

G-code examples:

Two g-code programs are included here, joeyellipse.ngc and joeystar3.ngc . They can be viewed with wordpad or other editor of your choice if you're interested, I don't claim them to be exemplary as far as style is concerned but I do claim them to be unusual from the mathematics involved. (I searched the web for ellipse programs and decided to go from scratch because I couldn't understand those I found and this one is understandable by me as well as extensible to any "conic" section as well as probably any other complex function as well)

First program:

Some unusual subroutines are shown in this screen shot of linuxcnc

1. Make a nine armed star figure with the arm length passed in
2. Make a polygon that fits inside a circle who's diameter is passed in along with the number of sides desired.
3. Make a star that fits inside a circle by passing in the outer radius. Inner radius and number of arms.
4. Make a piecrust by drawing -chord centered semicircles on an n-sided polygon inside a circle of desired diameter.
5. Make an n-sided polygon with an arc embedded in each side.
6. Make an n-sided polygon with circles centered around it.
7. Make a circle with circles centered around it.

I intended item 4 to be used for cutting sprockets, but the semicircles are chord centered instead of centered on the circumference of the circle so they won't roll right. (something to do with cycloidal curves and I probably won't figure it out eventually)

Item 6 and 7 was intended to be used for cutting out circular gaskets but couldn't figure out how to hold the material down for endmill use.

The routines are each called inside the program Joeystar3.ngc and the program is ready to run and make several passes through the figure shown. The file joeystar3.ngc has these subroutines.

Second program:

A common mathematical technique is to approximate a curve using very small straight lines. A program that does this is joeyellipse.ngc. This program divides the major axis of an ellipse into the number of pieces specified, computes a "y" value for each "x" value and executes small straight line sequences to draw a complete ellipse. The program assumes that the zero point is chosen at the center of the major and minor axis and four different quadrants of the ellipse are drawn in the correct sequence. All four quadrants are enclosed by a while loop, so this program is ready to execute after zeroing the cutter position.

joestar3.ngc - AXIS 2.5.0 on LinuxCNC-HAL-SIM-AXIS

File Machine View Help

Manual Control [F3] MDI [F2]

Axis: X Y Z

- + Continuous

Home All Touch Off

Preview DRO

X: 1.8614
Y: -0.7154
Z: -0.1000
Vel: 0.0000

Feed Override: 100 %

Jog Speed: 16 in/min

Max Velocity: 72 in/min

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1:  
2: %  
3: (subroutine for a nine pointed star in progress, borrows from)  
4: (wrench for setup)  
5: (each sub takes x,y,length of flat and a compass point )  
6: (compass point locates axis of the bolthead)
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joestar3.ngc [Update Manager]