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 Phone : 044-2684 3157  
 E-Mail : hvf.ofb@nic.in



Government of India  
 Ministry of Defence  
 Heavy Vehicles Factory  
 Avadi, Chennai 600 054.

NO.65013/AM/HVF/2018-2019/ALT MATL

Dt.31.12.2018

(Kind attn: Brig S.B.Kodaru Controller, CQA(HV)

The Controller,  
 Controllerate of Quality  
 Assurance (Heavy Vehicles),  
 AVADI, CHENNAI - 600 054

Sub: Alternate matl for 8,10,15,20 grades of Cost specification - Reg.

Ref: 1. Indian equivalents of Russian steels used in Articles 67S/765 & Article 172 Document  
 No. Copy No.4 cisv/td/pub/2 (Vol-1), Dt.07.05.1986  
 2.HVF Lt of Even no. Dt.22.12.18

In continuation of HVF Lt of even no Dt.22.12.18, the following alternate materials will be used against specified steel grades of Cost specification. The alternate matl used purchased will be deinitiated to CQA(HV) on regular basis for record and and reference please:

Steel 08	Steel 10	Steel 20	Steel 15
HRT, HR2, HR3 to IS:1079-09	FE-330 IS:5986-02	FE-410 IS:5986-02	FE-410 IS:5986-02
7C4 to IS:1570-04 Pt-II	14C6,15C8 TO IS:2004-91	20C8,25C8 IS:2004-91	14C6,15C8,20C8 IS:2004-91
CR1, CR2, CR3 to IS:513-08	CR1 to IS:513-08	E250 A IS:2062-11 (or) E250 C IS:2062-11 (Where impact strength is mandatory)	E250 A IS:2062-11 (or) E250 C IS:2062-11 (Where impact strength is mandatory)
EN 28 to BS:970 Pt-1 1983	080M15 (EN 32) to BS:970 Pt-1 1983	070M20/EN 3A or EN 4 to BS:970 Pt1 1983	070M20/EN 3 or EN 3A to BS:970-83

( S Kadinvel )  
 Jt.General Manager  
 For Sr.General Manager

वेबसाइट(Website): dgqadefence.gov.in  
फ़ोन(PHONE): 044-2684 0473  
फ़ैक्स(FAX): 044-26841200  
ईमेल(Email): cqahv-dgqa@nic.in

भारत सरकार(Government of India)  
रक्षा मंत्रालय (गुजरात)  
रक्षा मंत्रालय (गुजरात)  
Ministry of Defence(DGQA)  
गुजरात आयातन निश्चयनालय(गुजरात)  
Controllerate of Quality Assurance  
(Heavy Vehicles)  
आवडी(Avadi), चेन्नै(Chennai)-600 054



83201/TECH-GEN/EQ.MATL/HVF

05 Jan 2019

The Sr General Manager  
Heavy Vehicles Factory, Avadi,  
Kind atn : Shri V N R Nayudu, Jt. GM/QA

APPROVAL OF EQUIVALENT MATERIAL FOR LOW CARBON STEEL -REG

1 Ref : a) HVF letters

- i) 65013/HVF/2018-19/ALT MATL dated 06 Dec 18
- ii) 65013/HVF/2018-2019/ALT MATL dated 22 Dec 18
- iii) 65013 /AM/HVF/2018-2019/ ALT MATL dated 31 Dec 18
- b) COA(HV) letter No.83201/TECH GEN/ EQ MATL/HVF dated 15 Dec 2018

2. HVF Proposal for equivalent material (for low carbon steel) forwarded vide your letter under reference 1 (a) (iii) has been scrutinized and COA (HV) is agreed with HVF proposal. This approval will be applicable for Steel Grade 8, 10, 15 & 20 only as per COA (SV) Dehu Road book no. "CISV/ ID/ PUB/2 (Vol-I) for Indian equivalents of Russian steels used in Articles 675/765 & Article 172". The specific grade of Indian equivalent material of latest IS against specific Russian material has to be used and before use the same has to be intimated to COA (HV).

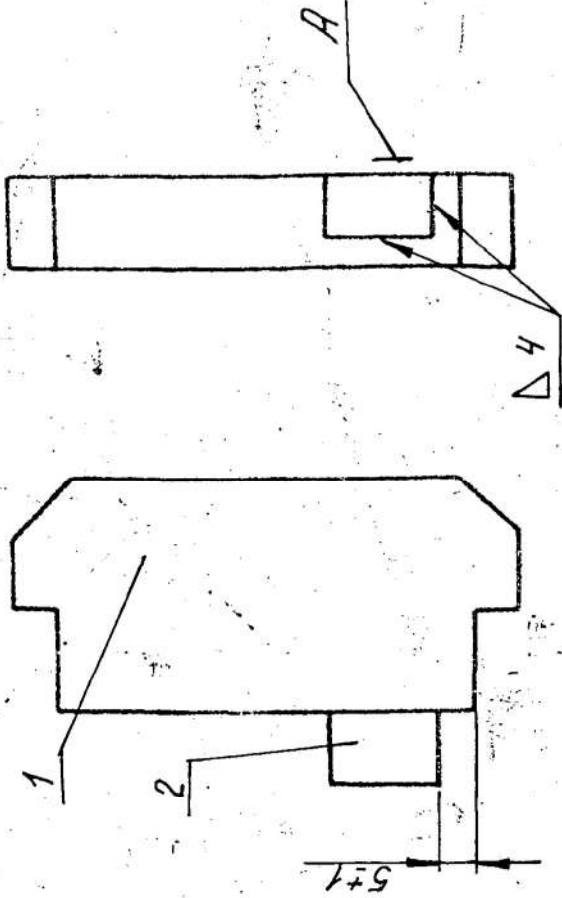
3. This is for your information and further necessary action please.

(श्री. रविंद्रनाथ / V. Ravindranath)  
व. व. अ. - १ / SSO-1  
सहायक नियंत्रक / Asst Controller  
श्री नियंत्रक / For Controller

*(Handwritten signature)*

*Exh. copy*

172.04.065.cδ



Восстановление сварочного шва за плоскостью  
не допускается. Зонадание до 1мм.  
Projection of weld beyond surface "A" is not allowed.  
Sinking up to 1mm is allowed.

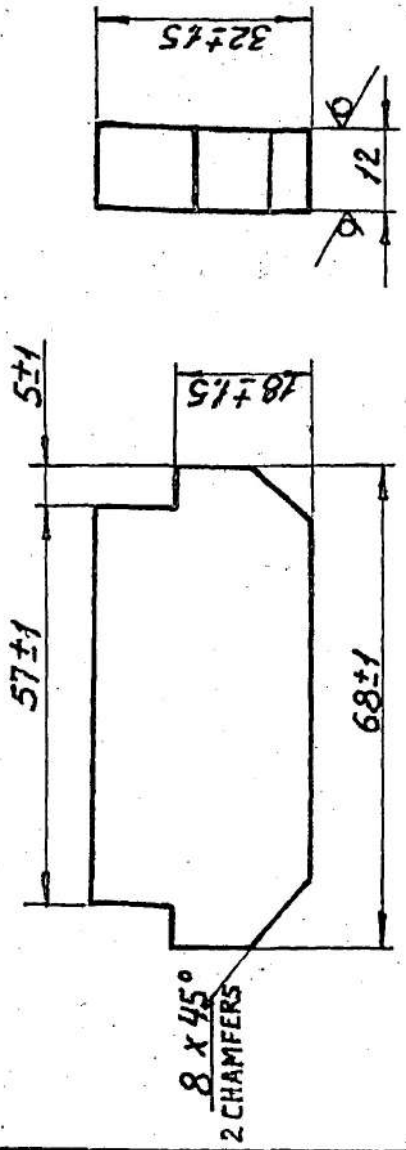
F 20

2	520.11.002-09	БОШКА 8x10x16	1	
		БОШКА	+	
1	172.04.240	УГОЛ STOP	1	
		УГОЛ		
		НОМЕНКЛАТУРА		
		ФИГУРНОЕ ЧИСЛО		
		КОЛ-ВО		
		КОЛ-ВО		REMARKS.
				КОЛ-ВО

EST. MASS	TO BE STAMPED OR MARKED WHERE INDICATED THUS #	LETTERS)
0.116 kg		
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.		
MATERIAL:-	USED ON:-	175 04 004 Cδ-1
CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI		
TITLE:-	STOP Assy	
D S CAT NUMBER	DRAWING NUMBER	
	172.04.065 cδ	
ISSUE DATE	NATURE OF AMENDMENTS	
DRN	SCALE - 1:1	
CD	DIMENSIONS IN mm.	
TCD	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.	
APPO	ALL THREADS CONFORM	
DATE	26.10.88	TO

4 3 2 1  
 DRAWING NUMBER  
**172 04 240**

500



DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

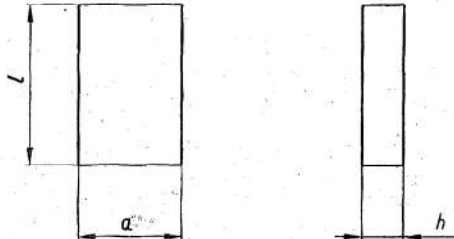
1. MAY BE MANUFACTURED FROM OPEN HEARTH STEEL 10, 20, 25 GOST 1577 - 70.
2. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
3. TOLERANCE ON THICKNESS IN COMPLIANCE WITH GOST 19903 - 74

F.24

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.	
EST. WT.	TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS)
0.113 kg	
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 :-	USED ON
OPEN HEARTH STEEL 15, GOST 1577-70	175 04 004 C5 -1 172 04 065 C5
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AYADI.	
ISSUE / DATE	NATURE OF AMENDMENTS
DRN S. Govindan	SCALE:- 1:1
CHD Chanchel	DIMENSIONS IN mm
TCD S. Govindan	TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69
APPD S. Govindan	ALL THREADS CONFORM TO
DATE 31-12-2001	
SIZE A4	
D S CAT NUMBER	TITLE
172 04 240	STOP
DRAWING NUMBER	
172 04 240	

DRAWING NUMBER  
**520.11.002**

SHEET No. 1 OF 1



DESIGNATION Обозначение	h, MM		l, MM		a, MM		WEIGHT Масса, кг
	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	
520.11.002			20	±10	16	±10	0,010
-01	4	±0,5	40		30		0,038
-02			70	±15	25	±2,0	0,055
-03			100		25		0,079
-04			110	±2,0	50		0,173
-05			55		16		0,043
-06	6	±0,5	70	±15	16	±1,5	0,053
-07			80		25	±2,0	0,094
-08			40	±1,0	30	±1,0	0,056
-09			10		16		0,010
-10	8	±0,5	20	±1,0	16	±1,0	0,020
-11			40		20		0,050
-12	10	+0,5	90	±3,0	30	±1,0	0,212
-13	12	-1,0	60	±2,0	22	±1,0	0,124
-14	16	+0,5	40	±1,0	36	±1,0	0,181
-15	4	+0,5	40	±1,0	20	±1,0	0,025
-16	6	+0,5	40	±1,0	25	±1,0	0,047

Обозначение DESIGNATION	LIMIT h, MM		LIMIT l, MM		LIMIT a, MM		WEIGHT Масса, кг
	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	
520.11.002-017	4	±0,5	100		16	±1,5	0,050
-18	8	+0,5 -1,0	50	±2,0	16	±2,0	0,050
-19	10	±0,5	30	±1,0	25	±1,0	0,060

- Alternate material – Steel 20 GOST 1050-88.
- Surface finish should corresponds to as follows:
  - In the delivery condition (as per base material) - ✓
  - during cold stamping - Rz630 ✓
  - during hot stamping - ✓
  - during machining - Rz80 ✓
- Other requirements should be as per specifications 520.TY1.

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	С.А.С.П.С.	MATERIAL:-	STEEL 15	USED ON:-	PV572.0718.0165
CHD	В.Т.С.		GOST 1050-88		PV572.0718.0061
APPD	Chanchel				PV572.0718.0092 (2A) (2B)
DATE	13-02-04	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
SCALE:-		AVADI			
DIMENSIONS IN mm		TITLE:-		BOSS	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102 - 69		D S CAT NUMBER		DRAWING NUMBER	
2B 02.02.13 55150/CQA(HV)/DB/BLT T-72 D1. 19.07.11				520.11.002	
2A 26.11.12 55150/CQA(HV)/DB/BLT T-72 D1. 19.07.11					
ISSUE DATE	NATURE OF AMENDMENTS				

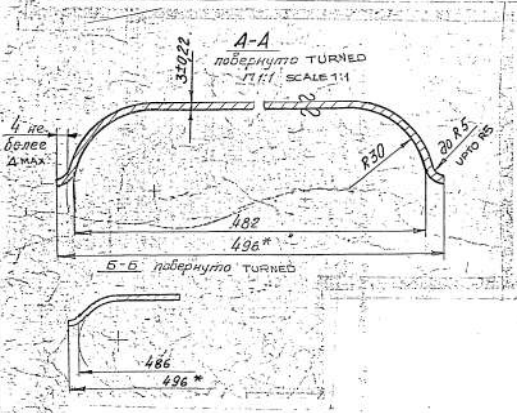
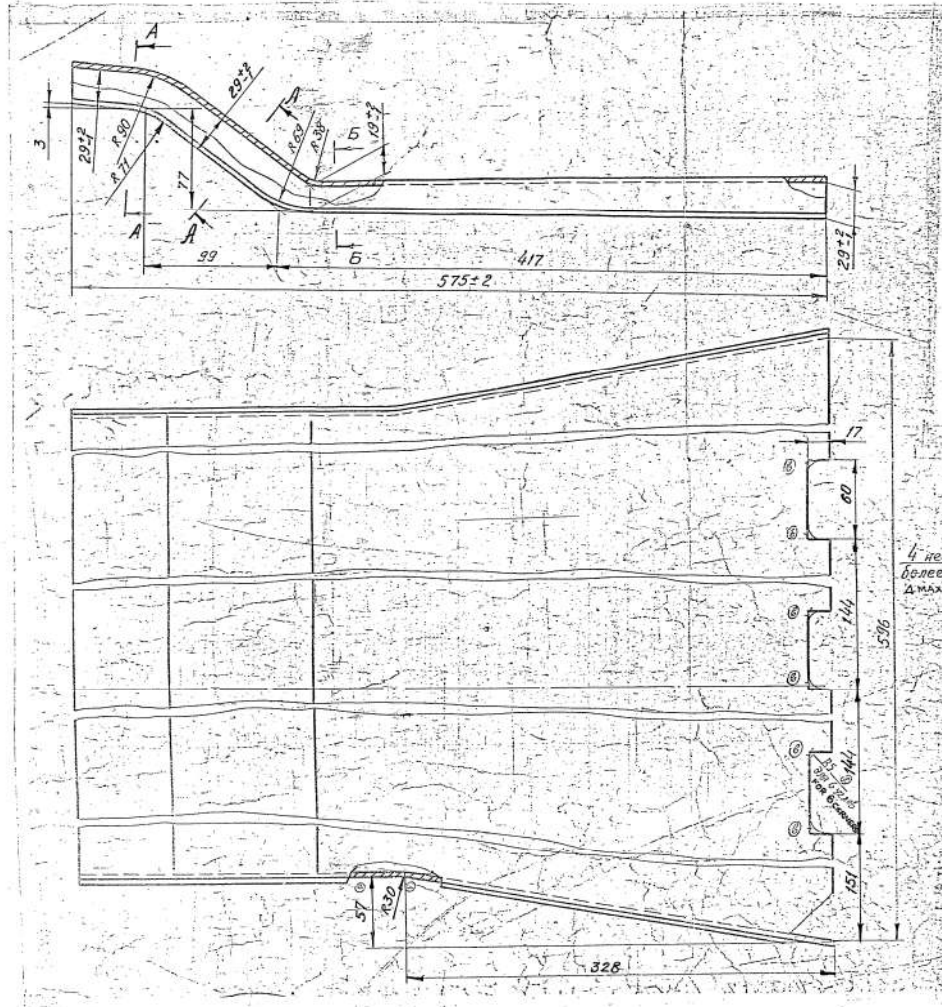
356

SUPPLY CODE  
U-01-1-1  
D90033

F-33  
66

SIZE A4 x 3

1. PERMISSIBLE DEVIATION OF COMPONENT FROM LONGITUDINAL AND TRANSVERSE PROFILE GAUGE CONSTRUCTED AS PER NOMINAL SIZE IS FROM LONGITUDINAL GAUGE. - UPTO 3 MM.  
FROM TRANSVERSE GAUGE - UPTO 2 MM.
2. ON THE SURFACE OF THE COMPONENT STAMPING MARKS ARE ALLOWED
3. AT BEND PLACES NATURAL THINNING OF METAL IS ALLOWED.
4. WARPAGE OF FLAT SECTIONS UPTO 3 MM IS ALLOWED.
5. SEPARATE DENTS AND WRINKLES UPTO 2 MM IN DEPTH (HEIGHT) ARE ALLOWED.
6. UNSPECIFIED RADII SHOULD BE ROUNDED OFF UPTO 3 MM.
7. SLOTS MAY BE SHIFTED UPTO 2 MM.
8. \* DIMENSIONS FOR REFERENCE.



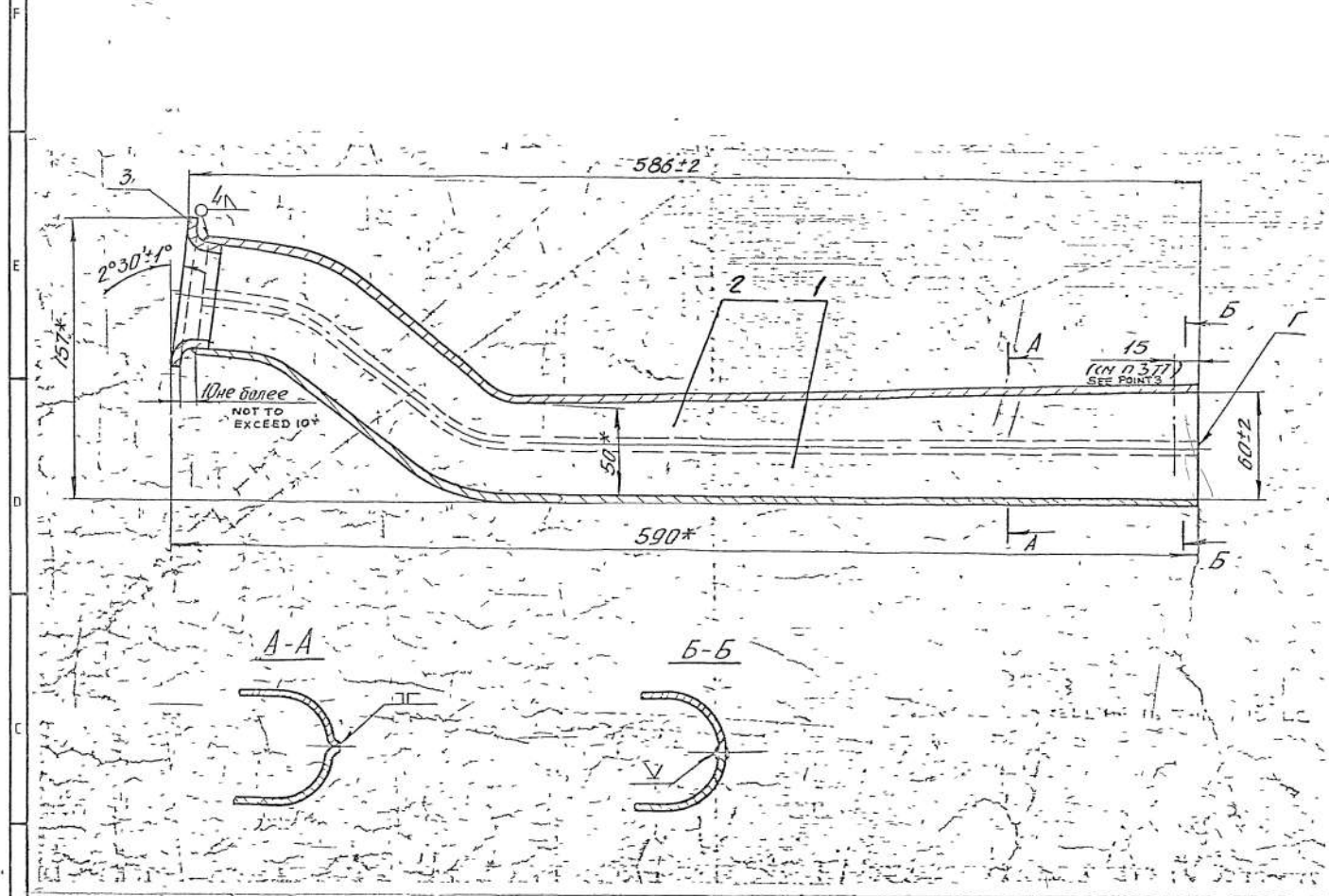
PLOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. MASS 7.4 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.	

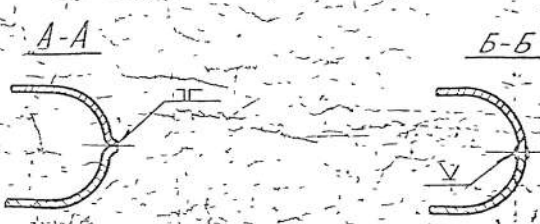
DRN	CHD	TCD	APPO	DATE	SCALE	EDIMENSIONS IN mm	TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 20:20-49	ALL THREADS TO CONFORM TO	MATERIAL : STEEL 12x16H10T (GROUP III GOST 5432-72)	USED ON : 175 04 003 C6-1
					1:2				CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I	
TITLE BRANCH PIPE UPPER WALL								10 S CAT NUMBER	DRAWING NUMBER 175 04 002-1A	
ISSUE	DATE	NATURE OF AMENDMENTS								

DRAWING NUMBER

175 04 003 C5-1



- 1 MISMATCHING OF THE UPPER AND LOWER SIDE WALLS OF THE BRANCH PIPE ALONG FACE 1 IS ALLOWED UP TO 3mm ✓
- 3 FROM THE END FACE 1, A PORTION 15mm IN LENGTH, OF THE BRANCH PIPE MAY BE DRESSED TO MATCH IN FLANGE 175 04 006 IN THIS CASE INNER V GROOVE SHOULD BE WELDED AS SHOWN IN SECTION ✓
- 4 GAS-SHIELDED WELDING IS ALLOWED ✓
5. \* DIMENSIONS FOR REFERENCE. ✓



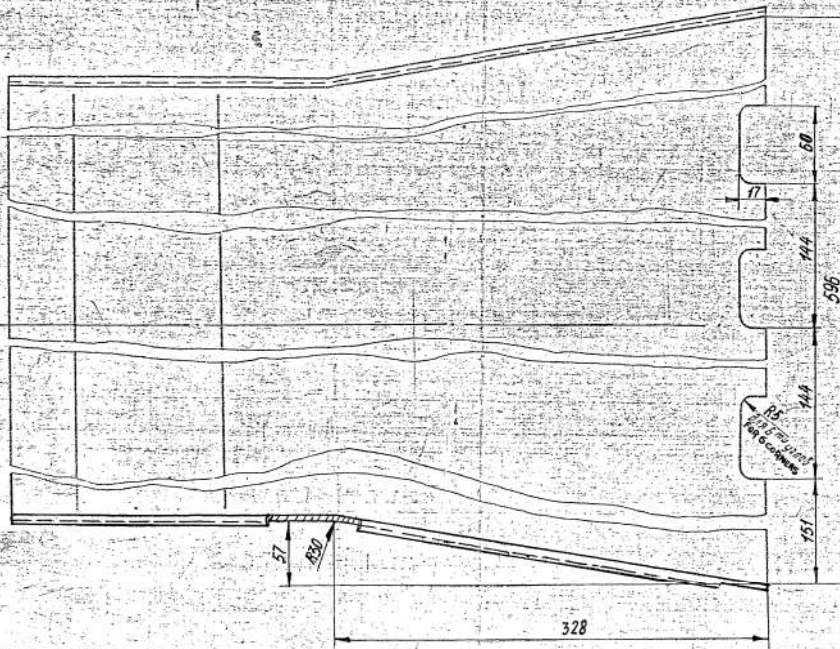
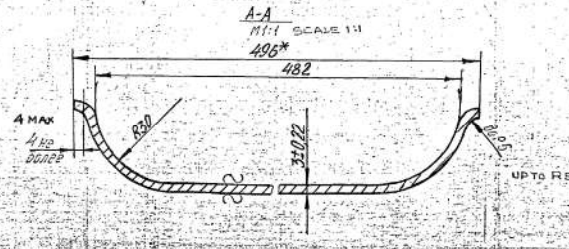
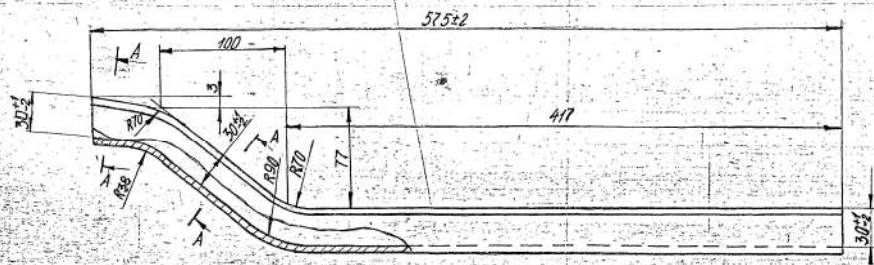
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST WT 163 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.

FORM	85a	TITULAR		USED ON	175 04 004 C5-1
REV	2/20/00				
DATE	19.3.84	CONTROLLED BY QUALITY ASSURANCE (HEAVY VEHICLES)			
SCALE	1:2				A V A 3 1
DIMENSIONS	mm				
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 2'02-65				
ALL T-READS TO CONFORM TO					
ISSUE	DATE	NATURE OF AMENDMENTS		S CAT NUMBER	DRAWING NUMBER
					175 04 003 C5-1

F-19  
1  
SIZE A2



1. PERMISSIBLE DEVIATION OF COMPONENT FROM LONGITUDINAL AND TRANSVERSE PROFILE GAUGES, DESIGNED AS PER NOMINAL SIZE IS
  - a) FROM THE LONGITUDINAL GAUGE UPTO 3 MM.
  - b) FROM TRANSVERSE GAUGE UPTO 2 MM.
2. ON THE SURFACE OF COMPONENT STAMPING MARKS ARE ALLOWED.
3. AT BEND PLACES NATURAL THINNING OF METAL IS ALLOWED.
4. WARPAGE OF FLAT SECTION UPTO 3 MM IS ALLOWED.
5. SOME DENTS AND WRINKLES UPTO 2 MM IN DEPTH (HEIGHT) ARE ALLOWED.
6. UNSPECIFIED RADII SHOULD BE ROUNDED OFF UPTO 3 MM.
7. SHIFT OF SLOTS UPTO 2 MM IS ALLOWED.
8. \* DIMENSIONS FOR REFERENCE.

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

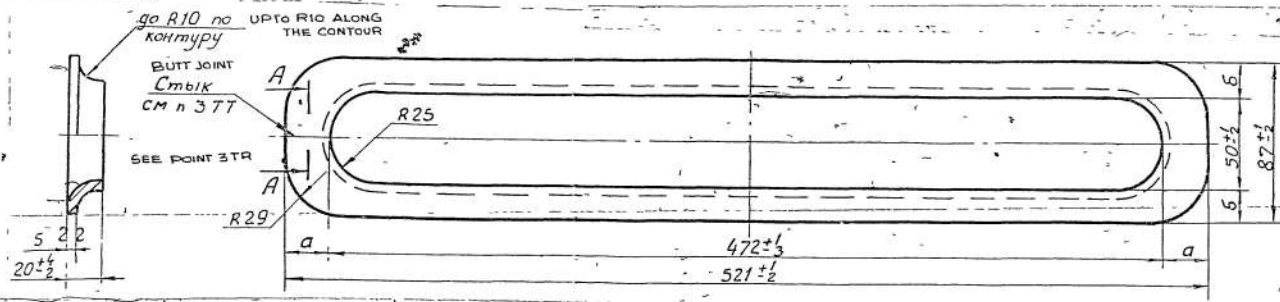
EST. MASS 7.4 Kg TO BE STAMPED OR MARKED WHERE INDICATED THUS \* [LETTERS]

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

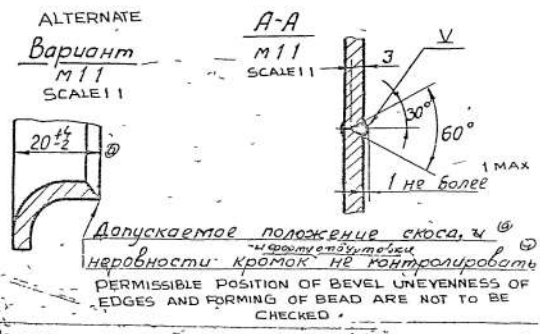
DRN	SC	MATERIAL	STEEL 12X18	USED ON	
CHD	8/25	HWT GROUP	III		175 04 003 Cd-1
TD	3/25	TEST	5632-77		
APPD	3/25	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
DATE	04-03-88	A V A D I			
SCALE	1:2				
DIMENSIONS IN mm					
TOLERANCE DIMENSIONS UNLESS OTHERWISE STATED IS 2102-69					
ALL THREADS TO CONFORM TO					
ISSUE / DATE	NATURE OF AMENDMENTS		D S CAT NUMBER	DRAWING NUMBER	
				175 04 001 -1A	

TITLE  
BRANCH PIPE LOWER WALL





1. THE COMPONENT MAY BE MANUFACTURED OF OPEN HEARTH STEEL GRADE 09Г-2 GOST 19282 - 73 , OPEN HEARTH STEEL 10, 20, 25 - 1577 - 70.
2. AT BEND PLACES NATURAL THINNING OF METAL IS ALLOWED.
3. THE COMPONENT MAY BE MANUFACTURED OF 2 BUTT JOINT WELDED PARTS (SEE AA) AND AS PER THE ALTERNATIVE.
4. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
5. AT BEND PLACES ALONG R 25 AND UPTO R 10 WRINKLES UPTO 2 MM IN DEPTH (HEIGHT) ARE ALLOWED.
6. DIFFERENCE IN MEASUREMENT OF DIMENSIONS "a" AND "b" SHOULD NOT EXCEED 2 MM.
7. NON -FITTING OF RADIAL SECTIONS R25 AND R 29 AND GAUGE CONSTRUCTED AS PER NOMINAL DIMENSIONS MAY NOT EXCEED 1.5 MM.
8. ON THE SURFACE OF THE COMPONENT STAMPING MARK IS ALLOWED.
9. BEADS MAY BE INCREASED UPTO 3 MM BEYOND THE TOLERANCE.



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

EST WT 15 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 P INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

CON	85m	MATERIAL - OPEN HEARTH	USED ON -
CHD	85m	STEEL 15, GOST 1577-70	175 04 003 Cb-1
TCD	85m		
APPD	85m		
DATE	09.3.88	CONTROLLER OF QUALITY ASSURANCE HEAVY VEHICLES	
SCALE	1:2		A V A O I
DIMENSIONS	in mm		
TOLERANCE ON DIMNS	UNLESS OTHERWISE STATED IS 2102-69		
ALL THREADS TO CONFORM TO			
ISSUE	DATE	NATURE OF AMENDMENTS	

TITLE: SHELL

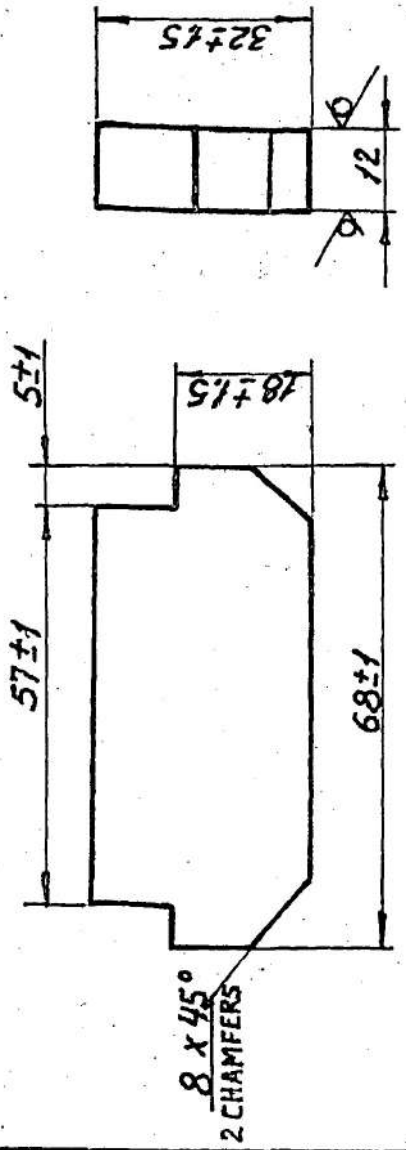
Welding symbol:

Welding specification: 175 04 007-1



4 3 2 1  
 DRAWING NUMBER  
**172 04 240**

500



DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

1. MAY BE MANUFACTURED FROM OPEN HEARTH STEEL 10, 20, 25 GOST 1577 - 70.
2. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
3. TOLERANCE ON THICKNESS IN COMPLIANCE WITH GOST 19903 - 74

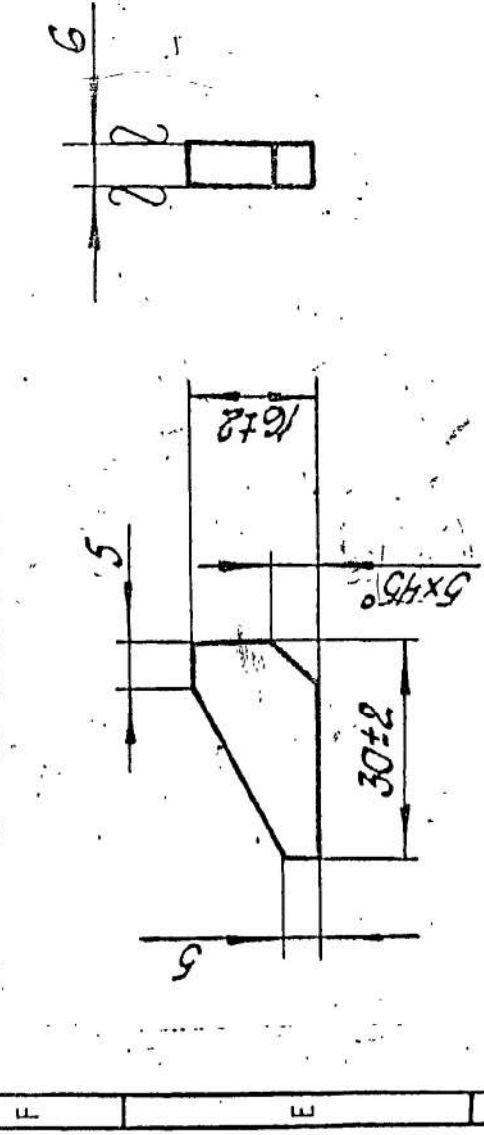
F.24

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.	
EST. WT.	TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS)
0.113 kg	
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 :-	USED ON
OPEN HEARTH STEEL 15, GOST 1577-70	175 04 004 C5 -1 172 04 065 C5
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AYADI.	
ISSUE / DATE	NATURE OF AMENDMENTS
DRN S. Govindan	SCALE:- 1:1
CHD Chanchel	DIMENSIONS IN mm
TCD S. Govindan	TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69
APPD S. Govindan	ALL THREADS CONFORM TO
DATE 31-12-2001	
SIZE A4	
D S CAT NUMBER	TITLE
172 04 240	STOP
DRAWING NUMBER	
172 04 240	

1 2 3 4

DRAWING NUMBER  
172 04 293

Rz 630  $\sqrt{(\nabla)}$

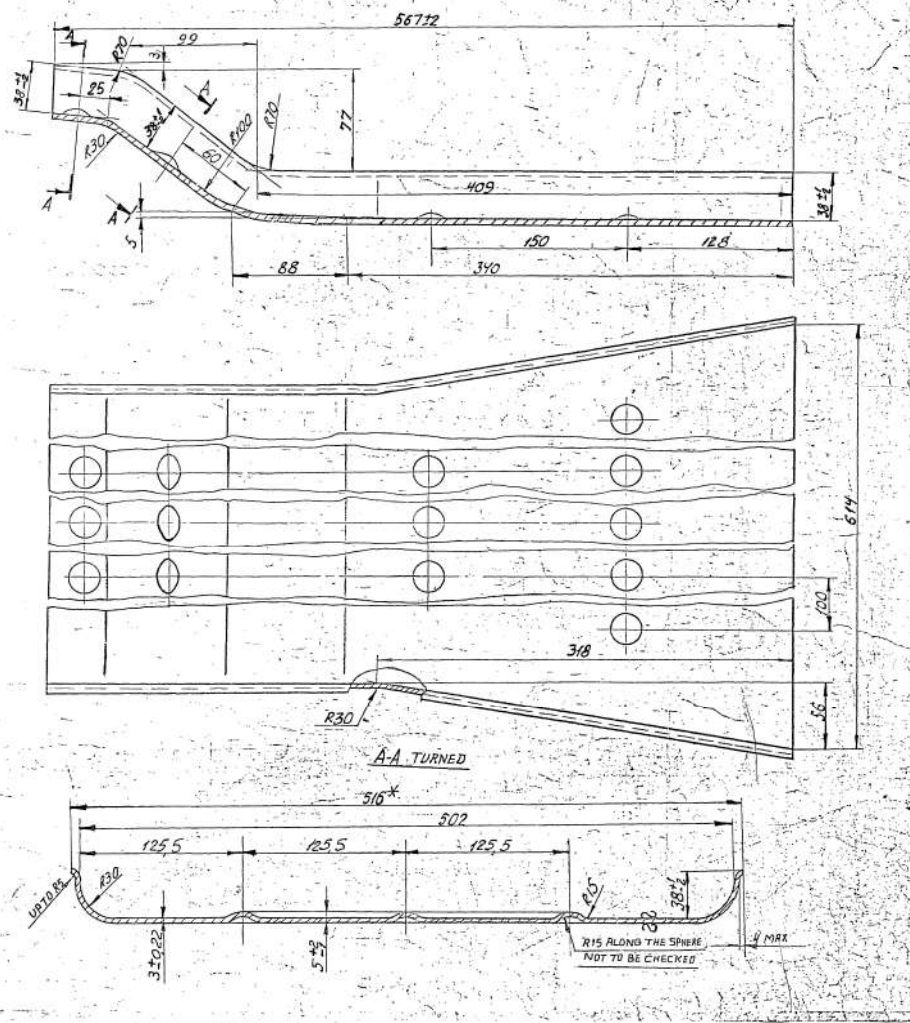


1. MAY BE MANUFACTURED FROM OPEN HEARTH STEEL GRADES 10, 20, 25 GOST 1577 - 70 OR 09 Γ2 GOST 19282 - 73.
  2. TOLERANCE ON THICKNESS - IN COMPLIANCE WITH GOST 19903 - 74.
  3. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
  4. CORNERS MAY BE ROUNDED OFF UPTO R 3 MM.
- PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

F-24  
38

ISSUE	DATE	NATURE OF AMENDMENTS	EST. WT.	TO BE STAMPED OR MARKED WHERE INDICATED THIS ( LETTERS)
DRN	9/8	SCALE:- 1:1 DIMENSIONS IN mm	0.016 Kg	
CHD	Chavch	TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69		
TCD	Chavch	ALL THREADS CONFORM TO		
APPD	1/8			
DATE	17.3.98			
		MATERIAL:- OPEN HEARTH STEEL 15, GOST 1577-70.		
		USED ON 175 04 004 C6-1		
		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.		
		TITLE RIB		
		D S CAT NUMBER	DRAWING NUMBER	
			172 04 293	

SIZE A4



1. MAY BE MANUFACTURED OF STEEL 15KH (RIMMING) 4 III GOST 16523-70.
2. PERMISSIBLE DEVIATION OF COMPONENT FROM LONGITUDINAL AND TRANSVERSE PROFILE GAUGES, CONSTRUCTED AS PER NOMINAL SIZE IS :  
A) UP TO 3 MM FROM LONGITUDINAL GAUGE.  
B) UP TO 2 MM FROM TRANSVERSE GAUGE.
3. ON THE SURFACE OF THE COMPONENT STAMPING MARK IS ALLOWED.
4. AT BENDING AND STAMPING PLACES NATURAL THINNING OF METAL IS ALLOWED.
5. WARPAGE OF FLAT SECTIONS SHOULD BE UP TO 3 MM.
6. SHIFT OF STAMPS R 15 FROM ITS NOMINAL POSITION IS NOT TO BE CHECKED.
7. CRACKS AND TEARS ARE NOT ALLOWED. SOME DENTS AND WRINKLES UP TO 2 MM IN DEPTH (HEIGHT) ARE ALLOWED.
8. \* DIMENSIONS FOR REFERENCE.
9. AT THE SLOPING PART OF THE COMPONENT STAMPS ARE TO BE DONE  $5 \pm 2$  MM IN HEIGHT.

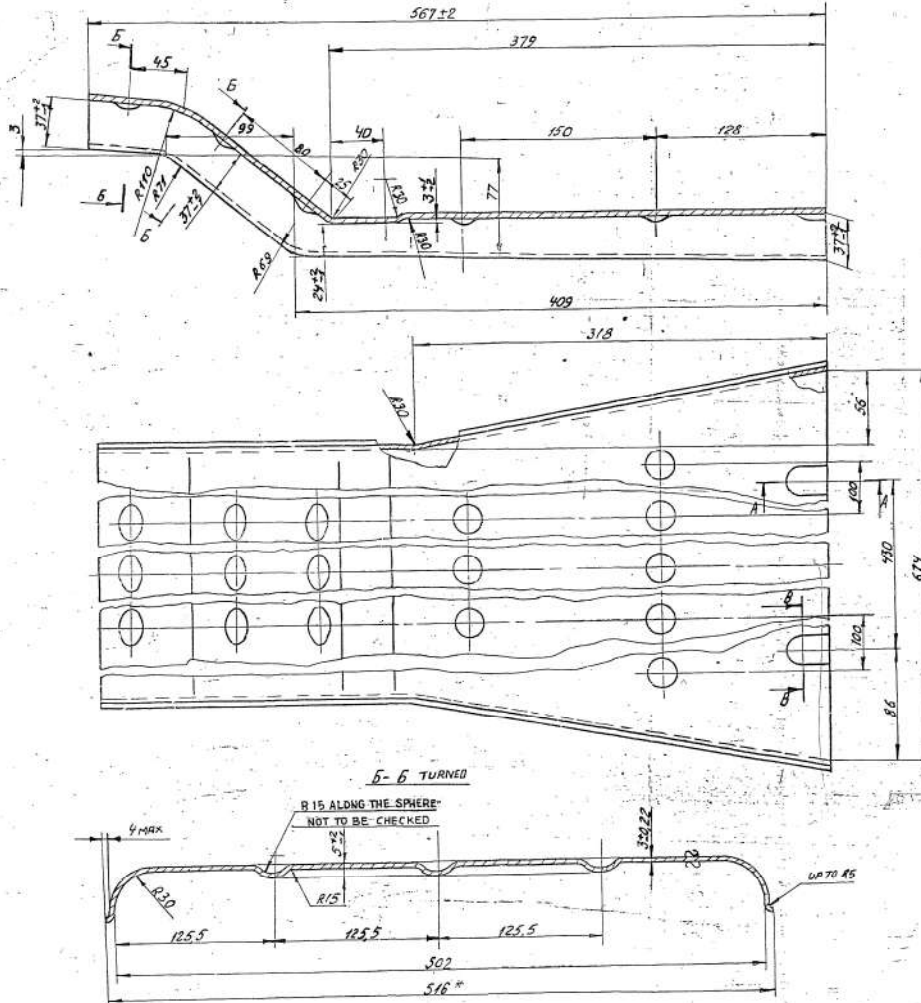
PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. MASS 8.3Kg  
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.

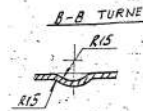
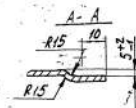
DRN	526	MATERIAL	STEEL 15KH RIMMING 4-II	USED ON	175 04 004E-1
CRD	1607/1608		GOST 16523-70		
TCU	175				
I/BPD	2.2	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
DATE	19. 2. 88				
SCALE	1:1				
DIMENSIONS	in mm				
TOLERANCE ON DIMS	UNLESS OTHERWISE STATED IS 20/2-65				
ALL THREADS TO CONFORM TO					
ISSUE   DATE	NATURE OF AMENDMENTS				

TITLE  
BRANCH PIPE WALL  
LOWER

DRAWING NUMBER  
175 04 003-1A



1. MAY BE MANUFACTURED OF STEEL 15 KIT (RIMMING) 4 III COST 16523 - 70.
2. PERMISSIBLE DEVIATION OF COMPONENT FROM LONGITUDINAL AND TRANSVERSE GAUGES CONSTRUCTED AS PER NOMINAL SIZE IS :  
a) UPTO 3 MM FROM LONGITUDINAL GAUGE.  
b) UPTO 2 MM FROM LATITUDINAL GAUGE.
3. ON THE SURFACE OF THE COMPONENT STAMPING MARKS ARE ALLOWED.
4. AT THE BENDING AND STAMPING PLACES NATURAL THINNING OF METAL IS ALLOWED.
5. WARPAGE OF FLAT SECTIONS SHOULD BE UPTO 3mm.
6. ALONG R 15 SHIFT OF STAMPS FROM ITS TRUE POSIT ON SHOULD BE UPTO 2mm. SHIFT OF STAMP R 15 ALONG THE SPHERE ARE NOT TO BE CHECKED.
7. CRACKS AND TEARS ARE NOT ALLOWED. SOME DENTS AND WRINKLES MAY BE UPTO 2mm IN DEPTH (HEIGHT)
8. DIMENSIONS FOR REFERENCE.
9. ON THE SLOPING SECTION OF THE COMPONENT STAMPING SHOULD BE DONE  $5 \pm 2$  mm IN HEIGHT.



5-6 TURNED

R 15 ALONG THE SPHERE  
NOT TO BE CHECKED

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

EST. MASS 8.3kg TO BE STAMPED OR MARKED WHERE INDICATED THIS IN LETTERS

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

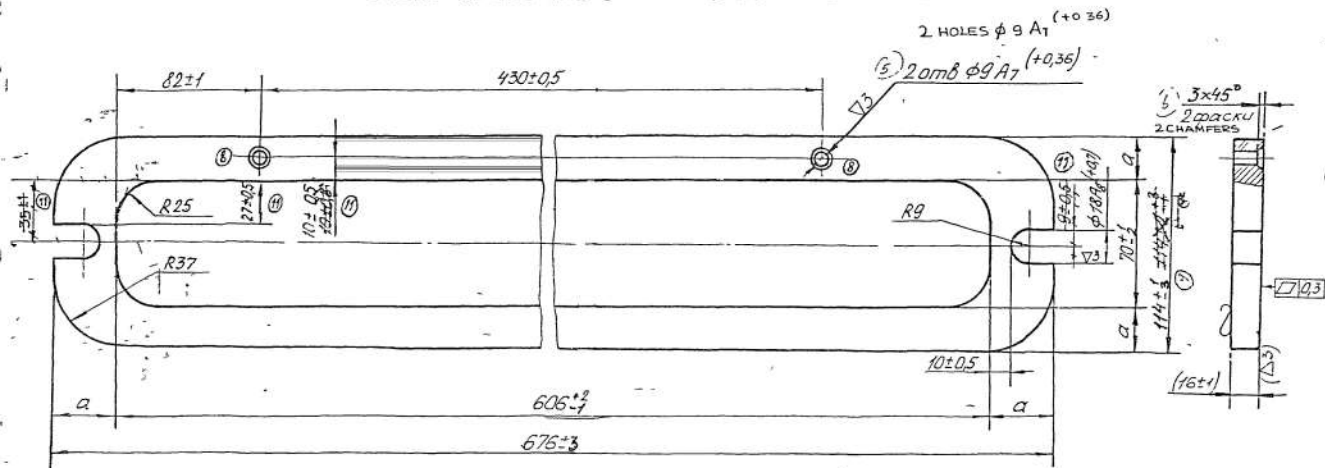
DRN	36mm	MATERIAL	STEEL 15K R-15	USED ON	175 04 004Cb-1
END	16/02/2017		COST 16523-70		
TID	16/02/2017	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
APPL	16/02/2017	A V A D I			
DATE	19.2.2017	TITLE			
SCALE	1:1	BRANCH PIPE WALL			
		UPPER			
		D S CAT NUMBER			
		100 A KING NUMBER			
		175 04 004-1A			

ISSUE / DATE / NATURE OF AMENDMENTS



DRAWING NUMBER  
175 04 008

630 / (▽)



1. THE COMPONENT MAY BE MANUFACTURED OF OPEN HEARTH STEEL, GRADE 20 GOST 1577 - 70.
2. DIMENSIONS AND SURFACE ROUGHNESS GIVEN IN THE BRACKETS ARE AFTER THE ASSEMBLY AS PER DRAWING 175.04.004.C6 - 1.
3. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
4. DIFFERENCE IN MEASUREMENT OF DIMENSIONS "a" SHOULD NOT EXCEED 2 MM.

11-4 22M 272 52 25 482  
1017 1722 516 28 1000 516 17  
914 112M 128 33 1000 516 17

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

EST WT 392 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 P OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

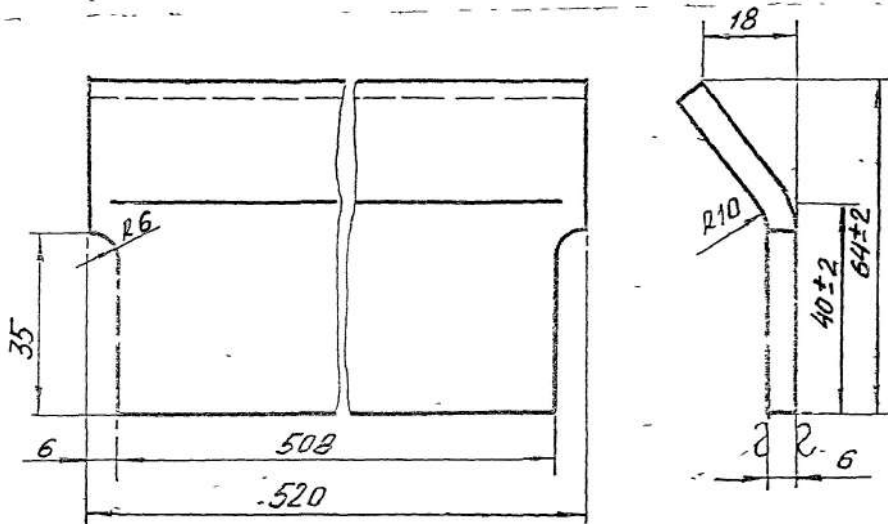
DRN	CHD	TCD	APPD	DATE	SCALE	DIMENSIONS IN mm	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69	ALL THREADS TO CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
				03-03-88	1:2					175 04 008
MATERIAL - OPEN HEARTH STEEL 15 GOST 1577 - 70								USED ON - 175 04 004 Cb-1		
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)								A V A D I		
TITLE								FLANGE		
ISSUE								DATE		
NATURE OF AMENDMENTS										

F22  
10  
SIZE A2



DRAWING NUMBER

175 04 009



1. THE COMPONENT MAY BE MANUFACTURED OF  
OPEN HEARTH STEEL 10,20,25 GOST 1577 - 70  
OPEN HEARTH STEEL 09Г 2 GOST 19282 - 73.
2. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
3. TOLERANCE FOR THICKNESS SHOULD BE AS PER GOST 19903-74.
4. NON-FITTING OF GAUGE TO THE BENDING PLANE SHOULD NOT EXCEED 2 MM.
5. CORNERS MAY BE ROUNDED OFF UPTO R 6 mm.
6. NON FITTING WITH PROFILE GAUGE CONSTRUCTED AS PER NOMINAL SIZES MAY NOT EXCEED 2 MM.

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

EST WT 162 Kg TO BE STAMPED OR MARKED WHERE INDICATED THUS  $\frac{162}{1000}$  (LETTEPS)

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

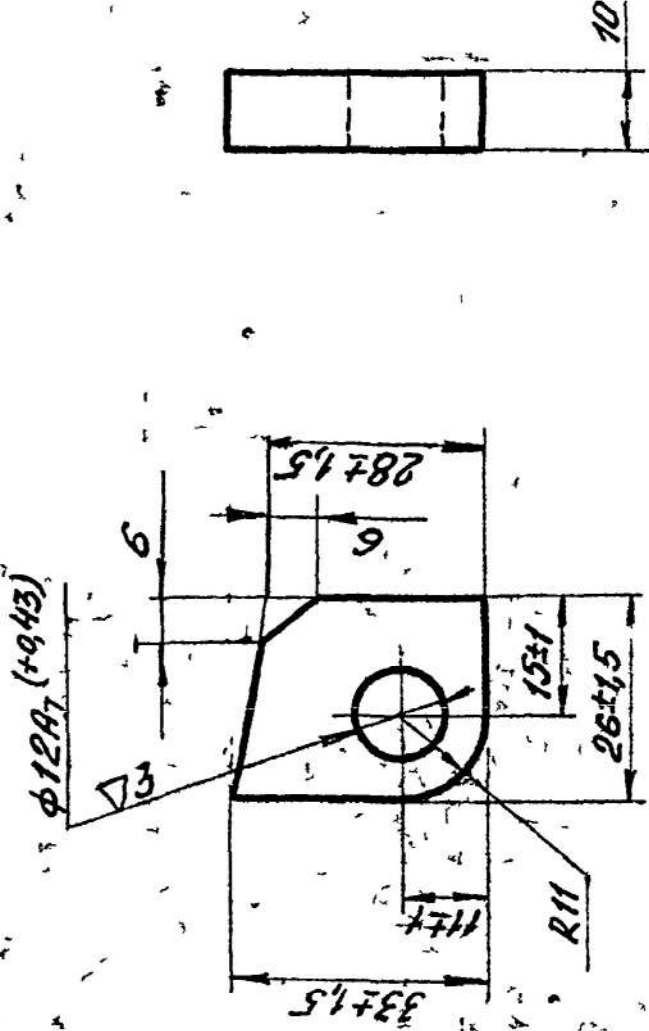
DPN	<i>Handwritten</i>	MATERIAL - OPEN HEARTH STEEL 15 GOST 1577 - 70	USED ON 175 04 004 Cb-1
REN	<i>Chanchel</i>		
TCD	<i>Handwritten</i>		
APPD	<i>Handwritten</i>		
DATE	04-03 -88	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE	1:1		
DIMENSIONS IN mm		TITLE	STRAP
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69			
ALL TITERS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER 175 04 009
ISSUE DATE	NATURE OF AMENDMENTS		

F22  
11-J

SIZE A3

175.04 017

Rz 6.30 (▽)



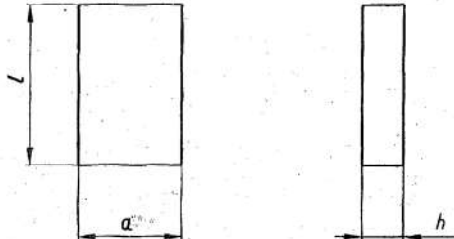
1. THE COMPONENT MAY BE MANUFACTURED OF OPEN HEARTH STEEL, GRADE 10, 20, 25 GOST 1577 - 70.
2. DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
3. TOLERANCE ON THICKNESS SHOULD BE AS PER GOST 19903-74.
4. SHARP CORNERS MAY BE ROUNDED OFF UPTO R 3.

F-22

EST MASS		TO BE STAMPED ON MARKED WHERE INDICATED THUS # LETTERS)	
0.0485kg			
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE			
ISSUE DATE		NATURE OF AMENDMENTS	
DRN		SCALE - 1:1	
DIMENSIONS IN mm		TOLERANCE ON DIMNS UNLESS OTHERWISE STATED	
MATERIAL - OPEN HEARTH STEEL IS GOST 1577-70		CONTROL LATERATE OF INSPECTIN (HEAVY VEHICLES) AVADI	
MATERIAL - OPEN HEARTH STEEL IS GOST 1577-70		USED ON 175 04 004 C3-1	
TITLE		BOSS	
D S CAT NUMBER		04 017	
APPROVED		DATE	
TCD P. Ravi		11/11/11	
APPO		DATE	
DATE		DATE	

DRAWING NUMBER  
**520.11.002**

SHEET No. 1 OF 1



DESIGNATION Обозначение	h, MM		l, MM		a, MM		WEIGHT Масса, кг
	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	
520.11.002			20	±10	16	±10	0,010
-01	4	±0,5	40		30		0,038
-02			70	±15	25	±2,0	0,055
-03			100		25		0,079
-04			110	±2,0	50		0,173
-05			55		16	±1,5	0,043
-06	6	±0,5	70	±15	16		0,053
-07			80		25	±2,0	0,094
-08			40	±1,0	30	±1,0	0,056
-09	8	±0,5	10		16		0,010
-10			20	±1,0	16	±1,0	0,020
-11			40		20		0,050
-12	10	+0,5	90	+3,0	30	±1,0	0,212
-13	12	-1,0	60	+2,0	22	±1,0	0,124
-14	16	+0,5	40	+1,0	36	±1,0	0,181
-15	4	+0,5	40	+1,0	20	±1,0	0,025
-16	6	+0,5	40	+1,0	25	±1,0	0,047

Обозначение DESIGNATION	LIMIT h, MM		LIMIT l, MM		LIMIT a, MM		WEIGHT Масса, кг
	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	НОМИН. NOMINAL	ПРЕД. ДЕВИАЦИЯ DEVIATION	
520.11.002-017	4	±0,5	100		16	±1,5	0,050
-18	8	+0,5 -1,0	50	±2,0	16	±2,0	0,050
-19	10	±0,5	30	±1,0	25	±1,0	0,060

- Alternate material – Steel 20 GOST 1050-88.
- Surface finish should corresponds to as follows:
  - In the delivery condition (as per base material) - ✓
  - during cold stamping - Rz630 ✓
  - during hot stamping - ✓
  - during machining - Rz80 ✓
- Other requirements should be as per specifications 520.TY1.

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	С.А.С.С.С.	MATERIAL:-	STEEL 15	USED ON:-	PV572.0718.0165
CHD	В.Т.С.		GOST 1050-88		PV572.0718.0061
APPD	Chanchel				PV572.0718.0092 (2A) (2B)
DATE	13-02-04	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
SCALE:-		AVADI			
DIMENSIONS IN mm		TITLE:-		BOSS	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102 - 69		D S CAT NUMBER		DRAWING NUMBER	
2B 02.02.13 55150/CQA(HV)/DB/BLT T-72 D1. 19.07.11				520.11.002	
2A 26.11.12 55150/CQA(HV)/DB/BLT T-72 D1. 19.07.11					
ISSUE DATE	NATURE OF AMENDMENTS				

356

SUPPLY CODE  
U-01-1-1  
D90033

F-33  
66

SIZE A4 x 3

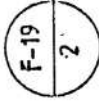
USED ON

172 04 038

CB-2

1/1 CREATED BASED ON RUSSIAN ORIGINAL ISSUE-

COMMON TO BLT



ITEM	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	No. OFF	REMARKS
	175 04 004 CB-1		BRANCH PIPE ASSY		
	& ITEM LIST				
1	175 04 003 CB-1		BRANCH PIPE ASSY	1	
	& ITEM LIST				
2	172 04 065 CB		STOP ASSY	3	
	& ITEM LIST				
3	175 04 003-1A		LOWER BRANCH PIPE SIDE - WALL	1	
4	175 04 004-1A		UPPER BRANCH PIPE SIDE - WALL	1	
5	175 04 008		FLANGE	1	
6	175 04 009		PLATE	1	
7	175 04 017		BOSS	4	
8	172 04 240		REST	3	
9	172 04 293		RIB	10	
10	520 11 002-06		BOSS 6x70x16	6	
17	20-6-89	DRG. AMENDED			
ISSUE	DATE	NATURE OF AMENDMENTS	ISSUE DATE	NATURE OF AMENDMENTS	
DRN	8/21				
CHD	8/21				
TCO	8/21				
APPD.	8/21				
DATE	11.5.88				
TITLE: BRANCH PIPE ASSY			CONTROLLE RATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI		
SHT. No.1 OF 1			ITEM LIST FOR		
			175 04 004 CB-1		

**RESTRICTED  
(DRAFT/PROVISIONAL)  
QUALITY ASSURANCE PLAN**

**FOR**

**(BRANCH PIPE ASSY)**

**DRG.NO.175.04.004CB-1**

**(LF NO: 6206803064)**

**No.HVF/T-72/QAP/04/BRANCH PIPE ASSY/241494-00**

**ISSUE No: 00**

**DATE: OCT-2021**

**QUALITY ASSURANCE (RIG-SUB ASSEMBLY)**

**HEAVY VEHICLES FACTORY**

**AVADI CHENNAI – 600 054**

**QUALITY ASSURANCE PLAN (QAP)**

**FOR**

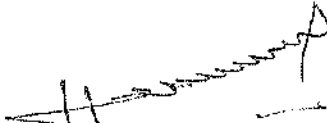
**BRANCH PIPE ASSY**

**DRG. NO. 175.04.004CB-1**

PREPARED BY

REVIEWED BY

  
(C. NANDA KUMAR)  
JWM/QA (RIG-SA)

  
(HANUMANTHA RAO GOLLA)  
JWM/QA (RIG-SA /TA)

APPROVED BY

  
( SUBHAM BIJLWAN)  
AWM/QA-RIG-(SA)

ISSUED BY

QUALITY ASSURANCE (RIG- SUB ASSEMBLY)  
HEAVY VEHICLES FACTORY  
AVADI CHENNAI – 600 054

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## **1.IMPORTANT NOTE**

### **Note-1**

This is only a provisional and will be amended from time to time according to the requirement. No addition, deletion and reproduction will be done without permission of The Sr. General Manager, Heavy Vehicles Factory, Avadi, Chennai – 54.

### **Note –2**

Any instruction contained in this does not prejudice the terms and conditions of the contract what so ever. In case of any contradiction between the contents of this QAP and the clause in the contract, the latter will prevail.

### **Note-3**

The stores should be manufactured strictly only as per the drawings supplied by the Inspection Authority and not as per the samples, if any received by the manufacturer for guidance purpose.

### **Note-4**

Any amendment issued by the Inspection Authority shall be incorporated in the QAP and the records for the amendments carried out should be maintained as per the Performa at Appendix-“A”.

### **Note-5**

In case of any contradiction between the contents of this QAP and drawings issued along with the contract, the latter will prevail.

## **2.INTRODUCTION**

1. This quality plan lays down the inspection and testing procedure to be carried out on the component **BRANCH PIPE ASSY TO DRG.NO 175.04.004CB-1** being procured indigenously. This is prepared, based on the acceptance standards and inspection parameters laid down in collaborators documents and on the inspection test standards followed in respect of similar indigenous items.
2. This QAP is the property of Government of India and is liable for amendments as and when required. The Sr. General Manager, Heavy Vehicles Factory, Avadi, Chennai – 600 054, is the inspecting Authority for this assembly. Any query / clarification on the content of this QAP shall be referred to this Factory. Any departure from these instructions is allowed only after written approval from the above authority. Notwithstanding the tests indicated in this QAP, the inspecting Officer has the right to carry out any test to check conformance to the paper particulars quoted in the Supply Order, which he may consider necessary to satisfy himself about the stores which he has to accept.

## **3.AIM**

The QAP is aimed at standardizing the Inspection procedure and acceptance norm for **BRANCH PIPE ASSY TO DRG.NO:175.04.004CB-1**.



It also aims at giving adequate information to the manufacturer on the quality requirements so that the required quality control methods are established. This is also meant to guide authorized Inspection Officer in his routine inspection and to set out main points to which his attention must be drawn to ensure that the accepted stores meet the stipulated standards.

#### **4. SCOPE:**

This QAP outlines in general terms, the checks and methods to be used during inspection of **BRANCH PIPE ASSY TO DRG. NO. 175.04.004CB-1** including the technical requirements of the drawings. The recommended Quality Plan stipulated herein is mandatory and should be strictly adhered to.

For inspection purpose, only the latest issue of this QAP will be made applicable and copies of this QAP can be obtained from the issuing authority i.e. The Sr. General Manager, Heavy Vehicles Factory, Avadi, and Chennai.

#### **Note:**

- i. Tender enquiry (TE) and supply order (S.O) will be issued with QAP stating that inspection will be done as per QAP.
- ii. In case of TE, It is responsibility of the vendor to obtain the copy of QAP and give the statement of compliance that vendor will abide by the QAP in case supply order is placed.
- iii. In case of S.O, it is the responsible of the vendor to obtained copy of QAP and give the statement of compliance that the vendor will follow QAP. However, GM/HVF reserves the right to revise/update the QAP from time to time.

#### **5. DOCUMENTS:**

- a) On placement of firm supply order, One set of relevant specification and technical instructions on the subject item can be obtained by the contractor from AHSP through DDO/HVF
- b) Any clarification required on these documents should be obtained from the Inspecting Authority i.e. The Sr. General Manager, Heavy Vehicles Factory, Avadi, Chennai – 600 054. Equivalentents to the collaborators specifications and standards will be decided only by the Inspecting Authority and should not be unilaterally decided. For any change in the specifications, standards or written approval, any alterations in specification can be affected and not otherwise.
- c) The process instruction sheets supplied by the collaborators are available with the Authority Holding Sealed Particulars, i.e. The Controllerate of Quality Assurance (Heavy Vehicles), Avadi, Chennai for the reference. The relevant process sheets may be studied at the premises of the AHSP after obtaining necessary permission.

d) The supplier after scrutiny of the concerned process sheets and connected paper particulars should establish the necessary production and inspection facilities. Particularly the inspection test rigs, stands, fixtures, template, gauges etc should be provided as recommended in these process sheets. If process sheet / Process Book is not available the details particulars/parameters available in the drawings to be strictly adhered.

**6. ITEM USED ON:**

1. 172.04.038CB-2 -

**7. LIST OF DRAWINGS:**

SI. NO.	DRG. NO	NOMENCLATURE	REMARKS
1	175.04.004CB-1	BRANCH PIPE ASSY	-
2	175.04.003CB-1	BRANCH PIPE ASSY	-
3	172.04.065CB	STOP ASSY	-
4	175.04.003-1A	LOWER BRANCH PIPE SIDE WALL	-
5	175.04.004-1A	UPPER BRANCH PIPE SIDE WALL	-
6	175.04.008	FLANGE	-
7	175.04.009	PLATE/STRAP	-
8	175.04.017	BOSS	-
9	172.04.240	REST/STOP	-
10	172.04.293	RIB	-
11	520.11.002-06	BOSS 6X70X16	-
12	175.04.001-1A	BRANCH PIPE LOWER WALL	-
13	175.04.002-1A	BRANCH PIPE UPPER WALL	-
14	175.04.007-1	SHELL	-
15	172.04.240	STOP	-
16	520.11.002-09	BOSS 8X10X16	-

**8. BILL OF MATERIALS:** (Individual items as mentioned in table to Para 7)

SI. NO	DRG. NO	NOMENCLATURE	MATERIAL SPECIFICATIONS	Qty
1	175.04.004CB-1	BRANCH PIPE ASSY	-----	1
2	175.04.003CB-1	BRANCH PIPE	-----	1

		ASSY		
3	172.04.065CB	STOP ASSY	-----	3
4	175.04.003-1A	LOWER BRANCH PIPE SIDE WALL	STEEL 10КП (RIMMING)-4- III GOST 16523-70.	1
5	175.04.004-1A	UPPER BRANCH PIPE SIDE WALL	STEEL 10КП-4-III GOST 16523-70.	1
6	175.04.008	FLANGE	OPEN HEARTH STEEL 15 GOST 1577-70.	1
7	175.04.009	PLATE/STRAP	OPEN HEARTH STEEL 15 GOST 1577-70.	1
8	175.04.017	BOSS	OPEN HEARTH STEEL 15 GOST 1577-70.	4
9	172.04.240	REST/STOP	OPEN HEARTH STEEL 15 GOST 1577-70.	3
10	172.04.293	RIB	OPEN HEARTH STEEL 15 GOST 1577-70.	10
11	520.11.002-06	BOSS 6X70X16	STEEL 15 GOST 1050-88.	6
12	175.04.001-1A	BRANCH PIPE LOWER WALL	STEEL 12X18H 10T GROUP III GOST 5632-72.	1
13	175.04.002-1A	BRANCH PIPE UPPER WALL	STEEL 12X18H 10T GROUP III GOST 5632-72.	1
14	175.04.007-1	SHELL	OPEN HEARTH STEEL 15 GOST 1577-70.	1
15	172.04.240	STOP	OPEN HEARTH STEEL 15 GOST 1577-70.	1
16	520.11.002-09	BOSS 8X10X16	STEEL 15 GOST 1050-88.	1

**Note:** Vendor/Contractor may use approved alternate material if any specified in drawing/ specification. \* Also refer Para 13.

### **9. CONDITIONS OF USE/STORAGE INSTRUCTIONS**

This assembly/item should be properly packed to protect from transit / handling damage and influence of atmospheric precipitations. In addition, the following parameters should be ensured:

- (a) The threaded parts if any should be covered with suitable plastic caps to prevent damages.
- (b) If the item consists of assemblies, each assembly should be packed separately.
- (c) The stores are to be suitably covered for preventing ingress of dust and Dirt/entry of sunlight / moisture.

(d) The packaging slip shall contains

- (i) Certificate of testing- NABL Certificate.
- (ii) Guarantee/ Warranty Certificate.
- (iii) Service and maintenance instructions.
- (iv) Delivery Slip with Inspector's Acceptance Mark.

(e) The stores are not permitted to be stored together with oils. Petrol, acids, alkaline and other substances to avoid damage to the metal / rubber components.

#### 10. SAMPLING PLAN:

Sl. No.	Sampling Plan	Pilot *	Bulk
(i)	Visual Inspection	100%	100%
(ii)	Dimensional Inspection	100%	General Inspection level III, single sampling, Normal Inspection, AQL 2.5 of IS 2500 (Part-I)-2000
(iii)	Material Inspection	1 No	1 No. for each batch of raw material or heat treatment lot as required by specifications.
(iv)	Acceptance test	100%	100%
(v)	Pressure testing	-----	-----
(vi)	Machining / Fitment/ Performance trial on higher assembly / Tank	02 Nos.	-----
(vii)	Interchangeability Test	02 Nos.	02 Nos. per batch on randomly basis, except selective assembly.
(viii)	Test stand/Jigs/ Fixtures/Gauges/Man drels/etc.	100 %	100 %
(ix)	Marking/Identification	100%	100%
(x)	Packing/ Preservation	100%	100%

#### Note:-

\* This clause is applicable if mentioned in supply order or project sanction order.

A New (First time supplier of this item) supplier should obtain clearance from HVF for bulk production which will be issued only after inspection/evaluation of pilot samples by HVF.

## 11. VISUAL INSPECTION[Sampling plan as per Para- 10 (i)]

The stores are to be visually examined on 100 % of pilot /bulk and same should be free from any defects and all the finishing requirements shall satisfy as indicated in technical conditions of the assembly / component drawing.

The components shall be checked for the following and should be free from the defects:

- Defects in construction
- Cracks/Dents/Scratches
- Fitment of all components
- Presence of foreign particles
- Moisture and dust
- Corrosion of metal parts
- Mechanical imperfections & distortion
- Any form of deterioration of material and finishing.

Packing and preservation should be ensured as per drawings/relevant TY specification (To be ensured on receipt at consignee end).

## 12. DIMENSIONAL CHECK[Sampling plan as per Para- 10(ii)]

The dimensions of individual component, sub assembly and major assembly shall be checked and ensured as per respective drawing. Dimensional check should be carried out as per sampling plan. However, the inspecting authority/rep. may at his discretion, tighten the inspection level and acceptance quality level on the critical items and adopt check point during manufacture.

SI. NO.	DRG. NO	NOMENCLATURE	REMARKS
1	175.04.004CB-1	BRANCH PIPE ASSY	All dimensions should be confirmed as per drawing/specification.
2	175.04.003CB-1	BRANCH PIPE ASSY	
3	172.04.065CB	STOP ASSY	
4	175.04.003-1A	LOWER BRANCH PIPE SIDE WALL	
5	175.04.004-1A	UPPER BRANCH PIPE SIDE WALL	
6	175.04.008	FLANGE	
7	175.04.009	PLATE/STRAP	
8	175.04.017	BOSS	
9	172.04.240	REST/STOP	
10	172.04.293	RIB	
11	520.11.002-06	BOSS 6X70X16	
12	175.04.001-1A	BRANCH PIPE LOWER	

		WALL	
13	175.04.002-1A	BRANCH PIPE UPPER WALL	
14	175.04.007-1	SHELL	
15	172.04.240	STOP	
16	520.11.002-09	BOSS 8X10X16	

**NOTE:**

1. Surface finish / Roughness of items should be ensured as per drawing and specification.
2. Refer drawing/specification for admissible alternate manufacture in dimensions/material if any specified for the component.

**13) MATERIAL CHECKS [SAMPLING PLAN AS PARA – 10 (iii)].**

Material specimen /test bars of the components shall be in conformity as per the material mentioned in the relevant documents/drawing. NABL test reports for all the parameters as per relevant specifications to be submitted. Test samples to be submitted by the vendor to HVF, if required. The material check will be carried out as per sampling plan. \* However, if the manufacturer proposes any alternative material at the stage of tender enquiry, the same has to be approved and a written concurrence should be obtained from AHSP through DDO/HVF, before usage of such materials.

**13.1 LOWER BRANCH PIPE SIDE-WALL TO DRG.NO 175.04.003-1A.**

- a) The component should be manufactured  
STEEL 10KП (RIMMING)-4-III GOST 16523-70.
- b) **Chemical properties:** As per STEEL 10KП (RIMMING)-4-III GOST 16523-70 & GOST 1050-74.

Grade of Steel	CONTENT OF ELEMENTS %							
	C	Si	Mn	Cr	Ni	S	P	Cu
10KП	0.07 to 0.14	0.07 Max	0.25 to 0.50	0.15	0.25	0.040	0.035	0.25

**Note:** For mass fraction of other elements refer GOST 1050-74.

- c) **Mechanical properties:** As per STEEL 10KП (RIMMING)-4-III GOST 16523-70.

Grade of Steel	Ultimate Tensile Strength Mpa (Kgf/mm <sup>2</sup> )	Relative Elongation % min	Cupping test	Bend test
10KП	28 – 40		Refer GOST 16523-70.	

**Note:** For other properties refer GOST 16523-70.

**13.2 UPPER BRANCH PIPE SIDE-WALL TO DRG.NO 175.04.004-1A.**

- a) The component should be manufactured  
STEEL 10КП-4-III GOST 16523-70.
- b) **Chemical properties:** As per STEEL 10КП-4-III GOST 16523-70 & GOST 1050-74.

Grade of Steel	CONTENT OF ELEMENTS %								
	C	Si	Mn	Cr	Ni	S	P	Cu	
				MAX					
10КП	0.07 to 0.14	0.07 Max	0.25 to 0.50	0.15	0.25	0.040	0.035	0.25	

**Note:** For mass fraction of other elements refer GOST 1050-74.

- c) **Mechanical properties:** As per STEEL 10КП-4-III GOST 16523-70.

Grade of Steel	Ultimate Tensile Strength Mpa (Kgf/mm <sup>2</sup> )	Relative Elongation % min	Cupping test	Bend test
10КП	28 – 40		Refer GOST 16523-70.	

**Note:** For other properties refer GOST 16523-70.

**13.3 FLANGE, PLATE/STRAP, BOSS, REST/STOP, RIB & SHELL TO DRG.NO 175.04.008, 175.04.009, 175.04.107, 172.04.240, 172.04.293 & 175.04.007-1.**

- a) The component should be manufactured from STEEL 15 GOST 1577-70.
- b) **Chemical properties:** As per STEEL 15 GOST 1577-70 and GOST 1050-74.

CONTENT OF ELEMENTS%								
C	Si	Mn	Cr	Ni	S	P	Cu	
			MAX					
0.12 to 0.19	0.17 to 0.37	0.35 to 0.65	0.25	0.25	0.040	0.035	0.25	

**Note:** For mass Fraction of other elements refer GOST 1050-74.

- c) **Mechanical properties:** As per STEEL 15 GOST 1577-70

For details refer  
OPEN HEARTH STEEL 15 GOST 1577-70.

**13.4 BOSS 6X70X16 & BOSS 8X10X16 TO DRG.NO 520.11.002-06 & 520.11.002-09**

a) The component should be manufactured from STEEL 15 to GOST 1050-88.

b) **Chemical properties:** As per STEEL 15 to GOST 1050-88.

CONTENT OF ELEMENTS %							
C	Si	Mn	Cr	Ni	S	P	Cu
MAX							
0.12 to 0.19	0.17 to 0.37	0.35 to 0.65	0.25	0.30	0.040	0.035	0.30

**Note:** For mass fraction of other elements refer GOST 1050-88.

c) **Mechanical properties:** As per STEEL 15 to GOST 1050-88.

For details refer

STEEL 15 to GOST 1050-88.

**13.5 BRANCH PIPE LOWER WALL & BRANCH PIPE UPPER WALL TO DRG.NO 175.04.001-1A & 175.04.002-1A**

a) The component should be manufactured from STEEL 12X18H 10T GROUP III GOST 5632-72.

b) **Chemical properties:** As per STEEL 12X18H 10T GROUP III GOST 5632-72.

CONTENT OF ELEMENTS %											
C	Si	Mn	Cr	Ni	Ti	Fe	S	P	Mo	T	V
MAX			MAX								
0.12	0.8	2.0	17.0 to 19.0	9.0 to 11.0	5C to 0.8	Base	0.020	0.035	0.3	0.2	0.2

**Note:** For mass fraction of other elements refer GOST 5632-72.

c) **Mechanical properties:** As per STEEL 12X18H 10T GROUP III GOST 5632-72.

For details refer

STEEL 12X18H 10T GROUP III GOST 5632-72.



**14) PERFORMANCES/ACCEPTANCE TEST:**

SI. NO.	DRG. NO	NOMENCLATURE	PERFORMANCES/ACCEPTANCE TEST
1	175.04.004CB-1	BRANCH PIPE ASSY	All technical requirements (T.R) points to be conformed as per drawing/ specification.
2	175.04.003CB-1	BRANCH PIPE ASSY	
3	172.04.065CB	STOP ASSY	
4	175.04.003-1A	LOWER BRANCH PIPE SIDE WALL	
5	175.04.004-1A	UPPER BRANCH PIPE SIDE WALL	
6	175.04.008	FLANGE	
7	175.04.009	PLATE/STRAP	
8	175.04.017	BOSS	
9	172.04.240	REST/STOP	
10	172.04.293	RIB	
11	520.11.002-06	BOSS 6X70X16	
12	175.04.001-1A	BRANCH PIPE LOWER WALL	
13	175.04.002-1A	BRANCH PIPE UPPER WALL	
14	175.04.007-1	SHELL	
15	172.04.240	STOP	
16	520.11.002-09	BOSS 8X10X16	

**15) FITMENT AND PERFORMANCE TEST**

- a. Pilot samples should be checked for fitment and Performance test to ascertain the efficacy of the system under different operating conditions by fitting in higher assembly and repeating it for functional checks, wherever required.
- b. Items of Bulk supplies may be subjected to performance trial in tank in case of repeated failure/defects during exploitation.

**16) INTERCHANGEABILITY:**

The assemblies/component should be interchangeable component wise and assembly wise, except the Component are to be supplied as a set and to be assembled selectively as per sampling plan.

## **17) CALIBRATION CHECKS**

### **(TEST STANDS/JIGS/FIXTURES/GAUGES/INSTRUMENTS):**

The supplier / Contractor should have suitable Instruments, Test Stand, jigs, fixture, mandrels and gauges to carry out quality checks, to ensure conformance of components/assembly as per drawing and Specification /T.R points.

The supplier/contractor should submit calibration reports for instruments/fixtures/gauges/mandrels etc., which are used during process of inspection activities.

## **18) MARKING/IDENTIFICATION.**

Marking of the items is to be carried out as called for in the relevant drawing, drawing/T.R points.

Inscription if any on the components is to be carried out as called for in the drawing/T.R points. Unless otherwise specified in the drawing/ specification, marking should not be carried out over the components.

For traceability, marking of part No., Manufacturer name, supply order No, Serial No/Qty, batch No. and manufacture date & year are to be carried out. Suitable method can be adopted, provided that the above parameters are legible and considering the parameters mentioned in the drawing and specification (Refer QAP Para No: 14).

## **19) PRESERVATION CHECK**

a) Preservative coatings are to be strictly adhered to as called for in the drawing. However, equivalent BIS Standards can also be followed, subject to the thickness of the coating/preservative is maintained as per the drawing/specification.

b) Other preservations as necessary to prevent damages due to moisture and dust during process, storage and transit are to be carried out. Conventional Methods can also be resorted to.

## **20) PACKING CHECK**

Components / Assemblies are to be packed separately to avoid damages during transit / handling of the same. Part No. and No. of sets are to be marked on the packing.

Packing and preservation should be ensured as per drawings/relevant TY specification (To be ensured on receipt at consignee end).

Finished products shall be wrapped / packed using black and opaque polyethylene sheet or bags.

## **21) DOCUMENTATION**

1. Firm has to maintain all the documents as per QAP with respect to the Sl.No.to have traceability.
2. Vendor has to submit Bill of materials, Material test reports, Class 'C' /Endurance test reports (wherever specified in drawing/TY specification/QAP)

and Complete PIR (pre-inspection report) at the time of offering the item for inspection. HVF will commence inspection only after scrutiny of these documents.

3. The testing/inspection responsibility to test all the parameters as per QAP and drawing specifications as mentioned in Annexure -A (enclosed).
4. Pre inspection reports (PIR) of firm like, 1. Chemical analysis (NABL Certificate), 2. Mechanical properties (NABL Certificate), 3. Pre-forming process, 4. Coating certification (Wherever applicable), 5. Calibration reports of instruments and 6. 100 % Dimensional inspection reports.

**22) REFERENCE:**

a) Drawing No: 175.04.004CB-1.

b) Material specification as per drawing:

Sl. NO	DRG. NO	NOMENCLATURE	MATERIAL SPECIFICATIONS
1	175.04.004CB-1	BRANCH PIPE ASSY	-----
2	175.04.003CB-1	BRANCH PIPE ASSY	-----
3	172.04.065CB	STOP ASSY	-----
4	175.04.003-1A	LOWER BRANCH PIPE SIDE WALL	STEEL 10KП (RIMMING)-4-III GOST 16523-70.
5	175.04.004-1A	UPPER BRANCH PIPE SIDE WALL	STEEL 10KП-4-III GOST 16523-70.
6	175.04.008	FLANGE	OPEN HEARTH STEEL 15 GOST 1577-70.
7	175.04.009	PLATE/STRAP	OPEN HEARTH STEEL 15 GOST 1577-70.
8	175.04.017	BOSS	OPEN HEARTH STEEL 15 GOST 1577-70.
9	172.04.240	REST/STOP	OPEN HEARTH STEEL 15 GOST 1577-70.
10	172.04.293	RIB	OPEN HEARTH STEEL 15 GOST 1577-70.
11	520.11.002-06	BOSS 6X70X16	STEEL 15 GOST 1050-88.
12	175.04.001-1A	BRANCH PIPE LOWER WALL	STEEL 12X18H 10T GROUP III GOST 5632-72.
13	175.04.002-1A	BRANCH PIPE UPPER WALL	STEEL 12X18H 10T GROUP III GOST 5632-72.
14	175.04.007-1	SHELL	OPEN HEARTH STEEL 15 GOST 1577-70.

15	172.04.240	STOP	OPEN HEARTH STEEL 15 GOST 1577-70.
16	520.11.002-09	BOSS 8X10X16	STEEL 15 GOST 1050-88.

c) GOST 1577-70, GOST 1050-88, GOST 5632-72, GOST 16523-70,  
GOST 1050-74 & GOST 19903-74.

d) Specification: 520.TY1.

e) Alternate material:

Sl. NO	DRG. NO	NOMENCLATURE	MATERIAL SPECIFICATIONS
1.	175.04.003-1A	LOWER BRANCH PIPE SIDE WALL	STEEL 15KП (RIMMING)-4-III GOST 16523-70.
2.	175.04.004-1A	UPPER BRANCH PIPE SIDE WALL	STEEL 15KП (RIMMING)-4-III GOST 16523-70.
3.	175.04.008	FLANGE	OPEN HEARTH STEEL GRADE 20 GOST 1577-70.
4.	175.04.009	PLATE/STRAP	1. OPEN HEARTH STEEL 10, 20, and 25 GOST 1577-70. 2. OPEN HEARTH STEEL 09Г2 GOST 19282-73.
5.	175.04.017	BOSS	OPEN HEARTH STEEL 10, 20, and 25 GOST 1577-70.
6.	172.04.240	REST/STOP	OPEN HEARTH STEEL 10, 20, and 25 GOST 1577-70.
7.	172.04.293	RIB	1. OPEN HEARTH STEEL 10, 20, and 25 GOST 1577-70. 2. OPEN HEARTH STEEL 09Г2 GOST 19282-73.
8.	520.11.002-06	BOSS 6X70X16	STEEL 20 GOST 1050-88.
9.	175.04.007-1	SHELL	1. OPEN HEARTH STEEL 10, 20, and 25 GOST 1577-70. 2. OPEN HEARTH STEEL 09Г2 GOST 19282-73.
10.	172.04.240	STOP	OPEN HEARTH STEEL 10, 20, and 25 GOST 1577-70.
11.	520.11.002-09	BOSS 8X10X16	STEEL 20 GOST 1050-88.

Sl. NO	CATEGORY	ASSEMBLY/ SUB ASSEMBLY	TESTS/ INSPECTION PARAMETERS	STANDARDS TO BE REFERRED	ACCEPTANCE CRITERIA	INSPECTION RESPONSIBILITY			REMARKS
						Firm	HVF	DGOA	
1	BRANCH PIPE ASSY TO DRG. NO 175.04.004 CB-1	Pre inspection reports (PIR) of firm	Firm has to produce all the document as per QAP	As per the relevant drawing and QAP.	Confirm to drawing and QAP as per bill of material	P	V	R	100% by firm/ vendor.
2		Bill of material (BOM)	Firm has to prepare the BOM as per QAP	Refer QAP Para no: 8 or item list.	Confirm to QAP	P	V	R	100% by firm/ vendor.
3		Material tests	Chemical composition & Mechanical / Physical Properties	As per- GOST 16523-70, GOST 1050-74, GOST 1577-70, GOST 1050-88 & GOST 5632-72.	All the values to confirm with QAP Para no: 13.1 & 13.5	P	W/V	R	SP followed by HVF.
4		Dimensional checks	Dimensions as per the drawing	Refer drawing / QAP Para no: 12	Confirm to drawing and QAP	P	W/P	R	100% by firm/ vendor SP followed by HVF.
5		Marking / traceability	Marking / traceability	Refer QAP Para no: 18 & 14.	Confirm to QAP Para no: 18 & 14.	P	V	R	100% by firm/ vendor.
6		Preservation & packing	Preservation & packing	Refer QAP Para no 19 & 20	Confirm to QAP Para no 19 & 20	P	V	R	100% by firm/ vendor.

**Note:**

For conformity of the items (Chemical/Physical/Mechanical properties).

- One sample per heat / batch shall be tested under NABL Lab/Govt. Approved lab by firm. In case of non-compliance to standards entire lot shall be rejected or not to use in production further.
- For cross conformation of material, manufacturer has to submit test sample pieces for the items used / test slab and button for rubber items / HVF will draw samples from supplied lot for Witnessing (W) at HVF premises. In case of non-compliance to standards entire lot will be rejected.

**P- Perform      W- Witness      V-Verify      R-Review      SP-Sampling Plan**

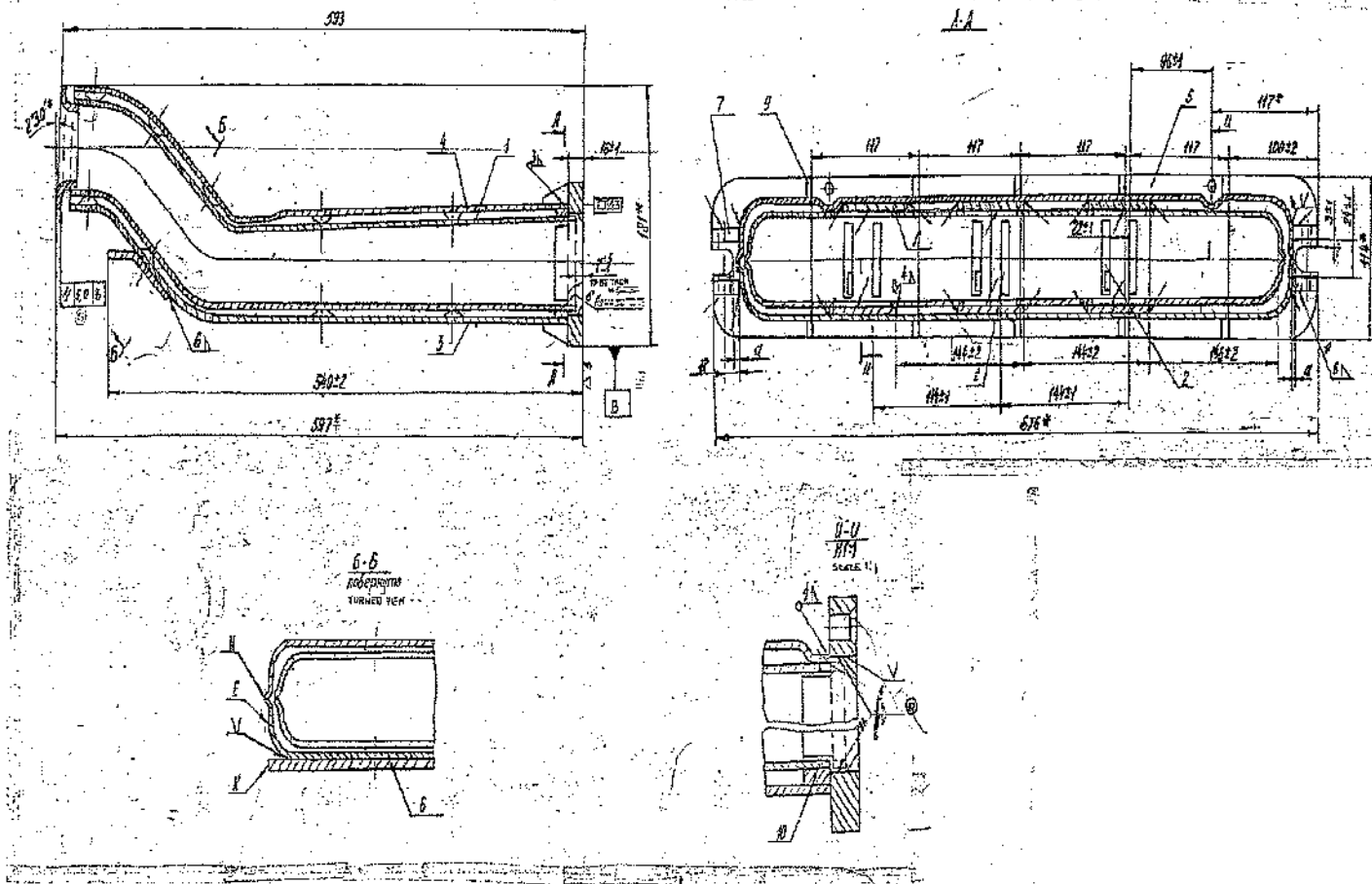


FIG: BRANCH PIPE ASSY TO DRG.NO.175.04.004CB-1.

(For reference only)

**RECORD OF AMENDMENTS**

<b>Sl. No</b>	<b>Amendment No. &amp; date</b>	<b>Amended by</b>	<b>Date of Insertion</b>	<b>Initial</b>

**Ref.no.6005/HVF/TA/CBOI/VQC/2023-24, Dated 08/08/2023, Vendor Qualification Criteria for Branch pipe Assembly**

Sl.No	Nomenclature & Drg.no.	Manufacturing Technology & Testing /Inspection facilities required to produce the item.	Must be possessed by the Vendor in his own premises. (List of plant and Machinery and Testing / Inspection facility to be submitted)	May be possessed by the Vendor in his own premises (or) may be outsourced. (Name and address of sub contractor, list of plant and Machinery and testing/Inspection facility to be submitted)		
1	Branch pipe Assembly Drg.no:175.04.004CB-1  LF NO.6206803064	Technology 1	Sheet metal forming Facility	sheet metal forming/bending, stamping facility. ( Shall be able to bend min 3.5 mm sheet)		
		Technology 2	Machining		Milling facility, Grinding facility, Turning facility, Drilling facility.	
		Technology 3	Fabrication (welding works)	Gas shielded welding, Brazing facility		
		Technology 4	Metal cutting		Cutoff wheel cutting facility or any metal cutting facility.	
		Technology 5	Inspection	Inspection facility available for dimension checking of job as per drawing. Micro meter/ Vernier /Radius gaugs etc		
		Technology 6	Pressure Testing	1. Test rig for Pressure Testing of Branch pipe assy with kerosene or air at pressure of 5 atmosperre pressure		