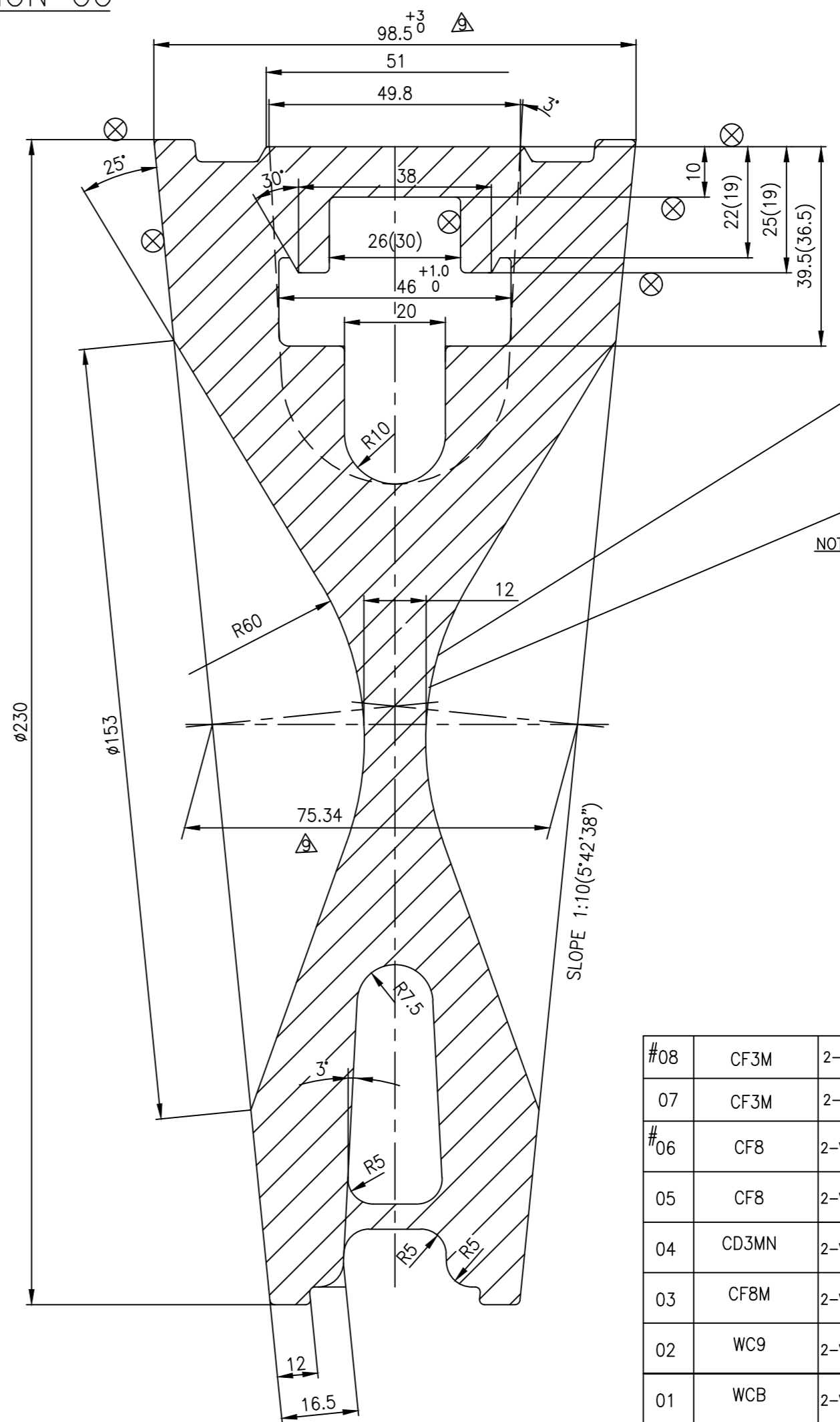
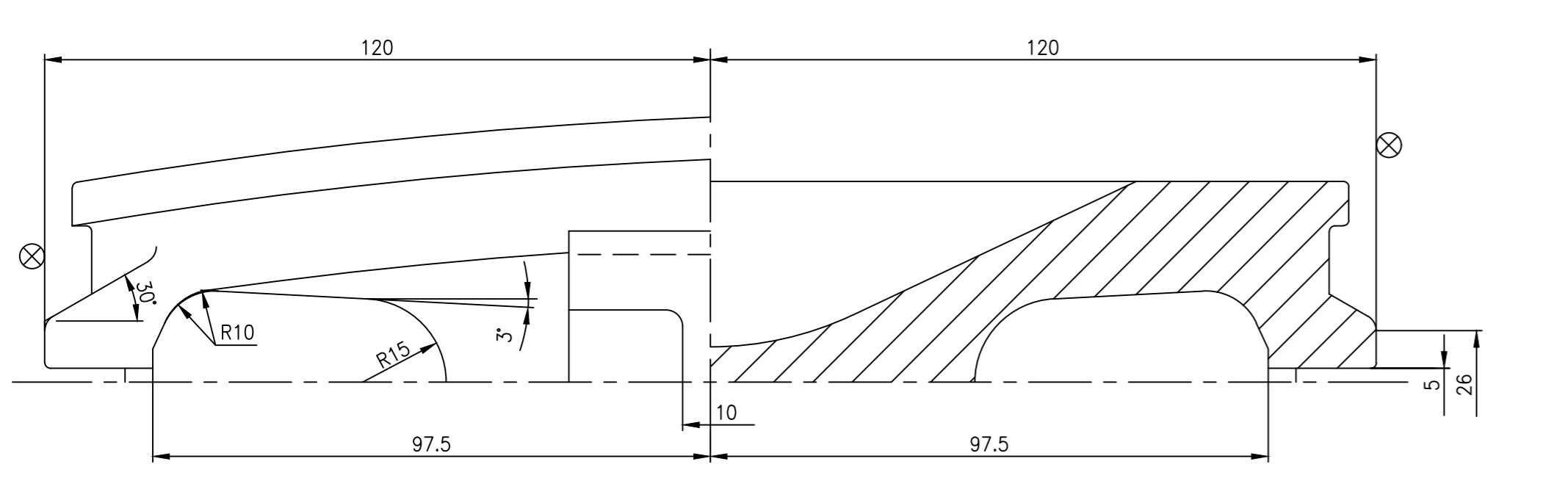
DRAWING NO. 2-V-0000-13624R

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

SECTION CC



SECTION BB



BHEL  
8  
150  
MATL MARK\*  
PUNCH MELT NO.

- NOTES:
1. CASTING SHALL COMPLY WITH THE REQUIREMENT OF LATEST APPLICABLE QUALITY WORK INSTRUCTION IN ALL RESPECTS.
  2. NECESSARY ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
  3. PERMISSIBLE DIMENSIONAL DEVIATIONS OF CASTING SURFACES REFER LATEST APPLICABLE QUALITY WORK INSTRUCTION
  4. UNSPECIFIED CASTING RADIUS 3mm
  5. ⊗ SURFACE TO BE MACHINED.
  6. HEIGHT OF CASTING LETTERS 30mm.
  10. HEAT TREATMENT FOR SA995 CD3MN AS PER ASTM STANDARD A-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
  11. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED

#	MATL	DCP No.	MATL CODE	MATL SPECN	HEAT TREATMENT	GROSS WT (kg)	ITEM No
#08	CF3M	2-V-UB26-13624R	922062580000	A351 CF3M, CERTIFY	SH	12.2	004
07	CF3M	2-V-NP82-13624R/1	922039430000	A351 CF3M, CERTIFY	SH	12.2	004
#06	CF8	2-V-U951-13624R/2	922037390000	A351 CF8, CERTIFY	SH	12.2	004
05	CF8	2-V-NP58-13624R/2	922037350000	A351 CF8, CERTIFY	SH	12.2	004
04	CD3MN	2-V-NP35-13624R/4	922035050000	A995 Gr.CD3MN CERTIFY	REFER NOTE	12.2	004
03	CF8M	2-V-ND15-13624R/3	922031540000	A351 CF8M, CERTIFY	SH	12.2	004
02	WC9	2-V-ND06-13624R/3	922031160000	A217 WC9, CERTIFY	NT	12.2	004
01	WCB	2-V-NC08-13624R/3	922014350000	A216 WCB, CERTIFY	NR	12.2	004
SL No	MATL MARK*	DRAWING No	MATL CODE	MATL SPECN	HEAT TREATMENT	GROSS WT (kg)	004

No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
-	-	-	-	-	-	-	-	-	-

REV	ZONE	DCP No.	ALTD:	RPS	CHD:	APPD:	SSK	DT:
10	-	-	RPS	MK	SSK	SSK	SSK	27.09.22
09	-	802553	RPS	SAB	SSK	SSK	SSK	15.02.20

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRG.REDRAWN WITH REV.09 ON 15.02.2020

BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI-620014.

DRN: V.BAIRAVAN, SIGN: R.L.NARAYANAN, DATE: 26.3.03, NO.OF VAR.: -

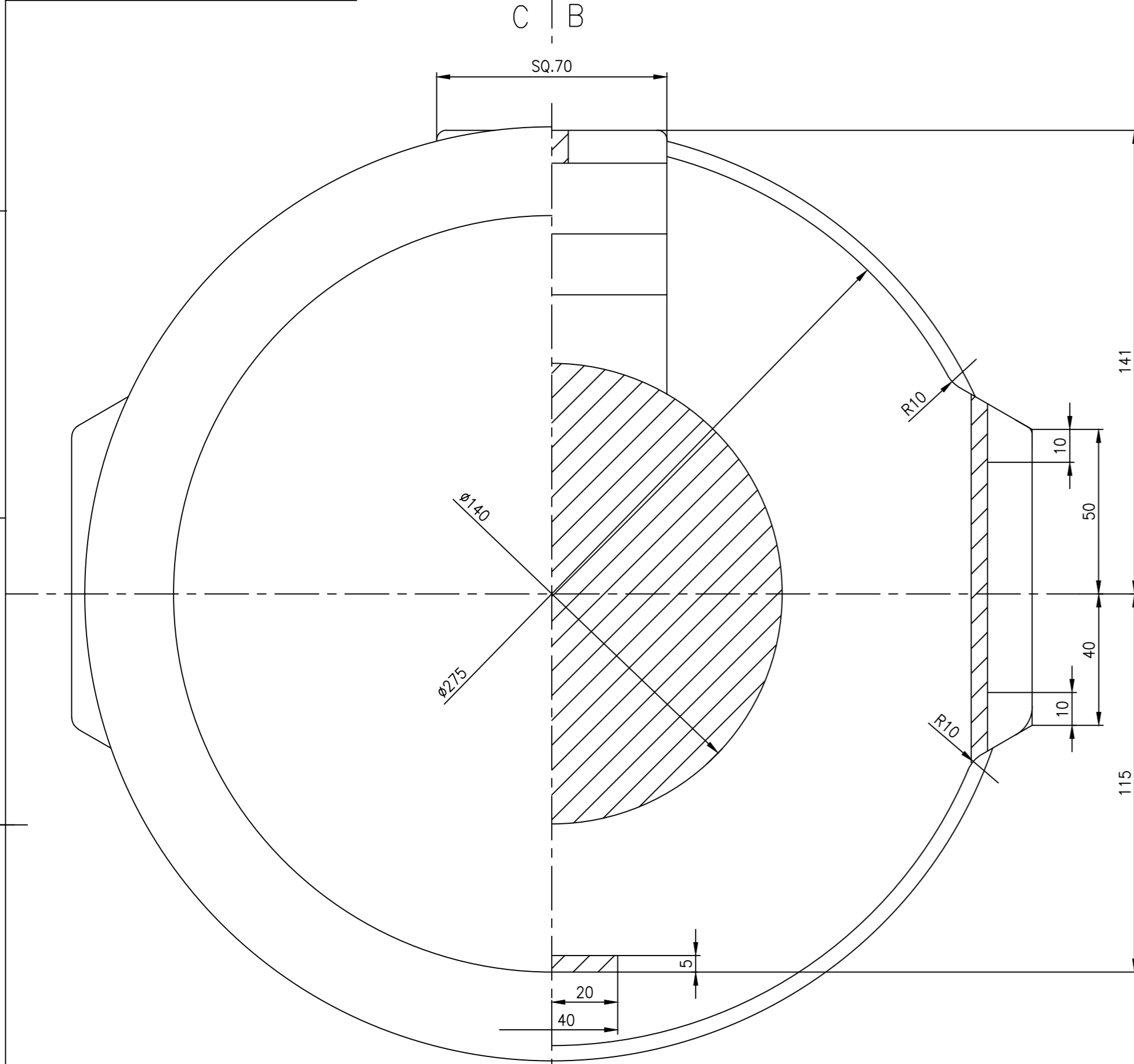
CHD: R.L.NARAYANAN, DATE: 26.3.03

APPD: M.RAJAKUMAR, DATE: 26.3.03

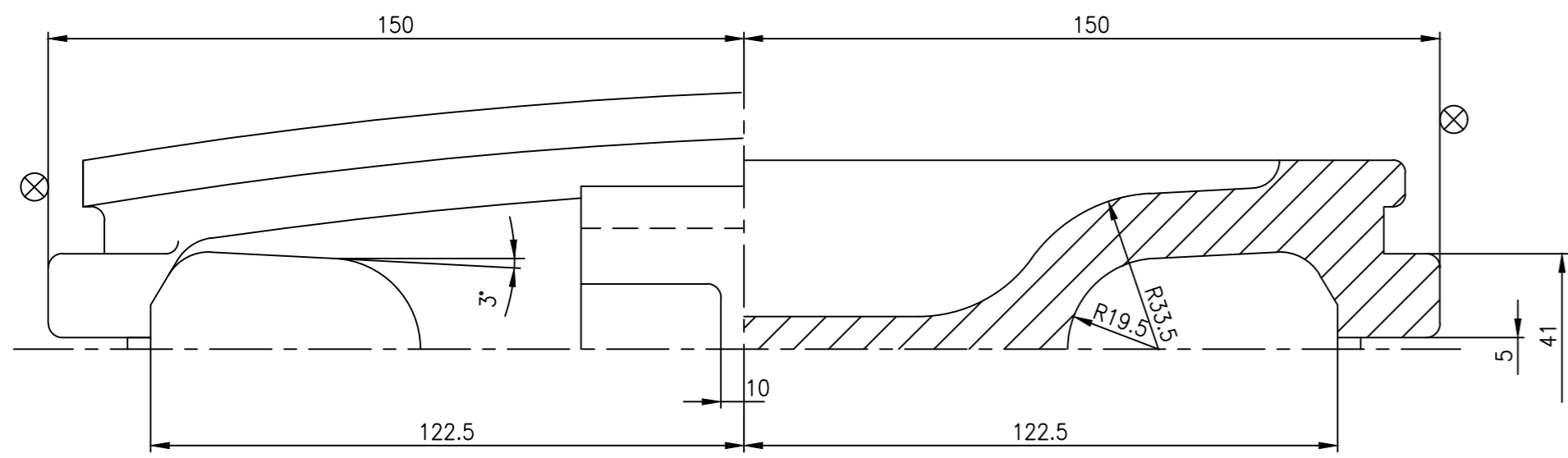
DEPT: VL, SCALE: NTS, WEIGHT (KG): REF. TABLE, REFERENCE INFORMATION: CAD REF.C213624R, NO.OF ITEMS: -

CODE: 320, TITLE: WEDGE, CARD CODE: U 01, DRAWING NO.: 2-V-0000-13624R, REV: 10

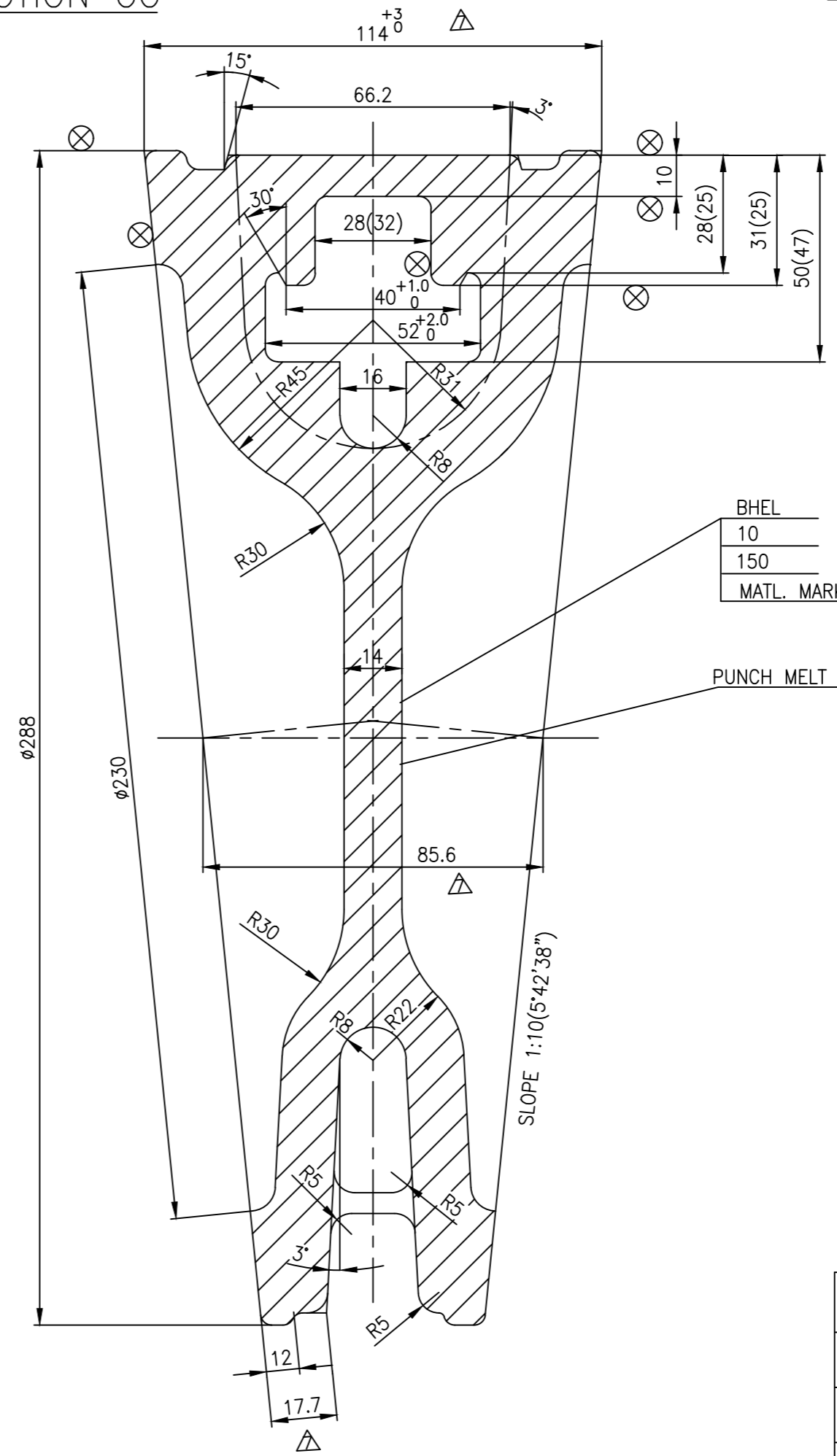
DRAWING NO. 2-V-0000-13687R



SECTION BB



SECTION CC



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

NOTES:

1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
2. FOR PERMISSIBLE DEVIATIONS ON NON TOLERANCED CASTING DIMENSION REFER APPLICABLE TDC
3. FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4. LETTERS- SIZE, MAYL.& SUPPLIERS CODE ARE TO BE CAST IN THE INDICATED ZONE.
5. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE TDC
6. UNSPECIFIED CASTING RADII = RS TO R3
7. HEIGHT OF CASTING LETTERS = 5 mm
8. ⊗ INDICATES SURFACE TO BE MACHINED
9. HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1  
(HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

BHEL  
10  
150  
MATL. MARK\*

PUNCH MELT NO.

05	2-V-NP83-13687R/1	922039380000	A351 CF3M CERTIFY,SH	CF3M	004
04	2-V-NP55-13687R/2	922036340000	SA995 CD3MN CERTIFY, REF. NOTE	CD3MN	004
03	2-V-NJ29-13687R/3	922033280000	A351 CF8 CERTIFY,SH	CF8	004
02	2-V-ND12-13687R/3	922031310000	A351 CF8M CERTIFY,SH	CF8M	004
01	2-V-NC10-13687R/3	922014750000	A216 WCB CERTIFY,NR	WCB	004
SL. No.	DRAWING No.	MATL. CODE	MATL. SPECN.	*MATL. MARK	ITEM No.

No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
-	-	-	-	-	-	-	-	-	-

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: DRG.REDRAWN WITH REV.07 ON 15.02.2020

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI - 620014.

DRN: V.BAIRAVAN  
CHD: R.L.NARAYANAN  
APPD: M.RAJAKUMAR

NAME: V.BAIRAVAN  
SIGN: R.L.NARAYANAN  
DATE: 20.05.05  
NO.OF VAR.: 20.05.05

DEPT: 365-120  
VL: /  
CODE: 320

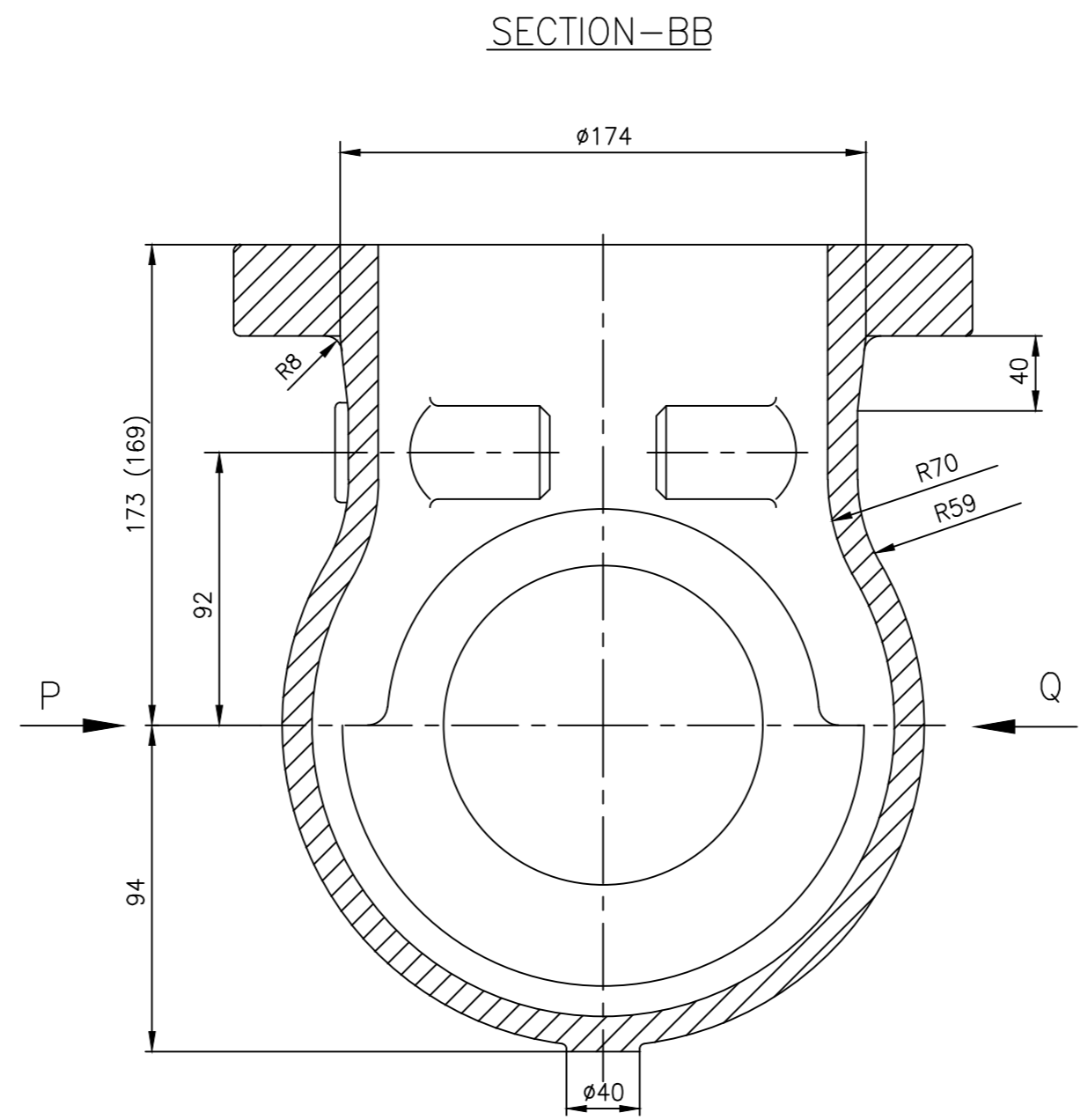
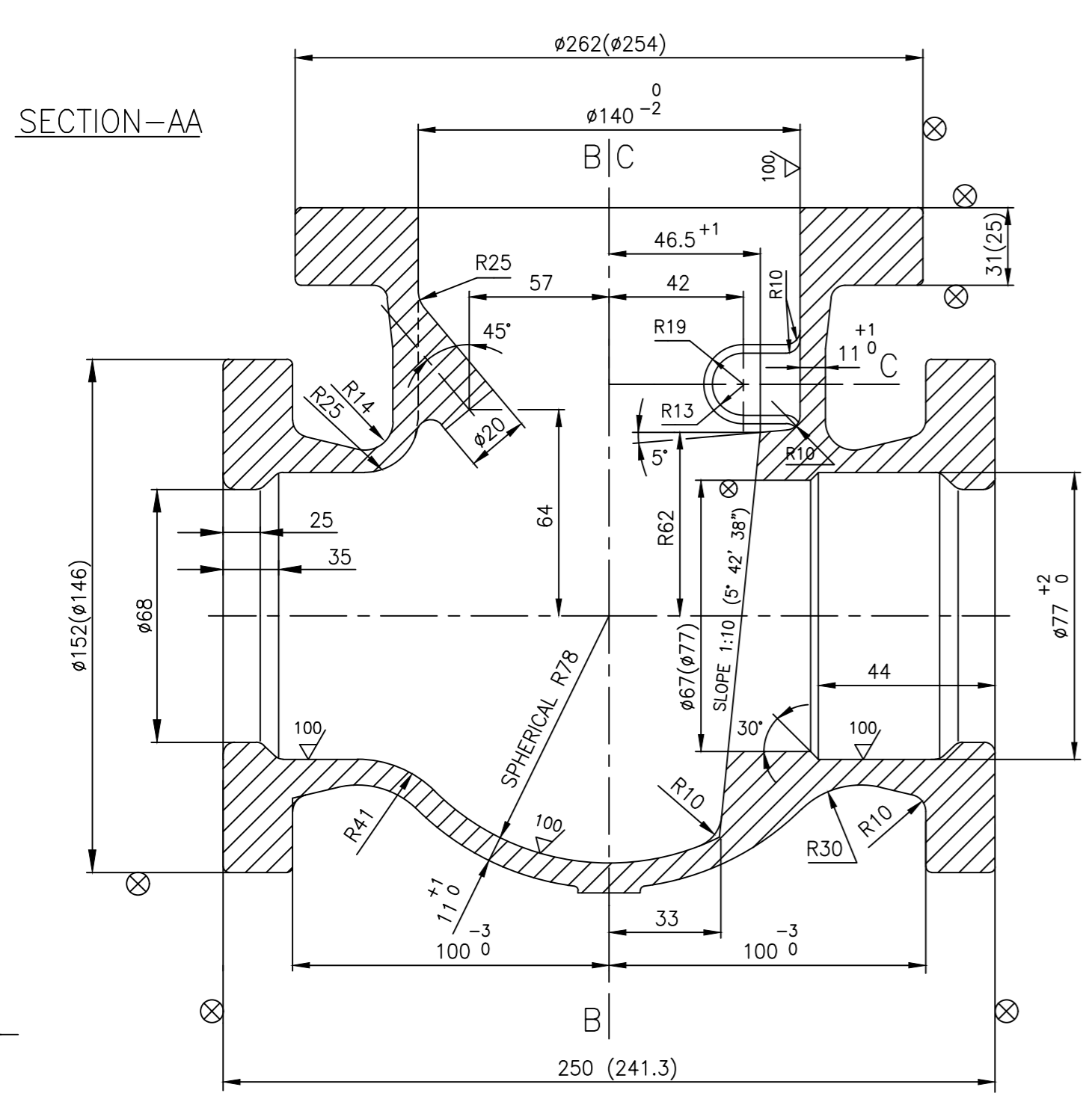
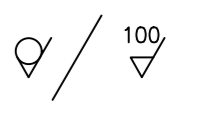
SCALE: N T S  
WEIGHT (KG): 19.2

REFERENCE INFORMATIONS: CAD REF.C213687R

TITLE: WEDGE  
CARD CODE: U 01  
DRAWING NO.: 2-V-0000-13687R  
REV: 07

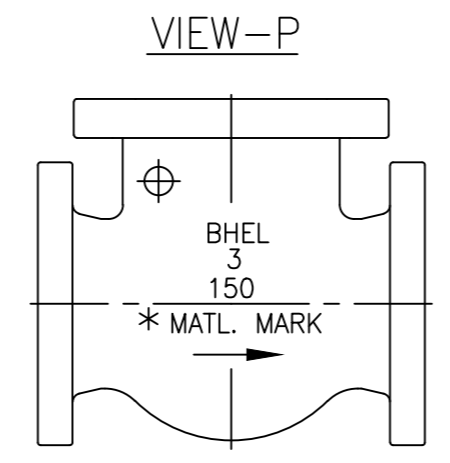
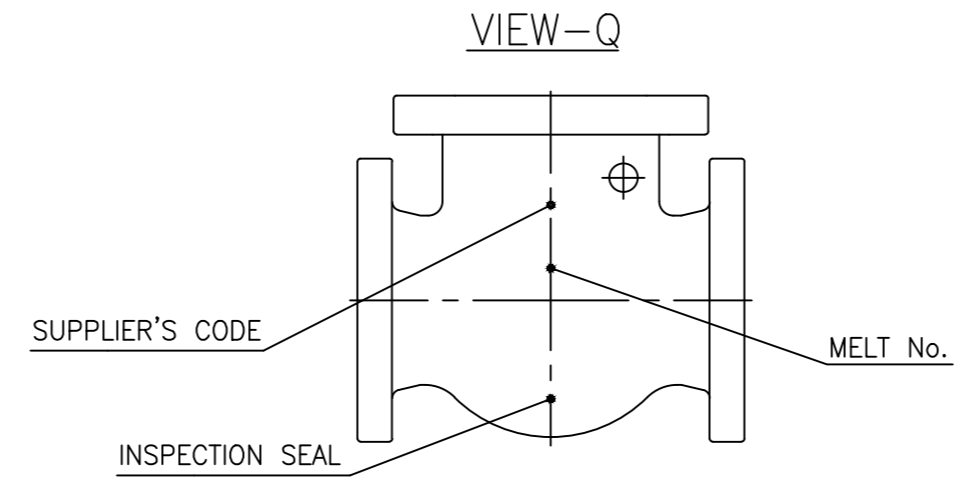
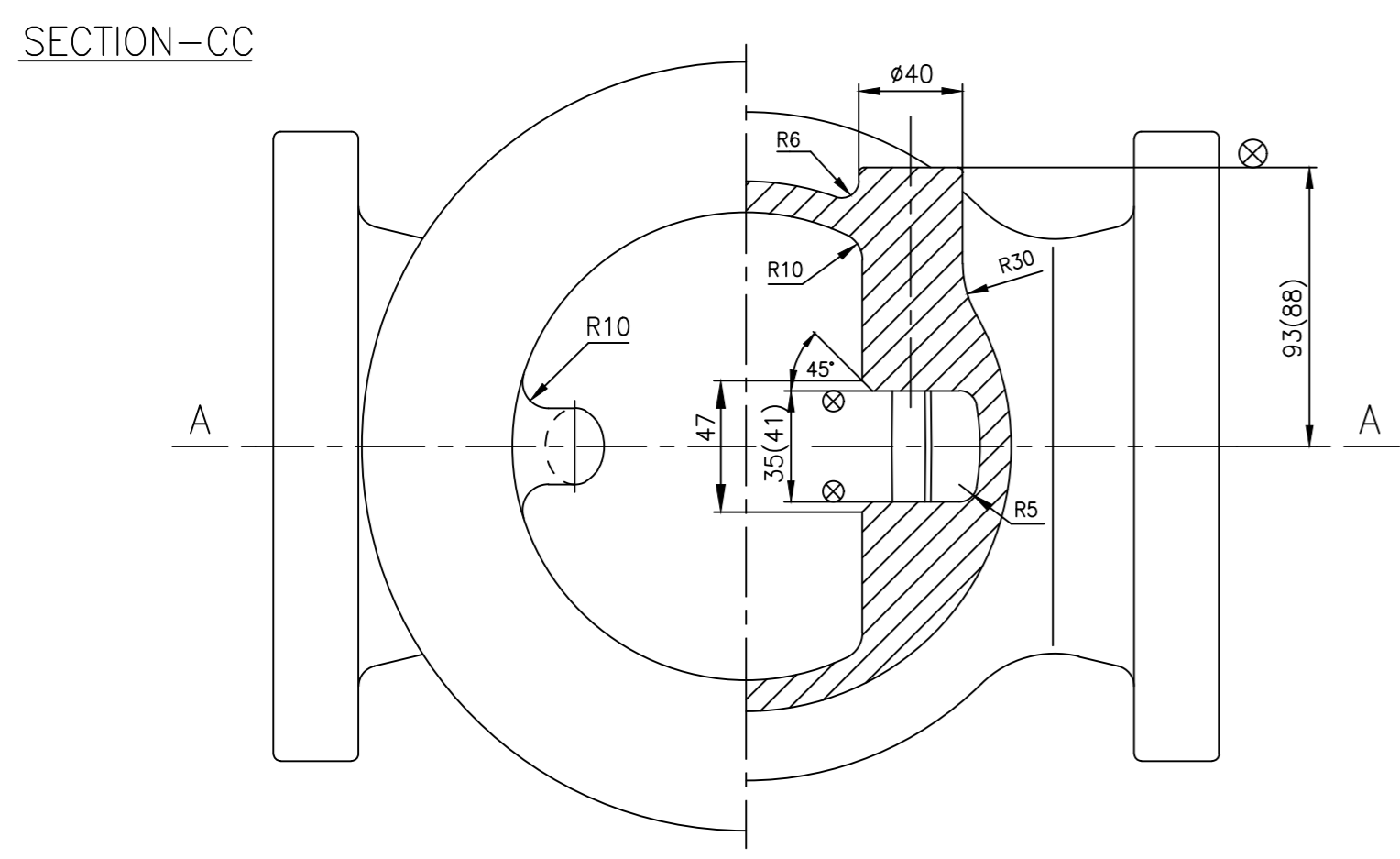
REV 07	DATE 15.02.20	ALTERED CHD & APPD SAMEER & SSK	R.P.SINGH
ZONE	DIMN. 114 <sup>+3</sup> , 85.6 & 17.7 WERE 110.6, 82.2 & 16 RESPECTIVELY DCP: 802553		

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NOTES:-

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE QUALITY PROCEDURE.
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- ALL DETAILS SHOWN IN VIEWS P & Q, EXCEPT MELT No. AND INSPECTION SEAL, ARE TO BE CAST.
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- UNSPECIFIED CASTING RADII R3 - R5 MM
- HEIGHT OF CASTING LETTERS 20MM
- ⊗ SURFACES TO BE MACHINED



CF3M	2	CASTING	92 203 884	SA351 CF3M (ATTEST)	SH	46	26.9	-	2-V-Z122-13884R	01
CF8M	1	CASTING	92 201 539	SA351 CF8M (ATTEST)	SH	46	26.9	-	2-V-Z051-13884R	01
*MATL. MARK	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

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

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

DRN	K.P.LEON	SIGN		DATE	23.03.05	NO.OF VAR.	
CHD	T.R.RAMAMURTHY			DATE	23.03.05		-
APPD	P.Boomnathan			DATE	23.03.05		-

DEPT: 365-120  
VL: /  
CODE: 320

SCALE: NTS.  
WEIGHT (KG): -  
REFERENCE INFORMATIONS: CAD:C213884R

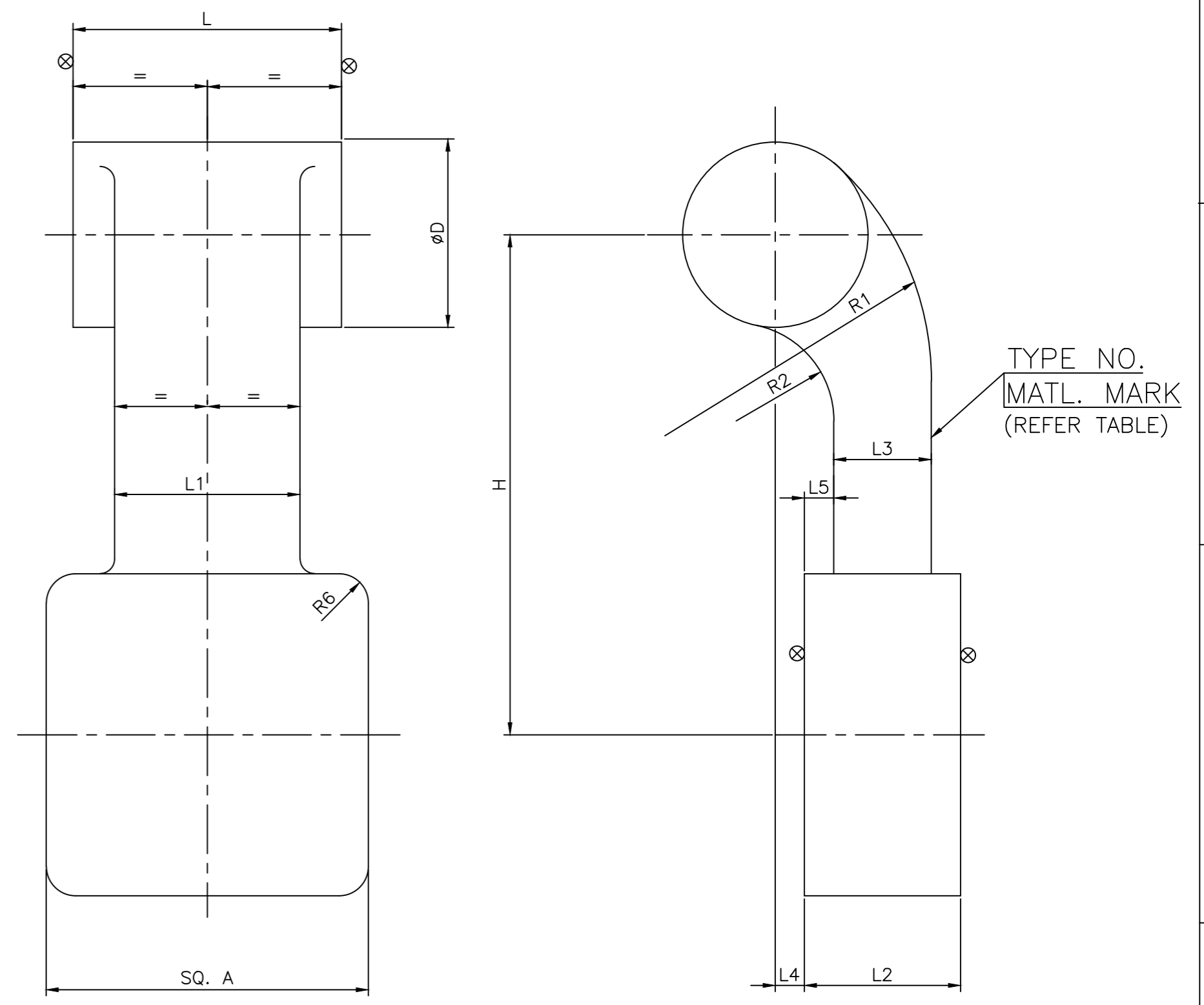
TITLE: **BODY (3"-150C BW)**  
CARD CODE: U 01  
DRAWING NO.: **2-V-0000-13884R01**  
REV: 01

REV	DATE	ALTERED	R.P.SINGH
01	05.08.19	CHD & APPD	SSK & KRS

SL.No. 02 INCLUDED.

SL. No.	DRAWING NUMBER	MATL.SPECN.	TYPE No.	MATL. MARK	MATERIAL CODE	Wt.(kg)	DIMENSIONS														APPLICABLE VALVES
							SQ.A	∅D	L	L1	L2	L3	L4	L5	H	R1	R2				
01	2-V-5144-14084R	A216 WCB NR, CERTIFY	5144	WCB	92 201 664	2.00	66	38	55	38	32	18	6	6	102.5	60	20	4"-150C & 300C-FV			
02	2-V-5182-14084R	A217 WC9 N&T, CERTIFY	5182	WC9	92 201 665	2.00	66	38	55	38	32	18	6	6	102.5	60	20	4"-150C & 300C-FV			
03	2-V-Z012-14084R	A351 CF8M SH, CERTIFY	Z012	CF8M	92 201 666	2.00	66	38	55	38	32	18	6	6	102.5	60	20	4"-150C & 300C-FV			
04	2-V-5173-14084R	A216 WCB NR, CERTIFY	5173	WCB	92 201 667	3.65	85	38	65	48	38	26	10.5	6	132	75	25	6"-150C & 300C-FV			
05	2-V-5193-14084R	A217 WC9 N&T, CERTIFY	5193	WC9	92 201 668	3.65	85	38	65	48	38	26	10.5	6	132	75	25	6"-150C & 300C-FV			
06	2-V-Z042-14084R	A351 CF8M SH, CERTIFY	Z042	CF8M	92 201 669	3.65	85	38	65	48	38	26	10.5	6	132	75	25	6"-150C & 300C-FV			
07	2-V-5150-14084R	A216 WCB NR, CERTIFY	5150	WCB	92 201 670	7.30	105	50	80	60	48	34	12	7	160	85	25	8"-150C & 300C-FV			
08	2-V-5195-14084R	A217 WC9 N&T, CERTIFY	5195	WC9	92 201 671	7.30	105	50	80	60	48	34	12	7	160	85	25	8"-150C & 300C-FV			
09	2-V-Z048-14084R	A351 CF8M SH, CERTIFY	Z048	CF8M	92 201 672	7.30	105	50	80	60	48	34	12	7	160	85	25	8"-150C & 300C-FV			
10	2-V-5158-14084R	A216 WCB NR, CERTIFY	5158	WCB	92 201 771	0.75	45	32	50	30	24	10	6.6	7	64	28	12	2"-150C-FV			
11	2-V-Z004-14084R	A351 CF8 SH, CERTIFY	Z004	CF8	92 201 772	0.75	45	32	50	30	24	10	6.6	7	64	28	12	2"-150C-FV			
12	2-V-Z057-14084R	A351 CF8M SH, CERTIFY	Z057	CF8M	92 201 773	0.75	45	32	50	30	24	10	6.6	7	64	28	12	2"-150C-FV			
13	2-V-5153-14084R	A216 WCB NR, CERTIFY	5153	WCB	92 201 774	0.86	45	34	50	30	26	12	4.1	7	78	28	16	2"-300C-FV			
14	2-V-Z032-14084R	A351 CF8 SH, CERTIFY	Z032	CF8	92 201 775	0.86	45	34	50	30	26	12	4.1	7	78	28	16	2"-300C-FV			
15	2-V-5198-14084R	A217 WC6 N&T, CERTIFY	5198	WC6	92 201 776	0.86	45	34	50	30	26	12	4.1	7	78	28	16	2"-300C-FV			
16	2-V-5157-14084R	A216 WCB NR, CERTIFY	5157	WCB	92 201 777	0.90	45	34	50	30	26	12	1.9	7	89.5	30	16	3"-150C-FV			
17	2-V-5199-14084R	A351 CF8 SH, CERTIFY	5199	CF8	92 201 778	0.90	45	34	50	30	26	12	1.9	7	89.5	30	16	3"-150C-FV			
18	2-V-Z024-14084R	A351 CF8M SH, CERTIFY	Z024	CF8M	92 201 779	0.90	45	34	50	30	26	12	1.9	7	89.5	30	16	3"-150C-FV			
19	2-V-5152-14084R	A216 WCB NR, CERTIFY	5152	WCB	92 201 780	1.21	54	34	50	33	30	16	4.9	7	89.5	32	16	3"-300C-FV			
20	2-V-Z005-14084R	A217 WC9 N&T, CERTIFY	Z005	WC9	92 201 781	1.21	54	34	50	33	30	16	4.9	7	89.5	32	16	3"-300C-FV			
21	2-V-Z015-14084R	A351 CF8 SH, CERTIFY	Z015	CF8	92 201 782	1.21	54	34	50	33	30	16	4.9	7	89.5	32	16	3"-300C-FV			
22	2-V-Z058-14084R	A351 CF8M SH, CERTIFY	Z058	CF8M	92 201 783	1.21	54	34	50	33	30	16	4.9	7	89.5	32	16	3"-300C-FV			
23	2-V-Z066-14084R	A351 CF8M SH, CERTIFY	Z066	CF8M	92 201 784	0.86	45	34	50	30	26	12	4.1	7	78	28	16	2"-300C-FV			
24	2-V-Z099-14084R	A217 WC9 NT, CERTIFY	Z099	WC9	92 203 355	0.86	45	34	50	30	26	12	4.1	7	78	28	16	2"-300C-FV			
# 25	2-V-U633-14084R	A351 CF8 SH, CERTIFY	U633	CF8	92 203 533	0.90	45	32	50	30	24	10	6.6	7	64	28	12	3"-150C-FV			
# 26	2-V-U638-14084R		U638		92 203 534	0.75												2"-150C-FV			
# 27	2-V-U639-14084R		U639		92 203 535	0.86												2"-300C-FV			
# 28	2-V-U934-14084R		U934		92 203 691	3.65												6"-150C-FV			
# 29	2-V-U935-14084R	U935	92 203 696	2.00	4"-150C-FV																
30	2-V-Z113-14084R	SA995 CD3MN REF. NOTE, CERTIFY	Z113	CD3MN	92 203 613	2.00	66	38	55	38	32	18	6	6	102.5	60	20	4"-150C-FV			
31	2-V-Z125-14084R	A351 CF3M SH, CERTIFY	Z125	CF3M	92 203 905	2.00	66	38	55	38	32	18	6	6	102.5	60	20	4"-150C & 300C-FV			
32	2-V-Z123-14084R	A351 CF3M SH, CERTIFY	Z123	CF3M	92 203 898	3.65	85	38	65	48	38	26	10.5	6	132	75	25	6"-150C & 300C-FV			
33	2-V-Z124-14084R	A351 CF3M SH, CERTIFY	Z124	CF3M	92 203 902	7.30	105	50	80	60	48	34	12	7	160	85	25	8"-150C & 300C-FV			
34	2-V-Z120-14084R	A351 CF3M SH, CERTIFY	Z120	CF3M	92 201 779	0.90	45	34	50	30	26	12	1.9	7	89.5	30	16	3"-150C-FV			

SL. No.	DRAWING NUMBER	MATL.SPECN.	TYPE No.	MATL. MARK	MATERIAL CODE	Wt.(kg)	DIMENSIONS														APPLICABLE VALVES
							SQ.A	∅D	L	L1	L2	L3	L4	L5	H	R1	R2				
35	2-V-Z131-14084R	A351 CF8M SH, CERTIFY	Z131	CF8M	92 206 133	0.75	45	32	50	30	24	10	6.6	7	64	28	12	2"-150C-FV			
#36	2-V-UB04-14084R	A351 CF8M SH, CERTIFY	UB04	CF8M	92 206 134	0.75	45	32	50	30	24	10	6.6	7	64	28	12	2"-150C-FV			
#37	2-V-UB05-14084R	A351 CF8M SH, CERTIFY	UB05	CF8M	92 206 144	0.90	45	34	50	30	26	12	1.9	7	89.5	30	16	3"-150C-FV			
#38	2-V-Z137-14084R	A315 CF3M SH, CERTIFY	Z137	CF3M	92 206 226	0.75	45	32	50	30	24	10	6.6	7	64	28	12	2"-150C-FV			
#39	2-V-UB17-14084R	A315 CF3M SH, CERTIFY	UB17	CF3M	92 206 227	0.90	45	34	50	30	26	12	1.9	7	89.5	30	16	3"-150C-FV			



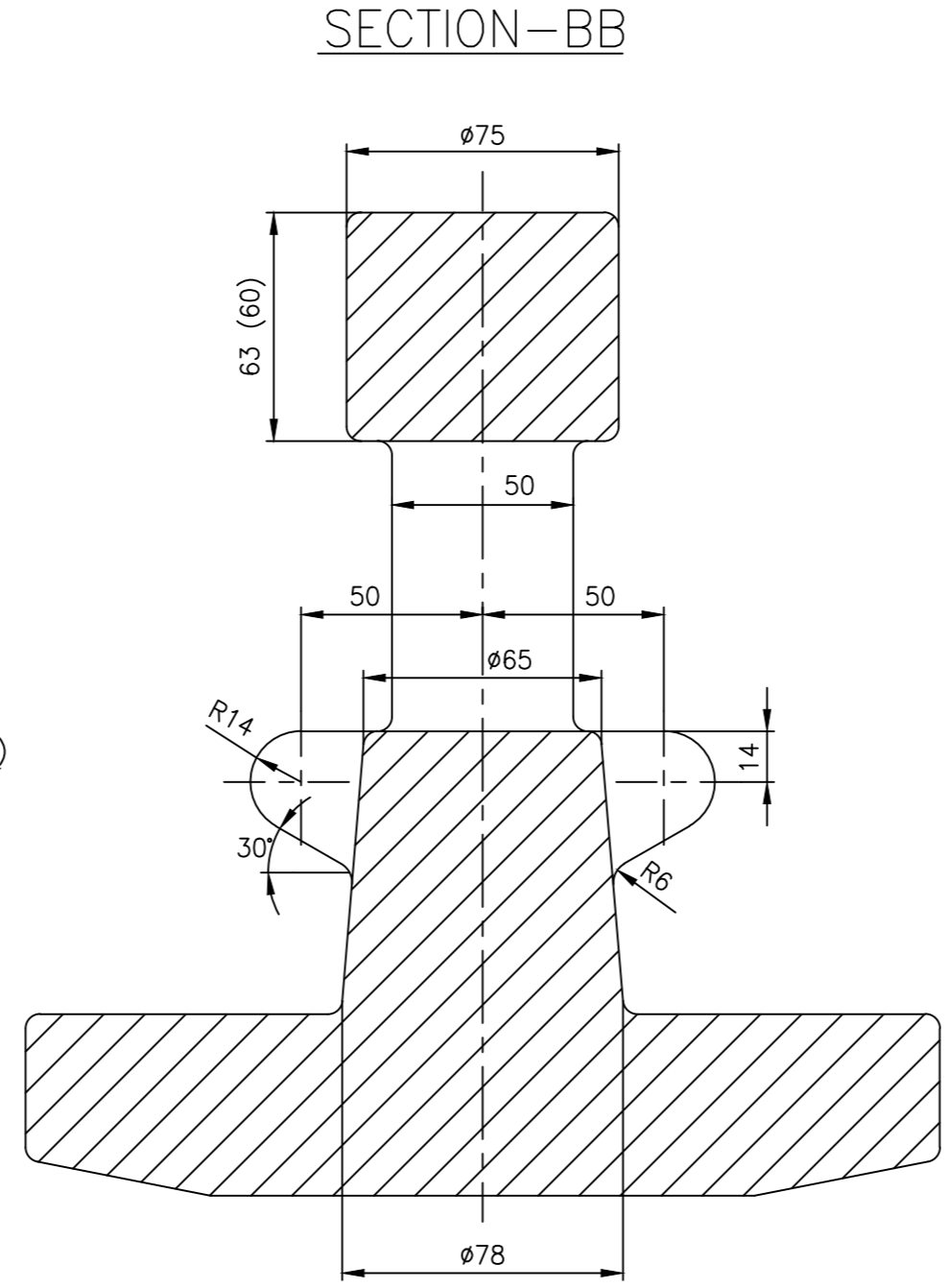
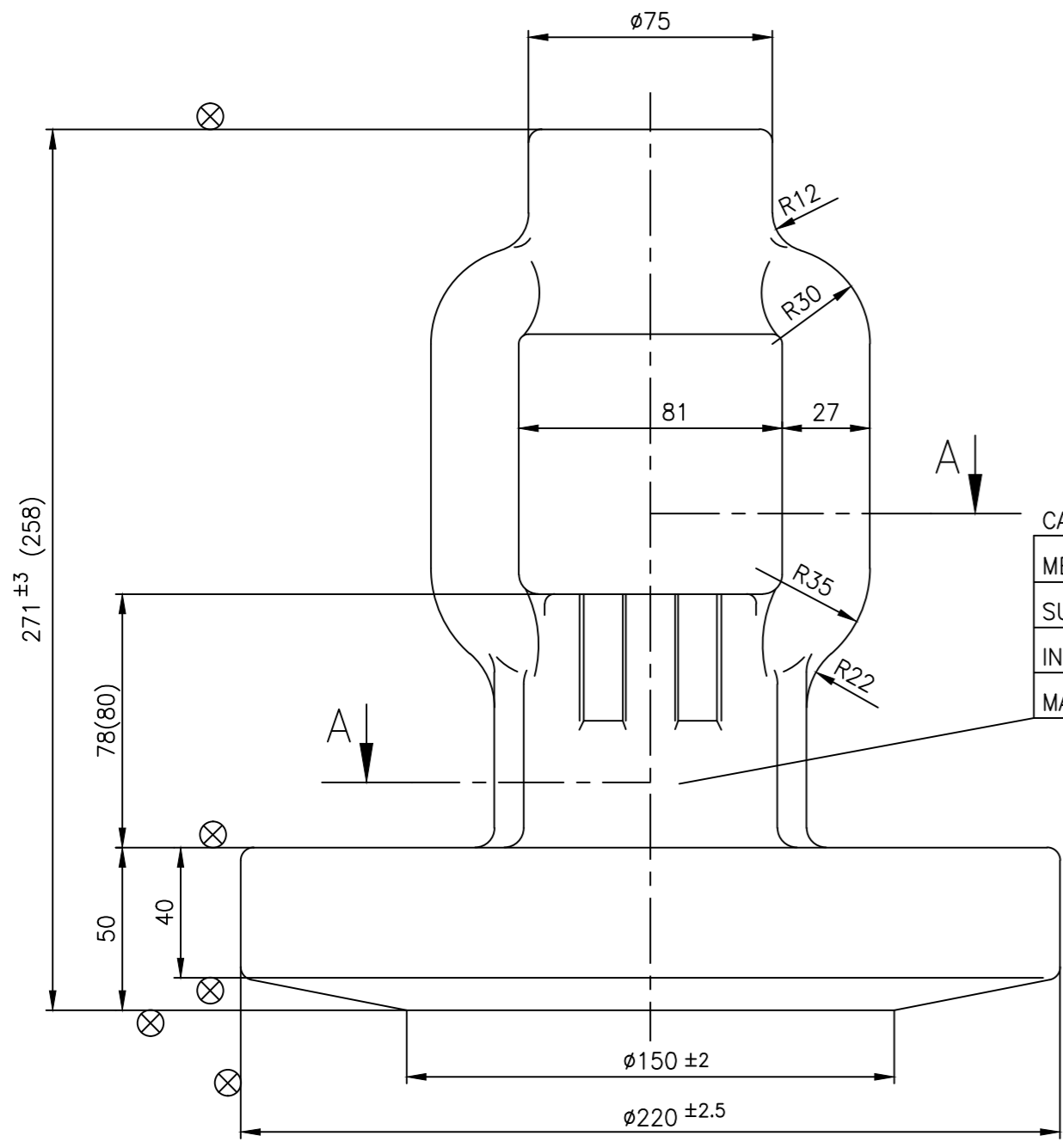
**NOTES:-**

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
- PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED CASTING DIMENSIONS - REFER LATEST APPLICABLE QUALITY PROCEDURE.
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- UNSPECIFIED CASTING RADII 3 - 5 MM.
- HEIGHT OF CASTING LETTERS 5MM.
- ⊗ SURFACES TO BE MACHINED FURTHER.
- # MARKED ITEMS ARE IGC TEST SHALL BE CONDUCTED
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPD: SSK	
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT: 04.10.21	
REV 09	SL. No. 38 & 39 INCLUDED			REV 08	SL. No. 35 TO 37 INCLUDED	
ZONE -				ZONE -		

No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No															
-	-	-	-	-	-	-	-	-	-															
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT																								
DRG.REDRAWN WITH REV.07 ON 01.11.2019																								
<table border="1"> <tr> <td>DRN</td> <td>T.R.RAMAMURTHY</td> <td>SIGN</td> <td>DATE</td> <td>NO.OF VAR.</td> </tr> <tr> <td>CHD</td> <td>T.R.RAMAMURTHY</td> <td></td> <td>30.05.08</td> <td>-</td> </tr> <tr> <td>APPD</td> <td>P.Boomianathan</td> <td></td> <td>30.05.08</td> <td>-</td> </tr> </table>										DRN	T.R.RAMAMURTHY	SIGN	DATE	NO.OF VAR.	CHD	T.R.RAMAMURTHY		30.05.08	-	APPD	P.Boomianathan		30.05.08	-
DRN	T.R.RAMAMURTHY	SIGN	DATE	NO.OF VAR.																				
CHD	T.R.RAMAMURTHY		30.05.08	-																				
APPD	P.Boomianathan		30.05.08	-																				
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS																
CODE	320	NTS	-	CAD:C214084R				-																
TITLE				CARD CODE	DRAWING NO.				REV															
ARM (CASTING)				U 01	2-V-0000-14084R				09															

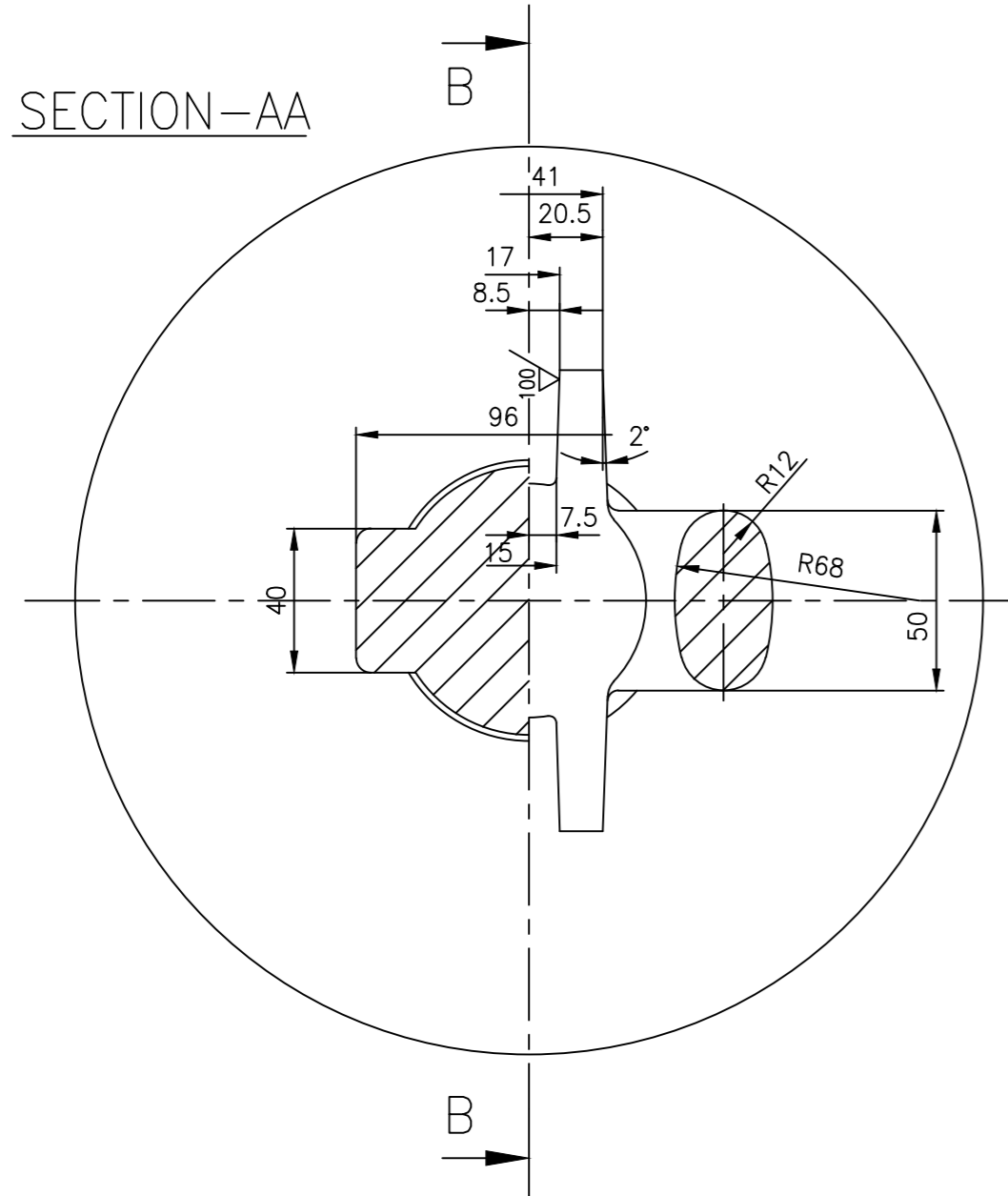
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NOTES:

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION
- CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- UNSPECIFIED CASTING RADII 3 - 5 MM
- HEIGHT OF CASTING LETTERS 20MM
- ⊗ SURFACES TO BE MACHINED
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- RISER REMAINS ARE TO COMPLETELY REMOVED SUITABLY.
- SUPPLIER'S CODE TO BE CAST AND ALL OTHER DETAILS SHALL BE PUNCHED.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

SECTION-AA



CF3M	#09	CASTING	--	A351 CF3M CERTIFY	S H	--	--	24.0	2.V.UB19.14085R	06
CF8M	#08	CASTING	--	A351 CF8M CERTIFY	S H	--	--	24.0	2.V.UB03.14085R	06
CF3M	07	CASTING	--	A351 CF3M CERTIFY	S H	--	--	24.0	2.V.P767.14085R	06
CF8	#06	CASTING	--	A351 CF8 CERTIFY	S H	--	--	24.0	2.V.P760.14085R	06
CF8M	05	CASTING	--	A351 CF8M CERTIFY	S H	--	--	24.0	2.V.P464.14085R/01	06
CF8	04	CASTING	--	A351 CF8 CERTIFY	S H	--	--	24.0	2.V.P259.14085R/01	06
WC9	03	CASTING	--	A217 WC9 CERTIFY	N & T	--	--	24.0	2.V.P324.14085R/01	06
WC6	02	CASTING	--	A217 WC6 CERTIFY	N & T	--	--	24.0	2.V.P364.14085R/01	06
WCB	01	CASTING	--	A216 WCB CERTIFY	NORMALISED	--	--	24.0	2.V.2897.14085R/01	06

DCP No. -	ALTD: RPS	APPD: SSK	CHD: MK	DT: 27.09.22
REV 06	SL. No. 09 INCLUDED			
ZONE -				
DCP No. -	ALTD: TS	APPD: SSK	CHD: RPS	DT: 04.10.21
REV 05	SL. No. 08 INCLUDED.			
ZONE -	WEIGHT UPDATED.			
DCP No. -	ALTD: RPS	APPD: KRS	CHD: SSK	DT: 26.02.19
REV 04	SL. No. 07 INCLUDED.			
ZONE -				

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

DEPT VL	SCALE NTS	WEIGHT (KG) REFER TABLE	REFERENCE INFORMATION	NO. OF ITEMS
CODE 320				
TITLE	YOKE (3"-300C GLOBE VALVE)		CARD CODE U 01	REV 06

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DRN	T.R.RAMAMURTHY	SIGN	DATE 19.01.08	NO. OF VAR.
CHD	T.R.RAMAMURTHY		19.01.08	-
APPD	P. BOOMINATHAN		19.01.08	-

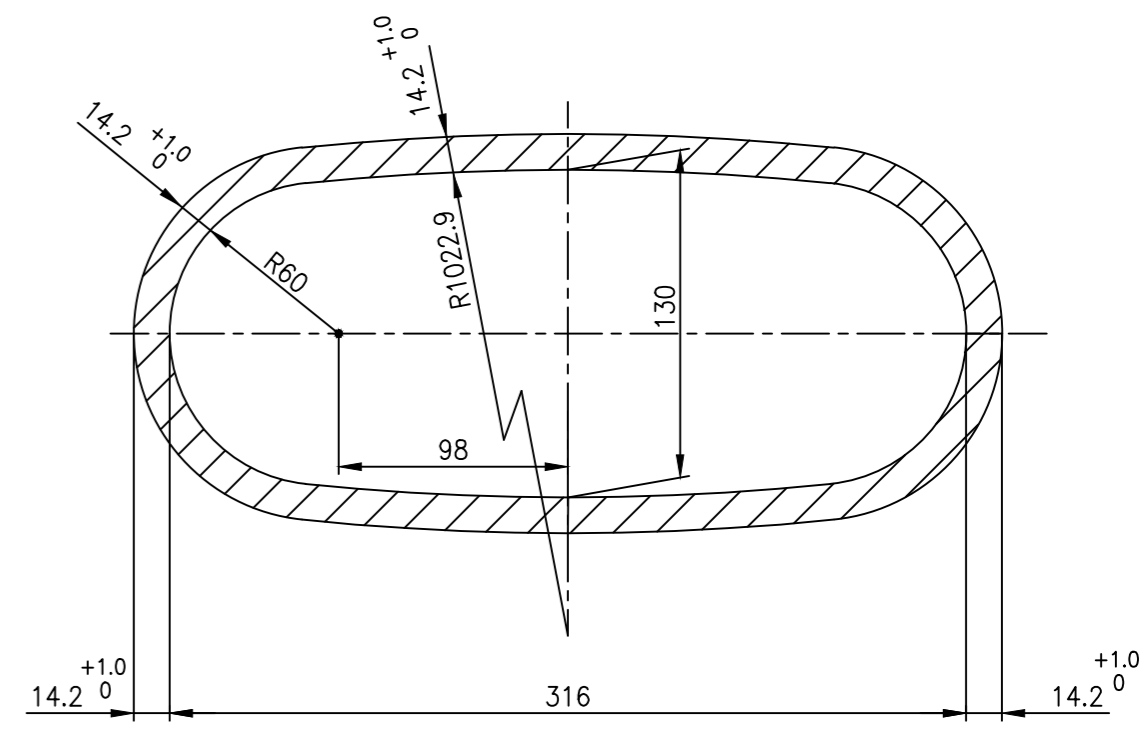
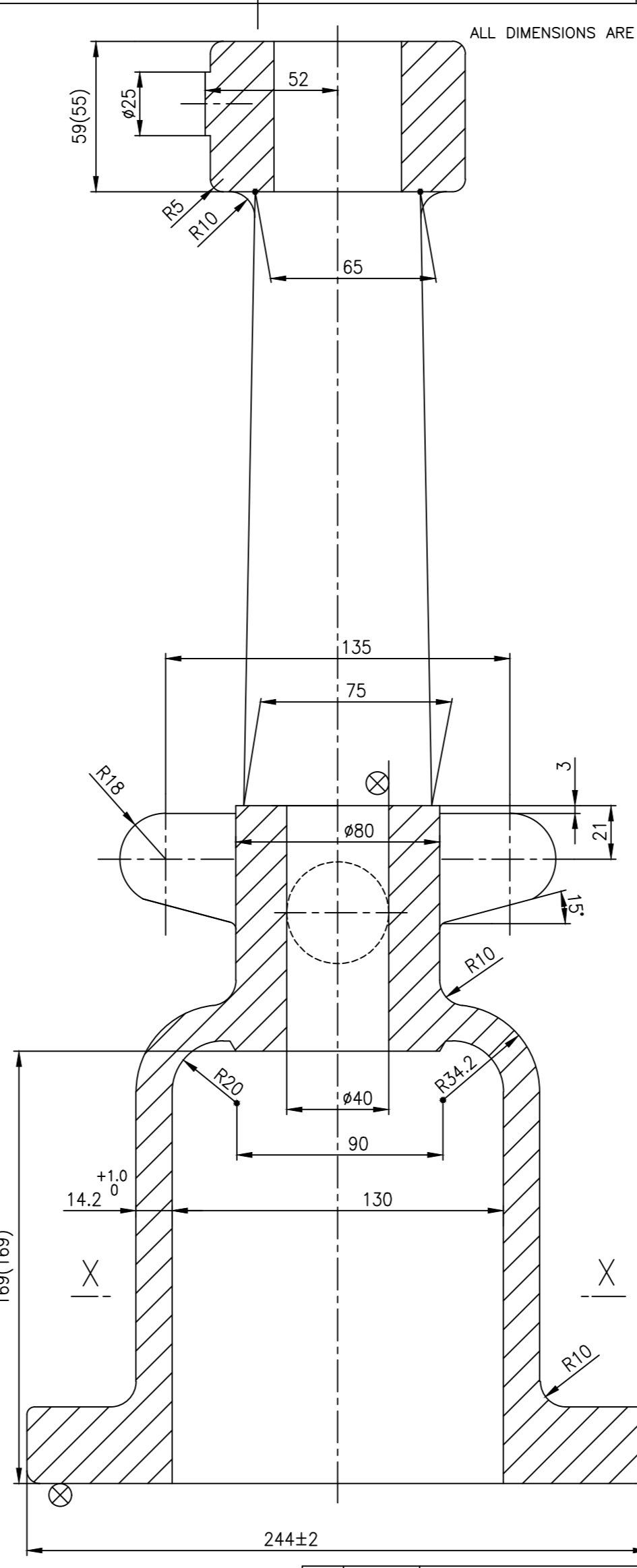
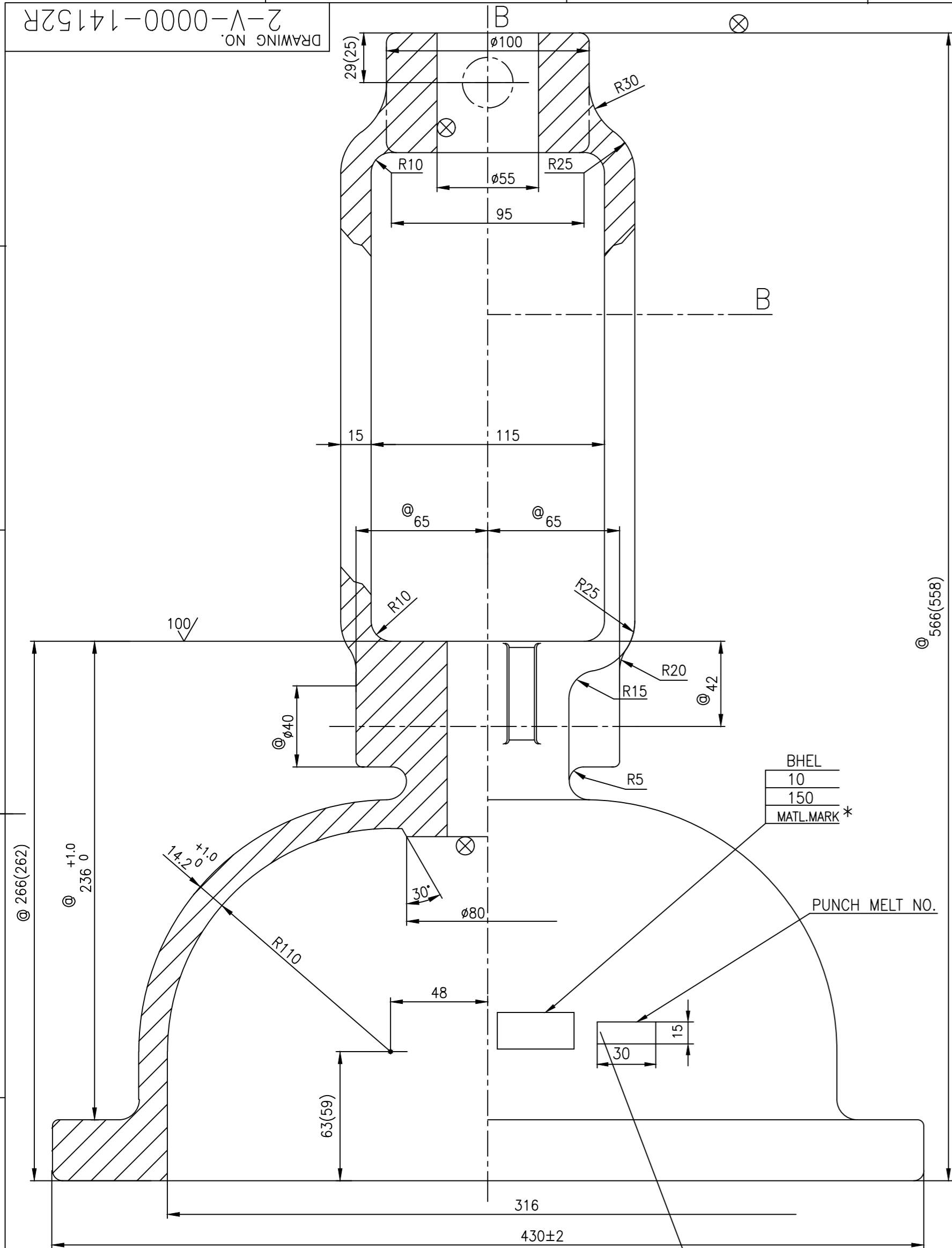


DRAWING NO. 2-V-0000-14152R

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

100/

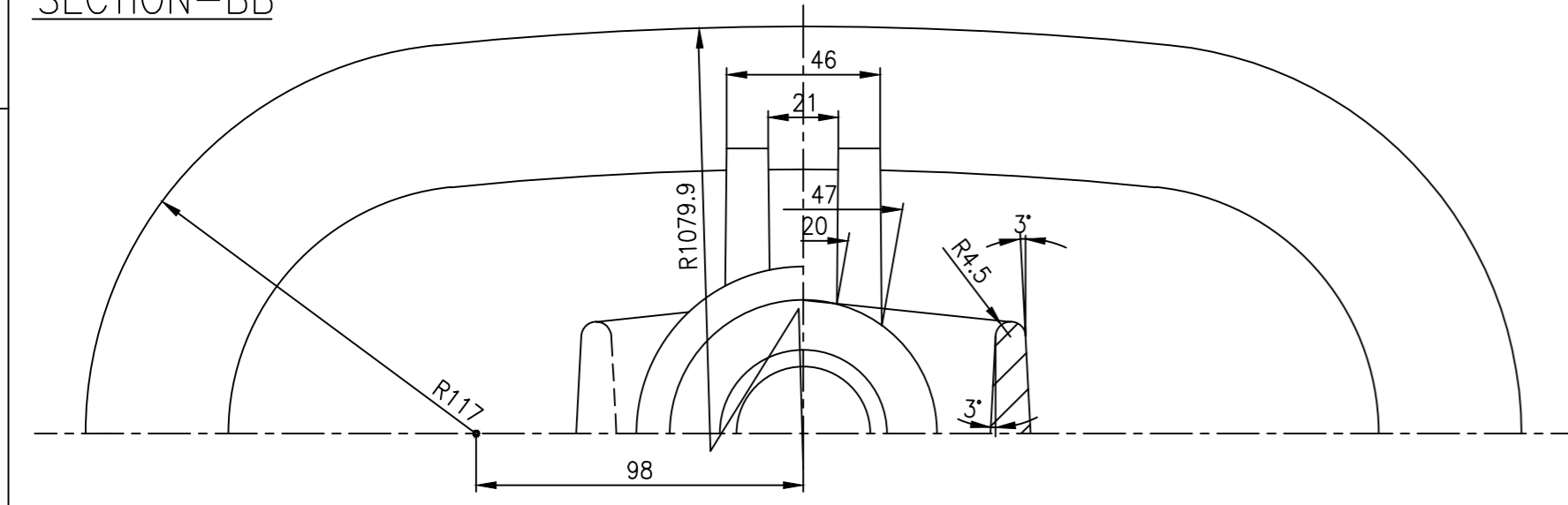
SECTION-XX



NOTES:

1. NECESSARY ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
2. FOR PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED LATEST DIMENSIONS REFER LATEST APPLICABLE QUALITY WORK INSTRUCTIONS
3. FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
4. 100/ INDICATES THE CASTINGSURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
5. UNSPECIFIED CASTING RADIOUS R3 MAX..
6. ⊗ THIS MARK INDICATES THE SURFACES TO BE MACHINED.
7. HEIGHT OF CASTING LETTERS 20mm.
8. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTIONS PROCEDURE IN ALL RESPECTS.
9. EXCEPT @ MARKED DIMENSIONS THIS DRG. IS DIMENSIONALLY IDENTICAL TO DRG. No. 2-V-NC10-13685R.
10. HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

SECTION-BB



REV	DATE	ALTERED	R.P.SINGH
05	01.10.19	CHD & APPD	SAMEER & SSK
SL. No. 05 INCLUDED.			
04	05.03.19	CHD & APPD	SSK & KRS
SL.No.04 INCLUDED NOTE No.10 INCLUDED			
02	28.05.13	CHD & APPD	SSK & KRS
SL.No. 02 INCLUDED			

CF3M	05	CASTING	92 203 950	A351 CF3M CERTIFY	SOLUTION ANNEALED	--	42	--	2.V.NP83.14152R	006
CD3MN	04	CASTING	92 203 635	SA995 GR.CD3MN ATTEST	REFER NOTE	--	42	--	2.V.NP55.14152R	006
CF8	03	CASTING	92 203 329	A351 CF8 CERTIFY	SOLUTION ANNEALED	--	42	--	2.V.NJ29.14152R	006
CF8M	02	CASTING	92 203 130	A351 CF8M CERTIFY	SOLUTION ANNEALED	--	42	--	2.V.ND12.14152R	006
WCB	01	CASTING	92 201 687	A216 WCB CERTIFY	NORMALAISED	--	42	--	2.V.NC66.14152R	006

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

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

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI - 620014.

DRN: A.S.PANDY, SIGN: T.R.R.MURTHY, DATE: 28.09.07, NO.OF VAR.: 28.09.07  
CHD: T.R.R.MURTHY, DATE: 28.09.07  
APPD: P.Boomnathan, DATE: 28.09.07

DEPT: VL, SCALE: NTS, WEIGHT (KG): REF. TABLE, REFERENCE INFORMATION: CAD.REF.C214152R, NO. OF ITEMS: 320

TITLE: **YOKE CUM BONNET**  
(10"-C150-GV-HW)

CARD CODE: U 01, DRAWING NO.: 2-V-0000-14152R, REV: 05

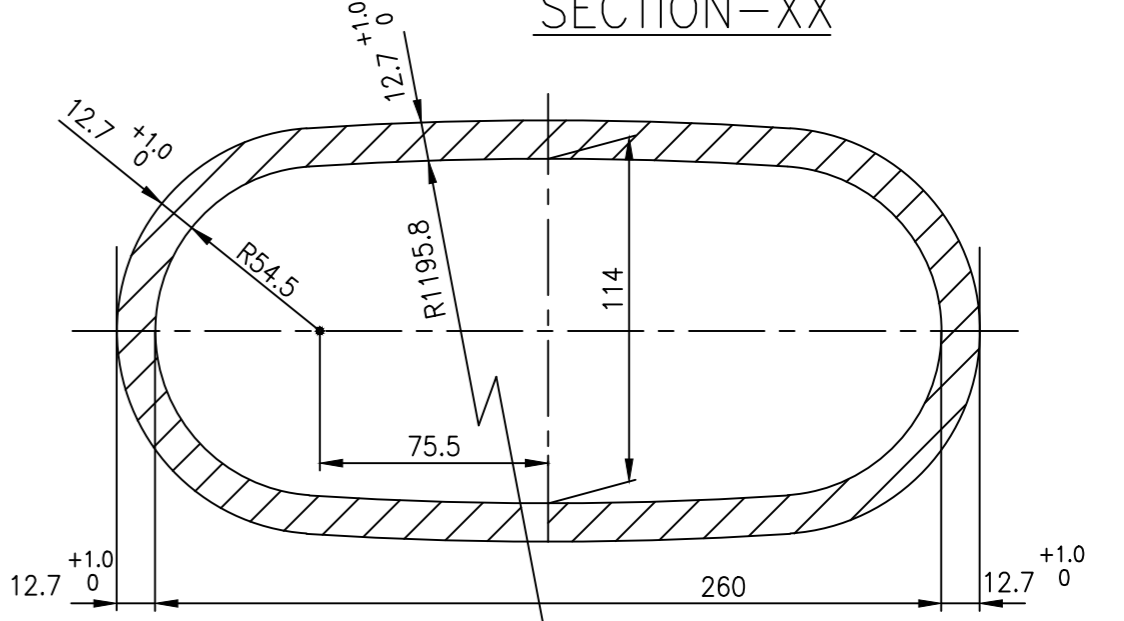
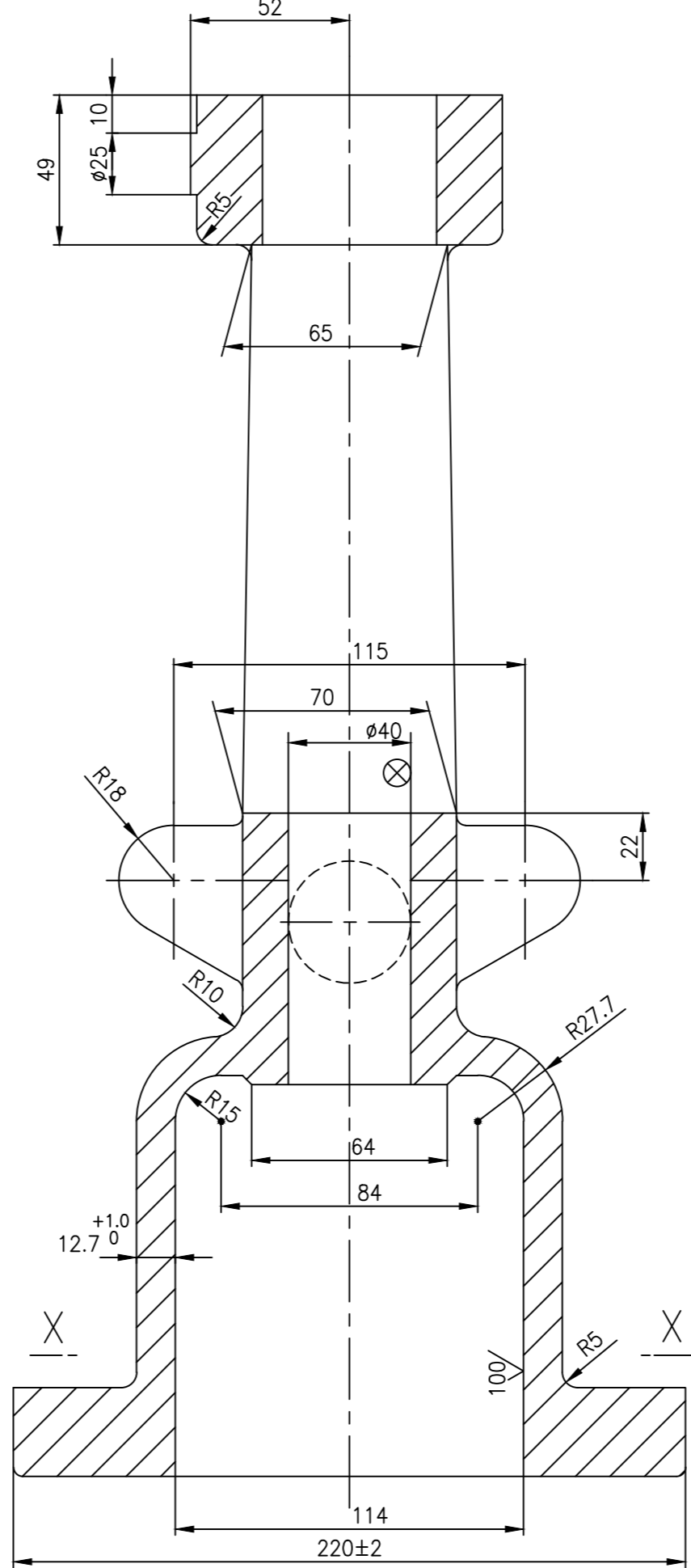
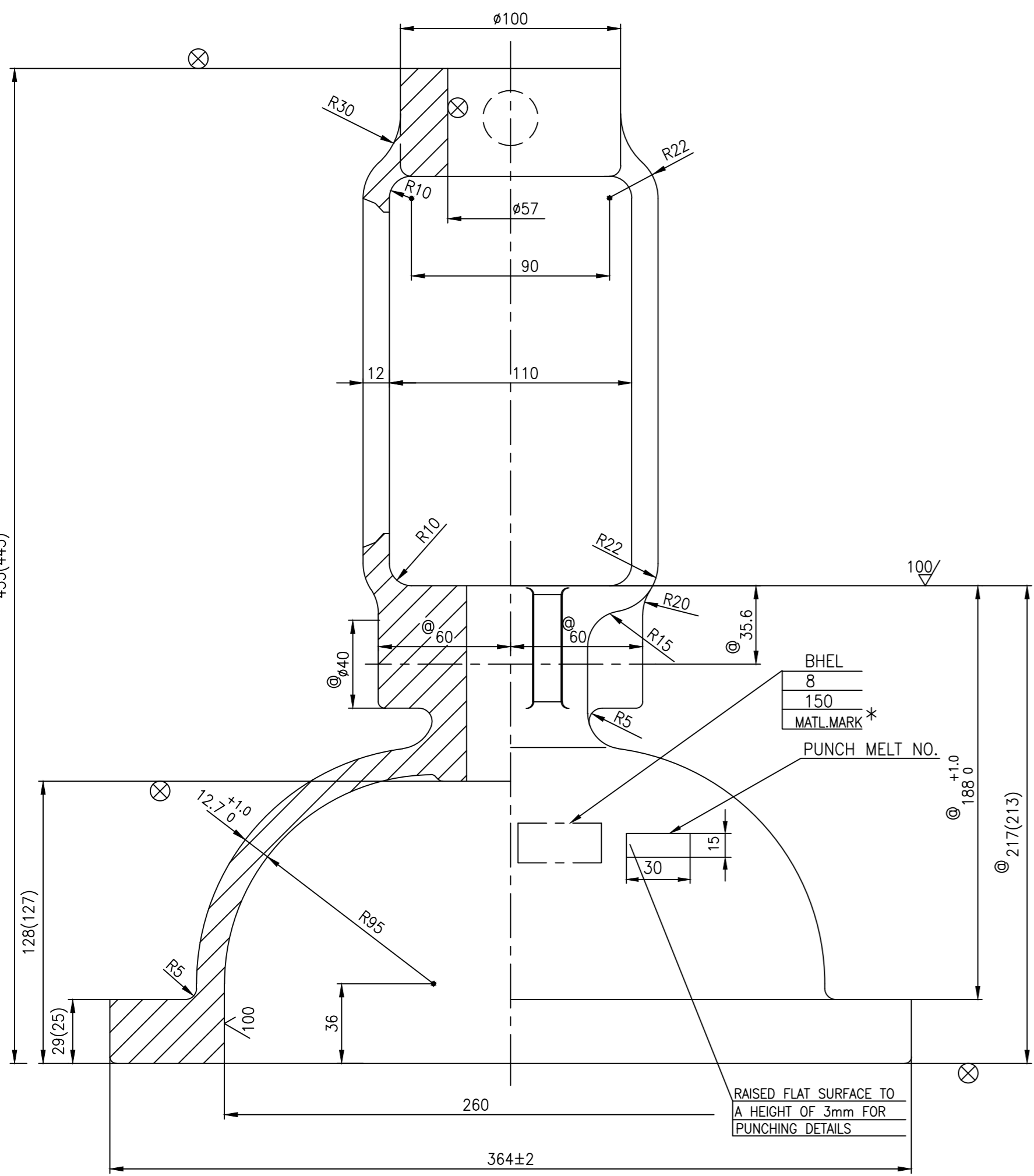


SECTION-AA

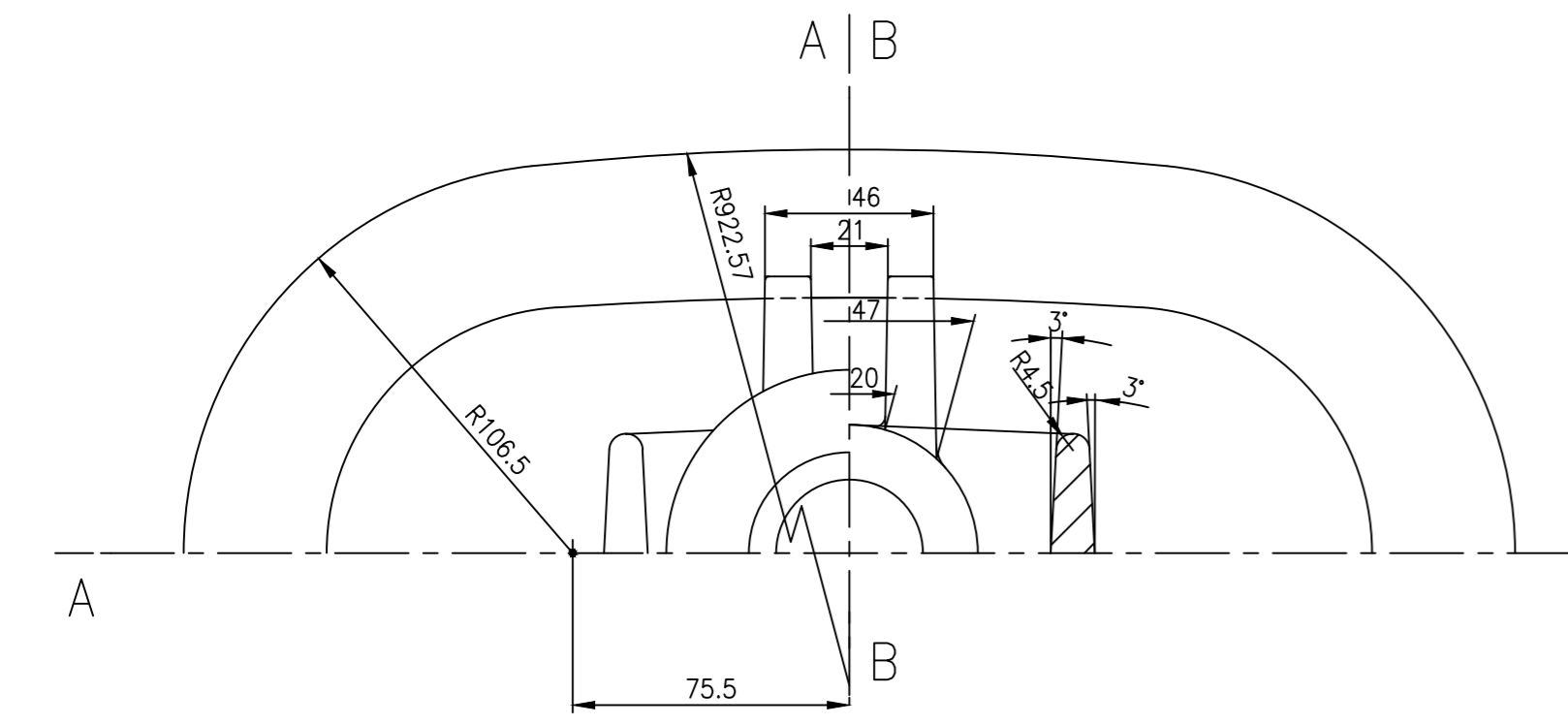
SECTION-BB

ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP  $\sqrt{100}$

SECTION-XX



- NOTES:
- NECESSARY ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
  - FOR PERMISSIBLE DIMENSIONAL DEVIATIONS OF NON TOLERANCED LATEST DIMENSIONS REFER LATEST APPLICABLE QUALITY WORK INSTRUCTIONS
  - FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
  - $\sqrt{100}$  INDICATES THE CASTING SURFACES MUST BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
  - UNSPECIFIED CASTING RADIUS R3 MAX..
  - ⊗ THIS MARK INDICATES THE SURFACES TO BE MACHINED.
  - HEIGHT OF CASTING LETTERS 20mm.
  - CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTIONS IN ALL RESPECTS.
  - EXCEPT ⊗ MARKED DIMENSIONS THIS DRG. IS DIMENSIONALLY IDENTICAL TO DRG. No. 2-V-NC08-13169R.
  - HEAT TREATMENT FOR SA995 CD3MN AS PER ASTM STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)
  - # MARKED ITEMS IGC TEST SHALL BE CONDUCTED



DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: RPS	APPD: SSK	
-	CHD: MK	DT: 27.09.22	-	CHD: SAB	DT: 15.11.19	
REV 08	SL. No. 09 INCLUDED			REV 07	SL. No. 08 INCLUDED	
ZONE -				ZONE -		
DCP No.	ALTD: RPS	APPD: KRS	DCP No.	ALTD: SSK	APPD: KRS	
-	CHD: SSK	DT: 12.12.18	-	CHD: SSK	DT: 30.01.18	
REV 06	SL. No. 06 & 07 INCLUDED			REV 05	FOR SL.NO.05 MATERIAL SPECIFICATION CHANGED TO CD3MN FROM 6A	
ZONE -	NOTES No. 11 INCLUDED			ZONE -	NOTE SL.NO.10 HEAT TREATMENT PROCESS REVISED	

CF3M	#09	CASTING	-	A351 CF3M CERTIFY	SH	-	23	--	2.V.UB26.14163R 92 206 257 0000	006
CF3M	08	CASTING	-	A351 CF3M CERTIFY	SH	-	23	--	2.V.NP82.14163R 92 203 886 0000	006
CF8	#07	CASTING	-	A351 CF8 CERTIFY	SH	-	23	--	2.V.U951.14163R 92 203 738 0000	006
CF8	06	CASTING	-	A351 CF8 CERTIFY	SH	-	23	--	2.V.NP58.14163R 92 203 734 0000	006
CD3MN	05	CASTING	-	A995 Gr.CD3MN CERTIFY	REFER NOTE	-	23	--	2.V.NP35.14163R/1 92 203 504 0000	006
CF8	04	CASTING	-	A351 CF8 CERTIFY	SH	-	23	--	2.V.NJ28.14163R 92 203 326 0000	006
CF8M	03	CASTING	-	A351 CF8M CERTIFY	SH	-	23	--	2.V.ND15.14163R 92 203 176 0000	006
WC9	02	CASTING	-	A217 WC9 CERTIFY	NT	-	23	--	2.V.ND06.14163R 92 203 117 0000	006
WCB	01	CASTING	-	A216 WCB CERTIFY	NORMALISED	-	23	--	2.V.NC65.14163R 92 201 691 0000	006
MATL. MARK	No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No

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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

**BHARAT HEAVY ELECTRICALS LTD.**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DRN A.S.PANDY SIGN DATE 27.09.07 NO.OF VAR. 08

CHD T.R.R.MURTHY DATE 27.09.07

APPD P.BOOMINATHAN DATE 27.09.07

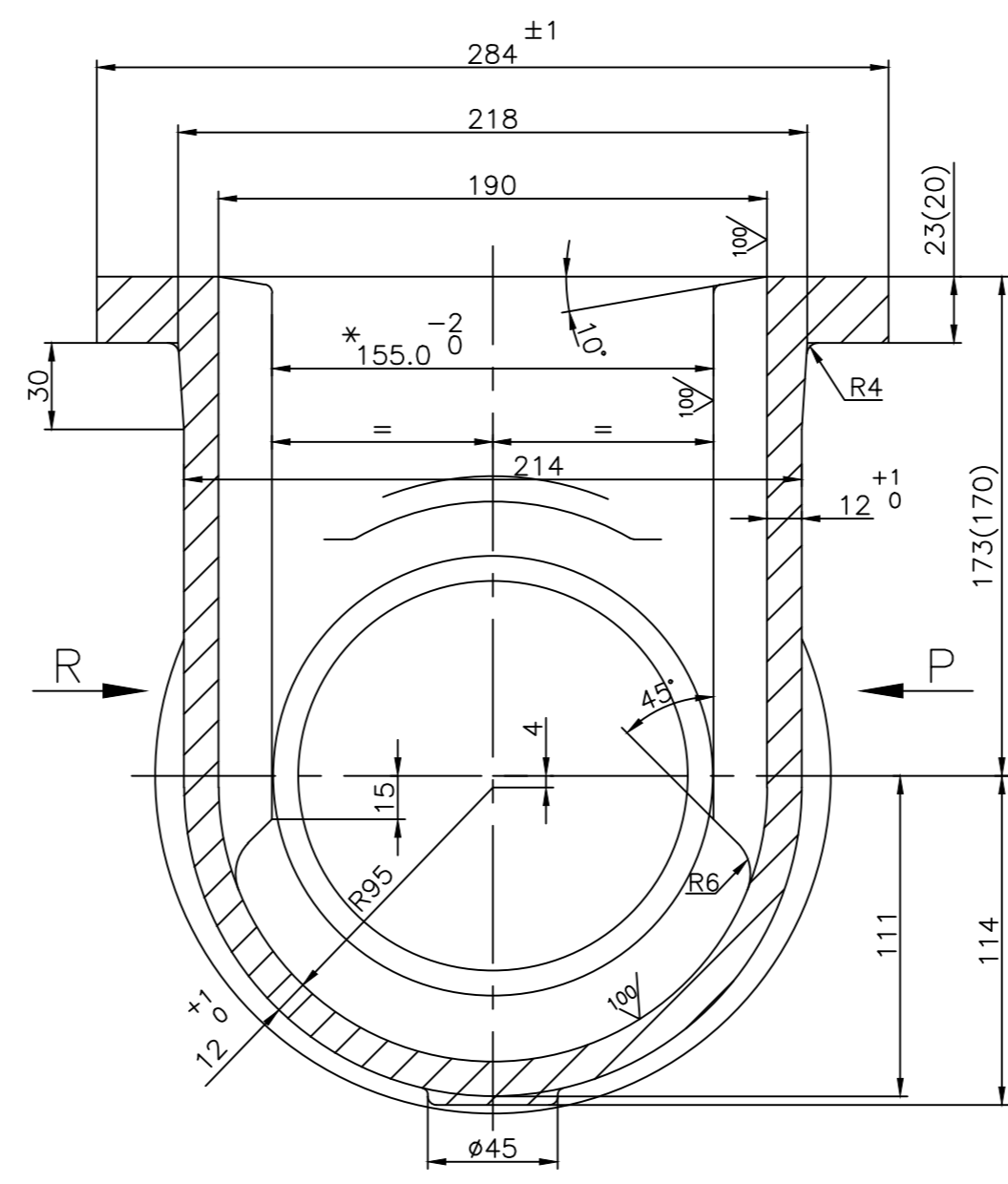
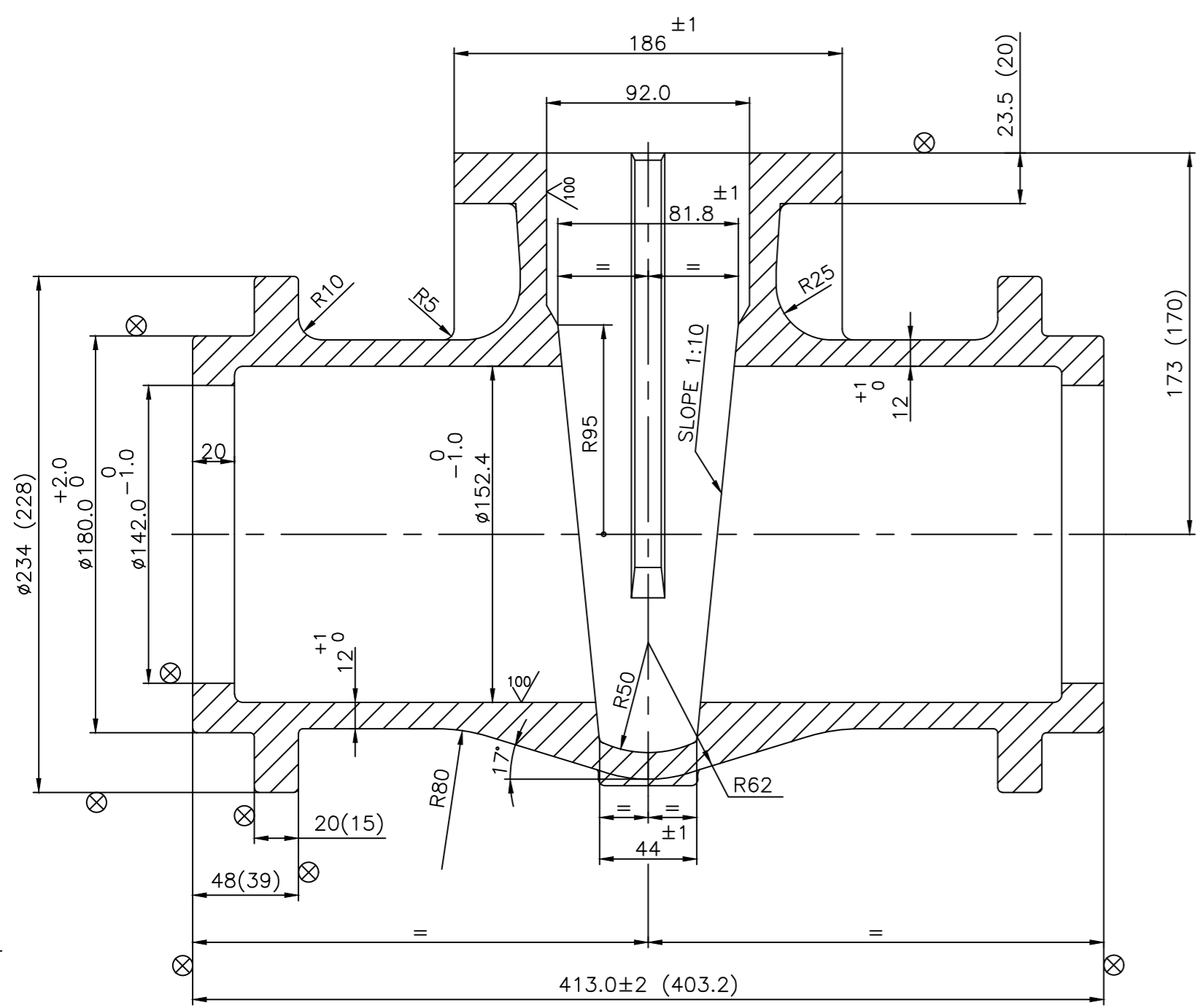
DEPT VL SCALE WEIGHT (KG) REFERENCE INFORMATION NO. OF ITEMS

CODE 320 NTS 23

TITLE Yoke CUM BONNET (8"-150-GV-HW) CARD CODE U 01 DRAWING NO. 2-V-0000-14163R REV 08

SECTION - AA

SECTION - BB

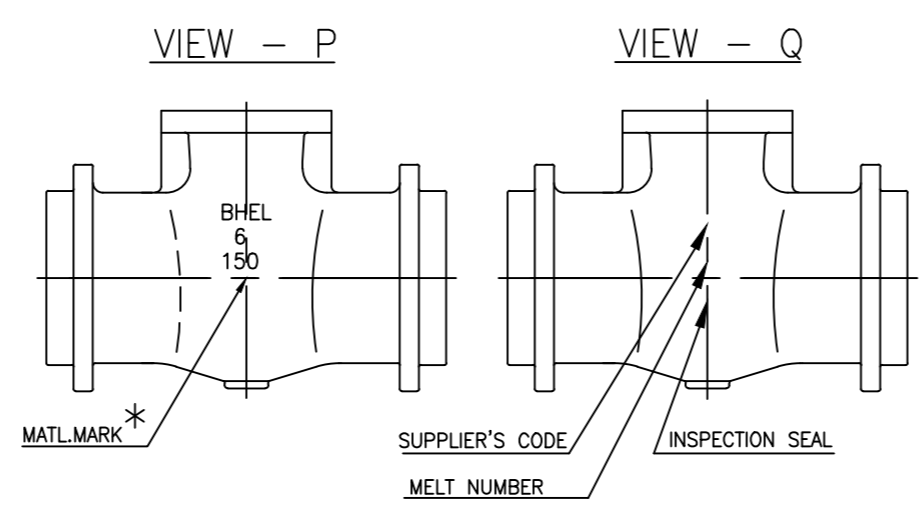
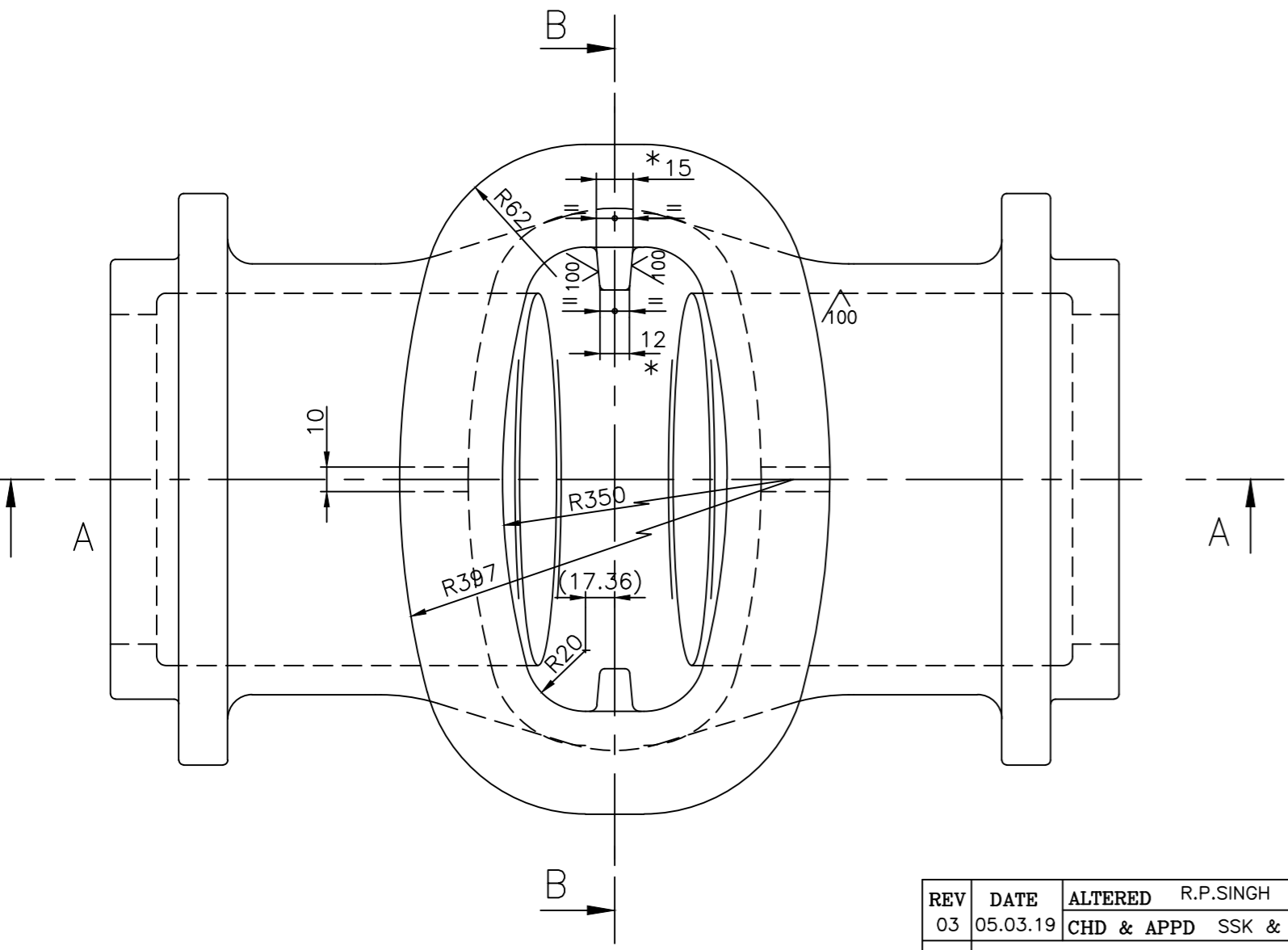


NOTE

01. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES.
02. INDICATED CASTING SURFACES SHALL BE OF HIGH QUALITY WITHOUT SURFACE UNEVENNESS.
03. FINISH MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS FOR INFORMATION ONLY.
04. LETTERS- BHEL, SIZE, MATL. & SUPPLIERS CODE ARE TO BE CAST IN THE INDICATED ZONE.
05. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE SPECIFICATION.
06. UNSPECIFIED CASTING RADII = R2 TO R3
07. HEIGHT OF CASTING LETTERS = 12 mm
08. ⊗ INDICATES SURFACE TO BE MACHINED.
09. HEAT TREATMENT FOR ASME 995 CD3MN AS PER ASME STANDARD ASME-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

\* SPECIAL NOTE

01. GUIDE BAR DIMENSIONS TO BE MAINTAINED WITHIN THE TOLERANCE INDICATED.
02. BOTH GUIDE RIBS TO BE COPLANAR AND TRUELY VERTICAL.



REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	R.P.SINGH
05	28.09.20	CHD & APPD	SSK & KRS	04	03.08.19	CHD & APPD	SSK & KRS
SL.No.06 INCLUDED				SL.No.05 INCLUDED			
03	05.03.19	CHD & APPD	SSK & KRS	02	27.2.14	CHD & APPD	A.MARIMUTHU MS & SSK
SL.No.04 INCLUDED NOTE No.09 INCLUDED				SL.No.03 INCLUDED.			
01	20.06.13	CHD & APPD	SSK & KRS	01	20.06.13	CHD & APPD	M.S
SL.No.02 INCLUDED				SL.No.02 INCLUDED			

SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
WC9	06	CASTING	-	SA 217 WC9 ATTEST	NT	-	38.0	2.V.NQ29.14166R 922060220000	001
CF3M	05	CASTING	-	SA 351 CF3M ATTEST	SH	-	38.0	2.V.NP81.14166R 922038790000	001
CD3MN	04	CASTING	-	SA995 GR.CD3MN ATTEST	REFER NOTE	-	38.0	2.V.NP53.14166R 922035830000	001
CF8	03	CASTING	-	SA 351 CF8 ATTEST	SH	-	38.0	2.V.ND72.14166R 922033380000	001
CF8M	02	CASTING	-	SA 351 CF8M ATTEST	SH	-	38.0	2.V.ND10.14166R 922031600000	001
WCB	01	CASTING	-	SA216 WCB ATTEST	NR	-	38.0	2.V.NC24.14166R 922016950000	001

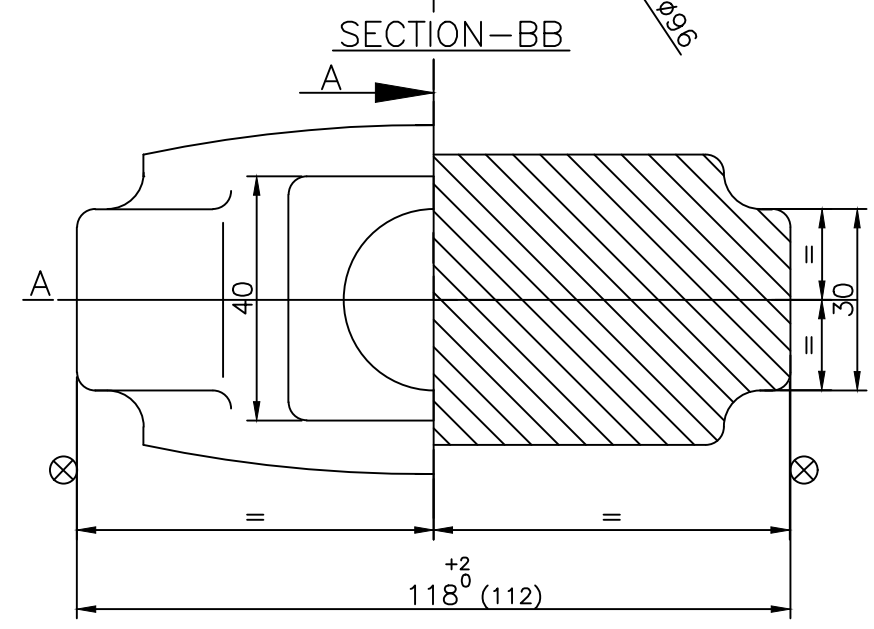
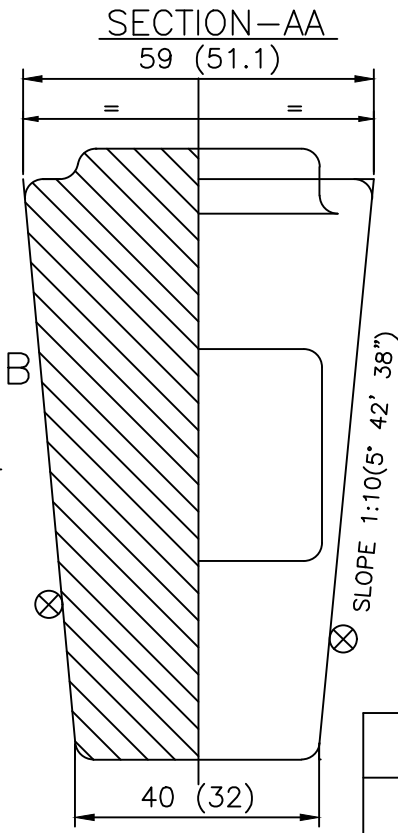
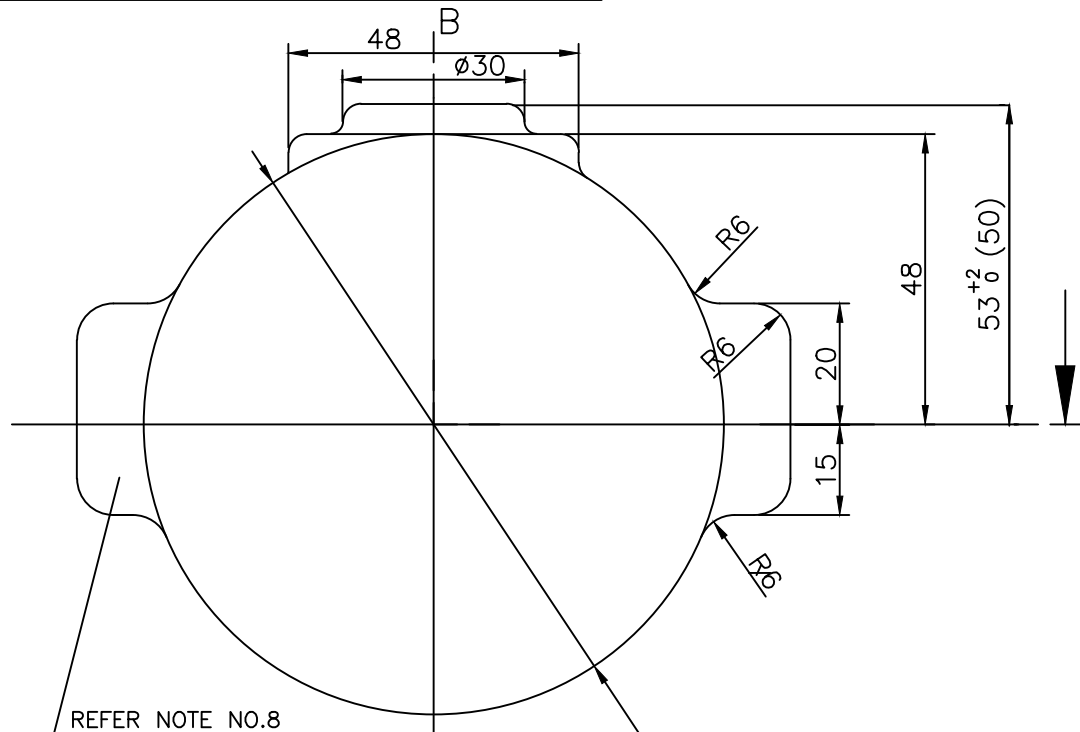
  

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		SIGN	DATE	NO.OF VAR.
<b>BHARAT HEAVY ELECTRICALS LTD.</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI - 620014.		DRN	M.SRINIVASAN		28.08.07	
		CHD	P.Boomnathan		28.08.07	
		APPD	M.RAJAKUAMR		28.08.07	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS		NO. OF ITEMS
320		NTS	38.0	CAD :C214166R		
TITLE		CARD CODE	DRAWING NO.		REV	
BODY ( 6" - C150 - BW )		U 01	2-V-0000-14166R		05	

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



DRAWING NO: 3-V-0000-06598R



**NOTE**

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- ⊗ SURFACES TO BE MACHINED
- UNSPECIFIED CASTING RADII R3-R5
- 100/√ CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- PERMISSIBLE DIMENSIONAL DEVIATION OF CASTING SURFACES REFER CHART
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS
- CASTING SHALL MEET THE REQUIREMENTS OF TDC (WITH LATEST REVISION)
- THE FOLLOWING IDENTIFICATION MARKING TO BE PUNCHED IN THE ZONE SPECIFIED IN THE DRG
 

3"-150C
MATL. MARK
SUPPLIERS CODE
MELT NO.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1. (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

* MATL. MARK	NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No
CF3M #11		CASTING	--	A351 CF3M CERTIFY	SH	--	2.75	--	3-V-UB23-06598R 92 206 245 0000	--
CF8M #10		CASTING	--	A351 CF8M CERTIFY	SH	--	2.75	--	3-V-UA97-06598R 92 206 129 0000	--
CF3M 09		CASTING	--	A351 CF3M CERTIFY	SH	--	2.75	--	3-V-NK74-06598R 92 203 929 0000	--
CD3MN 08		CASTING	--	SA995 CD3MN CERTIFY	REFER NOTE	--	2.75	--	3-V-NK66-06598R 92 203 859 0000	--
CF8 #07		CASTING	--	A351 CF8 CERTIFY	SH	--	2.75	--	3-V-U635-06598R 92 203 550 0000	--
LCB 06		CASTING	--	A352 LCB CERTIFY	NR	--	2.75	--	3-V-M768-06598R 92 200 896 0000	--
WC9 05		CASTING	--	A217 WC9 CERTIFY	N & T	--	2.75	--	3-V-N292-06598R 92 200 700 0000	--
WC6 04		CASTING	--	A217 WC6 CERTIFY	N & T	--	2.75	--	3-V-N291-06598R 92 200 678 0000	--
CF8M 03		CASTING	--	A351 CF8M CERTIFY	SH	--	2.75	--	3-V-N338-06598R 92 200 406 0000	--
CF8 02		CASTING	--	A351 CF8 CERTIFY	SH	--	2.75	--	3-V-N286-06598R 92 200 311 0000	--
WCB 01		CASTING	--	A216 WCB CERTIFY	NR	--	2.75	--	3-V-N025-06598R 92 034 283 0000	--

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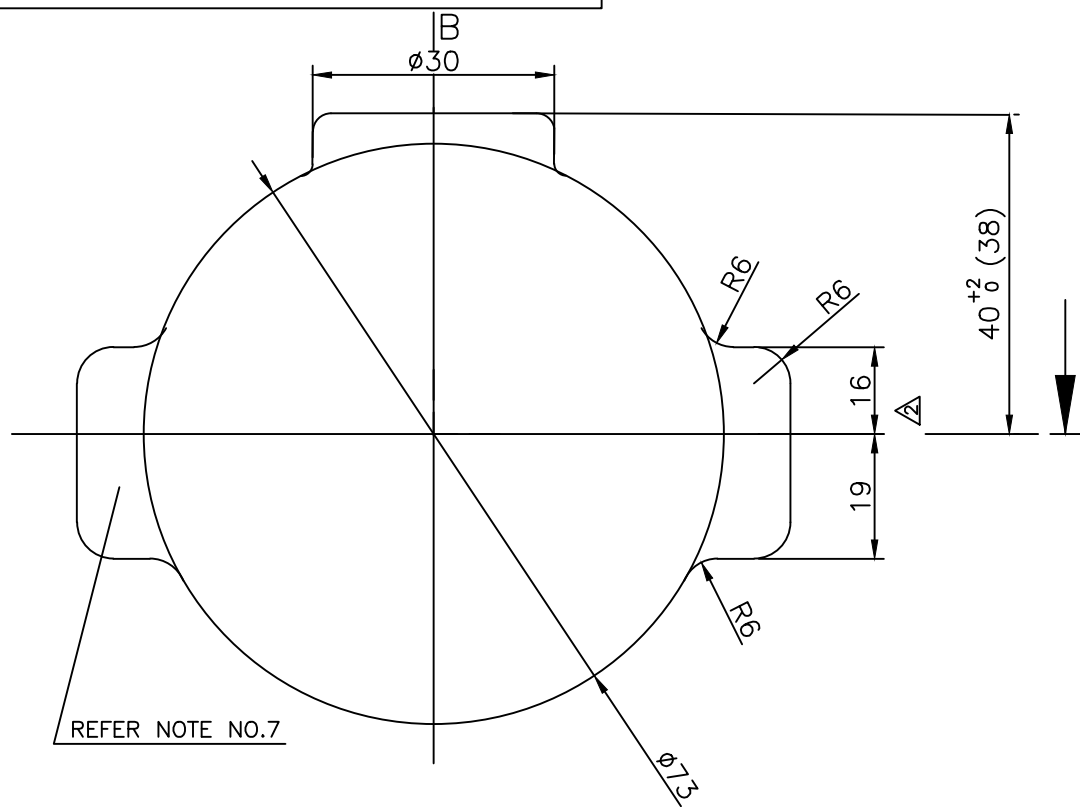
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **CS** DRG REDRAWN WITH REV.06 ON.10.04.18

 BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.	DRN	R.P.SINGH	SIGN	DATE	NO.OF VAR.
	CHD	S.SATHEESKUMAR		10.04.18	—
	APPD	K.RAJASEKARAN		10.04.18	—

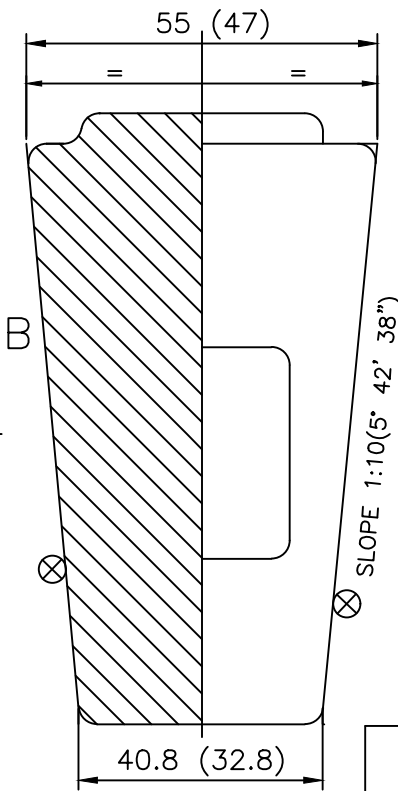
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS	NO. OF ITEMS
CODE	320	NTS	REF. TABLE		—
TITLE	WEDGE (3"-150C)		CARD CODE	DRAWING NO.	REV
			U 01	3-V-0000-06598R	10

DCP No.	ALTD: RPS	APPD:SSK	DCP No.	ALTD:TS	APPDSSK
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT:05.10.21
REV 10	SL. No. 11 INCLUDED.		REV 09	SL. No. 10 INCLUDED.	
ZONE -			ZONE -		

DRAWING NO: 3-V-0000-06628R



SECTION-AA

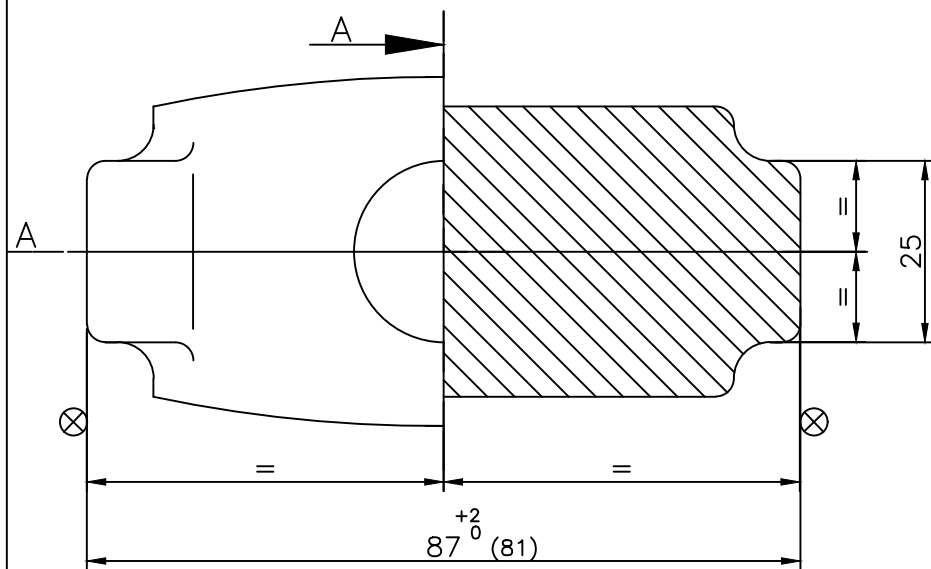


NOTE

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- ⊗ SURFACES TO BE MACHINED
- UNSPECIFIED CASTING RADII R3-R4
- ∇<sup>100/</sup> CASTING SURFACES MUST BE HIGH QUALITY WITHOUT SURFACE UNEVENNESS
- FINISHED MACHINED DIMENSIONS ARE INDICATED WITHIN BRACKETS
- CASTING SHALL MEET THE REQUIREMENTS OF APPLICABLE TDC (WITH LATEST REVISION)
- THE FOLLOWING IDENTIFICATION MARKING TO BE PUNCHED IN THE ZONE SPECIFIED IN THE DRG  
2"-300C  
MATL. MARK\*  
SUPPLIERS CODE  
MELT NO.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

REFER NOTE NO.7

SECTION-BB



ITEM NO	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
CF3M #10	CASTING	-	A351 CF3M CERTIFY	SH	-	1.75	--	3-V-UB21-06628R 92 206 241 0000	--
CF8M #09	CASTING	-	A351 CF8M CERTIFY	SH	-	1.75	--	3-V-UA96-06628R 92 206 132 0000	--
CF3M 08	CASTING	-	A351 CF3M CERTIFY	SH	-	1.75	--	3-V-NK01-06628R 92 203 930 0000	--
CF8 #07	CASTING	-	A351 CF8 CERTIFY	SH	-	1.75	--	3-V-U634-06628R 92 203 549 0000	--
WC9 06	CASTING	-	A217 WC9 CERTIFY	N & T	-	1.75	--	3-V-N262-06628R/02 92 200 477 0000	--
WC6 05	CASTING	-	A217 WC6 CERTIFY	N & T	-	1.75	--	3-V-N261-06628R/02 92 200 476 0000	--
WCC 04	CASTING	-	A216 WCC CERTIFY	NR	-	1.75	--	3-V-N260-06628R/02 92 200 475 0000	--
CF8M 03	CASTING	-	A351 CF8M CERTIFY	SH	-	1.75	--	3-V-N374-06628R/02 92 200 474 0000	--
CF8 02	CASTING	-	A351 CF8 CERTIFY	SH	-	1.75	--	3-V-N277-06628R/02 92 200 310 0000	--
WCB 01	CASTING	-	A216 WCB CERTIFY	NR	-	1.75	--	3-V-N073-06628R/03 92 034 289 0000	--

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **CS** DRG REDRAWN WITH REV.06 ON.10.04.18

DRN	R.P.SINGH	SIGN	DATE	NO.OF VAR.
CHD	S.SATHEESKUMAR		10.04.18	—
APPD	K.RAJASEKARAN		10.04.18	—

BHARAT HEAVY ELECTRICALS LTD.,  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI-620014.

DEPT: VL  
CODE: 320

SCALE: NTS  
WEIGHT (KG): REF. TABLE

TITLE: **WEDGE**  
(2"-150C/300C)

CARD CODE: U 01

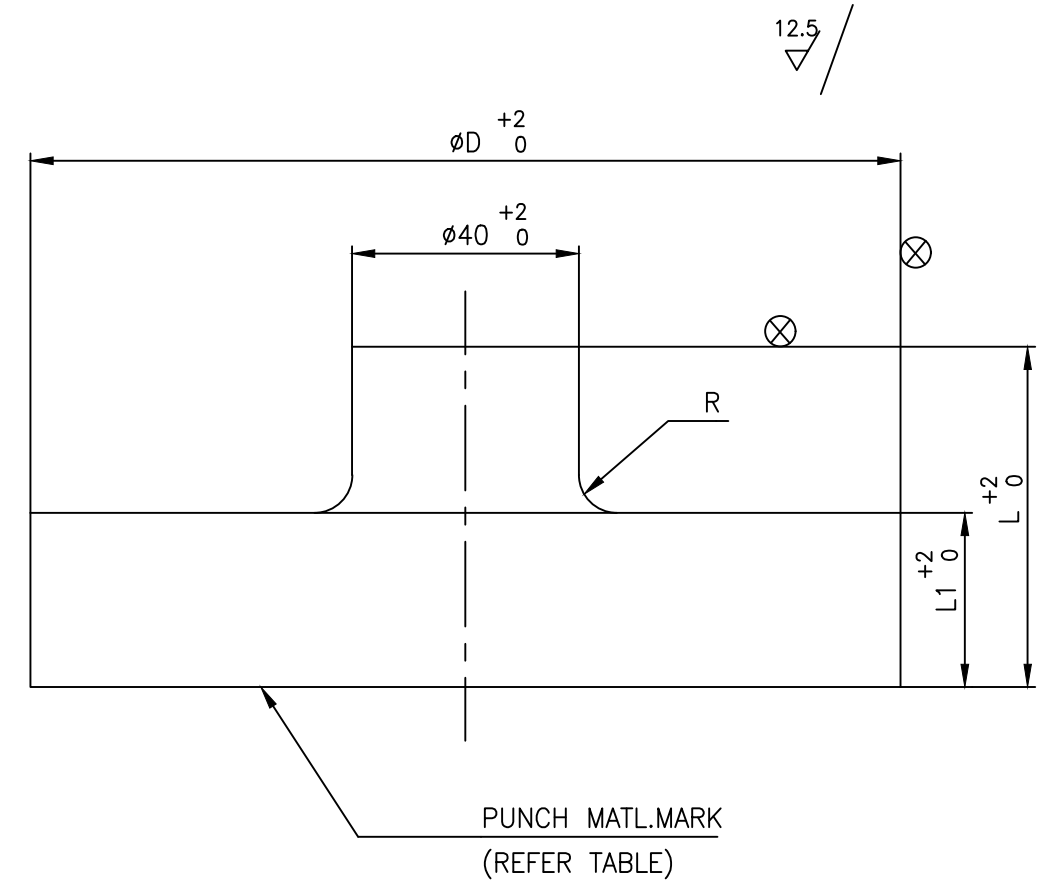
REFERENCE INFORMATIONS: DRAWING NO. 3-V-0000-06628R

NO. OF ITEMS: —

REV: 09

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPDSSK
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT: 05.10.21
REV 09	SL. No. 10 INCLUDED.			REV 08	SL. No. 09 INCLUDED.
ZONE -				ZONE -	

DRAWING NO. 3-V-0000-17688R												
SL.No.	DRAWING No.	MATL.SPECN.	MATL.CODE.	WT. (kg)	MATL.MARK TO BE PUNCHED *	SCRAP SORT	DIMENSIONS					REMARKS
							∅D	∅D1	L	L1	R	
01	3-V-5199-17688R/02	A351-CF8 SH,ATTEST	92 200 656	10.2	CF8	46	260	--	50	24	15	3"-150C
02	3-V-5197-17688R/01		92 200 657	13.2			294	--	50	24		4"-150C
03	3-V-5196-17688R/01		92 200 658	29.0			370	--	64	34		6"-150C
04	3-V-Z001-17688R/02		92 200 659	42.2			440	--	65	35		8"-150C
05	3-V-M332-17688R/01		92 200 653	12.8			252	--	58	32		2"-300C
06	3-V-Z004-17688R/01		92 200 780	6.9			210	--	50	24		2"-150C
07	3-V-5152-17688R/01		92 200 781	14.9			272	--	58	32		3"-300C
# 08	3-V-U633-17688R		92 203 544	10.2			260	--	50	24		3"-150C
# 09	3-V-U638-17688R		92 203 543	6.9			210	--	50	24		2"-150C
# 10	3-V-U639-17688R		92 203 545	12.8			252	--	58	32		2"-300C
# 11	3-V-U934-17688R		92 203 693	29.0			370	--	64	34		6"-150C
# 12	3-V-U935-17688R		92 203 698	13.2			294	--	50	24		4"-150C
13	3-V-Z113-17688R	SA995 CD3MN REF. NOTE, ATTEST	92 203 612	13.2	CD3MN		294	--	50	24	4"-150C	
14	3-V-Z120-17688R	A351-CF3M SH,ATTEST	92 203 853	10.2	CF3M		260	--	50	24	3"-150C	
15	3-V-Z121-17688R		92 203 855	29.0			370	--	64	34	6"-150C	



**NOTES:—**

- CASTING SHALL BE MADE AND PROOF MACHINED TO THE DIMENSION SHOWN IN TABULATION.
- UNSPECIFIEDCASTING RADII-R3
- INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
- CASTING SHALL COMPLY WITH REQUIRMENT OF LATESTAPPLICABLE TDC.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

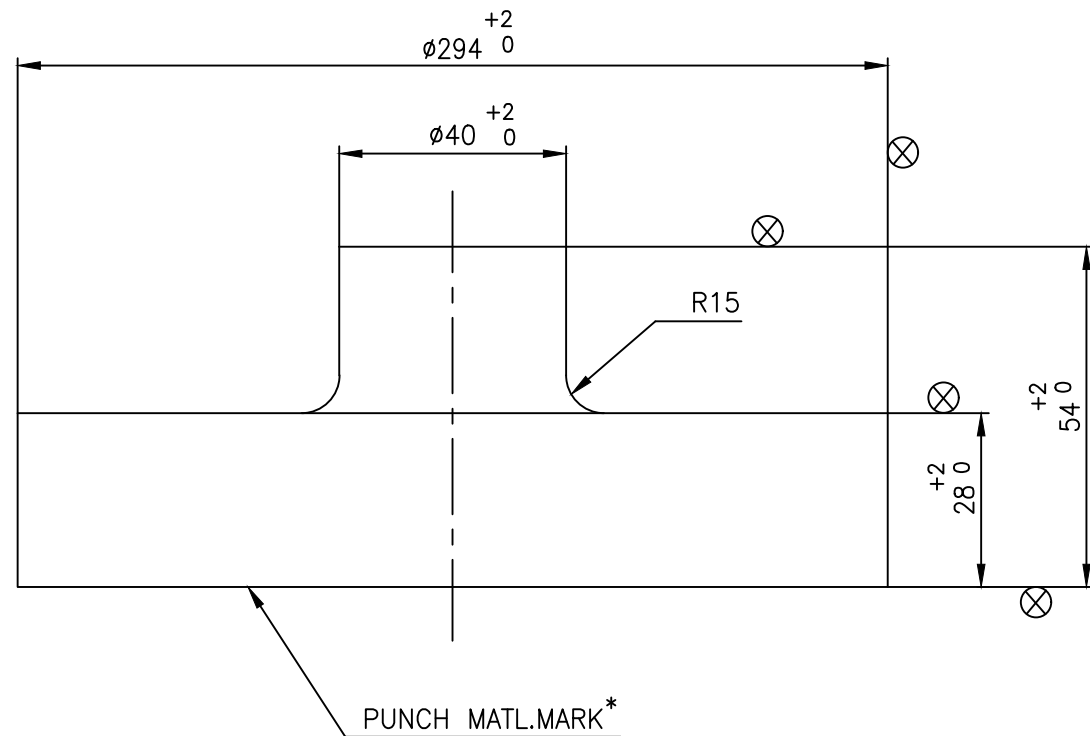
REV	DATE	ALTERED	R.P.SINGH
08	31.05.19	CHD & APPD	SSK & KRS

SL. NO. 14 TO 15 INCLUDED

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SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
DRAWING REDRAWN WITH REV. 07 ON 05.09.18									
Bharat Heavy Electricals Ltd. Logo		BHARAT HEAVY ELECTRICALS LTD.,			DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
365-121		UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.			CHD	N.DHANAPAL		27.03.98	
					APPD	K.SAKETHARAMAN		27.03.98	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION			NO. OF ITEMS		
CODE	320	N T S	--	CAD: C317688R					
TITLE						CARD CODE	DRAWING NO.	REV	
COVER (PROFF MACHINED CASTING)						U 01	3-V-0000-17688R	08	


DRAWING NO. 3-V-0000-23268R



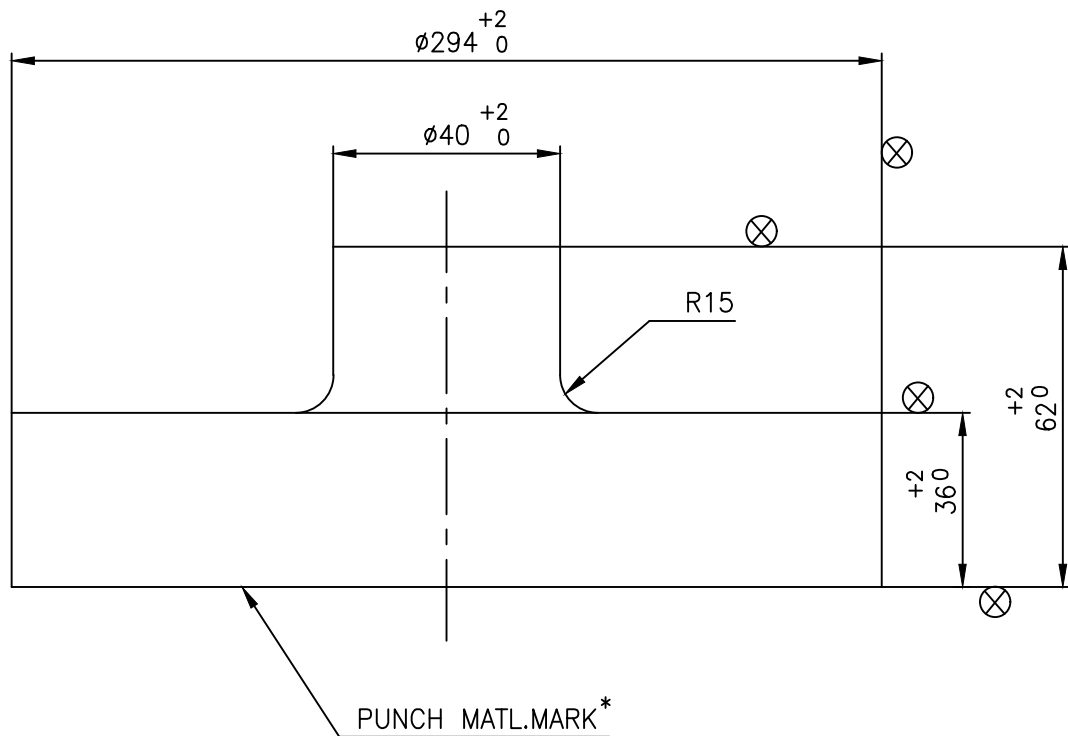
**NOTES:—**

1. UNSPECIFIEDCASTING RADII—R3
2. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
3. CASTING SHALL COMPLY WITH REQUIRMENT OF LATEST APPLICABLE QUALITY PROCEDURE.

REV	DATE	ALTERED	REV	DATE	ALTERED
02	13.09.19	R.P.SINGH CHD & APPD SAMEER & SSK	01	25.11.06	T.R.RAMAMURTHY CHD & APPDP.BOOMINATHAN
DRAWING TABULATED. SL. No. 02 INCLUDED.			1."PROOF MACHINED CASTING" DELETED IN TITLE BLOCK. 2.DIMNS 28 & 54 WAS 24 & 50. REFER DCP.:—800643		

MATL. MARK *	SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
CF3M	02	CASTING	92 203 893	SA351 CF3M (ATTEST)	SH	46	15.2	--	3-V-Z129-23268R	--
CF8M	01	CASTING	92 200 992	SA351 CF8M (ATTEST)	SH	46	15.2	--	3-V-Z011-23268R/1	--
<p>CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>										
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					CS					
 <b>BHARAT HEAVY ELECTRICALS LTD.</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI - 620014. 365-121					DRN	NAME	SIGN	DATE	NO.OF VAR.	
					CHD	A.S.PANDY		25.11.06		
					APPD	T.R.RAMAMURTHY		25.11.06		
DEPT VL	CODE 320	SCALE	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS		
		N T S	--	CAD: C323268R						
TITLE					CARD CODE	DRAWING NO.			REV	
COVER (4"-150C-FV)					U 01	3-V-0000-23268R			02	

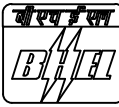
DRAWING NO. 3-V-0000-23269R



**NOTES:-**

1. UNSPECIFIEDCASTING RADII-R3
2. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
3. CASTING SHALL COMPLY WITH REQUIRMENT OF LATEST APPLICABLE QUALITY PROCEDURE.

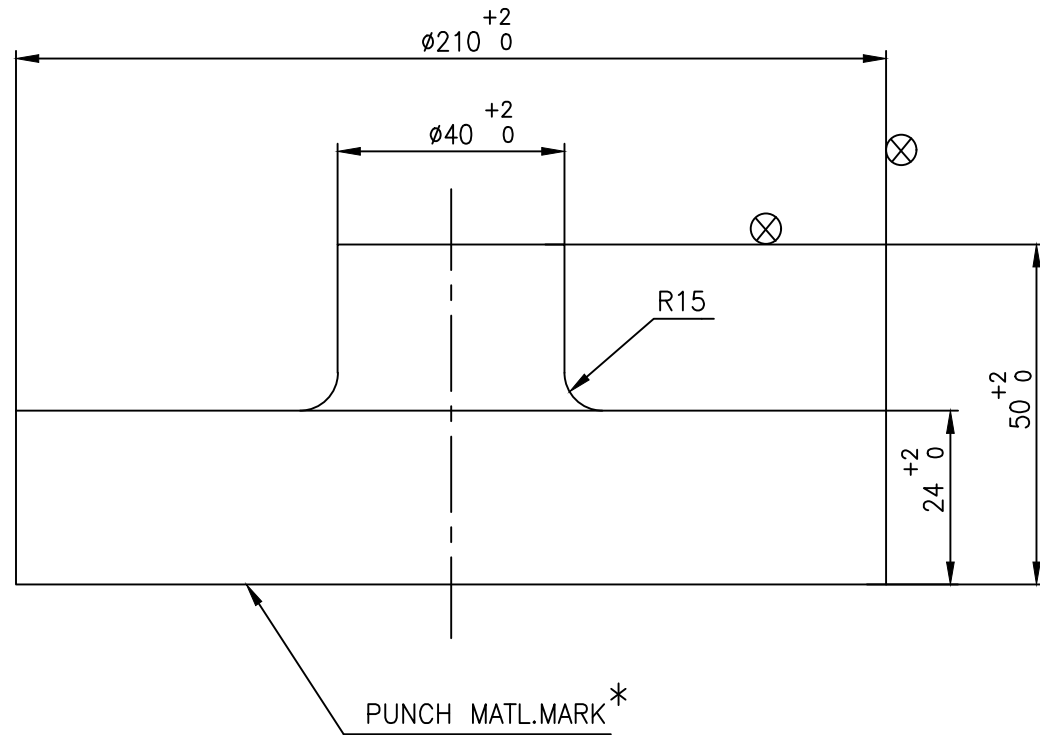
REV	DATE	ALTERED	R.P.SINGH	REV	DATE	ALTERED	T.R.RAMAMURTHY
02	08.09.19	CHD & APPD	SAMEER & SSK	01	25.11.06	CHD & APPDP.	BOOMINATHAN
DRAWING TABULATED. SL. No. 02 INCLUDED.				1."PROOF MACHINED CASTING" DELETED IN TITLE BLOCK. 2.DIMNS 36 & 62 WAS 32 & 58. REFER DCP.: -800643			

CF3M	02	CASTING	92 203 906	A351 CF3M (ATTEST)	SH	-	22	-	3-V-Z125-23269R	-
CF8M	01	CASTING	92 200 997	A351 CF8M (ATTEST)	SH	-	22	-	3-V-Z012-23269R/1	-
MATL. MARK *	SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					CS DRAWING REDRAWN WITH REV.01 ON 25.11.2006					
 <b>BHARAT HEAVY ELECTRICALS LTD.</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI - 620014.					DRN	NAME	SIGN	DATE	NO.OF VAR.	
					CHD	T.R.RAMAMURTHY		25.11.06		
					APPD	P.BOOMINATHAN		25.11.06		
DEPT VL	365-121	SCALE	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS		
CODE 320		N T S	-	CAD: C323269R						
TITLE					CARD CODE	DRAWING NO.			REV	
COVER (4"-300C-FV)					U 01	3-V-0000-23269R			02	

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

DRAWING NO: 3-V-0000-24280R

12.5 /



NOTES:-

1. CASTING SHALL BE MADE AND PROOF MACHINED TO THE DIMENSION SHOWN IN TABULATION.
2. UNSPECIFIED CASTING RADII-R3
3. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
4. CASTING SHALL COMPLY WITH REQUIREMENT OF LATEST APPLICABLE TDC.
5. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

* MATL. MARK	NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
CF3M	#03	CASTING	-	SA351-CF3M ATTEST	SH	-	-	6.9	2.V.Z137.24280R	-
									92 206 228 0000	-
CF8M	#02	CASTING	-	SA351-CF8M ATTEST	SH	-	-	6.9	2.V.UB04.24280R	-
									92 206 143 0000	-
CF8M	01	CASTING	-	SA351-CF8M ATTEST	SH	-	-	6.9	2.V.Z057.24280R	-
									92 201 520 0000	-

DCP No.	ALTD: RPS	APPD:SSK	DCP No.	ALTD: TS	APPD:SSK
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT: 04.10.21
REV 02	SL. No. 03 INCLUDED.		REV 01	SL.No. 02 INCLUDED.	
ZONE -			ZONE -	NOTES SL. NO. 05 INCLUDED.	

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

	<b>BHARAT HEAVY ELECTRICALS LTD.,</b>	DRN	K.P.LEON	SIGN	DATE	NO.OF VAR.
365-191 02.03.2021	UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.	CHD	T.R.RAMAMURTHY		15.02.05	-
		APPD	P.BOOMINATHAN		15.02.05	-

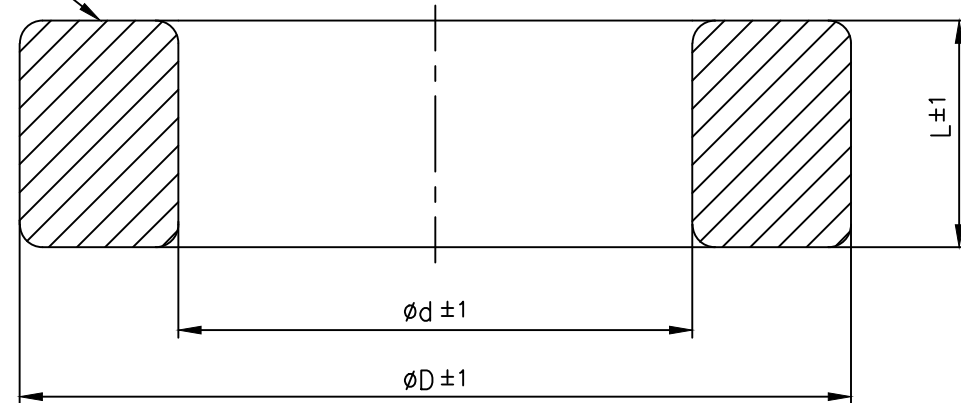
DEPT VL		SCALE NTS	WEIGHT (KG). --	REFERENCE INFORMATION	NO. OF ITEMS --
CODE 320					
TITLE	COVER (2"-150C-CF8M-FV)		CARD CODE U 01	DRAWING NO. 3-V-0000-24280R	REV 02

SL. NO.	DRG.NO.	MATL.SPECN.	HEAT TREATMENT	MATL. CODE	DIMENSIONS			NET WT (kg)	TO BE PUNCHED	
					∅D	∅d	L		SIZE	MATL.MARK
01	3-V-Z124-35217R	SA351 CF3M	SOLUTION HEAT TREATED	92 203 901 0000	248	195	39	5.7	8-C150-FV	CF3M
02	3-V-Z126-35217R	SA351 CF3M		92 203 908 0000	196	144	34	3.7	6-C300-FV	CF3M
03	3-V-Z128-35217R	SA351 CF8		92 203 882 0000	248	195	39	5.7	8-300C-FV	CF8
04	3-V-Z129-35217R	SA351 CF3M		92 203 909 0000	141	96	30	2.0	4-C150-FV	CF3M
05	3-V-P778-35217R	SA351 CF3M		92 203 914 0000	146	72	42	4.2	4-C300-RV	CF3M
06	3-V-P779-35217R	SA351 CF3M		92 203 917 0000	188	122	45	5.7	6-C300-SV	CF3M
07	3-V-NK79-35217R	SA351 CF3M		92 203 932 0000	144	82	26	2.25	4-C300-GV	CF3M
08	3-V-NK75-35217R	SA351 CF3M		92 203 933 0000	104	65	27	1.10	3-C150-GV	CF3M
09	3-V-NP81-35217R	SA351 CF3M		92 203 934 0000	178	136	32	2.60	6-C150-GV	CF3M
10	3-V-NP83-35217R	SA351 CF3M		92 203 937 0000	285	243	33	4.51	10-C150-GV	CF3M
11	3-V-NP82-35217R	SA351 CF3M		92 203 940 0000	228	184	28	3.13	8-C150-GV	CF3M
12	3-V-F810-35217R	SA351 CF3M		92 203 946 0000	102	60	27	0.98	3-C600-GV	CF3M
13	3-V-Z120-35217R	SA351 CF3M		92 203 962 0000	110	70	26	1.16	3-C300-FV	CF3M
14	3-V-P767-35217R	SA351 CF3M		92 203 890 0000	116	54	45	2.93	3-C300-RV	CF3M
15	3-V-NK02-35217R	SA351 CF3M		92 203 971 0000	128	96	21	0.92	4-C150-GV	CF3M
16	3-V-P831-35217R	SA351 CF3M		92 206 009 0000	246	167	48	9.66	8-C300-SV	CF3M
17	3-V-NQ29-35217R	SA217 WC9	Normalised & Tempered	92 206 025 0000	178	136	32	2.60	6-C150-GV	WC9
18	3-V-NQ21-35217R	SA216 WCB	Normalised	92 206 041 0000	153	110	30	2.10	5-C150-GV	WCB
#19	3-V-UA97-35217R	SA351 CF8M	SOLUTION HEAT TREATED	92 206 126 0000	104	65	27	1.10	3-C150-GV	CF8M
#20	3-V-UA98-35217R	SA351 CF8M		92 206 127 0000	134	90	27	1.64	4-C150-GV	CF8M
#21	3-V-UA99-35217R	SA351 CF8M		92 206 128 0000	178	136	32	2.60	6-C150-GV	CF8M
22	3-V-Z135-35217R	SA351 CF8M		92 206 209 0000	546	477	98	42.7	20-C150-FV	CF8M
#23	3-V-Z137-35217R	SA351 CF3M		92 206 222 0000	89	46	25	0.9	2-C150-FV	CF3M
#24	3-V-UB17-35217R			92 206 223 0000	110	70	27	1.2	3-C150-FV	CF3M
#25	3-V-NL97-35217R			92 206 230 0000	79	34	28	0.9	2-C150/C300-GV	CF3M
#26	3-V-UB23-35217R			92 206 244 0000	104	65	27	1.10	3-C150-GV	CF3M
#27	3-V-UB24-35217R			92 206 248 0000	134	90	27	1.64	4-C150-GV	CF3M
#28	3-V-UB25-35217R			92 206 252 0000	178	136	32	2.60	6-C150-GV	CF3M
#29	3-V-UB26-35217R			92 206 256 0000	228	184	28	3.13	8-C150-GV	CF3M
#30	3-V-P883-35217R			92 206 259 0000	84	38	26	0.9	2-C300-SV	CF3M
#31	3-V-P884-35217R			92 206 260 0000	116	54	45	2.93	3-C300-SV	CF3M
#32	3-V-P885-35217R			92 206 261 0000	146	72	42	4.2	4-C300-SV	CF3M
33	3-V-NQ89-35217R		SA351 CF8M	92 206 262 0000	153	110	30	2.10	5-C150-GV	CF8M

NOTES:-

- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE MATERIAL STD SA351 CF8, SA351 CF8M AND SA351 CF3M.
- UNSPECIFIED CASTING RADII 3 MM.
- CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
- # MARKED ITEMS IGC TEST SHALL BE CONDUCTED

PUNCH SIZE, MATL. MARK & SUPPLIER'S CODE



NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
								COMP. CODE	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT



**BHARAT HEAVY ELECTRICALS LTD.,**  
 UNIT: HIGH PRESSURE BOILER PLANT.  
 TIRUCHIRAPALLI-620014.

DRN	NAME	SIGN	DATE	NO.OF VAR.
R.P.SINGH			10.09.19	—
SAMEER BHAT			10.09.19	—
S.SATHEESKUMAR			10.09.19	—

DEPT	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
VL	NTS	REF. TABLE		—
CODE 320				
TITLE	CARD CODE	DRAWING NO.	REV	
SEAT RING (CASTING)	U 01	3-V-0000-35217R	06	

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.

DCP No.	ALTD: RPS	APPD: SSK	DCP No.	ALTD: TS	APPD: SSK
-	CHD: MK	DT: 28.09.22	-	CHD: RPS	DT: 05.10.21
REV 06	SL. NO. 22 TO 33 INCLUDED.		REV 05	SL. NO. 19 TO 21 INCLUDED.	
ZONE -			ZONE -	NOTES SL. NO. 04 INCLUDED.	

DRAWING NO: 3-V-0000-35217R

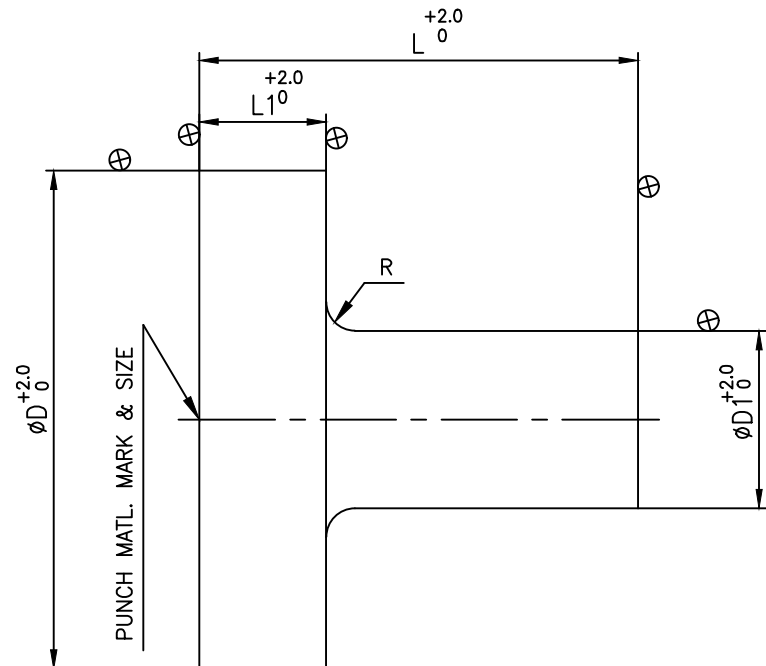
DRAWING NO. 3-V-0000-95062R

SL. NO.	DRAWING NO.	MATL. SPECN.	MATL. CODE	TO BE PUNCHED		SCRAP SORT	WT. (KG)	DIMENSIONS					REMARKS
				MATL. MARK	SIZE			ØD	ØD1	L	L1	R	
01	3-V-M332-95062R/01	ASTM A351 CF8 SH, CERTIFY	922000060000	CF8	2"-300	46	1.0	83	30	60	18	5	2"-300C & 150C
02	3-V-M331-95062R/01	ASTM A351 CF8 SH, CERTIFY	922000070000	CF8	3"-300	46	1.75	107	36	70	19	5	3"-300C & 150C
03	3-V-M333-95062R/02	ASTM A351 CF8 SH, CERTIFY	922000080000	CF8	4"-300	46	3.35	140	44	80	22	5	4"-300C & 150C
04	3-V-5186-95062R/01	ASTM A217 Gr.C5 NT, CERTIFY	922001080000	C5	3"-300	30	1.95	110	40	72	21	5	3"-300C & 150C
05	3-V-5187-95062R/01	ASTM A217 Gr.C5 NT, CERTIFY	922001090000	C5	4"-300	30	3.8	140	48	82	24	5	4"-300C & 150C
06	3-V-5188-95062R/01	ASTM A217 Gr.C5 NT, CERTIFY	922001100000	C5	6"-300	30	8.8	168	64	105	29	5	6"-300C & 150C
07	3-V-5189-95062R/01	ASTM A217 Gr.C5 NT, CERTIFY	922001110000	C5	8"-300	30	16.8	256	74	125	34	5	8"-300C & 150C
08	3-V-5196-95062R/01	ASTM A351 CF8 SH, CERTIFY	922006540000	CF8	6"-300	46	8.8	198	64	105	29	5	6"-300C & 150C
09	3-V-Z001-95062R/01	ASTM A351 CF8 SH, CERTIFY	922006550000	CF8	8"-300	46	16.8	256	74	125	34	5	8"-300C & 150C
10	3-V-Z042-95062R/01	ASTM A351 CF8M SH, CERTIFY	922013460000	CF8M	6"-300	46	8.8	198	64	105	29	5	6"-300C & 150C
11	3-V-Z043-95062R/01	ASTM A351 CF8M SH, CERTIFY	922013750000	CF8M	10"-300	46	26.25	306	82	142	38	15	10"-300C
12	3-V-Z045-95062R/01	ASTM A351 CF8M SH, CERTIFY	922013830000	CF8M	8"-300	46	16.8	256	74	125	34	5	8"-300C & 150C
13	3-V-Z047-95062R/01	ASTM A351 CF8M SH, CERTIFY	922013880000	CF8M	12"-300	46	48.0	368	84	155	50	15	12"-300C
14	3-V-Z058-95062R/01	ASTM A351 CF8M SH, CERTIFY	922015430000	CF8M	3"-300	46	1.75	107	36	70	19	5	3"-300C & 150C
15	3-V-Z012-95062R/01	ASTM A351 CF8M SH, CERTIFY	922016740000	CF8M	4"-300	46	3.35	140	44	80	22	5	4"-300C & 150C
16	3-V-Z096-95062R	ASTM A351 CF8 SH, CERTIFY	922033150000	CF8	10"-300	46	26.25	306	82	142	38	15	10"-300C
# 17	3-V-U633-95062R	ASTM A351 CF8 SH, CERTIFY	922035460000	CF8	3"-150	46	1.75	107	36	70	19	5	3"-150C
# 18	3-V-U639-95062R		922035470000		2"-300	46	1.0	83	30	60	18	5	2"-300C
# 19	3-V-U933-95062R		922036900000		12"-300	46	48.0	368	84	155	50	15	12"-300C
# 20	3-V-U934-95062R		922036940000		6"-150	46	8.8	198	64	105	29	5	6"-150C
# 21	3-V-U935-95062R/01		922036990000		4"-150	46	3.35	140	44	80	22	5	4"-150C

SL. NO.	DRAWING NO.	MATL. SPECN.	MATL. CODE	TO BE PUNCHED		SCRAP SORT	WT. (KG)	DIMENSIONS					REMARKS
				MATL. MARK	SIZE			ØD	ØD1	L	L1	R	
22	3-V-Z113-95062R	SA995 CD3MN, REF.NOTE, CERTIFY	922036110000	CD3MN	4"-150	46	3.2	136	44	80	22	5	4"-150C
23	3-V-Z118-95062R	ASTM A351 CF8 SH, CERTIFY	922036850000	CF8	12"-300	46	48.0	368	84	155	50	15	12"-300C
24	3-V-Z129-95062R/01	ASTM A351 CF3M SH, CERTIFY	922039100000	CF3M	4"-150	46	3.35	140	44	80	22	5	4"-300C & 150C
25	3-V-Z123-95062R	ASTM A351 CF3M SH, CERTIFY	922038970000	CF3M	6"-150	46	8.8	198	64	105	29	5	6"-300C & 150C
26	3-V-Z124-95062R	ASTM A351 CF3M SH, CERTIFY	922039000000	CF3M	8"-150	46	16.8	256	74	125	34	5	8"-300C & 150C
27	3-V-Z120-95062R	ASTM A351 CF3M SH, CERTIFY	922039630000	CF3M	3"-300	46	1.75	116	36	70	19	5	3"-300C & 150C
# 28	3-V-Z137-95062R	ASTM A351 CF3M SH, CERTIFY	922062240000	CF3M	2"-150	46	1.0	83	30	60	18	5	2"-300C & 150C
# 29	3-V-UB17-95062R	ASTM A351 CF3M SH, CERTIFY	922062250000	CF3M	3"-150	46	1.75	116	36	70	19	5	3"-300C & 150C

NOTES:-

- NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINABLE SURFACES
- CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
- UNSPECIFIED CASTING RADII 3 - 5 MM
- ⊗ INDICATES SURFACES TO BE MACHINED
- # MARKED ITEMS ARE IGC TEST SHALL BE CONDUCTED.
- HEAT TREATMENT FOR SA995 CD3MN AS PER ASME STANDARD SA-995 TABLE 1 (HEAT TO 2050°F [1120°C] MINIMUM FOR SUFFICIENT TIME TO HEAT CASTING UNIFORMLY TO TEMPERATURE AND WATER QUENCH, OR THE CASTING MAY BE FURNACE COOLED TO 1850°F [1010°C] MINIMUM, HOLD FOR 15 MIN MINIMUM AND THEN WATER QUENCH. A RAPID COOL BY OTHER MEANS MAY BE EMPLOYED IN LIEU OF WATER QUENCH.)

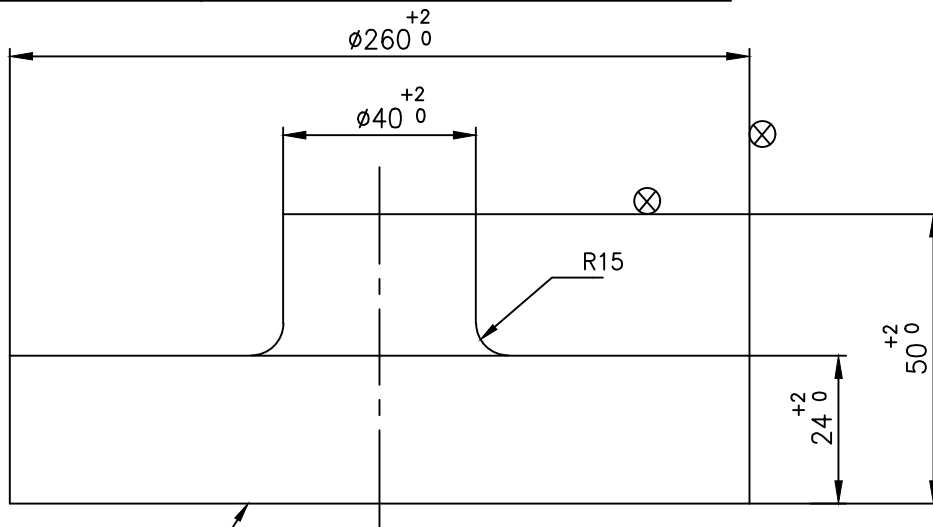


DCP No.	ALTD:RPS	APPDSSK
-	CHD: MK	DT:28.09.22
REV 15	SL. No. 28 & 29 INCLUDED.	
ZONE -		
DCP No.	ALTD:RPS	APPDSSK
-	CHD: SAB	DT:09.06.20
REV 14	IN SL No. 03, 15 & 21 DIM ØD 140 WAS 136.	
ZONE -	IN SL No. 24 DIM ØD1 44 WAS 46.	

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NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
-	-	-	-	-	-	-	-	-	-
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
DRAWING REDRAWN WITH REV.08 ON 29.06.2007 REFER DCP.:--800643									
DEPT VL		Bharat Heavy Electricals Ltd.,		DRN	NAME A.S.PANDY		SIGN	DATE 29.06.07	NO.OF VAR.
CODE 320		UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.		CHD	T.R.RAMAMURTHY			29.06.07	-
				APPD	P.BOOMINATHAN			29.06.07	-
SCALE NTS				WEIGHT (KG) -		REFERENCE INFORMATION CAD REF: C395062R			
TITLE FLAP							CARD CODE U 01	DRAWING NO. 3-V-0000-95062R	REV 15

DCP No. -	ALTD: TS CHD: RPS	APPD: SSK DT: 04.10.21	DCP No. -	ALTD: RPS CHD: MK	APPD: SSK DT: 28.09.22
REV 01	SL.No. 02 INCLUDED.		REV 02	SL.No. 03 INCLUDED.	
ZONE -	NOTES SL. NO. 6 INCLUDED.		ZONE -	NOTES SL. NO. 7 INCLUDED.	



CAST  
TYPE NO.  
\*MATL. MARK

**NOTES:-**

1. NECESSARY MACHINING ALLOWANCES HAVE BEEN ADDED ON ALL MACHINING SURFACES.
2. FOR PERMISSIBLE DIMENSIONAL DEVIATIONS ON NON - TOLERANCE CASTING DIMENSIONS - REFER LATEST APPLICABLE QUALITY PROCEDURE.
3. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
4. UNSPECIFIED CASTING RADII 3 - 5 MM.
5. HEIGHT OF CASTING LETTERS 15MM.
6. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.
7. ⊗ SURFACES TO BE MACHINED

#03	4-V-UB17-26236R	92 206 229 0000	SA351 CF3M, ATTEST, SH	10.2	-	UB17	CF3M
#02	4-V-UB05-26236R	92 206 142 0000	SA351 CF8M, ATTEST, SH	10.2	-	UB05	CF8M
01	4-V-Z024-26236R	92 201 133 0000	SA351 CF8M, ATTEST, SH	10.2	-	Z024	CF8M
NO. OFF	DRAWING NO.	COMP. CODE	MATL. SPECN.	NET WT.(kg)	GROSS WT.(kg)	TYPE NO.	* MATL. MARK.

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
								COMP. CODE	



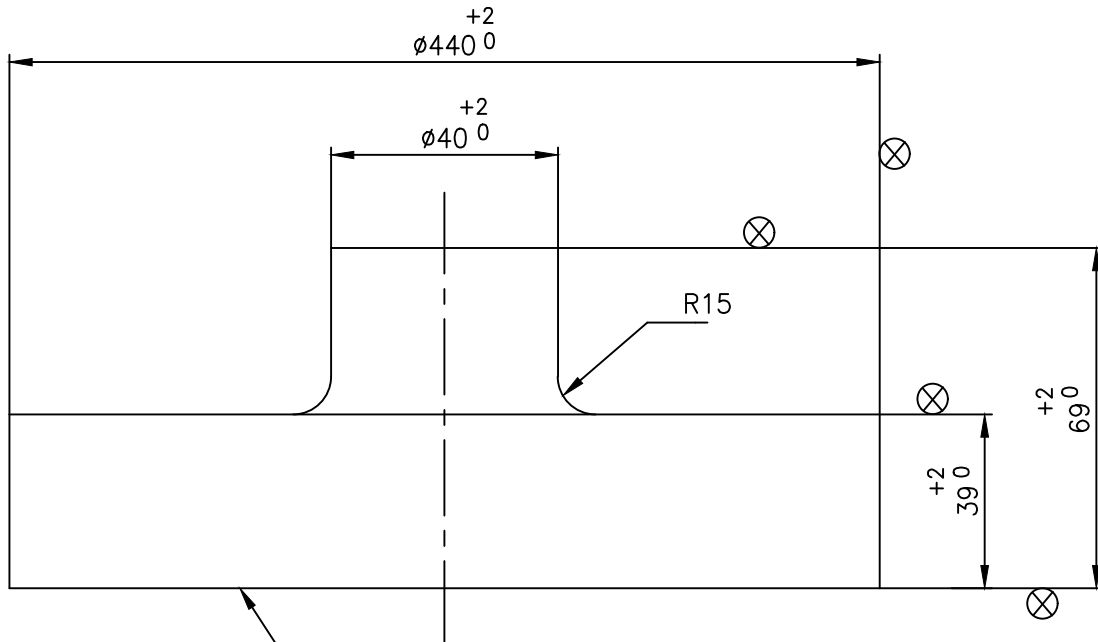
**BHARAT HEAVY ELECTRICALS LTD.,**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI 620014.

DRN	NAME	SIGN	DATE	NO.OF VAR
CHD	K.P.LEON		01.07.99	
APPD	N.DHANAPAL		01.07.99	
	R.VASANTH		01.07.99	

DEPT VL	/	⊕	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
CODE 320			NTS	--		
TITLE	COVER (3"-C150-FV)			CARD CODE U 01	DRAWING NO. 4-V-0000-26236R	REV 02

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

REV 01	DATE 25.11.06	ALTERED T.R.RAMAMURTHY CHD & APPD P.BOOMINATHAN	REV 02	DATE 08.09.19	ALTERED R.P.SINGH CHD & APPD SAMEER & SSK
1."PROOF MACHINED CASTING" DELETED IN TITLE BLOCK. 2.DIMNS 39 & 69 WAS 35 & 65. REFER DCP.: -800643			DRAWING TABULATED. SL. No. 02 INCLUDED.		



PUNCH MATL.MARK-CF8M FOR MATL. A351 CF8M  
PUNCH MATL.MARK-CF3M FOR MATL. A351 CF3M

**NOTES:-**

1. UNSPECIFIEDCASTING RADII-R3
2. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
3. CASTING SHALL COMPLY WITH REQUIRMENT OF LATEST APPLICABLE QUALITY PROCEDURE.

DRAWING REDRAWN WITH REV.01 ON 25.11.2006

02	CASTING	92 203 903	A351 CF3M ATTEST	SH	46	42.2	-	4-V-Z124-26409R	-
01	CASTING	92 201 384	A351 CF8M ATTEST	SH	46	42.2	-	4-V-Z045-26409R/1	-
SL No.	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No



**BHARAT HEAVY ELECTRICALS LTD.,**  
UNIT: HIGH PRESSURE BOILER PLANT.  
TIRUCHIRAPALLI 620014.

DRN	NAME A.S.PANDY	SIGN	DATE 25.11.06	NO.OF VAR
CHD	T.R.RAMAMURTHY		25.11.06	
APPD	P.BOOMINATHAN		25.11.06	

DEPT VL		SCALE N T S	WEIGHT (KG). --	REFERENCE INFORMATION	NO. OF ITEMS
CODE 320				CAD: C426409R	
TITLE COVER (8-C150-FV)	CARD CODE U 01	DRAWING NO. 4-V-0000-26409R	REV 02		

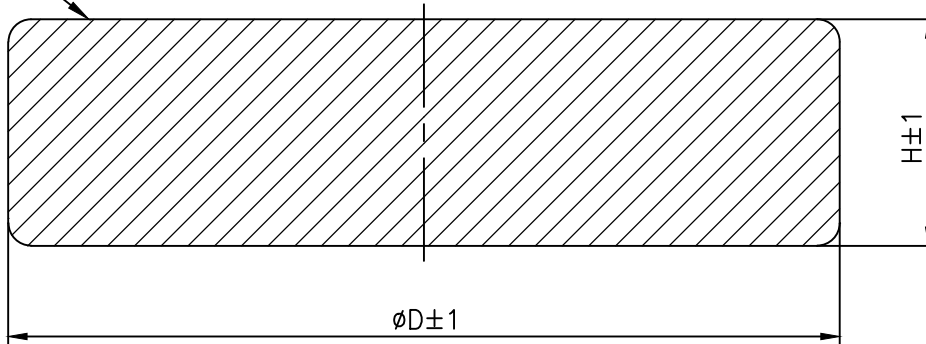
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 17.10.22
REV	SL.No. 06 TO 08 INCLUDED.	
04	IN SL. NO. 01 DIM. 20 WAS 26.	
ZONE	NOTES SL. NO. 4 INCLUDED.	
-		

NOTES:-

1. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE MATERIAL STD ASTM A351 CF3M
2. UNSPECIFIED CASTING RADII 3 MM
3. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
4. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

PUNCH SIZE, MATL. MARK & SUPPLIER'S CODE

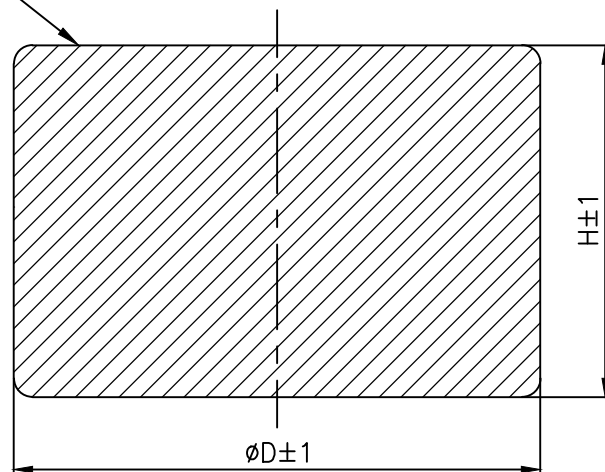


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SL. No.	DRAWING No.	MATL. SPECN.	MATL. CODE	MATL. MARK *TO BE PUNCHED.	WT IN KG	DIMENSIONS				
						$\phi D$	H			
# 8	4-V-UB26-27452R	A351 CF3M, SH	CERTIFY	92 206 273 0000	CF3M	0.88	68	31		
# 7	4-V-UB24-27452R	A351 CF3M, SH		92 206 272 0000	CF3M	0.56	60	25		
# 6	4-V-UB21-27452R	A351 CF3M, SH		92 206 271 0000	CF3M	0.26	46	20		
5	4-V-P831-27452R	A351 CF3M, SH		92 206 012 0000	CF3M	1.93	80	49		
4	4-V-P779-27452R	A351 CF3M, SH		92 203 972 0000	CF3M	1.17	68	41		
3	4-V-NK61-27452R/1	A351 CF3M, SH		92 203 970 0000	CF3M	0.50	56	$\triangle 26$		
2	4-V-NP76-27452R	A351 CF3M, SH		92 203 955 0000	CF3M	1.10	74	31		
1	4-V-NK01-27452R/1	A351 CF3M, SH		92 203 960 0000	CF3M	0.26	46	$\triangle 20$		
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No	
					DRN	NAME		SIGN	DATE	NO. OF VAR
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.					CHD	R.P.SINGH			04.11.19	
					APPD	SAMEER BHAT			04.11.19	
						S.SATHEES			04.11.19	
DEPT	VL	SCALE		WEIGHT (KG).		REFERENCE INFORMATION			NO. OF ITEMS	
CODE	320	NTS		-					-	
TITLE				CARD CODE	DRAWING NO.				REV	
BACK SEAT (CASTING)				U 01	4-V-0000-27452R				04	

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 03.10.22
REV	SL. No. 5 TO 7 INCLUDED.	
04		
ZONE	NOTES No. 4 INCLUDED.	
-		

PUNCH MATL. MARK & SUPPLIER'S CODE



NOTES:-

1. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE MATERIAL STD SA351 CF3M.
2. UNSPECIFIED CASTING RADII 3 MM
3. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
4. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

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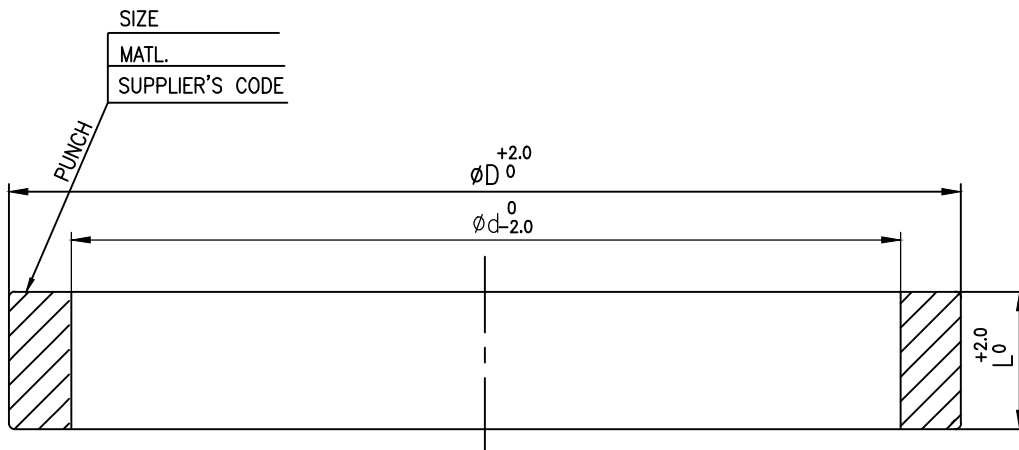
# 7	4-V-P885-27464R	SA351 CF3M, SH CERTIFY	92 206 265 0000	126	59	5.78	CF3M	4-C300-SV
# 6	4-V-P884-27464R		92 206 264 0000	101	60	3.78	CF3M	3-C300-SV
# 5	4-V-P883-27464R		92 206 263 0000	83	56	2.38	CF3M	2-C300-SV
4	4-V-P831-27464R		92 206 010 0000	216	92	26.5	CF3M	8-C300-SV
3	4-V-P767-27464R/1		92 203 961 0000	100	100	6.17	CF3M	3-C300-SV/RV
2	4-V-P779-27464R		92 203 918 0000	176	74	14.14	CF3M	6-C300-SV
1	4-V-P778-27464R		92 203 913 0000	120	100	8.88	CF3M	4-C300-RV
SL. No.	DRAWING No.	MATL. SPECN.	MATL. CODE	DIMENSIONS $\phi D$ H		WT IN KG	MATL. MARK *TO BE PUNCHED.	APPLICABLE VALVE

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
								COMP. CODE	

	<b>BHARAT HEAVY ELECTRICALS LTD.,</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.		DRN	NAME	SIGN	DATE	NO. OF VAR
			CHD	R.P.SINGH		11.09.19	
			APPD	SAMEER BHAT		11.09.19	
		APPD	S.SATHEES			11.09.19	

DEPT	VL		SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320		NMS	-		
TITLE			DISK (CASTING)		CARD CODE	REV
					U 01	04
					DRAWING NO. 4-V-0000-27464R	

DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 17.10.22
REV	SL.No. 04 TO 06 INCLUDED.	
03	IN SL. NO. 01 DIM. 30 WAS 25.	
ZONE	NOTES SL. NO. 3 INCLUDED.	
-		



NOTES

1. UNSPECIFIED FORGING RADII-R2 MAX.
2. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTION IN ALL RESPECTS.
3. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

#06	4-V-UB20-27466R	A351 CF3M CERTIFY	922062700000	78	30	81	2.59	UB20	CF3M
#05	4-V-UB19-27466R	A351 CF3M CERTIFY	922062690000	78	30	46	1.47	UB19	CF3M
#04	4-V-P883-27466R	A351 CF3M CERTIFY	922062680000	58	24	31	0.53	P883	CF3M
03	4-V-P831-27466R	A351 CF3M CERTIFY	922060130000	106	46	106	5.96	P831	CF3M
02	4-V-P779-27466R	A351 CF3M CERTIFY	922038890000	92	36	96	4.3	P779	CF3M
01	4-V-P778-27466R/1	A351 CF3M CERTIFY	922038880000	78	30	81	2.59	P778	CF3M
SL. No.	DRAWING No.	MATL. SPECN.	COMP. CODE	ØD	Ød	L	GROSS WT(Kg)	SIZE	MATL.
								PUNCH	

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No.	ITEM No
								COMP. CODE	

	<b>BHARAT HEAVY ELECTRICALS LTD.,</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.	DRN	NAME	SIGN	DATE	NO.OF VAR
		CHD	R.P.SINGH		04.11.19	
		APPD	SAMEER BHAT		04.11.19	
			S.SATHEES		04.11.19	

DEPT	VL		SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320		NTS	-		
TITLE				CARD CODE	DRAWING NO.	REV
RING				U 01	4-V-0000-27466R	03

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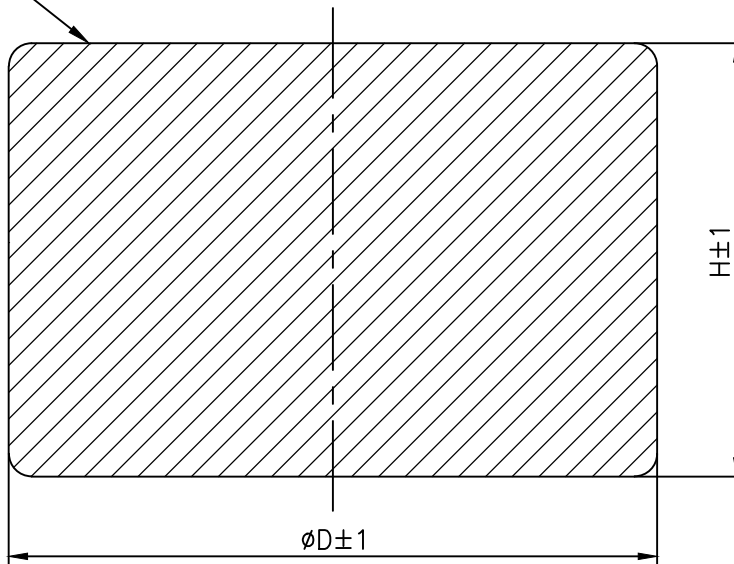
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DCP No.	ALTD: RPS	APPD: SSK
-	CHD: MK	DT: 28.09.22
REV	SL. No. 5 INCLUDED.	
02	IN SL. No. 1 DIM 26 WAS 30.	
ZONE	NOTES No. 4 INCLUDED.	
-		

NOTES:-

1. CASTING SHALL COMPLY WITH THE REQUIREMENTS OF APPLICABLE MATERIAL STD SA351 CF3M.
2. UNSPECIFIED CASTING RADII 1 MM
3. CASTING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
4. # MARKED ITEMS IGC TEST SHALL BE CONDUCTED.

PUNCH MATL. MARK & SUPPLIER'S CODE



#	DRAWING No.	MATL. SPECN.	MATL. CODE	MATL. MARK *TO BE PUNCHED.	WT IN KG	ØD	H
5	4-V-UB17-27472R	SA351 CF3M, SH	92 206 231 0000	CF3M	0.26	40	26
4	4-V-Z200-27472R	SA351 CF3M, SH	92 203 976 0000	CF3M	2.94	94	54
3	4-V-Z125-27472R	SA351 CF3M, SH	92 203 978 0000	CF3M	0.43	48	30
2	4-V-Z121-27472R	SA351 CF3M, SH	92 203 969 0000	CF3M	1.2	70	40
1	4-V-Z120-27472R/01	SA351 CF3M, SH	92 203 965 0000	CF3M	0.26	40	26 <sup>△</sup>

SL. No.	DRAWING No.	MATL. SPECN.	MATL. CODE	MATL. MARK *TO BE PUNCHED.	WT IN KG	DIMENSIONS	

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No. COMP. CODE	ITEM No

		<b>BHARAT HEAVY ELECTRICALS LTD.,</b> UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI 620014.			DRN	NAME	SIGN	DATE	NO. OF VAR
365-192 02.03.2021					CHD	R.P.SINGH		01.11.19	
					APPD	S.SATHEES		01.11.19	
DEPT	VL		SCALE	WEIGHT (KG).	REFERENCE INFORMATION				NO. OF ITEMS
CODE	320		NTS	-					
TITLE					CARD CODE	DRAWING NO.			REV
ROD (CASTING)					U 01	4-V-0000-27472R			02



Product: Steel Castings for Boilers & Valves

### Revisions record:

Rev. 21 – 1) CI 8 – requirements of test bar added. 2) CI 7 Table 1 – SV, SRV and QC NRV RT quantum for body casting modified. 3) Isolating valve, product name modified. 4) CI 8 a) clarity on need for re qualification of castings added. 5) CI 12 modified to include drawing details, 6) CI 13.4 A – clarity to submit IBR certificate and MTC added.  
Rev. 22- Dt: 26/06/2014 1) CI 7.0 Table 1 –RT area of QCNRV body revised. 2) CI.8.0 a) Modified. 3) Sketch of Zones of RT –RT zones of SV and SRV base castings modified based on Engineering review.  
Rev. 23 Dt: 06/10/2015: Cl. 2, 4, 5, 6, 7, 8, 13, 15 modified to incorporate API 6D 24<sup>th</sup> Edition requirements.  
Rev 24 Dt: 23/12/2015: CI 1, 2, 3,5, 6, 7, 8, 9, 10, 13, 14 & 15 modified.  
Rev: 25 Dt: 11/02/2017: CI 1 changed to indicate the use of latest revisions of referred codes, standards, specifications, drawings, procedures, etc; Requirements of API 6D removed from CI 2, 4, 5, 7, 13 & 15 since the API 6D certificate license was not applied for; Definitions for relevant, linear and rounded indications provided in CI 7; CI 2 to 10, 12, 13 & 15 revised to bring better clarity; Type 3.2 certification updated as per BS EN 10204-2004 in CI 13.2.  
Rev: 26 : Dt: 21/02/2018 - SA/ASTM A 995 Gr 4A (CD3MN) added in CI 1 & 5 based on Engineering/Valves input; Creep testing requirements removed and referred to SIP:RM:01.  
Rev: 27 : Dt: 01/04/2022 - CA15 added in CI 1; CI.5a updated; Table 2: Spring loaded Bypass Valves & Knife Edge Gate Valve –NDE requirements added; CI 7.2 modified to include NDE requirements for machined casting; CI.13.3 added for Machined castings; CI.13.4 added for Certification of Product Attest Items; CI.13.5 added for Certification of Certified Items; CI.15- updated; Shooting Sketch added for Spring Loaded Bypass Valves.

### 1. MATERIAL SPECIFICATIONS:

**All the codes, standards, specifications, drawings & procedures, etc., referred in this TDC shall be of latest revision as on the date of Enquiry/Purchase Order, whichever is earlier, unless specified otherwise.**

Carbon Steel (CS)	:	SA / ASTM A216 WCB, WCC & 352 LCB, LCC
Alloy Steel (AS)	:	SA / ASTM A217 WC6, WC9, C12A
Stainless Steel (SS)	:	SA / ASTM A217 CA15 SA / ASTM A351 CF3M, CF8, CF8C & CF8M; SA / ASTM 995 Gr. 4A(CD3MN)
Additional Requirement	:	As listed below (Supplementary to above material specifications)
Size, Quantity, Grade/Class	:	As per Purchase Order & Drawing / Pattern.

### 2. CHEMICAL COMPOSITION AND PROCESS:

- a) Melting: As per the Specification, Fully Killed.  
Carbon= 0.25% maximum: for SA / ASTM A216 WCB only.  
Carbon= 0.15% maximum: for SA / ASTM A217 WC6 & WC9 (For the castings used in QCNRV, CRHNRV, TOA Valves & Conventional valves having contours for welding).

Product Analysis on test bar for each melt including residual elements shall be carried out.

- b) All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity. (Applicable for SS material only)  
c) Tolerance for chemistry shall be as per the above applicable material specifications/standards specified in CI 1.

### 3. DIMENSIONS AND TOLERANCES:

Dimensions & their tolerances shall be as per applicable drawings. For untoleranced dimensions: VL: STDC: 023.

### 4. HEAT TREATMENT (HT):

CS – Castings of High Pressure Valve. (CI.900, CI.1500 & above), QCNRV & CRHNRV: Shall be in Annealed Condition.

AS – Castings: Normalized and Tempered.

Normalizing Temperature: SA/ASTM A217 WC6, WC9: 920-950°C and for C12A: 1050-1080°C.

Tempering Temperature: SA/ASTM A217 WC6: 680°C min.; WC9: 720°C min.; C12A: 750-780°C.

All other materials: Heat treatment shall be as per the applicable material specification & grade.

### 5. MECHANICAL TESTS:

- a) Test bars to be cast integral with the casting or separately. If cast separately, they shall be cast at the same time as the castings and from the same ladle. A metal strip with heat number stamped shall be fused with the test bar during casting, to maintain traceability.



**Product: Steel Castings for Boilers & Valves**

If one (1) casting is made from more than one heat, separate test bars for each cast to be poured and all test bars shall satisfy the requirements. Tests mentioned in Table 1 shall be conducted per heat *per* Heat treatment batch, as per ASTM A370.

Perform tensile tests at room temperature in accordance with the procedures specified in ASTM A370. Perform a minimum of one tensile test. All yield strengths shall be determined using 0.2 % offset method of ASTM A370. The results of the tensile test(s) shall satisfy the applicable material specification requirements. Hardness testing shall be as per ASTM E10 or E18.

If the results of the tensile test(s) do not satisfy the applicable requirements, two additional tests on two additional test specimens (removed from the same TC with no additional heat treatment) may be performed in an effort to qualify the material. The results of each of these tests shall satisfy the applicable requirements.

Table 1.

No	TEST	MATERIAL SPECIFICATIONS					
		SA/ASTM A216, 217	SA/ASTM A352	SA/ASTM A351	SA/ASTM A995		
1	Tension Test	As per the Material Specification					
2	Hardness Test	As per the Specification	225 HBW max.	Not applicable	Not Applicable		
3	Bend Test Specimen 1" x 3/4"		Bend Angle	Dia of Pin	Not applicable	S3 of SA703	Not applicable
		WCB	90°	2t			
		WCC	90°	2t			
		WC6	120°	3t			
		WC9	90°	3t			
C12A	90°	2t					
4	Charpy- U Impact for all QCNRV, CRHNRV bodies for IBR.	As per IBR. At Room temperature. Acceptance: Avg /Single=36J/32J min.	Not applicable	Not applicable	Not applicable		
5	Charpy- V Impact for CE Marking-Pressure Equipment Directive (PED) items as Specified in the Purchase Order.	At 20 Deg.C temperature. Acceptance:Avg/Single=40J/27J min.	As per Specification	Not applicable	Not applicable		
6	Charpy- V Impact for LPBP bodies	At 20 Deg.C temperature. Acceptance: Avg/Single=27J/21J min.	Not applicable	Not applicable	Not applicable		

b) **Creep testing** & reporting shall be carried out as per SIP:RM:01 (latest revision) whenever indicated in the Enquiry/Purchase Order/Engineering Drawing.

**6. FETTLING, DRESSING & CLEANING:**

- Dressing of castings-Free from risers, in gates, notches, undercuts, deep marks etc.
- Fused wires, parting line fins, chills etc. shall be removed by grinding.
- Gas cutting if employed shall be done before Heat treatment.
- Preheat the material to 200°C before gas cutting the Alloy steels.
- Castings shall be blast cleaned both inside and outside for the removal of fused sand, scales etc.
- Visual inspection: 100% as per MSS-SP:55. Acceptance: Type 1: none accepted; Type 2-12: A & B only accepted.

**7. NON DESTRUCTIVE TESTING (NDT) AFTER HEAT TREATMENT**

The NDE requirements for the castings shall meet the following as shown in Table-2 below. Castings shall be free from surface and internal defects like porosity, shrinkage, sand inclusion, crack, cold shut and other harmful defects. All castings shall be of Radiographic Quality.



**Product: Steel Castings for Boilers & Valves**

- |  |                      |
|--|----------------------|
| 1. Radiographic Testing Procedure (RT) | : As per ASME B16.34 |
| 2. Magnetic Particle Inspection (MPI)  | : As per ASTM E709   |
| 3. Liquid Penetrant Inspection (LPI)   | : As per ASTM E165   |

**Table: 2**

Product	Components	Characteristics	Type of NDE Check					
			RT	RT Area	RT Acc. Std	MT \$	MT Area	
Conventional Valves (Gate, Globe & Check)	Body, Bonnet Pr.part yoke, Cover,	< 600 Class	10%#	ASME B 16.34 / On critical area as indicated in the Drawing.	As per Table: 3	--	--	
	Body, Bonnet, Cover	600 Class & above	100%			--	--	
	Body, Bonnet, Cover	1500 Class & above	100%			100%	All accessible surfaces including belly.	
	Wedge	All Special Class Valves	--			--	100%	--
Knife Edge Gate Valve	Body	All	LPI shall be performed in all machined surfaces					
Spring Loaded Bypass Valves	Body, Bonnet, Cap	All	100%	Area shown in the sketch (Annexure-1). The areas where RT cannot be carried out MPI shall be done.	As per Table: 3	100%	All accessible surfaces including belly.	
Safety Valve	Base	Flanged ends of All Castings	100%	Critical Zones as given in the Drawing/ area shown in the sketch (Annexure-1). The areas where RT cannot be carried out MPI shall be done.	Class 2 of ASTM E446 / E186. For Butt weld ends as per Table- 3	100%	All accessible surfaces	
		Weld ends of All Castings	100%			--	--	
Safety Relief Valve	Base	All	100%		Class-2 of ASTM E446 / E186.	--	--	--
	Bonnet		10%#					
	SRV Nozzle	All	100%	All area	--	--	--	
QC NRV, CRH NRV	Body	150 & 300 Class	100%	Butt Weld Ends	As per Table: 3	100%	All accessible surfaces including belly.	
		600 Class & above	100%					Critical Zones as given in the Drawing/ area shown in the sketch (Annexure-1).The areas where RT cannot be carried out MPI shall be done.
	Body (Special)	All		100%	As per Table: 3	100%	--	
Soot Blower Valve	Body	All	10%#	Critical Zones as given in the Drawing/ area shown in the sketch (Annexure-1).The areas where RT cannot be carried out MPI shall be done.	As per Table: 3	--	--	
Isolating Valve/ device	Body	< 600 Class	100%	Critical Zones as given in the Drawing/ area	As per Table: 3	--	All accessible surfaces	
		600 Class & above				--		



**Product: Steel Castings for Boilers & Valves**

		1500 Class & above		shown in the sketch Annexure-1).The areas where RT cannot be carried out MPI shall be done.		100%	including belly.
LP Valve	Bypass Body	All	100%	Critical Zones as given in the Drawing/ area shown in the sketch Annexure-1).The areas where RT cannot be carried out MPI shall be done.	As per Table: 3	--	--

\$ LPI can be substituted for MPI in all inaccessible area and for stainless steel castings # Refer CI 7.1

**Table: 3**

Type Of Discontinuity	Acceptance Level Category	< 600 CLASS		≥ 600 CLASS	
		Thickness ≤2"	Thickness >2"	Thickness ≤2"	Thickness >2"
Gas Porosity	A	A2	A3	A1	A2
Sand/Slag inclusion	B	B3	B3	B2	B2
Shrink Type-1	C	CA2	CA3	CA1	CA2
Shrink Type-2	C	CB3	CB3	CB2	CB2
Shrink Type-3	C	CC3	CC3	CC2	CC2
Crack	D	NONE	NONE	NONE	NONE
Hot Tear	E	NONE	NONE	NONE	NONE
Un-fused Inserts (Chills/Chaplets)	F	NONE	NONE	NONE	NONE

a. Butt welding ends shall be free of shrinkage, crack & hot tear.  
 b. For butt weld ends Gas hole/Porosity and sand inclusions to be within level A1 & B1 respectively

**NDE for SS material:** Castings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hour or 1 micro Sievert per hour.

7.1 # 10% Sampling shall be done as follows: (Wherever specified): The vendor shall select 10% of the Casting from the lot consisting of same size and type, (along with melt number / Sl.nos of the castings covered in the lot) for Radiography. A lot to be specified as the total number of castings as above, supplied in 4 months period (Jan-Apr, May-Aug, Sep-Dec). The vendor shall radiograph these specified castings and incorporate the lot size and melt no and Sl.no in the RT reports along with the other Sl.nos of the other castings covered in the lot. If the identified casting is defective then 2 more castings shall be radiographed. If these 2 castings are defect free then the lot is acceptable. If any one of these castings is defective then all the remaining castings shall be radiographed and all defective areas shall be repaired. BHEL will carry out audit on the lots at the vendor works at any time.

**7.2 a) Raw Casting: Valve Body (Conventional Valves & Spring Loaded Bypass Valves):**

**Surface NDE (MPI & LPI):-** Testing as per ASME B16.34.

- Relevant indication: Surface-rupture NDE indication with major dimensions > 1.6 mm (1/16 in).**
- Linear indication: Surface NDE indication whose length is ≥ three times its width.**
- Rounded indication: Surface NDE indication whose length is < three times its width.**

**Acceptance for MPI & LPI:** As per TOA ST-E 0006 & ST-E-0005

- Cracks are not permitted.
- For linear indications other than cracks, indications must be separated by a distance greater than the length of an acceptable indication. Maximum allowable length of the indication shall be:
  - 1.6 mm for thickness upto 16.0 mm
  - 3.1 mm for thickness over 16.0 mm and below 50.8 mm



Product: Steel Castings for Boilers & Valves

- c) 4.7 mm for thickness over 50.8 mm
6. For rounded indications, 4 or more indications in a line separated by 1.5 mm or less edge to edge are unacceptable. Maximum allowable diameter of the indication shall be:
  - a) 3.1 mm for thickness less than 16.0 mm
  - b) 4.7 mm for thickness 16.0 mm and above
  - c) Four or more indications in a straight line, and the distance between adjacent indications is 1.6mm and less edge to edge
  - d) More than ten indications in the area 38.7 cm<sup>2</sup> selected so as to include as many as possible. However, the longest side of the area should be less than 152.4mm

**b) Raw Casting: Components other than Valve Body(Conventional Valves & Spring Loaded Bypass Valves):**

**Surface NDE (MPI & LPI)-:** Testing and acceptance as per ASME B16.34

1. **Relevant indication: Surface-rupture NDE indication with major dimensions > 1.6 mm (1/16 in).**
  2. **Linear indication: Surface NDE indication whose length is  $\geq$  three times its width.**
  3. **Rounded indication: Surface NDE indication whose length is < three times its width.**
- Acceptance for MPI & LPI:**
4. Cracks are not permitted.
  5. For linear indications other than cracks, indications must be separated by a distance greater than the length of an acceptable indication. Maximum allowable length of the indication shall be:
    - a) For thickness(t) up to 13mm= 8mm,
    - b) For thickness from 13 to 25mm = 13mm
    - c) For thickness above 25mm=18mm.
  6. For rounded indications, 4 or more indications in a line separated by 1.5 mm or less edge to edge are unacceptable. Maximum allowable diameter of the indication shall be:
    - a) For thickness up to 13mm =8mm
    - b) For thickness above 13mm =13mm

**c) Machined Casting: Valve Body(Conventional Valves & Spring Loaded Bypass Valves):**

**Surface NDE ( LPI):** Testing as per ASME B16.34 on all accessible machined area

**Acceptance for LPI:** As per TOA ST-E-0005. Following relevant indications are unacceptable.

**1. Butt Weld ends**

- a) Rounded indications of dia > 1.5 mm.
- b) Linear indications of length > 0.5 mm.
- c) Four or more indications in a line separated by 1.5 mm or less edge to edge.
- d) Ten or more acceptable indications in an area of 38.7 cm<sup>2</sup> with one side not exceeding 152.4 mm.

**2. Self-Sealing Bore Area**

- a) Any Linear indication
- b) Rounded indications of dia > 1.5 mm.
- c) Ten or more acceptable indications in an area of 38.7 cm<sup>2</sup> with one side exceeding 25 mm.

**d) Machined Casting: Knife Edge Gate Valve Body:**

**Surface NDE ( LPI):** Testing as per ASME B16.34 on all accessible machined area

**Acceptance for LPI:** As per TOA ST-E-0005. Following relevant indications are unacceptable.

- a) Rounded indications of dia > 1.5 mm.
- b) Linear indications of length > 0.5 mm.

- e) RT Films shall be reviewed and RT reports shall be verified by BHEL approved TPI. MPI for Special bodies shall be witnessed by BHEL approved TPI

**8. DEVELOPMENT STAGE OF CASTING:**

- a) During developmental stage, of new castings or change to an existing casting on account of change in dimension which warrants pattern correction, Foundry to ensure, first sample pieces meet dimensional,



**Product: Steel Castings for Boilers & Valves**

NDE & Quality requirements in this TDC, before starting bulk production. Sample castings, 3 castings with nominal bore (NB)  $\leq$  100mm. & 1 casting with NB > 100 mm for each type shall be inspected for dimension and RT requirements at BHEL/Vendor works by BHEL personnel. One Test bar for each melt/heat treatment batch shall be supplied along with casting for test at BHEL. RT shall be carried out on entire area of the casting to the acceptance requirement of Table-2 & 3. In addition 100% MPI on all critical areas like change of sections, riser & in gate portions shall be carried out. Casting to be inspected for dimensions after proof machining wherever necessary. If machining operation is involved the same shall be done and defect free condition shall be ensured. If any defect noticed in RT and machining, the type of defect shall be analyzed and accordingly size of gate, runner, riser and pouring methodology to be modified to get defect free casting. Sampling shall be continued till achieving sound casting. After satisfactory development of sampling bulk production shall be started. However weld repaired areas identified in visual examination for doubtful indications to be probed by MPI. Accepted sample castings may be considered for fixing the nominal weight of the castings.

- b) During developmental stage RT on sample castings of Yoke, Yoke Clamp & Wedge/Disc shall meet Level-3 of ASTM E446/E186/E280.
- c) Radiography not required after satisfactory development of casting & production based on established method for following parts: SRV Bonnet, Disc Holder, Upper and Lower adjusting rings, Packed cap, Cover Plate, Yoke and SRV guide flanges.

**9. REPAIR:**

Castings with unacceptable cracks, hot tears, shrinkage, etc. to be rectified by grinding & if required by welding. Welding to be done by qualified welder and qualified procedure as per ASME Section IX. For IBR items welders shall be qualified as per IBR.

Guidelines for repair of steel castings shall be as per SIP:VS:17 for activities like defects require/ not require weld repair, welding, Post Weld Heat Treatment, NDE and surface treatment. All repaired areas after PWHT shall be NDE tested and Hardness tested. Hardness shall meet material specification.

For PED (CE-Marking) castings, permanent joining (welding and weld repair) of components must be carried out by suitably qualified personnel according to suitable operating procedures. Also Non-Destructive tests of permanent joints must be carried out by suitable qualified personnel.

The procedures and personnel must be approved by a competent third party which at the manufacturer's discretion, may be - A notified body, - A third party organization recognized by a Member State of European Community.

**10. SURFACE TREATMENT:**

SS castings to be pickled & passivated (after repair & HT if any) as per ASTM A380. Satisfactory passivity of the surface to be checked using SS passivity test kit (Free iron test). After passivation, rinsing & test, the rinsed demineralised water to be checked for chloride with 1% Silver nitride, which shall not exceed 0.5 PPM.

**11. DIMENSIONAL CHECK:**

For all QCNRV & CRHNRV Body Castings: Thickness of the body shall be checked throughout the surface on a grid of 100mm x 100mm and recorded & submitted to BHEL.

**12. MARKING AND PACKING:**

Representation of Marking and identification shall be as per drawing. Also following details to be marked on each casting, on a raised pad using low stress stamps and Castings shall be suitably packed to avoid damage during transit.

1. Foundry code, 2. **Material** specification, grade & **Heat**/melt number, 3. Size and 4. Class rating.



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### 13. INSPECTION AND CERTIFICATION:

#### 13.1 **For Attested Items (As per Engg material code/Drawing): For IBR items,**

Products shall be inspected at works and the applicable IBR Form must be countersigned by the Inspecting Authority as indicated below in case the shop/mill/foundry is not recognised as a "Well known Foundry" under IBR:

- Imported Items:** Inspecting Authority approved by IBR, for the Country of origin.
- Indigenously Supplied items:** Director of Boilers/Chief Inspector of Boilers/Inspecting Authority approved by IBR, for the respective state.

Certification in IBR Form III-F for IBR items from "IBR-Well Known Foundry" or "Inspecting Authority", as applicable, to be submitted. IBR Form III-F & a separate Test certificate of type 3.1 or 3.2 as per BS EN 10204 in English language with following details, shall accompany the product:

1. Purchase Order No. (BHEL), TDC No & its revision no, Test certificate no & date.
2. **Material** Specification, Grade & Class with applicable year of code, Heat Number, Quantity & Size
3. Steel making process, Chemistry including incidental elements - Heat wise, Product analysis, Carbon Equivalent (CE).
4. Heat treatment details of the material and test bars.
5. Mechanical test results-Tensile (UTS, YTS (**0.2% offset**), % elongation, % reduction in area), Impact & Hardness and NDE test results with reference & acceptance standard.
6. Repair details including HT, if any, Cleaning & Surface treatment details.
7. Any other information like clearance of sample casting.
8. Dimensional Inspection Report, where applicable.
9. **For SS:** Measured Radioactivity levels at 5cm from the surface of the castings shall be reported in the Test Certificate stating the measured value at the specified distance (not to be recorded in IBR Form).
10. **Creep test report as per the format suggested in Cl 5 of this TDC (applicable only for IBR application).**

13.2 For PED 2014/68/EU (CE-marking), test certificates of type 3.1 or 3.2, with details specified in Cl 13.1 for separate test certificate, shall be submitted as per BS EN 10204.

- Type 3.1 – Suppliers shall have ISO 9001:2015 certification certified by Notified Body recognized by European community and test certificate certified by suppliers authorized inspection representative.
- Type 3.2 – Components inspected and test certificates certified by both the supplier's authorized inspection representative and Notified Body recognized by European community.

13.3 **Machined Casting:** In addition to Cl.13.1 (or) Cl.13.2 , as applicable, the following test reports shall be furnished,

1. Dimensional Report
2. LPI Report Signed by NDE Level II qualified Personnel

#### 13.4 **For Product Attested Items (as per Engg material code/Drawing):**

All tests specified have to be carried out by foundry and test results to be furnished in the test certificate of type 3.1 or 3.2 as per BS EN 10204 and shall contain the following information in English language only:

1. Purchase Order No. (BHEL), TDC No & its revision no, Test certificate no & date.
2. Material Specification, Grade & Class with applicable year of code, Heat Number, Quantity & Size
3. Steel making process, Chemistry including incidental elements - Heat wise, Product analysis, Carbon Equivalent (CE).
4. Heat treatment details of the material and test bars.
5. Mechanical test results-Tensile (UTS, YTS (0.2% offset), % elongation, % reduction in area), Impact & Hardness and NDE test results with reference & acceptance standard.
6. Repair details including HT, if any, Cleaning & Surface treatment details.
7. Any other information like clearance of sample casting.
8. Dimensional Inspection Report, where applicable.
9. For SS: Measured Radioactivity levels at 5cm from the surface of the castings shall be reported in the Test Certificate stating the measured value at the specified distance.



Product: Steel Castings for Boilers & Valves

**13.5 For Certified Items (as per Engg material code/Drawing):**

*In addition to Cl.8 requirements, all tests specified in the material specification have to be carried out by foundry and test results to be furnished in the test certificate of type 3.1 as per BS EN 10204 and information in English language only*

**14. AUDIT CHECKS AT BHEL:**

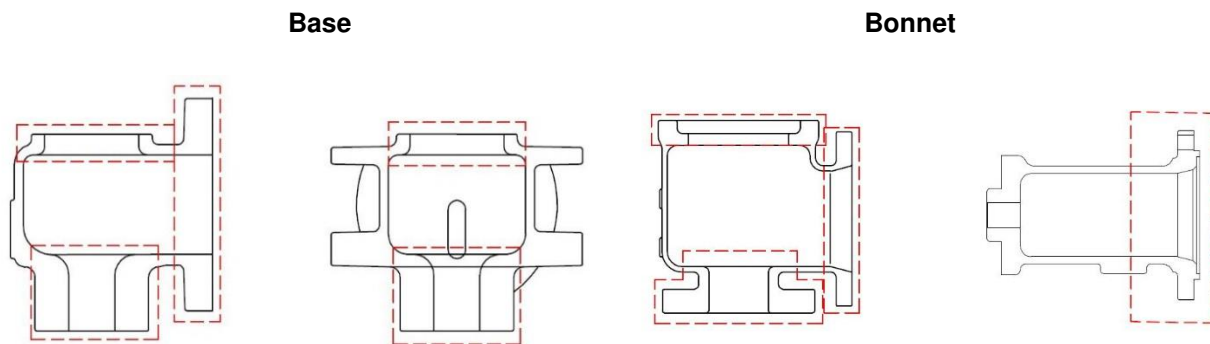
BHEL reserves the right to carry out audit checks for chemistry, HT condition, mechanical test and NDT on representative test bars or job. Items found defective during check or subsequent processing at BHEL will be rejected.

**15. END USE:**

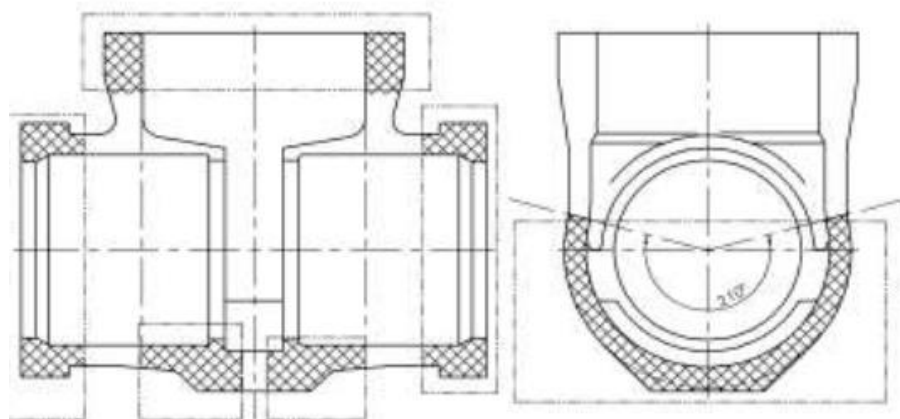
For use in valves and other components like flanges, fittings etc. for high temperature & high pressure applications meeting IBR, ASME Section I, ASME VIII Div 1, ASME B16.34 and PED 2014/68/EU (CE-marking).

**Annexure-1:Sketch of zones for RT**

**SV and SRV Base castings**



**Reheater Isolating Device Body**

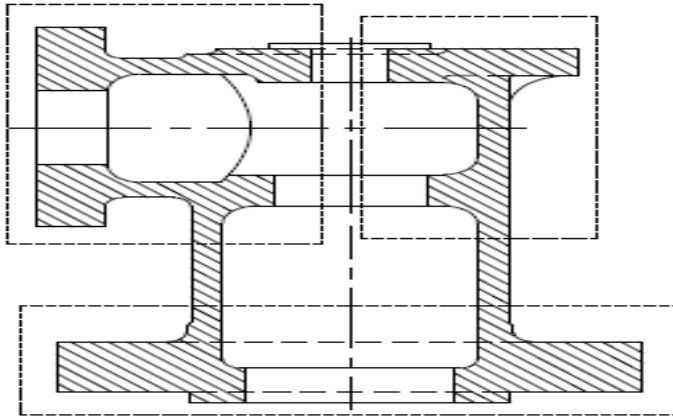


 Radiography Area



Product: Steel Castings for Boilers & Valves

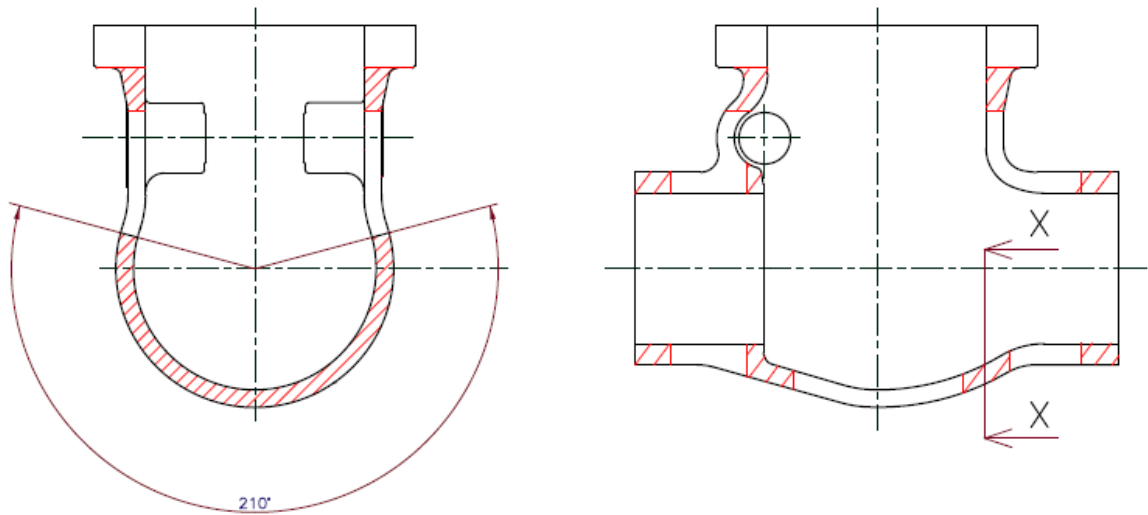
**Soot Blower Valve Body**



PART CODES : 920243870000, 920131810000, 920243870100, 920131810100  
LRD IE, LRD IIE & WB IE - 2.5" 600#

 — RADIOGRAPHY AREA

**Quick Closing Non Return Valve Body**

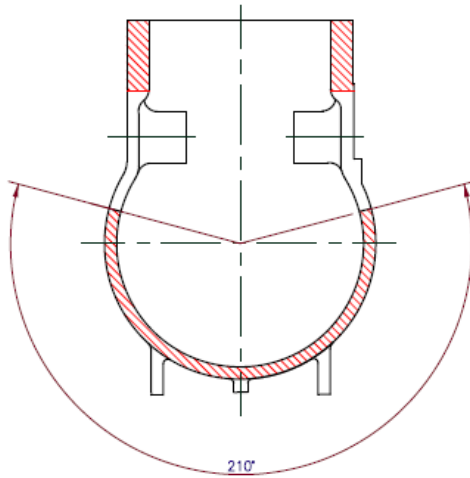


SECTION - XX

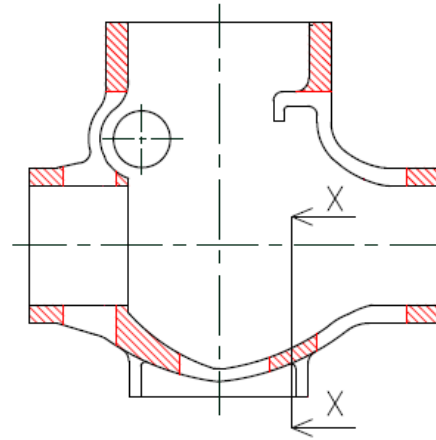
RADIOGRAPHY REQUIREMENT

Product: Steel Castings for Boilers & Valves

**Cold Reheat Non Return Valve Body**

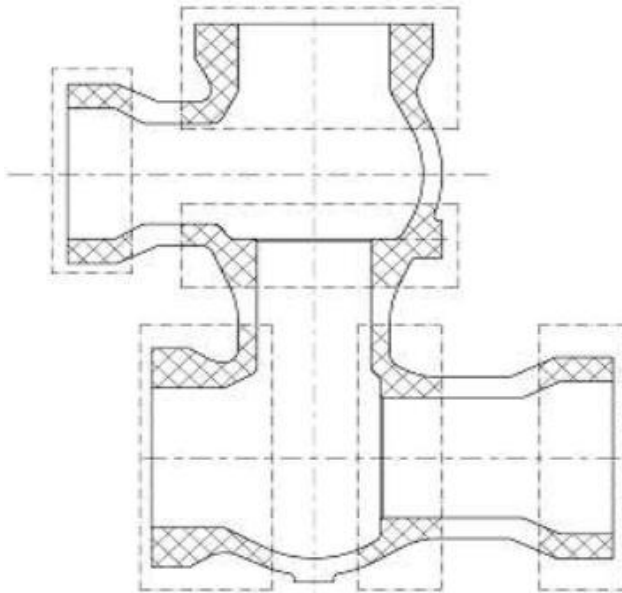


SECTION – AA



RADIOGRAPHY REQUIREMENT

**LP Bypass Stop cum Control Valve Body**



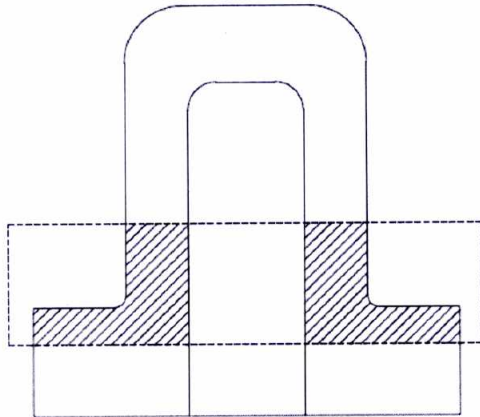
 Radiography Area



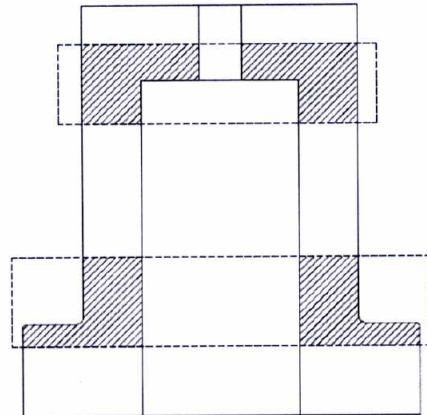
Product: Steel Castings for Boilers & Valves

Spring Loaded Bypass Valve

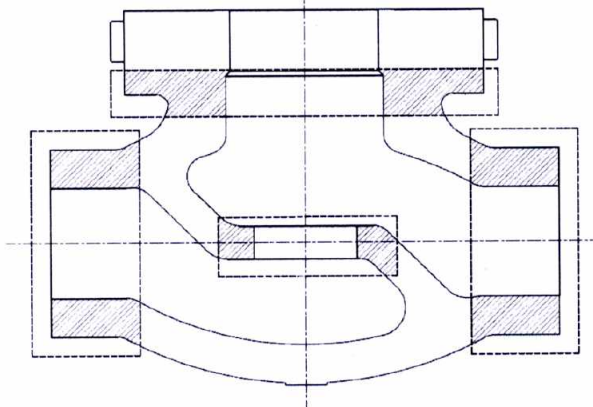
Cap



Bonnet



Body



<i>N Nagamuthu Pandian</i> 30/03/2022	<i>K. Rajasekaran</i> 30/3/22	<i>S. Lakshmi</i> 30/3/22	<i>Ajay Kumar Gupta</i> 30/3/22	<i>J.V.V. Aruna Kumar</i> 31/03/2022
N Nagamuthu Pandian Manager/QA	K. Rajasekaran DGM/Valves/Engg	S. Lakshmi SDGM/QA	Ajay Kumar Gupta AGM/Valves/Purchase	J.V.V. Aruna Kumar AGM/QA
<b>Prepared By</b>	<b>Reviewed By</b>		<b>Approved By</b>	



70-006

# Bharat Heavy Electricals Limited

High Pressure Boiler Plant, Tiruchirappalli-620 014, India.

Grams : BHARATELEC

Phone : --

Telex : 0455 - 211, 212, 295 &amp; 298

FAX : 81 - (0431) - 52710

## PRODUCT ENGINEERING/VALVES

VL:STDC:023

REV.00

PAGE 1 OF 6

### TDC FOR UNTOLERANCED DIMENSIONS IN CASTING & FORGING DRAWINGS


#### Scope :

This technical delivery condition specifies the tolerance for the untoleranced dimension for the castings and forgings wherever tolerances are not specified in the applicable drawing applicable material TDC.

#### A. Castings :

Nominal dimension (in mm)		Tolerance on diameter & height (in mm)
UPTO	4	± 0.5
OVER	4 UPTO 16	± 1.0
OVER	16 UPTO 65	± 1.5
OVER	65 UPTO 125	± 2.0
OVER	125 UPTO 250	± 2.5
OVER	250 UPTO 500	± 3.0
OVER	500 UPTO 1000	± 4.0
OVER	1000 UPTO 1600	± 5.0

B. Forgings : As per Table (1), (2), (3) & (4)



PREPARED



CHECKED



APPROVED

(S. KUMAR)  
SM/PE/VSB  
28/2/94

TABLE 1. LENGTH, WIDTH, HEIGHT, MISMATCH, RESIDUAL FLASH AND TRIMMED FLAT OF DROP, PRESS AND UPSET FORGINGS (NORMAL TOLERANCES)

DROP, PRESS & UPSET FORGINGS - TOLERANCES FOR: LENGTH, WIDTH & HEIGHT																					
MISMATCH	RESIDUAL FLASH (+) TRIMMED FLAT (-)	TRIM LINE		WEIGHT (KGS) ABOVE TO (INCL)	DIFFICULTY OF MATERIAL		COMPLEXITY		MISMATCH ; RESIDUAL FLASH & TRIMMED FLAT (Ø DIA & LENGTH FOR UPSET FORGINGS) NOTE: CENTRE TO SURFACE; STEP IN ONE DIE; + $\frac{1}{3}$ , - $\frac{1}{3}$ OF TOTAL TOLERANCE INTERNAL DIMENSION: REVERSE + AND - SIGNS.												
		ASYMMETRIC	STRAIGHT OR SYMMETRIC		M1	M2	>0.63	>0.32	>0.16	>0.15	MM										
					1	2	3	4	0 ABOVE	TO (INCL)	32	100	160	250	400	630	1000	1600	2500		
0.4	0.5	/	/	0-0.4	/	/	/	/	1.1 <sup>+0.7</sup> <sub>-0.4</sub>	1.2 <sup>+0.8</sup> <sub>-0.4</sub>	1.4 <sup>+0.9</sup> <sub>-0.6</sub>	1.6 <sup>+1.1</sup> <sub>-0.8</sub>	1.8 <sup>+1.2</sup> <sub>-0.8</sub>	2 <sup>+1.3</sup> <sub>-0.7</sub>							
0.5	0.6	/	/	0.4-10	/	/	/	/	1.2 <sup>+0.8</sup> <sub>-0.4</sub>	1.4 <sup>+0.9</sup> <sub>-0.6</sub>	1.6 <sup>+1.1</sup> <sub>-0.8</sub>	1.8 <sup>+1.2</sup> <sub>-0.8</sub>	2 <sup>+1.3</sup> <sub>-0.7</sub>	2.2 <sup>+1.5</sup> <sub>-0.9</sub>							
0.6	0.7	/	/	10-18	/	/	/	/	1.4 <sup>+0.9</sup> <sub>-0.6</sub>	1.6 <sup>+1.1</sup> <sub>-0.8</sub>	1.8 <sup>+1.2</sup> <sub>-0.8</sub>	2 <sup>+1.3</sup> <sub>-0.7</sub>	2.2 <sup>+1.5</sup> <sub>-0.9</sub>	2.5 <sup>+1.7</sup> <sub>-1.0</sub>	28 <sup>+1.9</sup> <sub>-0.9</sub>						
0.7	0.8	/	/	18-32	/	/	/	/	1.6 <sup>+1.1</sup> <sub>-0.8</sub>	1.8 <sup>+1.2</sup> <sub>-0.8</sub>	2 <sup>+1.3</sup> <sub>-0.7</sub>	2.2 <sup>+1.5</sup> <sub>-0.9</sub>	2.5 <sup>+1.7</sup> <sub>-1.0</sub>	2.8 <sup>+1.9</sup> <sub>-1.1</sub>	32 <sup>+2.1</sup> <sub>-1.1</sub>	36 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	45 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>		
0.8	1	/	/	32-56	/	/	/	/	1.8 <sup>+1.2</sup> <sub>-0.8</sub>	2 <sup>+1.3</sup> <sub>-0.7</sub>	2.2 <sup>+1.5</sup> <sub>-0.9</sub>	2.5 <sup>+1.7</sup> <sub>-1.0</sub>	2.8 <sup>+1.9</sup> <sub>-1.1</sub>	3.2 <sup>+2.1</sup> <sub>-1.1</sub>	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>		
1	1.2	/	/	56-10	/	/	/	/	2 <sup>+1.3</sup> <sub>-0.7</sub>	2.2 <sup>+1.5</sup> <sub>-0.9</sub>	2.5 <sup>+1.7</sup> <sub>-1.0</sub>	2.8 <sup>+1.9</sup> <sub>-1.1</sub>	3.2 <sup>+2.1</sup> <sub>-1.1</sub>	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>		
1.2	1.4	/	/	10-20	/	/	/	/	2.2 <sup>+1.5</sup> <sub>-0.9</sub>	2.5 <sup>+1.7</sup> <sub>-1.0</sub>	2.8 <sup>+1.9</sup> <sub>-1.1</sub>	3.2 <sup>+2.1</sup> <sub>-1.1</sub>	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>		
1.4	1.7	/	/	20-50	/	/	/	/	2.5 <sup>+1.7</sup> <sub>-1.0</sub>	2.8 <sup>+1.9</sup> <sub>-1.1</sub>	3.2 <sup>+2.1</sup> <sub>-1.1</sub>	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>		
1.7	2	/	/	50-120	/	/	/	/	2.8 <sup>+1.9</sup> <sub>-1.1</sub>	3.2 <sup>+2.1</sup> <sub>-1.1</sub>	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>	9 <sup>+2.8</sup> <sub>-1.7</sub>		
2	2.4	/	/	120-250	/	/	/	/	3.2 <sup>+2.1</sup> <sub>-1.1</sub>	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>	9 <sup>+2.8</sup> <sub>-1.7</sub>	10 <sup>+2.9</sup> <sub>-1.8</sub>		
2.4	2.8	/	/		/	/	/	/	3.6 <sup>+2.4</sup> <sub>-1.2</sub>	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>	9 <sup>+2.8</sup> <sub>-1.7</sub>	10 <sup>+2.9</sup> <sub>-1.8</sub>	11 <sup>+3.0</sup> <sub>-1.8</sub>		
QUALITY		(NORMAL)			/	/	/	/	4 <sup>+2.3</sup> <sub>-1.3</sub>	4.5 <sup>+2.5</sup> <sub>-1.5</sub>	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>	9 <sup>+2.8</sup> <sub>-1.7</sub>	10 <sup>+2.9</sup> <sub>-1.8</sub>	11 <sup>+3.0</sup> <sub>-1.8</sub>	12 <sup>+3.0</sup> <sub>-1.8</sub>		
					/	/	/	/	5 <sup>+2.3</sup> <sub>-1.3</sub>	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>	9 <sup>+2.8</sup> <sub>-1.7</sub>	10 <sup>+2.9</sup> <sub>-1.8</sub>	11 <sup>+3.0</sup> <sub>-1.8</sub>	12 <sup>+3.0</sup> <sub>-1.8</sub>	14 <sup>+3.1</sup> <sub>-1.8</sub>			
					/	/	/	/	5.6 <sup>+2.7</sup> <sub>-1.6</sub>	6.3 <sup>+3.1</sup> <sub>-1.7</sub>	7 <sup>+2.8</sup> <sub>-1.7</sub>	8 <sup>+2.7</sup> <sub>-1.7</sub>	9 <sup>+2.8</sup> <sub>-1.7</sub>	10 <sup>+2.9</sup> <sub>-1.8</sub>	11 <sup>+3.0</sup> <sub>-1.8</sub>	12 <sup>+3.0</sup> <sub>-1.8</sub>	14 <sup>+3.1</sup> <sub>-1.8</sub>				

TABLE 2 THICKNESS FOR DROP, PRESS AND UPSET FORGINGS AND EJECTOR MARKS FOR DROP AND PRESS FORGINGS (NORMAL TOLERANCES)

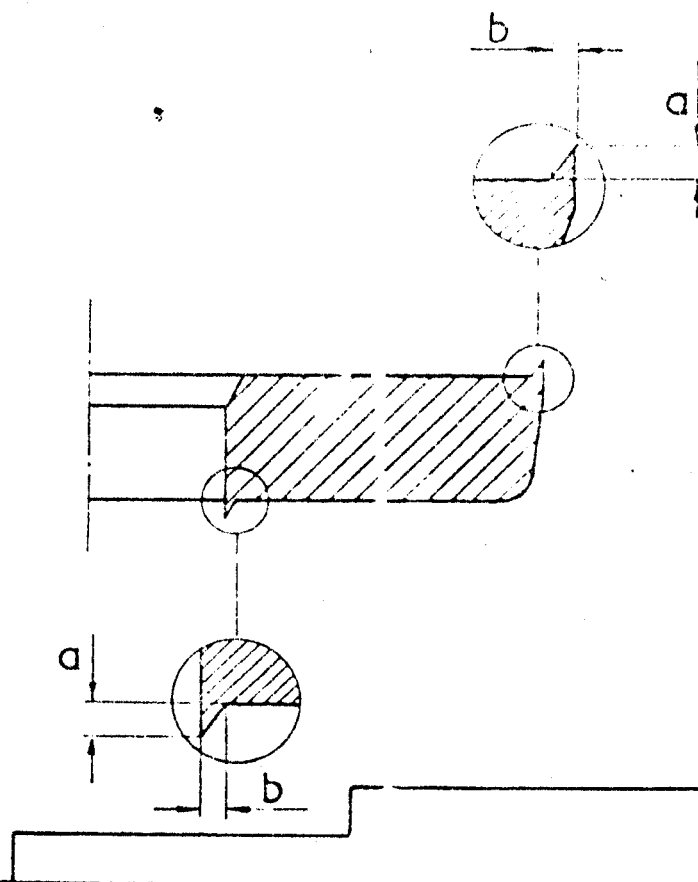
DROP, PRESS & UPSET FORGINGS - TOLERANCES FOR THICKNESS; EJECTOR MARKS*														
EJECTOR MARKS	WEIGHT (kg)	DIFFICULTY OF MATERIAL	COMPLEXITY				* (DROP AND PRESS FORGINGS ONLY)							
			S1	S2	S3	S4	0 ABOVE	TO (INCL)	M M					
ABOVE - TO (INCL)	M1	M2	> 0.63 ≤ 1	> 0.32 ≤ 0.63	> 0.16 ≤ 0.32	≤ 0.16	0	16	40	63	100	160	250	> 250
1	0-0.4						1	1.1	1.2	1.4	1.6	1.8	2	
1.2	0.4-1.2						1.1	1.2	1.4	1.6	1.8	2	2.2	2.5
1.6	1.2-2.5						1.2	1.4	1.6	1.8	2	2.2	2.5	2.8
2	2.5-5						1.4	1.6	1.8	2	2.2	2.5	2.8	3.2
2.4	5-8						1.6	1.8	2	2.2	2.5	2.8	3.2	3.6
3.2	8-12						1.8	2	2.2	2.5	2.8	3.2	3.6	4
4	12-20						2	2.2	2.5	2.8	3.2	3.6	4	4.5
5	20-36						2.2	2.5	2.8	3.2	3.6	4	4.5	5
6.4	36-63						2.5	2.8	3.2	3.6	4	4.5	5	5.6
8	63-110						2.8	3.2	3.6	4	4.5	5	5.6	6.3
10	110-200						3.2	3.6	4	4.5	5	5.6	6.3	7
12.6	200-250						3.6	4	4.5	5	5.6	6.3	7	8
							4	4.5	5	5.6	6.3	7	8	9
							4.5	5	5.6	6.3	7	8	9	10
QUALITY (NORMAL)							5	5.6	6.3	7	8	9	10	11
							5.6	6.3	7	8	9	10	11	12
							6.3	7	8	9	10	11	12	

TABLE 3 STRAIGHTNESS, FLATNESS AND CENTRE TO CENTRE DIMENSIONS FOR DROP, PRESS AND UPSET FORGINGS

DROP, PRESS AND UPSET FORGINGS																
NOTE. QUALITY E DOES NOT APPLY TO UPSET FORGINGS																
RANGE OF TOLERANCES FOR STRAIGHTNESS AND FLATNESS																
LENGTH ABOVE TO (INCL)		MM														
		0 100	100 125	125 160	160 200	200 250	250 315	315 400	400 500	500 630	630 800	800 1000	1000 1250	1250 1600	1600 2000	2000 2500
QUALITY	NORMAL	0.6	0.7	0.8	0.9	1	1.1	1.2	1.4	1.6	1.8	2	2.2	2.5	2.8	3.2
RANGE OF TOLERANCES FOR CENTRE TO CENTRE DIMENSIONS																
LENGTH ABOVE TO (INCL)		MM														
		0 100	100 160	160 200	200 250	250 315	315 400	400 500	500 630	630 800	800 1000	1000 1250				
QUALITY	NORMAL	$\pm 0.3$ 0.6	$\pm 0.4$ 0.8	$\pm 0.5$ 1	$\pm 0.6$ 1.2	$\pm 0.8$ 1.6	$\pm 1$ 2	$\pm 1.2$ 2.4	$\pm 1.6$ 3.2	$\pm 2$ 4	$\pm 2.5$ 5	$\pm 3.2$ 6.4				

TABLE 4 FILLET, EDGE RADII AND BURRS FOR DROP, PRESS AND UPSET FORGINGS

DROP, PRESS AND UPSET FORGINGS		
FILLET AND EDGE RADII TOLERANCES		
r MM	+	-
ABOVE - TO (INCL)		
0 - 10	50%	25%
10 - 32	40%	20%
32 - 100	32%	15%
> 100	25%	10%
BURR TOLERANCES (AND PARTING LINE FINIS FOR UPSET FORGINGS)		
WEIGHT (kg)	a	b
ABOVE - TO (INCL)		
0 - 1	1	0.5
1 - 6	1.6	0.8
6 - 40	2.5	1.2
40 - 250	4	2



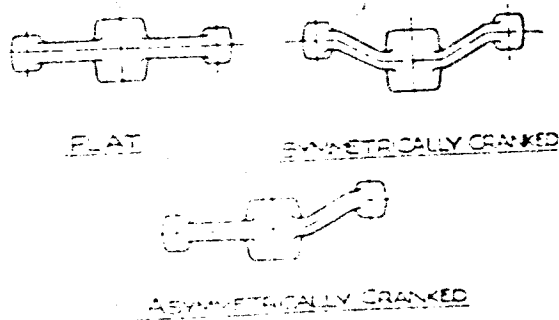


Fig. 1. Die lines

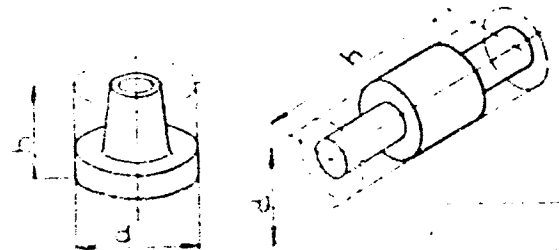


Fig. 2. Enveloping shapes of circular forgings

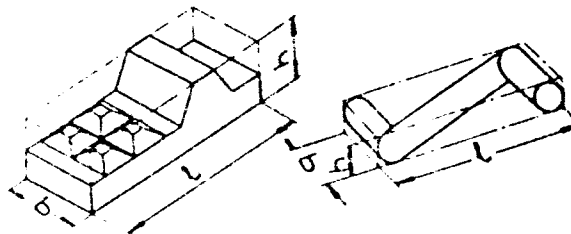


Fig. 3. Enveloping shapes of non-circular forgings

NOTE :

1. The type of steel used is determined as falling within one of the following categories :
  - a. M1 - steel with carbon content not more than 0.65% and total of specified alloying elements not more than 5%
  - b. M2 - steel with carbon content above 0.65% or total of specified alloying elements above 5%.
2. Complexity factor of a forging is the ratio of the weight of the forging to the weight of the overall shape necessary to accommodate the maximum dimensions of the forging.

The resulting complexity factor is determined as falling within one of the following categories :

- S4 - Upto and including 0.16
- S3 - Above 0.16 upto and including 0.32
- S2 - Above 0.32 upto and including 0.63
- S1 - Above 0.63 upto and including 1.00

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**List of items along with Established Weight**

Sr. No.	MATL_NO	DESCRIPTION	Drw. No.	IGC/ Non IGC	Tender qty.	Established Weight	Total Weight
2	92206220000	BODY_2_C150_FV_FL_CF3M (IGC)-Z	2V000006391R	IGC	2	20.8	41.60
3	92206228000	COVER_2_C150_FV_CF3M (IGC)-Z13	3V000024280R	IGC	2	8.2	16.40
4	92206224000	FLAP_2_C150_FV_CF3M (IGC)-Z137	3V000095062R	IGC	2	1.84	3.68
9	92203884000	BODY_3_C150_FV_BW_CF3M-Z122	2V000013884R		1	31.83	31.83
10	92206221000	BODY_3_C150_FV_FL_CF3M (IGC)-U	2V000006131R	IGC	18	35.5	639.00
11	92206229000	COVER_3_C150_FV_CF3M (IGC)-UB1	4V000026236R	IGC	18	12.82	230.76
12	92203853000	COVER_3_C150_FV_CF3M-Z120	3V000017688R		1	12.82	12.82
13	92203963000	FLAP_3_C150/C300_FV_CF3M-Z120	3V000095062R		1	1.84	1.84
14	92206225000	FLAP_3_C150_FV_CF3M (IGC)-UB17	3V000095062R	IGC	18	1.84	33.12
18	92203894000	BODY_4_C150_FV_BW_CF3M-Z129	2V000013501R		1	46	46.00
19	92203893000	COVER_4_C150_FV_CF3M-Z129	3V000023268R		1	17.3	17.30
21	92203899000	BODY_8_C150_FV_BW_CF3M-Z124	2V000008500R		1	114	114.00
22	92203903000	COVER_8_C150_FV_CF3M-Z124	4V000026409R		1	50.7	50.70
23	92203900000	FLAP_8_C150/C300_FV_CF3M-Z124	3V000095062R		1	16.17	16.17
27	92203904000	BODY_4_C300_FV_BW_CF3M-Z125	2V000007855R		1	54.8	54.80
28	92203906000	COVER_4_C300_FV_CF3M-Z125	3V000023269R		1	21	21.00
29	92203910000	FLAP_4_C150/C300_FV_CF3M-Z129	3V000095062R		2	3.39	6.78
31	92203907000	BODY_6_C300_FV_BW_CF3M-Z126	2V000013504R		1	95	95.00
32	92203855000	COVER_6_C150/C300_FV_CF3M-Z121	3V000017688R		1	32.1	32.10
36	92206238000	BODY_2_C150_GV_FL_CF3M (IGC)-U	2V000005873R	IGC	26	15.1	392.60
38	92206241000	WEDGE_2_C150/C300_CF3M (IGC)-U	3V000006628R	IGC	50	1.7	85.00
39	92206239000	YOKE-BONNET_2_C150_GV_CF3M (IGC)	2V000006107R	IGC	26	9.2	239.20
40	92206243000	BODY_3_C150_GV_FL_CF3M (IGC)-U	2V000005872R	IGC	44	26.5	1166.00
41	92206244000	SEAT RING 3-C150-GV-CF3M (IGC)	3V000035217R	IGC	88	1.1	96.80
42	92206245000	WEDGE_3_C150_CF3M (IGC)-UB23	3V000006598R	IGC	44	3.08	135.52
43	92206246000	YOKE-BONNET_3_C150_GV_CF3M (IGC)	2V000005937R	IGC	44	12.7	558.80
44	92203876000	BODY_4_C150_GV_BW_CF3M-NK76	2V000007944R		4	36	144.00
45	92206247000	BODY_4_C150_GV_FL_CF3M (IGC)-U	2V000005877R	IGC	6	42.75	256.50
46	92206248000	SEAT RING-4-150-GV-CF3M (IGC)-	3V000035217R	IGC	12	1.8	21.60
47	92203932000	SEAT RING-4-150-GV-FL-HW-CF3M-	3V000035217R		4	1.8	7.20
48	92206249000	WEDGE_4_C150_CF3M (IGC)-UB24	2V000003379R	IGC	6	5.5	33.00
49	92203935000	WEDGE_4_C150_CF3M-NK77	2V000003379R		6	5.5	33.00
50	92206250000	YOKE-BONNET_4_C150_GV_CF3M (IGC)	2V000005925R	IGC	6	18.85	113.10
51	92203851000	YOKE-BONNET_4_C150_GV_CF3M-NK0	2V000005925R		4	18.85	75.40
53	92203879000	BODY_6_C150_GV_BW_CF3M-NP81	2V000014166R		3	45	135.00
54	92206251000	BODY_6_C150_GV_FL_CF3M (IGC)-U	2V000013591R	IGC	4	46.13	184.52
56	92206253000	WEDGE_6_C150_CF3M (IGC)-UB25	2V000013610R	IGC	4	6.9	27.60
57	92203942000	WEDGE_6_C150_CF3M-NP81	2V000013610R		8	6.9	55.20
58	92206254000	YOKE-BONNET_6_C150_GV_CF3M (IGC)	2V000014171R	IGC	4	19.67	78.68
59	92203850000	YOKE-BONNET_6_C150_GV_CF3M-NP7	2V000014171R		3	19.67	59.01
61	92203880000	BODY_8_C150_GV_BW_CF3M-NP82	2V000014162R		1	62.1	62.10
62	92206255000	BODY_8_C150_GV_FL_CF3M (IGC)-N	2V000013609R	IGC	10	78	780.00
64	92206258000	WEDGE_8_C150_CF3M (IGC)-UB26	2V000013624R	IGC	10	13.7	137.00
65	92203943000	WEDGE_8_C150_CF3M-NP82	2V000013624R		1	13.7	13.70
66	92203886000	YOKE-BONNET_8_C150_GV_HO_CF3M-	2V000014163R		1	25.93	25.93
67	92206257000	YOKE-BONNET_8_C150_GV_HO_CF3M (IGC)-UB26	2V000014163R	IGC	10	25.93	259.30
69	92203878000	BODY_10_C150_GV_BW_CF3M-NP83	2V000014151R		1	100	100.00
71	92203938000	WEDGE_10_C150_CF3M-NP83	2V000013687R		1	20.6	20.60
72	92203950000	YOKE-BONNET_10_C150_GV_HO_CF3M	2V000014152R		1	43.9	43.90
73	92206240000	BODY_2_C300_GV_FL_CF3M (IGC)-N	2V000006012R	IGC	24	22.7	544.80
74	92206242000	YOKE-BONNET_2_C300_GV_CF3M (IGC)	2V000006099R	IGC	24	12	288.00

**List of items along with Established Weight**

Sr. No.	MATL_NO	DESCRIPTION	Drw. No.	IGC/ Non IGC	Tender qty.	Established Weight	Total Weight
75	922038830000	BODY_4_C300_GV_BW_CF3M-NK79	2V000006116R		1	46.7	46.70
76	922039360000	WEDGE_4_C300_CF3M-NK79	2V000003436R		1	6.3	6.30
77	922039570000	YOKE-BONNET_4_C300_GV_CF3M-NK7	2V000005935R		1	24.4	24.40
78	922062320000	BODY_2_C300_RV_FL_CF3M (IGC)-P	2V000008237R	IGC	12	23	276.00
81	922062330000	YOKE-BONNET_2_C300_SV_CF3M-P88 (IGC)	2V000001776R	IGC	12	12	144.00
82	922038700000	BODY_3_C300_RV_BW_CF3M-P777	2V000007850R		2	34	68.00
83	922062340000	BODY_3_C300_RV_FL_CF3M (IGC)-U	2V000008245R	IGC	17	46.5	790.50
86	922038430000	YOKE-BONNET_3_C300_RV_CF3M-P76	2V000014085R		2	23.43	46.86
87	922062350000	YOKE-BONNET_3_C300_SV_CF3M-UB1 (IGC)	2V000014085R	IGC	17	23.43	398.31
88	922039110000	BODY_4_C300_RV_BW_CF3M-P778	1V000005193R		1	49	49.00
89	922062360000	BODY_4_C300_RV_FL_CF3M (IGC)-U	1V000005148R	IGC	1	72	72.00
93	922038410000	YOKE-BONNET_4_C300_RV_CF3M-P76	2V000003153R		2	27	54.00
94	922062370000	YOKE-BONNET_4_C300_SV_CF3M-UB2 (IGC)	2V000003153R	IGC	1	27	27.00
98	922060080000	BODY_8_C300_RV_BW_CF3M-P831	1V000005210R		1	164.5	164.50
102	922060110000	YOKE-BONNET_8_C300_RV_CF3M-P83	2V000002419R		1	92	92.00



BHEL –  
GOINDWAL

## THIRD PARTY NON-DISCLOSURE AGREEMENT

(Tender enquiry no. 2223-051E dated 28.10.2022)

### THIRD PARTY NON-DISCLOSURE AGREEMENT

I, \_\_\_\_\_, on behalf of the \_\_\_\_\_ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL, Goindwal on contract is confidential and that the nature of the business of the BHEL, Goindwal is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL, Goindwal. Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

- Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs / data / configuration and research projects.
- Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL, Goindwal all documents and property of BHEL, Goindwal, including: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL Goindwal's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, Goindwal and are reasonable given the nature of the business carried on by the BHEL, Goindwal. I agree that this agreement shall be governed by and construed in accordance with the laws of country.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at \_\_\_\_\_, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Name

Company

Signature

# ON COMPANY (OEM) LETTER HEAD

## Make in India (MII) and Local Content Declaration

To whom it may concern

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017, as amended from time to time and as applicable on the date of submission of tender, we hereby certify that we M/s. \_\_\_\_\_ (supplier name) are (tick whichever is applicable as below)

“**Class-I local supplier**” meeting the requirement of minimum local content equal to 50% or more defined in above mentioned government notification for the goods & services

(or)

“**Class-II local supplier**” meeting the requirement of minimum local content 20 % to less than 50% defined in above mentioned government notification for the goods & services

(or)

**Non-local supplier** (if not belonging to Class-I & Class-II)

against Tender Enquiry No. \_\_\_\_\_

Product:

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

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We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rule for which for which a bidder or its successors can be debarred for up two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Authorized Signatory

Place:

Date: