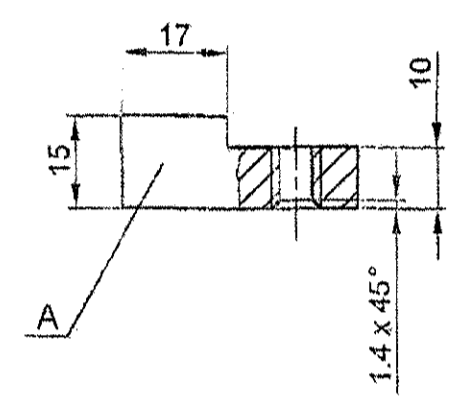
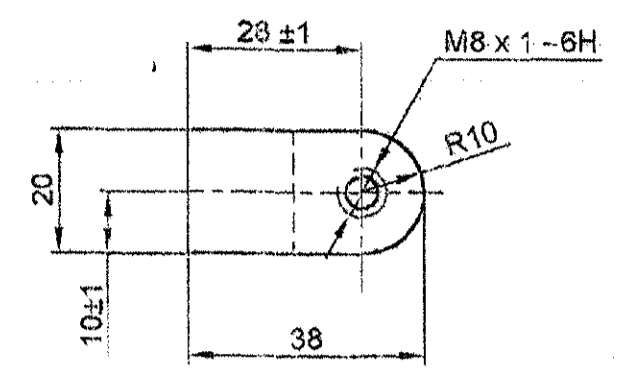






COMMON TO T-90  
 DRG. REINDIANISED PREPARED BASED ON RUSSIAN ORIGINAL ISSUE - NIL. COMPARED WITH EXISTING ORIGINAL ISSUE - NIL. REPLACES 175 32 178 VIDE AMDT. LIST 6, PART II, BOOK - 6  
 DRG. REDRAWN AND EXPLANATORY NOTE ADDED ON 28-6-91. (P. RAHANI, JTO) 28-07-95

DRAWING NUMBER  
**175.32.178 - A**



- MATERIAL SUBSTITUTE STEEL 20A-I GOST 977-75.
- REQUIREMENTS FOR CASTING IS IN COMPLIANCE WITH 172 TY 10 FOR THE ACCEPTANCE OF COMPONENTS AS PER THE INVESTMENT PATTERN.
- UNSPECIFIED CASTING RADII MAX 3mm.
- DIMENSIONS WITHOUT TOLERANCES ARE AS PER ACCURACY CLASS - I GOST 2309-55.
- ON SURFACE A REMAINDER FROM FEADER WITH HEIGHT UPTO 3mm IS ALLOWED.

**EXPLANATORY NOTE :-**

- REFERENCE MATERIAL QUOTED STEEL 25 A - I GOST 977 - 75.  
STRUCTURAL STEEL CASTING GROUP - I TO GRADE OF STEEL 25 A GOST 977 - 75.
- REFERENCE NOTE 1 ON ALTERNATIVE MATERIAL : STEEL 20 A - I GOST 977 - 75.  
STRUCTURAL STEEL CASTING GROUP - I TO GRADE 20 A GOST 977 - 75.
- CHEMICAL COMPOSITION OF STEEL GRADES 25 A & 20 A AS PER GOST 977 - 75.

GRADE OF STEEL	CONTENT OF ELEMENTS %					RESIDUAL %		
	C	Si	Mn	Cr	S	P	Ni	Cu
25 A	0.22 - 0.30	0.20 - 0.52	0.35 - 0.90	0.30	0.05	0.05	0.30	0.30
20 A	0.17 - 0.25	0.20 - 0.52	0.35 - 0.90	0.30	0.05	0.05	0.30	0.30

- MECHANICAL PROPERTIES OF STEEL GRADES 25 A & 20 A AS PER GOST 977 - 75.

GRADE OF STEEL	ULTIMATE STRENGTH	YIELD POINT	ELONGATION	REDUCTION IN AREA	IMPACT STRENGTH
	Kgf/mm <sup>2</sup>	Kgf/mm <sup>2</sup>	%	%	Kgm/cm <sup>2</sup>
25 A	45	24	19	30	4.0
20 A	42	22	22	35	5

ALTERNATE MATERIAL: STEEL GRADE Fe 410W ; IS: 2062-80  
 AUTHORITY: CQA (HV), Lehey NO: 091/IFD/MTPF/OE dt. 17-03-2005  
 P. 1/12/110

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)

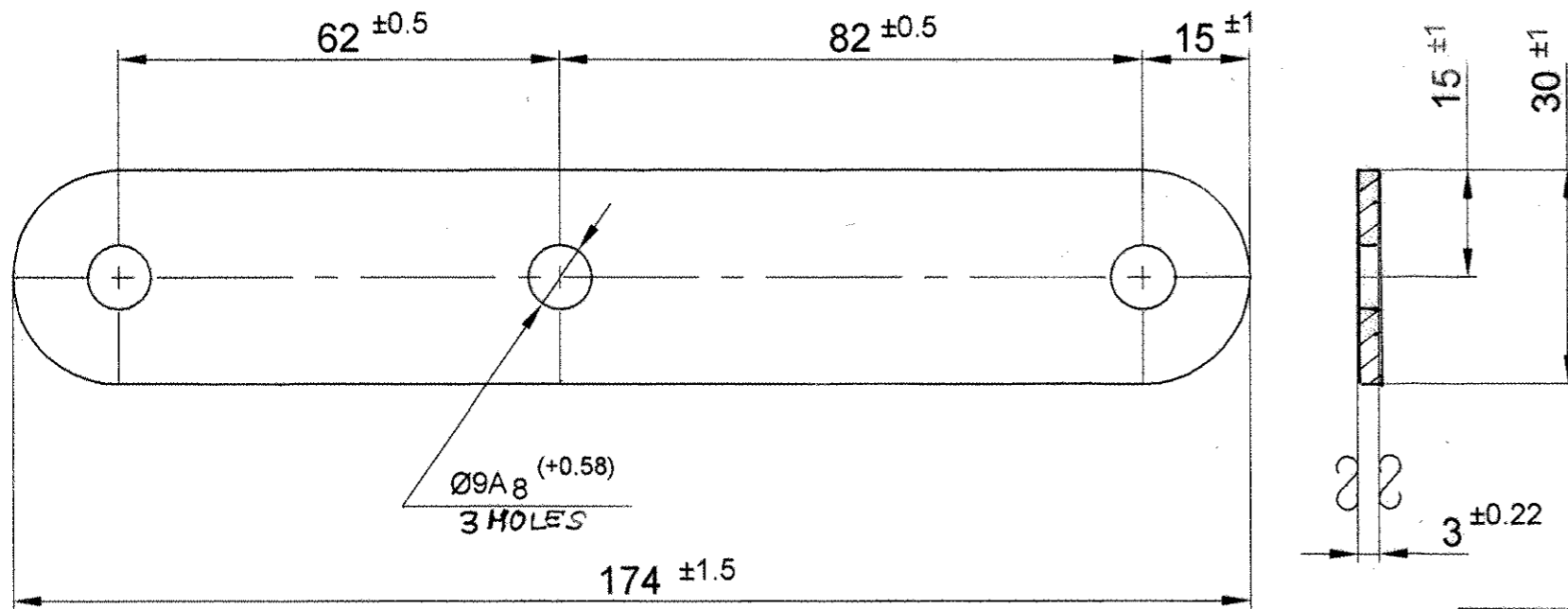
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	- sd -	MATERIAL :- STEEL 25A-I	USED ON :- 188 60 019cbCb
CHD	- sd -	GOST 977 - 75	175 30 049 Cb
TCD	- sd -	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
APPD	- sd -	TITLE :- <b>BOSS</b>	
DATE	28-11-88	D S CAT NUMBER	DRAWING NUMBER
SCALE	1:1		<b>175.32.178 - A</b>
DIMENSIONS IN mm			
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69			
ALL THREADS TO CONFORM TO			
ISSUE	A	N OF A No. CQA(HV)/T90/60/001.	
DATE	5.7.04	NATURE OF AMENDMENTS	

F-7B  
36  
SIZE A2

▽1(▽)

ELEMENT	CHEMICAL COMPOSITION (%)				MECHANICAL PROPERTIES				
	STEEL15-4-II GOST 16523-70 (REF.GOST 1050-88)	STEEL 10 Kn-4-III GOST 16523-70 (REF.GOST 1050-88)	STEEL 20-4-II GOST 16523-70 (REF.GOST 1050-88)	STEEL CRSS Gr. 'O' IS : 513-94	DESCRIPTION	STEEL15-4-II K330B GOST 16523-70	STEEL 10 Kn-4-III K270B GOST 16523-70	STEEL 20-4-II K350B GOST 16523-70	STEEL CRSS Gr. 'O' IS : 513-94
C	0.12 - 0.19	0.07 - 0.14	0.17 - 0.24	0.15 MAX.	ULTIMATE STRENGTH	330 - 460 Kg/mm <sup>2</sup> MIN	270 - 410 Kg/mm <sup>2</sup> MIN	350 - 500 Kg/mm <sup>2</sup> MIN	---
Si	0.17 - 0.37	0.07 MAX.	0.17 - 0.37	----	YIELD STRENGTH	----	----	----	---
Mn	0.35 - 0.65	0.250 - 0.50	0.35 - 0.65	0.60 MAX.	RELATIVE ELONGATION %	25 MIN.	28 MIN.	24 MIN.	---
Cr	0.25 MAX	0.15 MAX	0.25 MAX	----	HARDNESS HRB	----	----	----	60 - 75
S	0.035 MAX	0.035 MAX	0.035 MAX	0.055 MAX					
P	0.035 MAX.	0.035 MAX.	0.035 MAX.	0.055 MAX.					
Ni	0.30 MAX.	0.30 MAX.	0.30 MAX.	----					



ALTERNATE MATERIAL : STEEL CRSS 'O' IS:513-94  
 AUTHORITY : CQA(HV), LETTER NO. 091/IFD-V/MTPF/OE  
 DT. 17-03-2005

USED ON 175-60-049 Cb  
 USED ON 188-66-019 Cb

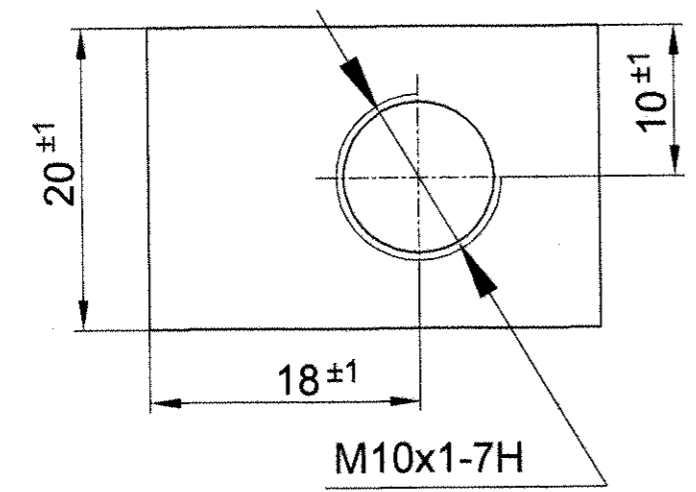
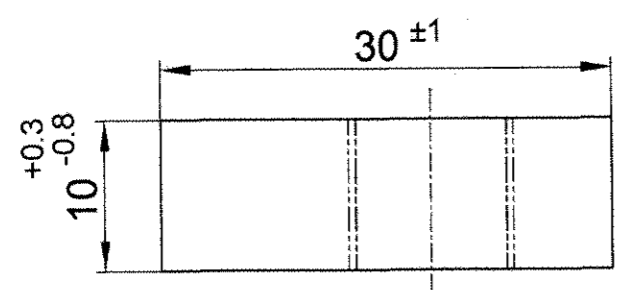
- MAY BE MANUFACTURED FROM OPEN HEARTH STEEL.  
10 Kn-4-III,20-II-Г,20-4-II GOST 16523-70.
- BUCKLING OF COMPONENT SHOULD NOT EXCEED 1mm.
- PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

इन आरेखों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।  
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मूलमाप व अन्वयोजन  
NOMINAL SIZE & FIT

विचलन  
DEVIATION

1	BOSS	2	STEEL 15-4-II OPEN HEARTH.	GOST 16523-70.	WEIGHT: 0.119 Kg.	
संख्या NO.OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS	अभ्यक्ति REMARKS
सामान्य सहिष्णुता GENERAL TOLERANCE						
रेखिक परिमाण LINEAR DIMENSION						
0-6 ±0.1						
6-30 ±0.2						
30-120 ±0.3						
120-315 ±0.5						
315-1000 ±0.8						
1000-2000 ±1.2						
कोणिक परिमाण ANGULAR DIMENSION						
1-10 ±1°						
10-50 ±30'						
50-100 ±20'						
> 100 ±10'						
मापक 'म्यू एम' में VALUE IN 'um'						
- >25						
▽ 8-25						
▽▽ 1.6-8						
▽▽▽ 0.025-1.6						
▽▽▽▽ <0.025						
PLATE TRANSMISSION GEAR UNIT CODE-45 T 72 / T 90				मापमान SCALE		आरेखित DRAWN
				1:1		03-11
				जाँचा CHECKED		11-11-06
				अनुमोदित APPROVED		13/11/06
				द्वारा बदला REPLACED BY		
				हेतु बदला REPLACED FOR		
मशीनी औजार आदिरूप फैक्टरी, अम्बरनाथ MACHINE TOOL PROTOTYPE FACTORY, AMBERNATH				कार्यालय OFFICE		D.O.
				आरेखण क्र. DRAWING NO.		175-60-083



~ (▽)

CHEMICAL COMPOSITION (%)			MECHANICAL PROPERTIES		
ELEMENT	STEEL 15 GOST 1577-70 (REF.GOST 1050-74)	STEEL 070M20(EN-3A) BS:970-83.	DESCRIPTION	STEEL 15 GOST 1577-93	STEEL 070M20(EN-3A) BS:970-83.
C	0.12 - 0.19	0.16 - 0.24	LIMITING RULING SECTION	----	150
Si	0.17 - 0.37	----	TENSILE STRENGTH	320 Kgf/mm <sup>2</sup> MIN	430 N/mm <sup>2</sup> MIN.
Mn	0.35 - 0.65	0.50 - 0.90	RELATIVE ELONGATION %	30 MIN.	21 MIN.
Cr	0.25 MAX	----	YIELD STRENGTH	----	215 N/mm <sup>2</sup>
S	0.035 MAX	0.025 - 0.050	HARDNESS (BHN)	----	126 - 179
P	0.035 MAX.	0.050 MAX.			
Ni	0.30 MAX.	----			

**VETTED**  
16 NOV 2006  
JWM/STD-CELL

THREAD DETAILS M10x1 - 7H	
MAJ Ø	10.000 MIN
PITCH Ø	9.350 +0.190
MIN Ø	8.917 +0.300

ALTERNATE MATERIAL : STEEL GRADE 070M20 (EN-3A) TO BS: 970-83.  
AUTHORITY : CQA(HV), LETTER NO. 091/IFD-V/MTPF/OE  
DT. 17-03-2005

USED ON 176-61-006 Cb-1  
USED ON 188-60-019 Cb

**NOTES:-**

- DRAFTS AND SHRINKAGE OF EDGES ARE ALLOWED.
- ALTERNATE MATERIALS : STEEL GRADES FROM 10 THROUGH 35 GOST 1577-70 OPEN HEARTH.
- PILOT SAMPLE SHOULD BE APPROVED BY **AHS P** BEFORE BULK PRODUCTION.

इन आरेखणों तथा इसके साथ की सम्पूर्ण सामग्री का स्वत्वाधिकार भारत सरकार रक्षा मंत्रालय की भारतीय आयुध निर्माणियों के पास है। भारतीय आयुध निर्माणियों के महानिदेशक की लिखित अनुमति के बिना इनकी नकल या किसी भी रूप में इनके उद्धरण या इनमें समाहित सूचना किसी अनधिकृत व्यक्ति को उपलब्ध नहीं कराई जानी चाहिए।  
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मूलमाप व अन्वयोजन NOMINAL SIZE & FIT	विचलन DEVIATION
---	--------------------

1	BOSS	3	STEEL 15 OPEN HEARTH	GOST 1577-70	WT. = 0.045 Kg.				
संख्या NO. OFF	विवरण DESCRIPTION	पुर्जा क्र. PART NO.	पदार्थ MATERIAL	मानक STANDARD	परिमाण DIMENSIONS	अभ्यक्ति REMARKS			
सामान्य सहिष्णुता GENERAL TOLERANCE									
रेखिक परिमाण LINEAR DIMENSION									
0-6		±0.1							
6-30		±0.2							
30-120		±0.3							
120-315		±0.5							
315-1000		±0.8							
1000-2000		±1.2							
कोणिक परिमाण ANGULAR DIMENSION		संख्या NO. OFF	संबंधित पुर्जा का आरेखण क्र. DRG. NO. OF ASSOCIATED PART	सूचक INDEX	संशोधन ALTERATION	2006	दिनांक DATE	नाम NAME	
1-10						±1°			
10-50						±30'			
50-100						±20'			
>100						±10'			
मापोंक 'म्यू एम' में VALUE IN 'um'									
-						>25			
▽						0-25			
▽▽						1.6-8			
▽▽▽						0.025-1.6			
▽▽▽▽						<0.025			
BOSS TRANSMISSION GEAR UNIT CODE-45/T72&T90						मापमान SCALE	आरेखित DRAWN	11-11	VML
						2:1	जाँचा CHECKED	18-11-06	
							अनुमोदित APPROVED		
मशीनी औजार आदिरूप फैक्टरी, अम्बरनाथ MACHINE TOOL PROTOTYPE FACTORY, AMBERNATH						कार्यालय OFFICE	द्वारा बदला REPLACED BY	हेतु बदला REPLACED FOR	आरेखण क्र. DRAWING NO.
						D.O.			155-20-233