



432-022

ENQUIRY

VALVES

Bharat Heavy Electricals Limited (A
Government of India undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT/VALVES
TIRUCHIRAPPALLI-620 014

Phone: 09445517830 & 0431-2577813
FAX : 0431-2520383
Email: bppreddy@bheltry.co.in

Enquiry Number

DATE

**DUE DATE FOR
QUOTATION**

EN-VAL-OT-1010

12.05.2016

11.06.2016

Please quote Enquiry No., and due date in correspondences This is
only a request for quotation and not an order

Scope of supply

Supply of Valve Body Forgings as per TDC: 0: 404/REV 15. The detailed annexures list is given below

- Enquiry Instructions for procurement of valve body forgings
- Annexure A (Bill of Quantities)
- Annexure B (Technical Delivery Conditions)
- Annexure C (Special Terms and Conditions)
- Annexure D (Standard Terms and Conditions)
- Annexure E (Performance Bank Guarantee)
- Annexure F (Drawings)
- Annexure G (Techno-commercial bid format)
- Annexure H (Price Bid Format)
- Annexure I (List of IBR approved inspection agencies)
- Annexure J (List of consortium banks)
- Annexure K (Price Variation Clause)
- Integrity Pact

The rate of Excise Duty and Sales Tax, Prevalent on the date of quotation, should be clearly indicated in the quotation itself.

Please, submit your quotation subject to our terms and conditions, for the above materials, so as to reach us on or before the due date by 14.00 Hrs. (IST)

Quotation will be opened at 14.30 Hrs. (IST) on the due date in the presence of tenderers who may like to be present.

Late tenders are liable to be rejected.

Yours faithfully,

For Bharat Heavy Electricals Ltd

B Rajendra Prasad Reddy
Engr./Purchase/Valves



BHARAT HEAVY ELECTRICALS LIMITED
Tiruchirappalli – 620014
Materials Management – Valves/Purchase

Enquiry Instructions – For Procurement of Valve Body Forgings

- A) The rates shall be quoted on the basis of unit price for **Valve Body Forgings** as per Annexure – A, confirming to the Technical Delivery conditions/drawings, standard & special terms and conditions.

The quoted rates (base price) shall be inclusive of all the charges (no additional charges will be paid) and price to be quoted on “**CFR Chennai Sea Port / FOR – BHEL Trichy**” basis in case of import & indigenous vendors respectively.

Offers should be in English and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in English.

- B) **Offers are invited in two parts:**

Part A:

- I. Techno-commercial bid covering technical conditions, delivery conditions and all other commercial conditions except price and filled up copy of Annexure – G without price, indicating “QUOTED / NOT-QUOTED” for the Bill of Quantities. Further vendor to furnish list of manufacturing and inspection facilities along with the company product catalogues.
- II. Please submit a separate envelope and indicate the enquiry number with “**Part A**” for techno-commercial bid.

Part B:

- I. Priced bid covering only price as per Annexure – H.
- II. Please submit a separate envelope and indicate the enquiry number with “**Part B**” for priced bid.

The bidder shall submit the offer in **TWO INNER ENVELOPES** as indicated below which shall be **sealed in one outer envelope**.

Envelop I: This sealed envelope should contain all the copies of technical bid together with un-priced bid. This envelope should be clearly marked “**Part A – Techno-commercial bid**” indicating Enquiry No., due date, address and reference of bidder.

Envelope II: This sealed envelope should contain price details. This envelope should be clearly marked “**Part B – Priced bid**” indicating enquiry no., due date, address and reference of the bidder.

Both the envelopes (Part A & B) shall be put it in one cover, duly sealed, super scribing as Part A and Part B of enquiry no., due date of opening and the address & reference of bidder.

The above offers should reach the following office address on or before the due date **11.06.2016 by 14.00 hours. Late offers will not be considered.**

**BOX NO. – 5,
VALVES/PURCHASE
THE TENDER OPENING TEAM/MM
ROOM NO. – 26, BUILDING 24, GROUND FLOOR
BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPALLI – 620014
TAMILNADU, INDIA**

- C) Opening of Tender: - The Part A – Techno-commercial bid will be opened on the tender opening date **11.06.2016** by 14.30 hrs.
- D) Techno-commercial bid will be opened first; subsequently priced bid opening will be opened for techno-commercially qualified vendors on pre-intimated date.
- E) The unit rates (base price) shall be quoted separately for each item in the format as given in the Annexure H. The applicable taxes and duties shall be mentioned separately in your quotation and the same will be paid as extra.
- F) *The L1 vendor will be finalized on the basis of total cash out flow to BHEL. Item wise L1 vendor will be finalized.*
- G) *H1 vendor will be eliminated against each category and the L1 prices will be counter offered to other eligible vendors. Preference for release of purchase order will be given in line with the ranking.*
- H) Special Provisions for Micro and small Enterprises (MSE)**
- ❖ 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
 - ❖ Out of 20% of the tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.
 - ❖ In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
 - ❖ MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with the other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier submits these documents
- I) The tender will be monitored by an independent external monitor (IEM). **The name of IEM is Shri D R S Chaudhary, IAS (Retd)**. All the vendors should give a signed integrity pact as a part of techno-commercial bid.
- J) Please refer Annexure F for the list of drawings covered in the enquiry.

- K) All the forgings shall be subject to chemical, mechanical tests as per **TDC: 0: 404 Rev 15** and the relevant test certificate should accompany the consignment.

Vendor shall offer samples as per TDC/ special requirements/ drawings for inspection and clearance by BHEL inspector. QC personnel from BHEL/ IBR authorized inspection agency would visit the firms for inspection and clearance of the forgings.

On completion of final inspection of the forgings by BHEL-QC/ IBR authorized inspection agency, necessary IBR certificate as per Form-IIIG/Form-IIIF shall be provided.

- L) **Price Variation Clause:** The unit price finalized will be fixed for the first two months from the date of finalization of rate contract. From there onwards once in two months the prices will be revised as per enclosed PVC formula (refer Annexure K). And the revised prices will be considered for ordering for the respective period.
- M) Prices shall be written in words as well as in figures. In the event of any difference, the price in words shall be valid and binding. Unit prices shall be considered as correct in the event of any discrepancy with regard to total price.
- N) Evaluation of offers shall be on the basis of delivered cost (Net cash outflow to BHEL). For evaluation of the tender, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Techno-commercial Bid opening date) shall be considered.
- O) **Indian Agent & Agency commission:** An Indian Agent can represent only one Foreign Manufacturer against a particular tender. The CFR price quoted by the foreign bidder shall include the agency commission however; the agency commission component payable to their Indian Agents shall be shown separately in the offer. This will be paid by BHEL in Indian Rupees, on satisfactory completion/execution of the order.

The bidder shall furnish authenticated copy of the Agency Agreement detailing the precise relationship between them and their mutual interest in the business so as to consider the offer of Indian Agent for the indigenous portion of the supply.

For the main equipment, the offer should be from principal / Original Equipment Manufacturer. The supplier has to furnish original authorization letter for the Indian Agent along with the offer.

Short shipment/Warranty replacement: In case of any short shipment in the main equipment/spares, customs duty levied on such supplies, shall be borne by the supplier. Any warranty replacement during the warrantee period shall be on FOR, BHEL, Tiruchirapalli-620014, basis.

- P) To those vendors who are not in BHEL Product Material Directory (PMD), the following additional conditions are applicable over and above the other conditions.
- The vendor should submit the techno-commercial offers along with duly filled supplier registration forms (SRF) which can be downloaded from our website www.bhel.com and supporting documents for the data filled in SRF to be provided along with the quotation.
 - The foreign sources will be enlisted in our Product Material Directory based on the M/s D & B (**M/s DUN & BRADSTREET**) statement and then their offer will be technically evaluated.
 - For indigenous sources, BHEL team will visit the vendor works to enlist them in our vendor directory and then their offer will be technically evaluated.

Q) BHEL Reserves the right

- To negotiate or re-float the tender in case the quoted prices are not acceptable.
 - To increase or reduce the tender quantity.
 - To not to order for some or all forgings based on changes in project requirements.
 - To visit vendor works during the execution of the contract, process of manufacture along with the end customer for inspection and testing of the forgings at vendor works/sub-vendors works.
- R)** Point by point technical confirmations of all pages of our technical specifications are required with your signatures along with the techno-commercial offer (Part A). ***Tenderers shall furnish any deviations to the technical requirements separately along with the offer for our review.***
- S)** In addition to all the above conditions, Special terms and conditions as per **Annexure C** and Standard Terms and conditions as per **Annexure D** shall also be applicable for this enquiry.
- T)** The drawings and technical documents given in this enquiry are the sole property of BHEL. This should not be misused in any form.
- U)** 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 <http://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.

Enclosures:

- | | |
|----------------|--|
| a) Annexure A: | Bill of Quantities |
| b) Annexure B: | Technical Delivery Conditions (TDC: 0: 404 Rev 15) |
| c) Annexure C: | Special Terms and Conditions |
| d) Annexure D: | Standard Terms and Conditions |
| e) Annexure E: | Performance Bank Guarantee format |
| f) Annexure F: | List of drawings |
| g) Annexure G: | Techno-commercial Bid format |
| h) Annexure H: | Priced Bid Format |
| i) Annexure I: | List of IBR approved inspection agencies |
| j) Annexure J: | List of consortium banks |
| k) Annexure K: | Price Variation Clause |

Rajendra Prasad
Engineer/Purchase/Valves

Bill Of Quantities

SI NO	Material	Description	Drg Num.	Unit Wt (Kg)	QTY
1	921537360000	BODY_ F91_GV_3_3500	2VV69218344P	117.00	30
2	921537570000	BODY_ F91_GV_10_3000SPL	3VV70831061P	949.70	36
3	921537580000	BODY_ F91_GV_8_2900SPL	3VV70931062P	554.12	15
4	921537590000	BODY_ F91_GV_4_2850	3VWD2731063P	138.80	90
5	921537660000	BODY_ F91_GLV_6_3500SPL	3VG39131077P	418.00	165
6	921537660000	BODY_ F91_GLV_3_3500SPL	3VR67331078P	116.00	144
7	921537760000	BODY_ F91_GV_10_3500SPL	3VV69831084P	1,094.00	30
8	921537780000	BODY_ F91_NRV_3_3500SPL	3VLD2631086P	115.00	45
9	921537930000	BODY_ F91_NRV_6_3500SPL	3VLD2831093P	434.00	30
10	921534420000	BODY 22"-3000SPL F91	3VWC3321831P/01	6,953.00	26
11	921534770000	BODY_ SA105_GV_4_1500SPL	2VWC4718148P	60.00	45
12	921534950000	BODY_ SA105_GV_6_1500SPL	2VV62718151P	144.00	126
13	921537550000	BODY_ SA105_GV_16_2500SPL	3VV70631060P	2,203.20	36
14	921537620000	BODY_ F92_GV_22_3500SPL	3VWD2931070P	6,920.00	10
15	921537670000	BODY_ F92_GLV_3_3500SPL	3VR67431078P	116.00	10



Product: Carbon, Alloy & Stainless Steel Forgings (Boilers And Valves)

Revision Record:

Rev 09: New materials F23, F91 & F92 requirements added in Cl.1.0, Cl.2.0, and Cl.4.0 to Cl.6.0. CE marking certification clarity included in Cl.10.

Rev 10: Cl 1:F6a Class 2 added, Code case corrected. Cl 2: Steel makers names removed and requirement for creep testing added as per IBR Reg 4, Cl 4: Tempering temperature and soaking time modified for SA 182 F91, F92 & F23. Cl 4 & 10: Photomicrograph requirement added for F91 & F92 forgings, Cl 2, 6 & 10: modified for SS, Cl 5: Bend test Clarified, Cl 6: Wet MPI added.

Rev 11: Cl 2 Pt 3, 4, 5 modified. Cl 6 – Wet MPI for CS, AS added, Cl 10.1 – IBR Forms indicated

Rev 12: Cl 1, 2, 4, 6 and 7 – requirements for grades SA 182 F1, SA 336 F1, F12, F22 Cl 3 and F91 added (for Neyveli Project). Creep test criteria in-line with BHEL R&D included. Cl 2 Pt 8 modified. Cl 6 Pt 1 – SA388 changed to ASTM A 388 based on ASME Sec II Ed 2013.

Rev 13: Dt: 17/11/2014: Cl 2 Cl 4 Cl 10 Cl 12 modified.

Rev 14: Dt: 06/10/2015: Cl.4.3, 5.2, 5.8, 10.1.b.9 added; Cl 1.0, 2.1, 2.2, 2.3, 4.1, 4.2, 5.3, 6.2, 9.0, 10 modified.

Rev 15: Dt: 23/12/2015: Cl 1, 2, 3, 5, 6, 7, 10, 11 & 12 modified.

1. MATERIAL

Specification: ASME (Latest as on the date of Enquiry/Purchase Order, whichever is earlier): (ASTM also applicable for non-pressure parts/Valves)

Carbon Steel (CS) : SA 105, SA 350 LF 2

Alloy Steel (AS) : SA 182 F12 Class 2, F22 Class 3, SA 182 F23 (Code case: 2199),
SA 182 F91 & SA182 F92 (Code Case: 2179), SA 182 F1, SA 336 F1, SA 336 F12,
SA 336 F22 Cl 3, SA 336 F91

Stainless Steel (SS) : SA 182 F6a Class 2, F6a Class 3, SA 182 Gr. F 304, 304L, 316, 316L, 316H, 321, 321H,
347 & 347H;
AISI 410 for TOA Gland and bushings.

Additional Requirement : As listed below (supplementary to Specification)

Size and Qty : As per Purchase order & Drawing.

For API-6D 24th Edition 2014 materials for sour service: Materials for pressure-containing and pressure-controlling parts shall meet the requirements of NACE MR0175 Ed 2009.

2. CHEMICAL COMPOSITION & PROCESS

1) Melting: fully killed.

Product analysis per heat: CS: C ≤ 0.25% , AS: SA182 F23: Si: 0.25-0.50% & Cu: 0.25max

SA182 F92: Si: 0.10-0.50%, Ni: 0.30 max & Cu: 0.25% max

Additional requirements for API-6D materials (in Product analysis):

CS: Carbon: 0.23% max.

Sulfur: 0.020% max, Phosphorus: 0.025% max

Carbon Equivalent (CE): 0.43% max.

Carbon Equivalent formula: $\%C + (\%Mn/6) + (\%Cr + \%Mo + \%V)/5 + (\%Ni + \%Cu)/15$.

SS: The carbon content of austenitic stainless steel welding ends shall not exceed 0.03 % by mass, except for stabilized material in which case a carbon content of up to 0.08 % by mass is permissible.

2) Raw material Steel for IBR forging items to be inspected at Mill & test certificate countersigned by IBR approved inspecting authority, if the mill is not approved under IBR as well known steel maker.

3) Forging: Hot working to ensure uniformity of structure & strength with reduction ratio in area 4:1 min from ingot to final forging, close to final size & shape. Flow lines to be parallel to axis of openings. Forged Items ordered to this TDC shall be forged to the nearest shape before machining to final dimensions as per respective drawing.

4) Blooms / Billets used for forgings (Side Length, Dia ≥ 50mm) shall be UT tested. For Acceptance Norm refer Cl.6.0. For finished bars this can be done at Final stage.

5) SS: All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity.

6) *Tolerance for chemistry shall be as per the above applicable material specifications/ standards.*

3. DIMENSIONS AND TOLERANCES

Tolerances as per Drawing. Untoleranced dimensions for valve components as per VL:STDC:023 Rev: 00.

4. HEAT TREATMENT(HT)

1) Heat treatment shall be as per applicable drawing. Unless otherwise specified, the following heat treatment shall be following:

CS: SA 105: Normalised, SA 350 LF 2: Normalised at 880-900 °C & Tempered at 620-640 °C

AS: Normalised and Tempered.

For SA 182 F91, F92 & F23, SA336 F91 Normalising temperature : 1050-1080°C & Tempering temperature : 750-780°C.

SS: As per material specification.

AISI 410: Supply in Quenched & Tempered condition as below.



Product: Carbon, Alloy & Stainless Steel Forgings (Boilers And Valves)

Quenching at 955-1010°C in air or water or oil or Polymer. Soaking 30 mts/inch maximum thk. Tempering at 663°C.min. Soaking :60 mts/inch maximum thickness and air cool.

- 2) Photomicrograph test for F91 & F92 forgings - one per heat treatment lot per size and shall be reported in test certificate. Acceptance – The material shall be free from any micro fissures. Microstructure shall show lathe tempered martensite and also to be examined for grain growth. Photomicrograph with 400x (Min) magnification along with Photomicrograph report to be provided. The actual magnification and result of actual microstructure shall be certified/indicated.
- 3) **HT Equipment qualification for API-6D materials:** As per Annex F of API 6D 24th Edition. Materials shall be heat treated in calibrated furnaces (HT Equipment) and furnaces shall be recalibrated at a frequency not longer than 12 months from the last calibration.

5. MECHANICAL TESTS

- 1) Extent of test: for each size/heat/HT batch from sample product or identical test coupon.
- 2) Tensile test: The test specimens shall be removed from a test coupon (TC) after the final heat-treatment cycle. Perform tensile tests at room temperature in accordance with the procedures specified in ASTM A370-2014. Perform a minimum of one tensile test. All yield strengths shall be determined using 0.2 % offset method. The results of the tensile test(s) shall satisfy the applicable material specification requirements.

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.

- 3) Additional requirements for SA182 F23, F91 & F92:
 F91: Yield: (0.2% offset): Min 450 MPa; Tensile: Min 630 MPa, Max 850 MPa; Hardness(HBW): Min 195, Max 248
 F92: Tensile: Min 630 MPa, Max 850 MPa; Hardness(HBW): Min 191, Max 250
 F23: Tensile: Min 510 MPa, Max 730 MPa; Hardness(HBW): Min 150, Max 220
- 4) AISI 410: Hardness 197-235 HBW. No other mechanical test required.

Additional requirements of tests: (Other than AISI 410 Only)

- 5) **Bend test: Acceptance as per IBR**
 CS: Sample 19mm.Thick(t) x 25.4mm width to be bent 180 deg. around mandrel of radius 6.35 mm.
 AS, SS: Sample 19mm.Thick(t) x 25.4mm width to be bent 180 deg. Around mandrel of radius =1.5 x t
- 6) **Impact test for QCNR Valves & CRHNR Valves:** CS, AS and SS: 1 / HT batch. As per ASTM A 370-2014, 2mm Charpy-U notch, at Room temperature. Acceptance: Avg of 3specimens: 36J, Single Min: 24J
- 7) **CE-marking items** Charpy- V impact test at 20 deg.C as per ASTM A 370-2014, Acceptance : Avg : 40 joules, Min. single value: 27 joules.
- 8) **Impact testing for API 6D items:** Carbon, alloy and stainless steel (except austenitic grades) for pressure-containing parts in valves with a specified design temperature below -29°C shall be impact-tested. A minimum of one impact test, comprised of a set of three specimens, shall be performed on a representative test bar of each heat of the material in the final heat-treated condition. If a test fails, then a retest of three additional specimens removed from the same TC, with no additional heat treatment, may be made, each of which shall exhibit an impact value equal to or exceeding the required average value.

Carbon and Alloy steels: Charpy- V impact test as per ASTM A 370-2014, Test Temperature: As per specification; Acceptance criteria: As per below table:

Minimum V-notch Impact Requirements (Full-size Specimen)

Minimum Tensile Strength (MPa)	Average of Three Specimens (Joules)	Single Specimen (Joules)
≤ 586	20	16
> 586 to 689	27	21
> 689	34	26

6. NON DESTRUCTIVE TEST

- 1) Extent of test: for each product. Stage of test : After heat treatment.
- 2) **UT:** As per ASTM A388-2014 - All finished forgings of dia/wall thickness ≥50mm; All Body & yoke of special class valves & all forgings of SA 182 F91, F92 & F23, SA 336 F91. **Acceptance:** ASME Sec.VIII Div. 2 Cl.3.3.4.
- 3) **MPI for CS & AS:** 100% : As per ASTM A275-2015. Dry MPI/ Wet MPI : CS, AS (other than SA182 F91, F92, F23, SA 336 F91) : all sizes Wet MPI : SA 182 F91, F92, F23; SA 336 F91: all sizes. **Acceptance:** ASME B16.34-2013 Appendix II .Linear Indications like cracks, folds & other injurious defects are unacceptable.
- 4) **LPI for SS:** 100%: ASTM E165-2012, No linear indications acceptable.
- 5) **SS:** Finished forgings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure at 5 cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.



Product: Carbon, Alloy & Stainless Steel Forgings (Boilers And Valves)

7. WORKMANSHIP AND FINISH

Forged items to spec SA336 shall be machined in the inside surface as it is meant for steam application. Items to be proof machined as per drawing or shot blasted for CS/AS, Pickled & passivated as per ASTM A 380-2013 for SS, & be free from scales & defects like laps, seams, folds, cracks, etc. Machined items (except SS) to be coated with a layer of transparent rust preventive before despatch.

8. REPAIR

Repairs by fusion welding are prohibited. Surface defects can be removed by mechanical means and defective areas smoothly dressed up with the adjacent surface. Minimum thickness after repair to meet drawing / Specification.

9. MARKING AND PACKING

Details of stamping on each item with low stress stamps: Heat number, Specification & grade, Code case number (for Gr 92 & 23), Maker's emblem/code & Inspection Authority's seal. Forgings to be properly packed and despatched to avoid damage during transit.

10. INSPECTION AND CERTIFICATION

10.1 For IBR Items:

a) 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 is not recognised as a "Well known Forger/Steel maker" 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.

b) Certification in IBR Form III-G for IBR items from "IBR-Well Known Forger" or "Inspecting Authority", as applicable, to be submitted. IBR Form III-G and Test certificate in English language with following details, shall accompany the product (including proof machined):

1. Purchase Order No.(BHEL), TDC No & its revision no, Test certificate no & date.
2. Specification, Grade with applicable year of code, Code case number (for Gr 92 & 23), Heat Number, Drawing No.,Quantity & Size
3. Supplier of the steel used in making the finished product (well known and others in IBR Form IV).
4. Melting & forging process, Chemistry with incidental elements-Heat wise, Product analysis, Carbon Equivalent (CE).
5. Heat treatment details of the material and test bars. For F91, F92 supplies – Photomicrograph at 400x resolution.
6. Mechanical test results- Tensile (UTS, YTS, % elongation, % reduction in area), Impact & Hardness and NDE test results with reference & acceptance standard.
7. Repair details if any, Certified copy of TC for starting material.
8. **For SS:** Measured Radioactivity levels shall be reported in the Mill Test Certificate. (Not to be recorded in IBR Form).
9. For API items, works certificate with details like QSL, Pressure-Temperature rating, size shall be issued. Records of furnace calibration and surveys shall be maintained for a period not less than five years.

10.2 For CE-marking items the TCs with details specified above shall be submitted as per BS EN 10204-2004.

1. For pressure parts test certificates of type 3.1 or 3.2 is acceptable.
 Type 3.1 – Suppliers shall have ISO 9001-2008 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 Notified Body recognized by European community.
2. For non-pressure parts test certificates of type 2.2 is acceptable.
 Type 2.2 – suppliers test certificates signed by suppliers authorized inspection representative with test results as required by TDC.

11. 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. Supplies found defective during check or subsequent processing at BHEL, *will be rejected.*

12. END USE

Valve bodies, bonners, discs, socket ends, body guides etc., Pressure part fittings in boilers & low, high temperature service like discs, socket weld tees, ells, weld neck flanges & stubs (except drum nozzles) meeting IBR, ASME Section I-2015, ASME B 16.34-2013 and API-6D 24th Edition. **Non pressure part items in boilers and valves:** For these, requirements on starting material, bend test and inspection by IBR are not required.

 23/12/2015	 23/12/15	 23/12/15			 23/12/15
Venkanna Rupani Sr.Engineer/QA	G. Panneer Selvam DGM/QA	S. Selvarajan SDGM/QA	K. Rajasekaran SM/Valves/Engg	A. Ayyachamy SDGM/Valves/ Purchase	U. Revisankaran AGM/QA&BE
Prepared By	Reviewed By			Approved By	



Annexure - C

BHARAT HEAVY ELECTRICALS LIMITED
Tiruchirappalli – 620014
Valves/Purchase

Ref: EN-VAL-OT-1010

DT: 12.05.2016

Special Terms and Conditions

- a) Material shall be supplied as per the Technical delivery conditions – **TDC: 0: 404 REV 15**, drawings and other special requirements as given in the purchase order.
- b) On placement of purchase order, the vendor shall make necessary arrangements for manufacturing the forging and inform BHEL.

So as to enable BHEL to plan a visit to your works, to witness the forging manufacture process, UT test etc.

Further on readiness of sample forging, in each of the ordered items at one point of time to enable BHEL to depute their quality personnel/IBR authorized inspection agency for inspection of the forging and quality documents. The vendor shall make available dimensional reports and other quality documents to BHEL/IBR authorized inspection agency during inspection.

On successful acceptance of the sample forging by BHEL personnel/IBR authorized inspection agency at vendor works, the sample can be dispatched to BHEL and the vendor can start the bulk production of forgings.

- c) In the event of non-clearance of sample forgings/inability of the vendor to develop the forgings as per BHEL requirement, BHEL will have the right to cancel the PO without any financial implication to BHEL.
- d) Any defects found during Machining/Assemble/Hydro test of the valves, the minor repairs shall be undertaken by BHEL and the entire cost of such repairs shall be borne by the vendor. If the defects are found to be major, such forgings will be rejected and in such a case the vendor shall replace all the defective forgings on FOR/BHEL Tiruchy-14. To ensure the guarantee of supplies a performance Bank Guarantee (PBG) for 10% of order value for a period of 18 months from the date of dispatch with an additional claim period of 2 months as per the format given in Annexure E. The PBG shall be submitted along with payment documents.
- e) All forgings shall be supplied free of defects like shrinkage, hot tears and process variable defects like inclusion & gas entrapment etc. If any forging is found defective, the same shall be upgraded at forge shop itself before dispatch to BHEL with necessary documentation.

- f) Separate charges shall not be paid for test bar and test certificate supplied by vendors. Test bar/plates for welding procedure qualification as well as for audit check shall be supplied by vendors for all the Heats.
- g) **BHEL Expected Delivery:**
- For sample forging, the delivery period is 6 Months from the date of PO and for bulk forgings the delivery shall be 4 months from the date of sample acceptance/date of PO. Vendor to confirm/quote their delivery schedule in “Un priced bid”;
- h) Qualified NDE personnel at vendor’s works shall carry out the UT and MPI examination on all the ordered forgings as per BHEL – Technical Delivery Conditions – TDC: 0: 404/REV 15.
- i) All the forgings shall be submitted to chemical, mechanical tests etc., as per TDC: 0: 404/REV 15 and the relevant test certificate shall accompany the consignment. All forgings shall also be subjected to impact tests as called for in the TDC and the testing charges shall be borne by the vendor.
- j) BHEL reserves the right to reject the forgings that are found to be defective during machining/assemble/hydraulic testing notwithstanding the earlier acceptance. Such defective forgings have to be replaced free of cost by the vendor.
- k) **Liquidated damage clause** will be applicable as 0.5% of total order value per week of delay subject to maximum of 10% of total order value. If any deviation loading will be applied to the extent to which it was not agreed by the bidder (at offered value).
- l) **Risk Purchase Clause:** BHEL shall be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the supplier, either the whole of the goods or any part thereof which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid. The supplier shall be liable for the losses, which BHEL may sustain by way of such risk purchase in addition to afore said penalty for delayed delivery.
- m) **Guarantee Clause:** The vendor shall give a guarantee of eighteen months from the date of acceptance of forgings at BHEL.
- n) **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 “any 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 delay 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 period 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.

o) 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.

p) Jurisdiction:

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

In addition to all the above conditions, BHEL Standard Terms and Conditions and the requirements spelt out in the Enquiry Instructions shall also be applicable for the orders to the extent they are not superseded by the above conditions.

B Rajendra Prasad Reddy
Engr/Purchase/Valves



BHARAT HEAVY ELECTRICALS LIMITED
Tiruchirappalli – 620014
Valves/Purchase

Ref: EN-VAL-OT-1010

Standard Terms & Conditions

- a) **Regulations:** Tenders should be free from correction and erasures. Corrections if any must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail. Unit prices shall be considered correct in the event of discrepancy with regard to total price.
- b) **Two bid system:** The offers are invited in two part bid system (Techno-commercial bid and priced bid). First Techno-commercial bid will be opened. Techno-commercially suitable vendors will be intimated for participating in priced bid opening.
- c) **Late Tenders:** Late tenders shall not be considered under any circumstances.
- d) **Catalogue:** Manufacturer's name, trade mark or patent No. if any should be specified. Illustrative leaflets giving technical particulars are required along with the quotation wherever necessary.
- e) **Acceptance of offer:** The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part of full without assigning any reason whatsoever.

f) Commercial Terms and Conditions

1. **Terms of payment:** Payment will be made only after 45 days from the date of acceptance of material at BHEL stores. Where required by the purchaser, the successful tenderer must send the operation and maintenance manuals, test certificates, drawings, etc., for the materials should be sent immediately after dispatch of the materials and a statement to that effect should be made in the Invoice. Failure to comply with this provision will result in delay in payment of the bills. Goods dispatched either by V.P.P. or by thro' document presented through bank will not be accepted unless agreed to by the Purchaser.

The original Excise Duty Gate Pass or certified extract from Excise Duty Ledger should accompany the material. A Photostat copy of the above gate pass for each delivery challan should be submitted along with the original bills routed through bank or submitted directly to BHEL department.

Any deviation in the above payment term will attract loading as mentioned below.

“Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

Payment through bank is not preferred. In case of payment through bank is opted by supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of goods to site/stores with consignee copy attached. In this case loading will be 3% on the offered value. In case of direct to site (DTS), only 90% through bank will be considered.

LC/Advance payment will not be operated for indigenous vendors. Offers of indigenous vendors with payment terms as LC/Advance payment are liable for rejection.

For import vendor, the documents required for payment are:

- I. Bill of lading
- II. Packing list & Invoice
- III. Country of origin Certificate
- IV. Test Certificate / Compliance Certificate
- V. A Certificate that:

One copy of tests/compliances certificate with non-negotiable documents, comprising of house Airway Bill, Invoice, Packing List, Country of origin certificates, applicable drawings and catalogues, duly signed and stamped, have been sent separately to the port consignee purchaser.

Attn: AGM/Purchase Department/Valves, BHEL, Tiruchirapalli-620014, India and to Senior Manager/Finance, Import Section, BHEL Tiruchirapalli-620014, India.

2. **Liquidated Damages:** It is clearly understood among the parties to the contract that "Time is the essence of the contract. Therefore, the delivery of the goods specified in the purchase order should be made within the time prescribed. Where the seller supplies or despatches the goods beyond the delivery period specified the purchaser will have no obligation to accept the goods. If accepted, the liquidated damages will be applicable as mentioned in the clause – k of special terms and conditions.
3. **Delivery Term:** For indigenous vendors - FOR BHEL Trichy-620014, inclusive of freight and insurance and for import vendors – CFR Chennai sea Port.
4. **Validity of offer:** Offers submitted by the bidder should be valid for a period of 120 days from the date of Techno-Commercial bid opening.
5. **Test Certificate:** The tenderer shall clearly mention in their offer, that the Test Certificate, as called for in the technical specification, in the required number of copies will be provided at no extra cost.
6. **Taxes and Duties:** If any Sales Tax is applicable as extra to the quoted price, it should be specifically stated in quotation along with CST & TNGST No. failing which the purchaser will not be liable for payment of sales tax. Our TNGST No. 3550005 Dated 01.04.1995 and CST No. 259383 Dt: 11.06.1991.

7. **Preferential Delivery:** It should be noted if a contract is placed on a higher tender as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R destination, including all elements of freights, sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract.
8. **Modvat / Credit:** If any Excise Duty is payable, the chapter head/sub-head reference and the rate of the duty should be quoted. If the tender is availing MODVAT credit for his input materials, the effect of proforma invoice should be passed on to the purchaser; Tenderer under MODVAT shall be preferred.
9. **Packing and Marking:** The supplier shall arrange for securely protecting and packing the stores to avoid loss of Damage during transit.

10) Note to the Beneficiary

- I. All documents are to be in “**ENGLISH LANGUAGE**” only.
 - II. Description of the material is to prefix by the word “**BOILER COMPONENTS / MACHINER SPARES**” (if not otherwise required by the contract).
 - III. Contract No., L.C. No. and Import License No. are to be inducted in all documents.
 - IV. Invoice should show the description of the goods and the unit rate of each item as in the purchase contract.
 - V. Packing list must indicate case identification, case dimension, and case contents, gross and net weight.
 - VI. Against each item in the invoice and packing list, the serial number of the corresponding Item in the purchase contract or as per order acknowledgement should be indicated.
 - VII. Demurrage charges due to delayed presentation of the original shipping documents for the reason not attributable to the buyer should be borne by the seller.
 - VIII. All documents should be submitted in triplicate.
- 11) Please avoid ODC (Over Dimensional Consignment) to the Air consolidation agent and inform us before packing the material of ODC condition.
- 12) **General:** Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted in by purchaser will not be applicable to the contract.

Rajendra Prasad
Engineer/Purchase/valves

(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT AND THE EXPIRY DATE OF BG MUST BE AFTER 60 DAYS FROM THE DATE OF COMPLETION OF WARRANTY PERIOD)

PERFORMANCE BANK GUARANTEE

In accordance of M/s. Bharat Heavy Electricals Limited (A Government of India undertaking, a company incorporated under the Companies Act 1956 having its Registered Office at "BHEL House", SIRI Fort, New Delhi 110 049) through its High Pressure Boiler Plant Division located at Tiruverumbur, Tiruchirapalli- 620 014 (hereinafter called 'the Company') having entered into a contract withhereinafter called ' the said contractor ' which term includes 'suppliers' for the purpose of this Bond and under the terms and conditions of the contract No..... Dt Between BHEL, Trichy and as per the contract, the contractor / supplier is to furnish a performance Bank guarantee for Rs. for the due performance of the equipment to be supplied under the above referred contract and for the fulfillment of all the terms and conditions of the contract, We(indicate the name of the bank) (herein after referred to as the bank) at the request of (Contractor(s)) do here by undertake to pay the company an amount not exceeding Rs.....against any loss or damage caused to or suffered or would be caused to or suffered by the company by reason of any breach by the said contractor (s) of any of the terms and conditions contained in the said agreement.

2. We(indicate the name of the bank with full address), do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Company stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of breach by the said Contractor(s) of any of the terms and conditions contained in the said Agreement or by the reason of the contractor(s) 'failure to perform' the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs._____.

3. We undertake to pay unconditionally to the Company any money so demanded notwithstanding any dispute(s) raised by the Contractor in any suit, or proceedings pending before any Court or Tribunal or Arbitration or before any other authority relating thereto our liability under this present being absolute and unequivocal. The payment under this guarantee would not wait till the disputes have been decided by any Court or Tribunal or in the arbitration proceedings or by any other authority. The payment so made by us under this Bond shall be a valid discharge of liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We.....(indicate the name of Bank), further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ Office / Department/ Division of the Company certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. (I) Unless a demand or claim under this guarantee is made on us in writing on or before the _____ we shall be discharged from all the liability under this guarantee thereafter. But where such claim or demand has been preferred by the Company with the Bank before the expiry of the said date, the claim shall be enforceable notwithstanding the fact that the said enforcement is effected after the said date.

(ii) For the purpose of this clause, any letter making demand on the Bank by M/s. BHEL dispatched by Registered Post with Ack.Due or by Telegram or by any Electronic media addressed to the above mentioned address of the Bank shall be deemed to be the claim / demand in writing referred to above irrespective of the fact as to whether and when the said letter reaches the Bank, as also any letter containing the said demand or claim is lodged with the bank personally.

6. We(indicate the name of Bank), further agree with the company that the Company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said Contractor(s) or for any forbearance, act or omission on the part of the company or any indulgence by the company to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating would, but for this provision, have effect of not so relieving us.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

8. It shall not be necessary for the company to proceed against the contractor before proceeding against the guarantor-bank and the guarantee herein contained shall be enforceable against them notwithstanding any security, which the company may have obtained or obtain from the Contractor shall, at the time when proceedings are taken against the guarantor hereunder be outstanding or unrealised.

9. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirapalli.

10. The guarantor hereby declare that it has power to execute this guarantee and the executant has full powers to do so on its behalf under the proper authorities granted to him/them by the guarantor.

11. We(indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the company in writing.

In witness whereof we....., (indicate the name of Bank) have hereunto setout Bank Seal the _____ day _____ month 200

BANK E-MAIL ID:
BANK PHONE NO.
BANK FAX NO:

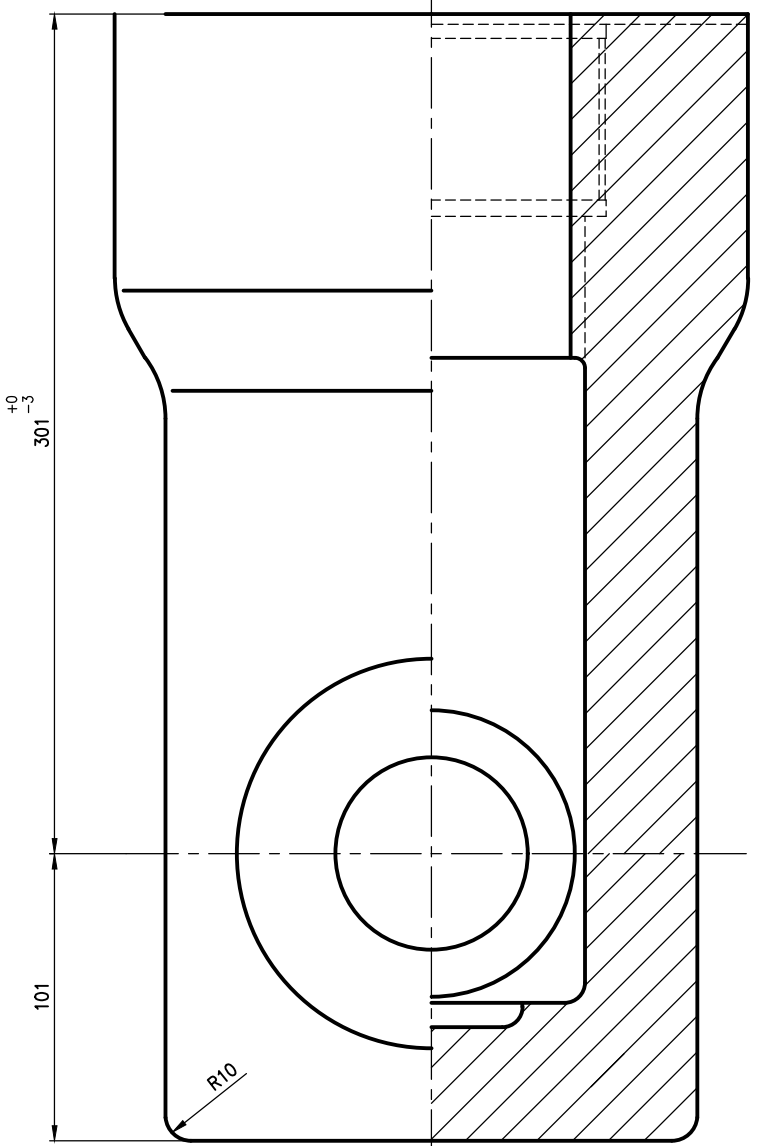
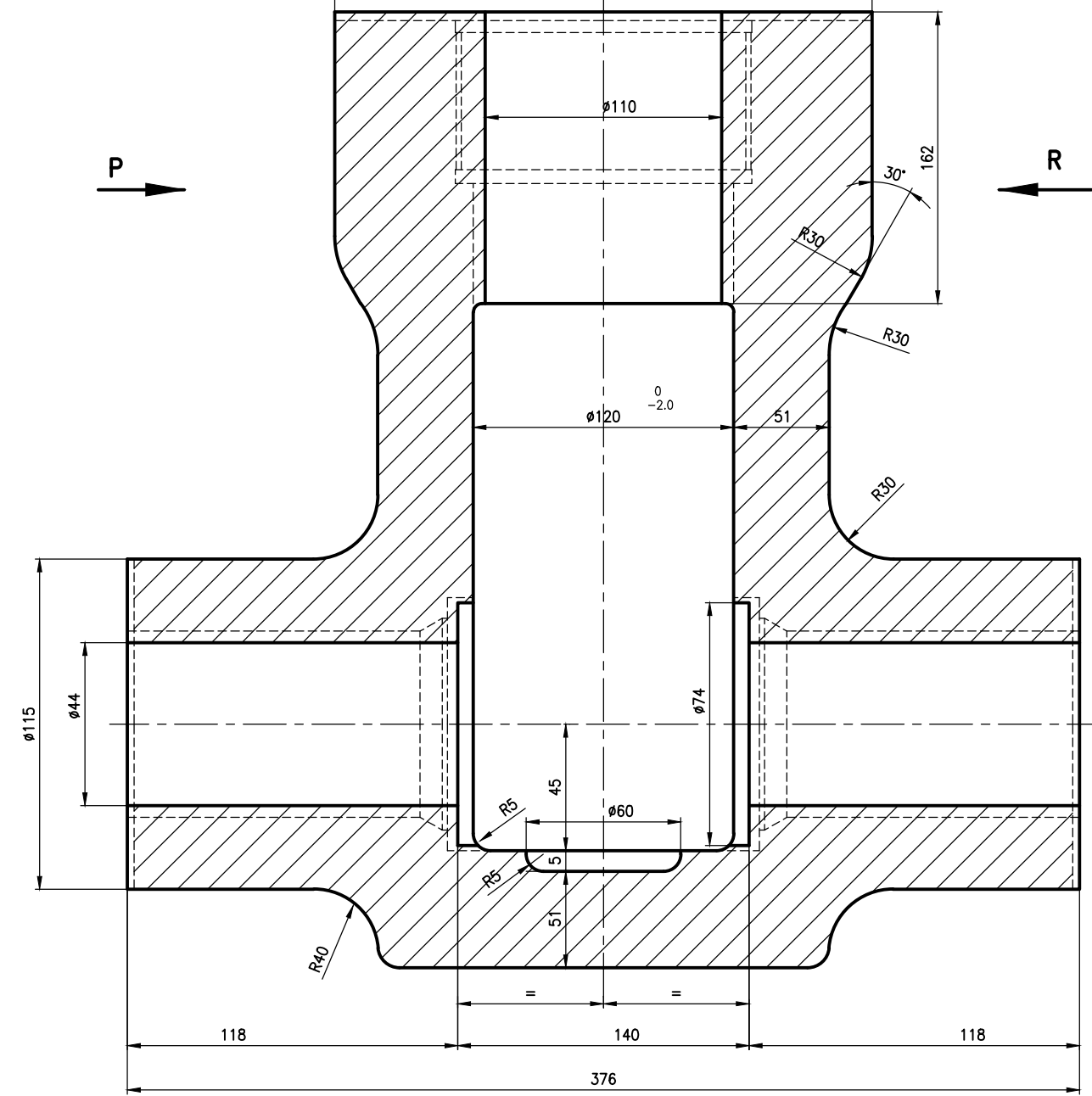
2-V-000-18344P
DRAWING NO.

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

1

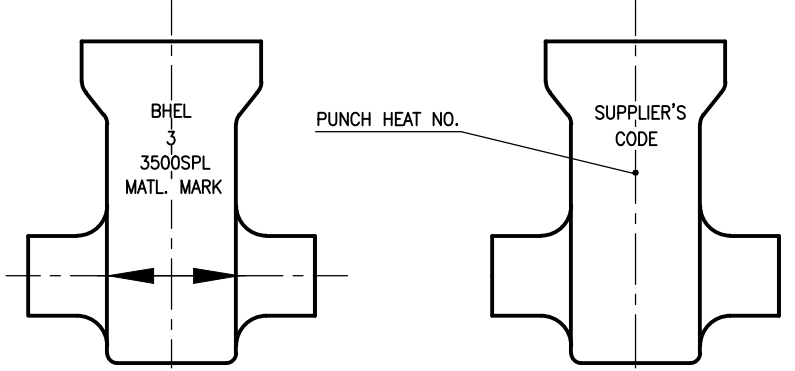
NOTES:

- FORGING SHALL BE MADE IN SUCH A WAY THAT MACHINING CAN BE DONE TO THE SPECIFIED DIMENSIONS.
- FORGING TOLERANCES
 LENGTH AND WIDTH +3.7
 TOLERANCES -1.9
 THICKNESS TOLERANCES +2.0
 0
- MISMATCH 2.0
- UNSPECIFIED DRAFT : 7'(MAX)
- RESIDUAL FLASH : 2.4
- UNSPECIFIED FORGING RADII - R3
- DOTTED LINE SHOWS FINISH MACHINED CONFIGURATION.
- FORGING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTION
- UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
- THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
- DIMENSIONS IN THE DRAWING EXCLUDE FORGING DRAFT.
- FORGINGS ARE TO BE SAND BLASTED OR SHOT BLASTED AND HEAT TREATED AS SPECIFIED.
- SIZE OF FORGING LETTERS 6 MM
- DOTTED LINE SHOWS THE FINISH MACHINED CONFIGURATION.



VIEW-P

VIEW-R



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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT TA

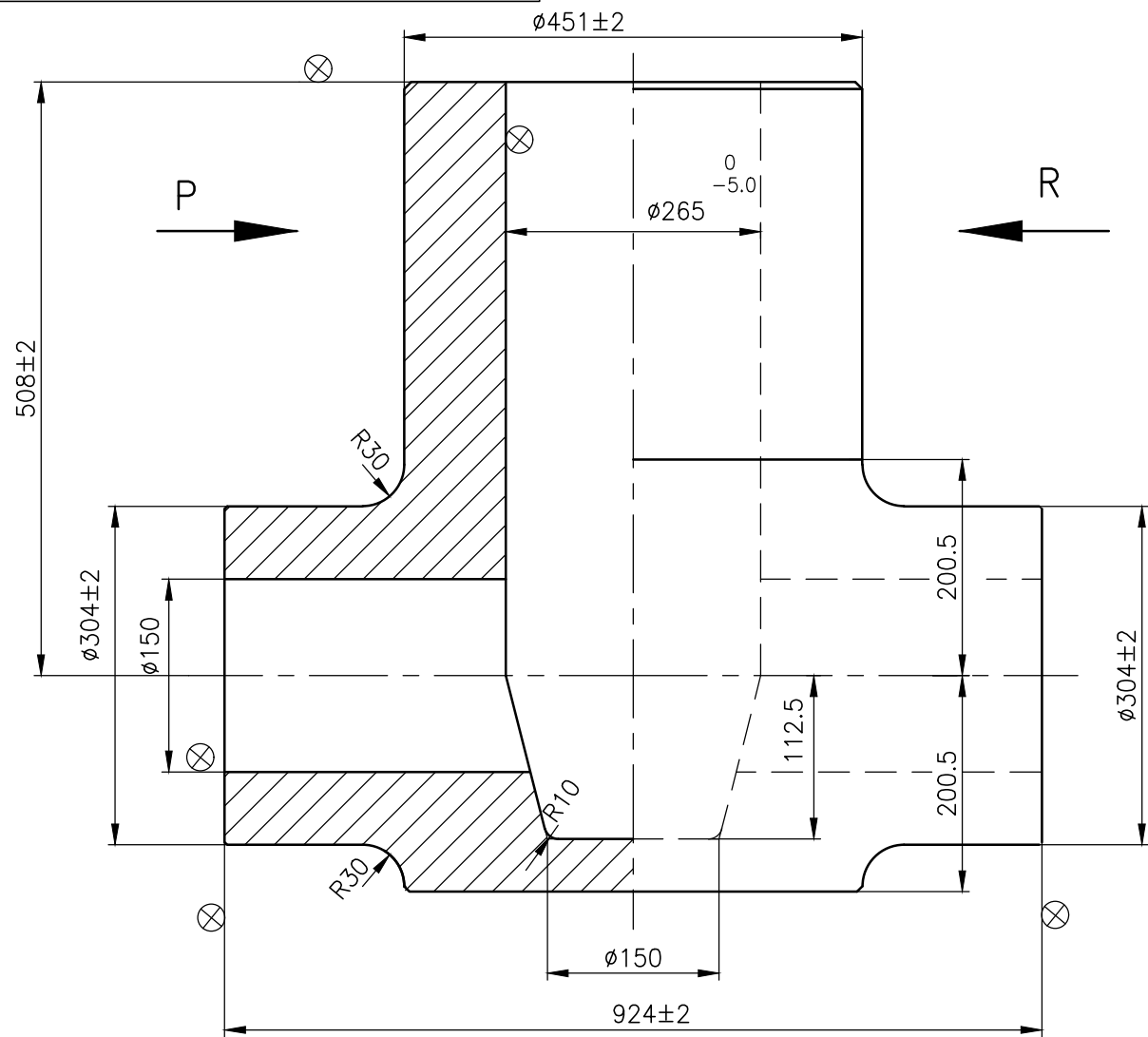
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	CHD	S.SATHEESKUMAR		17.12.15	
	APPD	K.RAJASEKARAN		17.12.15	

REV	DATE	ALTERED
		CHD & APPD
ZONE		

DEPT VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
365-120	N T S	117		
CODE 320				
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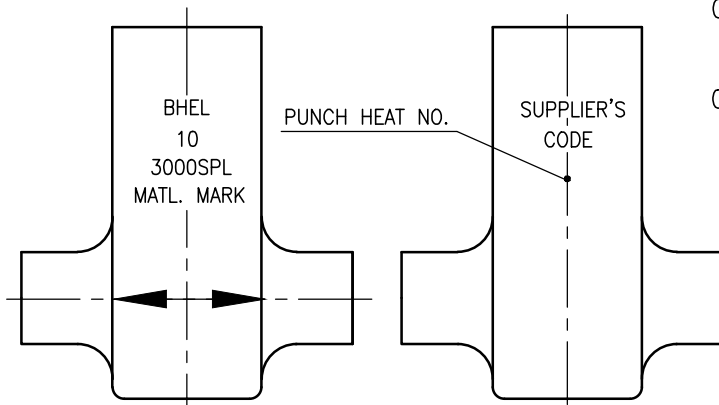
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12.5



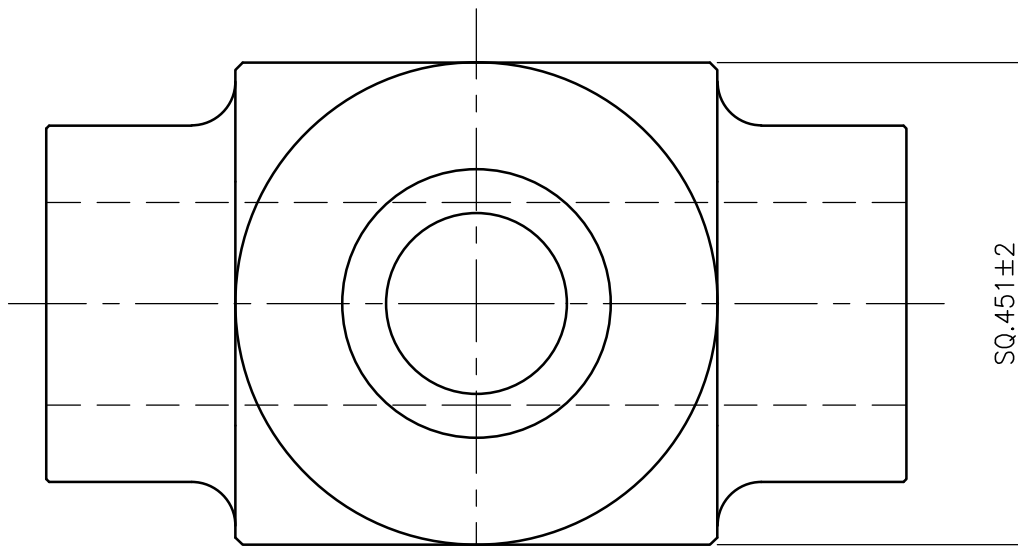
VIEW-P

VIEW-R



NOTES:-

- CHAMFER THE SHARP CORNERS TO 5x45°
- ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
- FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
- UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
- THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
- TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED.



REV	DATE	ALTERED
		CHD & APPD

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

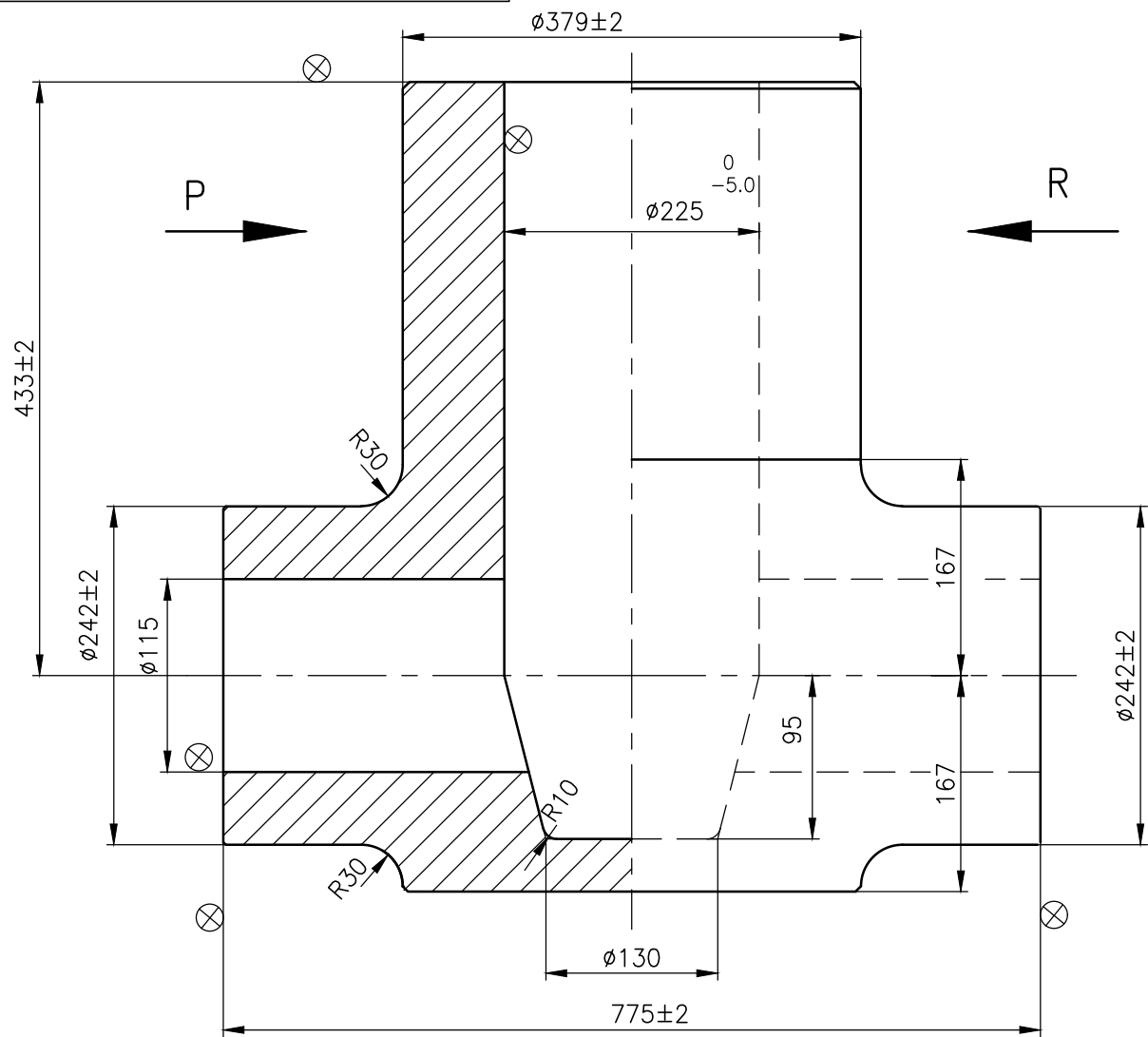
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	CHD	S.SATHEES		20.01.16	
	APPD	K.RAJASEKARAN		20.01.16	

DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320	NTS	949.7		

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FORGING	U 01	3-V-0000-31061P	

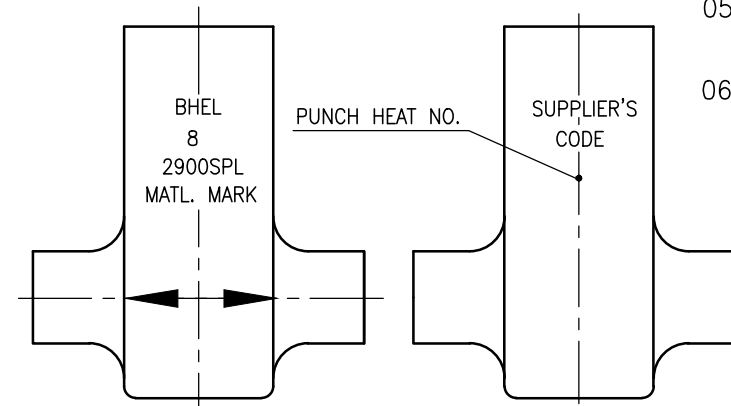
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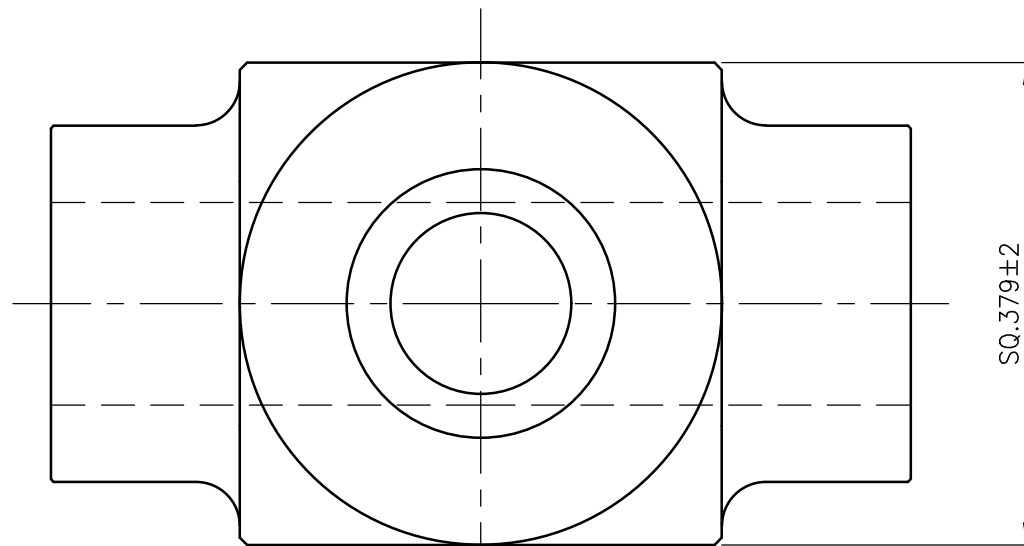
VIEW-P

VIEW-R



NOTES:-

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02. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
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05. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
06. TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED.



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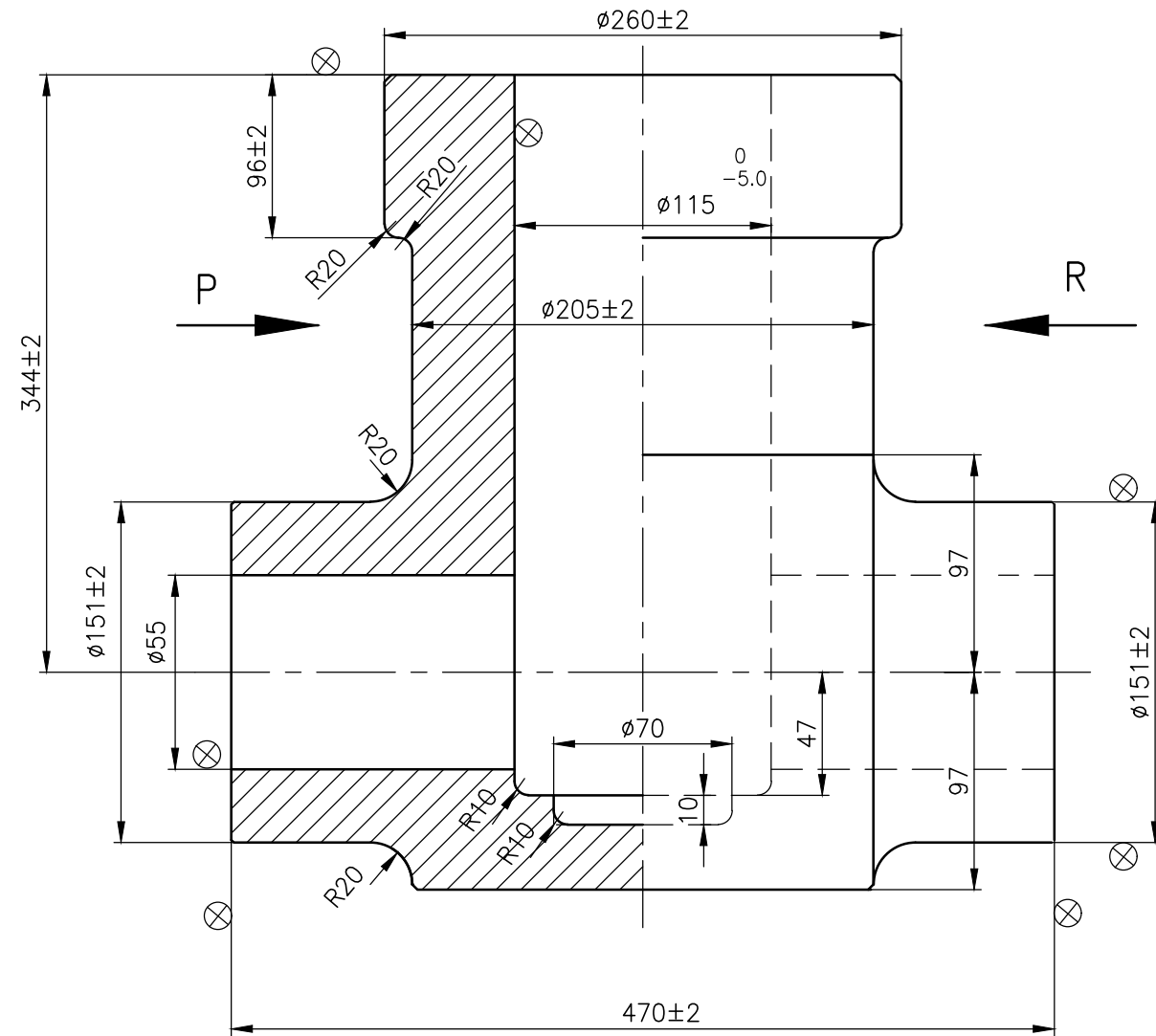
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						DRN	NAME	SIGN	DATE	NO.OF VAR.
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014. 365-121						CHD	S.SATHEES		20.01.16	
						APPD	K.RAJASEKARAN		20.01.16	
						DEPT	VL	SCALE	WEIGHT (KG).	
CODE	320	NTS	554.12							
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REV	DATE	ALTERED
		CHD & APPD

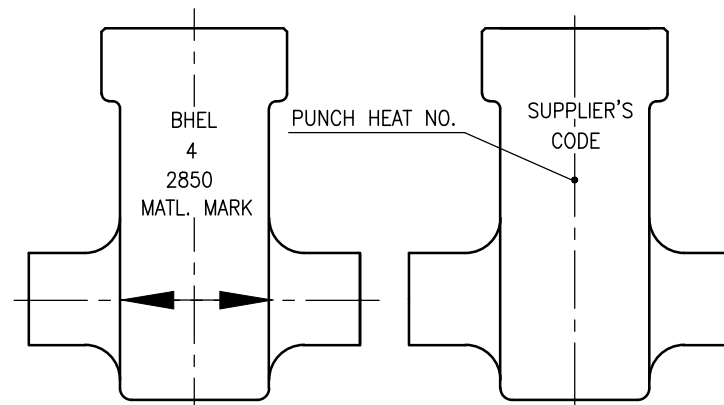
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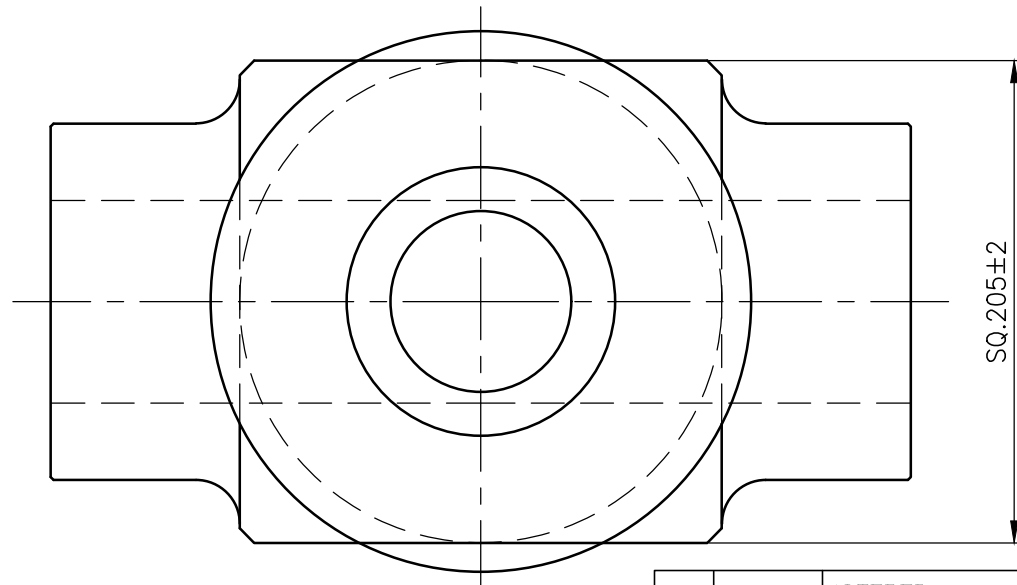
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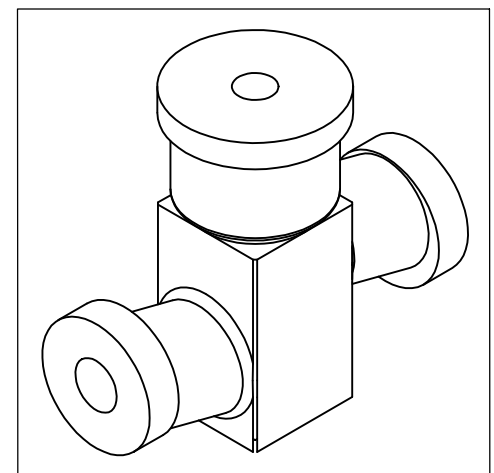
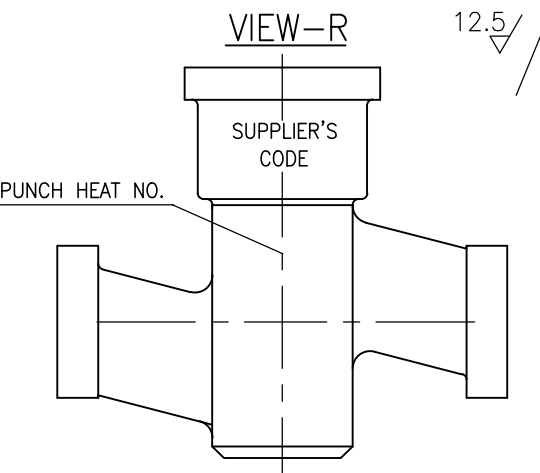
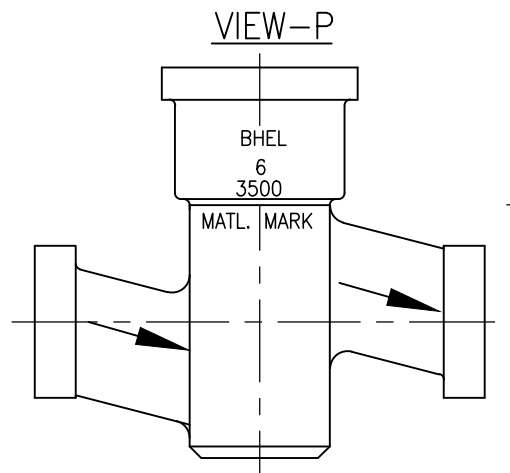
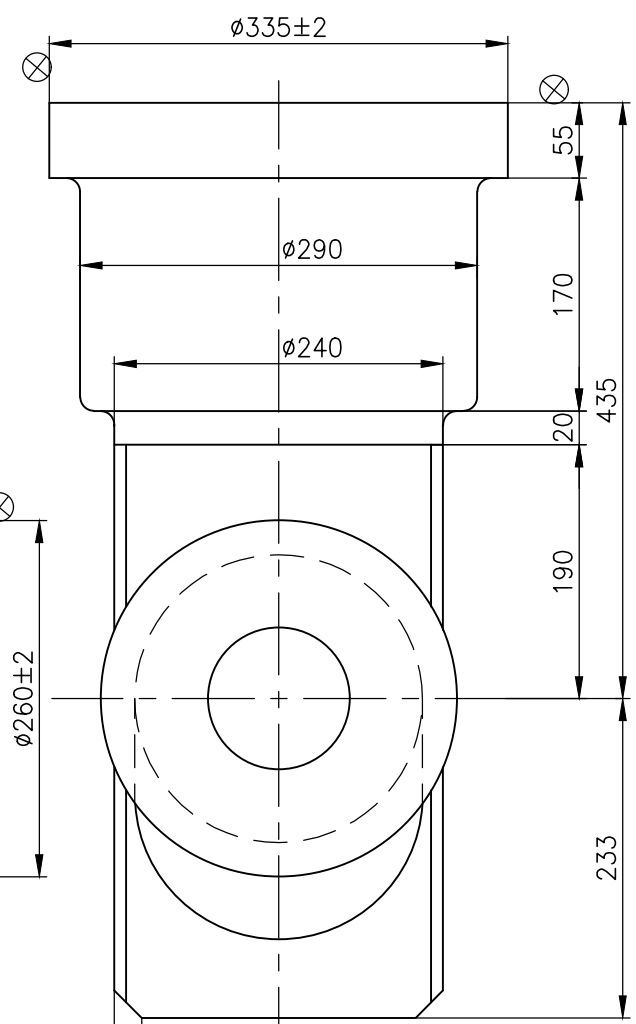
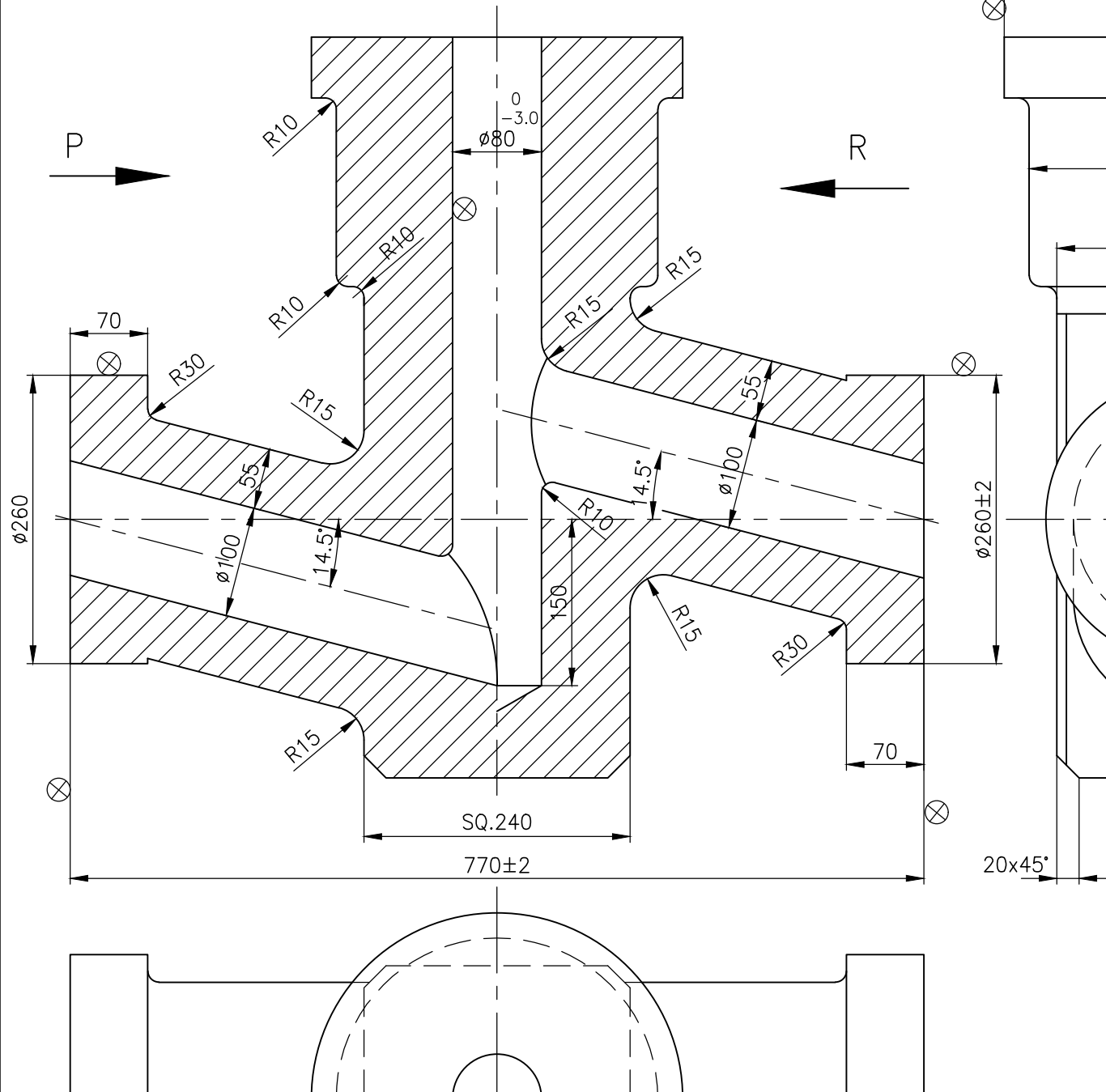
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NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

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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.
365-121			CHD	V.BAIRAVAN		27.01.16	
			APPD	S.SATHEES		27.01.16	
			APPD	K.RAJASEKARAN		27.01.16	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION			NO. OF ITEMS
CODE	320	NTS	138.8				
TITLE			CARD CODE	DRAWING NO.			REV
FORGING			U 01	3-V-0000-31063P			

REV	DATE	ALTERED
		CHD & APPD

DRAWING NO. 3-V-0000-31077P



12.5/

02	3-V-G392-31077P	SA182 F92, NT, ATTEST	92 153 767 0000	F92					
01	3-V-G391-31077P	SA182 F91, NT, ATTEST	92 153 766 0000	F91					
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK					
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

- NOTES:-
- CHAMFER THE SHARP CORNERS TO 5x45°
 - ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
 - FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
 - UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
 - THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
 - TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF SQUARE TO BE CHAMFERED AS SHOWN IN ISOMETRIC VIEW.

REV	DATE	ALTERED
		CHD & APPD

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	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
CHD	S.SATHEES		30.03.16	
APPD	K.RAJASEKARAN		30.03.16	

DEPT VL
CODE 320

SCALE N T S
WEIGHT (KG) 418

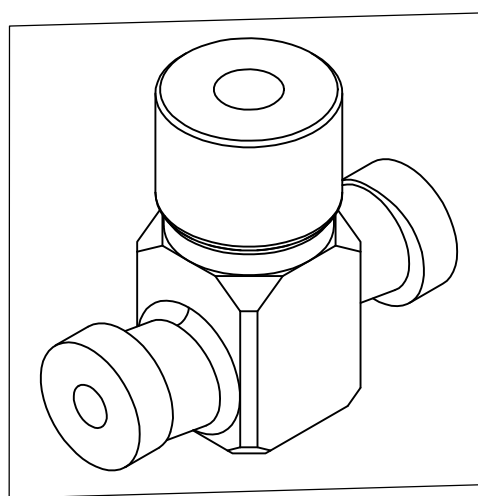
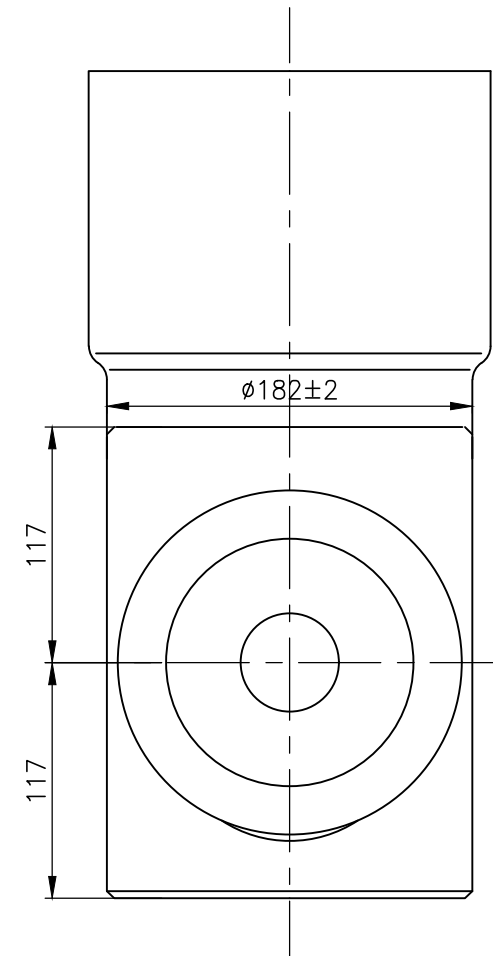
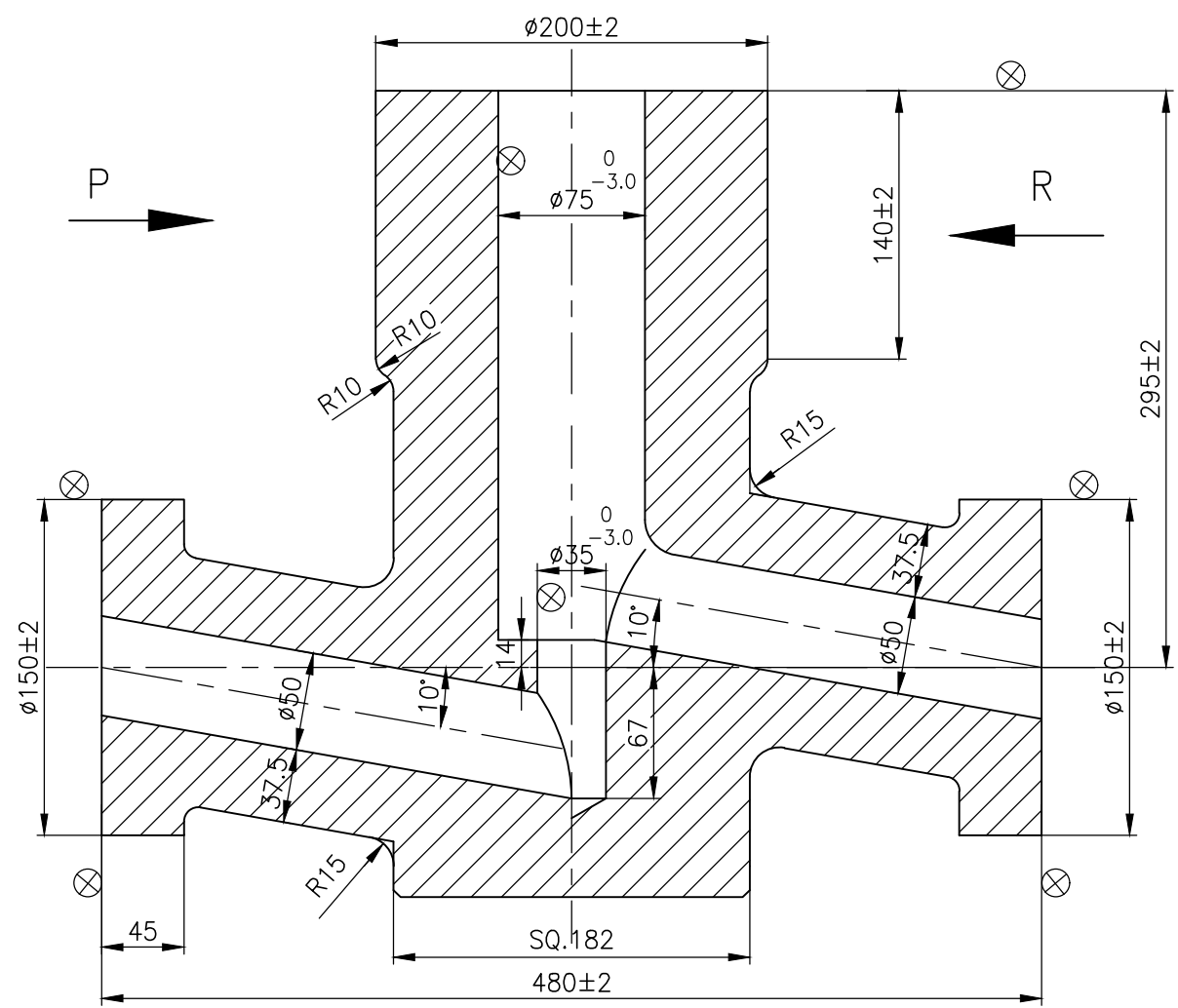
TITLE BODY
FORGING 6"/3500SPL CLASS

CARD CODE U 01

REFERENCE INFORMATIONS
DRAWING NO. 3-V-0000-31077P

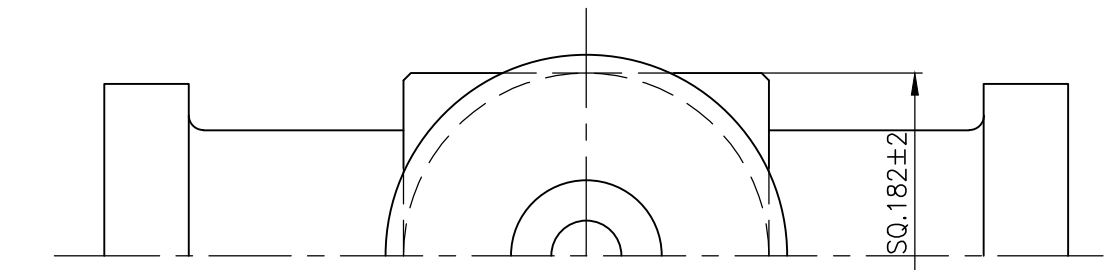
DRAWING NO. 3-V-0000-31078P

12.5/

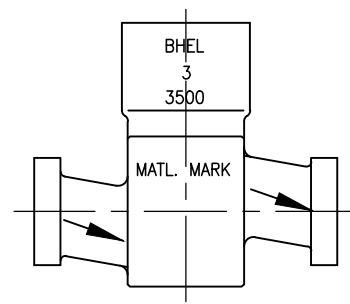


NOTES:-

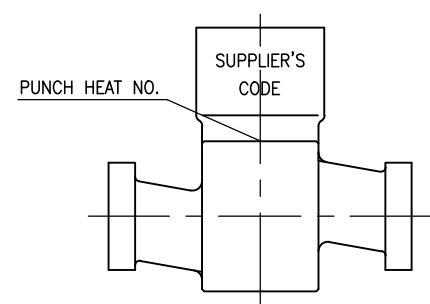
01. CHAMFER THE SHARP CORNERS TO 5x45°
02. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
04. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
05. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
06. TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF SQUARE TO BE CHAMFERED AS SHOWN IN ISOMETRIC VIEW.



VIEW-P



VIEW-R



REV	DATE	ALTERED
		CHD & APPD

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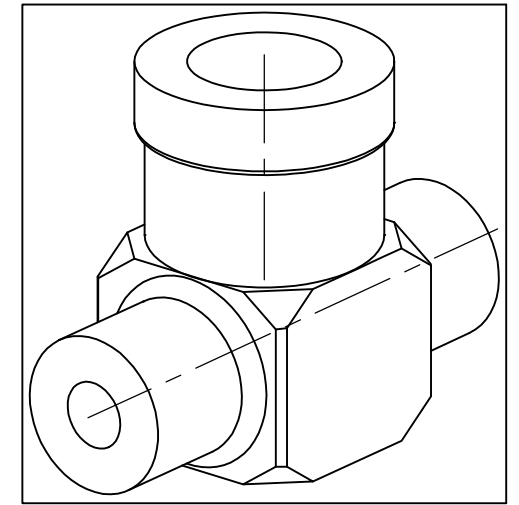
02	3-V-R674-31078P	SA182 F92, NT, ATTEST	92 153 767 0000	F92					
01	3-V-R673-31078P	SA182 F91, NT, ATTEST	92 153 7660000	F91					
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK					
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		DRN	NAME	SIGN	DATE	NO.OF VAR.
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.		365-121	V.BAIRAVAN		07.03.16	
DEPT VL	SCALE N T S	WEIGHT (KG) 116	CHD S.SATHEES		07.03.16	
CODE 320			APPD K.RAJASEKARAN		07.03.16	
TITLE FORGING	BODY	CARD CODE U 01	DRAWING NO. 3-V-0000-31078P		REV	

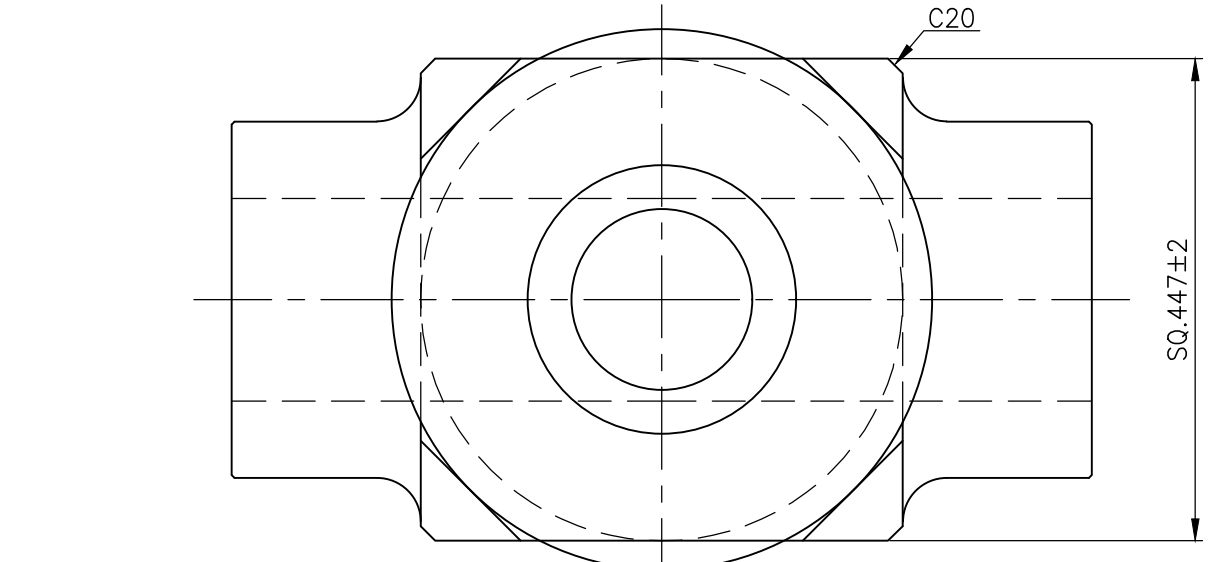
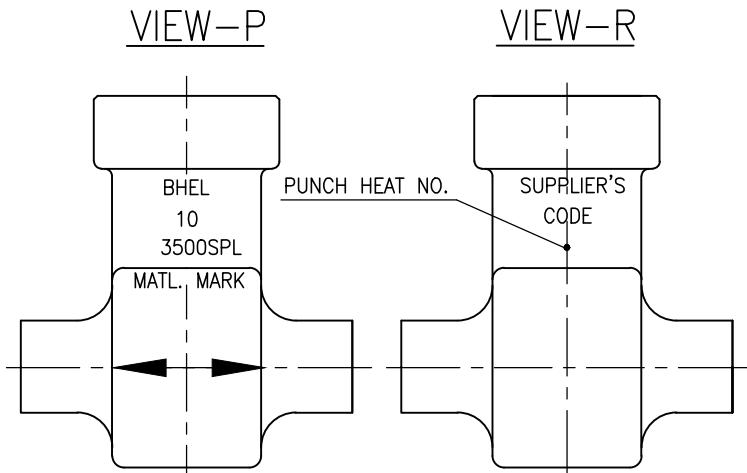
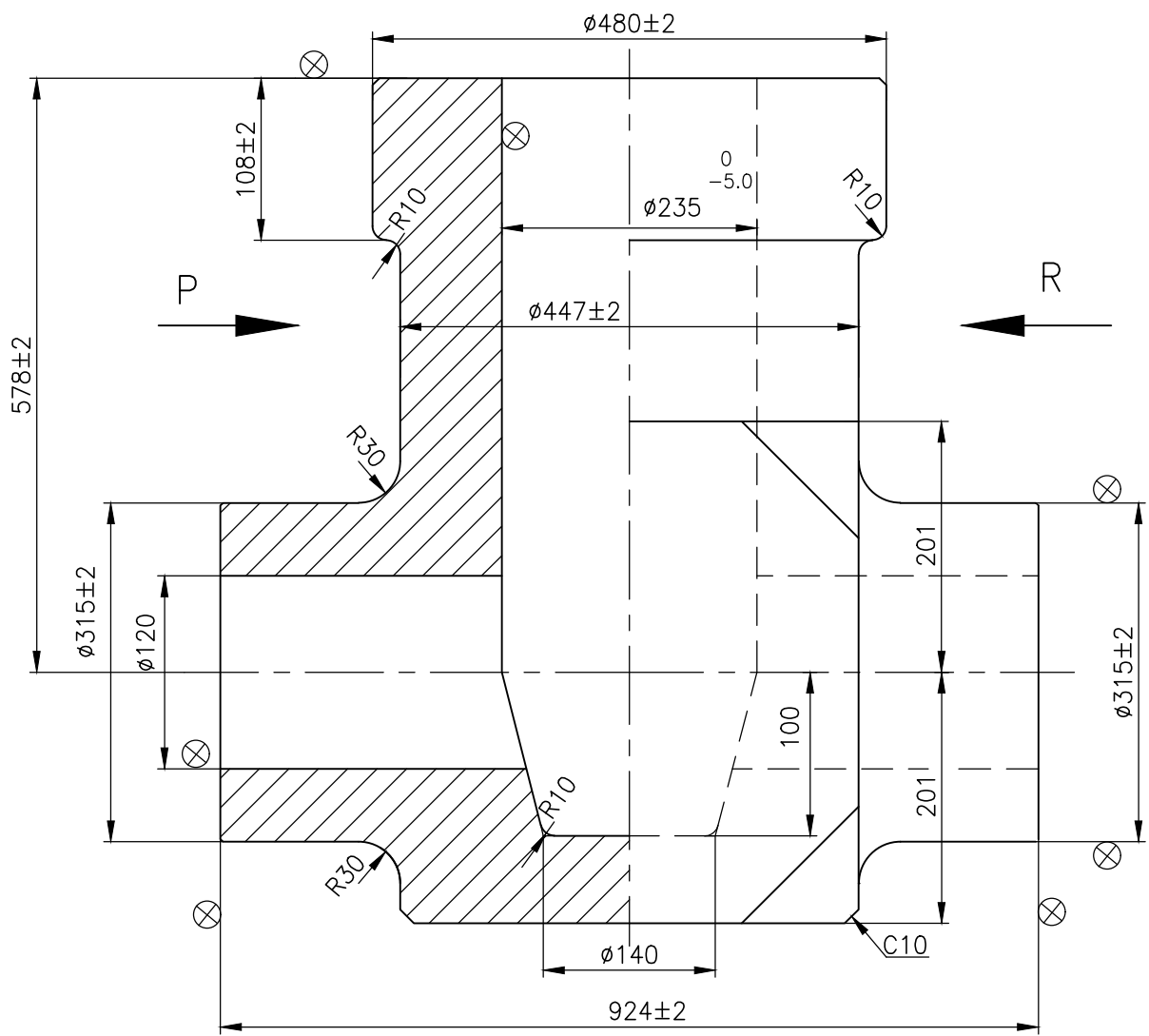
NOTES:-

01. CHAMFER THE SHARP CORNERS TO 5x45°
02. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
04. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
05. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
06. TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED. AS SHOWN IN ISOMETRIC VIEW

12.5/



DRAWING NO. 3-V-0000-31084P



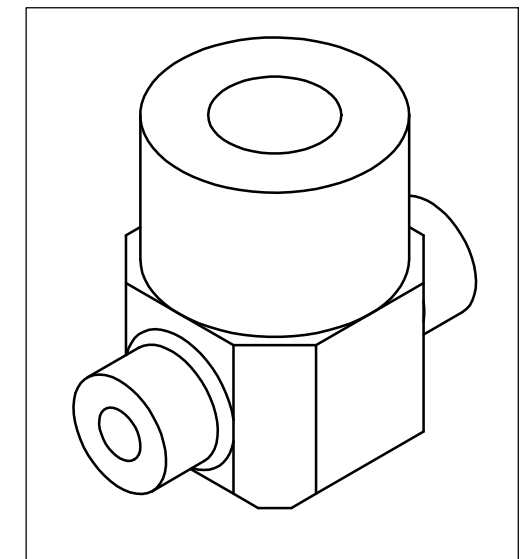
02	3-V-V699-31084P	SA182 F92, NT, ATTEST	92 153 777 0000	F92					
01	3-V-V698-31084P	SA182 F91, NT, ATTEST	92 153 776 0000	F91					
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK					
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT										
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.						DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
365-121						CHD	S.SATHEES		25.03.16	
						APPD	K.RAJASEKARAN		25.03.16	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS			NO. OF ITEMS			
CODE	320	NTS	1094							
TITLE						CARD CODE	DRAWING NO.		REV	
FORGING						U 01	3-V-0000-31084P			

REV	DATE	ALTERED
		CHD & APPD

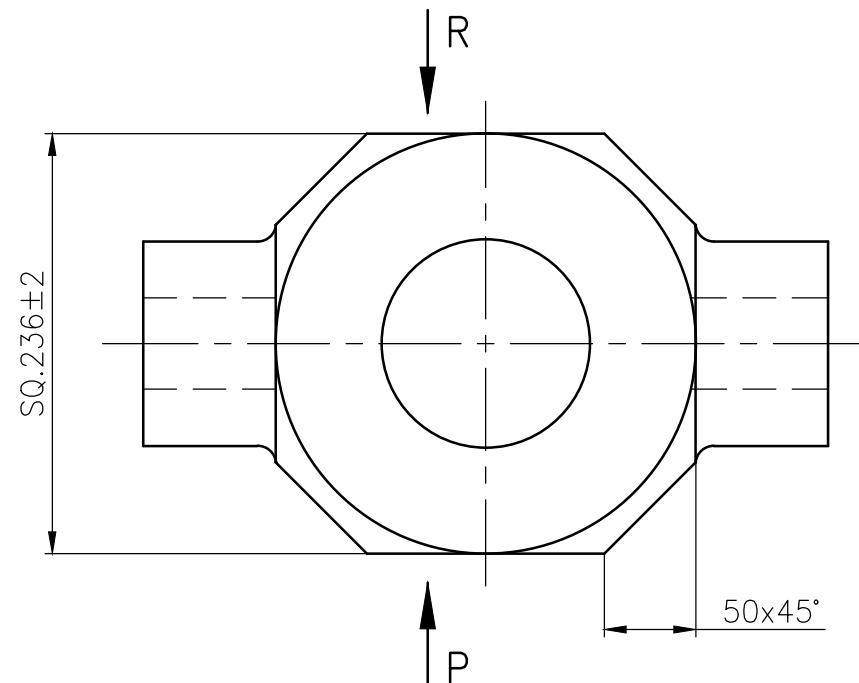
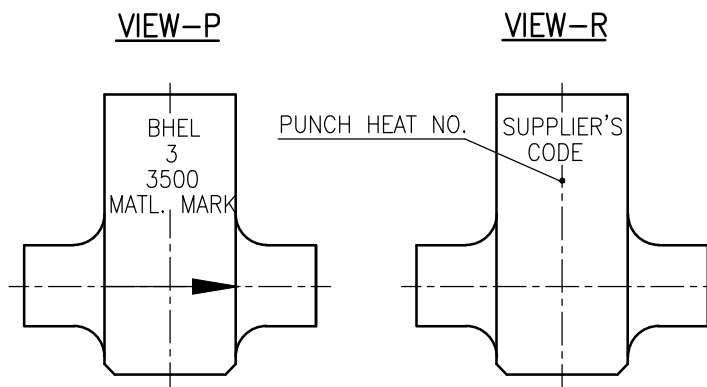
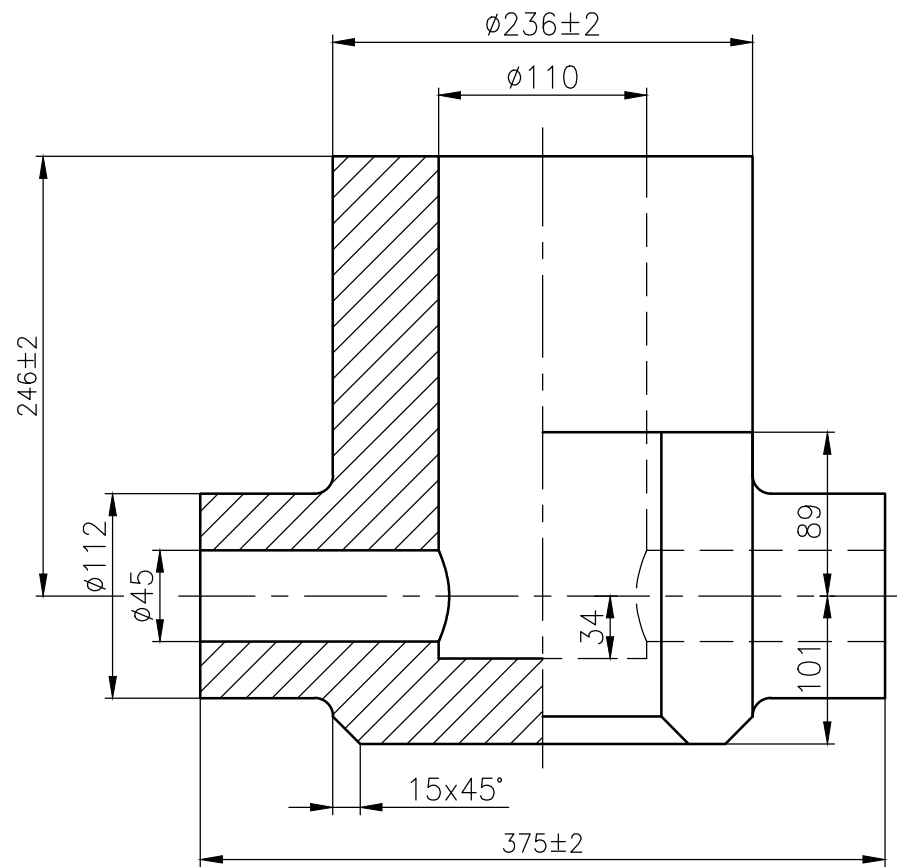
DRAWING NO. 3-V-0000-31086P

12.5/



NOTES:-

01. CHAMFER THE SHARP CORNERS TO 5x45°
02. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
04. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
05. THE IDENTIFICATION MARKS AND SPECIFCATION NOS. SHALL BE IN RAISED LETTERS.
06. TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED AS SHOWN IN ISOMETRIC VIEW.



02	3-V-LD27-31086P	SA182 F92, NT, ATTEST	92 153 779 0000	F92					
01	3-V-LD26-31086P	SA182 F91, NT, ATTEST	92 153 778 0000	F91					
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK					
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

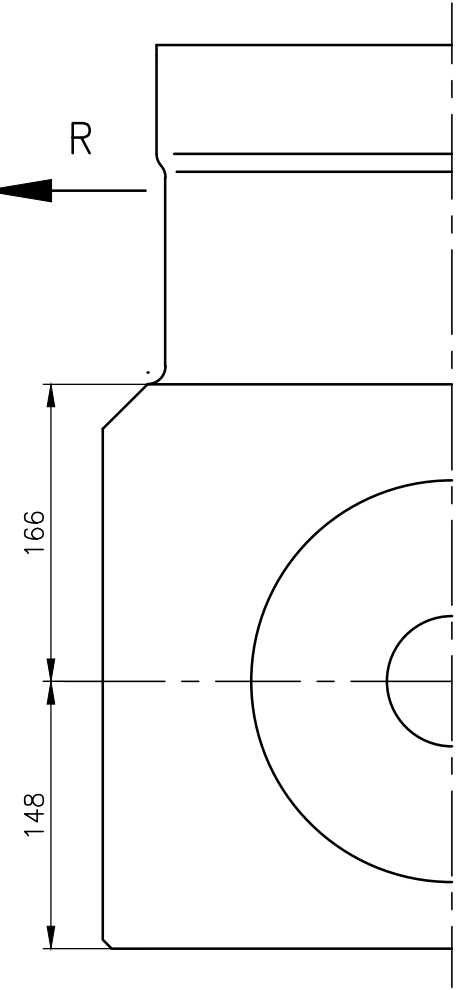
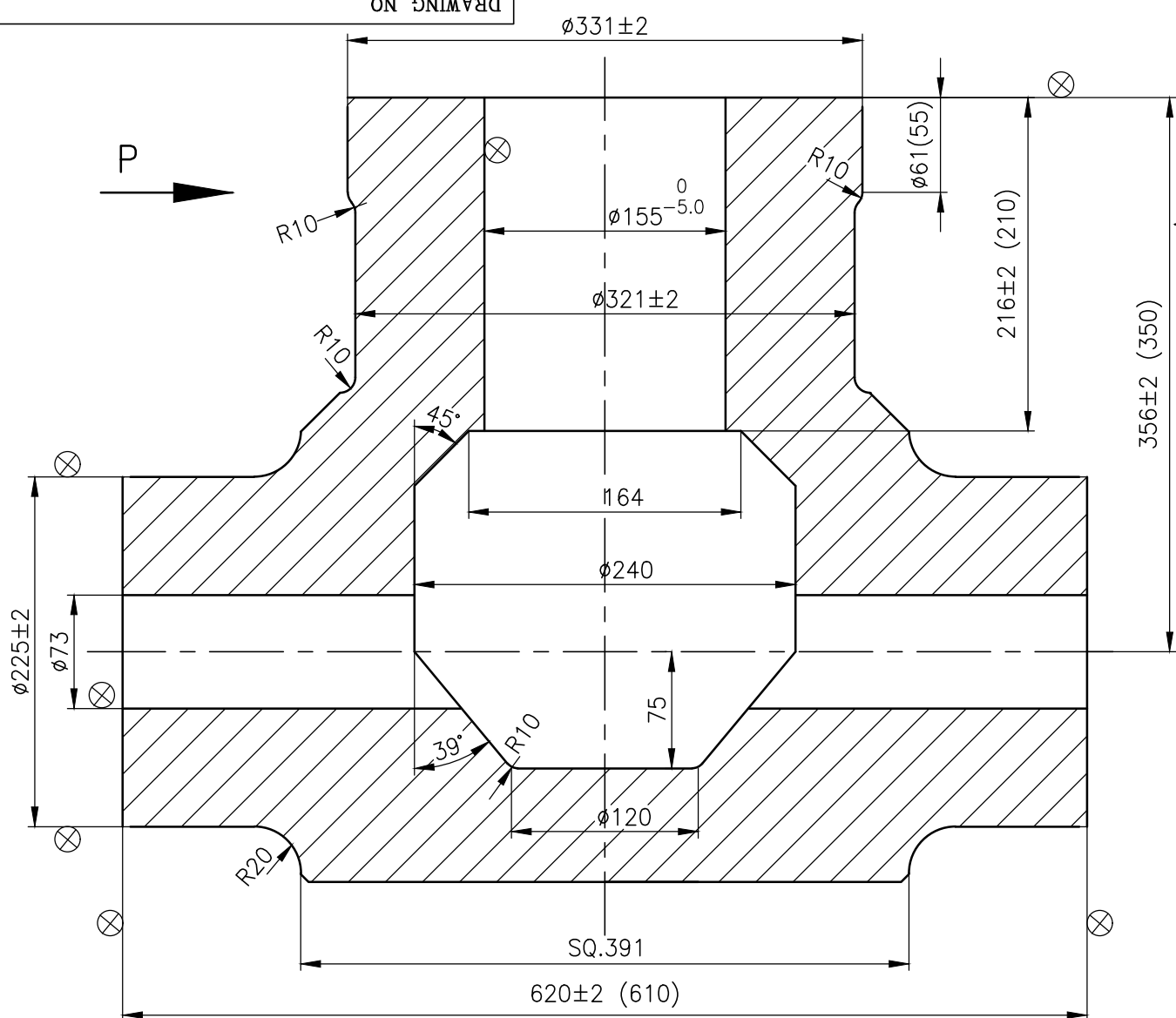
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014. 365-121		DRN	NAME	SIGN	DATE	NO. OF VAR.
		CHD	S.SATHEES		30.03.16	
		APPD	K.RAJASEKARAN		30.03.16	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION		NO. OF ITEMS
CODE	320	NTS	115			
TITLE			CARD CODE	DRAWING NO.		REV
FORGING			U 01	3-V- ^{REFER TABLE} 0000-31086P		
BODY			3"/3500 SPL. CLASS			

REV	DATE	ALTERED
		CHD & APPD

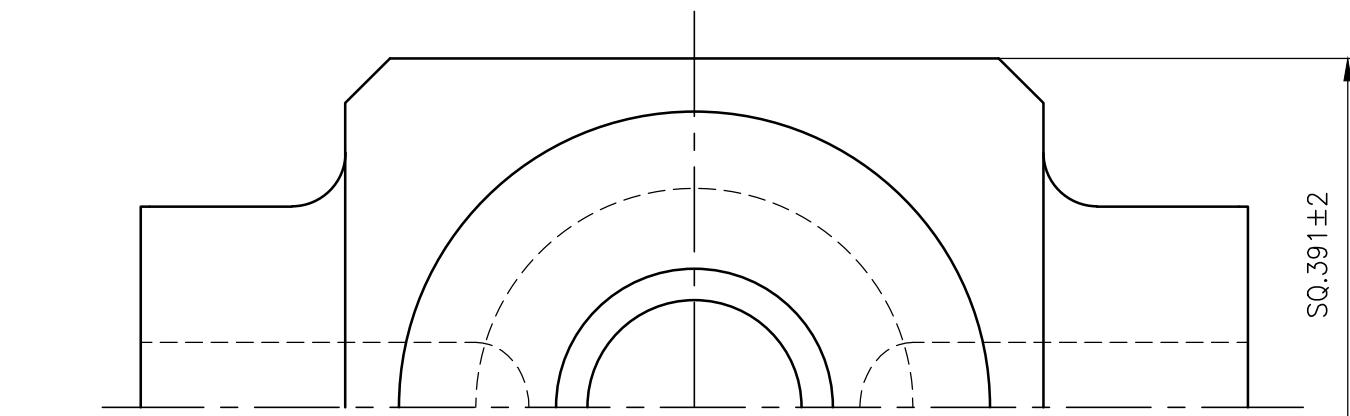
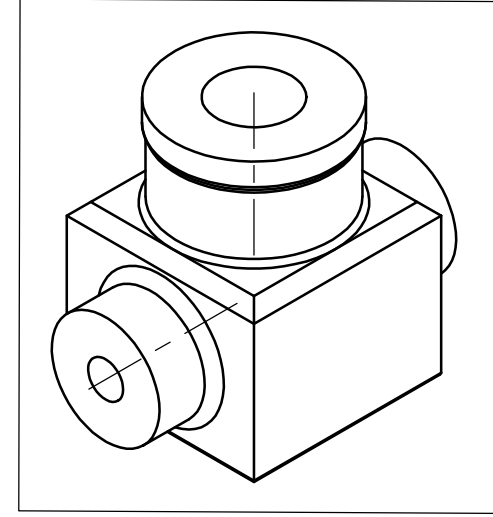
DRAWING NO. 3-V-0000-31093P

12.5



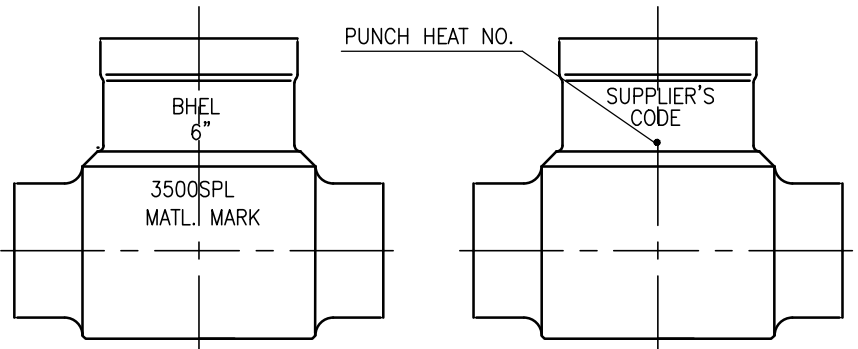
NOTES:-

01. CHAMFER THE SHARP CORNERS TO 5x45°
02. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
04. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
05. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
06. TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED.



VIEW-P

VIEW-R



REV	DATE	ALTERED
		CHD & APPD

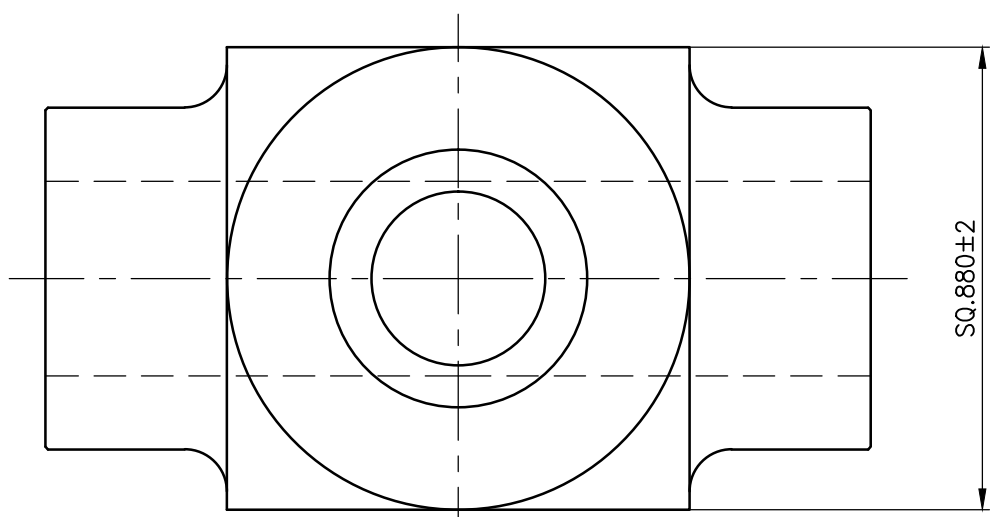
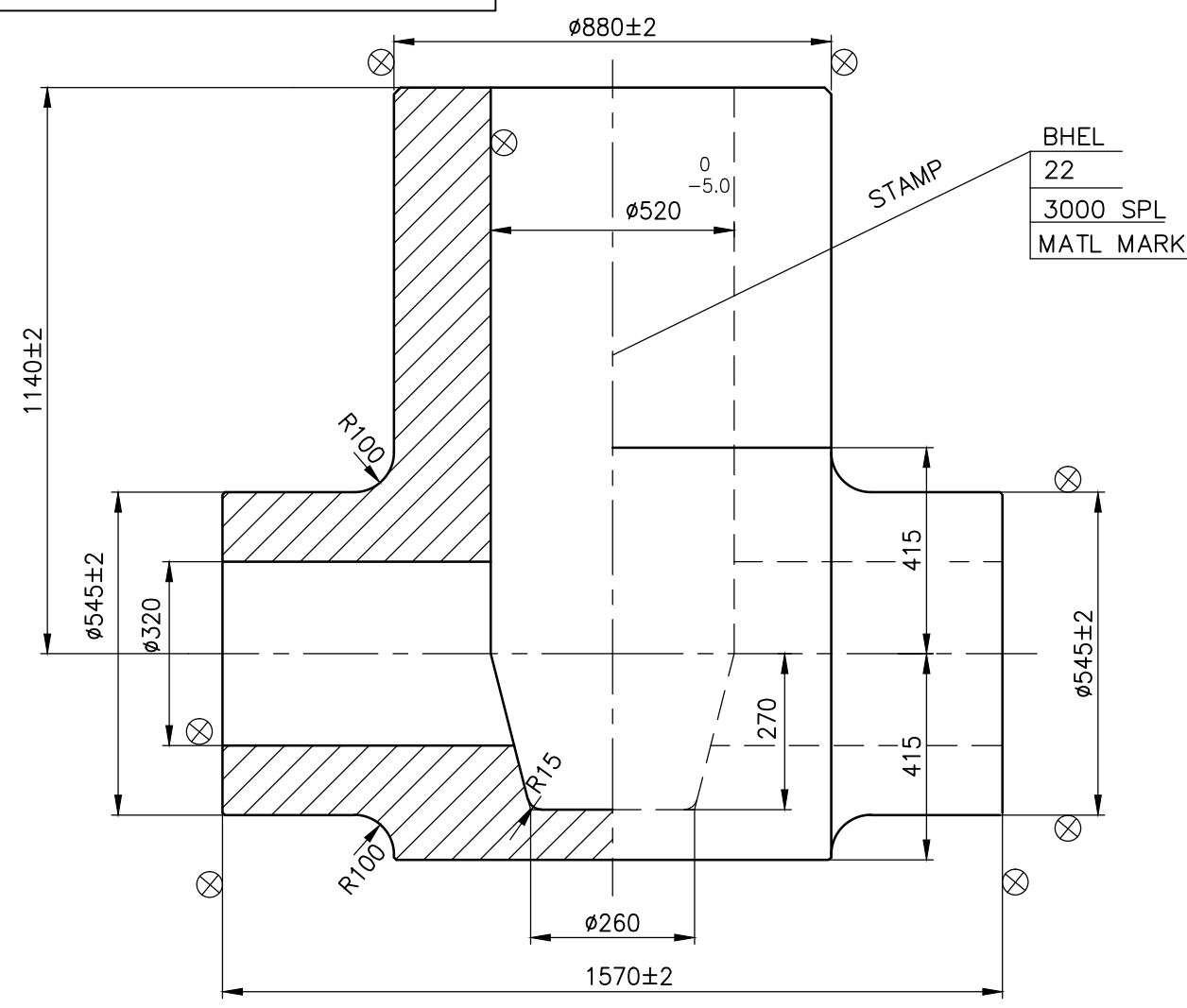
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01	3-V-LD28-31093P	SA182 F91, NT, ATTEST	92 153 793 0000	F91					
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK					
NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No

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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.
365-121		CHD	V.BAIRAVAN		12.04.16	
		APPD	S.SATHEES		12.04.16	
			K.RAJASEKARAN		12.04.16	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS		NO. OF ITEMS
CODE	320	N T S	434			
TITLE			CARD CODE	DRAWING NO.		REV
FORGING			U 01	3-V- <u>0000</u> -31093P		
BODY			REFER TABLE			
6"/3500SPL CLASS						

DRAWING NO. 3-V-0000-21831P/1

12.5



REV	DATE	ALTERED VB
1	05.04.14	CHD & APPD SSK & KRS
IN MATL. SPECN. SA336 F91 WAS SA182 F91		
DCP No.801724		

BHEL
22
3000 SPL
MATL MARK

NOTES:-

- 01. CHAMFER THE SHARP CORNERS TO 5x45°
- 02. ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
- 03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.

01	3-V-WC33-21831P/1	SA336 F91,NT, ATTEST	92 153 442 0000	F91						
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	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										
BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014.				DRN	V.BAIRAVAN	SIGN		DATE	04.08.12	NO.OF VAR.
365-121				CHD	K.RAJASEKARAN			DATE	04.08.12	
				APPD	M.RAJAKUMAR			DATE	04.08.12	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION			NO. OF ITEMS			
CODE	320	N T S	6470							
TITLE				CARD CODE	DRAWING NO.			REV		
FORGING				U 01	3-V-0000-21831P			1		
BODY				22"/3000SPL CLASS						

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2-V-0000-18148P
DRAWING NO.

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

1

NOTES:

1. FORGING SHALL BE MADE IN SUCH A WAY THAT MACHINING CAN BE DONE TO THE SPECIFIED DIMENSIONS.
- FORGING TOLERANCES**

2. LENGTH AND WIDTH TOLERANCES	+3.7 -1.9
THICKNESS TOLERANCES	+2.0 0 2.0
3. MISMATCH : 2.0
4. UNSPECIFIED DRAFT : 7°(MAX)
5. RESIDUAL FLASH : 2.4
6. UNSPECIFIED FORGING RADII - R5
7. DOTTED LINE SHOWS FINISH MACHINED CONFIGURATION.
8. FORGING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTION
9. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
10. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
11. DIMENSIONS IN THE DRAWING EXCLUDE FORGING DRAFT.
- *12. FOR SPECIAL CLASS VALVES STAMPING SHALL BE IN RAISED LETTERS AS '1500 SPL'.
13. FORGINGS ARE TO BE SAND BLASTED OR SHOT BLASTED AND HEAT TREATED AS SPECIFIED.
14. SIZE OF FORGING LETTERS 10MM
15. DOTTED LINE SHOWS THE FINISH MACHINED CONFIGURATION.

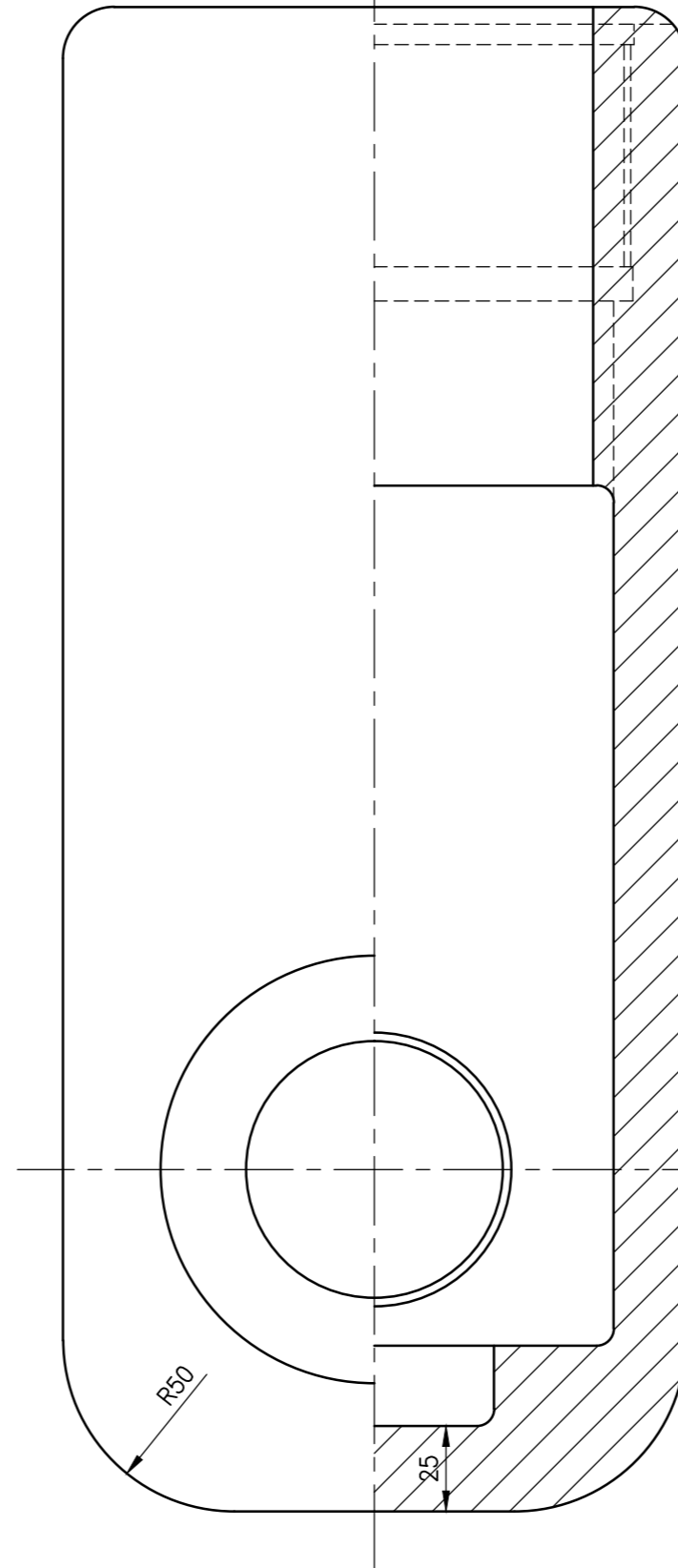
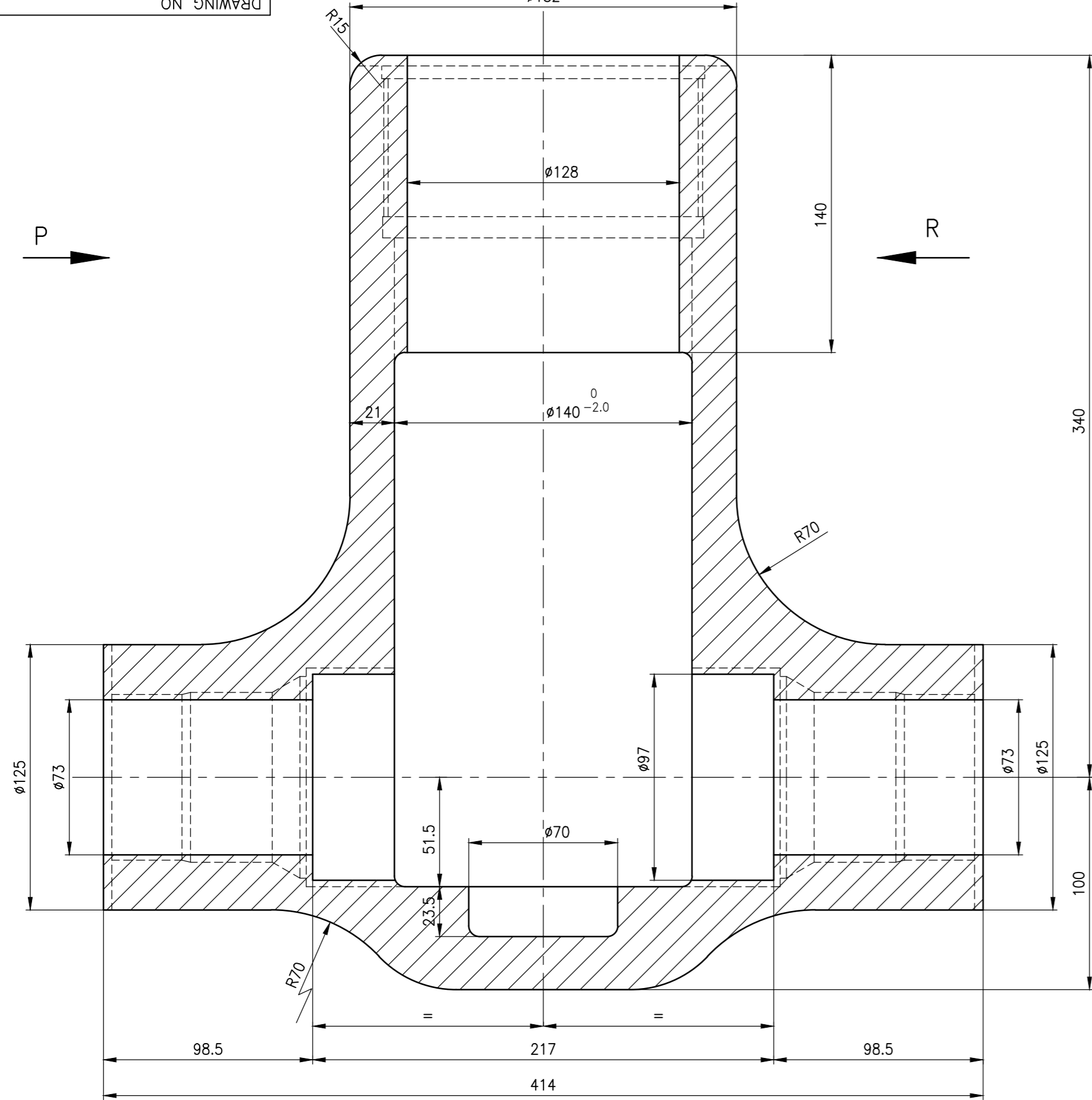
*06	2-V-WC49-18148P	SA182 F91, NT	ATTEST	92 153 479 0000	F91	
*05	2-V-WC48-18148P	SA182 F22 CL.3, NT		92 153 478 0000	F22	
*04	2-V-WC47-18148P	SA105, NR		92 153 477 0000	A105	
03	2-V-WC46-18148P	SA182 F91, NT		92 153 476 0000	F91	
02	2-V-WC45-18148P	SA182 F22 CL.3, NT		92 153 475 0000	F22	
01	2-V-WC44-18148P	SA105, NR		92 153 474 0000	A105	
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK		

No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
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TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		TA					
	BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI -620014.		DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
	CHD	S.SATHEESKUMAR				01.07.13	
	APPD	K.RAJASEKARAN				01.07.13	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION		NO. OF ITEMS	
CODE	320	N T S	60.0				
TITLE	FORGING BODY		CARD CODE	DRAWING NO.		REV	
	4"/1500 CLASS		U 01	2-V-0000-18148P			

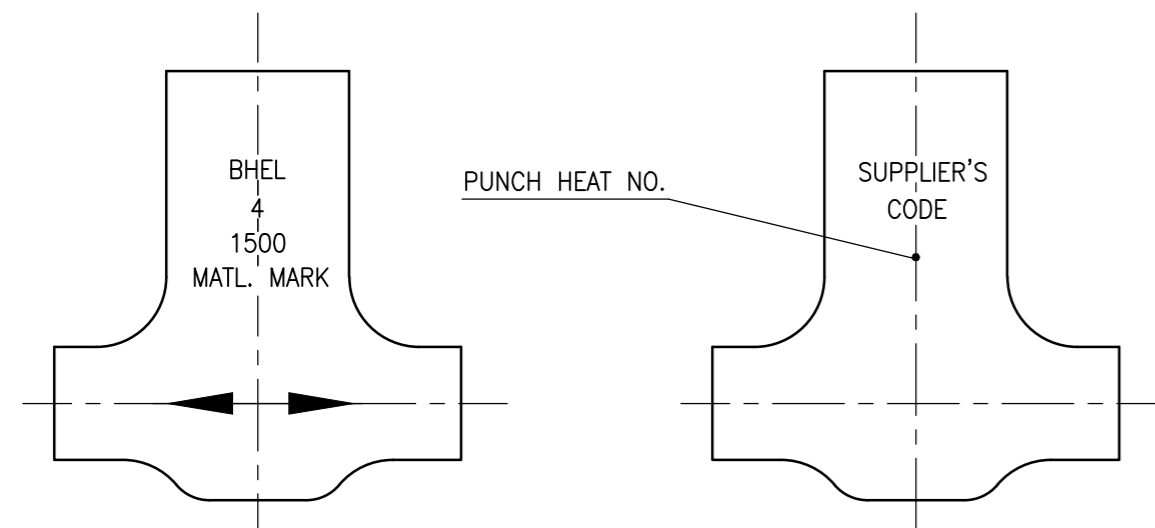
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REV	DATE	ALTERED
		CHD & APPD
ZONE		



VIEW-P

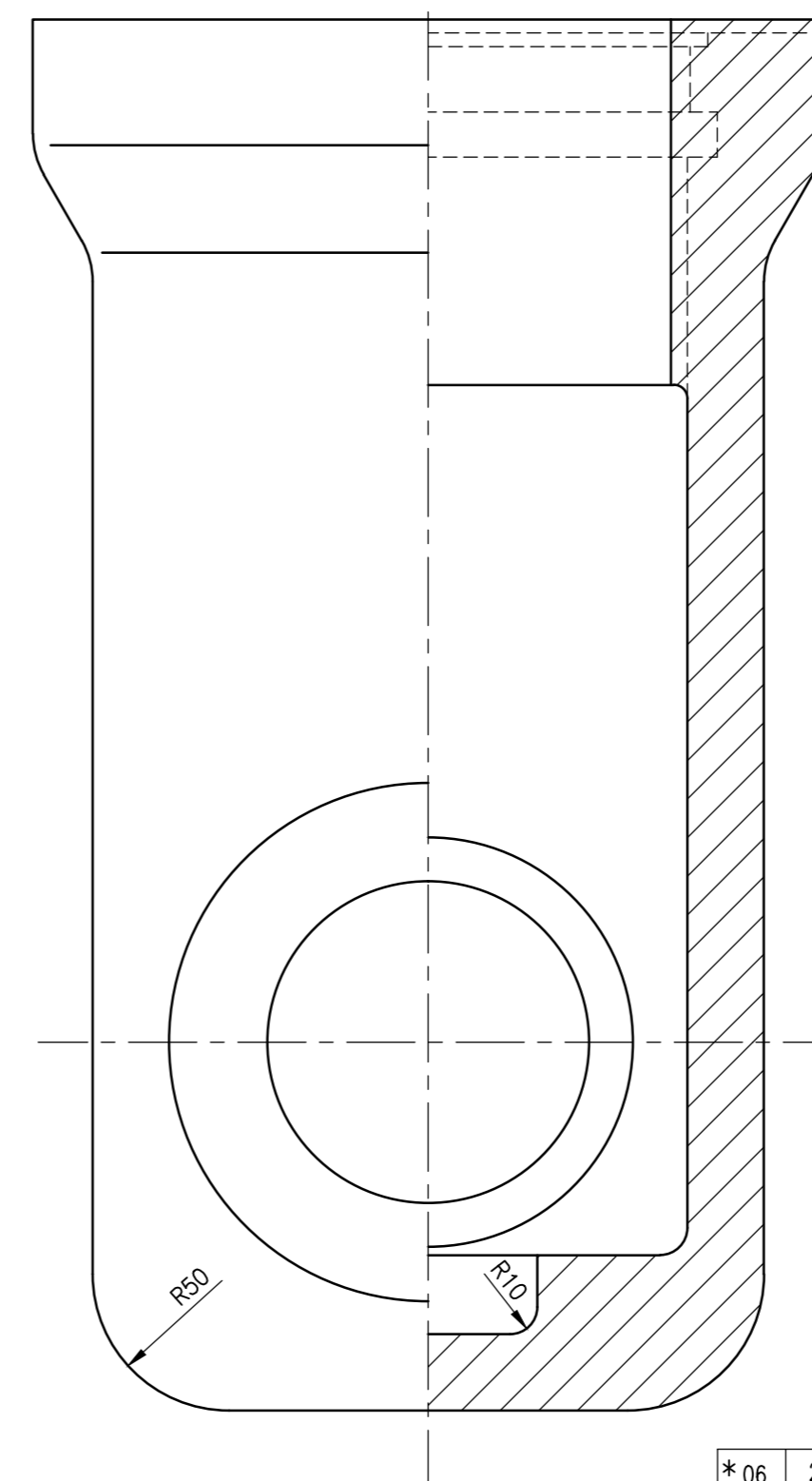
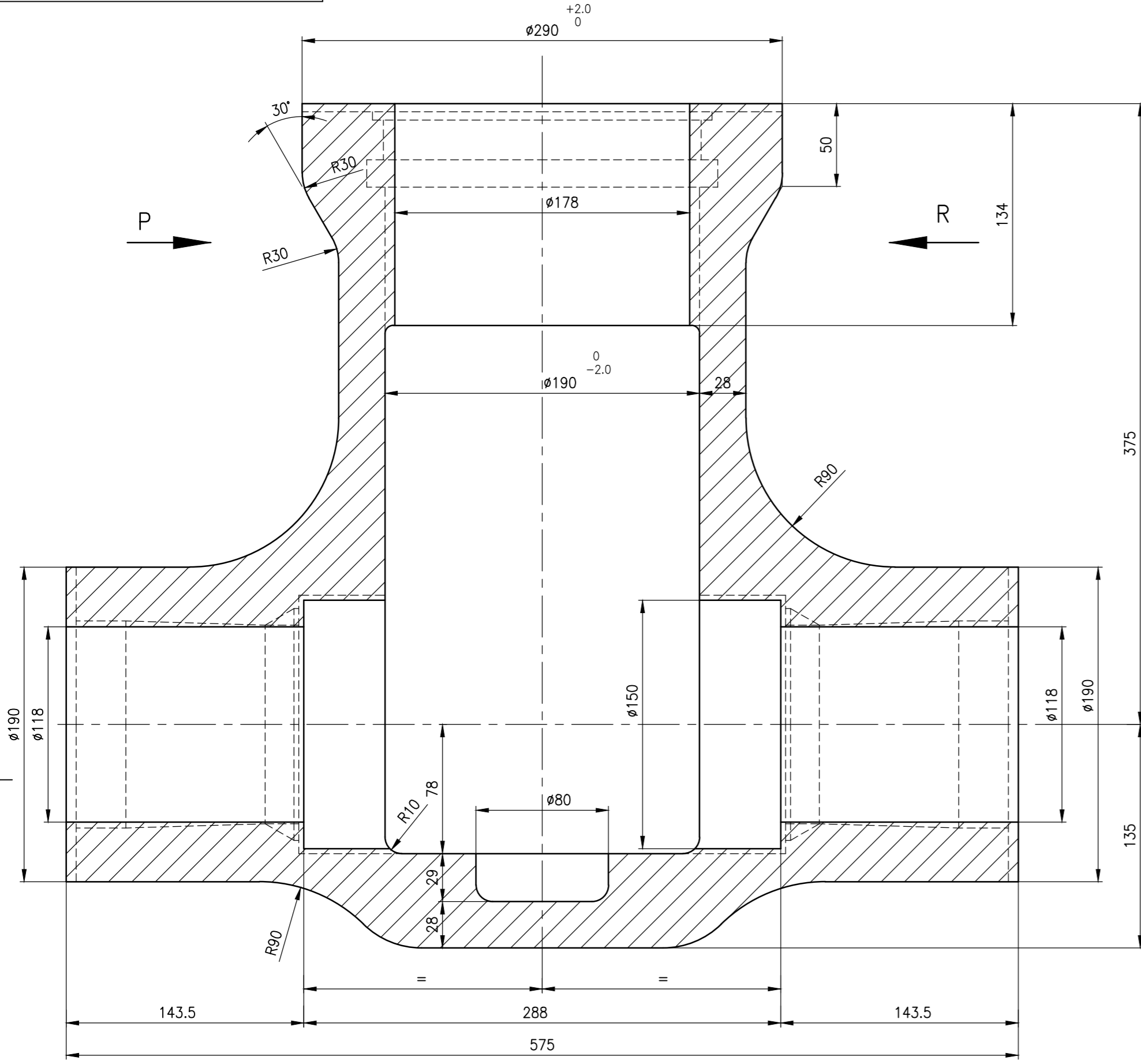
VIEW-R



DRAWING NO. 2-V-0000-18151P

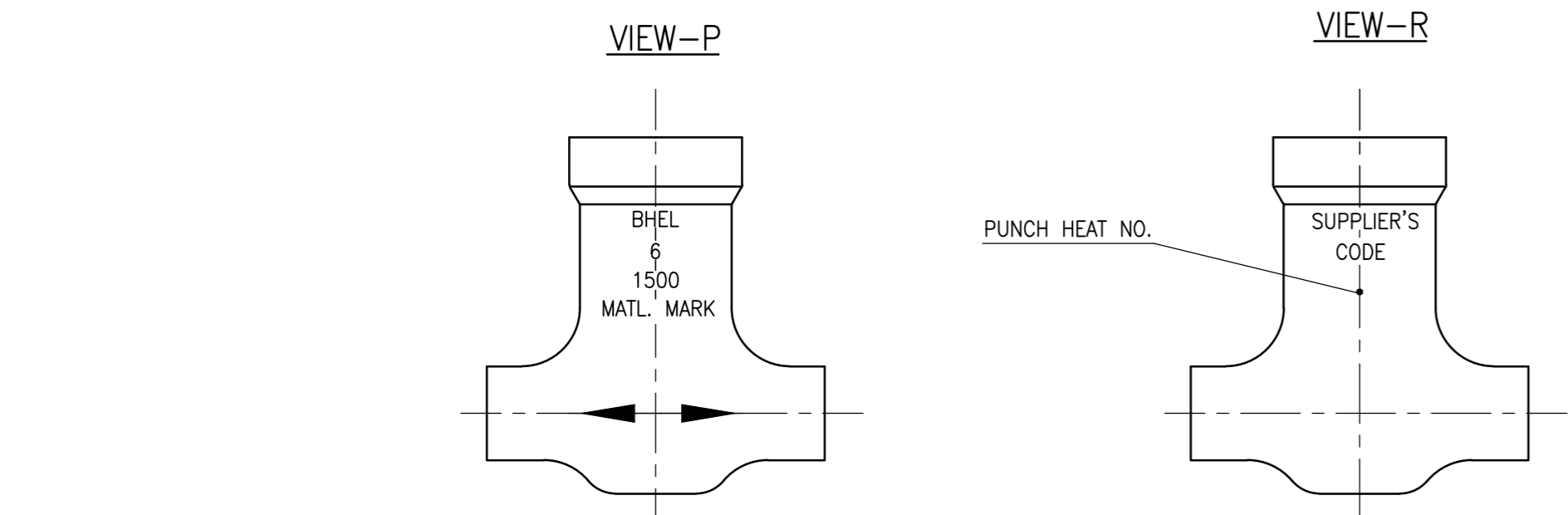
ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP

1



NOTES:

1. FORGING SHALL BE MADE IN SUCH A WAY THAT MACHINING CAN BE DONE TO THE SPECIFIED DIMENSIONS.
- FORGING TOLERANCES
2. LENGTH AND WIDTH TOLERANCES +3.7 / -1.9
- THICKNESS TOLERANCES +2.0 / 0
3. MISMATCH 2.0
4. UNSPECIFIED DRAFT : 7°(MAX)
5. RESIDUAL FLASH : 2.4
6. UNSPECIFIED FORGING RADII - R5
7. DOTTED LINE SHOWS FINISH MACHINED CONFIGURATION.
8. FORGING SHALL COMPLY WITH REQUIREMENTS OF LATEST APPLICABLE QUALITY WORK INSTRUCTION
9. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
10. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
11. DIMENSIONS IN THE DRAWING EXCLUDE FORGING DRAFT.
- *12. FOR SPECIAL CLASS VALVES STAMPING SHALL BE IN RAISED LETTERS AS '1500 SPL'.
13. FORGINGS ARE TO BE SAND BLASTED OR SHOT BLASTED AND HEAT TREATED AS SPECIFIED.
14. SIZE OF FORGING LETTERS 10MM
15. DOTTED LINE SHOWS THE FINISH MACHINED CONFIGURATION.



*06	2-V-V629-18151P	SA182 F91, NT	ATTEST	92 153 497 0000	F91	
*05	2-V-V628-18151P	SA182 F22 CL.3, NT		92 153 496 0000	F22	
*04	2-V-V627-18151P	SA105, NR		92 153 495 0000	A105	
03	2-V-V626-18151P	SA182 F91, NT		92 153 494 0000	F91	
02	2-V-V625-18151P	SA182 F22 CL.3, NT		92 153 493 0000	F22	
01	2-V-V624-18151P	SA105, NR		92 153 492 0000	A105	
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK		

No OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No
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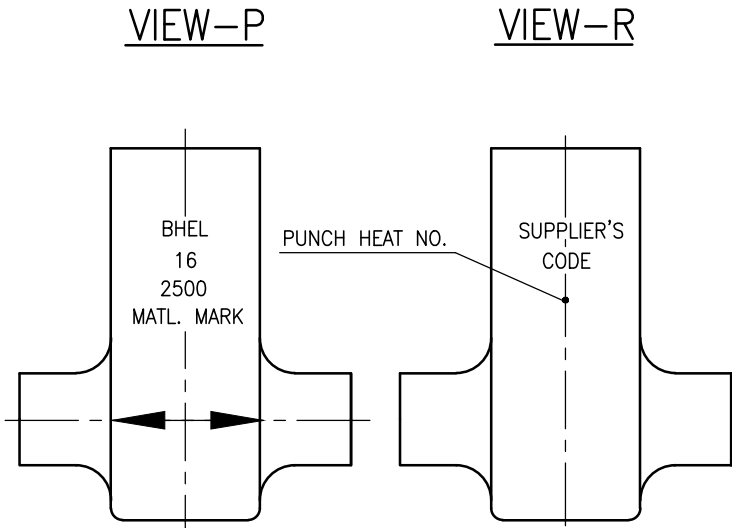
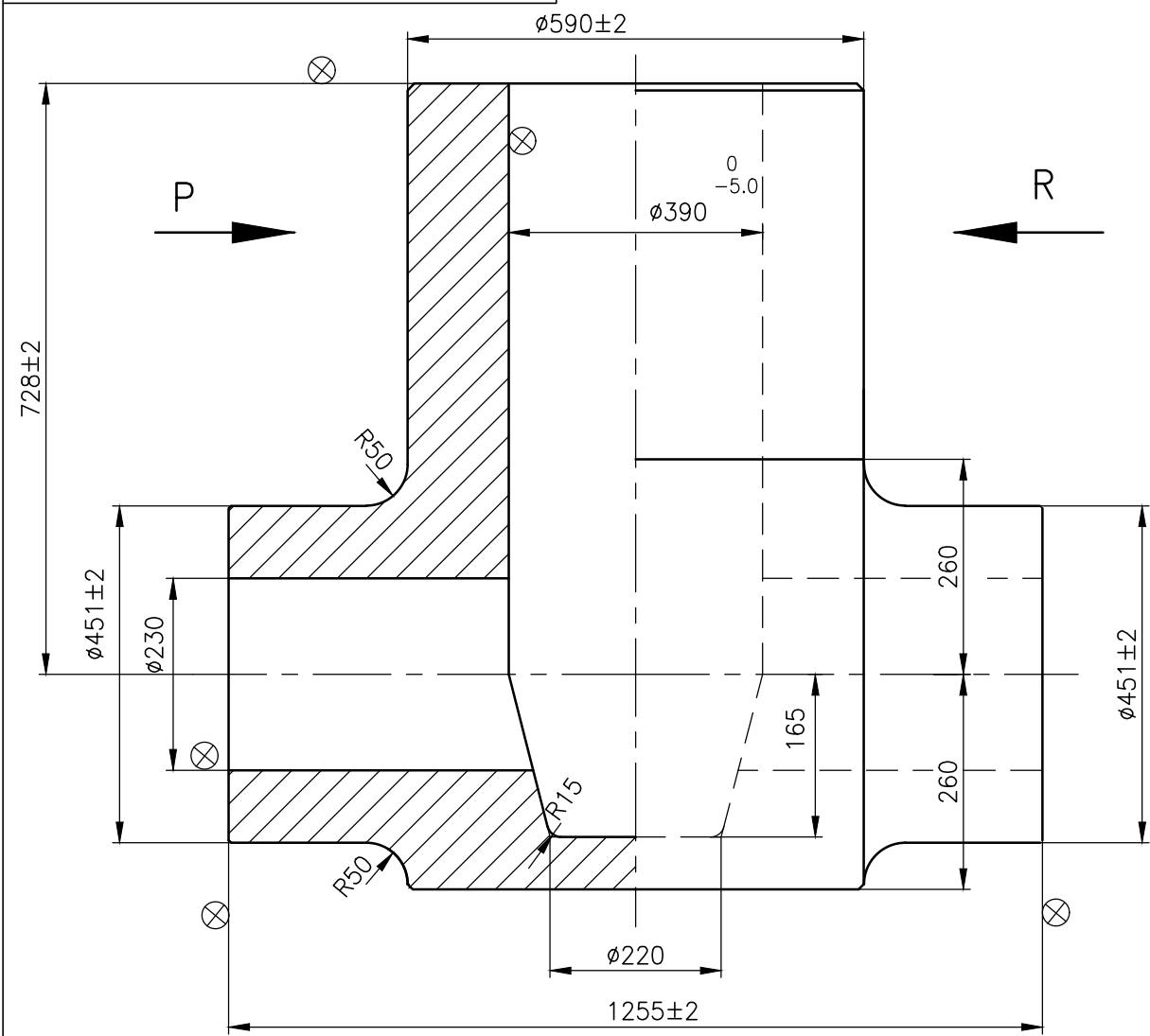
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		TA					
	BHARAT HEAVY ELECTRICALS LTD.,		DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
	UNIT: HIGH PRESSURE BOILER PLANT.		CHD	S.SATHEESKUMAR		04.07.13	
	TIRUCHIRAPALLI -620014.		APPD	K.RAJASEKARAN		04.07.13	
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS		NO.OF ITEMS	
320		N T S	144.0				
TITLE		CARD CODE	DRAWING NO.		REV		
FORGING BODY		U 01	2-V-0000-18151P				

REV	DATE	ALTERED
		CHD & APPD
ZONE		

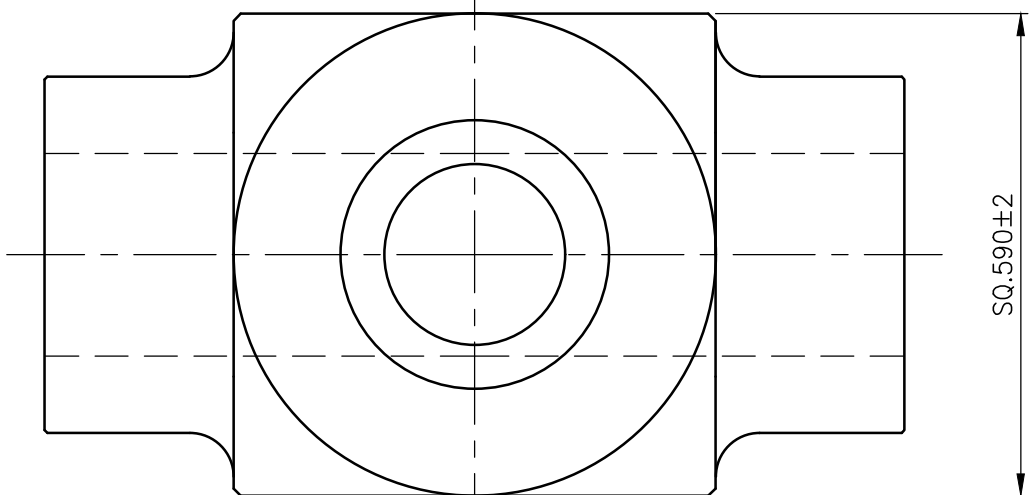
DRAWING NO. 3-V-0000-31060P

12.5



NOTES:-

- CHAMFER THE SHARP CORNERS TO 5x45°
- ⊗ INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
- FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
- * MARKED TYPES ARE SPECIAL CLASS RATINGS.
- UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
- THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
- TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED.



*04	3-V-V707-31060P	SA182 F22 CL.3,NT, ATTEST	92 153 756 0000	F22	
*03	3-V-V706-31060P	SA105, NR, ATTEST	92 153 755 0000	A105	
02	3-V-V705-31060P	SA182 F22 CL.3,NT, ATTEST	92 153 754 0000	F22	
01	3-V-V704-31060P	SA105, NR, ATTEST	92 153 753 0000	A105	
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	MATL. MARK	

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

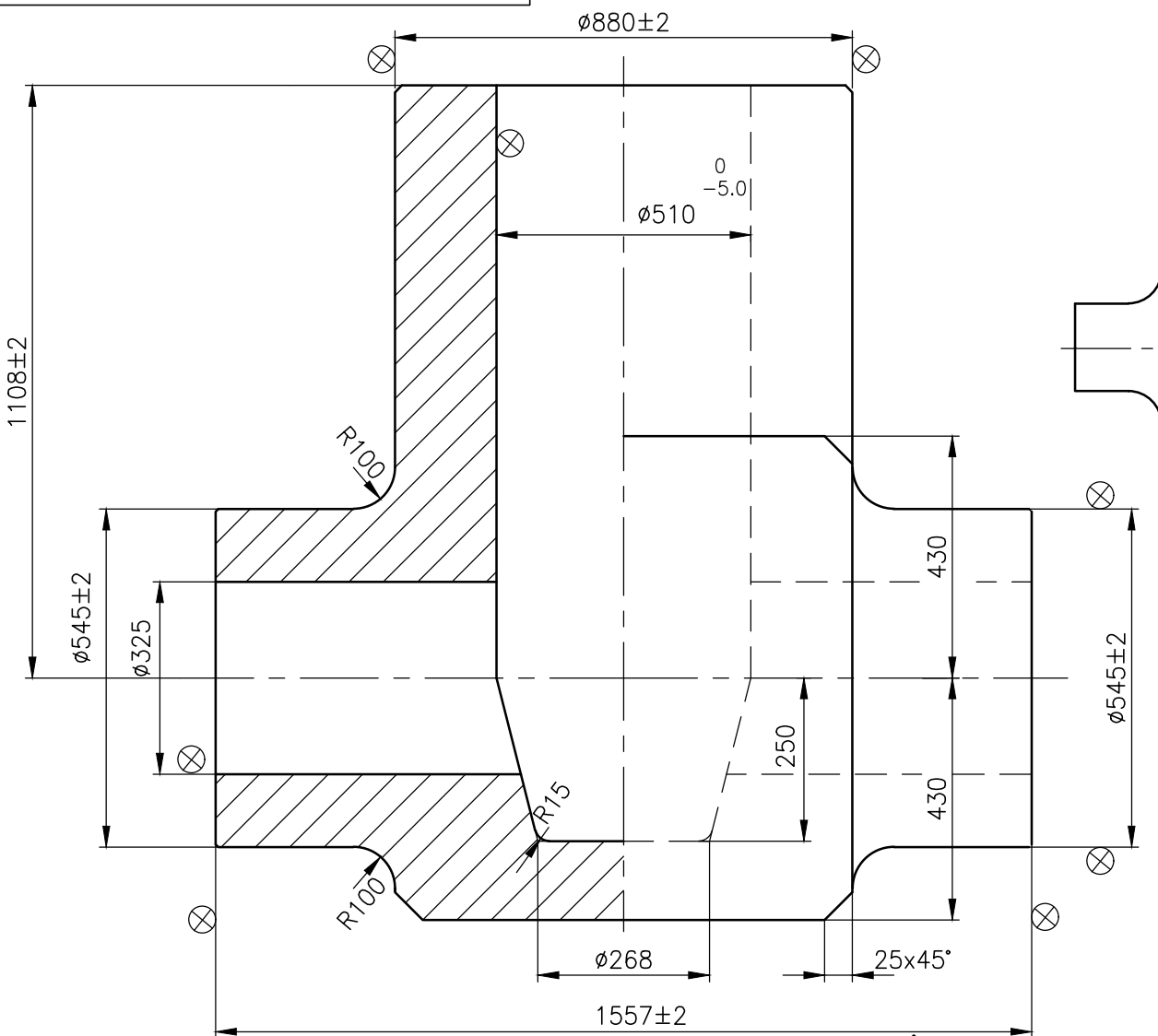
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

 BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014. 365-121	DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
	CHD	S.SATHEES		18.01.16	
	APPD	K.RAJASEKARAN		18.01.16	

REV	DATE	ALTERED
		CHD & APPD

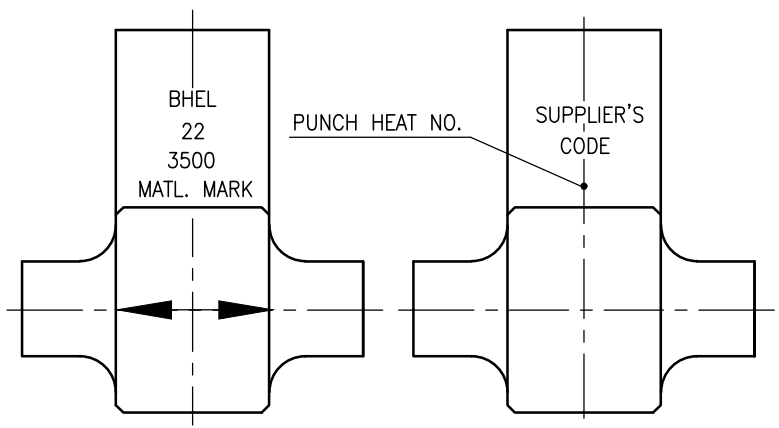
DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATION	NO. OF ITEMS
CODE	320	NTS	2203.2		
TITLE	BODY		CARD CODE	DRAWING NO.	REV
FORGING	16"/2500 CLASS		U 01	3-V- ^{REFER TABLE} 0000-31060P	

DRAWING NO. 3-V-0000-31070P



VIEW-P

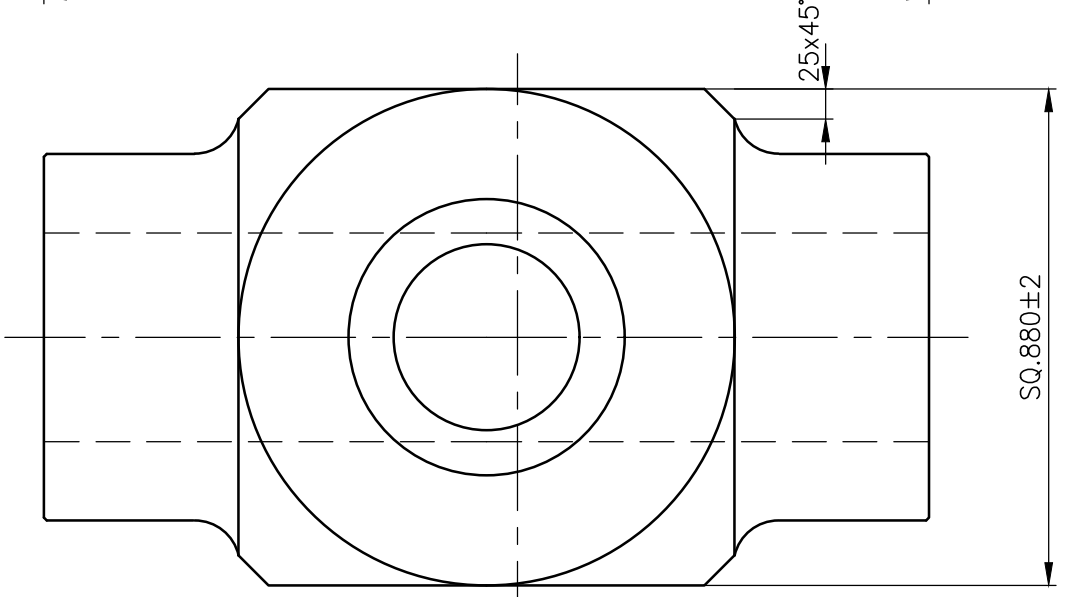
VIEW-R



NOTES:-

01. CHAMFER THE SHARP CORNERS TO $5 \times 45^\circ$
02. \otimes INDICATES THE SURFACES WHICH ARE TO BE MACHINED FURTHER.
03. FORGING SHALL BE COMPLY WITH REQUIREMENTS OF THE LATEST APPLICABLE QUALITY WORK INSTRUCTIONS.
04. UT AND MPI SHALL BE CONDUCTED, DETAILS AS PER THE LATEST APPLICABLE QUALITY WORK INSTRUCTION
05. THE IDENTIFICATION MARKS AND SPECIFICATION NOS. SHALL BE IN RAISED LETTERS.
06. TOP FOUR CORNERS AND BOTTOM FOUR CORNERS OF THE SQUARE TO BE CHAMFERED.

12.5 / ∇



01	3-V-WD29-31070P	SA182 F92,NT, ATTEST	92 153 762 0000	F92					
SL No.	DRAWING No.	MATERIAL SPECN.	MATERIAL CODE	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

BHARAT HEAVY ELECTRICALS LTD., UNIT: HIGH PRESSURE BOILER PLANT. TIRUCHIRAPALLI-620014. 365-121	DRN	V.BAIRAVAN	SIGN	DATE	NO.OF VAR.
	CHD	S.SATHEES		12.02.16	
	APPD	K.RAJASEKARAN		12.02.16	

DEPT	VL	SCALE	WEIGHT (KG).	REFERENCE INFORMATIONS	NO. OF ITEMS
CODE	320	N T S	6920		
TITLE	BODY		CARD CODE	DRAWING NO.	REV
FORGING	22"/3500 CLASS SPL		U 01	3-V-0000-31070P	

REV	DATE	ALTERED
		CHD & APPD

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.

Techno-commercial Bid Format

SI NO	Material	Description	Drg Num.	Unit Wt (Kg)	QTY	Quoted / Not Quoted
1	921537360000	BODY_F91_GV_3_3500	2VV69218344P	117.00	30	
2	921537570000	BODY_F91_GV_10_3000SPL	3VV70831061P	949.70	36	
3	921537580000	BODY_F91_GV_8_2900SPL	3VV70931062P	554.12	15	
4	921537590000	BODY_F91_GV_4_2850	3VWD2731063P	138.80	90	
5	921537660000	BODY_F91_GLV_6_3500SPL	3VG39131077P	418.00	165	
6	921537660000	BODY_F91_GLV_3_3500SPL	3VR67331078P	116.00	144	
7	921537760000	BODY_F91_GV_10_3500SPL	3VV69831084P	1,094.00	30	
8	921537780000	BODY_F91_NRV_3_3500SPL	3VLD2631086P	115.00	45	
9	921537930000	BODY_F91_NRV_6_3500SPL	3VLD2831093P	434.00	30	
10	921534420000	BODY 22"-3000SPL F91	3VWC3321831P/01	6,953.00	26	
11	921534770000	BODY_SA105_GV_4_1500SPL	2VWC4718148P	60.00	45	
12	921534950000	BODY_SA105_GV_6_1500SPL	2VV62718151P	144.00	126	
13	921537550000	BODY_SA105_GV_16_2500SPL	3VV70631060P	2,203.20	36	
14	921537620000	BODY_F92_GV_22_3500SPL	3VWD2931070P	6,920.00	10	
15	921537670000	BODY_F92_GLV_3_3500SPL	3VR67431078P	116.00	10	

Applicable taxes and duties if any to be indicated below (for indigenous vendors)

Priced Bid Format

SI NO	Material	Description	Drg Num.	Unit Wt (Kg)	QTY	Unit Price (FOR BHEL Trichy / CFR Chennai Sea Port)	
						In Figures	In Words
1	921537360000	BODY_F91_GV_3_3500	2VV69218344P	117.00	30		
2	921537570000	BODY_F91_GV_10_3000SPL	3VV70831061P	949.70	36		
3	921537580000	BODY_F91_GV_8_2900SPL	3VV70931062P	554.12	15		
4	921537590000	BODY_F91_GV_4_2850	3VWD2731063P	138.80	90		
5	921537660000	BODY_F91_GLV_6_3500SPL	3VG39131077P	418.00	165		
6	921537660000	BODY_F91_GLV_3_3500SPL	3VR67331078P	116.00	144		
7	921537760000	BODY_F91_GV_10_3500SPL	3VV69831084P	1,094.00	30		
8	921537780000	BODY_F91_NRV_3_3500SPL	3VLD2631086P	115.00	45		
9	921537930000	BODY_F91_NRV_6_3500SPL	3VLD2831093P	434.00	30		
10	921534420000	BODY 22"-3000SPL F91	3VWC3321831P/01	6,953.00	26		
11	921534770000	BODY_SA105_GV_4_1500SPL	2VWC4718148P	60.00	45		
12	921534950000	BODY_SA105_GV_6_1500SPL	2VV62718151P	144.00	126		
13	921537550000	BODY_SA105_GV_16_2500SPL	3VV70631060P	2,203.20	36		
14	921537620000	BODY_F92_GV_22_3500SPL	3VWD2931070P	6,920.00	10		
15	921537670000	BODY_F92_GLV_3_3500SPL	3VR67431078P	116.00	10		

Fax : 011-2306 2626



संख्या /No. 20/29/2009 -Boilers

भारत सरकार

वाणिज्य और उद्योग मंत्रालय
(औद्योगिक नीति एवं संवर्धन विभाग)
उद्योग भवन, नई दिल्ली - 110107

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY
(DEPTT. OF INDUSTRIAL POLICY & PROMOTION)

UDYOG BHAWAN, NEW DELHI-110107,
दिनांक/ Dated, the 21st October, 2015

To

1. All the members of the Central Boilers Board
2. All the Inspecting Authorities

Subject: List of recognised Inspecting/Competent Authorities, Well Known Steel Makers, Foundries/Forgings units, Tube/Pipe Makers, Material Testing Laboratories and Remnant Life Assessment Organizations under Indian Boiler Regulations as on 16th October, 2015

Sir,

I am to forward herewith a copy each of the list of recognised Inspecting/Competent Authorities, Well Known Steel Makers, Foundries/Forgings units, Tube/Pipe Makers, Material Testing Laboratories and Remnant Life Assessment Organizations under Indian Boiler Regulations, 1950, as on 16th December, 2015 for your reference and record.

Thanking you,

Yours faithfully,

(S. K. Jain)

Development Officer &
Assistant Secretary, Central Boilers Board
Tel. No.011-23063166

Encl: "As above"

INSPECTING AUTHORITIES

(As on 16/10/2015)

Sl. No.	Name of the Authority	Area of Operation
1.	Director of Boilers, Andhra Pradesh	Andhra Pradesh
2.	Chief Inspector of Boilers, Arunachal Pradesh	Arunachal Pradesh
3.	Chief Inspector of Boilers, Assam	Assam
4.	Chief Inspector of Boilers, Bihar	Bihar
5.	Chief Inspector of Boilers, Chhattisgarh	Chhattisgarh
6.	Chief Inspector of Boilers, Daman & Diu and Dadra & Nagar Haveli	Daman & Diu and Dadra & Nagar Haveli
7.	Chief Inspector of Boilers, Delhi	N.C.T.D.
8.	Chief Inspector of Boilers, Goa	Goa
9.	Director of Boilers, Gujarat	Gujarat
10.	Chief Inspector of Boilers, Haryana	Haryana & Chandigarh
11.	Chief Inspector of Boilers, Himachal Pradesh	Himachal Pradesh
12.	Chief Inspector of Boilers, Jharkhand	Jharkhand
13.	Director of Boilers, Karnataka	Karnataka
14.	Director of Boilers, Kerala	Kerala
15.	Director of Boilers, Madhya Pradesh	Madhya Pradesh
16.	Director of Boilers, Maharashtra	Maharashtra
17.	Chief Inspector of Boilers, Meghalaya	Meghalaya

18.	Chief Inspector of Boilers, Manipur	Manipur
19.	Chief Inspector of Boilers, Mizoram	Mizoram
20.	Chief Inspector of Boilers, Nagaland	Nagaland
21.	Director of Boilers, Odisha	Odisha
22.	Director of Boilers, Punjab	Punjab
23.	Chief Inspector of Boilers, Puducherry	Puducherry
24.	Chief Inspector of Boilers, Rajasthan	Rajasthan
25.	Director of Boilers, Tamil Nadu	Tamil Nadu
26.	Director of Boilers, Telangana	Telangana
27.	Chief Inspector of Boilers, Tripura	Tripura
28.	Director of Boilers, Uttar Pradesh	Uttar Pradesh
29.	Chief Inspector of Boilers, Uttarakhand	Uttarakhand
30.	Chief Inspector of Boilers, West Bengal	West Bengal
31.	M/s Lloyd's Register Asia 63-64, Kalpataru Square, 6 th Floor, Kondivita Lane, Off. Andheri-Kurla Road Mumbai-400059	Whole of India except the State of Jammu & Kashmir
32.	M/s Bureau Veritas(India) Pvt Ltd. Marwah Centre, 6 th Floor Opp Ansa Inds. Estate, K. Marwah Marg Off. Saki-Vihar Road, Andheri (East), Mumbai 400 072	Whole of India except the State of Jammu & Kashmir
33.	M/s ABS Industrial Verification(India) Pvt. Limited 10 th Floor, Lakhani's Centrium, Sector 15, Plot No. 27, CBD Belapur (E), Navi Mumbai 400 614	Whole of India except the State of Jammu & Kashmir

34.	M/s TÜV India Pvt. Limited (TUV Nord Group) 801, Raheja Plaza-I, L.B.S. Marg, Ghatkopar(W), Mumbai-400 086	Whole of India except the State of Jammu & Kashmir
35.	M/s TÜV Nord Systems GmbH Co.KG Langemarckstr 20, 451141 Essen, GERMANY	Europe, Brazil, China, Korea and Thailand
36.	M/s RSA (Formerly Royal & Sun Alliance plc) 17, York Street, Manchester, M2 3RS, United Kingdom	Europe
37.	M/s Japan Inspection Company Limited RBM Higasghi Yaesu Bldg. 10F, No. 2-9, I-Chome, hatchobori, Chou-ku Tokyo, 104-0032, Japan	All countries in Asia except India
38.	M/s S.G.S. Korea Company Ltd. Industrial Division, 50, sinsan-ro 29 beon-gil Saha-gu, Busan, Korea (604-838)	Korea & Japan
39.	M/s Bureau Veritas 67-71, Boulevard du Chateau 92200 Neuilly-sur-Seine, FRANCE	All countries except China, India & Korea
40.	M/s Lloyds Register Verification Ltd. 71, Fenchurch Street London EC 3M, U.K.	All countries except India
41.	M/s Velosi Certification Bureau Ltd. Unit 1 Woodside Business Park Whitley Wood Land Reading, Berkshire, RG2 8LW United Kingdom	Europe, Middle East Countries, China, Malaysia, Singapore & USA
42.	M/s TÜV Rheinland AG Am Grauen Stein, D-51105 Koln Germany	All countries except India
43.	M/s OOO "TekhnoLogicheskieEnergostime" 109, Vezelskay, Belgorod, 308015 Russia	Russia, China, Ukraine, USA & Germany
44.	M/s Engineering Bureau Franke International 55, Amurskaya St., Dnepropetrovsk 49108, Ukraine	Ukraine, Russia, Belarus, China, Uzbekistan, Poland, Belgium, Romania & Czech Republic

45.	M/s ARISE Boiler Inspection & Insurance Insurance Company Risk Retention Group Grand Bay 1,7000 South Edgerton Road Suite 100, Breeksville OH 44141 USA	USA & Canada
46.	M/s Tata Projects Limited Quality Service Division 2 nd Floor, Varun Towers-1, Begumpet Hyderabad 500 016	All countries except India *
47.	M/s TÜV SUD Industries Service GmbH Westendstr, 199 80686 Munich Germany	All countries except India
48.	M/s TÜV Thüringen e.v., Business Division Steam and Pressure Technology Melchendorfer Str. 64 99096 Erfurt, Germany	Europe
49.	M/s SGS-CSTC Standards Technical Services Co. Ltd. 9 th Building No. 69 KangQiao Industrial Park, Block 1159 KangQiao East Road, Pudong District Shanghai-201 319 China	China
50.	M/s Intertek Inspection Services UK Limited (Formerly M/s Moody International Limited) Hayworth House, Market Place Haywards Heath, West Sussex United Kingdom	All countries except India
51.	M/s ABSG Consulting Inc 16855 Northchase Drive Houston, TX 77060 United States of America	All countries except India
52.	M/s Hartford Steam Boiler Inspection and Insurance Company of Connecticut One State Street, 8 th Floor Hartford, CT 06141-0299 U.S.A.	All countries except India
53.	M/s Certification Engineers International Limited D 101-106, First Floor International Technology Centre CBD Belapur Station Complex, Navi Mumbai- 400 614	All countries in Europe, Middle East and China
54.	M/s Det Norske Veritas AS Veritasveien 1, PO Box 300 N-1322, Hovik, Norway	Europe, South & North America and Asia(except India)

55.	M/s SGS-TÜV Saar GmbH Am TUEV 1, D-66280 Sulzbach Germany	Europe
56.	M/s Korean Register of Shipping 36, Myeongji Ocean City 9-ro, Gangseo-gu, Busan, Republic of Korea	All countries in Asia except India

List of Consortium Banks *

Nationalised Banks		Nationalised Banks	
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign banks
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC
15	State Bank of Travancore	29	Kotak Mahindra Bank
16	UCO Bank	30	ICICI
17	Union Bank of India	31	Indusind Bank
18	United Bank of India	32	Yes Bank

* wef 22.03.2016

Annexure K - PRICE VARIATION CLAUSE

Forgings prices shall be revised based on the prices of only four materials: Ferrous scrap, Ferro Moly, & Chromium. Revised rates shall be arrived at by using following formulae:

$$X_n = X_o * 0.45 + X_o * 0.55 * \{(H_n / H_o) * \% \text{ of element} + (F_{mn} / F_{mo}) * \% \text{ of element} + (C_{rn} / C_{ro}) * \% \text{ of element} + (N_{in} / N_{io}) * \% \text{ of element}\}$$

X_o = Base Price – Finalized through Rate contract

X_n = New Price arrived on a particular date

1. SA105

$$X_n = (X_o * 0.45) + X_o * 0.55 * (H_n / H_o)$$

2. SA182 F91 / SA336 F91

$$X_n = (X_o * 0.45) + X_o * 0.55 * \{(H_n / H_o) * 0.903 + (F_{mn} / F_{mo}) * 0.0095 + (C_{rn} / C_{ro}) * 0.0875\}$$

3. SA182 F92

$$X_n = (X_o * 0.45) + X_o * 0.55 * \{(H_n / H_o) * 0.905 + (F_{mn} / F_{mo}) * 0.005 + (C_{rn} / C_{ro}) * 0.09\}$$

- i. H_o = Ferrous scrap price HMS (80-20 mix) taken from the Metal bulletin (Base data at the time of tender Opening)
- ii. H_n = New Average Ferrous scrap price HMS (80-20 mix) taken from the Metal bulletin taken from previous two months
- iii. F_{mo} = Ferro-moly taken from the metal bulletin (Base data at the time of tender Opening)
- iv. F_{mn} = New Average price for Ferro-moly taken from the metal bulletin taken from previous two months
- v. C_{ro} = Chromium taken from the metal bulletin. (Base data at the time of tender Opening)
- vi. C_{rn} = New Average price for Chromium taken from the metal bulletin taken from previous two months

All prices mentioned shall be in Rs./Kg:

The base price will be operated for two months from the date of tender finalization. Subsequently the Price Variation clause will be operated once in two months from the date of finalization of the L1 Rates and purchase orders with revised rate will be released.

INTEGRITY PACT

Between

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

and

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

Preamble

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

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

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

Section 1 – Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

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

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
 - 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved

in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

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

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

Section 4 – Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

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

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

- 6.1 The Bidder(s)/ Contractor(s) undertake(s) to obtain from all subcontractors a commitment consistent with this Integrity Pact and report Compliance to the Principal. This commitment shall be taken only from those sub-contractors whose contract value is more than 20 % of Bidder's/ Contractor's contract value with the Principal. The Bidder(s)/ Contractor(s) shall continue to remain responsible for any default by his Sub-contractor(s).
- 6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- 6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders/ Contractors /Sub-contractors

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

Section 8 –Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- 8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the

Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact begins and shall be binding on and from the submission of bid(s) by bidder(s). It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

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

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal

For & On behalf of the Bidder/ Contractor

(Office Seal)

(Office Seal)

Place-----

Date-----

Witness: _____

Witness: _____

(Name & Address) _____

(Name & Address) _____
