

BHARAT HEAVY ELECTRICALS LIMITED

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(A Government of India Undertaking)

HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

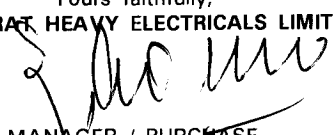
PHONE :2577629
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: srchandran@bheltry.co.in
Web:

429-002/A

	Enquiry No	Enquiry Date	Due Date for Quotation
	2661400620 - 55	08.09.2014	07.10.2014
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	7501B1901400 Planetary gear assembly as per drawing 3M-01B-19-12790. Assembly consist of following components: SI no. Description Drawing no. Qty (01) Stem 4M01B19 26407 1 (02) Double gear(50T and 30T) 4M01B19 26395-01 1 (03) Worm wheel(40T) 4M01B19 26416 1 (04) Double gear(40T and 27T) 4M01B19 26394-01 1 (05) Pinion shaft(18T) 4M01B19 26252 6 (06) Pinion(15T) 4M01B19 26253 6 (07) Worm shaft 3M01B19 11794 1 (08) Combined needle thrust bearing RAX712 4 (09) Thrust washer INA AS 1226 4 (10) Needle bearing HK 0609 (with metal cage) 12 (11) Spacer Dia. 24x12x3.5T 2 (12) Parallel key 2 x 2 x 8L 6 (13) External Circlip A6 (IS:3075) 6 Note:- (1) All the above components should be assembled as a single unit and the planetary gears should be able to rotate freely without backlash and axial play. (2) Items 5 and 6 to be keyed tightly so that there is no radial play. (3) Use High temperature MoS2 Grease in all the bearings while assembly. (4) The supplier should manufacture the planetary gear assembly and offer for inspection at supplier's works (assembly to be made in the	NO	2.000	2.00	01.12.14

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.

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

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
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2661400620 / 08.09.2014

presence of our inspector at supplier's works).
Assembly, material
composition and hardness will be checked
before acceptance.

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 YEAR
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.

General Note:

GENERAL NOTE: PLEASE SUBMIT YOUR OFFER IN "TWO PART BID SYSTEM" AS PER
THE ANNEXURES 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>

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:-

- 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"

Payment Term (Indigenous)	
If materials are receivable at Stores/Trichy <u>without</u> 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 <u>with</u> 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.

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 MIS
(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 per the latest audited financial year as per MSMED Act 2006 is as follows:

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 6. 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

(Strike off whichever is not applicable)

The above investment of Rs Lacs is within permissible limit of
RsLacs forMicro I Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not
applicable) and the date of graduation of such enterprise from its original category is
(dclimmiyyyy) which is within the period of 3 years from the date of graduation of such
enterprise from its original category as notified vide S.D. No. 3322(E) dated 01.11.2013
published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

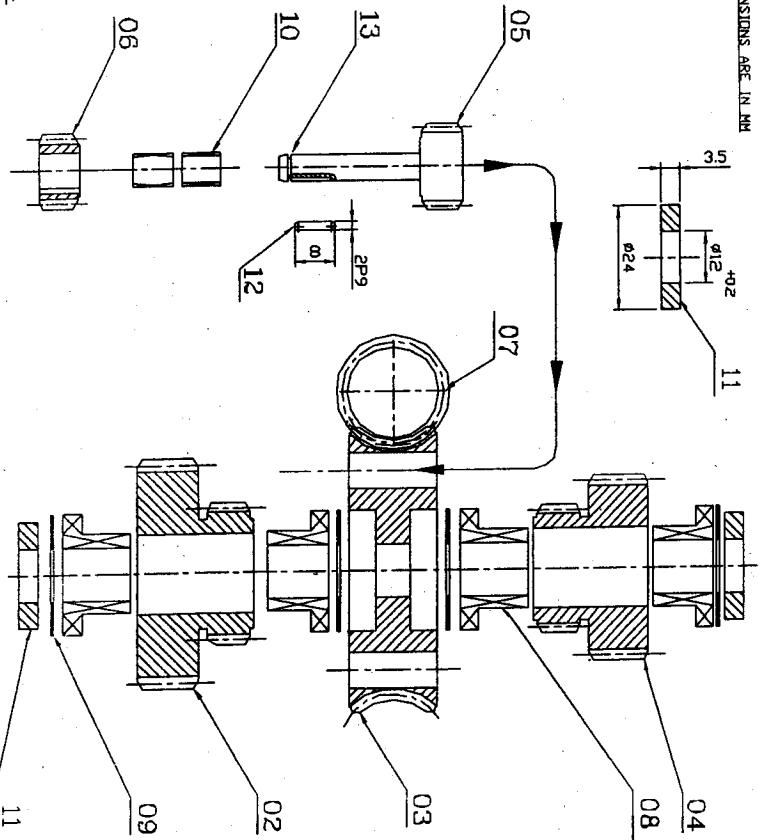
Name -

Membership number -

Seal of Chartered Accountant

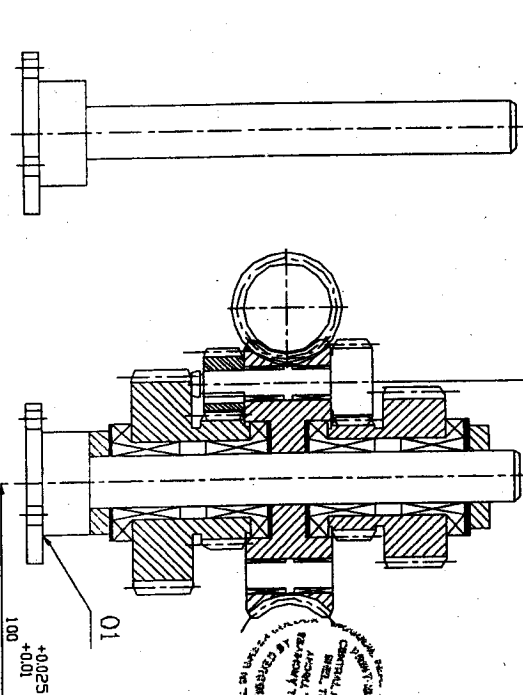
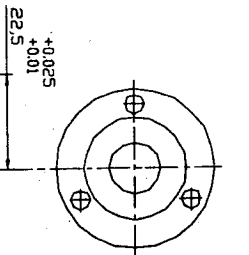
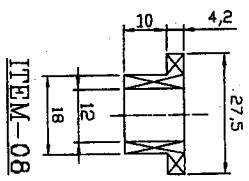
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ALL DIMENSIONS ARE IN MM



- NOTE:-
- 1) ITEM 5 & 6 TO BE KEVED TIGHTLY SO THAT NO RADIAL PLAY EXISTS.
 - 2) ALL THE ABOVE COMPONENTS SHOULD BE ASSEMBLED AS A SINGLE UNIT AND THE PLANATORY GEARS SHOULD BE ABLE TO ROATATE FREELY WITHOUT BACKLASH AND AXIAL PLAY.
 - 3) USE HIGH TEMPERATURE MOS2 GREASE IN ALL THE BEARINGS WHILE ASSEMBLY.

6	CIRCLIP A6	IS:3075 PART-1	13
6	KEY 21x2x8L		12
2	SPACERØ24x12x3.51		11
12	NEEDLE BRG	HK 0809 (with metal cage)	10
4	THRUST WASHER	INA AS 1226	09
4	COMBINED NEEDLE&THRUST BEARING	RAK 712	08
1	WORM SHAFT		07
6	PINION (15T)		06
6	PINION SHAFT(18T)		05
1	DOUBLE GEAR (40T,27T)		04



NO.	DESCRIPTION	MATERIAL	STANDARD	NET.VTJN KGS	DRAWING No.	DATE	SIGN.	DATE	DRWEN
1	WORM WHEEL (40T)				4M01B19 26416				03
1	DOUBLE GEAR (50T,30T)				4M01B19 26395				02
1	STEM				4M01B19 26407				01

SCALE	1:1
CHECKED	R.Ramamoorthy
APPROVED	C.S.Jayashreedan
DATE	31.08.2006

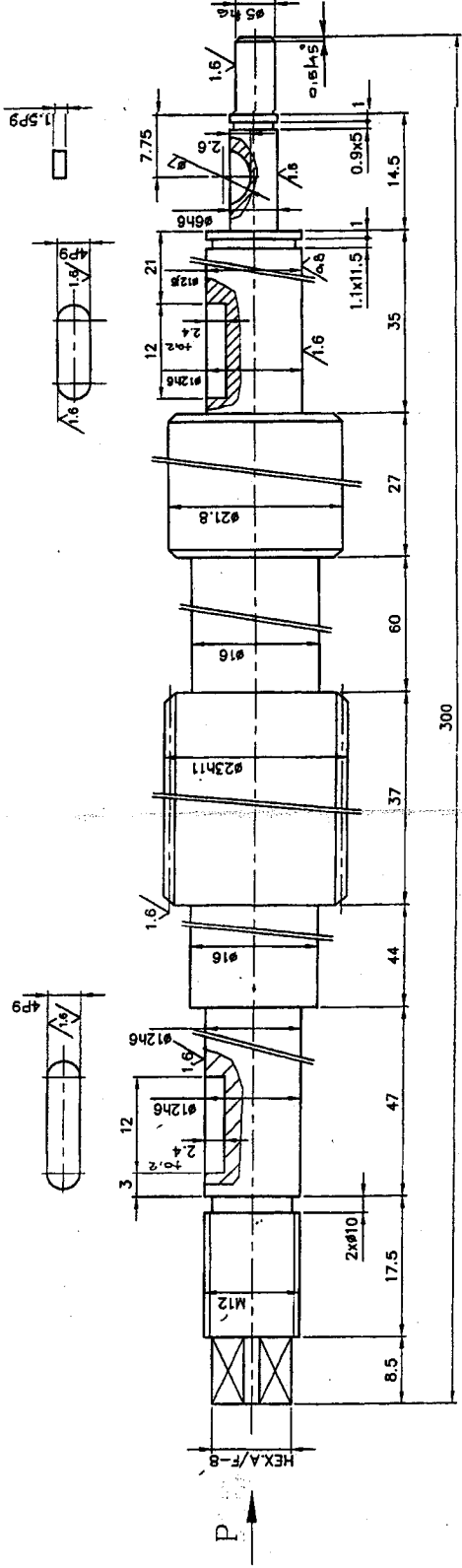
TITLE	PLANETARY GEAR ASSY
DRIVING No.	3M011B19127910
DATE	31.08.2006
TYPE	HB 617-UTA 160P

3.2/1.6

ALL DIMENSIONS ARE IN MM

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 TRICHIRAPPALLI - 620 014

±0.012	4P9	-0.012
-0.042		-0.042
-0.000		-0.000
-0.130	±12h6	-0.130
-0.110	±5h6	-0.110
-0.008		-0.008
-0.009		-0.009
-0.130	1.5P9	-0.130
-0.000		-0.000
-0.008		-0.008



300

CHAMFER ALL SHARP CORNERS TO 1/45°

NO. OF TEETH MATING GEAR	40
MODULE	1.5
PRESSURE ANGLE	20°
HELIX ANGLE	12° 40' 50"
HAND OF HELIX	RH
MATING WORM NO. OF STARTS	3
MATING WORM DRAWING NO:	4-M-01B-26416
CENTRE DISTANCE	40



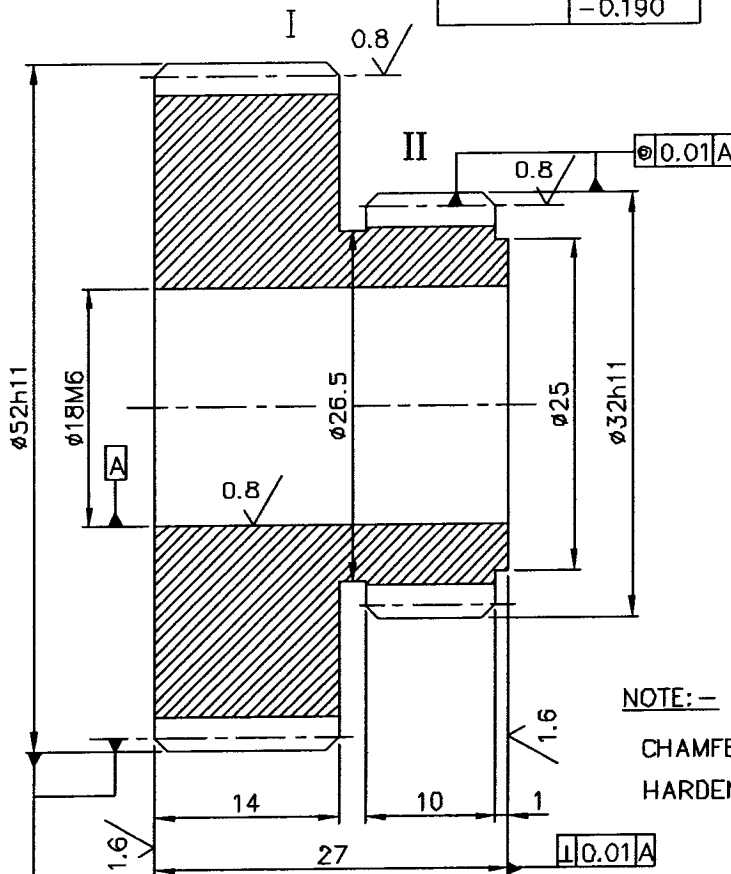
VIEW-P

✓	023K300L	45C8	7283	0.978	1-M-01B-02481 06
DESCRIPTION	MATERIAL	STANDARD	NET WT. IN KGS.	DRAWING No.	FOR
REFERENCE	ALTERATIONS	COMPONENT CODE 10	EQUIPMENT CODE 19	DATE	INDEX
SCALE DRAWN	P.A. ROSS/8/8	CHECKED	G. ROSS/8/8	DATE	SIGN.
2:1	APPROVED	DATE	26-04-99		
MACHINE: HORIZONTAL BORING					
TITLE: WORM SHAFT (0023K300L)					
D'ANDRA FACING HEAD ASSY.)					
TYPE: HB617-UTAI60P					
DRAWING No: 19					
REV. 3-M-01B-11794					
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

ø32h11	-0.000	ø18M6	-0.007	3.2/1.6/0.8/
	-0.160		-0.018	
ø52h11	-0.000			
	-0.190			



NOTE: -
CHAMFER SHARP CORNERS TO 1/45°
HARDEN & TEMPER TO 60 HRc

	I	II
NO.OF TEETH	50	30
MODULE	1	1
PRESSURE ANGLE	20°	20°
WIDTH ACROSS 6 TEETH (I) 4 TEETH (II)	16.9369 ^{-0.056} _{-0.094}	10.7526 ^{-0.056} _{-0.094}
CORRECTION FACTOR	NIL	NIL
QLTY.&TOL ZONE	9e DIN 3967	9e DIN 3967
MATING GEAR NO.OF TEETH	150	15
MATING GEAR DRAWING No.	3.M.01B19.11767	4.M.01B19.26253
CENTRE DISTANCE	100	22.5

	ø52x27L	40Ni6Cr4Mo2	IS: 5517	0.22		
					3.M.D1B19.1279D	02
No of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE	DRAWN	<i>R. Narayanan</i>	TOLERANCE & CONCENTRICITY ADDED		14.10.06	01
2:1	CHECKED	R.Ramamoorthy				
	APPROVED	C.S.Jayasheelan				
	DATE	05.04.99				
	MACHINE: HORIZONTAL BORING		TYPE: HB617-UTA 160P			
	TITLE: DOUBLE GEAR		DRAWING No:			REV.
	ø52x50T/ø32x30T		4M01B192639501			
	(D' ANDREA FACING HEAD)		Sheet No:		No. of Sheets:	

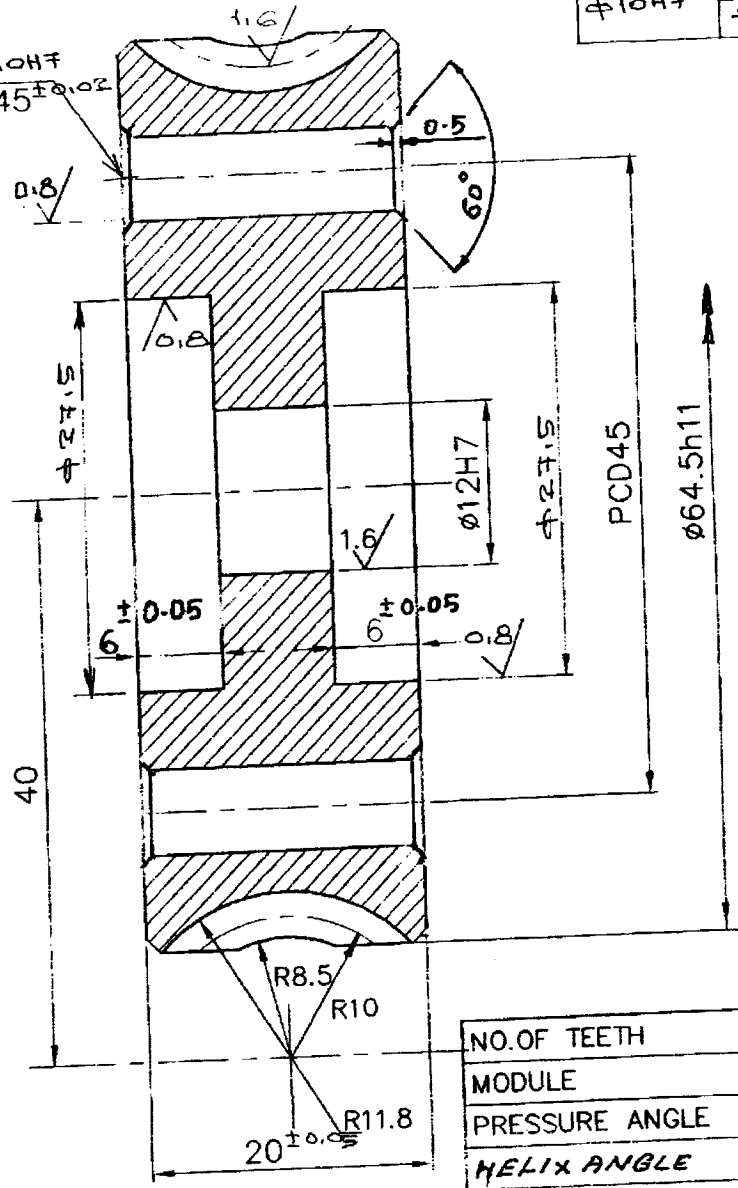
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ALL DIMENSIONS ARE IN MM

ø12H7	+0.018	ø64.5h11	-0.000
	+0.000		-0.160
ø10H7	+0.015	ø10H7	+0.000
	+0.000		+0.000

32/1.5/0.8

6 HOLES ø10H7 ON PCD ø45^{±0.02}



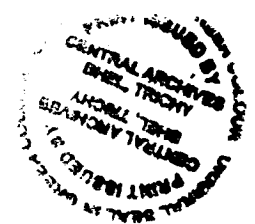
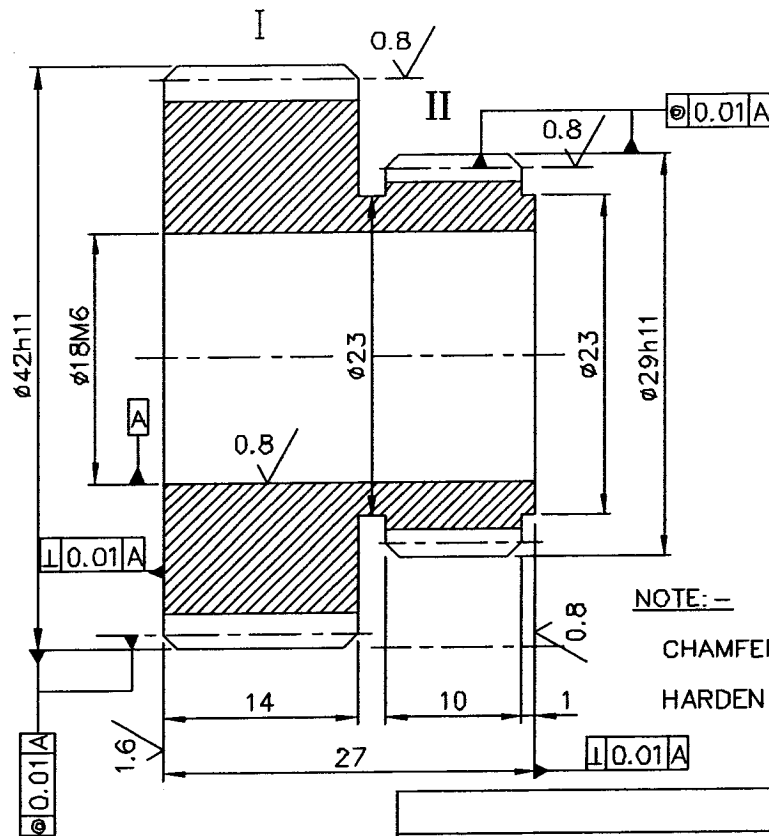
NO. OF TEETH	40
MODULE	1.5
PRESSURE ANGLE	20°
HELIX ANGLE	12° 40' 50"
HAND OF HELIX	RH
MATING WORM NO. OF STARTS	3
MATING WORM DRAWING NO:	3-M-01B-11794
CENTRE DISTANCE	40

No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.	
							1
REFERENCE:		COMPONENT CODE:		EQUIPMENT CODE: 19			
SCALE		ALTERATIONS:		DCN REF	DATE	SIGN.	INDEX
2:1	DRAWN	m.kumaravel					
	CHECKED	R. Ramamurthy					
	APPROVED	[Signature]					
	DATE	5-05-99					
MACHINE: HORIZONTAL BORING				TYPE: HP617-UTA160P		REV.	
TITLE:		WORM WHEEL		DRAWING No: 19			
		(ø64.5X40T)		4-M-01B-26416			
[D'ANDREA FACING HEAD 'APSY]		No. of Sheets		Sheet No			

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ALL DIMENSIONS ARE IN MM

ø29h11	-0.000	ø18M6	-0.007	3.2/1.6/0.8/
	-0.130		-0.018	
ø42h11	-0.000			
	-0.160			



NOTE: -

CHAMFER SHARP CORNERS TO 1/45°
HARDEN & TEMPER TO 60 HRc

	I	II
NO.OF TEETH	40	27
MODULE	1	1
PRESSURE ANGLE	20°	20°
WIDTH ACROSS 5 TEETH (I) 4 TEETH (II)	13.8447 ^{-0.056} _{-0.094}	10.7105 ^{-0.056} _{-0.094}
CORRECTION FACTOR	NIL	NIL
Q.LTY.&TOL ZONE	9e DIN 3967	9e DIN 3967
MATING GEAR NO.OF TEETH	160	18
MATING GEAR DRAWING No.	3.M.01B19.11790	4.M.01B19.26252
CENTRE DISTANCE	100	22.5

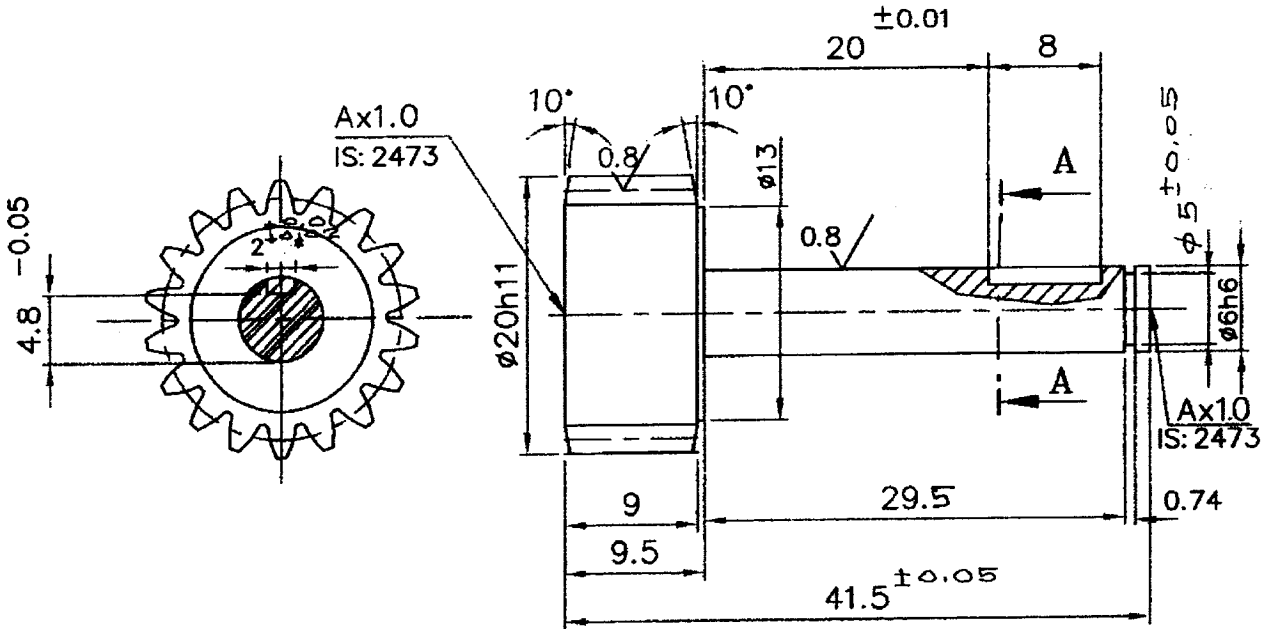
ø42x27L		40Ni6Cr4Mo2	IS: 5517	0.20		
					3.M.D1B19.1279D	04
No of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:	ALTERATIONS:		DCN REF	DATE	SIGN.
SCALE	DRAWN	R.Narayanan	TOLERANCE & CONCENTRICITY ADDED		14.10.06	01
2:1	CHECKED	R.Ramamoorthy				
	APPROVED	C.S.Jayasheelan				
	DATE	05.04.99				
MACHINE: HORIZONTAL BORING			TYPE: HB617-UTA 160P			
TITLE: DOUBLE GEAR			DRAWING No:		REV.	
ø42x40T/ø29x27T			4M01B1926394		01	
(D' ANDREA FACEING HEAD)			Sheet No:		No.of Sheets:	

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ALL DIMENSIONS ARE IN MM

6h6	-0.000
	-0.008
20h11	-0.000
	-0.030

3.2//1.6//0.8

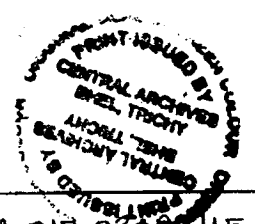


NO. OF TEETH	18
MODULE	1
PRESSURE ANGLE	20°
WIDTH ACROSS 3 TEETH	7.6324 -0.036 -0.059
CORRECTION FACTOR	NIL
QLTY. & TOL. ZONE	De DIN 3967
MATING GEAR NO. OF TEETH	27T
MATING GEAR DRAWING NO.	4-M-01B-26394
CENTRE DISTANCE	22.5 ±0.05

NOTE:

* THE KEY WAY ORIENTATION SHOULD BE AT THE CENTRE OF THE GEAR TOOTH AS SHOWN IN DRAWING

HARDENED TO HRC 45+2



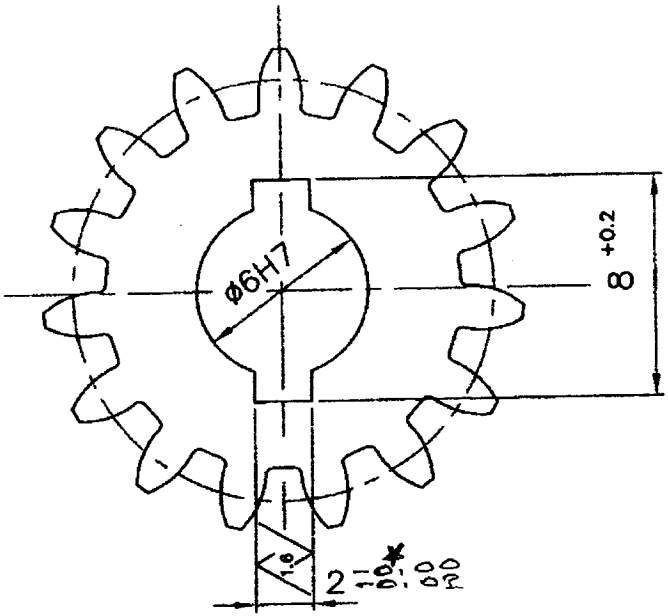
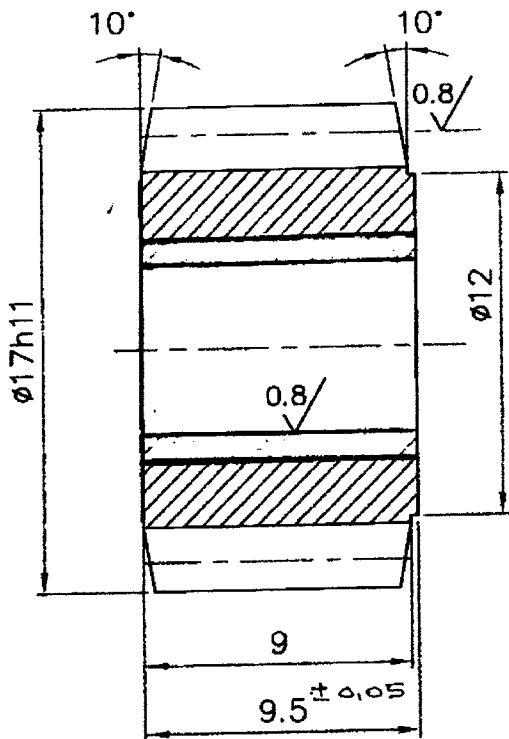
X		Ø20x42L	SSCB	IS: 5512	0.03	4-M-01B-26252	15
No. of Pieces	DESCRIPTION		MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.
REFERENCE:				COMPONENT CODE: 08	EQUIPMENT CODE: 19		
SCALE			ALTERATIONS:		DCN REF	DATE	SIGN.
2:1	DRAWN	m.kumaravel	MATERIAL WAS SA 102 F22			17/9/01	R.R.
	CHECKED	R. Ramamurthy					
	APPROVED						
	DATE	18-11-99					
MACHINE: HORIZONTAL BORING				TYPE: HB 617-UTA160P			
TITLE: PINION SHAFT [18TXØ20x41.5L]				DRAWING No: 19 4-M-01B-26252		REV.	
				No. of Sheets		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 - 680 014.

ALL DIMENSIONS ARE IN MM

ø6H7	+0.012
	+0.000
ø17h11	-0.000
	-0.110

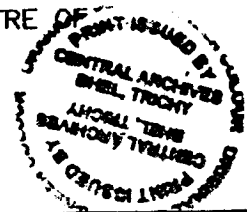
3.2/1.6/0.8/



NO. OF TEETH	15T
MODULE	1
PRESSURE ANGLE	20°
WIDTH ACROSS 2 TEETH	4.6383 -0.036 -0.059
CORRECTION FACTOR	NIL
QTY. & TOL. ZONE	8e DIN 3967
MATING GEAR NO. OF TEETH	30
MATING GEAR DRAWING NO:	4-M-01B-26395
CENTRE DISTANCE	22.5

NOTE:

* THE KEY WAY ORIENTATION SHOULD BE EXACTLY AT THE CENTRE OF THE GEAR TOOTH AS SHOWN IN DRAWING
 HARDENED TO HRC 45 ± 2



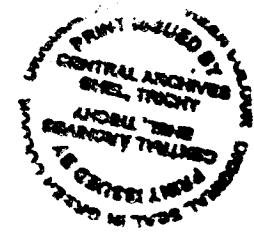
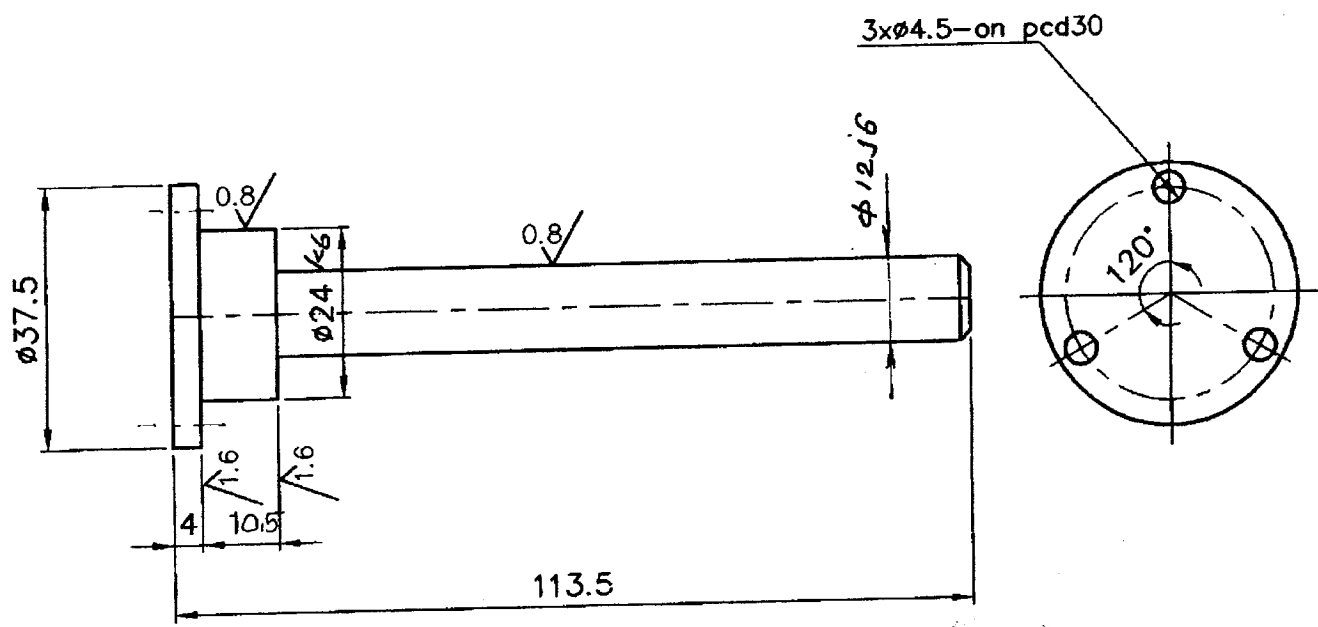
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.	
							REFERENCE:
SCALE	DRAWN	M.KUMARAVEL	MATERIAL WAS SA 62 F 22		DATE	SIGN.	INDEX
/	CHECKED	R. Ramamurthy			17/09/01	R.R.M.	
	APPROVED	(Signature)					
	DATE	17-11-99					
MACHINE: HORIZONTAL BORING			TYPE: HB 617-UTA160P			REV.	
TITLE: PINION [ø17X15T] (ANDRA BORING HEAD)			DRAWING No: 4-M-01B-26253			No. of Sheets: Sheet No	

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CAUTION:

ALL DIMENSIONS ARE IN MM

$\phi 24k6$	$+0.015$ $+0.002$	$\phi 12j6$	$+0.008$ -0.003	$3.2/\sqrt{1.6}/0.8/$
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ALL SHARP CORNER $1/45^\circ$
HARDENED TO HRC 40 ± 2

No. of Pieces	ROD $\phi 37.5 \times 113.5L$	55c8	IS: 5517	0.15	1-M-01B-02481	12
	DESCRIPTION	MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.
REFERENCE:	FACING HEAD		COMPONENT CODE: 00	EQUIPMENT CODE: 15		
SCALE	DRAWN	m.kumaravel	ALTERATIONS:	DCN REF	DATE	SIGN.
1:1	CHECKED	R.Ramamurthy				
	APPROVED					
	DATE	5-4-99				
	MACHINE: HORIZONTAL BORING	TYPE: HB 617-UTA 16DP		REV.		
	TITLE: $\phi 37.5$ FACING HEAD STEM ($\phi 37 \times 113.5L$)	DRAWING No:	4-M-01B-26407	19		
	No. of Sheets:	Sheet No:				