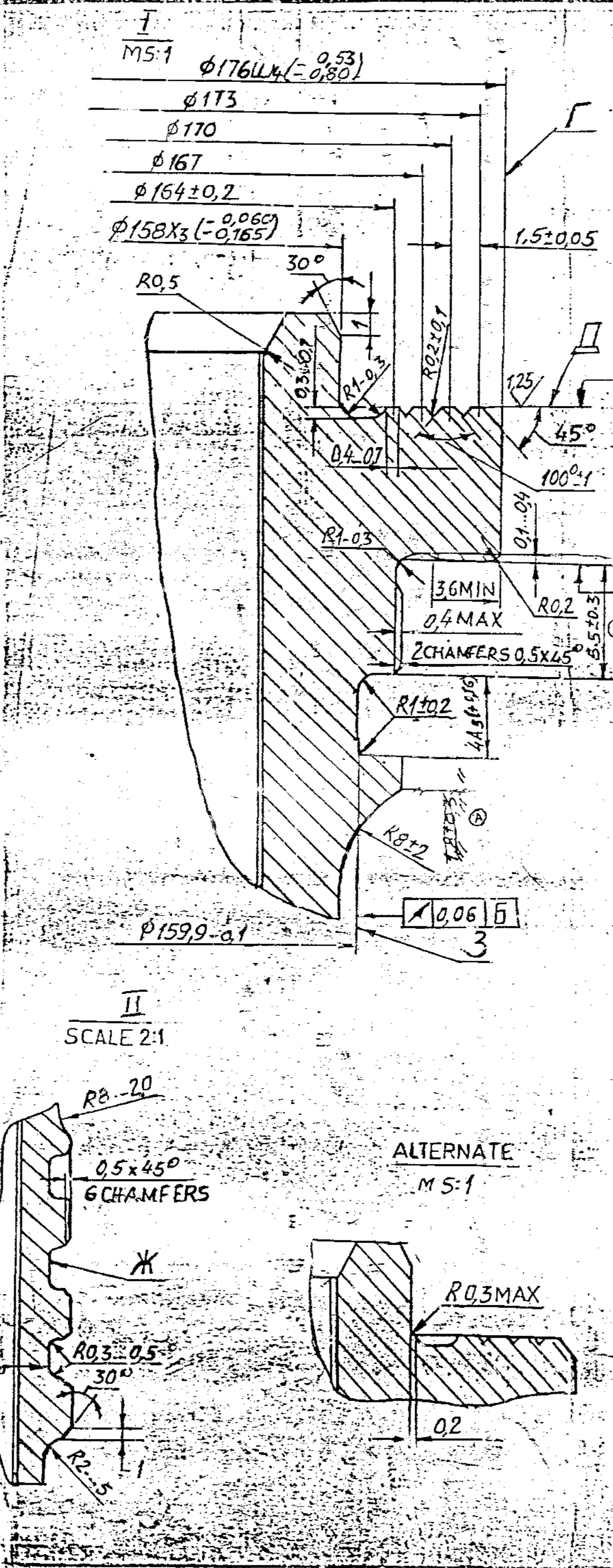
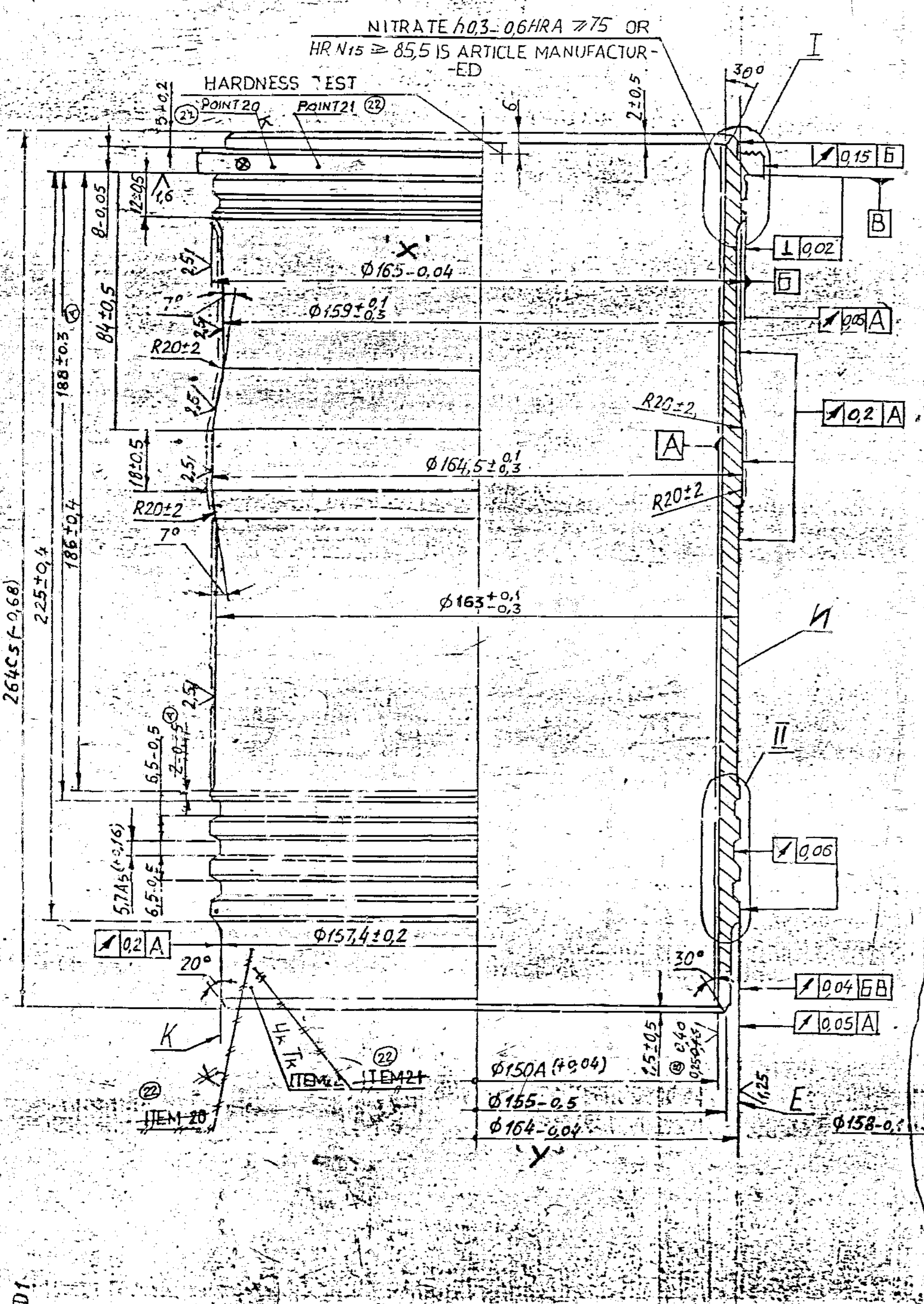


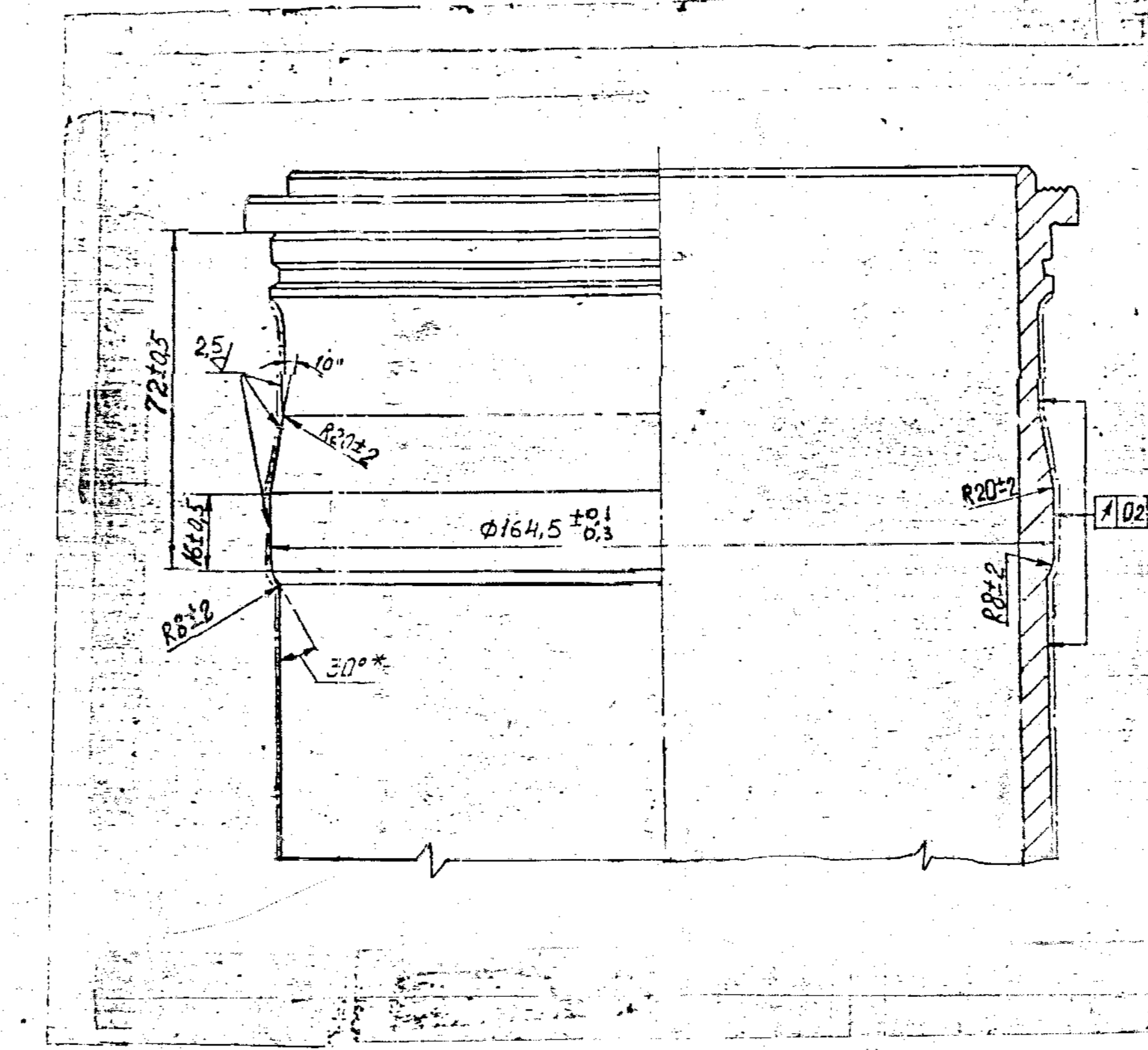
1-05-10-02



21. USE AN ELECTROGRAPHIC ACID FREE METHOD TO MARK ABSOLUTE VALUE OF THE DIAMETER OF UPPER AND LOWER LOCATING BELLS, ROUNDED TO 0.01mm BY USING TYPE NO. 6 OR 10-8 GOST 2930-62.
 22. MARK LINES TO BE DELIVERED AS SPARE-PARTS BY USING TYPE NO. 6 OF NO-8 GOST 2930-62.
 23. MARK TRADE-MARK WITH SIZE 11X10.5 mm.
 24. CHECK THICKNESS OF CHROME COATING BY USING 25% OF CYLINDER LINER (ONE LINER FROM BATCH OF PARTS IMMERSED INTO THE BATH)
 25. ACCEPTANCE RULES, TEST METHODS, MARKING, PACKING, TRANSPORTATION AND STORAGE SHOULD BE AS PER GOST 17819-72, GOST 24169-07-84
 26. STAMP MARK R1, R2 WHERE MARKED THUS
 27. THE SURFACES "I" AND "K" ARE ALLOWED TO BE NITRIDED TO h 0.3...0.88 mm. HRA ≥ 76 IN PLACE OF C-MOLYBDENUM 30. THE SURFACES "B" AND "E" ARE ALLOWED TO BE NITRIDED h 0.2...0.5 mm

19a. * DIMENSIONS FOR REFERENCES.
 19. TAPER TOLERANCE OF 'E' SURFACE IS 0.015 mm.
 20. TOLERANCES OF SURFACES FORMS ARE ACCORDING TO GOST 24642-81.

FIG. 2 (AMENDED)



ALL THE DIMENSIONS SHOWN IN FIG 1 ARE TO BE FOLLOWED EXCEPT THOSE SHOWN IN FIG. 2 (AMENDED).

REPAIR SIZE DIMENSIONS

| CATEGORY | X | Y |
|---------------|----------------------------|----------------------------|
| 20-01-50-1 R1 | DIA 165.5 ^{-0.04} | DIA 164.5 ^{-0.04} |
| 20-01-50-1 R2 | DIA 166.0 ^{-0.04} | DIA 165.0 ^{-0.04} |

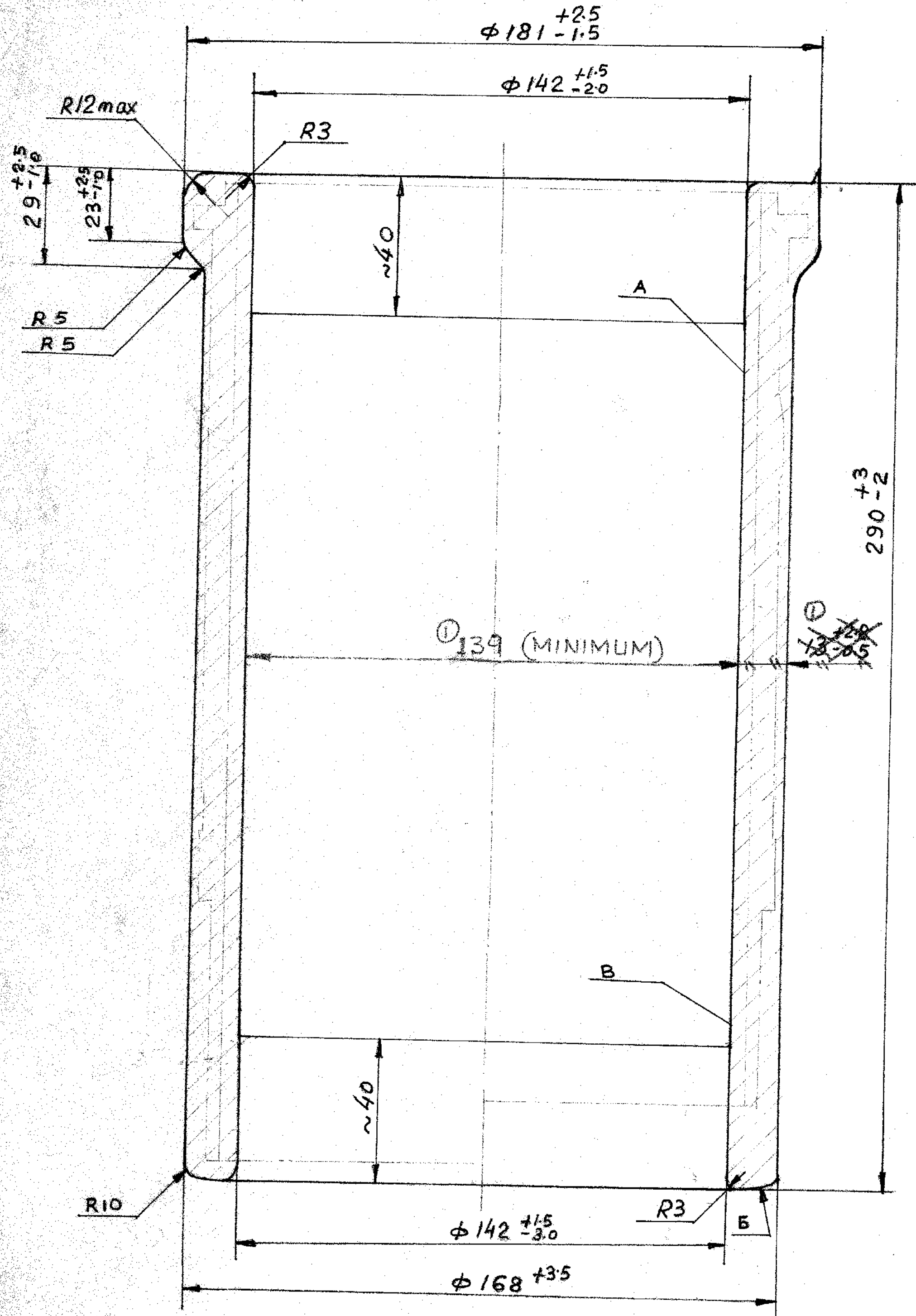
EXPLANATORY NOTE:

16. REFERENCE MATERIAL QJ0701
 PIPE 168x13
 168 - EXT DIAMETER
 13 - WALL THICKNESS
 MATERIAL 38X2MHO A TY 14-3-579-76
 MATERIAL DETAILS = 38X2MHOA AVAILABLE IN GOST 4543-71
 CHEMICAL COMPOSITION:
 CARBON = 0.35 - 0.42
 SILICON = 0.20 - 0.45
 MANGANESE = 0.30 - 0.60
 CHROMIUM = 1.35 - 1.65
 MOLYBDENUM = 0.15 - 0.25
 ALUMINIUM = 0.70 - 1.00
 SULPHUR } 0.025 max EACH
 PHOSPHORUS }
 COPPER & NICKEL = 0.30 max EACH
 MECHANICAL PROPERTIES:
 YIELD POINT = 85 Kgf/mm² (min)
 ULTIMATE STRENGTH = 100 Kgf/mm² (min)
 RELATIVE ELONGATION = 14 % (min)
 RELATIVE REDUCTION = 50 % (min)
 IMPACT STRENGTH = 9 Kgf/cm² (min)

- INSPECTOR GROUP II AS PER TECHNICAL REQUIREMENTS TT-11 AFTER HARDENING AND TEMPERING CHECK AT LEAST 25% OF PARTS FROM EACH BATCH FOR HARDNESS (HB 255 TO 302)
- AFTER HEAT TREATMENT ACCEPT THE PARTS AS PER TECHNICAL SPECIFICATIONS TY 20-07- PERMITTED ARE:-
 a) DEPTH OF NITRATED LAYER IN FINISHED ARTICLE UP TO 0.8 mm
 b) LOCAL ENRICHMENT OF NITRATED LAYER WITH NITROGEN AROUND NON-METALLIC IMPURITIES DETECTED ON THE CYLINDER LINER FACE IN THE FORM OF THIN DARK LINES WITH A LENGTH OF UP TO 15 mm WHOSE NUMBER DOES NOT EXCEED 8 AND WHICH MAY BE VISIBLE TO THE NAKED EYES.
 c) PRESENCE OF NITRATED LAYER ON TOP AND BOTTOM CHAMFERS OF THE FACE UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS ARE AS FOLLOWS
 FOR ANGLES ± 2° 30' FOR CHAMFERS ± 0.3 mm
- TAPER OF SURFACE 'A' SHOULD NOT EXCEED 0.015 mm/BOW AND BARREL OF SURFACE 'A' SHOULD NOT EXCEED 0.02 mm
- QUALITY OF SURFACE 'A'
 a) NOT MORE THAN 0.015 mm OVER THE LENGTH OF 240 mm FROM THE UPPER BUTT END
 b) NOT MORE THAN 0.02 mm OVER THE LENGTH OF 24 mm FROM THE LOWER BUTT END
 QUALITY OF SURFACES 'B' AND 'E' SHOULD NOT BE MORE THAN 0.02 mm
- TWISTED OVAL OF SURFACE 'A' (OVAL HAVING CHANGED DIRECTION OF AXES OF TOP BAND IN COMPARISON WITH BOTTOM BAND) IS NOT PERMITTED
- CHECK SURFACE 'B' BY PRUSSIAN BLUE. IT SHOULD BE CONTINUOUS OVER THE WIDTH OF NOT LESS THAN 3.2 mm
- CHECK THE BANDS OF COMBUSTION BY PRUSSIAN BLUE. CLOSE-FIT OF EACH BAND SHOULD BE CONTINUOUS CIRCUMFERENTIALLY WITH A WIDTH OF NOT LESS THAN 0.3 mm
- HONE SURFACE 'A' SO AS TO CREATE AN ANGLE OF 45° ± 3° ACCEPT PROCESSED LINERS AS PER STANDARD
- ENSURE SURFACE 'A' FINISH 0.160 TO 0.04 BEFORE HONING AT AN ANGLE OF 45°
- IT IS ALLOWED TO PERFORM HAND-POLISHING OF REMAINING TRACE OF GRINDING OF THE INTERNAL SURFACE IN THE PORTION AT A LENGTH OF UP TO 12 mm FROM THE BUTT END ON A WIDTH OF NOT MORE THAN 1/2 OF THE CIRCUMFERENCE BY INCREASING SURFACE 'A' UP TO 0.02 mm
- FINALLY MACHINED SURFACES SHOULD BE KEPT FREE FROM MARKS OF PURGING, CHIPPING OF NITRATED LAYERS, NICKS ON THE GROUND SURFACES AND CORROSION
- ALL LINERS SHOULD BE CHECKED FOR ABSENCE OF CRACKS AFTER MACHINING
- PERMITTED ON THE FINALLY MACHINED INTERNAL SURFACE ARE:-
 a) SPOT IMPURITIES (NOT MORE THAN 8) HAVING DIAMETER OF NOT MORE THAN 0.5 mm AT DIFFERENT PLACES (NOT MORE THAN ONE SPOT IMPURITY PER SQUARE AREA WITH THE SIDE OF 30 mm) AND NOT CAUSING NOTCHES AND CHAFINGS
 b) TRACES OF OPEN CANAVES (NOT MORE THAN THREE) HAVING DEPTH OF UP TO 0.1 mm WIDTH OF UP TO 1.0 mm AND LENGTH OF UP TO 2.0 mm WITH THE GREATER SIDE DIRECTED ALONG THE GENERATOR AT A DISTANCE OF AT LEAST 75 mm FROM

| NO. | DATE | NATURE OF AMENDMENTS | SCALE | USED ON |
|-------|----------|---|-------|---|
| 23B | 18-03-15 | Pl. 11 of 7th Alt. Comm. Meeting Dt. 11-4-12 | 1:1 | CG 20-01-00-R |
| 23A | 11.4.14 | 8th Alt. Comm. Mtg Minutes | | CONT. TOLL RATE OF INSPECTION (HEAVY VEHICLES) AVADIT |
| 23 | 09.12.06 | AUTHY LT NO: EFA/GC/027 ALT. COM. DT. 03-06-2006 | | CYLINDER LINER |
| ISSUE | DATE | NATURE OF AMENDMENTS | | DRAWING NUMBER |
| | | | | 20-01-50-1 |

AMDT. NO. 777-80



1. Поверхностные дефекты (вмятины, забоины, следы от скалывания) в зонах высадки глубиной не более 0,5 фактического припуска.
 2. Металлургические дефекты на поверхностях, не подвергавшихся высадке, согласно ТУ по поставке труб.
 3. Металлургические дефекты выточке не подлежат.
 4. Смещение по плоскости разреза штампав не более 10 мм.
 5. Допускается заусенец по линии разреза штампав и торцовый по $\phi 142$ не более 2 мм, торцовый по $\phi 181$ - не более 7 мм.
 6. На поверхности Б допускается заштампавованный заусенец (контролировать 2% проточки).
 7. Внутри трубы, в местах А и Б, допускается кацезовый наплыв.
 8. Поковки маркировать условным №ковки, а сдача производится не поплавоцно.
 9. Поковки сдавать вместе со свидетелями в количестве: 2 свидетеля на 300 штук. В качестве свидетеля должны направляться отрезки труб длиной не менее 200 мм.
 10. Допускается поставка свидетелей в разрезе месячной программы.
1. Термообработать на твердость согласно чертежу детали.

303-07-22
~~20-01-50-1~~
 Поковки
 (Гильза)
 38X2M10A
 ТУ 14-3-579-76

1. SURFACE DEFECTS (DENTS, NICKS, SCALE MARKS) IN THE UPSETTING AREAS SHOULD BE TO A DEPTH OF NOT MORE THAN 0.5 OF ACTUAL ALLOWANCE.
2. METALLURGICAL DEFECTS ON THE SURFACES, NOT SUBJECTED TO UPSETTING, ARE IN ACCORDANCE WITH TY 14-3-579-76 FOR THE SUPPLY OF PIPES.
3. METALLURGICAL DEFECTS ARE NOT SUBJECTED FOR TURNING OPERATION.
4. SHIFT ALONG THE DIE FLASH PLANE SHOULD NOT EXCEED 10 mm.
5. FIN ALONG THE DIE FLASH LINE AND END FACE FIN ALONG $\phi 168$ NOT EXCEEDING 2 mm, END FACE FIN ALONG $\phi 181$ - 7 mm MAX. ARE ALLOWED.
6. FORGED FIN (2% WITH THE RECESS TO BE CHECKED) IS ALLOWED ON THE SURFACE B.
7. RING FLASH ROLL IS ALLOWED INSIDE THE PIPE AND AT THE PLACES OF A AND B.
8. FORGINGS ARE TO BE MARKED WITH THE CONVENTIONAL HEAT NO. & TO BE ACCEPTED IRRESPECTIVE OF HEAT NO.
9. FORGINGS ARE TO BE SUPPLIED TOGETHER WITH TEST PIECES: 2 TEST PIECES FOR 300 PIECES. PIPE CUT TO A LENGTH OF 200 mm MIN SHOULD BE DESPATCHED AS TEST PIECE.
10. TEST PIECES CAN BE SUPPLIED AS PER MONTHLY SCHEDULE.
11. TO BE HEAT TREATED FOR HARDNESS - HB 255-302 IN ACCORDANCE WITH THE COMPONENT DRAWING 303-07-22.

| ISSUE | DATE | REFERENCE | LETTERS | MASS |
|-----------|------|---|--|----------|
| ① | 8 | Dim. 139 2.8 is deleted 2.5 MINIMUM IS ADDED | APPROVED B.K. SARIN | 16.32 kg |
| | | | CHECKED GKM | |
| | | | DRAWN AR. BURHAN | |
| 303-07-22 | | | CYLINDER LINER | |
| | | | (FORGING FROM PRESS OF CAPACITY 1250T) | |
| | | | STEEL 38X2M10A | |
| | | | TY 14-3-579-76 | |