

## Tool Panel

The screenshot shows the 'Tool Settings And Calculators' panel in the Tux Cutter/Smoothie Tools software. The interface is divided into several sections:

- Output Profile:** Shows 'Hermes7200' as the selected tool and 'Online (NET)' as the connection status. It includes sliders for XY Speed (18), Z Speed (10.1), Z Distance To Media Surface (94.7), Spindle Speed, Z Safe Height (2), Blade/Pen Down Force, Fill Line Spacing (3.4), Fill Line Angle, Blade Offset, Overcut, and Repeat Cuts. There are also buttons for 'Cam View', 'Test Cuts', 'Line Width', 'Media Size', 'Weed', and 'Media Type'.
- Tool Settings And Calculators:**
  - Tool Type:** A grid of buttons including Conical, Flat End (selected), Engraver, Ball End, Pcb Mill, Drill Bit, Diamond, Fiber Pen, Sharpie, Ball Pen, Plasma, and Gel Pen. An image of a flat end mill is shown.
  - Tool/Kerf Diameter Compensation:** Radio buttons for Outside (selected), Centerline, and Inside. Below are color selection buttons for All/None, Green, Magenta, Black, Blue, Yellow, Red, and Cyan.
  - Tool/Kerf Diameter In MM:** A slider set to 1.
  - Tool Tip Angle:** A slider set to 40.
  - Tool Overlap %:** A slider set to 75.
  - Buttons:** Calculate Fill Spacing, Calculate Fill Angles, and Apply Tool Compensation.
- Color Off Table:** A table with columns for XY Speed, Z Speed, Cut Depth, Slice, and Pass, with various numerical values and checkboxes.
- Navigation and Control:** Jog buttons for X, Y, Z, S, and a 'Tux Plot' button. A 'Table Size' section shows X: 508, Y: 305, Z: 60. There are also 'X Offset' and 'Y Offset' sliders.
- Bottom Bar:** A 'SEND' button and a status message: 'Tool Follows Outside Of Cut Line'. 'PLOT!' and 'CLOSE' buttons are also present.

Red annotations with lines pointing to specific features include:

- 'Type Of Tool/Pen' pointing to the 'Flat End' button.
- 'Type Of Compensation To Apply' pointing to the 'Outside' radio button.
- 'LStroke/Outline Colors To Apply' pointing to the color selection buttons.
- 'Show Tool Panel' pointing to a small icon on the right sidebar.
- 'Tool/Pen Tip Diameter' pointing to the 'Tool/Kerf Diameter In MM' slider.
- 'Tool Tip Angle For Future Use' pointing to the 'Tool Tip Angle' slider.
- 'Percentage Of Overlap Of Tool Tip When Calculating Fill Gap (engraving mainly)' pointing to the 'Tool Overlap %' slider.
- 'Calculate Fill Line Spacing Based On Tool Diameter And Tool Overlap Values' pointing to the 'Calculate Fill Spacing' button.
- 'Stagger Fill Angles Based On Fill Colors To Give A Prismatic Effect (mainly engraving)' pointing to the 'Calculate Fill Angles' button.
- 'After Adjustments Are Made Apply Compensation' pointing to the 'Apply Tool Compensation' button.

The tool panel has a lot of features and functions in one panel for multiple device types.

When type of tool is selected Diamond, Flat End Mill, Sharpie etc your values for sliders will adjust to approximate values based on your tool selection. Further fine tuning may be needed (good opportunity to create a memo and make a note of it and save job)

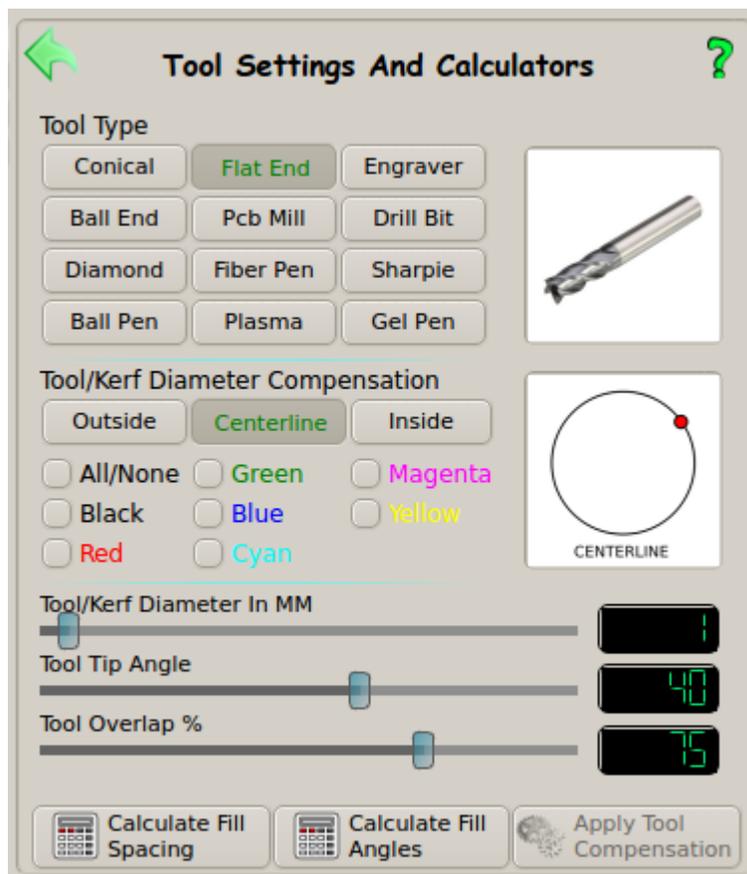
If engraving you will find features for auto calculating fill density based on your tool tip (diamond) and also auto calculating the fill angles based on fill colors. When auto calculating for diamond engraving your job image fill looks like a solid color fill but it's actually closely packed lines to yield a strong letter or image when done.

If cutting out shapes from your media tool diameter compensation may be wanted for either inside or outside original cut line to preserve accurate shape dimensions. Centerline has no compensation as it follows the original cut path. Tool/Kerf diameter slider is the space from original cut path to new compensated cut path which is half the tool diameter slider value.

Fill spacing is also used on the cnc and router devices. For example say your routing lettering for a sign and you want the lettering recessed. You could use an end mill and select 95% overlap and apply fill calculator which would auto adjust your fill spacing to appropriate density for a nice clean carved out letter.

Another useful task for the tools panel is if your using a sharpie/pen in your vinyl cutter and you want a quick cheap sign for a garage sale or something. Having the fills calculator will ensure no unwanted spaces between your pen passes.

### Tool Diameter Compensation



By selecting the outside or inside compensation buttons you can compensate for the tool diameter selected by the Tool/Kerf diameter slider. This feature will resize the shaped object larger or smaller by half the tool diameter. You can select by line color the objects to apply compensation to in case not all objects need compensation. This is why careful consideration when designing your job layout in Inkscape, CorelDraw etc should be given to line/stroke color. If compensation is to be applied to all objects then all line colors can be the same.

Centerline follows the original cut line so no tool diameter compensation is applied.

If more than half to the tool diameter is needed for compensation simply adjust the tool diameter slider larger until the InfoBar at the bottom of Tux Plot window displays the desired compensation gap.

## Auto Calculate Fill Line Spacing And Angles

Usually used when engraving but also for cnc work

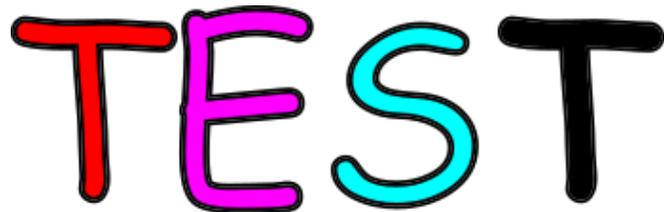
For example let's say your engraving a brass trophy plate and each letter has a different fill color and all letters have a black outline/stroke color.

If you were to engrave the letters with no fill lines just the faint outline of the lettering would be engraved! It would be hardly readable. Tux Plot allows you to manipulate the fills in lettering by manual adjustment in the main Tux Plot fill controls or auto-calculate feature. The fill spacing is based on tool diameter and overlap of fill line. Engraving is usually done with a diamond drag bit so a Diamond preset is provided with approximate values.

If that same lettering has different color fills you can also auto-calculate the angles of the fills based on fill colors. Tux Plot will stagger the fill angles for each color by 25 degrees resulting in a shimmering effect when the finished engraving is tilted in the reflected light. This effect is most widely used on jewellery.

Fill line spacing auto-calculation can also be used for cnc fills around lettering or other objects for material removal to make objects sunken or raised. Lettering in a sign for example.

In any case it's a time saver and quickens the completion of your job.



In the above engraving example individual fill spacing and angles could be applied to each fill color.



In this example the one fill color fill spacing could be auto-calculated for a cnc job to give a raised lettering effect. ( In this case the black outline of the lettering should be done last to give the lettering a nice smooth outer edge) Tux Plot allows for all cutting devices to plot by color one color at a time in the color subsystem.