| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| GEN ASSY. | | | **Cb.322-00-9** | | **COMPRESSED - AIR** | | |
| | | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | | **ASSY.** | | |
| | | | | | | | |
| | | 1 | Cb.322-13-3 & I/L | | STARTING VALVE ASSY. | 12 | Tropical make |
| | | 2 | Cb.322-14-9 & I/L | | COMPRESSED AIR | 1 | Tropical make |
| | | | | | STARTING TUBING | | |
| | | | | | L . H ASSY. | | |
| | | 3 | Cb.322-15-9 & I/L | | COMPRESSED AIR | 1 | Tropical make |
| | | | | | STARTING TUBING | | |
| | | | | | R . H ASSY. | | |
| | | 4 | 354-22 | | LOCK WIRE | 6 | Tropical make |
| | | | | | | | L=150±2 mm |
| | | | | | | | |
| | | | | | | | |
| | | | | | | |

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| GEN ASSY. | | 5 | 355-08 | | RING 18x24 MH 4152-62 | 12 | |
| | | 6 | 355-11 | | RING 16x22 MH 4152-62 | 24 | |

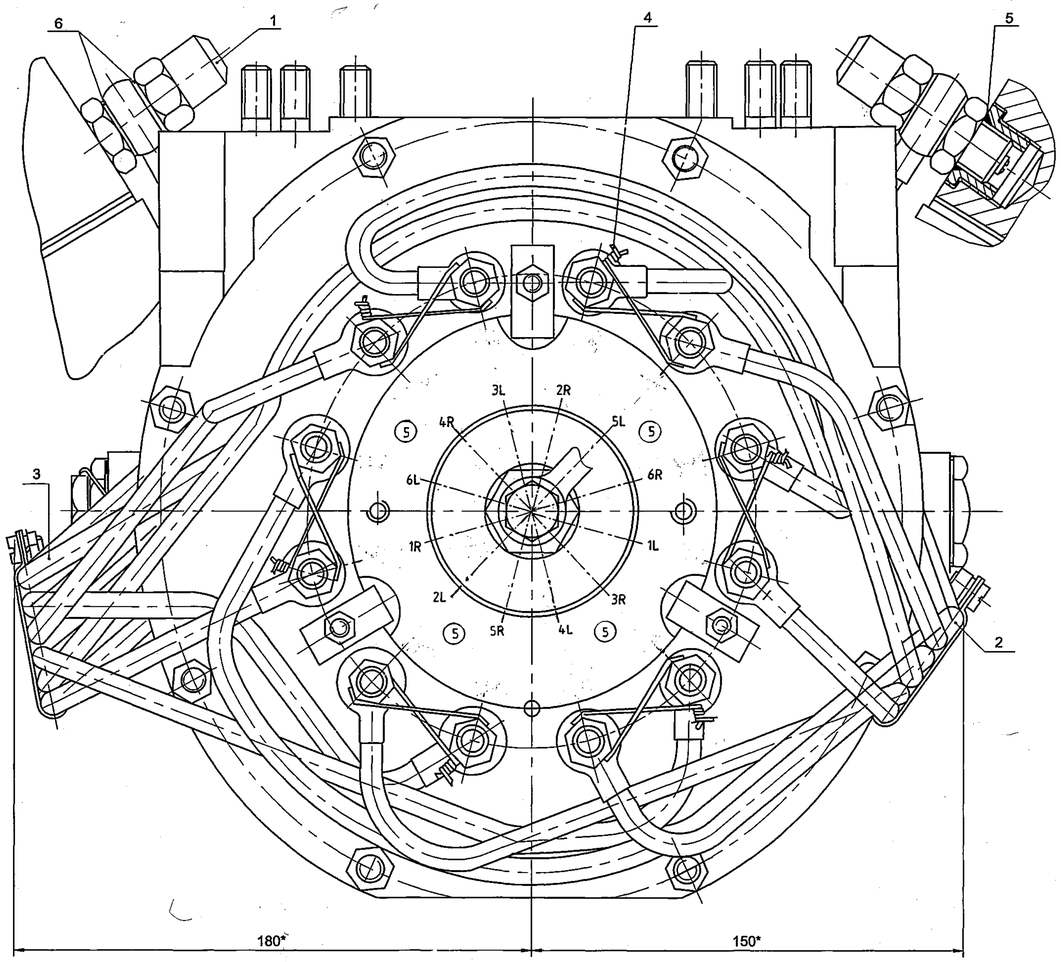
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 5

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED AIR STARTING TUBING ASSY.** | | |
| APPD | | | | |
| DATE | 28.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-00-9** |

F-4
143/253

DRAWING NUMBER
Cb.322-00-9




1. Gap between pipes and adjoining parts should be minimum 1.5mm while mounting (except the fastening area).

2. Mounting of pipe lines on the engine to be carried out as per technical requirment *ИВ-152Д*.

3. *Components and assembly units having conventional symbol "Т И", in the part list of given drawing in "remarks" column, should have tropicalized construction, as specified in the drawing for components.*

4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

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 OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 5 | 27.02.09 | NOTN. NO: 377-03 (F-158) |
| 4A | 13-8-08 | D.O. CORRECTION |

DRN
CHD
APPD
DATE 06/2/07
SCALE:- 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-
USED ON :- Gen. Assy.

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING ASSY (4A)

D S CAT NUMBER
DRAWING NUMBER Cb.322-00-9

F-4
144
283
SIZE A1

USED ON

CB 3300-00-26
CB 310-00-7 , CB 322-00-4
CB-20-22-00-7

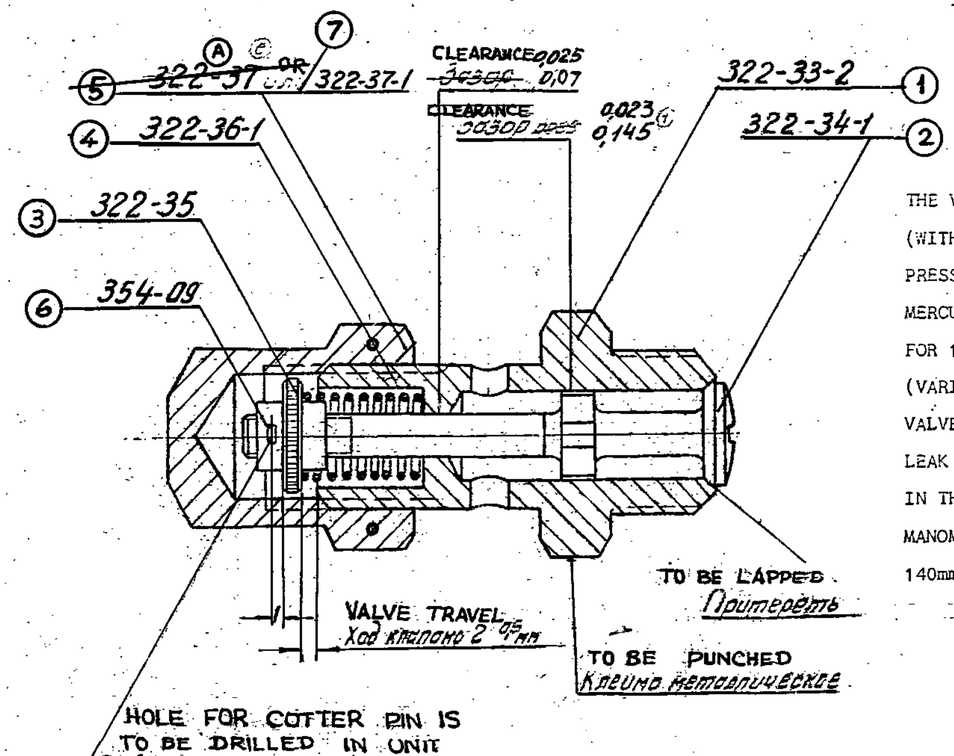
| ITEM | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | No. OFF | REMARKS |
|---|---|---|---|---|---|
| | | | | | |
| (A) | ~~CB 322-13-3 &~~ | | | | |
| | CB 322-13-4 | | STARTING VALVE ASSY | | |
| | & ITEM LIST | | | | |
| | | | | | |
| 1 | 322-33-2 | | BODY OF STARTING VALVE | 1 | |
| 2 | 322-34-1 | | STARTING VALVE HEAD | 1 | |
| 3 | 322-35 | | STARTING VALVE NUT | 1 | |
| 4 | 322-36-1 | | STARTING VALVE SPRING | 1 | |
| (A) ~~5~~ | ~~322-37~~ | | ~~STARTING VALVE CAP~~ | ~~1~~ | ~~REFER S.L.NO 7~~ |
| 6 | 354-09 | | COTTER PIN 1.6x12 GOST 397-79 | 1 | |
| 7 | 322-37-1 | | STARTING VALVE CAP | 1 | |

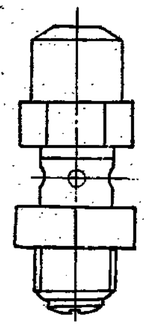
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| A | 30.6.01 | AUTHY LT. No. 90211/AHSP/ED dt 27.3.01 | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| CHD | | TITLE: STARTING VALVE ASSY | |
| TCD | | | |
| APPD | | | |
| DATE | 17-2-88 | SHT. No. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR (A) ~~CB 322-13-3 &~~ CB 322-13-4 |

A-7

DRAWING NUMBER (A)
~~CБ322-13-3~~, СБ322-13-4



M1:1
SCALE 1:1

THE VALVE SHOULD BE PRESSURE-TESTED ON A SPECIAL STAND WITH AIR (WITH INTERMEDIATE VOLUME NOT EXCEEDING 2500cm$^3$ BEFORE MERCURY PRESSURE GAUGE) AT A PRESSURE OF 5±1 kgf/cm$^2$
MERCURY COLUMN MAY RISE BY 5mm MAX. IN ONE LEG OF A MANOMETER TUBE FOR 10 SECONDS
(VARIATION IN HEIGHT OF COLUMNS SHOULD NOT EXCEED 10mm)
VALVE COMPONENTS SHOULD BE DRY DURING PRESSURE TESTING.
LEAK PROOFNESS OF VALVE MAY BE CHECKED BY WATER PRESSURE GAUGE.
IN THIS CASE WATER COLUMN MAY RISE BY 70mm MAX. IN ONE LEG OF MANOMETER TUBE VARIATION IN HIEGHT OF COLUMNS SHOULD NOT EXCEED 140mm)

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

| EST. WT. 0.117 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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 30.6.01 | AUTHY LL.No.90211/AHSP/ED dt 27.3.01 |

DRN
CHD
TCD
APPD
DATE 17-2-88
SCALE :- 2 : 1
DIMENSIONS in mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :- СБ-20-22-00-7
~~СБ-3300-00-26~~ СБ-310-00-7
~~СБ-322-00-4~~

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

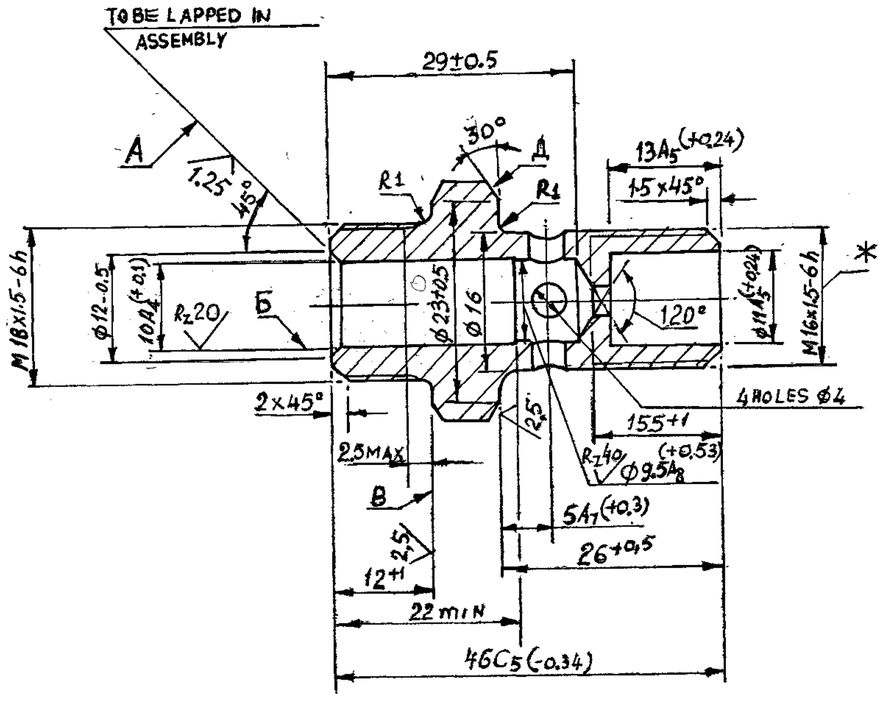
TITLE
STARTING VALVE ASSY

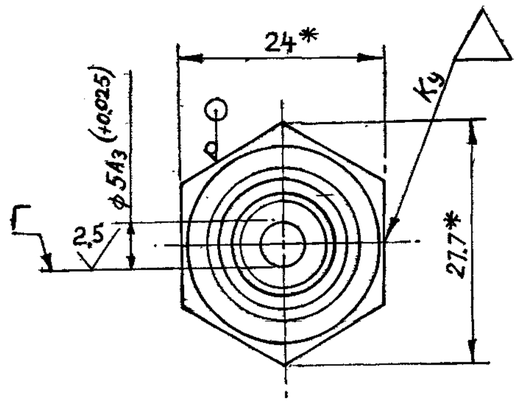
D S CAT NUMBER

DRAWING NUMBER (A)
~~СБ.322-13-3~~
СБ.322-13-4

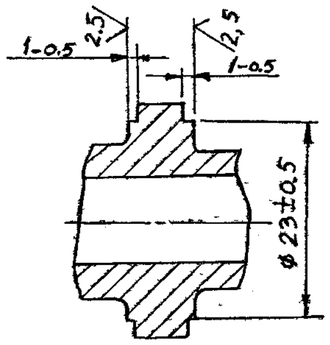
DRAWING NUMBER
322-33-2

▽4 UNLESS OTHERWISE SPECIFIED.




ALTERNATE




## EXPLANATORY NOTE :

MATERIAL QUOTED : 24-5 GOST 8560-78 / 45 GOST 1050-74

BRIGHT STEEL HEXAGONAL BAR ACROSS FLATS 24 mm.

CLASS OF ACCURACY 5 TO GOST 8560-78.

45 = GRADE OF STEEL.

(a) CHEMICAL COMPOSITION : (AS PER GOST 1050-74)

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 45 | 0.42-0.50 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.040 | 0.035 | 0.25 | 0.25 |

(b) MECHANICAL PROPERTIES :

| GRADE OF STEEL | YIELD POINT Kgf/mm² (min) | ULTIMATE TENSILE STRENGTH Kgf/mm² (min) | ELONGATION % (min) | REDUCTION IN AREA % (min) | IMPACT STRENGTH Kgf.m/cm² (min) |
|---|---|---|---|---|---|
| 45 | 36 | 61 | 16 | 40 | 5 |

1. INSPECTION GROUP III AS PER TECHNICAL REQUIREMENTS TT-11 HB 241 TO 207 ( d = 3.9 TO 4.2 ).
2. UNSPECIFIED LIMIT DEVIATIONS OF MACHINING DIMENSIONS ARE AS FOLLOWS :
   FOR HOLE - AS PER A7.
   FOR SHAFTS - AS PER B7.
   FOR OTHERS - AS PER CM7.
3. MACHINE SURFACES Б AND Г WITH COMBINATION TOOL.
4. TOLERANCE FOR END PLAY OF SURFACE B WITH RESPECT TO THE ANGLE DIAMETER AXIS OF THREAD SHOULD BE 0.05 mm.
5. TOLERANCE FOR RADIAL RUN-OUT OF CHAMFER A WITH RESPECT TO SURFACE Б AXIS SHOULD BE 0.02mm.
6. TOLERANCE FOR END PLAY OF SURFACE 'Д' WITH RESPECT TO THE ANGLE DIAMETER AXIS OF THREAD 'Ж' SHOULD BE 0.1mm.
7. WHEN BUTT-ENDS B AND 'Д' ARE FACED, THE SINGLE POINT TOOL MAY CUT ALONG THE CYLINDRICAL SURFACE TO A DEPTH OF NOT EXCEEDING 0.3mm.
8. THREAD 'U' MAY BE MADE BY ROLLING WITH THE DIAMETER OF THE UNTHREADED PORTION FROM BUTT-END 'B' BEING WITHIN THE LIMITS OF THE MEAN DIAMETER OF THREAD OVER THE LENGTH NOT EXCEEDING 2.5mm.
9. * DIMENSION ARE GIVEN FOR REFERENCE.
10. COATING : ZINC-PLATED, 6 MICRONS THICK OILED.
11. USED FOR TROPICAL VERSION IS COATING CADMIUM-PLATED 9 MICRONS THICK, OILED WITH REMOVEL OF HYDDROGEN EMBRITTLEMENT.
12. INTERNAL SURFACES MAY HAVE NO COATING.

** Cb 322-13-4 (A)

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≠ ( LETTERS) |
|---|---|
| 0.06 kg. | |

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 |
|---|---|---|
| A | 31.7.21 | USED ON NUMBER ADDED. |

DRN
CHD
TCD
APPD
DATE 6-1-90
SCALE :- 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- 24-5 GOST-8560-78 / 45 GOST 1050-74

USED ON :- ~~C6 322-13-3~~ ** / ~~C6 310-31~~ (A)

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE: STARTING VALVE BODY

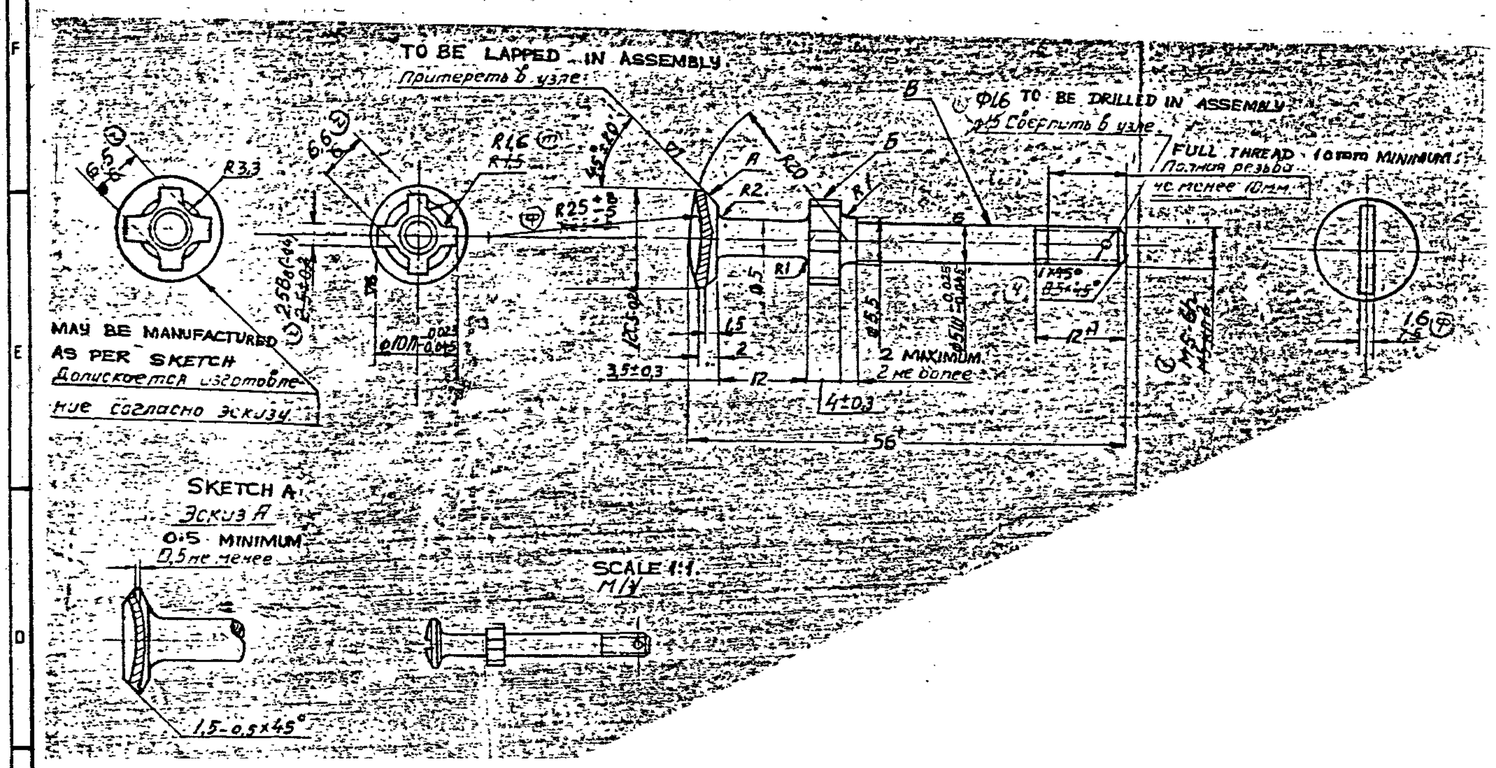
D S CAT NUMBER

DRAWING NUMBER 322-33-2

COMMON TO V92S2 Engine.

SIZE A2

DRAWING NUMBER
322-34-1




INSPECTION GROUP IV IN ACCORDANCE WITH TT-11 HRC = 26-33.

SHARP EDGES SHOULD BE BLUNTED.

DIMENSIONS WITH UNSPECIFIED TOLERANCES SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7 OST 1010.

TECHNICAL REQUIREMENTS FOR THREAD IN ACCORDANCE WITH STANDARD 82021-00.

SHIFT OF SLOT 1.6 mm RELATIVE TO THE AXIS SHOULD NOT EXCEED 0.3 mm

RUN-OUT OF CHAMFER A RELATIVE TO THE AXIS OF SURFACE 6 SHOULD NOT EXCEED 0.03mm, AND THAT OF SURFACE B RELATIVE TO SURFACE 6 SHOULD NOT EXCEED 0.05mm

VALVE HEAD MAY BE MANUFACTURED AS PER SKETCH A

COATING:- CHEMICAL OXIDIZING, OIL FINISHING.

THREAD MAY BE FORMED BY ROLLING.

FINAL ACCEPTANCE MARK SHOULD BE PUT ON A TAG FOR A BATCH OF COMPONENTS AND SEALED IN CONTAINER.

(A) ALTERNATE MATERIAL : STEEL 38XC GOST 4543-76

(B) Alt.Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

KVD No 63372
COMMON TO V92S2 Engine.

SIZE A2

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.008 kg. | |

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

▽4 UNLESS OTHERWISE SPECIFIED

## EXPLANATORY NOTE :-

MATERIAL QUOTED :- STEEL 38XA GOST 4543-76.

CHROMIUM STEEL GRADE = 38 XA , A - INDICATES HIGH QUALITY STEEL.

CHEMICAL COMPOSITION :- %

| CONTENT OF ELEMENTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·35-0·42 | 0·17-0·37 | 0·50-0·80 | 0·80-1·10 | 0·025 | 0·025 | 0·30 | 0·30 |

MECHANICAL PROPERTIES :-

1. HEAT TREATMENT
   - a) HARDENING OR NORMALIZING TEMPERATURE °C = 860.
     COOLING MEDIUM = OIL.
   - b) TEMPERING TEMPERATURE °C = 550.
     COOLING MEDIUM = WATER OR OIL.
2. YIELD POINT Kgf/mm² (MIN) = 80.
3. ULTIMATE STRENGTH Kgf/mm² (MIN) = 95.
4. RELATIVE ELONGATION % (MIN) = 12.
5. RELATIVE REDUCTION ALONG CROSS SECTION % = 50 (MIN).
6. IMPACT STRENGTH Kgf.m/cm² (MIN) = 9.

## EXPLANATORY NOTE :-

8. MATERIAL QUOTED STEEL 38XC GOST 4543-76.

CHROMIUM SILICON STEEL .

38XC = GRADE

(a) CHEMICAL COMPOSITION :

C = 0.34 - 0.42 , Si = 1.00 - 1.40 , Mn = 0.30 - 0.60 , Cr = 1.30 - 1.60

P = 0.025 (max) , S = 0.025 (max) , Cu = 0.30 (max) , Ni = 0.30 (max)

(b) MECHANICAL PROPERTIES :

ULTIMATE TENSILE STRENGTH Kgf/mm² = 95 (min)

YIELD POINT Kgf/mm² = 75 (min)

% RELATIVE ELONGATION = 12 (min)

% REDUCTION IN AREA = 50 (min)

IMPACT STRENGTH Kgf.m/cm² = 7 (min)

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| C | 31.07.21 | USED ON NUMBER DELETED. |
| B | 20-5-09 | Authy: Third Alt. Comm. Minutes Point: 2 Dated 27-02-2009. |
| A | 9-12-87 | AUTHY: BK-84-498 |

DRN
CHD
TCD
APPD
DATE 04-9-86
SCALE :- 2:1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- STEEL 38XA GOST 4543-76

USED ON :- ~~C6 322-13-3~~ (C) C6 322-13-4

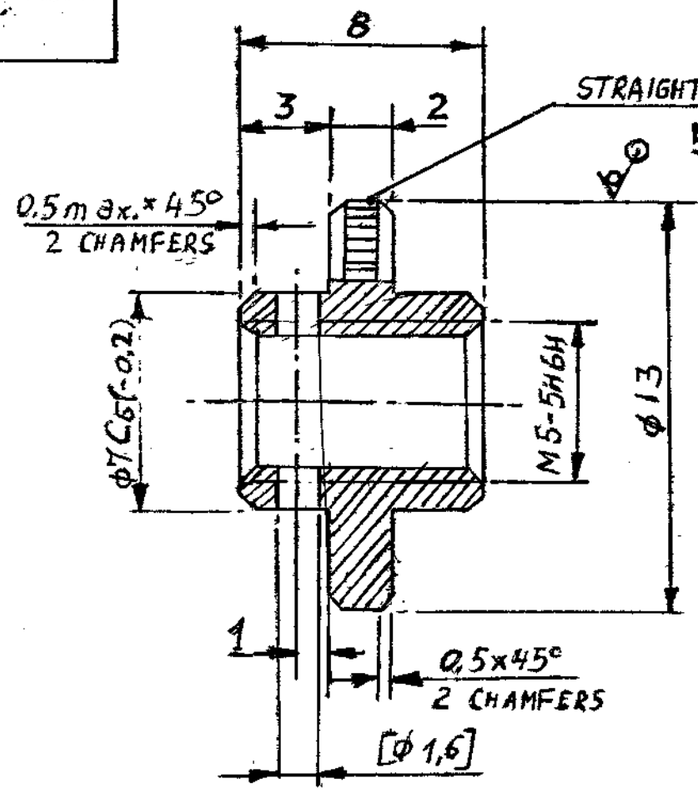
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

TITLE
STARTING VALVE HEAD

D S CAT NUMBER

DRAWING NUMBER
322-34-1

DRAWING NUMBER
322-35




1, ALTERNATE MATERIAL IS STEEL 40, 50, GOST 1050-74.

2. UNSPECIFIED LIMIT DEVIATIONS OF MACHINING DIMENSIONS ARE AS FOLLOWS FOR HOLES – AS PER $A_{7}$,
SHAFTS – AS PER $B_{7}$,
OTHERS – AS PER $CH_{7}$.

3, CARRY-OUT MACHINING AS PER DIMENSION GIVEN IN SQUARE BRACKETS IN THE ASSEMBLY.

4, COATING: CHEMICALLY OXIDIZED OILED.

Ⓐ

# EXPLANATORY NOTE:-

Rz 40 (√)

MATERIAL QUOTED:- 13-5 GOST-7417-75
45 GOST 1050-74

ALTERNATE MATERIAL QUOTED:- 40, 50, GOST 1050-74

SIZED, COLD ROLLED OR COLD DRAWN STEEL WITH 13 mm EXTERNAL DIA, CLASS OF ACCURACY -5 AS PER GOST 7417-75, MANUFACTURED FROM STEEL GRADES 40, 45 & 50 GOST 1050-74.

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

| GRADE OF STEEL | C | Si | Mn | Cr | P | S | Cu | Ni |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| 40 | 0·37-0·45 | 0·17-0·37 | 0·50-0·80 | 0·25 | 0·035 | 0·040 | 0·25 | 0·25 |
| 45 | 0·42-0·50 | 0·17-0·37 | 0·50-0·80 | 0·25 | 0·035 | 0·040 | 0·25 | 0·25 |
| 50 | 0·47-0·55 | 0·17-0·37 | 0·50-0·80 | 0·25 | 0·035 | 0·040 | 0·25 | 0·25 |

MECHANICAL PROPERTIES:- (AS PER GOST 1050-74).

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | % ELONGATION | % REDUCTION IN AREA | IMPACT STRENGTH Kgf.m/cm² |
|---|---|---|---|---|---|
| | MINIMUM | | | | |
| 40 | 58 | 34 | 19 | 45 | 6 |
| 45 | 61 | 36 | 16 | 40 | 5 |
| 50 | 64 | 38 | 14 | 40 | 4 |

Ⓐ Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

COMMON TO V92S2 Engine.

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

EST. WT. 0.003 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 B INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

| ISSUE/DATE | NATURE OF AMENDMENTS |
|---|---|
| A 18.5.09 | Authy: Third Alt. Comm. Minutes Point 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE 5-5-09
SCALE:- 5:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69
ALL THREADS TO CONFORM TO

MATERIAL:- ~~13-5 GOST 7417~~ 75
Ⓐ ~~45 GOST 1050-74~~

USED ON
SS 322-13-4

CONTROLLERATE OF QUALITY ASSURANCE(HEAVY VEHICLES) AVADI

TITLE
**STARTING VALVE**

D S CAT NUMBER

DRAWING NUMBER
322-35

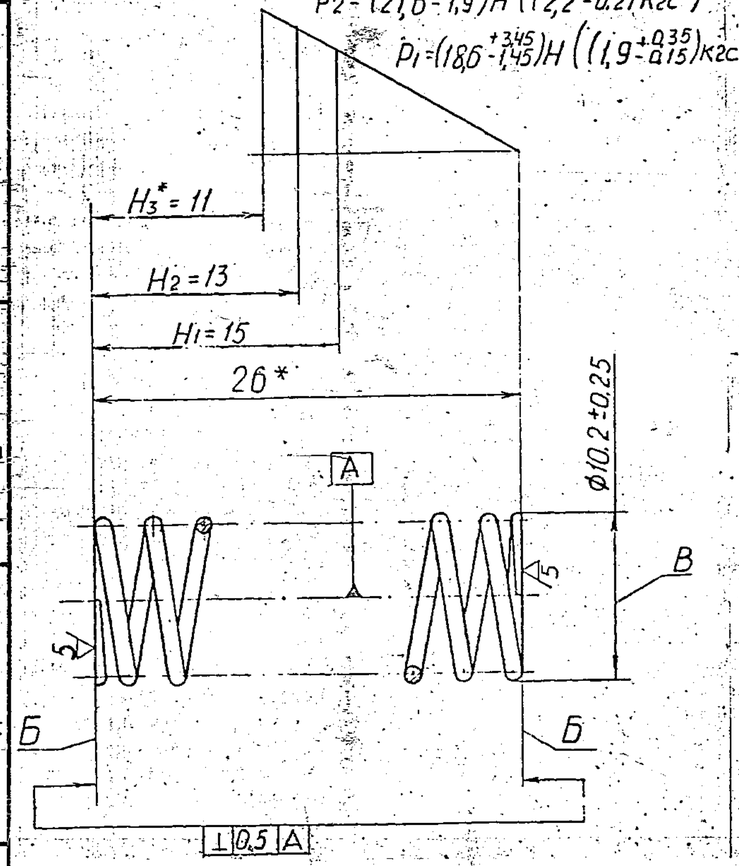
SIZE A3

DRAWING NUMBER
322.36.1

$P_3^* = 24.6H\ (2,5\ кгс)$

$P_2 = (21,6^{+3,9}_{-1,9})H\ ((2,2^{+0,4}_{-0,2})кгс)$

$P_1 = (18,6^{+3,45}_{-1,45})H\ ((1,9^{+0,35}_{-0,15})кгс)$




## TECHNICAL REQUIREMENTS IN RUSSIAN

1. Длина развернутой пружины 290мм.
2. Число рабочих витков 8.
3. Число витков полное 10,5-0,5.
4. Толщина конца опорного витка 0,2 мм, не менее.
5. Опорные поверхности Б должны составлять 5/8 длины окружности витка, не менее.
6. Допускается увеличение наружного диаметра опорных витков до 10,5 мм., не более.
7. Неравномерность шага пружины в свободном состоянии 0,5 мм., не более.
8. Зазор между концом опорного витка и соседним рабочим витком 0,2мм, не более.
9. Покрытие Ц.15.хр по ИЛ-483-82 с удалением водородной хрупкости.
10. * Размеры и параметры для справок.

## TECHNICAL REQUIREMENTS - TRANSLATED

1. Length of developed spring 290 mm.
2. No. of working coils 8.
3. Total no. of coils 10.5 - 0.5 .
4. Thickness of supporting coil end 0.2 mm min.
5. Resting surfaces b should not be less than 5/8 the length of circumference coil, minimum.
6. The outer diameter of supporting coils may be increased up to 10.5 mm max.
7. Variation in pitch should not exceed 0.5 mm max.
8. Gap between supporting coil end and adjacent working coils should not exceed 0.2 mm.
9. Coating. Zn . 15, chromatizing as per ИЛ-483-82 with elimination of hydrogen embittlement.
10. * Dimensions and parameters for reference.

## EXPLANATORY NOTE :-

MATERIAL QUOTED :- WIRE IIA-1, GOST 9389-75
CARBON STEEL, COLD DRAWN WIRE USED FOR FABRICATING SPRINGS, COILED IN COLD STATE AND NOT SUBJECTED TO HARDENING.

IIA = CATEGORY OF HIGH ACCURACY
WIRE DIA = 1 MM.
WIRE SHOULD BE FABRICATED FROM CARBON STEEL GRADE KT2 and SK7

CHEMICAL COMPOSITION %.

| GRADE | C | Mn | Si | S | P | Cr | Ni | Cu |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| KT2 | 0.86-0.91 | 0.20-0.40 | 0.17-0.37 | 0,020 | 0.020 | 0.050 | 0.050 | 0.10 |
| SK7 | 0.68-0.76 | 0.50-0.80 | 0.17-0.37 | 0.030 | 0.020 | 0.050 | 0.050 | 0.04 |

MECHANICAL PROPERTIES :-

TENSILE STRENGTH kgf/mm² = 205-250
NO. OF BENDS (min) = 10
NO. OF TWISTS (min) = 17

Ⓐ EQUIVALENT MATERIAL
Gr. DH/DM IS:4454-2001

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.02 kg. | ( 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 |
|---|---|---|
| A | 16-8-10 | 4th Alt. Comm. Meeting Minutes Point No.13 Dt:26-10-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-1-88 |
| SCALE :- | 4:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- WIRE IIA-1.0 GOST 9389-75.

USED ON :- CB.322-13-34

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A.V.A.D.I

TITLE
STARTING VALVE SPRING.

D S CAT NUMBER

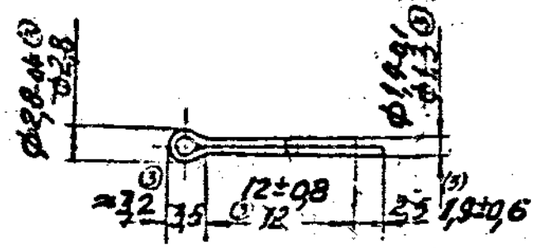
DRAWING NUMBER
322-36-1

KVD. 63374

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NIL (BK 84-483)

SIZE A2

DRAWING NUMBER
354-09




M1:1

1. COTTER PINS SHOULD BE MANUFACTURED FROM LOW-CARBON STEEL WITH CONTENT OF CARBON NOT EXCEEDING 0.28% AS PER GOST 1050-74.

2. BURRS, CRACKS, RUST AND SHARP CUTS IN THE PLACE OF TRANSMISSION OF HEAD TO THE SHANK ARE NOT ALLOWED ON THE SURFACE OF COTTER PINS.

3. COTTER PINS WITH NOMINAL DIAMETER UPTO 5mm. SHOULD WITH-STAND WITHOUT SIGNS OF FRACTURE AND CRACKS NOT LESS THAN 3 BENDINGS.

4. COATING : CADMIUM 3, CHROMATIZING AS PER 44A-184 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT.

5. TO BE ANNEALED.

** ~~Cb 321-13-3~~ ~~Cb 3331-683-2~~ (A) ~~Cb 318-31~~ ~~Cb 3331-681-18~~ ~~Cb 322-133~~ ~~Cb 318-681~~ Cb 322-13-4 (A)

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

COMMON TO V92S2 Engine.

A-11-87

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 PIECE. 0.230 Kg | TO BE STAMPED OR MARKED WHERE INDICATED THUS ⌐a (LETTERS) |
| | | 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 ** USED ON SEE ABOVE |
| A | 31.7.21 | USED ON NUMBER ADDED. | |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2:1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102-69 ALL THREADS CONFORM TO | TITLE COTTER PIN |
| TCD | | | |
| APPD | | | B.S. CAT NUMBER |
| DATE | 15-2-85 | | DRAWING NUMBER 354-09 |

SIZE A4

# EXPLANATORY NOTE:

Material Quoted : Low carbon steel carbon content 0.20 % (max) as per gost 1050-74.

## Chemical composition

| | | | |
|---|---|---|---|
| carbon | : 0.12 - 0.19 | sulphur | : 0.040 |
| silicon | : 0.17 - 0.37 | Phosphorus | : 0.035 |
| Manganese | : 0.35 - 0.65 | Nickel | : 0.25 |
| chromium | : 0.25 Max. | copper | : 0.25 |

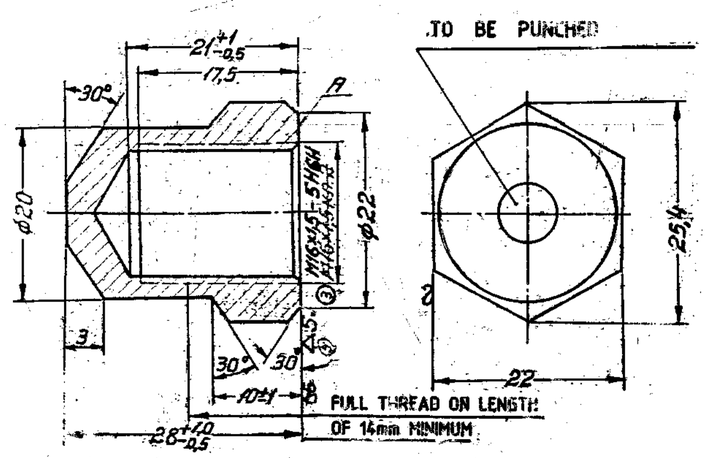
## Mechanical Properties.

| | | |
|---|---|---|
| Ultimate tensile strength Kgf/mm² | : 38 | (Min) |
| Yield point Kgf/mm² | : 23 | |
| Elongation % | : 27 | |
| Reduction in area % | : 55 | |

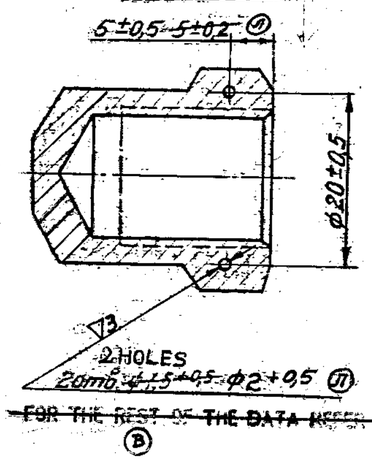
DRAWING NUMBER ~~322-37~~ (B)
322-37-1

▽3 UNLESS OTHERWISE SPECIFIED

322-37

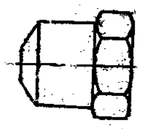



(B) ~~COMPONENT 322-37-1~~




(B)

SCALE 1:1
M1:1



1.

2. RUN-OUT OF SURFACE A RELATIVE TO PITCH DIAMETER OF THREAD SHOULD NOT EXCEED 0.1mm.
3. DIMENSIONS WITH UNSPECIFIED TOLERANCES SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7 OST 1010.
4. TECHNICAL REQUIREMENTS FOR THREAD IN ACCORDANCE WITH STANDARD 82021-00.
5. SHARP EDGES SHOULD BE BLUNTED.
7. COATING: ON OUTER SURFACES CV Ni 18,ON INNER SURFACES CV 12. NICKEL IS PERMISSIBLE ON THE THREAD.
   AFTER COPPER PLATING M 12, THE OUTER SURFACE MAY BE COATED WITH CV 18, MILKY.
   ALTERNATE MATERIAL: STEEL GRADES 40 AND 50, GOST 1050-74.

* * HEXAGON BAR 22.5 GOST 8560-78 / 45 GOST 1051-73

(A)
ALT. MATL:-
STEEL GRADE En 8 BRIGHT BAR TO SPECN. BS.970-55.

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0,04 Kg | |

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 |
|---|---|---|
| B | 30.6.01 | AUTHY. LT. No. 90211/AHSP/ED dt 27.3.01 |
| A | 20-10-95 | AUTHY. LT. NO 90241/AHSP/ENG. DE: 26-8-95 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Narain Rao |
| APPD | |
| DATE | 17-2-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :-
* * SEE ABOVE
SEE ALT. MATL. (A)

USED ON :- C.δ 447-00-1
CB 322-13-4 For 322-37-1

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE
STARTING VALVE CAP

DRAWING NUMBER ~~322-37~~ (B)
322-37-1

DRG. NUMBER TO BASED ON RUSSIAN ORIGINAL DRG. NO. 1
: COMMON TO V92S2 Engine.

A7
193
A2

USED ON

Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-14-9** | | **COMPRESSED AIR** | | |
| | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | **L . H ASSY** | | |
| | 1 | Cb.322-01-9 & I/L | | 1 ST LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 2 | Cb.322-02-9 & I/L | | 2 ND LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 3 | Cb.322-03-9 & I/L | | 3 RD LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 4 | Cb.322-04-9 & I/L | | 4 TH LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 5 | Cb.322-05-9 & I/L | | 5 TH LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 6 | Cb.322-06-9 & I/L | | 6 TH LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | | | | | | |
| | 8 | 322-65 | | CLIP FOR 2 TUBES | 1 | Tropical make |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **COMPRESSED AIR STARTING TUBING L H ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 2 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-14-9** |

F-4

169/253

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | 9 | 322-66 | | CLIP FOR 3 TUBES | 1 | Tropical make |
| | | 10 | 322-67 | | CLIP FOR 4 TUBES | 1 | Tropical make |
| | | 11 | 322-68 | | CLIP FOR 5 TUBES | 1 | Tropical make |
| | | 12 | 322-69 | | CLIP FOR 6 TUBES | 2 | Tropical make |
| | | 13 | 351-13 | | NUT M5 | 6 | Tropical make |
| | | 14 | 356-22-2 | | SCREW M5x12 | 6 | Tropical make |
| | | 15 | 3335-38-5 | | GASKET | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 21 | 353.93.1 | | WASHER 5Т65Г | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.22 Tropical make |
| | | 22 | - ND - | | WASHER 5Н65Г05 | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.21 |
| | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|

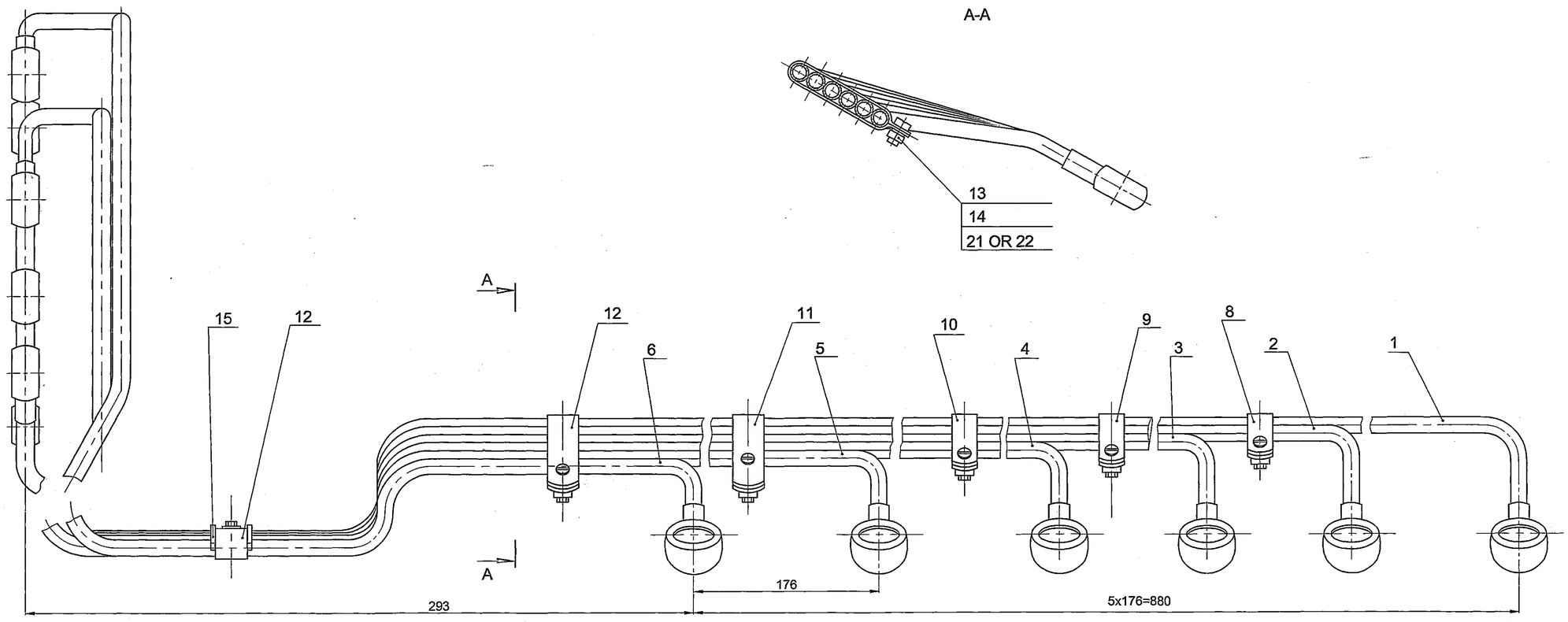
Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

F-4
170/253

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **COMPRESSED AIR STARTING TUBING L H ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-14-9** |

DRAWING NUMBER
**Cb.322-14-9**




1. Carry out adjustment and final inspection for assembly units from ɕb.332-01-9 to ɕb.322-06-9 together on the dummy.

2. Make a complete set of assembly units ɕb.322-14-9 and ɕb.322-15-9 in pairs.

3. Stamp the manufacturing - factory No. and part number of assembly units ɕb.322-14-9 and ɕb.322-15-9 on tag for making a set while sending as spare parts

4. Components and assembly units, having conventional symbol *"TИ" in the part list of given drawing in "remarks" column should have tropicalized construction as specified in the drawings for components.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
171
253
SIZE A1

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 ) |
|---|---|
| 1.395 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 05.12.06 |
| SCALE- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
Cb 322-00-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING LH ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER
**Cb.322-14-9**

USED ON

Cb 322-14-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

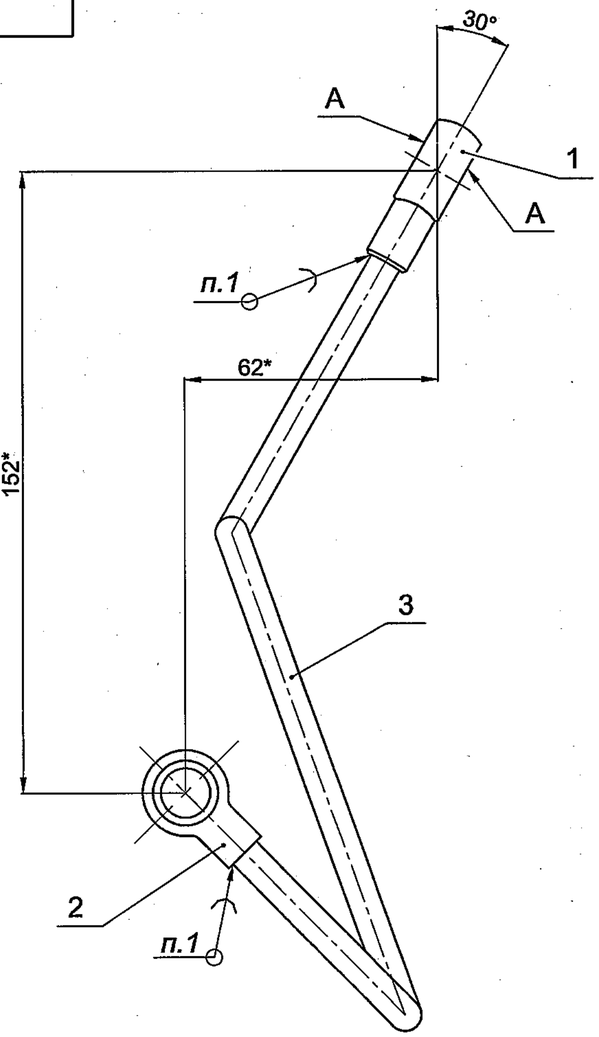
| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-01-9** | | **1ST LH CYLINDER** | | |
| | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | 3 | 322-21-9 | | 1 ST LH CYLINDER TUBE | 1 | |

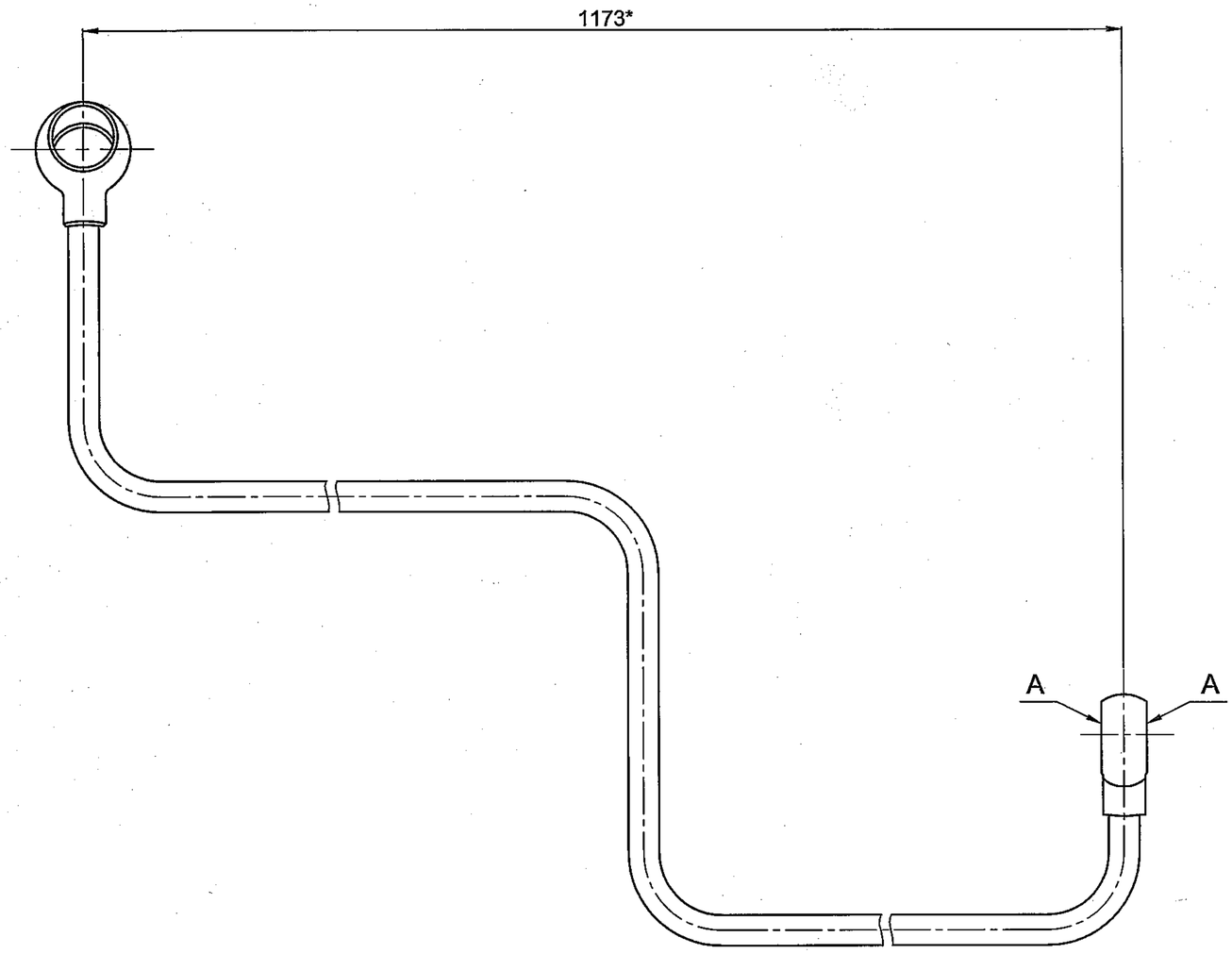
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **1 ST LH CYLINDER TUBE ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-01-9** |

F-4
145/253

DRAWING NUMBER
Cb.322-01-9




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit cb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel at a pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE
SCALE:- 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-
USED ON :- Cb 322-14-9
CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI
TITLE :- (4A) 1st LEFT HAND CYLINDER TUBE ASSY
D S CAT NUMBER
DRAWING NUMBER Cb.322-01-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

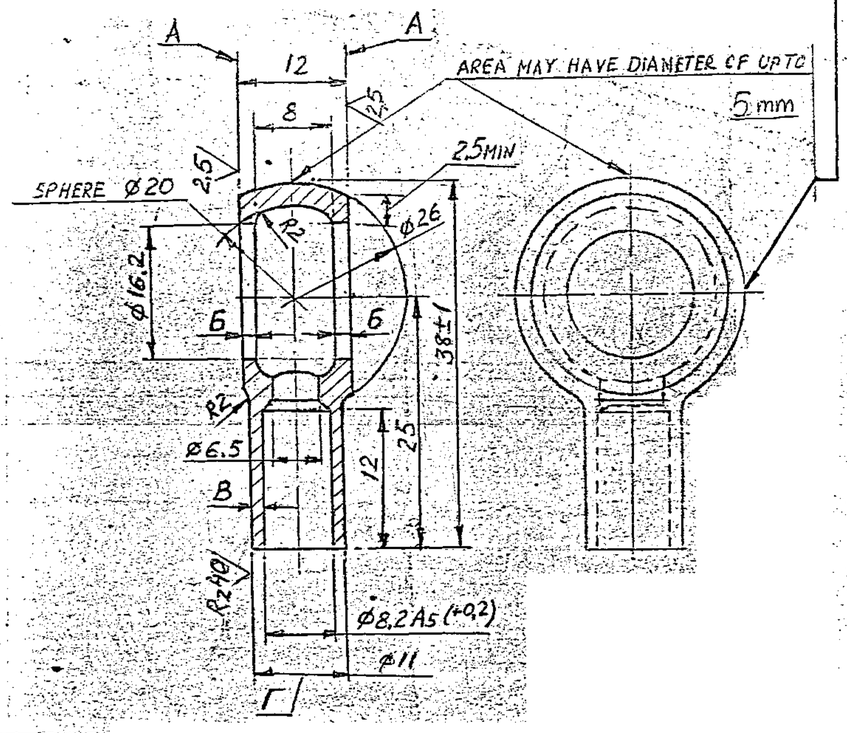
F-4
146
253
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

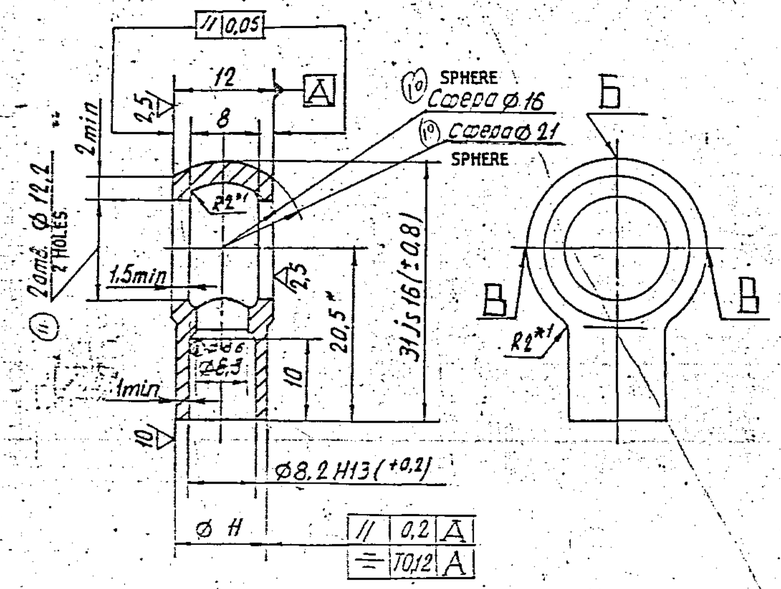
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

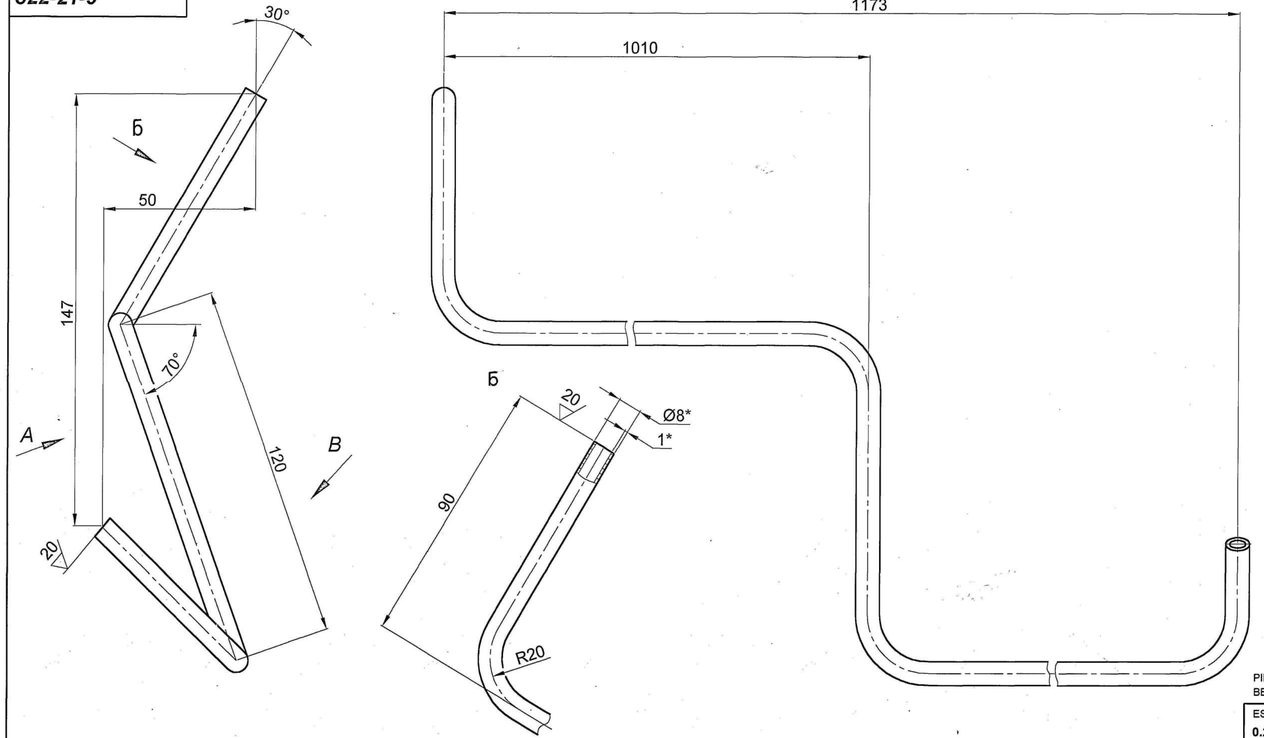
TITLE: SWIVEL ELBOW

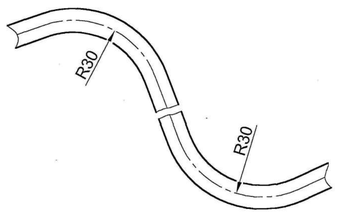
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

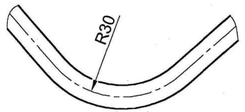
DRAWING NUMBER
**322-21-9**

SHEET No. OF




B




1. Unfolded length of pipe should be L ≈ *1410 mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. ** Dimensions are given 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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 25/1/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- СБ 322-01-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **1 st LH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-21-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
176
253

SIZE A4 x 4

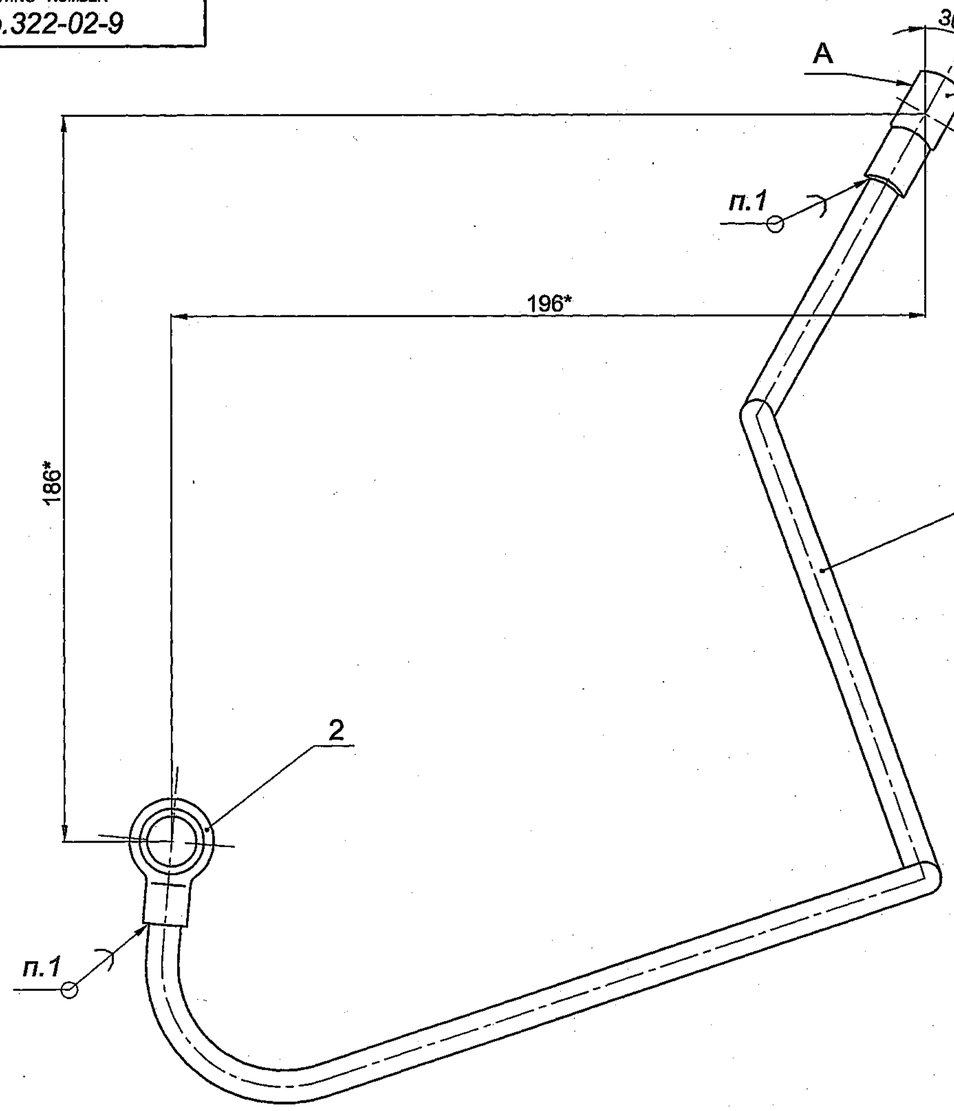
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| Cb 322-14-9 | | | **Cb.322-02-9** | | **2 ND LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-22-9 | | 2 ND LH CYLINDER TUBE | 1 | |

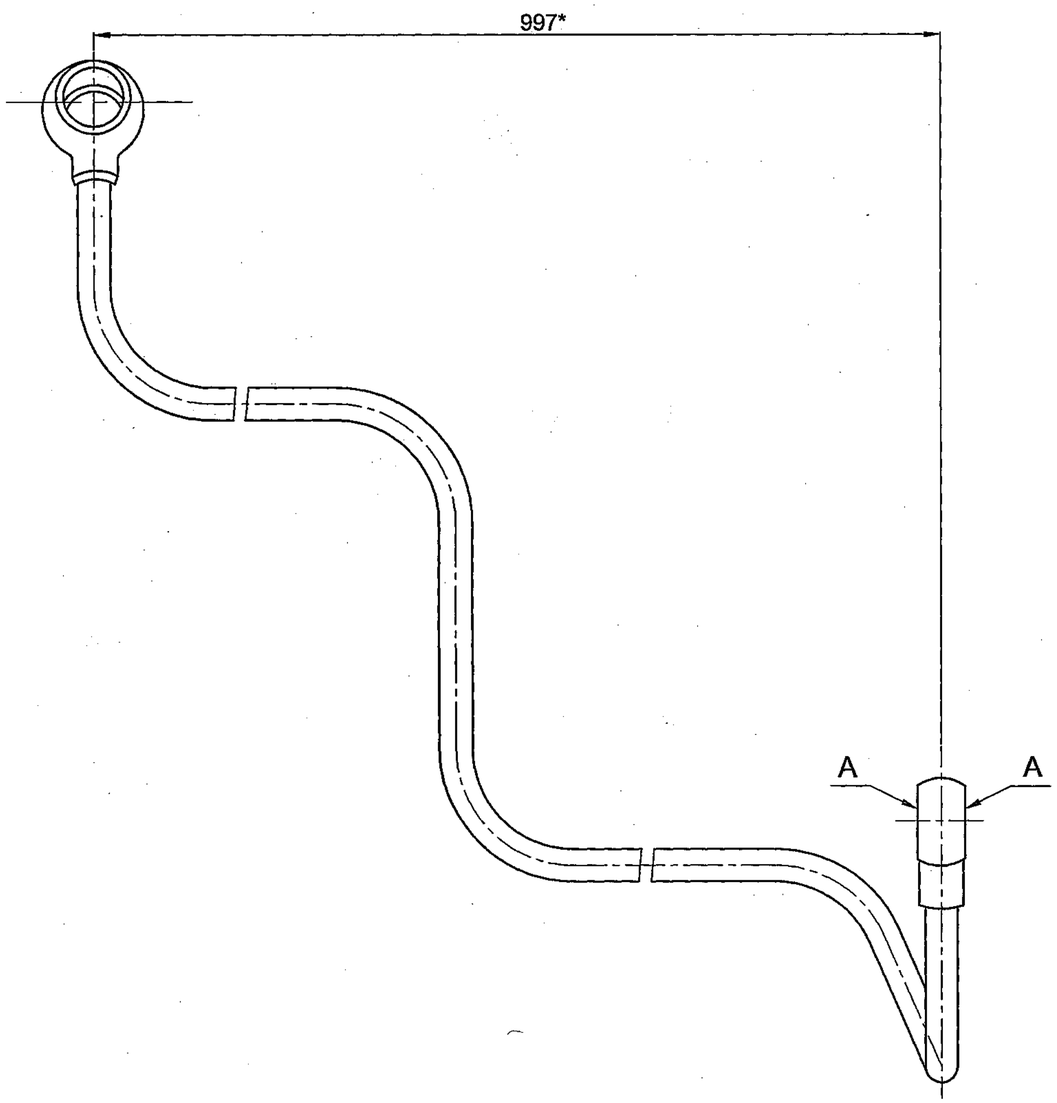
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | RF Zakhirov | TITLE : **2 ND LH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-02-9** |

DRAWING NUMBER
Cb.322-02-9




1. Wire Л63 Gost 12920-67.
2. Varnish coating ГФ - 95 as per ИП-628-86.
3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.
4. Check the pipe as per dummy in the assembly unit cb.322-14-9.
5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.
6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.
7. * Dimensions are given 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 ) |
|---|---|
| 0.270 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE
SCALE:- 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :-
Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :-
(4A) 2 nd LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
Cb.322-02-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
148
253

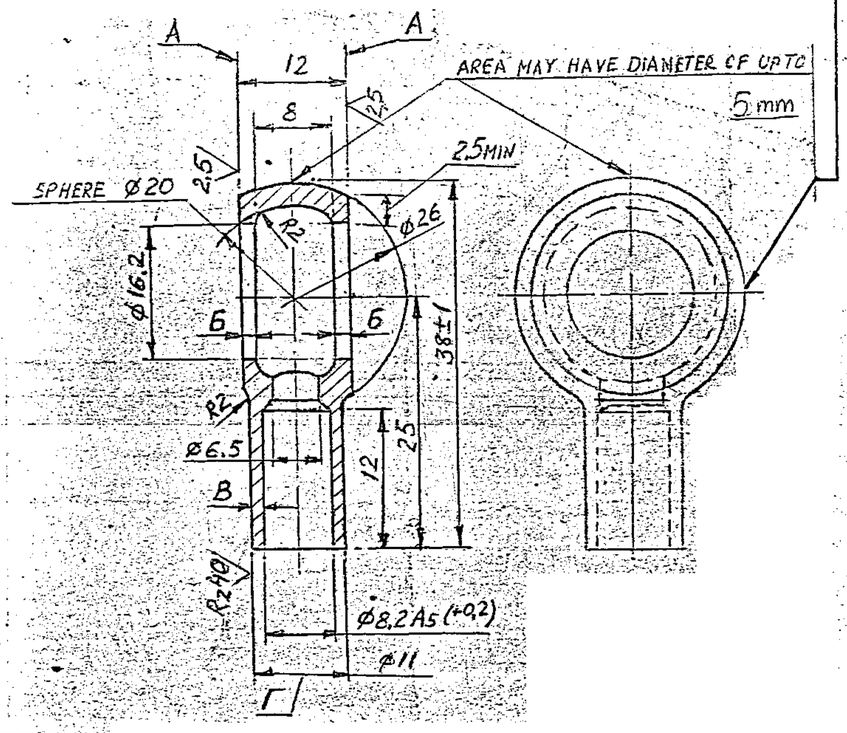
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

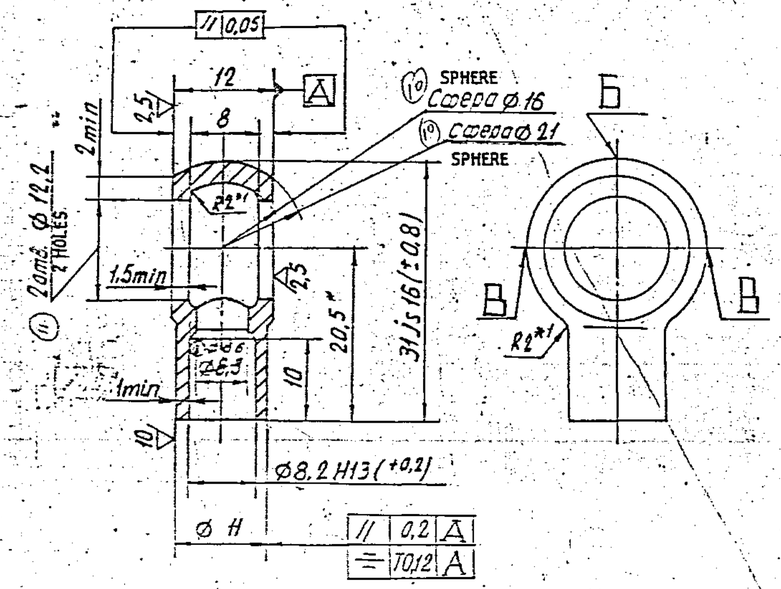
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

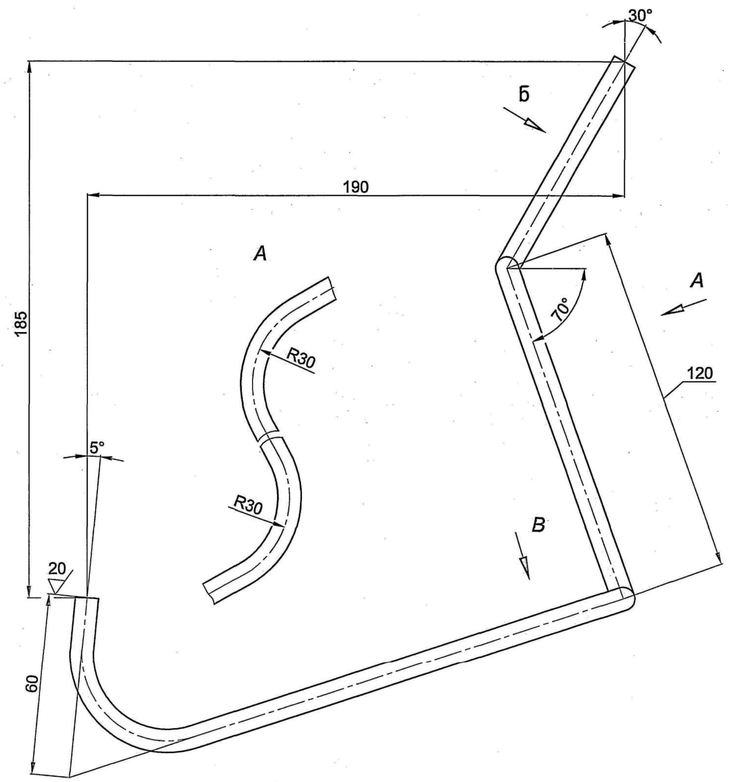
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

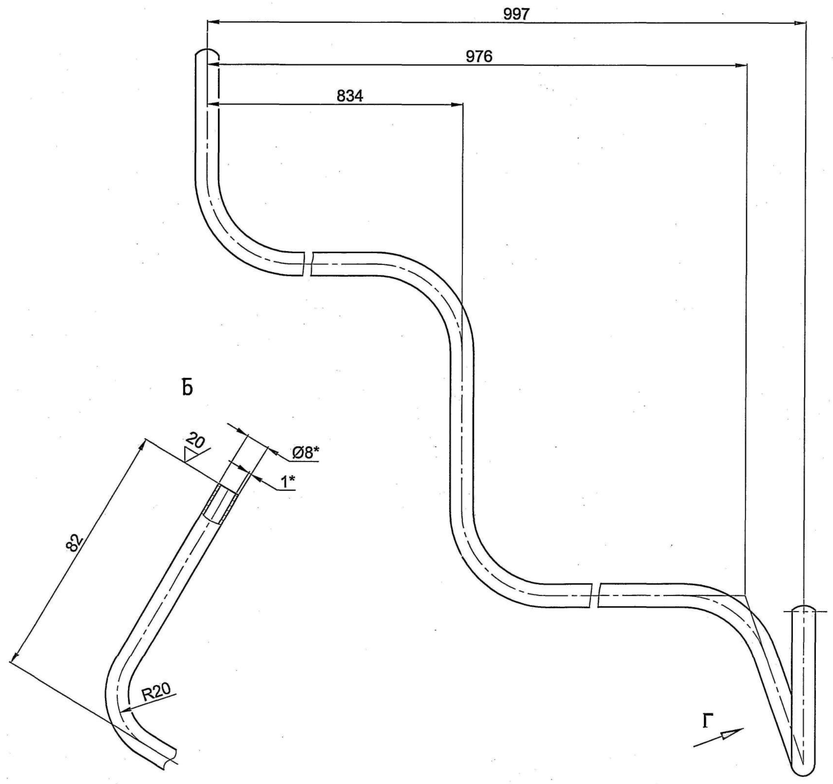
TITLE: SWIVEL ELBOW

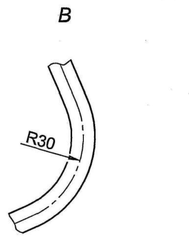
DRAWING NUMBER 322-18

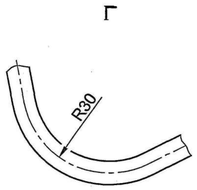
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-22-9**




1. Unfolded length of pipe should be L ≈ *1390 mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given 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 ) |
|---|---|
| 0.225 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/12/93 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- EB 322-02-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **2 nd LH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-22-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4 176 253

SIZE A1

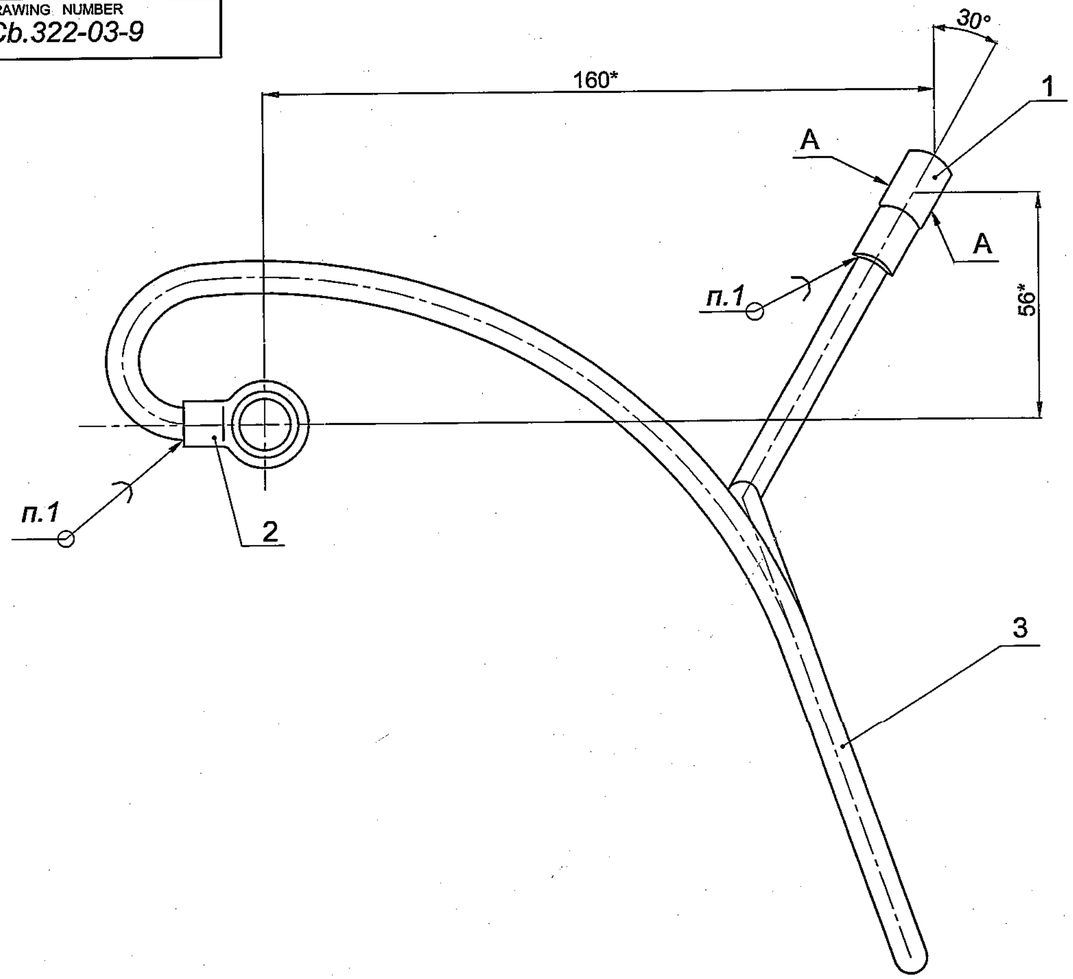
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| Cb 322-14-9 | | | **Cb.322-03-9** | | **3 RD LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-23-9 | | 3 RD LH CYLINDER TUBE | 1 | |

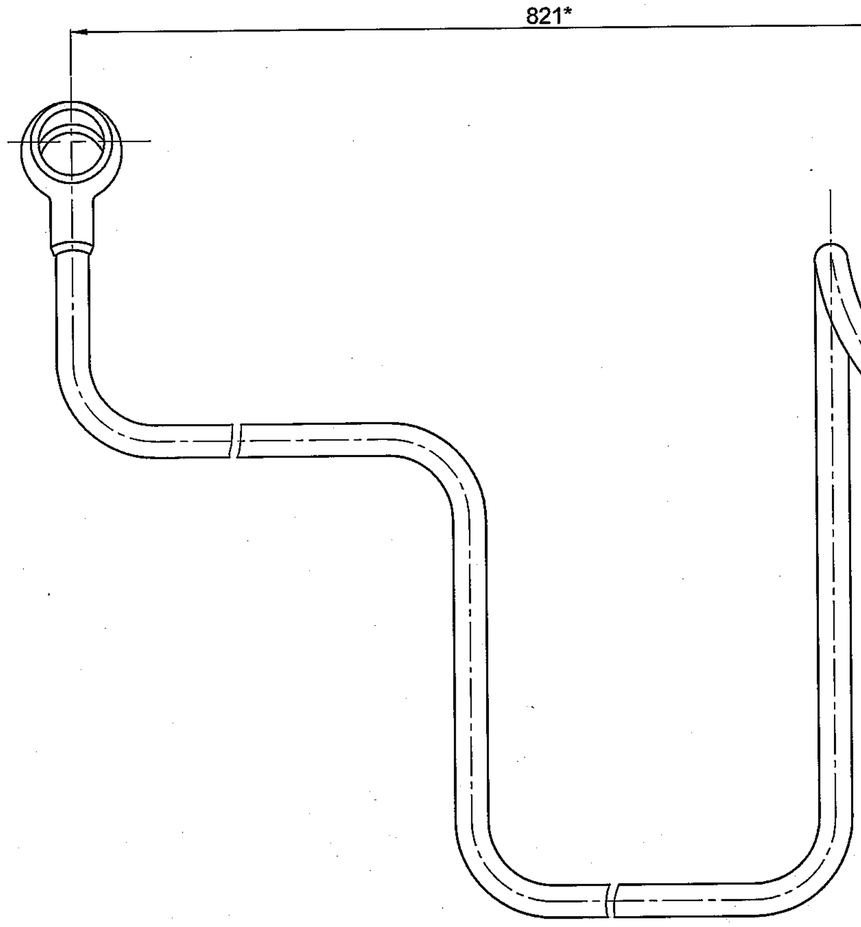
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

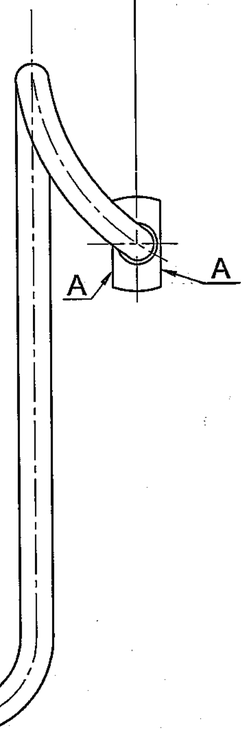
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **3 RD LH CYLINDER TUBE ASSY** | | |
| APPD | | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-03-9** |

DRAWING NUMBER
Cb.322-03-9




1. Wire Л63 Gost 12920-67.

2. Varnish coating ГФ - 95 as per ИП-628-86.

3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.

4. Check the pipe as per dummy in the assembly unit sb.322-14-9.

5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.

6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.

7. * Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 03-03-08 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
СБ 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :- 3 rd LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
СБ 322-03-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
150
253

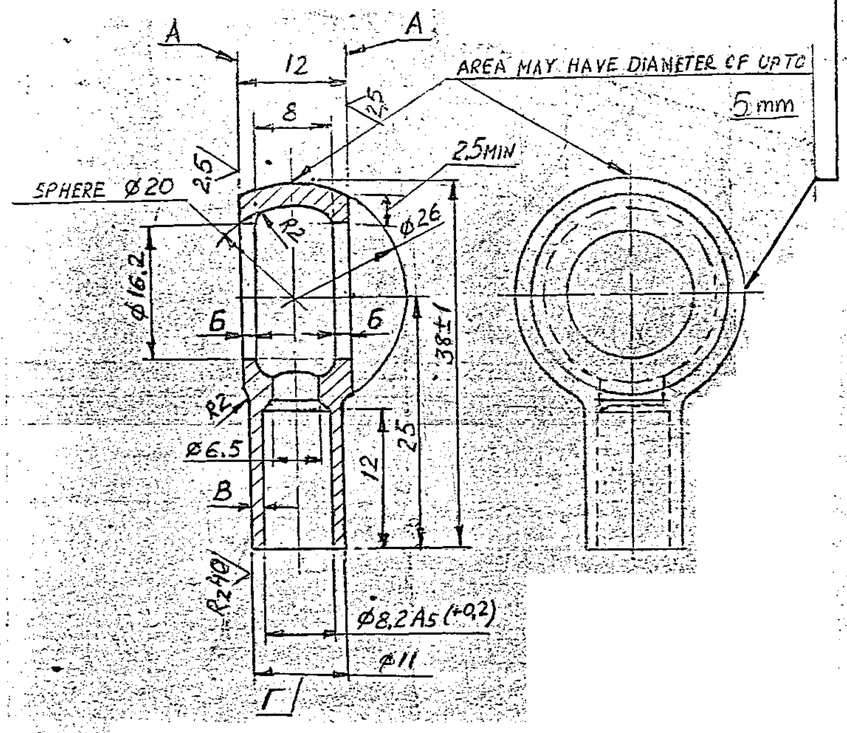
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

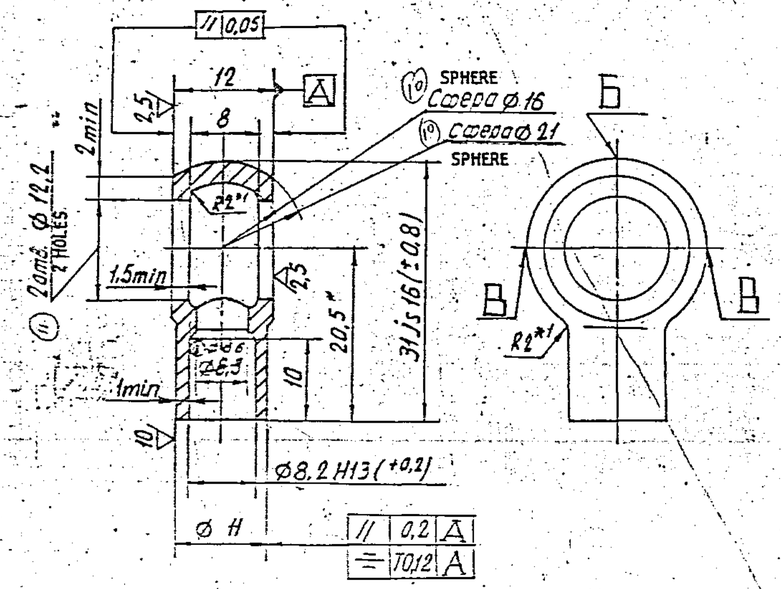
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

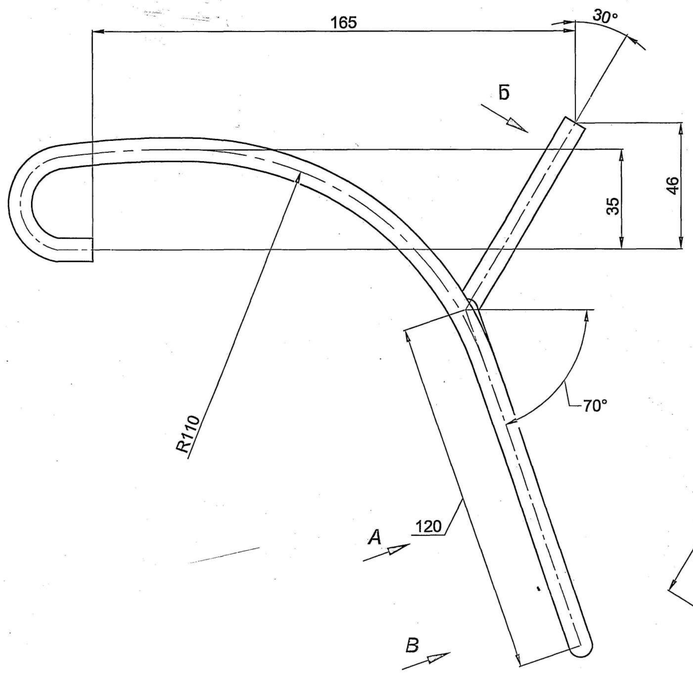
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

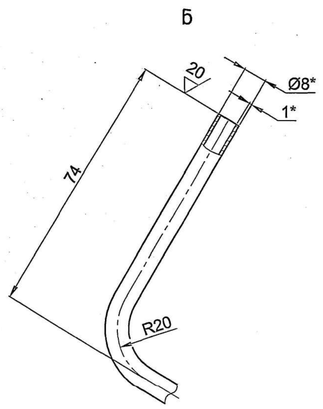
TITLE: SWIVEL ELBOW

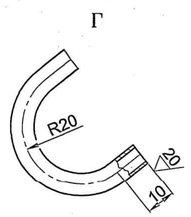
DRAWING NUMBER 322-18

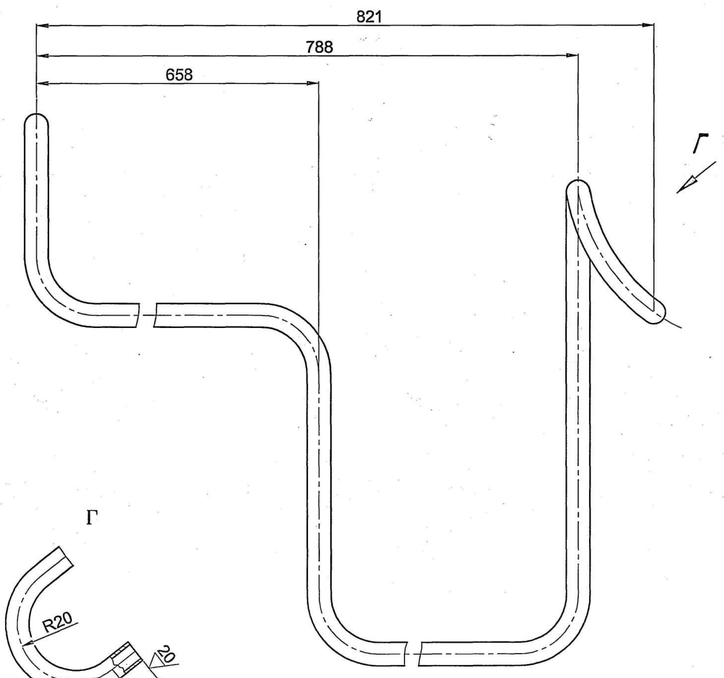
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

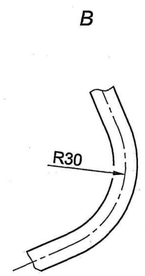
DRAWING NUMBER
**322-23-9**

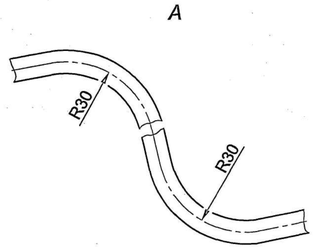



1. Unfolded length of pipe should be L ≈ *1283 mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
177
253

SIZE A1

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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 2-11-07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- E5 322 - 03 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **3 rd LH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-23-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-04-9** | | **4 TH LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-24-9 | | 4 TH LH CYLINDER TUBE | 1 | |

Cb 322-14-9

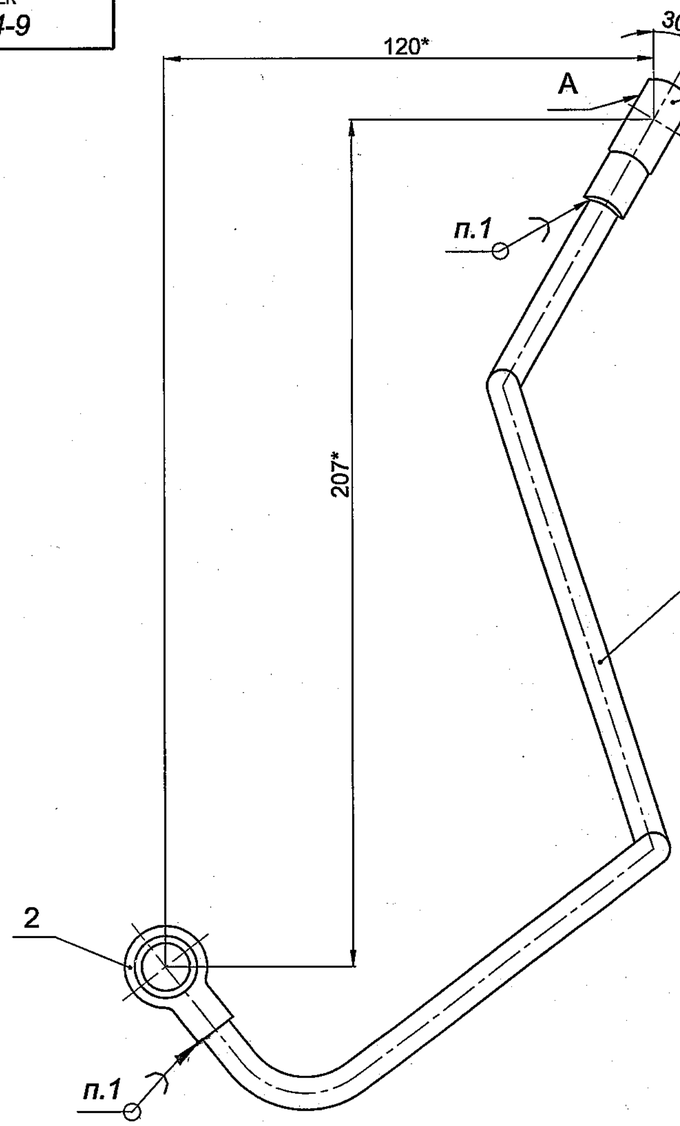
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

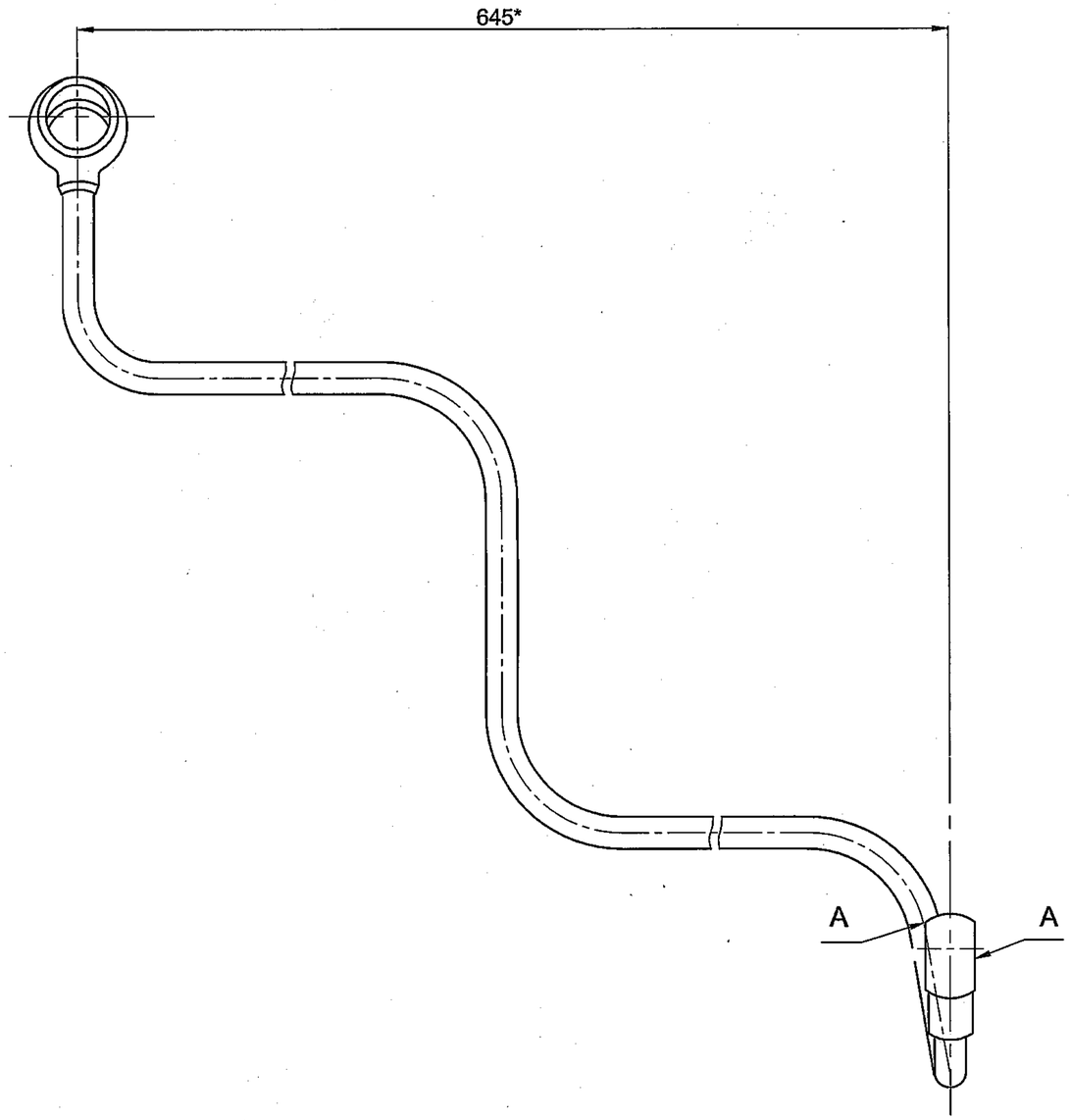
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **4 TH LH CYLINDER TUBE ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-04-9** |

F-4
151/253

DRAWING NUMBER
Cb.322-04-9




1. Wire Л63 Gost 12920-67.

2. Varnish coating ГФ - 95 as per ИП-628-86.

3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.

4. Check the pipe as per dummy in the assembly unit Cb.322-14-9.

5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.

6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.

7. * Dimensions are given 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 ) |
|---|---|
| 0.200 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 06/2/08 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 4 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER Cb.322-04-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
152
253

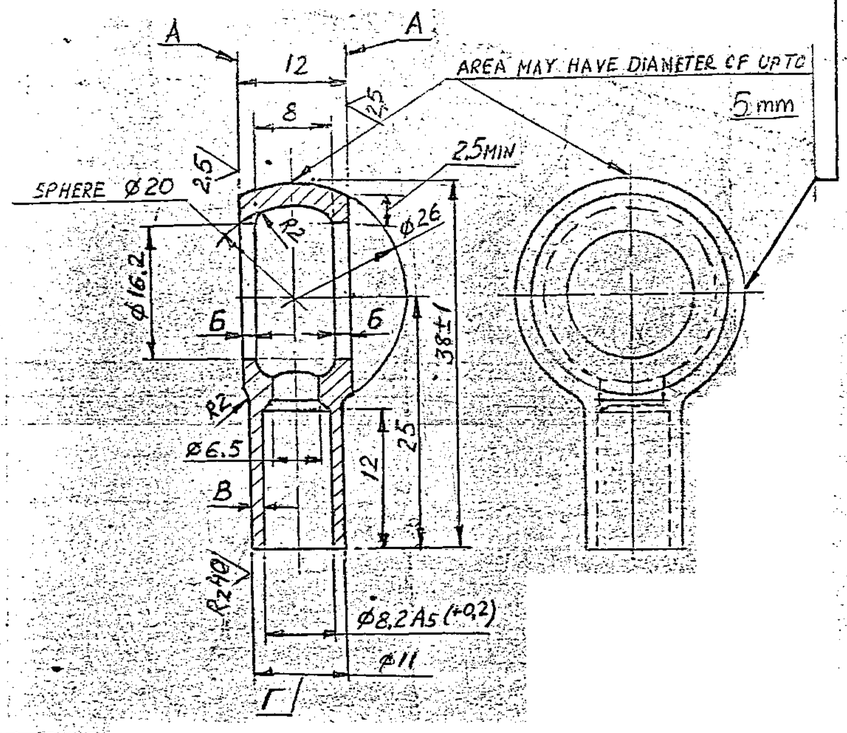
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

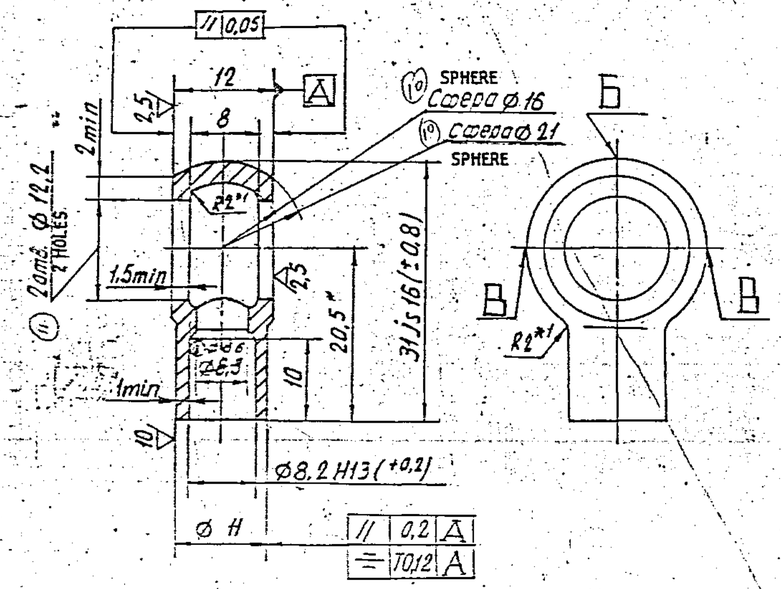
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

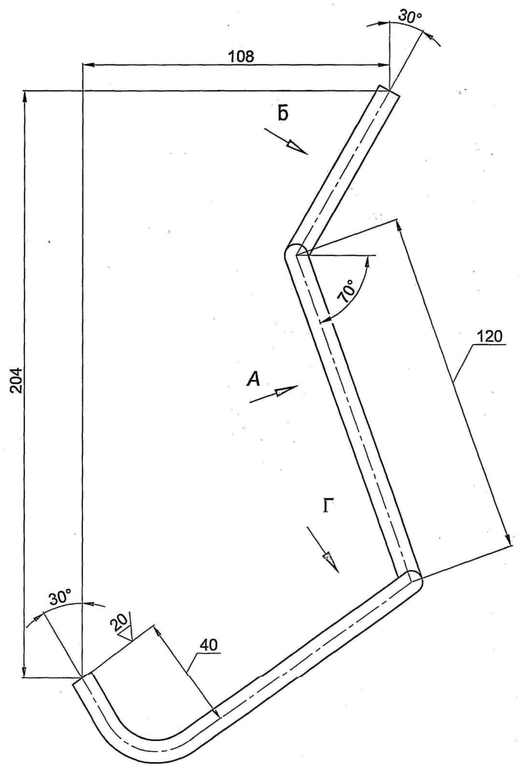
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

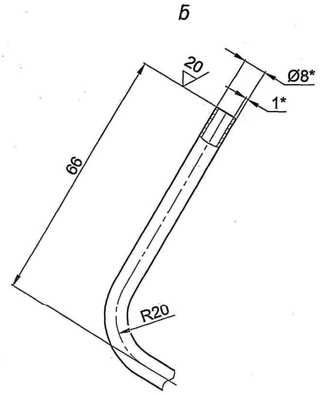
TITLE: SWIVEL ELBOW

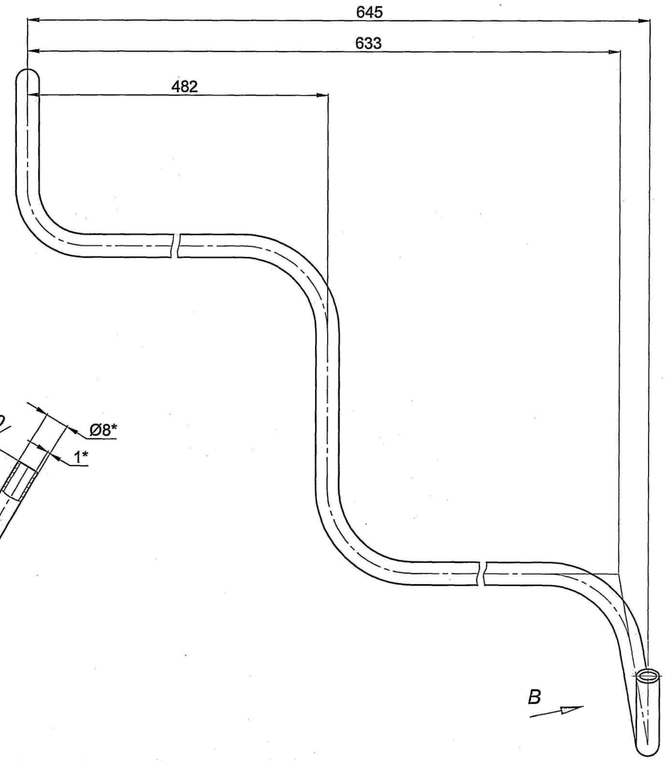
DRAWING NUMBER 322-18

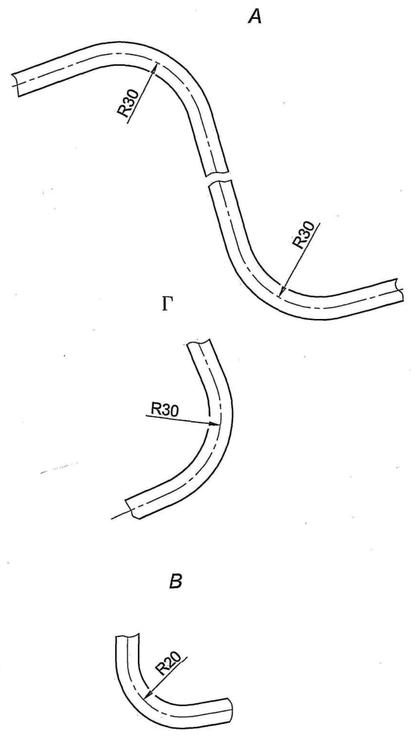
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-24-9**




1. Unfolded length of pipe should be L ≈ *925 mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
178
253
SIZE A1

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 ) |
|---|---|
| 0.155 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/11/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x20A TY 14-3-480-76

USED ON :- CБ 322 - 04 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *4th LH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER **322-24-9**

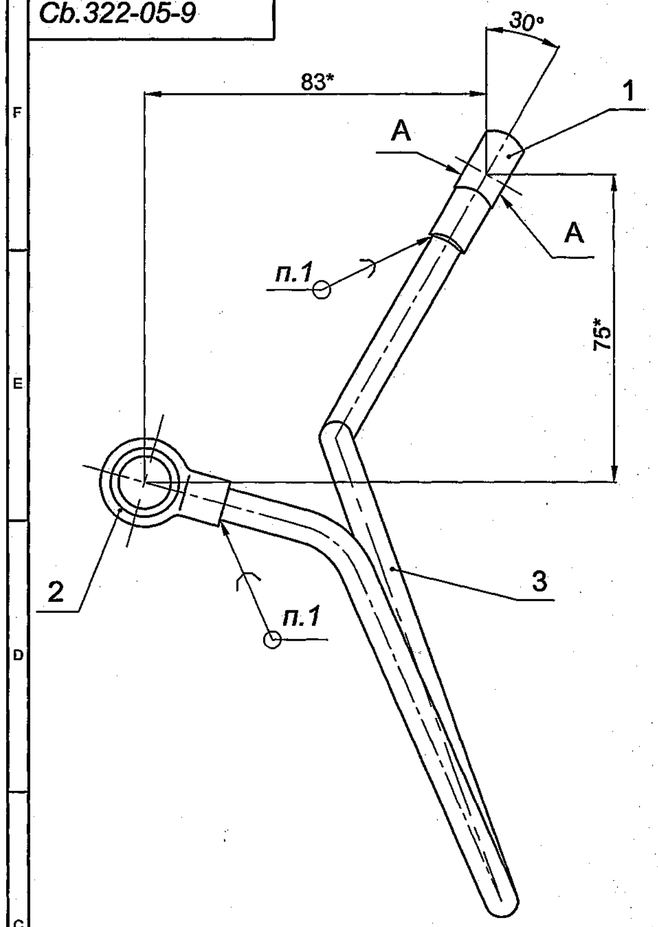
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-05-9** | | **5 TH LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-14-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-25-9 | | 5 TH LH CYLINDER TUBE | 1 | |

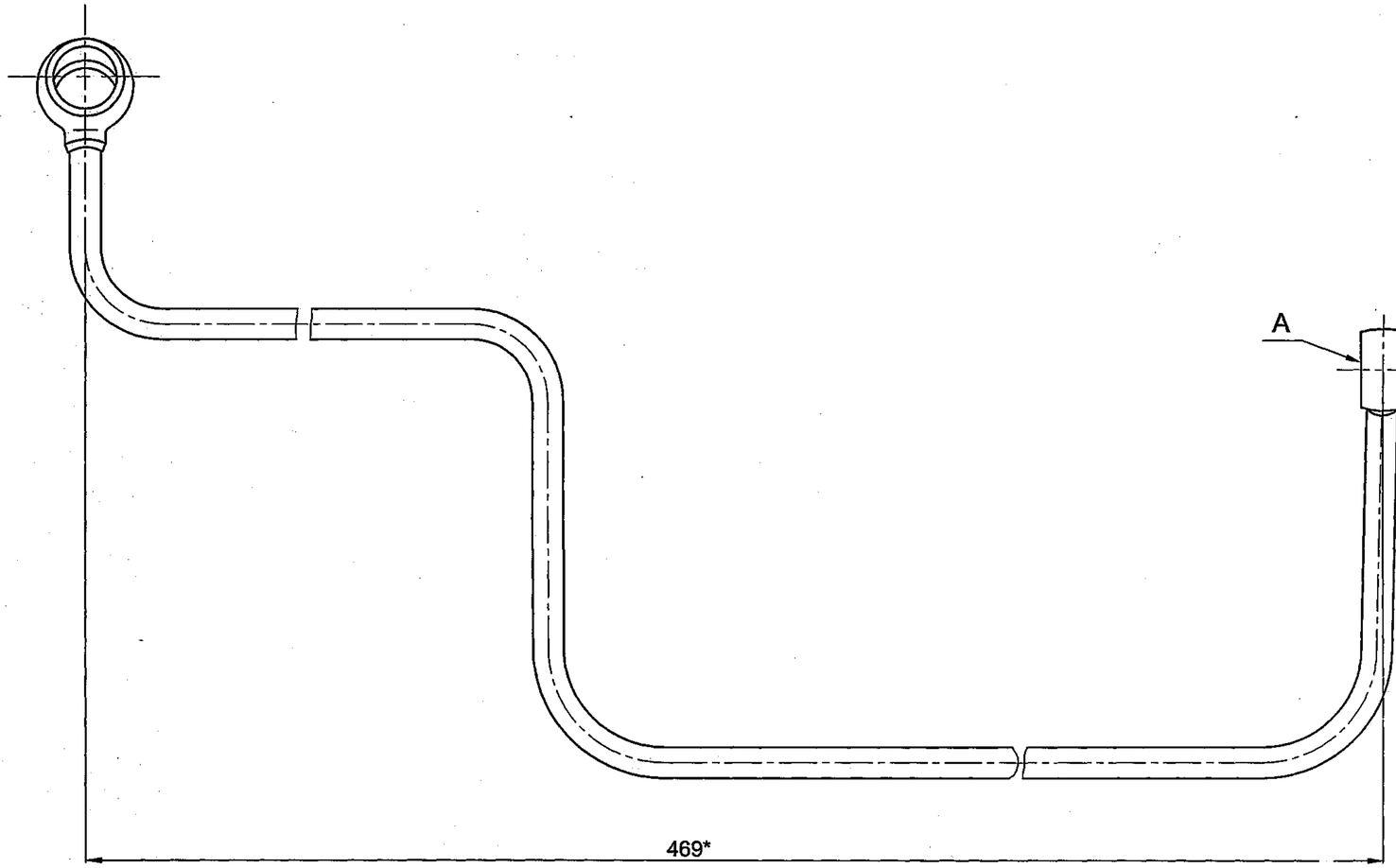
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

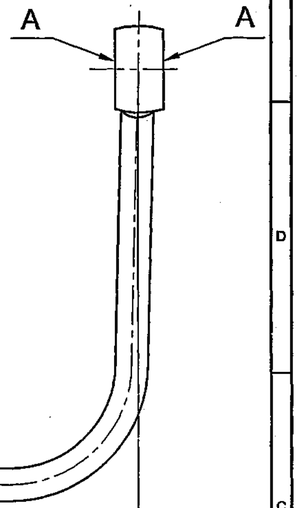
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **5 TH LH CYLINDER TUBE ASSY** | | |
| APPD | | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-05-9** |

DRAWING NUMBER
Cb.322-05-9




1. Wire Л63 Gost 12920-67.

2. Varnish coating ГФ - 95 as per ИЛ-628-86.

3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.

4. Check the pipe as per dummy in the assembly unit sb.322-14-9.

5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.

6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.

7. * Dimensions are given 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 ) |
|---|---|
| 0.170 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/88 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 5 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER Cb.322-05-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
154
253

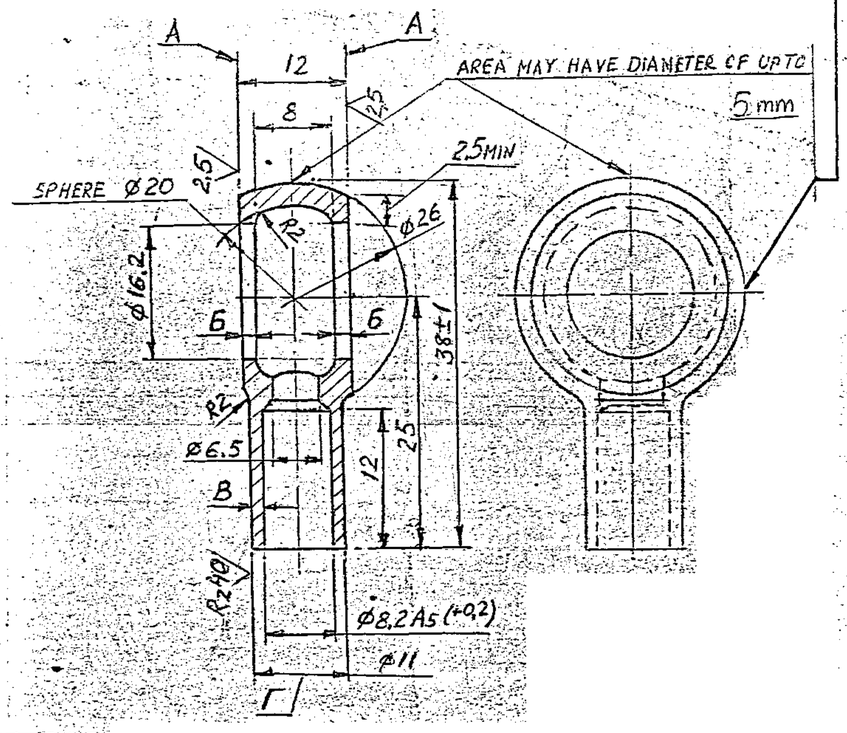
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

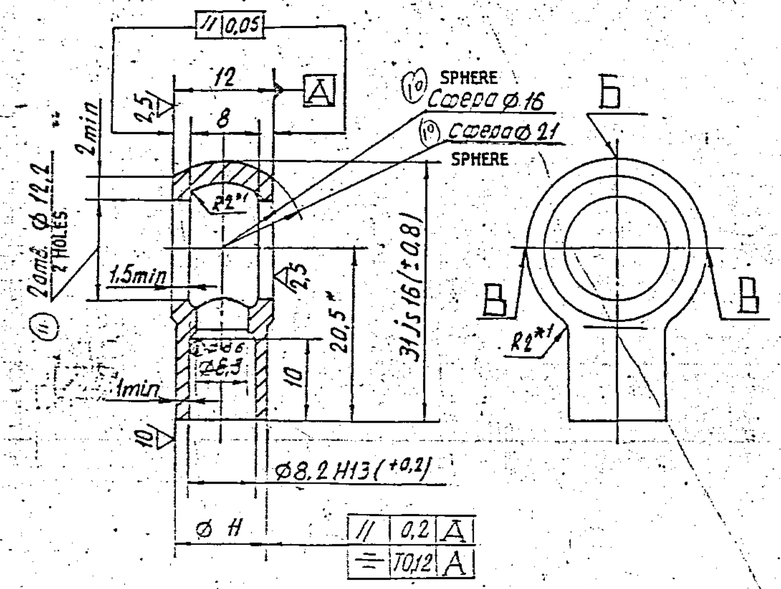
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

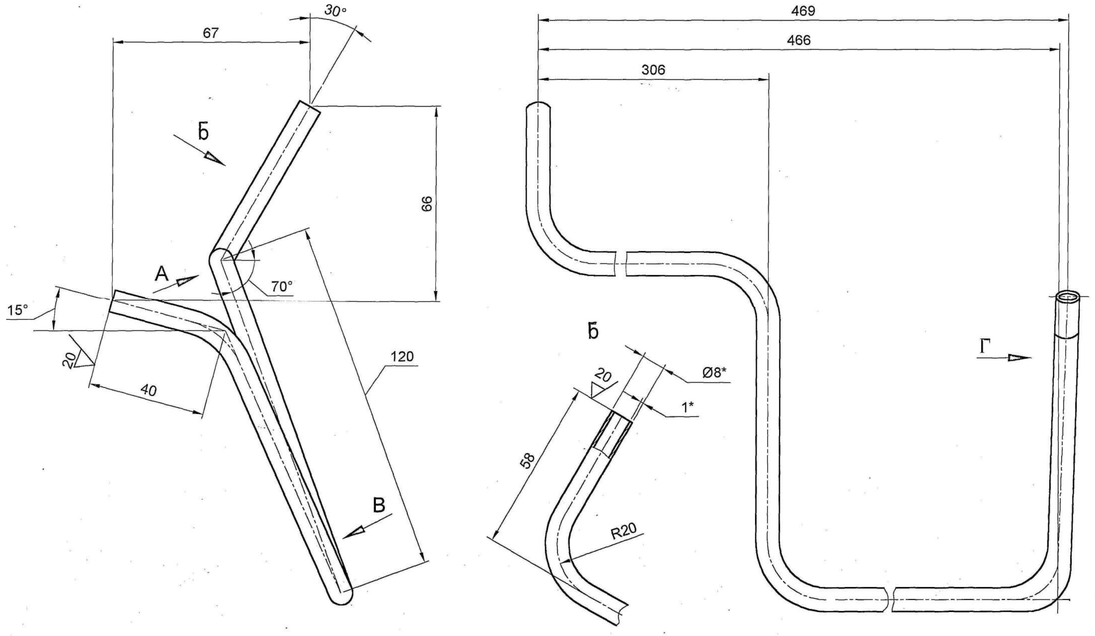
TITLE: SWIVEL ELBOW

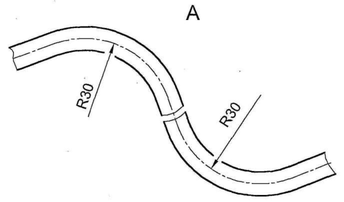
DRAWING NUMBER 322-18

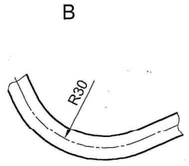
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

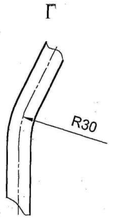
DRAWING NUMBER
322-25-9

SHEET No. OF




1. Unfolded length of pipe should be L ≈ *715mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm(semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given 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 ) |
|---|---|
| 0.125 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 23/11/79 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- Pipe 8x1-20A TY 14-3-480-76

USED ON :- СБ 322-05-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **5th LH CYLINDER PIPE**

DRAWING NUMBER 322-25-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4 179 253

SIZE A4 x 4

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-06-9** | | **6 TH LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-14-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-26-9 | | 6 TH LH CYLINDER TUBE | 1 | |

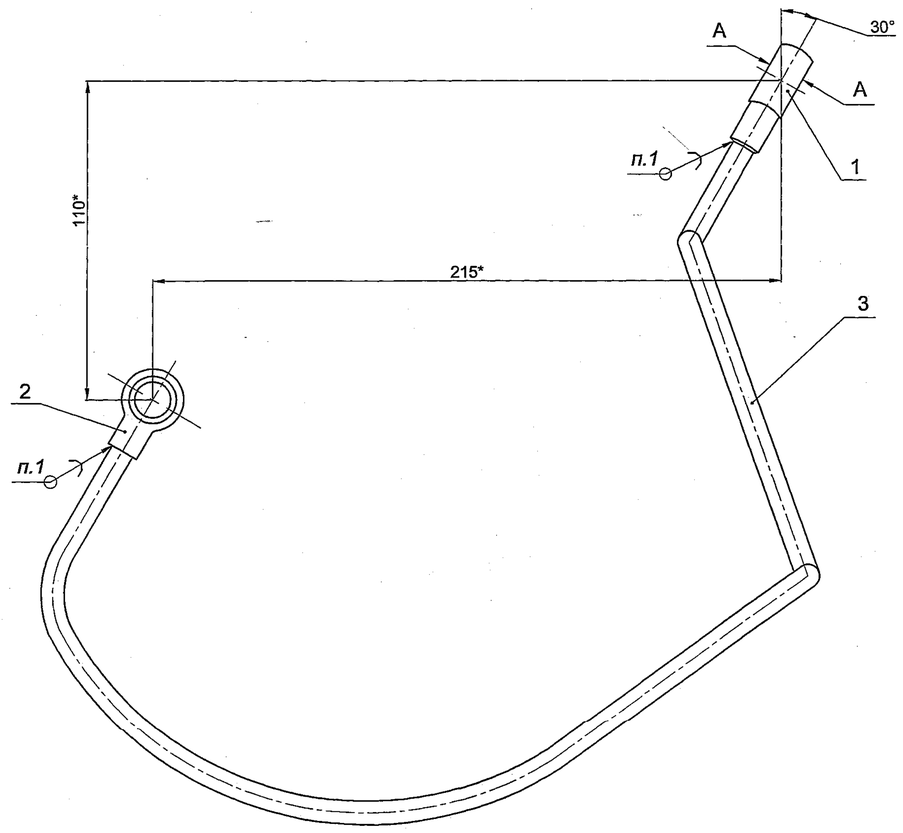
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

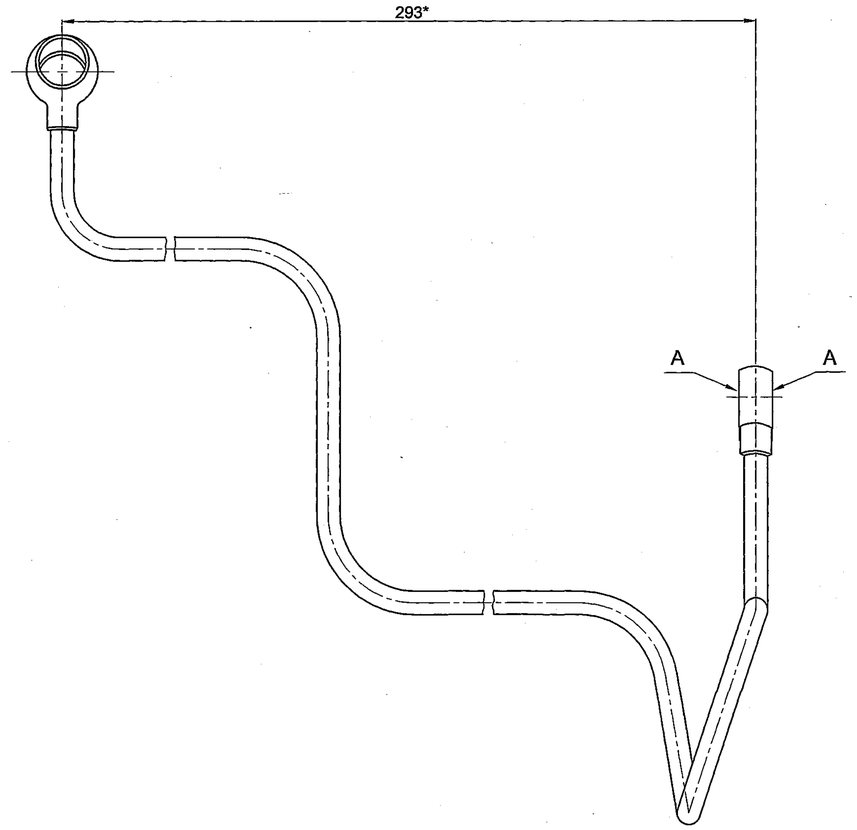
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **6 TH LH CYLINDER TUBE ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-06-9** |

F-4
155/253

DRAWING NUMBER
*Cb.322-06-9*




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Brownish Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.175 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 06/02/09 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 6 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER *Cb.322-06-9*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
156
263

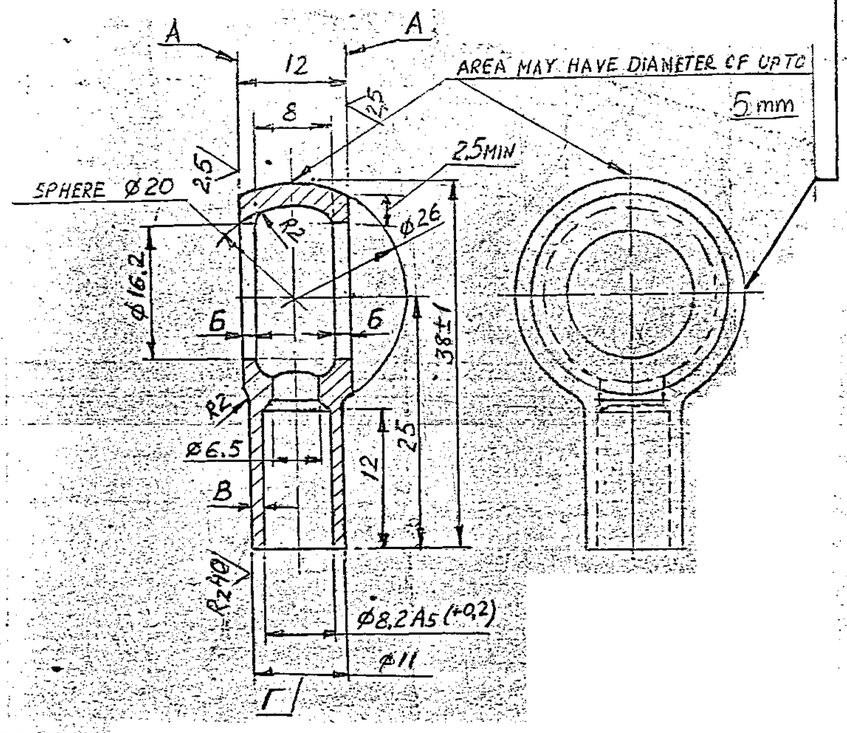
SIZE A1

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

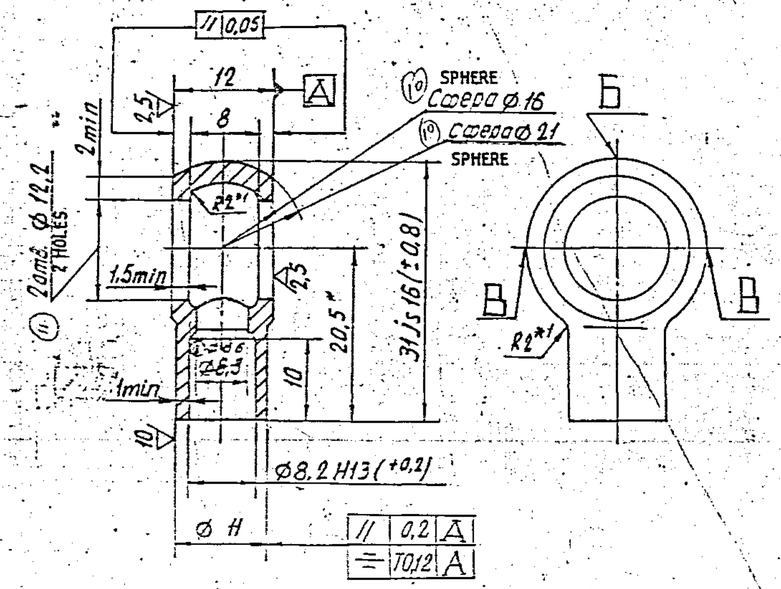
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

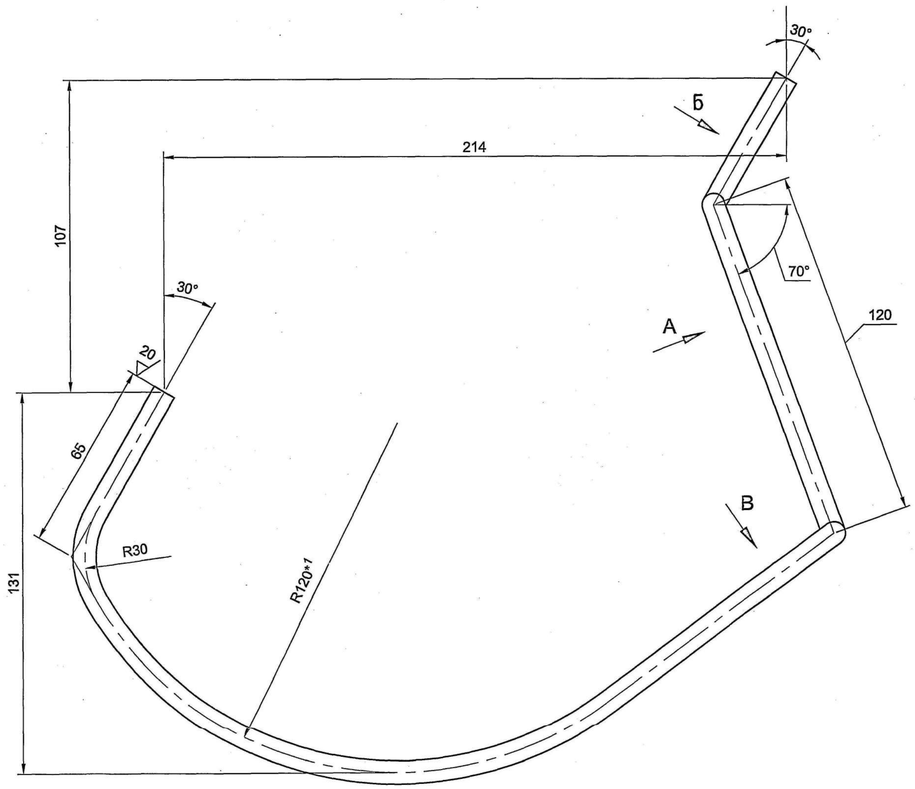
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

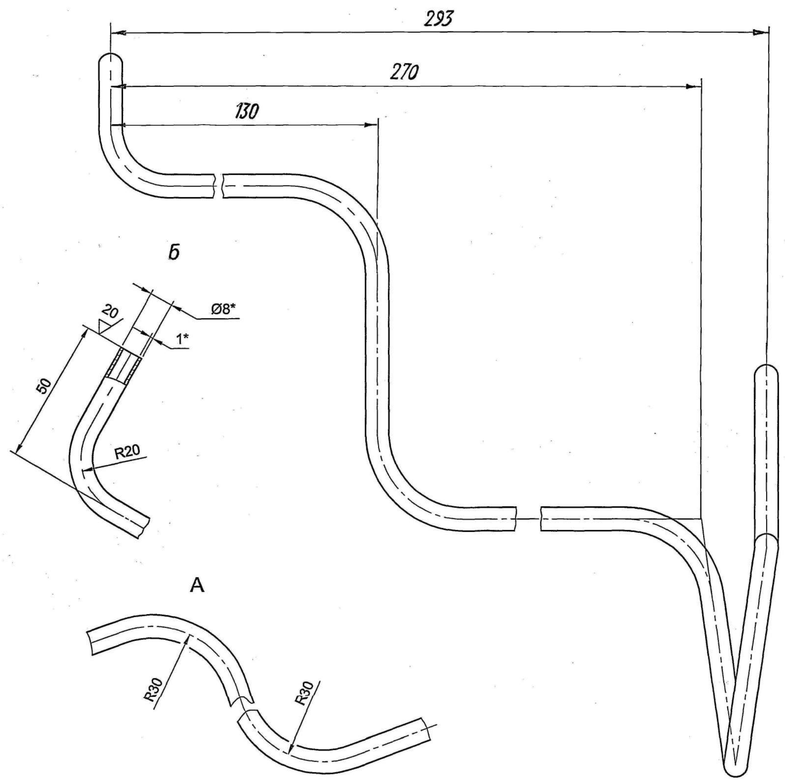
TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

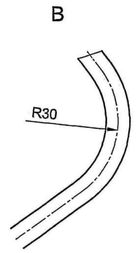
DRAWING NUMBER
322-26-9










1. Unfolded length of pipe should be L≈ *823mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
180
253
SIZE A1

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

EST. WT.(Kg) 0.130

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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/1/03 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- Pipe 8x1-20A TY 14-3-480-76

USED ON :- ЕБ 322-06-9

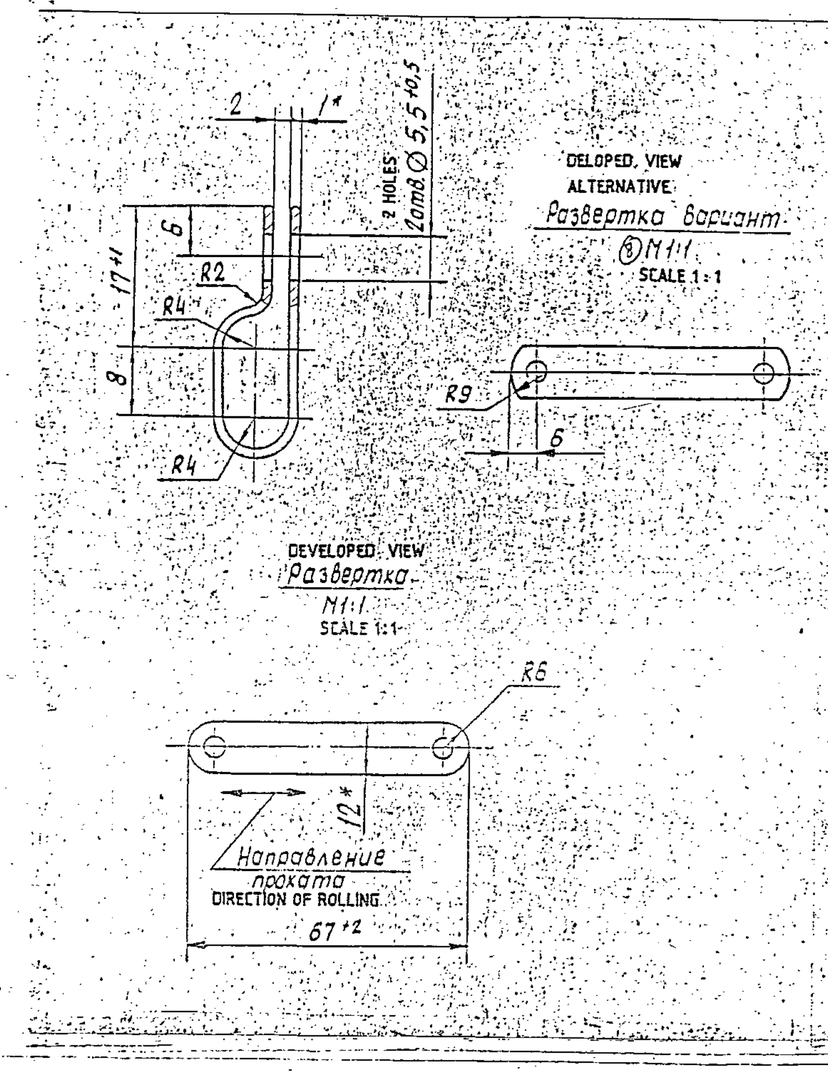
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *6th LH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER 322-26-9

DRAWING NUMBER
322-65




1. Заменитель материала сталь марок 08; 08 кп; 10 кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12... 24 хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9. хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08; 08КП; 10КП, GOST 1050-74, MAY BE MADE FROM SHEET GOST 19904-74.

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.

3) COATING : Zn 12..... 24 CHROMATIZING, AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ-95 AS PER ИЛ-09-73.

4) IN TROPICALIZED CONSTRUCTION, COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-109-73.

5) * DIMENSIONS FOR REFERANCE.

(A) EQUIVALENT MATERIAL
Gr. DD IS: 573-1994

DRG. REDRAWN BASED ON NEW ISSUE
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 83-114. )

KVD 66762

A-7

SIZE A2

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | 3АМ | 83-114 | | N 10326 |

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

EST. WT. 0,0052 Kg.

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

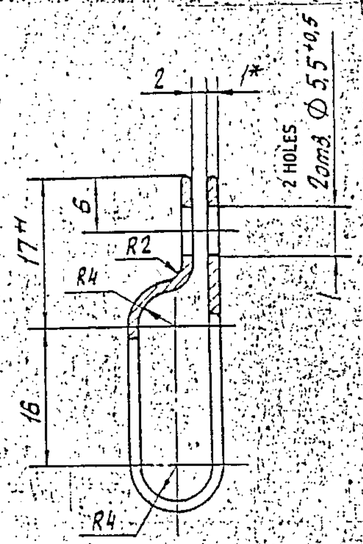
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 6th Alt. Comm. Mtg. Minutes Pt. No. 1 Dt. 26.10.09 |

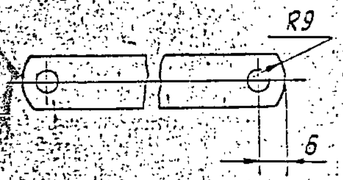
| | | | |
|---|---|---|---|
| DRN | | MATERIAL : STRIP-08ПС-Н-2-1х12 GOST 503-81 | USED ON : СБ 322-15-4 |
| CHD | | | |
| TC | | | |
| APPD | | | |
| DATE | 29-3-82 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| SCALE : 2:1 | | | |
| DIMENSIONS IN mm | | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | | TITLE : CLIP OF 2 PIPES | |
| ALL THREADS TO CONFORM TO | | C S CAT. NUMBER | DRAWING NUMBER : 322-65 |

2nd copy - Duplicate

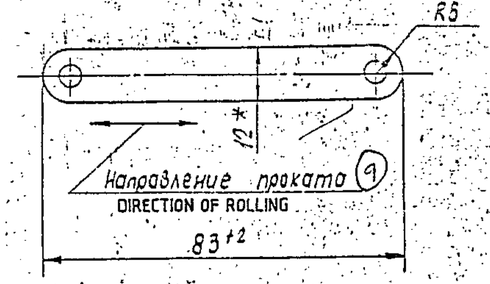
DRAWING NUMBER
322-66




DEVELOPED VIEW ALTERNATIVE
(7) Развертка вариант
H11
SCALE 1 : 1




DEVELOPED VIEW -
(8) Развертка
H11
SCALE 1 : 1




1. Заменитель материала сталь марок 08, 08кп, 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие К39.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры - для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП 10КПGOST 1050–74 MAY BE MANUFACTURED FROM SHEET GOST 19904–74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050–16 .

3) COATING : Zn 12 . . . 24 CHROMATIZING AS PER ИЛ – 483–82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ–95 , AS PER ИЛ –09–73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ –104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR CLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ИЛ–09–73 .

5) * DIMENSIONS FOR REFERENCE .

(A) EQUIVALENT MATERIAL
Gr.DD IS : 513-1994

| | | | |
|---|---|---|---|
| 8 | ЧЛН. | Яз-ТТУ | ЧЛ.ЛИСТ |
| ИЗМ. | ЛИСТ | N ДОКУМ. | ПОДП. |

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

| | |
|---|---|
| EST. WT. 0,0065 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. | |

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| PROD | |
| APPD | |
| DATE | 29 – 3 – 88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08ПС-М-2-1х12 GOST 503-81

USED ON :- СБ 20-35-00-5 СБ 322-14-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE
CLIP OF 3 PIPES

D S CAT NUMBER

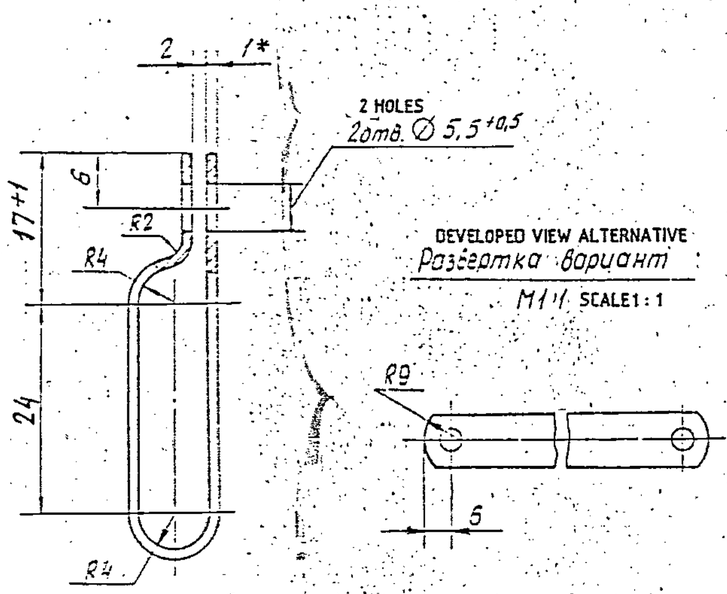
DRAWING NUMBER
322-66

A-7

SIZE: A2

DRG. REDRAWN BASED ON NEW ISSUE.
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 03-11 )

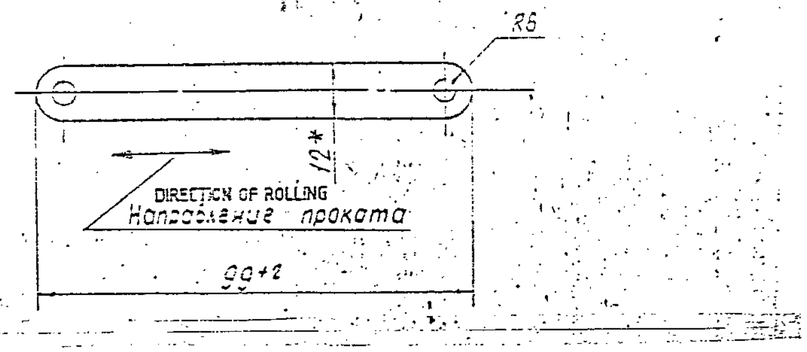
DRAWING NUMBER
322-67




DEVELOPED VIEW ALTERNATIVE
Развертка вариант
M1:1 SCALE 1:1




DEVELOPED VIEW
Развертка
M1:1 SCALE 1:1




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП, 10КП GOST 1050-74 MAY BE MANUFACTURED FROM SHEET GOST 19904-74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16 .

3) COATING : Zn, 12 . . . 24, CHROMATIZING AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ-09-73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-09-73 .

5) * DIMENSIONS FOR REFERENCE .

Ⓐ EQUIVALENT MATERIAL
Gr. DD IS:513-1994

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

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | чад | 83-114 | | |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,0075 Kg. | ( 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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-95 |
| SCALE :- 2:1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-
STRIP 08ПС-М-2-1×12
GOST 503-81 .

USED ON :-
СБ 322-14-4
СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 4 PIPES.

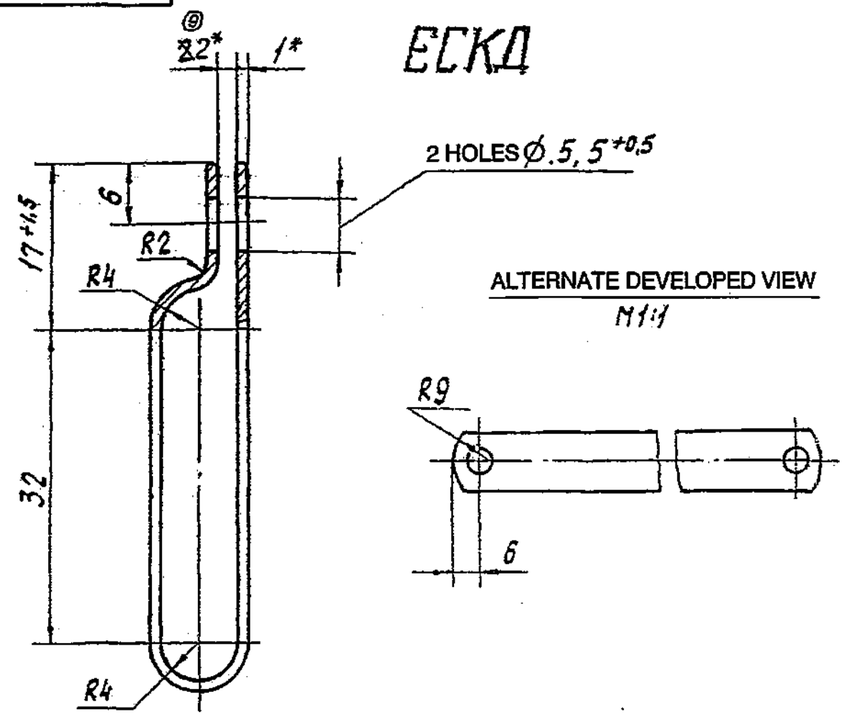
D S CAT NUMBER

DRAWING NUMBER
322-67

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8.1 83-114
DRAWN BASED ON NEW ISSUE

DRAWING NUMBER
322-68

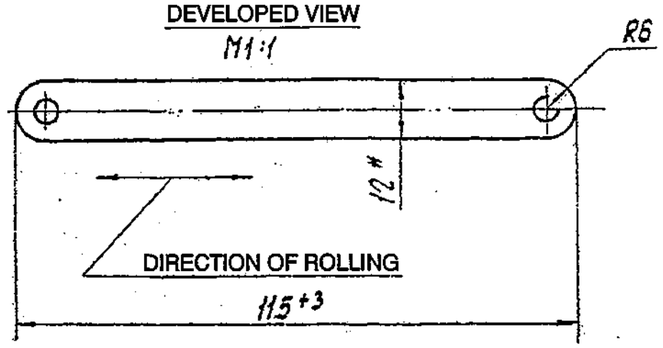
SHEET No. 1 OF 1




DEVELOPED VIEW
M1:1




ALTERNATE DEVELOPED VIEW
M1:1




ECKД

1. ALTERNATE MATERIAL : STEEL GRADES 08 КП, 10 КП, 15 КП TO GOST 1050-74.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. COATING : Zn 9, CHROMATIZING IN ACCORDANCE WITH ЦЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT. OR ЛаКГФ-95 AS PER ЦЛ628-86
4. IN TROPICALIZED MAKE THE COATING IS CADMIUM 9 MICRONS AS PER U 569-84 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT OR ЛаКГФ 95 AS PER ЦЛ628-86
5. * DIMENSION FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL Gr.DD
IS:513-1994

P. JANARDHANAN
Dt. 15 Nov'10 JTO (D)

DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

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) |
|---|---|
| 0.01 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 13.11.10 | 4th Alt. Comm. Mtg. Minutes Point No.1 Dated 26.10.09 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | Nov 2010 |
| SCALE:- | 2 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO IS : 4218,PART-4. | |

MATERIAL :- STRIP
08пс-M-2-1x12 GOST 503-81

USED ON :- Cb 322-14-9
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
# CLIP FOR 5 PIPES

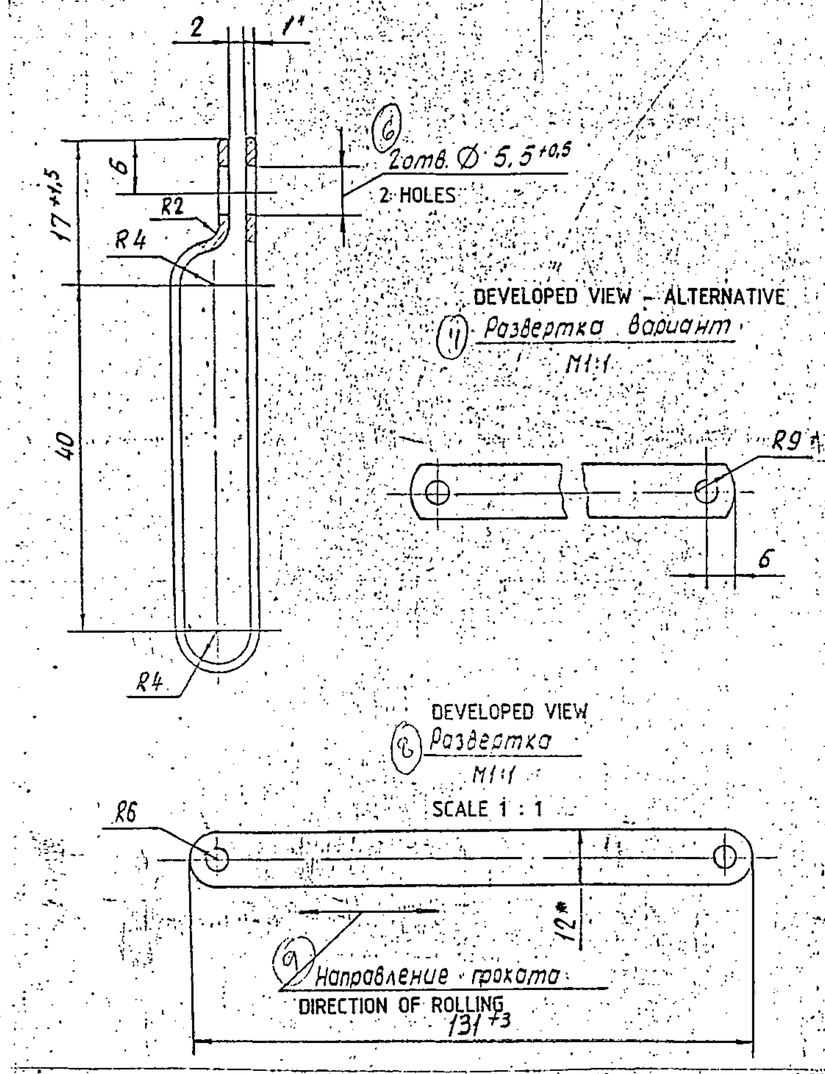
D S CAT NUMBER

DRAWING NUMBER
322-68

F -

SIZE A3

DRAWING NUMBER
322-69




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5.* Размеры для справок.

1. ALTERNATE MATERIAL : STEEL, GRADES 08, 08Kn 10Kn GOST 1050-74. MAY BE MANUFACTURED FROM SHEET GOST 19904-74.
2. REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.
3. COATING : Zn 12 .... 24, CHROMATIZING AS PER ИЛ - 483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ - 09-73.
4. IN TROPICALIZED CONSTRUCTION:
   COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ЦИЛ 104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ЦЛ - 09-73.
5. *DIMENSIONS FOR REFERENCE

(A) EQUIVALENT MATERIAL
GrDD IS:513-1994

ORG. REDRAWN BASED ON NEW ISSUE
ORG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No: 8 (BK 03-

| | | | | | |
|---|---|---|---|---|---|
| Разраб. | Ган | 83-714 | Утверд. | Гейн | |
| Н.контр. | Шкет | Чобкум. | Подп. | Дата | |

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0.0115 Kg | |

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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08пс - М - 2 - 1х12 GOST 503-81

USED ON :- СБ 322-14-4, СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 6 PIPES

D S CAT NUMBER

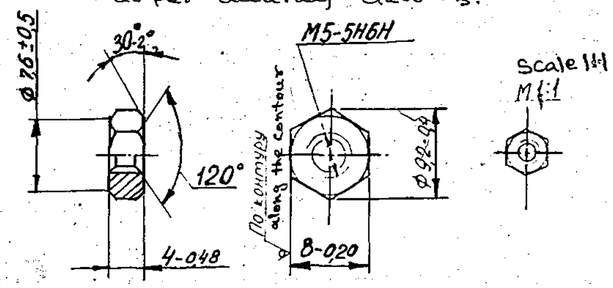
DRAWING NUMBER
322-69

A-7
SIZE A2

DRAWING NUMBER
351 13

Rz 40 (V)

Rolled stock of group B class 4 GOST 1051-73 may be used. To ensure high quality of coating, it is allowed to eliminate surface defects of rolled stock with decrease of dimension as per accuracy class - 5.




1. The Component may be manufactured from Steel 45 GOST 1050-74.
2. Chamfer 120° should be made up to the major diameter of thread.
3. Shift of hole axis up to 0.25 mm. is permitted.
4. The thread may be checked before coating.
6. Coating :- Cd 9, Chromatizing as per ГОСТ 9.104 with elimination of Hydrogen embrittlement.
7. The rest of the technical requirements as Per standard 82052-00.
8. Alternate material :- Steel, grades 40 and 50 GOST 1050-74.

## EXPLANATORY NOTE

9. i) REFERENCE MATERIAL QUOTED:
GAUGED HEXAGONAL STEEL BAR CLASS OF ACCURACY 4, 8.0(-0.100)mm A/F TO GOST 8560-78 FROM HIGH GRADE SIZED STEEL SURFACE QUALITY 'B' TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45 TO GOST 1050-74

(A) ii) REFERENCE NOTE '8' ON ALTERNATE MATERIAL : QUALITY CARBON STRUCTURAL STEEL GRADES 40 AND 50 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 | |
| | | | | MAXIMUM | | | |
| 45 | 0,42-0,50 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | REF MATL |
| 40 | 0.37-0,45 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | ALT MATL |
| 50 | 0,47-0,55 | 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 : AS PER GOST 1050-74

| GRADE OF STEEL | ULTIMATE TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | ELONGATION % | REDUCTION IN AREA % | IMPACT STRENGTH Kgfm/cm² | HARDNESS B H N MAX | REMARKS |
|---|---|---|---|---|---|---|---|
| 45 | 61 | 36 | 16 | 40 | 5 | 229 | REF MATL |
| 40 | 58 | 34 | 19 | 45 | 6 | 217 | ALT MATL |
| 50 | 64 | 38 | 14 | 40 | 4 | 241 | ALT MATL |

(A) Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

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

| EST. MASS | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.0012 Kg | ( 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 |
|---|---|---|
| A | 18.5.09 | Authy: Third Alt. Comm. Minutes Point: 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE
SCALE - 2 : 1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.
ALL THREADS CONFORM TO

MATERIAL: ~~HEXAGON BAR 8.0 GOST 8560-78 45-5 GOST 1051-73~~ (A)

USED ON:- ~~CG 80435 00 00 5~~ CG 3335 00 24 3

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI

TITLE:- NUT M5

D S CAT NUMBER

DRAWING NUMBER 351 13

A-11

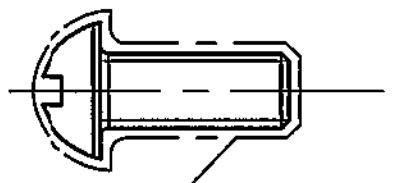
FORMAT A-2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

F-4
226
253

4 | 3 | 2 | 1

DRAWING NUMBER
356-22-2



Coating : Zinc-*6 microns, chromium-1micron* as per ИЛ-749-88 by removing hydrogen embrittlement.

1. In tropical construction, plating cadmium-9microns, chromium-1 micron as per *ИЛ-569-84 with removal of hydrogen embrittlement.*

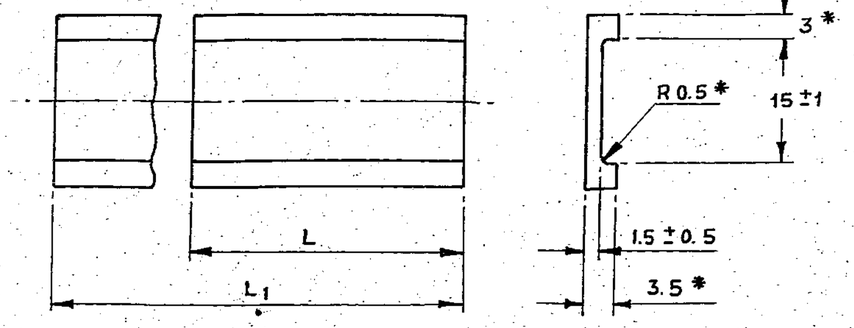
2. *Blank should match with requirement Gost 1759.0-87 for class of accuracy B.*

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

| | |
|---|---|
| EST. WT.(Kg) 0.003 | 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 :- *Blank* *Screw* M5-6gx12.58 GOST 17473-80 | USED ON :- СБ 322-14-9 СБ 322-15-9 СБ 323-00-10 СБ 3320-00-43 |
| ISSUE DATE NATURE OF AMENDMENTS | |
| DRN SCALE :- 2 : 1 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD DIMENSIONS IN mm | |
| APPD TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69 | TITLE :- SCREW M5x12 |
| DATE 26/11/07 ALL THREADS TO CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 356-22-2 |

SIZE A4

DRAWING NUMBER
3335-38-3 TO
3335-38-6




| PART No. | L MM | MASS Kg. | USED ON | KVD No. |
|---|---|---|---|---|
| 3335-38-3 | 26±1 | 0.002 | | |
| 3335-38-4 | 31±2 | 0.0024 | C6 3335-00-~~24~~30 | 78315 |
| 3335-38-5 | 42±2 | 0.0032 | C6 3335-00-~~24~~30 | 78435 |
| 3335-38-6 | 55±0.2 | 0.0042 | | |

*C620-27-00-4

1. DIMENSIONS ARE TO BE ENSURED WITH TOOL.
2. LENGTH OF DELIVERED BAND $L_1$ SHOULD NOT BE LESS THAN 1000 mm.
3. MARK "3335-38-3" SHOULD BE PUT ON TAG OF COMPONENT TO BE DELIVERED.
4. TO BE MADE AS PER TT III H 100 GOST 15152-69.
5. THE REST OF THE REQUIREMENTS AS PER TY 005 216-75.

3335-38-3

## EXPLANATORY NOTE :-

6. REFERENCE MATERIAL QUOTED :
UNVULCANISED OIL AND PETROL RESISTANT RUBBER CODE OF CLASSIFIER 25-1231, RUBBER GRADE HO-68-1 TO TY 005-216-75.

a. MECHANICAL PARAMETERS :

i. RUPTURE STRENGTH Kgf/cm$^2$ _____ 90 Min
ii. ELONGATION OF RUPTURE % _____ 250 Min
iii. RESIDUAL ELONGATION AFTER RUPTURE % ___ 12 Max
iv. HARDNESS No IP TO TM P DEVICE ARBITORY ____ 55-70

7. LIKELY EQUIVALENT GRADE / SPECIFICATION FOR NITRILE CHLOROPRENE BASE TO BA 60 BS 2751-82 AND C 60 BS 2752-82.

Ⓐ ALT MATL.: RUBBER GRADE BNC TO SPECN. CQA(HV)/NBR+CR

EXPLANATORY ADDED ON 4-6-92

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

| EST. WT. | 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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 27.05.08 | Lr. No. TC/GEN/IND-III Dt:. 02.04.08 |

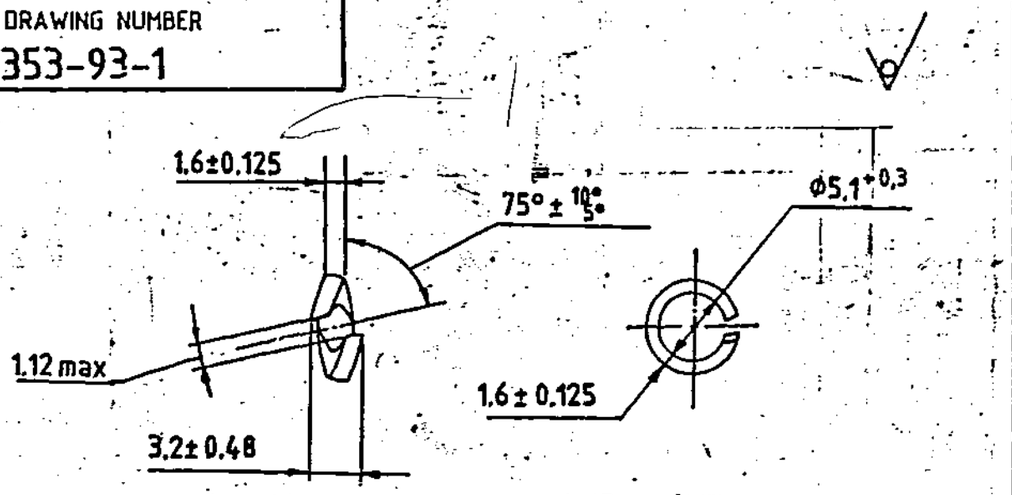
DRN —
CHD
TCD
APPD
DATE 8-7-86
SCALE - 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- RUBBER HO-68-1 TY 005 216-75
USED ON —
CONTROLLERATE OF QUALITY ASSURANCE. (HEAVY VEHICLES) AVADI
TITLE : GASKET
D S CAT NUMBER
DRAWING NUMBER 3335-38-3 TO 3335-38-6

A-9
SIZE A2

KVD.No. 78696

DRAWING NUMBER
353-93-1




1. IN TROPICAL MANUFACTURE, COATING Cd 9 Cr AS PER ШУЛ - 104 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.

2. WASHER 5Т65Г 09 GOST 6402-70 MAY BE USED, IN VISUAL AND TROPHICAL MANUFACTURE.

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

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 Pcs 0,424 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. |
| A | 16.8.10 | 4th Alt.Comm.Meeting Minutes Point No.12 Dt: 26-10-09 | MATERIAL:- 5T 65 Г 06 GOST 6402-70 / USED ON Cб [illegible] Cb [illegible] |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2 : 1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. |
| CHD | | | |
| TCD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69 | TITLE: WASHER |
| APPD | | ALL THREADS CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 353-93-1 |
| DATE | 28.5.94 | | |
| SIZE A4 | | | |

## EXPLANATORY NOTE:

MATERIAL QUOTED: WASHER 5Т, 65Г, 06 GOST 6402-70.

CORRESPONDS DESIGN AND DIMENSIONS OF SPRING (LOCK) WASHERS.
06 = CONVENTIONAL SYMBOL OF FINISH. (PARKERISING FOLLOWED BY OILING).
5 = NOMINAL THREAD DIA OF BOLT OR SCREW
Т = HEAVY ; 65Г (65G) = GRADE OF STEEL AS PER GOST 1050-74.

CHEMICAL COMPOSITION: AS PER GOST 1050-74.

| CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·62 – 0·70 | 0·17 – 0·37 | 0·90 – 1·20 | 0·25 | 0·040 | 0·035 | 0·25 | 0·25 |

WEIGHT OF STEEL WASHERS AND THEIR RESILIENCE PROPERTIES AS PER GOST 6402-70.

THEORITICAL WEIGHT OF 1000 STEEL WASHERS IN kg = 0·424.

ESTIMATED RESILIENCE OF WASHERS FROM STEEL GRADE 65G = 28·7. IN kg

MECHANICAL PROPERTIES: AS PER GRADE 65G GOST 1050-74.

YIELD POINT kgf/mm² (MIN) = 44

ULTIMATE TENSILE STRENGTH (MIN) = 75 kgf/mm²

ELONGATION % (MIN) = 9

REFERENCE NOTE: 09 = ZINC PLATING (CONVENTIONAL SYMBOL OF FINISH)

(A) EQUIVALENT MATERIAL
75 C6 TO IS:2507/EN 42 J BS:970

USED ON

Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-15-9** | | **COMPRESSED - AIR** | | |
| | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | **R . H ASSY.** | | |
| | 1 | Cb.322-07-9 & I/L | | 1 ST RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 2 | Cb.322-08-9 & I/L | | 2 ND RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 3 | Cb.322-09-9 & I/L | | 3 RD RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 4 | Cb.322-10-9 & I/L | | 4 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 5 | Cb.322-11-9 & I/L | | 5 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 6 | Cb.322-12-9 & I/L | | 6 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | | | | | | |
| | 8 | 322-65 | | CLIP FOR 2 TUBES | 1 | Tropical make |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED - AIR STARTING TUBING R H ASSY.** | | |
| APPD | | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-15-9** |

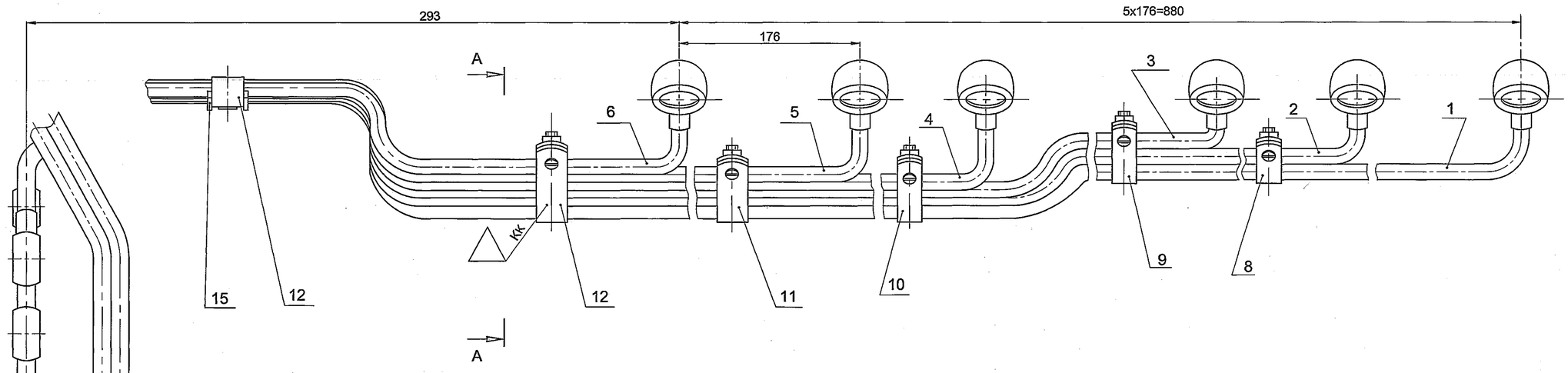
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | 9 | 322-66 | | CLIP FOR 3 TUBES | 1 | Tropical make |
| | | 10 | 322-67 | | CLIP FOR 4 TUBES | 1 | Tropical make |
| | | 11 | 322-68 | | CLIP FOR 5 TUBES | 1 | Tropical make |
| | | 12 | 322-69 | | CLIP FOR 6 TUBES | 2 | Tropical make |
| | | 13 | 351-13 | | NUT M5 | 6 | Tropical make |
| | | 14 | 356-22-2 | | SCREW M5x12 | 6 | Tropical make |
| | | 15 | 3335-38-5 | | GASKET | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 21 | 353-93-1 | | WASHER 5Т65Г | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.22 Tropical make |
| | | 22 | - ND - | | WASHER 5Н65Г05 | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.21 Tropical make |

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 3

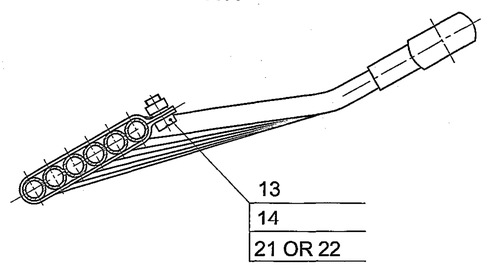
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED - AIR STARTING TUBING R H ASSY.** | | |
| APPD | | | | |
| DATE | 30.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-15-9** |

DRAWING NUMBER
**Cb.322-15-9**




A-A




1. Carry out adjustment and final inspection for assembly units from СБ.332-07-9 to СБ.322-12-9 together on the dummy.
2. Make a complete set of assembly units СБ.322-15-9 and СБ.322-14-9 in pairs.
3. Stamp the manufacturing - factory No. and part number of assembly units СБ.322-14-9 and СБ.322-15-9 on tag for making a set while sending as spare parts.
4. Components and assembly units, having conventional symbol *"ТИ" in the part list of given drawing in "remarks" column should have tropicalized construction as specified in the drawings for components.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
174
253
SIZE A1

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 ) |
|---|---|
| 1.460 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE 06/2/07
SCALE:- 1:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :-
СБ 322-00-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING RH ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER
**Cb.322-15-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-07-9** | | **1 ST RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-27-9 | | 1 ST RH CYLINDER TUBE | 1 | |

Cb 322-15-9

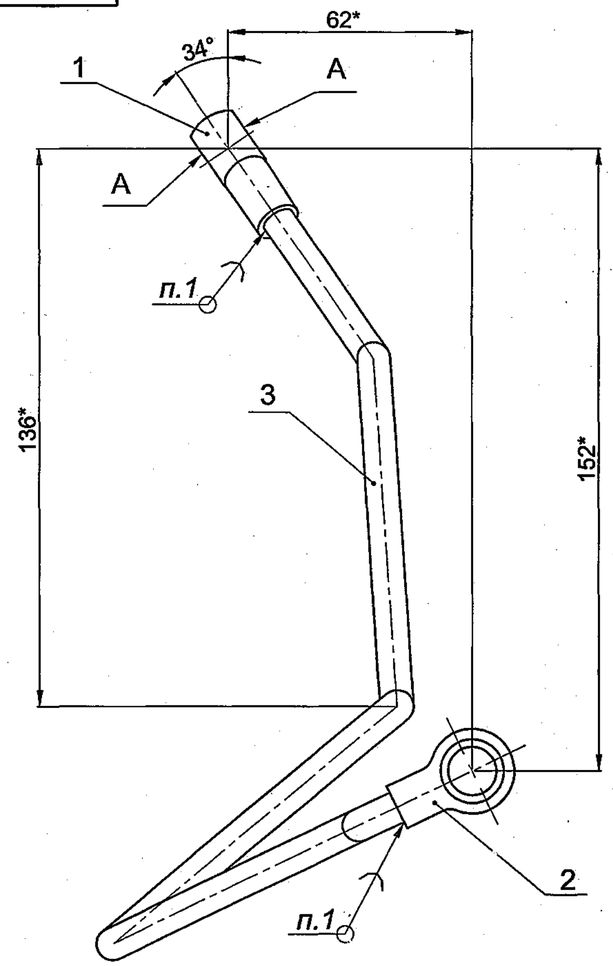
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

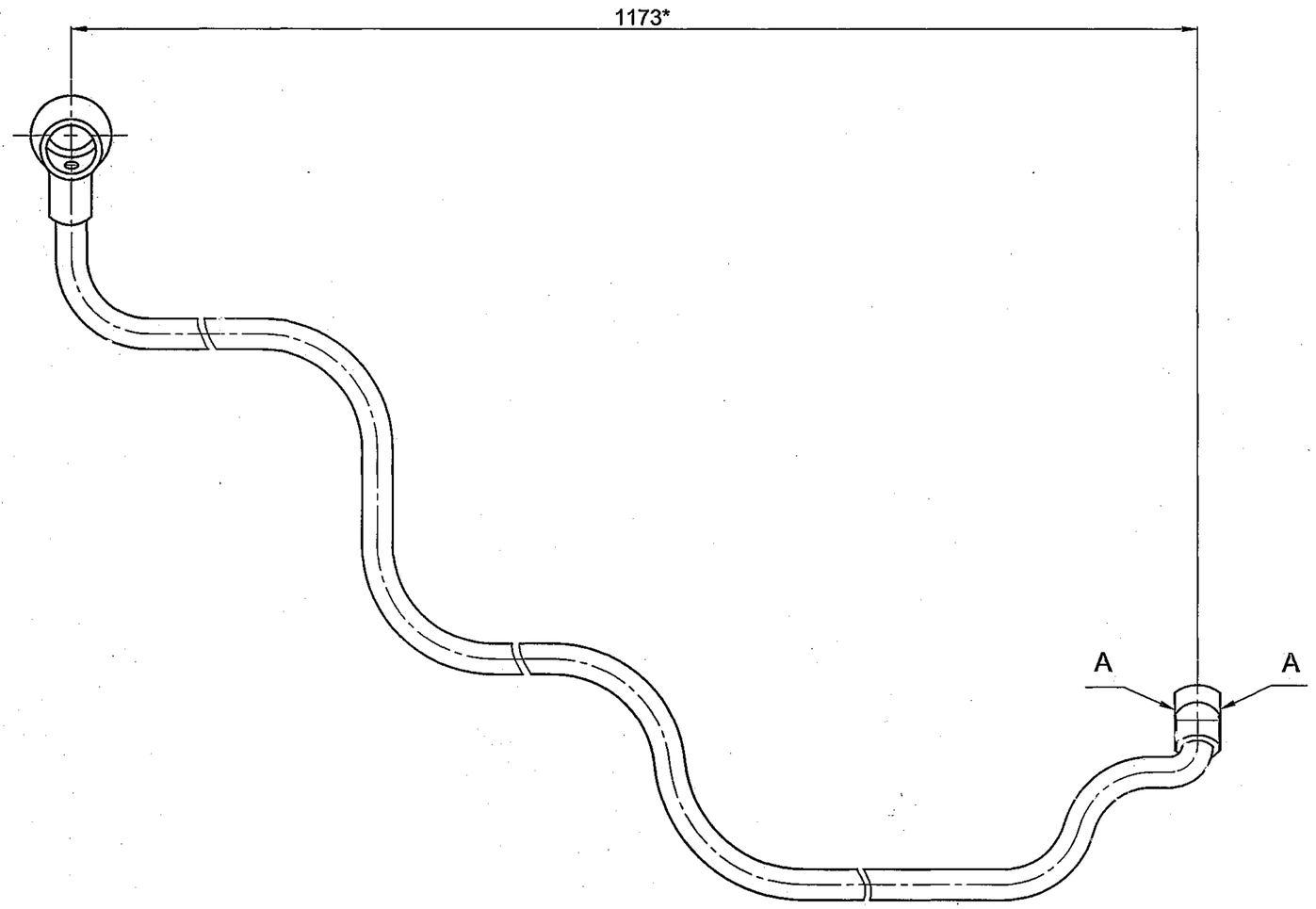
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **1 ST RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-07-9** |

F-4
157/253

DRAWING NUMBER
*Cb.322-07-9*




1. Wire *Л163 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.285 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/12/02 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :- (4A)
1 st RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
*Cb.322-07-9*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
158
253

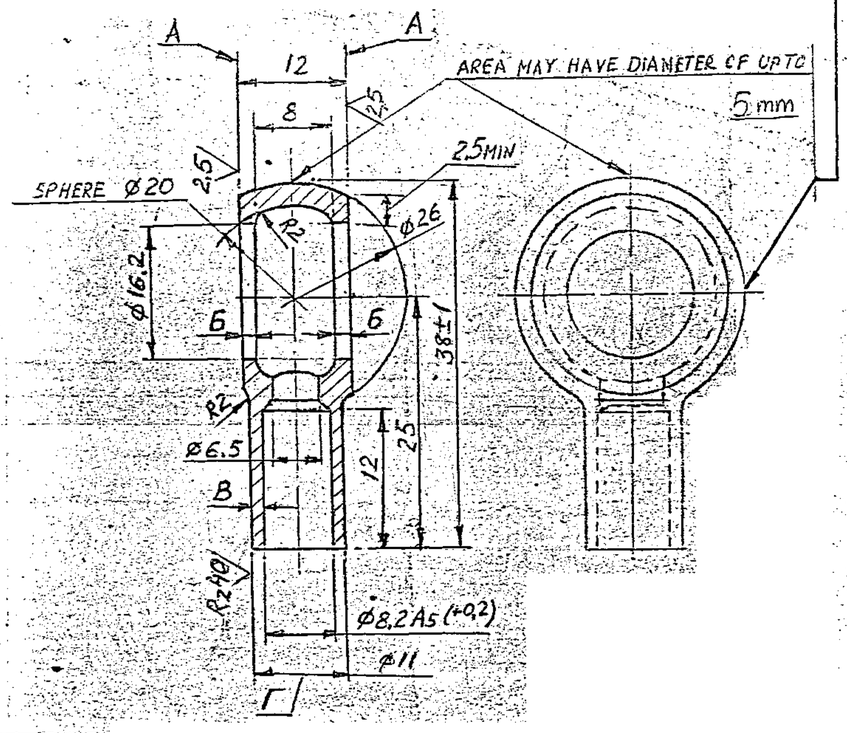
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

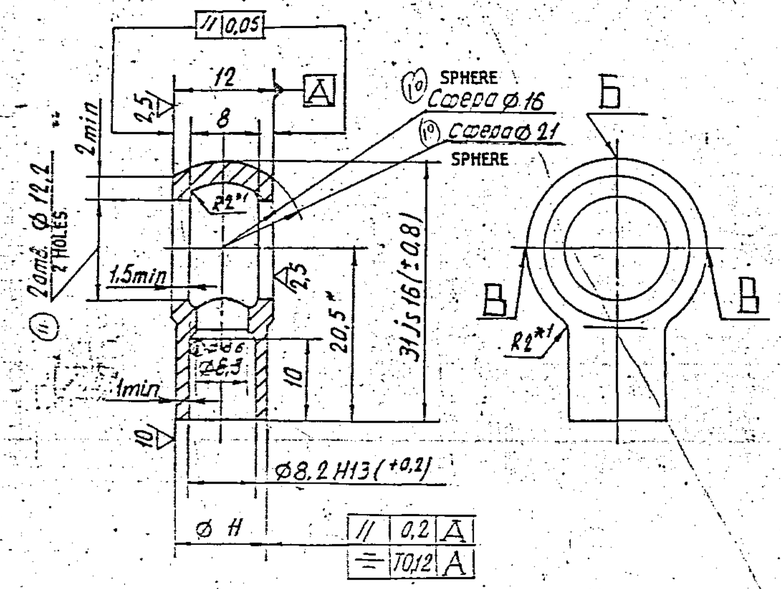
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

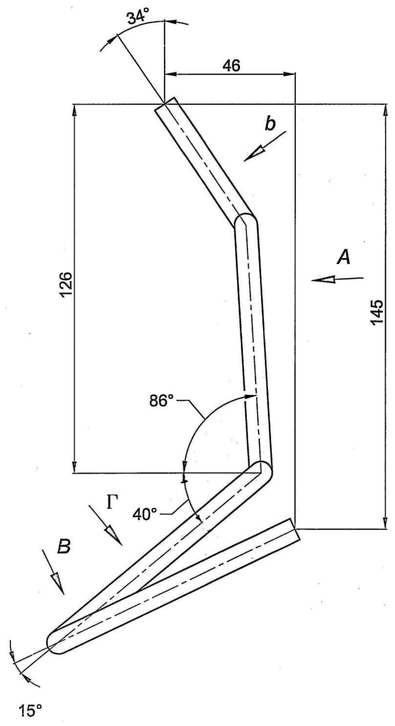
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

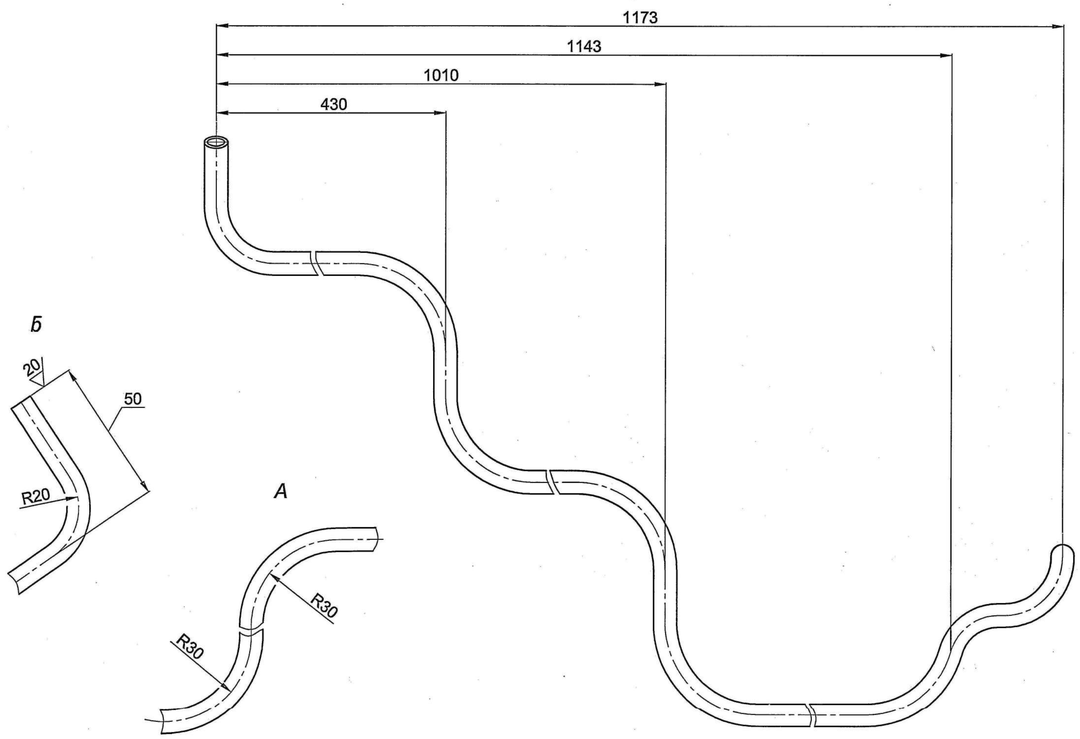
TITLE: SWIVEL ELBOW

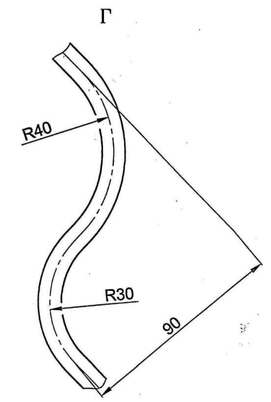
DRAWING NUMBER 322-18

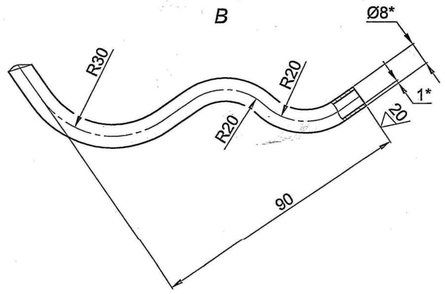
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-27-9**




1. Unfolded length of pipe should be L ≅ *1425 mm.*

2. *Tolerance of ovality for pipe in bending area should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
181
253

SIZE A1

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 ) |
|---|---|
| 0.240 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 28/11/97 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- C6 322 - 07 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *1 st RH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER **322-27-9**

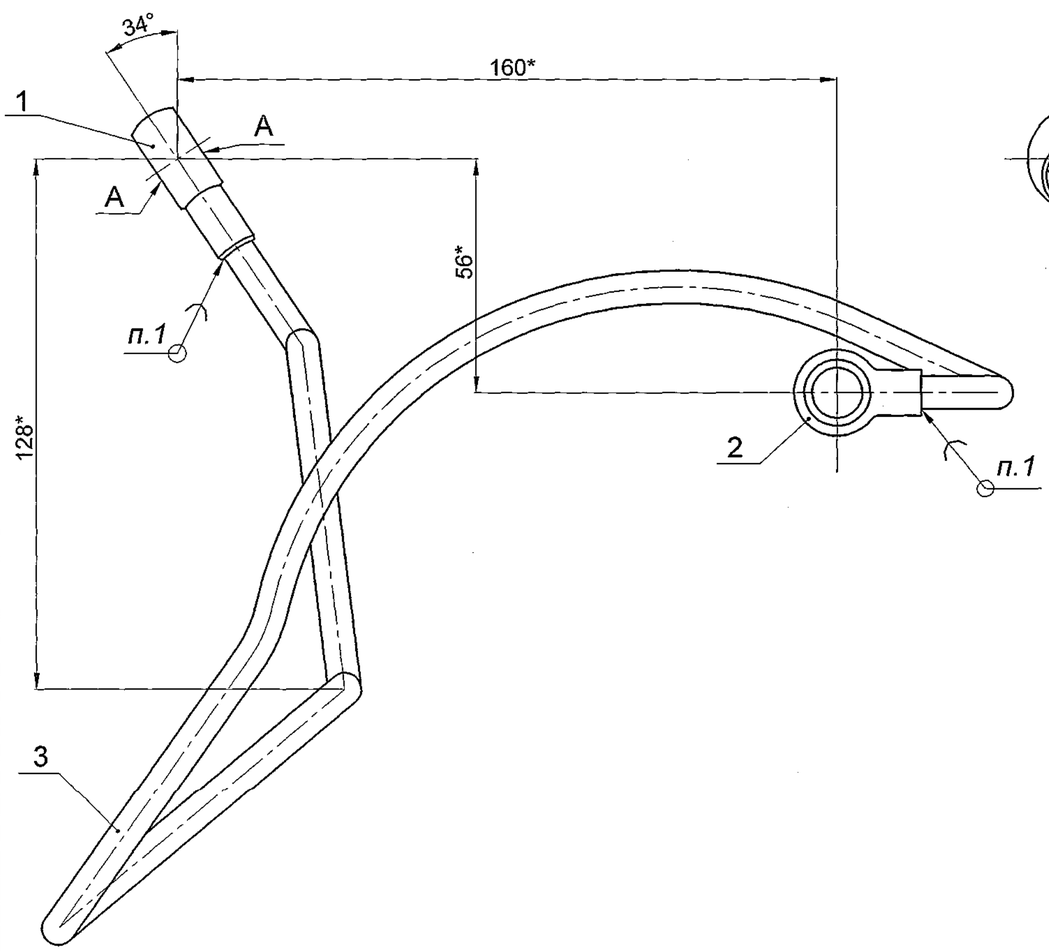
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-08-9** | | **2 ND RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-28-9 | | 2 ND RH CYLINDER TUBE | 1 | |

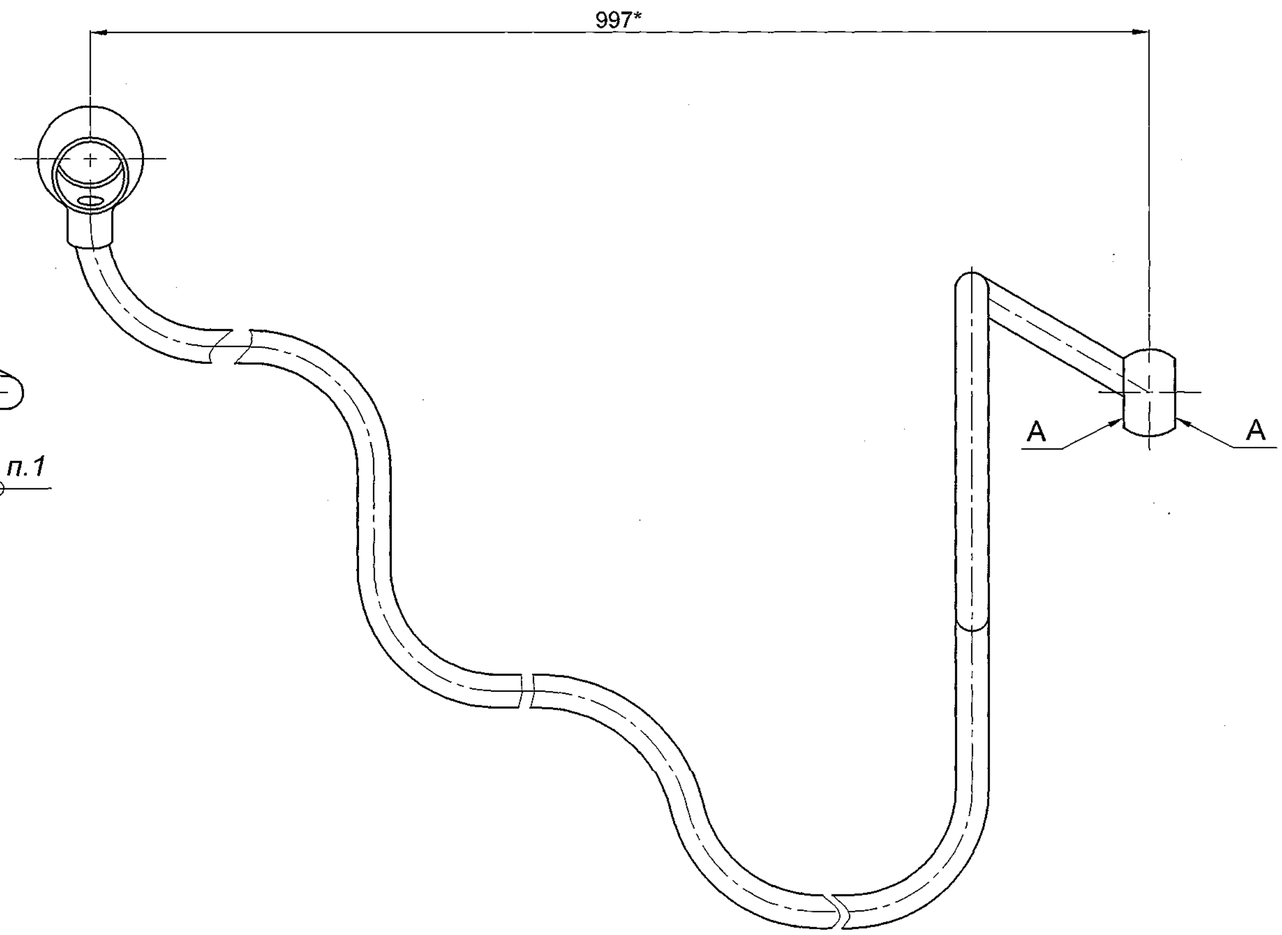
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **2 ND RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-08-9** |

DRAWING NUMBER
**Cb.322-08-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИЛ-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given for reference.*

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.295 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 13.7.07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - | 69 |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- **2 nd RH CYLINDER TUBE ASSY.**

D S CAT NUMBER

DRAWING NUMBER **Cb.322-08-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4 160/253

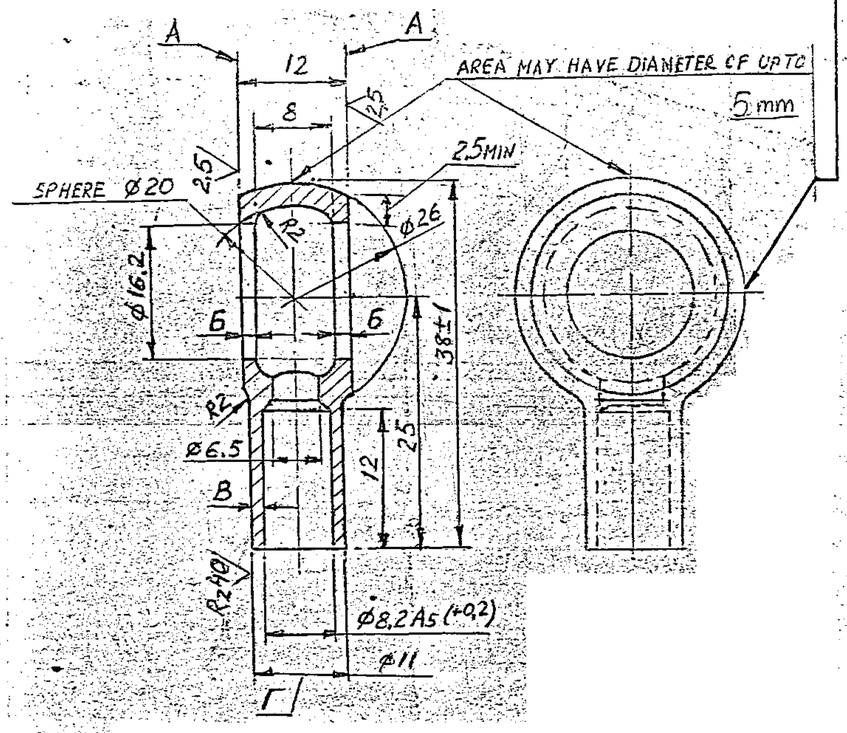
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

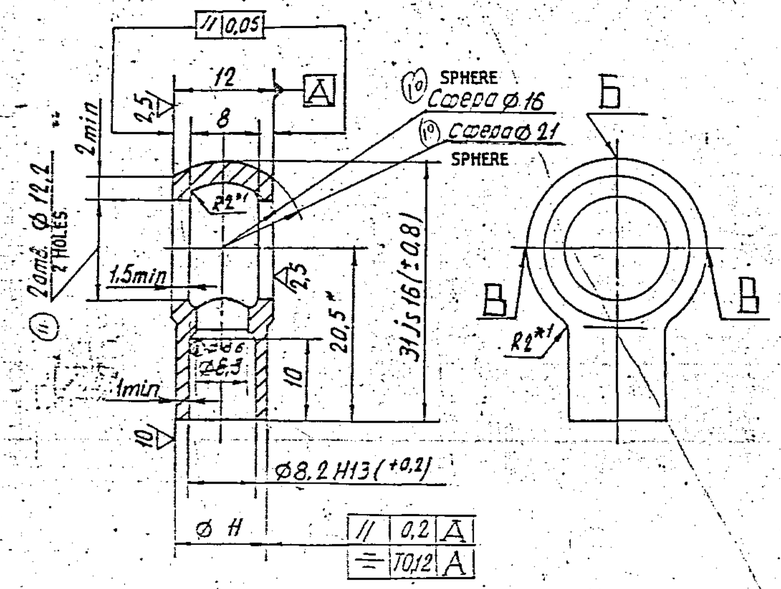
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

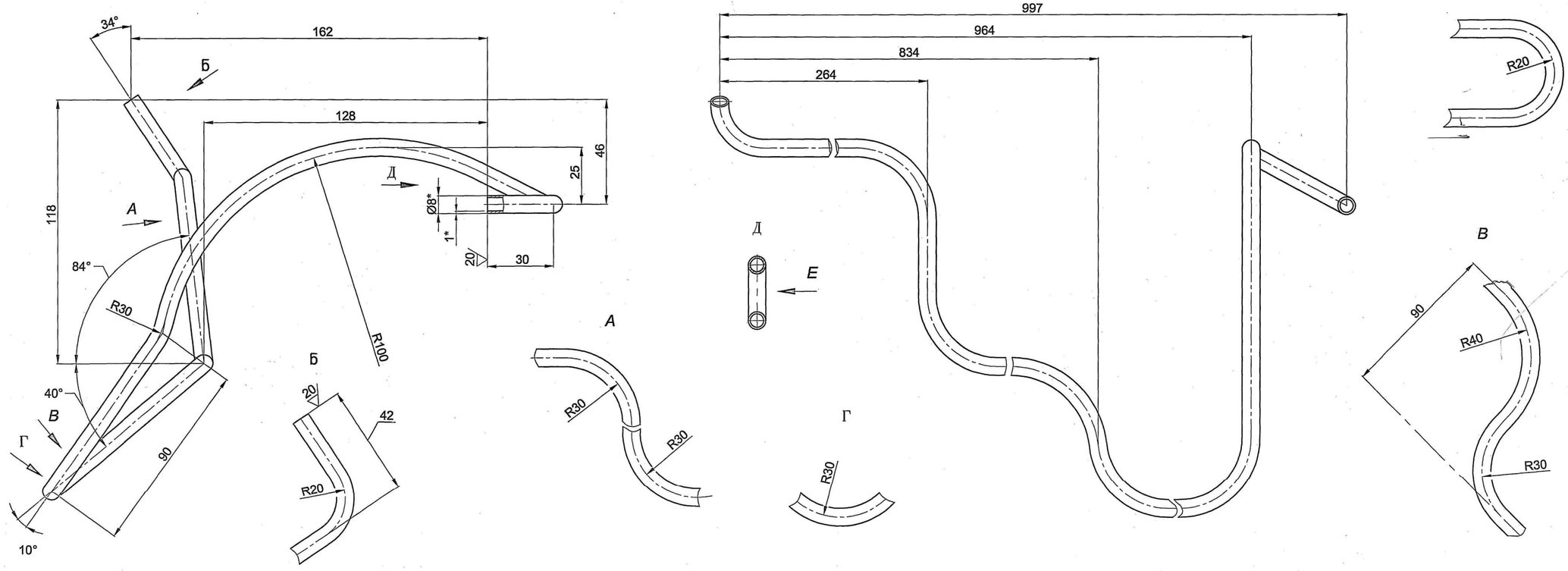
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-28-9**




1. Unfolded length of pipe should be L ≈ *1465 mm.*

2. *Tolerance of ovality for pipe in bending area should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- LE 322-08-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **2 nd RH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-28-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
182
253

SIZE A1

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-09-9** | | **3 RD RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-29-9 | | 3 RD RH CYLINDER TUBE | 1 | |

Cb 322-15-19

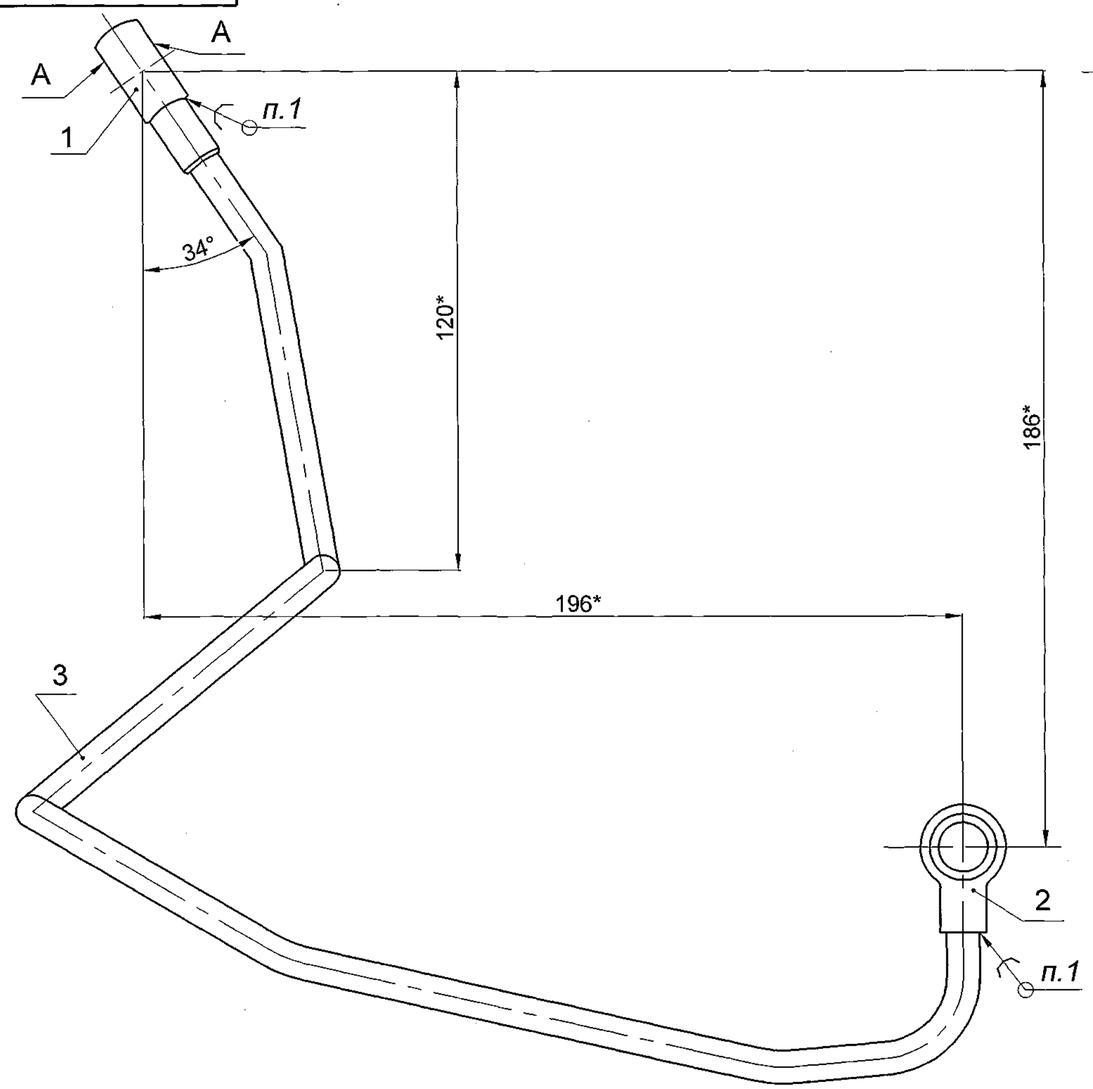
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

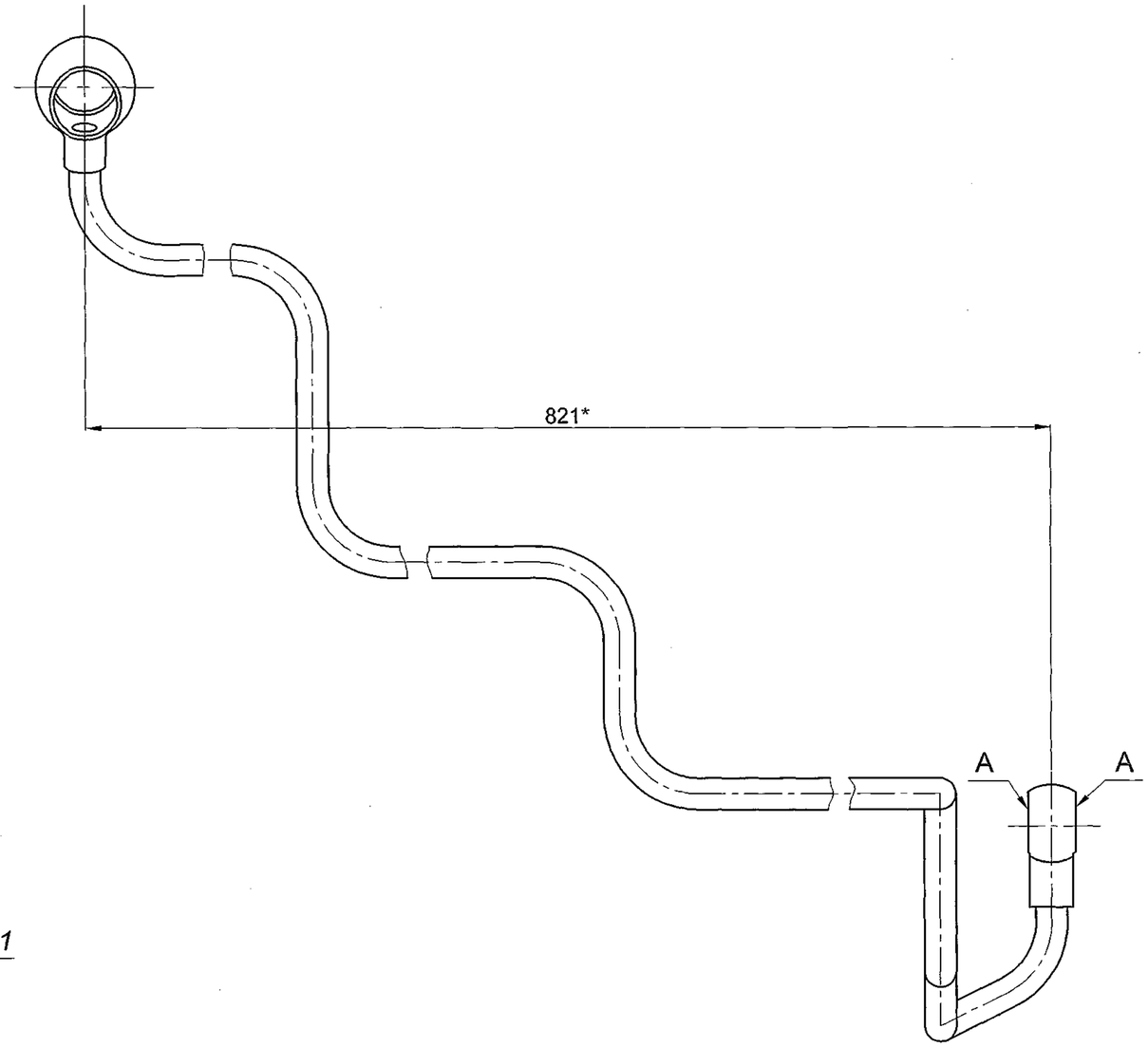
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **3 RD RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-09-9** |

F-4
161/253

DRAWING NUMBER
**Cb.322-09-9**




1. Wire *Л63 Gost 12920-67.*
2. *Varnish coating ГФ - 95 as per ИП-628-86.*
3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*
4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*
5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*
6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*
7. ** Dimensions are given for reference.*

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS ) |
|---|---|
| 0.245 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 13.7.07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- | — |
| USED ON :- | Cb 322-15-9 |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE :- | 3rd RH CYLINDER TUBE ASSY. |
| D S CAT NUMBER | |
| DRAWING NUMBER | Cb.322-09-9 |

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4
162
253

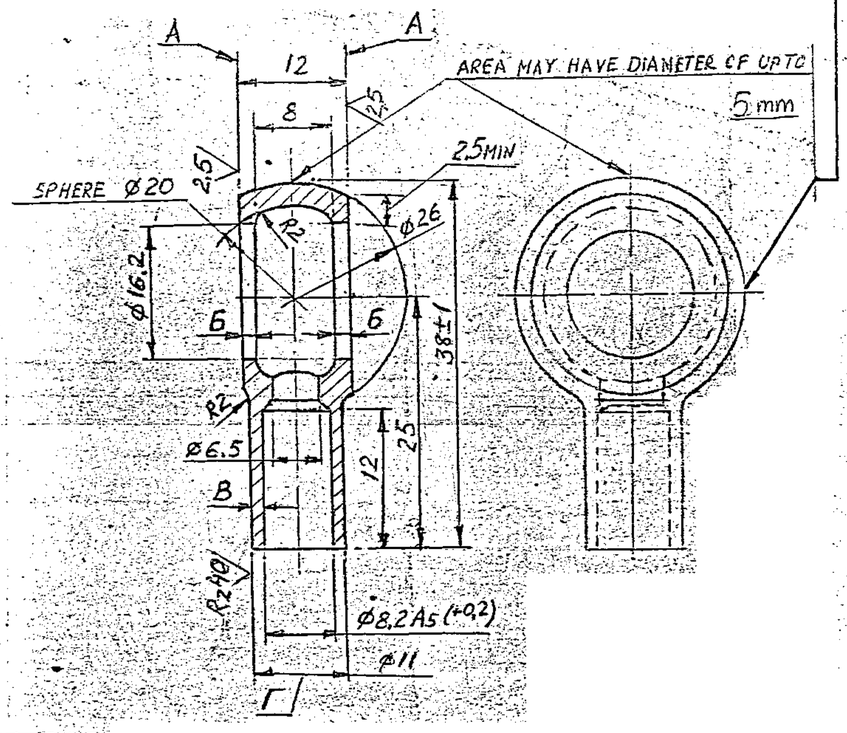
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

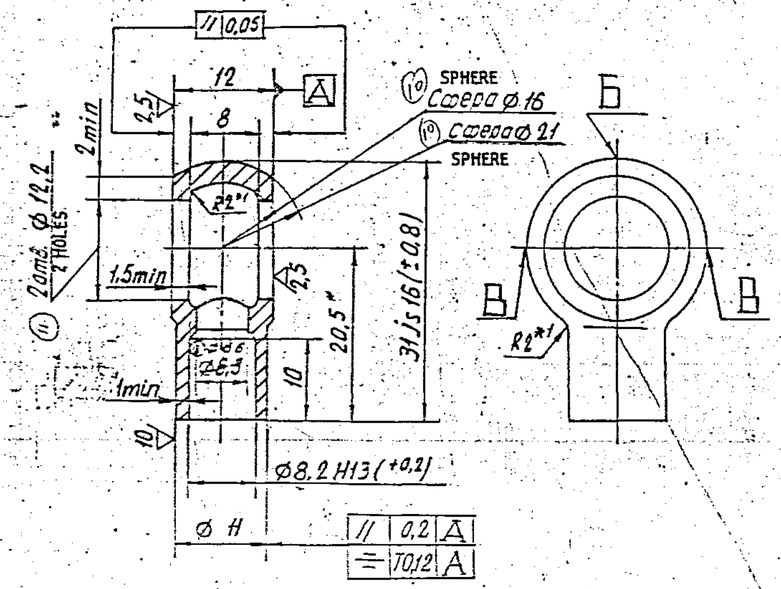
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

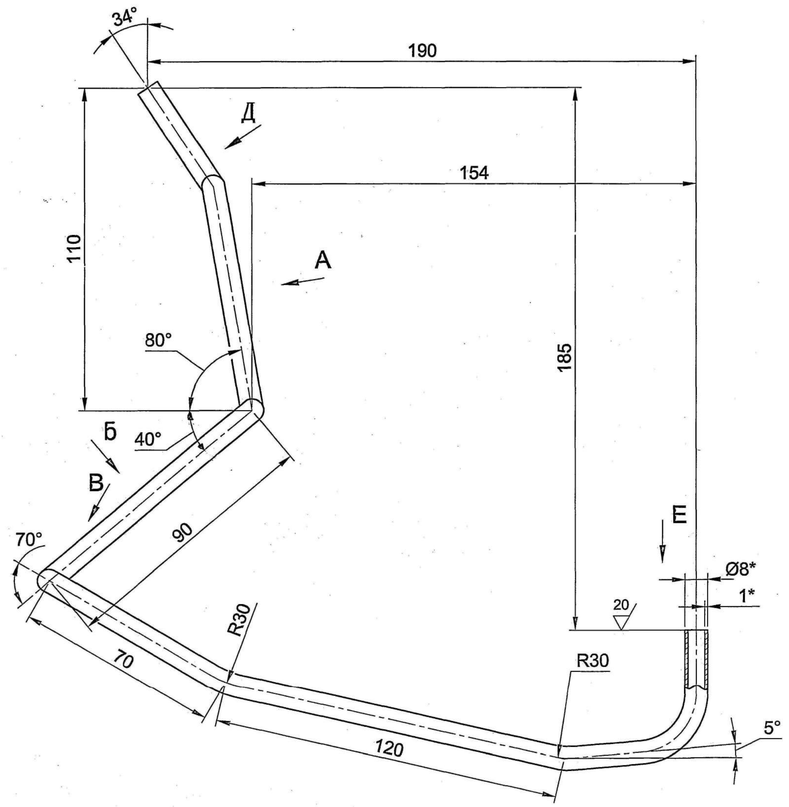
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

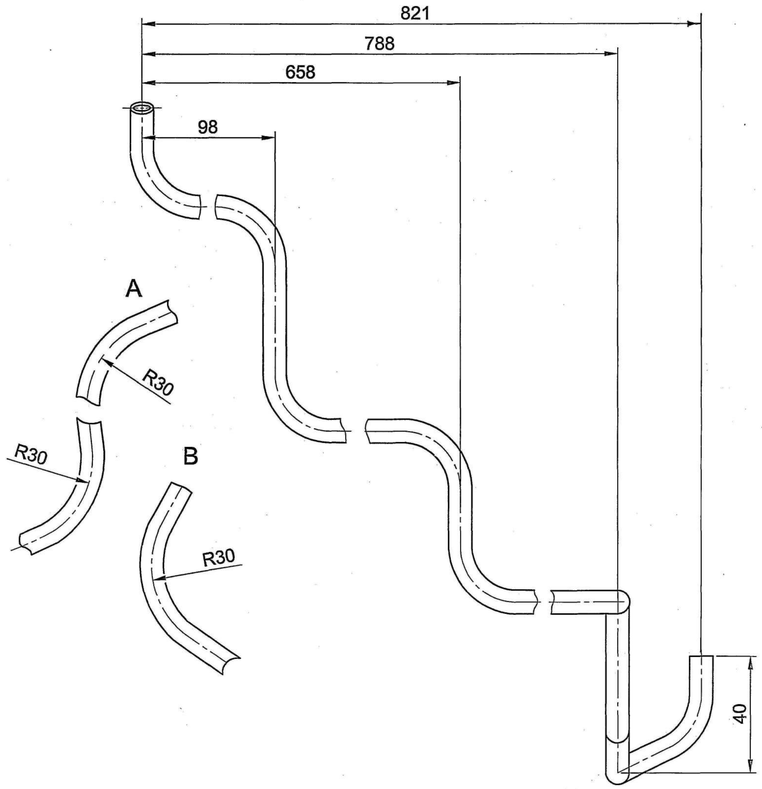
TITLE: SWIVEL ELBOW

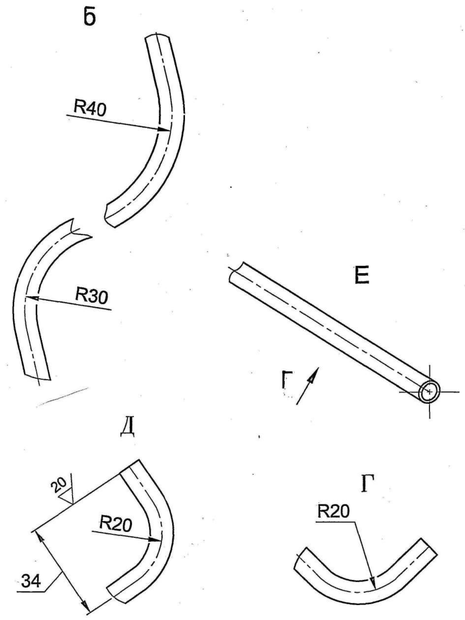
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-29-9**




1. Unfolded length of pipe should be L≈ 1185 mm.
2. Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).
3. Bending-tool marks are allowed.
4. * Dimensions are given for reference.

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
183
253
SIZE A1

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 ) |
|---|---|
| 0.200 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CB 322-09-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

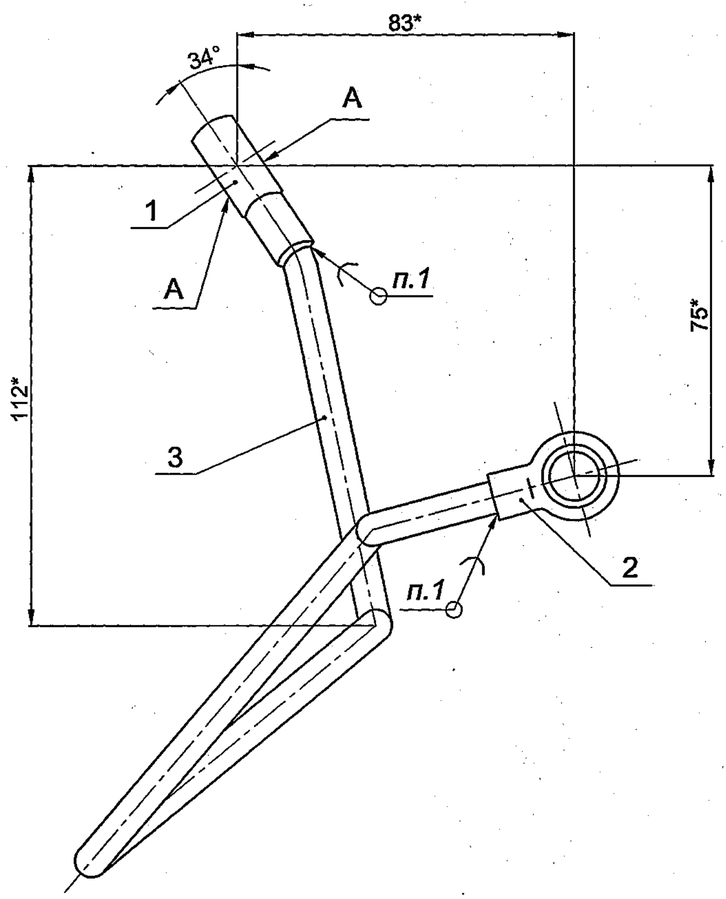
TITLE :- **3 rd RH CYLINDER PIPE**

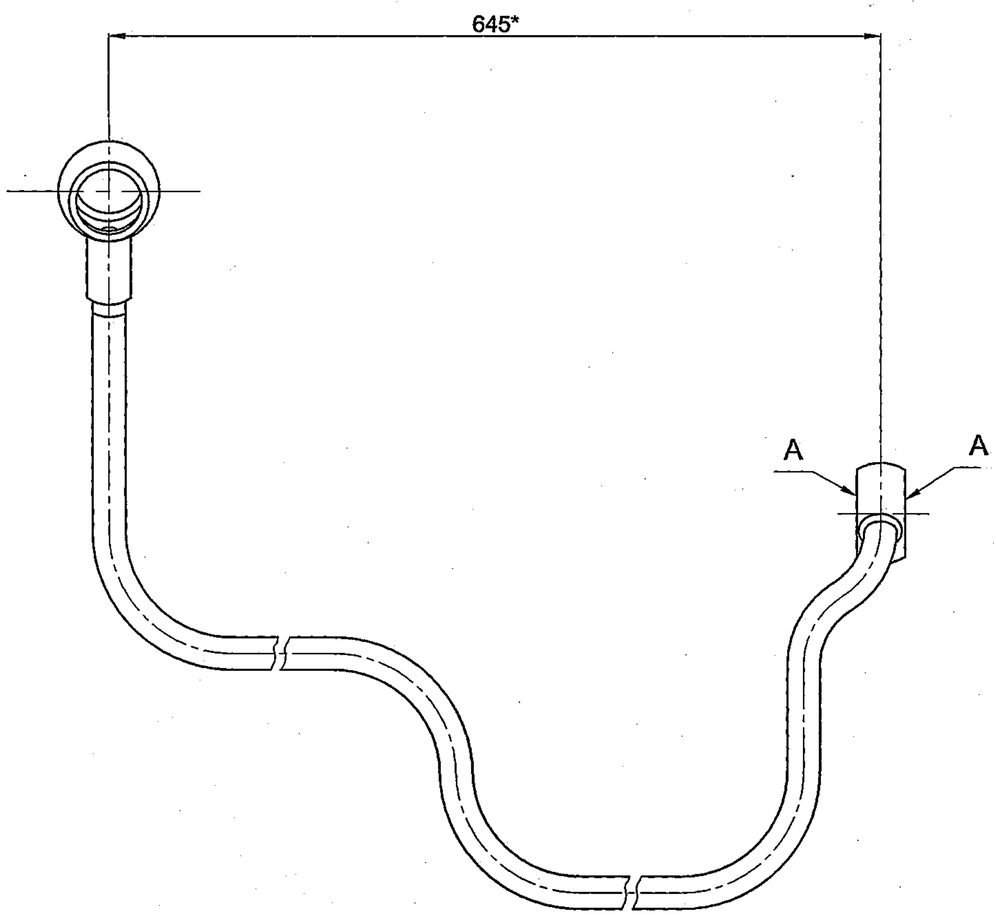
D S CAT NUMBER

DRAWING NUMBER **322-29-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-10-9** | | **4 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-30-9 | | 4 TH RH CYLINDER TUBE | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | |

DRAWING NUMBER
**Cb.322-10-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- (4A) 4 th RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER **Cb.322-10-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4 164/253

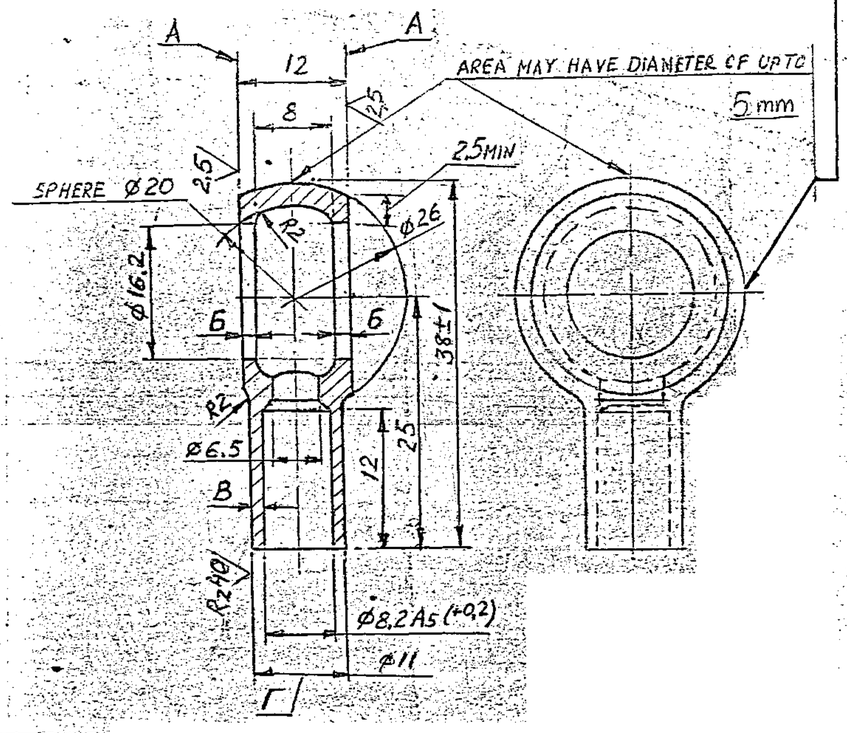
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

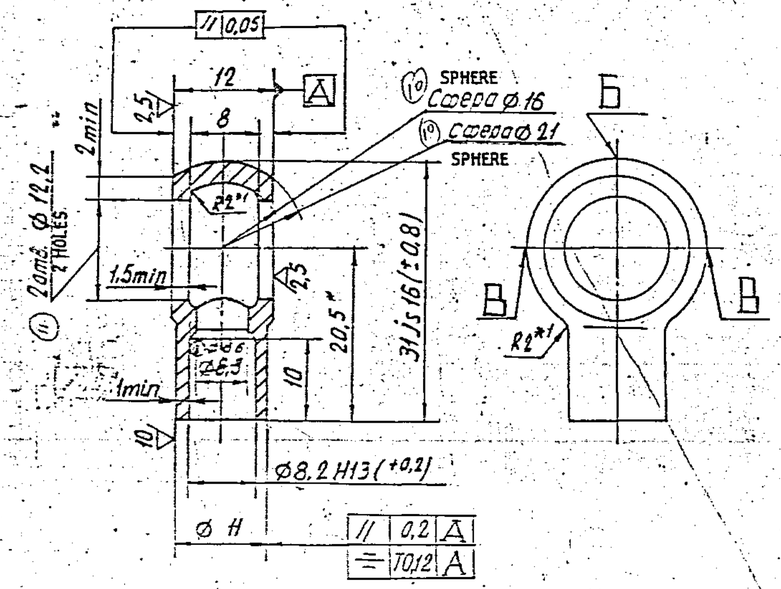
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

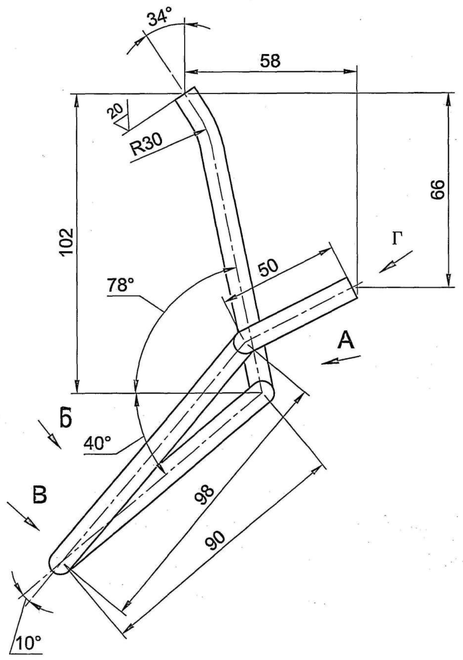
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

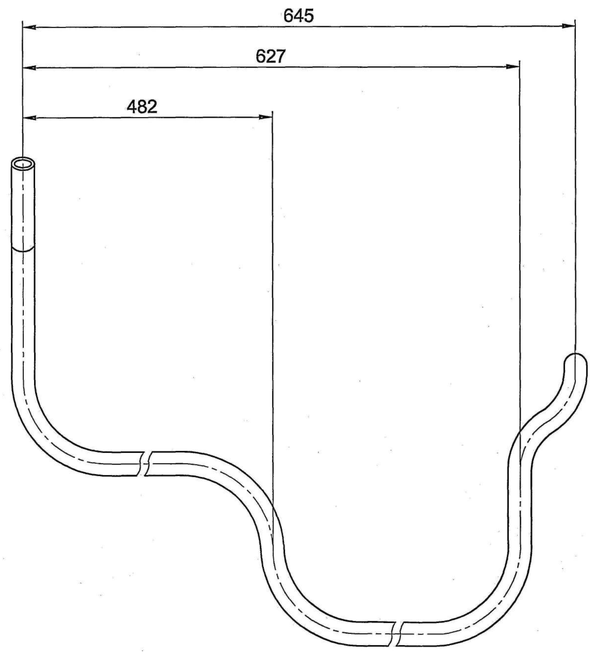
TITLE: SWIVEL ELBOW

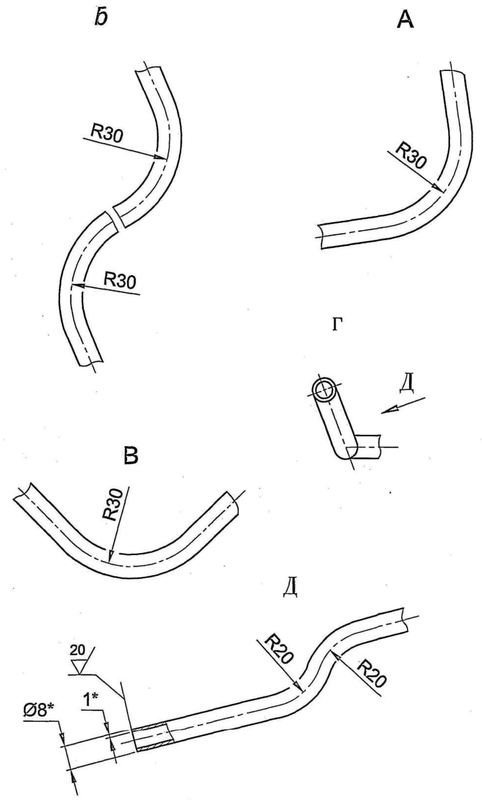
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
322-30-9




1. Unfolded length of pipe should be L ≈900 *mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
184
253

SIZE A1

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 ) |
|---|---|
| 0.160 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 23/1/07 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CБ 322-10-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- 4 th RH CYLINDER PIPE

DRAWING NUMBER 322-30-9

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-11-9** | | **5 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-31-9 | | 5 TH RH CYLINDER TUBE | 1 | |

Cb 322-15-9

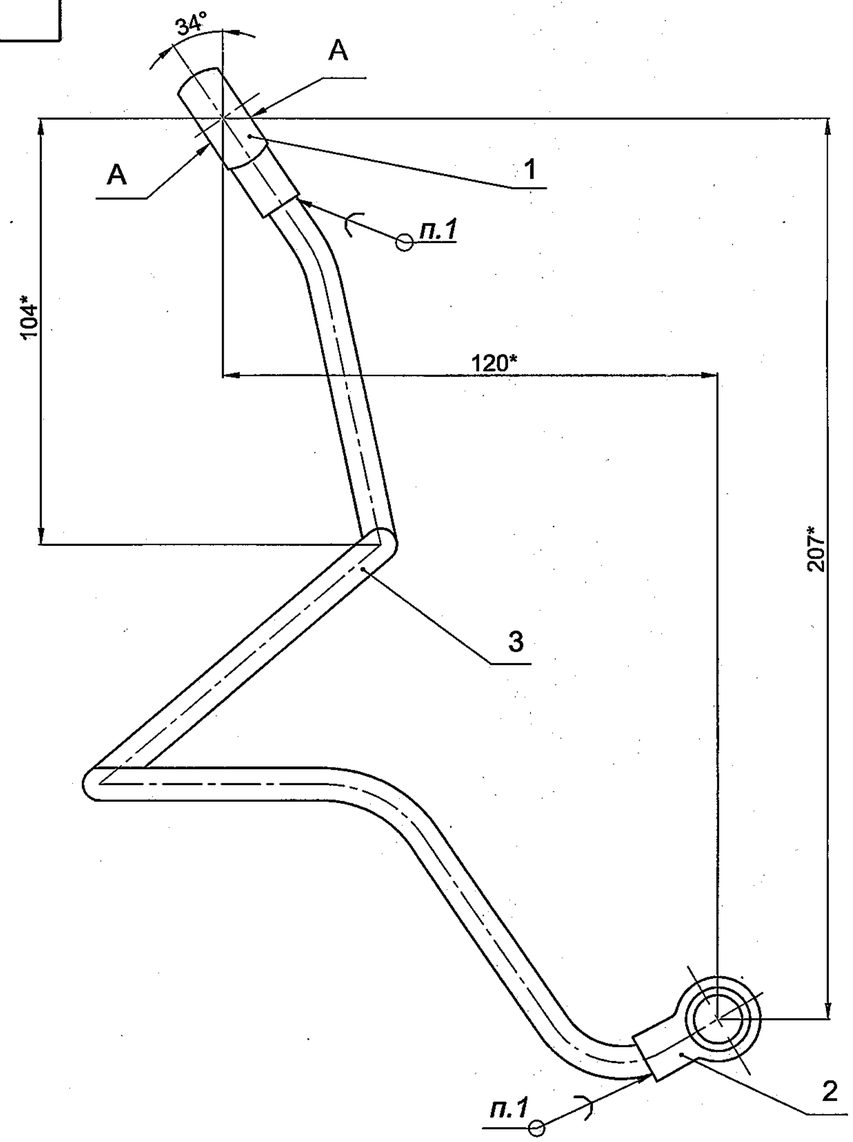
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

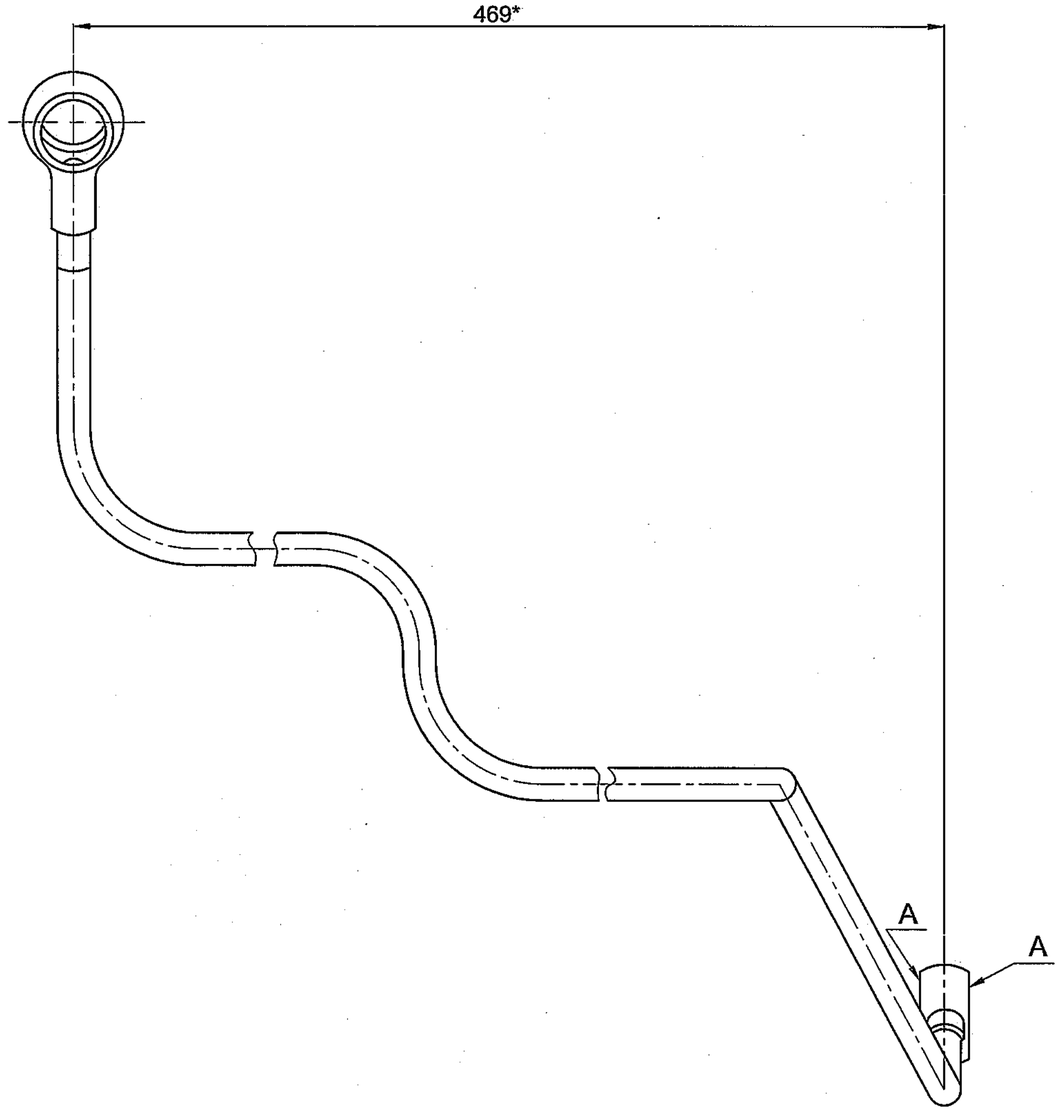
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **5 TH RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-11-9** |

F-4
165/253

DRAWING NUMBER
**Cb.322-11-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit sb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.170 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 8/12/67 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- (4A) 5 th RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER **Cb.322-11-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
166
253

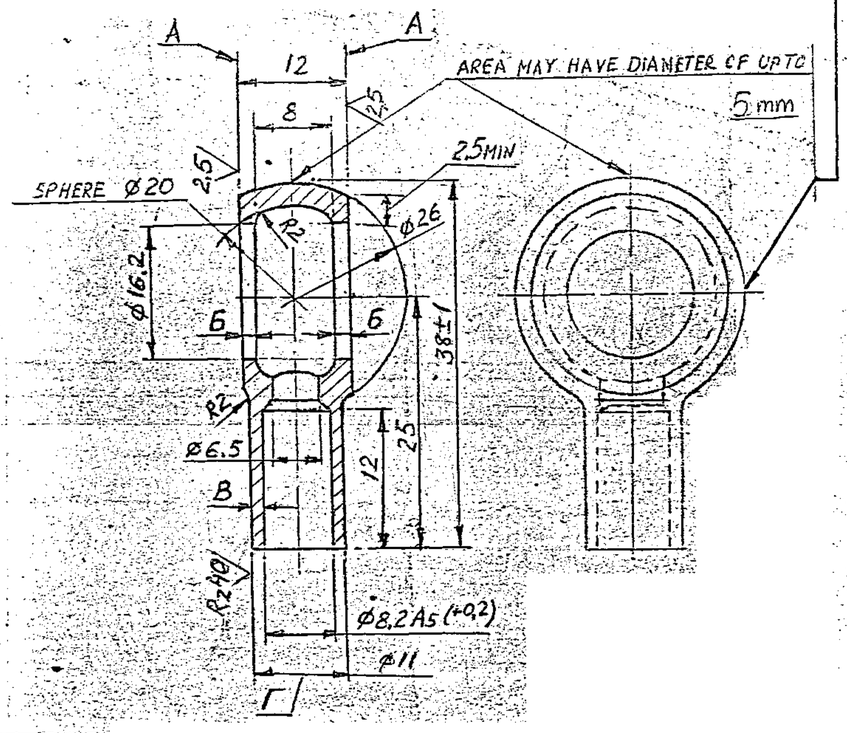
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

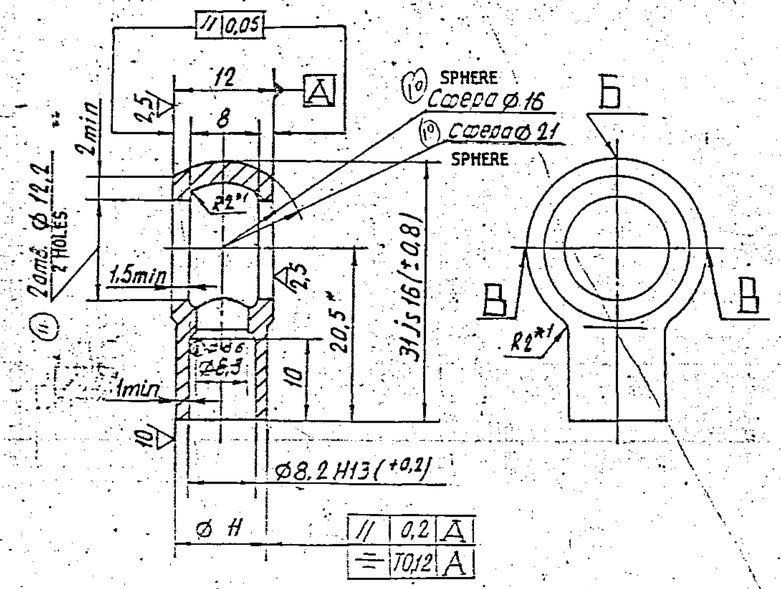
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

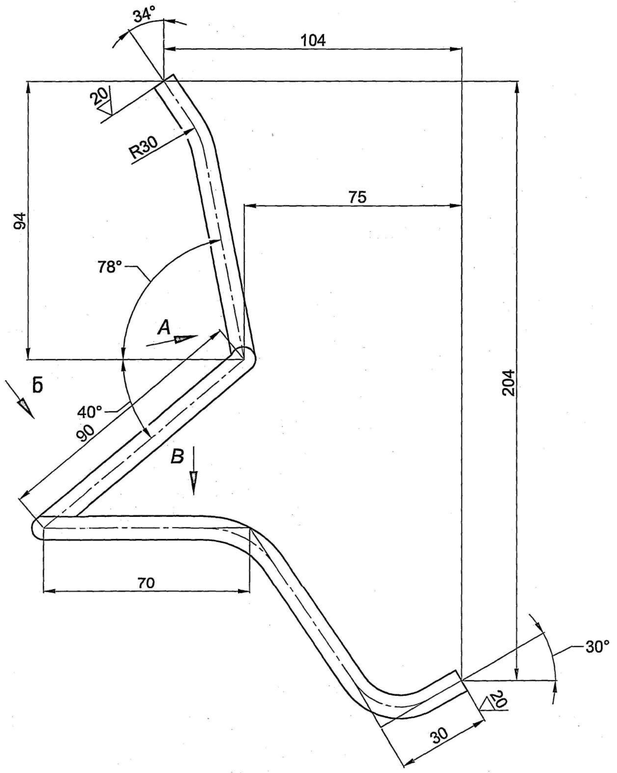
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

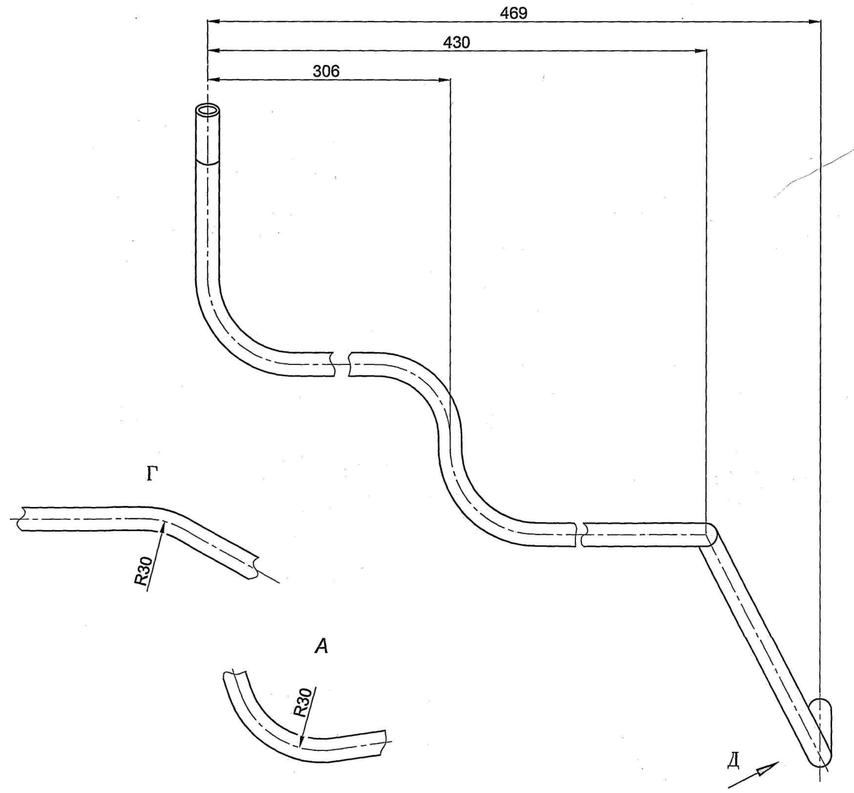
TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-31-9**







1. Unfolded length of pipe should be L ≈ *750mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
185
253

SIZE A1

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 ) |
|---|---|
| 0.125 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 14/2 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- СБ 322 -11-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **5th RH CYLINDER PIPE**

D S CAT NUMBER -

DRAWING NUMBER **322-31-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-12-9** | | **6 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-32-9 | | 6 TH RH CYLINDER TUBE | 1 | |

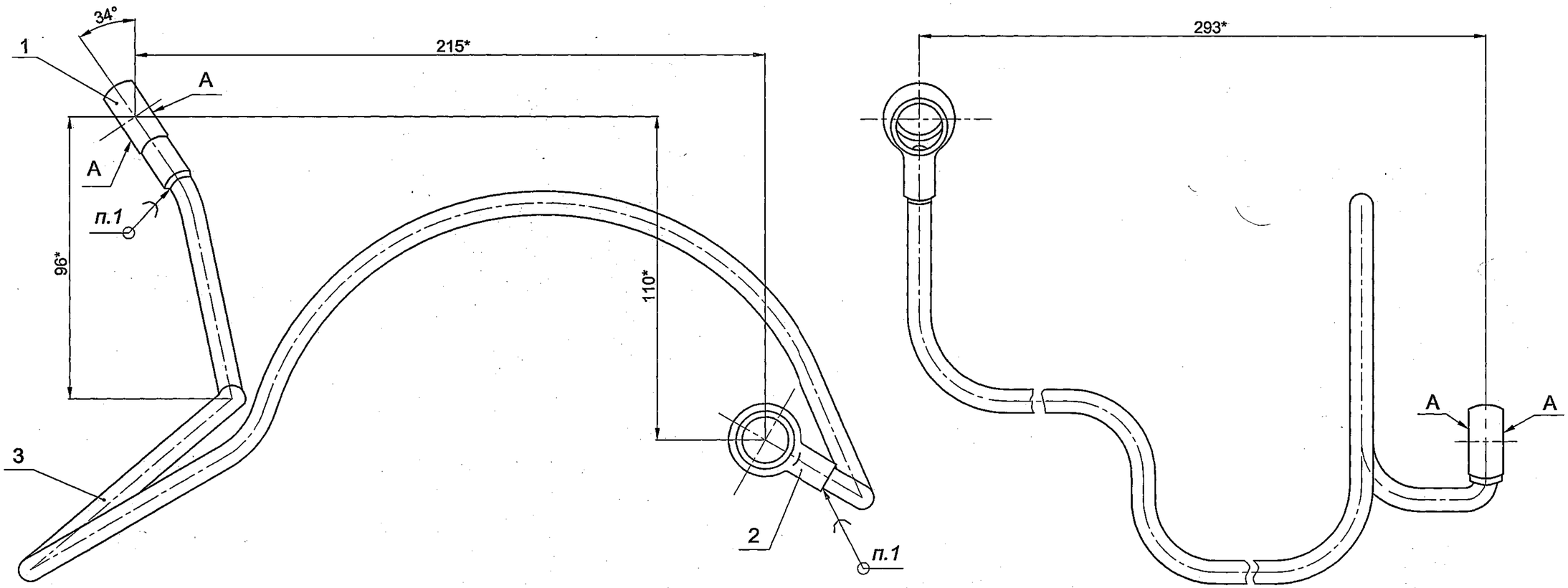
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | R Balakrishnan | TITLE : **6 TH RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-12-9** |

F-4
167/253

DRAWING NUMBER
**Cb.322-12-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit sb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.180 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/12/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 6 th RH CYLINDER TUBE ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER **Cb.322-12-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
168
253

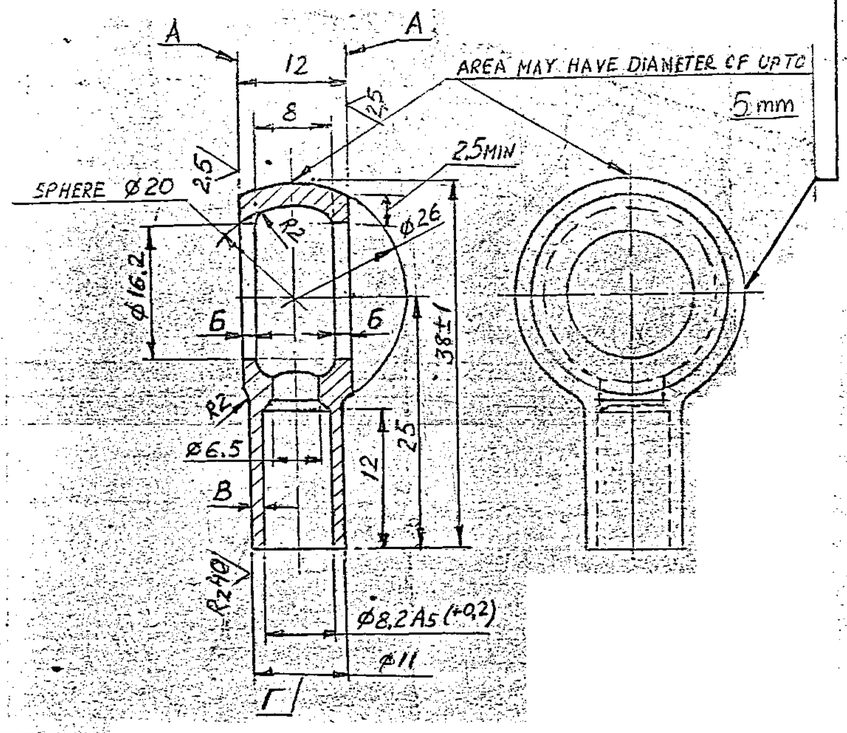
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

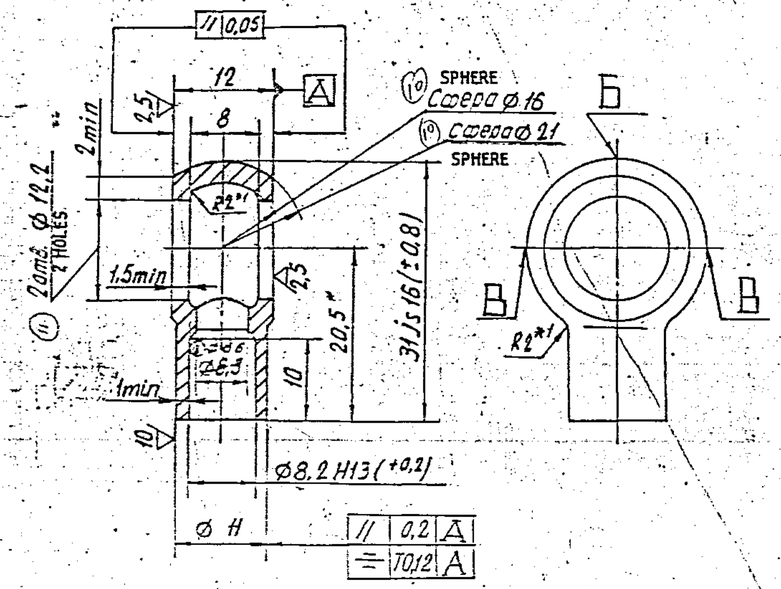
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

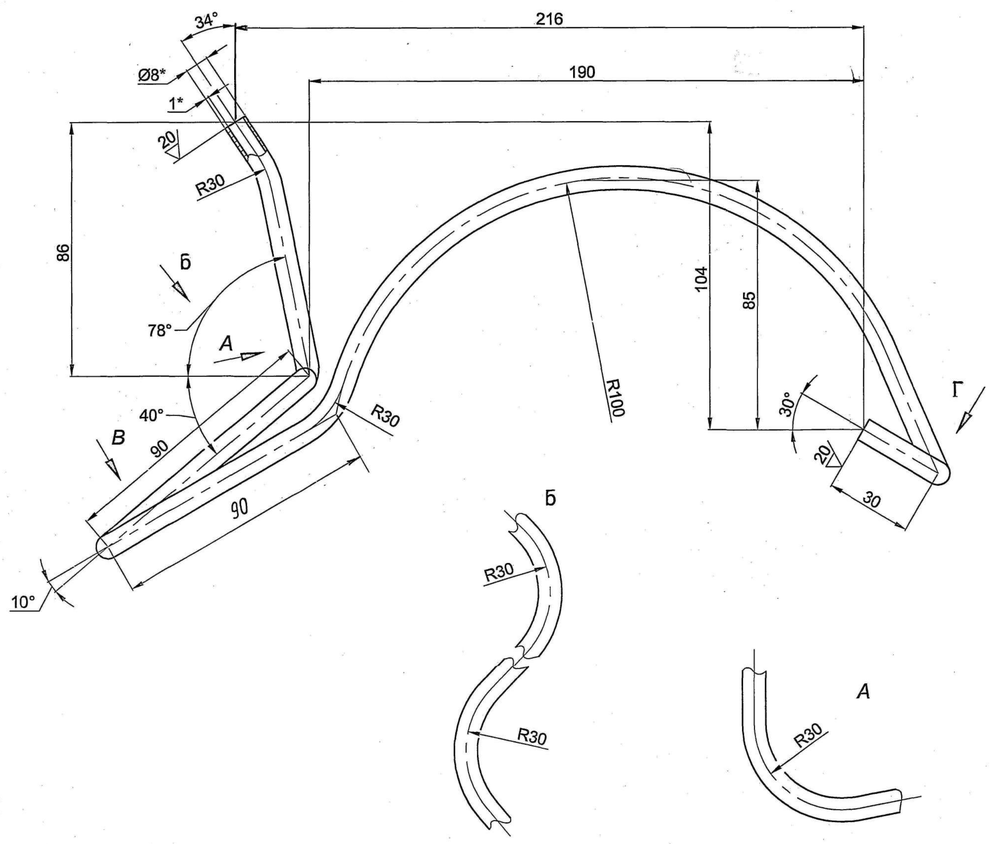
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

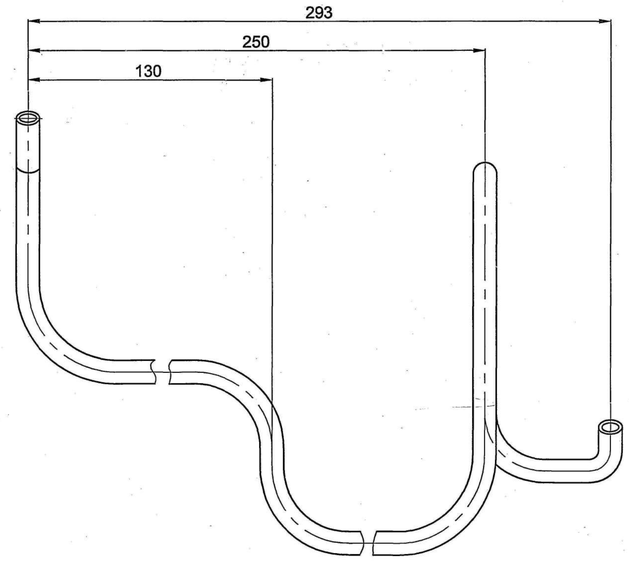
TITLE: SWIVEL ELBOW

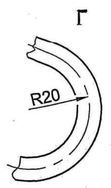
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-32-9**




1. Unfolded length of pipe should be L ≈ *850mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
186
263

SIZE A1

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 ) |
|---|---|
| 0.135 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | V Balakrishnan |
| APPD | |
| DATE | 27/1/17 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CB 322-12-9

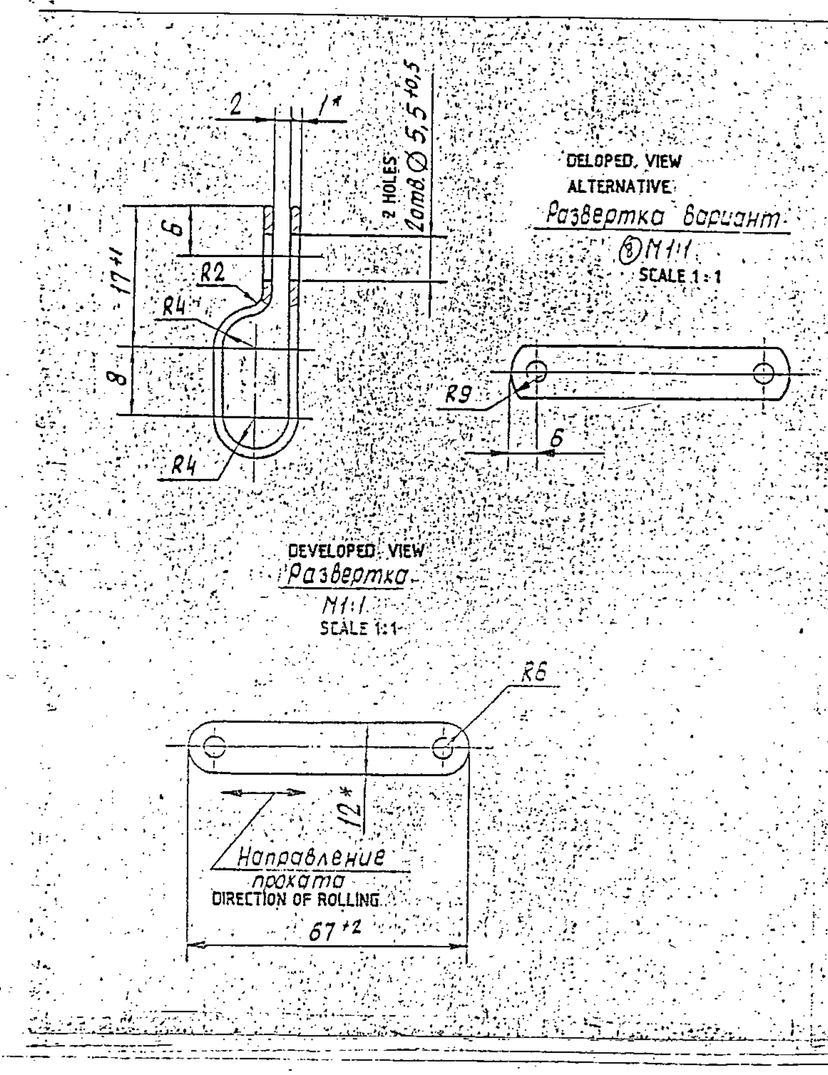
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **6th RH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-32-9**

DRAWING NUMBER
322-65




1. Заменитель материала сталь марок 08; 08 кп; 10 кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12... 24 хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9. хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08; 08КП; 10КП, GOST 1050-74, MAY BE MADE FROM SHEET GOST 19904-74.

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.

3) COATING : Zn 12..... 24 CHROMATIZING, AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ-95 AS PER ИЛ-09-73.

4) IN TROPICALIZED CONSTRUCTION, COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-109-73.

5) * DIMENSIONS FOR REFERANCE.

(A) EQUIVALENT MATERIAL
Gr. DD IS: 573-1994

DRG. REDRAWN BASED ON NEW ISSUE
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 83-114. )

KVD 66762

A-7

SIZE A2

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | 3АМ | 83-114 | | N 10326 |

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

EST. WT. 0,0052 Kg.

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

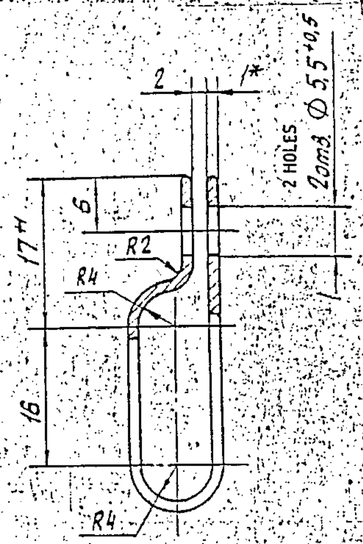
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 6th Alt. Comm. Mtg. Minutes Pt. No. 1 Dt. 26.10.09 |

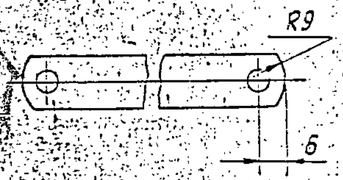
| | | | |
|---|---|---|---|
| DRN | | MATERIAL : STRIP-08ПС-Н-2-1х12 GOST 503-81 | USED ON : СБ 322-15-4 |
| CHD | | | |
| TC | | | |
| APPD | | | |
| DATE | 29-3-82 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| SCALE : 2:1 | | | |
| DIMENSIONS IN mm | | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | | TITLE : CLIP OF 2 PIPES | |
| ALL THREADS TO CONFORM TO | | C S CAT. NUMBER | DRAWING NUMBER : 322-65 |

2nd copy - Duplicate

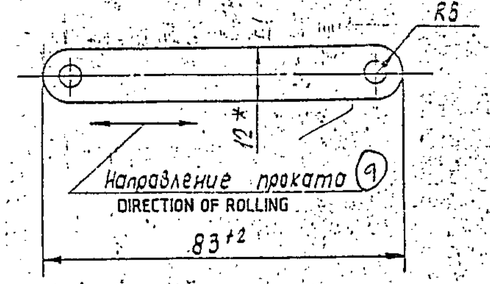
DRAWING NUMBER
322-66




DEVELOPED VIEW ALTERNATIVE
(7) Развертка вариант
H11
SCALE 1 : 1




DEVELOPED VIEW -
(8) Развертка
H11
SCALE 1 : 1




1. Заменитель материала сталь марок 08, 08кп, 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие К39.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры - для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП 10КПGOST 1050–74 MAY BE MANUFACTURED FROM SHEET GOST 19904–74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050–16 .

3) COATING : Zn 12 . . . 24 CHROMATIZING AS PER ИЛ – 483–82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ–95 , AS PER ИЛ –09–73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ –104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR CLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ИЛ–09–73 .

5) * DIMENSIONS FOR REFERENCE .

(A) EQUIVALENT MATERIAL
Gr.DD IS : 513-1994

| | | | |
|---|---|---|---|
| 8 | ЧЛН. | Яз-ТТУ | ЧЛ.ЛИСТ |
| ИЗМ. | ЛИСТ | N ДОКУМ. | ПОДП. |

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

| | |
|---|---|
| EST. WT. 0,0065 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. | |

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| PROD | |
| APPD | |
| DATE | 29 – 3 – 88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08ПС-М-2-1х12 GOST 503-81

USED ON :- СБ 20-35-00-5 СБ 322-14-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE
CLIP OF 3 PIPES

D S CAT NUMBER

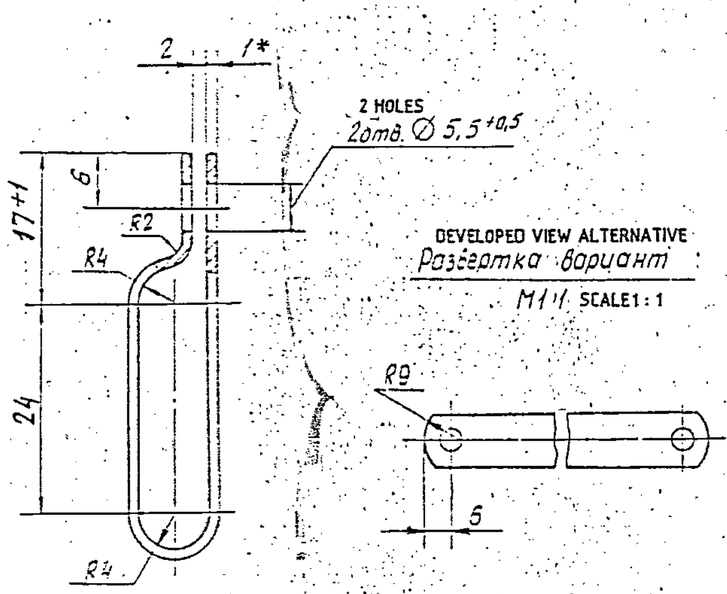
DRAWING NUMBER
322-66

A-7

SIZE: A2

DRG. REDRAWN BASED ON NEW ISSUE.
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 03-11 )

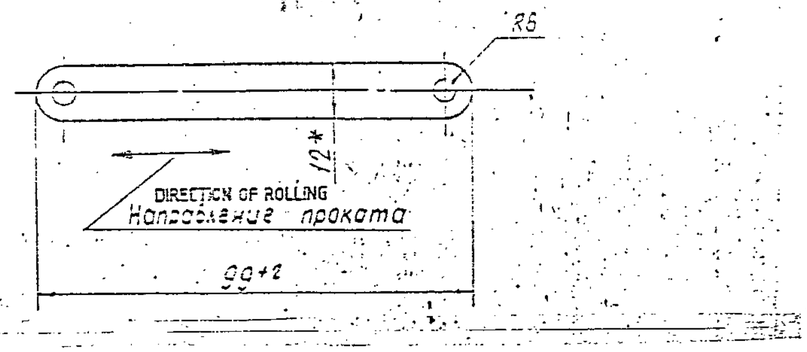
DRAWING NUMBER
322-67




DEVELOPED VIEW ALTERNATIVE
Развертка вариант
M1:1 SCALE 1:1




DEVELOPED VIEW
Развертка
M1:1 SCALE 1:1




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП, 10КП GOST 1050-74 MAY BE MANUFACTURED FROM SHEET GOST 19904-74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16 .

3) COATING : Zn, 12 . . . 24, CHROMATIZING AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ-09-73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-09-73 .

5) * DIMENSIONS FOR REFERENCE .

Ⓐ EQUIVALENT MATERIAL
Gr. DD IS:513-1994

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

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | чад | 83-114 | | |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,0075 Kg. | ( 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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-95 |
| SCALE :- 2:1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-
STRIP 08ПС-М-2-1×12
GOST 503-81 .

USED ON :-
СБ 322-14-4
СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 4 PIPES.

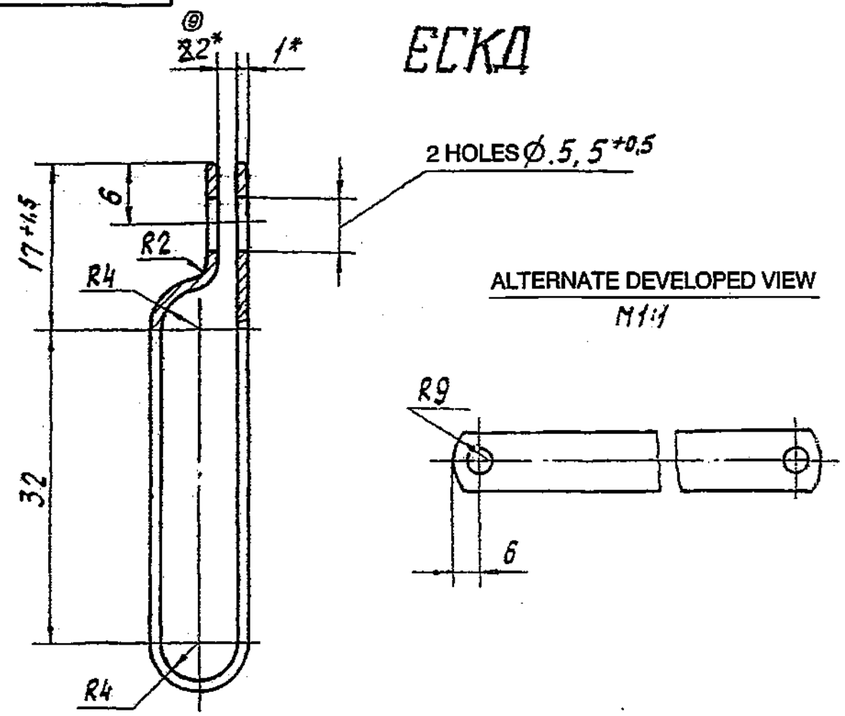
D S CAT NUMBER

DRAWING NUMBER
322-67

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8.1 83-114
DRAWN BASED ON NEW ISSUE

DRAWING NUMBER
322-68

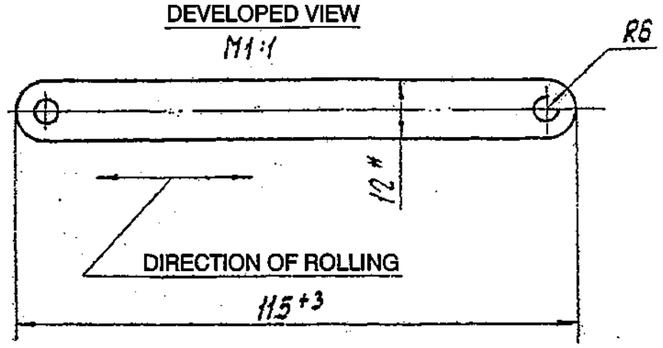
SHEET No. 1 OF 1




DEVELOPED VIEW
M1:1




ALTERNATE DEVELOPED VIEW
M1:1




ECKД

1. ALTERNATE MATERIAL : STEEL GRADES 08 КП, 10 КП, 15 КП TO GOST 1050-74.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. COATING : Zn 9, CHROMATIZING IN ACCORDANCE WITH ЦЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT. OR ЛаКГФ-95 AS PER ЦЛ628-86
4. IN TROPICALIZED MAKE THE COATING IS CADMIUM 9 MICRONS AS PER U 569-84 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT OR ЛаКГФ 95 AS PER ЦЛ628-86
5. * DIMENSION FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL Gr.DD
IS:513-1994

P. JANARDHANAN
Dt. 15 Nov'10 JTO (D)

DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

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) |
|---|---|
| 0.01 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 13.11.10 | 4th Alt. Comm. Mtg. Minutes Point No.1 Dated 26.10.09 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | Nov 2010 |
| SCALE:- | 2 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO IS : 4218,PART-4. | |

MATERIAL :- STRIP
08пс-M-2-1x12 GOST 503-81

USED ON :- Cb 322-14-9
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
# CLIP FOR 5 PIPES

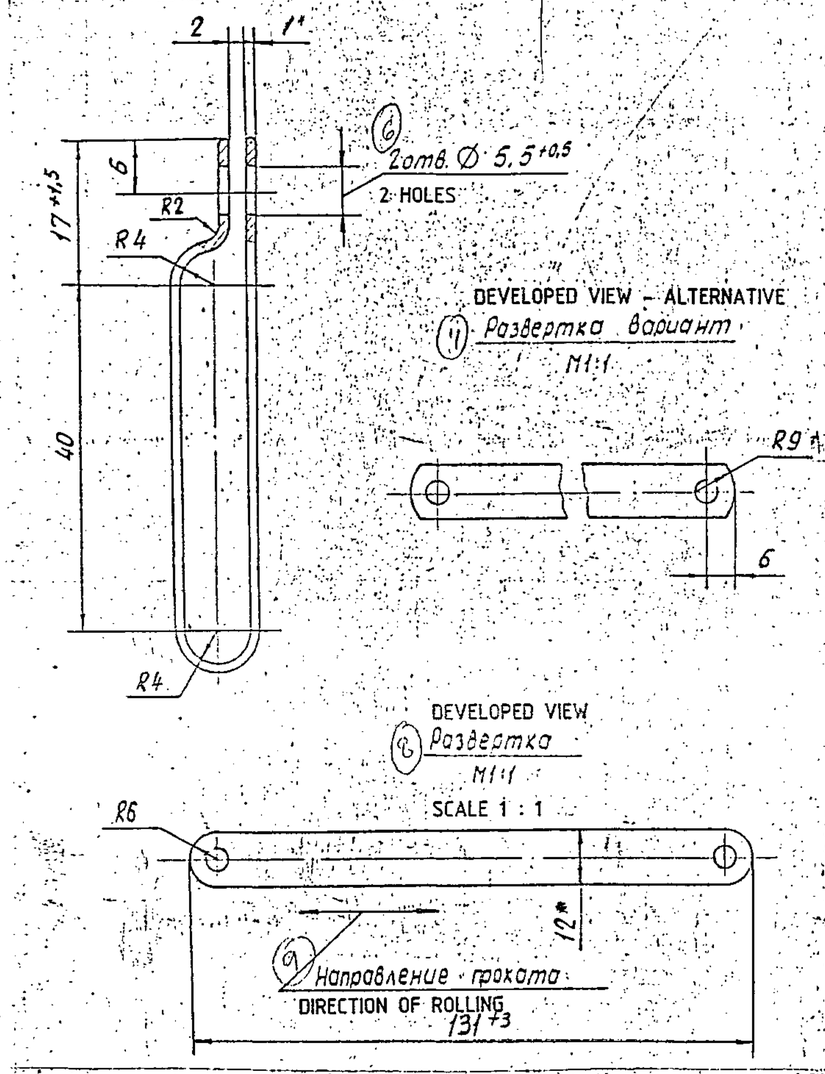
D S CAT NUMBER

DRAWING NUMBER
322-68

F -

SIZE A3

DRAWING NUMBER
322-69




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5.* Размеры для справок.

1. ALTERNATE MATERIAL : STEEL, GRADES 08, 08Kn 10Kn GOST 1050-74. MAY BE MANUFACTURED FROM SHEET GOST 19904-74.
2. REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.
3. COATING : Zn 12 .... 24, CHROMATIZING AS PER ИЛ - 483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ - 09-73.
4. IN TROPICALIZED CONSTRUCTION:
   COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ЦИЛ 104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ЦЛ - 09-73.
5. *DIMENSIONS FOR REFERENCE

(A) EQUIVALENT MATERIAL
GrDD IS:513-1994

ORG. REDRAWN BASED ON NEW ISSUE
ORG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No: 8 (BK 03-

| | | | | | |
|---|---|---|---|---|---|
| Разраб. | Ган | 83-714 | Утверд. | Гейн | |
| Н.контр. | Шкет | Чобкум. | Подп. | Дата | |

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0.0115 Kg | |

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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08пс - М - 2 - 1х12 GOST 503-81

USED ON :- СБ 322-14-4, СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 6 PIPES

D S CAT NUMBER

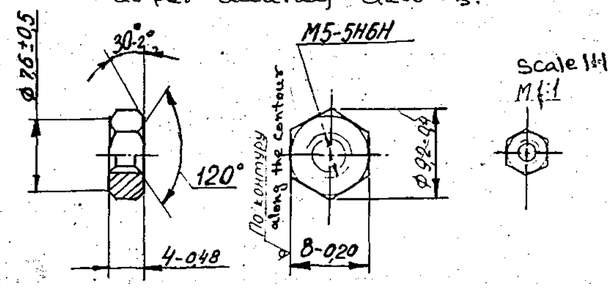
DRAWING NUMBER
322-69

A-7
SIZE A2

DRAWING NUMBER
351 13

Rz 40 (V)

Rolled stock of group B class 4 GOST 1051-73 may be used. To ensure high quality of coating, it is allowed to eliminate surface defects of rolled stock with decrease of dimension as per accuracy class - 5.




1. The Component may be manufactured from Steel 45 GOST 1050-74.
2. Chamfer 120° should be made up to the major diameter of thread.
3. Shift of hole axis up to 0.25 mm. is permitted.
4. The thread may be checked before coating.
6. Coating :- Cd 9, Chromatizing as per ГОСТ 9.104 with elimination of Hydrogen embrittlement.
7. The rest of the technical requirements as Per standard 82052-00.
8. Alternate material :- Steel, grades 40 and 50 GOST 1050-74.

## EXPLANATORY NOTE

9. i) REFERENCE MATERIAL QUOTED:
GAUGED HEXAGONAL STEEL BAR CLASS OF ACCURACY 4, 8.0(-0.100)mm A/F TO GOST 8560-78 FROM HIGH GRADE SIZED STEEL SURFACE QUALITY 'B' TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45 TO GOST 1050-74

(A) ii) REFERENCE NOTE '8' ON ALTERNATE MATERIAL : QUALITY CARBON STRUCTURAL STEEL GRADES 40 AND 50 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 | |
| | | | | MAXIMUM | | | |
| 45 | 0,42-0,50 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | REF MATL |
| 40 | 0.37-0,45 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | ALT MATL |
| 50 | 0,47-0,55 | 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 : AS PER GOST 1050-74

| GRADE OF STEEL | ULTIMATE TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | ELONGATION % | REDUCTION IN AREA % | IMPACT STRENGTH Kgfm/cm² | HARDNESS B H N MAX | REMARKS |
|---|---|---|---|---|---|---|---|
| 45 | 61 | 36 | 16 | 40 | 5 | 229 | REF MATL |
| 40 | 58 | 34 | 19 | 45 | 6 | 217 | ALT MATL |
| 50 | 64 | 38 | 14 | 40 | 4 | 241 | ALT MATL |

(A) Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

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

| EST. MASS | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.0012 Kg | ( 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 |
|---|---|---|
| A | 18.5.09 | Authy: Third Alt. Comm. Minutes Point: 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE
SCALE - 2 : 1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.
ALL THREADS CONFORM TO

MATERIAL: ~~HEXAGON BAR 8.0 GOST 8560-78 45-5 GOST 1051-73~~ (A)

USED ON:- ~~CG 80435 00 00 5~~ CG 3335 00 24 3

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI

TITLE:- NUT M5

D S CAT NUMBER

DRAWING NUMBER 351 13

A-11

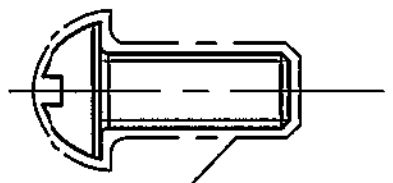
FORMAT A-2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

F-4
226
253

4 | 3 | 2 | 1

DRAWING NUMBER
356-22-2



Coating : Zinc-*6 microns, chromium-1micron* as per ИЛ-749-88 by removing hydrogen embrittlement.

1. In tropical construction, plating cadmium-9microns, chromium-1 micron as per *ИЛ-569-84 with removal of hydrogen embrittlement.*

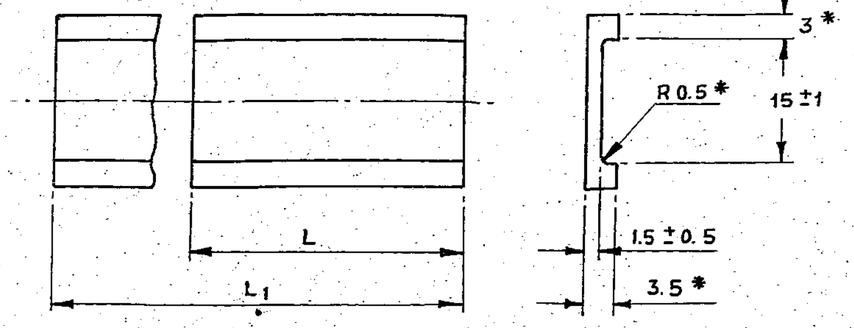
2. *Blank should match with requirement Gost 1759.0-87 for class of accuracy B.*

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

| | |
|---|---|
| EST. WT.(Kg) 0.003 | 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 :- *Blank* *Screw* M5-6gx12.58 GOST 17473-80 | USED ON :- СБ 322-14-9 СБ 322-15-9 СБ 323-00-10 СБ 3320-00-43 |
| ISSUE DATE NATURE OF AMENDMENTS | |
| DRN SCALE :- 2 : 1 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD DIMENSIONS IN mm | |
| APPD TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69 | TITLE :- SCREW M5x12 |
| DATE 26/11/07 ALL THREADS TO CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 356-22-2 |

SIZE A4

DRAWING NUMBER
3335-38-3 TO
3335-38-6




| PART No. | L MM | MASS Kg. | USED ON | KVD No. |
|---|---|---|---|---|
| 3335-38-3 | 26±1 | 0.002 | | |
| 3335-38-4 | 31±2 | 0.0024 | C6 3335-00-~~24~~30 | 78315 |
| 3335-38-5 | 42±2 | 0.0032 | C6 3335-00-~~24~~30 | 78435 |
| 3335-38-6 | 55±0.2 | 0.0042 | | |

*C620-27-00-4

1. DIMENSIONS ARE TO BE ENSURED WITH TOOL.
2. LENGTH OF DELIVERED BAND $L_1$ SHOULD NOT BE LESS THAN 1000 mm.
3. MARK "3335-38-3" SHOULD BE PUT ON TAG OF COMPONENT TO BE DELIVERED.
4. TO BE MADE AS PER TT III H 100 GOST 15152-69.
5. THE REST OF THE REQUIREMENTS AS PER TY 005 216-75.

3335-38-3

## EXPLANATORY NOTE :-

6. REFERENCE MATERIAL QUOTED :
UNVULCANISED OIL AND PETROL RESISTANT RUBBER CODE OF CLASSIFIER 25-1231, RUBBER GRADE HO-68-1 TO TY 005-216-75.

a. MECHANICAL PARAMETERS :

i. RUPTURE STRENGTH Kgf/cm$^2$ _____ 90 Min
ii. ELONGATION OF RUPTURE % _____ 250 Min
iii. RESIDUAL ELONGATION AFTER RUPTURE % ___ 12 Max
iv. HARDNESS No IP TO TM P DEVICE ARBITORY ____ 55-70

7. LIKELY EQUIVALENT GRADE / SPECIFICATION FOR NITRILE CHLOROPRENE BASE TO BA 60 BS 2751-82 AND C 60 BS 2752-82.

Ⓐ ALT MATL.: RUBBER GRADE BNC TO SPECN. CQA(HV)/NBR+CR

EXPLANATORY ADDED ON 4-6-92

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

| EST. WT. | 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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 27.05.08 | Lr. No. TC/GEN/IND-III Dt:. 02.04.08 |

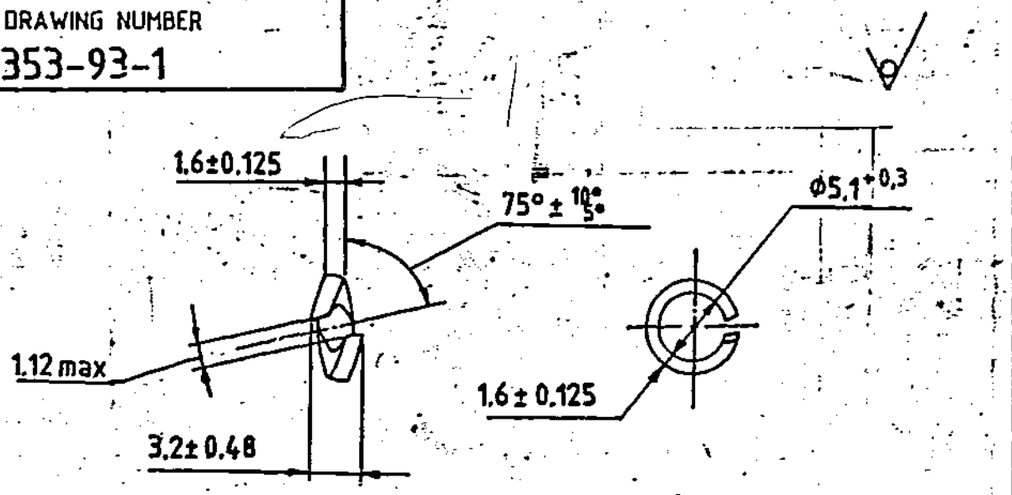
DRN —
CHD
TCD
APPD
DATE 8-7-86
SCALE - 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- RUBBER HO-68-1 TY 005 216-75
USED ON —
CONTROLLERATE OF QUALITY ASSURANCE. (HEAVY VEHICLES) AVADI
TITLE : GASKET
D S CAT NUMBER
DRAWING NUMBER 3335-38-3 TO 3335-38-6

A-9
SIZE A2

KVD.No. 78696

DRAWING NUMBER
353-93-1




1. IN TROPICAL MANUFACTURE, COATING Cd 9 Cr AS PER ШУЛ - 104 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.

2. WASHER 5Т65Г 09 GOST 6402-70 MAY BE USED, IN VISUAL AND TROPHICAL MANUFACTURE.

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

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 Pcs 0,424 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. |
| A | 16.8.10 | 4th Alt.Comm.Meeting Minutes Point No.12 Dt: 26-10-09 | MATERIAL:- 5T 65 Г 06 GOST 6402-70 / USED ON Cб [illegible] Cb [illegible] |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2 : 1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. |
| CHD | | | |
| TCD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69 | TITLE: WASHER |
| APPD | | ALL THREADS CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 353-93-1 |
| DATE | 28.5.94 | | |
| SIZE A4 | | | |

## EXPLANATORY NOTE:

MATERIAL QUOTED: WASHER 5Т, 65Г, 06 GOST 6402-70.

CORRESPONDS DESIGN AND DIMENSIONS OF SPRING (LOCK) WASHERS.
06 = CONVENTIONAL SYMBOL OF FINISH. (PARKERISING FOLLOWED BY OILING).
5 = NOMINAL THREAD DIA OF BOLT OR SCREW
Т = HEAVY ; 65Г (65G) = GRADE OF STEEL AS PER GOST 1050-74.

CHEMICAL COMPOSITION: AS PER GOST 1050-74.

| CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·62 – 0·70 | 0·17 – 0·37 | 0·90 – 1·20 | 0·25 | 0·040 | 0·035 | 0·25 | 0·25 |

WEIGHT OF STEEL WASHERS AND THEIR RESILIENCE PROPERTIES AS PER GOST 6402-70.

THEORITICAL WEIGHT OF 1000 STEEL WASHERS IN kg = 0·424.

ESTIMATED RESILIENCE OF WASHERS FROM STEEL GRADE 65G = 28·7. IN kg

MECHANICAL PROPERTIES: AS PER GRADE 65G GOST 1050-74.

YIELD POINT kgf/mm² (MIN) = 44

ULTIMATE TENSILE STRENGTH (MIN) = 75 kgf/mm²

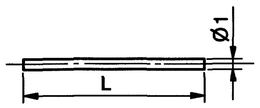
ELONGATION % (MIN) = 9

REFERENCE NOTE: 09 = ZINC PLATING (CONVENTIONAL SYMBOL OF FINISH)

(A) EQUIVALENT MATERIAL
75 C6 TO IS:2507/EN 42 J BS:970

EFA_19 MAR 22

DRAWING NUMBER
354-22




| KVD No. | L mm | LIMIT DEVIATIONS mm | USED ON | |
|---|---|---|---|---|
| | 50 | ± 1.5 | | |
| 78705 | 60 | ± 1.5 | Cb 3338-401-10, Cb 530-200 | |
| 78706 | 80 | ± 2 | Cb 3334-00-39, ~~Cb 327-00-45~~ Cb 327-00-47-01 Cb 327-00-73 | (G) |
| 78707 | 100 | ± 2 | Cb 3338-00-16 Cb 327-00-73 ~~Cb 3335-00-33 Cb 327-00-45, Cb 3335-00-24,~~ Cb 3342-00-8Cb | (G) (H) |
| 78708 (B) (C) | 120 | ± 2 | Cb 419-00-4, Cb 310-00-7, Cb 20-22-00-7 Cb 322-00-4Cb | (H) |
| 78709 | 150 | ± 2 | Cb 327-00-47-01 Cb 327-00-73 ~~Cb 3335-00-33 Cb 327-00-45, Cb 3335-00-24~~ Cb 3334-00-27 | (G) |
| 78710 | 200 | ± 2 | ~~Cb 327-00-45,~~ Cb 3334-00-27 Cb 327-00-47-01 Cb 327-00-73 | (G) |
| 78711 | 260 | ± 3 | Cb 3334-00-27, Cb 20-29-00-8 | |
| (A) | 300 | ± 3 | Cb 3338-407-4, Cb 3329-00-13 | |
| 78712 | 350 | ± 3 | | |
| 78713 | 420 | ± 3 | Cb 411-00-41 | |
| 78714 | 500 | ± 3 | ~~Cb 327-00-45~~ Cb 327-00-47-01 | (G) |
| | 600 | ± 3.5 | | |
| | 800 | ± 5 | | |

## ADDITIONAL REQUIREMENTS

FOR MANUFACTURE OF LOCK WIRE AS PER DRAWING 354-22

1. THE WIRE SHOULD BE PROVIDED WITH ZINC COATING. DIAMETER OF WIRE AFTER COATING SHOULD BE $1^{+0.06}_{-0.03}$ mm.
2. OVALITY OF WIRE SHOULD NOT EXCEED HALF OF THE TOLERANCE ON DIAMETER.
3. THE WIRE SHOULD BE MANUFACTURED FROM LOW CARBON ROLLED STEEL AS PER GOST 1050-74.
4. ULTIMATE RUPTURE STRENGTH OF ZINC PLATED WIRE SHOULD NOT BE LESS THAN 3.7 MPa ( 37 Kgf/mm$^2$ ).
5. THE WIRE SHOULD WITHSTAND NOT LESS THAN 7 BENDINGS THROUGH 100° AND NOT LESS THAN 25 TWISTINGS THROUGH 360°
6. THE SURFACE OF WIRE SHOULD NOT HAVE BLOW HOLES, CRACKS, MARKS, BACK FINS, OXIDE SPOTS, BURRS AND RUST THERE SHOULD NOT BE ANY UNCOATED AREAS ON THE WIRE.
7. ON WIRE FRACTURE, THERE SHOULD NOT BE ANY CRACKS, BACK FINS, FISSURES, BLISTERS, AND SHRINKAGE CAVITIES.
8. WIRE ZINC COATING SHOULD BE BOUND TO THE STEEL WHEN WOUND ON CYLINDER WITH DIAMETER EQUAL TO WIRE FIVE FOLD DIAMETER, THE WIRE SHOULD NOT HAVE ANY PEELINGS AND FISSURINGS OF ZINC COATING.

## EXPLANATORY NOTE :-

REFERENCE MATERIAL QUOTED :- LOW CARBON STEEL TO GOST 1050-74.

CHEMICAL COMPOSITION %

| GRADE | C | Si | Mn | Cr | P | S | Cu | Ni |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| 15 | 0.12 - 0.19 | 0.17 - 0.37 | 0.35 - 0.65 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

MECHANICAL PROPERTIES

1. ULTIMATE TENSILE STRENGTH Kgf/mm$^2$ (min) = 38
2. YIELD POINT Kgf/mm$^2$ (min) . . . . . = 23
3. PERCENTAGE ELONGATION % (min) . . . . . = 27
4. REDUCTION IN AREA % (min) . . . . . = 55
5. HARDNESS BHN ( MAX ) . . . . . = 149

(D) ** ITEM USED IN VARIOUS LENGTHS ON VARIOUS ASSEMBLIES OF V46-6, V92-S2 & UTD-20 ENGINE.

(E) EQUIVALENT MATERIAL IS: 549.

Cb3334-08-2 (L)
Cb 3312-00-22 (K)
Cb 3312-00-15
Cb 3308-00-23
Cb 3308-00-17 (J)
Cb 310-44
Cb 310-00-7
CQA(HV)5.06.607E (F)
Cb 20-06-00-2

PILOT SAMPLE SHOULD BE APPROVED BEFORE BULK PRODUCTION.

| EST. WT. | 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 |
|---|---|---|
| L | 8.03.22 | DC(I)No.CQA(HV)/ENGV46-6/C-0001/2022 Dt.5.2.22 |
| K | 04.01.22 | USED ON NUMBER ADDED. |
| J | 31.07.21 | USED ON NUMBER ADDED. |
| H | 20.09.19 | USED ON NUMBER ADDED. |
| G | 08.08.19 | USED ON NUMBER ADDED. |
| F | 15.7.15 | Pt.11 of 7th Alt. Comm. Meeting Dt.11.4.12 |
| E | 08.7.10 | 4 th Alt. Comm. Meeting Minutes. Point No.3 Dt. 26.10.09 |
| D | 28.8.08 | USED ON NUMBER ADDED. |
| C | 30.6.01 | AUTHY 90211/AHSP/ED dt. 27.3.01 |
| B | 15.1.02 | AUTHY Lt.No. 110026 / IND-III / 509 dt. 12.1.02. |
| A | 15.2.88 | AUTHY NOTN No. BK 81-406 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | 18.03.86 |
| SCALE:- | — |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- ———

USED ON :- Cb 20-35-00-5
Cb 3338-402-4Cb
SEE TABLE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
LOCK WIRE

D S CAT NUMBER

DRAWING NUMBER
354-22

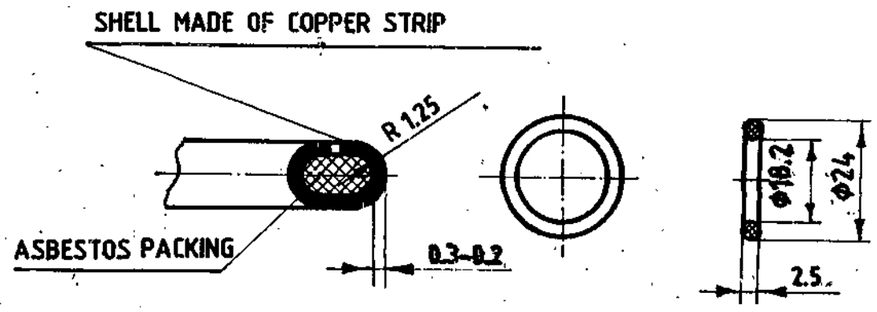
N. J (N SARAVANAN) SSO-I Dt. 22 Aug 2019

DRG. RE - INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL.

COMMON TO V46-6, V92S2 & UTD-20 ENGINES

SIZE A2

DRAWING NUMBER
355 08




SCALE 5 : 1

# EXPLANATORY NOTE:

1. REFERENCE MATERIAL QUOTED:

COPPER ASBESTOS SEALING RING 18.3mm I/D,24mm O/D AND MANUFACTURED IN ACCORDANCE WITH MH 4152-62.

a) COPPER SHEATHE RING :- SOFT COPPER BAND GRADE M3 TO GOST 859-78.

b) CORE:- BRAIDED ASBESTOS CORD MADE OF CHRYSOTILE.

C) CHEMICAL COMPOSITION AS PER GOST 859-78.

| GRADE OF COPPER | CONTENT OF ELEMENTS % | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | COPPER & SILVER min | IMPURITIES MAXIMUM | | | | | | | | |
| | | Bi | Sb | AS | Fe | Ni | Pb | Sn | S | O |
| M3 | 99.5 | 0.003 | 0.05 | 0.01 | 0.05 | 0.2 | 0.05 | 0.05 | 0.01 | 0.08 |

* (A) (C) CQA(HV)5.06.001E (B) CQA(HV)5.07.502E, CQA(HV)5.07.504E

Cb 3301-15-30 , Eb 3320-00-33
Cb 3335-00-24, Cb 20-01-00-8
Cb 20-11-02-11, Cb 20-22-00-7.
Cb 3301-00-44 , Cb 3301-15-44, Cb 310-44
Cb 3320-00-43 , Cb 3335-00-9 , Cb 337-100
Cb 413-115-9 , Cb 322-00-9 , Cb 327-00-73
Cb 329-00-7 , Cb 447-00-1
Cb 306-01-20 , Eb 306-02-20 , Cb 310-31
Cb 322-00-4 , Cb 406-16-2 , Cb 406-17-2
Eb 413-115-6 , Cb 3300-00-27 CX
CB 3335-00-24 ~~3330~~
Cb 3338-404-1
346 01 3 CB
346 00 CB
176-32 CB

COMMON TO V-92S2 & UTD-20 ENGINES

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

| EST WT 100 PIECES 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

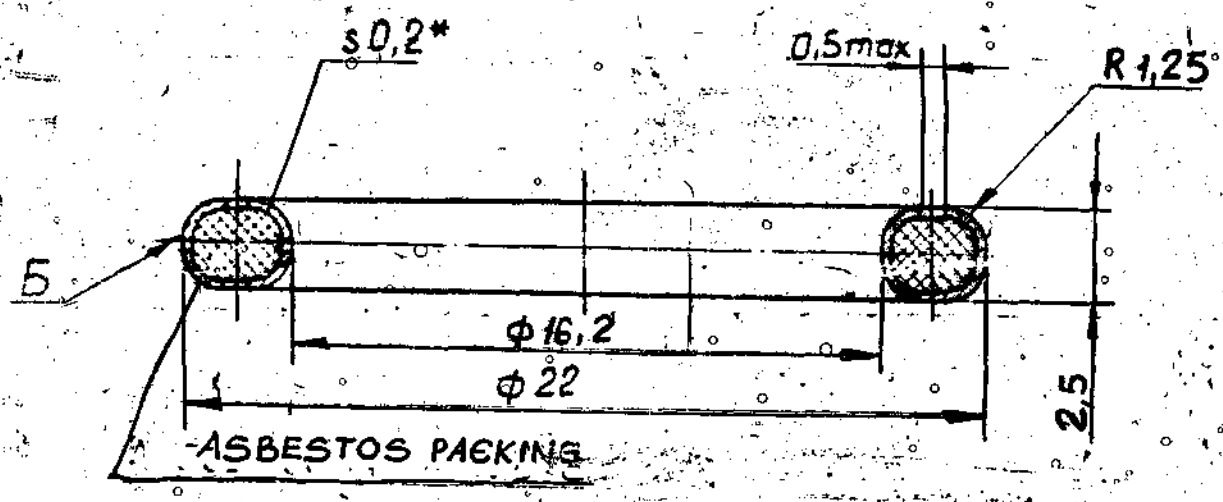
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| C | 18-03-15 | Pt. 11 of 7th Alt. Comm. Meeting Dt. 11-4-12 |
| B | 5.3.14 | Authy. Point No.11 of 7th Alt. Comm. meeting at EFA |
| A | 28.8.08 | USED ON NUMBER ADDED |

| | | |
|---|---|---|
| DRN | | MATERIAL: M3 AND ASBESTOS |
| CHD | | USED ON: CB 413-115-6, CB 3329-01-11, Cb 447-00-1, CB 327-00-45 * |
| TCD | | |
| APPD | | CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI |
| DATE | 04-4-86 | |
| SCALE: 1 : 1 | | TITLE: RING 18 x 24 |
| DIMENSIONS IN mm | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED | | |
| ALL THREADS CONFORM TO | | D S CAT NUMBER |
| | | DRAWING NUMBER 355 08 |

A.11

SIZE A3

355-11




1 ALTERNATE MATERIAL IS STRIP 0,22 TO 0,3mm THICK. GOST 1173-77.
2 TOLERANCE ON ROUNDNESS OF SURFACE Б SHOULD BE WITHIN THE DIAMETER TOLERANCE.
3 USED FOR PACKING IS ASBESTOS CORD ШАОН 1,5 GOST 1779-72.
4 RINGS SHOULD BE TIGHTLY FILLED WITH PACKING.
5 DISPLACEMENT OF SHEATHING EDGE FROM THE MEAN DIAMETER OF RING SHOULD NOT EXCEED 0,35mm.
6 PROJECTION OF ONE EDGE OF SHEATHING IN RESPECT TO THE OTHER ONE SHOULD NOT EXCEED 0,3mm.
7 PROJECTION OF ASBESTOS FIBRE IF NEGLIGIBLE BEYOND THE SHEATHING JOINT IS PERMITTED.
8 UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS:- FOR HOLES - AS PER A7
SHAFTS - AS PER B7.
AND OTHERS - AS PER CM7.
9 MARK DESIGNATION, DATE OF MANUFACTURE AND STAMP FINAL ACCEPTANCE ON THE TAG FOR BATCH OF PARTS.
10 *DIMENSION IS GIVEN FOR REFERENCE.

Ⓐ ** CQA(HV)5.06.001E

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

| | | | |
|---|---|---|---|
| | | | EST. MASS 100 PIECES 0,12 Kg |
| | | | TO BE STAMPED OR MARKED WHERE INDICATED THUS -II- ( LETTERS) |
| A | 18-03-15 | Pl. 11 of 7th All. Comm. Meeting Dt. 11-4-12 | ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE :- 5 : 1 | MATERIAL :- STRIP 0,2 M3 GOST :- 1173-77 |
| CHD | | DIMENSIONS IN mm | USED ON :- ** CB 310-00-7C6 Cb 20-01-00-8 |
| TCD | | TOLERANCE ON DIMNS UNLESS OTHERWISE STATED | CONTROLLERATE OF INSPECTION ( HEAVY VEHICLES ) AVADI |
| APPD | | | TITLE COPPER ASBESTOS SEALING RING 16 - 22 |
| DATE | 19/8/87 | ALL THREADS CONFORM TO | O S CAT NUMBER |
| | | | DRAWING NUMBER 355-11 |

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| GEN ASSY. | | | **Cb.322-00-9** | | **COMPRESSED - AIR** | | |
| | | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | | **ASSY.** | | |
| | | | | | | | |
| | | 1 | Cb.322-13-3 & I/L | | STARTING VALVE ASSY. | 12 | Tropical make |
| | | 2 | Cb.322-14-9 & I/L | | COMPRESSED AIR | 1 | Tropical make |
| | | | | | STARTING TUBING | | |
| | | | | | L . H ASSY. | | |
| | | 3 | Cb.322-15-9 & I/L | | COMPRESSED AIR | 1 | Tropical make |
| | | | | | STARTING TUBING | | |
| | | | | | R . H ASSY. | | |
| | | 4 | 354-22 | | LOCK WIRE | 6 | Tropical make |
| | | | | | | | L=150±2 mm |
| | | | | | | | |
| | | | | | | | |
| | | | | | | |

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| GEN ASSY. | | 5 | 355-08 | | RING 18x24 MH 4152-62 | 12 | |
| | | 6 | 355-11 | | RING 16x22 MH 4152-62 | 24 | |

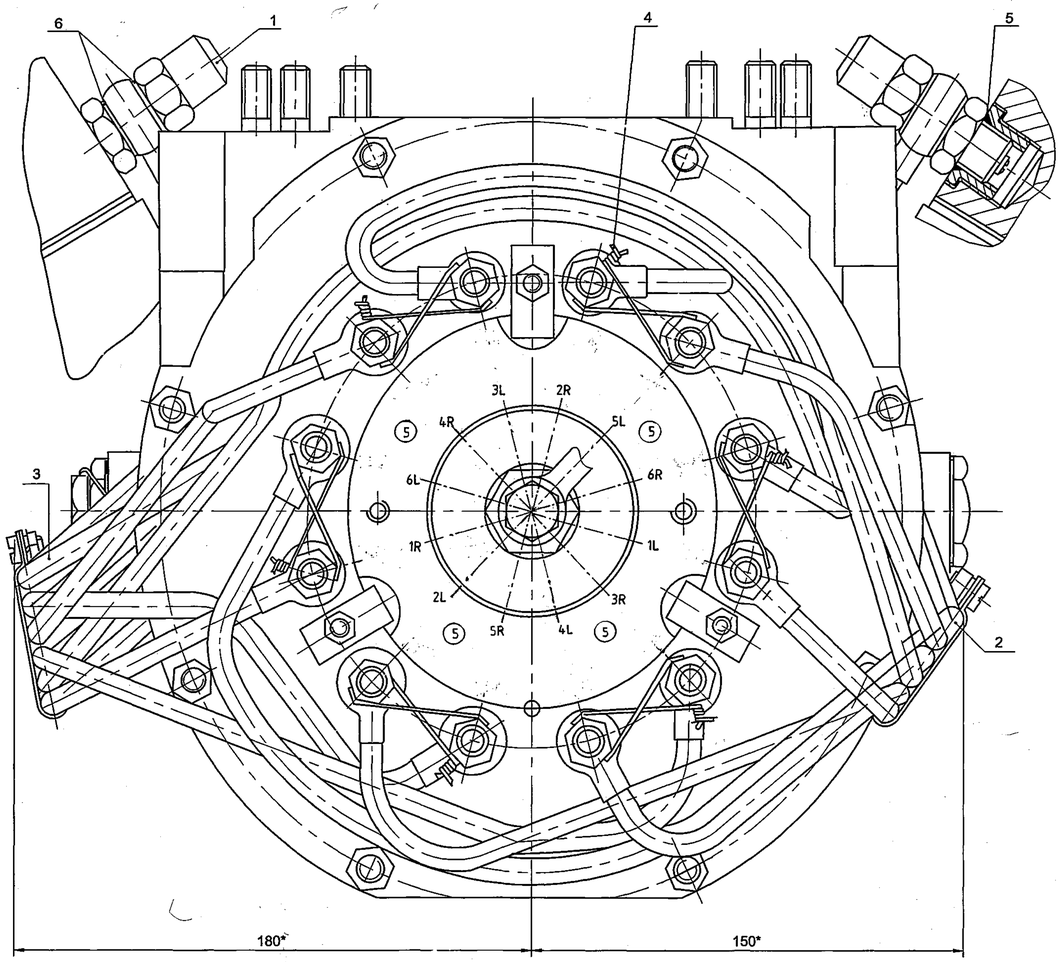
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 5

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED AIR STARTING TUBING ASSY.** | | |
| APPD | | | | |
| DATE | 28.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-00-9** |

F-4
143/253

DRAWING NUMBER
Cb.322-00-9




1. Gap between pipes and adjoining parts should be minimum 1.5mm while mounting (except the fastening area).

2. Mounting of pipe lines on the engine to be carried out as per technical requirment *ИВ-152Д*.

3. *Components and assembly units having conventional symbol "Т И", in the part list of given drawing in "remarks" column, should have tropicalized construction, as specified in the drawing for components.*

4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

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 OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 5 | 27.02.09 | NOTN. NO: 377-03 (F-158) |
| 4A | 13-8-08 | D.O. CORRECTION |

DRN
CHD
APPD
DATE 06/2/07
SCALE:- 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-
USED ON :- Gen. Assy.

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING ASSY (4A)

D S CAT NUMBER
DRAWING NUMBER Cb.322-00-9

F-4
144
283
SIZE A1

USED ON

CB 3300-00-26
CB 310-00-7 , CB 322-00-4
CB-20-22-00-7

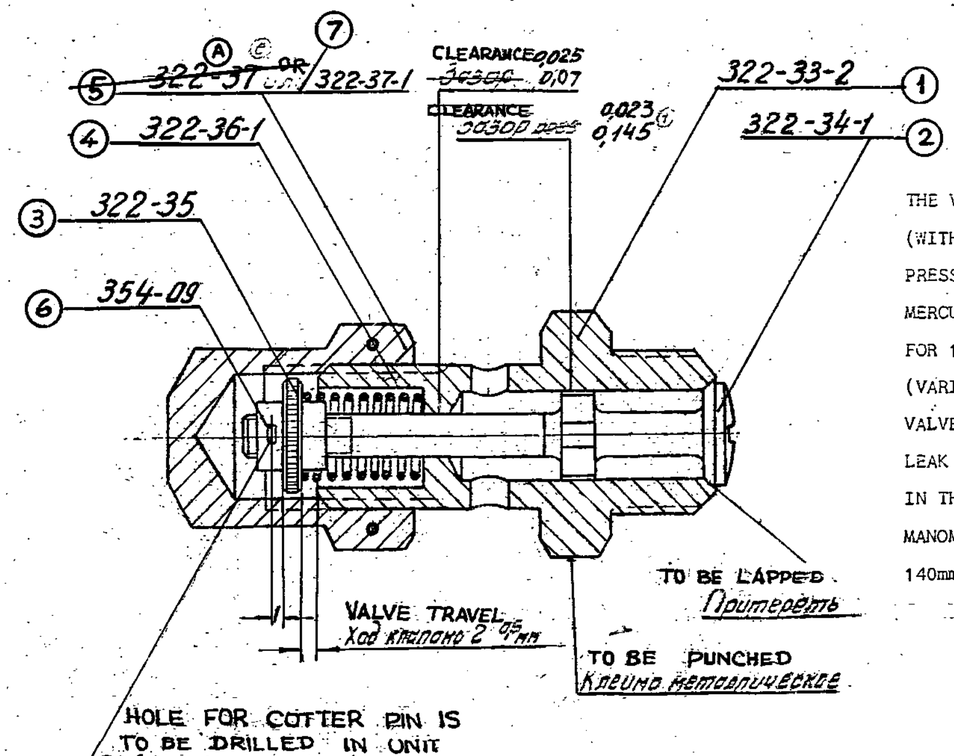
| ITEM | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | No. OFF | REMARKS |
|---|---|---|---|---|---|
| | | | | | |
| (A) | ~~CB 322-13-3 &~~ | | | | |
| | CB 322-13-4 | | STARTING VALVE ASSY | | |
| | & ITEM LIST | | | | |
| | | | | | |
| 1 | 322-33-2 | | BODY OF STARTING VALVE | 1 | |
| 2 | 322-34-1 | | STARTING VALVE HEAD | 1 | |
| 3 | 322-35 | | STARTING VALVE NUT | 1 | |
| 4 | 322-36-1 | | STARTING VALVE SPRING | 1 | |
| (A) ~~5~~ | ~~322-37~~ | | ~~STARTING VALVE CAP~~ | ~~1~~ | ~~REFER S.L.NO 7~~ |
| 6 | 354-09 | | COTTER PIN 1.6x12 GOST 397-79 | 1 | |
| 7 | 322-37-1 | | STARTING VALVE CAP | 1 | |

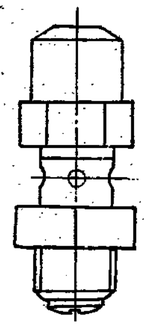
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| A | 30.6.01 | AUTHY LT. No. 90211/AHSP/ED dt 27.3.01 | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| CHD | | TITLE: STARTING VALVE ASSY | |
| TCD | | | |
| APPD | | | |
| DATE | 17-2-88 | SHT. No. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR (A) ~~CB 322-13-3 &~~ CB 322-13-4 |

A-7

DRAWING NUMBER (A)
~~CБ322-13-3~~, СБ322-13-4



M1:1
SCALE 1:1

THE VALVE SHOULD BE PRESSURE-TESTED ON A SPECIAL STAND WITH AIR (WITH INTERMEDIATE VOLUME NOT EXCEEDING 2500cm$^3$ BEFORE MERCURY PRESSURE GAUGE) AT A PRESSURE OF 5±1 kgf/cm$^2$
MERCURY COLUMN MAY RISE BY 5mm MAX. IN ONE LEG OF A MANOMETER TUBE FOR 10 SECONDS
(VARIATION IN HEIGHT OF COLUMNS SHOULD NOT EXCEED 10mm)
VALVE COMPONENTS SHOULD BE DRY DURING PRESSURE TESTING.
LEAK PROOFNESS OF VALVE MAY BE CHECKED BY WATER PRESSURE GAUGE.
IN THIS CASE WATER COLUMN MAY RISE BY 70mm MAX. IN ONE LEG OF MANOMETER TUBE VARIATION IN HIEGHT OF COLUMNS SHOULD NOT EXCEED 140mm)

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

| EST. WT. 0.117 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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 30.6.01 | AUTHY LL.No.90211/AHSP/ED dt 27.3.01 |

DRN
CHD
TCD
APPD
DATE 17-2-88
SCALE :- 2 : 1
DIMENSIONS in mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :- СБ-20-22-00-7
~~СБ-3300-00-26~~ СБ-310-00-7
~~СБ-322-00-4~~

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

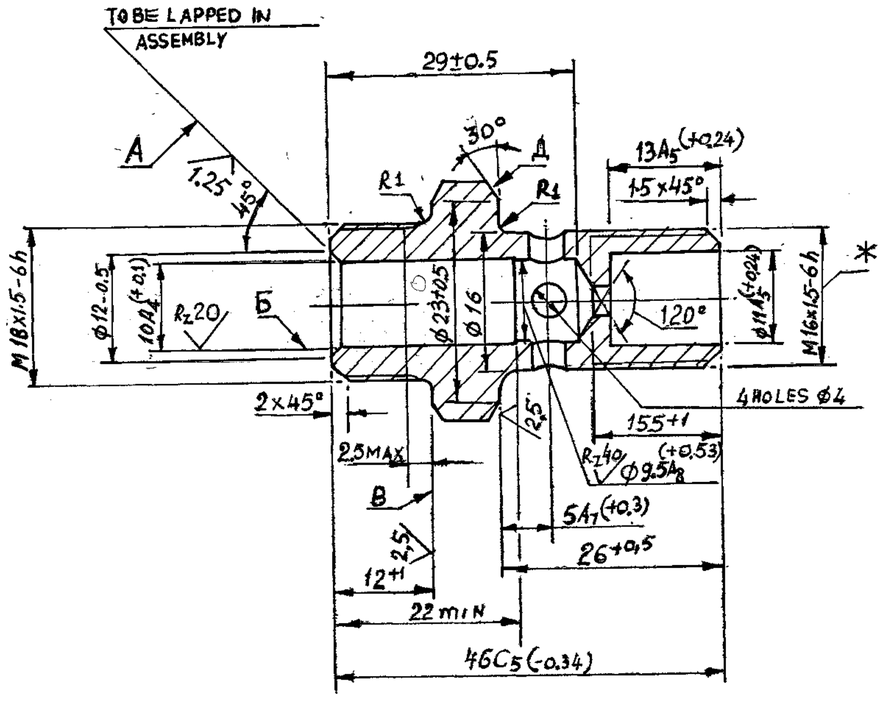
TITLE
STARTING VALVE ASSY

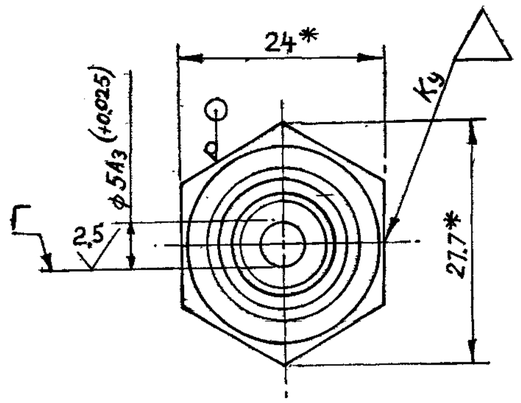
D S CAT NUMBER

DRAWING NUMBER (A)
~~СБ.322-13-3~~
СБ.322-13-4

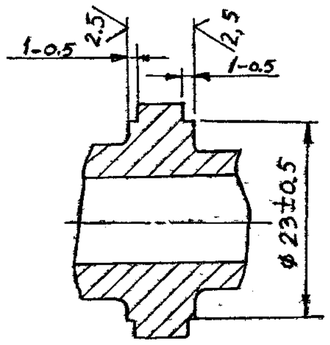
DRAWING NUMBER
322-33-2

▽4 UNLESS OTHERWISE SPECIFIED.




ALTERNATE




## EXPLANATORY NOTE :

MATERIAL QUOTED : 24-5 GOST 8560-78 / 45 GOST 1050-74

BRIGHT STEEL HEXAGONAL BAR ACROSS FLATS 24 mm.

CLASS OF ACCURACY 5 TO GOST 8560-78.

45 = GRADE OF STEEL.

(a) CHEMICAL COMPOSITION : (AS PER GOST 1050-74)

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 45 | 0.42-0.50 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.040 | 0.035 | 0.25 | 0.25 |

(b) MECHANICAL PROPERTIES :

| GRADE OF STEEL | YIELD POINT Kgf/mm² (min) | ULTIMATE TENSILE STRENGTH Kgf/mm² (min) | ELONGATION % (min) | REDUCTION IN AREA % (min) | IMPACT STRENGTH Kgf.m/cm² (min) |
|---|---|---|---|---|---|
| 45 | 36 | 61 | 16 | 40 | 5 |

1. INSPECTION GROUP III AS PER TECHNICAL REQUIREMENTS TT-11 HB 241 TO 207 ( d = 3.9 TO 4.2 ).
2. UNSPECIFIED LIMIT DEVIATIONS OF MACHINING DIMENSIONS ARE AS FOLLOWS :
   FOR HOLE - AS PER A7.
   FOR SHAFTS - AS PER B7.
   FOR OTHERS - AS PER CM7.
3. MACHINE SURFACES Б AND Г WITH COMBINATION TOOL.
4. TOLERANCE FOR END PLAY OF SURFACE B WITH RESPECT TO THE ANGLE DIAMETER AXIS OF THREAD SHOULD BE 0.05 mm.
5. TOLERANCE FOR RADIAL RUN-OUT OF CHAMFER A WITH RESPECT TO SURFACE Б AXIS SHOULD BE 0.02mm.
6. TOLERANCE FOR END PLAY OF SURFACE 'Д' WITH RESPECT TO THE ANGLE DIAMETER AXIS OF THREAD 'Ж' SHOULD BE 0.1mm.
7. WHEN BUTT-ENDS B AND 'Д' ARE FACED, THE SINGLE POINT TOOL MAY CUT ALONG THE CYLINDRICAL SURFACE TO A DEPTH OF NOT EXCEEDING 0.3mm.
8. THREAD 'U' MAY BE MADE BY ROLLING WITH THE DIAMETER OF THE UNTHREADED PORTION FROM BUTT-END 'B' BEING WITHIN THE LIMITS OF THE MEAN DIAMETER OF THREAD OVER THE LENGTH NOT EXCEEDING 2.5mm.
9. * DIMENSION ARE GIVEN FOR REFERENCE.
10. COATING : ZINC-PLATED, 6 MICRONS THICK OILED.
11. USED FOR TROPICAL VERSION IS COATING CADMIUM-PLATED 9 MICRONS THICK, OILED WITH REMOVEL OF HYDDROGEN EMBRITTLEMENT.
12. INTERNAL SURFACES MAY HAVE NO COATING.

** Cb 322-13-4 (A)

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≠ ( LETTERS) |
|---|---|
| 0.06 kg. | |

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 |
|---|---|---|
| A | 31.7.21 | USED ON NUMBER ADDED. |

DRN
CHD
TCD
APPD
DATE 6-1-90
SCALE :- 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- 24-5 GOST-8560-78 / 45 GOST 1050-74

USED ON :- ~~C6 322-13-3~~ ** / ~~C6 310-31~~ (A)

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE: STARTING VALVE BODY

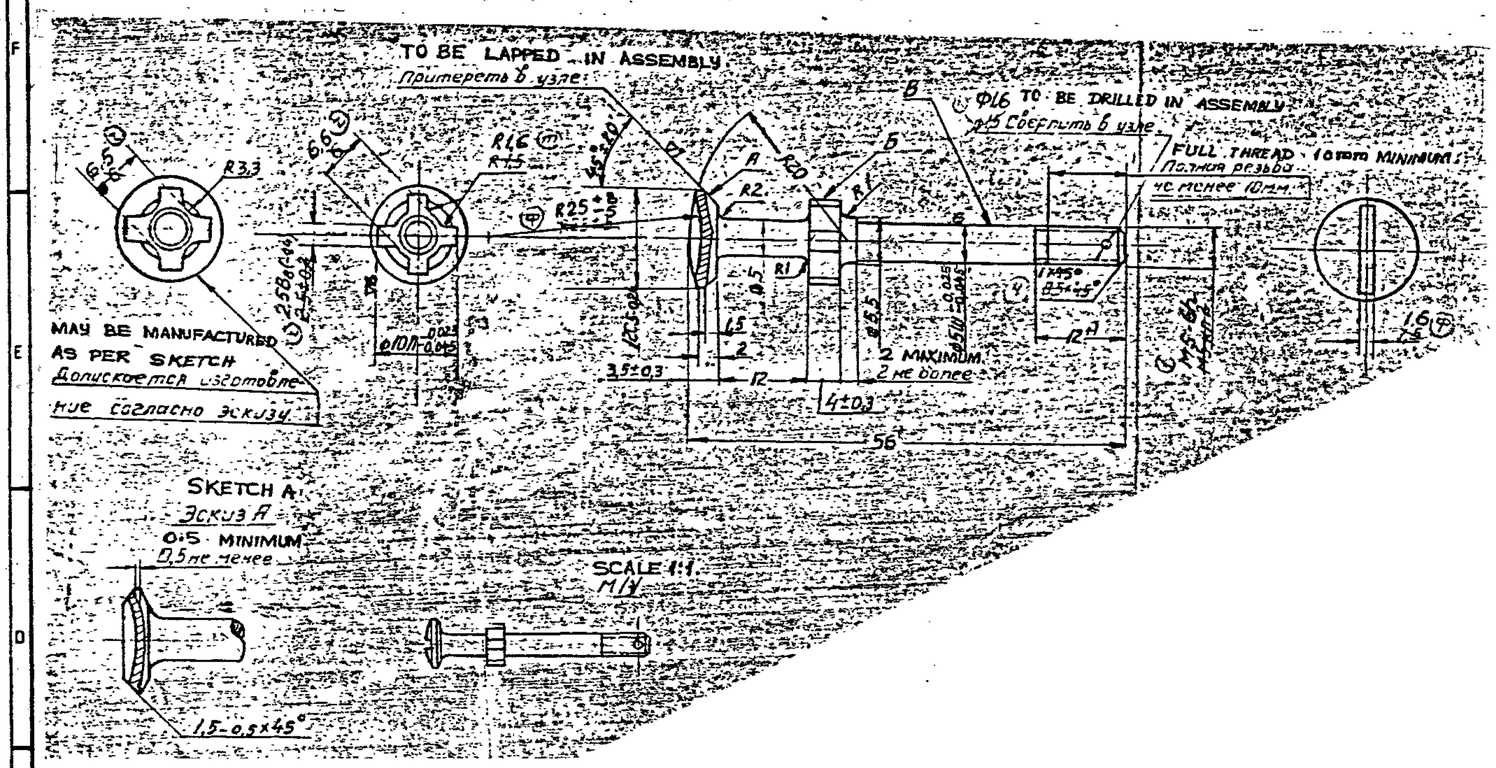
D S CAT NUMBER

DRAWING NUMBER 322-33-2

COMMON TO V92S2 Engine.

SIZE A2

DRAWING NUMBER
322-34-1




INSPECTION GROUP IV IN ACCORDANCE WITH TT-11 HRC = 26-33.

SHARP EDGES SHOULD BE BLUNTED.

DIMENSIONS WITH UNSPECIFIED TOLERANCES SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7 OST 1010.

TECHNICAL REQUIREMENTS FOR THREAD IN ACCORDANCE WITH STANDARD 82021-00.

SHIFT OF SLOT 1.6 mm RELATIVE TO THE AXIS SHOULD NOT EXCEED 0.3 mm

RUN-OUT OF CHAMFER A RELATIVE TO THE AXIS OF SURFACE 6 SHOULD NOT EXCEED 0.03mm, AND THAT OF SURFACE B RELATIVE TO SURFACE 6 SHOULD NOT EXCEED 0.05mm

VALVE HEAD MAY BE MANUFACTURED AS PER SKETCH A

COATING:- CHEMICAL OXIDIZING, OIL FINISHING.

THREAD MAY BE FORMED BY ROLLING.

FINAL ACCEPTANCE MARK SHOULD BE PUT ON A TAG FOR A BATCH OF COMPONENTS AND SEALED IN CONTAINER.

(A) ALTERNATE MATERIAL : STEEL 38XC GOST 4543-76

(B) Alt.Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

KVD No 63372
COMMON TO V92S2 Engine.

SIZE A2

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.008 kg. | |

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

▽4 UNLESS OTHERWISE SPECIFIED

## EXPLANATORY NOTE :-

MATERIAL QUOTED :- STEEL 38XA GOST 4543-76.

CHROMIUM STEEL GRADE = 38 XA , A - INDICATES HIGH QUALITY STEEL.

CHEMICAL COMPOSITION :- %

| CONTENT OF ELEMENTS | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·35-0·42 | 0·17-0·37 | 0·50-0·80 | 0·80-1·10 | 0·025 | 0·025 | 0·30 | 0·30 |

MECHANICAL PROPERTIES :-

1. HEAT TREATMENT
   - a) HARDENING OR NORMALIZING TEMPERATURE °C = 860.
     COOLING MEDIUM = OIL.
   - b) TEMPERING TEMPERATURE °C = 550.
     COOLING MEDIUM = WATER OR OIL.
2. YIELD POINT Kgf/mm² (MIN) = 80.
3. ULTIMATE STRENGTH Kgf/mm² (MIN) = 95.
4. RELATIVE ELONGATION % (MIN) = 12.
5. RELATIVE REDUCTION ALONG CROSS SECTION % = 50 (MIN).
6. IMPACT STRENGTH Kgf.m/cm² (MIN) = 9.

## EXPLANATORY NOTE :-

8. MATERIAL QUOTED STEEL 38XC GOST 4543-76.

CHROMIUM SILICON STEEL .

38XC = GRADE

(a) CHEMICAL COMPOSITION :

C = 0.34 - 0.42 , Si = 1.00 - 1.40 , Mn = 0.30 - 0.60 , Cr = 1.30 - 1.60

P = 0.025 (max) , S = 0.025 (max) , Cu = 0.30 (max) , Ni = 0.30 (max)

(b) MECHANICAL PROPERTIES :

ULTIMATE TENSILE STRENGTH Kgf/mm² = 95 (min)

YIELD POINT Kgf/mm² = 75 (min)

% RELATIVE ELONGATION = 12 (min)

% REDUCTION IN AREA = 50 (min)

IMPACT STRENGTH Kgf.m/cm² = 7 (min)

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| C | 31.07.21 | USED ON NUMBER DELETED. |
| B | 20-5-09 | Authy: Third Alt. Comm. Minutes Point: 2 Dated 27-02-2009. |
| A | 9-12-87 | AUTHY: BK-84-498 |

DRN
CHD
TCD
APPD
DATE 04-9-86
SCALE :- 2:1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- STEEL 38XA GOST 4543-76

USED ON :- ~~C6 322-13-3~~ (C) C6 322-13-4

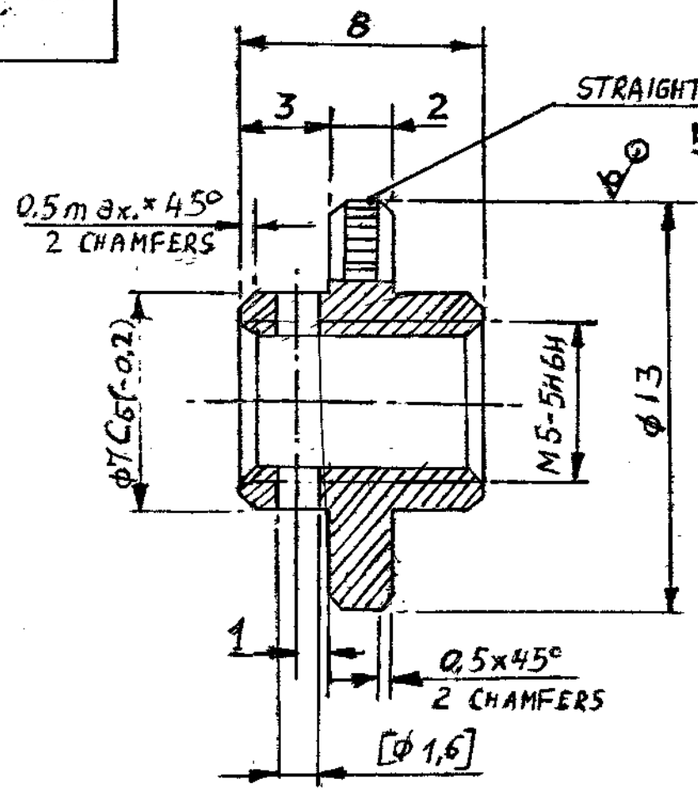
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

TITLE
STARTING VALVE HEAD

D S CAT NUMBER

DRAWING NUMBER
322-34-1

DRAWING NUMBER
322-35




1, ALTERNATE MATERIAL IS STEEL 40, 50, GOST 1050-74.

2. UNSPECIFIED LIMIT DEVIATIONS OF MACHINING DIMENSIONS ARE AS FOLLOWS FOR HOLES – AS PER $A_{7}$,
SHAFTS – AS PER $B_{7}$,
OTHERS – AS PER $CH_{7}$.

3, CARRY-OUT MACHINING AS PER DIMENSION GIVEN IN SQUARE BRACKETS IN THE ASSEMBLY.

4, COATING: CHEMICALLY OXIDIZED OILED.

Ⓐ

# EXPLANATORY NOTE:-

Rz 40 (√)

MATERIAL QUOTED:- 13-5 GOST-7417-75
45 GOST 1050-74

ALTERNATE MATERIAL QUOTED:- 40, 50, GOST 1050-74

SIZED, COLD ROLLED OR COLD DRAWN STEEL WITH 13 mm EXTERNAL DIA, CLASS OF ACCURACY -5 AS PER GOST 7417-75, MANUFACTURED FROM STEEL GRADES 40, 45 & 50 GOST 1050-74.

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

| GRADE OF STEEL | C | Si | Mn | Cr | P | S | Cu | Ni |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| 40 | 0·37-0·45 | 0·17-0·37 | 0·50-0·80 | 0·25 | 0·035 | 0·040 | 0·25 | 0·25 |
| 45 | 0·42-0·50 | 0·17-0·37 | 0·50-0·80 | 0·25 | 0·035 | 0·040 | 0·25 | 0·25 |
| 50 | 0·47-0·55 | 0·17-0·37 | 0·50-0·80 | 0·25 | 0·035 | 0·040 | 0·25 | 0·25 |

MECHANICAL PROPERTIES:- (AS PER GOST 1050-74).

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | % ELONGATION | % REDUCTION IN AREA | IMPACT STRENGTH Kgf.m/cm² |
|---|---|---|---|---|---|
| | MINIMUM | | | | |
| 40 | 58 | 34 | 19 | 45 | 6 |
| 45 | 61 | 36 | 16 | 40 | 5 |
| 50 | 64 | 38 | 14 | 40 | 4 |

Ⓐ Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

COMMON TO V92S2 Engine.

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

EST. WT. 0.003 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 B INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE

| ISSUE/DATE | NATURE OF AMENDMENTS |
|---|---|
| A 18.5.09 | Authy: Third Alt. Comm. Minutes Point 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE 5-5-09
SCALE:- 5:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69
ALL THREADS TO CONFORM TO

MATERIAL:- ~~13-5 GOST 7417~~ 75
Ⓐ ~~45 GOST 1050-74~~

USED ON
SS 322-13-4

CONTROLLERATE OF QUALITY ASSURANCE(HEAVY VEHICLES) AVADI

TITLE
**STARTING VALVE**

D S CAT NUMBER

DRAWING NUMBER
322-35

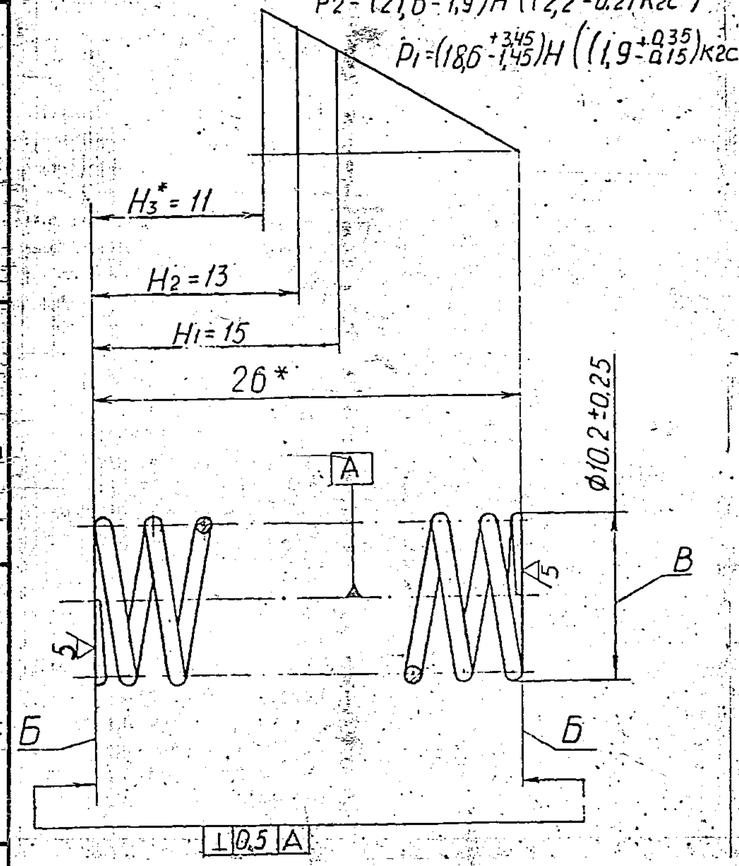
SIZE A3

DRAWING NUMBER
322.36.1

$P_3^* = 24.6H\ (2,5\ кгс)$

$P_2 = (21,6^{+3,9}_{-1,9})H\ ((2,2^{+0,4}_{-0,2})кгс)$

$P_1 = (18,6^{+3,45}_{-1,45})H\ ((1,9^{+0,35}_{-0,15})кгс)$




## TECHNICAL REQUIREMENTS IN RUSSIAN

1. Длина развернутой пружины 290мм.
2. Число рабочих витков 8.
3. Число витков полное 10,5-0,5.
4. Толщина конца опорного витка 0,2 мм, не менее.
5. Опорные поверхности Б должны составлять 5/8 длины окружности витка, не менее.
6. Допускается увеличение наружного диаметра опорных витков до 10,5 мм., не более.
7. Неравномерность шага пружины в свободном состоянии 0,5 мм., не более.
8. Зазор между концом опорного витка и соседним рабочим витком 0,2мм, не более.
9. Покрытие Ц.15.хр по ИЛ-483-82 с удалением водородной хрупкости.
10. * Размеры и параметры для справок.

## TECHNICAL REQUIREMENTS - TRANSLATED

1. Length of developed spring 290 mm.
2. No. of working coils 8.
3. Total no. of coils 10.5 - 0.5 .
4. Thickness of supporting coil end 0.2 mm min.
5. Resting surfaces b should not be less than 5/8 the length of circumference coil, minimum.
6. The outer diameter of supporting coils may be increased up to 10.5 mm max.
7. Variation in pitch should not exceed 0.5 mm max.
8. Gap between supporting coil end and adjacent working coils should not exceed 0.2 mm.
9. Coating. Zn . 15, chromatizing as per ИЛ-483-82 with elimination of hydrogen embittlement.
10. * Dimensions and parameters for reference.

## EXPLANATORY NOTE :-

MATERIAL QUOTED :- WIRE IIA-1, GOST 9389-75
CARBON STEEL, COLD DRAWN WIRE USED FOR FABRICATING SPRINGS, COILED IN COLD STATE AND NOT SUBJECTED TO HARDENING.

IIA = CATEGORY OF HIGH ACCURACY
WIRE DIA = 1 MM.
WIRE SHOULD BE FABRICATED FROM CARBON STEEL GRADE KT2 and SK7

CHEMICAL COMPOSITION %.

| GRADE | C | Mn | Si | S | P | Cr | Ni | Cu |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| KT2 | 0.86-0.91 | 0.20-0.40 | 0.17-0.37 | 0,020 | 0.020 | 0.050 | 0.050 | 0.10 |
| SK7 | 0.68-0.76 | 0.50-0.80 | 0.17-0.37 | 0.030 | 0.020 | 0.050 | 0.050 | 0.04 |

MECHANICAL PROPERTIES :-

TENSILE STRENGTH kgf/mm² = 205-250
NO. OF BENDS (min) = 10
NO. OF TWISTS (min) = 17

Ⓐ EQUIVALENT MATERIAL
Gr. DH/DM IS:4454-2001

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.02 kg. | ( 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 |
|---|---|---|
| A | 16-8-10 | 4th Alt. Comm. Meeting Minutes Point No.13 Dt:26-10-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-1-88 |
| SCALE :- | 4:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- WIRE IIA-1.0 GOST 9389-75.

USED ON :- CB.322-13-34

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A.V.A.D.I

TITLE
STARTING VALVE SPRING.

D S CAT NUMBER

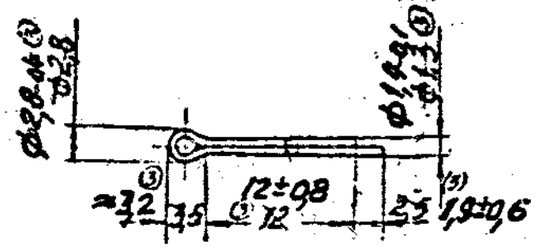
DRAWING NUMBER
322-36-1

KVD. 63374

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NIL (BK 84-483)

SIZE A2

DRAWING NUMBER
354-09




M1:1

1. COTTER PINS SHOULD BE MANUFACTURED FROM LOW-CARBON STEEL WITH CONTENT OF CARBON NOT EXCEEDING 0.28% AS PER GOST 1050-74.

2. BURRS, CRACKS, RUST AND SHARP CUTS IN THE PLACE OF TRANSMISSION OF HEAD TO THE SHANK ARE NOT ALLOWED ON THE SURFACE OF COTTER PINS.

3. COTTER PINS WITH NOMINAL DIAMETER UPTO 5mm. SHOULD WITH-STAND WITHOUT SIGNS OF FRACTURE AND CRACKS NOT LESS THAN 3 BENDINGS.

4. COATING : CADMIUM 3, CHROMATIZING AS PER 44A-184 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT.

5. TO BE ANNEALED.

** ~~Cb 321-13-3~~ ~~Cb 3331-683-2~~ (A) ~~Cb 318-31~~ ~~Cb 3331-681-18~~ ~~Cb 322-133~~ ~~Cb 318-681~~ Cb 322-13-4 (A)

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

COMMON TO V92S2 Engine.

A-11-87

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 PIECE. 0.230 Kg | TO BE STAMPED OR MARKED WHERE INDICATED THUS ⌐a (LETTERS) |
| | | 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 ** USED ON SEE ABOVE |
| A | 31.7.21 | USED ON NUMBER ADDED. | |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2:1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102-69 ALL THREADS CONFORM TO | TITLE COTTER PIN |
| TCD | | | |
| APPD | | | B.S. CAT NUMBER |
| DATE | 15-2-85 | | DRAWING NUMBER 354-09 |

SIZE A4

# EXPLANATORY NOTE:

Material Quoted : Low carbon steel carbon content 0.20 % (max) as per gost 1050-74.

## Chemical composition

| | | | |
|---|---|---|---|
| carbon | : 0.12 - 0.19 | sulphur | : 0.040 |
| silicon | : 0.17 - 0.37 | Phosphorus | : 0.035 |
| Manganese | : 0.35 - 0.65 | Nickel | : 0.25 |
| chromium | : 0.25 Max. | copper | : 0.25 |

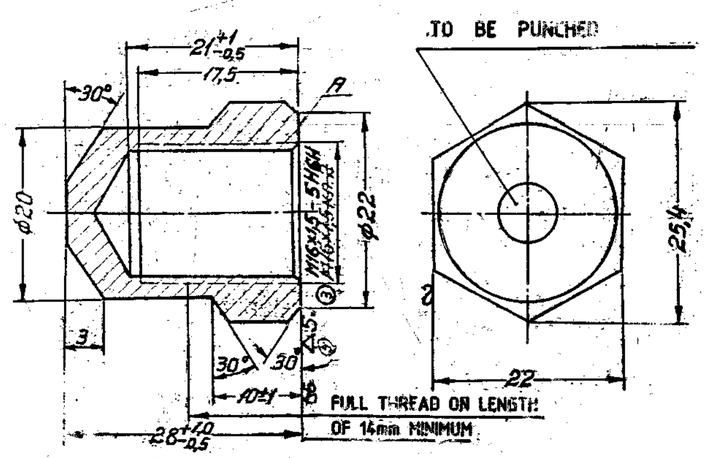
## Mechanical Properties.

| | | |
|---|---|---|
| Ultimate tensile strength Kgf/mm² | : 38 | (Min) |
| Yield point Kgf/mm² | : 23 | |
| Elongation % | : 27 | |
| Reduction in area % | : 55 | |

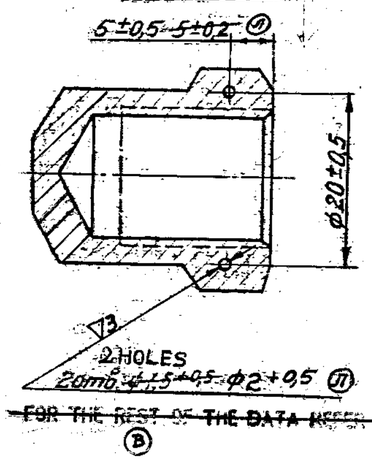
DRAWING NUMBER ~~322-37~~ (B)
322-37-1

▽3 UNLESS OTHERWISE SPECIFIED

322-37

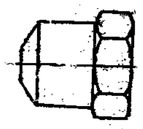



(B) ~~COMPONENT 322-37-1~~




(B)

SCALE 1:1
M1:1



1.

2. RUN-OUT OF SURFACE A RELATIVE TO PITCH DIAMETER OF THREAD SHOULD NOT EXCEED 0.1mm.
3. DIMENSIONS WITH UNSPECIFIED TOLERANCES SHOULD BE MAINTAINED AS PER ACCURACY CLASS 7 OST 1010.
4. TECHNICAL REQUIREMENTS FOR THREAD IN ACCORDANCE WITH STANDARD 82021-00.
5. SHARP EDGES SHOULD BE BLUNTED.
7. COATING: ON OUTER SURFACES CV Ni 18,ON INNER SURFACES CV 12. NICKEL IS PERMISSIBLE ON THE THREAD.
   AFTER COPPER PLATING M 12, THE OUTER SURFACE MAY BE COATED WITH CV 18, MILKY.
   ALTERNATE MATERIAL: STEEL GRADES 40 AND 50, GOST 1050-74.

* * HEXAGON BAR 22.5 GOST 8560-78 / 45 GOST 1051-73

(A)
ALT. MATL:-
STEEL GRADE En 8 BRIGHT BAR TO SPECN. BS.970-55.

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0,04 Kg | |

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 |
|---|---|---|
| B | 30.6.01 | AUTHY. LT. No. 90211/AHSP/ED dt 27.3.01 |
| A | 20-10-95 | AUTHY. LT. NO 90241/AHSP/ENG. DE: 26-8-95 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Narain Rao |
| APPD | |
| DATE | 17-2-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :-
* * SEE ABOVE
SEE ALT. MATL. (A)

USED ON :- C.δ 447-00-1
CB 322-13-4 For 322-37-1

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE
STARTING VALVE CAP

DRAWING NUMBER ~~322-37~~ (B)
322-37-1

DRG. NUMBER TO BASED ON RUSSIAN ORIGINAL DRG. NO. 1
: COMMON TO V92S2 Engine.

A7
193
A2

USED ON

Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-14-9** | | **COMPRESSED AIR** | | |
| | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | **L . H ASSY** | | |
| | 1 | Cb.322-01-9 & I/L | | 1 ST LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 2 | Cb.322-02-9 & I/L | | 2 ND LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 3 | Cb.322-03-9 & I/L | | 3 RD LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 4 | Cb.322-04-9 & I/L | | 4 TH LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 5 | Cb.322-05-9 & I/L | | 5 TH LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 6 | Cb.322-06-9 & I/L | | 6 TH LH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | | | | | | |
| | 8 | 322-65 | | CLIP FOR 2 TUBES | 1 | Tropical make |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **COMPRESSED AIR STARTING TUBING L H ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 2 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-14-9** |

F-4

169/253

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | 9 | 322-66 | | CLIP FOR 3 TUBES | 1 | Tropical make |
| | | 10 | 322-67 | | CLIP FOR 4 TUBES | 1 | Tropical make |
| | | 11 | 322-68 | | CLIP FOR 5 TUBES | 1 | Tropical make |
| | | 12 | 322-69 | | CLIP FOR 6 TUBES | 2 | Tropical make |
| | | 13 | 351-13 | | NUT M5 | 6 | Tropical make |
| | | 14 | 356-22-2 | | SCREW M5x12 | 6 | Tropical make |
| | | 15 | 3335-38-5 | | GASKET | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 21 | 353.93.1 | | WASHER 5Т65Г | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.22 Tropical make |
| | | 22 | - ND - | | WASHER 5Н65Г05 | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.21 |
| | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|

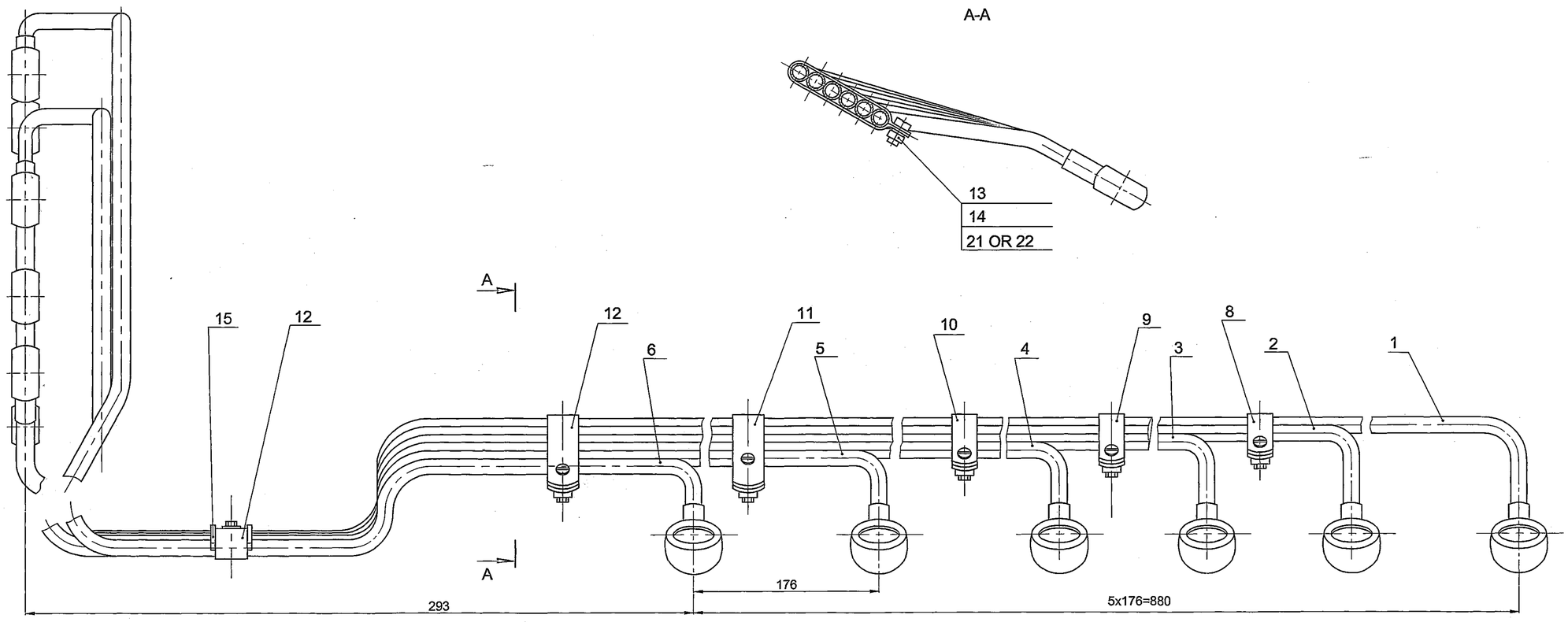
Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

F-4
170/253

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **COMPRESSED AIR STARTING TUBING L H ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-14-9** |

DRAWING NUMBER
**Cb.322-14-9**




1. Carry out adjustment and final inspection for assembly units from ɕb.332-01-9 to ɕb.322-06-9 together on the dummy.

2. Make a complete set of assembly units ɕb.322-14-9 and ɕb.322-15-9 in pairs.

3. Stamp the manufacturing - factory No. and part number of assembly units ɕb.322-14-9 and ɕb.322-15-9 on tag for making a set while sending as spare parts

4. Components and assembly units, having conventional symbol *"TИ" in the part list of given drawing in "remarks" column should have tropicalized construction as specified in the drawings for components.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
171
253
SIZE A1

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 ) |
|---|---|
| 1.395 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 05.12.06 |
| SCALE- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
Cb 322-00-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING LH ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER
**Cb.322-14-9**

USED ON

Cb 322-14-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

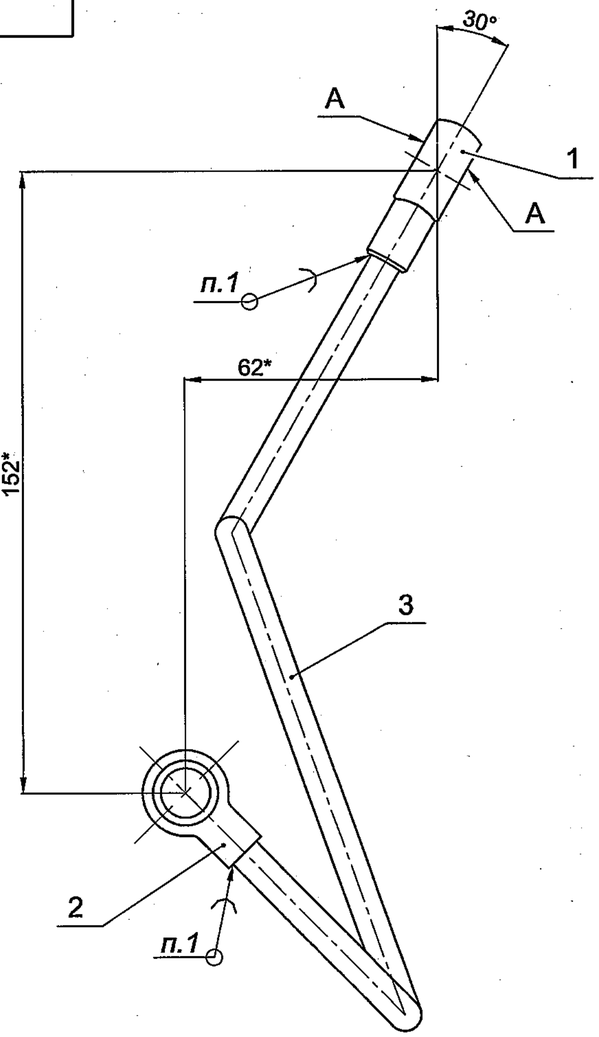
| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-01-9** | | **1ST LH CYLINDER** | | |
| | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | 3 | 322-21-9 | | 1 ST LH CYLINDER TUBE | 1 | |

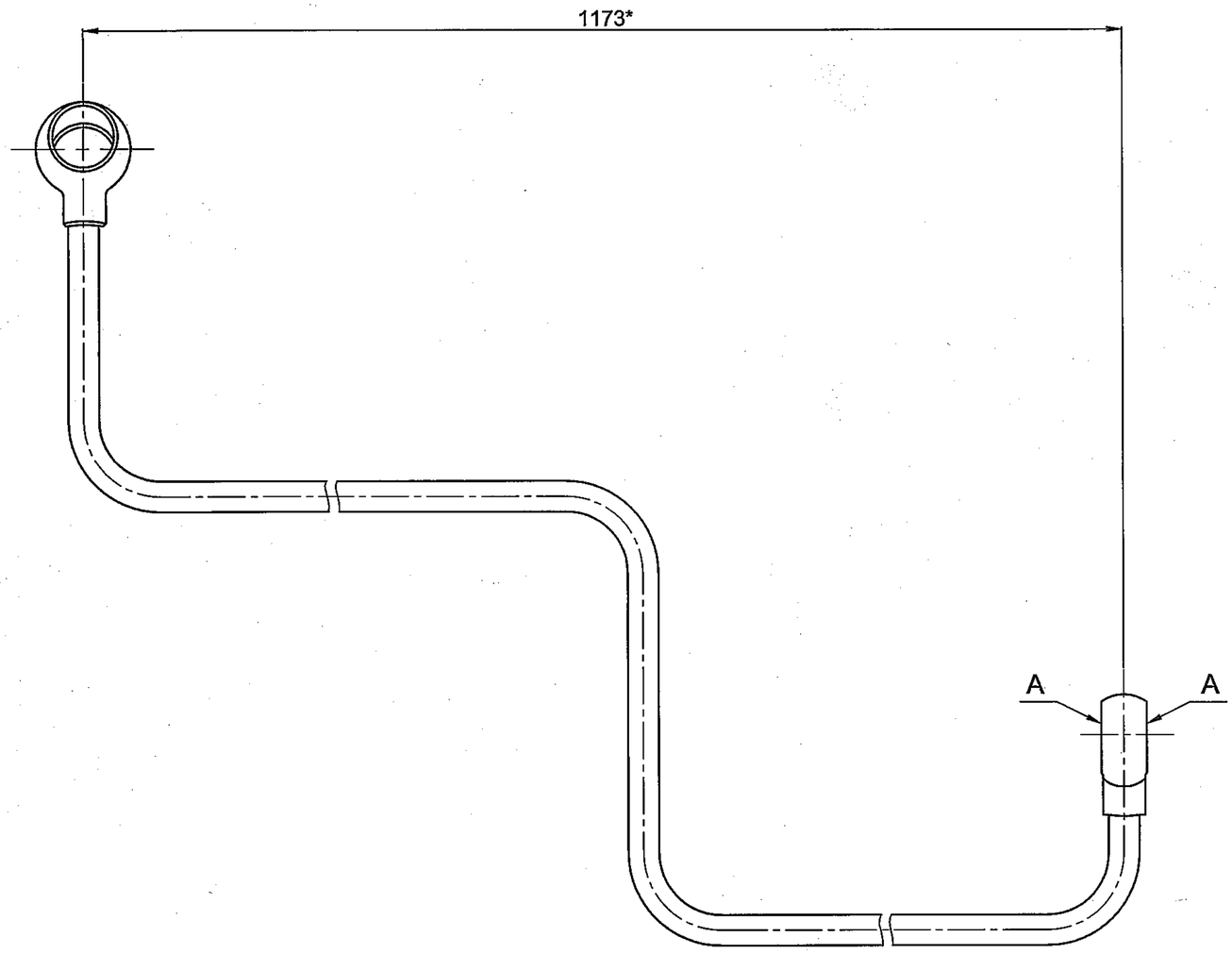
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **1 ST LH CYLINDER TUBE ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-01-9** |

F-4
145/253

DRAWING NUMBER
Cb.322-01-9




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit cb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel at a pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE
SCALE:- 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-
USED ON :- Cb 322-14-9
CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI
TITLE :- (4A) 1st LEFT HAND CYLINDER TUBE ASSY
D S CAT NUMBER
DRAWING NUMBER Cb.322-01-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

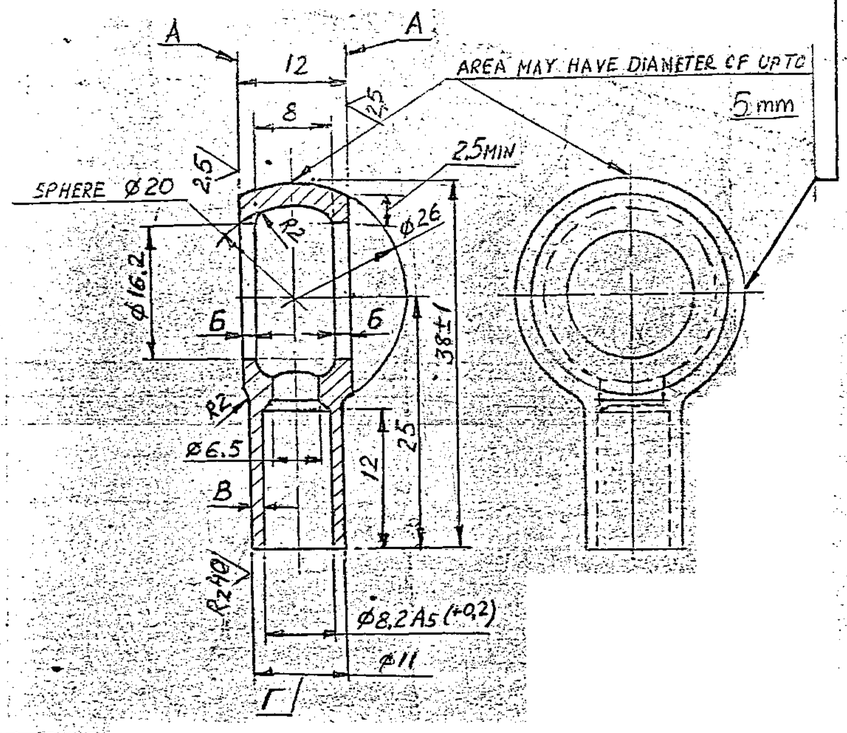
F-4
146
253
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

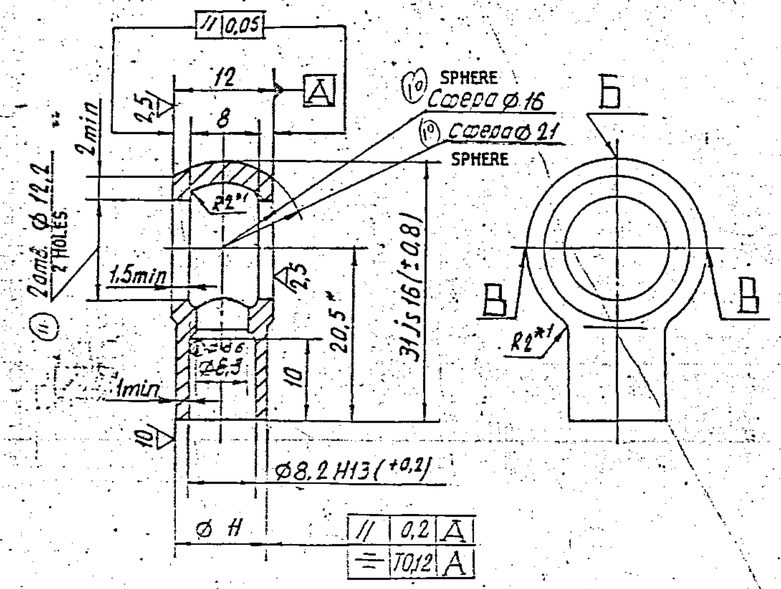
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

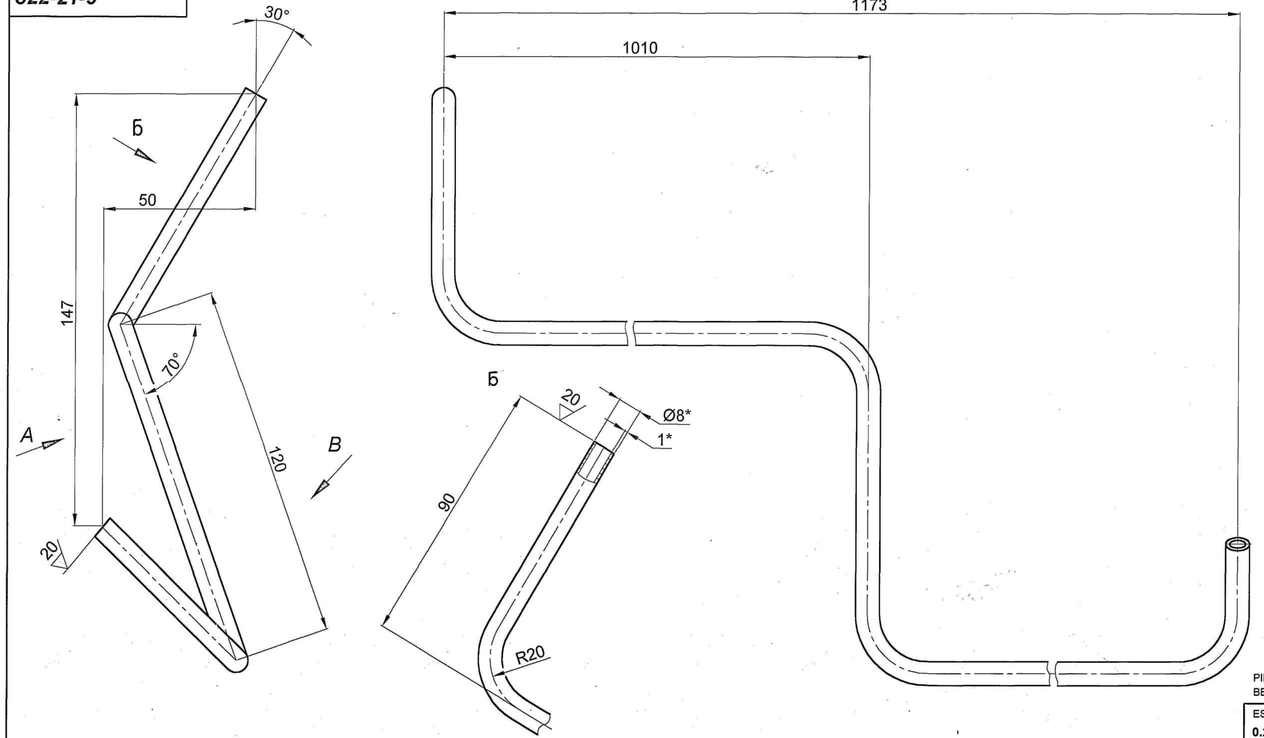
TITLE: SWIVEL ELBOW

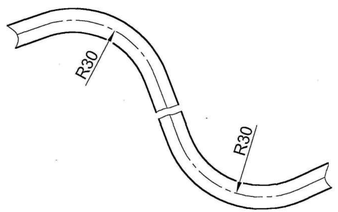
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

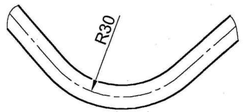
DRAWING NUMBER
**322-21-9**

SHEET No. OF




B




1. Unfolded length of pipe should be L ≈ *1410 mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. ** Dimensions are given 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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 25/1/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- СБ 322-01-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **1 st LH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-21-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
176
253

SIZE A4 x 4

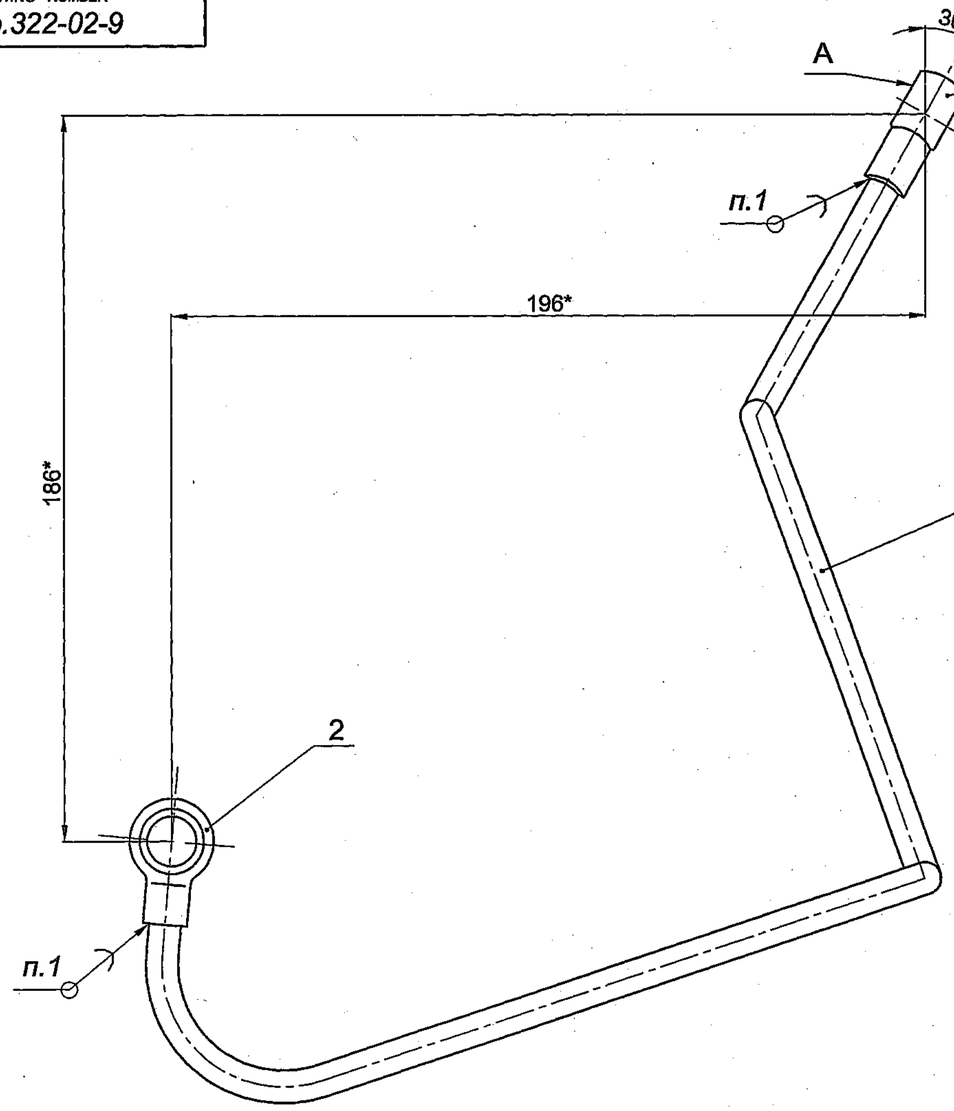
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| Cb 322-14-9 | | | **Cb.322-02-9** | | **2 ND LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-22-9 | | 2 ND LH CYLINDER TUBE | 1 | |

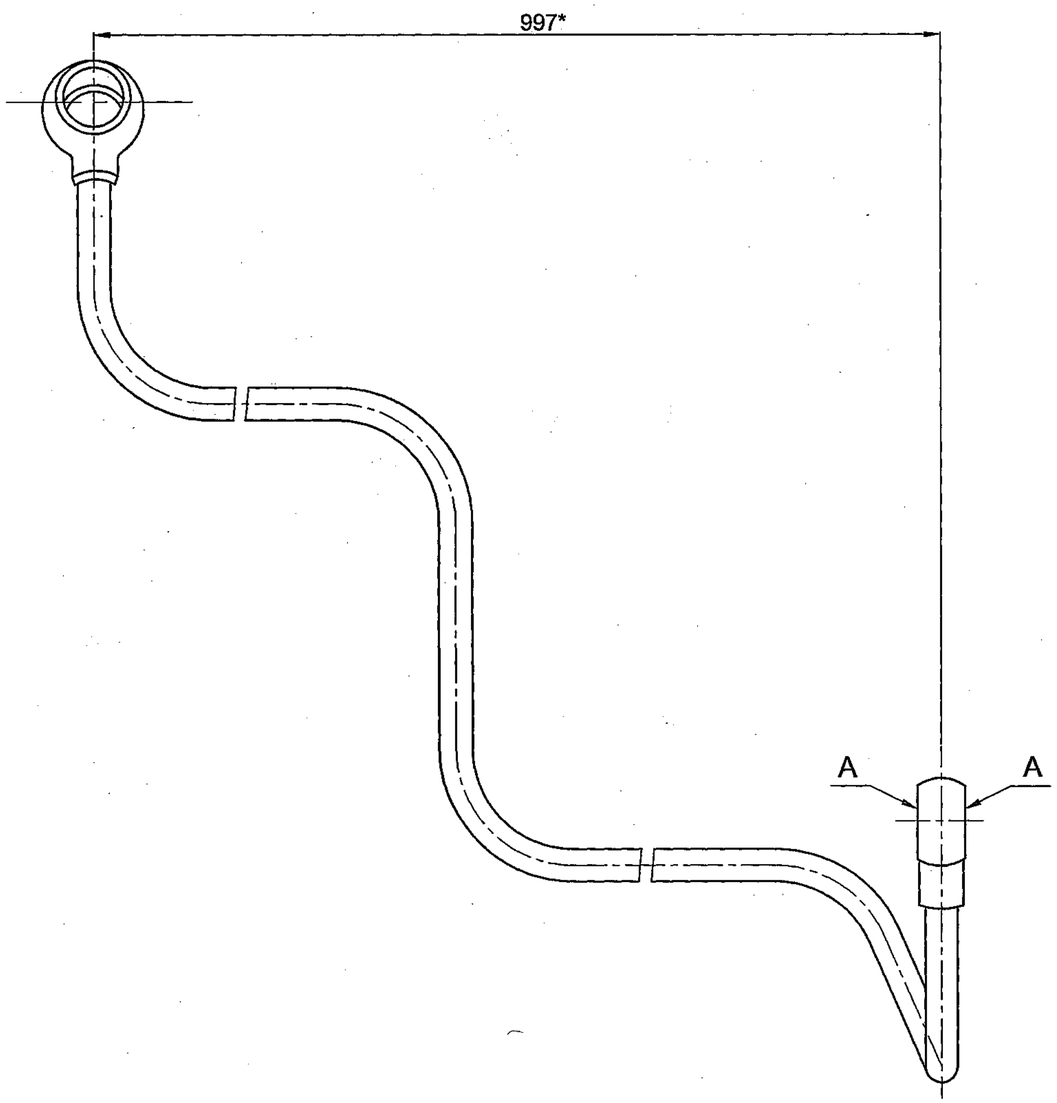
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | RF Zakhirov | TITLE : **2 ND LH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-02-9** |

DRAWING NUMBER
Cb.322-02-9




1. Wire Л63 Gost 12920-67.
2. Varnish coating ГФ - 95 as per ИП-628-86.
3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.
4. Check the pipe as per dummy in the assembly unit cb.322-14-9.
5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.
6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.
7. * Dimensions are given 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 ) |
|---|---|
| 0.270 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE
SCALE:- 1 : 1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :-
Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :-
(4A) 2 nd LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
Cb.322-02-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
148
253

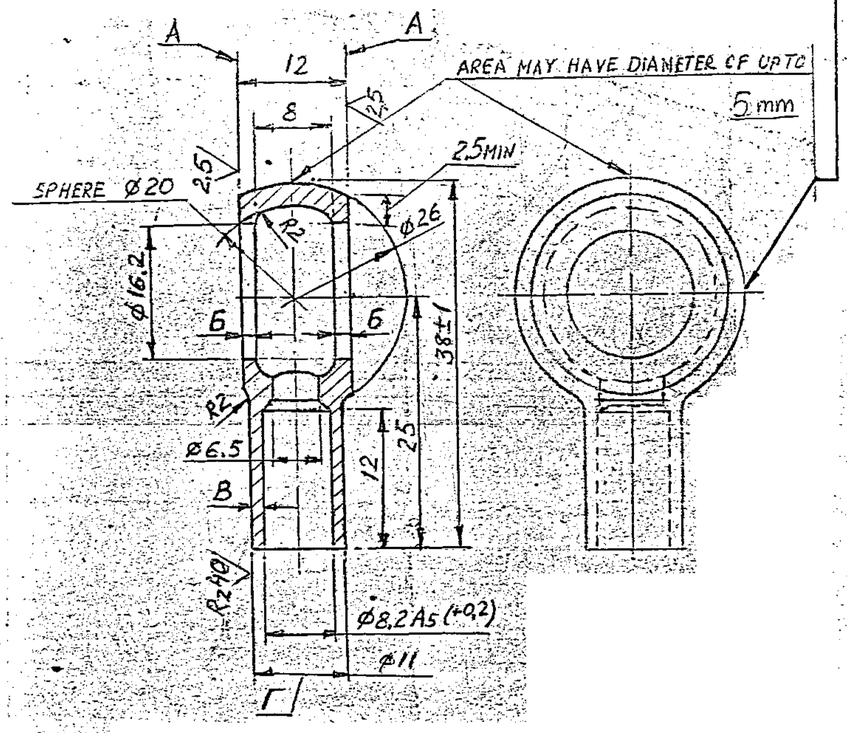
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

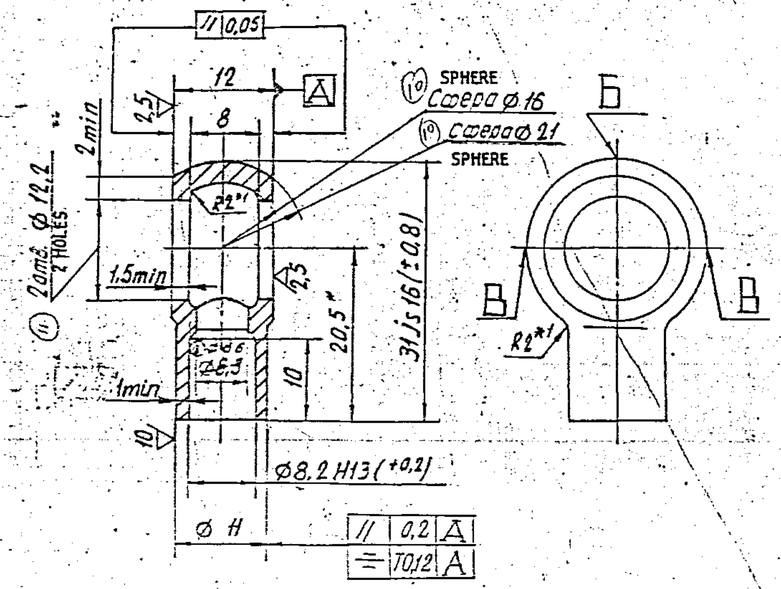
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

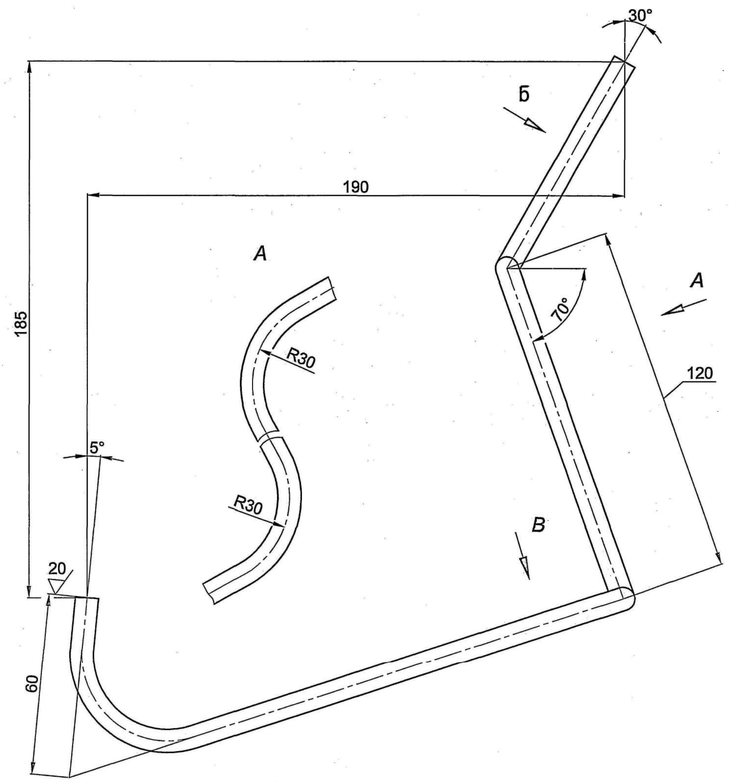
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

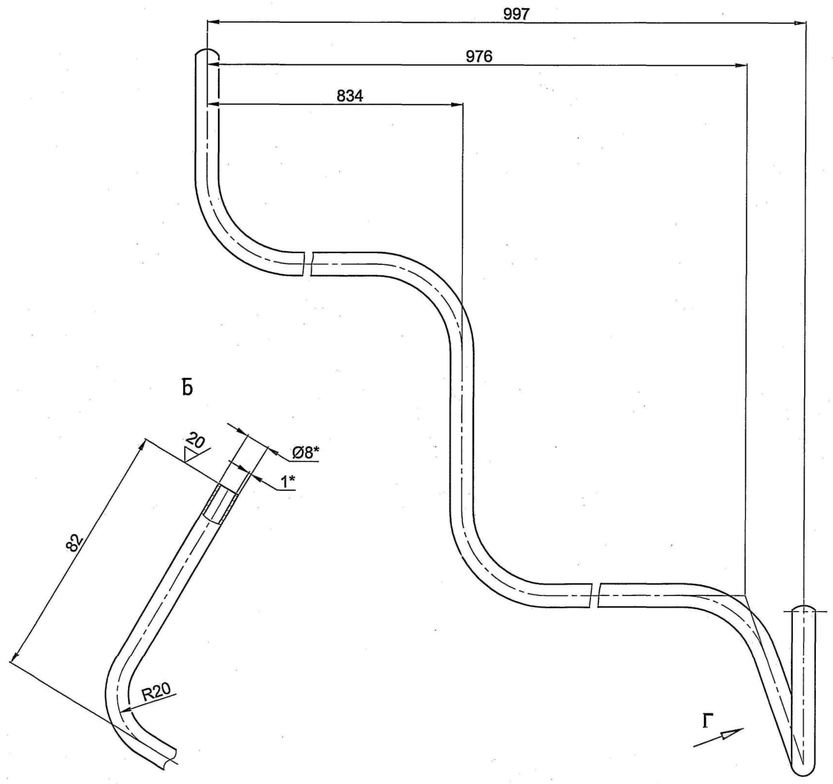
TITLE: SWIVEL ELBOW

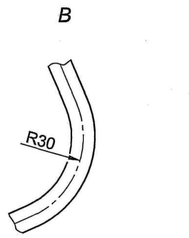
DRAWING NUMBER 322-18

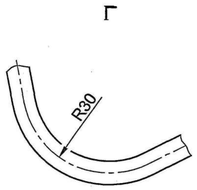
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-22-9**




1. Unfolded length of pipe should be L ≈ *1390 mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given 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 ) |
|---|---|
| 0.225 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/12/93 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS: 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- EB 322-02-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **2 nd LH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-22-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4 176 253

SIZE A1

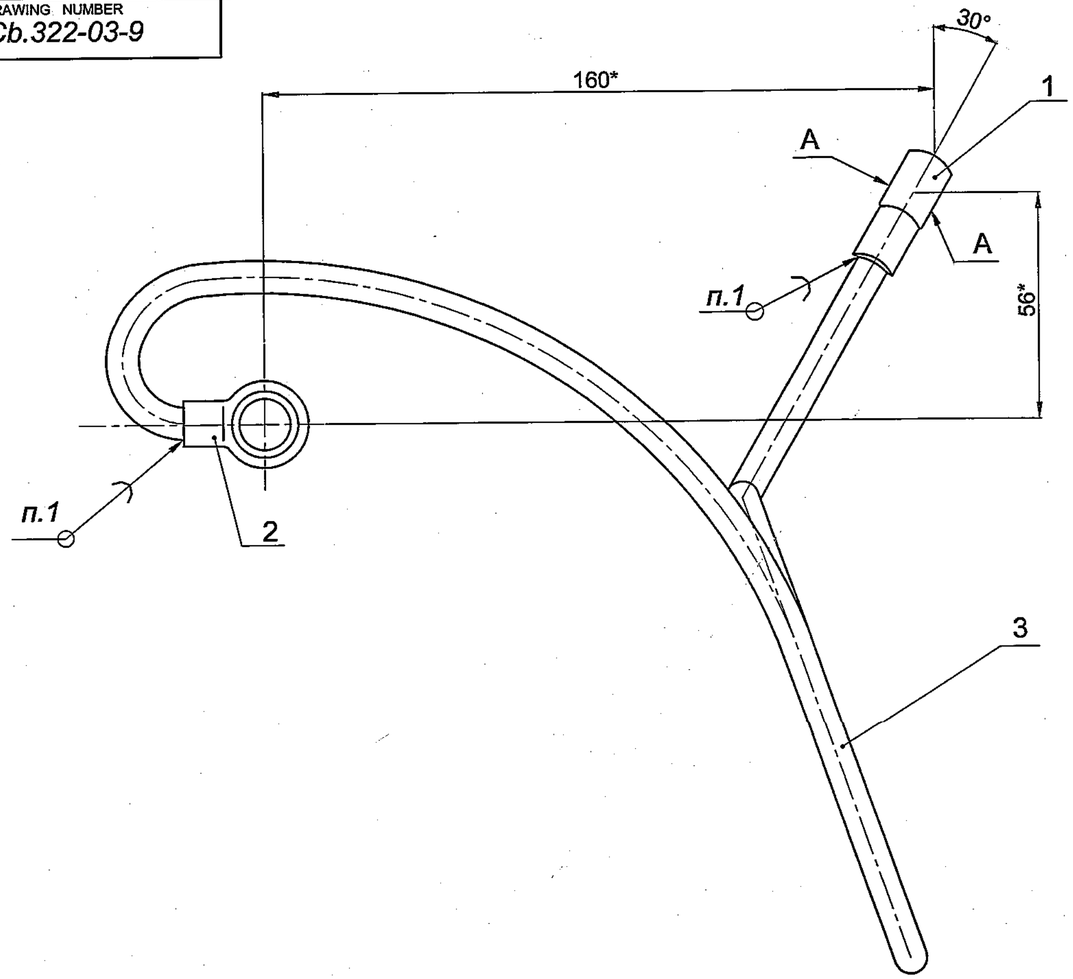
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| Cb 322-14-9 | | | **Cb.322-03-9** | | **3 RD LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-23-9 | | 3 RD LH CYLINDER TUBE | 1 | |

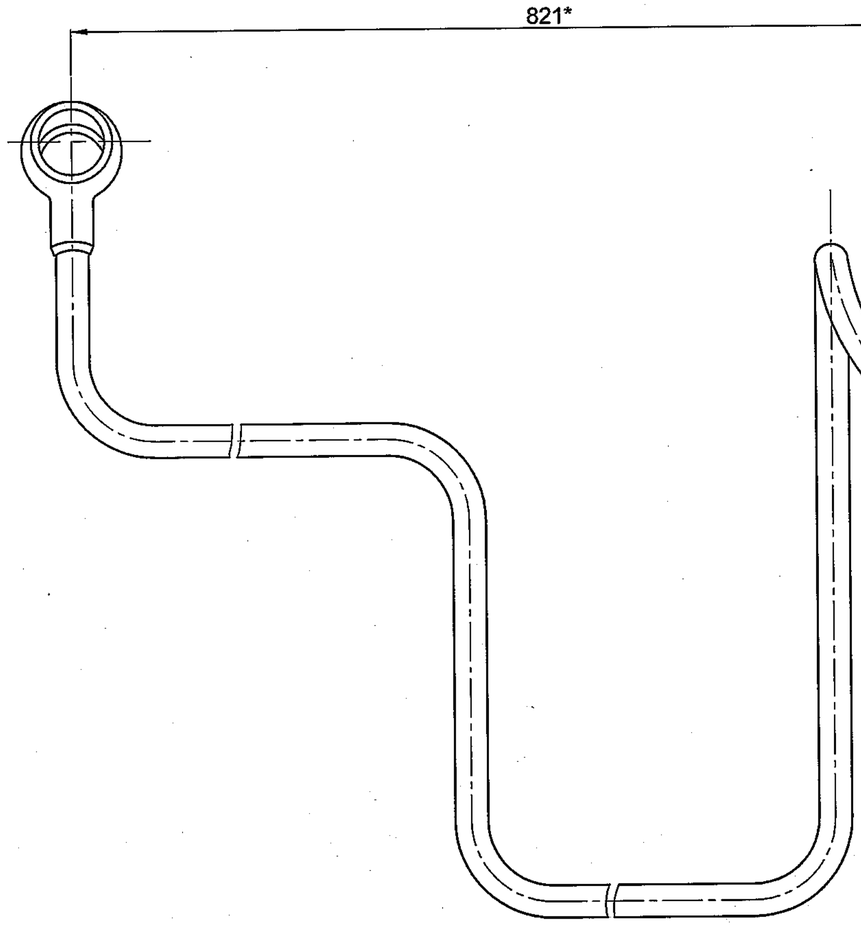
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

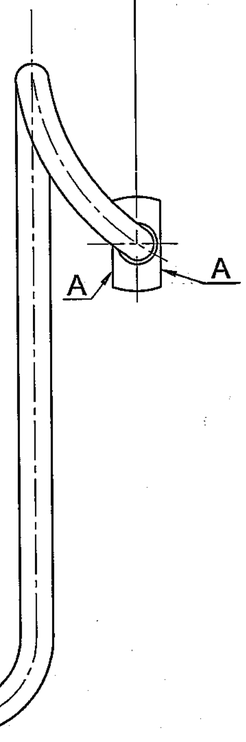
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **3 RD LH CYLINDER TUBE ASSY** | | |
| APPD | | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-03-9** |

DRAWING NUMBER
Cb.322-03-9




1. Wire Л63 Gost 12920-67.

2. Varnish coating ГФ - 95 as per ИП-628-86.

3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.

4. Check the pipe as per dummy in the assembly unit sb.322-14-9.

5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.

6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.

7. * Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 03-03-08 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
СБ 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :- 3 rd LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
СБ 322-03-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
150
253

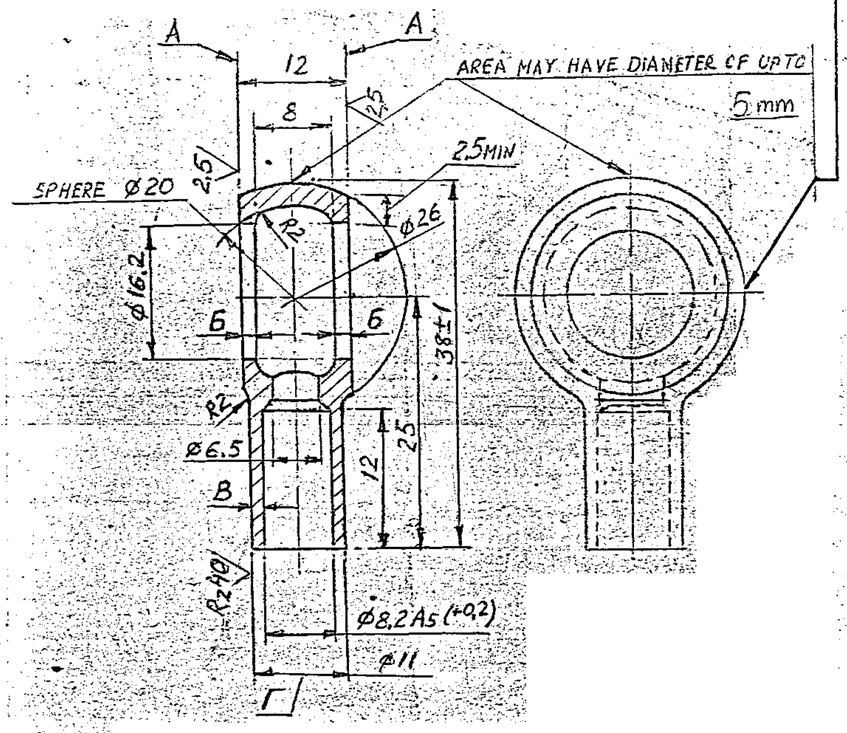
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

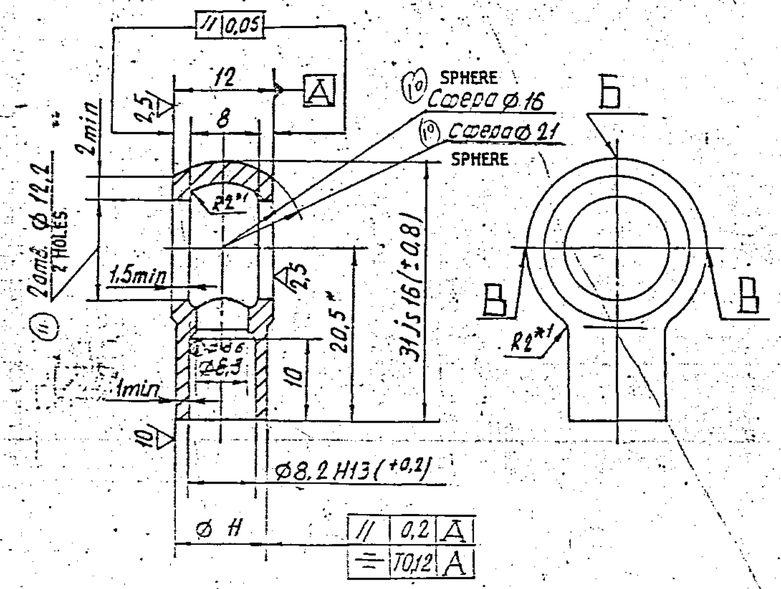
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

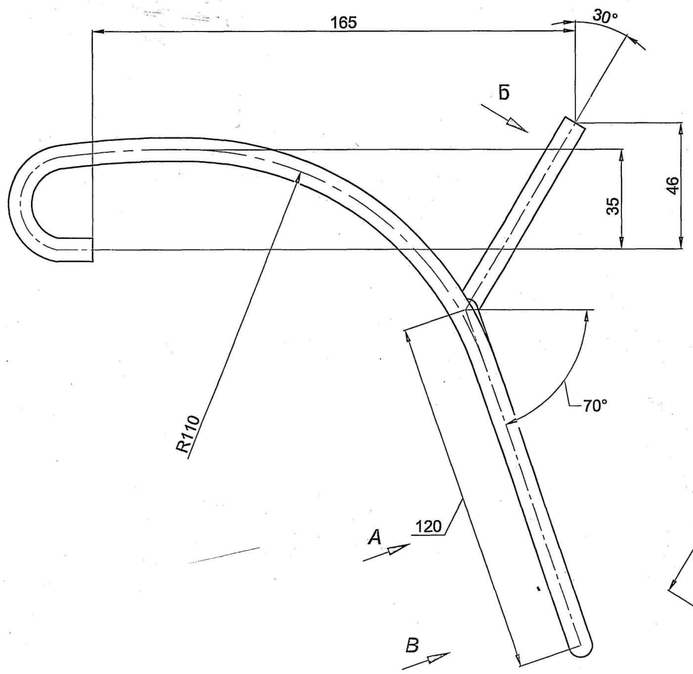
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

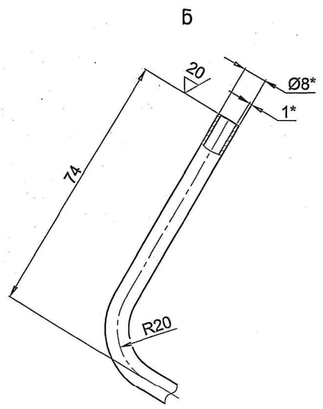
TITLE: SWIVEL ELBOW

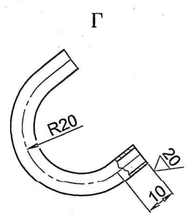
DRAWING NUMBER 322-18

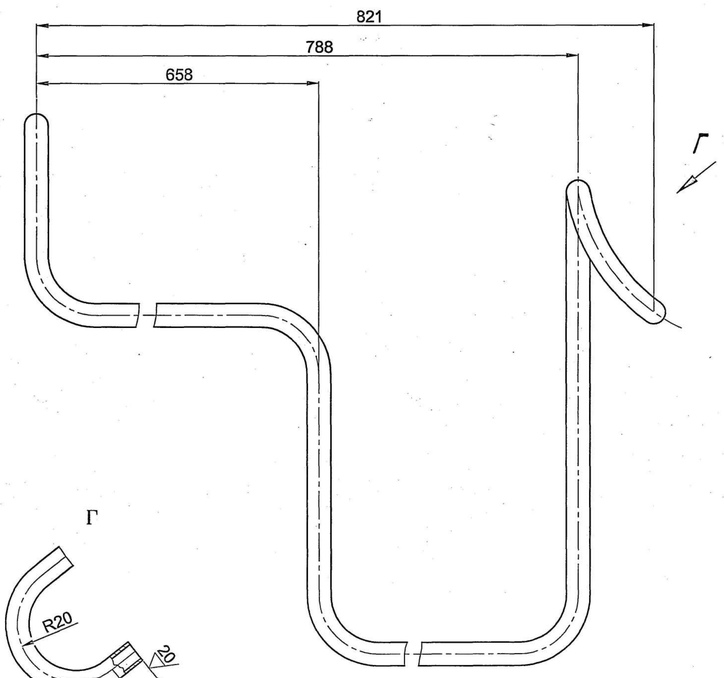
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

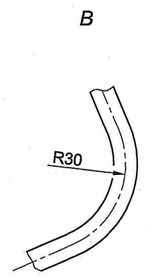
DRAWING NUMBER
**322-23-9**

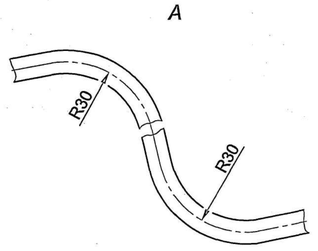



1. Unfolded length of pipe should be L ≈ *1283 mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
177
253

SIZE A1

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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 2-11-07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- E5 322 - 03 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **3 rd LH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-23-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-04-9** | | **4 TH LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-24-9 | | 4 TH LH CYLINDER TUBE | 1 | |

Cb 322-14-9

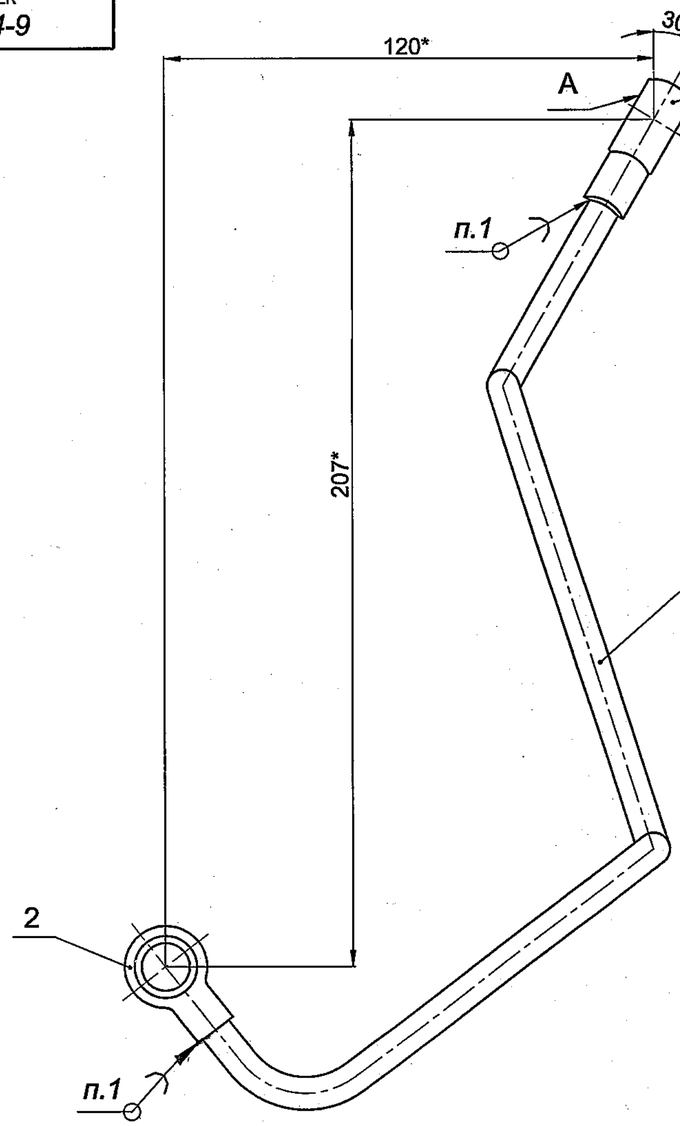
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

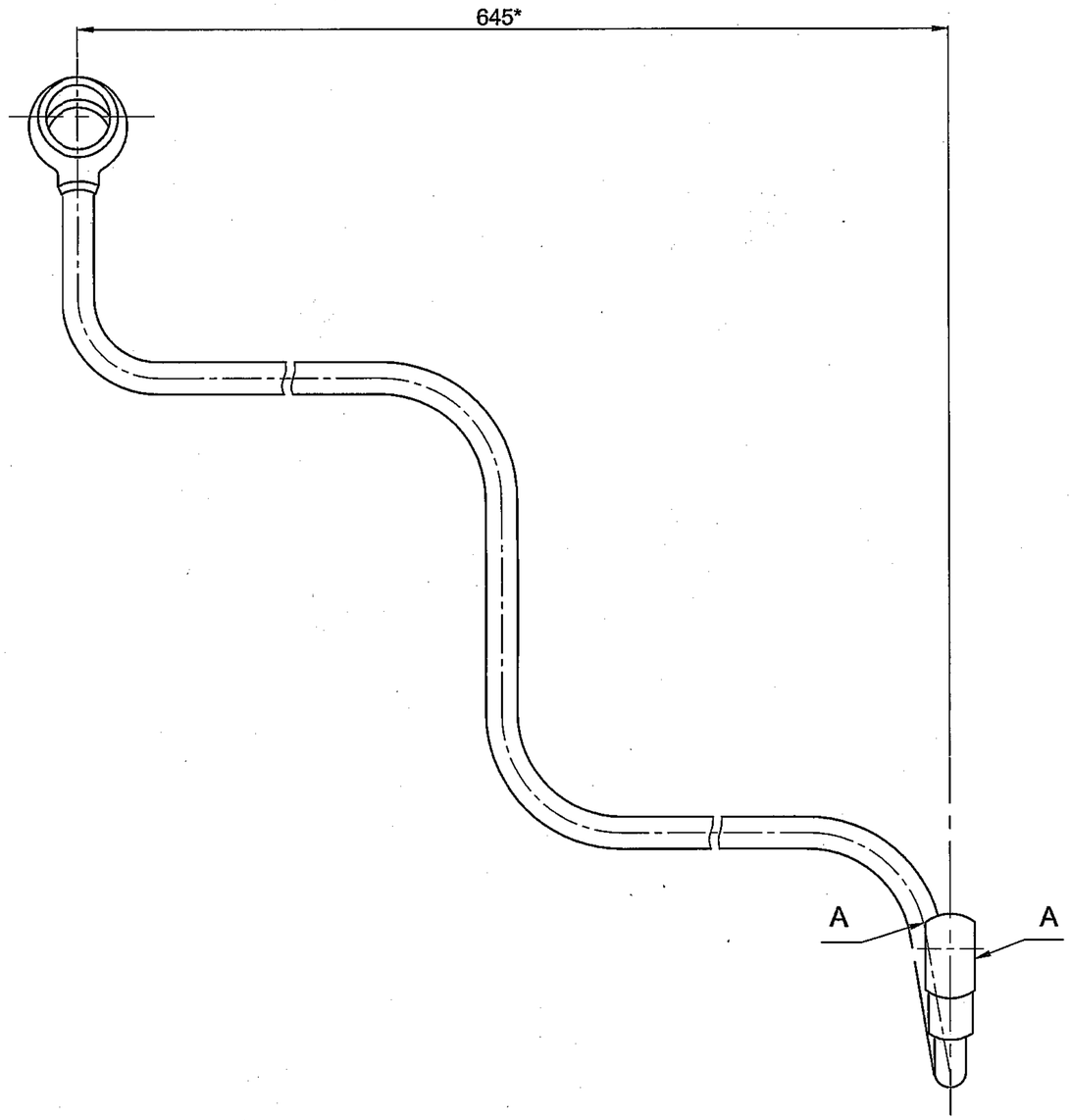
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **4 TH LH CYLINDER TUBE ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-04-9** |

F-4
151/253

DRAWING NUMBER
Cb.322-04-9




1. Wire Л63 Gost 12920-67.

2. Varnish coating ГФ - 95 as per ИП-628-86.

3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.

4. Check the pipe as per dummy in the assembly unit Cb.322-14-9.

5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.

6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.

7. * Dimensions are given 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 ) |
|---|---|
| 0.200 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 06/2/08 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 4 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER Cb.322-04-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
152
253

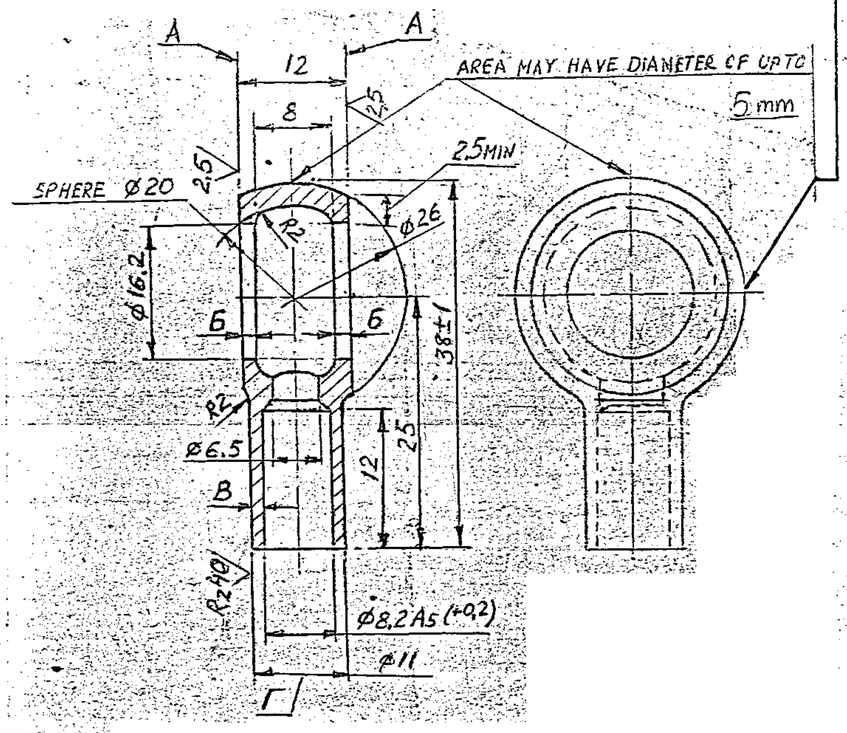
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

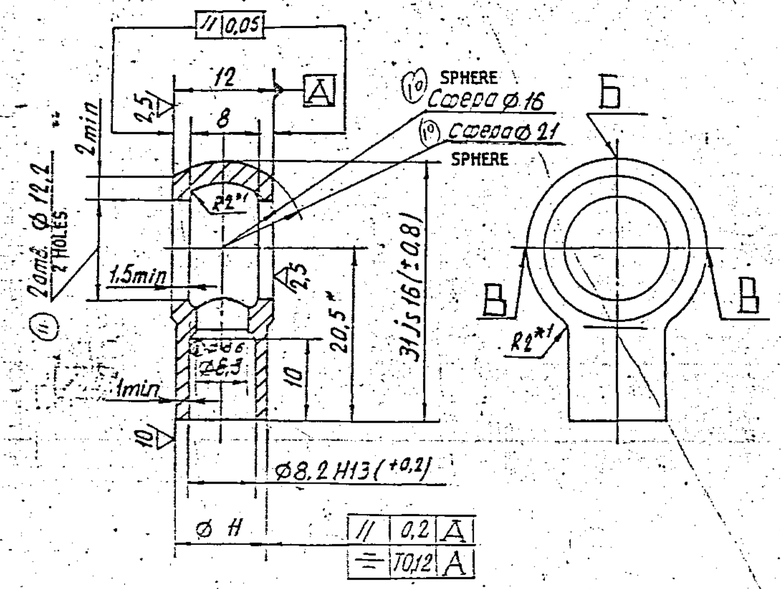
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

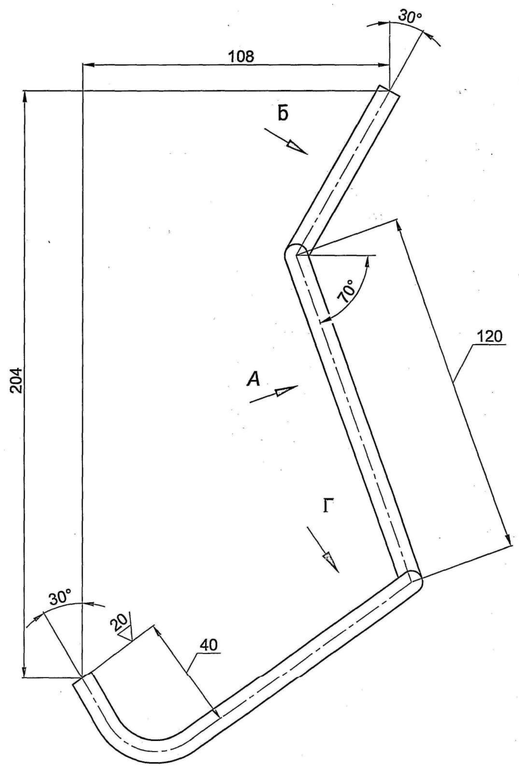
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

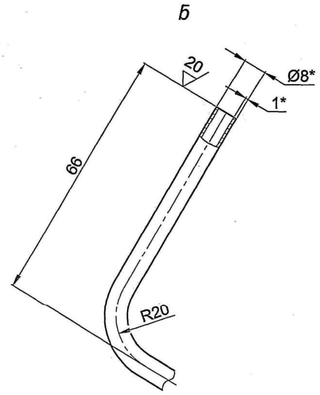
TITLE: SWIVEL ELBOW

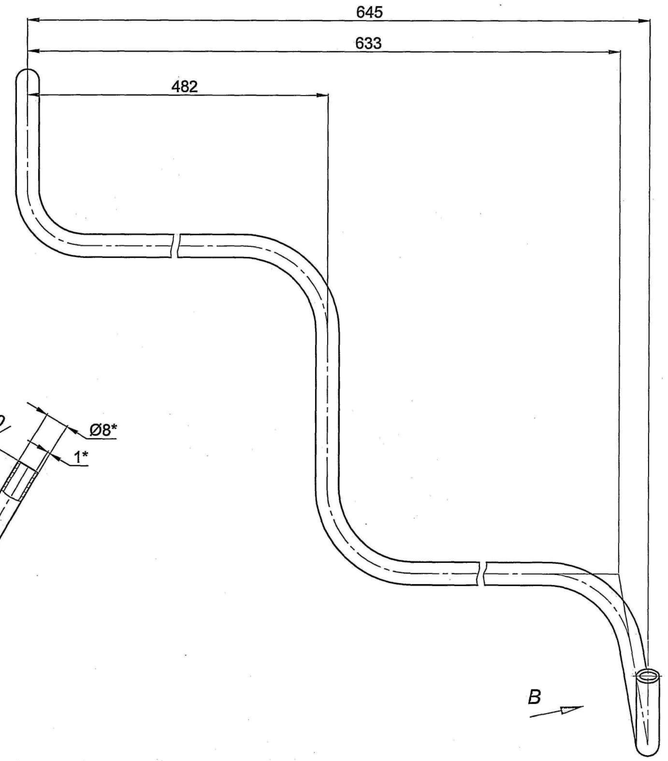
DRAWING NUMBER 322-18

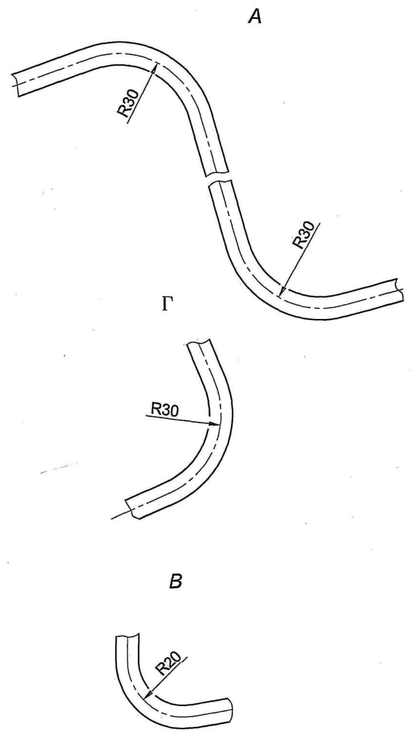
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-24-9**




1. Unfolded length of pipe should be L ≈ *925 mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
178
253
SIZE A1

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 ) |
|---|---|
| 0.155 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/11/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x20A TY 14-3-480-76

USED ON :- CБ 322 - 04 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *4th LH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER **322-24-9**

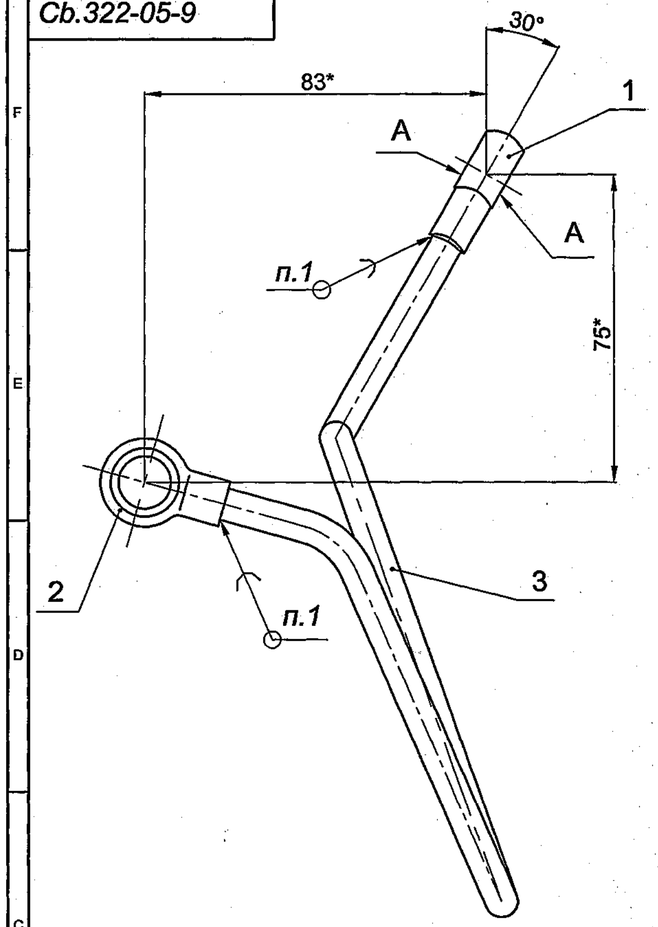
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-05-9** | | **5 TH LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-14-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-25-9 | | 5 TH LH CYLINDER TUBE | 1 | |

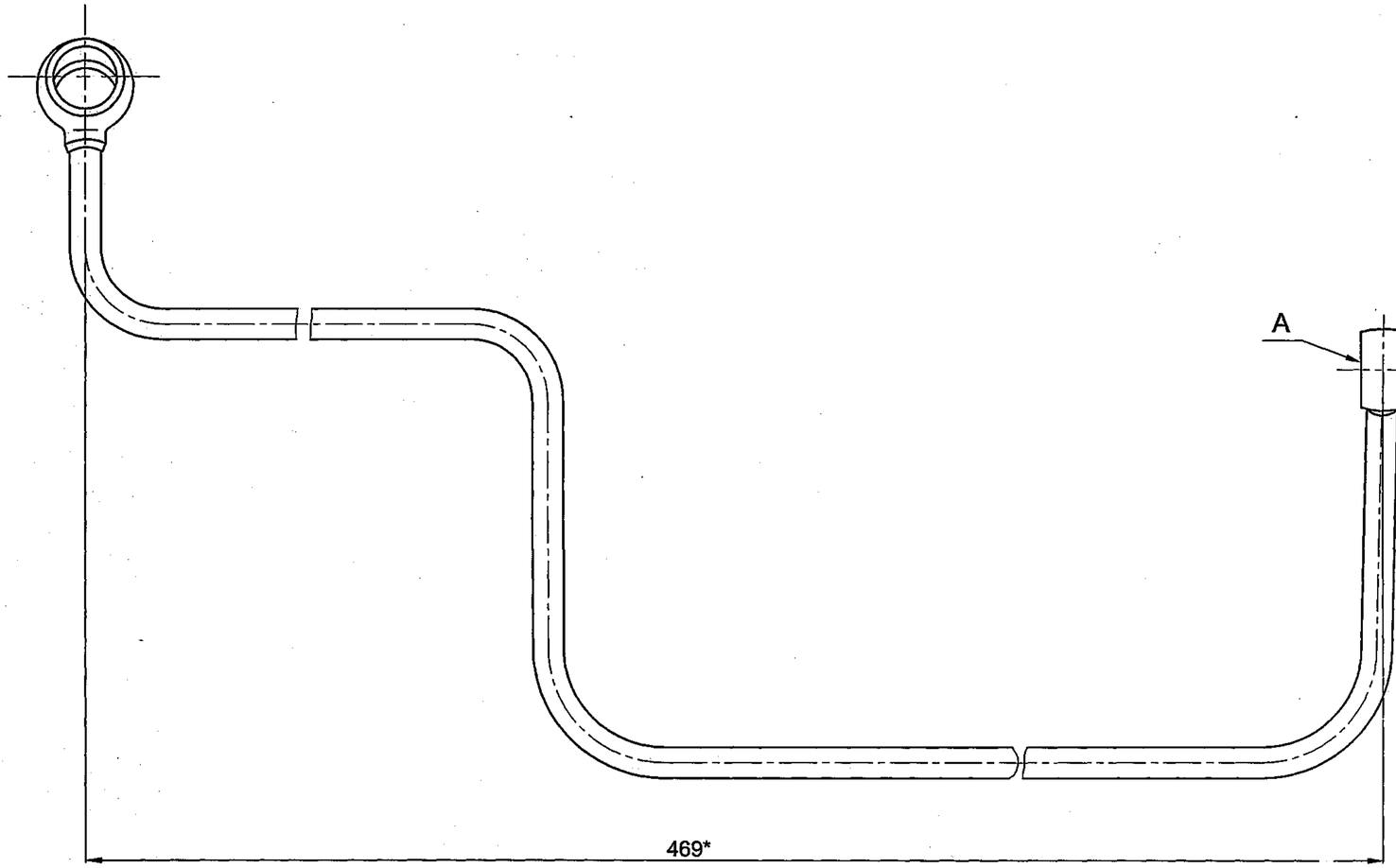
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

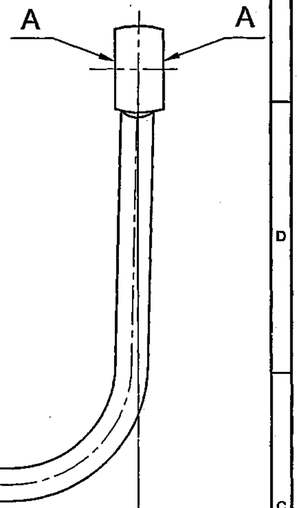
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **5 TH LH CYLINDER TUBE ASSY** | | |
| APPD | | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-05-9** |

DRAWING NUMBER
Cb.322-05-9




1. Wire Л63 Gost 12920-67.

2. Varnish coating ГФ - 95 as per ИЛ-628-86.

3. On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.

4. Check the pipe as per dummy in the assembly unit sb.322-14-9.

5. Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.

6. After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.

7. * Dimensions are given 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 ) |
|---|---|
| 0.170 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/88 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 5 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER Cb.322-05-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
154
253

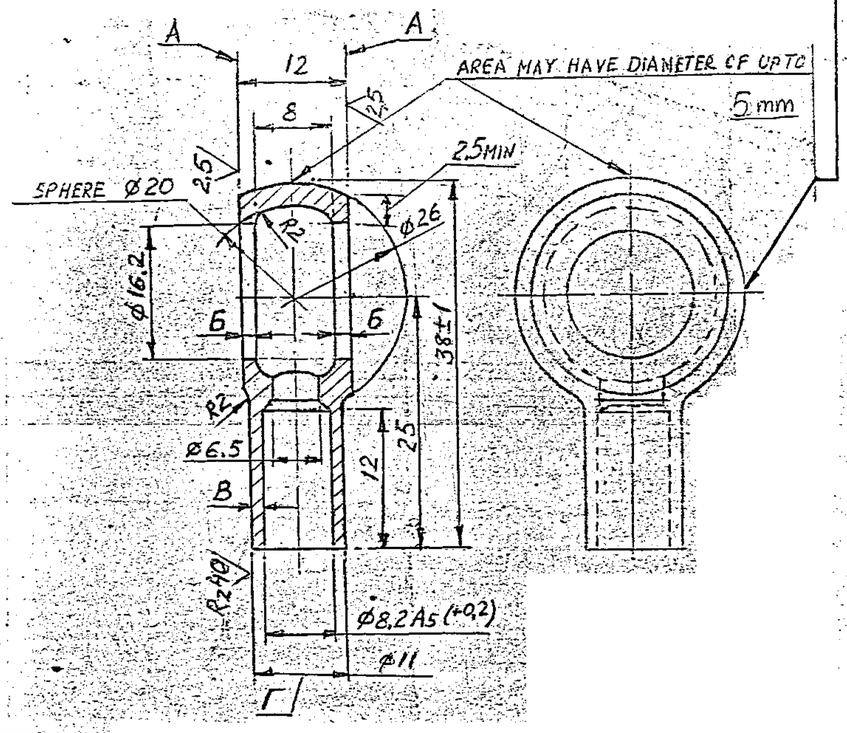
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

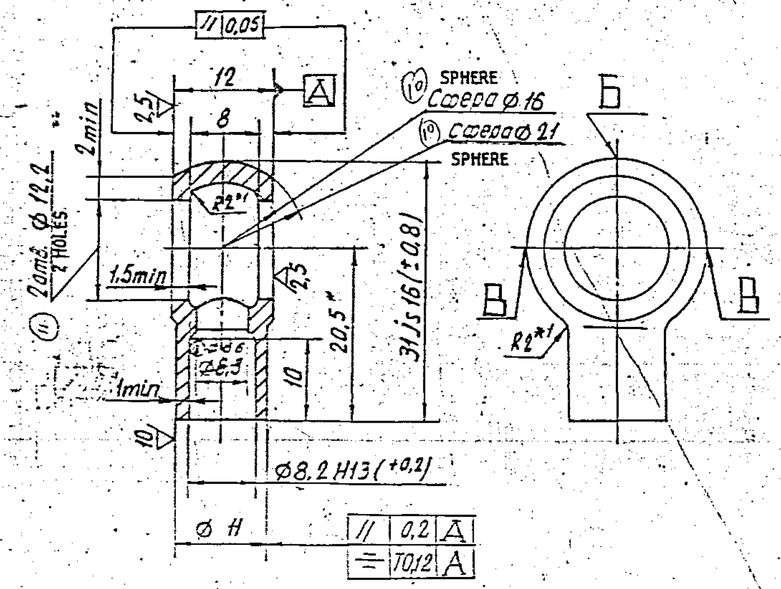
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

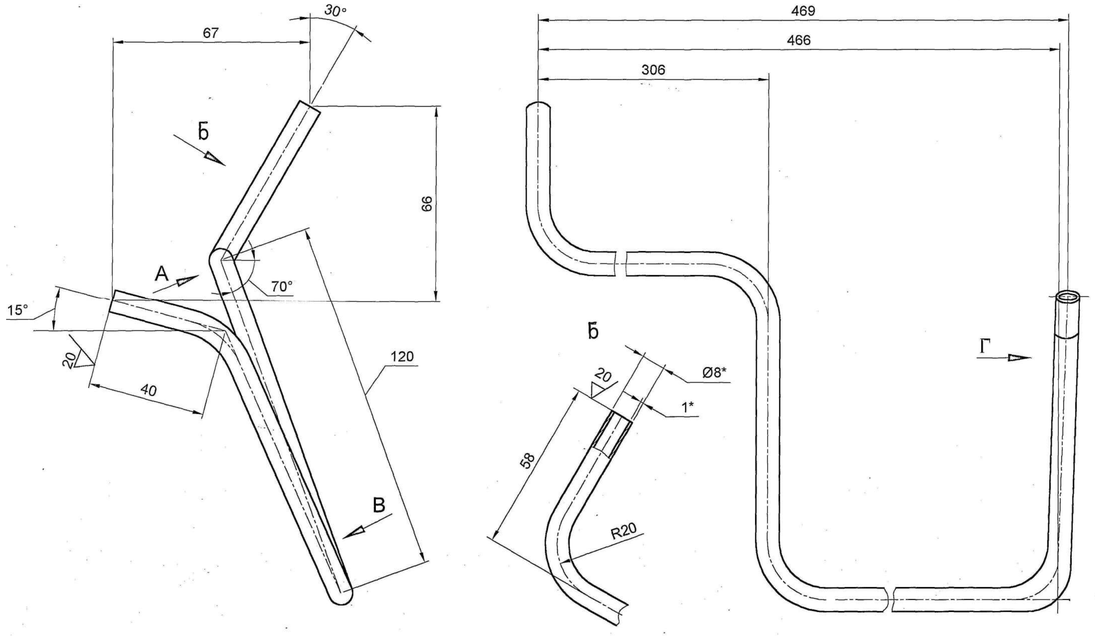
TITLE: SWIVEL ELBOW

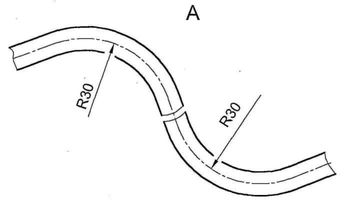
DRAWING NUMBER 322-18

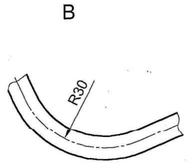
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

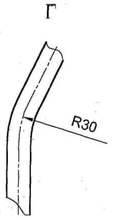
DRAWING NUMBER
322-25-9

SHEET No. OF




1. Unfolded length of pipe should be L ≈ *715mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm(semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given 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 ) |
|---|---|
| 0.125 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 23/11/79 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- Pipe 8x1-20A TY 14-3-480-76

USED ON :- СБ 322-05-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **5th LH CYLINDER PIPE**

DRAWING NUMBER 322-25-9

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4 179 253

SIZE A4 x 4

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-06-9** | | **6 TH LH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-14-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-26-9 | | 6 TH LH CYLINDER TUBE | 1 | |

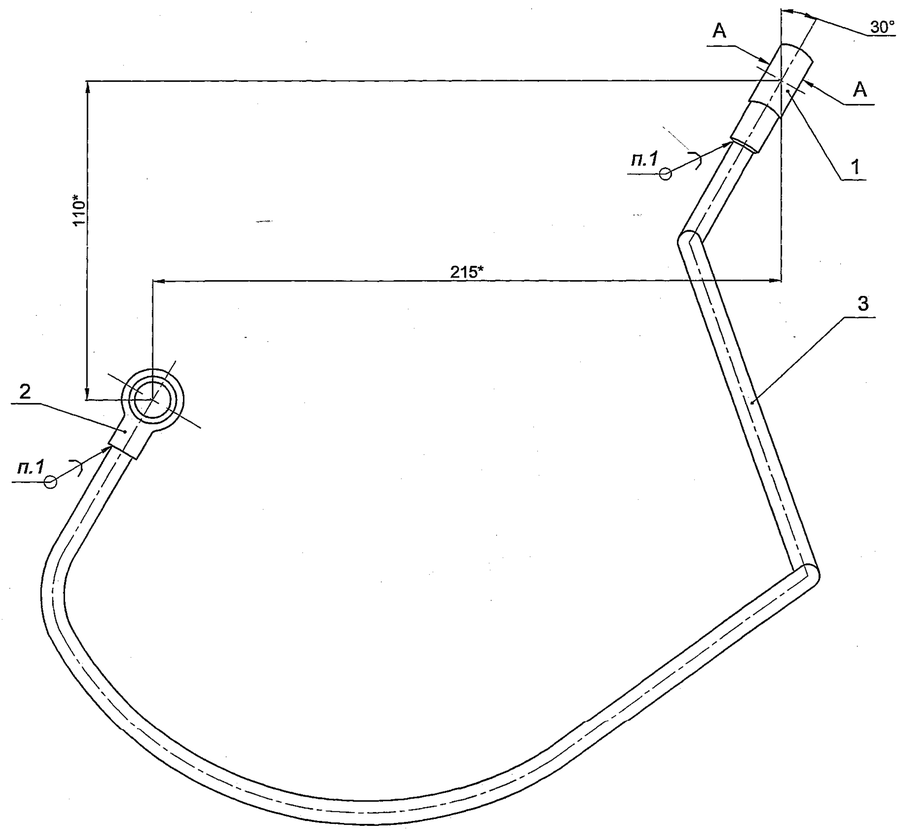
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

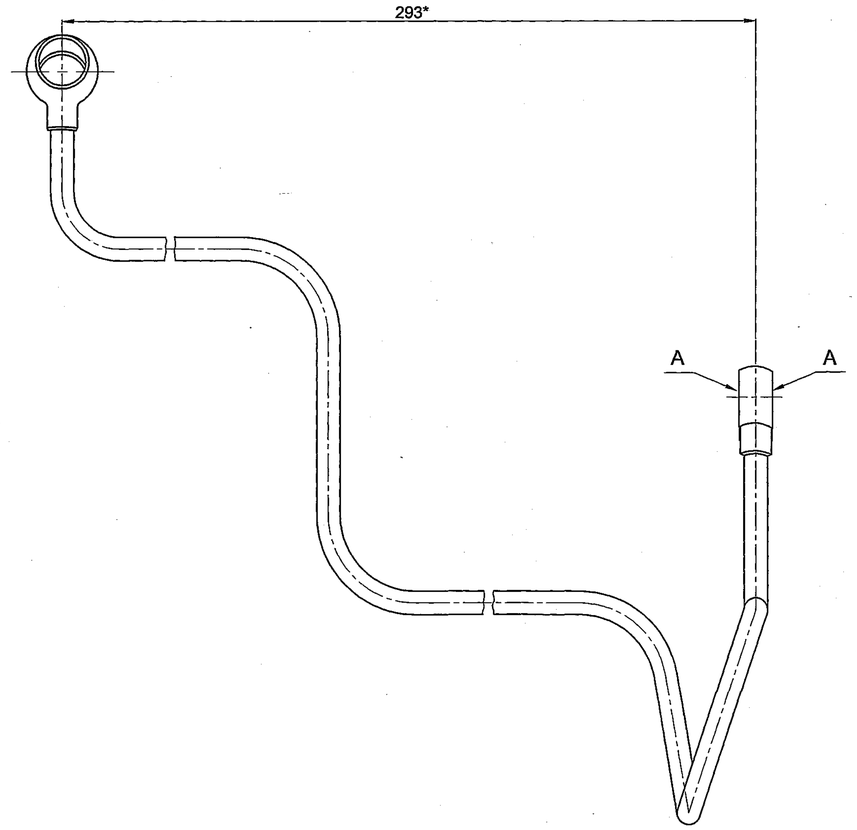
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **6 TH LH CYLINDER TUBE ASSY** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-06-9** |

F-4
155/253

DRAWING NUMBER
*Cb.322-06-9*




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Brownish Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.175 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 06/02/09 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 6 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER *Cb.322-06-9*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
156
263

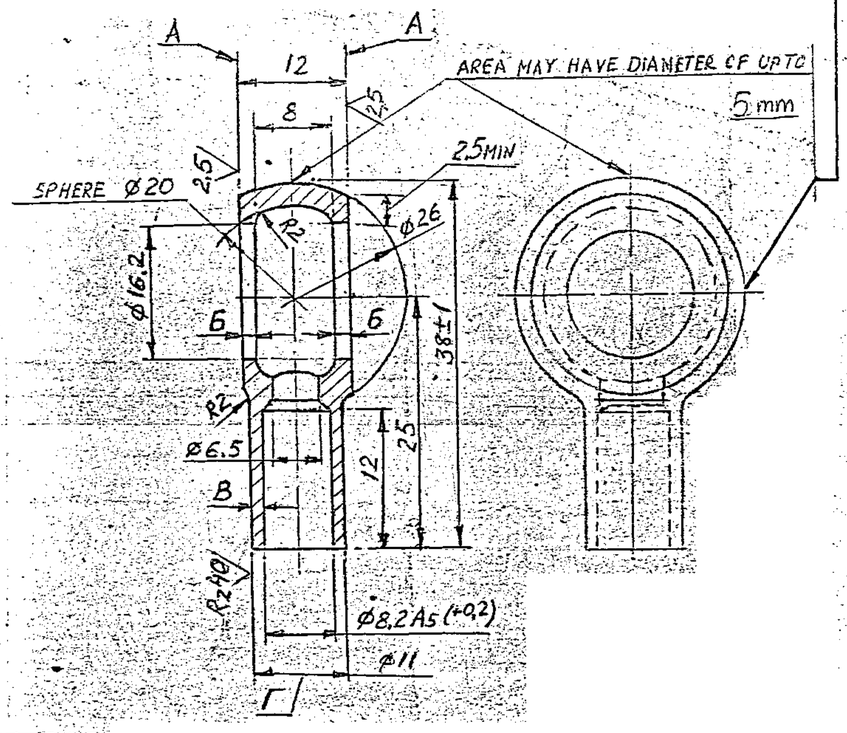
SIZE A1

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

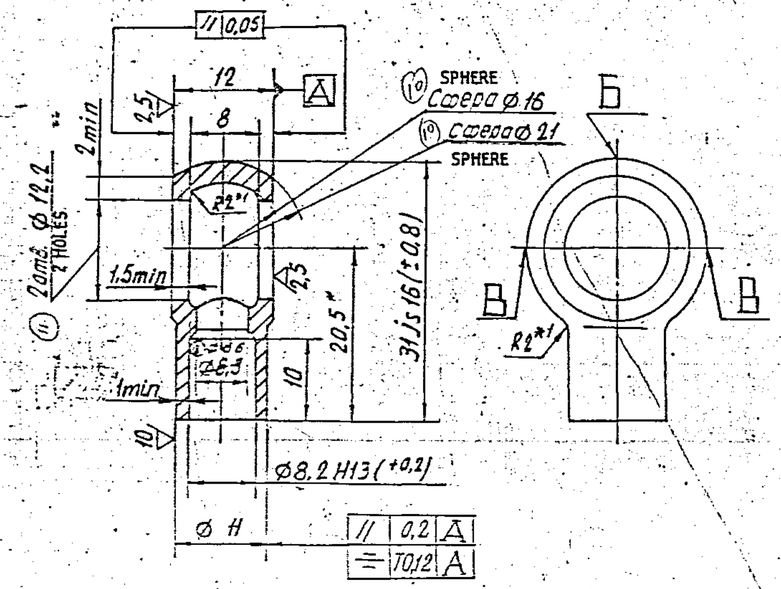
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

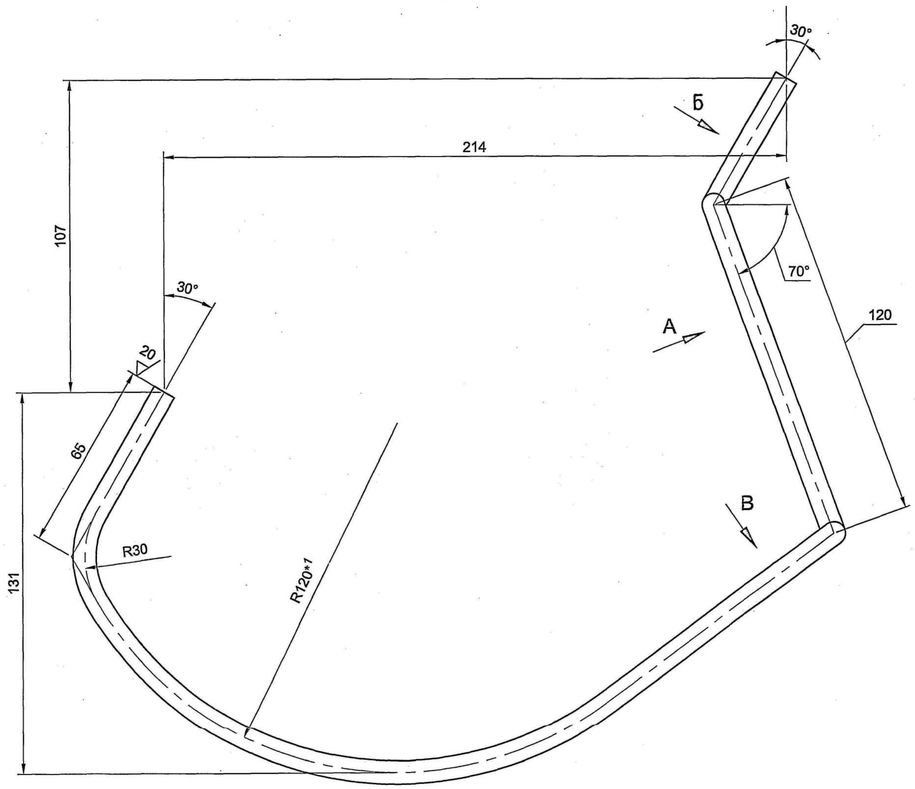
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

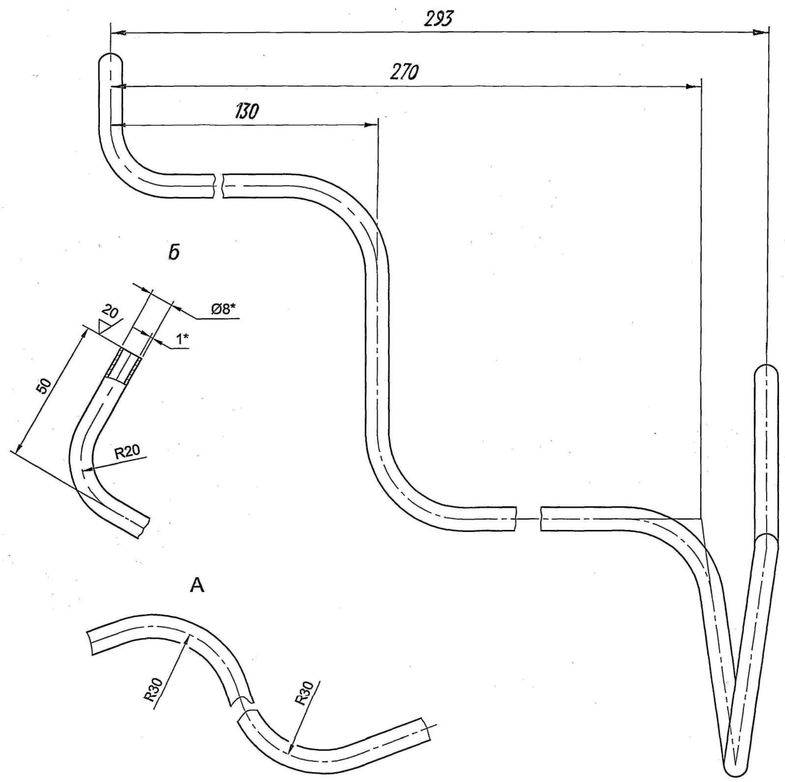
TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

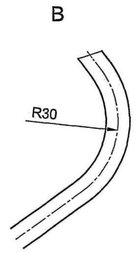
DRAWING NUMBER
322-26-9










1. Unfolded length of pipe should be L≈ *823mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
180
253
SIZE A1

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

EST. WT.(Kg) 0.130

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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/1/03 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- Pipe 8x1-20A TY 14-3-480-76

USED ON :- ЕБ 322-06-9

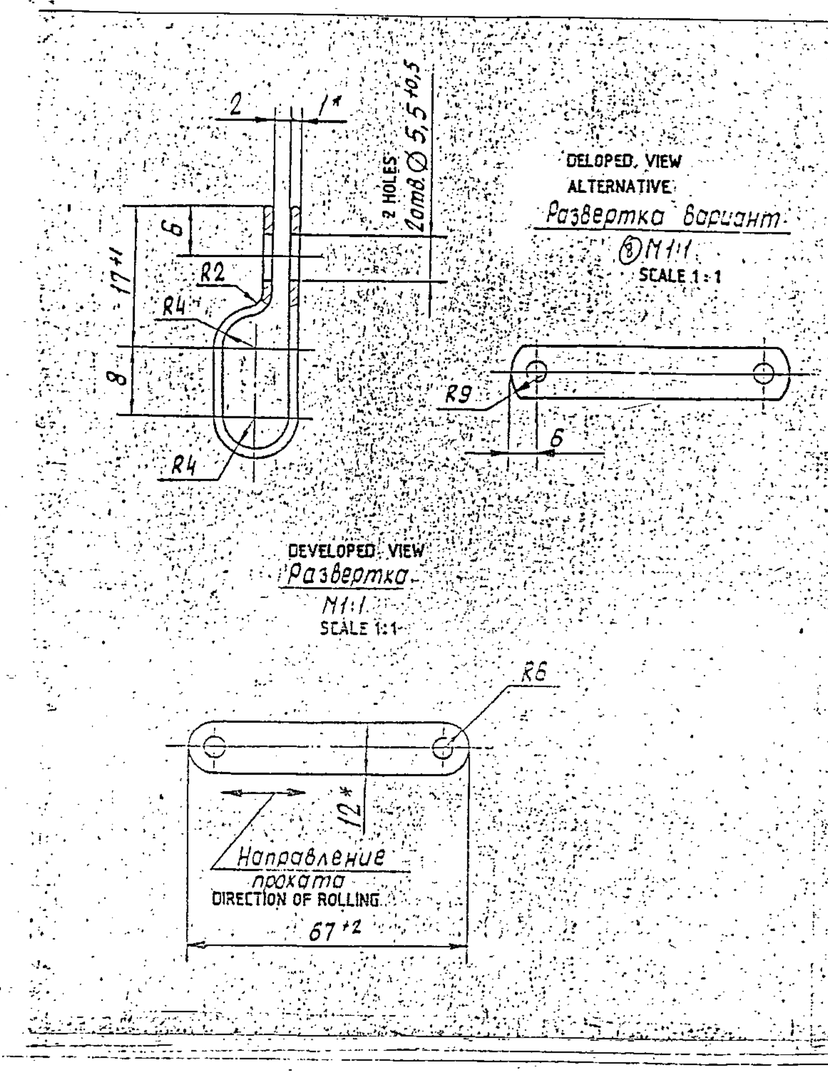
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *6th LH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER 322-26-9

DRAWING NUMBER
322-65




1. Заменитель материала сталь марок 08; 08 кп; 10 кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12... 24 хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9. хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08; 08КП; 10КП, GOST 1050-74, MAY BE MADE FROM SHEET GOST 19904-74.

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.

3) COATING : Zn 12..... 24 CHROMATIZING, AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ-95 AS PER ИЛ-09-73.

4) IN TROPICALIZED CONSTRUCTION, COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-109-73.

5) * DIMENSIONS FOR REFERANCE.

(A) EQUIVALENT MATERIAL
Gr. DD IS: 573-1994

DRG. REDRAWN BASED ON NEW ISSUE
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 83-114. )

KVD 66762

A-7

SIZE A2

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | 3АМ | 83-114 | | N 10326 |

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

EST. WT. 0,0052 Kg.

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

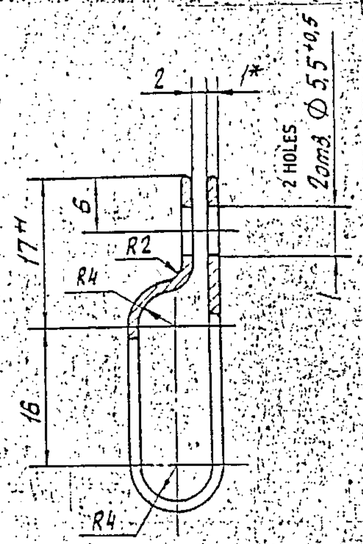
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 6th Alt. Comm. Mtg. Minutes Pt. No. 1 Dt. 26.10.09 |

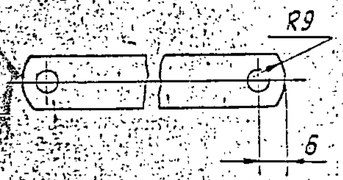
| | | | |
|---|---|---|---|
| DRN | | MATERIAL : STRIP-08ПС-Н-2-1х12 GOST 503-81 | USED ON : СБ 322-15-4 |
| CHD | | | |
| TC | | | |
| APPD | | | |
| DATE | 29-3-82 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| SCALE : 2:1 | | | |
| DIMENSIONS IN mm | | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | | TITLE : CLIP OF 2 PIPES | |
| ALL THREADS TO CONFORM TO | | C S CAT. NUMBER | DRAWING NUMBER : 322-65 |

2nd copy - Duplicate

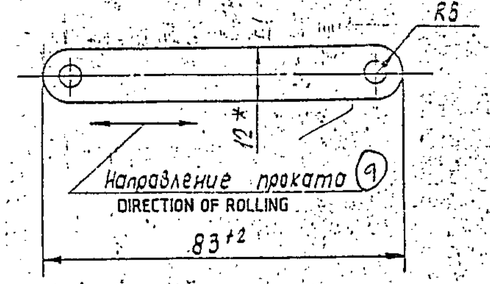
DRAWING NUMBER
322-66




DEVELOPED VIEW ALTERNATIVE
(7) Развертка вариант
H11
SCALE 1 : 1




DEVELOPED VIEW -
(8) Развертка
H11
SCALE 1 : 1




1. Заменитель материала сталь марок 08, 08кп, 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие К39.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры - для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП 10КПGOST 1050–74 MAY BE MANUFACTURED FROM SHEET GOST 19904–74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050–16 .

3) COATING : Zn 12 . . . 24 CHROMATIZING AS PER ИЛ – 483–82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ–95 , AS PER ИЛ –09–73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ –104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR CLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ИЛ–09–73 .

5) * DIMENSIONS FOR REFERENCE .

(A) EQUIVALENT MATERIAL
Gr.DD IS : 513-1994

| | | | |
|---|---|---|---|
| 8 | ЧЛН. | Яз-ТТУ | ЧЛ.ЛИСТ |
| ИЗМ. | ЛИСТ | N ДОКУМ. | ПОДП. |

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

| | |
|---|---|
| EST. WT. 0,0065 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. | |

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| PROD | |
| APPD | |
| DATE | 29 – 3 – 88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08ПС-М-2-1х12 GOST 503-81

USED ON :- СБ 20-35-00-5 СБ 322-14-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE
CLIP OF 3 PIPES

D S CAT NUMBER

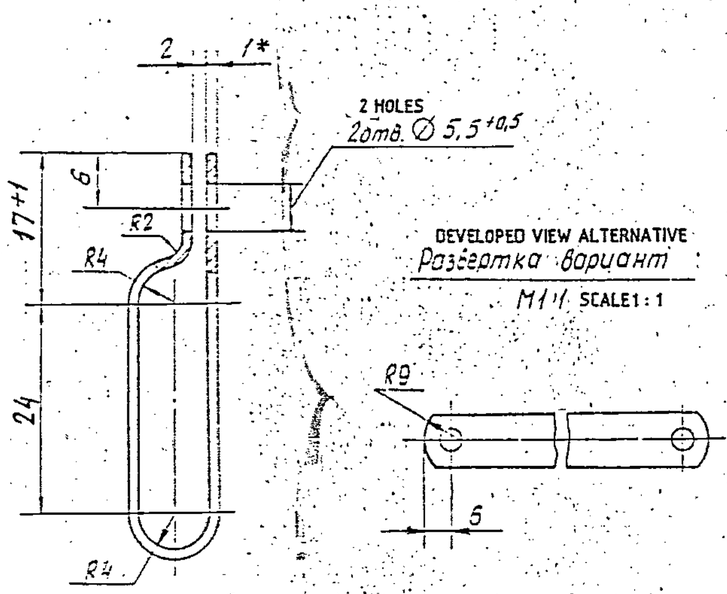
DRAWING NUMBER
322-66

A-7

SIZE: A2

DRG. REDRAWN BASED ON NEW ISSUE.
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 03-11 )

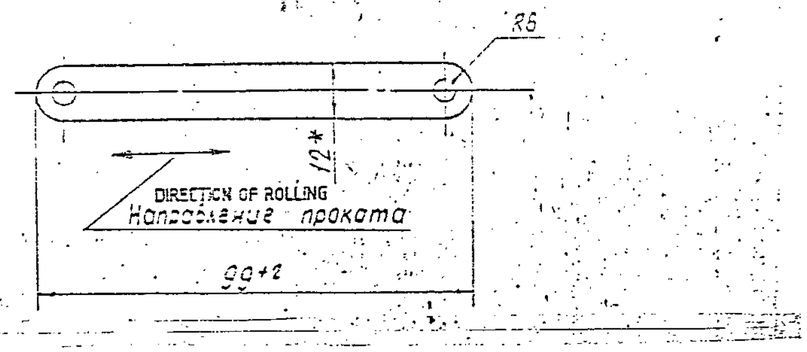
DRAWING NUMBER
322-67




DEVELOPED VIEW ALTERNATIVE
Развертка вариант
M1:1 SCALE 1:1




DEVELOPED VIEW
Развертка
M1:1 SCALE 1:1




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП, 10КП GOST 1050-74 MAY BE MANUFACTURED FROM SHEET GOST 19904-74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16 .

3) COATING : Zn, 12 . . . 24, CHROMATIZING AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ-09-73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-09-73 .

5) * DIMENSIONS FOR REFERENCE .

Ⓐ EQUIVALENT MATERIAL
Gr. DD IS:513-1994

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

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | чад | 83-114 | | |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,0075 Kg. | ( 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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-95 |
| SCALE :- 2:1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-
STRIP 08ПС-М-2-1×12
GOST 503-81 .

USED ON :-
СБ 322-14-4
СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 4 PIPES.

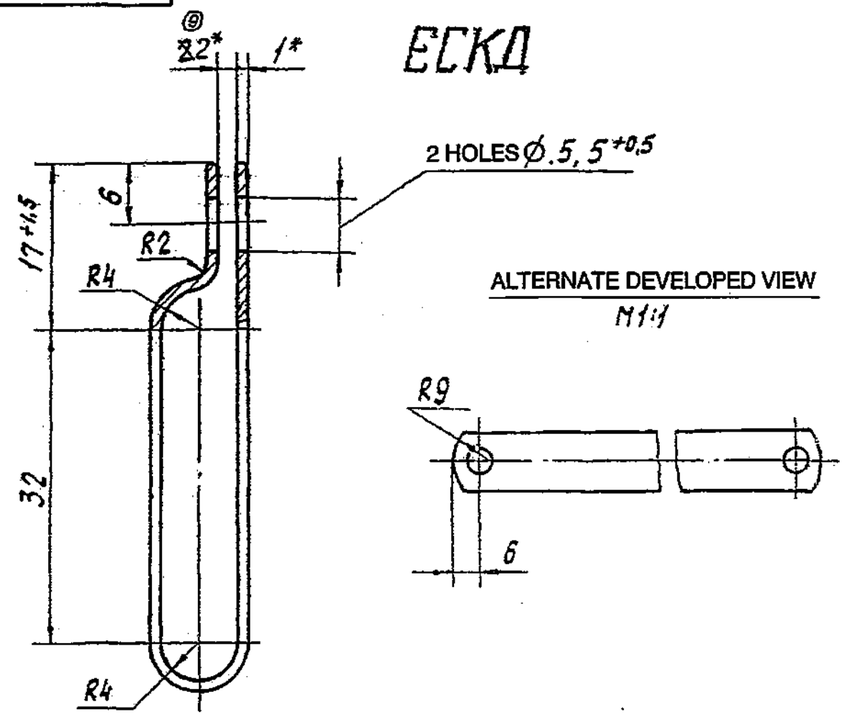
D S CAT NUMBER

DRAWING NUMBER
322-67

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8.1 83-114
DRAWN BASED ON NEW ISSUE

DRAWING NUMBER
322-68

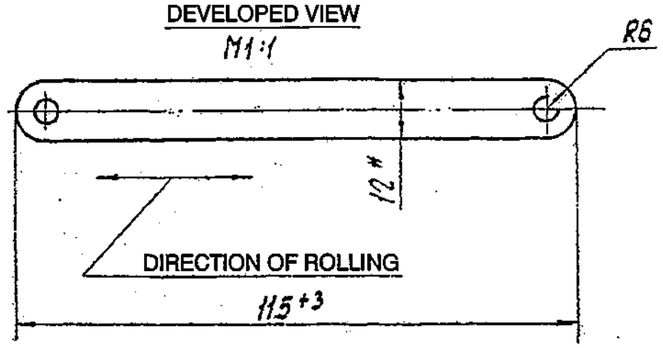
SHEET No. 1 OF 1




DEVELOPED VIEW
M1:1




ALTERNATE DEVELOPED VIEW
M1:1




ECKД

1. ALTERNATE MATERIAL : STEEL GRADES 08 КП, 10 КП, 15 КП TO GOST 1050-74.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. COATING : Zn 9, CHROMATIZING IN ACCORDANCE WITH ЦЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT. OR ЛаКГФ-95 AS PER ЦЛ628-86
4. IN TROPICALIZED MAKE THE COATING IS CADMIUM 9 MICRONS AS PER U 569-84 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT OR ЛаКГФ 95 AS PER ЦЛ628-86
5. * DIMENSION FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL Gr.DD
IS:513-1994

P. JANARDHANAN
Dt. 15 Nov'10 JTO (D)

DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

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) |
|---|---|
| 0.01 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 13.11.10 | 4th Alt. Comm. Mtg. Minutes Point No.1 Dated 26.10.09 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | Nov 2010 |
| SCALE:- | 2 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO IS : 4218,PART-4. | |

MATERIAL :- STRIP
08пс-M-2-1x12 GOST 503-81

USED ON :- Cb 322-14-9
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
# CLIP FOR 5 PIPES

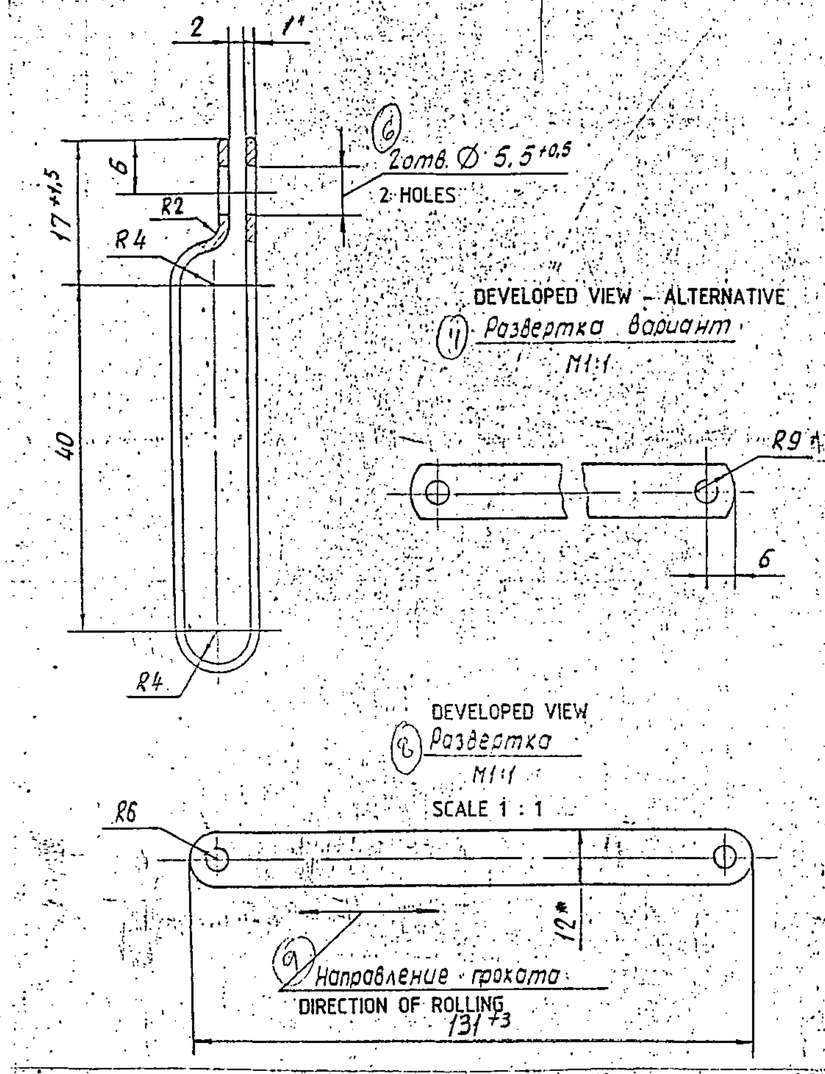
D S CAT NUMBER

DRAWING NUMBER
322-68

F -

SIZE A3

DRAWING NUMBER
322-69




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5.* Размеры для справок.

1. ALTERNATE MATERIAL : STEEL, GRADES 08, 08Kn 10Kn GOST 1050-74. MAY BE MANUFACTURED FROM SHEET GOST 19904-74.
2. REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.
3. COATING : Zn 12 .... 24, CHROMATIZING AS PER ИЛ - 483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ - 09-73.
4. IN TROPICALIZED CONSTRUCTION:
   COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ЦИЛ 104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ЦЛ - 09-73.
5. *DIMENSIONS FOR REFERENCE

(A) EQUIVALENT MATERIAL
GrDD IS:513-1994

ORG. REDRAWN BASED ON NEW ISSUE
ORG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No: 8 (BK 03-

| | | | | | |
|---|---|---|---|---|---|
| Разраб. | Ган | 83-714 | Утверд. | Гейн | |
| Н.контр. | Шкет | Чобкум. | Подп. | Дата | |

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0.0115 Kg | |

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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08пс - М - 2 - 1х12 GOST 503-81

USED ON :- СБ 322-14-4, СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 6 PIPES

D S CAT NUMBER

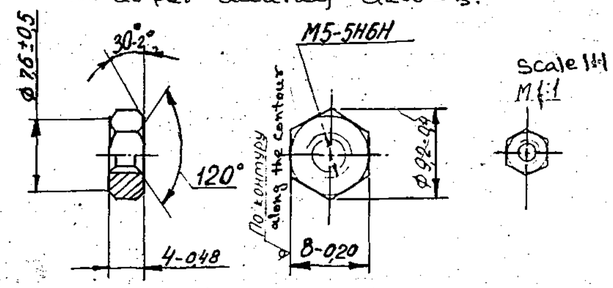
DRAWING NUMBER
322-69

A-7
SIZE A2

DRAWING NUMBER
351 13

Rz 40 (V)

Rolled stock of group B class 4 GOST 1051-73 may be used. To ensure high quality of coating, it is allowed to eliminate surface defects of rolled stock with decrease of dimension as per accuracy class - 5.




1. The Component may be manufactured from Steel 45 GOST 1050-74.
2. Chamfer 120° should be made up to the major diameter of thread.
3. Shift of hole axis up to 0.25 mm. is permitted.
4. The thread may be checked before coating.
6. Coating :- Cd 9, Chromatizing as per ГОСТ 9.104 with elimination of Hydrogen embrittlement.
7. The rest of the technical requirements as Per standard 82052-00.
8. Alternate material :- Steel, grades 40 and 50 GOST 1050-74.

## EXPLANATORY NOTE

9. i) REFERENCE MATERIAL QUOTED:
GAUGED HEXAGONAL STEEL BAR CLASS OF ACCURACY 4, 8.0(-0.100)mm A/F TO GOST 8560-78 FROM HIGH GRADE SIZED STEEL SURFACE QUALITY 'B' TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45 TO GOST 1050-74

(A) ii) REFERENCE NOTE '8' ON ALTERNATE MATERIAL : QUALITY CARBON STRUCTURAL STEEL GRADES 40 AND 50 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 | |
| | | | | MAXIMUM | | | |
| 45 | 0,42-0,50 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | REF MATL |
| 40 | 0.37-0,45 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | ALT MATL |
| 50 | 0,47-0,55 | 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 : AS PER GOST 1050-74

| GRADE OF STEEL | ULTIMATE TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | ELONGATION % | REDUCTION IN AREA % | IMPACT STRENGTH Kgfm/cm² | HARDNESS B H N MAX | REMARKS |
|---|---|---|---|---|---|---|---|
| 45 | 61 | 36 | 16 | 40 | 5 | 229 | REF MATL |
| 40 | 58 | 34 | 19 | 45 | 6 | 217 | ALT MATL |
| 50 | 64 | 38 | 14 | 40 | 4 | 241 | ALT MATL |

(A) Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

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

| EST. MASS | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.0012 Kg | ( 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 |
|---|---|---|
| A | 18.5.09 | Authy: Third Alt. Comm. Minutes Point: 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE
SCALE - 2 : 1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.
ALL THREADS CONFORM TO

MATERIAL: ~~HEXAGON BAR 8.0 GOST 8560-78 45-5 GOST 1051-73~~ (A)

USED ON:- ~~CG 80435 00 00 5~~ CG 3335 00 24 3

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI

TITLE:- NUT M5

D S CAT NUMBER

DRAWING NUMBER 351 13

A-11

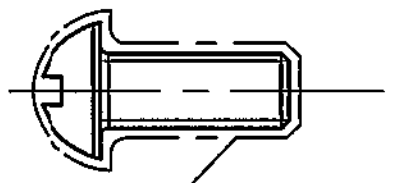
FORMAT A-2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

F-4
226
253

4 | 3 | 2 | 1

DRAWING NUMBER
356-22-2



Coating : Zinc-*6 microns, chromium-1micron* as per ИЛ-749-88 by removing hydrogen embrittlement.

1. In tropical construction, plating cadmium-9microns, chromium-1 micron as per *ИЛ-569-84 with removal of hydrogen embrittlement.*

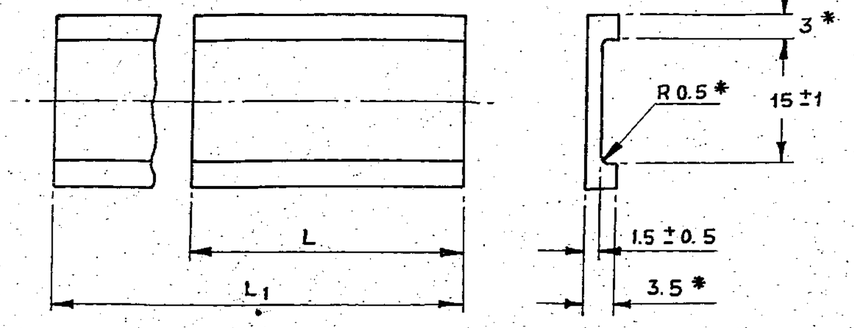
2. *Blank should match with requirement Gost 1759.0-87 for class of accuracy B.*

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

| | |
|---|---|
| EST. WT.(Kg) 0.003 | 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 :- *Blank* *Screw* M5-6gx12.58 GOST 17473-80 | USED ON :- СБ 322-14-9 СБ 322-15-9 СБ 323-00-10 СБ 3320-00-43 |
| ISSUE DATE NATURE OF AMENDMENTS | |
| DRN SCALE :- 2 : 1 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD DIMENSIONS IN mm | |
| APPD TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69 | TITLE :- SCREW M5x12 |
| DATE 26/11/07 ALL THREADS TO CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 356-22-2 |

SIZE A4

DRAWING NUMBER
3335-38-3 TO
3335-38-6




| PART No. | L MM | MASS Kg. | USED ON | KVD No. |
|---|---|---|---|---|
| 3335-38-3 | 26±1 | 0.002 | | |
| 3335-38-4 | 31±2 | 0.0024 | C6 3335-00-~~24~~30 | 78315 |
| 3335-38-5 | 42±2 | 0.0032 | C6 3335-00-~~24~~30 | 78435 |
| 3335-38-6 | 55±0.2 | 0.0042 | | |

*C620-27-00-4

1. DIMENSIONS ARE TO BE ENSURED WITH TOOL.
2. LENGTH OF DELIVERED BAND $L_1$ SHOULD NOT BE LESS THAN 1000 mm.
3. MARK "3335-38-3" SHOULD BE PUT ON TAG OF COMPONENT TO BE DELIVERED.
4. TO BE MADE AS PER TT III H 100 GOST 15152-69.
5. THE REST OF THE REQUIREMENTS AS PER TY 005 216-75.

3335-38-3

## EXPLANATORY NOTE :-

6. REFERENCE MATERIAL QUOTED :
UNVULCANISED OIL AND PETROL RESISTANT RUBBER CODE OF CLASSIFIER 25-1231, RUBBER GRADE HO-68-1 TO TY 005-216-75.

a. MECHANICAL PARAMETERS :

i. RUPTURE STRENGTH Kgf/cm$^2$ _____ 90 Min
ii. ELONGATION OF RUPTURE % _____ 250 Min
iii. RESIDUAL ELONGATION AFTER RUPTURE % ___ 12 Max
iv. HARDNESS No IP TO TM P DEVICE ARBITORY ____ 55-70

7. LIKELY EQUIVALENT GRADE / SPECIFICATION FOR NITRILE CHLOROPRENE BASE TO BA 60 BS 2751-82 AND C 60 BS 2752-82.

Ⓐ ALT MATL.: RUBBER GRADE BNC TO SPECN. CQA(HV)/NBR+CR

EXPLANATORY ADDED ON 4-6-92

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

| EST. WT. | 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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 27.05.08 | Lr. No. TC/GEN/IND-III Dt:. 02.04.08 |

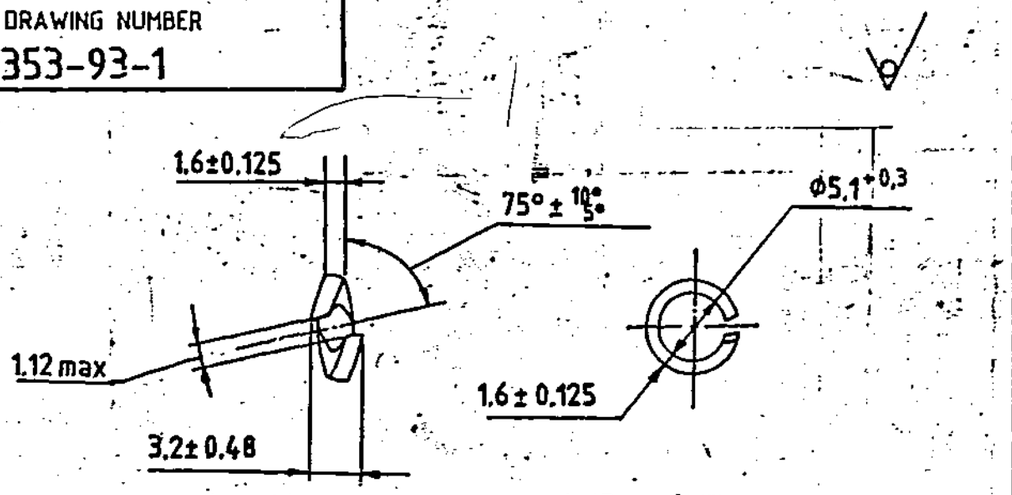
DRN —
CHD
TCD
APPD
DATE 8-7-86
SCALE - 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- RUBBER HO-68-1 TY 005 216-75
USED ON —
CONTROLLERATE OF QUALITY ASSURANCE. (HEAVY VEHICLES) AVADI
TITLE : GASKET
D S CAT NUMBER
DRAWING NUMBER 3335-38-3 TO 3335-38-6

A-9
SIZE A2

KVD.No. 78696

DRAWING NUMBER
353-93-1




1. IN TROPICAL MANUFACTURE, COATING Cd 9 Cr AS PER ШУЛ - 104 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.

2. WASHER 5Т65Г 09 GOST 6402-70 MAY BE USED, IN VISUAL AND TROPHICAL MANUFACTURE.

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

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 Pcs 0,424 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. |
| A | 16.8.10 | 4th Alt.Comm.Meeting Minutes Point No.12 Dt: 26-10-09 | MATERIAL:- 5T 65 Г 06 GOST 6402-70 / USED ON Cб [illegible] Cb [illegible] |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2 : 1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. |
| CHD | | | |
| TCD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69 | TITLE: WASHER |
| APPD | | ALL THREADS CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 353-93-1 |
| DATE | 28.5.94 | | |
| SIZE A4 | | | |

## EXPLANATORY NOTE:

MATERIAL QUOTED: WASHER 5Т, 65Г, 06 GOST 6402-70.

CORRESPONDS DESIGN AND DIMENSIONS OF SPRING (LOCK) WASHERS.
06 = CONVENTIONAL SYMBOL OF FINISH. (PARKERISING FOLLOWED BY OILING).
5 = NOMINAL THREAD DIA OF BOLT OR SCREW
Т = HEAVY ; 65Г (65G) = GRADE OF STEEL AS PER GOST 1050-74.

CHEMICAL COMPOSITION: AS PER GOST 1050-74.

| CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·62 – 0·70 | 0·17 – 0·37 | 0·90 – 1·20 | 0·25 | 0·040 | 0·035 | 0·25 | 0·25 |

WEIGHT OF STEEL WASHERS AND THEIR RESILIENCE PROPERTIES AS PER GOST 6402-70.

THEORITICAL WEIGHT OF 1000 STEEL WASHERS IN kg = 0·424.

ESTIMATED RESILIENCE OF WASHERS FROM STEEL GRADE 65G = 28·7. IN kg

MECHANICAL PROPERTIES: AS PER GRADE 65G GOST 1050-74.

YIELD POINT kgf/mm² (MIN) = 44

ULTIMATE TENSILE STRENGTH (MIN) = 75 kgf/mm²

ELONGATION % (MIN) = 9

REFERENCE NOTE: 09 = ZINC PLATING (CONVENTIONAL SYMBOL OF FINISH)

(A) EQUIVALENT MATERIAL
75 C6 TO IS:2507/EN 42 J BS:970

USED ON

Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-15-9** | | **COMPRESSED - AIR** | | |
| | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | **R . H ASSY.** | | |
| | 1 | Cb.322-07-9 & I/L | | 1 ST RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 2 | Cb.322-08-9 & I/L | | 2 ND RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 3 | Cb.322-09-9 & I/L | | 3 RD RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 4 | Cb.322-10-9 & I/L | | 4 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 5 | Cb.322-11-9 & I/L | | 5 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 6 | Cb.322-12-9 & I/L | | 6 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | | | | | | |
| | 8 | 322-65 | | CLIP FOR 2 TUBES | 1 | Tropical make |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED - AIR STARTING TUBING R H ASSY.** | | |
| APPD | | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-15-9** |

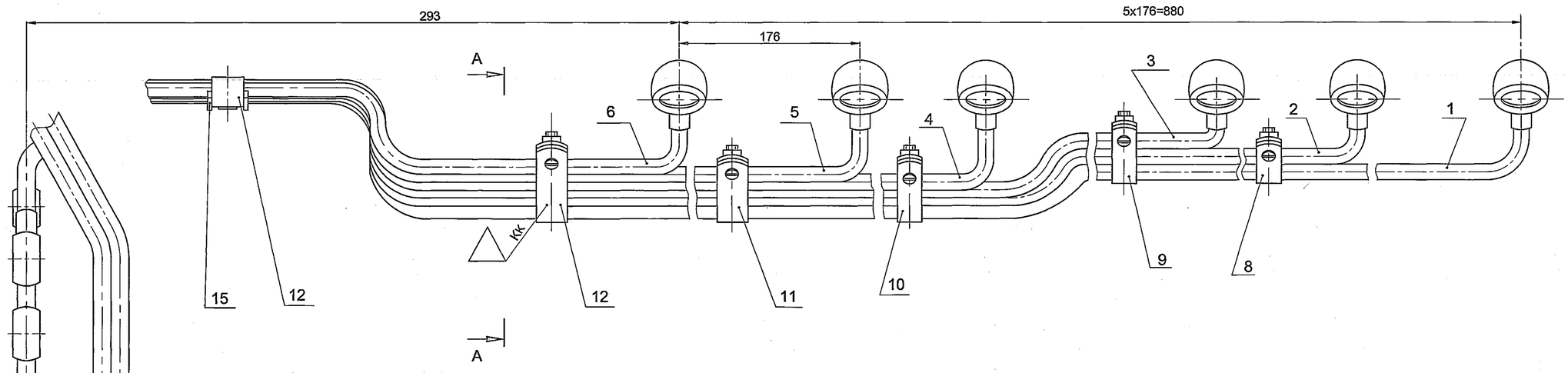
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | 9 | 322-66 | | CLIP FOR 3 TUBES | 1 | Tropical make |
| | | 10 | 322-67 | | CLIP FOR 4 TUBES | 1 | Tropical make |
| | | 11 | 322-68 | | CLIP FOR 5 TUBES | 1 | Tropical make |
| | | 12 | 322-69 | | CLIP FOR 6 TUBES | 2 | Tropical make |
| | | 13 | 351-13 | | NUT M5 | 6 | Tropical make |
| | | 14 | 356-22-2 | | SCREW M5x12 | 6 | Tropical make |
| | | 15 | 3335-38-5 | | GASKET | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 21 | 353-93-1 | | WASHER 5Т65Г | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.22 Tropical make |
| | | 22 | - ND - | | WASHER 5Н65Г05 | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.21 Tropical make |

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 3

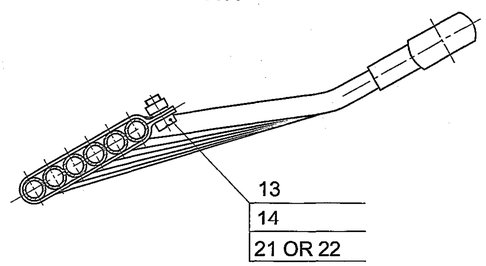
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED - AIR STARTING TUBING R H ASSY.** | | |
| APPD | | | | |
| DATE | 30.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-15-9** |

DRAWING NUMBER
**Cb.322-15-9**




A-A




1. Carry out adjustment and final inspection for assembly units from СБ.332-07-9 to СБ.322-12-9 together on the dummy.
2. Make a complete set of assembly units СБ.322-15-9 and СБ.322-14-9 in pairs.
3. Stamp the manufacturing - factory No. and part number of assembly units СБ.322-14-9 and СБ.322-15-9 on tag for making a set while sending as spare parts.
4. Components and assembly units, having conventional symbol *"ТИ" in the part list of given drawing in "remarks" column should have tropicalized construction as specified in the drawings for components.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
174
253
SIZE A1

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 ) |
|---|---|
| 1.460 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE 06/2/07
SCALE:- 1:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :-
СБ 322-00-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING RH ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER
**Cb.322-15-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-07-9** | | **1 ST RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-27-9 | | 1 ST RH CYLINDER TUBE | 1 | |

Cb 322-15-9

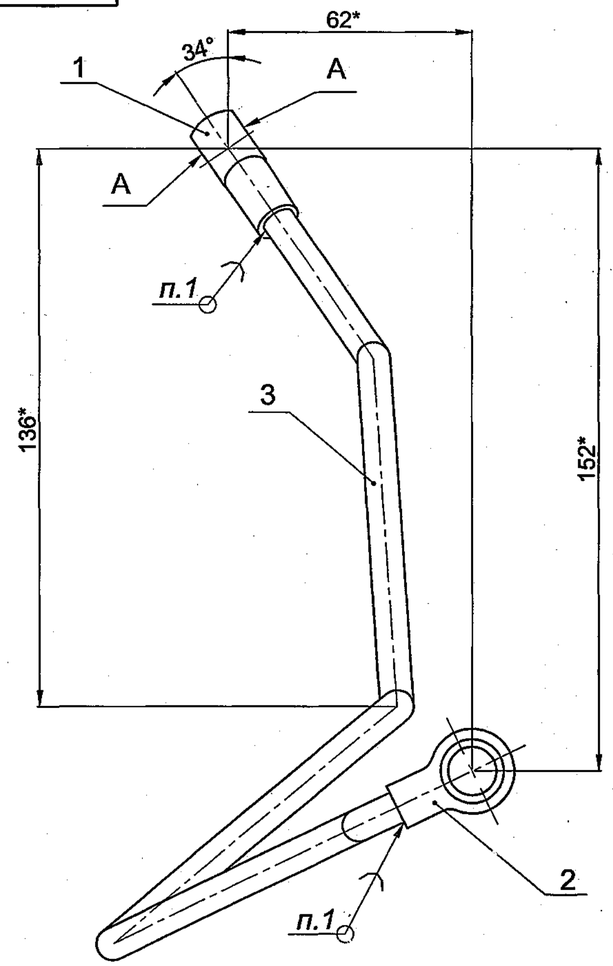
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

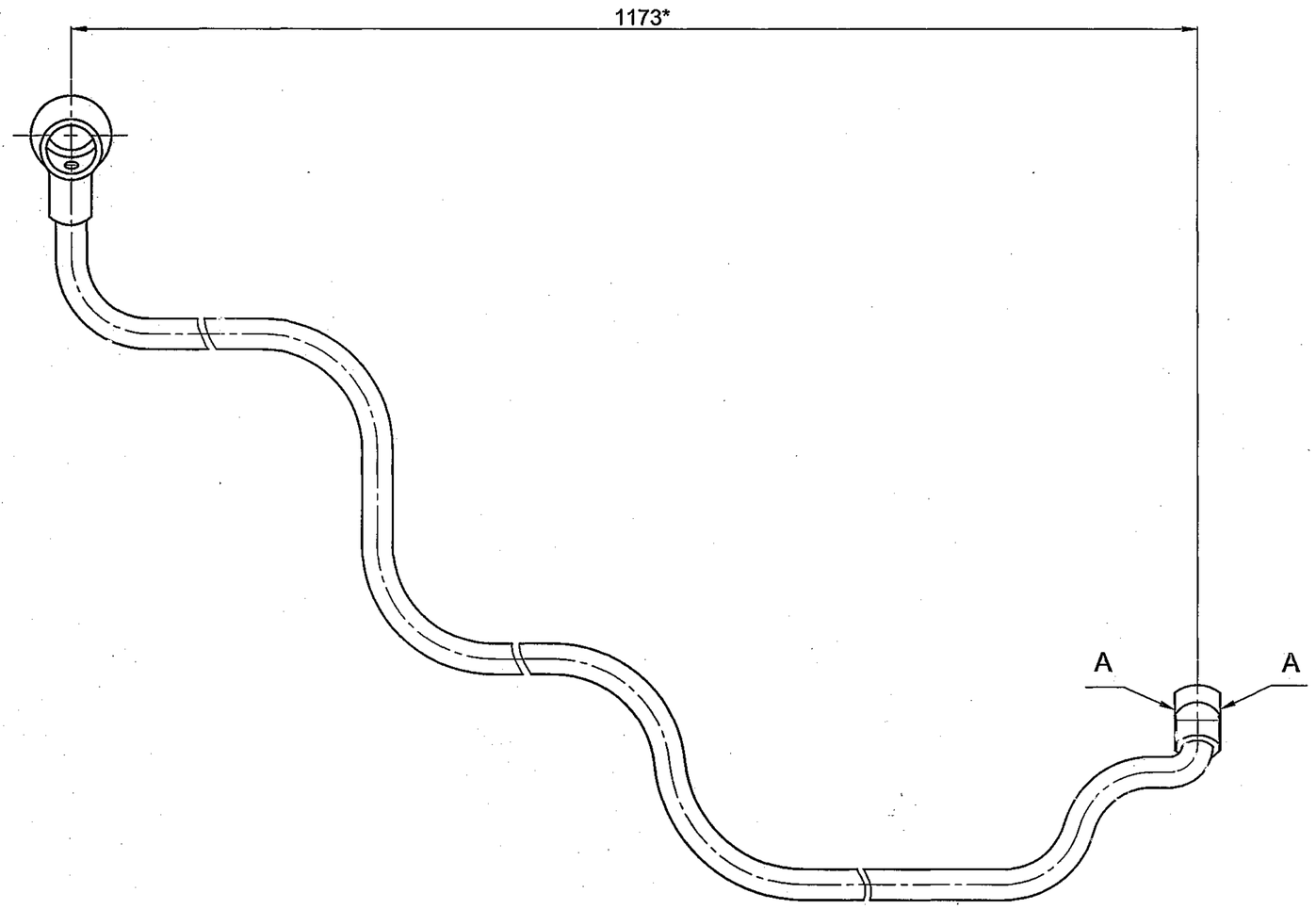
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **1 ST RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-07-9** |

F-4
157/253

DRAWING NUMBER
*Cb.322-07-9*




1. Wire *Л163 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.285 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/12/02 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :- (4A)
1 st RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
*Cb.322-07-9*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
158
253

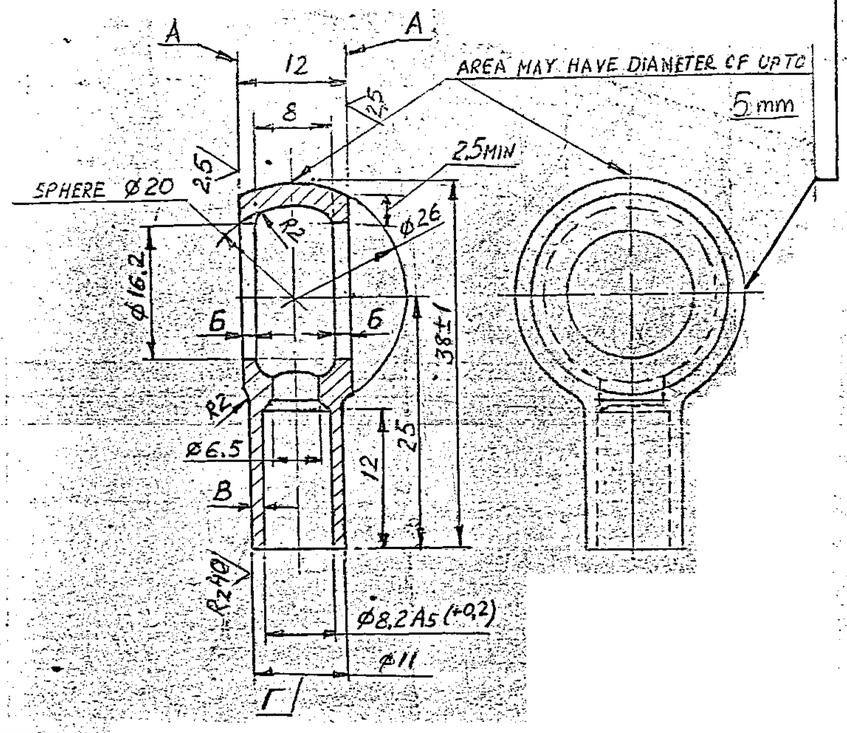
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

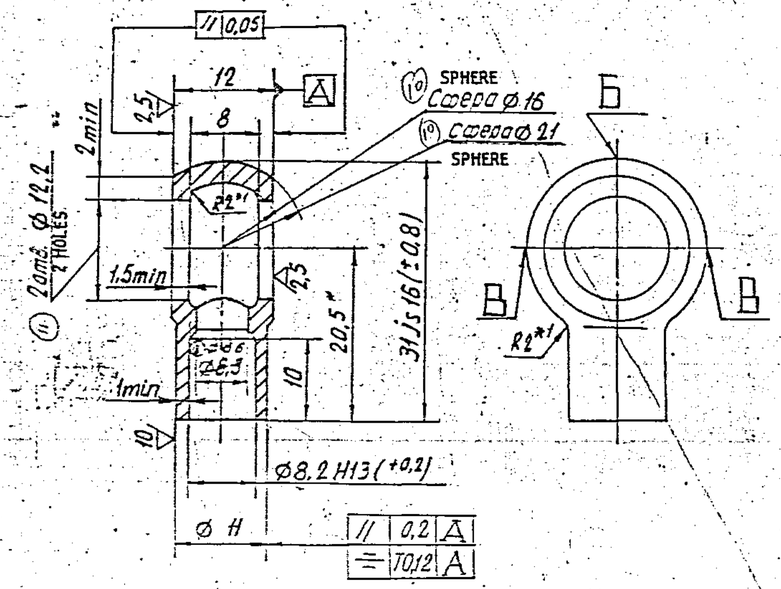
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

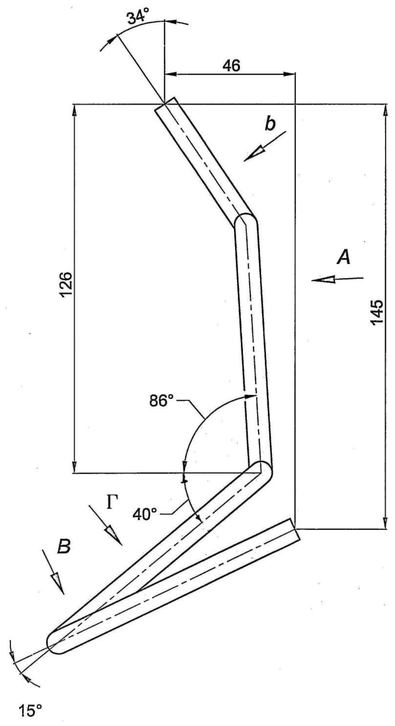
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

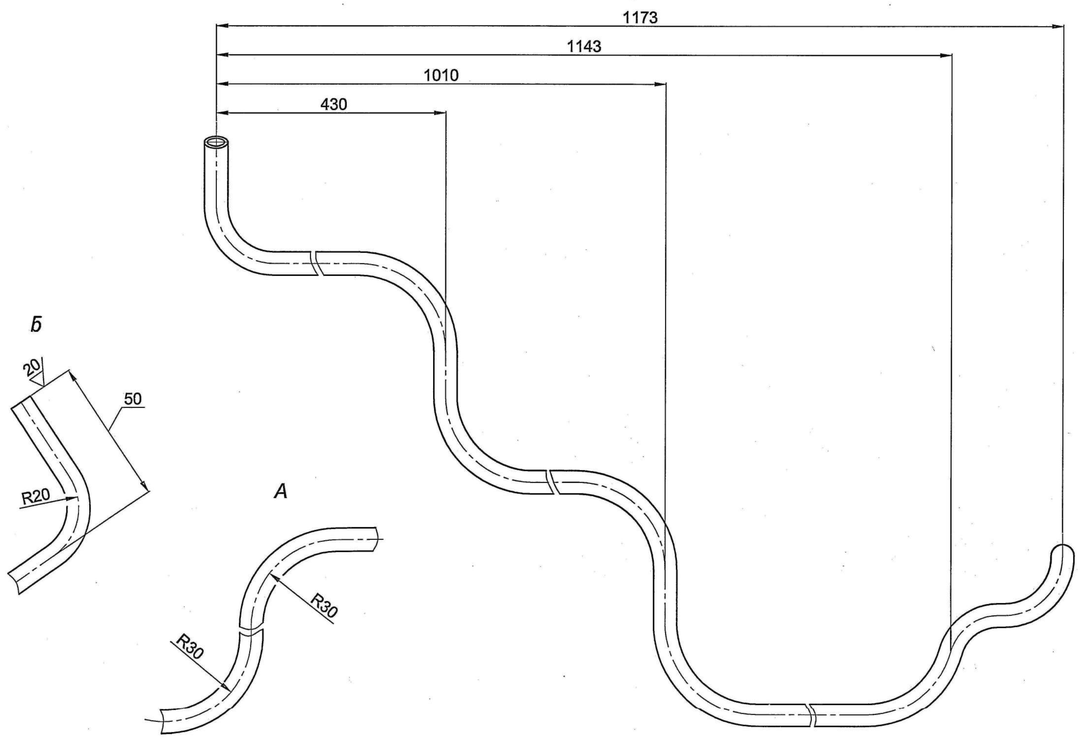
TITLE: SWIVEL ELBOW

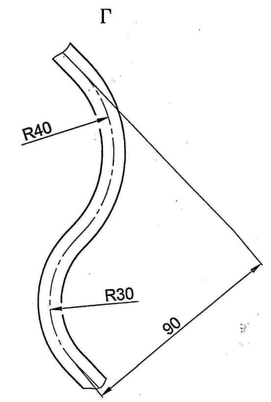
DRAWING NUMBER 322-18

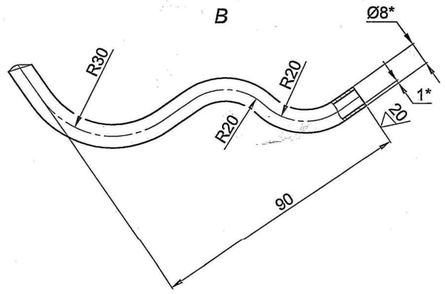
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-27-9**




1. Unfolded length of pipe should be L ≅ *1425 mm.*

2. *Tolerance of ovality for pipe in bending area should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
181
253

SIZE A1

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 ) |
|---|---|
| 0.240 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 28/11/97 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- C6 322 - 07 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *1 st RH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER **322-27-9**

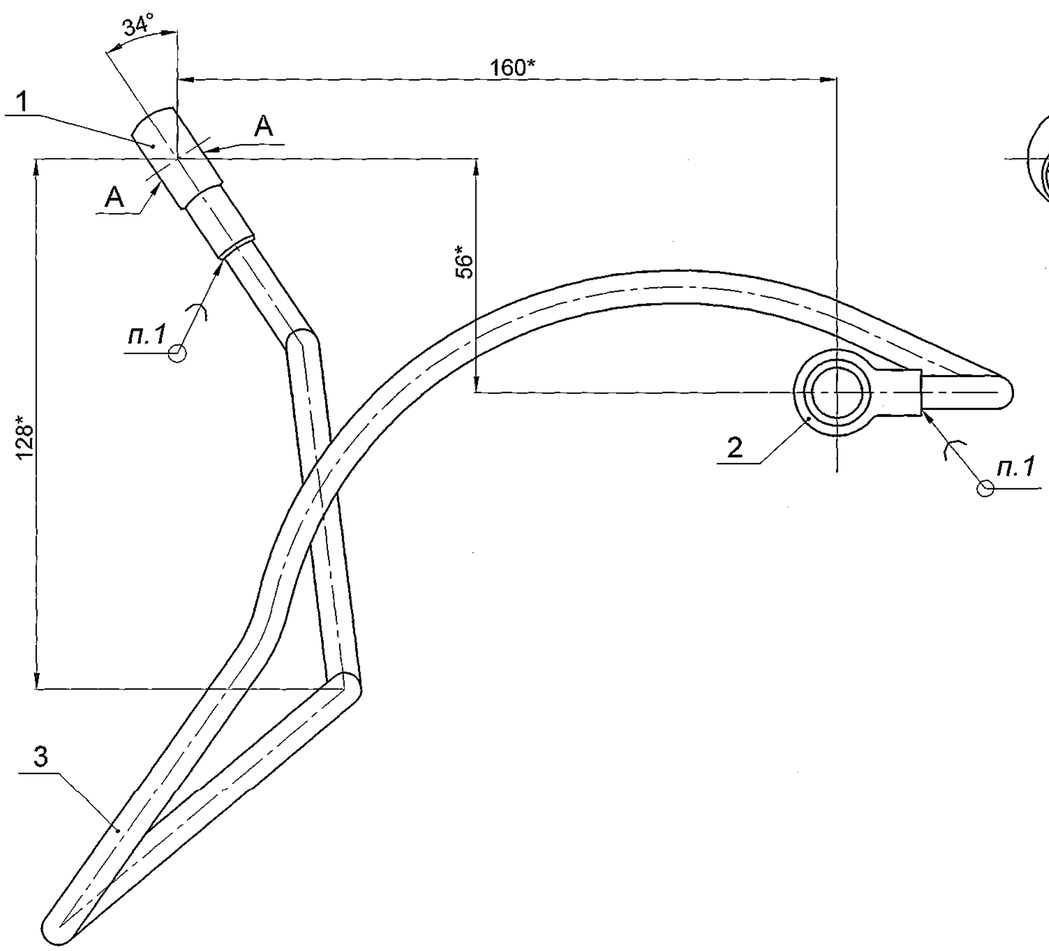
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-08-9** | | **2 ND RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-28-9 | | 2 ND RH CYLINDER TUBE | 1 | |

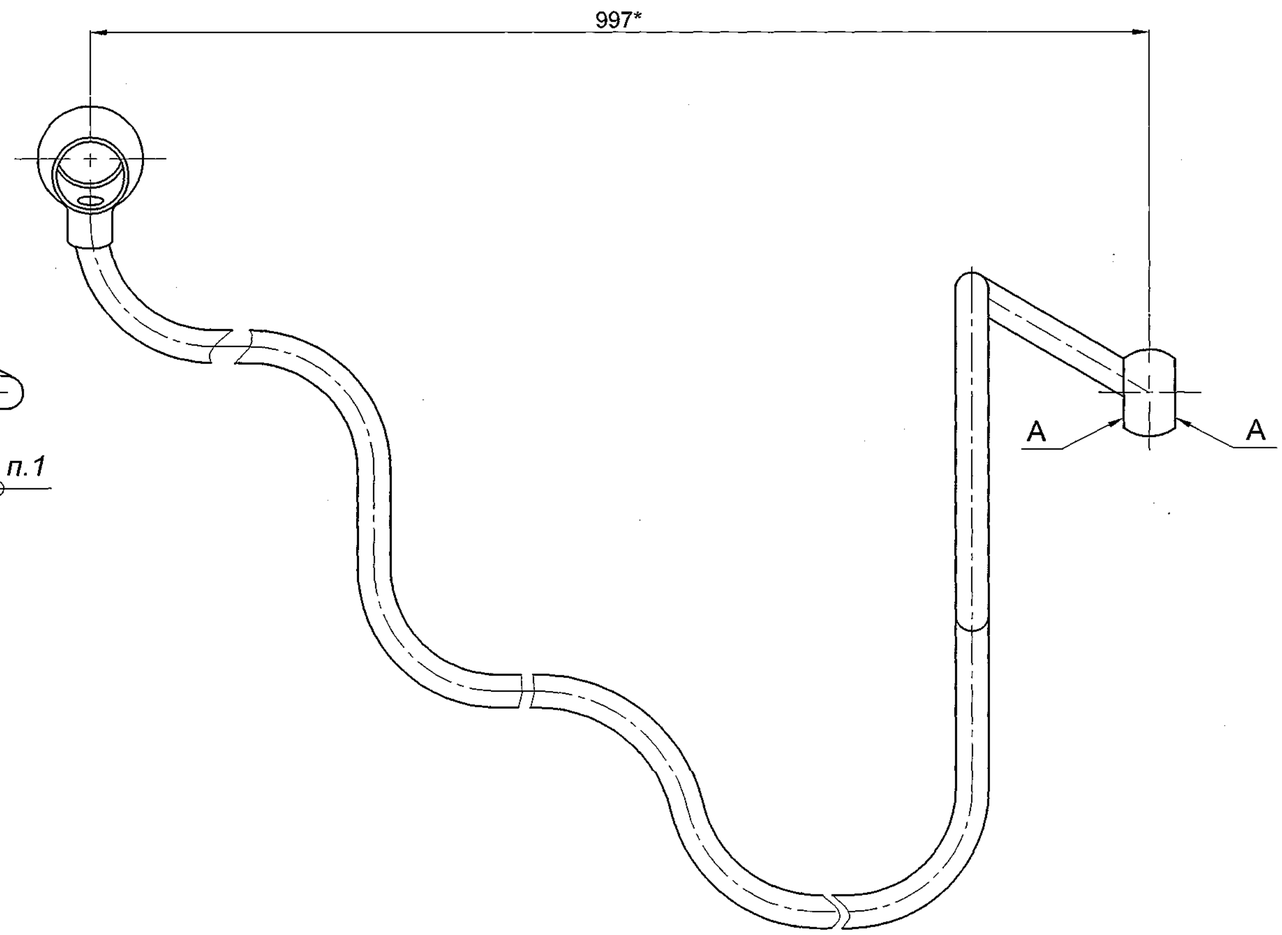
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **2 ND RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-08-9** |

DRAWING NUMBER
**Cb.322-08-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИЛ-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given for reference.*

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.295 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 13.7.07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - | 69 |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- **2 nd RH CYLINDER TUBE ASSY.**

D S CAT NUMBER

DRAWING NUMBER **Cb.322-08-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4 160/253

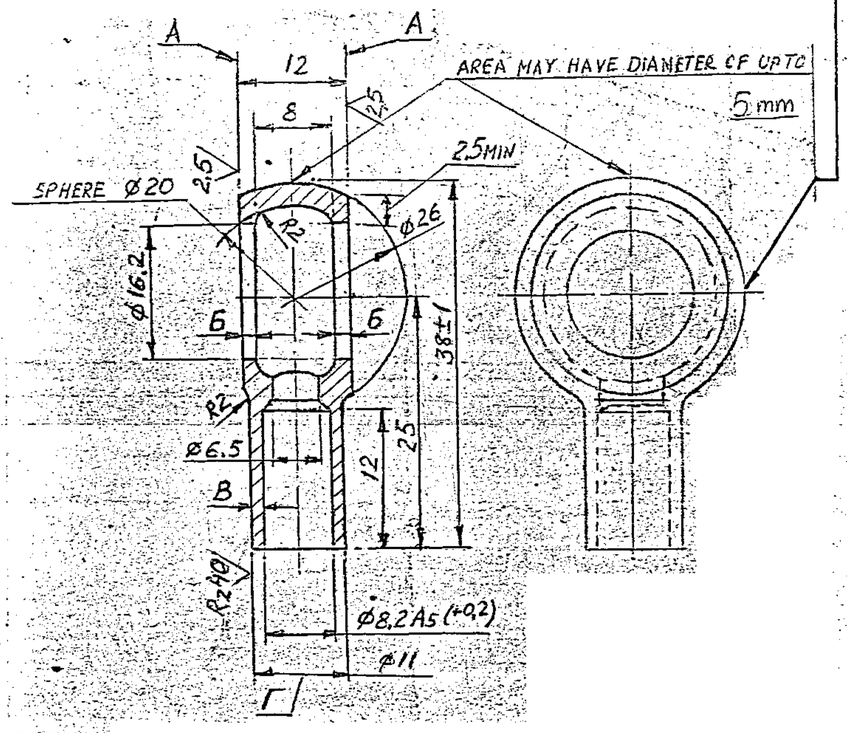
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

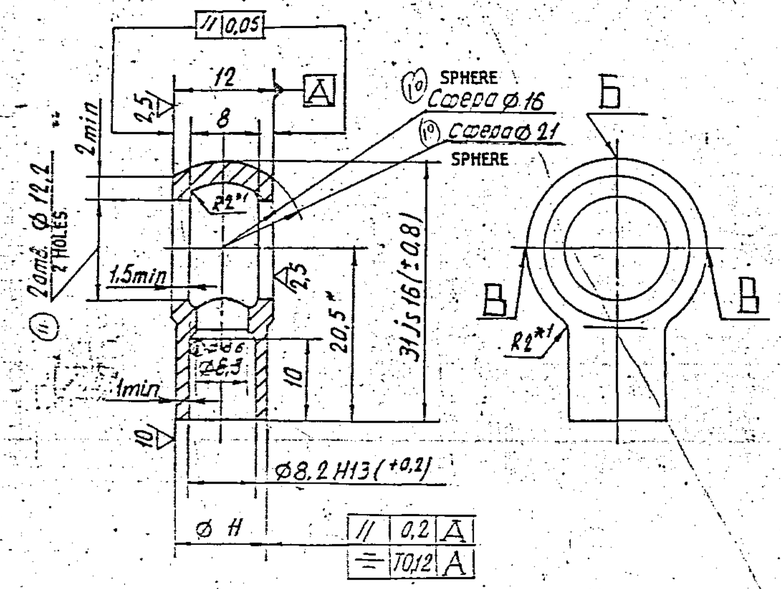
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

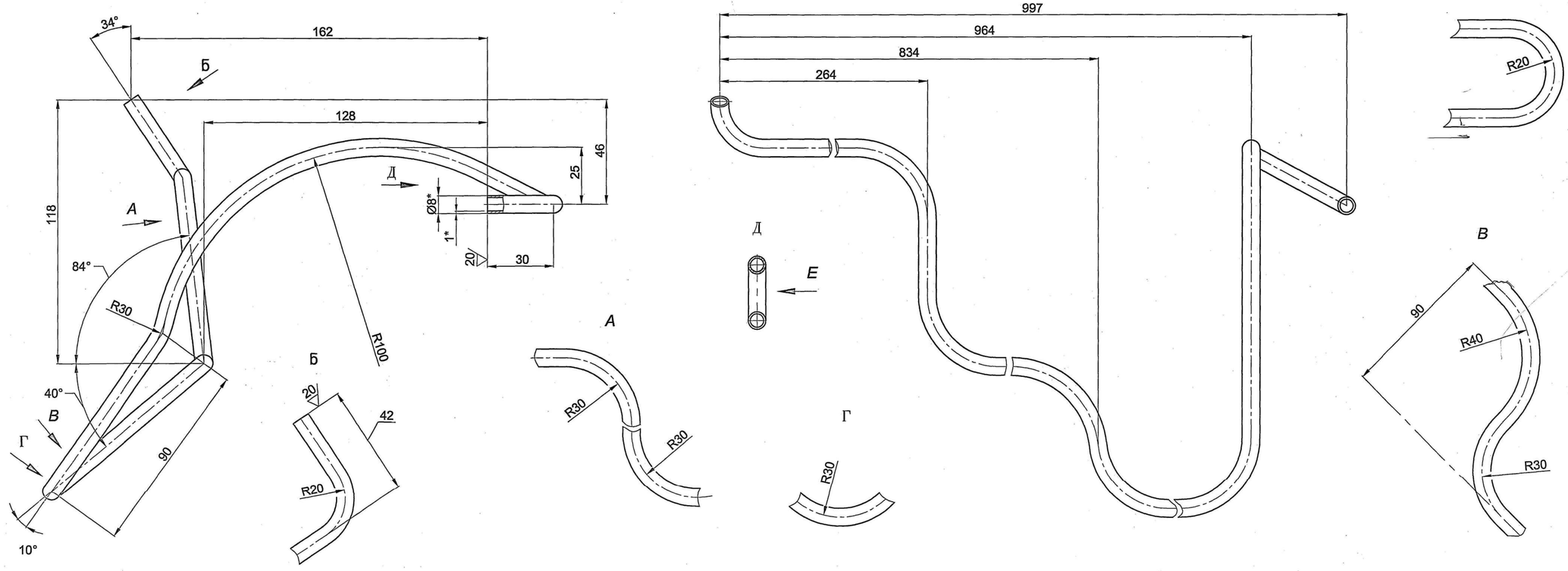
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-28-9**




1. Unfolded length of pipe should be L ≈ *1465 mm.*

2. *Tolerance of ovality for pipe in bending area should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- LE 322-08-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **2 nd RH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-28-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
182
253

SIZE A1

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-09-9** | | **3 RD RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-29-9 | | 3 RD RH CYLINDER TUBE | 1 | |

Cb 322-15-19

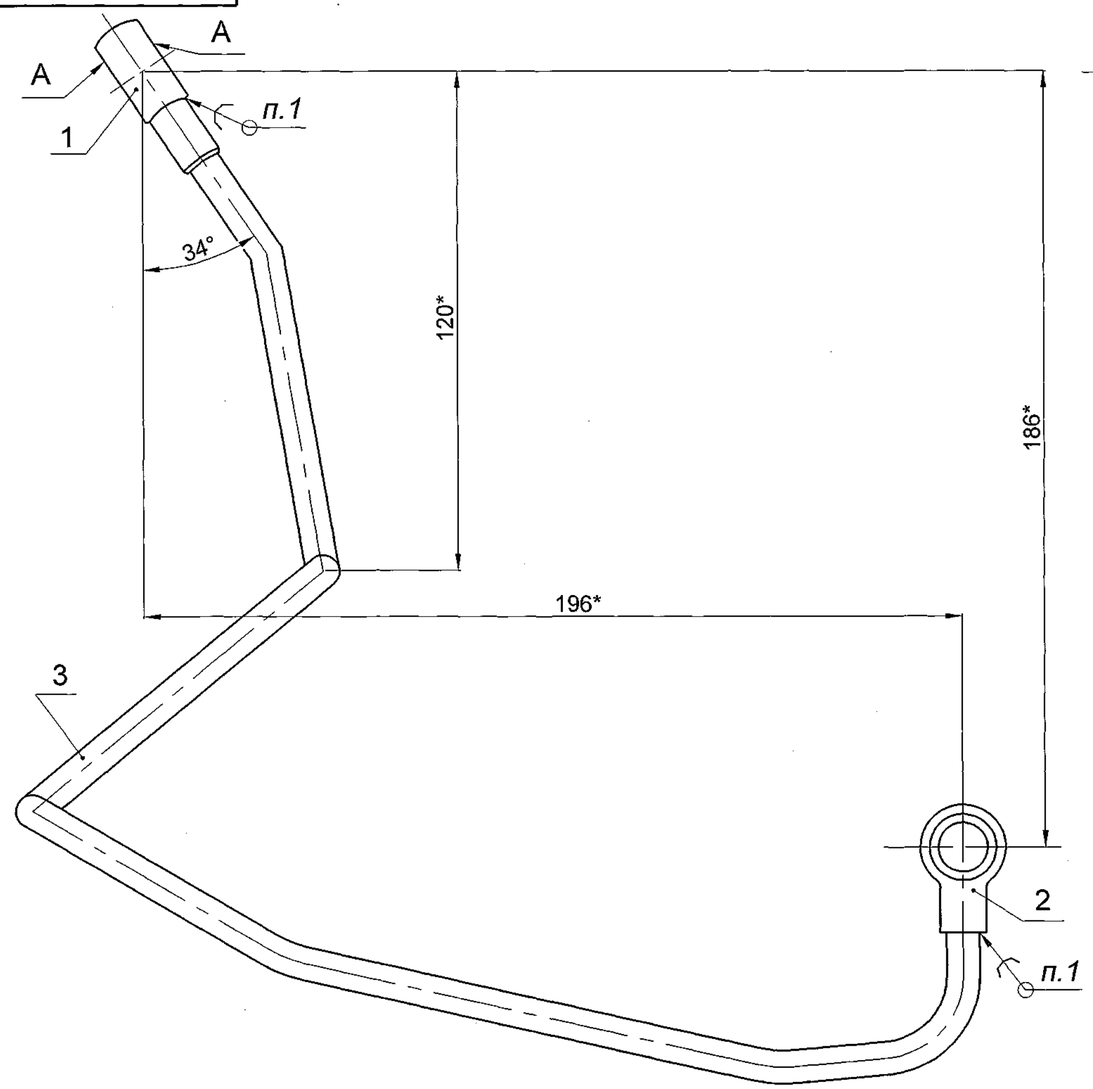
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

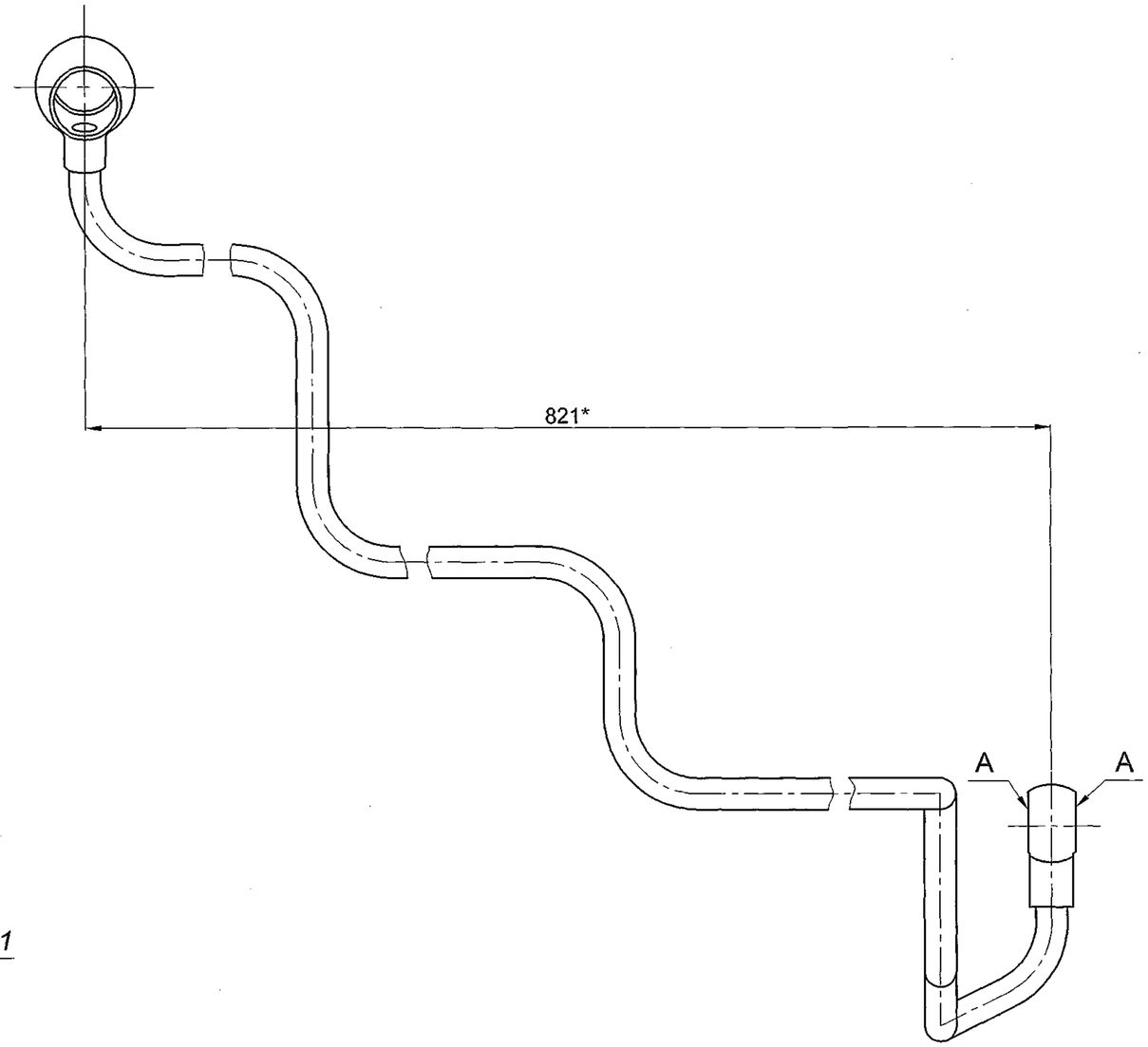
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **3 RD RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-09-9** |

F-4
161/253

DRAWING NUMBER
**Cb.322-09-9**




1. Wire *Л63 Gost 12920-67.*
2. *Varnish coating ГФ - 95 as per ИП-628-86.*
3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*
4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*
5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*
6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*
7. ** Dimensions are given for reference.*

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS ) |
|---|---|
| 0.245 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 13.7.07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- | — |
| USED ON :- | Cb 322-15-9 |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE :- | 3rd RH CYLINDER TUBE ASSY. |
| D S CAT NUMBER | |
| DRAWING NUMBER | Cb.322-09-9 |

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4
162
253

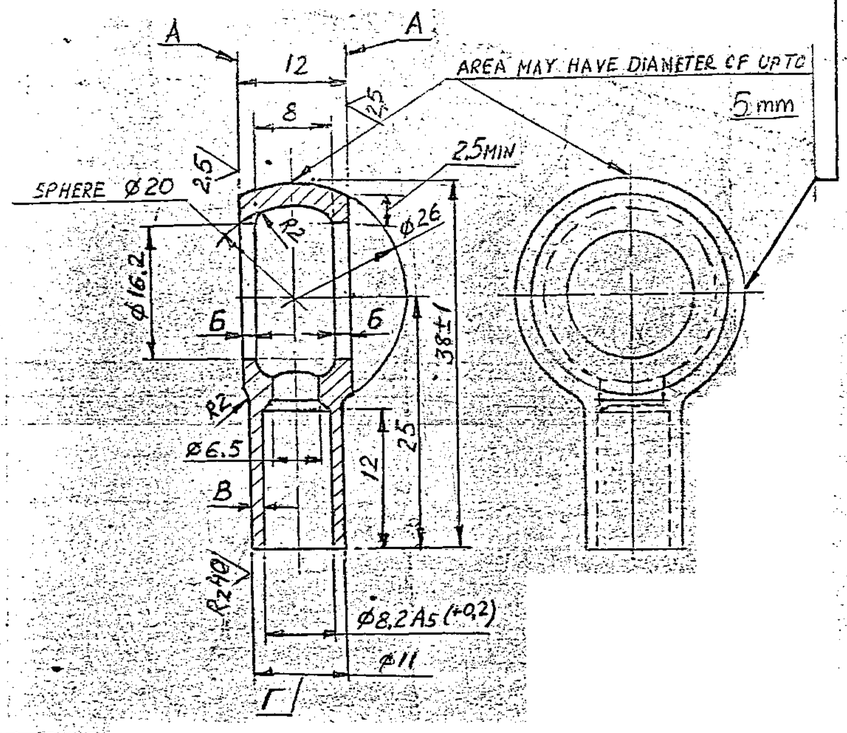
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

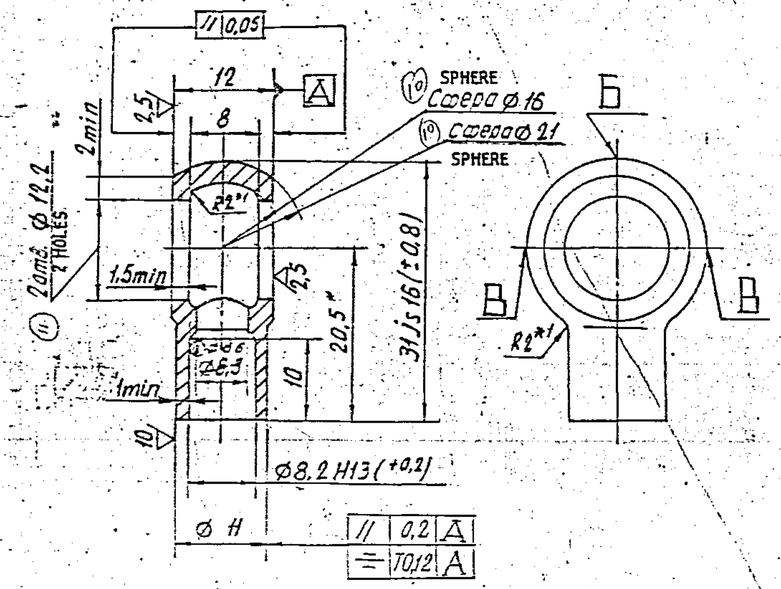
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

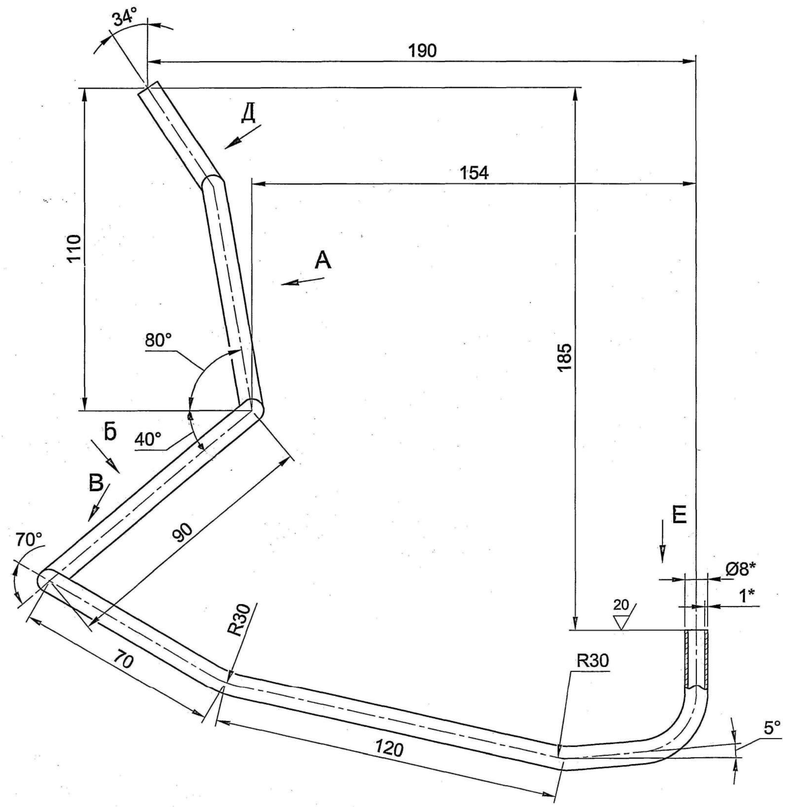
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

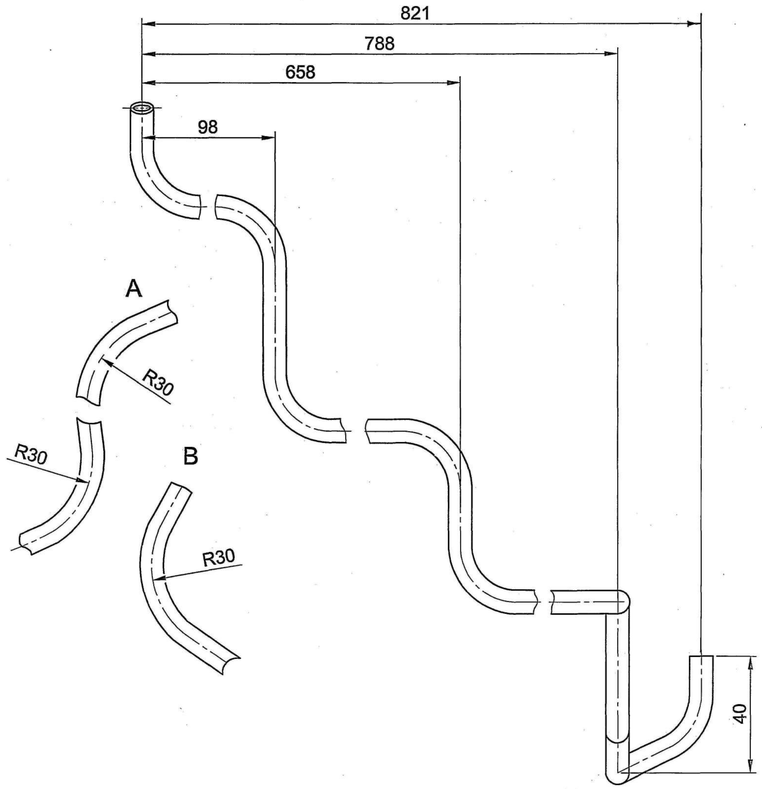
TITLE: SWIVEL ELBOW

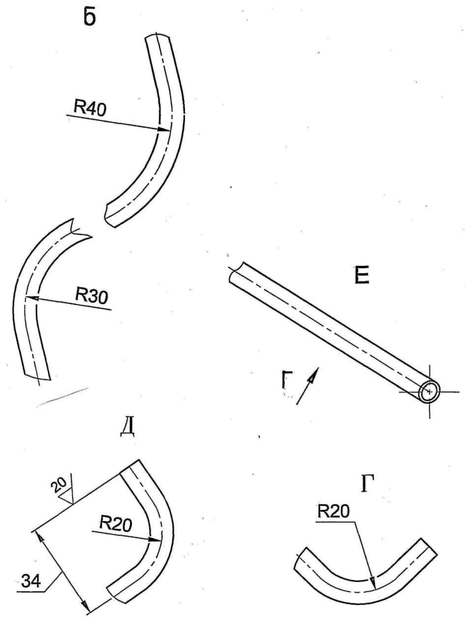
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-29-9**




1. Unfolded length of pipe should be L≈ 1185 mm.
2. Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).
3. Bending-tool marks are allowed.
4. * Dimensions are given for reference.

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
183
253
SIZE A1

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 ) |
|---|---|
| 0.200 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CB 322-09-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

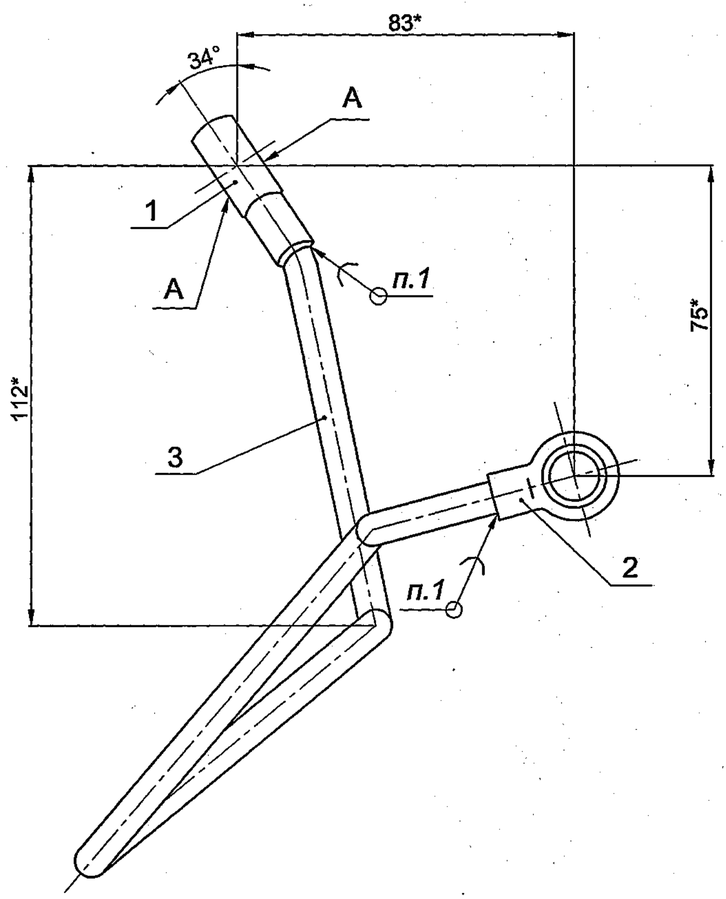
TITLE :- **3 rd RH CYLINDER PIPE**

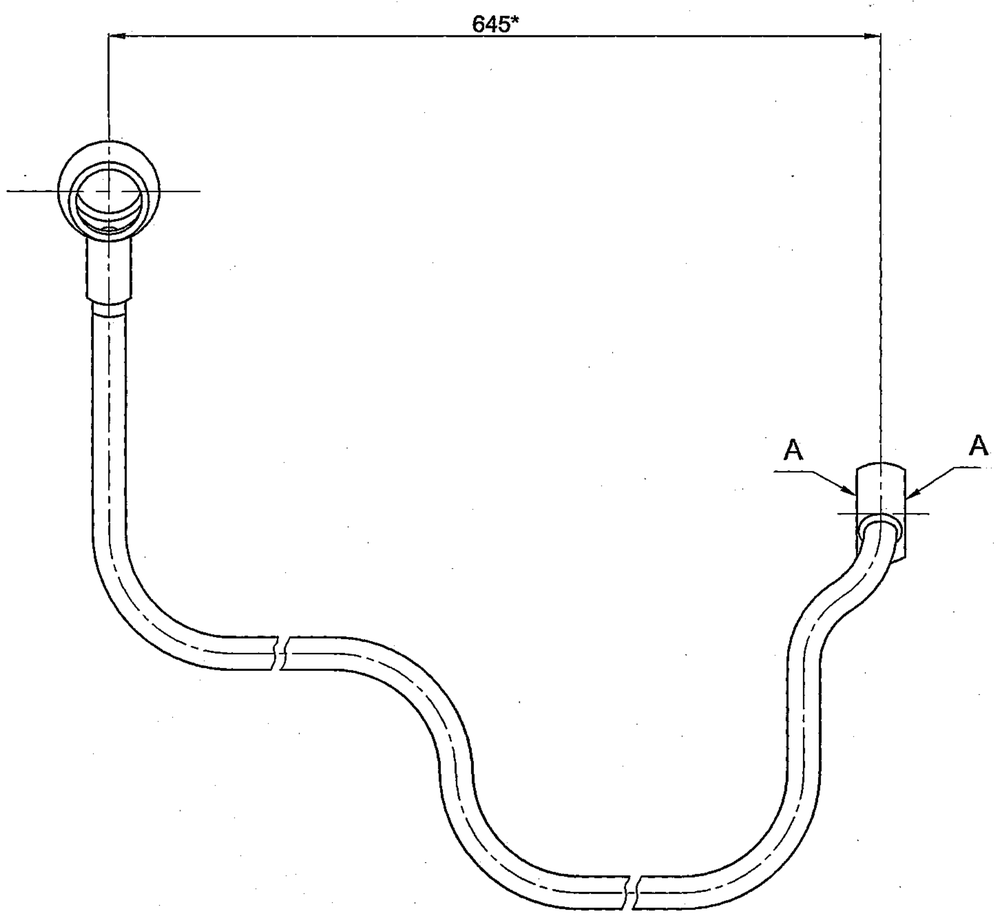
D S CAT NUMBER

DRAWING NUMBER **322-29-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-10-9** | | **4 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-30-9 | | 4 TH RH CYLINDER TUBE | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | |

DRAWING NUMBER
**Cb.322-10-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- (4A) 4 th RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER **Cb.322-10-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4 164/253

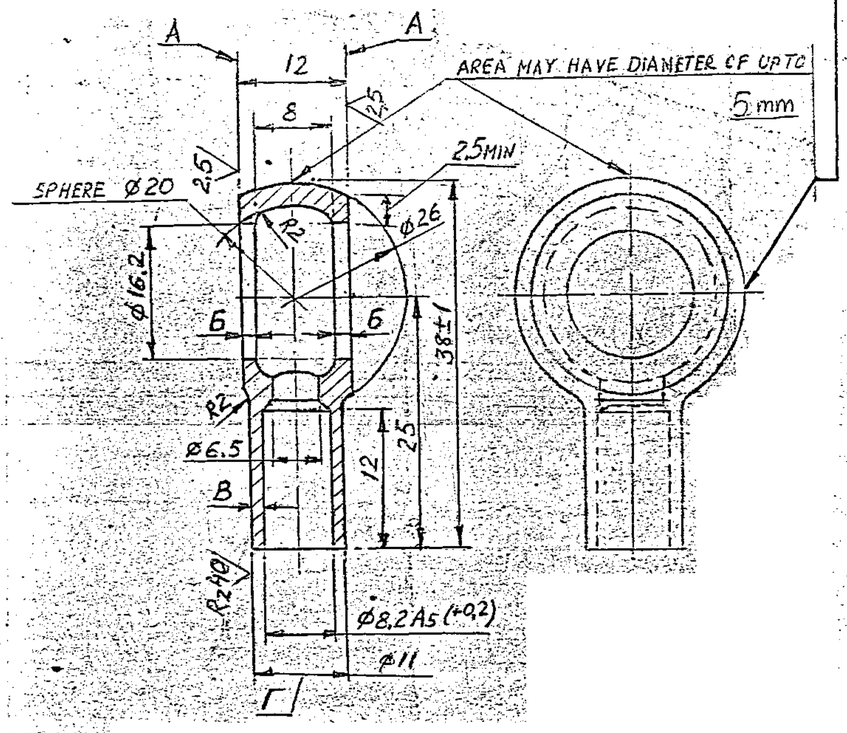
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

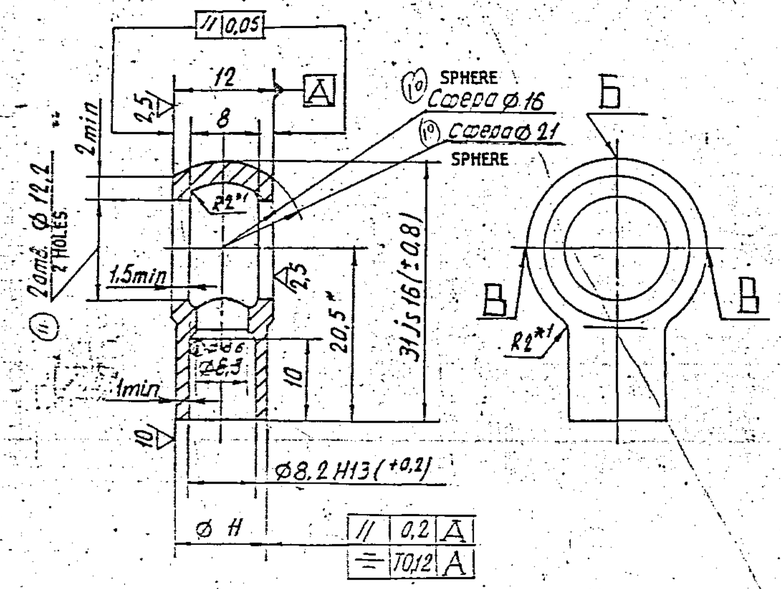
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

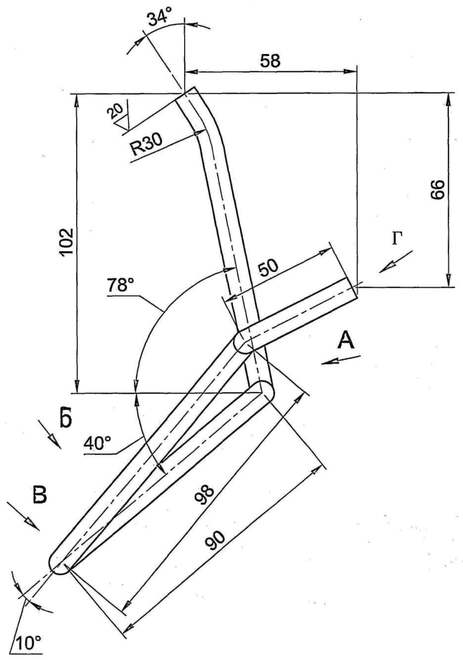
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

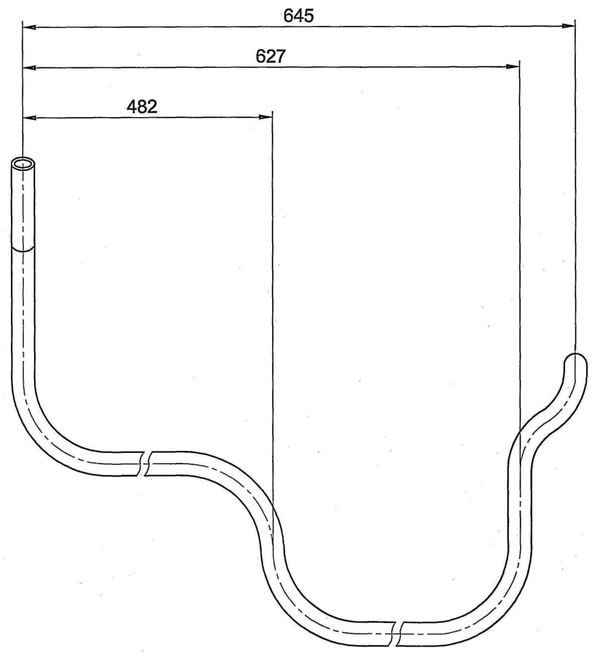
TITLE: SWIVEL ELBOW

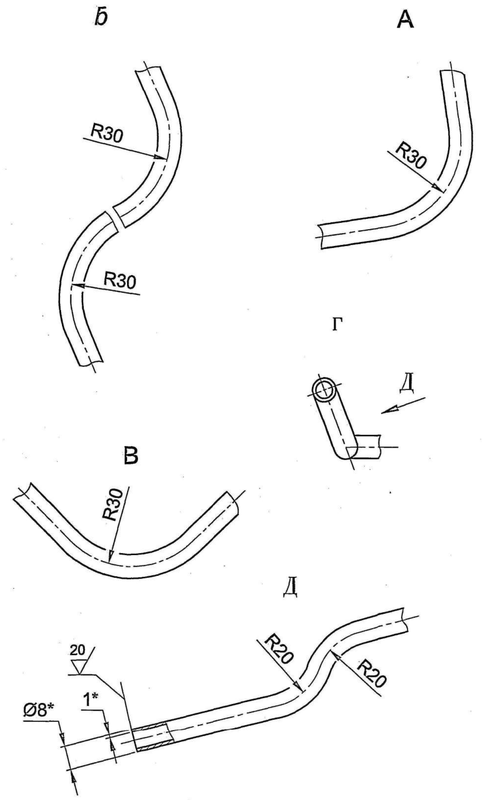
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
322-30-9




1. Unfolded length of pipe should be L ≈900 *mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
184
253

SIZE A1

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 ) |
|---|---|
| 0.160 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 23/1/07 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CБ 322-10-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- 4 th RH CYLINDER PIPE

DRAWING NUMBER 322-30-9

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-11-9** | | **5 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-31-9 | | 5 TH RH CYLINDER TUBE | 1 | |

Cb 322-15-9

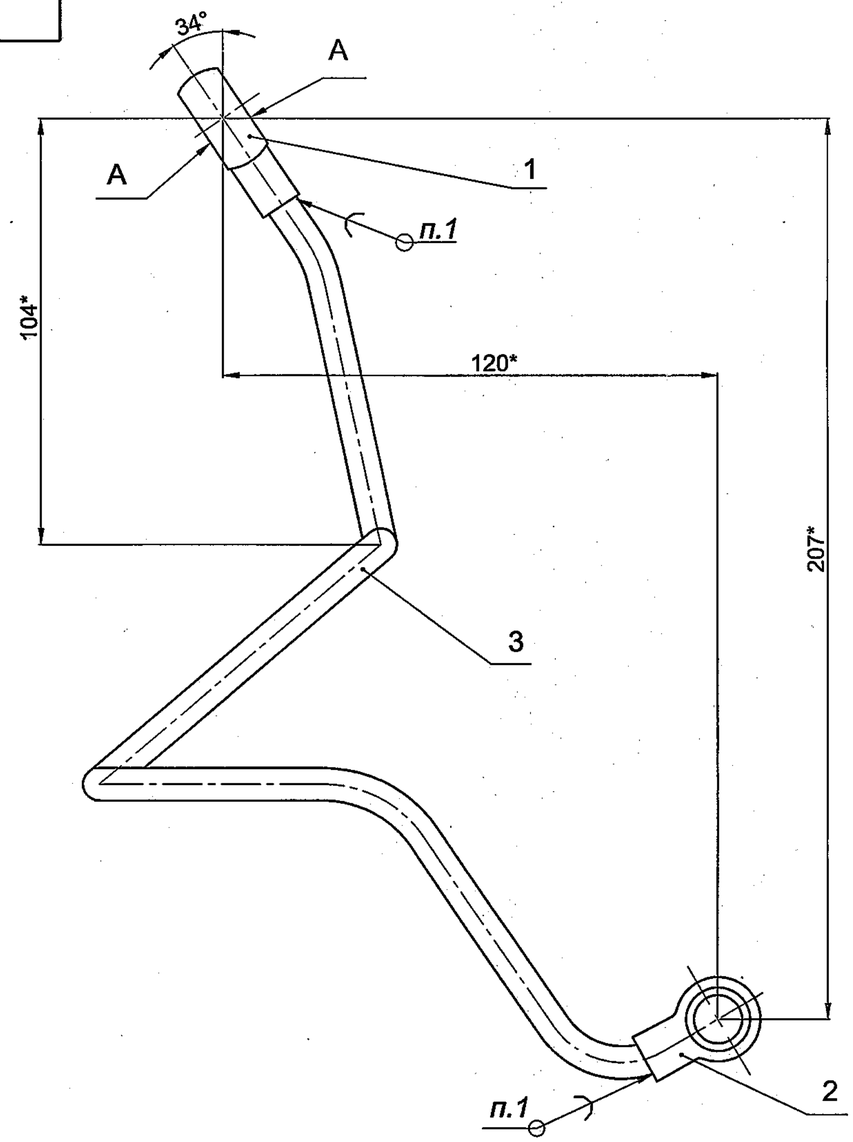
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

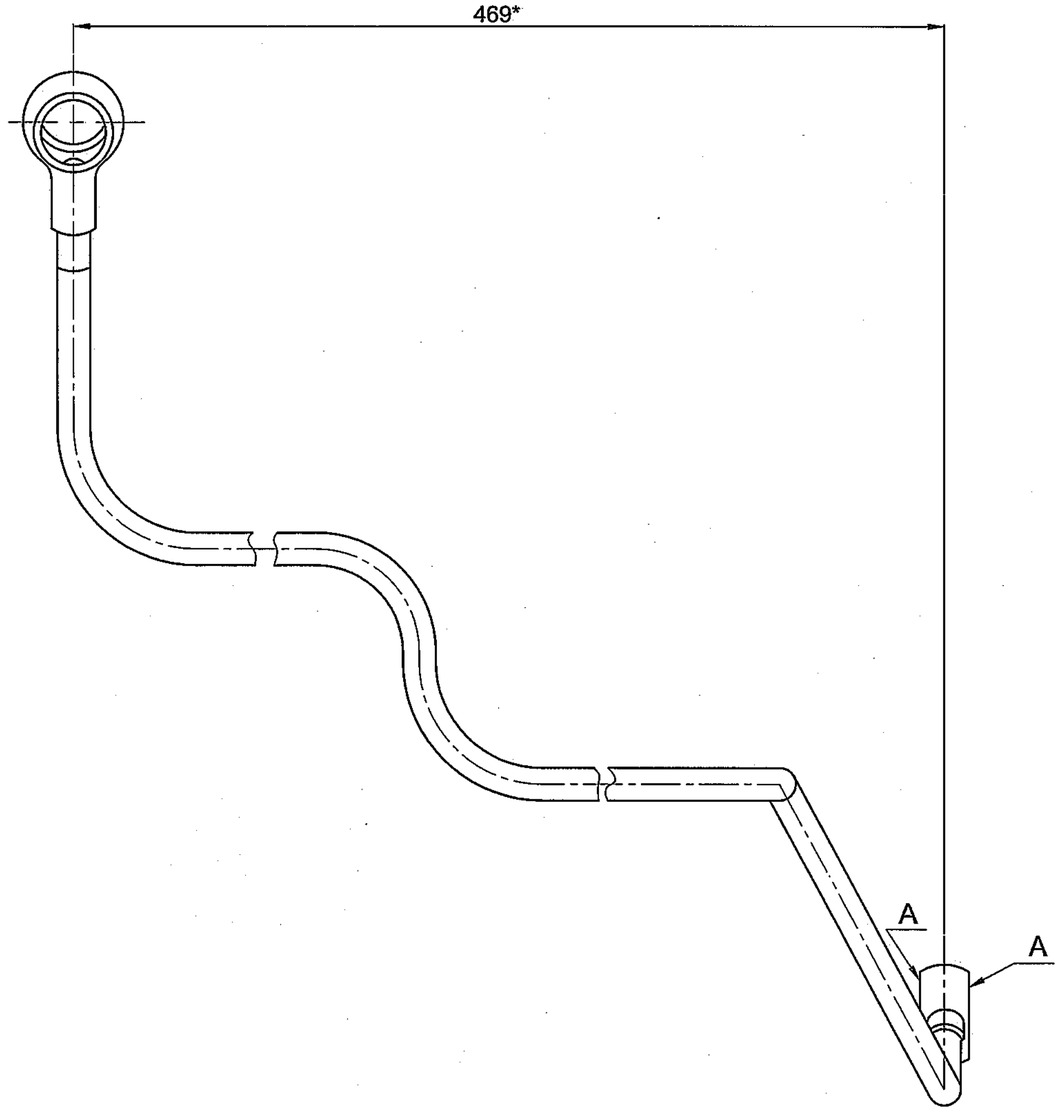
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **5 TH RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-11-9** |

F-4
165/253

DRAWING NUMBER
**Cb.322-11-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit sb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.170 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 8/12/67 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- (4A) 5 th RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER **Cb.322-11-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
166
253

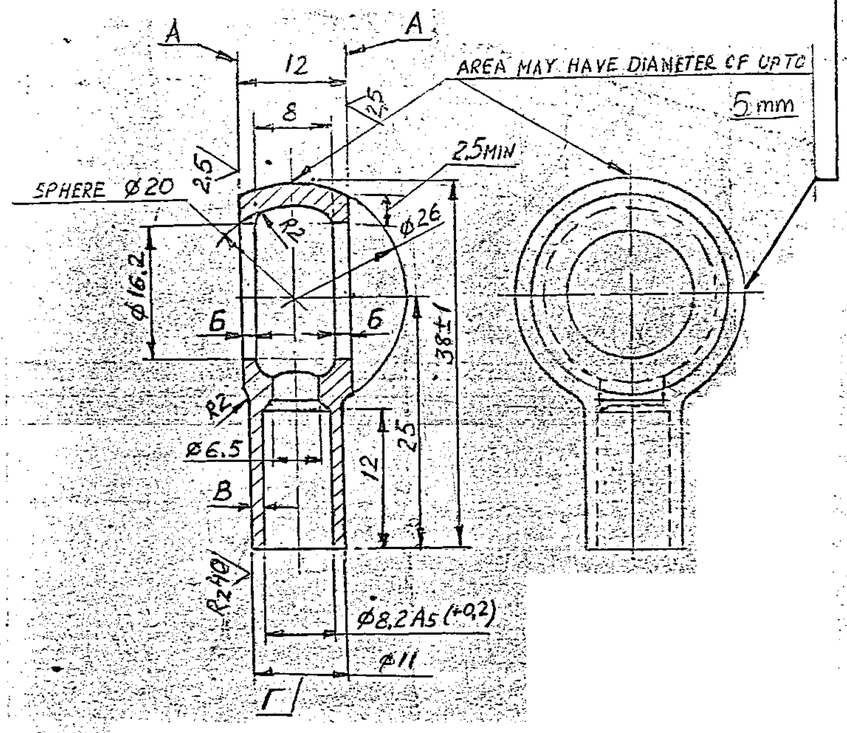
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

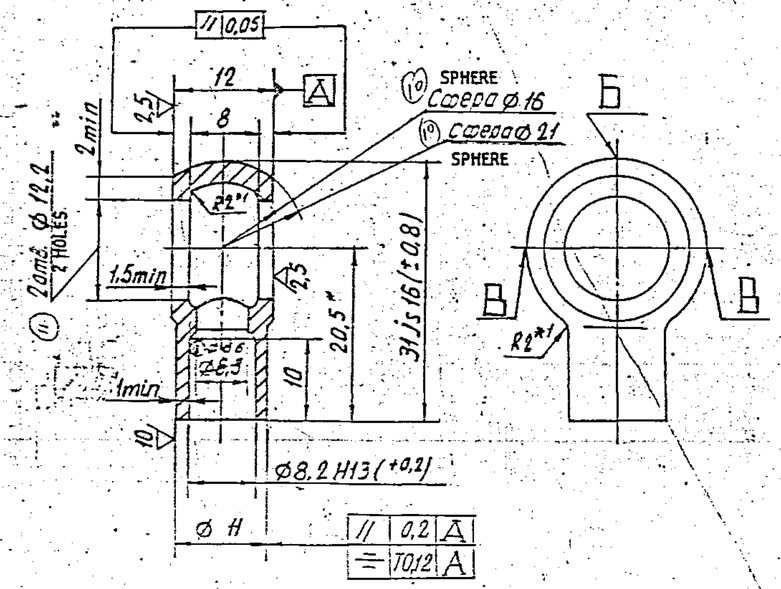
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

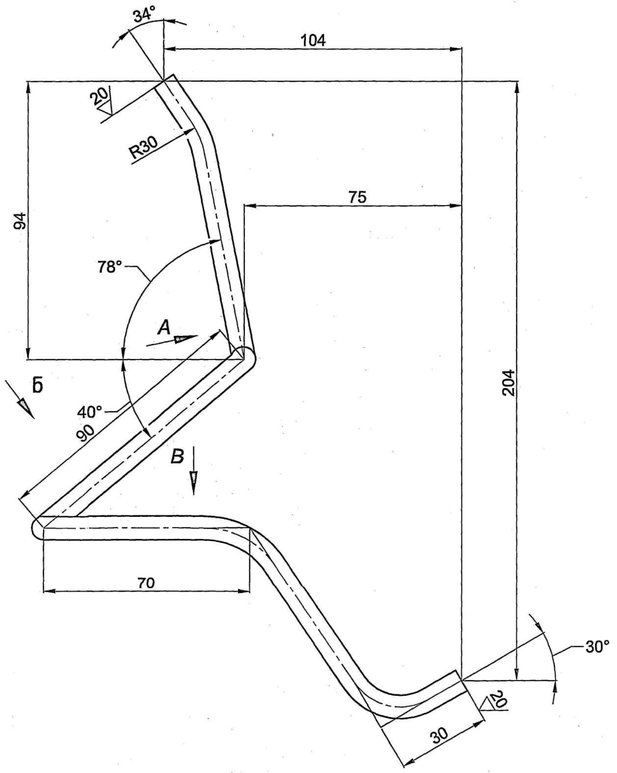
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

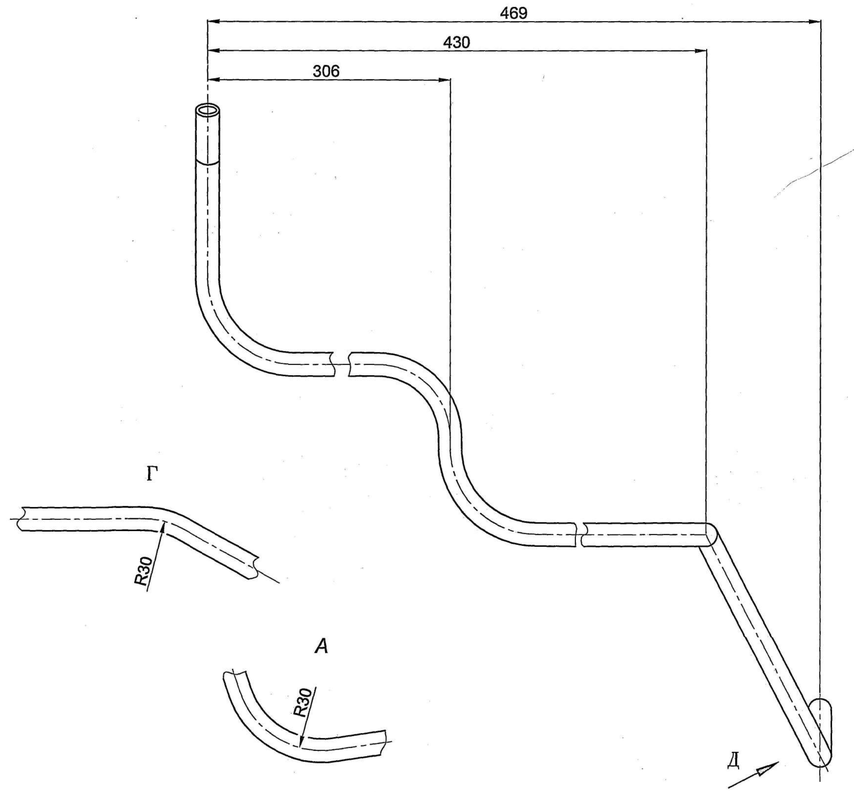
TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-31-9**







1. Unfolded length of pipe should be L ≈ *750mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
185
253

SIZE A1

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 ) |
|---|---|
| 0.125 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 14/2 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- СБ 322 -11-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **5th RH CYLINDER PIPE**

D S CAT NUMBER -

DRAWING NUMBER **322-31-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-12-9** | | **6 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-32-9 | | 6 TH RH CYLINDER TUBE | 1 | |

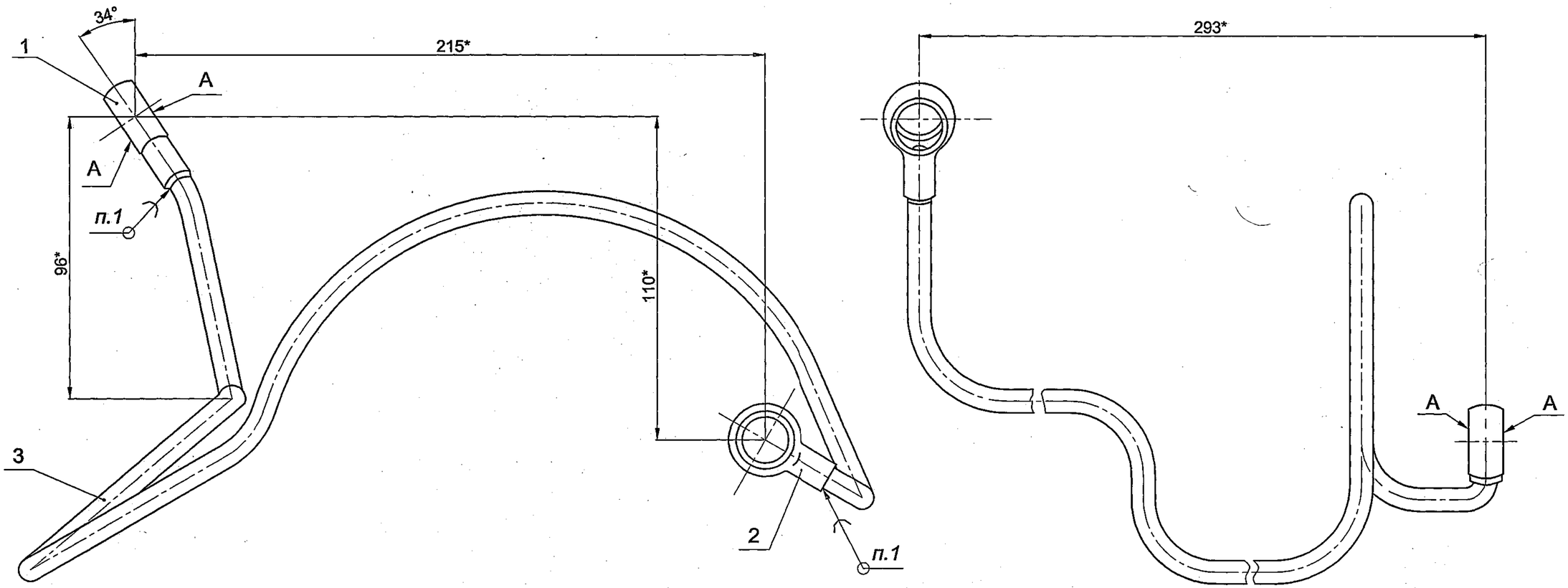
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | R Balakrishnan | TITLE : **6 TH RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-12-9** |

F-4
167/253

DRAWING NUMBER
**Cb.322-12-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit sb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.180 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/12/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 6 th RH CYLINDER TUBE ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER **Cb.322-12-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
168
253

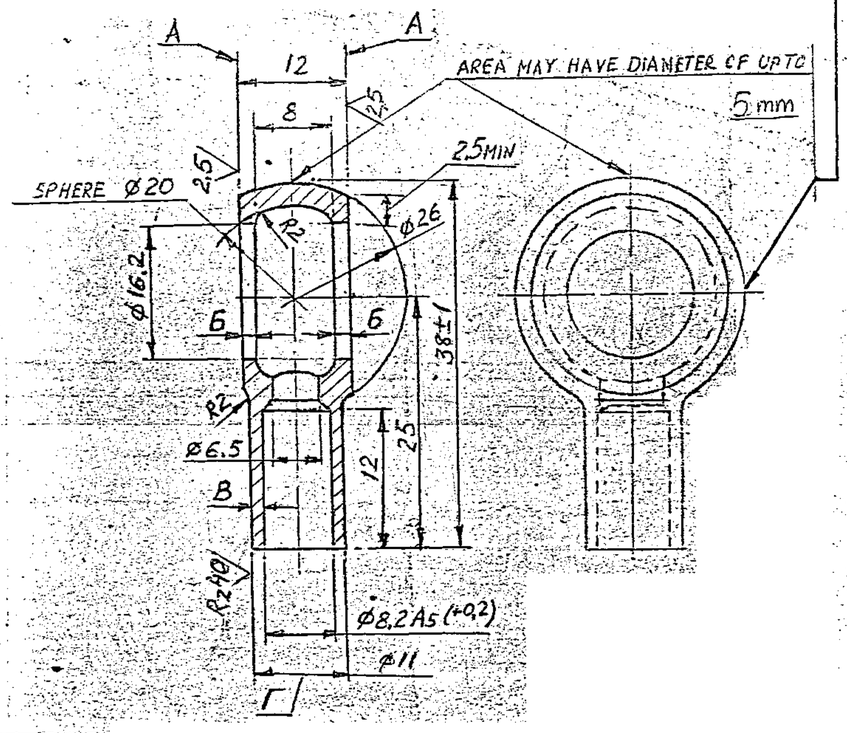
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

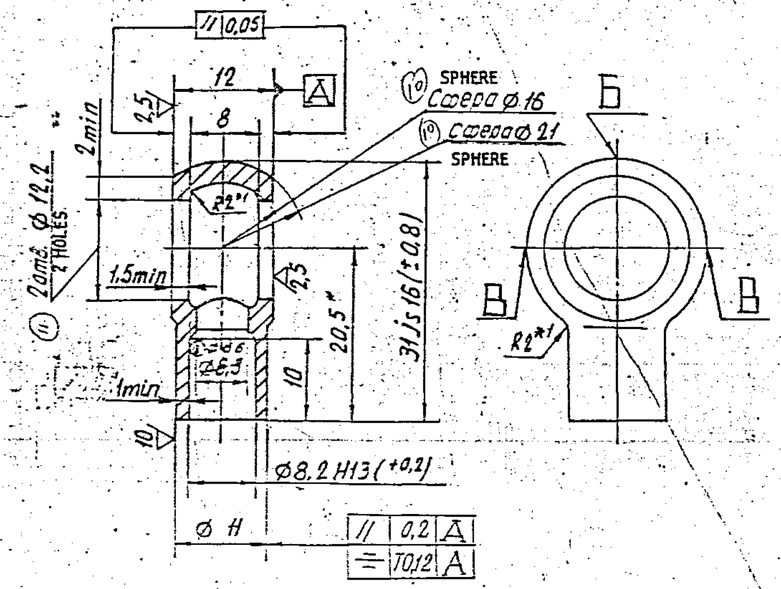
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

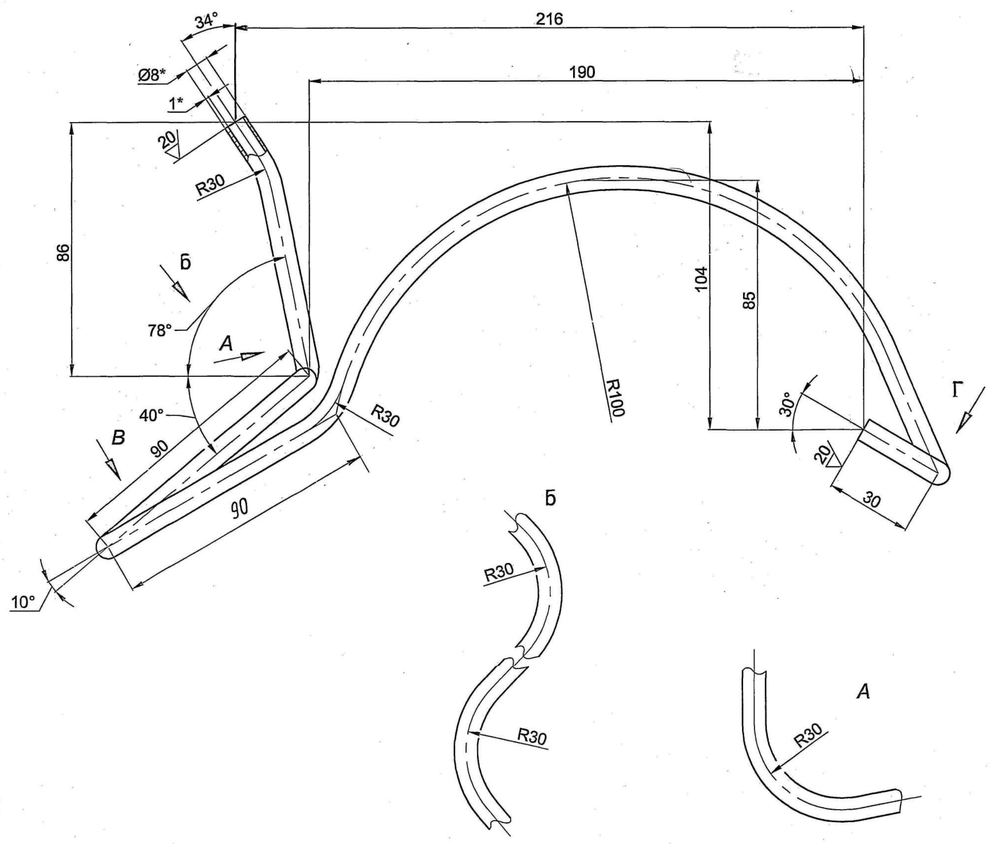
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

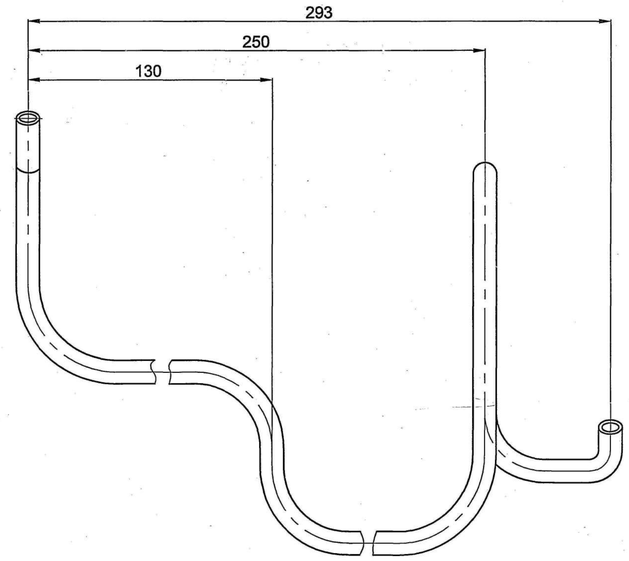
TITLE: SWIVEL ELBOW

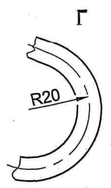
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-32-9**




1. Unfolded length of pipe should be L ≈ *850mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
186
263

SIZE A1

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 ) |
|---|---|
| 0.135 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | V Balakrishnan |
| APPD | |
| DATE | 27/1/17 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CB 322-12-9

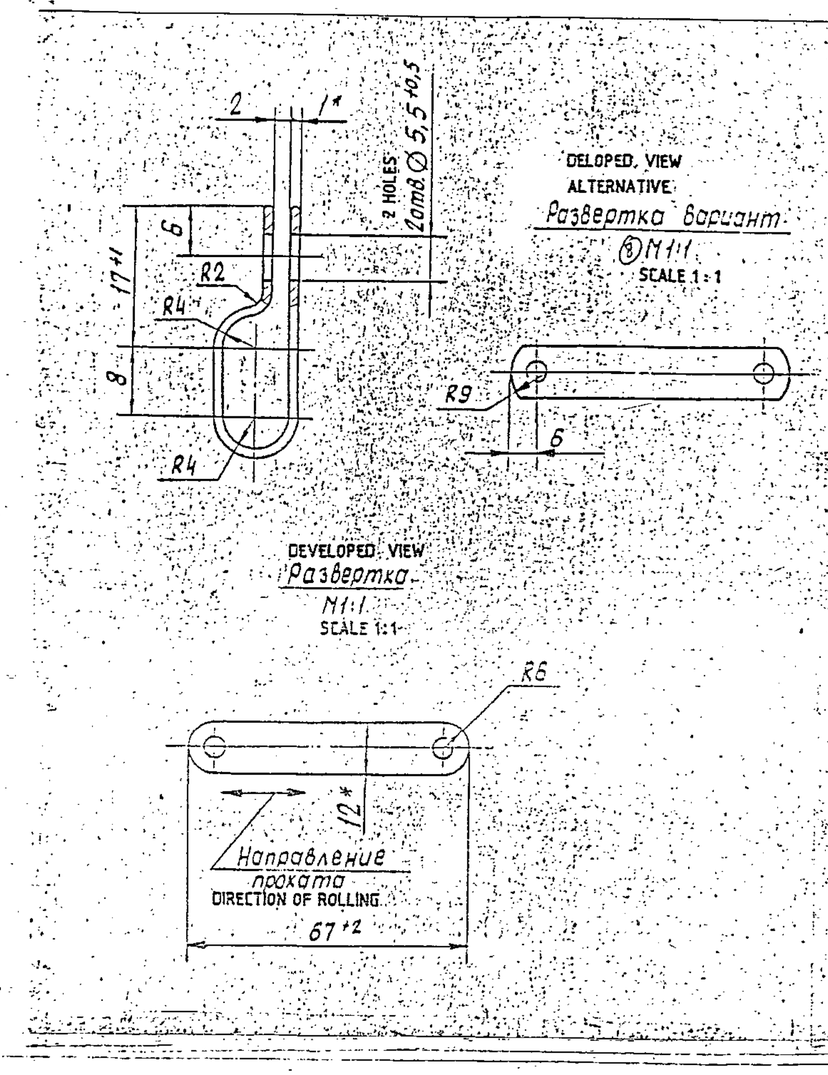
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **6th RH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-32-9**

DRAWING NUMBER
322-65




1. Заменитель материала сталь марок 08; 08 кп; 10 кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12... 24 хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9. хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08; 08КП; 10КП, GOST 1050-74, MAY BE MADE FROM SHEET GOST 19904-74.

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.

3) COATING : Zn 12..... 24 CHROMATIZING, AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ-95 AS PER ИЛ-09-73.

4) IN TROPICALIZED CONSTRUCTION, COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-109-73.

5) * DIMENSIONS FOR REFERANCE.

(A) EQUIVALENT MATERIAL
Gr. DD IS: 573-1994

DRG. REDRAWN BASED ON NEW ISSUE
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 83-114. )

KVD 66762

A-7

SIZE A2

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | 3АМ | 83-114 | | N 10326 |

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

EST. WT. 0,0052 Kg.

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

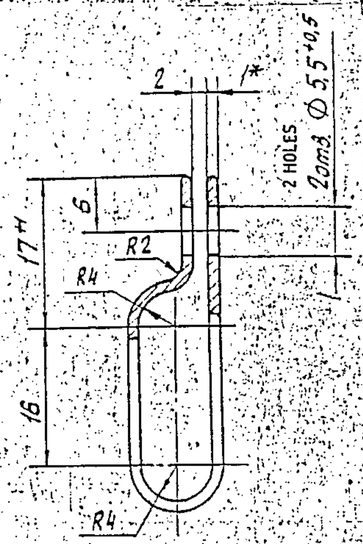
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 6th Alt. Comm. Mtg. Minutes Pt. No. 1 Dt. 26.10.09 |

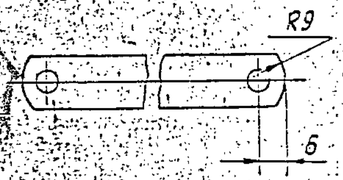
| | | | |
|---|---|---|---|
| DRN | | MATERIAL : STRIP-08ПС-Н-2-1х12 GOST 503-81 | USED ON : СБ 322-15-4 |
| CHD | | | |
| TC | | | |
| APPD | | | |
| DATE | 29-3-82 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| SCALE : 2:1 | | | |
| DIMENSIONS IN mm | | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | | TITLE : CLIP OF 2 PIPES | |
| ALL THREADS TO CONFORM TO | | C S CAT. NUMBER | DRAWING NUMBER : 322-65 |

2nd copy - Duplicate

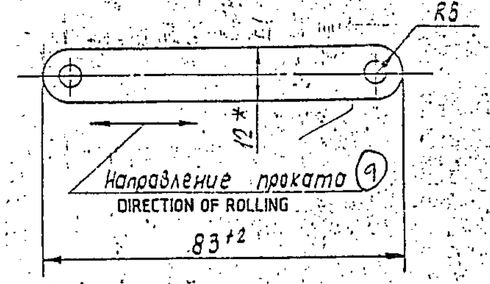
DRAWING NUMBER
322-66




DEVELOPED VIEW ALTERNATIVE
(7) Развертка вариант
H11
SCALE 1 : 1




DEVELOPED VIEW -
(8) Развертка
H11
SCALE 1 : 1




1. Заменитель материала сталь марок 08, 08кп, 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие К39.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры - для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП 10КПGOST 1050–74 MAY BE MANUFACTURED FROM SHEET GOST 19904–74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050–16 .

3) COATING : Zn 12 . . . 24 CHROMATIZING AS PER ИЛ – 483–82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ–95 , AS PER ИЛ –09–73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ –104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR CLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ИЛ–09–73 .

5) * DIMENSIONS FOR REFERENCE .

(A) EQUIVALENT MATERIAL
Gr.DD IS : 513-1994

| | | | |
|---|---|---|---|
| 8 | ЧЛН. | Яз-ТТУ | ЧЛ.ЛИСТ |
| ИЗМ. | ЛИСТ | N ДОКУМ. | ПОДП. |

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

| | |
|---|---|
| EST. WT. 0,0065 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. | |

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| PROD | |
| APPD | |
| DATE | 29 – 3 – 88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08ПС-М-2-1х12 GOST 503-81

USED ON :- СБ 20-35-00-5 СБ 322-14-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE
CLIP OF 3 PIPES

D S CAT NUMBER

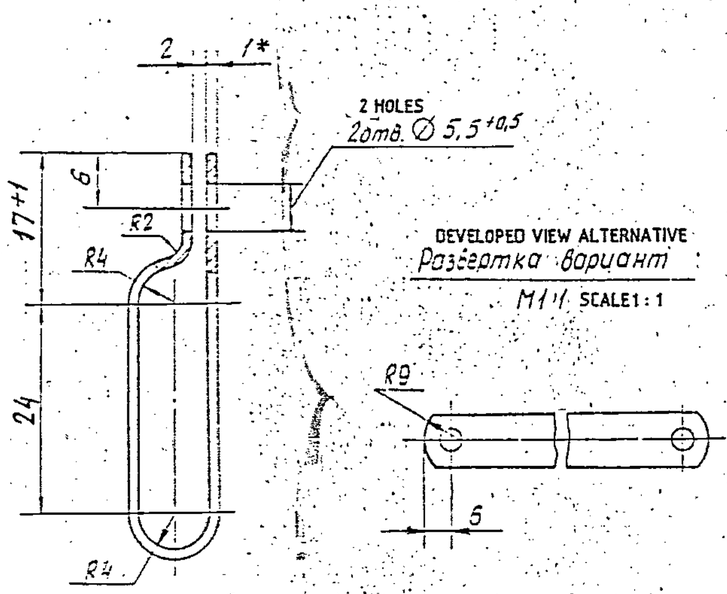
DRAWING NUMBER
322-66

A-7

SIZE: A2

DRG. REDRAWN BASED ON NEW ISSUE.
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 03-11 )

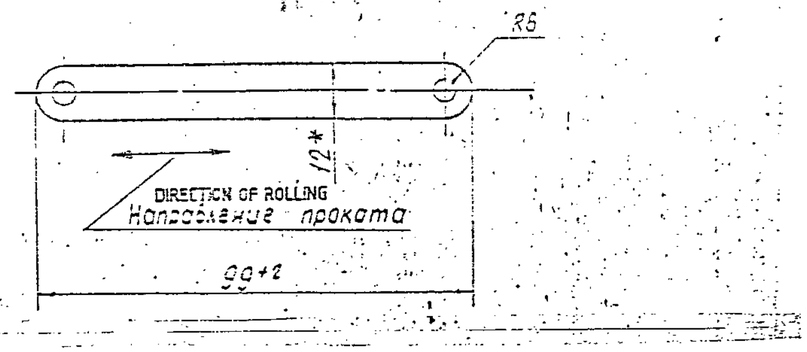
DRAWING NUMBER
322-67




DEVELOPED VIEW ALTERNATIVE
Развертка вариант
M1:1 SCALE 1:1




DEVELOPED VIEW
Развертка
M1:1 SCALE 1:1




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП, 10КП GOST 1050-74 MAY BE MANUFACTURED FROM SHEET GOST 19904-74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16 .

3) COATING : Zn, 12 . . . 24, CHROMATIZING AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ-09-73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-09-73 .

5) * DIMENSIONS FOR REFERENCE .

Ⓐ EQUIVALENT MATERIAL
Gr. DD IS:513-1994

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

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | чад | 83-114 | | |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,0075 Kg. | ( 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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-95 |
| SCALE :- 2:1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-
STRIP 08ПС-М-2-1×12
GOST 503-81 .

USED ON :-
СБ 322-14-4
СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 4 PIPES.

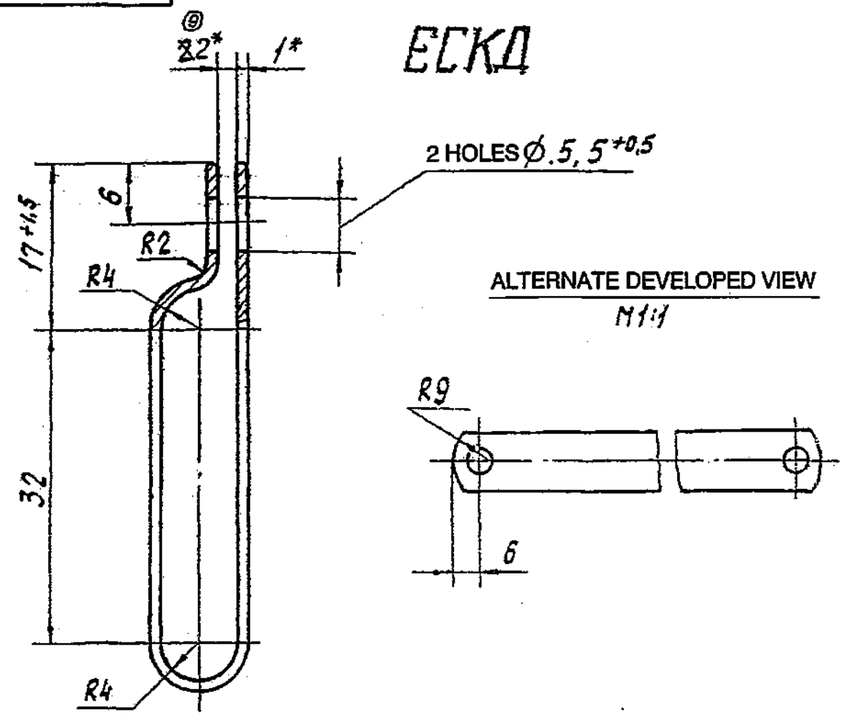
D S CAT NUMBER

DRAWING NUMBER
322-67

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8.1 83-114
DRAWN BASED ON NEW ISSUE

DRAWING NUMBER
322-68

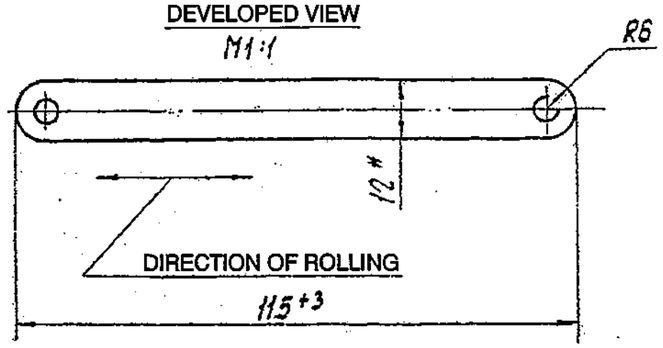
SHEET No. 1 OF 1




DEVELOPED VIEW
M1:1




ALTERNATE DEVELOPED VIEW
M1:1




ECKД

1. ALTERNATE MATERIAL : STEEL GRADES 08 КП, 10 КП, 15 КП TO GOST 1050-74.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. COATING : Zn 9, CHROMATIZING IN ACCORDANCE WITH ЦЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT. OR ЛаКГФ-95 AS PER ЦЛ628-86
4. IN TROPICALIZED MAKE THE COATING IS CADMIUM 9 MICRONS AS PER U 569-84 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT OR ЛаКГФ 95 AS PER ЦЛ628-86
5. * DIMENSION FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL Gr.DD
IS:513-1994

P. JANARDHANAN
Dt. 15 Nov'10 JTO (D)

DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

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) |
|---|---|
| 0.01 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 13.11.10 | 4th Alt. Comm. Mtg. Minutes Point No.1 Dated 26.10.09 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | Nov 2010 |
| SCALE:- | 2 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO IS : 4218,PART-4. | |

MATERIAL :- STRIP
08пс-M-2-1x12 GOST 503-81

USED ON :- Cb 322-14-9
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
# CLIP FOR 5 PIPES

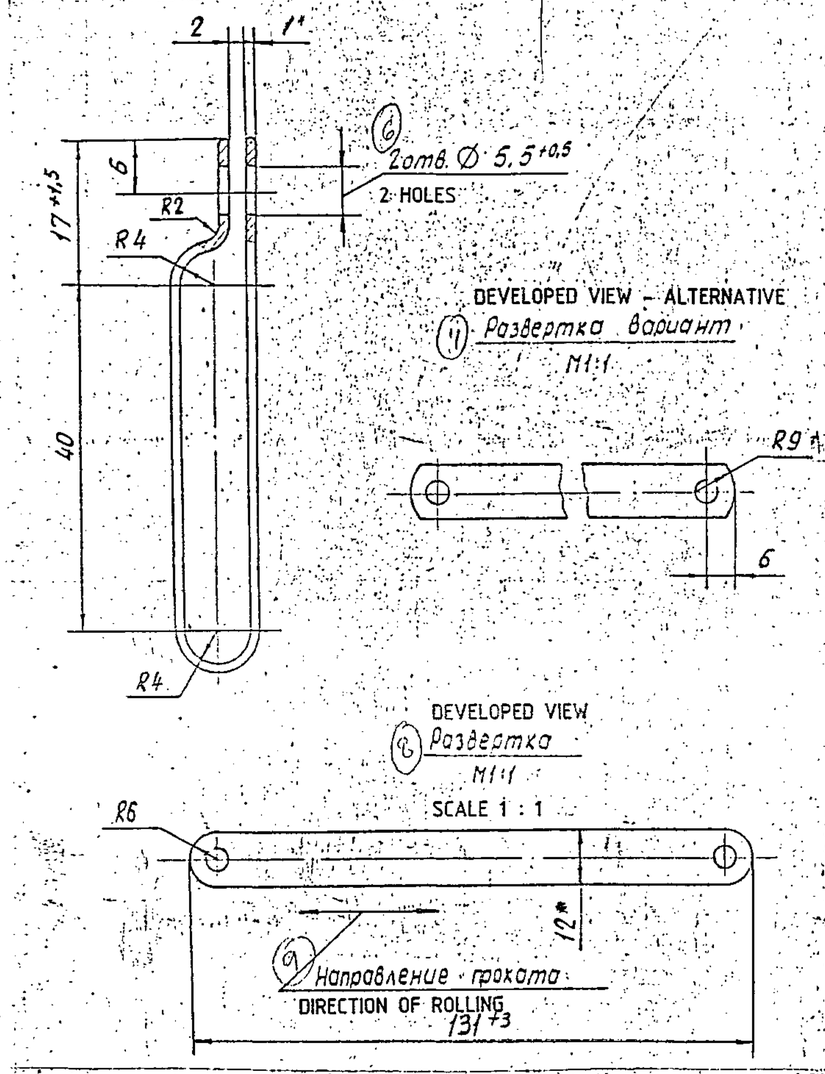
D S CAT NUMBER

DRAWING NUMBER
322-68

F -

SIZE A3

DRAWING NUMBER
322-69




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5.* Размеры для справок.

1. ALTERNATE MATERIAL : STEEL, GRADES 08, 08Kn 10Kn GOST 1050-74. MAY BE MANUFACTURED FROM SHEET GOST 19904-74.
2. REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.
3. COATING : Zn 12 .... 24, CHROMATIZING AS PER ИЛ - 483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ - 09-73.
4. IN TROPICALIZED CONSTRUCTION:
   COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ЦИЛ 104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ЦЛ - 09-73.
5. *DIMENSIONS FOR REFERENCE

(A) EQUIVALENT MATERIAL
GrDD IS:513-1994

ORG. REDRAWN BASED ON NEW ISSUE
ORG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No: 8 (BK 03-

| | | | | | |
|---|---|---|---|---|---|
| Разраб. | Ган | 83-714 | Утверд. | Гейн | |
| Н.контр. | Шкет | Чобкум. | Подп. | Дата | |

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0.0115 Kg | |

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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08пс - М - 2 - 1х12 GOST 503-81

USED ON :- СБ 322-14-4, СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 6 PIPES

D S CAT NUMBER

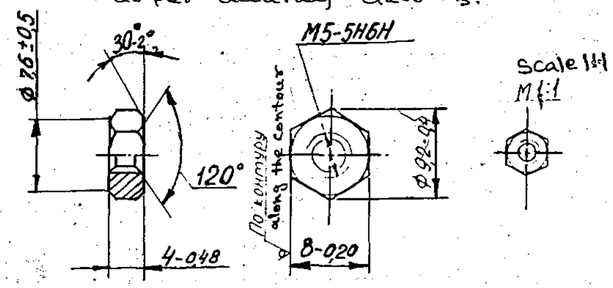
DRAWING NUMBER
322-69

A-7
SIZE A2

DRAWING NUMBER
351 13

Rz 40 (V)

Rolled stock of group B class 4 GOST 1051-73 may be used. To ensure high quality of coating, it is allowed to eliminate surface defects of rolled stock with decrease of dimension as per accuracy class - 5.




1. The Component may be manufactured from Steel 45 GOST 1050-74.
2. Chamfer 120° should be made up to the major diameter of thread.
3. Shift of hole axis up to 0.25 mm. is permitted.
4. The thread may be checked before coating.
6. Coating :- Cd 9, Chromatizing as per ГОСТ 9.104 with elimination of Hydrogen embrittlement.
7. The rest of the technical requirements as Per standard 82052-00.
8. Alternate material :- Steel, grades 40 and 50 GOST 1050-74.

## EXPLANATORY NOTE

9. i) REFERENCE MATERIAL QUOTED:
GAUGED HEXAGONAL STEEL BAR CLASS OF ACCURACY 4, 8.0(-0.100)mm A/F TO GOST 8560-78 FROM HIGH GRADE SIZED STEEL SURFACE QUALITY 'B' TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45 TO GOST 1050-74

(A) ii) REFERENCE NOTE '8' ON ALTERNATE MATERIAL : QUALITY CARBON STRUCTURAL STEEL GRADES 40 AND 50 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 | |
| | | | | MAXIMUM | | | |
| 45 | 0,42-0,50 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | REF MATL |
| 40 | 0.37-0,45 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | ALT MATL |
| 50 | 0,47-0,55 | 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 : AS PER GOST 1050-74

| GRADE OF STEEL | ULTIMATE TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | ELONGATION % | REDUCTION IN AREA % | IMPACT STRENGTH Kgfm/cm² | HARDNESS B H N MAX | REMARKS |
|---|---|---|---|---|---|---|---|
| 45 | 61 | 36 | 16 | 40 | 5 | 229 | REF MATL |
| 40 | 58 | 34 | 19 | 45 | 6 | 217 | ALT MATL |
| 50 | 64 | 38 | 14 | 40 | 4 | 241 | ALT MATL |

(A) Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

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

| EST. MASS | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.0012 Kg | ( 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 |
|---|---|---|
| A | 18.5.09 | Authy: Third Alt. Comm. Minutes Point: 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE
SCALE - 2 : 1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.
ALL THREADS CONFORM TO

MATERIAL: ~~HEXAGON BAR 8.0 GOST 8560-78 45-5 GOST 1051-73~~ (A)

USED ON:- ~~CG 80435 00 00 5~~ CG 3335 00 24 3

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI

TITLE:- NUT M5

D S CAT NUMBER

DRAWING NUMBER 351 13

A-11

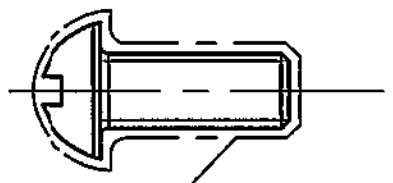
FORMAT A-2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

F-4
226
253

4 | 3 | 2 | 1

DRAWING NUMBER
356-22-2



Coating : Zinc-*6 microns, chromium-1micron* as per ИЛ-749-88 by removing hydrogen embrittlement.

1. In tropical construction, plating cadmium-9microns, chromium-1 micron as per *ИЛ-569-84 with removal of hydrogen embrittlement.*

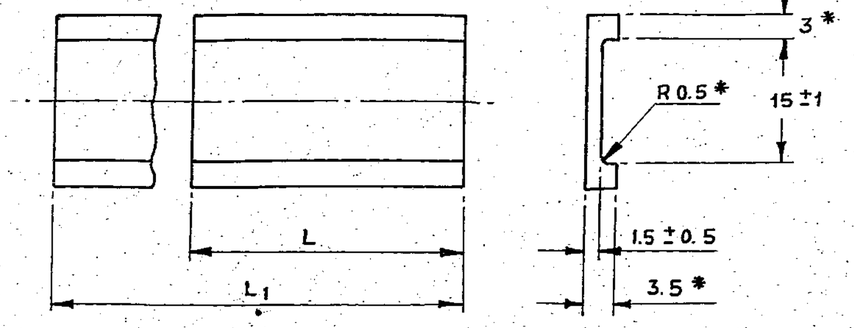
2. *Blank should match with requirement Gost 1759.0-87 for class of accuracy B.*

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

| | |
|---|---|
| EST. WT.(Kg) 0.003 | 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 :- *Blank* *Screw* M5-6gx12.58 GOST 17473-80 | USED ON :- СБ 322-14-9 СБ 322-15-9 СБ 323-00-10 СБ 3320-00-43 |
| ISSUE DATE NATURE OF AMENDMENTS | |
| DRN SCALE :- 2 : 1 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD DIMENSIONS IN mm | |
| APPD TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69 | TITLE :- SCREW M5x12 |
| DATE 26/11/07 ALL THREADS TO CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 356-22-2 |

SIZE A4

DRAWING NUMBER
3335-38-3 TO
3335-38-6




| PART No. | L MM | MASS Kg. | USED ON | KVD No. |
|---|---|---|---|---|
| 3335-38-3 | 26±1 | 0.002 | | |
| 3335-38-4 | 31±2 | 0.0024 | C6 3335-00-~~24~~30 | 78315 |
| 3335-38-5 | 42±2 | 0.0032 | C6 3335-00-~~24~~30 | 78435 |
| 3335-38-6 | 55±0.2 | 0.0042 | | |

*C620-27-00-4

1. DIMENSIONS ARE TO BE ENSURED WITH TOOL.
2. LENGTH OF DELIVERED BAND $L_1$ SHOULD NOT BE LESS THAN 1000 mm.
3. MARK "3335-38-3" SHOULD BE PUT ON TAG OF COMPONENT TO BE DELIVERED.
4. TO BE MADE AS PER TT III H 100 GOST 15152-69.
5. THE REST OF THE REQUIREMENTS AS PER TY 005 216-75.

3335-38-3

## EXPLANATORY NOTE :-

6. REFERENCE MATERIAL QUOTED :
UNVULCANISED OIL AND PETROL RESISTANT RUBBER CODE OF CLASSIFIER 25-1231, RUBBER GRADE HO-68-1 TO TY 005-216-75.

a. MECHANICAL PARAMETERS :

i. RUPTURE STRENGTH Kgf/cm$^2$ _____ 90 Min
ii. ELONGATION OF RUPTURE % _____ 250 Min
iii. RESIDUAL ELONGATION AFTER RUPTURE % ___ 12 Max
iv. HARDNESS No IP TO TM P DEVICE ARBITORY ____ 55-70

7. LIKELY EQUIVALENT GRADE / SPECIFICATION FOR NITRILE CHLOROPRENE BASE TO BA 60 BS 2751-82 AND C 60 BS 2752-82.

Ⓐ ALT MATL.: RUBBER GRADE BNC TO SPECN. CQA(HV)/NBR+CR

EXPLANATORY ADDED ON 4-6-92

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

| EST. WT. | 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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 27.05.08 | Lr. No. TC/GEN/IND-III Dt:. 02.04.08 |

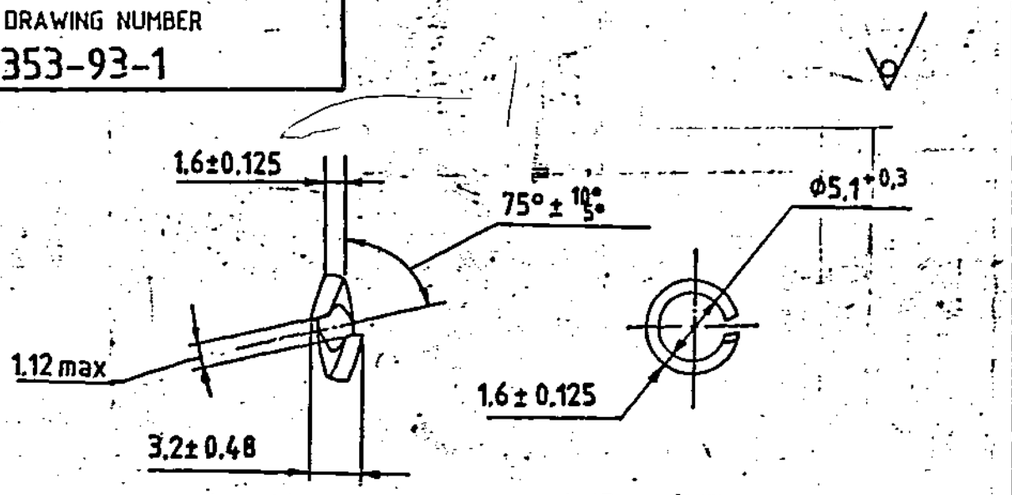
DRN —
CHD
TCD
APPD
DATE 8-7-86
SCALE - 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- RUBBER HO-68-1 TY 005 216-75
USED ON —
CONTROLLERATE OF QUALITY ASSURANCE. (HEAVY VEHICLES) AVADI
TITLE : GASKET
D S CAT NUMBER
DRAWING NUMBER 3335-38-3 TO 3335-38-6

A-9
SIZE A2

KVD.No. 78696

DRAWING NUMBER
353-93-1




1. IN TROPICAL MANUFACTURE, COATING Cd 9 Cr AS PER ШУЛ - 104 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.

2. WASHER 5Т65Г 09 GOST 6402-70 MAY BE USED, IN VISUAL AND TROPHICAL MANUFACTURE.

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

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 Pcs 0,424 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. |
| A | 16.8.10 | 4th Alt.Comm.Meeting Minutes Point No.12 Dt: 26-10-09 | MATERIAL:- 5T 65 Г 06 GOST 6402-70 / USED ON Cб [illegible] Cb [illegible] |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2 : 1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. |
| CHD | | | |
| TCD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69 | TITLE: WASHER |
| APPD | | ALL THREADS CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 353-93-1 |
| DATE | 28.5.94 | | |
| SIZE A4 | | | |

## EXPLANATORY NOTE:

MATERIAL QUOTED: WASHER 5Т, 65Г, 06 GOST 6402-70.

CORRESPONDS DESIGN AND DIMENSIONS OF SPRING (LOCK) WASHERS.
06 = CONVENTIONAL SYMBOL OF FINISH. (PARKERISING FOLLOWED BY OILING).
5 = NOMINAL THREAD DIA OF BOLT OR SCREW
Т = HEAVY ; 65Г (65G) = GRADE OF STEEL AS PER GOST 1050-74.

CHEMICAL COMPOSITION: AS PER GOST 1050-74.

| CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·62 – 0·70 | 0·17 – 0·37 | 0·90 – 1·20 | 0·25 | 0·040 | 0·035 | 0·25 | 0·25 |

WEIGHT OF STEEL WASHERS AND THEIR RESILIENCE PROPERTIES AS PER GOST 6402-70.

THEORITICAL WEIGHT OF 1000 STEEL WASHERS IN kg = 0·424.

ESTIMATED RESILIENCE OF WASHERS FROM STEEL GRADE 65G = 28·7. IN kg

MECHANICAL PROPERTIES: AS PER GRADE 65G GOST 1050-74.

YIELD POINT kgf/mm² (MIN) = 44

ULTIMATE TENSILE STRENGTH (MIN) = 75 kgf/mm²

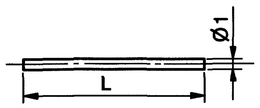
ELONGATION % (MIN) = 9

REFERENCE NOTE: 09 = ZINC PLATING (CONVENTIONAL SYMBOL OF FINISH)

(A) EQUIVALENT MATERIAL
75 C6 TO IS:2507/EN 42 J BS:970

EFA_19 MAR 22

DRAWING NUMBER
354-22




| KVD No. | L mm | LIMIT DEVIATIONS mm | USED ON | |
|---|---|---|---|---|
| | 50 | ± 1.5 | | |
| 78705 | 60 | ± 1.5 | Cb 3338-401-10, Cb 530-200 | |
| 78706 | 80 | ± 2 | Cb 3334-00-39, ~~Cb 327-00-45~~ Cb 327-00-47-01 Cb 327-00-73 | (G) |
| 78707 | 100 | ± 2 | Cb 3338-00-16 Cb 327-00-73 ~~Cb 3335-00-33 Cb 327-00-45, Cb 3335-00-24,~~ Cb 3342-00-8Cb | (G) (H) |
| 78708 (B) (C) | 120 | ± 2 | Cb 419-00-4, Cb 310-00-7, Cb 20-22-00-7 Cb 322-00-4Cb | (H) |
| 78709 | 150 | ± 2 | Cb 327-00-47-01 Cb 327-00-73 ~~Cb 3335-00-33 Cb 327-00-45, Cb 3335-00-24~~ Cb 3334-00-27 | (G) |
| 78710 | 200 | ± 2 | ~~Cb 327-00-45,~~ Cb 3334-00-27 Cb 327-00-47-01 Cb 327-00-73 | (G) |
| 78711 | 260 | ± 3 | Cb 3334-00-27, Cb 20-29-00-8 | |
| (A) | 300 | ± 3 | Cb 3338-407-4, Cb 3329-00-13 | |
| 78712 | 350 | ± 3 | | |
| 78713 | 420 | ± 3 | Cb 411-00-41 | |
| 78714 | 500 | ± 3 | ~~Cb 327-00-45~~ Cb 327-00-47-01 | (G) |
| | 600 | ± 3.5 | | |
| | 800 | ± 5 | | |

## ADDITIONAL REQUIREMENTS

FOR MANUFACTURE OF LOCK WIRE AS PER DRAWING 354-22

1. THE WIRE SHOULD BE PROVIDED WITH ZINC COATING. DIAMETER OF WIRE AFTER COATING SHOULD BE $1^{+0.06}_{-0.03}$ mm.
2. OVALITY OF WIRE SHOULD NOT EXCEED HALF OF THE TOLERANCE ON DIAMETER.
3. THE WIRE SHOULD BE MANUFACTURED FROM LOW CARBON ROLLED STEEL AS PER GOST 1050-74.
4. ULTIMATE RUPTURE STRENGTH OF ZINC PLATED WIRE SHOULD NOT BE LESS THAN 3.7 MPa ( 37 Kgf/mm$^2$ ).
5. THE WIRE SHOULD WITHSTAND NOT LESS THAN 7 BENDINGS THROUGH 100° AND NOT LESS THAN 25 TWISTINGS THROUGH 360°
6. THE SURFACE OF WIRE SHOULD NOT HAVE BLOW HOLES, CRACKS, MARKS, BACK FINS, OXIDE SPOTS, BURRS AND RUST THERE SHOULD NOT BE ANY UNCOATED AREAS ON THE WIRE.
7. ON WIRE FRACTURE, THERE SHOULD NOT BE ANY CRACKS, BACK FINS, FISSURES, BLISTERS, AND SHRINKAGE CAVITIES.
8. WIRE ZINC COATING SHOULD BE BOUND TO THE STEEL WHEN WOUND ON CYLINDER WITH DIAMETER EQUAL TO WIRE FIVE FOLD DIAMETER, THE WIRE SHOULD NOT HAVE ANY PEELINGS AND FISSURINGS OF ZINC COATING.

## EXPLANATORY NOTE :-

REFERENCE MATERIAL QUOTED :- LOW CARBON STEEL TO GOST 1050-74.

CHEMICAL COMPOSITION %

| GRADE | C | Si | Mn | Cr | P | S | Cu | Ni |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| 15 | 0.12 - 0.19 | 0.17 - 0.37 | 0.35 - 0.65 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

MECHANICAL PROPERTIES

1. ULTIMATE TENSILE STRENGTH Kgf/mm$^2$ (min) = 38
2. YIELD POINT Kgf/mm$^2$ (min) . . . . . = 23
3. PERCENTAGE ELONGATION % (min) . . . . . = 27
4. REDUCTION IN AREA % (min) . . . . . = 55
5. HARDNESS BHN ( MAX ) . . . . . = 149

(D) ** ITEM USED IN VARIOUS LENGTHS ON VARIOUS ASSEMBLIES OF V46-6, V92-S2 & UTD-20 ENGINE.

(E) EQUIVALENT MATERIAL IS: 549.

Cb3334-08-2 (L)
Cb 3312-00-22 (K)
Cb 3312-00-15
Cb 3308-00-23
Cb 3308-00-17 (J)
Cb 310-44
Cb 310-00-7
CQA(HV)5.06.607E (F)
Cb 20-06-00-2

PILOT SAMPLE SHOULD BE APPROVED BEFORE BULK PRODUCTION.

| EST. WT. | 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 |
|---|---|---|
| L | 8.03.22 | DC(I)No.CQA(HV)/ENGV46-6/C-0001/2022 Dt.5.2.22 |
| K | 04.01.22 | USED ON NUMBER ADDED. |
| J | 31.07.21 | USED ON NUMBER ADDED. |
| H | 20.09.19 | USED ON NUMBER ADDED. |
| G | 08.08.19 | USED ON NUMBER ADDED. |
| F | 15.7.15 | Pt.11 of 7th Alt. Comm. Meeting Dt.11.4.12 |
| E | 08.7.10 | 4 th Alt. Comm. Meeting Minutes. Point No.3 Dt. 26.10.09 |
| D | 28.8.08 | USED ON NUMBER ADDED. |
| C | 30.6.01 | AUTHY 90211/AHSP/ED dt. 27.3.01 |
| B | 15.1.02 | AUTHY Lt.No. 110026 / IND-III / 509 dt. 12.1.02. |
| A | 15.2.88 | AUTHY NOTN No. BK 81-406 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | 18.03.86 |
| SCALE:- | — |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- ———

USED ON :- Cb 20-35-00-5
Cb 3338-402-4Cb
SEE TABLE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
LOCK WIRE

D S CAT NUMBER

DRAWING NUMBER
354-22

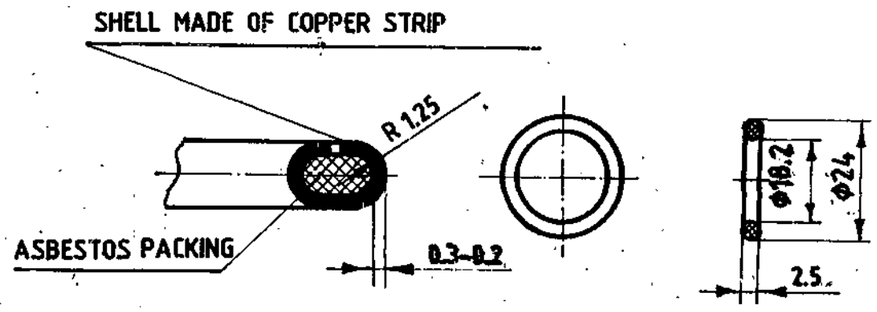
N. J (N SARAVANAN) SSO-I Dt. 22 Aug 2019

DRG. RE - INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL.

COMMON TO V46-6, V92S2 & UTD-20 ENGINES

SIZE A2

DRAWING NUMBER
355 08




SCALE 5 : 1

# EXPLANATORY NOTE:

1. REFERENCE MATERIAL QUOTED:

COPPER ASBESTOS SEALING RING 18.3mm I/D,24mm O/D AND MANUFACTURED IN ACCORDANCE WITH MH 4152-62.

a) COPPER SHEATHE RING :- SOFT COPPER BAND GRADE M3 TO GOST 859-78.

b) CORE:- BRAIDED ASBESTOS CORD MADE OF CHRYSOTILE.

C) CHEMICAL COMPOSITION AS PER GOST 859-78.

| GRADE OF COPPER | CONTENT OF ELEMENTS % | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | COPPER & SILVER min | IMPURITIES MAXIMUM | | | | | | | | |
| | | Bi | Sb | AS | Fe | Ni | Pb | Sn | S | O |
| M3 | 99.5 | 0.003 | 0.05 | 0.01 | 0.05 | 0.2 | 0.05 | 0.05 | 0.01 | 0.08 |

* (A) (C) CQA(HV)5.06.001E (B) CQA(HV)5.07.502E, CQA(HV)5.07.504E

Cb 3301-15-30 , Eb 3320-00-33
Cb 3335-00-24, Cb 20-01-00-8
Cb 20-11-02-11, Cb 20-22-00-7.
Cb 3301-00-44 , Cb 3301-15-44, Cb 310-44
Cb 3320-00-43 , Cb 3335-00-9 , Cb 337-100
Cb 413-115-9 , Cb 322-00-9 , Cb 327-00-73
Cb 329-00-7 , Cb 447-00-1
Cb 306-01-20 , Eb 306-02-20 , Cb 310-31
Cb 322-00-4 , Cb 406-16-2 , Cb 406-17-2
Eb 413-115-6 , Cb 3300-00-27 CX
CB 3335-00-24 ~~3330~~
Cb 3338-404-1
346 01 3 CB
346 00 CB
176-32 CB

COMMON TO V-92S2 & UTD-20 ENGINES

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

| EST WT 100 PIECES 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

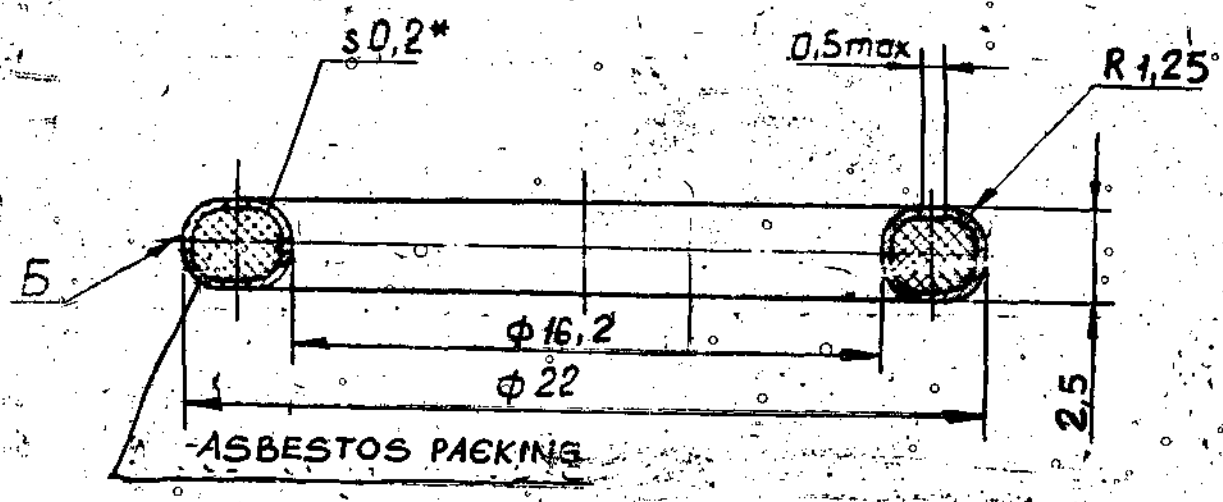
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| C | 18-03-15 | Pt. 11 of 7th Alt. Comm. Meeting Dt. 11-4-12 |
| B | 5.3.14 | Authy. Point No.11 of 7th Alt. Comm. meeting at EFA |
| A | 28.8.08 | USED ON NUMBER ADDED |

| | | |
|---|---|---|
| DRN | | MATERIAL: M3 AND ASBESTOS |
| CHD | | USED ON: CB 413-115-6, CB 3329-01-11, Cb 447-00-1, CB 327-00-45 * |
| TCD | | |
| APPD | | CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI |
| DATE | 04-4-86 | |
| SCALE: 1 : 1 | | TITLE: RING 18 x 24 |
| DIMENSIONS IN mm | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED | | |
| ALL THREADS CONFORM TO | | D S CAT NUMBER |
| | | DRAWING NUMBER 355 08 |

A.11

SIZE A3

355-11



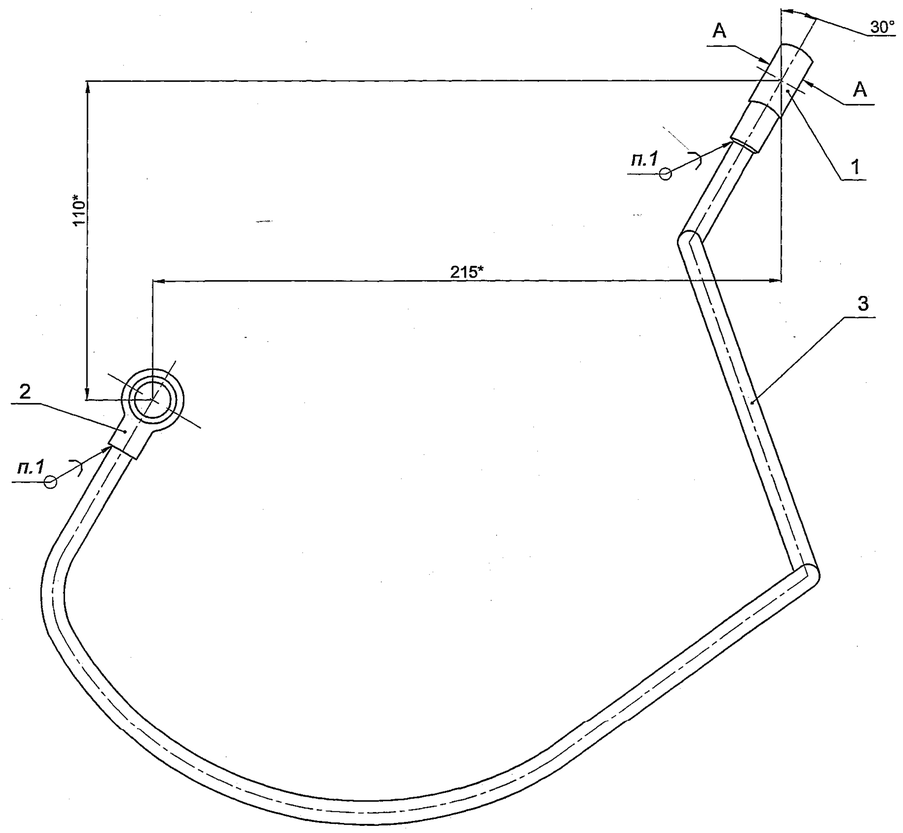

1 ALTERNATE MATERIAL IS STRIP 0,22 TO 0,3mm THICK. GOST 1173-77.
2 TOLERANCE ON ROUNDNESS OF SURFACE Б SHOULD BE WITHIN THE DIAMETER TOLERANCE.
3 USED FOR PACKING IS ASBESTOS CORD ШАОН 1,5 GOST 1779-72.
4 RINGS SHOULD BE TIGHTLY FILLED WITH PACKING.
5 DISPLACEMENT OF SHEATHING EDGE FROM THE MEAN DIAMETER OF RING SHOULD NOT EXCEED 0,35mm.
6 PROJECTION OF ONE EDGE OF SHEATHING IN RESPECT TO THE OTHER ONE SHOULD NOT EXCEED 0,3mm.
7 PROJECTION OF ASBESTOS FIBRE IF NEGLIGIBLE BEYOND THE SHEATHING JOINT IS PERMITTED.
8 UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS:- FOR HOLES - AS PER A7
SHAFTS - AS PER B7.
AND OTHERS - AS PER CM7.
9 MARK DESIGNATION, DATE OF MANUFACTURE AND STAMP FINAL ACCEPTANCE ON THE TAG FOR BATCH OF PARTS.
10 *DIMENSION IS GIVEN FOR REFERENCE.

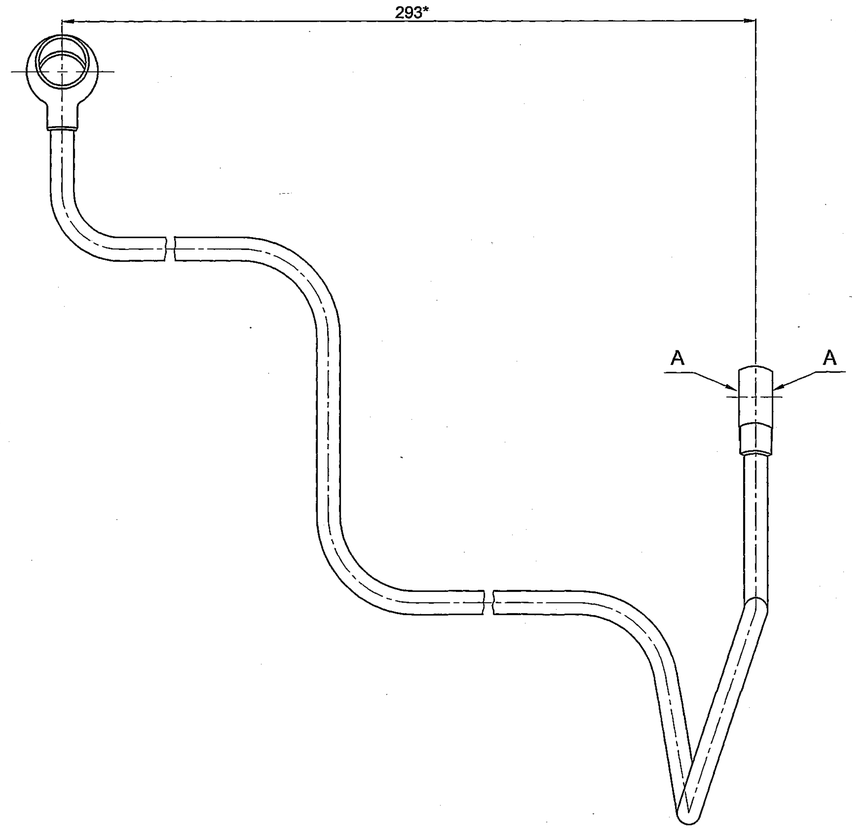
Ⓐ ** CQA(HV)5.06.001E

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

| | | | |
|---|---|---|---|
| | | | EST. MASS 100 PIECES 0,12 Kg |
| | | | TO BE STAMPED OR MARKED WHERE INDICATED THUS -II- ( LETTERS) |
| A | 18-03-15 | Pl. 11 of 7th All. Comm. Meeting Dt. 11-4-12 | ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE :- 5 : 1 | MATERIAL :- STRIP 0,2 M3 GOST :- 1173-77 |
| CHD | | DIMENSIONS IN mm | USED ON :- ** CB 310-00-7C6 Cb 20-01-00-8 |
| TCD | | TOLERANCE ON DIMNS UNLESS OTHERWISE STATED | CONTROLLERATE OF INSPECTION ( HEAVY VEHICLES ) AVADI |
| APPD | | | TITLE COPPER ASBESTOS SEALING RING 16 - 22 |
| DATE | 19/8/87 | ALL THREADS CONFORM TO | O S CAT NUMBER |
| | | | DRAWING NUMBER 355-11 |

DRAWING NUMBER
*Cb.322-06-9*




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Brownish Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.175 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 06/02/09 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-14-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 6 th LEFT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER *Cb.322-06-9*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
156
263

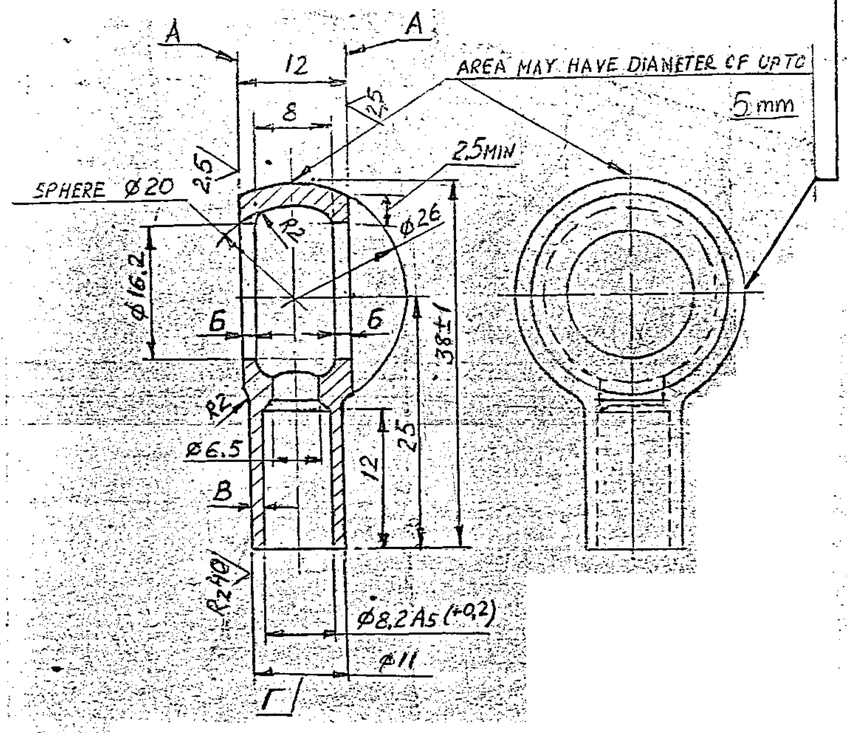
SIZE A1

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

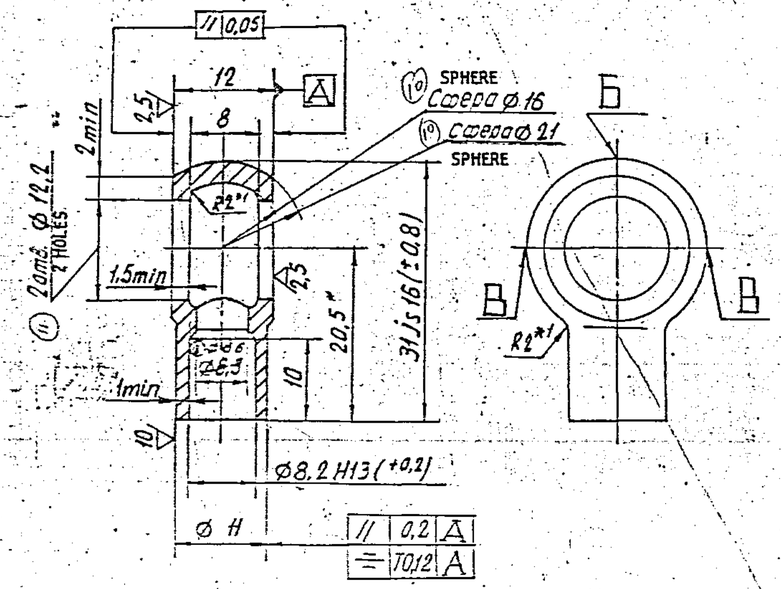
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

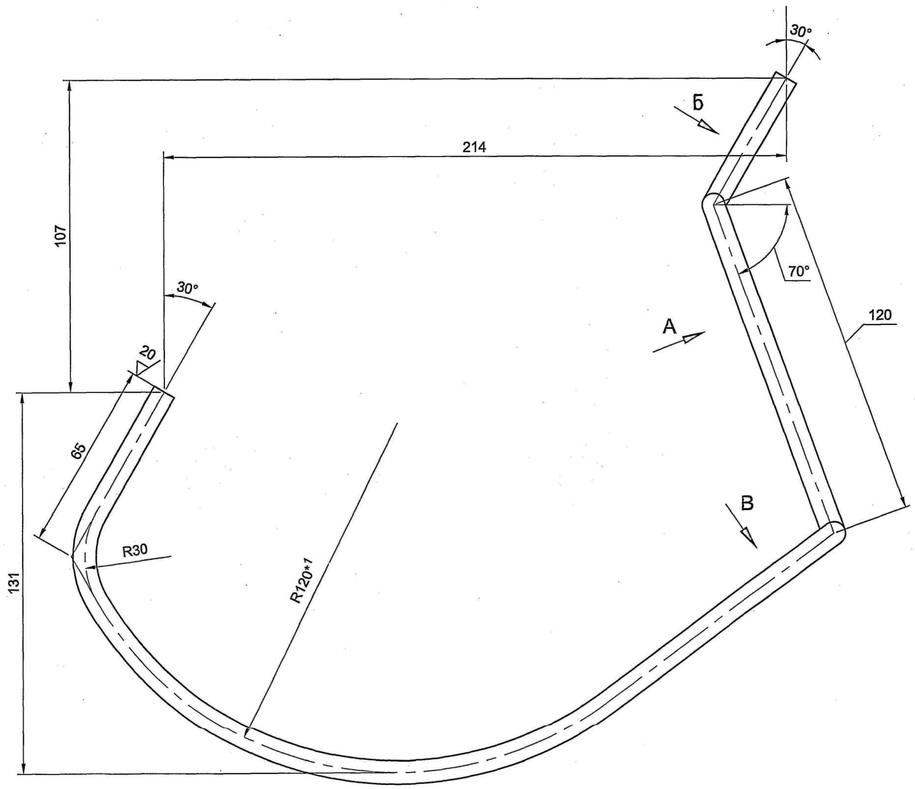
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

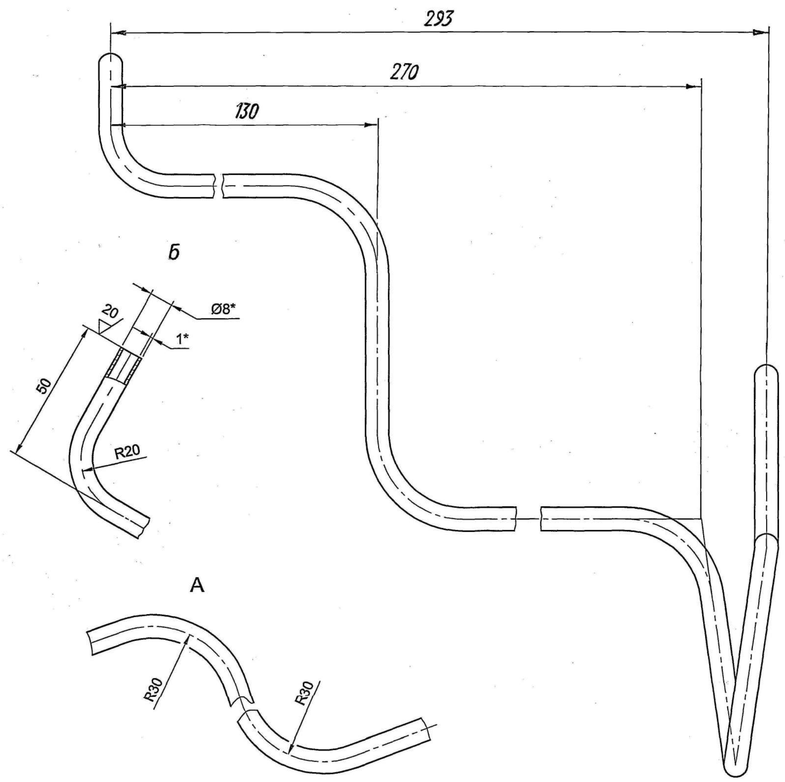
TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

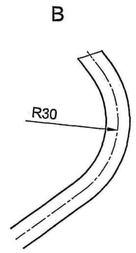
DRAWING NUMBER
322-26-9










1. Unfolded length of pipe should be L≈ *823mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
180
253
SIZE A1

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

EST. WT.(Kg) 0.130

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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 27/1/03 |
| SCALE:- | 1:1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS:2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- Pipe 8x1-20A TY 14-3-480-76

USED ON :- ЕБ 322-06-9

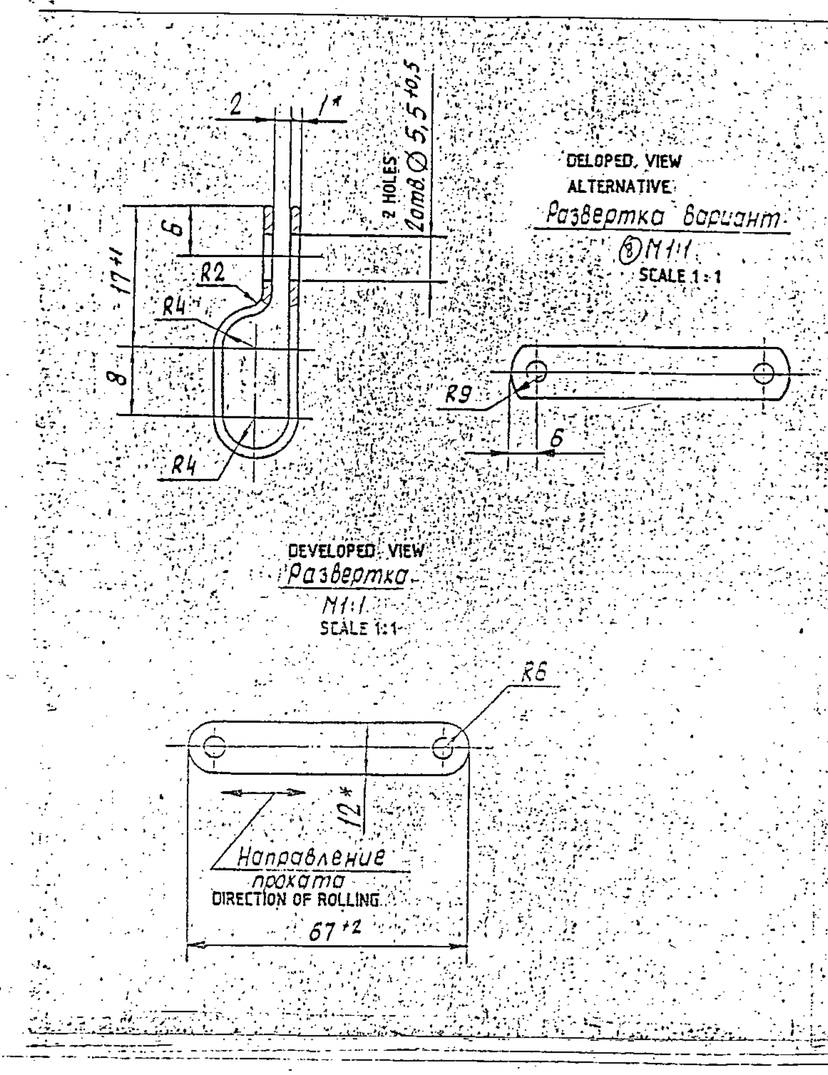
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *6th LH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER 322-26-9

DRAWING NUMBER
322-65




1. Заменитель материала сталь марок 08; 08 кп; 10 кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12... 24 хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9. хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08; 08КП; 10КП, GOST 1050-74, MAY BE MADE FROM SHEET GOST 19904-74.

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.

3) COATING : Zn 12..... 24 CHROMATIZING, AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ-95 AS PER ИЛ-09-73.

4) IN TROPICALIZED CONSTRUCTION, COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-109-73.

5) * DIMENSIONS FOR REFERANCE.

(A) EQUIVALENT MATERIAL
Gr. DD IS: 573-1994

DRG. REDRAWN BASED ON NEW ISSUE
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 83-114. )

KVD 66762

A-7

SIZE A2

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | 3АМ | 83-114 | | N 10326 |

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

EST. WT. 0,0052 Kg.

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

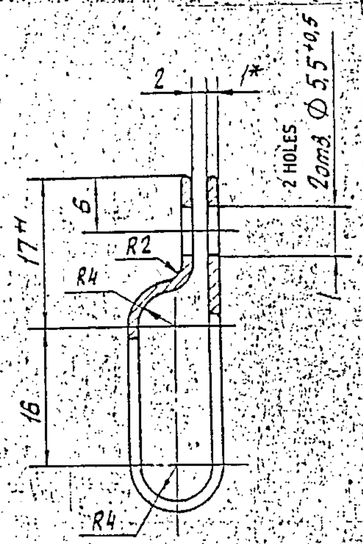
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 6th Alt. Comm. Mtg. Minutes Pt. No. 1 Dt. 26.10.09 |

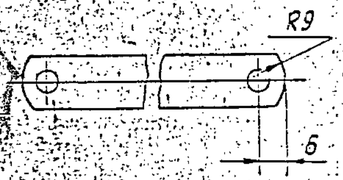
| | | | |
|---|---|---|---|
| DRN | | MATERIAL : STRIP-08ПС-Н-2-1х12 GOST 503-81 | USED ON : СБ 322-15-4 |
| CHD | | | |
| TC | | | |
| APPD | | | |
| DATE | 29-3-82 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| SCALE : 2:1 | | | |
| DIMENSIONS IN mm | | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | | TITLE : CLIP OF 2 PIPES | |
| ALL THREADS TO CONFORM TO | | C S CAT. NUMBER | DRAWING NUMBER : 322-65 |

2nd copy - Duplicate

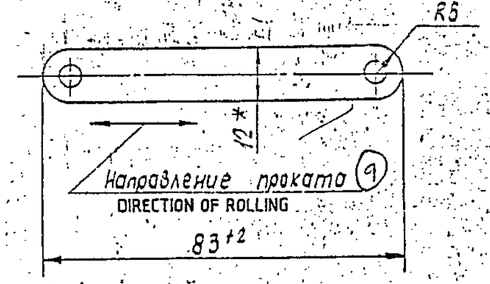
DRAWING NUMBER
322-66




DEVELOPED VIEW ALTERNATIVE
(7) Развертка вариант
H11
SCALE 1 : 1




DEVELOPED VIEW -
(8) Развертка
H11
SCALE 1 : 1




1. Заменитель материала сталь марок 08, 08кп, 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие К39.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры - для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП 10КПGOST 1050–74 MAY BE MANUFACTURED FROM SHEET GOST 19904–74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050–16 .

3) COATING : Zn 12 . . . 24 CHROMATIZING AS PER ИЛ – 483–82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ–95 , AS PER ИЛ –09–73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ –104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR CLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ИЛ–09–73 .

5) * DIMENSIONS FOR REFERENCE .

(A) EQUIVALENT MATERIAL
Gr.DD IS : 513-1994

| | | | |
|---|---|---|---|
| 8 | ЧЛН. | Яз-ТТУ | ЧЛ.ЛИСТ |
| ИЗМ. | ЛИСТ | N ДОКУМ. | ПОДП. |

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

| | |
|---|---|
| EST. WT. 0,0065 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. | |

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| PROD | |
| APPD | |
| DATE | 29 – 3 – 88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08ПС-М-2-1х12 GOST 503-81

USED ON :- СБ 20-35-00-5 СБ 322-14-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE
CLIP OF 3 PIPES

D S CAT NUMBER

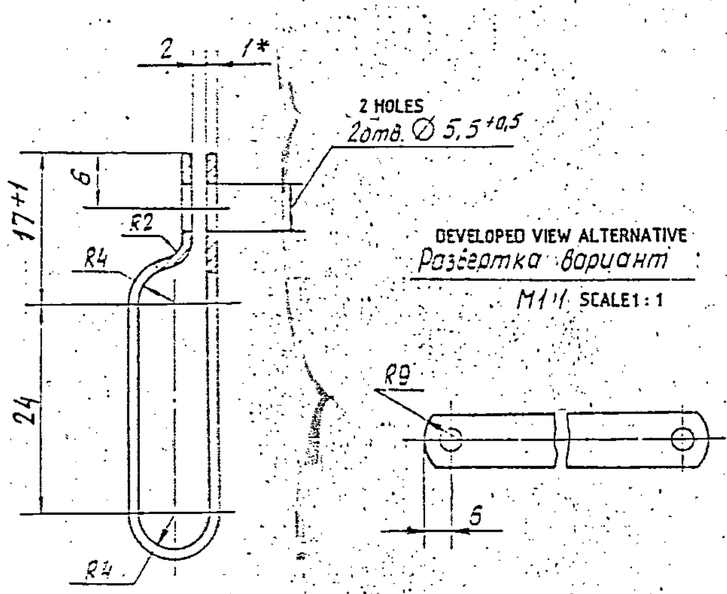
DRAWING NUMBER
322-66

A-7

SIZE: A2

DRG. REDRAWN BASED ON NEW ISSUE.
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 03-11 )

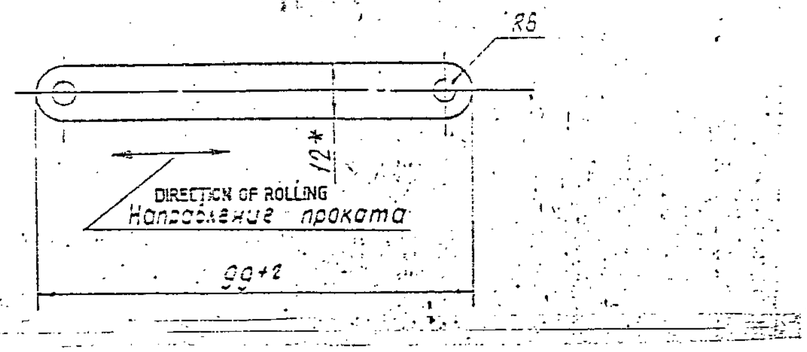
DRAWING NUMBER
322-67




DEVELOPED VIEW ALTERNATIVE
Развертка вариант
M1:1 SCALE 1:1




DEVELOPED VIEW
Развертка
M1:1 SCALE 1:1




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП, 10КП GOST 1050-74 MAY BE MANUFACTURED FROM SHEET GOST 19904-74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16 .

3) COATING : Zn, 12 . . . 24, CHROMATIZING AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ-09-73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-09-73 .

5) * DIMENSIONS FOR REFERENCE .

Ⓐ EQUIVALENT MATERIAL
Gr. DD IS:513-1994

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

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | чад | 83-114 | | |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,0075 Kg. | ( 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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-95 |
| SCALE :- 2:1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-
STRIP 08ПС-М-2-1×12
GOST 503-81 .

USED ON :-
СБ 322-14-4
СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 4 PIPES.

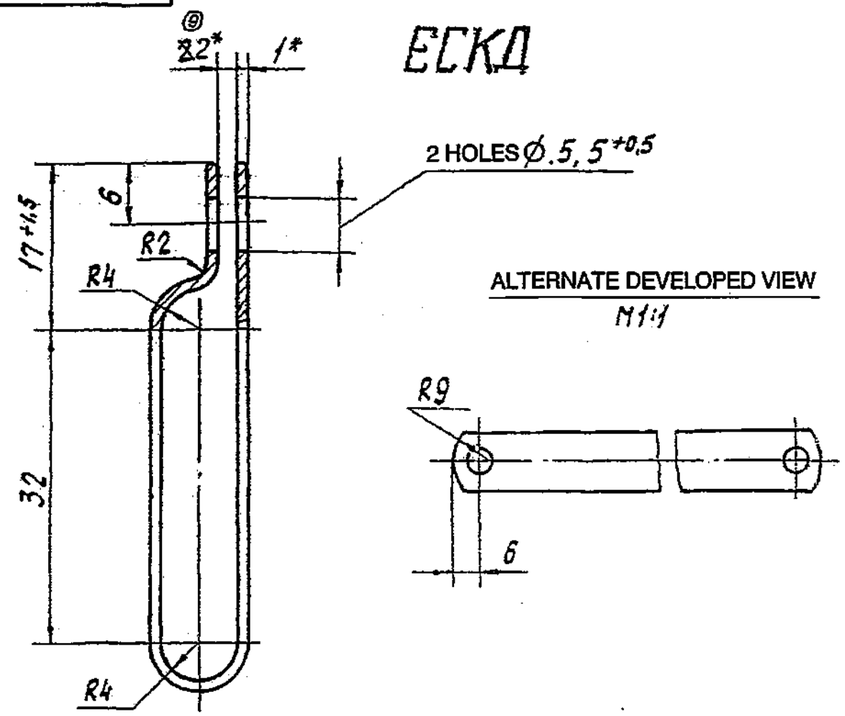
D S CAT NUMBER

DRAWING NUMBER
322-67

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8.1 83-114
DRAWN BASED ON NEW ISSUE

DRAWING NUMBER
322-68

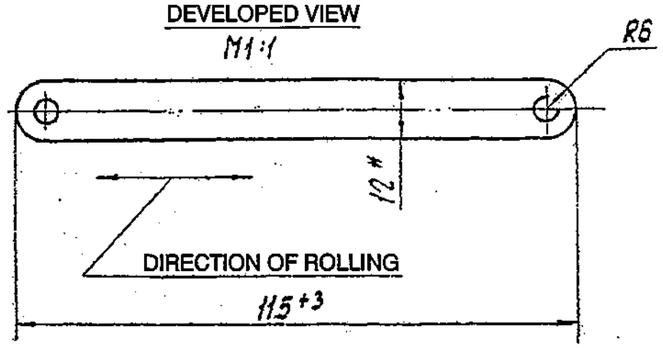
SHEET No. 1 OF 1




DEVELOPED VIEW
M1:1




ALTERNATE DEVELOPED VIEW
M1:1




ECKД

1. ALTERNATE MATERIAL : STEEL GRADES 08 КП, 10 КП, 15 КП TO GOST 1050-74.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. COATING : Zn 9, CHROMATIZING IN ACCORDANCE WITH ЦЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT. OR ЛаКГФ-95 AS PER ЦЛ628-86
4. IN TROPICALIZED MAKE THE COATING IS CADMIUM 9 MICRONS AS PER U 569-84 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT OR ЛаКГФ 95 AS PER ЦЛ628-86
5. * DIMENSION FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL Gr.DD
IS:513-1994

P. JANARDHANAN
Dt. 15 Nov'10 JTO (D)

DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

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) |
|---|---|
| 0.01 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 13.11.10 | 4th Alt. Comm. Mtg. Minutes Point No.1 Dated 26.10.09 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | Nov 2010 |
| SCALE:- | 2 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO IS : 4218,PART-4. | |

MATERIAL :- STRIP
08пс-M-2-1x12 GOST 503-81

USED ON :- Cb 322-14-9
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
# CLIP FOR 5 PIPES

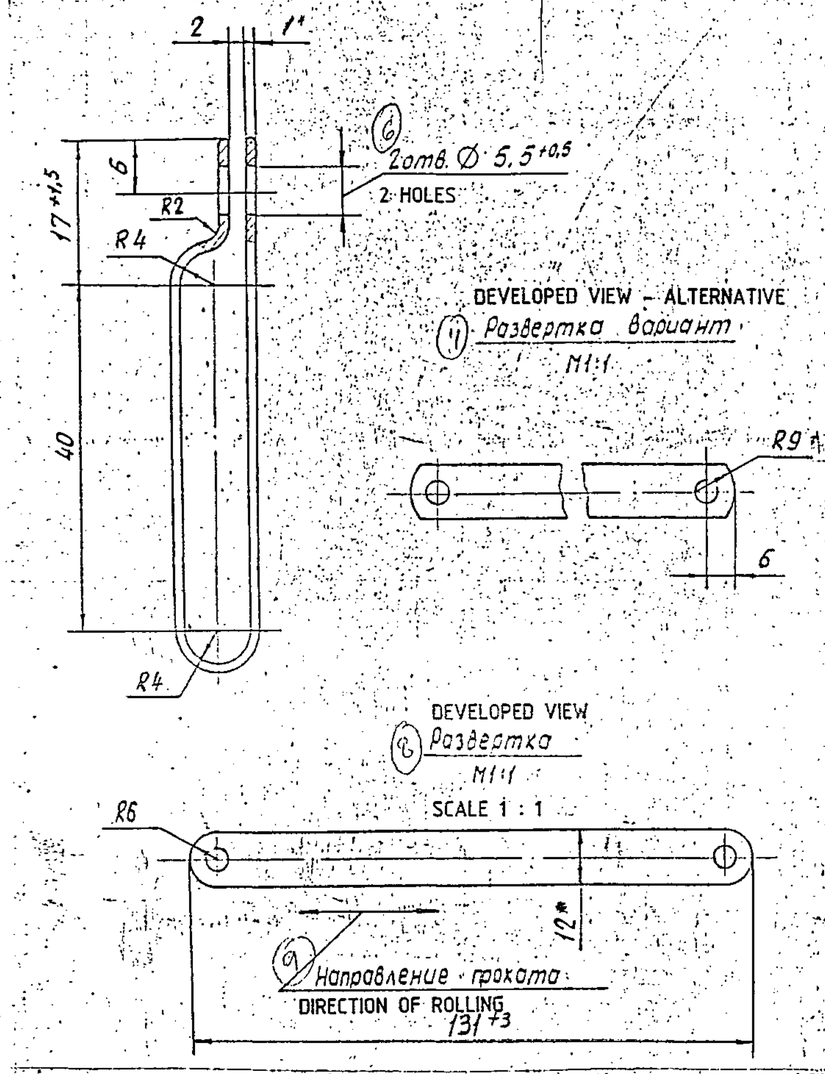
D S CAT NUMBER

DRAWING NUMBER
322-68

F -

SIZE A3

DRAWING NUMBER
322-69




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5.* Размеры для справок.

1. ALTERNATE MATERIAL : STEEL, GRADES 08, 08Kn 10Kn GOST 1050-74. MAY BE MANUFACTURED FROM SHEET GOST 19904-74.
2. REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.
3. COATING : Zn 12 .... 24, CHROMATIZING AS PER ИЛ - 483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ - 09-73.
4. IN TROPICALIZED CONSTRUCTION:
   COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ЦИЛ 104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ЦЛ - 09-73.
5. *DIMENSIONS FOR REFERENCE

(A) EQUIVALENT MATERIAL
GrDD IS:513-1994

ORG. REDRAWN BASED ON NEW ISSUE
ORG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No: 8 (BK 03-

| | | | | | |
|---|---|---|---|---|---|
| Разраб. | Ган | 83-714 | Утверд. | Гейн | |
| Н.контр. | Шкет | Чобкум. | Подп. | Дата | |

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0.0115 Kg | |

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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08пс - М - 2 - 1х12 GOST 503-81

USED ON :- СБ 322-14-4, СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 6 PIPES

D S CAT NUMBER

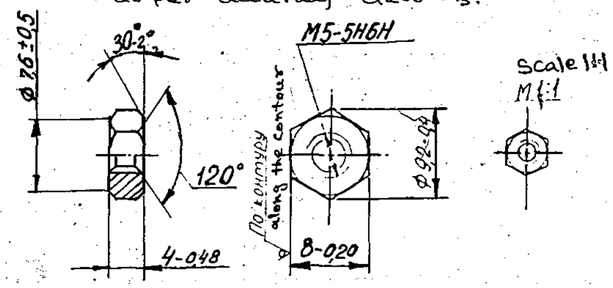
DRAWING NUMBER
322-69

A-7
SIZE A2

DRAWING NUMBER
351 13

Rz 40 (V)

Rolled stock of group B class 4 GOST 1051-73 may be used. To ensure high quality of coating, it is allowed to eliminate surface defects of rolled stock with decrease of dimension as per accuracy class - 5.




1. The Component may be manufactured from Steel 45 GOST 1050-74.
2. Chamfer 120° should be made up to the major diameter of thread.
3. Shift of hole axis up to 0.25 mm. is permitted.
4. The thread may be checked before coating.
6. Coating :- Cd 9, Chromatizing as per ГОСТ 9.104 with elimination of Hydrogen embrittlement.
7. The rest of the technical requirements as Per standard 82052-00.
8. Alternate material :- Steel, grades 40 and 50 GOST 1050-74.

## EXPLANATORY NOTE

9. i) REFERENCE MATERIAL QUOTED:
GAUGED HEXAGONAL STEEL BAR CLASS OF ACCURACY 4, 8.0(-0.100)mm A/F TO GOST 8560-78 FROM HIGH GRADE SIZED STEEL SURFACE QUALITY 'B' TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45 TO GOST 1050-74

(A) ii) REFERENCE NOTE '8' ON ALTERNATE MATERIAL : QUALITY CARBON STRUCTURAL STEEL GRADES 40 AND 50 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 | |
| | | | | MAXIMUM | | | |
| 45 | 0,42-0,50 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | REF MATL |
| 40 | 0.37-0,45 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | ALT MATL |
| 50 | 0,47-0,55 | 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 : AS PER GOST 1050-74

| GRADE OF STEEL | ULTIMATE TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | ELONGATION % | REDUCTION IN AREA % | IMPACT STRENGTH Kgfm/cm² | HARDNESS B H N MAX | REMARKS |
|---|---|---|---|---|---|---|---|
| 45 | 61 | 36 | 16 | 40 | 5 | 229 | REF MATL |
| 40 | 58 | 34 | 19 | 45 | 6 | 217 | ALT MATL |
| 50 | 64 | 38 | 14 | 40 | 4 | 241 | ALT MATL |

(A) Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

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

| EST. MASS | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.0012 Kg | ( 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 |
|---|---|---|
| A | 18.5.09 | Authy: Third Alt. Comm. Minutes Point: 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE
SCALE - 2 : 1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.
ALL THREADS CONFORM TO

MATERIAL: ~~HEXAGON BAR 8.0 GOST 8560-78 45-5 GOST 1051-73~~ (A)

USED ON:- ~~CG 80435 00 00 5~~ CG 3335 00 24 3

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI

TITLE:- NUT M5

D S CAT NUMBER

DRAWING NUMBER 351 13

A-11

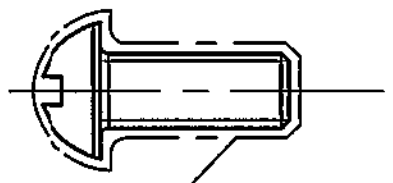
FORMAT A-2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

F-4
226
253

4 | 3 | 2 | 1

DRAWING NUMBER
356-22-2



Coating : Zinc-*6 microns, chromium-1micron* as per ИЛ-749-88 by removing hydrogen embrittlement.

1. In tropical construction, plating cadmium-9microns, chromium-1 micron as per *ИЛ-569-84 with removal of hydrogen embrittlement.*

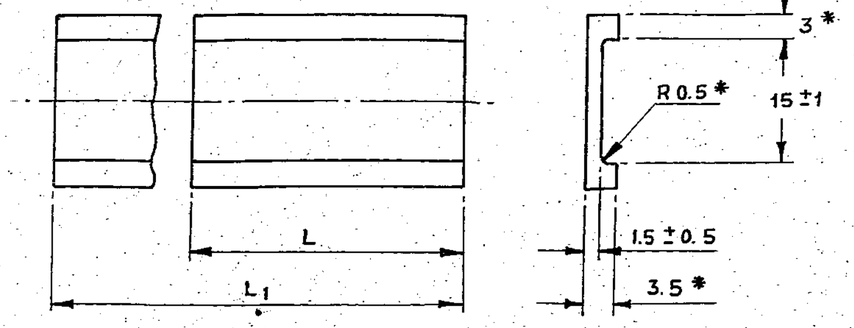
2. *Blank should match with requirement Gost 1759.0-87 for class of accuracy B.*

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

| | |
|---|---|
| EST. WT.(Kg) 0.003 | 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 :- *Blank* *Screw* M5-6gx12.58 GOST 17473-80 | USED ON :- СБ 322-14-9 СБ 322-15-9 СБ 323-00-10 СБ 3320-00-43 |
| ISSUE DATE NATURE OF AMENDMENTS | |
| DRN SCALE :- 2 : 1 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD DIMENSIONS IN mm | |
| APPD TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69 | TITLE :- SCREW M5x12 |
| DATE 26/11/07 ALL THREADS TO CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 356-22-2 |

SIZE A4

DRAWING NUMBER
3335-38-3 TO
3335-38-6




| PART No. | L MM | MASS Kg. | USED ON | KVD No. |
|---|---|---|---|---|
| 3335-38-3 | 26±1 | 0.002 | | |
| 3335-38-4 | 31±2 | 0.0024 | C6 3335-00-~~24~~30 | 78315 |
| 3335-38-5 | 42±2 | 0.0032 | C6 3335-00-~~24~~30 | 78435 |
| 3335-38-6 | 55±0.2 | 0.0042 | | |

*C620-27-00-4

1. DIMENSIONS ARE TO BE ENSURED WITH TOOL.
2. LENGTH OF DELIVERED BAND $L_1$ SHOULD NOT BE LESS THAN 1000 mm.
3. MARK "3335-38-3" SHOULD BE PUT ON TAG OF COMPONENT TO BE DELIVERED.
4. TO BE MADE AS PER TT III H 100 GOST 15152-69.
5. THE REST OF THE REQUIREMENTS AS PER TY 005 216-75.

3335-38-3

## EXPLANATORY NOTE :-

6. REFERENCE MATERIAL QUOTED :
UNVULCANISED OIL AND PETROL RESISTANT RUBBER CODE OF CLASSIFIER 25-1231, RUBBER GRADE HO-68-1 TO TY 005-216-75.

a. MECHANICAL PARAMETERS :

i. RUPTURE STRENGTH Kgf/cm$^2$ _____ 90 Min
ii. ELONGATION OF RUPTURE % _____ 250 Min
iii. RESIDUAL ELONGATION AFTER RUPTURE % ___ 12 Max
iv. HARDNESS No IP TO TM P DEVICE ARBITORY ____ 55-70

7. LIKELY EQUIVALENT GRADE / SPECIFICATION FOR NITRILE CHLOROPRENE BASE TO BA 60 BS 2751-82 AND C 60 BS 2752-82.

Ⓐ ALT MATL.: RUBBER GRADE BNC TO SPECN. CQA(HV)/NBR+CR

EXPLANATORY ADDED ON 4-6-92

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

| EST. WT. | 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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 27.05.08 | Lr. No. TC/GEN/IND-III Dt:. 02.04.08 |

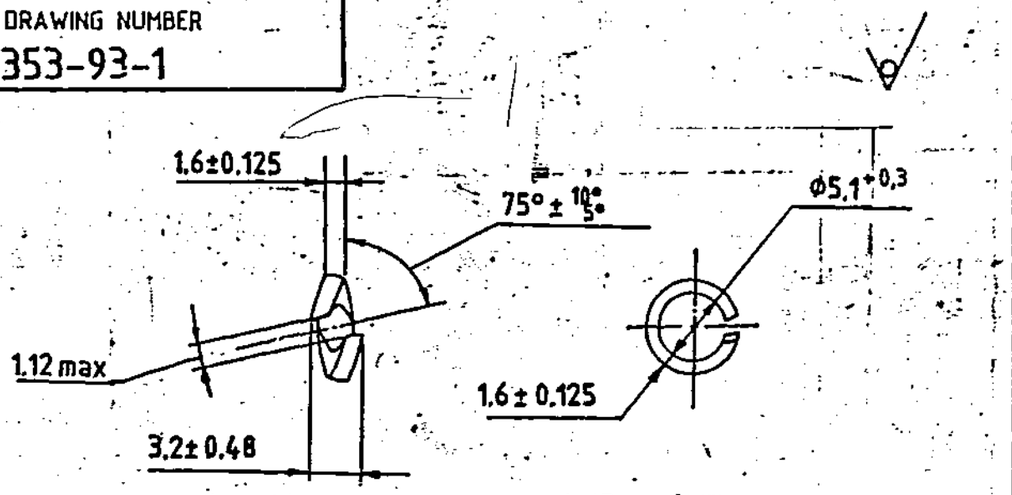
DRN —
CHD
TCD
APPD
DATE 8-7-86
SCALE - 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- RUBBER HO-68-1 TY 005 216-75
USED ON —
CONTROLLERATE OF QUALITY ASSURANCE. (HEAVY VEHICLES) AVADI
TITLE : GASKET
D S CAT NUMBER
DRAWING NUMBER 3335-38-3 TO 3335-38-6

A-9
SIZE A2

KVD.No. 78696

DRAWING NUMBER
353-93-1




1. IN TROPICAL MANUFACTURE, COATING Cd 9 Cr AS PER ШУЛ - 104 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.

2. WASHER 5Т65Г 09 GOST 6402-70 MAY BE USED, IN VISUAL AND TROPHICAL MANUFACTURE.

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

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 Pcs 0,424 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. |
| A | 16.8.10 | 4th Alt.Comm.Meeting Minutes Point No.12 Dt: 26-10-09 | MATERIAL:- 5T 65 Г 06 GOST 6402-70 / USED ON Cб [illegible] Cb [illegible] |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2 : 1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. |
| CHD | | | |
| TCD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69 | TITLE: WASHER |
| APPD | | ALL THREADS CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 353-93-1 |
| DATE | 28.5.94 | | |
| SIZE A4 | | | |

## EXPLANATORY NOTE:

MATERIAL QUOTED: WASHER 5Т, 65Г, 06 GOST 6402-70.

CORRESPONDS DESIGN AND DIMENSIONS OF SPRING (LOCK) WASHERS.
06 = CONVENTIONAL SYMBOL OF FINISH. (PARKERISING FOLLOWED BY OILING).
5 = NOMINAL THREAD DIA OF BOLT OR SCREW
Т = HEAVY ; 65Г (65G) = GRADE OF STEEL AS PER GOST 1050-74.

CHEMICAL COMPOSITION: AS PER GOST 1050-74.

| CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·62 – 0·70 | 0·17 – 0·37 | 0·90 – 1·20 | 0·25 | 0·040 | 0·035 | 0·25 | 0·25 |

WEIGHT OF STEEL WASHERS AND THEIR RESILIENCE PROPERTIES AS PER GOST 6402-70.

THEORITICAL WEIGHT OF 1000 STEEL WASHERS IN kg = 0·424.

ESTIMATED RESILIENCE OF WASHERS FROM STEEL GRADE 65G = 28·7. IN kg

MECHANICAL PROPERTIES: AS PER GRADE 65G GOST 1050-74.

YIELD POINT kgf/mm² (MIN) = 44

ULTIMATE TENSILE STRENGTH (MIN) = 75 kgf/mm²

ELONGATION % (MIN) = 9

REFERENCE NOTE: 09 = ZINC PLATING (CONVENTIONAL SYMBOL OF FINISH)

(A) EQUIVALENT MATERIAL
75 C6 TO IS:2507/EN 42 J BS:970

USED ON

Cb 322-00-9

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|
| | | **Cb.322-15-9** | | **COMPRESSED - AIR** | | |
| | | **ITEM LIST** | | **STARTING TUBING** | | |
| | | | | **R . H ASSY.** | | |
| | 1 | Cb.322-07-9 & I/L | | 1 ST RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 2 | Cb.322-08-9 & I/L | | 2 ND RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 3 | Cb.322-09-9 & I/L | | 3 RD RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 4 | Cb.322-10-9 & I/L | | 4 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 5 | Cb.322-11-9 & I/L | | 5 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | 6 | Cb.322-12-9 & I/L | | 6 TH RH CYLINDER | 1 | |
| | | | | TUBE ASSY. | | |
| | | | | | | |
| | 8 | 322-65 | | CLIP FOR 2 TUBES | 1 | Tropical make |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED - AIR STARTING TUBING R H ASSY.** | | |
| APPD | | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-15-9** |

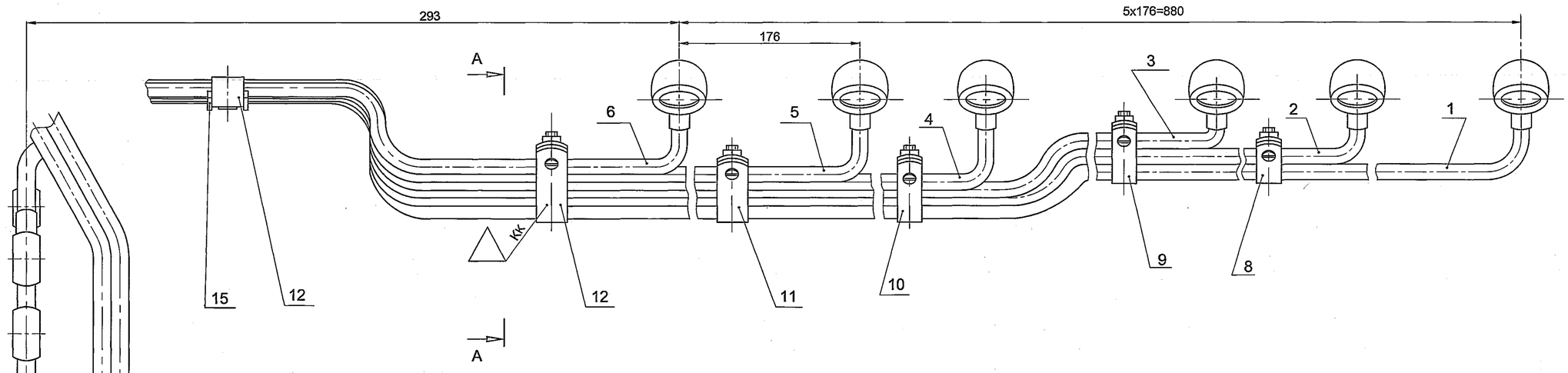
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | 9 | 322-66 | | CLIP FOR 3 TUBES | 1 | Tropical make |
| | | 10 | 322-67 | | CLIP FOR 4 TUBES | 1 | Tropical make |
| | | 11 | 322-68 | | CLIP FOR 5 TUBES | 1 | Tropical make |
| | | 12 | 322-69 | | CLIP FOR 6 TUBES | 2 | Tropical make |
| | | 13 | 351-13 | | NUT M5 | 6 | Tropical make |
| | | 14 | 356-22-2 | | SCREW M5x12 | 6 | Tropical make |
| | | 15 | 3335-38-5 | | GASKET | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 21 | 353-93-1 | | WASHER 5Т65Г | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.22 Tropical make |
| | | 22 | - ND - | | WASHER 5Н65Г05 | | 6 Pcs ARE |
| | | | | | GOST 6402-70 | | ALLOWED TO |
| | | | | | | | CHANGE TO |
| | | | | | | | Pos.21 Tropical make |

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 3

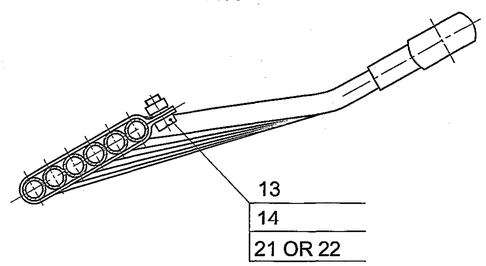
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | | |
|---|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | | |
| CHD | | TITLE : **COMPRESSED - AIR STARTING TUBING R H ASSY.** | | |
| APPD | | | | |
| DATE | 30.6.07 | SHT. NO. 2 OF 2 | D S CAT NUMBER | ITEM LIST FOR **Cb.322-15-9** |

DRAWING NUMBER
**Cb.322-15-9**




A-A




1. Carry out adjustment and final inspection for assembly units from СБ.332-07-9 to СБ.322-12-9 together on the dummy.
2. Make a complete set of assembly units СБ.322-15-9 and СБ.322-14-9 in pairs.
3. Stamp the manufacturing - factory No. and part number of assembly units СБ.322-14-9 and СБ.322-15-9 on tag for making a set while sending as spare parts.
4. Components and assembly units, having conventional symbol *"ТИ" in the part list of given drawing in "remarks" column should have tropicalized construction as specified in the drawings for components.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
174
253
SIZE A1

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 ) |
|---|---|
| 1.460 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

DRN
CHD
APPD
DATE 06/2/07
SCALE:- 1:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69
ALL THREADS TO CONFORM TO

MATERIAL :-

USED ON :-
СБ 322-00-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :- COMPRESSED AIR STARTING TUBING RH ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER
**Cb.322-15-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-07-9** | | **1 ST RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-27-9 | | 1 ST RH CYLINDER TUBE | 1 | |

Cb 322-15-9

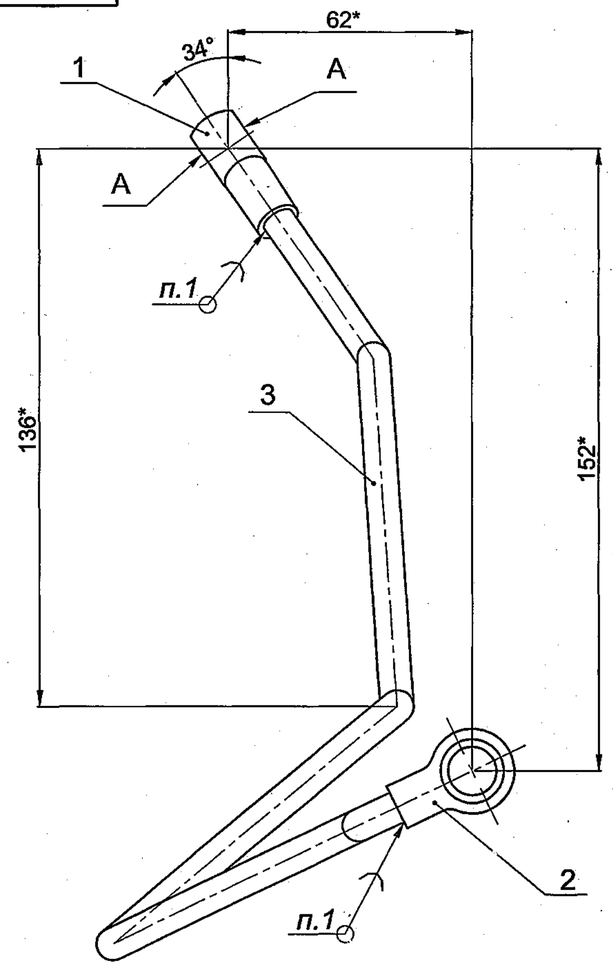
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

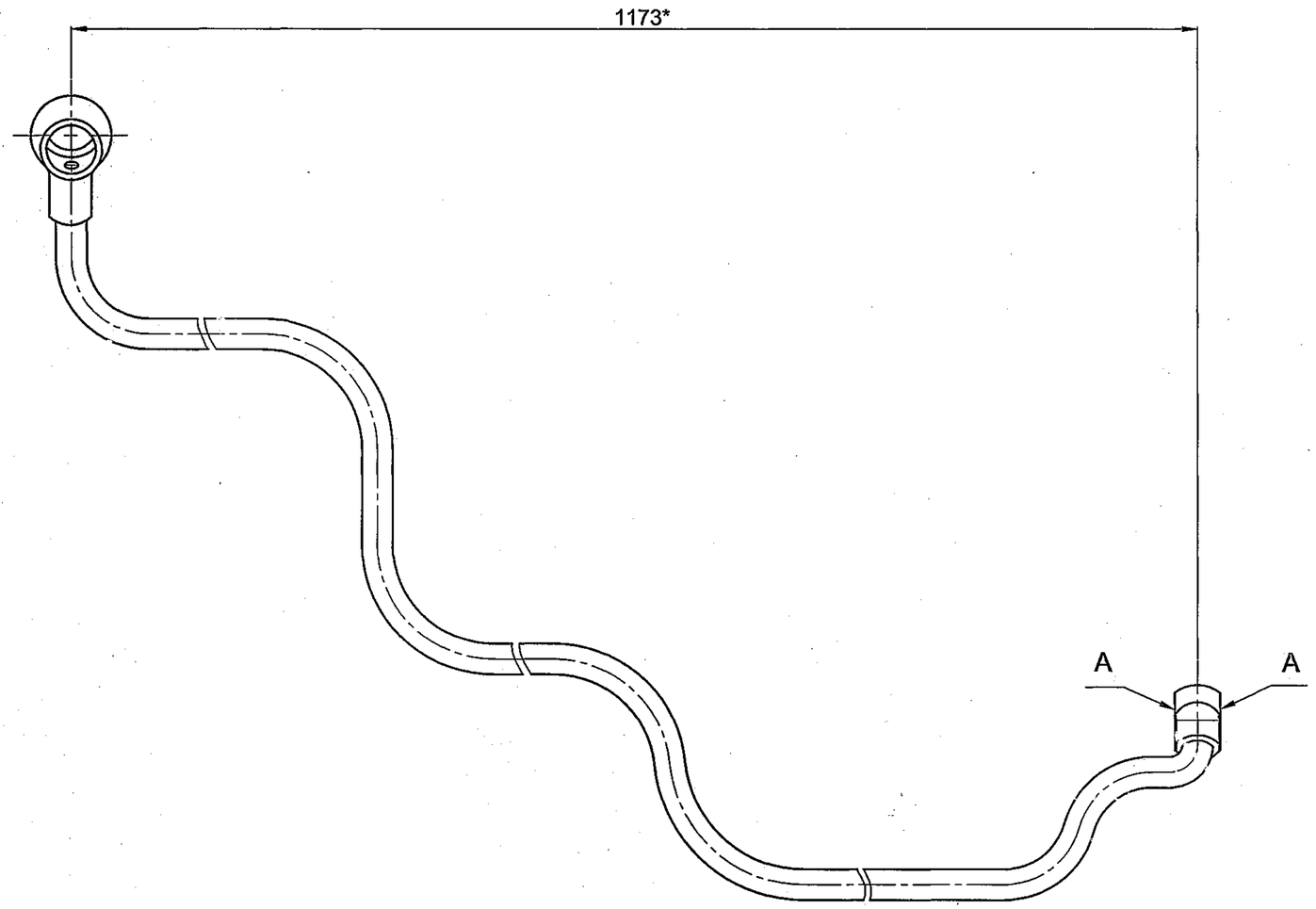
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **1 ST RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-07-9** |

F-4
157/253

DRAWING NUMBER
*Cb.322-07-9*




1. Wire *Л163 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.285 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/12/02 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :-
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES )
AVADI

TITLE :- (4A)
1 st RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER
*Cb.322-07-9*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
158
253

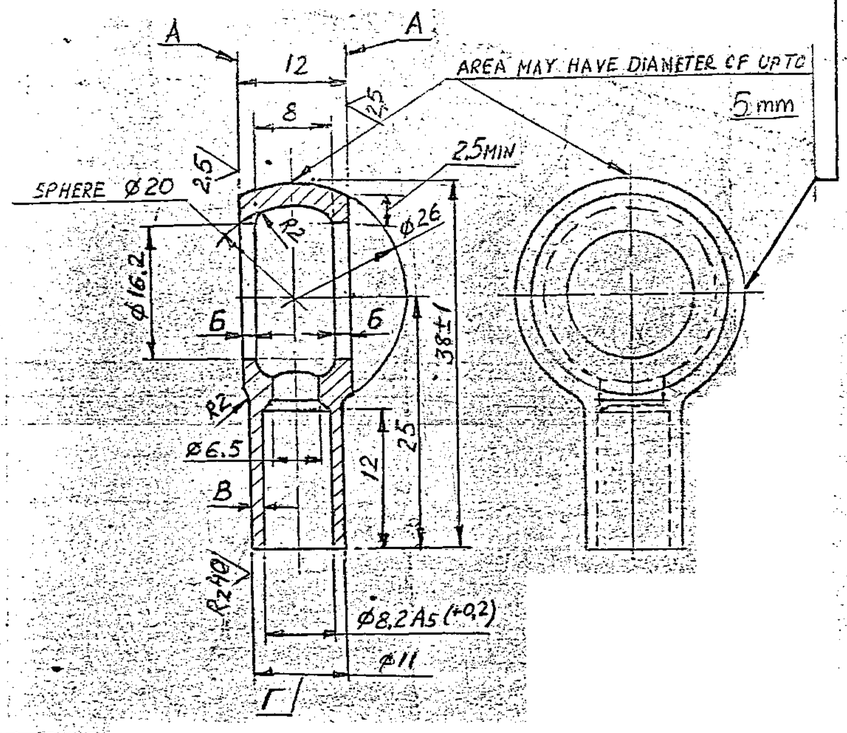
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

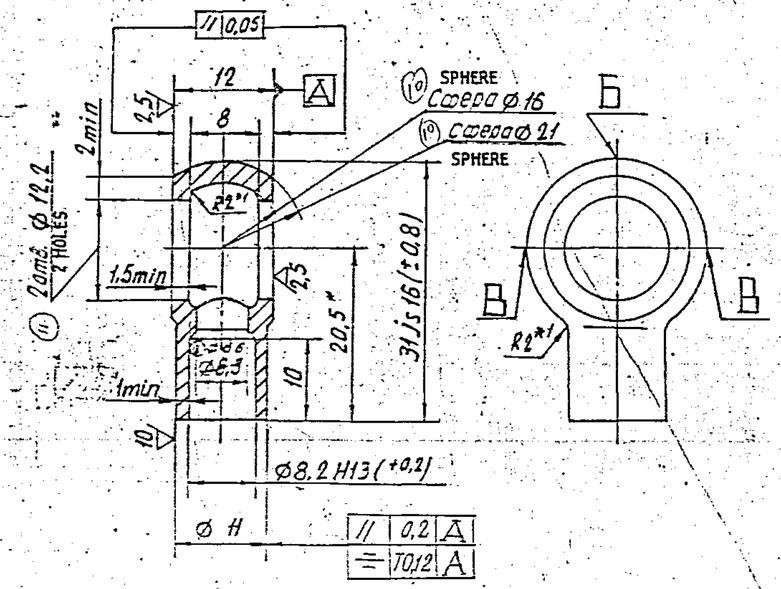
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

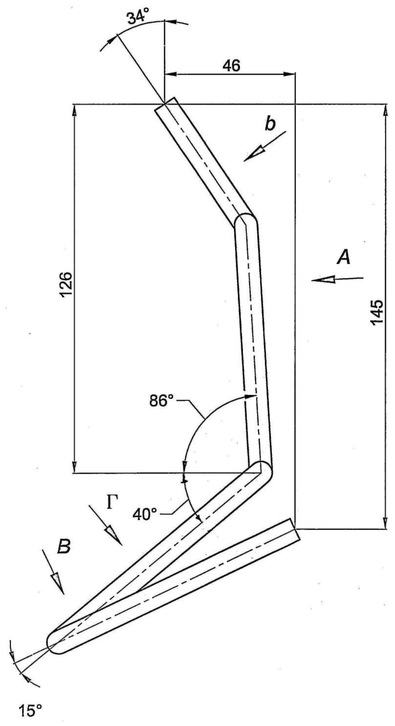
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

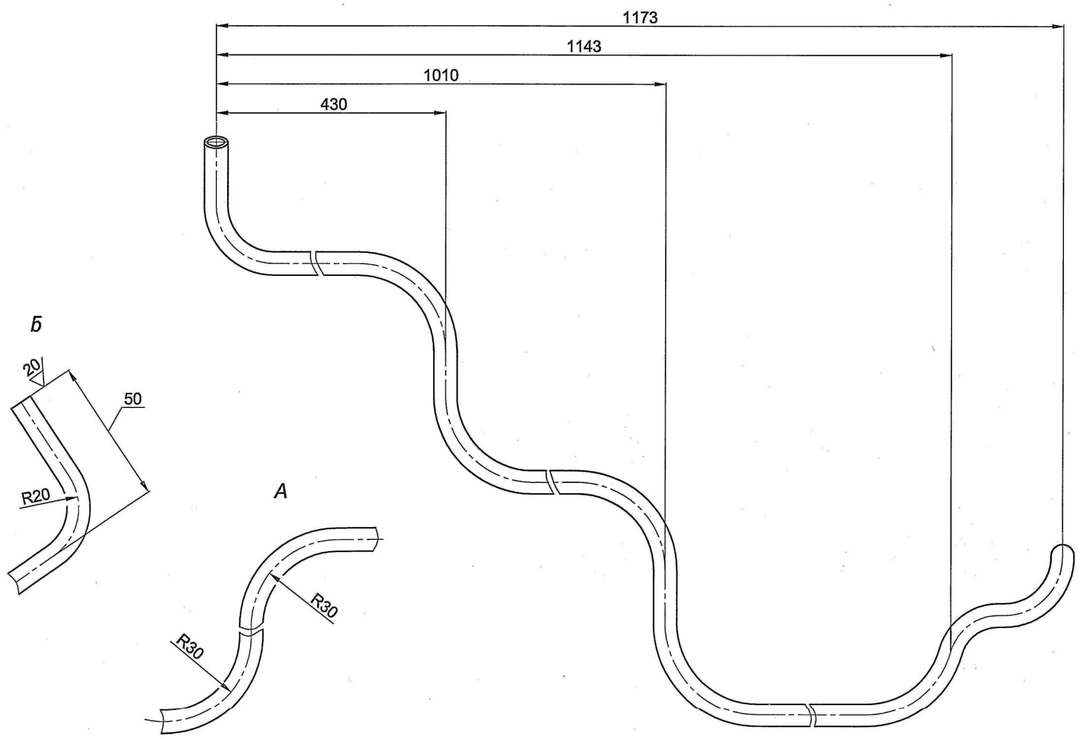
TITLE: SWIVEL ELBOW

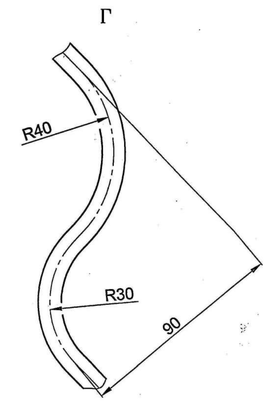
DRAWING NUMBER 322-18

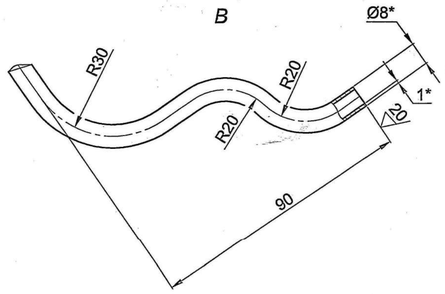
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-27-9**




1. Unfolded length of pipe should be L ≅ *1425 mm.*

2. *Tolerance of ovality for pipe in bending area should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
181
253

SIZE A1

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 ) |
|---|---|
| 0.240 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 28/11/97 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- C6 322 - 07 - 9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- *1 st RH CYLINDER PIPE*

D S CAT NUMBER

DRAWING NUMBER **322-27-9**

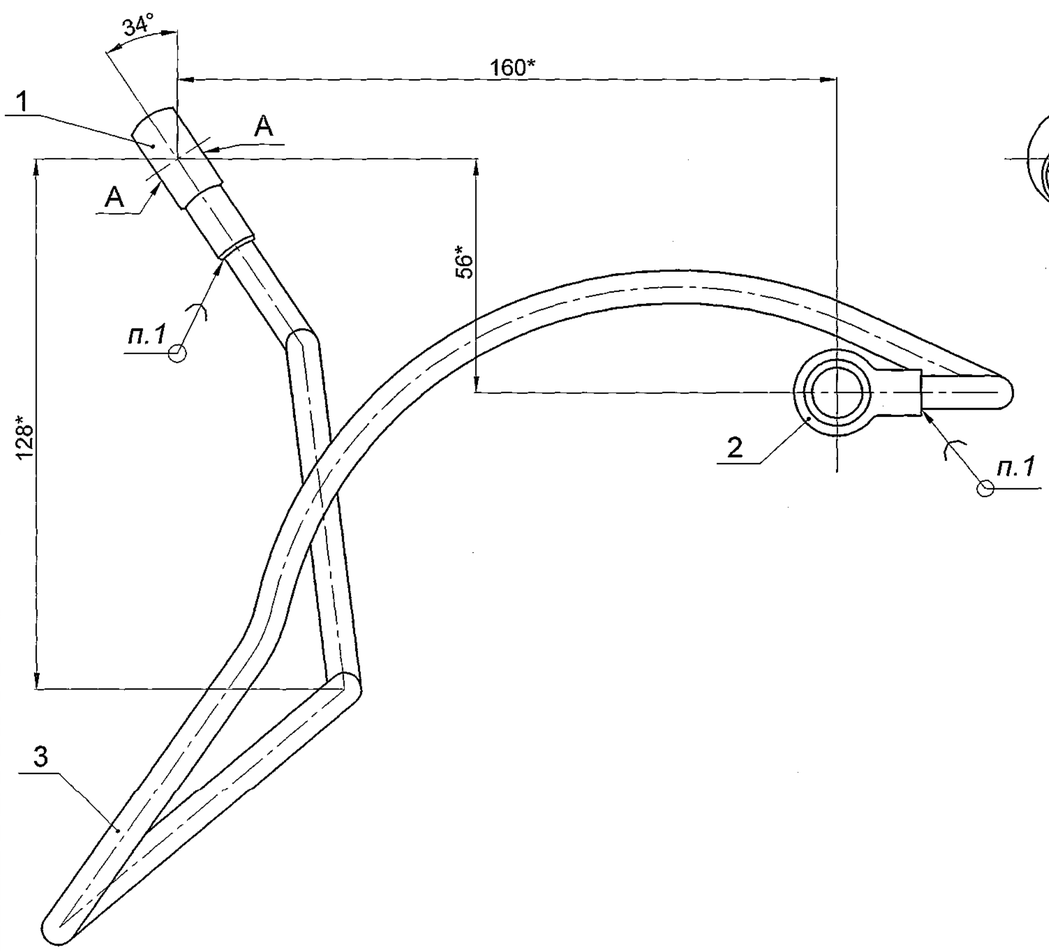
| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-08-9** | | **2 ND RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-28-9 | | 2 ND RH CYLINDER TUBE | 1 | |

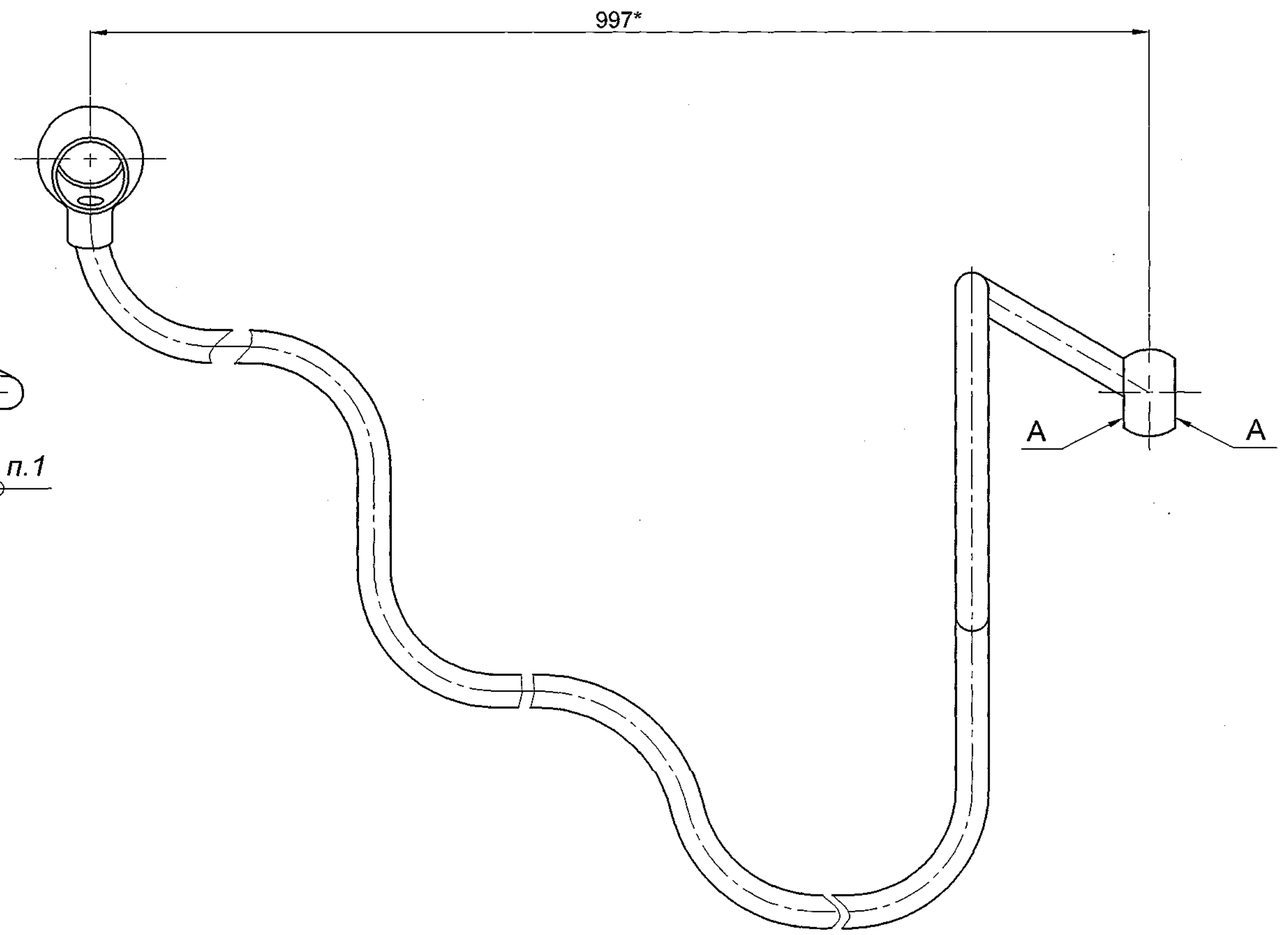
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **2 ND RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-08-9** |

DRAWING NUMBER
**Cb.322-08-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИЛ-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given for reference.*

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.295 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 13.7.07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - | 69 |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- **2 nd RH CYLINDER TUBE ASSY.**

D S CAT NUMBER

DRAWING NUMBER **Cb.322-08-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4 160/253

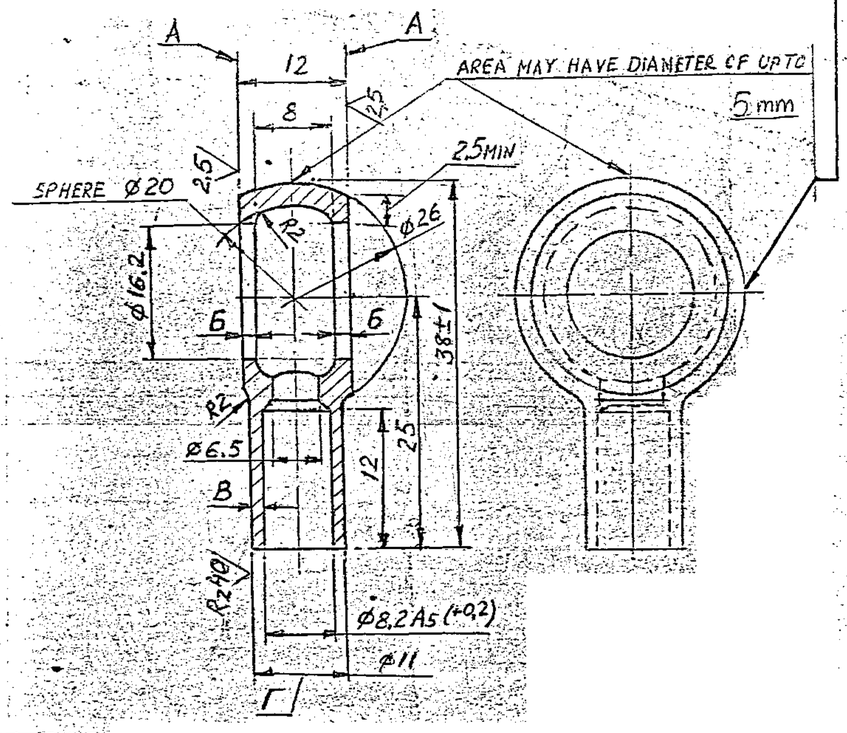
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

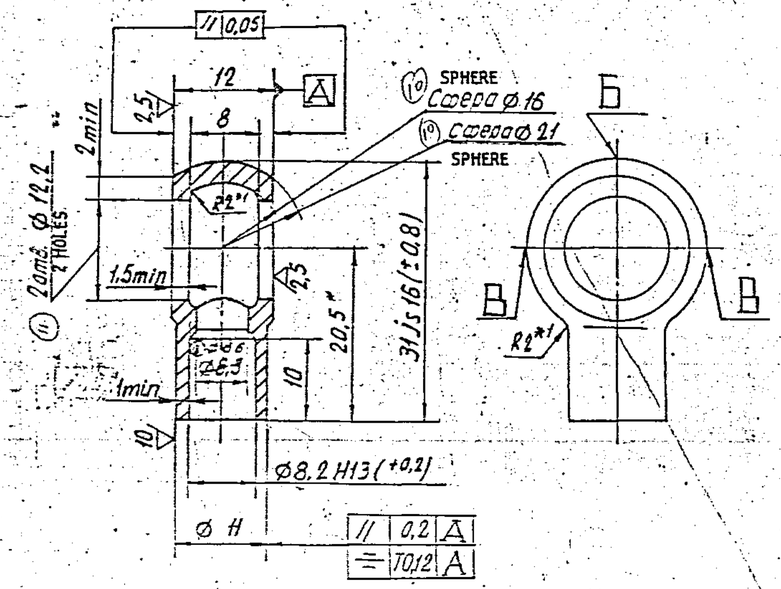
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

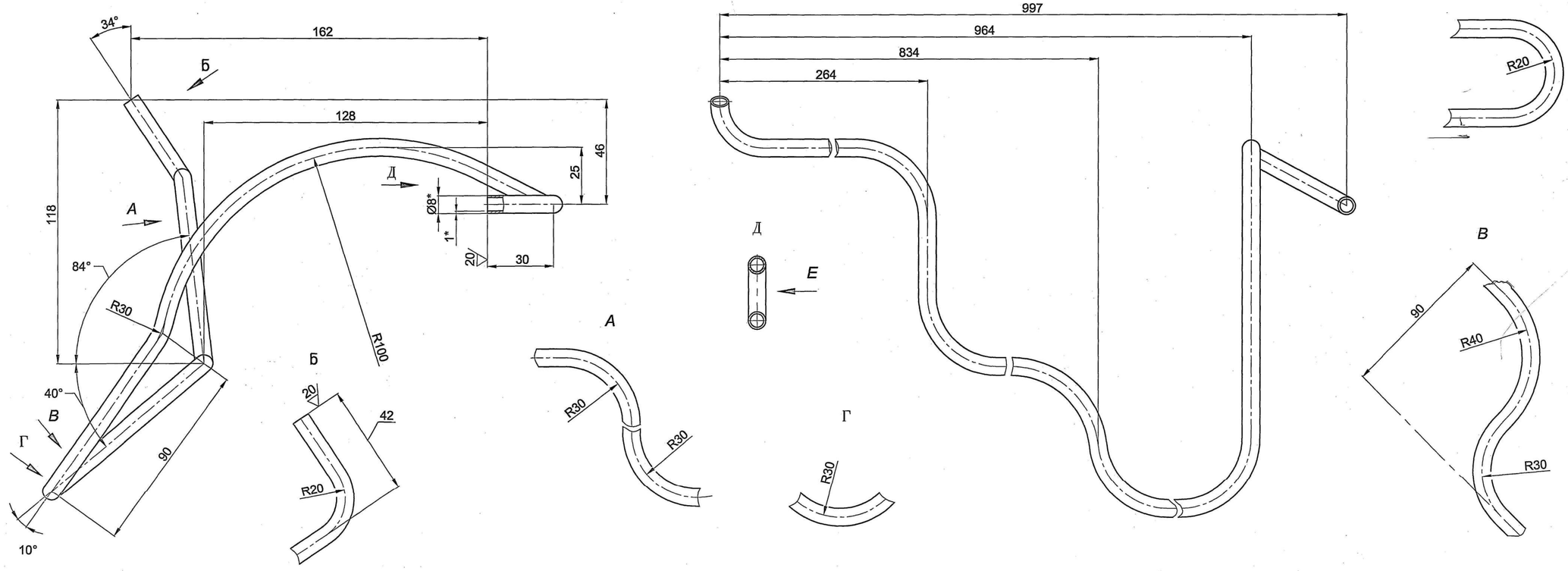
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-28-9**




1. Unfolded length of pipe should be L ≈ *1465 mm.*

2. *Tolerance of ovality for pipe in bending area should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given 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 ) |
|---|---|
| 0.250 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- LE 322-08-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **2 nd RH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-28-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
182
253

SIZE A1

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-09-9** | | **3 RD RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-29-9 | | 3 RD RH CYLINDER TUBE | 1 | |

Cb 322-15-19

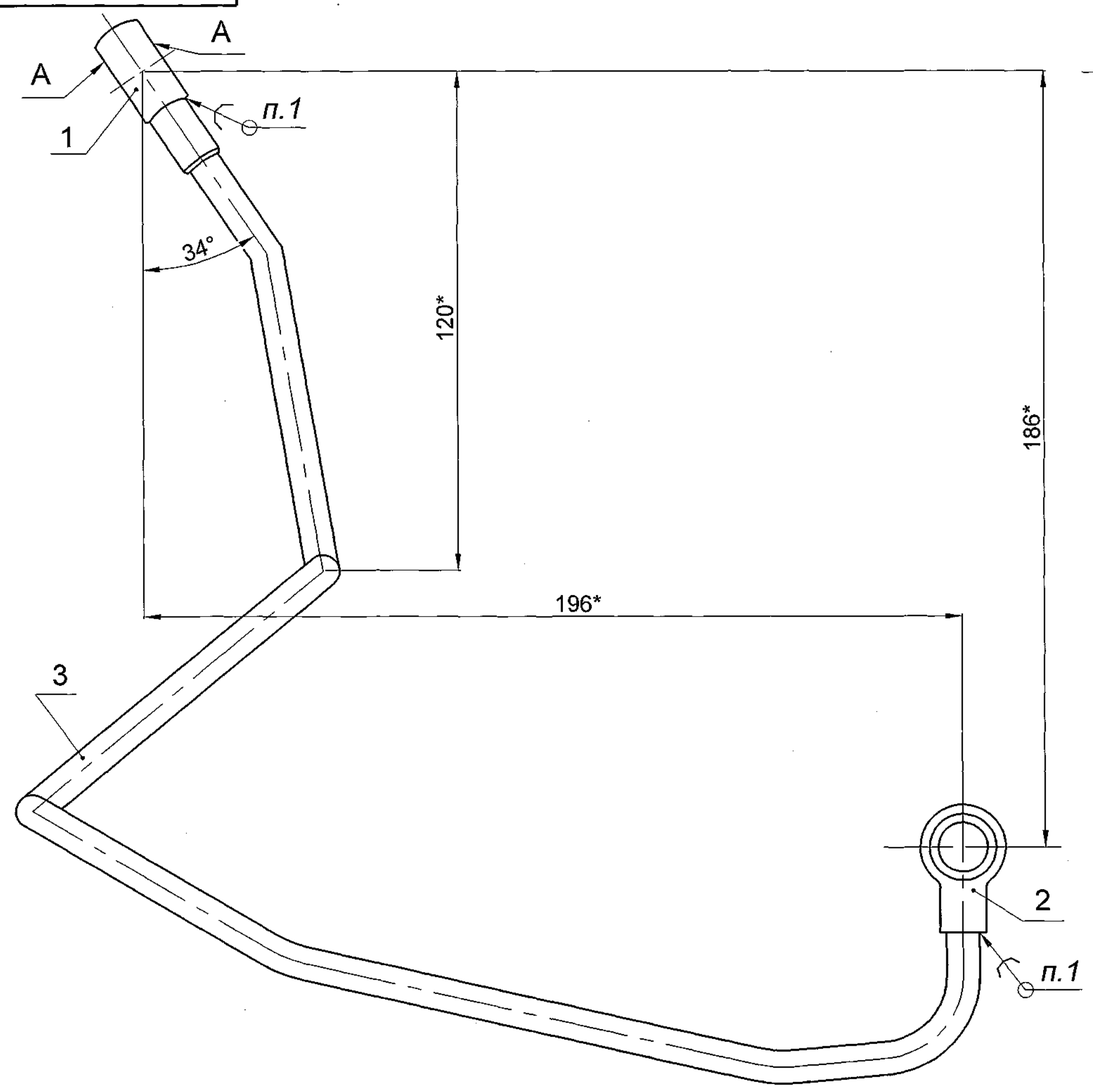
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

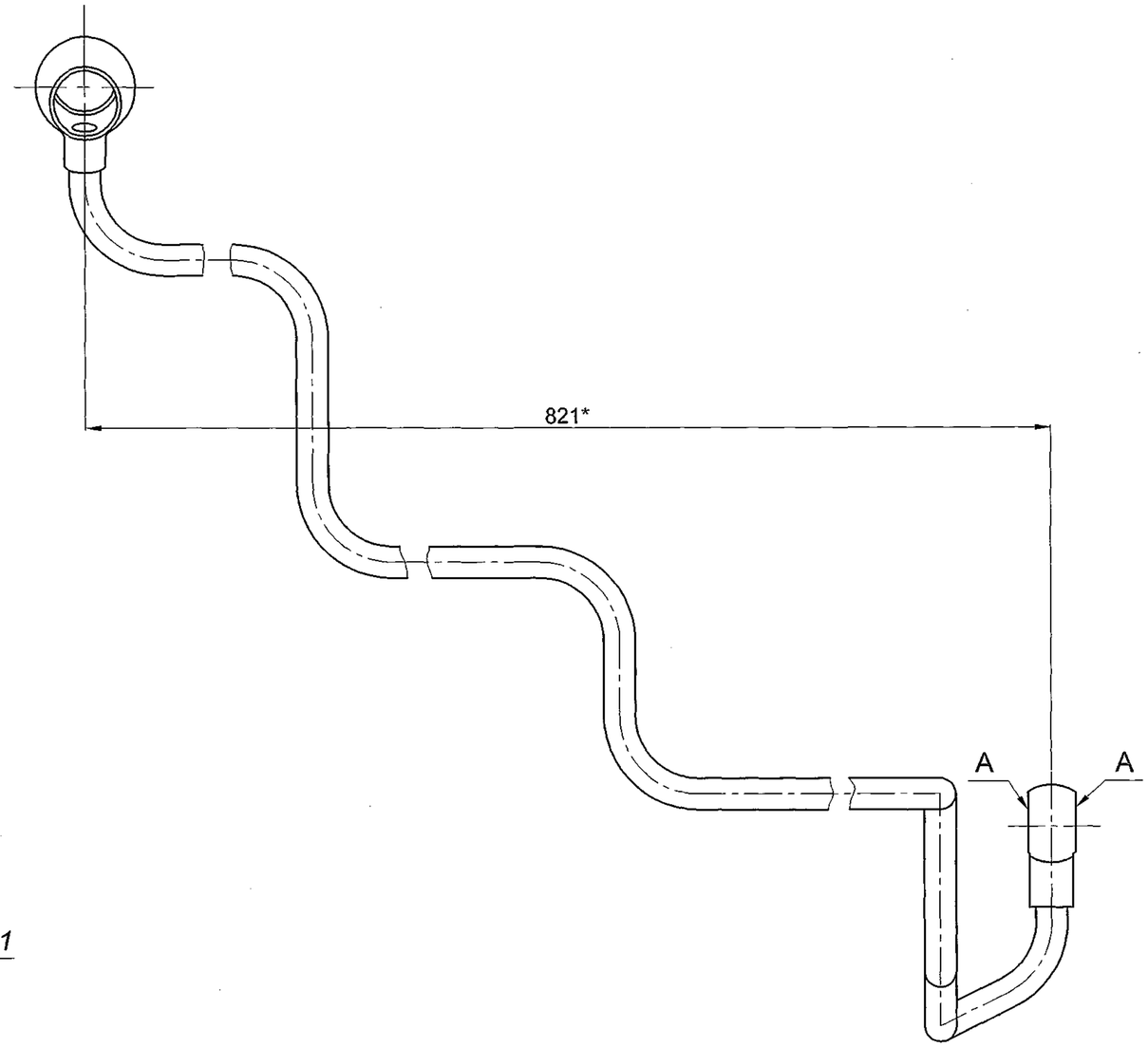
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **3 RD RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 30.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-09-9** |

F-4
161/253

DRAWING NUMBER
**Cb.322-09-9**




1. Wire *Л63 Gost 12920-67.*
2. *Varnish coating ГФ - 95 as per ИП-628-86.*
3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*
4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*
5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*
6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*
7. ** Dimensions are given for reference.*

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS ) |
|---|---|
| 0.245 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 13.7.07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- | — |
| USED ON :- | Cb 322-15-9 |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE :- | 3rd RH CYLINDER TUBE ASSY. |
| D S CAT NUMBER | |
| DRAWING NUMBER | Cb.322-09-9 |

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 5

F-4
162
253

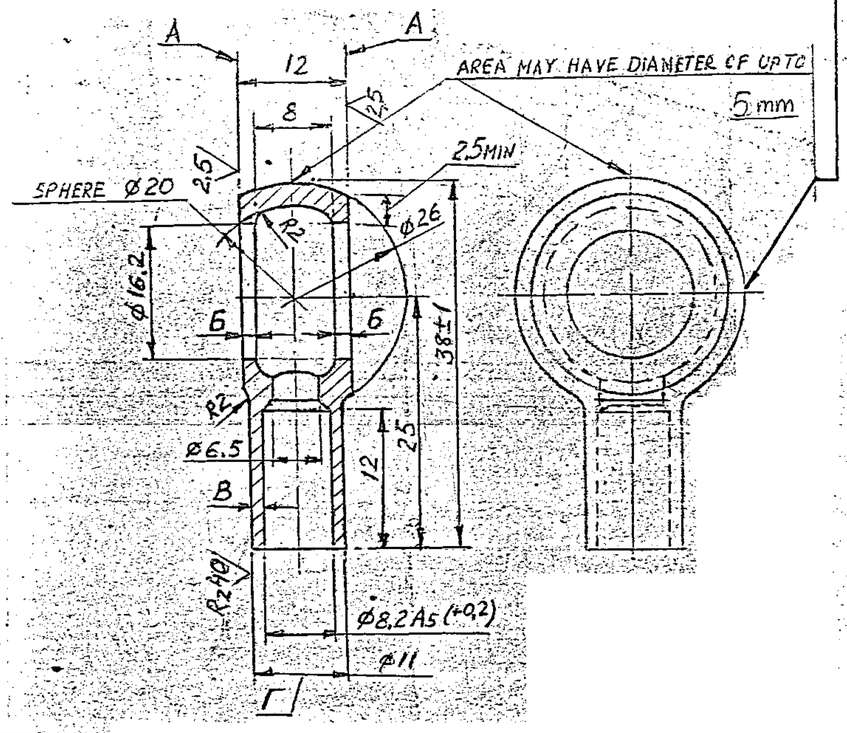
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

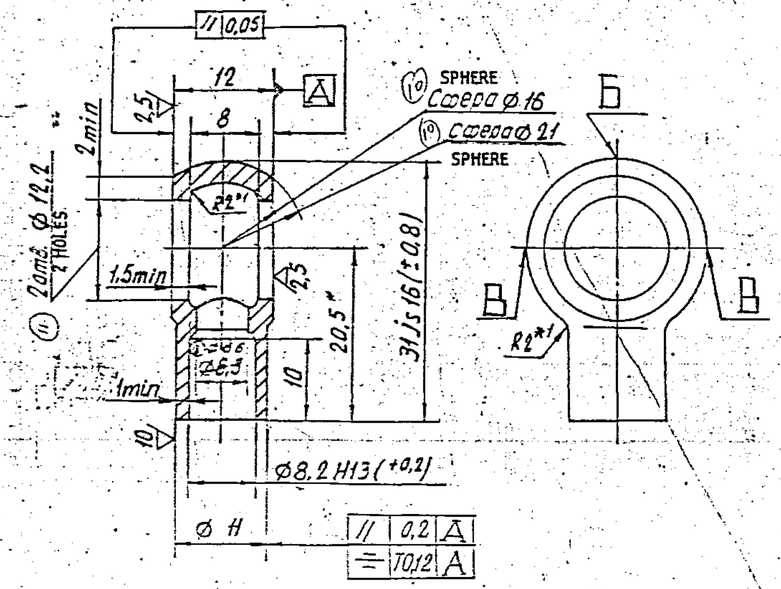
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

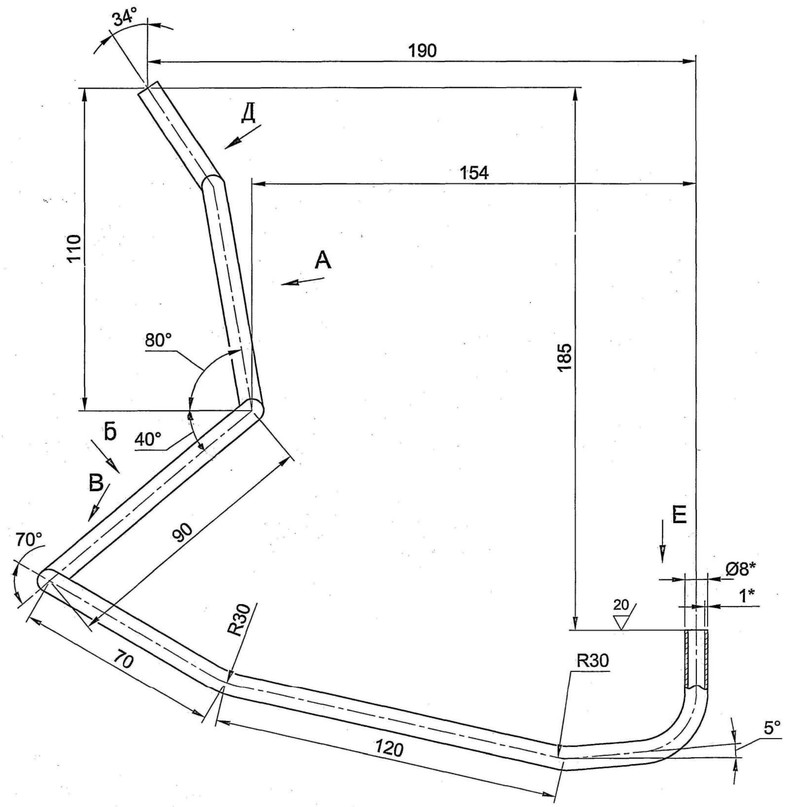
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

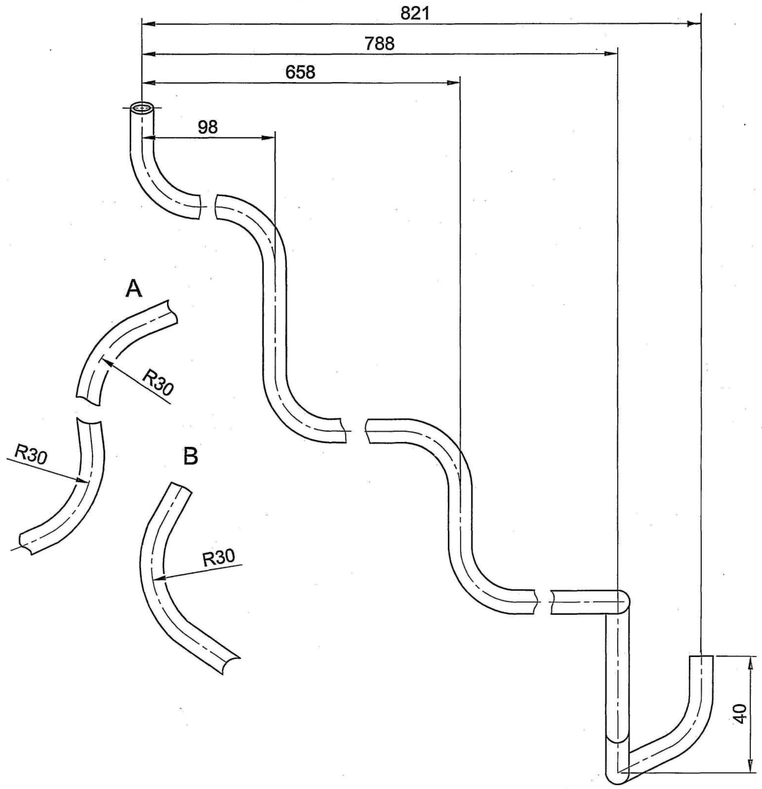
TITLE: SWIVEL ELBOW

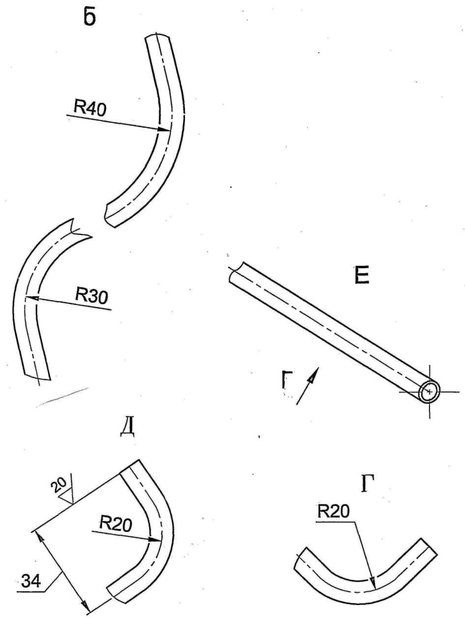
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-29-9**




1. Unfolded length of pipe should be L≈ 1185 mm.
2. Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).
3. Bending-tool marks are allowed.
4. * Dimensions are given for reference.

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
183
253
SIZE A1

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 ) |
|---|---|
| 0.200 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CB 322-09-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

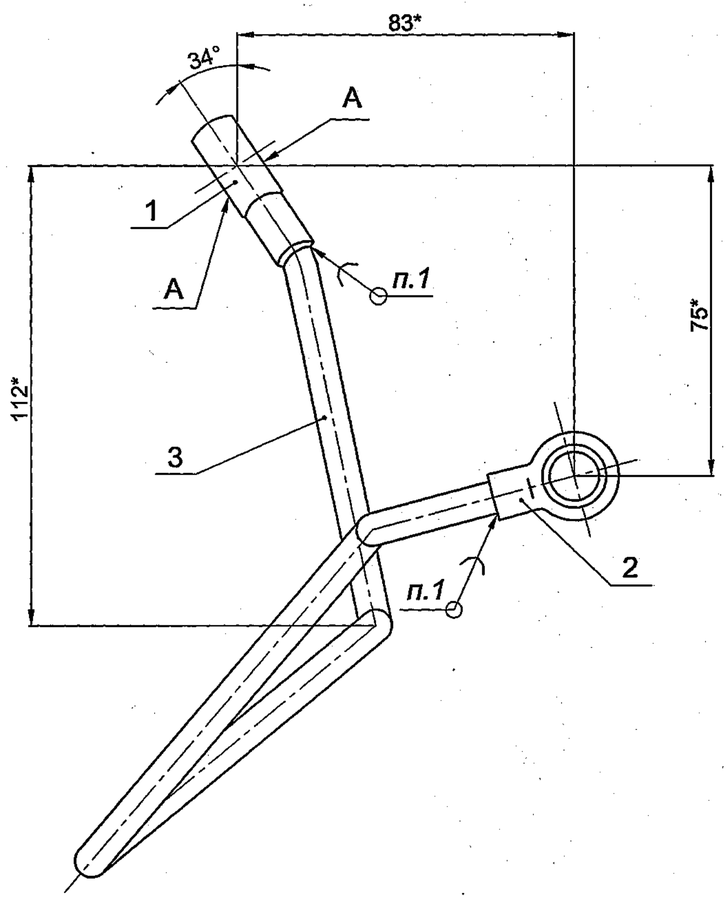
TITLE :- **3 rd RH CYLINDER PIPE**

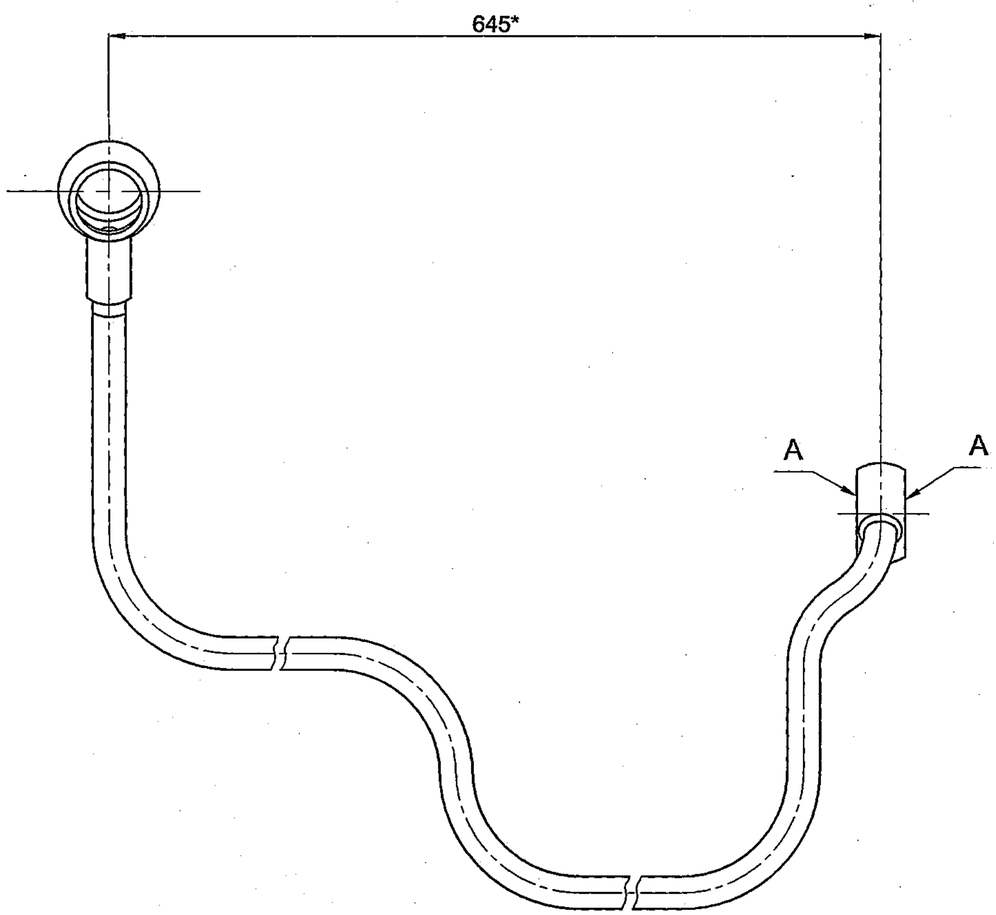
D S CAT NUMBER

DRAWING NUMBER **322-29-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-10-9** | | **4 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-30-9 | | 4 TH RH CYLINDER TUBE | 1 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | |

DRAWING NUMBER
**Cb.322-10-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit Cb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.205 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/2/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- (4A) 4 th RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER **Cb.322-10-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4 164/253

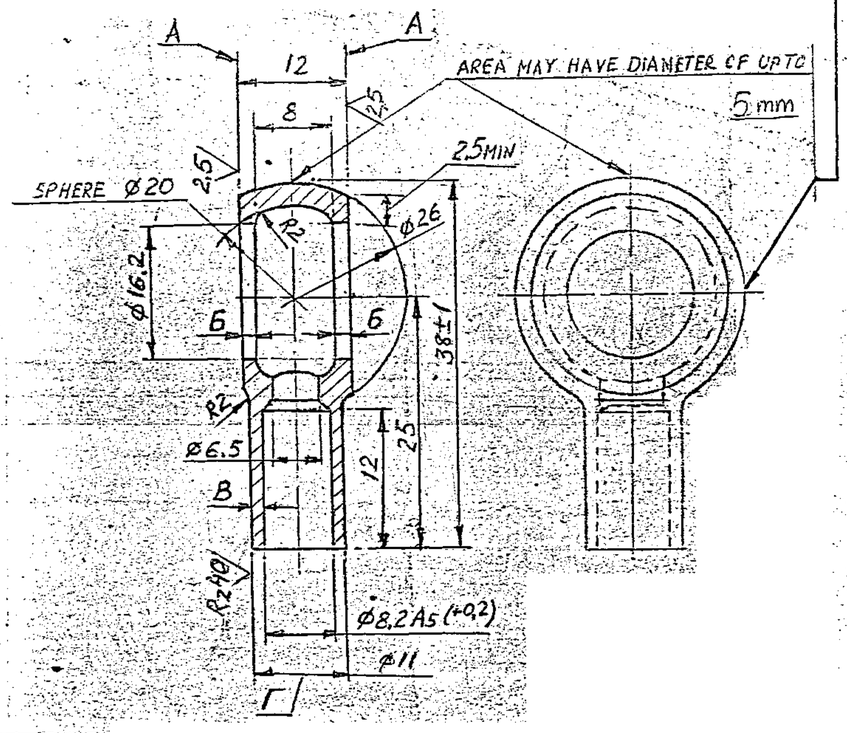
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

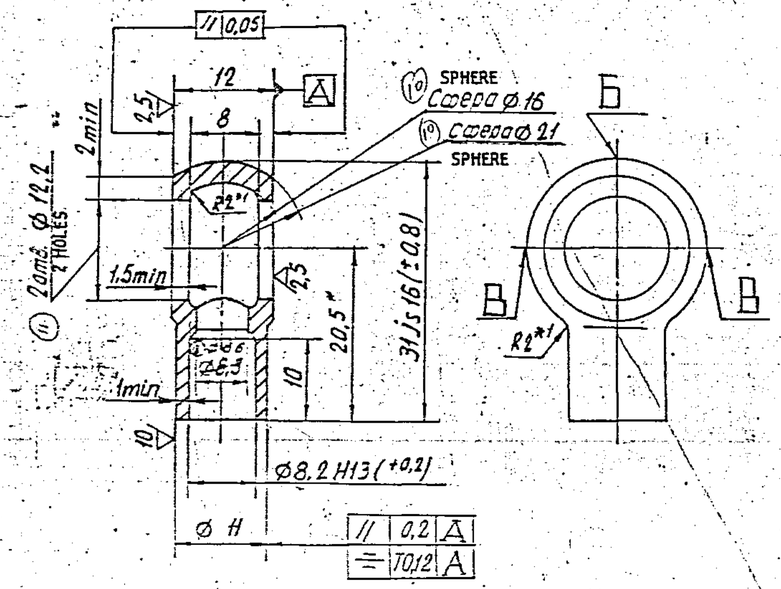
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

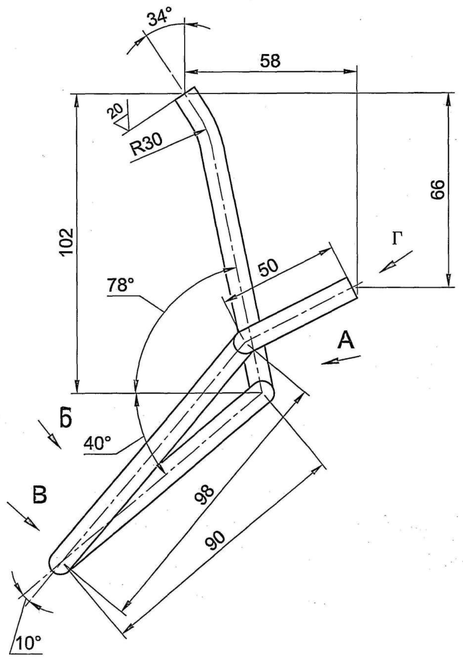
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

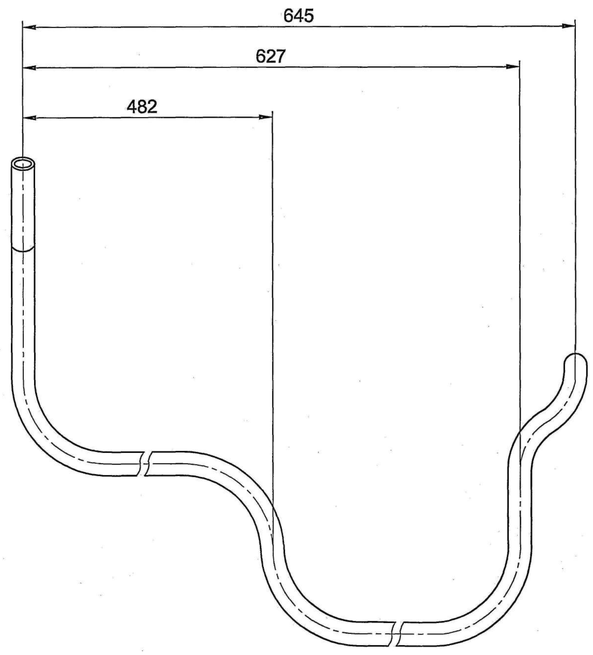
TITLE: SWIVEL ELBOW

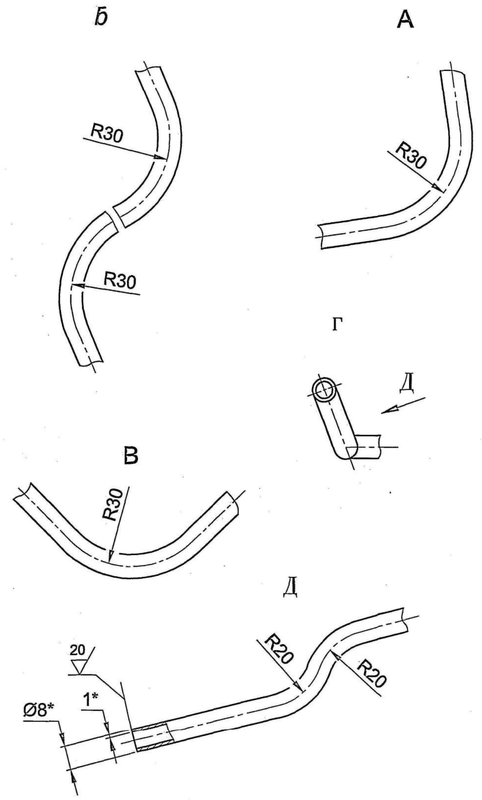
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
322-30-9




1. Unfolded length of pipe should be L ≈900 *mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
184
253

SIZE A1

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 ) |
|---|---|
| 0.160 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 23/1/07 |
| SCALE:- 1 : 1 | |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CБ 322-10-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- 4 th RH CYLINDER PIPE

DRAWING NUMBER 322-30-9

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-11-9** | | **5 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-31-9 | | 5 TH RH CYLINDER TUBE | 1 | |

Cb 322-15-9

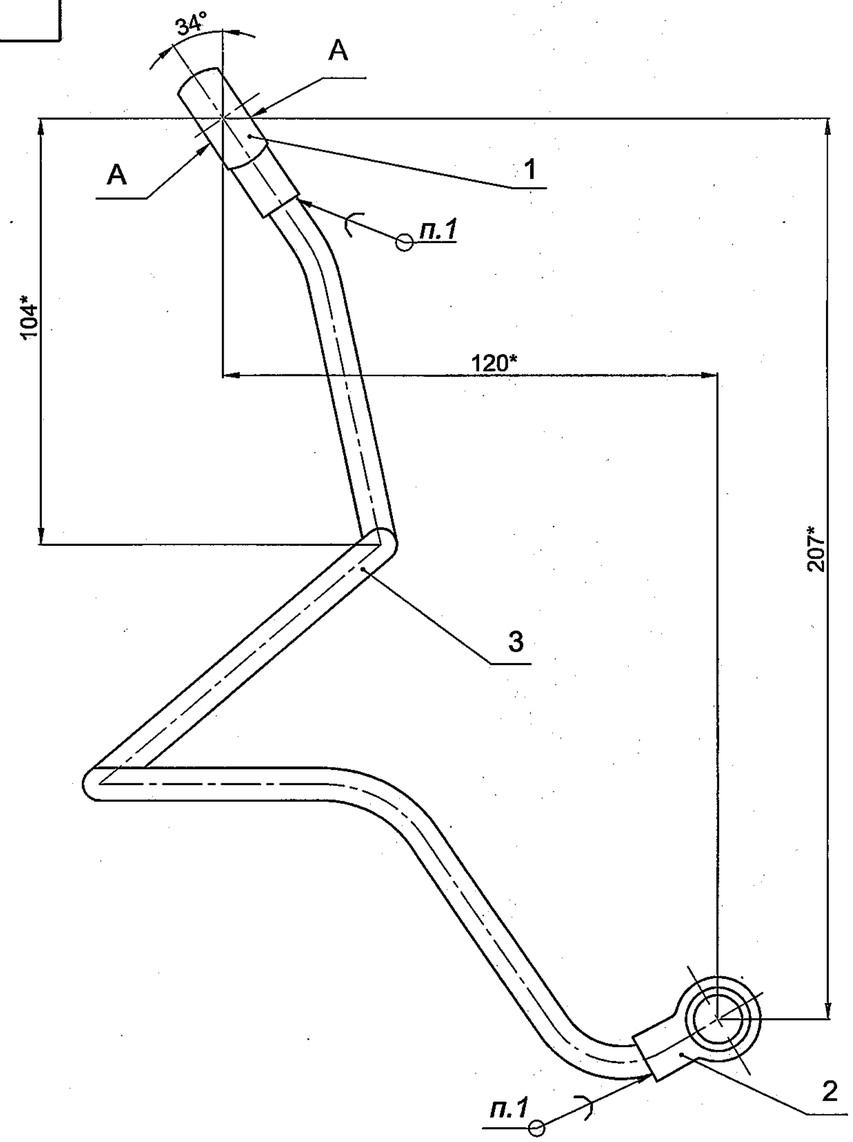
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

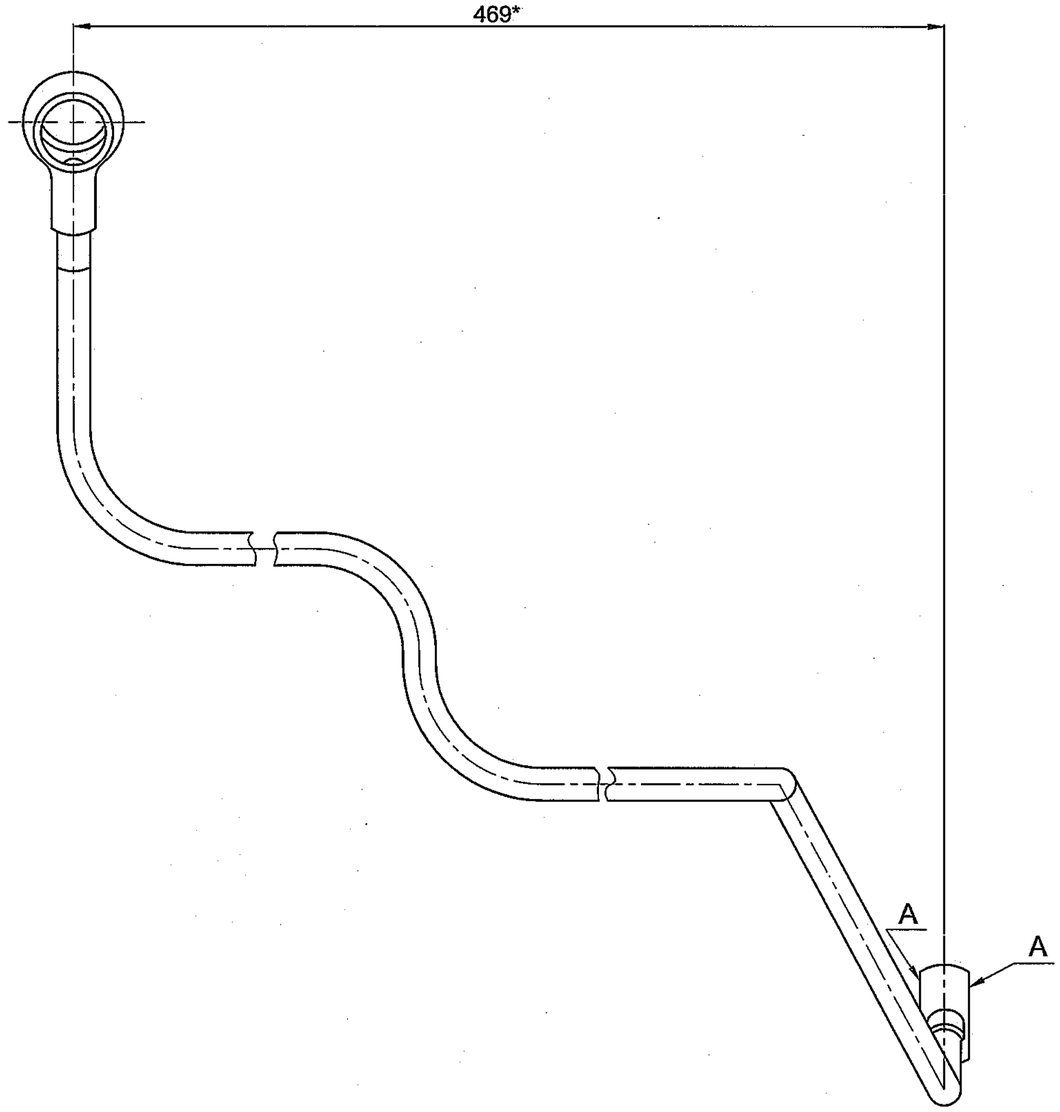
| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | | TITLE : **5 TH RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER |
| | | | ITEM LIST FOR **Cb.322-11-9** |

F-4
165/253

DRAWING NUMBER
**Cb.322-11-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit sb.322-14-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5)MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10% of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.170 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 8/12/67 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- (4A) 5 th RIGHT HAND CYLINDER TUBE ASSY

D S CAT NUMBER

DRAWING NUMBER **Cb.322-11-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
166
253

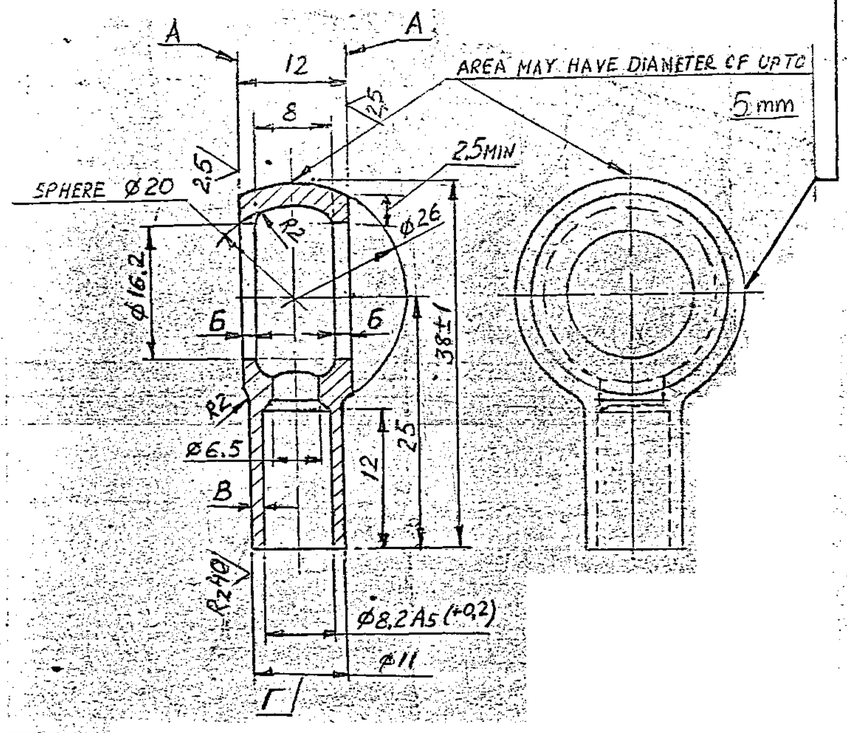
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

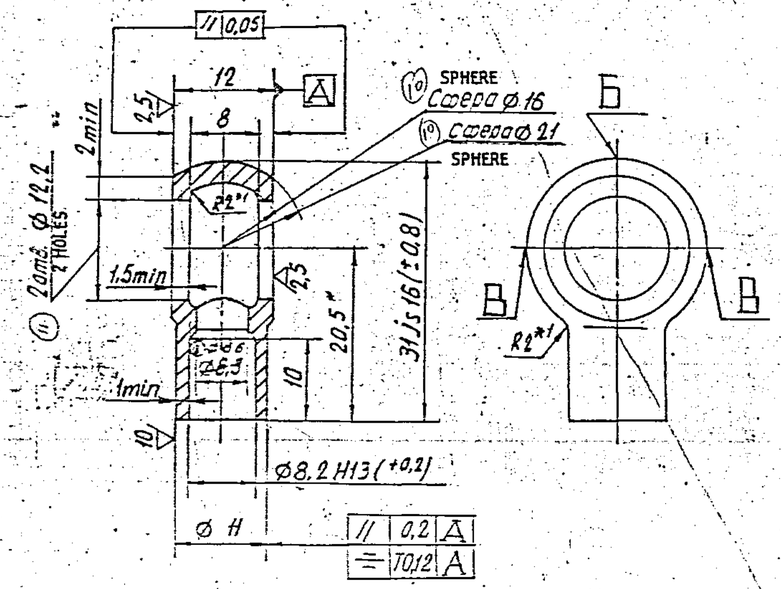
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

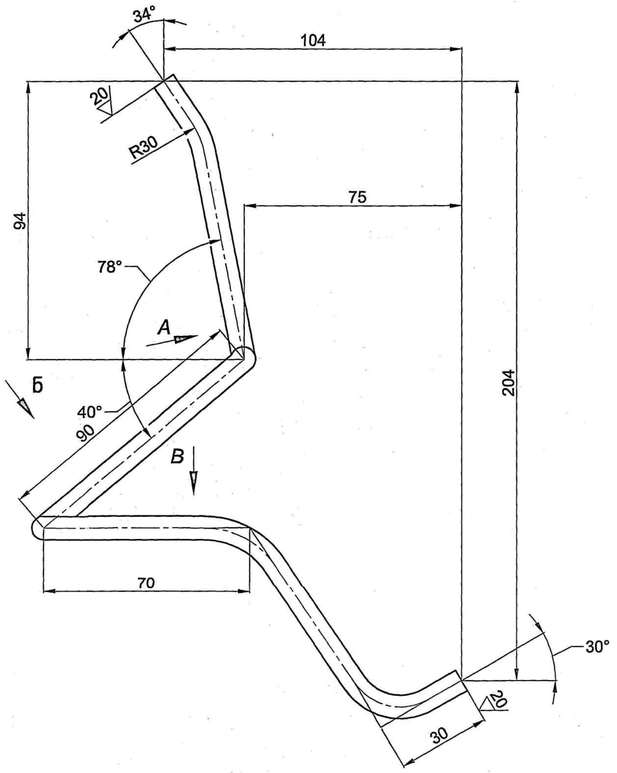
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

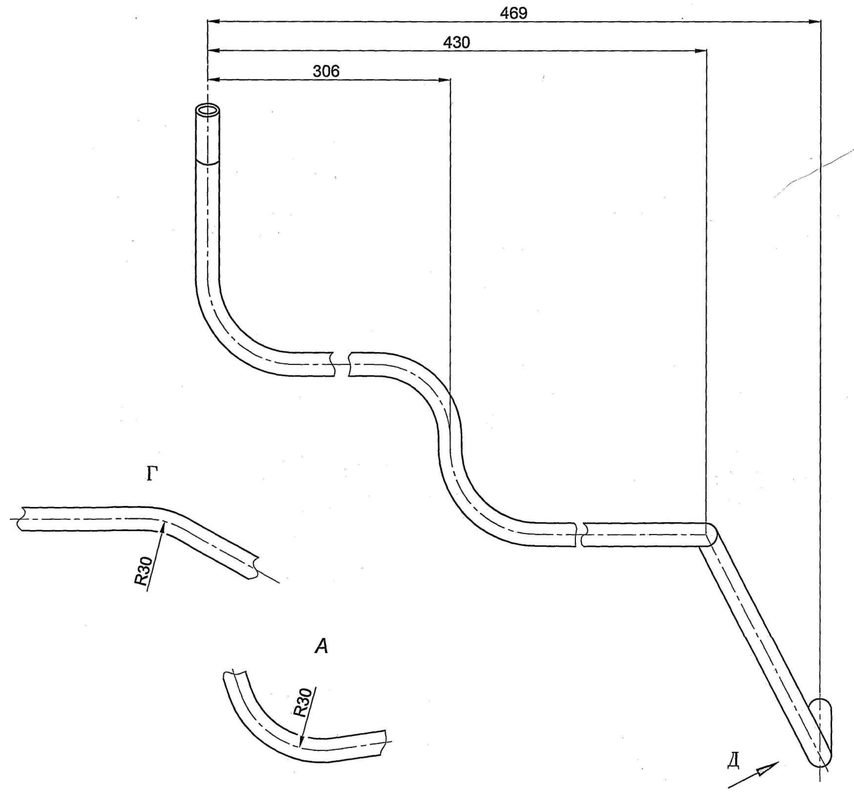
TITLE: SWIVEL ELBOW

DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-31-9**







1. Unfolded length of pipe should be L ≈ *750mm.*
2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*
3. *Bending-tool marks are allowed.*
4. ** Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
185
253

SIZE A1

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 ) |
|---|---|
| 0.125 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| | | |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 14/2 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- СБ 322 -11-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **5th RH CYLINDER PIPE**

D S CAT NUMBER -

DRAWING NUMBER **322-31-9**

| USED ON | ZONE | ITEM NO | DRAWING NUMBER | D S CAT NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | **Cb.322-12-9** | | **6 TH RH CYLINDER** | | |
| | | | **ITEM LIST** | | **TUBE ASSY.** | | |
| | | | | | | | |
| Cb 322-15-9 | | 1 | 322-17 | | SWIVEL ELBOW. | 1 | Tropical make |
| | | 2 | 322-18 | | SWIVEL ELBOW | 1 | Tropical make |
| | | 3 | 322-32-9 | | 6 TH RH CYLINDER TUBE | 1 | |

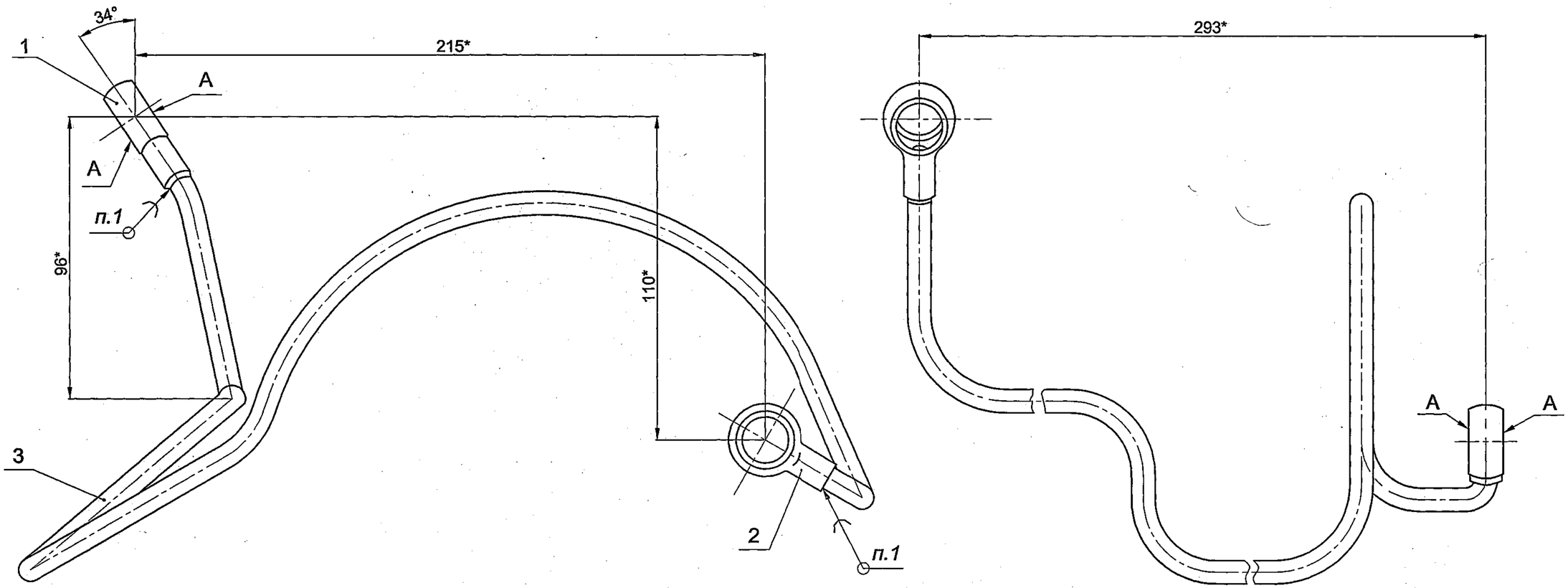
I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE – 3

| ISSUE | DATE | NATURE OF AMENDMENTS | ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRN | | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. | |
| CHD | R Balakrishnan | TITLE : **6 TH RH CYLINDER TUBE ASSY.** | |
| APPD | | | |
| DATE | 28.6.07 | SHT. NO. 1 OF 1 | D S CAT NUMBER / ITEM LIST FOR **Cb.322-12-9** |

F-4
167/253

DRAWING NUMBER
**Cb.322-12-9**




1. Wire *Л63 Gost 12920-67.*

2. *Varnish coating ГФ - 95 as per ИП-628-86.*

3. *On surface "A" sag and overflow of varnish are not allowed, but dressing them with subsequent coating with enamel НЦ-5123-Red-Sinnamen Gost 7462-73 is permitted.*

4. *Check the pipe as per dummy in the assembly unit sb.322-15-9.*

5. *Before coating carryout the test for air tightness with air in water under pressure (0.4±0.1) MPa ((4±1) Kgf/cm $^2$ ). Air - leakage is not allowed.*

6. *After coating carry out the test for airtightness with diesel fuel under pressure (9.5±0.5) MPa ((95±5) Kgf/cm $^2$ ) for a period of minimum 2 minutes. Leakage of fuel is not permitted. Check selectively minimum 10 % of pipes.*

7. ** Dimensions are given 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 ) |
|---|---|
| 0.180 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| 4A | 13.08.08 | D.O.CORRECTION |

| | |
|---|---|
| DRN | |
| CHD | |
| APPD | |
| DATE | 16/12/07 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-

USED ON :- Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE ( HEAVY VEHICLES ) AVADI

TITLE :- 6 th RH CYLINDER TUBE ASSY (4A)

D S CAT NUMBER

DRAWING NUMBER **Cb.322-12-9**

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 4

F-4
168
253

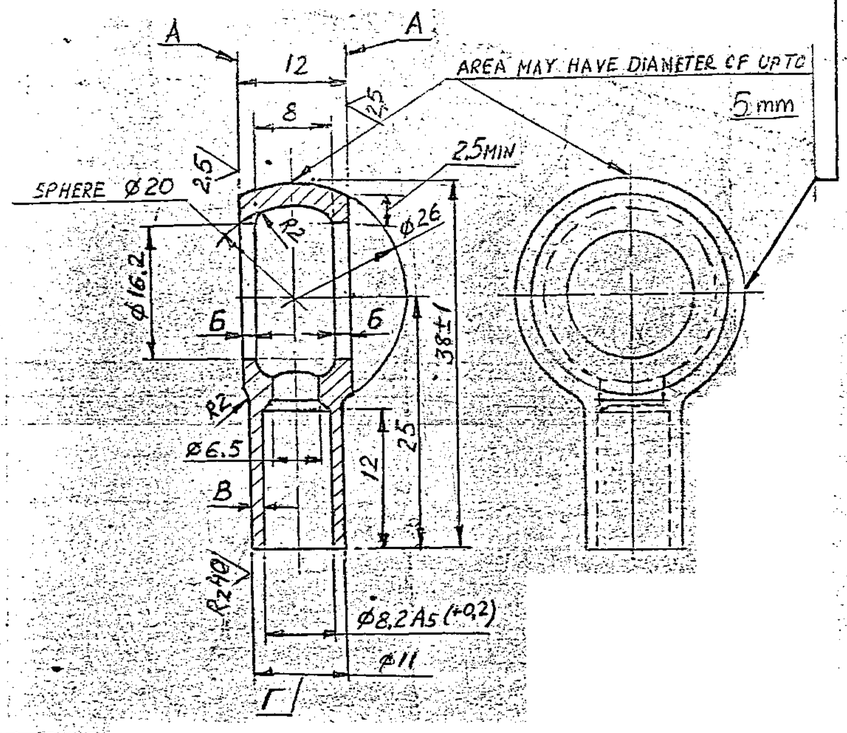
SIZE A2

DRAWING NUMBER
322-17

Rz80 (✓)

ROUGH (▽) CYLINDRICAL SURFACE FROM BOTH SIDES

4mm max, IN WIDTH IS PERMTTED.




1. ALTERNATE MATERIAL IS STEEL 30, 40 GOST 1050-74.
2. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS :
   FOR HOLES - AS PER A7
   FOR SHAFTS - AS PER B7
   FOR OTHERS - AS PER CM7
3. WALL THICKNESS DIFFERENCE B SHOULD NOT EXCEED 0.2mm.
4. TOLERANCE ON PARALLELISM OF PLANES A SHOULD BE 0.05mm.
5. TOTAL TOLERANCE ON ALIGNMENT AND INTERSECTION OF AXIS OF SURFACE Γ WITH RESPECT TO AXIS OF PLANES A SHOULD BE R 0.3mm OVER THE LENGTH OF CYLINDRICAL PORTION.
6. THICKNESS OF WALL 6 MAY BE ATLEAST 1.5mm.
7. USED FOR PARTS, DELIVERED AS SPARE-PARTS IS COATING: ZINC PLATED 6 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
8. USED FOR TROPICAL VERSION IS COATING: CADMIUM-PLATED 9 MICRONS THICK, OILED, WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.
9. INTERNAL SURFACE MAY HAVE NO COATING.
10. MARK AND STAMP FINAL ACCEPTANCE ON THE TAG (PART 540-551) FOR BATCH OF PARTS AND SEAL.

## EXPLANATORY NOTE :-

11. MATERIAL QUOTED : 35 GOST 1050-74.

Alt Matl Quoted : 30 ~ 40 GOST 1050-74.

30 , 35 & 40 = GRADES OF STEEL.

a) CHEMICAL COMPOSITION : -

| GRADE OF STEEL | CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | C | Si | Mn | Cr | P | S | Cu | Ni |
| | | | | MAXIMUM | | | | |
| 30 | 0.27 - 0.35 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 35 | 0.32-0.40 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |
| 40 | 0.37-0.45 | 0.17-0.37 | 0.50-0.80 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

b) MECHANICAL PROPERTIES :-

| GRADE OF STEEL | TENSILE STRENGTH Kgf/mm² ( min ) | YIELD POINT Kgf/mm² ( min ) | ELONGATION % ( min ) | REDUCTION IN AREA % °(min) | IMPACT STRENGTH Kgf.m/cm² ( min ) |
|---|---|---|---|---|---|
| 30 | 50 | 30 | 21 | 50 | 8 |
| 35 | 54 | 32 | 20 | 45 | 7 |
| 40 | 58 | 34 | 19 | 45 | 6 |

* *
CB 322-01-4 TO CB 322-12-4
CB 322-07-4
CB 20-22-01-4
CB 20-22-03-4
CB 20-22-05-5

Ⓐ ALTERNATE MATERIAL: STEEL 080 M40(EN8) TO BS: 970 pt 1-1983 OR 35 C4 TO IS:1570

KVD No:- 66732

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS) |
|---|---|
| 0.027 Kg | |

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

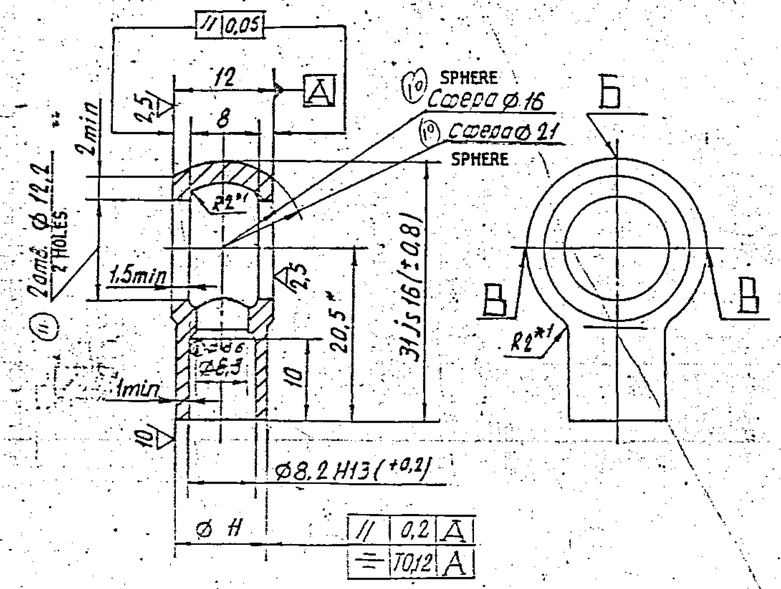
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | Puli |
| APPD | |
| DATE | 22-12-89 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

| | |
|---|---|
| MATERIAL :- 35 GOST 1050-74 | USED ON :- * * SEE ABOVE |
| CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| TITLE: SWIVEL - ELBOW | |
| D S CAT NUMBER | DRAWING NUMBER 322-17 |

SIZE A2

DRAWING NUMBER
322-18




1. Неуказанные предельные отклонения размеров отверстий по H14, валов по h14, остальных - $\pm \frac{IT14}{2}$.
2. На поверхностях В допускаются черноты шириной 4 мм, не более.
3. В месте Б допускается площадка ○ 5мм. не более.
4. Покрытие Ц6.хр по ИЦА-15н с удалением водородной хрупкости для деталей отправляемых в зап. части и для укомплектования объектов по ИВ-40.
5. Покрытие Кд9.хр по ИЦА-10д с удалением водородной хрупкости для деталей в тропическом исполнении. Допускается отсутствие покрытия на внутренних поверхностях.
6. Заменитель материала стали марок 10,20 ГОСТ 1050-74.
7. Клеймить на бирке для партии деталей с пломбированием окончательную приемку.
8. * размер для справок.
9. *1 размеры обеспечить инструментом

1) UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS OF HOLES AS PER H14, SHAFTS AS PER h14, OTHER DIMENSIONS - $\pm \frac{IT14}{2}$.
2) BLOCK SPOTS NOT EXCEEDING 4mm WIDE ARE ALLOWED ON SURFACES B.
3) AREA ⌀ 5mm MAXIMUM IS ALLOWED ON PLACE Б.
4) COATING : Zn 6, CHROMATIZING AS PER ~~УНЦ.П-154~~ Ⓐ УП-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENT TO BE DISPATCHED AS SPARES AND FOR COMPONENTSMAKING A COMPLETE SET OF ARTICLES AS PER ИВ-40.
5) COATING : Cd 9, CHROMATIZING AS PER ИЦД-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT FOR COMPONENTS HAVING TROPICALIZED CONSTRUCTION INTERNAL SURFACES MAY HAVE NO COATING.
6) ALTERNATE MATERIAL : STEEL GRADES 10, 20 GOST 1050-74.
7) FINAL ACCEPTANCE STAMP SHOULD BE MARKED ON A TAG FOR A BATCH OF COMPONENT AND SHOULD BE SEALED.
8) * DIMENSION FOR REFERENCE.
9) *1 DIMENSIONS TO BE ENSURED WITH TOOL

Ⓑ ALTERNATE MATERIAL: STEEL 080 M40 (EN 8) TO BS:970 - Pt.I-1983 OR 35 C4 TO IS:1570

| ** |
|---|
| СБ 322-01-4 СБ 322-07-4 |
| СБ 322-02-4 СБ 322-08-4 |
| СБ 322-03-4 СБ 322-09-4 СБ 20-35-12 |
| СБ 322-05-4 СБ 322-10-4 сб3335-00-30сб |
| СБ 322-06-4 СБ 322-11-4 СБ 322-12-4 |

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

| | | | | |
|---|---|---|---|---|
| 5 | — | ВКВЗ-265 | 2 Cu | M20A |
| 7 | — | ВКВЗ-5114 | 2 Cu | M20A |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,018 Kg. | ( 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 |
|---|---|---|
| B | 11-7-09 | 3rd ALTERATION COMM. MINUTES POINT 6. DATE 27-2-09 |
| A | 1.2.97 | AUTHY NOT N. No. BK 86-41 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- | 2:1 |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |
| D S CAT NUMBER | |

MATERIAL :- STEEL 35, GOST 1050-74

USED ON :- SEE ABOVE **

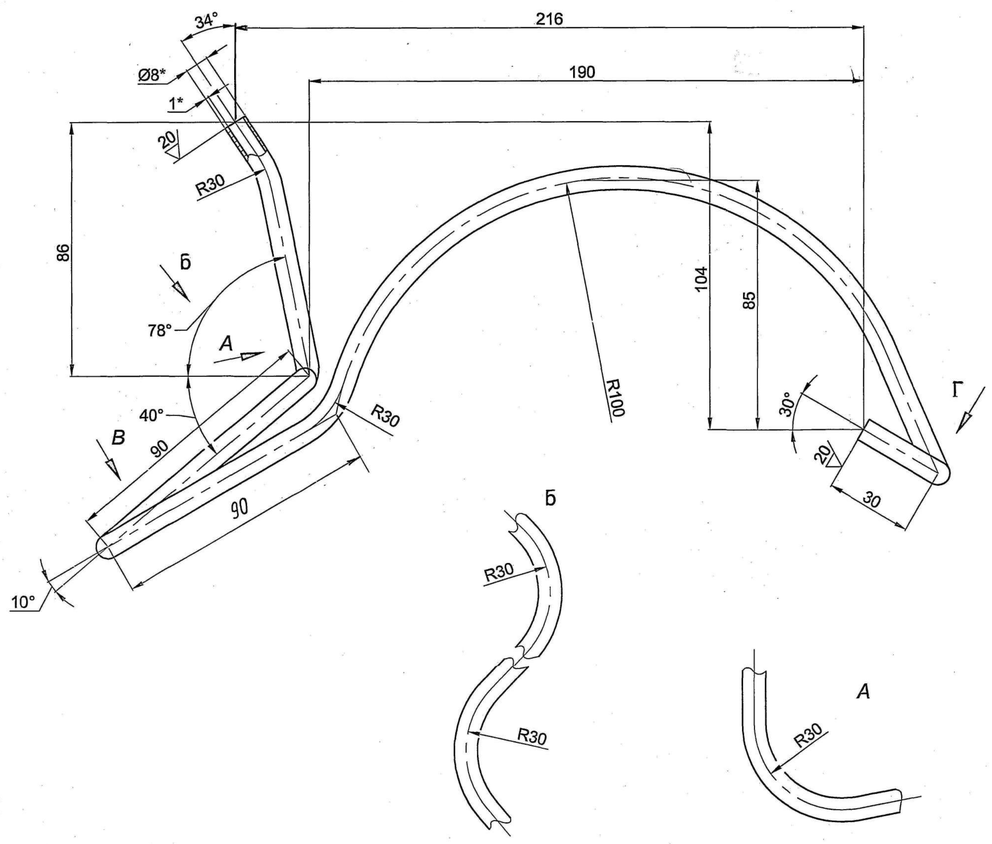
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) A V A D I

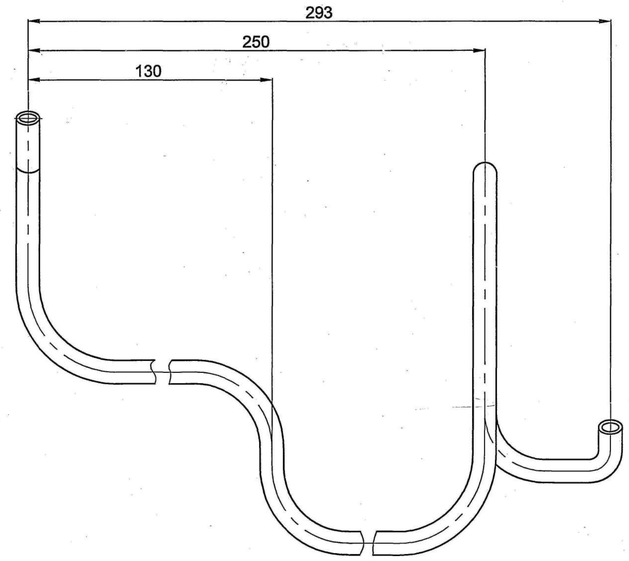
TITLE: SWIVEL ELBOW

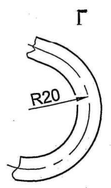
DRAWING NUMBER 322-18

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE NO. 8 (DK-83-265)

DRAWING NUMBER
**322-32-9**




1. Unfolded length of pipe should be L ≈ *850mm.*

2. *Tolerance of ovality for pipe in bending areas should be 0.8mm (semi difference of diameters).*

3. *Bending-tool marks are allowed.*

4. * *Dimensions are given for reference.*

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 1

F-4
186
263

SIZE A1

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 ) |
|---|---|
| 0.135 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|

| | |
|---|---|
| DRN | |
| CHD | V Balakrishnan |
| APPD | |
| DATE | 27/1/17 |
| SCALE:- | 1 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- PIPE 8x1-20A TY 14-3-480-76

USED ON :- CB 322-12-9

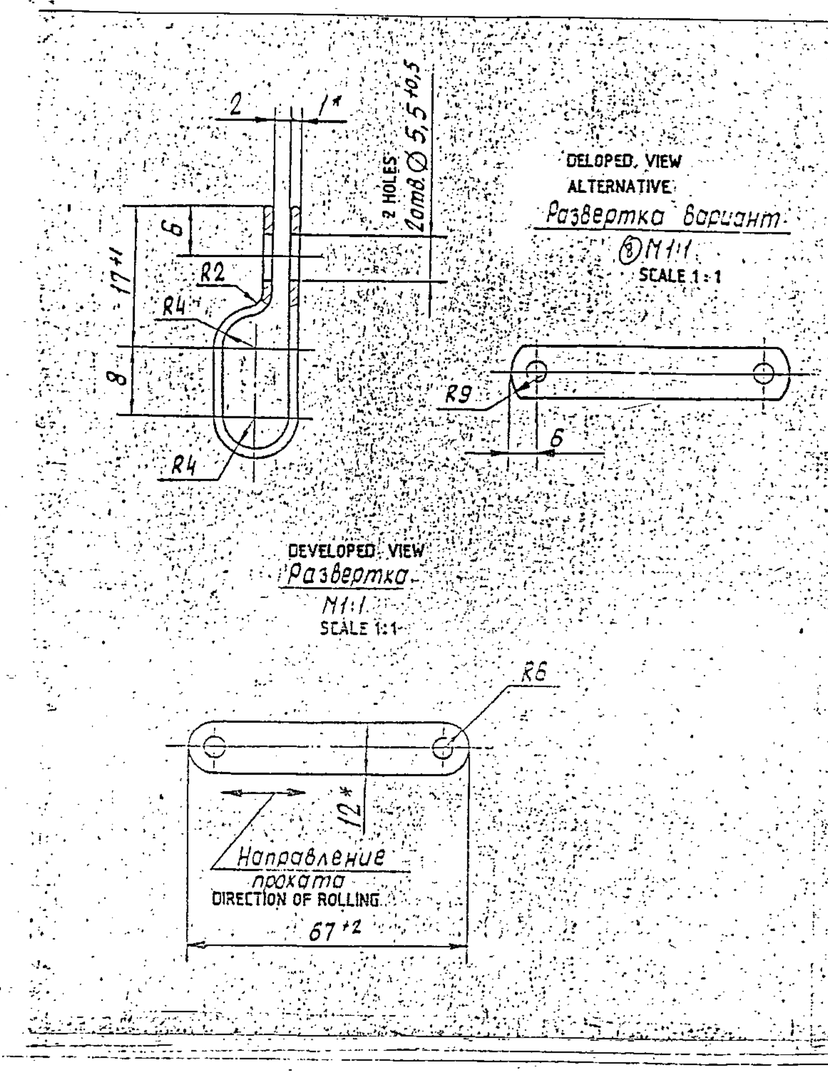
CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE :- **6th RH CYLINDER PIPE**

D S CAT NUMBER

DRAWING NUMBER **322-32-9**

DRAWING NUMBER
322-65




1. Заменитель материала сталь марок 08; 08 кп; 10 кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12... 24 хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9. хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08; 08КП; 10КП, GOST 1050-74, MAY BE MADE FROM SHEET GOST 19904-74.

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.

3) COATING : Zn 12..... 24 CHROMATIZING, AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ-95 AS PER ИЛ-09-73.

4) IN TROPICALIZED CONSTRUCTION, COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-109-73.

5) * DIMENSIONS FOR REFERANCE.

(A) EQUIVALENT MATERIAL
Gr. DD IS: 573-1994

DRG. REDRAWN BASED ON NEW ISSUE
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 83-114. )

KVD 66762

A-7

SIZE A2

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | 3АМ | 83-114 | | N 10326 |

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

EST. WT. 0,0052 Kg.

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

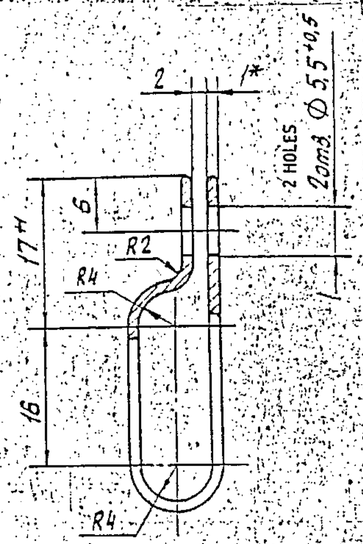
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 6th Alt. Comm. Mtg. Minutes Pt. No. 1 Dt. 26.10.09 |

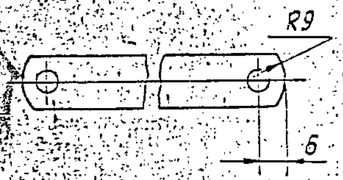
| | | | |
|---|---|---|---|
| DRN | | MATERIAL : STRIP-08ПС-Н-2-1х12 GOST 503-81 | USED ON : СБ 322-15-4 |
| CHD | | | |
| TC | | | |
| APPD | | | |
| DATE | 29-3-82 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI | |
| SCALE : 2:1 | | | |
| DIMENSIONS IN mm | | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | | TITLE : CLIP OF 2 PIPES | |
| ALL THREADS TO CONFORM TO | | C S CAT. NUMBER | DRAWING NUMBER : 322-65 |

2nd copy - Duplicate

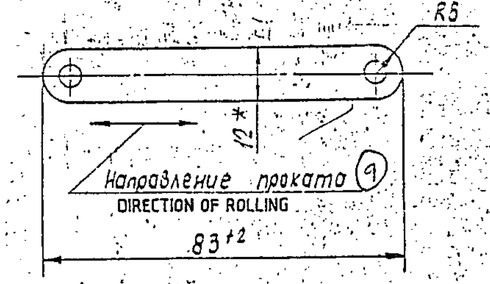
DRAWING NUMBER
322-66




DEVELOPED VIEW ALTERNATIVE
(7) Развертка вариант
H11
SCALE 1 : 1




DEVELOPED VIEW -
(8) Развертка
H11
SCALE 1 : 1




1. Заменитель материала сталь марок 08, 08кп, 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие К39.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры - для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП 10КПGOST 1050–74 MAY BE MANUFACTURED FROM SHEET GOST 19904–74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050–16 .

3) COATING : Zn 12 . . . 24 CHROMATIZING AS PER ИЛ – 483–82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ–95 , AS PER ИЛ –09–73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ –104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR CLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ИЛ–09–73 .

5) * DIMENSIONS FOR REFERENCE .

(A) EQUIVALENT MATERIAL
Gr.DD IS : 513-1994

| | | | |
|---|---|---|---|
| 8 | ЧЛН. | Яз-ТТУ | ЧЛ.ЛИСТ |
| ИЗМ. | ЛИСТ | N ДОКУМ. | ПОДП. |

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

| | |
|---|---|
| EST. WT. 0,0065 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. | |

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| PROD | |
| APPD | |
| DATE | 29 – 3 – 88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08ПС-М-2-1х12 GOST 503-81

USED ON :- СБ 20-35-00-5 СБ 322-14-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI

TITLE
CLIP OF 3 PIPES

D S CAT NUMBER

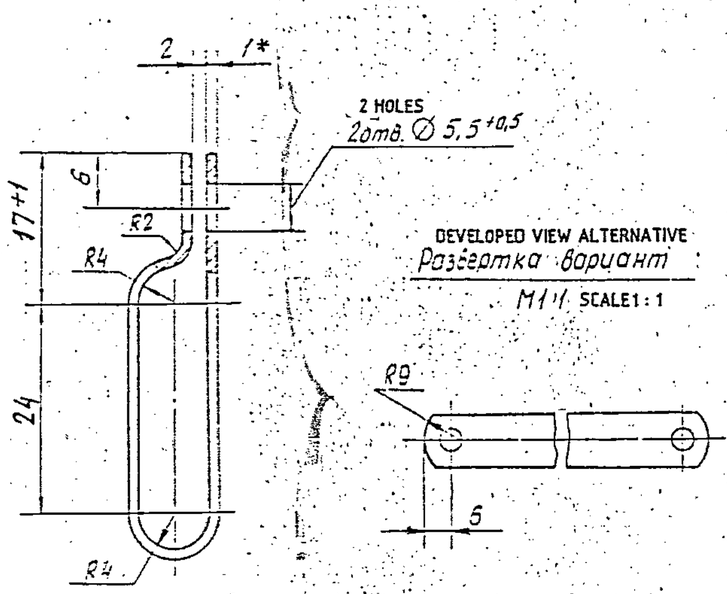
DRAWING NUMBER
322-66

A-7

SIZE: A2

DRG. REDRAWN BASED ON NEW ISSUE.
DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8 ( 03-11 )

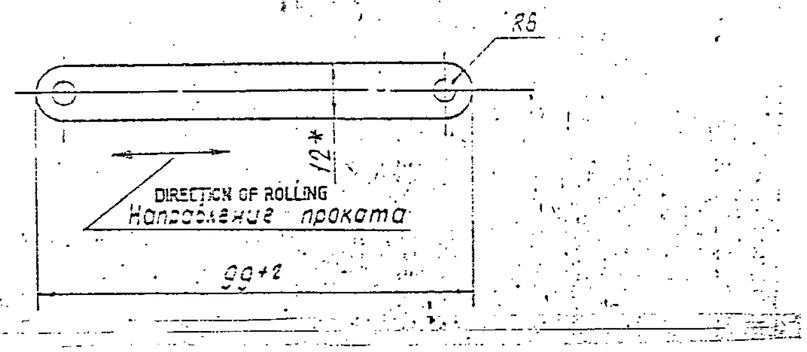
DRAWING NUMBER
322-67




DEVELOPED VIEW ALTERNATIVE
Развертка вариант
M1:1 SCALE 1:1




DEVELOPED VIEW
Развертка
M1:1 SCALE 1:1




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.

2. Требования, предъявляемые к штамповке, по нормали 82050-16.

3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.

5.* Размеры для справок.

1) ALTERNATE MATERIAL : STEEL, GRADES 08, 08КП, 10КП GOST 1050-74 MAY BE MANUFACTURED FROM SHEET GOST 19904-74 .

2) REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16 .

3) COATING : Zn, 12 . . . 24, CHROMATIZING AS PER ИЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ-09-73 .

4) IN TROPICALIZED CONSTRUCTION COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ИЦЛ-104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ-95 IN ACCORDANCE WITH ИЛ-09-73 .

5) * DIMENSIONS FOR REFERENCE .

Ⓐ EQUIVALENT MATERIAL
Gr. DD IS:513-1994

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

| Изм | Лист | N докум. | Подп. | Дата |
|---|---|---|---|---|
| 8 | чад | 83-114 | | |

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0,0075 Kg. | ( 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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-95 |
| SCALE :- 2:1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :-
STRIP 08ПС-М-2-1×12
GOST 503-81 .

USED ON :-
СБ 322-14-4
СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 4 PIPES.

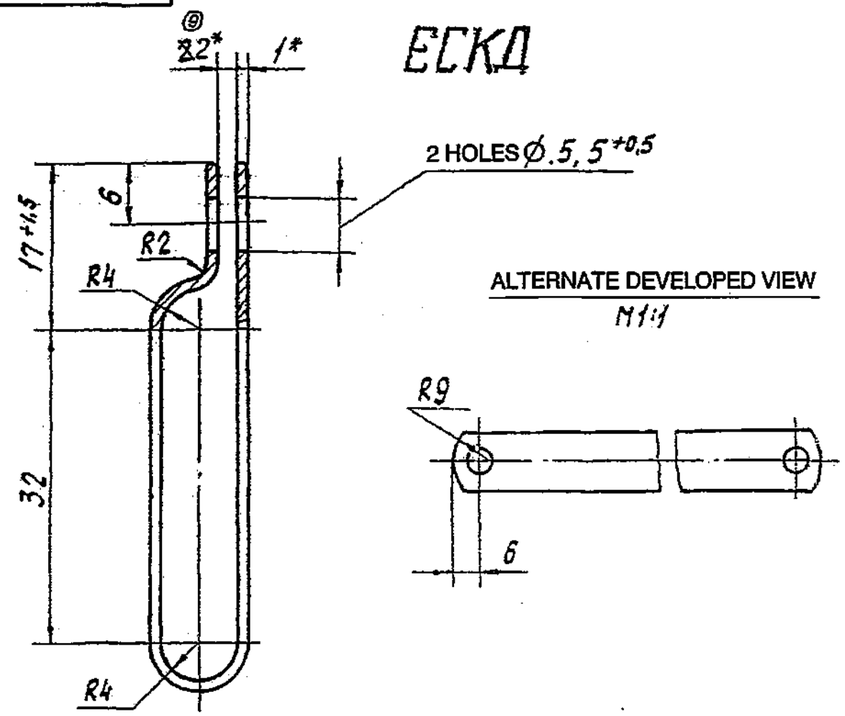
D S CAT NUMBER

DRAWING NUMBER
322-67

ORG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No. 8.1 83-114
DRAWN BASED ON NEW ISSUE

DRAWING NUMBER
322-68

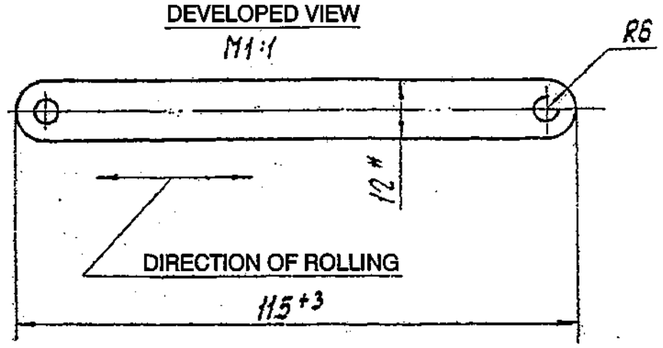
SHEET No. 1 OF 1




DEVELOPED VIEW
M1:1




ALTERNATE DEVELOPED VIEW
M1:1




ECKД

1. ALTERNATE MATERIAL : STEEL GRADES 08 КП, 10 КП, 15 КП TO GOST 1050-74.
2. REQUIREMENTS FOR STAMPING AS PER STANDARD 82050-16.
3. COATING : Zn 9, CHROMATIZING IN ACCORDANCE WITH ЦЛ-483-82 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT. OR ЛаКГФ-95 AS PER ЦЛ628-86
4. IN TROPICALIZED MAKE THE COATING IS CADMIUM 9 MICRONS AS PER U 569-84 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT OR ЛаКГФ 95 AS PER ЦЛ628-86
5. * DIMENSION FOR REFERENCE.

Ⓐ EQUIVALENT MATERIAL Gr.DD
IS:513-1994

P. JANARDHANAN
Dt. 15 Nov'10 JTO (D)

DRG. REINDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

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) |
|---|---|
| 0.01 | |

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

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 13.11.10 | 4th Alt. Comm. Mtg. Minutes Point No.1 Dated 26.10.09 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | Nov 2010 |
| SCALE:- | 2 : 1 |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO IS : 4218,PART-4. | |

MATERIAL :- STRIP
08пс-M-2-1x12 GOST 503-81

USED ON :- Cb 322-14-9
Cb 322-15-9

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
# CLIP FOR 5 PIPES

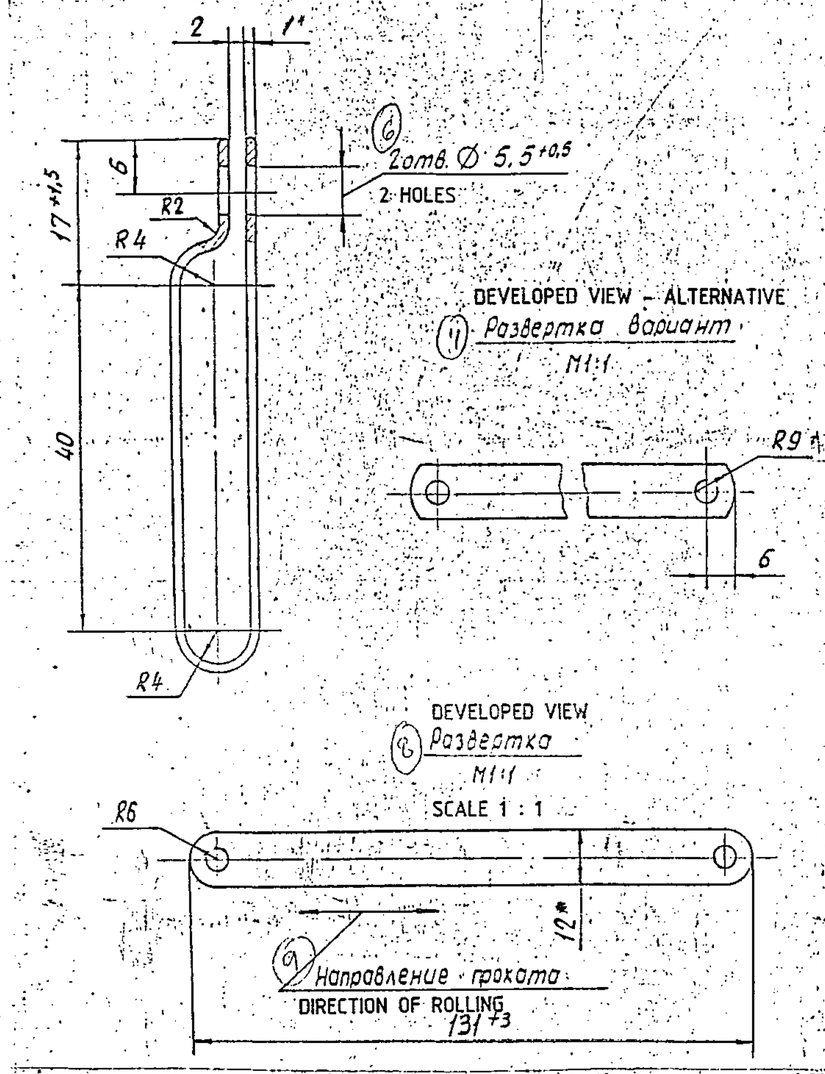
D S CAT NUMBER

DRAWING NUMBER
322-68

F -

SIZE A3

DRAWING NUMBER
322-69




1. Заменитель материала сталь марок 08; 08кп; 10кп ГОСТ 1050-74. Допускается изготовлять из листа ГОСТ 19904-74.
2. Требования, предъявляемые к штамповке, по нормали 82050-16.
3. Покрытие Ц12...24.хр по ИЛ-483-82 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
4. В тропическом исполнении покрытие Кд 9.хр по ИЦЛ-104 с удалением водородной хрупкости или лак ГФ-95 по ИЛ-09-73.
5.* Размеры для справок.

1. ALTERNATE MATERIAL : STEEL, GRADES 08, 08Kn 10Kn GOST 1050-74. MAY BE MANUFACTURED FROM SHEET GOST 19904-74.
2. REQUIREMENTS FOR STAMPING IN ACCORDANCE WITH STANDARD 82050-16.
3. COATING : Zn 12 .... 24, CHROMATIZING AS PER ИЛ - 483-82 WITH ELIMINATION OF HYDROGEN EMBITTLEMENT OR VARNISH ГФ - 95 AS PER ИЛ - 09-73.
4. IN TROPICALIZED CONSTRUCTION:
   COATING : Cd 9, CHROMATIZING IN ACCORDANCE WITH ЦИЛ 104 WITH ELIMINATION OF HYDROGEN EMBRITTLEMENT OR GLYPTAL VARNISH ГФ 95 IN ACCORDANCE WITH ЦЛ - 09-73.
5. *DIMENSIONS FOR REFERENCE

(A) EQUIVALENT MATERIAL
GrDD IS:513-1994

ORG. REDRAWN BASED ON NEW ISSUE
ORG INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE No: 8 (BK 03-

| | | | | | |
|---|---|---|---|---|---|
| Разраб. | Ган | 83-714 | Утверд. | Гейн | |
| Н.контр. | Шкет | Чобкум. | Подп. | Дата | |

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

| EST. WT. | TO BE STAMPED OR MARKED WHERE INDICATED THUS ≑ ( LETTERS) |
|---|---|
| 0.0115 Kg | |

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 |
|---|---|---|
| A | 10.03.10 | 4th Alt.Comm.Mt.Minutes Pt.No.1 Dt.26.10.09 |

| | |
|---|---|
| DRN | |
| CHD | |
| TCD | |
| APPD | |
| DATE | 29-3-88 |
| SCALE :- 2 : 1 | |
| DIMENSIONS IN mm. | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- STRIP 08пс - М - 2 - 1х12 GOST 503-81

USED ON :- СБ 322-14-4, СБ 322-15-4

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
A V A D I

TITLE
CLIP OF 6 PIPES

D S CAT NUMBER

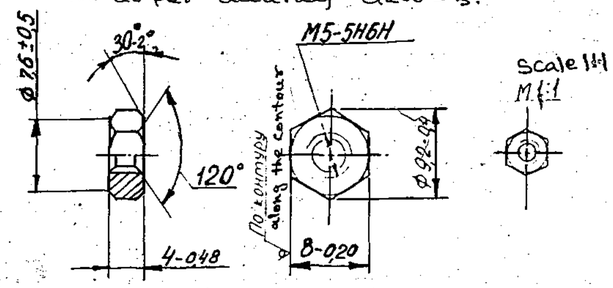
DRAWING NUMBER
322-69

A-7
SIZE A2

DRAWING NUMBER
351 13

Rz 40 (V)

Rolled stock of group B class 4 GOST 1051-73 may be used. To ensure high quality of coating, it is allowed to eliminate surface defects of rolled stock with decrease of dimension as per accuracy class - 5.




1. The Component may be manufactured from Steel 45 GOST 1050-74.
2. Chamfer 120° should be made up to the major diameter of thread.
3. Shift of hole axis up to 0.25 mm. is permitted.
4. The thread may be checked before coating.
6. Coating :- Cd 9, Chromatizing as per ГОСТ 9.104 with elimination of Hydrogen embrittlement.
7. The rest of the technical requirements as Per standard 82052-00.
8. Alternate material :- Steel, grades 40 and 50 GOST 1050-74.

## EXPLANATORY NOTE

9. i) REFERENCE MATERIAL QUOTED:
GAUGED HEXAGONAL STEEL BAR CLASS OF ACCURACY 4, 8.0(-0.100)mm A/F TO GOST 8560-78 FROM HIGH GRADE SIZED STEEL SURFACE QUALITY 'B' TO GOST 1051-73 AND MANUFACTURED IN ACCORDANCE WITH QUALITY CARBON STRUCTURAL STEEL GRADE 45 TO GOST 1050-74

(A) ii) REFERENCE NOTE '8' ON ALTERNATE MATERIAL : QUALITY CARBON STRUCTURAL STEEL GRADES 40 AND 50 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 | |
| | | | | MAXIMUM | | | |
| 45 | 0,42-0,50 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | REF MATL |
| 40 | 0.37-0,45 | 0,17-0,37 | 0,50-0,80 | 0,25 | 0,040 | 0,035 | ALT MATL |
| 50 | 0,47-0,55 | 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 : AS PER GOST 1050-74

| GRADE OF STEEL | ULTIMATE TENSILE STRENGTH Kgf/mm² | YIELD POINT Kgf/mm² | ELONGATION % | REDUCTION IN AREA % | IMPACT STRENGTH Kgfm/cm² | HARDNESS B H N MAX | REMARKS |
|---|---|---|---|---|---|---|---|
| 45 | 61 | 36 | 16 | 40 | 5 | 229 | REF MATL |
| 40 | 58 | 34 | 19 | 45 | 6 | 217 | ALT MATL |
| 50 | 64 | 38 | 14 | 40 | 4 | 241 | ALT MATL |

(A) Material: STEEL 709M40 (EN-19) TO BS-970 Pt-1-1983

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

| EST. MASS | TO BE STAMPED OR MARKED WHERE INDICATED THUS # |
|---|---|
| 0.0012 Kg | ( 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 |
|---|---|---|
| A | 18.5.09 | Authy: Third Alt. Comm. Minutes Point: 5 Dated 27-02-2009. |

DRN
CHD
TCD
APPD
DATE
SCALE - 2 : 1
DIMENSIONS IN mm.
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED.
ALL THREADS CONFORM TO

MATERIAL: ~~HEXAGON BAR 8.0 GOST 8560-78 45-5 GOST 1051-73~~ (A)

USED ON:- ~~CG 80435 00 00 5~~ CG 3335 00 24 3

CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI

TITLE:- NUT M5

D S CAT NUMBER

DRAWING NUMBER 351 13

A-11

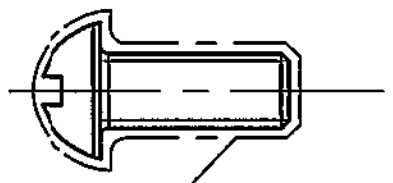
FORMAT A-2

DRAWING INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 7

F-4
226
253

4 | 3 | 2 | 1

DRAWING NUMBER
356-22-2



Coating : Zinc-*6 microns, chromium-1micron* as per ИЛ-749-88 by removing hydrogen embrittlement.

1. In tropical construction, plating cadmium-9microns, chromium-1 micron as per *ИЛ-569-84 with removal of hydrogen embrittlement.*

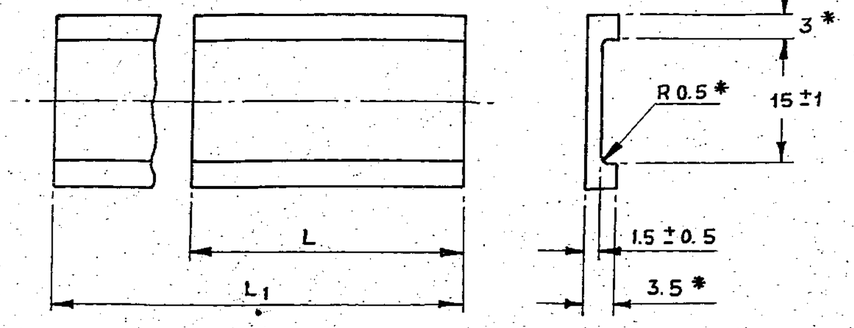
2. *Blank should match with requirement Gost 1759.0-87 for class of accuracy B.*

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

| | |
|---|---|
| EST. WT.(Kg) 0.003 | 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 :- *Blank* *Screw* M5-6gx12.58 GOST 17473-80 | USED ON :- СБ 322-14-9 СБ 322-15-9 СБ 323-00-10 СБ 3320-00-43 |
| ISSUE DATE NATURE OF AMENDMENTS | |
| DRN SCALE :- 2 : 1 | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI |
| CHD DIMENSIONS IN mm | |
| APPD TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS : 2102 - 69 | TITLE :- SCREW M5x12 |
| DATE 26/11/07 ALL THREADS TO CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 356-22-2 |

SIZE A4

DRAWING NUMBER
3335-38-3 TO
3335-38-6




| PART No. | L MM | MASS Kg. | USED ON | KVD No. |
|---|---|---|---|---|
| 3335-38-3 | 26±1 | 0.002 | | |
| 3335-38-4 | 31±2 | 0.0024 | C6 3335-00-~~24~~30 | 78315 |
| 3335-38-5 | 42±2 | 0.0032 | C6 3335-00-~~24~~30 | 78435 |
| 3335-38-6 | 55±0.2 | 0.0042 | | |

*C620-27-00-4

1. DIMENSIONS ARE TO BE ENSURED WITH TOOL.
2. LENGTH OF DELIVERED BAND $L_1$ SHOULD NOT BE LESS THAN 1000 mm.
3. MARK "3335-38-3" SHOULD BE PUT ON TAG OF COMPONENT TO BE DELIVERED.
4. TO BE MADE AS PER TT III H 100 GOST 15152-69.
5. THE REST OF THE REQUIREMENTS AS PER TY 005 216-75.

3335-38-3

## EXPLANATORY NOTE :-

6. REFERENCE MATERIAL QUOTED :
UNVULCANISED OIL AND PETROL RESISTANT RUBBER CODE OF CLASSIFIER 25-1231, RUBBER GRADE HO-68-1 TO TY 005-216-75.

a. MECHANICAL PARAMETERS :

i. RUPTURE STRENGTH Kgf/cm$^2$ _____ 90 Min
ii. ELONGATION OF RUPTURE % _____ 250 Min
iii. RESIDUAL ELONGATION AFTER RUPTURE % ___ 12 Max
iv. HARDNESS No IP TO TM P DEVICE ARBITORY ____ 55-70

7. LIKELY EQUIVALENT GRADE / SPECIFICATION FOR NITRILE CHLOROPRENE BASE TO BA 60 BS 2751-82 AND C 60 BS 2752-82.

Ⓐ ALT MATL.: RUBBER GRADE BNC TO SPECN. CQA(HV)/NBR+CR

EXPLANATORY ADDED ON 4-6-92

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

| EST. WT. | 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.

| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| A | 27.05.08 | Lr. No. TC/GEN/IND-III Dt:. 02.04.08 |

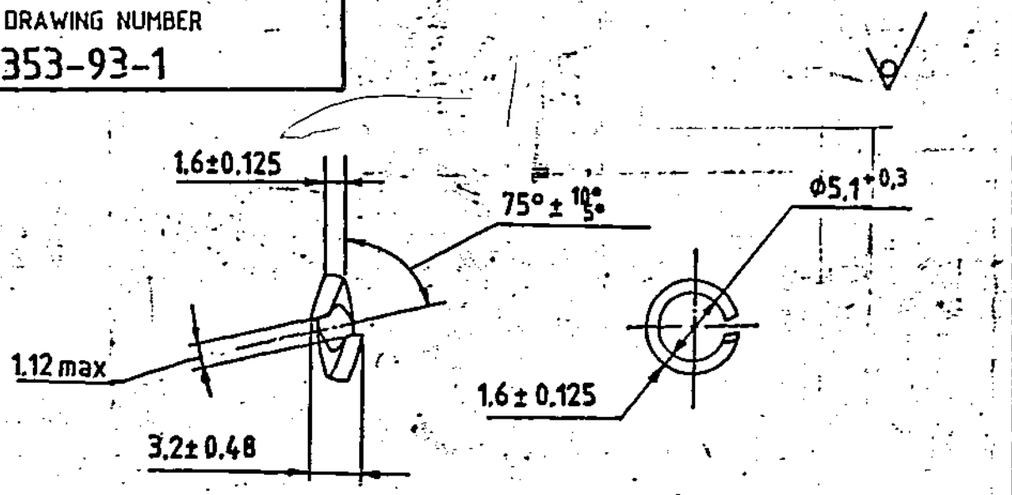
DRN —
CHD
TCD
APPD
DATE 8-7-86
SCALE - 2:1
DIMENSIONS IN mm
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS 2102-69
ALL THREADS TO CONFORM TO

MATERIAL :- RUBBER HO-68-1 TY 005 216-75
USED ON —
CONTROLLERATE OF QUALITY ASSURANCE. (HEAVY VEHICLES) AVADI
TITLE : GASKET
D S CAT NUMBER
DRAWING NUMBER 3335-38-3 TO 3335-38-6

A-9
SIZE A2

KVD.No. 78696

DRAWING NUMBER
353-93-1




1. IN TROPICAL MANUFACTURE, COATING Cd 9 Cr AS PER ШУЛ - 104 WITH REMOVAL OF HYDROGEN EMBRITTLEMENT.

2. WASHER 5Т65Г 09 GOST 6402-70 MAY BE USED, IN VISUAL AND TROPHICAL MANUFACTURE.

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

| | | | |
|---|---|---|---|
| | | EST. WT. 1000 Pcs 0,424 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. |
| A | 16.8.10 | 4th Alt.Comm.Meeting Minutes Point No.12 Dt: 26-10-09 | MATERIAL:- 5T 65 Г 06 GOST 6402-70 / USED ON Cб [illegible] Cb [illegible] |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE:- 2 : 1 DIMENSIONS IN mm | CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI. |
| CHD | | | |
| TCD | | TOLERANCE ON DIMENSIONS UNLESS OTHERWISE STATED IS 2102 -69 | TITLE: WASHER |
| APPD | | ALL THREADS CONFORM TO | D S CAT NUMBER / DRAWING NUMBER 353-93-1 |
| DATE | 28.5.94 | | |
| SIZE A4 | | | |

## EXPLANATORY NOTE:

MATERIAL QUOTED: WASHER 5Т, 65Г, 06 GOST 6402-70.

CORRESPONDS DESIGN AND DIMENSIONS OF SPRING (LOCK) WASHERS.
06 = CONVENTIONAL SYMBOL OF FINISH. (PARKERISING FOLLOWED BY OILING).
5 = NOMINAL THREAD DIA OF BOLT OR SCREW
Т = HEAVY ; 65Г (65G) = GRADE OF STEEL AS PER GOST 1050-74.

CHEMICAL COMPOSITION: AS PER GOST 1050-74.

| CONTENT OF ELEMENTS % | | | | | | | |
|---|---|---|---|---|---|---|---|
| C | Si | Mn | Cr | S | P | Cu | Ni |
| | | | MAXIMUM | | | | |
| 0·62 – 0·70 | 0·17 – 0·37 | 0·90 – 1·20 | 0·25 | 0·040 | 0·035 | 0·25 | 0·25 |

WEIGHT OF STEEL WASHERS AND THEIR RESILIENCE PROPERTIES AS PER GOST 6402-70.

THEORITICAL WEIGHT OF 1000 STEEL WASHERS IN kg = 0·424.

ESTIMATED RESILIENCE OF WASHERS FROM STEEL GRADE 65G = 28·7. IN kg

MECHANICAL PROPERTIES: AS PER GRADE 65G GOST 1050-74.

YIELD POINT kgf/mm² (MIN) = 44

ULTIMATE TENSILE STRENGTH (MIN) = 75 kgf/mm²

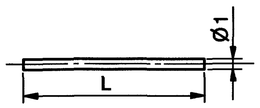
ELONGATION % (MIN) = 9

REFERENCE NOTE: 09 = ZINC PLATING (CONVENTIONAL SYMBOL OF FINISH)

(A) EQUIVALENT MATERIAL
75 C6 TO IS:2507/EN 42 J BS:970

EFA_19 MAR 22

DRAWING NUMBER
354-22




| KVD No. | L mm | LIMIT DEVIATIONS mm | USED ON | |
|---|---|---|---|---|
| | 50 | ± 1.5 | | |
| 78705 | 60 | ± 1.5 | Cb 3338-401-10, Cb 530-200 | |
| 78706 | 80 | ± 2 | Cb 3334-00-39, ~~Cb 327-00-45~~ Cb 327-00-47-01 Cb 327-00-73 | (G) |
| 78707 | 100 | ± 2 | Cb 3338-00-16 Cb 327-00-73 ~~Cb 3335-00-33 Cb 327-00-45, Cb 3335-00-24,~~ Cb 3342-00-8Cb | (G) (H) |
| 78708 (B) (C) | 120 | ± 2 | Cb 419-00-4, Cb 310-00-7, Cb 20-22-00-7 Cb 322-00-4Cb | (H) |
| 78709 | 150 | ± 2 | Cb 327-00-47-01 Cb 327-00-73 ~~Cb 3335-00-33 Cb 327-00-45, Cb 3335-00-24~~ Cb 3334-00-27 | (G) |
| 78710 | 200 | ± 2 | ~~Cb 327-00-45,~~ Cb 3334-00-27 Cb 327-00-47-01 Cb 327-00-73 | (G) |
| 78711 | 260 | ± 3 | Cb 3334-00-27, Cb 20-29-00-8 | |
| (A) | 300 | ± 3 | Cb 3338-407-4, Cb 3329-00-13 | |
| 78712 | 350 | ± 3 | | |
| 78713 | 420 | ± 3 | Cb 411-00-41 | |
| 78714 | 500 | ± 3 | ~~Cb 327-00-45~~ Cb 327-00-47-01 | (G) |
| | 600 | ± 3.5 | | |
| | 800 | ± 5 | | |

## ADDITIONAL REQUIREMENTS

FOR MANUFACTURE OF LOCK WIRE AS PER DRAWING 354-22

1. THE WIRE SHOULD BE PROVIDED WITH ZINC COATING. DIAMETER OF WIRE AFTER COATING SHOULD BE $1^{+0.06}_{-0.03}$ mm.
2. OVALITY OF WIRE SHOULD NOT EXCEED HALF OF THE TOLERANCE ON DIAMETER.
3. THE WIRE SHOULD BE MANUFACTURED FROM LOW CARBON ROLLED STEEL AS PER GOST 1050-74.
4. ULTIMATE RUPTURE STRENGTH OF ZINC PLATED WIRE SHOULD NOT BE LESS THAN 3.7 MPa ( 37 Kgf/mm$^2$ ).
5. THE WIRE SHOULD WITHSTAND NOT LESS THAN 7 BENDINGS THROUGH 100° AND NOT LESS THAN 25 TWISTINGS THROUGH 360°
6. THE SURFACE OF WIRE SHOULD NOT HAVE BLOW HOLES, CRACKS, MARKS, BACK FINS, OXIDE SPOTS, BURRS AND RUST THERE SHOULD NOT BE ANY UNCOATED AREAS ON THE WIRE.
7. ON WIRE FRACTURE, THERE SHOULD NOT BE ANY CRACKS, BACK FINS, FISSURES, BLISTERS, AND SHRINKAGE CAVITIES.
8. WIRE ZINC COATING SHOULD BE BOUND TO THE STEEL WHEN WOUND ON CYLINDER WITH DIAMETER EQUAL TO WIRE FIVE FOLD DIAMETER, THE WIRE SHOULD NOT HAVE ANY PEELINGS AND FISSURINGS OF ZINC COATING.

## EXPLANATORY NOTE :-

REFERENCE MATERIAL QUOTED :- LOW CARBON STEEL TO GOST 1050-74.

CHEMICAL COMPOSITION %

| GRADE | C | Si | Mn | Cr | P | S | Cu | Ni |
|---|---|---|---|---|---|---|---|---|
| | | | | MAXIMUM | | | | |
| 15 | 0.12 - 0.19 | 0.17 - 0.37 | 0.35 - 0.65 | 0.25 | 0.035 | 0.040 | 0.25 | 0.25 |

MECHANICAL PROPERTIES

1. ULTIMATE TENSILE STRENGTH Kgf/mm$^2$ (min) = 38
2. YIELD POINT Kgf/mm$^2$ (min) . . . . . = 23
3. PERCENTAGE ELONGATION % (min) . . . . . = 27
4. REDUCTION IN AREA % (min) . . . . . = 55
5. HARDNESS BHN ( MAX ) . . . . . = 149

(D) ** ITEM USED IN VARIOUS LENGTHS ON VARIOUS ASSEMBLIES OF V46-6, V92-S2 & UTD-20 ENGINE.

(E) EQUIVALENT MATERIAL IS: 549.

Cb3334-08-2 (L)
Cb 3312-00-22 (K)
Cb 3312-00-15
Cb 3308-00-23
Cb 3308-00-17 (J)
Cb 310-44
Cb 310-00-7
CQA(HV)5.06.607E (F)
Cb 20-06-00-2

PILOT SAMPLE SHOULD BE APPROVED BEFORE BULK PRODUCTION.

| EST. WT. | 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 |
|---|---|---|
| L | 8.03.22 | DC(I)No.CQA(HV)/ENGV46-6/C-0001/2022 Dt.5.2.22 |
| K | 04.01.22 | USED ON NUMBER ADDED. |
| J | 31.07.21 | USED ON NUMBER ADDED. |
| H | 20.09.19 | USED ON NUMBER ADDED. |
| G | 08.08.19 | USED ON NUMBER ADDED. |
| F | 15.7.15 | Pt.11 of 7th Alt. Comm. Meeting Dt.11.4.12 |
| E | 08.7.10 | 4 th Alt. Comm. Meeting Minutes. Point No.3 Dt. 26.10.09 |
| D | 28.8.08 | USED ON NUMBER ADDED. |
| C | 30.6.01 | AUTHY 90211/AHSP/ED dt. 27.3.01 |
| B | 15.1.02 | AUTHY Lt.No. 110026 / IND-III / 509 dt. 12.1.02. |
| A | 15.2.88 | AUTHY NOTN No. BK 81-406 |

| | |
|---|---|
| DRN | Sd/= |
| CHD | Sd/= |
| APPD | Sd/= |
| DATE | 18.03.86 |
| SCALE:- | — |
| DIMENSIONS IN mm | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69 | |
| ALL THREADS TO CONFORM TO | |

MATERIAL :- ———

USED ON :- Cb 20-35-00-5
Cb 3338-402-4Cb
SEE TABLE **

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)
AVADI

TITLE :-
LOCK WIRE

D S CAT NUMBER

DRAWING NUMBER
354-22

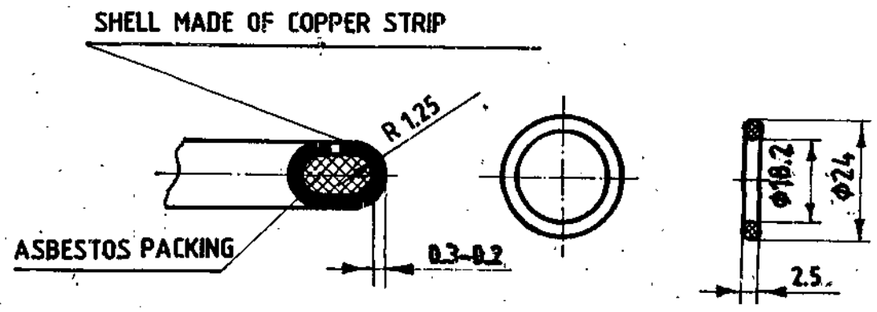
N. J (N SARAVANAN) SSO-I Dt. 22 Aug 2019

DRG. RE - INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL.

COMMON TO V46-6, V92S2 & UTD-20 ENGINES

SIZE A2

DRAWING NUMBER
355 08




SCALE 5 : 1

# EXPLANATORY NOTE:

1. REFERENCE MATERIAL QUOTED:

COPPER ASBESTOS SEALING RING 18.3mm I/D,24mm O/D AND MANUFACTURED IN ACCORDANCE WITH MH 4152-62.

a) COPPER SHEATHE RING :- SOFT COPPER BAND GRADE M3 TO GOST 859-78.

b) CORE:- BRAIDED ASBESTOS CORD MADE OF CHRYSOTILE.

C) CHEMICAL COMPOSITION AS PER GOST 859-78.

| GRADE OF COPPER | CONTENT OF ELEMENTS % | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | COPPER & SILVER min | IMPURITIES MAXIMUM | | | | | | | | |
| | | Bi | Sb | AS | Fe | Ni | Pb | Sn | S | O |
| M3 | 99.5 | 0.003 | 0.05 | 0.01 | 0.05 | 0.2 | 0.05 | 0.05 | 0.01 | 0.08 |

* (A) (C) CQA(HV)5.06.001E (B) CQA(HV)5.07.502E, CQA(HV)5.07.504E

Cb 3301-15-30 , Eb 3320-00-33
Cb 3335-00-24, Cb 20-01-00-8
Cb 20-11-02-11, Cb 20-22-00-7.
Cb 3301-00-44 , Cb 3301-15-44, Cb 310-44
Cb 3320-00-43 , Cb 3335-00-9 , Cb 337-100
Cb 413-115-9 , Cb 322-00-9 , Cb 327-00-73
Cb 329-00-7 , Cb 447-00-1
Cb 306-01-20 , Eb 306-02-20 , Cb 310-31
Cb 322-00-4 , Cb 406-16-2 , Cb 406-17-2
Eb 413-115-6 , Cb 3300-00-27 CX
CB 3335-00-24 ~~3330~~
Cb 3338-404-1
346 01 3 CB
346 00 CB
176-32 CB

COMMON TO V-92S2 & UTD-20 ENGINES

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

| EST WT 100 PIECES 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

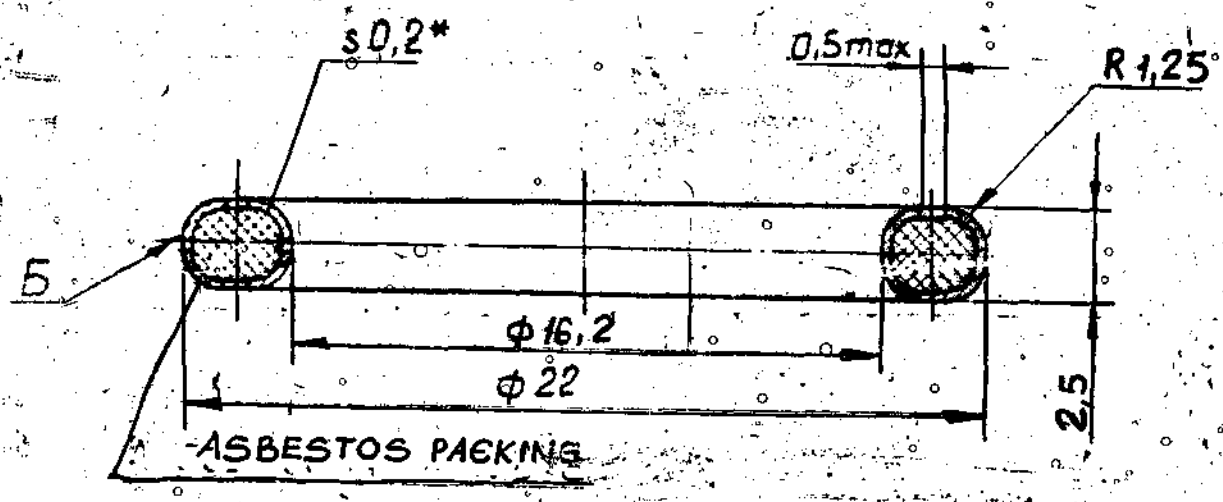
| ISSUE | DATE | NATURE OF AMENDMENTS |
|---|---|---|
| C | 18-03-15 | Pt. 11 of 7th Alt. Comm. Meeting Dt. 11-4-12 |
| B | 5.3.14 | Authy. Point No.11 of 7th Alt. Comm. meeting at EFA |
| A | 28.8.08 | USED ON NUMBER ADDED |

| | | |
|---|---|---|
| DRN | | MATERIAL: M3 AND ASBESTOS |
| CHD | | USED ON: CB 413-115-6, CB 3329-01-11, Cb 447-00-1, CB 327-00-45 * |
| TCD | | |
| APPD | | CONTROLLERATE OF INSPECTION (HEAVY VEHICLES) AVADI |
| DATE | 04-4-86 | |
| SCALE: 1 : 1 | | TITLE: RING 18 x 24 |
| DIMENSIONS IN mm | | |
| TOLERANCE ON DIMNS UNLESS OTHERWISE STATED | | |
| ALL THREADS CONFORM TO | | D S CAT NUMBER |
| | | DRAWING NUMBER 355 08 |

A.11

SIZE A3

355-11




1 ALTERNATE MATERIAL IS STRIP 0,22 TO 0,3mm THICK. GOST 1173-77.
2 TOLERANCE ON ROUNDNESS OF SURFACE Б SHOULD BE WITHIN THE DIAMETER TOLERANCE.
3 USED FOR PACKING IS ASBESTOS CORD ШАОН 1,5 GOST 1779-72.
4 RINGS SHOULD BE TIGHTLY FILLED WITH PACKING.
5 DISPLACEMENT OF SHEATHING EDGE FROM THE MEAN DIAMETER OF RING SHOULD NOT EXCEED 0,35mm.
6 PROJECTION OF ONE EDGE OF SHEATHING IN RESPECT TO THE OTHER ONE SHOULD NOT EXCEED 0,3mm.
7 PROJECTION OF ASBESTOS FIBRE IF NEGLIGIBLE BEYOND THE SHEATHING JOINT IS PERMITTED.
8 UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS:- FOR HOLES - AS PER A7
SHAFTS - AS PER B7.
AND OTHERS - AS PER CM7.
9 MARK DESIGNATION, DATE OF MANUFACTURE AND STAMP FINAL ACCEPTANCE ON THE TAG FOR BATCH OF PARTS.
10 *DIMENSION IS GIVEN FOR REFERENCE.

Ⓐ ** CQA(HV)5.06.001E

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

| | | | |
|---|---|---|---|
| | | | EST. MASS 100 PIECES 0,12 Kg |
| | | | TO BE STAMPED OR MARKED WHERE INDICATED THUS -II- ( LETTERS) |
| A | 18-03-15 | Pl. 11 of 7th All. Comm. Meeting Dt. 11-4-12 | ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE |
| ISSUE | DATE | NATURE OF AMENDMENTS | |
| DRN | | SCALE :- 5 : 1 | MATERIAL :- STRIP 0,2 M3 GOST :- 1173-77 |
| CHD | | DIMENSIONS IN mm | USED ON :- ** CB 310-00-7C6 Cb 20-01-00-8 |
| TCD | | TOLERANCE ON DIMNS UNLESS OTHERWISE STATED | CONTROLLERATE OF INSPECTION ( HEAVY VEHICLES ) AVADI |
| APPD | | | TITLE COPPER ASBESTOS SEALING RING 16 - 22 |
| DATE | 19/8/87 | ALL THREADS CONFORM TO | O S CAT NUMBER |
| | | | DRAWING NUMBER 355-11 |