

(MULTITOOL PROJECT.NC)

(CNC PROGRAMMING HANDBOOK - PETER SMID)

(T01 - 100 MM DIA FACE MILL)

```
N1 G21
N2 G17 G40 G80
N3 T01
N4 M06
N5 G90 G54 G00 X45.0 Y-52.0 S800 M03 T02 (START FACE CUT MILLING AT THE FRONT OF PART)
N6 G43 Z2.0 H01 M08
N7 G01 Z0 F200.0
N8 Y152.0 F300.0 (FINISH FACE CUT AT THE BACK OF PART)
N9 G00 Z2.0 M09
N10 G28 Z2.0 M05
N11 M01
```

(T02 - 12 MM DIA CENTER CUTTING END MILL - ROUGHING)

(D52 = SET AS OVERSIZE RADIUS BY THE STOCK AMOUNT)

(D52 = 6.500 SUGGESTED)

(0.5 MM LEFT ON THE BOTTOM FOR FINISHING CONTOUR AND POCKET)

```
N12 T02
N13 M06
N14 G90 G54 G00 X-8.0 Y30.0 S1600 M03 T03 (ROUGH OUT R20 INSIDE ARC - START)
N15 G43 Z2.0 H02 M08
N16 G01 Z-6.5 F250.0
N17 G03 Y54.0 I0 J12.0 (OPEN UP THE R20 ARC)
N18 G00 X-9.326 Y71.25 (MOVE TO 28 DEG ANGLE)
N19 G01 X10.215 Y108.0 (OPEN UP THE 28 DEG ANGLE)
N20 G00 X49.75 (MOVE TO R7 CENTERLINE)
N21 G01 Y91.0 (OPEN UP THE R7 ARC)
N22 G00 Z2.0
N23 X85.0 Y-10.0 (MOVE TO START POINT FOR CONTOUR ROUGHING)
N24 Z-6.5 (START OF ROUGH CONTOUR)
N25 G01 G41 Y2.0 D52 F300.0 (D52 = CUTTER RADIUS + STOCK AMOUNT)
N26 X16.0
N27 G02 X2.0 Y16.0 I0 J14.0
N28 G01 Y24.679
N29 G03 Y59.321 I-10.0 J17.321
N30 G01 Y71.25
N31 X16.223 Y98.0
N32 X42.75
N33 Y91.0
N34 G03 X56.75 I7.0 J0
N35 G02 X70.74 Y91.382 I7.0 J0
N36 G01 X73.0 Y50.0
N37 Y-10.0
N38 G00 G40 X85.0 (END OF ROUGH CONTOUR)
N39 Z2.0
N40 X44.0 Y33.0 (MOVE TO CENTER OF CIRCULAR POCKET)
N41 G01 Z-5.5 F125.0
N42 G41 X47.0 Y21.0 D52 F200.0 (LEAD-IN LINE)
N43 G03 X59.0 Y33.0 I0 J12.0 (LEAD-IN ARC)
N44 I-15.0 (FULL CIRCLE)
N45 X47.0 Y45.0 I-12.0 J0 (LEAD-OUT ARC)
N46 G01 G40 X44.0 Y33.0 (LEAD-OUT LINE)
N47 G00 Z2.0
N48 X31.0 Y108.0 (MOVE TO SLOT CENTERLINE)
N49 Z-14.0
N50 G01 Y68.75 F175.0 (OPEN UP THE SLOT CENTER)
```

```
N51 G00 Z2.0
N52 Y108.0
N53 Z-14.0
N54 G01 G41 X24.25 D52 F200.0 (ROUGH SLOT CONTOUR)
N55 Y68.75
N56 G03 X37.75 I6.75 J0
N57 G01 Y108.0
N58 G00 G40 X31.0 (END OF ROUGH SLOT CONTOUR)
N59 Z2.0 M09
N60 G28 Z2.0 M05
N61 M01

(T03 - 11 MM DIA CENTER CUTTING END MILL - FINISHING)
(D53 = 5.500 SUGGESTED FOR CONTOUR)
(D54 = 5.510 SUGGESTED FOR POCKET)
(D55 = 5.492 SUGGESTED FOR SLOT)
N62 T03
N63 M06
N64 G90 G54 G00 X-8.0 Y30.0 S2000 M03 T04 (FINISH R20 INSIDE ARC - START)
N65 G43 Z2.0 H03 M08
N66 G01 Z-7.0 F250.0
N67 G03 Y54.0 I0 J12.0 (OPEN UP THE R20 ARC)
N68 G00 X-9.326 Y71.25 (MOVE TO 28 DEG ANGLE)
N69 G01 X10.215 Y108.0 (OPEN UP THE 28 DEG ANGLE)
N70 G00 Z2.0
N71 X85.0 Y-10.0 (MOVE TO START POINT FOR CONTOUR FINISHING)
N72 G01 Z-7.0 F250.0
N73 G01 G41 Y2.0 D53 (D53 = CUTTER RADIUS - TO SIZE)
N74 X16.0 F250.0
N75 G02 X2.0 Y16.0 I0 J14.0
N76 G01 Y24.679
N77 G03 Y59.321 I-10.0 J17.321
N78 G01 Y71.25
N79 X16.223 Y98.0
N80 X42.75
N81 Y91.0
N82 G03 X56.75 I7.0 J0
N83 G02 X70.74 Y91.382 I7.0 J0
N84 G01 X73.0 Y50.0
N85 Y-10.0
N86 G00 G40 X85.0 (END OF FINISH CONTOUR)
N87 Z2.0
N88 X44.0 Y33.0 (MOVE TO CENTER OF CIRCULAR POCKET)
N89 G01 Z-6.0 F125.0
N90 G41 X47.0 Y21.0 D54 F180.0 (D54 - LEAD-IN LINE)
N91 G03 X59.0 Y33.0 I0 J12.0 (LEAD-IN ARC)
N92 I-15.0 (FULL CIRCLE)
N93 X47.0 Y45.0 I-12.0 J0 (LEAD-OUT ARC)
N94 G01 G40 X44.0 Y33.0 (LEAD-OUT LINE)
N95 G00 Z2.0
N96 X31.0 Y108.0 (MOVE TO SLOT CENTERLINE)
N97 Z-14.0
N98 G01 G41 X24.25 D55 F200.0 (D55 - FINISH SLOT CONTOUR)
N99 Y68.75
N100 G03 X37.75 I6.75 J0
N101 G01 Y108.0
N102 G00 G40 X31.0 (END OF FINISH SLOT CONTOUR)
N103 Z2.0 M09
N104 G28 Z2.0 M05
N105 M01
```

```
(T04 - 10 MM DIA SPOT DRILL - CHFR DIA 6.5 MM)
(HOLE ORDER CCW 1 TO 6 FROM ZERO DEGREES)
N106 T04
N107 M06
N108 G90 G54 G00 X44.0 Y53.0 S1750 M03 T05
N109 G43 Z10.0 H04 M08
N110 G99 G82 R2.0 Z-3.25 P200 F150.0 (HOLE 1 OF 6)
N111 X26.68 Y43.0 (HOLE 2 OF 6)
N112 Y23.0 (HOLE 3 OF 6)
N113 X44.0 Y13.0 (HOLE 4 OF 6)
N114 X61.321 Y23.0 (HOLE 5 OF 6)
N115 Y43.0 (HOLE 6 OF 6)
N116 G80 G00 Z2.0 M09
N117 G28 Z2.0 M05
N118 M01
```

```
(T05 - 4.8 MM DIA TAP DRILL)
(HOLE ORDER CW 6 TO 1 FROM LAST POSITION)
N119 T05
N120 M06
N121 G90 G54 G00 X61.321 Y43.0 S1300 M03 T06
N122 G43 Z10.0 H05 M08
N123 G99 G81 R2.0 Z-14.442 F175.0 (HOLE 6 OF 6)
N124 Y23.0 (HOLE 5 OF 6)
N125 X44.0 Y13.0 (HOLE 4 OF 6)
N126 X26.68 Y23.0 (HOLE 3 OF 6)
N127 Y43.0 (HOLE 2 OF 6)
N128 X44.0 Y53.0 (HOLE 1 OF 6)
N129 G80 G00 Z2.0 M09
N130 G28 Z2.0 M05
N131 M01
```

```
(T06 - M6.00 X 1.0 TAP RH)
(HOLE ORDER CCW 1 TO 6 FROM LAST POSITION)
N132 T06
N133 M06
N134 G90 G54 G00 X44.0 Y53.0 S900 M03 T01
N135 G43 Z10.0 H06 M08
N136 G99 G84 Z-14.0 R5.0 F900.0 (HOLE 1 OF 6)
N137 X26.68 Y43.0 (HOLE 2 OF 6)
N138 Y23.0 (HOLE 3 OF 6)
N139 X44.0 Y13.0 (HOLE 4 OF 6)
N140 X61.321 Y23.0 (HOLE 5 OF 6)
N141 Y43.0 (HOLE 6 OF 6)
N142 G80 G00 Z5.0 M09
N143 G28 Z5.0 M05
N144 G28 X43.0 Y-61.321
N145 M30
%
```