



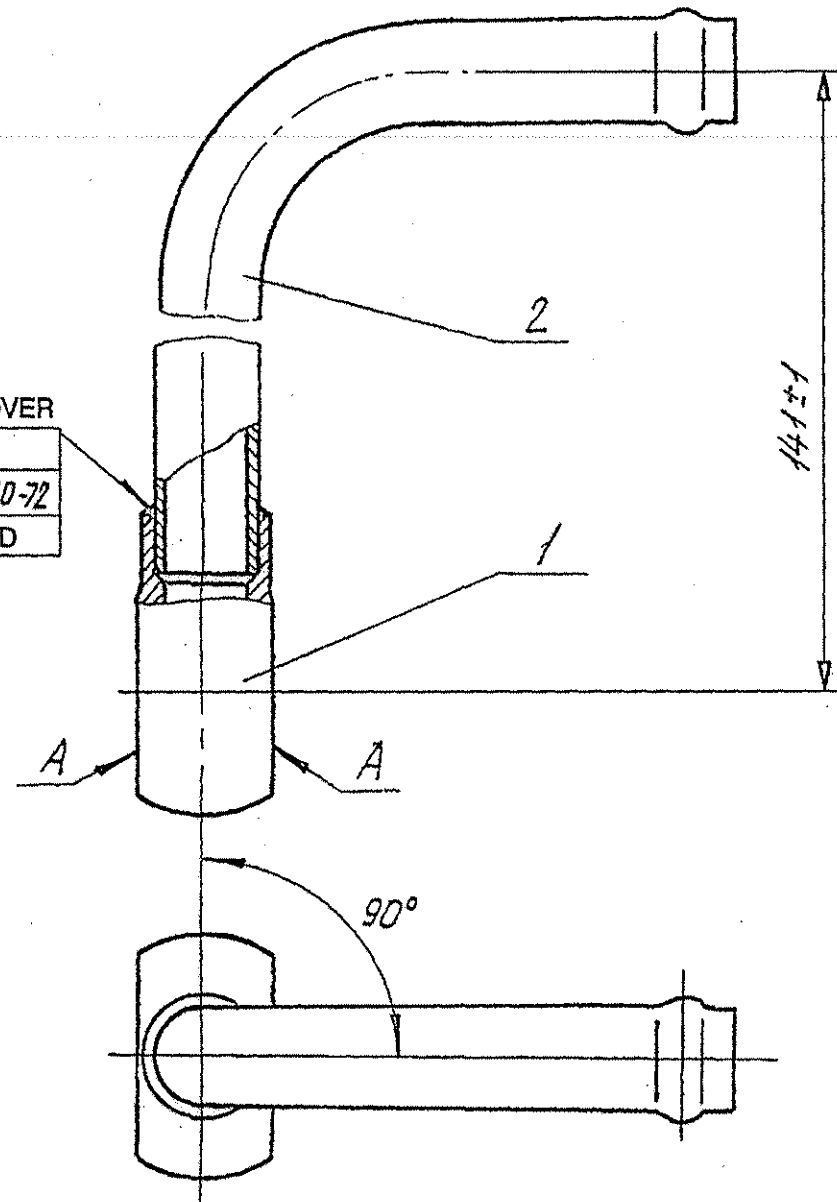
DRAWING NUMBER  
175.45.008cbCb

SHEET No 1 OF 1

IB. JAYAVELU, JTO(D)  
15-09-06

"COMMON TO T-90"  
DRG RE-INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE:- 4

TO BE SOLDERED ALL OVER  
WITH *NO-50-1* OR  
*AK-62-0,5* GOST 16130-72  
OR TO BE WELDED



1. THE PIPE LINE IS TO BE SUBJECTED TO A HYDROSTATIC OR PRESSURE TEST AT A PRESSURE OF 2-3 ATM FOR 3 MINUTES. LEAKAGE OF LIQUID OR SEEPAGE OF AIR IS NOT ALLOWED.
2. ROUGHNESS OF SURFACE "A" ON THE FINISHED UNIT SHOULD BE  $\nabla 5$  MINIMUM. DARKENING OF SURFACES IS ALLOWED.
3. TURNING ELBOW MAY BE TURNED FROM THE TRUE POSITION BY 1 mm, MAXIMUM WITHIN ITS DIMENSIONS.
- ~~⑤ 5. COATING: PAINTING IN COMPLIANCE WITH THE CURRENT SPECIFICATIONS.~~
- ⑤ 5. COATING: EXTERNAL SURFACES EXCEPT FACES "A".  
PRIMER  $\Phi$ JI-03K.  
DARK GREY ENAMEL  $\Pi\Phi$ -223 OR  $\Pi\Phi$ -115  
DARK GREY ENAMEL 894.  
INTERNAL SURFACES  
INSULATING VARNISH  $\Gamma\Phi$ -95  
REQUIREMENTS AS PER 520 TY 5.

188.45.001cb-3Cb (5A)

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

EST WT (Kg) 0.140  
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:-	USED ON:- 175.45cbCb
			CHD	Sd/=		172.45.060cbCb
			APPD	Sd/=	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
			DATE	24-02-88		
			SCALE :- 1:1		TITLE:- <b>PIPE LINE</b>	D S CAT NUMBER
			DIMENSIONS IN mm			
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102 69			
			5A	25.10.04	N OF A No. CQA(HV)/T90/45/001	DRAWING NUMBER 175.45.008cbCb
			5	1.7.91	NOTN.172M.807'A-88(AL.12/BK-1)	
			ISSUE	DATE	NATURE OF AMENDMENTS	

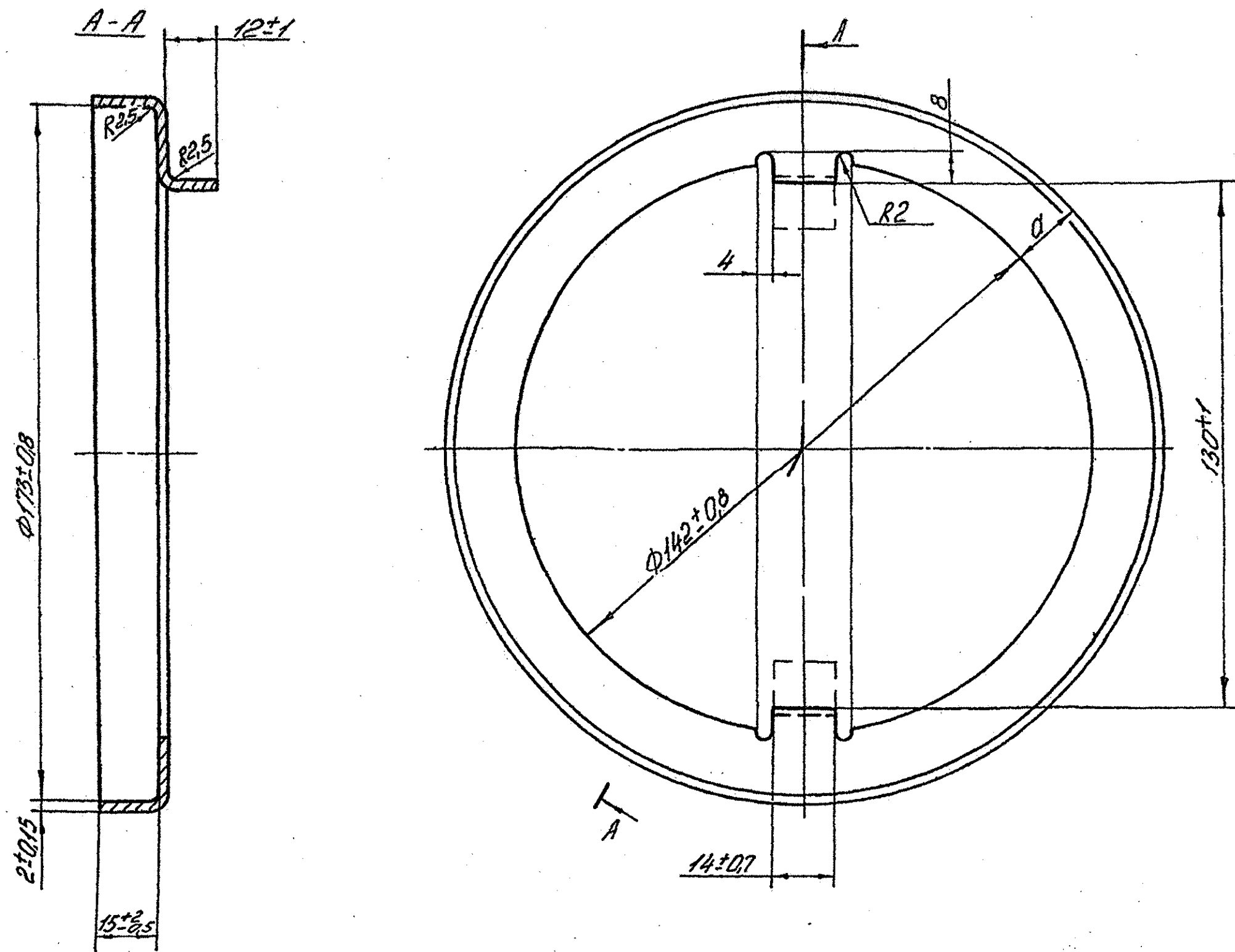
F-84  
8

SIZE A3

DRAWING NUMBER  
172.45.043

SHEET No. 1 OF 1

2



1. VARIATION IN WIDTH "a" SHOULD NOT EXCEED 0.7mm.
2. BENDING OF THE COMPONENT IN PLANE SHOULD NOT EXCEED 0.7mm.
3. TO BE GALVANIZED TO 6 TO 12 MICRON TO BE CHROMIUM PLATED.
4. COMPONENT MAY BE MANUFACTURED FROM OPEN-HEARTH STEEL 10 Kn - 5 - III r , GOST 16523 - 70.
5. TO BE MARKED ON TAG.

Approved  
B. JAYAVELU, JTDI  
27-07-86

" COMMON TO T - 90 "  
DRG. RE INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

4B ALT. MATL. :- GRADE 'D' TO IS : 513 - 94 4A 188.45.001cb-3Cb

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

EST. WT. (Kg) 0.2 /	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 :- OPEN HEARTH	USED ON :- 172.45.060cbCb
CHD	Sd / =	STEEL 10 Kn - 5 - II r	172.45.060cbCb
APPD	Sd / =	GOST 16523 - 70	
DATE	01 - 09 - 86 /	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
SCALE:- 1 : 1 /		TITLE :-	
DIMENSIONS IN mm		WASHER	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER	
4B	07.07.06	AUTHY. L.No.80001/COA(HV)/GEN/DL.15.10.05	DRAWING NUMBER
4A	25.10.04	N OF A No. COA(HV)/T90/45/001	172.45.043
ISSUE	DATE	NATURE OF AMENDMENTS	

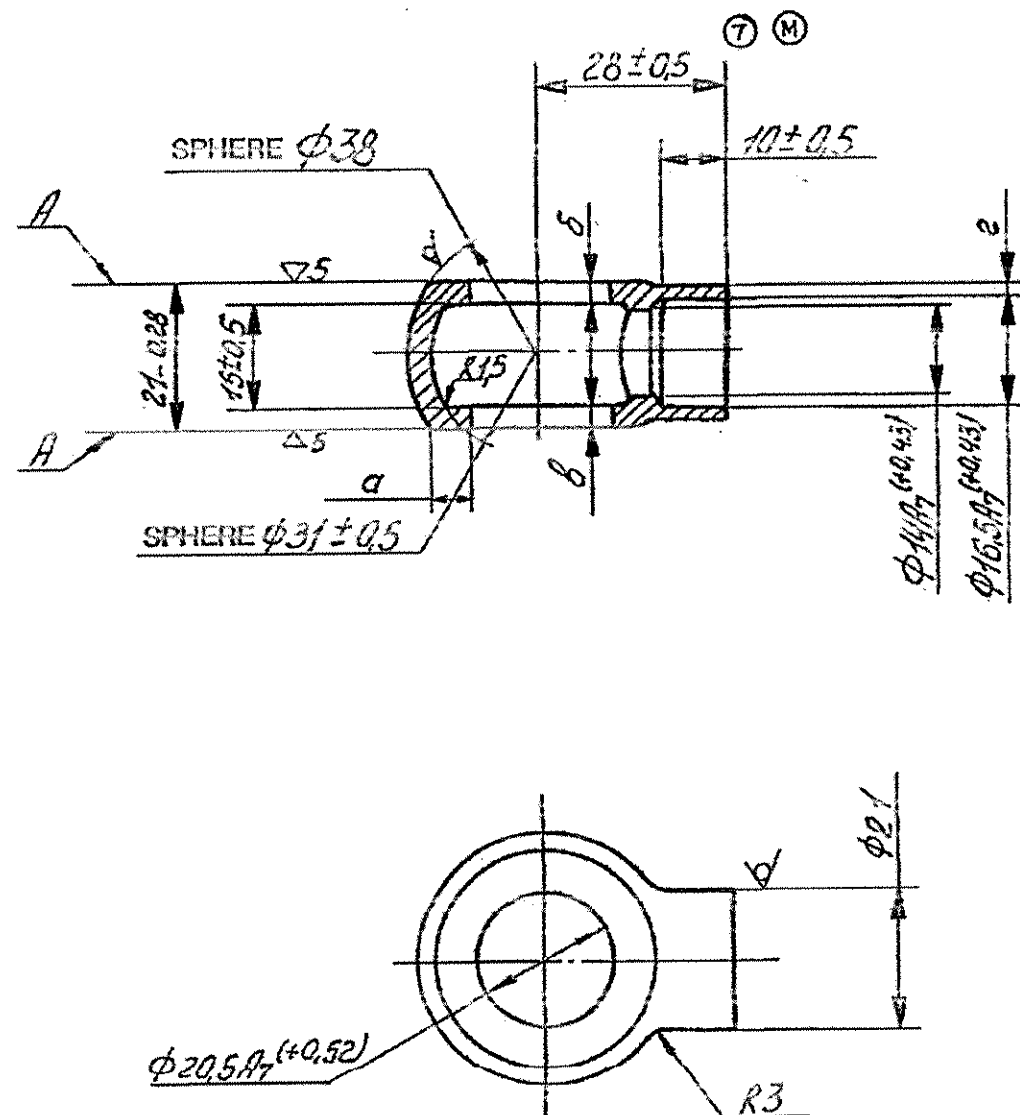
F - 86

SIZE A2

DRAWING NUMBER  
172.45.093

SHEET No. 1 OF 1

▽3 (▽)



1. COMPONENT MAY BE MANUFACTURED FROM OPEN HEARTH STEEL GRADES FROM 20 TO 40 GOST 1050 - 60.

2. NON - PARALLELISM OF SURFACES "A" MAY NOT EXCEED 0.1mm WITHIN OVERALL DIMENSIONS OF COMPONENT.

⑦ 3. THE NON - SQUARENESS OF AXIS OF HOLE  $\phi 20.5$  TO SURFACE "A" SHOULD NOT EXCEED 0.2mm WITHIN THE OVER - ALL DIMENSIONS OF THE COMPONENT. (MMC).

4. DIFFERENCE IN MEASUREMENTS OF DIMENSION "a" SHOULD NOT EXCEED 1mm.
5. DIFFERENCE IN MEASUREMENTS OF DIMENSION "b" AND "c" SHOULD NOT EXCEED 0.5mm.
6. DIMENSION "d" SHOULD BE 1.2mm MINIMUM.
7. PROJECTION OF  $\phi 21$  BEYOND THE SURFACES "A" IS NOT PERMISSIBLE. FLATS ON SURFACE  $\phi 21$  ARE ALLOWED.
8. TECHNICAL REQUIREMENTS ON STAMPED SURFACES NOT TO BE MACHINED ARE IN COMPLIANCE WITH 60-100-TY. 520 TY 1. ⑥

**EXPLANATORY NOTE :-**

9. REFERENCE MATERIAL QUOTED :- OPEN HEARTH STEEL 15 GOST 1050 - 60 AND REFERENCE NOTE 1 ON ALTERNATIVE MATERIAL, OPEN HEARTH STEEL 20 TO 40 GOST 1050 - 60. CARBON STRUCTURAL STEEL TO GRADE 15 AND ALTERNATIVELY TO GRADE 20 MANUFACTURED AS PER GOST 1050 - 74.
10. a) CHEMICAL COMPOSITION AS PER STEEL GRADES 15 AND 20 GOST 1050 - 74.

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

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

- b) MECHANICAL PROPERTIES:- AS PER STEEL GRADES 15 & 20 GOST 1050 - 74.

GRADE OF STEEL	TENSILE STRENGTH	ELONGATION	YIELD POINT	REDUCTION IN AREA
	Kgf/mm <sup>2</sup>	%	Kgf/mm <sup>2</sup>	%
15	38	27	23	55
20	42	25	25	55

⑦A) ALT. MATL. :- STEEL 070M20 (En 3A,3C) TO BS : 970 Part 1 : 1983

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DRN	Sd / =	MATERIAL :-	USED ON :-
CHD	Sd / =	OPEN HEARTH STEEL 15	175.45.008cbCb
APPD	Sd / =	GOST 1050 - 60	172.45.021cb-1Cb
DATE	01 - 09 - 86	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1 : 1	AVADI	
DIMENSIONS IN mm		TITLE :-	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		SWIVEL ELBOW	
7A	07.07.06	DS CAT NUMBER	DRAWING NUMBER
7	11.10.90		172.45.093
6	26.11.88		
ISSUE	DATE	NATURE OF AMENDMENTS	

DRG. RE INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

" COMMON TO T - 90 "

F - 86

SIZE A2