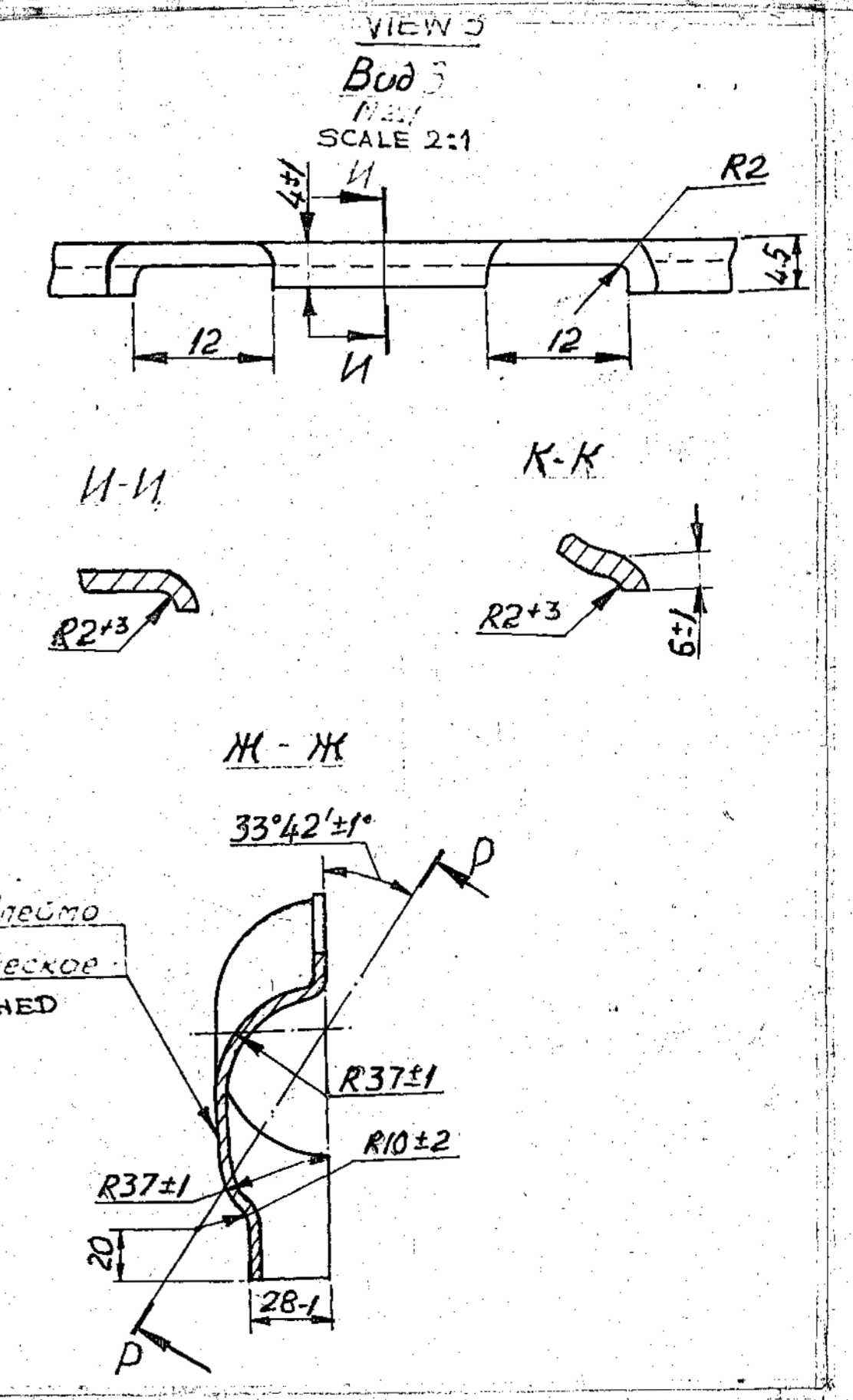
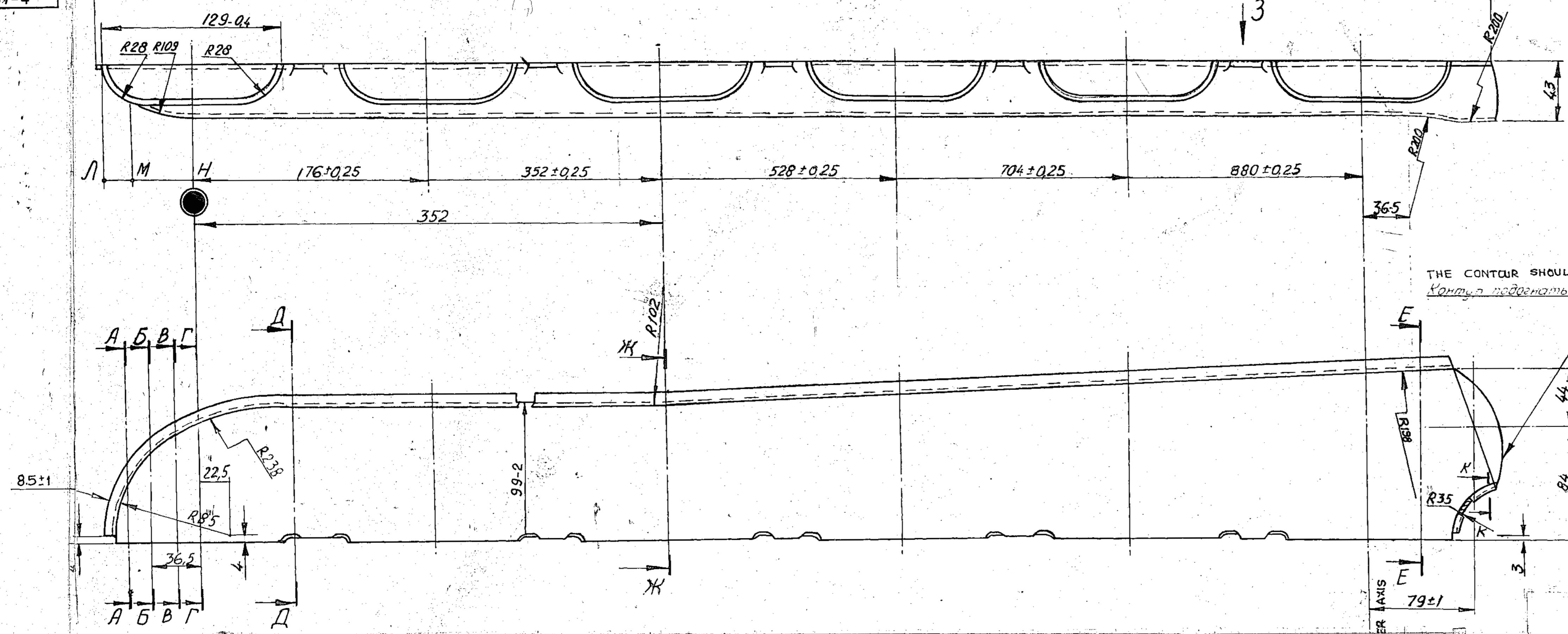


DRAWING NUMBER
319-67-4

1045



EXPLANATORY NOTE :

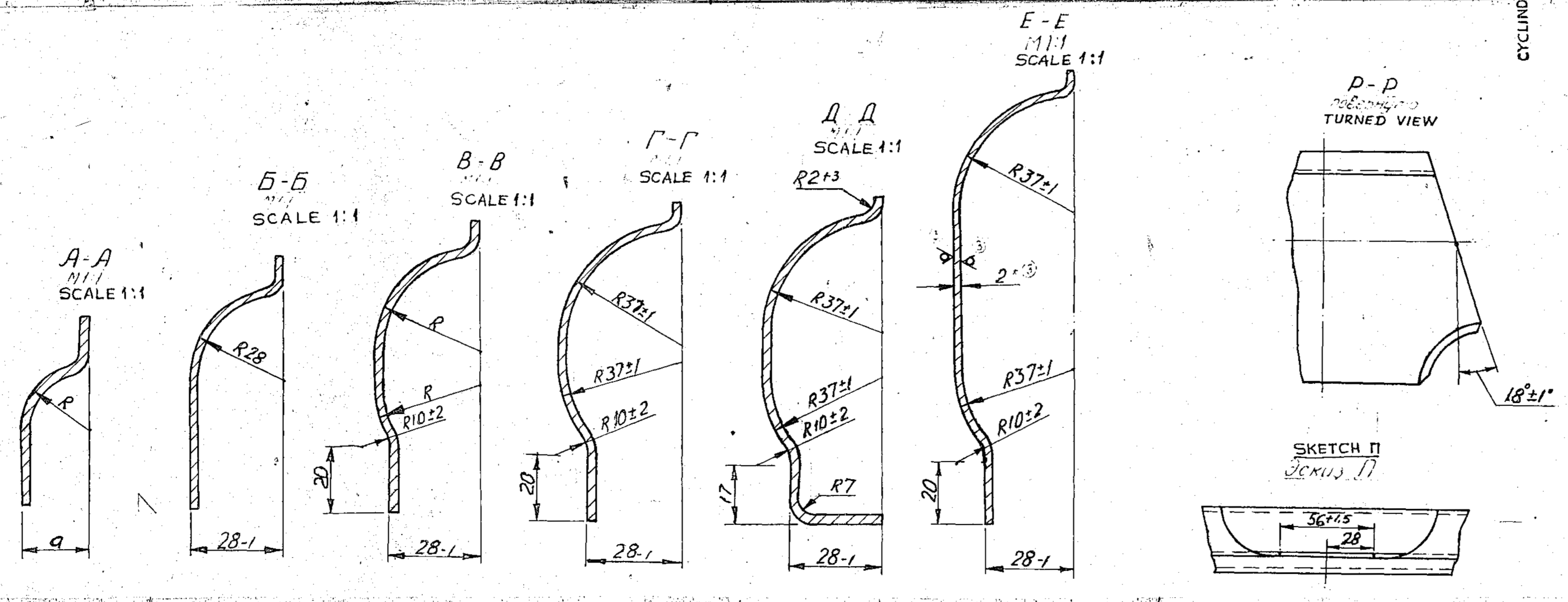
12. REFERENCE MATERIAL QUOTED:
COLD ROLLED SHEET STEEL OF HIGH ACCURACY ON ROLLING 'A', 2mm THICK TO GOST 19904-74, AND GRADE OF STEEL 08nc. HIGH SURFACE FINISH 'II', EXTREMELY DEEP DRAWING 'Bf' TO GOST 9045-80.
a) CHEMICAL COMPOSITION AS PER GOST 9045-80.

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Mn	S	P	Si	Cr	Ni	Cu
08nc	0.09	0.20-0.45	0.030	0.025	0.04	0.10	0.10	0.15

PRESENCE OF ALUMINIUM IS PERMISSIBLE.

b) MECHANICAL PROPERTIES: AS PER GOST 9045-80.

CATEGORY	GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	DIAMETER OF SPHERICAL HOLE DIAMIN.
Bf	08nc	26-37	29	12.1



- DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE MAINTAINED WITH TOLERANCE ± 0.5mm.
- DIMENSIONS 'R' 200mm, R198mm AND R102mm ARE GIVEN FOR DESIGNING THE DIES.
- CRACKS ARE ALLOWED TO BE WELDED-UP IN CASE THE NUMBER OF CRACKS DOES NOT EXCEED 2 PIECES AND THICKNESS OF MATERIAL NEAR CRACKS IS NOT LESS THAN 1.5mm.
- PUNCTURES, CORRUGATIONS, DENTS AND OTHER DEFECTS ARE NOT PERMISSIBLE.
- THICKNESS OF MATERIAL IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5mm.
- BEFORE PUTTING INTO PRODUCTION THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
- IN THE CORNERS OF RECESSES AT A DISTANCE UP TO 13mm FROM THE PARTING LINE AND UP TO 6mm FROM BRANCH PIPE CONTOUR THINNING TO 1.2mm IS PERMISSIBLE.
- SHARP EDGES SHOULD BE BLUNTED.
NOTES: 1. ON SECTION ΛM RADIUS R (SEE SECTION B-B) IS INCREASED FROM R0 TO R28mm.
2. ON SECTION MH (SEE SECTION B-B, B-B, Γ-Γ) RADIUS R IS INCREASED FROM R 28mm UPTO R 37mm.
- BEADING OF EDGE (FOR FLANGE OF MANIFOLD) AS PER SKETCH II IS ALLOWED.
- DIRECTION OF FIBRES OF ROLLED SHEET SHOULD BE PERPENDICULAR TO COMPONENT LONGITUDINAL AXIS.
- * DIMENSION FOR REFERENCE.

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

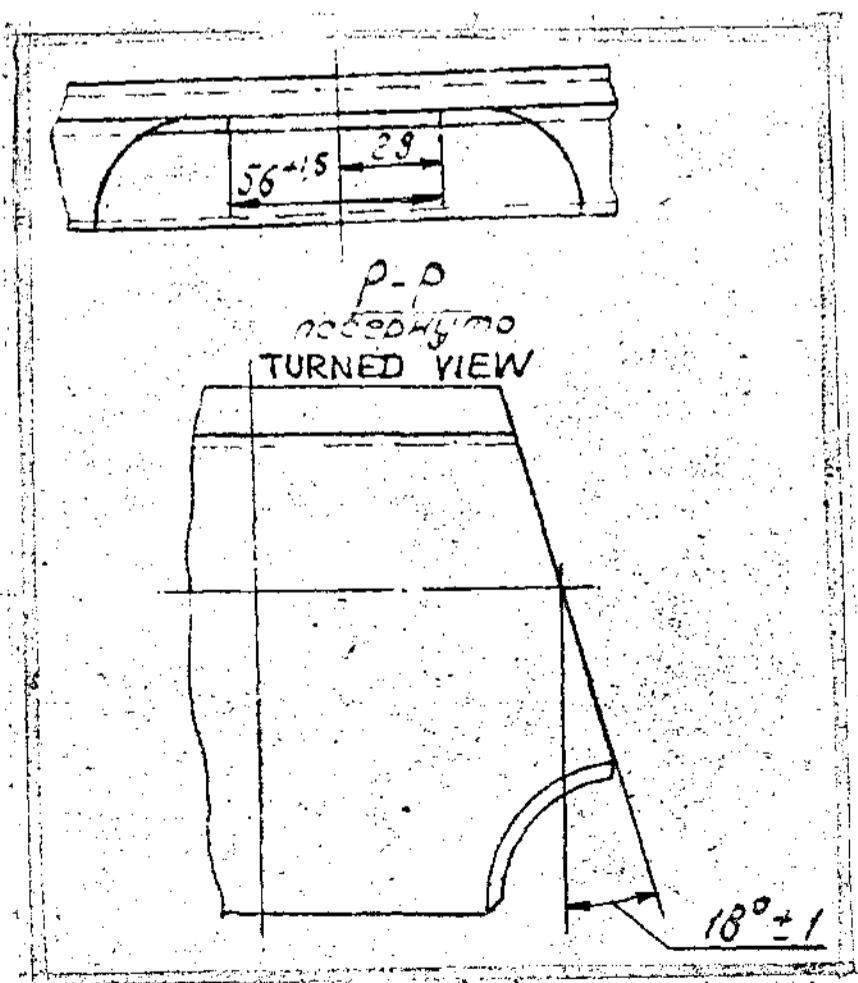
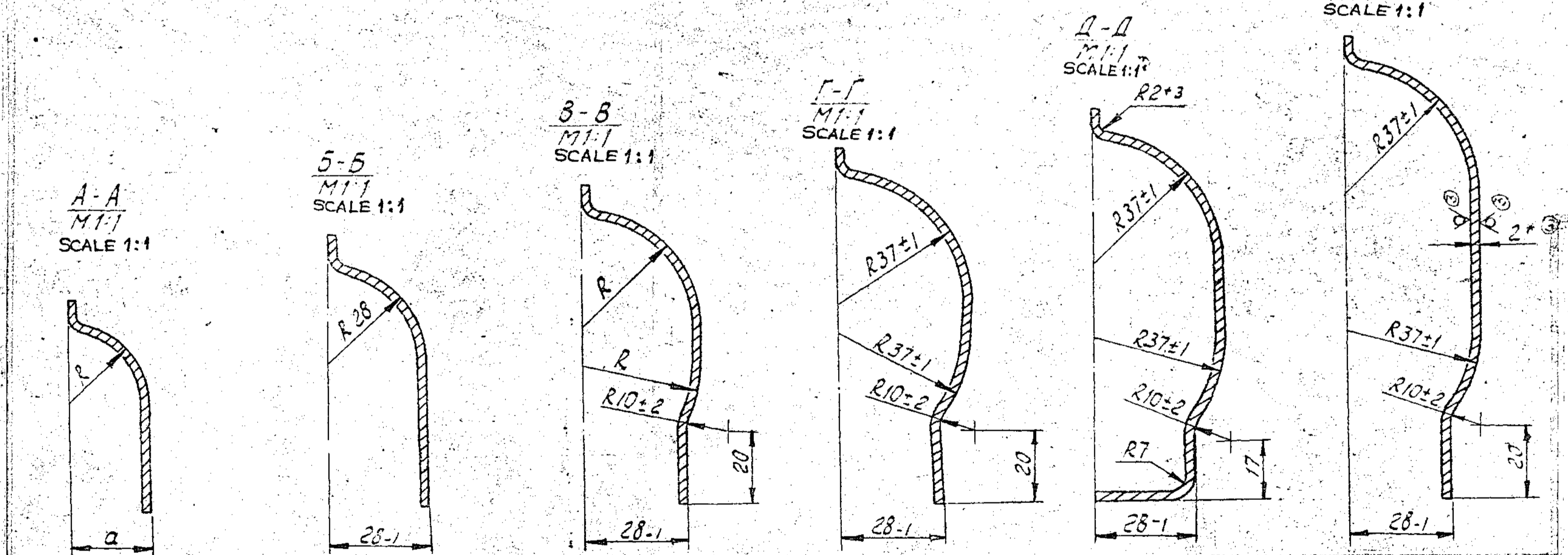
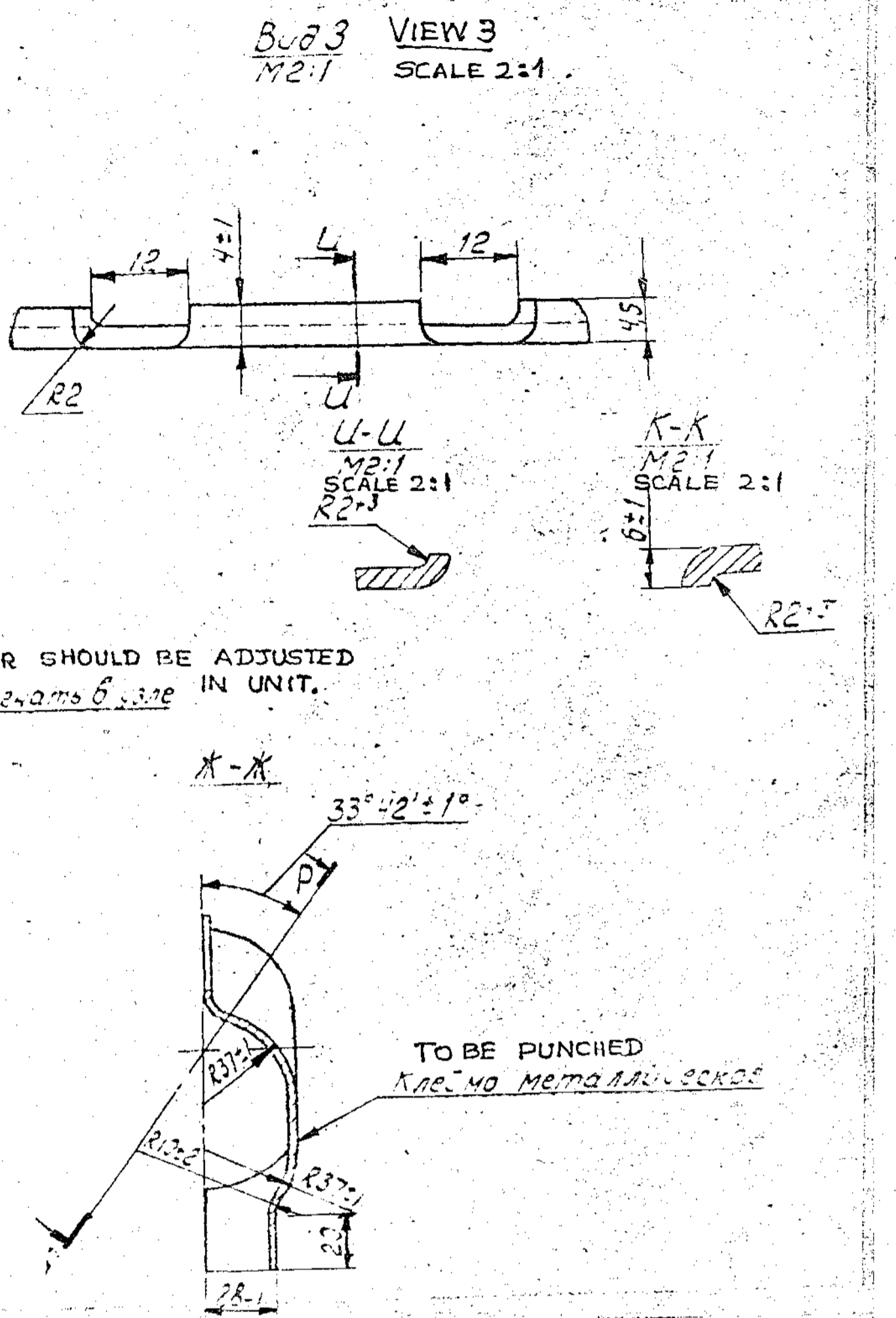
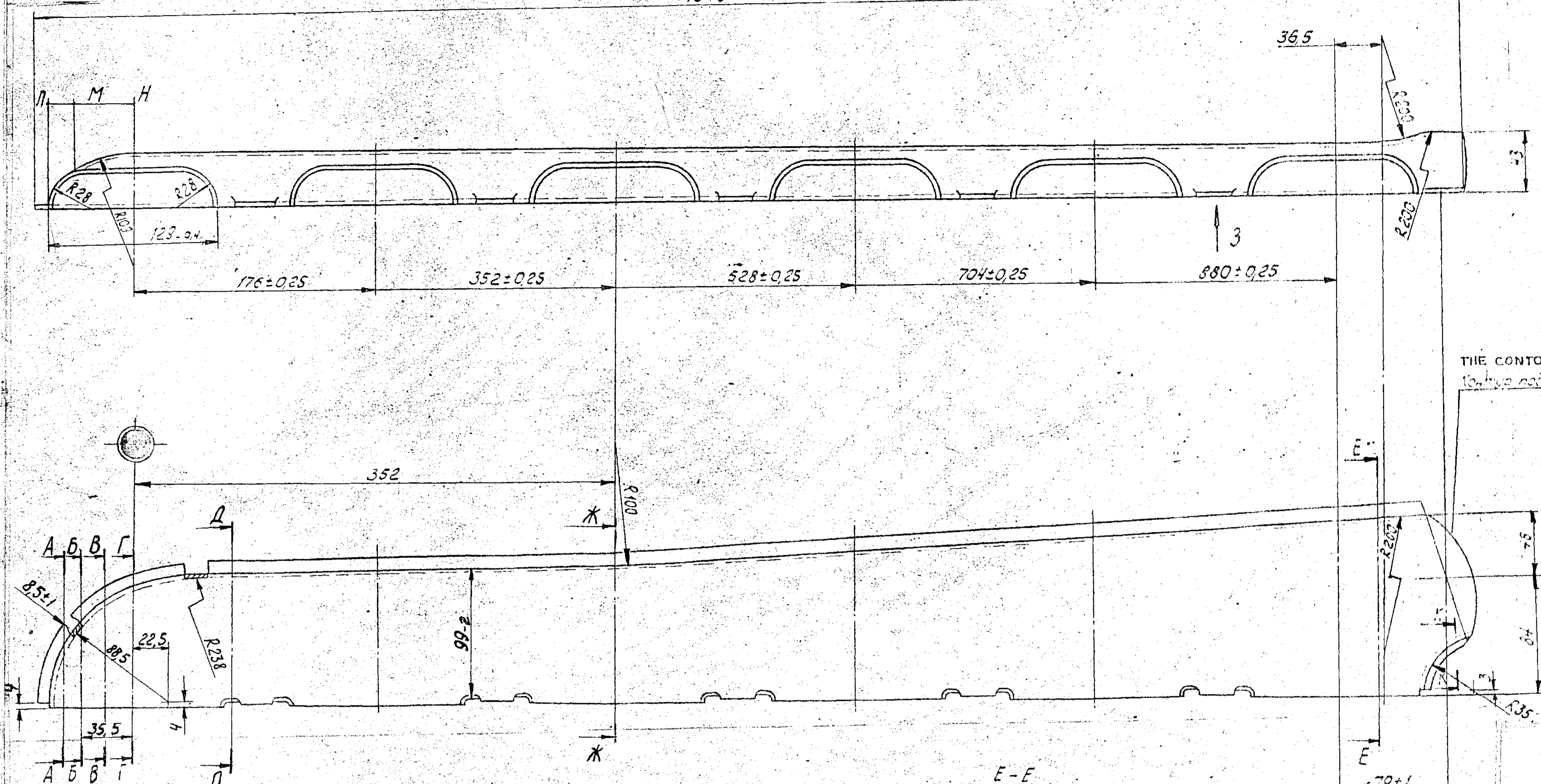
EST WT 2.63 Kg
TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R' INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	CHD	TED	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	ALL THREADS TO CONFORM TO
				11-3-86	1:2			
MATERIAL: SHEET A2 GOST 19904-74 II Bf 08nc GOST 9045-80						USED ON: CB 419-05-7		
CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AYADI						TITLE: MANIFOLD INTAKE HALF RH		
D S CAT NUMBER						DRAWING NUMBER 319-67-4		
ISSUE	DATE	NATURE OF AMENDMENTS						

SIZE A1

1045

R230
(V)



EXPLANATORY NOTE :

12. REFERENCE MATERIAL QUOTED:
COLD ROLLED SHEET STEEL OF HIGH ACCURACY ON ROLLING 'A', 2mm THICK TO GOST 19904-74, AND GRADE OF STEEL 08nc 'HIGH SURFACE FINISH II', EXTREMELY DEEP DRAWING 'B7' TO GOST 9045-80.
a) CHEMICAL COMPOSITION AS PER GOST 9045-80

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Mn	S	P	Si	Cr	Ni	Cu
08nc	0.09	0.20-0.45	0.030	0.025	0.04	0.10	0.10	0.15

PRESENCE OF ALUMINIUM IS PERMISSIBLE IN 08nc STEEL.
b) MECHANICAL PROPERTIES: AS PER GOST 9045-80.

CATEGORY	GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	DIAMETER OF SPHERICAL HOLE MIN.
B7	08nc	26 - 37	29	12.1

- DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE MAINTAINED WITH TOLERANCE ± 0.5mm.
- DIMENSIONS R 200mm, R100mm ARE GIVEN FOR DESIGNING THE DIE.
- CRACKS ARE ALLOWED TO BE WELDED-UP IN CASE NUMBER OF CRACKS DOES NOT EXCEED 2 PIECES AND THICKNESS OF MATERIAL NEAR THE CRACKS IS NOT LESS THAN 1.5mm.
- PUNCTURES, CORRUGATIONS, DENTS AND OTHER DEFECTS ARE NOT PERMISSIBLE.
- MATERIAL THICKNESS SHOULD NOT BE LESS THAN 1.5mm AT THINNED PLACES.
- BEFORE PUTTING INTO PRODUCTION THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS ON WELDING DEPARTMENT.
- THINNING TO 1.12mm IS PERMISSIBLE IN THE CORNERS OF RECESSES AT A DISTANCE OF UPTO 13mm FROM PARTING LINE AND OF UPTO 6mm FROM BRANCH PIPE CONTOUR.
- SHARP EDGES SHOULD BE BLUNTED.
NOTES: 1. ON SECTION A-M RADIUS R (SEE SECTION A-A, B-B) IS INCREASED FROM ZERO TO R 28mm.
2. ON SECTION M-H (SEE SECTION B-B, C-C) IS INCREASED FROM R28 TO R37.
- BEADING OF EDGE (FOR MANIFOLD FLANGE) AS PER SKETCH IT IS ALLOWED
- THE DIRECTION OF FIBRES OF ROLLED SHEET SHOULD BE PERPENDICULAR TO COMPONENT LONGITUDINAL AXIS.
- * DIMENSION FOR REFERENCE.

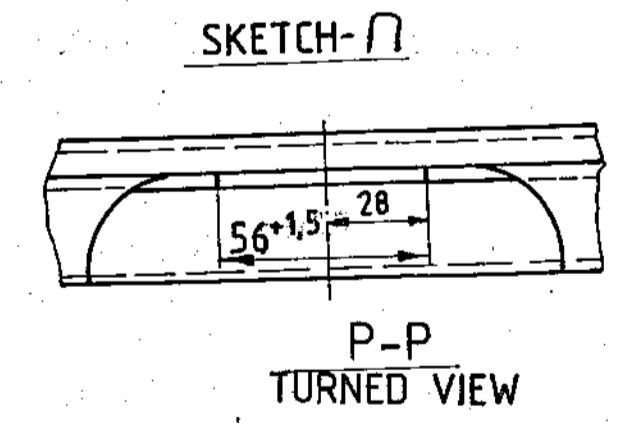
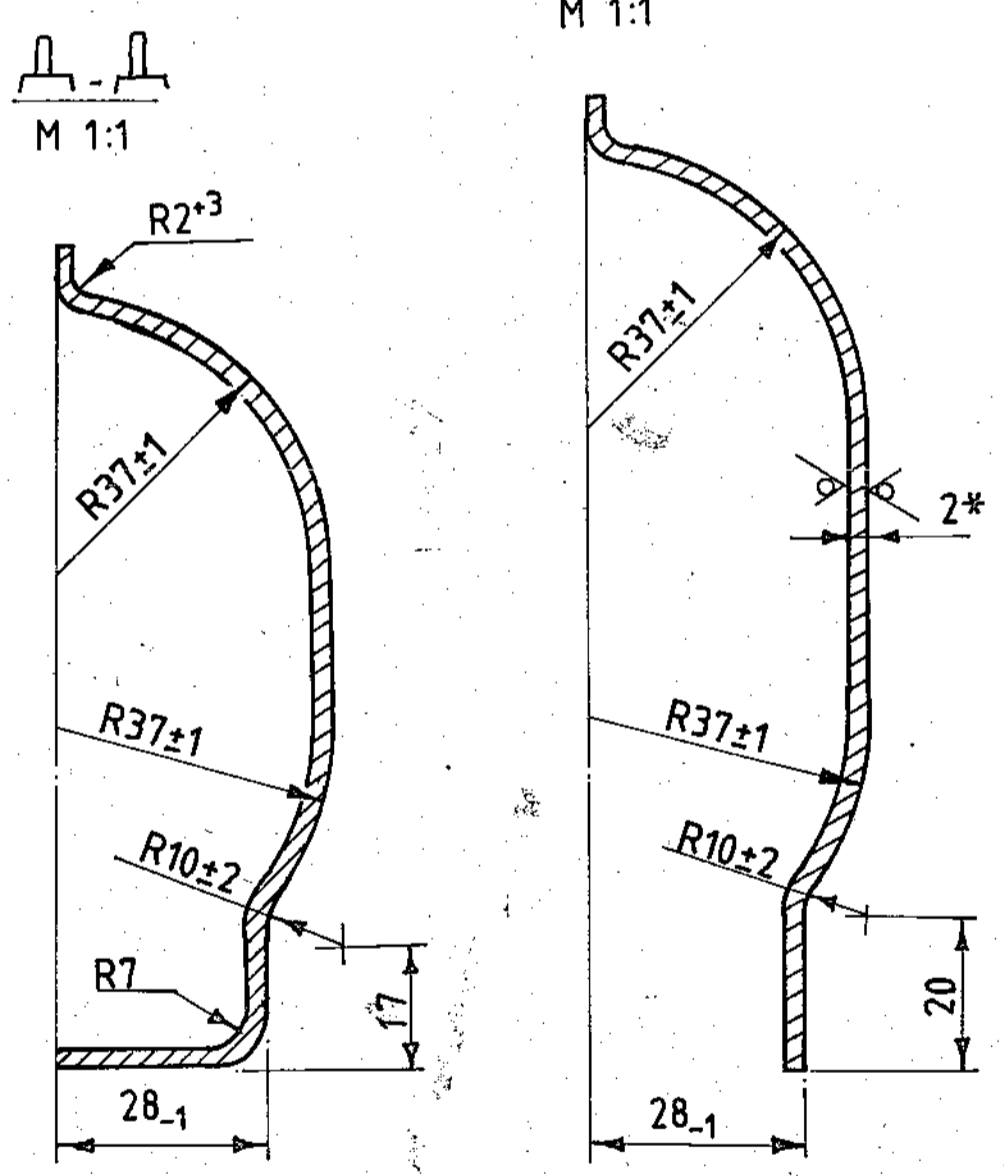
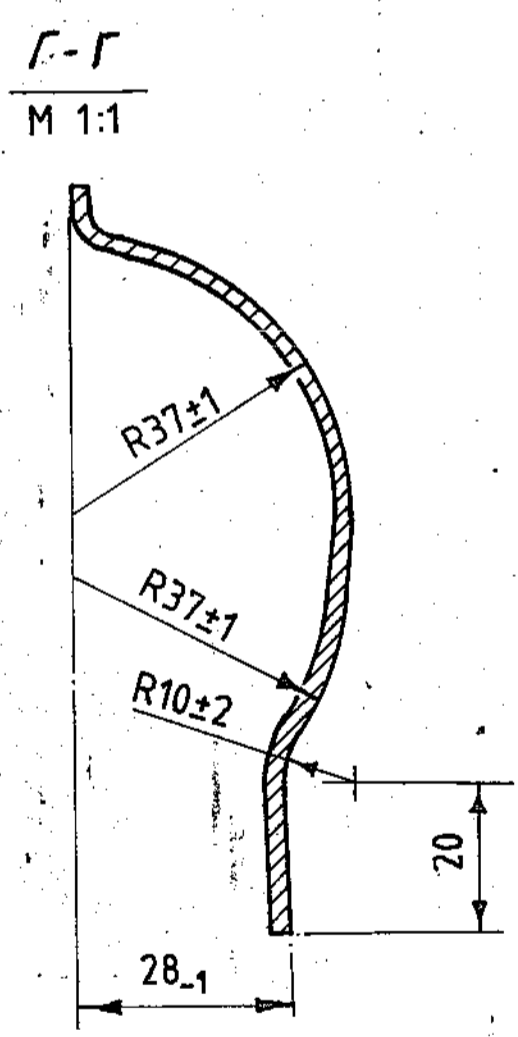
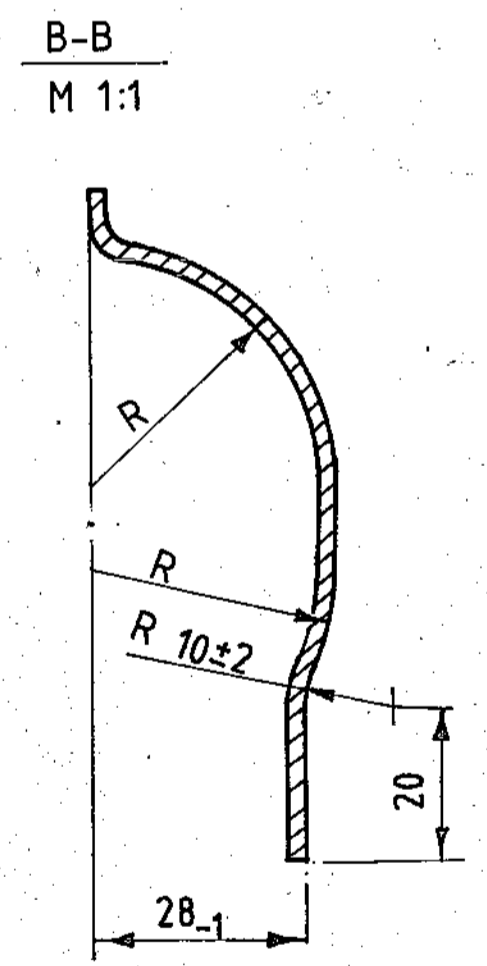
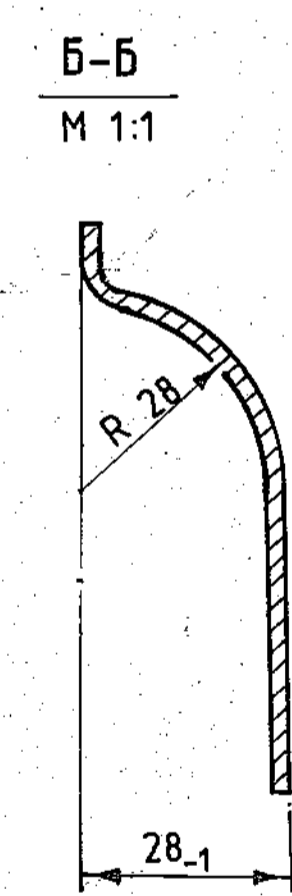
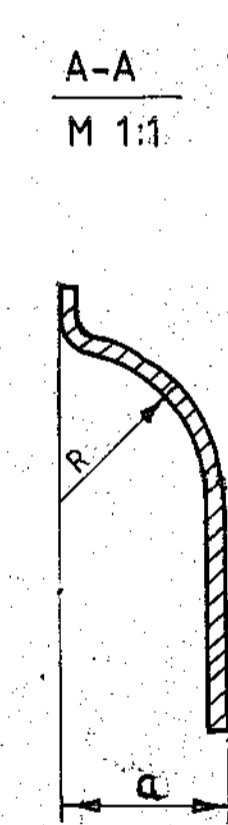
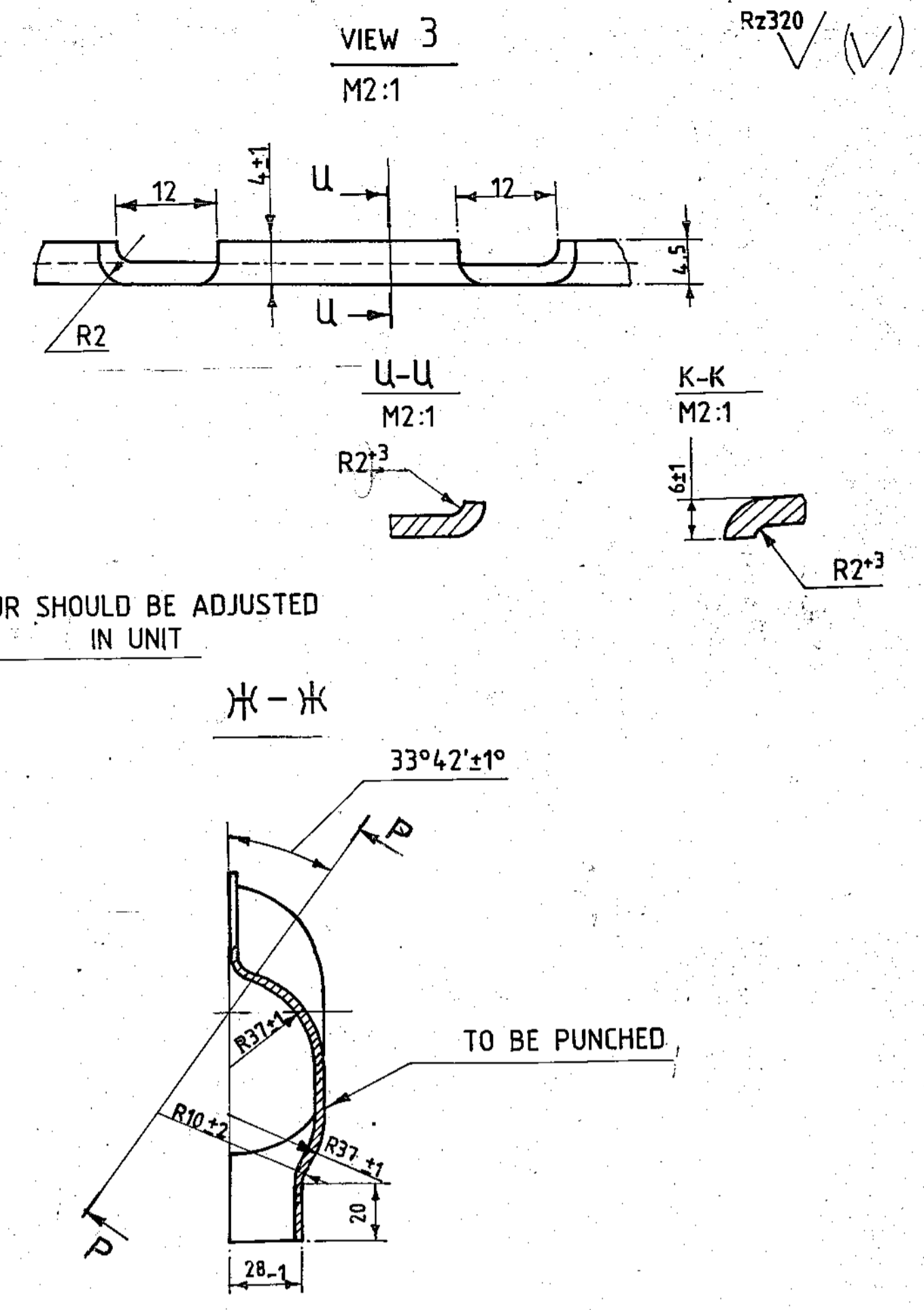
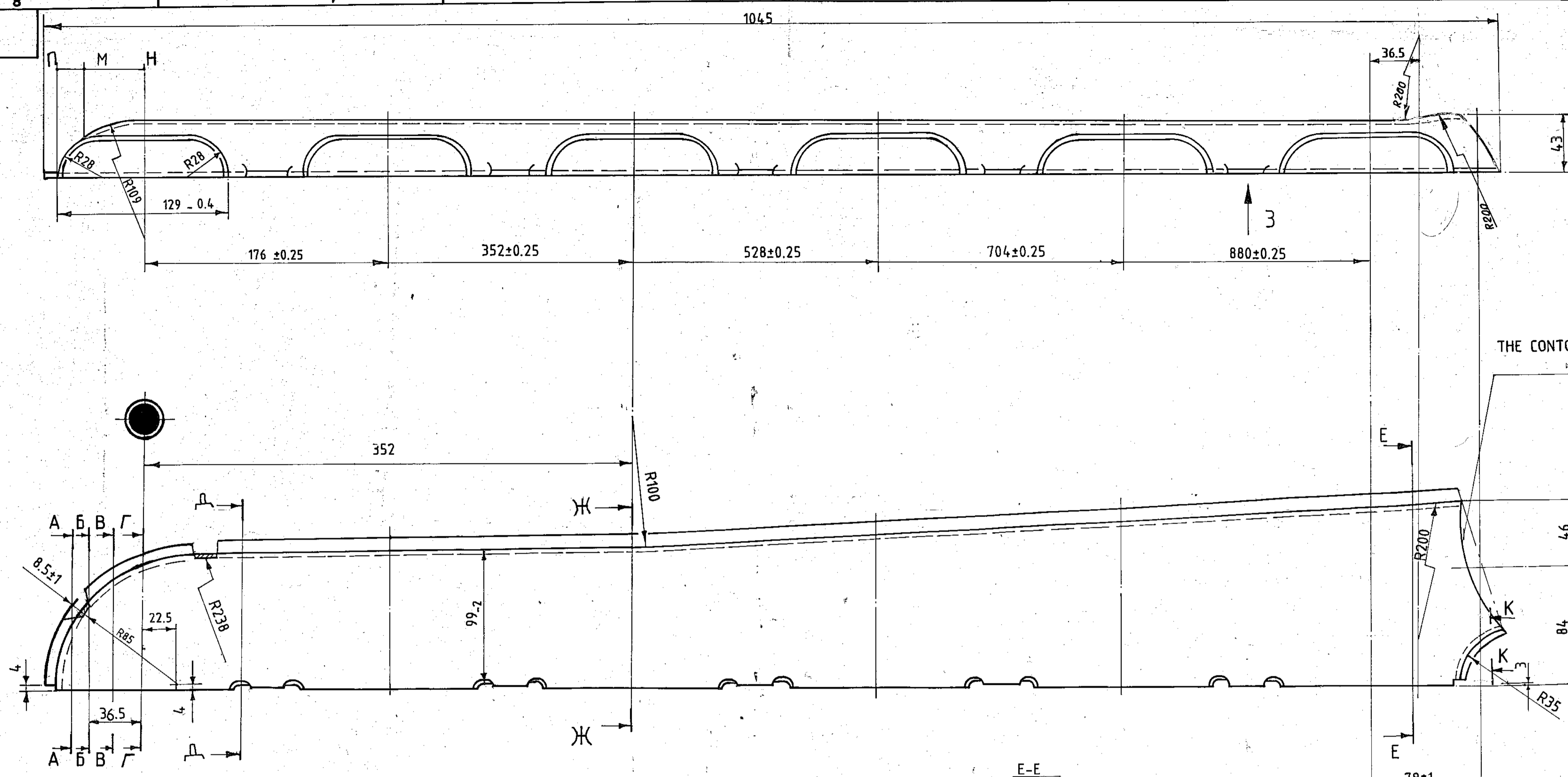
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. 2.53 Kg
TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED 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 IS: 2182-69	ALL THREADS TO CONFORM TO
MATERIAL: SHEET A2 GOST 19904-74	U-B7-08nc GOST 9045-80	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	TITLE: MANIFOLD INTAKE HALF LH	D S CAT NUMBER	DRAWING NUMBER 319-68-2			

DRAWING NUMBER
319-68-4

Rz320



EXPLANATORY NOTE

12. REFERENCE MATERIAL QUOTED:
COLD ROLLED SHEET STEEL OF HIGH ACCURACY ON ROLLING 'A', 2mm THICK TO GOST 19904-74, AND GRADE OF STEEL 08nc, HIGH SURFACE FINISH 'II', EXTREMELY DEEP DRAWING 'BF' TO GOST 9045-80.

a) CHEMICAL COMPOSITION AS PER GOST 9045-80

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Mn	S	P	Si	Cr	Ni	Cu
08nc	0.09	0.20-0.45	0.030	0.025	0.04	0.10	0.10	0.15

PRESENCE OF ALUMINIUM IS PERMISSIBLE IN 08nc STEEL.

b) MECHANICAL PROPERTIES: AS PER GOST 9045-80.

CATEGORY	GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	DIAMETER OF SPHERICAL HOLE MIN.
BF	08nc	26 - 37	29	12.1

- DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE MAINTAINED WITH TOLERANCE ± 0.5mm.
- DIMENSIONS 'R' 200mm, R198mm AND R102mm ARE GIVEN FOR DESIGNING THE DIES.
- CRACKS ARE ALLOWED TO BE WELDED-UP IN CASE THE NUMBER OF CRACKS DOES NOT EXCEED 2 PIECES AND THICKNESS OF MATERIAL NEAR CRACKS IS NOT LESS THAN 1.5mm.
- PUNCTURES, CORRUGATIONS, DENTS AND OTHER DEFECTS ARE NOT PERMISSIBLE.
- THICKNESS OF MATERIAL IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5mm.
- BEFORE PUTTING INTO PRODUCTION THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.

- IN THE CORNERS OF RECESSES AT A DISTANCE UPTO 13mm FROM THE PARTING LINE AND UPTO 6mm FROM BRANCH PIPE CONTOUR THINNING TO 1.2mm IS PERMISSIBLE.
- SHARP EDGES SHOULD BE BLUNTED.
NOTES: 1. ON SECTION ΛM RADIUS R (SEE SEC. A-A, B-B) IS INCREASED FROM R0 TO R28mm. DIMENSION 'A' IS INCREASED FROM a:0 UPTO a:28
2. ON SECTION MH (SEE SECTION B-B, Γ-Γ) RADIUS R IS INCREASED FROM R 28mm UPTO R 37mm.
- BEADING OF EDGE (FOR FLANGE OF MANIFOLD) AS PER SKETCH Π IS ALLOWED.
- DIRECTION OF FIBRES OF ROLLED SHEET SHOULD BE PERPENDICULAR TO COMPONENT LONGITUDINAL AXIS.
- * DIMENSION FOR REFERENCE.

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

EST. WT 2.53 Kg TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

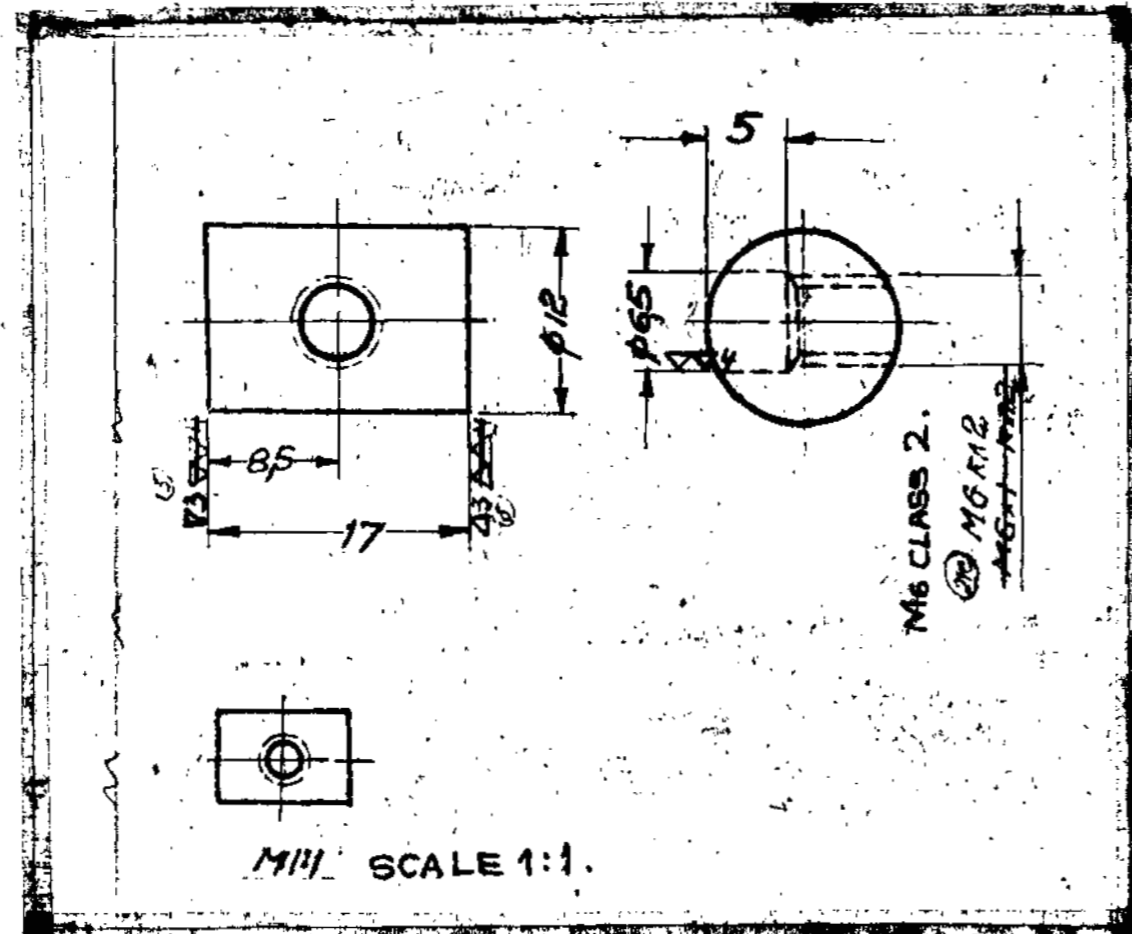
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

ISSUE	DATE	NATURE OF AMENDMENTS	DRN	CHD	TCD	APPO	DATE	MATERIAL:	USED ON:
								A-2 GOST 19904-74 B-Γ-08nc GOST 9045-80	C6 419-05-7

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI
TITLE: MANIFOLD INTAKE HALF RH

D S CAT NUMBER DRAWING NUMBER
319-68-4

DRAWING NUMBER
321-18-1



1. INSPECTION GROUP IV.
2. TECHNICAL REQUIREMENTS FOR THREAD IN ACCORDANCE WITH STANDARD 82021-00.
3. SHARP EDGES SHOULD BE BLUNTED.
4. COUNTERBORE $\phi 6.5$ UPTO 5mm DEEP IS OPTIONAL.
5. GALVANIZE AND PASSIVATE IN ACCORDANCE WITH U.Y.N-154.
6. COATING LAYER THICKNESS 0.003 --- 0.006mm.
7. DIMENSIONS SHOULD BE CHECKED BEFORE COATING.

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

EST WT 0.008 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

EXPLANATORY NOTE :

REFERENCE MATERIAL QUOTED:

COLD DRAWN STEEL ROD, $\phi 12.5$ mm TO GOST 7417-79, GRADE OF STEEL 45, TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45, TO GOST 1050-74.

a) CHEMICAL COMPOSITION : AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS %					
	C	Si	Mn	Cr	S	P
45	0.42-0.50	0.17-0.37	0.50-0.80	0.25	0.040	0.035

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH

b) MECHANICAL PROPERTIES NORMALISED STEEL AS PER GOST 1050-74.

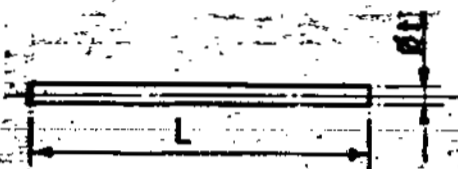
GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	YIELD POINT Kgf/mm ²	ELONGATION %	REDUCTION IN AREA %	IMPACT STRENGTH Kgm/cm ²	BRINNEL HARDNESS B H N max
45	61	36	16	40	5	229

KVD No. 63215 & 63203

SIZE A3

CHK	YCD	APPO	DATE	SCALE	DIMENSIONS	TOLERANCE	ALL THREADS	MATERIAL	USED ON
			11-3-86	2:1	IN mm	UNLESS OTHERWISE STATED IS : 2102-69	CONFORM TO	12.5 GOST 7417-79 45 GOST 1051-73	CB 3319-209-1 CB Y 36-11-07-1
CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI							TITLE : NUT		
D S CAT NUMBER							DRAWING NUMBER 321-18-1		
ISSUE	DATE	NATURE OF AMENDMENTS							

DRAWING NUMBER
354-22



KVD NO	L mm	LIMIT DEVIATIONS mm	USED ON
	50	±15	
78705	60	±15	C6 3338-401-10 C6 530-200
78706	80	±2	C6 3334-00-39 C6 327-00-45
78707	100	±2	C6 3338-00-16 C6 327-00-45 C6 3335-00-24 C6 3362-00-8C6
78708 (B) (C)	120	±2	C6 419-00-4 C6 310-00-7 C6 20-22-00-7 C6 322-00-4C6
78709	160	±2	C6 327-00-45 C6 3335-00-24 C6 3334-00-27
78710	200	±2	C6 327-00-45 C6 3334-00-27
78711 (A)	260	±3	C6 3334-00-27 C6 20-29-00-8
78712	350	±3	
78713	420	±3	C6 411-00-41
78714	500	±3	C6 327 00 45
	600	±3.5	
	800	±5	

ADDITIONAL REQUIREMENTS

- FOR REFERENCE WIRE OF LOCK WIRE IS PER DRAWING 354-22
1. THE WIRE SHOULD BE PROVIDED WITH ZINC COATING. DIAMETER OF WIRE AFTER COATING SHOULD BE 1.28 mm
 2. QUALITY OF WIRE SHOULD NOT EXCEED HALF OF THE TOLERANCE ON DIAMETER
 3. THE WIRE SHOULD BE MANUFACTURED FROM LOW CARBON ROLLED STEEL AS PER GOST 1050-74
 4. ULTIMATE RUPTURE STRENGTH OF ZINC PLATED WIRE SHOULD NOT BE LESS THAN 17 Pa (17 Kgf/mm²)
 5. THE WIRE SHOULD WITHSTAND NOT LESS THAN 7 BENDINGS THROUGH 100° AND NOT LESS THAN 25 TWISTINGS THROUGH 360°
 6. THE SURFACE OF WIRE SHOULD NOT HAVE BLOW HOLES, CRACKS, MARKS, BLACK FILMS, OXIDE SPOTS, BURS AND RUST. THERE SHOULD NOT BE ANY UNCOATED AREAS ON THE WIRE.
 7. ON WIRE FRACTURE, THERE SHOULD NOT BE ANY CRACKS, BACKFINS, FISSURES, BLISTERS, AND SHRINKAGE CAVITIES
 8. WIRE ZINC COATING SHOULD BE BOUND TO THE STEEL WHEN WOUND ON CYLINDER WITH DIAMETER EQUAL TO WIRE FIVE FOLD DIAMETER, THE WIRE SHOULD NOT HAVE ANY PEELINGS AND FISSURES OF ZINC COATING.

EXPLANATORY NOTE:-

REFERENCE MATERIAL QUOTED:- LOW CARBON STEEL
To GOST 1050-74.

CHEMICAL COMPOSITION %

GRADE	C	Si	Mn	Cr	P	S	Cu	Ni
				MAXIMUM				
15	0.12-	0.17-	0.35-	0.25	0.035	0.040	0.25	0.25
	0.19	0.37	0.65					

MECHANICAL PROPERTIES

1. ULTIMATE TENSILE STRENGTH Kgf/mm² (min) = 38
2. YIELD POINT Kgf/mm² (min) = 23
3. PERCENTAGE ELONGATION % (min) = 27
4. REDUCTION IN AREA % (min) = 55
5. HARDNESS BHN (MAX) = 149

COMMON TO V-92S2 & UTD-20 ENGINES

(E) EQUIVALENT MATERIAL
IS: 549.

(D) ** ITEM USED IN VARIOUS LENGTHS ON VARIOUS ASSEMBLIES OF V46-6, V92-S2, & UTD-20. ENGINE.

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

EST. WT. 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	<i>[Signature]</i>	MATERIAL	C6 20-06-00-2
CHD	<i>[Signature]</i>	USED ON	C6 20-35-00-5
TCD	<i>[Signature]</i>		C6 3338-402-4 C6
APPD	<i>[Signature]</i>		SEE TABLE **
DATE	18-3-86	CONTROL RATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE		A V A D I	
E	8-7-10	4 th ALT. COMM. Mtg. MINUTES	
D	28.8.08	POINT No. 3 DT. 26-10-09	
C	30.6.01	AUTHY 90211/AHSP/ED dt 27.3.01	
B	15.1.02	AUTHY LE No. 1100267/TND-11/522 dt 12-1-02	
A	15-2-88	AUTHY NOTN NO. BK 81-4-06	
ISSUE	DATE	NATURE OF AMENDMENTS	

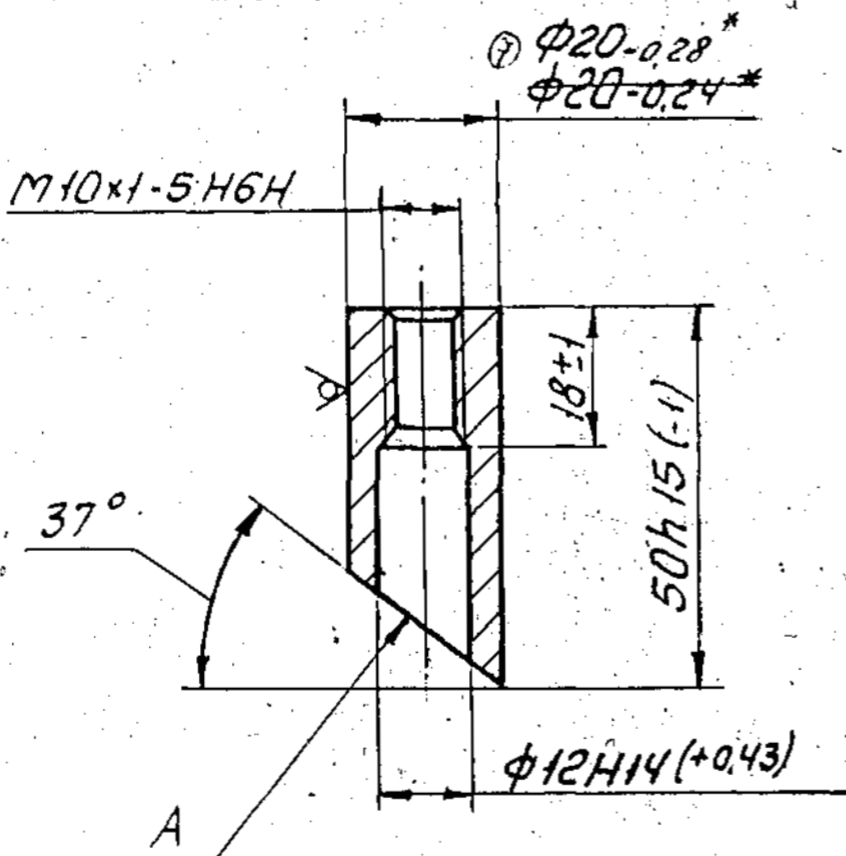
TITLE: **LOCK WIRE**

D.S. CAT NUMBER

DRAWING NUMBER: **354-22**

DRAWING NUMBER
3319-37

Rz80 (V)



1. ALTERNATE MATERIAL: STEEL 15 AND 25 GOST 1050-74.
2. TECHNICAL REQUIREMENTS FOR THREAD AS PER STANDARD 82052-00.
3. BEFORE WELDING SURFACE A OF THE COMPONENT MAY BE ADJUSTED.
4. *DIMENSION FOR REFERENCE.

(A) ALTERNATE MATERIAL STEEL 070M20 (EN3A) TO BS: 970
Pt. I- 1983 (OR) 20 CB TO IS 1570

EXPLANATORY NOTE :

5. REFERENCE MATERIAL QUOTED:-

COLD DRAWN STEEL ROUND BAR ϕ 20mm TO GOST 7417-75, ACCURACY CLASS 5, SURFACE QUALITY 'B' TO GOST 1051-73 MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 20 AND REFERENCE NOTE '1' ON ALTERNATE MATERIAL STEEL GRADE 15 & 25 TO GOST 1050-74.

a) CHEMICAL COMPOSITION AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
	M A X I M U M						
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref.Matl.
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt.Matl.
25	0.22-0.30	0.17-0.37	0.50-0.80	0.25	0.040	0.035	Alt.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH

b) MECHANICAL PROPERTIES UNDER NORMALISED CONDITION AS PER GOST 1050

GRADE OF STEEL	TENSILE STRENGTH	YIELD POINT	RELATIVE ELONGATION	HARDNESS	REMARKS	
	G/H Kgf/mm ²	Kgf/mm ²	%	B.H.N.		
	M I N I M U M				M A X	
20	42	25	25	163	Ref.Matl.	
15	38	23	27	149	Alt.Matl.	
25	46	28	23	170	Alt.Matl.	

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

EST WT 0.07Kg. TO BE STAMPED OR MARKED WHERE INDICATED THUS-II (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

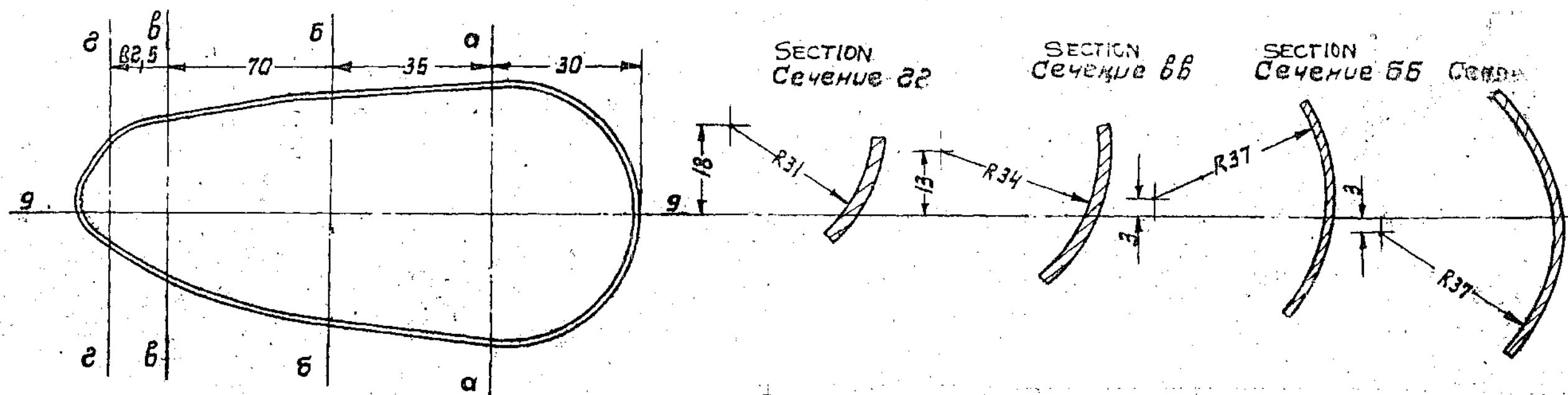
DRN	CHD	TCD	APPD	DATE	SCALE	DIMENSIONS	TOLERANCE	
				06-3-86	1:1	IN mm	UNLESS OTHERWISE STATED IS: 2102-69	
A			28-5-09	3 rd ALTERATION COMM. MINUTES POINT 4 DATE 27-2-09		ALL THREADS TO CONFORM TO IS 4218 PART IV		
ISSUE	DATE	NATURE OF AMENDMENTS						

MATERIAL	20-5GOST7417-75	USED ON	CB 419-05-7
ROUND BAR	20 GOST 1051-73		CB 419-06-7
CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI			
TITLE:		BOSS	
D S CAT NUMBER		DRAWING NUMBER	
		3319-37	

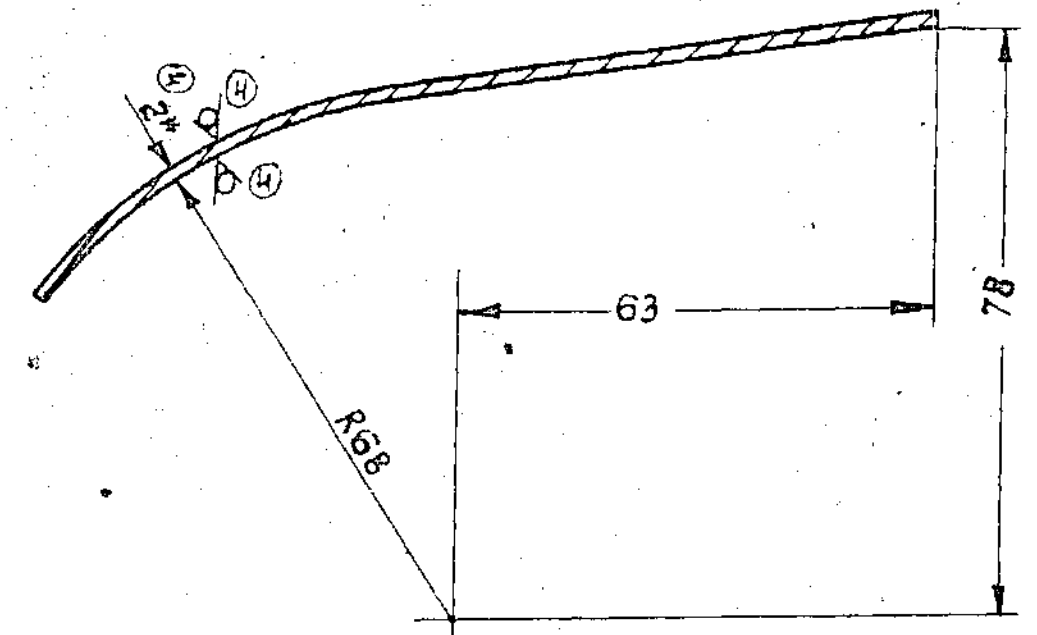
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SIZE A3

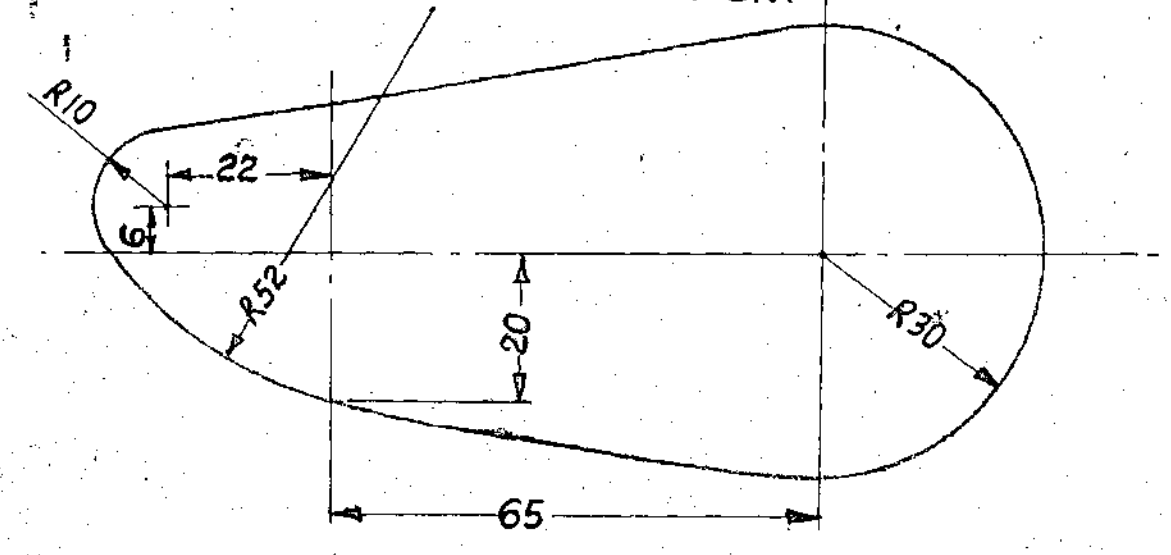
Rz320
✓(✓)



SECTION 99
Сечение 99



Развертка
DEVELOPMENT



EXPLANATORY NOTE :

REFERENCE MATERIAL QUOTED

6. COLD ROLLED SHEET STEEL 2mm THICK TO GOST 19904-74 ORDINARY SURFACE FINISH TO 10kn TO GOST 16523-70 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 10 kn AND REFERENCE NOTE '4' ON ALTERNATE MATERIAL STEEL GRADES 08,08kn,08nc,10,15kn TO GOST 1050-74.
a) CHEMICAL COMPOSITION AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
10kn	0.07-0.14	0.07	0.25-0.50	0.15	0.040	0.035	Ref.Matl.
08	0.05-0.12	0.17-0.37	0.35-0.65	0.10	0.040	0.035	Alt.Matl.
08 kn	0.05-0.11	MAX 0.03	0.25-0.50	0.10	0.040	0.035	Alt.Matl.
08 nc	0.05-0.11	0.05-0.17	0.35-0.65	0.10	0.040	0.035	Alt.Matl.
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035	Alt.Matl.
15 kn	0.12-0.19	MAX 0.07	0.25-0.50	0.25	0.040	0.035	Alt.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.MANGANESE CONTENT UPTO 0.25% AS REGARDS LOWER LIMIT, IS ALLOWED IN THE STEEL OF GRADE 08nc MEANT FOR PRODUCTION OF SHEET STEEL FOR COLD STAMPING
b) MECHANICAL PROPERTIES AS PER GOST 16523-70.

GRADE OF	TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	REMARKS
		MINIMUM	
10kn	28-40	25	Ref.Matl.
08	28-40	25	Alt.Matl.
08kn	27-39	26	Alt.Matl.
08nc	28-40	25	Alt.Matl.
10	30-42	25	Alt.Matl.
15kn	32-45	24	Alt.Matl.

1. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
2. SHARP EDGES SHOULD BE BLUNTED.
3. BLANKING BEVEL UPTO 1mm PER SIDE IS PERMISSIBLE.
4. ALTERNATE MATERIAL:STEEL GRADES 08,08kn,08nc,10,15kn GOST 1050-74, 08 TO GOST 9045-80. (A)
5. * DIMENSION FOR REFERENCE.

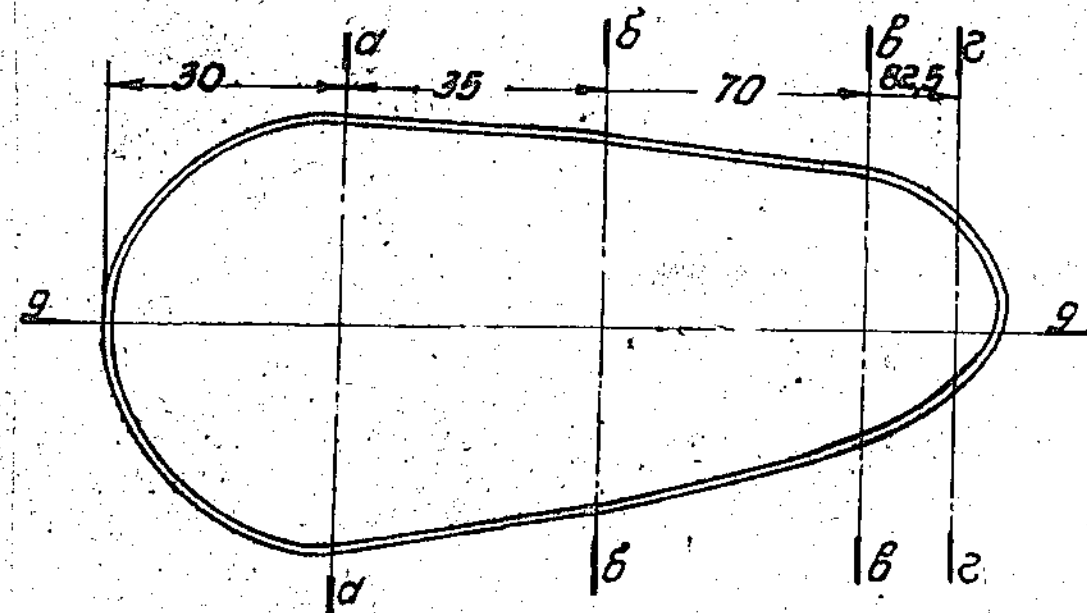
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST WT 0.095 Kg. TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

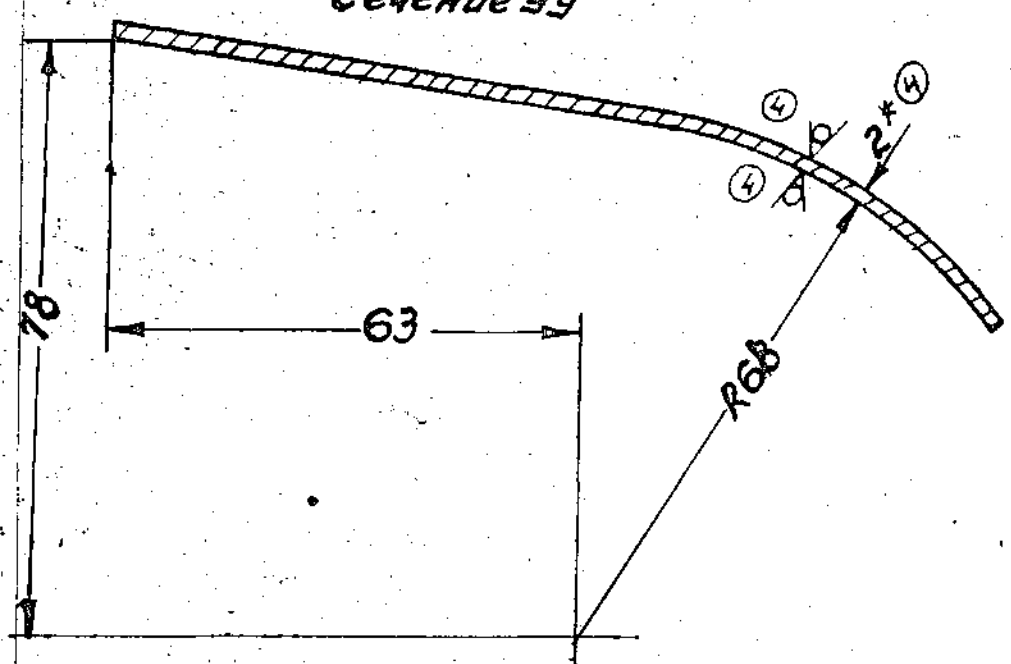
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

DRN	APPROVED	MATERIAL SHEET 2 GOST 19904-74 10kn GOST 16523-70	USED ON Cb 419-05-7
CHD	DESIGNED	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TECHNICAL		
APPD	APPROVED		
DATE	10-3-86		
SCALE: 1:1		TITLE: COVER PLATE MANIFOLD RH	
DIMENSIONS IN mm		D S CAT NUMBER	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69		DRAWING NUMBER 3319-38	
ALL THREADS TO CONFORM TO		ISSUE DATE NATURE OF AMENDMENTS	
A	26.10.88	AUTHY 85-733	

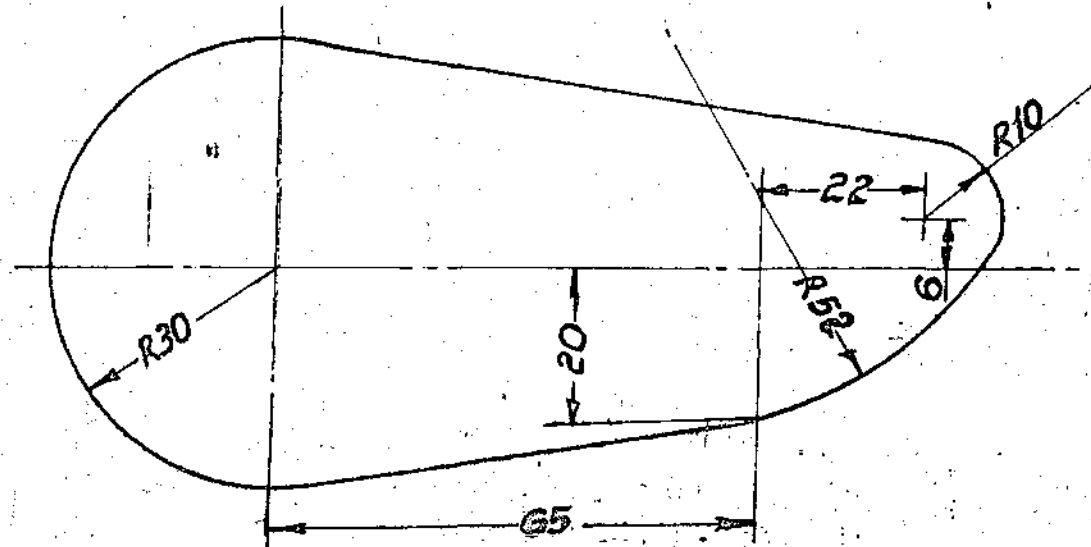
SIZE A2



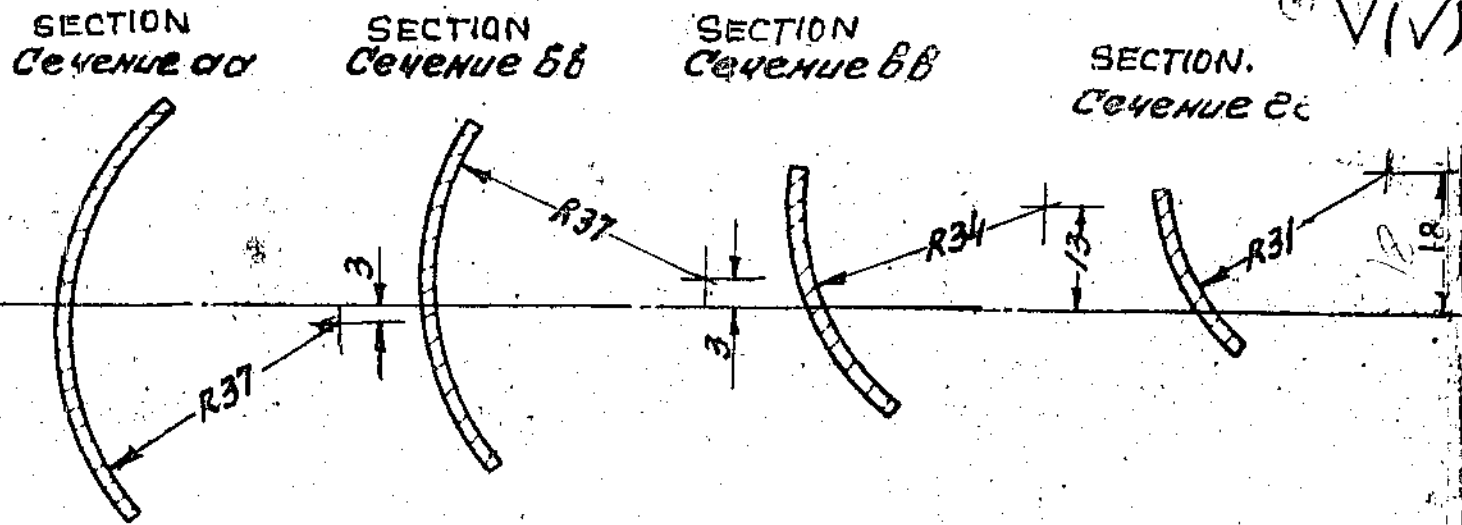
SECTION
Сечение 99



Развертка
DEVELOPMENT



1. * DIMENSION FOR REFERENCE.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. SHARP EDGES SHOULD BE BLUNTED.
4. BLANKING BEVEL UP TO 1mm PER SIDE IS PERMISSIBLE.
5. ALTERNATE MATERIAL: STEEL GRADES 08, 08кп, 08пс, 10, 15кп, GOST1050-74, 08.10 GOST 9045-80. (A)



EXPLANATORY NOTE :

6. REFERENCE MATERIAL QUOTED: COLD ROLLED SHEET STEEL HIGH ACCURACY ON ROLLING 'A' 2mm THICK TO GOST 19904-74 Gde 10кп TO GOST 16523 -74 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL Gde 10кп TO GOST 1050-74 AND REFERENCE NOTE 'S' ON ALTERNATE MATERIAL Gdes. 08,08кп,08пс,10,15кп GOST1050-74.

a) CHEMICAL COMPOSITION AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
	M A X I M U M						
10кп	0.07-0.14	MAX. 0.07	0.25-0.50	0.15	0.040	0.035	Ref.Matl.
08	0.05-0.12	0.17-0.37	0.35-0.65	0.10	0.040	0.035	Alt.Matl.
08кп	0.05-0.11	MAX. 0.03	0.25-0.50	0.10	0.040	0.035	Alt.Matl.
08пс	0.05-0.11	0.05-0.17	0.35-0.65	0.10	0.040	0.035	Alt.Matl.
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035	Alt.Matl.
15кп	0.12-0.19	MAX. 0.07	0.25-0.50	0.25	0.040	0.035	Alt.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH. MANGANESE CONTENT UP TO 0.25% AS REGARDS LOWER LIMIT, IS ALLOWED IN THE STEEL OF GRADE 08пс MEANT FOR PRODUCTION OF SHEET STEEL FOR COLD STAMPING.

b) MECHANICAL PROPERTIES AS PER GOST 16523-74.

GRADE OF STEEL	TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	REMARKS
		MINIMUM	
10кп	28-40	25	Ref.Matl.
08	28-40	25	Alt.Matl.
08кп	27-39	26	Alt.Matl.
08пс	28-40	25	Alt.Matl.
10	30-42	25	Alt.Matl.
15кп	32-45	24	Alt.Matl.

кп - RIMMED STEEL
пс - SEMI-KILLED STEEL.

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

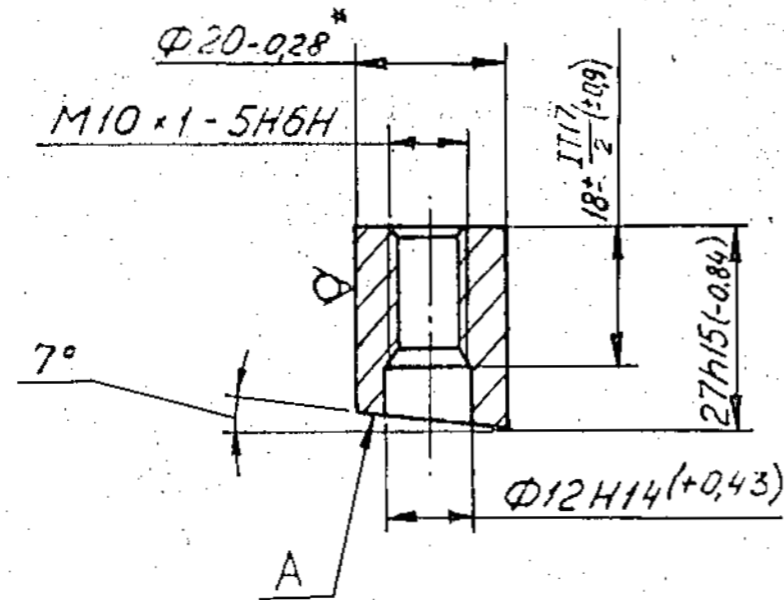
EST WT 0.025 Kg. TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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

DRN	CHD	TCD	APPD	DATE	MATERIAL SHEET 2 GOST19904-74 10кп GOST 16523-70	USED ON СБ 419-06-7
SCALE: 1:1					CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
DIMENSIONS IN mm					TITLE: COVER PLATE MANIFOLD L.H.	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69					D S CAT NUMBER	
ALL THREADS TO CONFORM TO					DRAWING NUMBER 3319-39	
A	26.10.88	AUTHY 85-733		ISSUE DATE NATURE OF AMENDMENTS		

DRAWING NUMBER
3319-112-1

20
✓ (M)



1. ALTERNATE MATERIAL: STEEL 15 AND 25 GOST 1050-74.
2. TECHNICAL REQUIREMENTS FOR THREAD AS PER STANDARD 82052-00.
3. BEFORE WELDING COMPONENT SURFACE A MAY BE ADJUSTED.
4. *DIMENSION FOR REFERENCE.

EXPLANATORY NOTE :

REFERENCE MATERIAL QUOTED:-

COLD DRAWN STEEL ROUND BAR ϕ 20mm TO GOST 7417-75, ACCURACY CLASS 5, SURFACE QUALITY 'B' TO GOST 1051-73 MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 20 AND REFERENCE NOTE '1' ON ALTERNATE MATERIAL STEEL GRADE 15 & 25 TO GOST 1050-74.
a) CHEMICAL COMPOSITION AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref.Matl.
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt.Matl.
25	0.22-0.30	0.17-0.37	0.50-0.80	0.25	0.040	0.035	Alt.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH

b) MECHANICAL PROPERTIES UNDER NORMALISED CONDITION AS PER GOST 1050-74

GRADE OF STEEL	TENSILE STRENGTH	YIELD POINT	RELATIVE ELONGATION	HARDNESS	REMARKS
	'GTH Kgf/mm ²	Kgf/mm ²	%	B.H.N.	
20	42	25	25	163	Ref.Matl.
15	38	23	27	149	Alt.Matl.
25	46	28	23	170	Alt.Matl.

(A) EQUIVALENT MATERIAL
STEEL 070 M20 (EN 3A) TO BS: 970

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

EST. WT 0.044 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	CHD	TCD	APPD	DATE	SCALE	DIMENSIONS	TOLERANCE	ALL THREADS	MATERIAL	USED ON
				11-3-86	1:1	IN mm	UNLESS OTHERWISE STATED IS: 2102-69	CONFORM TO IS 4218 PART IV	20-5GOST7417-75 ROUND BAR 20 GOST 1051-73	CB 419-05-7 CB 419-06-7
CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI								TITLE: BOSS		
ISSUE DATE						D S CAT NUMBER		DRAWING NUMBER		
A 9-7-10 4th ALT.COMM.Mtg. MINUTES POINT No 5 DT. 26-10-09								3319-112-1		

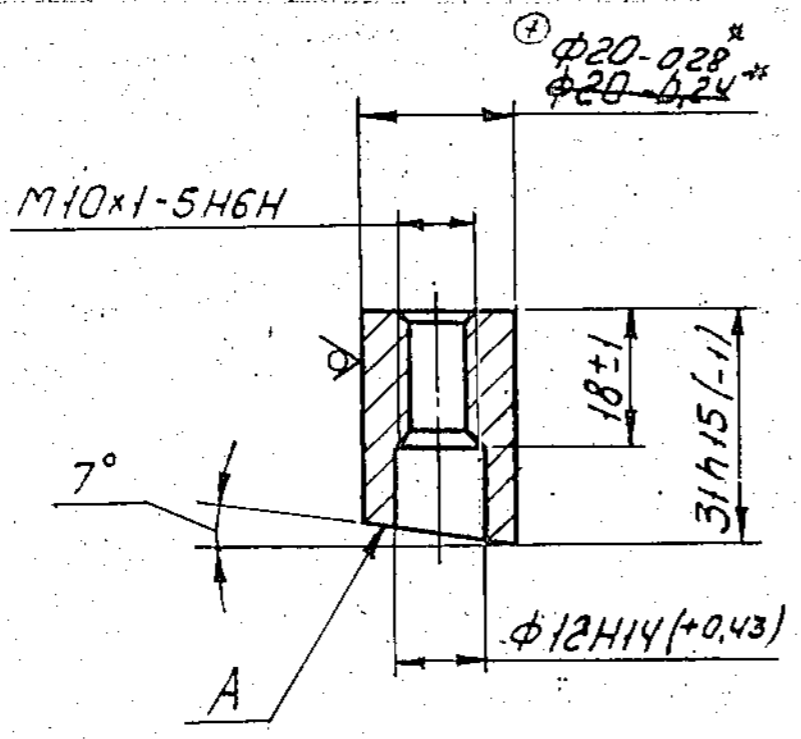
A7

SIZE A3



DRAWING NUMBER
3319-112

Rz80 (✓)



1. ALTERNATE MATERIAL: STEEL 15 AND 25 GOST 1050-74.
2. TECHNICAL REQUIREMENTS FOR THREAD AS PER STANDARD 82052-00.
3. BEFORE WELDING COMPONENT, SURFACE A MAY BE ADJUSTED.
4. *DIMENSION FOR REFERENCE.

(A) EQUIVALENT MATERIAL
STEEL 070 M20 (EN 3A) TO BS: 970

EXPLANATORY NOTE :

5. REFERENCE MATERIAL QUOTED:

COLD DRAWN STEEL ROUND BAR φ 20mm. TO GOST 7417-75. ACCURACY CLASS 5,
SURFACE QUALITY 'B' TO GOST 1051-73 MANUFACTURED IN ACCORDANCE WITH QUALITY
CARBON STRUCTURAL STEEL GRADE 20 AND REFERENCE NOTE '1' ON ALTERNATE MATERIAL
MATERIAL STEEL GRADE 15 & 25 TO GOST 1050-74.
a) CHEMICAL COMPOSITION AS PER GOST 1050.74.

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref,Matl
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt,Matl
25	0.22-0.30	0.17-0.37	0.50-0.80	0.25	0.040	0.035	Alt,Matl

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH

b) MECHANICAL PROPERTIES UNDER NORMALISED CONDITION AS PER GOST 1050-74.

GRADE OF STEEL	TENSILE STRENGTH Kgf/mm ²	YIELD POINT Kgf/mm ²	RELATIVE ELONGATION %	HARDNESS B H N max	REMARKS
20	42	25	25	163	Ref,Matl
15	38	23	27	149	Alt,Matl
25	46	28	23	170	Alt,Matl

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

EST WT 0.05 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	20.10.86	MATERIAL:	20-5GOST 7417-75	USED ON:	
CHD		ROUND BAR	20 GOST 1051-73	CB 419-05-7	
TCO		CONTROLLERATE OF INSPECTION (HEAVY VEHICLES)			
APPD		AVADI			
DATE	06-3-86	TITLE: BOSS			
SCALE: 1 : 1		D S CAT NUMBER		DRAWING NUMBER	
DIMENSIONS IN mm				3319-112	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69					
ALL THREADS TO CONFORM TO IS 4218 PART IV					
ISSUE	DATE	NATURE OF AMENDMENTS			
A	9-7-10	4 th ALT.COMM.Mtg. MINUTES POINT No.5. DT. 26-10-09			

A7

SIZE A3

Rz80
√(V)

EXPLANATORY NOTE :

5. REFERENCE MATERIAL QUOTED: CARBON STRUCTURAL STEEL GRADE 10 AND REFERENCE NOTE '4' ON ALTERNATE MATERIAL STEEL GRADES 15,20 TO GOST 1050-74 & GRADE 20X TO GOST 4543-71.

a) CHEMICAL COMPOSITION AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
10	0.07-0.14	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref.Matl.
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt.Matl.
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH

b) MECHANICAL PROPERTIES AS PER GOST 1050-74 (NORMALISED CONDITION)

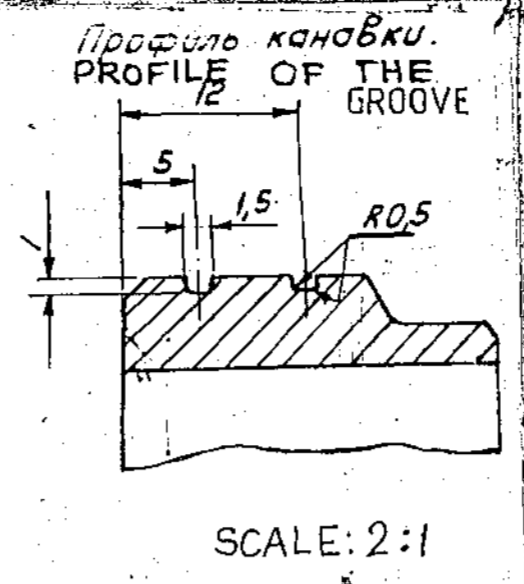
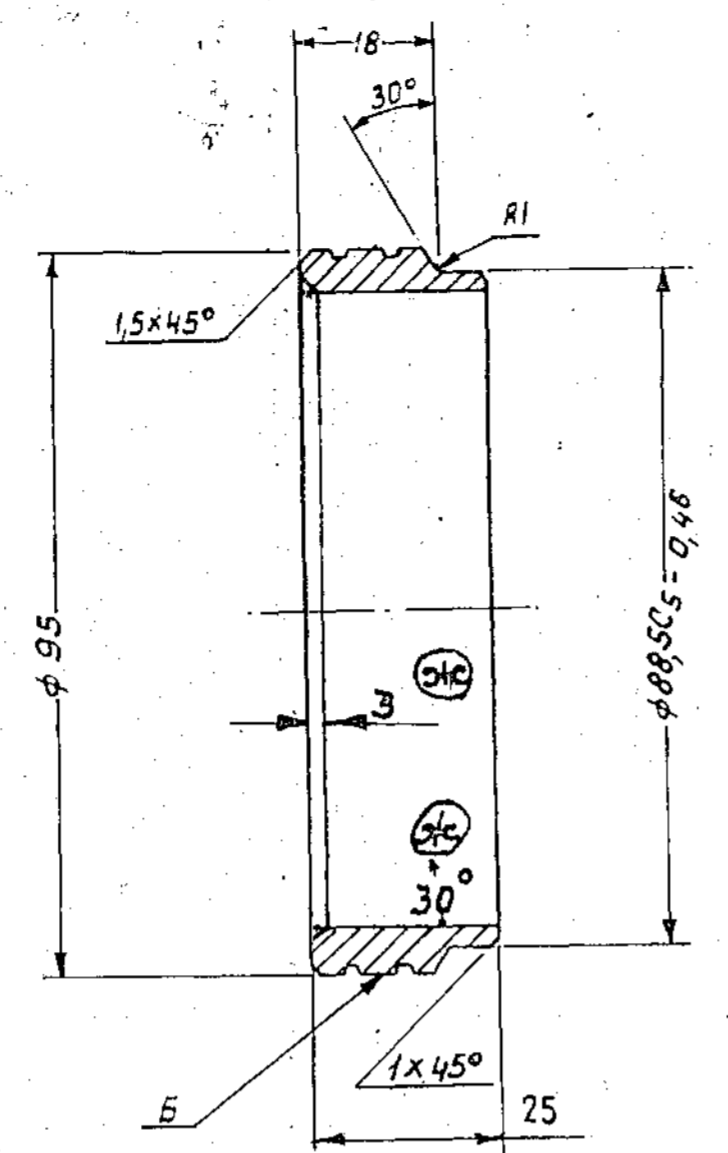
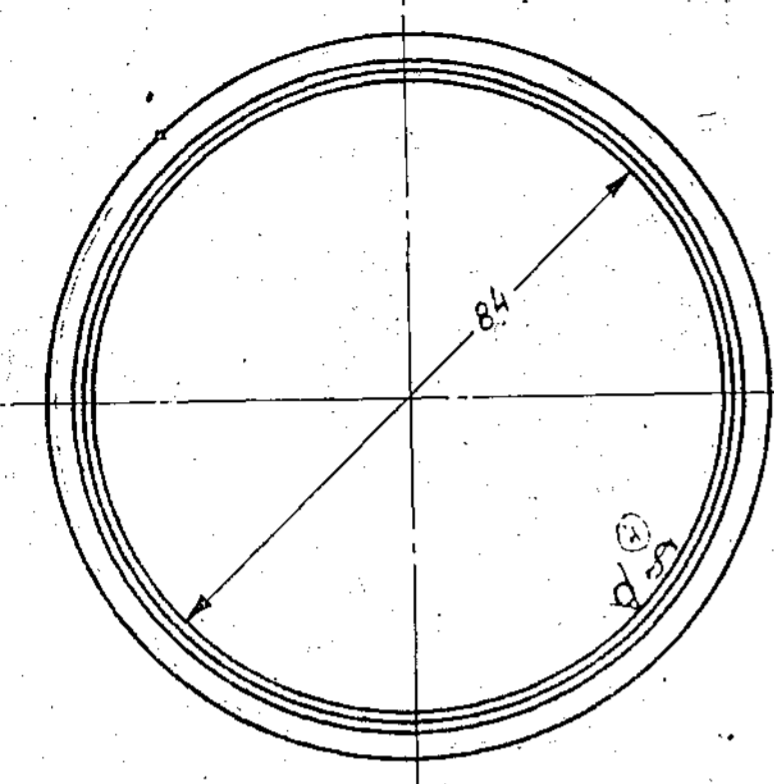
GRADE OF STEEL	ULTIMATE TENSILE STRENGTH	YIELD POINT	ELONGATION	REDUCTION IN AREA	HARDNESS B.H.N.	REMARKS
	Kgf/mm ²	Kgf/mm ²	%	%	MAX.	
10	34	21	31	55	143	Ref.Matl.
15	38	23	27	55	149	Alt.Matl.
20	42	25	25	55	163	Alt.Matl.

c) CHEMICAL COMPOSITION OF HOT ROLLED CHROMIUM STEEL GOOD QUALITY GRADE 20X TO GOST 4543-71.

GRADE OF STEEL	CONTENT OF ELEMENTS %								REMARKS
	C	Si	Mn	Cr	P	S	Cu	Ni	
20X	0.17-0.23	0.17-0.37	0.50-0.80	0.70-1.00	0.035	0.035	0.30	0.30	Alt.Matl.

d) MECHANICAL PROPERTIES AS PER GOST 4543-71 (IN HARDENED & TEMPERED CONDITION)

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH	YIELD POINT	ELONGATION	REDUCTION IN AREA	IMPACT STRENGTH	HARDNESS B.H.N.	REMARKS
	Kgf/mm ²	Kgf/mm ²	%	%	Kgf/cm ²	MAX	
20X	80	65	11	40	6	179	Alt.Matl.



1. SHARP EDGES SHOULD BE BLUNTED.
2. DURING MACHINING ROUGHNESS IS ALLOWED ON SURFACE 'B'.
3. DIMENSIONS WITH UNSPECIFIED TOLERANCE SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7 OST 1010.
4. ALTERNATE MATERIAL: STEEL Gdes. 15,20 GOST 1050-74 AND 20X GOST 4543-71.

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

EST WT 0.23 kg. TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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

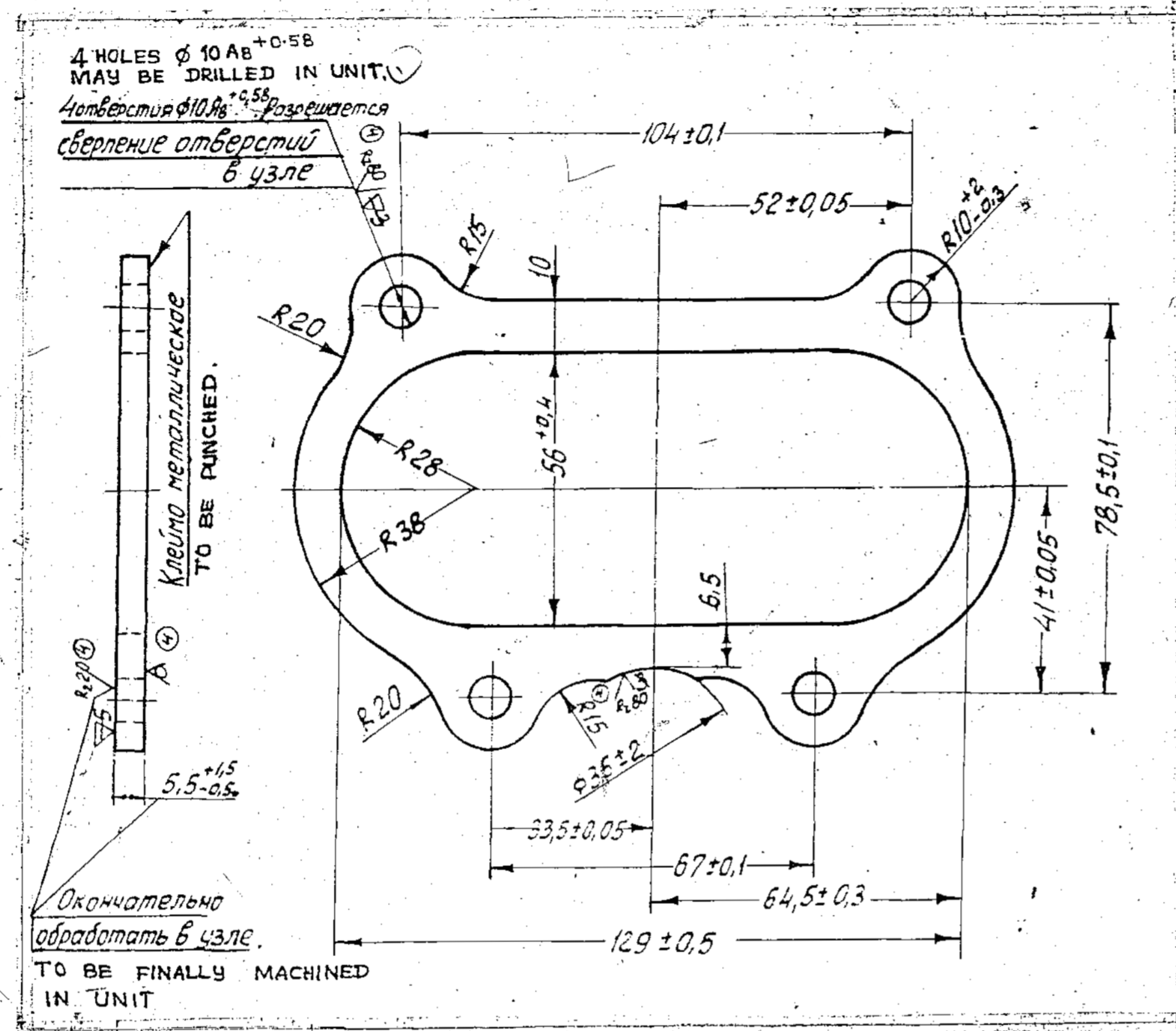
DRN	<i>[Signature]</i>	MATERIAL	STEEL 10 GOST 1050-74	USED ON	CB 419-05-7 CB 419-06-7
CHD	<i>[Signature]</i>	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES AVADI)			
TCD	<i>[Signature]</i>				
APPD	<i>[Signature]</i>	TITLE COLLAR MANIFOLD			
DATE	11-3-86				
SCALE:	1 : 1	D S CAT NUMBER			
DIMENSIONS IN mm					
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69		DRAWING NUMBER		3319-218	
ALL THREADS TO CONFORM TO		ISSUE DATE NATURE OF AMENDMENTS			

A-7

SIZE A2

DRAWING NUMBER
319-08-2

Rz320
✓(M)



EXPLANATORY NOTE :

6. REFERENCE MATERIAL QUOTED: HOT ROLLED STEEL SHEET OF NORMAL ACCURACY ON ROLLING 5' 8mm THICKNESS TO GOST 19903-74 STEEL Gde 20 OF GOST 1577-81 MANUFACTURED IN ACCORDANCE WITH NORMALISED CARBON STRUCTURAL STEEL Gde 20 AND REFERENCE NOTE 5 ON ALTERNATE MATERIALS MANUFACTURED IN ACCORDANCE WITH CARBON STRUCTURAL STEEL Gdes. 10,15 & 25 TO GOST 1050-74.
- a) CHEMICAL COMPOSITION AS PER GOST 1050-74

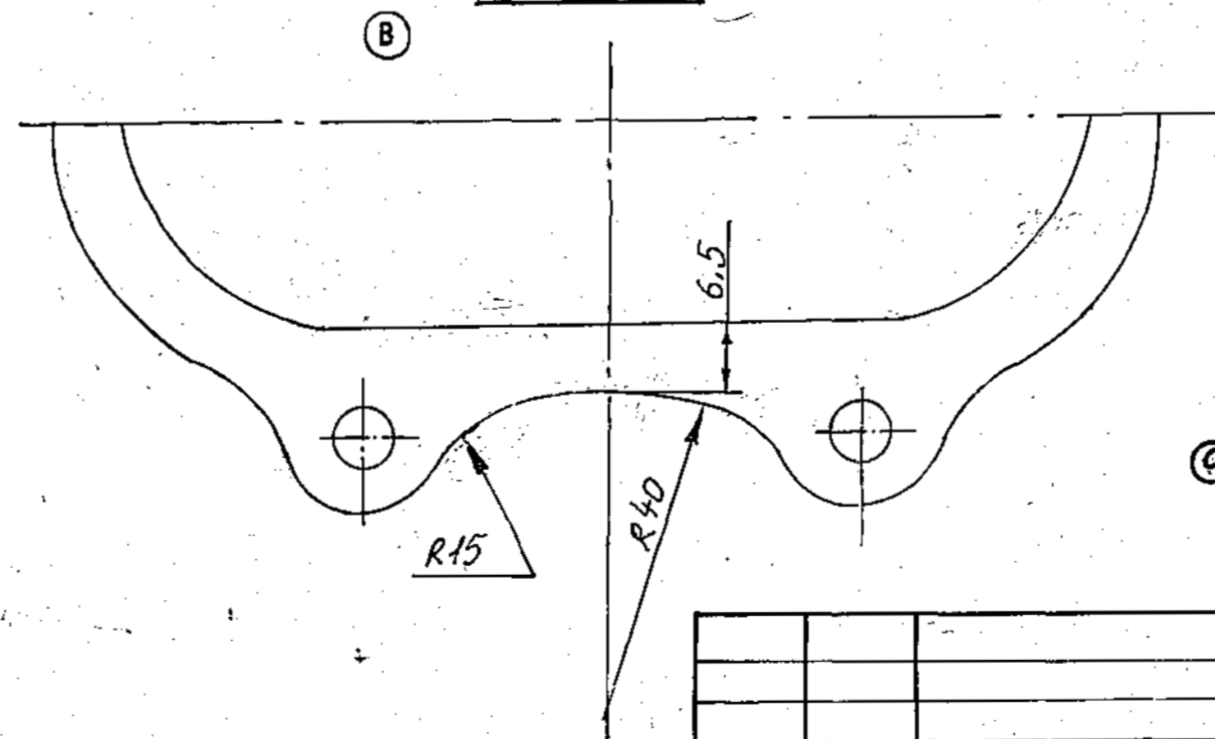
GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref.Matl.
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035	Ref.Matl.
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref.Matl.
25	0.22-0.30	0.17-0.37	0.50-0.80	0.25	0.040	0.035	Ref.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH

- b) MECHANICAL PROPERTIES OF NORMALISED HOT ROLLED SHEET AS PER GOST 1577-81.

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kg/mm ²	ELONGATION %	IMPACT STRENGTH Kgcm/cm ²	HARDNESS B.H.N.		REMARKS
				MINIMUM	MAX	
20	42	28	3	-	-	Ref.Matl.
10	34	32	3	-	-	Alt.Matl.
15	38	30	3	-	-	Alt.Matl.
25	45	25	-	170	-	Alt.Matl.

ALTERNATE



© ALTERNATE MATERIAL STEEL 070M20 (EN3A) TO BS: 970- Pt-1- 1983 (OR) 20 CB TO IS: 1570

1. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
2. DIMENSIONS WITH UNSPECIFIED TOLERANCES SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7 OST 1010.
3. SHARP EDGES SHOULD BE BLUNTED.
4. BLANKING BEVEL UPTO 0.8mm IS PERMISSIBLE.
5. ALTERNATE MATERIAL : STEEL 10,15,AND 25 GOST 1050-74.

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

EST WT. 0.26 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	Apkalla	MATERIAL	USED ON
CHD	...	SHEET 58 GOST19903-74	CB 419-05-7
TCD	...	20 GOST 1577-81	CB 419-06-7
APPD	...	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES AVADI)	
DATE	06-3-86	TITLE	
SCALE	1:1	FLANGE MANIFOLD	
DIMENSIONS IN mm		D S CAT NUMBER	DRAWING NUMBER
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69			319-08-2
3rd ALTERATION COMM. MINUTES POINT 4 DATE 27-2-09		ALL THREADS TO CONFORM TO	
AUTHY.No. BK 84-915		NATURE OF AMENDMENTS	
15.10.87			

EXPLANATORY NOTE :

5. REFERENCE MATERIAL QUOTED

COLD ROLLED SHEET STEEL 2mm THICK TO GOST 19904-74
 ORDINARY SURFACE FINISH TO 10kn TO GOST 16523-70
 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON
 STRUCTURAL STEEL Gde 10kn AND REFERENCE NOTE 2: ON
 ALTERNATE MATERIAL, STEEL GRADES 10, 20, 08k1, 15kn AND 08nc
 TO GOST 1050-74

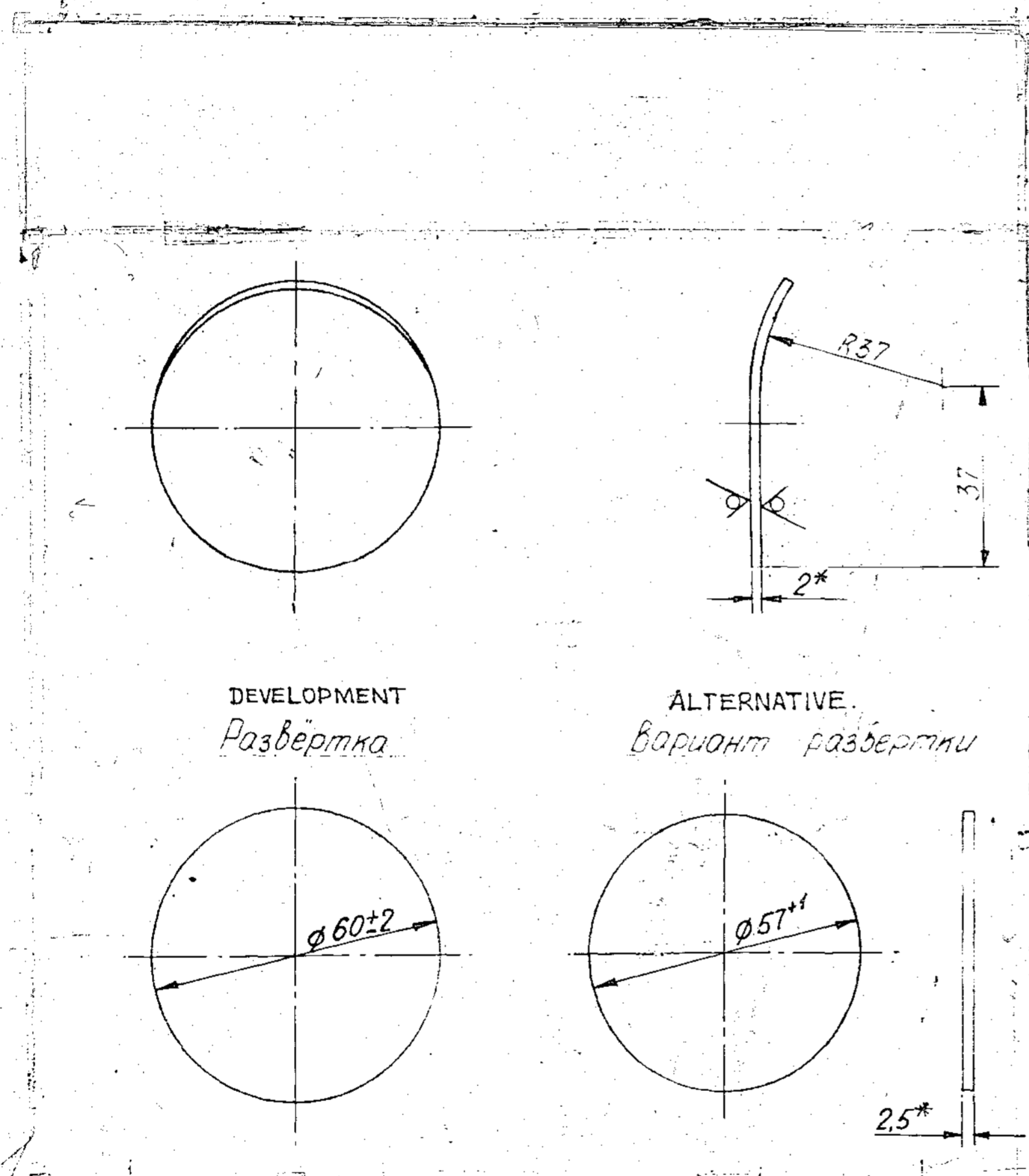
a) CHEMICAL COMPOSITION AS PER GOST 1050-74

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
10kn	0.07-0.14	max 0.07	0.25-0.50	0.15	0.040	0.035	Ref.Matl.
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035	Alt.Matl.
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt.Matl.
08k1	0.05-0.11	max 0.03	0.25-0.50	0.10	0.040	0.035	Alt.Matl.
15kn	0.12-0.19	max 0.07	0.25-0.50	0.25	0.040	0.035	Alt.Matl.
08nc	0.05-0.11	0.05-0.17	0.35-0.65	0.10	0.040	0.035	Alt.Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.
 MANGANESE CONTENT UPTO 0.75% AS REGARDS LOWER LIMIT IS ALLOWED IN
 THE STEEL Gde. 08nc MEANT FOR PRODUCTION OF SHEET STEEL FOR COLD STAMPING.

b) MECHANICAL PROPERTIES AS PER GOST 16523-70

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	REMARKS
10kn	28-40	25	Ref.Matl.
10	30-42	25	Alt.Matl.
20	36-51	23	Alt.Matl.
08 k1	27-39	26	Alt.Matl.
15 kn	32-45	24	Alt.Matl.
08 nc	28-40	25	Alt.Matl.



1. REQUIREMENTS FOR STAMPING AS PER STANDARD GOST 1050-16.

2. ALTERNATE MATERIAL : 10, 20, 08 kn, 15kn, 08nc TO GOST 1050-74, 08 TO GOST 9045-80.

3. DRAFT UP TO 1mm PER SIDE IS PERMISSIBLE.

4. * DIMENSIONS FOR REFERENCE

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

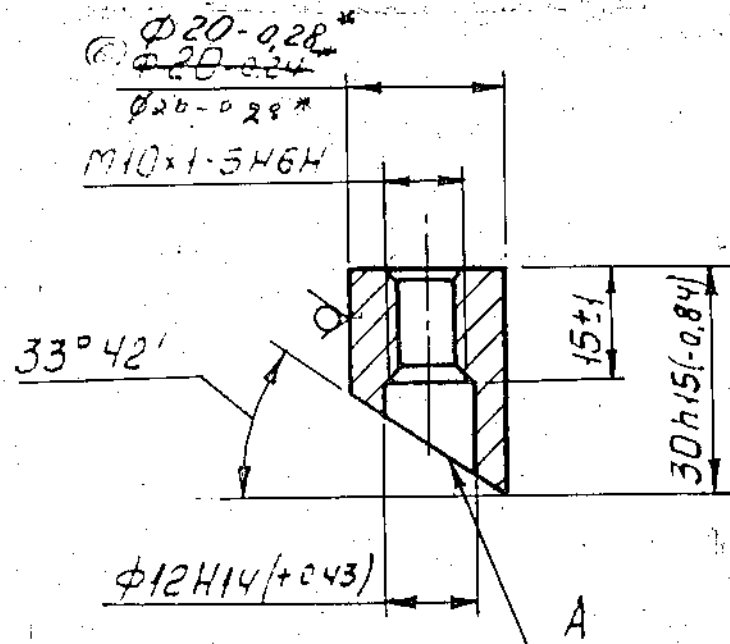
EST WT 0.056 Kg	TO BE STAMPED OR MARKED INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO BE REMOVED UNLESS OTHERWISE STATED	
SIDE R INSIDE EQUIVALENT CHAMFERS	

DRN	MATERIAL 2 GOST 19904-74	USED ON Cb 419-05-7
DATE	SHEET 10kn GOST 16523-70	Cb 419-06-7
SCALE 1:1	CONTROLLER OF INSPECTION (HEAVY VEHICLES AVAD)	
DIMENSIONS IN mm	TITLE COVER PLATE MANIFOLD	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	D S CAT NUMBER	DRAWING NUMBER 319-35
ALL THREADS TO CONFORM TO	ISSUE	NATURE OF AMENDMENTS
A 26.10.88 AUTHY 85-733		

DRAWING NUMBER

319-36

Rz80 (V)



1. ALTERNATE MATERIAL: STEEL 15 AND 25 GOST 1050-74.
2. TECHNICAL REQUIREMENTS FOR THREAD AS PER STANDARD 82052-00.
3. BEFORE WELDING SURFACE A OF THE COMPONENT MAY BE ADJUSTED.
4. *DIMENSION FOR REFERENCE.

EXPLANATORY NOTE

5. REFERENCE MATERIAL QUOTED:-

COLD DRAWN STEEL ROUND BAR ϕ 20mm TO GOST 7417-75. ACCURACY CLASS 5, SURFACE QUALITY 'B' TO GOST 1051-73 MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 20 AND REFERENCE NOTE '1' ON ALTERNATE MATERIAL STEEL GRADE 15&25 TO GOST 1050-74.

a) CHEMICAL COMPOSITION AS PER GOST 1050-74

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	Cr	S	P	
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Ref.Matl.
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt.Mat
25	0.22-0.30	0.17-0.37	0.50-0.80	0.25	0.040	0.035	Alt.Mat

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.

b) MECHANICAL PROPERTIES UNDER NORMALISED CONDITION AS PER GOST-1050-74.

Gde. OF STEEL	TENSILE STRENGTH	YIELD POINT	RELATIVE ELONGATION	HARDNESS	REMARKS
	Kgf/mm ²	Kgf/mm ²	%	B.H.N. MAX.	
20	42	25	25	163	Ref.Matl.
15	38	23	27	149	Alt.Matl.
25	46	28	23	170	Alt.Matl.

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

EST WT: 0.03 Kg TO BE STAMPED OR MARKED WHERE INDICATED THUS II (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 DIMNS UNLESS OTHERWISE STATED IS : 2102-69	MATERIAL: 20-5GOST 7417-75 ROUND BAR 20 GOST 1051-73	USED ON: CB 419-05-7 CB 419-06-7
				10-3-86	1 : 1			CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
								TITLE: BOSS	
								D. S CAT NUMBER	DRAWING NUMBER 319-36
ISSUE	DATE	NATURE OF AMENDMENTS							

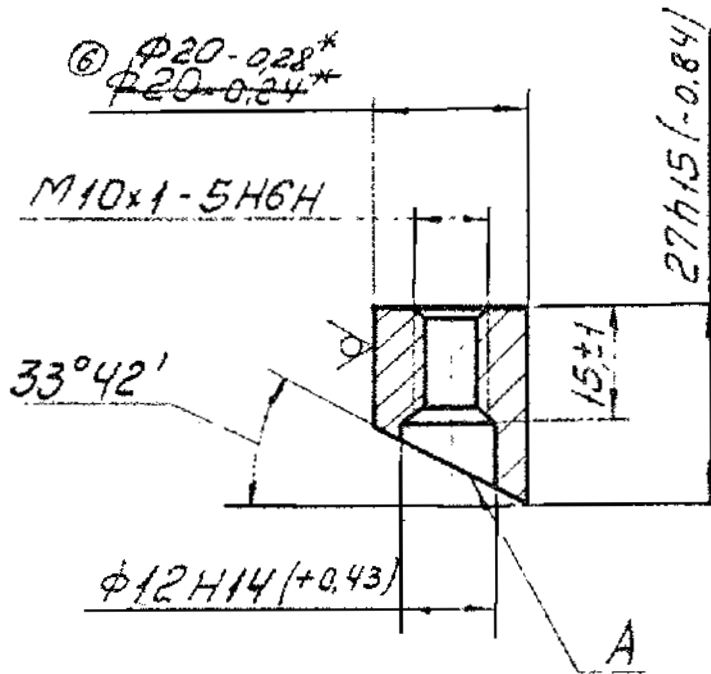
A-7

SIZE A3

1-98-618

ЕСКД

Rz80
V(V)

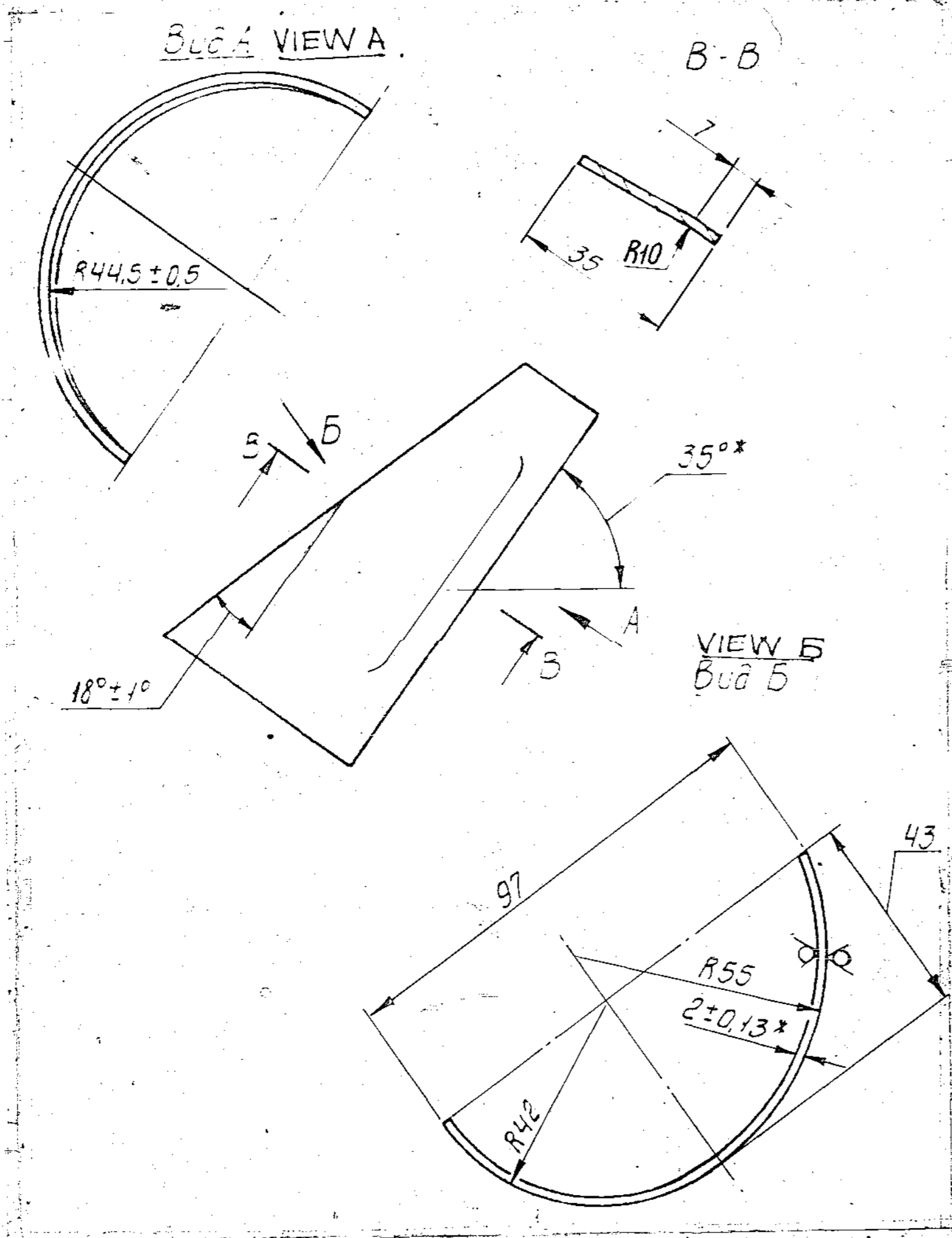


1. ALTERNATE MATERIAL: STEEL 15 AND 25 GOST 1050-74.
2. TECHNICAL REQUIREMENTS FOR THREAD AS PER STANDARD 82052-00.
3. BEFORE WELDING SURFACE A OF THE COMPONENT MAY BE ADJUSTED.
4. *DIMENSION FOR REFERENCE.

			319-36-1		Group No (A-7)	
					40008 KР (7)	
			BOSS		SHEET	MASS
					1 of 1	0.032
					SCALE	1:1
ISSUE	DATE	REFERENCE	MATERIAL:			HEAVY VEHICLES FACTORY AVADI
APPROVED			ROUND BAR 20-5 GOST 7417-75			
CHECKED			20 GOST 1051-73			
DRAWN		2.11.85				

DRAWING NUMBER

319-40



EXPLANATORY NOTE :

5. REFERENCE MATERIAL QUOTED:
 COLD ROLLED SHEET STEEL, HIGH ACCURACY ON ROLLING ON 'A' 2mm THICK TO GOST 19904-74 QUALITY OF SURFACE FINISH 'II' EXTREMELY DEEP DRAWN 'B' AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 08nc TO GOST 9045-80.

a) CHEMICAL COMPOSITION AS PER GOST 9045-80

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Mn	S	P	Si	Cr	Ni	Cu
08nc	0.05	0.20-0.45	0.030	0.025	0.04	0.10	0.10	0.15

PRESENCE OF ALUMINIUM IS PERMISSIBLE IN 08nc STEEL.

b) MECHANICAL PROPERTIES AS PER GOST 9045-80

CATEGORY	GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION % MIN
Bf	08nc	26 - 37	29

6. REFERENCE NOTE 1 ON ALTERNATE MATERIAL A2 GOST 19904-74 II GOST 16523-70.
 COLD ROLLED SHEET STEEL, QUALITY OF SURFACE HIGH FINISH 'II', DEEP DRAWN 'C' TO GOST 16523-70 AND MANUFACTURED FROM QUALITY CARBON STRUCTURAL STEEL OF GRADE '10' TO GOST 1050-74.

a) CHEMICAL COMPOSITION AS PER GOST 1050-74.

GRADE OF STEEL	CONTENT OF ELEMENTS					
	C	Si	Mn	Cr	S	P
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035

RESIDUAL CONTENTS OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.

b) MECHANICAL PROPERTIES AS PER GOST 16523-70.

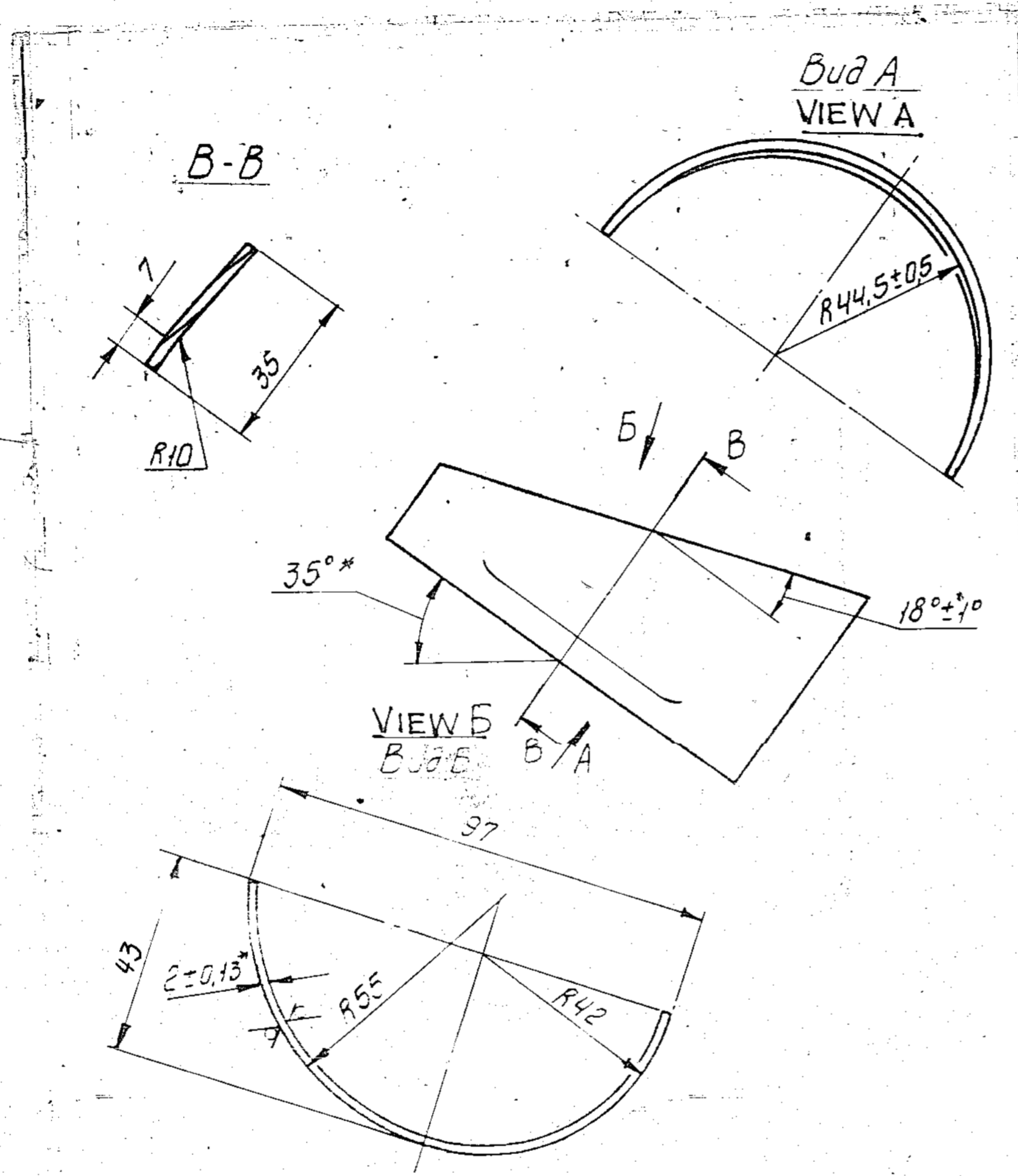
GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION % MIN
10	30 - 42	25

- ALTERNATE MATERIAL: SHEET A2 GOST 19904-74 II GOST 16523-70, STEEL 08nc TO GOST 9045-80. (A)
- UNSPECIFIED TOLERANCE FOR DIMENSION ± 1mm.
- THICKNESS OF MATERIAL IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5mm.
- * DIMENSIONS FOR REFERENCE.

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

EST WT 0.1 Kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE	

DRN	CHD	TCL	APPD	DATE	SCALE	DIMENSIONS	TOLERANCE	ALL THREADS	D S CAT NUMBER	DRAWING NUMBER
				10-3-186	1:1	IN mm	ON DIMS UNLESS OTHERWISE STATED IS: 2102-69	CONFORM TO		319-40
MATERIAL: A2 GOST 19904-74 II-Bf-08nc GOST 9045-80.					USED ON: C5 419-05-7 C6 419-06-7		CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI		TITLE: PIPE BRANCH HALF END	
A 26.10.88 AUTHY 85-733					ISSUE DATE		NATURE OF AMENDMENTS			



EXPLANATORY NOTE :

5. REFERENCE MATERIAL QUOTED:
 COLD ROLLED SHEET STEEL, HIGH ACCURACY ON ROLLING ON 'A' 2mm THICK TO GOST 19904-74, QUALITY OF SURFACE FINISH 'III' EXTREMELY DEEP DRAWN 'B' AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 08nc TO GOST 9045-80.

a) CHEMICAL COMPOSITION AS PER GOST 9045-80.

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C MAX	Mn	S	P	Si	Cr	Ni	Cu
08nc	0.09	0.20-0.45	0.030	0.025	0.04	0.10	0.10	0.15

PRESENCE OF ALUMINIUM IS PERMISSIBLE IN 08nc STEEL.

b) MECHANICAL PROPERTIES AS PER GOST 9045-80.

CATEGORY	GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION % MIN
B	08nc	26 - 37	29

6. REFERENCE NOTE : ON ALTERNATE MATERIAL: A2 GOST 19904-74 II GOST 16523-70. COLD ROLLED SHEET STEEL, QUALITY OF SURFACE HIGH FINISH 'II', DEEP DRAWN 'C' TO GOST 16523-70 AND MANUFACTURED FROM QUALITY CARBON STRUCTURAL STEEL OF GRADE 10 TO GOST 9045-80.

a) CHEMICAL COMPOSITION AS PER GOST 9045-80.

GRADE OF STEEL	CONTENT OF ELEMENTS					
	C	Si	Mn	Cr	S	P
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035

RESIDUAL CONTENTS OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.

b) MECHANICAL PROPERTIES AS PER GOST 16523-70.

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION % MIN
10	30 - 42	25

- ALTERNATE MATERIAL SHEET A2 GOST 19904-74 II GOST 16523-70, STEEL 10 TO GOST 9045-80 (A)
- UNSPECIFIED TOLERANCE FOR DIMENSION ± 1mm.
- THICKNESS OF MATERIAL IN THIN PLACES SHOULD NOT BE LESS THAN 1.5mm.
- * DIMENSIONS FOR REFERENCE.

PILOT SAMPLE SHOULD BE APPROVED BY S.P.F. FOR BULK PRODUCTION.

ALL SHARP EDGES AND CORNERS BE REMOVED UNLESS OTHERWISE STATED. MACHINING CORNERS TO HALF RADIUS OR EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	419-05-7	MATERIAL	A2 GOST 19904-74	USED ON:	419-05-7
CHKD	419-05-7	TC	08nc GOST 9045-80	DATE	11-1986
APP.	11-1986	SC	1	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES AVADI)	
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 102-65			TITLE: PIPE BRANCH HALF END		
ISSUE	26.10.88	AUTHY	85-733	DWG CAT NUMBER	DRAWING NUMBER 319-41

DRAWING NUMBER

319-62

R2330

EXPLANATORY NOTE

5. REFERENCE MATERIAL QUOTED

COLD ROLLED SHEET STEEL 2mm THICK TO GOST 19904-74
ORDINARY SURFACE FINISH TO 10kn TO GOST 16523-70
AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON
STRUCTURAL STEEL Gde 10Kn AND REFERENCE NOTE 2: ON
ALTERNATE MATERIAL STEEL GRADES 10, 20, 08Kn, 15Kn AND 08nc
TO GOST 1050-74

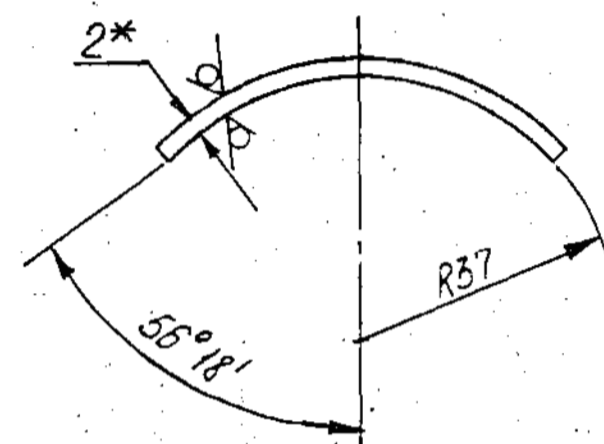
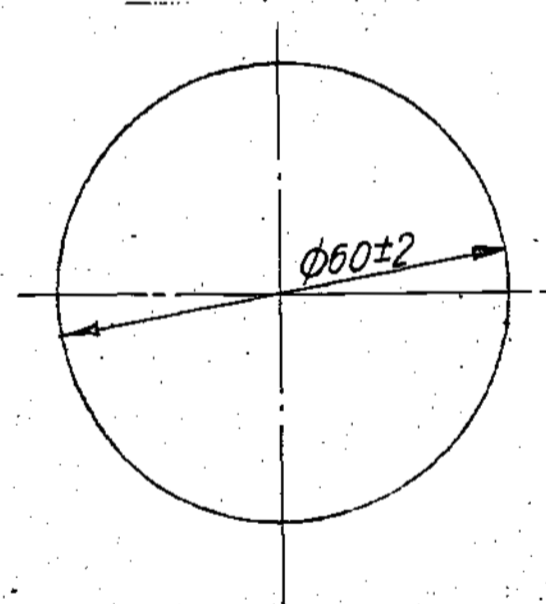
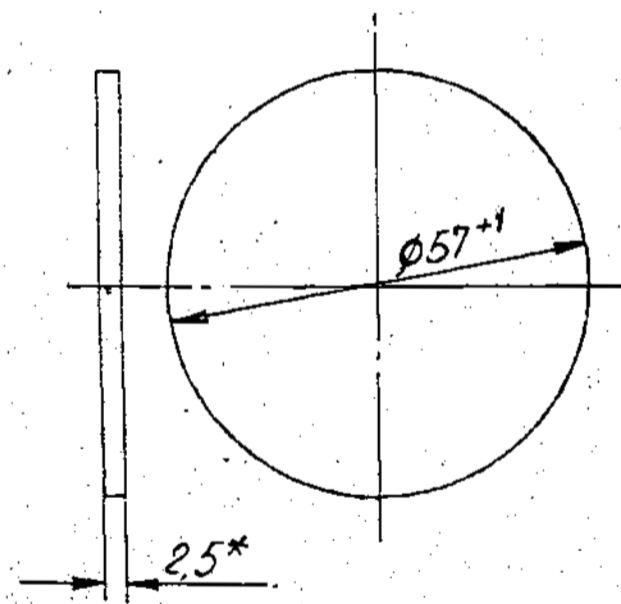
a) CHEMICAL COMPOSITION AS PER GOST 1050-74

GRADE OF STEEL	CONTENT OF ELEMENTS %						REMARKS
	C	Si	Mn	C	S	P	
				MAXIMUM			
10kn	0.07-0.14	max 0.07	0.25-0.50	0.15	0.040	0.035	Ref. Matl.
10	0.07-0.14	0.17-0.37	0.35-0.65	0.15	0.040	0.035	Alt. Matl.
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25	0.040	0.035	Alt. Matl.
08kn	0.05-0.11	max 0.03	0.25-0.50	0.10	0.040	0.035	Alt. Matl.
15kn	0.12-0.19	max 0.07	0.25-0.50	0.25	0.040	0.035	Alt. Matl.
08nc	0.05-0.11	0.05-0.17	0.35-0.65	0.10	0.040	0.035	Alt. Matl.

RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.
MANGANESE CONTENT UP TO 0.25% AS REGARDS LOWER LIMIT IS ALLOWED IN
THE STEEL Gde. 08nc MEANT FOR PRODUCTION OF SHEET STEEL FOR COLD STAMPING.

b) MECHANICAL PROPERTIES AS PER GOST 16523-70.

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	REMARKS
10kn	28-40	25	Ref. Matl.
10	30-42	25	Alt. Matl.
20	36-51	23	Alt. Matl.
08kn	27-39	26	Alt. Matl.
15kn	32-45	24	Alt. Matl.
08nc	28-40	25	Alt. Matl.

DEVELOPMENT
РазверткаALTERNATIVE.
вариант развертки

1. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.

2. ALTERNATE MATERIAL: STEEL 10, 20, 08Kn, 15Kn, 08nc GOST 1050-74, 08 TO GOST 9045-80. (A)

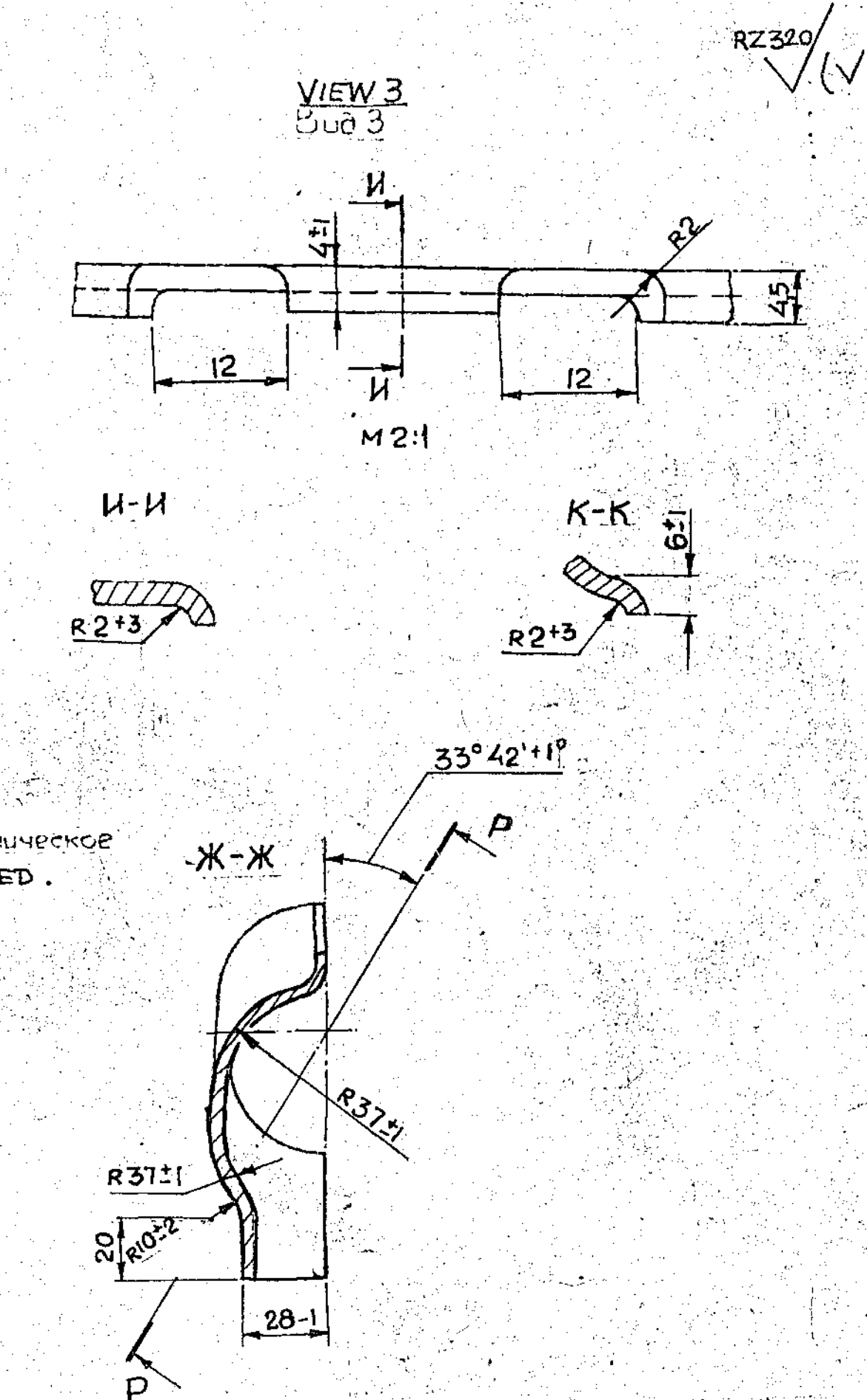
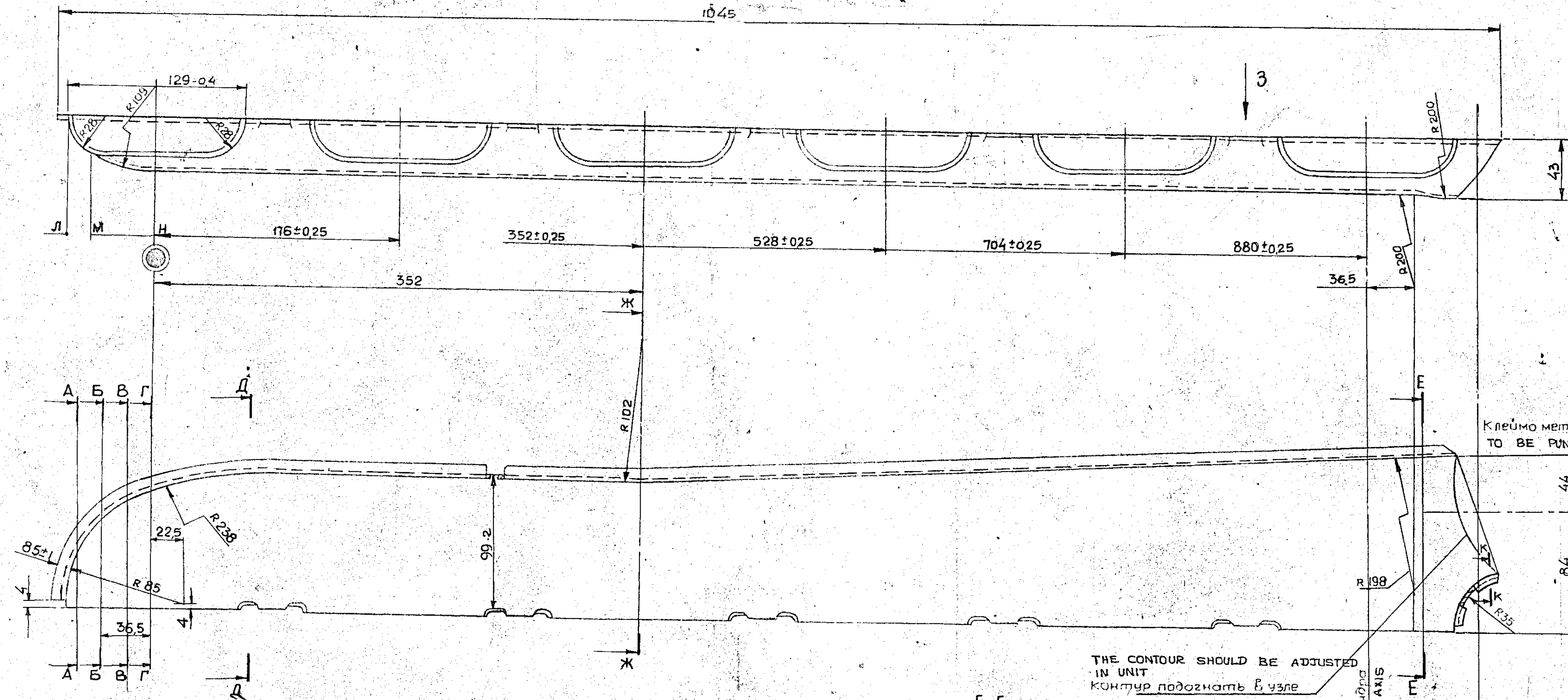
3. DRAFT UP TO 1mm PER SIDE IS PERMISSIBLE.

4. * DIMENSIONS FOR REFERENCE.

(B) EQUIVALENT MATERIAL
Gr. D IS: 513-1994.PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE
BULK PRODUCTION.

EST WT 0.056 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	THD	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	MATERIAL SHEET 2 GOST 19904-74 10Kn GOST 16523-70	USED ON CB 419-06-7 -05-7
CONTROLLERATE OF INSPECTION (HEAVY VEHICLES AVADI)					TITLE COVER PLATE MANIFOLD				
ISSUE DATE NATURE OF AMENDMENTS					D S CAT NUMBER DRAWING NUMBER 319-62				



THE CONTOUR SHOULD BE ADJUSTED IN UNIT
Контур подогнать в узле

Ось цилиндра
CYLINDER AXIS

EXPLANATORY NOTE :

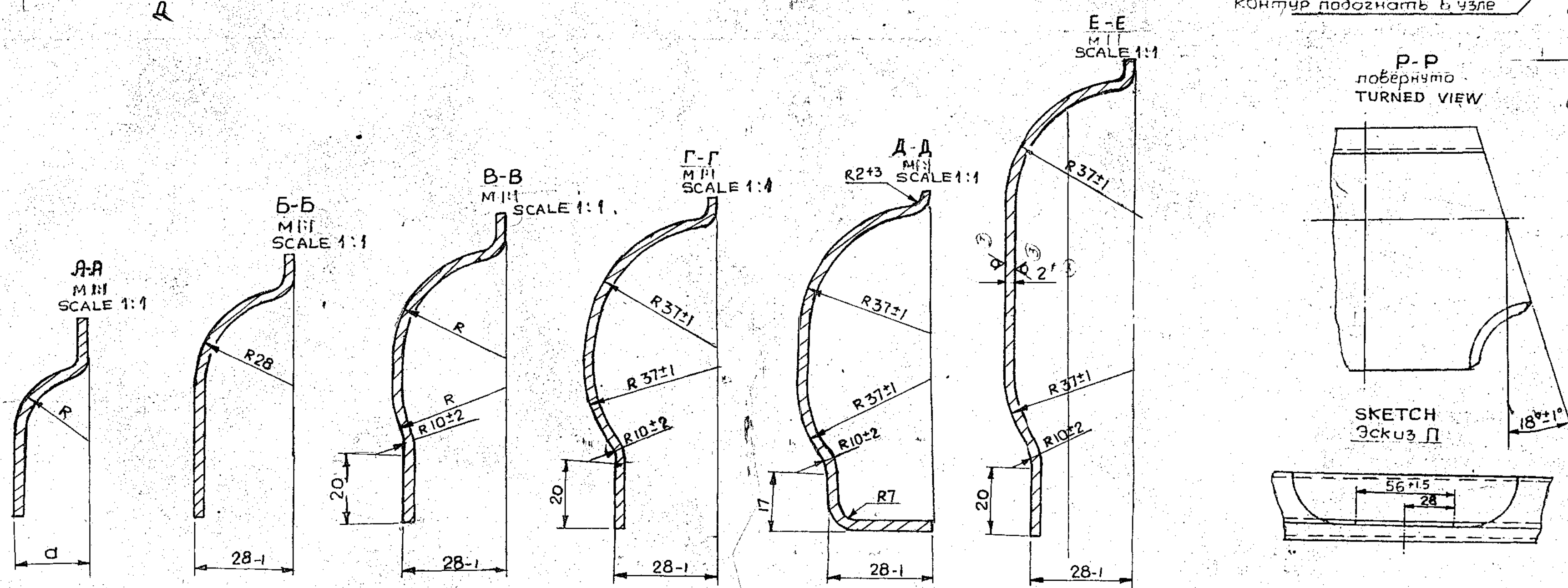
12. REFERENCE MATERIAL QUOTED:
COLD ROLLED SHEET STEEL OF HIGH ACCURACY ON ROLLING 'A', 2mm THICK TO GOST 19904-74, AND GRADE OF STEEL 08nc. HIGH SURFACE FINISH 'II', EXTREMELY DEEP DRAWING 'BF' TO GOST 9045-80.
a) CHEMICAL COMPOSITION AS PER GOST 9045-80.

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Mn	S	P	Si	Cr	Ni	Cu
08nc	0.09	0.20-0.45	0.030	0.025	0.04	0.10	0.10	0.15

PRESENCE OF ALUMINIUM IS PERMISSIBLE.

b) MECHANICAL PROPERTIES: AS PER GOST 9045-80.

CATEGORY	GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	DIAMETER OF SPHERICAL HOLE DIA. MIN.
B7	08nc	26-37	29	12.1



- DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE MAINTAINED WITH TOLERANCE ± 0.5mm.
- DIMENSIONS 'R' 200mm, R198mm AND R102mm ARE GIVEN FOR DESIGNING THE DIES.
- CRACKS ARE ALLOWED TO BE WELDED-UP IN CASE THE NUMBER OF CRACKS DOES NOT EXCEED 2 PIECES AND THICKNESS OF MATERIAL NEAR CRACKS IS NOT LESS THAN 1.5mm.
- PUNCTURES, CORRUGATIONS, DENTS AND OTHER DEFECTS ARE NOT PERMISSIBLE.
- THICKNESS OF MATERIAL IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5mm.
- BEFORE PUTTING INTO PRODUCTION THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
- IN THE CORNERS OF RECESSES AT A DISTANCE UPTO 13mm FROM THE PARTING LINE AND UPTO 6mm FROM BRANCH PIPE CONTOUR THINNING TO 1.2mm IS PERMISSIBLE.
- SHARP EDGES SHOULD BE BLUNTED.
NOTES: 1. ON SECTION A-A RADIUS R (SEE SEC. A-A, B-B) IS INCREASED FROM R TO R28mm. DIMENSION 'A' IS INCREASED FROM a:0 UPTO a:28
2. ON SECTION M-M (SEE SECTION B-B, Г-Г) RADIUS R IS INCREASED FROM R 28mm UPTO R 37mm.
- BEADING OF EDGE (FOR FLANGE OF MANIFOLD) AS PER SKETCH П IS ALLOWED.
- DIRECTION OF FIBRES OF ROLLED SHEET SHOULD BE PERPENDICULAR TO COMPONENT LONGITUDINAL AXIS.
- * DIMENSION FOR REFERENCE.

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

EST WT 253 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	TCO	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	MATERIAL: SHEET A2 GOST 19904-74 II B7 08nc GOST 9045-80	USED ON: CB 419-06-7
				11-3-86	1:2			CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
								TITLE: MANIFOLD INTAKE HALF LH	
								D S CAT NUMBER	DRAWING NUMBER 319-67-2
								ALL THREADS TO CONFORM TO	
								ISSUE	DATE
									NATURE OF AMENDMENTS