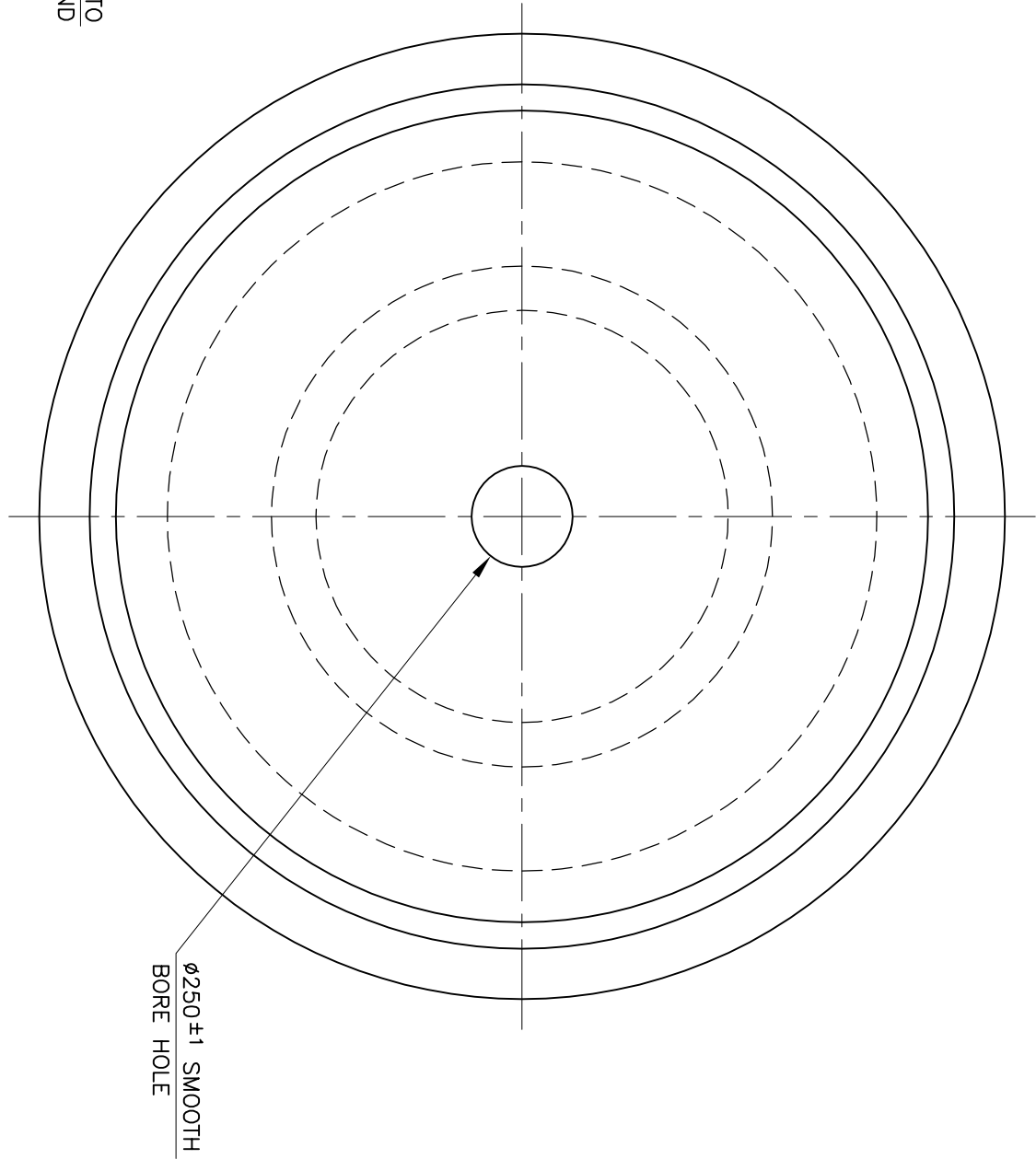
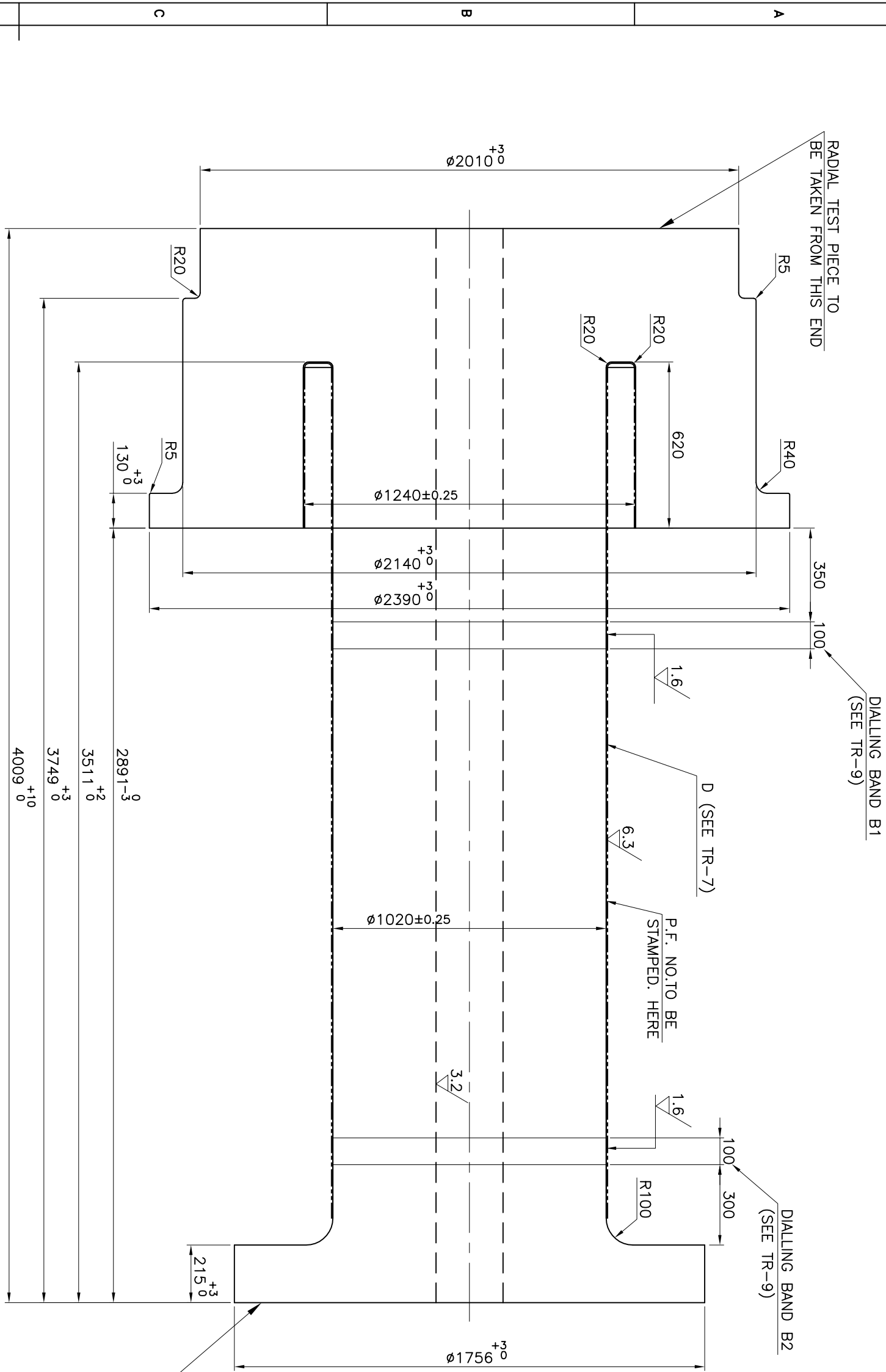


20120 10 452 2 ON GRD



TECHNICAL REQUIREMENTS:-

1. P.F. NOS TO BE STAMPED AT PLACE SHOWN IN DRAWING AND RESTAMPED JUST AFTER MACHINING.

UNIT NO.

- 1 PF NO. 310236
2 PF NO. 310237
3 PF NO. 310238
4 PF NO. 310239

2. SURFACE FINISH OF MACHINED SURFACE SHALL BE 6.3 MICRONS OR BETTER ALL OVER EXCEPT OTHER WISE STATED.

3. ALL FACES SHOULD BE PARALLEL AND SQUARE TO THE AXIS.

4. INSPECTION TO BE CARRIED OUT IN PRESENCE OF BHEL/THIRD PARTY/CUSTOMER AS PER APPROVED QA PLAN.

5. SHAFT FORGING TO BE PAINTED WITH ANTI RUST PAINT INCLUDING BORE TO BP NO. 0690084.

6. 6-COPIES OF TEST CERTIFICATES TO BE SUPPLIED. P.F. NO. OF FORGINGS AND CAST NO. OF BILLET TO BE QUOTED ON CORRESPONDING COPIES OF TEST CERTIFICATES.

7. PORTION OF THE SHAFT MARKED THUS "D" IS FINAL FINISHED AND THIS DIAMETER SHALL BE COAXIAL AND CONCENTRIC WITH CENTRAL HOLE DIA. 250 WHICH IS FINAL FINISHED. ALSO THESE PORTIONS WILL BE ADEQUATELY PROTECTED TO AVOID DAMAGE DURING TRANSPORTATION/HANDLING.

8. WELD REPAIR & COLD WORKING IS NOT PERMISSIBLE AT ANY STAGE.

9. MACHINING BAND B1 & B2 SHALL BE USED FOR RE-SETTING THE SHAFT AT BHEL WORKS. THESE SHALL BE DIALED WITHIN 0.05MM.

10. SUPPLIER TO CONFIRM COMPLIANCE OF AA19342 CLAUSE BY CLAUSE EXCEPT NOTE OF CLAUSE NO.6 & CLAUSE NO. 11 TO 13.
11. THE STEEL FOR THIS FORGING SHALL BE VACUUM DEGAUSED TO PROTECT THE FORGINGS FROM HARMFUL EFFECTS OF HYDROGEN AND OTHER GASES.

12. SUPPLIER TO CONFIRM COMPLIANCE OF BELOW MENTIONED PARTICULARS:-

A. MECHANICAL PROPERTIES:-

THE TEST PIECES SHALL SHOW THE FOLLOWING PROPERTIES FOR ALL RULING SECTIONS. TEST METHODS ARE SPECIFIED BELOW:

TENSILE STRENGTH : IS1608

HARDNESS TEST (BRINELL) : IS1500

CHARPY IMPACT VALUE (2mm U-NOTCH) : IS1499

i) TENSILE STRENGTH (IN ANY DIRECTION) 560 N/MM² MIN.

ii) YIELD STRENGTH (IN ANY DIRECTION) 335 N/MM² MIN.

iii) ELONGATION 5.65 %SO GAUGE LENGTH RADIAL -10% MIN. & TANGENTIAL -12% MIN.

iv) CHARPY IMPACT VALUE (2mm U NOTCH) RADIAL -23 JOULES MIN. & TANGENTIAL -29 JOULES MIN.

v) HARDNESS (BRINELL) 156-212

B. TEST SAMPLES:-

TEST SAMPLES SHOULD BE CUT FROM THE HEAT TREATED FORGINGS BY COLD PROCESS ONLY AND SHALL RECEIVE NO FURTHER HEAT TREATMENT.

(i) RADIAL TEST PIECE SHALL BE TAKEN FROM ONE END OF THE FORGING.

(ii) TANGENTIAL TEST PIECE SHALL BE TAKEN FROM OTHER END OF THE FORGING.

(iii) TEST PIECE DIAMETER SHALL BE 16MM MIN. (AS PER IS-1608:1995, AMD. NO. 1, MAY2002, TABLE5)

TEST PIECE SHALL BE CUT AS BELOW:

(i) FOR SOLID FORGINGS: AT A DISTANCE OF ONE - THIRD RADIUS OR ONE-SIXTH DIAGONAL FROM THE OUTER SURFACE.

(ii) FOR HOLLOW FORGINGS: MIDWAY BETWEEN THE INNER AND OUTER SURFACE OF THE WALL THICKNESS.

C. N.D.T

- i) EACH FORGING SHALL BE TESTED ULTRASONICALLY IN ACCORDANCE WITH BHEL STANDARD NO. AA0850101 AFTER FINAL COMPLETION OF ALL OPERATION ON THE FORGING. ALL TRANSITION ZONES SHALL BE SUBJECT TO MAGNETIC PARTICLE TEST AS PER ABOVE STANDARD, BEFORE APPLICATION OF ANTI RUST COMPOUND.

- ii) BOROSCOPIC TEST FOR CENTRAL HOLE IN CASE OF SHAFT FORGING SHALL BE CARRIED OUT TO AA0850101 BEFORE APPLICATION OF ANTI RUST COMPOUND.

D. REJECTION AND REPLACEMENT:

IN THE EVENT OF ANY FORGING PROVING DEFECTIVE IN THE COURSE OF PREPARATION, MACHINING, TESTING OR ERECTION SUCH FORGING SHALL BE REJECTED. NOTWITHSTANDING ANY PREVIOUS CERTIFICATION OF SATISFACTORY TESTING AND /OR INSPECTION. THE SUPPLIER SHALL UNDERTAKE TO REPLACE THE REJECTED FORGINGS AT HIS OWN COST AND THE REJECTED FORGINGS SHALL BE SENT BACK TO THE SUPPLIER AFTER FULFILLING THE COMMERCIAL TERMS AND CONDITIONS.

E. DOCUMENT TO BE SUBMITTED ALONG WITH OFFER:

MANUFACTURING PROCESS CHART COMPRISING OF MANUFACTURING SEQUENCE, FORGING SEQUENCE, HEAT TREATMENT CYCLE WITH STAGE WISE TEST SCHEDULE.

F. IN ADDITION TO CLAUSE NO.7 (HEAT TREATMENT) OF AA19342:

IF REQUIRED FORGING SHALL BE NORMALIZED AT SUITABLE TEMPERATURE TO GIVE THE MECHANICAL PROPERTIES SPECIFIED.

IMPORTANT NOTES FOR SUPPLIER:-

1. SUPPLIER TO CONFIRM COMPLIANCE OF TECHNICAL REQUIREMENTS OF DRAWING CLAUSE-BY-CLAUSE.

2. CLAUSE-BY-CLAUSE COMPLIANCE OF QA PLAN NO. QSP/HG/104 REV-01 (TWO SHEETS) AND CUSTOMER APPROVED QAP QA/HG/561 REV-04 (TWO SHEETS) SHALL BE CONFIRMED BY SUPPLIER.

3. SUPPLIER TO FURNISH FORGING MANUFACTURING SEQUENCE WITH FORGING RATIOS AND HEAT TREATMENT CYCLE WITH STAGE WISE TEST SCHEDULE PREFERABLY ALONG WITH OFFER.

4. ANY DEVIATION SHALL BE CLEARLY BROUGHT OUT IN THE OFFER.

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FORGINGS AND CAST NO. OF BILLET TO BE QUOTED ON CORRESPONDING COPIES OF TEST CERTIFICATES.																													
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8. WELD REPAIR & COLD WORKING IS NOT PERMISSIBLE AT ANY STAGE.																													
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10. SUPPLIER TO CONFIRM COMPLIANCE OF A419342 CLAUSE BY CLAUSE EXCEPT NOTE OF CLAUSE NO.6 & CLAUSE NO. 11 TO 13.																													
11. THE STEEL FOR THIS FORGING SHALL BE VACUUM DEGASSED TO PROTECT THE FORGINGS FROM HARMFUL EFFECTS OF HYDROGEN AND OTHER GASES.																													
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