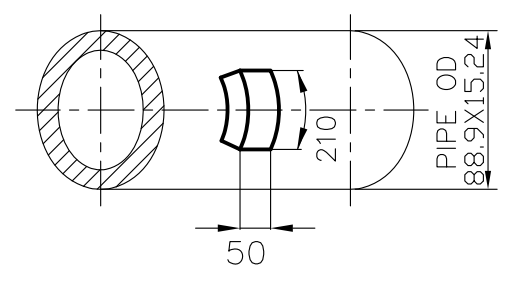
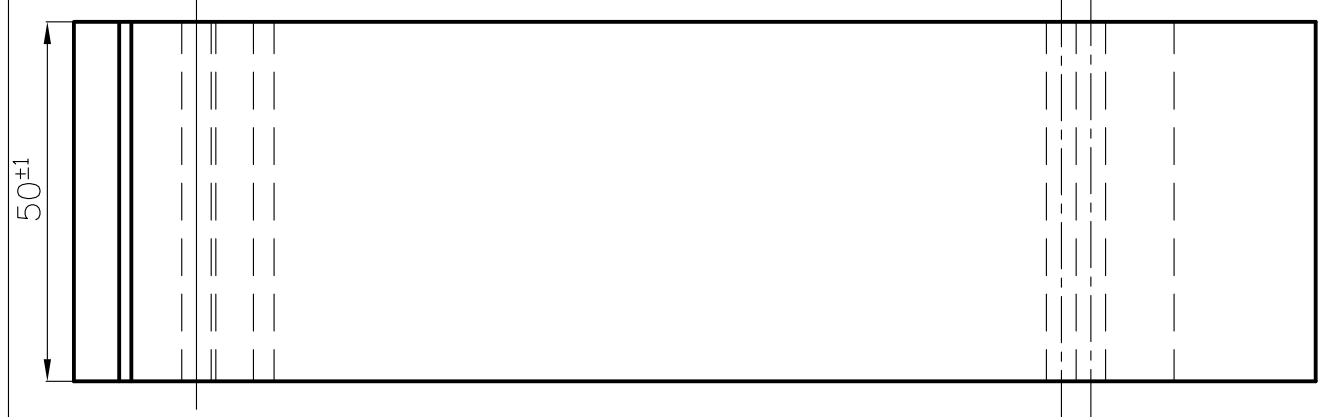
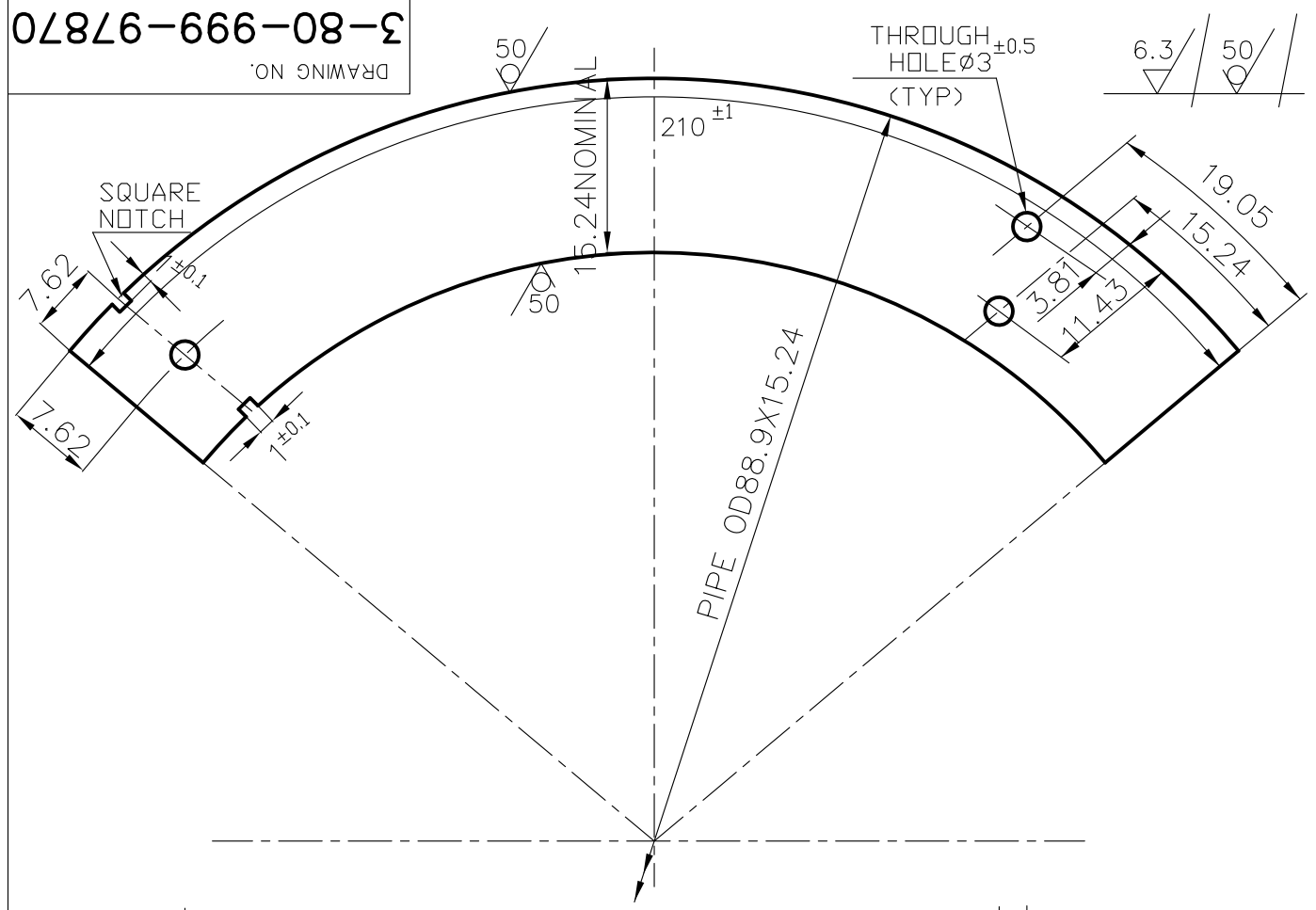


3-80-999-97870  
DRAWING NO.

CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



NOTES:

01. THE BLOCK HAS TO BE CUT FROM PIPE AS SHOWN IN THE FIGURE TO ENSURE ORIENTATION WITH RESPECT TO PIPE AXES.
02. INNER & OUTER SURFACE OF THE PIPES SHALL NOT BE MACHINED.
03. TOLERANCES FOR HOLE LOCATION: PLUS OR MINUS 0.8mm.
04. CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
05. SUITABLE MACHINING ALLOWANCES / PRECAUTIONS ARE TO BE CONSIDERED WHILE CUTTING FROM PIPE.
06. DEPTH OF SQUARE NOTCH HAS TO BE UNIFORMLY 1mm BOTH INSIDE AND OUTSIDE FOR THE FULL LENGTH OF 50mm.
07. FOR AUXIAL BLOCK RFEER STD DRG 3-80-999-97745.
08. FOR HARDNESS REFERENCE BLOCK RFEER STD DRG 3-80-999-97721.
09. FINISHED CIRCUMFERENTIAL BLOCK CODE No.XX XXX XXX XXXX
10. BLOCKS ARE TO BE CALIBRATED AT NABL APPROVED METROLOGY LABORATORY.
11. AFTER CALIBRATION ALL MACHINED SURFACES ARE TO BE COATED WITH SUITABLE RUST PREVENTIVE.

|         |          |                         |                |         |                |   |             |
|---------|----------|-------------------------|----------------|---------|----------------|---|-------------|
| VAR NO. | ITEM NO. | DESCRIPTION             | DRAWING NUMBER | ITEM NO | MATERIAL CODE  | A | UNIT WEIGHT |
|         |          | PIPE OD88.9X15.24 L=200 | 3-80-999-97870 |         | SA335P91       | P | 0.3646      |
|         |          |                         |                | VAR NO  | MATERIAL SPECN | C | QUANTITY    |
|         |          |                         |                |         |                |   | 1           |

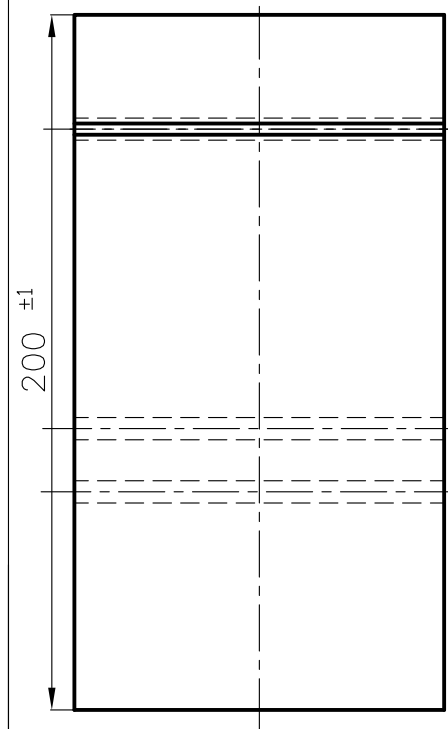
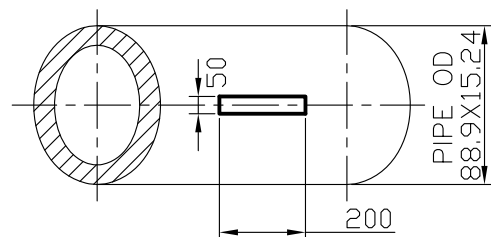
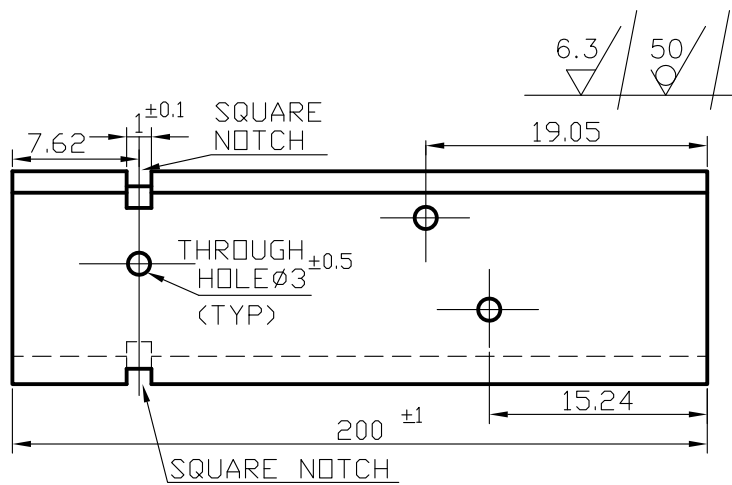
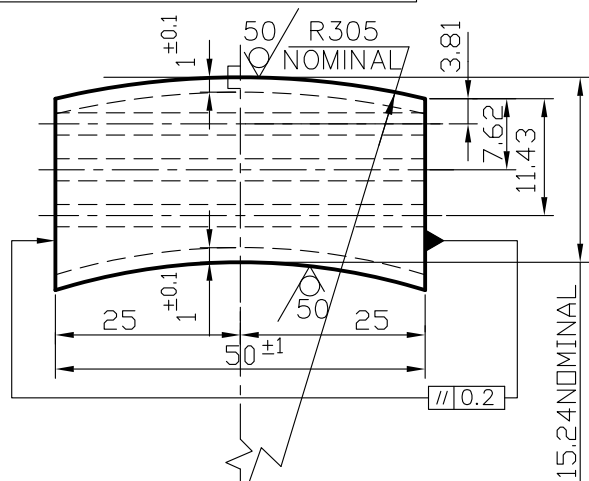
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|--|---------------------------------|--|------|--------------------|------------|
|  | BHARAT HEAVY ELECTRICALS LTD.,  |  | NAME | SIGN               | DATE       |
|  | PIPING CENTRE, CHENNAI, 600 017 |  | DRN  | LALIT              | 01.06.2011 |
|  |                                 |  | CHD  | G.PANNER SELVAM    | 01.06.2011 |
|  |                                 |  | APPD | A.P.MADHAVAN KUTTY | 01.06.2011 |

|        |      |                  |   |                     |                |             |                        |
|--------|------|------------------|---|---------------------|----------------|-------------|------------------------|
| REV 01 | DATE | ALTERED APPROVED | DEPT.   | GRADE OF UN TOL DIM | SCALE          | WEIGHT (Kg) | REF.TO ASSY / OLD DRG. |
|        |      |                  | CODE  | C/M/F               | N.T.S.         | 0.3646      |                        |
|        |      |                  | TITLE   | CARD CODE           | DRAWING No.    | REV         |                        |
|        |      |                  | UT REFERENCE BLOCK P91<br>CIRCUMFERENTIAL(OD88.9X15.24) | U 01                | 3-80-999-97870 | 00          |                        |

69876-666-08-2

DRAWING NO.

CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



NOTES:

01. THE BLOCK HAS TO BE CUT FROM PIPE AS SHOWN IN THE FIGURE TO ENSURE ORIENTATION WITH RESPECT TO PIPE AXES.
02. INNER & OUTER SURFACE OF THE PIPES SHALL NOT BE MACHINED.
03. TOLERANCES FOR HOLE LOCATION: PLUS OR MINUS 0.8mm.
04. CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
05. SUITABLE MACHINING ALLOWANCES / PRECAUTIONS ARE TO BE CONSIDERED WHILE CUTTING FROM PIPE.
06. DEPTH OF SQUARE NOTCH HAS TO BE UNIFORMLY 1mm BOTH INSIDE AND OUTSIDE FOR THE FULL LENGTH OF 50mm.
07. FOR CIRCUMFERENTIAL BLOCK REFER STD DRG 3-80-999-97846.
08. FOR HARDNESS REFERENCE BLOCK REFER STD DRG 3-80-999-97721.
09. FINISHED AXIAL BLOCK CODE No.XX XXX XXX XXXX
10. BLOCKS ARE TO BE CALIBRATED AT NABL APPROVED METROLOGY LABORATORY.
11. AFTER CALIBRATION ALL MACHINED SURFACES ARE TO BE COATED WITH SUITABLE RUST PREVENTIVE.

|         |          | PIPE OD88.9X15.24L=212.92 | 3-80-999-97869 | 15 958 178 6000 | P              | 0.7292      |
|---------|----------|---------------------------|----------------|-----------------|----------------|-------------|
|         |          |                           |                | SA335P91        |                | 1           |
| VAR NO. | ITEM NO. | DESCRIPTION               | DRAWING NUMBER | ITEM NO         | MATERIAL CODE  | UNIT WEIGHT |
|         |          |                           |                | VAR NO          | MATERIAL SPECN | QUANTITY    |



BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, CHENNAI, 600 017

|      | NAME            | SIGN | DATE       |
|------|-----------------|------|------------|
| DRN  | KONDAPA         |      | 22.10.2011 |
| CHD  | G.PANNER SELVAM |      | 22.10.2011 |
| APPD | K V RAMANI      |      | 22.10.2011 |

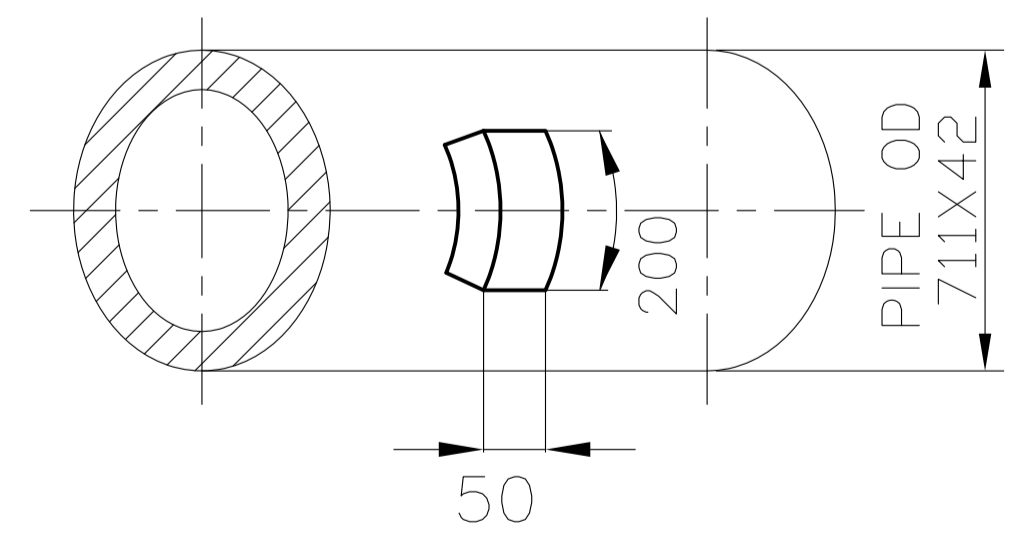
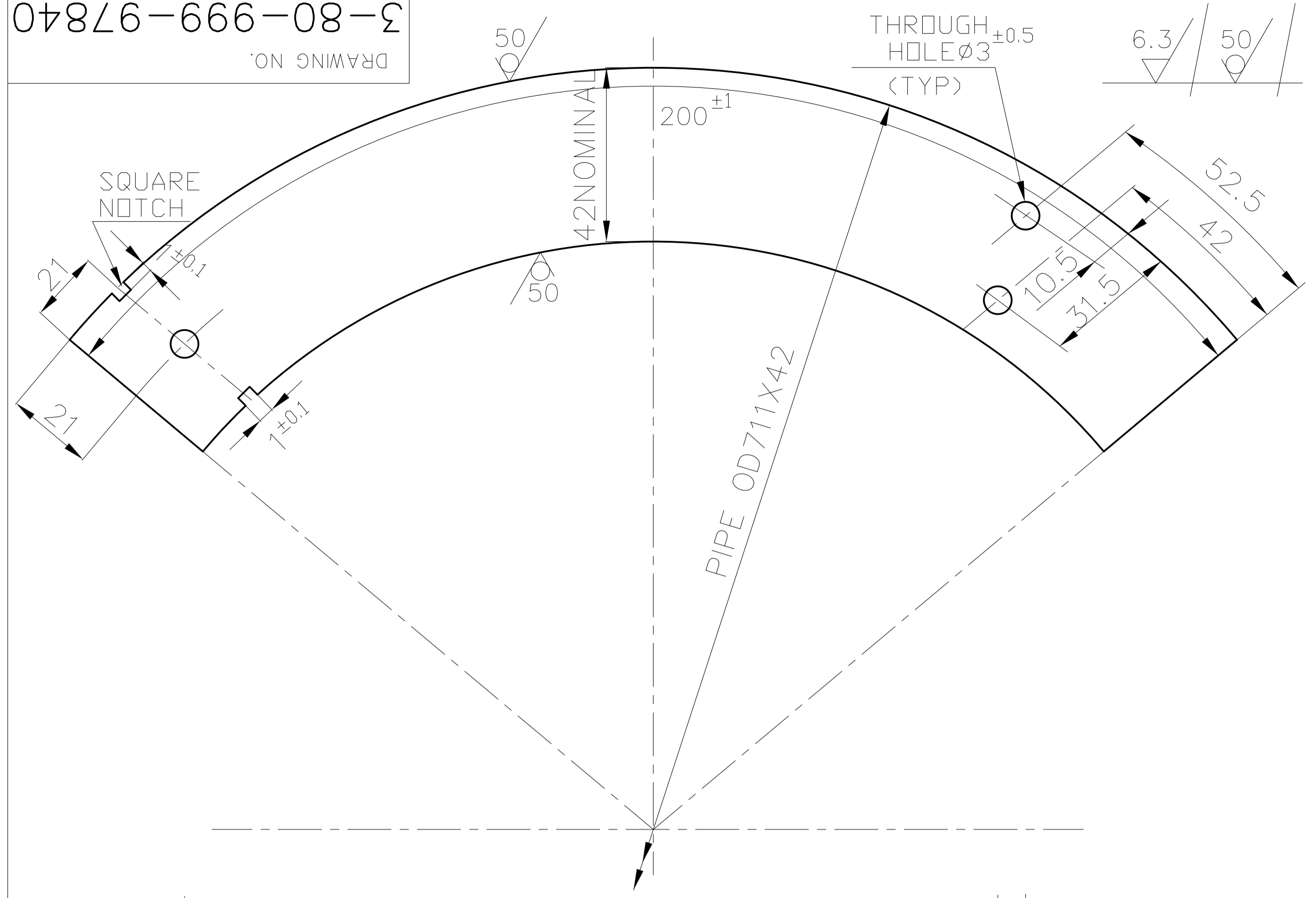
|        |      |                  |
|--------|------|------------------|
| REV 01 | DATE | ALTERED APPROVED |
|--------|------|------------------|

|       |                     |        |             |                        |
|-------|---------------------|--------|-------------|------------------------|
| DEPT. | GRADE OF UN TOL DIM | SCALE  | WEIGHT (Kg) | REF.TO ASSY / OLD DRG. |
| CODE  | C/M/F               | N.T.S. | 0.7292      |                        |

|  |           |                |     |
|--|-----------|----------------|-----|
| TITLE  | CARD CODE | DRAWING No.    | REV |
| UT REFERENCE BLOCK P91<br>AXIAL (OD88.9X15.24) | U 01      | 3-80-999-97869 | 00  |

3-80-999-97840  
DRAWING NO.

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NOTES:

01. THE BLOCK HAS TO BE CUT FROM PIPE AS SHOWN IN THE FIGURE TO ENSURE ORIENTATION WITH RESPECT TO PIPE AXES.
02. INNER & OUTER SURFACE OF THE PIPES SHALL NOT BE MACHINED.
03. TOLERANCES FOR HOLE LOCATION: PLUS OR MINUS 0.8mm.
04. CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
05. SUITABLE MACHINING ALLOWANCES / PRECAUTIONS ARE TO BE CONSIDERED WHILE CUTTING FROM PIPE.
06. DEPTH OF SQUARE NOTCH HAS TO BE UNIFORMLY 1mm BOTH INSIDE AND OUTSIDE FOR THE FULL LENGTH OF 50mm.
07. FOR AUXIAL BLOCK RFEER STD DRG 3-80-999-97839.
08. FOR HARDNESS REFERENCE BLOCK RFEER STD DRG 3-80-999-97721.
09. FINISHED CIRCUMFERENTIAL BLOCK CODE No.
10. BLOCKS ARE TO BE CALIBRATED AT NABL APPROVED METROLOGY LABORATORY.
11. AFTER CALIBRATION ALL MACHINED SURFACES ARE TO BE COATED WITH SUITABLE RUST PREVENTIVE.

STANDARD

| VAR NO. | ITEM NO. | DESCRIPTION         | DRAWING NUMBER | ITEM NO         | MATERIAL CODE  | UNIT WEIGHT |
|---------|----------|---------------------|----------------|-----------------|----------------|-------------|
|         |          | PIPE OD711X42 L=200 | 3-80-999-97840 | 15 958 157 6000 | SA335P91       | 3.297       |
|         |          |                     |                |                 |                | 1           |
|         |          |                     |                | VAR NO          | MATERIAL SPECN | QUANTITY    |



BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, CHENNAI, 600 017

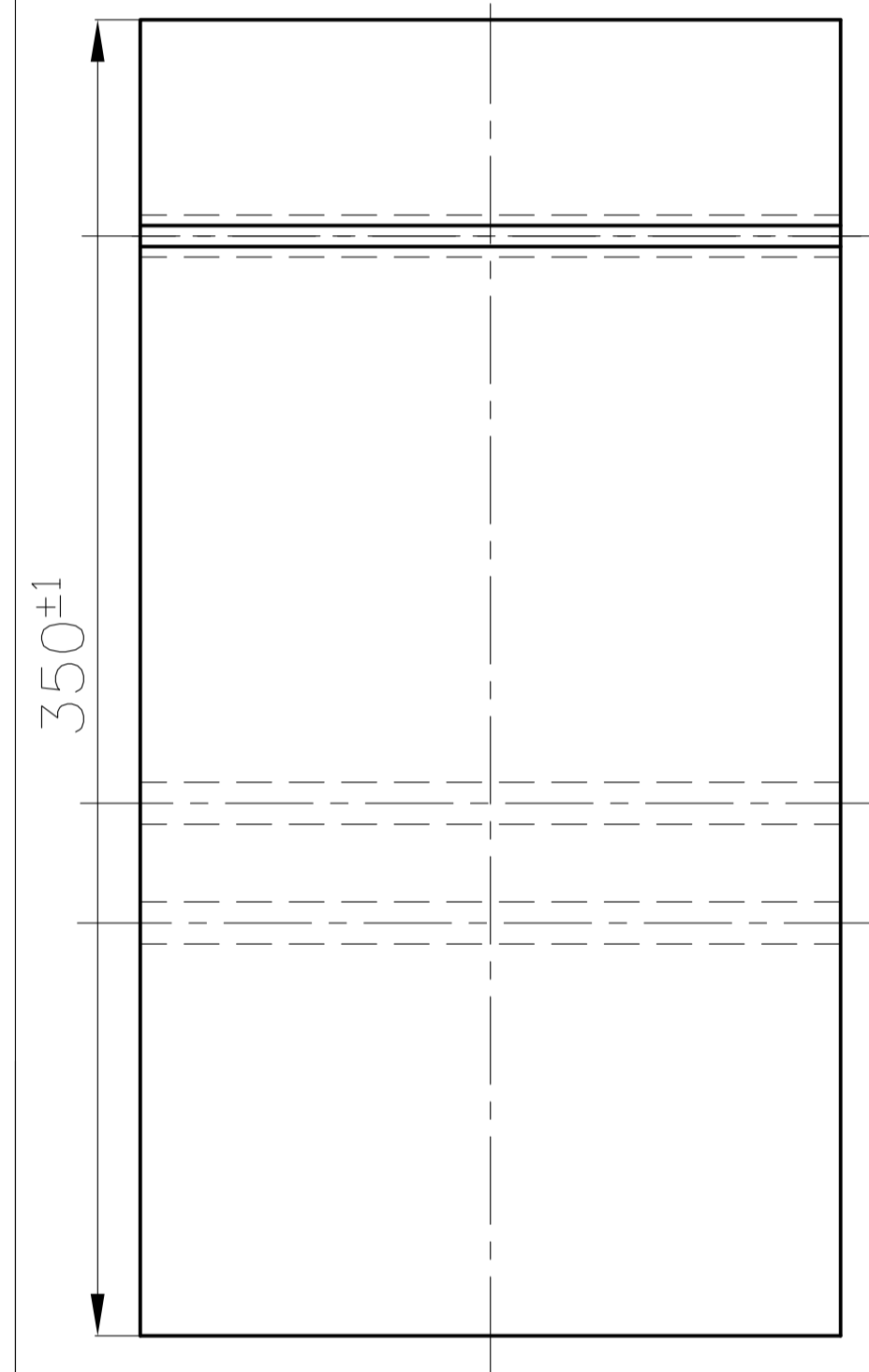
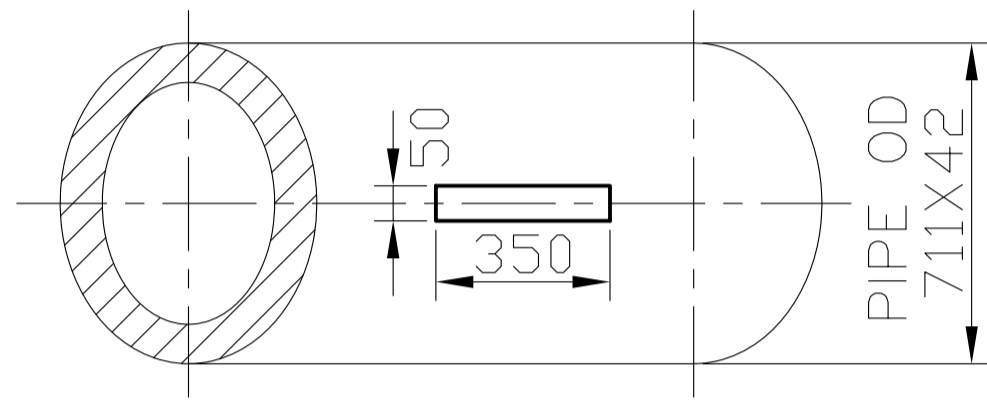
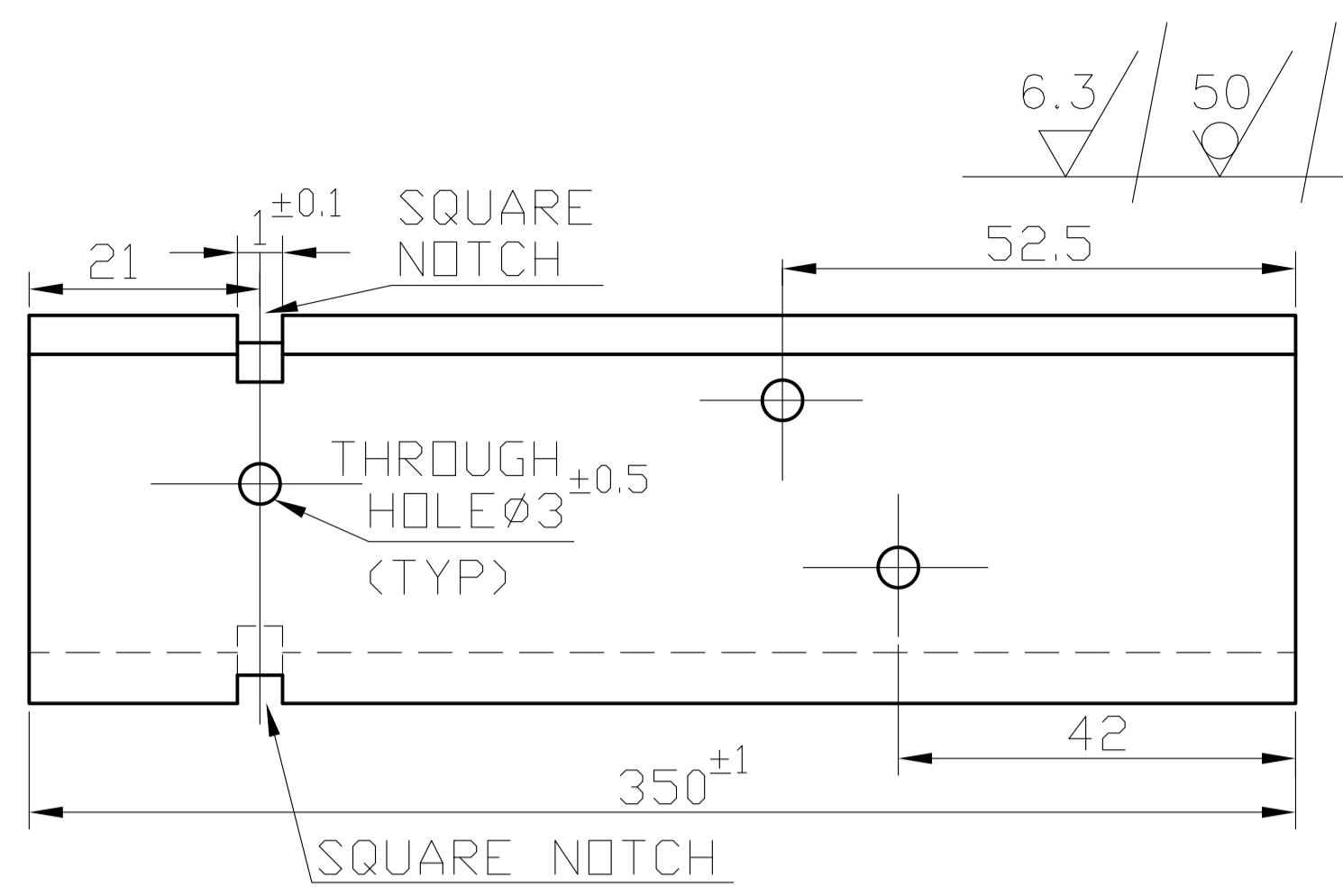
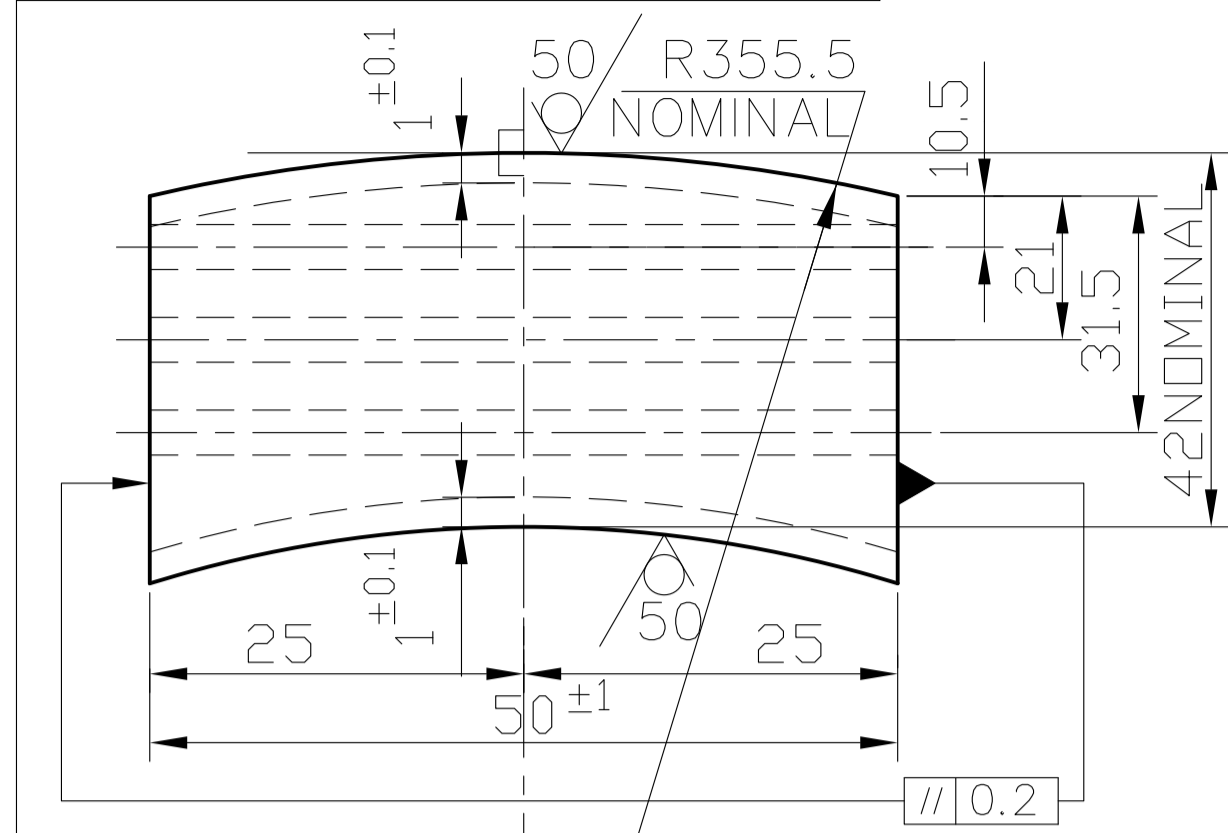
| NAME                    | SIGN | DATE       |
|-------------------------|------|------------|
| DRN LALIT               |      | 01.06.2011 |
| CHD G.PANNER SELVAM     |      | 01.06.2011 |
| APPD A.P.MADHAVAN KUTTY |      | 01.06.2011 |

| REV | DATE | ALTERED | APPROVED |
|-----|------|---------|----------|
| 01  |      |         |          |

| DEPT.  | GRADE OF UN TOL DIM | SCALE          | WEIGHT (Kg) | REF.TO ASSY / OLD DRG. |
|--|---------------------|----------------|-------------|------------------------|
|  | C/M/F               | N.T.S.         | 3.297       |                        |
| TITLE  | CARD CODE           | DRAWING No.    | REV         |                        |
| UT REFERENCE BLOCK P91<br>CIRCUMFERENTIAL (OD711X42) | U 01                | 3-80-999-97840 | 00          |                        |

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3-80-999-97839  
DRAWING NO.



NOTES:

01. THE BLOCK HAS TO BE CUT FROM PIPE AS SHOWN IN THE FIGURE TO ENSURE ORIENTATION WITH RESPECT TO PIPE AXES.
02. INNER & OUTER SURFACE OF THE PIPES SHALL NOT BE MACHINED.
03. TOLERANCES FOR HOLE LOCATION: PLUS OR MINUS 0.8mm.
04. CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
05. SUITABLE MACHINING ALLOWANCES / PRECAUTIONS ARE TO BE CONSIDERED WHILE CUTTING FROM PIPE.
06. DEPTH OF SQUARE NOTCH HAS TO BE UNIFORMLY 1mm BOTH INSIDE AND OUTSIDE FOR THE FULL LENGTH OF 50mm.
07. FOR CIRCUMFERENTIAL BLOCK RFEER STD DRG 3-80-999-97840.
08. FOR HARDNESS REFERENCE BLOCK RFEER STD DRG 3-80-999-97721.
09. FINISHED AXIAL BLOCK CODE No.
10. BLOCKS ARE TO BE CALIBRATED AT NABL APPROVED METROLOGY LABORATORY.
11. AFTER CALIBRATION ALL MACHINED SURFACES ARE TO BE COATED WITH SUITABLE RUST PREVENTIVE.

STANDARD

| VAR NO. | ITEM NO. | DESCRIPTION         | DRAWING NUMBER | ITEM NO         | MATERIAL CODE  | UNIT WEIGHT |
|---------|----------|---------------------|----------------|-----------------|----------------|-------------|
| VAR NO. |          |                     |                | VAR NO.         | MATERIAL SPECN | QUANTITY    |
|         |          | PIPE OD711X42 L=370 | 3-80-999-97839 | 15 958 157 6000 | SA335P91       | 6.099       |
|         |          |                     |                |                 |                | 1           |



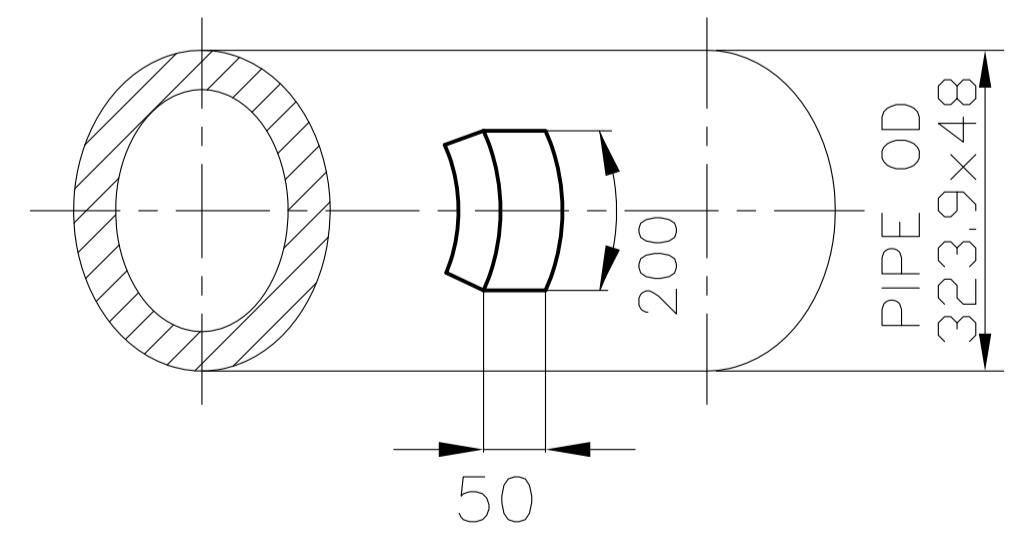
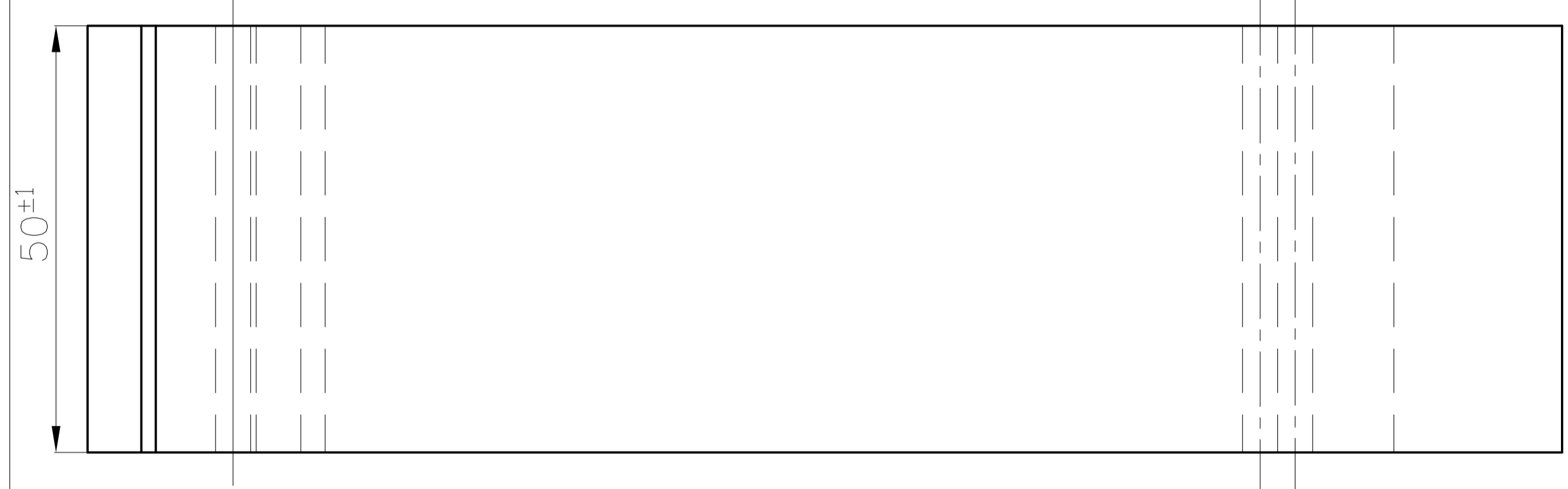
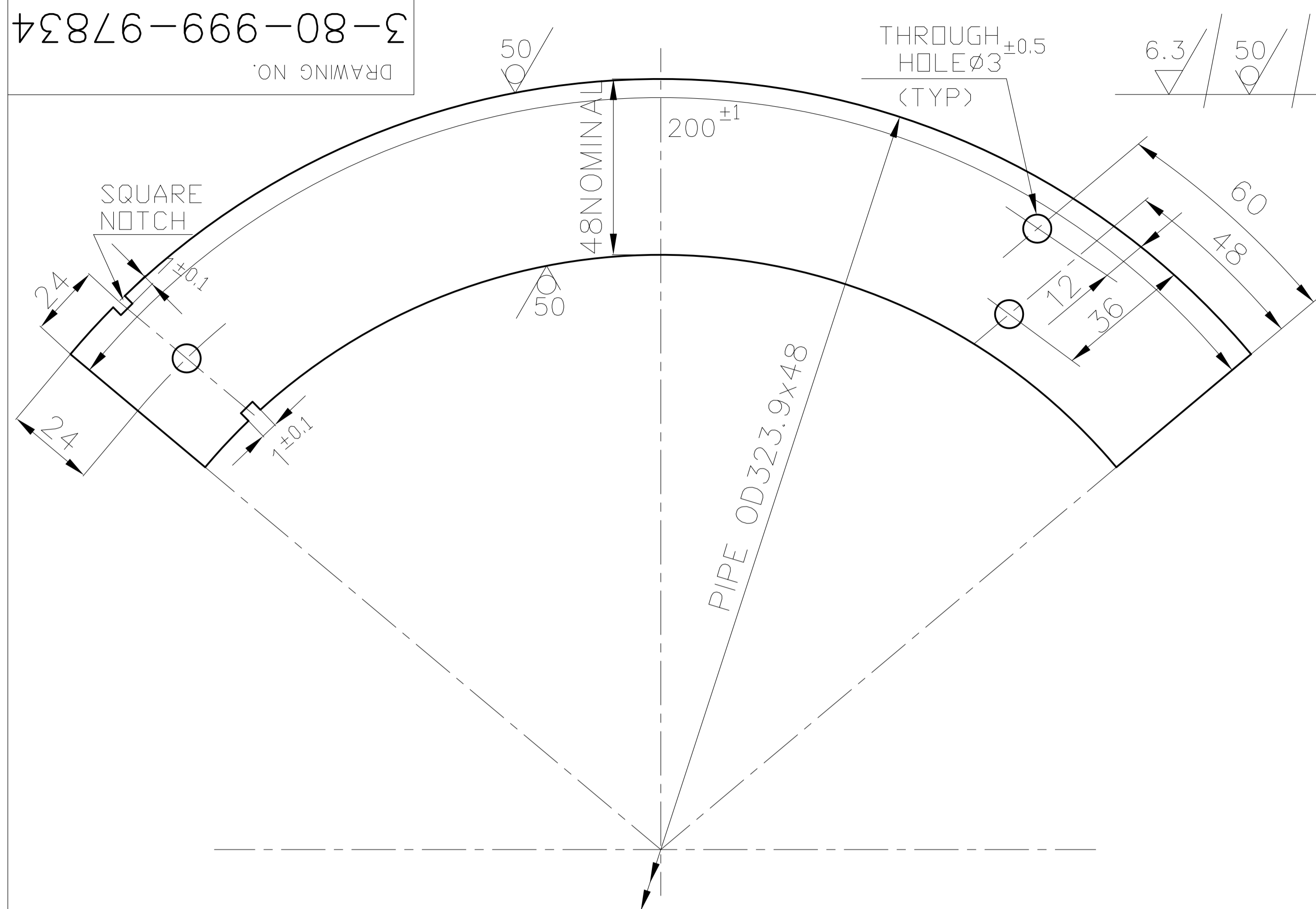
BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, CHENNAI, 600 017

| NAME                    | SIGN | DATE       |
|-------------------------|------|------------|
| DRN LALITH              |      | 01.06.2011 |
| CHD G.PANNER SELVAM     |      | 01.06.2011 |
| APPD A.P.MADHAVAN KUTTY |      | 01.06.2011 |

| REV | DATE | ALTERED  |
|-----|------|----------|
| 01  |      | APPROVED |

| DEPT.                                      | GRADE OF UN TOL DIM | SCALE  | WEIGHT (Kg) | REF.TO ASSY / OLD DRG. |
|--|---------------------|--------|-------------|------------------------|
|  | C/M/F               | N.T.S. | 6.099       |                        |
| TITLE                                      |                     |        | CARD CODE   | DRAWING No.            |
| UT REFERENCE BLOCK P91<br>AXIAL (OD711X42) |                     |        | U 01        | 3-80-999-97839         |
|  |                     |        |             | REV                    |
|  |                     |        |             | 00                     |

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3-80-999-97834  
DRAWING NO.

NOTES:

01. THE BLOCK HAS TO BE CUT FROM PIPE AS SHOWN IN THE FIGURE TO ENSURE ORIENTATION WITH RESPECT TO PIPE AXES.
02. INNER & OUTER SURFACE OF THE PIPES SHALL NOT BE MACHINED.
03. TOLERANCES FOR HOLE LOCATION: PLUS OR MINUS 0.8mm.
04. CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
05. SUITABLE MACHINING ALLOWANCES / PRECAUTIONS ARE TO BE CONSIDERED WHILE CUTTING FROM PIPE.
06. DEPTH OF SQUARE NOTCH HAS TO BE UNIFORMLY 1mm BOTH INSIDE AND OUTSIDE FOR THE FULL LENGTH OF 50mm.
07. FOR AUXIAL BLOCK RFEER STD DRG 3-80-999-97833.
08. FOR HARDNESS REFERENCE BLOCK RFEER STD DRG 3-80-999-97721.
09. FINISHED CIRCUMFERENTIAL BLOCK CODE No.
10. BLOCKS ARE TO BE CALIBRATED AT NABL APPROVED METROLOGY LABORATORY.
11. AFTER CALIBRATION ALL MACHINED SURFACES ARE TO BE COATED WITH SUITABLE RUST PREVENTIVE.

STANDARD

| VAR NO. | ITEM NO. | DESCRIPTION           | DRAWING NUMBER | ITEM NO         | MATERIAL CODE  | UNIT WEIGHT |
|---------|----------|-----------------------|----------------|-----------------|----------------|-------------|
|         |          | PIPE OD323.9x48 L=200 | 3-80-999-97834 | 15 958 162 6000 | SA335P91       | 3.768       |
|         |          |                       |                |                 |                | 1           |
|         |          |                       |                | VAR NO          | MATERIAL SPECN | QUANTITY    |



BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, CHENNAI, 600 017

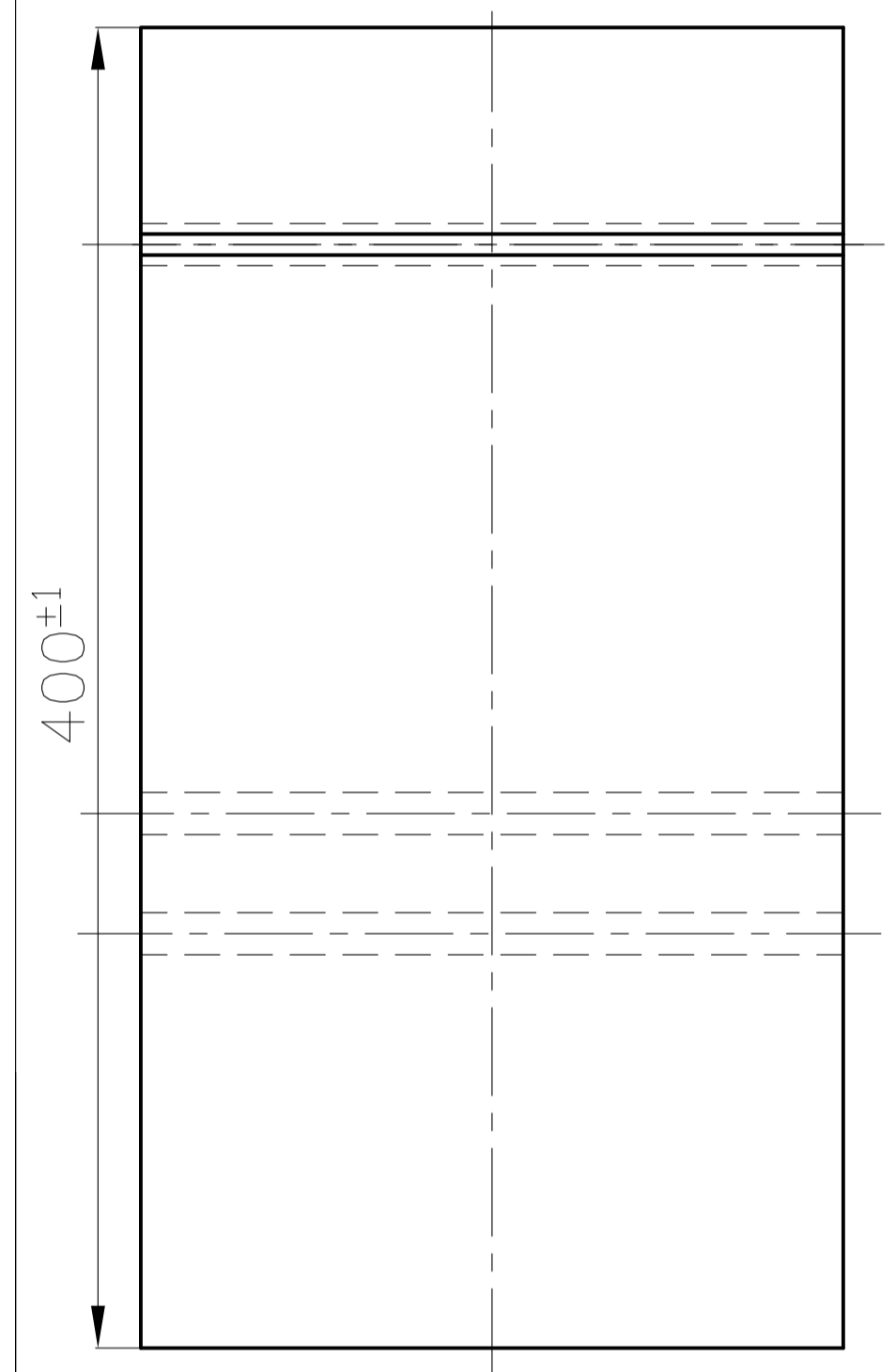
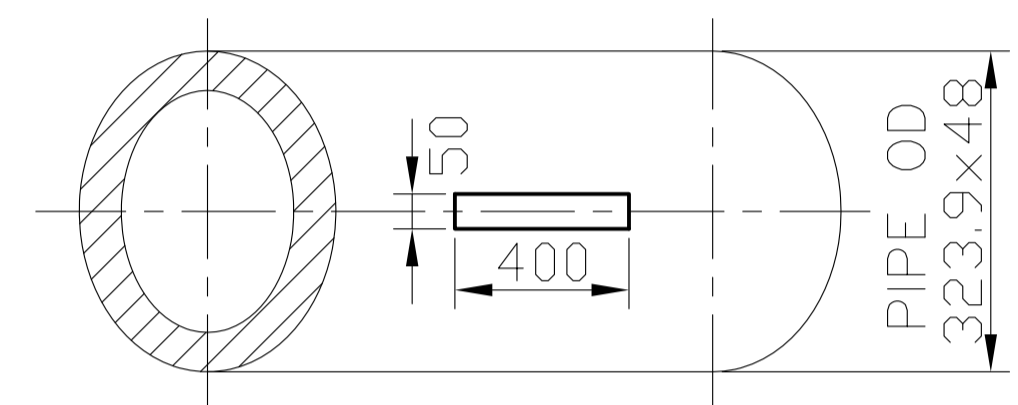
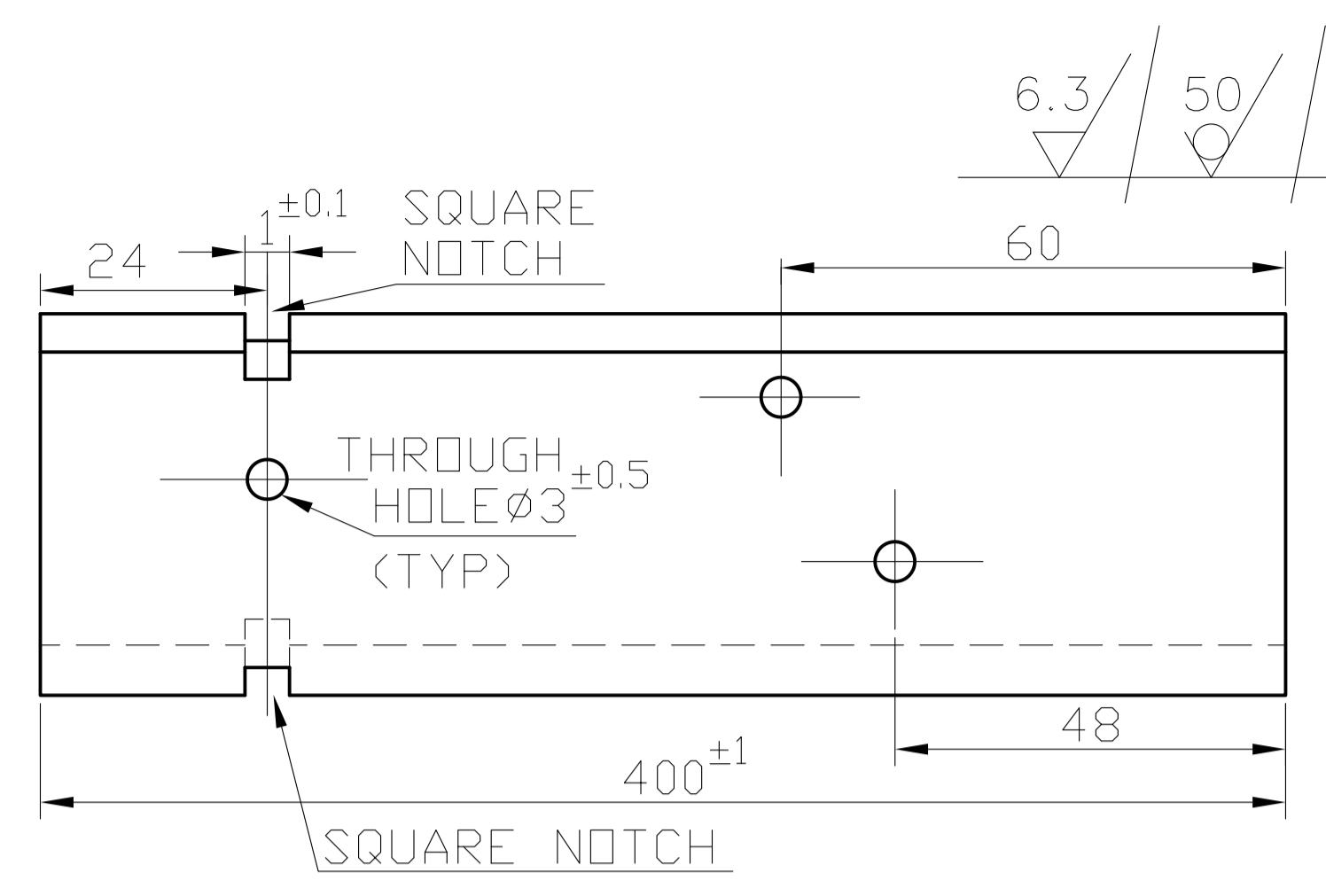
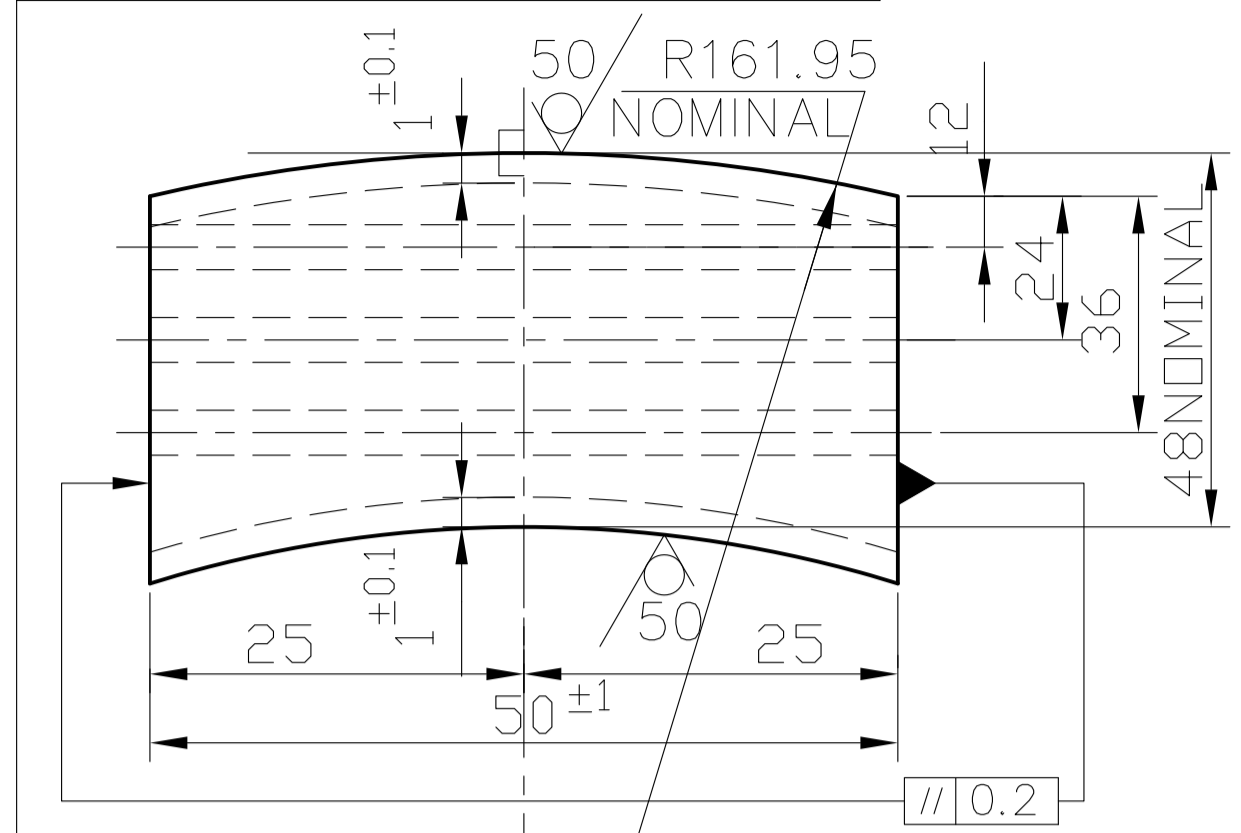
| NAME                    | SIGN | DATE       |
|-------------------------|------|------------|
| DRN LALIT               |      | 01.06.2011 |
| CHD G.PANNER SELVAM     |      | 01.06.2011 |
| APPD A.P.MADHAVAN KUTTY |      | 01.06.2011 |

| REV | DATE | ALTERED  |
|-----|------|----------|
| 01  |      | APPROVED |

| DEPT.  | GRADE OF UN TOL DIM | SCALE  | WEIGHT (Kg) | REF.TO ASSY / OLD DRG. |
|--|---------------------|--------|-------------|------------------------|
|  | C/M/F               | N.T.S. | 3.768       |                        |
| TITLE  |                     |        | CARD CODE   | DRAWING No.            |
| UT REFERENCE BLOCK P91<br>CIRCUMFERENTIAL (323.9x48) |                     |        | U 01        | 3-80-999-97834         |
|  |                     |        |             | REV                    |
|  |                     |        |             | 00                     |

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3-80-999-97833  
DRAWING NO.

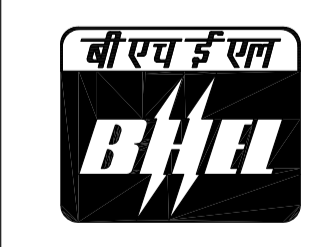


NOTES:

01. THE BLOCK HAS TO BE CUT FROM PIPE AS SHOWN IN THE FIGURE TO ENSURE ORIENTATION WITH RESPECT TO PIPE AXES.
02. INNER & OUTER SURFACE OF THE PIPES SHALL NOT BE MACHINED.
03. TOLERANCES FOR HOLE LOCATION: PLUS OR MINUS 0.8mm.
04. CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
05. SUITABLE MACHINING ALLOWANCES / PRECAUTIONS ARE TO BE CONSIDERED WHILE CUTTING FROM PIPE.
06. DEPTH OF SQUARE NOTCH HAS TO BE UNIFORMLY 1mm BOTH INSIDE AND OUTSIDE FOR THE FULL LENGTH OF 50mm.
07. FOR CIRCUMFERENTIAL BLOCK RFEER STD DRG 3-80-999-97834.
08. FOR HARDNESS REFERENCE BLOCK RFEER STD DRG 3-80-999-97721.
09. FINISHED AXIAL BLOCK CODE No.
10. BLOCKS ARE TO BE CALIBRATED AT NABL APPROVED METROLOGY LABORATORY.
11. AFTER CALIBRATION ALL MACHINED SURFACES ARE TO BE COATED WITH SUITABLE RUST PREVENTIVE.

STANDARD

| VAR NO. | ITEM NO. | DESCRIPTION           | DRAWING NUMBER | ITEM NO | MATERIAL CODE   | A | UNIT WEIGHT |
|---------|----------|-----------------------|----------------|---------|-----------------|---|-------------|
|         |          |                       |                | VAR NO  | MATERIAL SPECN  | C | QUANTITY    |
|         |          | PIPE OD323.9x48 L=420 | 3-80-999-97833 |         | 15 958 162 6000 | P | 7.912       |
|         |          |                       |                |         | SA335P91        |   | 1           |



BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, CHENNAI, 600 017

| NAME                    | SIGN | DATE       |
|-------------------------|------|------------|
| DRN LALIT               |      | 01.06.2011 |
| CHD G.PANNER SELVAM     |      | 01.06.2011 |
| APPD A.P.MADHAVAN KUTTY |      | 01.06.2011 |

| REV | DATE | ALTERED  |
|-----|------|----------|
| 01  |      | APPROVED |

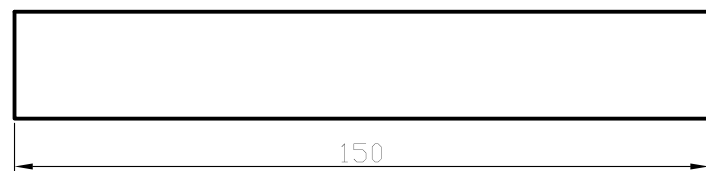
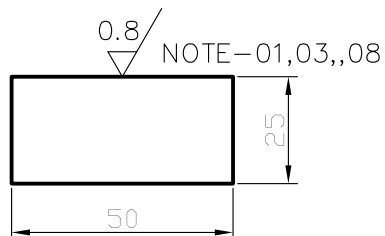
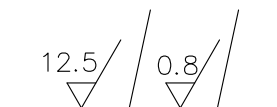
| DEPT.                                      | GRADE OF UN TOL DIM | SCALE  | WEIGHT (Kg) | REF.TO ASSY / OLD DRG. |
|--|---------------------|--------|-------------|------------------------|
|  | C/M/F               | N.T.S. | 7.912       |                        |
| TITLE                                      |                     |        | CARD CODE   | DRAWING No.            |
| UT REFERENCE BLOCK P91<br>AXIAL (323.9x48) |                     |        | U 01        | 3-80-999-97833         |
|  |                     |        |             | REV                    |
|  |                     |        |             | 00                     |

FIRST ANGLE PROJECTION (ALL DIMENSION IN MILLIMETRES)

3-80-993-30854

DRAWING NO.

CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



NOTES:

01. THIS SURFACE HAS TO BE MACHINED AND POLISHED TO MIRROR FINISH.
02. BLOCK TO BE HEAT TREATED TO ACHIVE A HARDNESS OF 300 HV10 Max.
03. THE ACTUAL HARDNESS HAS TO BE MEASURED ON THE POLISHED SURFACE & CERTIFIED AT ANY NABL APPROVED METROLOGY LABORATORY.
04. THE MEASURED HARDNESS VALUE & MATERIAL SPECIFICATION ARE TO BE ENGRAVED ON ANY ONE OF SURFACES OTHER THAN THE POLISHED SURFACE.
05. TOLERANCE: PLUS OR MINUS 2mm.
06. SUITABLE CUT BITS FROM THE SHOP MAY ALSO BE UTILIZED.
07. FINISHED HARDNESS BLOCK CODE No.
08. THE POLISHED SURFACE HAS TO BE COATED WITH SUITABLE RUST PREVENTIVE.

| VAR NO. | ITEM NO. | DESCRIPTION         | DRAWING NUMBER | ITEM NO | MATERIAL CODE               | UNIT WEIGHT |
|---------|----------|---------------------|----------------|---------|-----------------------------|-------------|
| VAR NO. |          |                     |                | VAR NO  | MATERIAL SPECN              | QUANTITY    |
|         |          | PIPE OD711X37 L=170 | 3-80-993-30854 |         | 15 097 011 6000<br>SA335P92 | 1.470<br>1  |



BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, CHENNAI, 600 017

|      | NAME          | SIGN | DATE       |
|------|---------------|------|------------|
| DRN  | P SURESH      |      | 02.08.2013 |
| CHD  | VIVEK         |      | 02.08.2013 |
| APPD | K VEDA PRASAD |      | 02.08.2013 |

| REV | DATE | ALTERED APPROVED |
|-----|------|------------------|
| 01  |      |                  |

| DEPT. CODE | GRADE OF UN TOL. DIM | SCALE  | WEIGHT (Kg) | REF. TO ASSY / OLD DRG. |
|------------|----------------------|--------|-------------|-------------------------|
|            | C/M/F                | N.T.S. | 1.470       |                         |

| TITLE                                     | CARD CODE | DRAWING No.    | REV |
|---|-----------|----------------|-----|
| HARDNESS REFERENCE BLOCK<br>P92 25X50X150 | U 01      | 3-80-993-30854 | 00  |