

USED ON

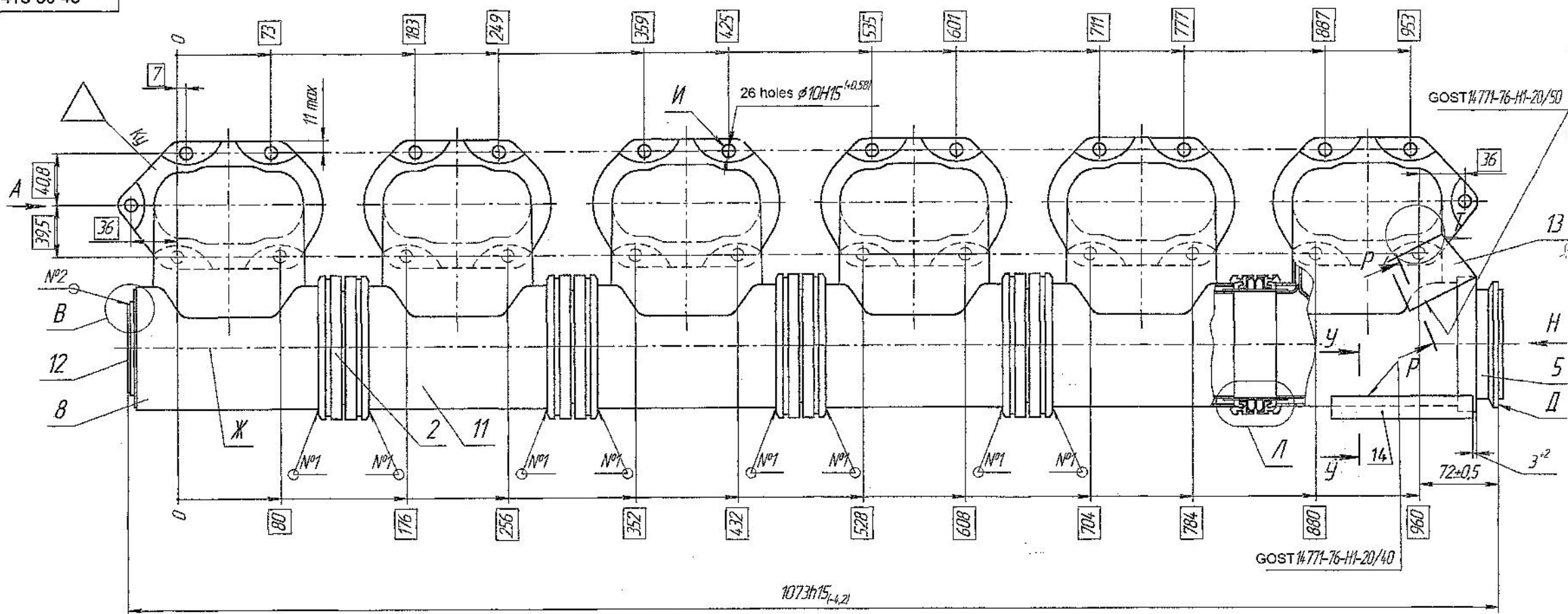
Cb.418-00-15

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - NIL
I/L REPLACES Cb.418-50-45 ISSUE-5, NOTN.No: 238-05

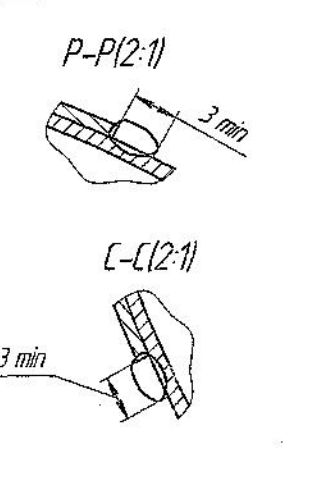
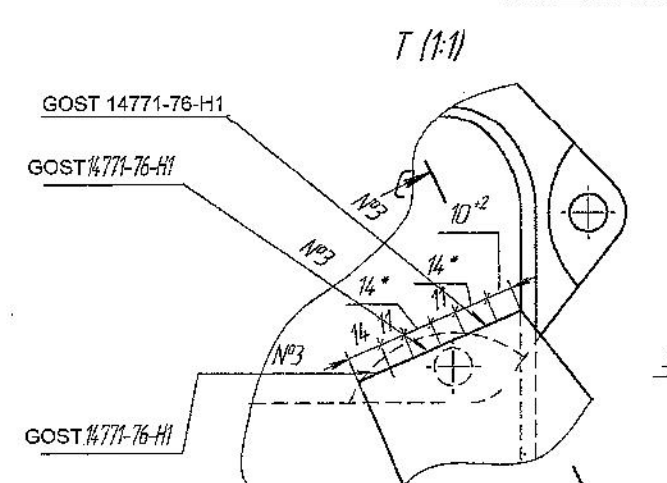
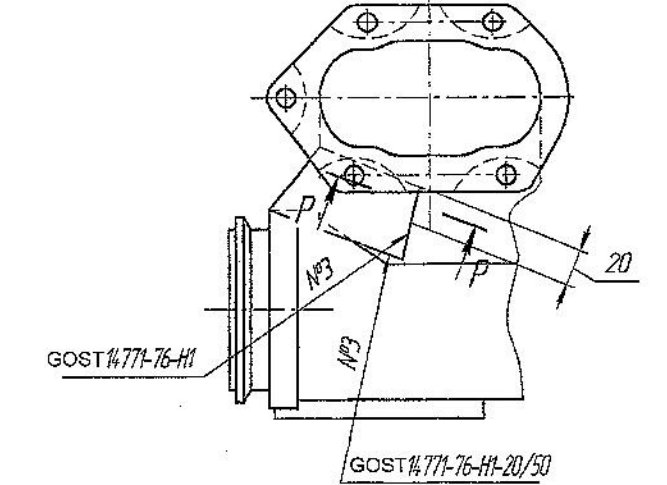
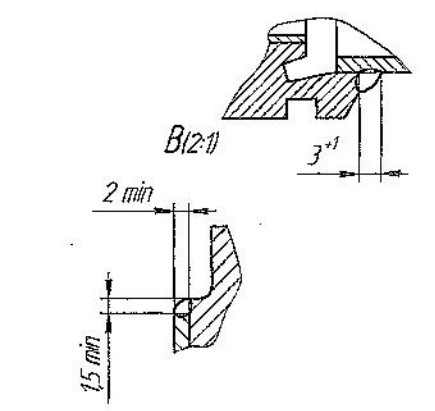
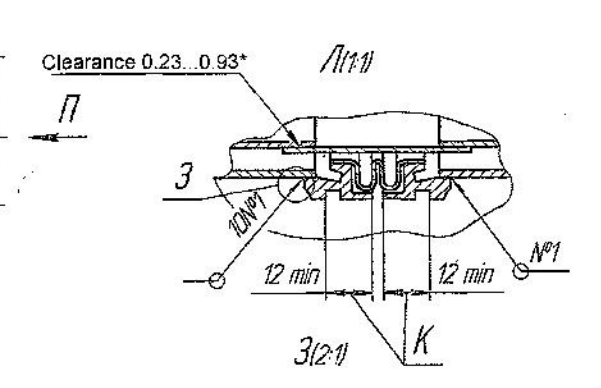
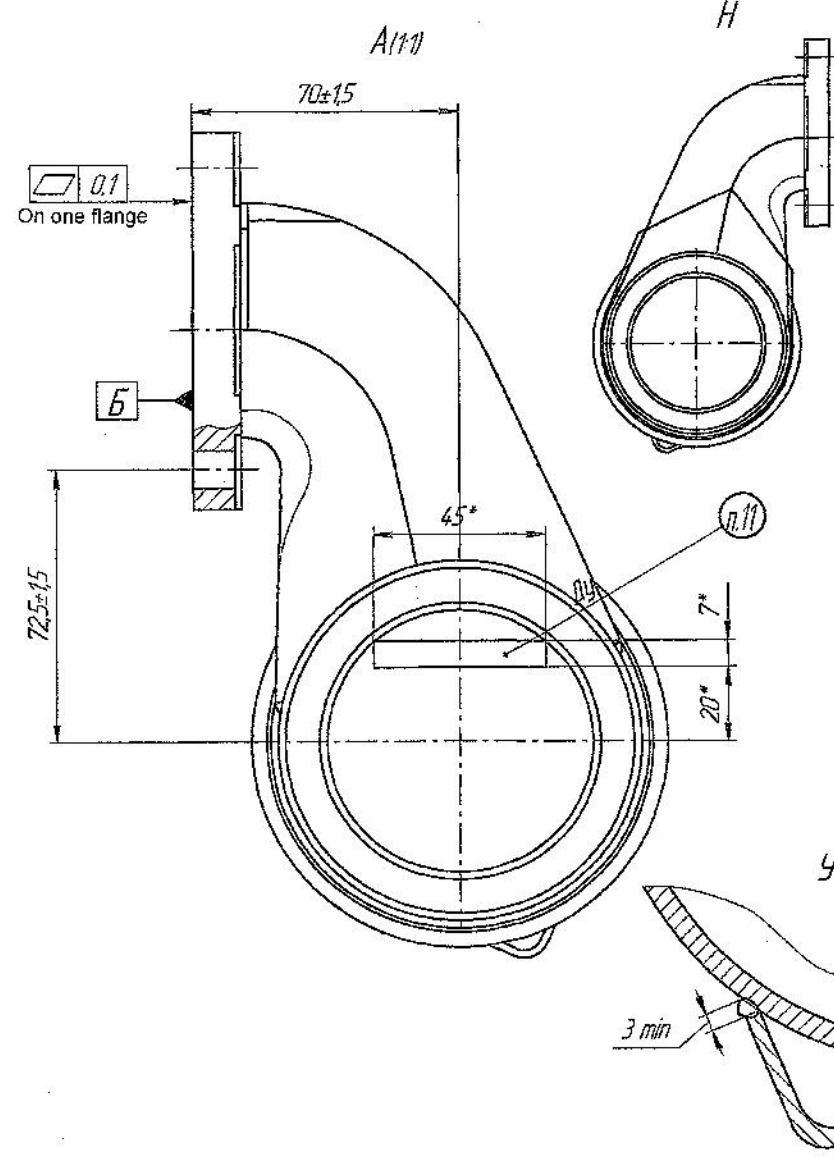
ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS
		Cb.418-50-45		EXHAUST MANIFOLD		
		ITEM LIST		L.H ASSY		
	2	Cb.418-30 & I/L		COMPENSATOR ASSY	5	
	5	Cb.418-31-2-01 & I/L		BRANCH PIPE ASSY	1	
	8	Cb.418-32-01 & I/L		BRANCH PIPE ASSY	1	
	11	Cb.418-33-01 & I/L		BRANCH PIPE ASSY	4	
	12	318-11-2		PLUG	1	
	13	418-150-1		STRAP	1	
	14	418-151		RIB	1	

ISSUE	DATE	NATURE OF AMENDMENTS	ISSUE	DATE	NATURE OF AMENDMENTS
DRN	9. <i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.			
CHD	<i>[Signature]</i>	TITLE : EXHAUST MANIFOLD L.H ASSY			
APPD	<i>[Signature]</i>				
DATE	02-01-09	SHT. NO. 1 OF 1	D S CAT NUMBER	ITEM LIST FOR Cb.418-50-45	

F-158



1. Coating of external surfaces of manifold, except surfaces B, D with enamel KO-813 as per ВП - 619-86, unevenness and drips of varnish are not permitted.
2. During supplying as spare parts coat surfaces B, D with thin equal layer of enamel KO-813 as per ВП - 619-86.
3. Leakage test in water bath with air pressure (0.2±0.1) MPa [(2±1) kgf/cm²]. Allowance of air is not permitted. In the places of allowance of air, welding with subsequent dressing and hydro-test are permitted.
4. Carry out welding, storage of manifold with fixture for equalizer (item 2).
5. * Dimensions for reference.
6. During welding of part item 2, surface B of flanges of exhaust collector should be arranged on general plate with tolerance of planeness of plate 0.005 mm maximum. After welding, tolerance of planeness of surface B of exhaust collector up to 0.4 mm maximum in compressed state is permitted.
7. Displacement of axis of branch pipe in relation to common axis of manifold K is not more than 0.6 mm. (ensure with technological process).
8. Splashes and inclusions due to welding on surface K is not permitted.
9. Carry out supply of manifold as spare in special container with fastening of branch pipes item 5, 8, 11 in relation to each other after applying instruction 360-205 in each container.
10. Displacement of axis of hole V from nominal arrangement is 0.5 mm, tolerance is dependable.
11. Mark the conditional date of manufacturing and serial number of manifold with letter size 5 - Пp3 GOST 26.008-85 by impact method.
12. Bend the part item 13 on place.



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

EST. WT. (kg) 19.58 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

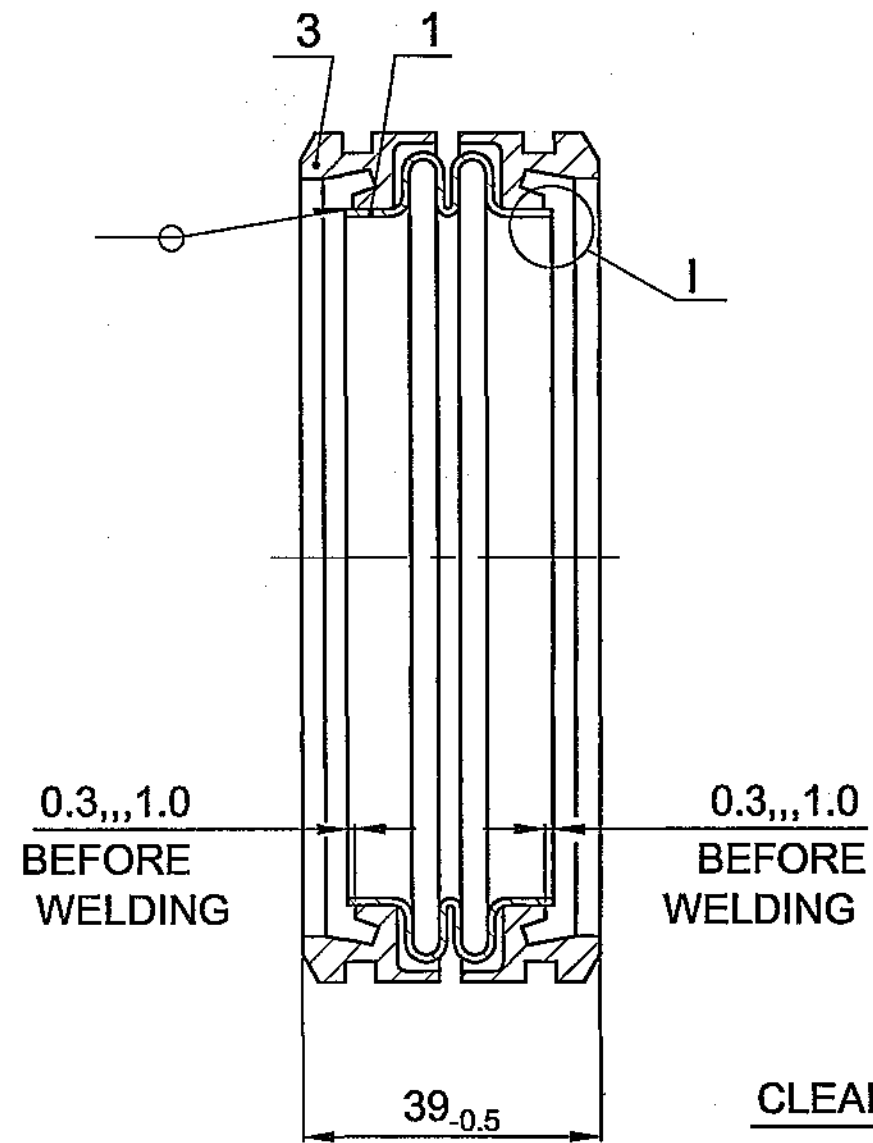
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	APPD	DATE	SCALE: 1:2	MATERIAL:	USED ON: Cb.418-00-15
CB0	APPD	02-01-89	DIMENSIONS IN mm	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS: 2102-69	TITLE: EXHAUST MANIFOLD L.H. ASSY	
			ALL THREADS TO CONFORM TO	D S CAT NUMBER	DRAWING NUMBER Cb.418-50-45
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING INDICATED BASED ON RUSSIAN ORIGINAL ISSUE -10 DRAWING REPLACES Cb.418-50-45 ISSUE -9 NOTN. No. 238-05

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
Cb.418-30



CLEARANCE 0,0.2

M 2:1

0.5 min

1. Electric arc welding in shield gas.
2. On the corrugated surface sheet item 1 temper colour, presence of splash from welding, dents are not allowed.
3. Test for airtightness in water-tank with air pressure $(0.2^{+0.1})\text{MPa}$ [$(2^{+1})\text{Kgf/cm}^2$]. Air-leakage is not permitted. In leakage areas, rewelding with subsequent dressing and hydraulic testing are permitted.
4. Welding and safe keeping of the compensator is carried out in special fixtures.
5. For ensuring flush mating of bellows to the mating surfaces of the bushes adjustment of deformations of edges of the bellows is allowed.

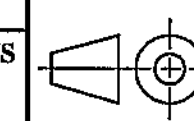
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT.(Kg) **0.49** 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	<i>adh</i>
CHD	<i>R. Balakrishnan</i>
APPD	<i>[Signature]</i>
DATE	<i>06/2/09</i>
SCALE:-	1:1
DIMENSIONS IN mm	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS :	2102 - 69
ALL THREADS TO CONFORM TO	

MATERIAL :-
USED ON :-
C6 418-50-45
C6 418-51-45
**CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI**



TITLE :-
COMPENSATOR ASSY.

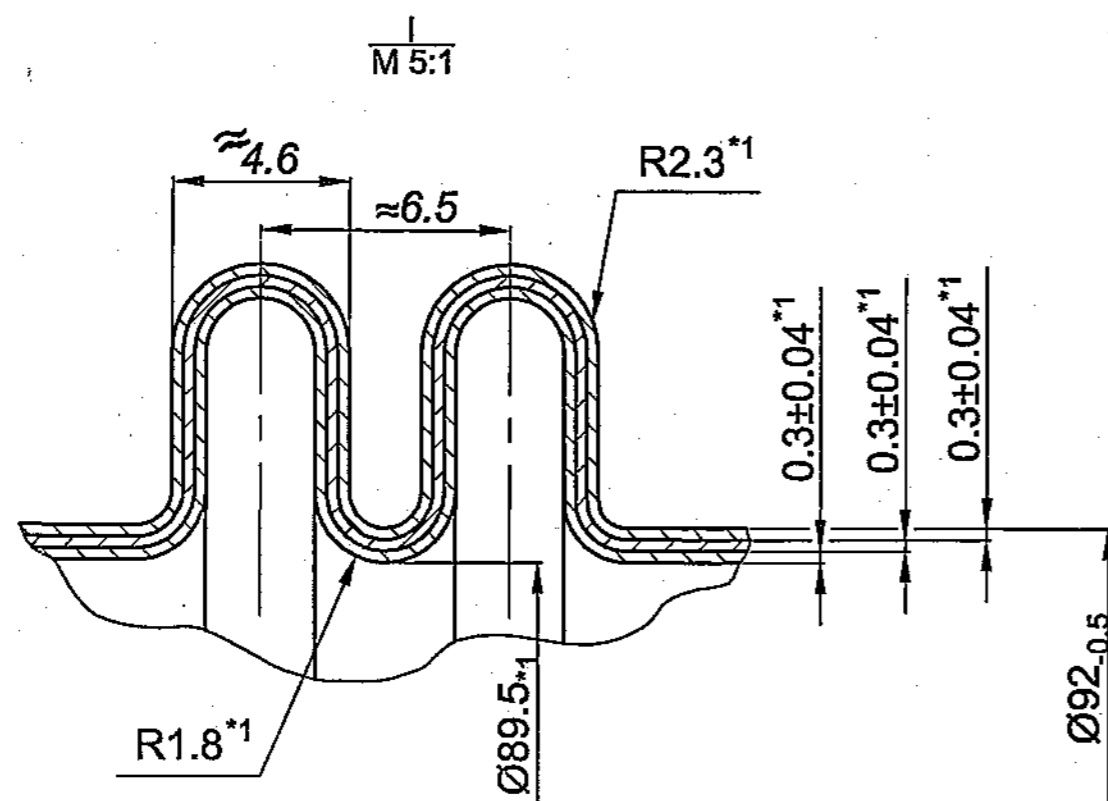
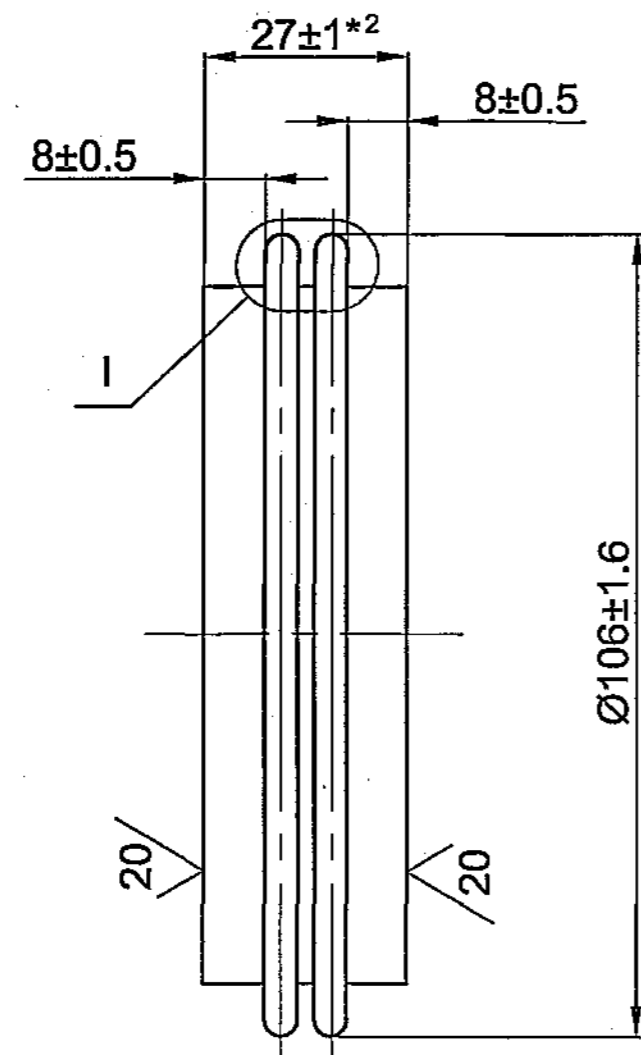
D S CAT NUMBER
DRAWING NUMBER
Cb.418-30

F-4
56
253

SIZE A3

8	7	6	ISSUE	DATE	NATURE OF AMENDMENTS
---	---	---	-------	------	----------------------

DRAWING NUMBER
418-04



1. * Make bellows by hadraulic stamping of thin-wall welded pipes-blanks of steel of grades 08X18H10T or 12X18H10T Gost 5632-72, made from strip Gost 4986-79, of surface finish of group 2. Make pipes by automatic - argon arc welding with non consumable electrodes with out additive while mounting the joint-edges without subsequent stretching.
2. Test for airtightness in water-tank with air under pressure (0.2±0.05) MPa [(2±0.5) Kgf/cm²] for a period of (30±5) seconds or by helium leak testing.
3. Presence of humidity and oil between layers are not permitted.
4. Remaining requirement are as per Gost 3-3338-76
5. *¹ Dimensions are given for reference.
6. *² Dimensions in free condition.
7. Alternate steel is 05X18H10T TY 14-1-3874-84

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

EST. WT. (Kg) 0.085 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:-	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69	ALL THREADS TO CONFORM TO
			25/11/07	1:1			
MATERIAL :-				USED ON :-			
HC 106-2-0.3x3				C6 418 -30			
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI						TITLE :-	
						BELLOW HC 106 - 2 - 0.3x3	
D S CAT NUMBER				DRAWING NUMBER			
				418-04			
2A	09.07.08	D.O.CORRECTION					
ISSUE	DATE	NATURE OF AMENDMENTS					

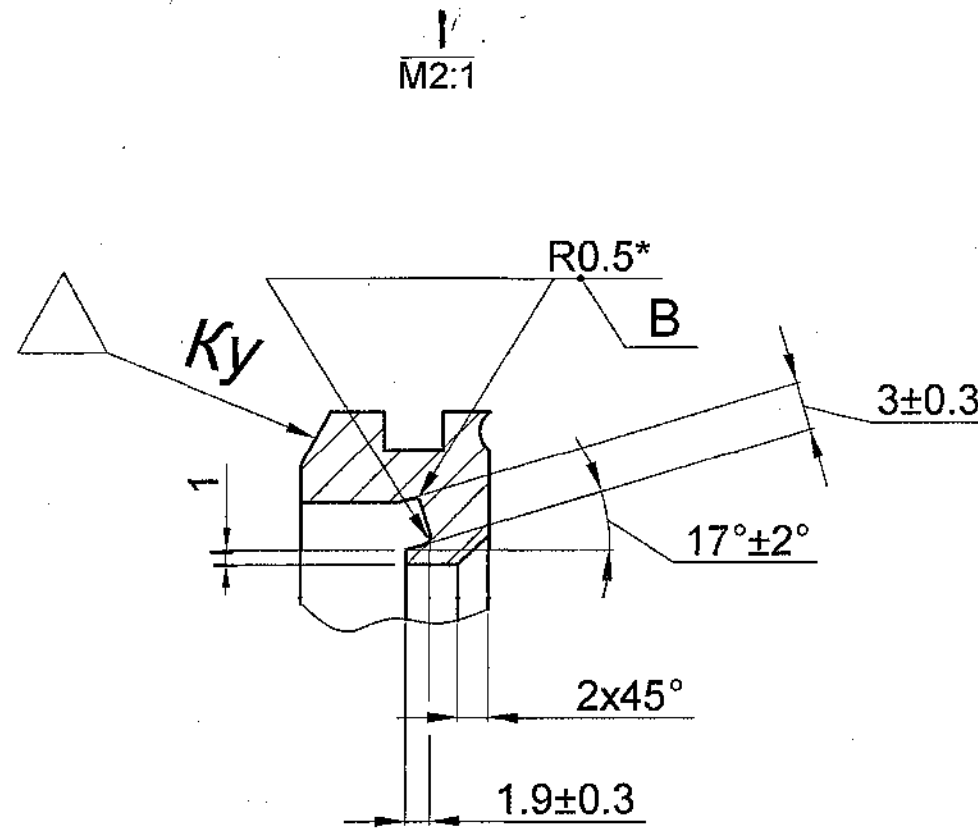
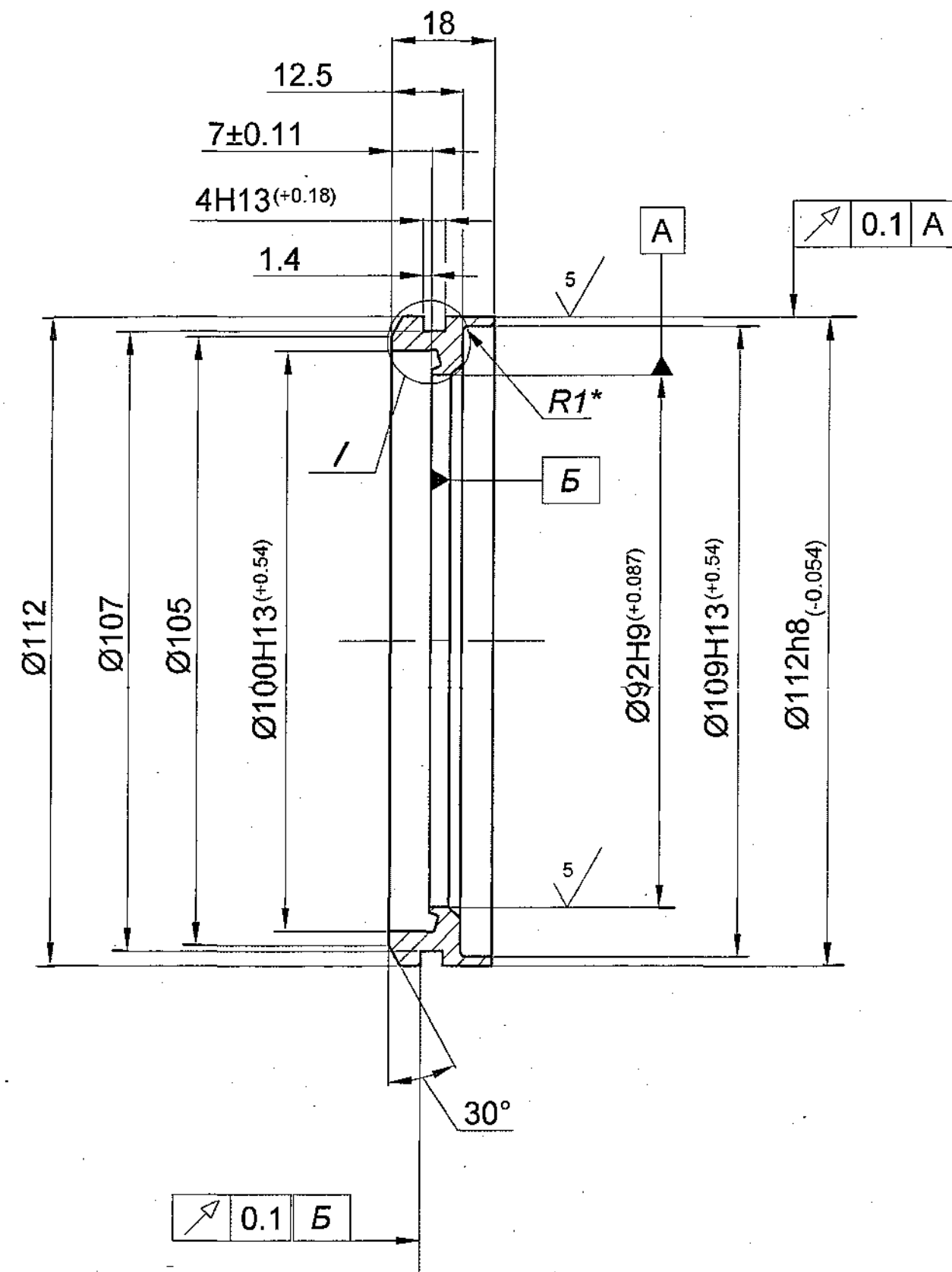
DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

F-4
67
253
SIZE A2

DRAWING NUMBER
418-05

SHEET No. OF

10 ✓ (✓)



1. Unspecified limit deviations of dimensions: H14, h14, $\pm \frac{IT14}{2}$
2. * Dimensions to be ensured by tool.
3. Alternate steel is 12X18H9T Gost 5632-72.
4. Chamfering 0.5x45° is permitted in place of "B"
5. Marks of forging defects, bubbles, shrink-hole, porosity, layer separation are not allowed.
6. Cracks are not allowed.

5A EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS:6911-72

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

EST. WT. (kg) 0.235 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	APPD	DATE	MATERIAL :- STEEL 12X18H10T GOST 5949-75	USED ON :- CB 4.18-30
SCALE:- 1:1				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
DIMENSIONS IN mm				TITLE:- BUSH	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69				D S CAT NUMBER	
ALL THREADS TO CONFORM TO				DRAWING NUMBER 418-05	
ISSUE	DATE	NATURE OF AMENDMENTS			
5A	28.8.10	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09			

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4
68
253
SIZE A4 x 3

USED ON	ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS		
Cb 418-50-45 Cb 418-51-45			Cb.418-31-2		BRANCH PIPE ASSY.				
			ITEM LIST						
		1	Cb.318-22-5 & I/L		BRANCH PIPE	1			
					SCREEN ASSY.				
	(5)	4	3318-06-4 3318-06-8		LOWER HALF OF BRANCH PIPE	1			
	(5)	6	3318-07-4 3318-07-8		UPPER HALF OF BRANCH PIPE	1			
		7	3318-07-5		UPPER LINING	1			
		8	3318-08-7		FLANGE	1			
		13	418-23-11		PIPE	1			
		14	418-55-10		FLANGE	1			
		15	418-85-5		BUSH	1			
		16	418-90-10-02		PROTECTIVE PIPE	1			
		17	418-85-6		BUSH	1			
			"DIFFERENCE IN DESIGN OF Cb.418-31-2 AND Cb.418-31-2-01 AS PER ASSEMBLY DRAWING"						
	5	16-2-09	Notification No.33-05 (F-158)						
	ISSUE	DATE	NATURE OF AMENDMENTS		ISSUE	DATE	NATURE OF AMENDMENTS		
	DRN		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.						
	CHD	<i>[Signature]</i>	TITLE : BRANCH PIPE ASSY.						
	APPD	<i>[Signature]</i>							
	DATE	28-6-07	SHT. NO. 1 OF 1	D S CAT NUMBER	ITEM LIST FOR Cb.418-31-2				

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
57/253

FIGURE.1

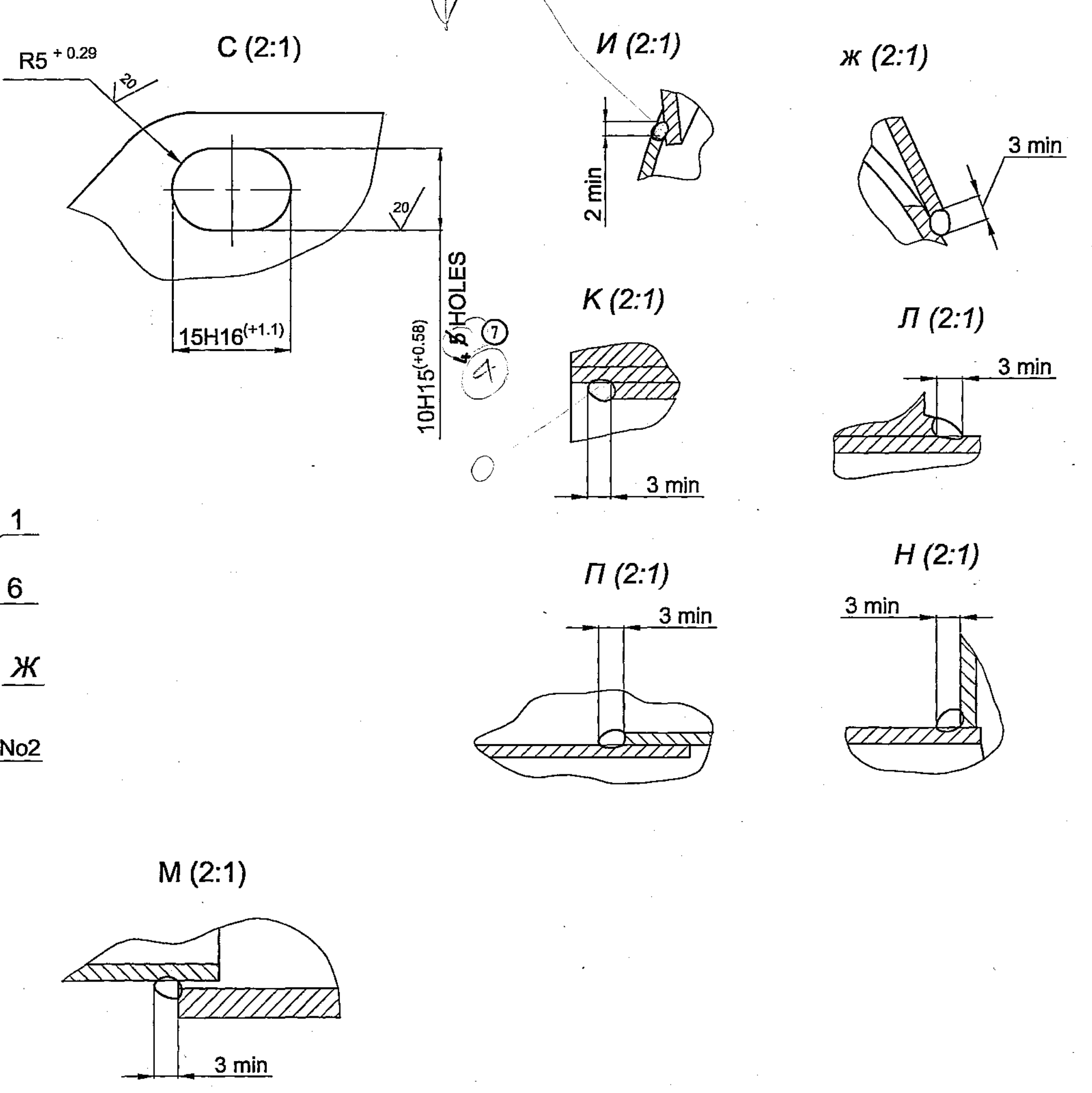
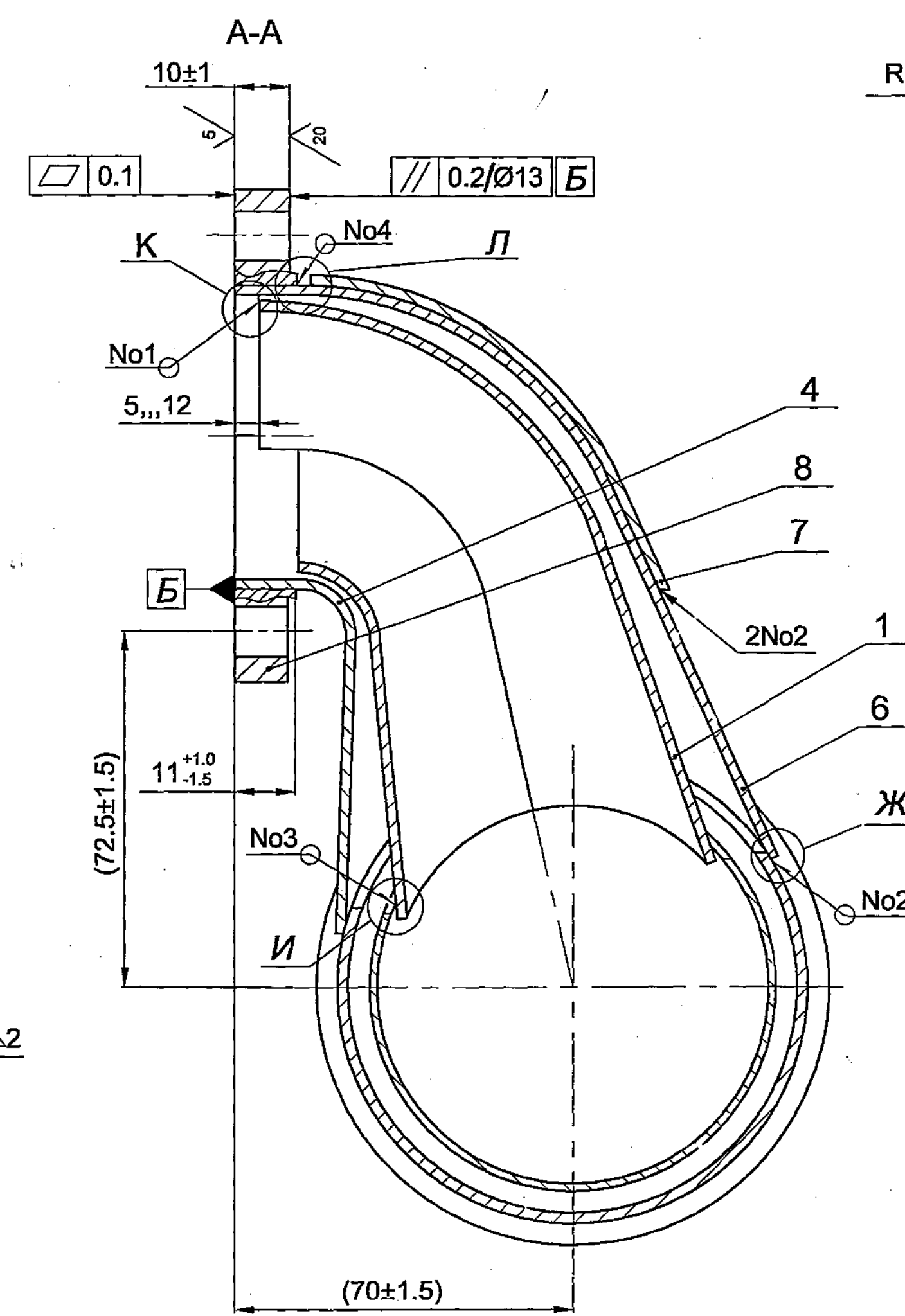
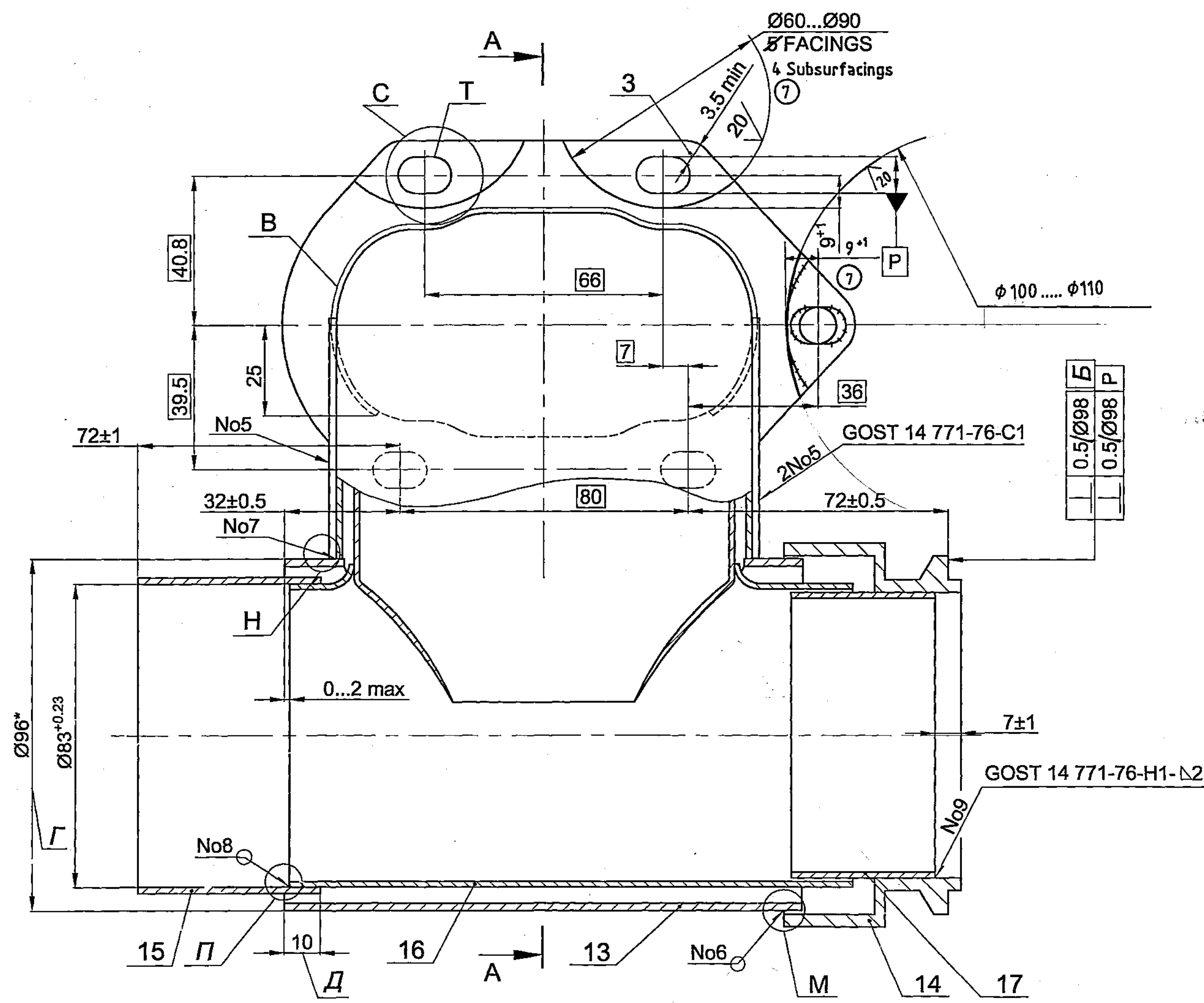
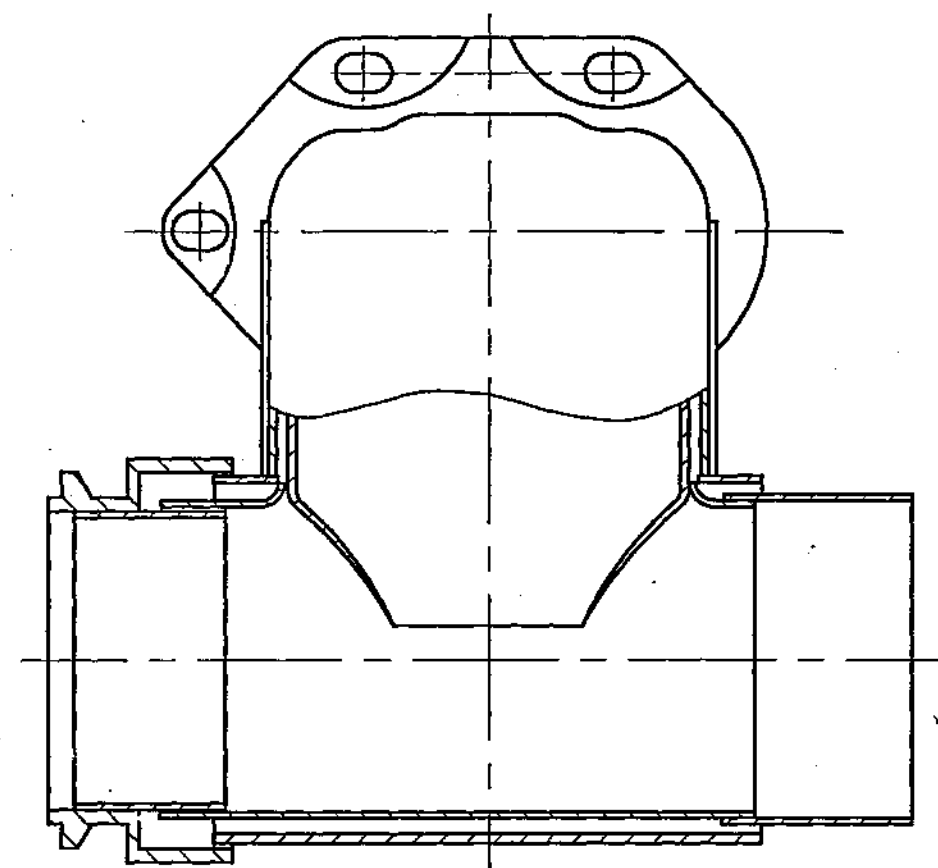


FIGURE 2 (1:2)
REMAINING :SEE FIGURE .1



1. Welded joint No.1,2,3,4,6,7,8, to be carried out in shielding gas medium.
2. Test for airtightness with air in water tank under pressure (0.2^{+0.05})MPa [(2^{+0.5}) Kg/cm²]. Air leakage in joint No.2,4,6 is not allowed. In leakage areas, rewelding is allowed with subsequent dressing and hydraulic testing.
3. Adjustment of parts item 1,4,6,16 is allowed at site during assembly.
4. Dimensions in brackets - After assembly.
5. * Dimensions are given for reference.
6. On section "B" along the outline of flange of welding is done in two phases with larger leg on the branch - pipe wall.
7. Dimension "Г" to be calibrated up to $\varnothing (99^{-1})$ mm on section Д maximum.
8. Welding of flange lug item 8 upto dimension of "3" is permitted.
9. Local expanding of flange item 8 opposite to welding seam, connecting the half of branch-pipes, with subsequent bending of flared portion and backup welding of outer surface of rib to length of minimum 30mm, height of minimum 2mm is permitted on flared -section.
10. Shift of axis of hole "T" from nominal position should be 0.2mm, permissible tolerance.

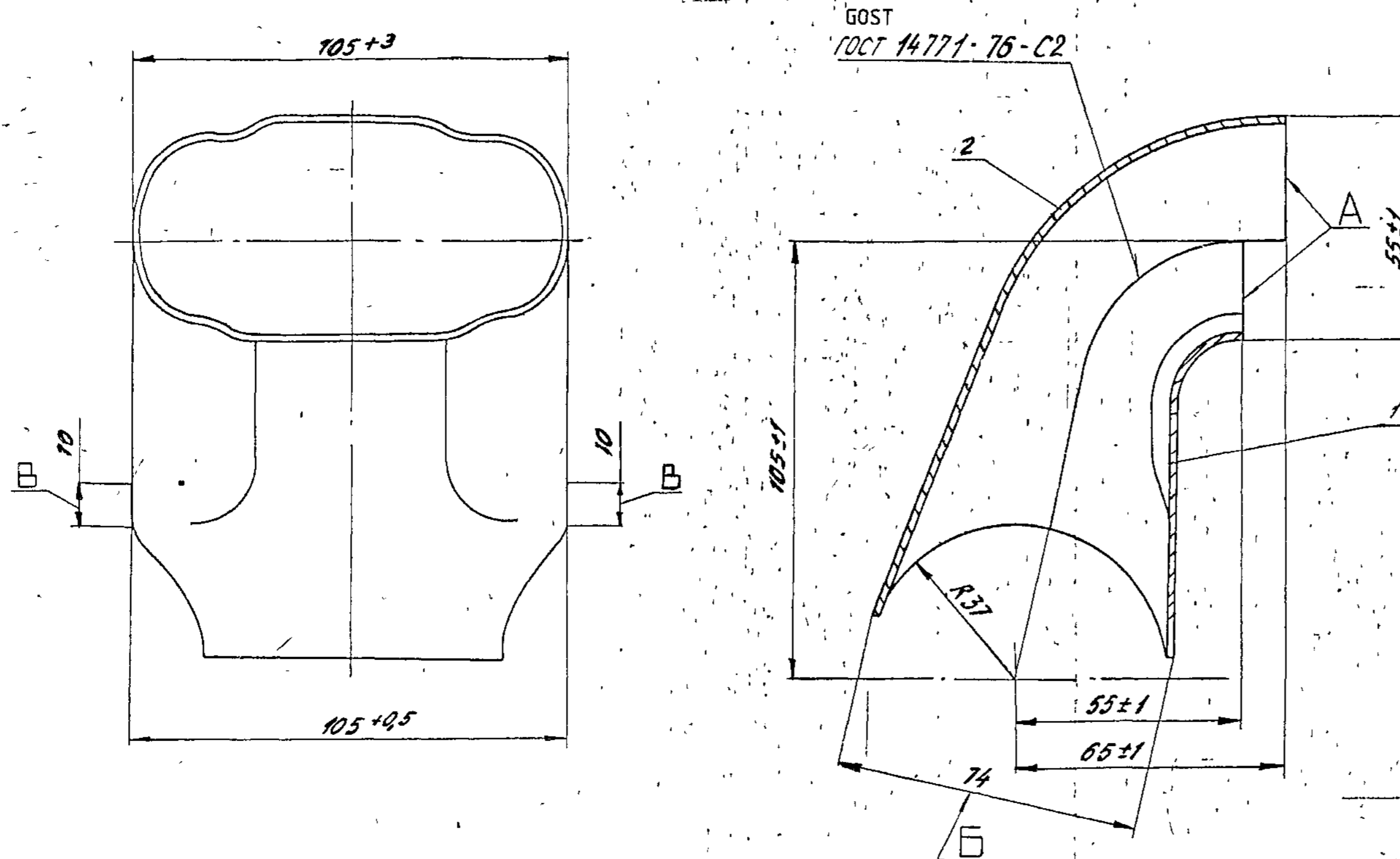
DRG. NO	FIGURE
sb.418-31-2	1
-01	2

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)
3.297

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

DRN	42	MATERIAL :-	USED ON - CB 418-50-45 CB 418-51-45
CHD			
APPD			
DATE	14/2/02	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:	1:1		
DIMENSIONS IN mm			
TOLERANCE ON DIMINS UNLESS OTHERWISE STATED IS : 2102 - 69			
ALL THREADS TO CONFORM TO			
ISSUE	7	14-02-09 Notification No. 33-05 (F-158)	D S CAT NUMBER
DATE		NATURE OF AMENDMENTS	DRAWING NUMBER Cb.418-31-2/-01



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Контур А и размер Б подогнать по сопрягаемой детали перед приваркой в узле.
2. Сварные швы на участках В зачистить заплещо.

TECHNICAL REQUIREMENTS - TRANSLATED

- 1 CONTOUR 'A' AND DIMENSION 'B' SHOULD BE ADJUSTED TO SUIT MATING COMPONENT BEFORE WELDED TO ASSEMBLY.
- 2 WELDS ON SECTION 'B' SHOULD BE DRESSED FLASH

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

		EST MASS 0.37	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	MATERIAL -	USED ON -
DRN	SCALE - 1:1		CB 418- 50- 29 CB 418- 51-29
CHD	DIMENSIONS IN mm	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE - BRANCH PIPE SCREEN	
APPD	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
DATE	29 1 88		CB 318- 22- 5CB

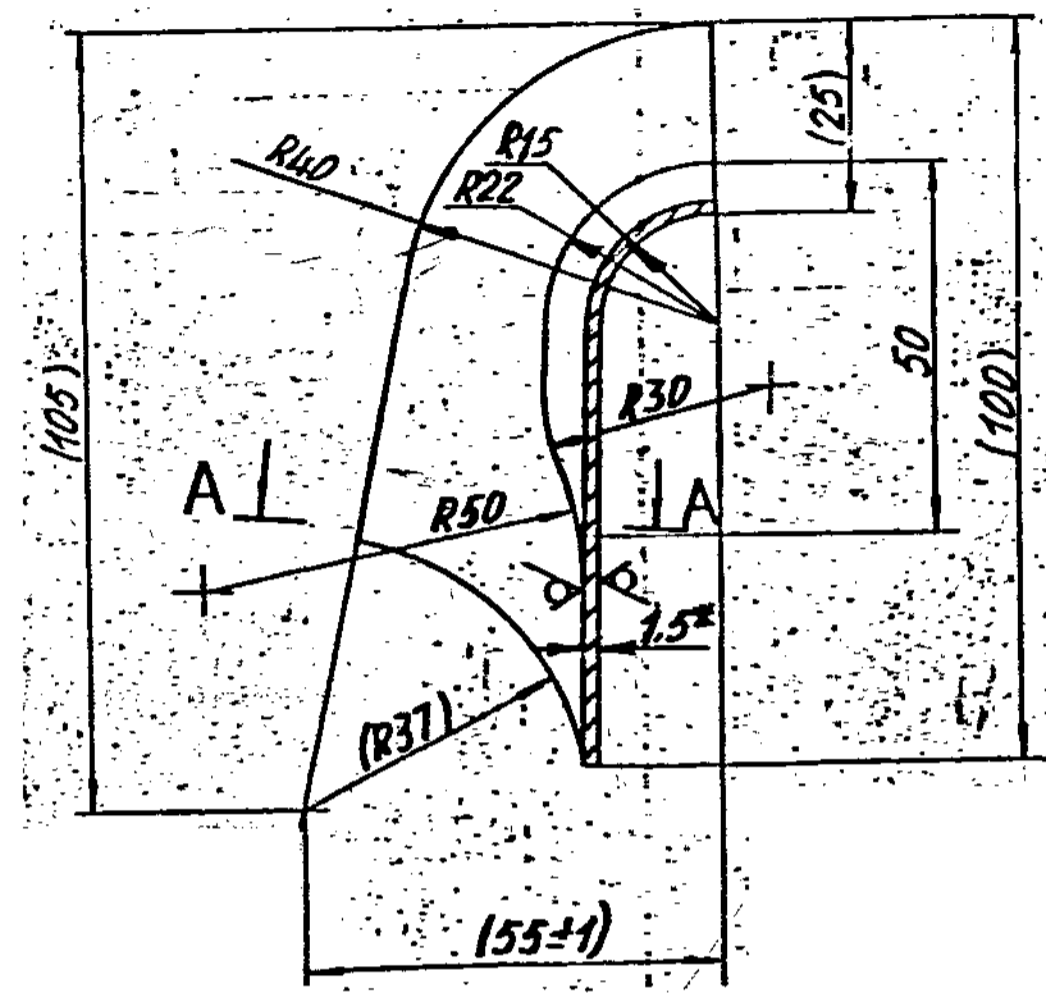
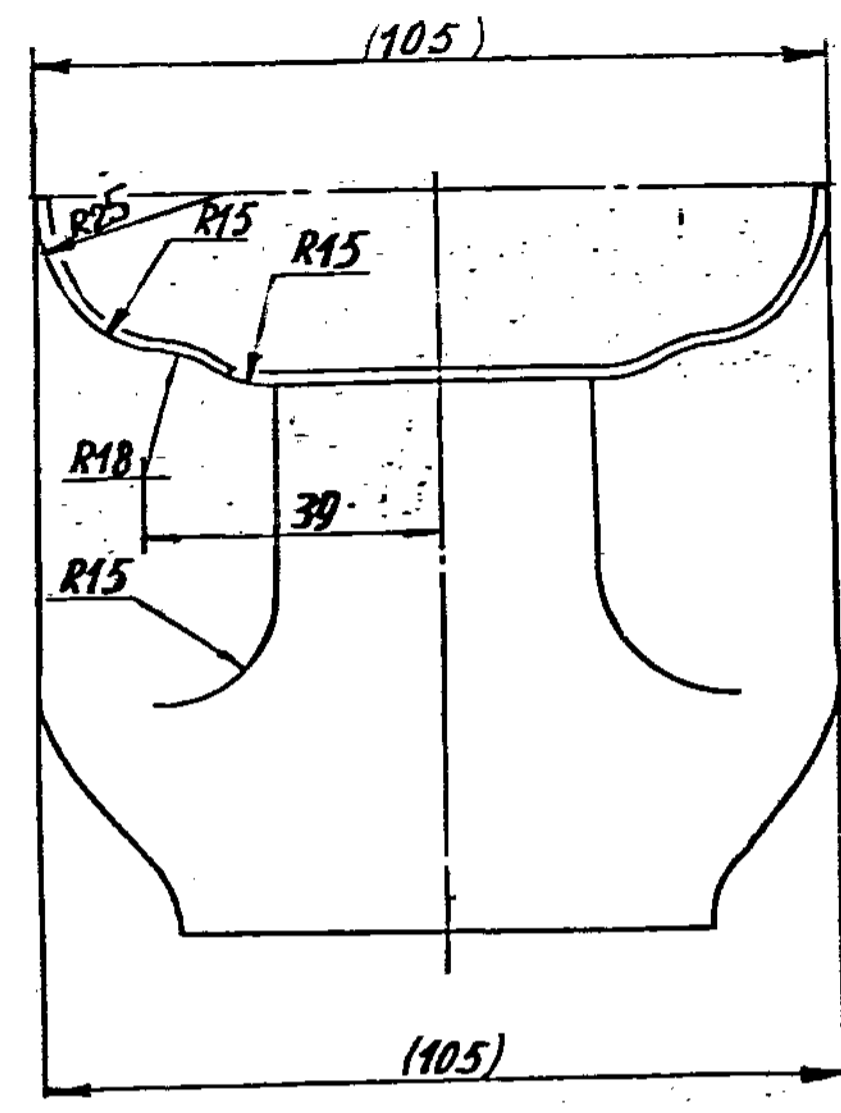
2	BK 81-31	10/11/88	10/11/88
10/11/88	10/11/88	10/11/88	10/11/88

DRAWING NUMBER
318-20-5

RZ 89/ (✓)

TECHNICAL REQUIREMENTS - TRANSLATED

1. DIMENSIONS WITH UNSPECIFIED DEVIATIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5\text{mm}$.
2. MATERIAL THICKNESS IN THINNED PLACES SHOULD BE 1mm MIN.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. DIMENSION IN BRACKETS SHOULD BE ENSURED AFTER ASSEMBLY.
5. * DIMENSION FOR REFERENCE.



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET Б 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST 5582-75

Б = STANDARD ACCURACY.
1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74
12X18H10T = GRADE OF STEEL.
M2a OR M3a = PICKLED & BRIGHT ANNEALED.

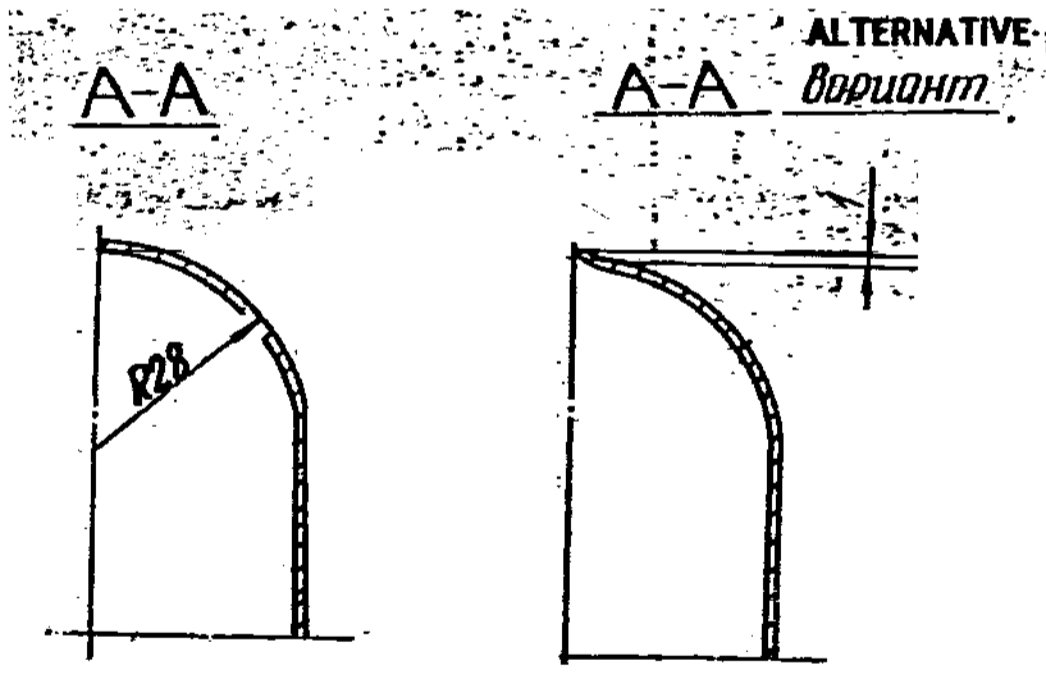
CHEMICAL COMPOSITION% (AS PER GOST 5632-72)
CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080°C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54
YIELD POINT Kgf/mm^2 (MIN) = 20
RELATIVE ELONGATION (MIN) = 40



**
SHEET: Б 1.5 GOST 19904-74
12x18H10 -M2a (ORM3a) GOST 5582-75

EXPLANATORY NOTE ADDED ON 18-2-92

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

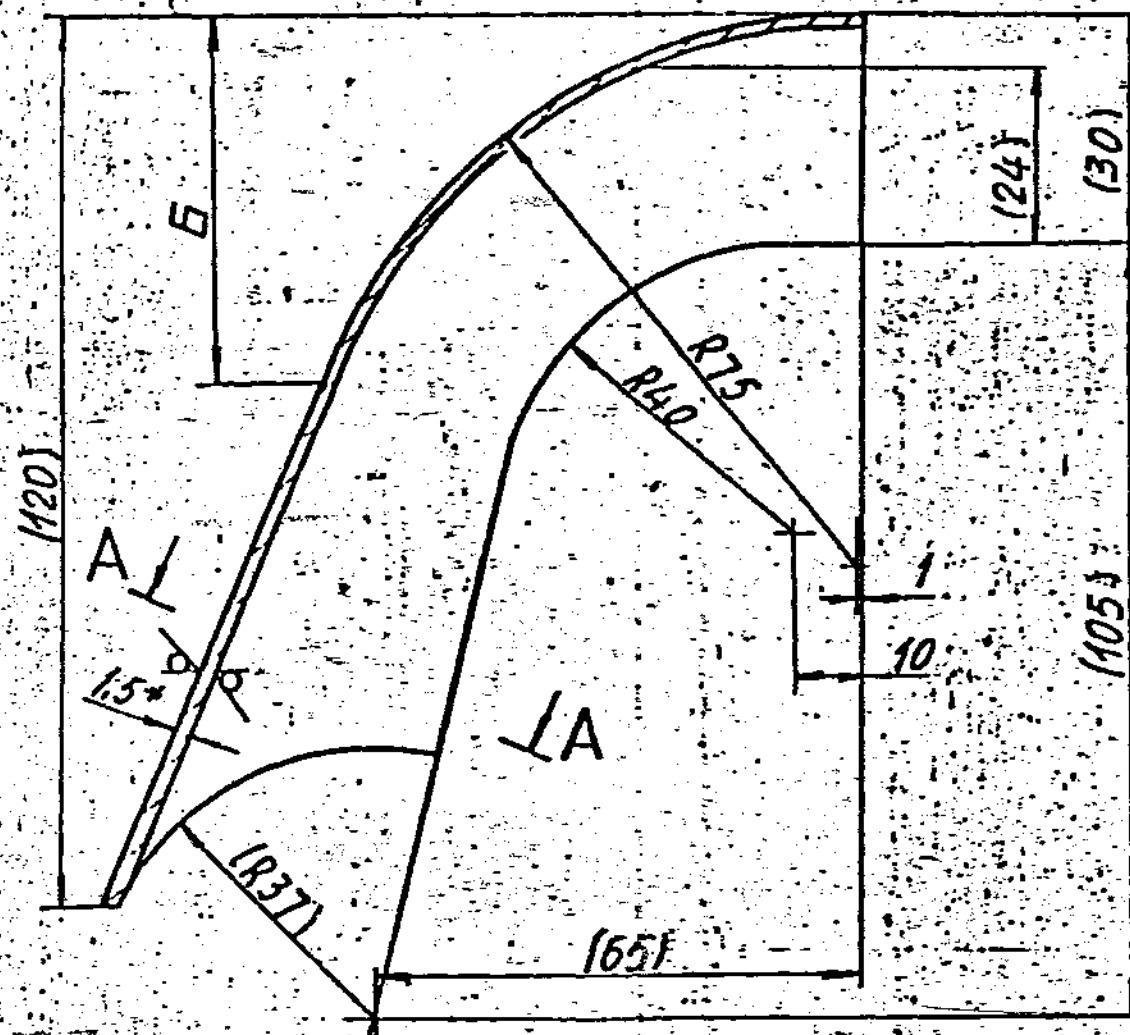
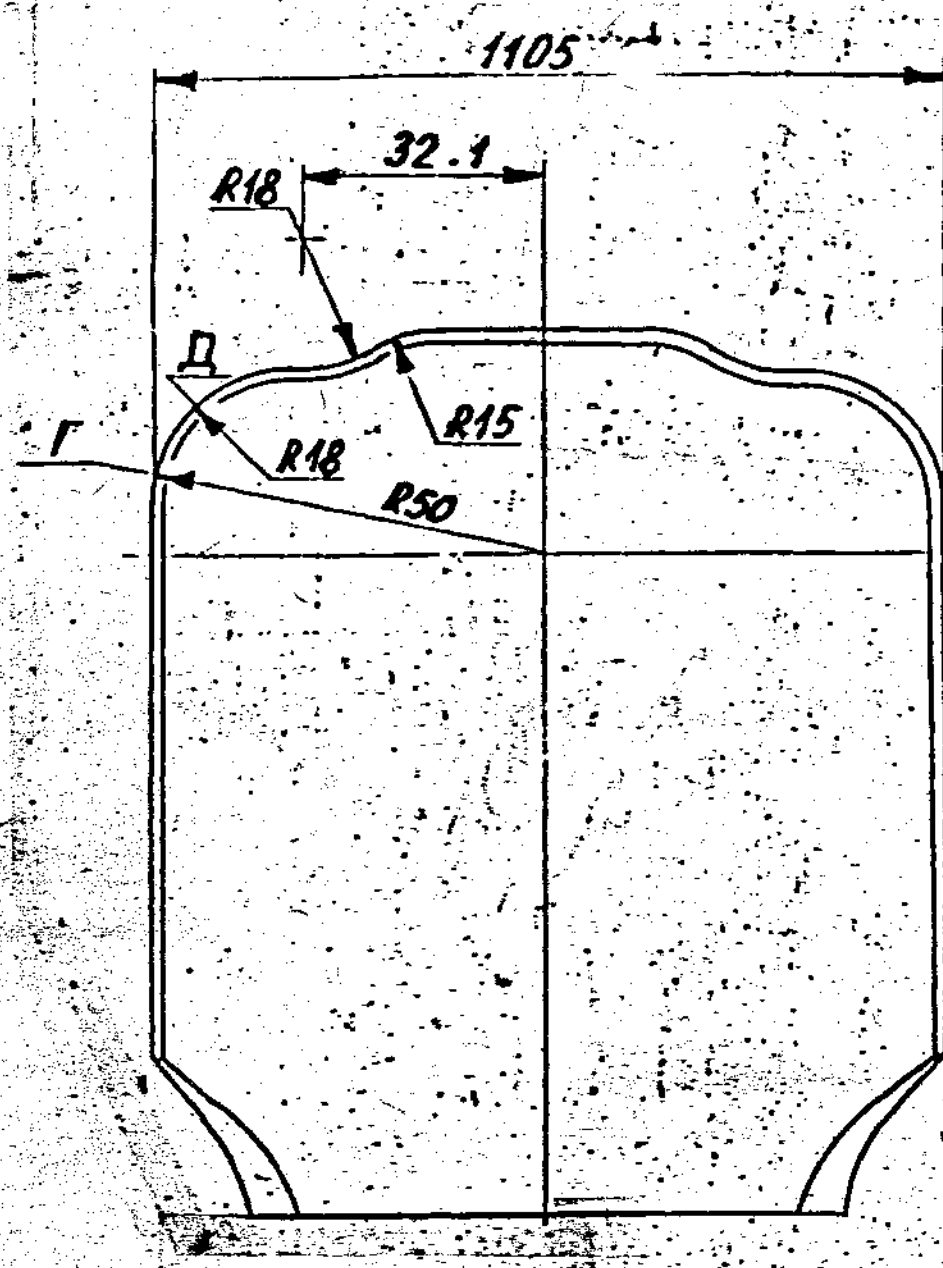
EST. WT. 0.135 kg TO BE STAMPED OR MARKED WHERE INDICATED THIS * LETTERS!

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

DRN	---	MATERIAL	SEE ABOVE **	USED ON	C5318-22-5
CHD	---	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)	A V A D I		
TCD	---	TITLE	LOWER PART OF SCREEN		
APPD	---	D S CAT NUMBER	DRAWING NUMBER		
DATE	29-1-88	318-20-5			
SCALE	1:1				
DIMENSIONS IN	mm				
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 2Y2-69				
ALL THREADS TO	CONFORM TO				
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
318-21-5

80° (✓)



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST5582-75

B = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74.
12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED OR BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080 °C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

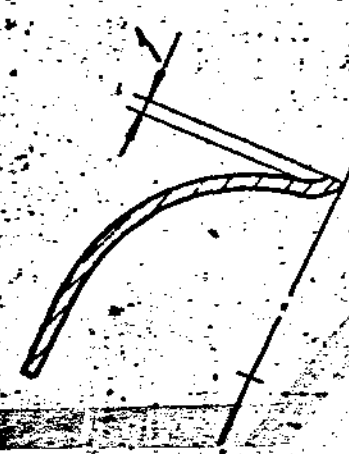
YIELD POINT Kgf/mm^2 (MIN) = 20

RELATIVE ELONGATION (MIN) = 40

A-A

A-A

ALTERNATIVE
ВЕРСИЯ



TECHNICAL REQUIREMENTS - TRANSLATED

- UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5mm$.
- MATERIAL THICKNESS IN THE THINNED PLACES SHOULD BE NOT LESS THAN 1mm.
- CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
- SMOOTH TRANSITION OF RADIUS B TO RADIUS Γ AND RADIUS A SHOULD BE ENSURED ON SECTION B.
- DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
- * DIMENSIONS FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS: 6911-72

**
SHEET: B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a
GOST 5582-75

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

EST. WT. 0.235 kg.	TO BE STAMPED OR MARKED WHERE INDICATED THIS # LETTERS)
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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 IS 2102-69
				29-1-88	1:1		
				MATERIAL :-		USED ON :-	
				SEE ABOVE **		CB 318-22-5	
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
				A V A D I			
				TITLE		UPPER PART OF SCREEN	
				D S CAT NUMBER		DRAWING NUMBER	
						318-21-5	
ISSUE	DATE	NATURE OF AMENDMENTS					
A	28.8.10	4 th ALT Comm Meeting Minutes Point No. 16 Dated 26.10.09					

DRAWING BASED ON RUSSIAN ORIGINAL ISSUED (AK 87-31)

EXPLANATORY NOTE ADDED ON 18-2-92

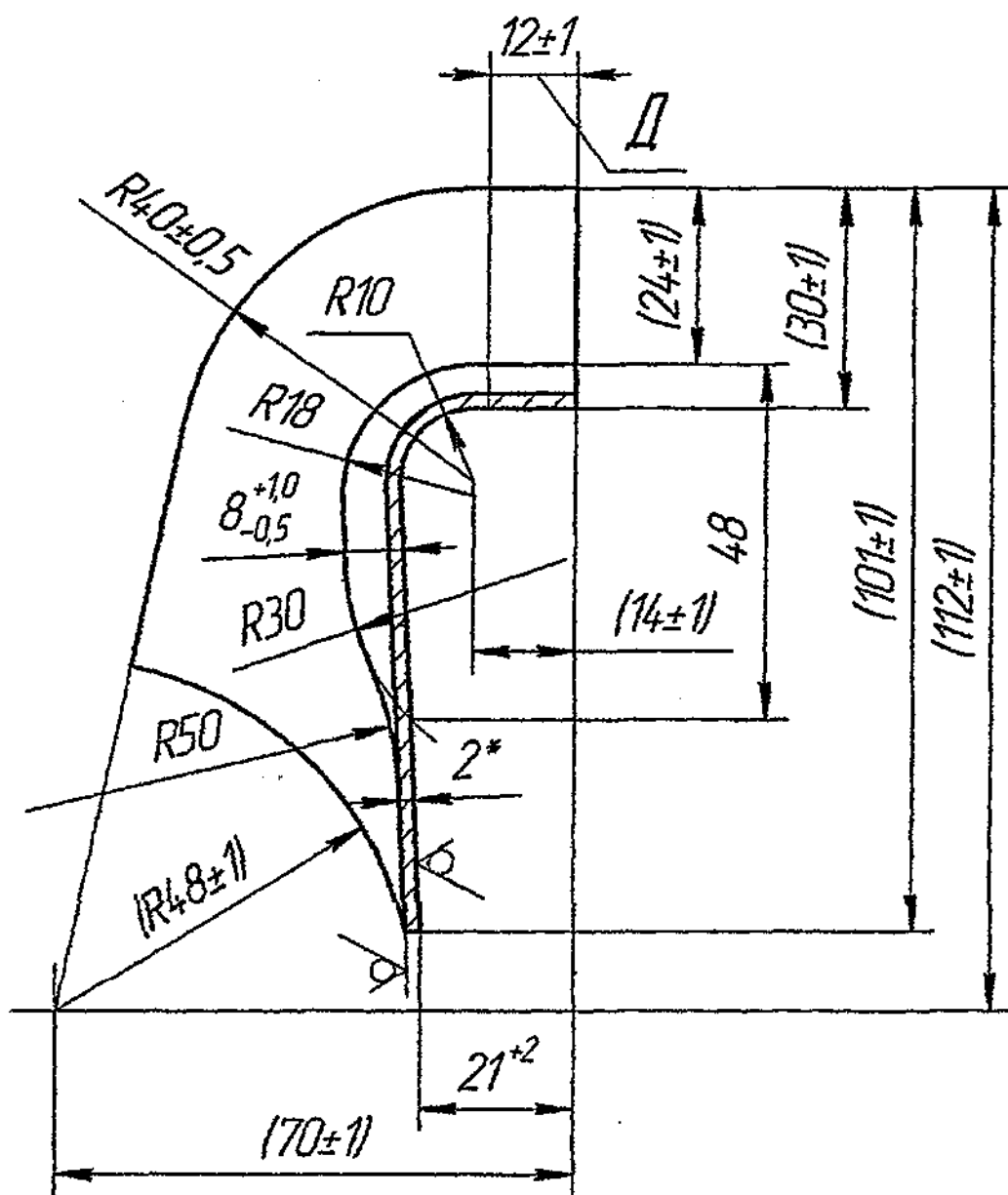
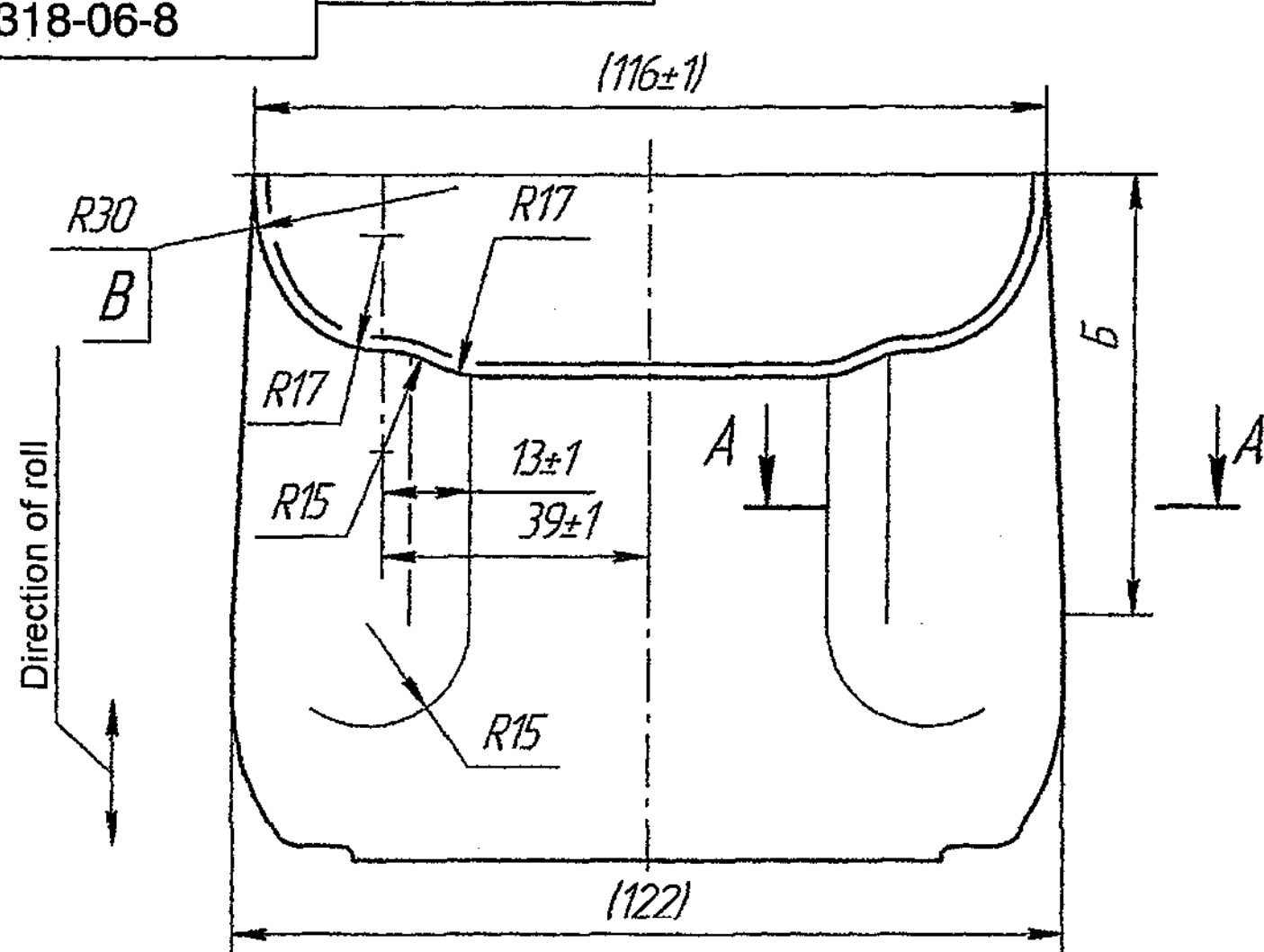
SIZE A2

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE-NIL

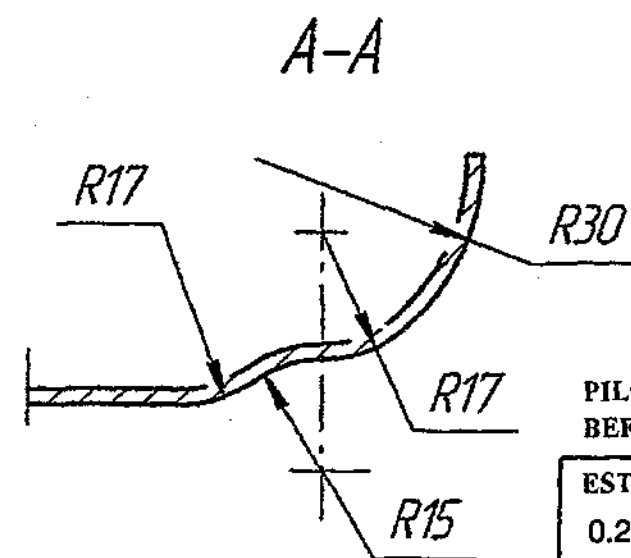
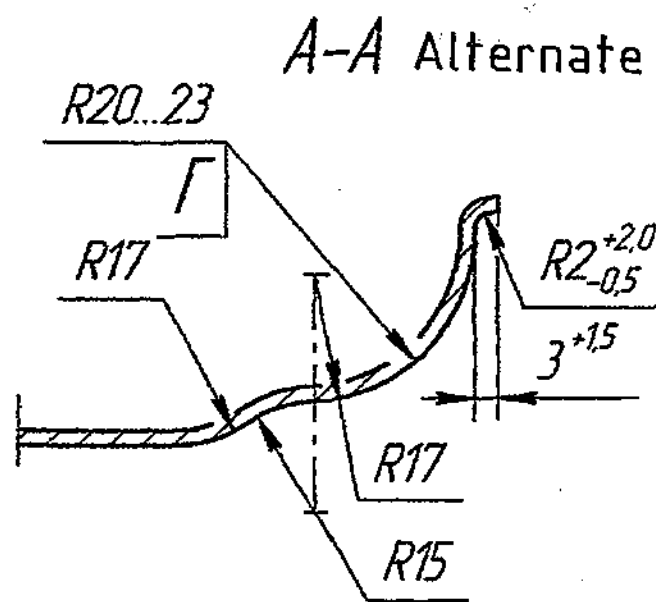
DRAWING NUMBER
3318-06-8

SHEET No. 1 OF 1

80 ✓ (✓)



1. Unspecified limit deviation of dimensions for cold stamping, make with accuracy ± 2 mm.
2. Thickness of material in thinned place should not be less than 1.5 mm.
3. Thickness, stratification, nicks and other defects are not permitted.
4. On section B ensure smooth passage of radius 'B' in radius Γ during manufacturing as per alternate.
5. During manufacturing as per alternate do not carry out flanging on section D.
6. Dimension given in brackets - after assembly.
7. * Dimensions for reference.



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)
0.229

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

DRN	P. Sharma	MATERIAL:- Sheet	USED ON:-
CHD	Shree...	572 GOST 1994-90	Cb.418-31-2,
APPD		12X18H10T-N2al or 12X18H10T-N2al GOST 5582-75	Cb.418-31-2-01
DATE	18-02-09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1:1	AVADI	
DIMENSIONS IN mm		TITLE:-	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69		LOWER HALF OF BRANCH PIPE	
ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER
ISSUE	DATE		3318-06-8
NATURE OF AMENDMENTS			

с 5415-31-2-01

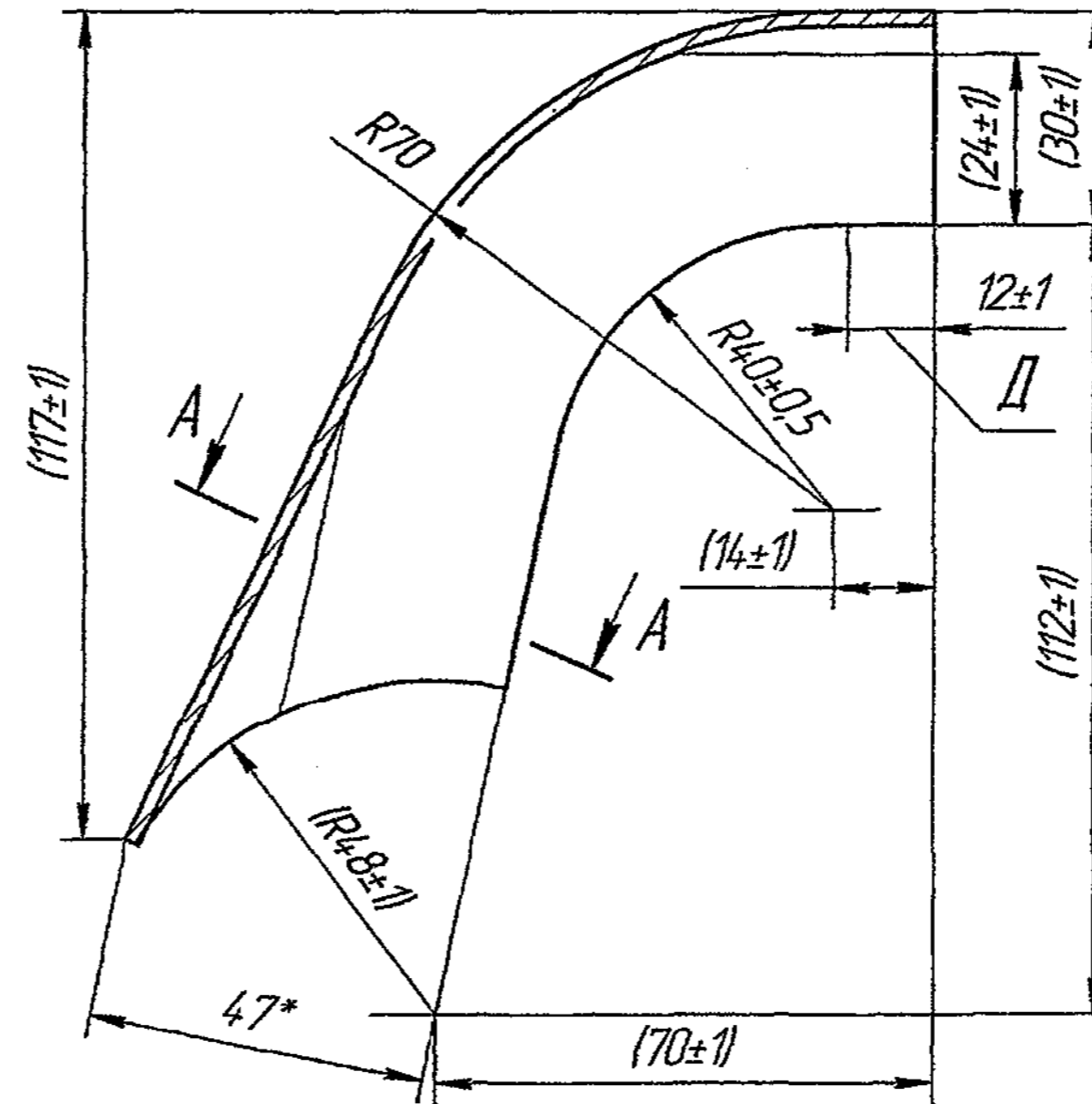
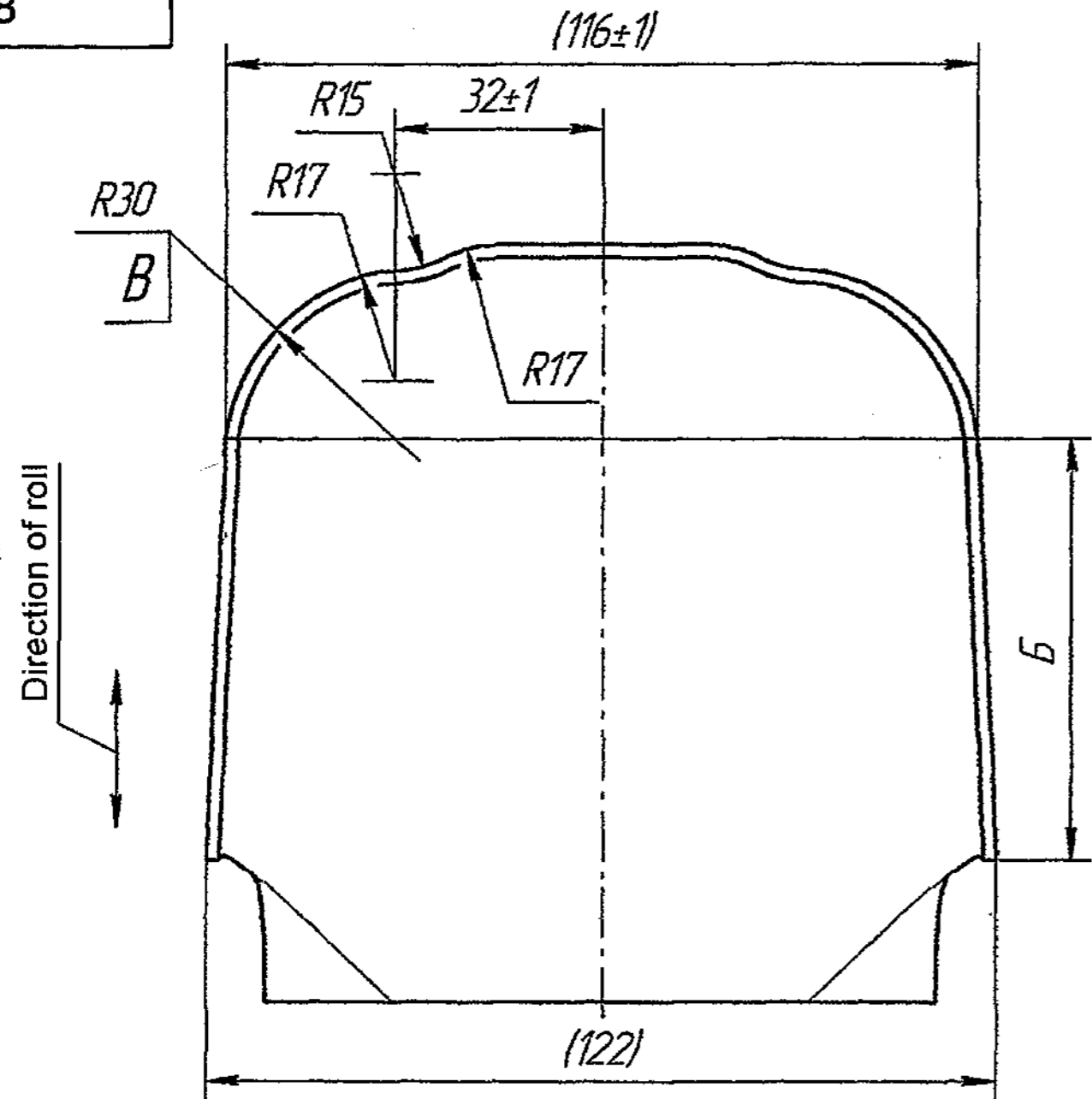
F-158
SIZE A4x3

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE -NIL

DRAWING NUMBER
3318-07-8

SHEET No. 1 OF 1

80 ✓(✓)

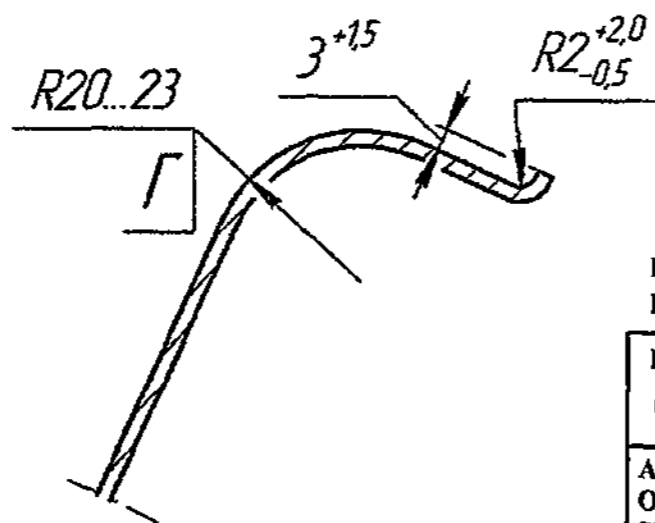
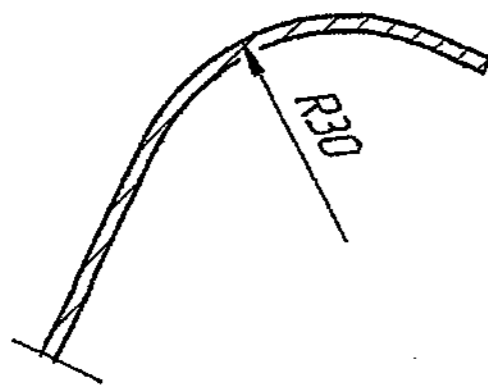


1. Unspecified limit deviation of dimensions for cold stamping, make with accuracy ± 2 mm.
2. Thickness of material in thinned place should not be less than 1.5 mm.
3. Thickness, stratification, nicks and other defects are not permitted.
4. On section B ensure smooth passage of radius 'B' in radius Γ during manufacturing as per alternate.
5. During manufacturing as per alternate, do not carry out flanging on section Δ .
6. Dimension given in brackets - after assembly.
7. * Dimensions for reference.

ALTERNATE

A-A Alternate

A-A



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

EST. WT. (kg) 0.428 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

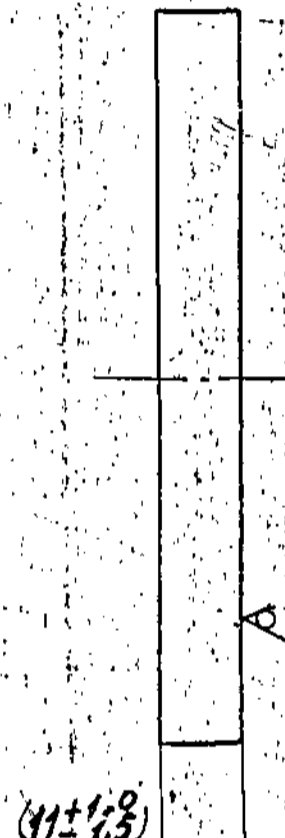
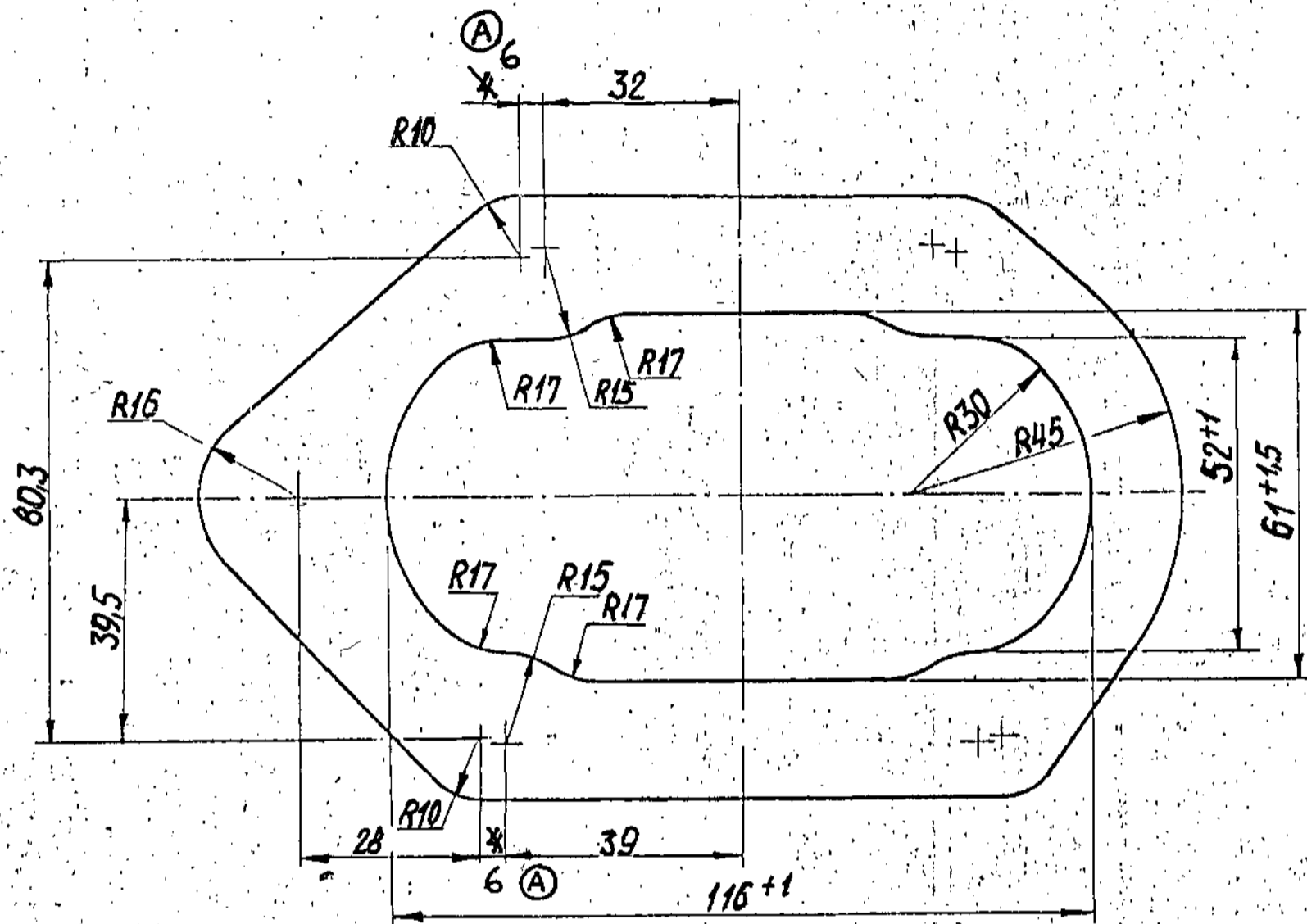
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	?	MATERIAL:- Sheet	USED ON:-
CHD		5T2 GOST 19904-90	Cb.418-31-2,
APPD		12X18H10T-M2a(or M3a) GOST 5582-75	Cb.418-31-2-01.
DATE	18-02-09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1:1		TITLE:-	
DIMENSIONS IN mm		UPPER HALF OF BRANCH PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	DRAWING NUMBER
ALL THREADS TO CONFORM TO			3318-07-8
ISSUE	DATE	NATURE OF AMENDMENTS	

F-158

SIZE A4x3

DRAWING INDICATED BASED ON RUSSIAN ORIGINAL ISSUE 7 (BK 81-31)
EXPLANATORY NOTE ADDED ON 12-2-82



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Неуказанные предельные отклонения размеров ± 0,5 мм
2. Размер в скобках - после сборки.
3. Заменитель материала сталь 15, 20 и 25 ГОСТ 1050-74.
4. Штамповочный скос 12 мм на сторону.

TECHNICAL REQUIREMENTS - TRANSLATED

1. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ± 0.5mm.
2. DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
3. ALTERNATIVE MATERIAL STEEL 15, 20, AND 25 GOST 1050-74.
4. DRAFT 12mm PER SIDE.

EXPLANATORY NOTE:-

MATERIAL QUOTED:- SHEET 12 GOST 19903-74
10 GOST 1577-81.

12 = THICKNESS OF THE SHEET
10 = GRADE OF OPENHEARTH STEEL
AS PER GOST 1577-81.

CHEMICAL COMPOSITION % (AS PER GOST 1050-74.)

C = 0.07 - 0.14, Si = 0.17 - 0.37, Mn = 0.35 - 0.65.
Cr = 0.15
S = 0.040
P = 0.035 (MAX)
Cu = 0.25
Ni = 0.25

MECHANICAL PROPERTIES AS PER GOST 1577-81.

ULTIMATE TENSILE STRENGTH: kgf/mm² (MIN) = 34
% ELONGATION (MIN) = 32
IMPACT STRENGTH kg cm/cm² (MIN) = 3

ⓑ EQUIVALENT MATERIAL
040 A 04 (EN 2A) BS:970

7	BK 81-31	1-7-10	4th ALT. COMM. Mfg. MINUTES
			POINT No 2 DT. 26-10-09
			NOTN. No. BK 86-455

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

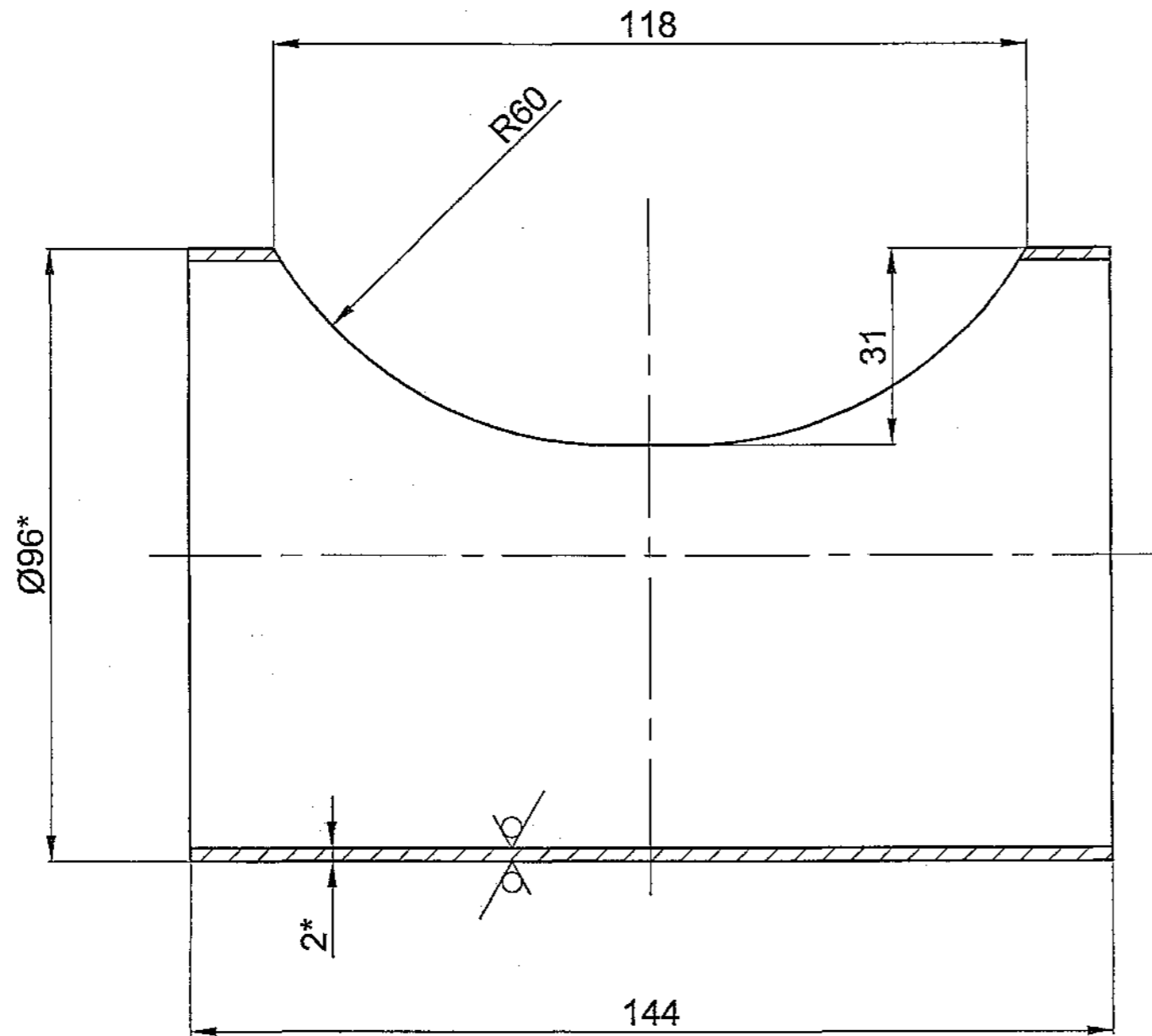
EST. MASS 0.6 Kg
TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRM	CHD	TCD	APPO	DATE	SCALE - 1:1	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED.	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
				29.1.88						3318-08-7
					MATERIAL :- SHEET 12 GOST 19903-74 10 GOST 1577-81.		USED ON :- Cb 418-50-29 Cb 418-51-29		CONTROLLERATE OF QUALITY ASS'URANCE (HEAVY VEHICLES) A V A D I	
					TITLE :-		FLANGE			
					ISSUE		DATE		NATURE OF AMENDMENTS	
					A		24.8.2K			

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
418-23-11

80 ✓ (✓)



1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5mm, above 80 mm upto 200mm ± 1mm.
2. * Dimensions are given for reference.

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

EST. WT. (Kg) **0.591** 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	<i>[Signature]</i>	MATERIAL :- PIPE 96x2-20A	USED ON :- Cb 418-32-01
			CHD	<i>[Signature]</i>	TY14-159-21-72	Cb 418-31-2-01
			APPD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
			DATE	26/1/07	AVADI	
			SCALE:-	1:1	TITLE :-	
			DIMENSIONS IN mm			PIPE
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			
			ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER
			ISSUE	DATE		418-23-11
				NATURE OF AMENDMENTS		

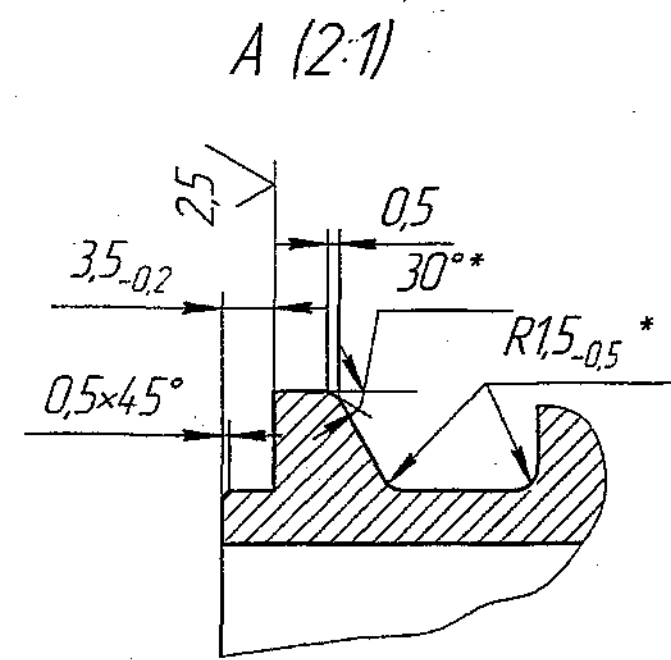
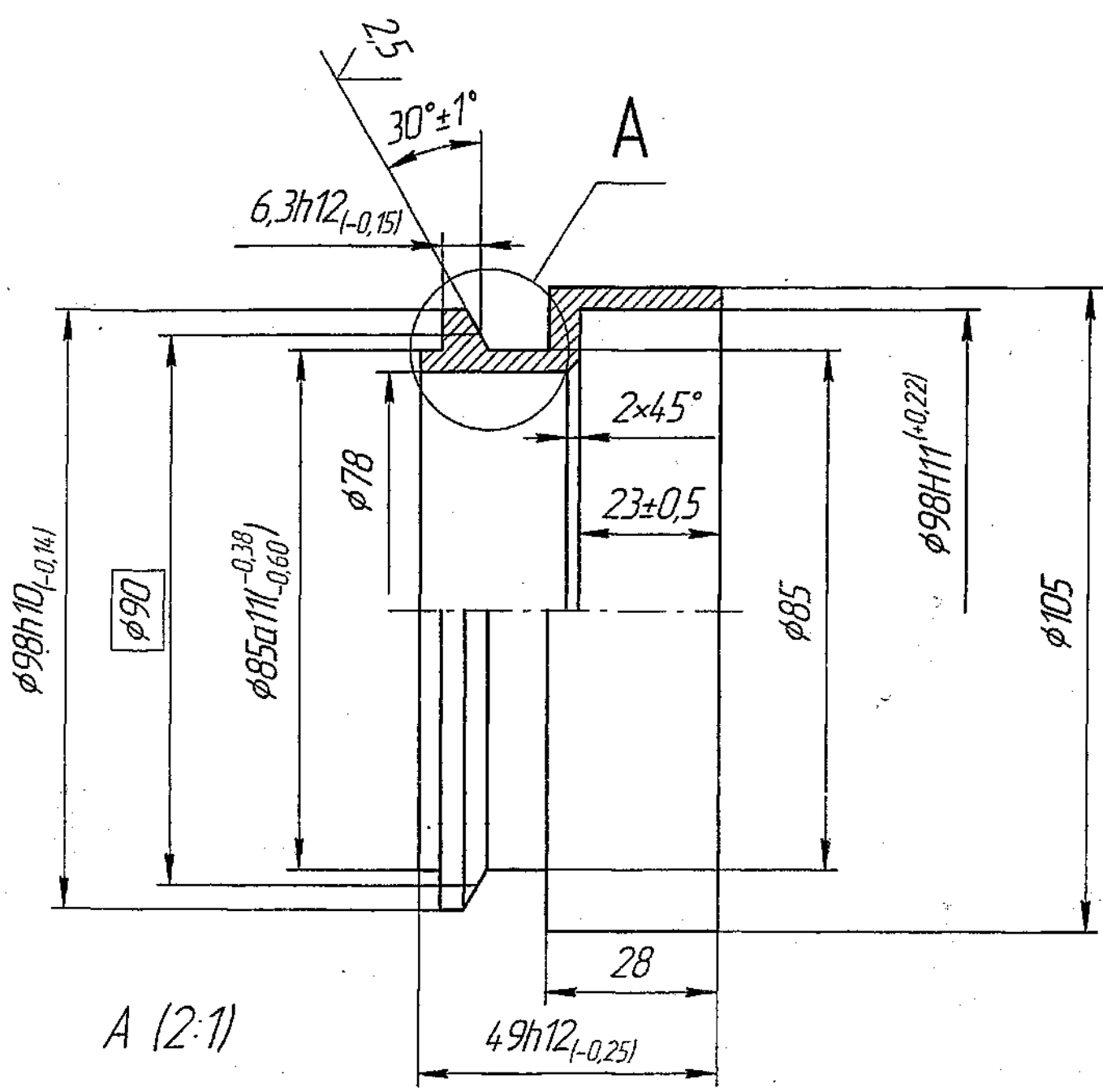
F-4
71
253

SIZE A3

DRAWING NUMBER
418-55-10

SHEET No. 1 OF 1

20 ✓ (✓)



1. Unspecified limit deviation of dimensions : H14, h14, ± IT14/2.
2. *Dimensions are ensured by tool.
3. Stamp on tag for final acceptance.
4. Alternate material steel 12X18H10T GOST 5632-72.

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL
DRG. REPLACES 418-55-1) ISSUE-5 VIDE NOTN. NO: 212-04

Ⓐ EQUIVALENT MATERIAL
04Cr.18Ni10Ti20 TOIS:6911-72

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

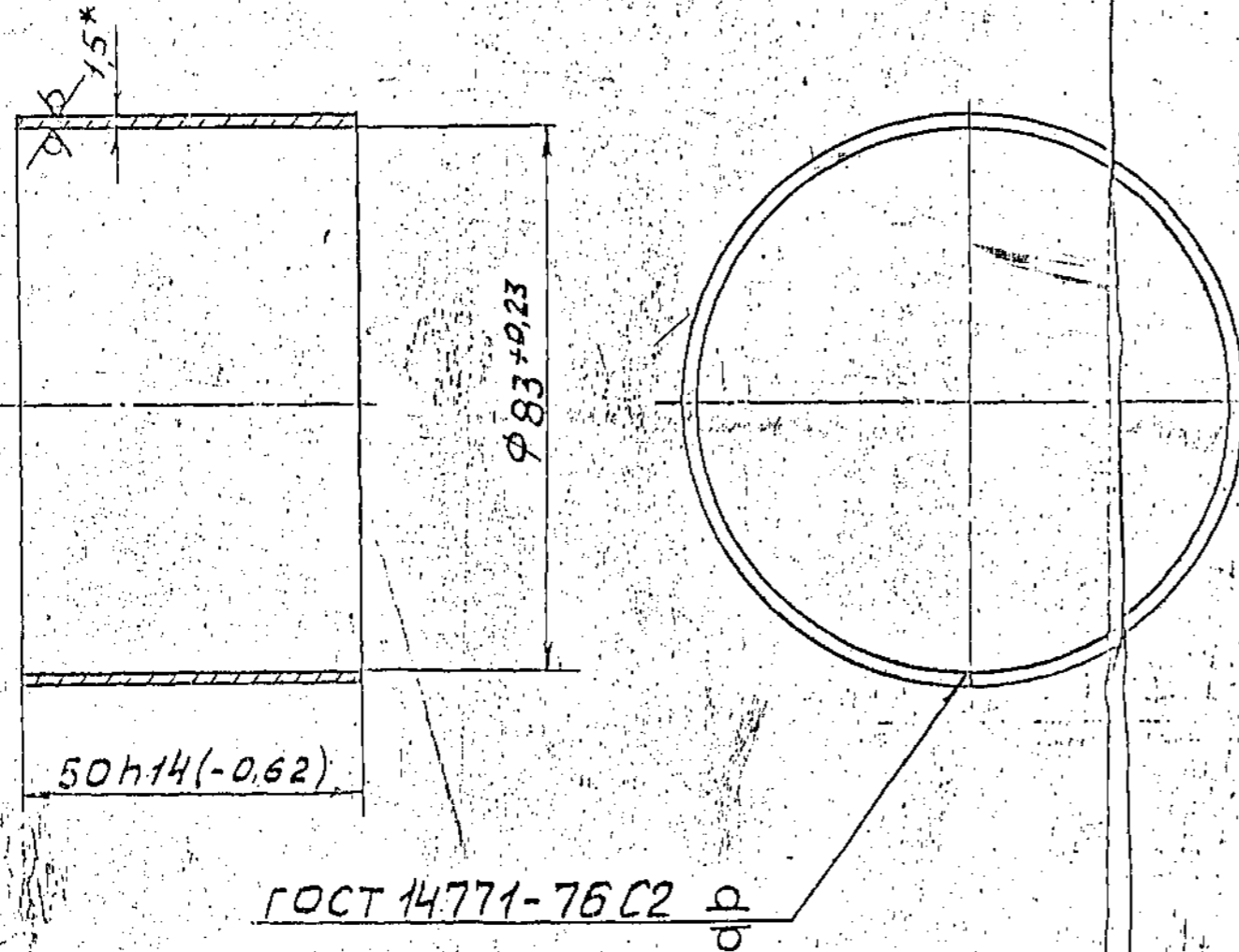
EST. WT. (Kg) 0.563 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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	B. A. / 24	MATERIAL :-	USED ON :-
CHD	<i>[Signature]</i>	STEEL 12X18H9T	Cb 418-31-2
APPD	<i>[Signature]</i>	GOST 5632-72	
DATE	4-12-08	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1 : 1	AVADI	
DIMENSIONS IN mm		TITLE :-	FLANGE
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			
ISSUE	A	D S CAT NUMBER	DRAWING NUMBER
DATE	28.8.10		418-55-10
NATURE OF AMENDMENTS	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09		

F-158
SIZE A3

ЕСКА



(A) EQUIVALENT MATERIAL
04Cr.18Ni.10Ti.20 TOIS.6911 72

1. Заменитель материала сталь 12X18H10T-М3а ГОСТ 5582-75.
2. Трещины, рванины, расслоения и вмятины не допускаются.
- 3.* Размер для справок.

- 1) ALTERNATE MATERIAL: STEEL 12X18H10T M3a GOST 5582-75.
- 2) CRACKS, TEARS LAMINATION AND DENTS ARE NOT ALLOWED.
- 3) * DIMENSIONS FOR REFERENCE.

** SHEET 6-1,5 GOST 19904-74
12X18H10T-M2a GOST 5582-75

Ил. № подл. 36981 | Пост. в ледя 4.12.85 | Ил. № дубл. | Пост. в ледя | Оригинал Issue 1 (BK 84-824)

PILOT SAMPLE SHOULD BE APPROVED BY A HSP BEFORE BULK PRODUCTION

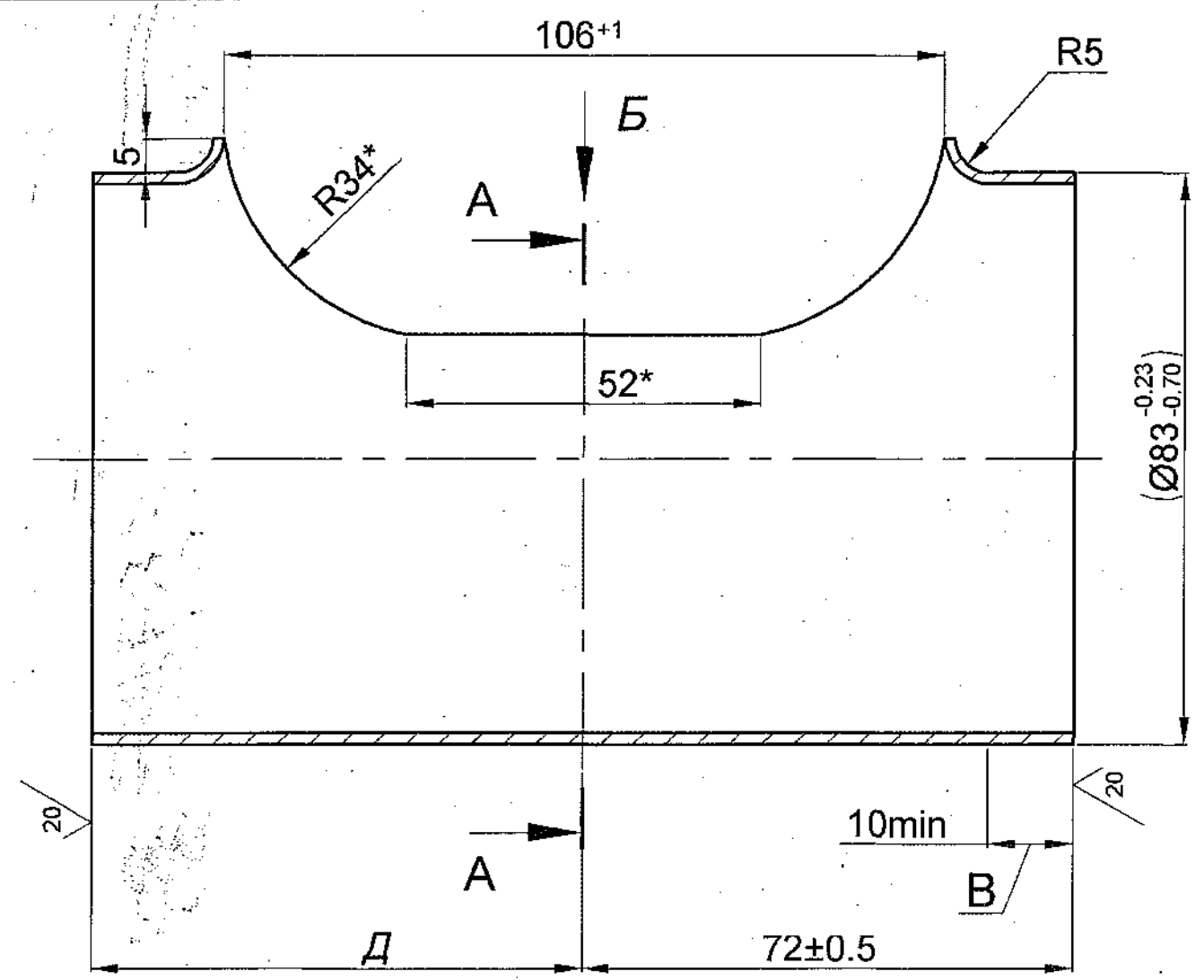
		EST. MASS 0,155 Kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)
A	28.8.10	4 th Alt Comm Mtg Minutes Point No.16 Dt. 26.10.09	ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R. OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE
ISSUE DATE	NATURE OF AMENDMENTS	MATERIAL: ** SEE ABOVE	USED ON:
DRN <i>[Signature]</i>	SCALE: 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I	
CHD <i>[Signature]</i>	DIMENSIONS IN mm	TITLE: BUSHING	
YCD <i>[Signature]</i>	TOLERANCE ON DIMS UNLESS OTHERWISE STATED	DS CAT NUMBER	DRAWING NUMBER 418-85-5
APPD <i>[Signature]</i>	ALL THREADS TO CONFORM TO		

406 - BK84-824

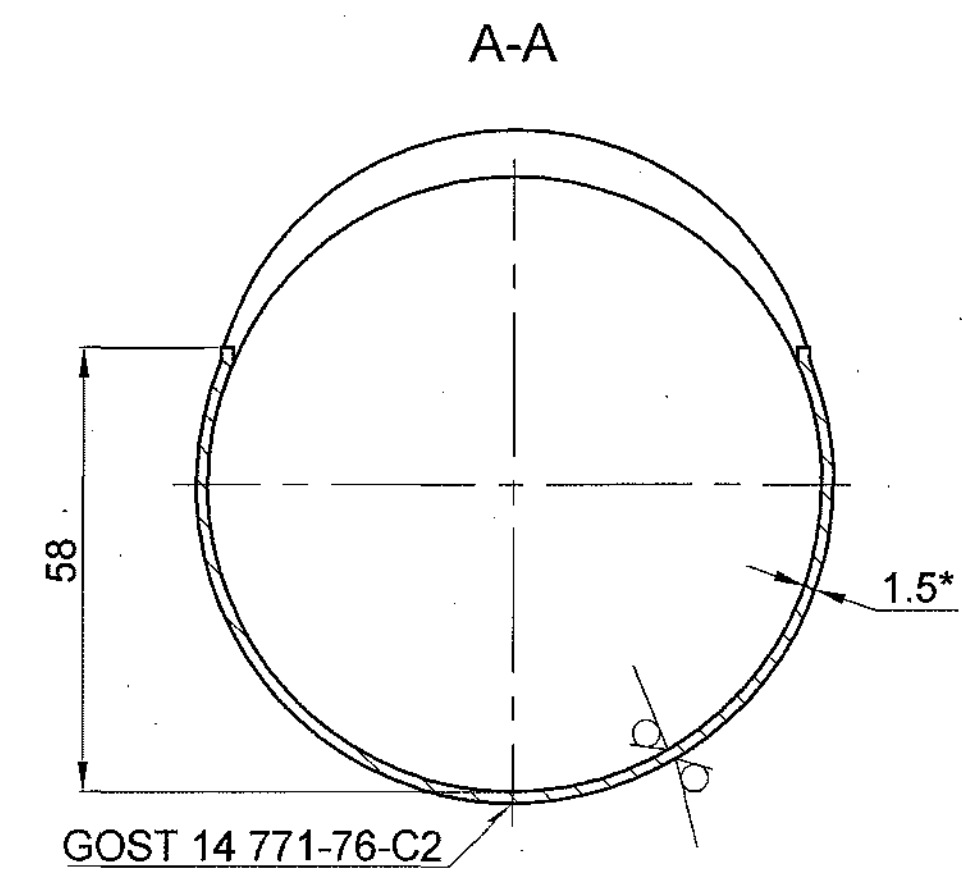
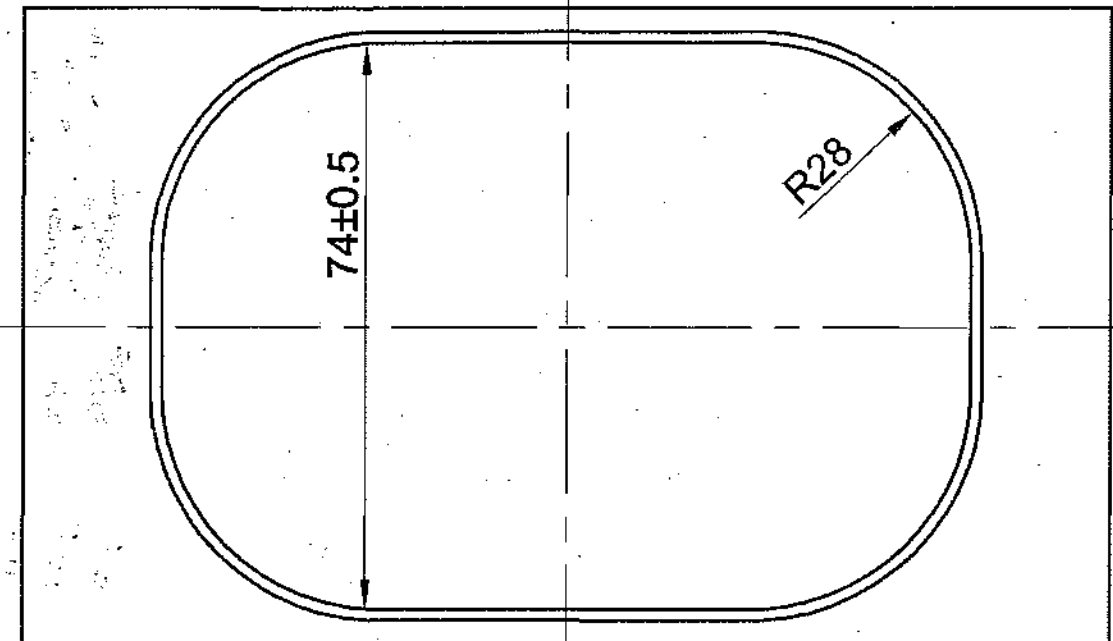
DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

DRAWING NUMBER
418-90-10 (01-02) SHEET No. OF

80 ✓ (✓)



VIEW B



DRG. NO.	Д, mm	WEIGHT IN kg
418-90-10	72±0.5	0.340
-01	65±0.5	0.319
-02	85±0.5	0.372

1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5 mm, above 80 mm upto 200 mm ± 1 mm.
2. Allowance for ovality of pipe should be 3 mm (Semi difference of diameters).
3. On flange ribs, metal tears are allowed upto maximum of 2 Nos per flange in quantity with subsequent electric arc welding and dressing at the base of the tears.
4. On section "B", it is permitted to carry out welding from inner side.
5. Dress the mounted on the section "B" along the outer diameter of weld-surface.
6. Dimension in brackets - After assembly.
7. * Dimensions are given for reference.
8. Alternate material is steel 12x18H10T TY 14-1-31-99-81.

Ⓐ EQUIVALENT MATERIAL
04Cr.18 Ni 10Ti 20 TO IS:6911-72

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)

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>Asok</i>	MATERIAL:- SHEET	USED ON:-
CHD	<i>R. B. Subramanian</i>	ET 1.5 GOST 19904-90	CB 418-31-2-01
APPD	<i>...</i>	12X18H10T-M2a GOST 5582-75	CB 418-32-01
DATE	14/2/09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1:1		TITLE:-	
DIMENSIONS IN mm		PROTECTIVE PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
A 28.8.10 4 th Alt. Comm Meeting Minutes		DRAWING NUMBER	
ISSUE DATE NATURE OF AMENDMENTS		418-90-10(01-02)	

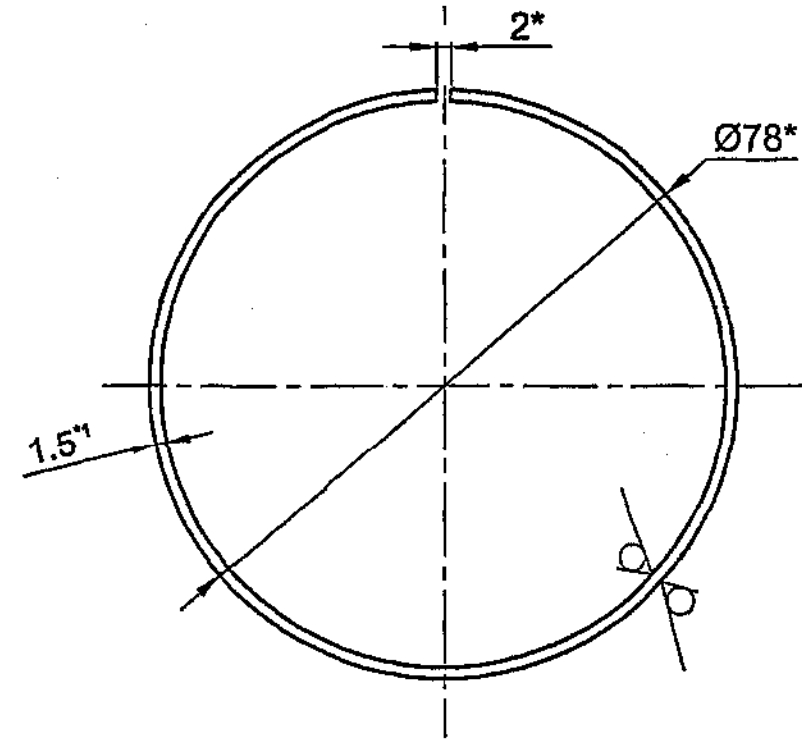
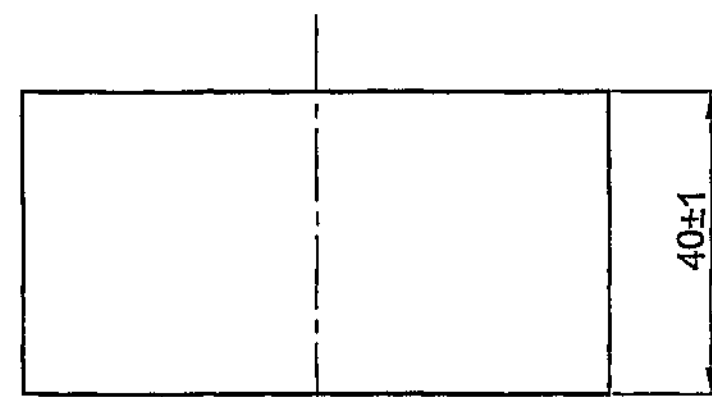
F-4
74
253
SIZE A4 x 3

DRAWING NUMBER
418-85-6

SHEET No. 1 OF 1

80 (✓)

P. JAVARDHANAN
 JTO (D)
 Dt. 21 Oct 2010



1. Length of unfolded Bush L=237 mm.
2. * Dimension to be ensured by tool.
3. *¹ Dimension is given for reference.

(3A) EQUIVALENT MATERIAL
 04 Cr.18 Ni 10Ti 20 TO IS:6911-72.

DRAWING REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

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

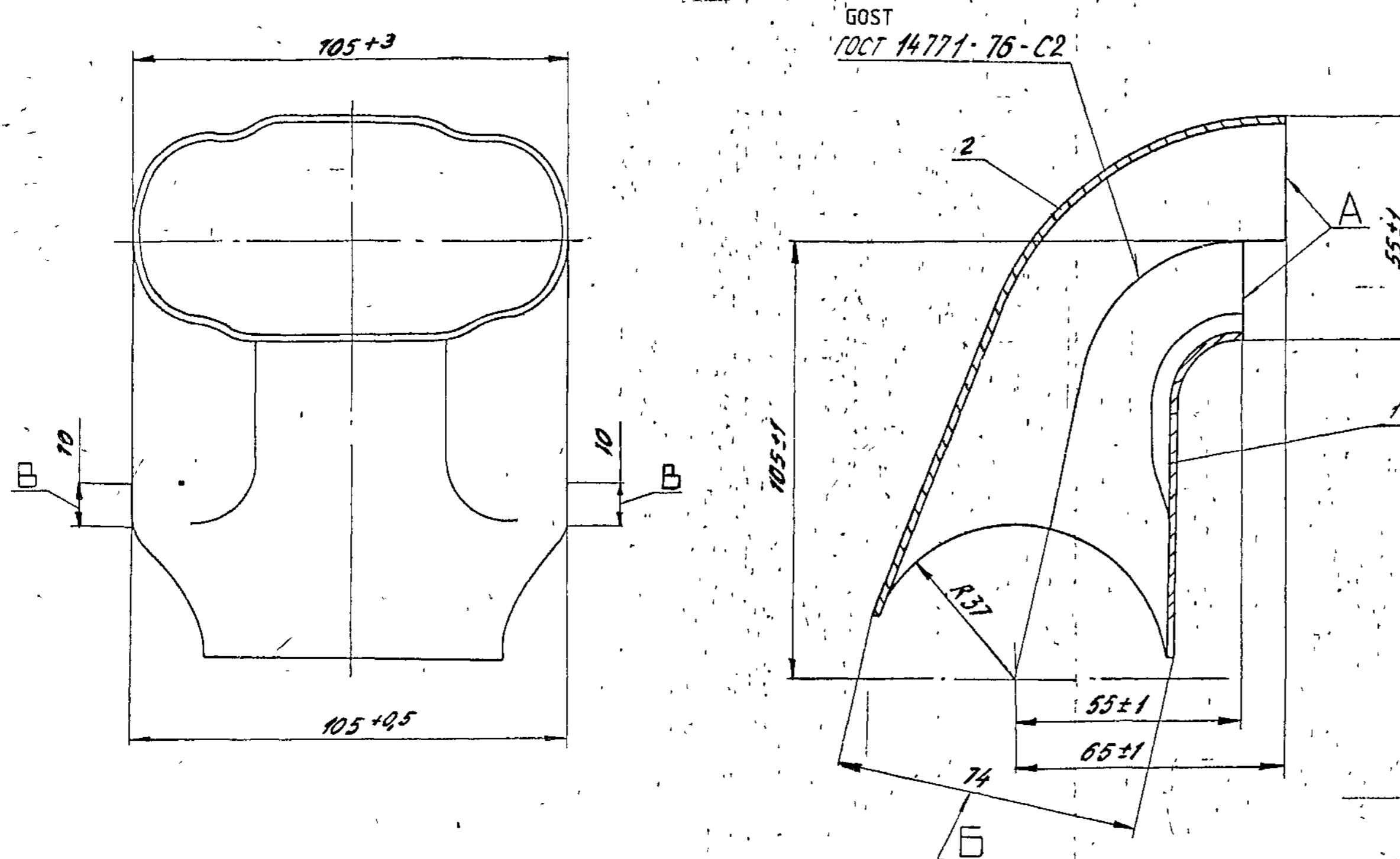
EST. WT. (Kg) 0.119 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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	Sd/=	MATERIAL :- SHEET	USED ON :- Cb 418-2-01
			CHD	Sd/=	BT-1.5 GOST 19904-90	
			APPD	Sd/=	12X18H10T-M2a GOST 5582-75	
			DATE	13-01-2007	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			SCALE:- 1 : 1			
			DIMENSIONS IN mm		TITLE :-	
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		BUSH	
			3A	23.10.10	4 th Alt. Comm. Mtg. Minutes Point No. 16 Dt. 26.10.09	D S CAT NUMBER
			ISSUE	DATE	NATURE OF AMENDMENTS	DRAWING NUMBER
						418-85-6

F4
73
253

SIZE A3



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Контур А и размер Б подогнать по сопрягаемой детали перед приваркой в узле.
2. Сварные швы на участках В зачистить заплотило.

TECHNICAL REQUIREMENTS - TRANSLATED

- 1 CONTOUR 'A' AND DIMENSION 'B' SHOULD BE ADJUSTED TO SUIT MATING COMPONENT BEFORE WELDED TO ASSEMBLY.
- 2 WELDS ON SECTION 'B' SHOULD BE DRESSED FLASH

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

		EST MASS 0.37	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	MATERIAL -	USED ON -
DRN	SCALE - 1:1		CB 418-50-29 CB 418-51-29
CHD	DIMENSIONS IN mm	CONTROLLER OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE - BRANCH PIPE SCREEN	
APPD	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
DATE	29 1 88		CB 318-22-5CB

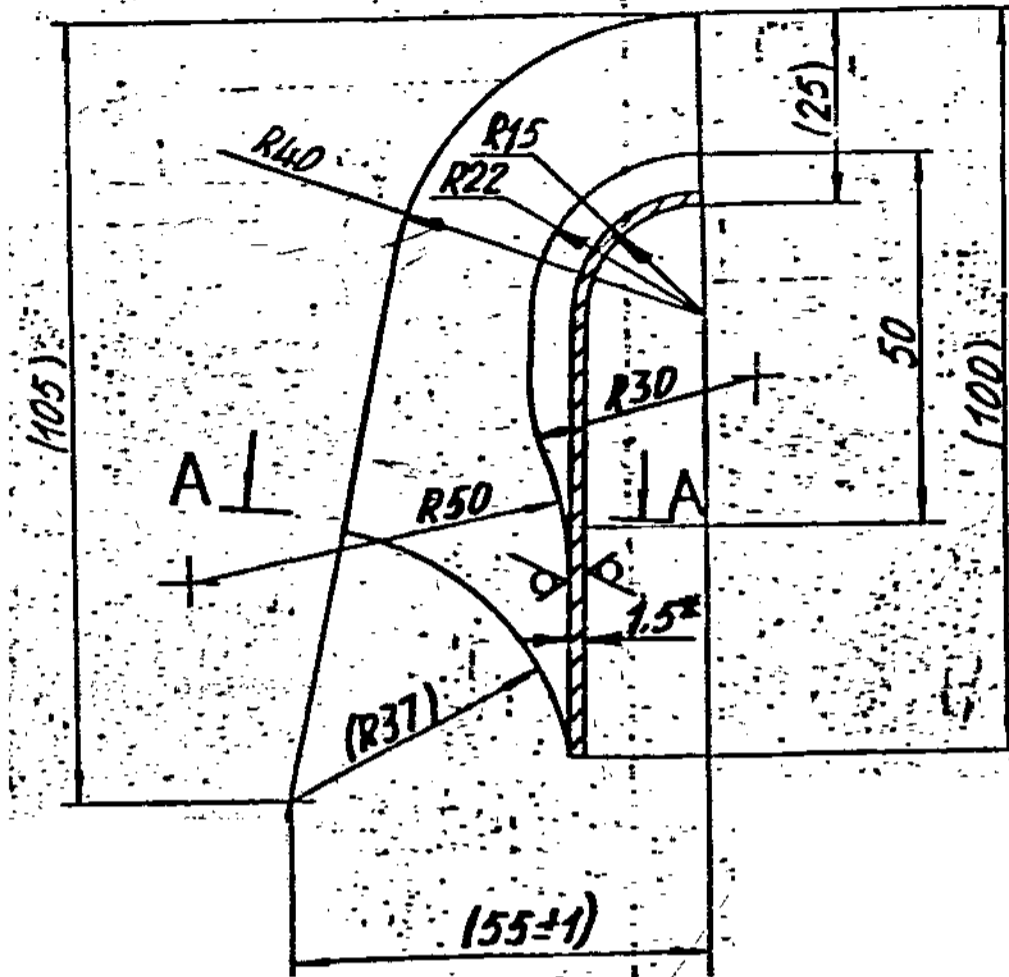
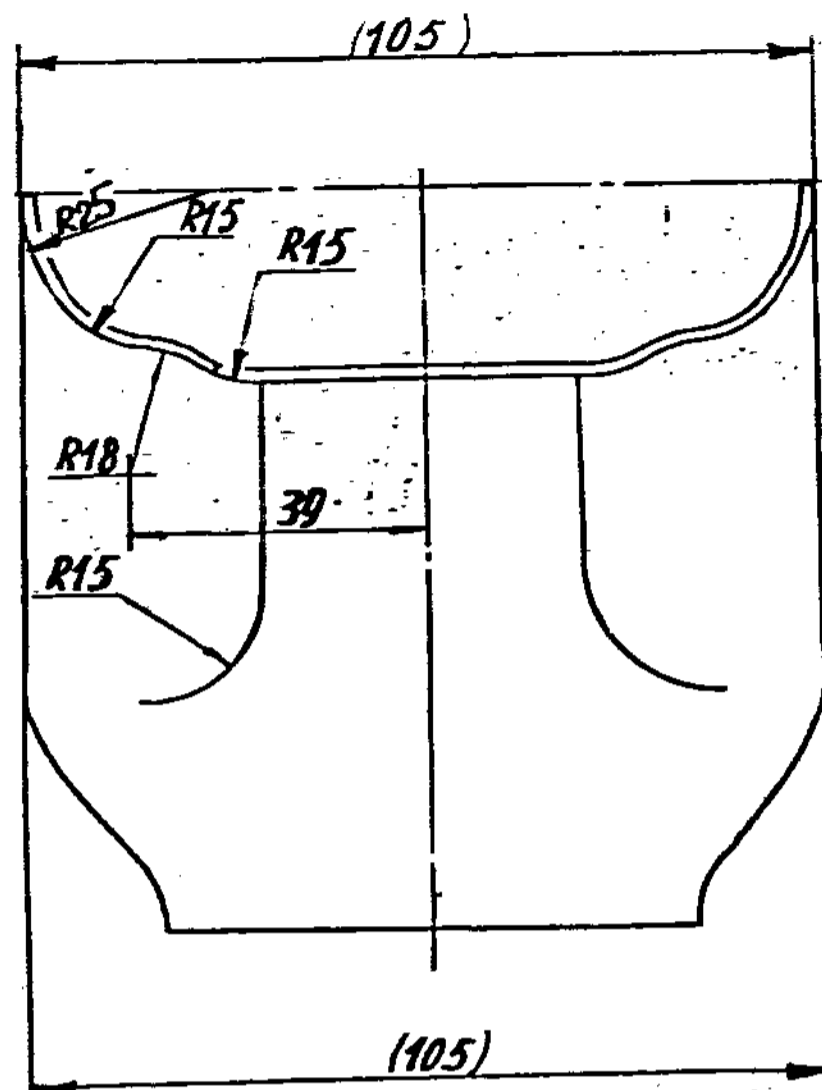
2	BK 81-31	10/11/88	10/11/88
10/11/88	10/11/88	10/11/88	10/11/88

DRAWING NUMBER
318-20-5

RZ 89/ (✓)

TECHNICAL REQUIREMENTS - TRANSLATED

1. DIMENSIONS WITH UNSPECIFIED DEVIATIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5\text{mm}$.
2. MATERIAL THICKNESS IN THINNED PLACES SHOULD BE 1mm MIN.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. DIMENSION IN BRACKETS SHOULD BE ENSURED AFTER ASSEMBLY.
5. * DIMENSION FOR REFERENCE.



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET Б 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST 5582-75

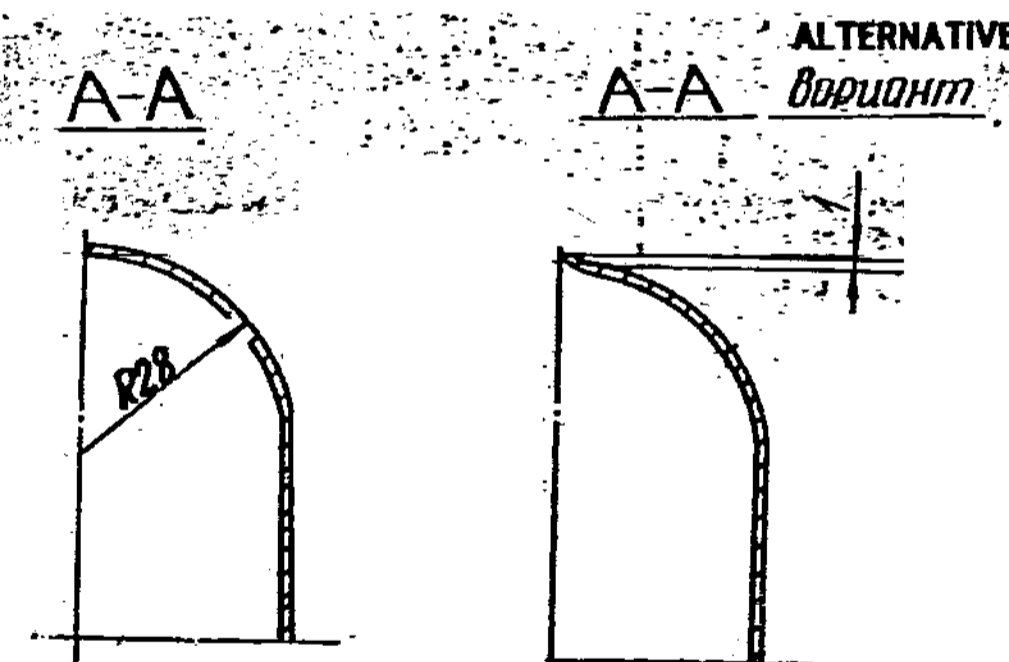
Б = STANDARD ACCURACY.
1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74
12X18H10T = GRADE OF STEEL.
M2a OR M3a = PICKLED & BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)
CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX),
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080°C
COOLING IN WATER OR IN AIR.
ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54
YIELD POINT Kgf/mm^2 (MIN) = 20
RELATIVE ELONGATION (MIN) = 40



**
SHEET: Б 1.5 GOST 19904-74
12x18H10 -M2a (OR M3a) GOST 5582-75

EXPLANATORY NOTE ADDED ON 18-2-92

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

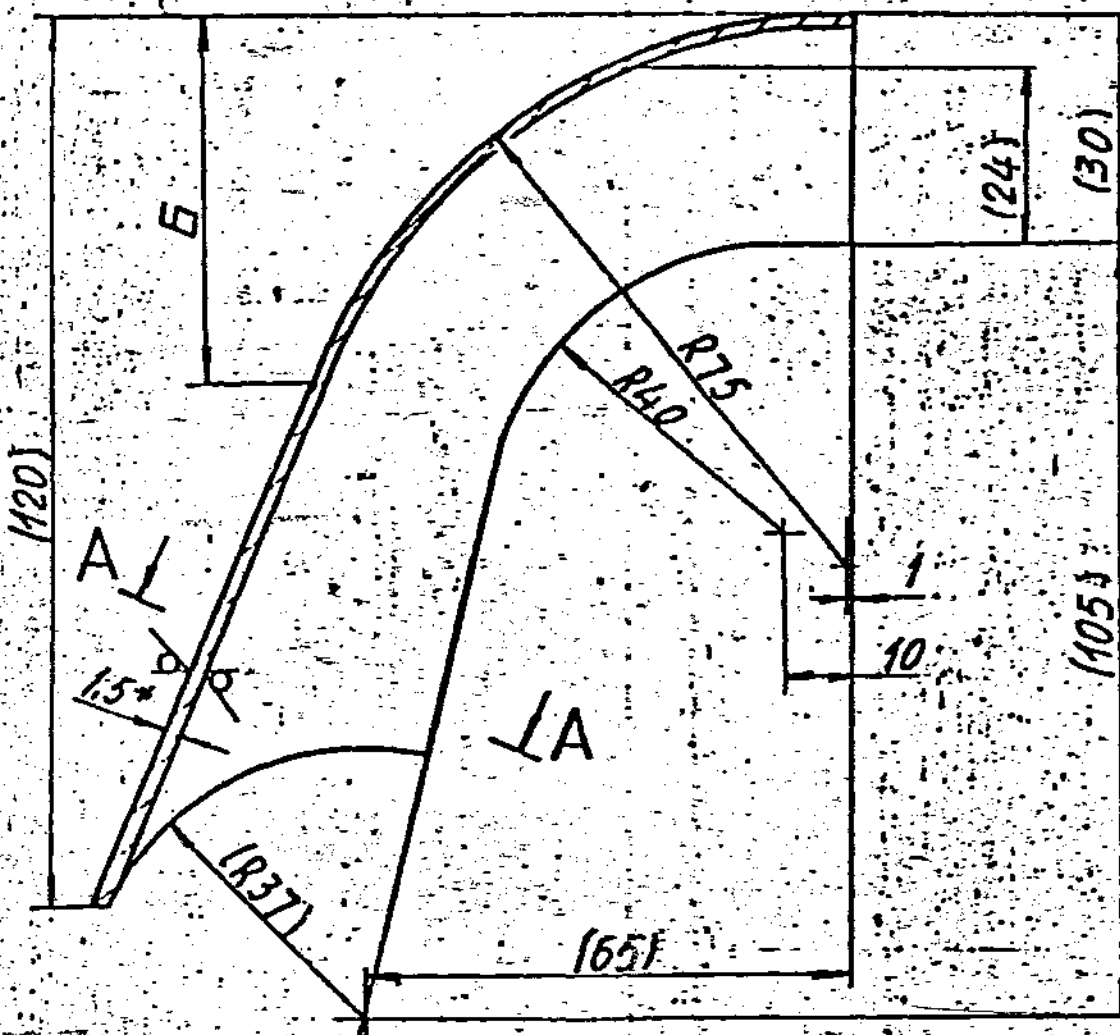
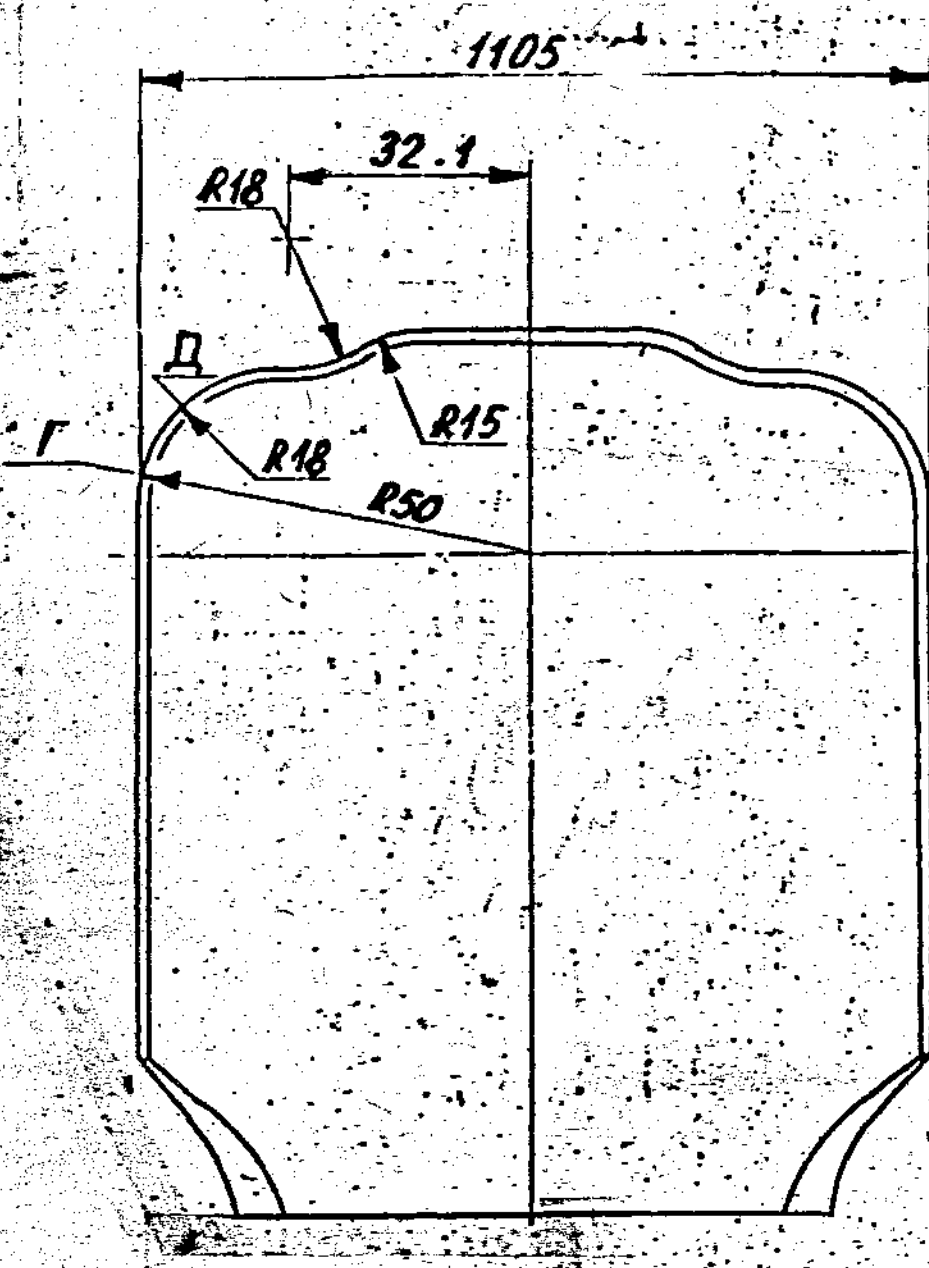
EST. WT. 0.135 kg TO BE STAMPED OR MARKED WHERE INDICATED THIS * LETTERS!

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

DRN	---	MATERIAL	SEE ABOVE **	USED ON	C5318-22-5
CHD	---	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)	A V A D I		
TCD	---	TITLE	LOWER PART OF SCREEN		
APPD	---	D S CAT NUMBER	DRAWING NUMBER		
DATE	29-1-88	318-20-5			
SCALE	1:1				
DIMENSIONS IN	mm				
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 2Y2-69				
ALL THREADS TO	CONFORM TO				
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
318-21-5

80° (✓)



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST5582-75

B = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74.
12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED OR BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080 °C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

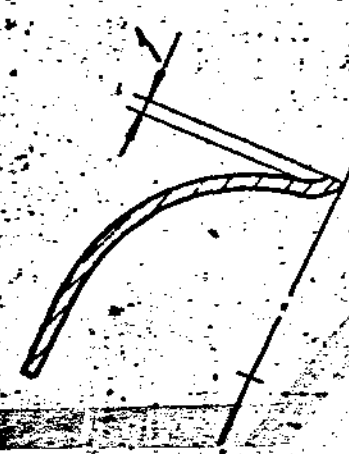
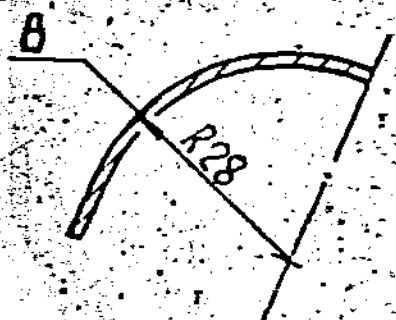
YIELD POINT Kgf/mm^2 (MIN) = 20

RELATIVE ELONGATION (MIN) = 40

A-A

A-A

ALTERNATIVE
ВЕРСИИ



TECHNICAL REQUIREMENTS - TRANSLATED

- UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5mm$.
- MATERIAL THICKNESS IN THE THINNED PLACES SHOULD BE NOT LESS THAN 1mm.
- CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
- SMOOTH TRANSITION OF RADIUS B TO RADIUS Γ AND RADIUS A SHOULD BE ENSURED ON SECTION B.
- DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
- * DIMENSIONS FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS: 6911-72

**
SHEET: B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a
GOST 5582-75

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

EST. WT. 0.235 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	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69
				29-1-88	1:1		
				MATERIAL :-		USED ON :-	
				SEE ABOVE **		CB 318-22-5	
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
				A V A D I			
				TITLE		UPPER PART OF SCREEN	
				D S CAT NUMBER		DRAWING NUMBER	
						318-21-5	
ISSUE	DATE	NATURE OF AMENDMENTS					
A	28.8.10	4 th ALT Comm Meeting Minutes Point No. 16 Dated 26.10.09					

DRAWING BASED ON RUSSIAN ORIGINAL ISSUED (AK 87-31)

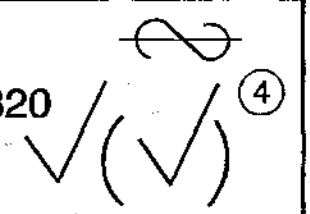
EXPLANATORY NOTE ADDED ON 18-2-92

SIZE A2

DRAWING NUMBER
3318-06-4

SHEET No. 1 OF 1

EXPLANATORY NOTE :-

Rz 320 

MATERIAL QUOTED : SHEET A2 GOST 19904 - 74
II - Γ - 10 GOST 16523 - 70

- A = HIGH ACCURACY
- 2 = THICKNESS OF COLD ROLLED SHEET STEEL TO GOST 19904 - 74
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW - DEEP DRAWN
- 10 = GRADE OF STEEL

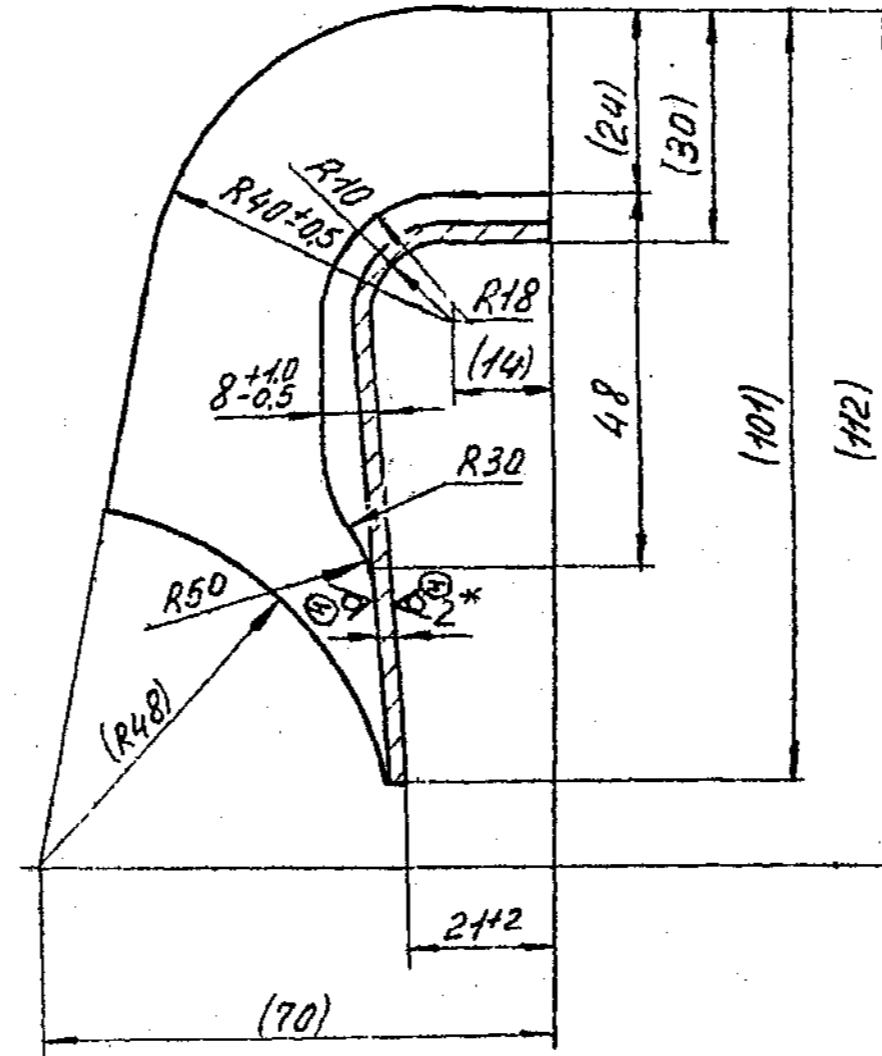
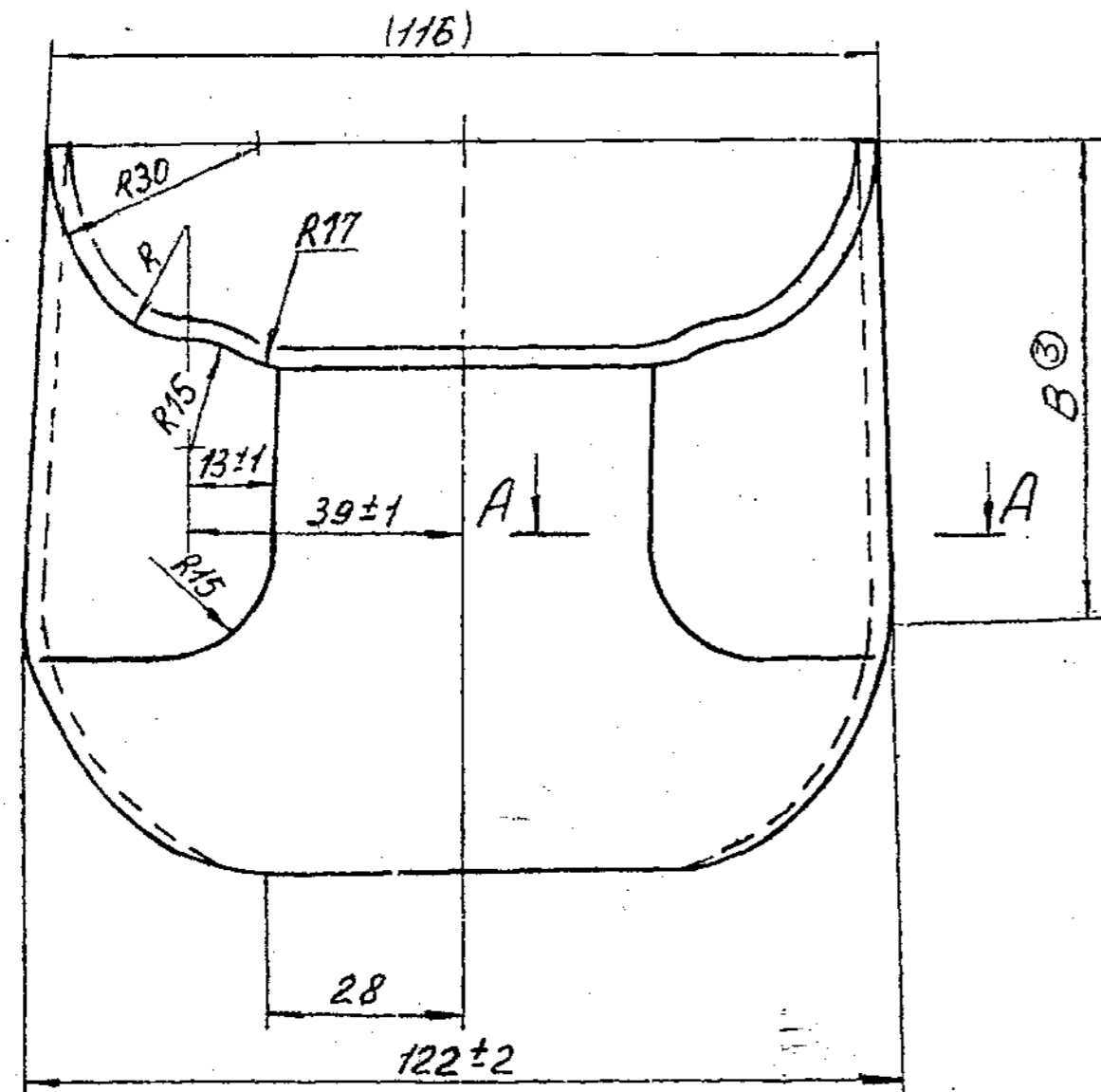
CHEMICAL COMPOSITION % (AS PER GOST 1050 - 74)

CARBON = 0.07 - 0.14 ; SILICON = 0.17 - 0.37
MANGANESE = 0.35 - 0.65
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX)
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX)
NICKEL = 0.25 (MAX)

MECHANICAL PROPERTIES (AS PER GOST 16523 - 70)

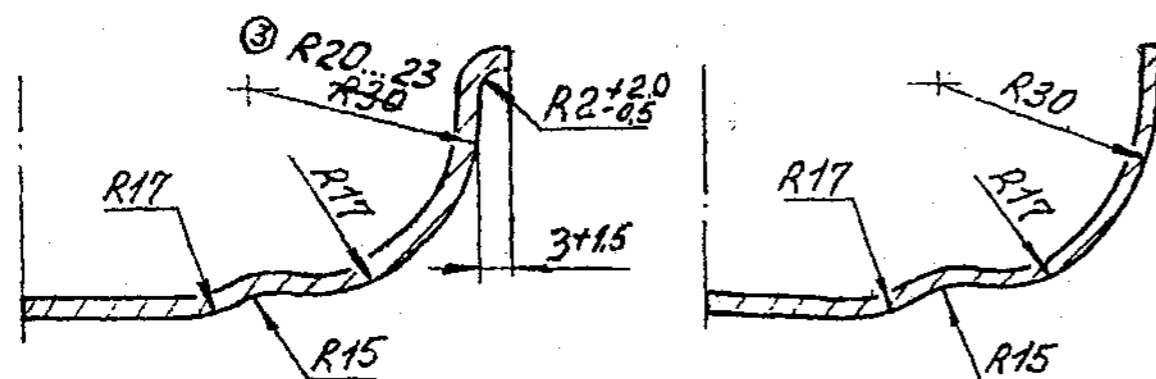
ULTIMATE TENSILE STRENGTH $Kgf/mm^2 = 30 - 42$
% ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE ± 2 mm.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY ± 1 mm.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION " B "



A-A ALTERNATIVE

A-A



ⓑ EQUIVALENT MATERIAL
Gr. DD IS: 513-1994

Ⓐ ALTERNATIVE MATERIAL :- SHEET A-ΓB-0-2.0 GOST 19904 - 74
II - BF 08 ΓC GOST 9045 - 80

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

EST. WT. (Kg) 0.229 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.

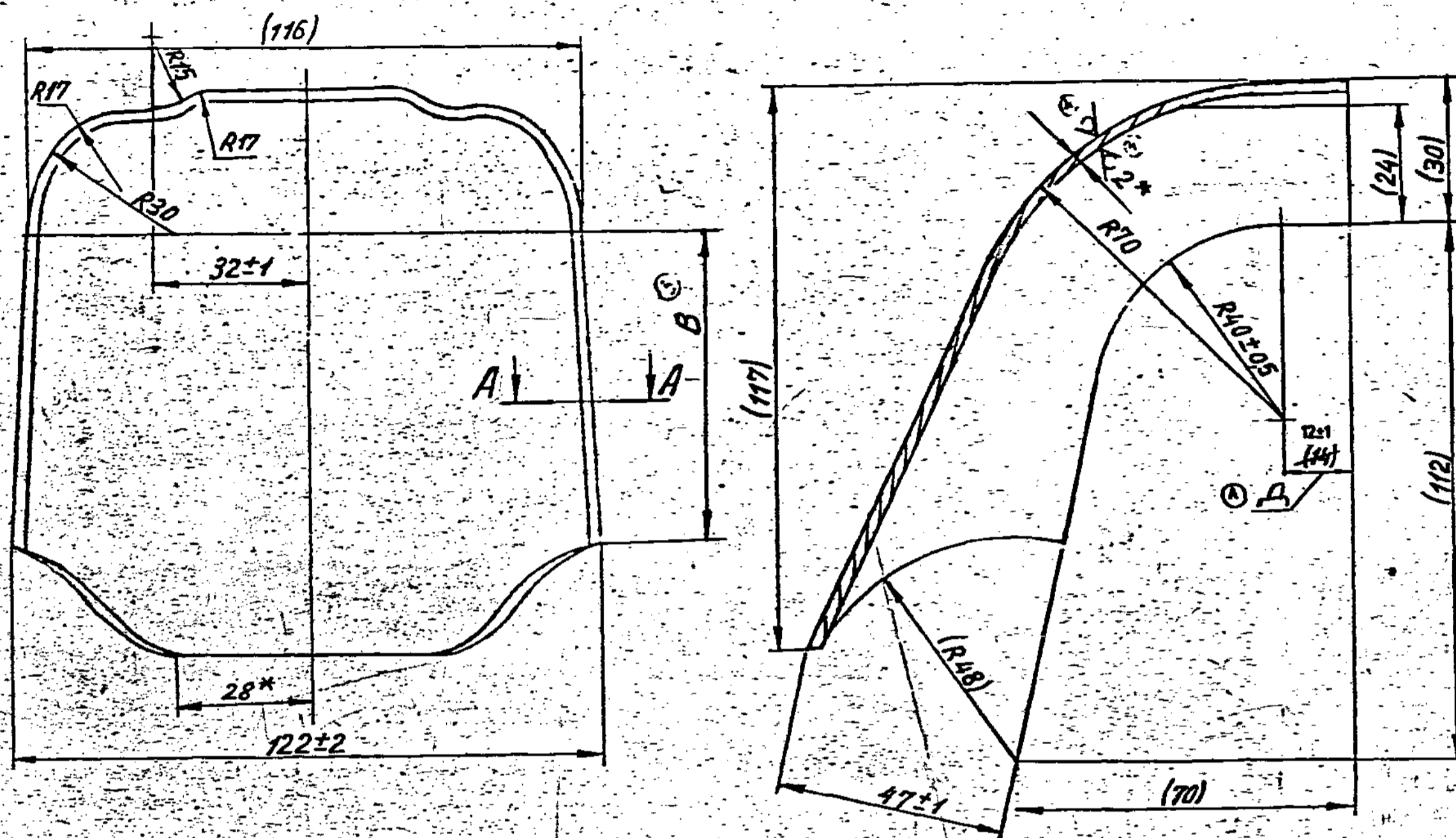
DRN	APPD	MATERIAL :- SHEET	USED ON :-
CHD	DATE 11/01/07	A2 GOST 19904 - 74	Cb 411-50-29
		II - Γ - 10 GOST 16523 - 70	Cb 411-51-29
		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
		SCALE:- 1 : 1	TITLE:- LOWER HALF OF BRANCH PIPE
		DIMENSIONS IN mm	D S CAT NUMBER
		TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS : 2102 - 69	DRAWING NUMBER 3318-06-4
B	23.10.10	4 th Alt. Comm. Mtg. Minutes	
A	18.9.89	Point. No.1 dt. 26.10.09	
ISSUE	DATE	NATURE OF AMENDMENTS	

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F - A
6
SIZE A2

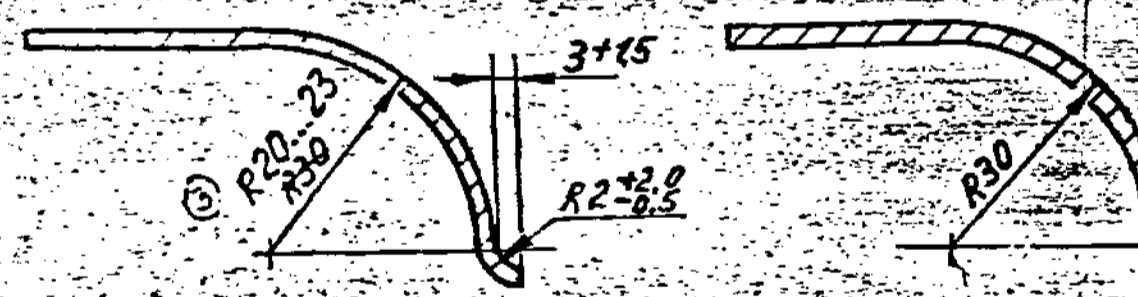
DRAWING NUMBER
3318-07-4

Rz320
V(V)⊕



ALTERNATIVE
A-A вариант

A-A



ⓐ ON SECTION 'A' BEAD SHOULD NOT BE MADE WHEN MANUFACTURING AS PER ALTERNATIVE

EXPLANATORY NOTE:-

MATERIAL QUOTED: SHEET A 2 GOST 19904-74
II-I-10 GOST 16523-70

- A = HIGH ACCURACY
- 2 = THICKNESS COLD ROLLED SHEET STEEL TO GOST 19904-74.
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW- DEEP DRAWN.
- 10 = GRADE OF STEEL

CHEMICAL COMPOSITION % (AS PER GOST 1050-74)

CARBON = 0.07-0.14 ; SILICON = 0.17- 0.37 ;
MANGANESE = 0.35 - 0.65 ;
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX) ;
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX) ;
NICKEL = 0.25 (MAX).

MECHANICAL PROPERTIES (AS PER GOST 16523-70)

ULTIMATE TENSILE STRENGTH $\text{kgf/mm}^2 = 30-42$
1. ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE $\pm 2\text{mm}$.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY $\pm 1\text{mm}$.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION 'B'

ALTERNATIVE MATERIAL

ⓐ SHEET A7B-0-2.0 GOST 19904-74
II-BF 08MC GOST 9045-80

ⓑ EQUIVALENT MATERIAL
Gr. D. IS: 513-1994

EXPLANATORY NOTE ADDED ON 18-2-92
DRG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO 4.

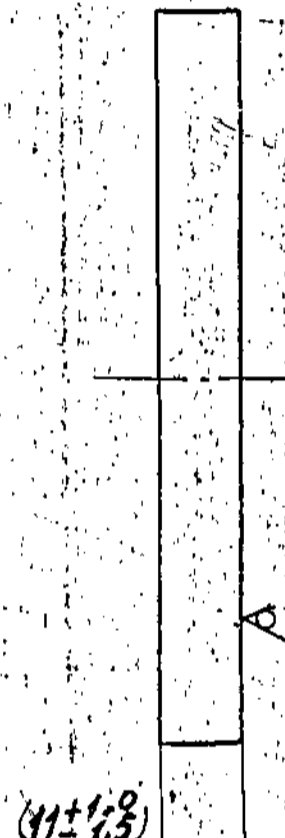
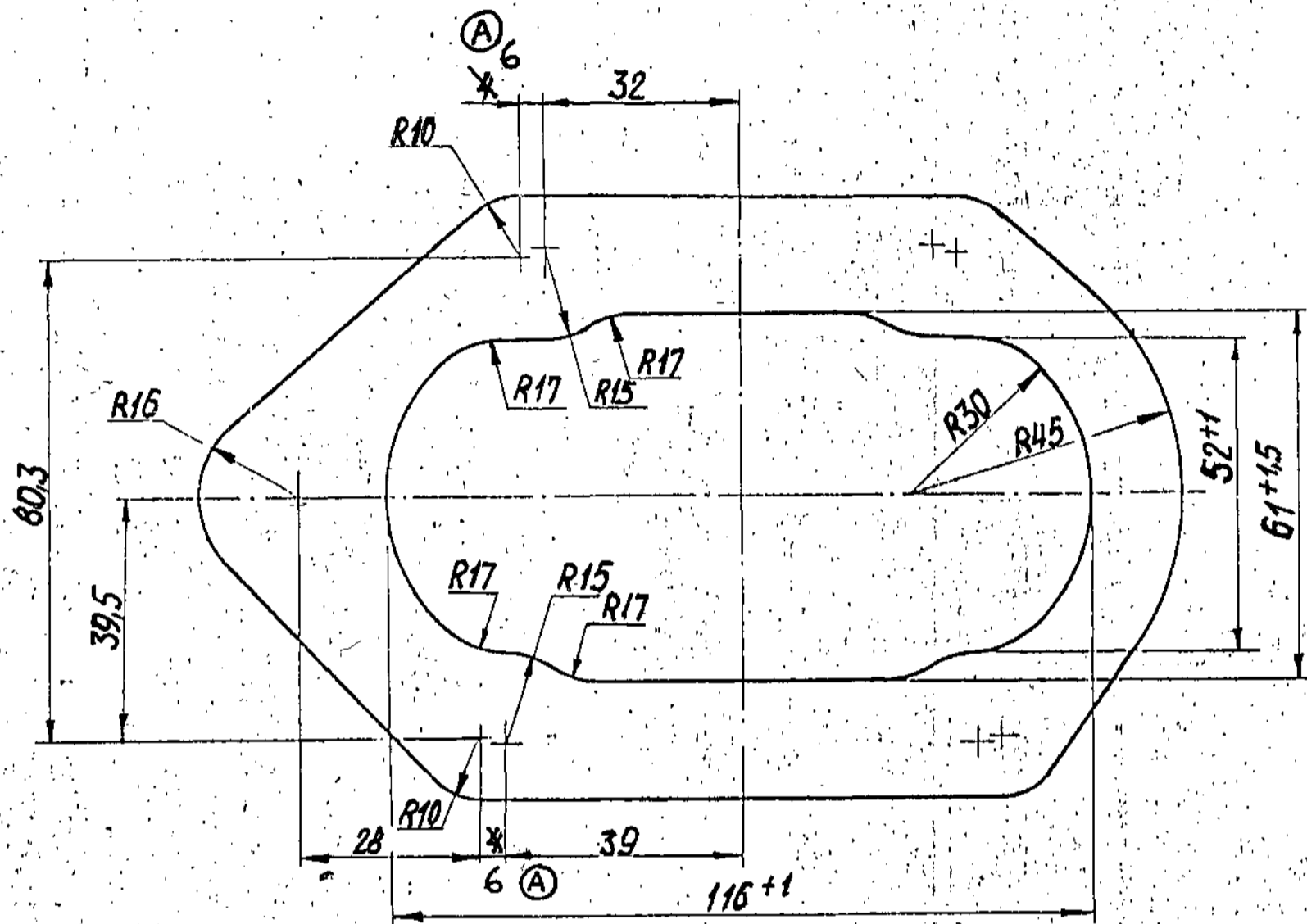
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. 0.428 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.

DATE	74-88	MATERIAL :- SHEET	A 2 GOST 19904-74	USED ON :-	CE 411-50-29
			II-I-10 GOST 16523-70		CE 411-51-29
SCALE :- 1:1			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)		
DIMENSIONS IN mm.			A V A D I		
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69			TITLE		
			UPPER HALF OF BRANCH PIPE		
B	18.03.10	4 th Alt. Comm. Mt. Minutes Pt. No. 1 Dt. 26.10.09	D S CAT NUMBER		
A	18-9-89	AUTHY. BK 84-779 & 85-788	DRAWING NUMBER		
ISSUE	DATE	NATURE OF AMENDMENTS	3318-07-4		

DRAWING INDICATED BASED ON RUSSIAN ORIGINAL ISSUE 7 (BK 81-31)
EXPLANATORY NOTE ADDED ON 12-2-82



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Неуказанные предельные отклонения размеров ± 0,5 мм
2. Размер в скобках - после сборки.
3. Заменитель материала сталь 15, 20 и 25 ГОСТ 1050-74.
4. Штамповочный скос 12 мм на сторону.

TECHNICAL REQUIREMENTS - TRANSLATED

1. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ± 0.5mm.
2. DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
3. ALTERNATIVE MATERIAL STEEL 15, 20, AND 25 GOST 1050-74.
4. DRAFT 12mm PER SIDE.

EXPLANATORY NOTE:-

MATERIAL QUOTED:- SHEET 12 GOST 19903-74
10 GOST 1577-81.

12 = THICKNESS OF THE SHEET
10 = GRADE OF OPENHEARTH STEEL
AS PER GOST 1577-81.

CHEMICAL COMPOSITION % (AS PER GOST 1050-74.)

C = 0.07 - 0.14, Si = 0.17 - 0.37, Mn = 0.35 - 0.65.
Cr = 0.15
S = 0.040
P = 0.035 (MAX)
Cu = 0.25
Ni = 0.25

MECHANICAL PROPERTIES AS PER GOST 1577-81.

ULTIMATE TENSILE STRENGTH: kgf/mm² (MIN) = 34
% ELONGATION (MIN) = 32
IMPACT STRENGTH kg cm/cm² (MIN) = 3

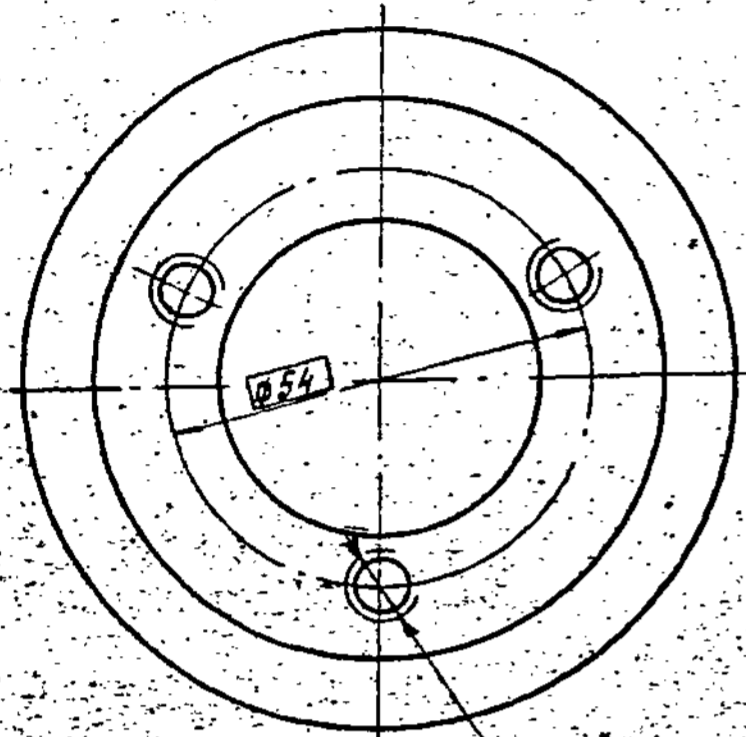
Ⓑ EQUIVALENT MATERIAL
040 A 04 (EN 2A) BS:970

7	BK 81-31	1-7-10	4th ALT. COMM. Mfg. MINUTES
			POINT No 2 DT. 26-10-09
			NOTN. No. BK 86-455

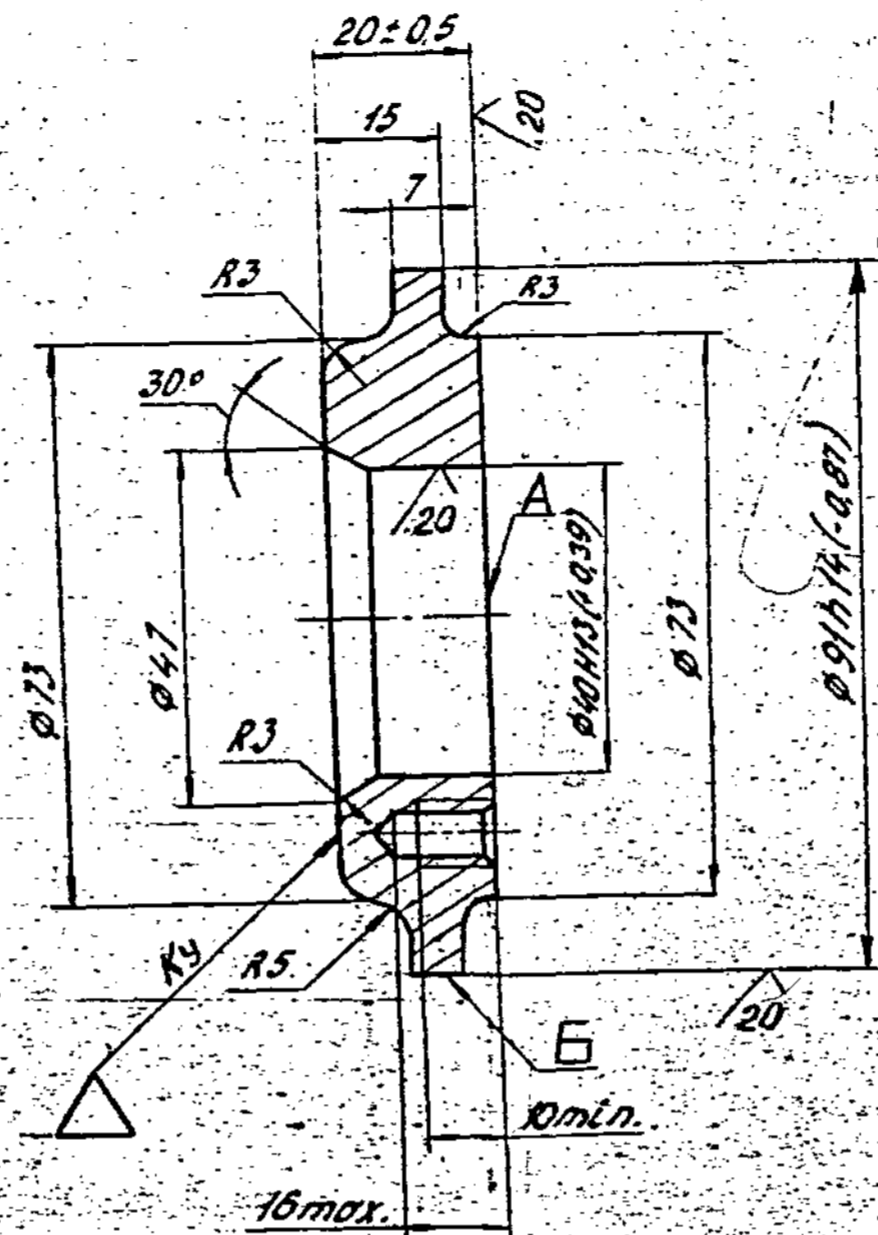
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. MASS 0.6 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.

DRM	CHD	TCD	APPO	DATE	SCALE - 1:1	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED.	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
				29.1.88						3318-08-7
					MATERIAL :- SHEET 12 GOST 19903-74 10 GOST 1577-81.		USED ON :- Cb 418-50-29 Cb 418-51-29		CONTROLLERATE OF QUALITY ASS'URANCE (HEAVY VEHICLES) AVADI	
					TITLE :-		FLANGE			
					ISSUE		DATE		NATURE OF AMENDMENTS	
					A		24.8.2K			



HOLES
30mm MB-7H



1. ALTERNATE MATERIAL STEEL GRADES CM 3KП GOST 380-71.
2. TECHNICAL REQUIREMENTS FOR THREAD ARE AS PER STANDARD 82021-00.
3. REQUIREMENTS FOR STAMPING AS PER GOST 1505-74.
4. DISPLACEMENT OF AXES OF HOLES FROM TRUE POSITION SHOULD NOT EXCEED 0.2 mm (MMC)
5. NONFLATNESS OF SURFACE A SHOULD NOT EXCEED 0.1 mm.
6. ON SURFACE A TOOL MARKS ARE ALLOWED. THROUGH RADIAL MARKS ARE NOT ALLOWED.
7. ON UNMACHINED AREAS, LOCAL DEPRESSION UP TO 0.5 mm IS ALLOWED.
8. LOCAL DECREASE OF SURFACE B TO A DEPTH UP TO 4mm WITH ROUGHNESS R_a AND SMOOTH TRANSITION IS ALLOWED.

EXPLANATORY NOTE:-

MATERIAL QUOTED: STEEL 5CП GOST 380-71
5 = CATEGORY OF STEEL (KILLED)
CП = GRADE OF STEEL

CHEMICAL COMPOSITION %

CARBON = 0.28-0.37
SILICON = 0.15-0.35
MANGANESE = 0.50-0.80
PHOSPHORUS = 0.04
SULPHUR = 0.05
CHROMIUM = 0.30
NICKEL = 0.30
COPPER = 0.30
ARSENIC = 0.08

MECHANICAL PROPERTIES

TENSILE STRENGTH Kgf/mm^2 = 58-64
STRESS AT YIELD POINT Kgf/mm = 23 (MIN)
RELATIVE ELONGATION % = 19 (MIN)

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

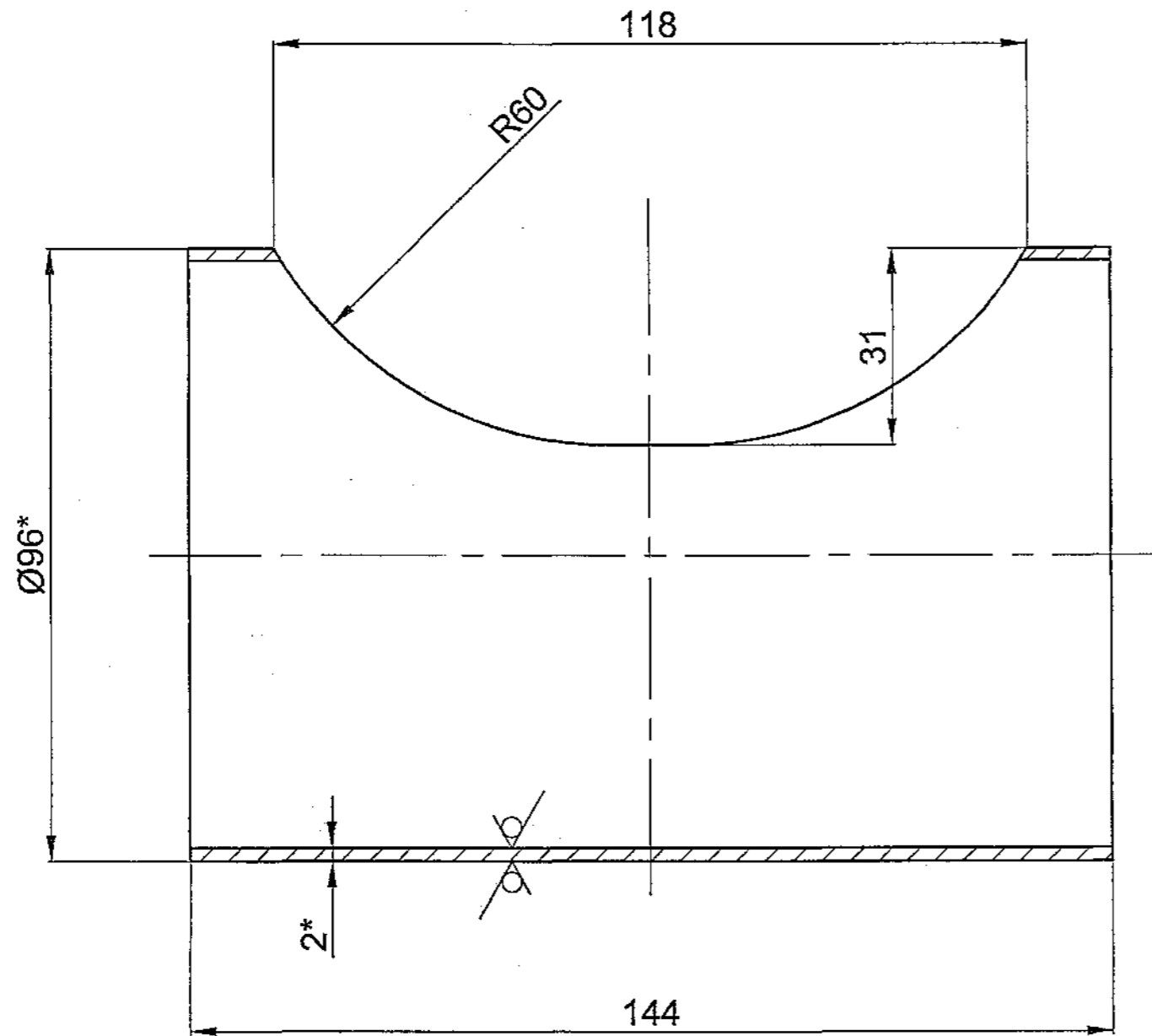
EST. WT. 0.562 kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED. UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT - SIDE R INSIDE. EQUIVALENT CHAMFERS ARE PERMISSIBLE.	

DRN	Ganji	MATERIAL -	STEEL 5CП	USED ON	CB 418-50-29
CHD	Ganji	GOST 380-71		CB 418-51-29	
TEC	Ganji	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
APPD	v. Ramond	A V A D I			
DATE	2-3-92	TITLE: FLANGE			
SCALE	1:1	D S CAT NUMBER			
DIMENSIONS IN mm		DRAWING NUMBER			
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69		418-11-1			
ALL THREADS TO CONFORM TO					

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
418-23-11

80 ✓ (✓)



1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5mm, above 80 mm upto 200mm ± 1mm.
2. * Dimensions are given for reference.

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

EST. WT. (Kg) **0.591** 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	<i>[Signature]</i>	MATERIAL :- PIPE 96x2-20A	USED ON :- Cb 418-32-01	
			CHD	<i>[Signature]</i>	TY14-159-21-72	Cb 418-31-2-01	
			APPD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)		
			DATE	26/1/07	AVADI		
			SCALE:-	1:1	TITLE :-		
			DIMENSIONS IN mm		PIPE		
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER		
			ALL THREADS TO CONFORM TO		DRAWING NUMBER		
			ISSUE	DATE	418-23-11		
			NATURE OF AMENDMENTS				

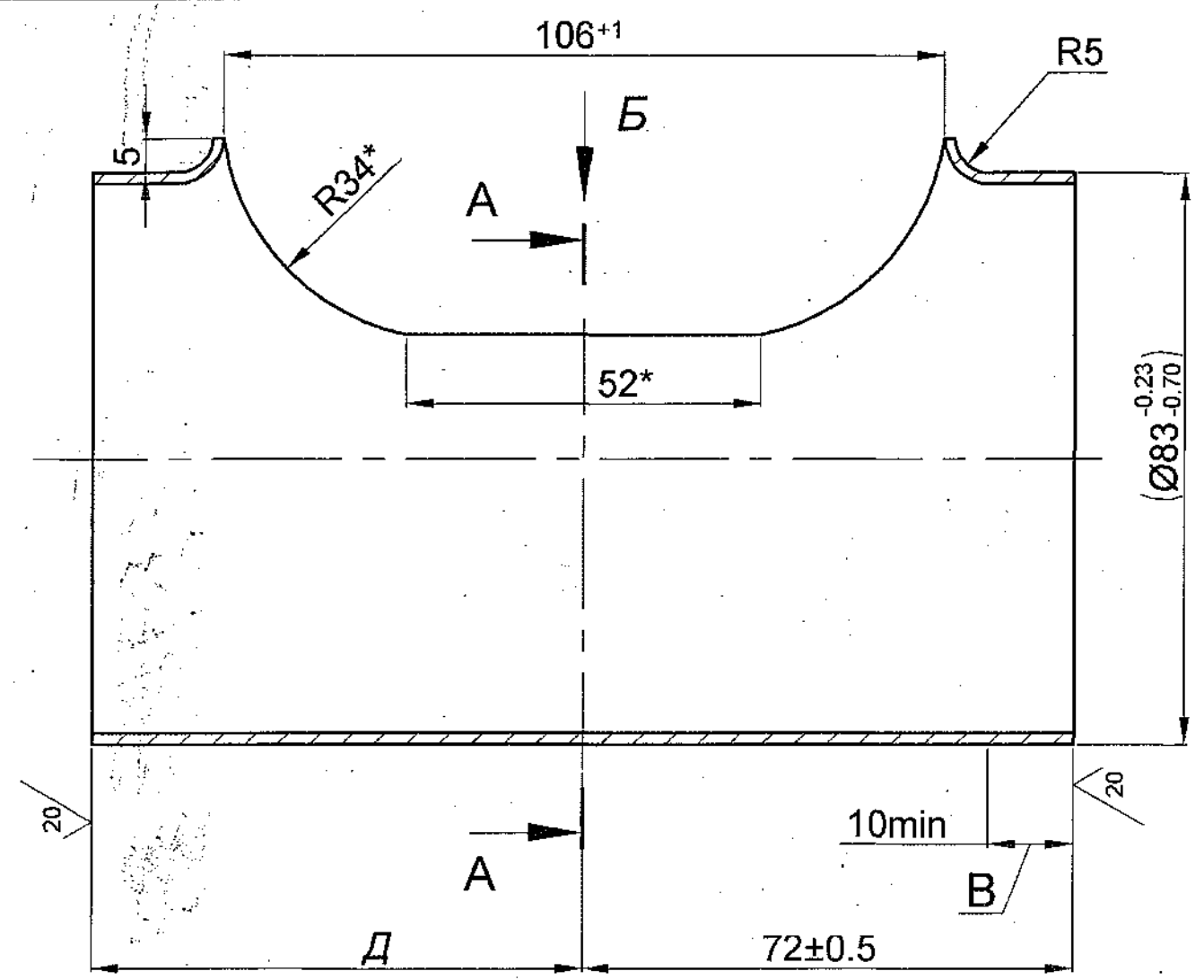
F-4
71
253

SIZE A3

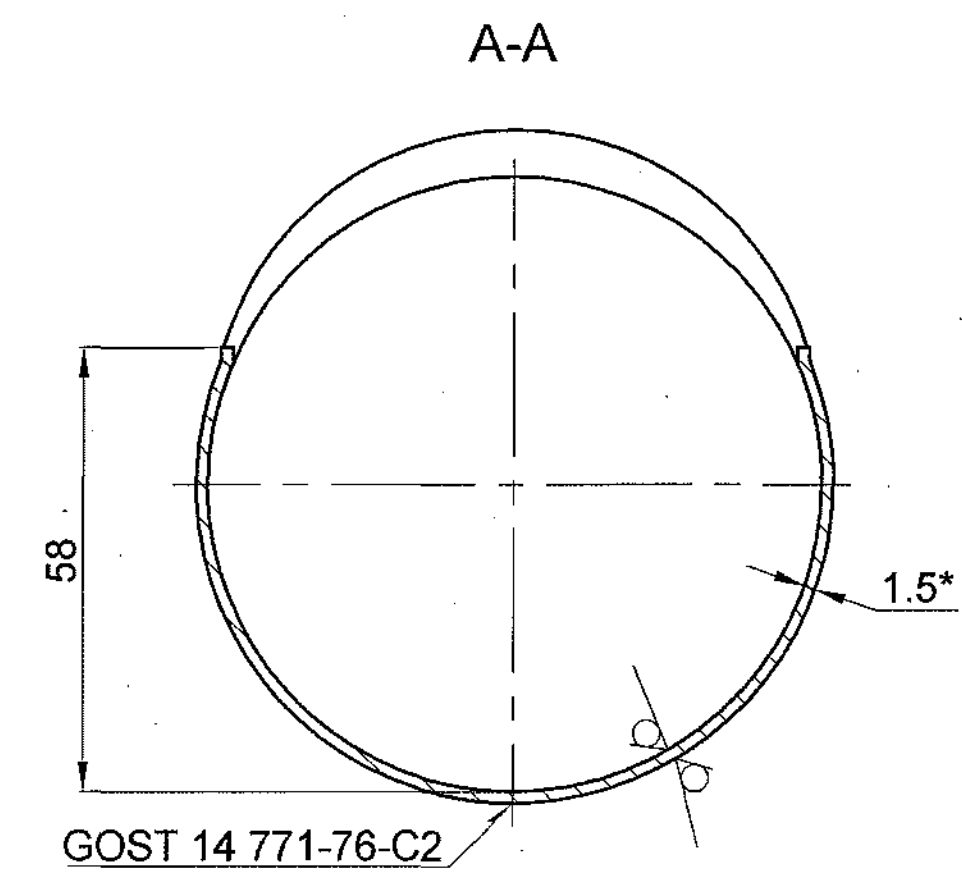
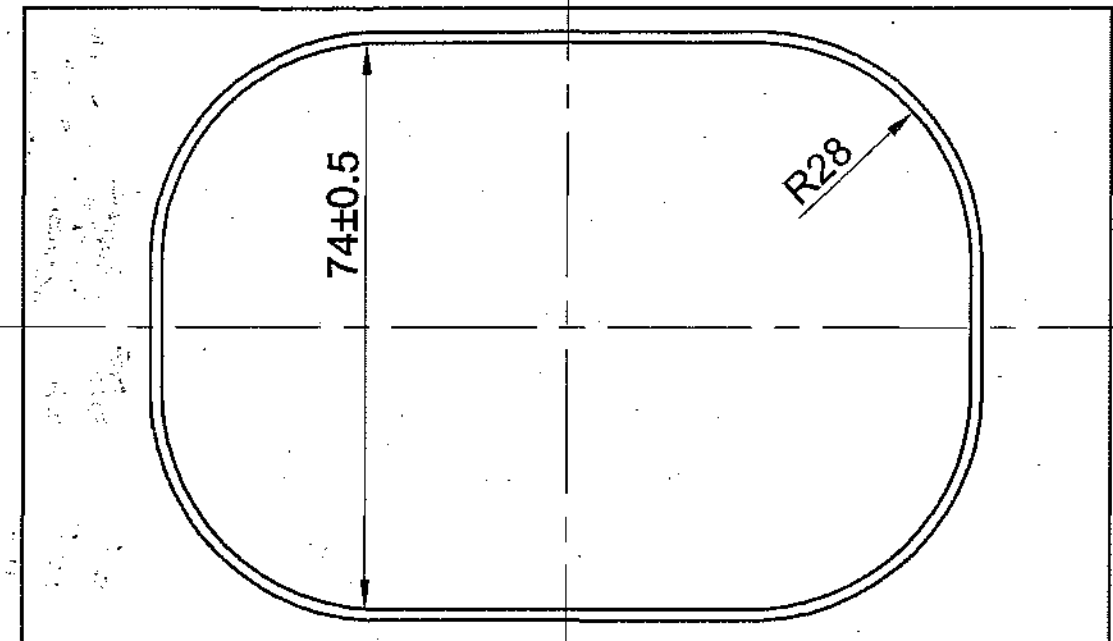
DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

DRAWING NUMBER
418-90-10 (01-02) SHEET No. OF

80 ✓ (✓)



VIEW B



DRG. NO.	Д, mm	WEIGHT IN kg
418-90-10	72±0.5	0.340
-01	65±0.5	0.319
-02	85±0.5	0.372

1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5 mm, above 80 mm upto 200 mm ± 1 mm.
2. Allowance for ovality of pipe should be 3 mm (Semi difference of diameters).
3. On flange ribs, metal tears are allowed upto maximum of 2 Nos per flange in quantity with subsequent electric arc welding and dressing at the base of the tears.
4. On section "B", it is permitted to carry out welding from inner side.
5. Dress the mounted on the section "B" along the outer diameter of weld-surface.
6. Dimension in brackets - After assembly.
7. * Dimensions are given for reference.
8. Alternate material is steel 12x18H10T TY 14-1-31-99-81.

Ⓐ EQUIVALENT MATERIAL
04Cr.18 Ni 10Ti 20 TO IS:6911-72

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)

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>Asok</i>	MATERIAL :- SHEET	USED ON :-
CHD	<i>R. B. Subramanian</i>	ET 1.5 GOST 19904-90	CE 418-31-2-01
APPD	<i>...</i>	12X18H10T-M2a GOST 5582-75	CB 418-32-01
DATE	14/2/09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1:1		TITLE :-	
DIMENSIONS IN mm		PROTECTIVE PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
A 28.8.10 4 th Alt. Comm Meeting Minutes		DRAWING NUMBER	
ISSUE DATE NATURE OF AMENDMENTS		418-90-10(01-02)	

F-4
74
253
SIZE A4 x 3

DRAWING NUMBER
Cb.418-33/(01)

FIGURE.1

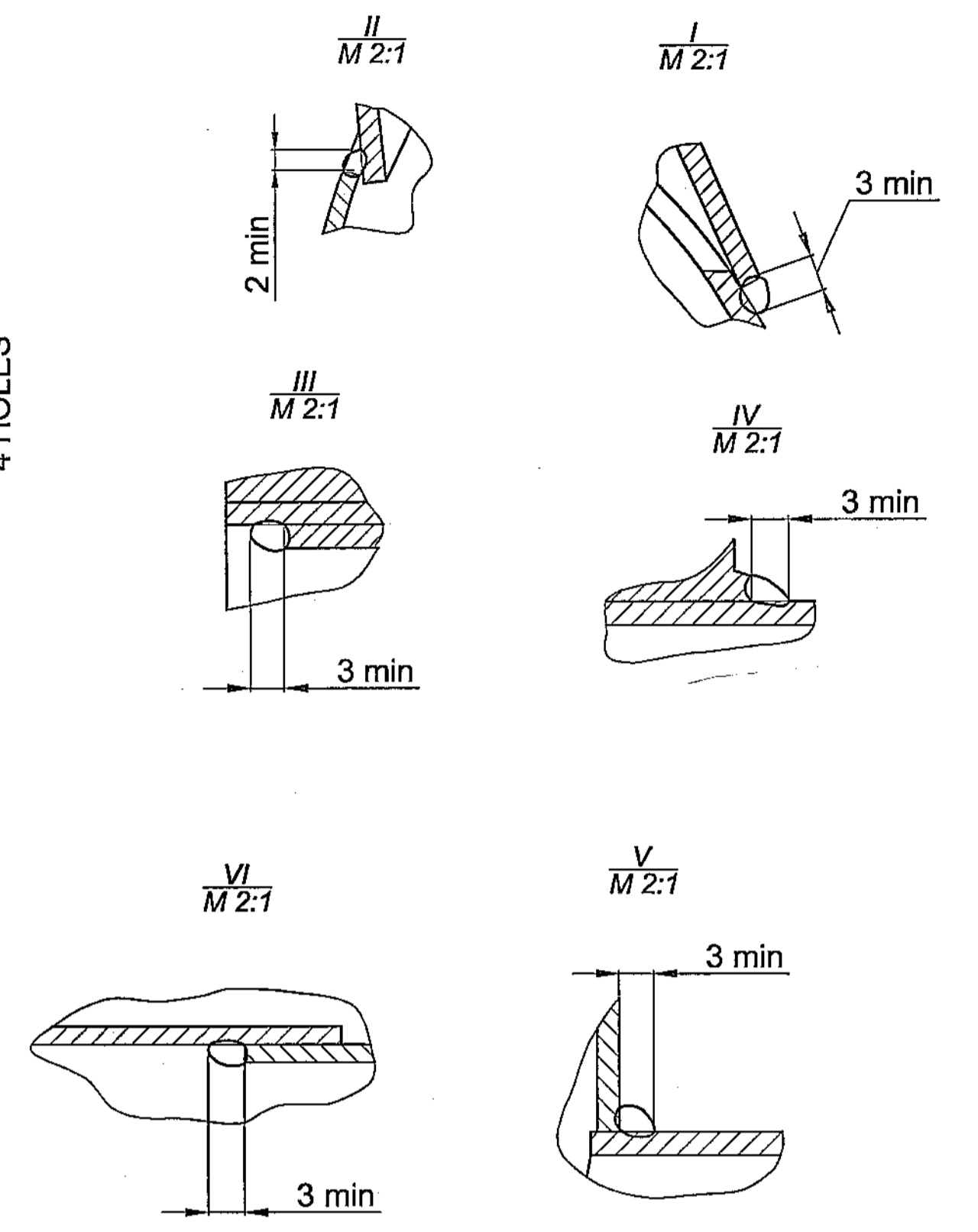
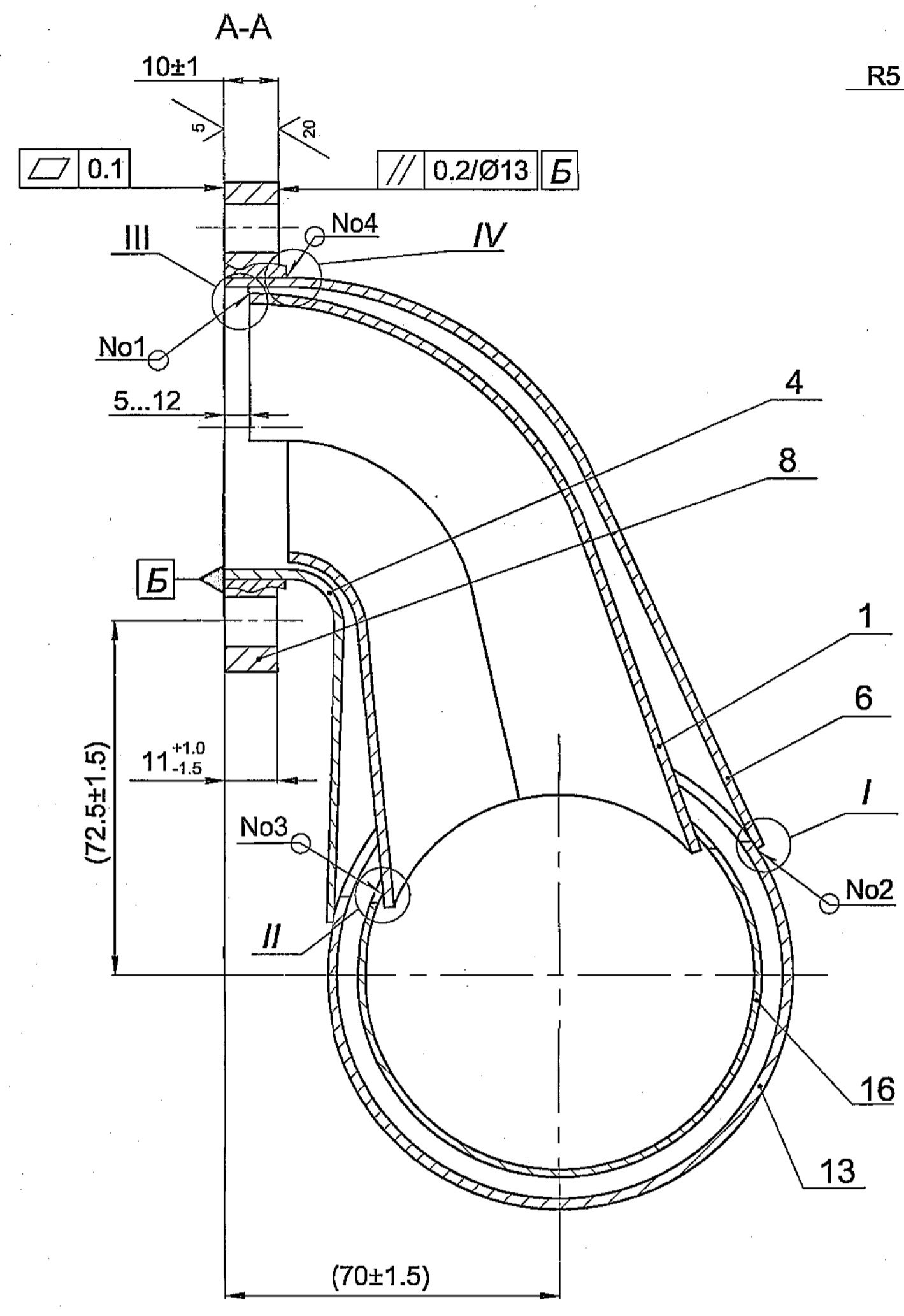
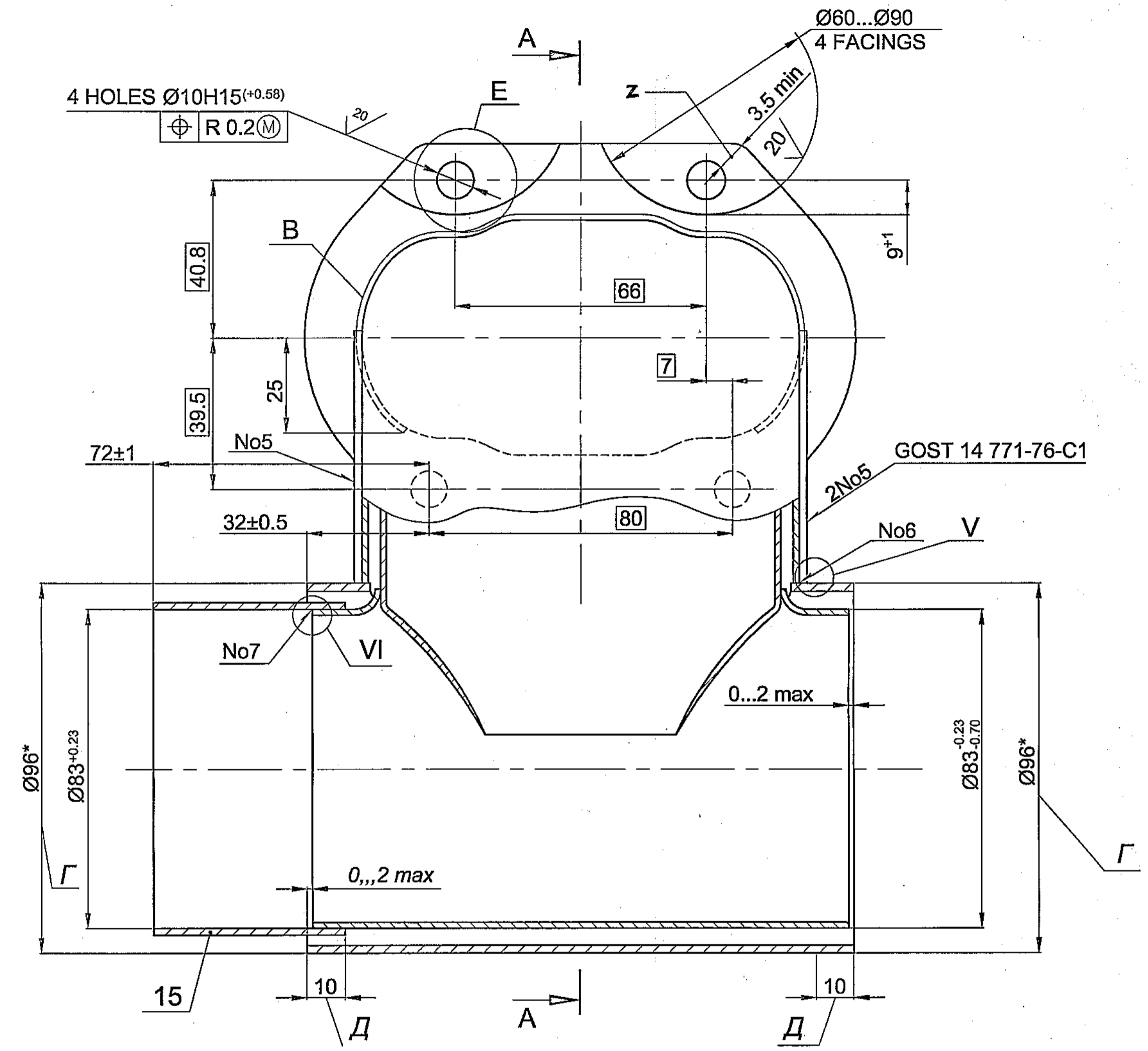
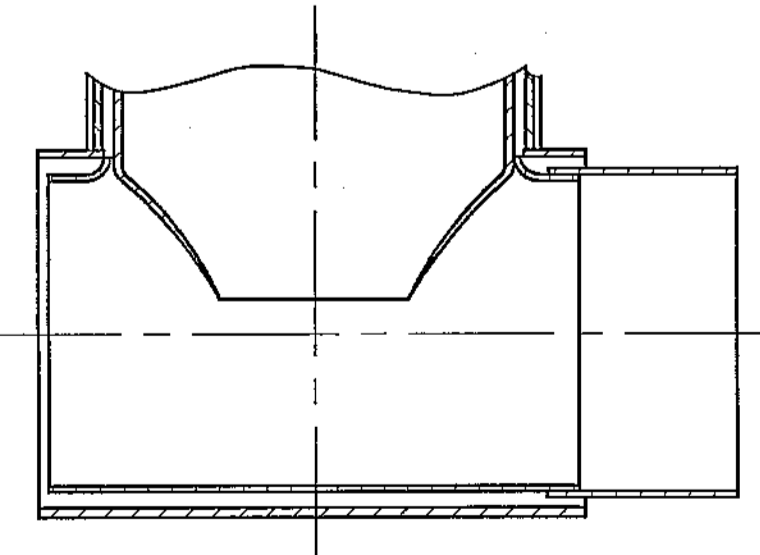


FIGURE.2
REMAINING :SEE FIGURE.1
M 1:2



DRG. NO	FIGURE
sb.418-33	1
-01	2

1. Welding joint No.1,2,3,4,6,7 to be carried out in shielding gas medium.
2. Test for airtightness with air in water tank pressure $(0.2 \pm 0.05) \text{MPa}$ [$(2 \pm 0.5) \text{Kg/cm}^2$]. Air leakage in joint No.2 and 4 is not allowed. In leakage areas, rewelding is allowed with subsequent dressing and hydraulic testing.
3. Adjustment by area of parts item 1,4,6,16 is allowed at site during assembly.
4. Dimensions in brackets - After assembly.
5. On section "B" along the contour of flange of welded joint to be carried out in two phases, with larger leg on the branch - pipe wall.
6. * Dimensions are given for reference.
7. Dimension "T" to be calibrated up to $\varnothing (99^{\pm 1}) \text{mm}$ maximum on section D.
8. Welding of flange lug item 8 upto dimension of "z" is permitted.

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

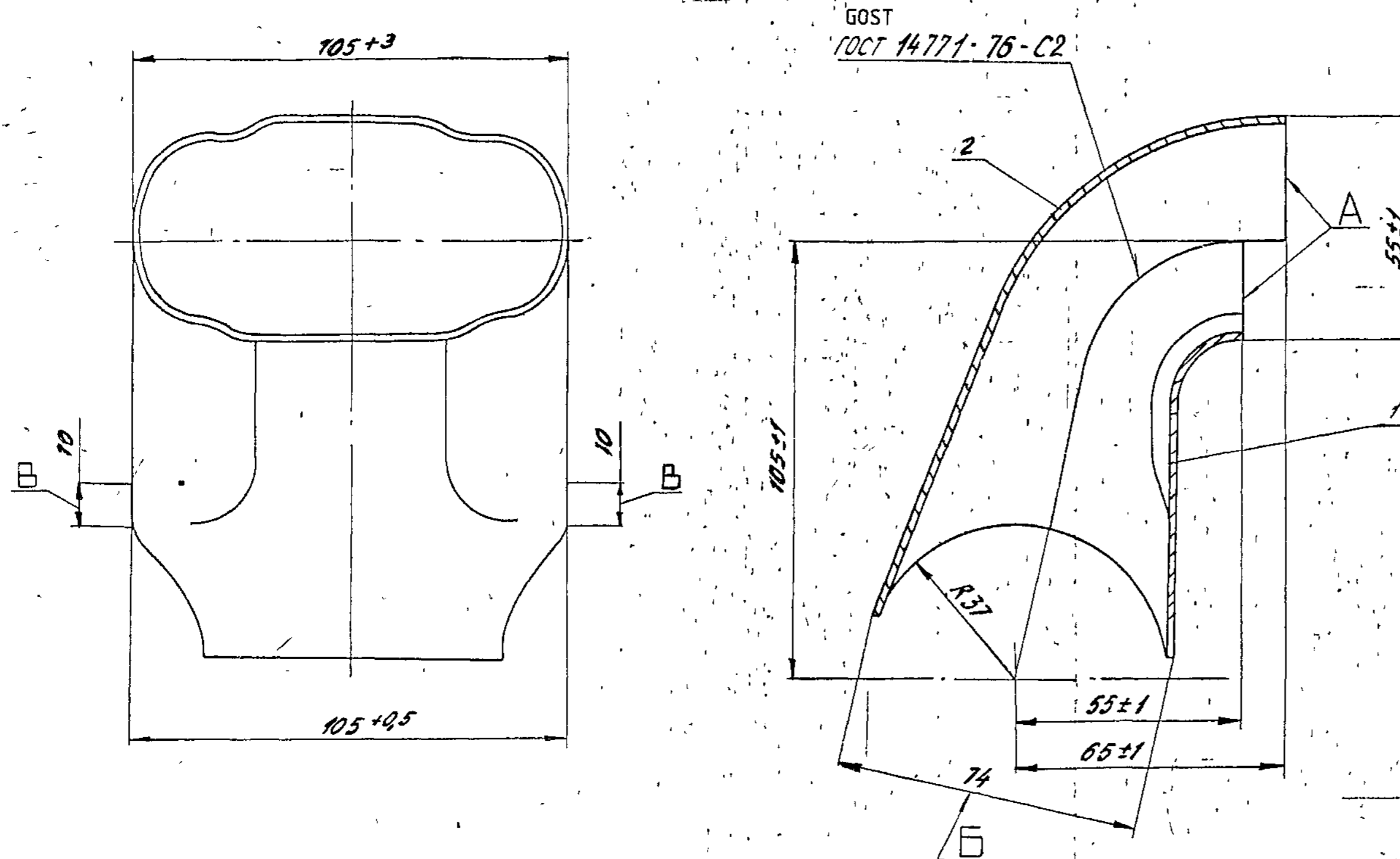
EST. WT.(Kg) 2.615	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
-----------------------	--

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	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	ALL THREADS TO CONFORM TO	MATERIAL :-	USED ON :- CB 418-50-45 CB 418-51-45
			03/03/07	1:1				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
								TITLE :-	
								D S CAT NUMBER	DRAWING NUMBER Cb.418-33/(01)
								TITLE :- BRANCH PIPE ASSY.	

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 6

F.4
62
283
SIZE A1



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Контур А и размер Б подогнать по сопрягаемой детали перед приваркой в узле.
2. Сварные швы на участках В зачистить заплотило.

TECHNICAL REQUIREMENTS - TRANSLATED

- 1 CONTOUR 'A' AND DIMENSION 'B' SHOULD BE ADJUSTED TO SUIT MATING COMPONENT BEFORE WELDED TO ASSEMBLY.
- 2 WELDS ON SECTION 'B' SHOULD BE DRESSED FLASH

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

		EST MASS 0.37	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	MATERIAL -	USED ON -
DRN	SCALE - 1:1		CB 418-50-29 CB 418-51-29
CHD	DIMENSIONS IN mm	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE - BRANCH PIPE SCREEN	
APPD	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
DATE	29 1 88		CB 318-22-5CB

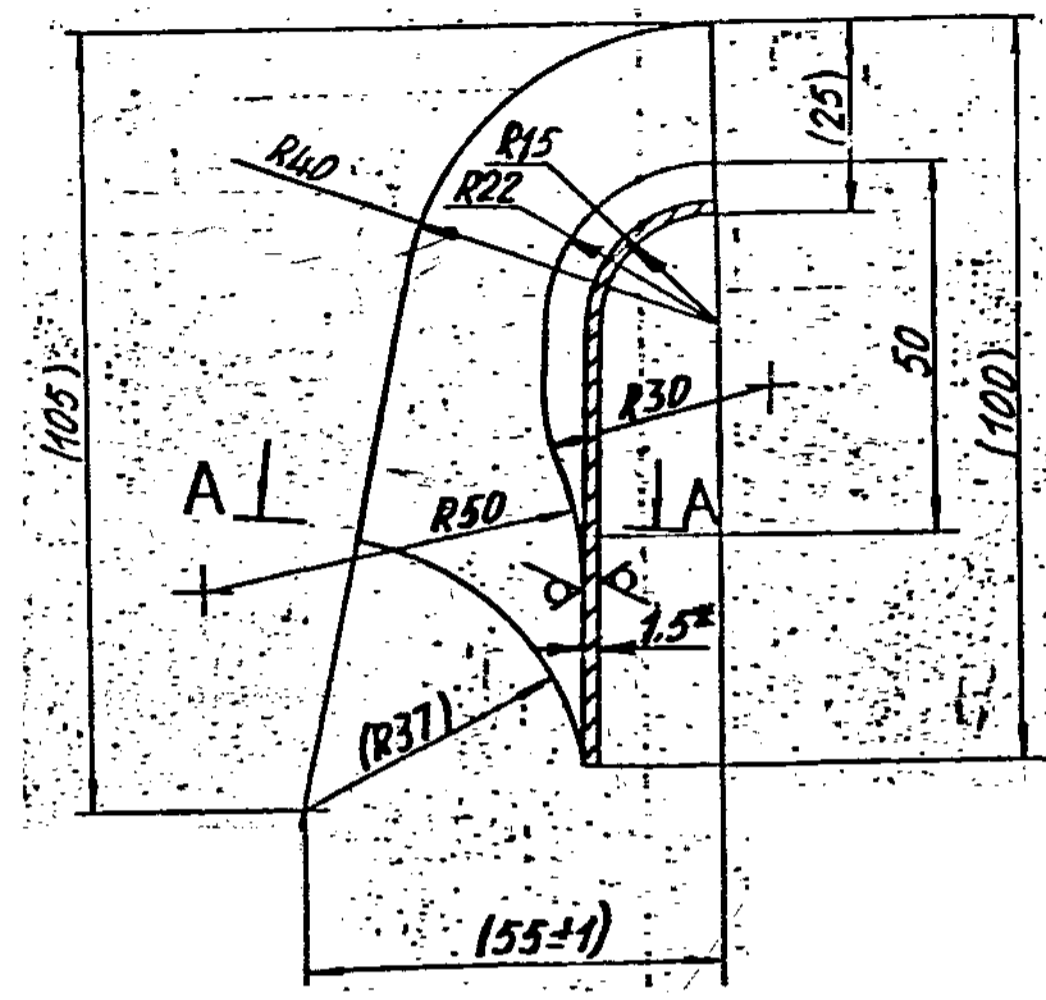
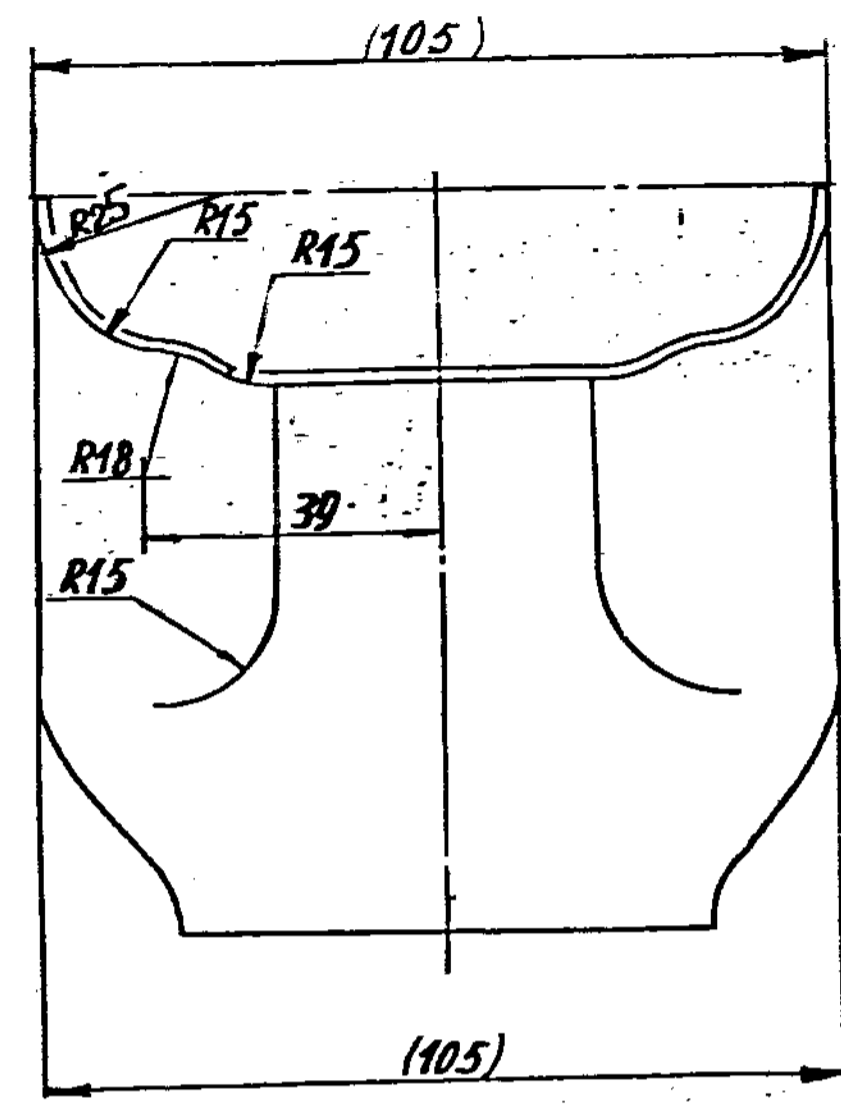
2	BK 81-31	10/11/88	10/11/88
10/11/88	10/11/88	10/11/88	10/11/88

DRAWING NUMBER
318-20-5

RZ 89/ (✓)

TECHNICAL REQUIREMENTS - TRANSLATED

1. DIMENSIONS WITH UNSPECIFIED DEVIATIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5\text{mm}$.
2. MATERIAL THICKNESS IN THINNED PLACES SHOULD BE 1mm MIN.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. DIMENSION IN BRACKETS SHOULD BE ENSURED AFTER ASSEMBLY.
5. * DIMENSION FOR REFERENCE.



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET Б 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST 5582-75

Б = STANDARD ACCURACY.
1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74
12X18H10T = GRADE OF STEEL.
M2a OR M3a = PICKLED & BRIGHT ANNEALED.

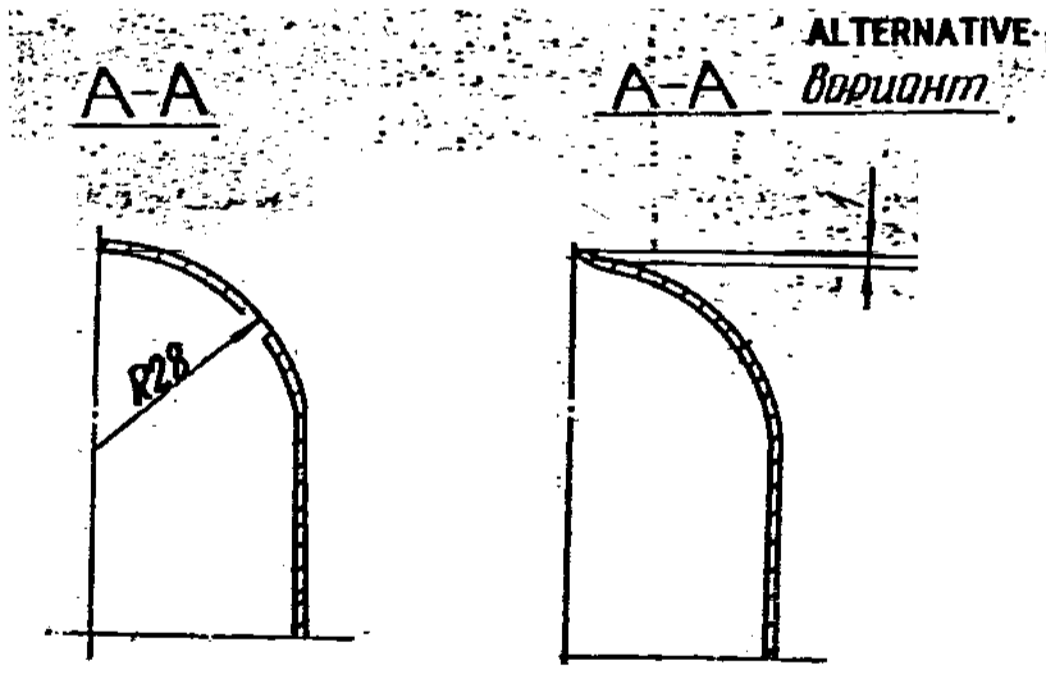
CHEMICAL COMPOSITION% (AS PER GOST 5632-72)
CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080°C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54
YIELD POINT Kgf/mm^2 (MIN) = 20
RELATIVE ELONGATION (MIN) = 40



**
SHEET: Б 1.5 GOST 19904-74
12x18H10 -M2a (ORM3a) GOST 5582-75

EXPLANATORY NOTE ADDED ON 18-2-92

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

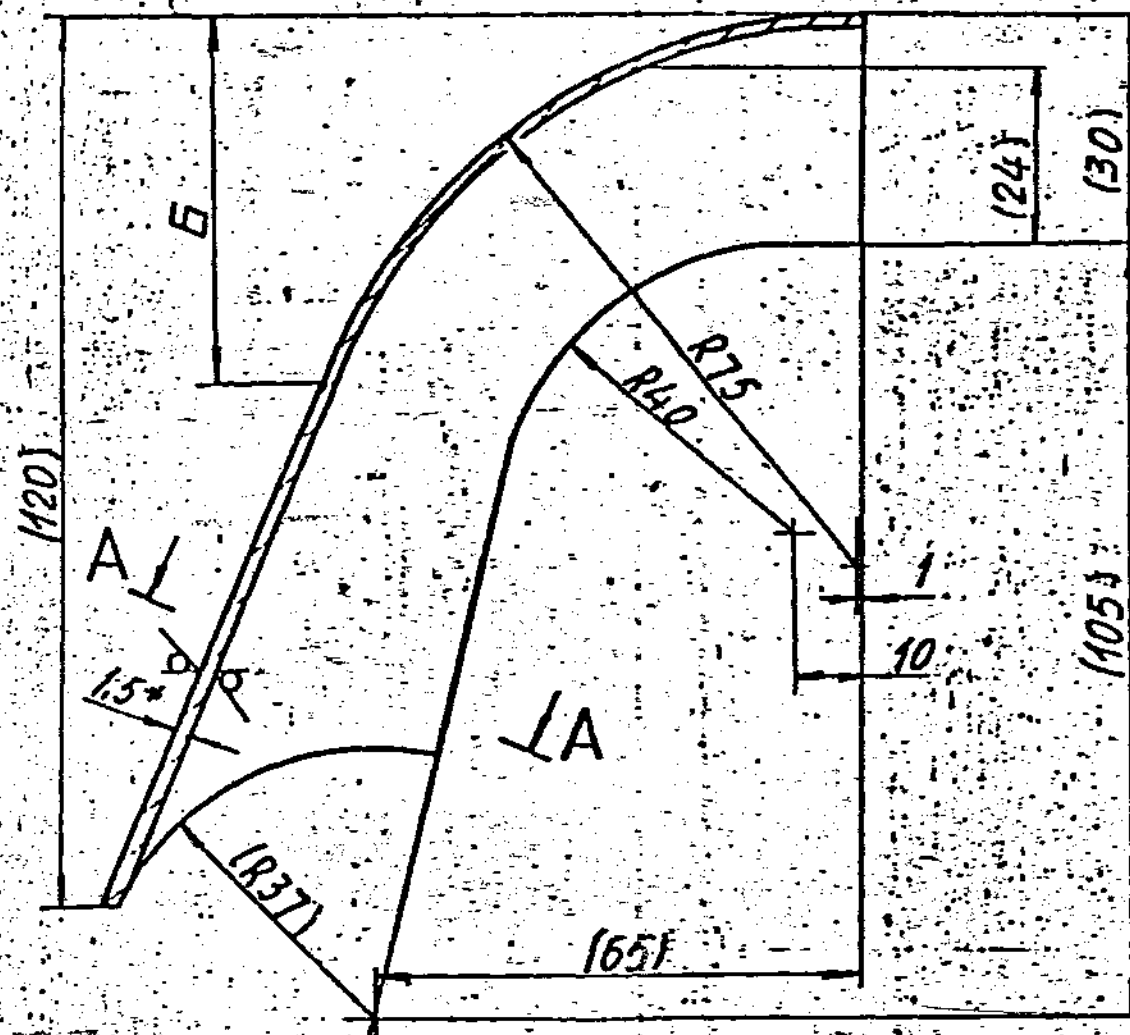
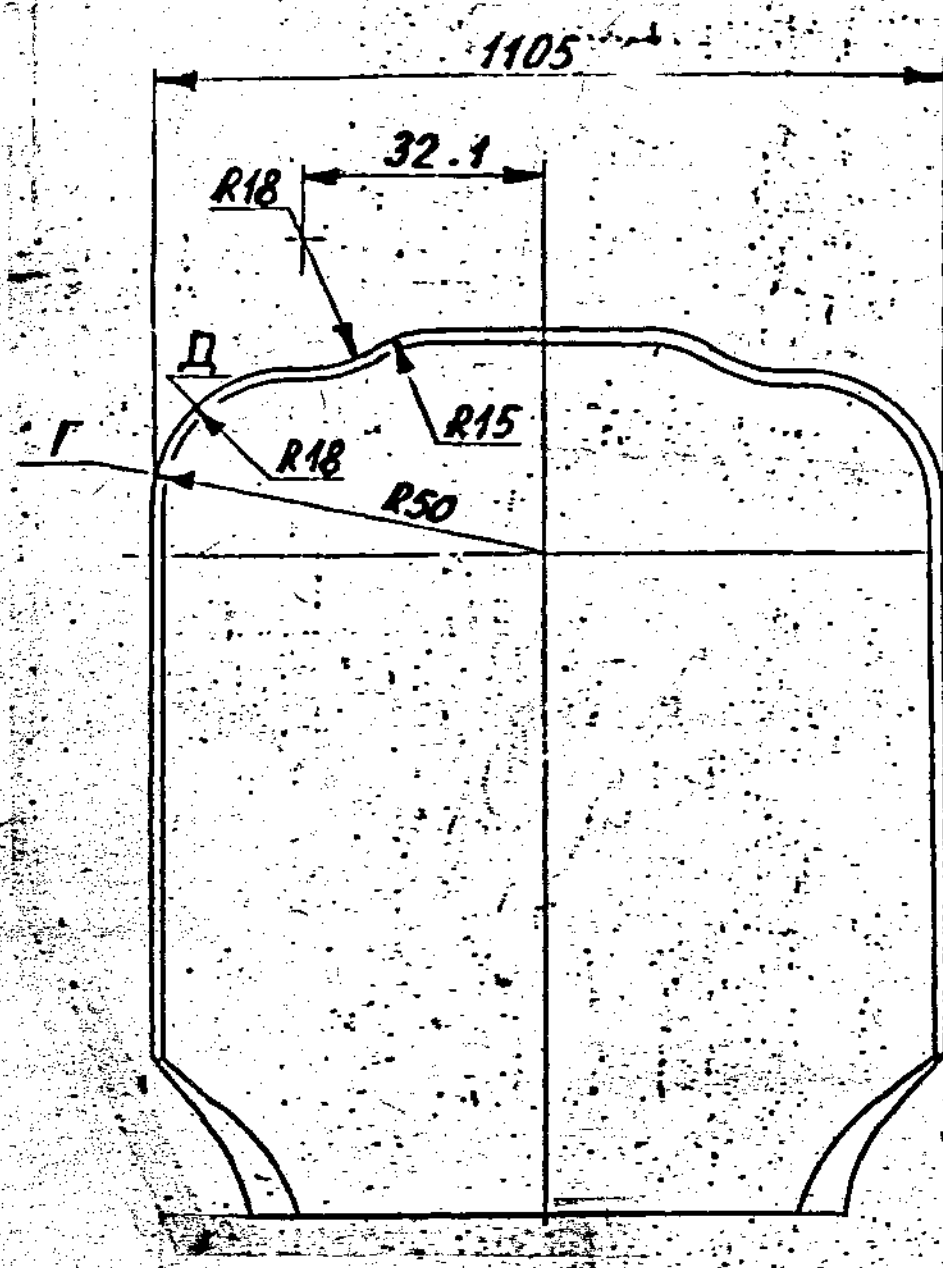
EST. WT. 0.135 kg TO BE STAMPED OR MARKED WHERE INDICATED THIS * LETTERS!

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

DRN	---	MATERIAL	SEE ABOVE **	USED ON	C5318-22-5
CHD	---	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)	A V A D I		
TCD	---	TITLE	LOWER PART OF SCREEN		
APPD	---	D S CAT NUMBER	DRAWING NUMBER		
DATE	29-1-88		318-20-5		
SCALE	1:1				
DIMENSIONS IN	mm				
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 2Y2-69				
ALL THREADS TO	CONFORM TO				
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
318-21-5

80° (✓)



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST5582-75

B = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74.
12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED OR BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080 °C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

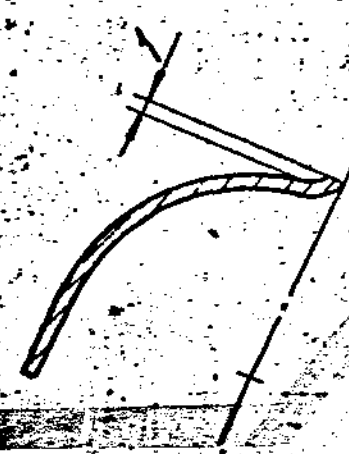
YIELD POINT Kgf/mm^2 (MIN) = 20

RELATIVE ELONGATION (MIN) = 40

A-A

A-A

ALTERNATIVE
ВЕРСИИ



TECHNICAL REQUIREMENTS - TRANSLATED

- UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5mm$.
- MATERIAL THICKNESS IN THE THINNED PLACES SHOULD BE NOT LESS THAN 1mm.
- CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
- SMOOTH TRANSITION OF RADIUS B TO RADIUS Γ AND RADIUS A SHOULD BE ENSURED ON SECTION B.
- DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
- * DIMENSIONS FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS: 6911-72

**
SHEET: B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a
GOST 5582-75

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

EST. WT. 0.235 kg.	TO BE STAMPED OR MARKED WHERE INDICATED THIS # LETTERS)
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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 IS 2102-69
				29-1-88	1:1		
				MATERIAL :-		USED ON :-	
				SEE ABOVE **		CB 318-22-5	
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
				A V A D I			
				TITLE		UPPER PART OF SCREEN	
				D S CAT NUMBER		DRAWING NUMBER	
						318-21-5	
ISSUE	DATE	NATURE OF AMENDMENTS					
A	28.8.10	4 th ALT Comm Meeting Minutes Point No. 16 Dated 26.10.09					

DRAWING BASED ON RUSSIAN ORIGINAL ISSUED (AK 87-31)

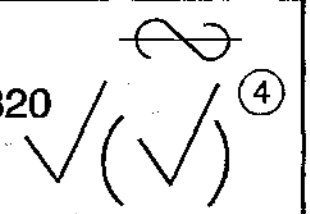
EXPLANATORY NOTE ADDED ON 18-2-92

SIZE A2

DRAWING NUMBER
3318-06-4

SHEET No. 1 OF 1

EXPLANATORY NOTE :-

Rz 320 

MATERIAL QUOTED : SHEET A2 GOST 19904 - 74
II - Γ - 10 GOST 16523 - 70

- A = HIGH ACCURACY
- 2 = THICKNESS OF COLD ROLLED SHEET STEEL TO GOST 19904 - 74
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW - DEEP DRAWN
- 10 = GRADE OF STEEL

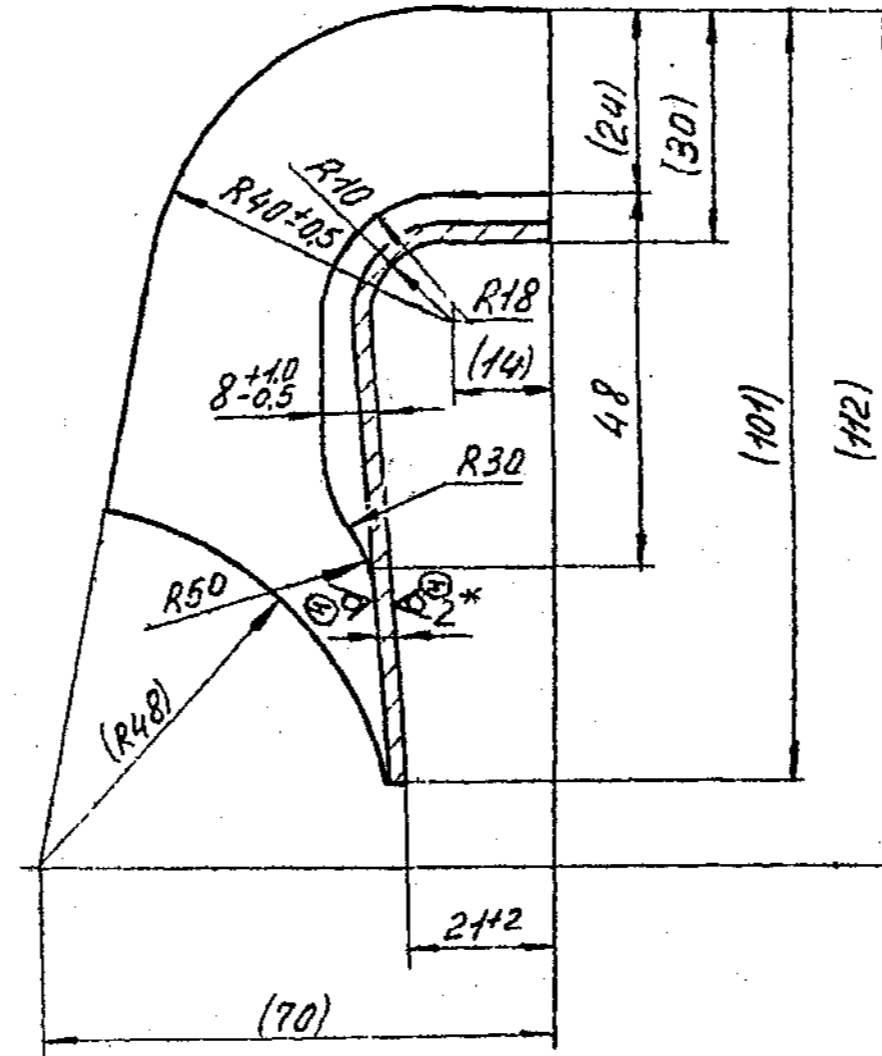
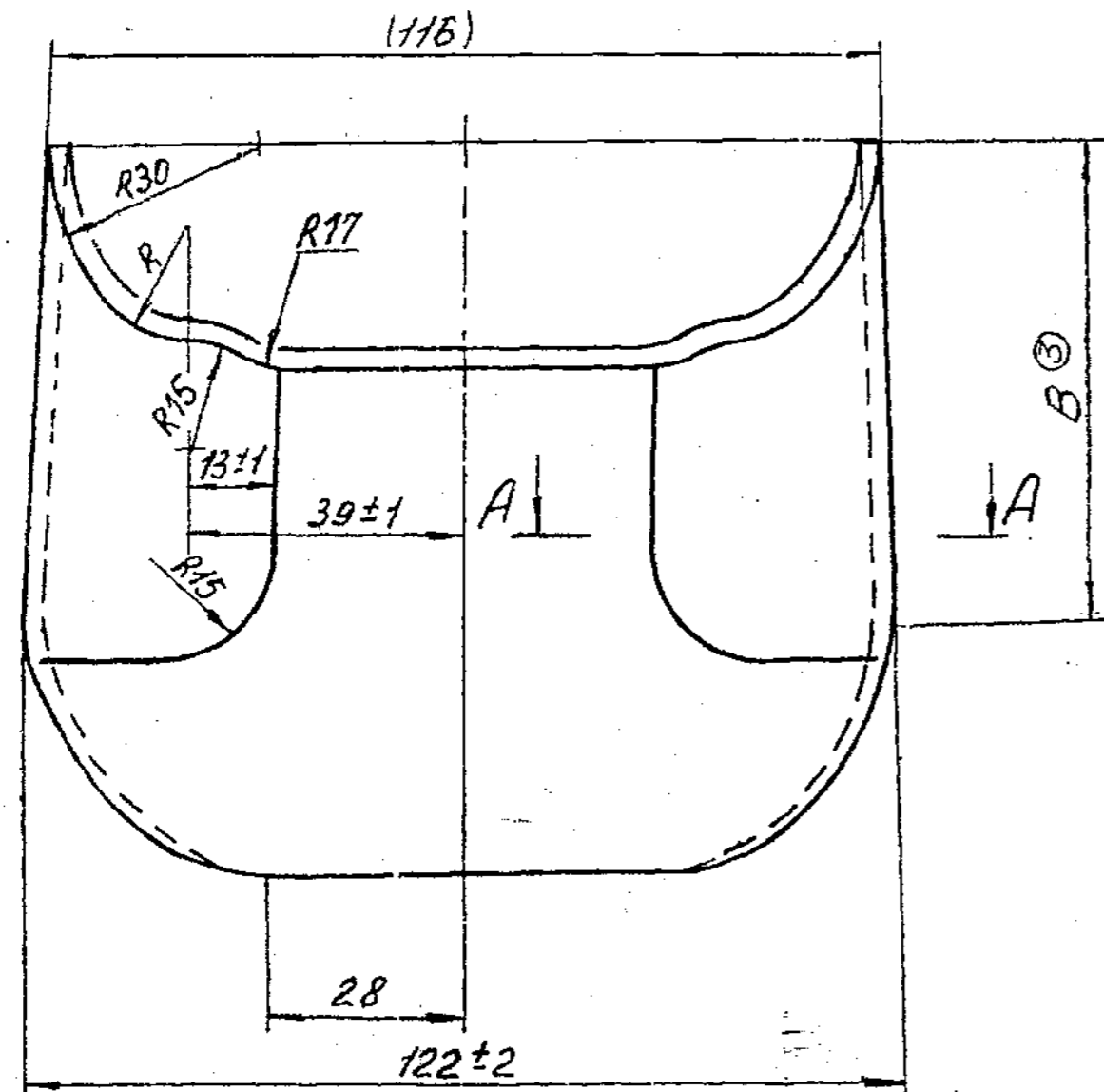
CHEMICAL COMPOSITION % (AS PER GOST 1050 - 74)

CARBON = 0.07 - 0.14 ; SILICON = 0.17 - 0.37
MANGANESE = 0.35 - 0.65
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX)
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX)
NICKEL = 0.25 (MAX)

MECHANICAL PROPERTIES (AS PER GOST 16523 - 70)

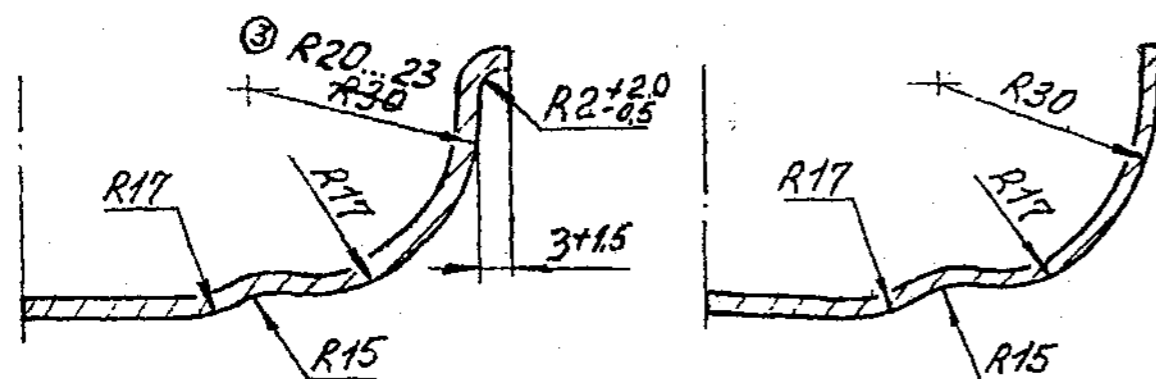
ULTIMATE TENSILE STRENGTH $Kgf/mm^2 = 30 - 42$
% ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE ± 2 mm.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY ± 1 mm.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION " B "



A-A ALTERNATIVE

A-A



ⓑ EQUIVALENT MATERIAL
Gr. DD IS: 513-1994

Ⓐ ALTERNATIVE MATERIAL :- SHEET A-ΓIB-0-2.0 GOST 19904 - 74
II - BF 08 ΓC GOST 9045 - 80

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

EST. WT. (Kg) 0.229 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.

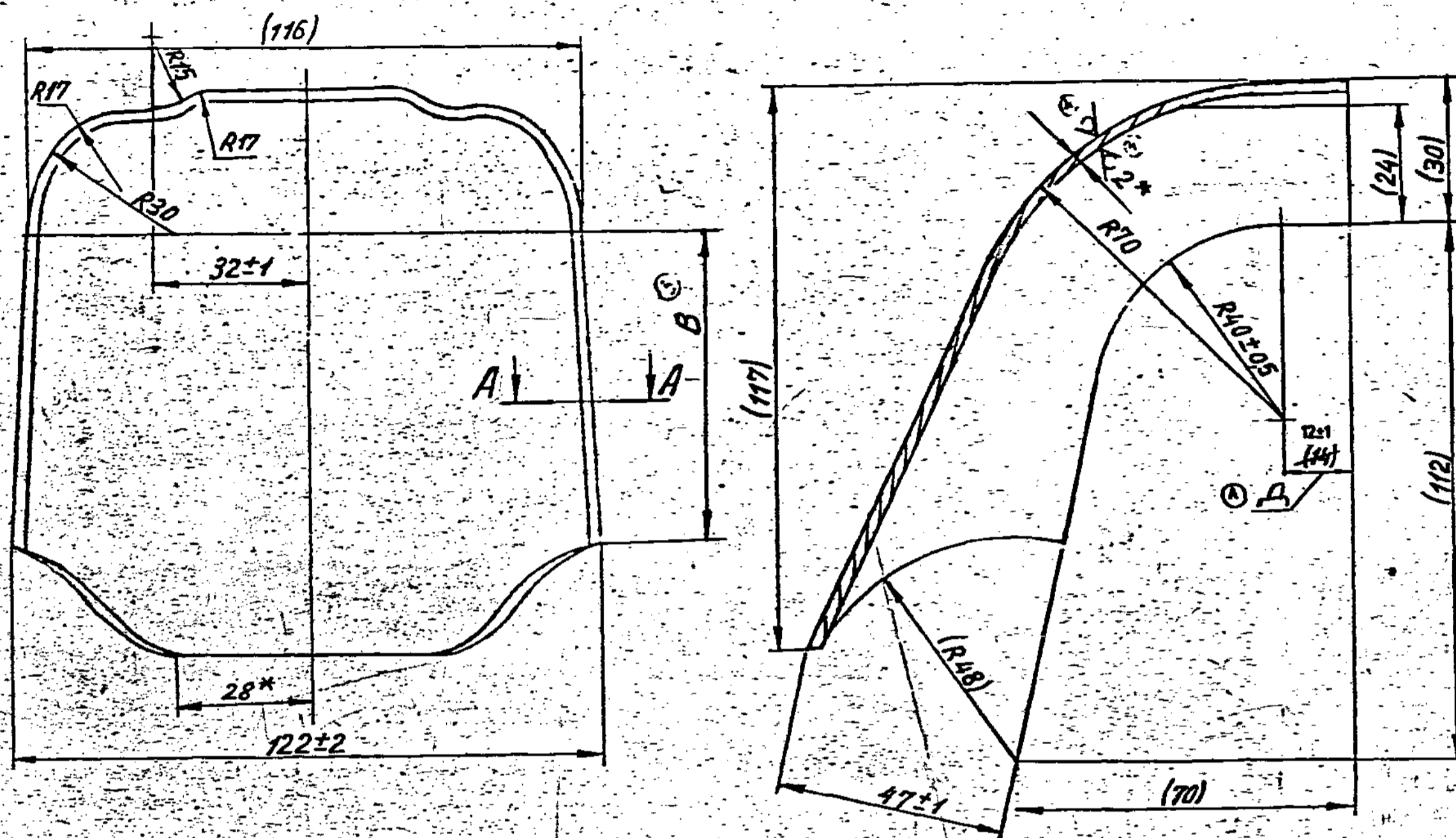
DRN	APPD	MATERIAL :- SHEET	USED ON :-
CHD	DATE 11/01/07	A2 GOST 19904 - 74	Cb 411-50-29
		II - Γ - 10 GOST 16523 - 70	Cb 411-51-29
		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
		SCALE:- 1 : 1	TITLE:-
		DIMENSIONS IN mm	LOWER HALF OF BRANCH PIPE
		TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS : 2102 - 69	
B	23.10.10	4 th Alt. Comm. Mtg. Minutes	D S CAT NUMBER
A	18.9.89	Point. No.1 dt. 26.10.09 AUTHY. BK. 84 - 779 & 85 - 788	DRAWING NUMBER
ISSUE	DATE	NATURE OF AMENDMENTS	3318-06-4

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F - A
6
SIZE A2

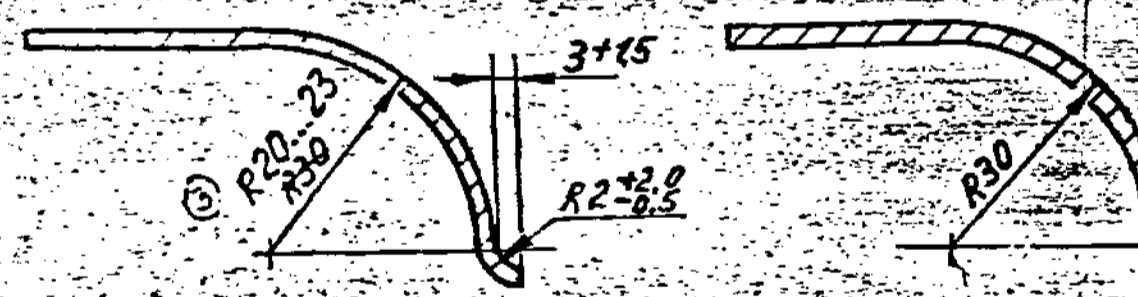
DRAWING NUMBER
3318-07-4

Rz320
V(V)⊕



ALTERNATIVE
A-A вариант

A-A



ⓐ ON SECTION 'A' BEAD SHOULD NOT BE MADE WHEN MANUFACTURING AS PER ALTERNATIVE

EXPLANATORY NOTE:-

MATERIAL QUOTED: SHEET A 2 GOST 19904-74
II-F-10 GOST 16523-70

- A = HIGH ACCURACY
- 2 = THICKNESS COLD ROLLED SHEET STEEL TO GOST 19904-74.
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW- DEEP DRAWN.
- 10 = GRADE OF STEEL

CHEMICAL COMPOSITION % (AS PER GOST 1050-74)

CARBON = 0.07-0.14 ; SILICON = 0.17- 0.37 ;
MANGANESE = 0.35 - 0.65 ;
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX) ;
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX) ;
NICKEL = 0.25 (MAX).

MECHANICAL PROPERTIES (AS PER GOST 16523-70)

ULTIMATE TENSILE STRENGTH $\text{kgf/mm}^2 = 30-42$
1. ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE $\pm 2\text{mm}$.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY $\pm 1\text{mm}$.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION 'B'

ALTERNATIVE MATERIAL

ⓐ SHEET A7B-0-2.0 GOST 19904-74
II-BF 08MC GOST 9045-80

ⓑ EQUIVALENT MATERIAL
Gr. D. IS: 513-1994

EXPLANATORY NOTE ADDED ON 18-2-92
DRG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO 4.

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

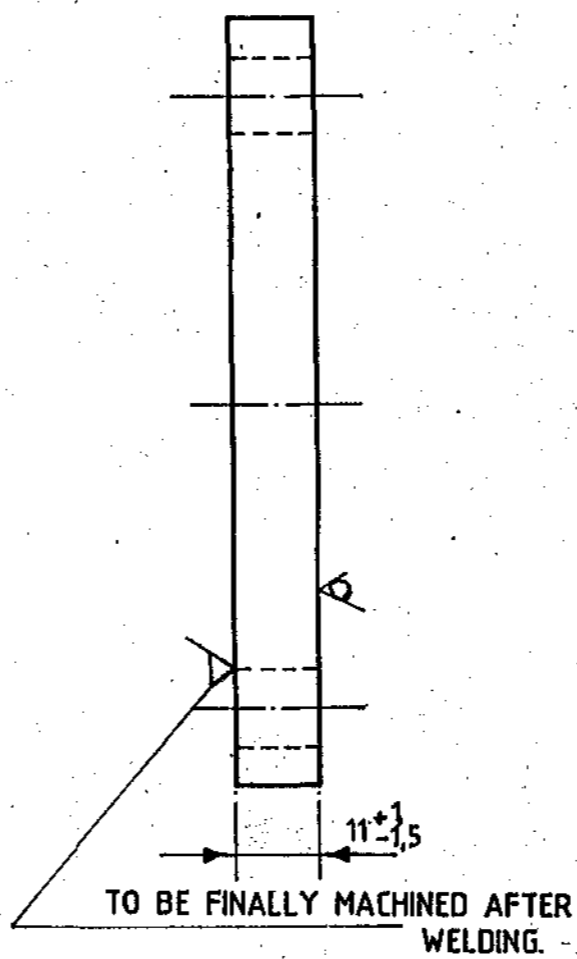
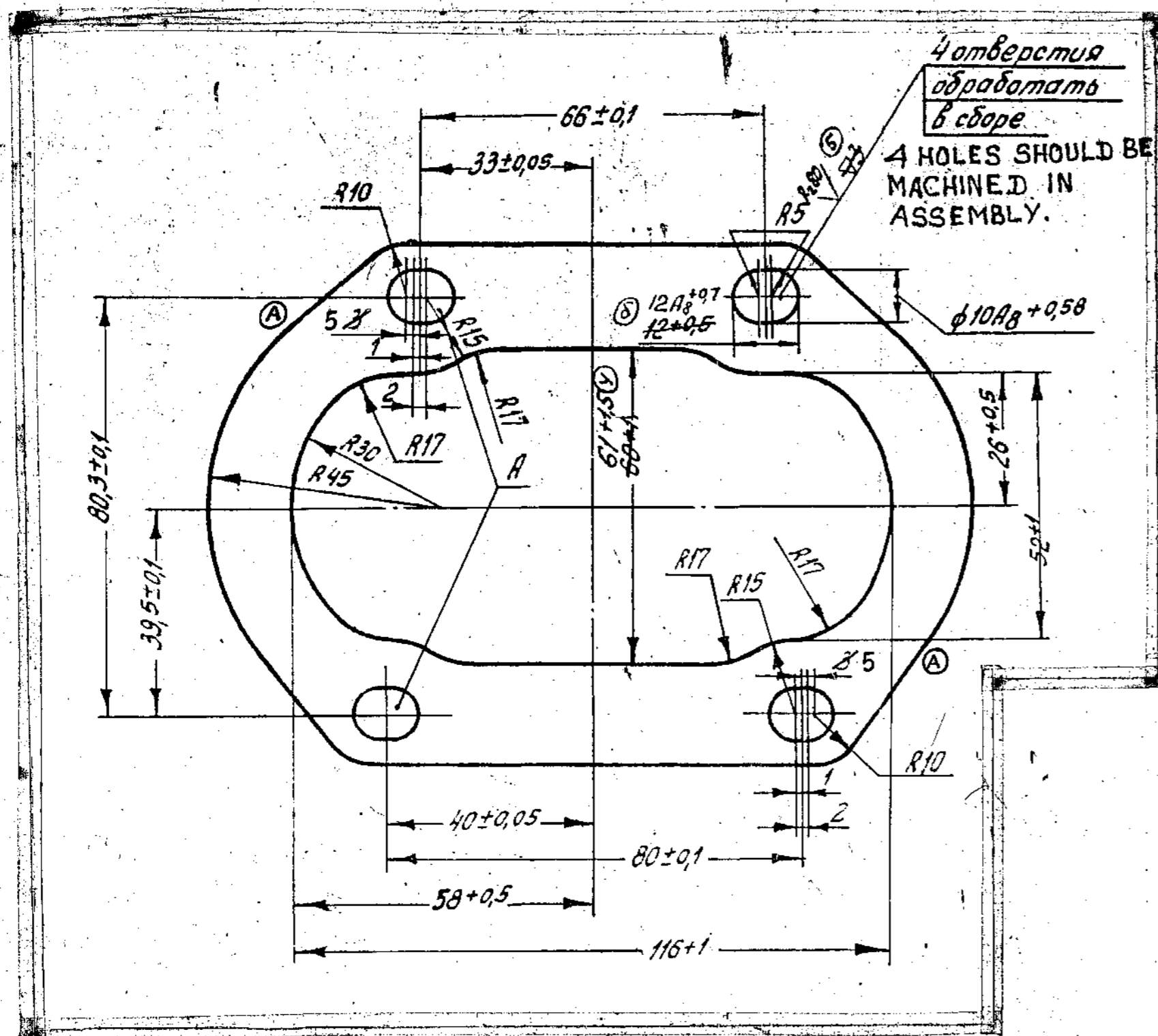
EST. WT. 0.428 kg
TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)

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

DATE	74-88	MATERIAL :- SHEET	A 2 GOST 19904-74	USED ON :-	CE 411-50-29
			II-F-10 GOST 16523-70		CE 411-51-29
SCALE :- 1:1			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)		
DIMENSIONS IN mm.			A V A D I		
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69			TITLE UPPER HALF OF BRANCH PIPE		
B	18.03.10	4 th Alt. Comm. Mt. Minutes Pt. No. 1 Dt. 26.10.09	ALL THREADS TO CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
A	18-9-89	AUTHY. BK 84-779 & 85-788			3318-07-4
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
3318-08-8

Rz320
✓(V)



EXPLANATORY NOTE

6. REFERENCE MATERIAL QUOTED: HOT ROLLED STEEL SHEET OF NORMAL ACCURACY ON ROLLING (5) 12mm THICKNESS TO GOST 19903-74 OF STEEL Gde 10 OF GOST 1577-81 MANUFACTURED IN ACCORDANCE WITH NORMALISED CARBON STRUCTURAL STEEL Gde 10 AND REFERENCE NOTE 5 ON ALTERNATIVE MATERIALS MANUFACTURED IN ACCORDANCE WITH CARBON STRUCTURAL STEEL Gdes 15,20 & 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	
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	ALT. MATL
20	0.17 - 0.24	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 OF NORMALISED HOT ROLLED SHEET AS PER GOST 1577-81.

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kg/mm ²	ELONGATION %	IMPACT STRENGTH NGTH. Kgfm/cm ²	HARDNESS B.H.N.	REMARKS
10	34	32	3	-	Ref Matl.
15	38	30	3	-	Alt. Matl.
20	40	28	3	-	Alt. Matl.
25	45	25	-	170	Alt. Matl.

- DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE ±0.5mm.
- SHARP EDGES SHOULD BE BLUNTED.
- STAMPING BEVEL UPTO 1.2mm PER SIDE IS ALLOWED.
- NOTE: HOLES A FOR 3rd AND 4th FLANGES OF EVERY MANIFOLD SHOULD BE OBTAINED WITH DIA. 10A8+0.7 AS PER ASSEMBLY DRAWINGS OF MANIFOLDS.
- ALTERNATE MATERIALS: STEEL GRADES 15,20 AND 25,GOST 1050-74

ⓑ EQUIVALENT MATERIAL
040 A 04 (EN-2A) BS:970

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

EST WT 0,55: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 5 12 GOST 19903-74 10 GOST 1577-81	USED ON CB 418-50-29 CB 418-51-29
				19-2-86	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
					TITLE: FLANGE, EXHAUST MANIFOLD	
					D S CAT NUMBER	DRAWING NUMBER 3318-08-8

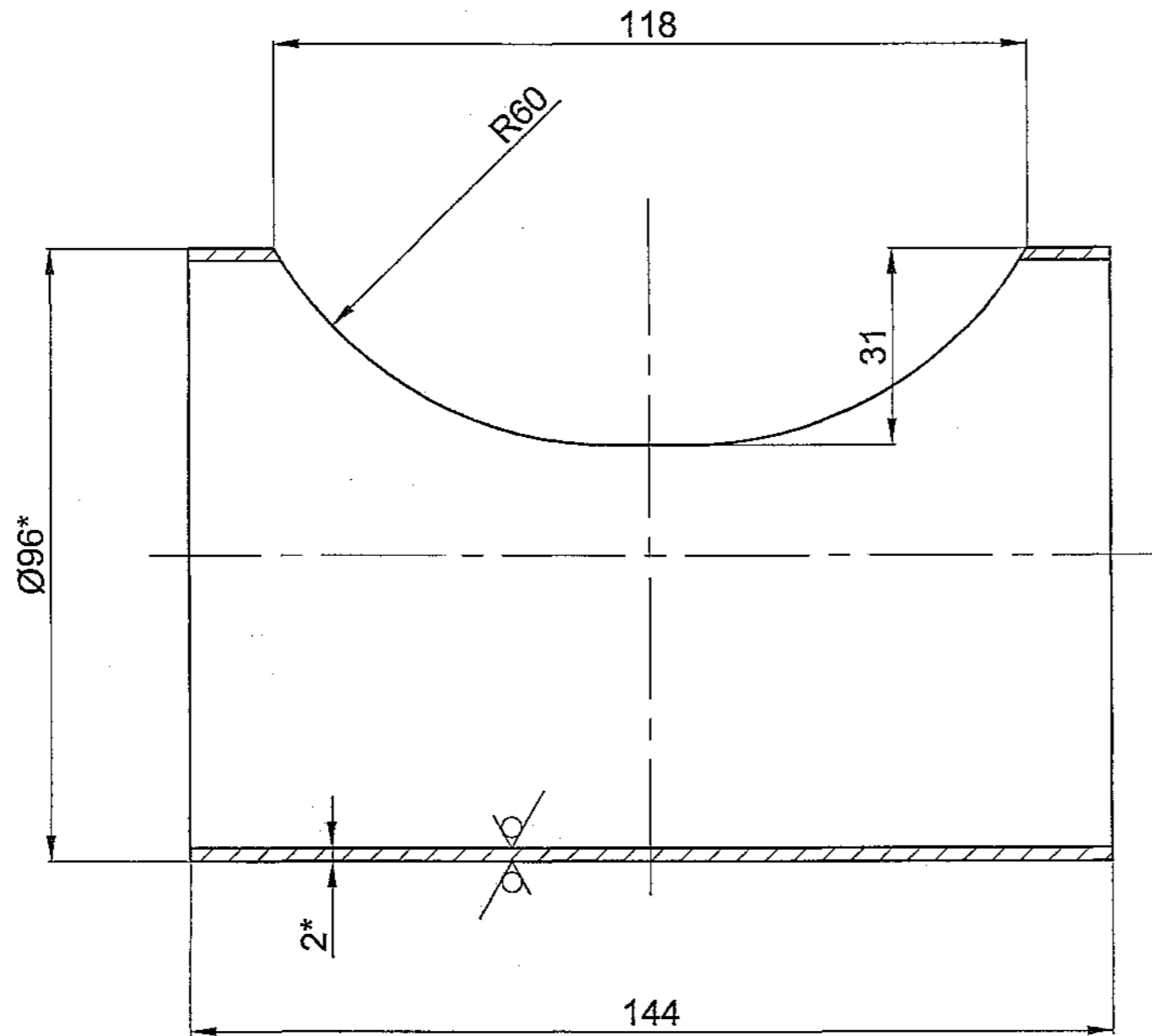
A6

SIZE A2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
418-23-11

80 ✓ (✓)



1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5mm, above 80 mm upto 200mm ± 1mm.
2. * Dimensions are given for reference.

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

EST. WT. (Kg) **0.591** TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

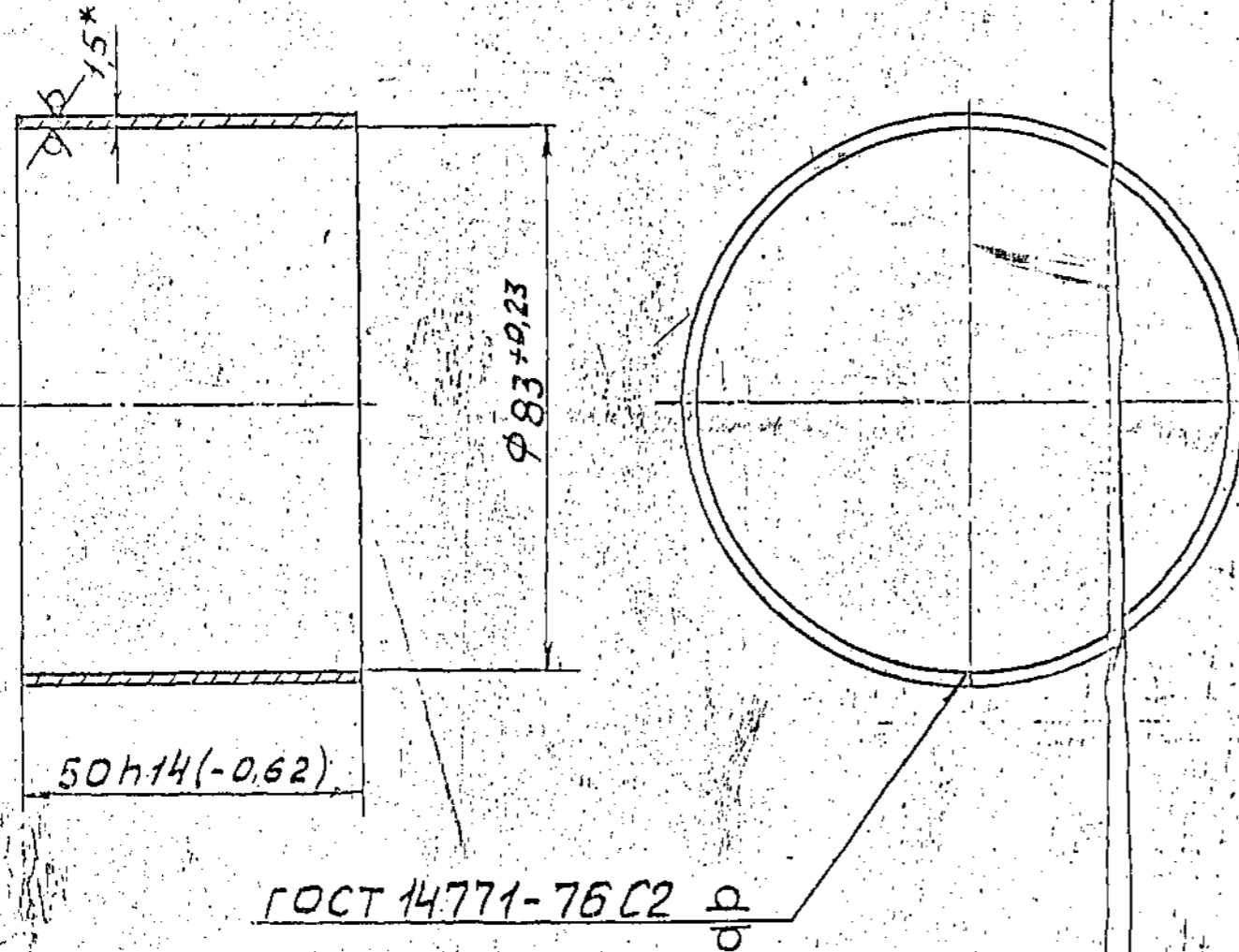
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

			DRN	<i>[Signature]</i>	MATERIAL :- PIPE 96x2-20A	USED ON :- Cb 418-32-01	
			CHD	<i>[Signature]</i>	TY14-159-21-72	Cb 418-31-2-01	
			APPD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)		
			DATE	26/1/07	AVADI		
			SCALE:-	1:1	TITLE :-		
			DIMENSIONS IN mm		PIPE		
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER		
			ALL THREADS TO CONFORM TO		DRAWING NUMBER		
			ISSUE	DATE	418-23-11		
			NATURE OF AMENDMENTS				

F-4
71
253

SIZE A3

ЕСКА



Ⓐ EQUIVALENT MATERIAL
04Cr.18Ni.10Ti.20 TOIS.6911 72

1. Заменитель материала сталь 12X18H10T-M3a ГОСТ 5582-75.
2. Трещины, рванины, расслоения и вмятины не допускаются.
- 3.* Размер для справок.

- 1) ALTERNATE MATERIAL: STEEL 12X18H10T M3a GOST 5582-75.
- 2) CRACKS, TEARS LAMINATION AND DENTS ARE NOT ALLOWED.
- 3) * DIMENSIONS FOR REFERENCE.

** SHEET 6-1,5 GOST 19904-74
12X18H10T-M2a GOST 5582-75

Ил. № подл. 36981 | Пост. в ледя 4.12.85 | Илв. № подл. 4.12.85 | Пост. в ледя 4.12.85
 ДРГ. INDIANISED BASED ON RUSSIAN - ORIGINAL ISSUE (BK 84-824)

PILOT SAMPLE SHOULD BE APPROVED BY A HSP BEFORE BULK PRODUCTION

		EST. MASS 0,155 Kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)
A	28.8.10	4 th Alt Comm Mtg Minutes Point No.16 Dt. 26.10.09	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	MATERIAL: ** SEE ABOVE	USED ON:
DRN <i>[Signature]</i>	SCALE: 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I	
CHD <i>[Signature]</i>	DIMENSIONS IN mm	TITLE: BUSHING	
YCD <i>[Signature]</i>	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	D S CAT NUMBER	
APPD <i>[Signature]</i>	ALL THREADS TO CONFORM TO	DRAWING NUMBER 418-85-5	

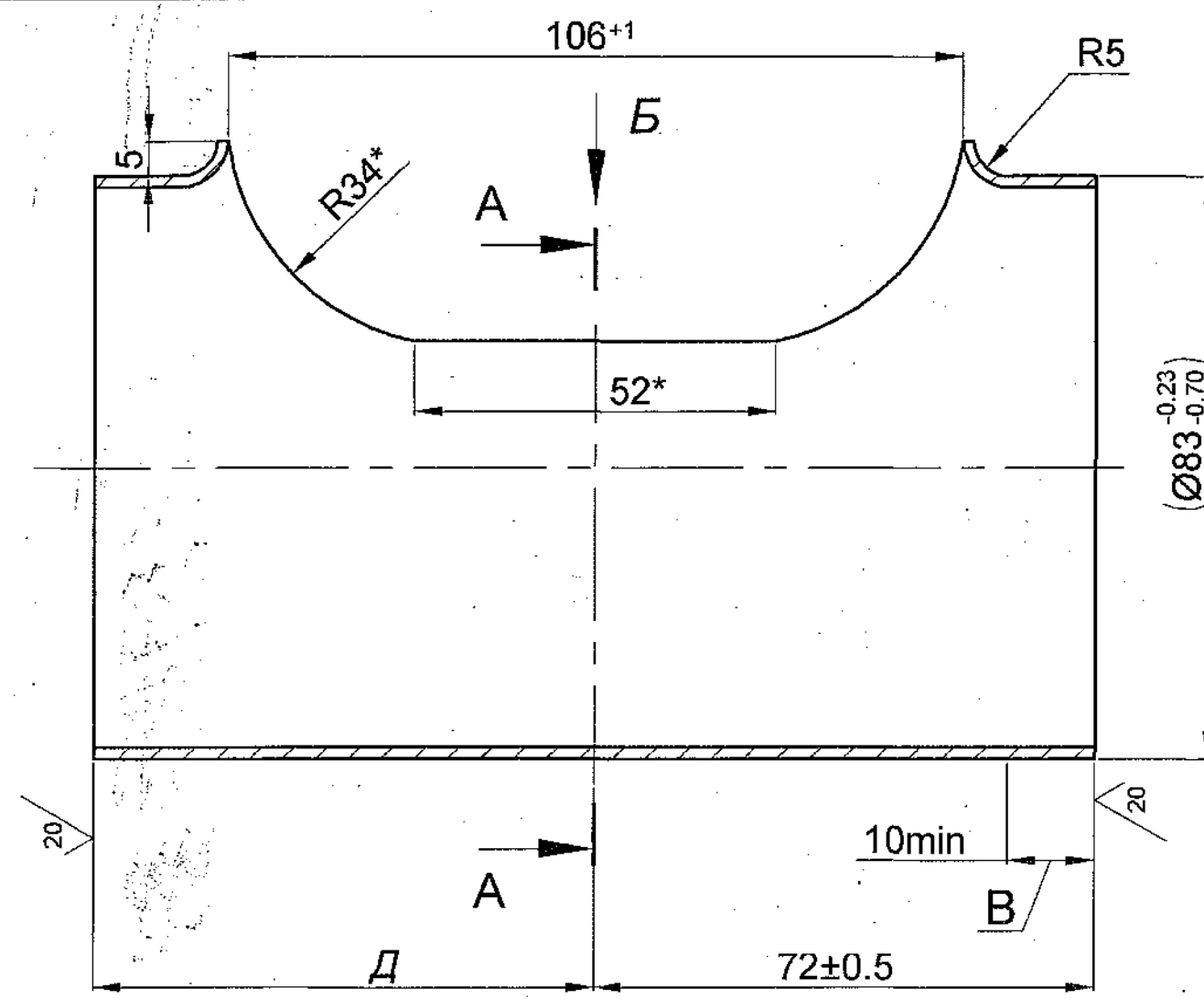
406 - BK84-824

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

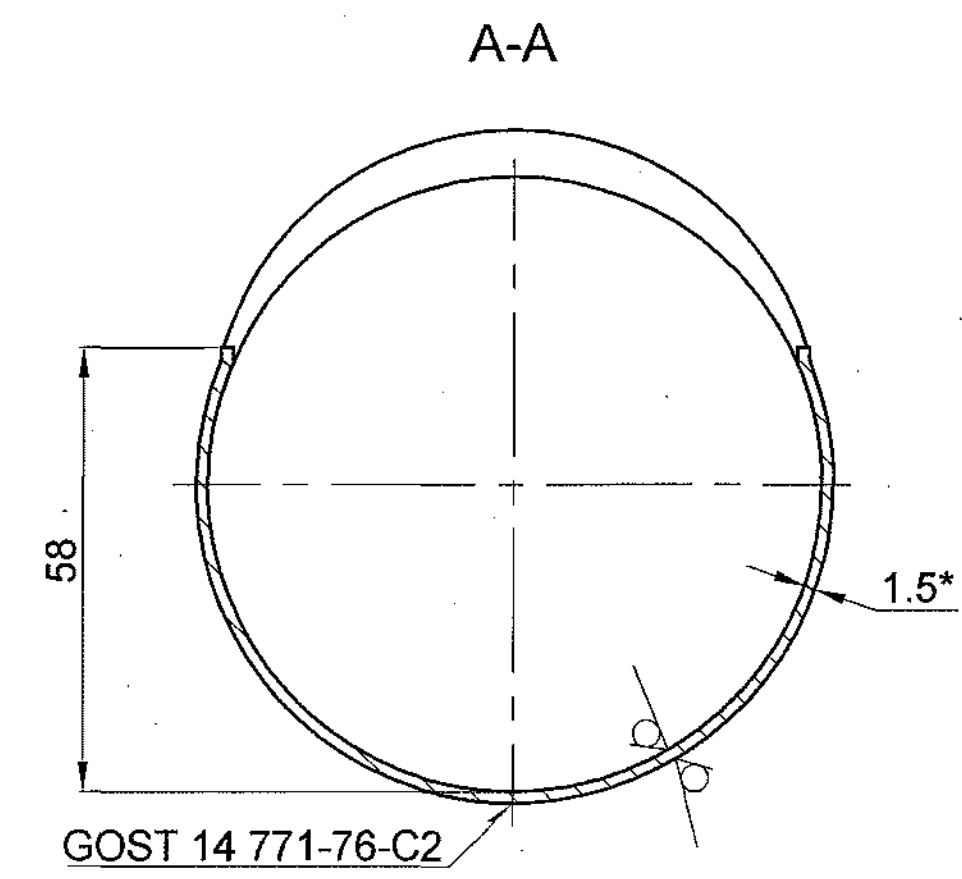
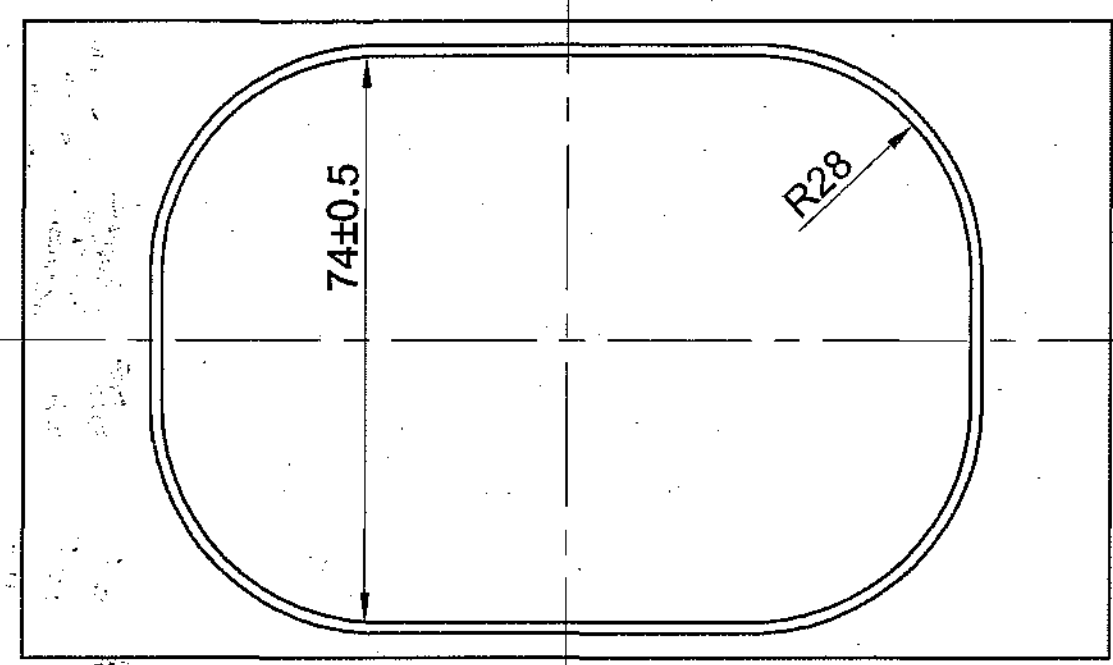
DRAWING NUMBER
418-90-10 (01-02)

SHEET No. OF

80 ✓ (✓)



VIEW B



DRG. NO.	Д, мм	WEIGHT IN kg
418-90-10	72±0.5	0.340
-01	65±0.5	0.319
-02	85±0.5	0.372

1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5 mm, above 80 mm upto 200 mm ± 1 mm.
2. Allowance for ovality of pipe should be 3 mm (Semi difference of diameters).
3. On flange ribs, metal tears are allowed upto maximum of 2 Nos per flange in quantity with subsequent electric arc welding and dressing at the base of the tears.
4. On section "B", it is permitted to carry out welding from inner side.
5. Dress the mounted on the section "B" along the outer diameter of weld-surface.
6. Dimension in brackets - After assembly.
7. * Dimensions are given for reference.
8. Alternate material is steel 12x18H10T TY 14-1-31-99-81.

Ⓐ EQUIVALENT MATERIAL
04Cr.18 Ni 10Ti 20 TO IS:6911-72

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

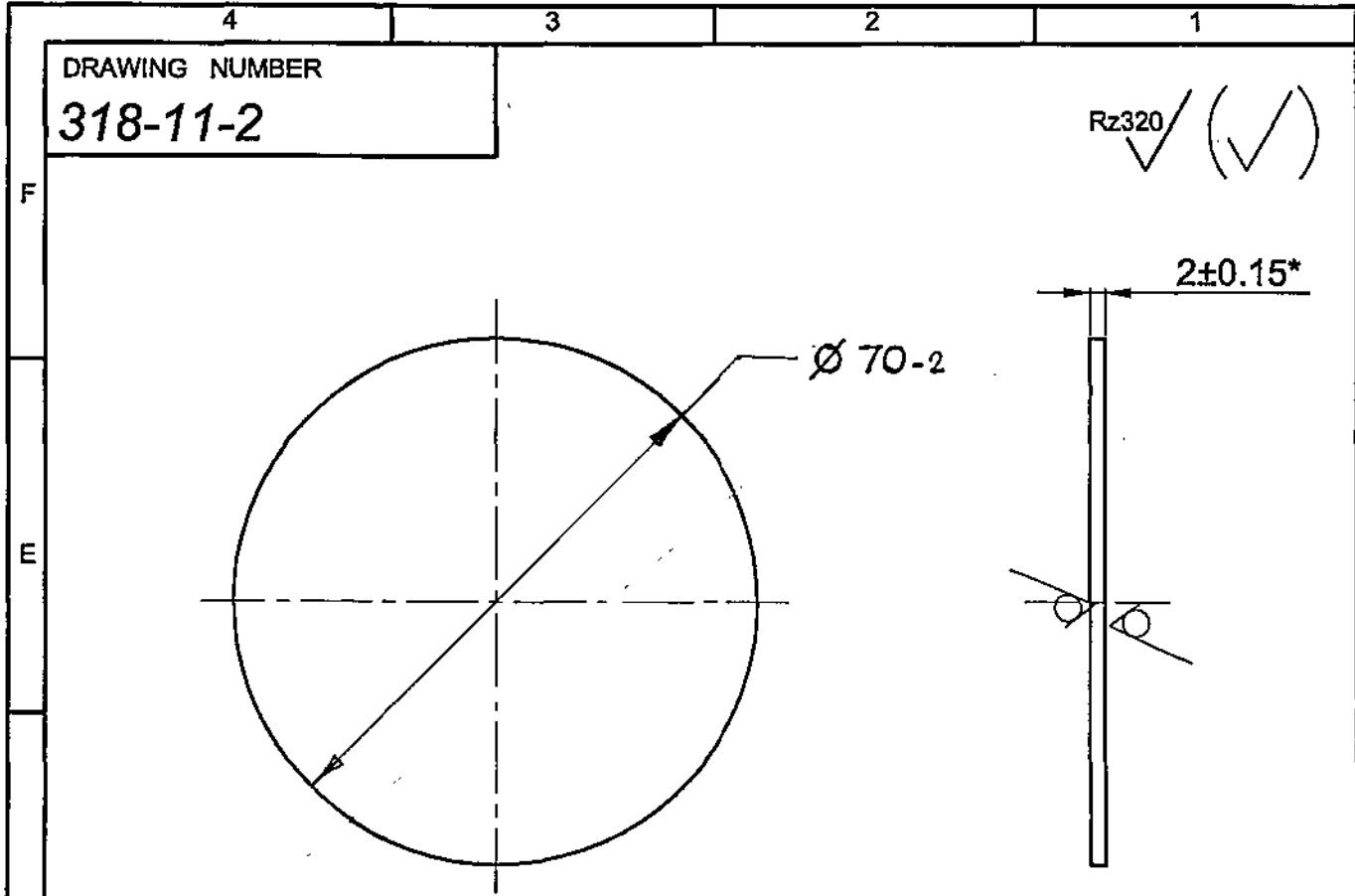
EST. WT. (kg) TO BE STAMPED OR MARKED WHERE INDICATED THIS # (LETTERS)

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

DRN	As per	MATERIAL:- SHEET	USED ON:-
CHD	R. B. Babbar	ET 1.5 GOST 19904-90	CB 418-31-2-01
APPD		12X18H10T-M2a GOST 5582-75	CB 418-32-01
DATE	14/2/09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:-	1:1	TITLE:-	
DIMENSIONS IN mm		PROTECTIVE PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69		D S CAT NUMBER	DRAWING NUMBER
A	28.8.10		418-90-10(01-02)
ISSUE	DATE	NATURE OF AMENDMENTS	
		4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09	

F-4
74
253
SIZE A4 x 3

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5



1. Dress the sharp edges.
2. * Dimension are given for reference.

5A EQUIVALENT MATERIAL
Gr. 0 IS:513-1994

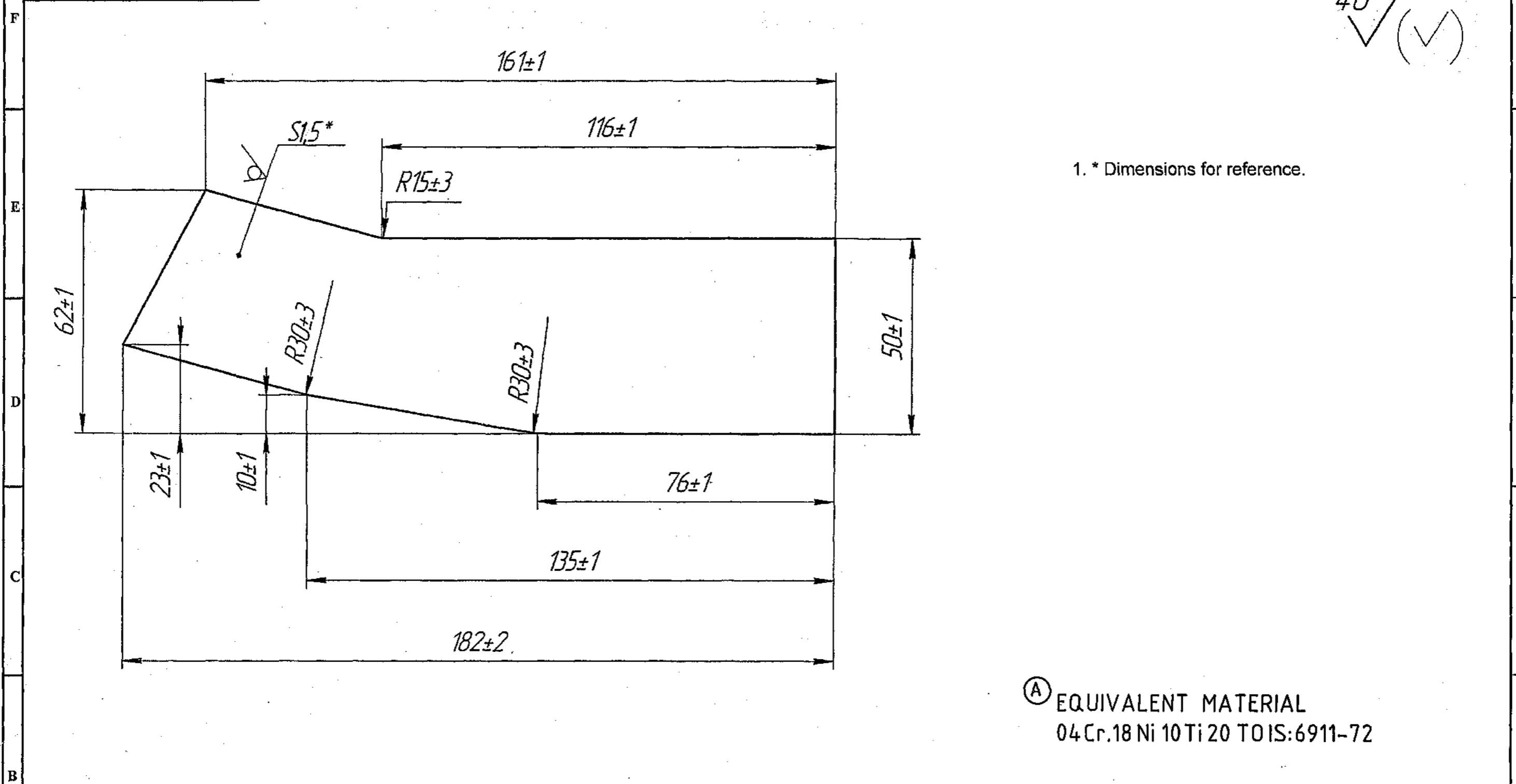
PILOT SAMPLE SHOULD BE APPROVED BY A H'S P BEFORE BULK PRODUCTION.

			EST. WT. 0.06	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.	
			MATERIAL :- SHEET AT 2 GOST 19904-90 K270B6-II-10-CB GOST 16583-89	USED ON :- Cb 418-50-45 Cb 418-51-45
5A	28.04.10	4 th Alt. Comm. Mt. Minutes Pt. No. 2 Dt. 26.10.09		
ISSUE	DATE	NATURE OF AMENDMENTS		
DRN		SCALE :- 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
		DIMENSIONS IN mm		
CHD		TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69	TITLE :- PLUG	
APPD				
	25/1/10	ALL THREADS TO CONFORM TO	D S CAT NUMBER	DRAWING NUMBER 318-11-2

SIZE A4

DRAWING NUMBER 418-150-1 SHEET No. 1 OF 1

40 ✓ (✓)



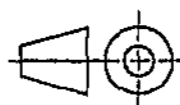
Ⓐ EQUIVALENT MATERIAL
04Cr.18Ni10Ti20 TO IS:6911-72

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL
DRAWING REPLACES 418-150 ISSUE -1 NOTN. No.238-05

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

EST. WT. (Kg) 0.95 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

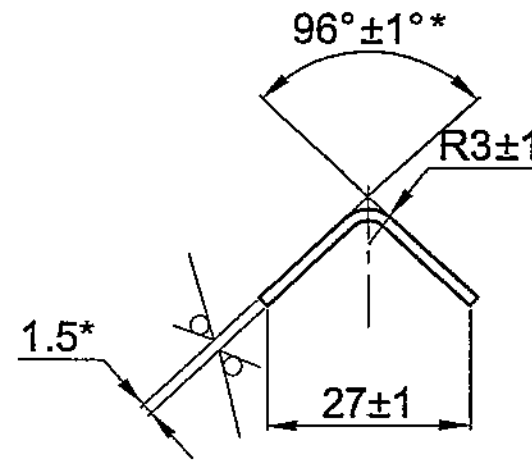
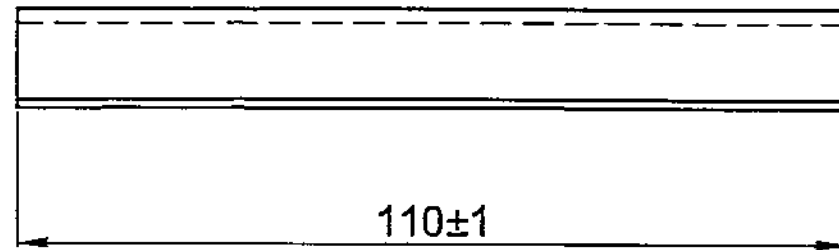
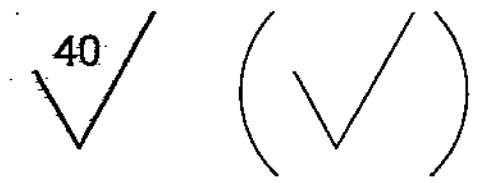
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	1. <i>[Signature]</i>	MATERIAL: bT 1.5 GOST 19904-90	USED ON:-
CHD	<i>[Signature]</i>	SHEET 12X18H10T-M2a (or M3a)	Cb.418-50-45
APPD	<i>[Signature]</i>	- GOST 5582-75.	Cb.418-51-45
DATE	02-01-09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1 : 1		TITLE:-  COVER PLATE	
DIMENSIONS IN mm			
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
ALL THREADS TO CONFORM TO		DRAWING NUMBER	
ISSUE	DATE	NATURE OF AMENDMENTS	
A	28.8.10	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09	

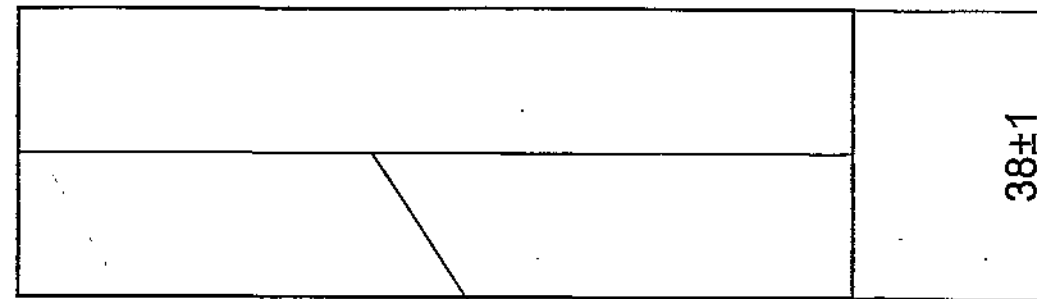
F-158
SIZE A3

8 7 6 5 4 3 2 1

DRAWING NUMBER
418-151



1. * Dimension is given for reference.



BENDING LINE



EQUIVALENT MATERIAL
Gr. 1 IS: 513-1994

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

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

EST. WT. (Kg) **0.06** 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	<i>[Signature]</i>	MATERIAL :- SHEET	USED ON :-
CHD	<i>[Signature]</i>	AT-1.5 GOST 19904-90	CB 418-50-45
APPD.	<i>[Signature]</i>	K270B6-II-T-10 cb GOST 16523-97	CB 418-51-45
DATE	28/11/07	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1:1	AVADI	
DIMENSIONS IN mm		TITLE:-	RIB
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69			
ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER
A	29.04.10	6 th Alt. Comm. Mt. Minutes Pt. No. 2 Dt. 26.10.09	418-151
ISSUE	DATE	NATURE OF AMENDMENTS	



SIZE A3

USED ON

Cb.418-00-15

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

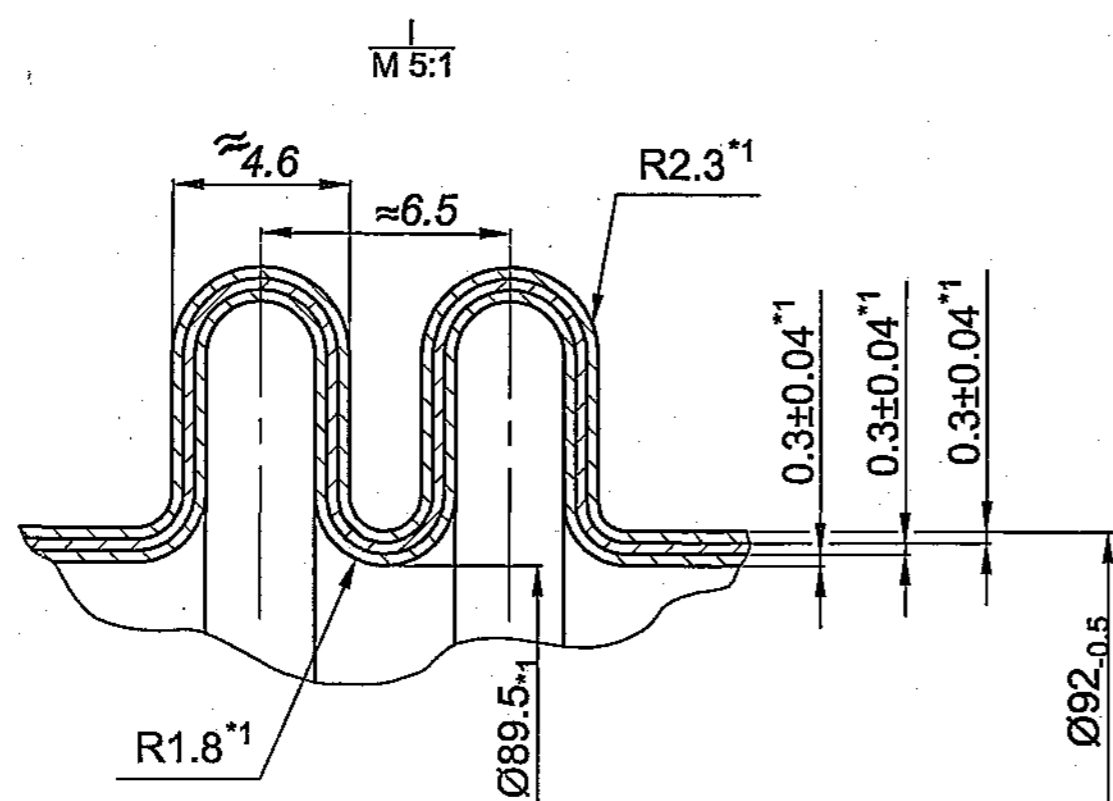
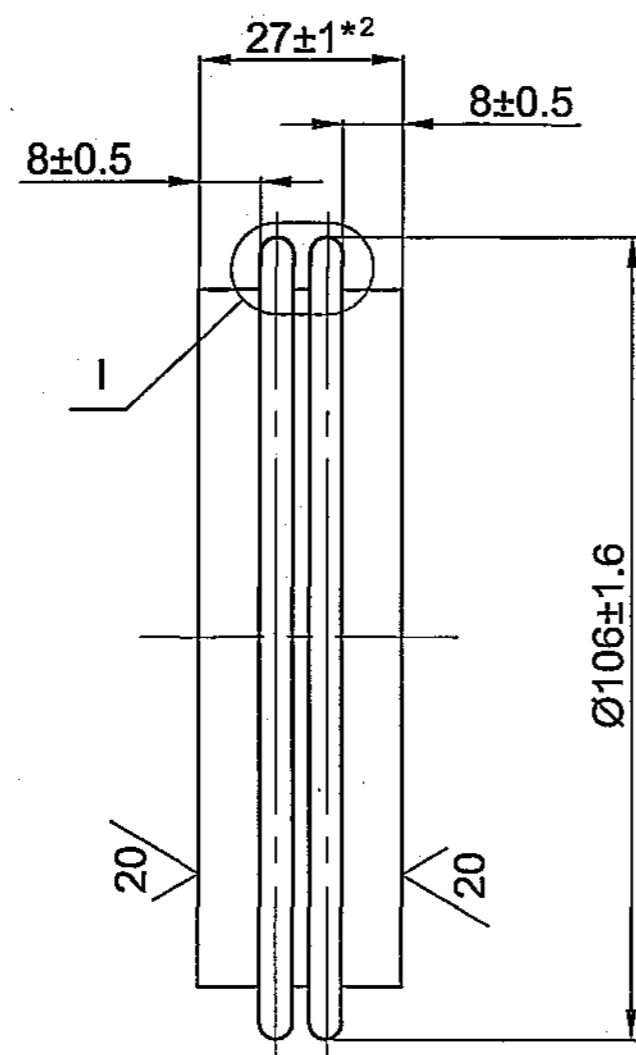
I/L REPLACES Cb.418-51-45 ISSUE-5, NOTN.No: 238-05

ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS
		Cb.418-51-45		EXHAUST MANIFOLD		
		ITEM LIST		R.H ASSY		
	2	Cb.418-30 & I/L		COMPENSATOR ASSY	5	
	5	Cb.418-31-2-01 & I/L		BRANCH PIPE ASSY	1	
	8	Cb.418-32-01 & I/L		BRANCH PIPE ASSY	1	
	11	Cb.418-33-01 & I/L		BRANCH PIPE ASSY	4	
	12	318-11-2		PLUG	1	
	13	418-150-1		STRAP	1	
	14	418-151		RIB	1	

ISSUE	DATE	NATURE OF AMENDMENTS	ISSUE	DATE	NATURE OF AMENDMENTS
DRN			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.		
CHD			TITLE :		
APPD			EXHAUST MANIFOLD R.H ASSY		
DATE	02-01-09	SHT. NO. 1 OF 1	D S CAT NUMBER	ITEM LIST FOR Cb.418-51-45	

F-158

DRAWING NUMBER
418-04



1. * Make bellows by hadraulic stamping of thin-wall welded pipes-blanks of steel of grades 08X18H10T or 12X18H10T Gost 5632-72, made from strip Gost 4986-79, of surface finish of group 2. Make pipes by automatic - argon arc welding with non consumable electrodes with out additive while mounting the joint-edges without subsequent stretching.
2. Test for airtightness in water-tank with air under pressure (0.2±0.05) MPa [(2±0.5) Kgf/cm²] for a period of (30±5) seconds or by helium leak testing.
3. Presence of humidity and oil between layers are not permitted.
4. Remaining requirement are as per Gost 3-3338-76
5. *¹ Dimensions are given for reference.
6. *² Dimensions in free condition.
7. Alternate steel is 05X18H10T TY 14-1-3874-84

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

EST. WT. (Kg) 0.085 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:-	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69	ALL THREADS TO CONFORM TO
			25/11/07	1:1			
MATERIAL :-				USED ON :-			
HC 106-2-0.3x3				C6 418 -30			
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI						TITLE :-	
						BELLOW HC 106 - 2 - 0.3x3	
D S CAT NUMBER				DRAWING NUMBER			
				418-04			
2A	09.07.08	D.O.CORRECTION					
ISSUE	DATE	NATURE OF AMENDMENTS					

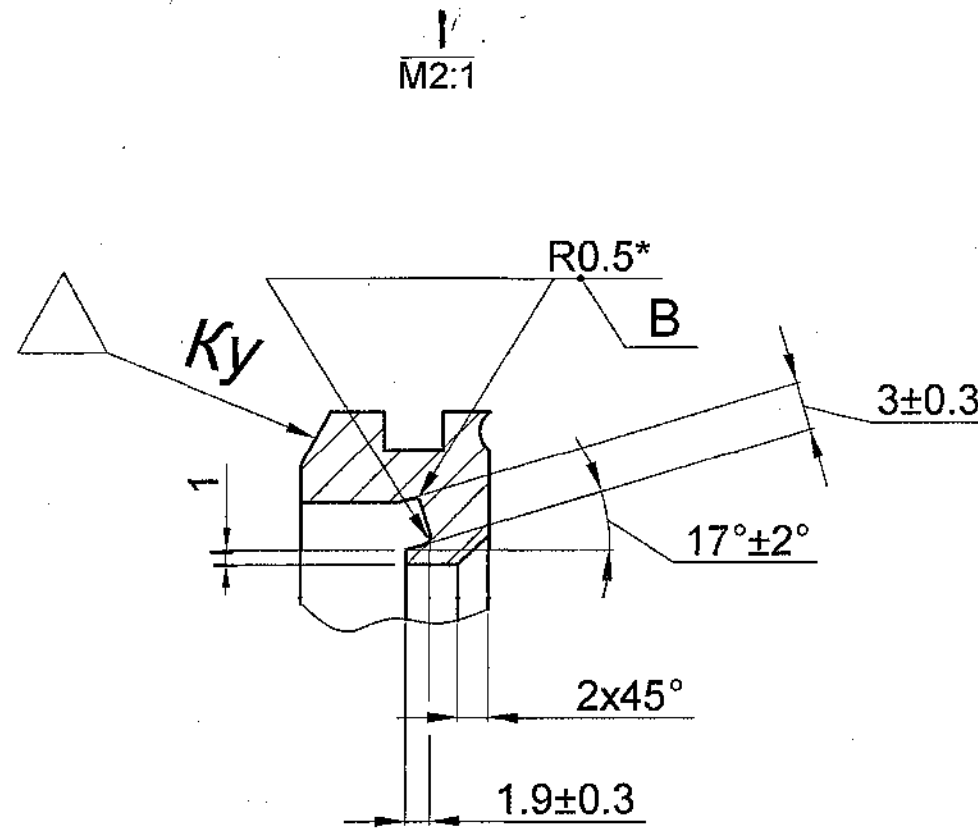
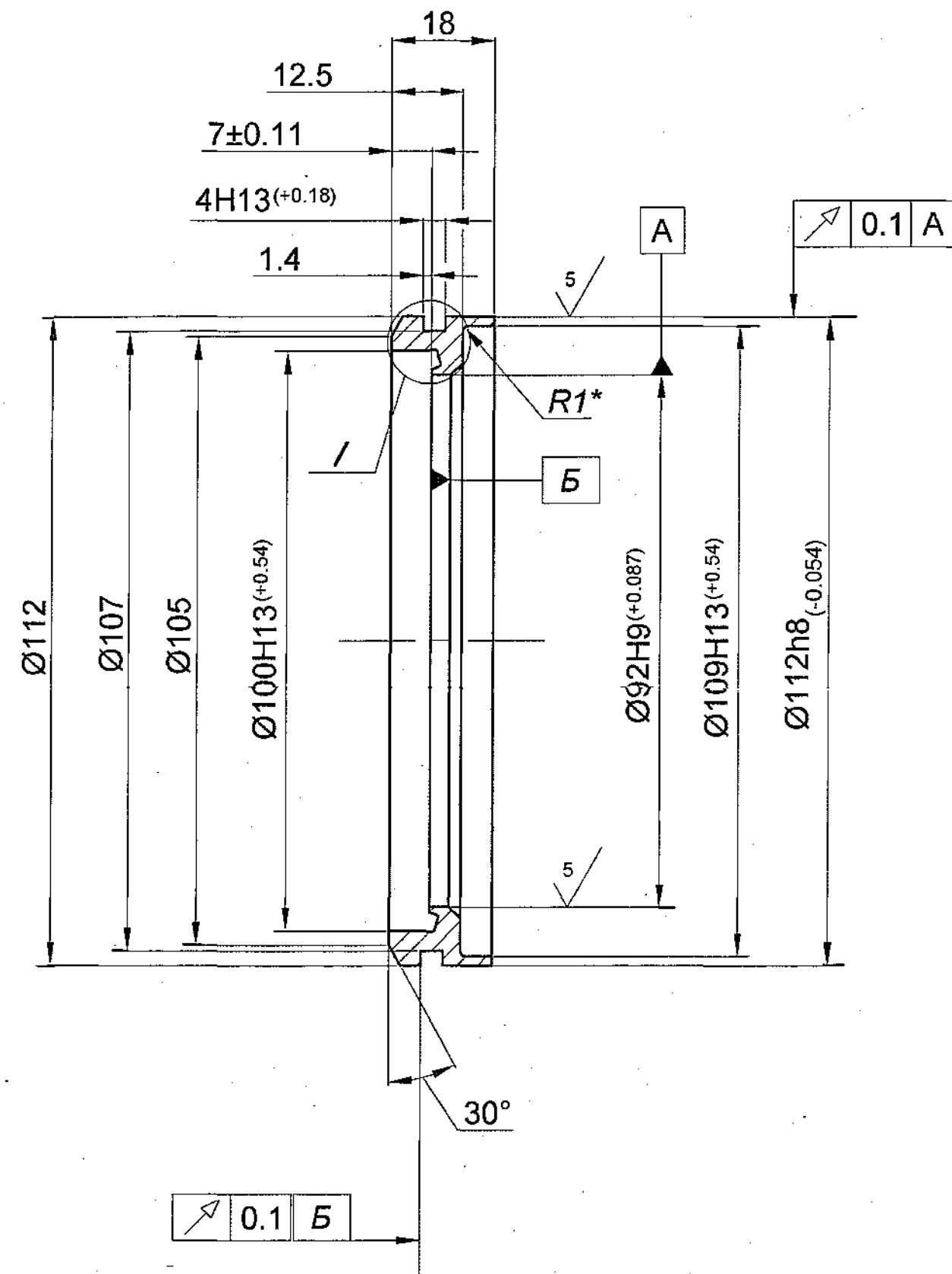
DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

F-4
67
253
SIZE A2

DRAWING NUMBER
418-05

SHEET No. OF

10 ✓ (✓)



1. Unspecified limit deviations of dimensions: H14, h14, $\pm \frac{IT14}{2}$
2. * Dimensions to be ensured by tool.
3. Alternate steel is 12X18H9T Gost 5632-72.
4. Chamfering 0.5x45° is permitted in place of "B"
5. Marks of forging defects, bubbles, shrink-hole, porosity, layer separation are not allowed.
6. Cracks are not allowed.

5A EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS:6911-72

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

EST. WT. (kg) 0.235 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	APPD	DATE	MATERIAL :- STEEL 12X18H10T GOST 5949-75	USED ON :- CB 4.18-30
SCALE:- 1:1				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
DIMENSIONS IN mm				TITLE:- BUSH	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69				D S CAT NUMBER	
ALL THREADS TO CONFORM TO				DRAWING NUMBER 418-05	
ISSUE	DATE	NATURE OF AMENDMENTS			
5A	28.8.10	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09			

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4
68
253
SIZE A4 x 3

USED ON	ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS		
Cb 418-50-45 Cb 418-51-45			Cb.418-31-2		BRANCH PIPE ASSY.				
			ITEM LIST						
		1	Cb.318-22-5 & I/L		BRANCH PIPE	1			
					SCREEN ASSY.				
	(5)	4	3318-06-4 3318-06-8		LOWER HALF OF BRANCH PIPE	1			
	(5)	6	3318-07-4 3318-07-8		UPPER HALF OF BRANCH PIPE	1			
		7	3318-07-5		UPPER LINING	1			
		8	3318-08-7		FLANGE	1			
		13	418-23-11		PIPE	1			
		14	418-55-10		FLANGE	1			
		15	418-85-5		BUSH	1			
		16	418-90-10-02		PROTECTIVE PIPE	1			
		17	418-85-6		BUSH	1			
			"DIFFERENCE IN DESIGN OF Cb.418-31-2 AND Cb.418-31-2-01 AS PER ASSEMBLY DRAWING"						
	5	16-2-09	Notification No.33-05 (F-158)						
	ISSUE	DATE	NATURE OF AMENDMENTS		ISSUE	DATE	NATURE OF AMENDMENTS		
	DRN			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.					
	CHD			TITLE : BRANCH PIPE ASSY.					
	APPD								
	DATE	28-6-07	SHT. NO. 1 OF 1	D S CAT NUMBER	ITEM LIST FOR Cb.418-31-2				

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
57/253

FIGURE.1

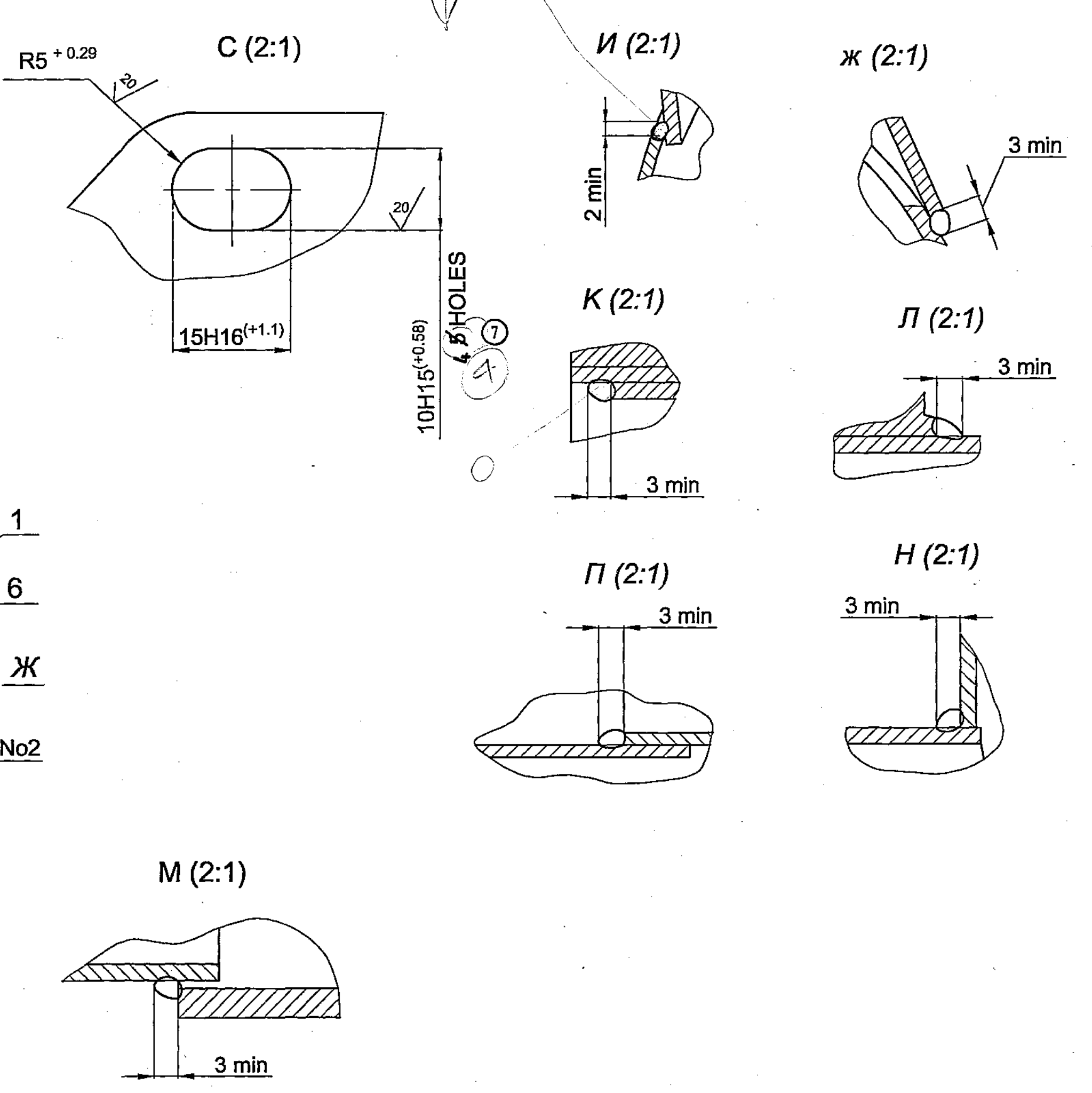
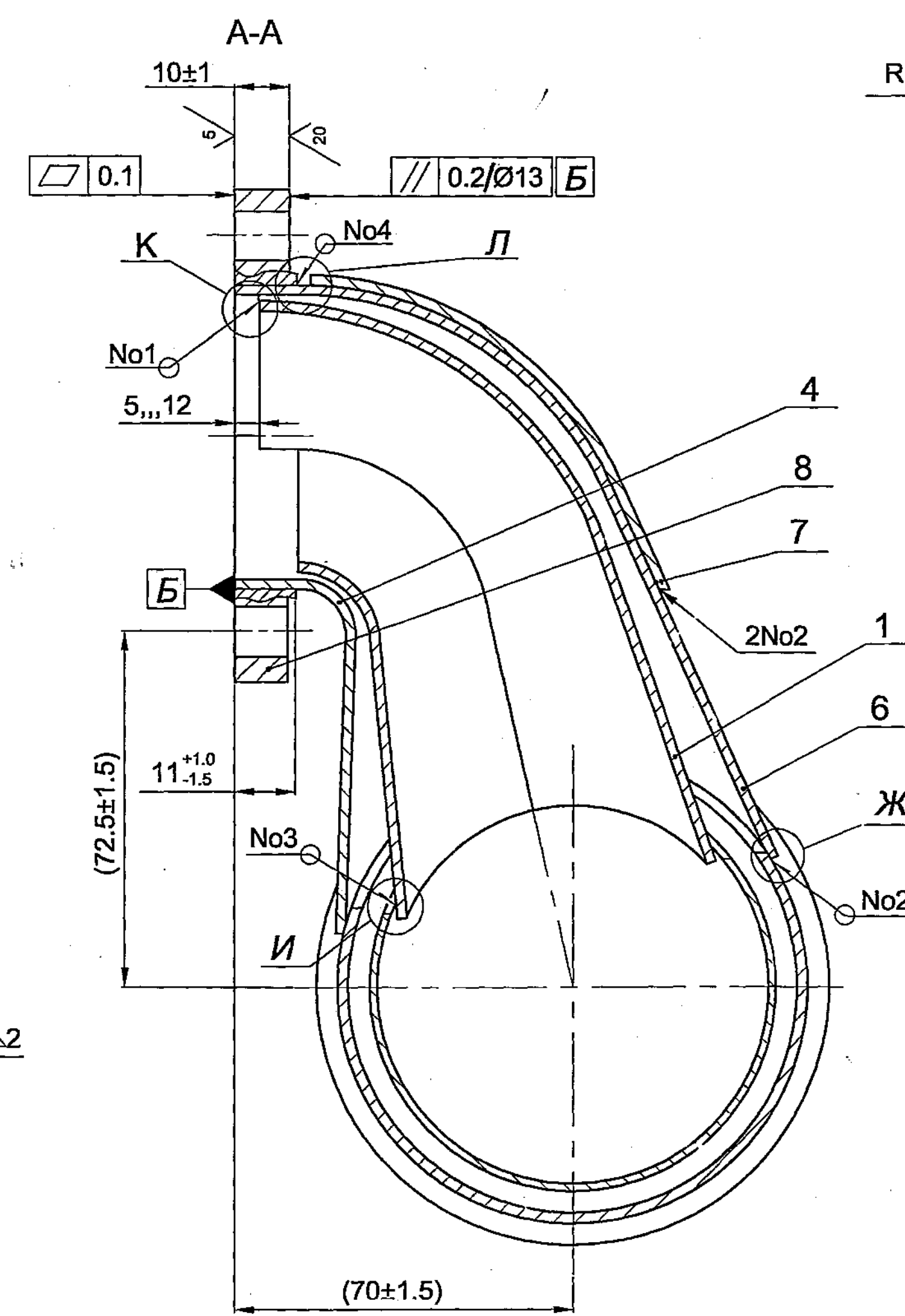
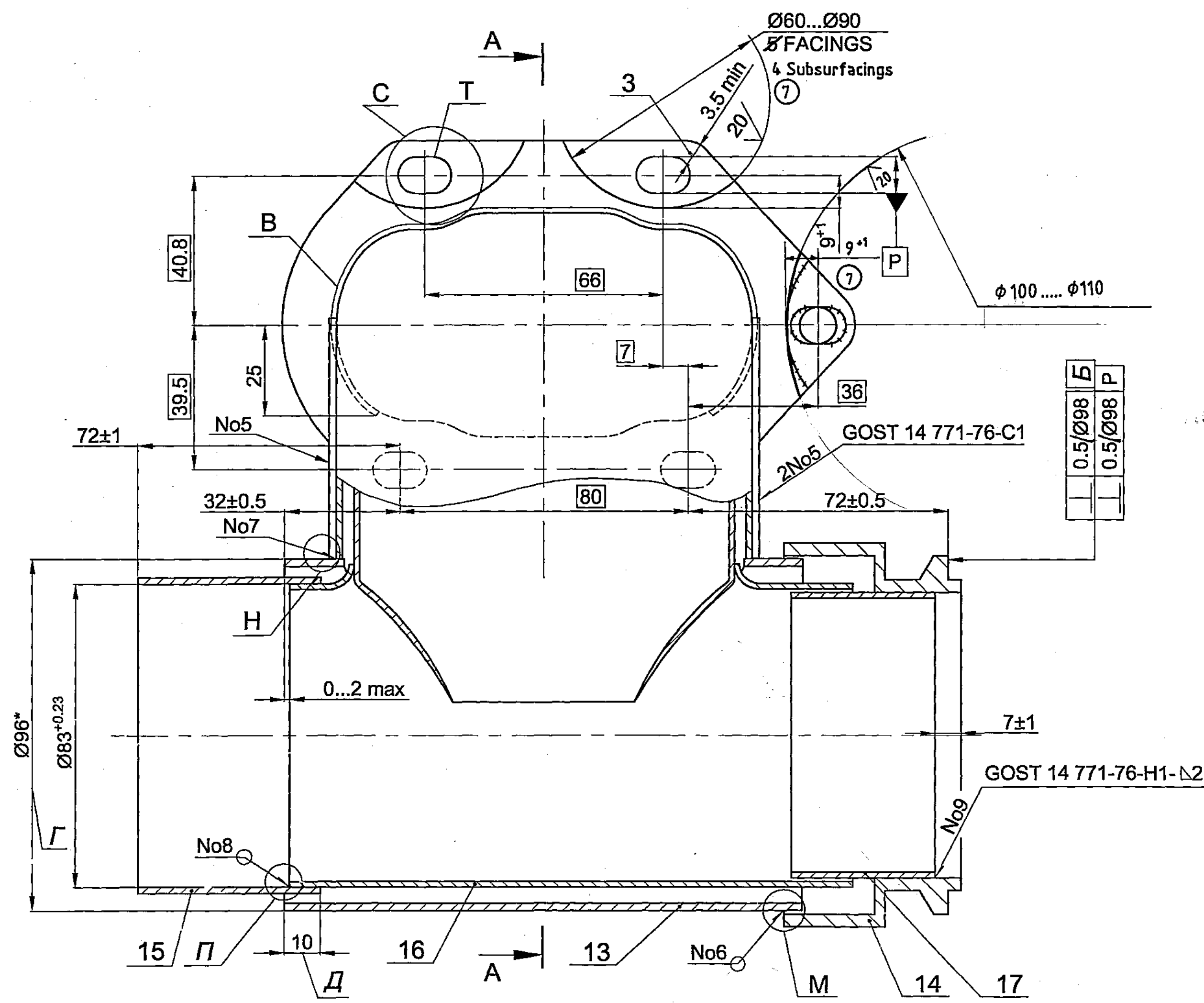
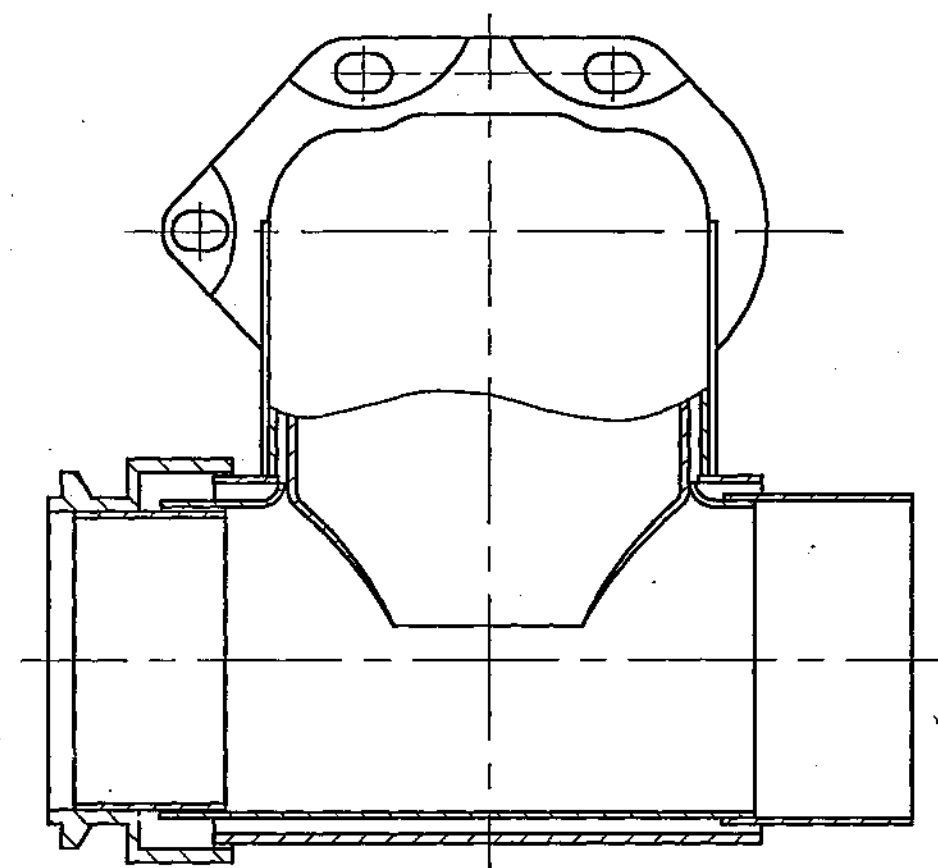


FIGURE 2 (1:2)
REMAINING :SEE FIGURE .1



1. Welded joint No.1,2,3,4,6,7,8, to be carried out in shielding gas medium.
2. Test for airtightness with air in water tank under pressure (0.2^{+0.05})MPa [(2^{+0.5}) Kg/cm²]. Air leakage in joint No.2,4,6 is not allowed. In leakage areas, rewelding is allowed with subsequent dressing and hydraulic testing.
3. Adjustment of parts item 1,4,6,16 is allowed at site during assembly.
4. Dimensions in brackets - After assembly.
5. * Dimensions are given for reference.
6. On section "B" along the outline of flange of welding is done in two phases with larger leg on the branch - pipe wall.
7. Dimension "Г" to be calibrated up to $\varnothing (99^{-1})$ mm on section Д maximum.
8. Welding of flange lug item 8 upto dimension of "3" is permitted.
9. Local expanding of flange item 8 opposite to welding seam, connecting the half of branch-pipes, with subsequent bending of flared portion and backup welding of outer surface of rib to length of minimum 30mm, height of minimum 2mm is permitted on flared -section.
10. Shift of axis of hole "T" from nominal position should be 0.2mm, permissible tolerance.

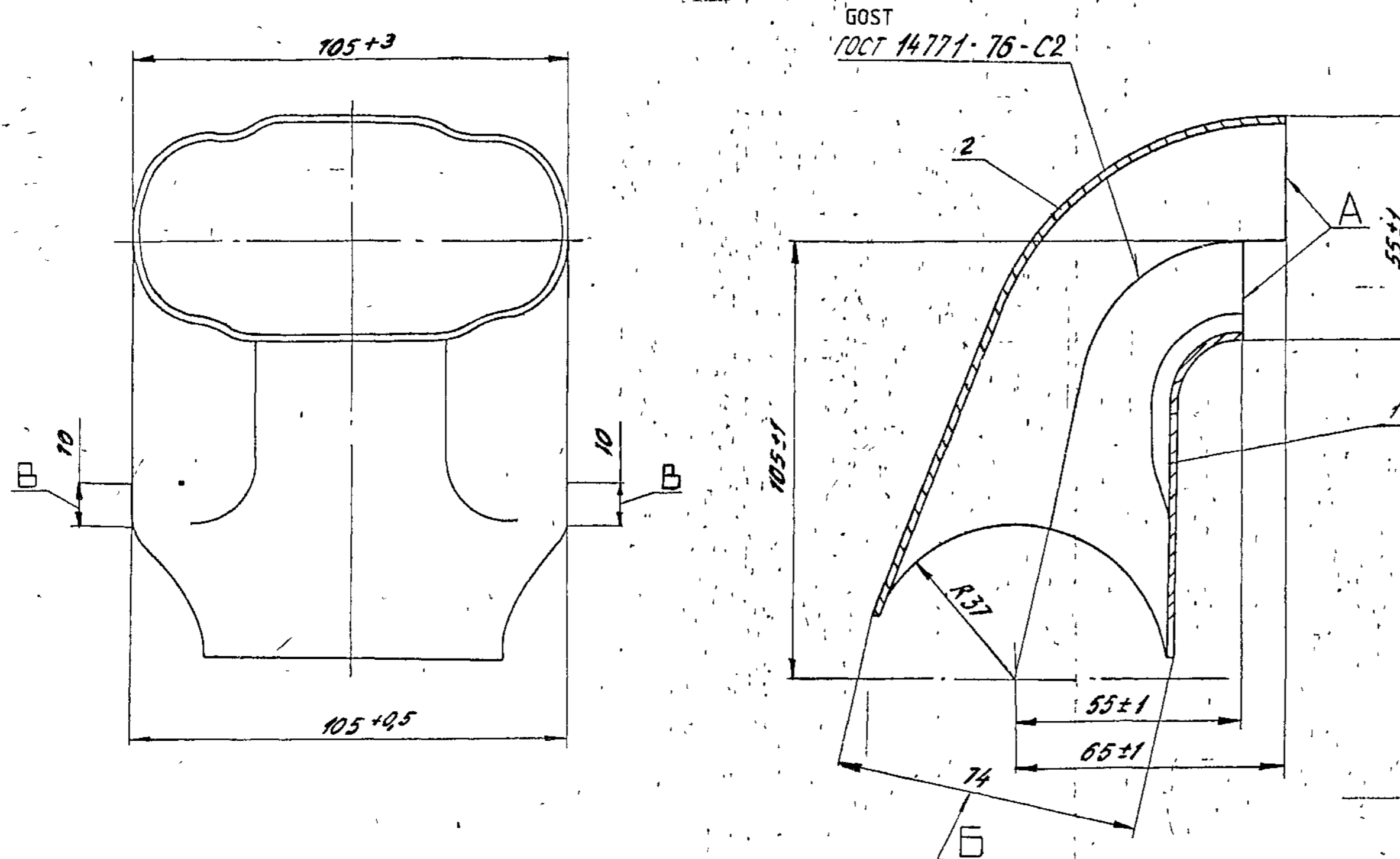
DRG. NO	FIGURE
sb.418-31-2	1
-01	2

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)
3.297	

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

DRN	42	MATERIAL :-	USED ON - CB 418-50-45 CB 418-51-45
CHD			
APPD			
DATE	14/2/02	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:	1:1		
DIMENSIONS IN mm			
TOLERANCE ON DIMINS UNLESS OTHERWISE STATED IS : 2102 - 69			
ALL THREADS TO CONFORM TO			
ISSUE	7	14-02-09 Notification No. 33-05 (F-158)	D S CAT NUMBER
DATE		NATURE OF AMENDMENTS	DRAWING NUMBER Cb.418-31-2/-01



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Контур А и размер Б подогнать по сопрягаемой детали перед приваркой в узле.
2. Сварные швы на участках В зачистить заплотило.

TECHNICAL REQUIREMENTS - TRANSLATED

- 1 CONTOUR 'A' AND DIMENSION 'B' SHOULD BE ADJUSTED TO SUIT MATING COMPONENT BEFORE WELDED TO ASSEMBLY.
- 2 WELDS ON SECTION 'B' SHOULD BE DRESSED FLASH

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

		EST MASS 0.37	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	MATERIAL -	USED ON -
DRN	SCALE - 1:1		CB 418-50-29 CB 418-51-29
CHD	DIMENSIONS IN mm	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE - BRANCH PIPE SCREEN	
APPD	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
DATE	29 1 88		CB 318-22-5CB

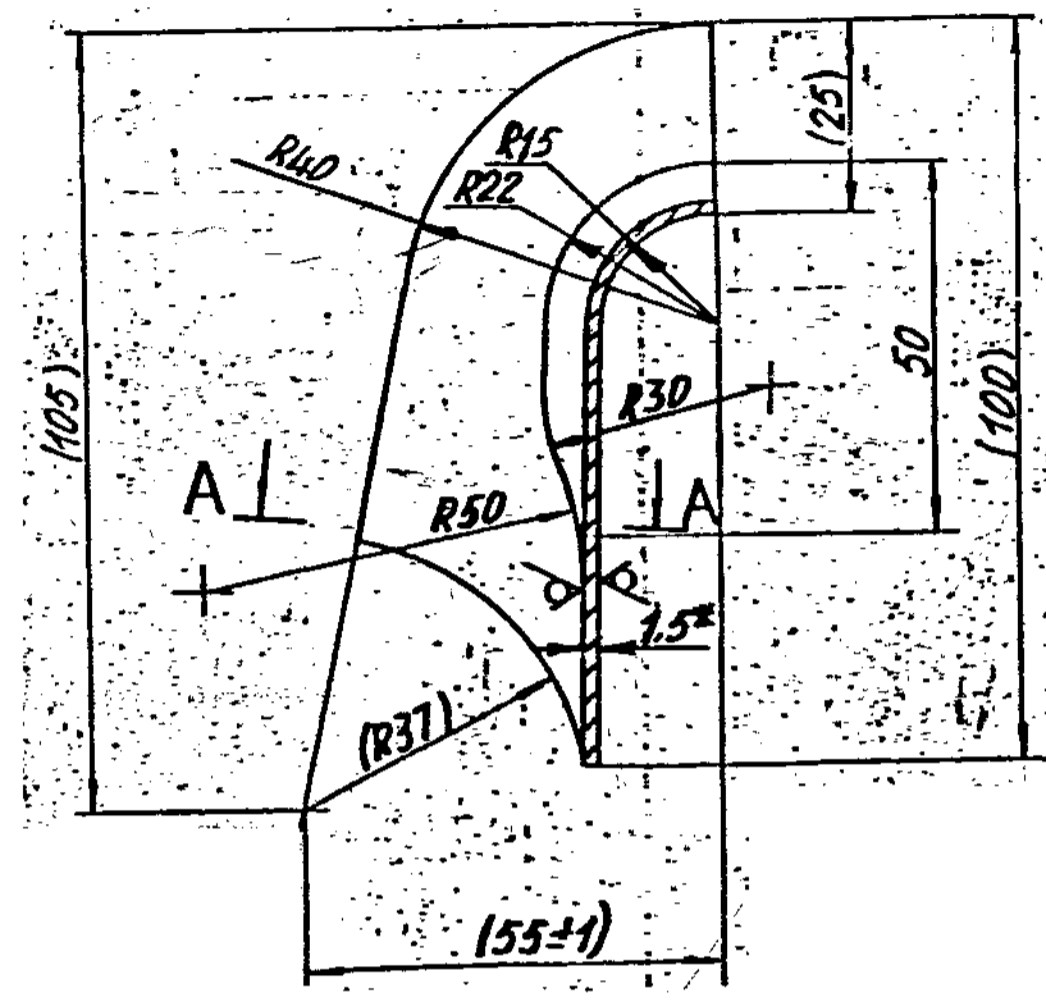
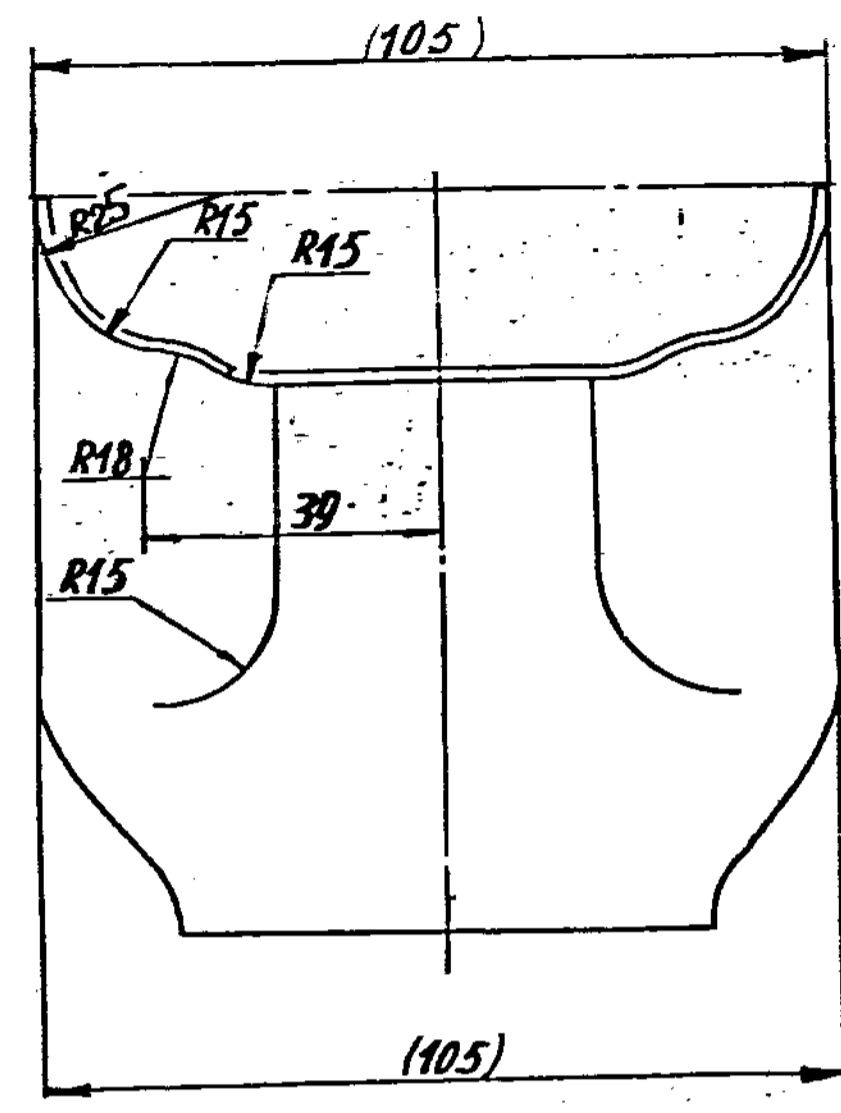
2	BK 81-31	10/11/88	10/11/88
10/11/88	10/11/88	10/11/88	10/11/88

DRAWING NUMBER
318-20-5

RZ 89/ (✓)

TECHNICAL REQUIREMENTS - TRANSLATED

1. DIMENSIONS WITH UNSPECIFIED DEVIATIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5\text{mm}$.
2. MATERIAL THICKNESS IN THINNED PLACES SHOULD BE 1mm MIN.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. DIMENSION IN BRACKETS SHOULD BE ENSURED AFTER ASSEMBLY.
5. * DIMENSION FOR REFERENCE.



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET Б 1.5 GOST 19904-74
12x18H10T-M2a OR M3a GOST 5582-75

Б = STANDARD ACCURACY.
1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74
12x18H10T = GRADE OF STEEL.
M2a OR M3a = PICKLED & BRIGHT ANNEALED.

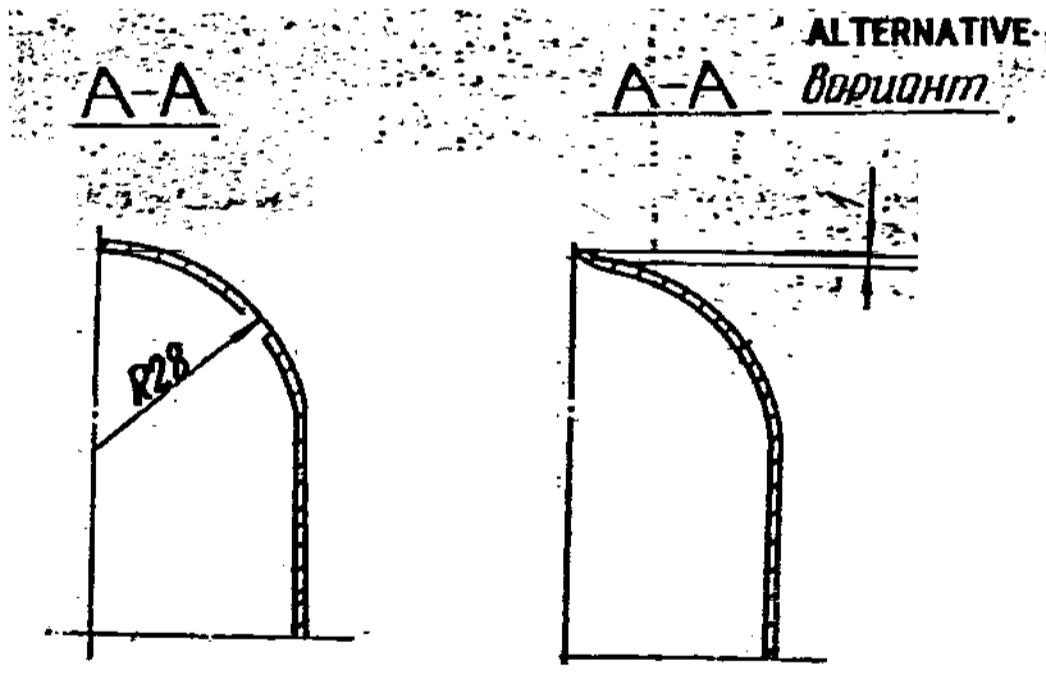
CHEMICAL COMPOSITION% (AS PER GOST 5632-72)
CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080°C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54
YIELD POINT Kgf/mm^2 (MIN) = 20
RELATIVE ELONGATION (MIN) = 40



**
SHEET: Б 1.5 GOST 19904-74
12x18H10 -M2a (OR M3a) GOST 5582-75

EXPLANATORY NOTE ADDED ON 18-2-92

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

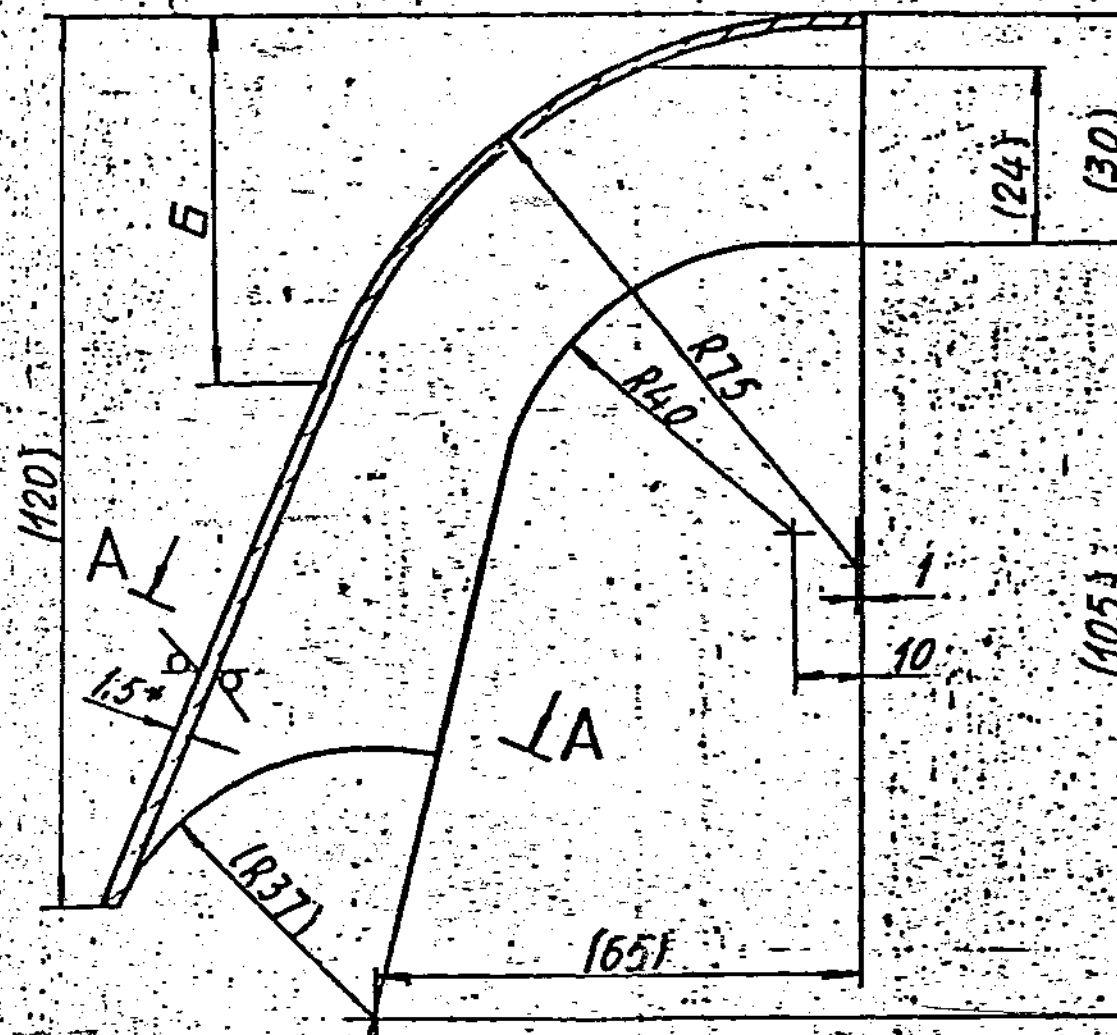
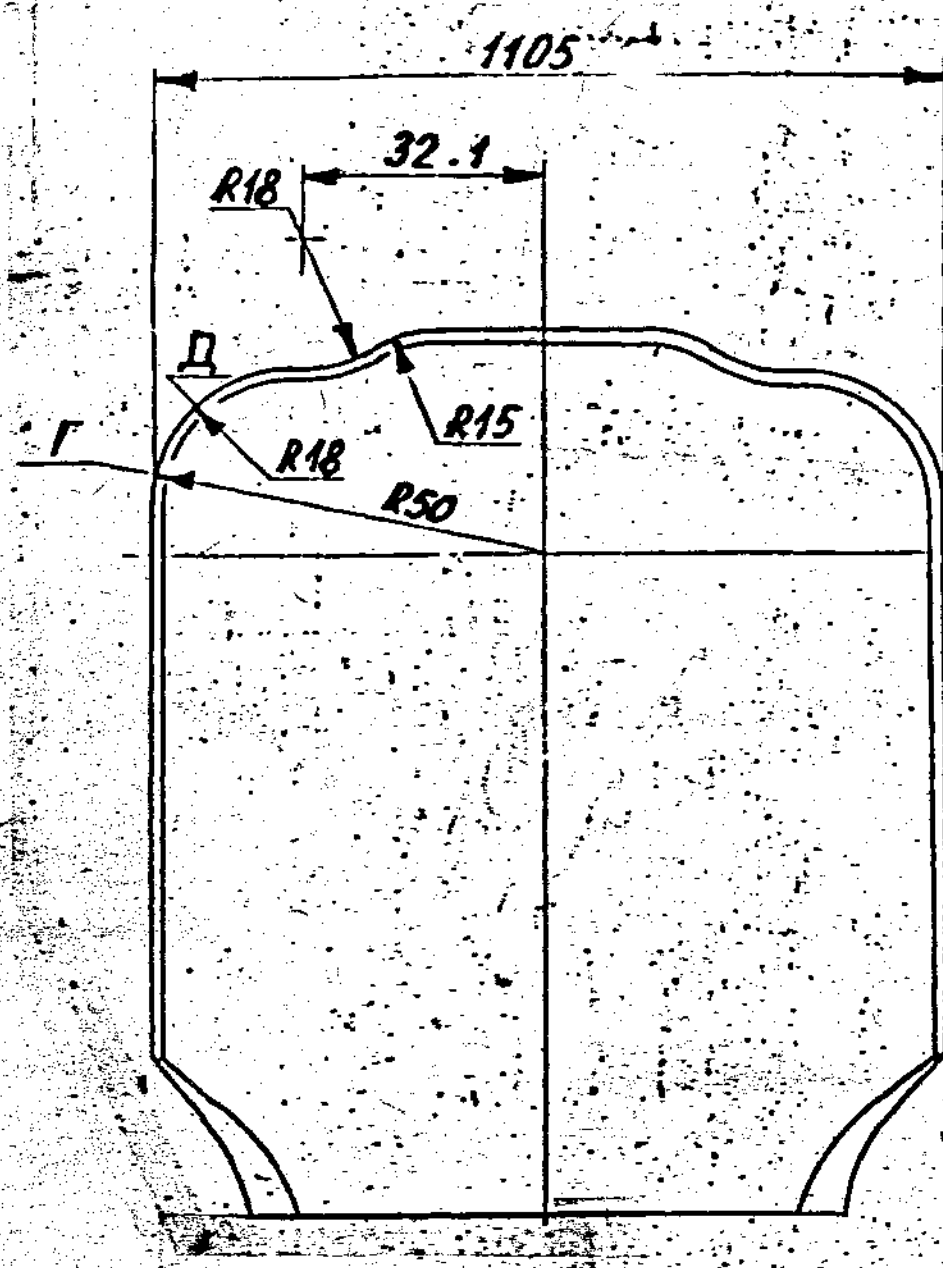
EST. WT. 0.135 kg TO BE STAMPED OR MARKED WHERE INDICATED THIS * LETTERS!

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

DRN	---	MATERIAL	SEE ABOVE **	USED ON	C5318-22-5
CHD	---	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)	A V A D I		
TCD	---	TITLE	LOWER PART OF SCREEN		
APPD	---	D S CAT NUMBER	DRAWING NUMBER		
DATE	29-1-88	318-20-5			
SCALE	1:1				
DIMENSIONS IN mm					
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2Y2-69					
ALL THREADS TO CONFORM TO					
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
318-21-5

80° (✓)



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST5582-75

B = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74.
12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED OR BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080 °C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

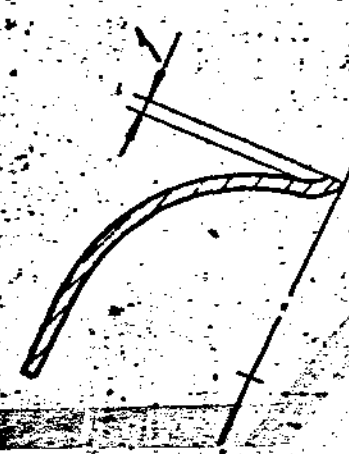
YIELD POINT Kgf/mm^2 (MIN) = 20

RELATIVE ELONGATION (MIN) = 40

A-A

A-A

ALTERNATIVE
ВЕРСИЯ



TECHNICAL REQUIREMENTS - TRANSLATED

- UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5mm$.
- MATERIAL THICKNESS IN THE THINNED PLACES SHOULD BE NOT LESS THAN 1mm.
- CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
- SMOOTH TRANSITION OF RADIUS B TO RADIUS Γ AND RADIUS A SHOULD BE ENSURED ON SECTION B.
- DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
- * DIMENSIONS FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS: 6911-72

**
SHEET: B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a
GOST 5582-75

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

EST. WT. 0.235 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	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69
				29-1-88	1:1		
				MATERIAL :-		USED ON :-	
				SEE ABOVE **		CB 318-22-5	
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
				A V A D I			
				TITLE			
				UPPER PART OF SCREEN			
				D S CAT NUMBER		DRAWING NUMBER	
						318-21-5	
ISSUE	DATE	NATURE OF AMENDMENTS					
A	28.8.10	4 th ALT Comm Meeting Minutes Point No. 16 Dated 26.10.09					

DRAWING BASED ON RUSSIAN ORIGINAL ISSUED (AK 87-31)

EXPLANATORY NOTE ADDED ON 18-2-92

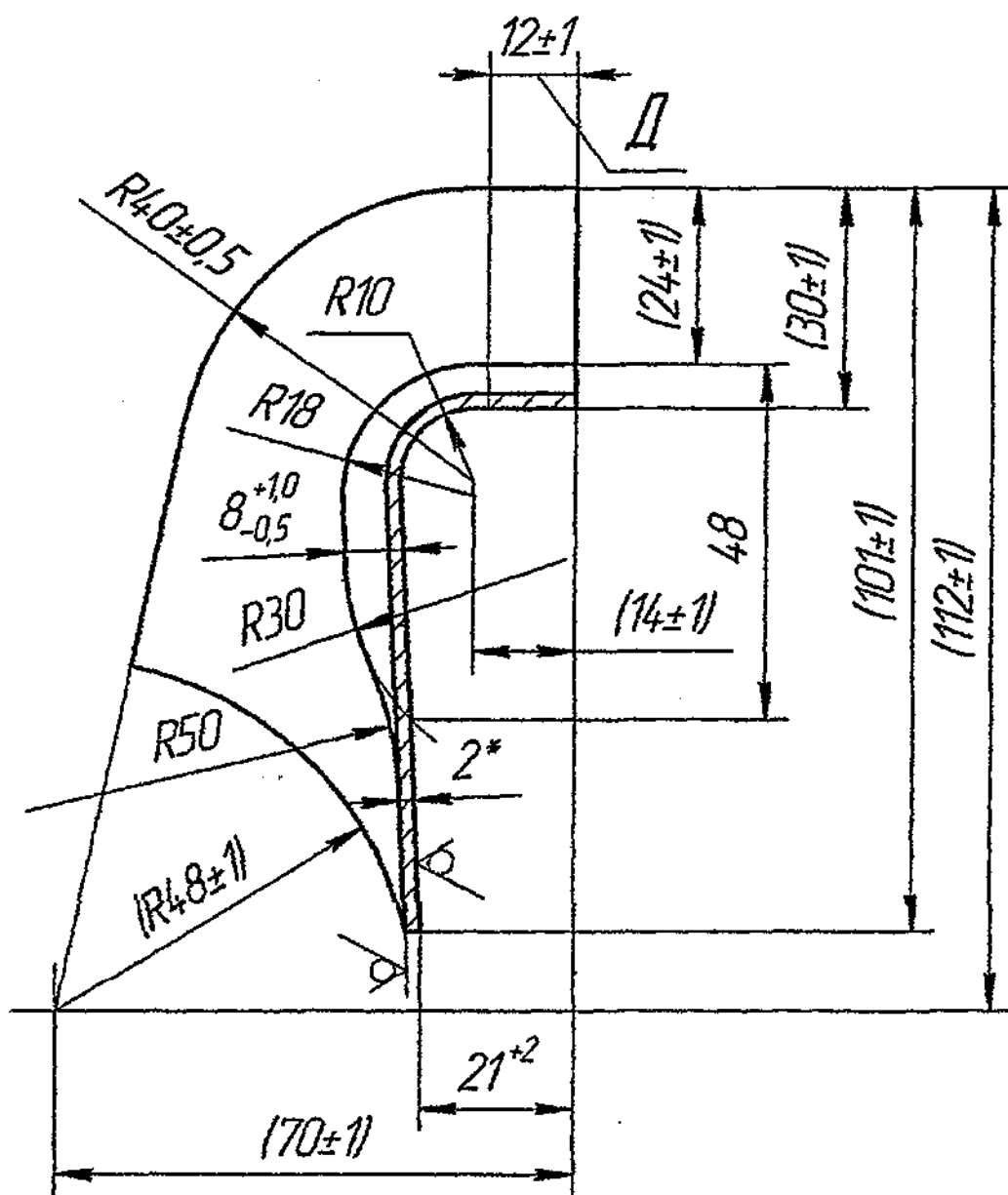
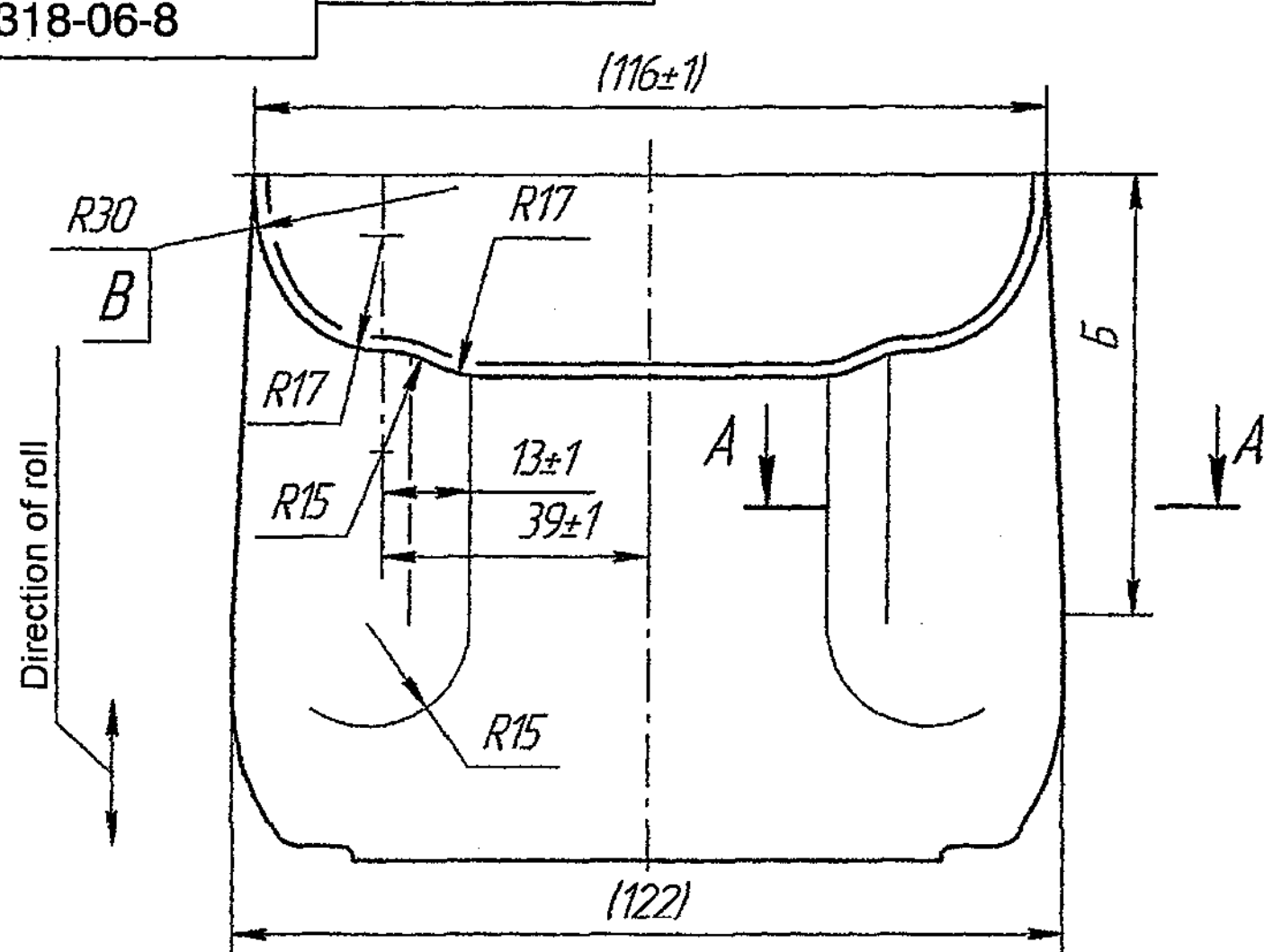
SIZE A2

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE-NIL

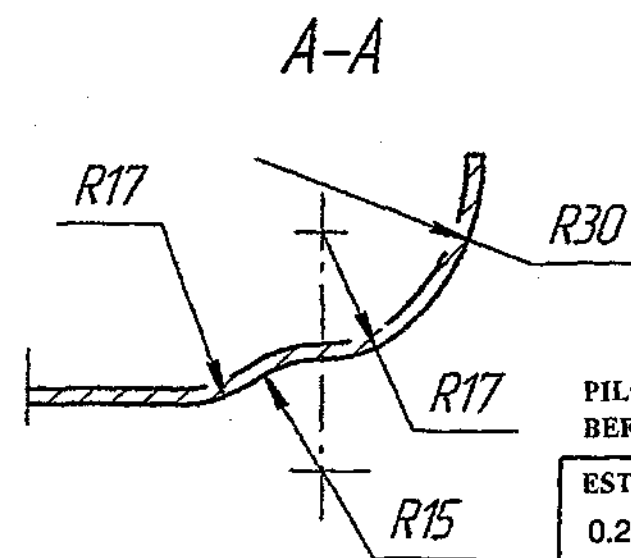
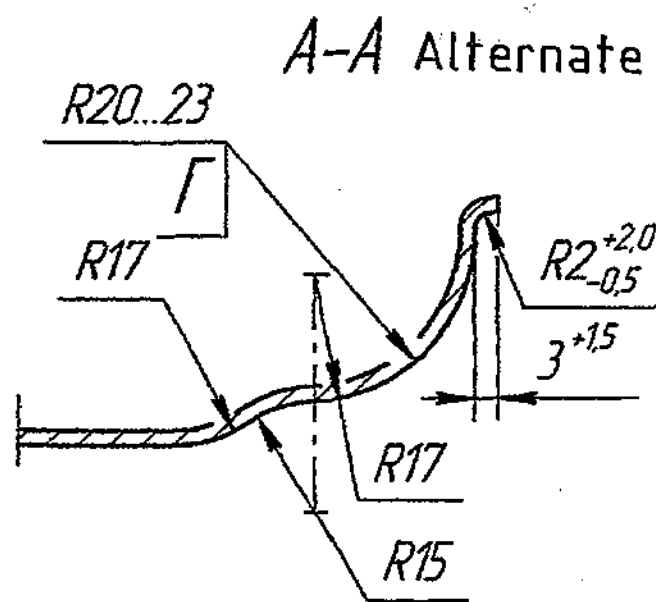
DRAWING NUMBER
3318-06-8

SHEET No. 1 OF 1

80 ✓ (✓)



1. Unspecified limit deviation of dimensions for cold stamping, make with accuracy ± 2 mm.
2. Thickness of material in thinned place should not be less than 1.5 mm.
3. Thickness, stratification, nicks and other defects are not permitted.
4. On section B ensure smooth passage of radius 'B' in radius Γ during manufacturing as per alternate.
5. During manufacturing as per alternate do not carry out flanging on section D.
6. Dimension given in brackets - after assembly.
7. * Dimensions for reference.



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

EST. WT. (kg) 0.229 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	P. Sharma	MATERIAL:- Sheet	USED ON:-
CHD	Shree...	572 GOST 1994-90	Cb.418-31-2,
APPD		12X18H10T-N2al or 12X18H10T-N2al GOST 5582-75	Cb.418-31-2-01
DATE	18-02-09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1:1	AVADI	
DIMENSIONS IN mm		TITLE:-	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69		LOWER HALF OF BRANCH PIPE	
ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER
ISSUE	DATE		3318-06-8
		NATURE OF AMENDMENTS	

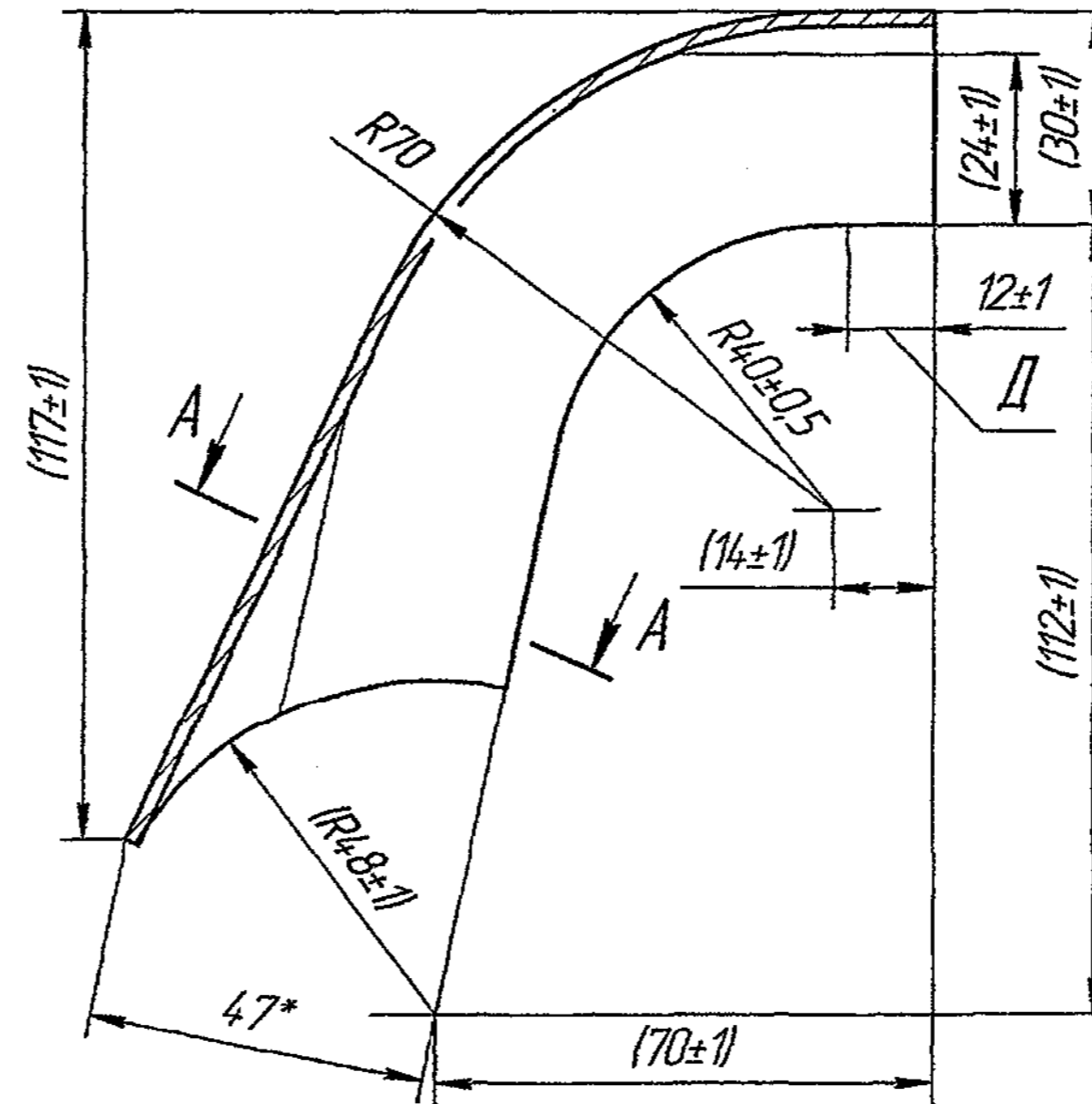
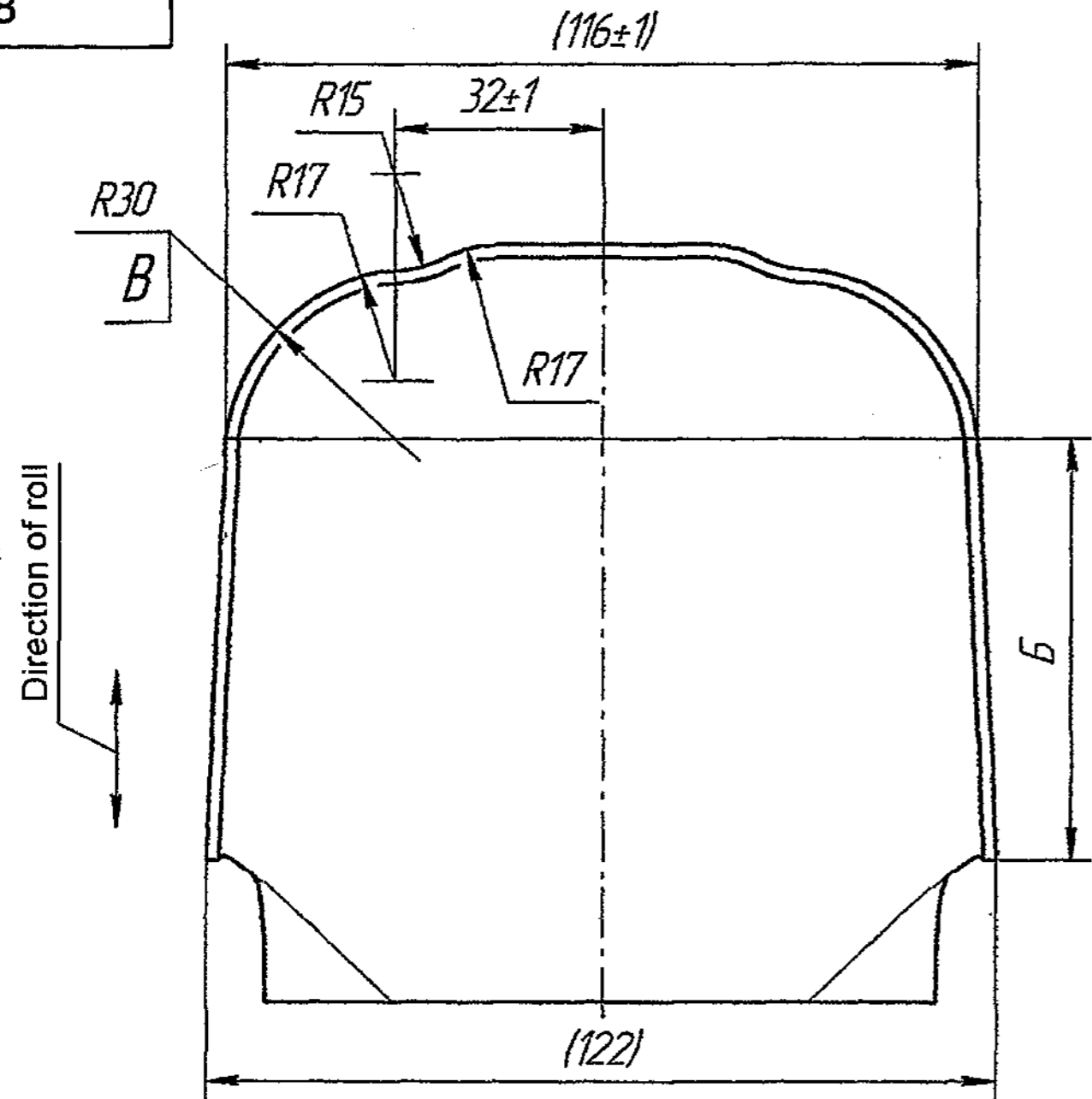
c8415-31-2-01

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE -NIL

DRAWING NUMBER
3318-07-8

SHEET No. 1 OF 1

80 ✓(✓)

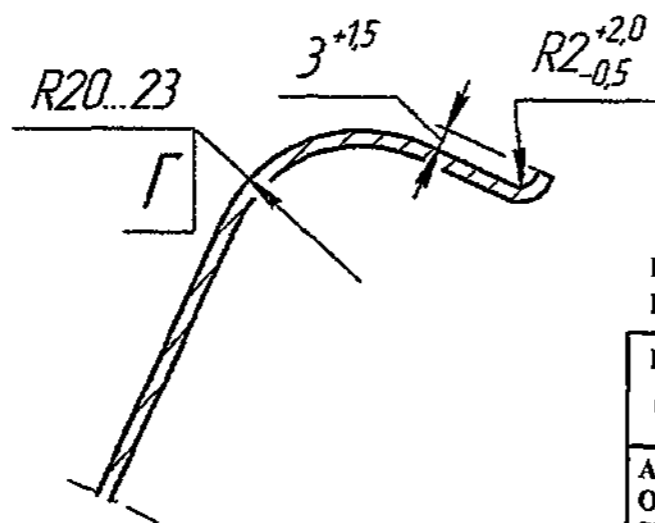
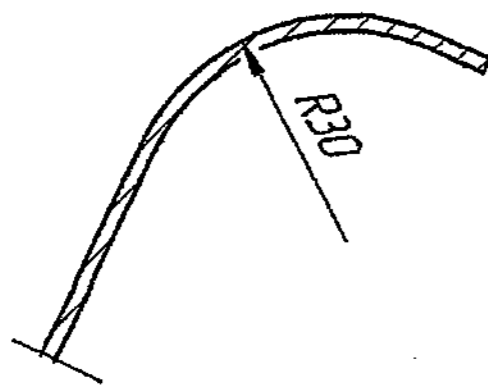


1. Unspecified limit deviation of dimensions for cold stamping, make with accuracy ± 2 mm.
2. Thickness of material in thinned place should not be less than 1.5 mm.
3. Thickness, stratification, nicks and other defects are not permitted.
4. On section B ensure smooth passage of radius 'B' in radius Γ during manufacturing as per alternate.
5. During manufacturing as per alternate, do not carry out flanging on section D.
6. Dimension given in brackets - after assembly.
7. * Dimensions for reference.

ALTERNATE

A-A Alternate

A-A



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

EST. WT. (kg) 0.428 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.

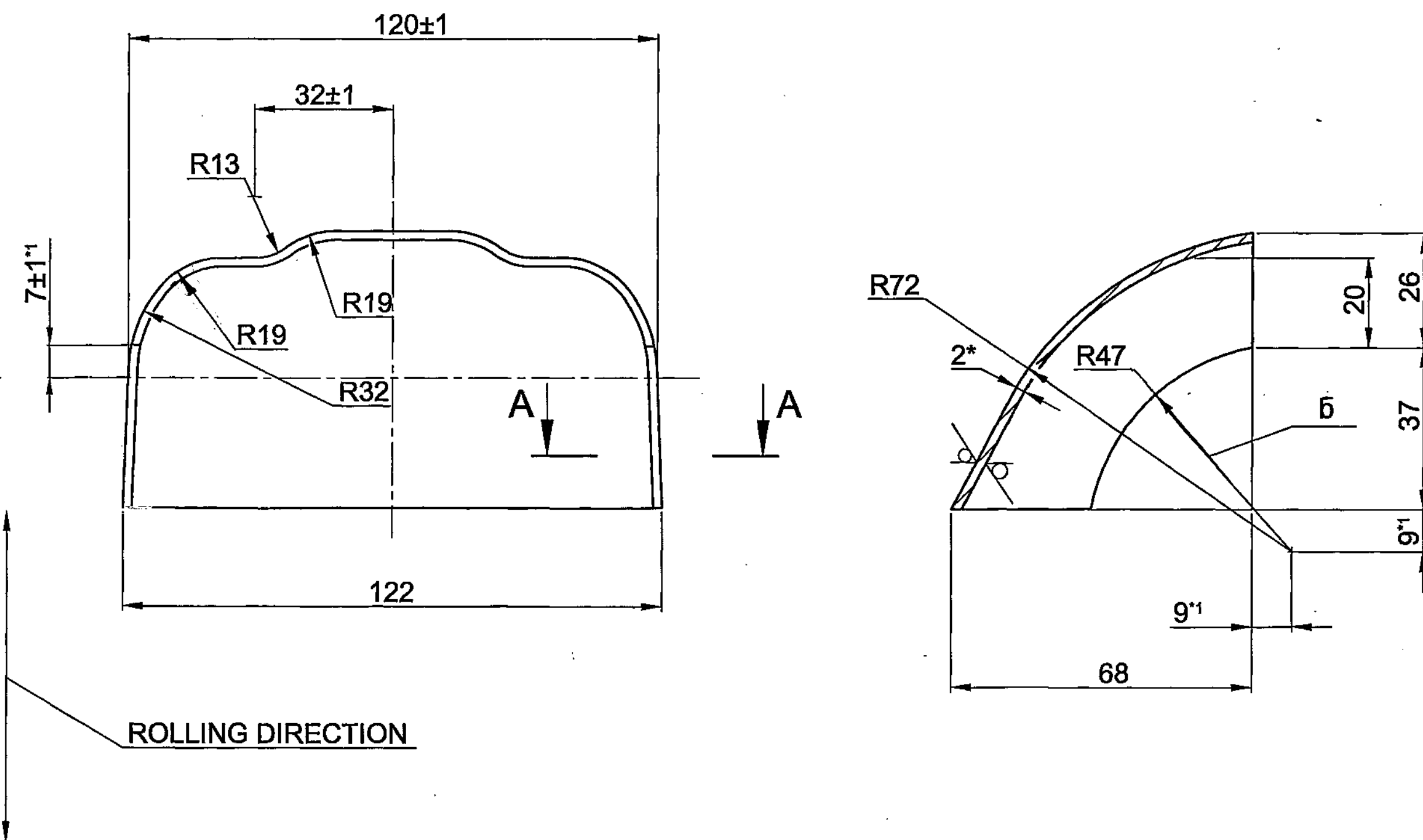
DRN	?	MATERIAL:- Sheet	USED ON:-
CHD		5T2 GOST 19904-90	Cb.418-31-2,
APPD		12X18H10T-M2a(or M3a) GOST 5582-75	Cb.418-31-2-01.
DATE	18-02-09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1:1		TITLE:-	
DIMENSIONS IN mm		UPPER HALF OF BRANCH PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	DRAWING NUMBER
ALL THREADS TO CONFORM TO			3318-07-8
ISSUE	DATE	NATURE OF AMENDMENTS	

F-158

SIZE A4x3

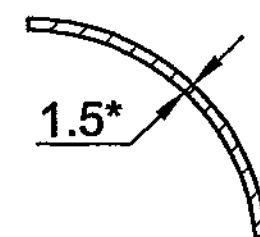
DRAWING NUMBER
3318-07-5

80 (✓)

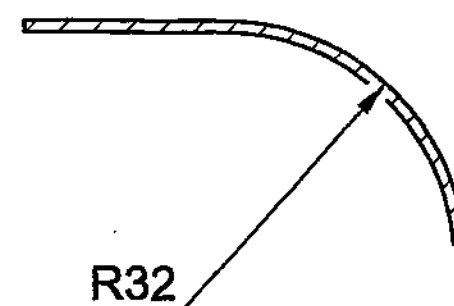


1. Alternate material steel 08ПC.10Gost 1050-88.
2. Unspecified limiting deviation of dimensions for cold forging should be ± 2mm.
3. Thickness of material in thinner areas should be minimum 1.5mm.
4. Cracks, layer separation, dents and other defects are not permitted.
5. Presence of corrugation and unevenness along the out-line of radius "b" is allowed.
6. Adjustment of outline of part at places is permitted.
7. * Dimensions are given for reference.
8. *1 Dimensions to be ensured by tool.

A-A ALTERNATE



A-A



Ⓐ EQUIVALENT MATERIAL
Gy.D D IS: 513-1994

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

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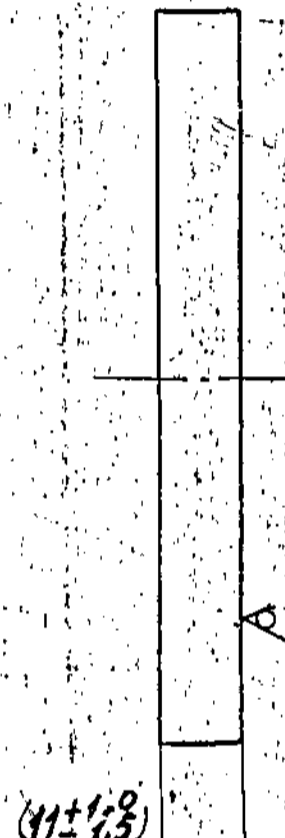
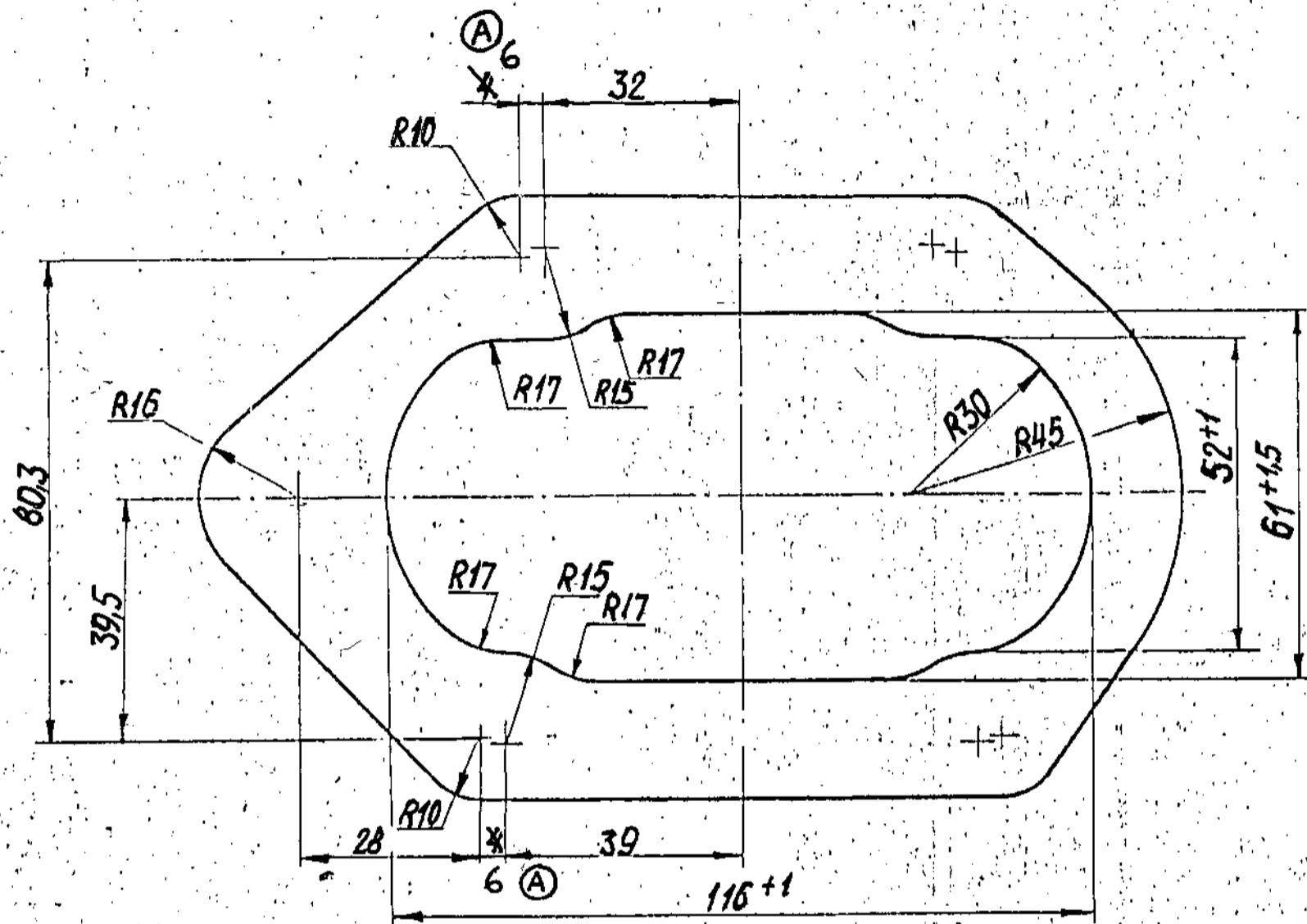
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS
OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-
SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	CHD	APPL	DATE	SCALE:- 1:1	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69	MATERIAL :- SHEET AT-2 GOST 19904-90 II-cb-08 to GOST 9045-93	USED ON:- CS 418-31-2
				DIMENSIONS IN mm		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
						TITLE :- UPPER LINING	
						D S CAT NUMBER	DRAWING NUMBER 3318-07-5
A	18.03.10	4 th Alf. Comm. Mt. Minutes Pt. No. 1 Of 26.10.09		ALL THREADS TO CONFORM TO			
ISSUE	DATE	NATURE OF AMENDMENTS					

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

F-4
69
253
SIZE A2

DRAWING INDICATED BASED ON RUSSIAN ORIGINAL ISSUE 7 (BK 81-31)
EXPLANATORY NOTE ADDED ON 12-2-82



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Неуказанные предельные отклонения размеров ± 0,5 мм
2. Размер в скобках - после сборки.
3. Заменитель материала сталь 15, 20 и 25 ГОСТ 1050-74.
4. Штамповочный скос 12 мм на сторону.

TECHNICAL REQUIREMENTS - TRANSLATED

1. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ± 0.5mm.
2. DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
3. ALTERNATIVE MATERIAL STEEL 15, 20, AND 25 GOST 1050-74.
4. DRAFT 12mm PER SIDE.

EXPLANATORY NOTE:-

MATERIAL QUOTED:- SHEET 12 GOST 19903-74
10 GOST 1577-81.

12 = THICKNESS OF THE SHEET
10 = GRADE OF OPENHEARTH STEEL
AS PER GOST 1577-81.

CHEMICAL COMPOSITION % (AS PER GOST 1050-74.)

C = 0.07 - 0.14, Si = 0.17 - 0.37, Mn = 0.35 - 0.65.
Cr = 0.15
S = 0.040
P = 0.035 (MAX)
Cu = 0.25
Ni = 0.25

MECHANICAL PROPERTIES AS PER GOST 1577-81.

ULTIMATE TENSILE STRENGTH: kgf/mm² (MIN) = 34
% ELONGATION (MIN) = 32
IMPACT STRENGTH kg cm/cm² (MIN) = 3

ⓑ EQUIVALENT MATERIAL
040 A 04 (EN 2A) BS:970

7	BK 81-31	12.2.82	12.2.82
ВНЕСЕН В ОБНОВЛ. ПОДП. ДОК.			

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

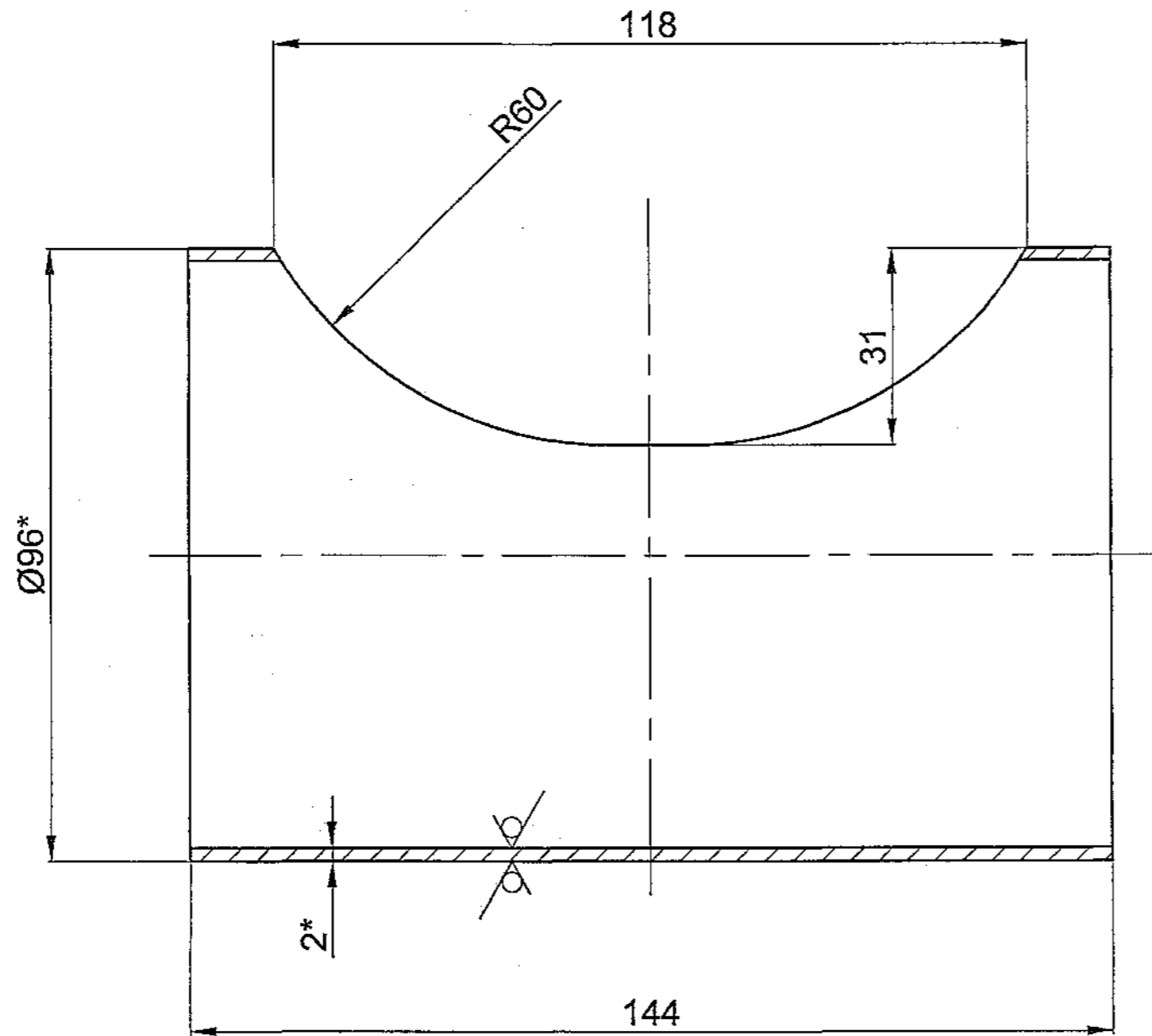
EST. MASS 0.6 Kg
TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRM	CHD	TCD	APPO	DATE	SCALE - 1:1	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED.	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
		V. MANIVANJAN		29.1.88						3318-08-7
					TITLE :-		FLANGE			
					4th ALT. COMM. MEQ. MINUTES		POINT No 2 DT. 26-10-09		NOTN. No. BK 86-455	
ISSUE	DATE	NATURE OF AMENDMENTS								
A	24.8.2K									

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
418-23-11

80 ✓ (✓)



1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5mm, above 80 mm upto 200mm ± 1mm.
2. * Dimensions are given for reference.

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

EST. WT. (Kg) **0.591** 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	<i>[Signature]</i>	MATERIAL :- PIPE 96x2-20A	USED ON :- Cb 418-32-01
			CHD	<i>[Signature]</i>	TY14-159-21-72	Cb 418-31-2-01
			APPD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
			DATE	26/1/07	AVADI	
			SCALE:-	1:1	TITLE :-	
			DIMENSIONS IN mm		PIPE	
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
			ALL THREADS TO CONFORM TO		DRAWING NUMBER	
			ISSUE	DATE	418-23-11	
				NATURE OF AMENDMENTS		

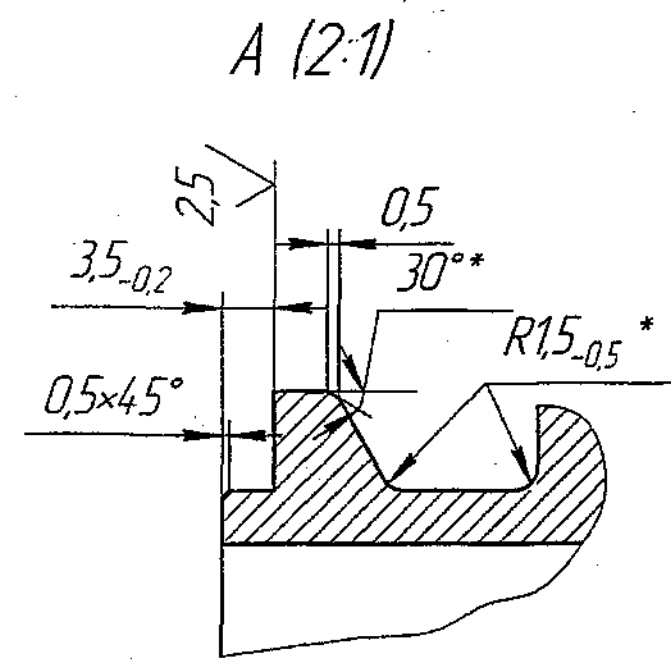
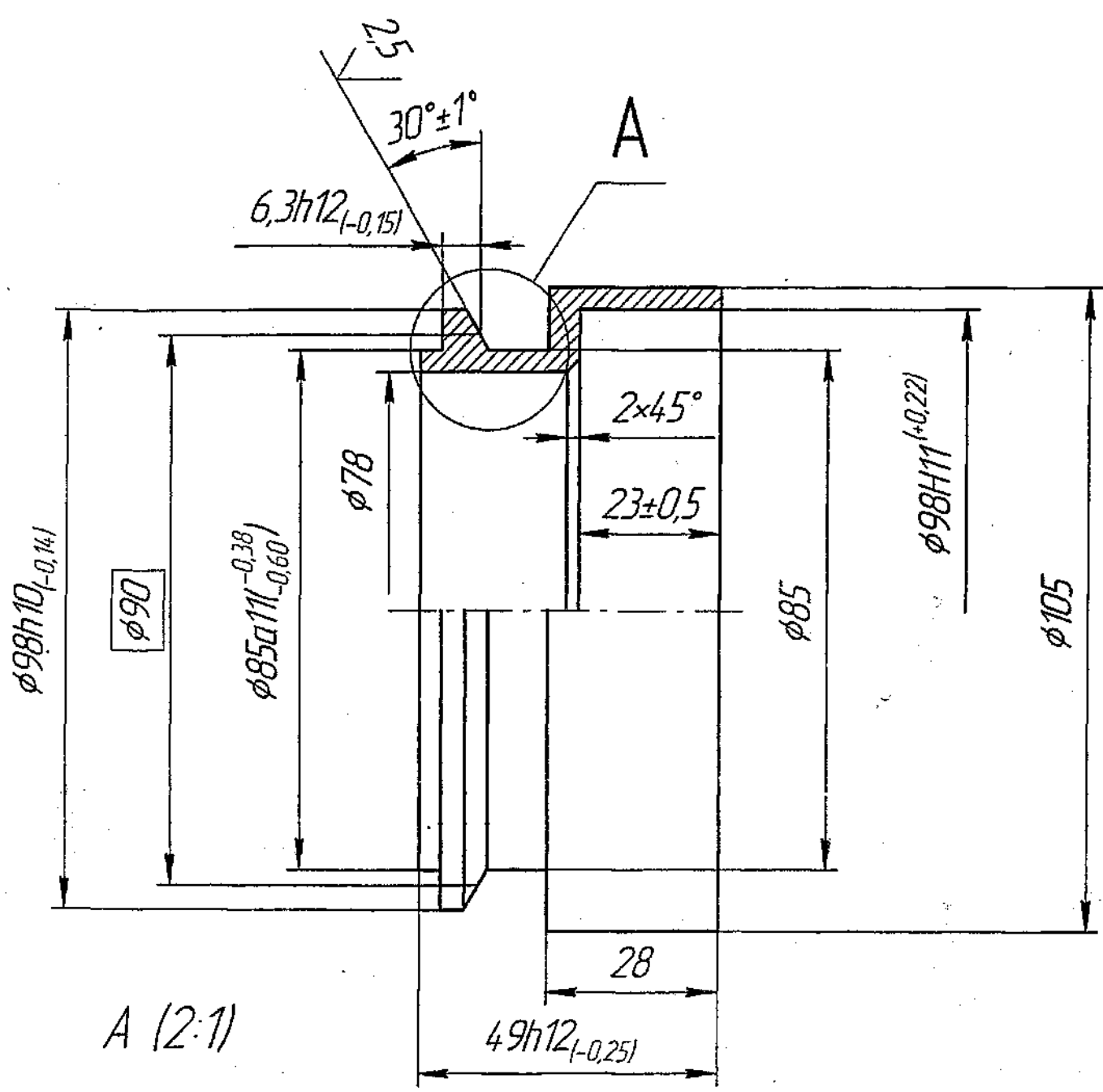
F-4
71
253

SIZE A3

DRAWING NUMBER
418-55-10

SHEET No. 1 OF 1

20 ✓ (✓)



1. Unspecified limit deviation of dimensions : H14, h14, ± IT14/2.
2. *Dimensions are ensured by tool.
3. Stamp on tag for final acceptance.
4. Alternate material steel 12X18H10T GOST 5632-72.

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL
DRG. REPLACES 418-55-1) ISSUE-5 VIDE NOTN. NO: 212-04

Ⓐ EQUIVALENT MATERIAL
04Cr.18Ni10Ti20 TOIS:6911-72

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

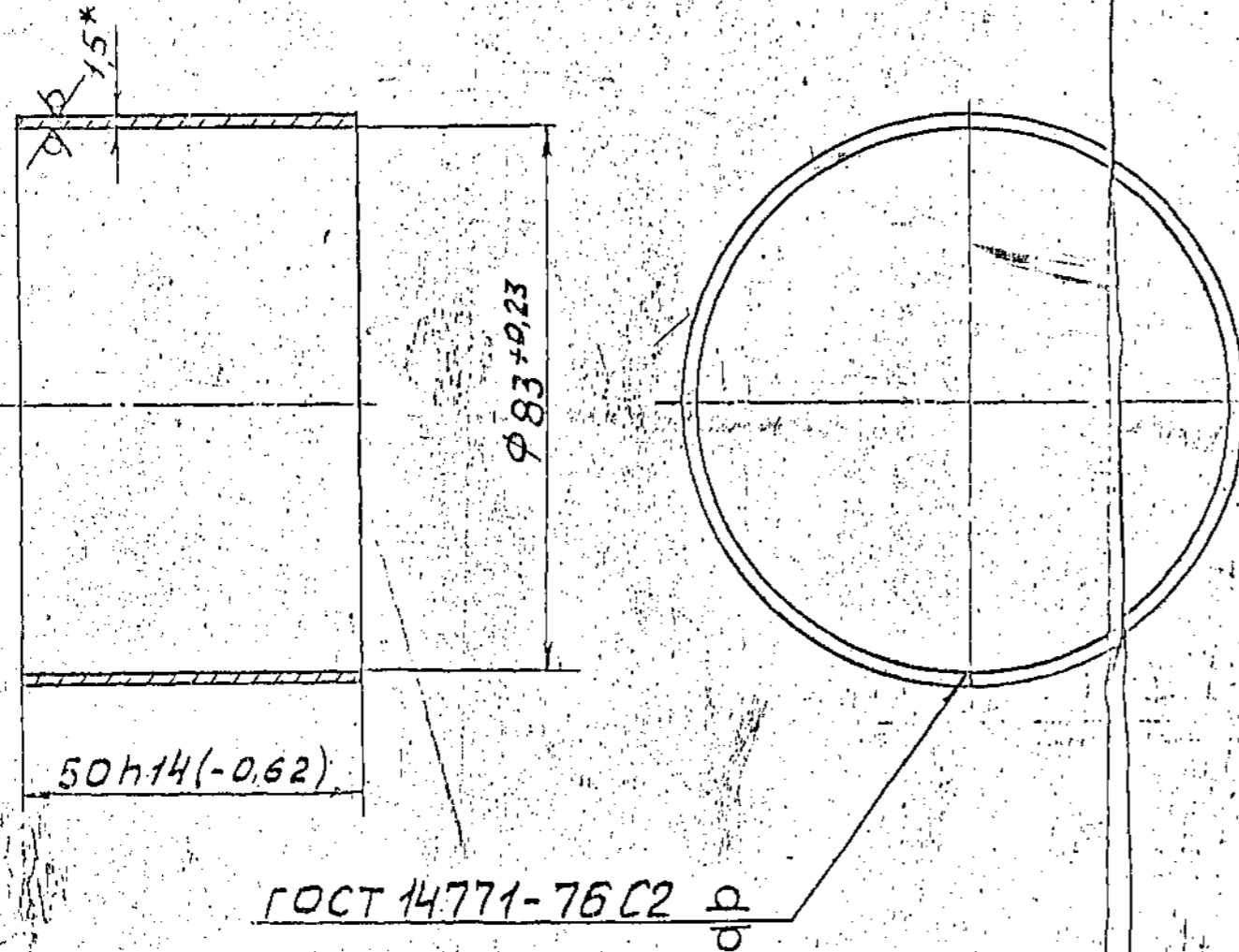
EST. WT. (Kg) 0.563 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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	B. A. / 24	MATERIAL :-	USED ON :-
CHD	<i>[Signature]</i>	STEEL 12X18H9T	Cb 418-31-2
APPD	<i>[Signature]</i>	GOST 5632-72	
DATE	4-12-08	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1 : 1	AVADI	
DIMENSIONS IN mm		TITLE :-	FLANGE
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			
ISSUE	A	D S CAT NUMBER	DRAWING NUMBER
DATE	28.8.10		418-55-10
NATURE OF AMENDMENTS	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09		

F-158
SIZE A3

ЕСКА



(A) EQUIVALENT MATERIAL
04Cr.18Ni.10Ti.20 TOIS.6911 72

1. Заменитель материала сталь 12X18H10T-M3a ГОСТ 5582-75.
2. Трещины, рванины, расслоения и вмятины не допускаются.
- 3.* Размер для справок.

- 1) ALTERNATE MATERIAL: STEEL 12X18H10T M3a GOST 5582-75.
- 2) CRACKS, TEARS LAMINATION AND DENTS ARE NOT ALLOWED.
- 3) * DIMENSIONS FOR REFERENCE.

** SHEET 6-1,5 GOST 19904-74
12X18H10T-M2a GOST 5582-75

Ил. № подл. 36981 | Пост. в латв. 4.12.85 | Инв. № подл. 4.12.85 | Пост. и дата 4.12.85
 DRG. INDIANISED BASED ON RUSSIAN - ORIGINAL ISSUE (BK 84-824)

PILOT SAMPLE SHOULD BE APPROVED BY A HSP BEFORE BULK PRODUCTION

		EST. MASS 0,155 Kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)
A	28.8.10	4 th Alt Comm Mtg Minutes Point No.16 Dt. 26.10.09	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	MATERIAL: ** SEE ABOVE	USED ON:
DRN <i>[Signature]</i>	SCALE: 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
CHD <i>[Signature]</i>	DIMENSIONS IN mm	A V A D I	
YCD <i>[Signature]</i>	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE: BUSHING	
APPD <i>[Signature]</i>	ALL THREADS TO CONFORM TO	D/S CAT NUMBER	DRAWING NUMBER 418-85-5

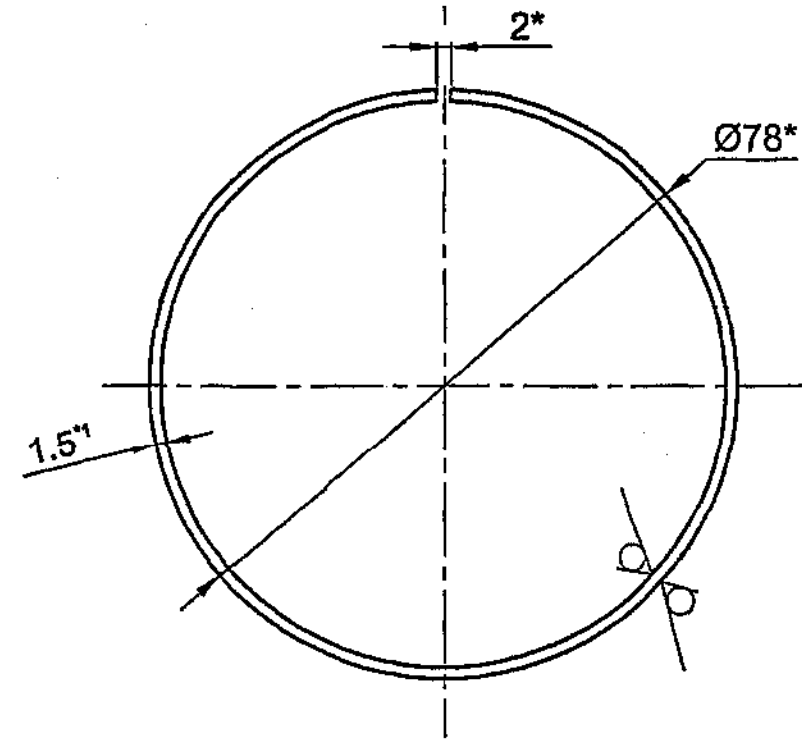
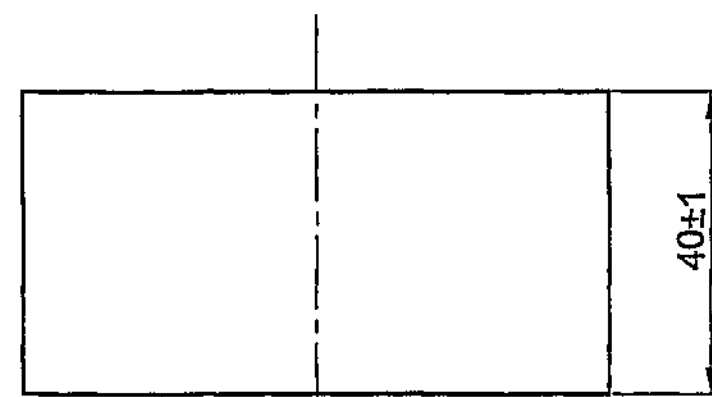
406 - BK84-824

DRAWING NUMBER
418-85-6

SHEET No. 1 OF 1

80 (✓)

P. JAVARDHANAN
 JTO (D)
 Dt. 21 Oct 2010



1. Length of unfolded Bush L=237 mm.
2. * Dimension to be ensured by tool.
3. *¹ Dimension is given for reference.

③A EQUIVALENT MATERIAL
04 Cr.18 Ni 10Ti 20 TO IS:6911-72.

DRAWING REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

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

EST. WT. (Kg) 0.119 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	Sd/=	MATERIAL :- SHEET	USED ON :- Cb 418-2-01
			CHD	Sd/=	BT-1.5 GOST 19904-90	
			APPD	Sd/=	12X18H10T-M2a GOST 5582-75	
			DATE	13-01-2007	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			SCALE:- 1 : 1			
			DIMENSIONS IN mm		TITLE :-	
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		BUSH	
			3A	23.10.10	4 th Alt. Comm. Mtg. Minutes Point No. 16 Dt. 26.10.09	D S CAT NUMBER
			ISSUE	DATE	NATURE OF AMENDMENTS	DRAWING NUMBER
						418-85-6

F4
73
253

SIZE A3

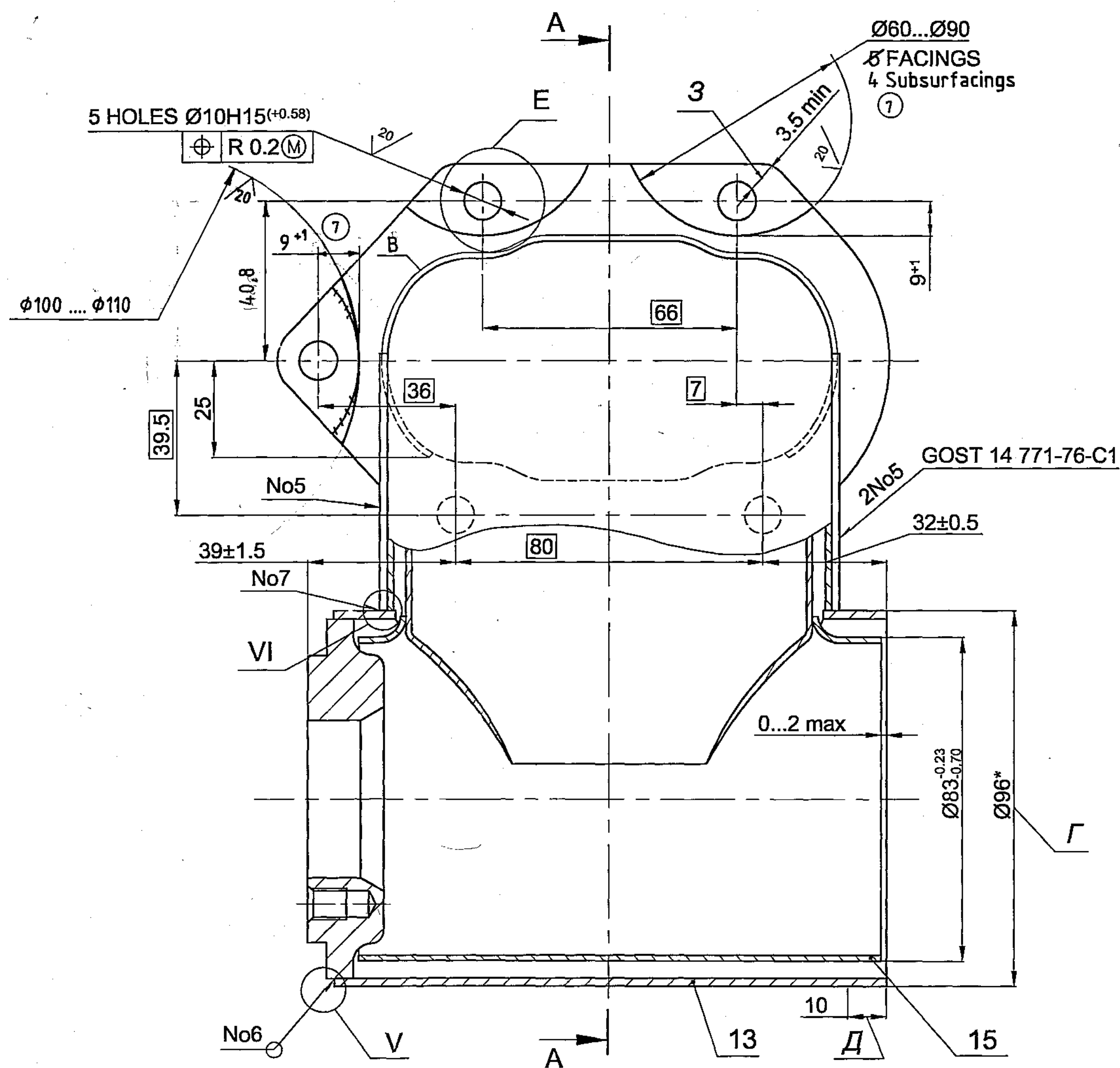
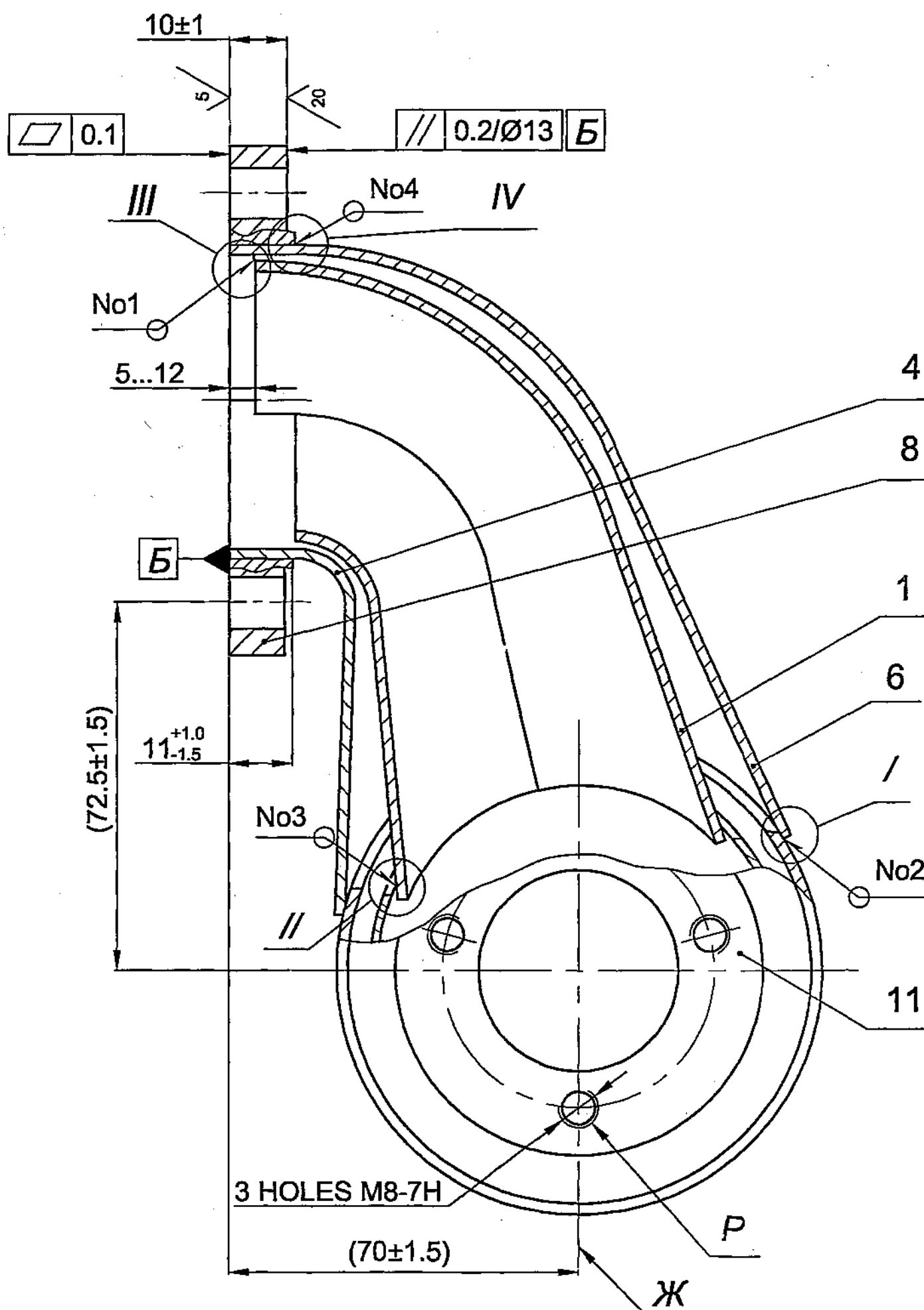


FIGURE:1
A-A



E(2:1)ALTERNATE

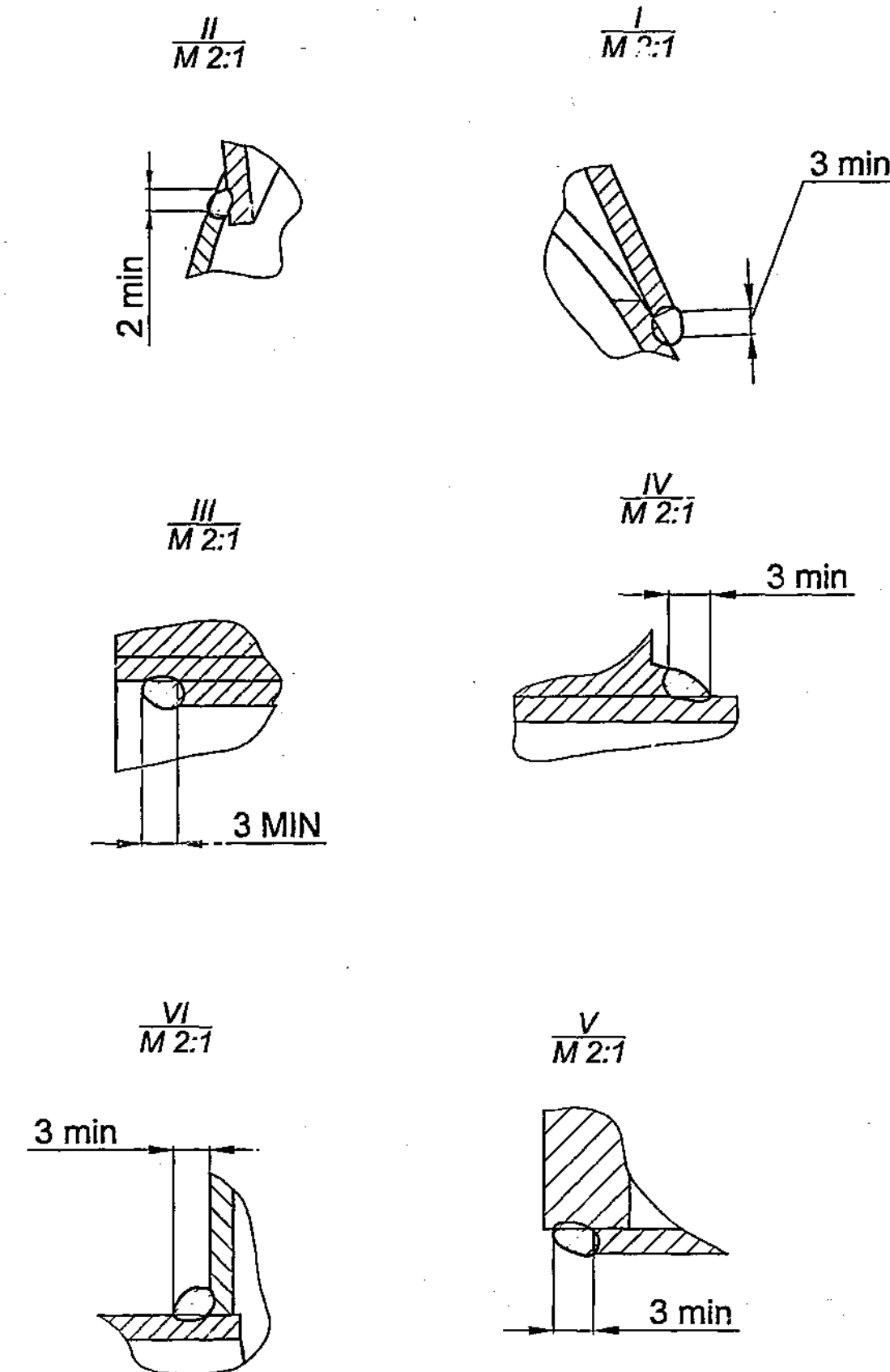
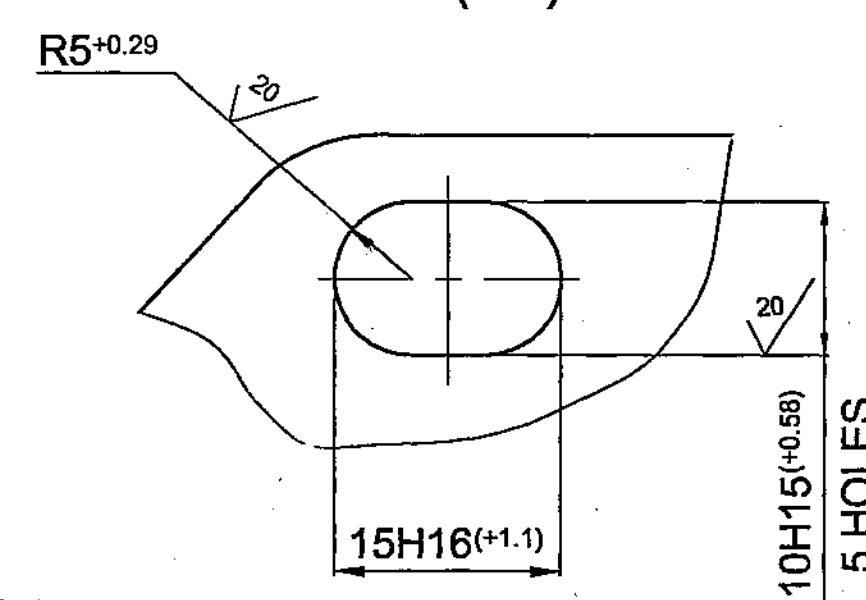
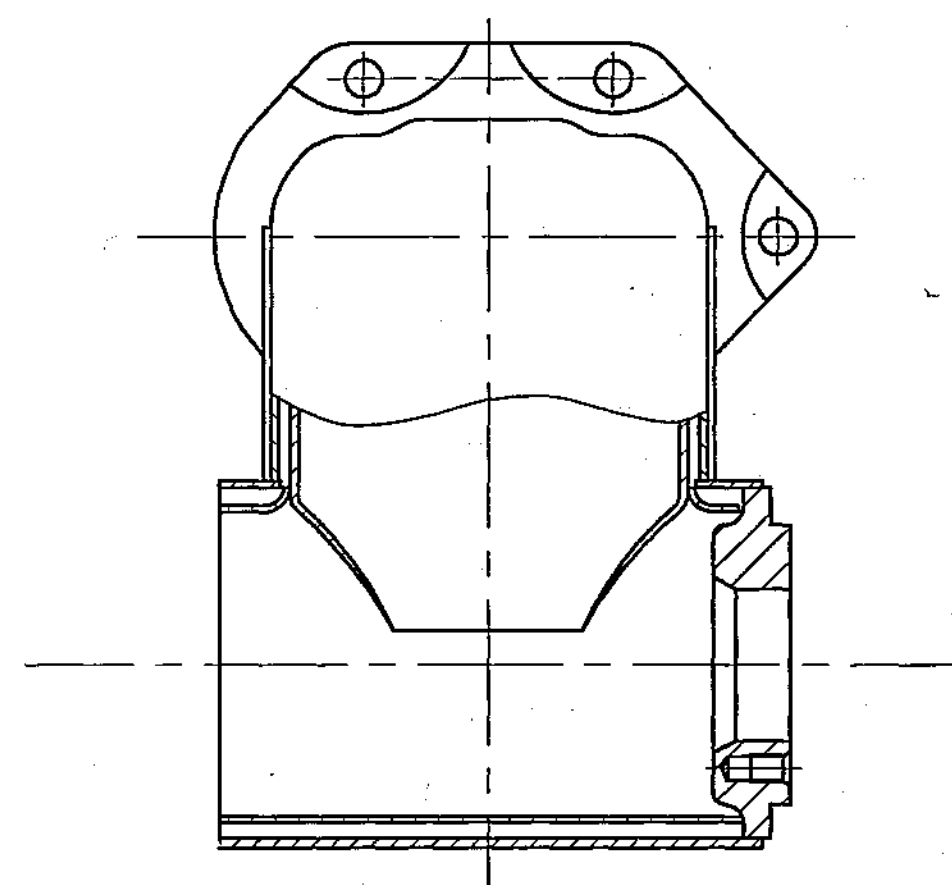


FIGURE 2
REMAINING: SEE FIGURE 1
M 1:2



DRG. NO	FIGURE
sb.418-32	1
-01	2

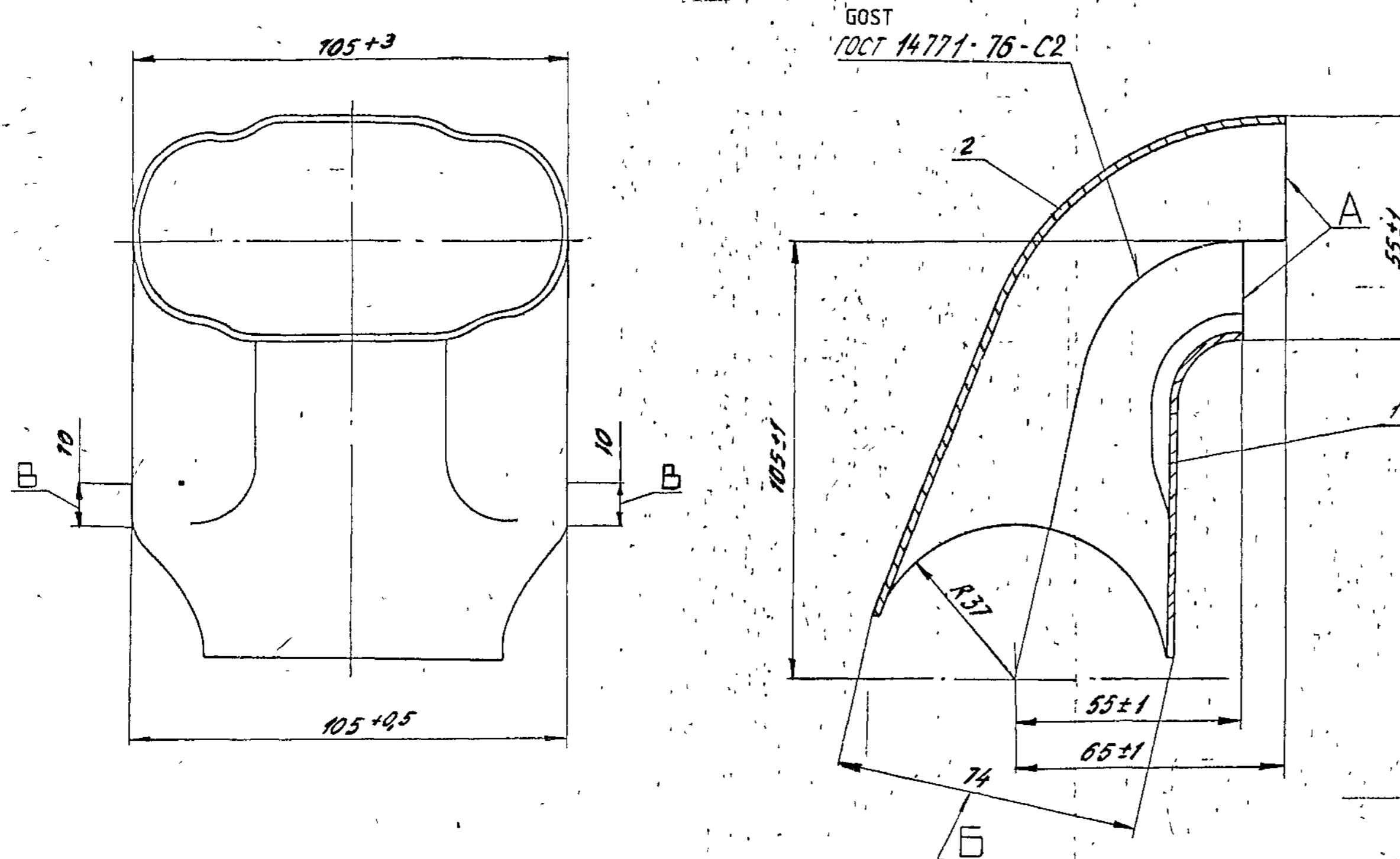
1. Welding joint No.1,2,3,4,7 to be carried out in shielding gas medium.
2. Welding joint No.6 to be carried by manual Electric - arc welding.
3. Test for airtightness with air in water tank under pressure of $(0.2 \pm 0.05) \text{ MPa}$ [$(2 \pm 0.5) \text{ Kg/cm}^2$]. Air leakage in joint No.2,4,6 is not allowed. In leakage areas, rewelding is allowed with subsequent dressing and hydraulic testing.
4. Adjustment of parts item 1,4,6,15 is allowed at site during assembly.
5. The shift of hole axis "P" with respect to axis "X" should be maximum 2".
6. Dimensions in brackets - After assembly.
7. On section "B" along the contour of flange of joint to be carried out in two phases with larger leg on the branch - pipe wall.
8. * Dimensions are given for reference.
9. Dimension "I" to be calibrated up to $\text{Ø}(99 \pm 1) \text{ mm}$ maximum on section I.
10. Welding of flange lug item 8 upto dimension of "3" is permitted.

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

EST. WT.(Kg) 3.015 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	APPD	DATE	MATERIAL :-	USED ON :-
CHD	APPD	14/12/07		CB 418-50-45 CB 418-51-45
SCALE:- 1:1			CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
DIMENSIONS IN mm			TITLE :-	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			BRANCH PIPE ASSY.	
ALL THREADS TO CONFORM TO			D S CAT NUMBER	DRAWING NUMBER
7 16-2-09 Notification No.33-05 (F-158)				Cb.418-32/-01
ISSUE DATE NATURE OF AMENDMENTS				



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Контур А и размер Б подогнать по сопрягаемой детали перед приваркой в узле.
2. Сварные швы на участках В зачистить заплотило.

TECHNICAL REQUIREMENTS - TRANSLATED

- 1 CONTOUR 'A' AND DIMENSION 'B' SHOULD BE ADJUSTED TO SUIT MATING COMPONENT BEFORE WELDED TO ASSEMBLY.
- 2 WELDS ON SECTION 'B' SHOULD BE DRESSED FLASH

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

		EST MASS 0.37	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	MATERIAL -	USED ON -
DRN	SCALE - 1:1		CB 418-50-29 CB 418-51-29
CHD	DIMENSIONS IN mm	CONTROLLER OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE - BRANCH PIPE SCREEN	
APPD	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
DATE	29 1 88		CB 318-22-5CB

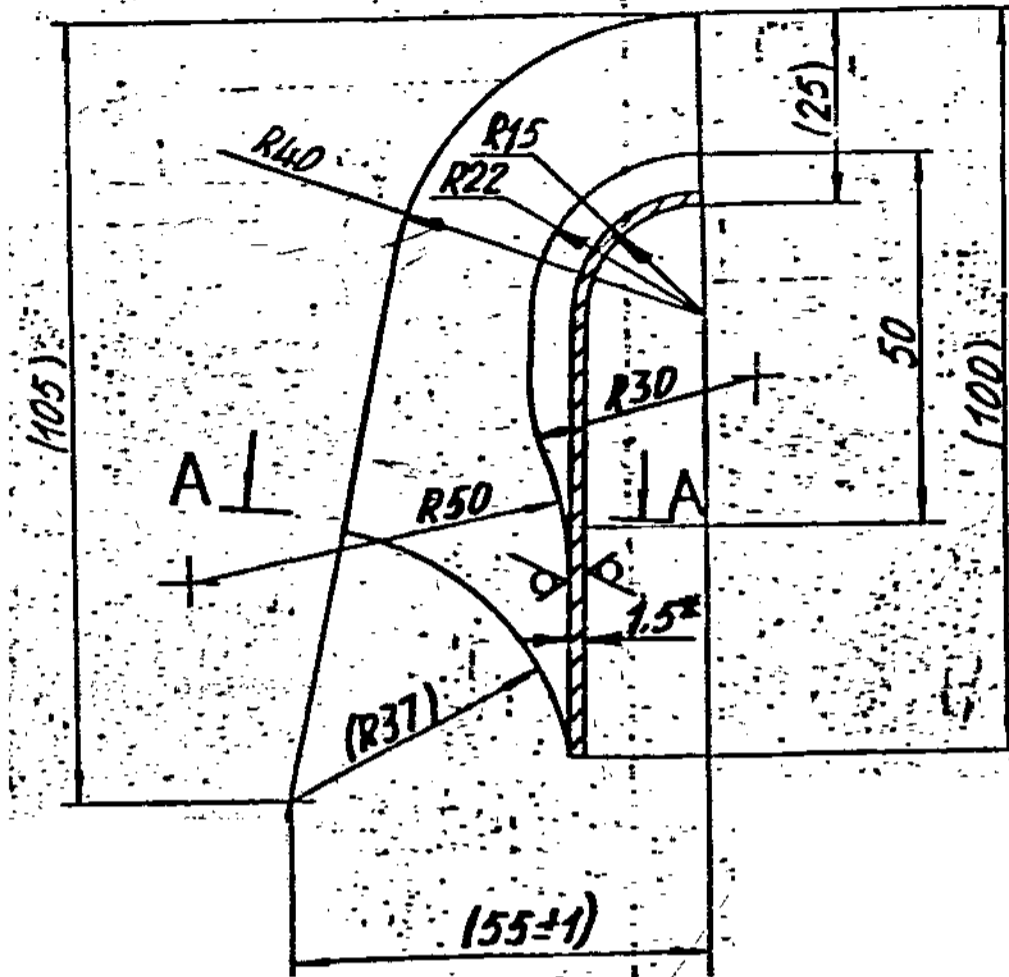
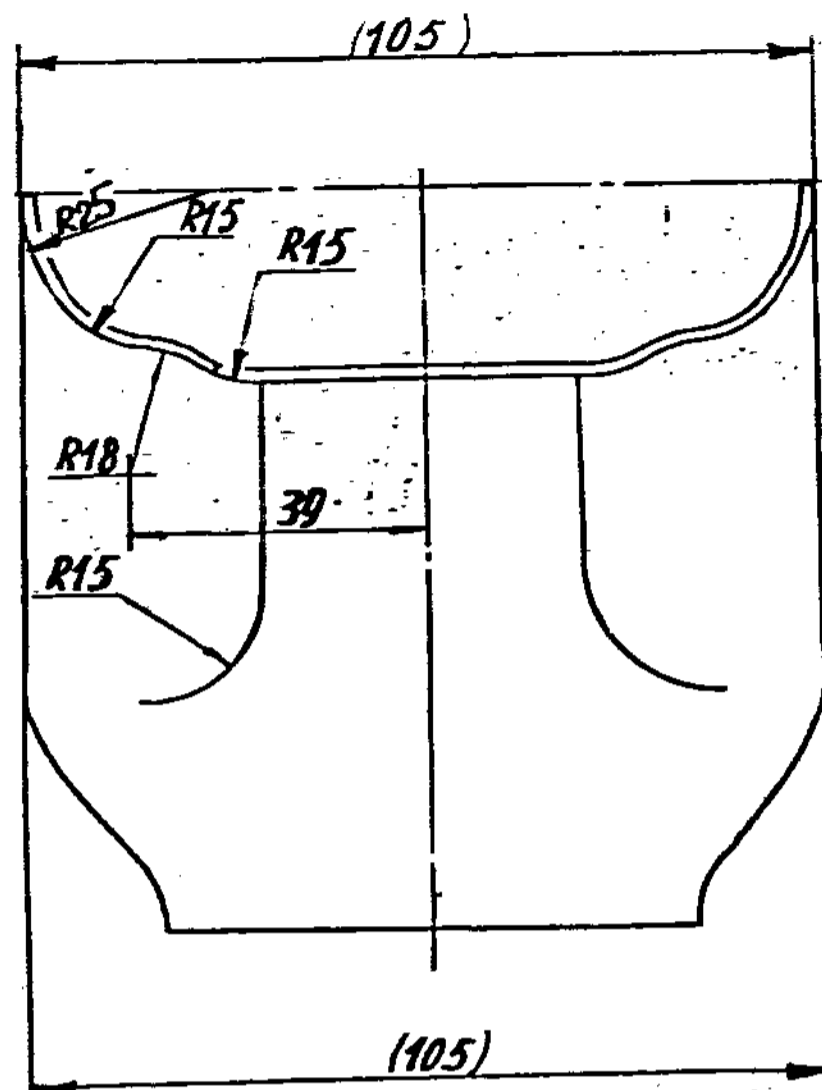
2	BK 81-31	10/11/88	10/11/88
10/11/88	10/11/88	10/11/88	10/11/88

DRAWING NUMBER
318-20-5

RZ 89/ (✓)

TECHNICAL REQUIREMENTS - TRANSLATED

1. DIMENSIONS WITH UNSPECIFIED DEVIATIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5\text{mm}$.
2. MATERIAL THICKNESS IN THINNED PLACES SHOULD BE 1mm MIN.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. DIMENSION IN BRACKETS SHOULD BE ENSURED AFTER ASSEMBLY.
5. * DIMENSION FOR REFERENCE.



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET Б 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST 5582-75

Б = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74

12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED & BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);

CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080°C

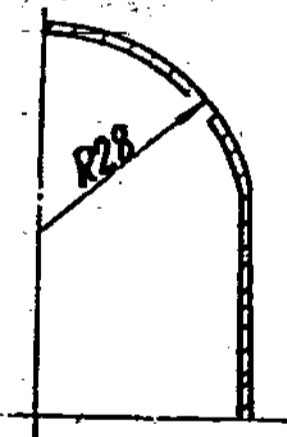
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

YIELD POINT Kgf/mm^2 (MIN) = 20

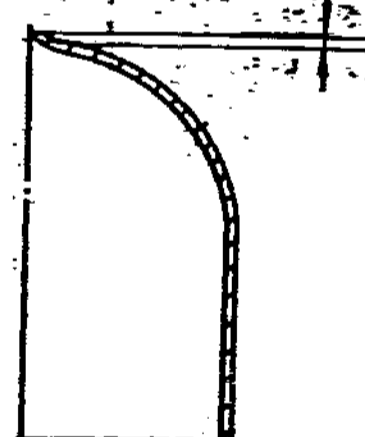
± RELATIVE ELONGATION (MIN) = 40

A-A



ALTERNATIVE
Вариант

A-A



**

SHEET: Б 1.5 GOST 19904-74
12x18H10 -M2a (OR M3a) GOST 5582-75

EXPLANATORY NOTE ADDED ON 18-2-92

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

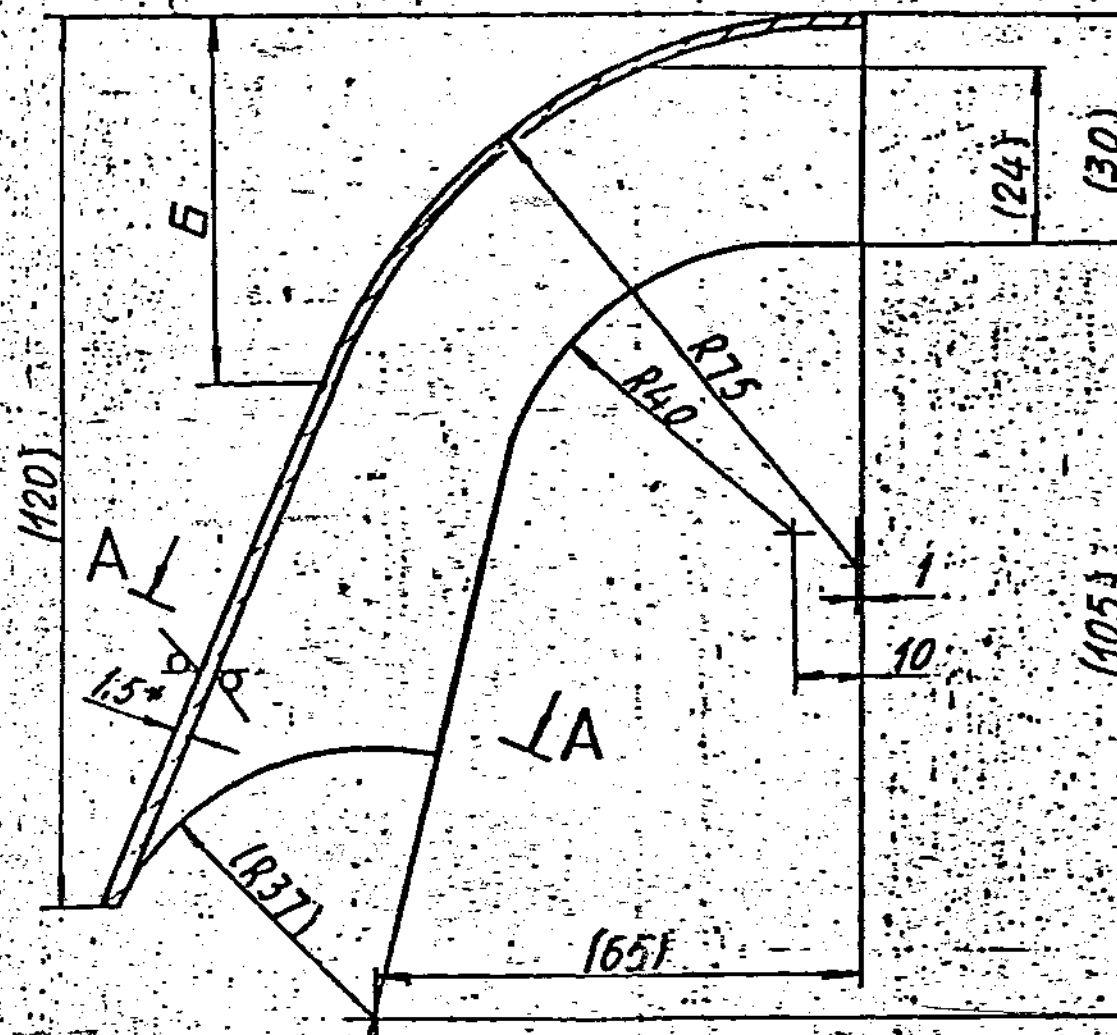
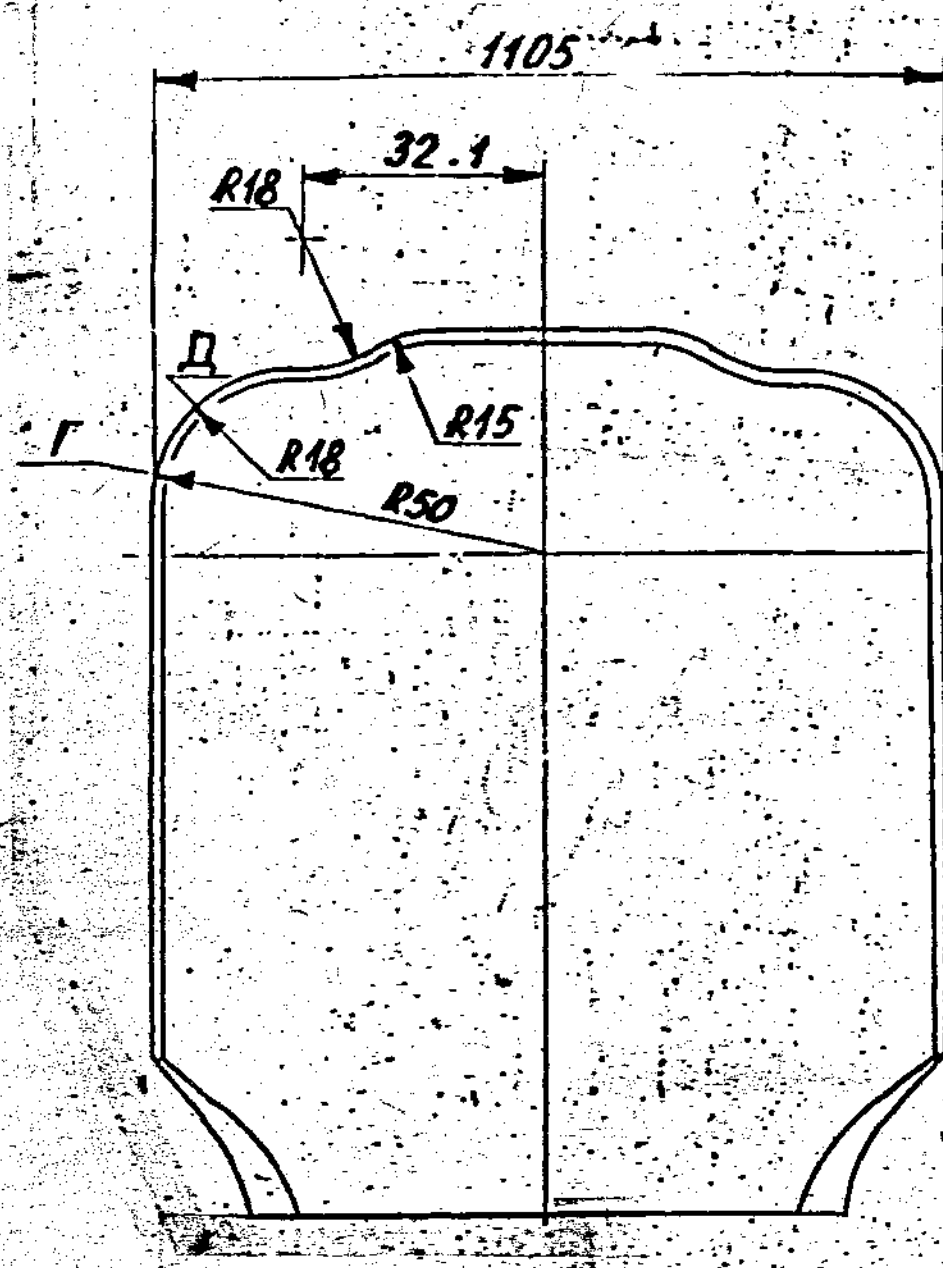
EST. WT. 0.135 kg TO BE STAMPED OR MARKED WHERE INDICATED THIS * LETTERS!

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

DRN	---	MATERIAL	SEE ABOVE **	USED ON	C5318-22-5
CHD	---	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)			
TCD	---	A V A D I			
APPD	---	TITLE			LOWER PART OF SCREEN
DATE	29-1-88	D S CAT NUMBER			
SCALE	1:1	DRAWING NUMBER			318-20-5
DIMENSIONS IN mm					
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2Y2-69					
ALL THREADS TO CONFORM TO					
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
318-21-5

80° (✓)



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST5582-75

B = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74.
12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED OR BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080 °C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

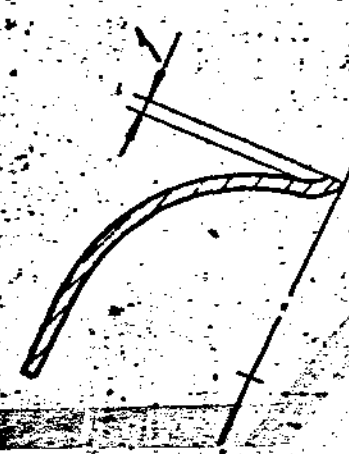
YIELD POINT Kgf/mm^2 (MIN) = 20

RELATIVE ELONGATION (MIN) = 40

A-A

A-A

ALTERNATIVE
ВЕРСИИ



TECHNICAL REQUIREMENTS - TRANSLATED

- UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5mm$.
- MATERIAL THICKNESS IN THE THINNED PLACES SHOULD BE NOT LESS THAN 1mm.
- CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
- SMOOTH TRANSITION OF RADIUS B TO RADIUS Γ AND RADIUS A SHOULD BE ENSURED ON SECTION B.
- DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
- * DIMENSIONS FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS: 6911-72

**
SHEET: B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a
GOST 5582-75

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

EST. WT. 0.235 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	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69
				29-1-88	1:1		
				MATERIAL :-		USED ON :-	
				SEE ABOVE **		CB 318-22-5	
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
				A V A D I			
				TITLE		UPPER PART OF SCREEN	
				D S CAT NUMBER		DRAWING NUMBER	
						318-21-5	
ISSUE	DATE	NATURE OF AMENDMENTS					
A	28.8.10	4 th ALT Comm Meeting Minutes Point No. 16 Dated 26.10.09					

DRAWING BASED ON RUSSIAN ORIGINAL ISSUED (AK 87-31)

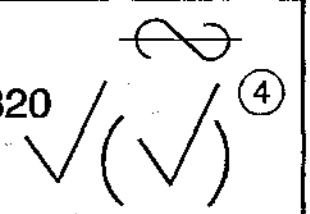
EXPLANATORY NOTE ADDED ON 18-2-92

SIZE A2

DRAWING NUMBER
3318-06-4

SHEET No. 1 OF 1

EXPLANATORY NOTE :-

Rz 320 

MATERIAL QUOTED : SHEET A2 GOST 19904 - 74
II - Γ - 10 GOST 16523 - 70

- A = HIGH ACCURACY
- 2 = THICKNESS OF COLD ROLLED SHEET STEEL TO GOST 19904 - 74
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW - DEEP DRAWN
- 10 = GRADE OF STEEL

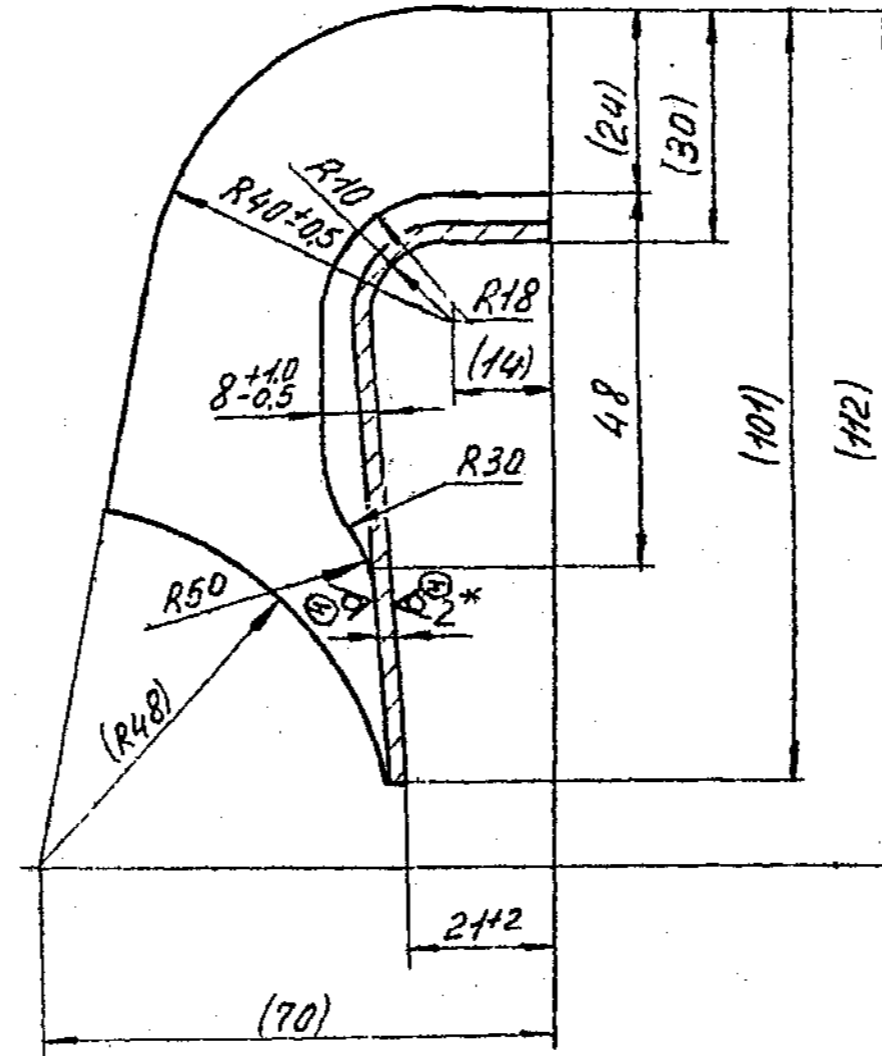
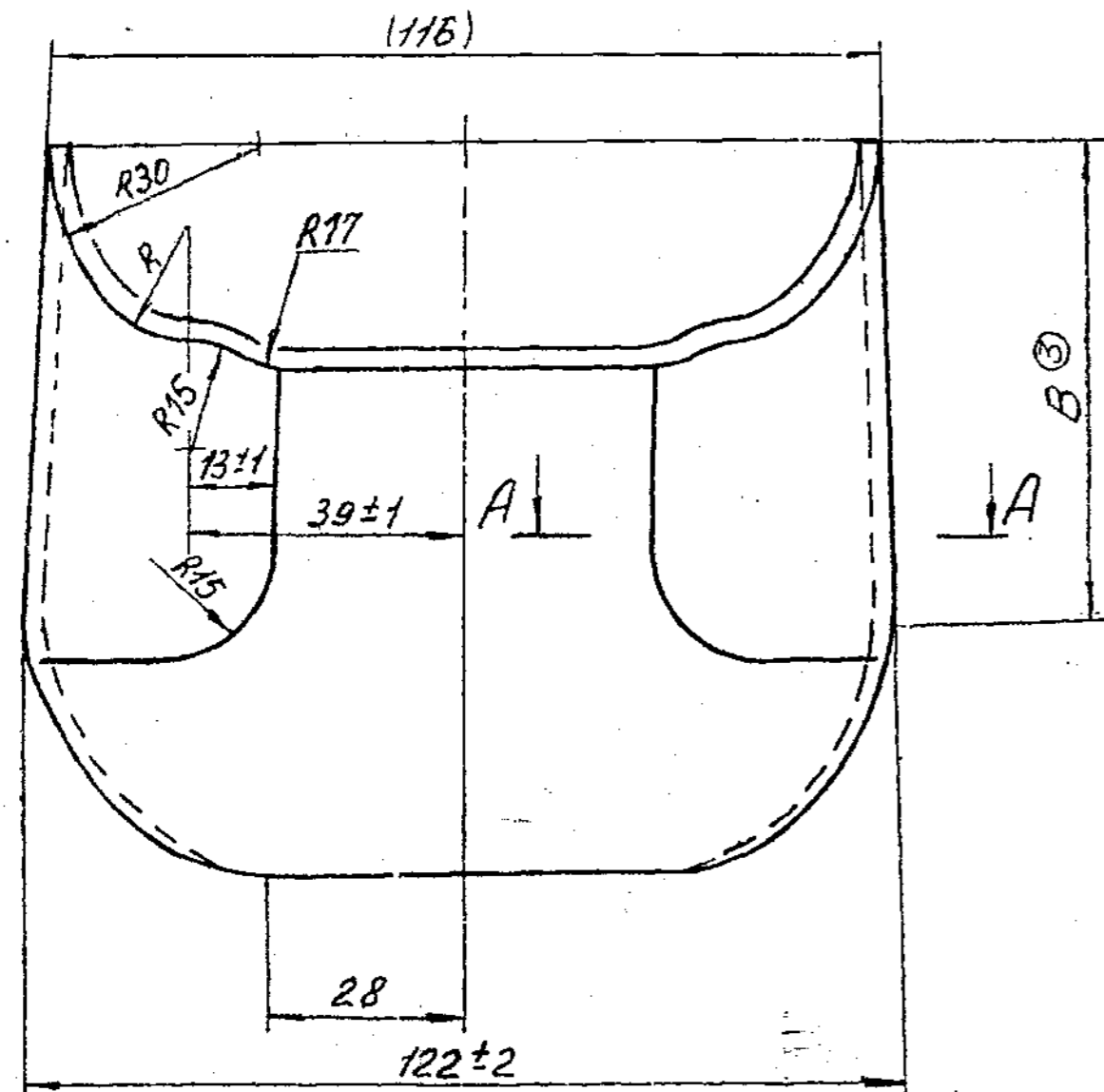
CHEMICAL COMPOSITION % (AS PER GOST 1050 - 74)

CARBON = 0.07 - 0.14 ; SILICON = 0.17 - 0.37
MANGANESE = 0.35 - 0.65
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX)
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX)
NICKEL = 0.25 (MAX)

MECHANICAL PROPERTIES (AS PER GOST 16523 - 70)

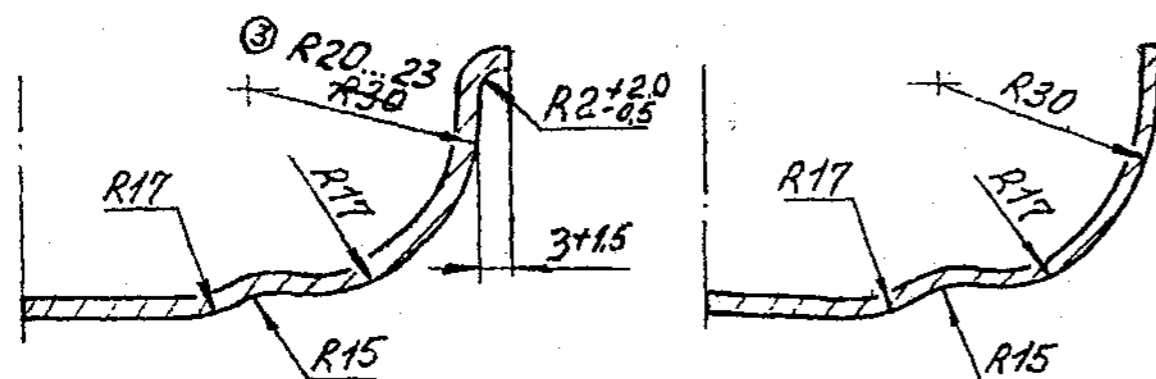
ULTIMATE TENSILE STRENGTH $Kgf/mm^2 = 30 - 42$
% ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE ± 2 mm.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY ± 1 mm.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION "B"



A-A ALTERNATIVE

A-A



ⓑ EQUIVALENT MATERIAL
Gr. DD IS: 513-1994

Ⓐ ALTERNATIVE MATERIAL :- SHEET A-Γ-B-0-2.0 GOST 19904 - 74
II - BF 08 ΓC GOST 9045 - 80

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

EST. WT. (Kg) 0.229 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.

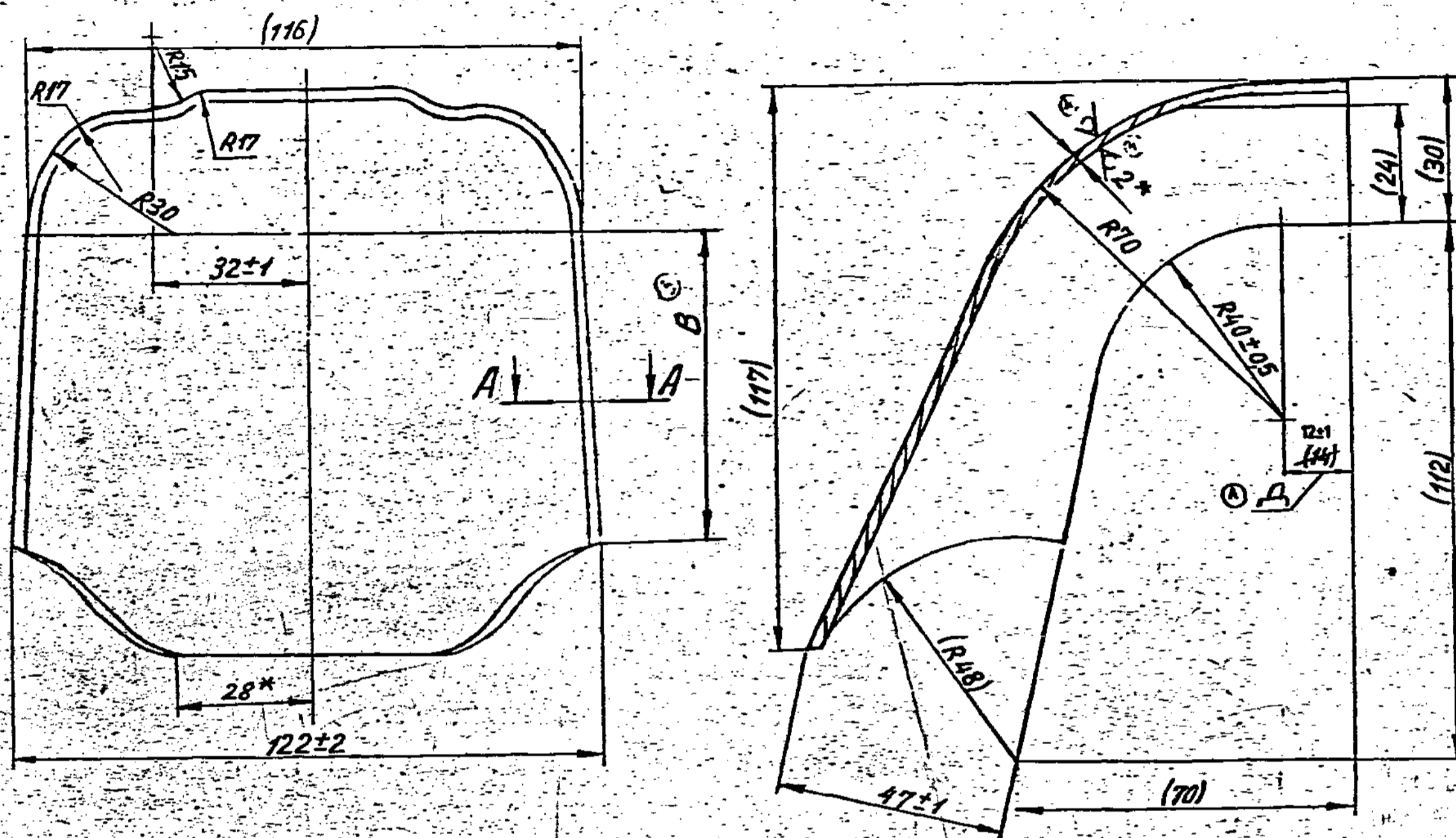
DRN	APPD	MATERIAL :- SHEET	USED ON :-
CHD	DATE 11/01/07	A2 GOST 19904 - 74	Cb 411-50-29
		II - Γ - 10 GOST 16523 - 70	Cb 411-51-29
		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
		SCALE:- 1 : 1	TITLE:- LOWER HALF OF BRANCH PIPE
		DIMENSIONS IN mm	D S CAT NUMBER
		TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS : 2102 - 69	DRAWING NUMBER 3318-06-4
B	23.10.10	4 th Alt. Comm. Mtg. Minutes	
A	18.9.89	Point. No.1 dt. 26.10.09	
ISSUE	DATE	NATURE OF AMENDMENTS	
		AUTHY. BK. 84 - 779 & 85 - 788	
		IS : 4218 Pt. IV	

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F - A
6
SIZE A2

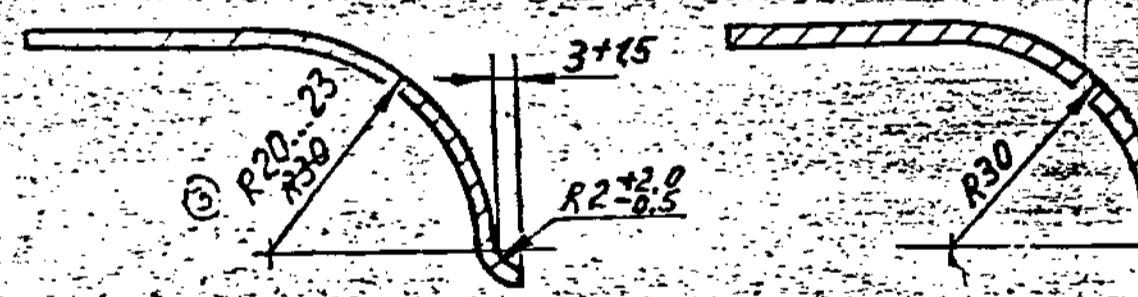
DRAWING NUMBER
3318-07-4

Rz320
V(V)⊕



ALTERNATIVE
A-A вариант

A-A



ⓐ ON SECTION 'A' BEAD SHOULD NOT BE MADE WHEN MANUFACTURING AS PER ALTERNATIVE

EXPLANATORY NOTE:-

MATERIAL QUOTED: SHEET A 2 GOST 19904-74
II-F-10 GOST 16523-70

- A = HIGH ACCURACY
- 2 = THICKNESS COLD ROLLED SHEET STEEL TO GOST 19904-74.
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW- DEEP DRAWN.
- 10 = GRADE OF STEEL

CHEMICAL COMPOSITION % (AS PER GOST 1050-74)

CARBON = 0.07-0.14 ; SILICON = 0.17- 0.37 ;
MANGANESE = 0.35 - 0.65 ;
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX) ;
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX) ;
NICKEL = 0.25 (MAX).

MECHANICAL PROPERTIES (AS PER GOST 16523-70)

ULTIMATE TENSILE STRENGTH $\text{kgf/mm}^2 = 30-42$
1. ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE $\pm 2\text{mm}$.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY $\pm 1\text{mm}$.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION 'B'

ALTERNATIVE MATERIAL

ⓐ SHEET A7B-0-2.0 GOST 19904-74
II-BF 08MC GOST 9045-80

ⓑ EQUIVALENT MATERIAL
Gr. D. IS: 513-1994

EXPLANATORY NOTE ADDED ON 18-2-92
DRG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO 4.

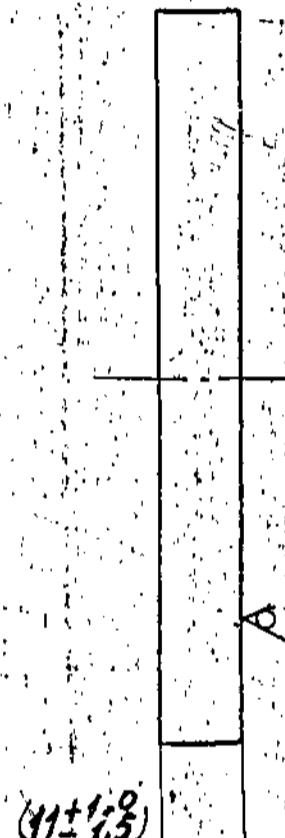
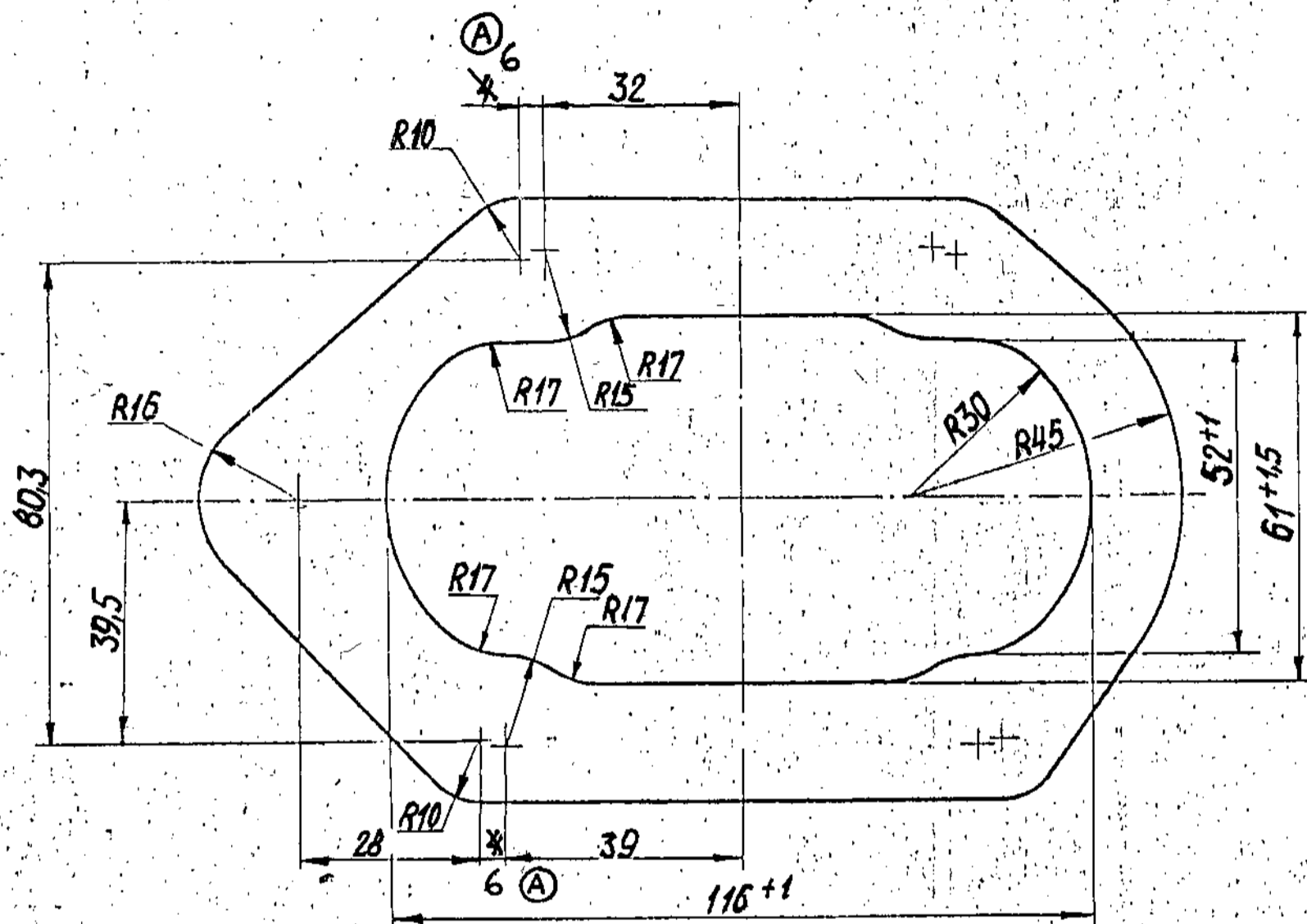
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. 0.428 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.

DATE	74-88	DRW	APPD	MATERIAL :- SHEET	USED ON :-
				A 2 GOST 19904-74	C6 411-50-29
				II-F-10 GOST 16523-70	C6 411-51-29
				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
				A V A D I	
				SCALE :- 1:1	
				DIMENSIONS IN mm.	
				TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69	
				TITLE	
				UPPER HALF OF BRANCH PIPE	
				D S CAT NUMBER	
				DRAWING NUMBER	
				3318-07-4	
ISSUE	DATE	NATURE OF AMENDMENTS			
B	18.03.10	4 th Alt. Comm. Mt. Minutes Pt. No. 1 Dt. 26.10.09			
A	18-9-89	AUTHY. BK 84-779 & 85-788			

DRAWING INDICATED BASED ON RUSSIAN ORIGINAL ISSUE 7 (BK 81-31)
EXPLANATORY NOTE ADDED ON 12-2-82



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Неуказанные предельные отклонения размеров ± 0,5 мм
2. Размер в скобках - после сборки.
3. Заменитель материала сталь 15, 20 и 25 ГОСТ 1050-74.
4. Штамповочный скос 12 мм на сторону.

TECHNICAL REQUIREMENTS - TRANSLATED

1. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ± 0.5mm.
2. DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
3. ALTERNATIVE MATERIAL STEEL 15, 20, AND 25 GOST 1050-74.
4. DRAFT 12mm PER SIDE.

EXPLANATORY NOTE:-

MATERIAL QUOTED:- SHEET 12 GOST 19903-74
10 GOST 1577-81.

12 = THICKNESS OF THE SHEET
10 = GRADE OF OPENHEARTH STEEL
AS PER GOST 1577-81.

CHEMICAL COMPOSITION % (AS PER GOST 1050-74.)

C = 0.07 - 0.14, Si = 0.17 - 0.37, Mn = 0.35 - 0.65.
Cr = 0.15
S = 0.040
P = 0.035 (MAX)
Cu = 0.25
Ni = 0.25

MECHANICAL PROPERTIES AS PER GOST 1577-81.

ULTIMATE TENSILE STRENGTH: kgf/mm² (MIN) = 34
% ELONGATION (MIN) = 32
IMPACT STRENGTH kg cm/cm² (MIN) = 3

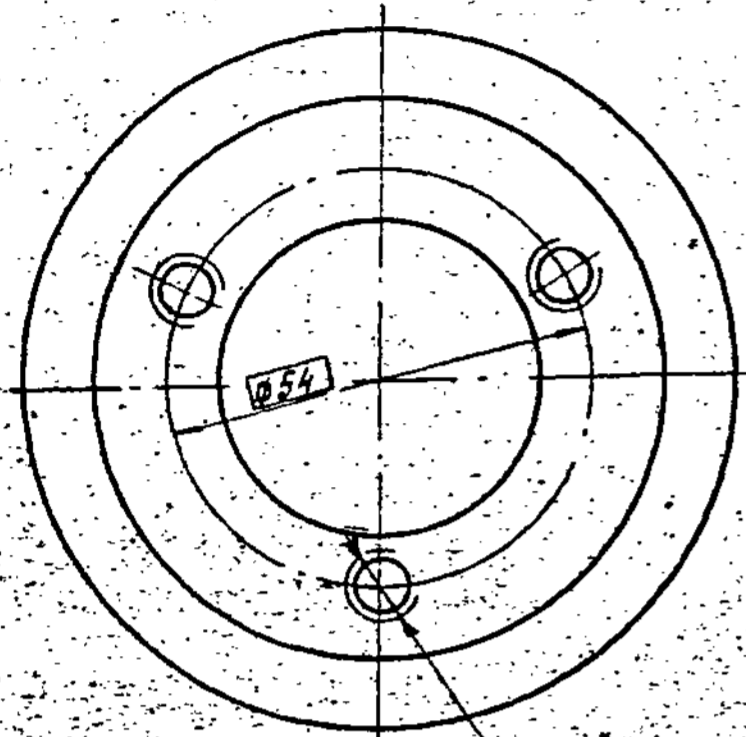
ⓑ EQUIVALENT MATERIAL
040 A 04 (EN 2A) BS:970

7	BK 81-31	1-7-10	4th ALT. COMM. Mfg. MINUTES
			POINT No 2 DT. 26-10-09
			NOTN. No. BK 86-455

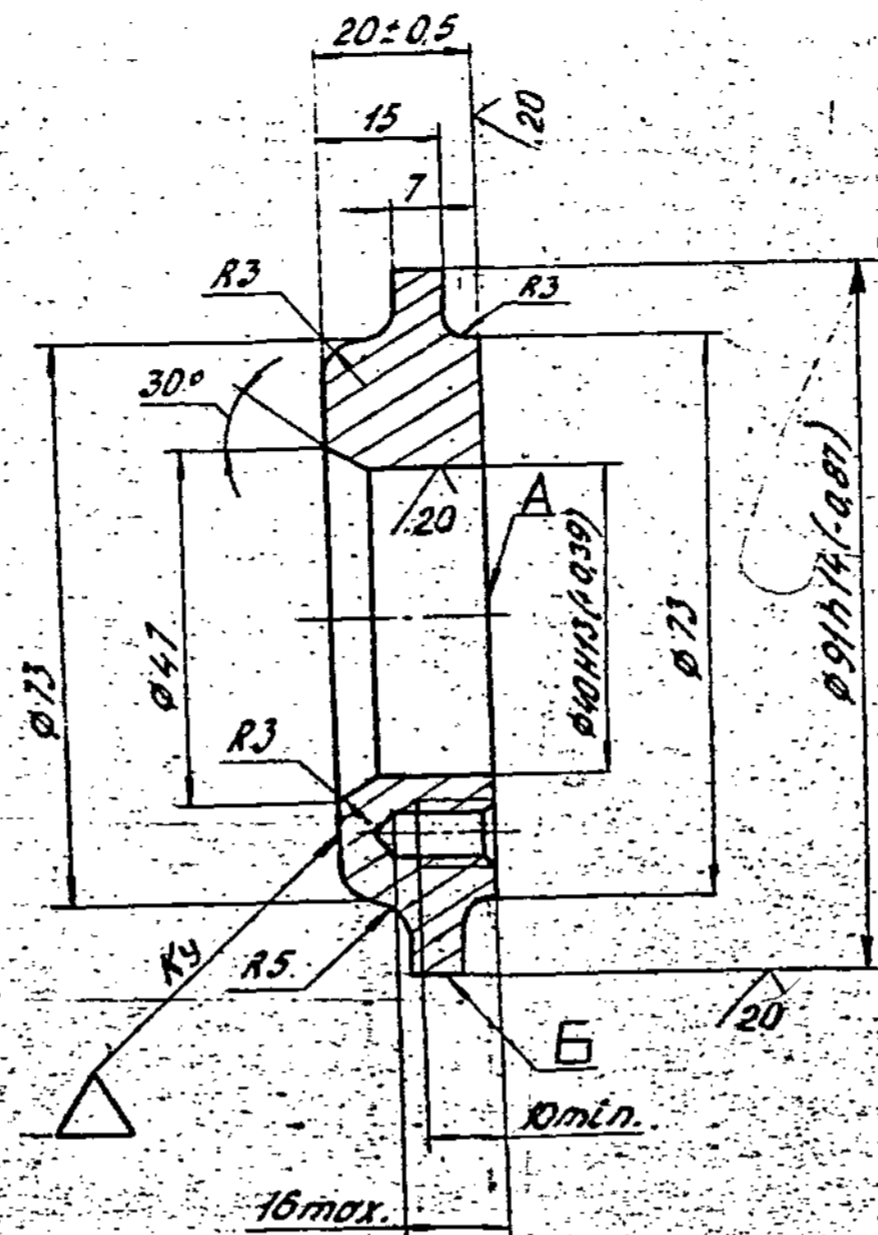
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. MASS 0.6 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.

DRM	CHD	TCD	APPO	DATE	SCALE - 1:1	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED.	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
				29.1.88						3318-08-7
					MATERIAL :- SHEET 12 GOST 19903-74 10 GOST 1577-81.		USED ON :- Cb 418-50-29 Cb 418-51-29		CONTROLLERATE OF QUALITY ASS'URANCE (HEAVY VEHICLES) AVADI	
					TITLE :-		FLANGE			
					ISSUE		DATE		NATURE OF AMENDMENTS	
					A		24.8.2K			



HOLES
30mm MB-7H



1. ALTERNATE MATERIAL STEEL GRADES CM 3KП GOST 380-71.
2. TECHNICAL REQUIREMENTS FOR THREAD ARE AS PER STANDARD 82021-00.
3. REQUIREMENTS FOR STAMPING AS PER GOST 1505-74.
4. DISPLACEMENT OF AXES OF HOLES FROM TRUE POSITION SHOULD NOT EXCEED 0.2 mm (MMC)
5. NONFLATNESS OF SURFACE A SHOULD NOT EXCEED 0.1 mm.
6. ON SURFACE A TOOL MARKS ARE ALLOWED. THROUGH RADIAL MARKS ARE NOT ALLOWED.
7. ON UNMACHINED AREAS, LOCAL DEPRESSION UP TO 0.5 mm IS ALLOWED.
8. LOCAL DECREASE OF SURFACE B TO A DEPTH UP TO 4mm WITH ROUGHNESS R_a AND SMOOTH TRANSITION IS ALLOWED.

EXPLANATORY NOTE:-

MATERIAL QUOTED: STEEL 5CП GOST 380-71
5 = CATEGORY OF STEEL (KILLED)
CП = GRADE OF STEEL

CHEMICAL COMPOSITION %

CARBON = 0.28-0.37
SILICON = 0.15-0.35
MANGANESE = 0.50-0.80
PHOSPHORUS = 0.04
SULPHUR = 0.05
CHROMIUM = 0.30
NICKEL = 0.30
COPPER = 0.30
ARSENIC = 0.08

MECHANICAL PROPERTIES:

TENSILE STRENGTH $Kgf/mm^2 = 58-64$
STRESS AT YIELD POINT $Kgf/mm = 23 (MIN)$
RELATIVE ELONGATION % = 19 (MIN)

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

EST. WT. 0.562 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.

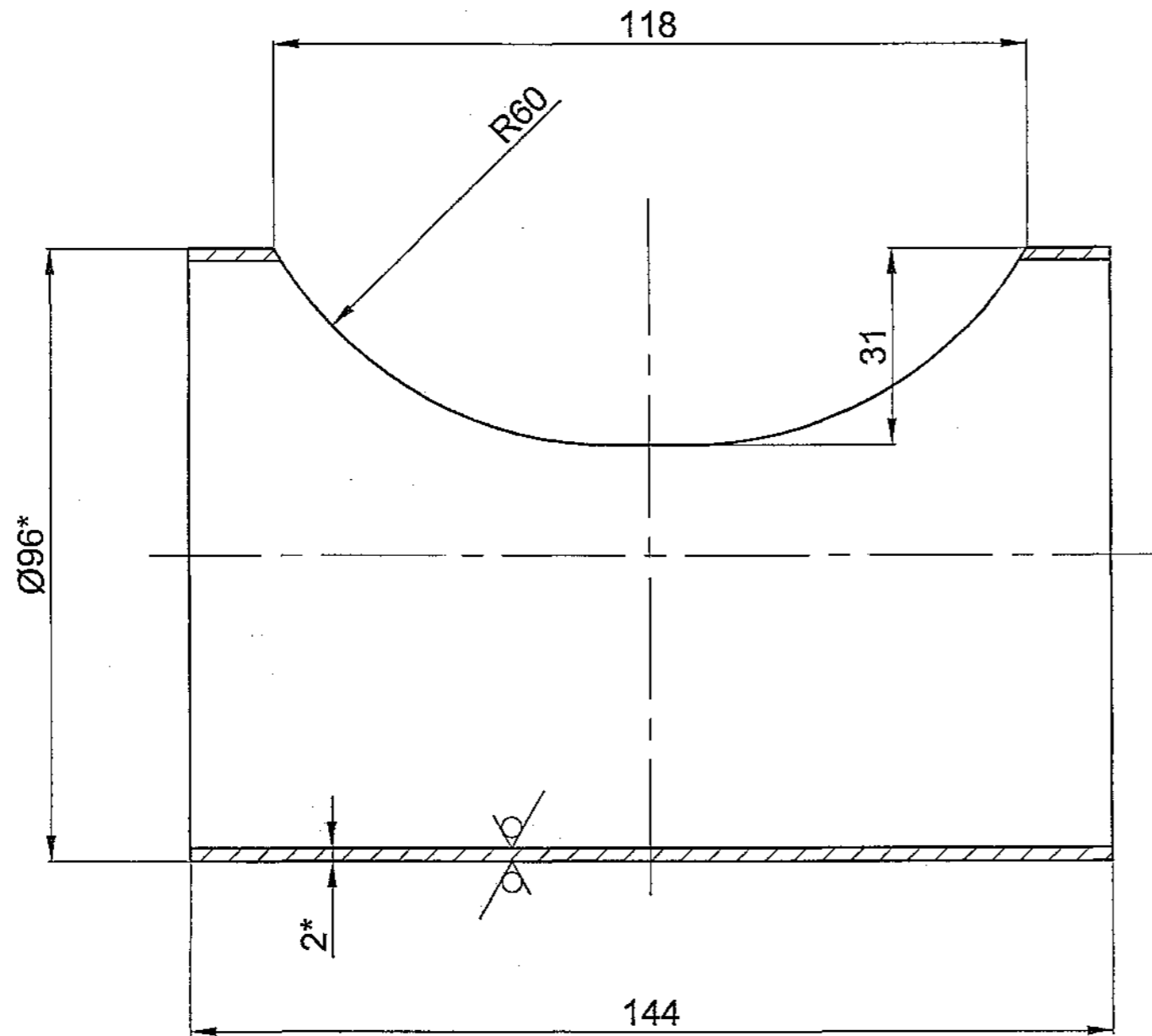
DRN	Gangra	MATERIAL -	USED ON
CHD	Gangra	STEEL 5CП	CB 418-50-29
TEC	Gangra	GOST 380-71	CB 418-51-29
APPD	v. Ramond	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
DATE	2-3-92	A V A D I	
SCALE	1:1	TITLE: FLANGE	
DIMENSIONS IN mm		D S CAT NUMBER	DRAWING NUMBER
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69			418-11-1
ALL THREADS TO CONFORM TO			



DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
418-23-11

80 ✓ (✓)



1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5mm, above 80 mm upto 200mm ± 1mm.
2. * Dimensions are given for reference.

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

EST. WT. (Kg) **0.591** 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	<i>[Signature]</i>	MATERIAL :- PIPE 96x2-20A	USED ON :- Cb 418-32-01
			CHD	<i>[Signature]</i>	TY14-159-21-72	Cb 418-31-2-01
			APPD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
			DATE	26/1/07	AVADI	
			SCALE:-	1:1	TITLE :-	
			DIMENSIONS IN mm		PIPE	
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
			ALL THREADS TO CONFORM TO		DRAWING NUMBER	
			ISSUE	DATE	418-23-11	
					NATURE OF AMENDMENTS	

F-4
71
253

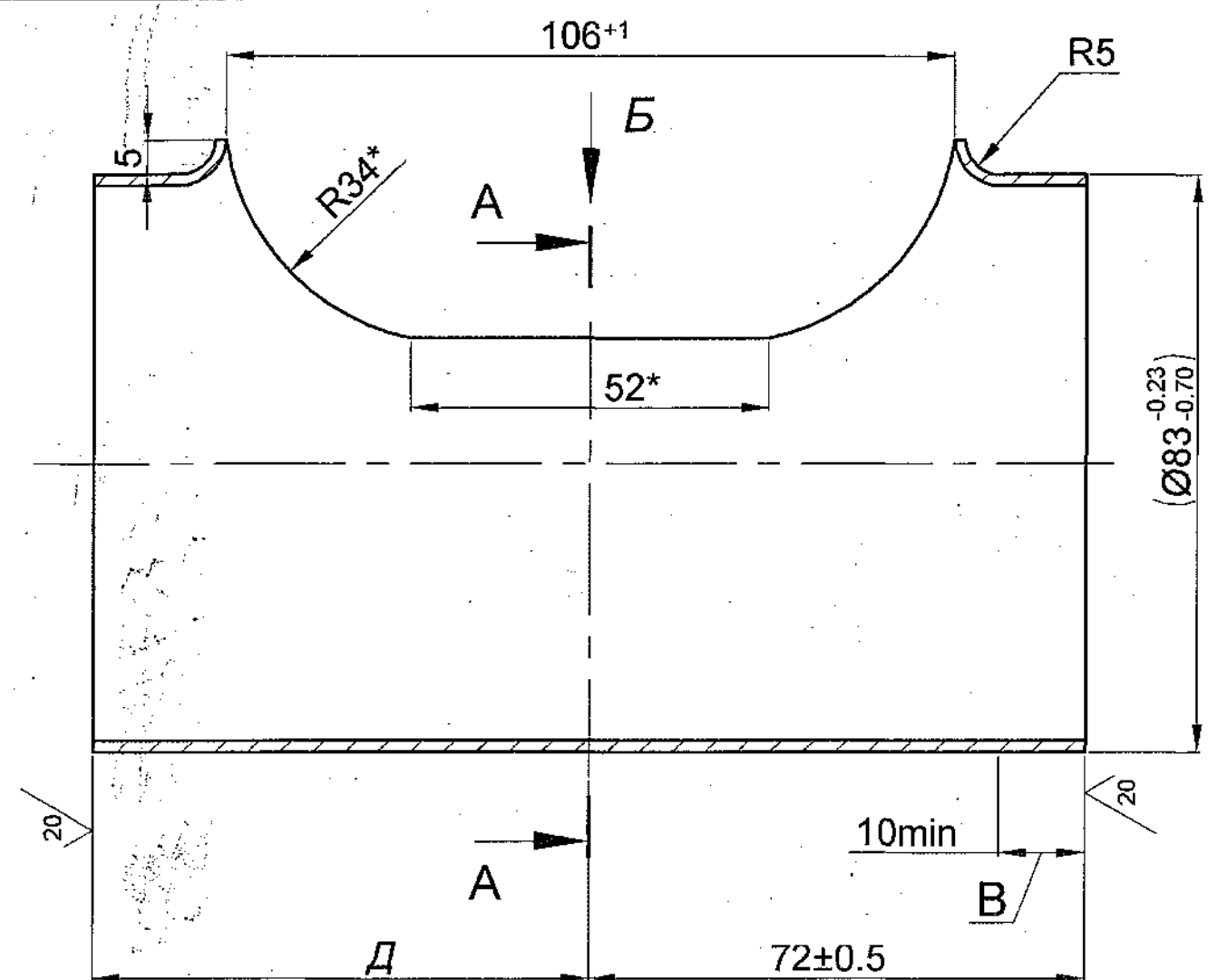
SIZE A3

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

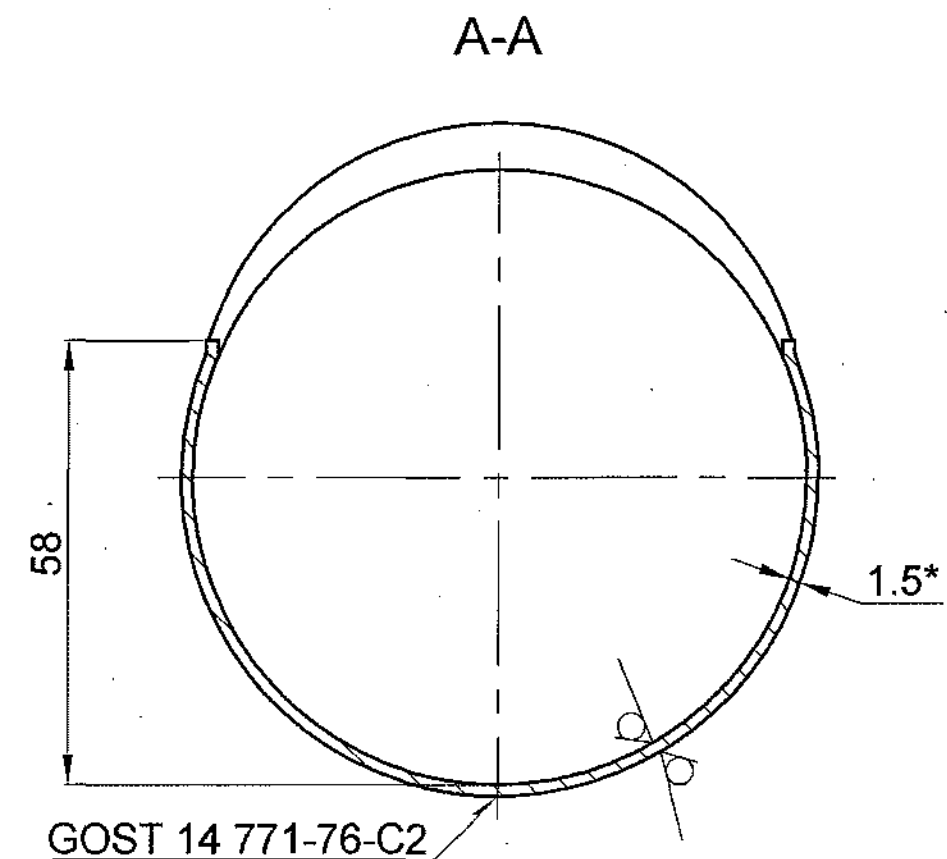
DRAWING NUMBER
418-90-10 (01-02)

SHEET No. OF

80 ✓ (✓)

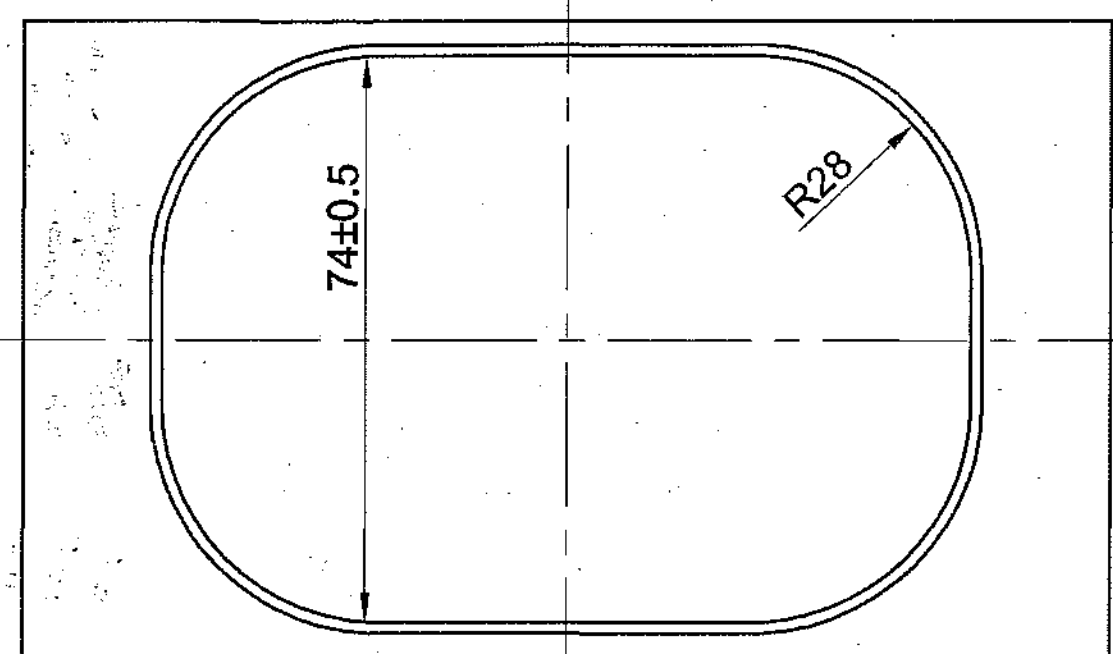


VIEW B



DRG. NO.	Д, mm	WEIGHT IN kg
418-90-10	72±0.5	0.340
-01	65±0.5	0.319
-02	85±0.5	0.372

1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5 mm, above 80 mm upto 200 mm ± 1 mm.
2. Allowance for ovality of pipe should be 3 mm (Semi difference of diameters).
3. On flange ribs, metal tears are allowed upto maximum of 2 Nos per flange in quantity with subsequent electric arc welding and dressing at the base of the tears.
4. On section "B", it is permitted to carry out welding from inner side.
5. Dress the mounted on the section "B" along the outer diameter of weld-surface.
6. Dimension in brackets - After assembly.
7. * Dimensions are given for reference.
8. Alternate material is steel 12x18H10T TY 14-1-31-99-81.



Ⓐ EQUIVALENT MATERIAL
04Cr.18 Ni 10Ti 20 TO IS:6911-72

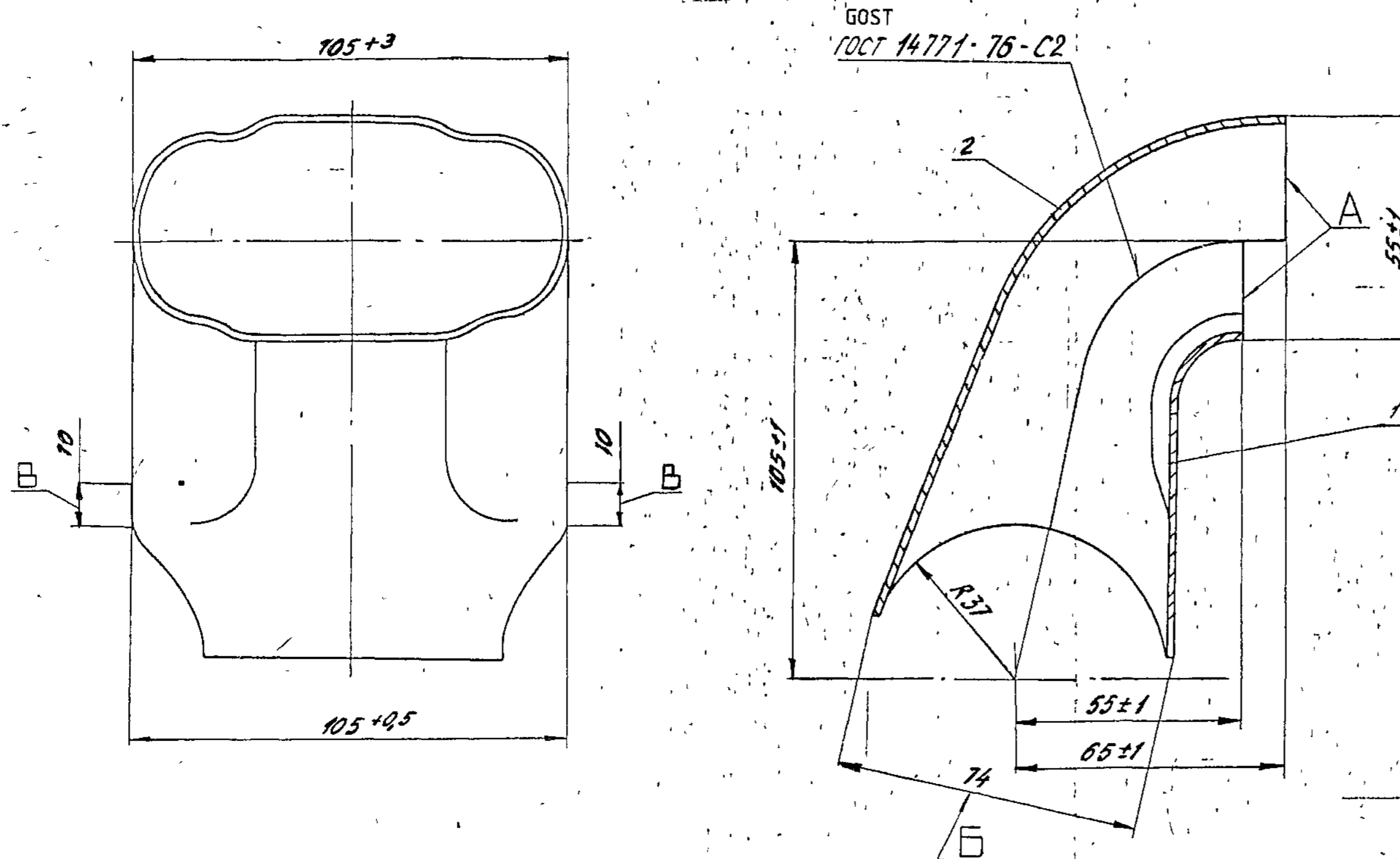
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

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

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>Asok</i>	MATERIAL:- SHEET	USED ON:-
CHD	<i>R. B. Bhatnagar</i>	ET 1.5 GOST 19904-90	CB 418-31-2-01
APPD	<i>...</i>	12X18H10T-M2a GOST 5582-75	CB 418-32-01
DATE	14/2/09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1:1		TITLE:-	
DIMENSIONS IN mm		PROTECTIVE PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
A	28.8.10	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09	DRAWING NUMBER 418-90-10(01-02)
ISSUE	DATE	NATURE OF AMENDMENTS	

F-4
74
253
SIZE A4 x 3



TECHNICAL REQUIREMENTS IN RUSSIAN

1. Контур А и размер Б подогнать по сопрягаемой детали перед приваркой в узле.
2. Сварные швы на участках В зачистить заплотило.

TECHNICAL REQUIREMENTS - TRANSLATED

- 1 CONTOUR 'A' AND DIMENSION 'B' SHOULD BE ADJUSTED TO SUIT MATING COMPONENT BEFORE WELDED TO ASSEMBLY.
- 2 WELDS ON SECTION 'B' SHOULD BE DRESSED FLASH

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

		EST MASS 0.37	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	MATERIAL -	USED ON -
DRN	SCALE - 1:1		CB 418-50-29 CB 418-51-29
CHD	DIMENSIONS IN mm	CONTROLLER/DATE OF INSPECTION (HEAVY VEHICLES) AVADI	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	TITLE - BRANCH PIPE SCREEN	
APPD	ALL THREADS CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
DATE	29 1 88		CB 318-22-5CB

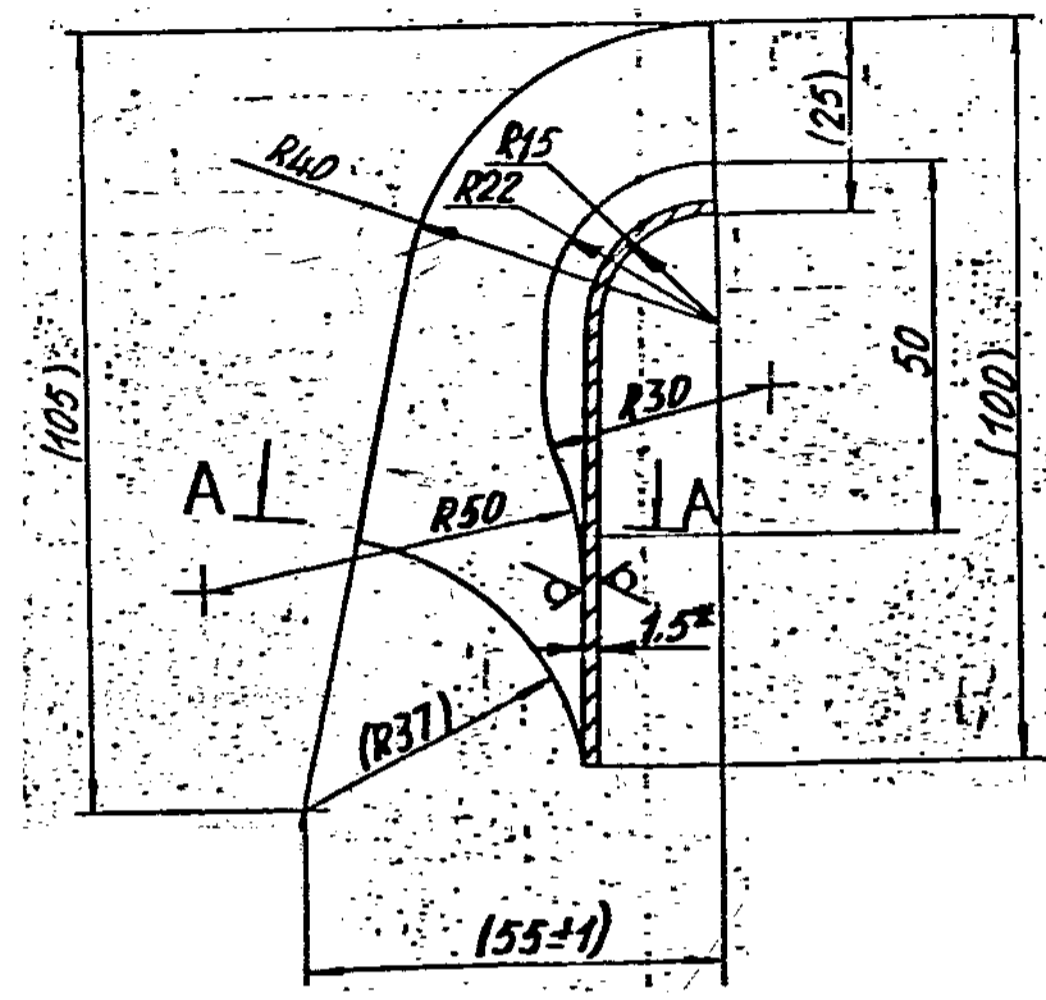
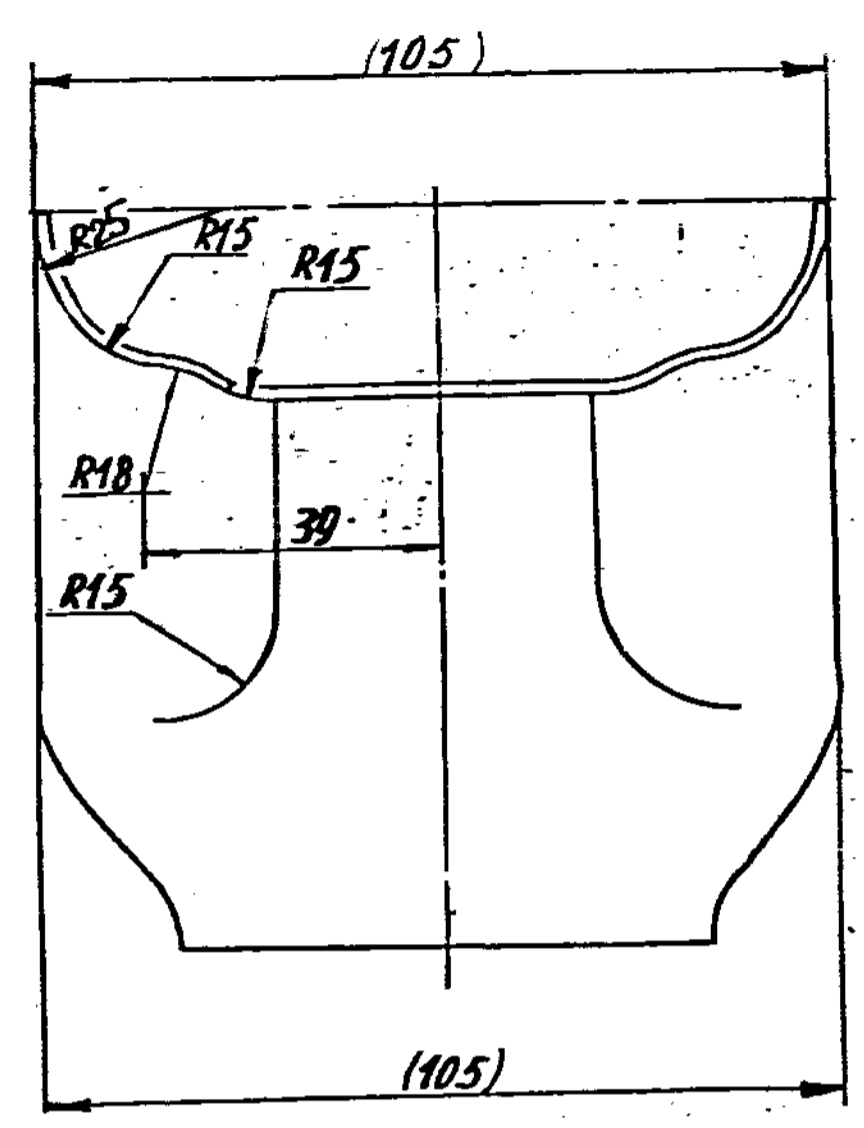
2	BK 81-31	10/1/88	10/1/88
10/1/88	10/1/88	10/1/88	10/1/88

DRAWING NUMBER
318-20-5

RZ 80/ (✓)

TECHNICAL REQUIREMENTS - TRANSLATED

1. DIMENSIONS WITH UNSPECIFIED DEVIATIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5\text{mm}$.
2. MATERIAL THICKNESS IN THINNED PLACES SHOULD BE 1mm MIN.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. DIMENSION IN BRACKETS SHOULD BE ENSURED AFTER ASSEMBLY.
5. * DIMENSION FOR REFERENCE.



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET Б 1.5 GOST 19904-74
12x18H10T-M2a OR M3a GOST 5582-75

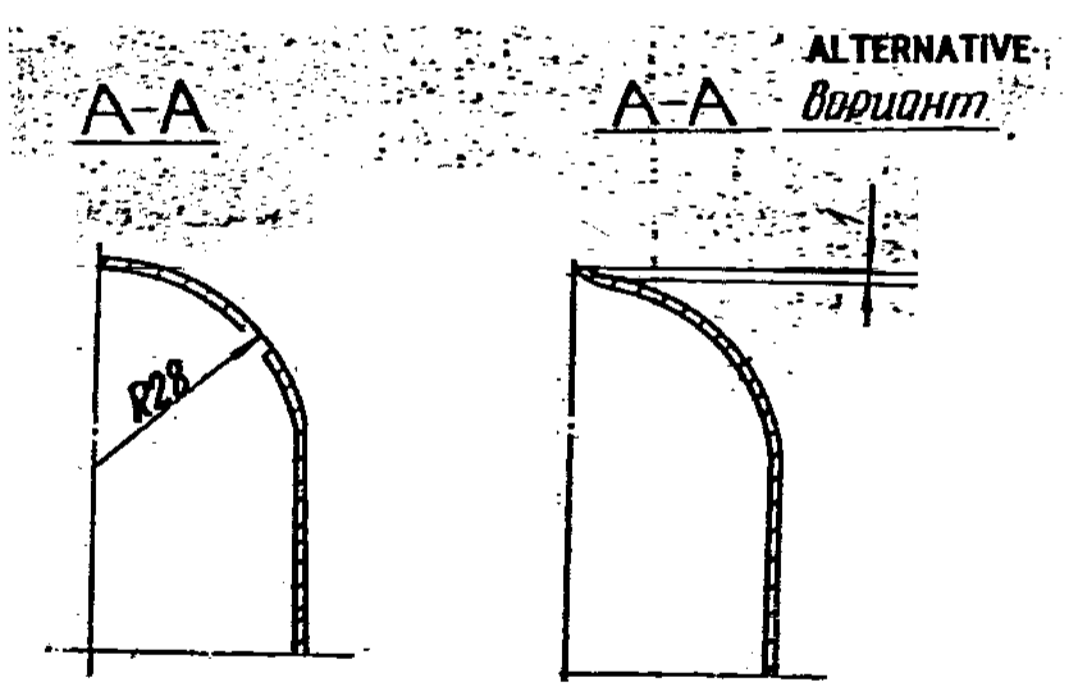
Б = STANDARD ACCURACY.
1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74
12x18H10T = GRADE OF STEEL.
M2a OR M3a = PICKLED & BRIGHT ANNEALED.

CHEMICAL COMPOSITION% (AS PER GOST 5632-72)
CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080°C
COOLING IN WATER OR IN AIR.
ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54
YIELD POINT Kgf/mm^2 (MIN) = 20
RELATIVE ELONGATION (MIN) = 40



**
SHEET: Б 1.5 GOST 19904-74
12x18H10 -M2a (OR M3a) GOST 5582-75

EXPLANATORY NOTE ADDED ON 18-2-92

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

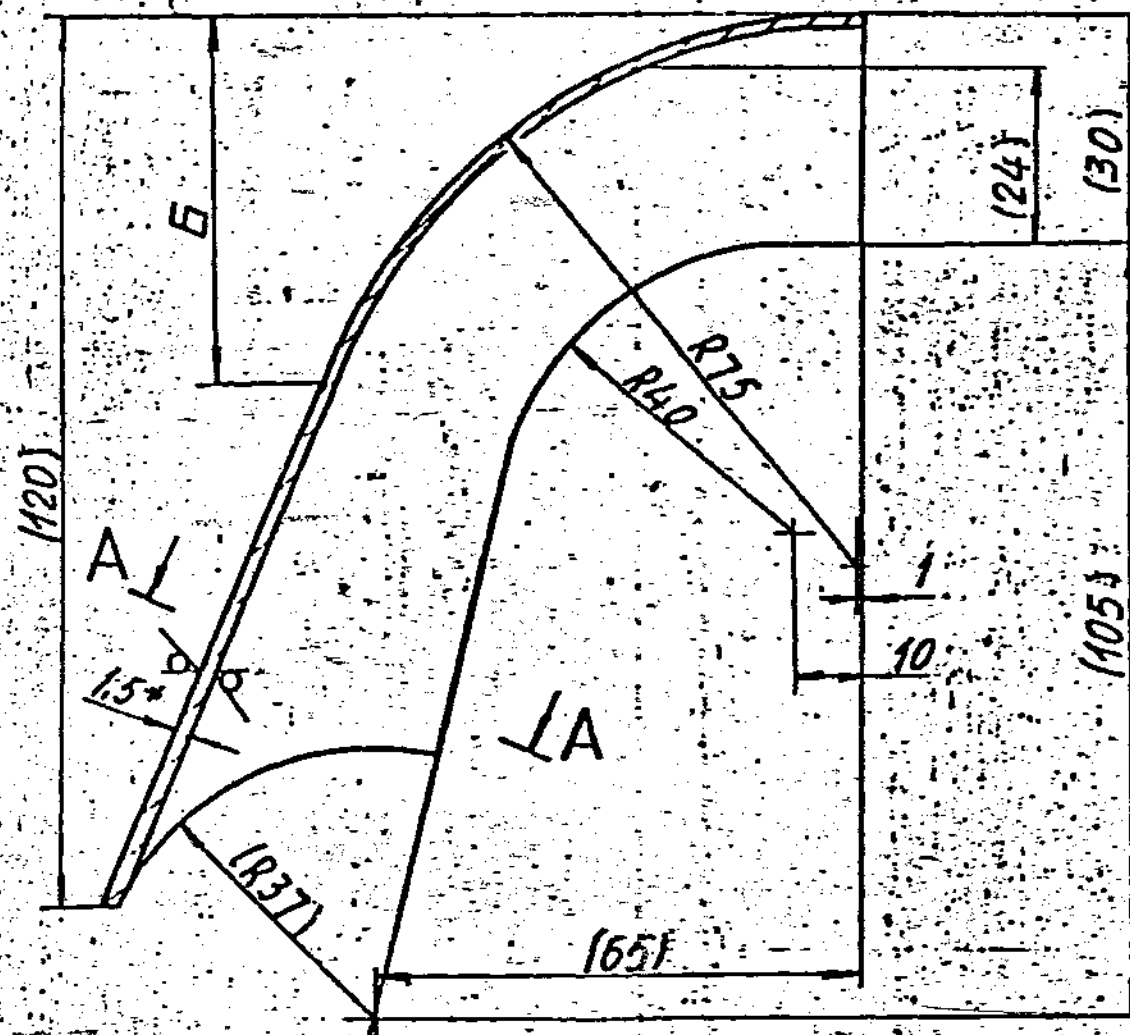
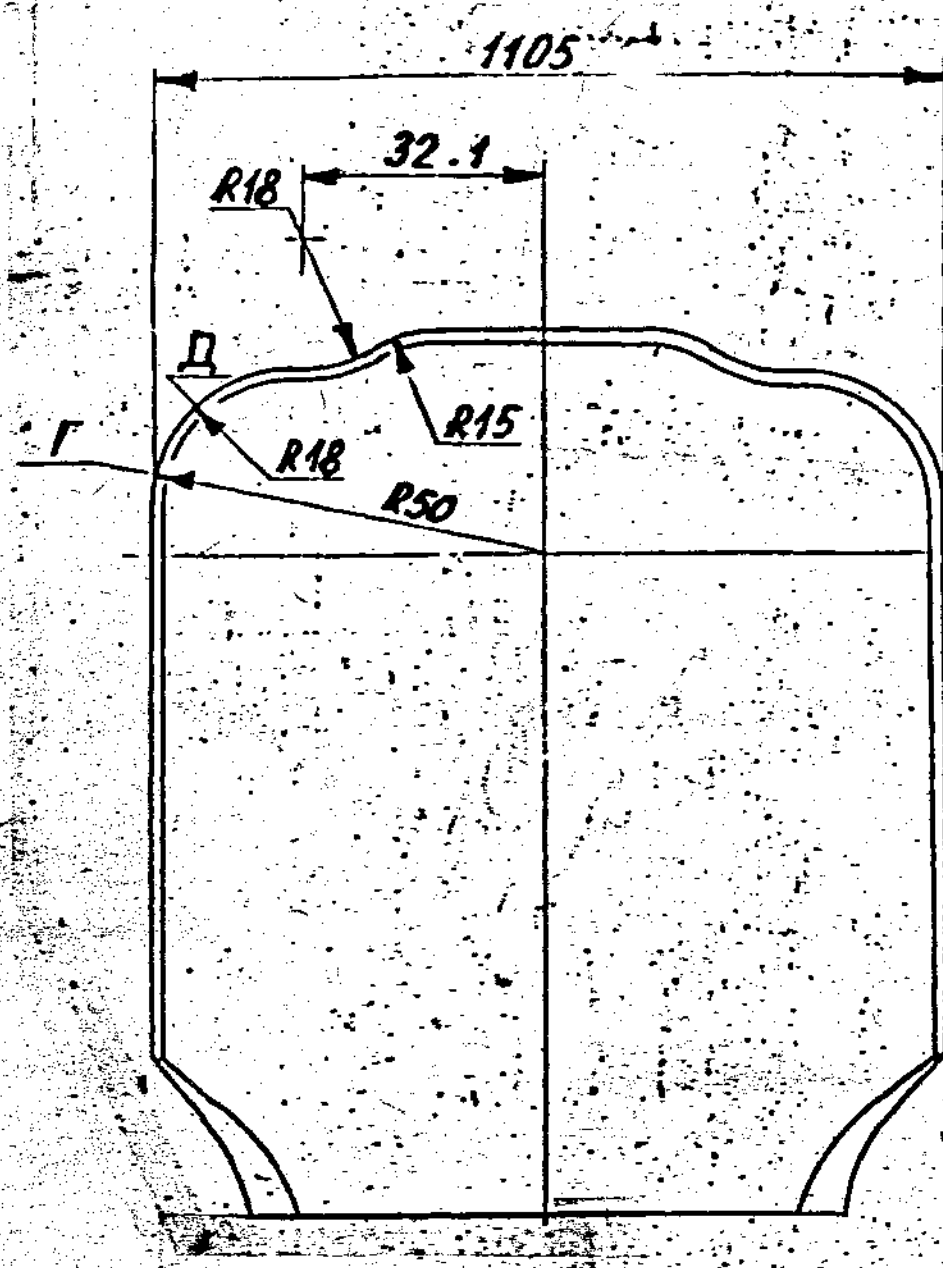
EST. WT. 0.135 kg TO BE STAMPED OR MARKED WHERE INDICATED THIS * LETTERS!

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

DRN	---	MATERIAL	SEE ABOVE **	USED ON	C5318-22-5
CHD	---	CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)	A V A D I		
TCD	---	TITLE	LOWER PART OF SCREEN		
APPD	---	D S CAT NUMBER	DRAWING NUMBER		
DATE	29-1-88	318-20-5			
SCALE	1:1				
DIMENSIONS IN	mm				
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 2Y2-69				
ALL THREADS TO	CONFORM TO				
ISSUE	DATE	NATURE OF AMENDMENTS			

DRAWING NUMBER
318-21-5

80° (✓)



EXPLANATORY NOTE :-

MATERIAL QUOTED : SHEET B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a GOST5582-75

B = STANDARD ACCURACY.

1.5 = THICKNESS OF COLD ROLLED SHEET STEEL AS PER GOST 19904-74.
12X18H10T = GRADE OF STEEL.

M2a OR M3a = PICKLED OR BRIGHT ANNEALED.

CHEMICAL COMPOSITION % (AS PER GOST 5632-72)

CARBON = 0.12 (MAX); SILICON = 0.8 (MAX); MANGANESE = 2.0 (MAX);
CHROMIUM = 17.0-19.0; NICKEL = 9.0-11.0; TITANIUM = 0.6-0.8

MECHANICAL PROPERTIES (AS PER GOST 5582-75)

HEAT TREATMENT

TEMPERING AT 1050 TO 1080 °C
COOLING IN WATER OR IN AIR.

ULTIMATE STRENGTH Kgf/mm^2 (MIN) = 54

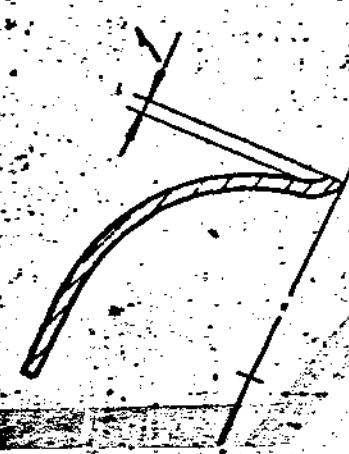
YIELD POINT Kgf/mm^2 (MIN) = 20

RELATIVE ELONGATION (MIN) = 40

A-A

A-A

ALTERNATIVE
ВЕРСИИ



TECHNICAL REQUIREMENTS - TRANSLATED

1. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS FOR COLD STAMPING SHOULD BE OBTAINED WITH ACCURACY $\pm 0.5mm$.
2. MATERIAL THICKNESS IN THE THINNED PLACES SHOULD BE NOT LESS THAN 1mm.
3. CRACKS, LAMINATIONS, DENTS, ARE NOT ALLOWED.
4. SMOOTH TRANSITION OF RADIUS B TO RADIUS Γ AND RADIUS A SHOULD BE ENSURED ON SECTION B.
5. DIMENSIONS GIVEN IN BRACKETS ARE TO BE ENSURED AFTER ASSEMBLY.
6. * DIMENSIONS FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL
04 Cr.18 Ni 10 Ti 20 TO IS: 6911-72

**
SHEET: B 1.5 GOST 19904-74
12X18H10T-M2a OR M3a
GOST 5582-75

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

EST. WT. 0.235 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	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm.	TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69
				29-1-88	1:1		
				MATERIAL :-		USED ON :-	
				SEE ABOVE **		CB 318-22-5	
				CONTROLLER OF QUALITY ASSURANCE (HEAVY VEHICLES)			
				A V A D I			
				TITLE		UPPER PART OF SCREEN	
				D S CAT NUMBER		DRAWING NUMBER	
						318-21-5	
ISSUE	DATE	NATURE OF AMENDMENTS					
A	28.8.10	4 th ALT Comm Meeting Minutes Point No. 16 Dated 26.10.09					

DRAWING BASED ON RUSSIAN ORIGINAL ISSUED (AK 87-31)

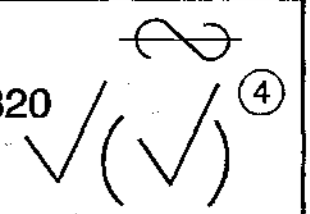
EXPLANATORY NOTE ADDED ON 18-2-92

SIZE A2

DRAWING NUMBER
3318-06-4

SHEET No. 1 OF 1

EXPLANATORY NOTE :-

Rz 320 

MATERIAL QUOTED : SHEET A2 GOST 19904 - 74
II - Γ - 10 GOST 16523 - 70

- A = HIGH ACCURACY
- 2 = THICKNESS OF COLD ROLLED SHEET STEEL TO GOST 19904 - 74
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW - DEEP DRAWN
- 10 = GRADE OF STEEL

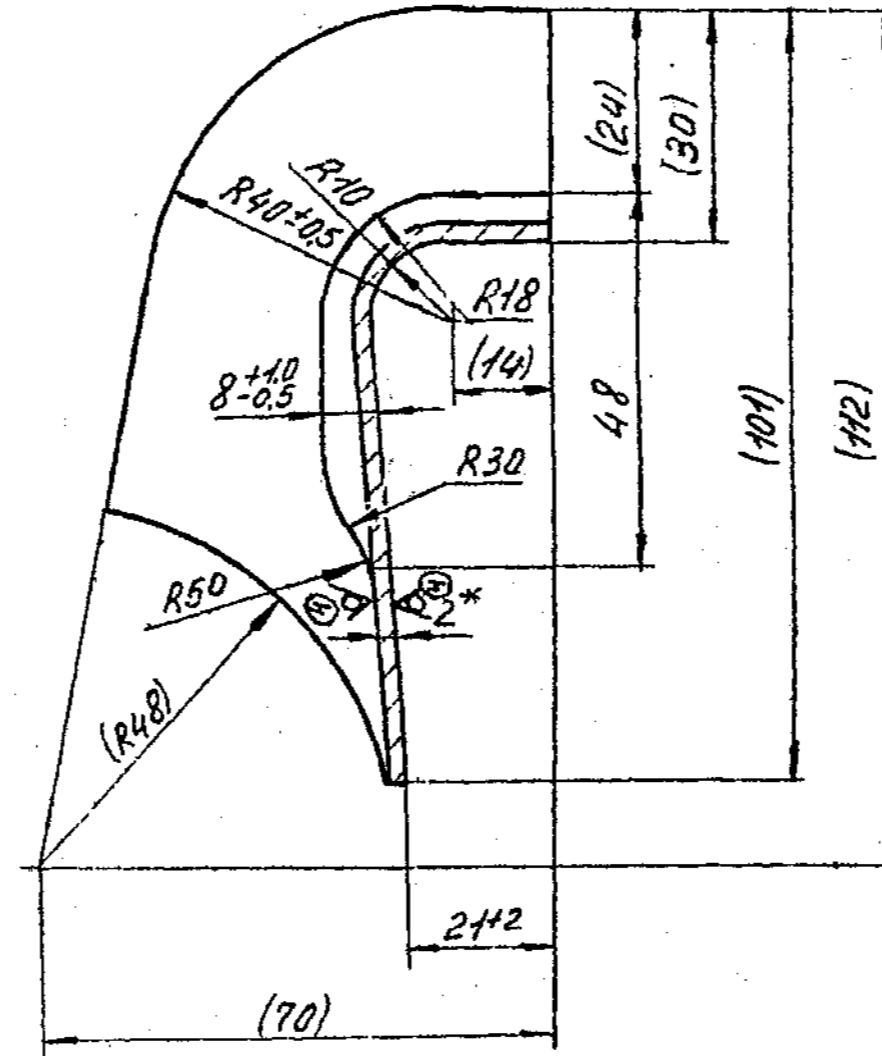
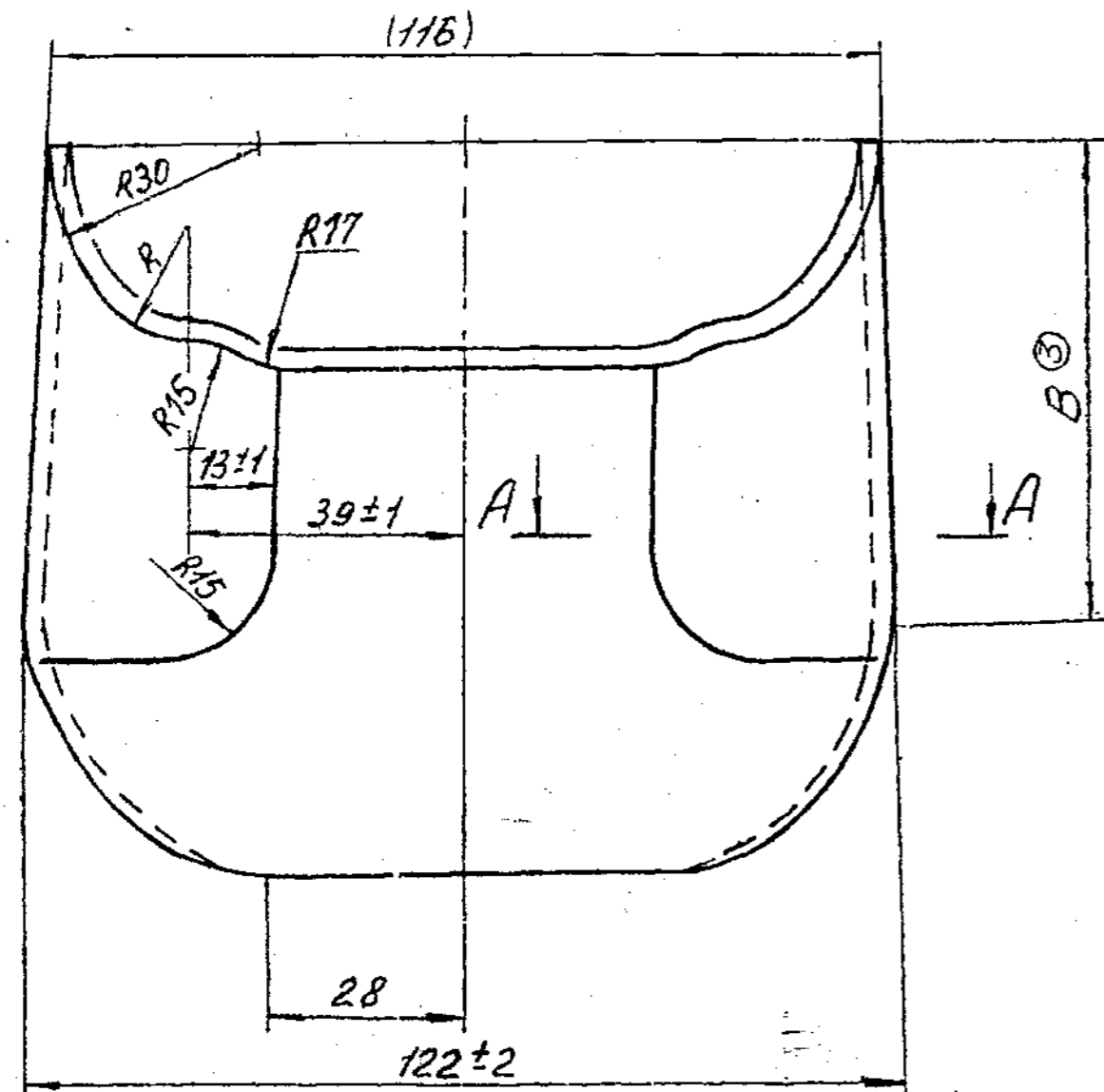
CHEMICAL COMPOSITION % (AS PER GOST 1050 - 74)

CARBON = 0.07 - 0.14 ; SILICON = 0.17 - 0.37
MANGANESE = 0.35 - 0.65
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX)
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX)
NICKEL = 0.25 (MAX)

MECHANICAL PROPERTIES (AS PER GOST 16523 - 70)

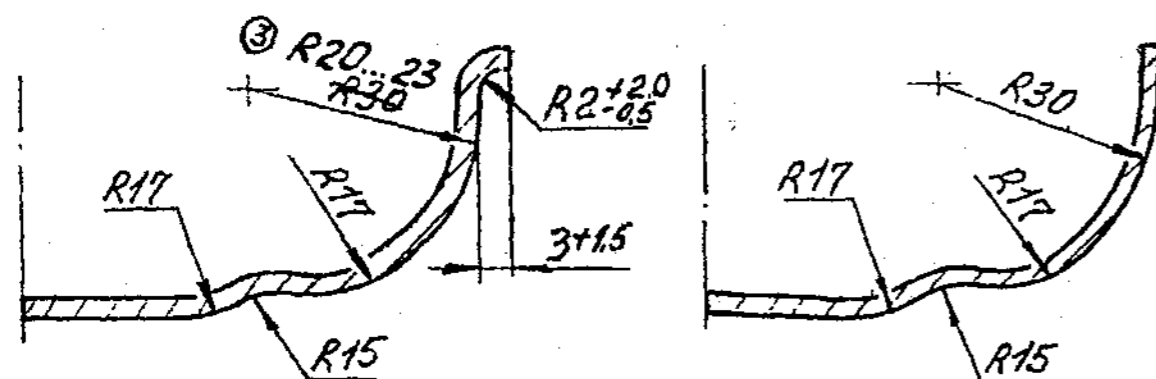
ULTIMATE TENSILE STRENGTH $Kgf/mm^2 = 30 - 42$
% ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE ± 2 mm.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY ± 1 mm.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION "B"



A-A ALTERNATIVE

A-A



ⓑ EQUIVALENT MATERIAL
Gr. DD IS: 513-1994

Ⓐ ALTERNATIVE MATERIAL :- SHEET A-ΓB-0-2.0 GOST 19904 - 74
II - BF 08 ΓC GOST 9045 - 80

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

EST. WT. (Kg) 0.229 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.

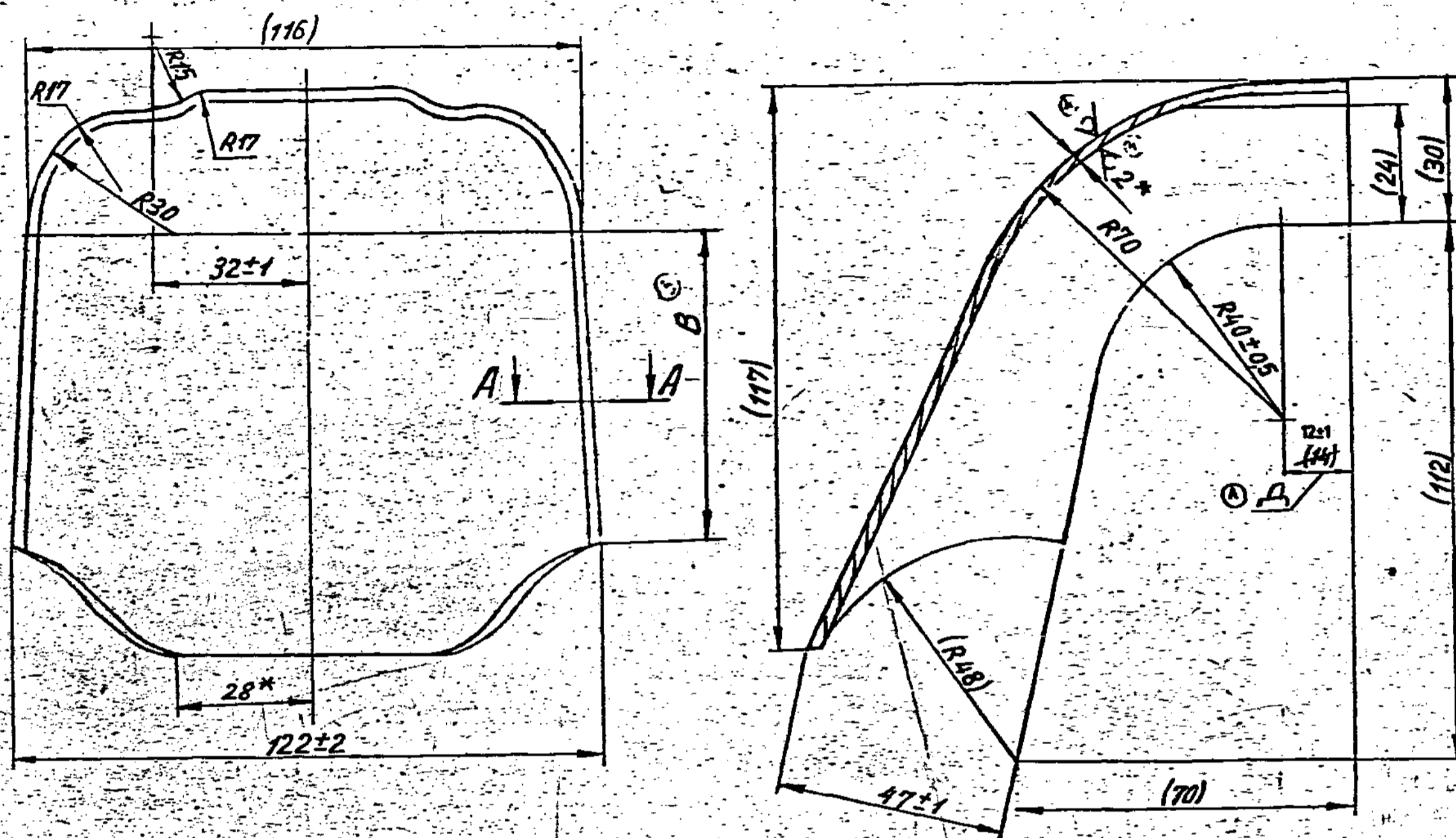
DRN	APPD	DATE	SCALE:- 1:1	MATERIAL:- SHEET A2 GOST 19904 - 74 II - Γ - 10 GOST 16523 - 70	USED ON:- Cb 411-50-29 Cb 411-51-29
CHD			DIMENSIONS IN mm	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS: 2102-69	TITLE:- LOWER HALF OF BRANCH PIPE	
B	23.10.10	4 th Alt. Comm. Mtg. Minutes Point. No.1 dt. 26.10.09	ALL THREADS TO CONFORM TO IS: 4218 Pt. IV	D S CAT NUMBER	DRAWING NUMBER 3318-06-4
A	18.9.89	AUTHY. BK. 84 - 779 & 85 - 788			
ISSUE	DATE	NATURE OF AMENDMENTS			

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-A
6
SIZE A2

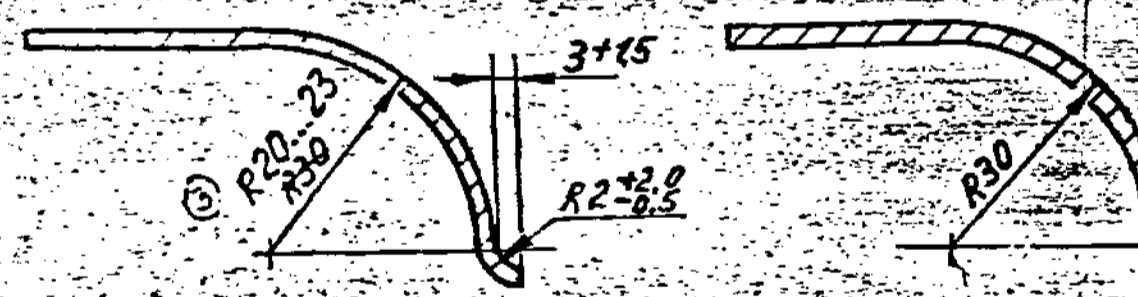
DRAWING NUMBER
3318-07-4

Rz320
V(V)⊕



ALTERNATIVE
A-A вариант

A-A



ⓐ ON SECTION 'A' BEAD SHOULD NOT BE MADE WHEN MANUFACTURING AS PER ALTERNATIVE

EXPLANATORY NOTE:-

MATERIAL QUOTED: SHEET A 2 GOST 19904-74
II-F-10 GOST 16523-70

- A = HIGH ACCURACY
- 2 = THICKNESS COLD ROLLED SHEET STEEL TO GOST 19904-74
- II = GROUP FOR QUALITY OF SURFACE FINISH.
- Γ = CAPABILITY TO DRAW- DEEP DRAWN.
- 10 = GRADE OF STEEL

CHEMICAL COMPOSITION % (AS PER GOST 1050-74)

CARBON = 0.07-0.14 ; SILICON = 0.17- 0.37 ;
MANGANESE = 0.35 - 0.65 ;
CHROMIUM = 0.15 (MAX) ; SULPHUR = 0.040 (MAX) ;
PHOSPHORUS = 0.035 (MAX) ; COPPER = 0.25 (MAX) ;
NICKEL = 0.25 (MAX).

MECHANICAL PROPERTIES (AS PER GOST 16523-70)

ULTIMATE TENSILE STRENGTH $\text{kgf/mm}^2 = 30-42$
1. ELONGATION (MIN) = 25

2. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE $\pm 2\text{mm}$.
3. MATERIAL THICKNESS IN THINNED PLACES SHOULD NOT BE LESS THAN 1.5 mm.
4. RUPTURE HOLES, LAMINATIONS, DENTS AND OTHER DEFECTS ARE NOT ALLOWED.
5. DIMENSIONS IN BRACKETS SHOULD BE OBTAINED WITH ACCURACY $\pm 1\text{mm}$.
6. BEFORE PUTTING INTO PRODUCTION, THE MATERIAL SHOULD BE CHECKED FOR WELDABILITY AS PER SPECIFICATIONS OF THE WELDING DEPARTMENT.
7. * DIMENSIONS FOR REFERENCE.
8. WHEN MANUFACTURING AS PER ALTERNATIVE SMOOTH TRANSITION OF R30 TO R20 TO 23 SHOULD BE ENSURED ON SECTION 'B'

ALTERNATIVE MATERIAL

ⓐ SHEET A7B-0-2.0 GOST 19904-74
II-BF 08MC GOST 9045-80

ⓑ EQUIVALENT MATERIAL
Gr. D. IS: 513-1994

EXPLANATORY NOTE ADDED ON 18-2-92
DRG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO 4.

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

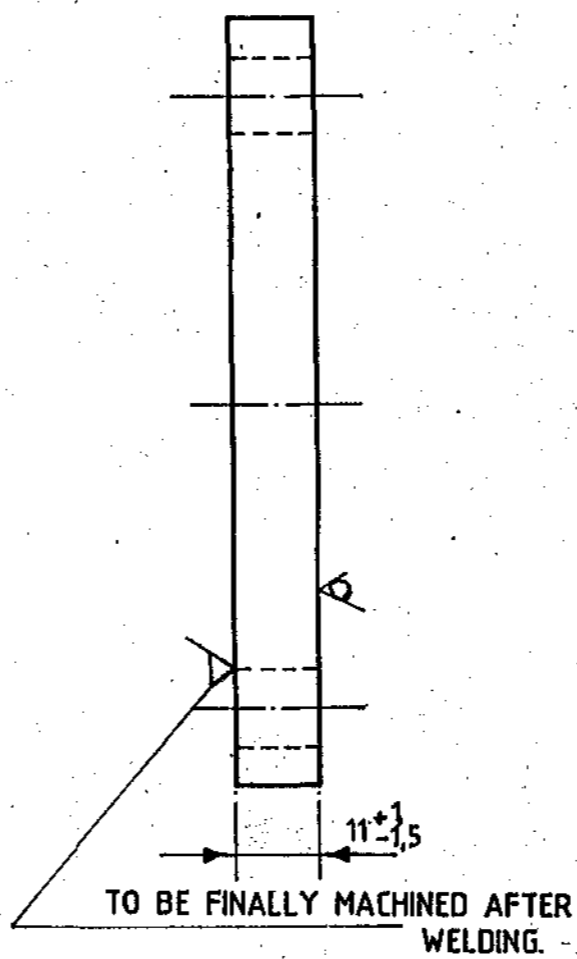
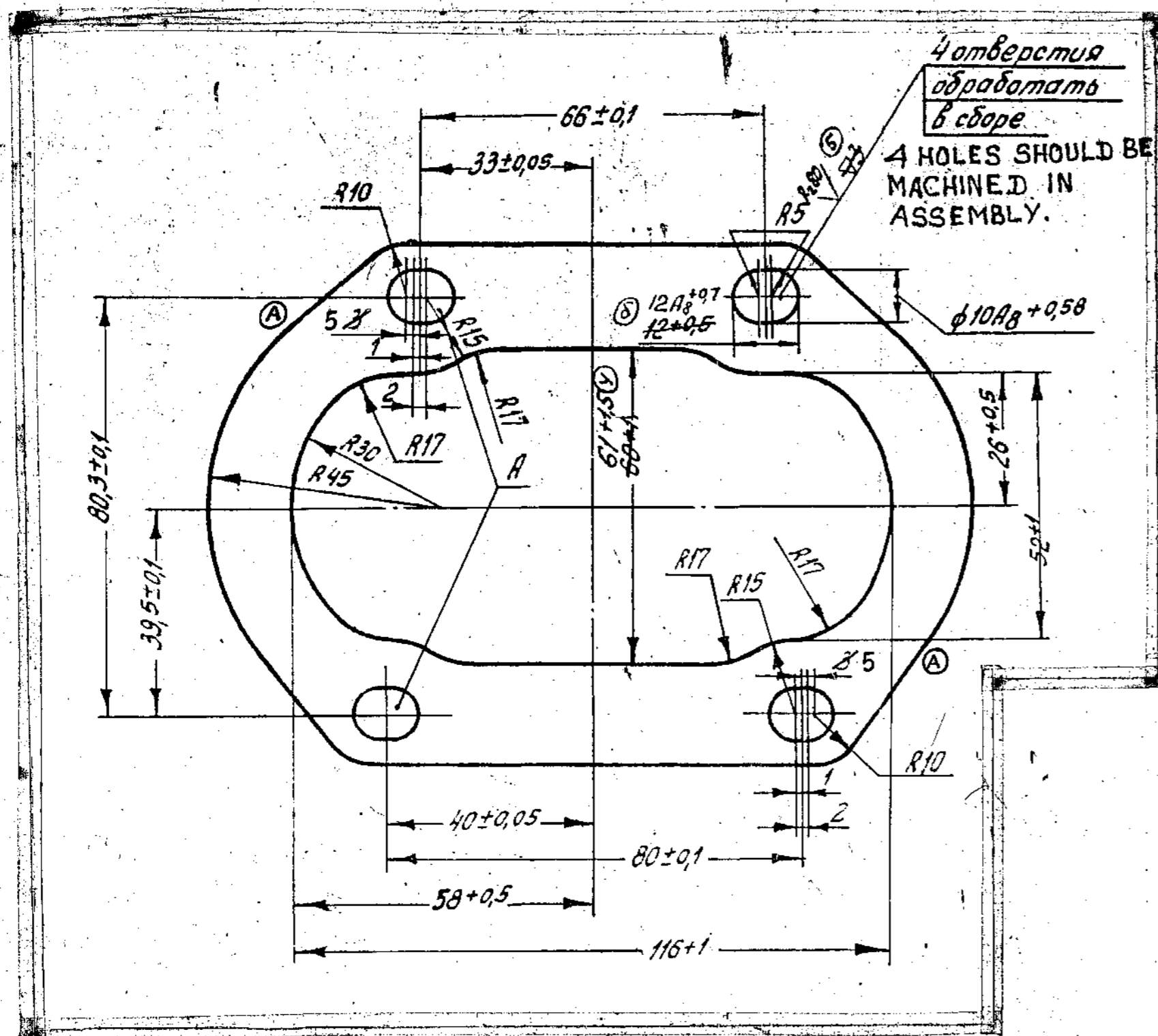
EST. WT. 0.428 kg
TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)

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

DATE	74-88	MATERIAL :- SHEET	A 2 GOST 19904-74	USED ON :-	CE 411-50-29
			II-F-10 GOST 16523-70		CE 411-51-29
		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
		A V A D I			
		SCALE :- 1:1			
		DIMENSIONS IN mm.			
		TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69			
		ALL THREADS TO CONFORM TO			
ISSUE	DATE	NATURE OF AMENDMENTS	D S CAT NUMBER	DRAWING NUMBER	
B	18.03.10	4 th Alt. Comm. Mt. Minutes Pt. No. 1 Dt. 26.10.09		3318-07-4	
A	18-9-89	AUTHY. BK 84-779 & 85-788			

DRAWING NUMBER
3318-08-8

Rz320
✓(V)



EXPLANATORY NOTE

6. REFERENCE MATERIAL QUOTED: HOT ROLLED STEEL SHEET OF NORMAL ACCURACY ON ROLLING (5) 12mm THICKNESS TO GOST 19903-74 OF STEEL Gde 10 OF GOST 1577-81 MANUFACTURED IN ACCORDANCE WITH NORMALISED CARBON STRUCTURAL STEEL Gde 10 AND REFERENCE NOTE 5 ON ALTERNATIVE MATERIALS MANUFACTURED IN ACCORDANCE WITH CARBON STRUCTURAL STEEL Gdes 15,20 & 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	
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	ALT. MATL
20	0.17 - 0.24	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 OF NORMALISED HOT ROLLED SHEET AS PER GOST 1577-81.

GRADE OF STEEL	ULTIMATE TENSILE STRENGTH Kg/mm ²	ELONGATION %	IMPACT STRENGTH NGTH. Kgfm/cm ²	HARDNESS B.H.N.	REMARKS
10	34	32	3	-	Ref Matl.
15	38	30	3	-	Alt. Matl.
20	40	28	3	-	Alt. Matl.
25	45	25	-	170	Alt. Matl.

1. DIMENSIONS WITH UNSPECIFIED TOLERANCES FOR COLD STAMPING SHOULD BE OBTAINED WITH TOLERANCE ±0.5mm.
2. SHARP EDGES SHOULD BE BLUNTED.
3. STAMPING BEVEL UP TO 1.2mm PER SIDE IS ALLOWED.
4. NOTE: HOLES A FOR 3rd AND 4th FLANGES OF EVERY MANIFOLD SHOULD BE OBTAINED WITH DIA. 10A8+0.7 AS PER ASSEMBLY DRAWINGS OF MANIFOLDS.
5. ALTERNATE MATERIALS: STEEL GRADES 15,20 AND 25, GOST 1050-74

ⓑ EQUIVALENT MATERIAL
040 A 04 (EN-2A) BS:970

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

EST WT 0.55 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	Doco	MATERIAL	USED ON
CHD		SHEET 5 12 GOST 19903-74	CB 418-50-29
TCD	Norain puls	10 GOST 1577-81	CB 418-51-29
APPD	Pontus	CONTROLLERATE OF INSPECTION (HEAVY VEHICLES AVADI)	
DATE	19-2-86	TITLE: FLANGE, EXHAUST MANIFOLD	
SCALE	1:1	D S CAT NUMBER	DRAWING NUMBER
DIMENSIONS IN mm			3318-08-8
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69			
ALL THREADS TO CONFORM TO			
ISSUE	DATE	NATURE OF AMENDMENTS	
B	1-7-10	4-15 ALT. COMM. M. Eq. MINUTES POINT No. 2. DT. 26-10-09	
A	24.8.2K	NOTN. No. BK 86-455	

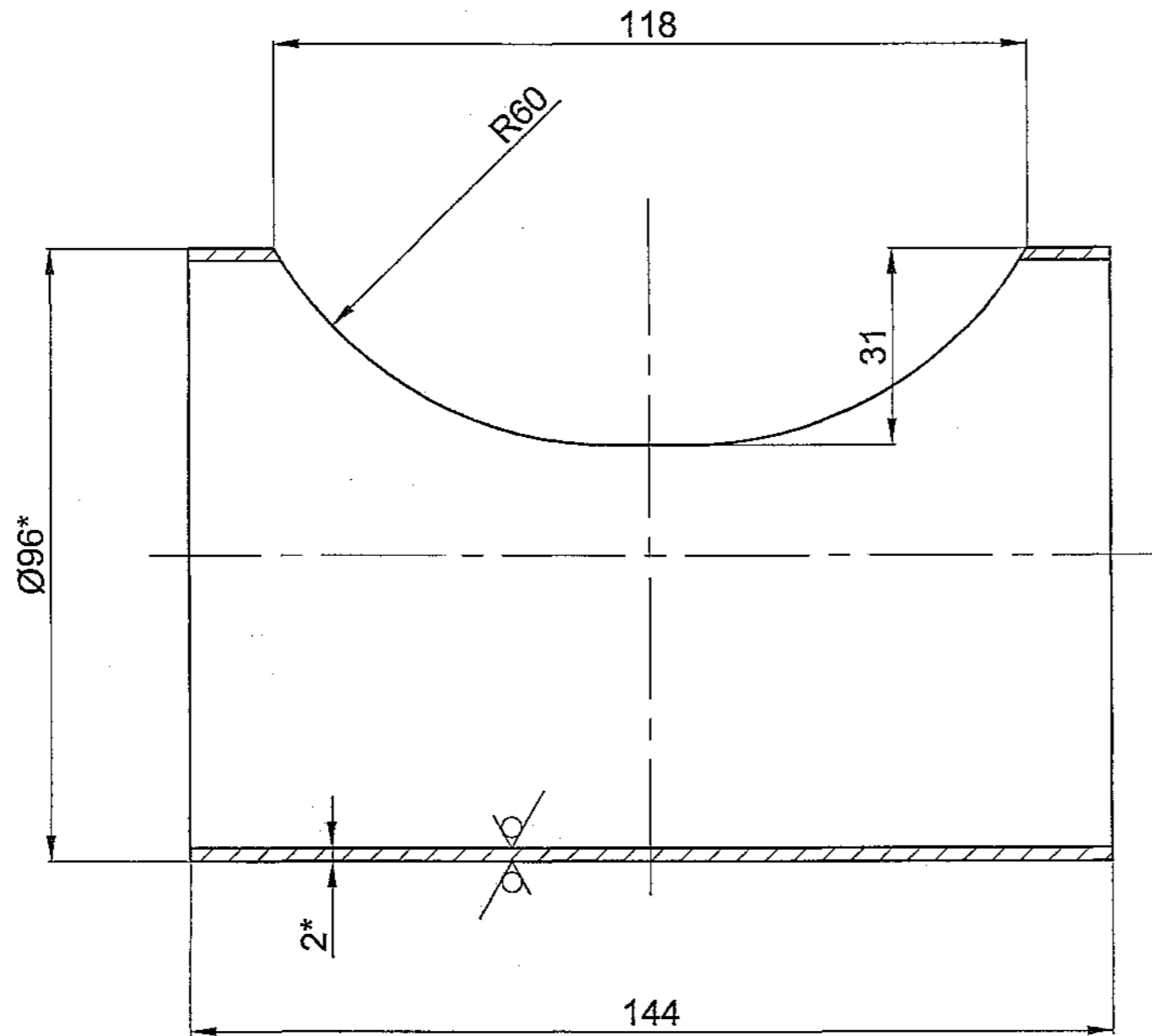
46

SIZE A2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

DRAWING NUMBER
418-23-11

80 ✓ (✓)



1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5mm, above 80 mm upto 200mm ± 1mm.
2. * Dimensions are given for reference.

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

EST. WT. (Kg) **0.591** TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

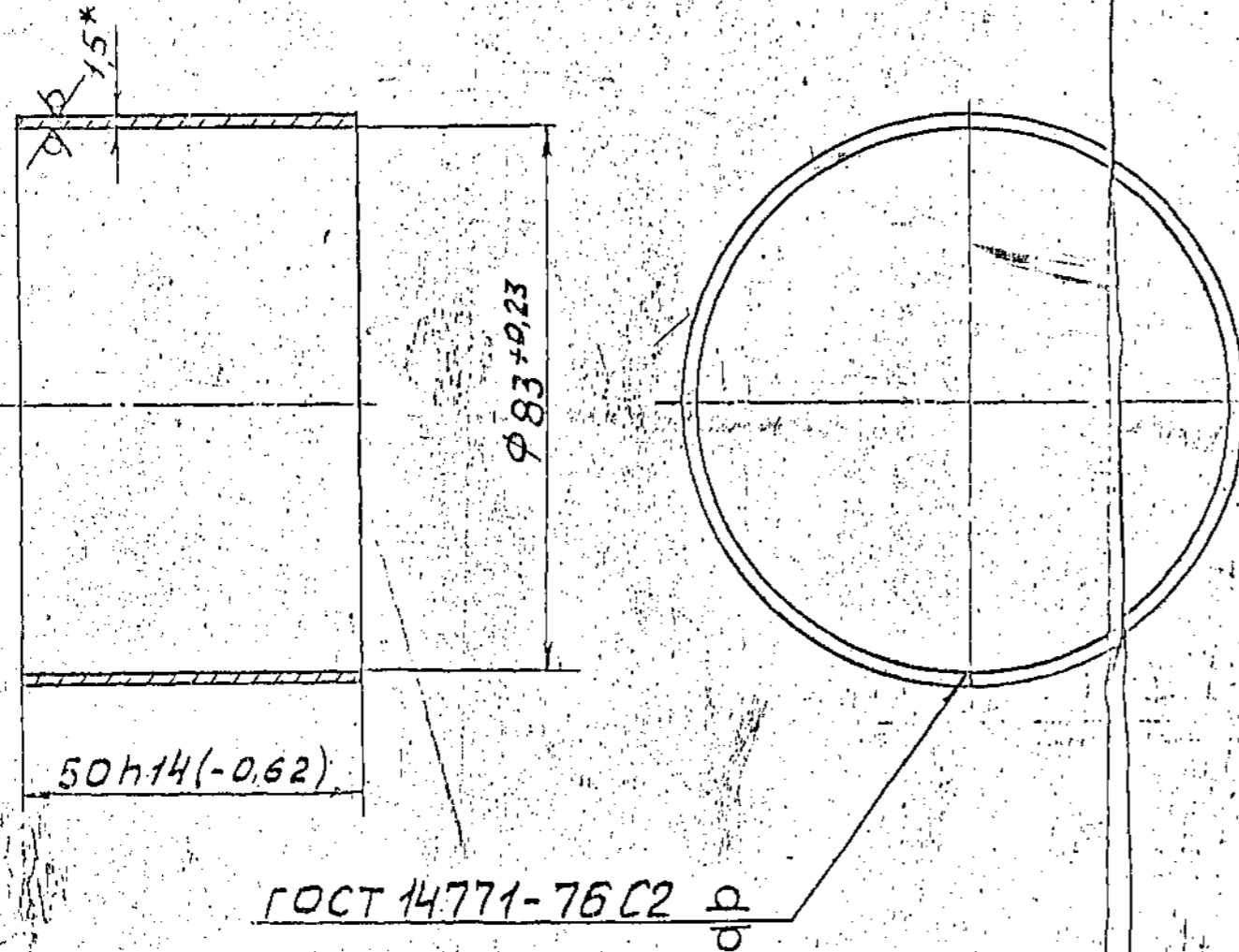
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

			DRN	<i>[Signature]</i>	MATERIAL :- PIPE 96x2-20A TY14-159-21-72	USED ON :- Cb 418-32-01 Cb 418-31-2-01 Cb 418-33-01
			CHD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			APPD	<i>[Signature]</i>		
			DATE	26/1/07		
			SCALE:-	1:1		
			DIMENSIONS IN mm		TITLE :- PIPE	
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
			ALL THREADS TO CONFORM TO		DRAWING NUMBER 418-23-11	
8	7	6	ISSUE	DATE	NATURE OF AMENDMENTS	

F-4
71
253

SIZE A3

ЕСКА



(A) EQUIVALENT MATERIAL
04Cr.18Ni.10Ti.20 TOIS.6911 72

1. Заменитель материала сталь 12X18H10T-М3а ГОСТ 5582-75.
2. Трещины, рванины, расслоения и вмятины не допускаются.
- 3.* Размер для справок.

- 1) ALTERNATE MATERIAL: STEEL 12X18H10T M3a GOST 5582-75.
- 2) CRACKS, TEARS LAMINATION AND DENTS ARE NOT ALLOWED.
- 3) * DIMENSIONS FOR REFERENCE.

** SHEET 6-1,5 GOST 19904-74
12X18H10T-M2a GOST 5582-75

Ил. № подл. 36981 | Пост. в ледя 4.12.85 | Илв. № подл. 4.12.85 | Пост. в ледя 4.12.85
 ДРГ. INDIANISED BASED ON RUSSIAN - ORIGINAL ISSUE (BK 84-824)

PILOT SAMPLE SHOULD BE APPROVED BY A HSP BEFORE BULK PRODUCTION

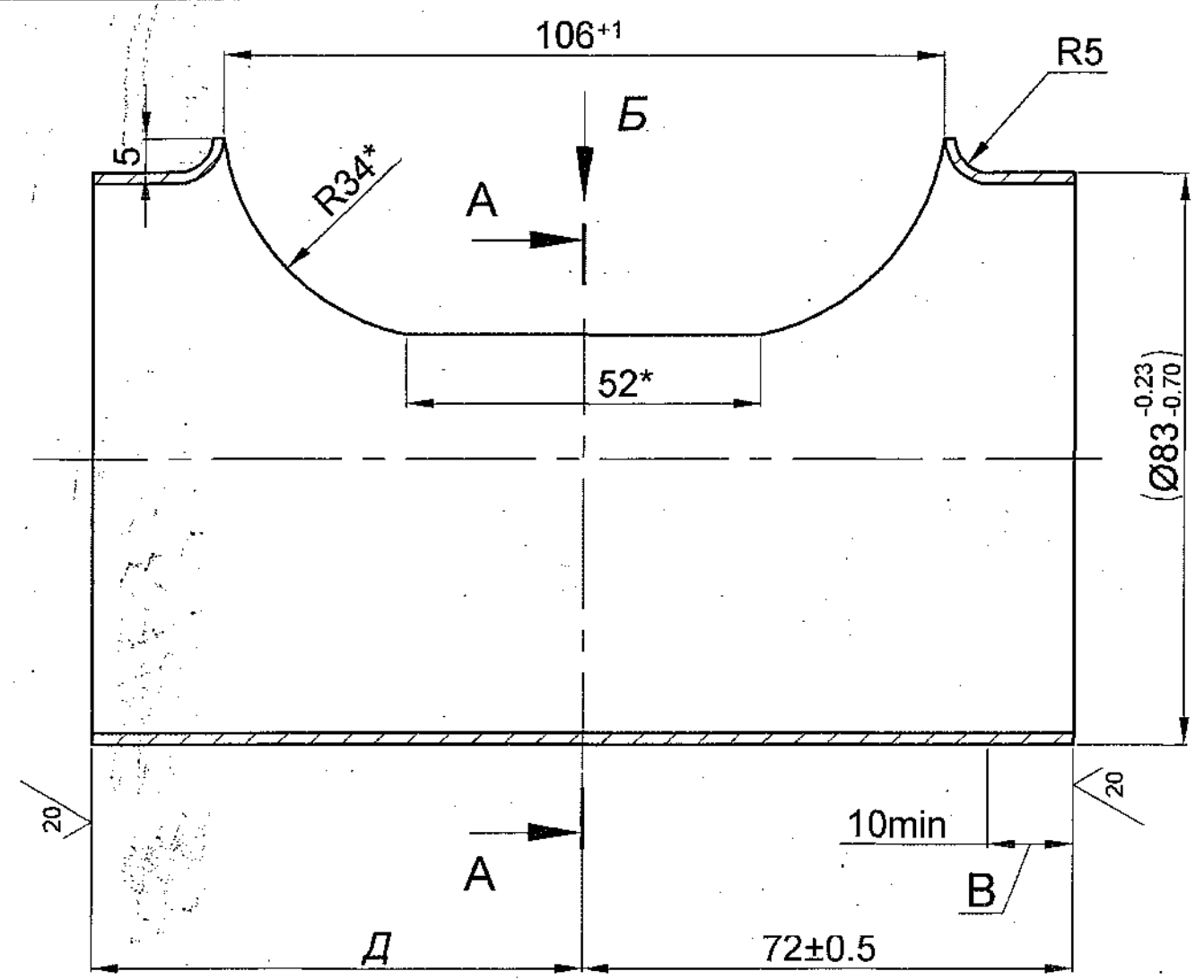
		EST. MASS 0,155 Kg	TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS)
A	28.8.10	4 th Alt Comm Mtg Minutes Point No.16 Dt. 26.10.09	ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R. OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE
ISSUE DATE	NATURE OF AMENDMENTS	MATERIAL: ** SEE ABOVE	USED ON:
DRN <i>[Signature]</i>	SCALE: 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I	
CHD <i>[Signature]</i>	DIMENSIONS IN mm	TITLE: BUSHING	
YCD <i>[Signature]</i>	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	DS CAT NUMBER	DRAWING NUMBER 418-85-5
APPD <i>[Signature]</i>	ALL THREADS TO CONFORM TO		

406 - BK84-824

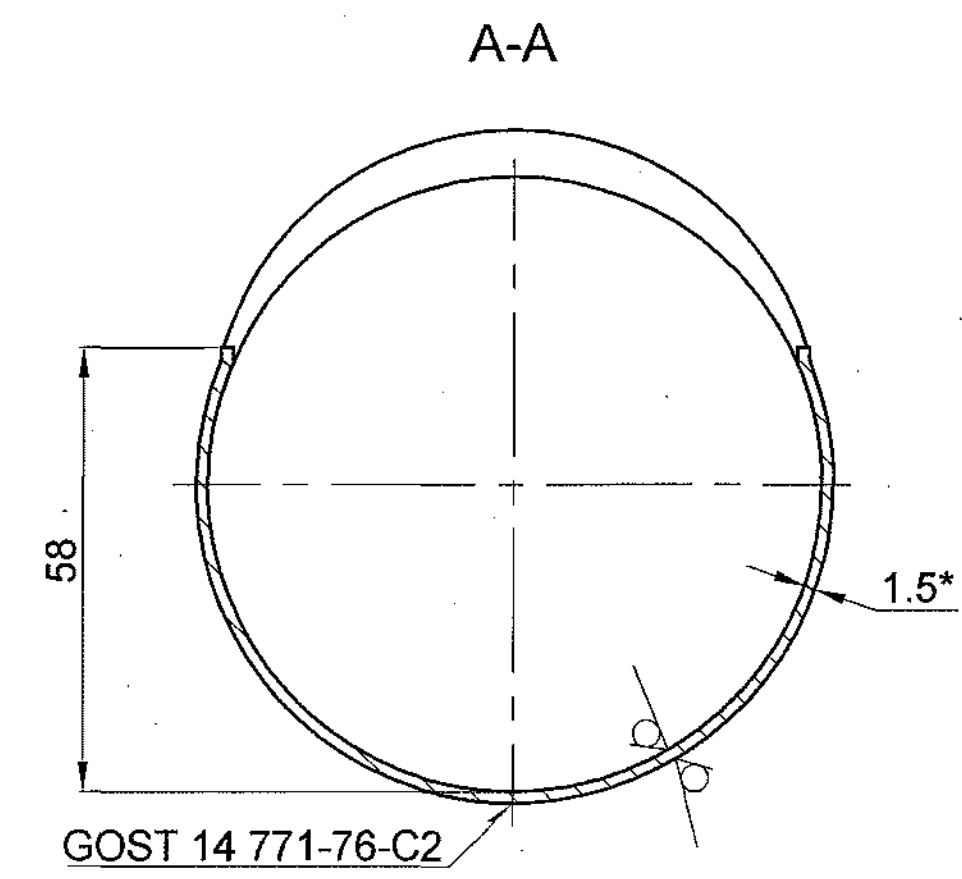
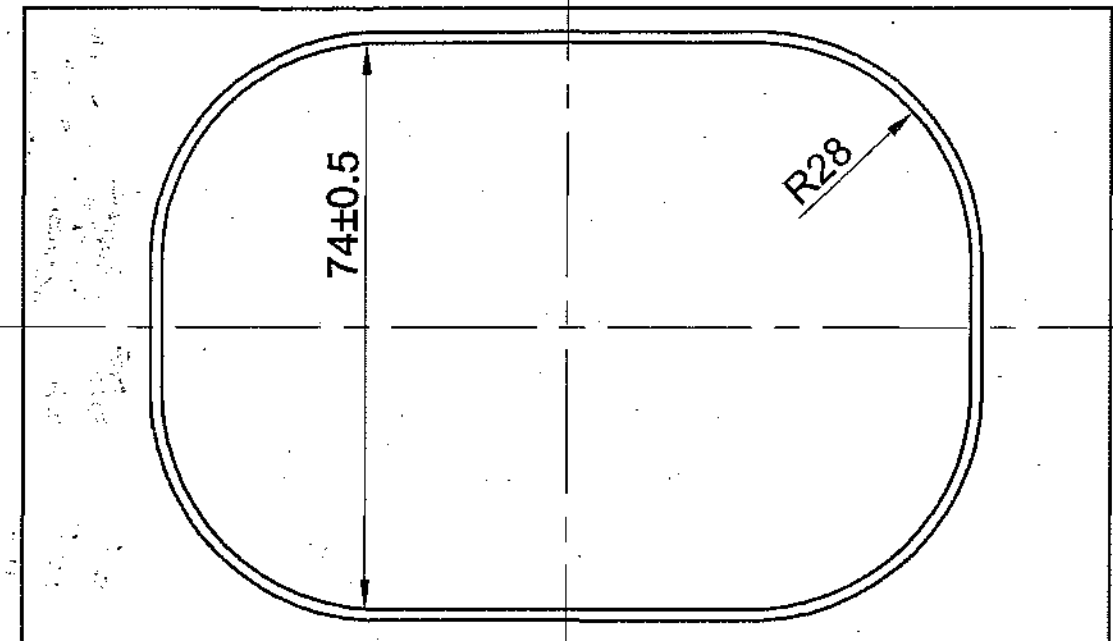
DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 3

DRAWING NUMBER
418-90-10 (01-02) SHEET No. OF

80 ✓ (✓)



VIEW B



DRG. NO.	Д, mm	WEIGHT IN kg
418-90-10	72±0.5	0.340
-01	65±0.5	0.319
-02	85±0.5	0.372

1. Unspecified limit deviations of dimensions for cold forging to be carried out upto 80mm ± 0.5 mm, above 80 mm upto 200 mm ± 1 mm.
2. Allowance for ovality of pipe should be 3 mm (Semi difference of diameters).
3. On flange ribs, metal tears are allowed upto maximum of 2 Nos per flange in quantity with subsequent electric arc welding and dressing at the base of the tears.
4. On section "B", it is permitted to carry out welding from inner side.
5. Dress the mounted on the section "B" along the outer diameter of weld-surface.
6. Dimension in brackets - After assembly.
7. * Dimensions are given for reference.
8. Alternate material is steel 12x18H10T TY 14-1-31-99-81.

Ⓐ EQUIVALENT MATERIAL
04Cr.18 Ni 10Ti 20 TO IS:6911-72

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

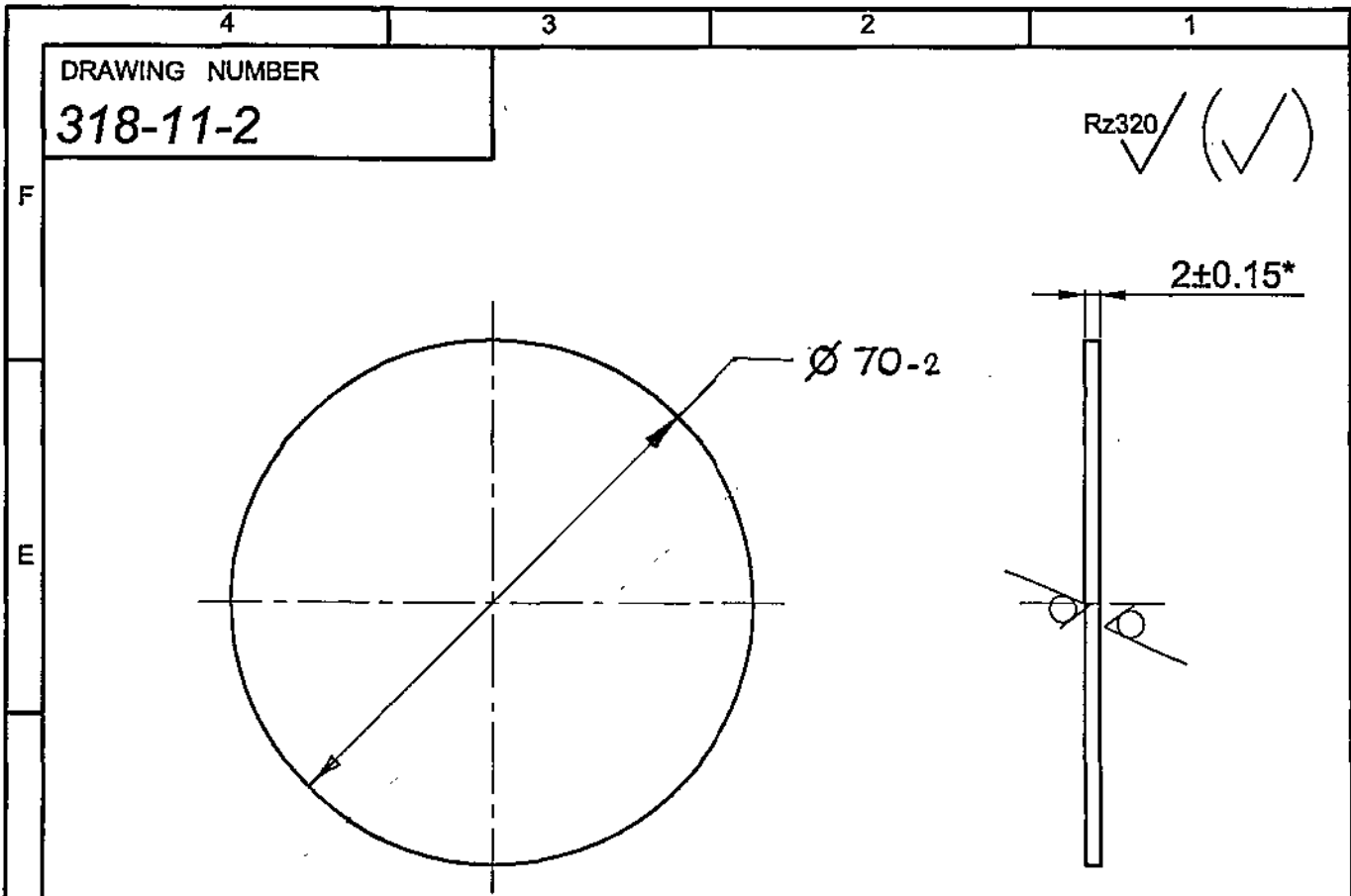
EST. WT. (kg) TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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>As per</i>	MATERIAL:- SHEET	USED ON:-
CHD	<i>R. B. B. B. B. B.</i>	ET 1.5 GOST 19904-90	CB 418-31-2-01
APPD	<i>As per</i>	12X18H10T-M2a GOST 5582-75	CB 418-32-01
DATE	14/2/09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1:1		TITLE:-	
DIMENSIONS IN mm		PROTECTIVE PIPE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
A 28.8.10		DRAWING NUMBER	
4 th Alt. Comm Meeting Minutes		418-90-10(01-02)	
Point No.16 Dated 26.10.09			
ISSUE	DATE	NATURE OF AMENDMENTS	

F-4
74
253
SIZE A4 x 3

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5



1. Dress the sharp edges.
2. * Dimension are given for reference.

5A EQUIVALENT MATERIAL
Gr. 0 IS:513-1994

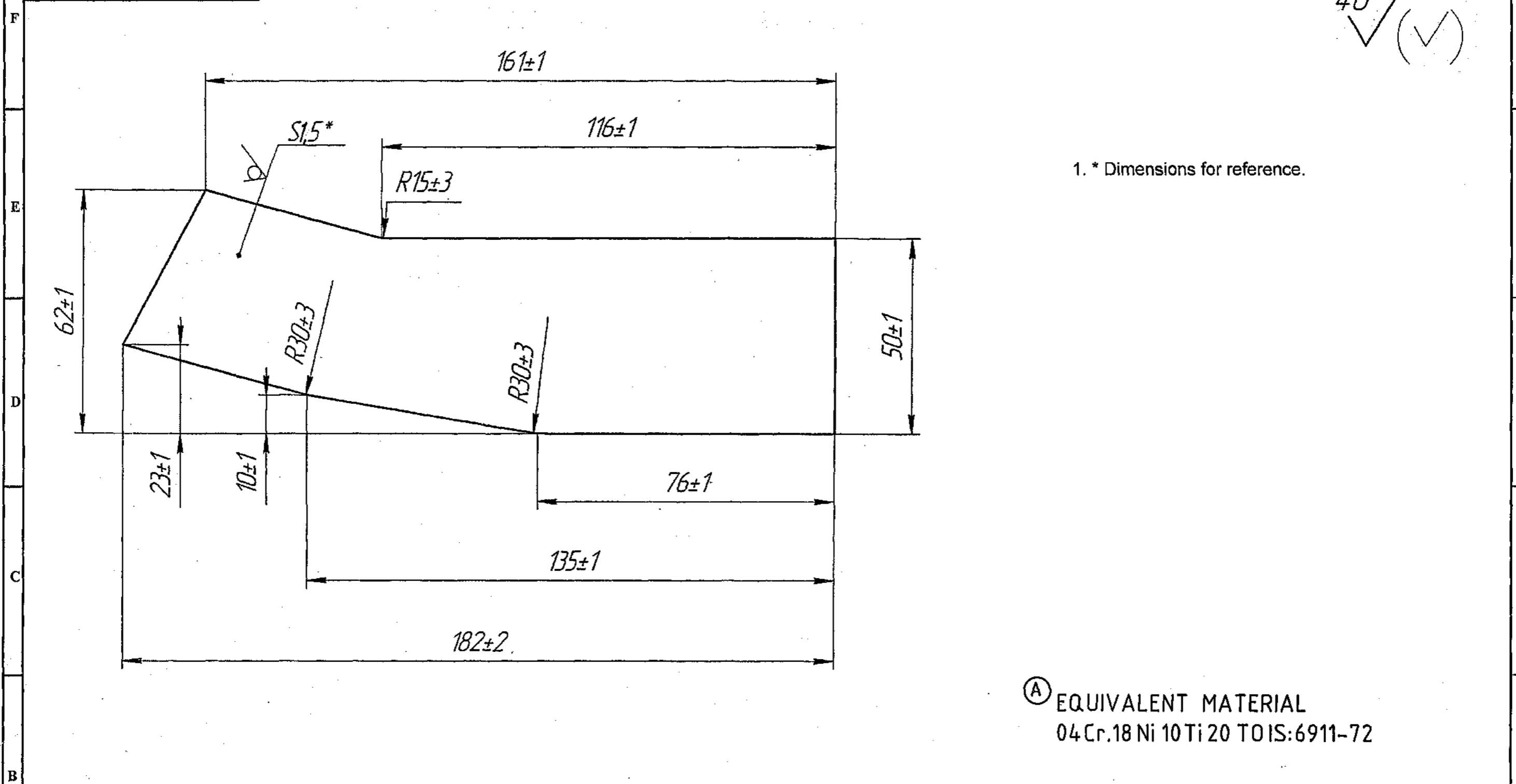
PILOT SAMPLE SHOULD BE APPROVED BY A H'S P BEFORE BULK PRODUCTION.

		EST. WT. 0.06	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.	
		MATERIAL :- SHEET AT 2 GOST 19904-90 K270B6-II-10-CB GOST 16583-89	USED ON :- Cb 418-50-45 Cb 418-51-45
5A	28.04.10	4 th Alt. Comm. Mt. Minutes Pt. No. 2 Dt. 26.10.09	
ISSUE	DATE	NATURE OF AMENDMENTS	
DRN	<i>[Signature]</i>	SCALE :- 1:1	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI
		DIMENSIONS IN mm	
CHD	<i>[Signature]</i>	TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69	TITLE :- PLUG
APPD	<i>[Signature]</i>		
DATE	25/1/10	ALL THREADS TO CONFORM TO	D S CAT NUMBER
			DRAWING NUMBER 318-11-2

SIZE A4

DRAWING NUMBER 418-150-1 SHEET No. 1 OF 1

40 ✓ (✓)



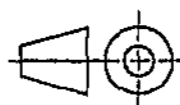
Ⓐ EQUIVALENT MATERIAL
04Cr.18Ni10Ti20 TO IS:6911-72

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL
DRAWING REPLACES 418-150 ISSUE -1 NOTN. No.238-05

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

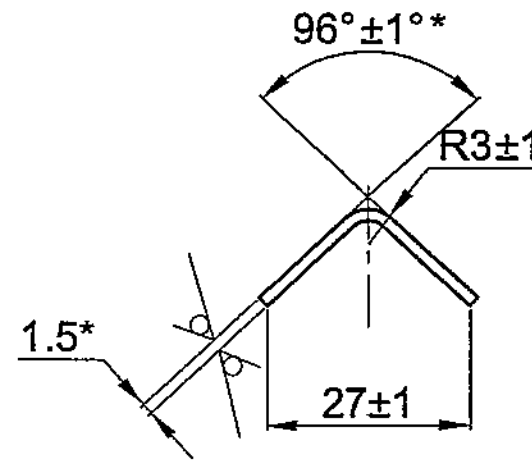
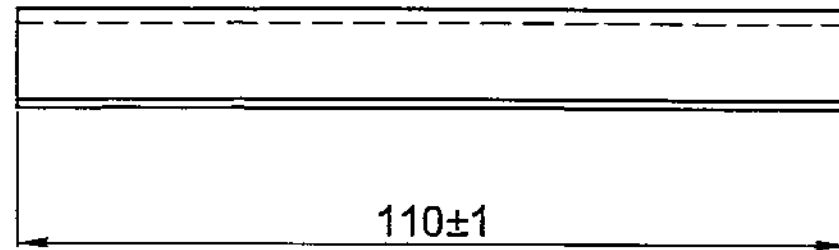
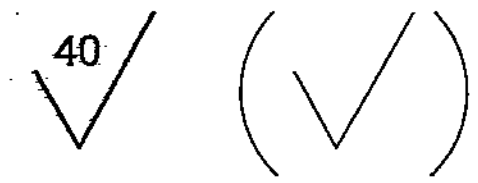
EST. WT. (Kg) 0.95 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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

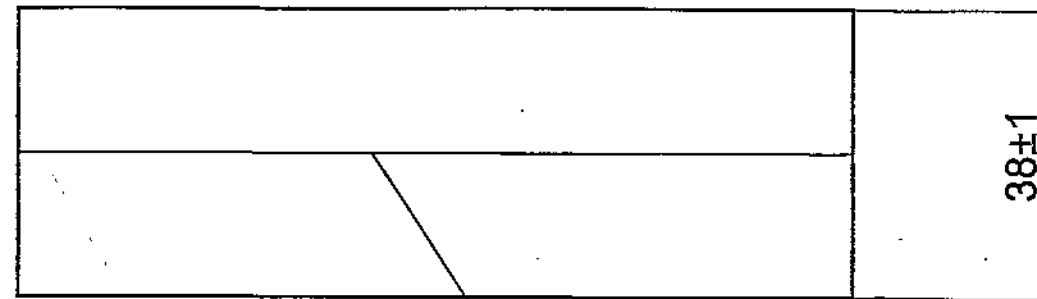
DRN	1. <i>[Signature]</i>	MATERIAL: bT 1.5 GOST 19904-90	USED ON:-
CHD	<i>[Signature]</i>	SHEET 12X18H10T-M2a (or M3a)	Cb.418-50-45
APPD	<i>[Signature]</i>	- GOST 5582-75.	Cb.418-51-45
DATE	02-01-09	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:-	1:1	TITLE:-	
DIMENSIONS IN mm		 COVER PLATE	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69			
ISSUE	A	ALL THREADS TO CONFORM TO	D S CAT NUMBER
DATE	28.8.10		DRAWING NUMBER
NATURE OF AMENDMENTS	4 th Alt. Comm Meeting Minutes Point No.16 Dated 26.10.09		418-150-1

F-158
SIZE A3

DRAWING NUMBER
418-151



1. * Dimension is given for reference.



BENDING LINE



EQUIVALENT MATERIAL
Gr. 1 IS: 513-1994

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

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

EST. WT. (Kg) **0.06** 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	<i>[Signature]</i>	MATERIAL :- SHEET	USED ON :-
CHD	<i>[Signature]</i>	AT-1.5 GOST 19904-90	CB 418-50-45
APPD.	<i>[Signature]</i>	K270B6-II-T-10 cb GOST 16523-97	CB 418-51-45
DATE	28/11/07	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1:1	AVADI	
DIMENSIONS IN mm		TITLE:-	RIB
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			
ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER
A	29.04.10	6 th Alt. Comm. Mt. Minutes Pt. No. 2 Dt. 26.10.09	418-151
ISSUE	DATE	NATURE OF AMENDMENTS	



SIZE A3