



Laser Cutter Induction

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What's a laser Cutter?

- Motorised mirror on an X, Y axis
- 100W Carbon Dioxide Laser
- Infrared follows VECTOR line work
- Can cut paper, card, wood, and acrylic
- Metal: can be etched only
- Wood: must check with the supervisor first

Is it dangerous?

- Yes
- Fire Danger
- Laser Radiation
 - Burns
 - Blindness
- Safety Interlocks
- No user serviceable parts

Before you start

- Ask the supervisor to use the Laser Cutter
- Specify the material you want to cut... and the size
- You will need to ask the supervisor to get a **HOT WORK PERMIT**
- No cutting can be done until the hot work permit is in place
- To stop the machine: Press the pause button or simply lift the lid...

Measure Twice, Cut Once!

You know the size of your design, yes?
You'll need it!

Today we are cutting $\frac{1}{2}$
A4 size – 148.5mm x
210mm in 4.5mm card

It is critical that you know
both the material
thickness and the size of
your material. Find out.
Write it down.

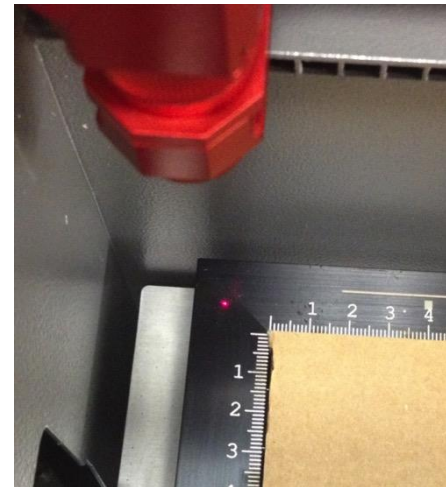


Inside the machine



Let's start

- Have the supervisor switch on the machine
- Place your material in the top left corner of the honeycomb

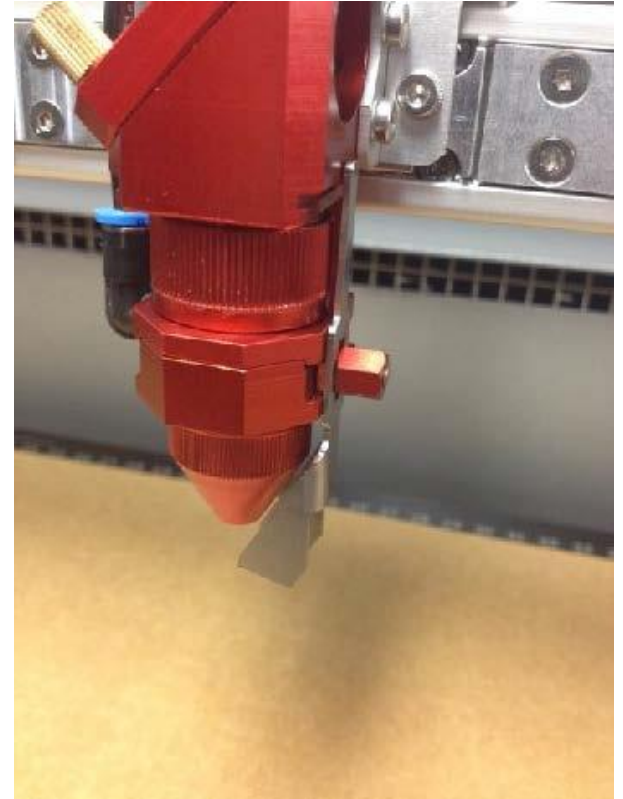
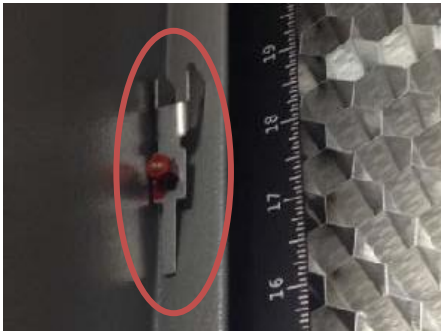


Position the laser head



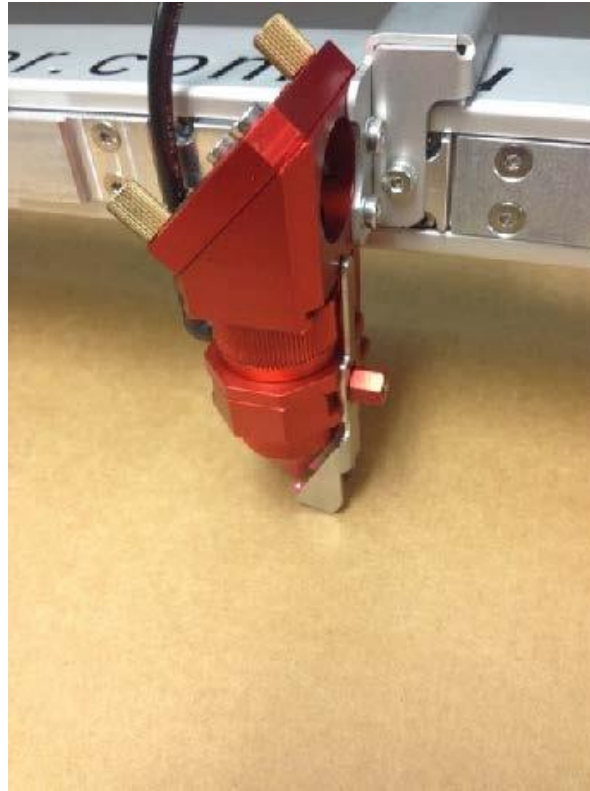
Check the focal distance

Take the focus check device and place carefully into the channel on the side of the laser head...
It'll balance there.
Don't drop it!



Raise the bed... Carefully...

As the bed approaches the head, use individual button clicks to move the bed up until it JUST touches the focus device, either knocking it off or causing it to move.



Put it back where it lives!



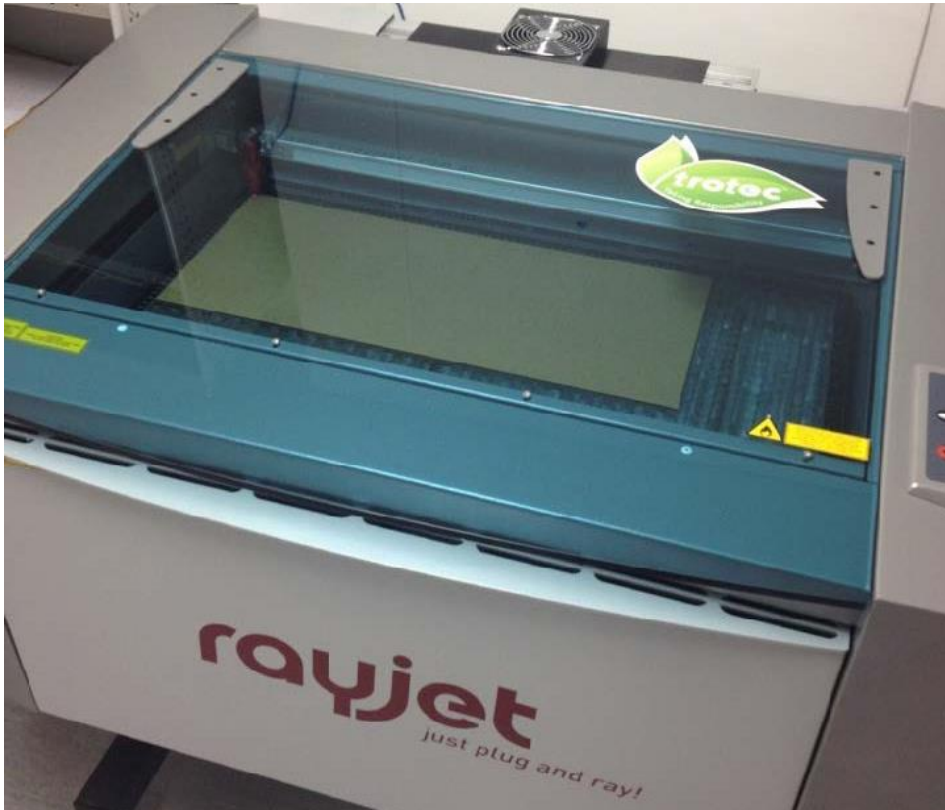
Inside the front ledge of the machine!

Position the laser



Position the laser at the top left of the material to be cut. Do NOT adjust the height....

Shut the lid



And move to the PC to setup the software

Open Corel Draw



Corel Draw

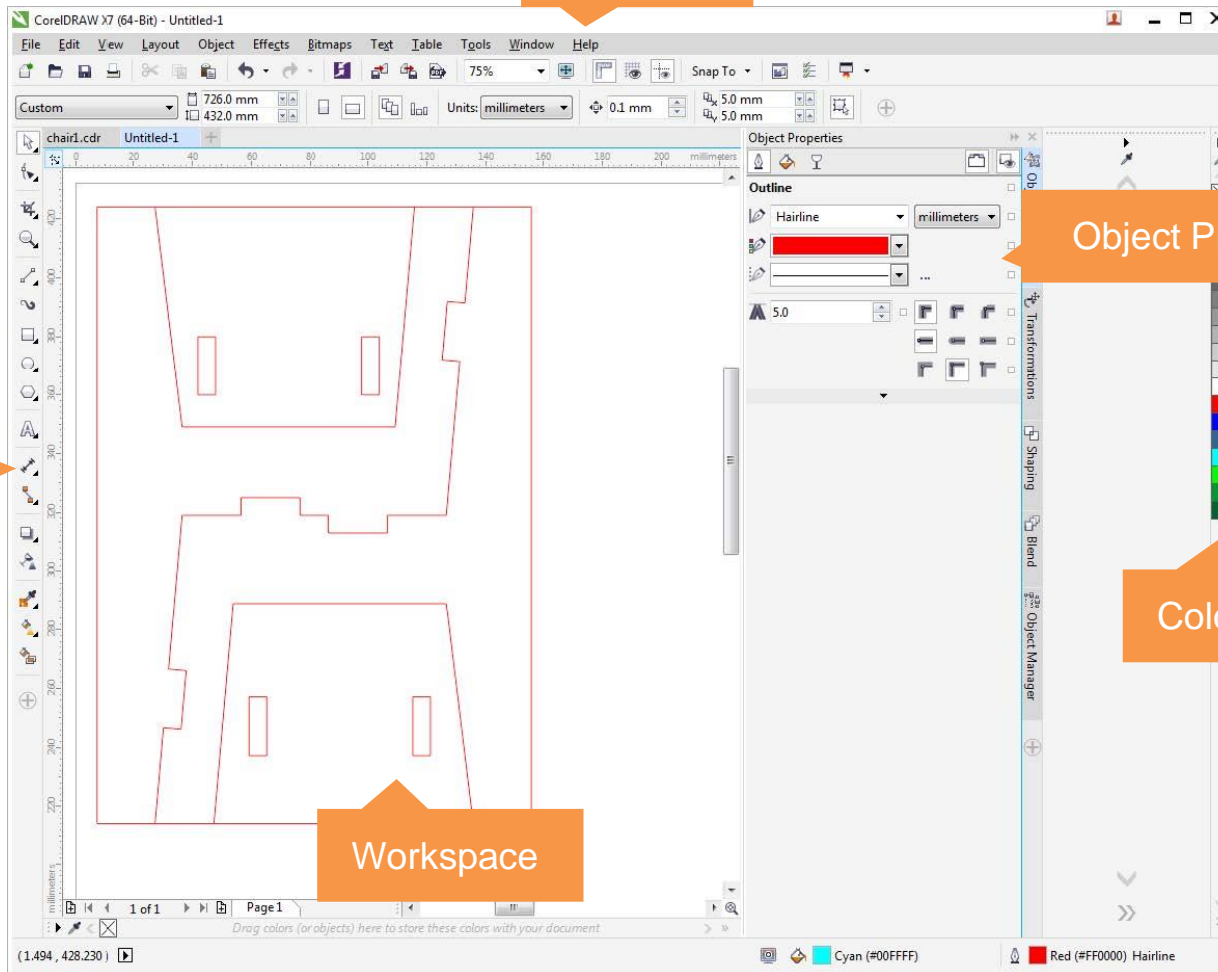
Menu bar

Toolbar

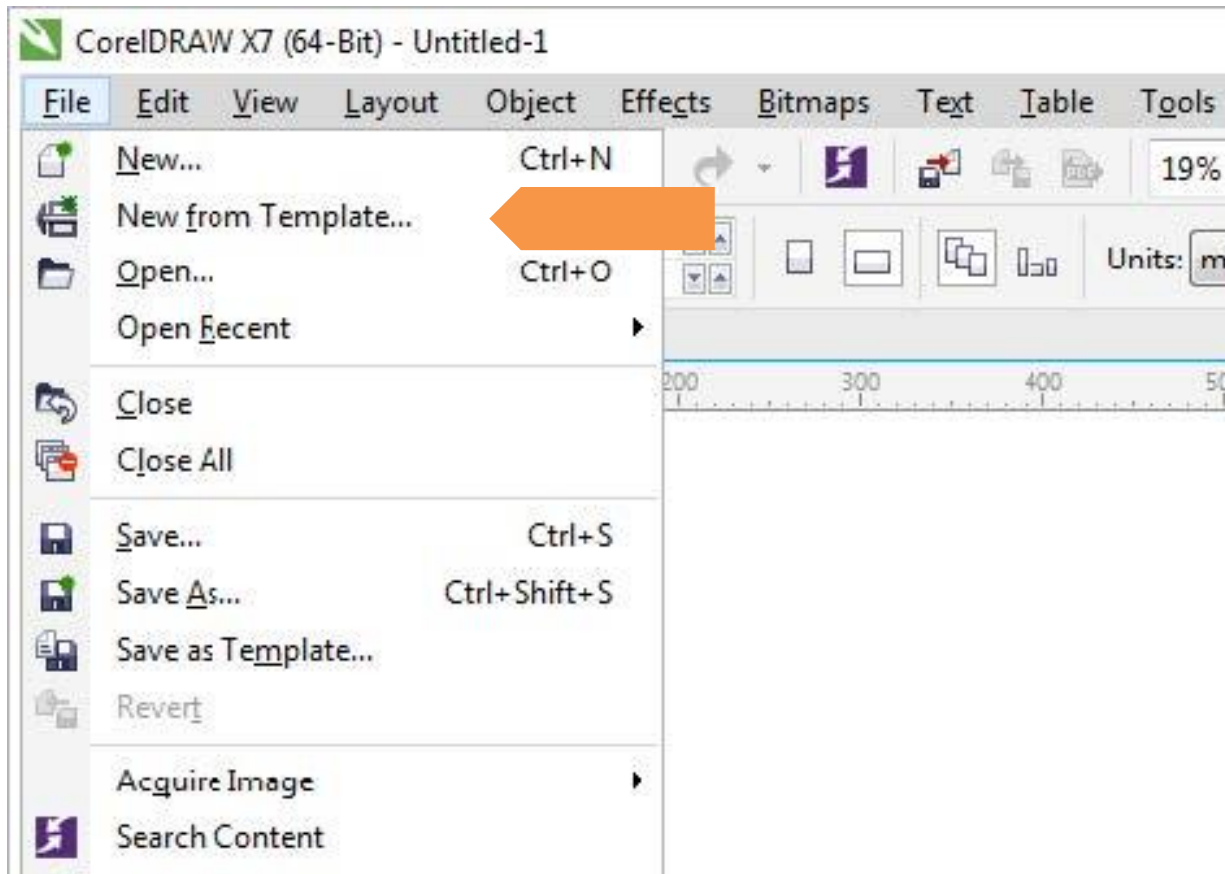
Object Properties

Colour Palette

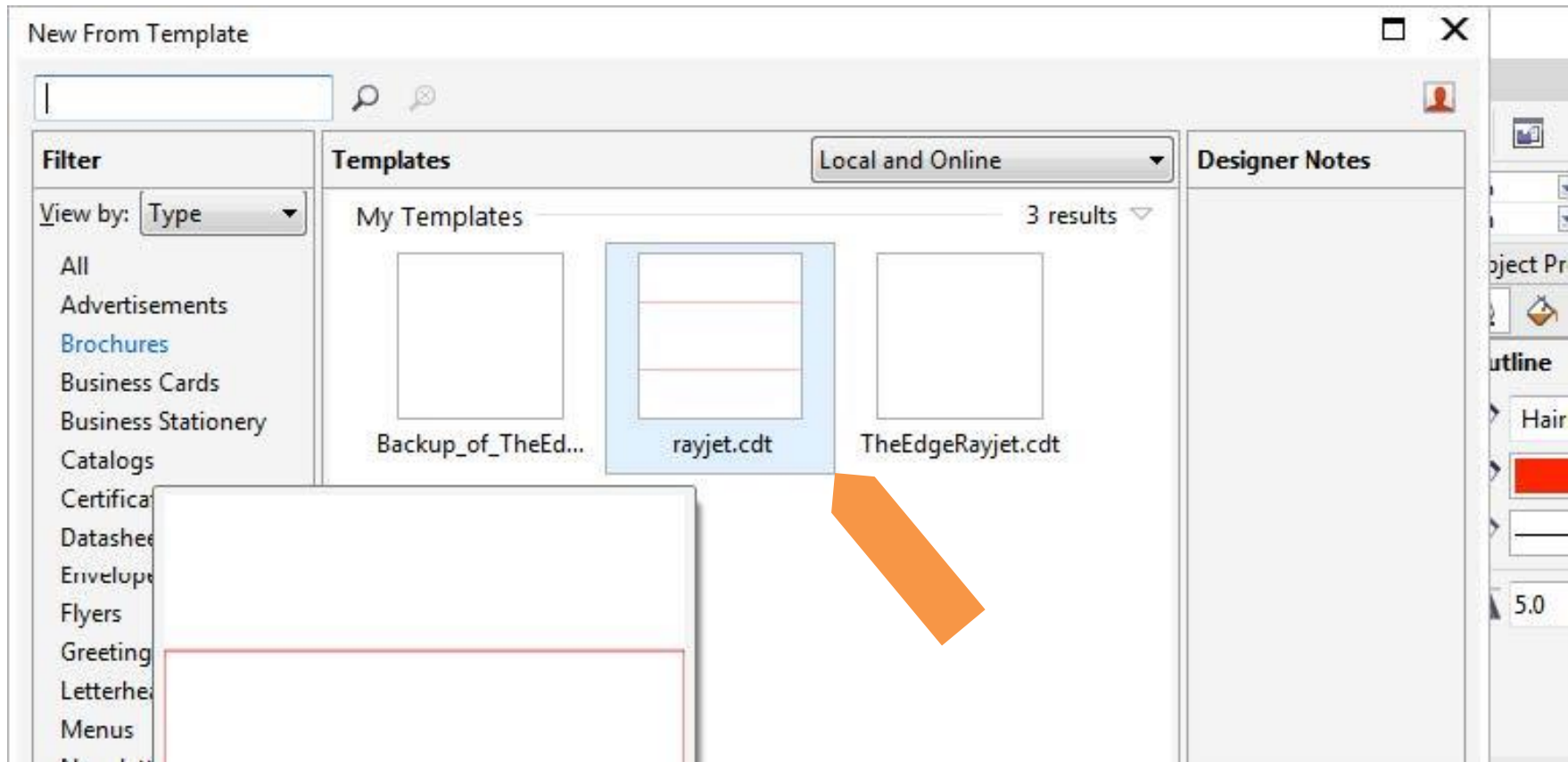
Workspace



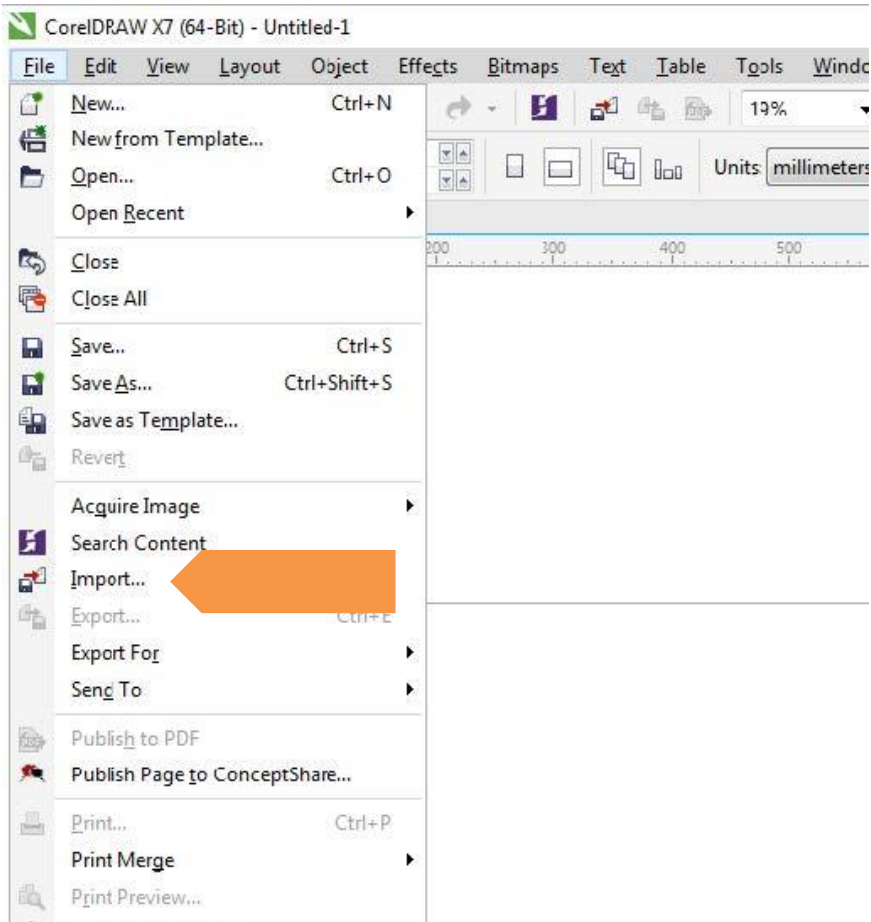
Select File > 'New from Template'



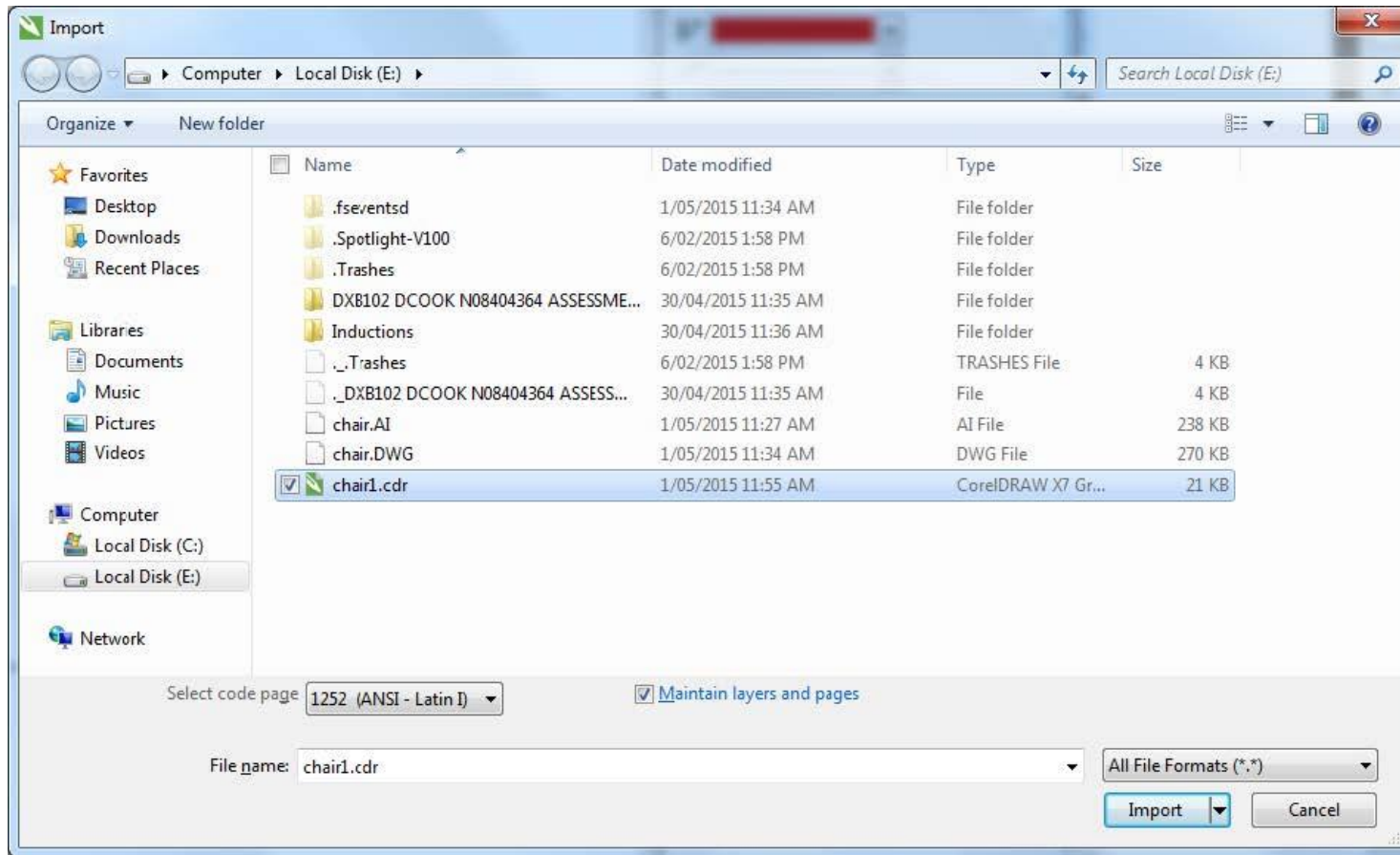
Choose 'rayjet.cdt' Template



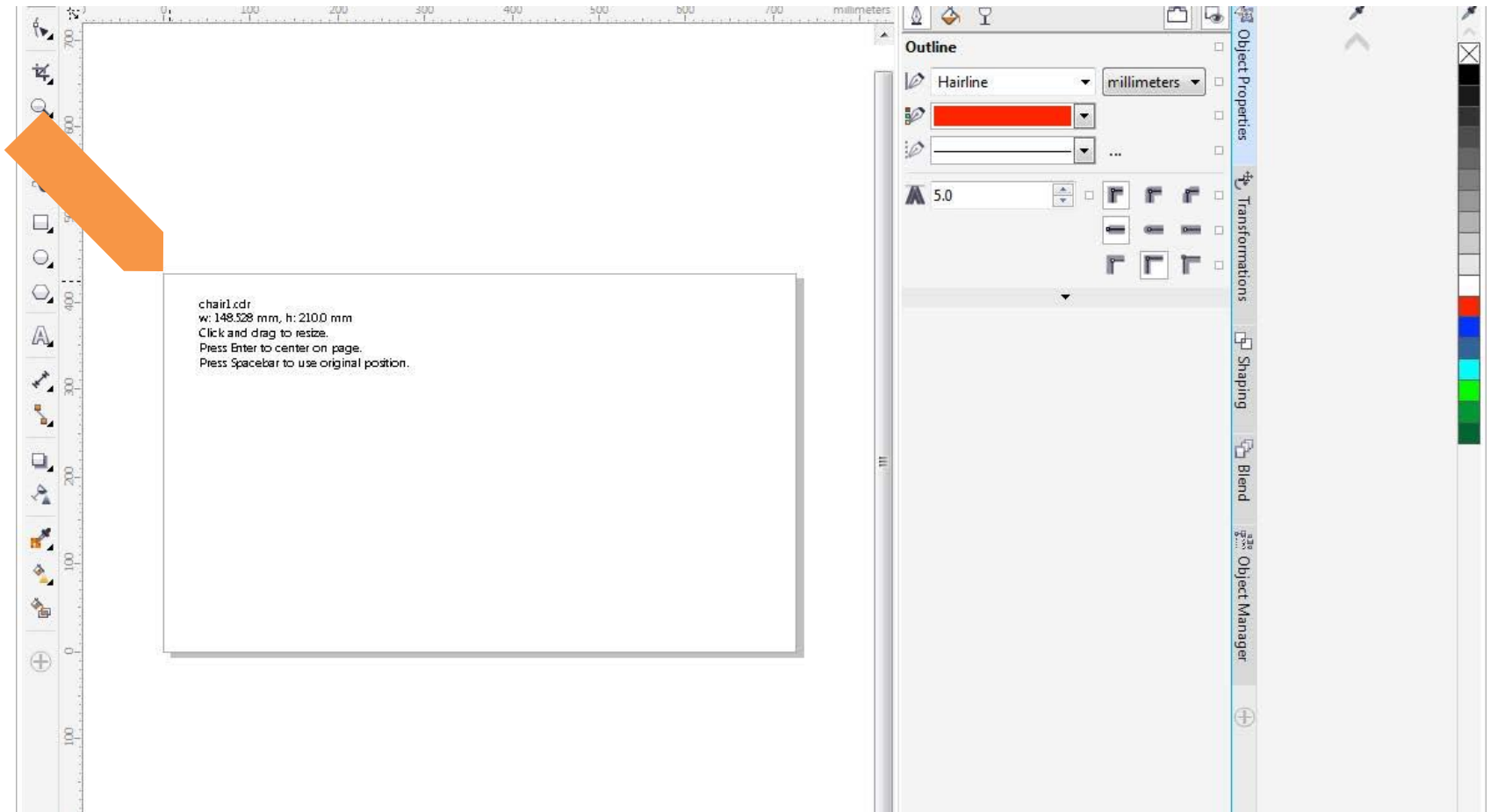
File > Import



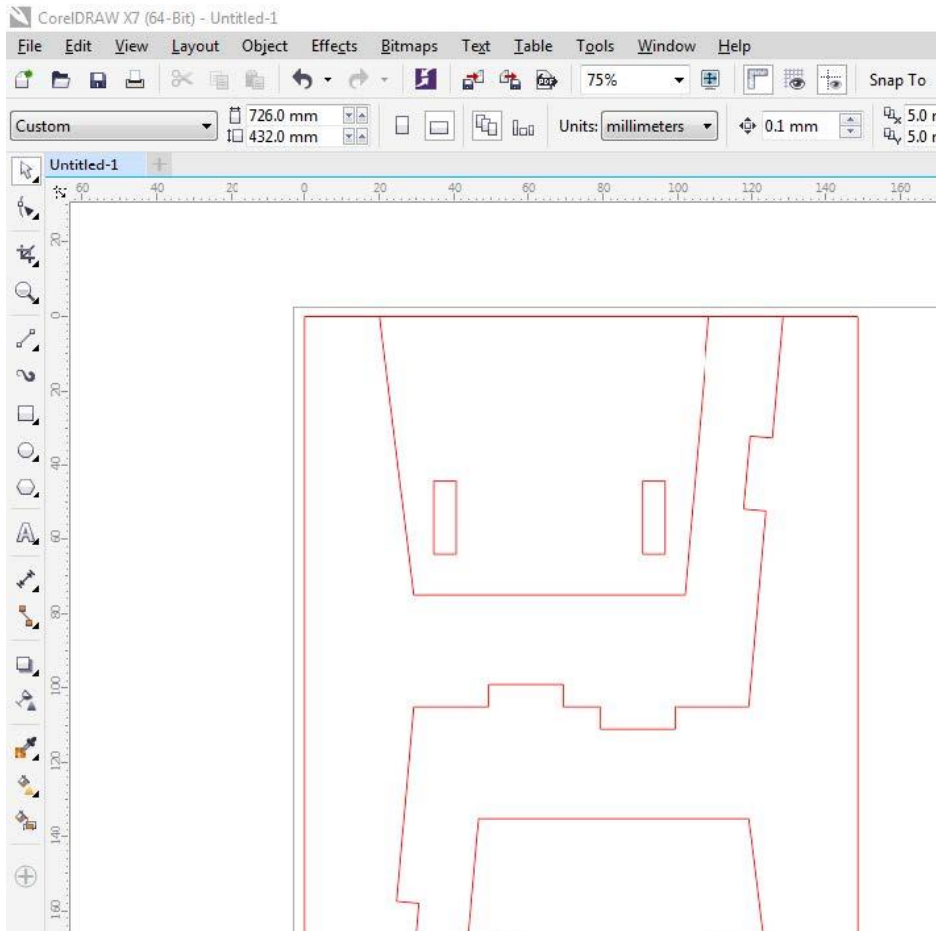
Select your file...



Place the file in the top left corner



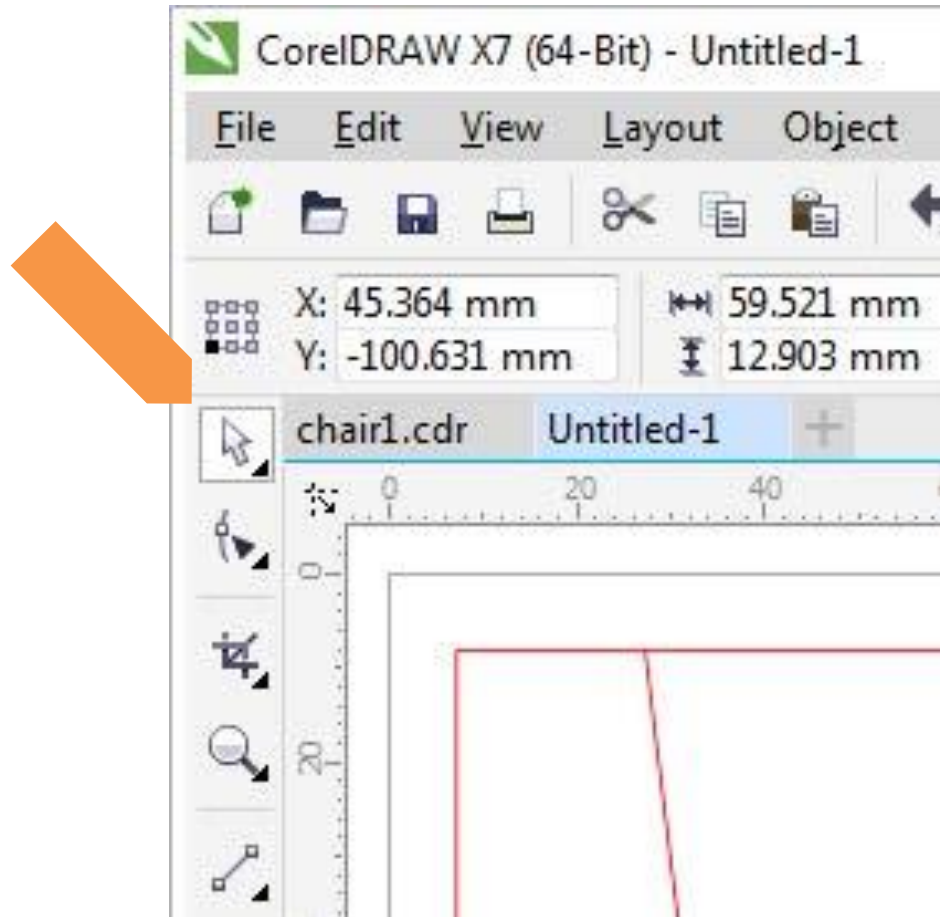
File is imported



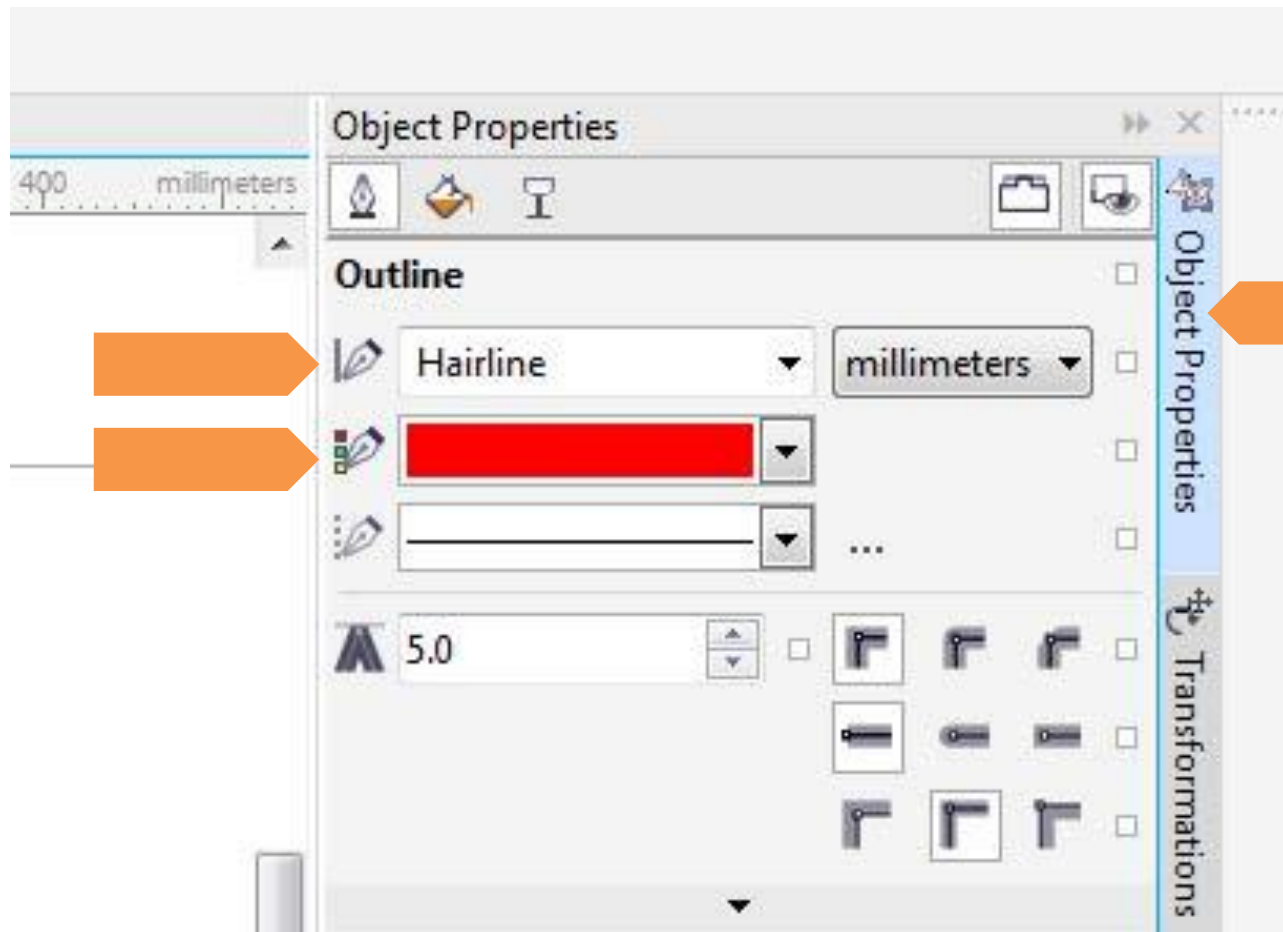
Use the selection arrow

This is used to select items within the program.

Use it to select the entire image by click-dragging a box over it.

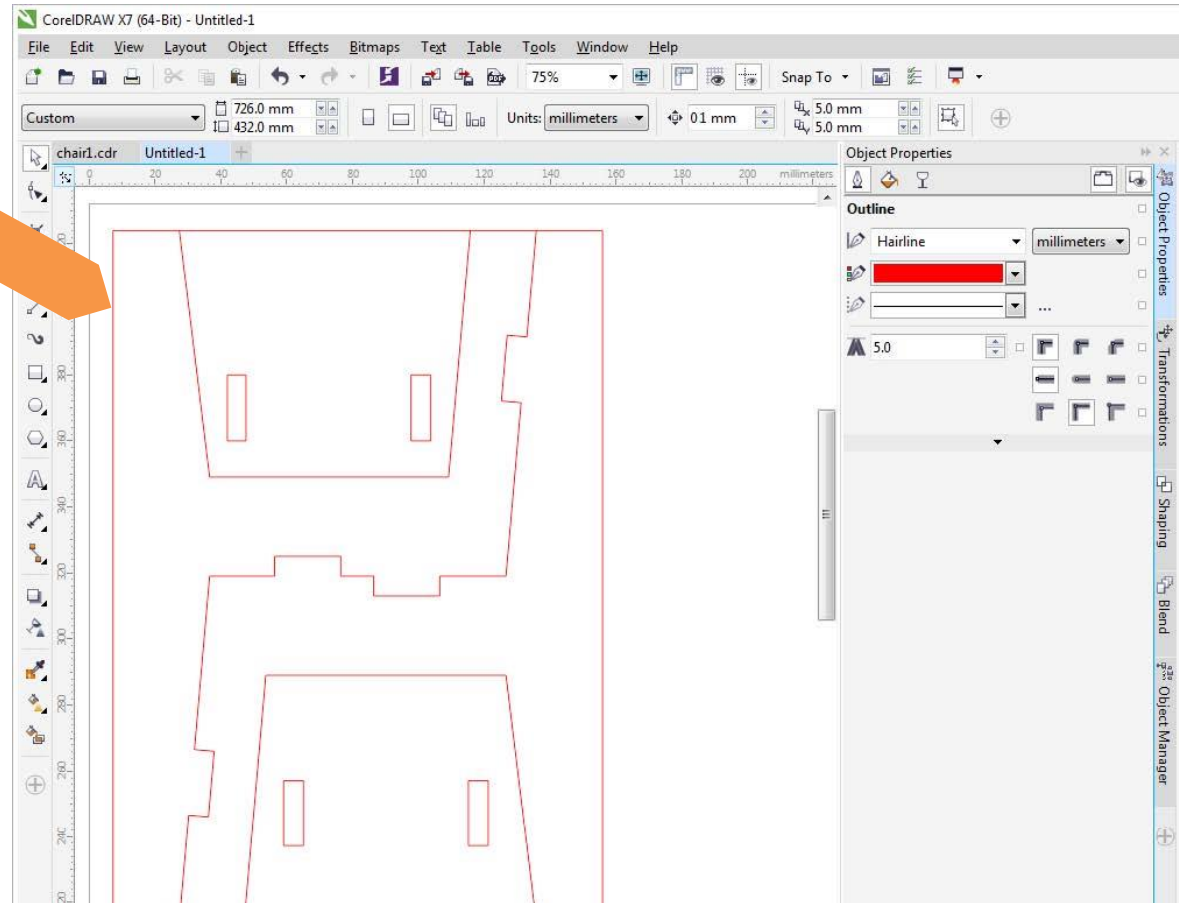


Cut paths MUST have a RED Hairline

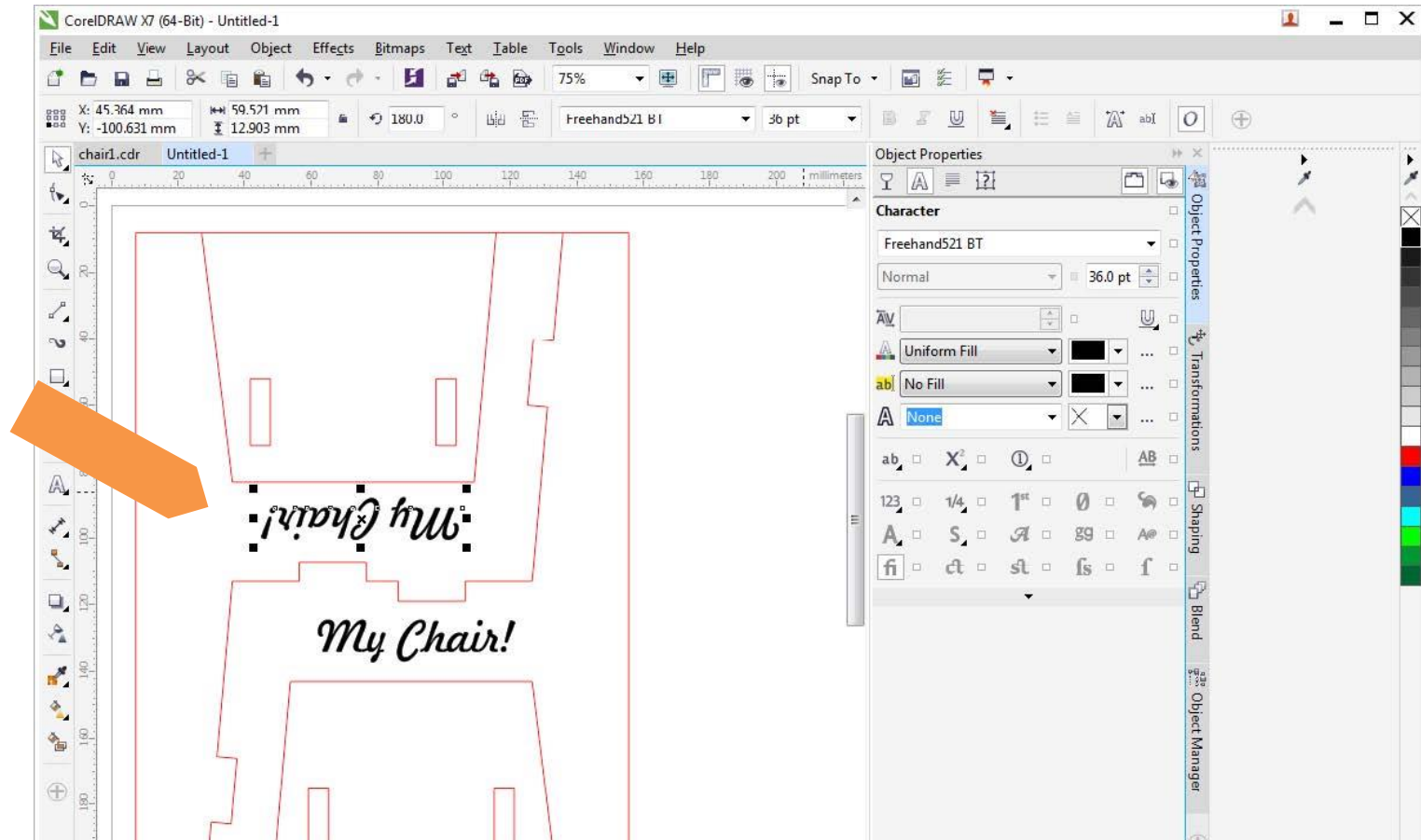


Check all cut lines are OK

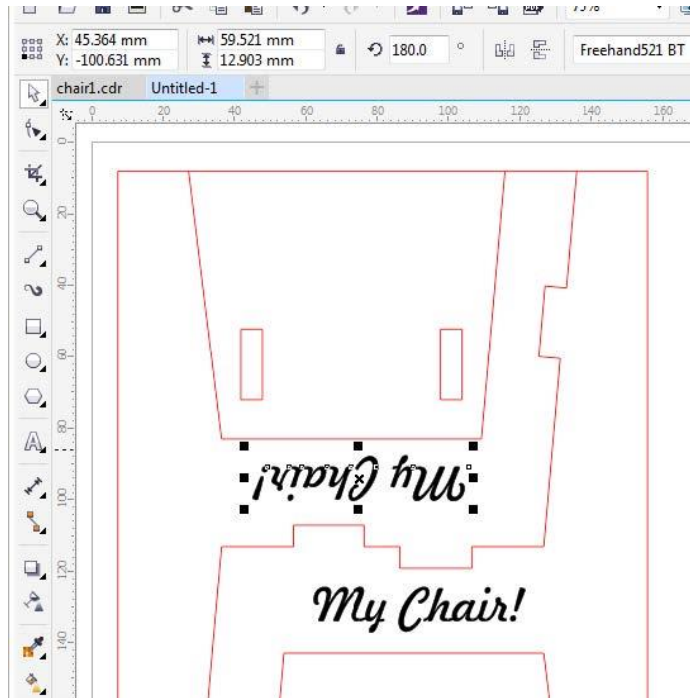
They should be a
RED HAIRLINE



Add some text



Use your colours!



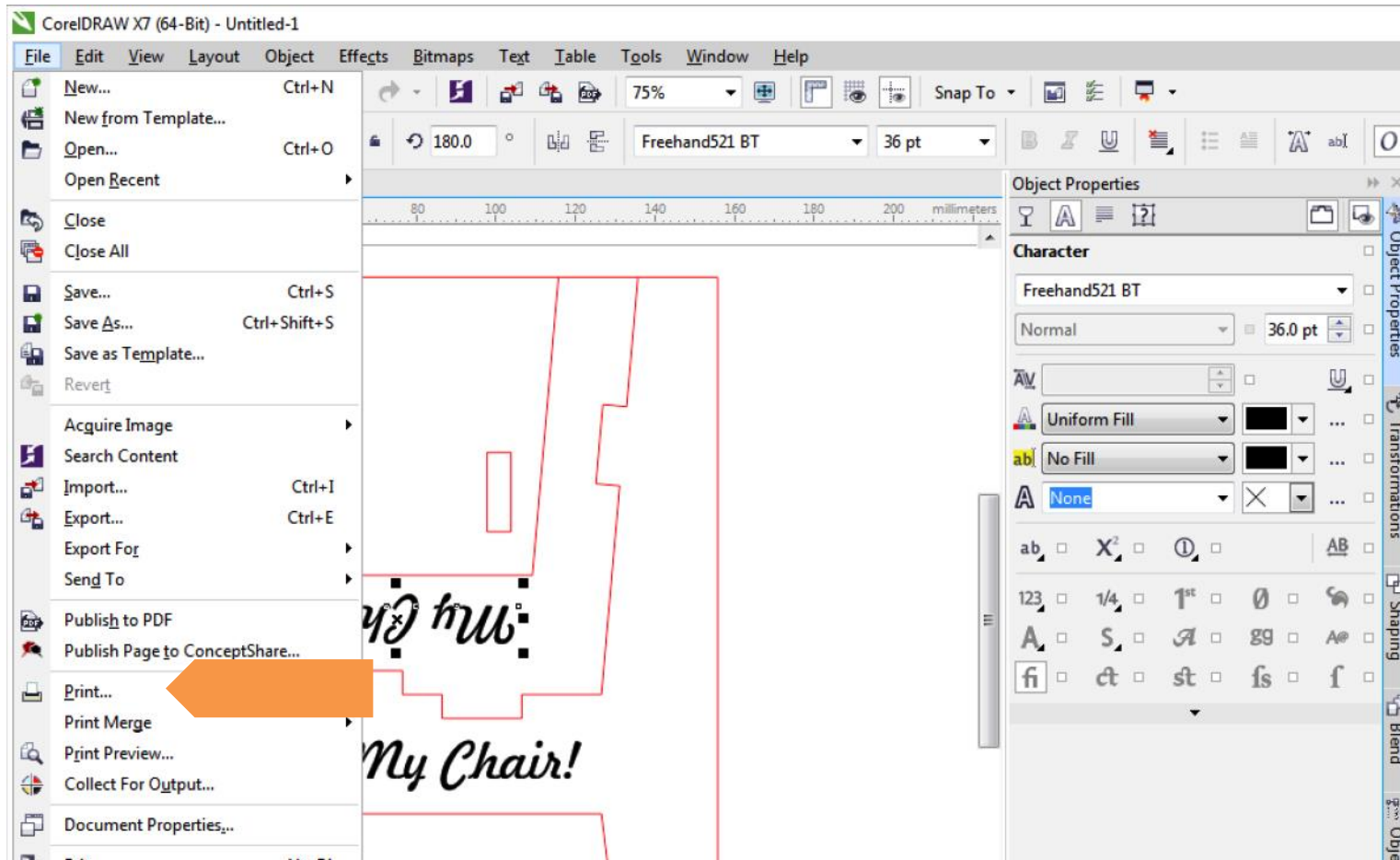
Colours can be used to set cut, engrave or cut orders

Red Hairline – Cut

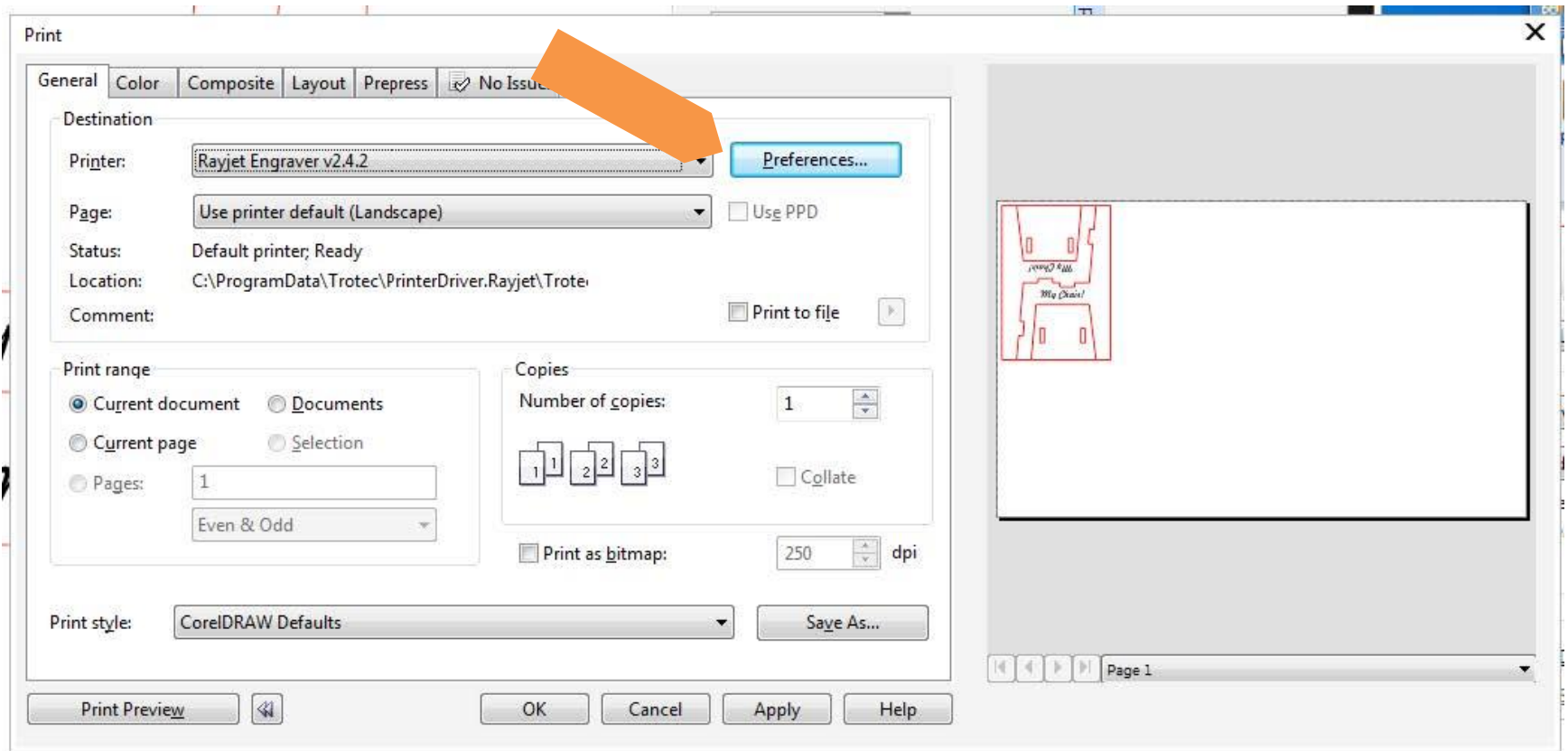
Engrave Power Setting Presets:

Colour	Red	Green	Blue
Red	255	0	0
Black	0	0	0
Blue	0	0	255
Desert Blue	51	102	153
Cyan	0	255	255
Green	0	255	0
Grass Green	0	153	51
Forest Green	0	102	51

File > Print



Go to 'Preferences' first



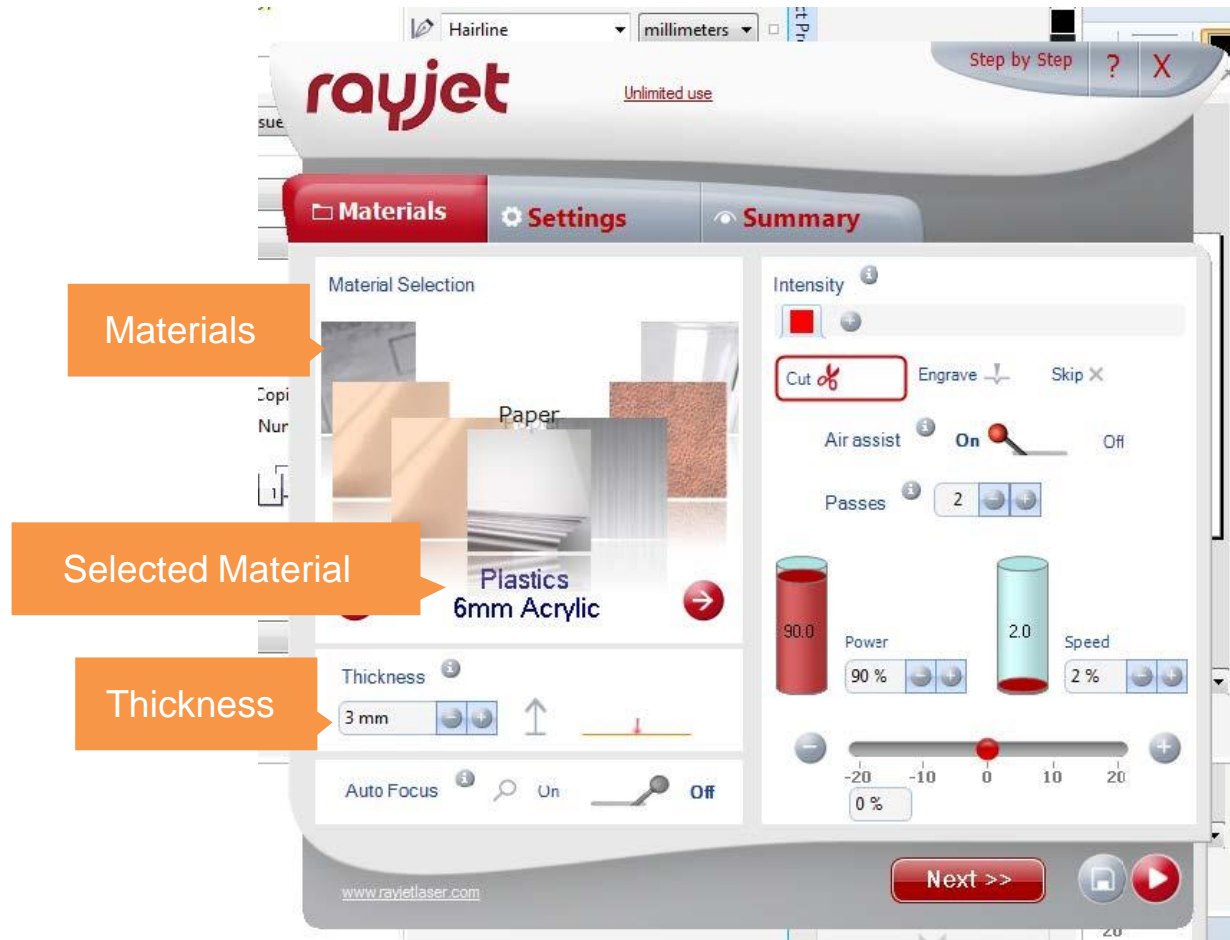
Setting up the Laser Cutter



Fire or fail!

- **BEWARE!**
- Incorrect settings will cause a fire...
- Or a print fail... and you still pay for the materials

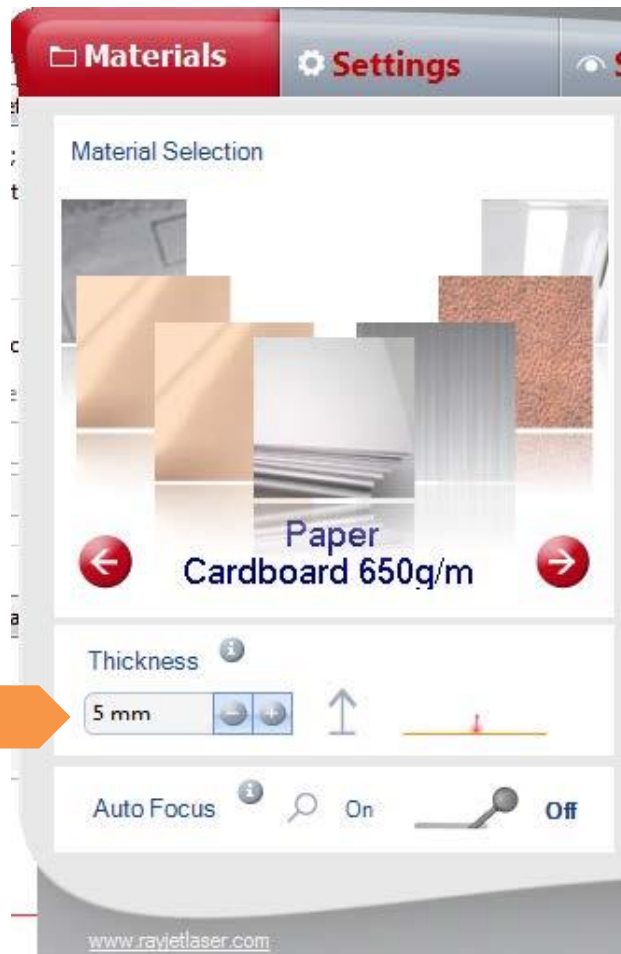
Setting up the configuration



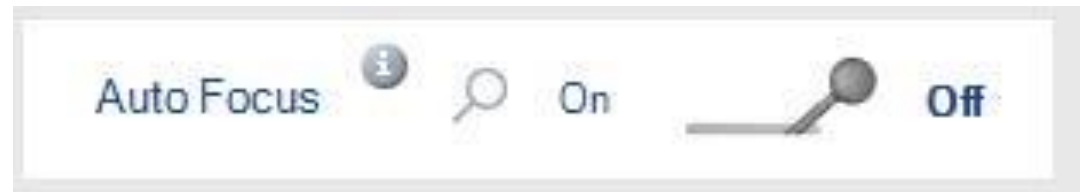
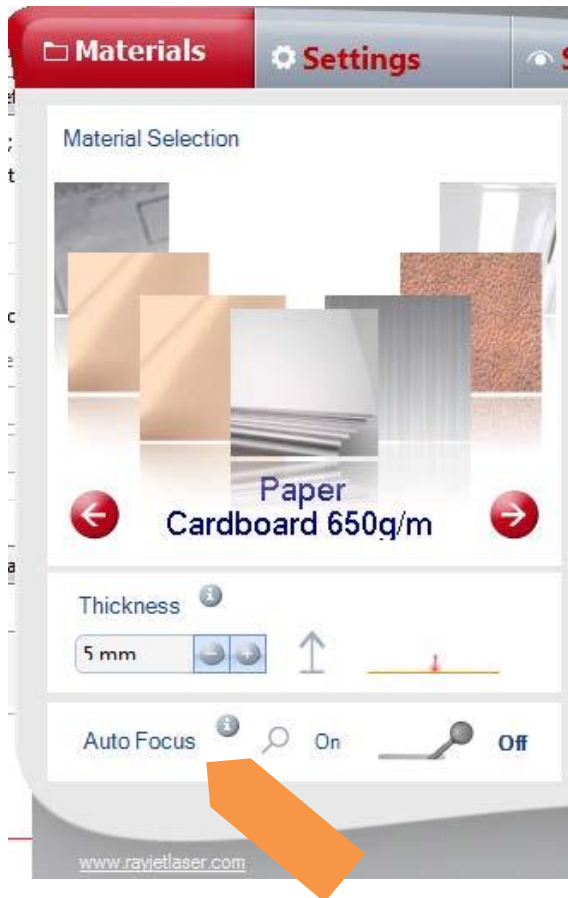
Set the material



Set the Thickness



Auto Focus is ALWAYS off



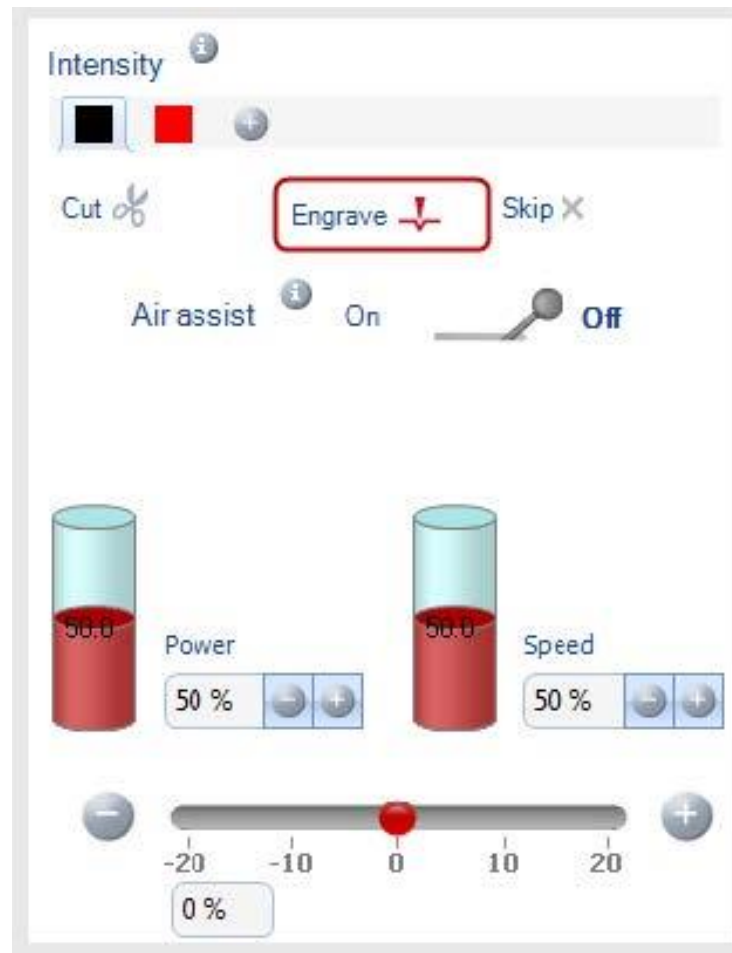
Why? This machine does not have an auto focus system. Switching on this setting will cause a head crash. This is bad and will require a service technician to rectify.

Setup the cut...

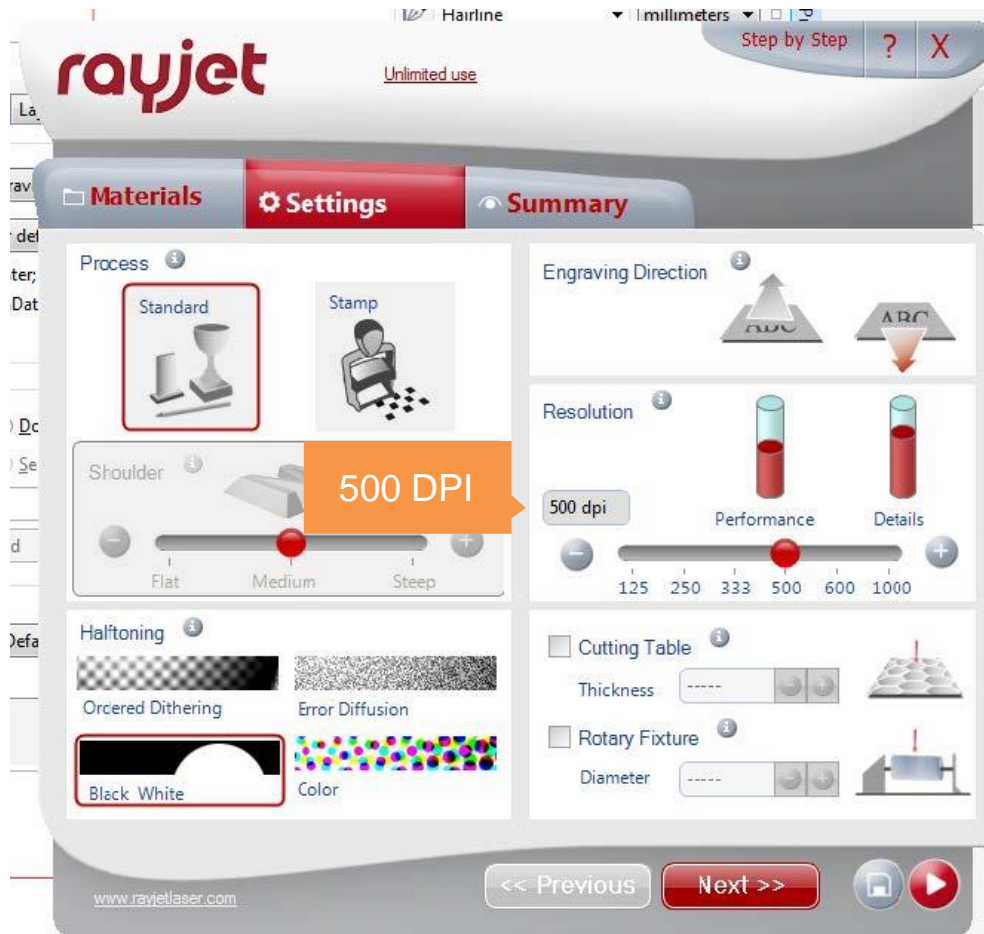
The image shows a screenshot of a laser control software interface with several settings. Orange callout boxes point to specific features:

- Colour Select:** Points to the color selection area showing black and red swatches.
- Operation Type:** Points to the 'Cut' button (scissors icon), 'Engrave' button (downward arrow), and 'Skip' button (X icon).
- Always ON!:** Points to the 'Air assist' toggle, which is currently set to 'On'.
- Times to repeat:** Points to the 'Passes' field, which is set to 2.
- Power Setting:** Points to the 'Power' section, which shows a cylinder with 30.0 and a '30 %' setting.
- Speed <> Accuracy:** Points to the 'Speed' section, which shows a cylinder with 2.0 and a '2 %' setting.
- Fine Tune:** Points to the 'Fine Tune' slider, which ranges from -20 to 20 and is currently at 0.

What's wrong here?



Check the settings...



Verify your settings

rayjet Unlimited use

Step by Step ? X

Materials Settings Summary

Material Group: Paper
Material: Card 350 gsm
Thickness: 3 mm
Auto Focus: ☐
Intensity: 0 %
Process: Standard
Shoulder: Medium
Halftoning: Black_White
Engraving Direction: Top Down
Resolution: 500 dpi
Cutting Table: ☐
Rotary Fixture: ☐

Quantity: 1
Job Start: ☐ Software Print Button ☒ Rayjet Start Button

Make sure this is checked

<< Previous

www.rayjetlaser.com

Upload your settings

The image shows a screenshot of the Rayjet software interface. At the top, the 'rayjet' logo is displayed in red, followed by 'Unlimited use' in a smaller font. To the right of the logo, there are three buttons: 'Step by Step', a question mark icon, and a close 'X' icon. Below the header, there are three tabs: 'Materials', 'Settings' (which is currently selected and highlighted in red), and 'Summary'. The main settings area is divided into two columns. The left column contains the following settings: 'Material Group' (set to 'Paper'), 'Material' (set to 'Card 350 gsm'), 'Thickness' (set to '3 mm'), 'Auto Focus' (unchecked), 'Intensity' (set to '0 %' with a red color swatch), 'Process' (set to 'Standard'), 'Shoulder' (set to 'Medium'), 'Halftoning' (set to 'Black_White'), 'Engraving Direction' (set to 'Top Down'), 'Resolution' (set to '500 dpi'), 'Cutting Table' (unchecked), and 'Rotary Fixture' (unchecked). The right column contains: 'Quantity' (set to '1'), 'Job Start' (with radio buttons for 'Software Print Button' and 'Rayjet Start Button', where 'Rayjet Start Button' is selected), and a small information icon. At the bottom of the interface, there is a 'Previous' button with a double left arrow, and two circular buttons: a square icon and a red play button icon. An orange callout box points to the red play button icon with the text 'Upload to printer'. The website 'www.rayjetlaser.com' is visible in the bottom left corner of the software window.

rayjet Unlimited use

Step by Step ? X

Materials Settings Summary

Material Group Paper

Material Card 350 gsm

Thickness 3 mm

Auto Focus ☐

Intensity 0 %

0 %

Process Standard

Shoulder Medium

Halftoning Black_White

Engraving Direction Top Down

Resolution 500 dpi

Cutting Table ☐

Rotary Fixture ☐

Quantity 1

Job Start ☐ Software Print Button ☒ Rayjet Start Button

Previous

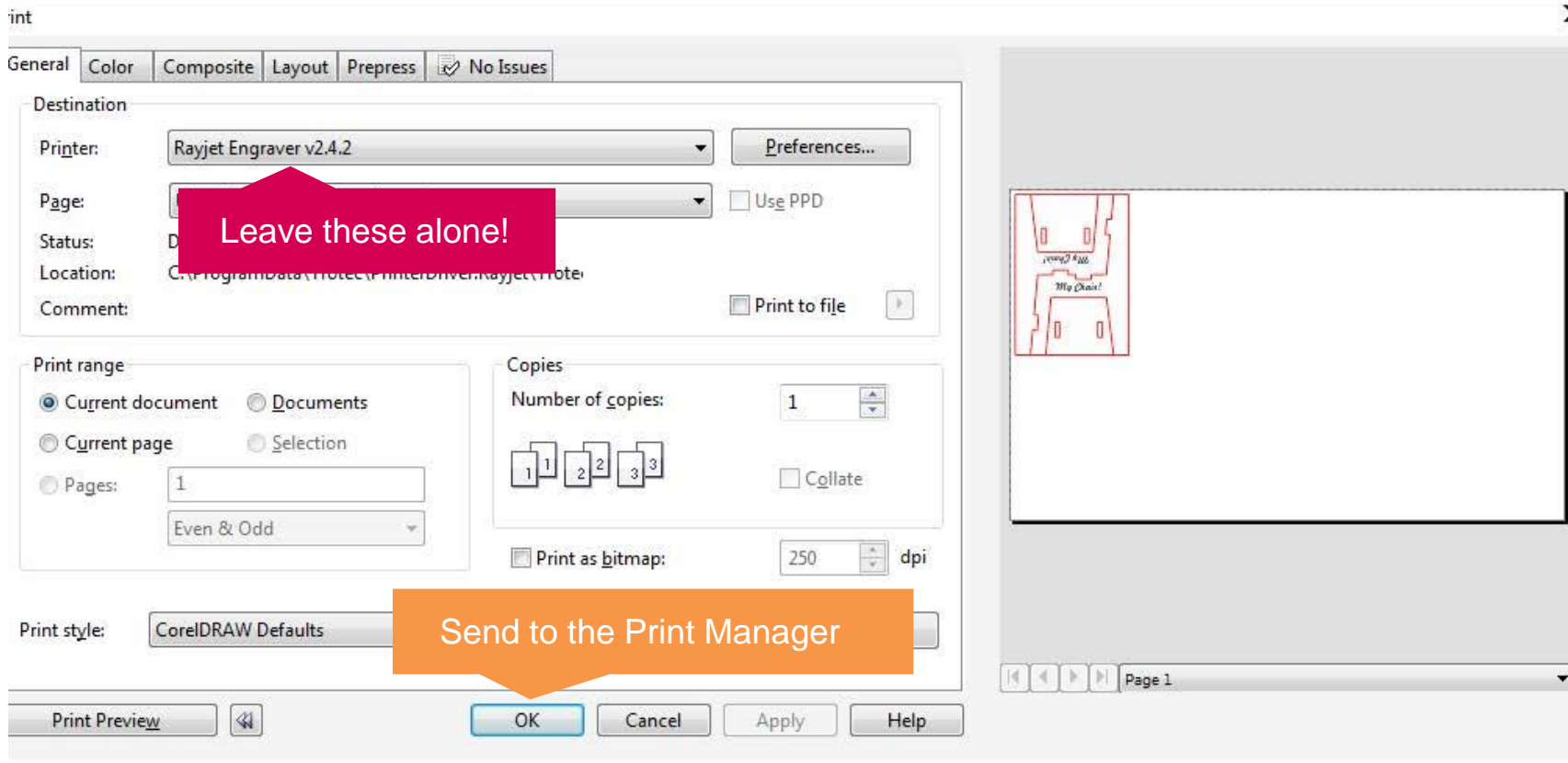
www.rayjetlaser.com

Upload to printer

But...



When configured, hit OK!

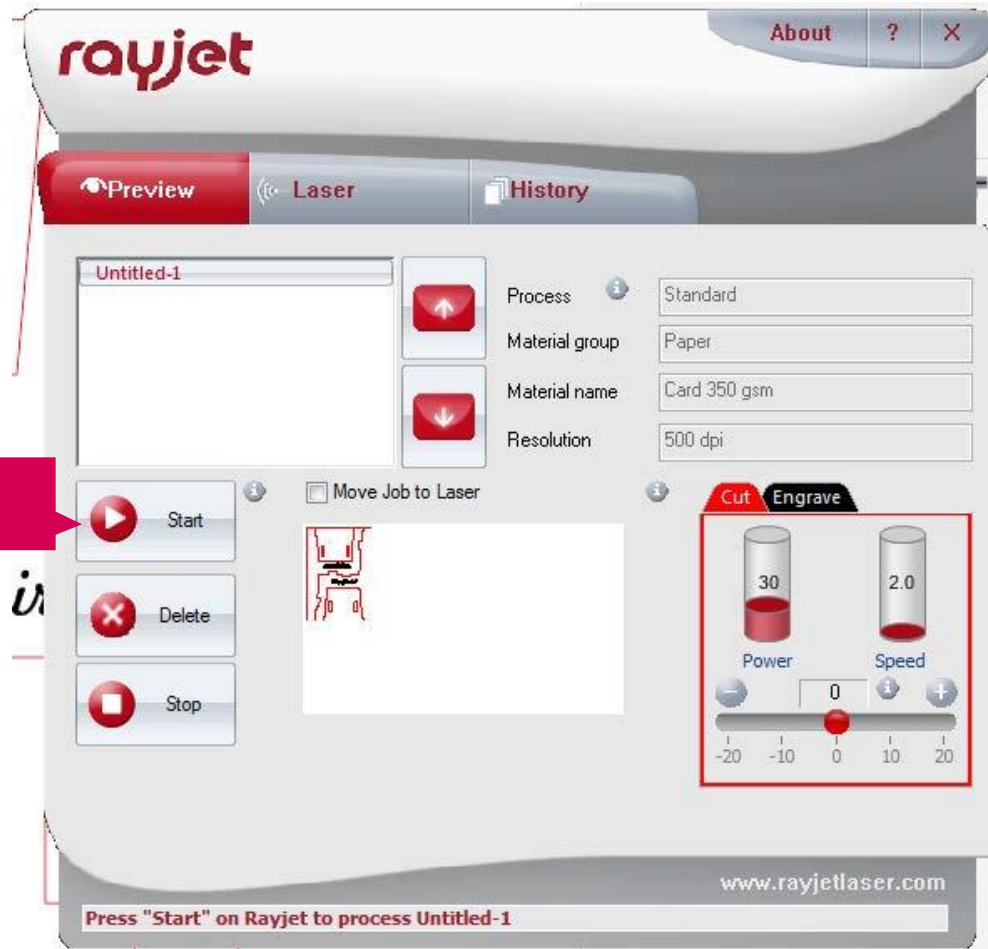


Now load the Print Manager



Load the Print Manager

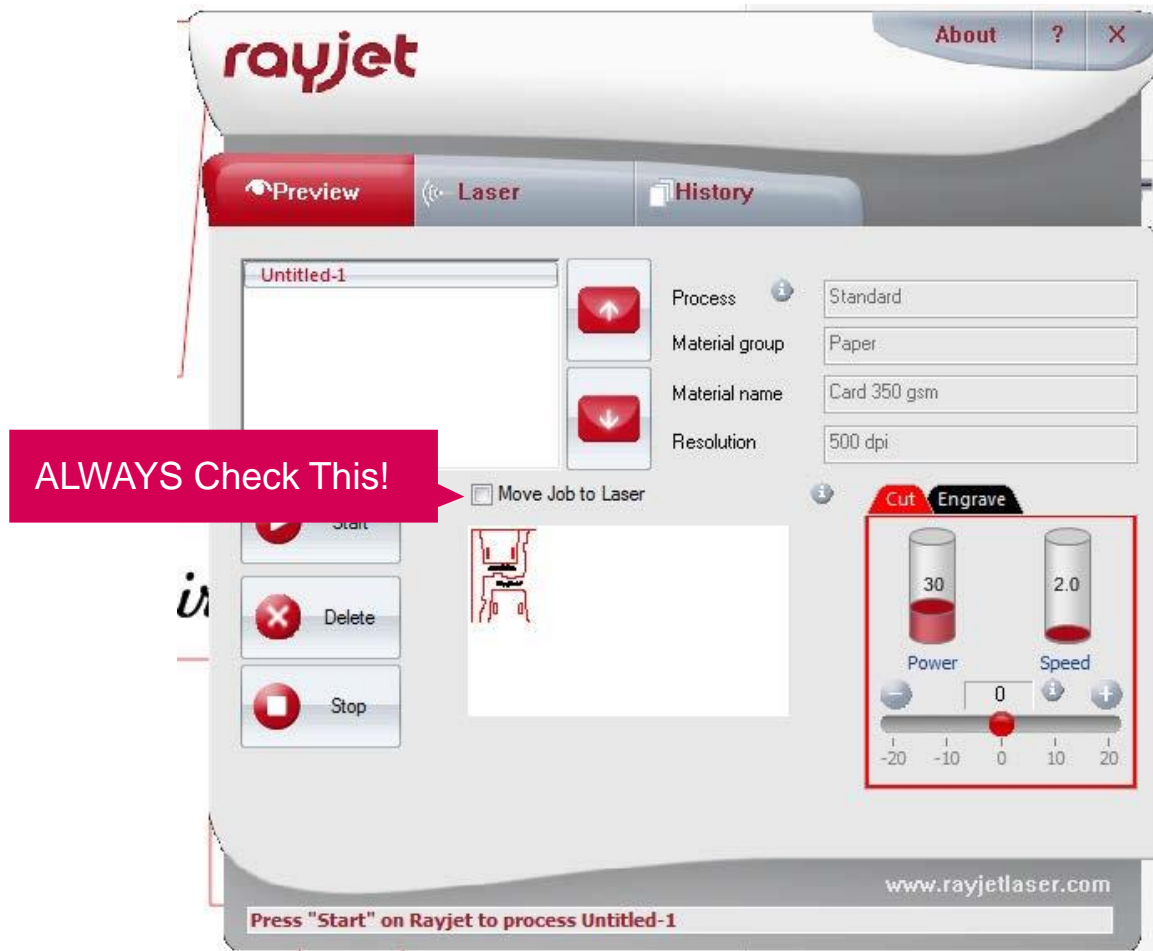
The Print Manager...

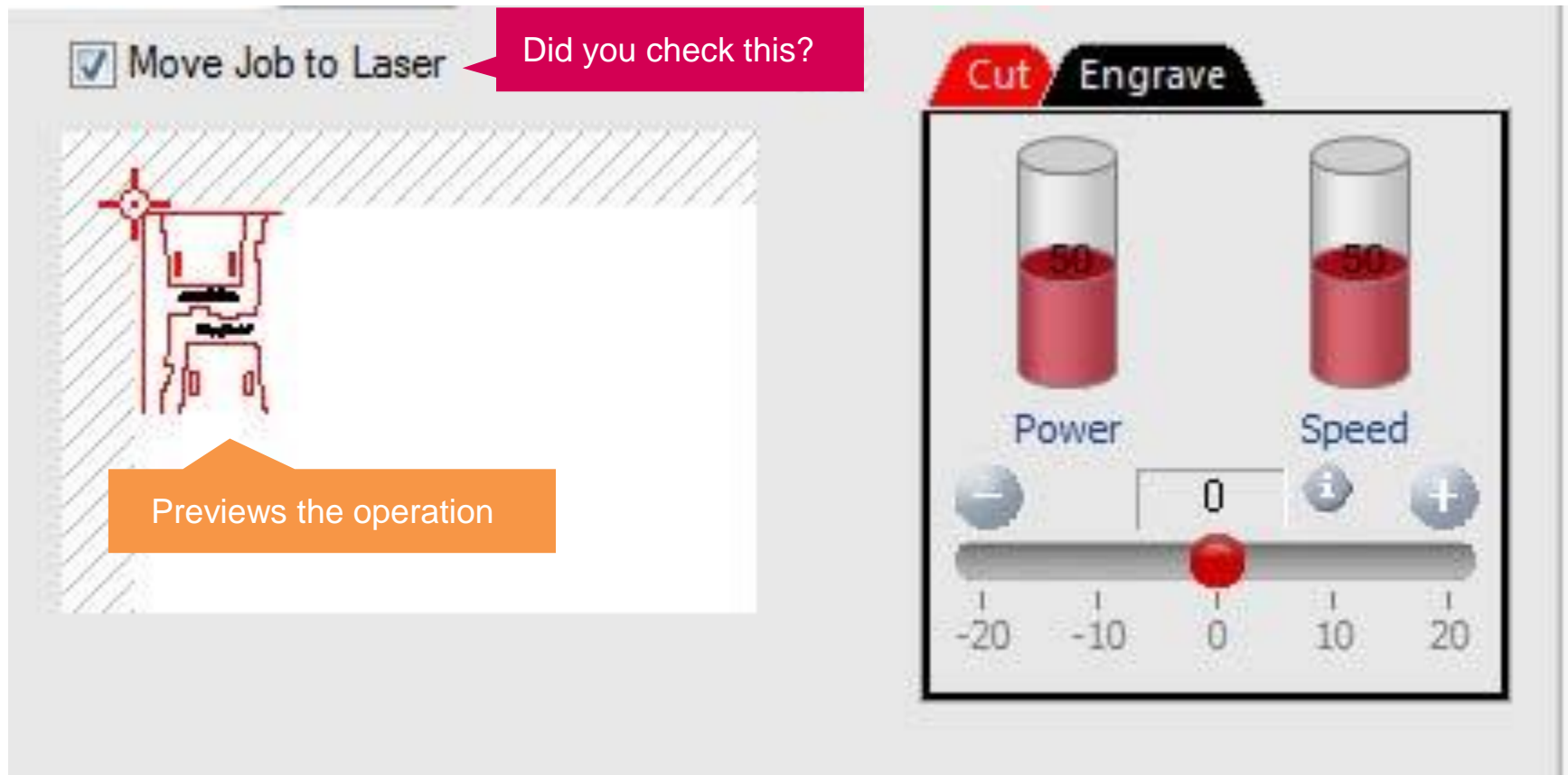


The Print Manager...



Always use Move Job to Laser





When previewing you should see the whole image with the colours you selected...

Press start on the laser cutter!

Press "Start" on Rayjet to process Untitled-1



The Extractor

The HEPA grade air filter will extract all smoke. Ensure it has automatically come on by looking for this light...



The print job will start!



Keep watch!

- Keep an eye on the cut in case of fire or issues with the print
- Usually, all engraving starts first, then the cutting
- In an emergency, lift the lid to stop the cut

Complete!



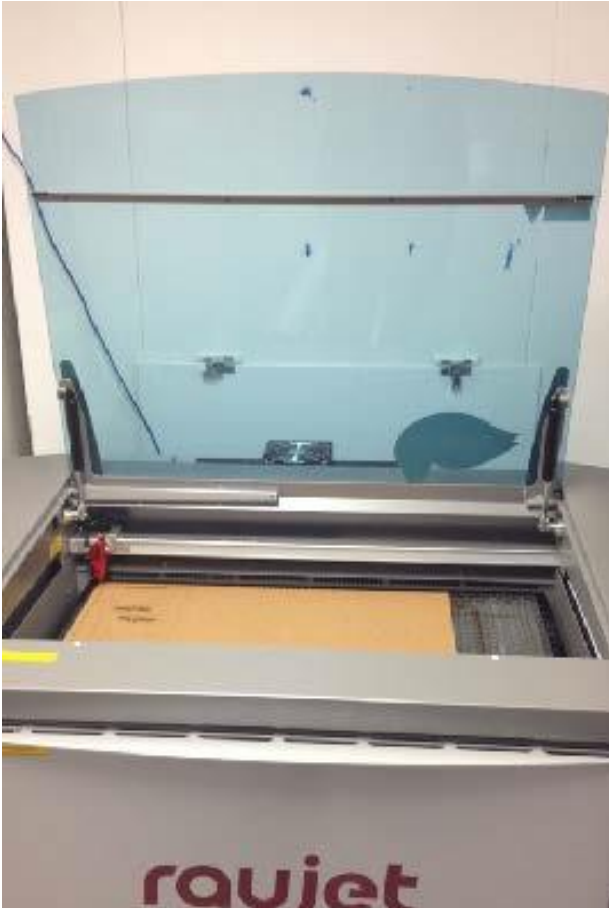
The laser will move back to it's home position.

BEFORE you lift the lid:

- Use the keypad to lower the bed. This prevents damage to the head when removing material.
- Wait... at least 30 seconds for the smoke to clear



Carefully remove the work piece



And you're done!

Make sure you remove all cut material.

If some material has dropped into the honeycomb, alert the supervisor who will remove it for you.

Final Questions

- What do you do if the lens is dirty?
- What do you do if the honeycomb is not located properly?
- What do you do if the work piece catches on fire?
- What do you do if the machine makes unusual noises?