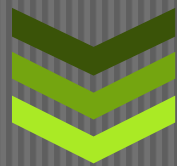


LaserCut – The Alternate Manual



Skaterdude

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Definitions

Here are some key terms that will help you understand this manual.

Workpiece: the material sitting on the work table of the machine. This is generally a flat sheet of variable size.

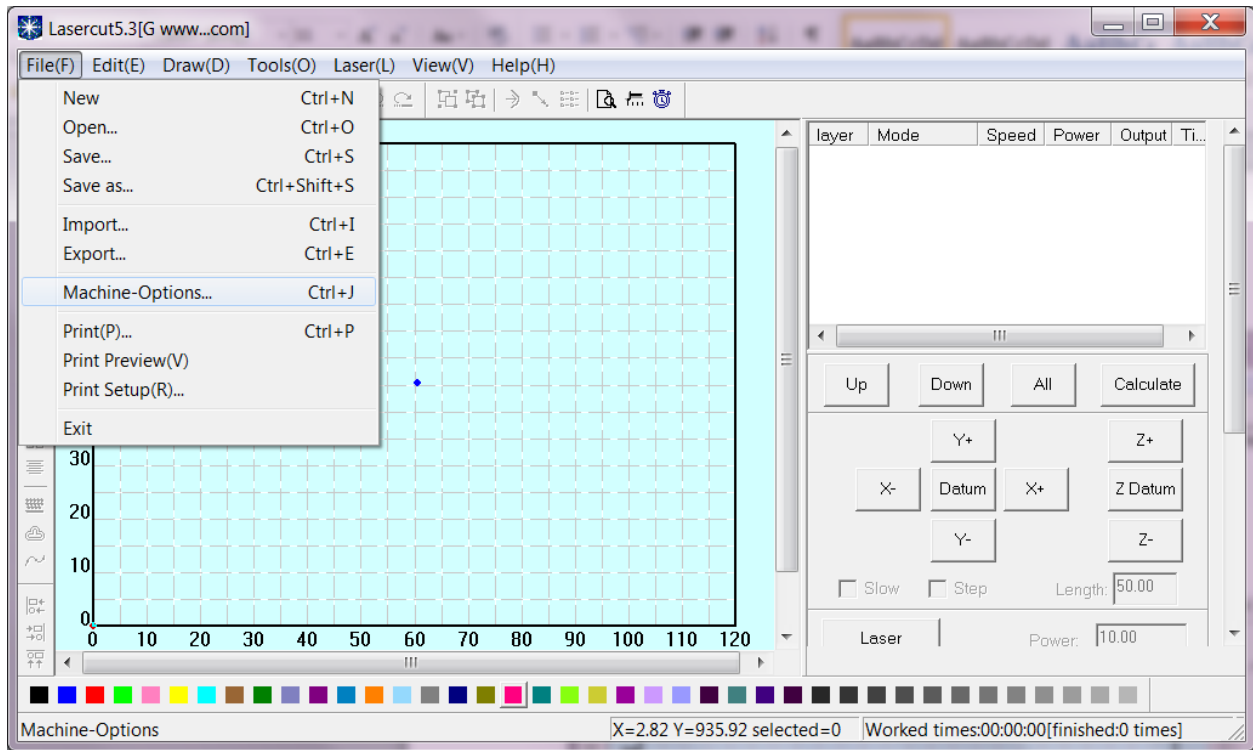
Work table: the surface of the laser engraving machine upon which the workpiece will be placed. This is the rectangular area with a grid that is shown in the main window of LaserCut.

Tasks

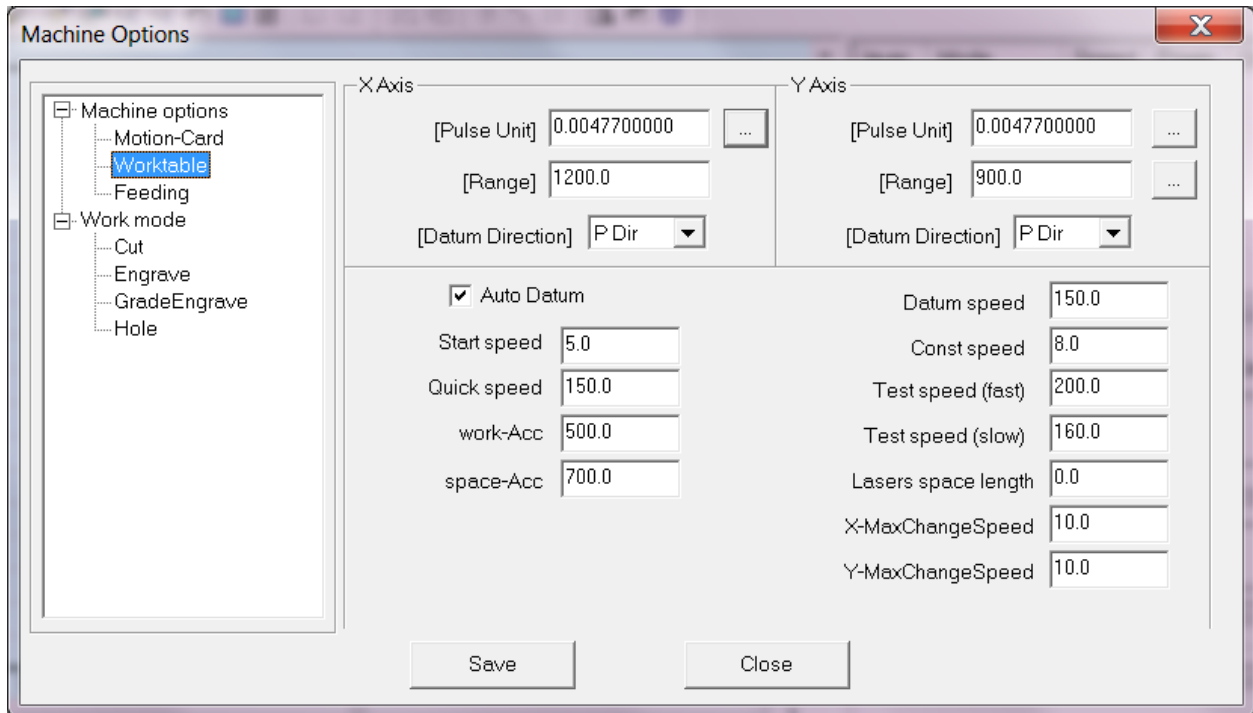
Calibrate the software-to-machine dimensions

LaserCut shows the work table of the machine in the main window. When you cut a piece using this window, you want the size as displayed to be identical to the size as shown in the software. If it's not, here's how you adjust it:

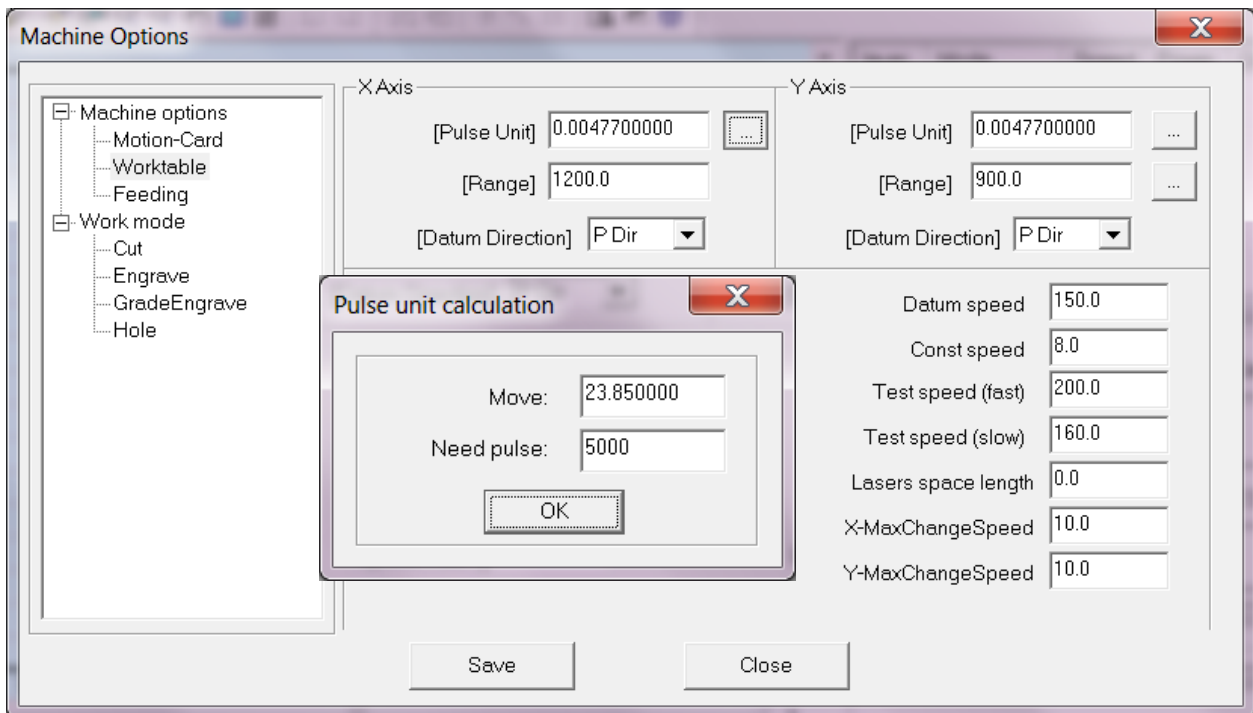
First, pick Machine-Options from the File menu:



Next, pick Worktable. The parameters you need to adjust are the X-Axis [Pulse Unit] and Y-Axis [Pulse Unit] values.



Click the “...” button next to each [Pulse Unit] to adjust the value. Common values are

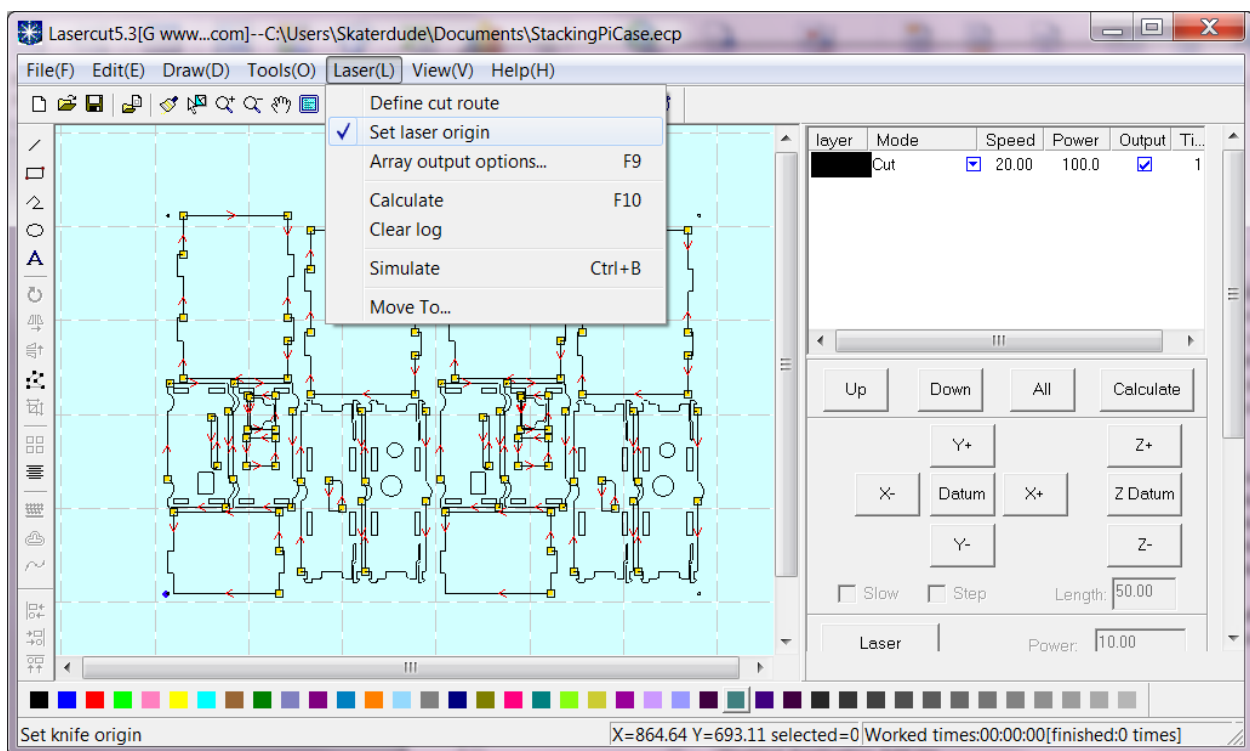


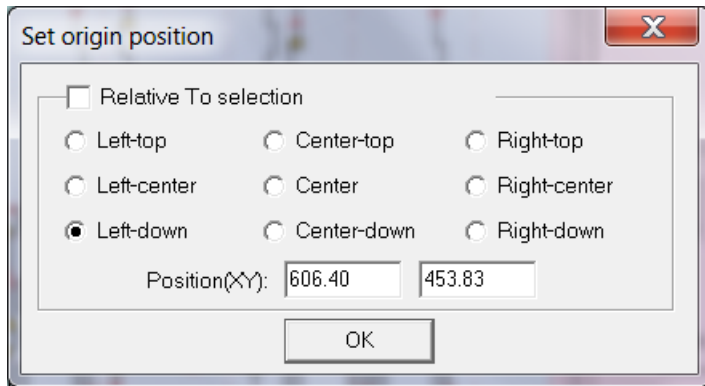
24 and 36.

In the example screen shot, this has been adjusted to a decimal value based upon actual measurements.

If you want to adjust to actual travel distance, you will need to draw a calibration box, cut the box just barely into the surface of a material, measure it with a caliper, and then adjust the "Move" value in the "Pulse unit calculation" box. As an example, if you start with a value of 24, and a 100mm box is cut with 105mm sides, you would adjust the "Move" value to $24 \cdot 100 / 105 = 22.8571$. You should then re-run the engraving job to check if this now gives you the correct size box. You may need to do a couple of iterations of this process to get it down. Note that when you measure the cut lines of the box, you must measure from the same point on each parallel line: either center to center, left side to left side, etc. to account for the kerf (width of the cut line).

Set where the laser head starts cutting





Task 3

Task 4

Task 5

Menu Explanations

File

New

Clear the work table

Open

Bring a layout from a LaserCut project file onto the work table.

Save

Update the contents of the LaserCut project file that holds the current layout with any changes you've made since the last time you saved it.

Save As

Make a new LaserCut project file that contains the contents of the current layout.

Import

Get an object from a file and place it on the current layout. The list of supported formats includes:

- PLT – HPGL plotter
- AI – Adobe Illustrator
- DXF – AutoCAD
- DST – Tajima
- BMP – Windows Bitmap
- NC – MasterCam GCode
- JPG
- JPEG
- GIF – Graphics Interchange Format
- PNG – Portable Network Graphics
- TIF – Tagged Image File format
- TIFF – Tagged Image File format
- TGA – Targa image
- PCX – PC Paintbrush bitmap

Export

Store the current layout in

Machine-Options

This brings up a menu of items that allow you to adjust the software configuration and connect it to the machine. The options include:

Machine Options

Motion-Card

Worktable

This lets you set up the X and Y axis scaling from the software to the machine. The software represents the work table in the main window, scales in mm. In order to make 1 mm on the screen equal to 1 mm of motion on the machine, you set the scaling here.

[Pulse Unit] is the number of mm of travel of the laser head per pulse to the stepper motors. Clicking on the button next to this field allows you to enter mm and pulse count values that will be used to calculate the pulse unit factor.

[Range] defines the maximum value for the axis, in mm.

[Datum Direction] allows you to choose the direction of motion of the axis.

Auto Datum determines whether or not the machine will re-zero itself when it is turned on.

Start speed is the

Quick speed is the

work-Acc

space-Acc

Datum speed determines how fast the the laser head moves to the datum position.

Const speed

Test speed (fast)

Test speed (slow)

Lasers space length

X-MaxChangeSpeed

Y-MaxChangeSpeed

Save stores any changes you've made.

Close does not store changes you've made.

Feeding

[Pulse Unit] is the number of mm of travel of the laser head per pulse to the stepper motors. Clicking on the button next to this field allows you to enter mm and pulse count values that will be used to calculate the pulse unit factor.

[Range] defines the maximum value for the axis, in mm.

[Datum Direction] allows you to choose the direction of motion of the axis.

Start speed is the

Quick speed is the

Acceleration

Datum Speed determines how fast the the laser head moves to the datum position.

Test speed (fast)

Test speed (slow)

Org-OffsetLength

Cut

PWM frequency

Curve disperse

Min close-gas time

Corner acc

Gap on xy axis

Original

Inner-to-outer

Down-to-up, divide-heigh

Automation set cut director

Optimize

Gap-Optimize

Circle speed

Engrave

PWM frequency

Engrave dir

Begin Speed, End Speed, Acc len, Acc space, Start speed, Acc, Y Speed

Add, Delete, Modify

Save: stores any changes you've made.

Close: does not store changes you've made.

GradeEngrave

PWM frequency

Engrave dir

Begin Speed, End Speed, Acc len, Acc space, Start speed, Acc, Y Speed

Add, Delete, Modify

Save: stores any changes you've made.

Close: does not store changes you've made.

Hole

PWM Frequency

Print

Print Preview

Print Setup

Exit

Exits the program. Whether or not you have saved the layout you're editing, it will prompt you to save your work.

Edit

Undo

This item works the same as for other applications. It reverses the last action you took.

Redo

Does the last action over.

Copy

Copies the currently-selected item onto the "clipboard".

Paste

Pastes the last-copied item from the “clipboard” to the same place that it was copied or cut from. You will have to move it to where you want it.

Cut

Removes the currently-selected item from the layout and puts it on the “clipboard”.

Refresh

Use this item to clean up the screen if the software leaves any artifacts behind after drawing or moving things around.

Pick

This item changes from any other mode to the mode that lets you choose any object in your layout.

Zoom In

The Zoom In item lets you select the portion of the main window that you want to magnify. Once you've clicked the item, pick the area you want to zoom by clicking the mouse, holding while dragging to the far corner of the area, and then releasing.

Zoom Out

This item reduces the scale of the main window by an incremental amount each time you click it. You can also use the F3 shortcut.

Pan

Pan allows you to move the worktable in the main window around. Click the Pan item and the mouse pointer will change to a hand. Click the mouse and move the distance and direction you want the work table view to move, then release.

Zoom to table

Click this item to make the work table fill the main window. Anything outside the worktable will not be visible.

Zoom to all object

Clicking this item will put all of the objects in your layout in the center of the main window, zoomed so that they fill the window.

Center to table

This will be inactive unless you have an object selected. Clicking it will move the object(s) to the center of the work table.

Draw

Line draws a line. Click the mouse to start the line and click again to finish it. Holding down the ctrl key will force the line to be vertical or horizontal.

Rectangle draws a rectangle with corners where you click the mouse. Holding down the ctrl key will force the rectangle to be a square.

Polyline draws an irregular polygon. Click at the first vertex, and then each time you click another vertex will be placed at the mouse cursor. Note that you must close the polygon or it will be deleted. While you are drawing, holding down the ctrl key will force the current line segment to vertical or horizontal. When the mouse cursor is over the original vertex, it will change from crosshairs to a square with arrow heads around it. Double-clicking at this point will close the polygon.

Ellipse draws an oval within the rectangle you define with two clicks of the mouse. Holding down the ctrl key will force it to be a circle.

Bezier draws a Bezier curve between successive mouse clicks.

Text draws text starting with the lower left corner near the first corner of the rectangle. A pop-up allows you to define the text to be drawn, its size, font, letter spacing. Note that the default values in this pop-up will be the same as the last time you changed them. Also note that once you click OK, you will not be able to edit the text because it is drawn as a set of curves. After you click OK, you can move and resize the text using other modes.

Tran Text to curve

Code Text

Copies

Rotal allows you to rotate the currently-selected object(s). Initially, a pop-up allows you to type in the angle. Once you have dismissed the pop-up, you can use the arrow keys to jog the rotation of the object(s).

Mirror(vertically)

Mirror(Horizontally)

Size allows you to resize the selected object(s). You can either define different sizes in each axis, or you can enter the size in one axis and click the "..." button for the other axis to scale it equally (maintain aspect ratio).

Align allows you to align the edges or centers of the selected objects.

Align left moves the objects to line up their left edges with the left edge of the right-most object.

Align right moves the objects to line up their right edges with the right edge of the left-most object.

Align top moves the objects to line up their top edges with the top edge of the top-most object.

Align bottom moves the objects to line up their bottom edges with the top edge of the top-most object.

Align centers vertically moves the objects so that their centers lie on an imaginary vertical line.

Align centers horizontally moves the objects so that their centers lie on an imaginary horizontal line.

Align middle centers all of the objects on top of each other, i.e., all of their centers will lie on the same point.

Edit Node

Spline line

Tools

Data check

Smooth curve

Unite lines

Offset curve

Cal EnterPath

Output order

Invert colors

Half Bmitmap

Laser

Define cut route

Set laser origin

Array output options

Calculate

Clear log

Simulate

Move to...

View

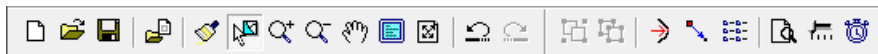
Toolbar

Statusbar

Help

Help...

About...



FAQs

Q: Why doesn't the machine start cutting where I positioned the laser head?

A: The laser keeps track of a physical position and a logical position. The physical position is where the laser head is positioned. The logical position is where the machine thinks that your layout is positioned on the table. You set the logical position for each layout (file) that you download to the machine. Read "Set where the laser head starts cutting" for details.