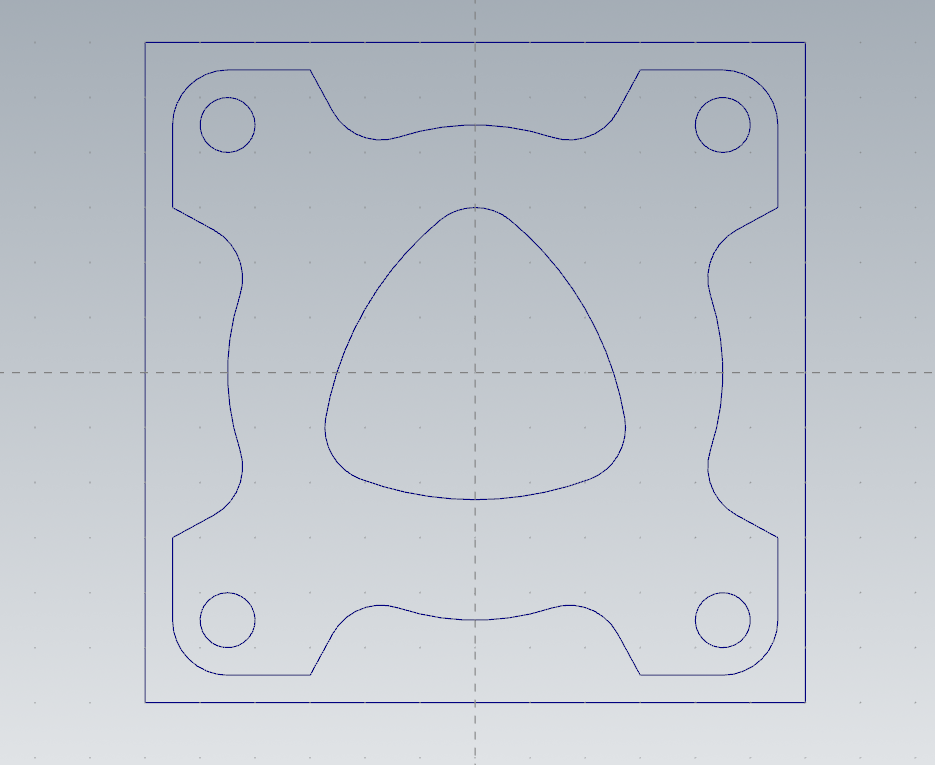
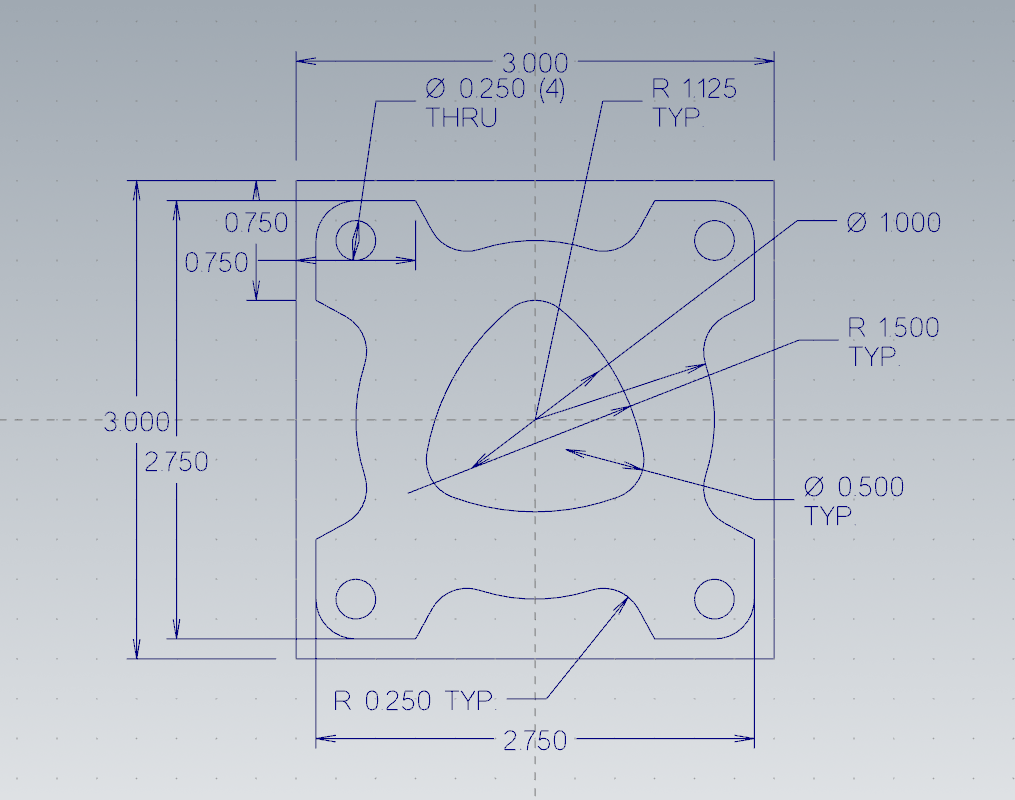
# CCET 3680 Mill Lesson 5 Second Exercise

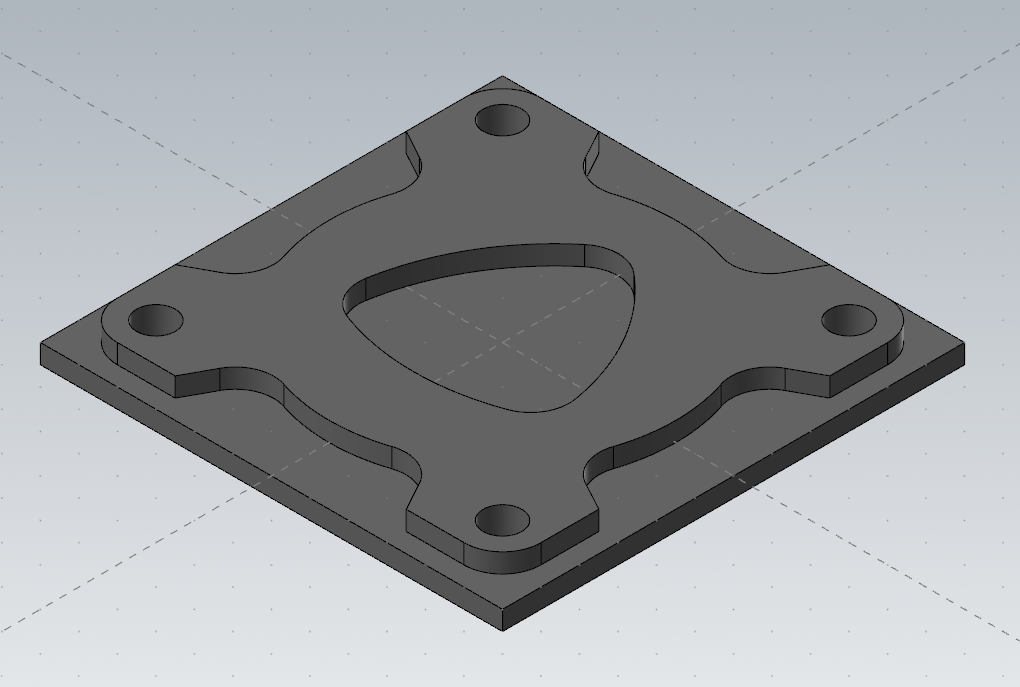
I. Wireframe:



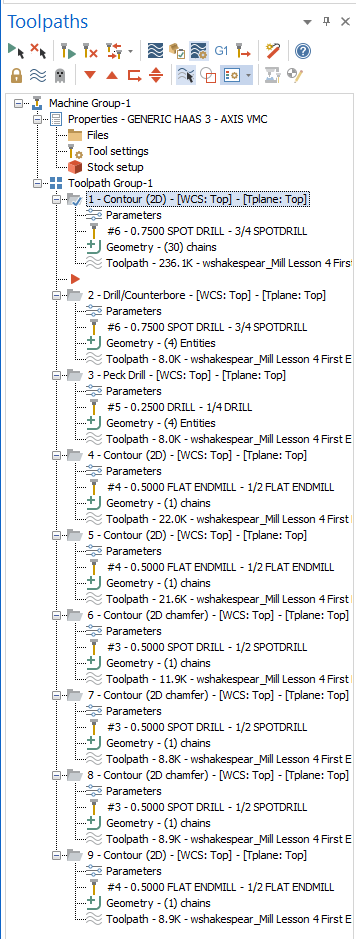
II. Dimensions:



III. Solid:



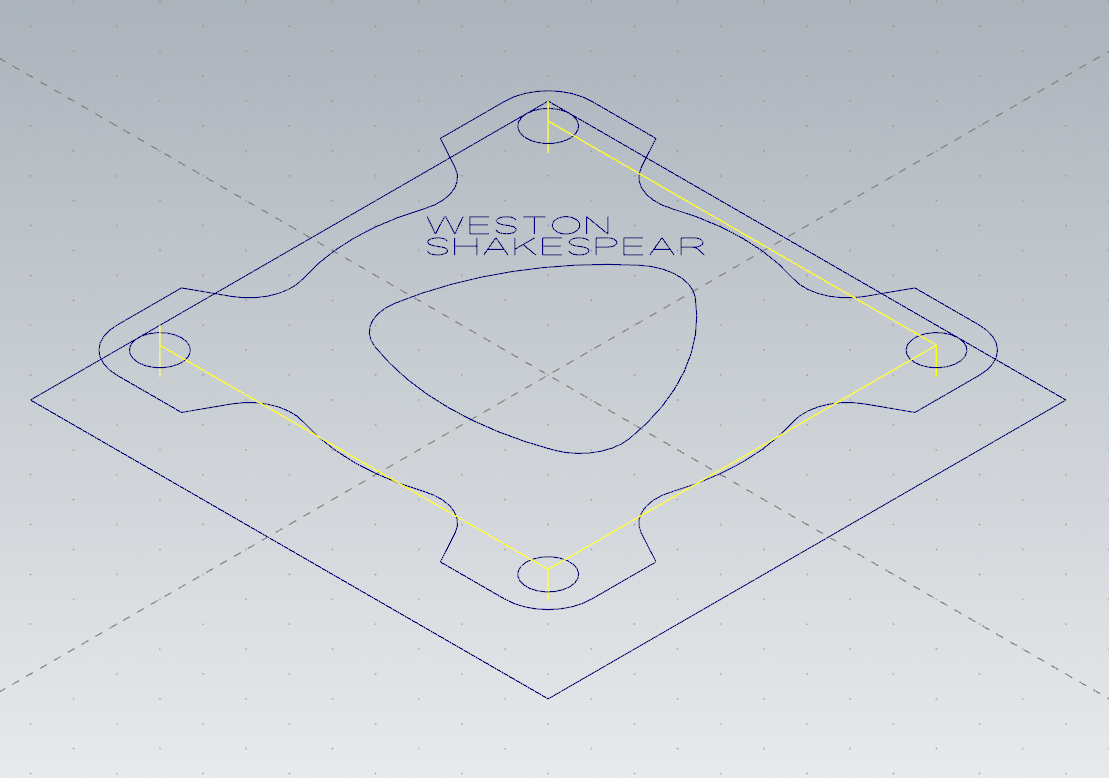
IV. Toolpaths:



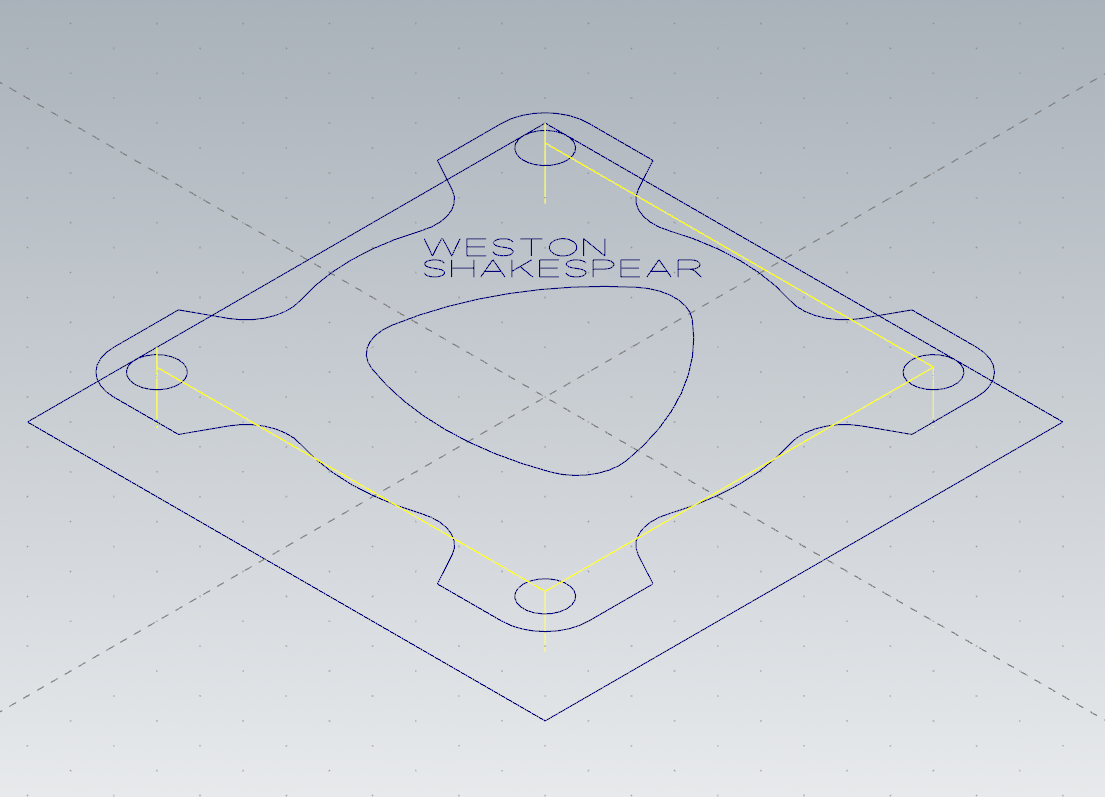
V. Name 2D Contour:



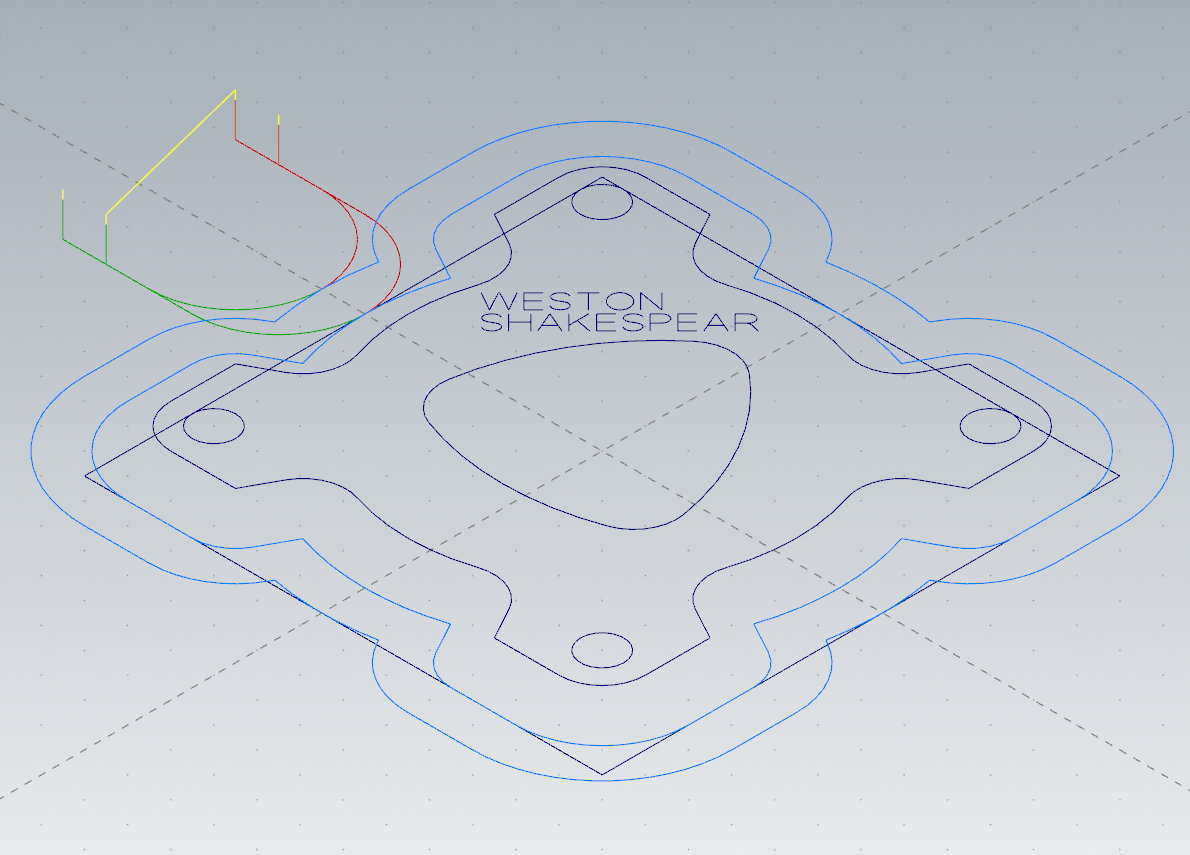
VI. Spot Drill:



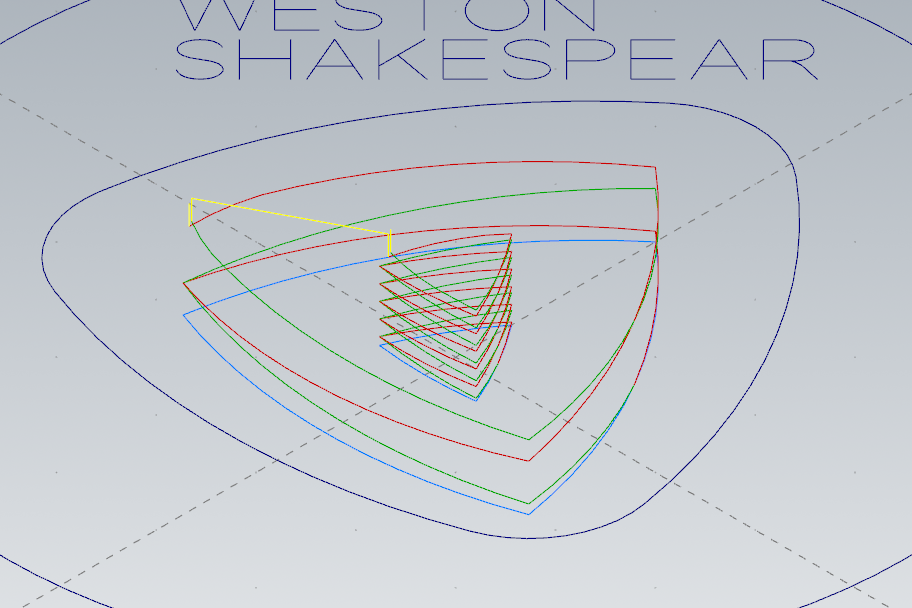
VII. Peck Drill:



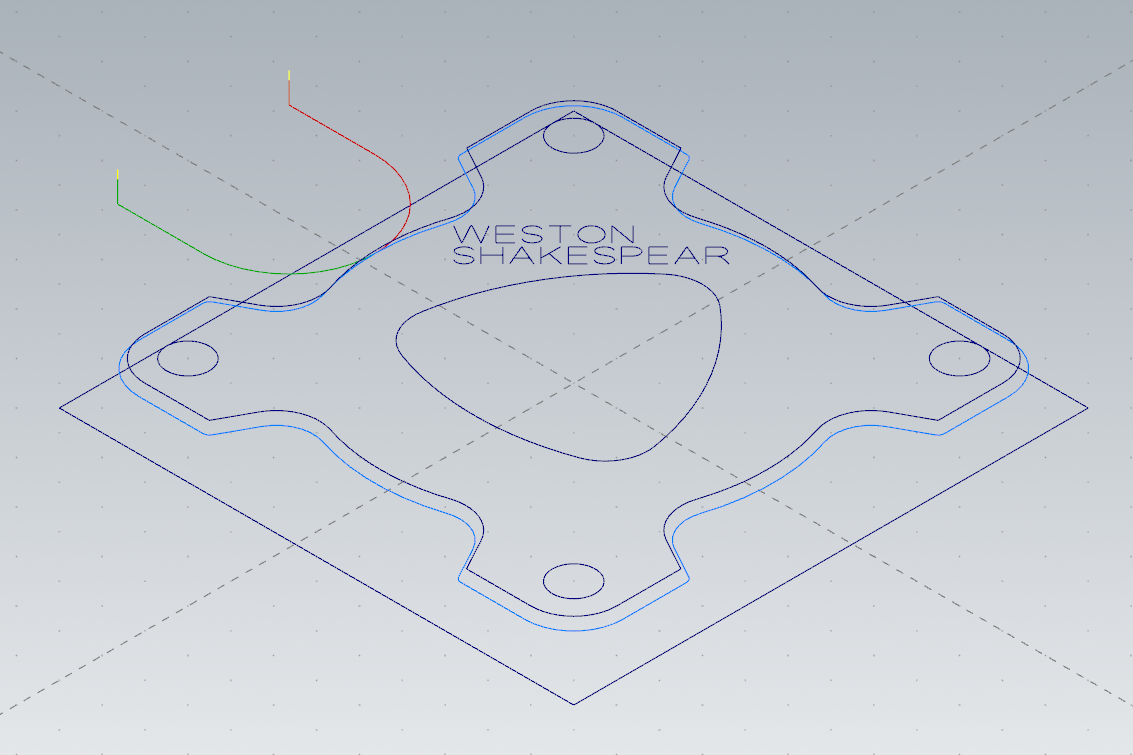
VIII. 2D Contour Outside:



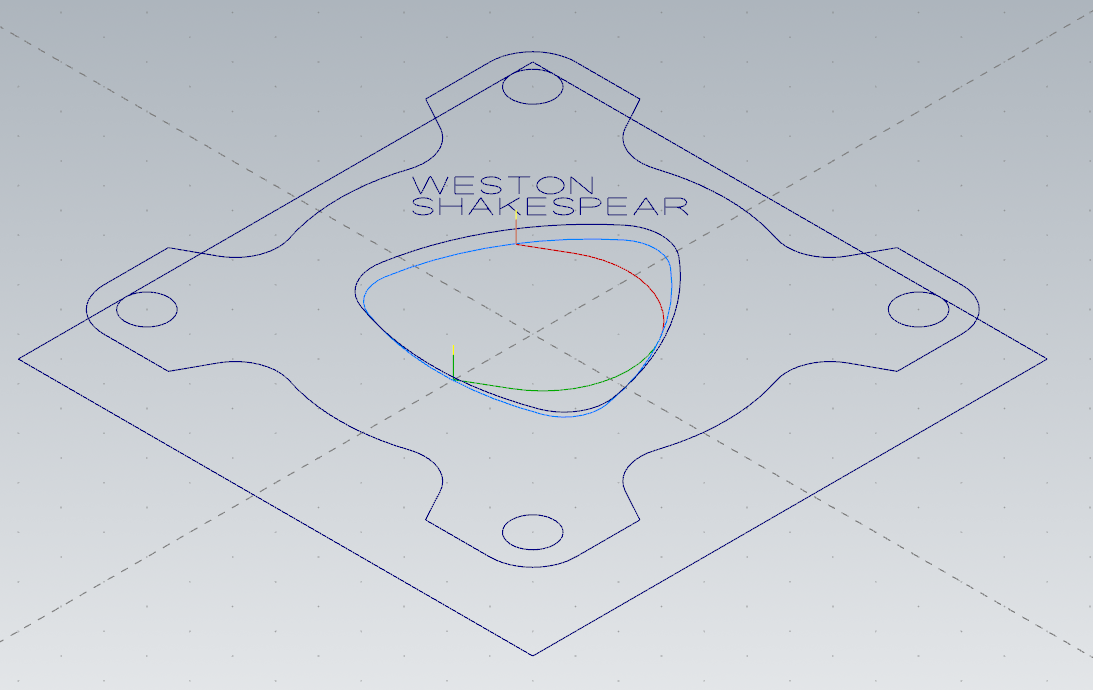
IX. 2D Contour Inside:



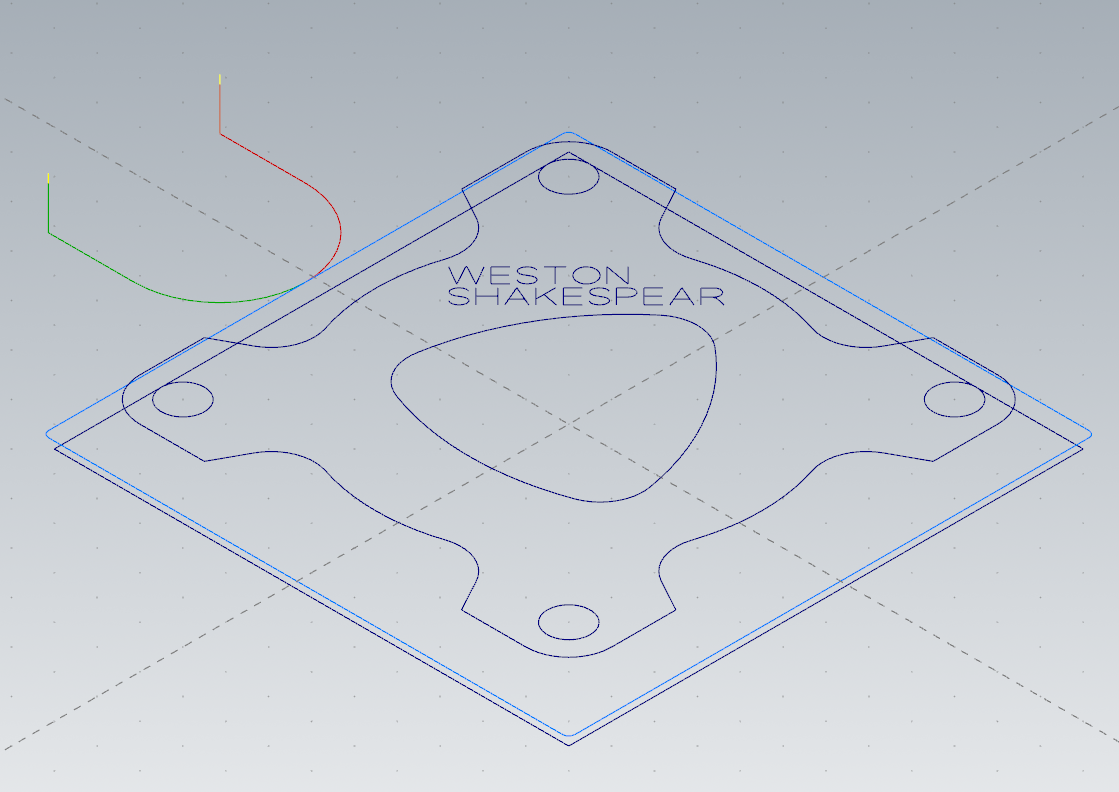
X. 2D Chamfer Contour Outside:



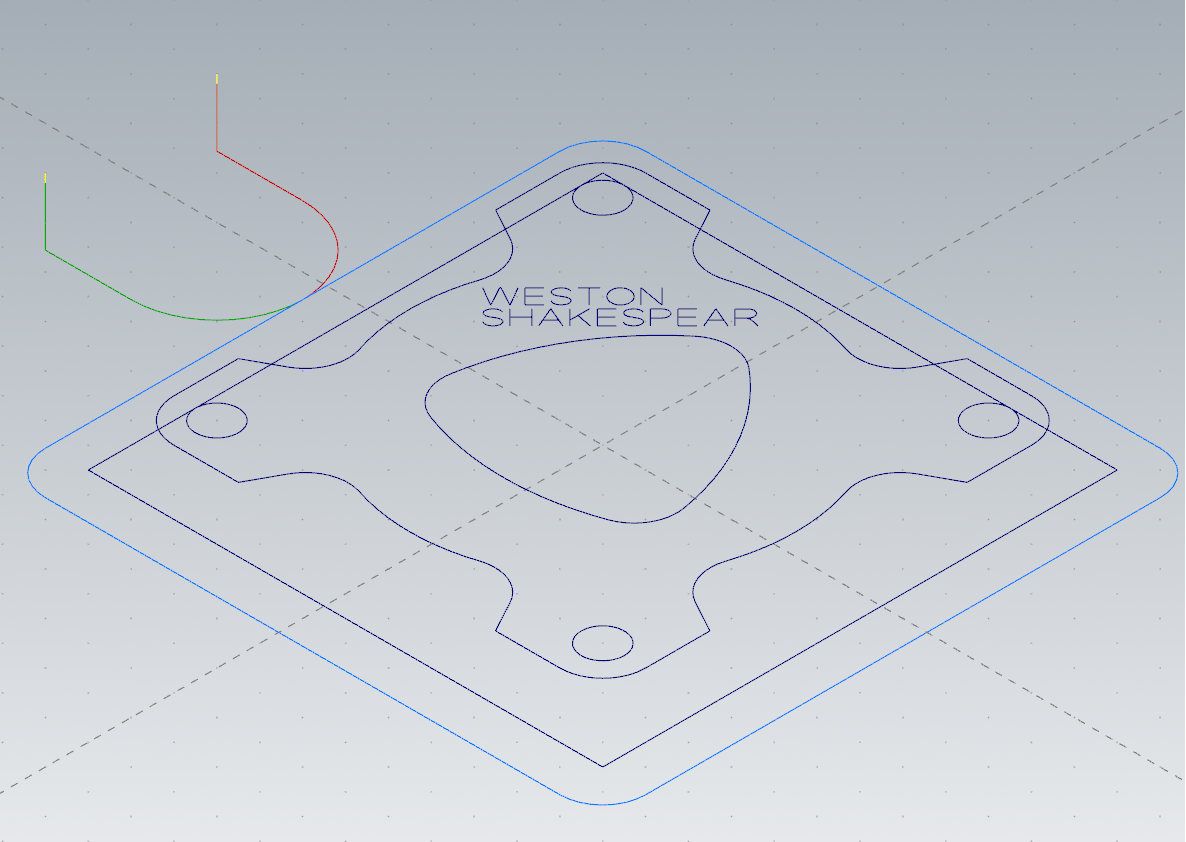
XI. 2D Chamfer Contour Inside:



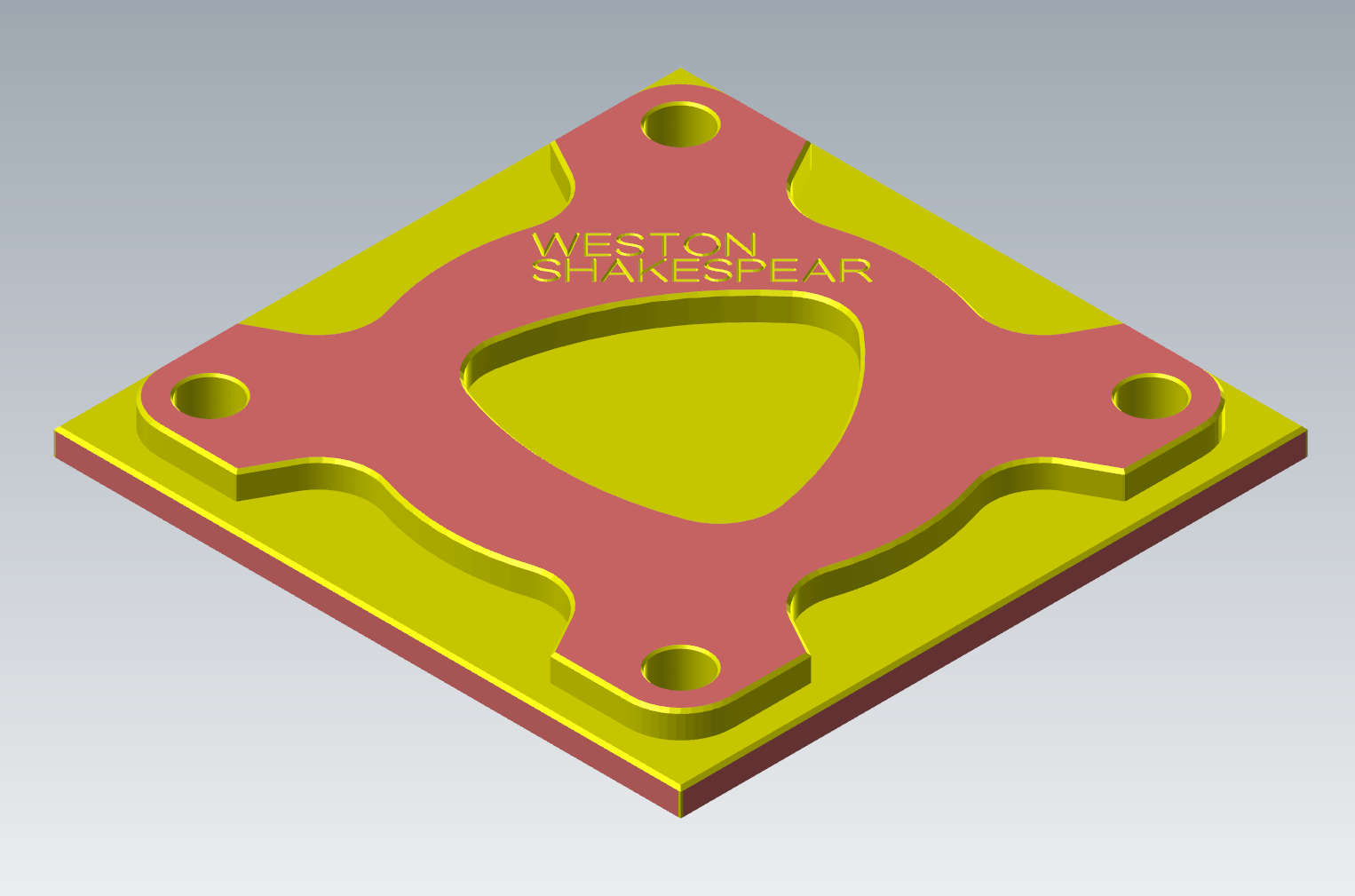
XII: 2D Chamfer Contour:



XIII: 2D Contour:



XIV. Final Solid:



XV. Method:

I just used a basic center anchored rectangle for the perimeter of the geometry. For the wireframe in the center I first created the inner circle then drew a line and manually assigned 30 degrees to the angle, this let me create the equidistant triangle in the center, from there I drew the 3 circles and then used the tangent 2 entities to complete the center.

Then I drew one copy of the radially symmetric portion and used a polar copy to finish the wireframe.

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. Gcode:

%

O33001

(WSHAKESPEAR\_MILL LESSON 5 SECOND)

(DATE=DD-MM-YY - 30-01-23 TIME=HH:MM - 12:05)

(MCAM FILE - C:\USERS\WESTONSHAKESPEAR\DOWNLOADS\WSHAKESPEAR\_MILL LESSON 5B.EMC)

(NC FILE - F:\CCET3680\NC\WSHAKESPEAR\_MILL LESSON 5 SECOND.NC)

(MATERIAL - ALUMINUM INCH - 6061)

(T6|3/4 SPOTDRILL|H6|D6|TOOL DIA. - .75)

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

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

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

N100 G20

N110 G0 G17 G40 G49 G80 G90

N120 T6 M6

N130 G187 P3 E.001

N140 G0 G90 G54 X-1.0209 Y.32 S4966 M3

N150 G43 H6 Z.145

N160 G1 Z.118 F6.4

N170 X-.9097 Y.2562 F500.

N180 X-.9707 Y.3703

N190 X-.9674 Y.3735

N200 X-.8533 Y.3125

N210 X-.9172 Y.4237

N220 Z.138 F6.4

N230 G0 Z.145

N240 X-.7552 Y.4131

N250 G1 Z.118

N260 X-.811 Y.3572 F500.

N270 X-.8961 Y.4423

N280 X-.8403 Y.4982

N290 Z.138 F6.4

N300 G0 Z.145

N310 X-.8028 Y.4542

N320 G1 Z.118

N330 X-.8554 Y.4016 F500.

N340 Z.138 F6.4

N350 G0 Z.145

N360 X-.746 Y.5595

N370 G1 Z.118

N380 X-.7572 Y.5627 F500.

N390 X-.7691 Y.5617

N400 X-.7806 Y.5566

N410 X-.7909 Y.5482

N420 X-.8005 Y.5356

N430 X-.8053 Y.5224

N440 X-.8052 Y.5098

N450 X-.7998 Y.4998

N460 X-.7873 Y.4929

N470 X-.7854 Y.4926

N480 X-.7702 Y.4943

N490 X-.7644 Y.4964

N500 X-.7339 Y.5136

N510 X-.7185 Y.5188

N520 X-.7127 Y.519

N530 X-.7013 Y.5155

N540 X-.6974 Y.5124

N550 X-.6919 Y.5025

N560 X-.6911 Y.4896

N570 X-.6955 Y.476

N580 X-.7055 Y.4628

N590 X-.7156 Y.4547

N600 X-.7267 Y.4494

N610 X-.7379 Y.4478

N620 X-.7476 Y.4497

N630 X-.7562 Y.4535

N640 Z.138 F6.4

N650 G0 Z.145

N660 X-.7089 Y.6295

N670 G1 Z.118

N680 X-.6226 Y.5432 F500.

N690 Z.138 F6.4

N700 G0 Z.145

N710 X-.7414 Y.5971

N720 G1 Z.118

N730 X-.6769 Y.6615 F500.

N740 Z.138 F6.4

N750 G0 Z.145

N760 X-.6145 Y.6384

N770 G1 Z.118

N780 X-.6278 Y.6573 F500.

N790 X-.6283 Y.6585

N800 X-.6335 Y.6804

N810 Y.6809

N820 X-.6309 Y.7007

N830 X-.6303 Y.7028

N840 X-.6204 Y.7196

N850 X-.6182 Y.7219

N860 X-.6018 Y.7327

N870 X-.5996 Y.7335

N880 X-.5799 Y.7368

N890 X-.5776

N900 X-.5566 Y.7322

N910 X-.5552 Y.7316

N920 X-.5363 Y.7189

N930 X-.5352 Y.7178

N940 X-.522 Y.699

N950 X-.5216 Y.698

N960 X-.5164 Y.6757

N970 Y.6756

N980 X-.5194 Y.6543

N990 X-.5197 Y.6536

N1000 X-.5301 Y.6365

N1010 X-.5315 Y.6351

N1020 X-.5463 Y.6246

N1030 X-.5504 Y.6229

N1040 X-.571 Y.6196

N1050 X-.5723 Y.6197

N1060 X-.5945 Y.6248

N1070 X-.5947 Y.6249

N1080 X-.6131 Y.637

N1090 X-.6145 Y.6384

N1100 Z.138 F6.4

N1110 G0 Z.145

N1120 X-.4716 Y.6942

N1130 G1 Z.118

N1140 X-.5592 Y.7817 F500.

N1150 X-.41 Y.7558

N1160 X-.4976 Y.8433

N1170 Z.138 F6.4

N1180 G0 Z.145

N1190 X-.8266 Y.2088

N1200 G1 Z.118

N1210 X-.8571 Y.1916 F500.

N1220 X-.8727 Y.1876

N1230 X-.8781 Y.1877

N1240 X-.8859 Y.1902

N1250 X-.8925 Y.195

N1260 X-.8979 Y.205

N1270 X-.898 Y.2176

N1280 X-.8932 Y.2308

N1290 X-.8836 Y.2434

N1300 X-.8733 Y.2518

N1310 X-.8618 Y.2569

N1320 X-.8499 Y.2579

N1330 X-.8387 Y.2547

N1340 Z.138 F6.4

N1350 G0 Z.145

N1360 X-.7901 Y.2076

N1370 G1 Z.118

N1380 X-.8019 Y.2137 F500.

N1390 X-.8054 Y.2142

N1400 X-.8154 Y.2132

N1410 X-.8266 Y.2088

N1420 X-.8571 Y.1916

N1430 X-.8727 Y.1876

N1440 X-.8781 Y.1877

N1450 X-.8859 Y.1902

N1460 X-.8925 Y.195

N1470 X-.8979 Y.205

N1480 X-.898 Y.2176

N1490 X-.8932 Y.2308

N1500 X-.8836 Y.2434

N1510 X-.8733 Y.2518

N1520 X-.8618 Y.2569

N1530 X-.8499 Y.2579

N1540 X-.8387 Y.2547

N1550 Z.138 F6.4

N1560 G0 Z.145

N1570 X-.7982 Y.158

N1580 G1 Z.118

N1590 X-.7882 Y.1712 F500.

N1600 X-.7838 Y.1848

N1610 X-.7846 Y.1977

N1620 X-.7901 Y.2076

N1630 X-.8019 Y.2137

N1640 X-.8054 Y.2142

N1650 X-.8154 Y.2132

N1660 X-.8266 Y.2088

N1670 X-.8571 Y.1916

N1680 X-.8727 Y.1876

N1690 X-.8781 Y.1877

N1700 X-.8859 Y.1902

N1710 X-.8925 Y.195

N1720 X-.8979 Y.205

N1730 X-.898 Y.2176

N1740 X-.8932 Y.2308

N1750 X-.8836 Y.2434

N1760 X-.8733 Y.2518

N1770 X-.8618 Y.2569

N1780 X-.8499 Y.2579

N1790 X-.8387 Y.2547

N1800 Z.138 F6.4

N1810 G0 Z.145

N1820 X-.8489 Y.1487

N1830 G1 Z.118

N1840 X-.8403 Y.1449 F500.

N1850 X-.8306 Y.1429

N1860 X-.8194 Y.1446

N1870 X-.8082 Y.1499

N1880 X-.7982 Y.158

N1890 X-.7882 Y.1712

N1900 X-.7838 Y.1848

N1910 X-.7846 Y.1977

N1920 X-.7901 Y.2076

N1930 X-.8019 Y.2137

N1940 X-.8054 Y.2142

N1950 X-.8154 Y.2132

N1960 X-.8266 Y.2088

N1970 X-.8571 Y.1916

N1980 X-.8727 Y.1876

N1990 X-.8781 Y.1877

N2000 X-.8859 Y.1902

N2010 X-.8925 Y.195

N2020 X-.8979 Y.205

N2030 X-.898 Y.2176

N2040 X-.8932 Y.2308

N2050 X-.8836 Y.2434

N2060 X-.8733 Y.2518

N2070 X-.8618 Y.2569

N2080 X-.8499 Y.2579

N2090 X-.8387 Y.2547

N2100 Z.138 F6.4

N2110 G0 Z.145

N2120 X-.7479 Y.2059

N2130 G1 Z.118

N2140 X-.8354 Y.2934 F500.

N2150 Z.138 F6.4

N2160 G0 Z.145

N2170 X-.7293 Y.3156

N2180 G1 Z.118

N2190 X-.7935 Y.2515 F500.

N2200 Z.138 F6.4

N2210 G0 Z.145

N2220 X-.6837 Y.27

N2230 G1 Z.118

N2240 X-.7713 Y.3575 F500.

N2250 Z.138 F6.4

N2260 G0 Z.145

N2270 X-.6638 Y.2899

N2280 G1 Z.118

N2290 X-.716 Y.4128 F500.

N2300 X-.5931 Y.3606

N2310 Z.138 F6.4

N2320 G0 Z.145

N2330 X-.6811 Y.3317

N2340 G1 Z.118

N2350 X-.6349 Y.3779 F500.

N2360 Z.138 F6.4

N2370 G0 Z.145

N2380 X-.6606 Y.4682

N2390 G1 Z.118

N2400 X-.5731 Y.3806 F500.

N2410 Z.138 F6.4

N2420 G0 Z.145

N2430 X-.6027 Y.5261

N2440 G1 Z.118

N2450 X-.6026 Y.4102 F500.

N2460 Z.138 F6.4

N2470 G0 Z.145

N2480 X-.6027 Y.4575

N2490 G1 Z.118

N2500 X-.5123 Y.4414 F500.

N2510 Z.138 F6.4

N2520 G0 Z.145

N2530 X-.4381 Y.5181

N2540 G1 Z.118

N2550 X-.494 Y.4622 F500.

N2560 X-.579 Y.5473

N2570 X-.5232 Y.6031

N2580 Z.138 F6.4

N2590 G0 Z.145

N2600 X-.5384 Y.5066

N2610 G1 Z.118

N2620 X-.4857 Y.5592 F500.

N2630 Z.138 F6.4

N2640 G0 Z.145

N2650 X-.4391 Y.5585

N2660 G1 Z.118

N2670 X-.4305 Y.5547 F500.

N2680 X-.4209 Y.5527

N2690 X-.4096 Y.5544

N2700 X-.3985 Y.5596

N2710 X-.3884 Y.5678

N2720 X-.3784 Y.5809

N2730 X-.374 Y.5946

N2740 X-.3748 Y.6074

N2750 X-.3803 Y.6174

N2760 X-.3921 Y.6235

N2770 X-.3956 Y.624

N2780 X-.4056 Y.6229

N2790 X-.4169 Y.6185

N2800 X-.4473 Y.6013

N2810 X-.4629 Y.5973

N2820 X-.4684 Y.5975

N2830 X-.4762 Y.6

N2840 X-.4828 Y.6048

N2850 X-.4881 Y.6148

N2860 X-.4882 Y.6274

N2870 X-.4834 Y.6406

N2880 X-.4738 Y.6532

N2890 X-.4635 Y.6616

N2900 X-.4521 Y.6667

N2910 X-.4401 Y.6677

N2920 X-.4289 Y.6645

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N2940 G0 Z.145

N2950 X-.3382 Y.6155

N2960 G1 Z.118

N2970 X-.4245 Y.7018 F500.

N2980 X-.3908 Y.7355

N2990 X-.38 Y.7433

N3000 X-.3669 Y.7475

N3010 X-.3533 Y.7465

N3020 X-.3413 Y.7394

N3030 X-.3342 Y.7274

N3040 X-.3332 Y.7139

N3050 X-.3374 Y.7007

N3060 X-.3452 Y.6899

N3070 X-.3789 Y.6562

N3080 Z.138 F6.4

N3090 G0 Z.145

N3100 X-.2031 Y.7531

N3110 G1 Z.118

N3120 X-.259 Y.6972 F500.

N3130 X-.344 Y.7823

N3140 X-.2882 Y.8381

N3150 Z.138 F6.4

N3160 G0 Z.145

N3170 X-.2507 Y.7942

N3180 G1 Z.118

N3190 X-.3033 Y.7416 F500.

N3200 Z.138 F6.4

N3210 G0 Z.145

N3220 X-.1825 Y.7713

N3230 G1 Z.118

N3240 X-.2346 Y.8942 F500.

N3250 X-.1117 Y.842

N3260 Z.138 F6.4

N3270 G0 Z.145

N3280 X-.1997 Y.8131

N3290 G1 Z.118

N3300 X-.1535 Y.8593 F500.

N3310 Z.138 F6.4

N3320 G0 Z.145

N3330 X-.0917 Y.862

N3340 G1 Z.118

N3350 X-.1779 Y.9482 F500.

N3360 X-.1389 Y.9873

N3370 X-.128 Y.9946

N3380 X-.1157 Y.9978

N3390 X-.1032 Y.996

N3400 X-.0918 Y.9887

N3410 X-.0845 Y.9773

N3420 X-.0825 Y.9647

N3430 X-.0857 Y.9523

N3440 X-.0933 Y.9417

N3450 X-.1323 Y.9026

N3460 Z.138 F6.4

N3470 G0 Z.145

N3480 X-.0983 Y.9366

N3490 G1 Z.118

N3500 X-.0835 Y.9407 F500.

N3510 X-.0682 Y.9397

N3520 X-.0237 Y.93

N3530 Z.138 F6.4

N3540 G0 Z.145

N3550 G187 P3 E.001

N3560 X-1.125 Y1.125 Z.25

N3570 Z.15

N3580 G99 G81 Z-.01 R.15 F246.6

N3590 X1.125

N3600 Y-1.125

N3610 X-1.125

N3620 G80

N3630 Z.25

N3640 M5

N3650 G91 G28 Z0.

N3660 M01

N3670 T5 M6

N3680 G187 P3 E.001

N3690 G0 G90 G54 X-1.125 Y1.125 S2139 M3

N3700 G43 H5 Z.25

N3710 Z.15

N3720 G99 G83 Z-.155 R.15 Q.075 F4.1

N3730 X1.125

N3740 Y-1.125

N3750 X-1.125

N3760 G80

N3770 Z.25

N3780 M5

N3790 G91 G28 Z0.

N3800 M01

N3810 T4 M6

N3820 G187 P3 E.001

N3830 G0 G90 G54 X-2.625 Y-.5 S4966 M3

N3840 G43 H4 Z.25

N3850 Z.2

N3860 G1 Z0. F6.4

N3870 X-2.125 F500.

N3880 G3 X-1.625 Y0. I0. J.5

N3890 G2 X-1.5968 Y.3014 I1.625 J0.

N3900 G1 X-1.6144 Y.3111

N3910 G2 X-1.875 Y.75 I.2394 J.4389

N3920 G1 Y1.125

N3930 G2 X-1.125 Y1.875 I.75 J0.

N3940 G1 X-.75

N3950 G2 X-.3111 Y1.6144 I0. J-.5

N3960 G1 X-.3014 Y1.5968

N3970 G2 X0. Y1.625 I.3014 J-1.5968

N3980 X.3014 Y1.5968 I0. J-1.625

N3990 G1 X.3111 Y1.6144

N4000 G2 X.75 Y1.875 I.4389 J-.2394

N4010 G1 X1.125

N4020 G2 X1.875 Y1.125 I0. J-.75

N4030 G1 Y.75

N4040 G2 X1.6144 Y.3111 I-.5 J0.

N4050 G1 X1.5968 Y.3014

N4060 G2 X1.625 Y0. I-1.5968 J-.3014

N4070 X1.5968 Y-.3014 I-1.625 J0.

N4080 G1 X1.6144 Y-.3111

N4090 G2 X1.875 Y-.75 I-.2394 J-.4389

N4100 G1 Y-1.125

N4110 G2 X1.125 Y-1.875 I-.75 J0.

N4120 G1 X.75

N4130 G2 X.3111 Y-1.6144 I0. J.5

N4140 G1 X.3014 Y-1.5968

N4150 G2 X0. Y-1.625 I-.3014 J1.5968

N4160 X-.3014 Y-1.5968 I0. J1.625

N4170 G1 X-.3111 Y-1.6144

N4180 G2 X-.75 Y-1.875 I-.4389 J.2394

N4190 G1 X-1.125

N4200 G2 X-1.875 Y-1.125 I0. J.75

N4210 G1 Y-.75

N4220 G2 X-1.6144 Y-.3111 I.5 J0.

N4230 G1 X-1.5968 Y-.3014

N4240 G2 X-1.625 Y0. I1.5968 J.3014

N4250 G3 X-2.125 Y.5 I-.5 J0.

N4260 G1 X-2.625

N4270 Z.2 F6.4

N4280 G0 Z.25

N4290 X-2.375 Y-.5

N4300 Z.2

N4310 G1 Z0.

N4320 X-1.875 F500.

N4330 G3 X-1.375 Y0. I0. J.5

N4340 G2 X-1.3067 Y.428 I1.375 J0.

N4350 G1 X-1.4947 Y.5305

N4360 G2 X-1.625 Y.75 I.1197 J.2195

N4370 G1 Y1.125

N4380 G2 X-1.125 Y1.625 I.5 J0.

N4390 G1 X-.75

N4400 G2 X-.5305 Y1.4947 I0. J-.25

N4410 G1 X-.428 Y1.3067

N4420 G2 X0. Y1.375 I.428 J-1.3067

N4430 X.428 Y1.3067 I0. J-1.375

N4440 G1 X.5305 Y1.4947

N4450 G2 X.75 Y1.625 I.2195 J-.1197

N4460 G1 X1.125

N4470 G2 X1.625 Y1.125 I0. J-.5

N4480 G1 Y.75

N4490 G2 X1.4947 Y.5305 I-.25 J0.

N4500 G1 X1.3067 Y.428

N4510 G2 X1.375 Y0. I-1.3067 J-.428

N4520 X1.3067 Y-.428 I-1.375 J0.

N4530 G1 X1.4947 Y-.5305

N4540 G2 X1.625 Y-.75 I-.1197 J-.2195

N4550 G1 Y-1.125

N4560 G2 X1.125 Y-1.625 I-.5 J0.

N4570 G1 X.75

N4580 G2 X.5305 Y-1.4947 I0. J.25

N4590 G1 X.428 Y-1.3067

N4600 G2 X0. Y-1.375 I-.428 J1.3067

N4610 X-.428 Y-1.3067 I0. J1.375

N4620 G1 X-.5305 Y-1.4947

N4630 G2 X-.75 Y-1.625 I-.2195 J.1197

N4640 G1 X-1.125

N4650 G2 X-1.625 Y-1.125 I0. J.5

N4660 G1 Y-.75

N4670 G2 X-1.4947 Y-.5305 I.25 J0.

N4680 G1 X-1.3067 Y-.428

N4690 G2 X-1.375 Y0. I1.3067 J.428

N4700 G3 X-1.875 Y.5 I-.5 J0.

N4710 G1 X-2.375

N4720 Z.2 F6.4

N4730 G0 Z.25

N4740 G187 P3 E.001

N4750 X-.1089 Y-.0543

N4760 Z.2

N4770 G3 X.037 Y-.0761 I.1459 J.4783 F500.

N4780 X.0739 Y-.0747 I0. J.5001

N4790 G1 X.0976 Y-.0727 Z.1988

N4800 X.1213 Y-.07 Z.1975

N4810 X.1047 Y-.033 Z.1954

N4820 X.0866 Y.0032 Z.1932

N4830 X.067 Y.0387 Z.1911

N4840 X.046 Y.0734 Z.189

N4850 X.0237 Y.1071 Z.1869

N4860 X0. Y.14 Z.1848

N4870 X-.0283 Y.1005 Z.1822

N4880 X-.0546 Y.0596 Z.1797

N4890 X-.0789 Y.0175 Z.1771

N4900 X-.1011 Y-.0258 Z.1746

N4910 X-.1213 Y-.07 Z.172

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N4980 X.1047 Y-.033 Z.1572

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N5150 X.1047 Y-.033 Z.119

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N5260 X-.081 Y-.0741 Z.0935

N5270 X-.0405 Y-.0766 Z.0913

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N5310 X.1213 Y-.07 Z.0828

N5320 X.1047 Y-.033 Z.0807

N5330 X.0866 Y.0032 Z.0786

N5340 X.067 Y.0387 Z.0765

N5350 X.046 Y.0734 Z.0744

N5360 X.0237 Y.1071 Z.0722

N5370 X0. Y.14 Z.0701

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N5390 X-.0546 Y.0596 Z.065

N5400 X-.0789 Y.0175 Z.0624

N5410 X-.1011 Y-.0258 Z.0599

N5420 X-.1213 Y-.07 Z.0573

N5430 X-.081 Y-.0741 Z.0552

N5440 X-.0405 Y-.0766 Z.053

N5450 X0. Y-.0774 Z.0509

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N5480 X.1213 Y-.07 Z.0446

N5490 X.1047 Y-.033 Z.0425

N5500 X.0866 Y.0032 Z.0403

N5510 X.067 Y.0387 Z.0382

N5520 X.046 Y.0734 Z.0361

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N5560 X-.0546 Y.0596 Z.0268

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N5660 X.1047 Y-.033 Z.0043

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N5710 X0. Y-.0774 I.1213 J.9926

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N5730 X.067 Y.0387 I-.9203 J-.3913

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N6050 X.1047 Y-.033 Z.0722

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N6090 X.0237 Y.1071 Z.0807

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N6180 X0. Y-.0774 Z.102

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N6260 X.0237 Y.1071 Z.119

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N6670 Z.2

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N6830 X.387 Y-.0664 Z.1523

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N6860 X.3137 Y.1082 Z.1423

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N7180 X.2509 Y-.3019 Z.0331

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N7490 X-.3583 Y.0111 Z.0553

N7500 X-.3823 Y-.0526 Z.0588

N7510 X-.4028 Y-.1174 Z.0624

N7520 X-.4197 Y-.1833 Z.0659

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N7560 X-.2509 Y-.3019 Z.0794

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N7580 X-.1261 Y-.321 Z.0861

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N7670 X.433 Y-.25 Z.1159

N7680 X.4208 Y-.188 Z.1192

N7690 X.4054 Y-.1268 Z.1225

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N7790 X.0929 Y.4145 Z.1556

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N7970 G91 G28 Z0.

N7980 M01

N7990 T3 M6

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N8030 Z.2

N8040 G1 Z.075 F6.4

N8050 X-1.66 F500.

N8060 G3 X-1.16 Y0. I0. J.5

N8070 G2 X-1.1024 Y.3611 I1.16 J0.

N8080 G3 X-1.0917 Y.428 I-.2043 J.0669

N8090 X-1.2037 Y.6167 I-.215 J0.

N8100 G1 X-1.3918 Y.7193

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N8120 G1 Y1.125

N8130 G2 X-1.125 Y1.41 I.285 J0.

N8140 G1 X-.75

N8150 G2 X-.7193 Y1.3918 I0. J-.035

N8160 G1 X-.6167 Y1.2037

N8170 G3 X-.428 Y1.0917 I.1887 J.103

N8180 X-.3611 Y1.1024 I0. J.215

N8190 G2 X0. Y1.16 I.3611 J-1.1024

N8200 X.3611 Y1.1024 I0. J-1.16

N8210 G3 X.428 Y1.0917 I.0669 J.2043

N8220 X.6167 Y1.2037 I0. J.215

N8230 G1 X.7193 Y1.3918

N8240 G2 X.75 Y1.41 I.0307 J-.0168

N8250 G1 X1.125

N8260 G2 X1.41 Y1.125 I0. J-.285

N8270 G1 Y.75

N8280 G2 X1.3918 Y.7193 I-.035 J0.

N8290 G1 X1.2037 Y.6167

N8300 G3 X1.0917 Y.428 I.103 J-.1887

N8310 X1.1024 Y.3611 I.215 J0.

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N8340 G3 X1.0917 Y-.428 I.2043 J-.0669

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N8360 G1 X1.3918 Y-.7193

N8370 G2 X1.41 Y-.75 I-.0168 J-.0307

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N8390 G2 X1.125 Y-1.41 I-.285 J0.

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N8480 X-.6167 Y-1.2037 I0. J-.215

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N8560 G3 X-1.0917 Y-.428 I-.103 J.1887

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N8880 Z.2

N8890 G1 Z-.05

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N9170 G2 X-1.5 Y1.75 I.25 J0.

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N9270 Z.2 F6.4

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N9290 M5

N9300 G91 G28 Z0.

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N9320 M30

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