Annexure -I

Sample Report

Measurement Report

Date: 27.07.07
Time: 11:31:35

Component : Casing 500MW
Drg. No : 0-10307-41007
Project Name : Raichur
Machine: CNC Horizontal Borer 160 (Model name/Layout number of machine)

*** Note: '0' in Error denotes "Measured Values are within tolerance" ***

Description	Nom. Size	Measured Value	Dev.from Nom.Size	Tol. upper (+)	Tol. lower (-)	Error (Out-Tol)
SLOTWIDTH:	40	40.0345	0.0345	0	-0.05	0.0345
SLOTDEPTH:	24.6	24.5548	-0.0451	0	-0.13	0
GROOVEWIDTH:	39	39.0755	0.0755	0.1	-0.1	0
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MAIN INNER BORE	121.98	122.1065	0.1265	0.04	-0.02	0.0865
OUTER TAPER ANGLE:	1.475	1.4943	0.0193	0.05	-0.05	0
COUNTER BORE: (DET-1)	34.847	34.9773	0.1303	0.04	-0.02	0.0903

Note:

- The Nominal size means the nominal value as mentioned in the drawing without application of any tolerance or any adjustment for mid value.
- The Tolerance values should be specified in Upper and Lower tolerance as mentioned in the drawing and not in any other tolerance band with adjustment.

GUIDELINES FOR MACHINING PROCESS OF END SHIELD (MACHINED)
DRAWING NO. 0-139-37-01006

- General sequence of machining process for End Shield (Machined) drawing no. 0-139-37-01006 is to be followed as per the enclosed process sheets (having 29 operations) during the proving out of machine. However, minor changes in sequence can be made to suit the CNC machine and to increase the productivity of machine.

- Operations, which have been marked "Vendor's scope" are only to be carried out on the machine during proving out of machine by the Vendor. Remaining operations marked "BHEL's scope" are to be carried out by BHEL away from machine.

- Machining allowance per surface may be taken as 10 mm (approx.).

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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1/29 2025 935 [redacted] BHEL SCOPE

NOTE:-I.BLOCK-I ENSURE THAT END SHIELDS RECEIVED
FROM BLOCK-II ARE CLEANED, DEFICIENCIES IF
ANY, TO BE REMOVED IN BLOCK-I BEFORE M/CING.
II.BEARING OIL INLET PIPE TO BE SUITABLY PLUGGED
TO AVOID ENTRY OF CHIPS DURING MACHINING.
MARKING OF UPPER HALF:-

1/29 Continued

1.PLACE UPPER HALF OF END SHIELD ON MARKING
TABLE WITH ALIGNMENT WEDGES IN BETWEEN,
KEEPING FLANGE SIDE (H2 SIDE)
TOWARDS MARKING TABLE AND SPLIT
SURFACE IN VERTICAL PLANE.
2.ALIGN THE HALF SHIELD TO MAKE

1/29 Continued

THE SPLIT SURFACE VERTICAL.
CHECK ITS PERPENDICULARITY TO OTHER SURFACES.
3.MARK SPLIT SURFACE TO DIMENSION 55
(SEC. C-C AND B-B).
4.MARK BEARING CENTRE LINE
MAINTAING DIMENSION 140 (SEC. A-A).

1/29 Continued

5.MARK REFERANCE AT PLANE FLANGE SIDE
(H2 SIDE) AT 470 FROM BEARING C/L (SEC. A-A)
6.MARK FOR MACHINING SURFACE FOR FITTING END
SHIELD COVER ITEM 13 MAINTAINING DIMENSION
279 FROM BRG. CENTRE LINE (SEC. A-A).
7.MARK FOR MACHINING SURFACE 755X535

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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1/29 Continued

WITH R60 ON OPENING.
8.LOCATE VERTICAL CENTRE LINE
OF THE JOB IN THE MIDDLE OF THE FLANGE SURFACE.
TRANSFER THE CENTRE LINE ALL AROUND.
9.TAKING THE MARKED CENTRE AS REFERANCE,CARRYOUT
CONTROL MARKING ON ALL SURFACES

1/29 Continued

TO BE MACHINED AS SHOWN IN SEC. A-A.
10.CHECK THE AVAILABILITY OF SUFFICIENT MACHINING
ALLOWANCE ON ALL THE SURFACE TO BE MACHINED.
CARRYOUT MANIPULATION
IF MATERIAL IS NOT AVAILABLE ON ANY SURFACE.
11.CLEARLY IDENTIFY MARKING OF VERTICAL CENTRE

1/29 Continued

LINE (ALL AROUND) AND BEARING CENTRE LINE.
INSPECTION-CHECK CONTROL MARKING AND
AVAILABILITY OF MACHINING ALLOWANCE
ON ALL THE SURFACES.

2/29 2035 266 [redacted] VENDOR SCOPE

ALTERNATIVELY FOLLOW CNC PROGRAMME NUMBER % 6911
,6921,6931,6932,6941,6951,6961,6971,6972,6981,
6982 AND6991 FOR WOTAN-RAP-6C (1-227) EQUIPMENT
CODE 266 FOR MANUFACTURING THIS
COMPONENT ON CNC MACHINE TOOL.COMPONENT SHALL BE
DULY INSPECTED BY QC AFTER COMPLETION OF OPERATION

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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2/29 Continued

1.PLACE UPPER HALF OF END SHIELD ON M/C TABLE
WITH PARTING PLANE ON SUPPORTS ON M/C TABLE
& WITH BEARING END SHIELD COVER SURFACE
TOWARDS M/C SPINDLE. ALIGN AS PER MARKING OF
SPLIT SURFACE IN VERTICAL & HORIZONTAL PLANE
AND MARKED CENTRE LINES.

2/29 Continued

2.MILL AREA FOR FITTING END SHIELD COVER
(ITEM 13) MAINTAINING
DIMENSION 279 AS PER MARKING & SEC. A-A.
3.MILL AREA FOR FITTING COVER ITEM 76
(REFER DRG. 01393701005) MAINTAINING DIMENSIONS
535X755 WITH R60 AT

2/29 Continued

CORNERS AS PER MARKING MAINTAINING
DEPTH TILL CLEANING ON INNER SIDE OF
H2 SIDE PLATE.
INSPECTION- CHECK DIMENSIONS.

3/29 2045 935 [redacted] BHEL SCOPE

1.PLACE END SHIELD COVER ITEM 13
ON END SHIELD CONCENTRIC AS PER DRG.
TRANSFER LOCATION OF 19 HOLES D17.5 (M20)
CORRESPONDING TO THE HOLES
IN E.S. COVER ITEM 13
2.MATCH MARK E.S. COVER WITH END SHIELD.

S GHOSH S K TANDON

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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3/29 Continued

3.PLACE COVER ITEM 76 ON END SHIELD AS
PER DRG.(REFER DRG. 01393701005). TRANSFER
LOCATION OF 40 HOLES M20 (SEC. A-A)
ON END SHIELD CORRESPONDING TO
THE HOLES IN COVER.

4/29 2045 254 [redacted] VENDOR SCOPE

1.DRILL, C' SINK AND TAP 19 HOLES
M20 MAINTAINING DEPTH
AS PER DRG.(DRILL DEPTH 35, THREAD DEPTH 28).
2. DRILL, C' SINK, AND TAP 40 HOLES M20
MAINTAINING DEPTH OF HOLES 36
AND DEPTH OF THREAD 28 (SEC. A-A).

4/29 Continued

INSPECTION-CHECK DIMENSIONS.

5/29 2045 934 [redacted] BHEL SCOPE

1.DEBURR AND CLEAN CONTACT SURFACE OF END SHIELD
FOR END SHIELD COVER ITEM 13 AND COVER ITEM 76.
2.ASSEMBLE END SHIELD COVER ITEM
13 WITH THE HELP OF 19. R7429.0054 TECH. PACKING
BOLTS ITEM 25 AS PER DRG. WITH TECHNOLOGICAL
PACKING 1MM THICK.

S GHOSH S K TANDON

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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5/29 Continued

INSPECTION-CHECK ASSEMBLY AS PER DRG.

6/29 2035 266 [redacted] VENDOR SCOPE

ALTERNATIVELY FOLLOW CNC PROGRAMME NUMBER %
FOR OPN.NO. TO FOR MANUFACTURING THIS
COMPONENT ON CNC M/C TOOL.COMPONENT SHALL BE DULY
INSPECTED BY QC AFTER COMPLETION OF OPERATION.
ROUGH MACHINING OF UPPER HALF END SHIELD:-
1.PLACE UPPER HALF ON M/C BED PLATES WITH FLANGE

6/29 Continued

SIDE(H2 SIDE) RESTING ON SUPPORTS AND SPLIT
SURFACE TOWARDS M/C SPINDLE. ALIGN IN
HORIZONTAL AND VERTICAL PLANES AS PER MARKING ON
SPLIT SURFACE AND CLAMP. RECHECK THE ALIGNMENTS
W.R.T MARKING AT THE OTHER
SURFACE AND RE-ALIGN IF NECESSARY.

6/29 Continued

2. PRELIMINARILY MILL SPLIT SURFACE
AS PER THE MARKING LEAVING 0.3MM
ALLOWANCE FOR FINAL MILLING.
3. MILL 2 ALINGMENT POINTS ON THE
TOP AND BOTTOM OF ONE OF THE VERTICAL
SIDES. LENGTH OF THE MILLED AREA TO BE

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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6/29 Continued

APPROX 100MM. BOTTOM OF THE TWO
MILLED SURFACES MUST BE EXACTLY IN
THE SAME VERTICAL PLANE. MILLING TO BE
CARRIED OUT WITH THE HELP OF A LARGE DIAMETER
END MILL TO MINIMUM POSSIBLE DEPTH.
4. SIMILARLY MILL TWO MORE ALIGMENT

6/29 Continued

POINTS ON THE SECOND VERTICAL SIDE.
5. MILL TWO ALIGNMENT POINTS AT
THE TWO ENDS OF THE TOP
HORIZONTAL SIDE BOTTOM OF THESE POINTS
MUST BE EXACTLY IN THE SAME HORIZONTAL PLANE
INSPECTION-CHECK PRELIMINARY MILLING OF SPLIT

6/29 Continued

SURFACE AND ALIGNMENT POINTS.
6. LEAVE THE JOB IN THE
CLAMPED CONDITION ON THE M/C TO CARRYOUT
THE MARKING.(NOT IN CASE OF CNC H. BORER)

7/29 2035 935 [redacted] BHEL SCOPE

THE FOLLOWING MARKING MAY BE
CARRIED OUT ON THE HORIZONTAL BORING M/C FOR
BETTER ACCURACY.(NOT IN CASE OF CNC H.BORER)
JOB HAS BEEN LEFT IN THE ALIGNED AND CLAMPED
CONDITION ON THE MACHINE AFTER THE
PREVIOUS OPERATION. FIX CENTRE

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

7/29 Continued

IN THE M/C SPINDLE FOR
MARKING AND LOCATING DIMENSIONS.
1. MARK 30 HOLES DIA 39 AS PER VIEW-Y
ON THE SPLIT SURFACE OF UPPER HALF.
2. MARK 16 HOLES DIA 33 ON THE SPLIT
SURFACE OF UPPER HALF AS PER VIEW-Y.

7/29 Continued

3. MARK 2 HOLES EACH FOR PINS AS PER SEC. B-B
AND D-D (REFER VIEW Y AND Z).
4. MARK 4 HOLES FOR TAPER PINS AS PER
SEC. C-C AND VIEW-Y.
5. MARK 4 HOLES DIA 22 AS PER VIEW-Y.
6. MARK 2 HOLES DIA 12 AS PER

7/29 Continued

VIEW-Y MAINTAINING DISTANCE 31.
7. MARK AREAS 100X240 WITH R50
AS PER VIEW-Y.

8/29 2035 266 [redacted] VENDOR SCOPE

1. PLACE UPPER HALF ON M/C
BED PLATE WITH SPLIT SURFACE
TOWARDS M/C SPINDLE AND FLANGE
(H2) SIDE RESTING ON SUPPORTS. ALIGN AS PER THE
SPLIT SURFACE AND CLAMP.
2. DRILL THROUGH 30 HOLES D39 AS PER MARKING & VIEW

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

8/29 Continued

-Y. CHAMFER TO 3X45DEG.(REFER NOTE IN ZONE C-9)
3.REVERSE SPOT FACE THESE HOLES TO DIA 82 WITH DEPTH 2 MM AS PER VIEW-Y. R2350.0456 R'C'B' TOOL D39 /D82
4. DRILL 16 HOLES DIA 33 THROUGH AS PER MARKING AND VIEW-Y. R6235.0179 MANDREL D39/D82
5. REVERSE SPOT FACE THESE HOLES DIA 33

8/29 Continued

TO DIA 69 MAINTAINING DEPTH 2 MM AS PER VIEW-Y. R6300.0775 R'C'B' MANDREL D33/D69
6. DRILL 2 HOLES DIA 12 AS PER MARKING & VIEW-Y.
7. MILL AREA 100X240 WITH R50 WITH DEPTH 2MM AS PER MARKING(VIEW-Y).
8. GET 2 HOLES M20 MARKED AS PER VIEW-Y.
9. DRILL 2 HOLES DIA 17.5 (M20) TO DEPTH 31

8/29 Continued

10.TAP 2 HOLES TO M20 DRILL DEPTH 23.
11.RESET TO PLACE SPLIT SURFACE ON ROTARY TABLE. ALIGN AS PER SPLIT SURFACE AND ALIGNMENT POINTS AND CLAMP, KEEPING HYDROGEN SIDE TOWARDS M/C SPINDLE.
12.MILL ONE ALIGNMENT POINT

8/29 Continued

IN THE MIDDLE OF BORE DIA 542(REFER DETAIL-V) WITH THE HELP OF END MILL APPROX DIA 50. CUT TO BE TAKEN TO DEPTH 2 SO THAT SOME ALLOWANCE IS LEFT FOR FINISH TURNING DIA 542.MEASURE AND RECORD THE DISTANCE FROM THE MIDDLE OF THIS ALIGNMENT POINT TO THE

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

8/29 Continued

SPLIT SURFACE WITH THE HELP OF MICROMETER.
UNCLAMP AND REMOVE FROM M/C.
INSPECTION-I. CHECK DIMENSION AND FINISH.
II.CHECK AND RECORD THE DISTANCE OF
ALIGNMENT POINT TO THE SPLIT SURFACE

9/29 2035 935 [redacted] BHEL SCOPE

MARKING OF LOWER HALF:-
1. REPEAT OPERATION NO. 1/29
(EXCEPT SL. NO. 6 & 7) FOR LOWER
HALF END SHIELD ITEM NO. 1
TO CARRYOUT CONTROL MARKING. REFER
DIMENSIONS APPLICABLE FOR LOWER HALF AS PER DRG.

9/29 Continued

2. MARK FOR MILLING AREA 510X400
WITH R125 AT CORNERS (ZONE H-11).
3. MARK FOR MILLING AREA 300X325
WITH R50 AT TWO CORNER
MAINTAINING DISTANCE 240 & 360 (VIEW-N).
4. MARK FOR MILLING AREA 620

9/29 Continued

(310+310)X170 AT THE BOTTOM AS PER DRG.
INSPECTION- CHECK CONTROL MARKING AND
AVAILABILITY OF ALLOWANCE ON ALL SURFACES.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

10/29 2035 266 [redacted] VENDOR SCOPE

NOTE- ALTERNATIVELY FOLLOW CNC PROGRAMME NO. %
& FOR OPERATION NO. ,
& FOR MANUFACTURING THIS COMPONENT ON CNC M/C TOOL. COMPONENT SHALL BE DULY INSPECTED BY Q.C. AFTER COMPLETION OF OPERATION.
ROUGH MACHINING OF LOWER HALF:-

10/29 Continued

1.REPEAT OPERATION 6/29 TO CARRYOUT ROUGH MACHINING OF SPLIT SURFACE (LEAVING 0.3MM ALLOWANCE) AND MILLING OF SIX NOS. ALIGNMENT POINTS. INSPECTION-CHECK PRELIMINARY MILLING OF SPLIT SURFACE AND MILLING OF SIX NOS ALIGNMENT PTS.
2. UNCLAMP & REMOVE FROM M/C.

11/29 2035 935 [redacted] BHEL SCOPE

1. PLACE LOWER HALF END SHIELD ON TWO NOS. EQUAL HEIGHT BOX SUPPORTS. ALIGN TO BRING SPLIT SURFACE IN HORIZONTAL PLANE.
2. PLACE UPPER HALF ON LOWER HALF.ALIGN UPPER HALF R7843.0080 CENTRE PUNCH AS PER MARKING OF REFERENCE PLANE ON FLANGE SIDE (H2 SIDE) AND

11/29 Continued

VERTICAL CENTRE LINE ON UPPER HALF COINCIDE WITH THAT OF LOWER HALF. CHECK MATCHING OF THE MARKING ALSO.
3. TRANSFER FROM UPPER HALF TO LOWER HALF CENTRES AT HOLES R7845.0740 BUSH D39(1) D33 (2) D22(3) CORRESPONDING TO 30 HOLES

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

9250.000

0202-0205

11/29 Continued

DIA 39 AS PER VIEW Y (SEE TR 3)
4. TRANSFER LOCATION OF 16 HOLES DIA 33
AS PER VIEW-Y (SEE TR-3).
5.TRANSFER LOCATION OF 4
HOLES DIA 22 AS PER VIEW-Y.
INSPECTION-CHECK ALIGNMENT OF UPPER

11/29 Continued

HALF W.R.T. LOWER HALF AND
TRANSFER THE LOCATION OF HOLES.
6. ROMOVE UPPER HALF.
MARK ALL THE HOLES ON THE TRANSFERRED
LOCATION OF CENTRES. MARK CONTROL CIRCLES ALSO.
7. RESET THE LOWER HALF TO

11/29 Continued

PLACE REFERRENCE. SIDE (H2 SIDE) ON EQUAL
HEIGHT SUPPORTS AND SPLIT SURFACE IN VERTICAL
PLANE.ALIGN TO BRING SPLIT SURFACE
IN VERTICAL PLANE AND MARKING
OF REFERENCE SURFACE IN HORIZONTAL PLANE.
8. MARK ON THE SPLIT SURFACE

11/29 Continued

FOR MILLING AREA 375X775 WITH R50
AS PER VIEW-Z ON BOTH LEFT
SIDE AND RIGHT SIDE (CONTOURS
ON LEFT AND RIGHT SIDE ARE DIFFERENT).
9. MARK 4 HOLES DIA 17.5 (M20) AS PER VIEW-Z.
INSPECTION-CHECK MARKING AS PER DRG.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

9250.000

0202-0205

12/29 2035 266 [redacted] VENDOR SCOPE

1. PLACE LOWER HALF ON SUPPORTS PLACED ON M/C
   ROTARY TABLE WITH SPLIT SURFACE TOWARDS
   M/C SPINDLE AND FLANGE SIDE
   (H2 SIDE) RESTING ON SUPPORTS.
   ALIGN AS PER THE SPLIT SURFACE AND CLAMP.
2. DRILL AS PER MARKING 24 HOLES R2320.0222 FLAT DRILL

12/29 Continued

   DIA 32(M36) THROUGH (VIEW-Z). D31.9
3. DRILL AS PER MARKING 6 BLIND HOLES.
   DIA 32(M36) AS PER SEC. L-L DEPTH 50.3
   (50+0.3 ALLOWANCE) WITH FLAT BOTTOM.
4. DRILL AS PER MARKING 16 HOLES
   THROUGH DIA 26.5 (M30) AS PER VIEW-Z.

12/29 Continued

5. DRILL 4 HOLES DIA 17.5 (M20)
   AS PER MARKING & VIEW-Z.
6. MILL AREA 375X775 WITH R50
   AS PER VIEW-Z ON BOTH LEFT
   & RIGHT SIDE AS PER MARKING WITH DEPTH 2MM.
7. ROTATE THE TABLE BY 180DEG.

12/29 Continued

   AND BRING MARKING OF SURFACE
   AS PER VIEW-N PERPENDICULAR TO M/C SPINDLE.
8. MILL AREA 325X300 WITH R50
   AS PER MARKING AND VIEW-N TILL CLEANING.
9. GET MARKED ON THIS SURFACE 4 HOLES D 17.5(M20)
   AS PER VIEW-N & ONE HOLE D29.5(M33)

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

12/29 Continued

ON OTHER SIDE AS PER SEC. A1-A1.
10. DRILL 4 HOLES DIA 17.5 (M20) AS PER MARKING. R2352.0296 C' B' TOOL
MAINTAINING DEPTH 27.5 AS PER VIEW-N. D29.4/D45
TAP 4 HOLES TO M20 TO DEPTH 20.
11. DRILL ONE HOLE DIA 29.5 THROUGH R6304.0041 MANDREL
AND C' BORE TO DIA 45 TILL

12/29 Continued

DEPTH 2 AS PER SEC. A1-A1.
TAP HOLES DIA 29.5 TO M33 AS PER SEC. A1-A1.
12. RESET AND PLACE THE END SHIELD ON ROTARY TABLE
WITH SPLIT SURFACE ON TABLE. ALIGN AS PER
ALIGNMENT POINTS AND SPLIT SURFACE AND CLAMP.
NON FLANGE SIDE (AIR SIDE)

12/29 Continued

TO REMAIN TOWARDS SPINDLE.
13. MILL ONE ALIGNMENT POINT IN THE MIDDLE ON BORE
D542(REFER DETAIL-V) WITH THE HELP
OF END MILL OF APPROX DIA 50MM.CUT TOBE TAKEN
TO DEPTH SO THAT SOME ALLOWANCE IS LEFT FOR
FINISH TURNING OF DIA 542. MEASURE AND RECORD

12/29 Continued

THE DISTANCE FROM THE MIDDLE
OF THIS ALIGNMENT POINT TO THE
SPLIT SURFACE WITH THE HELP OF MICROMETER.
14. MILL AREA 510X400 WITH R125 R6304.0051 MANDREL DIA 40
AT 2 CORNERS TILL CLEANING AS PER MARKING.
15.MILL AREA 620 (310+310)X170 R2352.0321 D'C'B' TOOL D40

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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12/29 Continued

TILL CLEANING AS PER MARKING. /D160
16.SPOT FACE D210 AT TWO SIDES AS PER
MAIN VIEW TILL CLEANING.
17. SPOT FACE HOLES DIA 19 TO DIA 35 R2070.0185 PILOT D19/D35
TILL CLEANING AS PER DRG.
18. UNCLAMP & REMOVE FROM M/C.

12/29 Continued

INSPECTION-CHECK DIMENSION AND SURFACE FINISH.

13/29 2045 254 [redacted] VENDOR SCOPE

1.PLACE LOWER HALF ON M/C
BED PLATE WITH SPLIT SURFACE IN HORIZONTAL
PLANE. ALIGN WITH SPIRIT LEVEL & CLAMPS.
2.TAP 24 HOLES DIA 31.9 TO M36 THROUGH
3.TAP 6 HOLES DIA 31.9 TO M36 AS PER SEC. L-L
TO DEPTH 40.3 (40+0.3 ALLOWANCE).

13/29 Continued

4. TAP 16 HOLES DIA 26.5 TO M30 THROUGH.
5.TAP 4 HOLES DIA 17.5 TO M20 AS PER VIEW-Z.
INSPECTION-CHECK SIZE AND DEPTH OF HOLES.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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14/29 2045 934 [redacted] BHEL SCOPE

1.COMPLETELY DEBURR AND CLEAN THE TWO
HALVES & ROUND OFF CORNER TO R0.5.
2.PLACE LOWER HALF IN VERTICAL POSITION WITH ITS
SIDE SURFACES RESTING ON EQUAL HEIGHT SUPPORTS.
3.PLACE UPPER HALF ON LOWER HALF.ALIGN UPPER HALF
SUCH THAT MARKING OF ITS REFERENCE PLANE AND

14/29 Continued

VERTICAL CENTRE LINE COINCIDES WITH
THAT OF LOWER HALF.
INSPECTION-CHECK ALIGNMENT OF 2 HALVES.
4. ASSEMBLE TWO HALVES
TOGETHER WITH BOLTS ITEM 19,20,23 & 24
TECH. PACKING AND WASHER ITEM 39 & 40. R7429.0053 TECH. PACKING

14/29 Continued

5.CHECK FOR ABSENCE OF GAP AT SPLIT SURFACE.
INSPECTION-CHECK FOR PROPER ASSEMBLY.

15/29 2035 266 [redacted] VENDOR SCOPE

1. PLACE END SHIELD ON MACHINE BED PLATE
WITH EQUAL HEIGHT SUPPORT IN BETWEEN
FOR DRILLING AND REAMING OF TAPER HOLE AS
AS PER SEC. BB, CC & DD. ALIGN AS PER SPLIT R6235.0313 MANDREL D19.5/D
SURFACE AND 6 ALIGNMENT POINTS AND CLAMP. 44
2. DRILL 2 HOLES D39.5 (D40) AS PER MARKING.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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15/29 Continued

AND SEC. BB AND VIEW-Z.		
3. C' BORE HOLES D39.5 TO D44 TILL DEPTH 20. AND TO D64 TILL DEPTH 2MM AS PER SECTION BB.	R6300.0776	MANDREL R'C'B'T ' D39.5/D64
4. ENLARGE AND REAM 2 HOLES TO TAPER 1:50 PRELIMINARILY AND FINALLY MAINTAINING D40 AND DIMENSIONS 130.	R8321.0130 R2373.0010	TAPER PLUG GAUG E TAPER REAMER D3

15/29 Continued

5. DRILL 4 HOLES D29.5 (DIA 30) THROUGH FOR PINS AS PER SEC. C-C AND MARKING.		0
6. C' BORE HOLES D29.5 TO D34 TILL DEPTH 20 AND TO D51 TILL DEPTH 2 AS PER SEC. C-C.	R6300.0774	MANDREL R'C'B'T ' D29.5/D34
7. ENLARGE AND REAM 4 HOLES TO TAPER 1 IS TO 50 PRELIMINARILY & FINALLY MAINT.D30 & DIM. 13	R8321.0128	TAPER PLUG GAUG E

15/29 Continued

8. DRILL 2 HOLES D19.5 (D20) THROUGH FOR PINS AS PER MARKING AND SECTION DD AND VIEW-Z.	R2373.0022	TAPER REAMER D2 0
9. C' BORE D19.5 TO D23 TILL DEPTH 17 AND SPOT FACE TO D44 TILL DEPTH 2MM.	R2350.0457	R'C'B'T' D19.5/ D23
10. ENLARGE AND REAM 2 HOLES	R2373.0027	TAPER REAMER D4 0

15/29 Continued

PRELIMINARILY & FINALLY MAINTAINING D20 AND		D19.5/D44 D19.5/D44
DIMENSIONS 85.	R8321.0129	TAPER PLUG GAUGE
11. DEBURR AND ASSEMBLE TAPER PINS ITEM 28 WITH NUT ITEM 34 & WASHER ITEM 39 ASSEMBLE THE TAPER PINS ITEM 29		

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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15/29 Continued

ASSEMBLE THE TAPER PINS ITEM 30 WITH NUT ITEM
35 AND WASHER ITEM 40.
INSPECTION-
CHECK REAMING OF HOLES AND ASSEMBLY OF PINS.

16/29 2035 156 [redacted] BHEL SCOPE

ALTERNATIVELY FOLLOW CNC PROGRAMME NUMBER %
%8021 ,%8031 , %8041 , % 8051 FOR MANUFACTURING
THIS COMPONENT ON CNC MACHINE TOOL.COMPONENT SHALL
BE DULY INSPECTED BY QC AFTER COMPLETION OF
OPERATION. & .
ROUGH TURNING:-

16/29 Continued

1. PLACE EQUAL HEIGHT BLOCKS ON M/C TABLE.
PLACE END SHIELD ON BLOCKS WITH REFERENCE
SIDE ON TOP (H2 SIDE.)
2. ALIGN AS PER THE HORIZONTAL AND VERTICAL
ALIGNMENT POINTS OF ONE HALF.MEASURE THE
BEATING OF ALIGNMENT POINTS IN THE BORE D542 OF

16/29 Continued

TWO HALVES WITH THE HELP OF A DIAL INDICATOR.
ALIGN END SHIELD TO BRING THE DIFFERANCE OF
BEATING IN TWO HALVES ACCORDING TO READINGS
TAKEN IN OPERATION 8 SL NO 13
AND OPN 12 SL NO 14. CLAMP END
SHIELD ON M/C TABLE RECHECK THE

XXX 1

END SHIELD MACHINING 01393701005 00 2 01393701006 00

9250.000

0202-0205

16/29 Continued

ALIGNMENT IN ALL PLANES AND REALIGN IF NECESSARY
3. FACE THE CONTACT SURFACE OF STATOR FRAME
DIA 3300/DIA 3080-0.2
TO DIMENSION 52 (48+4 ALLOWANCE) AS PER SEC.
AA (DETAIL-U) MAINTAINING DIMENSION 190 FROM
BEARING CENTRE LINE.

16/29 Continued

4. TURN O.D. TO 3310 (3300+10) AS PER SEC. A-A
LEAVING 5MM ALLOWANCE FOR FINAL M/CING.
5. FACE TO D680(690-10) MAINTAINING DIMENSIONS
475(470+5) AS PER DETAIL-V AND SECTION A-A
LEAVING 5MM ALLOWANCE FOR FINAL M/CING.
6. BORE D542(552-10) MAINTAINING DEPTH 35

16/29 Continued

AS PER SEC. AA AND DETAIL-V
LEAVING 5MM FOR FINAL M/CING.
7. BORE D532(542-10) AS PER DETAIL-V
LEAVING 5MM ALLOWANCE FOR FINAL M/CING.
8. UNCLAMP THE END SHIELD.
RESET THE EQUAL HEIGHT SUPPORT AND REPLACE

16/29 Continued

THE END SHIELD WITH FLANGE SIDE(H2 SIDE)
MACHINE SURFACE RESTING ON EQUAL HEIGHT
BLOCKS. ALIGN AS PER MACHINED SURFACE AND CLAMP.
9. TURN DIAMETER D775(785-10) MAINTAINING
DIMENSION 120(110+5+5) AS PER SEC. AA & DETAIL-V
LEAVING 5MM ALLOWANCE FOR FINAL M/CING.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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16/29 Continued

10. BORE D850(860-10) AS PER SEC. A-A
MAINTAINING DISTNACE 775
LEAVING 5MM ALLOWNCE FOR FINAL M/CING.
11. BORE D790(800-10) AS PER SEC. AA
LEAVING 5MM ALLOWANCE FOR FINAL M/CING.
12. FACE THE OTHER SIDE OF FLANGE SURFACE

16/29 Continued

MAINTAINING THICKNESS 50
(48+2) OF FLANGE AS PER SEC. A-A.
13. ROUGH TURN BEARING SEATING SURFACEE
LEAVING 5MM ALLOWANCE FOR FINAL M/CING.
INSPECTION-CHECK DIMENSIONS.
14. UNCLAMP AND REMOVE FROM MACHINE.

17/29 2035 934 [redacted] BHEL SCOPE

1.MATCH MARK TWO HALVES.
2.DISASSEMBLE END SHIELD IN TWO HALVES.
3.DEBURR AND CLEAN THE TWO HALVES.
INSPECTION- CHECK MATCH MARKING.

18/29 2035 266 [redacted] VENDOR SCOPE

NOTE- ALTERNATIVELY FOLLOW CNC PROGRAMME NO. %
FOR MANUFACTURING THIS COMPONENT ON CNC MACHINE
TOOL.COMPONENT SHALL BE DULY INSPECTED BY QC AFTER
COMPLETION OF OPERATION.
FINAL MACHINING OF LOWER HALF END SHIELD:-
1. PLACE LOWER HALF END SHIELD ON

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

18/29 Continued

ROTARY PLATE WITH FLANGE SIDE
(H2 SIDE) RESTING ON SUPPORTS
AND SPLIT SURFACE TOWARDS M/C
SPINDLE. SET ALL CORNERS TO ZERO
ALIGN AS PER SPLIT SURFACE AND CLAMP.
2. FINISH MILL SPLIT SURFACE TO

18/29 Continued

DIMENSIONS 55. USE MICRO MILLING CUTTER.
3. GET THE SLOT FOR RUBBER CORD MARKED
ON SPLIT SURFACE AS PER VIEW-Z.
4. MILL RUBBER CORD SLOT ON SPLIT SURFACE 7 R2323.0085 SLOT MILLING CU
WIDE AS PER MARKING MAINTAINING DEPTH 5 & DIMS. TTER D7
AS PER VIEW-Z, DETAIL-R & T AND SEC. D1-D1

18/29 Continued

(REFER TR-4). R2323.0057 SLOT DRILL D7
INSPECTION- I. CHECK DIMENSIONS & SURFACE FINISH
II.CARRYOUT D.P TEST ON PARTING PLANE
AFTER FINAL MACHINING.
5. UNCLAMP AND REMOVE FROM M/C.

19/29 2035 266 [redacted] VENDOR SCOPE

ALTERNATIVELY FOLLOW CNC PROGRAMME NUMBER %
FOR MANUFACTURING THIS COMPONENT ON CNC MACHINE
TOOL.COMPONENT SHALL BE DULY INSPECTED BY QC AFTER
COMPLETION OF OPERATION.
FINISH MACHINING OF UPPER HALF.
1. PLACE THE UPPER HALF OF END SHIELD

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

9250.000

0202-0205

19/29 Continued

ON ROTARY TABLE WITH FLANGE
SIDE (H2 SIDE) RESTING ON SUPPORTS
AND SPLIT SURFACE TOWARDS M/C
SPINDLE SET ALL CORNER TO ZERO
ALIGN AS PER SPLIT SURFACE AND CLAMP.
2. FINISH MILL THE SPLIT SURFACE

19/29 Continued

TO DIMENSION 55 TO FINISH AS PER DRAWING.
USE MICRO MILLING CUTTER.
INSPECTION-I.CHECK DIMENSIONS AND SURFACE FINISH.
II.CARRYOUT D.P.TEST OF PARTING PLANE.
AFTER FINAL MACHINING.
3.UNCLAMP AND REMOVE FROM MACHINE

20/29 2035 934 [redacted] BHEL SCOPE

1. COMPLETELY DEBURR AND CLEAN TWO HALVES.
2. ROUND OFF THE CORNER OF SEALING GROOVES
TO R0.5 AS PER SEC. D1-D1.
3. PLACE LOWER HALF IN VERTICAL POSITION
WITH ITS SIDE SURFACES RESTING ON EQUAL
HEIGHT SUPPORTS.

20/29 Continued

4. PLACE UPPER HALF ON LOWER HALF.
ALIGN UPPER HALF SO THAT MARKING
OF ITS REFERENCE PLANE AND VERTICAL
CENTRE LINE COINCIDES WITH THAT OF LOWER HALF.
INSPECTION-I.CHECK ALIGNMENT OF 2 HALVES.
II.CHECK GAP BETWEEN TWO HALVES AT JOININ

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

9250.000

0202-0205

20/29 Continued

SURFACE.IT SHOULD NOT BE MORE THAN 0.6
(REFER TR- 5).
5. LOOSEN AND SHIFT THE END SHIELD COVER
ITEM 13 ONE MM UPWARDS IN U/HALF.
ASSEMBLE TWO HALVES TOGETHER WITH
TECHNOLOGICAL PACKING AND WITH BOLTS. R7429.0053 TECH. PACKING

20/29 Continued

ITEM 23 & WASHER ITEM 39 BOLT ITEM 19,20 & 24
WAHSER ITEM 40.
6. CHECK GAP AT SPLIT SURFACE AS PER TR-5. IT
SHOULD NOT BE MORE THAN 0.1
INSPECTION-I.CHECK THE PROPER ASSEMBLY.
II.CHECK GAP AT SPLIT SURFACE AS PER

20/29 Continued

TR-5. IT SHOULD BE LESS THAN 0.1

21/29 2035 156 [redacted] BHEL SCOPE

REFER CNC PROGRAMMES GIVEN IN OPN. NO. 16/29
FINISH TURNING:-
1. PLACE AND CLAMP 4 NOS. EQUAL HEIGHT
BLOCKS TO SUPPORT AIR SIDE
(NON-FLANGE SIDE) OF END SHIELD.
2. PLACE END SHIELD ON M/C. TABLE WITH AIR

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

21/29 Continued

SIDE DOWNWARDS.
3.ALIGN AS PER MACHINED SURFACES AND CLAMP.
4.TURN OD TO D3300 AS PER SEC. A-A & DETAIL-U.
5.FINISH FACE STEP D690+0.3 FINALLY MAINTAINING
DISTANCE 470+/-0.2 AS PER SEC. A-A & DETAIL-V.
6. TURN RECESS 0.5 DEEP 44 WIDE AT

21/29 Continued

DIA 3156-1 ON FLANGE SURFACE.
7. TURN GROOVE 6 WIDE MAINTAINING DEPTH
6 AT D3122+/-0.5 AS PER DETAIL-U.
8. BORE D552+0.5 FINALLY MAINTAINING DEPTH
35 WITH R5 AS PER DETAIL-V, SEC. A-A.
9.BORE D542-0.5 FINALLY AS PER DETAIL-V.

21/29 Continued

INSPECTION:-CHECK DIMENSIONS AND FINISH.
10. UNCLAMP AND REMOVE THE END SHIELD, R7701.0151 BLOCK FOR JAWS
PLACE BLOCKS BELOW THE JAWS AND
OVERTURN THE END SHIELD AND PLACE.
THE REFERENCE PLANE ON THE TABLE
WITH H2 SIDE DOWN, ALIGN AS PER FINISH MACHINED

21/29 Continued

SURFACES AND CLAMP.
11. TURN FLANGE SURFACE MAINTAINING THICKNESS
48-0.3 AS PER SEC. A-A & DETAIL-U.
12. FINISH BORE BEARING HALF RING SEATING
SURFACE TO D782.4+0.080/-0.000 MAINTAINING R7011.0073 PLATE FOR BORE
SURFACE FINISH AS PER SECTION A-A.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

9250.000

0202-0205

21/29 Continued

13. BORE D860 AS PER SEC.
A-A MAINTAINING DISTANCE 755.
14. BORE DIA 800 FINALLY AS PER SEC. A-A.
15. FINISH TURN STEP D785+0.3 MAINTAINING DISTANCE
110+0.2 AS PER SEC. A-A AND DETAIL-V.
16. TURN GROOVE 9 WIDE WITH DEPTH 5+0.2

21/29 Continued

WITH R0.5 AT BOTTOM ON D637, CHAMFER 1.5X45DEG.
AT THE CORNERS OF THE GROOVE.(REFER DETAIL-P).
INSPECTION:-CHECK DIMENSIONS AND SURFACE FINISH.
17. UNCLAMP AND SHIFT THE END SHIELD BY
15 MM AS PER DRG.AND TURN THE ECENTRIC GROOVE
8 WIDE WITH D580/D596 AND DEPTH

21/29 Continued

10 AS PER DETAIL-V.
INSPECTION-CHECK DIMENSIONS AND FINISH.
18.UNCLAMP AND REMOVE FROM MACHINE

22/29 2035 935 [redacted] BHEL SCOPE

1. MARK 80 HOLES DIA 40 AT PCD 3200 AS PER DRG.
2. MARK 6 HOLES DIA 28 ON PCD 3200.
3. MARK 16 HOLES D21 (M24) ON PCD 700 AS PER
DETAIL-V. FOR SEAL RING HOLDER. (REFER VIEW-O).
4. MARK 24 HOLES DIA 10.2 (M12)
ON PCD 830 MATCHING WITH OIL

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

22/29 Continued

WIPER RING DRG.(SEC. A-A).
5. MARK 4 GROUPS OF 4 HOLES DIA 17.5 (M20) ON PCD 140 AS PER VIEW-X.
6. MARK 4 HOLES DIA 14 (M16) ON PCD 125 FOR SEAL OIL DRAIN & 2 GROUPS OF 4 HOLES DIA 14(M16) ON PCD 110 FOR SEAL OIL SUPPLY AND RING RELIEF OIL

22/29 Continued

INLET IN LOWER HALF END SHIELD AS PER DRG. IN MILLED AREA (310+310)X170
7. MARK 4 HOLES DIA 14 (M16) ON PCD 145 AND 8 HOLES DIA 14 (M16) ON PCD 160 IN LOWER HALF END SHIELD.
8. MARK 8 HOLES DIA 17.5 (M20)

22/29 Continued

ON PCD 240 IN MILLED AREA 400X510 IN LOWER HALF.
8A.MARK 4 HOLES D 10.2(M12) ON PCD 70 & ONE HOLE D 18.63(G 1/2") AS PER DRG.
9.MARK 2 HOLES D8 AS PER DETAIL-R & SEC. B1-B1.
10.MARK 2 HOLES D8 & 2 HOLE D10.2(M12) AS PER SEC. E-E.

22/29 Continued

11.MARK 3 HOLES DIA 8 AS PER SEC. F-F.
12.MARK 2 HOLES DIA 10 AS PER SEC. I-I.
13.MARK 2 HOLES DIA 5 AS PER SEC. J-J.
14.MARK 2 HOLES DIA 14.95 AS PER SEC. C1-C1 & VIEW S IN UPPER HALF (FOR G3/8").
15. MARK 2 HOLES DIA 8 AS PER SEC. C1-C1.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

22/29 Continued

16. MARK 2 HOLES DIA 24.25 (G3/4")
AS PER VIEW X AND SEC. G-G.
INSPECTION- CHECK MARKING.

23/29 2045 254 [redacted] VENDOR SCOPE

NOTE- ALTERNATIVELY FOLLOW CNC PROGRAMME NO. %
& FOR OPERATION NO. & FOR
MANUFACTURING THIS COMPONENT ON CNC M/C TOOL.
COMPONENT SHALL BE DULY INSPECTED BY QC
AFTER COMPLETION OF OPERATION.

1. PLACE END SHIELD ON M/C BED R6100.0097 EXTENSION SLEEV

23/29 Continued

PLATE WITH FLANGE SIDE (H2 SIDE) E
ON TOP ALIGN AND CLAMP.

2. DRILL THROUGH 80 HOLES DIA 40 AT PCD 3200 AS PER
MARKING (2HOLES THE FIRST HOLE ON LEFT SIDE AND
RIGHTSIDE BELOW THE PARTING PLANE OF BOTTOM
HALF IS TO BE DONE LATER).

23/29 Continued

DRILL 6 HOLES DIA 28 AS PER MARKING.

3.DRILL 4 GROUP OF 4 HOLES DIA 17.5
AS PER MARKING AND VIEW X TO DEPTH 38.

4.TAP 4 GROUPS OF 4 HOLES DIA 17.5
TO M20 TILL DEPTH 30.

5. OVERTURN AND REST THE END SHIELD

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

23/29 Continued

WITH NON FLANGE SIDE
(AIR SIDE) ON TOP. PLACE ON EQUAL
HEIGHT SUPPORTS. ALIGN AND FIX.

6. DRILL 2 HOLES DIA 10 AS PER SEC I-I (THROUGH) ON LOWER HALF — R2350.0377 CBT D10/D17.25
7. C'BORE 2 HOLES DIA 10 TO DIA 17.25 — R2624.0006 TAP PG11

23/29 Continued

(PG 11) TILL DEPTH 13.

8. TAP 2 HOLES DIA 17.5 TO PG 11 TILL DEPTH 8.5 — R2350.0378 CBT D5/D17.25
9. DRILL 2 HOLES DIA 5 AS PER SEC J-J (THROUGH) ON LOWER HALF.
10. C'BORE 2 HOLES DIA 5 TO DIA 17.25 (PG11) TILL DEPTH 13. — R2624.0006 TAP PG11

23/29 Continued

11. TAP 2 HOLES DIA 17.5 TO PG 11 TILL DEPTH 8.5
12. DRILL 2 HOLES DIA 24.25 (G3/4") AS PER VIEW-X, SEC. G-G & MM AND MARKING. — R2352.0264 CBT D24.25/D38
13. C'BORE DIA 24.25 TO DIA 38+0.1 — R6304.0034 MANDREL
14. DRILL 24 HOLES DIA 10.2 THROUGH ON PCD 830 AS PER MARKING.

23/29 Continued

15. DRILL 4 HOLES DIA 14 ON PCD 125 TILL DEPTH 25 AS PER MARKING ON LOWER HALF.
16. TAP 4 HOLES DIA 14 TO M16 TILL DEPTH 20 AS PER DRG.
17. DRILL 2 GROUPS OF 4 HOLES D14(M16) TILL DEPTH 20 ON PCD 110 AS PER MARKING ON LOWER HALF.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

23/29 Continued

18. DRILL 4 HOLES DIA 14 (M16)ON PCD 145 AND 8
HOLES DIA 14 (M16) ON PCD 160 TILL DEPTH 30 AS
PER MAKRING ON LOWER HALF.
19. TAP 8 HOLES DIA 14 TO M16
AS PER DRG. TO DEPTH 23.
20. DRILL 8 HOLES DIA 17.5

23/29 Continued

M20 ON PCD 240 TILL DEPTH 27.5
AS PER MARKING ON LOWER HALF.
21. TAP 8 HOLES DIA 17.5TO M20 TILL DEPTH 20.
22. DRILL 2 HOLES DIA 8 THROUGH
AS PER SEC. B1-B1 & MARKING.
23.DRILL 2 HOLES DIA 15.25 TO DEPTH 34 AS PER

23/29 Continued

SEC. B1-B1.
24. TAP 2 HOLES DIA 15.25
TO G3/8" AS PER SEC. B1-B1.
25.DRILL 2 HOLES DIA 8 & ONE HOLE D10.2(M12)
THROUGH AS PER SEC EE AND MARKING. R2350.0376 CBT D8/D15.25
26.C'BORE 2 HOLES DIA 8 & ONE HOLE D10.2 TO

23/29 Continued

DIA 15.25 TILL DEPTH AS PER SEC. E-E. R2350.0419 PILOT D14.5/D30
27. C'BORE 3 HOLES DIA 15.25 TO
DIA 40 DEPTH 2 AS PER DRG.
28.TAP 3 HOLES DIA 15.25 R2070.0247 PILOT
TO G3/8" AS PER SEC. E-E.
29.DRILL 3 HOLES DIA 8 THROUGH R2350.0376 CBT D8/D15.25

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

23/29 Continued

AS PER MARKING AND SEC. F-F.
30.C'BORE 3 HOLES DIA 8 TO D15.25 TO DEPTH 22 AND TO DIA 40 R2350.0376 CBT D8/D15.25
31.TAP 3 HOLES DIA 15.25 TO G3/8". R2070.0247 PILOT
32.DRILL 2 HOLES DIA 8 AS PER SEC. C1- C1 AS PER MARKING.

23/29 Continued

33. C' BORE HOLES DIA 8 TO DIA 30+0.2 TILL DEPTH 11.
34. DRILL 2 HOLES DIA 14.95 TILL DEPTH 65 AS PER SEC. C1-C1 AND MARKING.
35. C' BORE HOLES DIA 15.25 TO DIA 40 TILL DEPTH 2MM AS PER SEC. C1-C1.

23/29 Continued

36. TAP HOLES DIA 15.25 TO G3/8" TILL DEPTH 15.
37.DRILL AND TAP 4 HOLES D 10.2 (M12) ON PCD 70 AND 1 HOLE D 18.63 (G1/2") AS PER MARKING & DRG AND S F 1 HOLE D 18.63 TO D 35 AS PER DRG.
INSPECTION-
CHECK LOCATION AND SIZE OF HOLES.

24/29 2035 934 [redacted] BHEL SCOPE

1. DISMANTLE THE 2 HALVES.
2. DEBURR AND CLEAN.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

25/29 2045 254 [redacted] VENDOR SCOPE

1. DRILL 2 HOLES DIA 40 AT PCD
   3200 (IST HOLES LEFT AND
   RIGHTSIDE BELOW PARTING PLANE IN BOTTOM HALF.)
   INSPECTION-
   CHECK SIZE AND LOCATION OF HOLES.

26/29 2035 935 [redacted] BHEL SCOPE

1. MARK 3 HOLES M72X2 ON CORD DIA 542
   AS PER SEC HH IN LOWER HALF END SHIELD.
2. MARK 2 HOLES DIA 8 PERPENDICAL
   TO HOLES G3/8
   AS PER SEC B1-B1 MAINTAINING DIMENSION 20.
3. MARK 2 HOLES DIA 8 AT 35DEG.

26/29 Continued

   (MARK THE AXIS OF HOLES DIA 8
   AS PER VIEW S ON UPPER HALF).
4. MARK 1 HOLES DIA 12 AS PER SEC. C1-C1
   ON UPPER HALF.

27/29 2035 266 [redacted] VENDOR SCOPE

NOTE- ALTERNATIVELY FOLLOW CNC PROGRAMME NO. %
FOR MANUFACTURING THIS COMPONENT ON CNC M/C TOOL.
COMPONENT SHALL BE DULY INSPECTED BY
QC AFTER COMPLETION OF OPERATION.

1. PLACE LOWER HALF ON M/C ROTARY TABLE WITH SPLIT SURFACE PERPENDICULAR TO M/C R2352.0318 C'B'T' D70/D85

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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0202-0205

27/29 Continued

SPINDLE. ALIGN AS PER MACHINE SPINDLE AND CLAMP. R6304.0048 MANDREL
2. DRILL 3 HOLES DIA 70 (M72X2) THROUGH
AS PER SEC HH & MARKING. (REFER DETAIL-Q). R2621.0147 TAP M72X2
3. C'BORE HOLES DIA 70
TO DIA 85 MAINTAINING DEPTH 7MM AS PER DRG.
4. TAP 3 HOLES DIA 70 TO M72X2 TILL DEPTH 40. R8222.0070 PLUG GAUGE

27/29 Continued

5. DRILL 2 HOLES DIA 8 AS PER MARKING & SEC B1-B1.
6. C' BORE PIPE OPENING R2352.0319 CBT D68.1/D90
DIA 68.1 TO DIA 90.+0.5
TO DEPTH 3.2+0.5 AS PER SEC. M1-M1.. R6304.0049 MANDREL
INSPECTION-CHECK AS PER DRAWING.
7. UNLAMP AND REMOVE FROM M/C.

28/29 2035 266 [redacted] VENDOR SCOPE

1. PLACE UPPER HALF ON ROTARY
TABLE WITH SPLIT SURFACE TOWARDS M/C SPINDLE.
ALIGN AS PER SPLIT SURFACE AND CLAMP.
2. DRILL 2 HOLES DIA 12 TILL DEPTH
5 AS PER SEC. GG & MARKING.
3. UNCLAMP & RESET THE END SHIELD,

28/29 Continued

SO THAT AXIS OF HOLE DIA 8 AT 35 DEGREE IS
PERPENDLCULAR TO M/C.SPINDLE.ALIGN AND CLAMP.
4. DRILL 2 HOLES DIA 8 AS PER SEC. C1-C1
(JOINING HOLES D12 TO D14.95).
INSPECTION-CHECK AS PER DRG.
5. UNLAMP AND REMOVE FROM M/C.

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END SHIELD MACHINING 01393701005 00 2 01393701006 00

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29/29 2053 934 [redacted] BHEL SCOPE

1.ROUND OFF SHARP EDGES AND CLEAN.
2.COMPLETELY DEBURR AND CLEAN THROUGHLY
INCLUDING ALL HOLES, OIL PIPE LINES, CHAMBERS
TO MAKE THEM FREE FROM CHIPS, OIL ANY
FOREIGN PARTICLE.
3.MARK IDENTIFICATION AS PER TR-2.

29/29 Continued

INSPECTION-1. CHECK AS PER DRG.
2.CHECK FOR CLEANINESS INCLUDING ALL HOLES
PIPE LINES, CHAMBERS ETC. FOR ABSENCE OF
CHIPS /FOREIGN PARTICLES.