

MACHINED COMPONENTS (GROUP -IV)

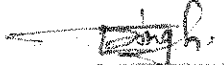
SI No	LF No	Drawing No	Nomenclature
1	6106401050	172.40.146	RING ENGAGING EXTREME RIGHT
2	6106401051	172.40.147	INITIATING RING MIDDLE R.H
3	6106401052	172.40.148	ENGAGING RING EXTREME LH
4	6106401053	172.40.149	ENGAGING RING MIDDLE, LH
5	6106401065	172.40.225	RELEASE RING III FRICTION CLUTCH
6	6101040031	172.40.225-1	3RD FRICTION CLUTCH RELEASING RING
7	6106401068	172.40.229	BOOSTER INNER
8	6106401070	172.40.231	BOOSTER
9	6106401071	172.40.232	BOOSTER
10	6106401084	172.40.246	EPICYCLE OF TRAIN IV
11	6106401085	172.40.247	GEAR CROWN 3RD PLANETARY GEAR SET
12	6106401096	172.40.270	BOOSTER
13	6101040033	172.40.270-1	BOOSTER
14	6106401097	172.40.271	CROWN
15	6106401098	172.40.308	DISCHARGE RING
16	6101040041	172.40.308-1	RELEASE RING
17	6101040042	172.40.309	CROWN GEAR OF 2ND PLANETARY GEAR SET
18	6101040043	172.40.310	CROWN GEAR OF 3RD PLANETARY GEAR SET
19	6101040044	172.40.311	EPICYCLIC GEAR OF 4TH PLANETARY SET
20	6101040052	172.40.319	DRUM
21	6101040053	172.40.320	CROWN
22	6101040054	172.40.321	BOOSTER
23	6101040055	172.40.322	INNER BOOSTER
24	6101040056	172.40.323	INNER BOOSTER
25	6101040057	172.40.324	BOOSTER
26	6101040059	172.40.326	THRUST DISK
27	6101040061	172.40.328	RIGHT HAND REAR ENGAGING RING
28	6101040062	172.40.329	RIGHT-HAND MIDDLE ENGAGING RING
29	6101040063	172.40.330	LEFT HAND REAR ENGAGING RING
30	6101040064	172.40.331	LEFT-HAND MIDDLE ENGAGING RING
31	6101040108	172.40.366	STOPPING BRAKE HOUSING (RIGHT-HAND)
32	6101040109	172.40.367	STOPPING BRAKE HOUSING (LEFT-HAND)
33	6106404014	172.43.008	PACKING COVER
34	6106401118	175.40.021	HOUSING OF MAIN BRAKE RH
35	6106401119	175.40.022	HOUSING OF MAIN BRAKE L
36	6106401120	175.40.023	BOOSTER INNER
37	6106401127	175.40.025	CROWN GEAR OF 2ND PLANETARY GEAR SET
38	6106401128	175.40.026	DRUM
39	6106401126	175.40.027-2	BOOSTER OUTER
40	6106401131	175.40.030-1	BOOSTER
41	6106401132	175.40.031	THRUST DISC
42	6106401146	175.40.052	BOOSTER BODY RIGHT
43	6106401147	175.40.053	HOUSING LH BOOSTER
44	6106402034	175.41.050	HUB FAN STEEL 38XC
45	6106402035	175.41.051	PLATE PRESSURE
46	6106406229	175.45.112	TOOTHED COUPLING
47	6101041013	188.41.006	FAN HUB




MACHINED COMPONENTS (GROUP -IV)

Sl no.	Nomenclature & drawing No.	Manufacturing technology & Testing / Inspection Facilities required to produce the item		Must be possessed by the vendor in his premises (P&M list and testing / inspection equipment list to be submitted)	May be possessed by the vendor in his premises or out sourced (Self declaration to be submitted)	FIRM Compliance (Y/N)	Remarks
1	Components as per enclosed list of Machined Components (Group IV) <i>Total items = 47 Nos</i>	TECHNOLOGY-1	Turning	CNC Turning dia 600mm suitable to accommodate component of diameter in the range of dia 250 to 600mm with 0.010mm accuracy			
			Milling & Drilling	HMC and/or VMC suitable to the components upto the size 630mm diameter with 0.010 accuracy			
			Gear Hobbing		Gear Hobbing of Mod 3 x cutting ϕ 400 with gear cutting accuracy of class of Din 7 or better accuracy		
		TECHNOLOGY-3	Gear Shaping		Gear Shaping of Mod 5 with gear cutting accuracy of class of Din 7 or better accuracy.		
			Hardening & Tempering		Hardening & Tempering furnace with Oil quenching facility		
			Protection coating		Oxidising Plant		
			TECHNOLOGY-4	Raw material		Firm should be capable to arrange the raw material like Forging, Casting, Bar material etc as per drawing specification and standard.	



(D.SATHISH KUMAR)
 WM/QA(NF& QMSC)



(LUXMAN SINGH)
 WM/TRG-II, HT & EP



(K.DURAIRAJ)
 JWM/Trans -II

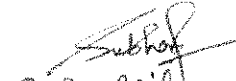
Sl no.	Nomenclature & drawing No.	Manufacturing technology & Testing / Inspection Facilities required to produce the item		Must be possessed by the vendor in his premises (P&M list and testing / inspection equipment list to be submitted)	May be possessed by the vendor in his premises or out sourced (Self declaration to be submitted)	FIRM Compliance (Y/N)	Remarks	
1	Components as per enclosed list of Machined Components (Group IV)	TEST / INSPECTION-1	3D CMM	3D CMM 500 x 500mm.				
			Gear Profile Tester			Gear Profile Tester (Max module 5)		
			Surface Roughness Tester	Surface Roughness Tester for Ra & Rz values				
			Gauges	Standard Gauges for checking Holes and threads suitable to the requirement of the components. Firm should submit the undertaking in this regard that they will create the facilities within 6 months from the date of receipt of order.				
			Measuring Instruments	Gear Teeth Micrometer, Vernier Caliper, Groove Vernier, Radius gauge, Feeler Gauge etc. suitable to the requirement of the components				
		TEST / INSPECTION-2	Hardness measurement			Brinell / Rockwell Hardness Tester		

Note : Justification for alternate facilities may be shared to prove that alternate facilities can be utilised to manufacture the item wherever the facilities are mentioned above are not available, but vendor has alternate facilities.


(D.SATHISH KUMAR)
WM/QA(NF& QMSC)

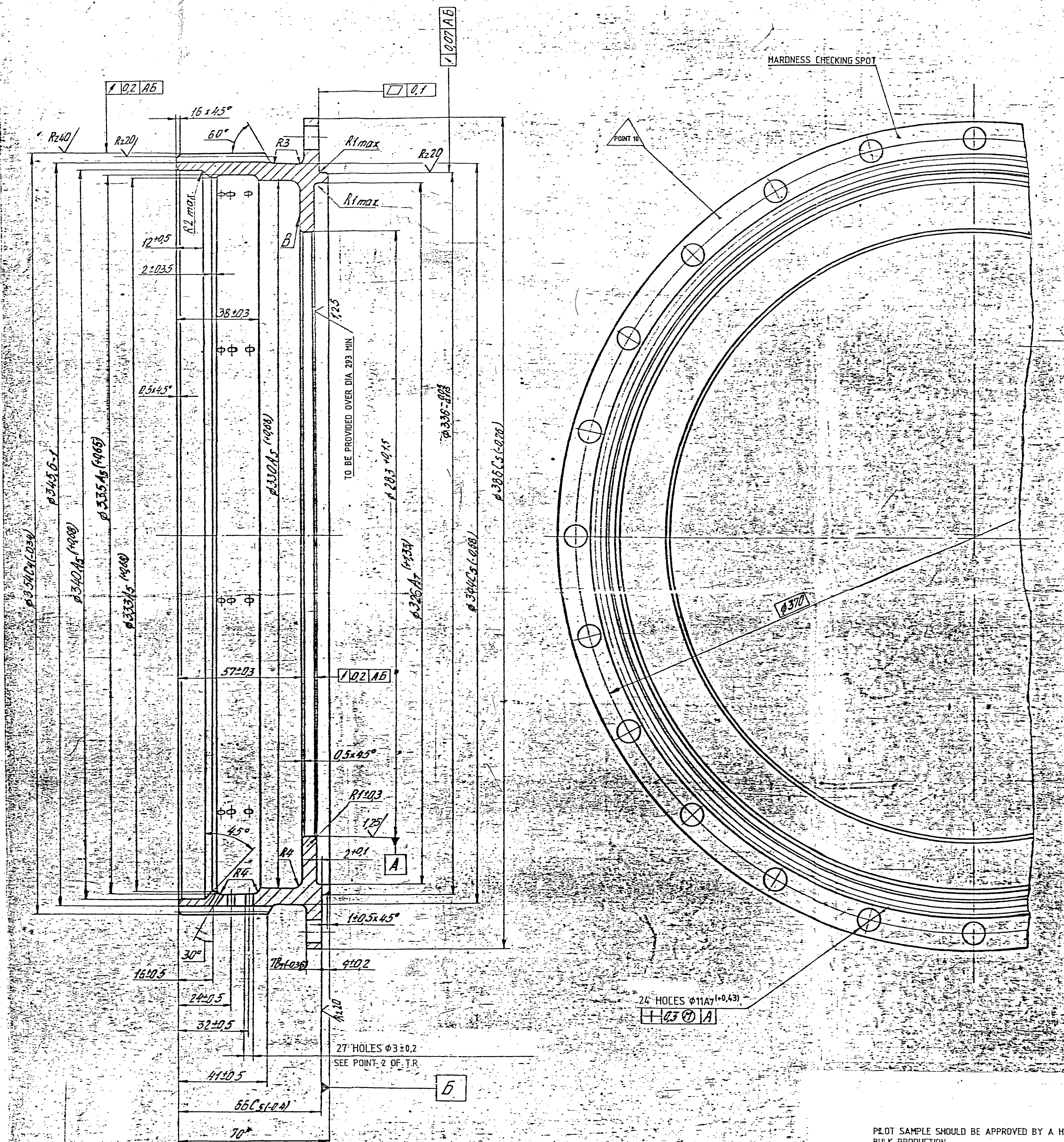

(J.P.SINGH)
GM-OPERATIONS I


(LUXMAN SINGH)
WM/TRG-II,HT & EP


Subham Brijleban
Alt to (NEERAJ KUMAR)
QA-RIG(OE)


(K.DURAIRAJ)
JWM/Trans -II


(ANIMESH PAIK)
DGM/CA,TRG & RG



MODULE	m	3	
NUMBER OF TEETH	Z	117	
BASIC RACK	PROFILE ANGLE	α	20°
	COEFFICIENT OF ADDENDUM	ha*	0.7
	COEFFICIENT OF RADIAL CLEARANCE	c*	0.2
	FILLET RADII	zi	0.3 MAX
COEFFICIENT OF-ADDENDUM MODIFICATION	X	0	
DEGREE OF ACCURACY AS PER GOST 1643-36		-	
BASE TANGENT LENGTH	W	124,475 ± 0.4	
TOLERANCE ON BASE TANGENT LENGTH	√W	-	
COMPOSITE ERROR	TOTAL	Ft	-
	TOOTH TO TOOTH	fi	-
TOTAL ERROR OF DISTORTION	Fβ	-	
REFERENCE DIAMETER	d	351	

- BHN 341-235 (DIA OF INDENTATION 3.3-3.6)
- 2 HOLES φ3±0.2 SHOULD BE DRILLED IN THREES IN EVERY THIRTEENTH ROOT SURFACE. SHIFT OF AXES OF HOLES FROM TRUE POSITION TO BE WITHIN THE WIDTH OF ROOT.
- RUN-OUT OF UNSPECIFIED SURFACES NOT TO EXCEED 0.3 mm
- 0.2 mm MAX. DEEP LOCAL MARKS ARE ALLOWED ON TOOTH SURFACES.
- DECREASE OF BASE TANGENT LENGTH BY 0.2 mm BEYOND TOLERANCE IS ALLOWED ON NOT MORE THAN 10 TEETH OF RIM GEAR.
- THE TEETH TO BE CHECKED FOR INTERCHANGEABILITY WITH TOOTH GAUGE. MANUFACTURED TO MINIMUM DEVIATIONS OF MATING COMPONENT.
- AN ALTERNATIVE TO CHECKING BY MEANS OF TOOTH GAUGE IS CHECKING THE DIFFERENCE OF TOOTH DEPTHS. IN THIS CASE, DIFFERENCE IN DEPTH OF ANY PAIR OF TEETH SHOULD NOT EXCEED 0.3 mm. EXCEPT FOR 10 TEETH, WITH INCREASED PITCH.
- THE OTHER REQUIREMENTS AS PER 520 TY1.
- COATING SURFACE φ283 WITH HARD CHROME PLATING, 42 TO 70 MICRONS THICK. THE OTHER SURFACES ARE TO BE CHEMICALLY LEXIDIZED-PHOSPHATED AND OIL LEXIDO-PHOSPHATING (A). FINISHED FINISH ROUGHNESS OF SURFACES BEFORE AND AFTER CHROMIUM PLATING TO BE 1.25. PRESENCE OF CHROMIUM ON R1±0.3 IS ALLOWED IN THIS CASE THE STRENGTH OF CHROMIUM ON THE ABOVE RADIUS MUST NOT BE LOWER THAN GENERAL STRENGTH OF THE CHROMIUM PLATED SURFACE. PRESENCE OF CHROMIUM ON FACE 'B' IS PERMITTED.
- TO BE MARKED.
- * DIMENSIONS FOR REFERENCE.

EXPLANATORY NOTE (U)

12. Reference material quoted:-
structural chromium silicon alloy steel good quality
grade 38XC gost 4543-71
a) Chemical Composition: As per steel grade 38XC GOST 4543-71

grade of steel	CONTENT OF ELEMENTS					
	C	Si	Mn	Cr	S	P
38XC	0.34-0.42	1.0-1.4	0.30-0.60	1.30-1.60	0.035	0.035

Residual content of Copper and nickel should not exceed 0.30 % Each.

b) Mechanical properties: As per steel grade 38XC gost 4543-71

grade of steel	Tensile strength	Yield point	Elongation	Reduction in Area	Impact strength
	kgf/mm ²	kgf/mm ²	%	%	kgm/cm ²
38XC	95	75	12	50	7

COMMON TO BLT

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. MASS 5.6 Kg TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)

ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	LD	MATERIAL	USED ON
CHD	Pa	STEEL 38XC GOST 4543-71	172 40 023 Cb
TCD	REVISION		
APPD	DATE	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
	09-01-88		
	SCALE - 1 : 1		
	DIMENSIONS IN mm.		
	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69		
		TITLE	CROWN
		D S CAT NUMBER	DRAWING NUMBER
			172 40 271

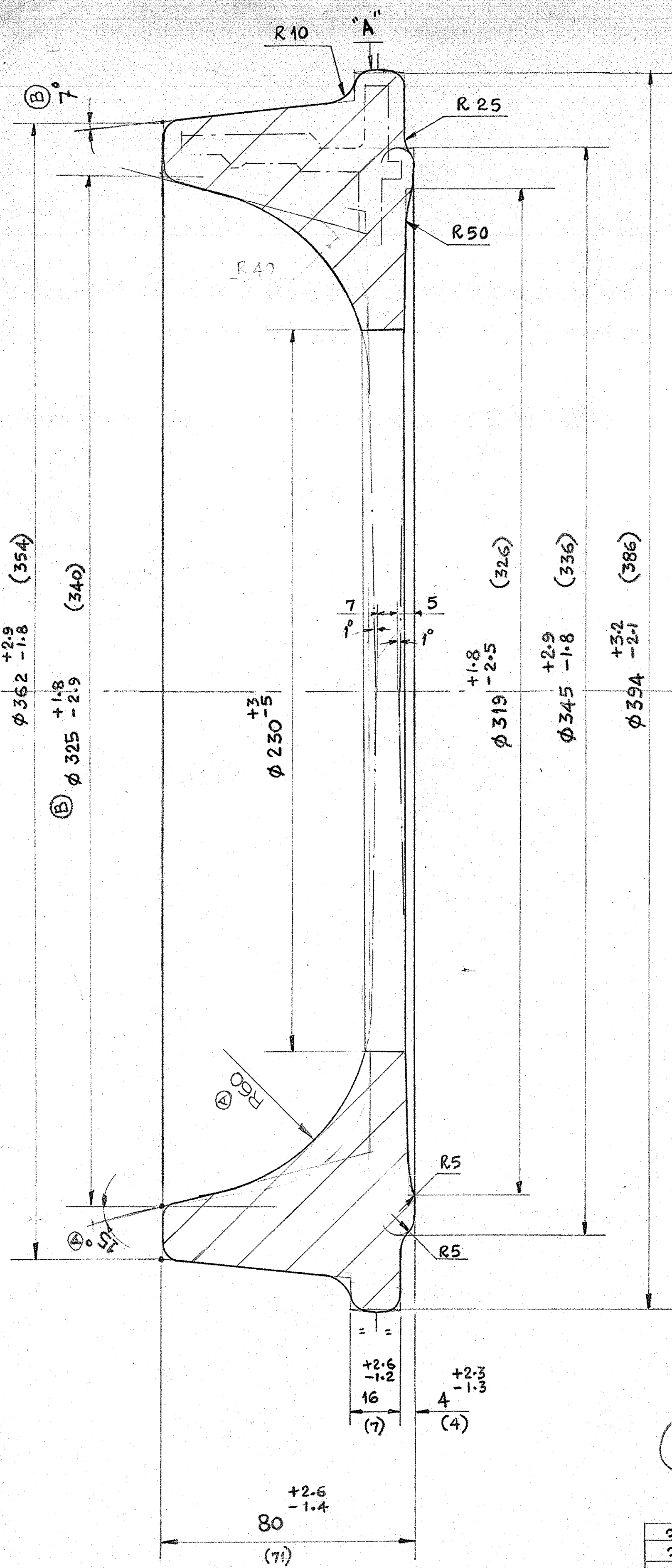
A 28-11-98 Russian Splits. Decision on 23-10-98
LI 29.6.99 EXPLANATORY NOTE A DDED
ISSUE DATE NATURE OF AMENDMENTS

ALL THREADS TO CONFORM TO
D S CAT NUMBER
DRAWING NUMBER 172 40 271

DRAWING NO.

172-40-271/F

ISSUE	MODIFICATIONS	DATE
(A)	ANGLE 15° WAS 10° R60 WAS R40.	19/12/88
(B)	DRAFT ANGLE 7° ADDED. DIA. 325 ±1.8 328 ±2.9 REASON: AVOIDING PRODUCTION PROBLEM	12.0.12.88 16/8/2006



- NOTE:-**
1. HEATTREATMENT ~ NORMALISE, HARDNESS - DIA. OF INDENTATION ≥ 3.8
 2. DESCALE.
 3. DEPTH OF SURFACE DEFECTS AND PITS FROM SCALE UP TO .5 OF ACTUAL MACHINING ALLOWANCE IS ALLOWED.
 4. MISMATCH SHOULD NOT EXCEED 1.6 mm.
 5. RESIDUAL FIN ALONG PARTING LINE SHOULD NOT EXCEED 1.5mm. FOLDING OF FIN UP TO 3 mm AT "A" AND IN PIERCED HOLE IS ALLOWED.
 6. BUCKLING SHOULD NOT EXCEED 1.5 mm.
 7. SHIFT OF PIERCED HOLE UP TO 3 mm IS ALLOWED.
 8. UNSPECIFIED RADII TO BE R.5.
 9. UNSPECIFIED DRAFTS TO BE 6°.
 10. MACHINING DIMENSIONS ARE SHOWN IN BRACKETS.
 11. DIMENSIONS WITHOUT TOLERANCES ARE NOT TO BE CHECKED.

MATERIAL :- STEEL 38 XC GOST 4543-71
WEIGHT OF FORGING : 28 Kg.

(17)

20080	PIERCING TOOL.	1500T	
20089	TRIMMING TOOL.	1500T	
20088	STAMPING DIES.	DG-32	
TOOL NO.	DESCRIPTION	MACHINE	EQUIP. TO BE USED WITH.
SCALE	COMPONENT ~ T-72.	MACHINE	COMPNT / FORGING.
1:1	172-40-271/F. RIM	DG 32	1 OFF.
DGN.	CHD.	APPD.	AUTHD.
FORGING DRAWING			H.V.F. AVADI. DRAWING NO. 172-40-271/F