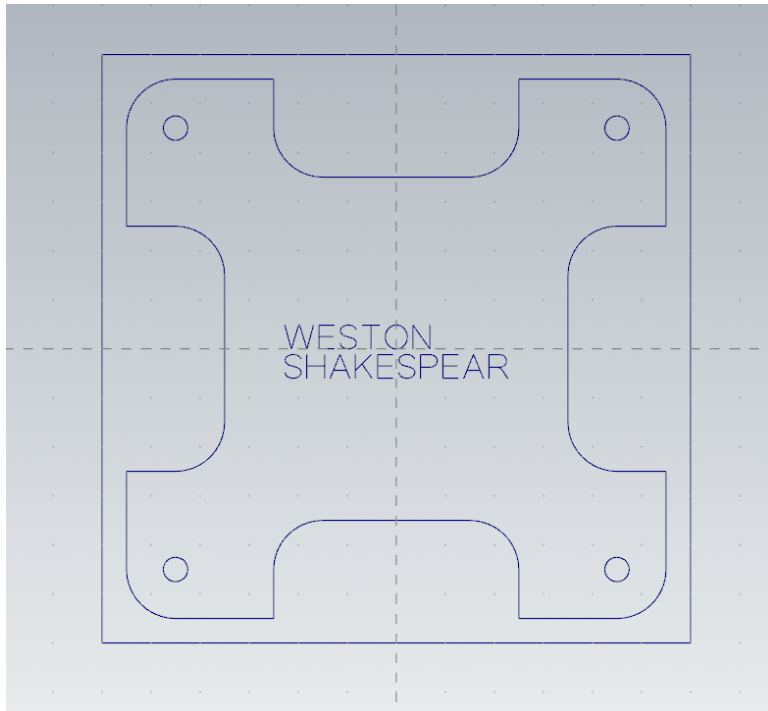
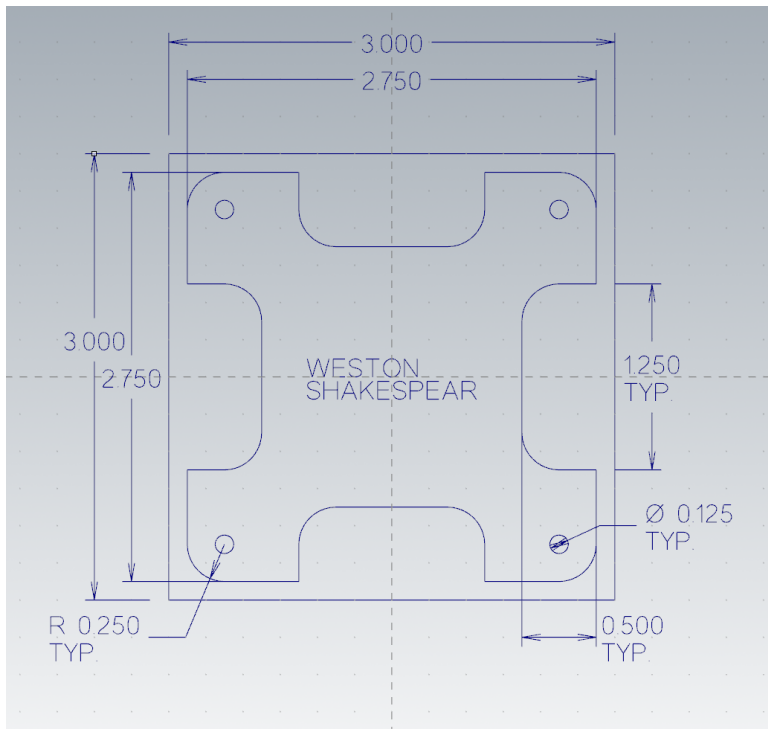


CCET 3680
Mill Lesson 4 Second Exercise

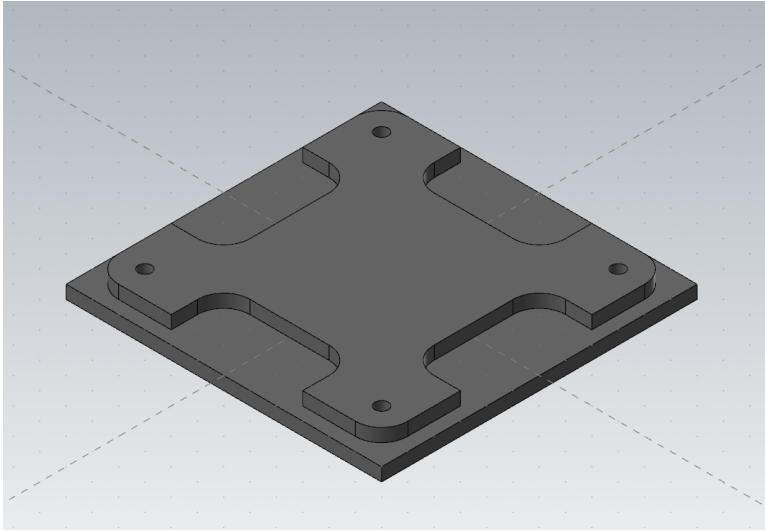
I. Wireframe:



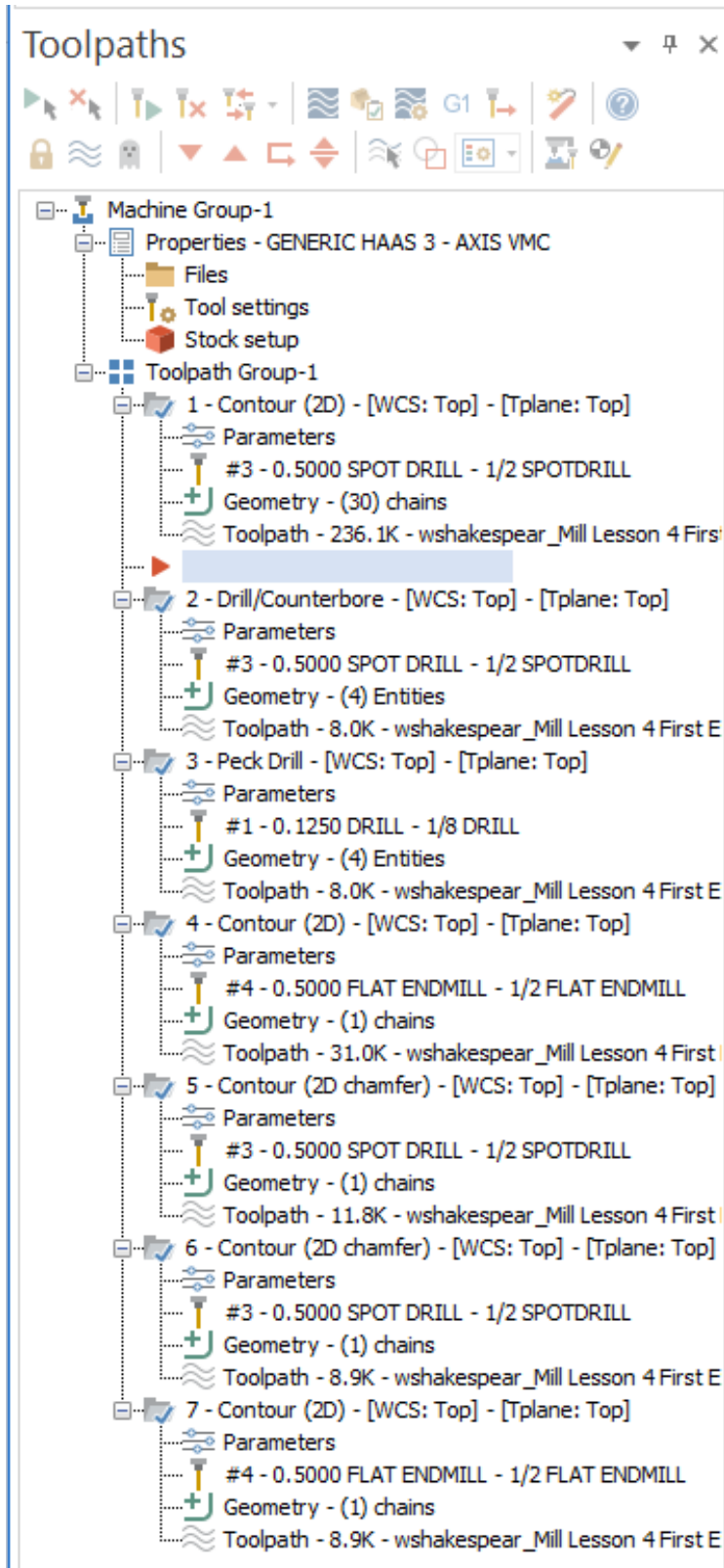
II. Dimensions:



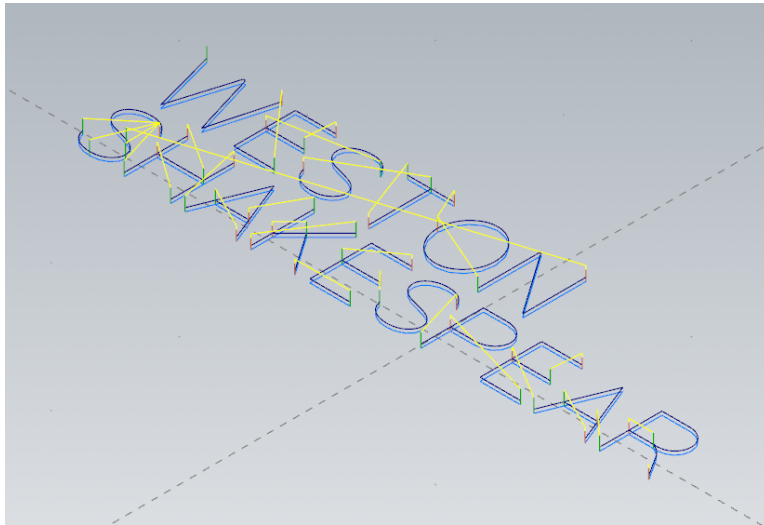
III. Solid:



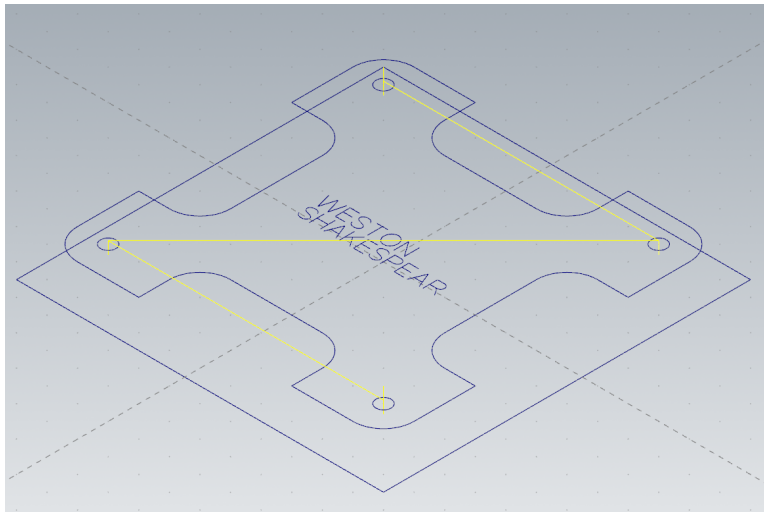
IV. Toolpaths:



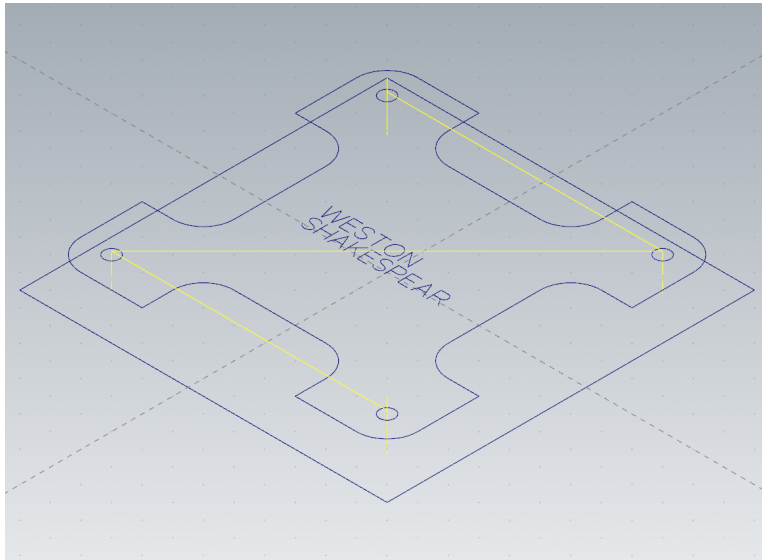
V. Name 2D Contour:



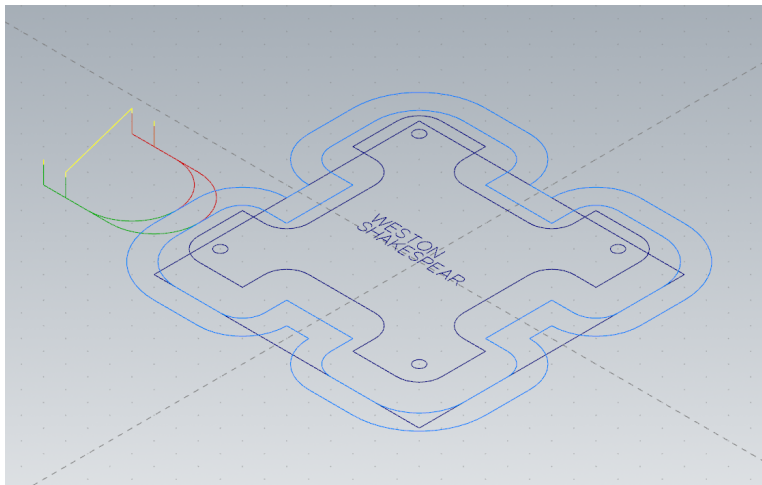
VI. Spot Drill:



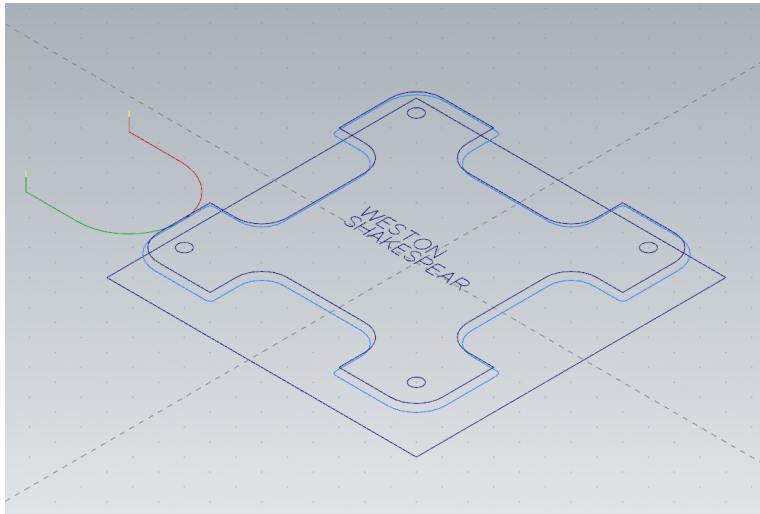
VII. Peck Drill:



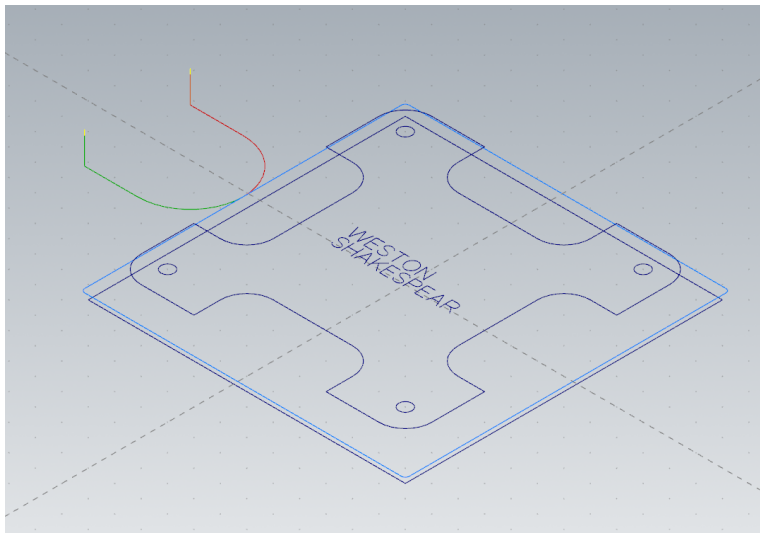
VIII. 2D Contour:



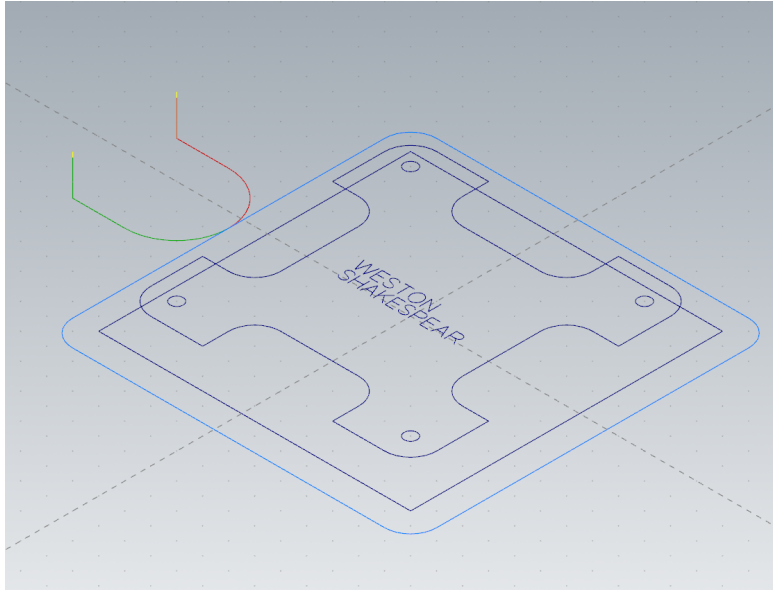
IX. 2D Chamfer Contour:



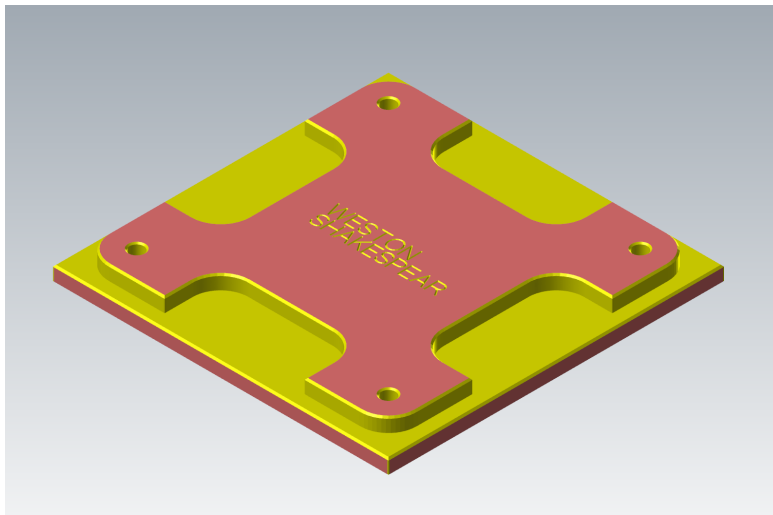
X: 2D Chamfer Contour:



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. I then used the rotate tool to create four copies of the wireframe around the center.

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:



XV. Gcode:

%

O33004

(WSHAKESPEAR_MILL LESSON 4B)

(DATE=DD-MM-YY - 03-02-23 TIME=HH:MM - 10:50)

(MCAM FILE - C:\USERS\WESTONSHAKESPEAR\DOWNLOADS\WSHAKESPEAR_MILL LESSON 4
SEC0)

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

(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 S4966 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-.3145 Y0.
N250 G1 Z.118
N260 X-.3935 F40.
N270 Y.1203
N280 X-.3145
N290 Z.138 F6.4
N300 G0 Z.145
N310 X-.3191 Y.0628
N320 G1 Z.118
N330 X-.3935 F40.
N340 Z.138 F6.4
N350 G0 Z.145
N360 X-.2045 Y.0971
N370 G1 Z.118
N380 X-.2102 Y.1072 F40.
N390 X-.2193 Y.1149
N400 X-.231 Y.1195
N410 X-.2442 Y.1208
N420 X-.2599 Y.1186
N430 X-.2726 Y.1128
N440 X-.2815 Y.1037
N450 X-.2848 Y.0929
N460 X-.2808 Y.0791
N470 X-.2797 Y.0776
N480 X-.2677 Y.068
N490 X-.2622 Y.0654
N500 X-.2284 Y.056
N510 X-.2138 Y.0488
N520 X-.2096 Y.0448
N530 X-.204 Y.0343
N540 X-.2034 Y.0294
N550 X-.2066 Y.0185

N560 X-.2151 Y.0088
N570 X-.2278 Y.0022
N580 X-.2442 Y0.
N590 X-.2571 Y.0014
N600 X-.2687 Y.0055
N610 X-.2778 Y.0123
N620 X-.2833 Y.0205
N630 X-.2866 Y.0293
N640 Z.138 F6.4
N650 G0 Z.145
N660 X-.1288 Y.1203
N670 G1 Z.118
N680 Y-.0017 F40.
N690 Z.138 F6.4
N700 G0 Z.145
N710 X-.1747 Y.1203
N720 G1 Z.118
N730 X-.0835 F40.
N740 Z.138 F6.4
N750 G0 Z.145
N760 X-.0557 Y.0599
N770 G1 Z.118
N780 X-.0517 Y.0826 F40.
N790 X-.0513 Y.0838
N800 X-.0394 Y.103
N810 X-.0391 Y.1033
N820 X-.0233 Y.1155
N830 X-.0213 Y.1165
N840 X-.0024 Y.1214
N850 X.0007 Y.1215
N860 X.02 Y.1175
N870 X.0221 Y.1165
N880 X.0383 Y.1049
N890 X.0399 Y.1033
N900 X.0515 Y.0852
N910 X.0521 Y.0838
N920 X.0565 Y.0615
N930 Y.0599
N940 X.0525 Y.0373
N950 X.0521 Y.0362
N960 X.04 Y.0168
N970 X.0399 Y.0167

N980 X.0228 Y.0038
N990 X.0221 Y.0035
N1000 X.0026 Y-.0011
N1010 X.0007 Y-.0012
N1020 X-.0172 Y.0018
N1030 X-.0213 Y.0035
N1040 X-.0383 Y.0158
N1050 X-.0391 Y.0167
N1060 X-.0512 Y.036
N1070 X-.0513 Y.0362
N1080 X-.0557 Y.0578
N1090 Y.0599
N1100 Z.138 F6.4
N1110 G0 Z.145
N1120 X.0847 Y-.0017
N1130 G1 Z.118
N1140 Y.1221 F40.
N1150 X.1719 Y-.0017
N1160 Y.1221
N1170 Z.138 F6.4
N1180 G0 Z.145
N1190 X-.5095 Y-.094
N1200 G1 Z.118
N1210 X-.5432 Y-.0846 F40.
N1220 X-.5571 Y-.0764
N1230 X-.5608 Y-.0724
N1240 X-.5646 Y-.0652
N1250 X-.5659 Y-.0571
N1260 X-.5625 Y-.0463
N1270 X-.5537 Y-.0372
N1280 X-.541 Y-.0314
N1290 X-.5253 Y-.0292
N1300 X-.5121 Y-.0305
N1310 X-.5004 Y-.0351
N1320 X-.4912 Y-.0428
N1330 X-.4856 Y-.0529
N1340 Z.138 F6.4
N1350 G0 Z.145
N1360 X-.4845 Y-.1206
N1370 G1 Z.118
N1380 X-.4885 Y-.1079 F40.
N1390 X-.4907 Y-.1052

N1400 X-.4984 Y-.0988
N1410 X-.5095 Y-.094
N1420 X-.5432 Y-.0846
N1430 X-.5571 Y-.0764
N1440 X-.5608 Y-.0724
N1450 X-.5646 Y-.0652
N1460 X-.5659 Y-.0571
N1470 X-.5625 Y-.0463
N1480 X-.5537 Y-.0372
N1490 X-.541 Y-.0314
N1500 X-.5253 Y-.0292
N1510 X-.5121 Y-.0305
N1520 X-.5004 Y-.0351
N1530 X-.4912 Y-.0428
N1540 X-.4856 Y-.0529
N1550 Z.138 F6.4
N1560 G0 Z.145
N1570 X-.5253 Y-.15
N1580 G1 Z.118
N1590 X-.5089 Y-.1478 F40.
N1600 X-.4962 Y-.1412
N1610 X-.4877 Y-.1315
N1620 X-.4845 Y-.1206
N1630 X-.4885 Y-.1079
N1640 X-.4907 Y-.1052
N1650 X-.4984 Y-.0988
N1660 X-.5095 Y-.094
N1670 X-.5432 Y-.0846
N1680 X-.5571 Y-.0764
N1690 X-.5608 Y-.0724
N1700 X-.5646 Y-.0652
N1710 X-.5659 Y-.0571
N1720 X-.5625 Y-.0463
N1730 X-.5537 Y-.0372
N1740 X-.541 Y-.0314
N1750 X-.5253 Y-.0292
N1760 X-.5121 Y-.0305
N1770 X-.5004 Y-.0351
N1780 X-.4912 Y-.0428
N1790 X-.4856 Y-.0529
N1800 Z.138 F6.4
N1810 G0 Z.145

N1820 X-.5677 Y-.1207
N1830 G1 Z.118
N1840 X-.5643 Y-.1295 F40.
N1850 X-.5589 Y-.1377
N1860 X-.5498 Y-.1445
N1870 X-.5382 Y-.1486
N1880 X-.5253 Y-.15
N1890 X-.5089 Y-.1478
N1900 X-.4962 Y-.1412
N1910 X-.4877 Y-.1315
N1920 X-.4845 Y-.1206
N1930 X-.4885 Y-.1079
N1940 X-.4907 Y-.1052
N1950 X-.4984 Y-.0988
N1960 X-.5095 Y-.094
N1970 X-.5432 Y-.0846
N1980 X-.5571 Y-.0764
N1990 X-.5608 Y-.0724
N2000 X-.5646 Y-.0652
N2010 X-.5659 Y-.0571
N2020 X-.5625 Y-.0463
N2030 X-.5537 Y-.0372
N2040 X-.541 Y-.0314
N2050 X-.5253 Y-.0292
N2060 X-.5121 Y-.0305
N2070 X-.5004 Y-.0351
N2080 X-.4912 Y-.0428
N2090 X-.4856 Y-.0529
N2100 Z.138 F6.4
N2110 G0 Z.145
N2120 X-.4559 Y-.1517
N2130 G1 Z.118
N2140 Y-.0279 F40.
N2150 Z.138 F6.4
N2160 G0 Z.145
N2170 X-.3652 Y-.0872
N2180 G1 Z.118
N2190 X-.4559 F40.
N2200 Z.138 F6.4
N2210 G0 Z.145
N2220 X-.3652 Y-.1517
N2230 G1 Z.118

N2240 Y-.0279 F40.
N2250 Z.138 F6.4
N2260 G0 Z.145
N2270 X-.3371 Y-.1517
N2280 G1 Z.118
N2290 X-.287 Y-.0279 F40.
N2300 X-.237 Y-.1517
N2310 Z.138 F6.4
N2320 G0 Z.145
N2330 X-.3197 Y-.1099
N2340 G1 Z.118
N2350 X-.2544 F40.
N2360 Z.138 F6.4
N2370 G0 Z.145
N2380 X-.2087 Y-.0279
N2390 G1 Z.118
N2400 Y-.1517 F40.
N2410 Z.138 F6.4
N2420 G0 Z.145
N2430 X-.1268 Y-.0279
N2440 G1 Z.118
N2450 X-.2087 Y-.1099 F40.
N2460 Z.138 F6.4
N2470 G0 Z.145
N2480 X-.1753 Y-.0765
N2490 G1 Z.118
N2500 X-.1228 Y-.1517 F40.
N2510 Z.138 F6.4
N2520 G0 Z.145
N2530 X-.0161 Y-.15
N2540 G1 Z.118
N2550 X-.0951 F40.
N2560 Y-.0297
N2570 X-.0161
N2580 Z.138 F6.4
N2590 G0 Z.145
N2600 X-.0951 Y-.0872
N2610 G1 Z.118
N2620 X-.0207 F40.
N2630 Z.138 F6.4
N2640 G0 Z.145
N2650 X.0118 Y-.1207

N2660 G1 Z.118
N2670 X.0152 Y-.1295 F40.
N2680 X.0206 Y-.1377
N2690 X.0298 Y-.1445
N2700 X.0413 Y-.1486
N2710 X.0542 Y-.15
N2720 X.0706 Y-.1478
N2730 X.0833 Y-.1412
N2740 X.0919 Y-.1315
N2750 X.095 Y-.1206
N2760 X.091 Y-.1079
N2770 X.0889 Y-.1052
N2780 X.0811 Y-.0988
N2790 X.07 Y-.094
N2800 X.0363 Y-.0846
N2810 X.0224 Y-.0764
N2820 X.0187 Y-.0724
N2830 X.0149 Y-.0652
N2840 X.0137 Y-.0571
N2850 X.017 Y-.0463
N2860 X.0258 Y-.0372
N2870 X.0385 Y-.0314
N2880 X.0542 Y-.0292
N2890 X.0674 Y-.0305
N2900 X.0791 Y-.0351
N2910 X.0883 Y-.0428
N2920 X.0939 Y-.0529
N2930 Z.138 F6.4
N2940 G0 Z.145
N2950 X.1235 Y-.1517
N2960 G1 Z.118
N2970 Y-.0297 F40.
N2980 X.1711
N2990 X.1843 Y-.0317
N3000 X.1965 Y-.0381
N3010 X.2054 Y-.0485
N3020 X.2089 Y-.062
N3030 X.2054 Y-.0754
N3040 X.1965 Y-.0857
N3050 X.1843 Y-.0921
N3060 X.1711 Y-.0942
N3070 X.1235

N3080 Z.138 F6.4
N3090 G0 Z.145
N3100 X.3163 Y-.15
N3110 G1 Z.118
N3120 X.2373 F40.
N3130 Y-.0297
N3140 X.3163
N3150 Z.138 F6.4
N3160 G0 Z.145
N3170 X.3117 Y-.0872
N3180 G1 Z.118
N3190 X.2373 F40.
N3200 Z.138 F6.4
N3210 G0 Z.145
N3220 X.3437 Y-.1517
N3230 G1 Z.118
N3240 X.3938 Y-.0279 F40.
N3250 X.4438 Y-.1517
N3260 Z.138 F6.4
N3270 G0 Z.145
N3280 X.3611 Y-.1099
N3290 G1 Z.118
N3300 X.4264 F40.
N3310 Z.138 F6.4
N3320 G0 Z.145
N3330 X.4721 Y-.1517
N3340 G1 Z.118
N3350 Y-.0298 F40.
N3360 X.5273
N3370 X.5402 Y-.0323
N3380 X.5511 Y-.0388
N3390 X.5587 Y-.0488
N3400 X.5616 Y-.0621
N3410 X.5587 Y-.0753
N3420 X.5511 Y-.0856
N3430 X.5402 Y-.0921
N3440 X.5273 Y-.0943
N3450 X.4721
N3460 Z.138 F6.4
N3470 G0 Z.145
N3480 X.5201
N3490 G1 Z.118

N3500 X.5335 Y-.1018 F40.
N3510 X.5436 Y-.1134
N3520 X.5682 Y-.1517
N3530 Z.138 F6.4
N3540 G0 Z.145
N3550 M5
N3560 G91 G28 Z0.
N3570 M01
N3580 T3 M6
N3590 G187 P3 E.001
N3600 G0 G90 G54 X-1.125 Y1.125 S4966 M3
N3610 G43 H3 Z.25
N3620 M8
N3630 Z.15
N3640 G99 G81 Z.05 R.15 F40.
N3650 X1.125
N3660 X-1.125 Y-1.125
N3670 X1.125
N3680 G80
N3690 Z.25
N3700 M5
N3710 G91 G28 Z0. M9
N3720 M01
N3730 T1 M6
N3740 G187 P3 E.001
N3750 G0 G90 G54 X-1.125 Y1.125 S5000 M3
N3760 G43 H1 Z.25
N3770 Z.15
N3780 G99 G81 Z-.155 R.15 F20.
N3790 X1.125
N3800 X-1.125 Y-1.125
N3810 X1.125
N3820 G80
N3830 Z.25
N3840 M5
N3850 G91 G28 Z0.
N3860 M01
N3870 T4 M6
N3880 G187 P3 E.001
N3890 G0 G90 G54 X-2.875 Y-1.375 S4966 M3
N3900 G43 H4 Z.25
N3910 Z.2

N3920 G1 Z0. F6.4
N3930 X-2.375 F40.
N3940 G3 X-1.875 Y-.875 I0. J.5
N3950 G1 Y-.625
N3960 G2 X-1.375 Y-.125 I.5 J0.
N3970 G1 Y.125
N3980 G2 X-1.875 Y.625 I0. J.5
N3990 G1 Y1.125
N4000 G2 X-1.125 Y1.875 I.75 J0.
N4010 G1 X-.625
N4020 G2 X-.125 Y1.375 I0. J-.5
N4030 G1 X.125
N4040 G2 X.625 Y1.875 I.5 J0.
N4050 G1 X1.125
N4060 G2 X1.875 Y1.125 I0. J-.75
N4070 G1 Y.625
N4080 G2 X1.375 Y.125 I-.5 J0.
N4090 G1 Y-.125
N4100 G2 X1.875 Y-.625 I0. J-.5
N4110 G1 Y-1.125
N4120 G2 X1.125 Y-1.875 I-.75 J0.
N4130 G1 X.625
N4140 G2 X.125 Y-1.375 I0. J.5
N4150 G1 X-.125
N4160 G2 X-.625 Y-1.875 I-.5 J0.
N4170 G1 X-1.125
N4180 G2 X-1.875 Y-1.125 I0. J.75
N4190 G1 Y-.875
N4200 G3 X-2.375 Y-.375 I-.5 J0.
N4210 G1 X-2.875
N4220 Z.2 F6.4
N4230 G0 Z.25
N4240 X-2.625 Y-1.375
N4250 Z.2
N4260 G1 Z0.
N4270 X-2.125 F40.
N4280 G3 X-1.625 Y-.875 I0. J.5
N4290 G1 Y-.625
N4300 G2 X-1.375 Y-.375 I.25 J0.
N4310 G1 X-1.125
N4320 Y.375
N4330 X-1.375

N4340 G2 X-1.625 Y.625 I0. J.25
N4350 G1 Y1.125
N4360 G2 X-1.125 Y1.625 I.5 J0.
N4370 G1 X-.625
N4380 G2 X-.375 Y1.375 I0. J-.25
N4390 G1 Y1.125
N4400 X.375
N4410 Y1.375
N4420 G2 X.625 Y1.625 I.25 J0.
N4430 G1 X1.125
N4440 G2 X1.625 Y1.125 I0. J-.5
N4450 G1 Y.625
N4460 G2 X1.375 Y.375 I-.25 J0.
N4470 G1 X1.125
N4480 Y-.375
N4490 X1.375
N4500 G2 X1.625 Y-.625 I0. J-.25
N4510 G1 Y-1.125
N4520 G2 X1.125 Y-1.625 I-.5 J0.
N4530 G1 X.625
N4540 G2 X.375 Y-1.375 I0. J.25
N4550 G1 Y-1.125
N4560 X-.375
N4570 Y-1.375
N4580 G2 X-.625 Y-1.625 I-.25 J0.
N4590 G1 X-1.125
N4600 G2 X-1.625 Y-1.125 I0. J.5
N4610 G1 Y-.875
N4620 G3 X-2.125 Y-.375 I-.5 J0.
N4630 G1 X-2.625
N4640 Z.2 F6.4
N4650 G0 Z.25
N4660 M5
N4670 G91 G28 Z0.
N4680 M01
N4690 T3 M6
N4700 G187 P3 E.001
N4710 G0 G90 G54 X-2.41 Y-1.375 S4966 M3
N4720 G43 H3 Z.25
N4730 Z.2
N4740 G1 Z.075 F6.4
N4750 X-1.91 F40.

N4760 G3 X-1.41 Y-.875 I0. J.5
N4770 G1 Y-.625
N4780 G2 X-1.375 Y-.59 I.035 J0.
N4790 G1 X-1.125
N4800 G3 X-.91 Y-.375 I0. J.215
N4810 G1 Y.375
N4820 G3 X-1.125 Y.59 I-.215 J0.
N4830 G1 X-1.375
N4840 G2 X-1.41 Y.625 I0. J.035
N4850 G1 Y1.125
N4860 G2 X-1.125 Y1.41 I.285 J0.
N4870 G1 X-.625
N4880 G2 X-.59 Y1.375 I0. J-.035
N4890 G1 Y1.125
N4900 G3 X-.375 Y.91 I.215 J0.
N4910 G1 X.375
N4920 G3 X.59 Y1.125 I0. J.215
N4930 G1 Y1.375
N4940 G2 X.625 Y1.41 I.035 J0.
N4950 G1 X1.125
N4960 G2 X1.41 Y1.125 I0. J-.285
N4970 G1 Y.625
N4980 G2 X1.375 Y.59 I-.035 J0.
N4990 G1 X1.125
N5000 G3 X.91 Y.375 I0. J-.215
N5010 G1 Y-.375
N5020 G3 X1.125 Y-.59 I.215 J0.
N5030 G1 X1.375
N5040 G2 X1.41 Y-.625 I0. J-.035
N5050 G1 Y-1.125
N5060 G2 X1.125 Y-1.41 I-.285 J0.
N5070 G1 X.625
N5080 G2 X.59 Y-1.375 I0. J.035
N5090 G1 Y-1.125
N5100 G3 X.375 Y-.91 I-.215 J0.
N5110 G1 X-.375
N5120 G3 X-.59 Y-1.125 I0. J-.215
N5130 G1 Y-1.375
N5140 G2 X-.625 Y-1.41 I-.035 J0.
N5150 G1 X-1.125
N5160 G2 X-1.41 Y-1.125 I0. J.285
N5170 G1 Y-.875

N5180 G3 X-1.91 Y-.375 I-.5 J0.
N5190 G1 X-2.41
N5200 Z.2 F6.4
N5210 G0 Z.25
N5220 G187 P3 E.001
N5230 X-2.535 Y-.5
N5240 Z.2
N5250 G1 Z-.05
N5260 X-2.035 F40.
N5270 G3 X-1.535 Y0. I0. J.5
N5280 G1 Y1.5
N5290 G2 X-1.5 Y1.535 I.035 J0.
N5300 G1 X1.5
N5310 G2 X1.535 Y1.5 I0. J-.035
N5320 G1 Y-1.5
N5330 G2 X1.5 Y-1.535 I-.035 J0.
N5340 G1 X-1.5
N5350 G2 X-1.535 Y-1.5 I0. J.035
N5360 G1 Y0.
N5370 G3 X-2.035 Y.5 I-.5 J0.
N5380 G1 X-2.535
N5390 Z.2 F6.4
N5400 G0 Z.25
N5410 M5
N5420 G91 G28 Z0.
N5430 M01
N5440 T4 M6
N5450 G187 P3 E.001
N5460 G0 G90 G54 X-2.75 Y-.5 S4966 M3
N5470 G43 H4 Z.25
N5480 Z.2
N5490 G1 Z-.14 F6.4
N5500 X-2.25 F40.
N5510 G3 X-1.75 Y0. I0. J.5
N5520 G1 Y1.5
N5530 G2 X-1.5 Y1.75 I.25 J0.
N5540 G1 X1.5
N5550 G2 X1.75 Y1.5 I0. J-.25
N5560 G1 Y-1.5
N5570 G2 X1.5 Y-1.75 I-.25 J0.
N5580 G1 X-1.5
N5590 G2 X-1.75 Y-1.5 I0. J.25

N5600 G1 Y0.
N5610 G3 X-2.25 Y.5 I-.5 J0.
N5620 G1 X-2.75
N5630 Z.2 F6.4
N5640 G0 Z.25
N5650 M5
N5660 G91 G28 Z0.
N5670 G28 X0. Y0.
N5680 M30
%