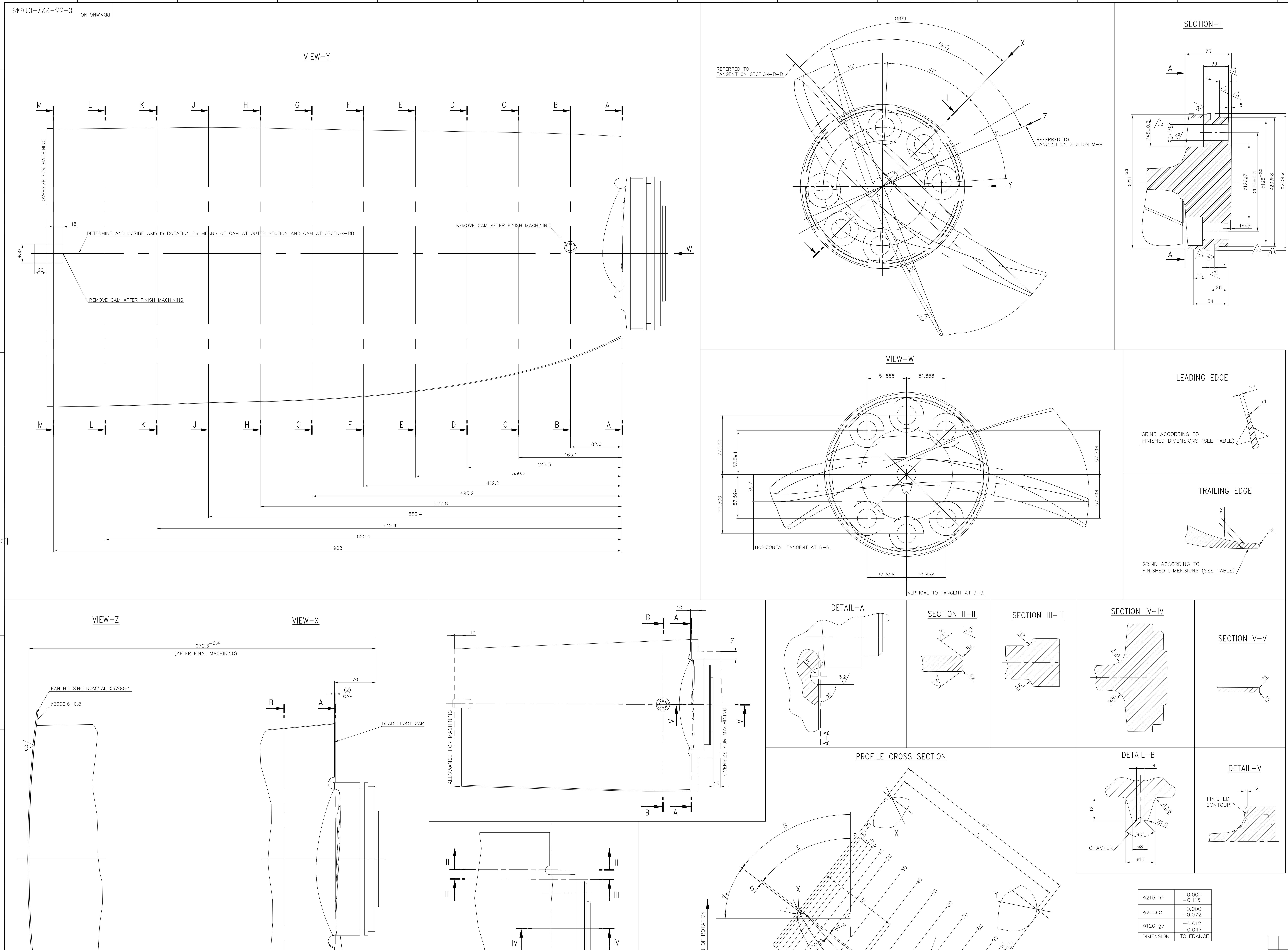


| DIMENSION | TOLERANCE |
|---|---|
| ø215 h9 | 0.000 / −0.115 |
| ø203h8 | 0.000 / −0.072 |
| ø120 g7 | −0.012 / −0.047 |

## NOTES:-

01. OPERATING SPEED = 745 RPM
02. DENSITY OF BLADE MATERIAL 7.10 Kg/dm$^3$
03. CENTER OF GRAVITY OF BLADE AT RADIUS 1155.3 mm
04. NON DIMENSIONED FILLETS ROUNDED R0.4
05. NON DIMENSIONED EDGES CHAMFERED 0.3x45°
06. GROSS WEIGHT – 57.5 Kg

$H_{ME}$ = 150

ALL DIMENSIONS ARE IN MILLIMETRES

FOR PRODUCTION
REF. PR:QA:590 FOR PAINTING
REF. PR:QA:500 FOR UNTOL. DIMNS.
REF. APPLICABLE GMS FOR MATCODE&SPEC.

## PROFILE DIMENSIONS

| SECTION | A-A | B-B | C-C | D-D | E-E | F-F | G-G | H-H | J-J | K-K | L-L | M-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HUB RATIO | 1 | 0.92 | 0.85 | 0.79 | 0.74 | 0.7 | 0.66 | 0.62 | 0.59 | 0.56 | 0.53 | 0.51 |
| øD [mm] | 1884 | 2049 | 2214 | 2379 | 2544 | 2710 | 2875 | 3040 | 3205 | 3370 | 3535 | 3700 |
| R [mm] | 489 | 575 | 658 | 745 | 826 | 897 | 957 | 1009 | 1055 | 1095 | 1132 | 1166 |
| L [mm] | 416 | 413 | 410 | 407 | 403 | 400 | 396 | 393 | 389 | 386 | 383 | 380 |
| LT [mm] | 416.6 | 413.5 | 410 | 406.7 | 403.4 | 399.9 | 396.3 | 392.6 | 389.2 | 385.9 | 382.7 | 379.6 |
| M [mm] | 175.9 | 175.1 | 173.8 | 173.7 | 173.9 | 174.1 | 173.8 | 173.6 | 174 | 172.7 | 171.4 | 170.2 |
| P [mm] | 43.7 | 35.7 | 30.1 | 24.3 | 20.2 | 16.7 | 13.8 | 11.1 | 8.6 | 6.4 | 4.2 | 2.2 |
| f [mm] | 27.2 | 23.6 | 19.0 | 19.3 | 18.3 | 17.4 | 16.4 | 15.6 | 15.2 | 14.3 | 13.5 | 12.8 |
| α [°] | 0.3 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| β [°] | 52.5 | 45.9 | 40.9 | 36.9 | 33.7 | 31 | 28.8 | 26.9 | 25.2 | 23.8 | 22.5 | 21.4 |
| $\gamma_m$ [°] | 37.5 | 44.1 | 49.1 | 53.1 | 56.3 | 59 | 61.2 | 63.1 | 64.8 | 66.2 | 67.5 | 68.6 |
| ε m [°] | 52.3 | 45.7 | 40.7 | 36.9 | 33.7 | 31.0 | 28.8 | 26.8 | 25.2 | 23.7 | 22.5 | 21.3 |
| $r_1$ [mm] | 4.3 | 3.4 | 3.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| $r_2$ [mm] | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| $d_{max}$/2[mm] | 21.5 | 16.8 | 16.1 | 10.6 | 8.3 | 6.9 | 6.1 | 5.5 | 4.9 | 4.8 | 4.8 | 4.7 |
| d/L [%] | 10.3 | 8.1 | 7.8 | 5.2 | 4.1 | 3.4 | 3.1 | 2.8 | 2.5 | 2.5 | 2.5 | 2.5 |

| X [%] | PROFILE THICKNESS hy [mm] AT x [%] OF TANGENT LENGTH (FINISHED DIMENSIONS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.25 | 13.2 | 10.4 | 9.8 | 6.8 | 6.2 | 6.0 | 5.9 | 5.8 | 5.7 | 5.7 | 5.6 | 5.6 |
| 2.5 | 18.5 | 14.2 | 13.4 | 9.2 | 7.6 | 6.7 | 6.5 | 6.3 | 6.0 | 6.0 | 5.9 | 5.9 |
| 5 | 25.5 | 19.4 | 18.2 | 11.9 | 9.2 | 7.6 | 6.9 | 6.3 | 5.9 | 5.8 | 5.8 | 5.7 |
| 7.5 | 30.3 | 23.2 | 21.8 | 14.2 | 11.0 | 9.1 | 8.1 | 7.3 | 6.5 | 6.4 | 6.4 | 6.3 |
| 10 | 33.6 | 25.8 | 24.3 | 15.8 | 12.3 | 10.2 | 9.1 | 8.1 | 7.2 | 7.1 | 7.0 | 7.0 |
| 15 | 38.2 | 29.4 | 27.8 | 18.2 | 14.2 | 11.7 | 10.5 | 9.4 | 8.3 | 8.2 | 8.1 | 8.1 |
| 20 | 41 | 31.8 | 30.1 | 19.7 | 15.4 | 12.7 | 11.4 | 10.2 | 9.0 | 8.9 | 8.8 | 8.8 |
| 30 | 43.5 | 33.9 | 32.3 | 21.2 | 16.6 | 13.8 | 12.3 | 11.0 | 9.7 | 9.7 | 9.6 | 9.5 |
| 40 | 41.8 | 32.7 | 31.2 | 20.5 | 16.1 | 13.3 | 11.9 | 10.7 | 9.4 | 9.4 | 9.3 | 9.2 |
| 50 | 37.9 | 29.7 | 28.3 | 18.6 | 14.6 | 12.1 | 10.8 | 9.7 | 8.6 | 8.5 | 8.4 | 8.4 |
| 60 | 32.9 | 25.6 | 24.4 | 16 | 12.5 | 10.4 | 9.3 | 8.3 | 7.4 | 7.3 | 7.3 | 7.2 |
| 70 | 26.3 | 20.3 | 19.3 | 12.6 | 9.9 | 8.2 | 7.3 | 6.5 | 5.8 | 5.8 | 5.7 | 5.7 |
| 80 | 18.9 | 14.5 | 13.7 | 8.9 | 7.0 | 5.8 | 5.4 | 5.0 | 4.7 | 4.7 | 4.6 | 4.6 |
| 90 | 10.8 | 8.2 | 7.7 | 5.2 | 4.6 | 4.4 | 4.3 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 95 | 6.4 | 5.3 | 5 | 4.3 | 4.3 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 97.5 | 5.2 | 4.8 | 4.6 | 4.5 | 4.5 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |

| X [%] | DISTANCE hd [mm] AT X [%] OF TANGENTIAL LENGTH (FINISHED DIMENSIONS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5.1 | 3.9 | 4 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| 1.25 | 0.5 | 0.2 | 0.3 | 0.2 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | 0 | 0.1 | 0 | 0.1 | 0.4 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 |
| 5 | 0.7 | 1.0 | 0.6 | 1.5 | 2.0 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.1 |
| 7.5 | 2.2 | 2.4 | 1.6 | 2.7 | 3.3 | 3.6 | 3.6 | 3.6 | 3.7 | 3.5 | 3.3 | 3.2 |
| 10 | 4.2 | 4.2 | 2.9 | 4.2 | 4.7 | 4.9 | 4.8 | 4.8 | 4.9 | 4.6 | 4.3 | 4.1 |
| 15 | 8.5 | 7.9 | 5.9 | 7.3 | 7.5 | 7.5 | 7.2 | 7.0 | 7.0 | 6.6 | 6.2 | 5.9 |
| 20 | 12.8 | 11.6 | 8.9 | 10.1 | 10.1 | 9.9 | 9.4 | 9.1 | 9.0 | 8.4 | 7.9 | 7.5 |
| 30 | 20.2 | 17.8 | 14 | 14.9 | 14.4 | 13.8 | 13.1 | 12.5 | 12.2 | 11.4 | 10.8 | 10.2 |
| 40 | 26.2 | 22.7 | 18.2 | 18.6 | 17.6 | 16.7 | 15.7 | 15 | 14.5 | 13.6 | 12.9 | 12.2 |
| 50 | 29.7 | 25.6 | 20.8 | 20.6 | 19.4 | 18.2 | 17.1 | 16.2 | 15.6 | 14.7 | 13.9 | 13.2 |
| 60 | 30.4 | 26 | 21.3 | 20.8 | 19.4 | 18.2 | 17 | 16.1 | 15.5 | 14.6 | 13.8 | 13.2 |
| 70 | 28.3 | 24.1 | 19.9 | 19.1 | 17.7 | 16.6 | 15.5 | 14.7 | 14.1 | 13.3 | 12.6 | 12 |
| 80 | 22.7 | 19.3 | 16.1 | 15.3 | 14.2 | 13.2 | 12.3 | 11.6 | 11.0 | 10.4 | 9.9 | 9.5 |
| 90 | 13.5 | 11.6 | 9.8 | 9.2 | 8.4 | 7.6 | 7.1 | 6.6 | 6.2 | 5.8 | 5.5 | 5.3 |
| 95 | 7.4 | 6.3 | 5.4 | 4.8 | 4.2 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 | 2.6 |
| 97.5 | 3.3 | 2.8 | 2.4 | 2.0 | 1.8 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.1 |
| 100 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |

| X [%] | DISTANCE hs [mm] AT X [%] OF TANGENTIAL LENGTH (FINISHED DIMENSIONS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 94.9 | 96.1 | 96 | 97.7 | 97.8 | 97.8 | 97.7 | 97.7 | 97.7 | 97.7 | 97.7 | 97.7 |
| 1.25 | 86.4 | 89.4 | 89.9 | 93 | 93.7 | 94 | 94.1 | 94.2 | 94.3 | 94.3 | 94.4 | 94.4 |
| 2.5 | 81.5 | 85.7 | 86.6 | 90.7 | 92 | 92.7 | 92.9 | 93.1 | 93.4 | 93.4 | 93.5 | 93.6 |
| 5 | 73.7 | 79.5 | 81.1 | 86.7 | 88.8 | 90 | 90.7 | 91.3 | 91.7 | 91.9 | 92.1 | 92.2 |
| 7.5 | 67.5 | 74.4 | 76.6 | 83.1 | 85.7 | 87.3 | 88.3 | 89.1 | 89.9 | 90.1 | 90.3 | 90.5 |
| 10 | 62.2 | 70.1 | 72.8 | 79.9 | 83 | 84.9 | 86.1 | 87.1 | 88.0 | 88.3 | 88.6 | 88.9 |
| 15 | 53.3 | 62.7 | 66.3 | 74.6 | 78.3 | 80.8 | 82.3 | 83.6 | 84.7 | 85.2 | 85.7 | 86.1 |
| 20 | 46.2 | 56.7 | 61 | 70.2 | 74.5 | 77.4 | 79.2 | 80.7 | 82.0 | 82.7 | 83.2 | 83.7 |
| 30 | 36.3 | 48.3 | 53.7 | 63.9 | 69.0 | 72.4 | 74.6 | 76.5 | 78.1 | 78.9 | 79.6 | 80.3 |
| 40 | 32.1 | 44.6 | 50.6 | 60.9 | 66.3 | 70.0 | 72.4 | 74.4 | 76.1 | 77.0 | 77.9 | 78.6 |
| 50 | 32.3 | 44.7 | 50.9 | 60.8 | 66.1 | 69.7 | 72.1 | 74.1 | 75.8 | 76.8 | 77.7 | 78.4 |
| 60 | 36.7 | 48.3 | 54.2 | 63.2 | 68.1 | 71.5 | 73.7 | 75.6 | 77.2 | 78.1 | 78.9 | 79.6 |
| 70 | 45.5 | 55.6 | 60.8 | 68.3 | 72.4 | 75.3 | 77.2 | 78.8 | 80.1 | 80.9 | 81.6 | 82.3 |
| 80 | 58.4 | 66.1 | 70.2 | 75.7 | 78.8 | 80.9 | 82.3 | 83.4 | 84.3 | 84.9 | 85.5 | 85.9 |
| 90 | 75.8 | 80.3 | 82.6 | 85.6 | 87.0 | 88.0 | 88.7 | 89.2 | 89.6 | 90.0 | 90.3 | 90.5 |
| 95 | 86.3 | 88.4 | 89.6 | 90.9 | 91.5 | 91.9 | 92.3 | 92.5 | 92.7 | 92.9 | 93.1 | 93.2 |
| 97.5 | 91.5 | 92.4 | 93.0 | 93.5 | 93.8 | 94.0 | 94.1 | 94.3 | 94.4 | 94.4 | 94.5 | 94.6 |
| 100 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 |

| VAR NO | ITEM NO | DESCRIPTION | CAT | DRAWING No. | ITEM NO VAR NO | MATL CODE / MATL SPECN | UNIT | UNIT WT / QTY |
|---|---|---|---|---|---|---|---|---|
| | 01 | BLADE NA18 −10% | | | | GGG40 | | 45.970 / 1 |

TYPE OF PRODUCT: SAF 37/19-1
OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.,
UNIT: BOILER AUXILIARIES PLANT.
RANIPET – 632 406.

| | NAME | SIGN | DATE |
|---|---|---|---|
| DRN | A.PRABHA | Sd/– | 03.03.18 |
| CHD | C.MANOJ | Sd/– | 03.03.18 |
| APPD | A.V.N | Sd/– | 05.03.18 |

DEPT FANS · CODE 864 · GRADE OF UNTOL.DIM PR:QA:500 · SCALE N.T.S · WEIGHT (KG). 45.970 · REF. TO ASSY/OLD DRG. 0-55-227-01331

TITLE: ROTOR BLADE (NA18 −10%)
CARD CODE U 01
DRAWING NO. 0-55-227-01649

| REV | DATE | ALTERED / CHECKED |
|---|---|---|
| ZONE | | |

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