



# 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  
½ A4 size:  
148.5mm x 210mm on  
4.5mm card

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

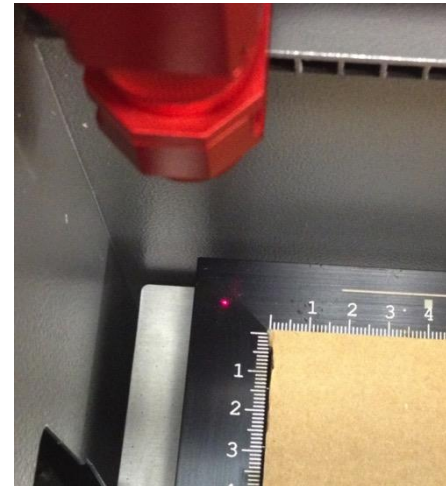


# Inside the machine



# Let's start

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



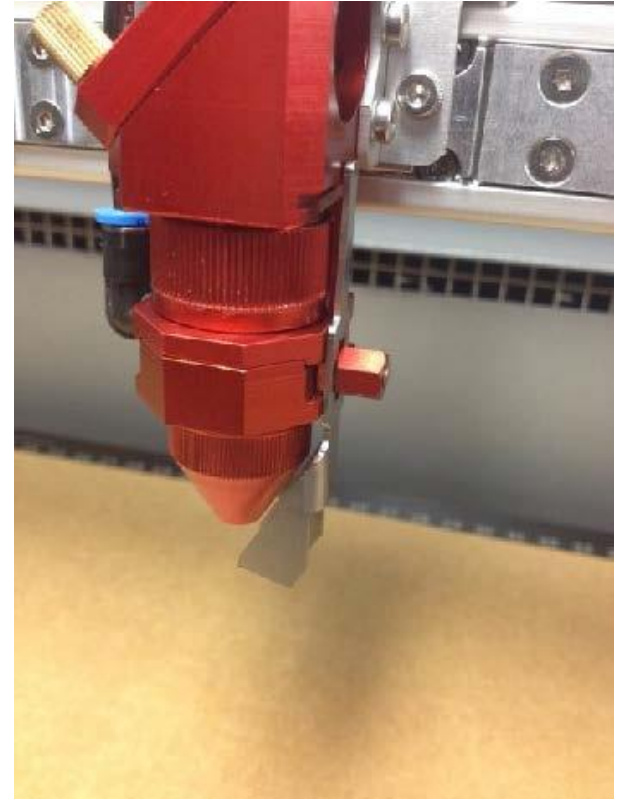
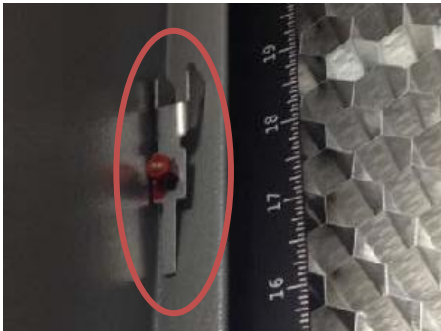
# Position the laser head





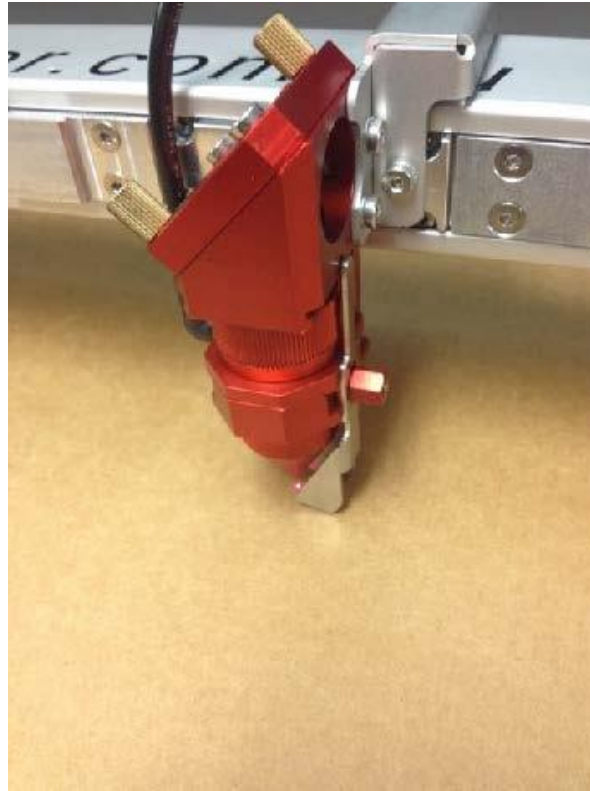
# Check the focal distance

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!

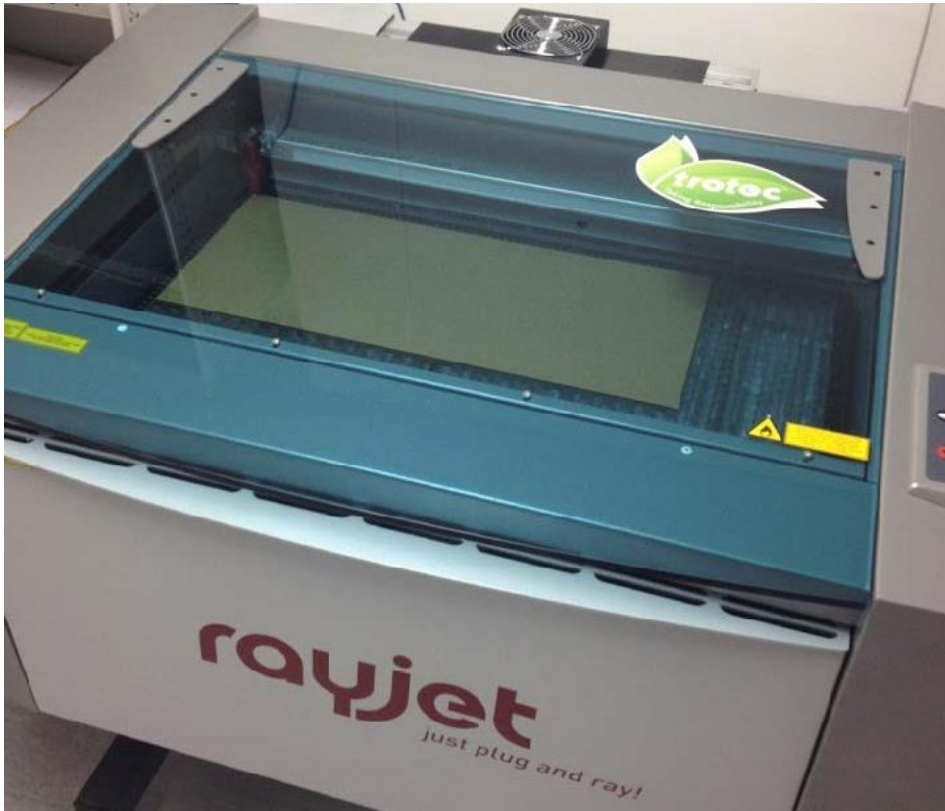
# Position the laser



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

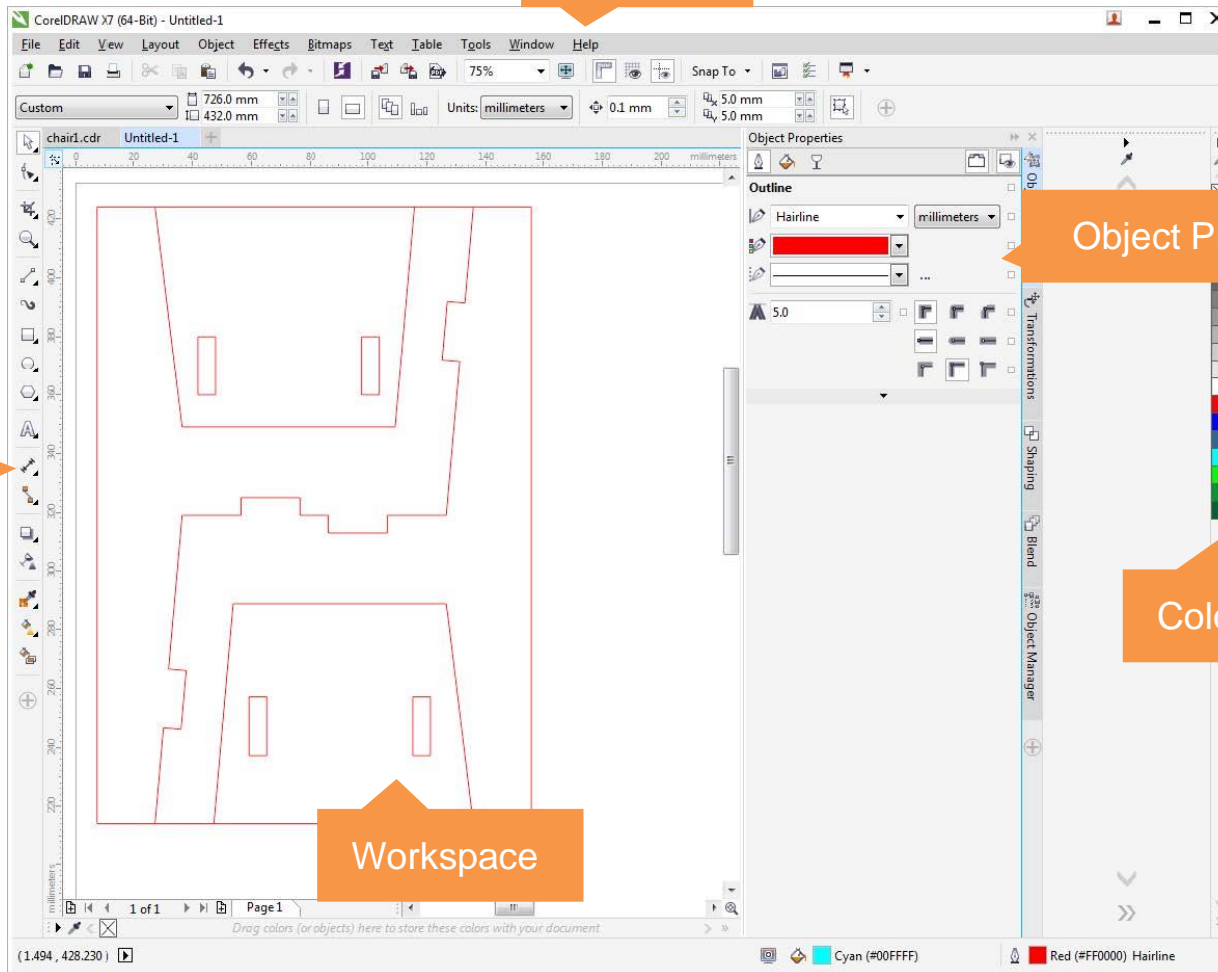
Menu bar

Toolbar

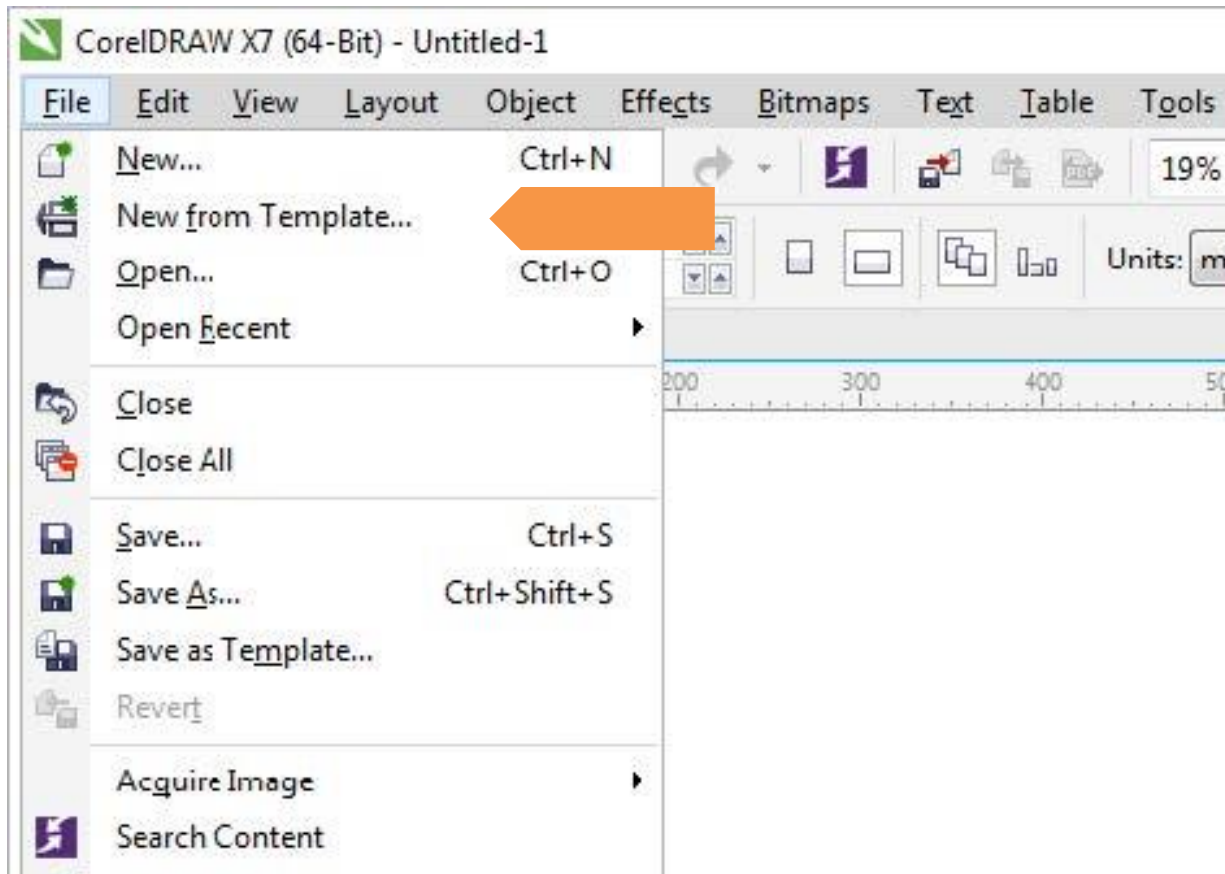
Object Properties

Colour Palette

Workspace

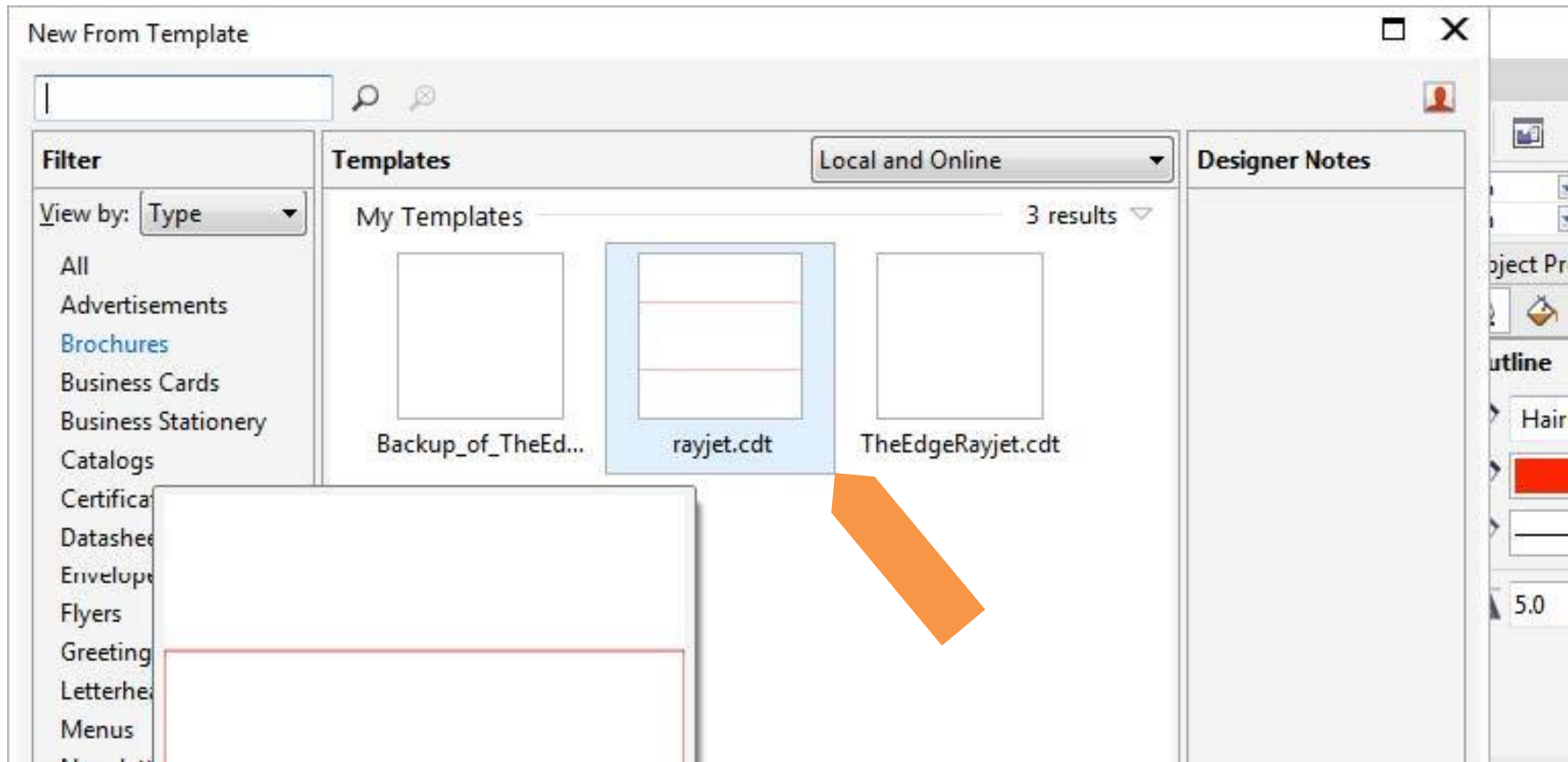


# Select File > 'New from Template'

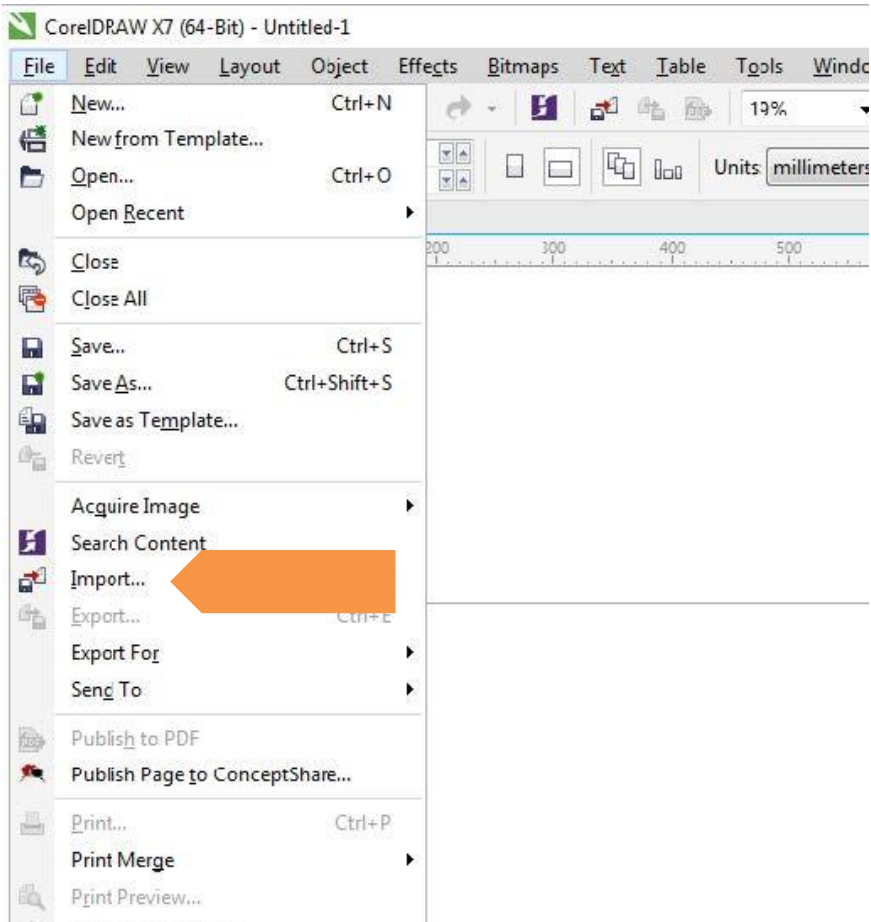




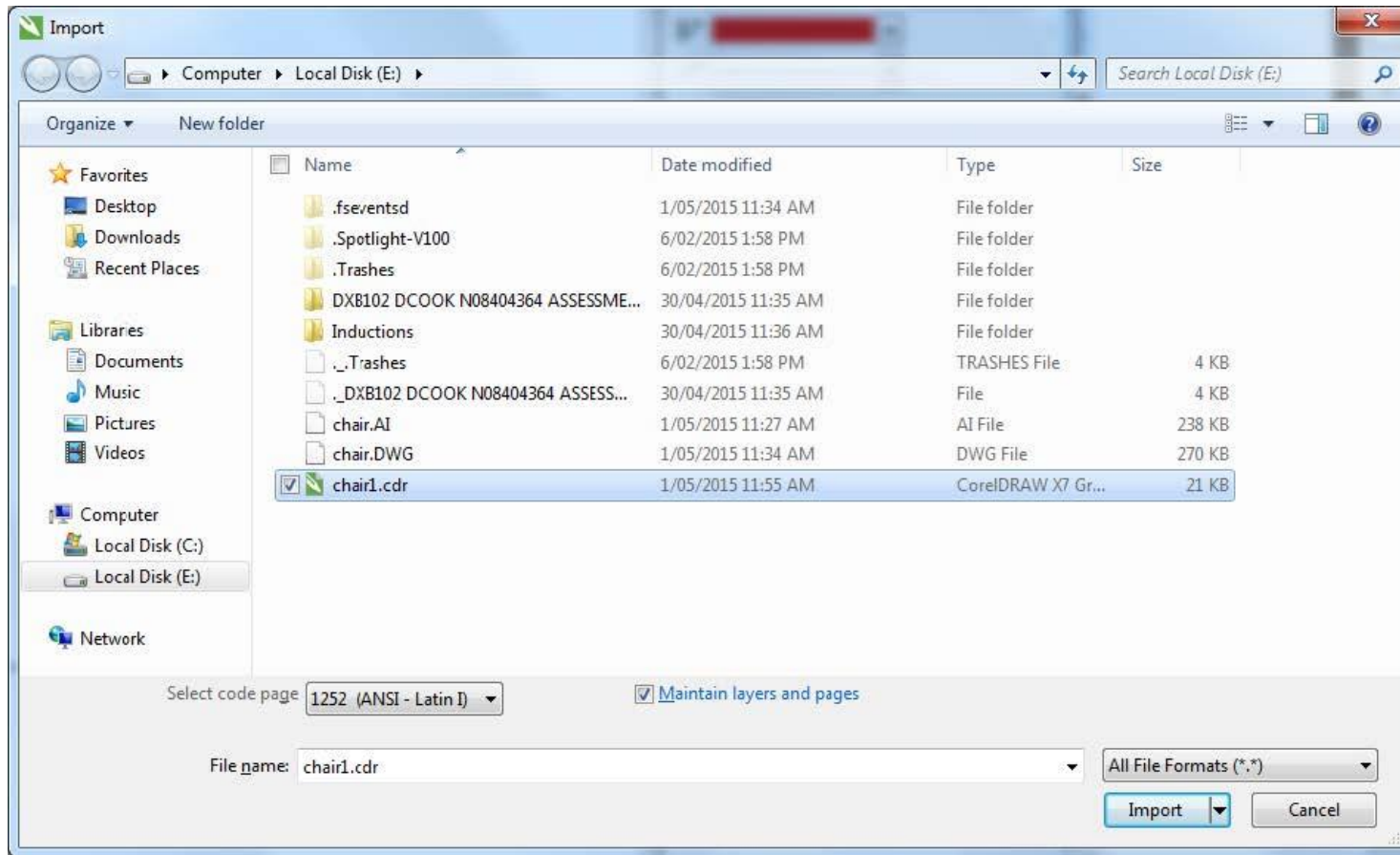
# Choose 'rayjet.cdt' template



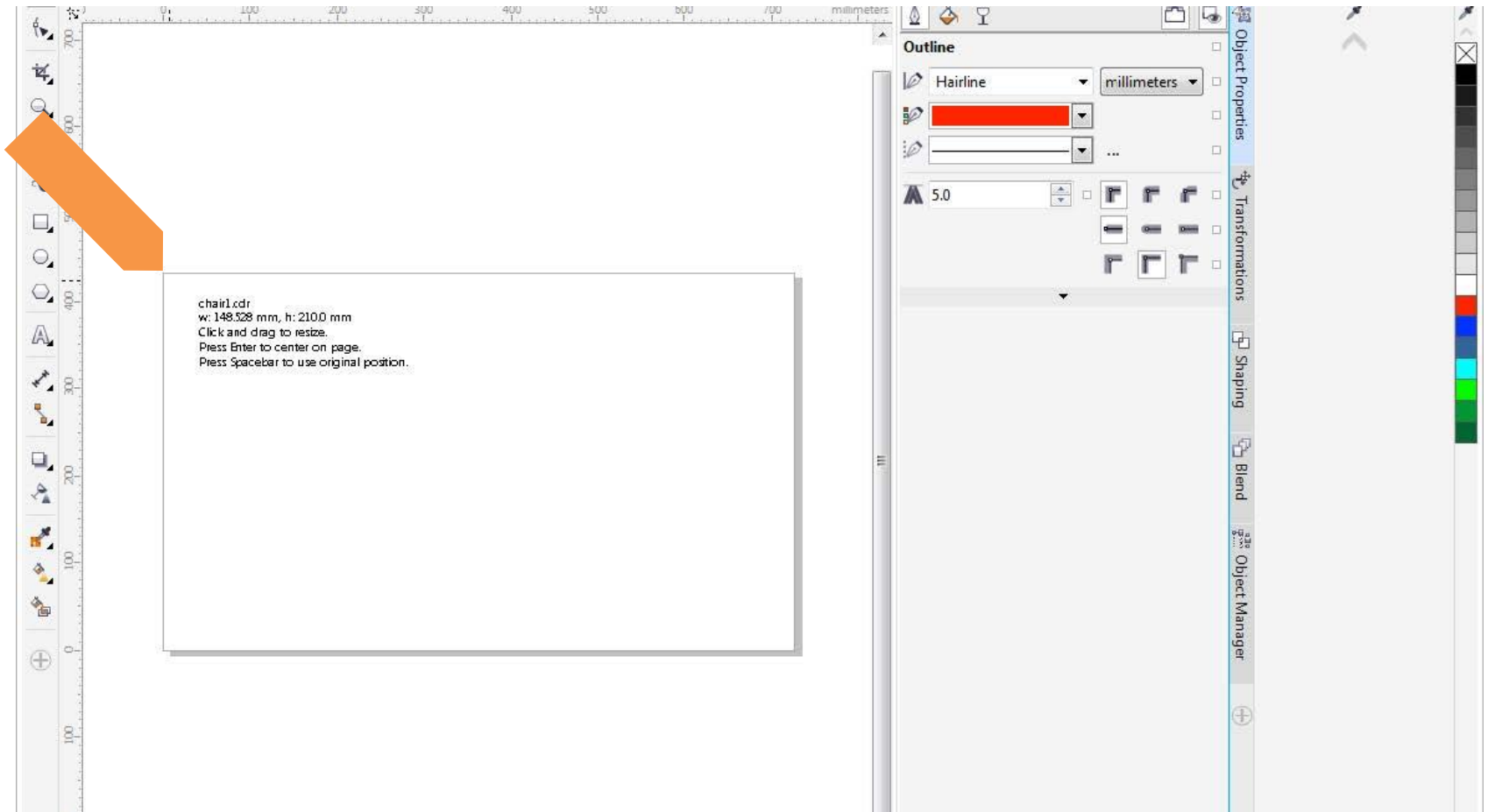
# File > Import



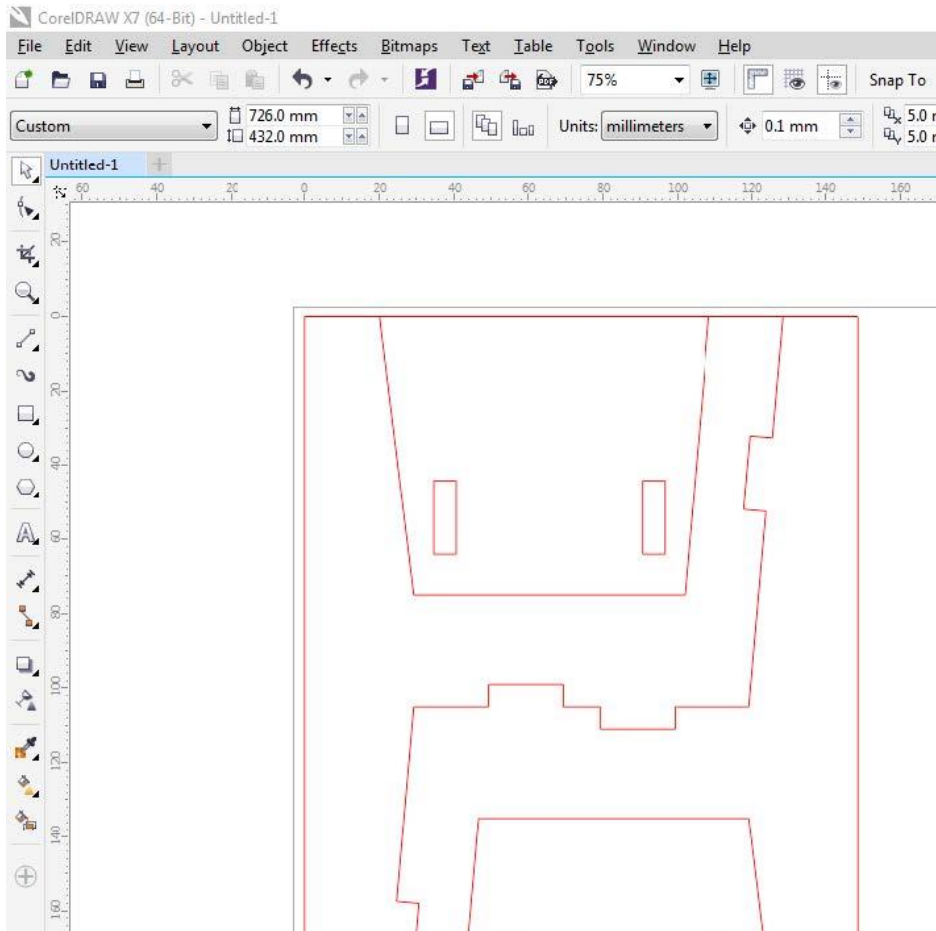
# Select your file...



# Place the file in the top left corner



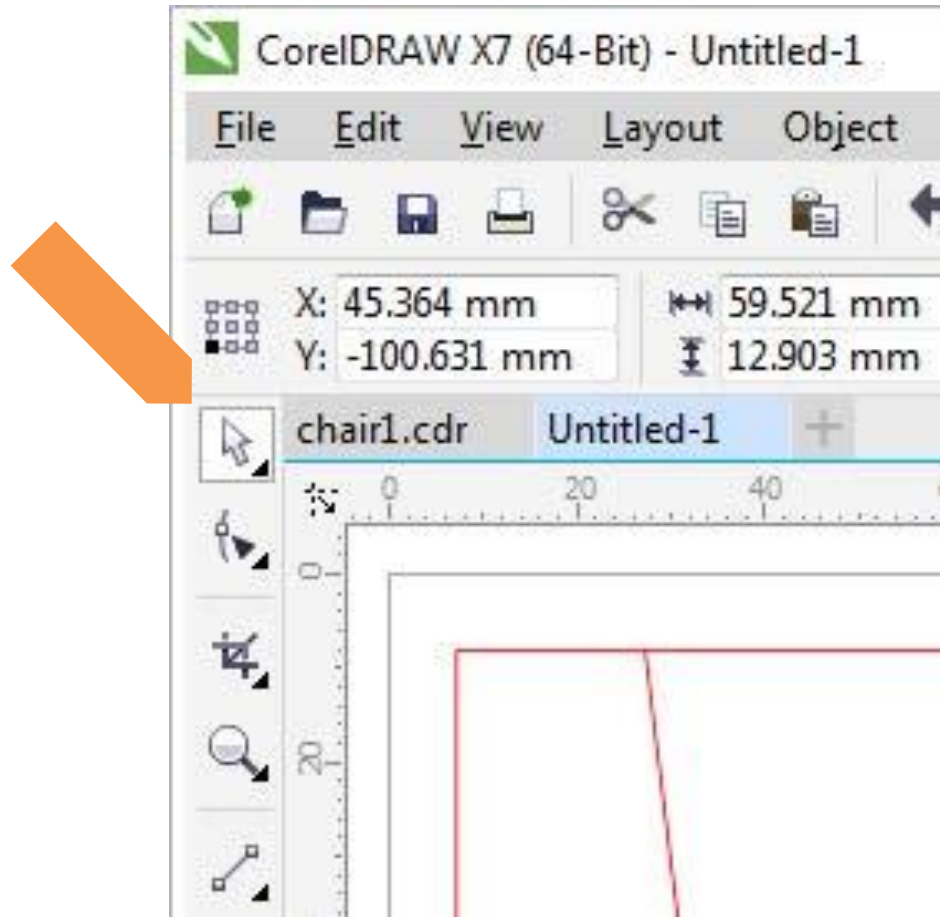
# File is imported



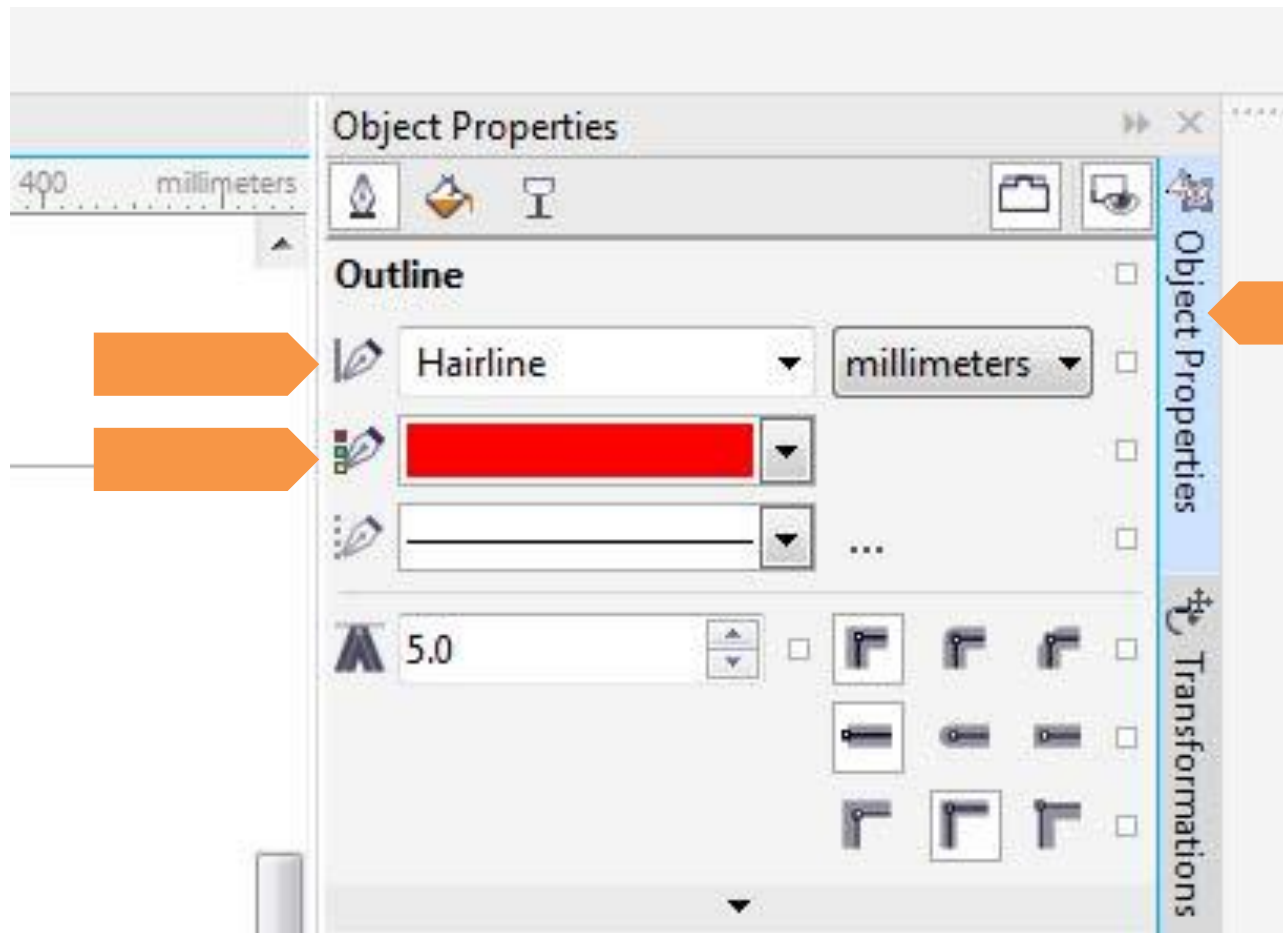
# Use the selection arrow

This is used to select items within the program.

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

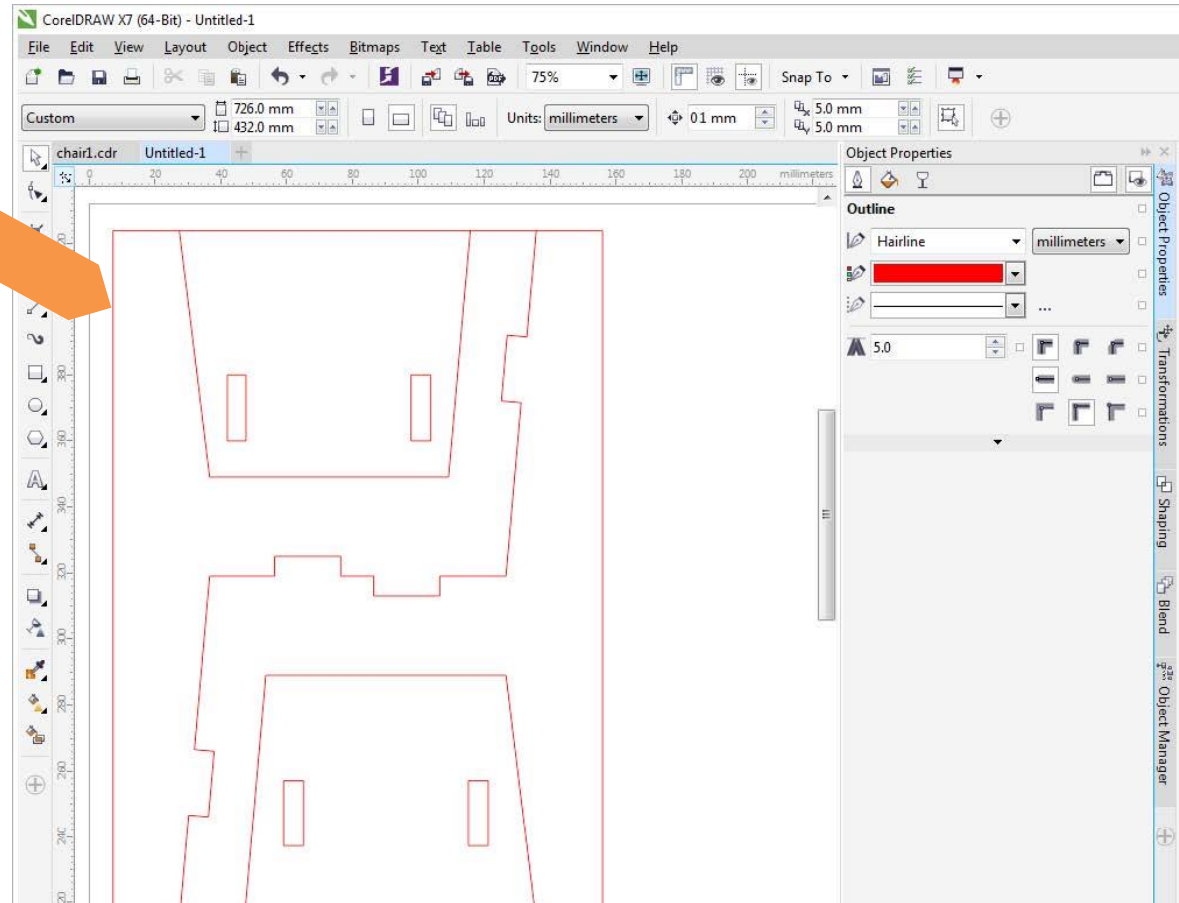


# Cut paths MUST have a RED Hairline



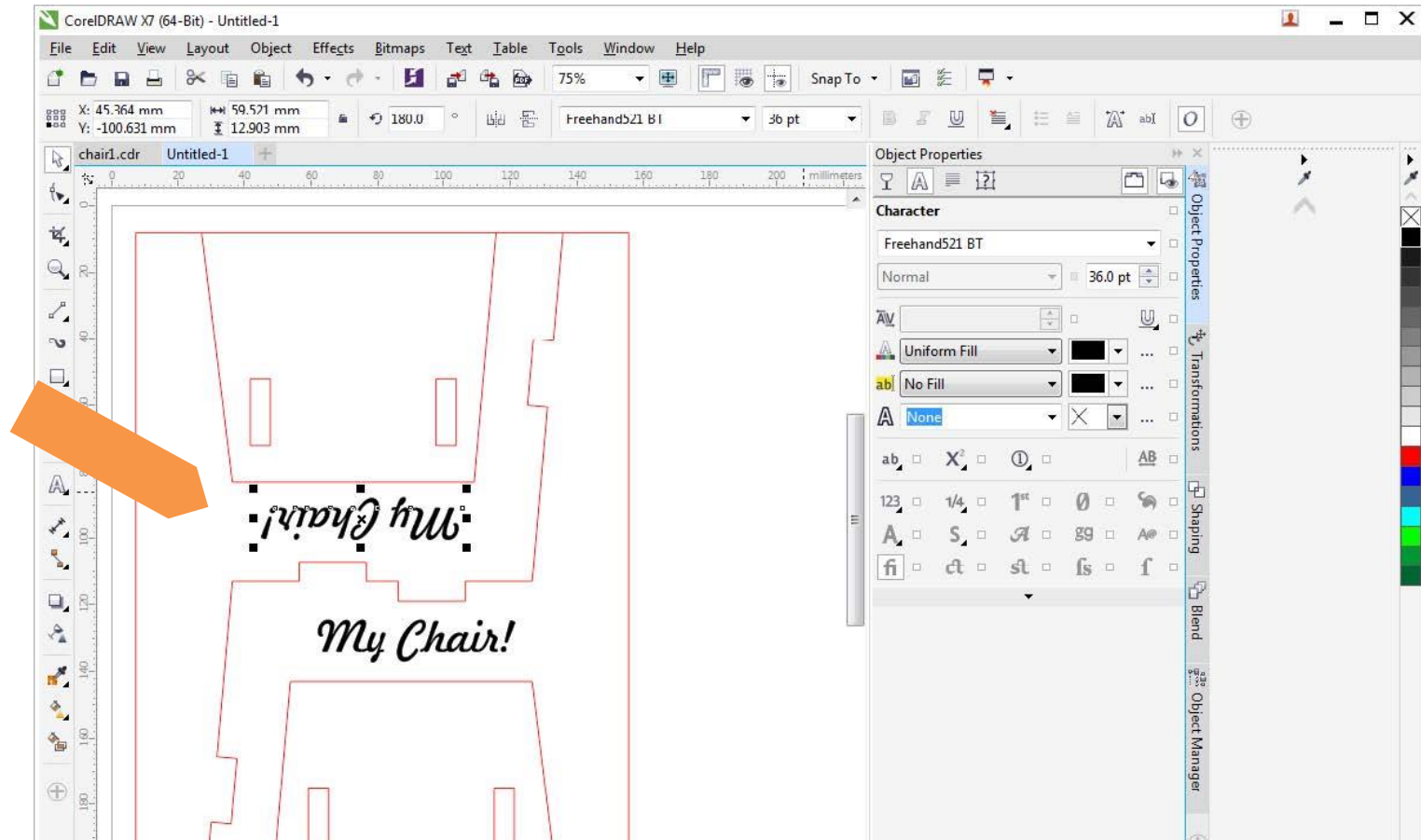
# Check all cut lines are OK

They should be a  
**RED HAIRLINE**

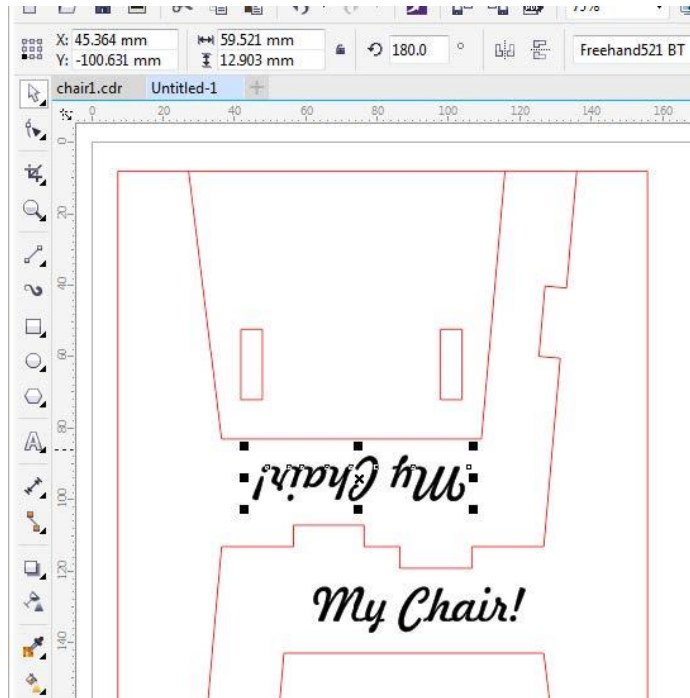




# Add some text



# Use your colours!

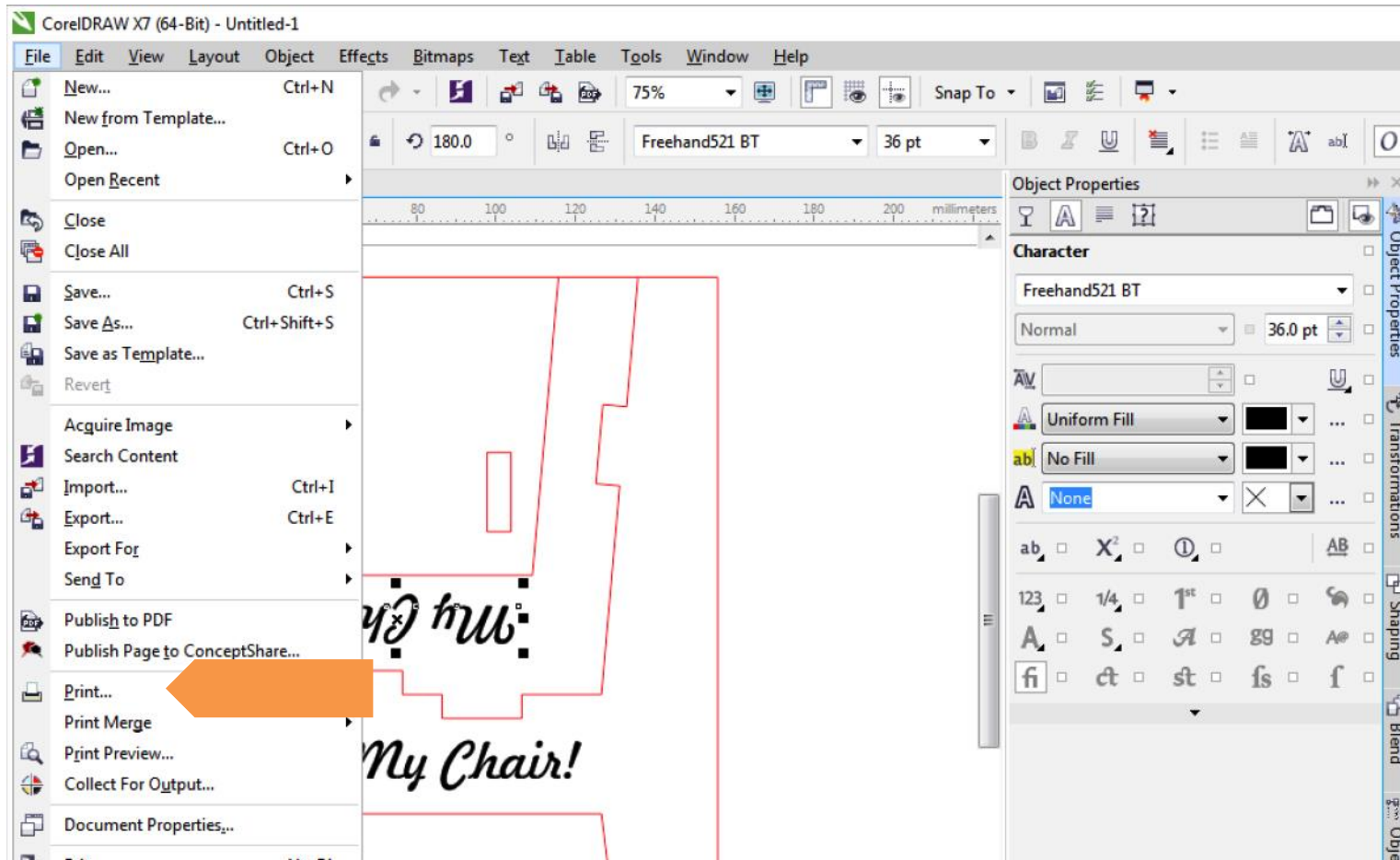


Colours can be used to set cut, engrave or cut orders: **Red Hairline = Cut**

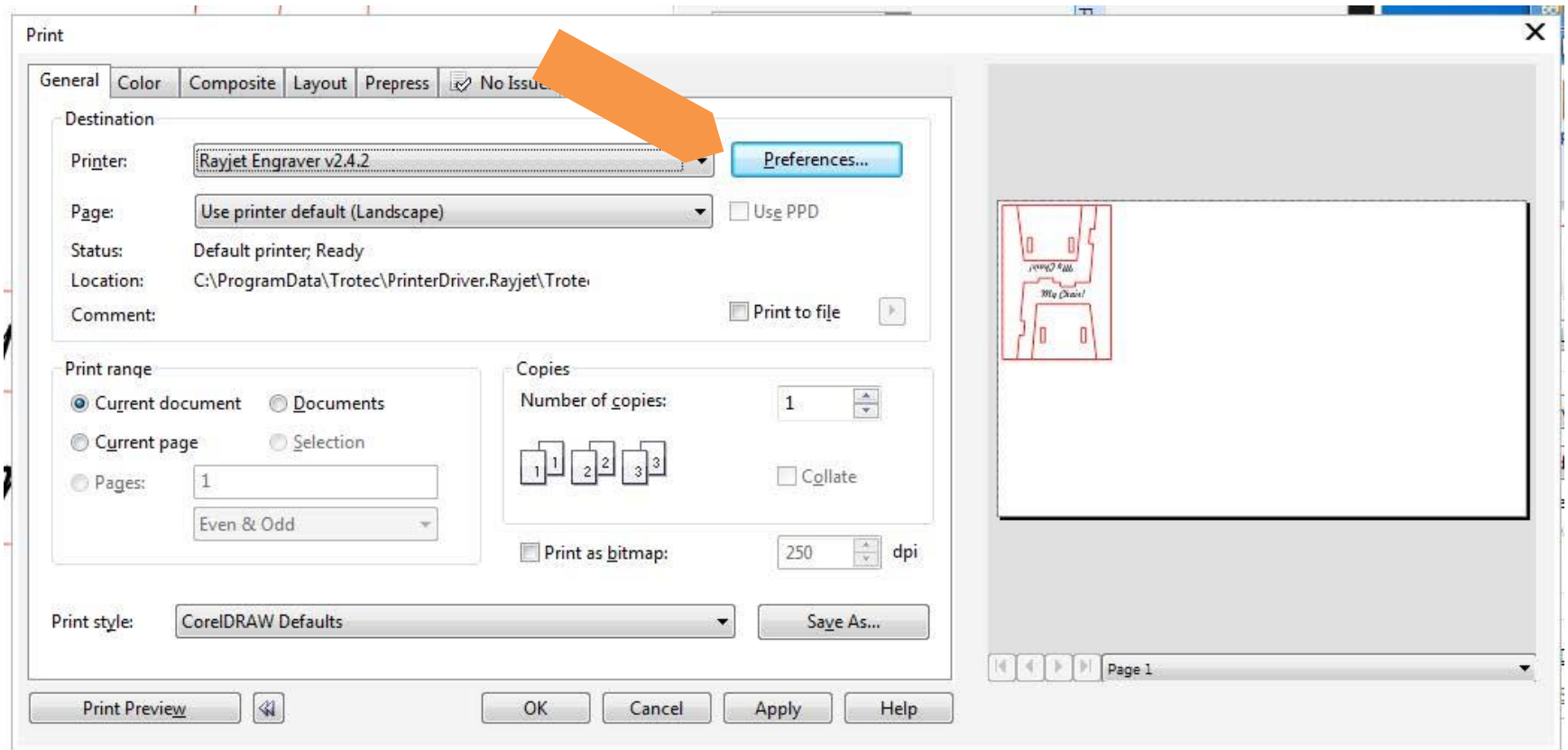
## Engrave Power Setting Presets:

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



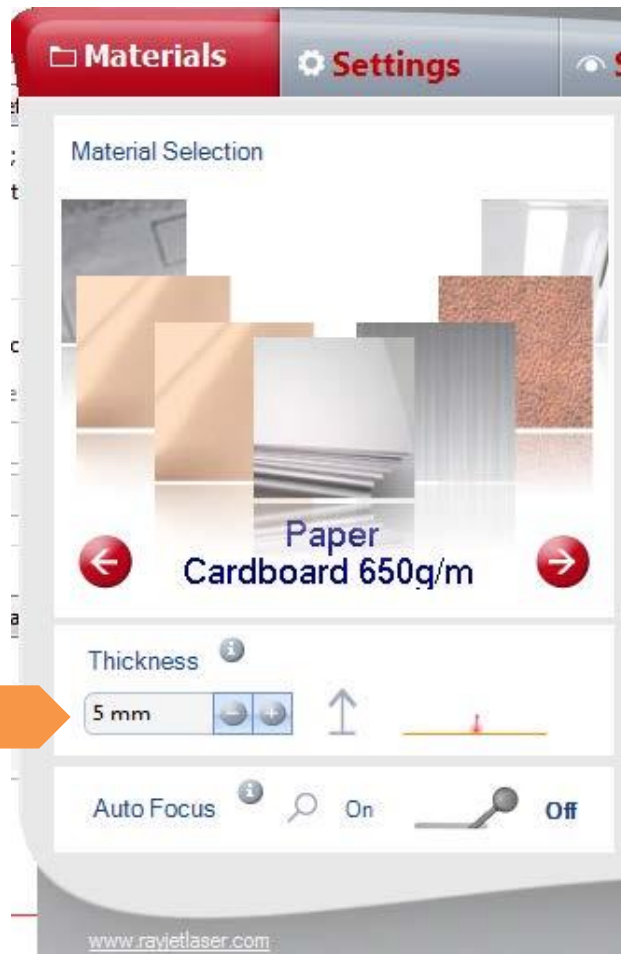


# Set the material

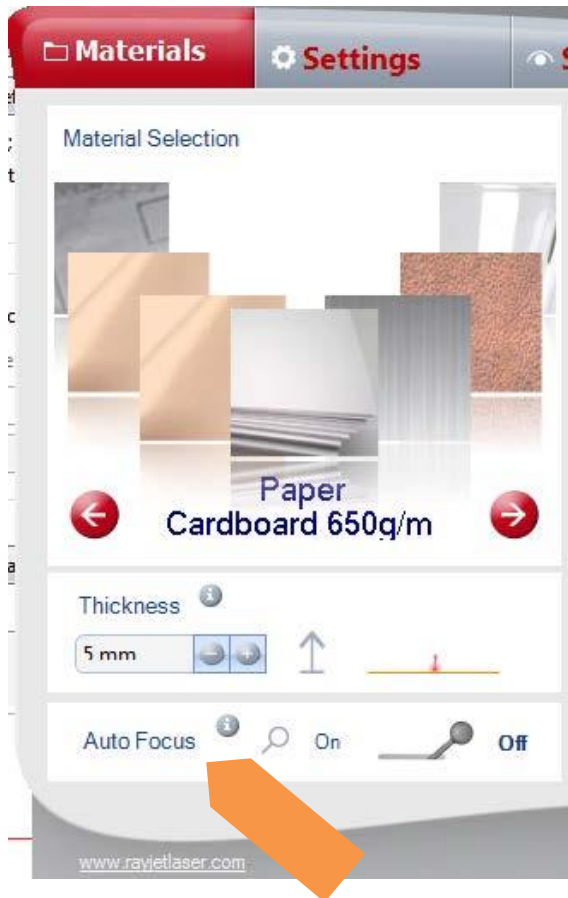




# Set the thickness



# Auto Focus is ALWAYS off



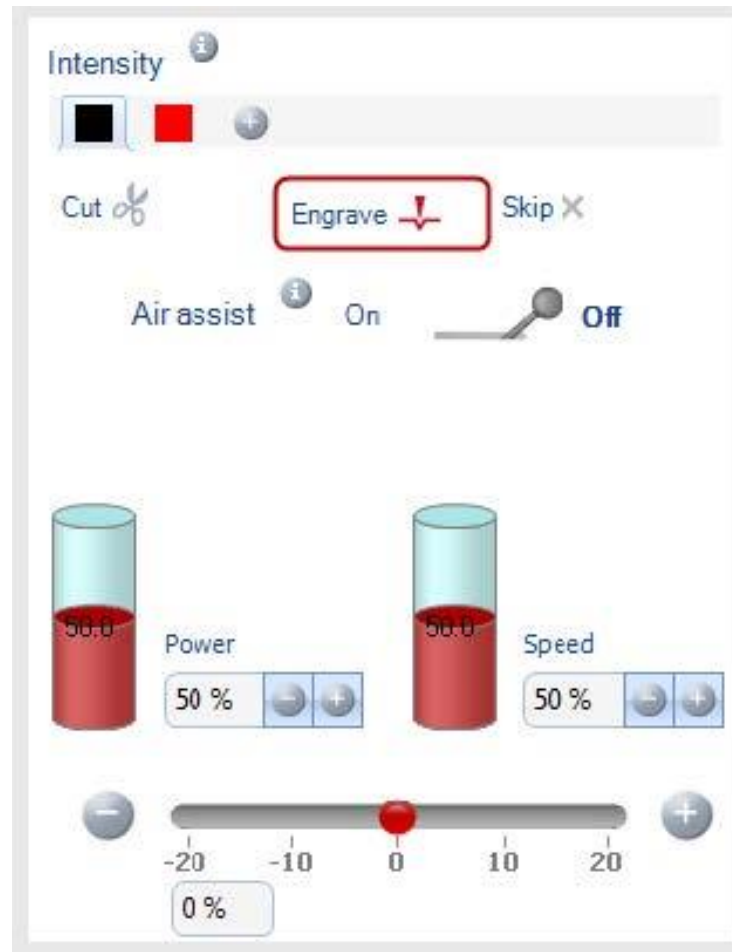
Why? This machine does not have an auto focus system. Switching this setting on will cause a head crash. This is bad, and will require a service technician to rectify.

# Setup the cut

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

- Colour Select:** Points to the color selection area showing black and red squares.
- 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 buttons for 'Step by Step', a question mark, and a close 'X' button. Below the logo, there are three tabs: 'Materials', 'Settings' (which is currently selected), and 'Summary'. The 'Settings' tab contains various configuration options for a laser engraving job. These include: '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). On the right side of the settings panel, there is a 'Quantity' field set to '1', a 'Job Start' section with radio buttons for 'Software Print Button' and 'Rayjet Start Button' (the latter is selected), and an 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. An orange callout box points to the red play button 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

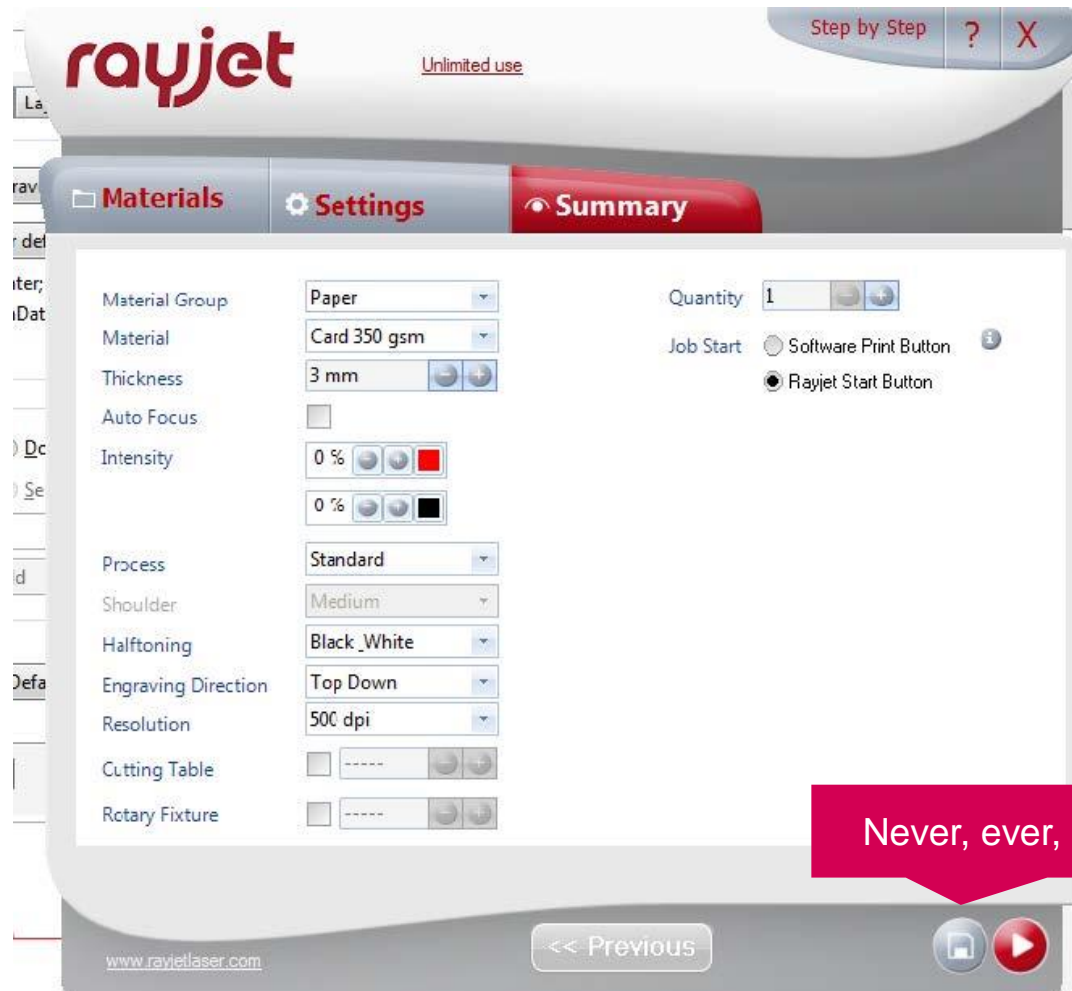
Job Start ☐ Software Print Button ☒ Rayjet Start Button

Previous

www.rayjetlaser.com

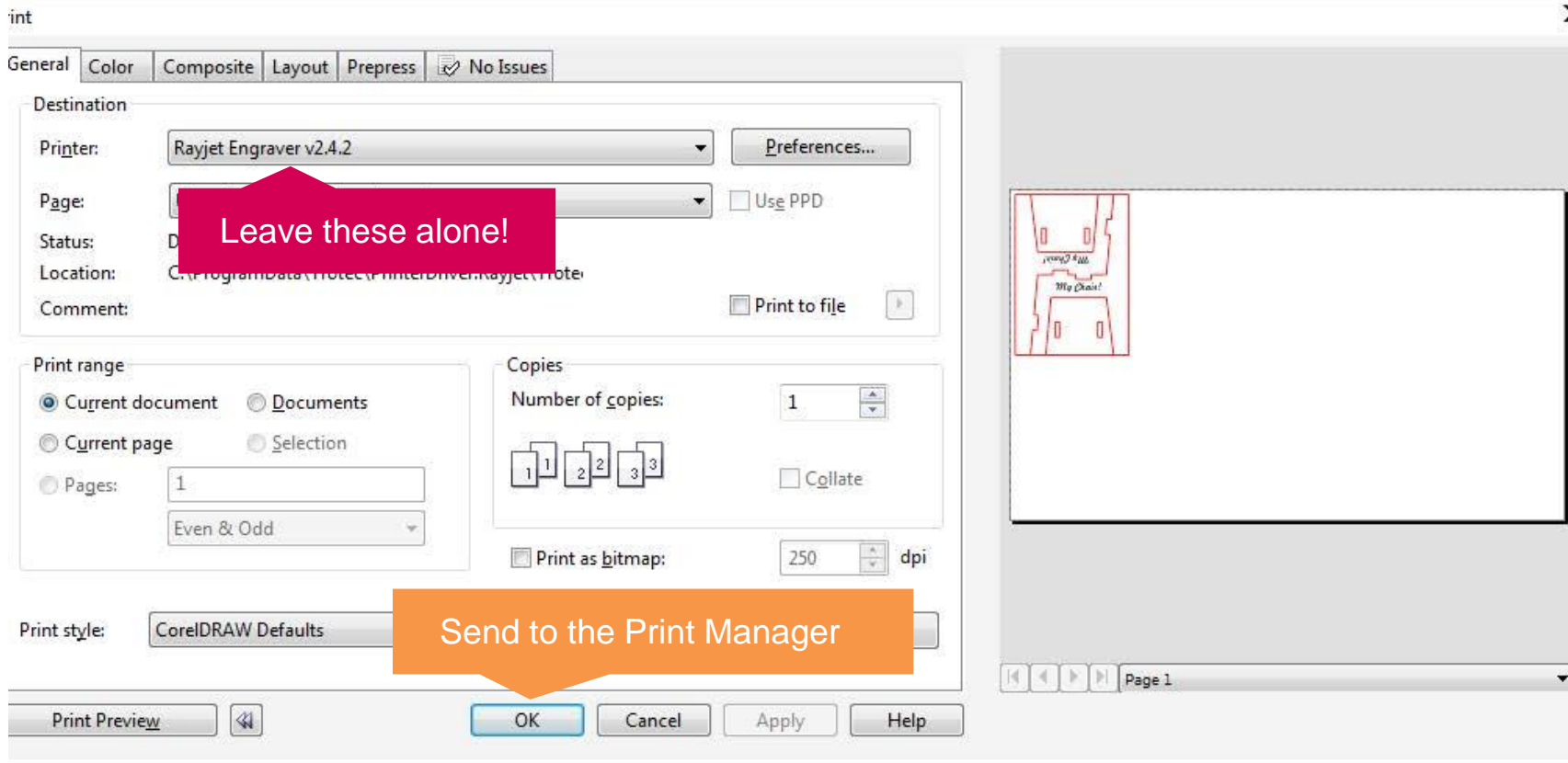
Upload to printer

# But...





# When configured, hit OK!

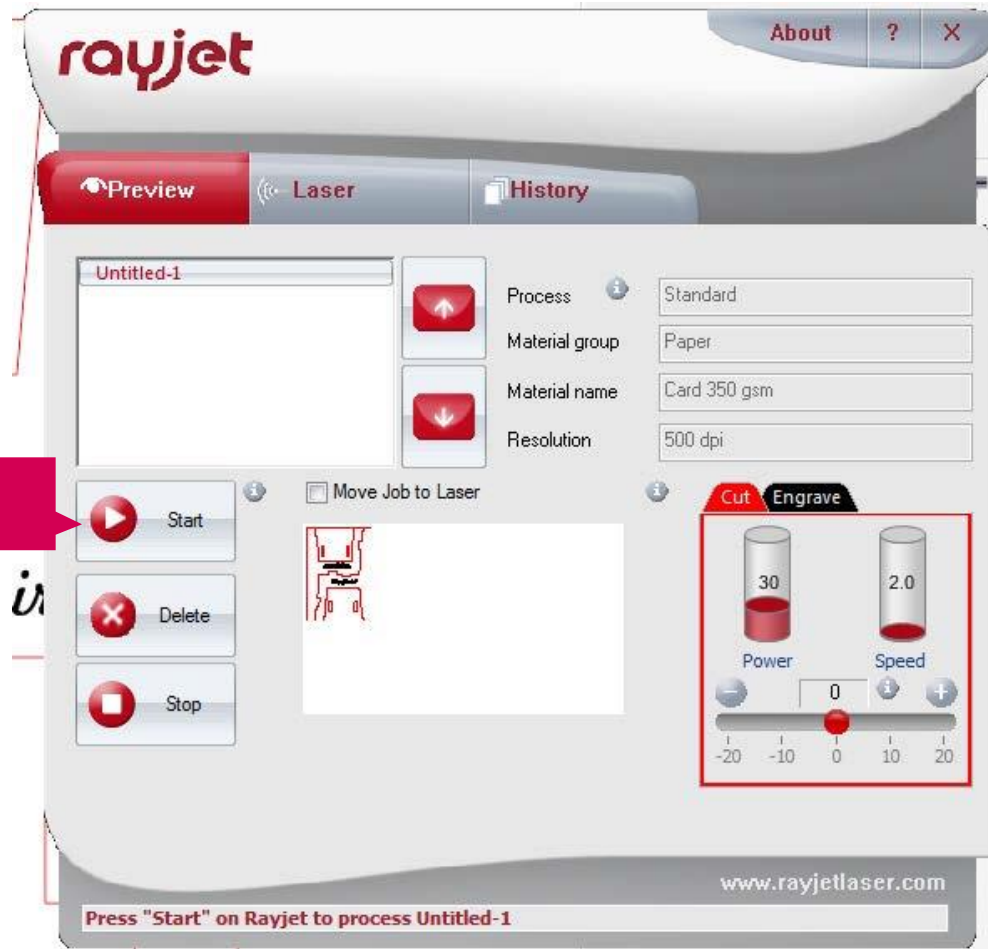


# Now load the Print Manager



Load the Print Manager

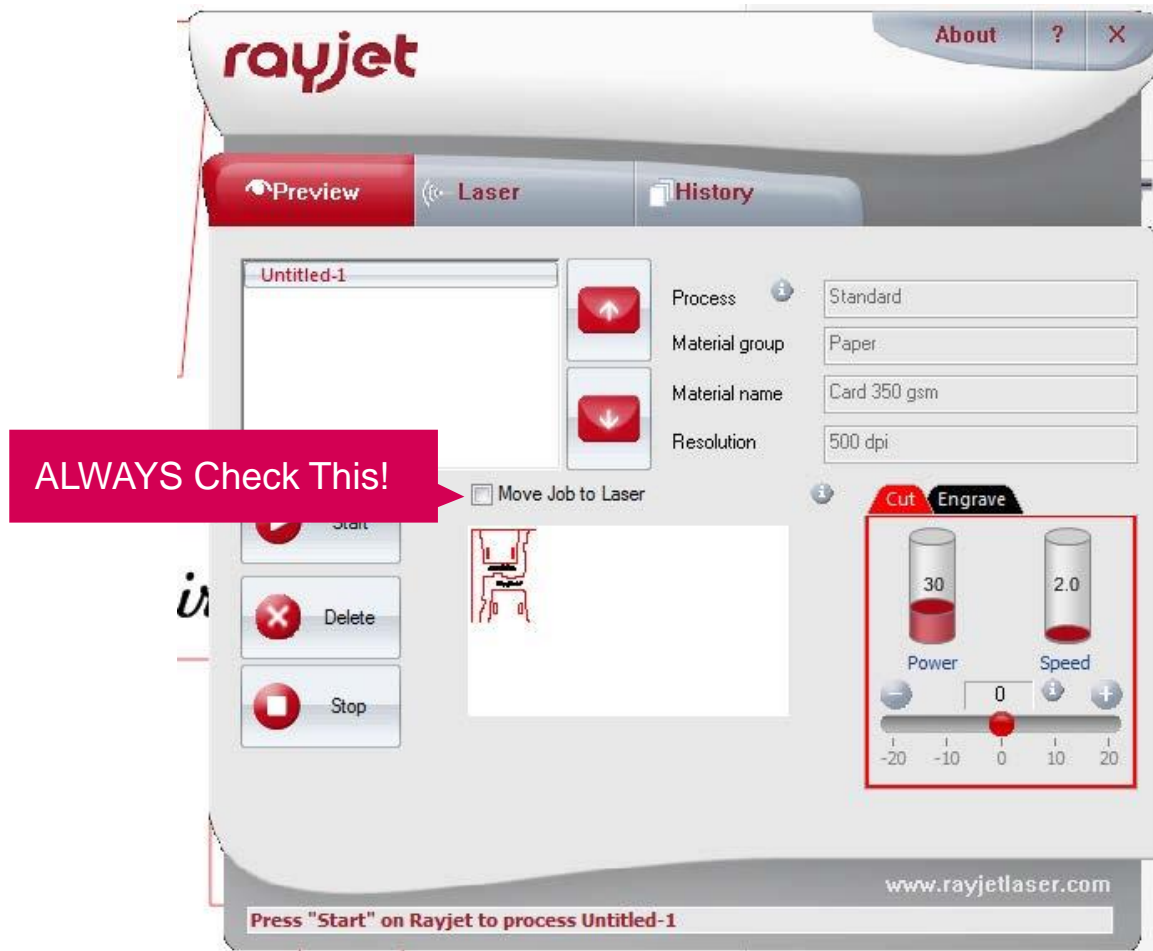
# The Print Manager

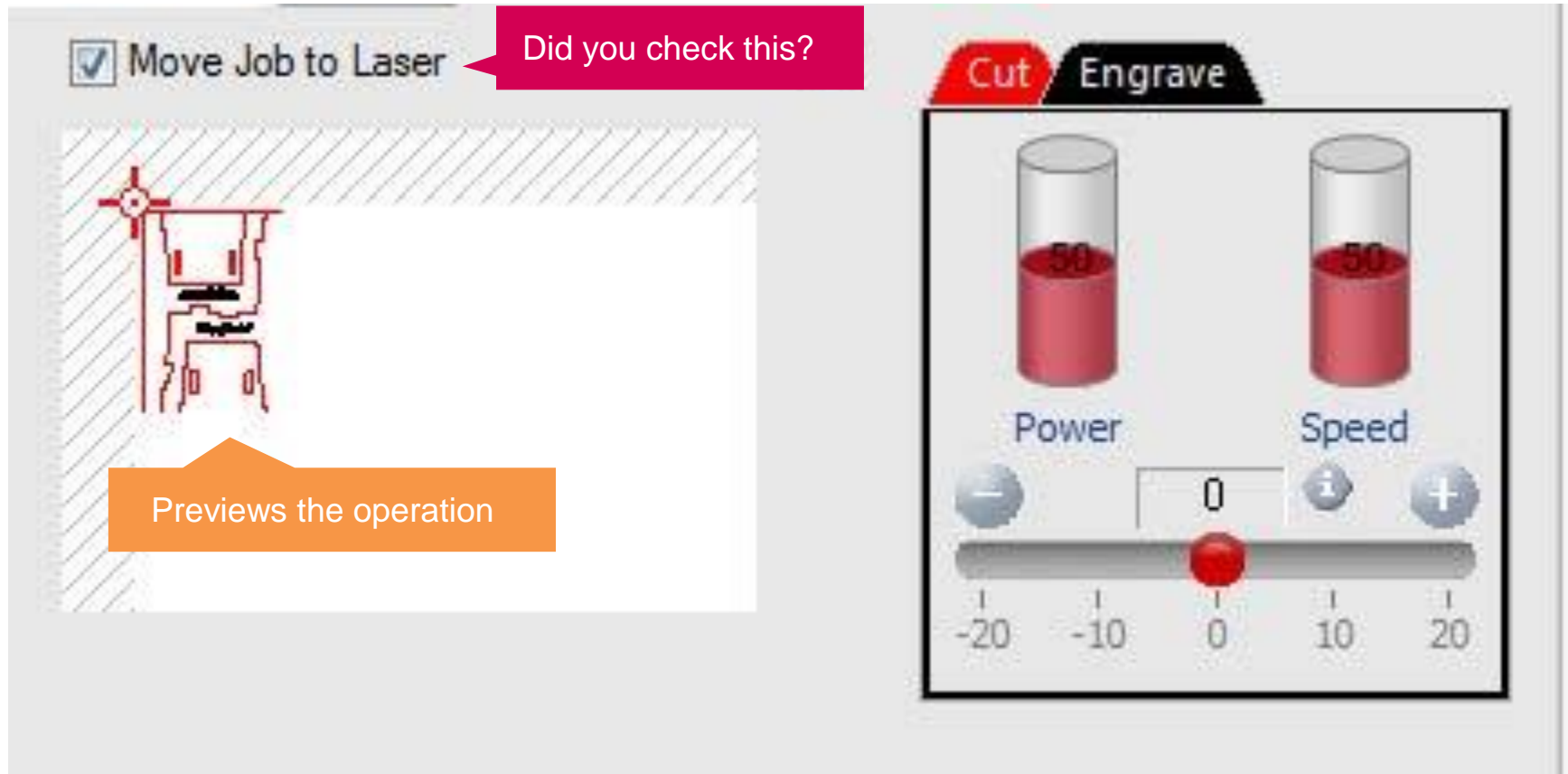


# The Print Manager



# 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 the orange 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!



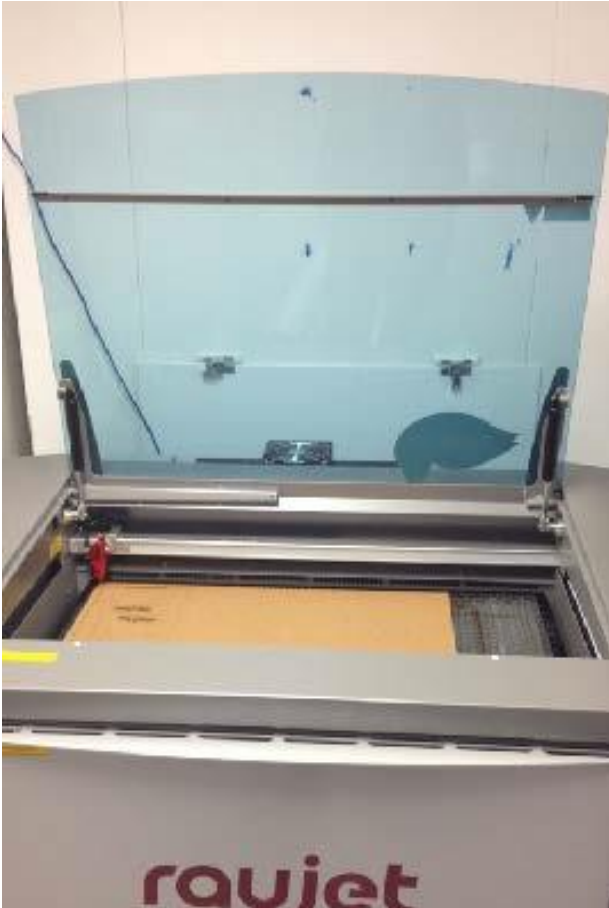
The laser will move back to it's home position.

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?