

**NOTE TO VENDOR : GEAR & PINION MATERIAL AS PER TDC & TECHNICAL SPECIFICATION**

### SECTION-AA

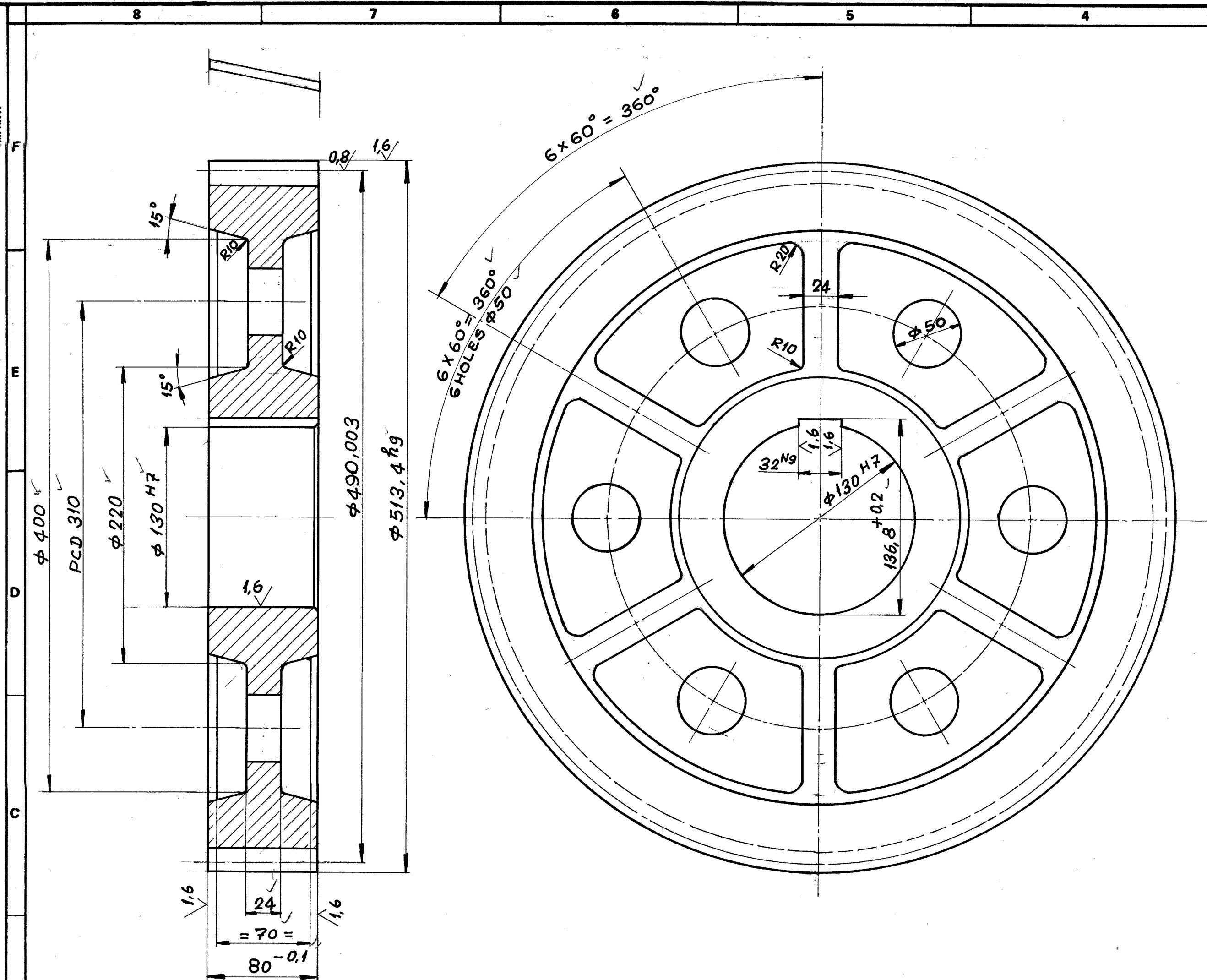
45	SEALING WASHER - $\phi 42,5/65 \times 4$	ATP COPPER		1
44	AIR VENT - $\frac{1}{4}$ " BSP			1
43	CAP $\frac{1}{2}$ " BSP			2
42	CAP 2" BSP			1
41	SPRING LOADED METAL CLAD OIL SEAL - $\phi 130/160 \times 15$ 'omco'			2
40	SPRING LOADED METAL CLAD OIL SEAL - $\phi 80/105 \times 13$ 'omco'			2
39	SELF ALIGNING ROLLER BRG. 223 26 C		28,5	4
38	SELF ALIGNING ROLLER BRG. 223 22 C		18,0	2
37	SELF ALIGNING ROLLER BRG. 223 16 C		6,2	2
36	EXTERNAL THREADED TAPER PIN - 25 X 140	IS: 3524	0,3	4
35	SPRING WASHER B36	IS: 3063	0,07	12
34	HEX-NUT - M36 X 3	IS: 1364 - P6	0,4	12
33	SLOTTED CHEESE HEAD SCREW - M10 X 20	IS: 1366 - P6,6	0,01	2
32	SLOTTED CHEESE HEAD SCREW - M12 X 25	IS: 1366 - P6,6	0,01	2
31	HEX-SOCKET GRUB SCREW WITH FLAT END - M8 X 10 L	IS: 6094 - P 10-9	0,01	12
30	HEX-SOCKET HEAD CAP SCREW - M10 X 16 L	IS: 2269 - P8-8	0,02	16
29	HEX-SOCKET HEAD CAP SCREW - M10 X 25 L	IS: 2269 - P8-8	0,02	16
28	HEX-SOCKET HEAD CAP SCREW - M20 X 40 L	IS: 2269 - P8-8	0,1	48
27	HEX-SOCKET HEAD CAP SCREW - M24 X 45 L	IS: 2269 - P8-8	0,3	16
26	FEATHER KEY	4-7-1139-01-03202 C45 IS: 1570	1,6	1
25	FEATHER KEY	4-7-1139-01-03201 C45 IS: 1570	0,66	1
24	STUD	4-7-1139-01-03200 C 30 IS: 2073	2,75	12
23	COVER PLATE	4-7-1139-01-03199 C20 IS: 226	2,3	1
22	COVER PLATE	4-7-1139-01-03198 C 20 IS: 226	2,3	1
21	COVER PLATE	4-7-1139-01-03197 C 20 IS: 226	2,3	2
20	COVER PLATE	4-7-1139-01-03196 C 20 IS: 226	3,0	1
19	SIGHT PLATE	4-7-1139-01-03195 ACRYLIC	1,0	1
18	SEALING PLATE	4-7-1139-01-03194 PERMANITE		2
17	SPACER	4-7-1139-01-03193 C30 IS: 2073	0,5	2
16	SPACER	4-7-1139-01-03192 C30 IS: 2073	0,25	1
15	SPACER	4-7-1139-01-03191 C 30 IS: 2073	0,7	4
14	SPACER	4-7-1139-01-03190 C 30 IS: 2073	1,6	2
13	SPACER	4-7-1139-01-03189 C30 IS: 2073	2,0	2
12	END COVER	4-7-1139-01-03188 C30 IS: 2073	25,0	2
11	END COVER	4-7-1139-01-03187 C30 IS: 2073	20,2	2
10	END COVER	4-7-1139-01-03186 C30 IS: 2073	19,6	2
9	END COVER	4-7-1139-01-03185 -	12,3	1
8	END COVER	4-7-1139-01-03184 C30 IS: 2073	10,0	1
7	HELICAL GEAR $Z=69$ $Mm=6,5$	-	276,3	1
6	HELICAL GEAR $Z=69$ $Mm=6,5$	-	276,3	1
5	HELICAL GEAR $Z=24$ $Mm=9,5$	2-7-1139-01-01854 -	142,0	1
4	SHAFT III	3-7-1139-01-02508 C45 IS: 5517	101,0	2
3	PINION SHAFT II $Z=20$ $Mm=6,5$	40 Cr1 Mo28 IS: 5517	62,0	1
2	PINION SHAFT I $Z=21$ $Mm=6,5$	3-7-1139-01-02632 40 Cr1 Mo28 IS: 5517	53,0	1
1	GEAR BOX CASING	0-7-1139-01-00114 -	1706,0	1

EQPT: MANDREL BAR EXTRACTOR

<b>Bharat Heavy Electricals Ltd.,</b> SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI-620 014		DRN NAME SIGN DATE NO. OF ITEMS
DEPT CODE TITLE <b>GEAR BOX ASSY.</b> (DRIVE ASSY.)		CHD APPD WEIGHT (kg) 3109 - REF TO ASSY / DRG 0-7-1139-01-00111 CARD CODE U 01 DRAWING NO. <b>2-7-1139-01-01774</b> REV DD



FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)



NOTE TO VENDOR: MATERIAL AS  
PER TDC & TECHNICAL  
SPECIFICATION

 $3.2/1.6/0.8$ 

$\phi 513.4$	$hg$	0
$\phi 130$	$H7$	$+0.040$
$32N9$		0.0
		$-0.062$

## GEAR DATA :-

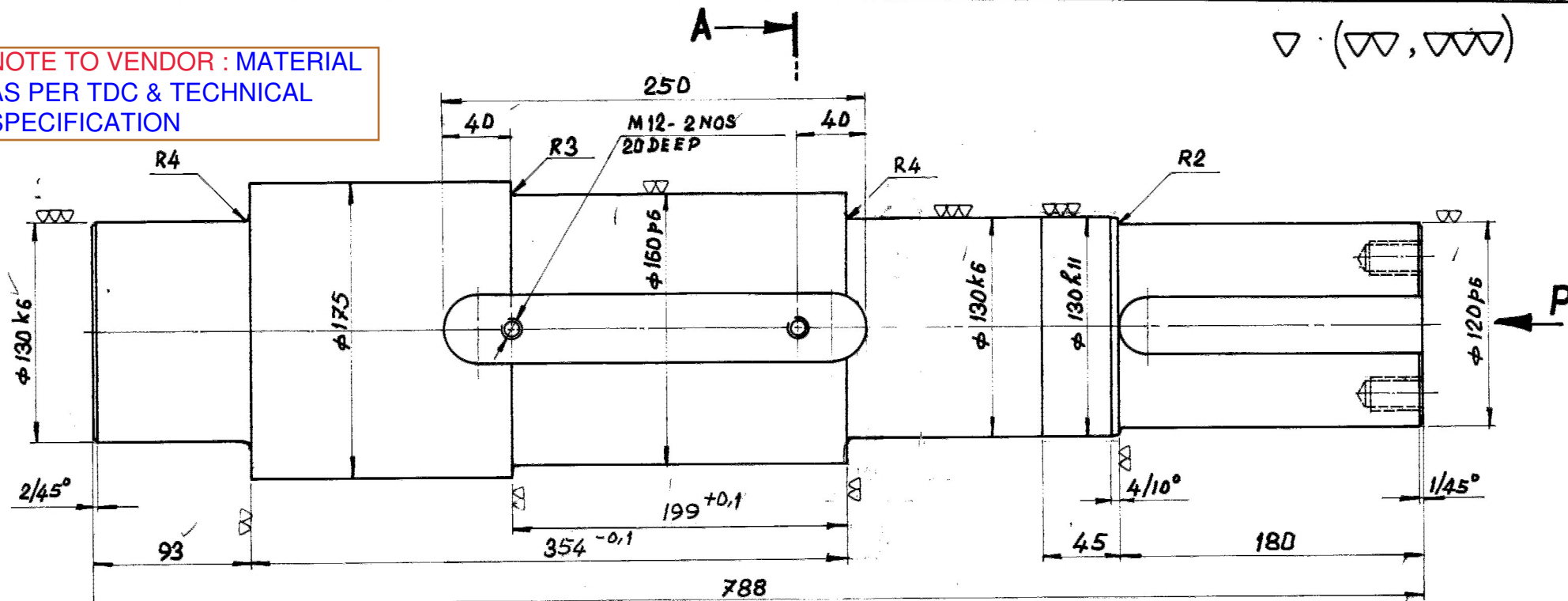
NO. OF TEETH	74 ✓
MODULE	6.5 ✓
PRESSURE ANGLE	$20^\circ$ ✓
HELIX. ANGLE	$11^\circ$ ✓
HAND OF HELIX.	RH ✓
CORRECTION FACTOR	$+0.8$ ✓
WIDTH ACROSS 10 TEETH	$192.954$ ✓
QUALITY AND TOL. ZONE	9e DIN 3967
MATING GEAR NO. OF TEETH	21 ✓
MATING GEAR DRG. NO.	3. - 02632
CENTRE DISTANCE	321.4 ✓

## NOTE :-

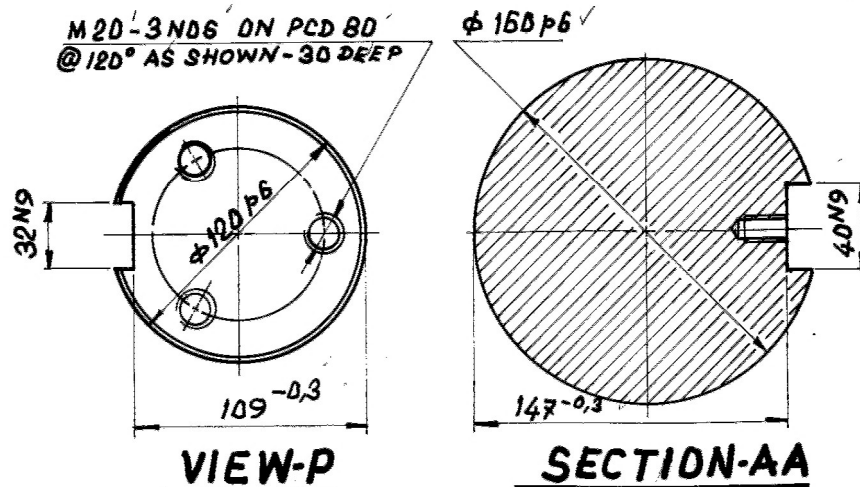
1. GEAR RIM TO BE HARDENED AND TEMPERED TO 65-80 kp/mm<sup>2</sup>
2. BALANCING SHOULD BE DONE (AFTER MACHINING) AT 500 rpm.

ITEM NO.		DESCRIPTION		DRAWING NO.		40CrMo28 - CASTING	
						IS: 5517	
						MATL CODE	
						UNIT WT	
						MATL SPEC	
						QTY	
EQPT.:- MANDREL BAR EXTRACTOR							
Bharat Heavy Electricals Ltd.,		DRN		NAME		NO. OF	
SEAMLESS STEEL TUBE PLANT		G.K. MURTHY		SIGN		ITEMS	
TIRUCHIRAPALLI - 620 014		CHD		DATE		3/4/82	
		APPD		3/4/82			
REV 01		DATE		ALTERED		SCALE	
ZONE				CHECKED		1:2.5	
						WEIGHT (kg)	
						87/-	
						REF TO ASSY/OLD DRG	
						2.7.1139.01.01774	
						RW 37390/11	
						ITEM NO.	
						5	
						REV	
						00	
						TITLE	
						HELICAL GEAR	
						(GEAR BOX ASSY.) Z=74; mn=6.5	
						CARD CODE	
						U 01	
						DRAWING NO.	
						2.7.1139.01 - 01854	

**NOTE TO VENDOR : MATERIAL  
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SPECIFICATION**



M20-3 NOS ON PCD 80  
@ 120° AS SHOWN-30 DEEP



$\phi 160 p6$	+0,068 +0,043	$\phi 120 p6$	+0,059 +0,037
$\phi 130 k8$	+0,028 +0,003	40 N9	-0,052 0
$\phi 130 k11$	0 -0,250	32 N9	-0,062 0
$\phi 120 p6$			

FLAME HARDEN TO HRC 55-58


ITEM NO.	DESCRIPTION	DRAWING NO.	MATL CODE	UNIT WT
			MATL SPEC	QTY

EQPT: MANDREL BAR EXTRACTOR

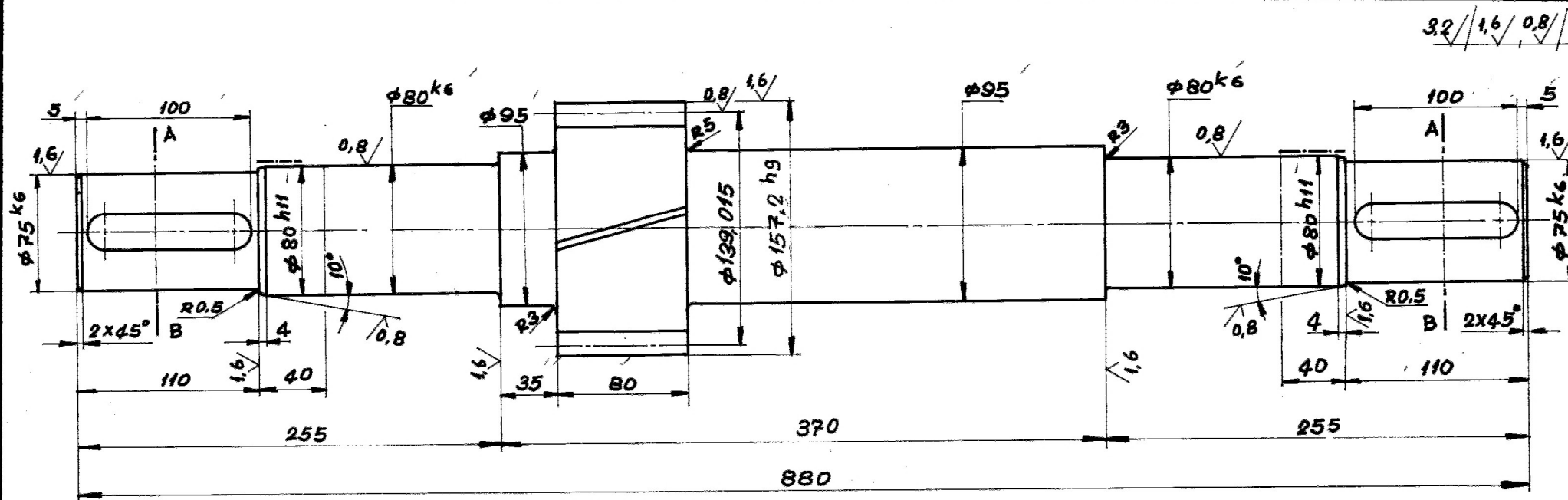


**Bharat Heavy Electricals Ltd.,**  
SEAMLESS STEEL TUBE PLANT  
TIRUCHIRAPALLI-620 014

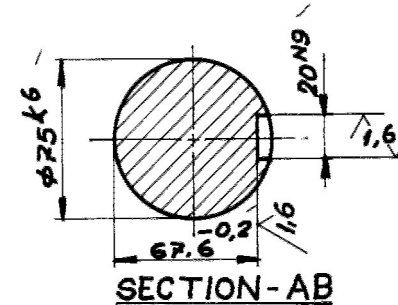
DRN	NAME	SIGN	DATE	NO. OF ITEMS
CHD				
APPD				

REV 01	DATE	ALTERED	DEPT	GRADE OF UNTO. DIM C M/F		SCALE 1:2,5	WEIGHT (kg) 101	REF TO ASSY/OLD DRG 27-1139-01-01774 RW19164/3	ITEM NO. 4
		CHECKED							
ZONE	TITLE SHAFT III (GEAR BOX ASSY)					CARD CODE U 01	DRAWING NO 3-7-1139-01-02508		REV 00



**NOTE :-**

1. TO BE HARDENED AND TEMPERED TO 75-90 Kp/mm<sup>2</sup>.
2. — TO BE FLAME HARDENED TO 55-58 HRC.



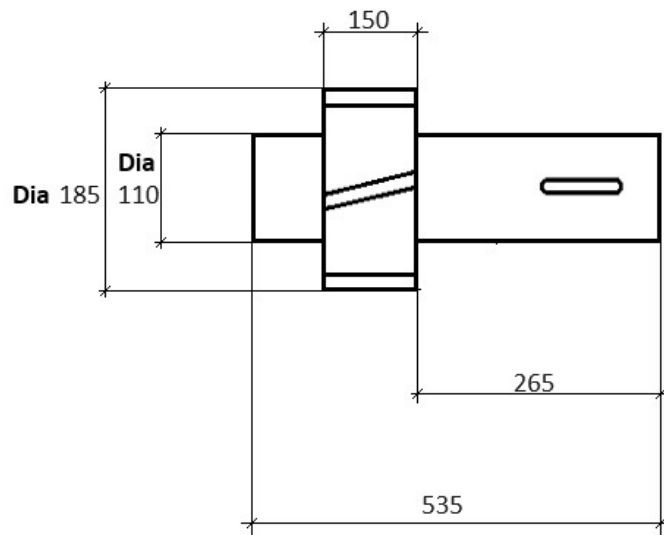
NO. OF TEETH	21
MODULE	6.5
PRESSURE ANGLE	20°
HELIX ANGLE	11°
HAND OF HELIX	L.H
CORRECTION FACTOR	+ 0.4
WIDTH ACROSS 3 TEETH	51.767 <sup>+0.087</sup> <sub>-0.145</sub>
QUALITY & TOL. ZONE	9e3W3967
MATING GEAR NO. OF TEETH	74
MATING GEAR DRG. NO.	2. - 01854
CENTRE DISTANCE	321.4

$\phi 157.2^{h9}$	0
	-0.100
$20^{N9}$	0
	-0.052
$\phi 75^{k6}$	+0.021
	+0.002
$\phi 80^{H11}$	0
	-0.190
$\phi 80^{k6}$	+0.021
	+0.002

**NOTE TO VENDOR :**  
MATERIAL AS PER TDC &  
TECHNICAL SPECIFICATION

ITEM NO.		DESCRIPTION		DRAWING NO.		40Cr1 Mo 28		IS: 5517	
						MATL CODE		UNIT WT	
						MATL SPEC		QTY	
EQPT. :- MANDREL BAR EXTRACTOR									
<b>Bharat Heavy Electricals Ltd.,</b> SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620 014				DRN	NAME	SIGN	DATE	NO. OF ITEMS	
				CHD	G.K. MURTHY	[Signature]	31/3/82		
				APPD	[Signature]		3/4/82		
DEPT	GRADE OF UNTOOL DIM	SCALE		WEIGHT (kg)	REF TO ASSY. OLD DRG		ITEM NO.		
CODE	C M F	1: 2.5		53, --	2.2.1139.01. 01774		2		
TITLE				CARD CODE	DRAWING NO		REV		
PINION SHAFT (GEAR BOX ASSY.) Z=21, m=6.5				U 01	3.2.1139.01. 02632		00		

INTERMEDIATE PINION SHAFT Z = 20  
( ITEM NO . 3 OF 2-7-1139-01-01774)



NOTE TO  
VENDOR :  
MATERIAL AS PER  
TDC & TECHNICAL  
SPECIFICATION

Material : 18CrNiMo 6-7

All dimensions are in mm