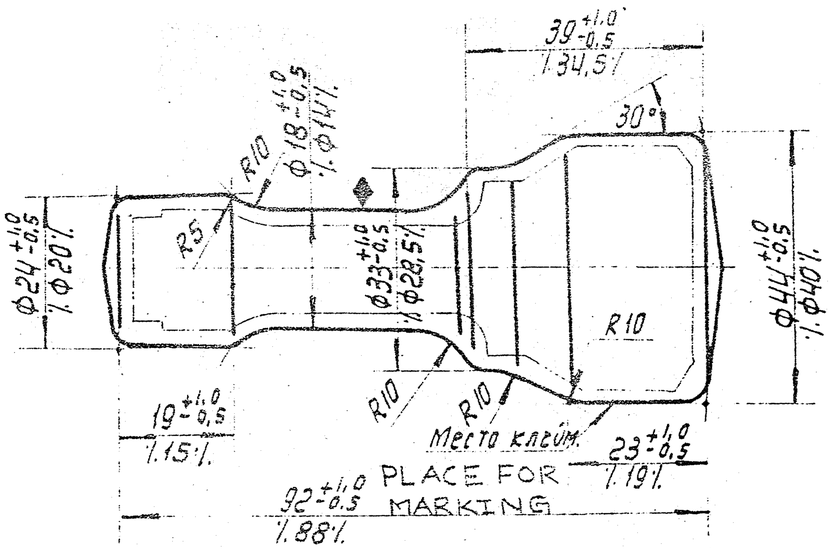


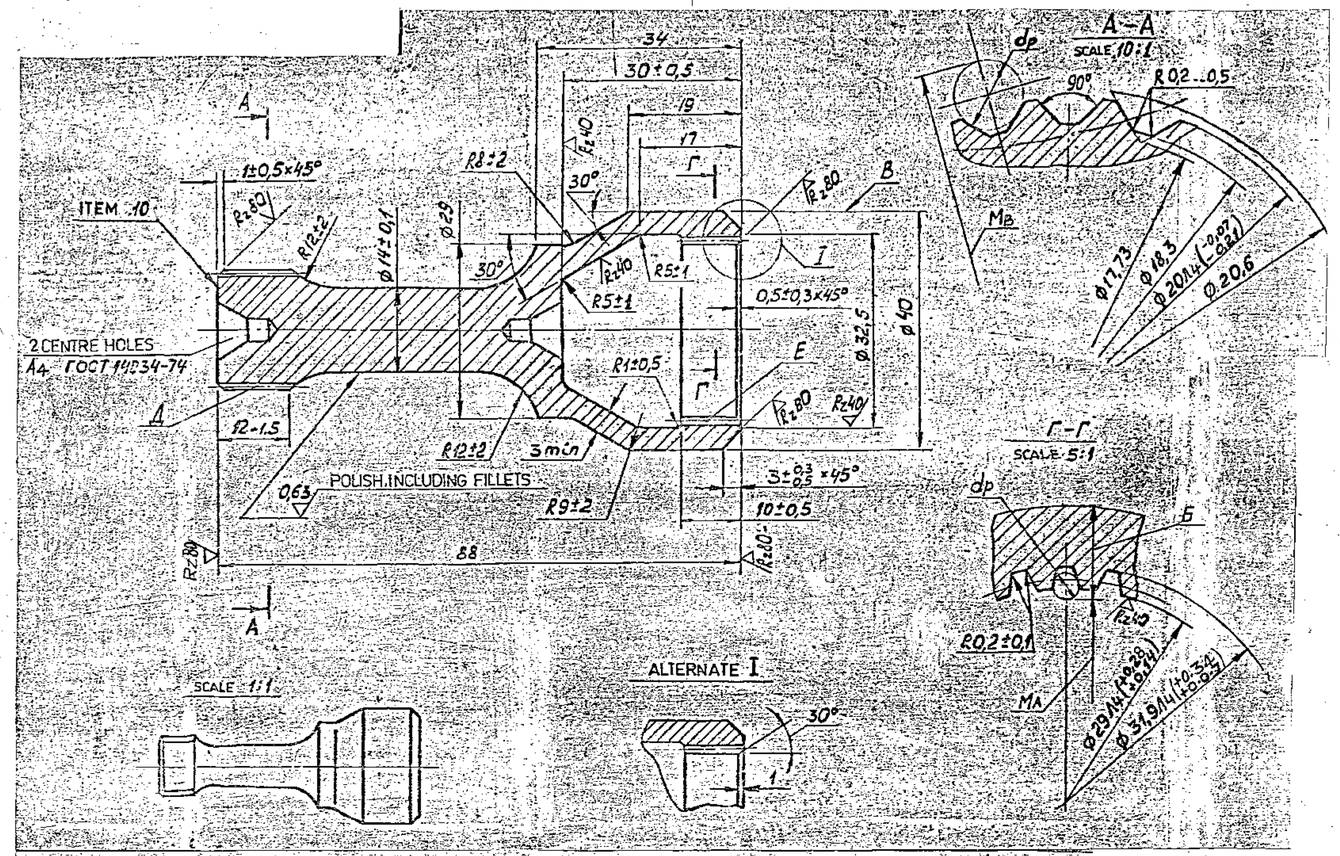
1. DRAFTS ARE TO BE 6° MAX
2. UNSPECIFIED RADII ARE TO BE R3 MAX.
3. MIS MATCH OF DIE AXES SHOULD NOT EXCEED 0·5 MM.
4. RESIDUAL FIN ALONG THE PARTING LINE SHOULD NOT EXCEED 0·6 MM.
5. CURVATURE SHOULD NOT EXCEED 1·0 MM.
6. DEPTHS OF THE DEFECTS SHOULD NOT EXCEED 0·5 OF THE MACHINING ALLOWANCE
7. WHEN ALTERNATE MATERIAL IS USED GRADE OF STEEL IS TO BE MARKED
(1)8 ~~NORMALISING AND ANNEALING TO HARDNESS 255-196 BHN~~
9. DATUM FOR MACHINING
10. MAY BE MANUFACTURED FROM STEEL 18X2H4MA AS PER TY 14-1-381-72
11. GRAIN SIZE 5-8 MCQUAID.
(1)8. FORGING TO BE SUPPLIED, NORMALIZED AT 940°C+20°C, HIGH TEMPERED AT 640°C+20°C. HARDNESS 196-255 BHN.

1. Штамповочные уклоны 6°.
2. Неуказанные радиусы R3.
3. Перекос и сдвиг осей штампов не до 0,5 мм.
4. Заусенец по разъёму штампов до 0,6 мм.
5. Кривизна до 1,0 мм.
6. Глубина дефектов до 0,5 припуска на обработку.
7. Клеймить маркой стали при замене материала.
8. ~~Приведена ко II группе~~
9. ♦ - базы механической обработки.
(1) 10. Допускается изготовление из стали 18Х2Н4МА по ТУ14-1-381-72 ~~с содержанием вольфрама не менее 0,3%~~. (1)

Согласовано:

			NOMENCLATURE	DRAWING NO.		
(1)	29.8.91	As GM's letter dated 13-12-90	TORSION BAR (FORGING)	402-37-7		
ISSUE	DATE	REFERENCE		SHEET	MASS	SCALE
APPROVED			MATERIAL: 18X2H4MA TY 14-1-381-72.	ENGINES FACTORY AVADI		
CHECKED						
DRAWN	A.PRASANNA.					

DRAWING NUMBER
402-37-7



EXPLANATORY NOTE:-

REFERENCE MATERIAL QUOTED:

MATERIAL: 18X2H4MA = GRADE, CHROMIUM NICKEL MOLYBDENUM STEEL, 18X2H4BA = GRADE, CHROMIUM NICKEL TUNGSTEN STEEL. } TO TY14-1-381-72

CHEMICAL COMPOSITION % AS PER GOST 4543-71.

	Gde. 18X2H4MA	Gde. 18X2H4BA
CARBON	0.14 - 0.20	0.14 - 0.20
SILICON	0.17 - 0.37	0.17 - 0.37
MANGANESE	0.25 - 0.55	0.25 - 0.55
CHROMIUM	1.35 - 1.65	1.35 - 1.65
NICKEL	4.00 - 4.40	4.00 - 4.40
MOLYBDENUM	0.30 - 0.40	—
TUNGSTEN	—	0.90 - 1.20
PHOSPHORUS	0.025 (max)	0.025 (max)
SULPHUR	0.025 (max)	0.025 (max)
COPPER (residual)	0.30 (max)	0.30 (max)

MECHANICAL PROPERTIES.

YIELD POINT	Kgf / mm² (min)	85	80
ULTIMATE TENSILE STRENGTH	Kgf/mm² (min)	115	105
RELATIVE ELONGATION	% (min)	12	12
REDUCTION IN AREA	% (min)	50	50
IMPACT STRENGTH	Kgfm / cm² (min)	10	12

1 INSPECTION GROUP III AS PER TECHNICAL REQUIREMENTS TT-11 HRC 33 TO 37.
2 UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS:
FOR HOLES AS PER A7.
SHAFTS AS PER B7.
OTHERS AS PER CM7.
3 PLAY OF SPLINES A RELATIVE TO AXIS OF CENTRES SHOULD NOT EXCEED 0.1 mm.
4 PLAY OF SURFACE 'B' RELATIVE TO AXIS OF CENTRES SHOULD NOT EXCEED 0,02 mm.
5 SIZE 'B' DIFFERENCE SHOULD NOT EXCEED 0.08 mm.
6 SURFACES OF ROD AND FILLETS SHOULD BE KEPT FREE FROM NOTCHES, NICKS, SCRATCHES AND OTHER DEFECTS.
7 IT IS PERMITTED TO INCRESE WIDTH OF THREE TOOTH SPACES OF INNER SPLINES AND SIMULTA-NEOUSLY INCREASE DISTANCE OVER PINS IN THESE THREE TOOTH SPACES UPTO DIAMETER OF 27.75 mm.
8 CHECK THE PART BY USING A MAGNETIC FLAW DETECTOR; CARRY OUT ACCEPTANCE AS PER TECHNICAL REQUIREMENTS TT U B-17.
9 WHEN DELIVERING AS SPARE-PARTS PERMISSIBLE COATING; CHEMICALLY OXIDIZED, OILED.
10 APPLY STAMP WITH HAMMER OR BY ELECTRIC SPARK METHOD.

SPLINES		A	E
MODULE	m		1
NUMBER OF TEETH	z	24	30
BASIC RACK PROFILE ANGLE	α_0		30°
WIDTH OF TOOTH SPACE ALONG PITCH CIRCLE CHORD	S_a		$1{,}57^{+0{,}12}_{+0{,}06}$
PITCH CIRCLE DIAMETER	d_a	$19{,}02^{-0{,}08}_{-0{,}20}$	30
PIN DIAMETER	d_p	2,311	1,732
DISTANCE OVER PINS	$M_{B(A)}$	$23{,}31^{-0{,}08}_{-0{,}20}$	$27{,}49^{+0{,}23}_{+0{,}11}$

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

EST. MASS 0.206 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.

ISSUE	DATE	NATURE OF AMENDMENTS

DRN G.Nagoya
CHD
TCD G.Nagoya
APPD
DATE 7-6-90
SCALE - 2:1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL - 18X2H4MA (18X2H4BA) TY 14-1-381-72

USED ON :- CB 20-11-00-6, CB 402-00-19

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) — AVADI

TITLE WATER PUMP DRIVE TORSION BAR

C S CAT NUMBER

DRAWING NUMBER 402-37-7

KVD NO 63258

A1