



429-002/A

**BHARAT HEAVY ELECTRICALS LIMITED**

( A Government of India Undertaking )  
HIGH PRESSURE BOILER PLANT  
PURCHASE DEPARTMENT - FOSSIL BOILERS  
THIRUCHIRAPALLI - 620014  
TAMILNADU (INDIA)

Page  
1/4

PHONE :2577629  
GRAMS : BHARATELEC  
FAX NO: 2520719  
E-mail: srchandran@bheltry.co.in  
Web:

Enquiry No	Enquiry Date	Due Date for Quotation
2661400751 - 55	14.10.2014	29.11.2014

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

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	7512B1601200 FRONT OUTER RACE LOCK NUT (L.H) AS PER DRG. NO. 3M-12B-16-7887 NOTE:SL.NO. 10 TO 120 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY. COMMON NOTE FOR SL.NO. 10 TO 260: (1)VENDOR SHALL SUBMIT THE MATERIAL TEST CERTIFICATE OBTAINED FROM APPROVED AGENCIES WHILE DELIVERY OF THE MATERIAL. (2)AFTER PLACEMENT OF PURCHASE ORDER ONE NUMBER OF SAMPLE IN EACH ITEM HAS TO BE SUPPLIED FOR BHEL ACCEPTANCE PREFERABLY WITHIN 5 WEEKS. AFTER ACCEPTANCE OF SAMPLE ONLY BALANCE QUANTITY SHALL BE MANUFACTURED AND SUPPLIED.ACCEPTENCE BY BHEL WILL BE GIVEN WITHIN 1 WEEKS. THIS PERIOD (5+1=6WEEKS) IS TO BE TAKEN INTO ACCOUNT WHILE QUOTING DELIVERY PERIOD BY THE SUPPLIER. VENDOR QUALIFYING CRITERIA Only those vendors who satisfy the following conditions will get qualified to participate in the tender: 1.Vendor should have minimum 3 years experience in this field. 2.Previous PO details for supplying similar kind of items should be submitted along with offer.Otherwise offer will be rejected. 3.Company profile details has to be provided along with offer. 4.BHEL reserves the right to visit the vendor's works for verifying the manufacturing facilities and any other credential furnished by the vendor in case the information furnished with the offers found to be false /incorrect, the offer shall be rejected.	NO	10.000	10.00	29.12.14
20	7512B1601400 FRONT OUTER BALL BEARING HOUSING AS PER DRG. NO. 3M-12B-16-7885-01	NO	8.000	8.00	29.12.14

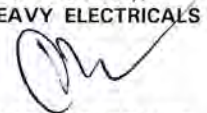
The offers should reach us 30 minutes before the time of opening of tenders.  
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

**VIGILANCE AWARENESS WEEK**  
**27 th OCT to 1st NOV 2014**

**FOR VIGILANCE RELATED COMPLAINTS,**  
**CONTACT DGM/VIGILANCE**

**PHONE:0431-2577552,2577636**

Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

  
MANAGER / PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,



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2/4  
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2661400751 / 14.10.2014

30	7512B1603000 LOCK NUT AS PER DRG. NO. 4M-12B-16-19256	NO	10.000	10.00	29.12.14
40	7512B1604700 LOCK NUT AS PER DRG NO: 4M-12B-16-28807.	NO	10.000	10.00	29.12.14
50	7512B1600700 SPINDLE AS PER DRG.No. 3M-12B-16-7889	NO	4.000	4.00	29.12.14
60	7512B1602900 BEARING LOCK NUT AS PER DRG.No. 4M-12B-16-19794	NO	10.000	10.00	29.12.14
70	7512B1603200 FRONT THRUST RING AS PER DRG.No. 3M-12B-16-7886	NO	10.000	10.00	29.12.14
80	7512B1603100 FRONT INNER RACE LOCK NUT (L.H) AS PER DRG. NO. 4M-12B-16-19624	NO	10.000	10.00	29.12.14
90	7512B1602600 REAR THRUST RING AS PER DRG.No. 3M-12B-16-7946	NO	10.000	10.00	29.12.14
100	7512B1602800 REAR INNER RACE LOCK NUT AS PER DRG. NO. 4M 12B 16 19625	NO	10.000	10.00	29.12.14
110	7512B1601500 REAR OUTER BALL BEARING HOUSING AS PER DRG. NO. 3M-12B-16-7892-01	NO	10.000	10.00	29.12.14
120	7512B1601300 REAR OUTER RACE LOCK NUT AS PER DRG. NO. 3M-12B-16-7893	NO	10.000	10.00	29.12.14
130	7510A1304600 BUSH AS PER DRG NO: 4M-10A-13-28890-01, SL.NO. 01	NO	40.000	40.00	29.12.14
140	7510A1304700 BUSH AS PER DRG NO: 4M-10A-13-28890-01, SL.NO. 02	NO	40.000	40.00	29.12.14
150	7510A1304800 BUSH AS PER DRG NO: 4M-10A-13-28890-01, SL.NO. 03	NO	100.000	100.00	29.12.14

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tenderers who have submitted their offer and who may like to be present for the tender  
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**VIGILANCE AWARENESS WEEK**

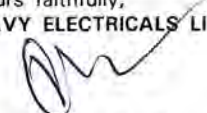
**27 th OCT to 1st NOV 2014**

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MANAGER / PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,



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3/4  
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2661400751 / 14.10.2014

160	7510A1305200 BUSH AS PER DRG NO: 4M-10A-13-28890-01, SL.NO. 04	NO	10.000	10.00	29.12.14
170	7510A1305300 BUSH AS PER DRG NO: 4M-10A-13-28890-01, SL.NO. 05	NO	20.000	20.00	29.12.14
180	7502F1401900 BUSH AS PER DRG NO 4M-02F-14-12820, ITEM NO 22	NO	250.000	250.00	29.12.14
190	7512B1607200 PISTON ROD AS PER DRG. NO. 3M-12B-16-8644	NO	5.000	5.00	29.12.14
200	7512B1607300 VALVE SEAT AS PER DRG. NO. 4M-12B-16-25529 NOTE: SL.NO. 200 TO 220 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	10.000	10.00	29.12.14
210	7512B1607400 VALVE CONE AS PER DRG. NO. 4M-12B-16-25534	NO	10.000	10.00	29.12.14
220	7512B1607500 NEEDLE VALVE AS PER DRG. NO. 4M-12B-16-25535	NO	10.000	10.00	29.12.14
230	7512B1607600 SPRING AS PER DRG. NO. 4M-12B-16-25538	NO	10.000	10.00	29.12.14
240	7512B1607700 PULLEY (MOTOR SIDE) AS PER DRG. NO. 4M-12B-16-27469 NOTE: SL.NO. 240 AND 250 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	5.000	5.00	29.12.14
250	7512B1607800 PULLEY (FEEDER SIDE) AS PER DRG. NO. 4M-12B-16-27470	NO	5.000	5.00	29.12.14
260	7512B1603300 THRUST PIN AS PER DRG NO:4M-12B-16-19619	NO	100.000	100.00	29.12.14

## General Note:

### GENERAL NOTE:

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27 th OCT to 1st NOV 2014

FOR VIGILANCE RELATED COMPLAINTS.

CONTACT DGM/VIGILANCE

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Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,



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2661400751 / 14.10.2014

PLEASE SUBMIT YOUR OFFER IN "TWO PART BID SYSTEM"

**Enclosures:**

"LD clause has to be confirmed without fail."

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**27 th OCT to 1st NOV 2014**

**FOR VIGILANCE RELATED COMPLAINTS.**

**CONTACT DGM/VIGILANCE**

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For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE  
(FOSSIL BOILERS)

Yours faithfully,

**CAPITAL PURCHASE**  
**COMMERCIAL TERMS AND CONDITIONS**

**1.0 QUOTATIONS**

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

**Envelope I** This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid & annexure III. This envelope should be clearly marked **'Part I - Technical and commercial bid'**,

Indicating Enquiry No., Due Date and Address & Reference of the Bidder.

**Envelope II** This sealed envelope should contain **price as per Annexure-IV format**. This envelope should be clearly marked **"Part II - Price bid"**, indicating **Enquiry No., Due Date and Address & Reference of the Bidder**.

Both the envelopes (Part I & II) shall be put in one cover (**Envelope III**), duly sealed, superscribing as Part I and Part II of Enquiry No., due date of opening and the address and reference of the Bidder

The above offer should reach this office on or before the due date by 14.00 hours (IST). Late offers will not Be considered.

Tender should not be addressed to any individual's name but only by designation to

**SENIOR MANAGER /PURCHASE/ CP & SP/ MM / MFG  
BHARAT HEAVY ELECTRICALS LIMITED  
HIGH PRESSURE BOILER PLANT  
TIRUCHIRAPALLI - 620 014  
TAMIL NADU**

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.

Offers should be in **ENGLISH** and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in **ENGLISH** or otherwise, the offers will not be considered.

**2.0 OPENING OF TENDERS**

The Part I - Technical & commercial bid alone would be opened on the Tender opening date.

The Part II - Price bid of technically suitable Bidders alone would be opened. The Technically Suitable Bidders would be informed about the tender opening date through e-mail.

Clarifications if any required by BHEL for Technical evaluation **would be** sought from Bidders before opening of Part II - price bid

**For any queries clarifications the bidders may contact us through our FAX NO. +91 431 2520719 or through e-mail < mmcpmfg1@bheltry.co.in > & < chells@bheltry.co.in>**

**Annexure For Techno Commercial Bid**  
**Check List - to be filled and submitted along with Technical Bid**

<b>BHEL Commercial Terms and Conditions for Indigenous Supplies</b>	<b>Vendor's Confirmation / Comments</b>
Technical confirmation to BHEL's Specification as called for in BHEL Format shall be furnished. If needed additional sheets shall be used.	
Prices shall be <b>quoted item wise</b> only as per the model format enclosed	
Prices shall be quoted on " <b>FIRM PRICE</b> " basis only The prices should be only on <b>F.O.R / Despatching station</b> basis with <b>Packing &amp; Forwarding</b> charges if any. <b>Applicable % of ED &amp; Sales Tax, Freight &amp; Insurance, Installation &amp; Commissioning Charges should be clearly Indicated</b>	
<b>Validity of offer</b> shall be for a minimum period of 120 days from the date of Tender opening	
Delivery period from the date of Letter of Intent / Purchase order shall be clearly mentioned in the offer	
<b>Liquidated damages @ '0.5% per week</b> subject to a maximum of 10% of the order value shall be applicable for delay in deliveries <b>For Details Refer Annexure- v</b>	
<b>Following Risk Purchase clause</b> shall be applicable The purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated or if the same were not available, the best and the nearest available substitute therefore The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases	
<b>Payment term for supply portion:</b> Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials <b>For details Refer Annexure- v</b>	
Erection / commissioning: (if applicable only) Erection / commissioning charges if any has been mentioned in the offer or else confirmation that Erection / commissioning shall be done at free of cost is available in the offer,	
The equipment shall be guaranteed for a period of 12 months from the date of commissioning	
Final inspection and acceptance of equipment will be after installation at BHEL, Trichy	
The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost	
Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis.	
Offers should be submitted only in <b>sealed cover super-scribing clearly the Enquiry reference and due date.</b>	
% of Excise Duty with cess	
% of TAX (CST/VAT)-(INGST with FORM-17 or CST with C-FORM)	
Packing & Forwarding Charges ( if any in % only)	
Percentage of Freight& transit insurance charges, if any Freight charges from Dispatching station to BHEL, Tiruchirappalli • Supplier should quote for F.O.R-BHEL Trichy Stores.	
As per Commercial terms and conditions, acceptance for participation in Reverse auction (RA).Yes/No to be indicated	
Name of the person for participating reverse auction	
Land Line Number	
Fax Number	
Mobile Number	
E-mail ID	

NOTE:-

- a) It is confirmed that all the terms and conditions stipulated In the Enquiry have been fully understood by us and all clarifications & details have been obtained.**
- b) Your offer should be indicating applicable If any P&F Charges, % of ED, Sales Tax -CST or VAT, Service Tax), Freight, Insurance and Installation and Commissioning Charges etc., as per our Price Format**
- c) Your specific acceptance to our Payment terms, LD & Risk Purchase Clause are essential for consideration of your offer. Other wise your offer is liable for rejection.**
- d) No row shall be left blank. Please indicate NA, in case the item is "not applicable"**

**Annexure For Price Bid**

**Bharat Heavy Electricals Limited TIRUCHIRAPPALLI  
MODEL PRICE BID FORMAT FOR INDIAN BIDDERS**

CAPITAL PURCHASE  
Annexure-IV

Enquiry No. & Date:

Bidder's Offer No. & Date:

SI No	Description of item	Unit	Quantity	Rate in Rs.	Value in Rs.
	<b>TOTAL VALUE IN RS.</b>				
	<b>Packing &amp; Forwarding charges in % if any</b>				
	<b>Freight &amp; Insurance Charges In % if freight charges are not mentioned it will be considered as FOR-BHEL TRICHY.</b>				
	<b>Excise Duty (indicate in %)</b>				
	<b>A) TNGST — VAT (%)</b>				
	<b>B) CST with C-FORM — (%)</b>				
	<b>C) CST without C-Form — (%)</b>				
	<b>Approximate Net weight of the total consignment</b>				
	<b>Approximate Gross weight of the total consignment</b>				
	<b>Approximate Dimensions of the Consignment</b>				
	<b>The price indicated shall be inclusive of all accessories, spares etc. as given in the scope of supply. Individual item-wise break-up price shall be attached as an annexure to this price bid format.</b>				

**Signature & Seal of Vendor**

**NOTE:**

1. The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "not applicable"
2. Prices shall be quoted item-wise only as per the above format.
3. If Price quoted is Inclusive of ED, the included ED Value and Base Value shall be indicated item-wise.

<b>Payment Term (Indigenous)</b>	
<b>If materials are receivable at Stores/Trichy without PBG</b>	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.
<b>If materials are receivable at Stores/Trichy with PBG</b>	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials and against 10% PBG valid for the warranty period.
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.
Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection.

<b>Liquidated Damages / Penalty -</b>
Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.
For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.
Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

<b>Guarantee / Warranty Period – (if applicable)</b>
Normally No deviation permitted and the deviated offers are liable for rejection.

<b>Ranking-</b>
BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.

<b>Performance Bank Guarantee – (if applicable)</b>
Normally No deviation permitted and the deviated offers are liable for rejection.

**NOTE:-**

1. If the due date of tender opening happens to be a holiday, the tenders will be opened on the next working day.
2. BHEL reserves the right to go for a reverse auction (RA) instead of opening the submitted sealed bid which will be decided after technical evaluation. Information and general terms and conditions covering RA are given in commercial terms and conditions.
3. Corrigendum if any, with respect to this tender will be hosted only in the website <http://www.bhel.com> or <http://tenders.gov.in>. You are requested to visit the website regularly for updates.

**Special Provisions for Micro and Small Enterprises (MSE)**

1. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
2. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.
3. 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.
4. "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 (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -VII where deemed validity of EM II certificate of five Years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer."

**Certificate by Chartered Accountant on letter head**

This is to Certify that M/S .....  
(hereinafter referred to as 'company') having its registered office at  
..... is registered under MSMED Act 2006, (Entrepreneur  
Memorandum No (Part-II) ..... dtd:.....,  
Category: ..... (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on  
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :  
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:  
Rs.....Lacs

The above investment of Rs.....Lacs is within permissible limit of  
Rs.....Lacs for .....Micro / Small (~~Strike off which is not applicable~~)  
Category under MSMED Act 2006.

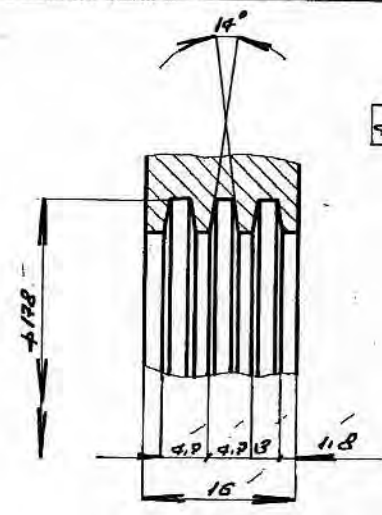
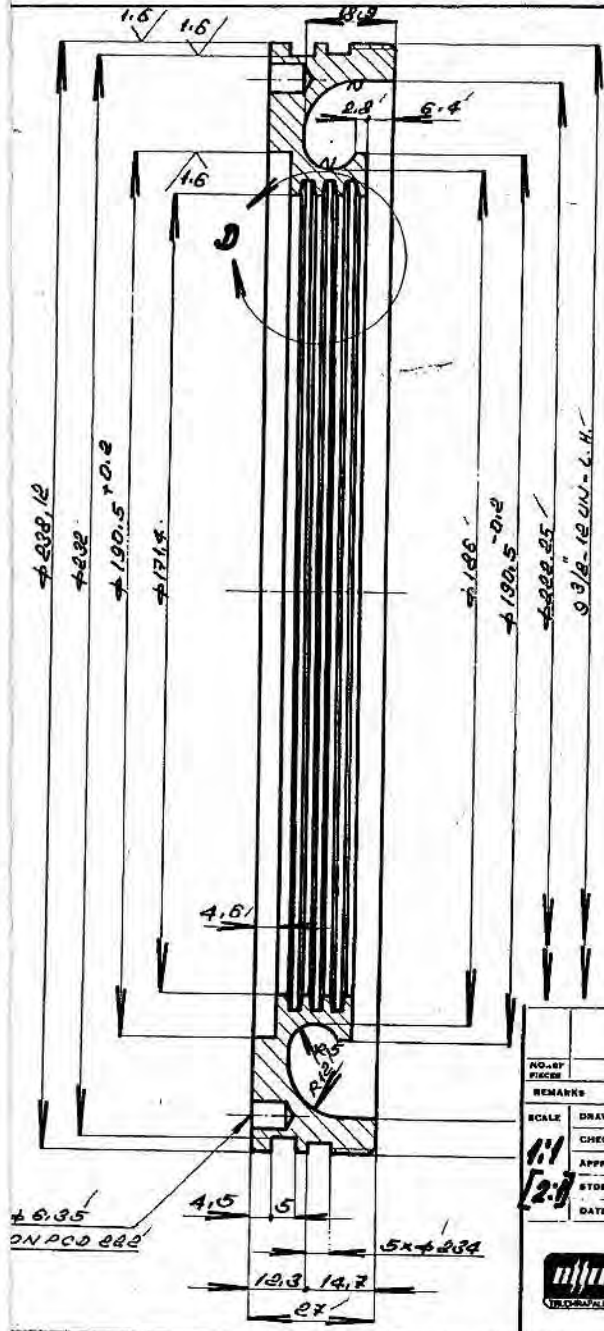
Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant



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	-0.086

**DETAIL - D**



NO. OF PIECES		DESCRIPTION		SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP WGT (KG)	NET WGT (KG)	GROSS WGT (KG)	DRAWING NO.	ITEM NO.
					E-G220 IS:810			4.5			
REMARKS											
TOTAL NET WT. (KG.)											
SCALE	DRAWN	CHECKED	APPROVED	STOR. OFFICER	DATE	REFERENCE	ALTERATIONS		DATE	SIGNATURE	INDEX
1:1					3.5.1980	E 813					
MACHINE MODERN CUT OFF						TYPE: MODEL 3K					
FRONT OUTER RACE LOCK NUT 9 3/8" 12UN L.H.						DRAWING NO. 3-M-128-7887 <sup>16</sup>					
No. OF SHEETS.						SHEET No.1					



32

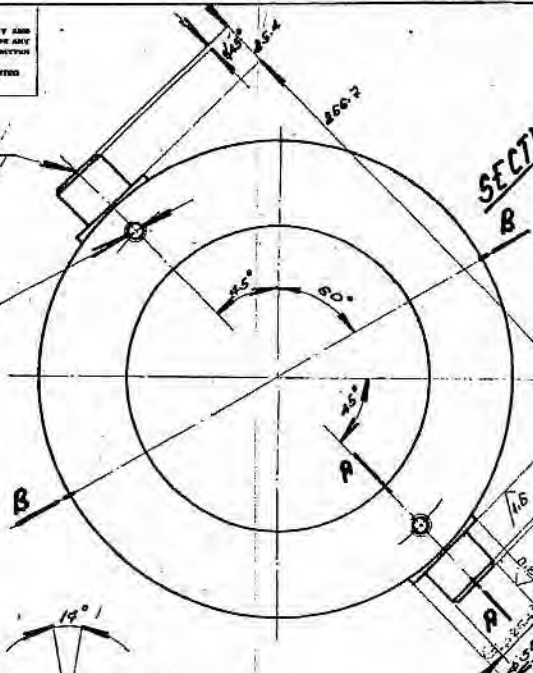
**CAUTION**  
THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF  
SIEMENS HEAVY ELECTRICAL LIMITED  
TRUCHKEMPAH—532 911

± 332.12	H7	10.076
± 285.00	H7	10.000
± 31.75 k6		± 0.018
		± 0.007

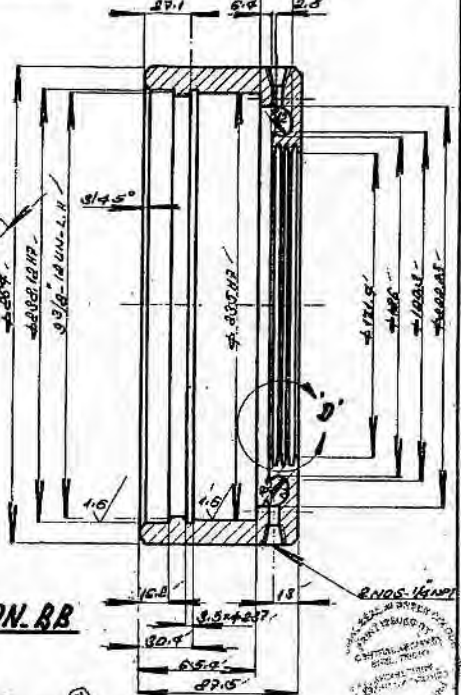
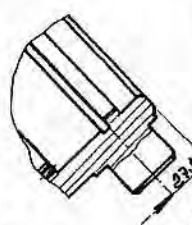
32/24 1.5  
1.1

MS. 32.6 DEEP  
ON BOTH ENDS

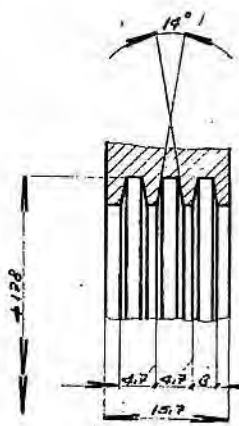
1/8" BSW ENDS  
ON PCD 229.15  
THROUGH



**SECTION A-A**



**SECTION B-B**

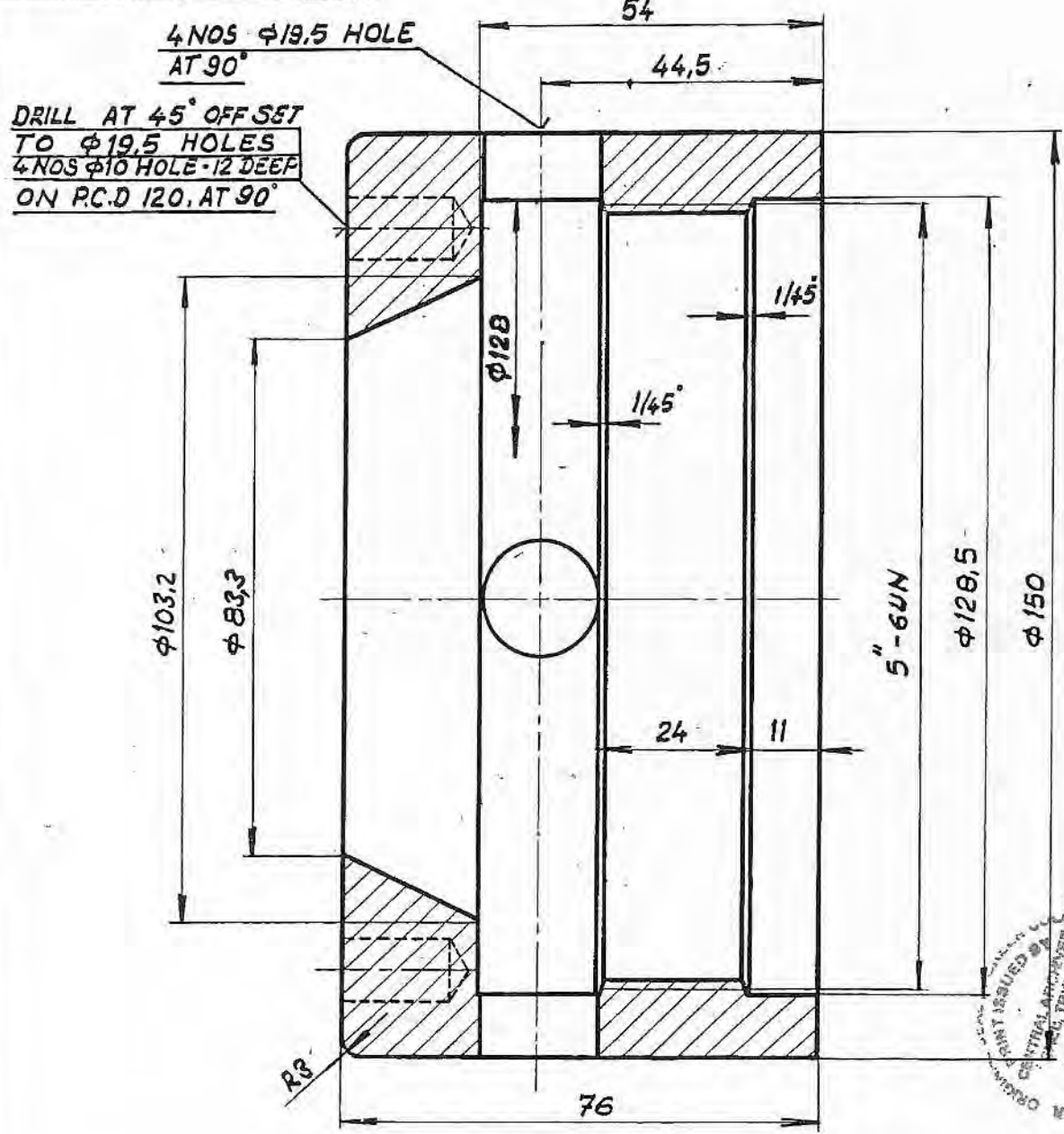


**DETAIL D**

45 CB	IS:72 B3	17.13							
SCALE	DRAWN	CHECKED	APPROVED	DATE	BY	DATE	BY	DATE	BY
1:2	[Signature]	[Signature]	[Signature]	0.5.1990					
MACHINE MODERN CUT OFF					TYPE: MODEL 3K				
TITLE: FRONT OUTER BALL BEARING HOUSING					DRAWING NO. 3-M-122-7885				
NO. OF SHEETS					SHEET NO. 01				

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**BHARAT HEAVY ELECTRICALS LTD.,**  
 TIRUCHIRAPALLI-14

INDEX NO. 39 - 607



		BM-C45		45C8			3.2			
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING ISO.	ITEM NO.	
REMARKS				TOTAL NET WT (kg)		CC:00		EC:16		
SCALE 1:1	DRAWN	K.P. Varadarajan		REFERENCE	ALTERATIONS		DATE	SIGNATURE	INDEX	
	CHECKED	<i>S. V. J.</i>								
	APPROVED	<i>Handwritten Signature</i>								
	STDS. OFFICER	15-12-79								
DATE		MACHINE MODERN CUT-OFF		TYPE: MODEL 3K		INV. NO.				
TITLE:		LOCK NUT		DRAWING NO.		4-M-12b <sup>16</sup> -19256				
5"-6UN (COLLET LOCKING)		NO. OF SHEETS		SHEET NO.						

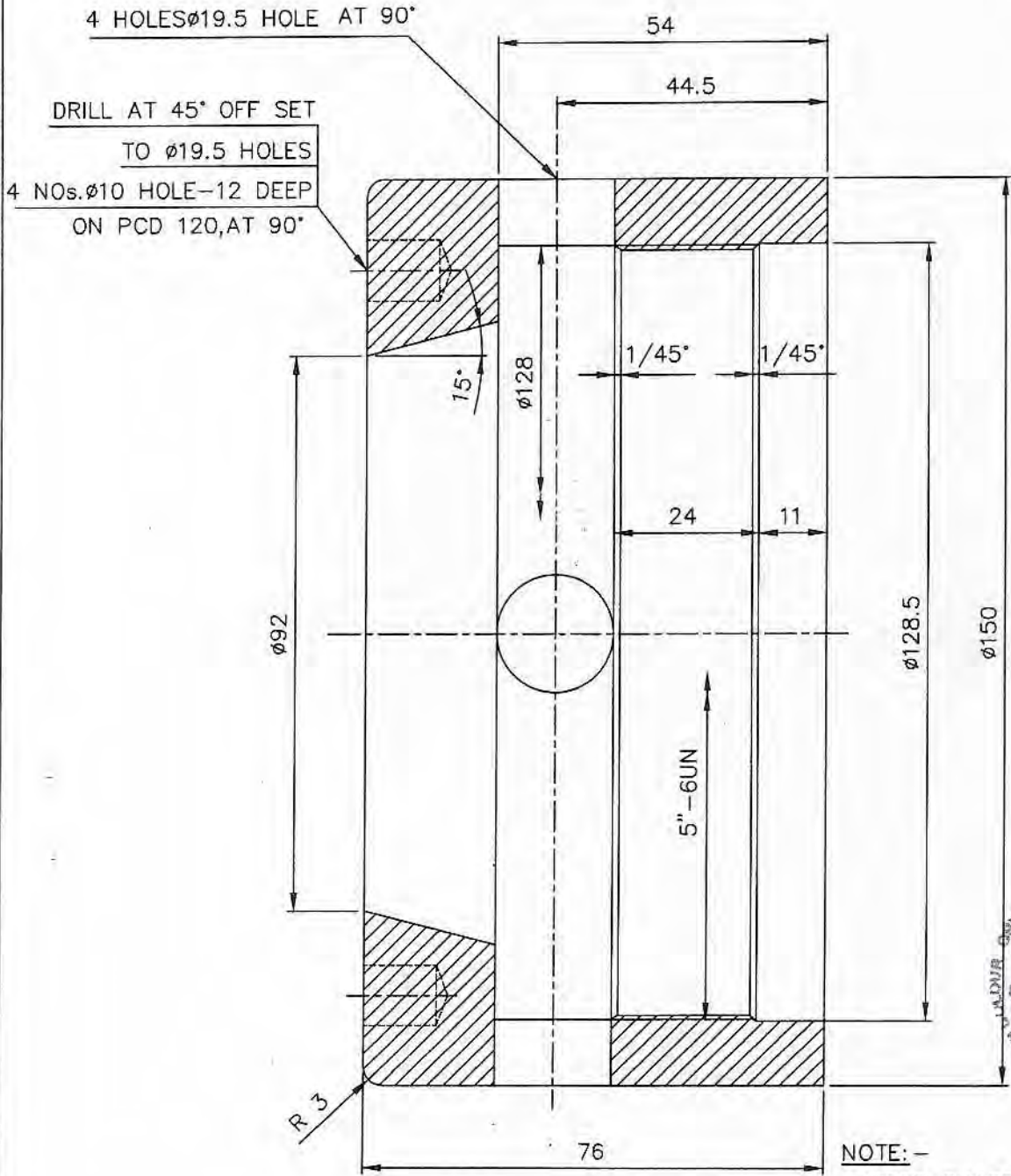


36

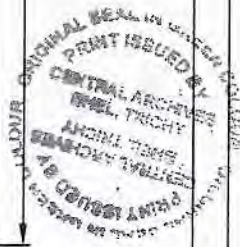
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM

3.2/



NOTE: - AVOID SHARP CORNERS



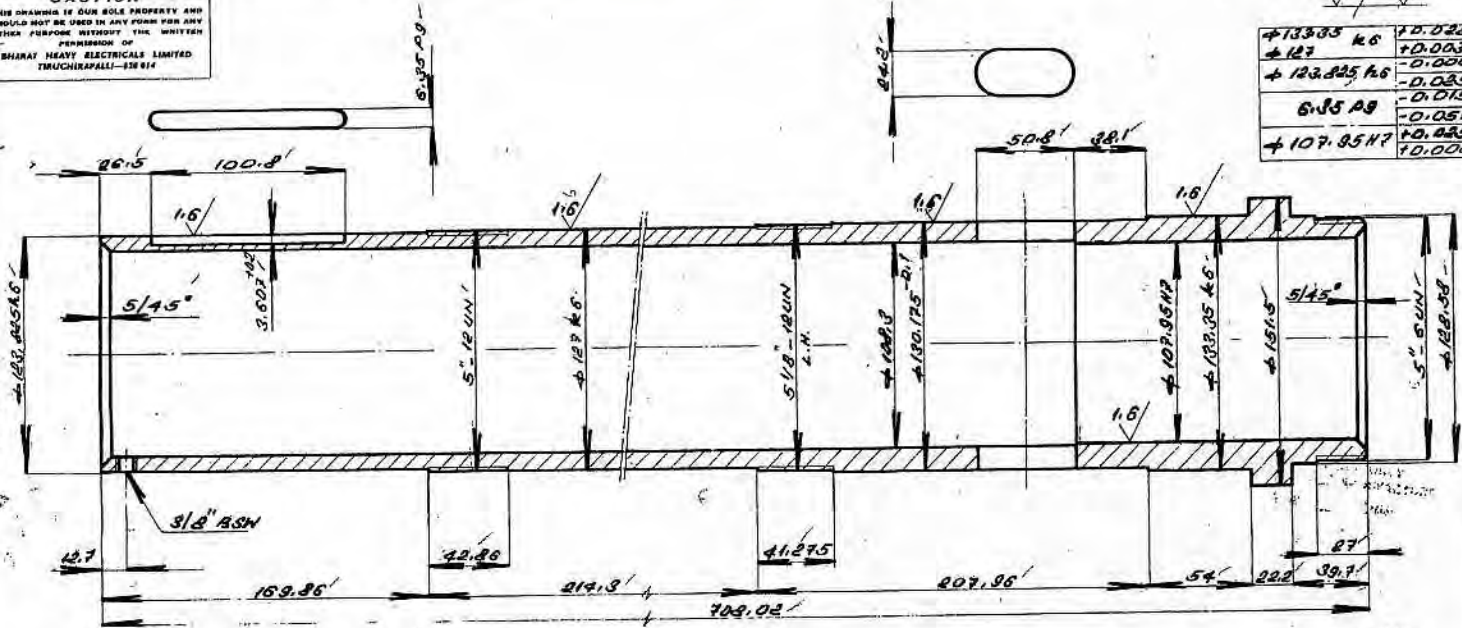
No. of Pieces	DESCRIPTION		MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE: LOC.NO: 5951-4014			ALTERATIONS:	DCN REF	DATE	SIGN. INDEX
SCALE 1:1	DRAWN/TCD	P.Albertrose					
	CHECKED	R.Ramamoorthy					
	APPROVED	C.S.Jayasheelan					
	DATE	18-03-10					
	MACHINE	MODERN CUT-OFF		TYPE	MODEL 3K-NEW		
	TITLE	LOCK NUT 5"-6UNx76 L (COLLET LOCKING.)		DRAWING No	4M12B1628807		
				Sheet No	No. of Sheets		

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 TRUCHIRAPALLI-520 014

3-2 / 1.5

+133.83	4.6	10.028
+127		+0.003
+133.825	4.6	-0.000
		-0.035
		-0.015
6.85	0.8	-0.051
+107.9517		+0.035
		10.000

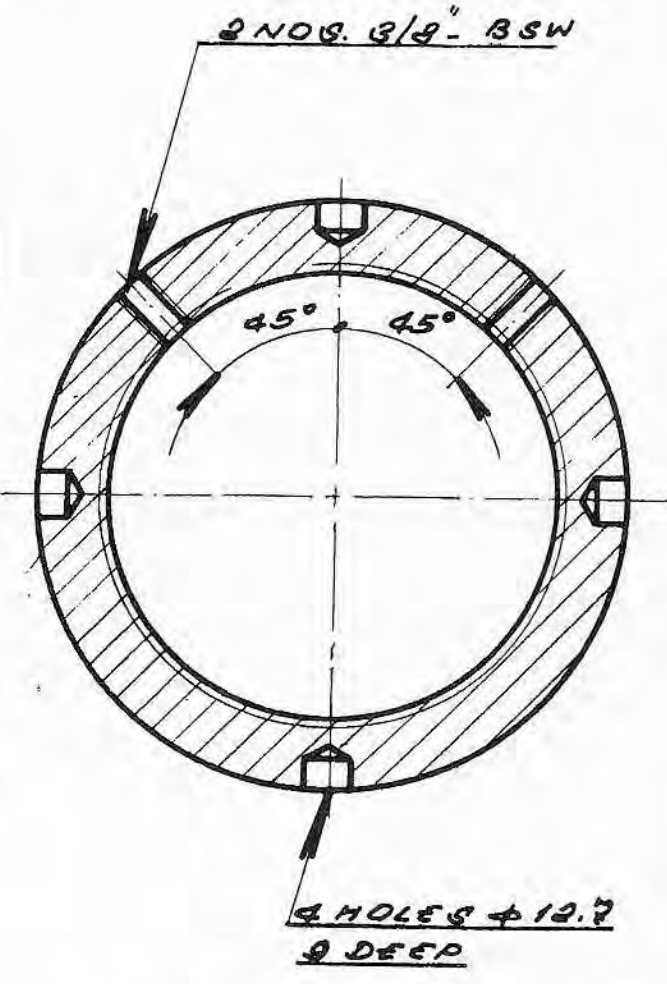
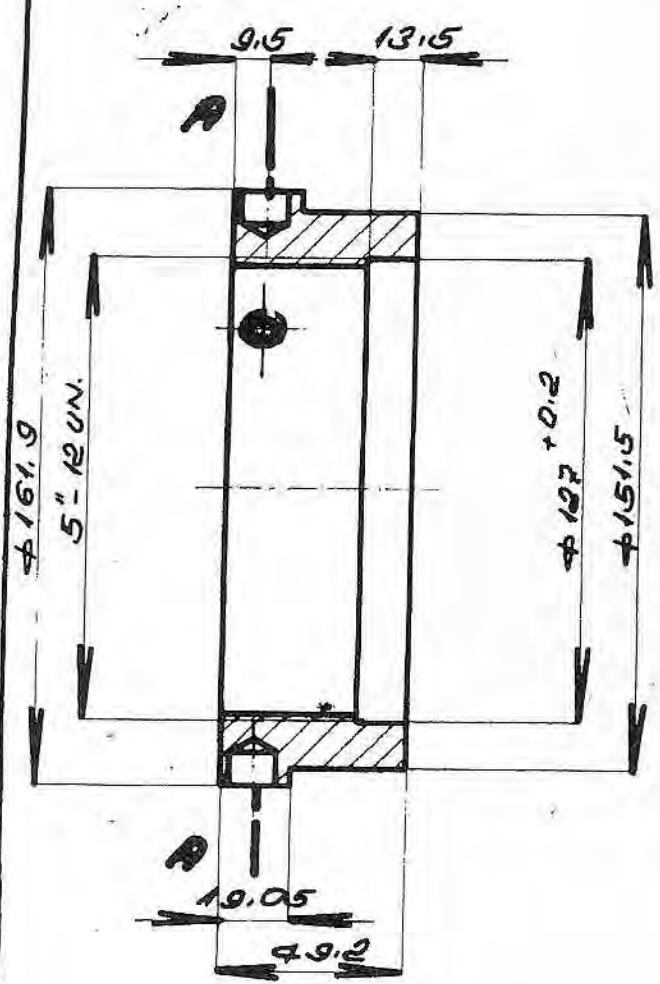


NO. OF SHEETS	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	REMARKS	DATE	DRAWING NO.	ITEM NO.
			55CB 13.7283			23.26		
REMARKS			TOTAL NET WT. (KG.)					
SCALE	DRAWN	CHECKED	APPROVED	DATE	REFERENCE	ALTERATIONS	DATE	SHEET NO.
1:1				3.5.1980				
MACHINE MODERN CUT OFF			TYPE: MODEL JK					
TITLE: SPINDLE			DRAWING NO. 3-M.122-7889					
PART NO: E 3002A1			NO. OF SHEETS: 16			SHEET No.:		

35

3.2

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 TIRUCHIRAPALLI-14



**SECTION 'A-A'**

PRINT ISSUED BY  
 CENTRAL ARCHIVING  
 SHEEL, TRICHY  
 ARCHIVE TRANS  
 BEARINGS DIVISION  
 BHARAT HEAVY ELECTRICALS LTD.

		CI. 9120									
		I.S. 210									
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt (kg)	GROSS Wt (kg)	DRAWING NO.	ITEM NO.	TOTAL NET Wt (kg)	
REMARKS											
SCALE	DRAWN	REFERENCE		ALTERATIONS		DATE	SIGNATURE	INDEX			
1:2	CHECKED	PART NO.									
	APPROVED	E.308									
	STDS. OFFICER										
DATE	15.7.1980										
MACHINE MODERN CUT OFF				TYPE: MODEL-3K.		INV. NO.					
TITLE:				DRAWING NO.							
<b>BEARING LOCK NUT</b>				7-M.126-19.794							
5" 12. UN.				-16							
NO. OF SHEETS				SHEET NO.							



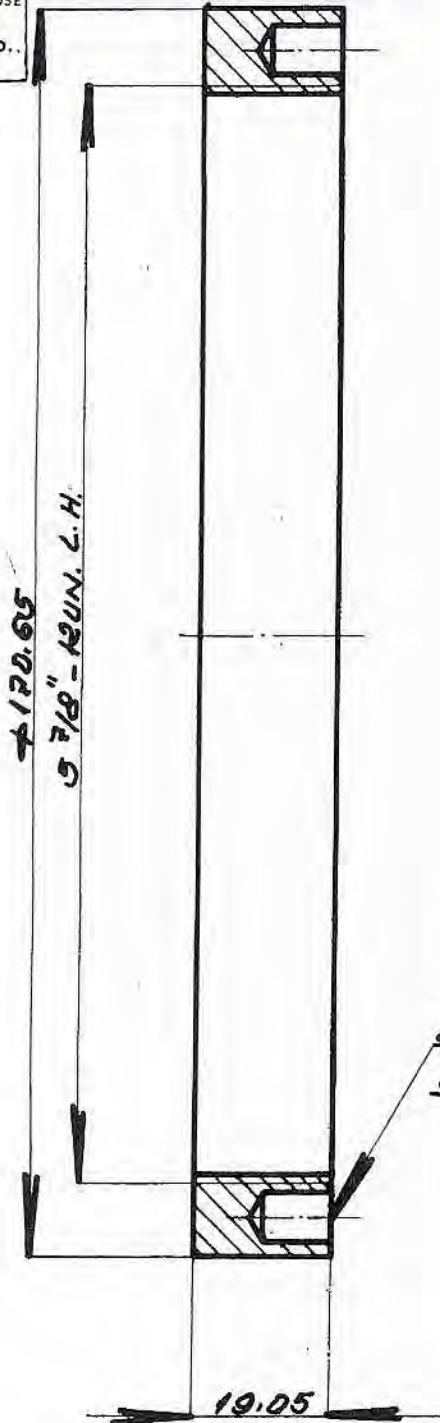


33

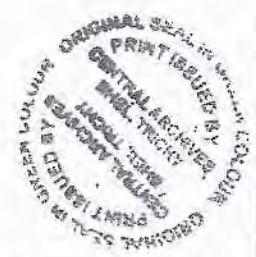
3.2

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TIRUCHIRAPALLI-14



2 HOLES 6.9 - 9.5 DEEP  
ON DCD 158.75



				BM.830					
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt (kg)	GROSS Wt (kg)	DRAWING NO.	ITEM NO.
REMARKS					TOTAL NET Wt (kg)				
SCALE 1:1	DRAWN	<i>[Signature]</i>		REFERENCE	ALTERATIONS		DATE	SIGNATURE	INDEX
	CHECKED	<i>[Signature]</i>							
	APPROVED	<i>[Signature]</i>							
	STDS. OFFICER	<i>[Signature]</i>							
	DATE	9.5.1980							
MACHINE MODERN CUT OFF			TYPE: MODEL 3K		INV. NO.				
TITLE: <b>FRONT INNER RACE LOCK NUT 5 7/8"-12UN.LH.</b>			DRAWING NO. <b>16</b>		<b>Q. M. 12B-19624</b>				
PART NO: 53008			NO. OF SHEETS		SHEET NO.				

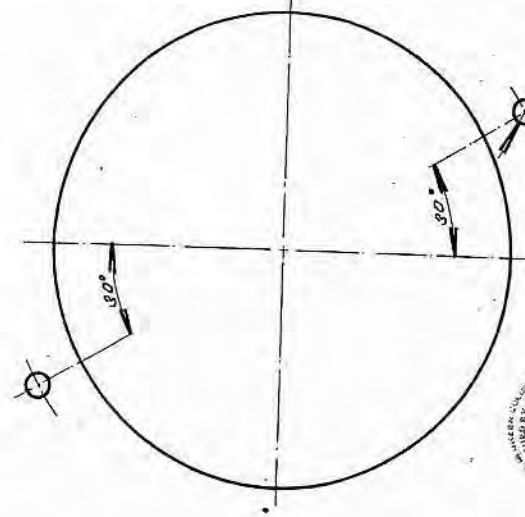
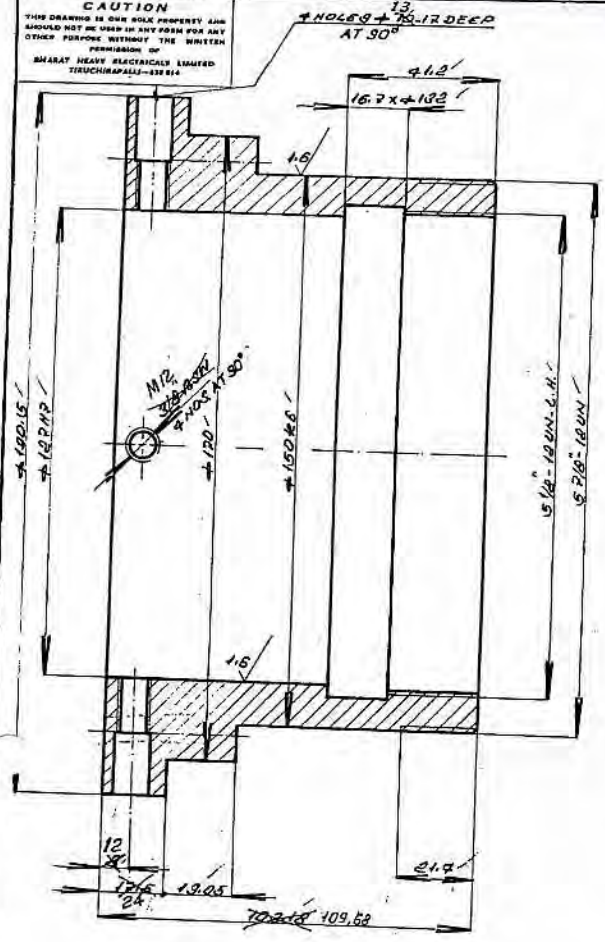


32

32 / 1.6

+ 127 H7	10.040
+ 150 H8	10.000
	10.033
	10.003

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 TIRUCHIRAPPALLI-620 014

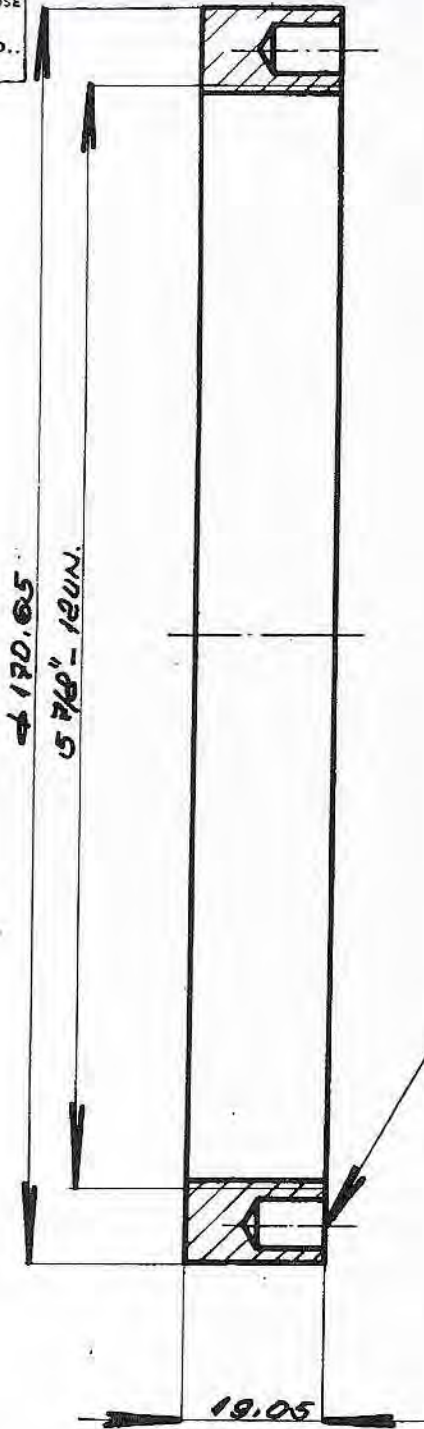


NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	C.I. 61.20 IS: 210	FC 210 IS: 210	STC 7.3	DRAWING NO.	ITEM NO.
REMARKS	TOTAL NET WT. (KG.)							
SCALE	DRAWN	CHECKED	APPROVED	STDR. OFFICER	DATE	REPARED	DATE	SIGNAL
1:1	10/1/80	S. Srinivas	S. Srinivas	S. Srinivas	8.7.1980	16		DET
MACHINE WORKED OUT OFF				PART NO: R.811		TYPE: MODEL-3K		
TITLE: REAR THRUST RING				DRAWING NO. 16		3. M. 126-7946		
NO. OF SHEETS.				SHEET NO.				

82 ✓

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 TIRUCHIRAPALLI-14



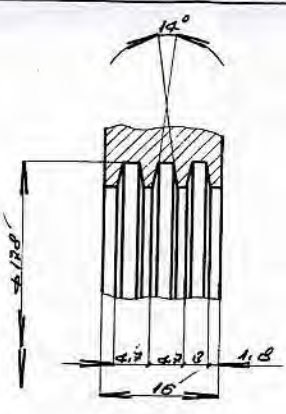
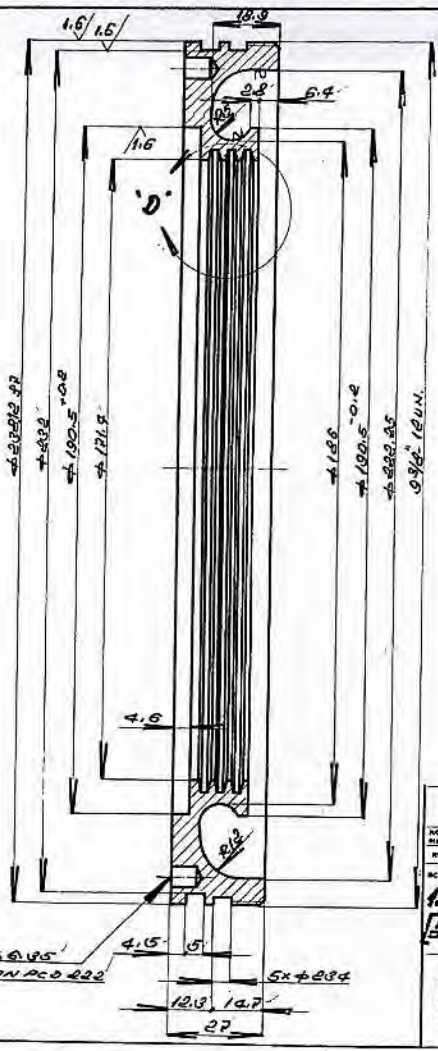
2 HOLES 46.9 - 9.5 DEEP  
ON PCD 158.75

		BM-C30							
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt(kg)	GROSS Wt(kg)	DRAWING NO.	ITEM NO.
REMARKS				TOTAL NET Wt (kg)					
SCALE	DRAWN			REFERENCE	ALTERATIONS		DATE	SIGNATURE	INDEX
	CHECKED								
	APPROVED								
	STDS. OFFICER								
DATE		0.5.1980							
MACHINE MODERN CUT OFF				TYPE: MODEL.3K		INV. NO.			
				TITLE: <b>REAR INNER RACE LOCK NUT 5 7/8" 12UN.</b> PART NO: E3009		DRAWING NO. <b>16</b> <b>4.M.126.19625</b>			
				NO. OF SHEETS		SHEET NO.			



29

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**DETAIL-D**

+288.1287 -D.050  
 -D.098



NO. OF SHEETS		DESCRIPTION		SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	FORM NO.	NET WT. (G.)	NET WT. (KG.)	DRAWING NO.	ITEM NO.
					1 FG 220 16:210			2.15			
REMARKS											
TOTAL NET WT. (KG.)											
SCALE	DRAWN	CHECKED	APPROVED	ATDS. OFFICER	DATE	REFERENCE	ALTERNATIONS	DATE	SIGNAL	TYPE	DES.
1:1					10.5.1980	PART NO E314					
MACHINE: MODERN CUT OFF						TYPE: MODEL 3K					
REAR OUTER RACE LOCK NUT 3 3/8" 12 UN.						DRAWING NO. 16					
						3. M. 122. 7893					
						NO. OF SHEETS. SHEET NO.					

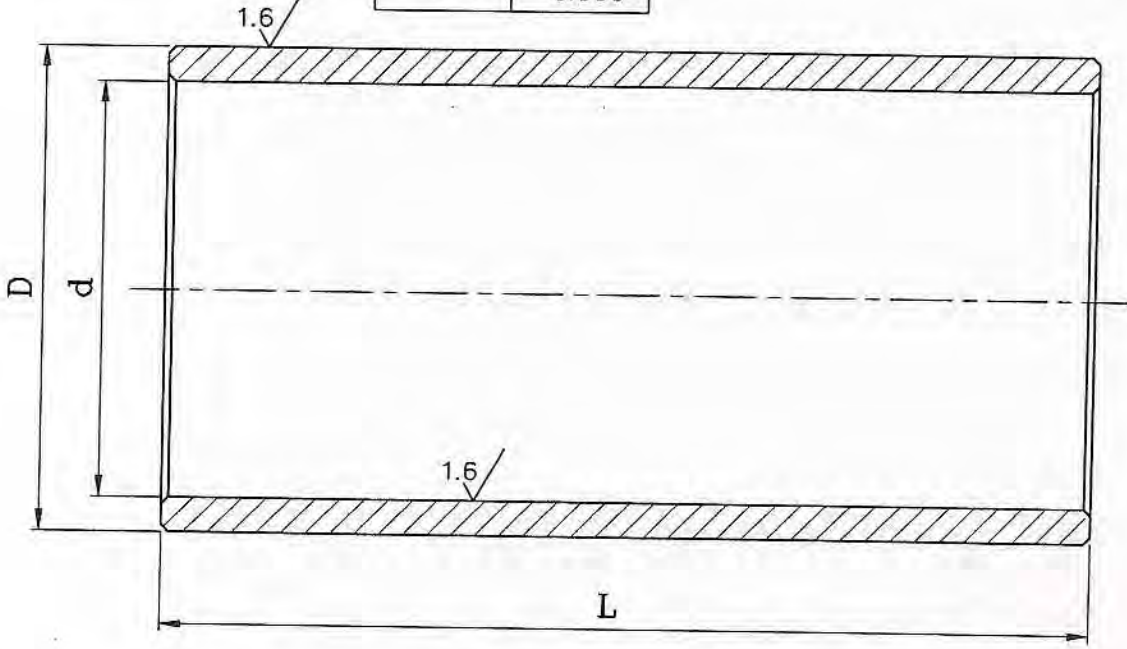
INDEX No. 71-11F

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ALL DIMENSIONS ARE IN MM

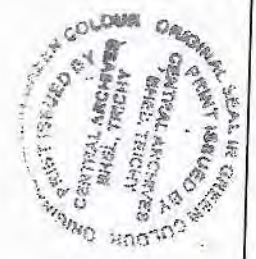
ø30H7	+0.021	ø50p6	+0.051
	0.000		ø52p6
ø60H7	+0.030	ø70p6	+0.068
	0.000		ø150p6
ø130H7	+0.040		
	0.000		
ø40H7	+0.025		
	0.000		

3.2//1.6



05	ø40H7	ø50p6	60	0.33
04	ø130H7	ø150p6	90	3.07
03	ø40H7	ø52p6	20	0.14
02	ø30H7	ø50p6	50	0.50
01	ø60H7	ø70p6	135	1.07
SL NO.	d	D	L	wt.in kg

NOTE: - CHAMFER CORNERS FOR 1/45°

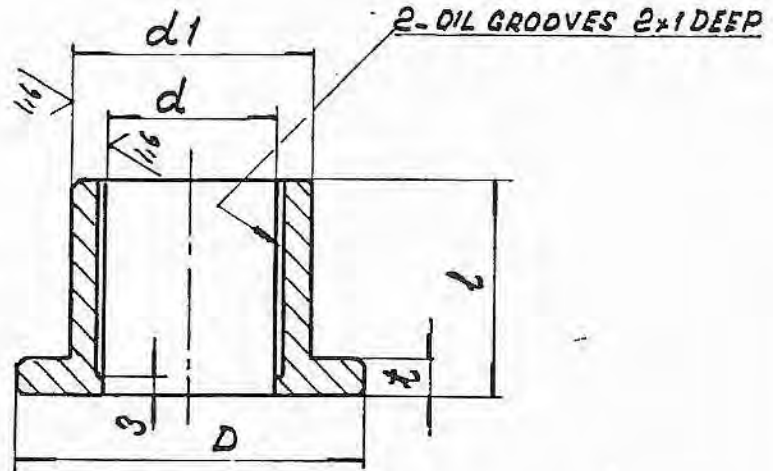


PCuSn7		IS: 28					
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.	
	REFERENCE:	ALTERATIONS:		DCN REF	DATE	SIGN.	INDEX
		SL.NO.04&05 ADDED			14.03.12'	CSJ	00
SCALE	DRAWN	S.Selvamanickam					
NTS	CHECKED	R.Ramamoorthy					
	APPROVED	C.S.Jayasheelan					
	DATE	23.03.11'					
MACHINE: PANEL PROCESSING MACHINE		TYPE: PLWD-II					
TITLE: BUSH (ID60xOD70x135L) (CROSS CONVEYOR)		DRAWING No:				REV.	
		4M10A1		328890		01	
		Sheet No:				No. of Sheets:	

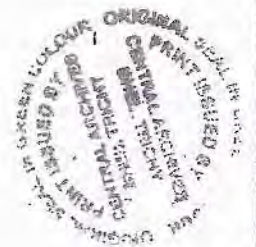
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 TIRUCHIRAPALLI-14

3.2 / 1.6 /



D	dH7	d1P6	l	t	NOS.	RED	ITEM NO.	wt.
70	50	60	30	5	1		26	0,28
50	25	35	20	5	2		25	0,114
80	60	70	30	5	4		24	0,075
55	35	45	40	5	4		22	0,26



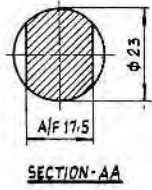
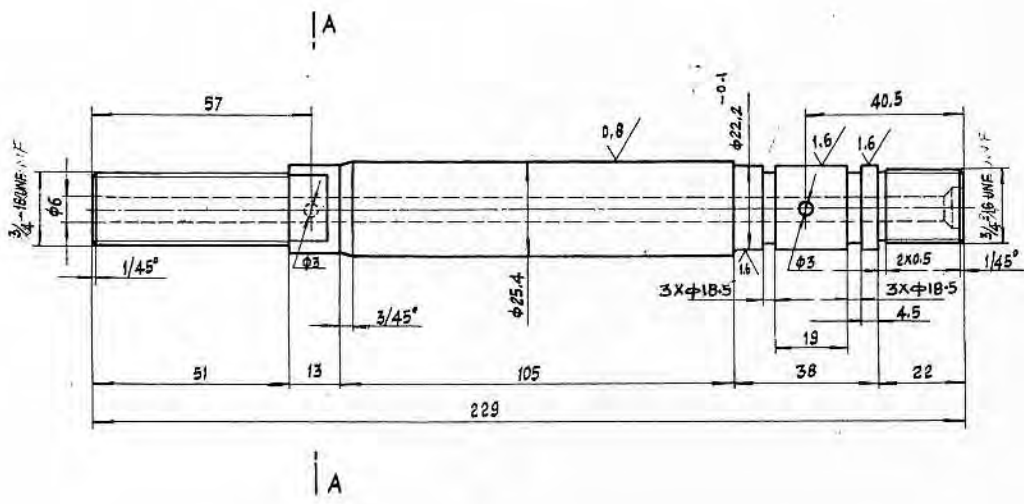
CHAMFER SHARP CORNERS TO  $1/45^\circ$

26  
25  
24  
22

		BH-CA3		PCUS77				1.M.02F-0804	
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING NO.	ITEM NO.
REMARKS				TOTAL NET wt (kg) 6077.6601					
SCALE	DRAWN	REFERENCE		ALTERATIONS	DCN	DATE	SIGNATURE	INDEX	
1:1	CHECKED	S. U. Basamy							
	APPROVED	[Signature]							
	STDS. OFFICER	[Signature]							
	DATE	19.11.1974							
MACHINE PINCH ROLL		TYPE: PRG		INV. NO.					
TITLE: BUSH		DRAWING NO. 14		4.M.02F.12820					
NO. OF SHEETS		SHEET NO.							



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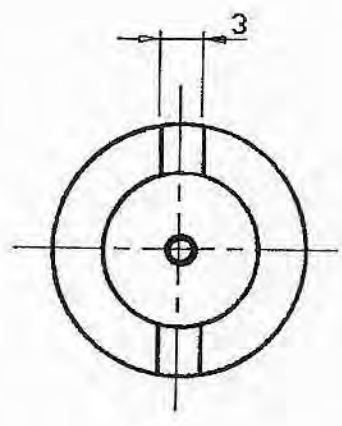
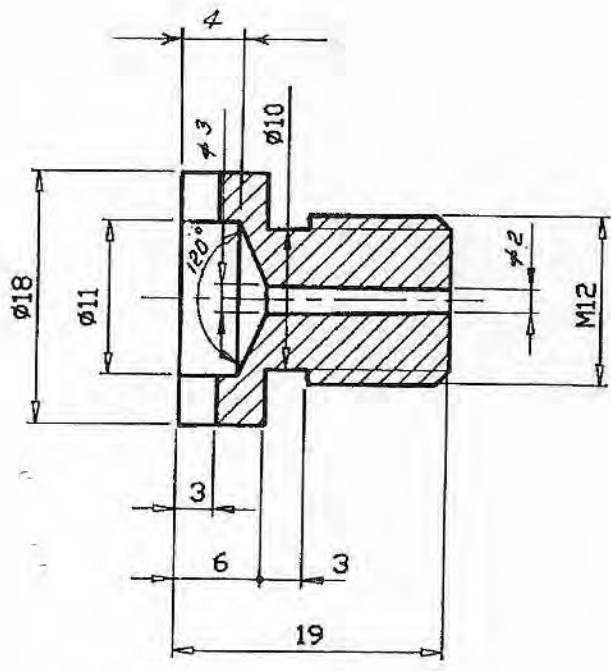


				45 CB	0.13	2-17-128-23949	04
				IS: 7283			
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP COST	NET WT	DRAWING NO.
						ECIB	CC 00
REMARKS				TOTAL NET WT. 152			
SCALE	DRAWN	REFERENCE		ALTERATIONS			
1:1	CHECKED						
	APPROVED						
	STDS. OFFICER						
	DATE	08-11-82					
MACHINE: MODERN CUT OFF				TYPE: MODEL 3K			
TITLE: PART NO. EXP 161				DRAWING NO.			
PISTON ROD				3-M-12b-8644			
[WORKING CYLINDER]				NO. OF SHEETS: SHEET NO.			

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ALL DIMENSIONS ARE IN MM

		3.2/1.6/✓
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AVOID SHARP CORNERS.

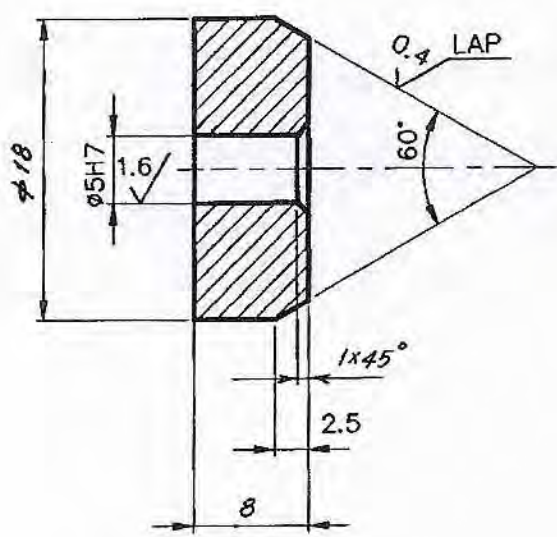
No. of Pieces	ROD $\phi$ 18 x 19 l		CL IV	IS-1875	0.02	2-M-12B-03351	11	
	DESCRIPTION		MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.	
REFERENCE:				COMPONENT CODE: 00	EQUIPMENT CODE: 16			
				ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE	DRAWN	K. Natarajan						
	CHECKED							
	APPROVED	<i>[Signature]</i>						
	DATE	23-07-95						
	MACHINE: MODERN CUT-OFF			TYPE: MODEL 3K				
	TITLE: VALVE SEAT (WORKING CYLINDER)			DRAWING No: 4-M-12B-25529 <sup>16</sup>			REV.	
				No. of Sheets:		Sheet No:		

24

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ALL DIMENSIONS ARE IN MM

ø5H7	+0.012	3.2/1.6/0.4	LAP
	+0.000		



NOTE: -  
AVOID SHARP CORNERS.



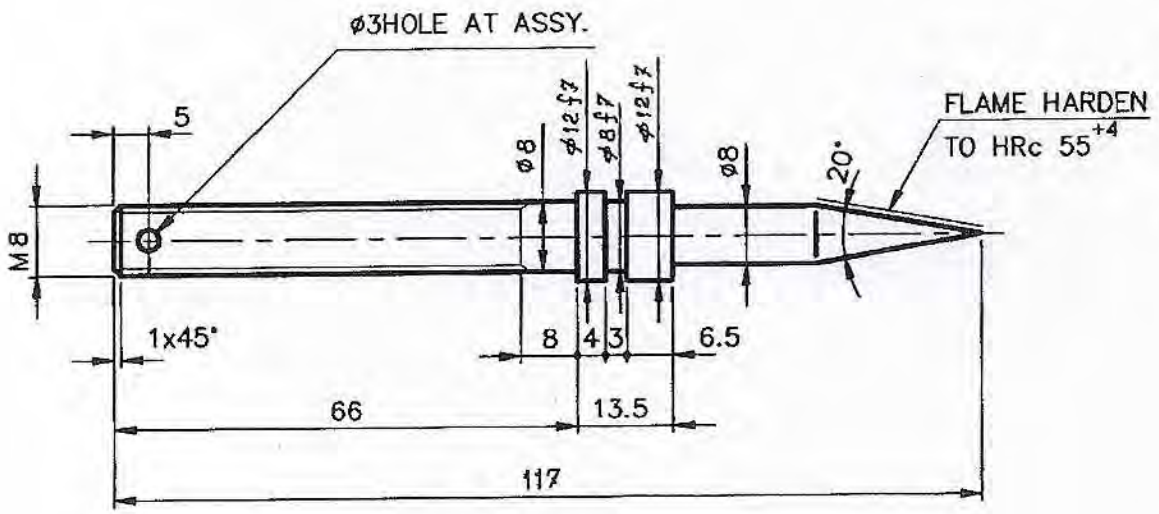
X	ROD ø 18 x 8L		PCU Sn 7	IS: 28	0.02	2-M-12B-03951	08
	No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
REFERENCE:					COMPONENT CODE: 00	EQUIPMENT CODE: 16	
			ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE	DRAWN	K. Natarajan					
	CHECKED						
	APPROVED						
	DATE	28-07-95					
MACHINE: MODERN CUT-OFF				TYPE: MODEL 3K			
		TITLE: VALVE CONE (WORKING CYLINDER)		DRAWING No: 4-M-12B-25534 16		REV.	
				No. of Sheets:		Sheet No:	

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CAUTION:

ALL DIMENSIONS ARE IN MM

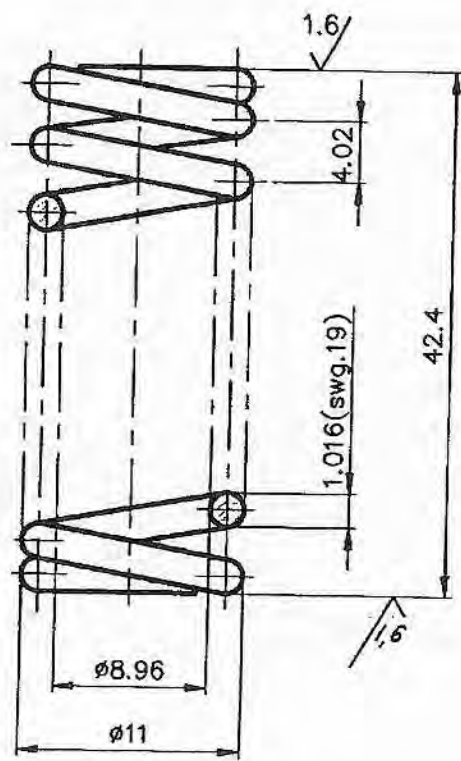
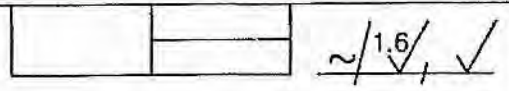
$\phi 8f7$	-0.013	$\phi 12f7$	-0.016	3.2//1.6// ✓/✓/✓
	-0.028		-0.034	



No. of Pieces	ROD $\phi 12 \times 117$		55C8	IS: 5517	0.05	2-12-12B-03951	12
	DESCRIPTION		MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
REFERENCE:				COMPONENT CODE: 00	EQUIPMENT CODE: 16		
SCALE			ALTERATIONS:		DCN REF	DATE	SIGN. INDEX
DRAWN		<i>K. Natarajan</i>					
CHECKED		<i>[Signature]</i>					
APPROVED		<i>[Signature]</i>					
DATE		28-07-95					
MACHINE: MODERN CUT-OFF				TYPE: MODEL 3K			
TITLE: NEEDLE VALVE (WORKING CYLINDER)				DRAWING No: 4-M-12B-25535		REV.	
				No. of Sheets: 16		Sheet No:	

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ALL DIMENSIONS ARE IN MM



COIL DETAILS:-

TOTAL NO. OF COILS: 12  
 NO. OF ACTIVE COILS 10  
 ENDS CLOSED & SQUARED BY GRINDING.

HARDENED AND TEMPERED



No. of Pieces	DESCRIPTION		MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		COMPONENT CODE: 18	EQUIPMENT CODE: 16			
SCALE	DRAWN	P.A. ROSS			DCN REF	DATE	SIGN.
/	CHECKED	<i>[Signature]</i>					
	APPROVED	<i>[Signature]</i>					
	DATE	29-07-95					
MACHINE: MODERN CUT-OFF				TYPE: MODEL 3K			
TITLE: SPRING (ID8.96xOD11x42.4L) (WORKING CYLINDER)				DRAWING No: 4-M-12B-25538		REV.	
No. of Sheets:				Sheet No:			

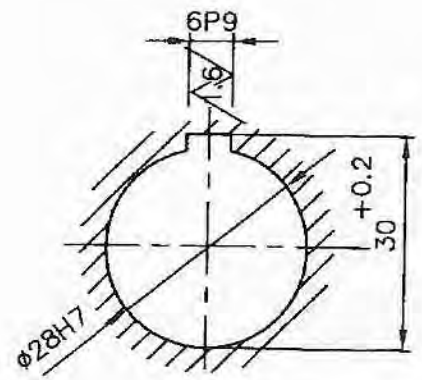
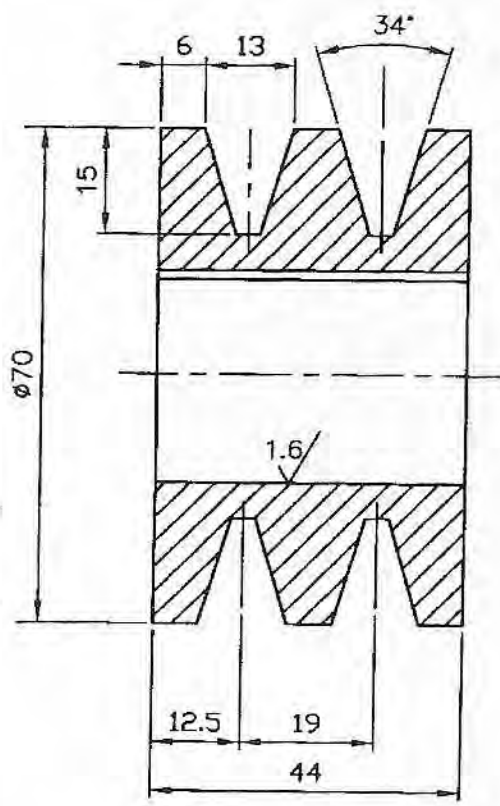


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ALL DIMENSIONS ARE IN MM

ø28H7	+0.021
	+0.000
6P9	-0.012
	-0.042

3.2//1.6/



**NOTE:**  
SHARP CORNERS TO BE CHAMFERED 1/45°



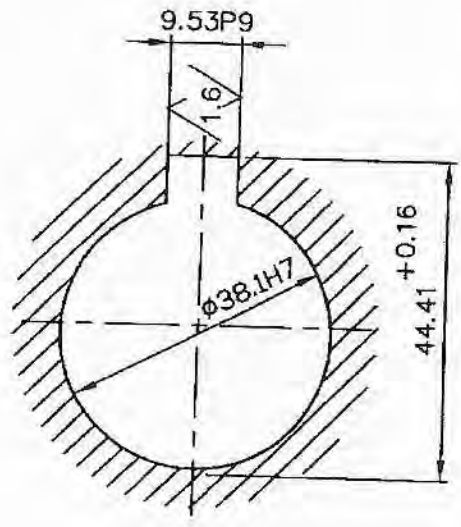
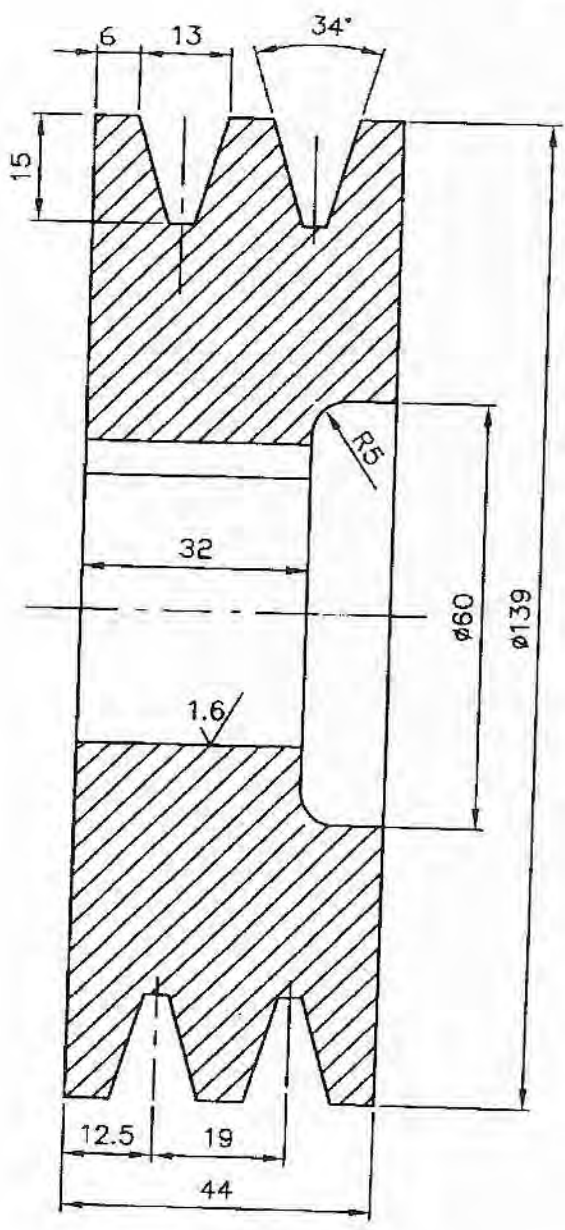
No. of Pieces		DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
X		FG220	IS: 210	1.00			
REFERENCE:		ALTERATIONS:		DCN REF	DATE	SIGN.	INDEX
SCALE	DRAWN	M.K.V					
1:1	CHECKED						
	APPROVED						
	DATE	24-09-04					
MACHINE: MODERN CUT OFF			TYPE: MCO-NEW				
TITLE: PULLEY (MOTOR SIDE) (FEEDER ASSY)			DRAWING No:				REV.
Sheet No:			4M12B1627469				No. of Sheets

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 680 014.

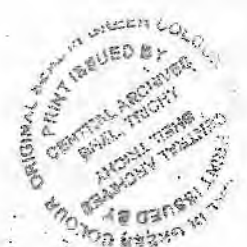
ALL DIMENSIONS ARE IN MM

∅38.1H7	+0.021
	+0.000
9.53P9	-0.015
	-0.051

3.2/1.6/



NOTE: SHARP CORNERS TO BE CHAMFERED 1/45°



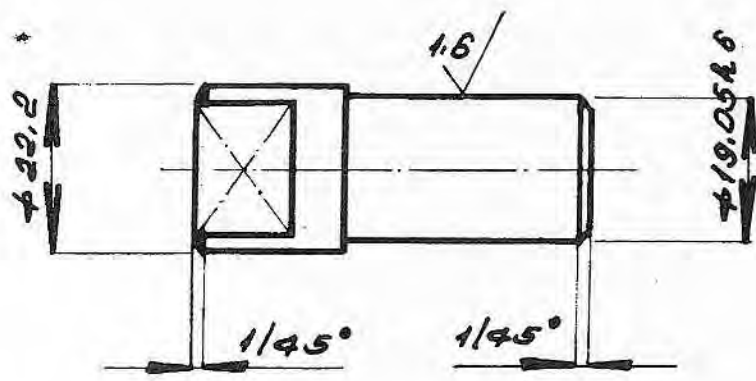
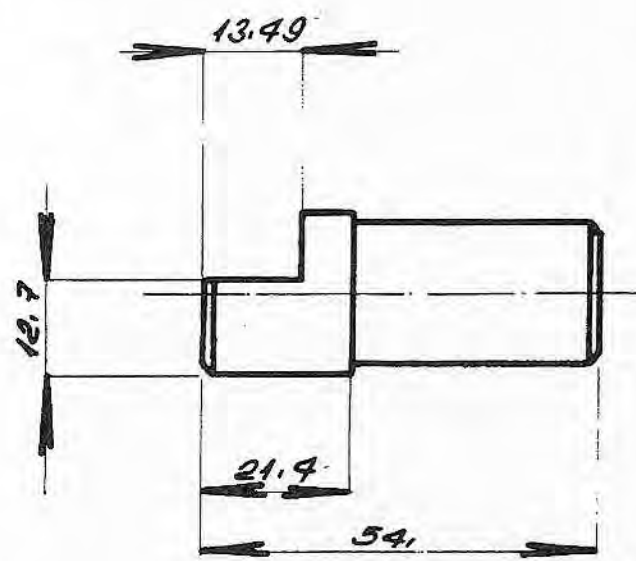
No. of Pieces	DESCRIPTION		FG220	IS: 210	4.00	DRAWING No.		ITEM No.	
	REFERENCE:		MATERIAL	STANDARD	NET.WT.IN KGS.	ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE 1:1	DRAWN	M.K.V							
	CHECKED								
	APPROVED								
	DATE	24-09-04							
MACHINE:	MODERN CUT OFF			TYPE: MCO-NEW					
	TITLE: PULLEY (FEEDER SIDE) (FEEDER ASSY)			DRAWING No:		REV.			
				4M12B1627470					
			Sheet No:		No. of Sheets:				

19

3.2 / 1.6

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**BHARAT HEAVY ELECTRICALS LTD.,**  
 TIRUCHIRAPALLI-14

± 19.05 ± 0.06	- 0.000
	- 0.013



2	ROD Ø 22.2 x 54L		BM. C45 A5CB				0.02		
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING NO.	ITEM NO.

REMARKS			TOTAL NET WT (kg) EC: 31		EC: 16	
SCALE	DRAWN	REFERENCE	ALTERATIONS		DATE	SIGNATURE
1:1	<i>Bayal</i>					
	CHECKED					
	APPROVED					
	STDS. OFFICER					
	DATE	9.5.1980				

	MACHINE MODERN CUT OFF	TYPE: MODEL 3K	INV. NO.
	TITLE: <b>THRUST PIN</b> Ø 22.1 x 54L PART NO: E8301	DRAWING NO. <b>46</b> <b>Q.M. 122.19619</b>	
	NO. OF SHEETS	SHEET NO.	