



BHARAT HEAVY ELECTRICALS LIMITED

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

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

429-002/A

	Enquiry No	Enquiry Date	Due Date for Quotation
	2661400640 - 55	11.09.2014	11.10.2014
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	7501B2101100 DOUBLE GEAR AS PER DRG. NO. 3M-01B-21-12256 NOTE: FOR SL.NO. 10 AND 20 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY. 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	6.000	6.00	27.11.14
20	7501B2100600 PINION SHAFT AS PER DRG:4M-01B-21-27057	NO	21.000	21.00	27.11.14
30	7501B2100800 PINION SHAFT AS PER DRG. NO. 3M-01B-21-13555 NOTE: FOR SL.NO. 30 AND 40 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	6.000	6.00	27.11.14
40	7501B2100700 SPUR GEAR AS PER DRG.NO.4M-01B-21-28182	NO	21.000	21.00	27.11.14
50	7501B1201900 SCREW ROD AS PER DRG. NO. 3M-01B-12-11013 NOTE: FOR SL.NO. 50 AND 60 ARE MATING	NO	1.000	1.00	27.11.14

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.

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

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



BHARAT HEAVY ELECTRICALS LIMITED

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

Page
2/3

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

2661400640 / 11.09.2014

COMPONENTS. HENCE THESE ITEMS
SHOULD BE PROCURED FROM SINGLE SOURCE
ONLY.

60	7501B1202000 BOX NUT AS PER DRG. NO. 3M-01B-12-11014	NO	2.000	2.00	27.11.14
70	7508A0202300 INTERNAL GEAR AS PER DRG. NO. 3M-08A-02/03-2741	NO	4.000	4.00	27.11.14
80	7509A0301200 SCREW ROD AS PER DRG. NO. 3M-09A-03-7667 NOTE: FOR SL.NO. 80 TO 100 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	2.000	2.00	27.11.14
90	7509A0300200 BOX NUT AS PER DRG. NO. 4M-09A-03-25392.	NO	2.000	2.00	27.11.14
100	7509A0300100 BOX NUT AS PER DRG. NO. 4M-09A-03-25393.	NO	2.000	2.00	27.11.14
110	7509C0700400 SCREW ROD (LH) AS PER DRG. NO. 3M-09C-07-5892 NOTE: FOR SL.NO. 110 TO 130 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	1.000	1.00	27.11.14
120	7509A0301400 CHECK NUT (LH) AS PER DRG. NO. 3M-09A-03-6484	NO	1.000	1.00	27.11.14
130	7509A0301300 NUT (LH) AS PER DRG. NO. 3M-09A-03-6485.	NO	1.000	1.00	27.11.14
140	7507B1400300 BOX NUT AS PER DRG. NO. 4M 07B 14 29590.	NO	2.000	2.00	27.11.14
150	7508A0202400 DRILLING PLATE AS PER DRG. NO. 4M-08A-02/03-10710	NO	4.000	4.00	27.11.14
160	7508A0202500 DRILLING SPACER AS PER DRG. NO.	NO	4.000	4.00	27.11.14

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.

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

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



BHARAT HEAVY ELECTRICALS LIMITED

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

Page
3/3

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

2661400640 / 11.09.2014

4M-08A-02/03-10711

170	7506B0900900 SPLINE SHAFT AS PER DRG. NO. 3M 06B 09 15094	NO	1.000	1.00	27.11.14
180	7507B1400400 INTERNAL GEAR AS PER DRG. NO. 4M-07B-14-29620. NOTE: FOR SL.NO. 180 AND 190 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	2.000	2.00	27.11.14
190	7507B1400500 SPUR GEAR AS PER DRG. NO. 4M 07B 14 29619	NO	2.000	2.00	27.11.14
200	7508D0802100 SPUR GEAR AS PER DRG. NO. 4M 08D 08 19970-02. NOTE: FOR SL.NO. 200 AND 210 ARE MATING COMPONENTS. HENCE THESE ITEMS SHOULD BE PROCURED FROM SINGLE SOURCE ONLY.	NO	1.000	1.00	27.11.14
210	7508D0802200 SPUR GEAR AS PER DRG. NO. 4M 08D 08 19975.	NO	1.000	1.00	27.11.14

General Note:

GENERAL NOTE:

PLEASE SUBMIT YOUR OFFER IN 'TWO PART BID SYSTEM'
AS PER ANNEXURE ENCLOSED.

ENCLOSURES:

ANNEXURE II,III,IV,V,VI,VII & DRAWINGS

Enclosures:

"LD clause has to be confirmed without fail."

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.

Yours faithfully,
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>

MM: CP & SP
Annexure For Techno Commercial Bid
 Check List - to be filled and submitted along with Technical Bid

BHEL Commercial Terms and Conditions for Indigenous Supplies	Vendor's Confirmation / Comments
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 quoted item wise only as per the model format enclosed	
Prices shall be quoted on " FIRM PRICE " basis only The prices should be only on F.O.R / Despatching station basis with Packing & Forwarding charges if any. Applicable % of ED & Sales Tax, Freight & Insurance, Installation & Commissioning Charges should be clearly Indicated	
Validity of offer 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	
Liquidated damages @ '0.5% per week subject to a maximum of 10% of the order value shall be applicable for delay in deliveries For Details Refer Annexure- v	
Following Risk Purchase clause 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	
Payment term for supply portion: Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials For details Refer Annexure- v	
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 sealed cover super-scribing clearly the Enquiry reference and due date.	
% 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:-

- 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.
- 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
- 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.
- No row shall be left blank. Please Indicate NA, in case the item is "not applicable"

Payment Term (Indigenous)	
If materials are receivable at Stores/Trichy without PBG	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.
If materials are receivable at Stores/Trichy with PBG	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.

Liquidated Damages / Penalty -

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).

Guarantee / Warranty Period – (if applicable)

Normally No deviation permitted and the deviated offers are liable for rejection.

Ranking-

BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.

Performance Bank Guarantee – (if applicable)

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.

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 forMicro / Small (~~Strike off which is not applicable~~)
Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership number -

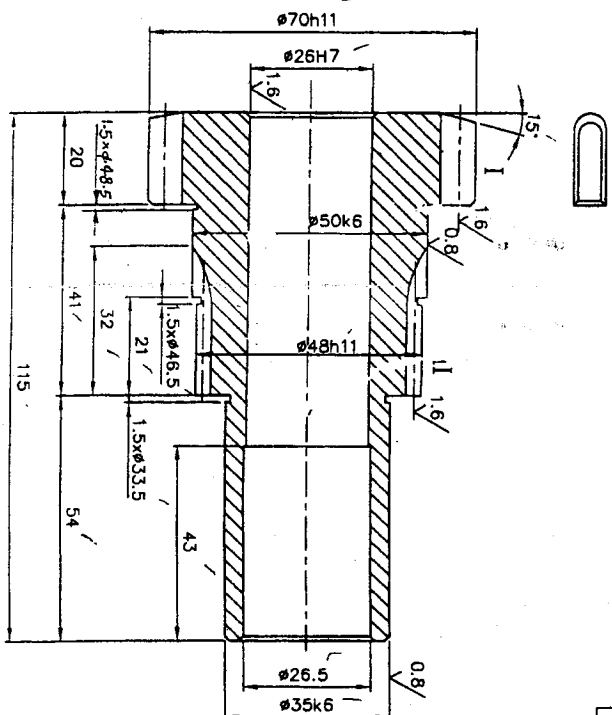
Seal of Chartered Accountant

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

NO. OF TEETH	18
MODULE	3.5
PRESSURE ANGLE	20°
WIDTH ACROSS 3 TEETH	26.7134 -0.141 / -0.189
CORRECTION FACTOR	NIL
Q.L.T.Y. & TOL. ZONE	9c DIN 3967
MATING GEAR NO. OF TEETH	-
MATING GEAR DRAWING NO.	-
CENTRE DISTANCE	-

NO. OF TEETH	30
MODULE	1.5
PRESSURE ANGLE	20°
WIDTH ACROSS 4 TEETH	16.129 -0.113 -0.152
CORRECTION FACTOR	NIL
Q.L.T.Y. & TOL. ZONE	9c DIN 3967
MATING GEAR NO. OF TEETH	20
MATING GEAR DRAWING NO.	4-M-D1B-27057
CENTRE DISTANCE	37.5



$\phi 26H7$	+0.021	$\phi 70h11$	-0.000
	+0.000		-0.190
$\phi 35k6$	+0.018	$\phi 48h11$	-0.000
	+0.002		-0.160
$\phi 50k6$	+0.018		
	+0.002		

NOTE: - CHAMFER THE EDGES TO 1/4S.
HARDEN TO HRc40 ±2

NO. OF REVISIONS	1	DESCRIPTION	5508	IS: 5517	1-16	DRAWING NO.	3-M-01B-21	TICK NO.	
REFERENCE:		MATERIAL	5508	STANDARD	IS: 5517	EQUIPMENT CODE	21		
SCALE	1:1	DRAWN		CHECKED		DATE	14-03-2003		
		APPROVED							

DOUBLE GEAR
(ODVETAIL DRIVE) 18T ϕ 70/30T ϕ 48

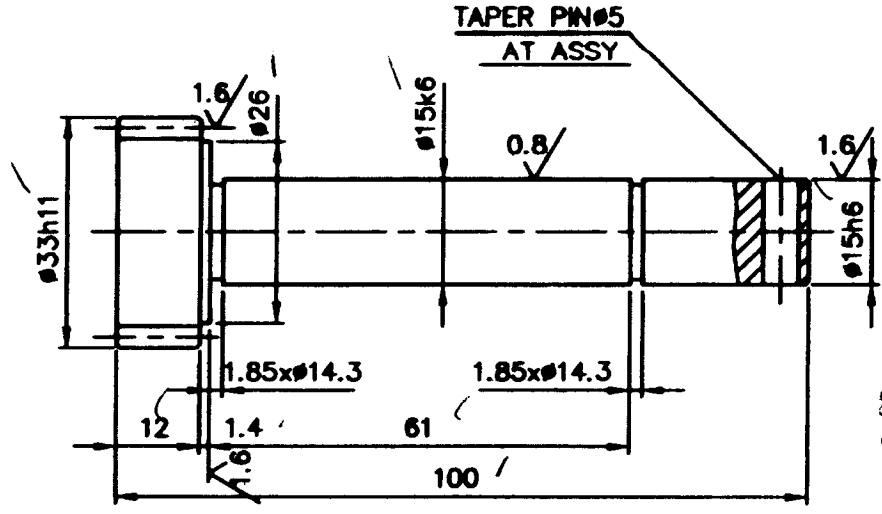
TITLE: MACHINE-HORIZONTAL BORING
TYPE: CBH100
DRAWING No: 3-M-01B-21
Sheet No: 21
REV.

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 TRICHY/PALLI - 600 014.

ALL DIMENSIONS ARE IN MM

Ø15k6	+0.012	Ø33h11	-0.000
	+0.000		-0.160
		Ø15h6	-0.000
			-0.011

3.2//1.6/0.8/



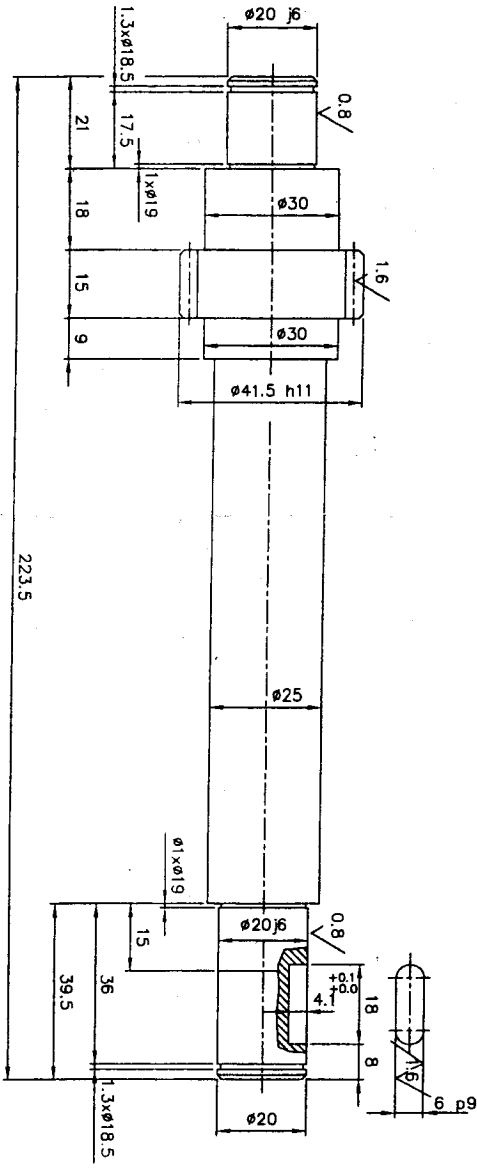
NO. OF TEETH	20 ✓
MODULE	1.5 ✓
PRESSURE ANGLE	20° ✓
WIDTH ACROSS 3 TEETH	11.49 -0.113 -0.150 ✓
CORRECTION FACTOR	NIL ✓
QTY. & TOL. ZONE	9c DIN 3967 ✓
MATING GEAR NO. OF TEETH	30 ✓
MATING GEAR DRAWING NO.	3-M-01B-12256 ✓
CENTRE DISTANCE	37.5 ✓

NOTE: -
CHAMFER THE EDGES TO 0.5/45°
HARDEN TO HRC40^{±2}

Ø33x100L	55C8	IS: 5517	0.21		
DESCRIPTION	MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.
REFERENCE:		COMPONENT CODE: 08	EQUIPMENT CODE: 21		
SCALE	DRAWN	ALTERATIONS:	DCN REF	DATE	SIGN.
1:1	CHECKED				
	APPROVED				
	DATE	14-03-2003			
MACHINE: HORIZONTAL BORING			TYPE: CBH100		
TITLE: PINION SHAFT _{20TxØ33} (DOVETAIL DRIVE)			DRAWING No: 4-M-01B-27057		REV.
			Sheet No.		Sheet No.

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



6 p9	-0.012	ø41.5 h11	-0.000
	-0.042		-0.160
ø20 k6	+0.009		+0.009
	+0.004		+0.004

32/16/08

NO. OF TEETH	25
MODULE	1.5
PRESSURE ANGLE	20°
WIDTH A/C 4 TEETH	-0.113
QUAL. & TOL. ZONE	16.02 -0.150
CORRECTION FACTOR	9C DIN 3967
MATING GEAR NO. OF TEETH	NIL
MATING DRAWING NO.	25
CENTRE DISTANCE	4M01B21-28182
	37.5

NOTE:-

1. CHAMFER ALL SHARP CORNERS TO 1/45°



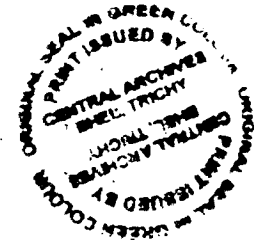
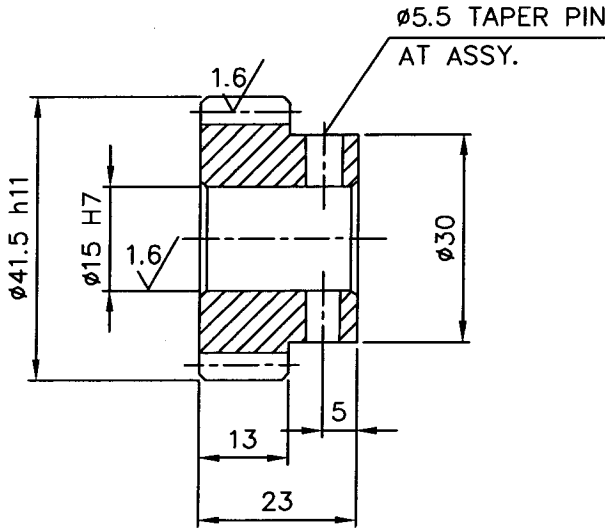
NO. OF SHEETS	1	NO. OF SHEETS	1
DESCRIPTION	ø41.5x223.5 L	MATERIAL	45 CB
STANDARD	IS: 7283	NET WT IN KGS	0.54
ALTERATIONS		DCN REF	
DATE		DATE	
SIGN.		SIGN.	
INDEX		INDEX	
SCALE	1:1	CHECKED	P. A. ROSS
DRAWN	R. RAMAMOORTHY	APPROVED	C. S. JAYASHEELAN
DATE	18-06-08		
MACHINE	HORIZONTAL BORING	TYPE	CBH 100
TITLE	PINION SHAFT	DRAWING NO.	3M01B2113555
(DEVEITAL ASSY)		SHEET NO.	

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

ø15 H7	+0.025
	+0.000
ø41.5 h11	-0.000
	-0.160

3.2/1.6/



NO.OF TEETH	25
MODULE	1.5
PRESSURE ANGLE	20°
WIDTH A/C 4 TEETH	16.02 -0.113 -0.150
QUAL.& TOL ZONE	9C DIN 3967
CORRECTION FACTOR	NIL
MATING GEAR NO.OF TEETH	25
MATING DRAWING NO:	3M01B21-13555
CENTRE DISTANCE	37.5

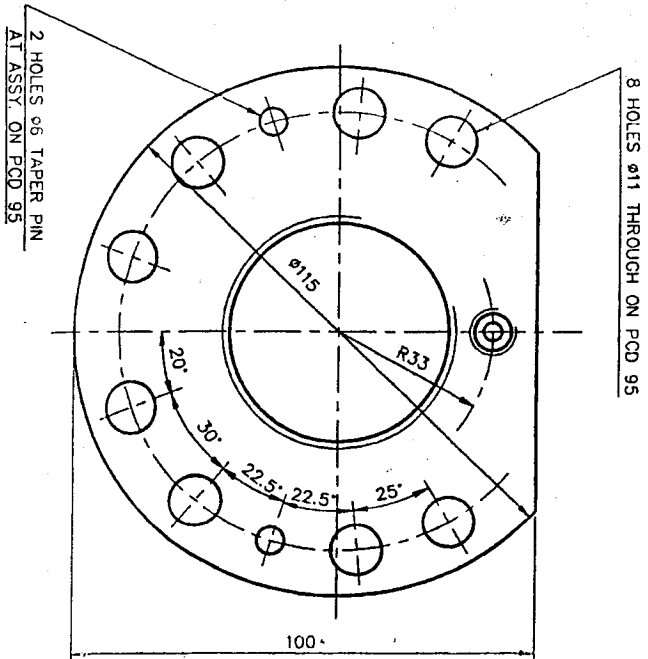
NOTE: -

1.CHAMFER ALL SHARP CORNERS TO 1/45°

<input checked="" type="checkbox"/>	RODø41.5x32 L	45 C8	IS: 7283	0.21		
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE	DRAWN	P. Albertrose				
1:1	CHECKED	R. Ramamoorthy				
	APPROVED	C.S. Jayasheelan				
	DATE	29-04-08				
	MACHINE: HORIZONTAL BORING		TYPE: CBH 100			
	TITLE: SPUR GEAR		DRAWING No:			
	25T/ø41.5					
	(DEVETAIL ASSY.)					
			4M01B21	28182		
			Sheet No:		No. of Sheets:	

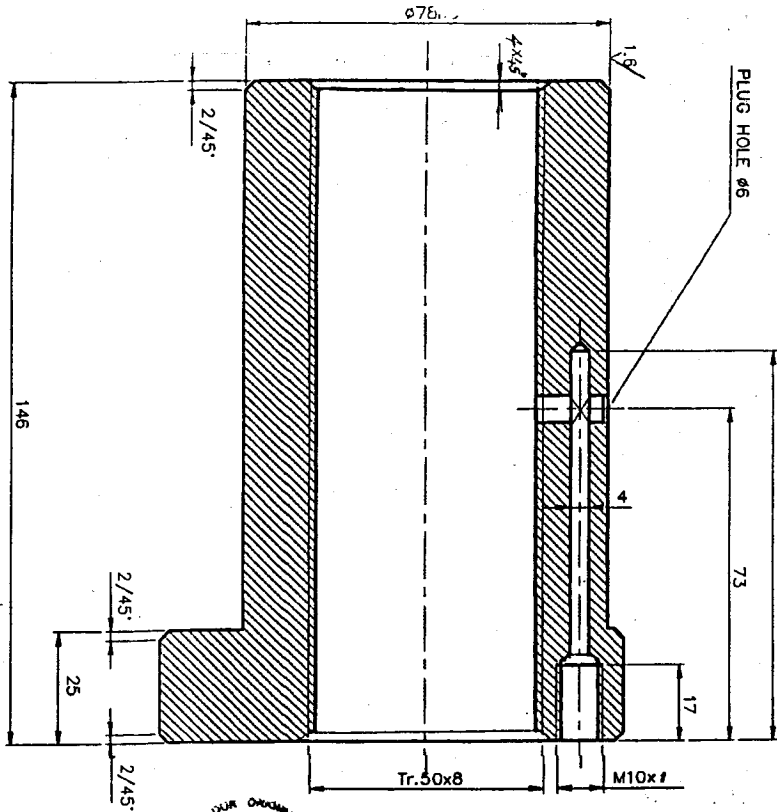
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHYRAPPALLE - 620 014.

ALL DIMENSIONS ARE IN MM



NOTE -

MACHINE: 5007/J No. 3-1-01b-11013



			678h6	-0.008
				-0.019

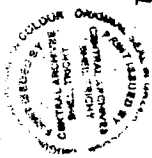
32/16/1

Sheet No.					
DESCRIPTION	PCUSN7	IS: 28			
MATERIAL					
STANDARD					
NET WT IN KGS					
EQUIPMENT CODE	24				
DRAWING NO.					
EQUIPMENT CODE	12				
DCN REF					
DATE					
STOR					
INDEX					

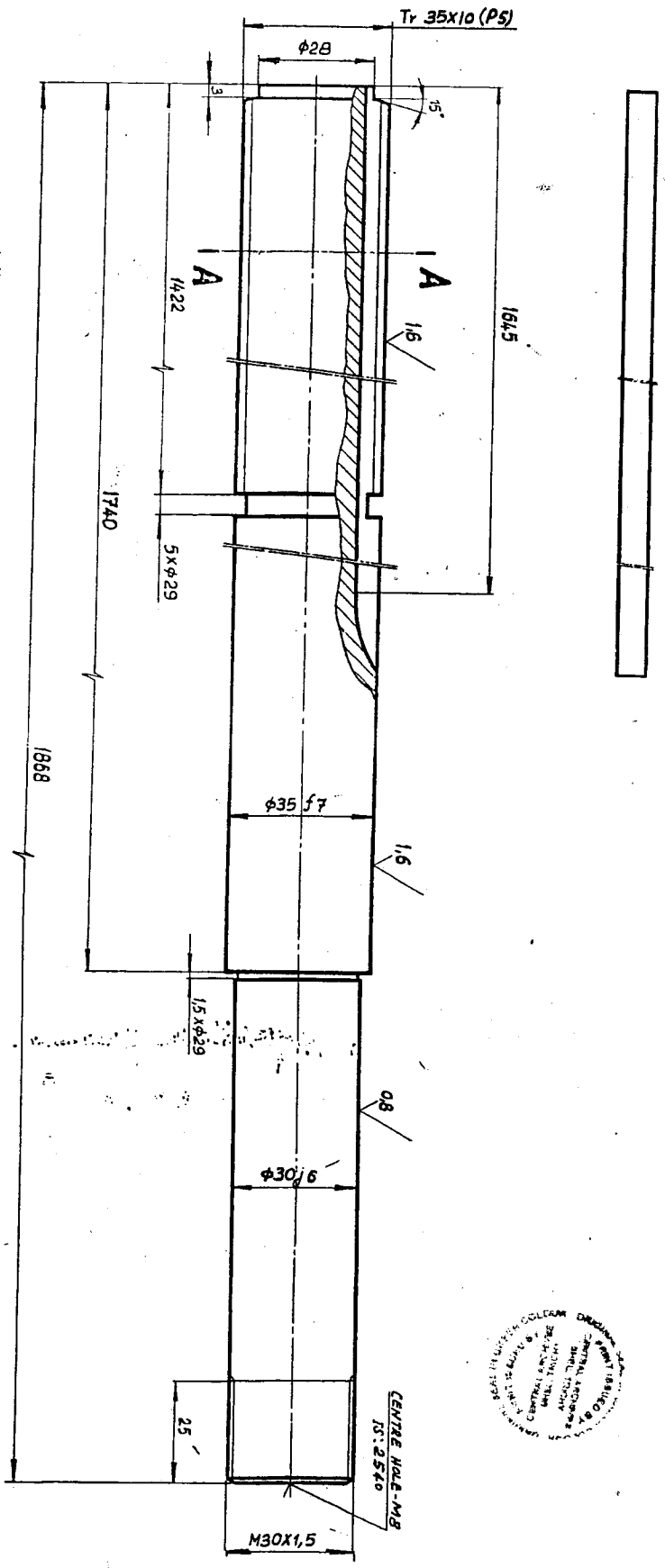
SCALE: DRAWN 1:1, CHECKED R. Rajan, APPROVED K. Lakshmi, DATE 22-10-94



TITLE: MACHINE: HORIZONTAL BORING
BOX NUT Tr. 50x8-
 (LONGITUDINAL ASSY.)
 1468
 DRAWING No. 3-M-01b-11014
 TYPE: AZ 11
 1/2
 Sheet No.



CAUTION
 THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE REPRODUCED OR COPIED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF GREAT HEAVY ELECTRICALS LTD. TORONTO, ONTARIO, CANADA.

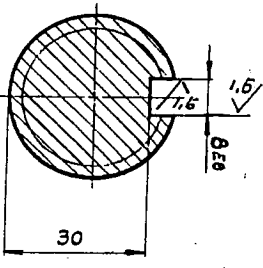


435f7	-0,025
668	+0,045
φ30/6	+0,009
	-0,004

32
 1/8
 0,8

MATING BOX NUTS REF DRG. NOS. 4-M-09A-2532Z & 4-M-09B-2535Z

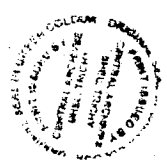
SEC-AA



DIA OVER WIRE = 35,616
 WIRE DIA = 2,55

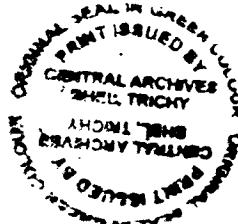
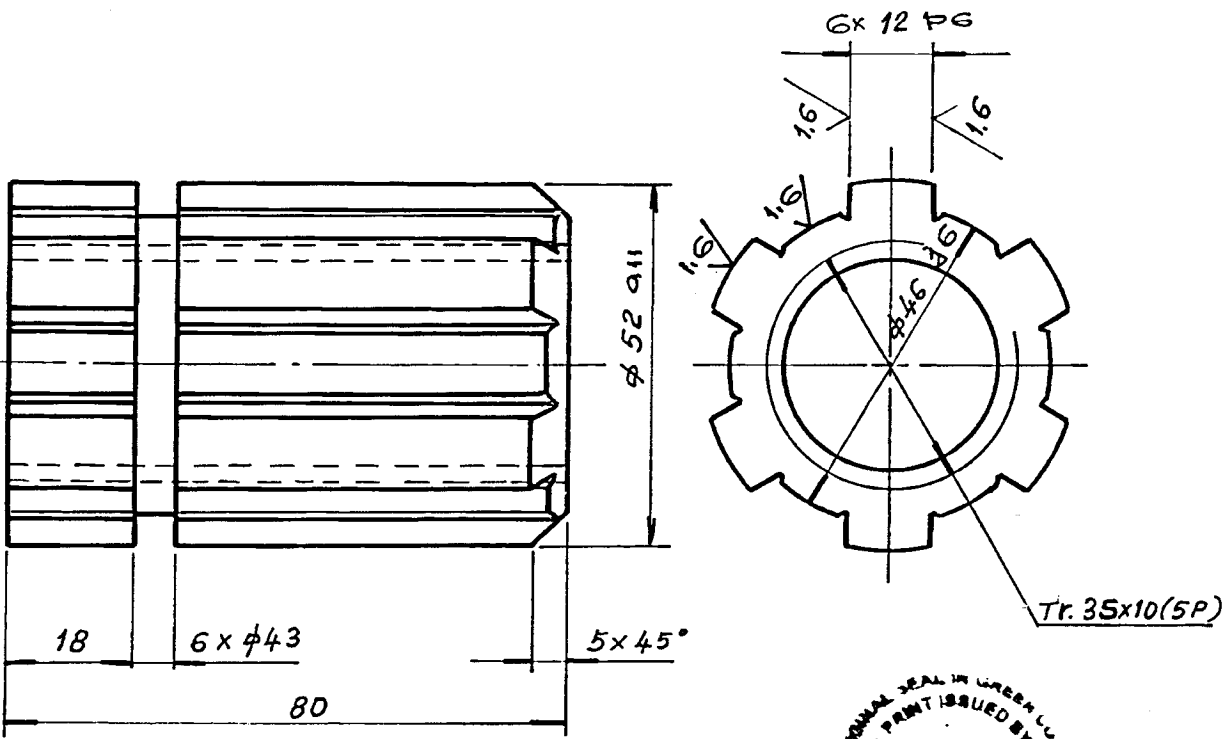
-0,045
 -0,0325

NO. OF SHEETS		DRAWING NO.		DATE		SHEET NO.	
1		3-M-09A-7667		05		1	
MACHINE: VERTICAL MILLING		TYPE: ENAV / FN 3 V		DATE: 9-11-79		DRAWING NO.	
DRAWN: Y. R. S. / S. S. / S. S.		CHECKED: S. S. / S. S. / S. S.		APPROVED: S. S. / S. S. / S. S.		DATE: 9-11-79	
DESCRIPTION: φ35 X 1868		REF. PRODUCT: 45 C 8		INITIAL MATERIAL: 15 2079		TOTAL NET WT. (kg): 15,2079	
SCALE: 1:1		MATERIAL: 15 2079		INITIAL MATERIAL: 15 2079		TOTAL NET WT. (kg): 15,2079	
DATE: 9-11-79		DRAWING NO.:		DATE: 9-11-79		DRAWING NO.:	
DRAWING NO.:		DATE: 9-11-79		DRAWING NO.:		DATE: 9-11-79	



39-607 A

CAUTION THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LTD., TRICHY - 620 014.	$\phi 52 \pm 0.11$	-0.360	12 PG	+0.026	
		-0.550		+0.018	
	$\phi 46 \pm 0.06$	+0.011			
		-0.005			



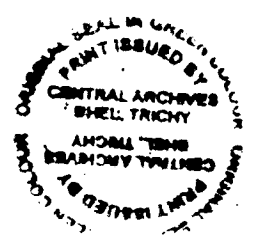
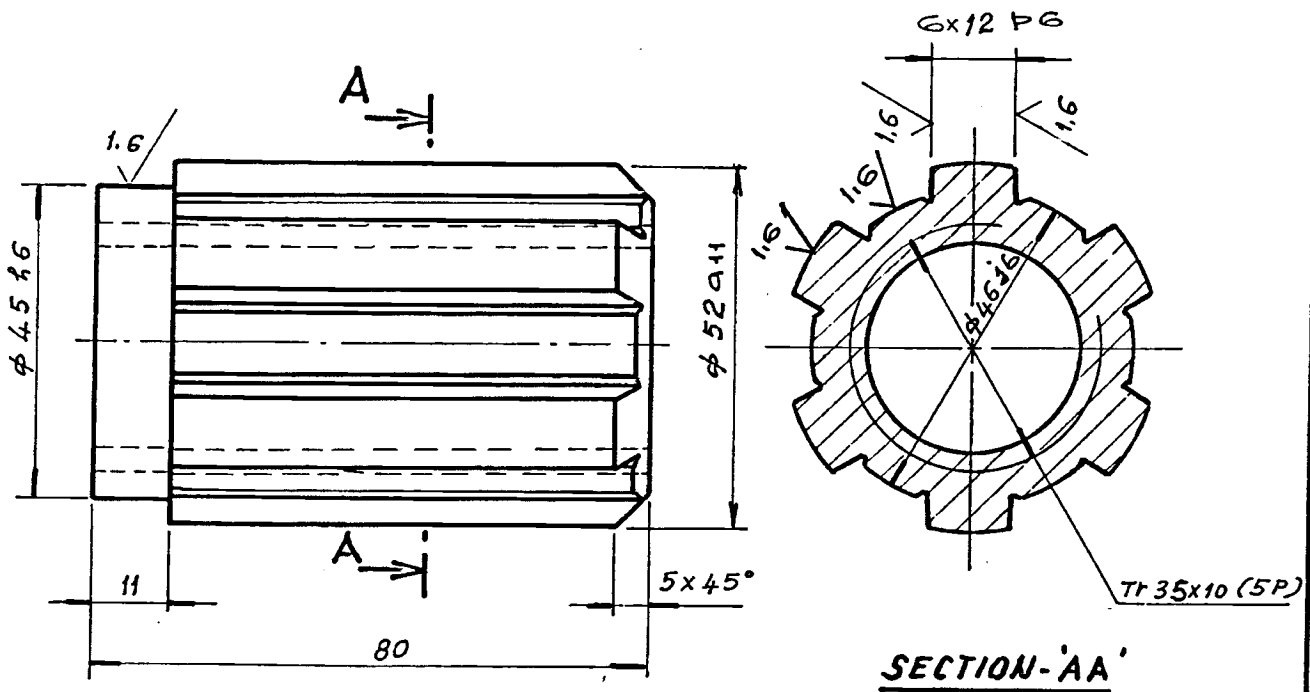
MATING SCREEN ROD REF. DRG. NO: 3-M-09a-7667.

$\phi 52 \times 80$		P Cu Sn 7	IS: 28	0.8		
No. of pcs.	DESCRIPTION	MATERIAL	STD/BPS	Net wt. (kg)	Gross wt. (kg)	DRAWING No.
REFERENCE:			ALTERATIONS	CC: 24	EC: 03	DCN
SCALE	DRAWN	CHECKED	APPROVED	DATE	SIGN.	INDEX
1:1	<i>R. Paramanathan</i>	<i>R. Paramanathan</i>	<i>R. Paramanathan</i>	12.11.94		
MACHINE: VERTICAL MILLING		TYPE: EM 3 V / FH 3 V		Total wt. (kg.)		
TITLE		DRAWING No.		REV.		
BOX NUT Tr. 3.5x10 (5P) (LONGITUDINAL)		4-M-09a-25392		03		
No. of Sheets:		Sheet No.				



39-607 A

Caution THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LTD., TRUCHIRAPALLI - 623 014.	$\phi 52 \pm 0.11$	-0.360	$\phi 45 \pm 0.11$	+0.011	3.2 / 1.6 / ✓ / ✓ / ✓ / ✓
		-0.1550		-0.005	
	12 PG	+0.026			
		+0.018			



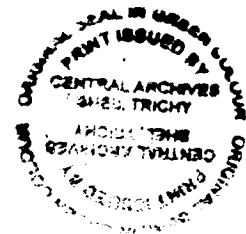
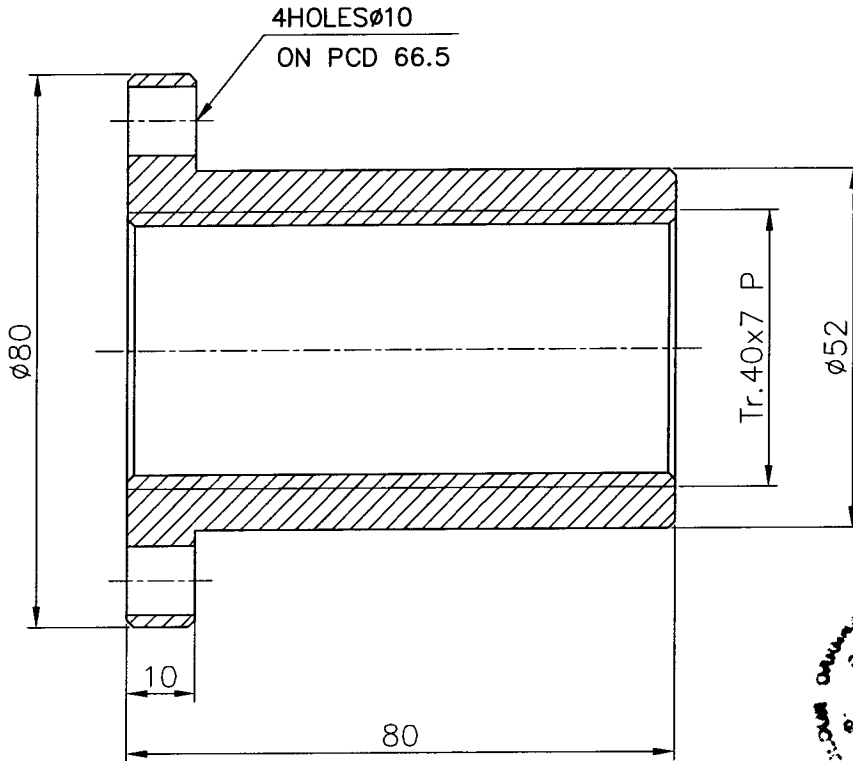
MATING SCREW ROD REF. DRG. NO: 3-M.09a.7667.

$\phi 52 \times 80$		P Cu Sn 7	IS: 28	0.8	DRAWING No.		Item No.		
No. of DES.	DESCRIPTION	MATERIAL	STD/BPS	wt. (kg)	wt. (kg)	DCN	DATE	SIGN.	Index
REFERENCE:		ALTERATIONS	CC: 24	EC: 03					
SCALE	DRAWN								
1:1	CHECKED	R. Ramamurthy							
	APPROVED								
	DATE	12.11.94							
	MACHINE:	VERTICAL MILLING		TYPE:	EM 3V / FN 3V		Total wt. (kg.)		
	TITLE	BOX NUT Tr. 35x10 (5P) (LONGITUDINAL)		DRAWING No.	4-M-09a.25393		REV.		
	No. of Sheets:			Sheet No.					

CAUTION: THIS DRAWING IS OUR STYLE 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:

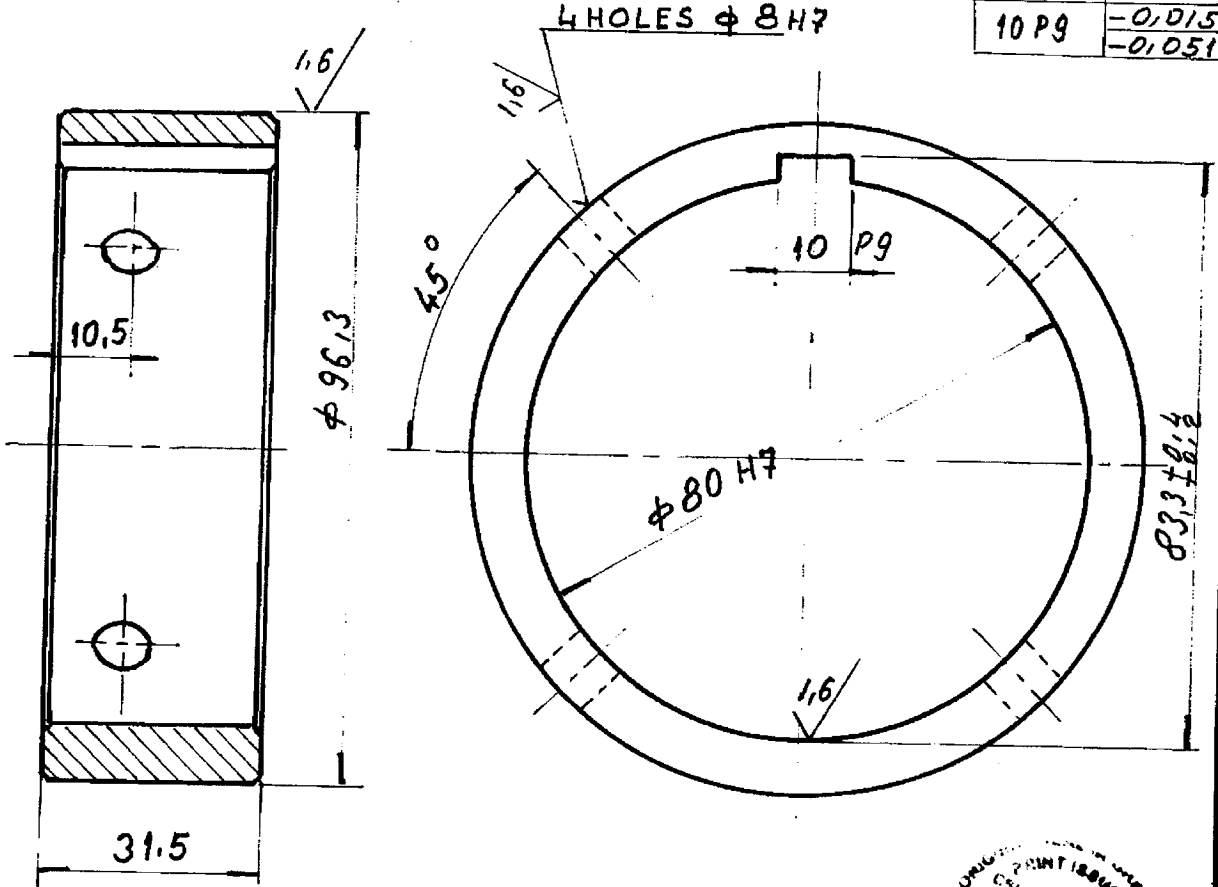
AVOID SHARP CORNERS

P Cu.Sn.7		IS: 28					
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.		ITEM No.
	REFERENCE:		ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE 1:1	DRN.	P.Albert Ross					
	CHD.	G.Govindaraj					
	APPD	K.Ramanan					
	DATE	05-12-12					
	MACHINE: VALVE BODY SEAT LAPPING			TYPE: 4 TON			REV.
	TITLE: BOX NUT Tr. 40x7P-80 L (Y-AXIS)			DRAWING No:			
				4M07B1 429590			

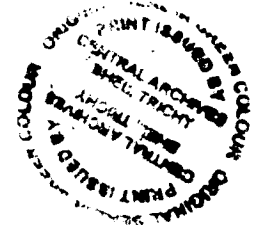
INDEX NO 39-607

CAUTION
 THIS DRAWING IS OUR SOLE PROPERTY
 AND SHOULD NOT BE USED IN ANY FORM
 FOR ANY OTHER PURPOSE WITHOUT THE
 WRITTEN PERMISSION OF
 BHARAT HEAVY ELECTRICALS LTD.,
 TIRUCHIRAPALLI-14.

3,2	1,6
φ 80 H7	+0,030 +0,000
φ 8 H7	+0,015 +0,000
10 P9	-0,015 -0,051



CHAMFER SHARP CORNER TO 1/45°
CASE HARDEN ~ TO HRC 42 ± 2
CASE DEPTH 0,2



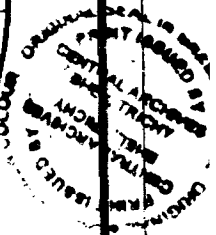
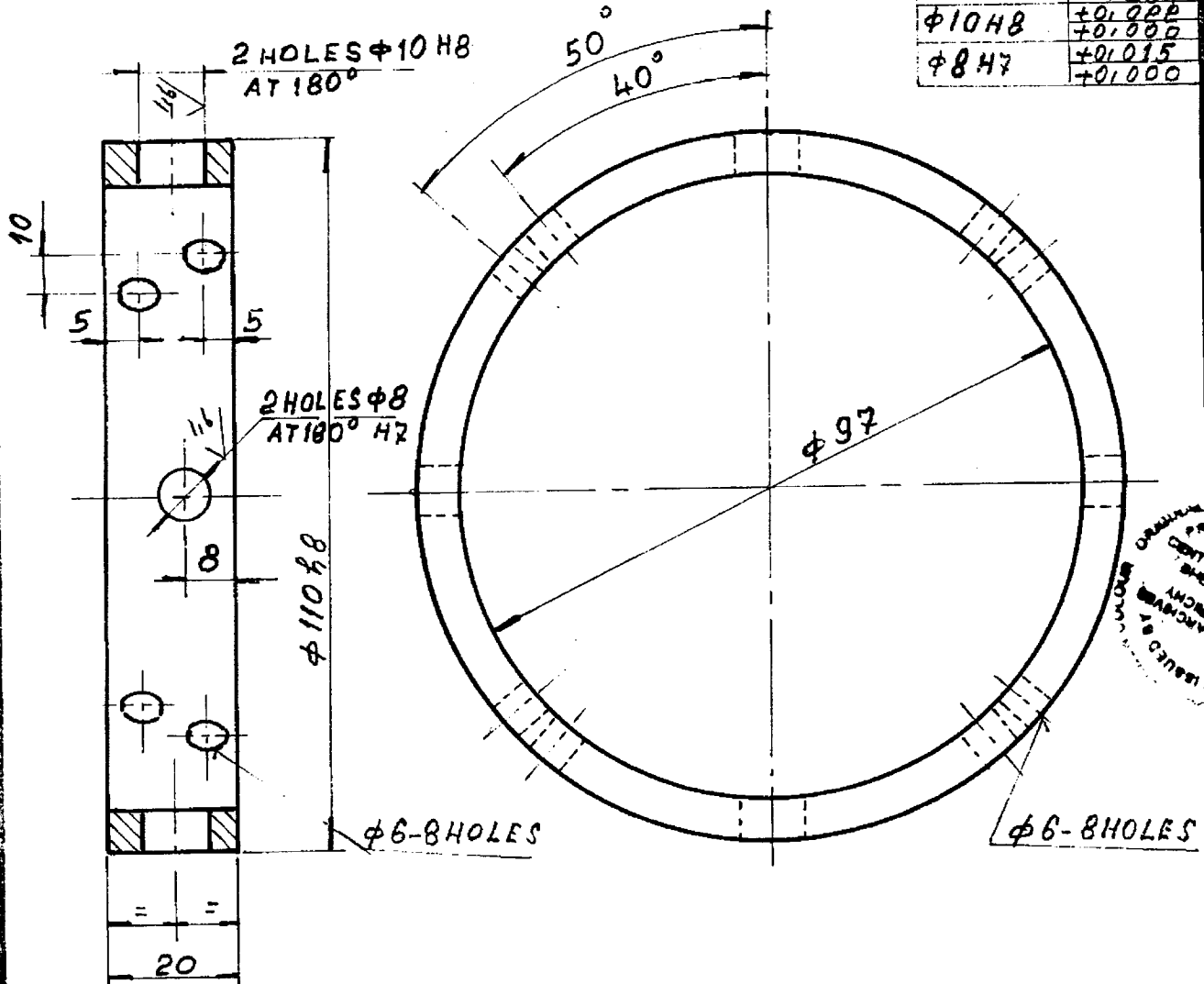
NO OF PIECES		DESCRIPTION		SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt(kg)	GROSS Wt(kg)	DRAWING NO.	ITEM NO.
					BM-CQ20	Fe 410NA IS:2062		0,69		0.M.08a-0110	46
REMARKS											
SCALE		DRAWN BY			REFERENCE			TOTAL NET Wt (kg)		ALTERATIONS	
1:1		K. U. B. Samy						9.200		5.002	
		CHECKED BY								DATE	
		APPROVED BY								SIGNATURE	
		STDS. OFFICER								INDEX	
		DATE									
		30-11-73									
MACHINE		TITLE			TYPE			DRAWING NO.		NO. OF SHEETS	
CENTRE LATHE		DRILLING PLATE			LB 20 + 25			4-M.08a-10710		SHEET NO:	
TIRUCHY								02,03			

CAUTION

THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANYOTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LTD., TIRUCHIRAPALLI-15.

3,2 / 7,6

φ110 H8	-0,240
	-0,294
φ10 H8	+0,022
	+0,000
φ8 H7	+0,015
	+0,000



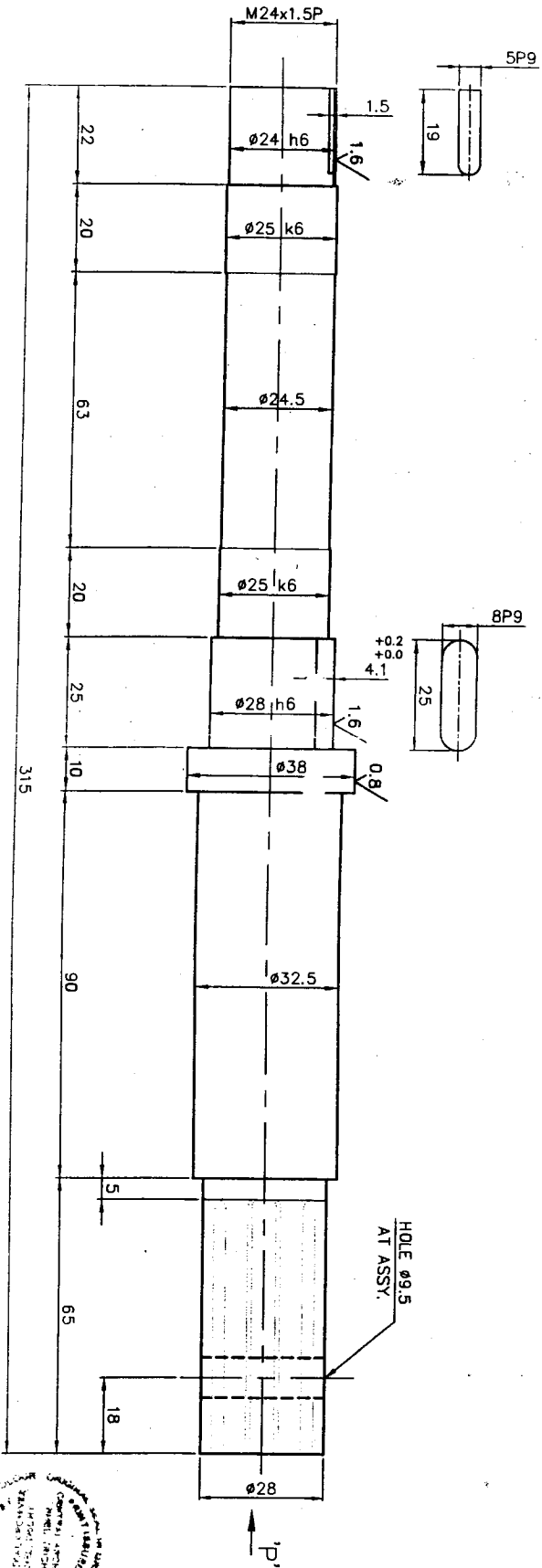
CASE HARDEN TO HRC 42 ± 2
CASE DEPTH 0,5

OD 110 x 20		BM-CQ20	FE 410WA IS: 2062	D138	0.M.08a-0110	47			
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) 001.00 EC: 02					
SCALE	DRAWN BY	REFERENCE		ALTERATIONS		DATE	SIGNATURE	INDEX	
1:1	K. U. B. Samy								
	CHECKED BY								
	APPROVED BY								
	STDS. OFFICER								
	DATE	30-11-73							
MACHINE		CENTRE LATHE		TYPE:		LB 20 + 25			
TITLE:		DRILLING SPACER		DRAWING NO.		02, 03			
TIRUCHY				NO. OF SHEETS:		SHEET NO:			
				4.M.08a-10711					

INDEX NO 39-607

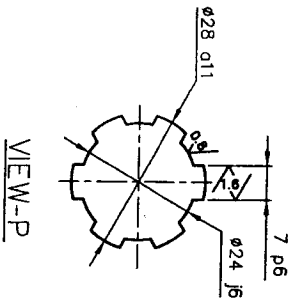
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED

ALL DIMENSIONS ARE IN mm



7 P6	+0.024	$\phi 24$ h6	-0.000	5 P9	-0.012
	+0.015	$\phi 28$ h6	-0.013		-0.042
		$\phi 24$ k6	+0.015		-0.015
		$\phi 25$ k6	+0.002	8 P9	-0.051
		$\phi 28$ o11	-0.430		

3.2/1.6/0.8

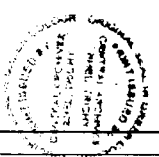


VIEW-P

NOTE:-

1. CASE HARDENED TO HRC 35 ± 2
2. AVOID SHARP CORNERS

		SPLINE SHAFT $\phi 38 \times 315$ L. (TABLE DRIVE ASSY.)		DRAWING No: 3M06B091150914 Sheet No: 01	
TITLE: VERTICAL GRINDER		MACHINE: KIRLOSKAR GRINDER - VRS		No of Sheets: 01	
SCALE: 1:1	CHD: R Ramamoorthy APPD: K Ramamun DATE: 02/04/2013	DESCRIPTION: $\phi 38 \times 315$ L. REFERENCE:	MATERIAL: S5 CB STANDARD: IS: 5917 NET WT. IN KGS: 2.8	DRAWING No.	INDEX
SCALE: 1:1	CHD: R Ramamoorthy APPD: K Ramamun DATE: 02/04/2013	DESCRIPTION: $\phi 38 \times 315$ L. REFERENCE:	MATERIAL: S5 CB STANDARD: IS: 5917 NET WT. IN KGS: 2.8	DRAWING No.	INDEX

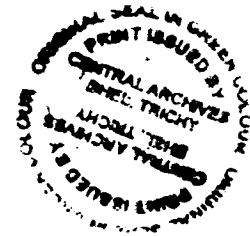
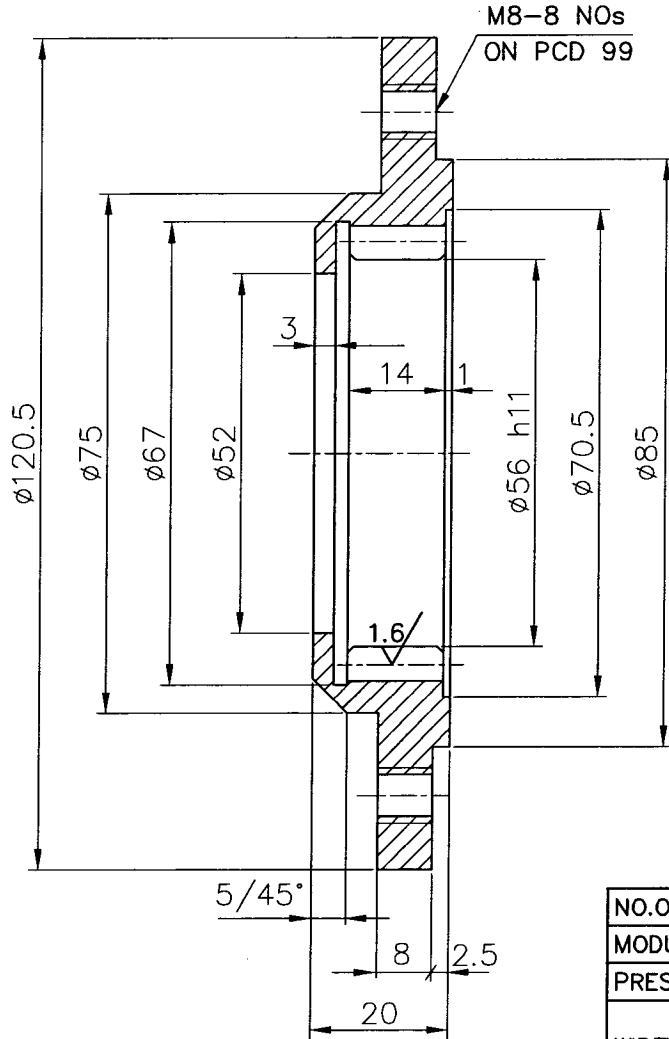


CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM

ø56 h11	-0.000
	-0.190

3.2/1.6



NO.OF TEETH	30
MODULE	2
PRESSURE ANGLE	20°
WIDTH ACROSS 2 TEETH	21.5 -0.141 -0.118
PIN DIA	2.88
DISTANCE BETWEEN PIN	57.32
CORRECTION FACTOR	-
QLTY.&TOL.ZONE	9c DIN 3967
MATING GEAR NO.OF TEETH	30 (INTERNAL)
MATING GEAR DRAWING NO:	4M07B1429619
CENTRE DISTANCE	-

NOTE:
AVOID SHARP CORNERS

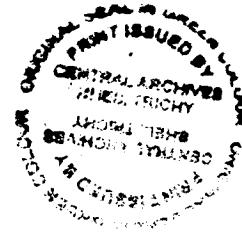
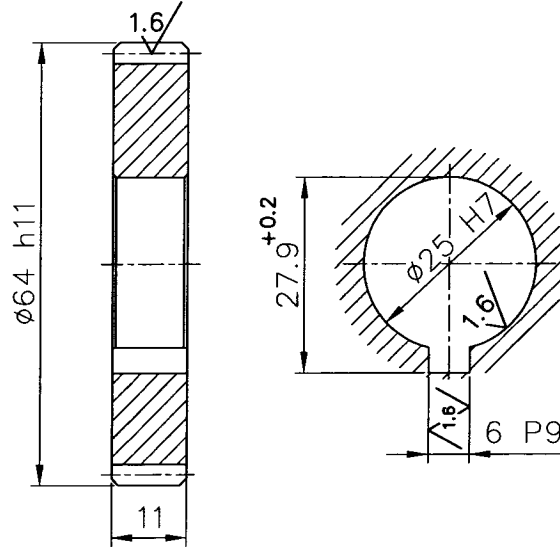
No. of Pieces	ø121x20 L	45 C8	IS: 2004	1.79				
	DESCRIPTION		MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.		ITEM No.
SCALE	DRN.	P. Albert Ross	ALTERATIONS:		DCN REF	DATE	SIGN.	INDEX
	1:1	CHD.	G. Govindaraj					
	APPD	K. Ramanan						
	DATE	14-01-13						
MACHINE:	VALVE BODY SEAT LAPPING			TYPE: 4 T				
	TITLE:	INTERNAL GEAR 30T x ø56			DRAWING No:			REV.
		(LAPPING PLATE ASSY.)			4M07B1429620			

ALL DIMENSIONS ARE IN MM

6 P9	-0.012	ø64 h11	-0.000
	-0.042		-0.190
		ø25 H7	+0.021
			+0.000

3.2/1.6/

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



NO.OF TEETH	30
MODULE	2
PRESSURE ANGLE	20°
WIDTH ACROSS 2 TEETH	21.5 -0.141 -0.118
CORRECTION FACTOR	-
QLTY.&TOL.ZONE	9c DIN 3967
MATING GEAR NO.OF TEETH	30(INTERNAL)
MATING GEAR DRAWING NO:	4M07B1429620
CENTRE DISTANCE	-

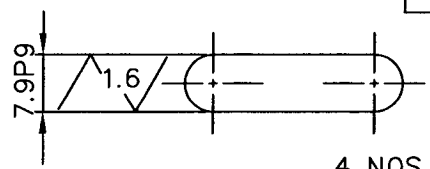
NOTE:
TOPPING EFFECTED
AVOID SHARP CORNERS

		ø64x11 L	45 C8	IS: 2004	0.27			
No. of Pieces	DESCRIPTION		MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.		ITEM No.
	REFERENCE:			ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE 1:1	DRN.	P.Albert Ross						
	CHD.	G.Govindaraj						
	APPD	K.Ramanan						
	DATE	14-01-13						
	MACHINE: VALVE BODY SEAT LAPPING			TYPE: 4 T				
	TITLE: SPUR GEAR 30Txø64 (LAPPING PLATE ASSY.)			DRAWING No:		REV.		
				4M07B1429619				

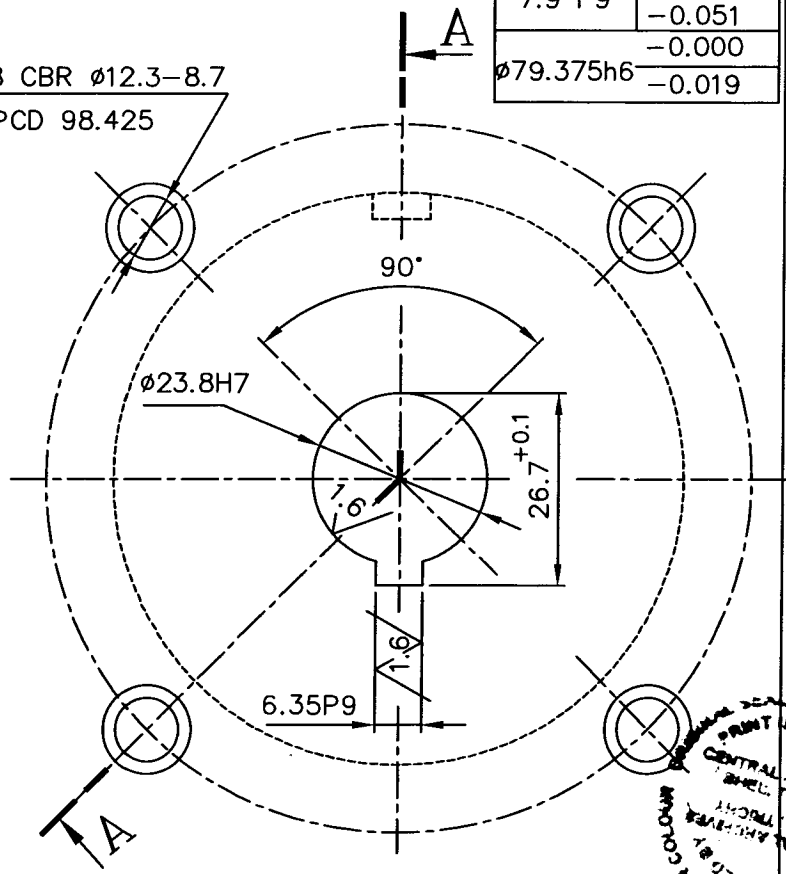
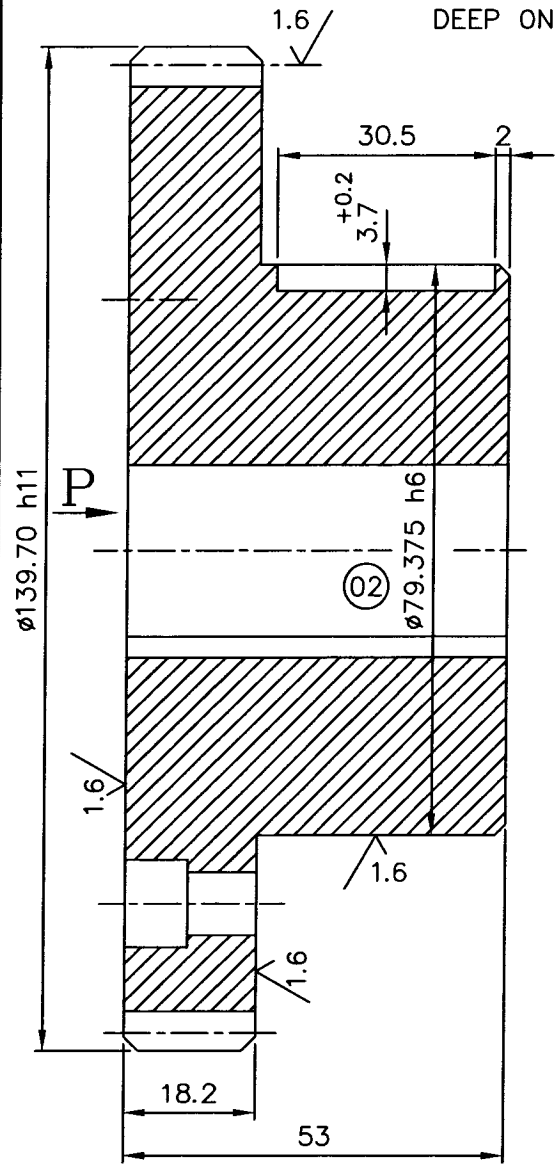
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM

6.35 P9	-0.015	ø139.70 h11	-0.000	3.2/1.6/
	-0.051		-0.250	
ø23.8 H7	+0.021	ø79.375h6	+0.000	7.9 P9
	+0.000		-0.015	
				-0.051
				-0.000
				-0.019



4 NOS. ø8.8 CBR ø12.3-8.7
DEEP ON PCD 98.425



VIEW-P

PRINTED BY
CENTRAL ARCHIVES
TRICHY
REPRODUCED BY
CENTRAL ARCHIVES
TRICHY

NO.OF TEETH	53
MODULE	2.54(10 DP)
PRESSURE ANGLE	15°
WIDTH A/C 5 TEETH	35.48 ^{-0.158} _{-0.210}
QUALITY & TOL.ZONE	9c.DIN 3967
CORRECTION FACTOR	-
MATING GEAR No.OF TEETH	36
MATING GEAR DRG.No.	4M08D0819975
CENTRE DISTANCE	113

NOTE:- **SEC. AA**
CHAMFER ALL SHARP CORNERS TO 1/45°

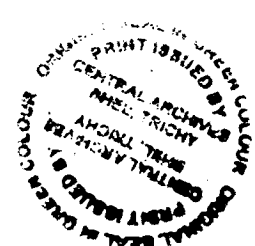
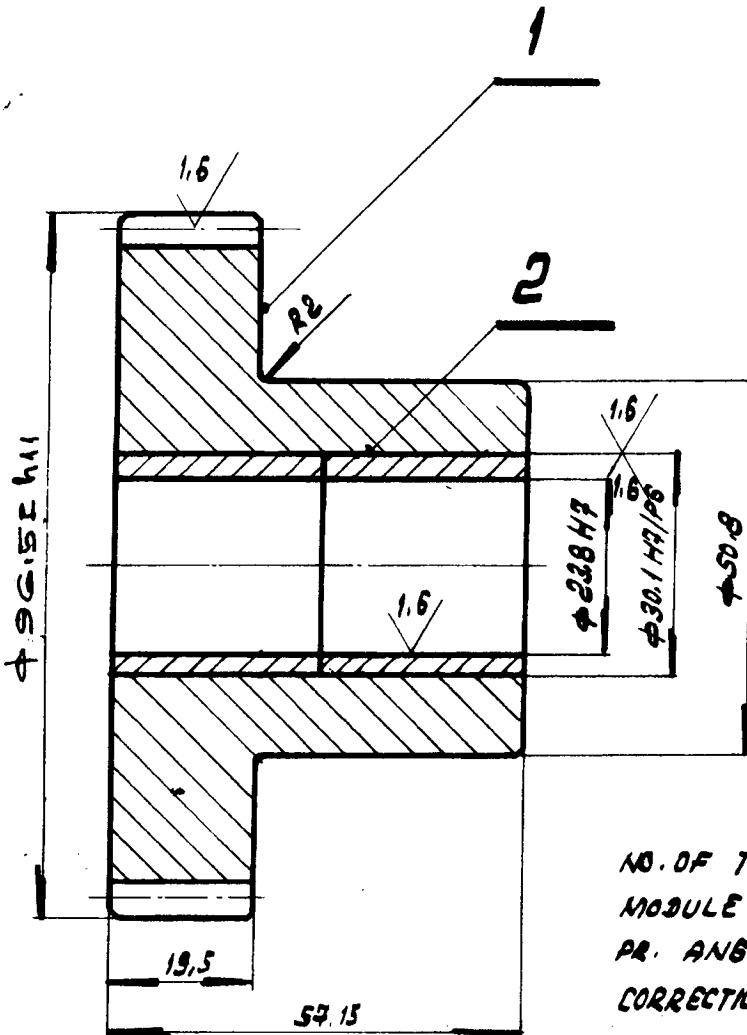
Ø140x53 L	45 C8	IS: 7283	3.31				
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.	
	REFERENCE: PART No.1157		ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE	DRAWN/TCID	S.Selvamanickam	DRG. MODIFIED TO DATE		15.03.12	CSJ	01
1:1	CHECKED	R.Ramamoorthy	DIM. ø79.375 WAS ø73.375		13.07.13'	RRM	02
	APPROVED	K.Ramanan	SIDE VIEW CHANGED				
	DATE	23-07-09/13.07.13'					
	MACHINE: TURRET LATHE		TYPE: HERBERT 9C				
	TITLE: SPUR GEAR 53Txø140 (APRON ASSY.)		DRAWING No:				
			4M08D081997002				
			Sheet No:			No. of Sheets:	

CAUTION

THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF
BHARAT HEAVY ELECTRICALS LTD.,
 TIRUCHIRAPALLI-14

3.2 / 1.6

φ96.52H11	-0.000
	-0.320
φ23.8 H7	+0.025
	+0.000
φ30.1 H7	+0.025
	+0.000
φ30.1 P8	+0.042
	+0.026



VALIDATED FOR
 MANUFACTURING
 Sign: / Date: 30.06.98
 Design: Mgr | PDO | MRS

NO. OF TEETH 36
 MODULE 2.54 (10 DP)
 PR. ANGLE 15°
 CORRECTION FACTOR -
 QUALITY & TOL. ZONE 9c DIN 3967
 WIDTH ACROSS 4 TEETH 27.52 ± 0.10
 MATING GEAR NO. OF TEETH 53
 MATING GEAR JRG No. 4-M-08D-19970
 CENTRE DISTANCE 113.

REFERENCE ONLY
 NOT FOR MANUFACTURE
 Date: /
 Chamfer Sharp Corners 1/45°

2	BUSH		PC: 57.15 IS: 20			0.14		1	
1	SPUR GEAR 36T		CP: 07.20 IS: 210	FG 220 IS: 210		1.53		1	
						1.67			
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) CC: 08 EC: 08				
SCALE	DRAWN	REFERENCE	ALTERATIONS	DATE	SIGNATURE	INDEX		
1:1	CHECKED	APPROVED						
	STDS. OFFICER	DATE						

	MACHINE TURRET LATHE	TYPE: HERBERT 9c 30	INV. NO.
	TITLE: SPUR GEAR 36T / φ96.52	DRAWING NO. 4-M-08D-19975	08
	NO. OF SHEETS	SHEET NO.	