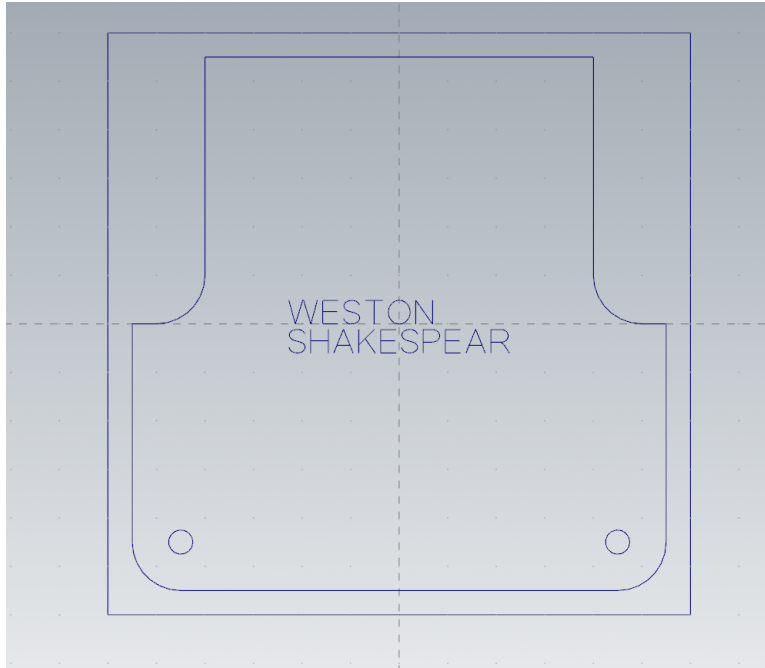
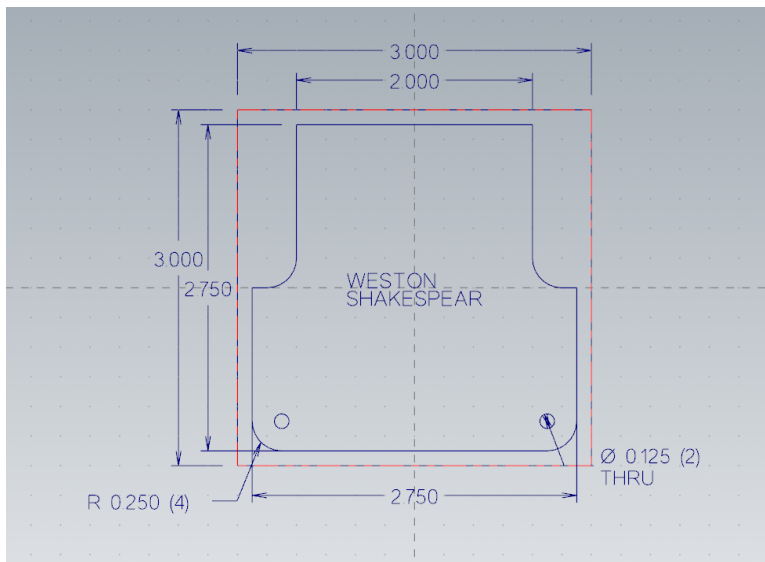


CCET 3680
Mill Lesson 4 First Exercise

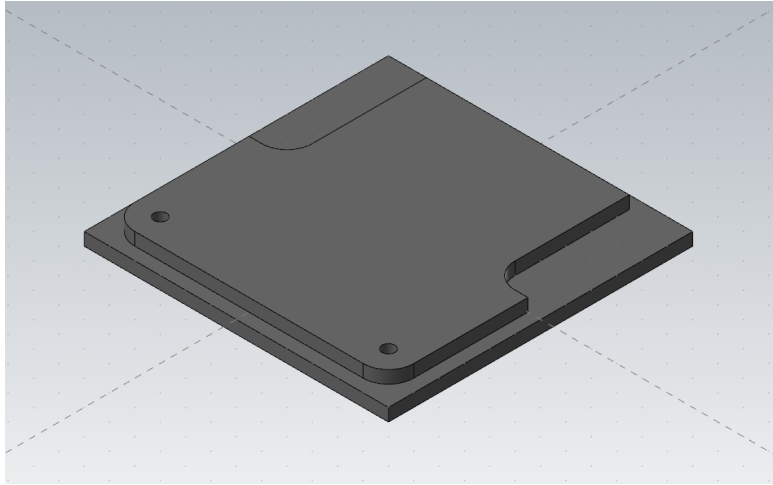
I. Wireframe:



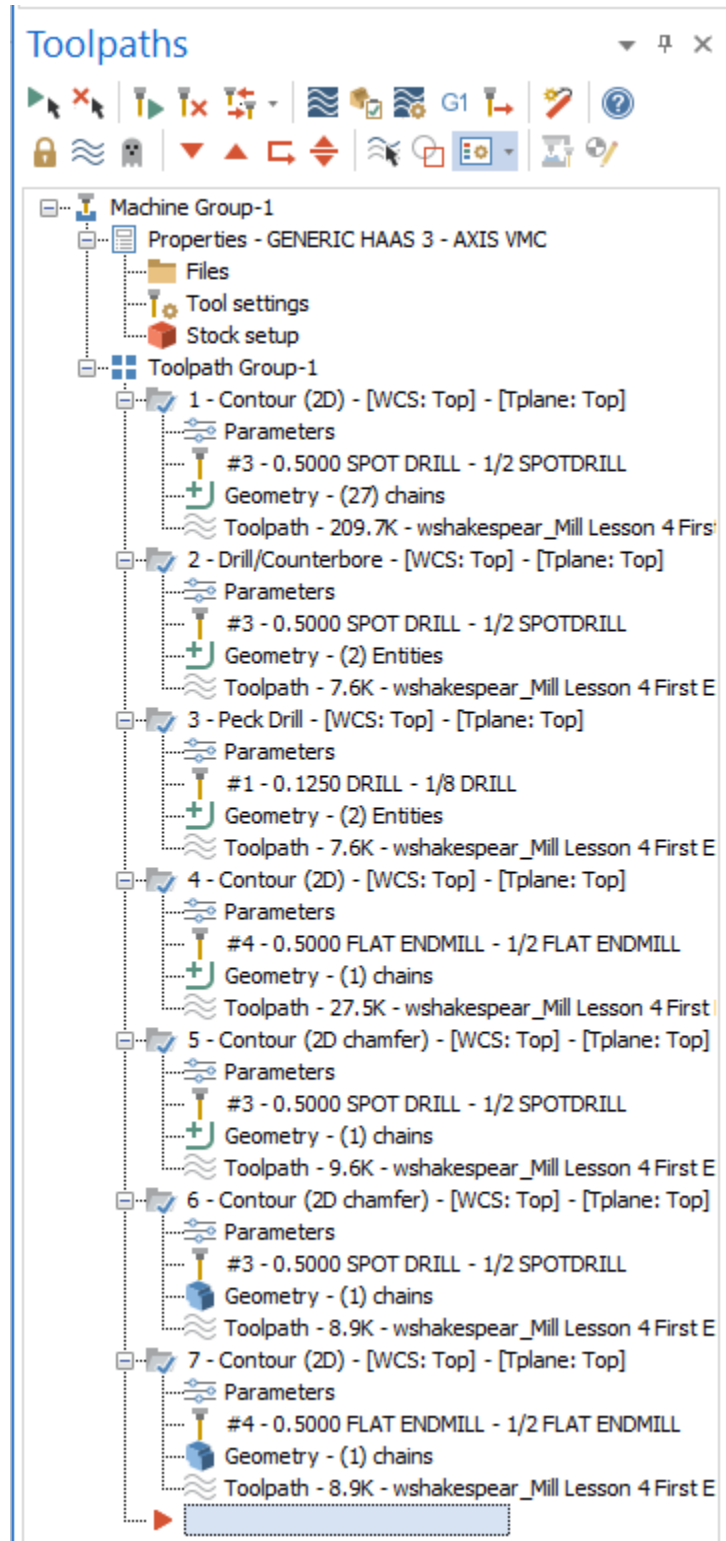
II. Dimensions:



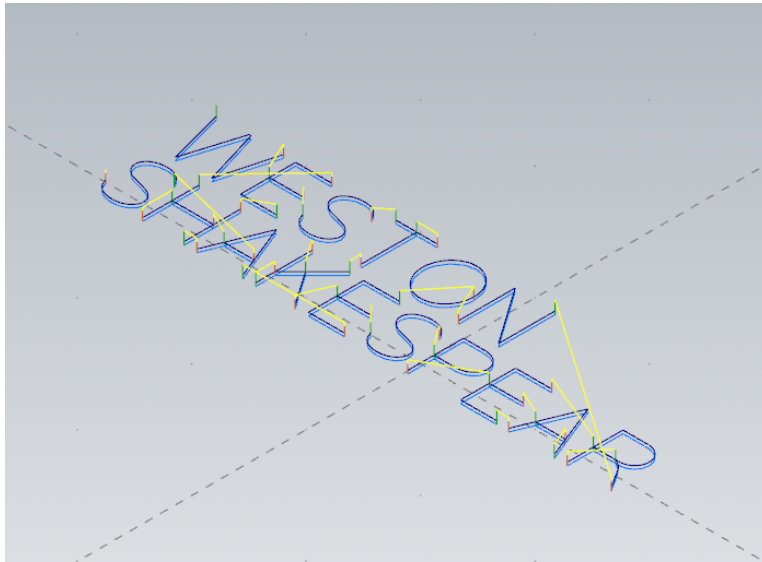
III. Solid:



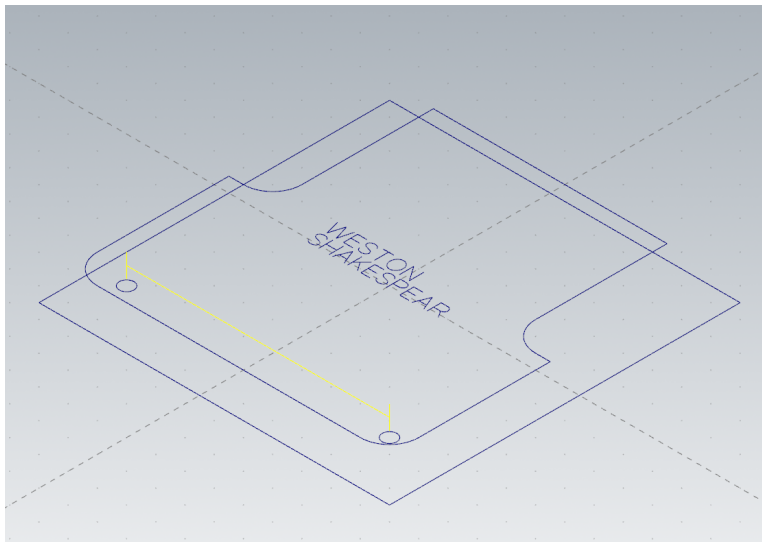
IV. Toolpaths:



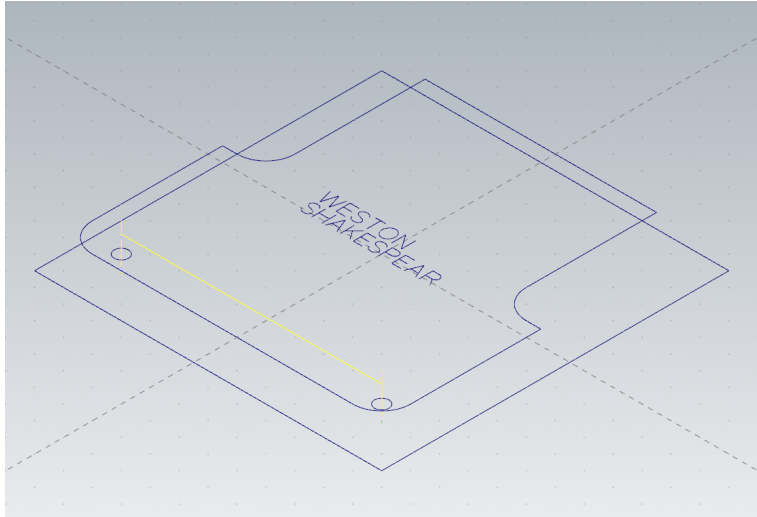
V. Name 2D Contour:



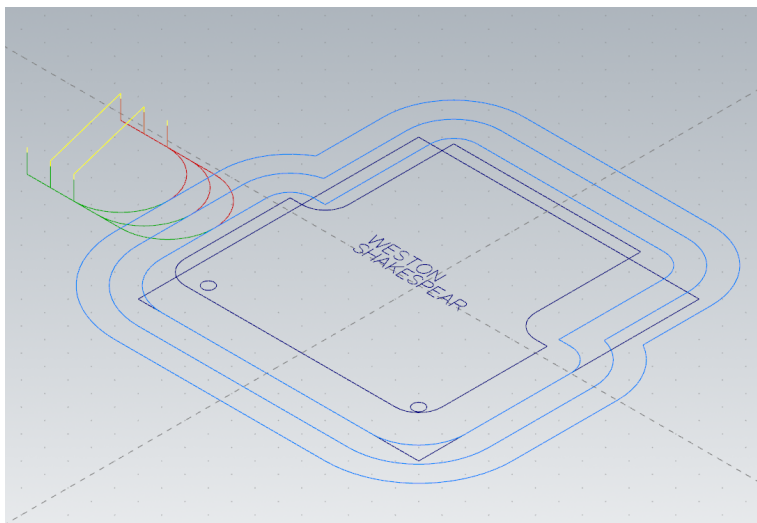
VI. Spot Drill:



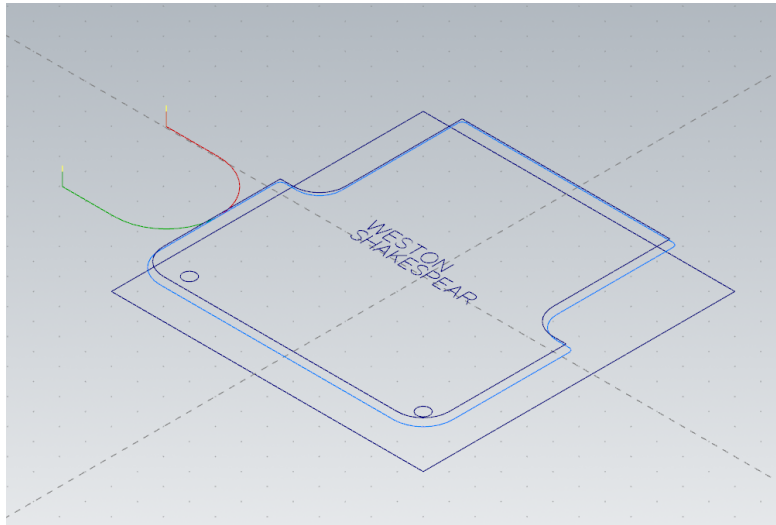
VII. Peck Drill:



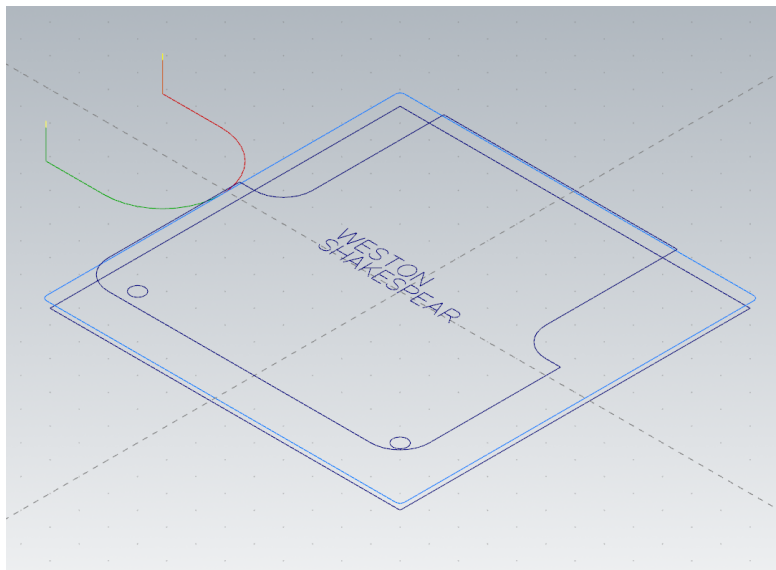
VIII. 2D Contour:



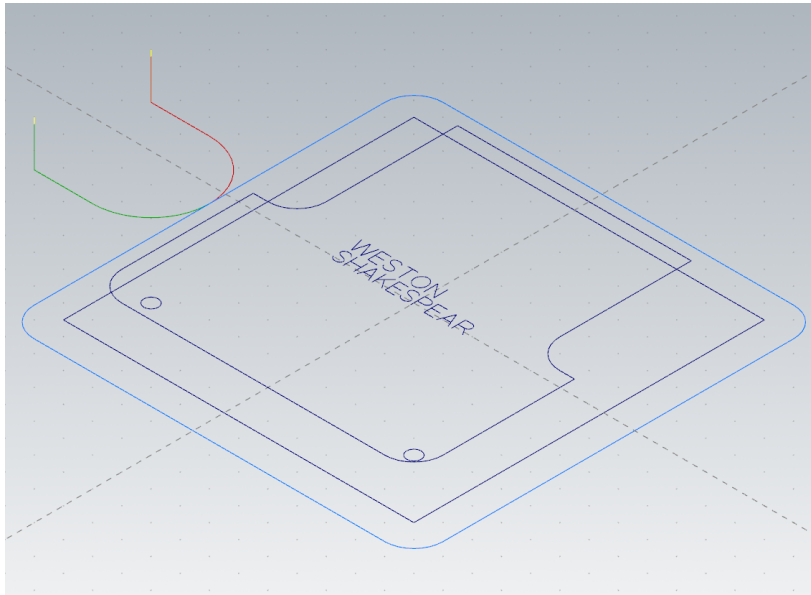
IX. 2D Chamfer Contour:



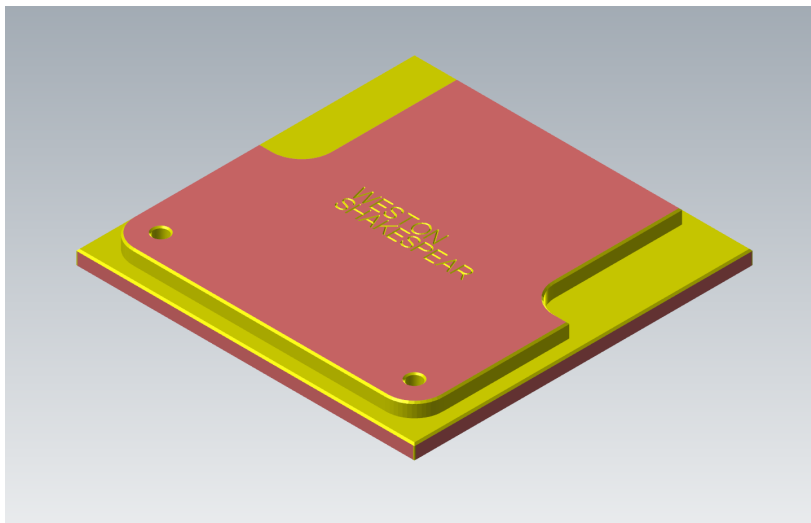
X. 2D Chamfer Contour:



XI. 2D Contour:



XII. Final Solid:



XIII. Method:

I drew two center anchored rectangles and then used offsets to create one copy of the repeating geometry. Then I offset the upper portion and added the fillets and holes.

XIV. GCode Changes:

To modify my gcode to be compatible with the machine I first made sure the HAAS 3 axis post processor was selected when exporting the gcode. Then I removed the long lines at the beginning and edited the last G28 home command to not zero the x axis.

XV. Finished Part:



XVI. Gcode:

%

O33003

(WSHAKESPEAR_MILL LESSON 4A)

(DATE=DD-MM-YY - 03-02-23 TIME=HH:MM - 10:59)

(MCAM FILE - C:\USERS\WESTONSHAKESPEAR\DOWNLOADS\WSHAKESPEAR_MILL LESSON 4
FIRS)

(NC FILE - C:\USERS\WESTONSHAKESPEAR\DOWNLOADS\GCODE\WSHAKESPEAR_MILL LESSON
4A)

(MATERIAL - ALUMINUM INCH - 6061)

(T5|1/8 SPOTDRILL|H5|D5|TOOL DIA. - .125)

(T3|1/2 SPOTDRILL|H3|D3|TOOL DIA. - .5)

(T1|1/8 DRILL|H1|D1|TOOL DIA. - .125)

(T4|1/2 FLAT ENDMILL|H4|D4|TOOL DIA. - .5)

N100 G20
N110 G0 G17 G40 G49 G80 G90
N120 T5 M6
N130 G187 P3 E.001
N140 G0 G90 G54 X-.5682 Y.1221 S5000 M3
N150 G43 H5 Z.145
N160 G1 Z.118 F6.4
N170 X-.5347 Y-.0017 F40.
N180 X-.4972 Y.1221
N190 X-.4926
N200 X-.455 Y-.0017
N210 X-.4216 Y.1221
N220 Z.138 F6.4
N230 G0 Z.145
N240 X-.3935 Y.0628
N250 G1 Z.118
N260 X-.3191 F40.
N270 Z.138 F6.4
N280 G0 Z.145
N290 X-.2866 Y.0293
N300 G1 Z.118
N310 X-.2833 Y.0205 F40.
N320 X-.2778 Y.0123
N330 X-.2687 Y.0055
N340 X-.2571 Y.0014
N350 X-.2442 Y0.
N360 X-.2278 Y.0022
N370 X-.2151 Y.0088
N380 X-.2066 Y.0185
N390 X-.2034 Y.0294
N400 X-.2074 Y.0421
N410 X-.2096 Y.0448
N420 X-.2174 Y.0512
N430 X-.2284 Y.056
N440 X-.2622 Y.0654
N450 X-.276 Y.0736
N460 X-.2797 Y.0776
N470 X-.2835 Y.0848
N480 X-.2848 Y.0929
N490 X-.2815 Y.1037
N500 X-.2726 Y.1128
N510 X-.2599 Y.1186

N520 X-.2442 Y.1208
N530 X-.231 Y.1195
N540 X-.2193 Y.1149
N550 X-.2102 Y.1072
N560 X-.2045 Y.0971
N570 Z.138 F6.4
N580 G0 Z.145
N590 X-.1747 Y.1203
N600 G1 Z.118
N610 X-.0835 F40.
N620 Z.138 F6.4
N630 G0 Z.145
N640 X-.1288
N650 G1 Z.118
N660 Y-.0017 F40.
N670 Z.138 F6.4
N680 G0 Z.145
N690 X-.1268 Y-.0279
N700 G1 Z.118
N710 X-.2087 Y-.1099 F40.
N720 Z.138 F6.4
N730 G0 Z.145
N740 Y-.1517
N750 G1 Z.118
N760 Y-.0279 F40.
N770 Z.138 F6.4
N780 G0 Z.145
N790 X-.1753 Y-.0765
N800 G1 Z.118
N810 X-.1228 Y-.1517 F40.
N820 Z.138 F6.4
N830 G0 Z.145
N840 X-.0951 Y-.0872
N850 G1 Z.118
N860 X-.0207 F40.
N870 Z.138 F6.4
N880 G0 Z.145
N890 X.0118 Y-.1207
N900 G1 Z.118
N910 X.0152 Y-.1295 F40.
N920 X.0206 Y-.1377
N930 X.0298 Y-.1445

N940 X.0413 Y-.1486
N950 X.0542 Y-.15
N960 X.0706 Y-.1478
N970 X.0833 Y-.1412
N980 X.0919 Y-.1315
N990 X.095 Y-.1206
N1000 X.091 Y-.1079
N1010 X.0889 Y-.1052
N1020 X.0811 Y-.0988
N1030 X.07 Y-.094
N1040 X.0363 Y-.0846
N1050 X.0224 Y-.0764
N1060 X.0187 Y-.0724
N1070 X.0149 Y-.0652
N1080 X.0137 Y-.0571
N1090 X.017 Y-.0463
N1100 X.0258 Y-.0372
N1110 X.0385 Y-.0314
N1120 X.0542 Y-.0292
N1130 X.0674 Y-.0305
N1140 X.0791 Y-.0351
N1150 X.0883 Y-.0428
N1160 X.0939 Y-.0529
N1170 Z.138 F6.4
N1180 G0 Z.145
N1190 X.1235 Y-.0942
N1200 G1 Z.118
N1210 X.1711 F40.
N1220 X.1843 Y-.0921
N1230 X.1965 Y-.0857
N1240 X.2054 Y-.0754
N1250 X.2089 Y-.062
N1260 X.2054 Y-.0485
N1270 X.1965 Y-.0381
N1280 X.1843 Y-.0317
N1290 X.1711 Y-.0297
N1300 X.1235
N1310 Y-.1517
N1320 Z.138 F6.4
N1330 G0 Z.145
N1340 X.2373 Y-.0872
N1350 G1 Z.118

N1360 X.3117 F40.
N1370 Z.138 F6.4
N1380 G0 Z.145
N1390 X.3611 Y-.1099
N1400 G1 Z.118
N1410 X.4264 F40.
N1420 Z.138 F6.4
N1430 G0 Z.145
N1440 X.4438 Y-.1517
N1450 G1 Z.118
N1460 X.3938 Y-.0279 F40.
N1470 X.3437 Y-.1517
N1480 Z.138 F6.4
N1490 G0 Z.145
N1500 X.3163 Y-.15
N1510 G1 Z.118
N1520 X.2373 F40.
N1530 Y-.0297
N1540 X.3163
N1550 Z.138 F6.4
N1560 G0 Z.145
N1570 X.4721 Y-.0943
N1580 G1 Z.118
N1590 X.5273 F40.
N1600 X.5402 Y-.0921
N1610 X.5511 Y-.0856
N1620 X.5587 Y-.0753
N1630 X.5616 Y-.0621
N1640 X.5587 Y-.0488
N1650 X.5511 Y-.0388
N1660 X.5402 Y-.0323
N1670 X.5273 Y-.0298
N1680 X.4721
N1690 Y-.1517
N1700 Z.138 F6.4
N1710 G0 Z.145
N1720 X.5201 Y-.0943
N1730 G1 Z.118
N1740 X.5335 Y-.1018 F40.
N1750 X.5436 Y-.1134
N1760 X.5682 Y-.1517
N1770 Z.138 F6.4

N1780 G0 Z.145
N1790 X.1719 Y.1221
N1800 G1 Z.118
N1810 Y-.0017 F40.
N1820 X.0847 Y.1221
N1830 Y-.0017
N1840 Z.138 F6.4
N1850 G0 Z.145
N1860 X.0565 Y.0599
N1870 G1 Z.118
N1880 X.0525 Y.0827 F40.
N1890 X.0521 Y.0838
N1900 X.0469 Y.0943
N1910 X.0399 Y.1033
N1920 X.0221 Y.1165
N1930 X.0117 Y.1203
N1940 X.0007 Y.1215
N1950 X-.0192 Y.1175
N1960 X-.0213 Y.1165
N1970 X-.0391 Y.1033
N1980 X-.0513 Y.0838
N1990 X-.0546 Y.0721
N2000 X-.0557 Y.0599
N2010 X-.0517 Y.0374
N2020 X-.0513 Y.0362
N2030 X-.0391 Y.0167
N2040 X-.0308 Y.0091
N2050 X-.0213 Y.0035
N2060 X-.0108 Y0.
N2070 X.0007 Y-.0012
N2080 X.0205 Y.0028
N2090 X.0221 Y.0035
N2100 X.0316 Y.0091
N2110 X.0399 Y.0167
N2120 X.0521 Y.0362
N2130 X.0554 Y.0476
N2140 X.0565 Y.0599
N2150 Z.138 F6.4
N2160 G0 Z.145
N2170 X-.0161 Y-.0297
N2180 G1 Z.118
N2190 X-.0951 F40.

N2200 Y-.15
N2210 X-.0161
N2220 Z.138 F6.4
N2230 G0 Z.145
N2240 X-.237 Y-.1517
N2250 G1 Z.118
N2260 X-.287 Y-.0279 F40.
N2270 X-.3371 Y-.1517
N2280 Z.138 F6.4
N2290 G0 Z.145
N2300 X-.3652
N2310 G1 Z.118
N2320 Y-.0279 F40.
N2330 Z.138 F6.4
N2340 G0 Z.145
N2350 X-.3145 Y0.
N2360 G1 Z.118
N2370 X-.3935 F40.
N2380 Y.1203
N2390 X-.3145
N2400 Z.138 F6.4
N2410 G0 Z.145
N2420 X-.4559 Y-.0279
N2430 G1 Z.118
N2440 Y-.1517 F40.
N2450 Z.138 F6.4
N2460 G0 Z.145
N2470 Y-.0872
N2480 G1 Z.118
N2490 X-.3652 F40.
N2500 Z.138 F6.4
N2510 G0 Z.145
N2520 X-.3197 Y-.1099
N2530 G1 Z.118
N2540 X-.2544 F40.
N2550 Z.138 F6.4
N2560 G0 Z.145
N2570 X-.4856 Y-.0529
N2580 G1 Z.118
N2590 X-.4912 Y-.0428 F40.
N2600 X-.5004 Y-.0351
N2610 X-.5121 Y-.0305

N2620 X-.5253 Y-.0292
N2630 X-.541 Y-.0314
N2640 X-.5537 Y-.0372
N2650 X-.5625 Y-.0463
N2660 X-.5659 Y-.0571
N2670 X-.5619 Y-.0709
N2680 X-.5608 Y-.0724
N2690 X-.5488 Y-.082
N2700 X-.5432 Y-.0846
N2710 X-.5095 Y-.094
N2720 X-.4949 Y-.1012
N2730 X-.4907 Y-.1052
N2740 X-.4851 Y-.1157
N2750 X-.4845 Y-.1206
N2760 X-.4877 Y-.1315
N2770 X-.4962 Y-.1412
N2780 X-.5089 Y-.1478
N2790 X-.5253 Y-.15
N2800 X-.5382 Y-.1486
N2810 X-.5498 Y-.1445
N2820 X-.5589 Y-.1377
N2830 X-.5643 Y-.1295
N2840 X-.5677 Y-.1207
N2850 Z.138 F6.4
N2860 G0 Z.145
N2870 M5
N2880 G91 G28 Z0.
N2890 M01
N2900 T3 M6
N2910 G187 P3 E.001
N2920 G0 G90 G54 X-1.125 Y-1.125 S5000 M3
N2930 G43 H3 Z.25
N2940 M8
N2950 Z.15
N2960 G99 G81 Z.05 R.15 F40.
N2970 X1.125
N2980 G80
N2990 Z.25
N3000 M5
N3010 G91 G28 Z0. M9
N3020 M01
N3030 T1 M6

N3040 G187 P3 E.001
N3050 G0 G90 G54 X-1.125 Y-1.125 S5000 M3
N3060 G43 H1 Z.25
N3070 Z.15
N3080 G99 G83 Z-.155 R.15 Q.0375 F20.
N3090 X1.125
N3100 G80
N3110 Z.25
N3120 M5
N3130 G91 G28 Z0.
N3140 M01
N3150 T4 M6
N3160 G187 P3 E.001
N3170 G0 G90 G54 X-3.125 Y-1.0625 S5000 M3
N3180 G43 H4 Z.25
N3190 Z.2
N3200 G1 Z0. F6.4
N3210 X-2.625 F40.
N3220 G3 X-2.125 Y-.5625 I0. J.5
N3230 G1 Y0.
N3240 G2 X-1.75 Y.6495 I.75 J0.
N3250 G1 Y1.375
N3260 G2 X-1. Y2.125 I.75 J0.
N3270 G1 X1.
N3280 G2 X1.75 Y1.375 I0. J-.75
N3290 G1 Y.6495
N3300 G2 X2.125 Y0. I-.375 J-.6495
N3310 G1 Y-1.125
N3320 G2 X1.125 Y-2.125 I-1. J0.
N3330 G1 X-1.125
N3340 G2 X-2.125 Y-1.125 I0. J1.
N3350 G1 Y-.5625
N3360 G3 X-2.625 Y-.0625 I-.5 J0.
N3370 G1 X-3.125
N3380 Z.2 F6.4
N3390 G0 Z.25
N3400 X-2.875 Y-1.0625
N3410 Z.2
N3420 G1 Z0.
N3430 X-2.375 F40.
N3440 G3 X-1.875 Y-.5625 I0. J.5
N3450 G1 Y0.

N3460 G2 X-1.5 Y.4841 I.5 J0.
N3470 G1 Y1.375
N3480 G2 X-1. Y1.875 I.5 J0.
N3490 G1 X1.
N3500 G2 X1.5 Y1.375 I0. J-.5
N3510 G1 Y.4841
N3520 G2 X1.875 Y0. I-.125 J-.4841
N3530 G1 Y-1.125
N3540 G2 X1.125 Y-1.875 I-.75 J0.
N3550 G1 X-1.125
N3560 G2 X-1.875 Y-1.125 I0. J.75
N3570 G1 Y-.5625
N3580 G3 X-2.375 Y-.0625 I-.5 J0.
N3590 G1 X-2.875
N3600 Z.2 F6.4
N3610 G0 Z.25
N3620 X-2.625 Y-1.0625
N3630 Z.2
N3640 G1 Z0.
N3650 X-2.125 F40.
N3660 G3 X-1.625 Y-.5625 I0. J.5
N3670 G1 Y0.
N3680 G2 X-1.375 Y.25 I.25 J0.
N3690 G1 X-1.25
N3700 Y1.375
N3710 G2 X-1. Y1.625 I.25 J0.
N3720 G1 X1.
N3730 G2 X1.25 Y1.375 I0. J-.25
N3740 G1 Y.25
N3750 X1.375
N3760 G2 X1.625 Y0. I0. J-.25
N3770 G1 Y-1.125
N3780 G2 X1.125 Y-1.625 I-.5 J0.
N3790 G1 X-1.125
N3800 G2 X-1.625 Y-1.125 I0. J.5
N3810 G1 Y-.5625
N3820 G3 X-2.125 Y-.0625 I-.5 J0.
N3830 G1 X-2.625
N3840 Z.2 F6.4
N3850 G0 Z.25
N3860 M5
N3870 G91 G28 Z0.

N3880 M01
N3890 T3 M6
N3900 G187 P3 E.001
N3910 G0 G90 G54 X-2.41 Y-1.0625 S4966 M3
N3920 G43 H3 Z.25
N3930 Z.2
N3940 G1 Z.075 F6.4
N3950 X-1.91 F40.
N3960 G3 X-1.41 Y-.5625 I0. J.5
N3970 G1 Y0.
N3980 G2 X-1.375 Y.035 I.035 J0.
N3990 G1 X-1.25
N4000 G3 X-1.035 Y.25 I0. J.215
N4010 G1 Y1.375
N4020 G2 X-1. Y1.41 I.035 J0.
N4030 G1 X1.
N4040 G2 X1.035 Y1.375 I0. J-.035
N4050 G1 Y.25
N4060 G3 X1.25 Y.035 I.215 J0.
N4070 G1 X1.375
N4080 G2 X1.41 Y0. I0. J-.035
N4090 G1 Y-1.125
N4100 G2 X1.125 Y-1.41 I-.285 J0.
N4110 G1 X-1.125
N4120 G2 X-1.41 Y-1.125 I0. J.285
N4130 G1 Y-.5625
N4140 G3 X-1.91 Y-.0625 I-.5 J0.
N4150 G1 X-2.41
N4160 Z.2 F6.4
N4170 G0 Z.25
N4180 G187 P3 E.001
N4190 X-2.535 Y-.5
N4200 Z.2
N4210 G1 Z-.05
N4220 X-2.035 F40.
N4230 G3 X-1.535 Y0. I0. J.5
N4240 G1 Y1.5
N4250 G2 X-1.5 Y1.535 I.035 J0.
N4260 G1 X1.5
N4270 G2 X1.535 Y1.5 I0. J-.035
N4280 G1 Y-1.5
N4290 G2 X1.5 Y-1.535 I-.035 J0.

N4300 G1 X-1.5
N4310 G2 X-1.535 Y-1.5 I0. J.035
N4320 G1 Y0.
N4330 G3 X-2.035 Y.5 I-.5 J0.
N4340 G1 X-2.535
N4350 Z.2 F6.4
N4360 G0 Z.25
N4370 M5
N4380 G91 G28 Z0.
N4390 M01
N4400 T4 M6
N4410 G187 P3 E.001
N4420 G0 G90 G54 X-2.75 Y-.5 S4966 M3
N4430 G43 H4 Z.25
N4440 Z.2
N4450 G1 Z-.14 F6.4
N4460 X-2.25 F40.
N4470 G3 X-1.75 Y0. I0. J.5
N4480 G1 Y1.5
N4490 G2 X-1.5 Y1.75 I.25 J0.
N4500 G1 X1.5
N4510 G2 X1.75 Y1.5 I0. J-.25
N4520 G1 Y-1.5
N4530 G2 X1.5 Y-1.75 I-.25 J0.
N4540 G1 X-1.5
N4550 G2 X-1.75 Y-1.5 I0. J.25
N4560 G1 Y0.
N4570 G3 X-2.25 Y.5 I-.5 J0.
N4580 G1 X-2.75
N4590 Z.2 F6.4
N4600 G0 Z.25
N4610 M5
N4620 G91 G28 Z0.
N4630 G28 X0. Y0.
N4640 M30
%