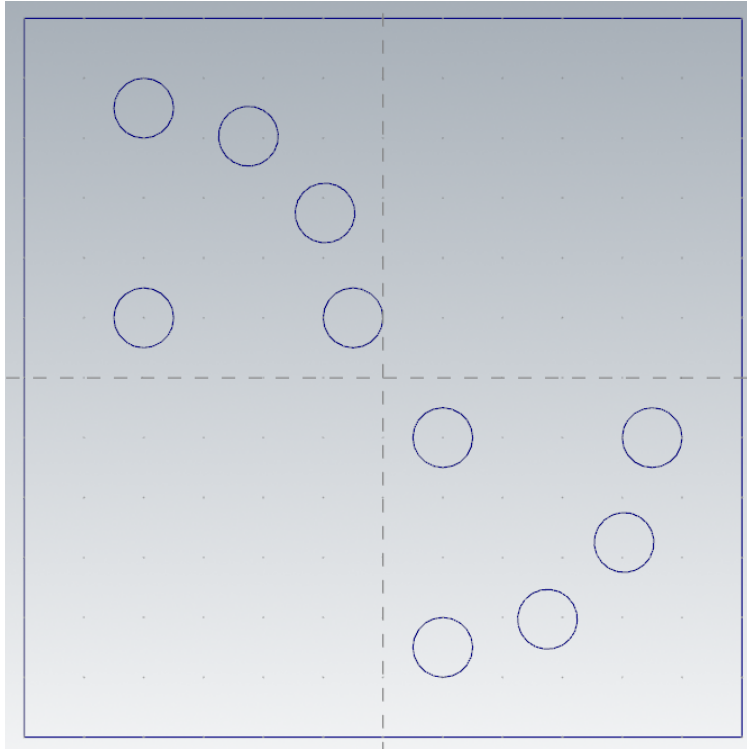
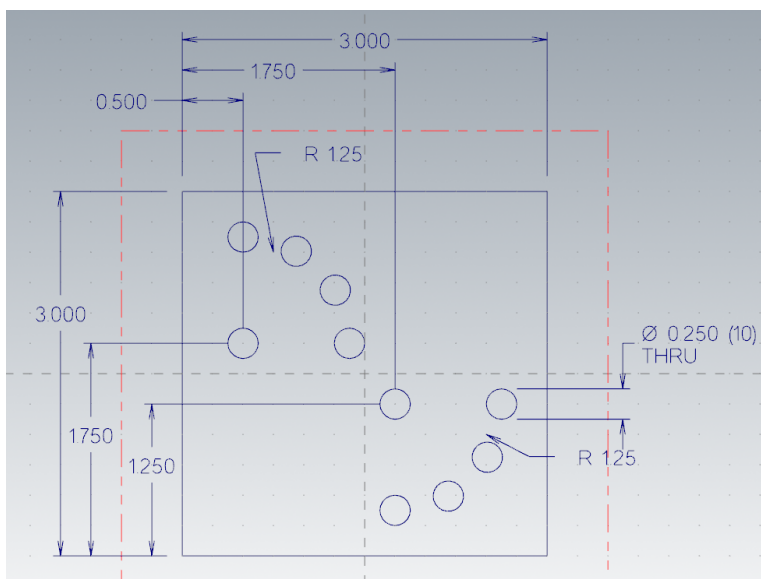


CCET 3680
Mill Lesson 3 First Exercise

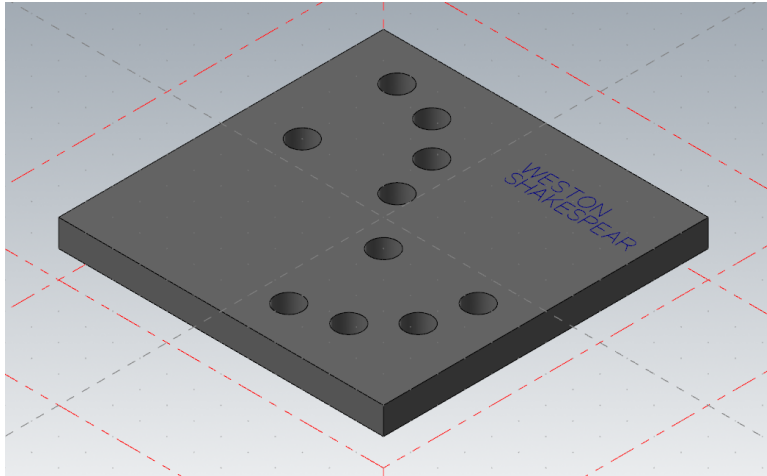
I. Wireframe:



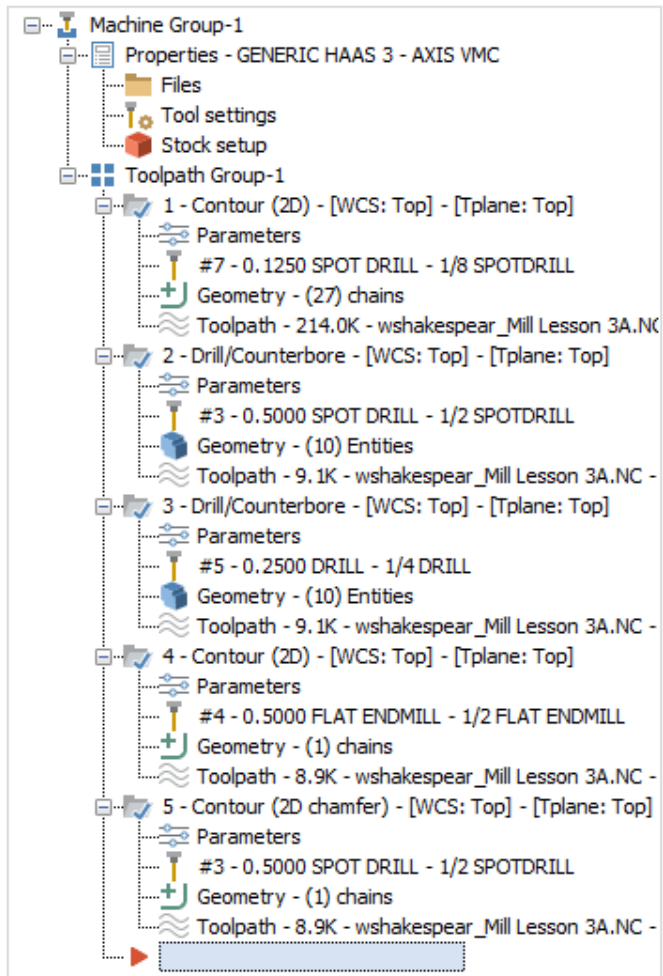
II. Dimensions:



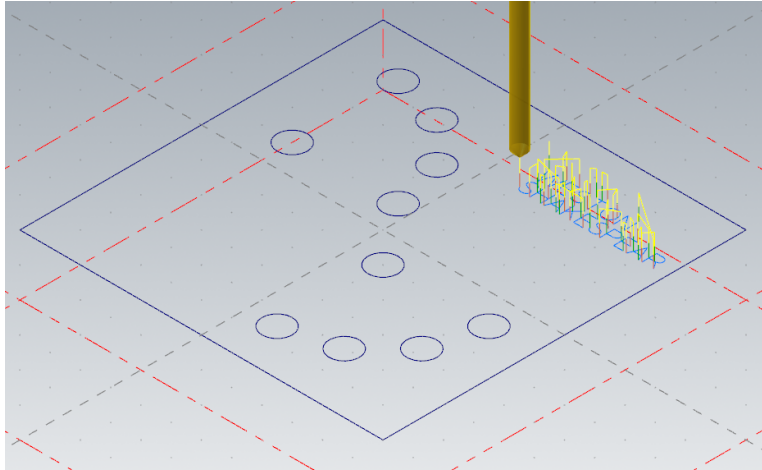
III. Solid:



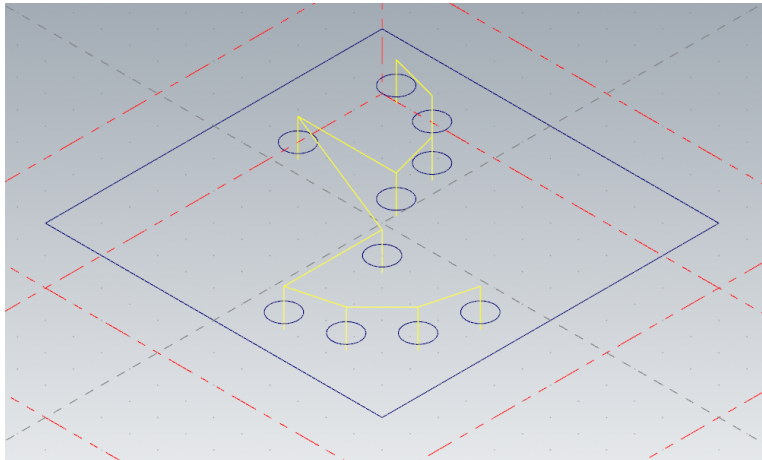
IV. Toolpaths:



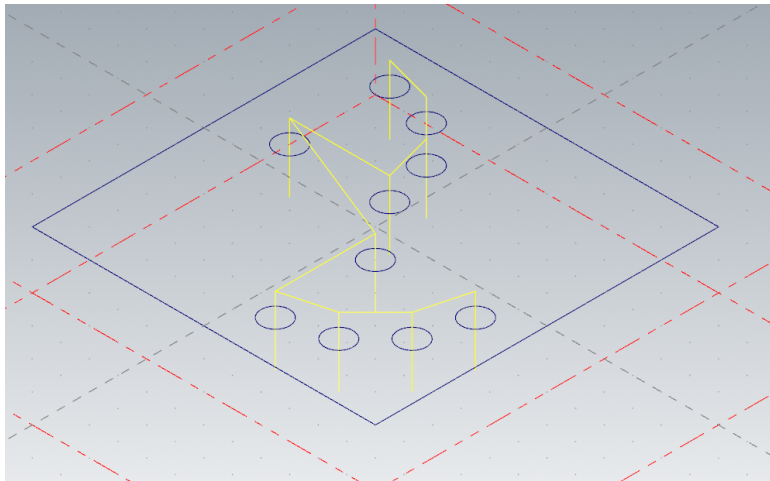
V. Name 2D Contour:



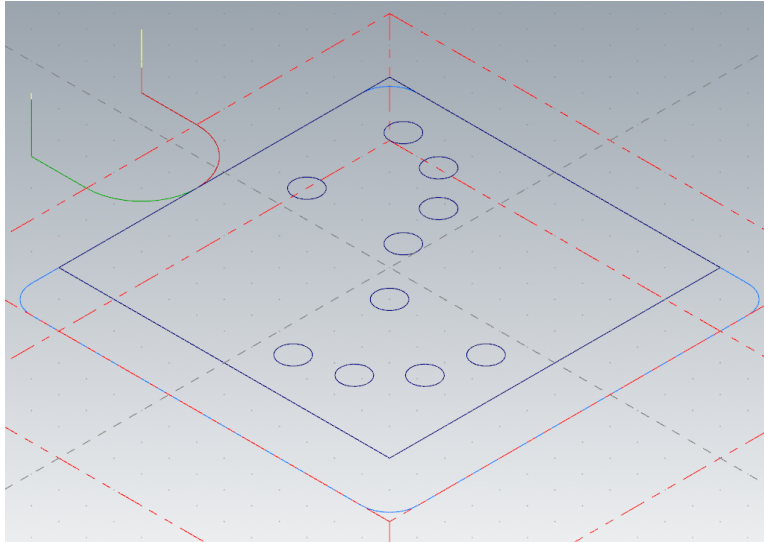
VI. Spot Drill:



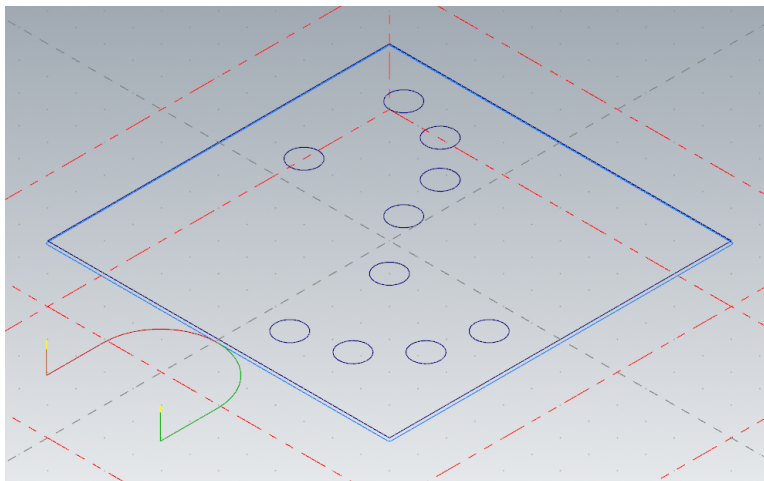
VII. Drill:



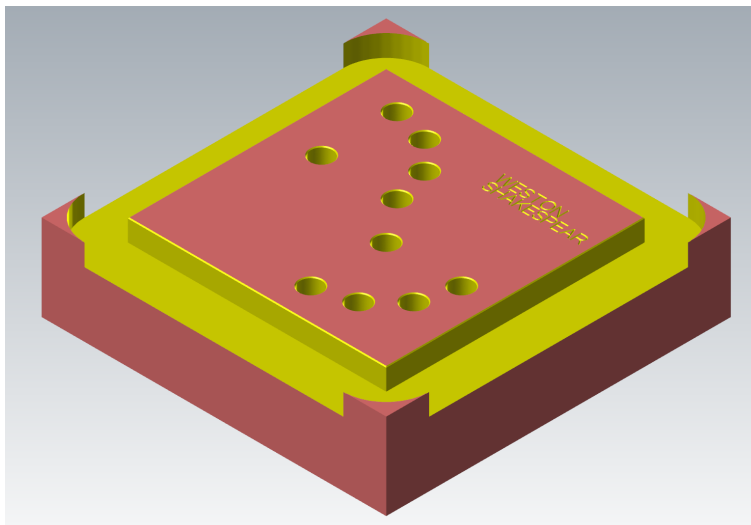
VIII. 2D Contour:



IX. 2D Chamfer Contour:



X. Final Solid:



XI. Method:

I drew the center rectangle, then used a combination of offsetting, circle, and polar copying to create the needed holes.

XII. 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.

XIII. Finished Part:



XIV. Gcode:

%

O33002

(WSHAKESPEAR_MILL LESSON 3B)

(DATE=DD-MM-YY - 03-02-23 TIME=HH:MM - 11:58)

(MCAM FILE - C:\USERS\WESTONSHAKESPEAR\DOWNLOADS\WSHAKESPEAR_MILL LESSON
3B.EMC)

(NC FILE - C:\USERS\WESTONSHAKESPEAR\DOWNLOADS\GCODE\WSHAKESPEAR_MILL LESSON
3B)

(MATERIAL - ALUMINUM INCH - 6061)

(T8|1/8 SPOTDRILL|H8|D8|TOOL DIA. - .125)

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

(T5|1/4 DRILL|H5|D5|TOOL DIA. - .25)

(T7|3/16 DRILL|H7|D7|TOOL DIA. - .1875)

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

N100 G20

N110 G0 G17 G40 G49 G80 G90

N120 T8 M6

N130 G187 P3 E.001

N140 G0 G90 G54 X.2505 Y.6221 S5000 M3

N150 G43 H8 Z.25

N160 Z.2

N170 G1 Z-.008 F1.1

N180 X.284 Y.4983 F40.

N190 X.3215 Y.6221

N200 X.3261

N210 X.3636 Y.4983

N220 X.3971 Y.6221

N230 Z.192 F1.1

N240 G0 Z.242

N250 Z.25

N260 X.4252 Y.5628

N270 Z.2

N280 G1 Z-.008

N290 X.4996 F40.

N300 Z.192 F1.1

N310 G0 Z.242

N320 Z.25

N330 X.5321 Y.5293

N340 Z.2

N350 G1 Z-.008

N360 X.5354 Y.5205 F40.

N370 X.5409 Y.5123
N380 X.55 Y.5055
N390 X.5616 Y.5014
N400 X.5745 Y.5
N410 X.5909 Y.5022
N420 X.6036 Y.5088
N430 X.6121 Y.5185
N440 X.6153 Y.5294
N450 X.6113 Y.5421
N460 X.6091 Y.5448
N470 X.6013 Y.5512
N480 X.5902 Y.556
N490 X.5565 Y.5654
N500 X.5427 Y.5736
N510 X.539 Y.5776
N520 X.5352 Y.5848
N530 X.5339 Y.5929
N540 X.5372 Y.6037
N550 X.546 Y.6128
N560 X.5588 Y.6186
N570 X.5745 Y.6208
N580 X.5877 Y.6195
N590 X.5994 Y.6149
N600 X.6085 Y.6072
N610 X.6142 Y.5971
N620 Z.192 F1.1
N630 G0 Z.242
N640 Z.25
N650 X.644 Y.6203
N660 Z.2
N670 G1 Z-.008
N680 X.7352 F40.
N690 Z.192 F1.1
N700 G0 Z.242
N710 Z.25
N720 X.6899
N730 Z.2
N740 G1 Z-.008
N750 Y.4983 F40.
N760 Z.192 F1.1
N770 G0 Z.242
N780 Z.25

N790 X.6918 Y.4721
N800 Z.2
N810 G1 Z-.008
N820 X.61 Y.3901 F40.
N830 Z.192 F1.1
N840 G0 Z.242
N850 Z.25
N860 Y.3483
N870 Z.2
N880 G1 Z-.008
N890 Y.4721 F40.
N900 Z.192 F1.1
N910 G0 Z.242
N920 Z.25
N930 X.6434 Y.4235
N940 Z.2
N950 G1 Z-.008
N960 X.6959 Y.3483 F40.
N970 Z.192 F1.1
N980 G0 Z.242
N990 Z.25
N1000 X.7236 Y.4128
N1010 Z.2
N1020 G1 Z-.008
N1030 X.798 F40.
N1040 Z.192 F1.1
N1050 G0 Z.242
N1060 Z.25
N1070 X.8305 Y.3793
N1080 Z.2
N1090 G1 Z-.008
N1100 X.8339 Y.3705 F40.
N1110 X.8393 Y.3623
N1120 X.8484 Y.3555
N1130 X.86 Y.3514
N1140 X.8729 Y.35
N1150 X.8893 Y.3522
N1160 X.902 Y.3588
N1170 X.9105 Y.3685
N1180 X.9137 Y.3794
N1190 X.9097 Y.3921
N1200 X.9075 Y.3948

N1210 X.8998 Y.4012
N1220 X.8887 Y.406
N1230 X.855 Y.4154
N1240 X.8411 Y.4236
N1250 X.8374 Y.4276
N1260 X.8336 Y.4348
N1270 X.8323 Y.4429
N1280 X.8356 Y.4537
N1290 X.8445 Y.4628
N1300 X.8572 Y.4686
N1310 X.8729 Y.4708
N1320 X.8861 Y.4695
N1330 X.8978 Y.4649
N1340 X.9069 Y.4572
N1350 X.9126 Y.4471
N1360 Z.192 F1.1
N1370 G0 Z.242
N1380 Z.25
N1390 X.9422 Y.4058
N1400 Z.2
N1410 G1 Z-.008
N1420 X.9898 F40.
N1430 X1.0029 Y.4079
N1440 X1.0152 Y.4143
N1450 X1.0241 Y.4246
N1460 X1.0276 Y.438
N1470 X1.0241 Y.4515
N1480 X1.0152 Y.4619
N1490 X1.0029 Y.4683
N1500 X.9898 Y.4703
N1510 X.9422
N1520 Y.3483
N1530 Z.192 F1.1
N1540 G0 Z.242
N1550 Z.25
N1560 X1.0559 Y.4128
N1570 Z.2
N1580 G1 Z-.008
N1590 X1.1303 F40.
N1600 Z.192 F1.1
N1610 G0 Z.242
N1620 Z.25

N1630 X1.1798 Y.3901
N1640 Z.2
N1650 G1 Z-.008
N1660 X1.2451 F40.
N1670 Z.192 F1.1
N1680 G0 Z.242
N1690 Z.25
N1700 X1.2625 Y.3483
N1710 Z.2
N1720 G1 Z-.008
N1730 X1.2124 Y.4721 F40.
N1740 X1.1624 Y.3483
N1750 Z.192 F1.1
N1760 G0 Z.242
N1770 Z.25
N1780 X1.1349 Y.35
N1790 Z.2
N1800 G1 Z-.008
N1810 X1.0559 F40.
N1820 Y.4703
N1830 X1.1349
N1840 Z.192 F1.1
N1850 G0 Z.242
N1860 Z.25
N1870 X1.2907 Y.4057
N1880 Z.2
N1890 G1 Z-.008
N1900 X1.346 F40.
N1910 X1.3589 Y.4079
N1920 X1.3698 Y.4144
N1930 X1.3774 Y.4247
N1940 X1.3803 Y.4379
N1950 X1.3774 Y.4512
N1960 X1.3698 Y.4612
N1970 X1.3589 Y.4677
N1980 X1.346 Y.4702
N1990 X1.2907
N2000 Y.3483
N2010 Z.192 F1.1
N2020 G0 Z.242
N2030 Z.25
N2040 X1.3388 Y.4057

N2050 Z.2
N2060 G1 Z-.008
N2070 X1.3522 Y.3982 F40.
N2080 X1.3623 Y.3866
N2090 X1.3869 Y.3483
N2100 Z.192 F1.1
N2110 G0 Z.242
N2120 Z.25
N2130 X.9905 Y.6221
N2140 Z.2
N2150 G1 Z-.008
N2160 Y.4983 F40.
N2170 X.9034 Y.6221
N2180 Y.4983
N2190 Z.192 F1.1
N2200 G0 Z.242
N2210 Z.25
N2220 X.8752 Y.5599
N2230 Z.2
N2240 G1 Z-.008
N2250 X.8712 Y.5827 F40.
N2260 X.8708 Y.5838
N2270 X.8655 Y.5943
N2280 X.8586 Y.6033
N2290 X.8408 Y.6165
N2300 X.8304 Y.6203
N2310 X.8194 Y.6215
N2320 X.7995 Y.6175
N2330 X.7973 Y.6165
N2340 X.7796 Y.6033
N2350 X.7674 Y.5838
N2360 X.764 Y.5721
N2370 X.7629 Y.5599
N2380 X.7669 Y.5374
N2390 X.7674 Y.5362
N2400 X.7796 Y.5167
N2410 X.7879 Y.5091
N2420 X.7973 Y.5035
N2430 X.8079 Y.5
N2440 X.8194 Y.4988
N2450 X.8392 Y.5028
N2460 X.8408 Y.5035

N2470 X.8503 Y.5091
N2480 X.8586 Y.5167
N2490 X.8708 Y.5362
N2500 X.8741 Y.5476
N2510 X.8752 Y.5599
N2520 Z.192 F1.1
N2530 G0 Z.242
N2540 Z.25
N2550 X.8026 Y.4703
N2560 Z.2
N2570 G1 Z-.008
N2580 X.7236 F40.
N2590 Y.35
N2600 X.8026
N2610 Z.192 F1.1
N2620 G0 Z.242
N2630 Z.25
N2640 X.5817 Y.3483
N2650 Z.2
N2660 G1 Z-.008
N2670 X.5317 Y.4721 F40.
N2680 X.4816 Y.3483
N2690 Z.192 F1.1
N2700 G0 Z.242
N2710 Z.25
N2720 X.4535
N2730 Z.2
N2740 G1 Z-.008
N2750 Y.4721 F40.
N2760 Z.192 F1.1
N2770 G0 Z.242
N2780 Z.25
N2790 X.5042 Y.5
N2800 Z.2
N2810 G1 Z-.008
N2820 X.4252 F40.
N2830 Y.6203
N2840 X.5042
N2850 Z.192 F1.1
N2860 G0 Z.242
N2870 Z.25
N2880 X.3628 Y.4721

N2890 Z.2
N2900 G1 Z-.008
N2910 Y.3483 F40.
N2920 Z.192 F1.1
N2930 G0 Z.242
N2940 Z.25
N2950 Y.4128
N2960 Z.2
N2970 G1 Z-.008
N2980 X.4535 F40.
N2990 Z.192 F1.1
N3000 G0 Z.242
N3010 Z.25
N3020 X.499 Y.3901
N3030 Z.2
N3040 G1 Z-.008
N3050 X.5643 F40.
N3060 Z.192 F1.1
N3070 G0 Z.242
N3080 Z.25
N3090 X.3331 Y.4471
N3100 Z.2
N3110 G1 Z-.008
N3120 X.3274 Y.4572 F40.
N3130 X.3183 Y.4649
N3140 X.3066 Y.4695
N3150 X.2934 Y.4708
N3160 X.2777 Y.4686
N3170 X.2649 Y.4628
N3180 X.2561 Y.4537
N3190 X.2528 Y.4429
N3200 X.2568 Y.4291
N3210 X.2579 Y.4276
N3220 X.2699 Y.418
N3230 X.2754 Y.4154
N3240 X.3091 Y.406
N3250 X.3237 Y.3988
N3260 X.328 Y.3948
N3270 X.3336 Y.3843
N3280 X.3342 Y.3794
N3290 X.331 Y.3685
N3300 X.3225 Y.3588

N3310 X.3098 Y.3522
N3320 X.2934 Y.35
N3330 X.2805 Y.3514
N3340 X.2689 Y.3555
N3350 X.2598 Y.3623
N3360 X.2543 Y.3705
N3370 X.251 Y.3793
N3380 Z.192 F1.1
N3390 G0 Z.25
N3400 M5
N3410 G91 G28 Z0.
N3420 M01
N3430 T3 M6
N3440 G187 P3 E.001
N3450 G0 G90 G54 X-1.25 Y1.25 S5000 M3
N3460 G43 H3 Z.2
N3470 M8
N3480 G99 G81 Z-.135 R.2 F20.
N3490 X-1.1548 Y.7716
N3500 X-.8839 Y.3661
N3510 X-.4784 Y.0952
N3520 X0. Y0.
N3530 X.4784 Y-.0952
N3540 X.8839 Y-.3661
N3550 X1.1548 Y-.7716
N3560 X1.25 Y-1.25
N3570 G80
N3580 G187 P3 E.001
N3590 X-1. Y-.5
N3600 G99 G81 Z-.1037 R.2 F20.
N3610 X-.8536 Y-.8536
N3620 X-.5 Y-1.
N3630 X-.1464 Y-.8536
N3640 X0. Y-.5
N3650 Y.375
N3660 X.1172 Y.8125
N3670 X.4375 Y1.1328
N3680 X.875 Y1.25
N3690 G80
N3700 M5
N3710 G91 G28 Z0. M9
N3720 M01

N3730 T5 M6
N3740 G187 P3 E.001
N3750 G0 G90 G54 X-1.25 Y1.25 S5000 M3
N3760 G43 H5 Z.2
N3770 M8
N3780 G99 G81 Z-.4 R.2 F20.
N3790 X-1.1548 Y.7716
N3800 X-.8839 Y.3661
N3810 X-.4784 Y.0952
N3820 X0. Y0.
N3830 X.4784 Y-.0952
N3840 X.8839 Y-.3661
N3850 X1.1548 Y-.7716
N3860 X1.25 Y-1.25
N3870 G80
N3880 M5
N3890 G91 G28 Z0. M9
N3900 M01
N3910 T7 M6
N3920 G187 P3 E.001
N3930 G0 G90 G54 X-1. Y-.5 S5000 M3
N3940 G43 H7 Z.2
N3950 G99 G81 Z-.4 R.2 F20.
N3960 X-.8536 Y-.8536
N3970 X-.5 Y-1.
N3980 X-.1464 Y-.8536
N3990 X0. Y-.5
N4000 Y.375
N4010 X.1172 Y.8125
N4020 X.4375 Y1.1328
N4030 X.875 Y1.25
N4040 G80
N4050 M5
N4060 G91 G28 Z0.
N4070 M01
N4080 T4 M6
N4090 G187 P3 E.001
N4100 G0 G90 G54 X-2.75 Y-.5 S5000 M3
N4110 G43 H4 Z.25
N4120 M8
N4130 Z.2
N4140 G1 Z-.25 F6.4

N4150 X-2.25 F40.
N4160 G3 X-1.75 Y0. I0. J.5
N4170 G1 Y1.5
N4180 G2 X-1.5 Y1.75 I.25 J0.
N4190 G1 X1.5
N4200 G2 X1.75 Y1.5 I0. J-.25
N4210 G1 Y-1.5
N4220 G2 X1.5 Y-1.75 I-.25 J0.
N4230 G1 X-1.5
N4240 G2 X-1.75 Y-1.5 I0. J.25
N4250 G1 Y0.
N4260 G3 X-2.25 Y.5 I-.5 J0.
N4270 G1 X-2.75
N4280 Z-.05 F6.4
N4290 G0 Z.25
N4300 M5
N4310 G91 G28 Z0. M9
N4320 M01
N4330 T3 M6
N4340 G187 P3 E.001
N4350 G0 G90 G54 X.5 Y-2.51 S5000 M3
N4360 G43 H3 Z.25
N4370 M8
N4380 Z.2
N4390 G1 Z-.02 F6.4
N4400 Y-2.01 F40.
N4410 G3 X0. Y-1.51 I-.5 J0.
N4420 G1 X-1.5
N4430 G2 X-1.51 Y-1.5 I0. J.01
N4440 G1 Y1.5
N4450 G2 X-1.5 Y1.51 I.01 J0.
N4460 G1 X1.5
N4470 G2 X1.51 Y1.5 I0. J-.01
N4480 G1 Y-1.5
N4490 G2 X1.5 Y-1.51 I-.01 J0.
N4500 G1 X0.
N4510 G3 X-.5 Y-2.01 I0. J-.5
N4520 G1 Y-2.51
N4530 Z.18 F6.4
N4540 G0 Z.25
N4550 M5
N4560 G91 G28 Z0. M9

N4570 G28 X0. Y0.

N4580 M30

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