

	ANNEXURE-I		
BID NO		DT	
SL NO	PRE QUALIFICATION REQUIREMENT	VENDOR'S COMMENTS	
1	Vendors shall be a manufacturer of fabricated metal products or machinery or equipment etc .Proof of OEM shall be submitted like UDYAM registration certificate etc .		
2	Vendor should have executed machining related works in the last 5 years from the date of tender. The Vendor shall submit previous Purchase Order supplied to Central/State Govt./PSU company/Private organization during the last five years along with the documentary evidence (Eg: Invoice copy, Delivery challan etc) for supply of material.		
	Offers not meeting the above requirements shall be liable for rejection. Kindly submit only one relevant documents related to Pre-Qualification requirement. Avoid sending multiple documents which is liable for rejection.		
SL NO	Documents requirements	VENDOR'S COMMENTS	
1	Signed copy of technical specification and drawing of each item of enquiry with organization seal/stamp		
2	Executed previous Purchase Order Copy along with the documentary evidence (Eg: Invoice copy, Delivery challan etc) for supply of material. to meet the requirements in Annexure I Sl No 2. Kindly avoid sending multiple purchase orders.		
3	Filled in & signed copy of Annexure I - PQR details with organization seal /stamp		
4	Filled in & signed copy of Annexure B & C (BHEL Technical Cum Commercial Terms And Conditions)for Indigenous Vendors)with organization seal /stamp		

BID NO:

DT:

ANNEXURE - III TECHNICAL
DELIVERY CONDITIONS:

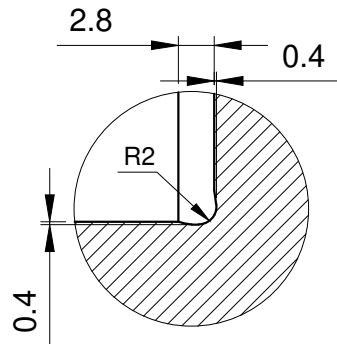
Sl No	Technical Description	Vendor Comments
1	Original Chemical composition certificate of material issued by Govt. authorized NABL Lab at free of cost.	
2	Detailed Dimensional inspection report of all dimensions mentioned in drawing	
3	Rust preventive oil to be applied on ferrous metal machined surface	
4	IS/DIN standards mentioned in the drawing to be strictly adhered	

DRAWING NO: 3-7-1123-42-10266

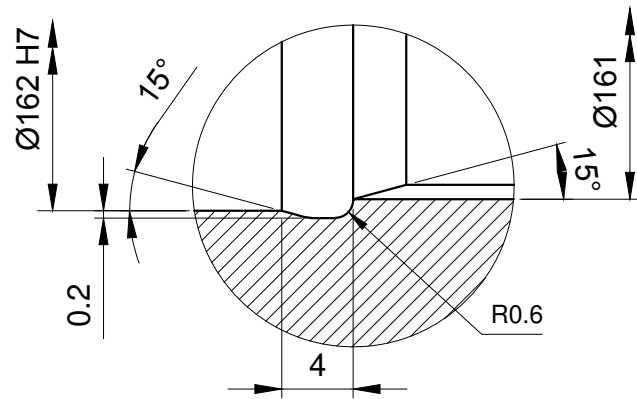
ALL DIMENSIONS ARE IN MILLIMETRES

√ Ra 3.2 (√ Ra 1.6 √ Ra 0.8)

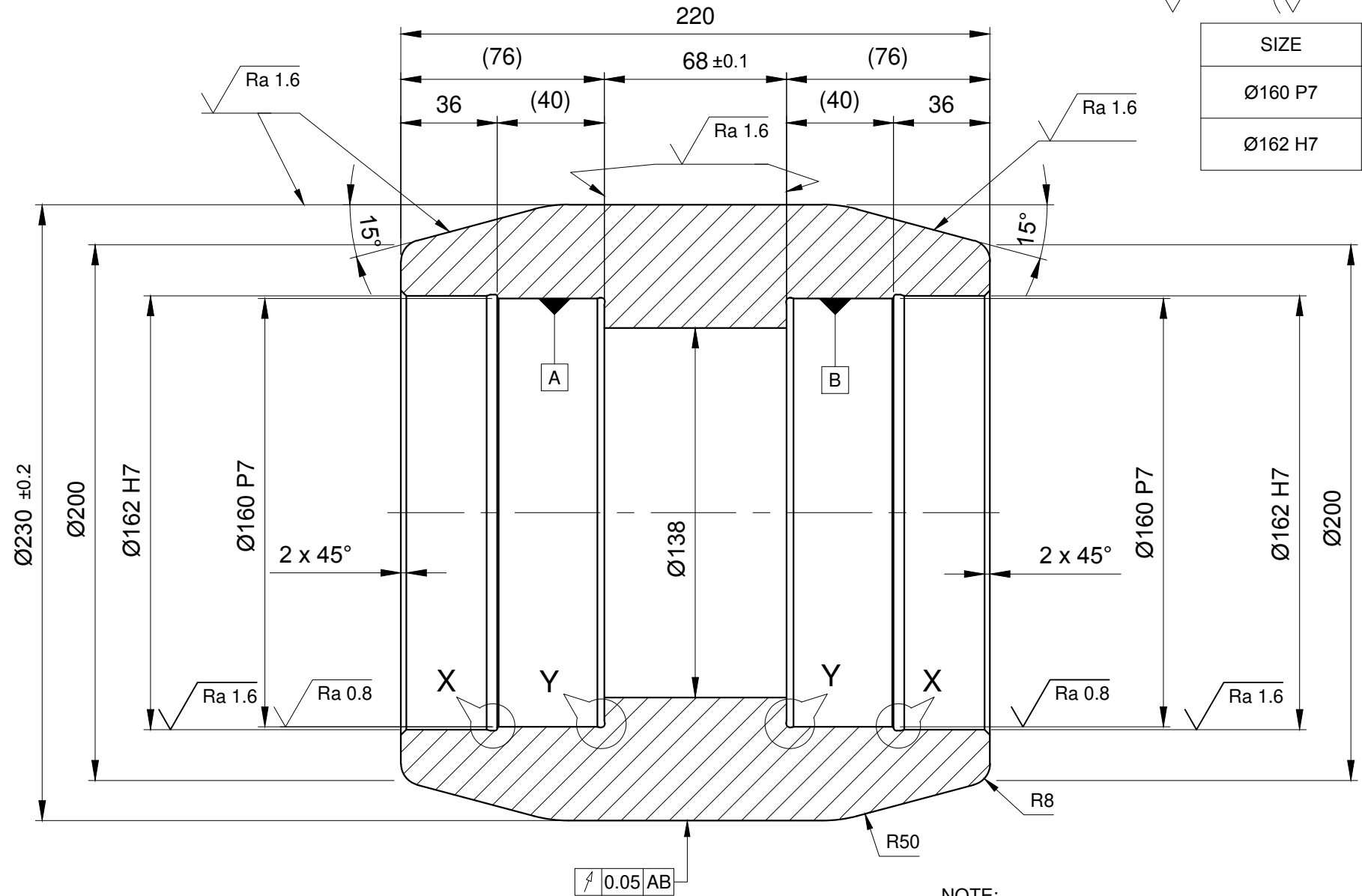
SIZE	DEVIATION
Ø160 P7	-0.028 -0.068
Ø162 H7	+0.040 0.000



DETAIL - Y
SCALE - 1:5



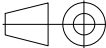
DETAIL - X
SCALE - 1:5



NOTE:
1.ALL UNSPECIFIED CHAMFER ARE TAKEN AS 0.5 x 45°
2.HARDNESS TO 50 - 54 HRC

REV	DATE	ALTERED
01		CHECKED
		APPROVED

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

	RO 230 x 220			X37CrMoW5-1		
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE		UNIT WT	
			MATL SPEC		QTY	
EQPT: CROSS PIERCING AND ELONGATION						
	Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI – 620014		DRN	NAME V.KRISHNAKUMAR/ A.S	SIGNATURE <i>V. Krishnakumar/ A.S</i>	DATE 27/11/14
			CHD	R.K.SINGH	<i>R. K. Singh</i>	27/11/14
			APPD	G.LOGANATHAN	<i>G. Loganathan</i>	27/11/14
DEPT SSTP	GRADE OF UNTOL. DIM		SCALE 1:2	WEIGHT (Kg) 34.8	REF TO ASSY DWG NO 0101056-42.000_03	ITEM 30
CODE 456	Ø/√/∅ IS: 2102				REF TO OLD DWG NO 0101056-42.030	
TITLE CPE - ROLLER 3-ROLLER GUIDE			CARD CODE U 01	DRAWING NO : 3-7-1123-42-10266		REV 00

A3-SIZE

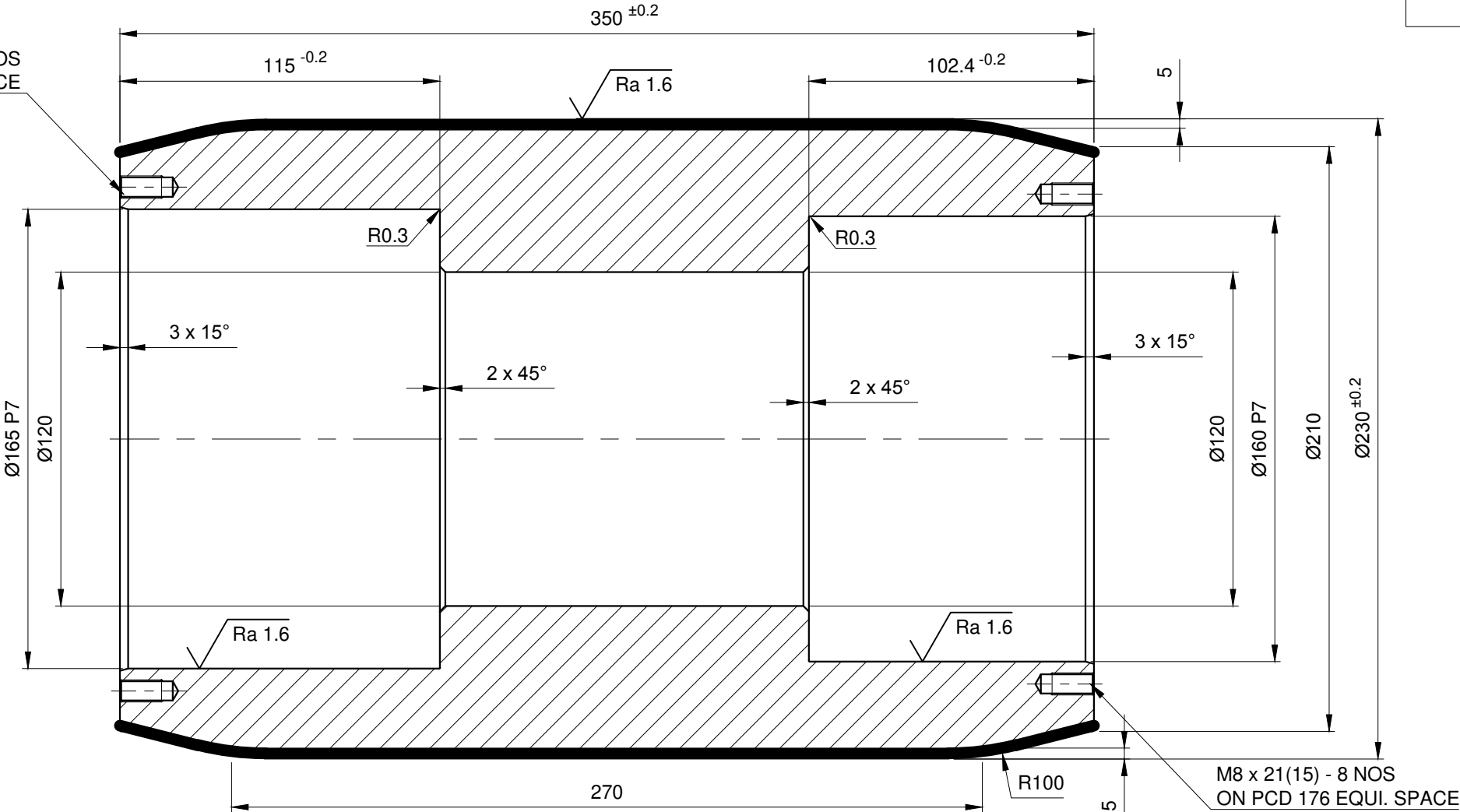
ALL DIMENSIONS ARE IN MILLIMETRES

DRAWING NO: 3-7-1123-43-10260

Ra 3.2 (Ra 1.6)

SIZE	DEVIATION
160 P7	-0.028 -0.068
165 P7	-0.028 -0.068

M8 x 21(15) - 8 NOS
ON PCD 181 EQUI. SPACE

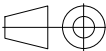


NOTE:

- 1.ALL UNSPECIFIED CHAMFER ARE TAKEN AS 0.5 x 45°.
- 2.WELDING DEPOSIT TO BE DONE. ACCORDING TO MAINTAIN 5mm OF DEPOSIT AFTER MACHINING.
- 3.WELDING ELECTRODE: HARD FACE ELECTRODE TO BE USED & HARDNESS REQUIRED 50HRC.
- 4.PROPER PREHEAT AND INTERPASS TEMPERATURE TO BE MAINTAINED TO PREVENT CRACKING AND SPALLING.
- 5.COUNTERSINK THREAD BORES UPTO THREAD OUTER DIAMETER; COUNTERSINK ANGLE 120°.

REV 02	DATE 16/12/14	ALTERED CHECKED APPROVED	S.P.N.Kumar/ A.S R.K.Singh S.Loganathan	REV 01	DATE 26/11/14	ALTERED CHECKED APPROVED	S.P.N.Kumar/ A.S R.K.Singh S.Loganathan
NOTE SL.No.2 MODIFIED AND NOTE SL.Nos.3 & 4 ADDED.				DRAWING REVISED AS PER SMS DRAWING			

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						IS Fe540WHT EN10025.2	03
ITEM NO	DESCRIPTION	DRAWING NO				MATL CODE	UNIT WT
						MATL SPEC	QTY
EQPT: CROSS PIERCING AND ELONGATION							
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI – 620014		DRN	S.S.N.KUMAR/ A.S	SIGNATURE <i>S.P.N.Kumar/ A.S</i>	DATE 11/11/14
				CHD	R.K.SINGH	<i>R.K.Singh</i>	11/11/14
				APPD	G.LOGANATHAN	<i>G.Loganathan</i>	11/11/14
DEPT SSTP	GRADE OF UNTOL. DIM		SCALE 1:2	WEIGHT (Kg) 56.5	REF TO ASSY DWG NO		ITEM
CODE 456	Ø/√/≠ IS: 2102				REF TO OLD DWG NO 0101056-43.000-03		92
TITLE CPE - ROLLER 3-ROLLER GUIDE				CARD CODE U 01	DRAWING NO : 3-7-1123-43-10260		REV 02

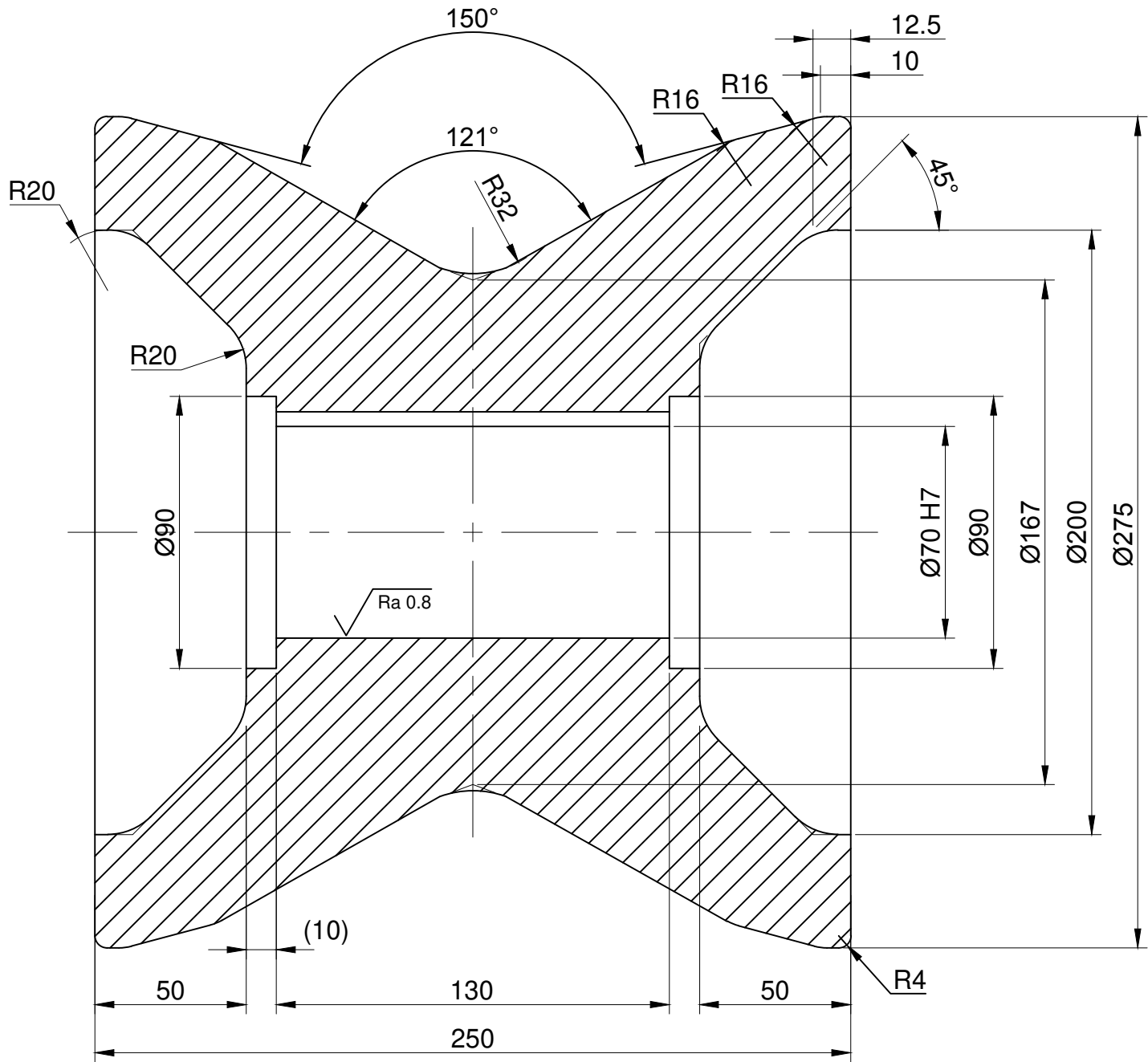
A3-SIZE

DRAWING NO: 2-7-1123-46-10109

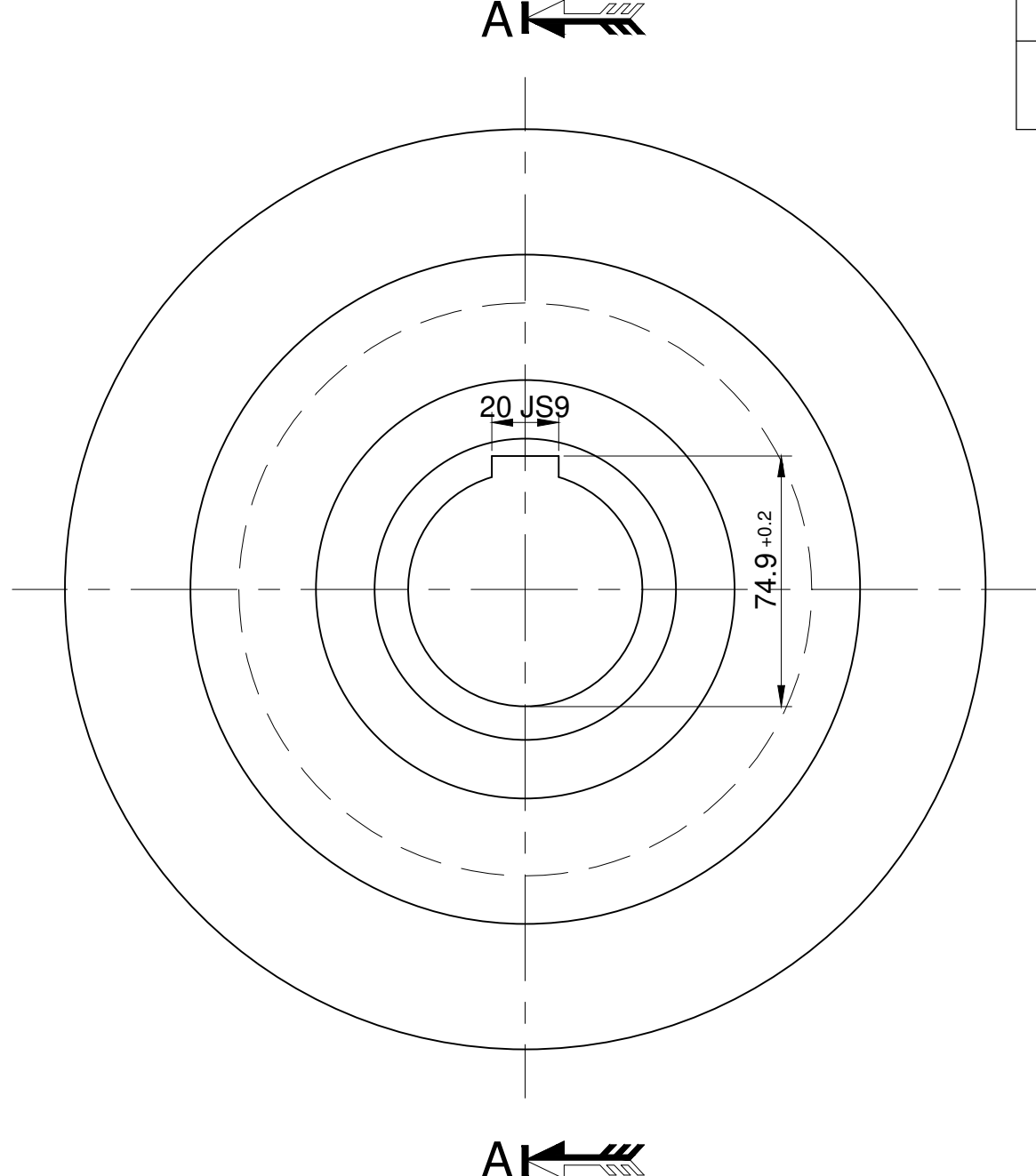
ALL DIMENSIONS ARE IN MILLIMETERS

$\sqrt{Ra\ 1.6}$ ($\sqrt{Ra\ 0.8}$)

Nominal size	Tolerance field	Deviations
Ø70	H7	+0.03
		0
20	JS9	+0.026
		-0.026



SEC-AA

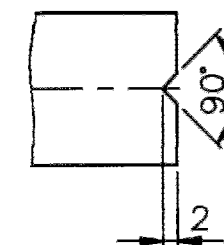
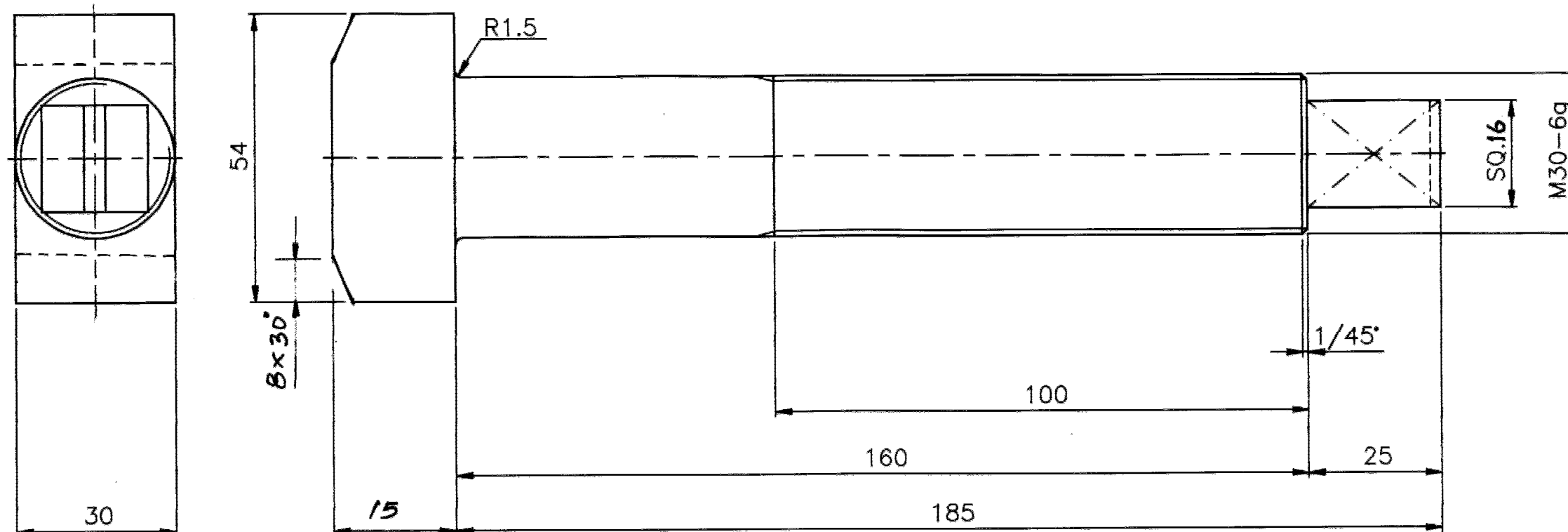


CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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A2-SIZE

ALL DIMENSIONS ARE IN MILLIMETERS

1.6/



GRADE : PRECISION AS PER IS:1367

THREAD : METRIC THREAD ACCORDING TO TOLERANCE CLASS 6g AS PER IS:4218-PART V

: MAY BE FORMED EITHER BY ROLLING OR THREAD CUTTING

MANUFACTURE AND WORKMANSHIP : AS PER IS:1367

ITEM NO	DESCRIPTION	DRAWING NO	45C8 IS:1875	MATL CODE	UNIT WT
				MATL SPEC	QTY
EQPT: PUSH BENCH					
Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014			DRN	NAME G. RAJENDRAKUMAR	SIGNATURE <i>[Signature]</i>
			CHD	A. AROCKIAM	DATE 03/11/95
			APPD	S. SHANMUGASUNDARAM	DATE 11/11/95
DEPT MPG	GRADE OF UNTOL DIM C/M/F	SCALE 1:1	WEIGHT (Kg) 1.20	REF TO ASSY DWG NO 9-7-1127-06-00026	ITEM 09
TITLE T HEAD BOLT - M30 (WEAR STRIP FIXING-MANDREL BAR GUIDE ASSY)			CARD CODE U 01	DRAWING NO : 3-7-1127-06-03938	REV 02

REV	DATE	ALD:- <i>[Signature]</i>	REV	DATE	ALTERED : <i>[Signature]</i>
02	29.10.99	CHD:- <i>[Signature]</i>	01	20.2.96	CHECKED : <i>[Signature]</i>
		APPD:- <i>[Signature]</i>			APPROVED : <i>[Signature]</i>
DIMN. 15 WAS 23. CHAMFER 8X30° WAS 4X45°			ZONE SQ.16 WAS SQ.20		

7

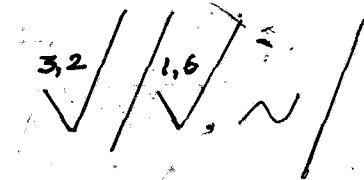
E

D

10

1

A



4 RIBS 20 THICK ALONG
CIRCUMFERENCE (SPACING 90°)

TYPE I

MATERIAL CAST STEEL GY 230-450 N, IS:1030

~~TYPE II~~

~~MATERIAL CAST STEEL IS: 2707 Gr.2~~

~~HEAT TREAT TO 110 kg/mm²~~

PERMISSABLE UNBALANCE @ 300RPM AFTER MACHINING 200Gms.
COMPENSATE - LARGER UNBALANCE BY MEANS OF
WELD - IN PIECES.

EQPT: EQPT. BETWEEN PUSH BENCH AND REELER



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

	NAME	SIGN	DATE	NO. OF ITEMS
DRN	S. Baskal	[Signature]	12-10-84	
CHD	A. ARCKIAM	[Signature]	18-6-85	
APPD		[Signature]	2-2-86	

REV	DATE	ALTERED: P. GEORGE SUSAI	REV	DATE	ALTERED
	31.10.85	CHECKED: J. CHINI	01	3.3.86	CHECKED
		APPD: <u>[Signature]</u>	ZONE		MATERIAL TYPE II WITH HE TREATMENT ADDED FOR DEVELOPMENT PURPOSE
02		MTL SPEN CAST STEEL GP 230 - 450N IS: 1030 WAS CAST STEEL GP 2 IS: 1030 AND TYPE-II MTL IS REMOVED			

DEPT	GRADE OF UNTOL DIM		SCALE	WEIGHT (Kg)	REF TO NEW/OLD DRG 1-7-1134-02-004934-00496	ITEM NO
CODE	C/M/F		1:1.5	95.0	RW37541 Part 5	
TITLE				CARD CODE UOI	DRAWING NO.	REV
V-ROLLER Φ 300 × 240 × 350					2-7-1134-00-00180	1

V-ROLLER
 $\phi 300 \times 240 \times 350$

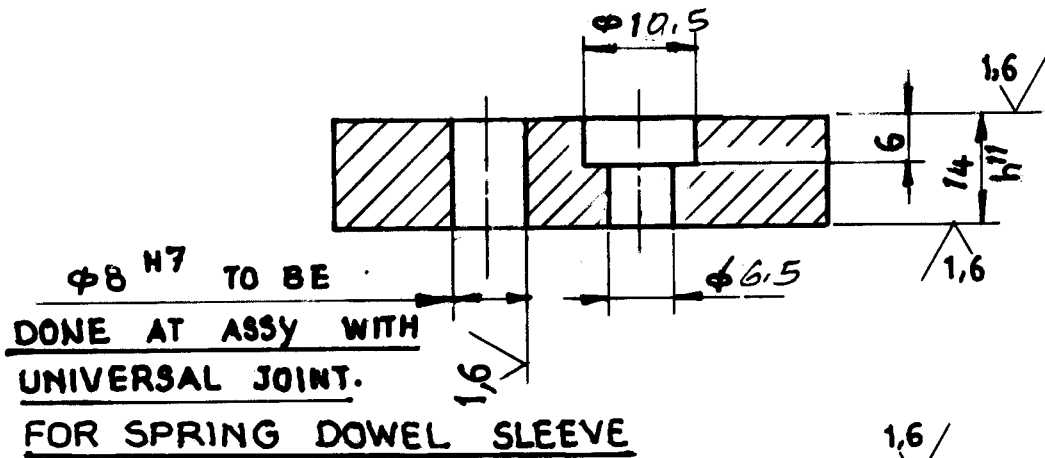
05-249/B

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

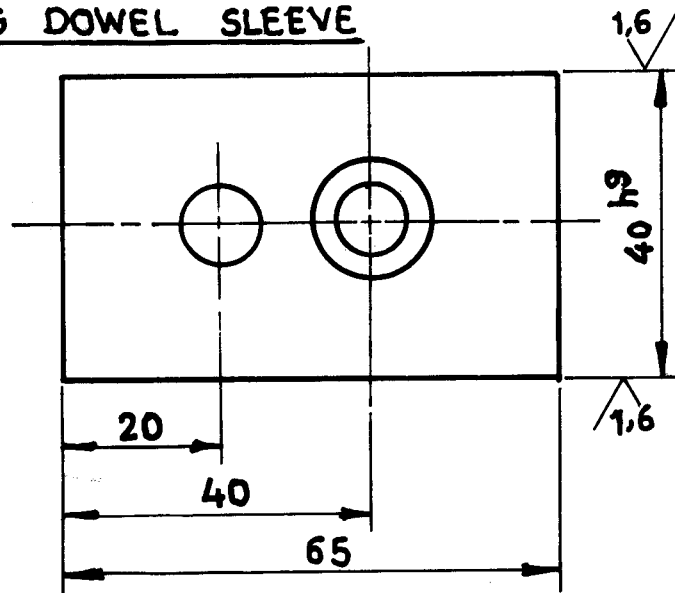
REV. 01	DATE 04/12/90	ALTERED T. Kumar	REV 02	DATE 25/5/91	ALD : S. Srinivas
ZONE APPD J. Srinivas		CHECKED: J. Srinivas	APPD: S. Srinivas		
MTL SPCN. Fe 540 15:8500 WAS St. 52 15:1079		COUNTER BORE DIMENSIONS $\phi 10.5/6.5$ WERE $\phi 15/\phi 9$			

3,2 ✓ / 1.6 ✓



$\phi 8$ H7 TO BE
DONE AT ASSY WITH
UNIVERSAL JOINT.

FOR SPRING DOWEL SLEEVE



$\phi 8$ H7	+0,015
	0
40 h9	0
	-0,062
14 h11	0
	-0,110

ALL SHARP EDGES TO BE
CHAMFERED TO $0,5 \times 45^\circ$

ITEM NO.	DESCRIPTION	Fe 540 15:8500	UNIT WT.
		MATL. SPEC	QTY.

EQPT: REELER

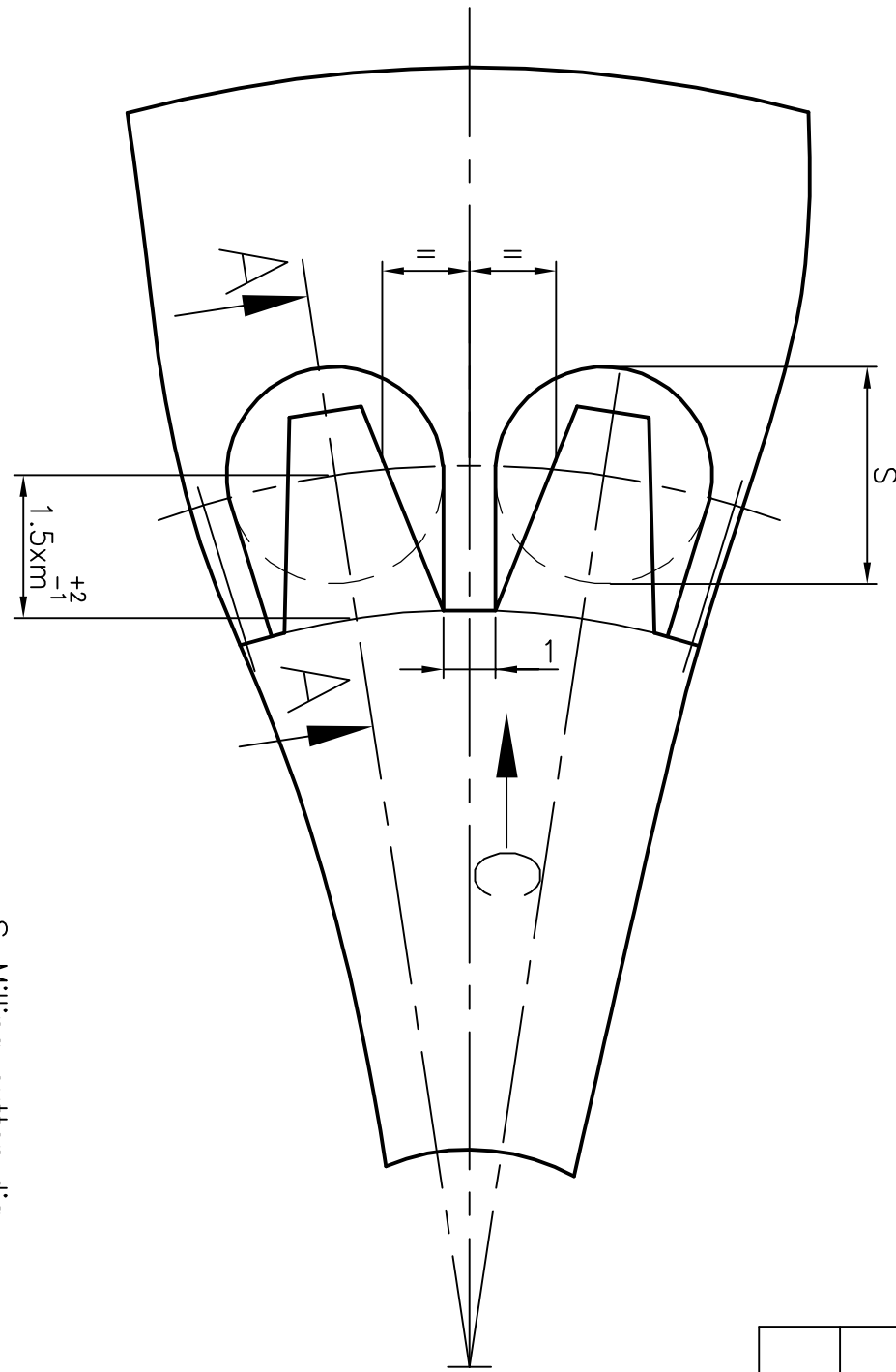
 Bharat Heavy Electricals Ltd., SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI-620 014		DRN.	NAME	SIGN	DATE
		CHD.	A. Srinivas	[Signature]	28-2-90
		APPD.	[Signature]	[Signature]	3 3 80
DEPT.	GRADE OF UNTOLO.DIM.	SCALE	WEIGHT (Kg)	REF. TO ASSY./OLD DRG.	
CODE	C/M/F	1:1	0,28		
TITLE			CARD CODE	DRAWING NO.	REV
KEY			U 01	4-7-1136-08-04037	02
REELER UNIVERSAL JOINT					

Size A4

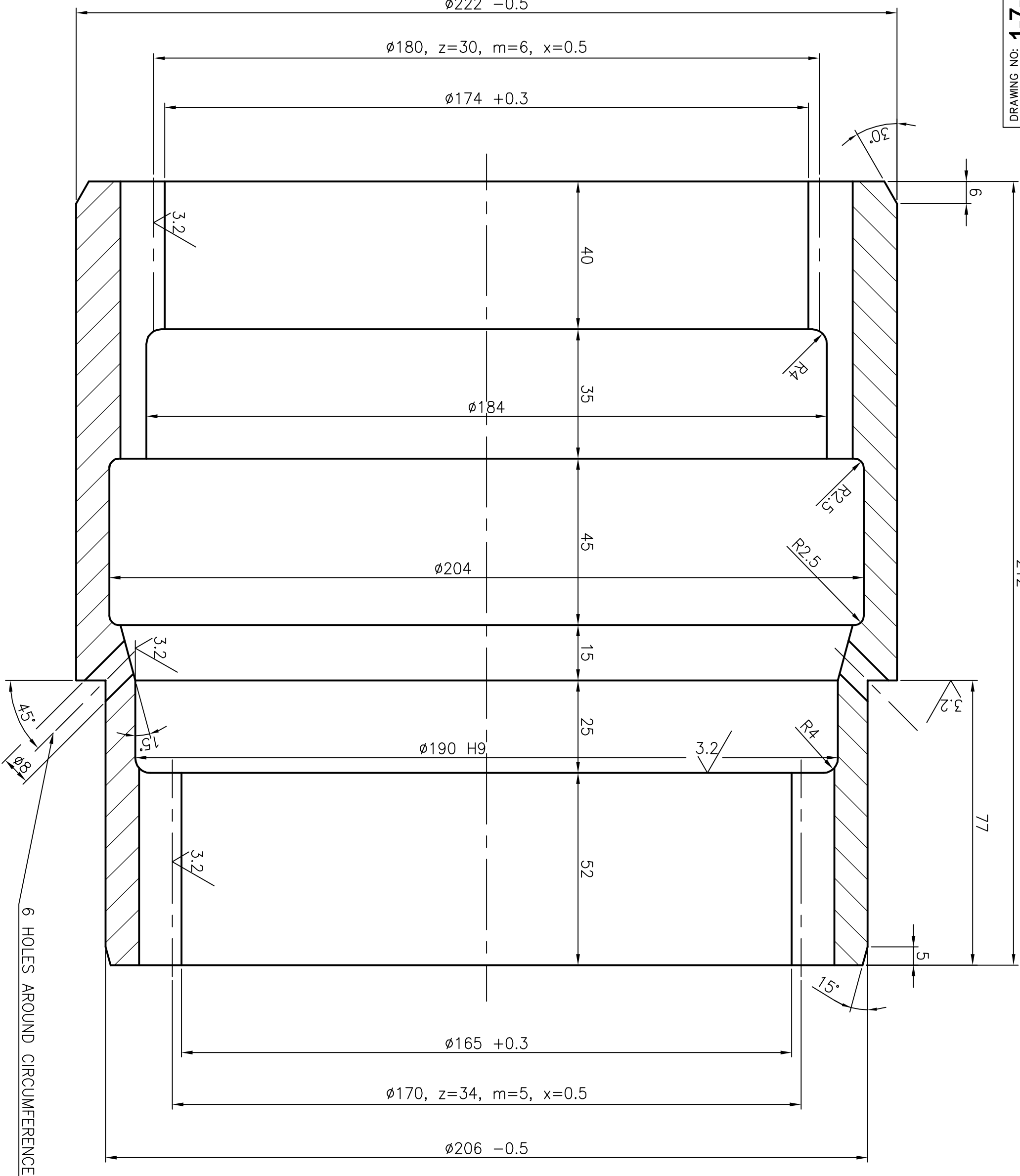
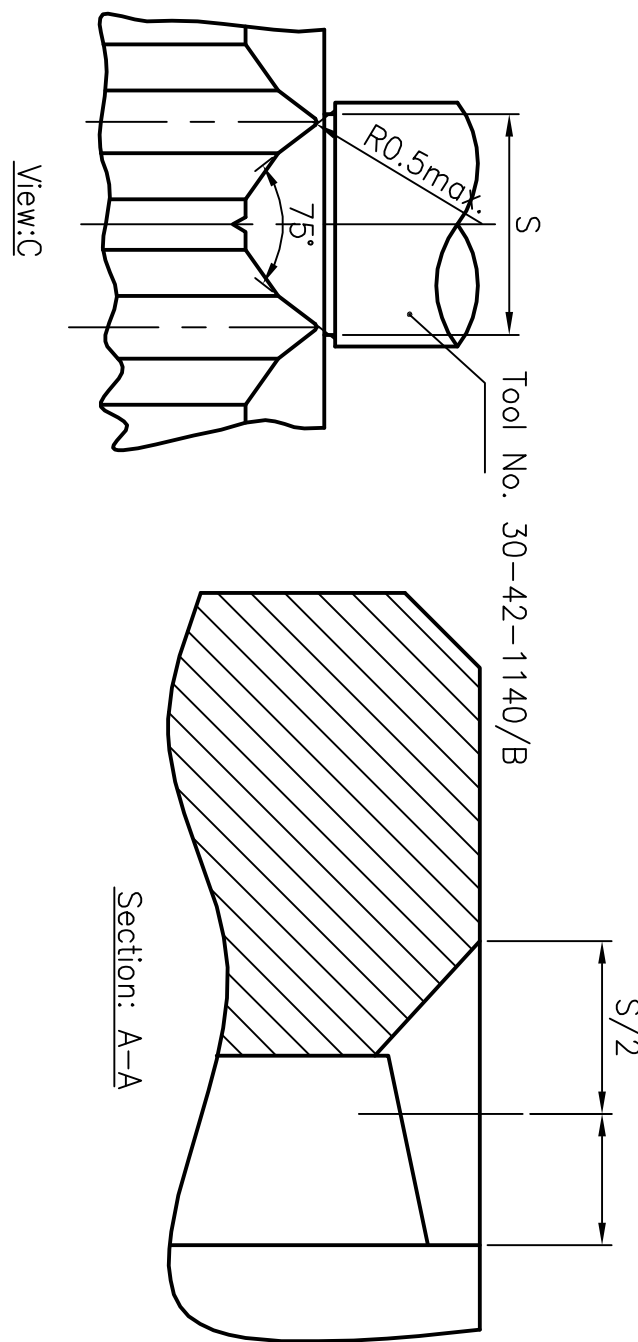
25/3.2/

Ø190	H9	^{+0.115} ₀	190115
SIZE	TOLERANCE		

Pointing of Teeth



S=Milling cutter dia.



Crown Gearing

1	No. of teeth	z	30
2	Normal Modulus,	m _{no}	6
3	Normal Pressure angle,	a _{no}	20°
4	Bevel	B _o	-
5	Thread direction		-
6	Modification of tooth proportion x·m _{no}	2.5	
7	Tooth form	DIN 867	
8	Perm. out of true	63µ	
9	Quality	8	
10	Size of	upper	-
11	tooth width	lower	-
12	Measured over teeth	z	Zahne
13	Tolerance		µm
14	Foot circle diameter	d _f	-
15	Pitch circle diameter	d _o	180
16	Outside circle diameter	d _k	174 +0.3
17	Head	km _n	-
18	Axle distance in housing	a	-
19	Axle allowances	A _a	-
20	Flank clearance	min.	-
21		max.	-
22	Countergear dfg.no.	2-7-1155-07-10019	

Crown Gearing

1	No. of teeth	z	34
2	Normal Modulus,	m _{no}	5
3	Normal Pressure angle,	a _{no}	20°
4	Bevel	B _o	-
5	Thread direction		-
6	Modification of tooth proportion x·m _{no}	0.5	
7	Tooth form	DIN 687	
8	Perm. out of true	63µ	
9	Quality	8	
10	Size of	upper	-
11	tooth width	lower	-
12	measured over teeth	z	-
13	Tolerance		µm
14	Foot circle diameter	d _f	-
15	Pitch circle diameter	d _o	170
16	Outside circle diameter	d _k	165 +0.3
17	Head	km _n	-
18	Axle distance in housing	a	-
19	Axle distance allowances	A _a	-
20	Flank Clearance	min.	-
21		max.	-
22	Countergear dfg.no.	30-ST-115-02-050	

* Machining of Tooth base : Grounded
max. surface roughness of tooth base : 0.016 mm

- NOTES:
1. All Non-Dimension edges broken 0.3x45°
 2. Countersink thread bores up to thread outside diameter, countersink angle 120°
- Spline to be checked only with GO & NOGO gauge
Matching of sets shall not be used.
- * Gas nitrided by special nitriding treatment: 0.8-1.0mm depth
 - * Hardened to: Rm 900-100 N/mm2
 - * Manufacturing Instructions
SN 200

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED.IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.									
EQUIP: STRETCH REDUCING MILL									
ITEM NO	DESCRIPTION				DRAWING NO	42C4M02 IS-5517	MATL CODE	UNIT WT	QTY
1	Bharat Heavy Electricals Ltd				DIN	VKRISHNAKUMAR	SIGNATURE	DATE	
2	SEAMLESS STEEL TUBE PLANT				CNO	SSNKUMAR	20/07/2008	23.02.11	
3	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
4	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
5	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
6	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
7	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
8	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
9	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
10	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
11	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
12	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
13	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
14	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
15	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
16	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
17	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
18	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
19	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
20	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
21	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	
22	TIRUCHIRAPALLI - 620014				APPRO	GLOKAMANTHAN	20/07/2008	23.02.11	

REV	QTY	DATE	CHANGED	APPROVED	456	SCALE	1:1	WEIGHT (Kg)	23.0	REF TO ASSY DWG NO	1-7-1155-07-10088	REF TO OLD DWG NO	0107120-33002	DRAWING NO :	1-7-1155-07-10088	REV	00
1	1	2008	2008	2008	2008	1:1	1:1	23.0	23.0	1-7-1155-07-10088	1-7-1155-07-10088	0107120-33002	0107120-33002	1-7-1155-07-10088	1-7-1155-07-10088	00	00

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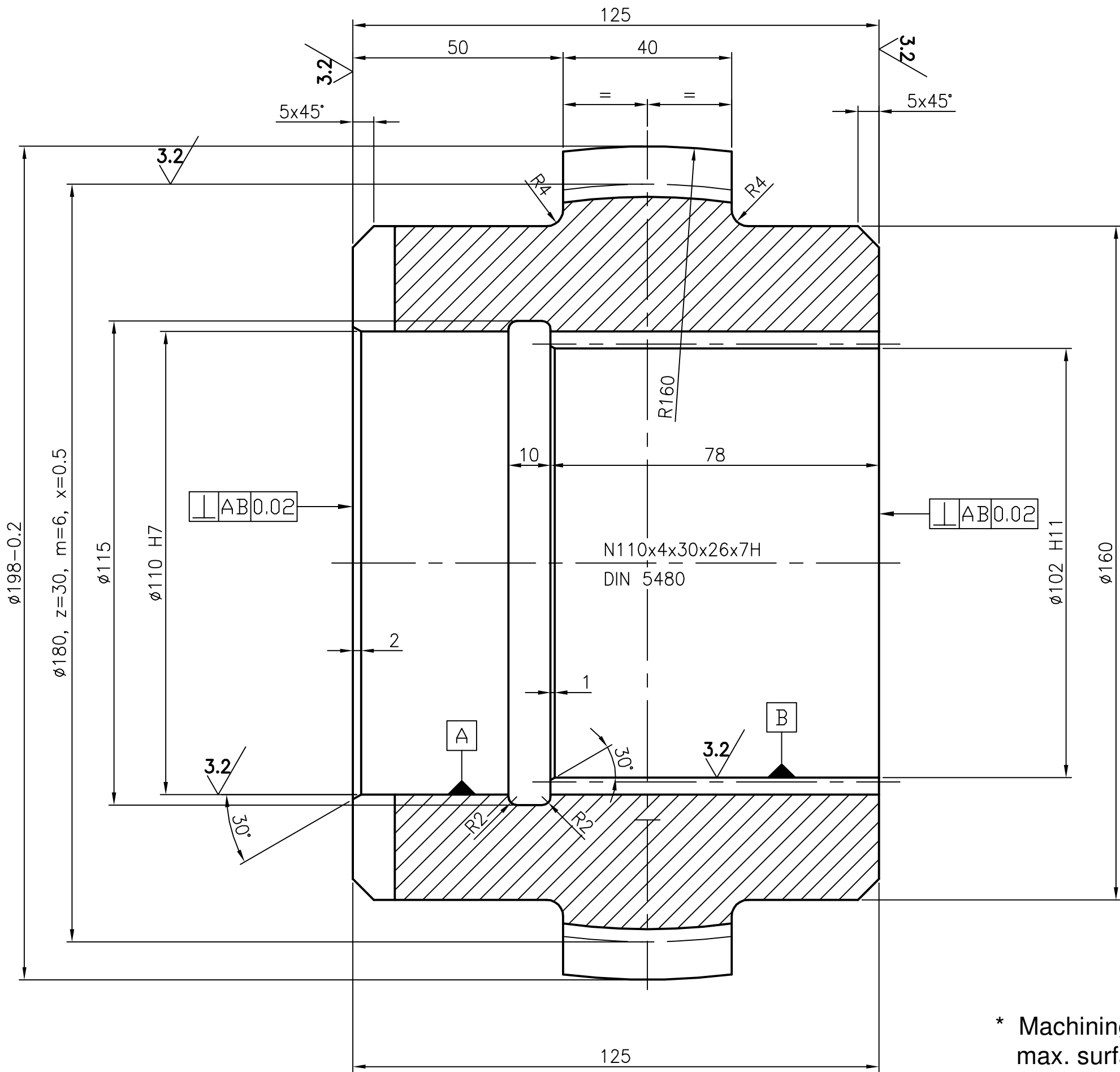
61001-20-9911-2-2
2-7-1155-07-10019
DRAWING NO.

ALL DIMENSIONS ARE IN MILLIMETERS

25//3.2//

Spline Hub		
Reference diameter d (for pitch diameter d)	B	110
Module, m		4
Pressure angle, a		30°
No. of teeth, z		26
Basic rack profile as in		DIN 5480
Addendum modification x.m		-0.800
Space width tolerance		DIN 5480-7H
Go plug gauge		DIN 5480-
NO GO gauge		DIN 5480-
Text dim. Mi between D _M	Basic Dim.	95.447
	K _{Mi}	95.529
	G _{Mi}	95.478
Supplementary datum F _r		22
Theoretical Root Diameter d _r plus deviation A	df2	110.8 +0.878
Broached (h _{fp} =0.55m):d	f2	0.650
Generated by shaping (h _{fp} =0.65m):d	f2	
Hobbed (h _{fp} =0.60m):d	f2	
Mating Spline Element (Drawing No.)		2-7-1155-07-10020

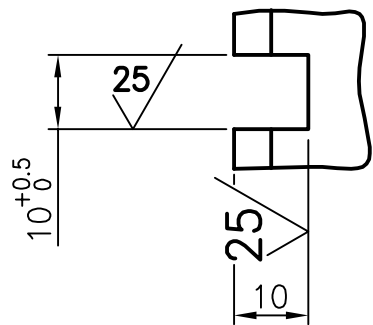
SIZE	TOLERANCE
Ø110	H7 $\begin{smallmatrix} +0.035 \\ 0 \end{smallmatrix}$ 110.035 110
Ø102	H11 $\begin{smallmatrix} +0.22 \\ 0 \end{smallmatrix}$ 102.22 102



- * Machining of Tooth base : Grounded
max. surface roughness of tooth base : 0.016 mm
Spline to be checked only with GO & NOGO gauge
Matching of sets shall not be used.
Hardened to: Rm 900+100 N/mm²
- * Bath nitrided

CROWN GEARING

1	No. of teeth	z	30
2	Normal Modulus,	m _{no}	6
3	Normal Pressure angle,	a _{no}	20°
4	Bevel	B _o	-
5	Thread Direction		-
6	Modification of tooth proportion	x. m _{no}	0.5
7	Tooth form		DIN 687
8	Perm. out of true		63µ
9	Quality		8ba
10	Size of Tooth width	upper	84.1118
11		lower	84.0268
12	measured over ... teeth z'		5
13	Tolerance		42µm
14	Foot circle diameter	d _f	-
15	Pitch circle diameter	d _o	180
16	Outside circle diameter	d _k	198-02
17	Head	km _n	-
18	Axle distance in housing	a	-
19	Axle distance allowances	Aa	-
20	Flank	min.	-
21	Clearance	max.	-
22	Countergear drg.no.		1-7-1155-07-10088



* Manufacturing Instructions SN 200

REV 01	DATE 18.09.13	ALTERED CHECKED APPROVED	V. Krishnakumar S. Loganathan
COUNTERGEAR DRG.NO. IS CHANGED FROM 2-7-1155-07-10086 TO 1-7-1155-07-10088			

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							42Cr4Mo2	IS: 5517	
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE				UNIT WT		
			MATL SPEC				QTY		
EQPT: STRETCH REDUCING MILL									
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI – 620014			DRN	NAME V.KRISHNAKUMAR	SIGNATURE <i>V. Krishnakumar</i>	DATE 19.02.11	
					CHD	SSN.KUMAR	<i>SSN. Kumar</i>	19.02.11	
					APPD	G.LOGANATHAN	<i>S. Loganathan</i>	19.02.11	
DEPT SSTP CODE 456	GRADE OF UNTOL. DIM ϕ / M / F IS: 2102		SCALE 1:1	WEIGHT (Kg) 11	REF TO ASSY DWG NO 1-7-1155-07-10086 1-7-1155-07-10087				ITEM 12
TITLE SRM - COUPLING HUB (DRIVE ASSY - SRM 300)					REF TO OLD DWG NO 0107120-33.003				REV 01
					DRAWING NO : 2-7-1155-07-10019				
					CARD CODE U 01				

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A2-SIZE

ALL DIMENSIONS ARE IN MILLIMETERS

Ø122 H8
+0.100
0

3.2/1.8/

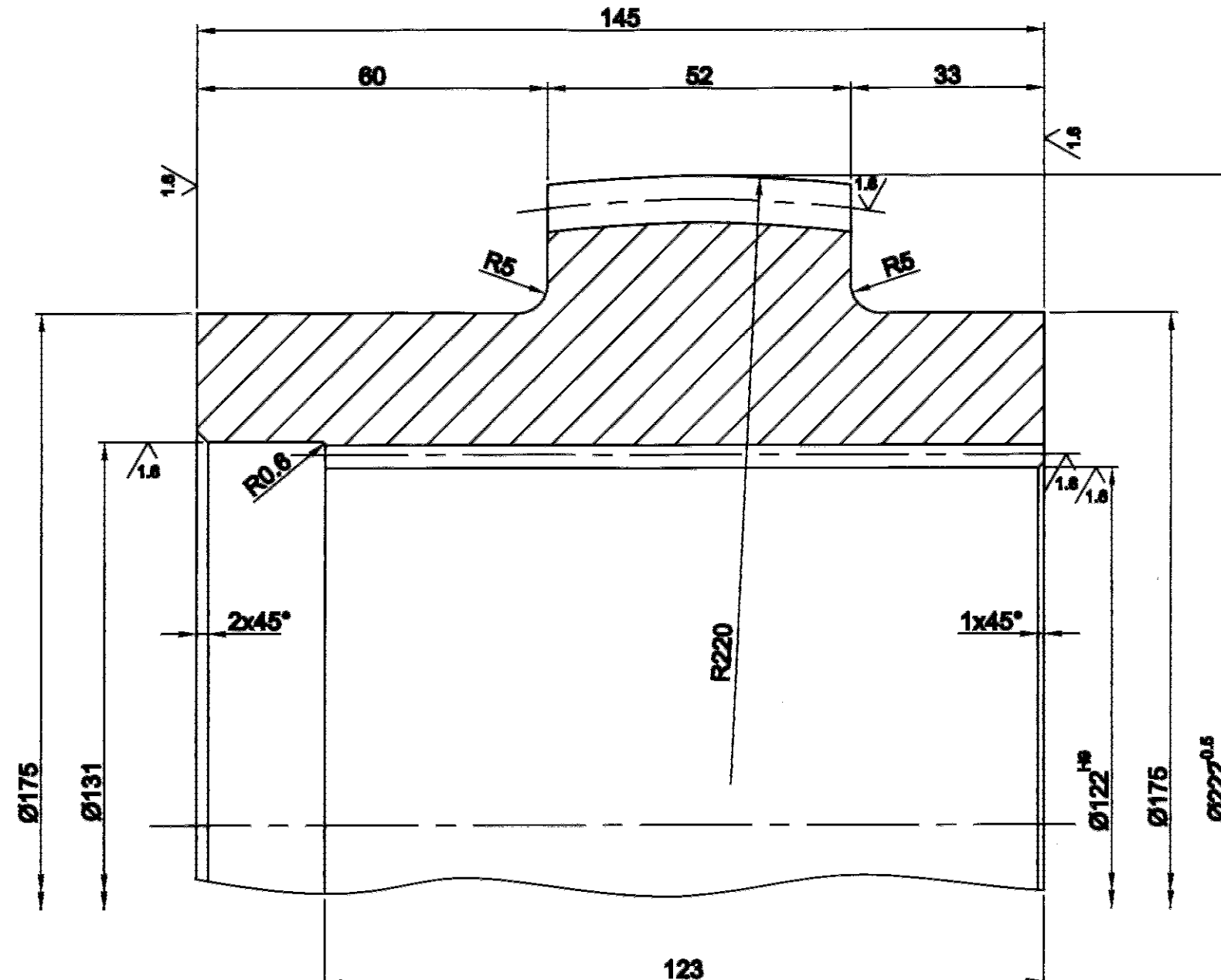
GEAR DATA

No.OF TEETH	34
MODULE	6
PRESSURE ANGLE	20°
CORRECTION FACTOR	+0.5
WIDTH ACROSS 5 TEETH	84.616 ^{+0.007} _{-0.007}
QUALITY & TOL.ZONE	9C DIN 3967
MATING GEAR DRG.No	3-7-1155-08-00459
MATING GEAR No OF TEETH	34
CENTRE DISTANCE	0.00

INVOLUTE SPLINE DATA

REFERENCE DIA	130
No.OF SPLINES	31
MODULE	4
PROFILE-INVOLUTE	IS:3665
CORRECTION FACTOR	+0.2
DIA OF MEASURING PIN	7
DIMENSION BETWEEN PINS	115.298 ^{+0.081} _{-0.081}
QUALITY & TOL.ZONE	7H IS:3665
MATING SPLINE DRG No.	2-7-1155-08-00258

01.TEMPERED TO = 85⁺¹⁵ daN/mm²
02.GAS NITRIDED BY SPECIAL NITRIDING METHOD TO 8-1.0 mm DEPTH
03.ALL SHARP CORNERS CHAMFERED TO 0.3x45°



REV	DATE	ALTERED :	REV	DATE	ALTERED :
04		CHECKED :	03		CHECKED :
ZONE		APPROVED:	ZONE		APPROVED:
REV	DATE	ALTERED :	REV	DATE	ALTERED :
02	18.02.02	CHECKED :	01	13.08.97	CHECKED :
ZONE		APPROVED:	ZONE		APPROVED:
CORRECTION FACTOR ADDED			MATL.SPEC 42Cr4Mo2 IS:5517 WAS 40 Cr1Mo28 IS:5517		

ITEM NO	DESCRIPTION	DRAWING NO	IS:5517 42Cr4Mo2	UNIT WT	QTY
EQPT:	SRM 380				
Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		DRN	NAME B.ASHOKKUMAR	SIGNATURE	DATE 20.08.02
		CHD	NAME BENJUMAR	SIGNATURE	DATE 30.05.02
		APPD	NAME SHANMUGASUNDARAMS	SIGNATURE	DATE 30.05.02
DEPT MPG	GRADE OF UNTOL. DIM C/M/F	SCALE 1:1	WEIGHT(kg) 17.4	REF TO ASSY DWG NO 0-7-1155-08-00198	ITEM NO 08
TITLE COUPLING BODY SRM380 DRIVE SHAFT ASSY		CARD CODE U 01	DRAWING NO : 3-7-1155-08-00461	REV 02	

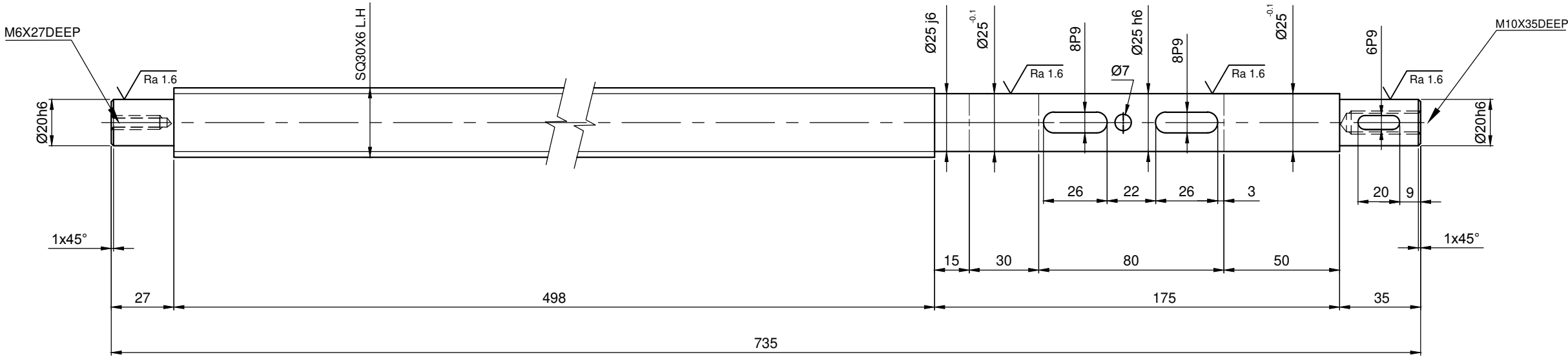
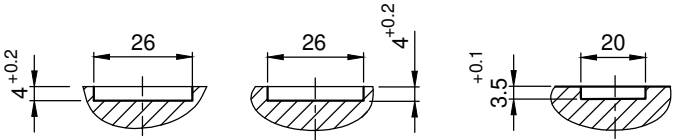
ALL DIMENSIONS ARE IN MILLIMETRES

3-7-1301-00-10333

DRAWING NO:

$\sqrt{Ra\ 3.2}$ ($\sqrt{Ra\ 1.6}$)

SIZE	DEVIATION
Ø25 h6	+0.000 -0.013
Ø25 j6	+0.009 -0.004
Ø20 h6	+0.000 -0.013
8P9	-0.015 -0.051
6P9	-0.006 -0.031



NOTE:
ALL SHARP CORNERS ARE CHAMFERED TO 1X45°

REV	DATE	ALTERED
01		CHECKED
		APPROVED

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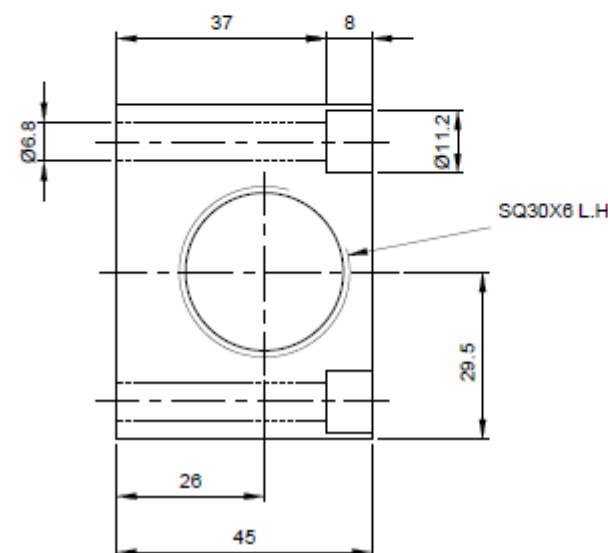
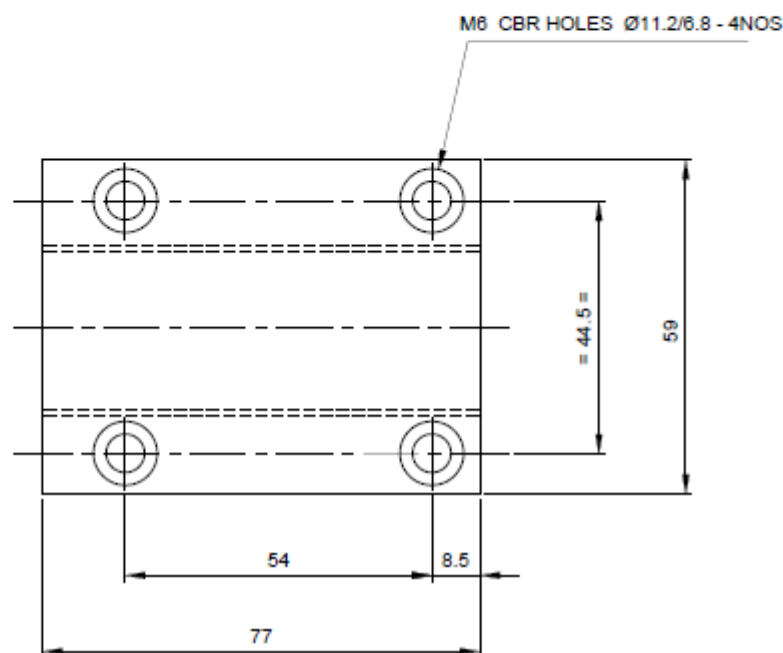
								45C8 IS:1875	
ITEM NO	DESCRIPTION	DRAWING NO						MATL CODE	UNIT WT
									MATL SPEC
EQPT: END MILLING MACHINE WITH FACILITIES									
 Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI – 620014		DRN	NAME	SIGNATURE	DATE				
		CHD	SSN.KUMAR/K.Y	SSN.Kumar/ky	23.04.16				
		APPD	RK.SINGH	RK.Singh	23.04.16				
DEPT SSTP	GRADE OF UNTOL. DIM		SCALE	WEIGHT (Kg)	REF TO ASSY DWG NO				ITEM
CODE 456	ϕ/M/ℱ IS:2102		1:2	3.100	REF TO OLD DWG NO				
TITLE				CARD CODE	DRAWING NO :				REV
EMM - SCREW ROD CROSS SLIDE ASSY				U 01	3-7-1301-00-10333				00

3-7-1301-00-10334

DRAWING NO.

ALL DIMENSIONS ARE IN MILLIMETRES

Ra 3.2



NOTE:

ALL SHARP CORNERS ARE CHAMFERED TO 0.5X45°

REV	DATE	ALTERED
01		CHECKED
		APPROVED

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			GZ-CuSn12				
			EN 1982				
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE		UNIT WT		
			MATL SPEC		QTY		
EQPT: END MILLING MACHINE WITH FACILITIES							
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
				CHD	RK.SINGH	RK. Singh	21.04.16
				APPD	RK.SINGH	RK. Singh	21.04.16
DEPT	GRADE OF UNCL DIM		SCALE	WEIGHT (kg)	REF TO ASSY DWG NO		ITEM
SSTP	φ/M/F		1:1	1.60	-		
CODE	IS: 2102				REF TO OLD DWG NO		
456					-		
TITLE				CARD CODE	DRAWING NO :		REV
EMM - BOX NUT				U 01	3-7-1301-00-10334		00
CROSS SLIDE ASSY							

A3-SIZE

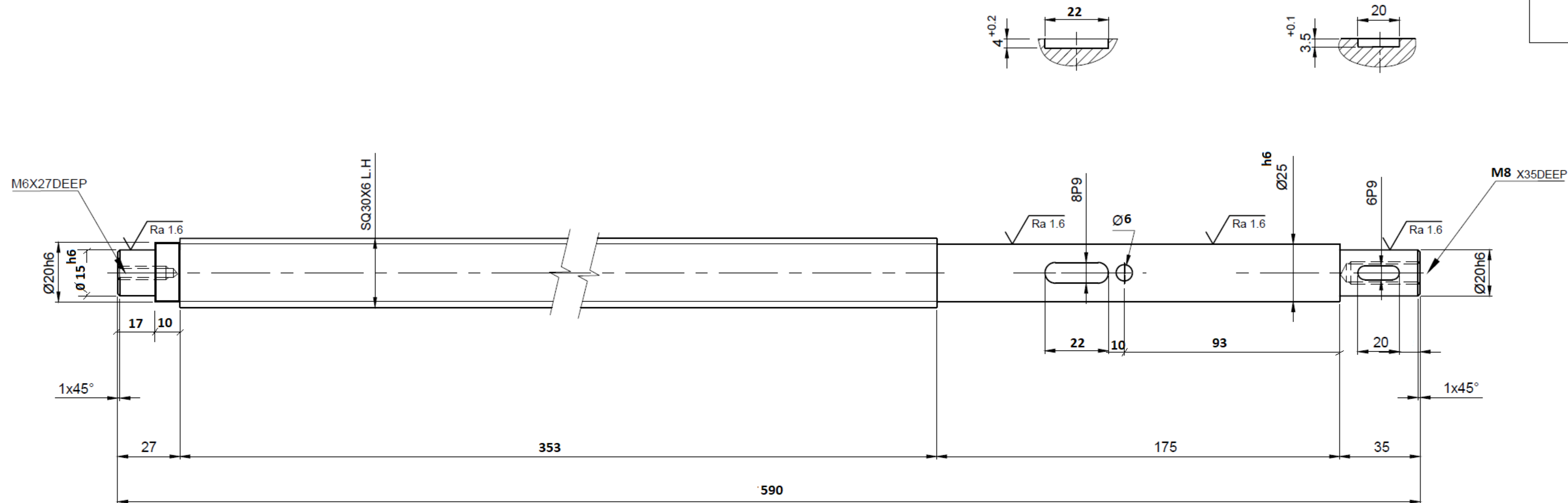
ALL DIMENSIONS ARE IN MILLIMETRES

3-7-1301-00-10335

DRAWING NO:

$\sqrt{Ra\ 3.2}$ ($\sqrt{Ra\ 1.6}$)

SIZE	DEVIATION
Ø25 h6	+0.000 -0.013
Ø20 h6	+0.000 -0.013
8P9	-0.015 -0.051
6P9	-0.006 -0.031



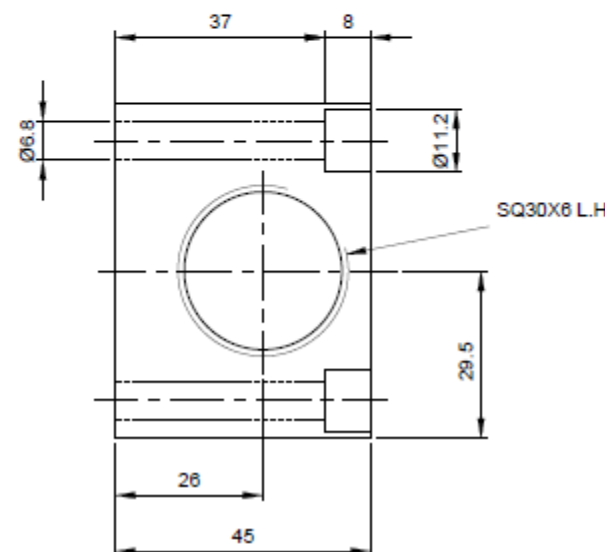
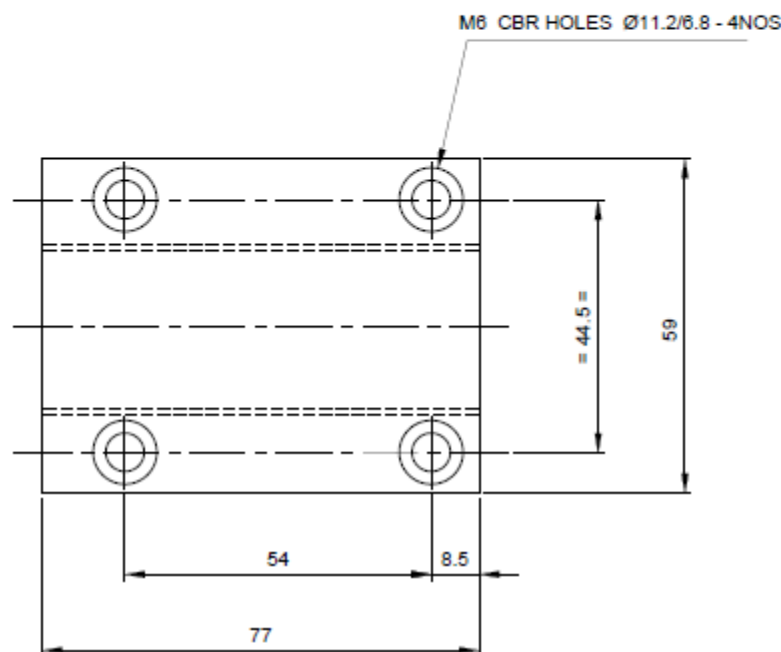
NOTE:
ALL SHARP CORNERS ARE CHAMFERED TO 1X45°

REV	DATE	ALTERED
01		CHECKED
		APPROVED

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			45C8 IS:1875			
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE		UNIT WT	
			MATL SPEC		QTY	
EQPT: END MILLING MACHINE WITH FACILITIES						
 Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI – 620014		DRN	NAME SSN.KUMAR/K.Y	SIGNATURE SSN.Kumar/ky	DATE 23.04.16	
		CHD	RK.SINGH	RK.Singh	23.04.16	
		APPD	RK.SINGH	RK.Singh	23.04.16	
DEPT SSTP	GRADE OF UNTOL. DIM  IS: 2102		SCALE 1:2	WEIGHT (Kg) 3.100	REF TO ASSY DWG NO	ITEM
CODE 456					REF TO OLD DWG NO	
TITLE EMM - SCREW ROD CROSS SLIDE ASSY				CARD CODE U 01	DRAWING NO : 3-7-1301-00-10335	REV 00

A3-SIZE



NOTE:
ALL SHARP CORNERS ARE CHAMFERED TO 0.5X45°

REV	DATE	ALTERED
01		CHECKED
		APPROVED

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			GZ-CuSn12			
			EN 1982			
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE		UNIT WT	
			MATL SPEC		QTY	
EQPT. END MILLING MACHINE WITH FACILITIES						
 Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014			DRN	NAME SSN.KUMAR/KG	SIGNATURE <i>SSN.Kumar/Kg</i>	DATE 21.04.16
			CHD	RK.SINGH	<i>RK.Singh</i>	21.04.16
			APPD	RK.SINGH	<i>RK.Singh</i>	21.04.16
DEPT SSTP	GRADE OF UNCL DIM φ/M/F IS: 2102		SCALE 1:1	WEIGHT (kg) 1.60	REF TO ASSY DWG NO -	ITEM 0
CODE 456				REF TO OLD DWG NO -		
TITLE EMM - BOX NUT CROSS SLIDE ASSY			CARD CODE U 01	DRAWING NO : 3-1-1301-00-10336		REV 00

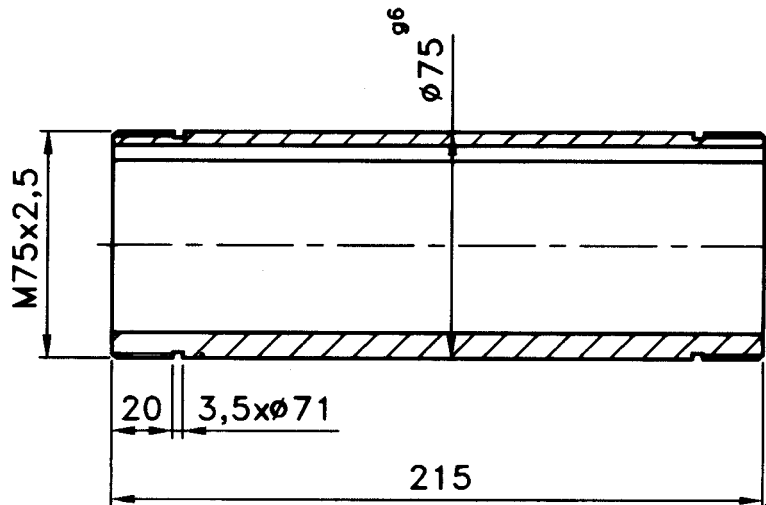
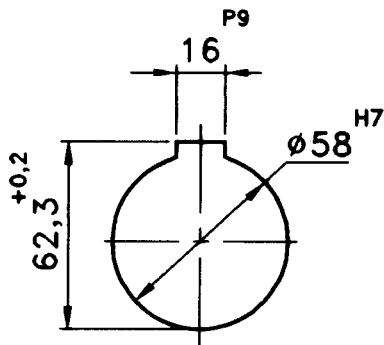
ALL DIMENSIONS ARE IN MM

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REV	DATE	ALTERED
01		CHECKED
		APPROVED

1.6/
✓

ø75 g6	-0,010
	-0,075
ø58 H7	+0,030
	0
16 P9	-0,018
	-0,061



ALL CORNERS CHAMFERED TO 1x45°

				AISI410			
ITEM NO	DESCRIPTION	DRAWING NO		MATL CODE		UNIT WT	
				MATL SPEC		QTY	
EQPT: SCALE PIT & PUMP HOUSE							
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		DRN	NAME	SIGNATURE	DATE
				CHD	SSN.KUMAR	<i>SSN.Kumar</i>	2.12.96
				APPD	AROCKIAM A	<i>A. Arockiam</i>	7.12.96
DEPT	GRADE OF		SCALE	WEIGHT (Kg)	REF TO ASSY DRG		ITEM NO
MPG	UNTOL DIM				820-05/2667		
CODE	C/M/F		1:2,5	3,0	REF TO OLD DRG		
TITLE				CARD CODE	DRAWING NO :		REV
COUPLING SLEEVE				U 01	4-7-3412-00-05424		00
SHAFT ASSY-SAM PUMP VO150/500+AR							

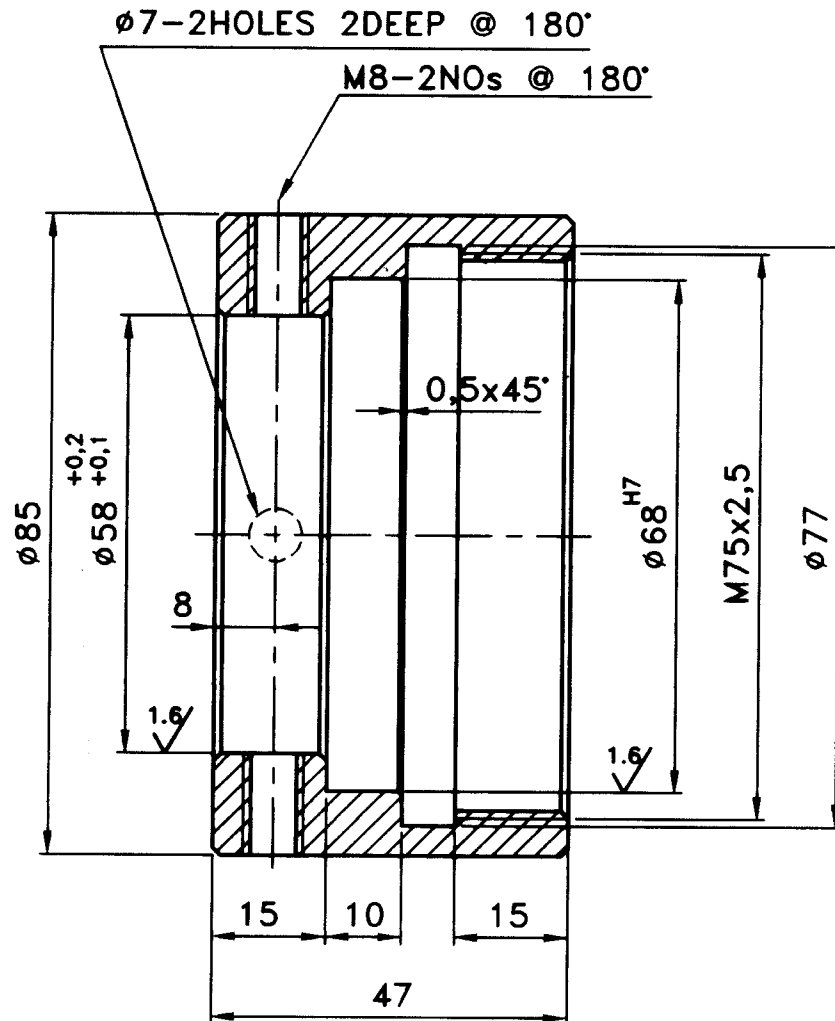
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ALL DIMENSIONS ARE IN MM

REV	DATE	ALTERED
		CHECKED
		APPROVED

3.2/ 1.6/

ø68 H7	+0,030
	0



UNSPECIFIED CHAMFERS TAKEN AS 1x45°

				AISI410			
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE		UNIT WT		
			MATL SPEC		QTY		
EQPT: SCALE PIT & PUMP HOUSE							
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		NAME SSN.KUMAR	SIGNATURE SSN.Kumar	DATE 2.12.96	
				DRN			
				CHD	AROCKIAM A	7.12.96	
DEPT MPG	GRADE OF UNTOL. DIM C/M/F		SCALE 1:1	WEIGHT (Kg) 0,75	REF TO ASSY DRG 320-05/667		
					REF TO OLD DRG		
TITLE COUPLING NUT SHAFT ASSY-SAM PUMP VO150/500+AR				CARD CODE U 01	DRAWING NO : 4-7-3412-00-05425	REV 00	

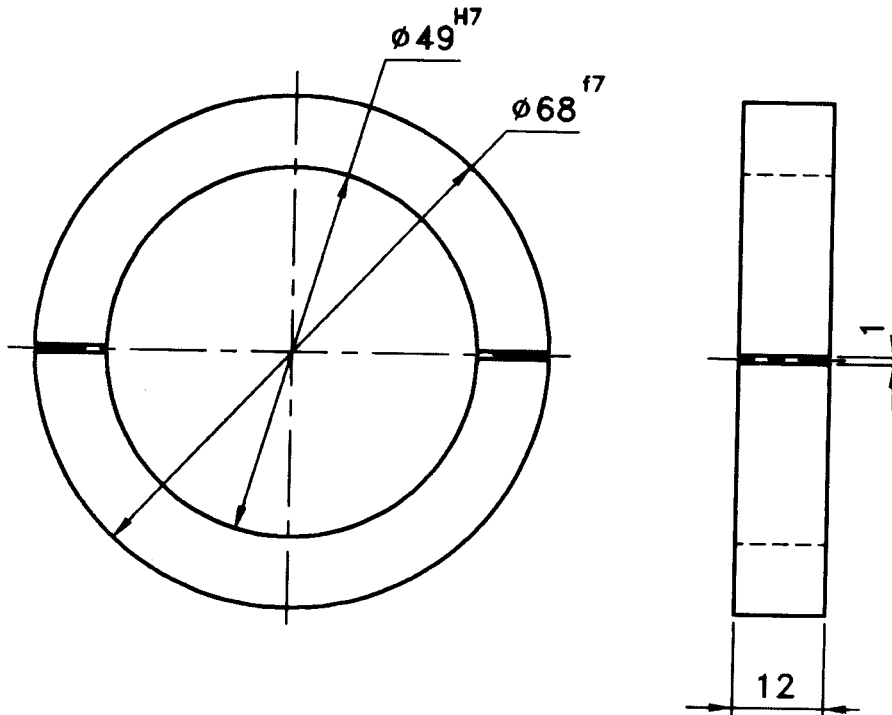
CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETRIMENTAL TO INTEREST OF THE COMPANY

ALL DIMENSIONS ARE IN MM

REV 01	DATE	ALTERED
		CHECKED
		APPROVED

1.6/

Ø68 f7	-0,030
	-0,060
Ø49 H7	+0,025
	0



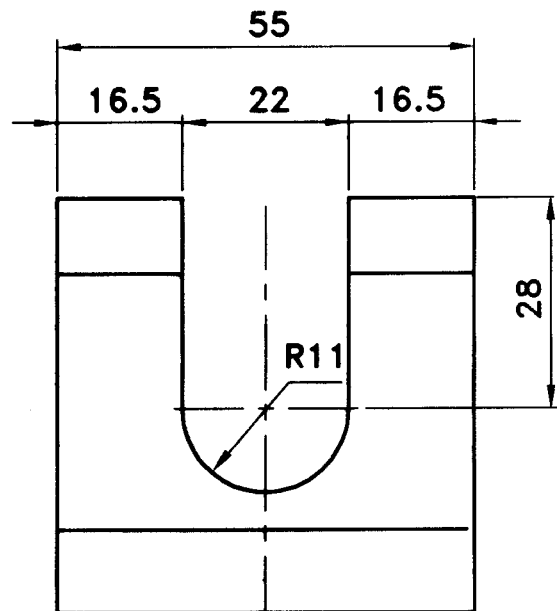
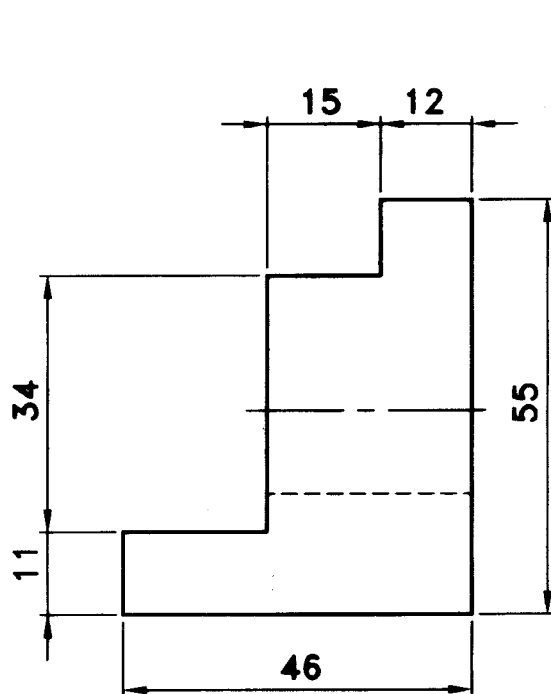
ALL CORNERS CHAMFERED TO 1x45°

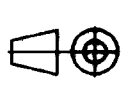
				AISI410			
ITEM NO	DESCRIPTION	DRAWING NO		MATL CODE	UNIT WT		
				MATL SPEC	QTY		
EQPT: SCALE PIT & PUMP HOUSE							
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		DRN	NAME SSN.KUMAR	SIGNATURE SSN.Kumar	DATE 2.12.96
				CHD	AROCKIAM A	J. Chockil	7-12-96
				APPD	SHANMUGASUNDARAM	Shanmugasundaram	7-12-96
DEPT MPG	GRADE OF UNTOL DIM C/M/F		SCALE 1:1	WEIGHT (Kg) 0,16	REF TO ASSY DRG 820-05/2667		ITEM NO 18
TITLE COUPLING SPLIT RING					REF TO OLD DRG		
SHAFT ASSY-SAM PUMP VO150/500+AR					DRAWING NO : 4-7-3412-00-05426		REV 00
					CARD CODE U 01		

ALL DIMENSIONS ARE IN MM

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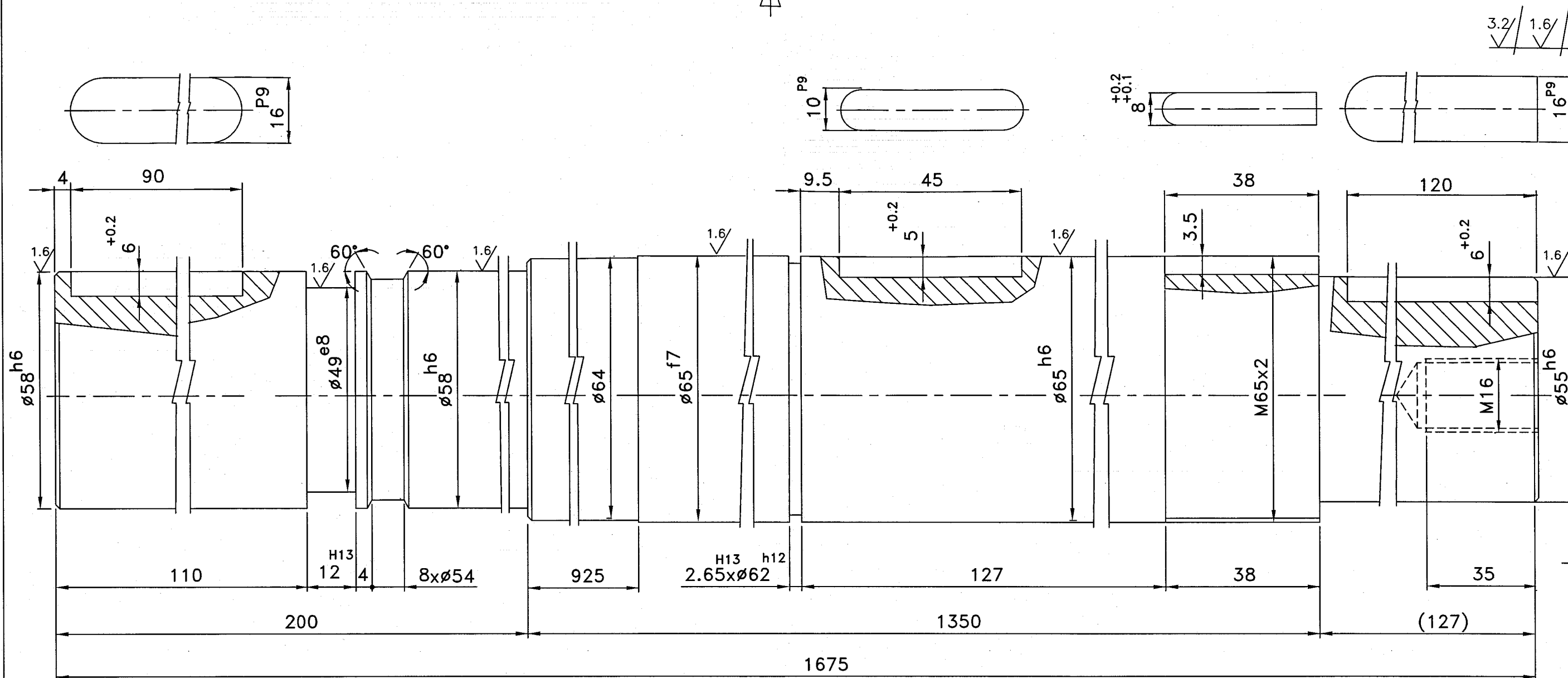
REV	DATE	ALTERED
01		CHECKED
		APPROVED

3.2/
✓

				Fe410WB IS:2062			
ITEM NO	DESCRIPTION	DRAWING NO		MATL CODE		UNIT WT	
				MATL SPEC		QTY	
EQPT: SCALE PIT & PUMP HOUSE							
 Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		DRN	NAME S.MOHAN RAJ	SIGNATURE <i>S. Mohan Raj</i>	DATE 04.11.97		
		CHD	A.AROCKIAM	<i>A. Arockiam</i>	10-12-97		
		APPD	S.SHANMUGASUNDARAM	<i>S. Shanmugasundaram</i>	10/12/97		
DEPT MPG	GRADE OF UNTOL DIM C/M/F	 SCALE 1:1	WEIGHT (Kg) 0.570		REF TO ASSY DRG		ITEM NO
CODE					REF TO OLD DRG 820-06/2667		
TITLE LOCKING BLOCK (SAM PUMP VO 150/500+AR)			CARD CODE U 01	DRAWING NO : 4-7-3412-00-05557			REV 00

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UNSPECIFIED CHAMFERS TAKEN AS 1x45°

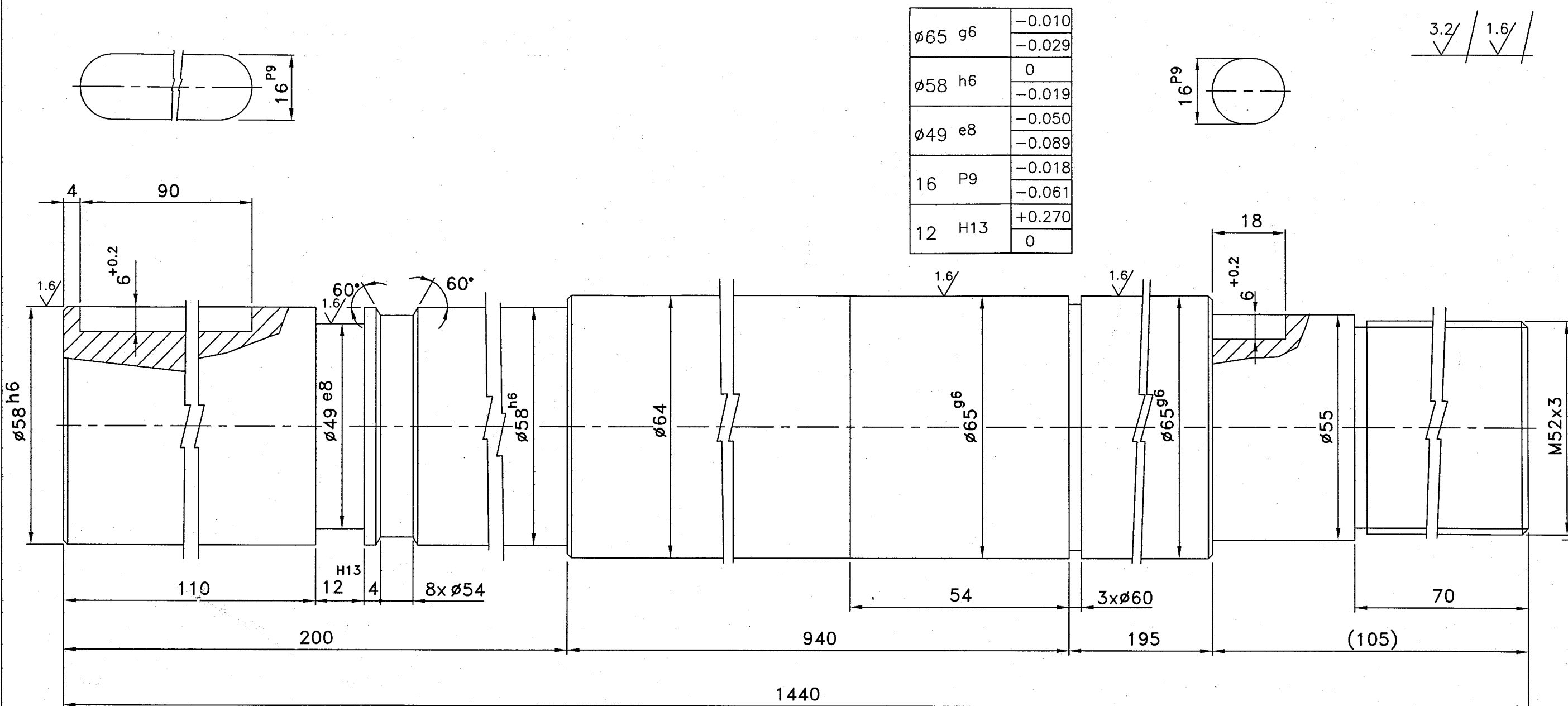
ø65 f7	-0.030	ø49 e8	-0.050
	-0.060		-0.089
ø65 h6	0	16 P9	-0.018
	-0.019		-0.061
ø62 h12	0	12 H13	+0.270
	-0.300		0
ø58 h6	0	10 P9	-0.015
	-0.019		-0.051
ø55 h6	0	2.65 H13	+0.140
	-0.019		0

REV	DATE	ALTERED :	REV	DATE	ALTERED :
02		CHECKED :	01		CHECKED :
		APPROVED			APPROVED

				SA276-TYPE410		
ITEM NO	DESCRIPTION	DRAWING NO		MATL CODE	UNIT WT	
				MATL SPEC	QTY	
EQPT: SCALE PIT PUMP HOUSE						
		Bharat Heavy Electricals Ltd SEAMLESS STEEL TUBE PLANT TIRUCHIRAPALLI - 620014		DRN R.VIGNESH WARAN CHD S.S.N.KUMAR APPD A.SAHUL HAMEED	SIGNATURE	DATE 17.02.0
DEPT MPG	GRADE OF UNTOL. DIM C/M/F		SCALE 1:1	WEIGHT (Kg) 39	REF TO ASSY DWG NO	ITEM NO
CODE					REF TO OLD DWG NO	
TITLE DRIVE SHAFT SAM PUMP VO 150/500+AR HEIGHT 3000 SHORT PUMP				CARD CODE U 01	DRAWING NO : 3-7-3412-00-04969	REV 00

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UN SPECIFIED CHAMFERS TAKEN AS 1x45°

REV	DATE	ALTERED	REV	DATE	ALTERED
02		CHECKED	01		CHECKED
		APPROVED			APPROVED
ZONE			ZONE		

ITEM NO		DESCRIPTION		DRAWING NO		SA276-TYPE410		UNIT WT	
						MATL CODE		QTY	
						MATL SPEC			
EQPT: SCALE PIT PUMP HOUSE									
				Bharat Heavy Electricals Ltd		DRN	NAME	SIGNATURE	DATE
				SEAMLESS STEEL TUBE PLANT		CHD	R.VIGNESH WARAN		19.02.09
				TIRUCHIRAPALLI - 620014		APPD	S.S.N.KUMAR		
							A.SAHUL HAMEED		
DEPT		GRADE OF		SCALE		WEIGHT (Kg)		REF TO ASSY DWG NO	
MPG		UNTOL DIM		1:1		35		REF TO OLD DWG NO	
CODE		C/M/F							
TITLE						CARD CODE		REV	
PUMP SHAFT						U 01		00	
(SAM PUMP VO 150/500+AR)									
SHORT PUMP									
						DRAWING NO :			
						3-7-3412-00-04970			