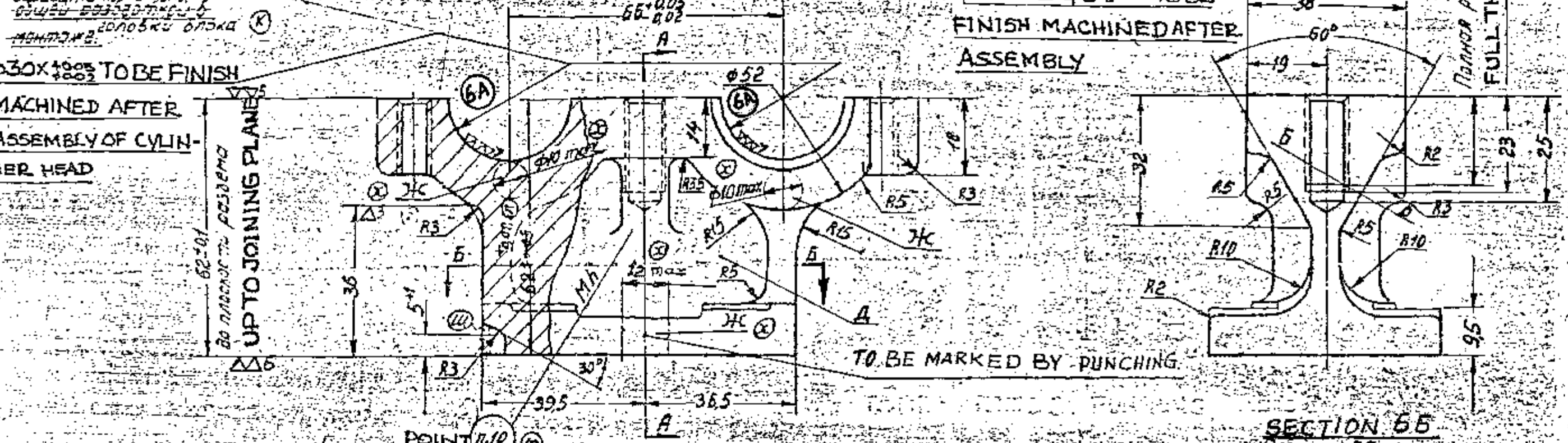
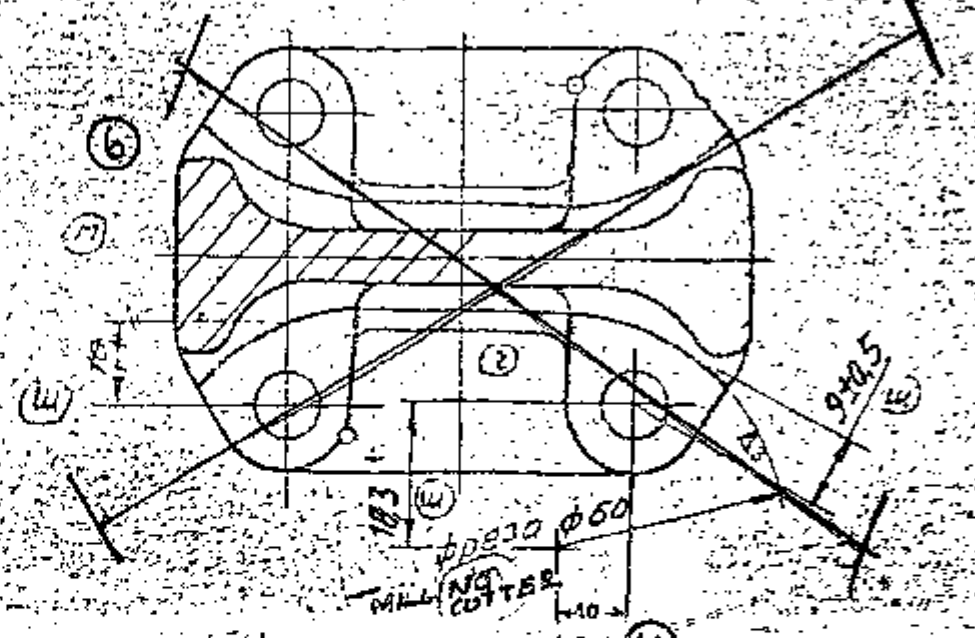
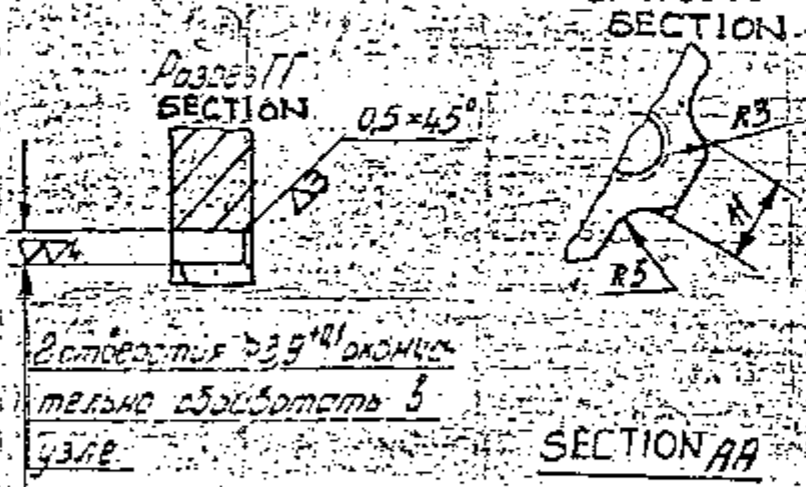
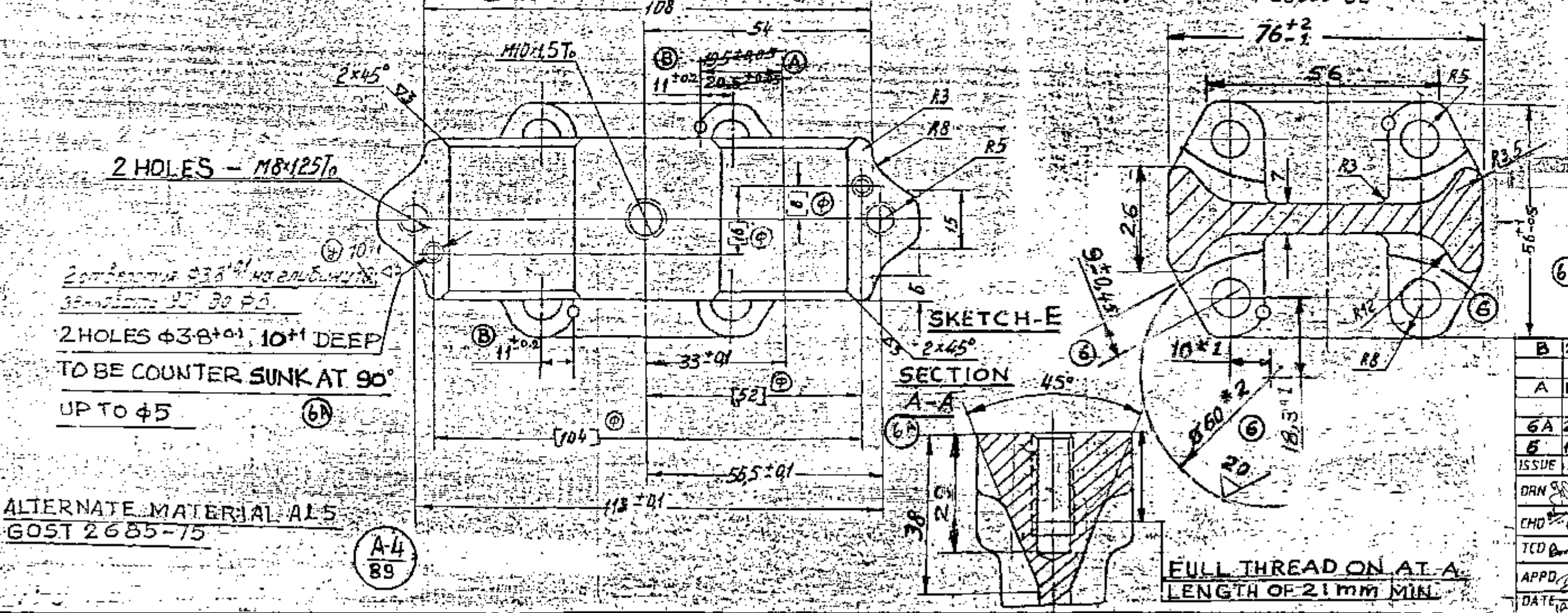


Допускается отливать по условному контуру, но высота 5 мм MAY BE CAST ALONG CONVENTIONAL PROFILE AT HEIGHT 5+1 mm.



1. Casting requirements should, in accordance with TTM - 65-78.
2. BHN ≥ 80 .
3. Machining dimension without tolerance should be as per accuracy class 7, OST 1010.
5. Casting identification mark upto $\phi 5$ mm and upto 3 mm in height is permitted at place "A" (6A).
6. Sharp edges are to be blunted.
8. Technical requirements for threads should be in accordance with standard 82021-00.
9. Components may be manufactured as per sketch E.
10. Material grade is to be marked in casting, Marking by punching is allowed.
11. Machining according to dimensions given in square brackets is done together with mating components.
12. permissible at points X are marks from push-rods



IN THE FORM OF RECESSES UPTO 1 mm OR BULGES UPTO 0.5 mm FROM BOTH SIDES OF THE COMPONENT WITHOUT COMING ON CHAMFER $2 \times 45^\circ$ FLASHES ARE NOT ALLOWED. (6A)

13. DIMENSIONS ARE FOR REFERENCE. ** A19 GOST 2685-75

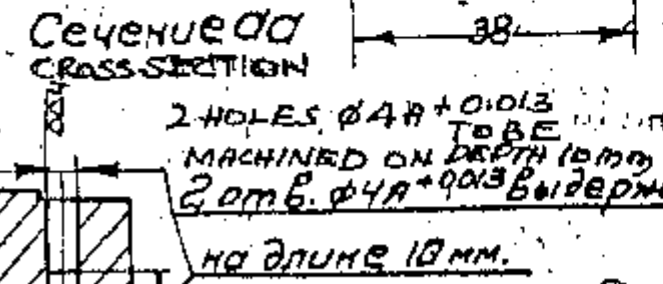
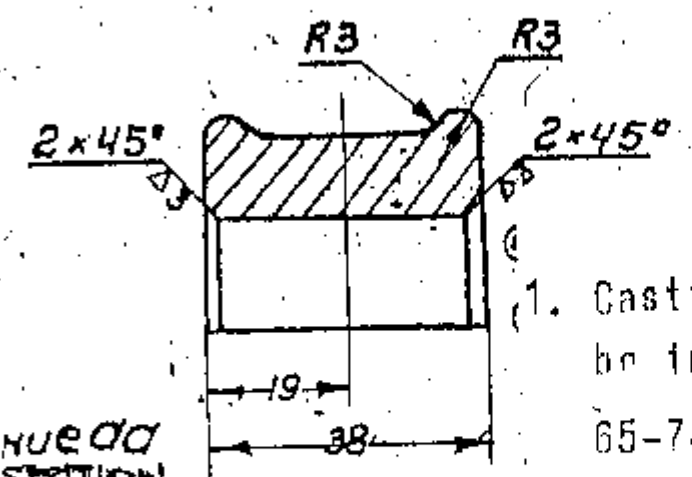
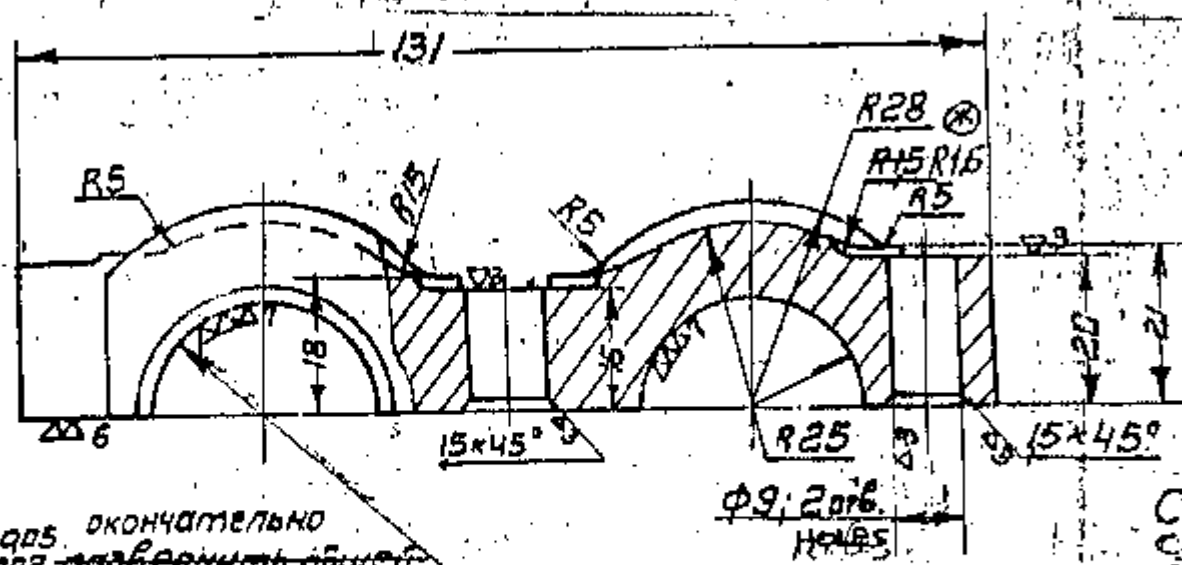
PILOT SAMPLE SHOULD BE APPROVED BY A HSP BEFORE

B	2.11.02	EFA/P/PD0/023	EST. MASS	TO BE STAMPED OR MARKED WHERE INDICATED THUS
A	17.9.02	EFA/P/PD0/023	0,35 Kg	LETTERS I
6A	22.3.93	DO CORRECTION	ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE	
5	12.3.93	BR 83-103	MATERIAL	USED ON
ISSUE DATE	NATURE OF AMENDMENTS	MATERIAL	* * * SEE ABOVE	CS 306-04-2
DRN	SCALE: 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI		
CHD	DIMENSIONS IN mm	TITLE: BASE OF CAMSHAFT BEARING		
TCD	TOLERANCE ON DIMS UNLESS OTHERWISE STATED	DRAWING NUMBER		
APPD	ALL THREADS TO CONFORM TO	306-40-1A		
DATE				

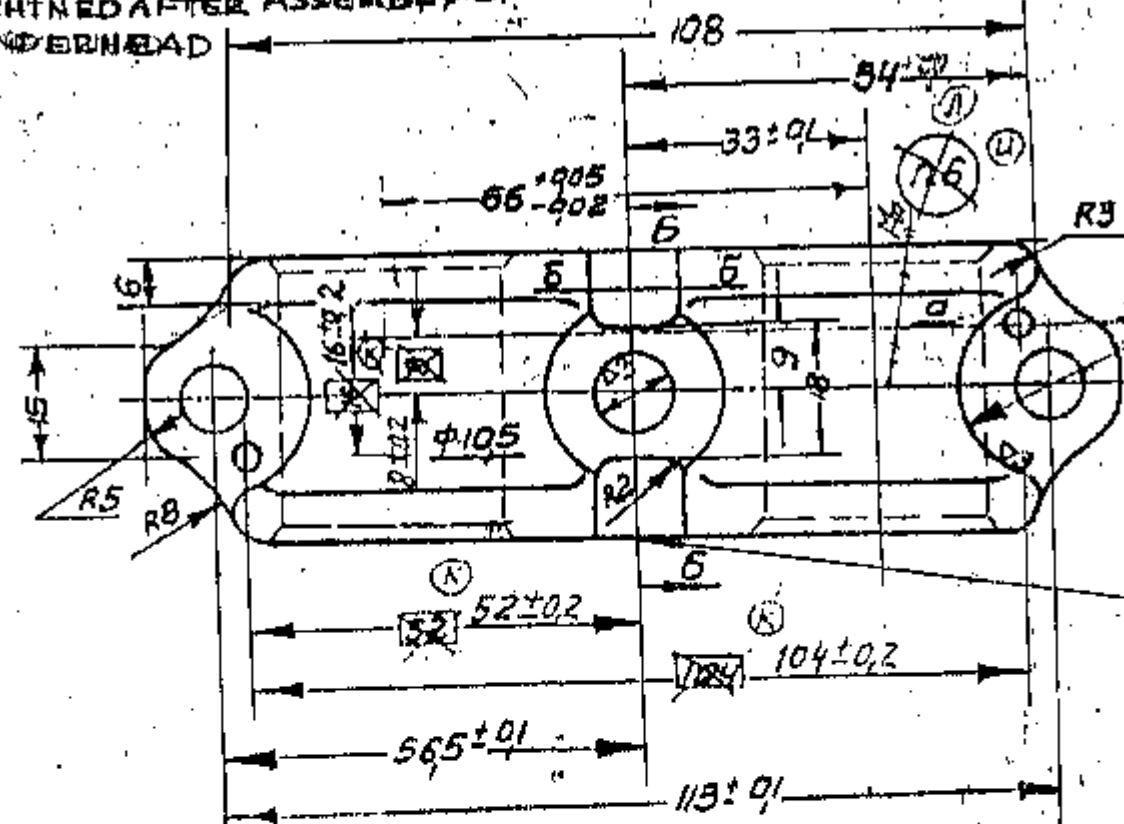
DRG. INDIVANISED BASED ON RUSSIAN ORIGINAL ISSUE - B.

ALTERNATE MATERIAL AL5
GOST 2685-75

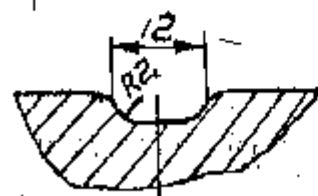
A-4
89



окончательно
 обработать в угле головки блока.
 обработать в монтаже
 TO BE FINISHED
 MACHINED AFTER ASSEMBLY OF
 CYLINDER HEAD



CROSS SECTION
 Сечение бб



1. Casting requirements should be in accordance with TTM 65-78.
2. BHN ≥ 80
3. Machining dimensions without tolerances should be as per accuracy class 7 OST 1010.
4. Sharp edges are to be blunted.

Клейма металлическое.
 TO BE MARKED BY PUNCHING.

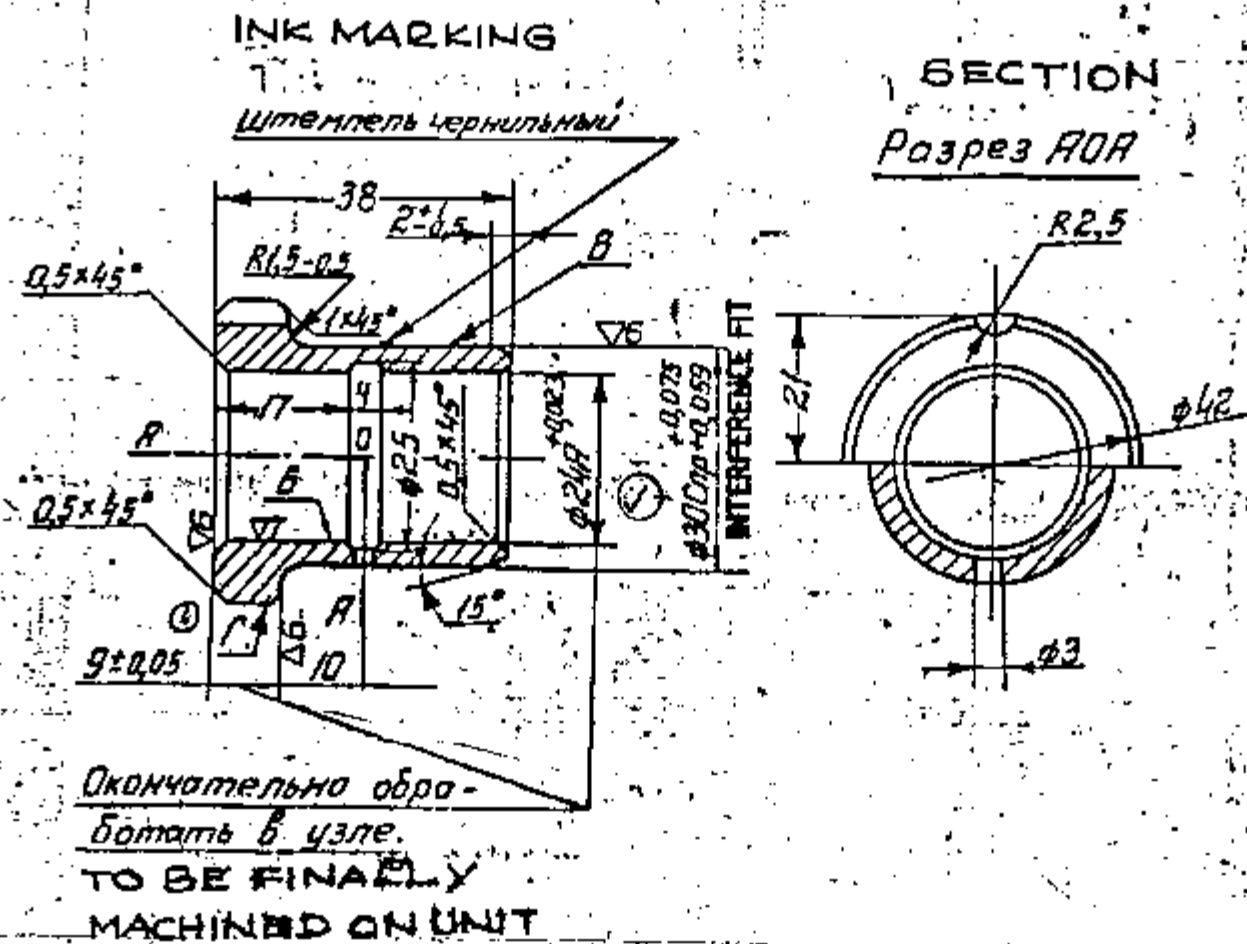
PILOT SAMPLE SHOULD BE APPROVED BY A ILS P BEFORE BULK PRODUCTION

EST. MASS 0,17 kg.	TO BE STAMPED ON MARKING SURFACE INDICATED THIS IS (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED FACTURED CORNERS TO HAVE R-OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE	
ISSUE DATE	NATURE OF AMENDMENTS
DRN	SCALE: 1:1
CHKD	DIMENSIONS IN mm
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED
APPD	ALL DIMENSIONS TO CONFORM TO
DATE 20.1.88	
MATERIAL: A R 9 GOST 2685-75	USED ON- 66 306-04-2
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A U I	
TYPE: CAP OF CAMSHAFT BEARING	DRAWING NUMBER 306-41 A

1	2	24.278	2/10/88	5
K	4	74.463	2/10/88	5
U	7	72.272	2/10/88	5
J	2	66.734	2/10/88	5

DRAWING NUMBER

306-75-3



- INSPECTION GROUP IV, TT II.
- B.H.N \geq 120.
- DIMENSION WITH UNSPECIFIED TOLERANCES SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7, OF OST 1010.
- RUN-OUT OF SURFACE 'B' RELATIVE TO AXIS OF SURFACE 'B' BEFORE PRESSING SHOULD NOT EXCEED 0.04mm.
- SHARP EDGES SHOULD BE BLUNTED.
- ALTERNATE MATERIAL : БР А9 Ж 3П, GOST 493-79.
- REQUIREMENTS FOR CASTING ARE AS PER TECHNICAL REQUIREMENT Б/А -109.
- CUTTER MARK NOT MORE THAN 0.3mm DEEP IS PERMISSIBLE ON SURFACE Г.

10. REPAIR SIZE DIMENSION: $\varnothing 30.5$ ADDED WHERE INDICATED THIS AND BASED ON LETTER No: 82847/OH/QAD/ED Dt: 13.1.95

Sl. No.	R ₁	R ₂	REMARKS
1	+ 0.075 + 0.059	+ 0.075 + 0.059	1. MARK REPAIR SIZE CATEGORIES R ₁ , R ₂ , Etc. 2. ALL OTHER SIZES SURFACE FINISH MATERIAL AND TECHNICAL REQUIREMENTS ARE SAME

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

EST. WT. 0.110 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.	

EXPLANATORY NOTE :

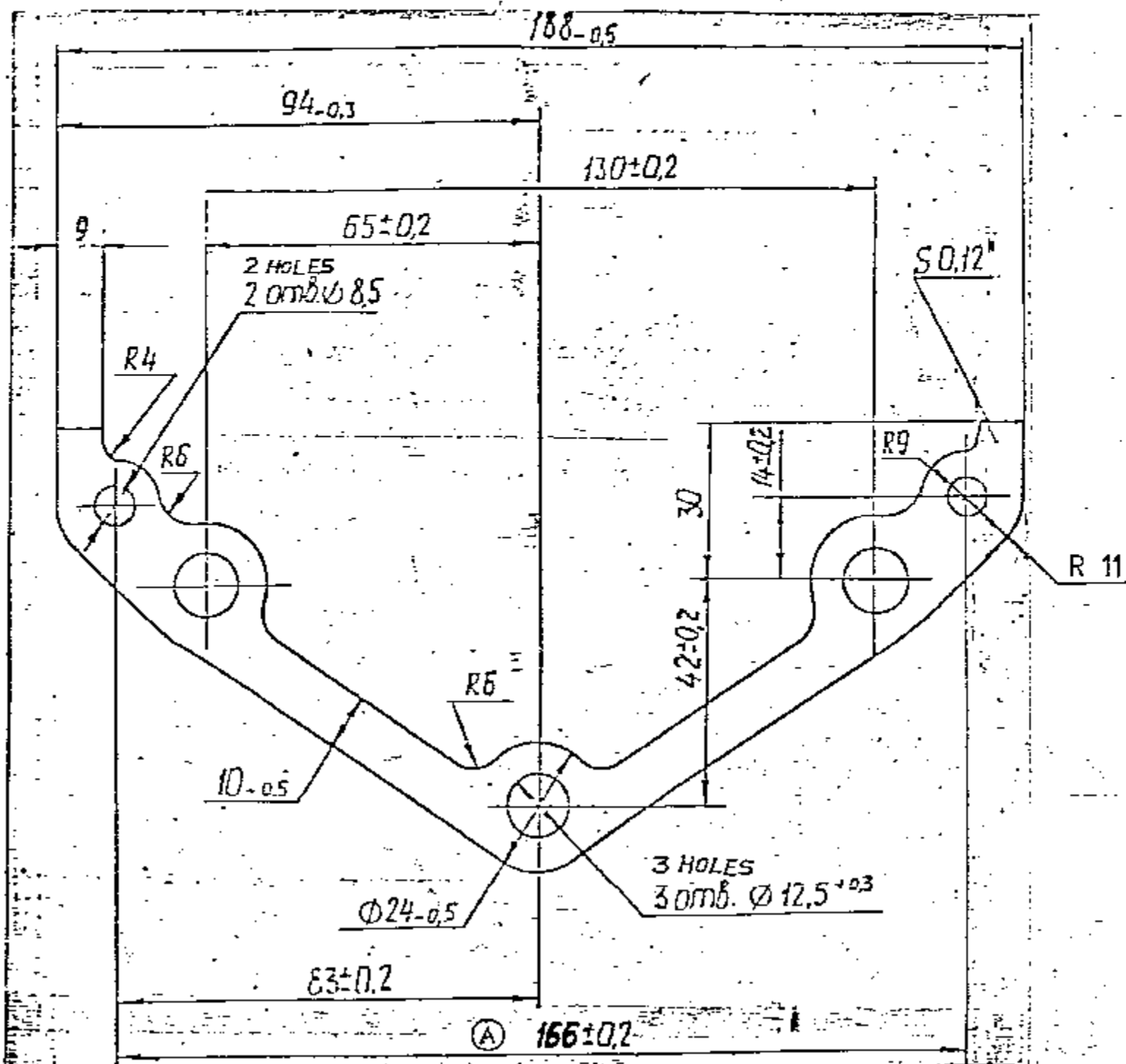
- REFERENCE MATERIAL QUOTED : BAR БРА Ж 9-4 GOST 1628-78
БРА Ж 9-4 - GRADE OF MATERIAL (BRONZE - EXTRUDED ROUND ROD)
a) CHEMICAL COMPOSITION : % (BY WEIGHT) AS PER GOST 18175-78.
(i) BASIC COMPONENT COPPER - THE REST
ALUMINIUM - 8.0 - 10.0
IRON - 2.0 - 4.0
(ii) IMPURITIES ELEMENTS VIZ :
TIN, SILICON, LEAD, PHOSPHORUS, ZINC, MANGANESE ALL PUT TOGETHER 1.7 % (max) BY WEIGHT.
b) MECHANICAL PROPERTIES :
ULTIMATE TENSILE STRENGTH Kgf/mm² (Mpa) (min) - 55 (540)
RELATIVE ELONGATION % (min) - 15
- ALTERNATE MATERIAL QUOTED : БРА9 Ж 3П, GOST 493-79
БРА9 Ж 3П - GRADE OF MATERIAL (TIN FREE BRONZE).
a) CHEMICAL COMPOSITION : % (BY WEIGHT)
BASIC COMPONENT COPPER - THE REST.
ALUMINIUM - 8.0 - 10.5
IRON - 2.0 - 4.0
IMPURITIES ELEMENTS VIZ :
ARSENIC, ANTIMONY, TIN, SILICON, NICKEL, LEAD, PHOSPHORUS, ZINC, MANGANESE, ALL PUT TOGETHER 2.8% (max) BY WEIGHT.
b) MECHANICAL PROPERTIES : CHILL CASTING METHOD.
ULTIMATE TENSILE STRENGTH, Mpa (Kgf/mm²) (min) 490 (50)
RELATIVE ELONGATION % (min) = 12

DRN	CHD	TCD	APPB	DATE	SCALE	DIMENSIONS IN mm.	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69	ALL THREADS TO CONFORM TO
				28-1-88	1:1			
MATERIAL :- BAR БРА Ж 9-4 GOST 1628-78			USED ON :- CB 306-01-20 CB 306-02-20			CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I		
TITLE							OBLIQUE SHAFT BUSHING	
ISSUE			DATE		NATURE OF AMENDMENTS		D S CAT NUMBER	
DRAWING NUMBER							306-75-3	

KVD No: 78120

A55

ZE A2



1. ALTERNATE MATERIAL : CABLE INSULATING PAPER K-170 GOST 23463-83.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS $\pm 0.5\text{mm}$.
3. ON THE EDGES OF CONTOUR OF DENTS AND RUPTURE ARE NOT ALLOWED.
4. * DIMENSION FOR REFERENCES.

EXPLANATORY NOTE

5. MATERIAL QUOTED : CABLE INSULATING PAPER K120 GOST 23436-83.
 Alt Matl quoted : CABLE INSULATING PAPER K170 GOST 23436-83.
 PAPER = FOR INSULATING 35KV POWER CABLES.
 K-120 = GRADE OF PAPER - ORDINARY - THICKNESS = 120 ± 7 MICRONS.
 K-170 = GRADE OF PAPER - ORDINARY - THICKNESS = 170 ± 10 MICRONS.

QUALITY PARAMETERS :

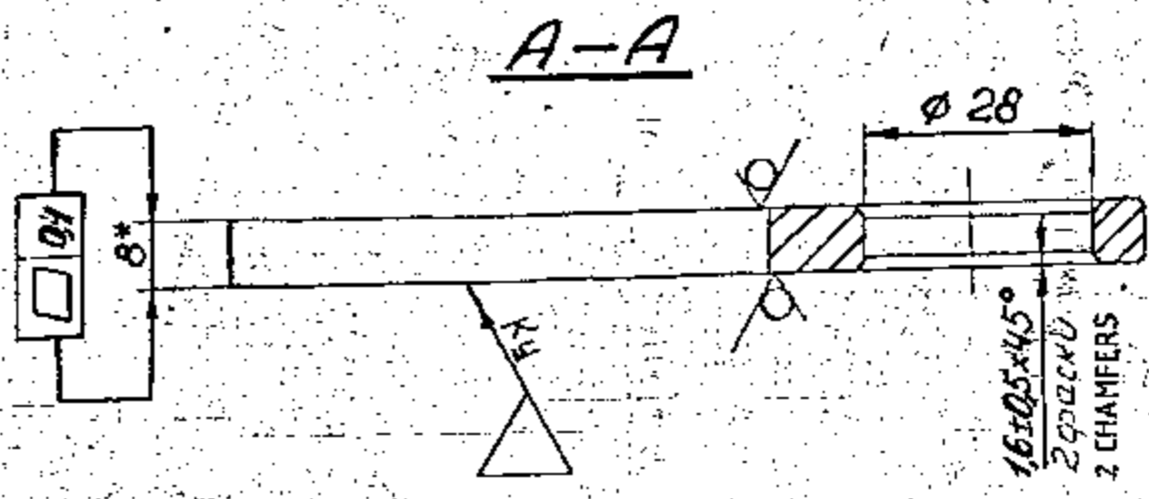
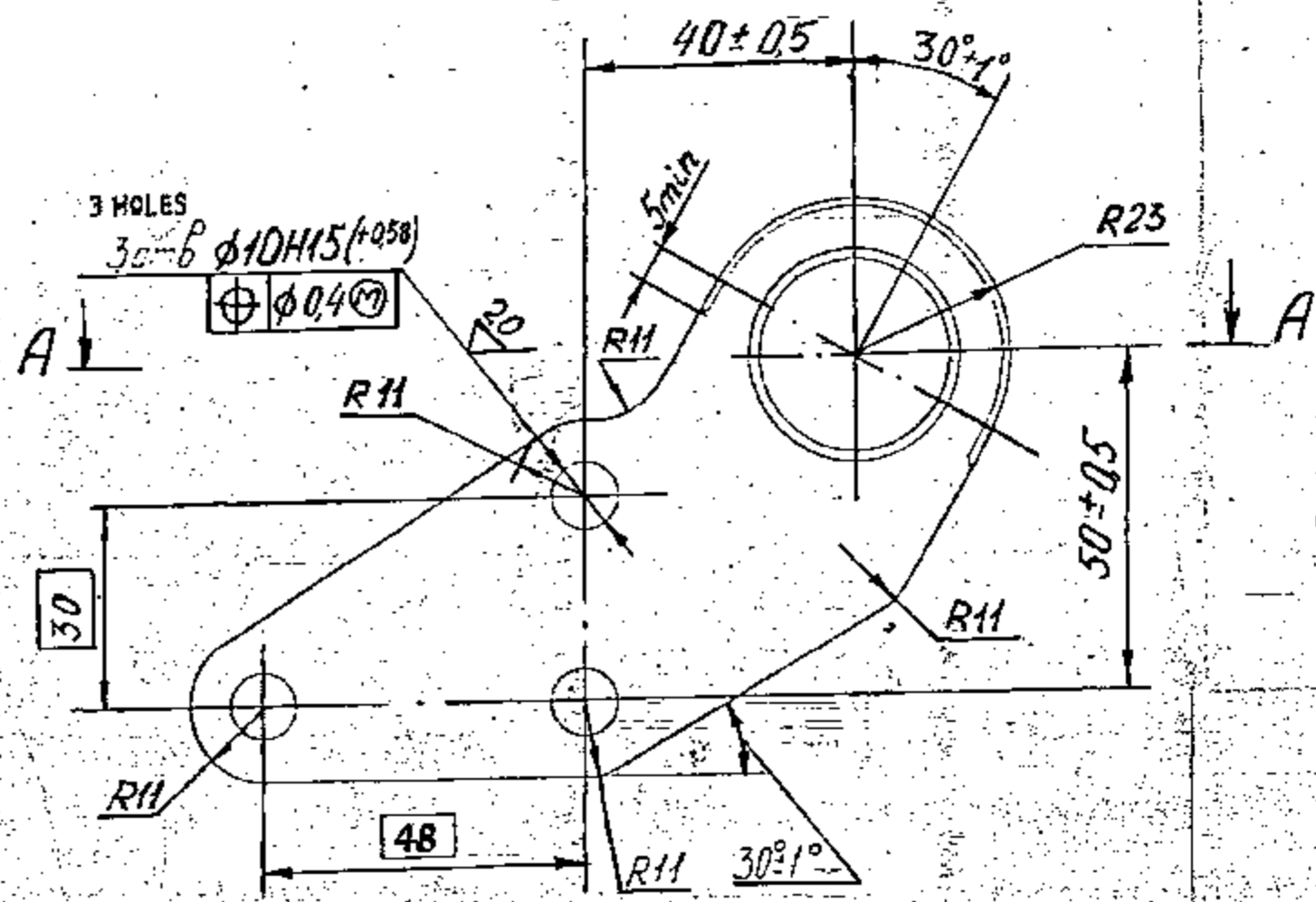
	K - 120	K - 170
1. FIBRE COMPOSITION % OF UNBLEACHED SULPHATE CELLULOSE AS PER STANDARD AND TECHNICAL DOCUMENTATION	100	100
2. DENSITY g/cm^3	0.78 ± 0.05	0.76 ± 0.05
3. BREAKING PROOF Kgf (min) IN THE MACHINE DIRECTION IN THE TRANSVERSE DIRECTION	13.0 6.0	17.5 8.5
4. ELONGATION % (min) IN THE MACHINE DIRECTION IN THE TRANSVERSE DIRECTION	2.2 6.6	2.2 6.6
5. AIR PERMEABILITY ml/min (max)	40	40
6. ASH CONTENT % (max)	1.0	1.0
7. PH VALUE OF AQUEOUS EXTRACT	7.0 - 9.5	7.0 - 9.5
8. CONDUCTIVITY OF AQUEOUS EXTRACT $\mu\text{s/cm (max)}$ WITH MODULE 1 : 50 WITH MODULE 1 : 20	63 126	63 126
9. MOISTURE CONTENT %	4-8	4-8

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

EST. WT. (A) TO BE STAMPED OR MARKED WHERE INDICATED THIS \neq 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	Art. 306-87	MATERIAL :-	USED ON :-
CHKD	9/1/89	CABLE INSULATING PAPER	CB 306-01-20
TED	11/1/89	K-120 GOST 23436-83	CB 306-02-20
APRD	11/1/89	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
DATE	11-5-89	A V A D I	
SCALE	1:1	TITLE	
DIMENSIONS IN	mm	GASKET	
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 2102-69	D S GAT NUMBER	
A 28-2-96	AUTHY. I.T. No. EFA/PDO/2556-4/36 DT. 21-2-96	DRAWING NUMBER	
ISSUE	DATE	NATURE OF AMENDMENTS	
		306-87	



1. Заменитель материала сталь 25,35,40,45 ГОСТ 1050-74.
2. Неуказанные предельные отклонения размеров на штамповку ± 0.5 мм.
3. Допускается штамповочный скос не более 0.8 мм на сторону.
4. Покрытие Ц15.хр по УЛ-483-82.
5. В тропическом исполнении покрытие ЦК39.хр по УЛ-569-84 с последующим удалением водородной хрупкости.
6. * Размер для справок.

1. ALTERNATE MATERIAL : STEEL 25, 35, 40, 45 GOST 1050 - 74.
2. UNSPECIFIED TOLERANCES FOR STAMPING DIMENSIONS ARE ± 0.5 mm.
3. DRAFTS UPTO 0.8 mm PER SIDE IS PERMITTED.
4. COATING: Zn.15 CHROMATIZING AS PER U/L 483-82.
5. IN TROPICALIZED CONSTRUCTION COATING: ЦК.9 CHROMATIZING IN ACCORDANCE WITH U/L 569 - 84 WITH SUBSEQUENT REMOVAL OF HYDROGEN BRITTLNESS.
6. * DIMENSION FOR REFERENCE.
7. ALTERNATE MATERIAL : SHEET 6 8 GOST 19903 - 74 20 GOST 4061 - 71

ⓑ EQUIVALENT MATERIAL
STEEL 070 M20 (EN3A) TO BS: 970

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

EST. WT. 0.27 Kg.	TO BE STAMPED OR MARKED WHERE INDICATED THIS # (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	TED	APPD	DATE	SCALE	DIMENSIONS IN CM	TOLERANCE ON DEPTS UNLESS OTHERWISE STATED IS 202-97	MATERIAL SHEET 6 8 GOST 19903-74 20 GOST 1577-70	USED ON CS 306-92-20
				15-11-89	1:1			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
								AVADI	
								TITLE	
								ANGLE PIECE	
								D S CAT NUMBER	DRAWING NUMBER
									306 - 98 - 6

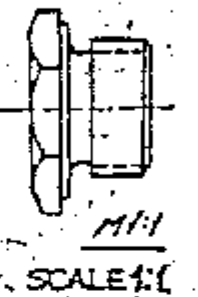
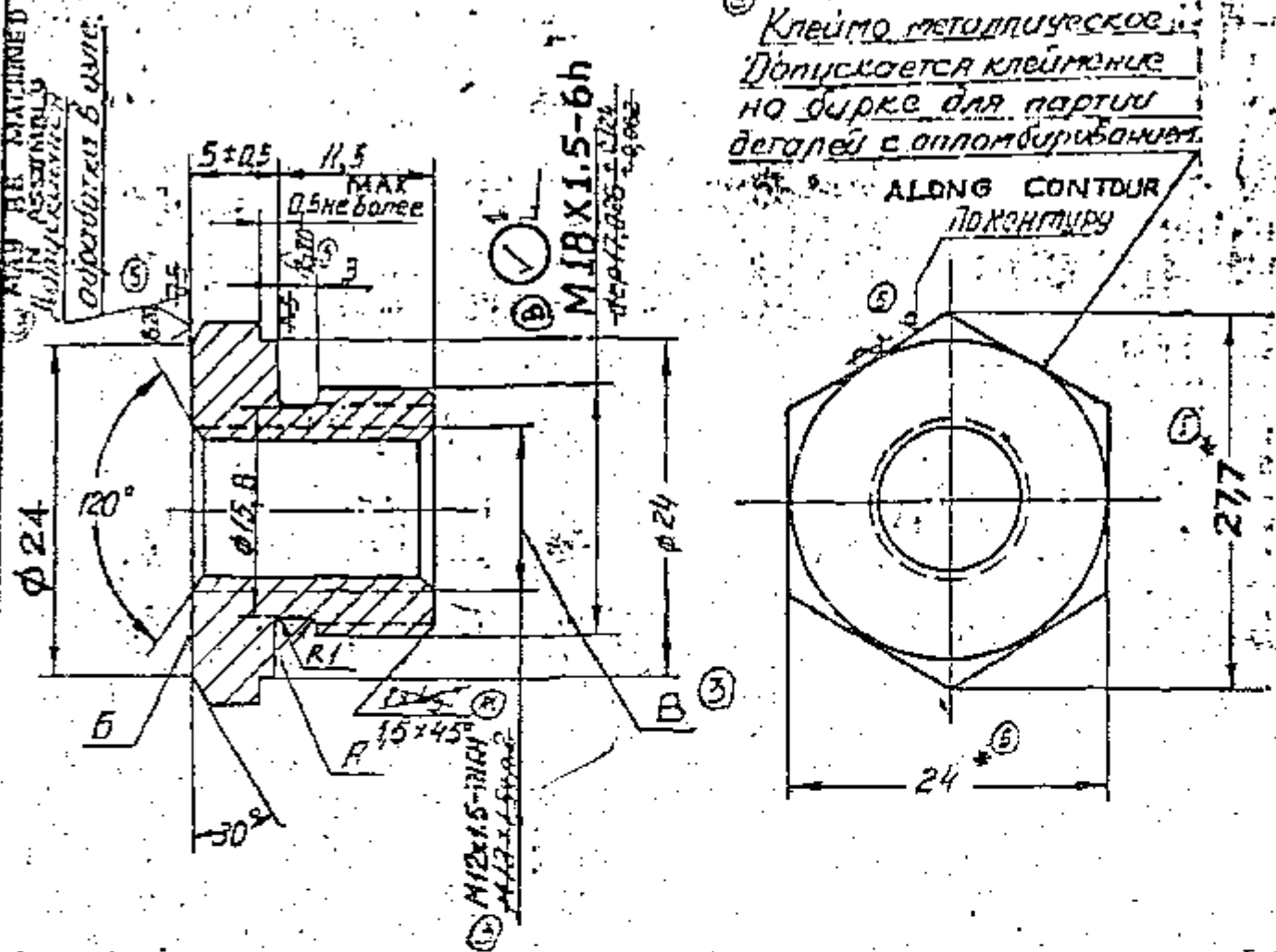
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE-7(BK 85-141)

AS 20 SIZE A2

1-901-10E

TO BE PUNCHED, MARKING ON TAG FOR A BATCH OF COMPONENTS WITH PACKING AND SEALING IS PERMISSIBLE.

Клеймо металлическое
Допускается клеймение
но бирке для партии
деталей с опломбированием



Inspection group V
Tolerance on free dimensions are as per class 7 accuracy of OST 1010.
Tech. Requirements for thread are as per standard 82021-00.
End play on surface A relative to the axis of external thread should not exceed 0.1 mm on Ø 23. End play on surface B relative to the axis of internal thread should not exceed 0.15 mm on Ø 23. Thread dimensions are to be checked before coating, internal thread may not be coated. Sharp edges should be blunted, turning of face on Ø 26 C5 is permissible.
Coating is Cd 9 Cr as per ~~U.S. 569-86~~ with hydrogen embrittlement removed.
Alternate material-steel grades 40 and 50, Gost 1050-74

*Dimensions for reference.

ALTERNATE MATERIAL: STEEL 080M40 (EN B)
TO BS: 970 Pt. I-1983 OR 45 CB 70 15 :1570

COA(HV)5.07.50ZE Cb 306-01-36 * CB-20-29-08-2
COA(HV)5.07.504E Cb 306-02-36 CB-3329-01-11
Cb 337-120 CB-3301-15-44
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION

D	9-6-09	3 rd ALTN. COMM. MINUTES POINT B. DT 27-2-09	EST. MASS 0,022 Kg	TO BE STAMPED ON MARKED WHERE INDICATED THUS #
C	9-9-08	USED ON NUMBER ADDED		
B	20-5-98	REPAIR SIZES ADDED	ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE	
G		BK 82-207	MATERIAL 24-5 GOST 8560-78 USED ON- CB 3301-15-30 *	
A	25.12.08	AUTHY BK 65-141	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
ISSUE	DATE	NATURE OF AMENDMENTS	TITLE: BUSH	
DRN	1/2	SCALE: 2:1	U.S. CAT NUMBER: 301-106-1	
CHD	3/11	DIMENSIONS IN mm	DRAWING NUMBER: 301-106-1	
TCO	4	TOLERANCE ON DIMS UNLESS OTHERWISE STATED		
APPD		ALL TOLERANCES TO COMPLY TO		
ISSUE	DATE	NATURE OF AMENDMENTS		
E	5.3.14	Authy. Point No.11 of 7 th Alt. Comm. Meeting at EFA.		

EXPLANATORY NOTE:-

MATERIAL QUOTED :- HEXAGONAL BAR 24-5 GOST 8560-78.
45- GOST 1051-73.

ALTERNATE MATERIAL QUOTED :- 40 AND 50 GOST 1050-74.

BRIGHT STEEL HEXAGONAL FROM GRADE 45 STEEL WITH WIDTH ACROSS FLATS 24 mm; OF ACCURACY CLASS - 5 AS PER GOST 1051-73.

CHEMICAL COMPOSITION:-

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Si	Mn	Cr	P	S	Cu	Ni
40	0.37-0.45	0.17-0.37	0.50-0.80	0.25	0.035	0.040	0.25	0.25
45	0.42-0.50	0.17-0.37	0.50-0.80	0.25	0.035	0.040	0.25	0.25
50	0.47-0.55	0.17-0.37	0.50-0.80	0.25	0.035	0.040	0.25	0.25

MECHANICAL PROPERTIES:-

GRADE OF STEEL	TENSILE STRENGTH	YIELD POINT	ELONGATION	REDUCTION IN AREA	IMPACT STRENGTH
	kgf/cm ²	kgf/mm ²	%	%	kgf.m/cm ²
40	58	34	19	45	6
45	61	36	16	40	5
50	64	38	14	40	4

REPAIR SIZE DIMENSIONS ARE ADDED BASED ON LETTER NO:

82847/OH/GAS/ED. DT: 27 MAR 95 AS FOLLOWS:

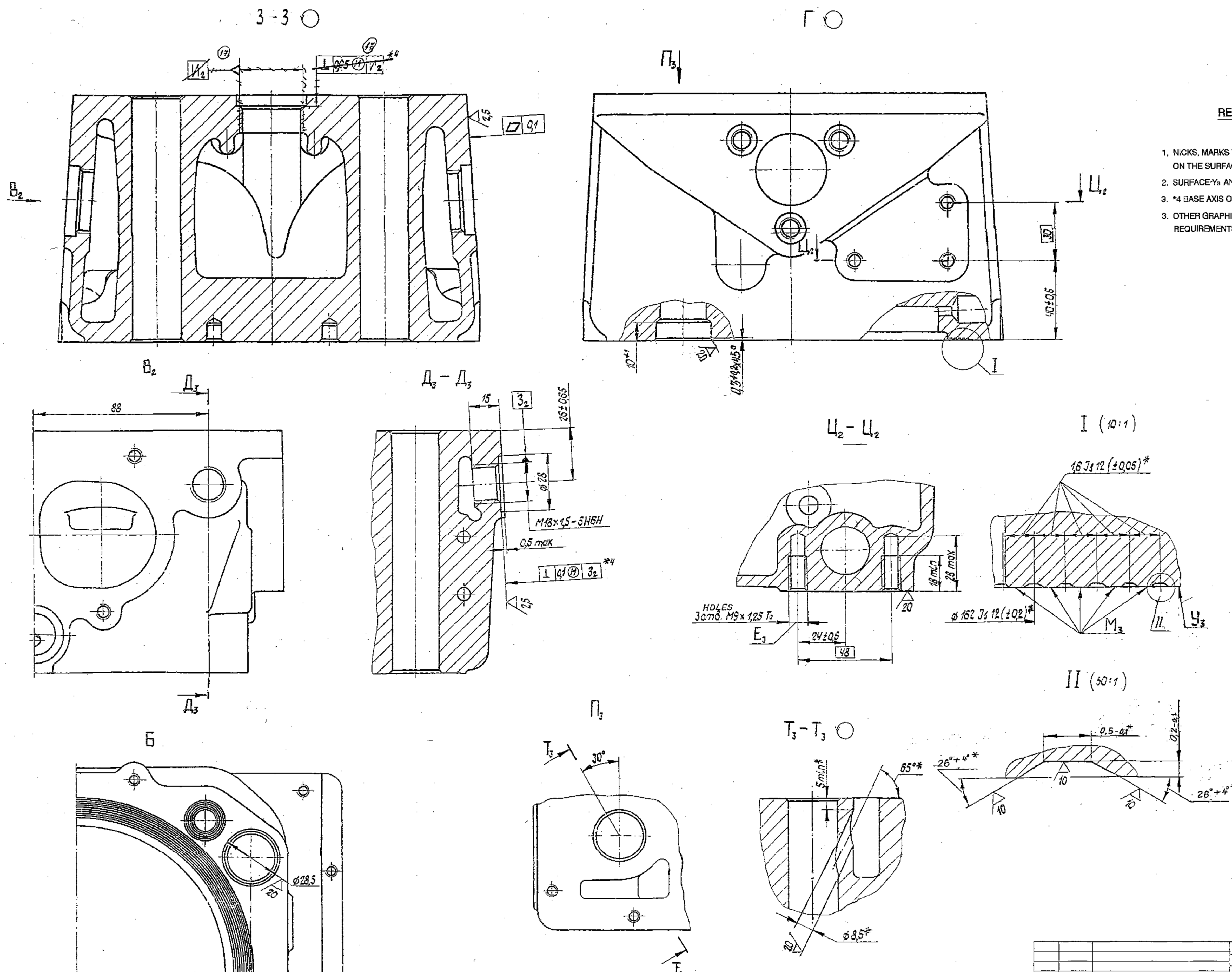
REPAIR SIZE DIMENSION ADDED WHERE INDICATED THUS: (B)

S/N	R	REMARKS
1	M20x1.5-6h	ALL OTHER CONDITIONS AS PER STD DRG. MARK REPAIR SIZE

COMMON TO V-92S2 & UTD-20 ENGINES

A-2

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 17 AND DRG. REPLACES ISSUE A VIDE 18th TRIG POINT No. 2



REDUCED ORIGINAL No. -1
R.H CYLINDER HEAD

1. NICKS, MARKS FLAY MARKS AND DIG OUT FROM MACHINING ARE NOT ALLOWED ON THE SURFACE M3.
2. SURFACE M₃ AND M₄ SHOULD BE ON ONE FLATNESS.
3. *4 BASE AXIS OF NEAR DIAMETER.
3. OTHER GRAPHICS, DIMENSIONS, SURFACE FINISH MATERIAL AND TECHNICAL REQUIREMENTS ARE AS PER DRAWING 306-16-23.

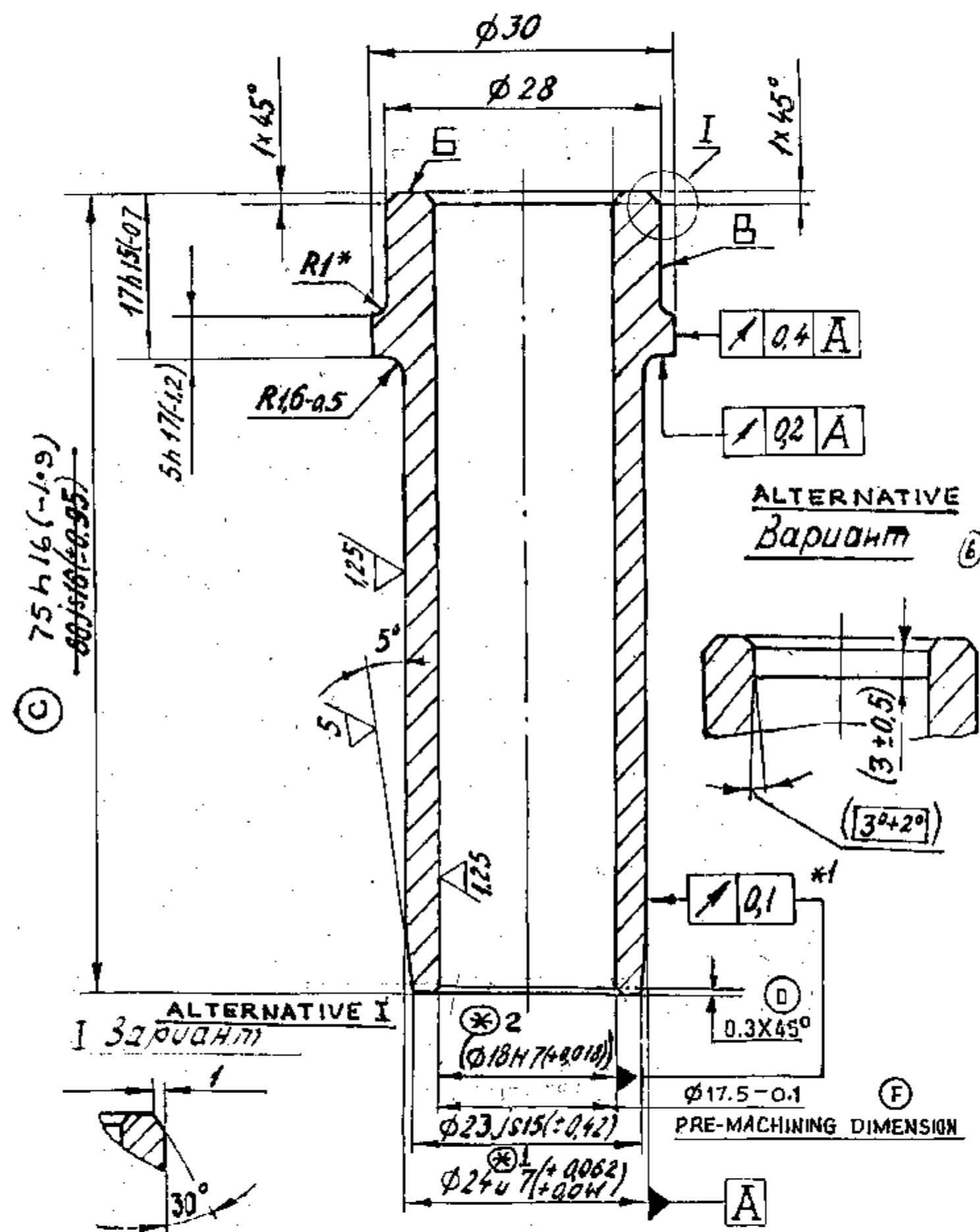
PILOT SAMPLE SHOULD BE APPROVED BY A I S P BEFORE BULK PRODUCTION.

EST. WT. (kg) TO BE STAMPED OR MARKED WHERE INDICATED THIS # (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	CHB	APFD	DATE	SCALE	DIMENSIONS	TOLERANCE	ALL TREADS	MATERIAL	USED ON
			16-05-2012	1:1	IN mm	UNLESS OTHERWISE STATED IS: 2102-69	TO CONFORM TO		CB.306-01-20
								CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
								TITLE:- R.H CYLINDER HEAD	
								D S CAT NUMBER	
								DRAWING NUMBER 306-16-19	
ISSUE	DATE	NATURE OF AMENDMENTS							

306-17-5



6. ALTERNATE MANUFACTURING PROCESS:-
HOT UPSET FORGING OF BLANKS FROM $\phi 24$ mm BRONZE ROD IS PERMITTED.

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

EST. WT. 0.155 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.

1. BHN: 110 TO 170.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS : h 14.
3. DIMENSIONS IN BRACKETS : AFTER ASSEMBLY.
4. ON SURFACES B AND B TRACES FROM TOOL MARKS ARE ALLOWED.
- 4* DIMENSIONS TO BE ENSURED BY TOOL.
- 5* TO BE ENSURED BEFORE ASSEMBLY.

REFERENCE MATERIAL QUOTED:

TIN FREE PRESSURE WORKED EXTRUDED BRONZE ROD GRADE BPA * MU 10-3-1.5, 30.0mm (-0.13) DIA TO GOST 1628-78 AND MANUFACTURED IN ACCORDANCE WITH BRONZE GRADE BPA * MU 10-3-1.5 TO GOST 18175-78.

a) CHEMICAL COMPOSITION AS PER GOST 18175-78

GRADE OF BRONZE	BASIC COMPONENTS %					IMPURITIES %				
	Al	Fe	Mn	Cu	Sn	Si	Pb	P	Zn	TOTAL
BPA * MU 10-3-1.5	9.0	2.0	1.0	REST	0.1	0.1	0.03	0.1	0.5	0.7
	11.0	4.0	2.0							

NICKEL UPTO 0.5% (PART BY WEIGHT) WITHOUT CONSIDERING IT IN TOTAL IMPURITIES IS ALLOWED.

b) MECHANICAL PROPERTIES AS PER GOST 1628-78

GRADE OF BRONZE	METHOD OF MANUFACTURE	ULTIMATE TENSILE STRENGTH Kgf/mm ²	ELONGATION %	HARDNESS BHN
BPA * MU 10-3-1.5	EXTRUDED	MINIMUM 60	12	130-200

REPAIR SIZE DIMENSIONS ARE ADDED AS INDICATED THUS * BASED ON LETTER No: 82847/OH/QAD/ED dt 13-1-95

S.No	R ₁	R ₂	R ₃	REMARKS
*1	+0.062 +0.041 $\phi 24.0$	+0.062 +0.041 $\phi 24.1$	+0.062 +0.041 $\phi 24.2$	1. MARK REPAIR SIZE CATEGORY R ₁ R ₂ R ₃ . 2. ENSURE INNER DIA AFTER ASSEMBLY. 3. PERMISSIBLE RUN-OUT OF SURFACE TO INNER DIA IS 0.1mm. 4. PERMISSIBLE RUN-OUT W.R.T. DIA 30 TO INNER DIA IS 0.4mm 5. ALL OTHER SIZES, SURFACE FINISH MATERIAL & TECH. REQUIREMENTS ARE SAME.
*2	+0.018 $\phi 17.8$	+0.018 $\phi 17.8$	+0.018 $\phi 17.8$	

DRN	CHO	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-59	ALL THREADS TO CONFORM TO	ISSUE	DATE	NATURE OF AMENDMENTS
				21-12-99	2:1						
MATERIAL :-			USED ON :-			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVAOI					
Br. A * MU 10-3-1.5			CS 306-01-20			TITLE: VALVE GUIDE					
GOST 1628-78			CS 306-02-20								
D S CAT NUMBER			DRAWING NUMBER 306-17-5								

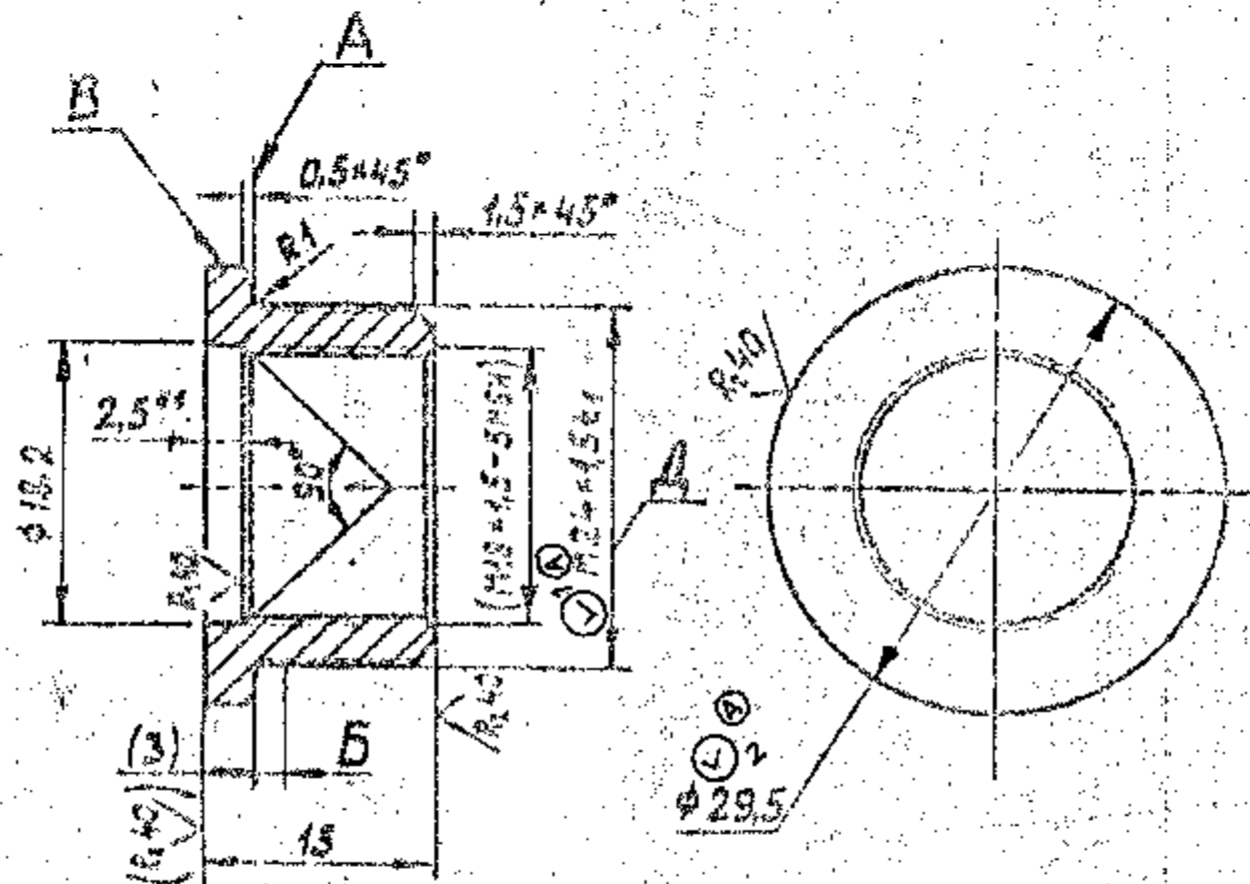
INTRODUCED VIDE NOTN No. BK 88-284



SIZE A2

202-11-7

2.5



1. ALTERNATE MATERIAL IS BRONZE OF THE FOLLOWING GRADES:
 Bp AX 9-4, Bp AX-MU10-3-105, GOST 18175-78 AND BRASS
 AC 59-1, GOST 15527-70.
2. REQUIREMENTS PLACED UPON CASTING ARE AS PER TTM 55-78.
3. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS:
 FOR HOLES - AS PER A₇
 SHAFTS - AS PER B₇
 OTHERS - AS PER CM₇.
4. IT IS PERMITTED TO PERFORM EXTERNAL DIAMETER OF HEAD B WITH TOLERANCE B₀ (-0.04) AND SURFACE ROUGHNESS.
5. RUN OUT OF SURFACE A IN RESPECT TO AXIS OF ANGLE DIAMETER OF EXTERNAL THREAD AS PER DIAMETER OF 26mm SHOULD NOT EXCEED 0.05mm.
6. CHATTER MARKS ON THE FIRST THREAD FROM THE DEAD ARE PERMITTED.
7. NO THREAD OR FLATTENED THREAD IS ALLOWED ON SECTION B EQUAL TO 2mm MAX AND MAJOR DIAMETER OF THREAD ON THIS SECTION MAY BE LOOSENED UP TO 0.3mm.
8. CARRY OUT FINAL MACHINING OF DIMENSIONS GIVEN IN BRACKETS IN ASSEMBLY.
9. MAKE THREAD A AS PER STANDARD 82020-13, ISSUE 4.
10. APPLY STAMP OF FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

II. REPAIR SIZES DIMENSIONS ARE ADDED WHERE INDICATED. THIS

*** ROD Bp A * 9-4 GOST 1520-78
 *** COA(HV)5.06.605E * CB 306-01-20
 COA(HV)5.06.609E * CB 306-02-20

S.No	R1	R2	REMARKS
1	2M 27x1.5±1 $\phi 26-0.26 \pm 0.062$ (MEAN)	2M 30x1.5±1 $\phi 29-0.26 \pm 0.062$ (MEAN)	1. MARK REPAIR SIZE CATEGORY R1, R2
2	$\phi 32.5^{-0.84}$	$\phi 35.5^{-0.84}$	2. ALL OTHER SIZES SURFACE FINISH MATERIAL AND TECHNICAL REQUIREMENTS ARE SAME

BASED ON LETTER No. B2847/04/QAD/ED DT 13-1-95

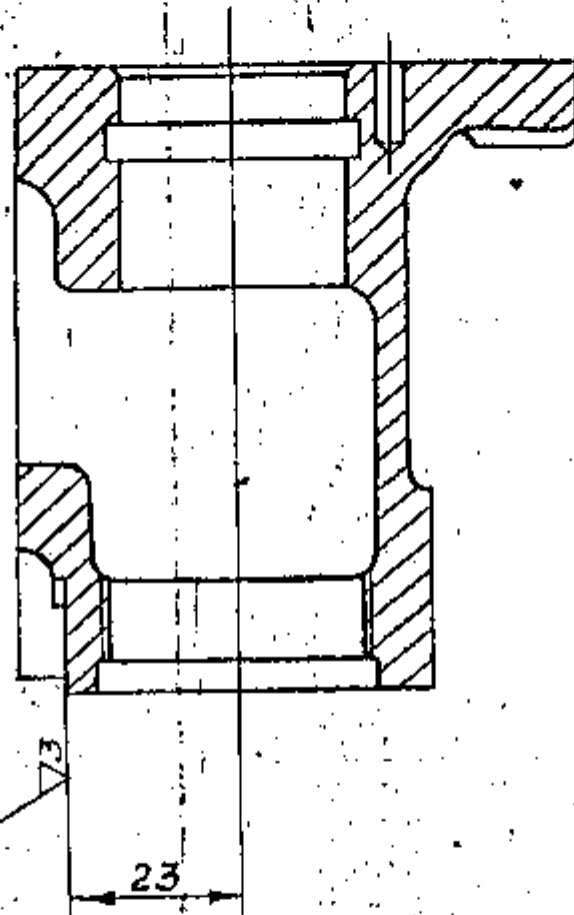
PRINT STAMP SHOULD BE APPROVED BY A MAN RECORDS AND ENGINEERING

B	15.715	Pt. 11 of 7th Alt. Com. Meeting Dt. 11.4.12	EST. MASS	TO BE STAMPED BY PERSONNEL
			0.030 Kg	REPAIR SIZE
A	205.86	REPAIR SIZES ADDED	ALL STAMP EDGES AND CORNERS TO BE DEBURRED PROSS	REVISIONS
DATE	15.7.15	NATURE OF ASSIGNMENT	OVERSHIRT STAMPED ENOUGH TO HAVE A DESIGN	REVISIONS
SCALE	2:1	DRAWING BY	A HIGH EQUIVALENT DESIGNER AND ENGINEER	REVISIONS
DIVISIONS	RECORDS	DATE	MATERIAL	USED DT. 15.7.15
TOLERANCE ON HOLE	PROSS OTHERWISE	APPROVED	* * * SEE ABOVE	15.7.15
STATED	PER THREADS CATEGORY	DATE	CONTROL UNIT OF INSPECTION HEAVY VEHICLE AVAIL	15.7.15
10			STARTING VALVE BUSH	
			DRAWING NUMBER	
			306-19-7	

306-20-2

③ A-A
см. чертёж 306-20-1
SEE DRAWING 306-20-1

K

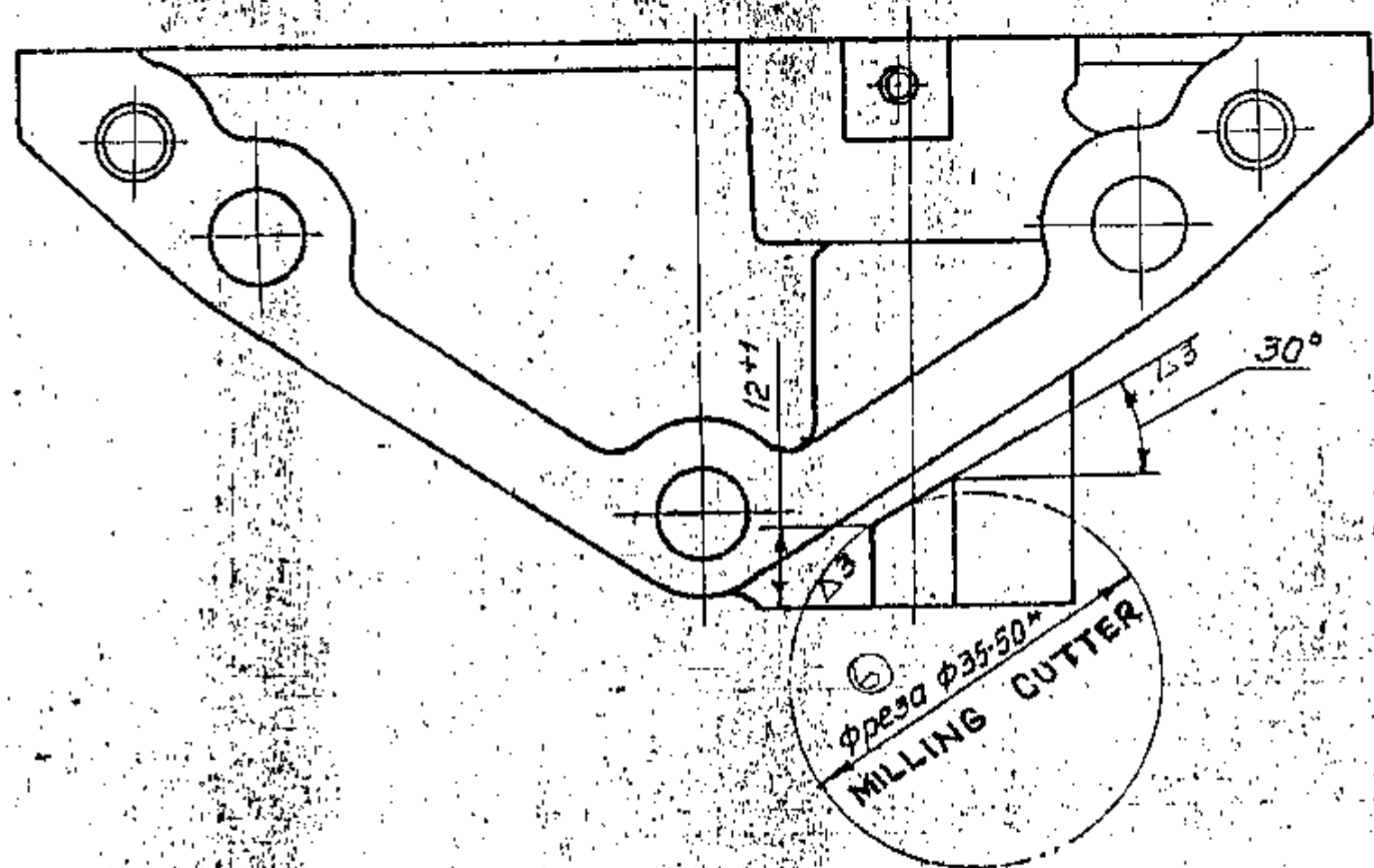


Проверять

④ TO BE CHECKED

- 1. ALTERNATE MACHINING
- 2. OTHER DIMENSIONS, SKETCHES, MACHINING AND TECHNICAL REQUIREMENTS AS PER DRAWING 306-20-1

⑤ Вид К
VIEW



⑥ фреза φ35-50
MILLING CUTTER

- 1. * Допустимый вариант обработки.
 - 2. Остальные размеры, графика, обработка и технические требования по чертежу 306-20-1.
- PILOT SAMPLE SHOULD BE APPROVED BY A HSP BEFORE BULK PRODUCTION

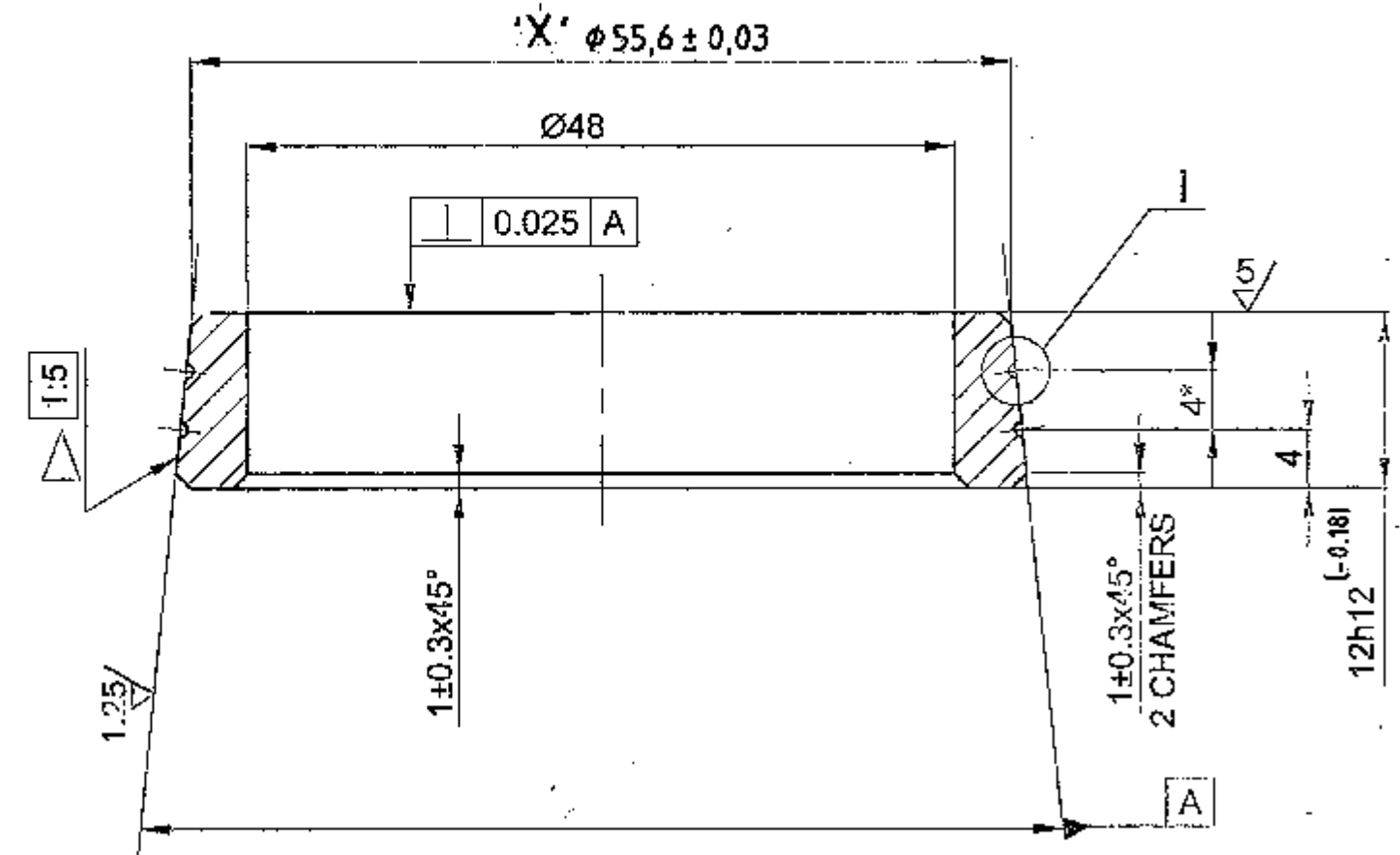
АБ

EST. MASS 0.73 Kg.		TO BE STAMPED OR MARKED WHERE INDICATED THIS # LETTERS	
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE A OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE			
ISSUE	DATE	NATURE OF AMENDMENTS	MATERIAL: АЛ9 GOST 2685-75. USED ON: СБ 306-01-20
DHN	by	SCALE: 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) АВАУ
CHD	by	DIMENSIONS IN mm	TITLE: INCLINED SHAFT CASING R.H.
TCO	by	TOLERANCE ON DIMS UNLESS OTHERWISE STATED	DRAWING NUMBER: 306-20-2
APPD	by	ALL DIMENSIONS TO	

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 13
 DRG. REPLACES 306-22-1, ISSUE - A VIDE NOTIFICATION NO: 89-361
 COMMON TO V-92SZ & UTD-20

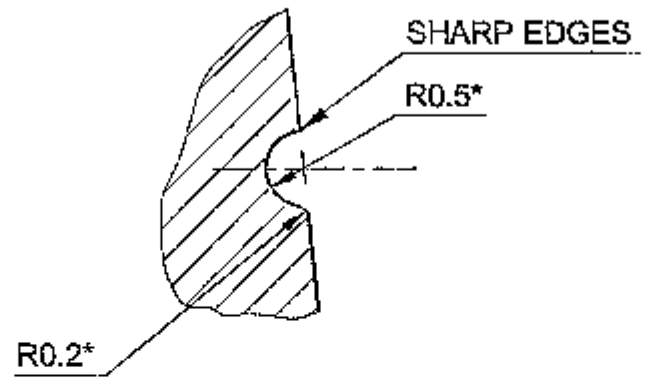
DRAWING NUMBER
306-22-1

10 / (✓)



1. Inspection group IV as per TT-11.
2. Hardness 269.....321 HB.
3. Alternative material is steel 38XC GOST 4543-71.
4. Coating : Chemically oxidized,oiled.
5. Unspecified limit deviation of dimensions $H14, \pm \frac{IT14}{2}$.
6. Deviation from the taper surfaces 'A' to be checked by "bluing" with special gauge, the imprint should be uniform and cover the length of the cone minimum 80 % of the area.
7. *Dimension to be ensured by tool.

1 (10:1)



CATEGORY		X
306-22-1	R ₁	DIA 55,7 ± 0,03
306-22-1	R ₂	DIA 55,8 ± 0,03

NOTE: R₂ SIZE IS "APPLICABLE ONLY" FOR V46-6 & UTD-20 ENGINES.

**
 (13B) CQA(HV)5.06.605E
 CQA(HV)5.06.609E

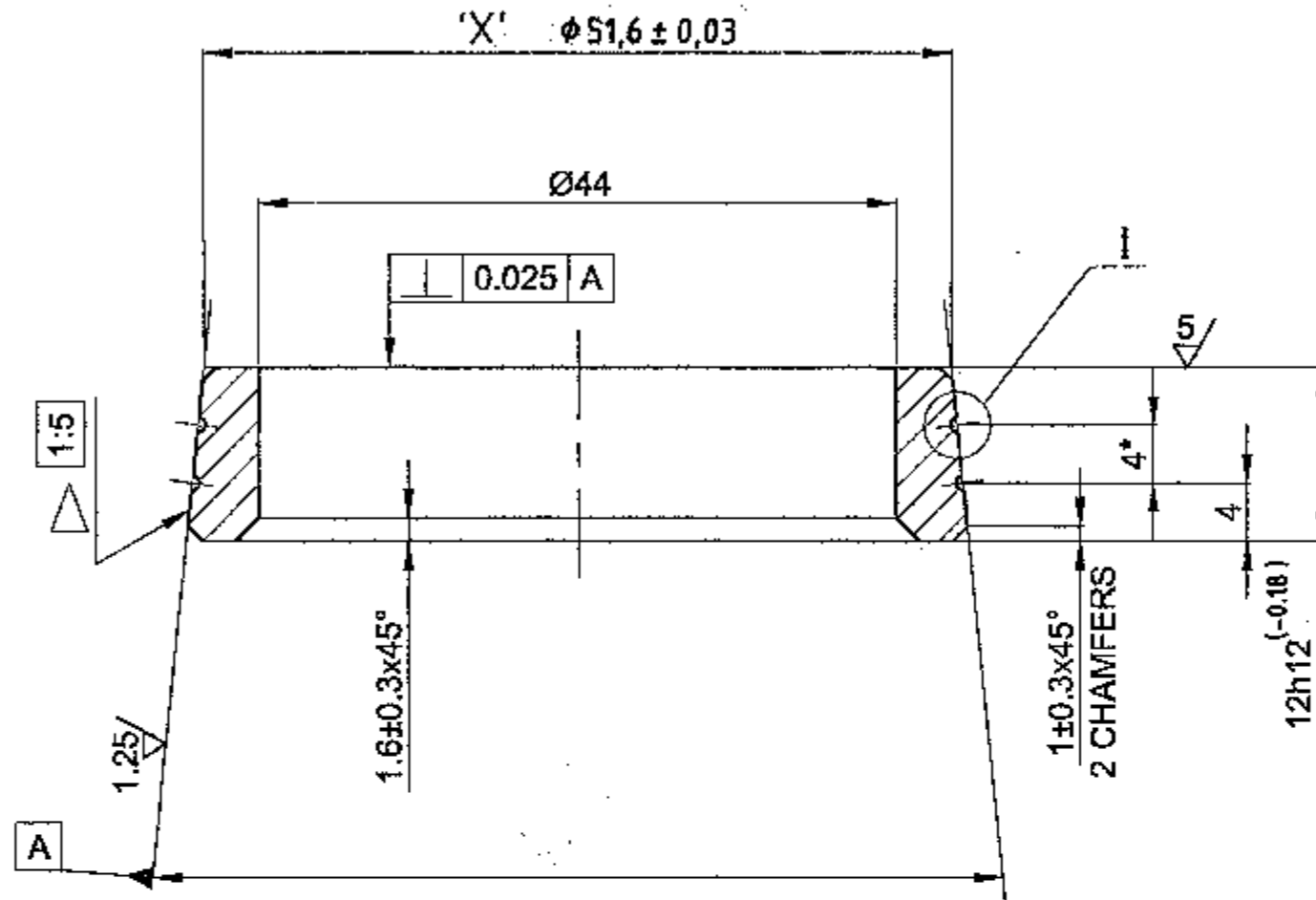
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.		DRN	<i>B. A. ...</i>	MATERIAL :- PIPE	USED ON :- Sb 20-06-01-5
EST. WT. 0.065Kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)	CHD	<i>R. ...</i>	60x8GOST 8732-78	Sb 20-06-02-5, SB 306-01-20,
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE. EQUIVALENT CHAMFERS ARE PERMISSIBLE.		APPD	<i>...</i>	B-40X GOST 8731-87	Sb 306-02-20, Sb 306-01-36, **
		DATE	31.12.07	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
		SCALE:-	2 : 1	TITLE :-	
		DIMENSIONS IN mm		VALVE SEAT	
		TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS :	2102 - 69	D S CAT NUMBER	
		ALL THREADS TO CONFORM TO		DRAWING NUMBER	
		ISSUE	DATE	306-22-1	
		NATURE OF AMENDMENTS			

F-153
 12
 74
 SIZE A3

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 14
 DRG. REPLACES 306-23-1 ISSUE - A, VIDE NOTIFICATION NO: 89-361
 COMMON TO V-9252 & UTD-20

DRAWING NUMBER
306-23-1

10 ✓ (✓)



1. Inspection group IV as per TT-11.
2. Hardness 269.....321 HB.
3. Alternative material is steel 38XC GOST 4543-71.
4. Coating: Chemically oxidized, oiled.
5. Unspecified limit deviation of dimensions $H14, \pm \frac{IT14}{2}$.
6. Deviation from the taper surfaces 'A' to be checked by "bluing" with special gauge, the imprint should be uniform on cone length and cover minimum 80 % of the area.
7. *Dimension to be ensured by tool.

(14A)

CATEGORY	X
306-23-1 R ₁	DIA 51,7 ± 0,03
306-23-1 R ₂	DIA 51,8 ± 0,03

NOTE: R₂ SIZE IS "APPLICABLE ONLY" FOR V46-6 & UTD-20 ENGINES.

**

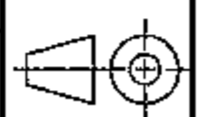
(14B) CQA(HV)5.06.605E
 CQA(HV)5.06.609E

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

EST. WT. **0.055 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.

ISSUE	DATE	NATURE OF AMENDMENTS
14B	15.7.15	Pt. 11, 7 th Alt. Comm. Meeting Dt. 11.4.12
14A	24-03-10	i) Lt. No. EFA/P/RDS/CQA(HV)/23. Dt: 20-3-10 ii) Authy: SPECN. FOR REPAIR SIZE DRGS PART-III

DRN	<i>B. J. B. B.</i>	MATERIAL :- PIPE	USED ON :- Sb 20-06-01-5
CHD	<i>R. P. B. B.</i>	56x8 GOST 8734-75	** Sb 20-06-02-5
APPD	<i>Summ.</i>	B-40X GOST 8733-87	Sb 306-01-20, Sb 306-02-20
DATE	31-12-07		Sb 306-01-36, Sb 306-02-36
SCALE:-	2:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
DIMENSIONS IN mm		TITLE :-  VALVE SEAT	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			
ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER 306-23-1

F-153
 13
 74

SIZE A3

DRAWING NUMBER
306-25

76

unless otherwise stated.

EXPLANATORY NOTE:

Material quoted: Bar ПС 59-1 GOST 2060-73

Alternate material quoted: Brass П63 GOST 15527-70

ПС 59-1 and П63 : grade of Brass.

Chemical composition

chemical composition

(For Gde. ПС 59-1 GOST 15527-70)

(For Gde. П63 GOST 15527-70)

Basic elements

Basic elements

Copper = 57.0 - 60.0

Copper = 62.0 - 65.0

Lead = 0.8 - 1.5

Zinc = Remainder.

Zinc = Remainder.

Admixtures

Admixtures

Iron = 0.5 ; Tin = 0.30 ;

Lead = 0.07 ; Phosphorus = 0.01 ;

Antimony = 0.01 ;

Iron = 0.20 ;

Bismuth = 0.003 ;

Antimony = 0.005 ; Bismuth = 0.002 .

Phosphorus = 0.02

Mechanical properties - GOST 2060-73.

Mechanical properties - GOST 2060-73.

ultimate tensile strength $\text{kgf/mm}^2 = 40(\text{min})$

ultimate tensile strength $\text{kgf/mm}^2 = 38(\text{min})$

% Relative elongation = 15 (min)

% Relative elongation = 15 (min)

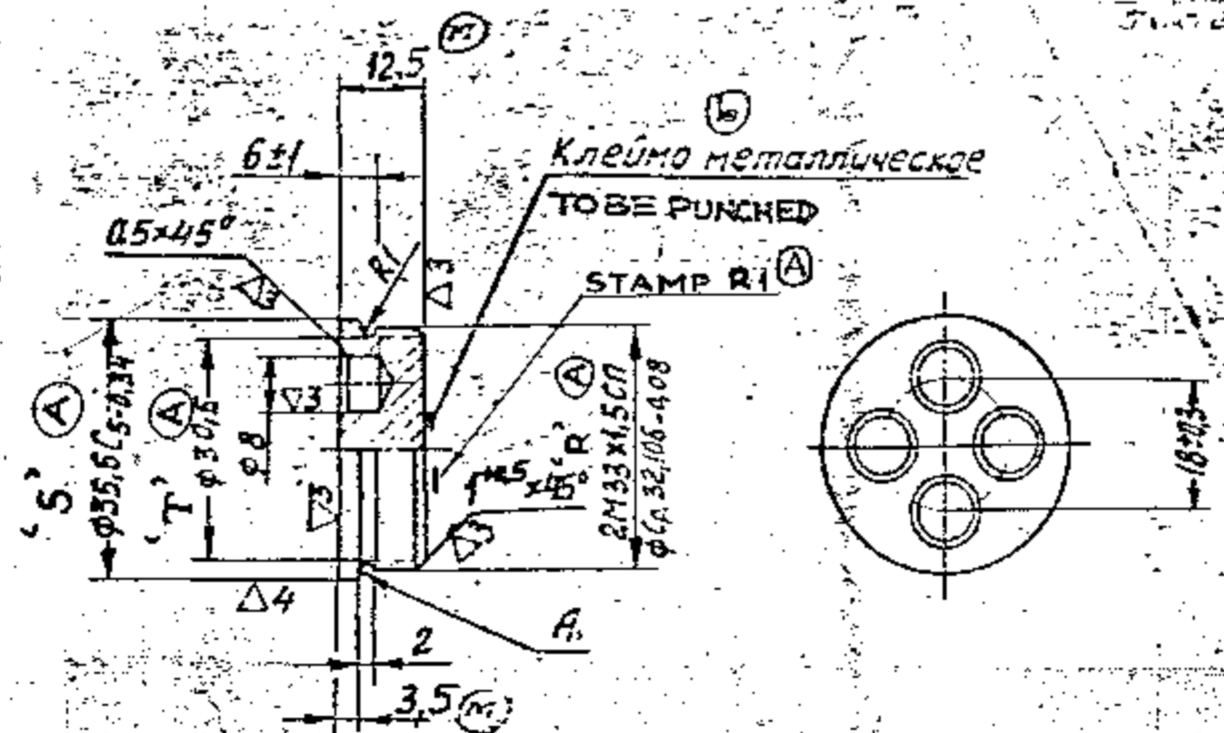
Hardness BHN = 100 (min)

Hardness BHN = 100 (min)

REPAIR SIZE DIMENSIONS

CATEGORY	DESIGNATION SIZE	SIZE ACCORDING TO WORKING DRG	REPAIR SIZE DIMENSION
306-25 R1	(DIAMETER)	2M 33 X 1.5 C П	2M 36 X 1.5 C П
	DIAMETRAL PITCH		35.106 - 0.08
	S	DIA 35.5 C5 - 0.34	DIA 38.5 C5 - 0.34
	T	DIA 30.5	DIA 33.5

- Maximum permissible run-out of surface 'A' with respect to thread axis at 38mm diameter should not exceed 0.08mm.
- All other details as per working drg.
- Stamp R₁ where marked thus -



- Dimensions without tolerances should be as per accuracy class 7, GOST 1010.
- Technical requirements for thread should be in accordance with standard 82021-00
- Run-out of surface A relative to thread on $\varnothing 35$ should not exceed 0.08 mm.
- Sharp edges should be blunted.
- Alternate material: Brass П63, GOST 15527 - 70

** CQA(HV)5.06.605E
CQA(HV)5.06.609E
CQA(HV)5.06.605E
CQA(HV)5.06.609E
CQA(HV)5.07.502E
CQA(HV)5.07.504E

Cb 3308-04-24
Cb 3308-00-23
Cb 3301-15-30
Cb 3301-15-44
Cb 306-01-36
Cb 306-02-36
Cb 20-06-01-5
Cb 20-06-02-5

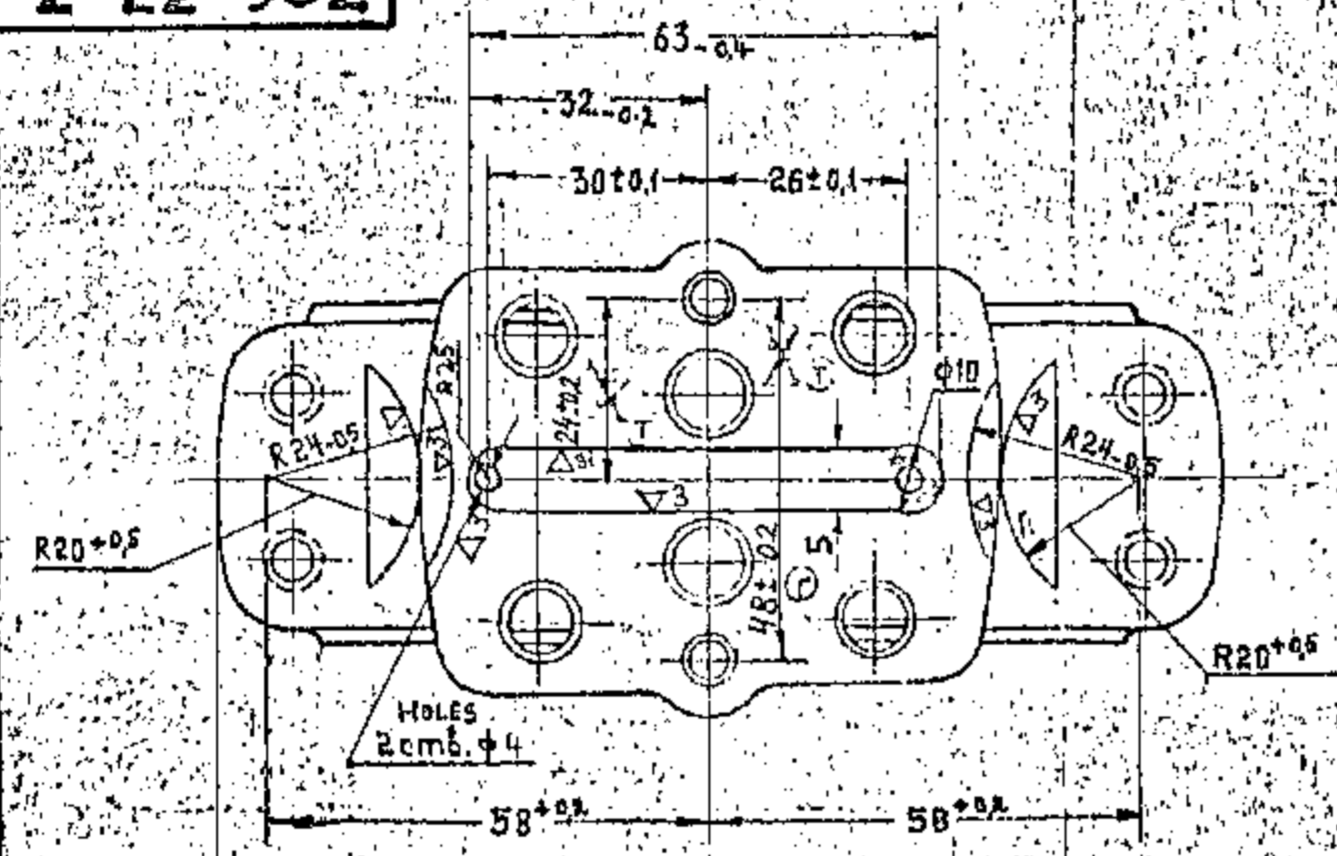
DRN	15.7.15	Pl. 11, 7 th Alt. Comm. Meeting Dt. 11.4.12	DRN	15.7.15	Pl. 11, 7 th Alt. Comm. Meeting Dt. 11.4.12	MATERIAL - BAR ПС 59-1	USED ON - CB 306-04-20
CHD	5.3.14	Authy. Point No. 11 of 7 th Alt. Comm. meeting at EFA	CHD	5.3.14	Authy. Point No. 11 of 7 th Alt. Comm. meeting at EFA	GOST 2060-73	CB 20-12-01-13 CB 306-02-20 **
TCO	25.8.08	USED ON NUMBER ADDED	TCO	25.8.08	USED ON NUMBER ADDED	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	AVADI
APPO	7.8.98	AUTHY. SPECN. FOR REPAIR SIZE DRGS PART III BK 77-498	APPO	7.8.98	AUTHY. SPECN. FOR REPAIR SIZE DRGS PART III BK 77-498	SCALE - 1:1	TITLE PLUC
DATE	15-6-89	NATURE OF AMENDMENTS	DATE	15-6-89	NATURE OF AMENDMENTS	D S CAT NUMBER	DRAWING NUMBER 306-25

PILOT SAMPLE SHOULD BE APPROVED BY A RESPONSIBLE BULK PRODUCTION.

EST. WT.	TO BE STAMPED OR MARKED (WHERE INDICATED THIS * LETTERS)
0.070 Kg.	1
ALL SHARP EDGES AND CORNERS TO BE REMOVED/BLUNTED OTHERWISE STATED MACHINED CORNERS TO HAVE: OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.	

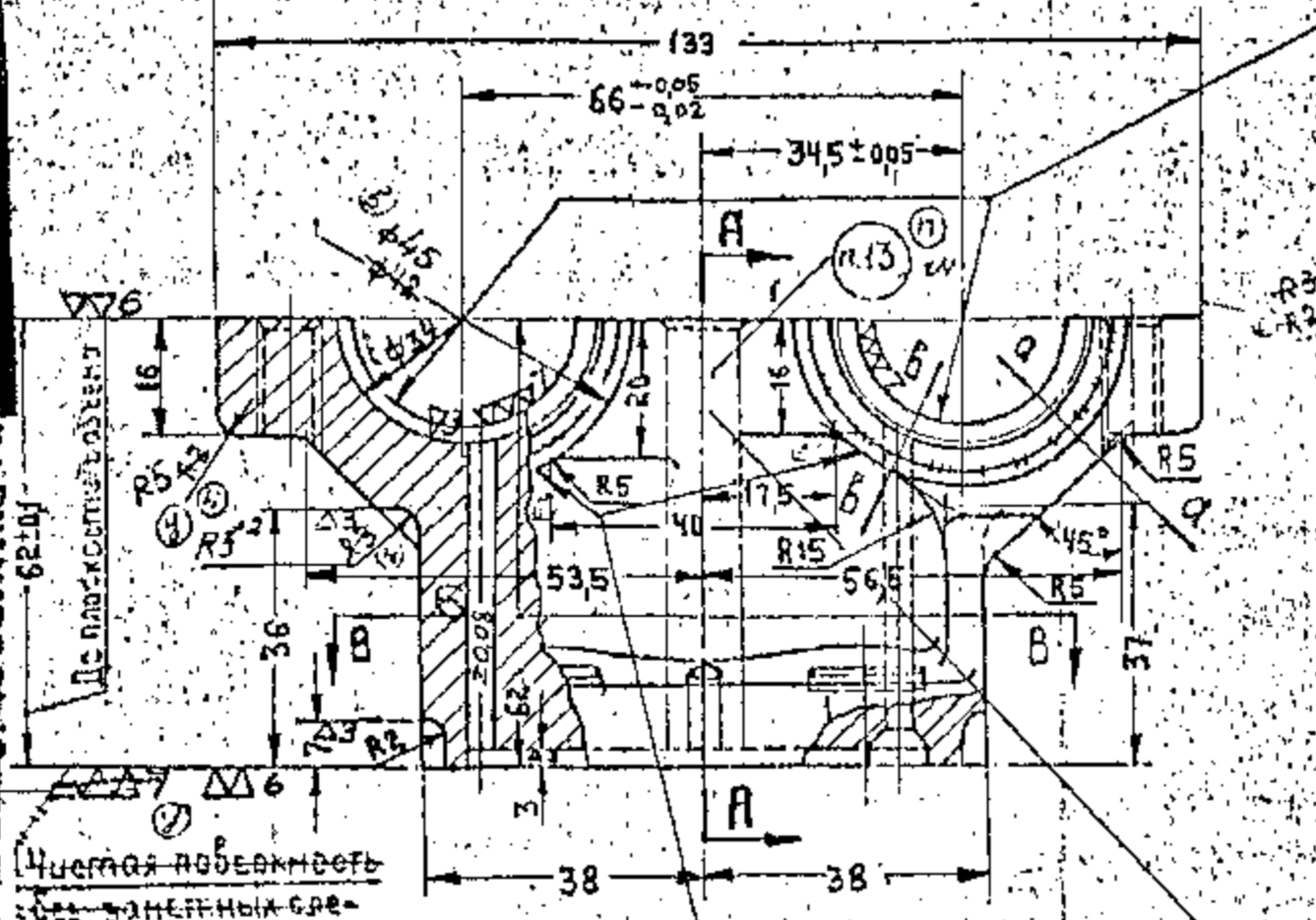
COMMON TO V-92S2 & UTD-20 ENGINE

Handwritten notes and symbols at the top right of the page.



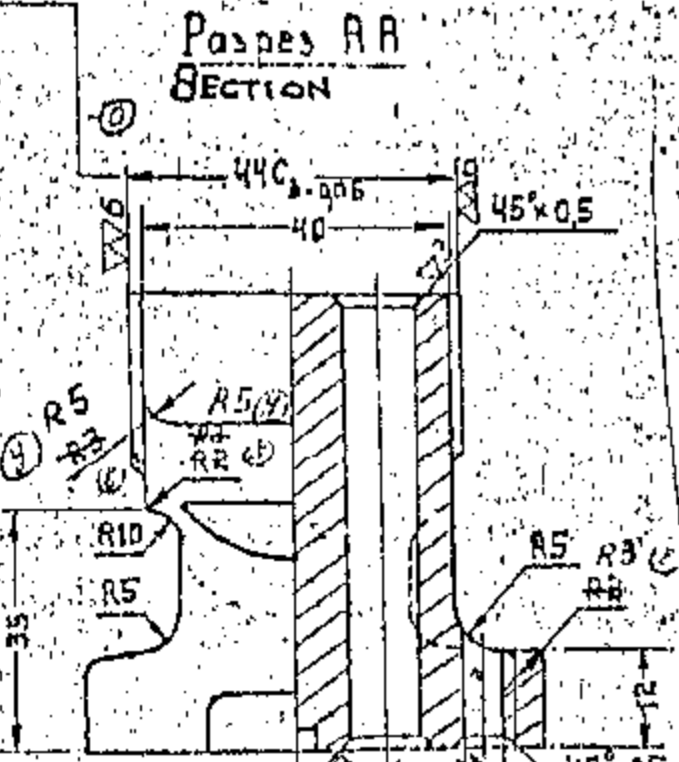
TO BE FINISHED AFTER THE ASSEMBLY OF CYLINDER HEAD

Φ 30X+0.02 окончательная обработка в виде блока



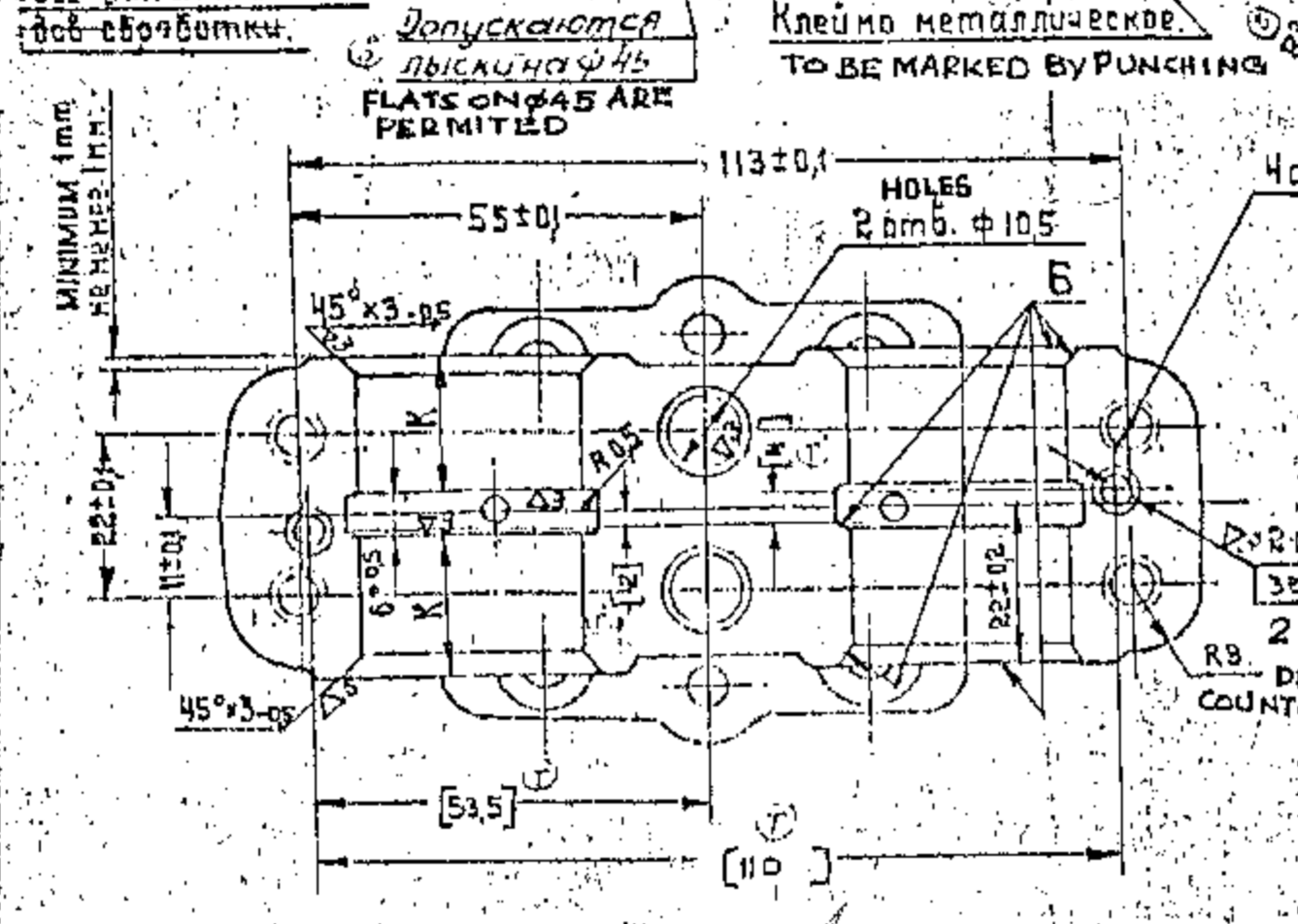
Сечение BB SECTION

Сечение AA SECTION



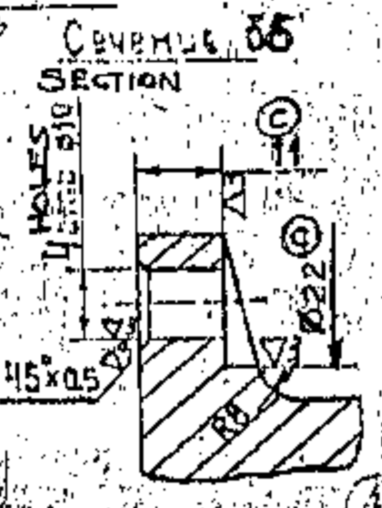
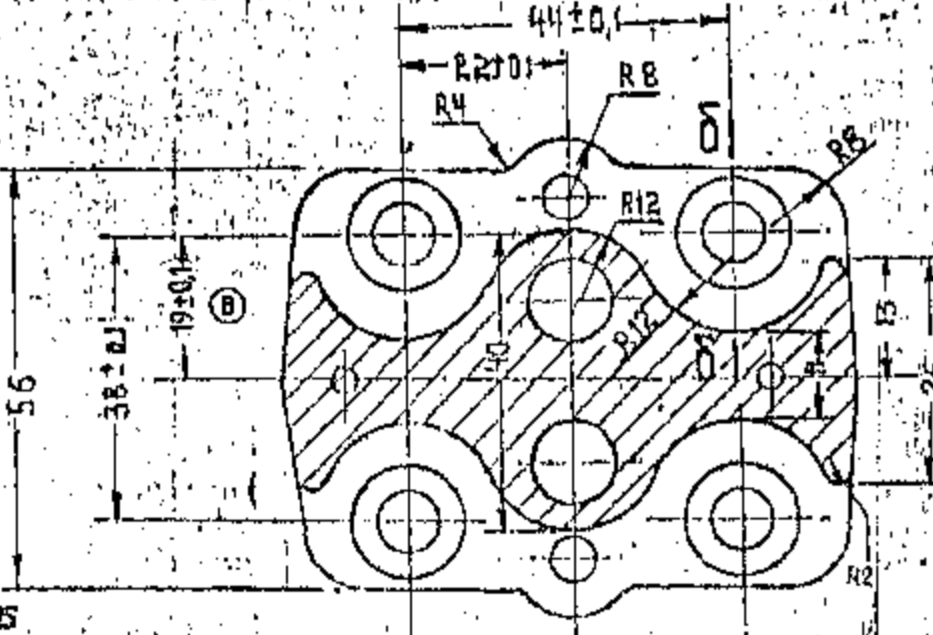
Разрез BB SECTION

2 HOLES φ 5g TO BE FINISHED MACHINED AFTER ASSEMBLY



HOLES 4 amb. 18x1.25 to

2 HOLES φ 3.8 TO BE DEPTH 10 TO BE COUNTERSUNK AT 80° TO 45



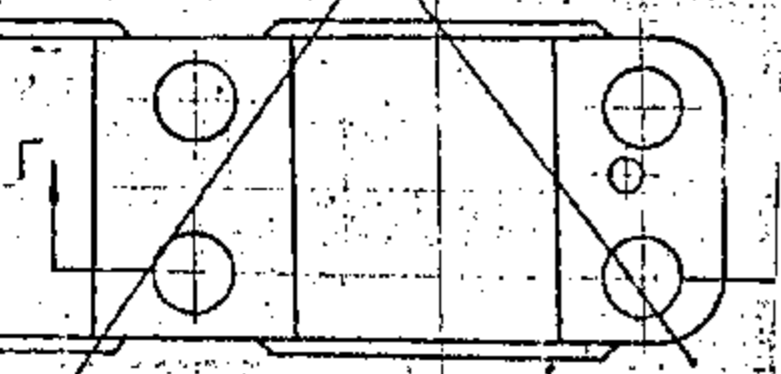
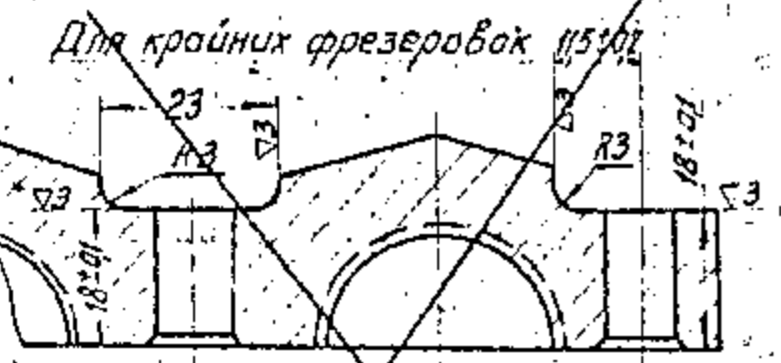
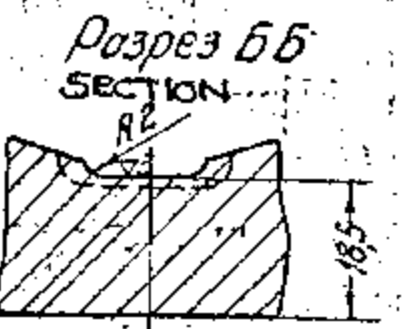
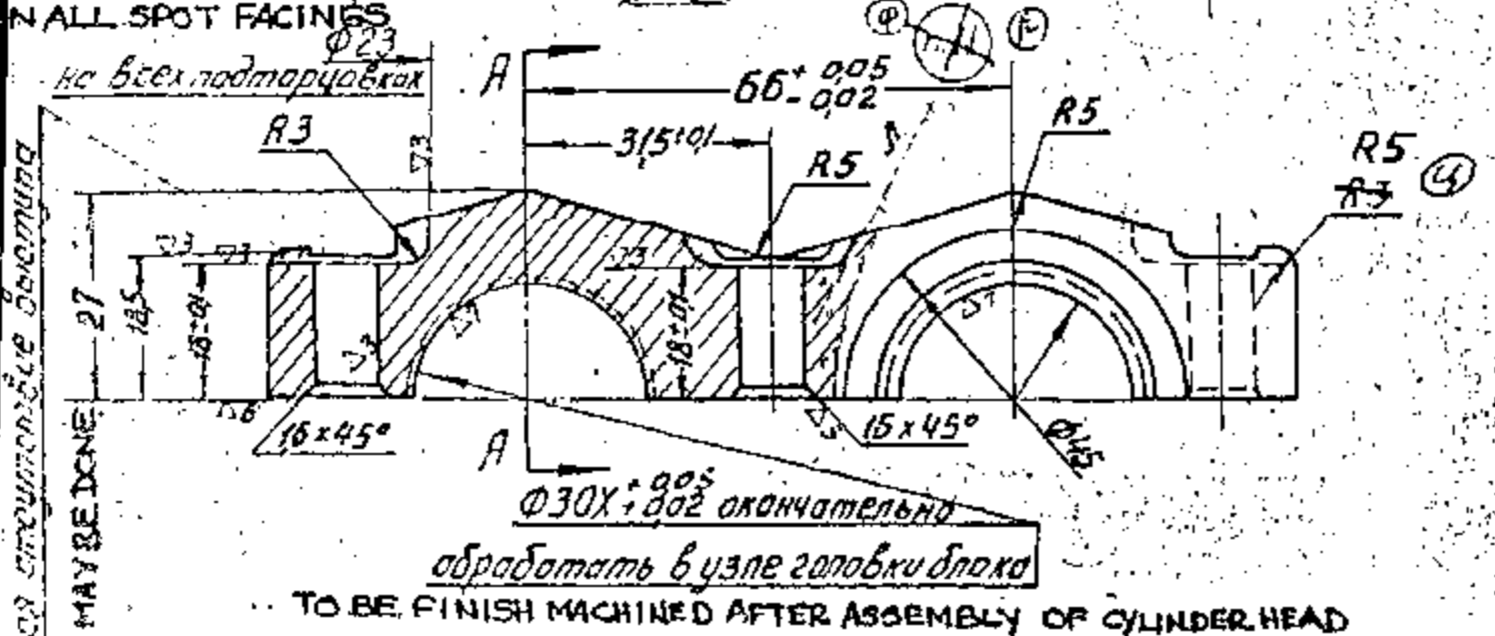
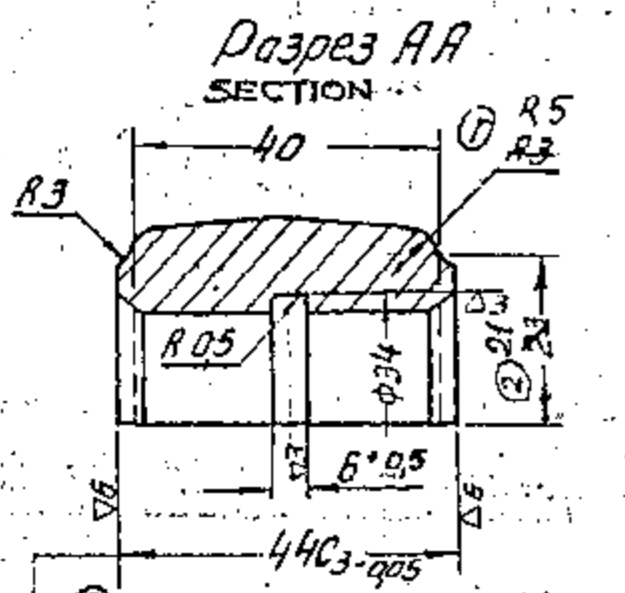
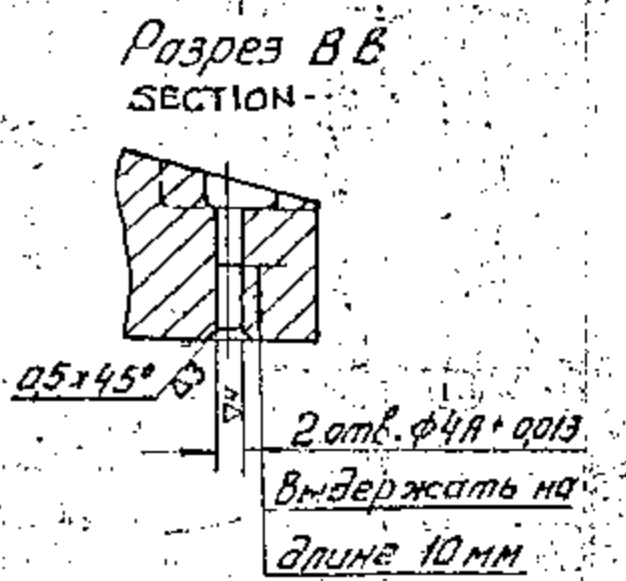
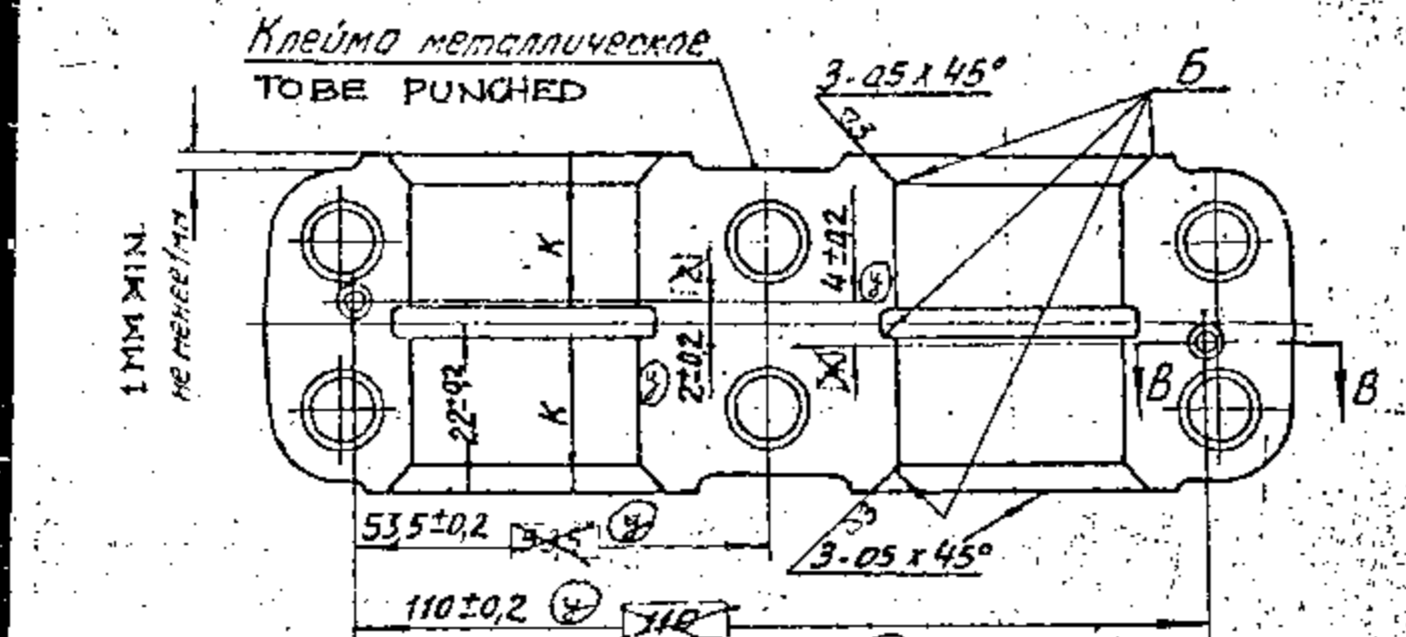
Сечение BB SECTION

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

1. INSPECTION GROUP IV, AS PER TT-11.
2. HARDNESS: BHN ≥ 90.
3. COMPONENTS SHOULD BE ACCEPTED AFTER FINAL HEAT TREATMENT ACCORDING TO TT-10. (A)
4. TOLERANCES ON STAMPING DIMENSIONS SHOULD BE IN ACCORDANCE WITH STANDARD 82050-17.
5. DRAFTS WHICH ARE NOT SPECIFIED ON THE DRAWING SHOULD BE EQUAL TO 6°.
6. MACHINING DIMENSIONS WITHOUT TOLERANCES SHOULD BE AS PER ACCURACY CLASS 7 OST 1010.
7. TECHNICAL REQUIREMENTS FOR THREAD ARE AS PER STANDARD 82021-00.
- 8.
9. SURFACES SHOULD BE MACHINED IN ASSEMBLY
10. DIFFERENCE IN MEASUREMENTS OF DIMENSION "K" SHOULD NOT EXCEED 0.8mm.
11. SHARP EDGES ARE TO BE BLUNTED.
12. DRILL RUN-OFF OF HOLE φ 4mm SHOULD BE WITHIN THE GROOVE WIDTH.
13. MATERIAL GRADE TO BE MARKED.
14. TRACES OF FINS UP TO 1.7mm HIGH ALONG THE DIE PARTING-LINE ARE PERMISSIBLE.
15. DIMENSIONS GIVEN IN SQUARE BRACKETS SHOULD BE OBTAINED BY MACHINING TOGETHER WITH MATING COMPONENTS.

EST. PAGES	0.460 Kg	TO BE STAMPED OR MARKED WITH INDICATED LETTERS
C 11.9.80	D.O. CORRECTION	ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED. MACHINED CORNERS TO HAVE R OUTSIDE
B 11.12.89	D. O. CORRECTION	IF IN THE EQUIVALENT CHARACTERS ARE PERMISSIBLE
A 05.12.88	AUTHY BK 65-897	NATIONAL A.I. GOST 4784-78
ISSUE DATE	NATURE OF AMENDMENTS	© STAMPING
DRN	SCALE 1:1	WELD ON - CB 306-03-3
CID	DIMENSIONS IN mm	CONTINUATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A H I
TCD	TOLERANCE OF DIMS UNLESS OTHERWISE STATED	TITLE: THRUST BEARING BASE FOR CAMSHAFT
APPD	ALL THREADS TO CONFORM TO	U.S. CAT NUMBER
DATE 5/1/88		DRAWING NUMBER 306-37-3

1-8E-90E



1. Inspection group IV as per TT - 11
2. BHN ≥ 90;
3. Components should be accepted after final heat treatment according to TT - 10 TTM - 79 - 81 (A)
4. Tolerances on stamping dimensions should be in accordance with standard 82050 - 17.
5. Drafts which are not specified in the drawing should be equal to 6°.
6. Machining dimensions without tolerances should be as per accuracy, class 7 OST 1010.
7. Surfaces 6 should be machined after assembly. Difference in measuring of dimension 'K' should not be more than 0.8 mm
8. Sharp edges should be blunted.
9. Traces of fins upto 1.7 mm high along the die parting line are permissible

A-4

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

EST. MASS	0.200Kg	TO BE STAMPED OR MARKED WHERE INDICATED THIS # LETTERS
ISSUE DATE	2-12-88	ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED OTHERWISE CORNERS TO HAVE R OUTSIDE IF INSIDE EQUIVALENT CHANGES ARE PERMISSIBLE
DRN	04	NATURE OF APPROVEMENTS
CHKD	04	SCALE 1:1
TCU	04	DIMENSIONS IN mm
APPD	04	TOLERANCE ON DIMS UNLESS OTHERWISE STATED
DATE	28-1-88	ALL THREADS TO CONFORM TO
		MATERIAL ALUMINUM ALLOY (A1) USED ON - GOST 4764-74 (STAMPING) GOST 306-03-3
		CONTROL RATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AV 411
		CAP OF CAMSHAFT THRUST BEARING
		DRAWING NUMBER 306-38-1