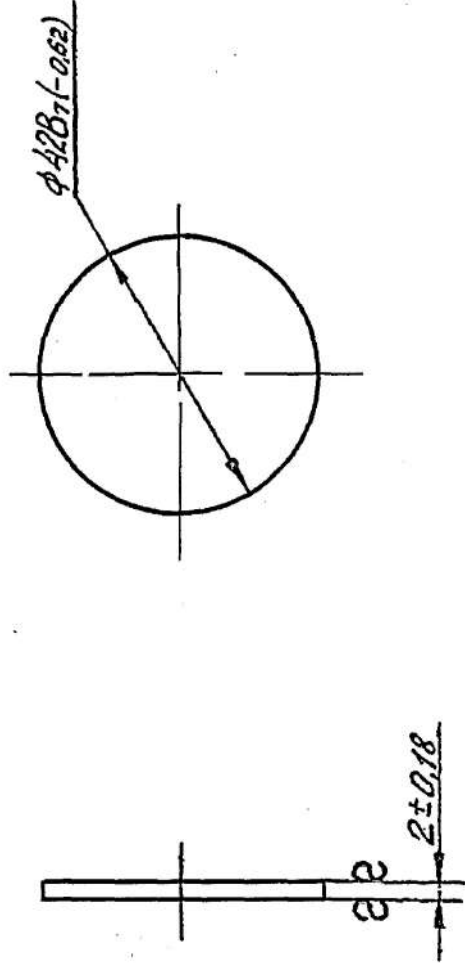
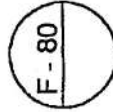


4	3	2	1
DRAWING NUMBER 175.41.099		SHEET No. 1 OF 1	
▽1 (▽)			



1. ALLOWED TO BE MANUFACTURED FROM STEEL 20 - 4 - II GOST
16523 - 70, OPEN - HEARTH AND 10KП - 5 - II - Г GOST 16523 - 70 ③

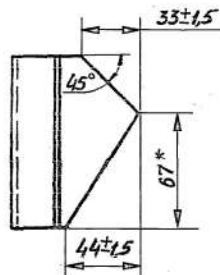
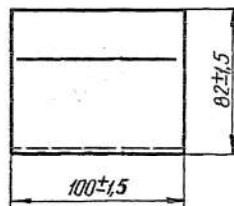
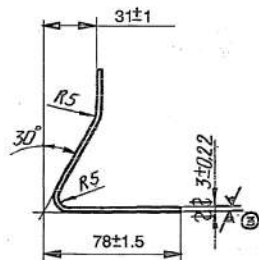


PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. (Kg)	0.022	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 :- OPEN HEARTH	USED ON :-	
STEEL 15 - 4 - II	175.41.018cbCb	
GOST 16523 - 70		
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI		
TITLE :-		
STOPPER		
D S CAT NUMBER	DRAWING NUMBER	
	175.41.099	

DRAWING NUMBER
172.2M.33.135

SHEET No. 1 OF 1

UNLESS OTHERWISE SPECIFIED Rz 320 ✓(✓)
✓(✓) ③

- ③ 1. Допускается изготовление из стали 10кп-5-II-Г, ГОСТ 16523-70 мартеновская
2. Допускаются штамповочные уклоны и утяжка краев.
3. Допускается естественное утонение металла в местегиба.
4. *Размеры для справок.
5. Допускается скругление углов радиусом 5 мм.

- ③ 1. THE COMPONENT MAY BE MANUFACTURED FROM OPEN-HEARTH STEEL 10Kn-5-II-Г, 20-4-II GOST 16523-70.
2. DRAFTS AND SHRUNK EDGES ARE ALLOWED.
3. NATURAL THINNING OF METAL AT THE PLACE OF BENDING IS ALLOWED.
4. * DIMENSIONS FOR REFERENCE.
5. CORNERS MAY BE ROUNDED OFF AT A RADIUS OF 5 mm.

EXPLANATORY NOTE:-

THE COMPONENT SHOULD BE PRODUCED FROM OPEN-HEARTH HOT ROLLED QUALITY CARBON STEEL SHEET 3mm THICKNESS OF HIGH SURFACE FINISH 'II', WITH STANDARD CHARACTERISTICS CATEGORY '4' OF GRADE 15 (KILLED) TO GOST 16523-70.
ALTERNATIVELY IT MAY BE PRODUCED FROM STEEL SHEET OF HIGH SURFACE FINISH 'II', WITH STANDARD CHARACTERISTICS CATEGORY '5' DEEP DRAWN 'Г' OF GRADE 10KII (RIMMED) TO GOST 16523-70. OR STEEL SHEET OF HIGH SURFACE FINISH 'II' WITH STANDARD CHARACTERISTICS CATEGORY '4' OF GRADE 20 (KILLED) TO GOST 16523-70.

CHEMICAL COMPOSITIONS %AS PER GOST 1050-74.

GRADE OF STEEL	C	Si	Mn	Cr (MAX)
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25
10KII	0.07-0.14	0.07(MAX)	0.25-0.50	0.15
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25

NOTE:-

- a) CONTENTS OF SULPHUR 0.040%(MAX) & PHOSPHORUS 0.035%(MAX).
b) RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25 % EACH

MECHANICAL PROPERTIES AS PER GOST 16523-70.

GRADE OF STEEL	TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION % NOT LESS THAN
15	34 - 47	24
10KII	28 - 40	26
20	36 - 51	23

③B ALT. MATL: STEEL 070M20 (En3A) TO BS 970 Part-1:1983.

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

EST. WT. (G) 0.315	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 OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	Sd/=	MATERIAL:-	USED ON:-
CHD	Sd/=	O H STEEL 15-4-II, GOST 16523-70.	172.2M.33.005Cb ③A
APPD	Sd/=	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
DATE	11-8-86	TITLE:-	
SCALE:-	1:2	DRAWING NUMBER	
DIMENSIONS IN mm		172.2M.33.135	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69		D S CAT NUMBER	
3B 23.1.06 AUTHY Lt. No. 80001/CQA(HV)/GEN DT. 30.11.05		DRAWING NUMBER	
3A 19.4.04 N OF A No. CQA(HV)/T90/33/001		172.2M.33.135	
3 11.10.88 AMDT. LIST No.6/II, BOOK-6.			
ISSUE	DATE	NATURE OF AMENDMENTS	

COMMON TO T-90
DRAWING RE-INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE-2
DRG. REDRAWN AND EXPLANATORY NOTE ADDED ON 31.10.90

(R. RAMANI, JTO
26-07-85)

F-64

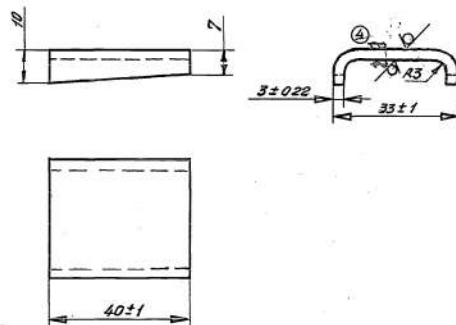
SIZE A2

DRAWING NUMBER
172.33.445

SHEET No. 1 OF 1

UNLESS OTHERWISE SPECIFIED Rz 320 (✓)

④



- ④ 1. IT IS ALLOWED TO MAKE THE BOSS FROM OPEN HEARTH STEEL 10KII-4-III, 20-4-II GOST 16523-70.
2. TECHNOLOGICAL ALLOWANCE AS SPECIFIED IN THE TECHNOLOGICAL PROCESS IS ALLOWED ALONG DIMENSIONS 7 AND 10.

EXPLANATORY NOTE:-

THE COMPONENT SHOULD BE PRODUCED FROM OPEN-HEARTH HOT ROLLED QUALITY CARBON STEEL SHEET 3mm THICKNESS OF HIGH SURFACE FINISH 'II', WITH STANDARD CHARACTERISTICS CATEGORY '4' OF GRADE 15 (KILLED) TO GOST 16523-70.

ALTERNATIVELY IT MAY BE PRODUCED FROM STEEL SHEET OF SUPERIOR SURFACE FINISH 'III', WITH STANDARD CHARACTERISTICS CATEGORY '4' OF GRADE 10KII (RIMMED) TO GOST 16523-70. OR STEEL SHEET OF HIGH SURFACE FINISH 'II' WITH STANDARD CHARACTERISTICS CATEGORY '4' OF GRADE 20 (KILLED) TO GOST 16523-70.

CHEMICAL COMPOSITIONS %AS PER GOST 1050-74.

GRADE OF STEEL	C	Si	Mn	Cr (MAX)
15	0.12-0.19	0.17-0.37	0.35-0.65	0.25
10KII	0.07-0.14	0.07(MAX)	0.25-0.50	0.15
20	0.17-0.24	0.17-0.37	0.35-0.65	0.25

NOTE:-

- a) CONTENTS OF SULPHUR 0.040%(MAX) & PHOSPHORUS 0.035%(MAX).
- b) RESIDUAL CONTENT OF COPPER AND NICKEL SHOULD NOT EXCEED 0.25% EACH.

MECHANICAL PROPERTIES AS PER GOST 16523-70.

GRADE OF STEEL	TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION % NOT LESS THAN
15	34 - 47	24
10KII	28 - 40	26
20	36 - 51	23

④B ALT. MATL: STEEL 070M20 (En3A) TO BS 970 Part-1:1983.

* COMMON TO T-90° & BLT
DRAWING RE-INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE -3
DRG. REDRAWN AND EXPLANATORY NOTE ADDED ON 31.10.90

④
24.07.05
P. RAMANI, TD

F - 60

SIZE A2

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

EST. WT. (G) 0.038	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
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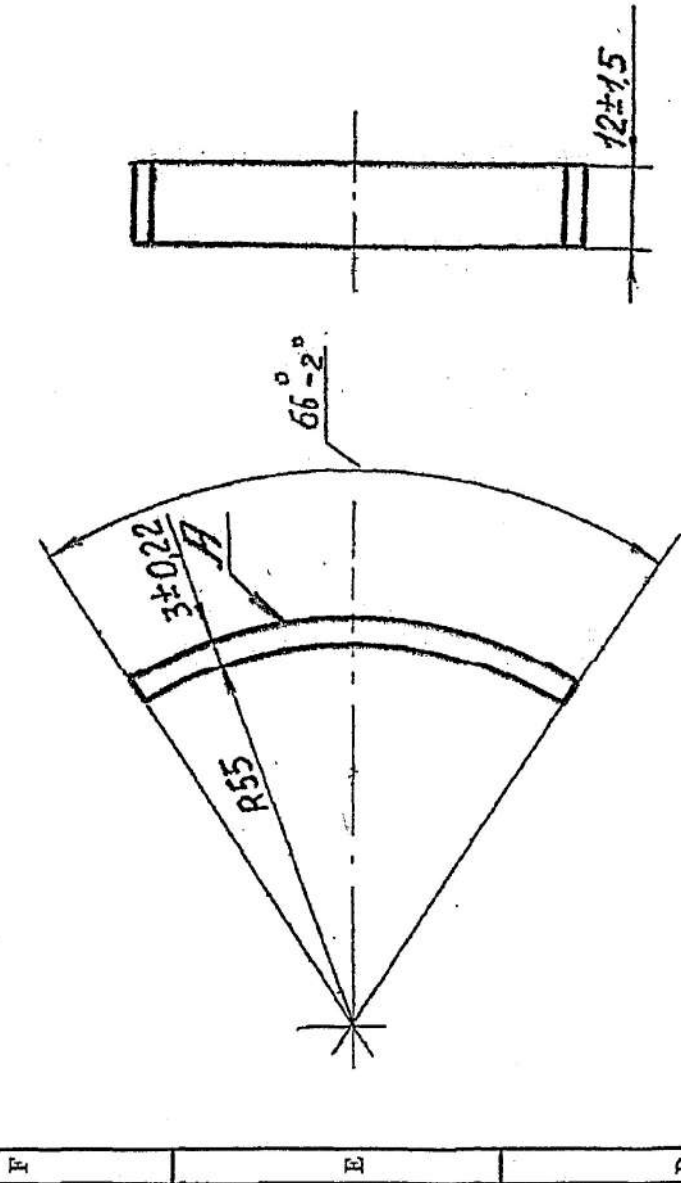
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

			DRN	Sd/=	MATERIAL:-	O.H. STEEL	USED ON:-	(4A)
			CHD	Sd/=	15 - 4 - II	GOST 16523-70	176.33.004Cb 172.33.225Cb-2Cb	
			APPD	Sd/=	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)			
			DATE	15-7-86	AVADI			
			SCALE:-	1 : 1				
			DIMENSIONS IN mm					
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		TITLE :- BOSS			
			ALL THREADS TO CONFORM TO					
4B	23.1.06	AUTHY Lt. No. 80001/CQA(HV)/GEN Dt. 30.11.05			D S CAT NUMBER		DRAWING NUMBER	
4A	19.4.04	N OF A No. CQA(HV)/T90/33/001					172.33.445	
4	5.10.88	AMDT. LIST No.6/JI BOOK-6.						
ISSUE	DATE	NATURE OF AMENDMENTS						

DRAWING NUMBER
172.11.125

SHEET No. 1 OF 1

▽1(▽)



1. MANUFACTURE FROM STEEL 20-4III GOST 16523-70 IS ALLOWED.
2. NON-FITTING OF TEMPLET TO SURFACE R55 SHOULD NOT EXCEED 1 mm.
3. SHARP CORNERS ARE TO BE ROUNDED OFF TO R2 mm ON THE SIDE OF SURFACE 'A'.

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

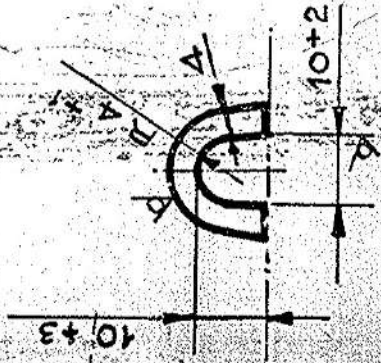
F-32
46

EST. WT. (kg)	0.0245	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:- STEEL 15-4-II OPEN - HEARTH GOST 16523-70.	
USED ON:- 172.11.030cbCb 188.11.018cb-1Cb 2A	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69	TITLE:- VISOR	
ALL THREADS TO CONFORM TO	D S CAT NUMBER	DRAWING NUMBER
12.10.88	172.11.125	

SIZE A4

PART No/DSCAT No

5340-009185



NOTES:-

- 1 IT MAY BE MANUFACTURED FROM OPEN-HEARTH STEEL 10, 20, 25 GOST 1577-70
- 2 LOCATION OF EDGES ALONG DIMENSION 10+2 IS NOT TO BE CHECKED
- 3 DRAFT AND SHRINKAGE OF EDGES ARE ALLOWED.
- 4 TOLERANCE FOR THICKNESS AS PER GOST 19903-74.

ALT. MATL:- STEEL GRADE
14 HR, SEC 4 TO BS 14-49 Pt 1:83

22.10.03	18814-W	HINDI NOMEN ADDED	YADU DAC 15/11/03
3.29.04	17879-W	ALT MATL ADDED.	CLB
4.7.91	17088-W	DS CAT No ADDED	
2.9.85		RETRACED WITHOUT CHANGE	
DATE	AUTHORITY	ZONE	NATURE
AMENDMENTS			
DRG SEALED:- 16478-W			
23-10-86 DOQA(W)			
SCALE:- 1:1		EST MASS:- 0.04 DATE	
MATL:- OPEN HEARTH STEEL 15 GOST 1577-70			
ASSY DRG			
CLAMP		छाया	
GROUP No.		F-116	
40001 KD		89	
C.Q.A (AVA) AVADI			
DRAWN		CHD	
TRACED		CHD	
C/D MAN		DO	
AHSP		FOR CQA(W)	
DESIGN No.			
PART No.		172.18.210	
DSCAT No.		5340-009185	

DRAWING NUMBER
175 33 112-1

EXPLANATORY NOTE:-

Rz320
V(V)

5. REFERENCE MATERIAL QUOTED:- AND NOTE No. 1.

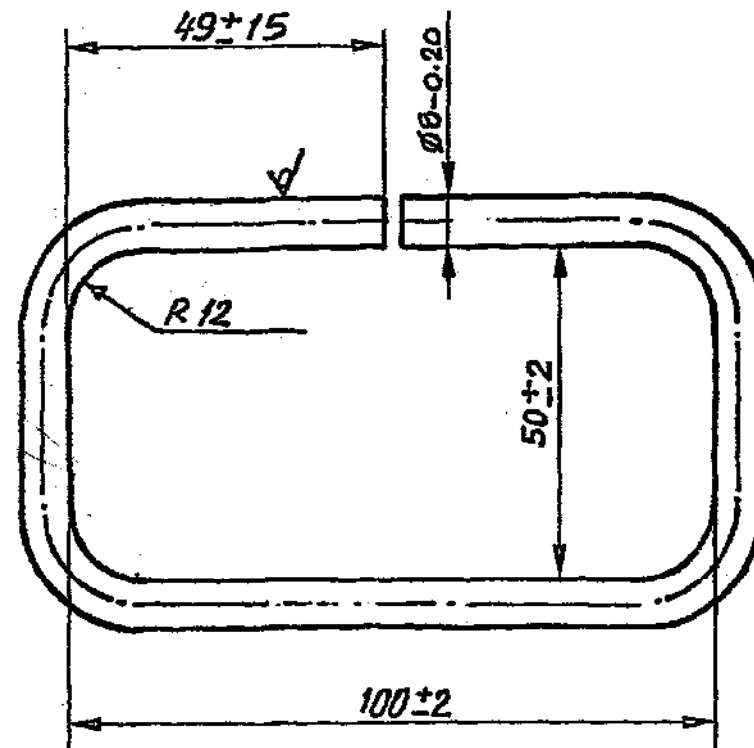
CARBON STRUCTURAL STEEL GRADE 15 AND ALTERNATE MATERIAL GRADE 20 , 45 TO SPECN GOST 1050-74

a) CHEMICAL COMPOSITION:-

Gde OF STEEL	CONTENT OF ELEMENTS IN %						
	C	Si	Mn	Cr	Ni	S	P
	MAXIMUM						
15	0.12 0.19	0.17 0.37	0.35 0.65	0.25	0.25	0.04	0.035
20	0.17 0.24	0.17 0.37	0.35 0.65	0.25	0.25	0.04	0.035
45	0.42 0.50	0.17 0.37	0.50 0.80	0.25	0.25	0.04	0.035

b) MECHANICAL PROPERTIES :- AT NORMALISED CONDITION

Gde. OF STEEL	TENSILE STRENGTH Kgf/mm ²	YIELD POINT Kgf/mm ²	ELONGATION %	REDUCTION IN AREA %	IMPACT STRENGTH Kgm/cm ²	B H N MAX
	MINIMUM					
15	38	23	27	55	—	149
20	42	25	25	55	—	163
45	61	36	16	40	5	229



1. ALTERNATE MATERIAL - STEEL GRADE 20 , 45 OPEN HEARTH GOST 1050-60.
2. FOLDINGS UPTO 0.5mm ARE ALLOWED.
3. TOTAL LENGTH ≈ 346mm.
4. NATURAL THINNING OF METAL IS ALLOWED ON BENDS

(4B) EQUIVALENT MATERIAL: Grade Fe410WA to IS: 2062-1999 (or) E250A to IS: 2062-11
NOTE: Mechanical Properties of Equivalent Material shall be as per Drawing/OEM Material Specification.

USED ON:- 172-91-148Cb
175-33-010 Cb-2
175-33-011 Cb-2
175-33-007 Cb-2
175-33-008 Cb-2
175-33-009 Cb-2
175-33-012 Cb-1A Cb
175-91-023 Cb
172-91-164 Cb
175-32-094 Cb-1

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

EST. WT.
0.135

TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

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

DRN
CHD
TCD
APPD
DATE
SCALE:- 1:1

MATERIAL:-
STEEL 15 (OPEN HEARTH)
GOST 1050 - 60

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

DIMENSIONS IN mm
TOLERANCE ON DIMNS
UNLESS OTHERWISE
STATED IS: 2102-69

ALL THREADS TO
CONFORM TO

D S CAT NUMBER

DRAWING NUMBER
175 33 112-1

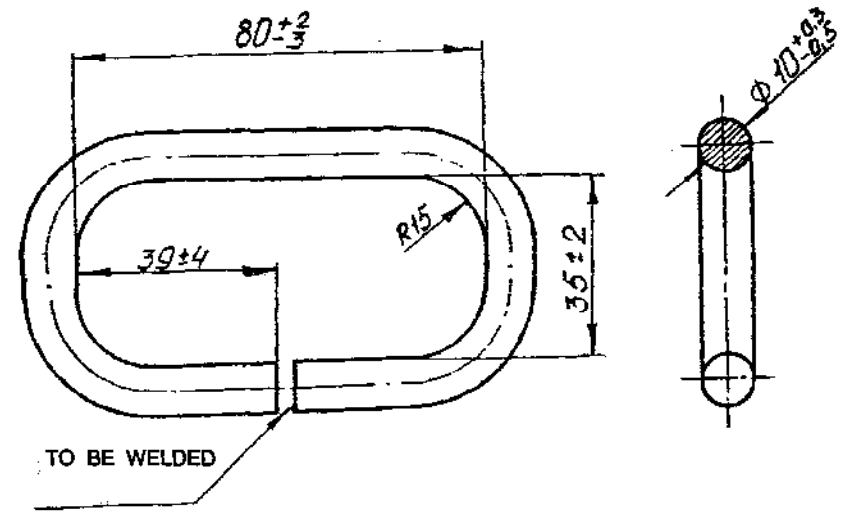
HANDLE



SIZE A3

DRAWING NUMBER
155.05.714

SHEET No. 1 OF 1



1. WELD SHOULD BE DRESSED FLUSH WITH THE SURFACE.
2. THE COMPONENT SHOULD BE CHECKED ON PLATE. NON-FITTING SHOULD NOT BE MORE THAN 2mm.
3. MAY BE MANUFACTURED FROM STEEL 20, GOST 1050-74, OPEN-HEARTH.
4. DEPTH OF LOCAL DENTS SHOULD NOT EXCEED 1mm.
5. DIMENSIONS WITH UNSPECIFIED TOLERANCES ARE NOT BE CHECKED.

LENGTH OF STRAIGHTENED COMPONENT ≈ 230mm.

EXPLANATORY NOTE :

MATERIAL QUOTED : OPEN HEARTH STEEL 15
GOST 1050-74

ALTERNATE MATERIAL QUOTED : OPEN HEARTH STEEL 20
GOST 1050-74

a) CHEMICAL COMPOSITION :-

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Si	Mn	Cr	P	S	Cu	Ni
15	0.12-0.19	0.17-0.37	0.35-0.65	0.15	0.035	0.040	0.25	0.25
20	0.17-0.24	0.17-0.37	0.35-0.65	0.15	0.035	0.040	0.25	0.25

b) MECHANICAL PROPERTIES :

GRADE OF STEEL	TENSILE STRENGTH Kgf/mm ²	YIELD POINT Kgf/mm ²	ELONGATION % Kgf/mm ²	REDUCTION IN AREA % Kgf/mm ²
	m i n i m u m			
15	32	23	27	55
20	42	25	25	55

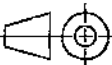
NOTE: Mechanical Properties of Equivalent Material shall be as per Drawing/OEM Material Specification.

- Ⓔ CQA(HV)5 33 010
- Ⓕ PV572.0705.0010
- Ⓖ 172.33.225cb-2Cb
- Ⓑ 172.33.231cb-2Cb
- 172.33.243cbCb
- 188.32.004cbCb
- Ⓐ 175.32.104cb-2
- 172.2M.33-005cb
- 175.33.002cb-1
- 175.33.003cb-2
- 176.33.004cb
- 172.33.226cb

Ⓒ ALT. MATL: GRADE Fe 410WA TO IS: 2062-1999.
Ⓕ for E250A to IS: 2062/11

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

EST. WT. (Kg) 0.14	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.	

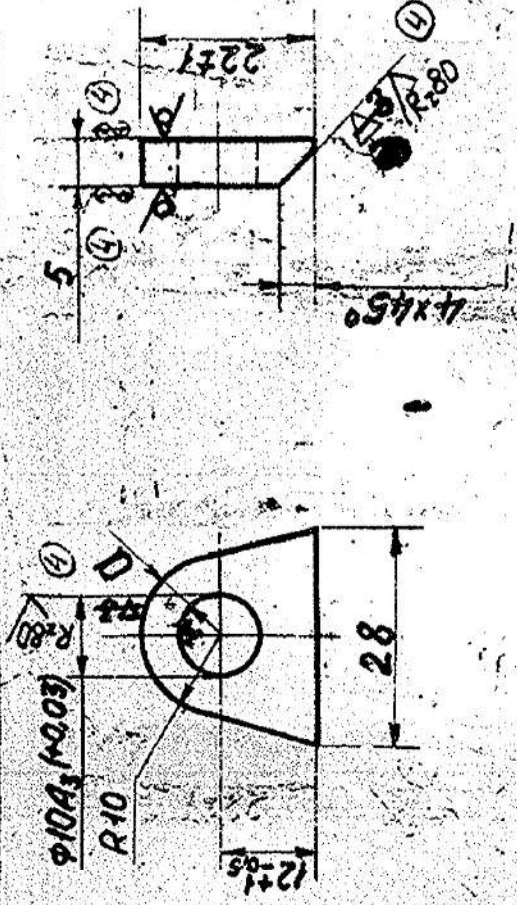
			DRN	- Sd-	MATERIAL:- OPEN HEARTH	USED ON :-
			CHD	- Sd-	STEEL 15	** SEE ABOVE
			APPD	- Sd-	GOST 1050 - 74	
			DATE	8 - 9 - 86	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
F	25.5.23	DC (H) No: CQA(HV)/T-72/C-0022/2023	SCALE:-	1 : 1	AVADI	
		dated 24-01-2023	DIMENSIONS IN mm			TITLE:- GRIP TANK
E	2.6.15	Authy Lt.No.81233/33/DBII/AMDT Dt.27.5.15	TOLERANCE ON DIMNS			
D	26.11.12	55150/CQA(HV)/DB/BLT T-72 Dt.19.07.11	UNLESS OTHERWISE			
C	8.12.05	AUTHY. Lt.No.80001/CQA(HV)/GEN Dt.30.11.05	STATED IS : 2102 - 69			
B	19.4.04	N OF A No.CQA(HV)/T90/33/001	ALL THREADS TO		D S CAT NUMBER	DRAWING NUMBER
A	12.3.04	N OF A No.CQA(HV)/T-90/32/001	CONFORM TO			
ISSUE	DATE	NATURE OF AMENDMENTS				155.05.714

COMMON TO T-90 & BLT
DRG.RE.INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL
IR. RAMANI, JTO
04-10-05

DRAWING NUMBER
176.33.013

C26.81.641

R2.630
④ √ (V) ①



1. It may be manufactured from open hearth steel 20, Gost 1577-70.
2. Drafts and shrinkage of edges are allowed.
3. Presence of chamfers 1X 45°, on both sides, in hole Ø10A3 is allowed.
4. Minimum dimension "a" is 4 mm.
5. Corners may be rounded off upto R 3 mm.
6. Tolerance for thickness as per Gost 19903-74.

ALT. MATL:- STEEL GRADE 14MR
SEC 4 TO B5 1449 Pt1:83

170

18814-W	22-10-83	HINDI NOMEN ADDED	25/11
17879-W	3-2-94	ALT MATL ADDED	22/11/83
17088-W	4-7-91	DS CAT No ADDED	29/08/85
16478-W	23-10-86	DRG SEALED	
ISSUE	DATE	REFERENCE	
APPROVED	25/11		
CHECKED	A. B. R. Rao		
DRAWN	S. V. R.		

172.18.232

BRACKET
S. V. R.

MATERIAL:
OPEN HEARTH STEEL 15
GOST 1577-70

D'S CAT No		1015-003605	
Group No		F-116	
40001 KD		91	
SHEET	MASS	SCALE	
10F1	0.02	1:1	
CQA (AVA) AVADI			

172.33.120