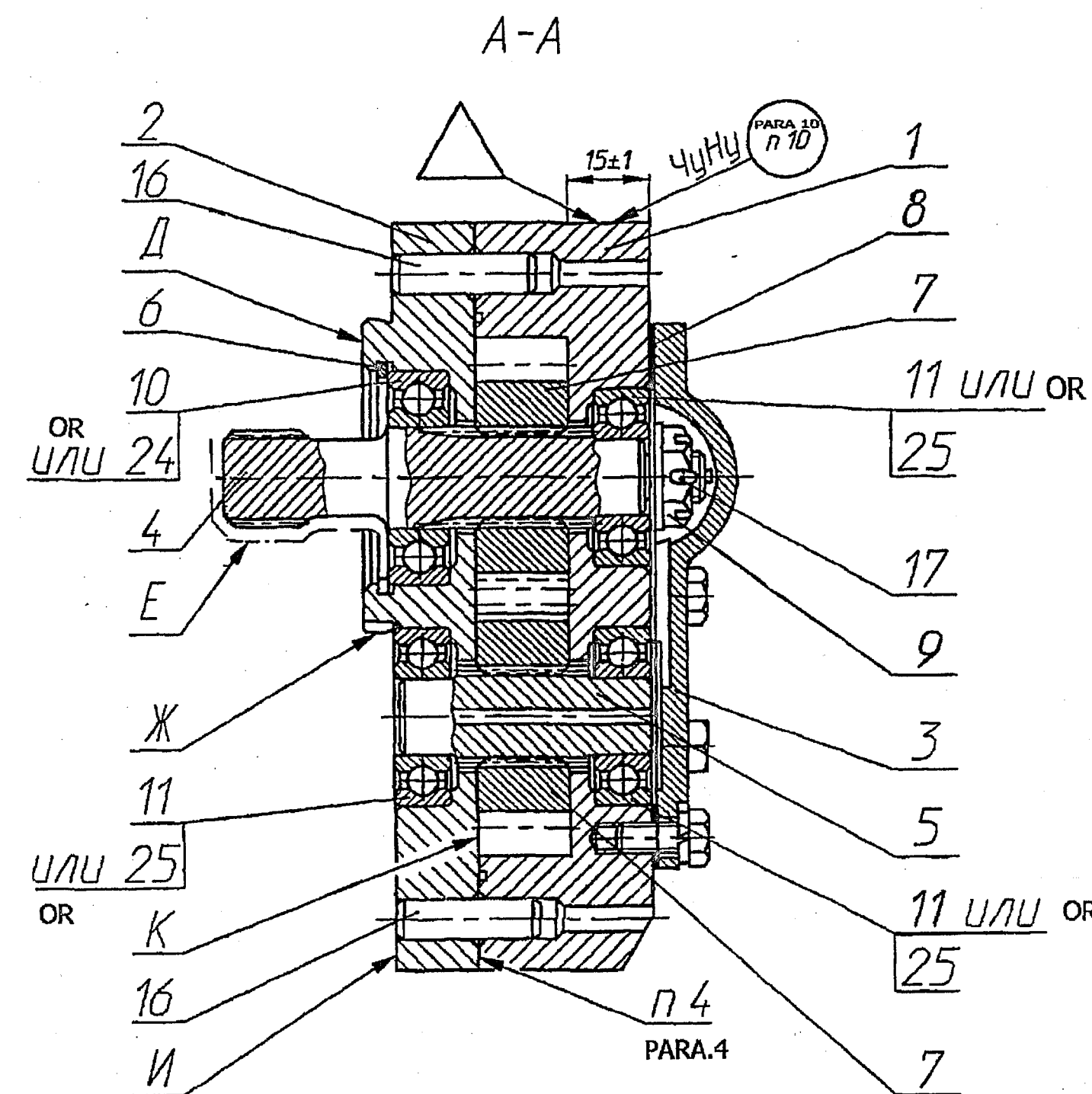
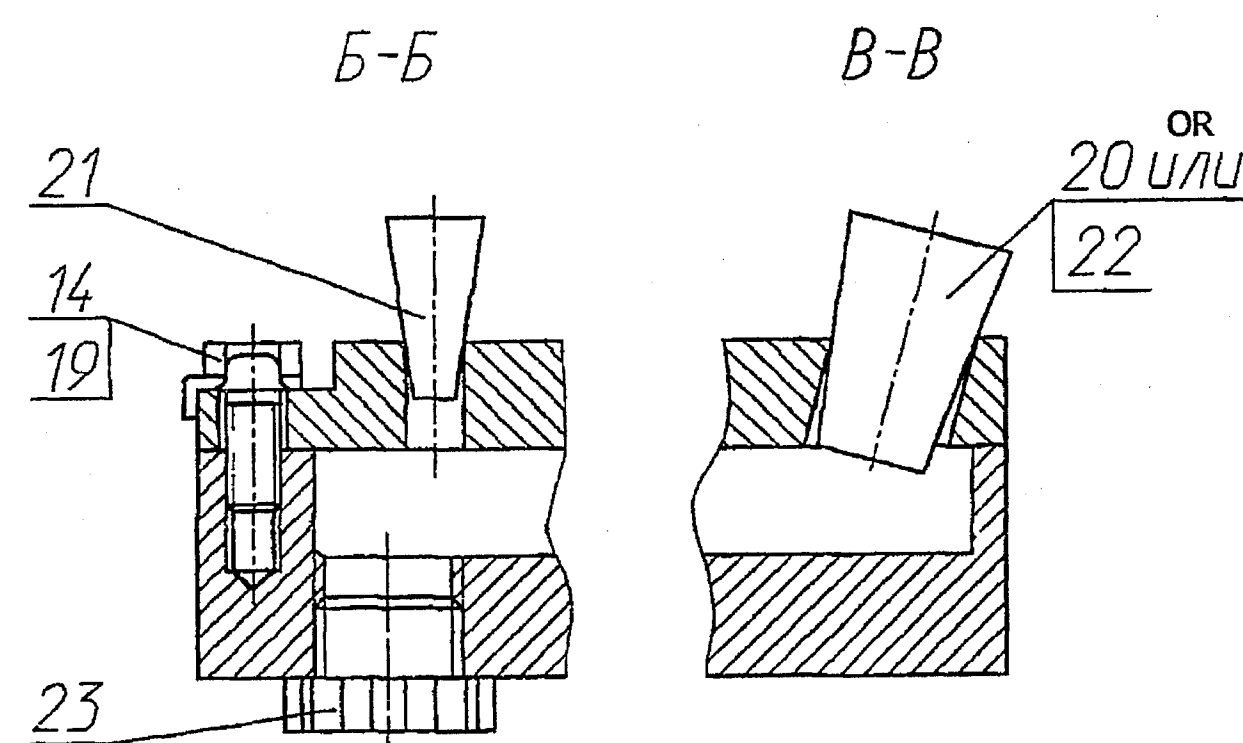


USED ON 188 45 001cb-3Cb I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - NIL 356 SUPPLY CODE U-01-1-2 D 90059 F-80 38	ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS
			172.46.002cb-1Cb		SUCTION PUMP ASSY		
		1	172 46 006		SUCTION PUMP BODY	1	
		2	172 46 007-1		SUCTION PUMP COVER	1	
		3	172 46 008		COVER	1	
		4	172 46 009		DRIVING SHAFT	1	
		5	172 46 010		DRIVEN SHAFT	1	
		6	172 46 011		RING, SPRING	1	
		7	172 46 013		SUCTION PUMP GEAR	2	
		8	172 46 024		GASKET	1	
		9	172 46 025		NUT	1	
	ISSUE	DATE	NATURE OF AMENDMENTS		ISSUE	DATE	NATURE OF AMENDMENTS
	DRN	<i>Vout.</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI				
	CHD	<i>L. Pangindara</i>	TITLE				
	APPD	<i>Chanchal</i>	SUCTION PUMP ASSY				
	DATE	7.9.04	SHT NO 1 OF 3	D S CAT NUMBER	ITEM LIST FOR 172.46.002cb-1Cb		

USED ON	ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - NIL		16	172 46 027		LOCK PIN	2	
		20	172 98 020		PLUG	1	TECHNOLOGICAL MAY BE REPLACED WITH ITEM 22
		21	172 98 021		PLUG	1	TECHNOLOGICAL
		22	172 98 025		PLUG		TECHNOLOGICAL MAY BE REPLACED WITH ITEM 20
		23	520 05 003-03		PLUG	1	TECHNOLOGICAL
		19	520 07 006-01		WASHER	1	
		13	GOST-7805-70		BOLT M6-6gx14 66 16	8	
		14	GOST -7808-70		BOLT M8-6gx20 88 38XC 016	1	
		15	GOST -7808-70		BOLT M8-6gx45 66 016	1	
	356 SUPPLY CODE U-01-1-2 D 90059	ISSUE	DATE	NATURE OF AMENDMENTS		ISSUE	DATE
DRN		<i>van</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI				
CHD		<i>L. Gungasalam</i>	TITLE				
APPD		<i>Chanchal</i>	SUCTION PUMP ASSY				
DATE		7.9.04	SHT NO 2 OF 3	D S CAT NUMBER	ITEM LIST FOR 172.46.002cb-1Cb		

USED ON		ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS	
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - NIL			18	GOST- 6402-70		WASHER 6T 65Г 016	8		
			12	GOST- 6402-70		WASHER 8 65Г 016	1		
			17	GOST- 397-79		COTTER PIN 2 5x25 016	1		
			10	ETY 500		BEARING 104	1	MAY BE REPLACED WITH ITEM No 24	
			24	ETY 500		BEARING 6-104	1	MAY BE REPLACED WITH ITEM No 10	
			11	ETY 500		BEARING 202	3	MAY BE REPLACED WITH ITEM No 25	
			25	ETY 500		BEARING 5-202	3	MAY BE REPLACED WITH ITEM No 11	
		356							
SUPPLY CODE									
U-01-1-2									
D 90059									
F-80									
38									
ISSUE	DATE	NATURE OF AMENDMENTS				ISSUE	DATE	NATURE OF AMENDMENTS	
DRN	V. <i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.							
CHD	<i>L. Gouguenou</i>	TITLE SUCTION PUMP ASSY							
APPD	<i>Chanchal</i>								
DATE	7-9 04	SHT NO 3 OF 3		D S CAT NUMBER		ITEM LIST FOR 172.46.002cb-1Cb			

SHEET No. 1 OF 1



Frequency of rotation of driving shaft of pump, rpm	Operating time, not less than, minutes	TRIAL RUN		Operating time, not less than, minutes	INSPECTION	
		Parameters			Parameters to be checked	
		Oil pressure at the outlet from pump (counter pressure)	Discharge of pump, not less than, lit/min		Oil pressure at the outlet from pump (counter pressure)	Discharge of pump, not less than, lit/min
1200±50	5	(0.1±0.03) MPa (1±0.3) kgf/cm ²	—	5		18
1800±50	5	(0.2±0.03) MPa (2±0.3) kgf/cm ²	—	5	(0.3±0.03) MPa (3±0.3) kgf/cm ²	28
2600±50	5	(0.3±0.03) MPa (3±0.3) kgf/cm ²	—	5		41
4000±50	10	(0.5±0.03) MPa (5±0.3) kgf/cm ²	63	5	(0.5±0.03) MPa (5±0.3) kgf/cm ²	63

- 9 After setting the pump on the stand, pump is to be filled with oil, which is used for trial run of pump
- 10 To be marked on body, item 1 by type ПП-5 GOST 2930-62
Place for marking and stamping are to be dressed from unevenness.
11. Coating of external surfaces, bolt heads, lock washer, except surfaces Г, Д, Е, Ж, И
Primer ФЛ -03К
Enamel ПФ-223 dark-grey or
ПФ-115 dark-grey 894
Requirements are as per 520.TY 5.
Coating on assembled input reduction gear unit is allowed.
- 12 Pump is to be wrapped with paper БП-3-35 GOST 9569-79 or with film ОН 0.15 GOST 16272-79 and to be bind with twine ШП 1 67.... 3.34 П2 "6" GOST 17308-88.
13. Other requirements are as per 520.TY1

1. In the finally assembled pump, while rotating the driving shaft, item 4, the gear, item 7 of pump should rotate smoothly without jamming and seizing
2. End clearance K should be $0.05^{+0.06}_{-0.04}$ mm
Following are allowed:
 - Lapping of a body, item 1 at the increased clearance
 - Lapping of gear, item 7 at the decreased clearance.
3. While assembling the pump, all friction surfaces of gear, item 7 are to be lubricated with oil, which is used for trial run of pump
4. During assembly of pump, on joining plane of body, item 1, sealant Anatherm-6 or Anatherm-6B TY 6-01-1215-79 should be applied between the outer contour and groove and to the portion of cover, item 2 corresponding to it.
Falling-in of sealant to the face of gear and in recess of body is not allowed.
5. Before setting the pump, sealant TY Y6.10-00204234-004-95 or Anatherm-6 or Anatherm-6B are to be applied on gasket, item 8 from both the sides.
Falling-in of sealant on the cavity of pump is not allowed
6. On threads and bearing faces of bolts apply with sealant TY Y6.10-00204234-004-95
7. Projection of pins, item 16 beyond surface M of cover, item 2 is not allowed
8. Trial run and inspection of pump is to be carried out in compliance with the table for oil TC3n-8 TY 38.1011280-89 at an oil temperature of 85^{+5}_{-5} °C

Direction of rotation of driving shaft, item 4 of the pump should be clockwise. Position of pump on the stand should comply with its position on input reduction gear unit.

Tolerance of alignment of axes of drive shaft of stand and abutting surface towards the pump should be 0.1 mm in the diametrical expression (MMC)

Check the tolerance of alignment during the certification of stand or during its periodical inspection

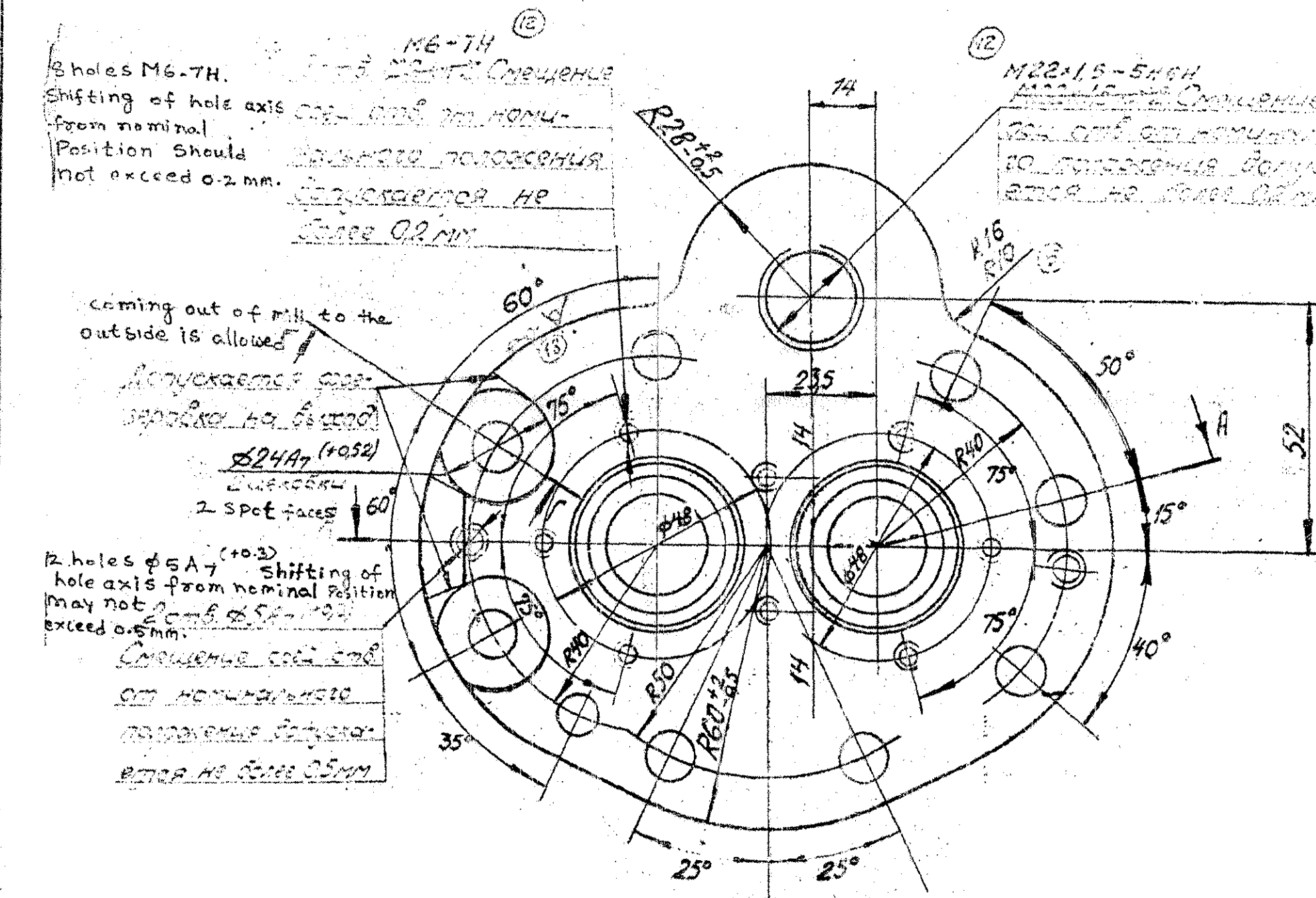
During trial run and inspection, leakage of oil is not allowed

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

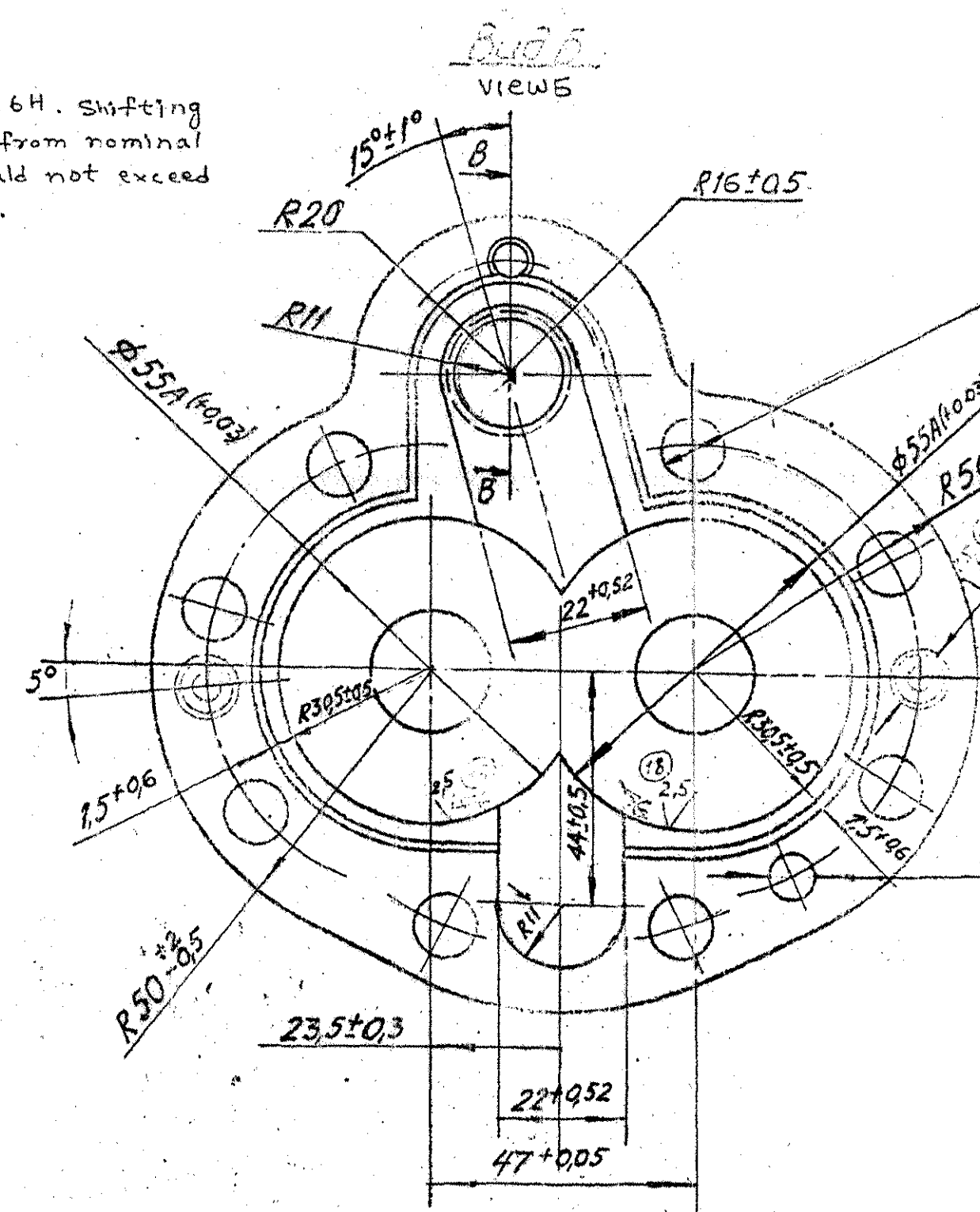
EST. WT (kg) 4 42	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE	

			DRN CHD APFD DATE	1607 <i>Amphib</i> <i>Chancel</i> 7.9.04	MATERIAL:- USED ON:- 175 48cbCb 188 45 001cb-3Cb
			SCALE:- 1 1		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI
			DIMENSIONS IN mm		TITLE:- SUCTION PUMP ASSY.
			TOLERANCE ON DIM'S UNLESS OTHERWISE STATED IS 210±0		DRAWING NUMBER
			ALL THREADS TO CONFORM TO		D S CAT NUMBER
ISSUE	DATE	NATURE OF AMENDMENTS	172.46.002cb-1Cb		

DRAWING NUMBER
172.46.006



M22x1.5 - 5H6H. Shifting of hole axis from nominal position should not exceed 0.2 mm.

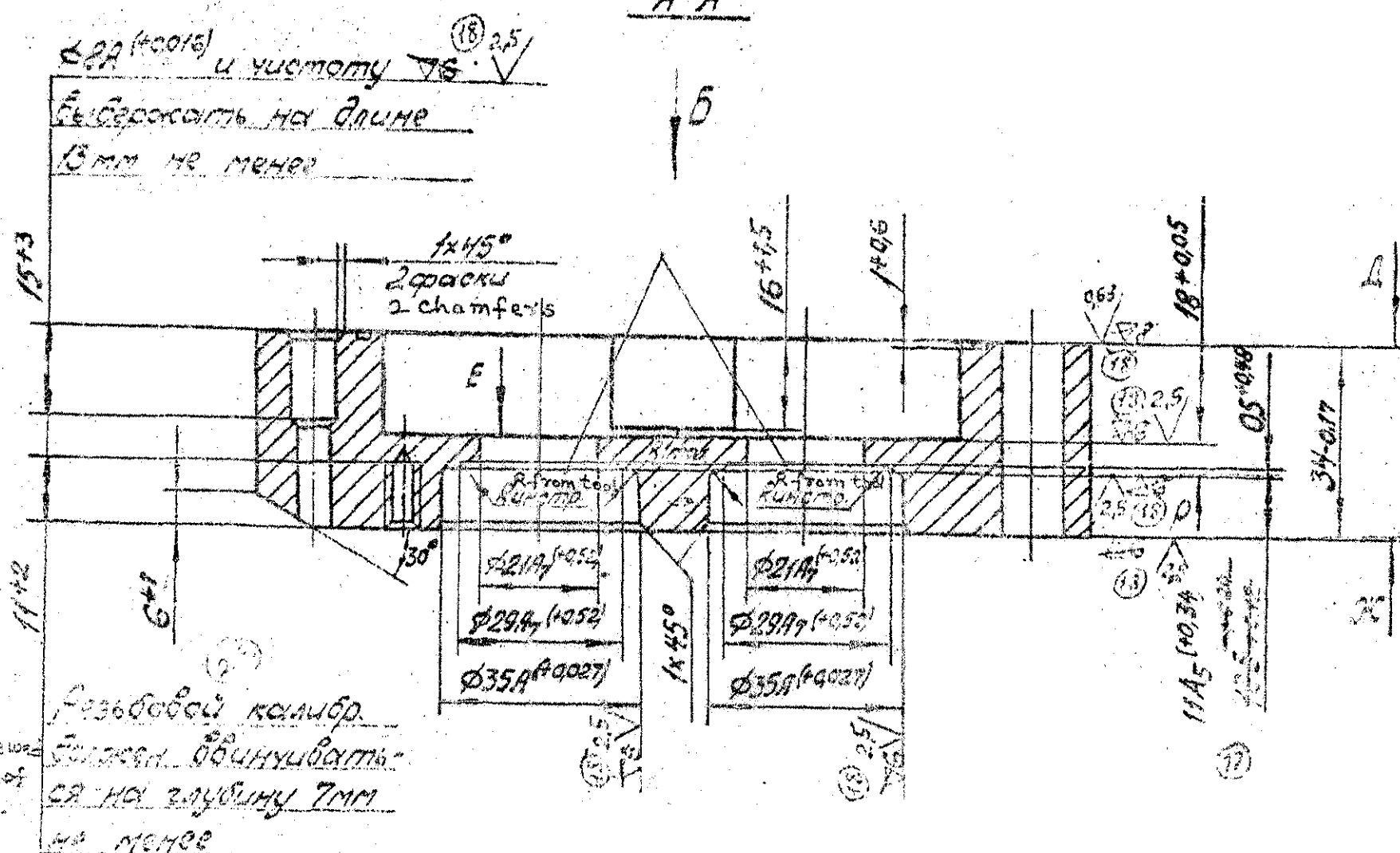


8. Holes $\phi 11A7 (+0.43)$ Shifting of hole axis from nominal position may not exceed 0.2 mm.

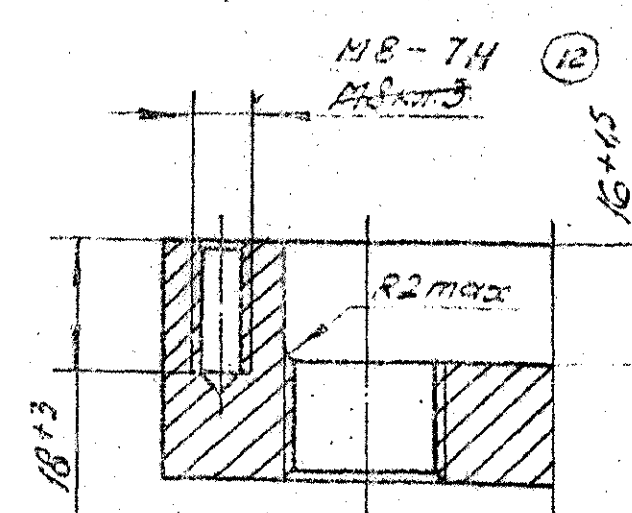
2 Holes $\phi 8A (+0.016)$ to be reamed in assembly with component 172.46.0071 Shifting of hole axis from nominal position may not exceed 0.2 mm.

23A $\phi 9A7 (+0.36)$ Shifting of hole axis from nominal position may not exceed 0.2 mm.

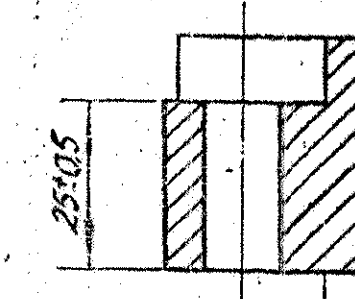
$\phi 8A (+0.016)$ and surface finishing $\sqrt{R}$ should be held at the length of at least 13 mm.



B-B повернуто B-B, turned

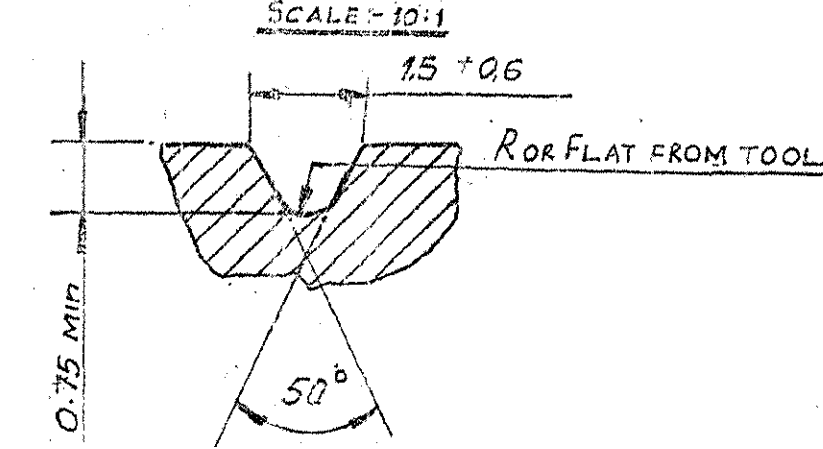


Г-Г повернуто Г-Г, turned



Резьбовой канал должен быть сверлен на всю глубину 12 мм. Thread gauge should be screwed in for a depth not less than 12 mm.

ALTERNATIVE FOR MAKING GROOVE



1. LACK OF FLATNESS OF SURFACE A SHOULD BE CHECKED BY BLUEING. IN THIS CASE, THERE SHOULD BE 8 IMPRINTS ON 1 cm^2 MAXIMUM.
2. RELATIVE NON-PARALLELISM OF PLANES A AND E SHOULD NOT EXCEED 0.03 mm WITHIN THE OVERALL DIMENSION OF COMPONENTS.
3. LACK OF FLATNESS OF SURFACE E SHOULD NOT EXCEED 0.05 mm. AND NON-PARALLELISM WITH SURFACE A SHOULD NOT EXCEED 0.05 mm WITHIN THE DIMENSIONS OF THE COMPONENTS.
4. RUN OUT OF SURFACE $\phi 35A$ AND FACE P SHOULD NOT EXCEED 0.05 mm, $\phi 21$ SHOULD NOT EXCEED 0.01 mm. RELATIVE TO COAXIAL SURFACES $\phi 55$.
5. NON-SQUARENESS OF AXIS OF BEARING $\phi 55$, RELATIVE TO SURFACE A SHOULD NOT EXCEED 0.03 mm AT LENGTH 100 mm.
6. NON-SQUARENESS OF THREADED HOLE M6 - 7H AND M8 - 7H SHOULD NOT EXCEED 0.1 mm. AT A LENGTH 20 mm, M22x1.5 - 5H6H SHOULD NOT EXCEED 0.1 mm AT A LENGTH 34 mm.
7. THREADED HOLES SHOULD BE COUNTER SUNK AT ANGLE 120° UP TO THE MAJOR DIAMETER OF THE THREAD.
8. REQUIREMENTS FOR CASTING SHOULD COMPLY WITH 172 TY 7.
9. TO BE HARDENED - HB 229 TO THE 170 (DIAMETER OF INDENTATION 4.0 TO 4.6).
11. INSTEAD OF RECTANGULAR GROOVE WITH DIMENSIONS 1.5 x 1 GROOVE OF TRIANGULAR SECTION IS ALLOWED.
12. LAPPING OF PLANE IS ALLOWED.
13. TOLERANCE ON SHIFT OF AXES OF HOLES M6-7H, $\phi 9A7$, $\phi 11A7$ FROM NOMINAL POSITION DEPENDENT.
9. TO BE HARDENED HB 170..... 241 (DIA OF INDENTATION 4,6 3,9)

EXPLANATORY NOTE:-

11. REFERENCE MATERIAL QUOTED:- GRAY IRON CASTING OF GRADE C4 20 TO SPECN GOST 1412-79 85 (23)

a) CHEMICAL COMPOSITION:-

Gde. OF CAST IRON	CONTENT OF ELEMENTS %				
	C	Si	Mn	P	S
C4 20	3.3 - 3.5	1.4 - 2.2	0.7 - 1.0	0.2	0.15

b) MECHANICAL PROPERTIES:-

Gde. OF CAST IRON	ULTIMATE TENSILE STRENGTH Kgf/mm ²	ULTIMATE BENDING STRENGTH Kgf/mm ²	HARDNESS H B
	MINIMUM		
C4 20	20	40	170-241

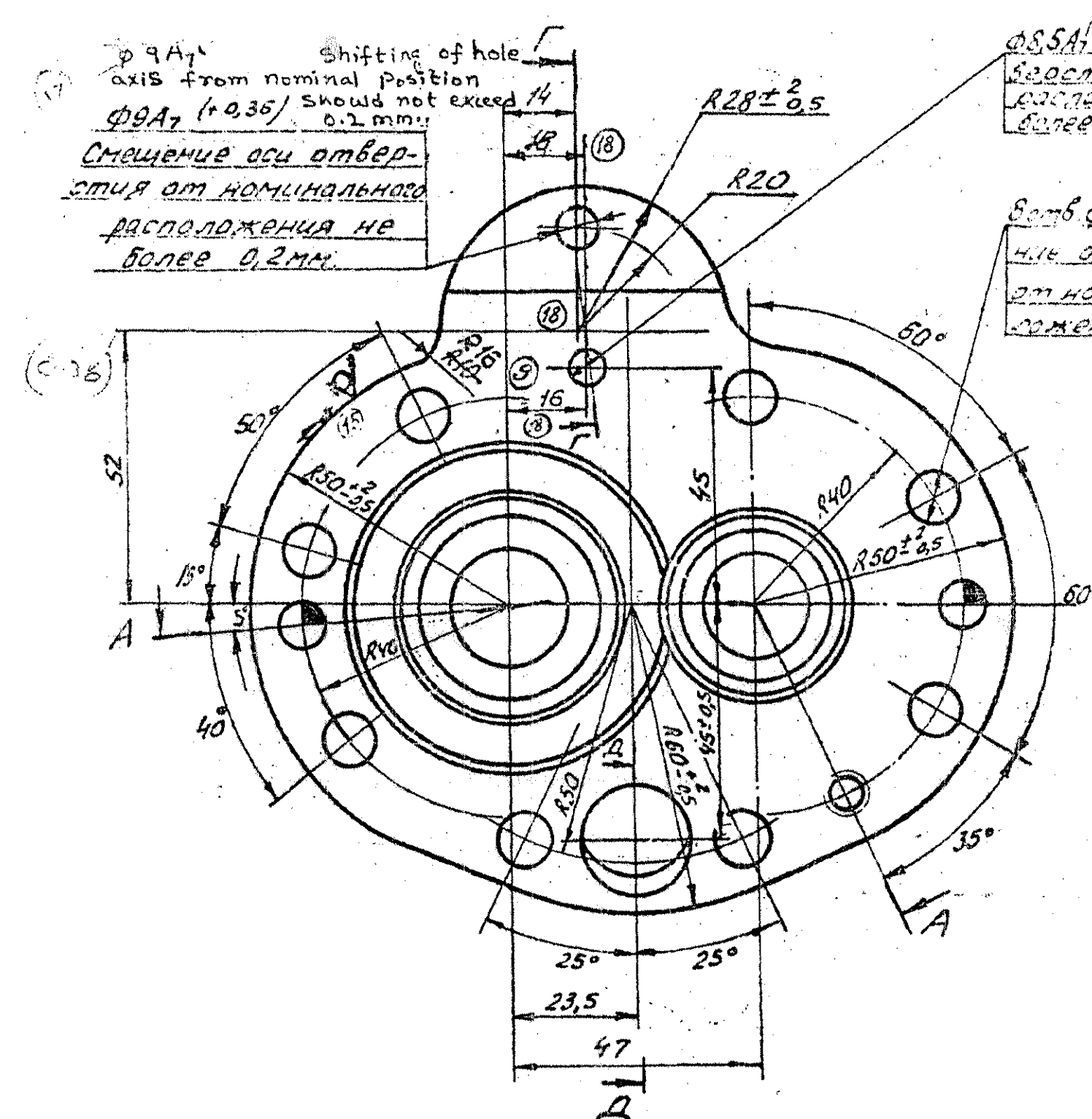
ALT. MATL. - GI CASTING GDE FG 220 TO 157210-93

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

EST. WT.	TO BE STAMPED OR MARKED WHERE INDICATED THUS II
1.7	LETTERS
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.	

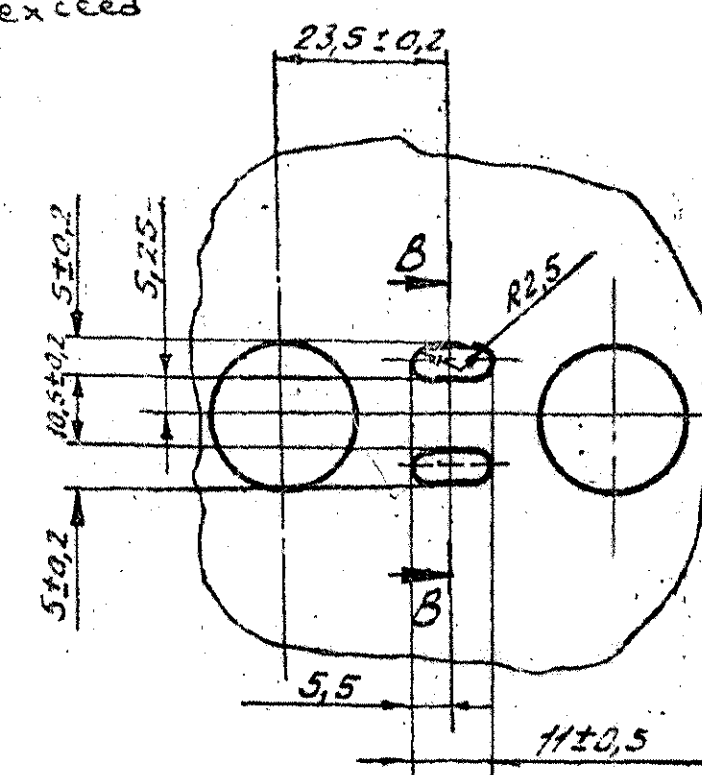
DRN	7.10.05	USED ON-	172.46.002 C5-1
CHD	7.10.05	MATERIAL -	CASTING 44 - C4 20
ED	7.10.05	GOST 1412-79 85 (23)	
APPD	7.10.05	CONTROLLER OF INSPECTION (HEAVY VEHICLES)	AVADI
DATE	7.10.05	TITLE:	BODY OF SUCTION PUMP
SCALE: 1:1		D S CAT NUMBER	DRAWING NUMBER
23C 31.10.05	DRN		172.46.006
23B 25.11.05	CHD		
23A 16.8.05	ED		
23 2.8.89	APPD		
22 20-12-88	DATE		
21 20-12-88	ISSUE		
NATURE OF AMENDMENTS			

DRAWING NUMBER
172.46.007-1

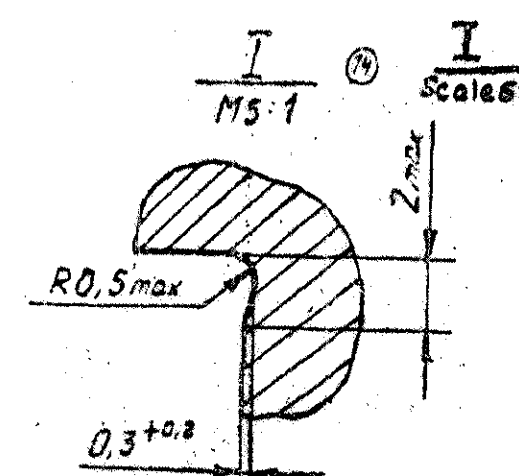
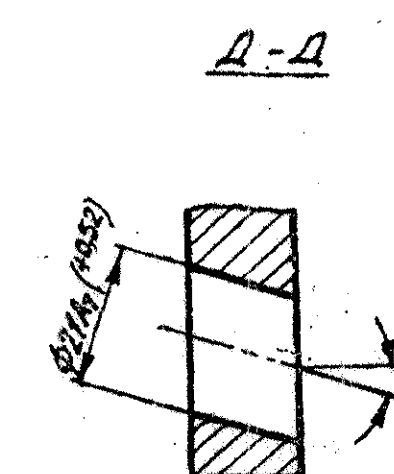
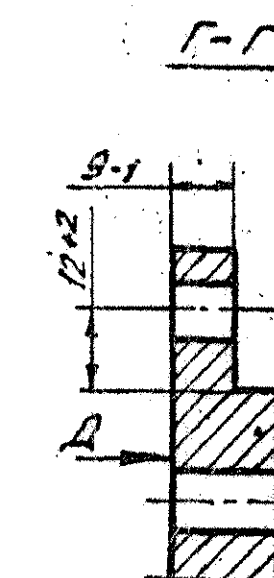
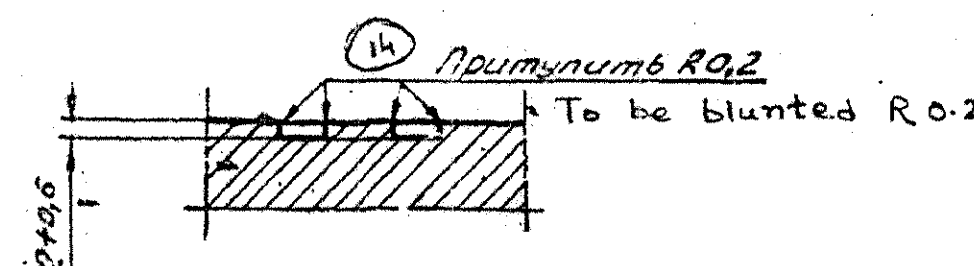


Shift of hole axis from nominal position $\phi 8A_7 (+0.036/-0.024)$ should not exceed 0.2 mm.
Смещение оси отбортоту от номинального расположения не более 0.2 мм.

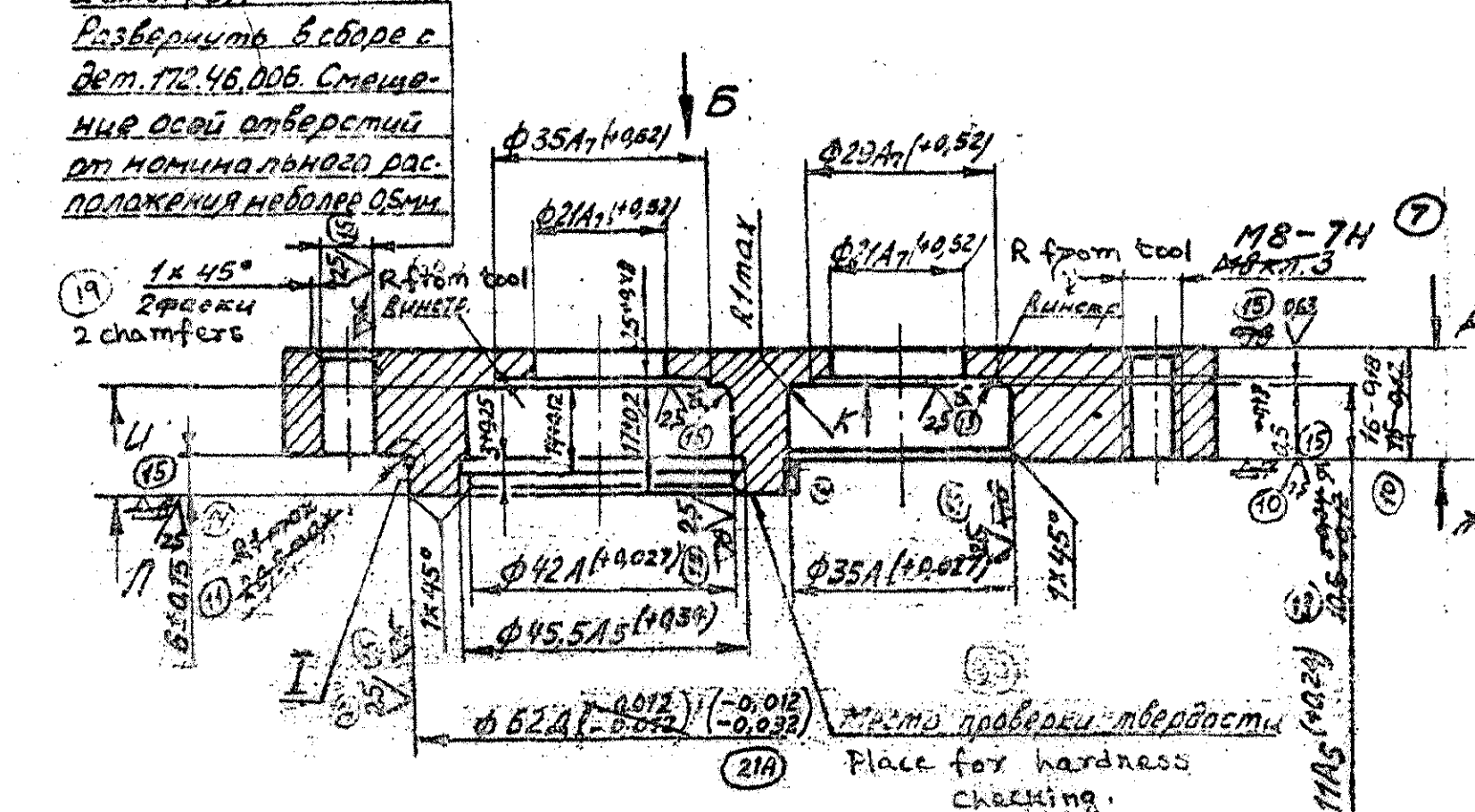
8 holes $\phi 11A_7 (+0.043/-0.024)$ shifting of hole axis from nominal position should not exceed 0.2 mm.
8 отверстий $\phi 11A_7$ смещение осей отбортоту от номинального расположения не более 0.2 мм.



B-B turned
B-B повернуто



2 holes $\phi 8A_7 (+0.016/-0.006)$ To be reamed when in assembly with component 172.46.006. Shifting of hole axis from nominal position should not exceed 0.05 mm.
2 отв. $\phi 8A_7$ (+0.016/-0.006) Разбортоту в сборе с дет. 172.46.006. Смещение осей отбортоту от номинального расположения не более 0.05 мм.



1. LACK OF FLATNESS OF SURFACE "A" SHOULD BE CHECKED BY BLUEING, IN THIS CASE THERE SHOULD BE AT LEAST 8 IMPRINTS ON 1cm².
2. LACK OF FLATNESS OF SURFACE "K" SHOULD NOT EXCEED 0.03mm.
3. RELATIVE NON PARALLELISM OF PLANES "A" AND "K" SHOULD NOT EXCEED 0.03mm OF WITH IN THE DIMENSIONS OF COMPONENTS.
4. RUN-OUT OF $\phi 35 A$, $\phi 42 A$, $\phi 45 A$ AND FACE "U" RELATIVE TO COAXIAL SURFACE $\phi 55$ IN COMPONENT 172.46.006 SHOULD NOT EXCEED 0.05mm.
5. RUN-OUT OF SURFACE $\phi 21$ RELATIVE TO ALIGNED SURFACE NOT TO EXCEED 0.1mm.
6. THREADED HOLE M8 SHOULD BE COUNTER SUNK AT ANGLE 120° UP TO THE MAJOR DIAMETER OF THREADS.
7. NON SQUARENESS OF THREADED HOLE M8 SHOULD NOT EXCEED 0.1mm AT LENGTH 20mm.
8. REQUIREMENTS FOR CASTING SHOULD COMPLY WITH 172.TY.7.
9. HARDNESS HB 229 TO 170 (DIA OF INDENTATION 4.0 TO 4.6).
10. SURFACE $\phi 35 A$ AND FACE "K" $\phi 42 A$ AND FACE "U" SHOULD BE MACHINED IN ONE SETTING.
11. TOLERANCE ON SHIFT OF AXES OF HOLES $\phi 8A_7$, $\phi 11A_7$ FROM NOMINAL POSITION DEPENDENT.
12. HARDNESS HB 170..... 241 (DIA OF INDENTATION 4.6 3.9)

Rz80 (✓)

EXPLANATORY NOTE

11. REFERENCE MATERIAL QUOTED:- GRAY IRON CASTING OF GRADE C4 20 TO SPECN GOST 1412-79 85 (2)

a) CHEMICAL COMPOSITION:-

Gde. OF CAST IRON	CONTENT OF ELEMENTS %				
	C	Si	Mn	P	S
C4 20	3.3 - 3.5	1.4 - 2.2	0.7 - 1.0	0.2	0.15

b) MECHANICAL PROPERTIES:-

Gde. OF CAST IRON	ULTIMATE TENSILE STRENGTH Kgf/mm ²	ULTIMATE BENDING STRENGTH Kgf/mm ²	HARDNESS H B
	MINIMUM	MINIMUM	
C4 20	20	40	170-241

ALT. MATL :- G.I. CASTING
GDE FG.220 TO IS: 210-93

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

EST. WT. 1.4 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	CHD	TCO	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMS UNLESS OTHERWISE STATED.	ALL THREADS CONFORM TO	D. S. CAT. NUMBER	DRAWING NUMBER
31.10.05	21.5.90	21.5.90	21.5.90	21.5.90	1:2	172 M 360 A-87 A.L. 9/3	20-12-86	20-12-88	172.46.002 (B-1)	172.46.007-1

TITLE: COVER OF SUCTION PUMP

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE -10
COMMON TO T-72

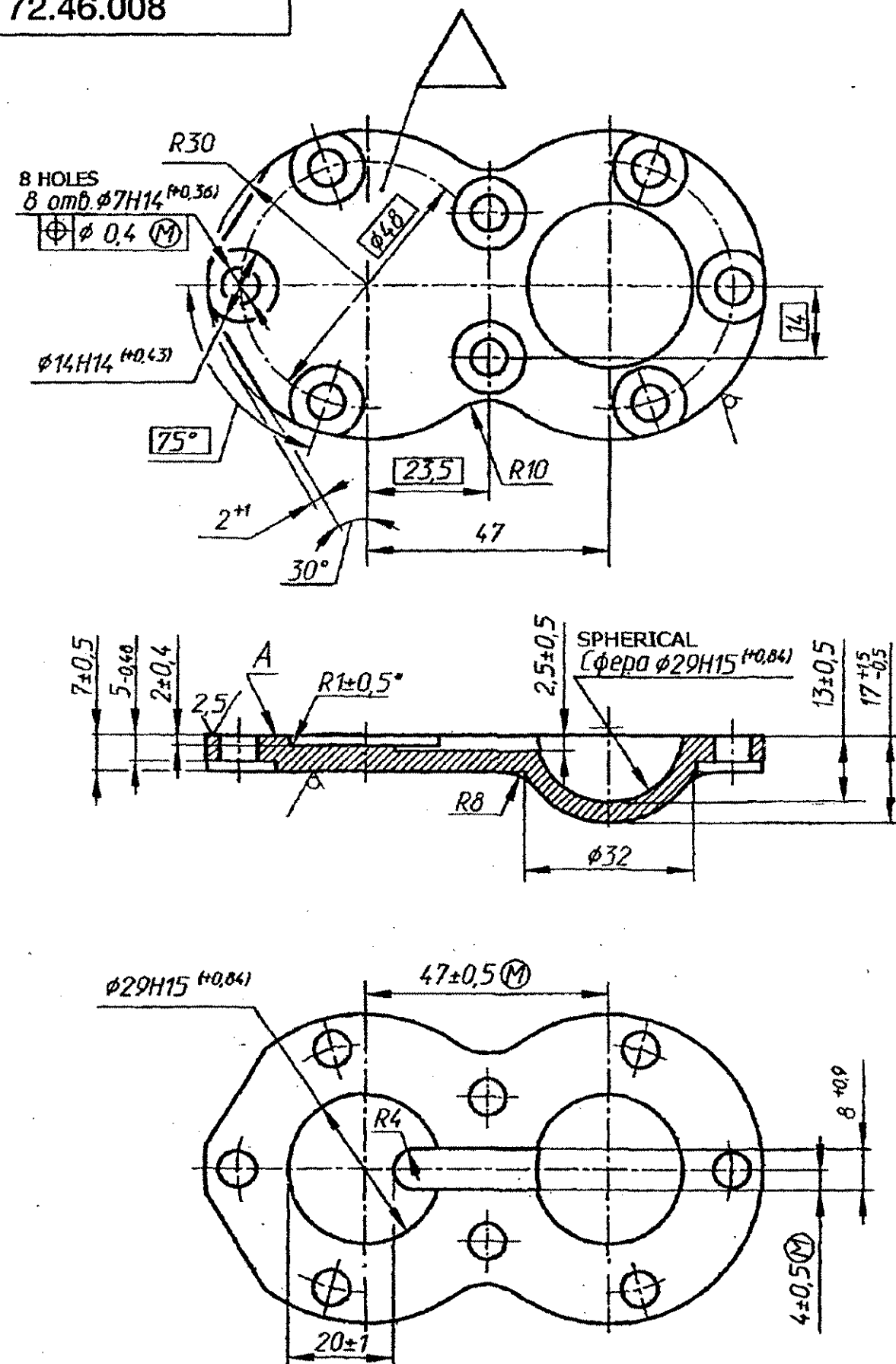
356
SUPPLY CODE
U-01-1-2
D 90059

F-80
45

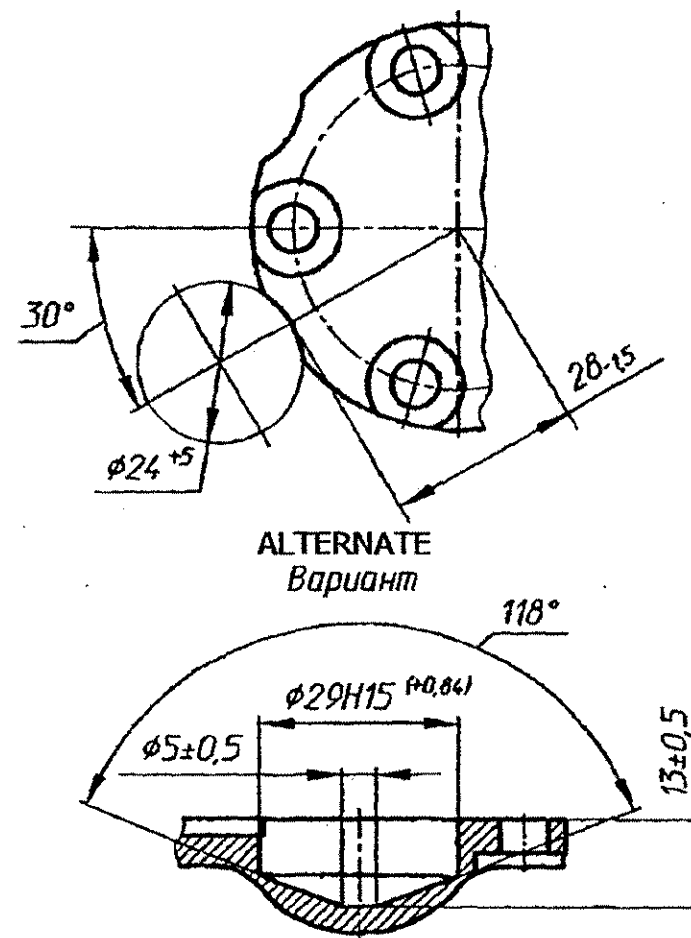
SIZE A4x3

DRAWING NUMBER
172.46.008

SHEET No. 1 OF 1



ALTERNATE
Вариант



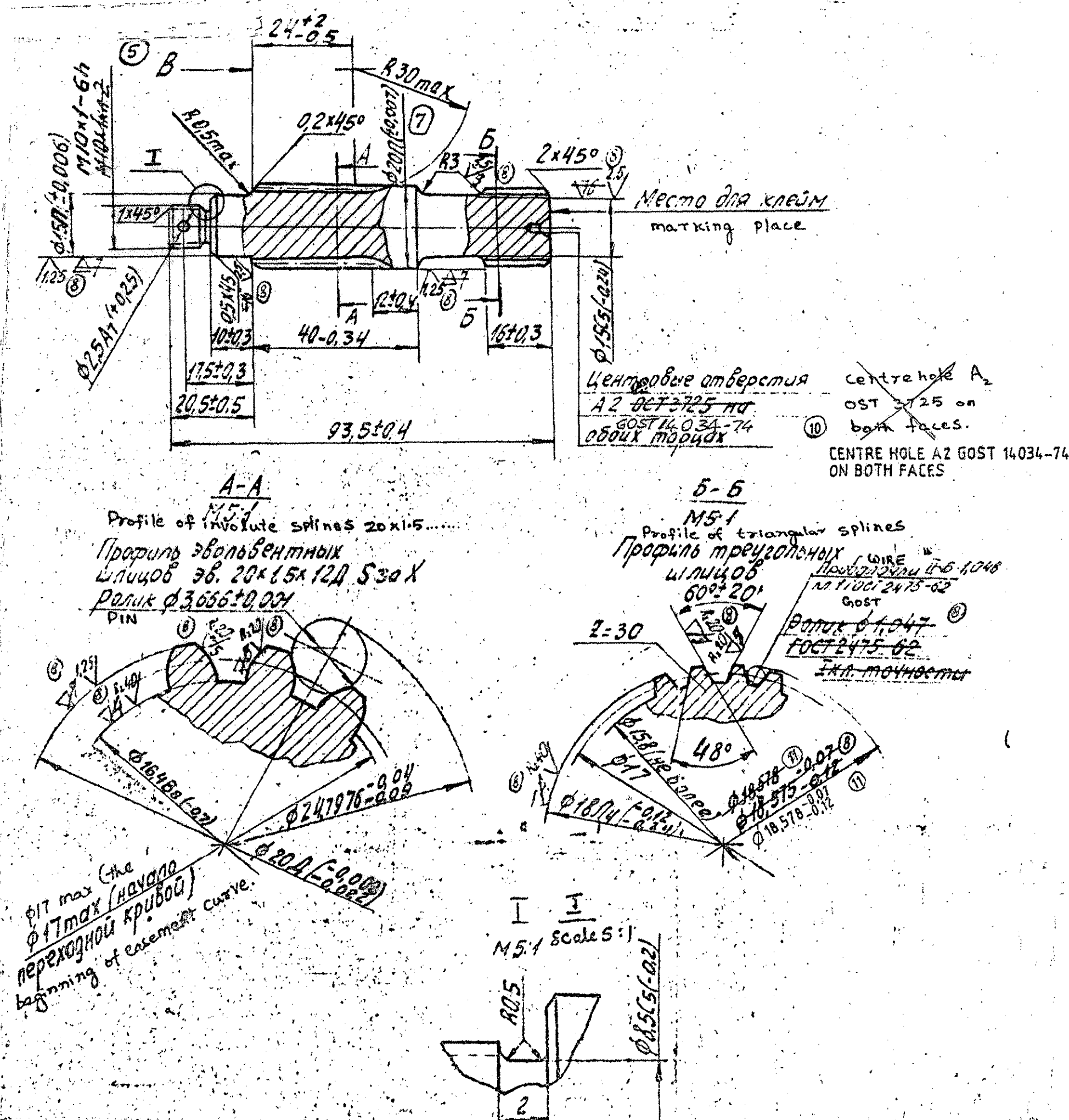
ALT. MATL. EN-24 BS:970-83
AUTHY. CQA(HV) Letter no. 09/IFD/INDV/MTPE/OE dt. 24.05.05

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

EST. WT. (Kg) 0.35 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 OUT-
SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	CHD	APPD	DATE	SCALE	MATERIAL	USED ON
				1:1	STEEL 38XC GOST 4543-71	172.46.002cb-1Cb
					CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
					TITLE:- COVER	
					D S CAT NUMBER	DRAWING NUMBER 172.46.008
ISSUE	DATE	NATURE OF AMENDMENTS				



1. RELATIVE TO CENTRE PERMISSIBLE ARE:

- RUN OUT OF SURFACE $\phi 15$ П; $\phi 20$ П; $\phi 20$ Д, NOT EXCEEDING 0.02mm
- RUN OUT OF SURFACE $\phi 18$ П, 18.575 AND FACE "B" NOT EXCEEDING 0.05mm;
- RUN OUT OF THREAD (BEFORE THREADING) NOT EXCEEDING 0.1mm.
- RUN OUT OF OTHER SURFACES NOT EXCEEDING 0.2mm

2. SHIFTING OF CENTRE HOLE $\phi 2.5$ RELATIVE TO COMPONENT AXIS NOT EXCEEDING 0.2mm.

3. TO BE HARDENED HARDNESS HB 341-285 (DIA OF INDENTATION 3.3±3.6) HARDNESS IS TO BE CHECKED ON BLANK.

4. INVOLUTE SPLINES CAN BE CHECKED ON INTERCHANGEABILITY WITH COMPLEX GAUGE CHECKING AS PER GOST 6528-53.

5. ON SURFACE $\phi 15$ П GROOVE FOR COMING OUT OF GRINDSTONE IS ALLOWED. DEPTH OF GROOVE SHOULD NOT EXCEED 0.25mm WIDTH NOT EXCEEDING 2mm.

6. AT THE TIPS OF ALL TEETH OF INVOLUTE SPLINES THERE SHOULD BE CHAMFER (FLANK) ON BOTH SIDES, SPECIFIED IN GOST 6033-51

7. INSTEAD OF CHECKING RUN OUT OF $\phi 18$ П AND $\phi 18.575$, SPLINES MAY BE CHECKED BY COMPLEX GAUGE CENTRED AS PER $\phi 20$ AND MANUFACTURED AS PER MINIMUM DIMENSIONS OF MATING COMPONENT

8. TO BE MARKED WITH ALIDIC STAMP.

9. USE OF WIRE 1.047±0.00025mm IS ALLOWED IN THIS CASE = 18.575 - 0.07 - 0.12 mm.

Module	m	1.5
Number of teeth	z	12
profile angle of basic rack	α_d	20°
Reference diameter	A_d	18
Addendum modification shift	X	+0.25
Tooth thickness along reference circle arc	S	2.645

Module	m	1.5	Nominal tooth space width along reference circle chord of gauge system
Number of teeth	z	12	
profile angle of basic rack	α_d	20°	
Reference diameter	A_d	18	
Addendum modification shift	X	+0.25	
Tooth thickness along reference circle arc	S	2.645	

EXPLANATORY NOTE:-

- REFERENCE MATERIAL QUOTED:- CHROME SILICON STEEL BAR TO GOST 4543-71.

a) CHEMICAL COMPOSITION:-

Gde OF STEEL	C	Si	Mn	Cr	Ni	S	P	Cu
38 XC	0.34 0.42	1.00 1.40	0.30 0.60	1.30 1.60	0.30	0.035	0.035	0.30

b) MECHANICAL PROPERTIES:-

Gde OF STEEL	HEAT TREATMENT				YIELD POINT Kgf./mm ²	ULTIMATE TENSILE STRENGTH Kgf./mm ²	ELONGATION % (mm)	REDUCTION IN AREA %	IMPACT STRENGTH Kgm./cm ²	LIMITING RULING SECTION	
	HARDENING		TEMPERING								
	1st HARDENING °C	2nd HARDENING °C	COOLANT	TEMPERATURE °C							
38 XC	900	-	OIL	630	WATER OR OIL	75	95	12	50	7	25

ALT. MATL:- STEEL B17M 40 (En24)
TO BS. 970 Pt-1-1983

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

EST. WT.
0.165
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	CHD	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMS UNLESS OTHERWISE STATED	ALL THREADS CONFORM TO	DATE	NATURE OF AMENDMENTS	MATERIAL:- STEEL 38XC GOST 4543-71.	USED ON:- 172.46.002 C5-1
11A	31.10.05	11A	31.10.05	11A	31.10.05	11A	31.10.05	11A	31.10.05	11A	31.10.05	11A
11	21-12-88	11	21-12-88	11	21-12-88	11	21-12-88	11	21-12-88	11	21-12-88	11
10	21-12-88	10	21-12-88	10	21-12-88	10	21-12-88	10	21-12-88	10	21-12-88	10
9	21-12-88	9	21-12-88	9	21-12-88	9	21-12-88	9	21-12-88	9	21-12-88	9

TITLE:

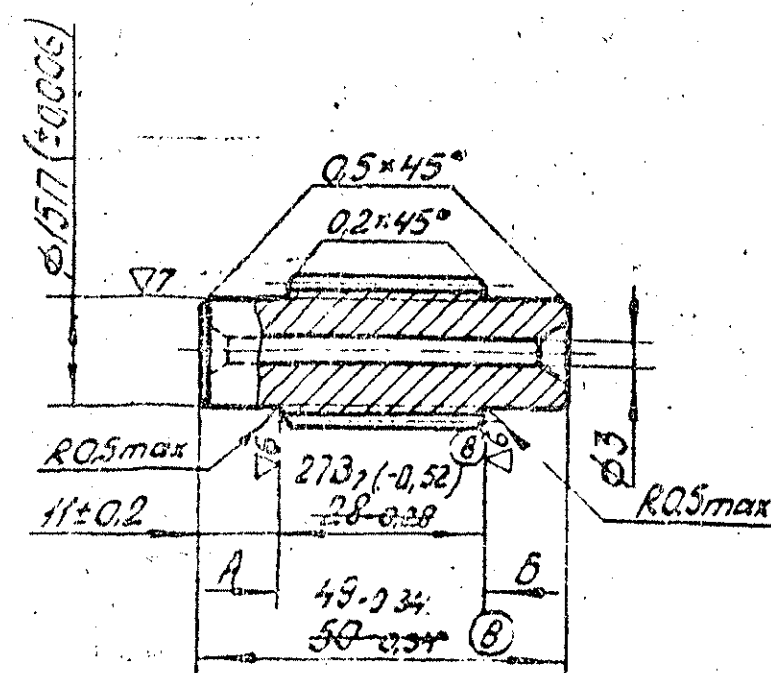
SHAFT DRIVING

D S CAT NUMBER

DRAWING NUMBER

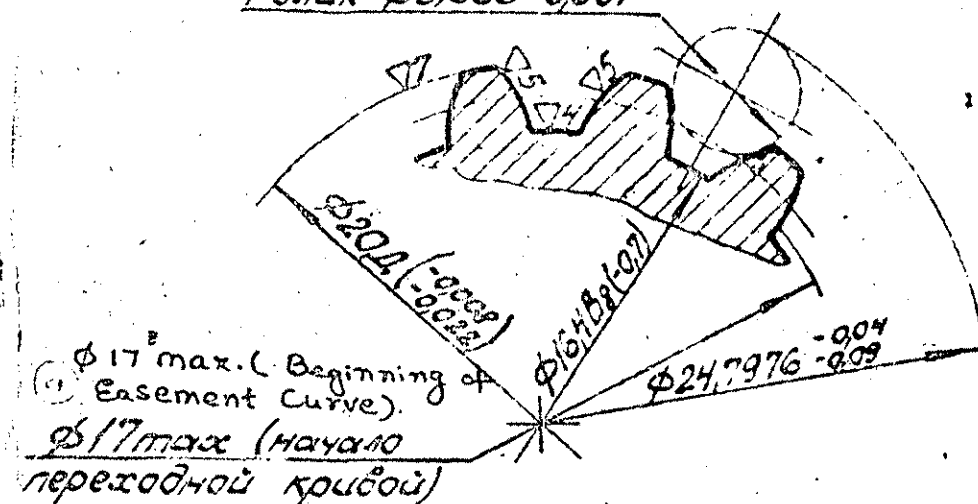
172.46.009

DRAWING NUMBER
172.46.010



Profile of involute splines 38.20x1.5x12A
Профиль эвольвентных шлицов 38.20x1.5x12A S30X M5:1
1:5:1

PIN $\phi 3.666 \pm 0.001$
Родик $\phi 3.666 \pm 0.001$



BASIC PARAMETERS	MODULE	M	1.5	REFERENCE FOR CHECKING	NOMINAL TOOTH OF THE WIDTH (ALONG THE CIRCUMFERENCE CIRCLE CHORD) SIZE 2.645.
	NO. OF TEETH	Z	12		
	PROFILE ANGLE OF BASIC RACK	α_d	30°		
	REFERENCE DIAMETER	d_d	18		
	ADDENDUM MODIFICATION SHIFT	X	+ 0.25		
	TOOTH THICKNESS ALONG REFERENCE CIRCLE ARC	S	-0.03 2.645 -0.07		
REFERENCE FOR CHECKING					DIMENSION $\phi 17$ MAX TO BE CHECKED BY COMPLEX GAUGE.

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

EST. WT.	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
0.07	
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R. OUTSIDE R. INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.	

- RUN-OUT OF SURFACE $\phi 15$ RELATIVE TO SURFACE $\phi 20$ SHOULD NOT EXCEED 0.04mm.
- TO BE HARDENED HARDNESS HB 341 TO 285 (DIAMETER OF INTENDATION 3.3 TO 3.6) HARDNESS IS TO BE CHECKED ON BLANK.
- SPLINES CAN BE CHECKED BY SPLINE GAUGE CHECKING SHOULD BE AS PER GOST 6528-53.
- GROOVES ON SURFACE $\phi 15$ FOR COMING OUT OF GRIND STONE IS ALLOWED. DEPTH OF GROOVE SHOULD NOT EXCEED 0.25mm. WIDTH SHOULD NOT EXCEED 2 mm.
- ON THE TIPS OF ALL THE TEETH THERE SHOULD BE CHAMFER (FLANK), SPECIFIED IN GOST 6033-51.
- ON FACES, THERE SHOULD BE CENTRE HOLES A_3 , 15 GOST 14034-74.

EXPLANATORY NOTE:-

7 REFERENCE MATERIAL QUOTED:- CHROME SILICON STEEL BAR TO GOST 4543-71 Gde 38XC.

a) CHEMICAL COMPOSITION:-

STEEL Gde	CONTENT OF ELEMENTS %							
	C	Si	Mn	Cr	Ni	S	P	Cu
38XC	0.34	1.00	0.30	1.30	0.30	0.035	0.035	0.30
	0.42	1.40	0.60	1.60				

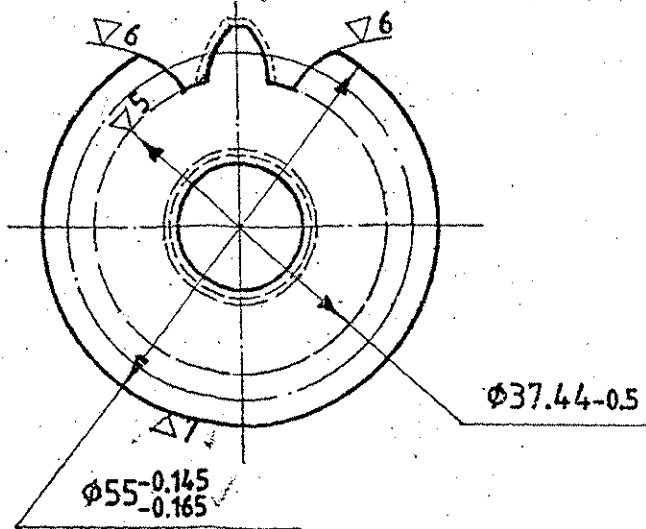
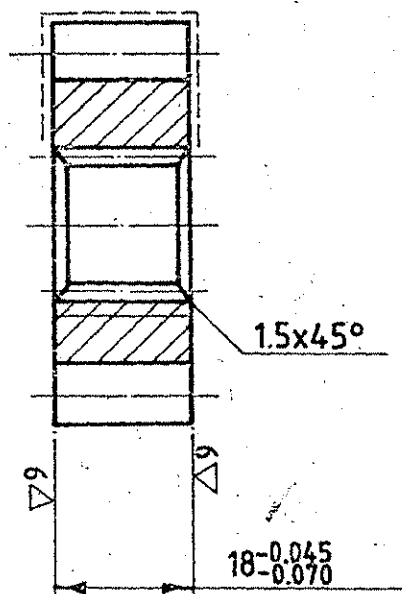
b) MECHANICAL PROPERTIES:-

STEEL Gde	HEAT TREATMENT					YIELD POINT Kgf/mm ²	U T S Kgf/mm ²	ELONGATION % (min)	REDUCTION IN AREA %	IMPACT STRENGTH Kgm/cm ²	LIMITING RULING SECTION mm
	HARDENING		TEMPERING								
	1st HARDENING °C	2nd HARDENING °C	COOLANT	TEMPERATURE °C	COOLANT						
30XC	900	--	OIL	630	WATER OR OIL	75	95	12	50	7	25

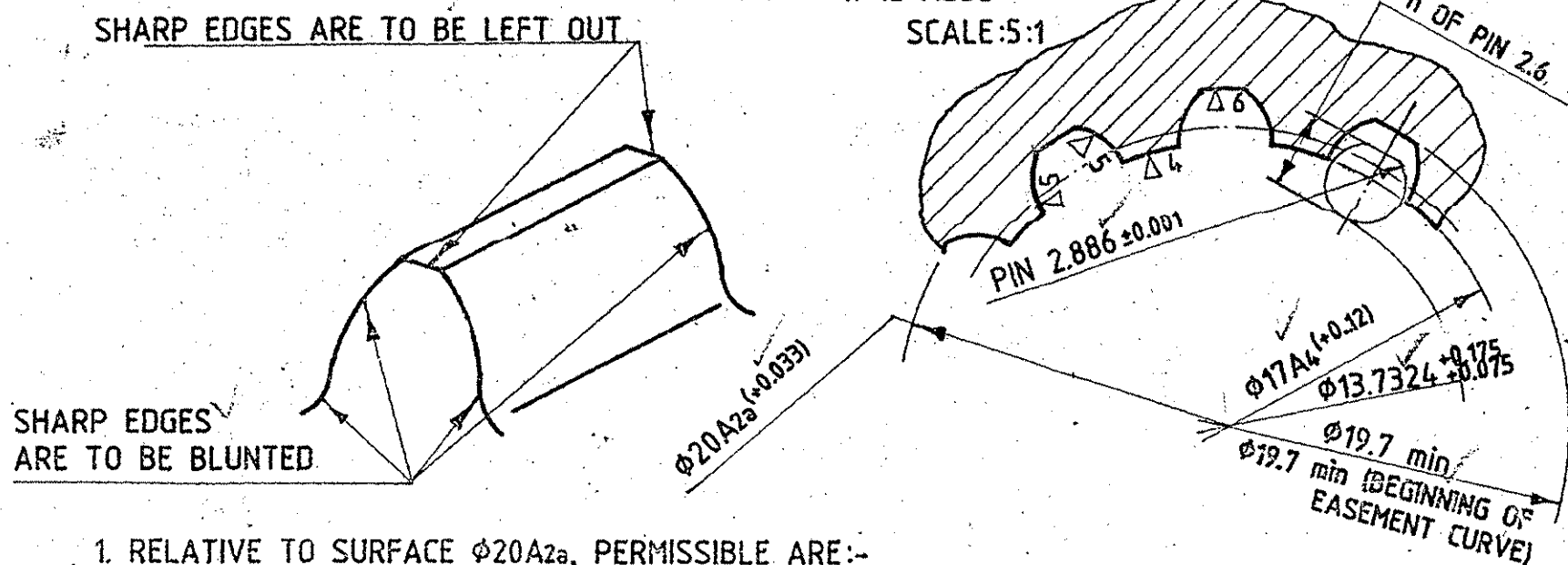
(8A) ALT. MATL:- STEEL 817M40 (En24)
TO BS. 970 Pt-1-1983

DRN	31.10.05	MATERIAL:-	USED ON:-
CHD	31.10.05	STEEL 38XC	172.46.002 CB-1
TCO	31.10.05	GOST 4543-71.	
APPD	31.10.05	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES)	
DATE	16-12-95	AVADI	
SCALE: 1:1		TITLE: DRIVEN SHAFT	
DIMENSIONS IN mm			
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.		D S CAT NUMBER	DRAWING NUMBER
ALL THREADS CONFORM TO			172.46.010
ISSUE	DATE	NATURE OF AMENDMENTS	

DRAWING NUMBER
172.46.013



PROFILE OF INTERNAL INVOLUTE SPLINES 36.20x13.
x 12 AS3a



1. RELATIVE TO SURFACE $\phi 20A_{2a}$, PERMISSIBLE ARE:-
 - a) RUN OUT OF TIPS OF TEETH NOT EXCEEDING 0.015mm.
 - b) END PLAY NOT EXCEEDING 0.02mm.
2. NON PARALLELISM OF FACES BETWEEN EACH OTHER EXCEEDING 0.01mm.
3. -----
TO BE CARBURISED ALL OVER EXCEPT FACES UPTO $\phi 25$ AND SPLINE HOLES. CARBURISATION DEPTH AFTER GRINDING SHOULD BE 0.8 TO 1.2mm TOOTH PROFILE SHOULD BE GROUND TO A DEPTH NOT EXCEEDING 0.3mm (ENSURED IN TECHNOLOGY)
4. TO BE HEAT TREATED.
5. HARDNESS OF CARBURISED SURFACES HRC 58 SHOULD BE CHECKED AT THE TOOTH TIP:
 - a) CORE HARDNESS HRC 35 TO 45.
 - b) CORE HARDNESS AND CARBURIZATION DEPTH ARE TO BE CHECKED BY TEST PIECES.
6. BEARING PATTERN OF TOOTH WHILE BEING IN ENGAGEMENT WITH STANDARD GEAR AT LEAST.
 - a) 65% OF TOOTH LENGTH.
 - b) 60% OF TOOTH DEPTH.
7. END FACES ARE TO BE LAPPED, BLUEING AS PER GAUGE SHOULD BE ATLEAST 75%.
8. FOR FINALLY FINISHED COMPONENT SURFACES, TO BE GROUND, SHOULD BE CHECKED BY MAGNOFLUX FOR ABSENCE OF LAMINATION CRACKS, HAIR LINE CRACKS AND NON-METAL INCLUSIONS.
9. COMPONENT SHOULD BE UNGAMNETIZED.

10. ORDINAL NUMBER MAY BE MARKED ON THE TOOTH SPACE BY ACID WITH SUBSEQUENT NEUTRALISATION.
11. SPLINES SHOULD BE CHECKED FOR INTERCHANGEABILITY BY SPLINE GAUGE. TO BE CHECKED AS PER GOST 6528-53.
12. ACTIVE FLANK SHOULD BE ENSURED BEGINNING FROM $R=21\text{mm}$ MAXIMUM IN THIS CASE, IN PLACE OF COMING OUT OF GRIND STONE, SHOULDER IS ALLOWED.
13. COUNTER SINKING OF SPLINE HOLES AT AN ANGLE OF 120° UP TO $\phi 22\text{mm}$ IS ALLOWED IN STEAD OF CHAMFERS 1.5 TO 45° .
14. MAY BE MANUFACTURED FROM STEEL 20x2H4A - GOST 4543-71.

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

EST. WT. 0.195	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 OUT- SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE	

MODULE			m	4	REFERENCE DIAMETER	ϕ	44
NUMBER OF TEETH			Z	11	ADDENDUM	h'	5.5 ATLEAST
BASIC RACK	PROFILE ANGLE		$\angle$	20°	DEDENDUM	h''	3.28
	COEFFICIENT OF	$\odot$ ADDENDUM $\ominus$ DEDENDUM	f'	1	BASE TANGENT LENGTH	L	19.36 0.07
		$\odot$ ADDENDUM $\ominus$ DEDENDUM	f''	1.2	TOLERANCE FOR BASE TANGENT LENGTH	δoL	0.017
	FILLET RADIUS		r_f	± 0.2	MAXIMUM DEVIATION IN CENTRE DISTANCE	ONE REVOLUTION OF GEAR FOR ONE TOOTH	$\delta o\alpha$
ADDENDUM MODIFICATION CO-EFFICIENT			ξ	+0.38		$\delta \rho_a$	0.045
ACCURACY AS PER GOST 1643-56				7	TOTAL ERROR OF DISTORTION	δB_0	0.017

DATA OF SPLINE HOLE

BASIC	MODULE	m	1.5
	NUMBER OF TEETH	Z	12
	PROFILE ANGLE OF BASIC RACK	α	30°
	REFERENCE DIAMETER	D	18
	ADDENDUM MODIFICATION SHIFT	X	+0.25
	TOOTH SPACE ALONG ARC OF REFERENCE CIRCLE CHORD	S	$2.645^{+0.07}_{+0.03}$
REFERENCE FOR CHECKING	NOMINAL TOOTH THICKNESS (ALONG REF. CIRCLE) OF COMPLEX GAUGE 2.645.		
	DIMENSION ϕ 19.7 mm SHOULD BE CHECKED BY COMPLEX GAUGE.		

EXPLANATORY NOTE:-

15. REFERENCE MATERIAL QUOTED: CHROME NICKEL HIGH QUALITY
CASE HARDENING STEEL GRADE 20x2 H4A. GOST 4543-71.

a) CHEMICAL COMPOSITION:-

STEEL GRADE	CONTENT OF ELEMENTS %						
	C	Si	Mn	Cr	Ni	S	P
20x2 H4A	0.16	0.17	0.30	1.25	3.25	MAXIMUM	
	0.22	0.37	0.60	1.65	3.65	0.030	0.030

b) MECHANICAL PROPERTIES:-

STEEL GRADE	HEAT TREATMENT					YIELD POINT Kgf/mm ²	U T S Kgf/mm ²	ELONGATION % (min)	REDUCTION IN AREA %	IMPACT Kgm/cm ²	LIMIT RULING SECTION
	HARDENING			TEMPERING							
	TEMPERATURE		COOLANT	TEMPERATURE °C	COOLANT						
	FIRST HARDENING °C	SECOND HARDENING °C									
20x2 H4A	860	780	OIL	180	WATER OR OIL	110	130	9	45	8	15

(9B) ALT. MATL:- STEEL 835M15 (En39B)
TO BS:970 Pt-1-1983

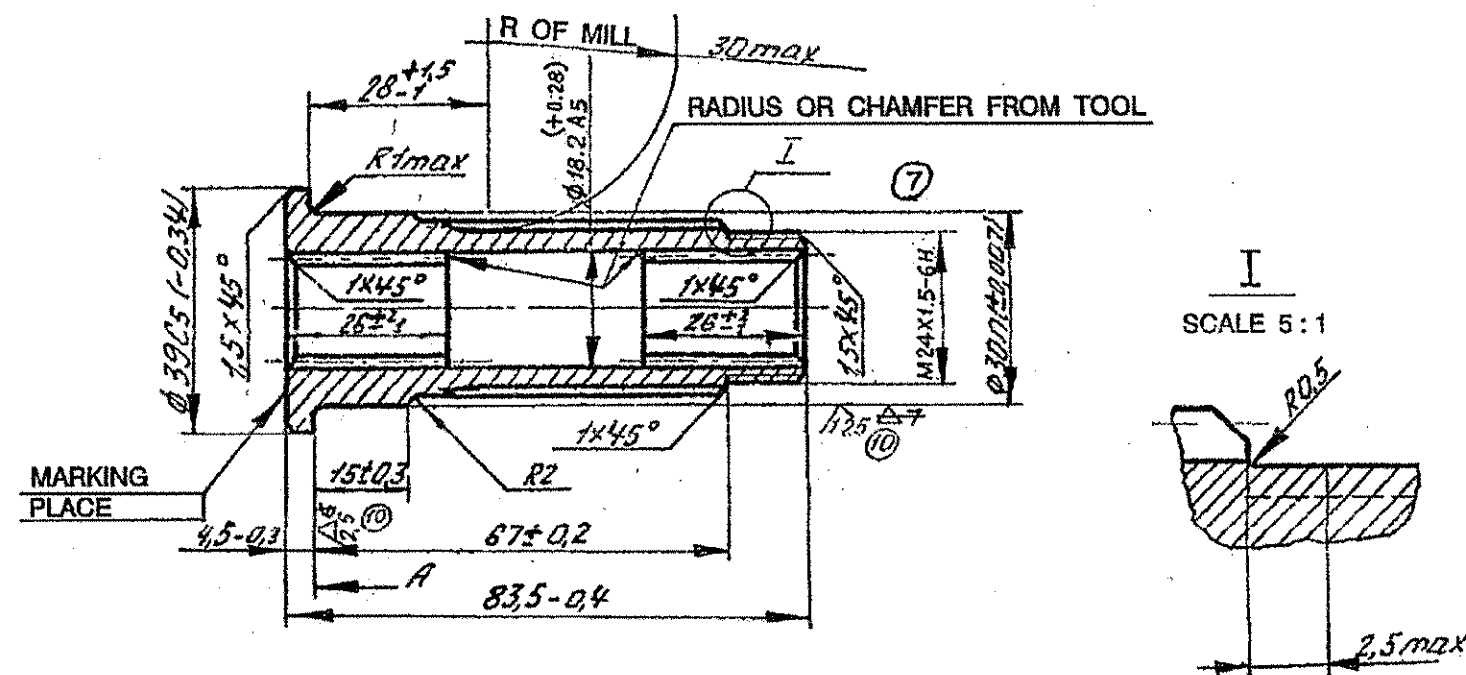
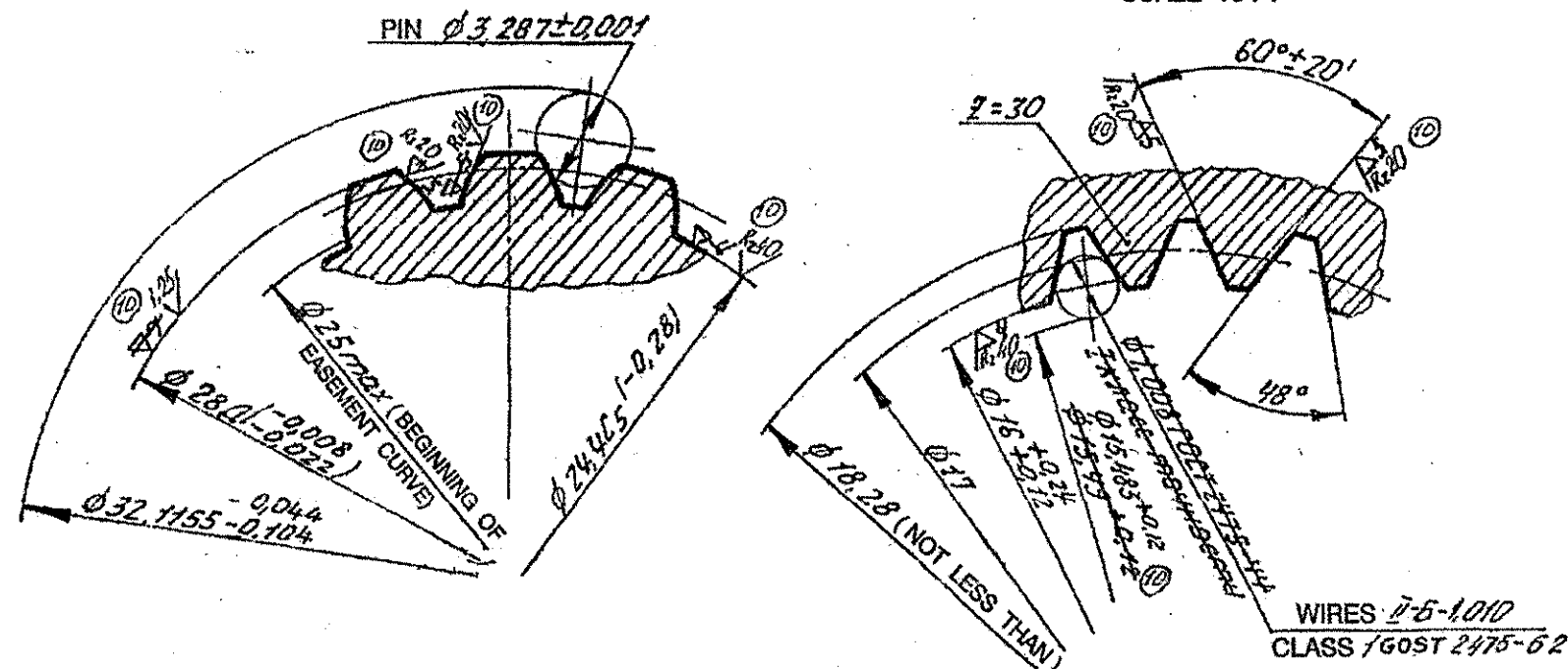
			DRN	N 804	MATERIAL:	STEEL 20x2H4A	USED ON	172.46.002 C5-1
			CHD	Chattanooga		GOST 4543-71		
			TCO	Marine pump				
			APPD	For				
			DATE	11-12-88	CONTROLLERATE OF INSPECTION(HEAVY VEHICLES)			
			SCALE:-	1:1	AVADI			
			DIMENSIONS IN	mm		TITLE: GEAR OF		
			TOLERANCE ON DIMMS	UNLESS OTHERWISE		SUCTION PUMP		
			STATED.					
9B	31.10.05	Authy: Lt No. 80001/CQA(HV)/GEN.dt. 7.10.05	ALL THREADS		D S CAT NUMBER		DRAWING NUMBER	
9A	28.6.89	00 CORRECTION	CONFORM TO				172.46.013	
ISSUE	DATE	NATURE OF AMENDMENTS)						

DRAWING NUMBER
172.46.014

SHEET No. 1 OF 1

UNLESS OTHERWISE SPECIFIED

Rz 80 ✓(✓)

PROFILE OF INVOLUTE SLOTS
36 28x15x18.25 32 X
SCALE 5:1PROFILE OF INTERNAL TRIANGULAR SPLINES
SCALE 10:1

BASIC PARAMETERS	MODULE	<i>m</i>	1.5	FOR CHECKING	NOMINAL TOOTH SPACE WIDTH (ALONG REFERENCE CIRCLE CORD)
	NUMBER OF TEETH	<i>Z</i>	18		
	ANGLE OF BASIC RACK	<i>α</i>	30°		
	REFERENCE DIAMETER	<i>d</i>	27	FOR REFERENCE	DIMENSION MAX. Ø 25 MM BE CHECKED BY COMPLEX GAUGE
	ADDENDUM MODIFICATION SHIFT	<i>x</i>	-0.25		
	TEETH THICKNESS ALONG REFERENCE CIRCLE CORD	<i>s</i>	2.067 -0.03 -0.07		

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

EST. WT. (Kg)	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
0.31 /	
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.	

- RELATIVE TO Ø 28, PERMISSIBLE ARE :-
 - RUN - OUT OF Ø 30 NOT EXCEEDING 0.02 mm.
 - RUN - OUT OF Ø 15.49 AND FACE "A" NOT EXCEEDING 0.05 mm.
 - RUN - OUT OF Ø 15.483 AND FACE "A" NOT EXCEEDING 0.05 mm.
 - RUN - OUT OF OTHER SURFACES NOT EXCEEDING 0.2 mm.
- GROOVE FOR COMING OUT OF GRIND STONE WITH DEPTH NOT EXCEEDING 0.25 mm AND WIDTH NOT EXCEEDING 2 mm IS ALLOWED ON SURFACE Ø 30 INSTEAD OF RADIUS R MAX 1 mm.
- TO BE HARDENED HARDNESS HB 341 - 285 (DIA OF INDENTATION 3.3 TO 3.6) HARDNESS IS TO BE CHECKED OF BLANK.
- INVOLUTE SPLINES SHOULD BE CHECKED FOR INTERCHANGEABILITY WITH COMPLEX GAUGE TO BE CHECKED AS PER GOST 6528 - 53.
- CHAMFERS (FLANKS) SHOULD BE MADE ON THE TIPS OF ALL TEETH ON BOTH SIDES AS SPECIFIED IN GOST 6033 - 51.
- TRIANGULAR SPLINES MAY BE CHECKED BY COMPLEX GAUGE CENTERED WITH RESPECT TO Ø 2811 (MANUFACTURED AS PER MAXIMUM DIMENSIONS OF THE MATING PARTS INSTEAD OF CHECKING AS PER POINT 16).
- TO BE MARKED WITH ACID STAMP.
- TRACES FROM BROACHING IS ALLOWED ON SURFACES Ø 18.2 A5 INSTEAD OF CHAMFERS 1x45° AT THE END FACES CHAMFER 1x60° IS ALLOWED.
- USE OF WIRE 1.008 ± 0.00025 mm IS ALLOWED BY DOING SO Ma = 15.49 ± 0.12 mm.

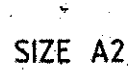
(11B) ALT. MATL. :- STEEL 817M40 (En 24) TO BS : 970 Part 1 : 1983

188.45.001cb-3Cb (11A)

DRN	Sd / =	MATERIAL :-	USED ON :-
CID	Sd / =	STEEL 38XC -	175.45cbCb
APPD	Sd / =	GOST 4543 - 71	172.45.060cbCb
DATE	22 - 02 - 88	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE	1 : 1	TITLE :- SHAFT, PUMP DRIVE	
DIMENSIONS IN mm			
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
ALL THREADS TO CONFORM TO IS : 4218 Pt. IV			
11B 07.07.06 AUTHY.LLNo.80001/CQA(HV)/GEN/DL15.10.05		DRAWING NUMBER 172.46.014	
11A 25.10.04 N OF A No. CQA(HV)/T90/45/001			
11 21.12.88 AMDT. LIST No.6/II BOOK - 8.			
ISSUE	DATE	NATURE OF AMENDMENTS	

COMMON TO T-90
(BAYAVELU), JTDID
01-08-06COMMON TO T-90
DRG. RE INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 10F-87
30
SIZE A2

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE-7



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

EXPLANATORY NOTE:-

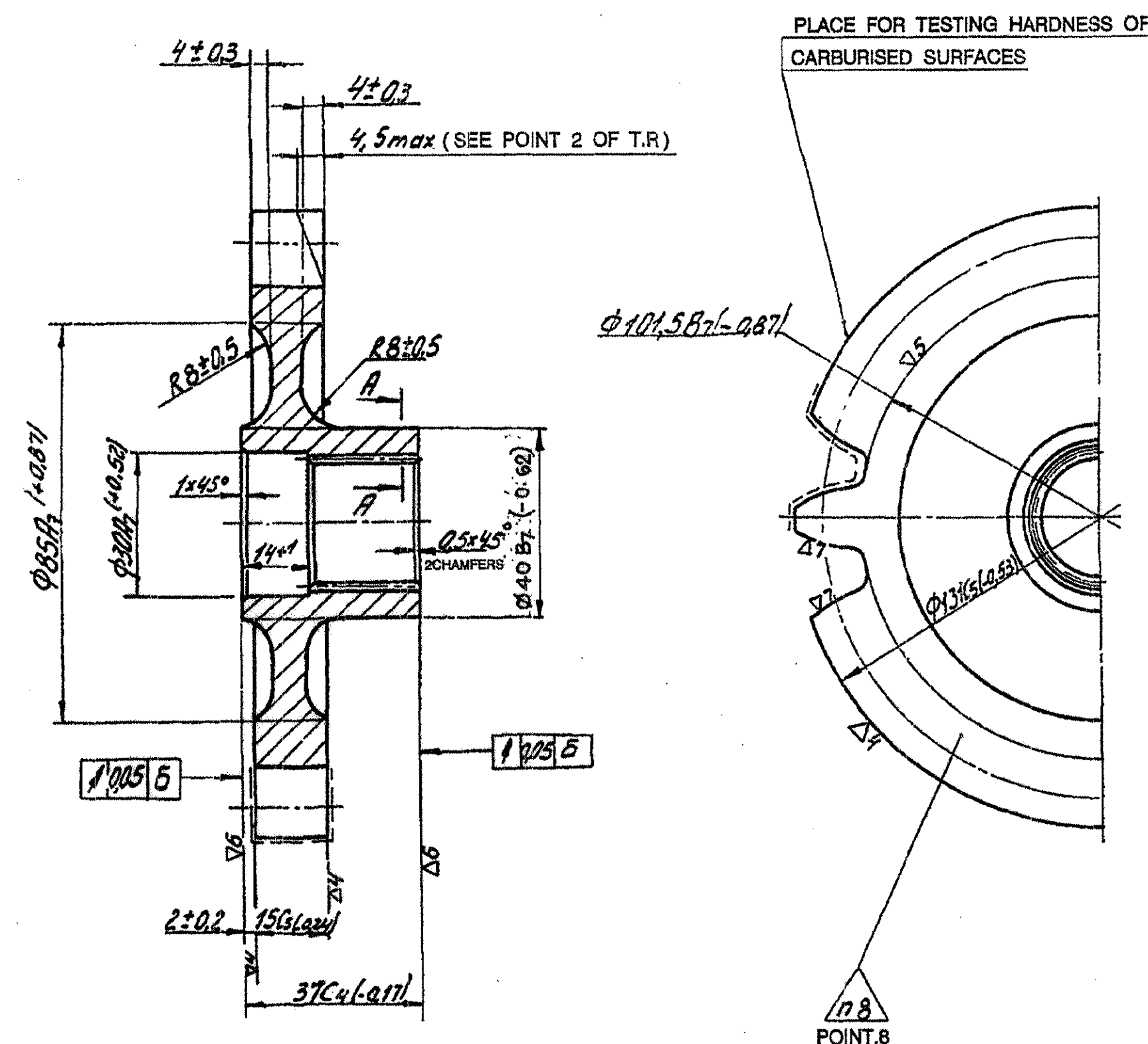
a.) CHEMICAL COMPOSITION:-

b) MECHANICAL PROPERTIES:-

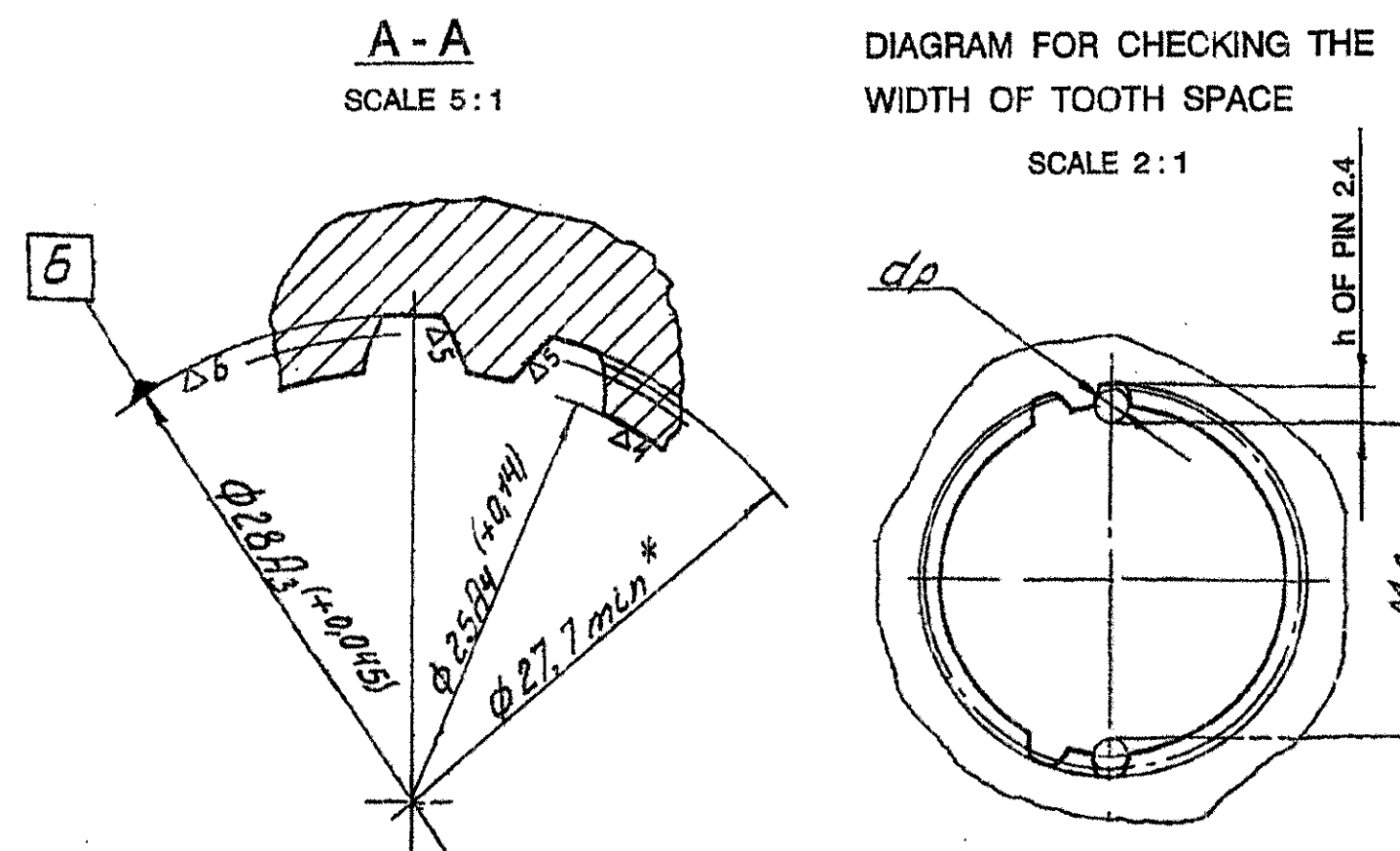
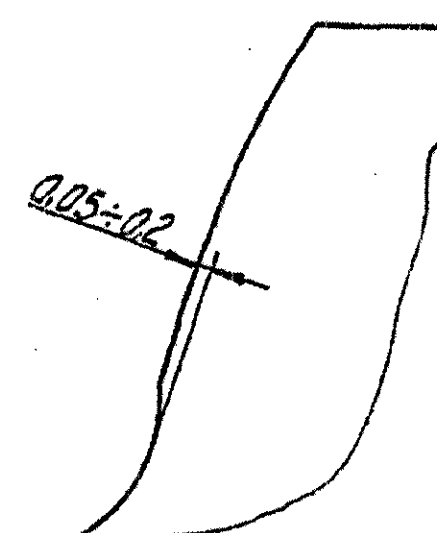
II. COATING: REFERENCE NOTE 6. ZINC COATING 6-12 MICRONS
AND CHROMATIZING TO B5:3382 - PART II.

7A ALT. MATL:- STEEL 817M40 (En24)
TO BS. 970 Pt-1-1983

			QRN	N80th	MATERIAL:	USED ON:
			CHD	Blattachin	STEEL 38XC	172-46-002 C6-1
			ICD	Narava Pull	4543-71	
			APPD	Von 18	CONTROLLERATE OF INSPECTION(HEAVY VEHICLES AVADI	
			DATE	18-12-85		
				SCALE: 1:1	 TITLE: NUT	
				DIMENSIONS IN mm		
				TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.		
				ALL THREADS CONFORM TO		
7A	31.10.05	Hy: Lt No. 8000/CRA(V)/GEN. dt. 7.10. 05			D S CAT NUMBER	DRAWING NUMBER
ISSUE	DATE	NATURE OF AMENDMENTS.				172.46.025



SCALE 5 : 1



CONVENTIONAL DESIGNATION OF HOLES AS PER GOST 8033 - 51	$26 \pm 28 \times 1.5 \times 18 \text{ A}_3 \text{ S}_{20}$	
MODULE	m	1.5
NUMBER OF TEETH	Z	18
DIAMETER OF PINS	d_p	2.595
DISTANCE OVER PINS	M_A	$22.58 \begin{smallmatrix} +0.194 \\ +0.07 \end{smallmatrix}$
TOOTH - SPACE WIDTH ALONG REFERENCE CIRCLE CHORD	S_2	$2.067 \begin{smallmatrix} +0.07 \\ +0.03 \end{smallmatrix}$
DIAMETER OF REFERENCE CIRCLE	d_d	27

MODULE			m	7
NUMBER OF TEETH			Z	17
BASIC RACK	PROFILE ANGLE		20°	20°
	COEFFICIENT OF	ADDENDUM	$\frac{1}{P}$	1
		DEDENDUM	$\frac{1}{P^2}$	1.25
	FILLET RADIUS		r_f	1.2 - 0.2
ADDENDUM MODIFICATION COEFFICIENT			ξ	0
ACCURACY AS PER GOST 1643 - 56			—	Cr-7
TOLERANCE FOR COMPOSITE ERROR DOUBLE FLANK			Δa	+0.060 -0.168
TOTAL COMPOSITE ERROR DOUBLE FLANK			$\delta_{\Sigma a}$	0.105
TOOTH-TOOTH COMPOSITE ERROR DOUBLE FLANK			$\delta_{\gamma a}$	0.060
TOLERANCE FOR BASE TANGENT LENGTH			$\delta_{\Sigma L}$	0.030
TOLERANCE FOR BASE PITCH			Δt_0	± 0.022
TOTAL ERROR OF DISTORTION			$\delta_{\Sigma b}$	0.017
BASE CIRCLE DIAMETER			d_0	107.85
INVOLUTE RADIUS AT THE START OF PROFILE WORKING SECTION			ρ_0	10.13 MAX
TOLERANCE FOR PROFILE			δ_f	0.026
BASE TANGENT LENGTH			L	53.059 - 0.1
MATING PART			175.45.005	

1. ----- TO BE CARBURIZED :
- a) ON GROUND SURFACES OF TEETH (AFTER GRINDING) h 1.3 MM, ON SURFACES OF TEETH h 1.9 MM.
- b) CARBURIZATION MAY BE DONE ALL OVER, EXCEPT ON FACES OF HUB AND SLOTS.
- b) HARDNESS OF CARBURIZED SURFACES AFTER GRINDING HRC ≥ 58 ;
- c) HARDNESS OF CORE - HRC 35 TO 45.
2. TO CHECK THE DEPTH OF CARBURIZATION AND HARDNESS OF CORE, GRINDING SHOULD BE DONE ONE TOOTH OR ON TWO DIAMETRICALLY OPPOSITE TEETH ON ANY SIDE.
3. BEFORE HEAT TREATMENT, SHARP EDGES OF THE FACES OF TEETH SHOULD BE ROUNDED OFF WITH $R_1^{+0.5}$ OR BY MAKING CHAMFERS $1^{+0.5} \times 45^\circ$.
4. RUN - OUT OF SURFACES RELATIVE TO DATUM SURFACE "5" SHOULD NOT EXCEED 0.3 MM.
5. SPLINES TO BE CHECKED FOR INTERCHANGEABILITY SPLINE GAUGE.
6. SPLINES HOLE MAY BE COUNTERSUNK AT AN ANGLE OF 120° INSTEAD OF CHAMFER $0.5 \times 45^\circ$.
7. INCREASE IN DISTANCE OVER PINS MAY BE PINS UP TO 0.03, BEYOND TOLERANCE IS ALLOWED FOR THREE PAIRS OF SPLINES.
8. TO BE MARKED.
9. * DIMENSION FOR REFERENCE.

EXPLANATORY NOTE :- (L1)

REFERENCE MATERIAL QUOTED : STEEL 20X2H4A GOST 4543 - 71
STRUCTURAL CHROMIUM ALLOY HIGH QUALITY STEEL GRADE 20X2H4A
MANUFACTURED IN ACCORDANCE WITH GOST 4543 - 71.
CHEMICAL COMPOSITION AS PER GRADE 20X2H4A GOST 4543 - 71.

CONTENT OF ELEMENTS %					PROPORTION OF ELEMENTS % MAX				
C	Si	Mn	Cr	Ni	P	S	Cu	Ni	C
0.16 - 0.22	0.17-0.37	0.3 - 0.6	1.25 - 1.65	3.25 - 3.65	0.025	0.025	0.30	0.30	0.30

MECHANICAL PROPERTIES AS PER GRADE 20X2H4A GOST 4543-71

YIELD POINT Kgf/mm ²	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	REDUCTION IN AREA %	IMPACT STRENGTH Kgf/cm ²
MINIMUM				
110	130	9	45	8

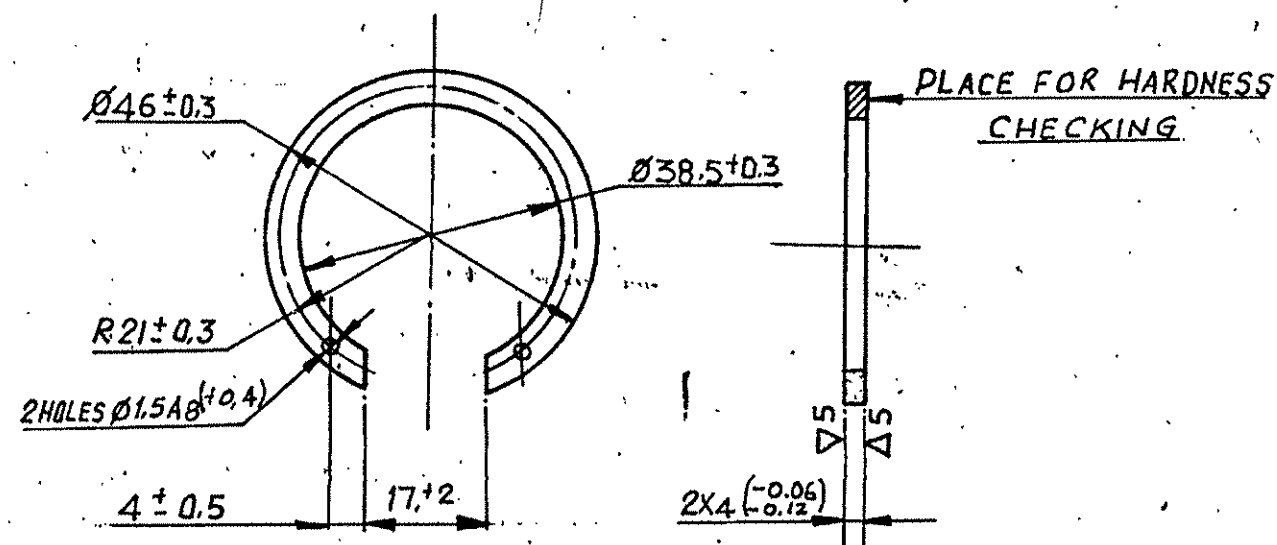
(2B) ALT. MATL. :- STEEL 835 M15 (En 39B) TO BS : 970 Part 1 : 1983

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.		DRN Sd / = CHD Sd / = APFD Sd / = DATE 05-03-88 SCALE: 1:1 DIMENSIONS IN mm TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69		MATERIAL:- STEEL 20X2H4A GOST 4543-71 USED ON:- 188.45.001cb-3CL 172.45.080cbCb 175.45.65- (2A)	
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
EST. WT. (Kg) TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)		2B 07.07.06 AUTHY.LI.No.80001/CQA(HV)/GEN/DI.15.10.05 2A 25.10.04 N OF A No. CGA(HV)/T90/45/001 L1 02.08.89 EXPLANATORY NOTE ADDED ISSUE DATE NATURE OF AMENDMENTS		 TITLE:- GEAR PUMP DRIVE	
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE		ALL THREADS TO CONFORM TO		D S CAT NUMBER DRAWING NUMBER 175.46.001	

DRAWING NUMBER:

172.46.011

EXPLANATORY NOTE:-



1. DIFFERENCE IN WIDTH OF RING SHOULD NOT EXCEED 0.5mm.
2. LACK OF FLATNESS OF RING (BEFORE CUTTING) MAY NOT EXCEED 0.1mm.
3. BURRS AND SHARP EDGES ARE NOT ALLOWED.
4. TO BE HARDENED. HARDNESS HRC 35 TO 49.
5. AFTER CUTTING, THE RING, DECREASE IN HARDNESS BY 3 UNITS ON THE SECTION FROM CUT-OUT TO MOUNTING HOLES, IS ALLOWED.
6. HARDNESS IS TO BE CHECKED BEFORE GRINDING: TRACES FROM HARDNESS CHECK ARE ALLOWED IN THE FINISHED PART.
7. OXIDISING PHOSPHOTISING.
8. LACK OF FLATNESS OF RING SHOULD BE CHECKED AS PER GOST 13944-80 ⑦

⑦ 9. REFERENCE MATERIAL QUOTED: SPRING STEEL GDE. 30XΓCA-3
CATEGORY 3, TO GOST 11269-76 AND CHEMICAL COMPOSITION SUPPLIED WITH
~~GOST 11269-76~~. GOST 4543-71

a) CHEMICAL COMPOSITION:-

GRADE OF STEEL	CONTENT OF ELEMENTS %					
	C	Si	Mn	Cr	Ni	S & P (MAX)
30XΓCA-3 ⑦	0.28 0.34	0.90 1.20	0.80 1.10	0.80 1.10	1.40 1.80 ⑦	0.025

b) MECHANICAL PROPERTIES (NORMALISED CONDITION)

GRADE OF STEEL	U T S Kgf/mm ²	YIELD STRENGTH Kgf/mm ²	ELONGATION %	REDUCTION AREA %	IMPACT Kgm/cm ²	HARDNESS H B
30XΓCA-3 ⑦	110 (MIN)	85 (MIN)	10	45	5	229

10. REFERENCE NOTE-7 : PHOSPHATE TREAT AND OIL FINISH
TO IS: 3618.

⑦ ALT. MATL:- STEEL 816M40 (EN 110)
TO BS. 970 PL-1-1983

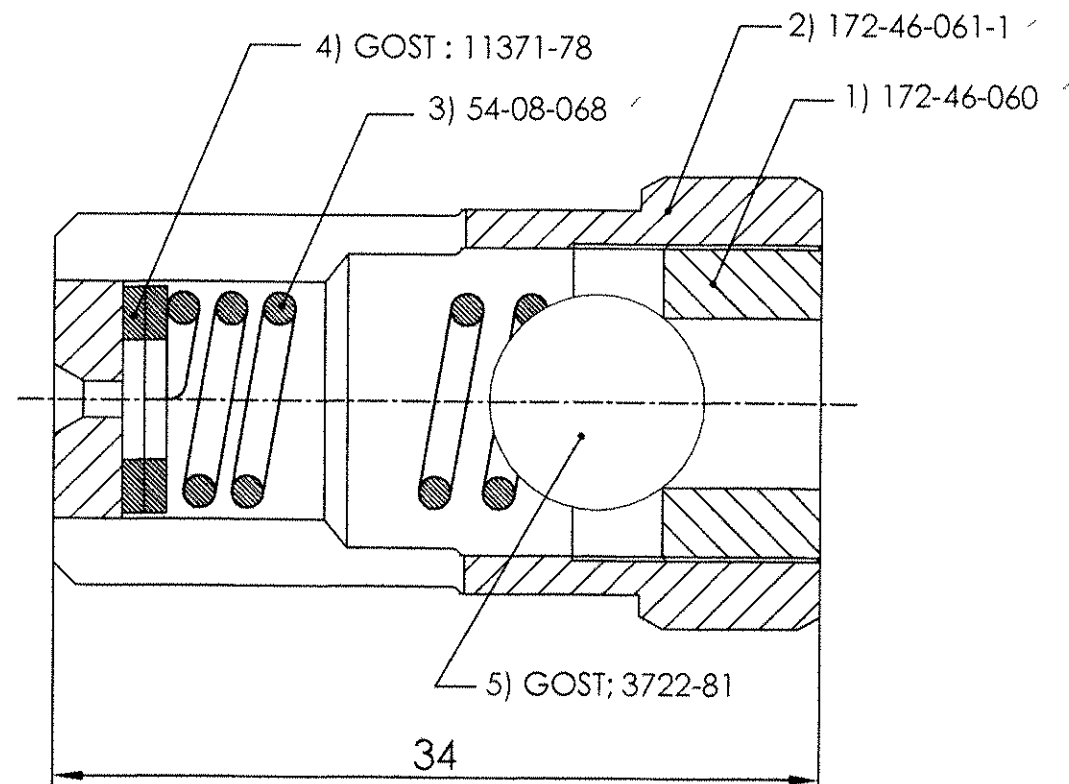
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. 0.01 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 OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	G. Narayana	MATERIAL:	STEEL 30XΓCA-3	USED ON	172.46.002 C5-1
CHD	Bhattacharya	GOST 11269-76			
TCD	m. (unhandy)				
APPD	B. (unhandy)				
DATE	19-12-85	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES)			
SCALE	1 : 1	AVADI.			
DIMENSIONS IN mm.		TITLE:			
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.					
ALL THREADS CONFORM TO		D. S. CAT. NUMBER			
		DRAWING NUMBER			172.46.011

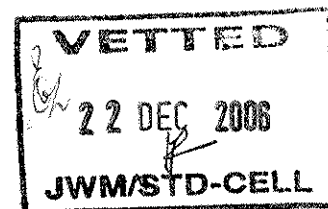
7B	24.7.08	D.O CORRECTION
7A	31.10.05	Authy: Lt. No. 80001/CRA (W)/GEN. dt. 7.10.05
7	21-12-88	AMDT LIST No. 6/II BOOK-8
ISSUE	DATE	NATURE OF AMENDMENTS.



USED ON :- 172-45-060 CD
:- 188-45-001 CD-3

TECHNICAL REQUIREMENTS :-

- BEFORE ASSEMBLY, SHARP EDGES OF VALVE SEAT ITEM 1 SHOULD BE PRESSED WITH BALL ITEM 5 TO ENSURE SNUGGING OF BALL AGAINST ITS MOUNTING FACE.
- VALVE, ASSEMBLED WITHOUT WASHER ITEM 4, SHOULD BE CHECKED IN THE STAND FOR OPENING PRESSURE 8-15 Kg/cm² WHEN THE OPENING PRESSURE OF VALVE IS LESS THAN 8 Kg/cm² VALVE MAY BE ADJUSTED WITH HELP OF INSTALLING NOT MORE THAN 2 WASHERS ITEM 4, WHEN THE VALVE IS CLOSED, OIL IS ALLOWED TO BE OVER-FLOWED AT A RATE NOT EXCEEDING 0.1 L/Min, SHOULD BE CHECKED AT A PRESSURE 6±0.5 Kg/cm² VALVE CAN BE TESTED WITH OIL, USED WHEN ASSEMBLING AND CHECKING THE PUMPS.
- AFTER ASSEMBLY AND TESTING, VALVE SEAT SHOULD BE PUNCH-LOCKED IN SLOTS. PROJECTION OF VALVE SEAT ITEM 1 FROM THE BODY OF VALVE BODY ITEM 2 IS NOT ALLOWED.
- DIMENSION FOR REFERENCE.
- PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION

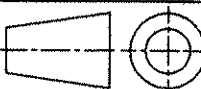


इन आरेखों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।

THE COPYRIGHT OF THESE DRAWINGS AND ALL ATTACHMENTS THERE TO BELONGS TO THE INDIAN ORDNANCE FACTORIES, MINISTRY OF DEFENCE, GOVT. OF INDIA THEY SHOULD NOT BE COPIED, REPRODUCED IN ANY WAY OR THE INFORMATION CONTAINED THEREIN MADE AVAILABLE TO UNAUTHORISED PERSONS WITHOUT THE WRITTEN PERMISSION OF THE DIRECTOR OF ORDNANCE FACTORIES

मूलमाप व अन्वयोजन
NOMINAL SIZE & FIT

विचलन
DEVIATION

5	1	GOST 3722-81	A3	BALL 9.525-60	Wx15 GOST:801-78	103 Gr.2 OR EN-31 IS:4398-72	
4	2	GOST 11371-78	A3	WASHER 05.01.016	10 KΠ GOST: 1050-74	GRADE CU Zn 37 IS:410-77	
3	1	54-08-068	A3	SPRING	WIRE III-1.4 , GOST 9389-75	WIRE Gr.3 IS:4454-81 Pt.-1	
2	1	172-46-061-1 ✓	A3	BODY, VALVE	STEEL 40 GOST 1050-74	STEEL 080M40(EN-8) BS : 970-83	
1	1	172-46-060 ✓	A3	SEAT VALVE	STEEL 38XC GOST 4543-71	STEEL817M40(EN-24) BS : 970-83	
P.No.	QTY.	DRAWING No.	SIZE	DESCRIPTION	ORIGINAL MATL.	ALTERNATE MATL	REMARKS
संख्या NO.OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS	अभ्यक्ति REMARKS	WT.= 0.05kg.
सामान्य सहिष्णुता GENERAL TOLERANCE							
रेखिक परिमाण LINEAR DIMENSION							
0-6	±0.1						
6-30	±0.2						
30-120	±0.3						
120-315	±0.5						
315-1000	±0.8						
1000-2000	±1.2						
कोणिक परिमाण ANGULAR DIMENSION	संख्या NO.OFF	संबंधित पुर्जोंका आरेखण क्र. DRG. NO. OF ASSOCIATED PART	सूचक INDEX	संशोधन ALTERATION	2006	दिनांक DATE	नाम NAME
1-10	±1°	<u>VALVE ASSY.</u> <u>TRANSMISSION GEAR UNIT</u> <u>CODE - 45 ; T-72 & T-90</u>			मापमान SCALE	आरेखित DRAWN	07-12 VML
10-50	±30'				NTS	जाँचा CHECKED	23/12 ✓
50-100	±20'					अनुमोदित APPROVED	23/12 ✓
>100	±10'						
मापोंक 'म्यू एम' में VALUE IN "um"							
~	>25	<u>मशीनी औजार आदिरूप फैक्टरी, अम्बरनाथ</u> <u>MACHINE TOOL PROTOTYPE FACTORY, AMBERNATH</u>			द्वारा बदला REPLACED BY	हेतु बदला REPLACED FOR	<u>आरेखण क्र. DRAWING NO.</u> 172 - 46 - 016 CD
▽	8-25				कार्यालय OFFICE		
▽▽	1.6-8				D.O.		
▽▽▽	0.025-1.6						
▽▽▽▽	<0.025						
							

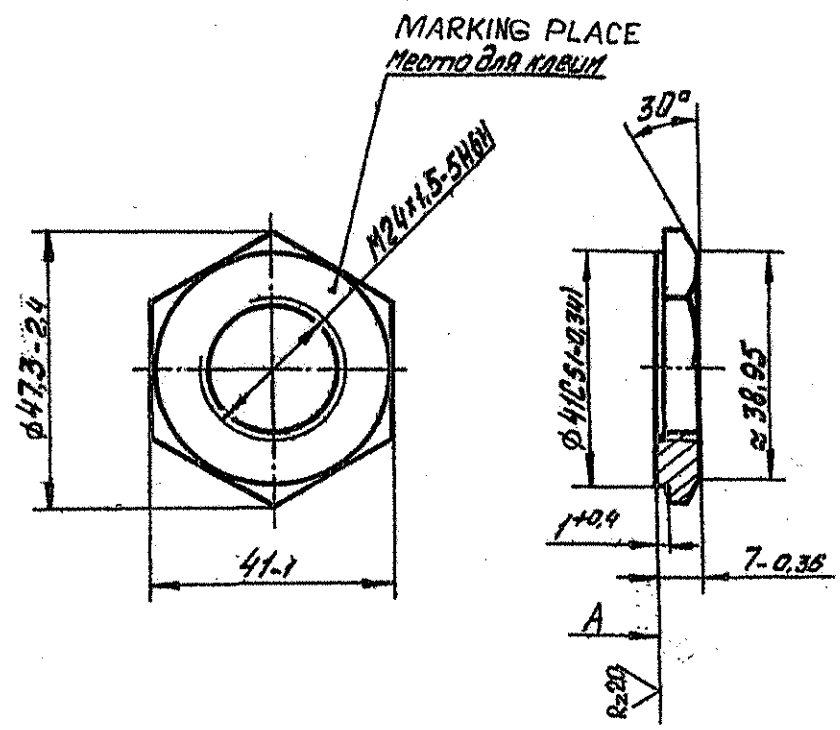
REF : ORIGINAL DRG. OF CQA (HV) DATED : 16-10-2004

FILE PATH:-D:\VML\OLD-PC\CODE-45\T-90\COMPONENTS\172-46-016 CD.DWG.

COMMON TO T-90
DRAWING RE-INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5
(B. AVADI, JTOID)
27-07-06

DRAWING NUMBER 172.46.016	SHEET No. 1 OF 1
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Rz 80
VM



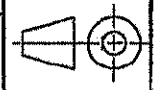
1. RELATIVE TO THREAD AXIS PERMISSIBLE ARE :-
 - a. RUN-OUT OF FACE "A" NOT EXCEEDING 0.1 mm
 - b. SHIFTING OF SIDES NOT EXCEEDING 0.5 mm.
 - c. RUN-OUT OF OTHER SURFACES NOT EXCEEDING 0.5 mm.
2. THREAD SHOULD BE COUNTER-SUNK AT ANGLE 120° UP TO THE MAJOR DIAMETER WITH THE SIDES OF FACE "A".
3. TO BE HARDENED. HARDNESS HB 302-255 (DIA OF INDENTATION 3.5 TO 3.8). HARDNESS TO BE CHECKED ON BLANK.
4. COATING : - CHEMICAL OXIDISATION / PHOSPHOTIZING, OIL FINISHING.

(5B) ALT. MATL: STEEL 817M40 (En24) TO BS 970 Part-1:1983

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

EST. WT. (Kg) 0.053	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
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ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

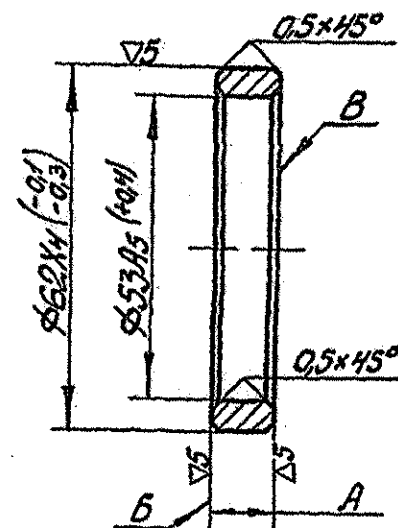
			DRN	Sd/=	MATERIAL :- STEEL 38XC	USED ON :- 475.45CB
			CHD	Sd/=	GOST 4543-71	(5A) 172.45.060CB
			APPD	Sd/=		188.4.5.001CB-3CB
			DATE	01/09/90	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
				SCALE:- 1 : 1	AVADI	
				DIMENSIONS IN mm	TITLE :-  NUT	
				TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		
5B	07-07-06	AUTHY L1.No.80001/CQA(HV)/GEN Dt.15.10.05	ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER
5A	25.10.04	N OF A No. CQA(HV)/T90/45/001				172.46.016
ISSUE	DATE	NATURE OF AMENDMENTS				

F-87
SIZE A3

COMMON TO T-90
DRAWING RE - INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5:1:..
(B. JAYAVELU, JTDID)
27-07-06

DRAWING NUMBER
172.46.018 TO 172.46.021
172.46.073 TO 172.46.075

SHEET No. 1 OF 1



1. VARIATIONS IN THE MEASUREMENT OF THICKNESS ALONG RING SHOULD NOT EXCEED 0.5mm
2. NON-PARALLELISM OF FACES AND "B" SHOULD NOT EXCEED 0.5 mm.
3. TO BE HARDENED HARDNESS HB 341-285 (DIA OF INDENTATION 3.3 TO 3.6)
4. TO BE MARKED WITH ACID STAMP ON $\phi 62$.
5. OXIDIC PHOSPHOTIZING.
6. BRIGHT HARDENING TO HARDNESS HRC 34 TO 43 IS ALLOWED.
7. ALTERNATE MATERIAL : STEEL 30XI CA GOST 4543-71.

EXPLANATORY NOTE

- a) REFERENCE MATERIAL QUOTED : STEEL 38XC GOST 4543-71.
STRUCTURAL CHROMIUM SILICON ALLOY STEEL GOOD QUALITY
GRADE 38XC GOST 4543-71.
- b) REFERENCE NOTE 7 ON ALTERNATIVE MATERIAL : STEEL 30XI CA GOST 4543-71. STRUCTURAL ALLOY STEEL HIGH QUALITY GRADE 30XI CA (CHROMIUM, SILICON, MANGANESE, NICKEL & STEEL) AND MANUFACTURED IN ACCORDANCE WITH
GOST 4543-71.
- a) CHEMICAL COMPOSITION : AS PER STEEL GRADES 38XC & 30XI CA TO GOST 4543-71

6A	PART No.	THICKNESS "A"	WEIGHT	USED ON	
6A	172.46.018	9.7 ± 0.05	0.065	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb
6A	172.46.019	10 ± 0.05	0.065	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb
6A	172.46.020	10.3 ± 0.05	0.068	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb
6A	172.46.021	10.6 ± 0.05	0.070	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb
6A	172.46.073	10.9 ± 0.05	0.076	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb
6A	172.46.074	11.2 ± 0.05	0.078	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb
6A	172.46.075	11.5 ± 0.05	0.08	175.45Cb	172.45.060CbCb 188.45.001Cb-3Cb

GRADE OF STEEL	CONTENT OF ELEMENTS %					
	C	Si	Mn	Cr	S	P
	MAX					
38XC	0.34-0.42	1.0-1.4	0.30-0.60	1.3-1.60	0.035	0.035
30XI CA	0.28-0.34	0.9-1.2	0.80-1.10	0.80-1.10	0.025	0.025

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.30% EACH

b) MECHANICAL PROPERTIES : AS PER STEEL GRADES 38XC & 30XI CA TO GOST 4543-71.

GRADE OF STEEL	TENSILE STRENGTH Kgf/mm^2	YIELD POINT Kgf/mm^2	ELONGATION %	REDUCTION IN AREA %	IMPACT STRENGTH Kgf/mm^2
MINIMUM					
38XC	95	75	12	50	7
30XI CA	110	85	10	45	5

6B ALT. MATL: STEEL 817M40 (En24) TO BS 970 Pt-1:1983

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

EST. WT. (Kg) TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
SEE TABLE

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

			DRN	Sd/=	MATERIAL:- STEEL 38XC GOST 4543-71	USED ON:- SEE TABLE
			CHD	Sd/=		
			APPD	Sd/=		
			DATE	21-03-92	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			SCALE:- 1 : 1			
			DIMENSIONS IN mm			
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			TITLE:- ADJUSTING SLEEVE
6B	07-07-06	AUTHY L1.No.80001/CQA(HV)/GEN D1.15.10.05	ALL THREADS TO CONFORM TO			
6A	25.10.04	N OF A No. CQA(HV)/TPD/45/001				
6	21.12.88	AMD T LIST No.6/II BOOK-8				
ISSUE	DATE	NATURE OF AMENDMENTS				

F-87

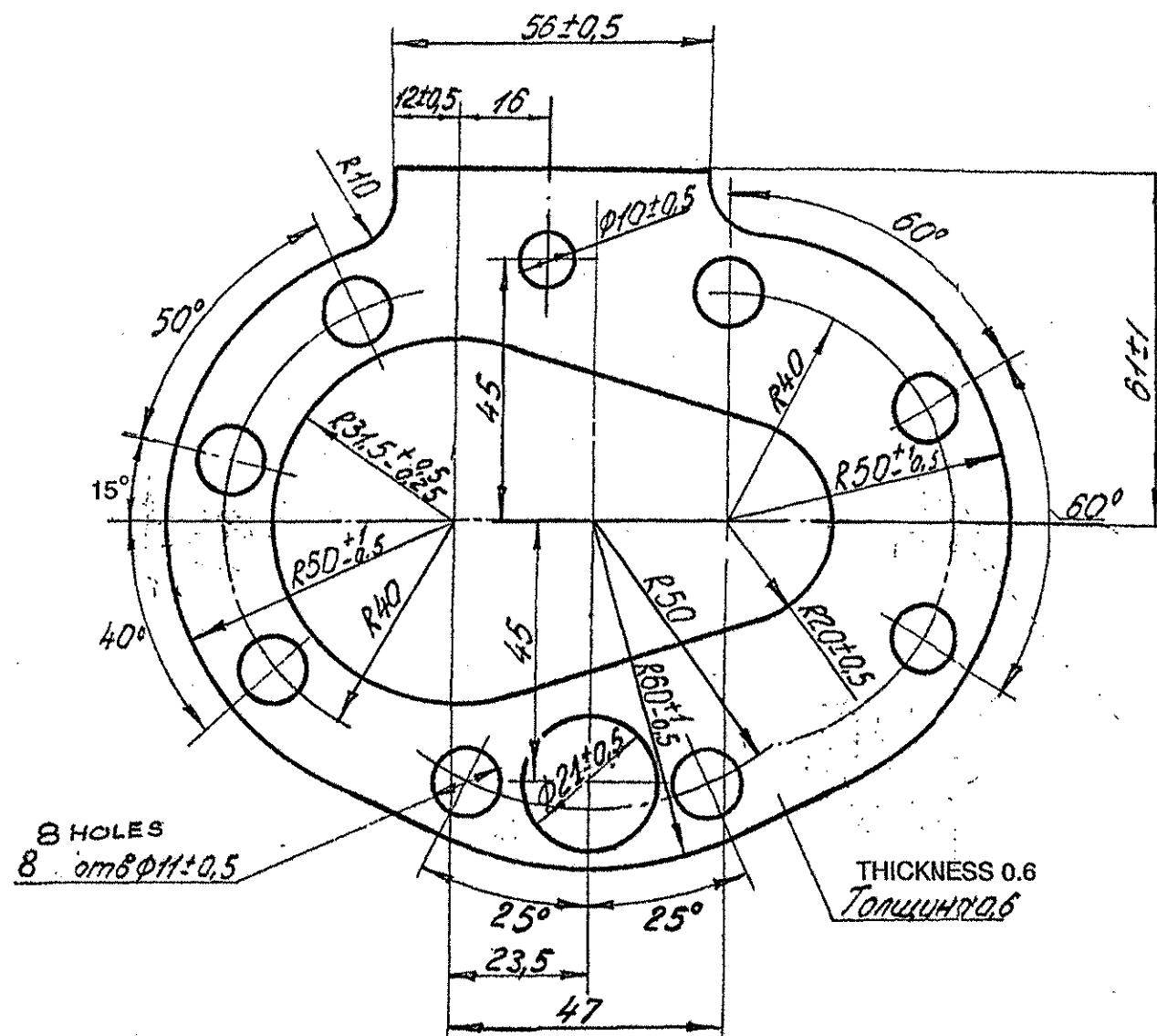
SIZE A3

F - 87

SIZE A3

DRAWING RE - INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 6

SHEET No. 1 OF 1



1. SHIFTING OF HOLE AXES FROM NOMINAL POSITION SHOULD NOT EXCEED 0.5 mm.
2. GASKET SHOULD BE SMOOTH, WITHOUT CRACKS AND TEARS.

(6B) ALT. MATL: GDE 0/1 TO IS: 2712-79 OR CAF-707

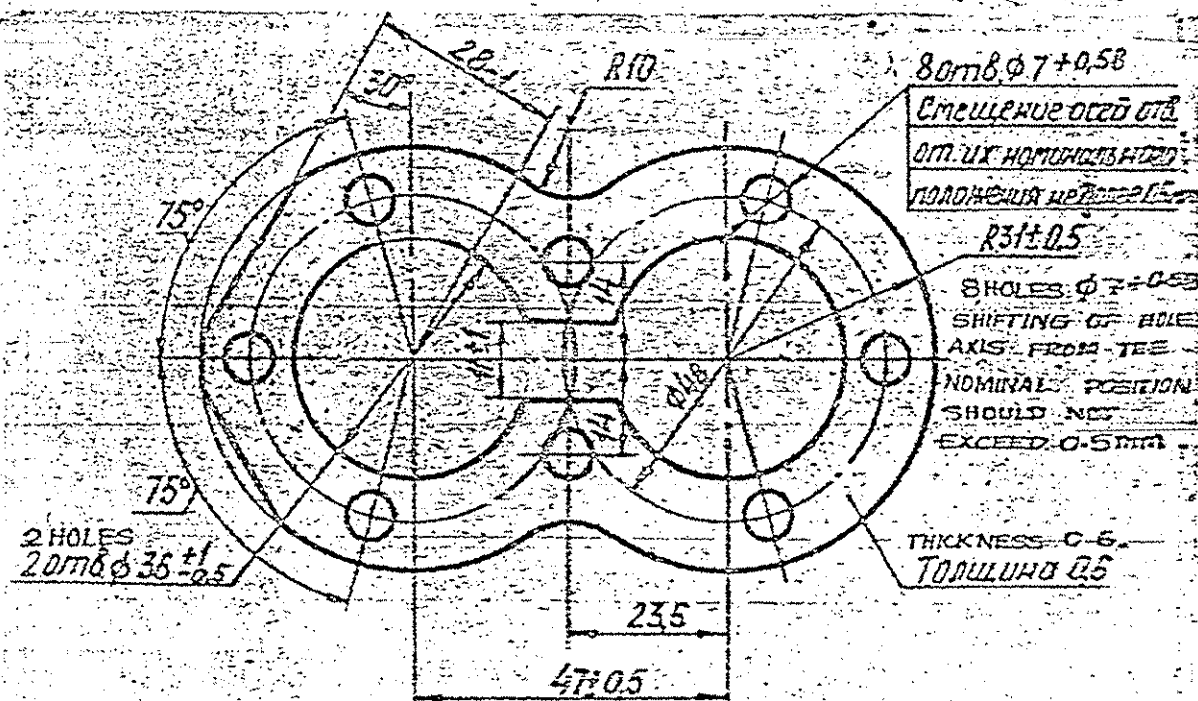
PILOT SAMPLE SHOULD BE APPROVED BY A H S P
BEFORE BULK PRODUCTION.

EST. WT. (Kg)	TO BE STAMPED OR MARKED WHERE
0.003	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	Sd/=	MATERIAL :- PARONITE	USED ON:- 172.45.060CbCb
			CHD	Sd/=	ΠΜ5 GOST 481-71	175.45Cb
			APPD	Sd/=		188.45.001Cb-3Cb (6A)
			DATE	18-09-86	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
			SCALE:-	1 : 1	AVADI	
			DIMENSIONS IN	mm		TITLE :- GASKET
			TOLERANCE ON DIMNS			
			UNLESS OTHERWISE STATED IS : 2102 - 69			
6B	07-07-06	AUTHY Lt.No.86001/CQA(HV)/GEN 01.15.10.05	ALL THREADS TO		D S CAT NUMBER	DRAWING NUMBER
6A	25.10.04	N OF A No.CQA(HV)/T90/45/001	CONFORM TO			172.46.023-1
ISSUE	DATE	NATURE OF AMENDMENTS				

DRAWING NUMBER
172 46 024



EXPLANATORY NOTE (L1)

3. REFERENCE MATERIAL QUOTED: PARONITE PM6 GOST 481-80.
PARONITE SHEET OF GRADE PM6 MADE
AS PER GOST 481-80:

PARAMETERS	
1. DENSITY g/cm ³	1.5 TO 2.0
2. CONVENTIONAL BREAKING POINT Kgf/cm ² IN TRANSVERSE DIRECTION	130 MIN.
a) AFTER SOAKING IN KEROSENE AT 23°C FOR 12 HOURS Kgf/cm ²	70 MIN
b) AFTER SOAKING OIL MS 20 OR MK 22 AT 150°C FOR 12 HOURS Kgf/cm ²	100 MIN
3. INCREASING WEIGHT	
a) IN KEROSENE AT 23°C FOR 12 HOURS %	10 TO 24
b) IN OIL MS 20 OR MK 22, 12 HOURS %	23 MAX.
4. COMPRESSIBILITY AT 350 Kgf/cm ² %	5 TO 16
5. RECOVERY AFTER REMOVAL OF PRESSURE 350 Kgf/cm ² %	35 MIN
6. WORKING MEDIUM	AIR, FUEL, OIL AND GAS
a) LIMITING PRESSURE Kgf/cm ²	20 TO 25
b) LIMITING TEMPERATURE	200°C-300°C

1. Прокладка не должна иметь складок, морщин, разрывов или просачивающих мест и пятен.
2. Допускается неровность по контуру детали в 6 отверстий.

1. THERE SHOULD NOT ANY WRINKLES, FOLDS, DIRTY OR TRANSLUCENT BAND AND SPOTS ON GASKET.
2. FLUFFINESS IS ALLOWED ALONG THE CONTOUR OF COMPONENT AND IN HOLES.

(4A) ALT. MATL: GDE O/1 TO IS: 2712-98

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

EST. WT. 0.003 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 OUT SIDE INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

			DRN	<i>Chetan</i>	MATERIAL:-	USED ON
			CHD	<i>Chetan</i>	PARONITE PM5 GOST:481-80	172 46 002 CB-1
			TEO	<i>E. J. J.</i>		
			APPD			
			DATE	15-02-89	CONTROLLERATE OF QUALITY ASSURANCE(HEAVY VEHICLES)	
			SCALE:-	1:1	AVADI	
			DIMENSIONS IN mm			TITLE
			TOLERANCE ON DIMS			GASKET
			UNLESS OTHERWISE			
			STATED IS:2712-69			
4-A	31.10.05	Authy:-LT.No.80001/CRA(HV)/GEN. dt. 7.10.05	ALL THREADS TO		D S CAT NUMBER	DRAWING NUMBER
E1	15-02-89	EXPLANATORY NOTE ADDED.	CONFORM TO			172 46 024
ISSUE	DATE	NATURE OF AMENDMENTS				



DRAWING RE - INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

Trivedi
B. JAYAVELU, JTO(B)
27-07-06

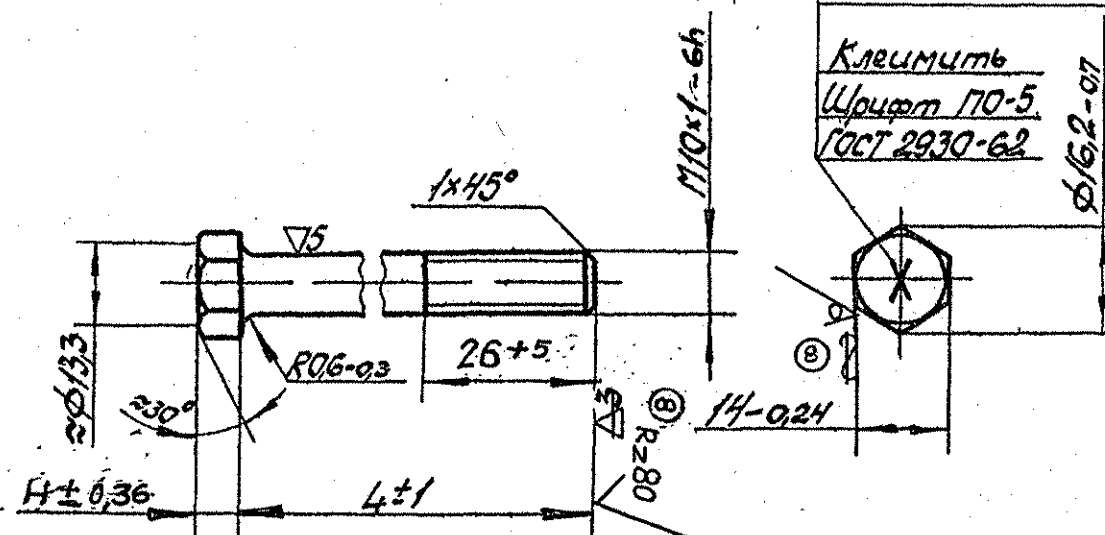
DRAWING NUMBER
172.46.034 TO 036

SHEET No. 1 OF 1

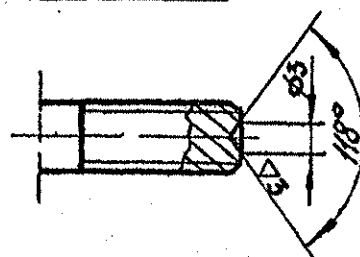
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Rz 40 ✓(✓)

TO BE MARKED
WITH TYPE
ΠΟ.5 GOST 2930-62

Клеимить
Шрифт 170-5.
ГОСТ 2930-62



ALTERNATE



1. SHIFTING OF HEAD AXES RELATIVE TO THREAD AXES ARE ALLOWED UP TO 0.4 mm.
2. HB 302-255 (DIA OF INDENTATION 3.5-3.8) MAY BE CHECKED ON BLANK.
3. WHEN MANUFACTURING THE THREADED BY ROLLING, THINNING OF UNTHREADED PART OF SHANK MAY BE UP TO PITCH DIAMETER OF THREAD.
4. INSTEAD OF MARKING, DISTINCTIVE CENTERING IS ALLOWED.
5. TO BE ZINC COATED 6-12 MICRONS. CHROMATIZING.
6. OTHER TECHNICAL REQUIREMENTS AS PER GOST 1759-62.
7. INSTEAD OF MARKING "X", 2 DISTINCTIVE MARKS NOT LESS THAN ON TWO HEAD EDGES IN ANY PLACE NOT EXCEEDING 1 mm. IN DEPTH ARE ALLOWED.
8. OTHER REQUIREMENTS SHOULD COMPLY WITH 520 Ty1.

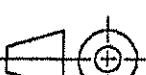
USED ON	PART NO	LENGTH L mm	WEIGHT IN Kg	H mm	WEIGHT IN Kg	USED ON
188.45.001Cb-3Cb	172.46.034	64	0.050	12	0.056	175.45Cb 172.45.060CbCb
188.45.001Cb-3Cb	172.46.035	54	0.040	7	0.040	175.45Cb 172.45.060CbCb
	172.45.036	103	0.070	7	0.070	

(8B) ALT. MATL: STEEL 817M40 (En24) TO BS 970 Part-1: 1983

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

EST. WT. (Kg)	TO BE STAMPED OR MARKED WHERE
SEE TABLE	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.

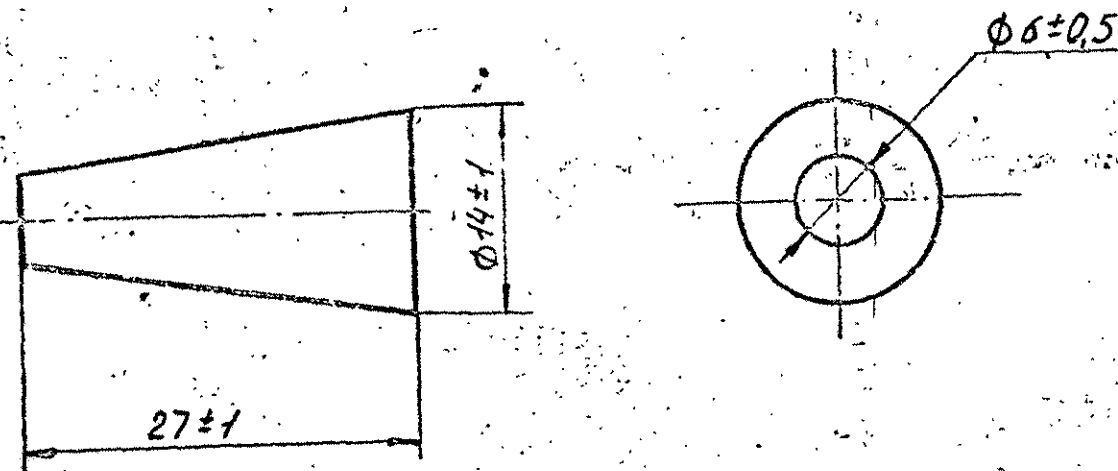
			DRN	Sd/=	MATERIAL:- STEEL	USED ON:-
			CHD	Sd/=	38x6 GOST 4543-71	SEE TABLE
			APPD	Sd/=		
			DATE	01-09-96	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
			SCALE:-	1 : 1	AVADI	
			DIMENSIONS IN mm			TITLE:- BOLT
			TOLERANCE ON DIMNS			
			UNLESS OTHERWISE STATED IS : 2102 - 69			
8B	07-07-06	AUTHY Lt.No.80001/CQA(HVI)/GEN Dt.15.10.05	ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER 172.46.034 TO 036
8A	25.10.04	N OF A No.CQA(W)/T90/45/001				
8	31.5.91	N8TN.172M.343A89-AL12/3				
ISSUE	DATE	NATURE OF AMENDMENTS				

DRG. REPLACES 172 98 021 ISSUE-1
INTRODUCED VIDE NOTN. No. 172M 466 A-88, AMDT. LIST No. 11/BOOK-1
DRG. CREATED BASED ON RUSSIAN ORIGINAL ISSUE- 2

F-3
48

SIZE A3

DRAWING NUMBER
172 98 021



1. COMPONENT OF TYPE 1 TY38 105376 - 82.
2. CONDITIONS OF OPERATION : MEDIUM - OIL,
TEMPERATURE- °C FROM -45 TO 90 PRESSURE- 0 atm. abs.
3. DIMENSIONS ARE TO BE ENSURED BY TOOL.
4. SURFACE FINISH IS TO BE ENSURED BY SHAPING SURFACES
OF MOULD MADE WITH SURFACE FINISH 0.32 ✓
5. TO BE MARKED ON THE TAG.

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

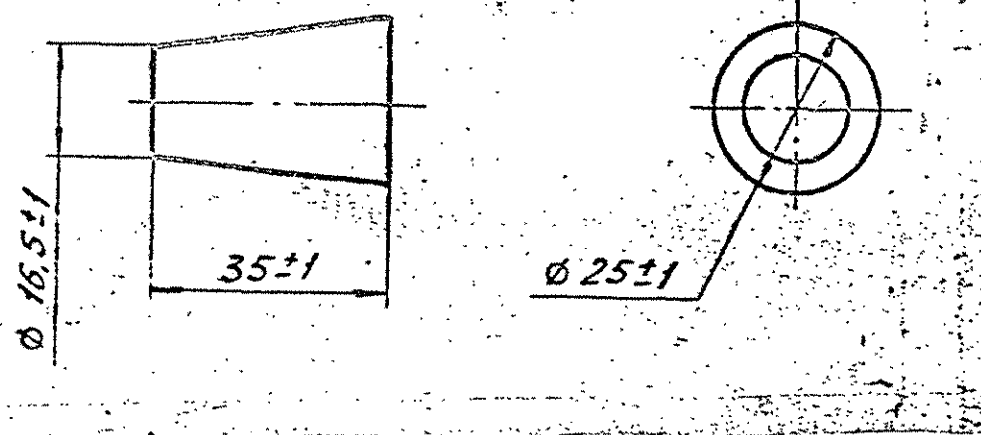
EST. WT. 0,015 Kg. TO BE STAMPED OR MARKED WHERE
INDICATED THUS # 1 LETTERS)

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

DRN	172 98 021	MATERIAL : RUBBER	USED ON 172 46 001 Cb-4
CHD	172 98 021	TYPE B-14 2P. MSM - П	172 46 002 Cb
TCD	172 98 021	TY38 105376 -82	172 46 017 Cb
APPD	172 98 021	CONTROLLERATE OF QUALITY ASSURANCE(HEAVY VEHICLES)	
DATE	25-1-91	AVADI	
SCALE:-	2 : 1	TITLE	
DIMENSIONS IN mm		PLUG	
TOLERANCE ON DIMNS.		D S CAT NUMBER	
UNLESS OTHERWISE		DRAWING NUMBER	
STATED IS:2102-69		172 98 021	
ALL THREADS TO			
CONFORM TO			
ISSUE DATE			
NATURE OF AMENDMENTS			

DRG. REPLACES 172 98 025 ISSUE-1
 INTRODUCED VIDE NOTN. No. 172M 66 A-80, AMDT. LIST No. 11/BOOK-1
 DRG. CREATED BASED ON RUSSIAN ORIGINAL ISSUE-2

DRAWING NUMBER
 172 98 025



1. COMPONENT OF TYPE 1 TY38 105376 - 82.
2. CONDITIONS OF OPERATION: MEDIUM - OIL, TEMPERATURE-°C FROM-45 TO 90 PRESSURE- 0 atm. abs.
3. DIMENSIONS ARE TO BE ENSURED BY TOOL.
4. SURFACE FINISH IS TO BE ENSURED BY MOULDING SURFACES OF MOULD MADE WITH SURFACE FINISH 0.32
5. TO BE MARKED ON THE TAG.

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

EST. WT. 0.016 Kg. TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

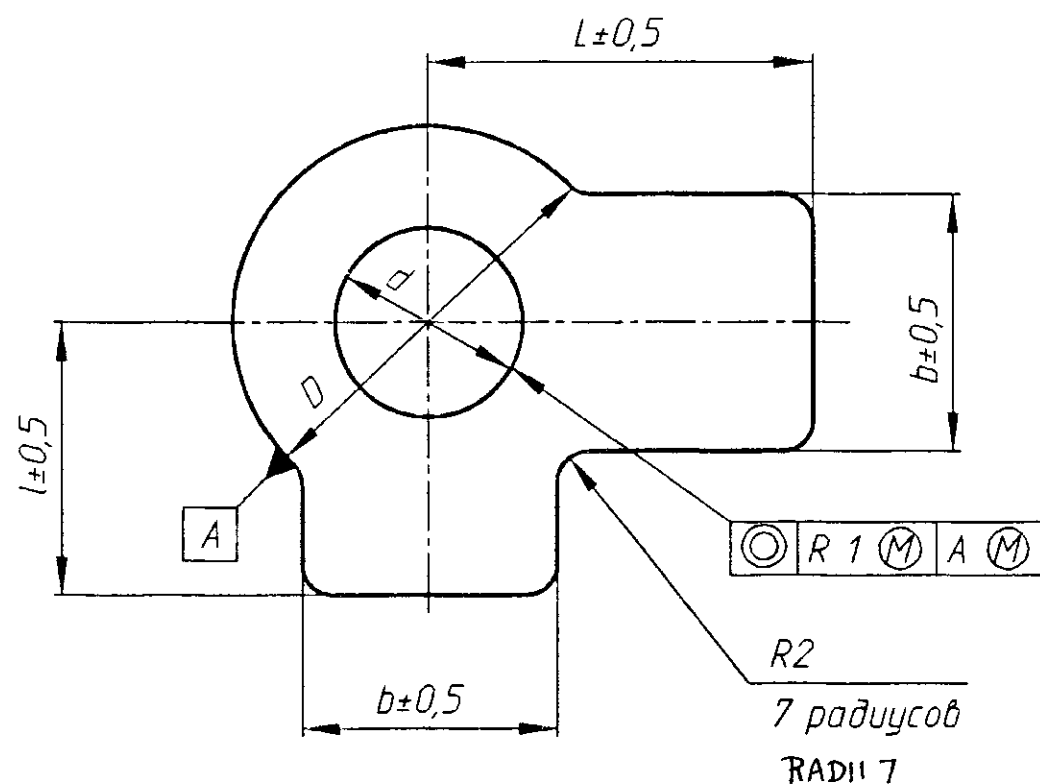
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

DRN	172 98 025	MATERIAL:- RUBBER	USED ON
CHD	25-1-91	TYPE B-14 2P: (MDM) IT	172 62 001 (b-2)
TCD	172 98 025	TY38-105376-82.	172 62 002 (b-2)
APPD	172 98 025	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
DATE	25-1-91	AVADI	
SCALE:-	1:1	TITLE PLUG	
DIMENSIONS IN mm		D S CAT NUMBER	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69		DRAWING NUMBER	
ALL THREADS TO CONFORM TO		172 98 025	
ISSUE	DATE	NATURE OF AMENDMENTS	

SIZE A3

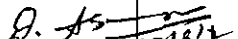
520.07.006

Rz320/ (✓)



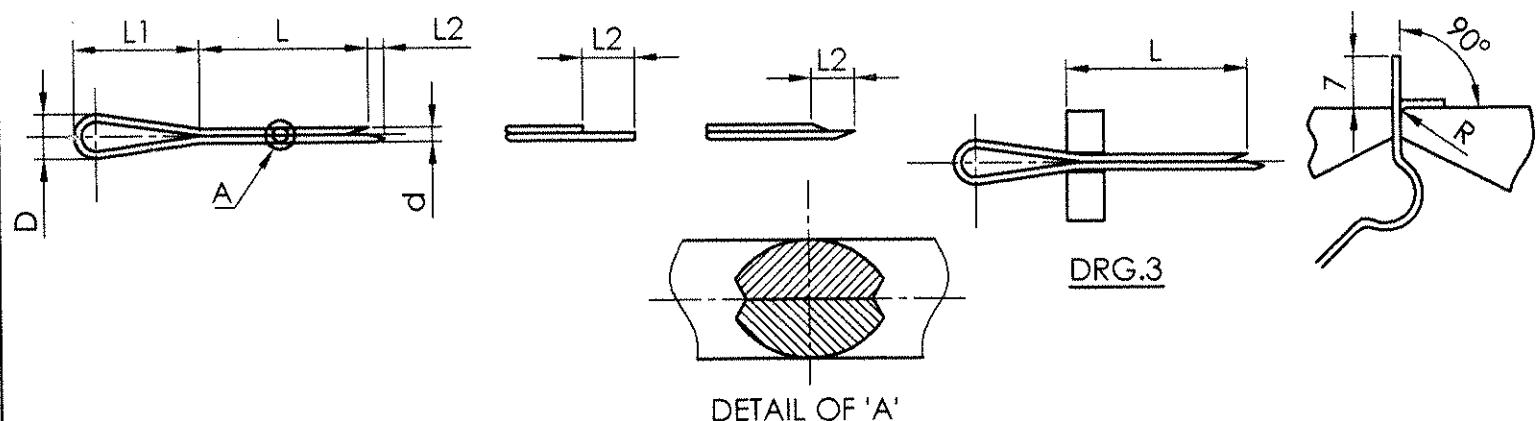
1. Alternate material Sheet: s GOST 19904-90
K270B6-III-F-10kn GOST 16523-97
2. * Dimensions for reference.
3. Coating Zn 6 Chromotizing.
4. Other requirements should be as per specifications 520.TY1.

DESIGNATION Обозначение	DIAMETER OF STUD		D, MM		b, MM		L, MM		l, MM		S, MM		Под шестиг- ранник	WEIGHT масса, кг
	Диаметр шпиль- ки	d, мм	NOMINAL НОМИН.	пред откл. LIMIT DEVIATION	NOMINAL НОМИН.	пред откл. LIMIT DEVIATION	мм	мм	мм	мм	мм	мм		
520.07.006	6	6,5			12		8	12	9	1	10	0,0014		
-01	8	8,5			14		9	15	10	1	12	0,0016		
-02	10	10,5			16		10	18	13	1	14	0,0022		
-03	12	12,5			20		12	20	14	1,5	17	0,0045		
-04	12	12,5			22		14	22	16	1,5	19	0,0056		
-05	16	16,5			26		17	25	18	1,5	22	0,0075		
-06	18	18,5			32		20	30	23	1,5	27	0,0115		
-07	20	20,5			32		20	30	23	1,5	27	0,011		
-08	22	23			36		22	32	25	1,5	30	0,0124		
-09	24	25			38		22	35	28	1,5	32	0,014		
-10	14	15			22		22	28	16	1	18	0,033		

5		197.27-98	520.07.006	Sup. Code	Fold. No.	Sl.no
				U-01-1-1	33	51
				Weight (kgs)	Scale	
				see table		
				Page	Page total	
ISSUE SHEET			REFERENCE	1	1	
APPROVED			SHEET: <u>s GOST 19904-90</u> K270B6-II-F-10kn GOST 16523-97	HEAVY VEHICLES FACTORY AVADI		
CHECKED						
DRAWN						

Копирован

Формат А3



CHEMICAL COMPOSITION (%)		MECHANICAL PROPERTIES	
ELEMENT	STEEL 20 GOST 1050-74	DESCRIPTION	STEEL 20 GOST 1050-74
C	0.17 - 0.24	TENSILE STRENGTH	42 Kgf/mm ² MIN.
Si	0.17 - 0.37	YIELD STRENGTH	25 Kgf/mm ² MIN.
Mn	0.35 - 0.65	RELATIVE ELONGATION	25 % MIN.
Cr	0.25 MAX.	REDUCTION OF AREA	55 % MIN.
S	0.040 MAX.	HARDNESS BHN	163 MAX.
P	0.035 MAX.		

DESIGNATION	d	L2	L1	D	L	USED ON.	QTY.
2.5 x 25.016	2.1 - 2.3	1.3 - 2.5	5	4.0 - 4.6	25	172-46-002CD-1	1
						188-45-001CD-3	1
5 x 50.016	4.4 - 4.6	2.0 - 4.0	10	8.0 - 9.2	50	172-66-101CD-1	1
2 x 20.016	1.7 - 1.8	1.3 - 2.5	4	3.2 - 3.6	20	(CODE-45 / T-72 & T-90)	1

THIS SKETCH ALONG WITH ALL DETAILS IS AN ABSTRACT BASED ON GOST-397-79

VETTED
28 DEC 2006
JWM/STD-CELL

1. SPLIT PINS OF CONVENTIONAL DIAMETER UP TO 5mm. MUST WITHSTAND NOT LESS THAN 3 BENDINGS WITHOUT ANY SIGN OF RUPTURE OR CRACK, SPLIT PINS OF CONVENTIONAL DIAMETER OVER 5mm MUST WITHSTAND TWO BENDINGS.
2. THE BEND TEST IS CARRIED OUT BY SEPARATING THE LEGS AND CLAMPING ONE OF THEM BETWEEN THE JAWS OF A VICE (DRG.3) SUCH THAT BENDING TAKES PLACE IN THE STRAIGHT PORTION OF THE LEG.
3. THE EDGES OF THE JAWS MUST HAVE A ROUNDING OFF RADIUS R AS SHOWN IN TABLE GIVEN BELOW.
4. THE EDGES OF THE SPLIT PIN IS BENT AT 90°, BROUGHT BACK TO ITS INITIAL POSITION AND BENT AGAIN IN THE SAME DIRECTION.

CONVENTIONAL DIAMETER d	ROUNDING OFF RADIUS R FOR EDGES OF JAWS OF VICE
UP TO 2	0.5
OVER 2 UP TO 5	0.8
OVER 5	1.2

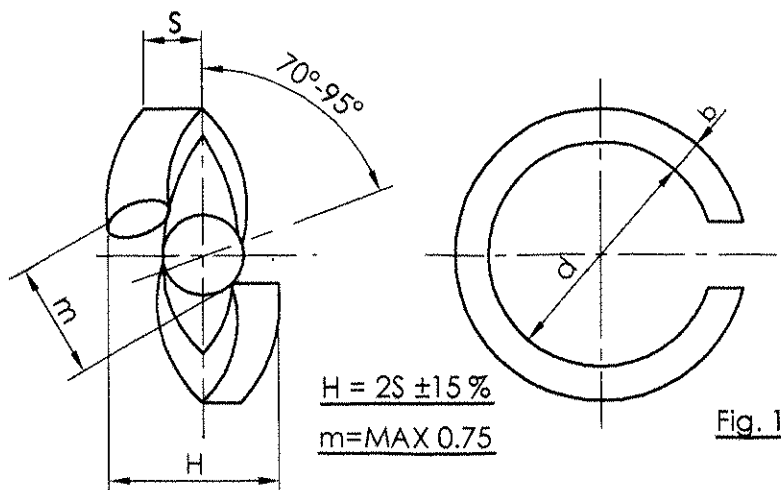
ALT. MATERIAL :- HALF ROUND MILD STEEL WIRE WITH LOW CARBON CONTENT, 0.2 % MAX. IS: 549-1974

AUTHORITY :- CQA(HV) LETTER No. 98704/04/ID-CO-ORD/ALT.COM DATED 03-05-2005

SPLIT PIN (COTTER PIN)		STEEL 20	GOST 1050-74		
संख्या NO. OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS
सामान्य सहिष्णुता GENERAL TOLERANCE		DRG. UP TO DATED SN. 31.5.01			
रेखिक परिमाण LINEAR DIMENSION					
0-6 ±0.1					
6-30 ±0.2					
30-120 ±0.3					
120-315 ±0.5					
315-1000 ±0.8					
1000-2000 ±1.2					
कोणिक परिमाण ANGULAR DIMENSION	संख्या NO. OFF	संबंधित पुर्जा क्र. DRG. NO. OF ASSOCIATED PART	सूचक INDEX	संशोधन ALTERATION	2006 दिनांक DATE
1-10 ±1°					
10-50 ±30'					
50-100 ±20'					
> 100 ±10'					
मापक 'म्यू एम' में VALUE IN "μm"		SPLIT PIN (COTTER PIN)		मापमान SCALE	आरेखित DRAWN
~ >25		TRANSMISSION GEAR UNIT		NTS	28/12
▽ 8-25		CODE-45 / T-72 & T-90		जाँचा CHECKED	28/12
▽▽ 1.6-8		मशीनी औजार आदिरूप फैक्टरी, अम्बरनाथ		अनुमोदित APPROVED	28/12
▽▽▽ 0.025-1.6		MACHINE TOOL PROTOTYPE FACTORY, AMBERNATH		द्वारा बदला REPLACED BY	
▽▽▽▽ <0.025		कार्यालय OFFICE		हेतु बदला REPLACED FOR	
मूलमाप व अन्वयोजन NOMINAL SIZE & FIT		विचलन DEVIATION		आरेखण क्र. DRAWING NO. MPF/IGB/397	

इन आरेखणों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।

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DESIGNATION EXAMPLE: -
 5T-65F-01-6
 5 --- THREAD DIAMETER
 T --- CONDITION
 65F - MATERIAL
 01 - TYPE OF FINISH
 6 --- THICKNESS OF PLATING IN MICRONS

CONDITION	DESCRIPTION
L	LIGHT
N	MEDIUM
T	HEAVY
OT	VERY HEAVY

CONVENTIONAL SYMBOL OF FINISH	TYPE OF FINISH
00	WITHOUT FINISH.
01	ZINC PLATING FOLLOWED BY CHROMATE PASSIVATION.
02	CADMIUM PLATING FOLLOWED BY CHROMATE PASSIVATION.
03	NICKEL PLATING
04	MULTILAYER COPPER NICKEL PLATING
05	MULTILAYER NICKEL CHROME PLATING
06	MULTILAYER COPPER NICKEL CHROME PLATING
09	OXIDE COATING
10	PARKERISING FOLLOWED BY OILING
11	ZINC PLATING
12	OXY ANODIZING FOLLOWED BY CHROMATE PASSIVATION.
13	PASSIVATION.



SPRING WASHER DESIGNATION	NOMINAL DIA.	d	s	b
4-65F	4	4.1 ^{+0.30}	1.2 ^{±0.125}	1.2 ^{±0.125}
5-65F-05	5	5.1 ^{+0.30}	1.4 ^{±0.125}	1.4 ^{±0.125}
5T-65F-01-6	5	5.1 ^{+0.30}	1.6 ^{±0.125}	1.6 ^{±0.125}
6T-65F-01-6	6	6.1 ^{+0.58}	2.0 ^{±0.125}	2.0 ^{±0.125}
8-65F-01-6	8	8.1 ^{+0.58}	2.0 ^{±0.125}	2.0 ^{±0.125}
8T-65F-01-6	8	8.1 ^{+0.58}	2.5 ^{±0.125}	2.5 ^{±0.125}
10-65F-01-6	10	10.1 ^{+0.70}	2.5 ^{±0.125}	2.5 ^{±0.125}
12OT-65F-01-6	12	12.1 ^{+0.70}	4.0 ^{+0.24}	4.0 ^{+0.24}
3-65F-06	3	3.1 ^{+0.30}	1.0 ^{±0.125}	1.0 ^{±0.125}

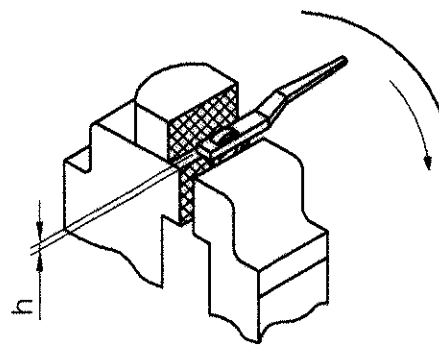
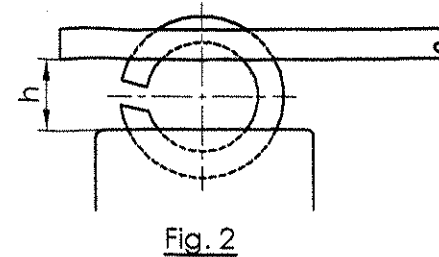


Fig. 3

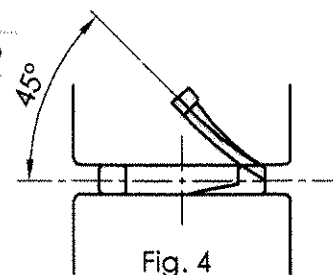


Fig. 4

THIS SKETCH ALONG WITH ALL DETAILS IS AN ABSTRACT BASED ON GOST-6402-70

TESTING THE TENACITY:

ONE END OF THE WASHER IS CLAMPED IN VICE, ITS OTHER END IS BENT WITH MONKEY WRENCH OR HANDLE HAVING A SLOT TO THE SIDE OF INCREASE OF DIMENSION 'H'. DURING THE TEST, DIMENSION 'h' SHOULD BE MAINTAINED (BETWEEN THE JAWS OF VISE AND WRENCH) EQUAL TO HALF THE INNER DIAMETER OF WASHER (SEE FIG. 2, 3, 4).

इन आरेखों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।

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मूलमाप व अन्वयोजन
 NOMINAL SIZE & FIT

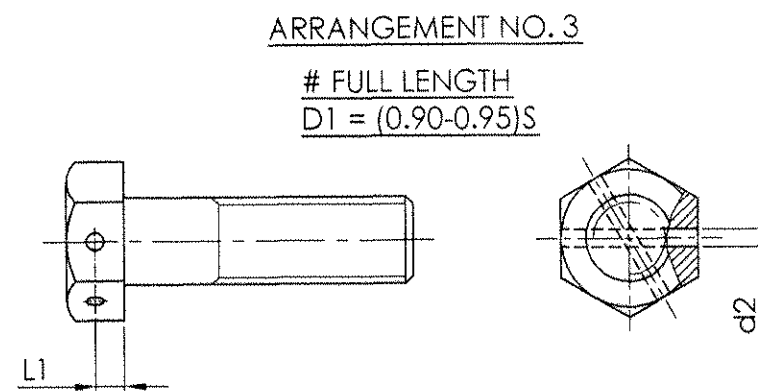
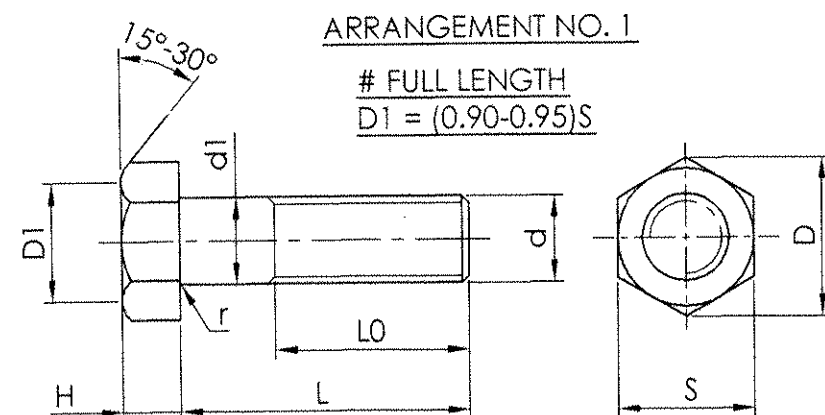
विचलन
 DEVIATION

CHEMICAL COMPOSITION (%)			MECHANICAL PROPERTIES		
ELEMENT	STEEL 65F GOST 14959-79	STEEL 70C6 IS: 2507-75	DESCRIPTION	STEEL 65F GOST 14959-79	STEEL 70C6 IS: 2507-75
C	0.62 - 0.70	0.65 - 0.75	TENSILE STRENGTH	981 (MIN.) MPa	1180-1420 MPa
Si	0.17 - 0.37	0.10 - 0.35	YIELD STRENGTH	785 (MIN.) MPa	1030 (MIN.) MPa
Mn	0.90 - 1.20	0.50 - 0.80	RELATIVE ELONGATION	8 % MIN.	6 % MIN.
Cr	0.25 MAX.	-----	RELATIVE REDUCTION	30 % MIN.	-----
Ni	0.25 MAX.	-----	HARDNESS	40 - 50 HRC	350 - 425 VPN
Cu	0.20 MAX.	-----			
S	-----	0.05 MAX.			
P	-----	0.05 MAX.			

ALTERNATE MATERIAL :- STEEL GRADE 70C6 TO IS:2507-75

AUTHORITY :- CQA(HV), AVADI, LETTER NO. 98704/04/ID-CO-ORD/ALT COM. DATED 03/05/2005

SPRING WASHER		STEEL 65F		GOST 14959-79		HRD. & TEMP.	
संख्या NO. OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS	अभ्यक्ति REMARKS	
	सामान्य सहिष्णुता GENERAL TOLERANCE		a)	Added as required.			
	रेखिक परिमाण LINEAR DIMENSION		b)	DRG. UPTO DATED ON 31.5.01			
	0-5	±0.1					
	6-30	±0.2					
	30-120	±0.3					
	120-315	±0.5					
	315-1000	±0.8					
	1000-2000	±1.2					
	कोणिक परिमाण ANGULAR DIMENSION		c)	7100/STD CELL/DRG AND SW DT. 14.3.06			
	1-10	±1°					
	10-50	±30'					
	50-100	±20'					
	>100	±10'					
	मापक 'म्यू एम' में VALUE IN "μm"						
	1-25	±25					
	25-63	±63					
	63-125	±125					
	125-250	±250					
	250-500	±500					
	500-1000	±1000					
	1000-2000	±2000					
	2000-4000	±4000					
	4000-6000	±6000					
	6000-10000	±10000					
	10000-15000	±15000					
	15000-20000	±20000					
	20000-25000	±25000					
	25000-30000	±30000					
	30000-40000	±40000					
	40000-50000	±50000					
	50000-60000	±60000					
	60000-80000	±80000					
	80000-100000	±100000					
	100000-150000	±150000					
	150000-200000	±200000					
	200000-250000	±250000					
	250000-300000	±300000					
	300000-400000	±400000					
	400000-500000	±500000					
	500000-600000	±600000					
	600000-800000	±800000					
	800000-1000000	±1000000					
	1000000-1500000	±1500000					
	1500000-2000000	±2000000					
	2000000-2500000	±2500000					
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	400000000-500000000	±500000000					
	500000000-600000000	±600000000					
	600000000-800000000	±800000000					
	800000000-1000000000	±1000000000					
	1000000000-1500000000	±1500000000					
	1500000000-2000000000	±2000000000					
	2000000000-2500000000	±2500000000					
	2500000000-3000000000	±3000000000					
	3000000000-4000000000	±4000000000					
	4000000000-5000000000	±5000000000					
	5000000000-6000000000	±6000000000					
	6000000000-8000000000	±8000000000					
	8000000000-10000000000	±10000000000					
	10000000000-15000000000	±15000000000					
	15000000000-20000000000	±20000000000					
	20000000000-25000000000	±25000000000					
	25000000000-30000000000	±30000000000					
	30000000000-40000000000	±40000000000					
	40000000000-50000000000	±50000000000					
	50000000000-60000000000	±60000000000					
	60000000000-80000000000	±80000000000					
	80000000000-100000000000	±100000000000					
	100000000000-150000000000	±150000000000					
	150000000000-200000000000	±200000000000					
	200000000000-250000000000	±250000000000					
	250000000000-300000000000	±300000000000					
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	400000000000-500000000000	±500000000000					
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	600000000000-800000000000	±800000000000					
	800000000000-1000000000000	±1000000000000					
	1000000000000-1500000000000	±1500000000000					
	1500000000000-2000000000000	±2000000000000					
	2000000000000-2500000000000	±2500000000000					
	2500000000000-3000000000000	±3000000000000					
	3000000000000-4000000000000	±4000000000000					
	4000000000000-5000000000000	±5000000000000					
	5000000000000-6000000000000	±6000000000000					
	6000000000000-8000000000000	±8000000000000					
	8000000000000-10000000000000	±10000000000000					
	10000000000000-15000000000000	±15000000000000					
	15000000000000-20000000000000	±20000000000000					
	20000000000000-25000000000000	±25000000000000					
	25000000000000-30000000000000	±30000000000000					
	30000000000000-40000000000000	±40000000000000					
	40000000000000-50000000000000	±50000000000000					
	50000000000000-60000000000000	±60000000000000					
	60000000000000-80000000000000	±80000000000000					
	80000000000000-100000000000000	±100000000000000					
	100000000000000-150000000000000	±150000000000000					
	150000000000000-200000000000000	±200000000000000					
	200000000000000-250000000000000	±25000					



DESIGNATION	d	d1	H	L	L0	r	S	D	d2	L1	THREAD DETAILS		
											Major Ø	Eff. Ø	Minor Ø
M6-6gx14.66.016	M6	6.0 ^{-0.18}	4.0 ^{±0.15}	14 ^{±0.35}	#	0.25 0.40	10 ^{-0.22}	11	-	-	6.0 ^{-0.026 -0.206}	5.352 ^{-0.026 -0.138}	4.776 ^{0 -0.026}
3M6-6gx10.66.019	M6	6.0 ^{-0.18}	4.0 ^{±0.15}	10 ^{±0.29}	#	0.25 0.40	10 ^{-0.22}	11	2 ^{±0.40}	2 ^{±0.20}	6.0 ^{-0.026 -0.206}	5.352 ^{-0.026 -0.138}	4.776 ^{0 -0.026}

NATIONAL DESIGNATION OF PLATING		TYPE OF PLATING
NUMERICAL	ACCORDING TO GOST 9073-77	
01	Zn, Cr	ZINC CHROMATING
02	Cd, Cr	CADMIUM CHROMATING
03	Cu, Ni	MULTILAYER COPPER NICKEL
04	Cu Ni Cr	MULTILAYER COPPER NICKEL CHROMIUM
05	Chem. Oxid.	OXIDING
06	Chem. Phos. Oil Imp.	PHOSPHATING WITH OIL IMPREGNATION
07	Cu	COPPER
08	Zn	ZINC
09	Hot Zn (Galv.)	HOT ZINC (GALVANISING)
10	Anod. Oxid. Cr	OXIDING WITH POTASSIUM BICHROMATE SOLUTION
11	Chem. Pass.	OXIDING WITH ACID SOLUTION
13	Ni	NICKEL
14	Cd	CADMIUM

DESIGNATION EXAMPLE :-
M6-6gx14-66-01-6

1----- ARRANGEMENT NO.
M6 x 1 --- THREAD DESIGNATION
6g----- THREAD TOLERANCE ZONE AS PER GOST 16093-81
14----- LENGTH
66----- STRENGTH CLASS AS PER GOST-1759-70
01----- DESIGNATION OF PLATING
6----- THICKNESS OF COATING IN MICRONS

CHEMICAL PROPERTIES:

MATERIAL DESIGNATION	% C	% Si	% Mn	% Cr	% S	% P	% Cu	% Ni
STEEL 20 GOST 1050-74	0.17 0.24	0.17 0.37	0.35 0.65	0.25 max	0.040 max	0.035 max	0.25 max	0.25 max
080 M40 BS:970-83	0.36 0.44	-	0.60 1.00	-	0.050 max	0.050 max	-	-

MECHANICAL PROPERTIES:

MATERIAL DESIGNATION	YIELD POINT	ULTIMATE TENSILE STRENGTH	ELONGATION % (Min)	IMPACT STRENGTH	HARDNESS
STEEL 20 GOST 1050-74	36 kg/mm ² (Min)	60-80 kgf/mm ²	16	4.0 kgf.m/cm ² (Min)	170-245 HB
080 M40 BS:970-83	385 N/mm ² (Min)	625-775 N/mm ²	16	-	179-229 HB

@ THIS SKETCH ALONG WITH ALL DETAILS IS AN
ABSTRACT BASED ON GOST-7805

इन आरेखणों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।

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मूलमाप व अन्वयोजन
NOMINAL SIZE & FIT

विचलन
DEVIATION

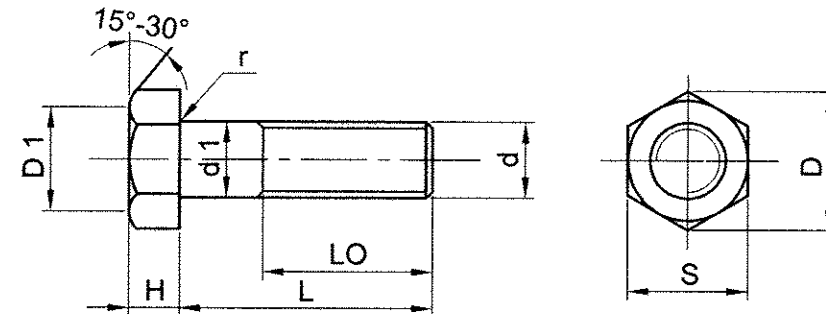
BOLT		STEEL 20	GOST 1050-74		
संख्या NO. OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS
सामान्य सहिष्णुता GENERAL TOLERANCE		@ DRG UPTO DATED ON 19.7.11			
रेखिक परिमाण LINEAR DIMENSION					
0-5		±0.1			
6-30		±0.2			
30-120		±0.3			
120-315		±0.5			
315-1000		±0.8			
1000-2000		±1.2			
कोणिक परिमाण ANGULAR DIMENSION	संख्या NO. OFF	संबंधित पुर्जा का आरेखण क्र. DRG. NO. OF ASSOCIATED PART	सूचक INDEX	संशोधन ALTERATION	
1-10	±1°				
10-50	±30'				
50-100	±20'				
>100	±10'				
मापक 'म्यू एम' में VALUE IN 'μm'					
-	>25				
▽	6-25				
▽▽	1.6-5				
▽▽▽	0.025-1.6				
▽▽▽▽	<0.025				
HEXAGON BOLT		मापमान SCALE		आरेखित DRAWN	दिनांक DATE
TRANSMISSION GEAR UNIT		NTS		जोड़ा CHECKED	04/09/05
CODE - 45 / T-90 & T-72				अनुमोदित APPROVED	23.12
मशीनी औजार आदिरूप फैक्टरी, अम्बरनाथ		कार्यालय OFFICE		द्वारा बदला REPLACED BY	नाम NAME
MACHINE TOOL PROTOTYPE FACTORY, AMBERNATH		D.O.		हेतु बदला REPLACED FOR	GAK
				आरेखण क्र. DRAWING NO.	
				MPF/IGB/7805	

MPF/IGB/7805

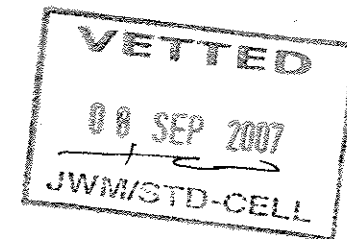
DESCRIPTION	d	d1	H	L	r Min Max	LO	S	D	PITCH	THREAD DETAILS			STRENGTH CLASS	TYPE OF PLATING	THICKNESS OF COATING IN MICRONS	THREAD TOLERANCE ZONE	MATERIAL	ALTERNATE MATERIAL
										MAJOR Ø	EFF. Ø	MINOR Ø						
M8-6gx20.88.38xc.016	M8	8.0 ^{-0.20}	5.0 ^{±0.15}	20 ^{±0.35}	0.4 0.6	*	12.0 ^{-0.24}	13.2	1.25	8.0 ^{-0.028 -0.240}	7.188 ^{-0.028 -0.146}	6.466 ^{-0.028 -0.236}	8.8	01 ZINC CHROMATING	6	6g	38xc GOST 4543-71	817 M40 BS:970-83

CHEMICAL COMPOSITION (%)

	38xc GOST-4543-71	817 M40 BS: 970-83
CARBON	0.34 - 0.42	0.36 - 0.44
SILICON	1.0 - 1.40	-----
MANGANESE	0.30 - 0.60	0.45 - 0.70
CHROMIUM	1.30 - 1.60	1.00 - 1.40
PHOSPHORUS	0.035 Max.	0.050 Max.
SULPHUR	0.035 Max.	0.050 Max.
NICKEL	-----	1.30 - 1.70
MOLYBDENUM	-----	0.20 - 0.35
MECHANICAL PROPERTIES AS PER GOST 1759		MECHANICAL PROPERTIES
TENSILE STENGTH, Kgf/mm ²	80 - 100	850 - 1000 N/mm ²
YIELD POINT, Kgf/mm ²	64 Min.	650 Min. N/mm ²
ELONGATION, %	12 Min.	13 Min
IMPACT STRENGTH, Kf.m/Cm ²	6 Min.	30 Min. ft.lb.
IMPACT KCV, J	--	35 Min.
BRINELL HARDNESS -HB	225 - 300	248 - 302



D1=(0.90-0.95)S
* FULL LENGTH



@ ALT.MATERIAL:-

@ AUTHORITY: CQA(HV) LETTER NO.98704/04/ID-CO-ORD/ALT COM DATED 03-05-2005

संख्या NO.OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS	अभ्यक्ति REMARKS
सामान्य सहिष्णुता GENERAL TOLERANCE			Ⓐ	Dr. updated		28/08/07
रेखिक परिमाण LINEAR DIMENSION						
0-6		±0.1				
6-30		±0.2				
30-120		±0.3				
120-315		±0.5				
315-1000		±0.8				
1000-2000		±1.2				
कोणिक परिमाण ANGULAR DIMENSION	संख्या NO.OFF	संबंधित पुर्जा क्र. DRG. NO. OF ASSOCIATED PART	सूचक INDEX	संशोधन ALTERATION	2007	दिनांक DATE
1-10	±1°					
10-50	±30'					
50-100	±20'					
>100	±10'					
मापक 'म्यू एम' में VALUE IN "um"						
~	>25					
▽	8-25					
▽▽	1.6-8					
▽▽▽	0.025-1.6					
▽▽▽▽	<0.025					
HEXAGON BOLTS WITH REDUCED HEAD TRANSMISSION GEAR UNIT CODE - 45 / T - 90 & T - 72				मापमान SCALE	आरेखित DRAWN	27.8.07
				NTS	जाँचा CHECKED	14/09
					अनुमोदित APPROVED	A.K.N.
				द्वारा बदला REPLACED BY		
				हेतु बदला REPLACED FOR		
मशीनी औजार आदिखप फैक्टरी, अम्बरनाथ MACHINE TOOL PROTOTYPE FACTORY, AMBERNATH				कार्यालय OFFICE	आरेखण क्र. DRAWING NO.	2/2
				D.O.	MPF/JGB/7808	

This sketch alongwith all details is an abstract based on GOST 7808-70

इन आरेखणों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।

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