

No. Cap/OT/09

Date: 16/12/09

Subject: Open tender as detailed below:

OPEN TENDER

1. Sealed tenders with the Tender No. and opening date clearly super scribed on the cover are invited for the supply of the following items.
2. Last date for taking tender documents and Opening of tenders is indicated against each tender. Tenders will be received up to 1.45 P.M. on opening date and opened on the same day at 2.00 P.M. in the Tender Room.
3. Intending vendors must remit the tender fee of Rs. 2,000.00 for indigenous supplies (equivalent foreign currency \$ 50.00 / €40.00) from foreign vendors against each tender along with the requisite EMD in the form of bank draft **only (Cheque / Bank Guarantee are not acceptable)** while submitting the tender documents as detailed in “Instruction to Bidders”, after down loading from this web site.
4. BHEL will not be responsible for any type of postal delay / incomplete information from vendor.
5. Other terms and conditions will be as per tender documents

Sl. No.	Tender No.	Description of Equipment	Qty. (Nos.)	Last date to get from BHEL	Opening date
1.	C/4200/9/1863T/2	Portable Ball Identification System	01	27.01.2010	28.01.2010

Gurmit Singh
AGM (PPX-CAP)



BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
FAX NO: 0091 1334 226462/223948
PHONE NO: 0091 1334 285291

Enq. No.:C/4200/9/1863T/2

Date of issue : 16/12/09
Due Date : 28.01.2010

M/S.....

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Sub: Tender Enquiry No. C/4200/9/1863T/2

Dear Sir,

We are pleased to invite your offer in TWO PARTS strictly as per enclosed terms and conditions and instruction to bidders, in sealed covers for the under mentioned equipment / systems.

Sl. No.	Description of Equipment	Qty. (Nos.)	Delivery Required	EMD (Earnest Money Deposit)
1.	Portable Ball Identification System	01	At the earliest	Rs.50000.00(Rs. Fifty Thousand only) or equivalent foreign currency)

Please submit your lowest quotation / offer for the above requirement subject to our terms and conditions. Your offer should reach us on or before the due date by 1.45 PM.

NOTE: The vendor should submit their best price at this stage itself and they will not be allowed to revise the price. Any revision / discount given by vendor subsequently will be ignored.

[Any clarification on technical specifications can be obtained from BHEL before tender opening. Vendors are welcome to have pre-bid meeting with BHEL engineers for better understanding our requirements](#)

Part-1 bids shall be opened of those vendors **ONLY AFTER ENSURING PROOF AVAILIBLITY OF EMD AND TENDER FEE (PLEASE SUBMIT SEPARATE DRAFTS FOR EMD AND TENDER FEE {drawn in favor of BHEL Hardwar} IN ANOTHER ENVELOPE SUPERSCRIBED WITH BOLD LETTERS “EMD & TENDER FEE”)** at 2 PM on the due date in the presence of authorized representatives of the bidders who may like to be present. The authorized representative should bring authority letter from their principals for attending the bid opening.

All Govt. of India / PSU / State Govt. entities / **NSIC registered vendors (if registered for tendered item)** are exempted from submission of EMD.

NSIC registered vendors (if registered for tendered item) are also exempted from submission of tender fee (As per GM MM approval)

Purchase preference will be given to CPSE s as per GOI notification no. DPE/13(12) 2003-Fin. Dated 26th Oct'04

KINDLY READ “INSTRUCTIONS TO BIDDERS” THOROUGHLY. QUOTATION NOT IN ACCORDANCE WITH THE ABOVE INSTRUCTIONS ARE LIABLE TO BE DISQUALIFIED AND IGNORED

Thanking You,
Yours Faithfully,

For & ON BEHALF OF BHEL, HARDWAR

AGM (Capital Purchase)

Instruction to bidders

Clause 1.0 :

The tenders shall be submitted in three parts (part I Techno -Commercial Bid, part II price Bid & part III vendor evaluation form) as described below on or before the due date.

- **The Quotation should be from the Principal / Original Manufacturer, failing which the quotation is likely to be ignored.**
- Any corrections / amendments shall be properly & fully authenticated with signature.

BHEL will deal directly with the manufacturer and no correspondence with the agents will be entertained. The agents will not be permitted to visit / interact with BHEL on behalf of their principals. Subsequently also, no correspondence of any type will be made with any agents (all individuals / companies – representative / adviser / retainer ship basis or claimed to be part time employees for many OEMs / claiming to be channel or business partner for BHEL work / stockist not registered specifically etc. are agents)

The bidders (originals manufacturers) will have to submit ink-signed offer / bid in original directly to BHEL. In case the bid is submitted by fax / email, the bidders shall simultaneously ensure submission of ink-signed original bid to BHEL also in the manner prescribed in this tender. **Unsigned bids shall be ignored.**

However, the suppliers or their authorized person may be allowed to attend the tender opening, if duly authorized by their principals, through a specific letter for a particular enquiry for specific price bid opening on that particular day. General authorization letter is not acceptable.

Clause 1.1 : PART-I (TECHNO-COMMERCIAL BID) shall comprise of following documents:

Following change proposed

- Complete Technical offer
- Catalogue of the Equipment, Complete reference of the past supply of equipment for the same or similar specification giving details of customer with Name of the contact person, Fax no, phone no, E-mail if available.
- Acceptance of commercial terms by vendor as per **Annexure I**.
- Deviation with reference to specification to be laid down on separate sheet.

Cost of deviation is to be submitted along with the price bid essentially, in case vendor withdraws the deviation clauses the same will be considered for final evaluation,

- Copy of price Bid (without prices).
- The rating of the company quoting for this tender from a third party (independent agency) preferably by M/S Dun and Bradstreet should be submitted. (DUN NUMBER). **Compliance of this clause is mandatory in case of foreign supplier, Indigenous suppliers to submit the copy of balance sheets for last three years** in absence of DNB / third agency report.

- Any additional documents (please specify).

Clause 1.2 : PART-II (PRICE BID)

The price Bid (with price) to be submitted with part I, for the complete scope strictly as specified in the price Format attached as Annexure-II.

Prices are to be indicated in both figures and words. Incase of any discrepancy of value the prices quoted in words shall be considered for evaluation and establishing L1 status.

If price bid is not submitted along with the technical bid, the offer will be rejected out rightly.

Clause 1.2.1

- Foreign Suppliers: The prices are to be quoted on C&F Mumbai (Sea) / New Delhi (Air) basis. The bidder who quote on other than C&F Mumbai / New Delhi basis then his offer will be loaded by the

maximum freight, packing & forwarding charges quoted by any other bidder from the same or nearby port, against the enquiry/freight rate available with BHEL. Further non-availability of ship will not be accepted for rescheduling or waiver of penalties.

b) Indigenous suppliers : Vendors to quote rates on FOR destination (BHEL Haridwar) basis. However, the insurance will be arranged by BHEL. Vendor can dispatch good through any Indian Bank Association approved transporters having their branch at Haridwar / destination. For the convenience name and address of transporters approved by IBA and BHEL are posted at website www.bhelhwr.co.in. If any bidder still quotes on other than FOR destination basis, then their offer will be loaded by maximum freight, packing & forwarding charges quoted by any other vendor from the same or nearby station, against the enquiry / freight rate available with BHEL. Further, non-availability of BHEL approved transporter will not be accepted for rescheduling of delivery or waiver of penalties.

c) Insurance during transportation shall be taken care of by BHEL.

d) Applicable sales Tax, Excise duty, service tax, educational cess and any other statutory levy should be indicated separately and clearly in the quotation.

e) The comparison between foreign and indigenous bids shall be done based on the **Total Landed price** basis (FOR Destination).

Clause 1.3 :

Part-III - Supplier Registration/ evaluation form (SRF)

The SRF duly filled up will be assessed for manufacturing capability, quality systems being followed, organizational soundness and financial worthiness

Following is to be added:

Vendor evaluation form can be downloaded from www.bhel.com. BHEL registered vendors (registered with permanent code M, N, S) need not to submit SRF.

For New Vendors, the SRF is to be submitted essentially for the items having value more than Rs. 20 lacs, failing which the offer will not be considered further.

For Vendor registered with T code, VRF is to be submitted essentially along with the offer, failing which the offer will not be considered further.

Clause 2.2 :

PART-I containing techno-commercial part and part-III containing vendor Registration/ evaluation form will be opened on the date and time specified in the covering letter, in the presence of those **vendors**, who wish to attend **the tender opening**.

Following is to be added:

Offer should be complete in all respect (i.e. Part-I, Part-II, Part-III and Part-IV)

Clause 2.3 :

a. BHEL reserves the right to open the price bid (part-II) along with the opening of techno-commercial offer at its option and in that case vendor will be informed accordingly.

b. BHEL reserves the rights to place order for tendered quantity on more than one vendor

Clause 2.3.1:

The part-II price Bid along with supplementary priced bid (if necessary) will be opened at a later date of only those bidders whose techno-commercial bid and financial health has been found acceptable.

BHEL reserves the right to evaluate vendors process capability / quality systems etc by visiting vendor works (if required)

Clause 3.1 :

The following shall be subscribed on the envelopes:

1. PART-I

1. TENDER NO. AND ITEMS DESCRIPTION.
2. DUE DATE FOR OPENING.
3. "TECHNO-COMMERCIAL BID PART-I"

2. PART-II

1. TENDER NO. AND ITEMS DESCRIPTION.
2. DUE DATE FOR OPENING OF PART-I.
- 3."PRICE BID PART-II".

3. PART-III

1. TENDER NO. AND ITEMS DESCRIPTION.
2. DUE DATE FOR OPENING.
3. Vendor evaluation form. Can be downloaded from, www.bhel.com

4. PART-IV

**EMD AND TENDER FEE. : Details of Drafts attached (Amount, No, Bank, Branch, Issue date)
Addition as follows:**

Clause 3.2 :

The part-I, part-II, part-III **and part-IV** shall be individually sealed and super scribed as indicated above and shall be enclosed further in the envelop duly sealed and super scribed as :

"TENDER FOR (ITEM NAME) AGAINST TENDER NO.----- DUE ON -----
-----CONTAINING PART-I, PART-II, **PART-III & PART IV** OF THIS OFFER." Vendor's full name and address should be clearly mentioned on the envelope

Clause 3.3 :

Envelopes not marked as above are liable to be ignored and will not be opened.

Clause No. 4: As per directives of CENTRAL VIGILANCE COMMISSION, GOVERNMENT OF INDIA, One agent can not represent two or more suppliers or quote on their behalf in a particular tender. If so found at any stage, BHEL Hardwar is likely to cancel Enquiries / POs to such suppliers. Further such Indian Agent are likely to be de-listed (Black listed for business from BHEL)

Thanking You,

Yours faithfully,
For & on behalf of BHEL, Hardwar.

AGM (PPX-CAP)

ANNEXURE – I :- ACCEPTANCE OF COMMERCIAL TERMS BY VENDOR

Present Tender document Terms	Vendor's Acceptance
<p>1. Payment terms:</p> <p><u>For indigenous supply :</u> 80% of material cost to be paid against dispatch documents through bank and balance 20% of material cost + E&C and proving charges (all the services provided at BHEL) will be paid after satisfactory erection & Commissioning and submission of PBG of 10% of total order value in BHEL prescribed format from any consortium bank of BHEL and valid for full guarantee period.</p> <p><u>For import supply :</u> 80% of FOB value + 100% sea freight charges to be paid through 1st L/C against dispatch documents through bank and balance 20% of FOB value + E&C and proving charges (all the services provided at BHEL) will be paid after satisfactory erection & Commissioning and submission of PBG of 10% of total order value in BHEL prescribed format from any consortium bank of BHEL and valid for full guarantee period</p>	
<p>Note (for import supply only) :</p> <p>a) 1st L/C for 80% material cost and sea freight charges shall be opened for 3 months i.e. 2 months before dispatch and shall be valid till 1 month after dispatch for negotiation.</p> <p>b) 2nd L/C for 20% of material cost + E&C and proving charges (all the services provided at BHEL) shall be opened before vendor's E&C personnel starts for BHEL Haridwar.</p> <p>c) First LC will be opened after receipt of bank guarantee towards security deposit and clean order acceptance.</p> <p>If above payment terms are not agreed by vendor, loading on vendor's price will be as per following :</p> <p>Payment at the time of dispatch against shipping/dispatch documents (Amount Y):</p>	

Present Tender document Terms	Vendor's Acceptance
<p>"1.5% per month for the amount Y exceeding 80% of contract value i.e. 1.5% of (Y-0.8Z) where Z is the contract value. As such loading of 6% will be done for imported (considering 4 months needed from the date of dispatch to final acceptance of machine/material) and 3% for indigenous items. (considering 2 months from the date of dispatch to final acceptance of machine/material) "</p>	
<p>2. <u>PBG terms</u></p> <p>Performance Bank Guarantee to be submitted on the BHEL prescribed format equal to the value of 10% of the total contract value (Total contract value Includes Total material cost + packing & forwarding + freight + E&C charges) valid for full WARRANTY / GUARANTEE agreed period. This bank guarantee shall have to be submitted before release of last balance payment.</p>	
<p>3 CURRENCY OF PAYMENT: (Euro / Dollar / CHF/ Rs. etc.)</p>	
<p>4 For indigenous supply the currency shall be Indian Rupees</p>	
<p>5. <u>CHARGES FOR SERVICES AT BHEL HARIDWAR :</u> Services to be rendered at BHEL Haridwar like E&C, proving, training to operators, supervising foundation work etc.</p> <p>For Indian Suppliers: It should be quoted in Rupees.</p> <p>For Foreign suppliers: If supervision is being carried out by persons residing in India, it should be quoted in Indian Rupees.</p> <p>These charges are essentially to be indicated separately in price bid. Vendor to confirm</p>	
<p>6 TAXES :</p> <p>All statutory taxes, if any, will be deducted at source & to be borne by the beneficiary. Tax deduction certificate shall be issued at the end of financial year if required.</p>	
<p>7. Security Deposit :</p> <p>Vendor has to submit security equal to the amount of 5% of the total contract value (Total contract value Includes Total material cost + packing & forwarding + freight + E&C charges) in the currency of order within one month of receipt of order in the form of Bank Guarantee in BHEL format from BHEL consortium bank valid up to two months</p>	

Present Tender document Terms	Vendor's Acceptance
<p>beyond shipment.</p> <p>SSI units registered with NSIC for the tendered items are exempted from submission of security deposit up to the monitory limit. However, copy of NSIC certificate to be included in the technical offer.</p>	
<p>8. ORDER ACCEPTANCE : Bank guarantee towards security deposit and order acceptance (ink-signed) will be submitted within 30 days from the date of PO.</p>	
<p>9. Submission of Bank Guarantee :</p> <p>All bank guarantees for security deposit as well as performance bank guarantee should be from one of the BHEL consortium banks (annexure-III) and the bank guarantees should be in the proforma as prescribed by BHEL (annexure-IV). The performance bank guarantee as well as the list of consortium banks is displayed at BHEL web-site www.bhelhwr.co.in however, in case the bank guarantee is not from BHEL consortium banks, then the vendor has to confirm bank guarantee on consortium bank and the bank charges are to be borne by the bidder.</p>	
<p>10. Late delivery penalty Clause (LD): Penalty for late delivery shall be applicable @ 0.5% per week and part thereof subject to a maximum of 10% for total Contract value (Total contract value Includes Total material cost + packing & forwarding + freight + E&C charges) / LOT value (If BHEL accepts delivery in lots). For LD purpose lot value will include proportionate value of material cost + packing & forwarding + freight + E&C charges. If any vendor does not accept the LD @ of 0.5% per week and part thereof subject to a maximum of 5% of total contract / lot value, their offer will be ignored.</p> <p>Vendors accepting LD terms different from the proposed terms of 0.5% maximum 10%, their prices (FOB for imported and ex-factory for indigenous) will be loaded @ %age deviation from BHEL requirement of maximum 10%. If the vendor does not accept the above, their offer is likely to be ignored and technical bid will not be processed.</p> <p>For calculating Late Delivery penalty delivery date shall be considered as per following :</p> <p>1. Indigenous Suppliers:</p> <p>a. Delivery Ex-works:- Date of GR /LR</p> <p>b. Delivery FOR vendor works:- Date of GR/LR</p> <p>c. Delivery FOR Destination:- Date of receipt at</p>	

Present Tender document Terms	Vendor's Acceptance
<p>BHEL Hardwar (if supply is direct to BHEL) or date of GR + one week (if documents are through bank)</p> <p><u>2. Import Supply:</u></p> <p>a. Delivery FOB / FCA port of discharge:- Date of BL/AWB</p> <p>b. Delivery C&F/CPT port of destination:- Date of AWB/BL</p>	

Present Tender document Terms	Vendor's Acceptance
<p>11. Delivery of the equipment:</p> <ul style="list-style-type: none"> • Delivery must essentially be C&F Mumbai Sea port for import and FOR BHEL Haridwar for indigenous. Sea freight charges for import and freight charges for indigenous items must essentially be quoted and indicated separately in price bid. • Categorically indicate time period required for delivery of the equipment. • Firm delivery period for the equipment to be stated w.e.f. date of LOI/ Order. <p>Commissioning & handing over of complete system in weeks.</p>	
<p>12. Settlement of Disputes:</p> <ul style="list-style-type: none"> • Settlement of disputes through arbitration shall be in accordance with Arbitration Rules of Conciliation and Arbitration of the ICC, Paris. The venue of arbitration shall be Delhi. The courts of Delhi shall have exclusive jurisdiction. • For Indigenous Source. The venue of arbitration shall be Haridwar Courts, which will have exclusive jurisdiction. 	
<p>13. Authorization for pre-inspection:</p> <p>BHEL is authorized to pre inspect the material at vendor's works. The material will be dispatched only after getting clearance from BHEL.</p> <p>Indigenous suppliers should give Pre-Dispatch Inspection (PDI) call at least 15 days in advance and foreign suppliers should give PDI call at least 45 days in advance. If supplier fails to give pre-inspection call with in stipulated time, this will not be a reason of penalty waiver or delivery extension.</p> <p>Travel, Lodging & Boarding charges of BHEL inspectors / trainees during pre-inspection and training will be borne by BHEL.</p>	
<p>14. Drawing / data approval :</p> <p>Any drawing / data approval required from BHEL after placement of order Shall be the responsibility of the vendor and any delay on account of the same shall be the responsibility of the vendor and have no bearing on the penalty applicable.</p>	
<p>15. Drawing / design / information use:</p> <p>The vendor will have to give an undertaking that the drawing / design / information enclosed with the enquiry / proposed order will not be</p>	

Present Tender document Terms	Vendor's Acceptance
<p>parted to any other agency and will also not be used for manufacturing for any other customer.</p>	
<p>16. Time period for Foundation /Erection & Commission: Vendor will have to ensure deputation of their people for erection & commissioning or for attending to any complaint during guarantee period within 7 days of intimation. In case of delay BHEL will be within their rights to get the job completed at the risk and cost of the supplier.</p>	
<p>17. 5 Sets of O&M Manual: 5 Sets of Operation & Maintenance Manual shall have to be supplied along with the equipment. Final payment will be released only after receipt of the required documentation.</p>	
<p>18. Training: Vendor shall provide required training to BHEL personnel free of cost.</p>	
<p>19. Purchasing of BOI items: Vendor shall purchase the BOUGHT OUT ITEMS only from vendors of repute and indicate the same to BHEL at the time of approval of GA drawing. BHEL reserves the right to visit / inspect the works of supplier and that of their sub contractors before or after placement of order.</p>	
<p>20. Spares, tooling, jigs and fixtures: The equipment being new, above items shall be needed in bulk at a later stage. However two separate lists of spares, tooling, jigs and fixtures should be sent along with quotation.</p> <ol style="list-style-type: none"> 1. Items which you recommend very necessary to be available along with the equipment. 2. Item which may be required at a later stage. (The price validity of these items should be for a minimum period of two years from the date of commissioning of the equipment). 	
<p>21. Details of Contact person Name, Designation, Department complete postal, E-mail address & Fax no, phone, Mobile no. to be mentioned.</p>	
<p>22. Import Supply: a. Phsyto-sanitary Certificate essential for packages (Wooden) b. Country or origin certificate: Vendor to furnish the country of origin certificate from Chamber of Commerce with dispatch documents.</p>	

Present Tender document Terms	Vendor's Acceptance
23. Validity: Validity of the offer should be 180 days from tender opening date.	
24. Bank Charges: Bank Charges on either side. Or your prices will be loaded suitably	
25. Participation in Reverse Auction: BHEL may decide to process the case through RA (As per Annexure-V attached). Vendors to give their confirmation for participation in Reverse Auction process.	
26. Beneficiary of PO: Please confirm the beneficiary of PO along with the complete address	
27. Foreign Suppliers: Dispatching port & Country to be mentioned essentially	
28. Total weight -- /Gross / Net in Kg, package size essentially should be indicated (if not exact then approximate.)	
29. Bar Chart / Progress Chart of the project execution:- Detailed activity chart will be submitted within 30 days of placement of PO and the progress chart of the project will be submitted monthly.	
<p>30. Risk Purchase Clause: In case of delays in supplies / defective supplies or non-fulfillment of any other terms and conditions given in the Purchase Order the purchaser may cancel the purchase order in full or part thereof, and may also make the purchase of such material from elsewhere / alternative source at the risk and cost of the supplier.</p> <p>Vendor does not agree to above risk purchase clause, their offer is liable to be rejected. In case any vendor accepts risk purchase clause initially and subsequently declines to honour the term in the eventuality of RISK PURCHASE, they may be banned for business with BHEL.</p>	
<p>31. Force Majeure Clause:</p> <p>a. Either party shall be entitled to suspend performance of his obligations under the contract to the extent that such performance is impeded or made unreasonably onerous by any of the following circumstances: fire, war, flood, riots, earthquake etc.</p> <p>b. The party claiming to be affected by force majeure shall notify the other party in writing immediately without delay on the intervention and on the cessation of such circumstances. If force majeure prevents the purchaser from fulfilling his obligations, he shall not be forced to compensate the contractor for expenses.</p> <p>c. Regardless of what might otherwise follow from these general conditions, either party shall be</p>	

Present Tender document Terms	Vendor's Acceptance
entitled to terminate the contract by notice in writing to the other party if performance of the contract remains suspended under Clause Force Majeure for more than 6 months. d. Evidence for this would be "Force Majeure" certificate issued by chamber of commerce of the concerned country.	
Note: Attach separate sheet for additional information if necessary. The above terms & condition supersedes the terms & conditions found contradictory written elsewhere in the tender enquiry	

Following price schedule will replace the earlier price schedule

PRICE SCHEDULE

ANNEXURE-II

For import supply

Description	Price (in foreign currency)
Basic m/c and equipment as per tech. specification covering all features (ex-works) Please attach un-priced copy of your price bid with technical bid. The sequence of price and other details shall be kept same as stated in the specifications.	
Essential Toolings / Consumables (ex-works) – item wise price break-up to be indicated against each clause of technical specification.	
Spares (ex-works) – item wise price break-up to be indicated against each clause of technical specification.	
Total Services at vendors works (training, pre-acceptance etc.) Item wise break-up to be submitted as per technical specification	
Packing & Forwarding charges (FOB Charges)	
Sea freight upto Mumbai Seaport or Air Freight upto New Delhi Airport	
Total C&F cost =	
Total Services including E&C, training etc. at BHEL Haridwar (price break-up to be indicated against corresponding clauses of technical specification)	
Service Tax on Service charges @12.36% or prevailing rate	
Total Service at BHEL =	

For indigenous supply

Description	Price (in Indian rupees)
Basic m/c and equipment as per tech. specification covering all features (ex-works) Please attach un-priced copy of your price bid with technical bid. The sequence of price and other details shall be kept same as stated in the technical specifications.	
Essential Toolings / Consumables / Spares (ex-works) – item wise price break-up to be indicated against each clause of technical specification.	
Spares (ex-works) – item wise price break-up to be indicated against each clause of technical specification.	
Packing charges	
Excise duty : @8.24% or prevailing rate	
CST @2% or prevailing rate	
Forwarding charges	
Freight up to BHEL Haridwar stores	
Total supply cost at BHEL Haridwar =	
Total services including E&C charges & training etc. (price break-up to be indicated against corresponding clauses of technical specification)	
Service Tax @10.3% or prevailing rate	
Total service charges =	

NOTE :

- a) Item wise breakup of the prices shall be **furnished** as per TECH. SPECIFICATION / DISCUSSIONS; ELSE, THE BID IS LIABLE FOR REJECTION.
- b) Bidder to note that total price indicated above shall be considered for evaluation and hence should be complete in all respects for the full scope defined and considering all terms and conditions. Optionals as indicated in specification will not be taken for evaluation.
- c) Any item not included in this price quoted above and shown separately will not be taken cognizance of and shall be ignored while evaluation.
- e) Following details shall be provided in separate Annexure.
 - A) Unit prices for variable items.
 - B) Prices for any other OPTIONAL items.
- f) **Excise duty:** Concession forms requirements etc. to be stated wherever applicable.
- g) Transit insurance shall be arranged by BHEL

NOTE:

1. BHEL will evaluate the technical bids against essential criteria/requirements. BHEL may seek clarifications, if required, from the qualified bidders only. These clarifications will be communicated to the eligible vendors and they will be asked to attend techno-commercial discussions on specified dates. The bidders will be given 15 days notice to come prepared with the required documents/ clarifications. No extension will be given. **The offers of those bidders, who are unable to respond in this time frame, are likely to be ignored.**
2. The vendors found technically acceptable against their original technical offer and subsequent technical discussion BHEL will communicate equivalent scope of supply to the qualified bidders who will be required to submit their supplementary technical bid along with impact in the form of addition and deletion in their price bid in separate sealed envelopes. They will also be required to submit copy of un-priced price bid of these impacts in a 3rd sealed envelope duly super-scribed. **These will be submitted within 15 days.** The technical bid along with un-priced price bid of impact will be opened on the communicated date and no extension in this time will be given.

It is clarified that no correspondence, technical or commercial, other than the above bids is permissible. In case any uncalled for correspondence, technical or commercial, is received, the same will be ignored and entire bid also may be ignored. It is also clarified that no commercial discount will be acceptable.

3. All the bidders whose offers have been accepted by BHEL will be given **notice for opening of their original price bid and supplementary impact.**

Date :

Signature :

Name :

Designation :

Department :

M/s

ANNEXURE-III

LIST OF CONSORTIUM BANK*

1. State Bank of India
2. ABN Amro Bank N.V.
3. Bank of Baroda
4. Canara Bank
5. CITI Bank N. A.

6. Corporation Bank
7. Deutsche Bank
8. HDFC Bank Ltd.
9. The Hongkong and Shanghai Banking Corporation Ltd.
10. ICICI Bank Ltd.
11. IDBI Ltd.
12. Punjab National Bank
13. Standard Chartered Bank
14. State Bank of Travancore
15. State Bank of Hyderabad
16. Syndicate Bank

*** Please check the list of consortium banks on the following web site www.bhelhwr.co.in every time a bank guarantee is executed.**

**ANNEXURE-IV****WAM-28****Proforma for Bank Guarantee**

In consideration of the Bharat Heavy Electrical Limited Siri fort N. Delhi through Division HEEP Hardwar (hereinafter called the Company') having agreed to exempt----- (hereinafter called 'the said Contractor' which term includes 'Suppliers' for the purpose of this Bond) from the demand under the terms and conditions of an Agreement date. ----- Made between -----and ----- for (hereinafter called 'the said Agreement') of Security Deposit for the due fulfillment by the said Contractor of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. --- (Rupees-----only).

1. We, _____ (Indicate the name of the Bank) (hereinafter referred to as 'the Bank') at the request _____ (Contractor (s) do hereby undertake to pay to 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) 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 of conditions contained in the said Agreement or by 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 to the Company any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, _____ (indicate the name of the 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 Bharat Heavy Electrical Limited certifies that the terms and conditions of the said Agreement have been fully and property carried out by the said contractor(s) and accordingly discharged this guarantee. 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.
5. We, _____ (indicate the name of the 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 power 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 to sureties would but for this provision have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).
7. We, _____ (indicate the name of the bank) _____ lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing.

Dated the _____ day of _____

For _____ (indicate the name of the bank) _____

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTIONING

Against this enquiry for the subject item /system with detailed scope of supply as per enquiry specifications, BHEL may resort to “REVERSE AUCTION PROCEDURE” i.e., ON LINE BIDDING ON INTERNET.

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHEL will inform the vendor in writing in case of reverse auction, the details of Service Provider to enable them to contact & get trained.
4. Business rules like event date, time, start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to participate in the event.
6. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
7. Reverse auction will be conducted on scheduled date & time.
8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL’s standard practice.

Pre-Qualification Requirements
For
Portable Automatic Ball Indentation System

- A. Only those vendors who have supplied and commissioned at least 1 Automatic Ball Indentation System in the past 10 years, and, referred machine is presently working satisfactorily for more than one year after commissioning (on the date of opening of tender) should quote. However, if referred machine(s) has been supplied to BHEL then the m/c should be presently working satisfactorily for more than 6 months after commissioning & acceptance (on the date of opening of tender) in BHEL can also quote.
- B. The following information should be submitted by the vendor about companies where similar equipment have been supplied. This is required from all vendors for qualification of their offer:
 - I. Name of customers/ companies where referred machine has been supplied.
 - II. Complete postal address of the customers, name & designation of the contact persons of customers with their phone/FAX and e-mail address
 - III. Month and year of commissioning
 - IV. Type of products tested by the customer
 - V. Complete parameters of the m/c's supplied,.
 - VI. Performance certificate from the customers regarding satisfactory performance of the m/c supplied to them (original certificate) or through e-mail directly from the customer of the vendor.
 - VII. BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect the offer shall be rejected.

Specification for Portable Automatic Ball Indentation System

1. The PABI system shall perform in-situ automatic ball indentation tests on the service exposed components like rotors, casings etc. as well as on small volumes of metals to measure the following mechanical properties
 - i. Yield Strength
 - ii. Strain hardening coefficient (n)
 - iii. Strength Coefficient (K)
 - iv. Ultimate Tensile Strength
 - v. Fracture toughness (K_{JC})
 - vi. Hardness (BHN)
2. Details of the components whose properties are to be determined, i.e. mechanical & physical properties are given in Annex.I. The vendor shall tailor the s/w & h/w to ensure proper correlation (within $\pm 5\%$) between values obtained by conventional testing, and, that by PABI method. Necessary samples of each of the grades mentioned shall be supplied by BHEL (if required). Supplier to indicate the quantity and size of samples required (if required).
3. The system shall consist of a rugged steel frame (single column) with motor, backlash free ball screw nut assembly, load cell, LVDT, tungsten carbide ball indenter, base & suitable clamping arrangement. The system shall be controlled by a notebook computer, and, the entire operation from data acquisition to final result output, except mounting / positioning on the component surface is to be controlled by the computer.
4. The equipment shall be used solely at sites. Therefore, the components of the system (especially the electronics) should be such as to operate continuously at an ambient temperature of 50°C, and the control cabinet (if separate) should have a sealing effectiveness conforming at least to IP 54. The equipment should be rugged enough & tropicalized to withstand wear and tear of site operation without failure. All external cables should be armored type to reduce wear & tear.
5. The mechanical components of the system shall be as under:
 - i. Load cell: Precision type of 5 KN capacity, minimum in tension/compression with 150% safe operational range, non-linearity less than 0.2% FS, complete with signal conditioner.
 - ii. Z axis movement : 15-30 mm
 - iii. X axis movement (to allow shifting of indenter head without un-clamping of m/c) : 10-15 mm
 - iv. LVDT: Ultra precision type with sensitivity 2 microns max.
 - v. Indenter & holder: Precision tungsten carbide balls having diameters between 0.5mm – 1.57 mm. The indenter holder shall consist of a stainless steel rod threaded at one end for mounting to the load cell, with a stainless steel chuck at the other end to hold the indenter.
 - vi. Cables between the instrument & notebook PC should be at least 10 meters in length.
 - vii. Grips / Clamps: These should be suitable for measurements to be carried out on components, whose part drawings are attached in Annex.II. In addition, the equipment should also be capable of holding & testing small specimens of approx. 30x30x30 mm size.
6. The minimum software capabilities of the system shall be as under:
 - i. Full computer control of the system in closed loop operation in load or displacement control mode.
 - ii. User selectable input of test parameters like grade of material being tested, number of cycles, total load, rate of loading/unloading, rate of data acquisition etc.
 - iii. During performance of the test, online plot of load-deflection and how the actual plot matches the experimental plots (generated previously & stored in system) shall be shown.
 - iv. The data analysis shall be offline.
 - v. The analyses shall show:

1. All the mechanical properties (CI.1) evaluated.
2. The number of unloading data and their slopes along with the respective R^2 values.
3. By changing the number of unloading points it should be possible to get the best R^2 fittings.
- vi. Through s/w it should be possible to validate the PABI data with the conventional test data for all the parameters, which have been previously stored in the system.
- vii. It should be possible to store the results obtained in user configurable files in the notebook, which shall be subsequently printed out in the laboratory.
7. The supplier shall provide free s/w upgrades, as & when they become available for a duration of 3 yrs. from the date of commissioning.
8. The supplier should also indicate the charges for characterizing additional samples (other than those given in Annex.II) over a period of 3 yrs.
9. The total equipment shall work off 220V, 50 Hz, AC supply.
10. The notebook computer offered with the equipment shall be of the latest branded industrial type, pre-loaded with MS Win XP & Office 2007, along with a CD/DVD R/W drive. Details to be given along with the offer.
11. The supplier shall commission the equipment, demonstrate the total capability and accuracy of the equipment and train our operators in the usage of the equipment. This training shall be imparted for a minimum of 3 days. The location at which the capability of the system is to be demonstrated may either be in plant or at a site, to be mutually agreed between BHEL & the supplier.
12. Along with the offer supplier shall also quote for the following:
 - i. Tungsten carbide indenters of all sizes..... 4 sets
 - ii. Load cell & conditioner.... 1 no.
 - iii. LVDT with signal conditioner... 2 nos.
 - iv. UPS of suitable capacity for the PABI system & PC.... 1 no.
 - v. Any other components (especially electronic boards) felt necessary by the supplier for 5 years trouble free operation.
13. Along with the equipment the supplier shall provide 3 copies of the operational manual and detailed circuit diagram (where each component is properly identified) of the equipment.
14. Along with the equipment the supplier shall provide a CD/DVD with the software and also a backup copy of the software on CD/DVD.
15. The total equipment shall be guaranteed for satisfactory working for 24 months from date of commissioning.
16. The offer should be accompanied by a comprehensive technical brochure containing the full capabilities of the equipment offered, wherein all the points mentioned above should be addressed to avoid repeated correspondence.

Annexure -I

Chemical Compositions

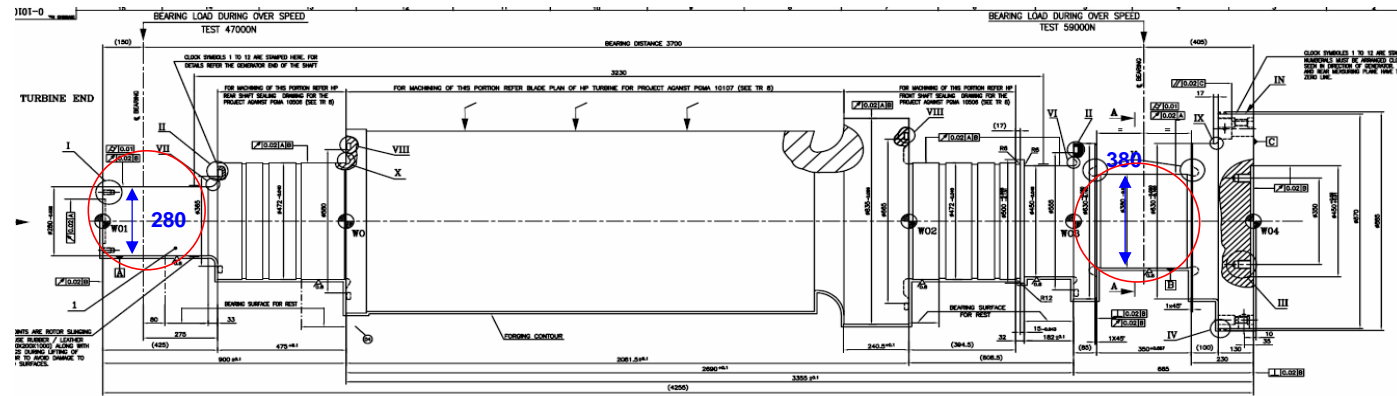
[illegible]

Mechanical Properties

[illegible]

S.NO.	DESCRIPTION	DRG NO. (200 MW)	DRG NO. (500 MW)
1	HP SHAFT	0-10101-01000	0-10101-03000
2	HP SHAFT SEALS (F)	0-10505-01000	0-10505-02000
3	HP SHAFT SEALS (R)	0-10506-01000	0-10506-02000
4	BLADE PLAN OF HPT	9-10107-01000	9-10107-05000
5	I.P. SHAFT	0-10201-01000	0-10201-02000
6	BLADE PLAN IPT	9-10204-01000	9-10204-05000
7	IP SHAFT SEALS	0-10606-01000	0-10606-02000
8	L.P. SHAFT	0-10301-01000	0-10301-02000
9	BLADE PLAN LPT	9-10304-01000	9-10304-02000
10	H.P. CASING (OUTER)	0 1050101500	0-10501-02500
11	H.P. INNER CASING	0-10502-10010	0-10502-02000
12	H.P. INLET INSERT	1 1051410008	0 1051402000
13	H.P. EXHAUST ELBOWS	1 1051510016	0 1051502000
14	I.P. OUTER CASING	0 1060120005	0 1060102000
15	I.P. INNER CASING	0 1060220002	0 1060202000
16	I.P. INLET INSERTS	0 1061201000	0 1061202000
17	LP SHAFT SEALS (F)	0-10710-30014	0-10766-02000
18	LP SHAFT SEALS (R)	0-10710-30018	0-10767-02000
19	LPC INNER CASING (I)	0 1074230006	0 1074202000
20	GUIDE BLADE CARRIER LP IR (TS)	0 1110101000	0 1110105000
21	GUIDE BLADE CARRIER LP IIR(TS)	0 1110201000	0 1110205000
22	GUIDE BLADE CARRIER LPIIR(TS)	0 1110301000	0 1110305000
23	E.S.V. & C.V. CASING	0 1122201000	0 1122202000
24	IV & CV CASING	0 1132101000	0 1132102000

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

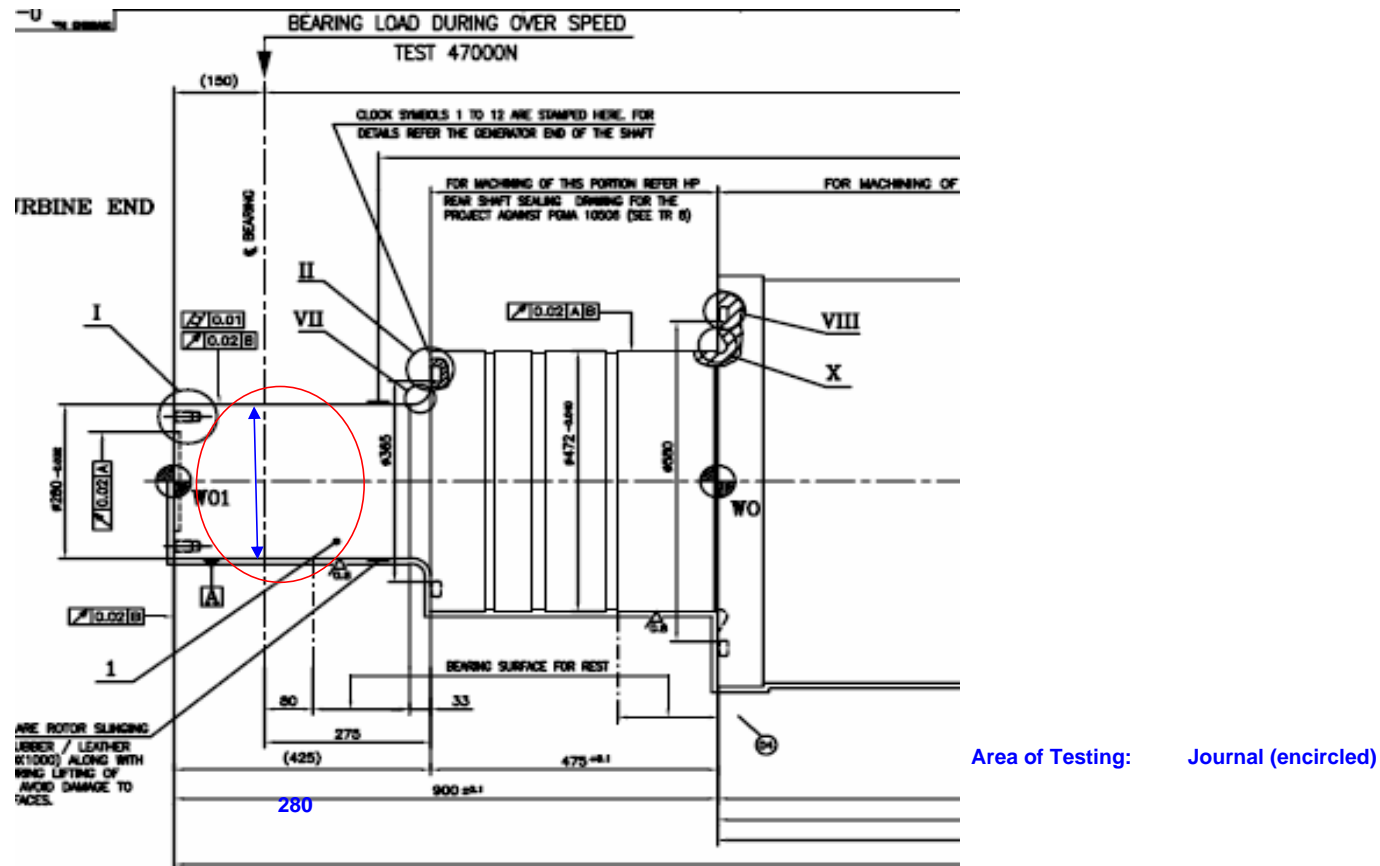


Area of Testing:

Journal (encircled)

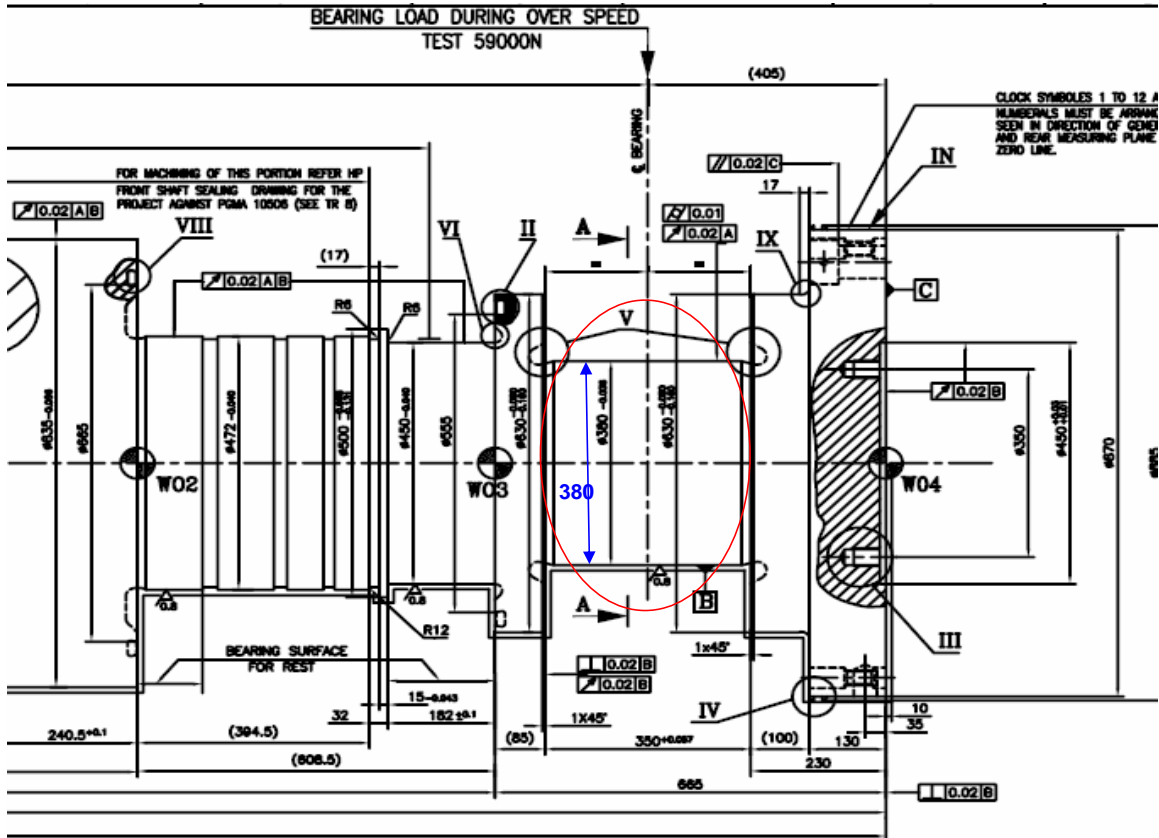
HP SHAFT

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

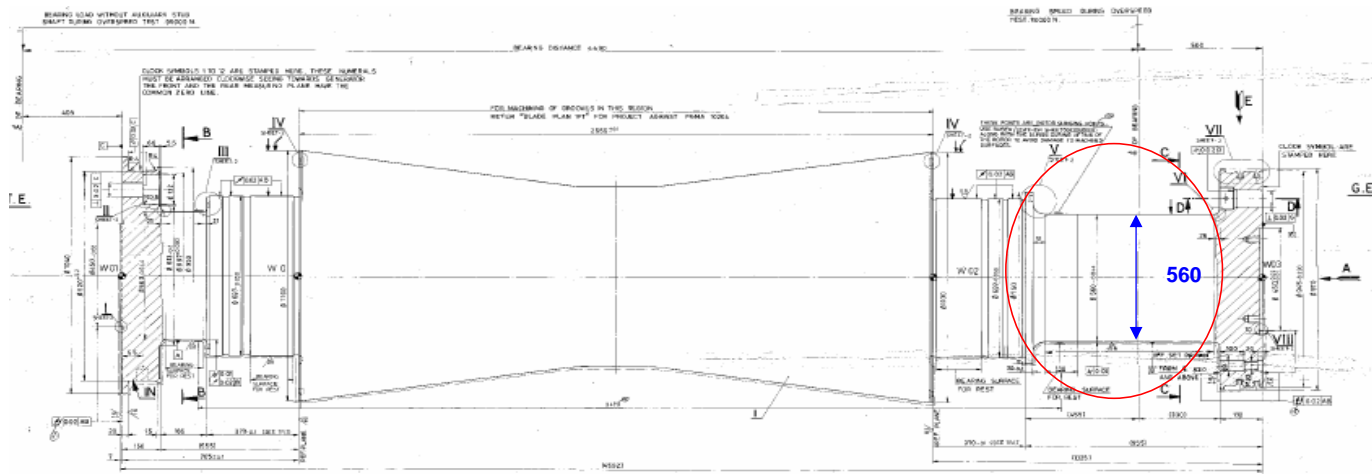
HP SHAFT (FRONT BEARING SIDE)



Area of Testing: **Journal (encircled)**

HP SHAFT (FRONT IP SIDE)

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

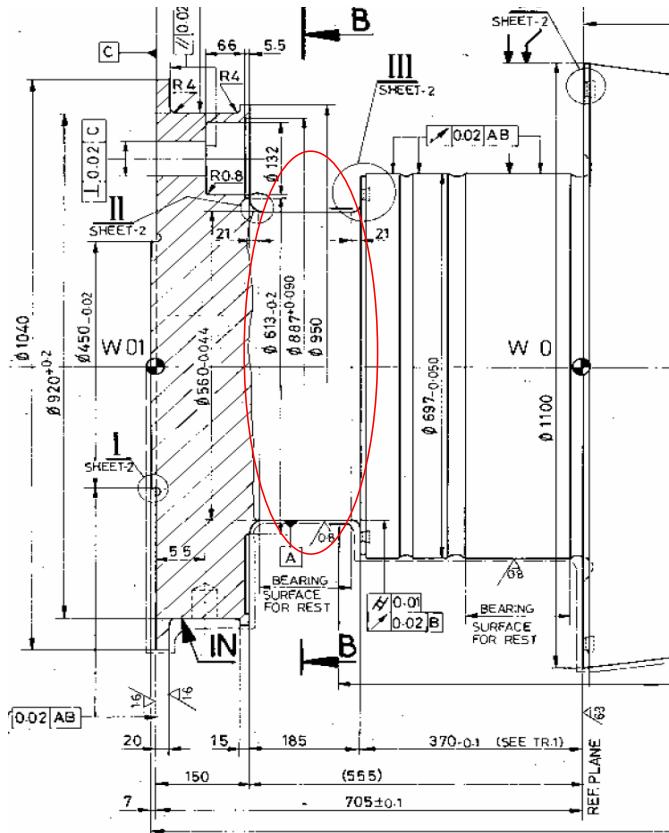


Area of Testing:

Journal (encircled)

IP SHAFT

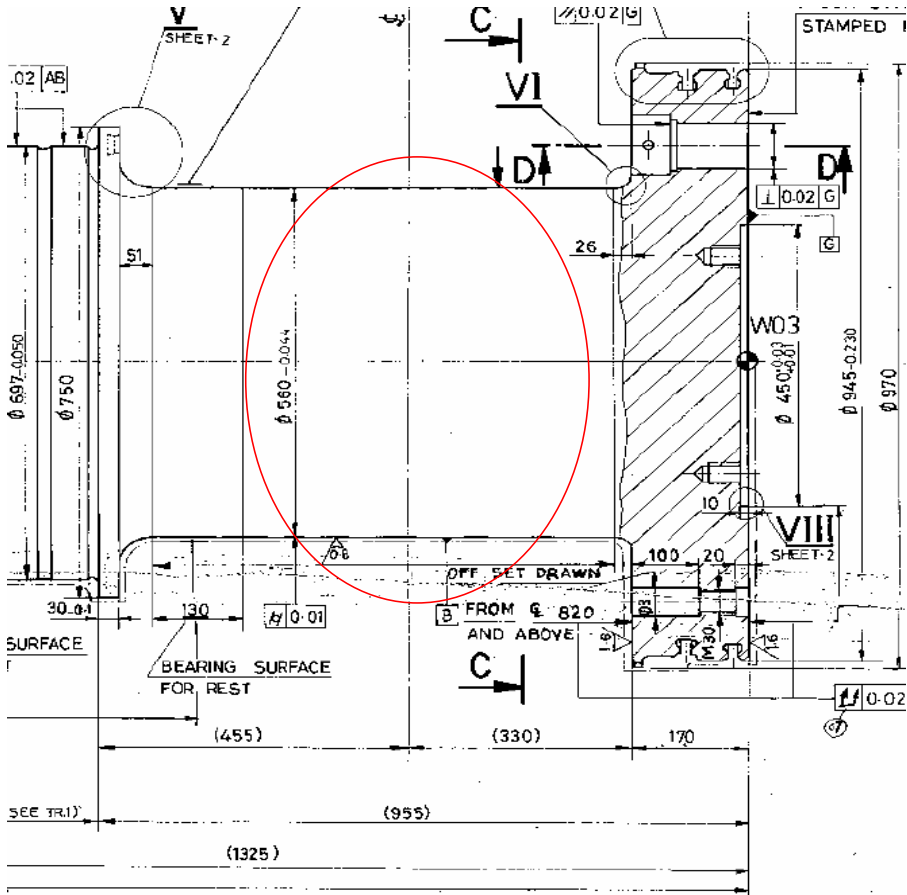
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



Area of Testing: Journal (encircled)

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

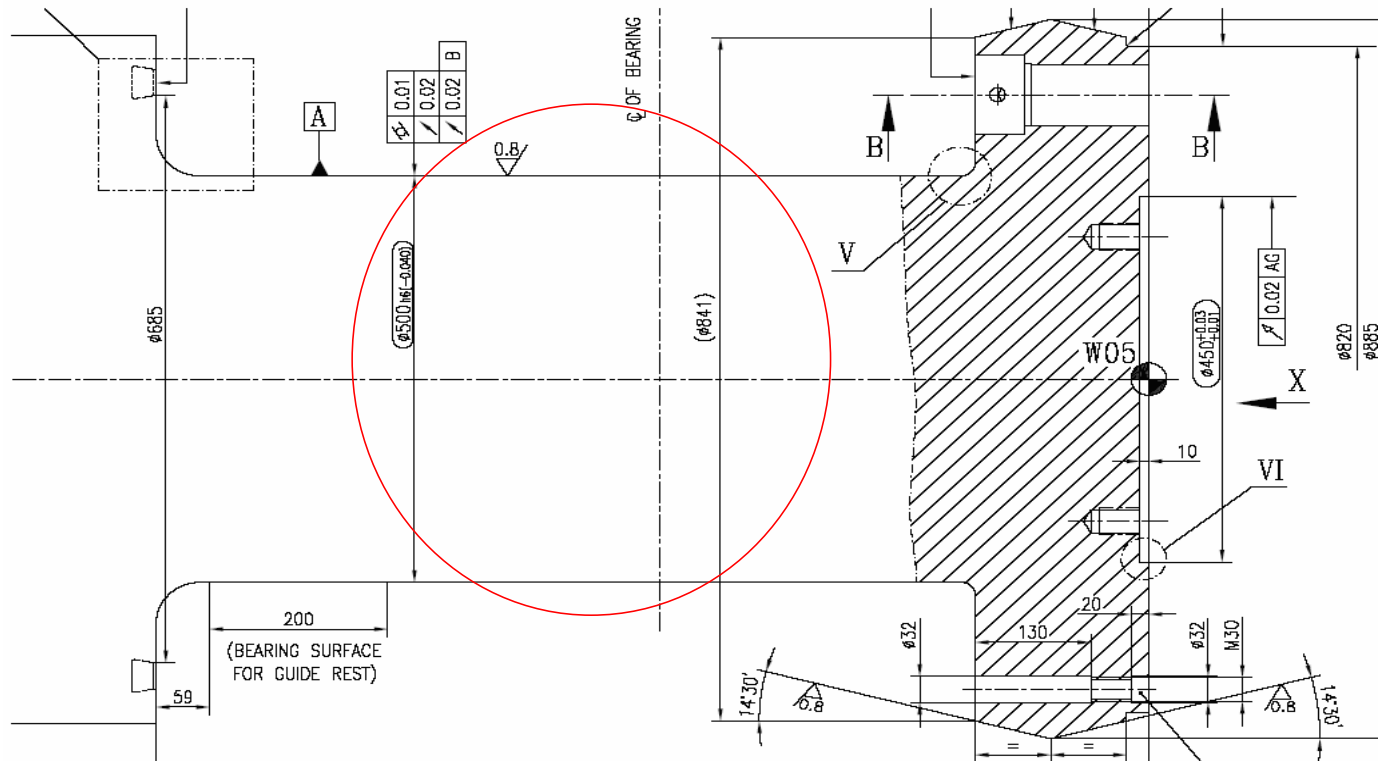
IP SHAFT (HPR SIDE)



Area of Testing: Journal (encircled)

IP ROTOR (LPR SIDE)

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

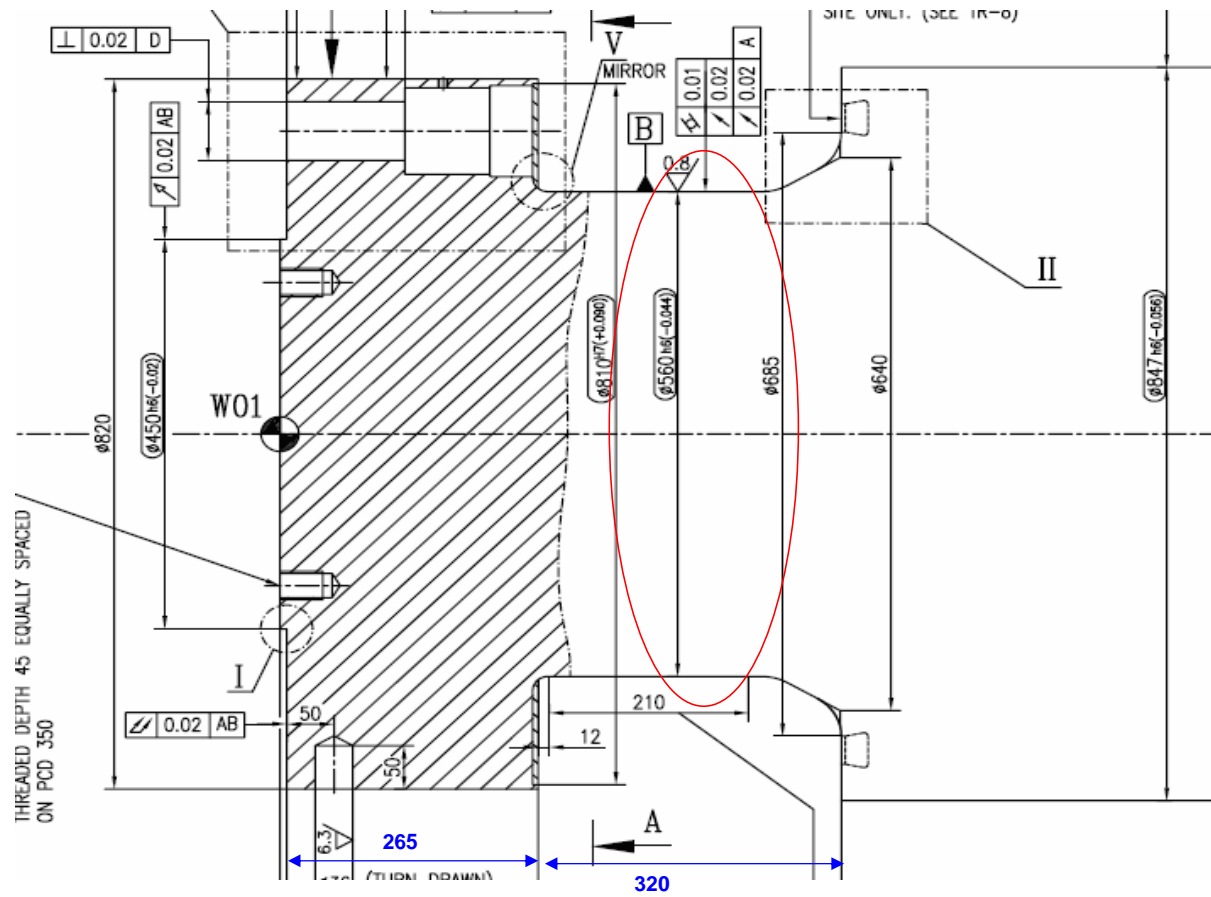


Area of Testing:

Journal (encircled)

LP SHAFT (Gen SIDE)

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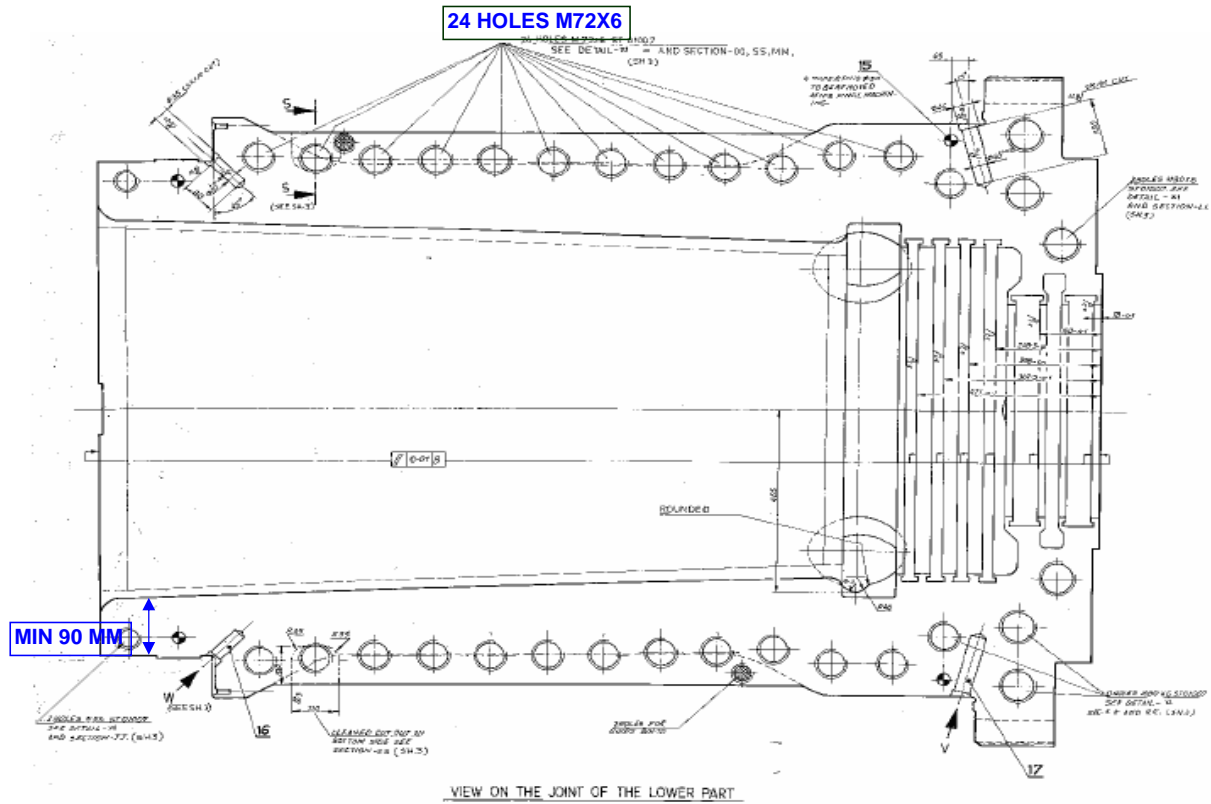


350

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



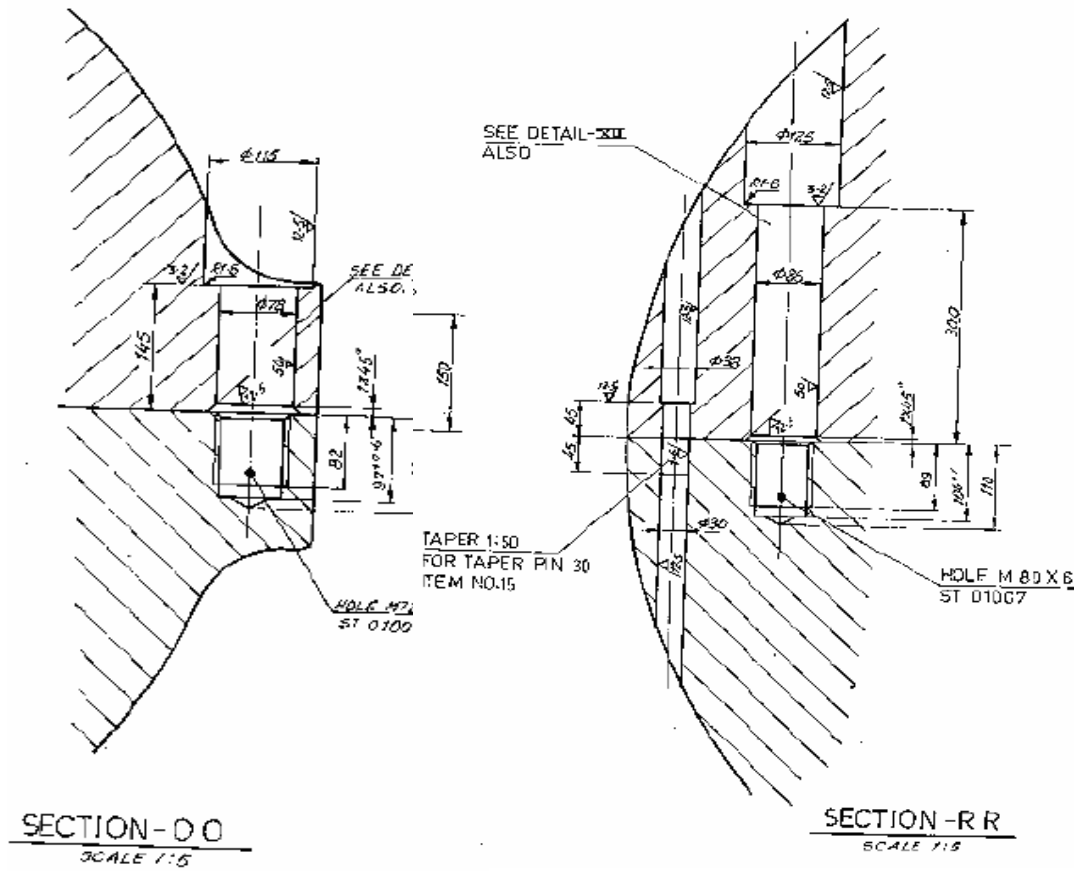
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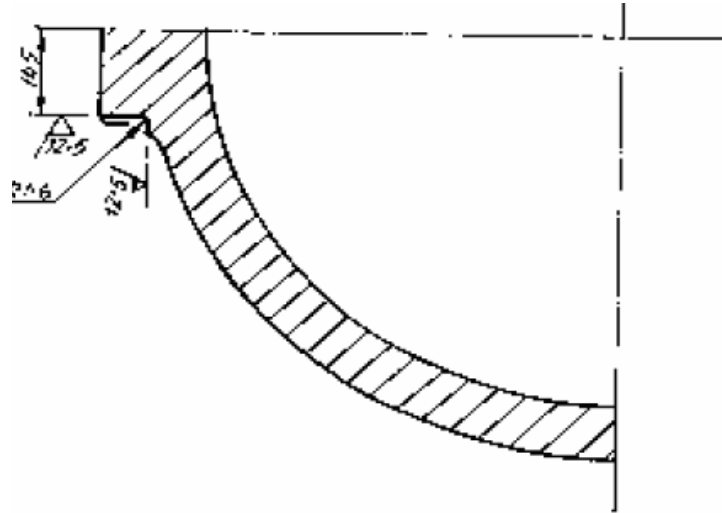
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

Area of Testing: PARTING PLANE (L/H OR U/H)

HP INNER CASING

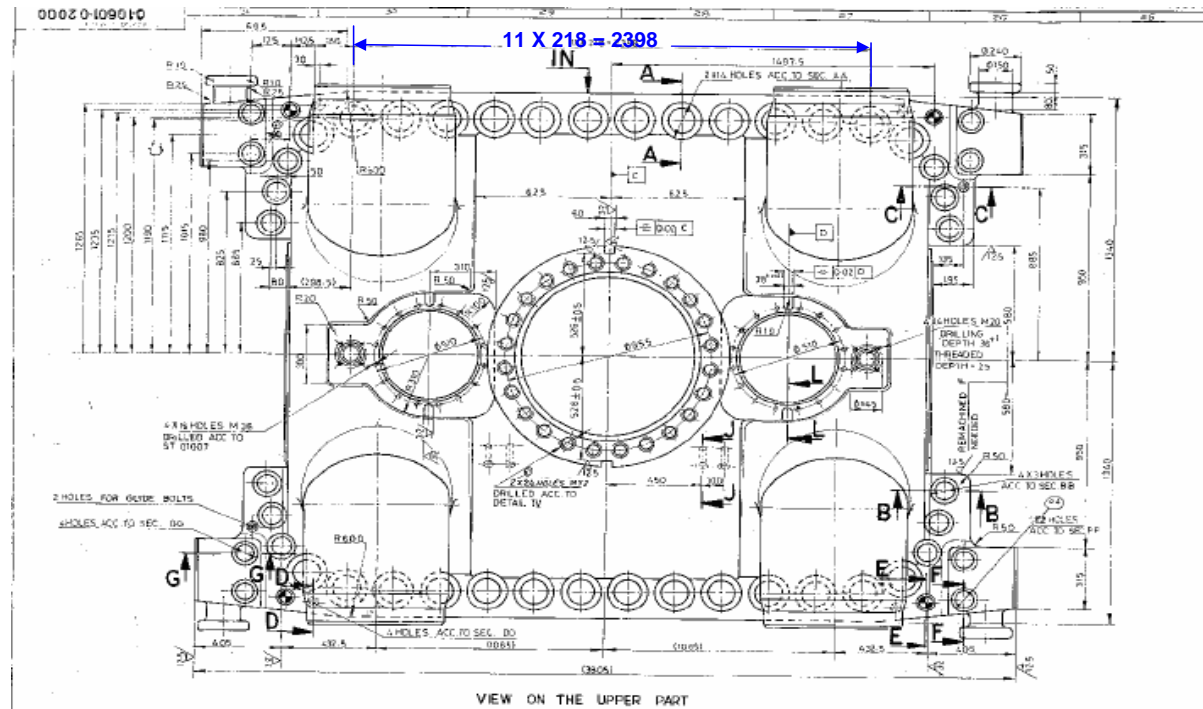


SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



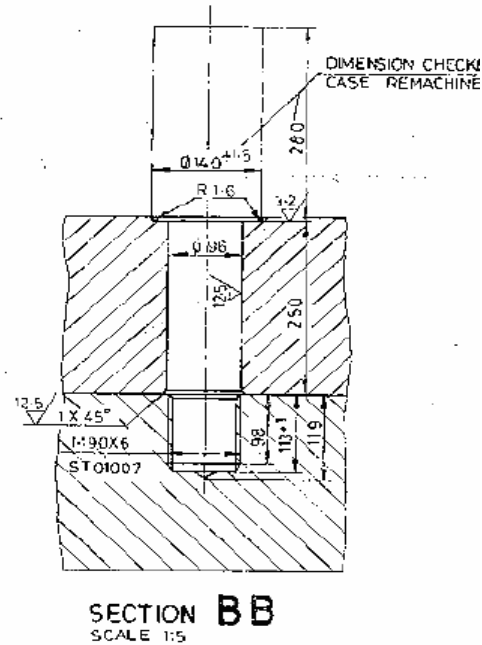
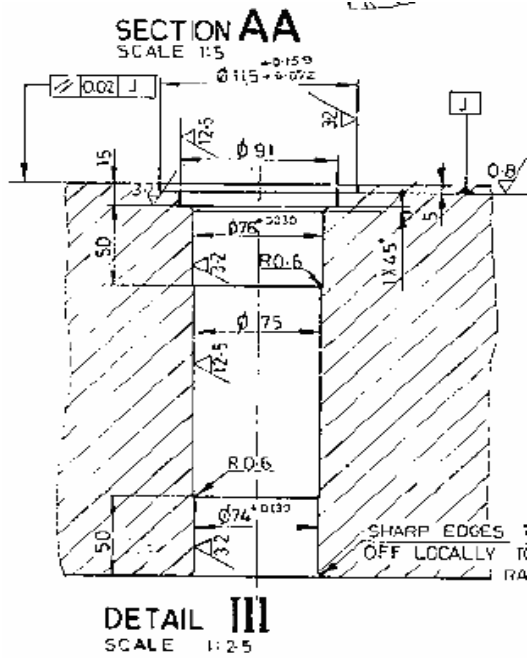
SECTION - S S (FROM SH. 2)
SCALE 1:10

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



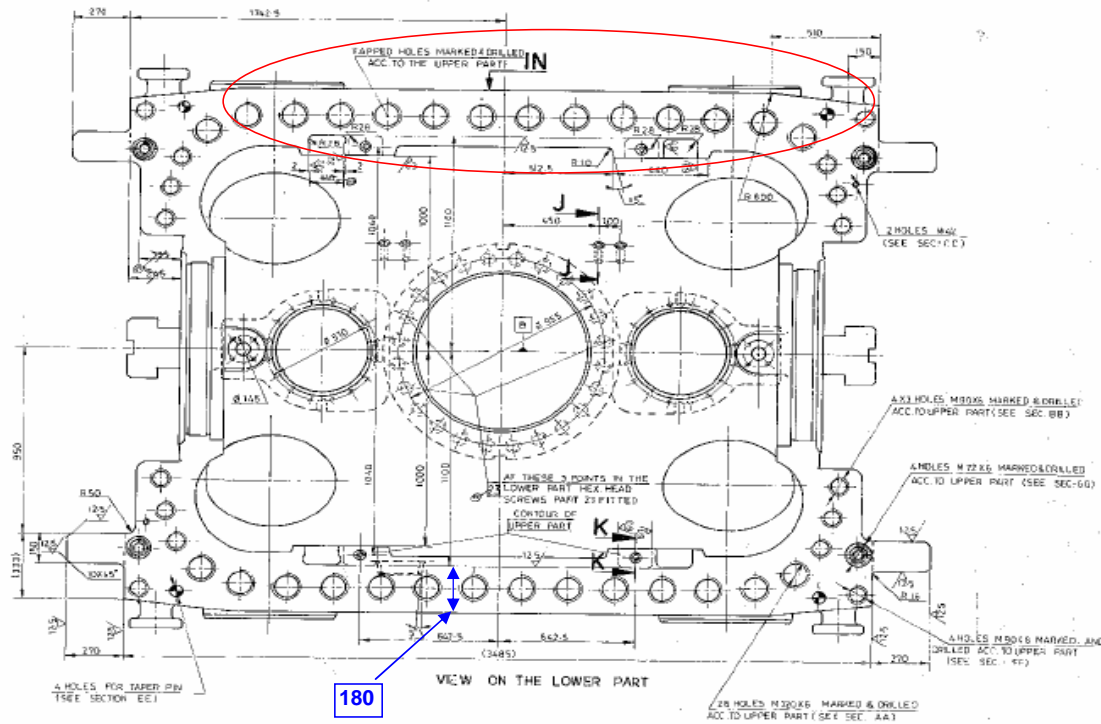
Area of Testing: PARTING PLANE (L/H OR U/H)
IP OUTERCASING

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



Area of Testing: PARTING PLANE (L/H OR U/H)
IP OUTERCASING

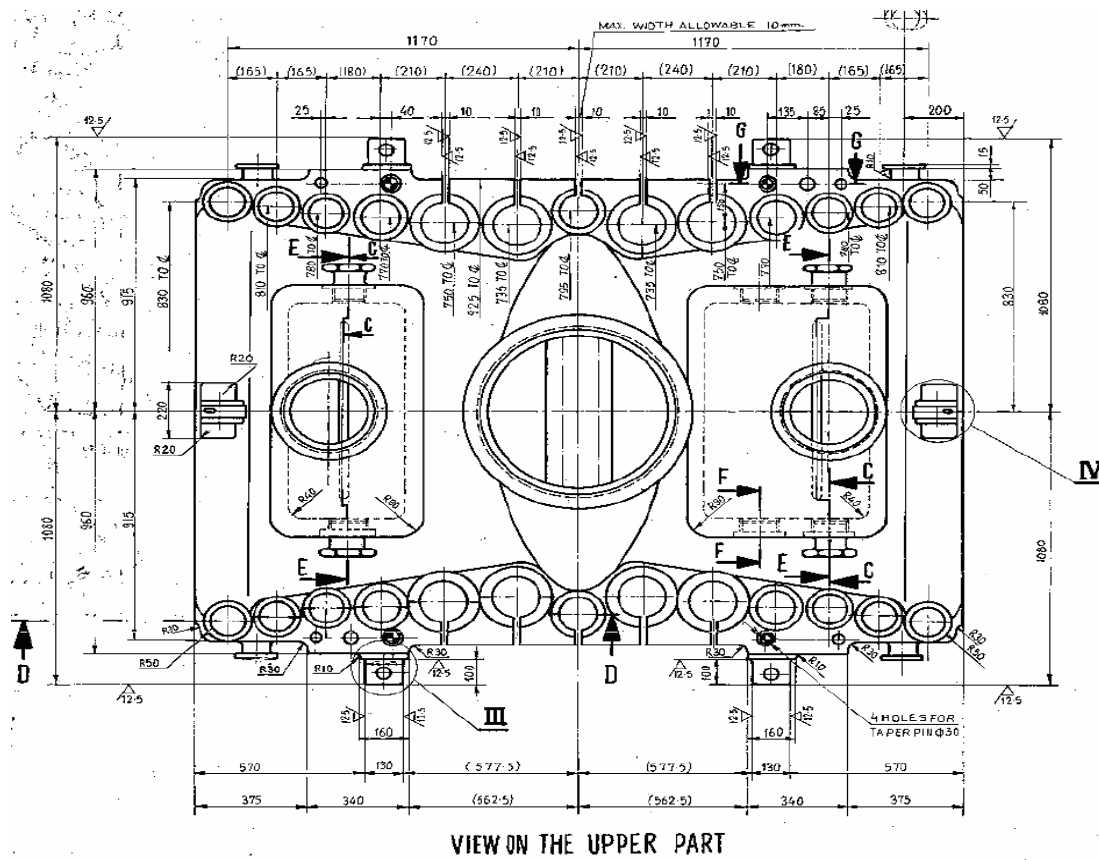
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



Area of Testing: PARTING PLANE (L/H OR U/H)

IP OUTERCASING

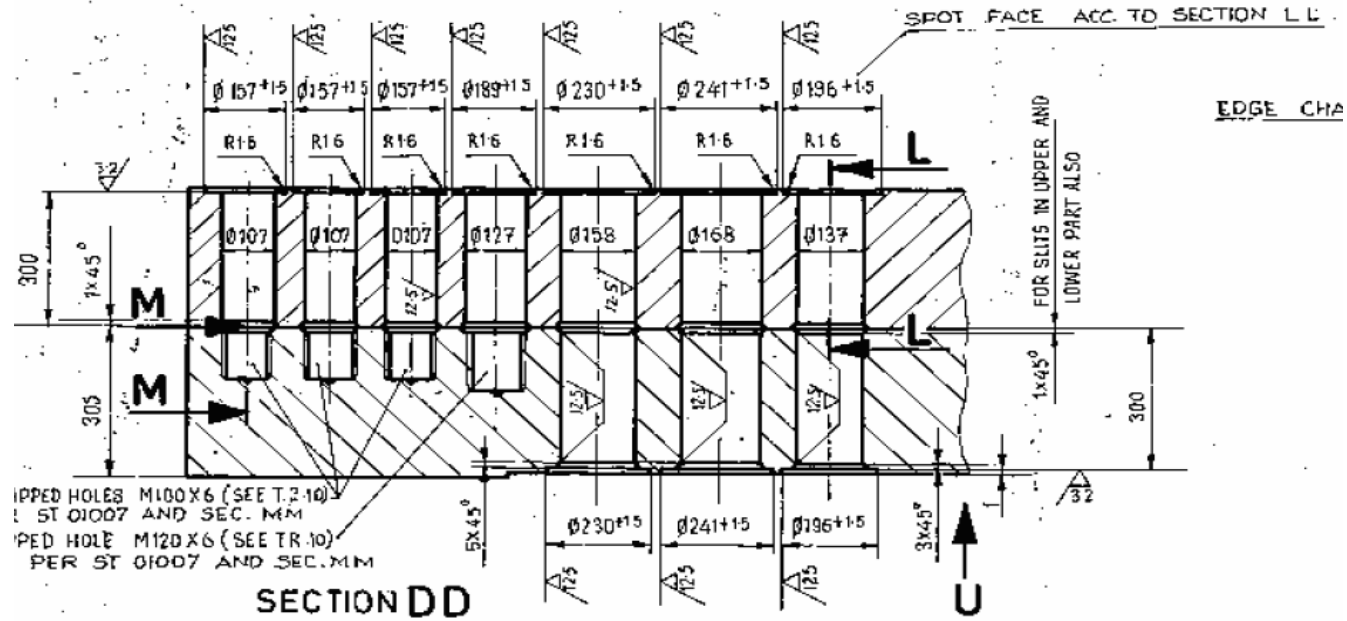
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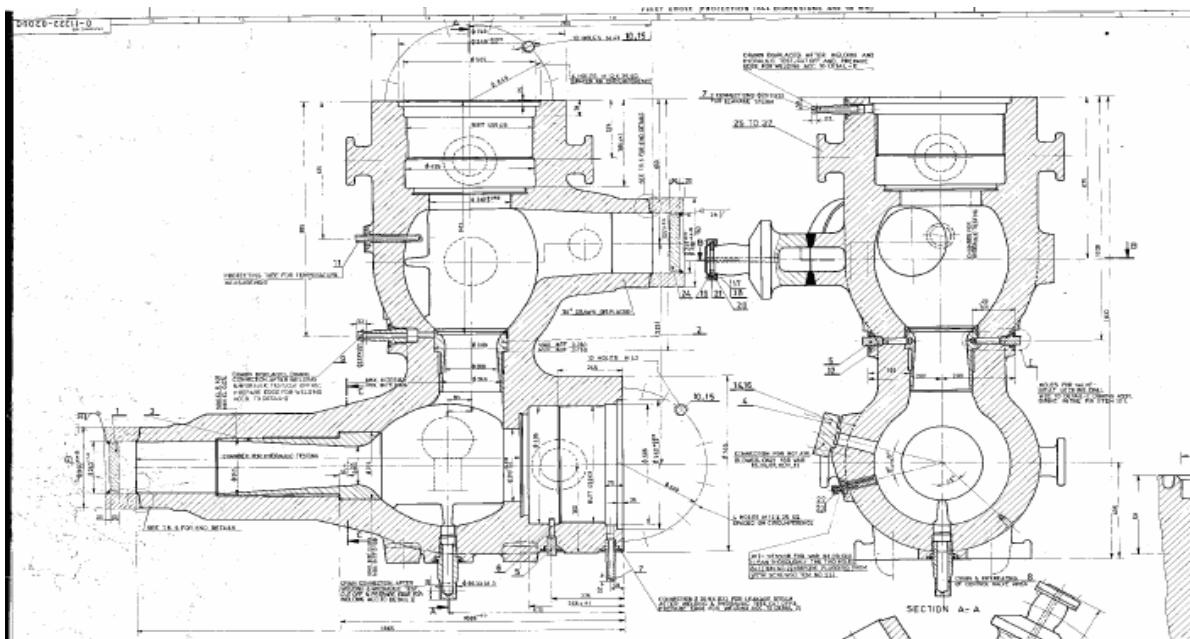
IP INNER CASING

Area of Testing: PARTING PLANE (L/H OR U/H)

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

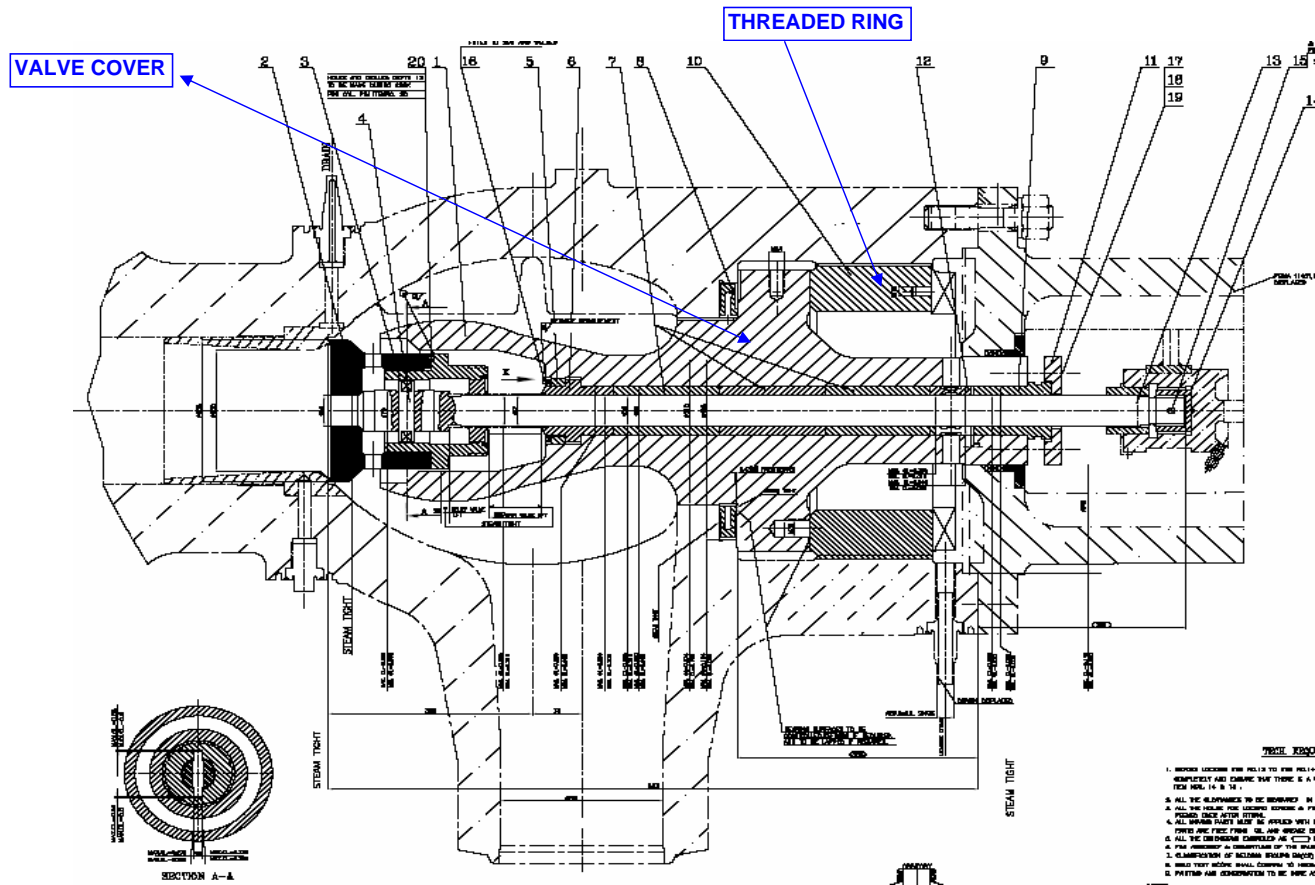


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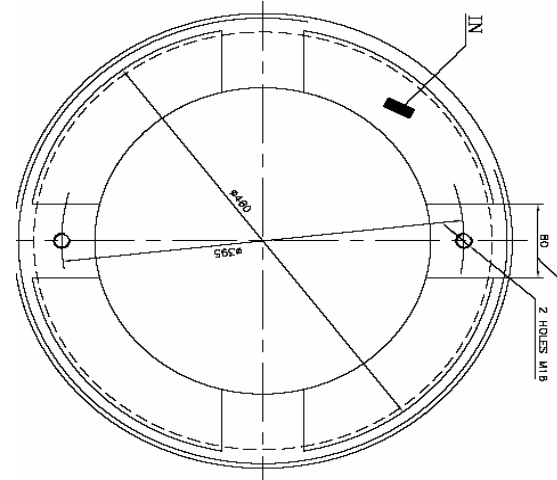
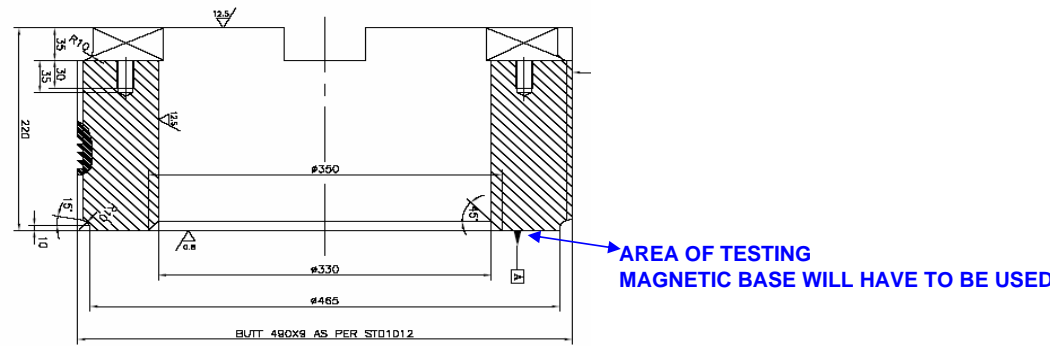
ESV & CV CASING

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



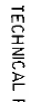
HP CONTROL VALVE

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



THREADED RING OF HP CONTROL VALVE

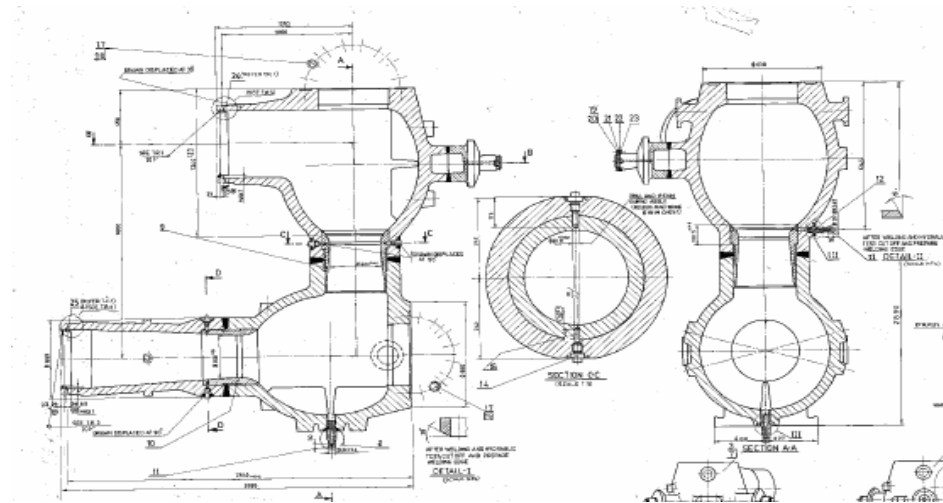
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



22 OF 25; MRL PIR DRGS 23.04.2009.xls; 01/06/2009; 08.01.2009

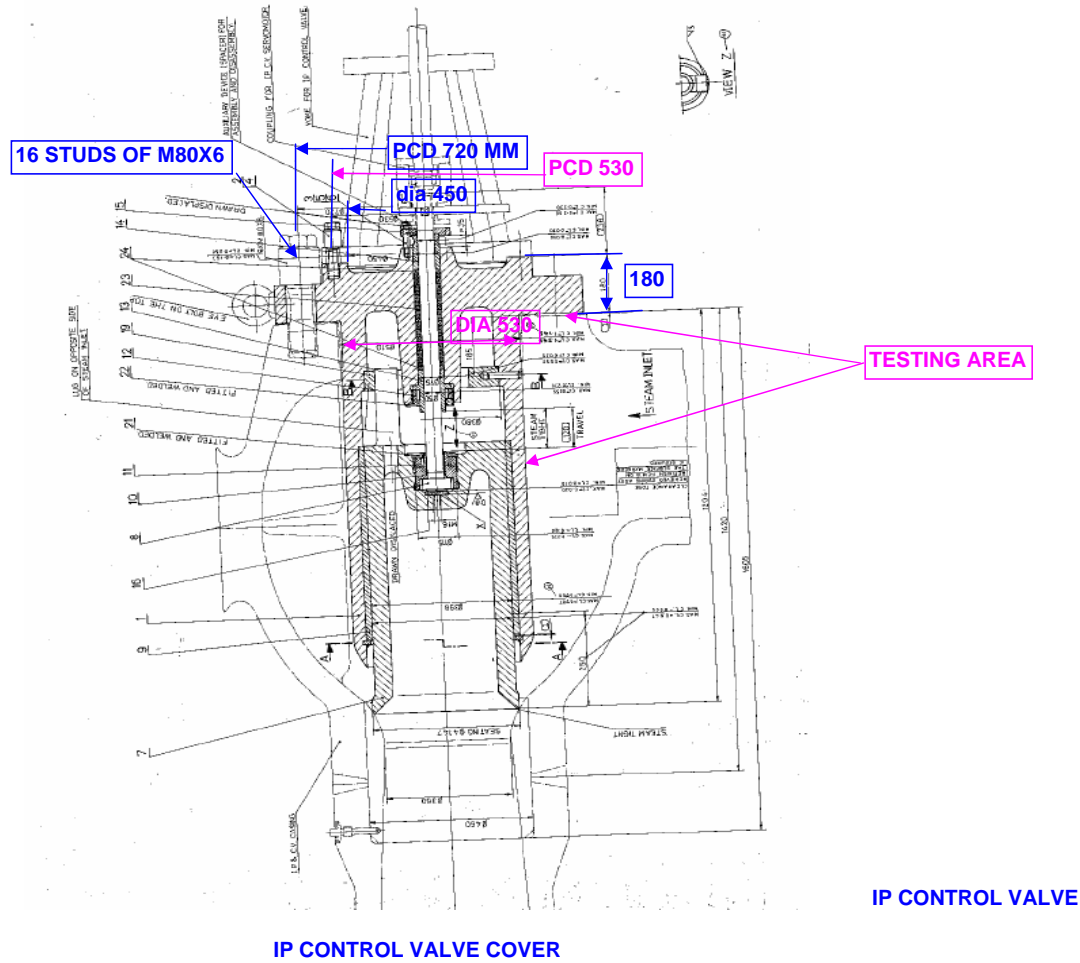


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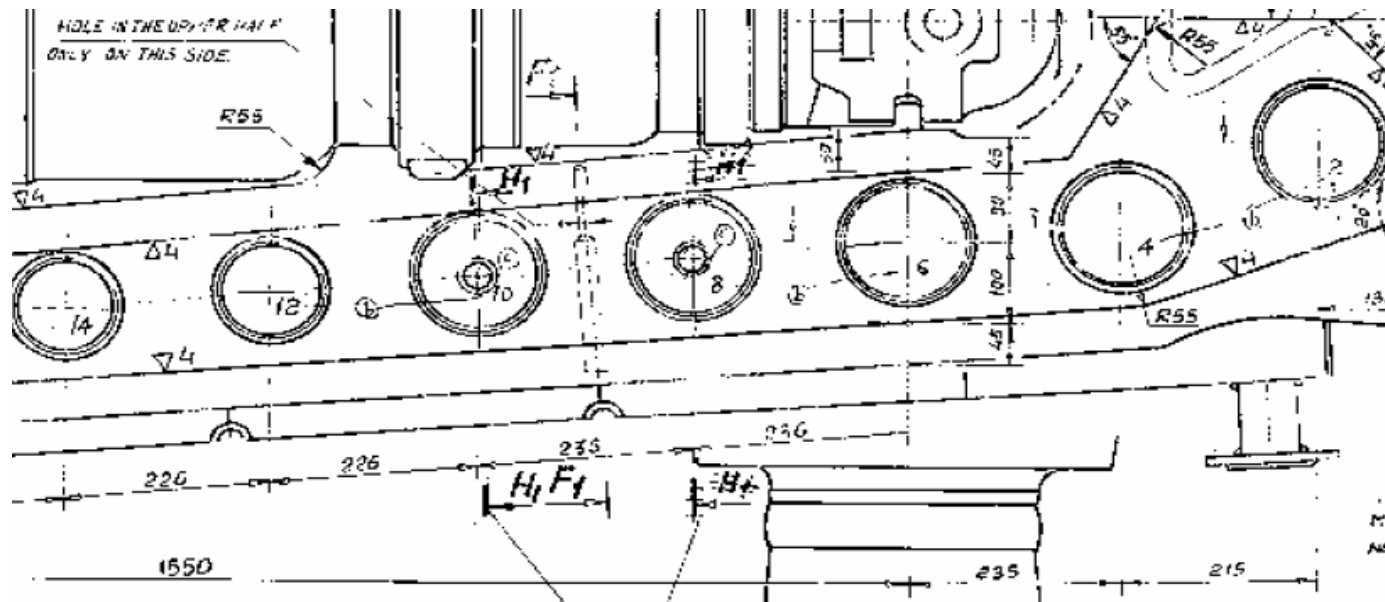
IV & CV CASING

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST



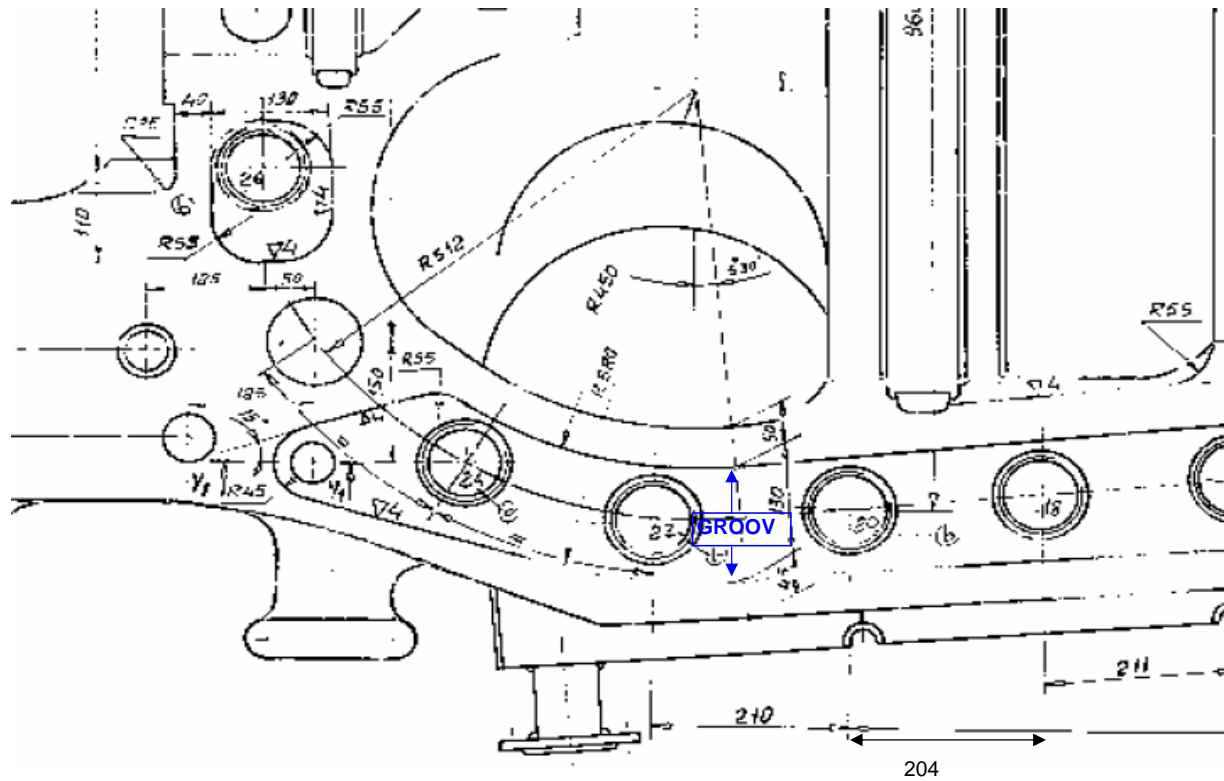
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 500 MW ST

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



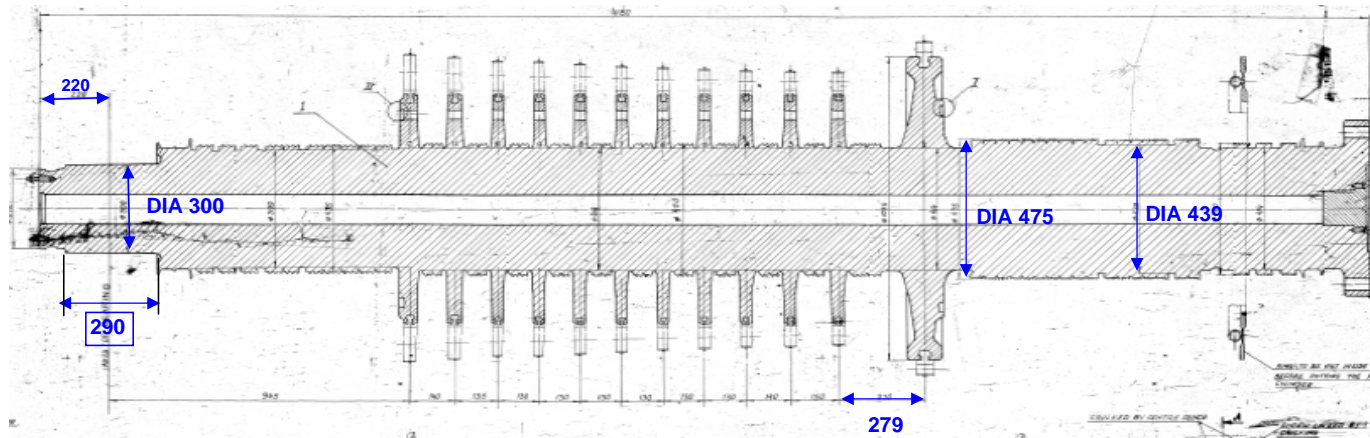
AREA OF TESTING : PARTING PLANE
HP CASING PARTING PLANE (INLET SIDE)

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



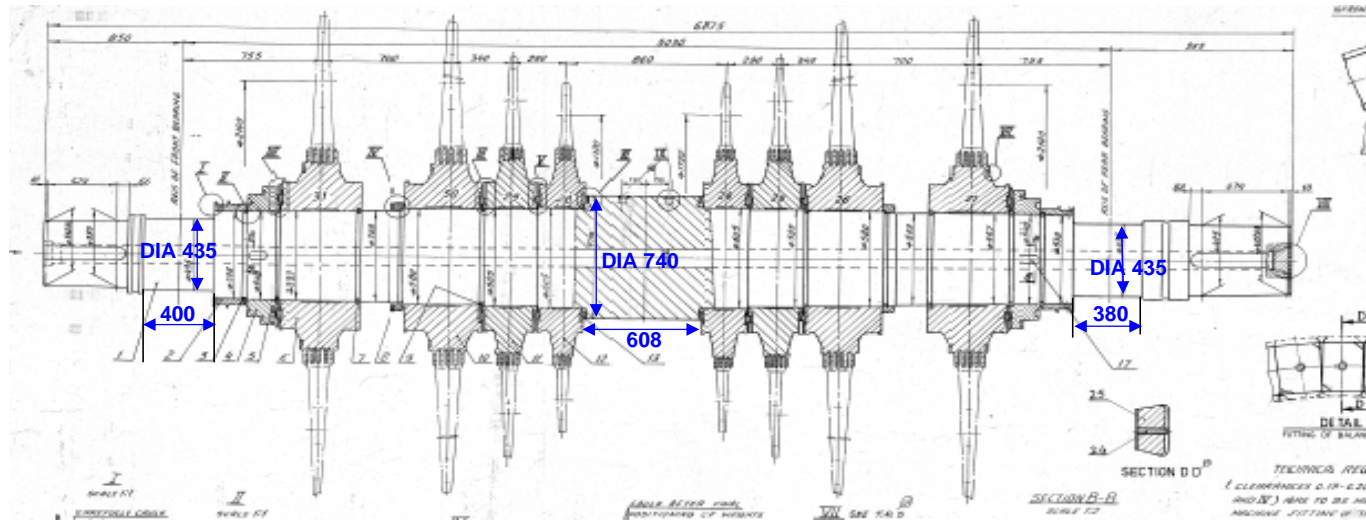
HP CASING PARTING PLANE (EXHAUST SIDE)

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



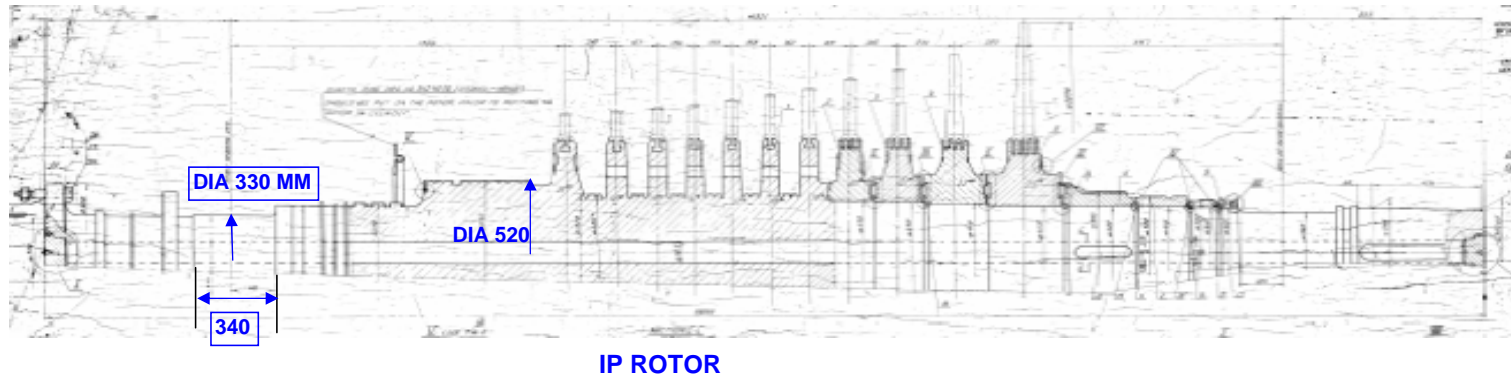
HP ROTOR

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)

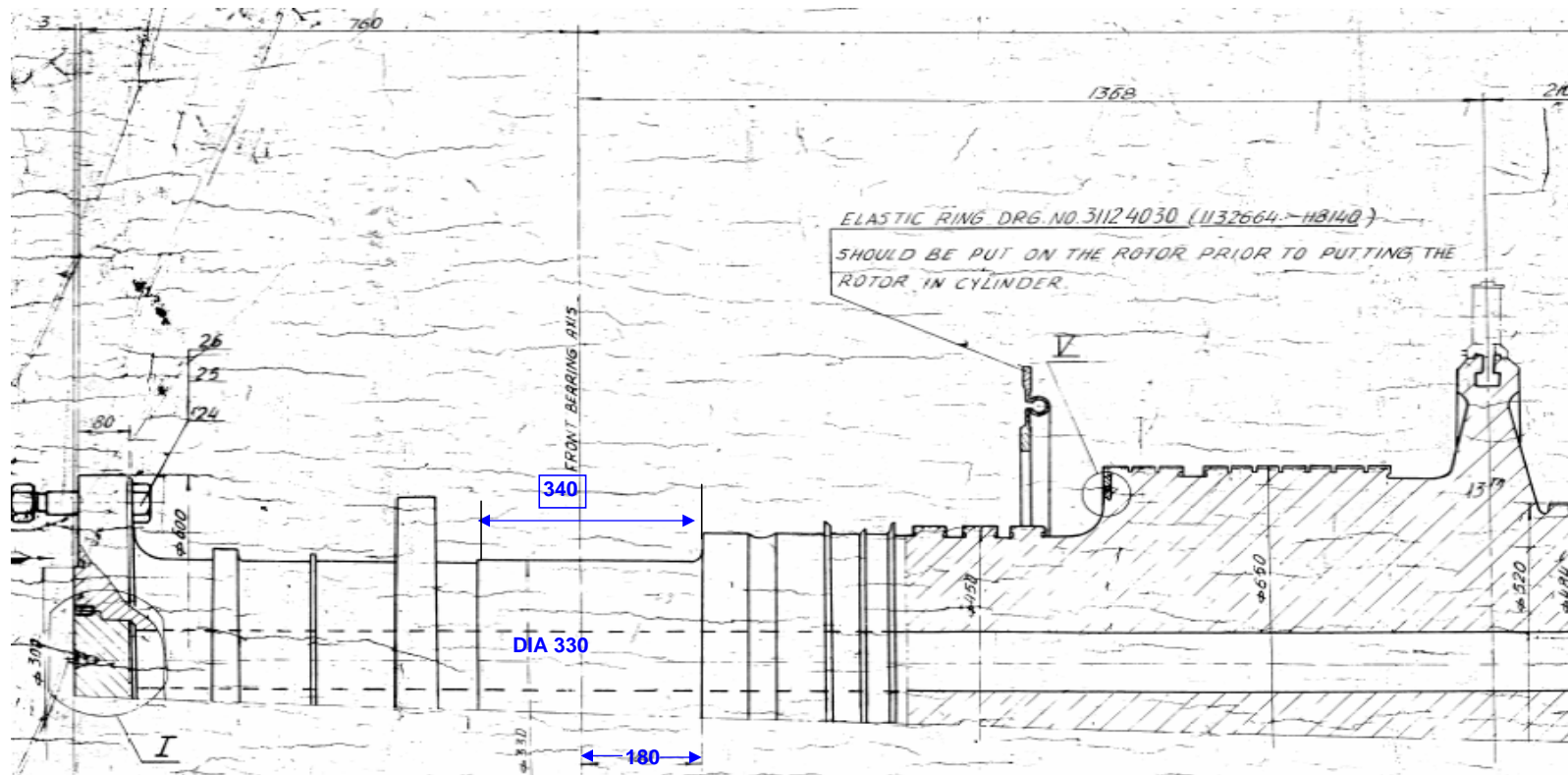


LP ROTOR

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



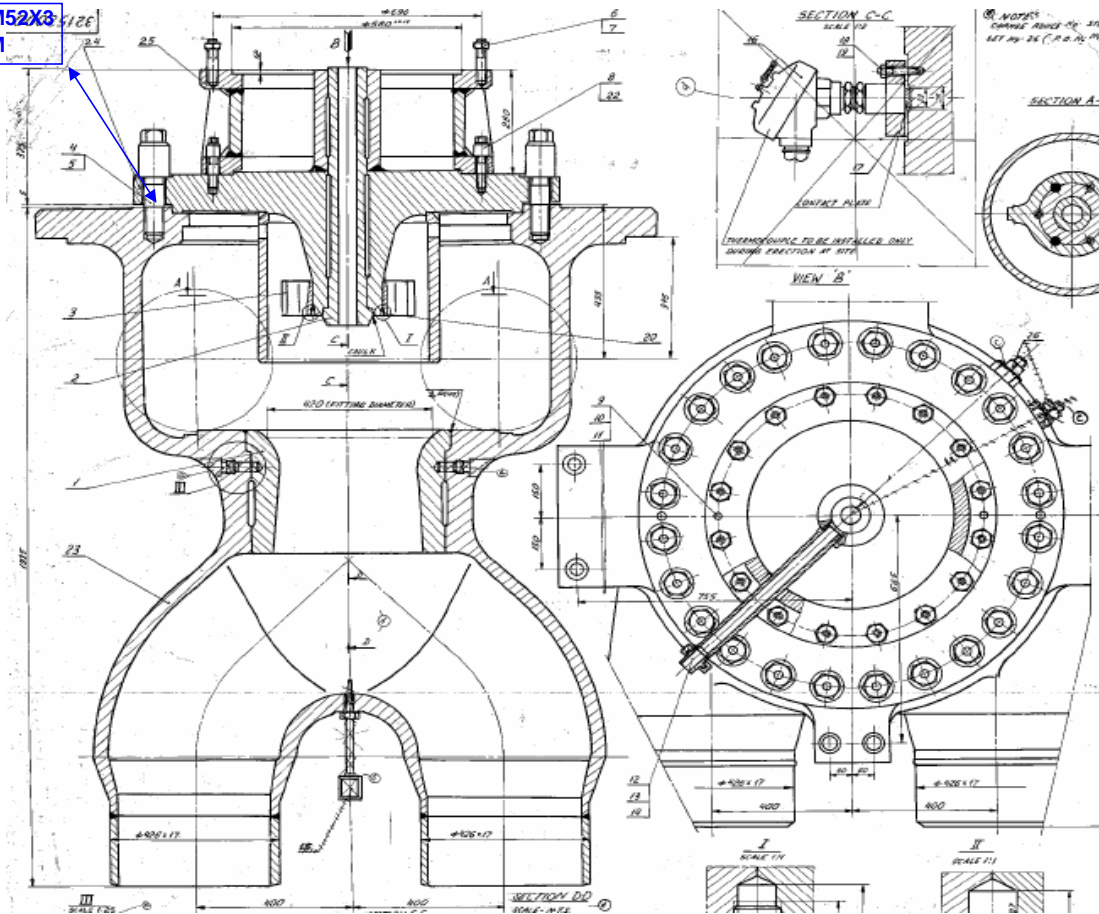
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



IP ROTOR (INLET SIDE)

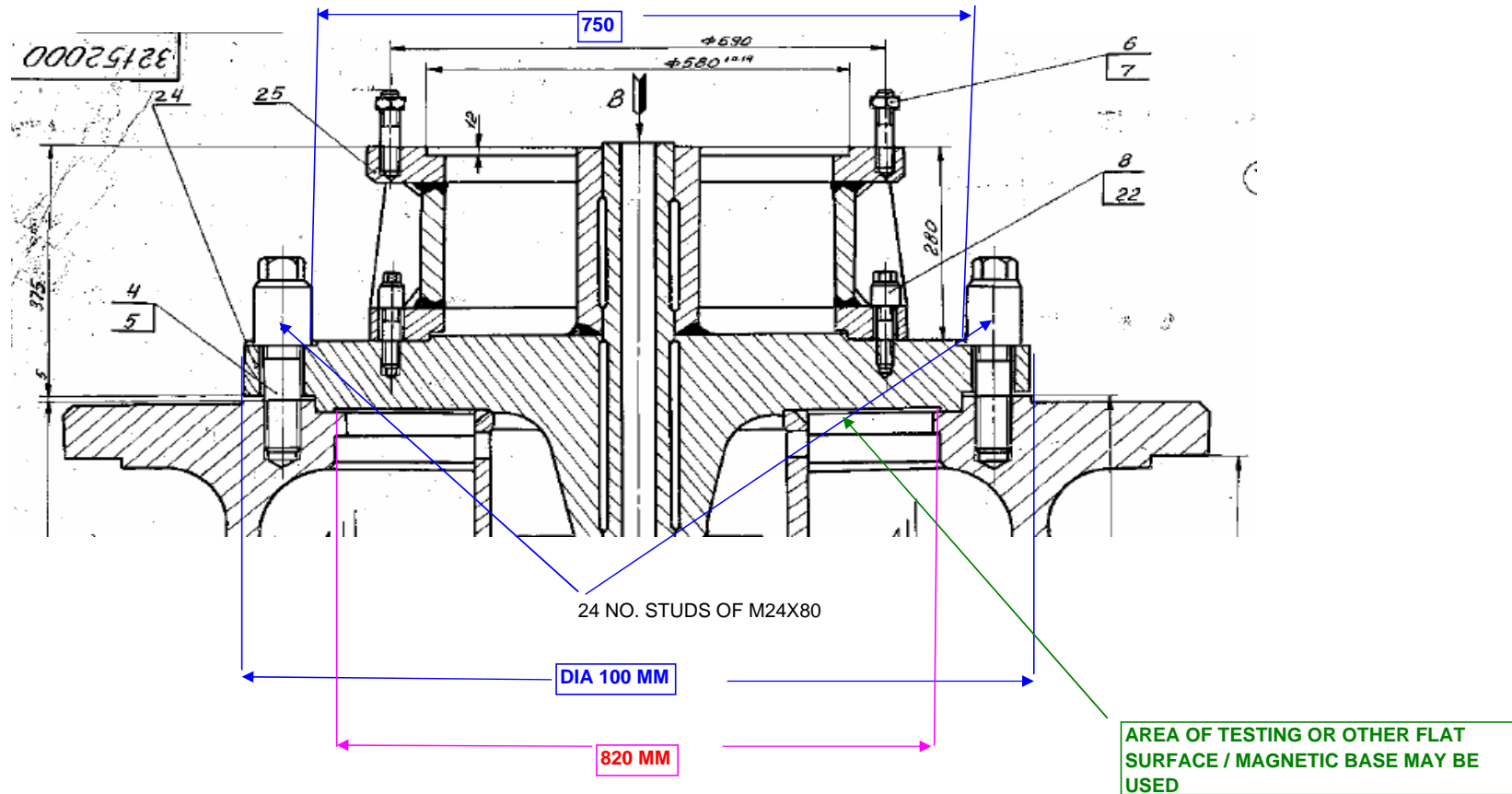
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)

24 HOLES OF M52X3
AT PCD 980 MM

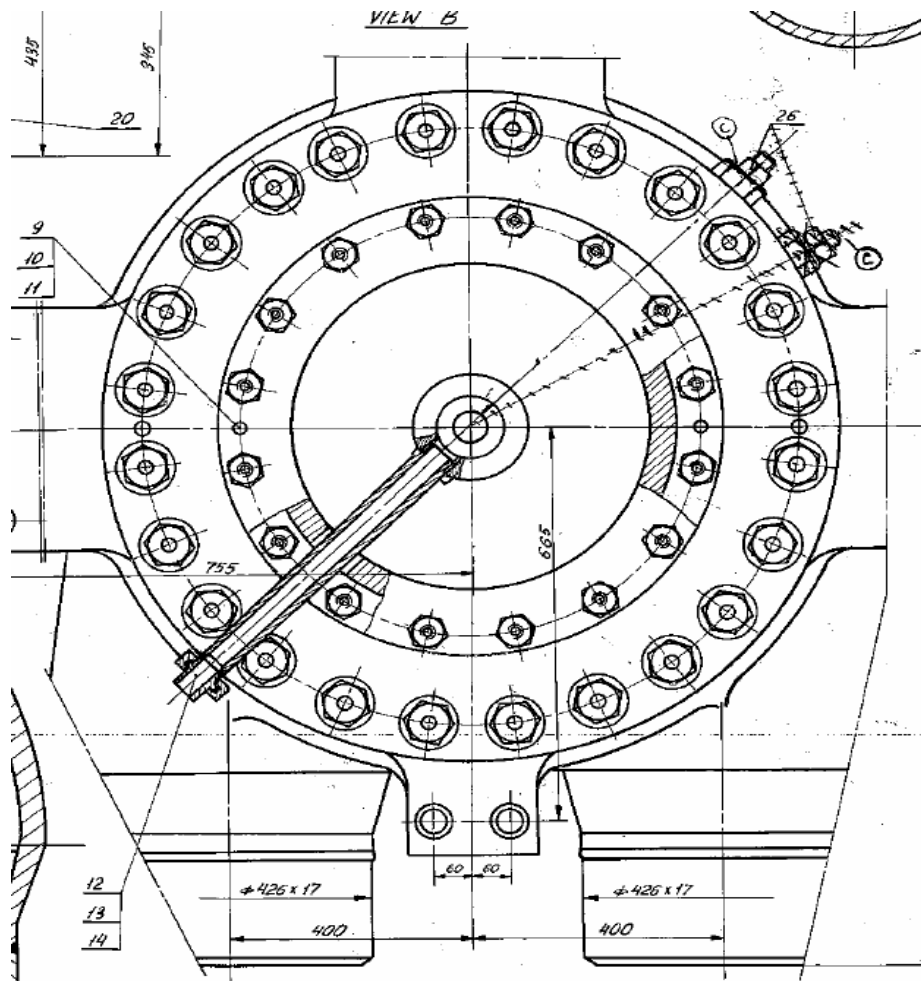


IV CASING

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)

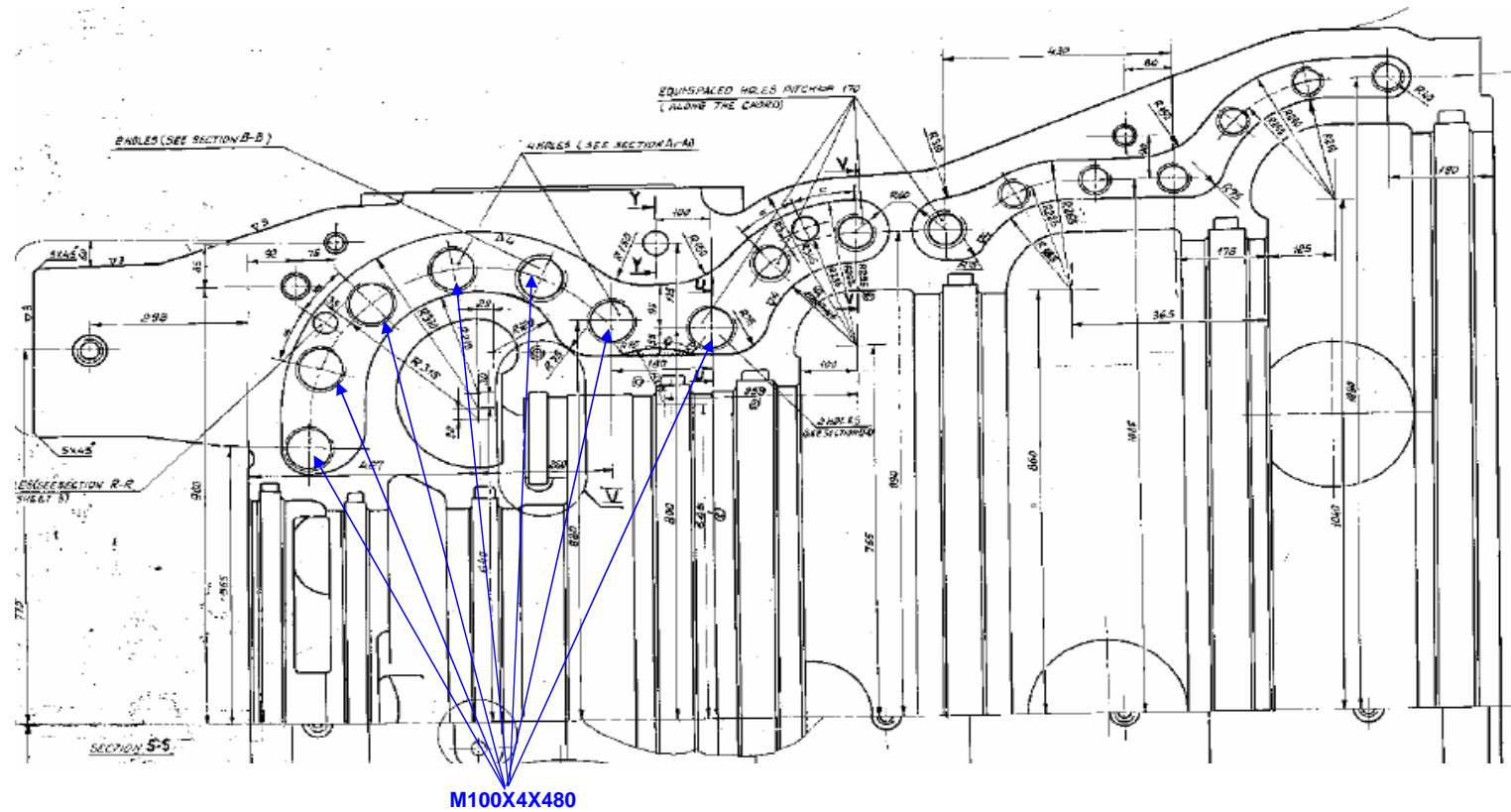


SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



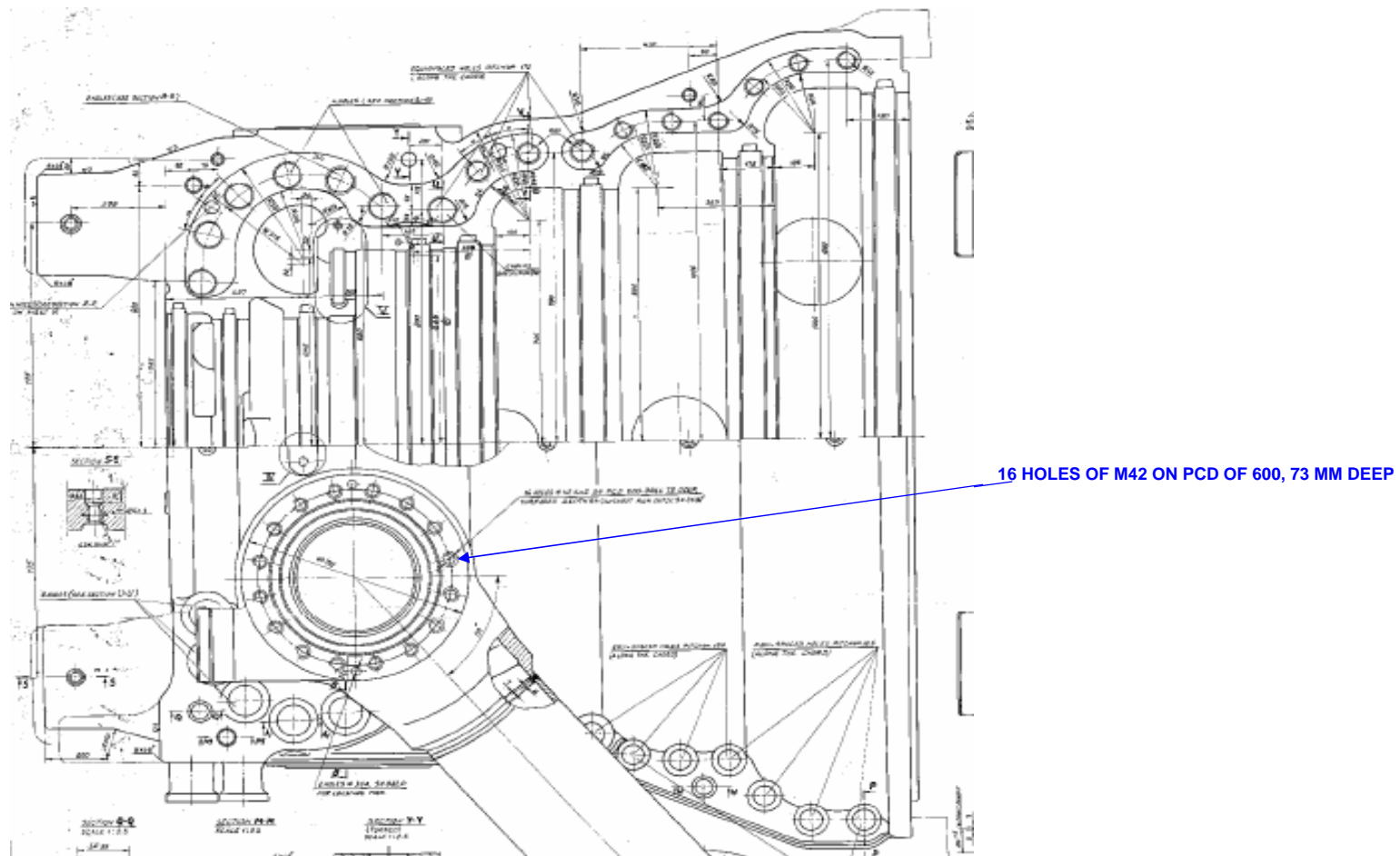
IV CASING : VIEW "B"

SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



IP CASING

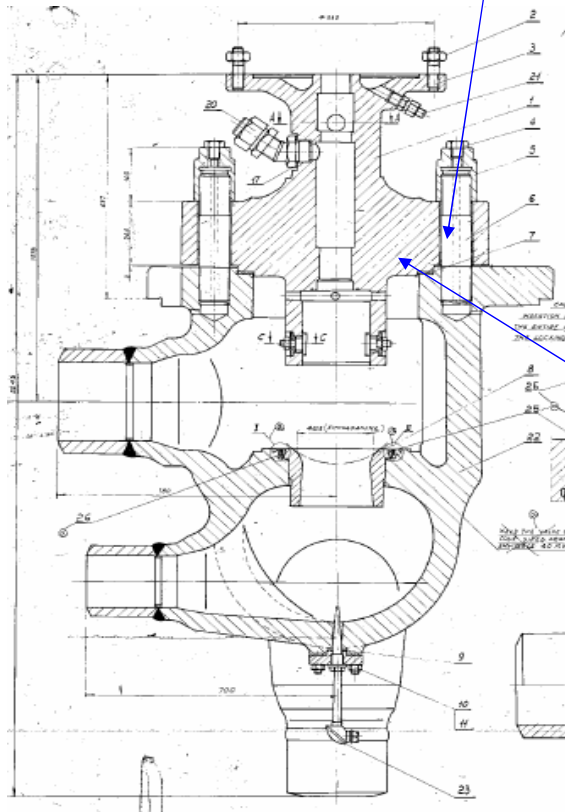
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



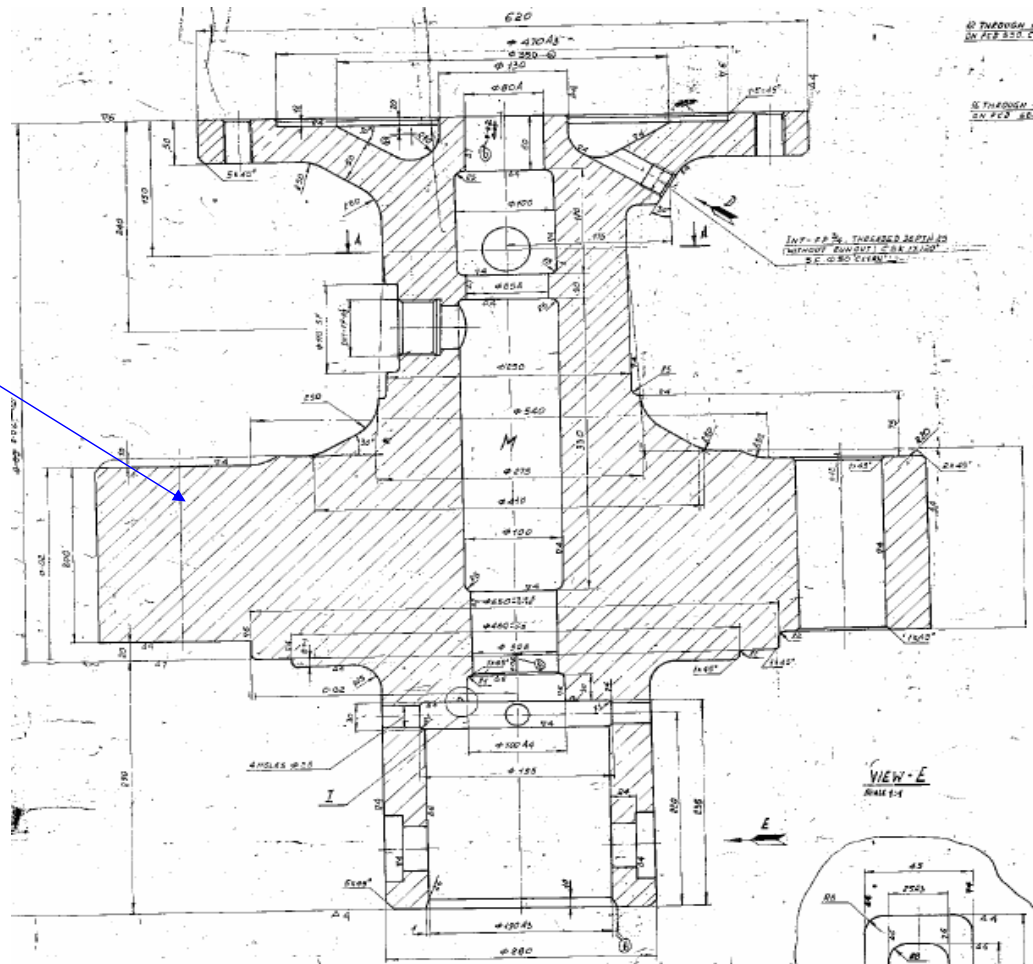
SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)

STUD M85X4X400 : 16 NO.(PCD 680 MM)

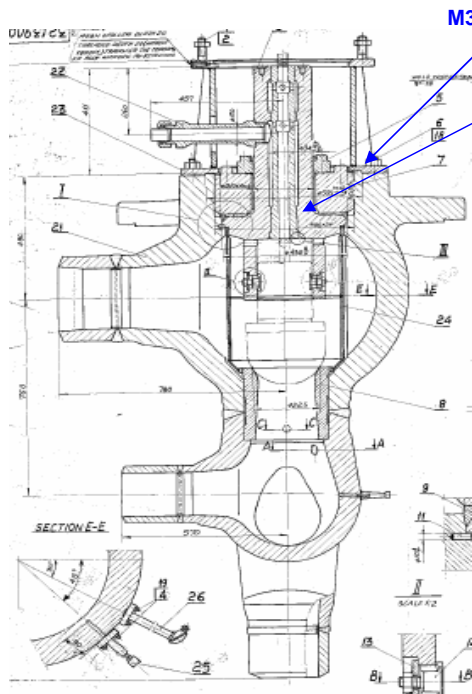
AREA OF TESTING : COVER



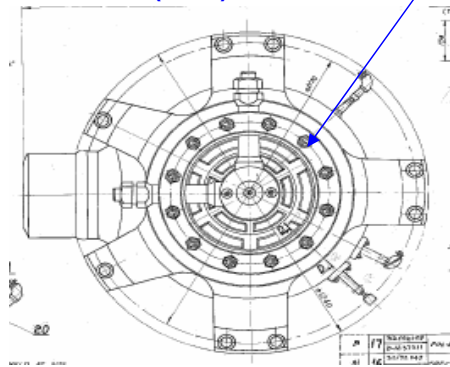
ESV STEAM CHEST (OLD)



SKETCHES FOR MRL PIR NO. "B-ST-08-525-HW": 210 MW ST (LMW DESIGN)



ESV STEAM CHEST (NEW)

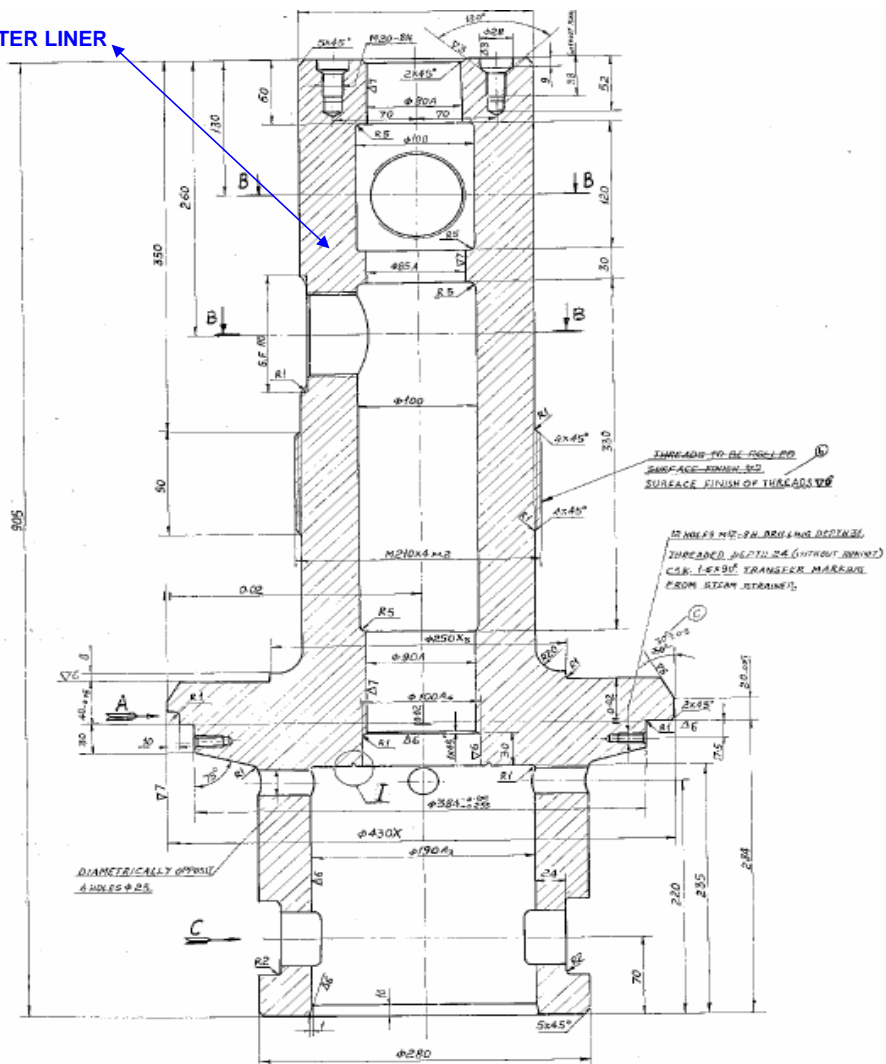


M30X110 - 12 NO. STI

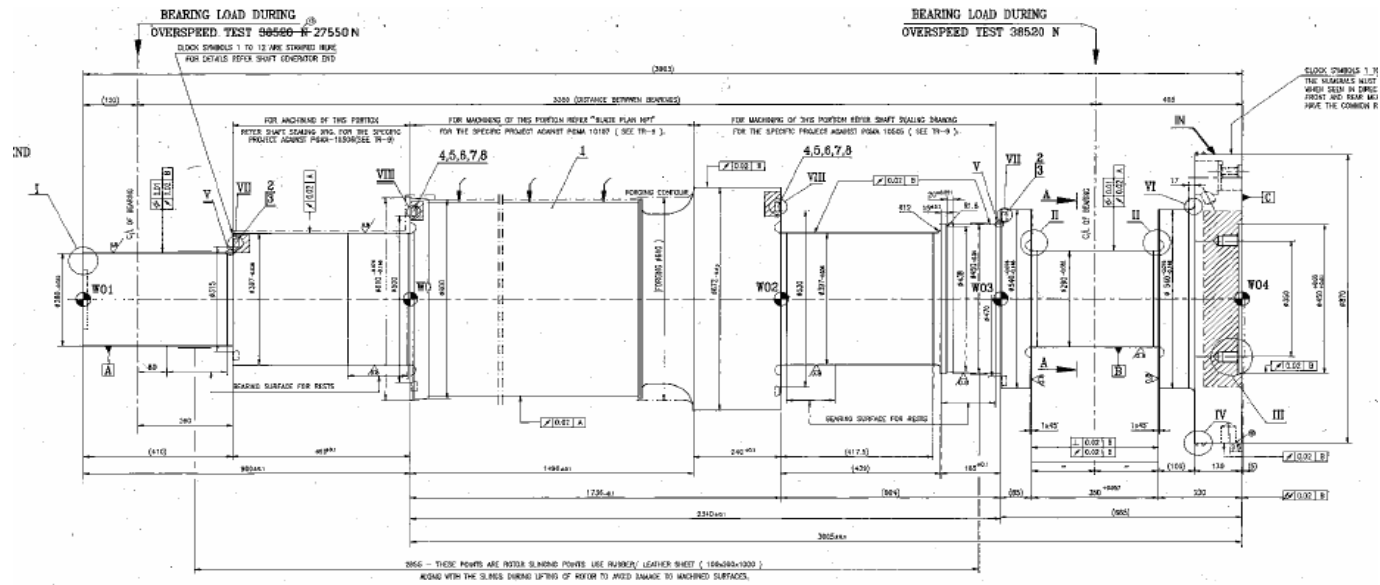
M30X110 - 12 NO. STUDS

OUTER LINER

AREA OF TESTING: OUTER LINER



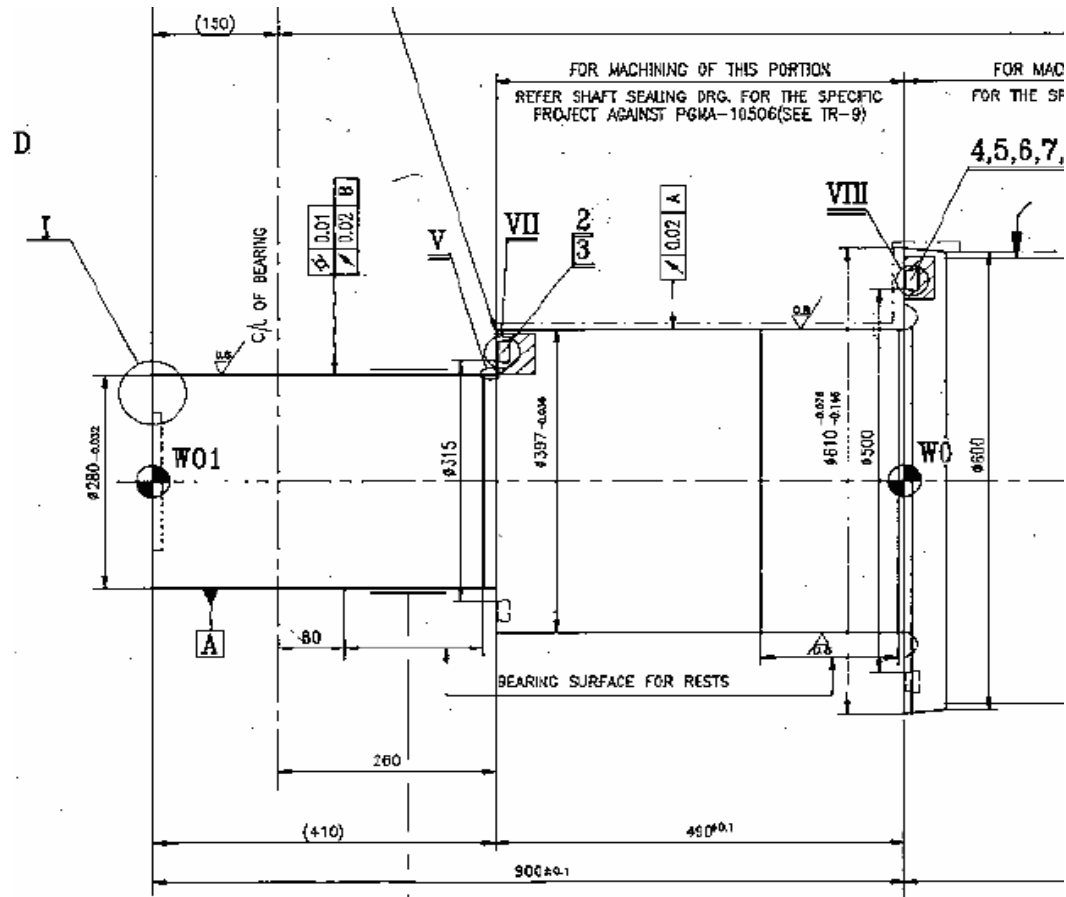
SKETCHES FOR 210 MW ST (KWU DESIGN)



AREA OF TESTING: JOURNAL

HP SHAFT

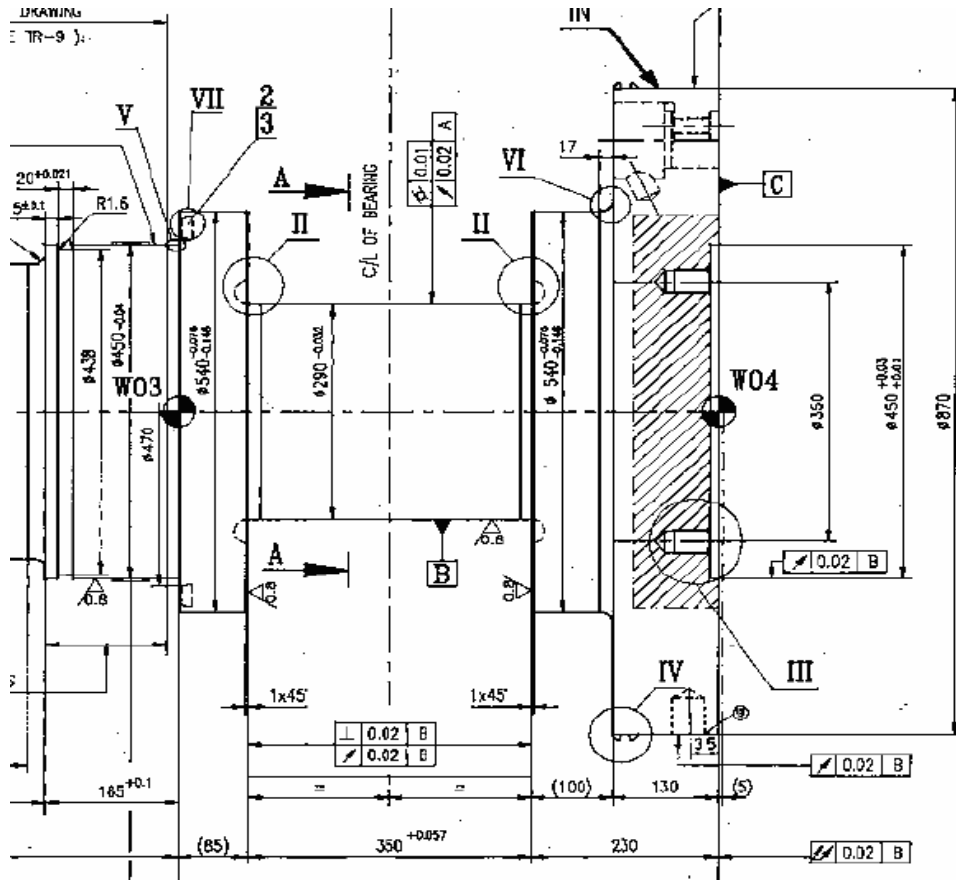
SKETCHES FOR 210 MW ST (KWU DESIGN)



AREA OF TESTING: JOURNAL

HP SHAFT (EXHAUST SIDE)

SKETCHES FOR 210 MW ST (KWU DESIGN)



HP SHAFT (INLET SIDE)

AREA OF TESTING: JOURNAL

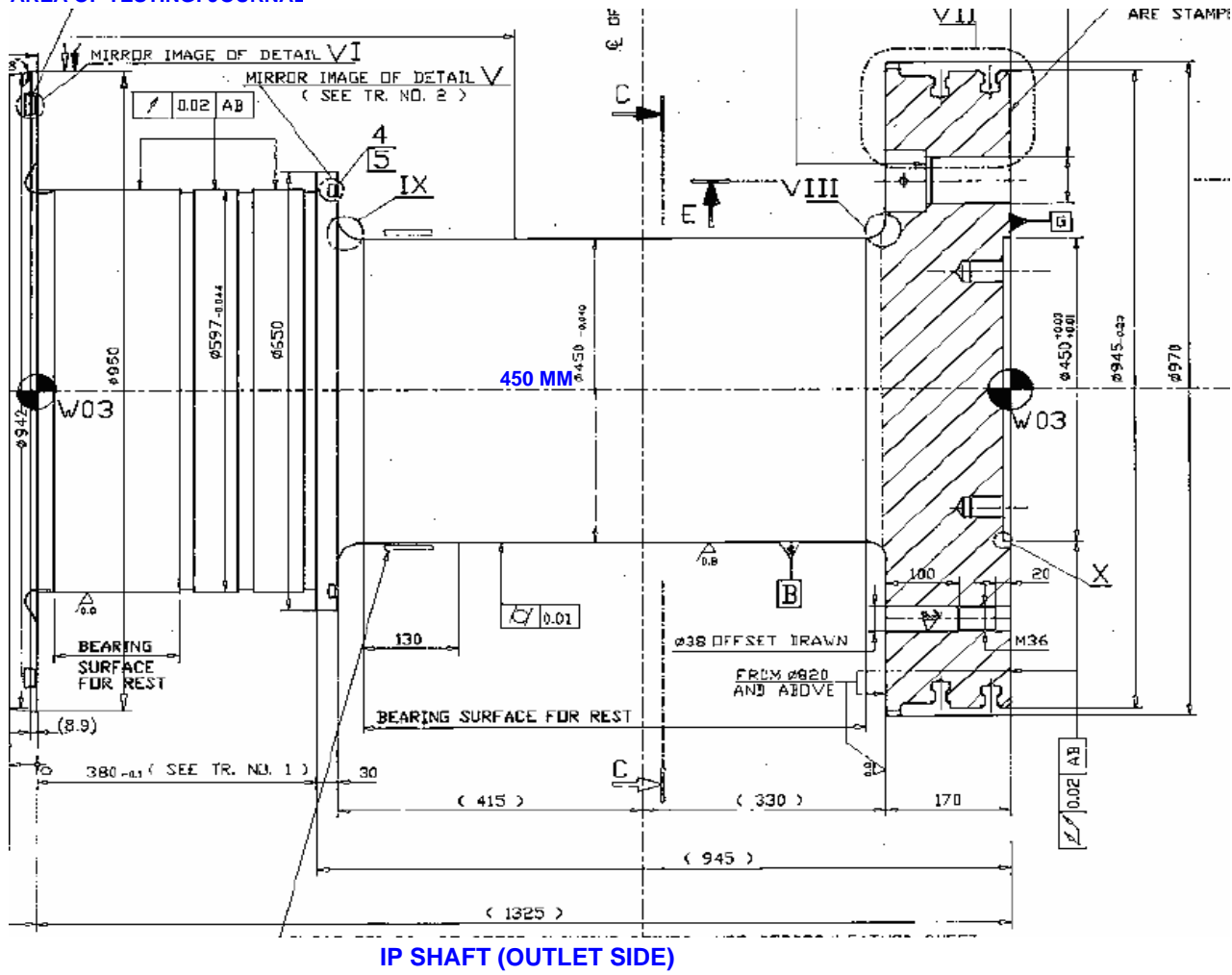
CLOCK SYMBOLS 01 TO 12 ARE STAMPED HERE. THE
SEEING TOWARDS GENERATOR. THE FRONT AND RE



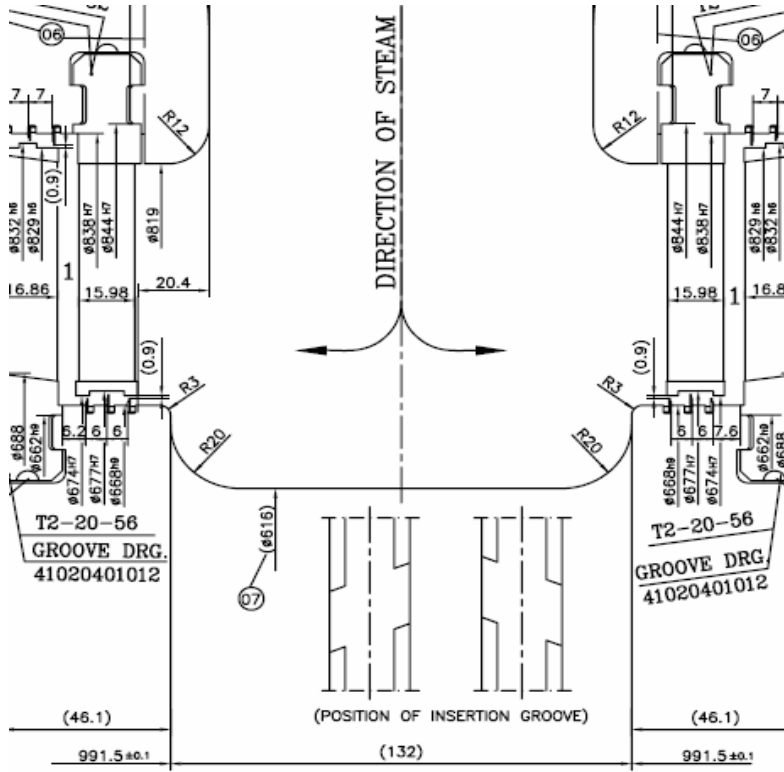
4 OF 29; JAN'09' 01/06/2009

SKETCHES FOR 210 MW ST (KWU DESIGN)

AREA OF TESTING: JOURNAL



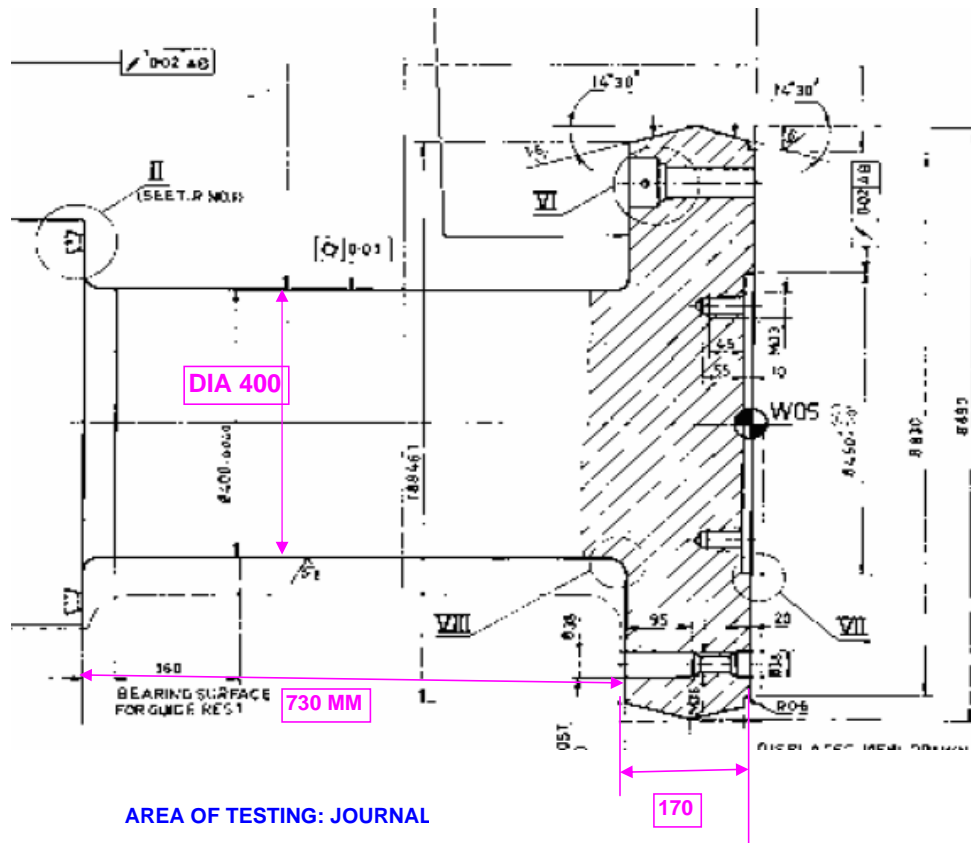
SKETCHES FOR 210 MW ST (KWU DESIGN)



AREA OF TESTING: JOURNAL

IP SHAFT (MIDDLE)

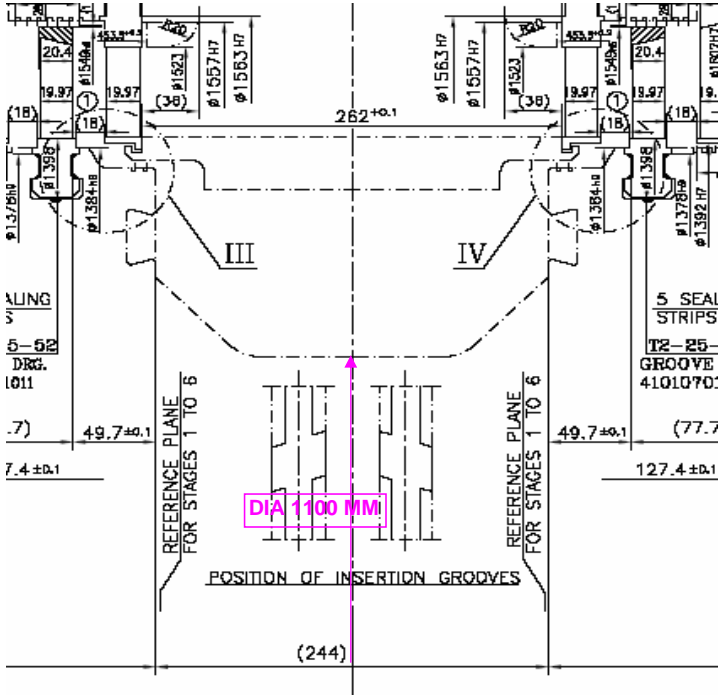
SKETCHES FOR 210 MW ST (KWU DESIGN)



AREA OF TESTING: JOURNAL

LP SHAFT JOURNAL

SKETCHES FOR 210 MW ST (KWU DESIGN)



AREA OF TESTING: JOURNAL (dia 400 mm)
LP SHAFT (MIDDLE)

[illegible]

AREA OF TESTING: PARTING PLANE

SKETCHES FOR 210 MW ST (KWU DESIGN)

SECTION



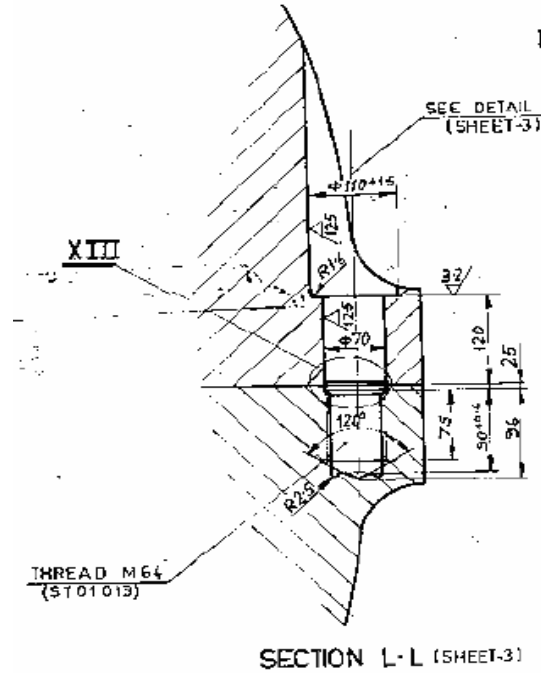
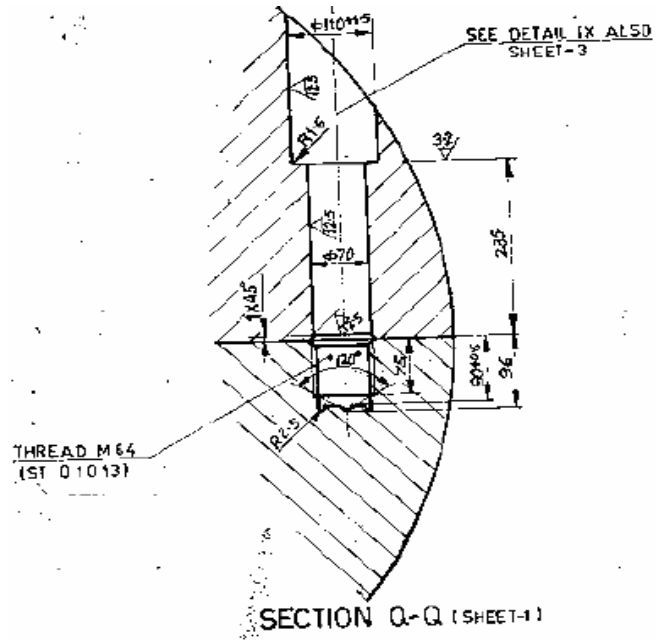
Technical drawing showing two cross-sections of a mechanical part.

SECTION N-N (SHEET-1): This section shows a cross-section of a part with a central hole. The hole has a diameter of $\varnothing 70$. The outer diameter is $\varnothing 110 \pm 1.5$. The section is labeled "XV" and "THREAD M64 (STITCH)". A detail callout points to "SEE DETAIL IX ALSO (SHEET-3)". Dimensions include a total height of 96, a central hole diameter of 70, and a section width of 140. Surface finish symbols like $R1.6$ and $R3.2$ are indicated.

SECTION O-O (SHEET-1): This section shows a cross-section of a part with a central hole. The hole has a diameter of $\varnothing 40$. The outer diameter is $\varnothing 110 \pm 1.5$. The section is labeled "SEE DETAIL IX ALSO (SHEET-3)". Dimensions include a total height of 96, a central hole diameter of 40, and a section width of 140. Surface finish symbols like $R1.6$ and $R3.2$ are indicated.

AREA OF TESTING : PARTING PLANE

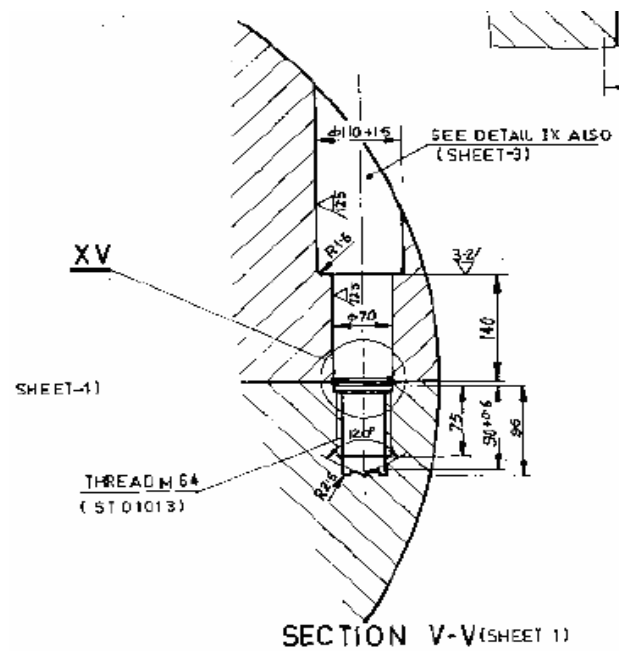
SKETCHES FOR 210 MW ST (KWU DESIGN)



HP INNER CASING

AREA OF TESTING : PARTING PLANE

SKETCHES FOR 210 MW ST (KWU DESIGN)

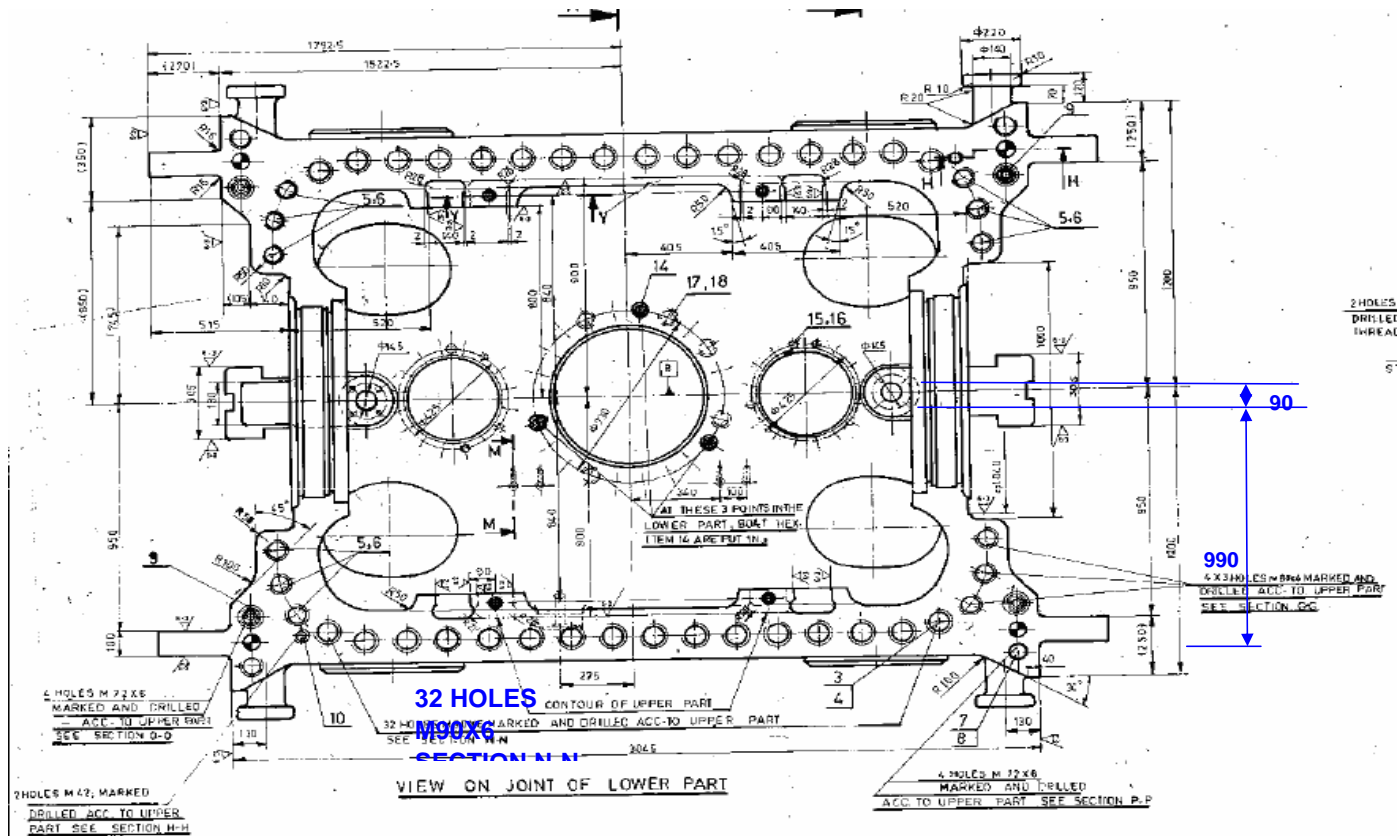


HP INNER CASING

AREA OF TESTING : PARTING PLANE

HP OUTER CASING: NO TESTING IS TO BE DONE

SKETCHES FOR 210 MW ST (KWU DESIGN)



IP OUTER CASING (Lower Part)

AREA OF TESTING : PARTING PLANE

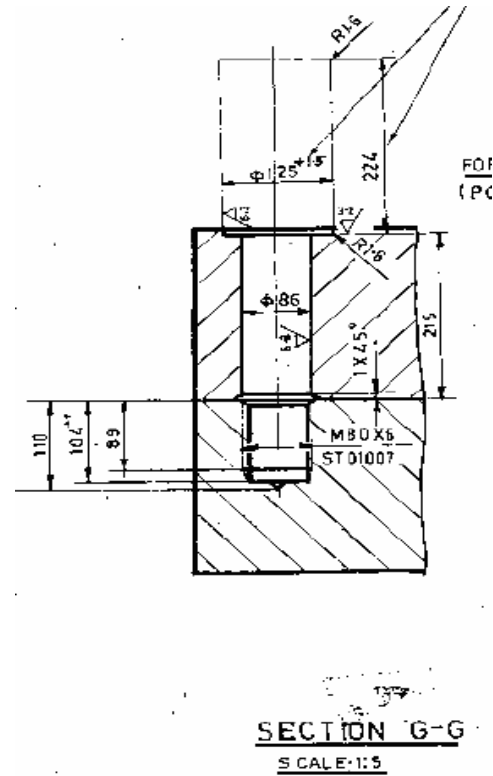
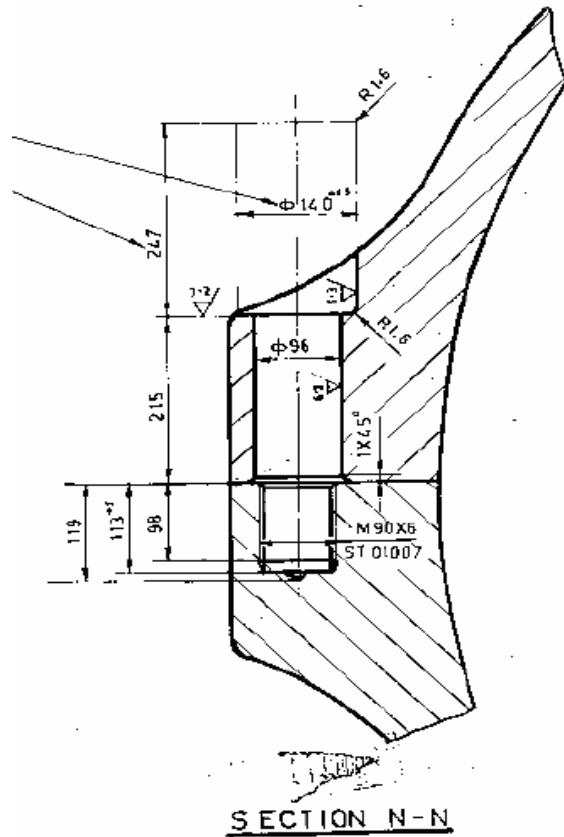
SKETCHES FOR 210 MW ST (KWU DESIGN)



IP OUTER CASING

AREA OF TESTING : PARTING PLANE

SKETCHES FOR 210 MW ST (KWU DESIGN)



IP OUTER CASING

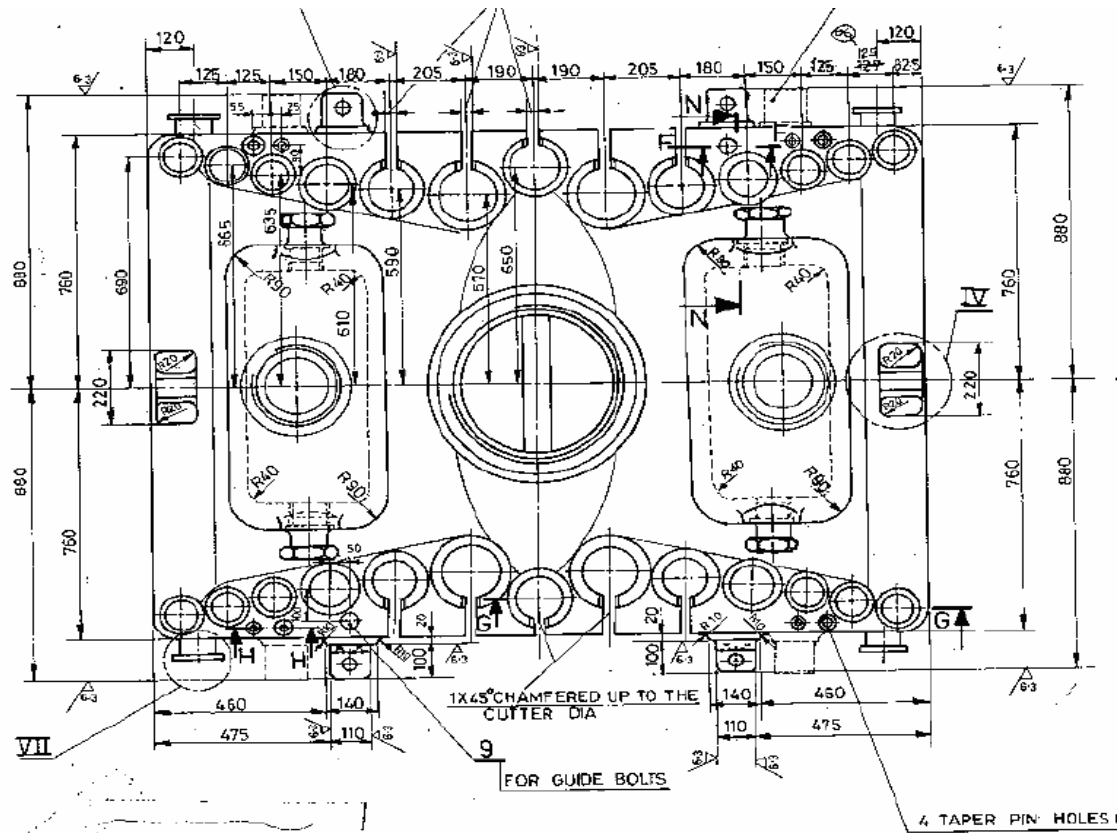
AREA OF TESTING : PARTING PLANE

VIEW ON THE JOINT OF THE LOWER PART

SCALE: 1:10

AREA OF TESTING: PARTING PLANE

SKETCHES FOR 210 MW ST (KWU DESIGN)



VIEW ON THE UPPER PART

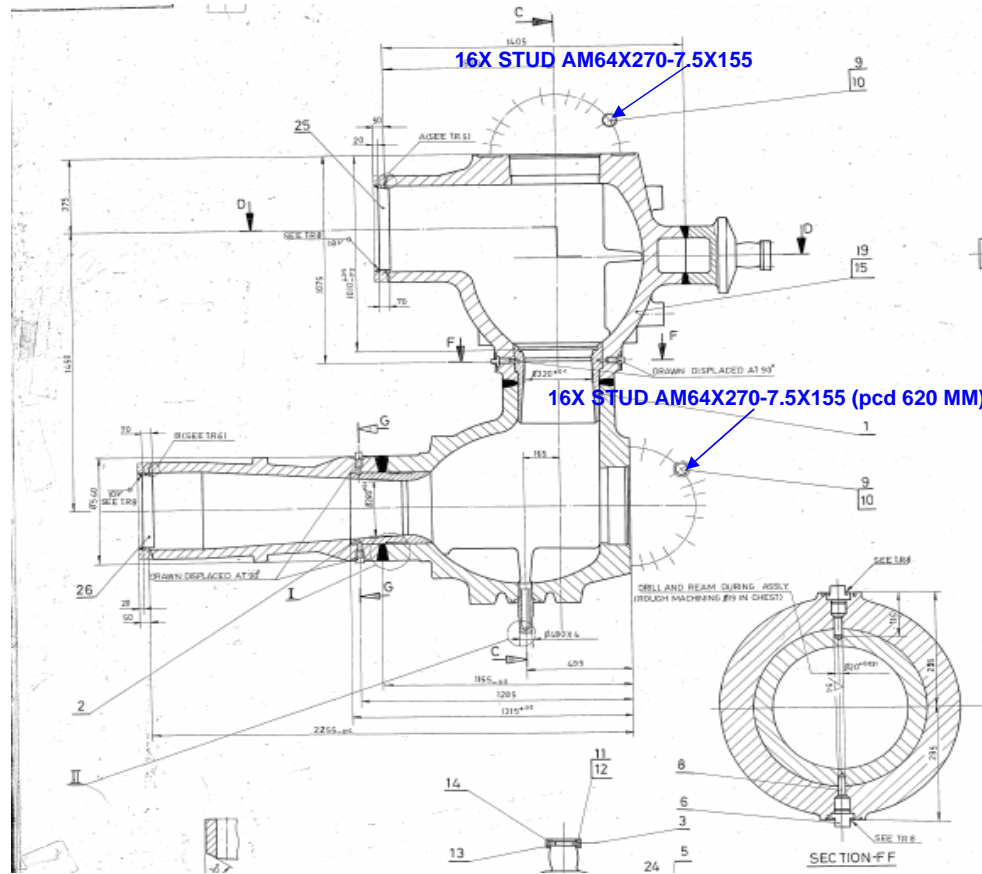
SCALE 1:10

IP INNERCASING (Upper Part)

AREA OF TESTING: PARTING PLANE

- IP INNERCASING (Upper Part)**
AREA OF TESTING: PARTING PLANE

SKETCHES FOR 210 MW ST (KWU DESIGN)



IP STOP & CONTROL VALVE CASING

[illegible]

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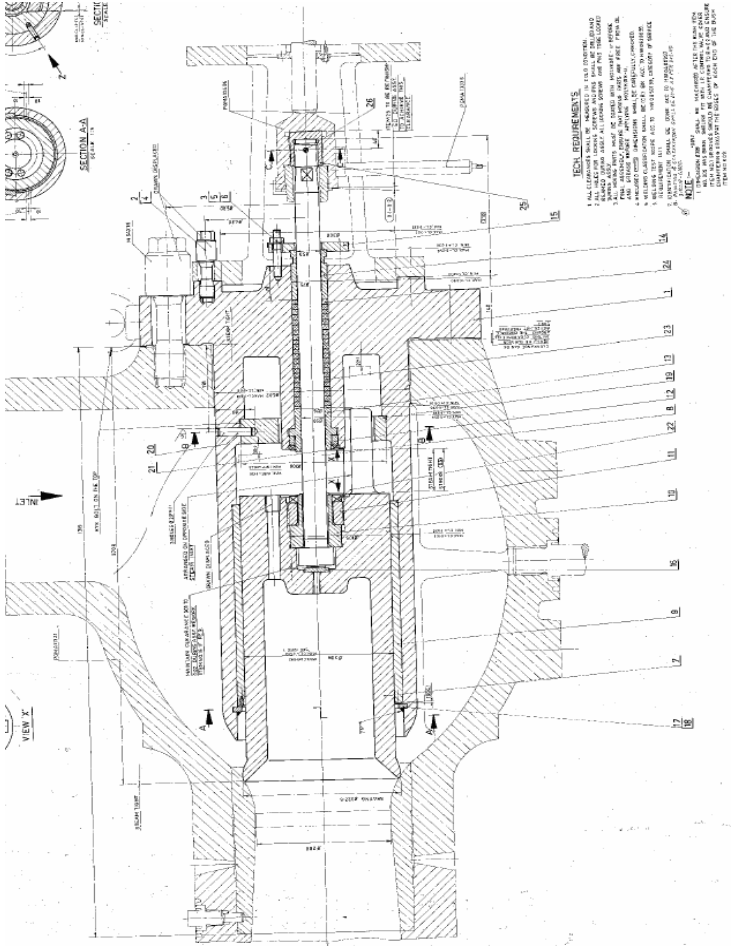
Technical drawing of a mechanical part, likely a pump housing or valve body, showing a cross-section with various dimensions and tolerances.

Key dimensions and features include:

- Overall width: 8420
- Overall height: 1029
- Central vertical bore diameter: $\phi 520$
- Horizontal bore diameter: $\phi 280$
- Internal diameters: $\phi 750$, $\phi 420$, $\phi 350$, $\phi 21.75 \pm .04$, $\phi 200$, $\phi 280 \pm .03$, $\phi 261$, $\phi 352$, $\phi 330 \pm .03$
- Radii: R15, R20, R30, R40, R50, R60, R70, R80, R90, R100, R110, R120, R130, R140, R150, R160, R170, R180, R190, R200, R210, R220, R230, R240, R250, R260, R270, R280, R290, R300, R310, R320, R330, R340, R350, R360, R370, R380, R390, R400, R410, R420, R430, R440, R450, R460, R470, R480, R490, R500, R510, R520, R530, R540, R550, R560, R570, R580, R590, R600, R610, R620, R630, R640, R650, R660, R670, R680, R690, R700, R710, R720, R730, R740, R750, R760, R770, R780, R790, R800, R810, R820, R830, R840, R850, R860, R870, R880, R890, R900, R910, R920, R930, R940, R950, R960, R970, R980, R990, R1000
- Tolerances: 0.03 A, 0.05 A
- Note: HOLES SHOULD BE DRILLED DIAGONALLY OPPOSITE PLACES
- Note: R80 MACHINING SOUTH CORNER
- Note: BUSH DRG. NO. 2-1320-1100 TO BE SHRINK FITTED & CAL. AT TOP P. ACCESS HOLE MAY BE DRIVEN 2500 INCH OF THE TO BE DONE AFTER ITS SHOWN

23 OF 29; JAN'09' 01/06/2009

SKETCHES FOR 210 MW ST (KWU DESIGN)



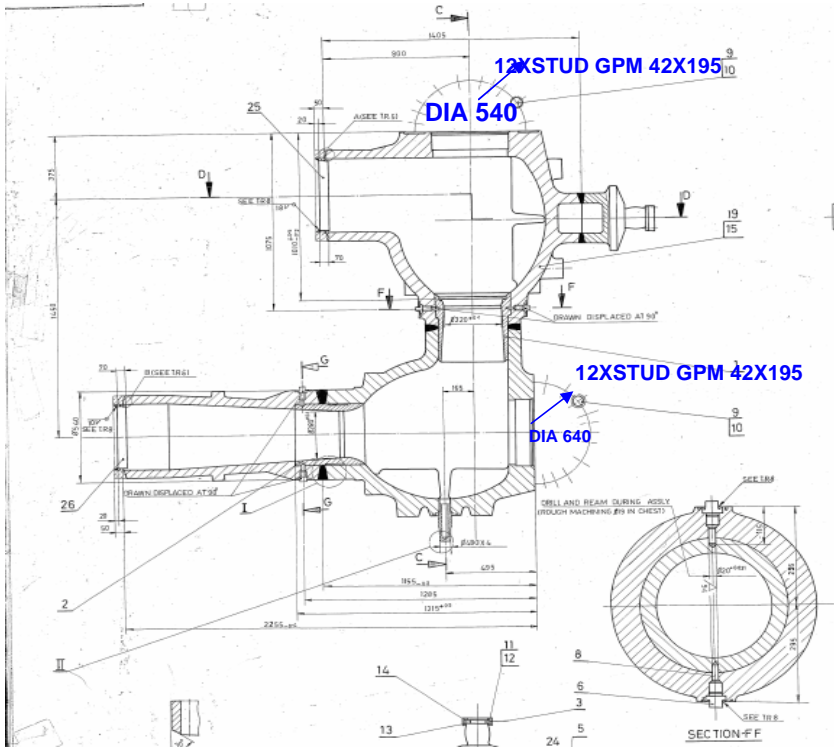
IP CONTROL VALVE

[illegible]

25 OF 29; JAN'09' 01/06/2009

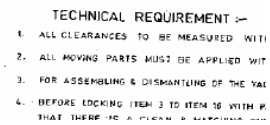
SKETCHES FOR 210 MW ST (KWU DESIGN)

SKETCHES FOR 210 MW ST (KWU DESIGN)



ESV STOP & CONTROL VALVE CASING

VALVE COVER



28 OF 29; JAN'09' 01/06/2009

Technical drawing of a mechanical part, likely a pump housing or valve body, showing a cross-section with various dimensions and features. The drawing includes a title block "DRAWN DISPOSED" and a scale "1:1". Key dimensions include overall length 304, internal diameters like $\phi 180$, $\phi 150$, $\phi 120$, and $\phi 100$, and a central bore of $\phi 100$. The part has a flange with a central hub and a base with a 30-degree taper. A blue arrow points to a specific feature on the right side.

ESV VALVE COVER