



ENGINE FACTORY, AVADI

PROCESS SCHEDULE

DESCRIPTION :- **GEAR**

COMPT. No :- **20-07-16**

MFG. SHOP :- **SPS**

REV. No. 00

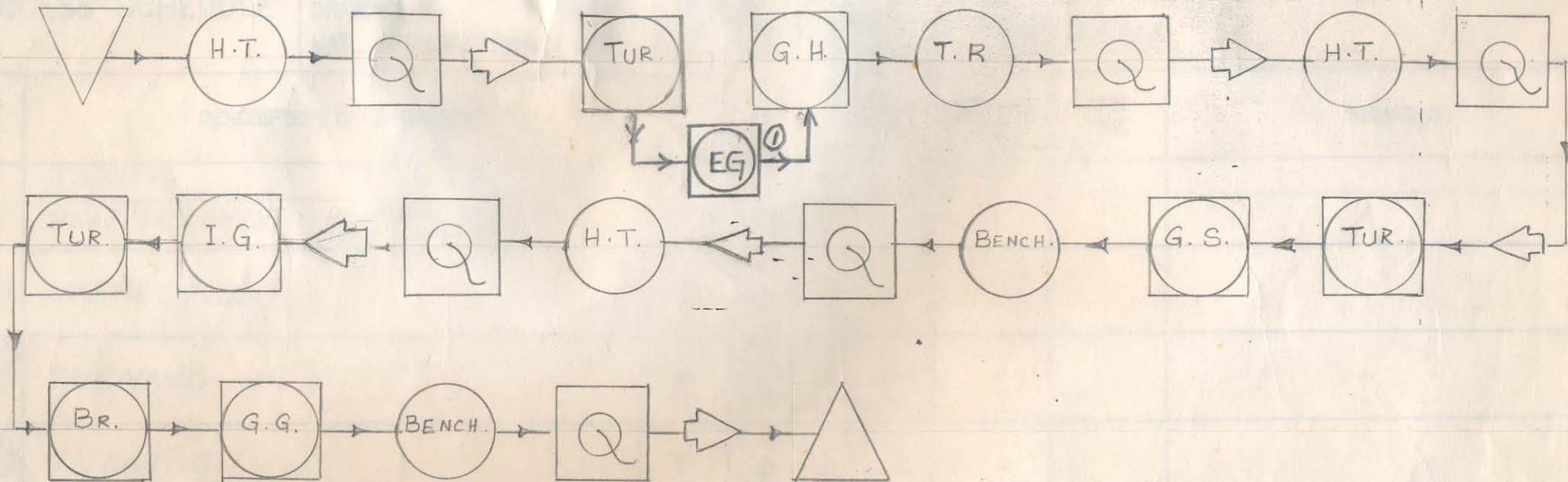
DATE - 27.10.96

FLOW PROCESS CHART

STORE : GEAR.

DRG. NO.: 20-07-16

END STORE : U.T.D. ENGINE ASSEMBLY.



026	1	28/4/97	<i>Ally</i>
PDO-REF	ISSUE	DATE	SIGN

H.T. = HEAT TREATMENT G.H. = GEAR HOBGING. G.S. = GEAR SHAPING. BR. = BROACHING. EG = EXTERNAL GRINDING
 TUR. = TURNING. T.R. = TOOTH ROUNDING. I.G. = INTERNAL GRIND. G.G. = GEAR GRINDING

LEGEND		APPROVAL			SECTION
TEMP. STORAGE	▽	TRANSPORTATION	➔	SIGNATURE & DATE	S.P.S.
OPERATION	○	INSPECTION BY QC	Q	PREPARED BY	NO. OF SHEETS
OPERATION CUM INSPECTION	◻	INSPECTION BY SQAE/CQA(ME) ETC.	I	APPROVED BY	SHEET NO.
100% INSPN. BY MFG. SEC.	□	STORAGE	△	AUTHORISED FOR ISSUE	

APPROVED BY: *[Signature]*
 MGE: *[Signature]* QC
 27/10/96

ENGINE FACTORY,
 AVADI, MADRAS-54



ENGINE FACTORY AVADI

FORM No :EFA/P-038

PROCESS SCHEDULE NOMENCLATURE : GEAR
 DRAWING No : 20-07-16
 MATL. SPECIFICATION : STEEL STAMPING : ST. 18X2H4MA

OPN No	DESCRIPTION OF OPERATION	SHT No	WORK CENTRE	SET UP TIME	OPN TIME	REMARKS
000	FORGING	5	-			
010	HEAT TREATMENT : RE-NORMALIZE TO BHN - 197 TO 269	-	H.T.P.			
020	INSPECTION	-	BENCH			
030	TURNING	6	CENTRE LATHE - HMT NH 26/1000			
040	TURNING	7	CNC - LATHE GDM-65-2A HMT.			
050	TURNING	8	CNC - LATHE GDM-65-2A HMT.			
055	GRINDING	8A	GRINDING M/C			NEW SHT ADDED
060	INSPECTION	9	BENCH			
070	GEAR HOBGING	10	GEAR HOB. MIC. HMT H400			
080	TOOTH ROUNDING	11	TOOTH RND. MIC PENTAGON			

PREPARED BY		CHECKED BY		APPROVED BY		AUTHORISED BY						
SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>	<i>[Signature]</i>						SHT. No
DATE	27/10/96	DATE	27.10.96	DATE	27.10.96	27/10/96						1 OF 24
CME /PDO		epm /PDO		HOS/PDO		DO/PDO		026	1	28/10/97	<i>[Signature]</i>	
								PDO REF	ISSUE	DATE	SIGN	



ENGINE FACTORY AVADI

FORM No :EFA/P-038

PROCESS SCHEDULE

NOMENCLATURE :

DRAWING No : 20-07-16

MATL SPECIFICATION :

OPN No	DESCRIPTION OF OPERATION	SHT No	WORK CENTRE	SET UP TIME	OPN TIME	REMARKS
085	DRESSING	11	BENCH			
090	WASHING	-	WASHING PLANT			
100	INSPECTION	12	BENCH			
105	COPPER PLATING	13	ELECTRO-PLATING SHOP			
110	HEAT TREATMENT - CARBURIZING	13	H.T.P.			
120	INSPECTION	-	BENCH			
130	TURNING	14	CNC-LATHE GDM-65/2A HMT			
140	INSPECTION	-	BENCH			

PREPARED BY		CHECKED BY		APPROVED BY		AUTHORISED BY					
SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>				
DATE	27/10/96	DATE	27.10.96	DATE	27.10.96	DATE	27/10/96				
CM I /PDO		cmz /PDO		HOS/PDO		DO/PDO					
PDO REF		ISSUE		DATE		SIGN					



ENGINE FACTORY AVADI

FORM No :EFA/P-038

PROCESS SCHEDULE	NOMENCLATURE	:
	DRAWING No	:	20-07-16
	MATL SPECIFICATION	:

OPN No	DESCRIPTION OF OPERATION	SHT No	WORK CENTRE	SET UP TIME	OPN TIME	REMARKS
150	GEAR SHAPING	15	GEAR SHAPING MIC - HMT LEIBHERR.			
160	TOOTH ROUNDING	-	TOOTH ROUNDING MIC - PENTAGON			
165	DRESSING : DRESS THE TEETH AT GROOVE SIDE.	-	BENCH			
170	WASHING	-	WASHING PLANT			
180	INSPECTION	16	BENCH			
190	HEAT TREATMENT: HARDENING & TEMPERING	17	H.T.P.			
200	INSPECTION	-	BENCH			
210	INTERNAL GRINDING	18	I.G. MIC NOVA/ PARISHUDH.			

PREPARED BY	CHECKED BY	APPROVED BY	AUTHORISED BY					SHT. No
SIGN	SIGN	SIGN	SIGN					3 OF 24
DATE	DATE	DATE	DATE					
CM I /PDO	qmi /PDO	HOS/PDO	DO/PDO					
				PDO REF	ISSUE	DATE	SIGN	



ENGINE FACTORY AVADI

FORM No :EFA/P-038

PROCESS SCHEDULE

NOMENCLATURE :
 DRAWING No : 20-07-16
 MATL SPECIFICATION :

OPN No	DESCRIPTION OF OPERATION	SHT No	WORK CENTRE	SET UP TIME	OPN TIME	REMARKS
220	TURNING	19	CENTRE LATHE			
230	BENCH WORK-RE-BROACHING	20	BENCH			
240	GEAR GRINDING	21	GEAR GRND. MACHINE - REISHUER			
250	DRESSING	22	BENCH			
260	INSPECTION: CRACK TEST & DE-MAGNETIZE.		MAGNETIC FLAW DETECTOR			
270	WASHING		WASHING PLANT			
280	FINAL INSPECTION	23 24	BENCH			

PREPARED BY		CHECKED BY		APPROVED BY		AUTHORISED BY						SHT. No
SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>	SIGN	<i>[Signature]</i>	<i>[Signature]</i>						4 OF 2
DATE	27/10/96	DATE	27.10.96	DATE	27.10.96	27/10/96						
CME /PDO		CME /PDO		HOS/PDO		DO/PDO		PDO REF	ISSUE	DATE	SIGN	

PLANNING SHEET - PDO/EFA

FORM No: EFA/P-039

DECLARATION

GEAR

DRAWING No.
20.07.16

ISSUE

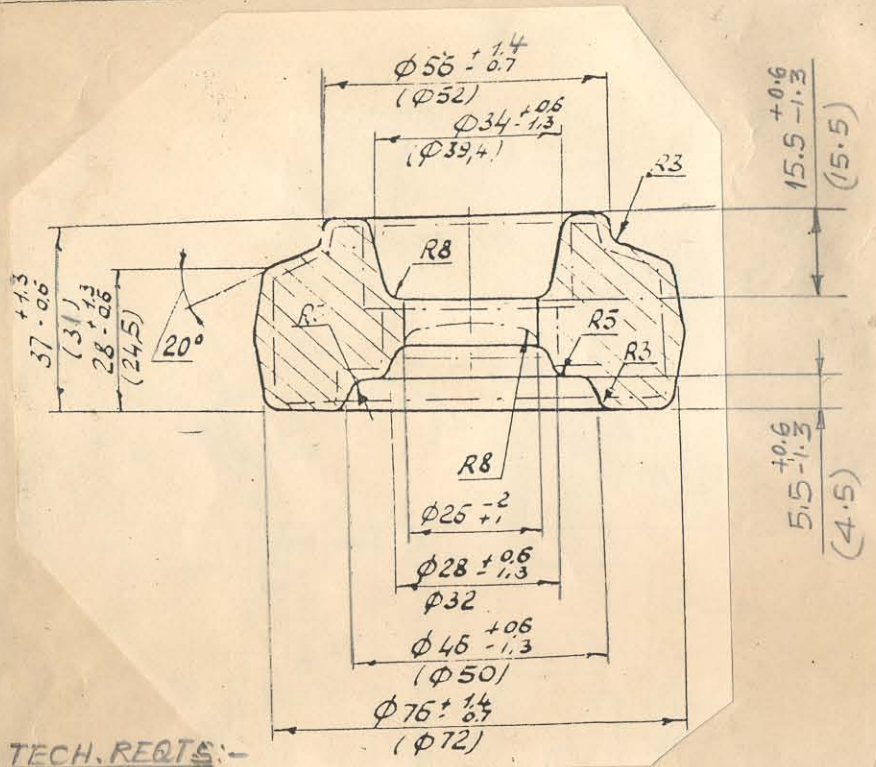
OPN. No.
000

OPERATION
STAMPING DRG

STEEL 18X2HMA
HARDNESS BHN : 269 TO 197
(d 3.7 TO 4.3)

MACHINE:

STD. TOOLS & GAUGES



TECH. REQTS:-

1. DRAFTS : EXTERNAL - 6° AND INTERNAL - 10°.
2. UNSPECIFIED RADII OF ROUNDING OFF IS TO BE 2MM.
3. DIMENSIONS IN BRACKETS ARE FOR MACHINING.
4. HEAT TREAT DIA. OF INTENDATION = 3.7 - 4.3
5. CLEAN OFF SCALE. (6) THE FOLLOWING ARE ALLOWED:-
 - a. SURFACE DEFECTS AND DENTS OF SCALE - 0.5 OF ACTUAL ALLOWANCE;
 - b. SKEWNESS (DISPLACEMENT OF AXES OF DIES) SHOULD NOT EXCEED 0.6MM;
 - c. TRACE OF CUTTING THE BURR UPTO 0.8MM;
 - d. ECCENTRICITY OF PIERCED HOLE 1.5MM MAX;
 - e. WARPING UPTO 0.5MM;
 - f. CLAMPS, HAIR LINE CRACKS AND OTHER SURFACE DEFECTS WITHIN THE LIMITS OF 0.5 OF ACTUAL ALLOWANCE.

PRED.	CHD.	APPD

SPECIAL TOOLS & GAUGES

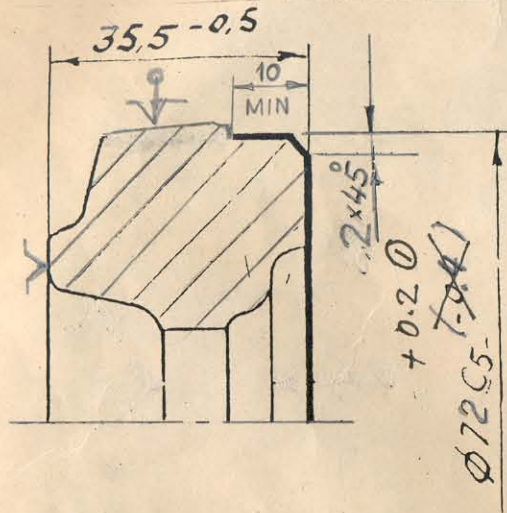
STEEL 18X2HAMA *Ra10*
HARDNESS - BHN 269...197.

MACHINE: CENTRE LATHE
HMT-NH-26/1000

STD. TOOLS & GAUGES

TURNING & FACING TOOL.	PC LNR 2525M12
INSERT CNMG	120408

SPECIAL TOOLS & GAUGES



<i>QSV</i>	<i>QSV</i>	<i>QSV</i>	026	1	28/4/17	<i>A. Man</i>
PRED.	CHD.	APPD	PDO REF	ISSUE	DATE	SIGN

PLANNING SHEET-PDO/EFA FORM No: EFA/F--039

PLANNING SHEET-PDO/EFA

FORM No: EFA/P-039

SYMBOLIC NOMENCLATURE

GEAR

DRAWING No.
20.07.16

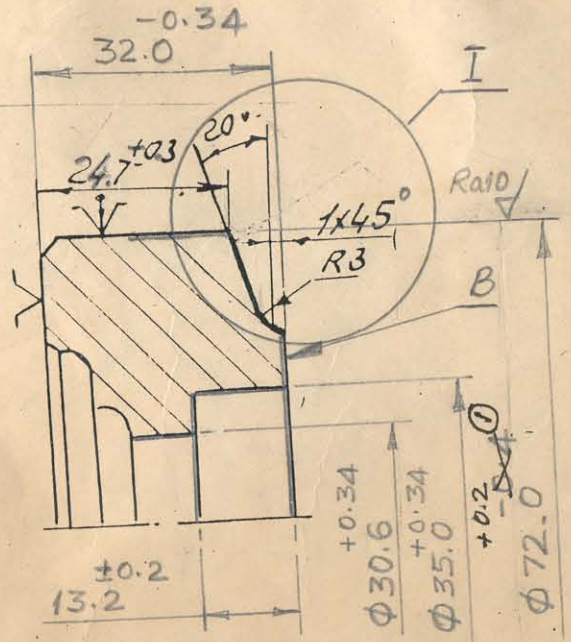
ISSUE
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OPN. No.
040

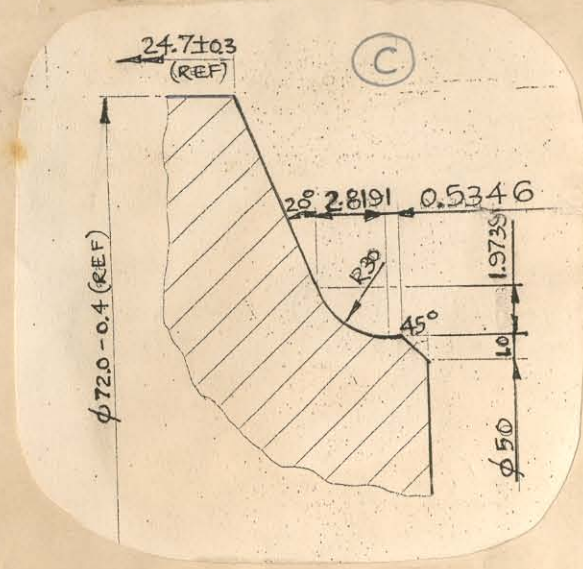
OPERATION
TURNING

MACHINE: CNC-LATHE
HMT-GDM-65/2A

Ra 5/



ENLARGED VIEW AT I



TECH. REQT: RUN OUT OF SURFACE 'B' RELATIVE TO THE AXIS OF HOLE SHOULD NOT EXCEED 0.05 MM.

STD. TOOLS & GAUGES

TURNING & FACING TOOL	PCLNR 2525 M12
INSERT-CNMG	120408
COPY TURNING TOOL	SVJBR 2525 M12
INSERT VBNM1	120408
BORING TOOL	
i) S20 S SCLCR-09	
INSERT-CCMT090308	
ii) S25T PCLNR-12	
CNMG 120408	

SPECIAL TOOLS & GAUGES

SOFT JAWS -	200536
PROFILE TEMPLATE }	203263

PR	CHD.	APPD	026	1	28/4/17	<i>[Signature]</i>
			PDO REF	ISSUE	DATE	SIGN

