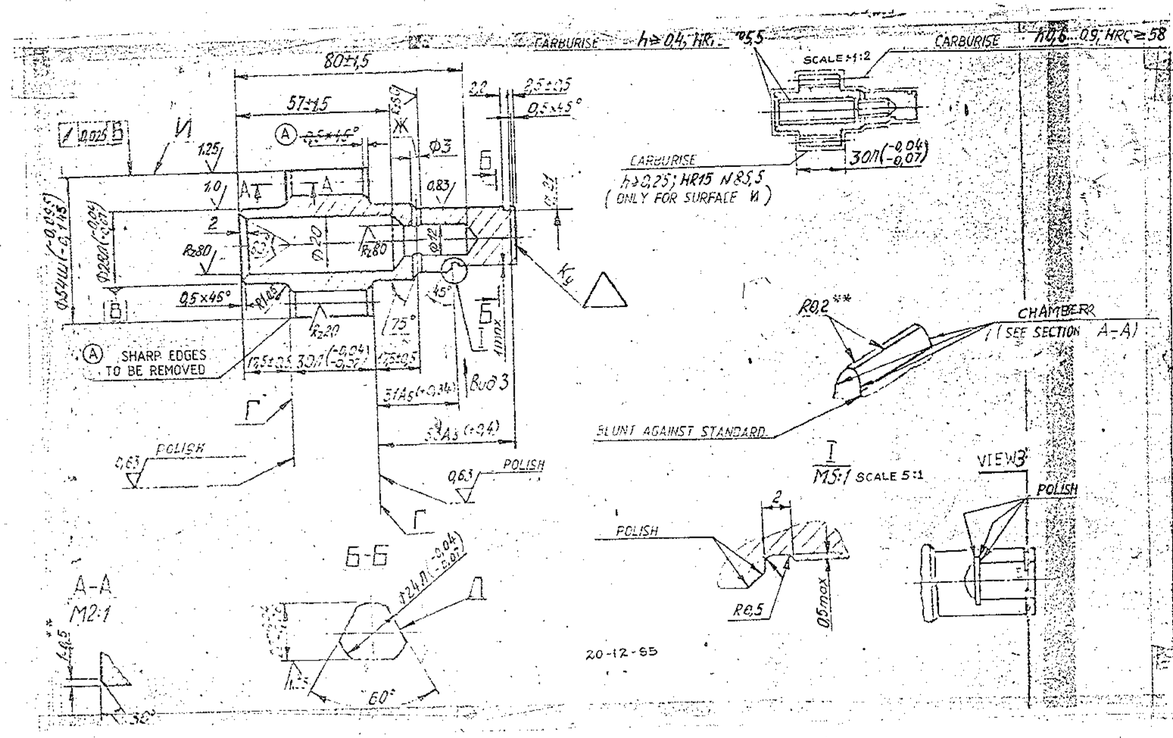
DRAWING NUMBER
20-12-85



1. INSPECTION GROUP III AS PER TECHNICAL REQUIREMENTS TT-11. HRC 26 TO 40, UNCARBURIZED SURFACE. CARBURIZATION OF HOLE ✳ IS ALLOWED.
2. ALTERNATE MATERIAL IS STEEL 12 X H3A, TY 14-1-381-72.
3. UNSPECIFIED LIMIT DEVIATIONS FOR DIMENSIONS ARE AS FOLLOWS:
   FOR HOLES – AS PER A_7
   FOR SHAFTS – AS PER B_7
   OTHERS – AS PER CM_7
4. TOLERANCE FOR END PLAY OF SURFACES Г WITH RESPECT TO AXIS OF SURFACES B IS 0.025mm ON Ø 50mm.
5. CHECK PITCH DIFFERENCE OF SURFACES Д WITH SPECIAL GAUGE, MADE AS PER MINIMUM DIMENSIONS OF MATED PART.
6. TOLERANCE FOR RADIAL RUNOUT OF PITCH CIRCLE OF TEETH WITH RESPECT TO SURFACES B IS 0.1mm. CHECK WHEN NO RUN – IN WITH A STANDARD IS PERFORMED.
7. TOLERANCE FOR PARALLELISM OF SURFACE Г IS 0.025mm.
8. ** BLUNTING IS ALLOWED AGAINST STANDARD.
9. MASTER GEAR AS PER GOST 6512 – 74.
10. CHECK FOR PROPER MESHING OF TEETH BY PRUSSIAN BLUE DURING THE PART RUN IN WITH STANDARD WITHOUT CLEARANCE AS PER INSTRUCTIONS UB – 42. BEARING PATTERN (ALONG THE WIDTH AND HEIGHT OF TEETH) SHOULD CORRESPOND TO THE TABLE.

   TWO TO THREE ADJOINING GEAR TEETH MAY BE FITTED BY 30 TO 50% OF THE FACE WIDTH AS INDICATED BY PRUSSIAN BLUE.
11. CHECK SURFACES Г BY PRUSSIAN BLUE WITH A SPECIAL GAUGE, MADE AS PER MINIMUM DIAMETER OF MATED PART. ANNULAR BEARING PATTERN SHOULD BE AT LEAST 2mm IN WIDTH.
12. CHECK THE PART ON MAGNETIC FLAW DETECTOR AS PER INSTRUCTIONS UB 20 – 11.

	MODULE	m	4,5
	NUMBER OF TEETH	Z	10
BASIC RACK	PROFILE ANGLE	α	25°
	ADDENDUM COEFFICIENT	ha*	1
	RADIAL CLEARANCE COEFFICIENT	c*	0,2
ADDENDUM MODIFICATION COEFFICIENT		x	0
DEGREE OF ACCURACY AS PER GOST 1643-72			
BASE TANGENT LENGTH		W	$20,43^{-0,08}_{-0,22}$
TOLERANCE FOR BASE TANGENT LENGTH VARIATION		Vw	0,1
COMPOSITE ERROR DOUBLE FLANK	TOTAL	Fi"	0,13
	TOOTH TO TOOTH	fi"	0,07
TOLERANCE FOR RADIAL RUNOUT OF TOOTHED RIM		Fr	0,065
BASE PITCH	NOMINAL VALUE		13,254
	LIMIT DEVIATIONS	±fpb	±0,018
TOTAL BEARING PATTERN OF STANDARD GEAR TEETH	IN FACE WIDTH	%	AT LEAST 50
	IN HEIGHT	%	AT LEAST 40
TOLERANCE FOR TOOTH PROFILE ERROR		ff	0,020
TOLERANCE FOR TOTAL ERROR OF DISTORTION		FB	0,019
BASE CIRCLE DIAMETER		db	40,78
RADIUS OF INVOLUTE CURVATURE AT THE BEGINING OF CONTACT PROFILE		ρb	0
RADIUS OF INVOLUTE CURVATURE AT THE END OF CONTACT PROFILE		ρc	36,681
INVOLUTE DEVELOPMENT ANGLE		ψ	51°32'

MATERIAL QUOTED :- STEEL 12X H3A GOST 4543-71.

CHROMIUM – NICKEL AND CHROMIUM – NICKEL STEEL
12 X H3A – GRADE OF STEEL.

CHEMICAL COMPOSITION :-

CONTENT OF ELEMENTS %							
C	Si	Mn	Cr	Ni	P	S	Cu
					MAXIMUM.		
0·09 – 0·16	0·17 – 0·37	0·30 – 0·60	0·60 – 0·90	2·75 – 3·15	0·025	0·025	0·30

MECHANICAL PROPERTIES:-

1.
2. HEAT TREATMENT.
   a) HARDENING i) FIRST HARDENING OR NORMALIZING = 860°C.
      ii) SECOND HARDENING = 760 – 810°C.
      iii) COOLING MEDIUM = WATER OR OIL.
   b) TEMPERING i) TEMPERATURE °C = 180.
      ii) COOLING MEDIUM = AIR OR OIL.
3. YIELD POINT Kgf/mm² (MIN) = 70.
4. ULTIMATE STRENGTH Kgf/mm² (MIN) = 95.
5. % RELATIVE ELONGATION (MIN) = 11.
6. % RELATIVE REDUCTION ALONG CROSS SECTION (MIN) = 55.
7. IMPACT STRENGTH kgf.m/cm² (MIN) = 9.

ALTERNATE MATERIAL QUOTED : STEEL 16x2H4MA TY 14-1-381-72.

(B) a) CHEMICAL COMPOSITION : AS PER GOST 4543-71.

GRADE OF STEEL	CONTENT OF ELEMENTS %								
	C	Si	Mn	Cr	Ni	Mo	P	S	Cu
							MAXIMUM		
16x2H4BA (16x2H4MA)	0.14-0.20	0.17-0.37	0.25-0.55	1.35-1.65	4.00-4.40	0.30-0.40	0.025	0.025	0.30

b) MECHANICAL PROPERTIES : AS PER GOST 4543-71.

GRADE OF STEEL	YIELD POINT Kgf/mm²	ULTIMATE STRENGTH Kgf/mm²	RELATIVE ELONGATION %	RELATIVE REDUCTION ALONG CROSS SECTION %	IMPACT STRENGTH Kgfm/cm²
	m	i n i m u m			
16x2H4BA (16x2H4MA)	85	115	12	50	12

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

EST. MASS	TO BE STAMPED OR MARKED WHERE INDICATED THUS ✳ (LETTERS)
0.465 Kg	

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

ISSUE	DATE	NATURE OF AMENDMENTS
B	06.06.15	D.O.CORRECTION
A	12-11-07	TC/GEN/IND-II, DT 07-11-97.

DRN
CHD
TCD
APPD
DATE 12-5-85
SCALE - 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- STEEL 12xH3A GOST 4543-71

USED ON :- CG 20-12-79-1

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.

TITLE GEAR WHEEL

D S CAT NUMBER

DRAWING NUMBER 20-12-85

KVD No: 66710

SIZE A1.