



# 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
- Other Materials: see supervisor

# 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!

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

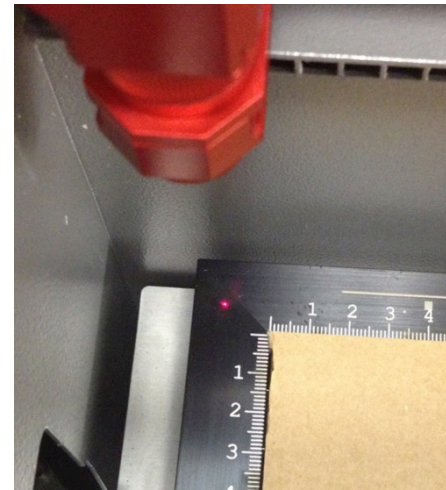


# Inside the machine



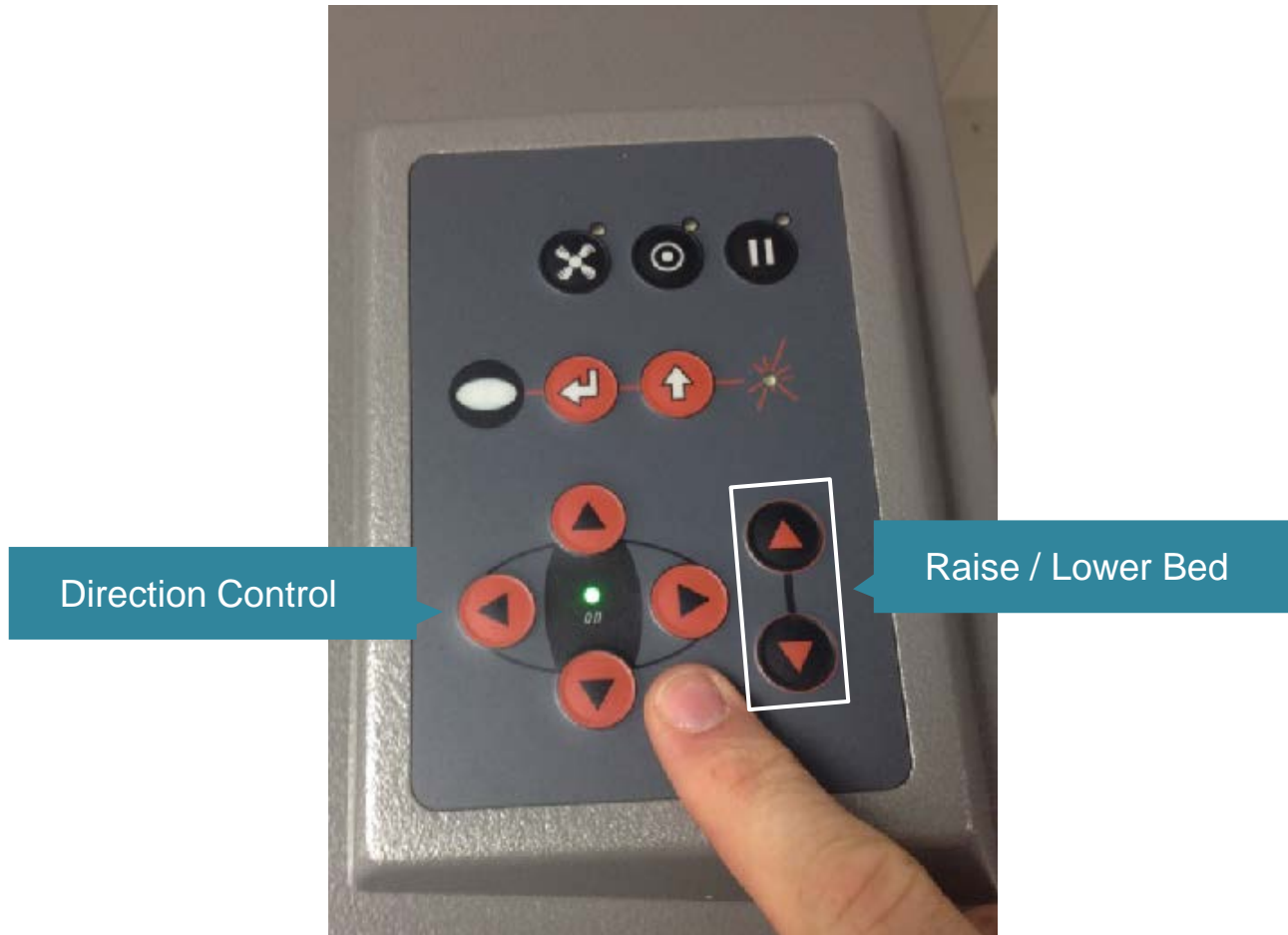
# Let's start

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





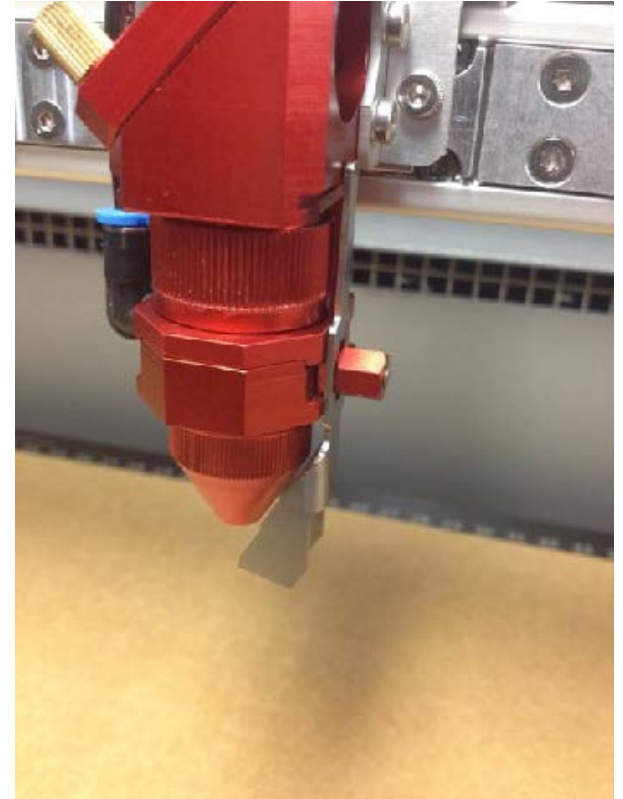
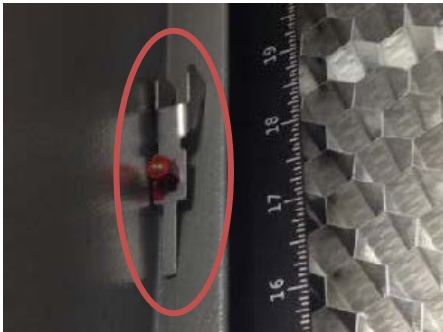
# Position the laser head





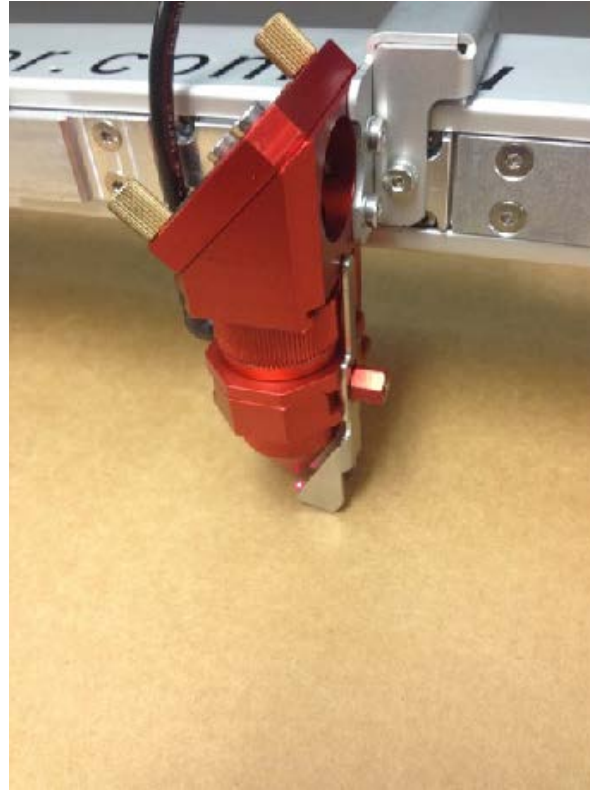
# Check the focal distance

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!

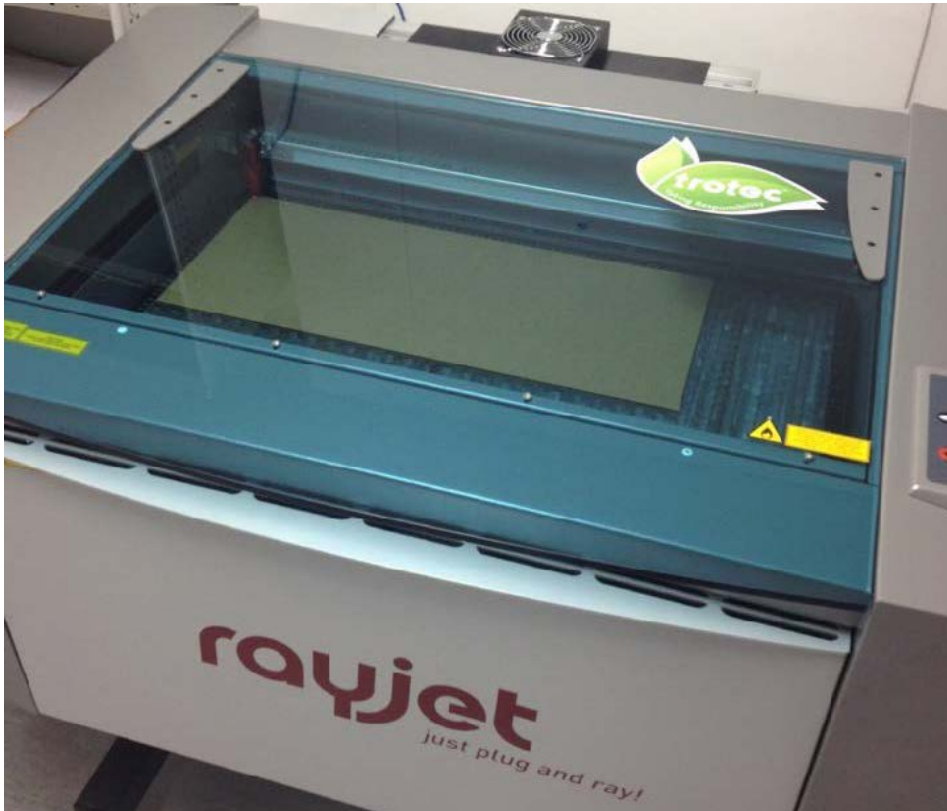
# Position the laser



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

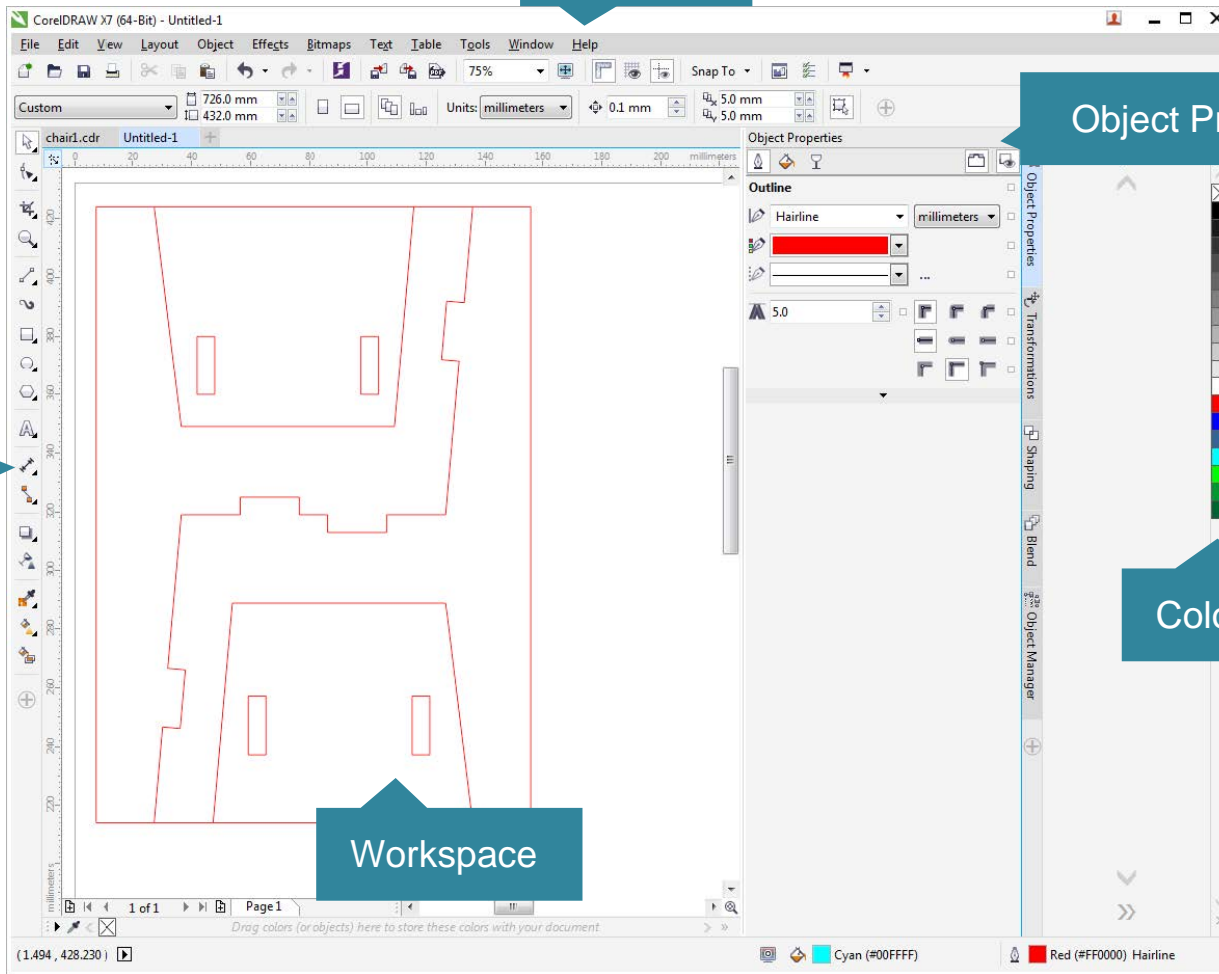
Menu bar

Object Properties

Toolbar

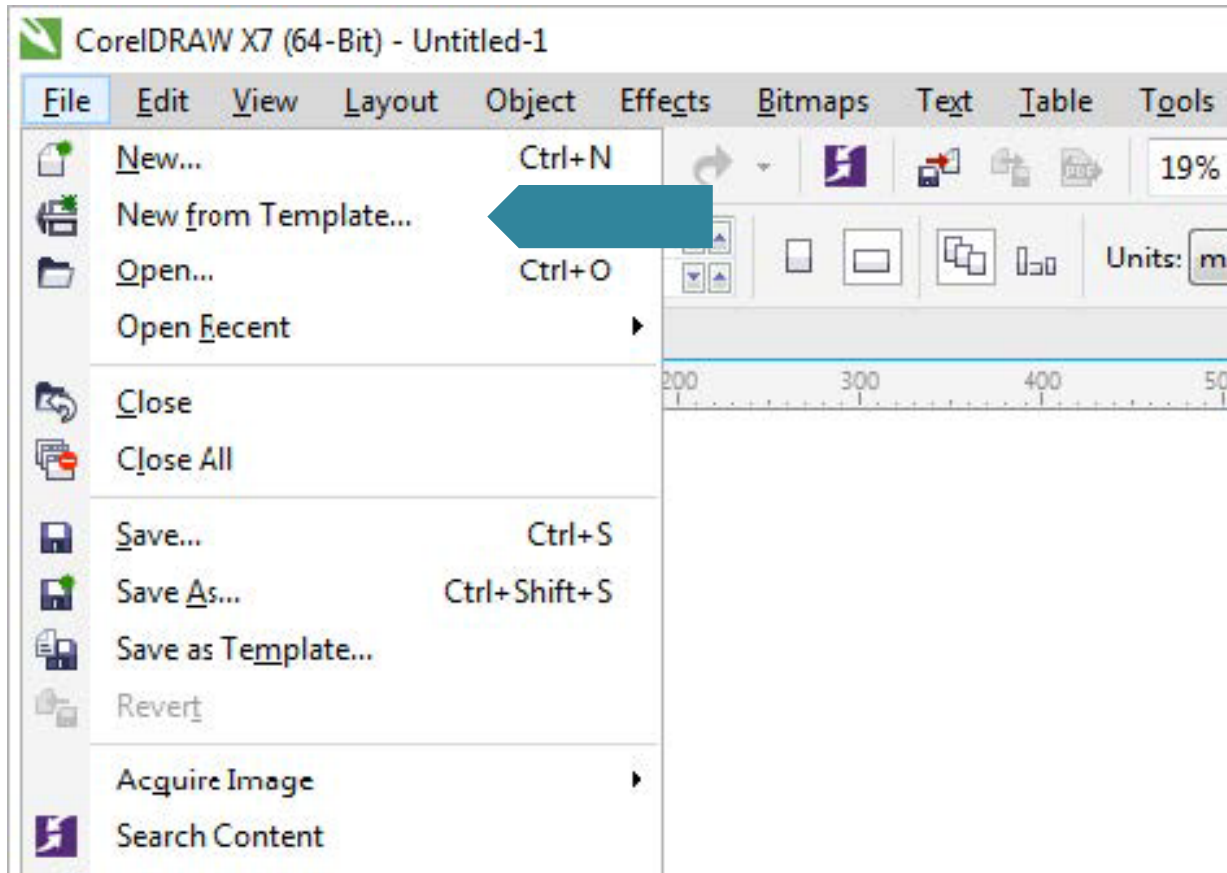
Colour Palette

Workspace

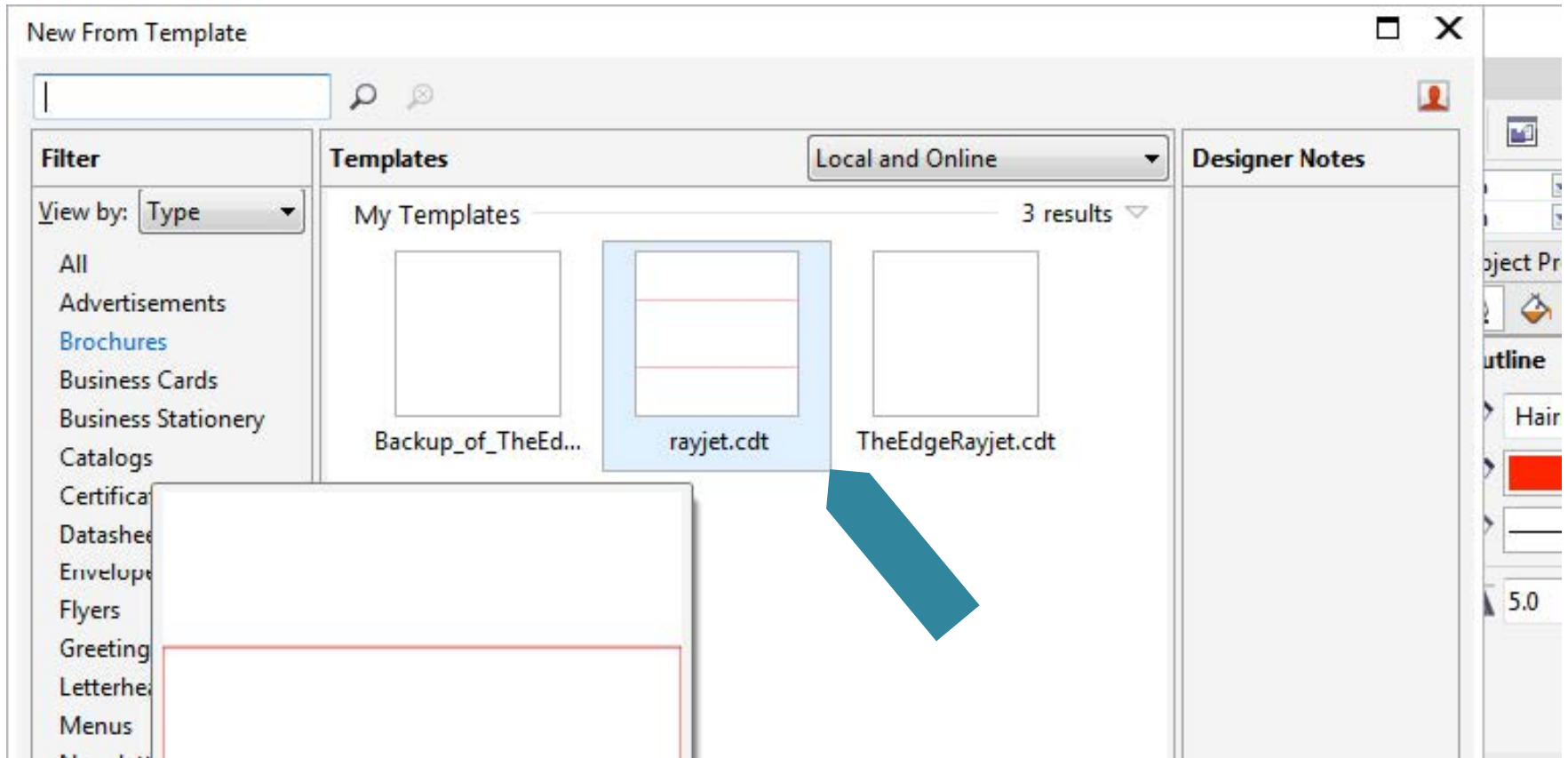




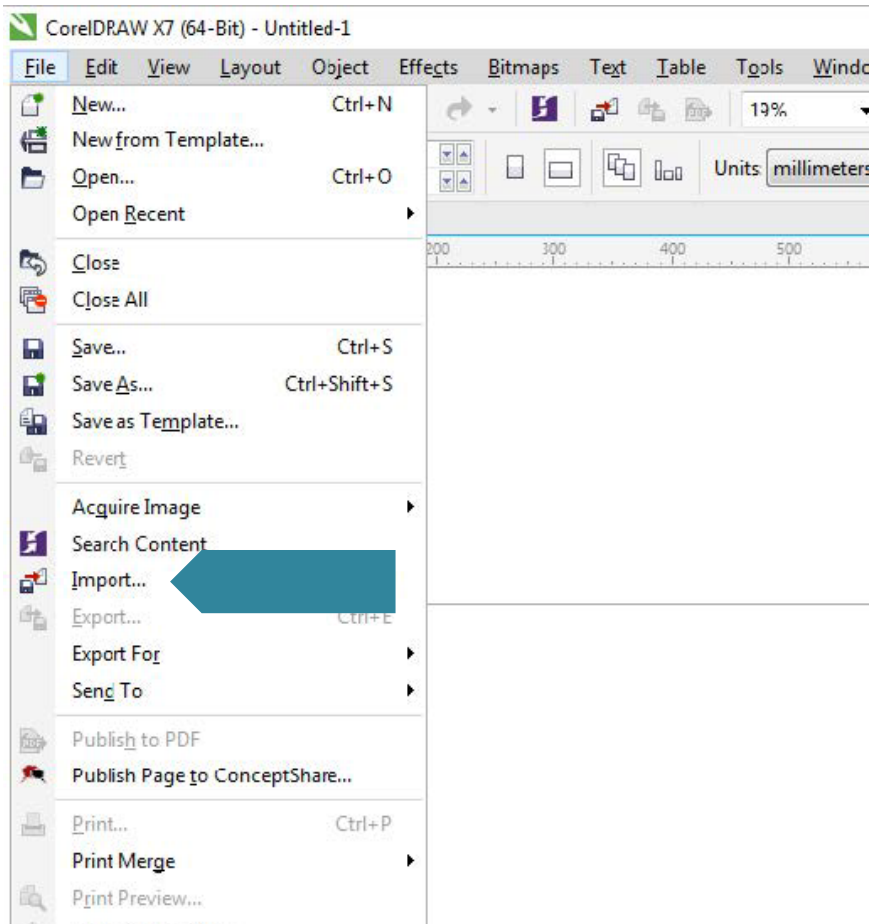
# Select File > 'New from Template'



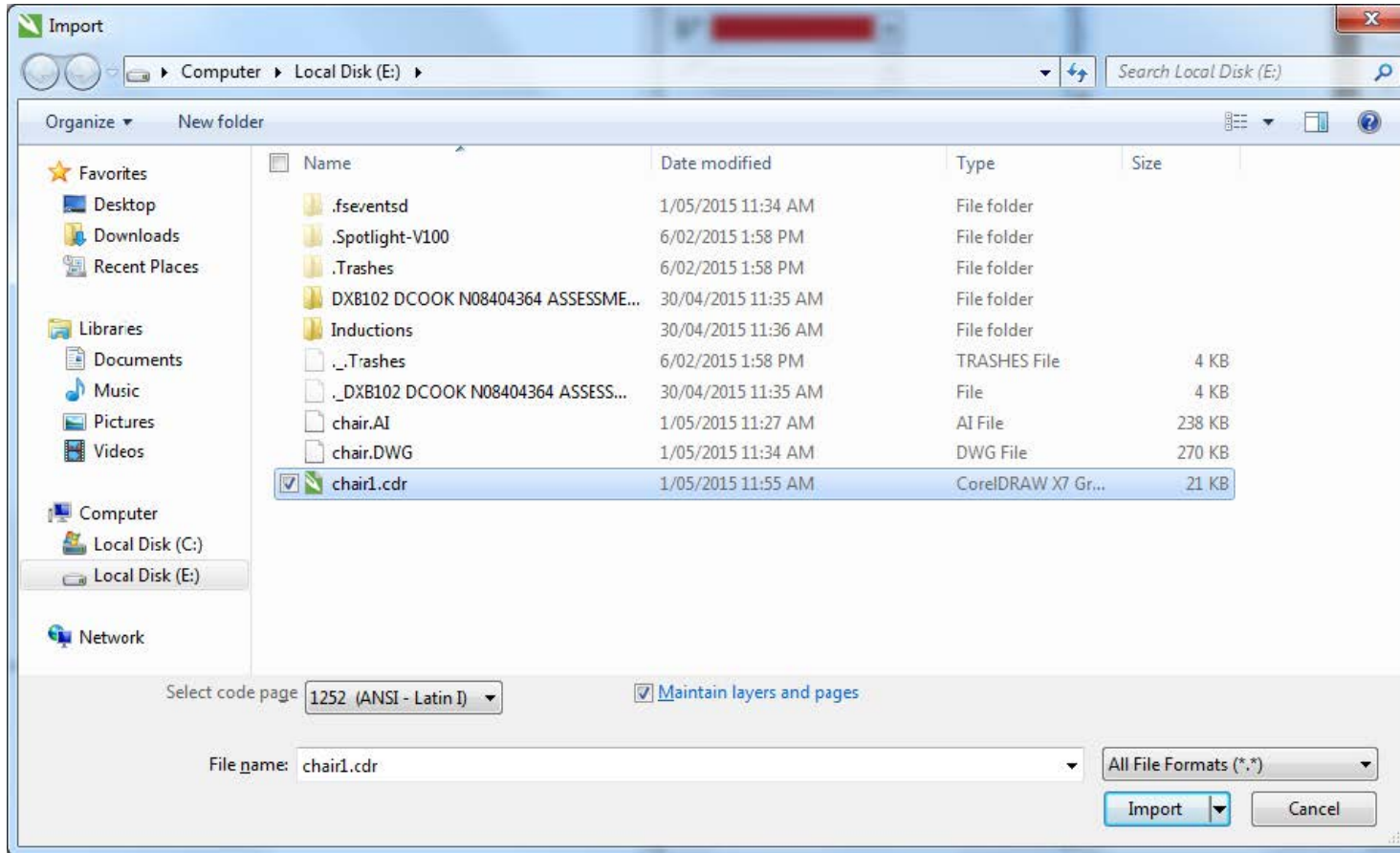
# Choose 'rayjet.cdt' Template



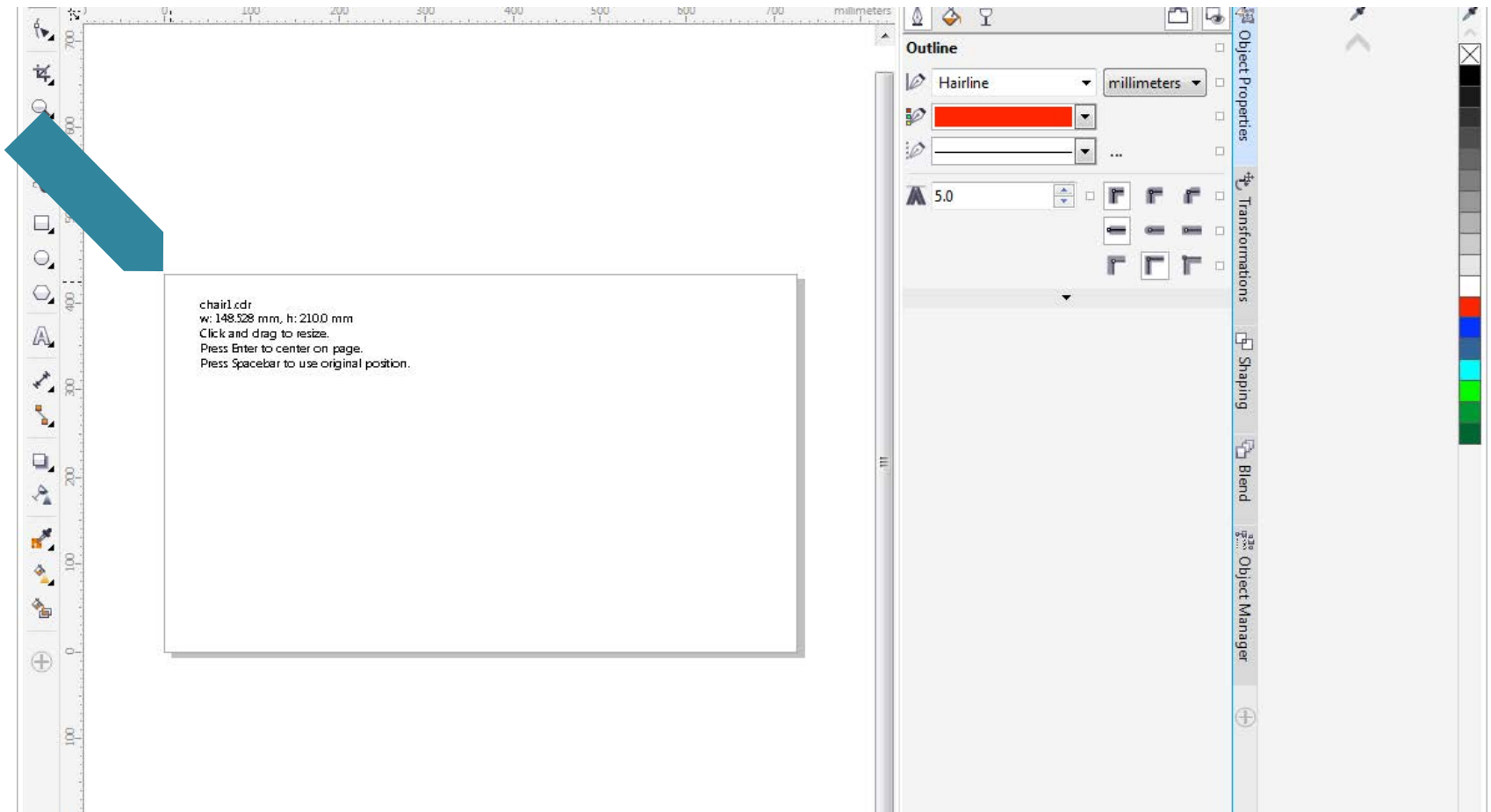
# File > Import



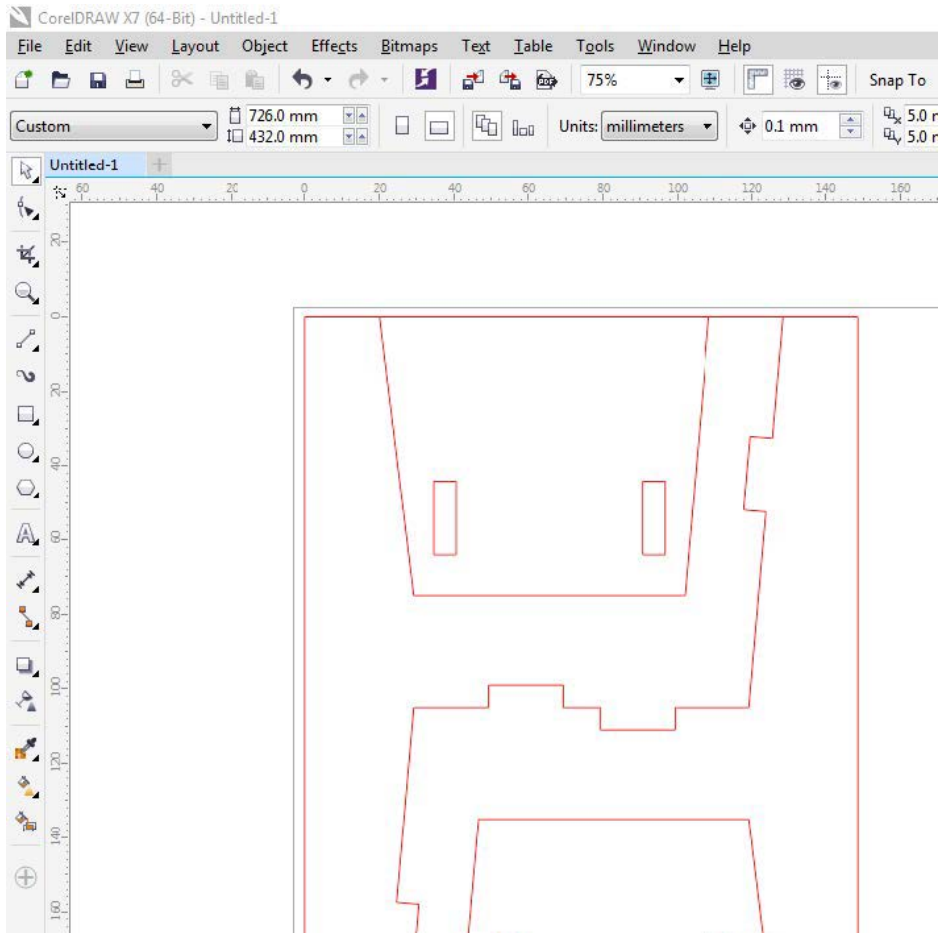
# Select your file...



# Place the file in the top left corner



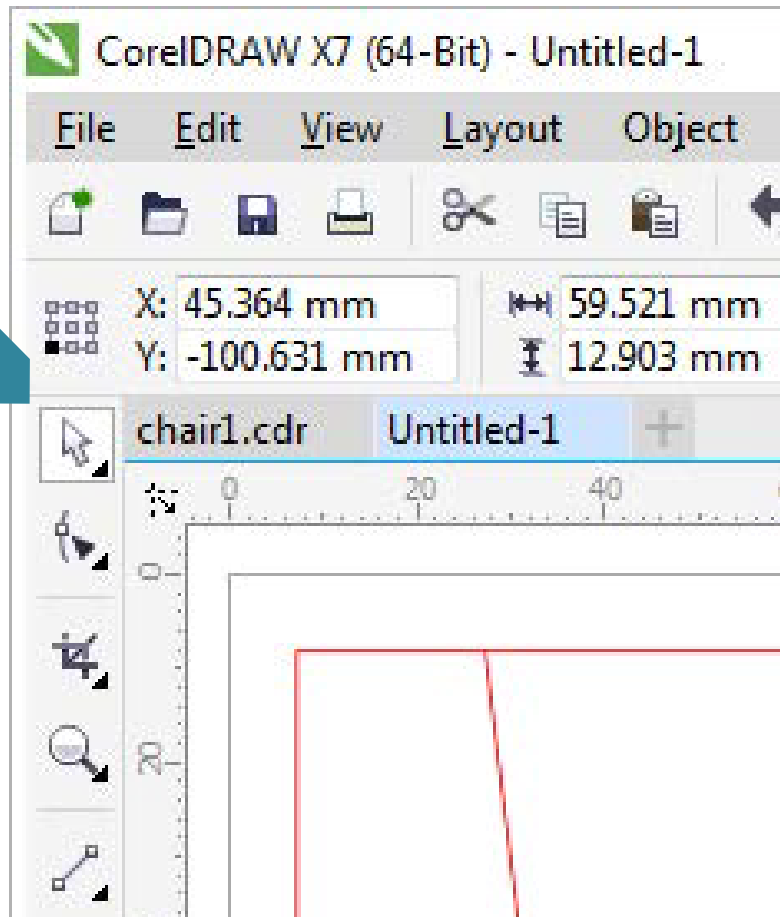
# File is imported



# Use the selection arrow

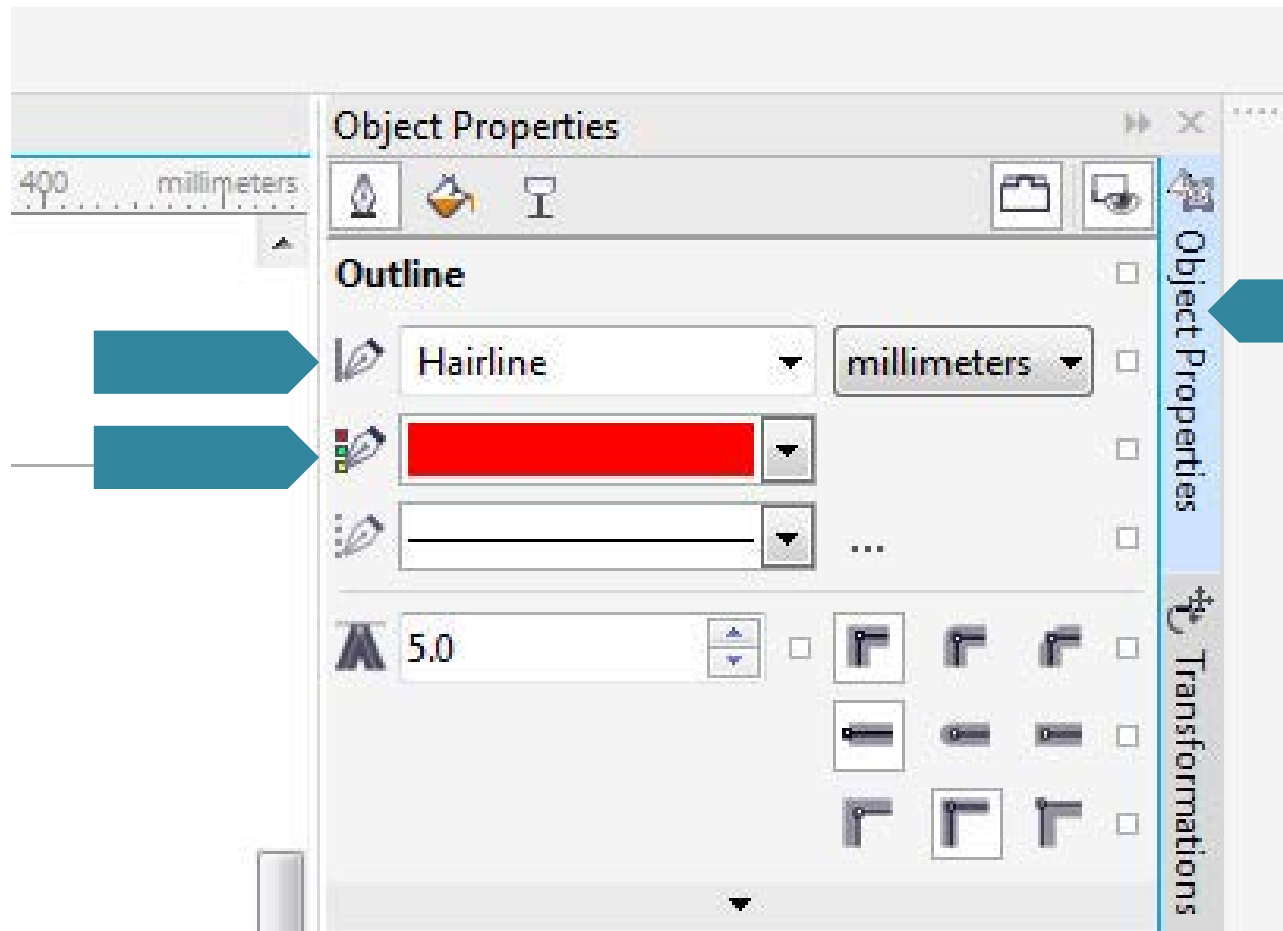
This is used to select items within the program.

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



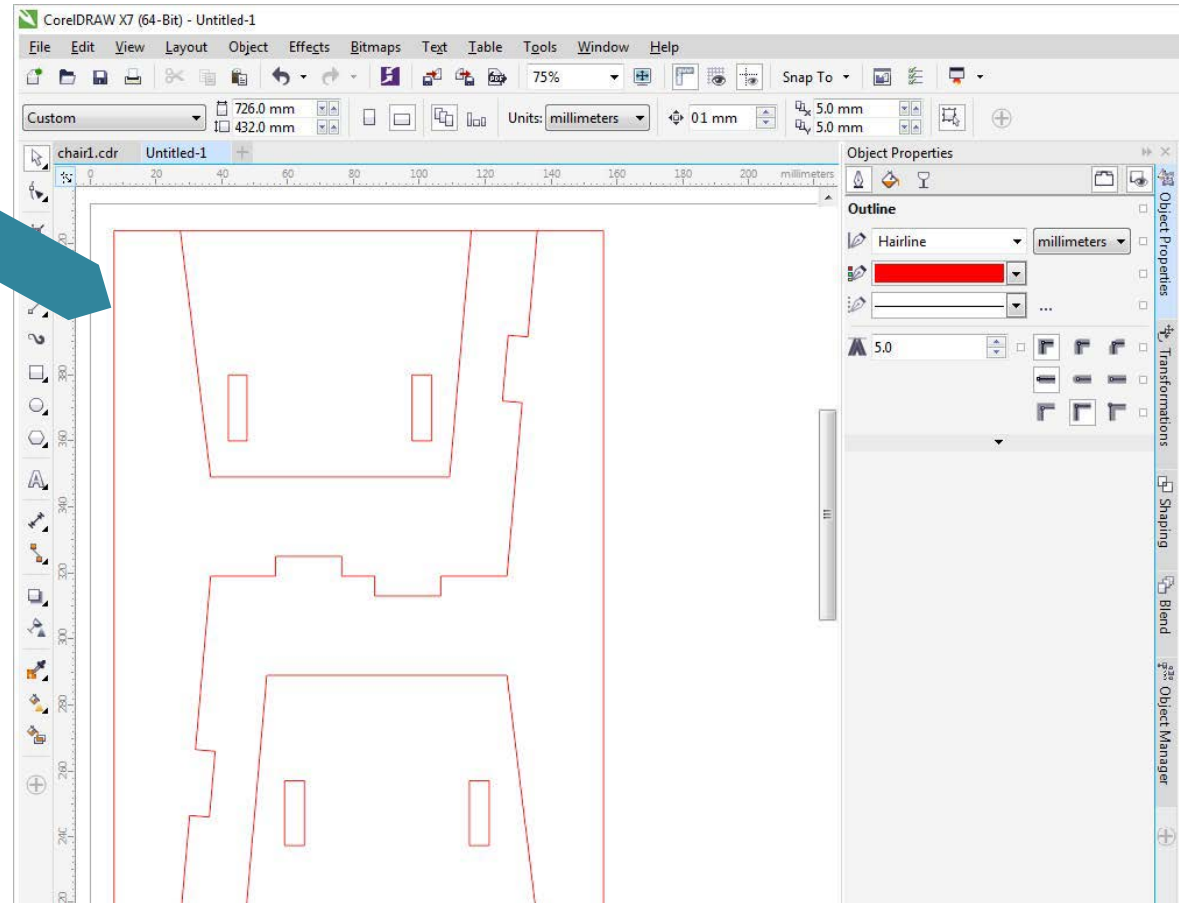


# Cut paths MUST have a RED Hairline

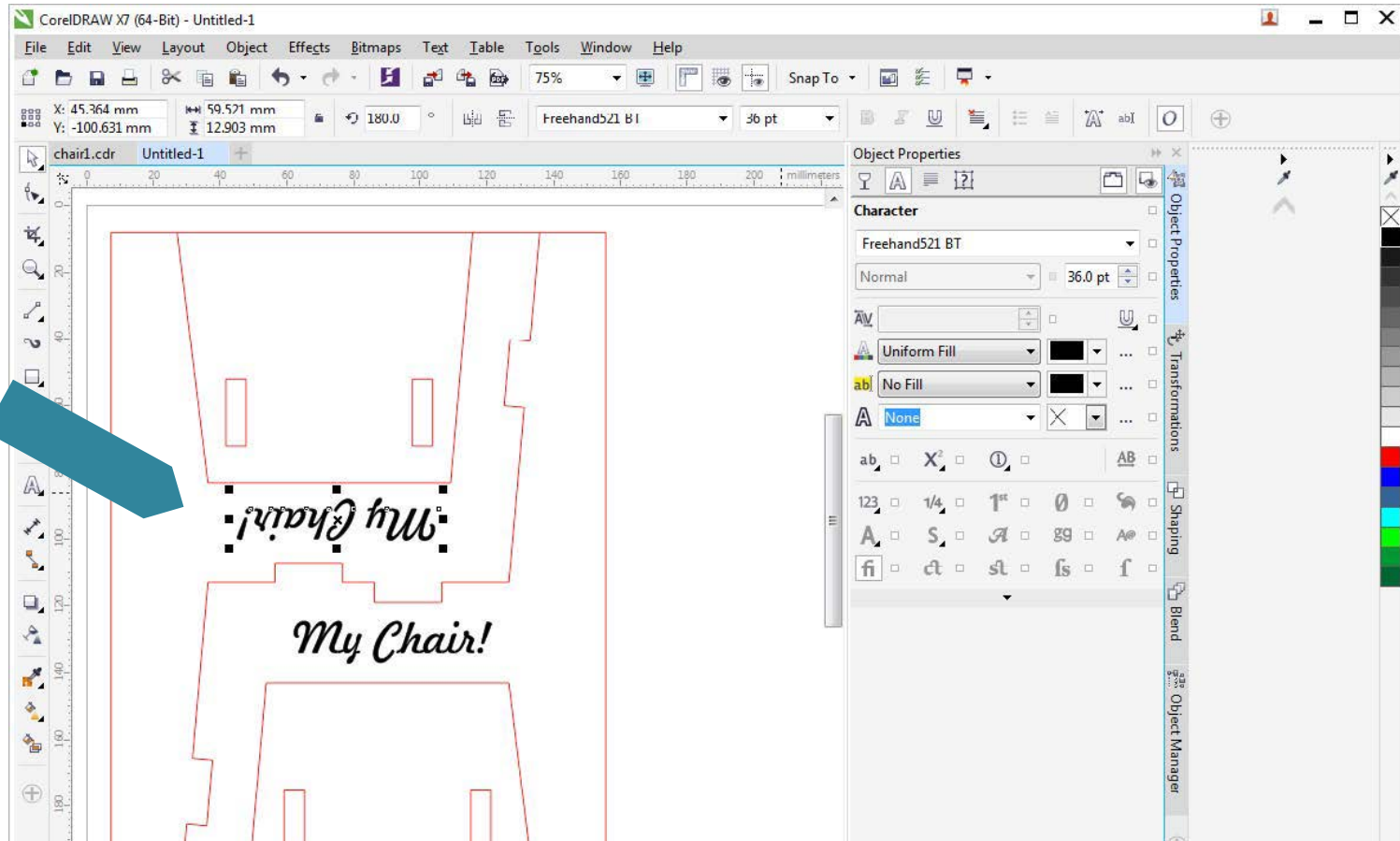


# Check all cut lines are OK

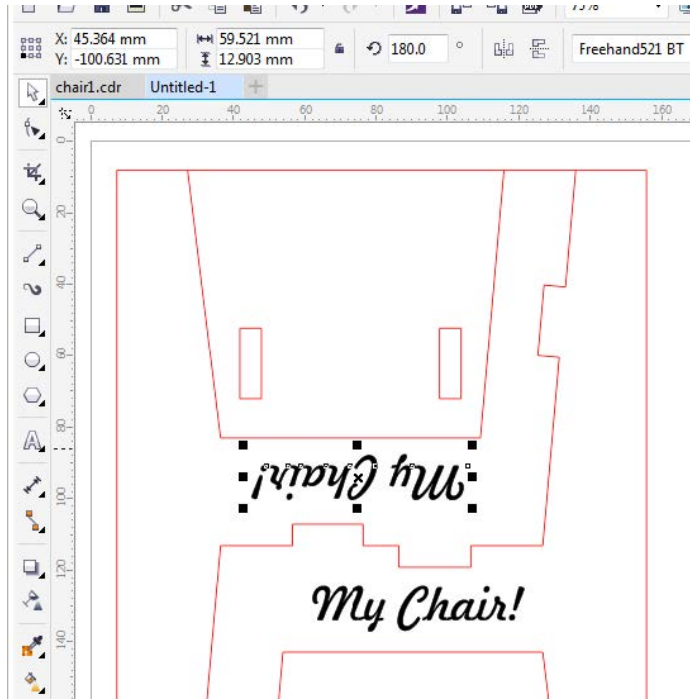
They should be a  
**RED HAIRLINE**



# Add some text



# Use your colours!



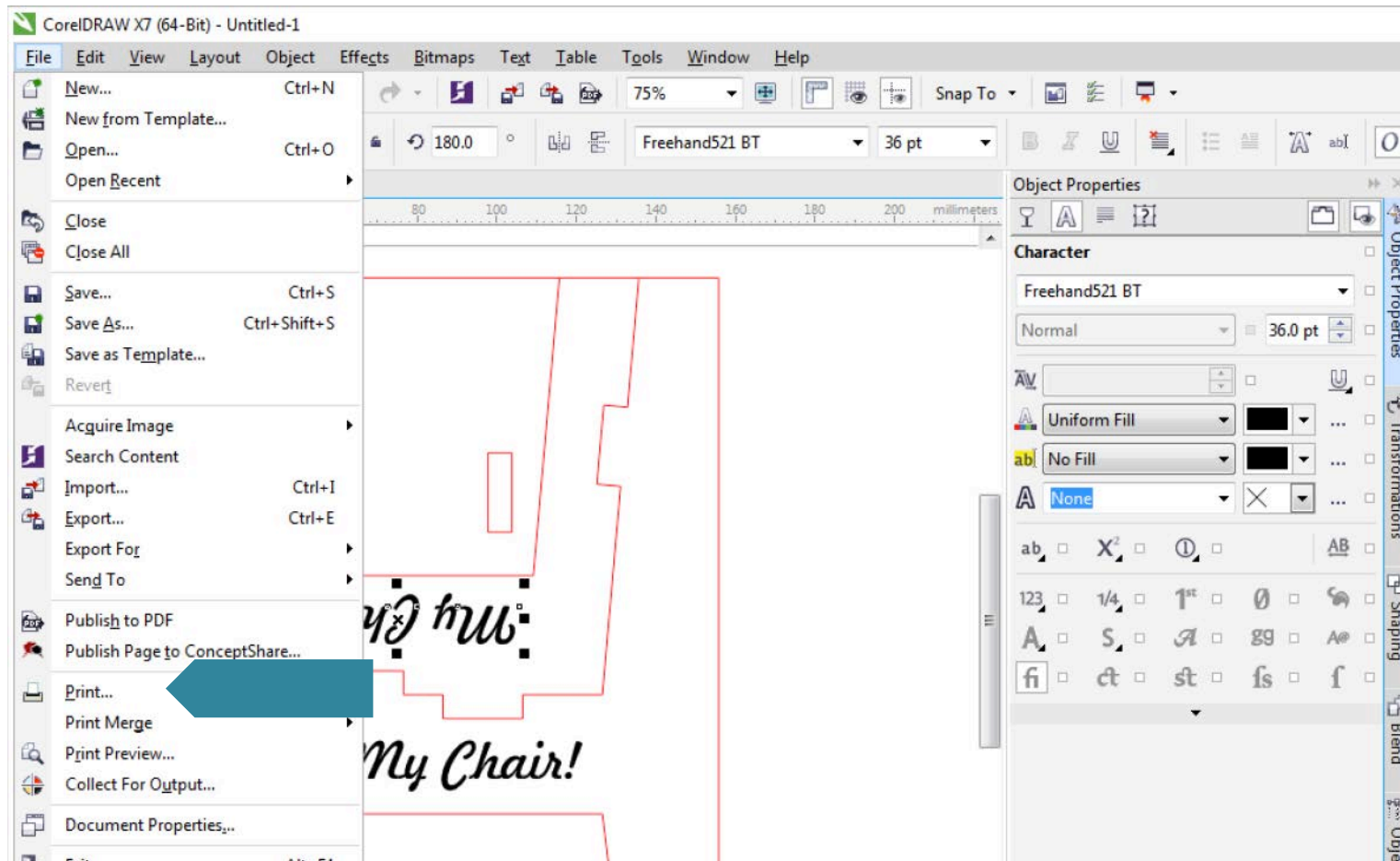
Colours can be used to set cut, engrave or cut orders

Red Hairline – Cut

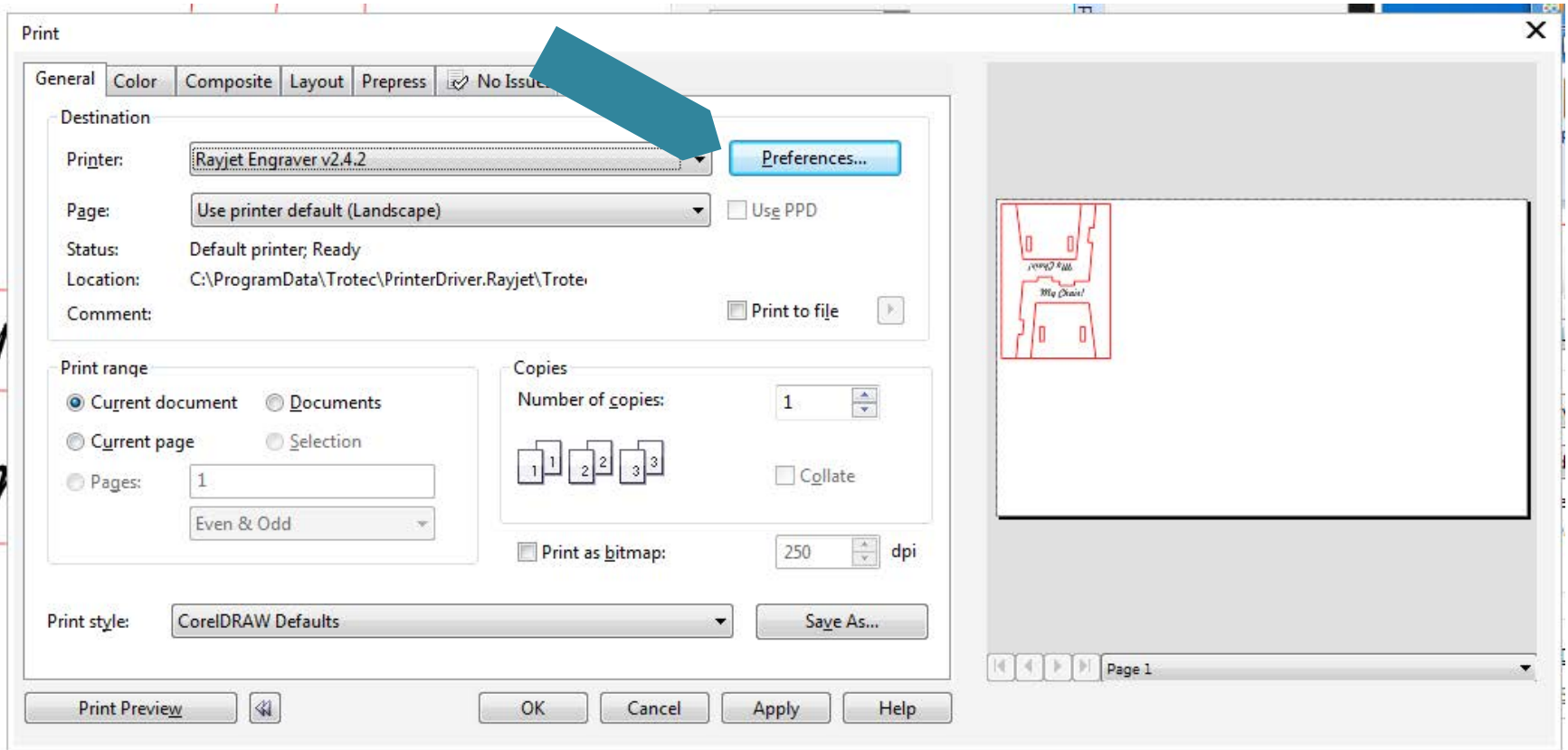
Engrave Power Setting Presets:

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

The screenshot displays the rayjet software interface. At the top, there is a header with the 'rayjet' logo and 'Unlimited use' text. Below the header is a navigation bar with three tabs: 'Materials', 'Settings', and 'Summary'. The 'Materials' tab is active, showing a 'Material Selection' panel. This panel contains several material categories: 'Paper', 'Plastics', and '6mm Acrylic'. A red arrow points to the '6mm Acrylic' option, which is highlighted as the 'Selected Material'. Below the material selection, there is a 'Thickness' section with a dropdown menu set to '3 mm'. To the right of the material selection panel is a 'Configuration' panel. This panel includes an 'Intensity' section with a color bar and a 'Cut' button. Below this are 'Air assist' (set to 'On'), 'Passes' (set to '2'), 'Power' (set to '90.0 %'), and 'Speed' (set to '2.0 %'). At the bottom of the configuration panel is a horizontal slider ranging from -20 to 20, currently set at 0. A 'Next >>' button is located at the bottom right of the interface.

Materials

Selected Material

Thickness

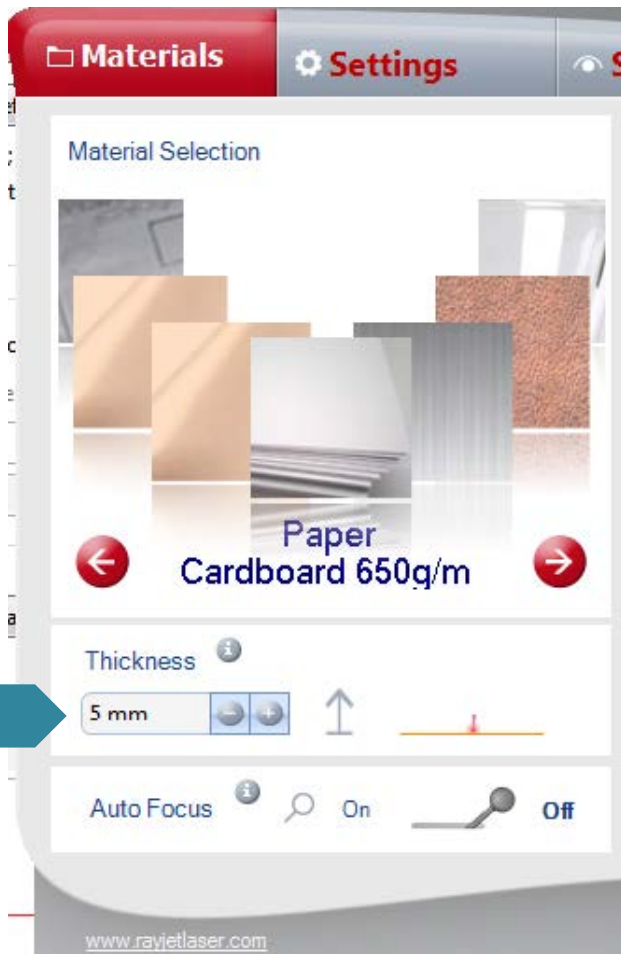
# Set the material

The screenshot displays the rayjet software interface. At the top, the 'rayjet' logo is visible with 'Unlimited use' below it. A navigation bar contains 'Materials', 'Settings', and 'Summary' tabs. The 'Materials' tab is active, showing a 'Material Selection' panel with categories for 'Paper' and 'Plastics'. The 'Plastics' category is selected, showing '6mm Acrylic'. A list of materials is visible, including 'Paper 160g/m', 'Paper 80g/m', 'Cardboard 650g/m', and 'Card 350gsm'. A 'Select Type' callout points to this list. To the right, the 'Intensity' panel shows 'Cut' selected, with 'Engrave' and 'Skip' options. Other settings include 'Air assist' (On), 'Passes' (2), 'Power' (90.0%), and 'Speed' (2.0%). A 'Next >>' button is at the bottom right. A 'Step by Step' help button is at the top right.

Click on Material

Select Type

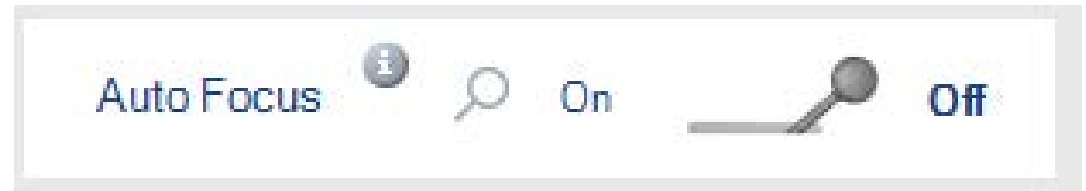
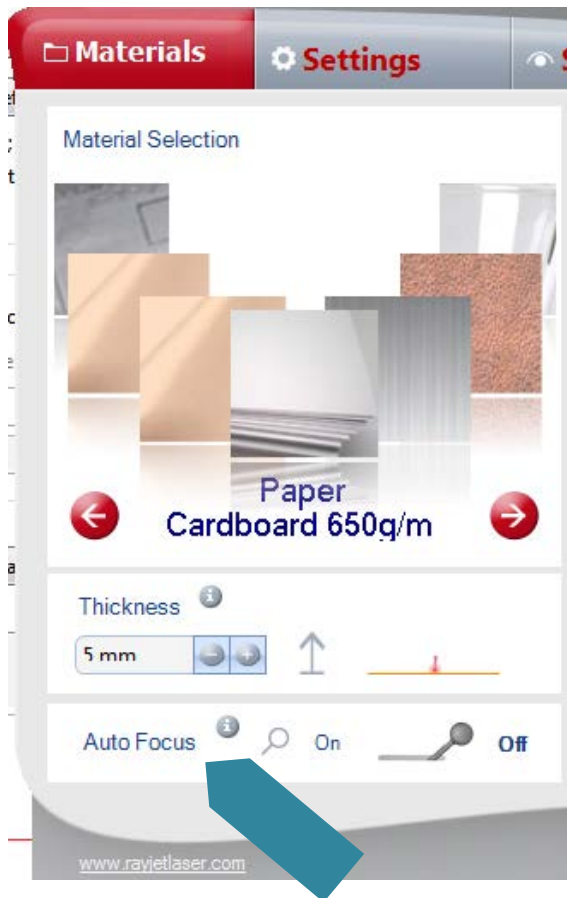
# Set the Thickness



Thickness

4.3

# Auto Focus is ALWAYS off



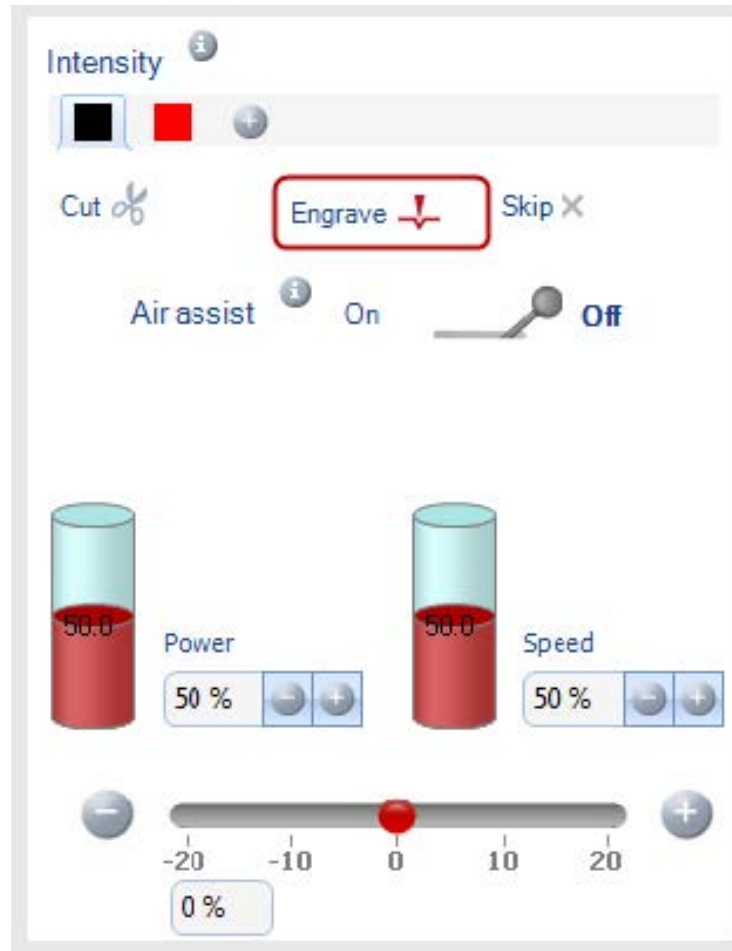
Why? This machine does not have an auto focus system. Switching on this setting will cause a head crash. This is bad and will require a service technician to rectify.

# Setup the cut...

The image shows a software interface for configuring a cut operation. The interface includes several sections:

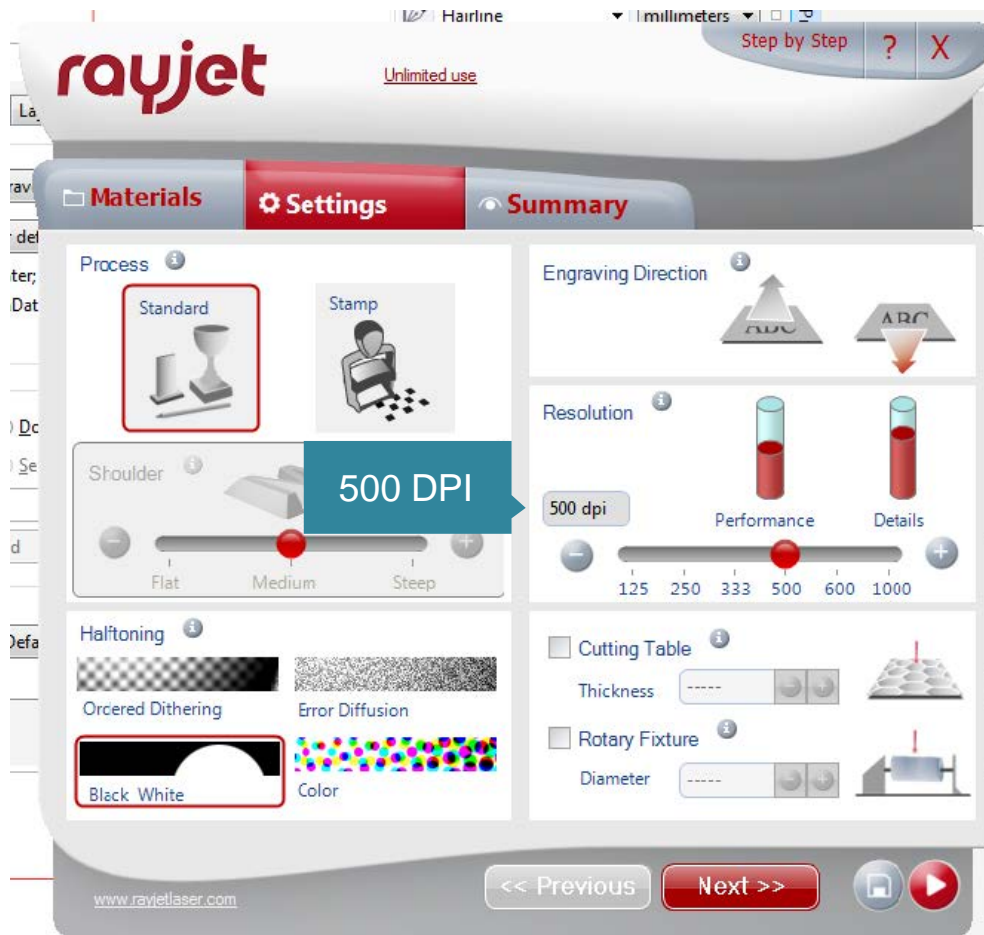
- Intensity:** A color selection bar with black and red options. A callout labeled "Colour Select" points to the red color.
- Operation Type:** Three buttons: "Cut" (highlighted with a red box and a scissors icon), "Engrave" (with a downward arrow icon), and "Skip" (with an 'X' icon). A callout labeled "Operation Type" points to these buttons.
- Air assist:** A toggle switch currently set to "On". A callout labeled "Always ON!" points to the "On" position.
- Passes:** A numeric input field showing "2" with minus and plus buttons. A callout labeled "Times to repeat" points to this field.
- Power Setting:** Two vertical cylinders representing power levels. The left cylinder is labeled "30.0" and "Power 30 %". The right cylinder is labeled "2.0" and "Speed 2 %". A callout labeled "Power Setting" points to the "30.0" value. A callout labeled "Speed <=> Accuracy" points to the "2 %" value.
- Fine Tune:** A horizontal slider ranging from -20 to 20, currently set at 0. A callout labeled "Fine Tune" points to the slider.

# What's wrong here?

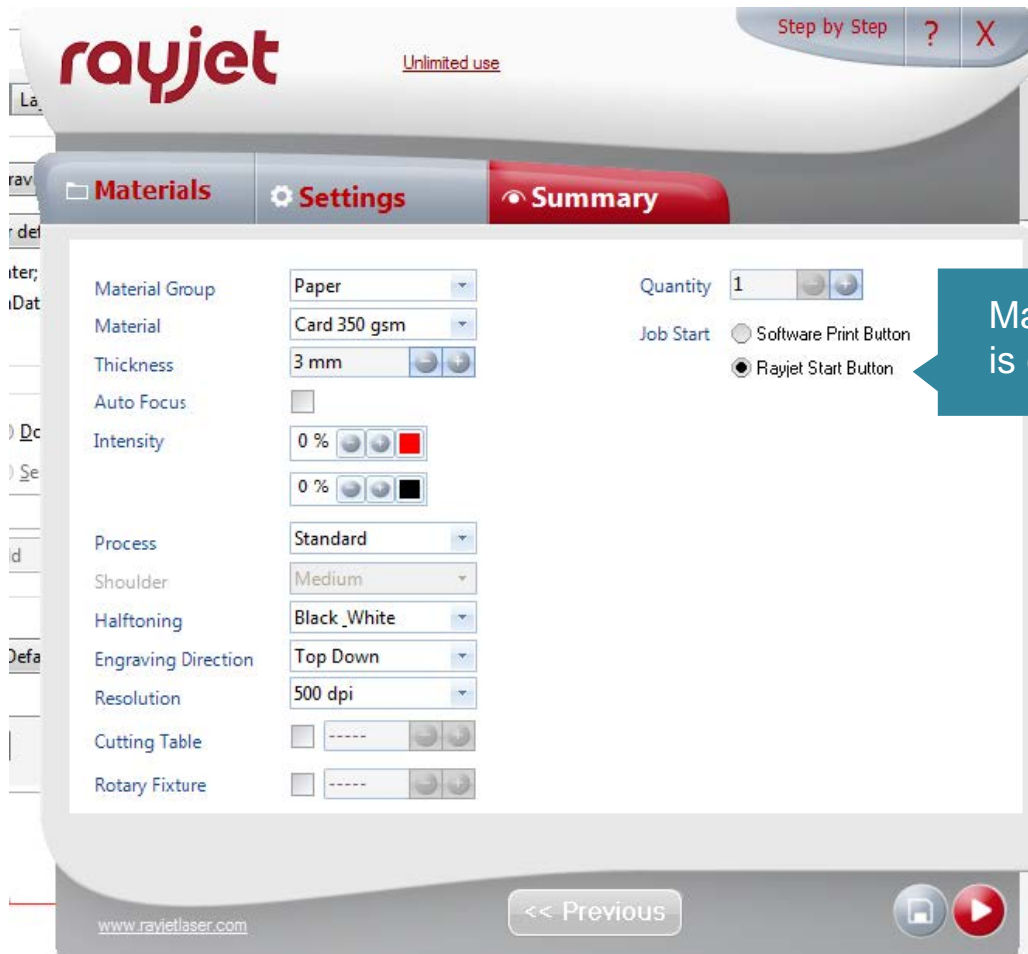




# Check the settings...



# Verify your settings



# Upload your settings

The screenshot shows the Rayjet software interface with the following settings:

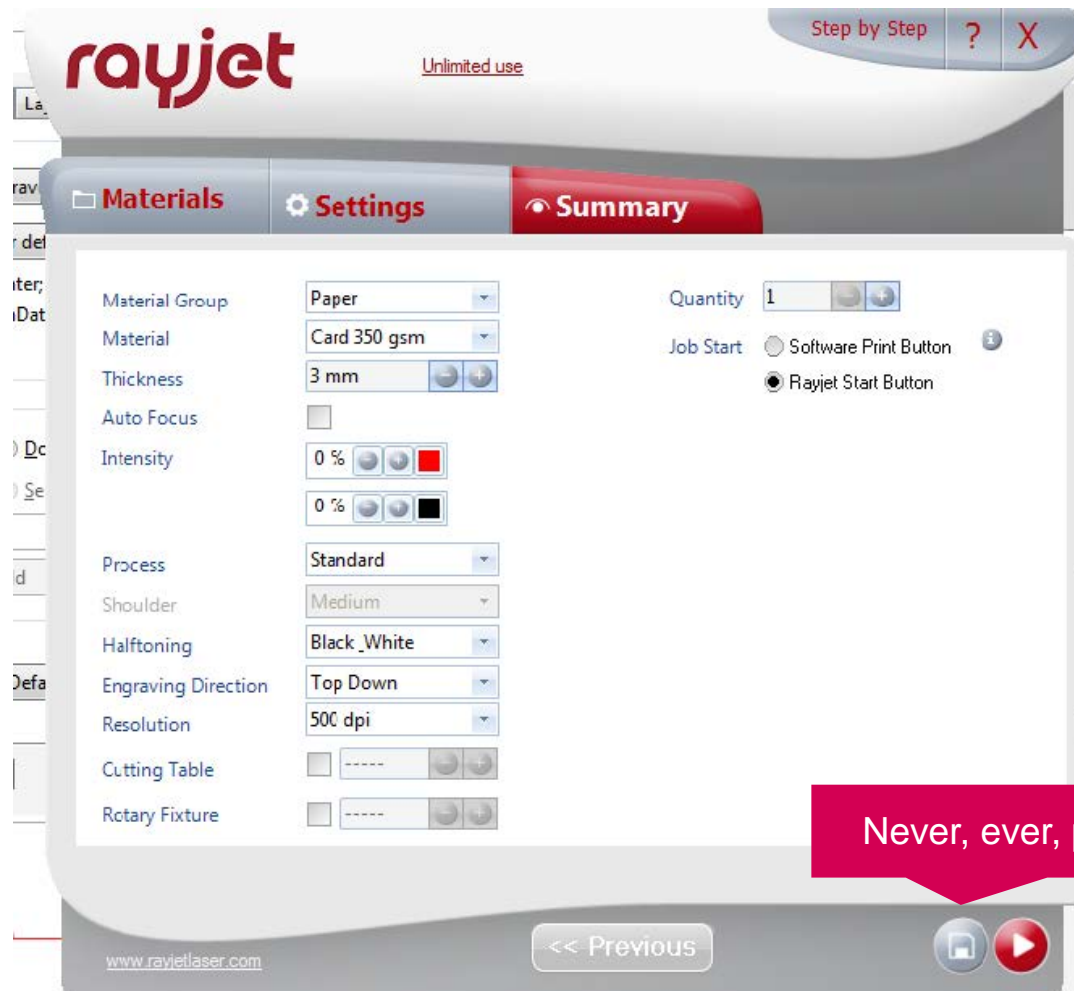
- Material Group: Paper
- Material: Card 350 gsm
- Thickness: 3 mm
- Auto Focus:
- Intensity: 0 % (Color and Black)
- Process: Standard
- Shoulder: Medium
- Halftoning: Black\_White
- Engraving Direction: Top Down
- Resolution: 500 dpi
- Cutting Table:
- Rotary Fixture:

Additional settings visible on the right side:

- Quantity: 1
- Job Start:  Software Print Button,  Rayjet Start Button

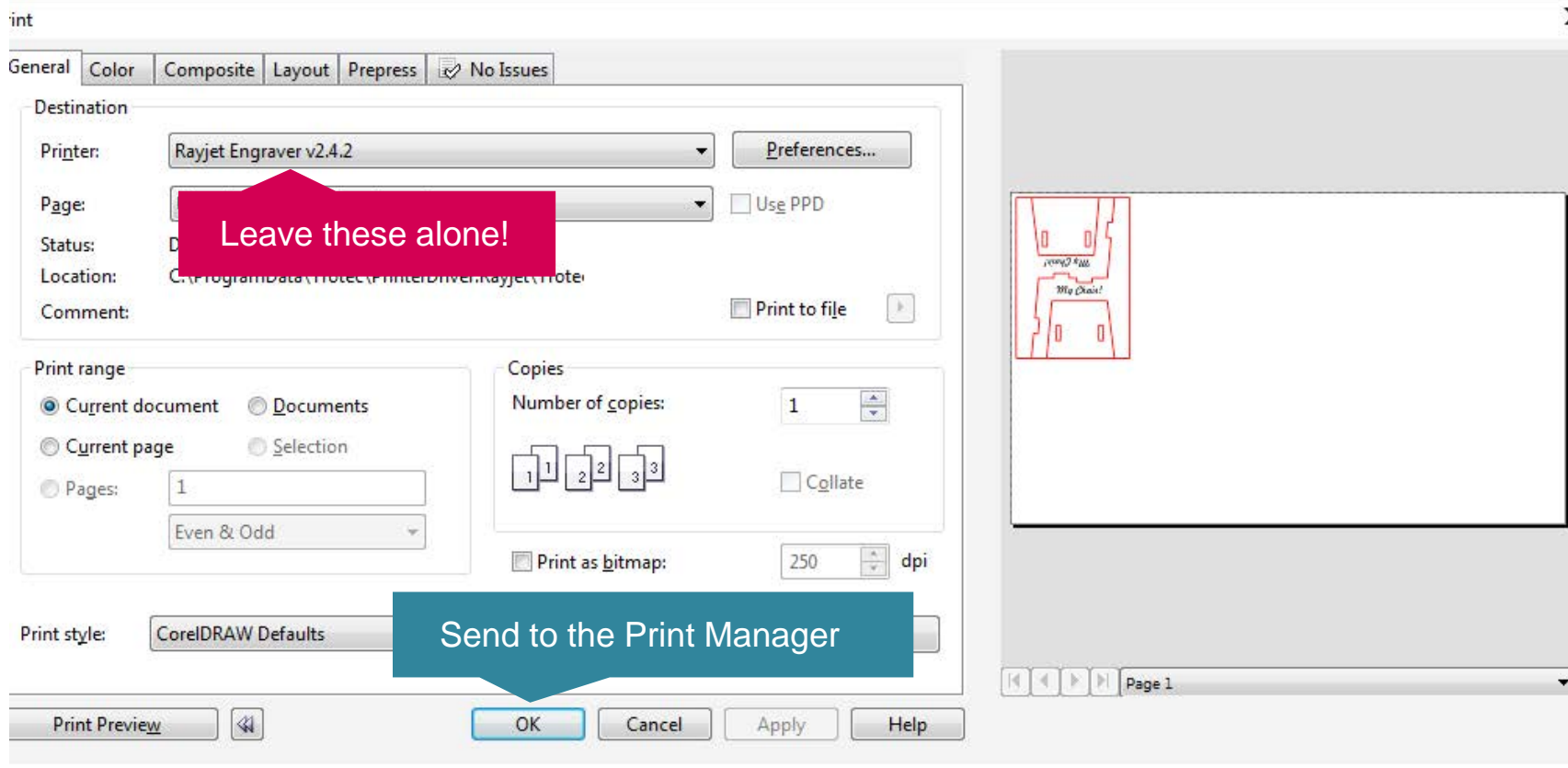
At the bottom of the interface, there is a '<< Previous' button and a red play button icon. A callout box points to this icon with the text 'Upload to printer'.

# But...

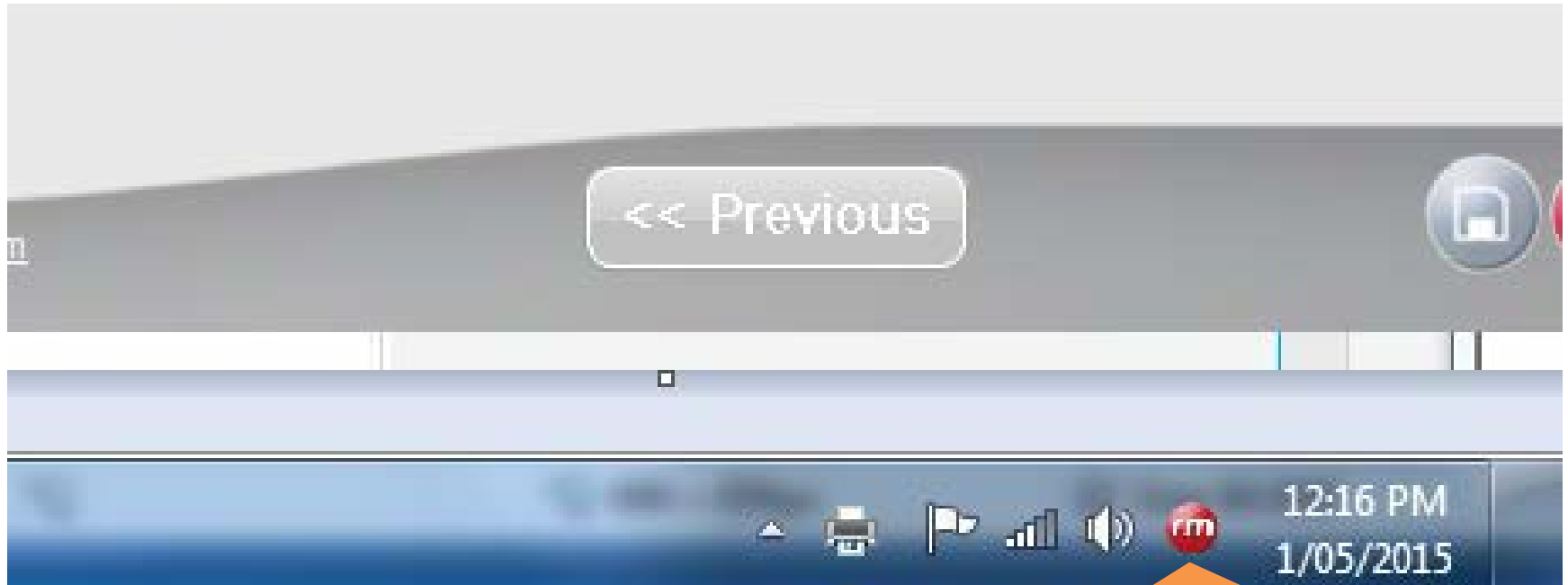


Never, ever, press this one!

# When configured, hit OK!

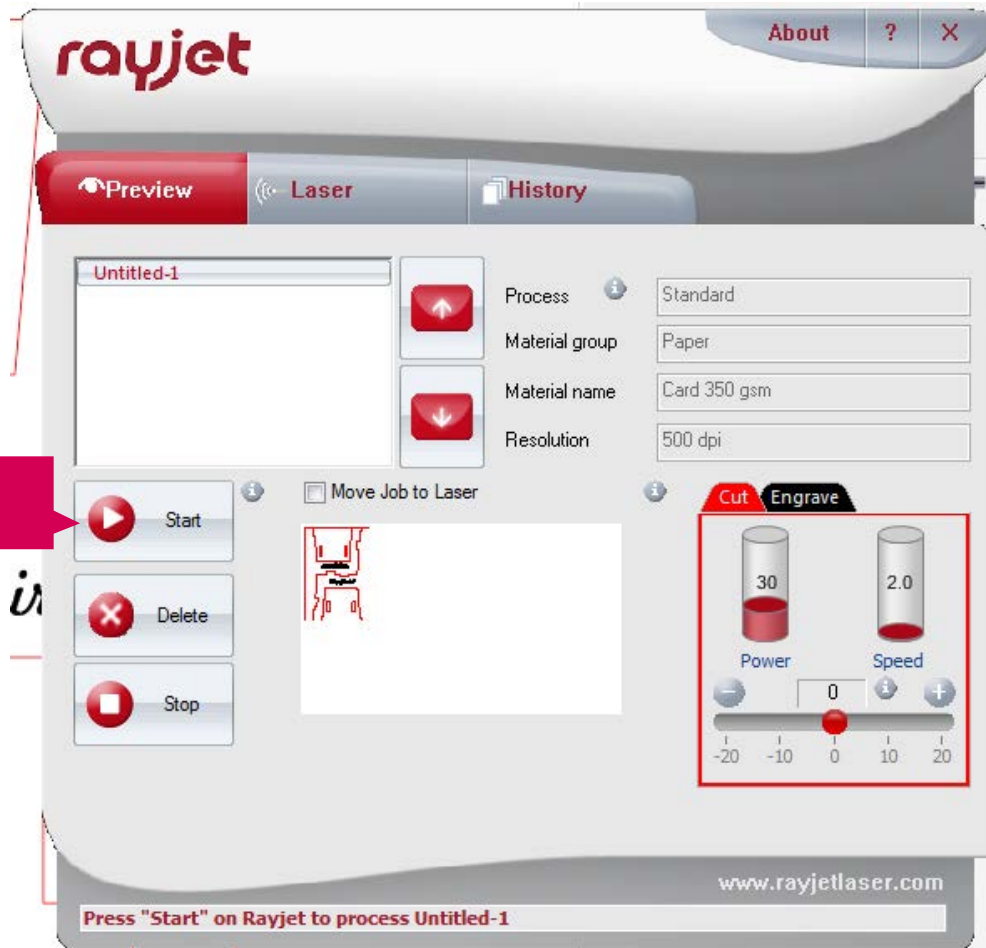


# Now load the Print Manager



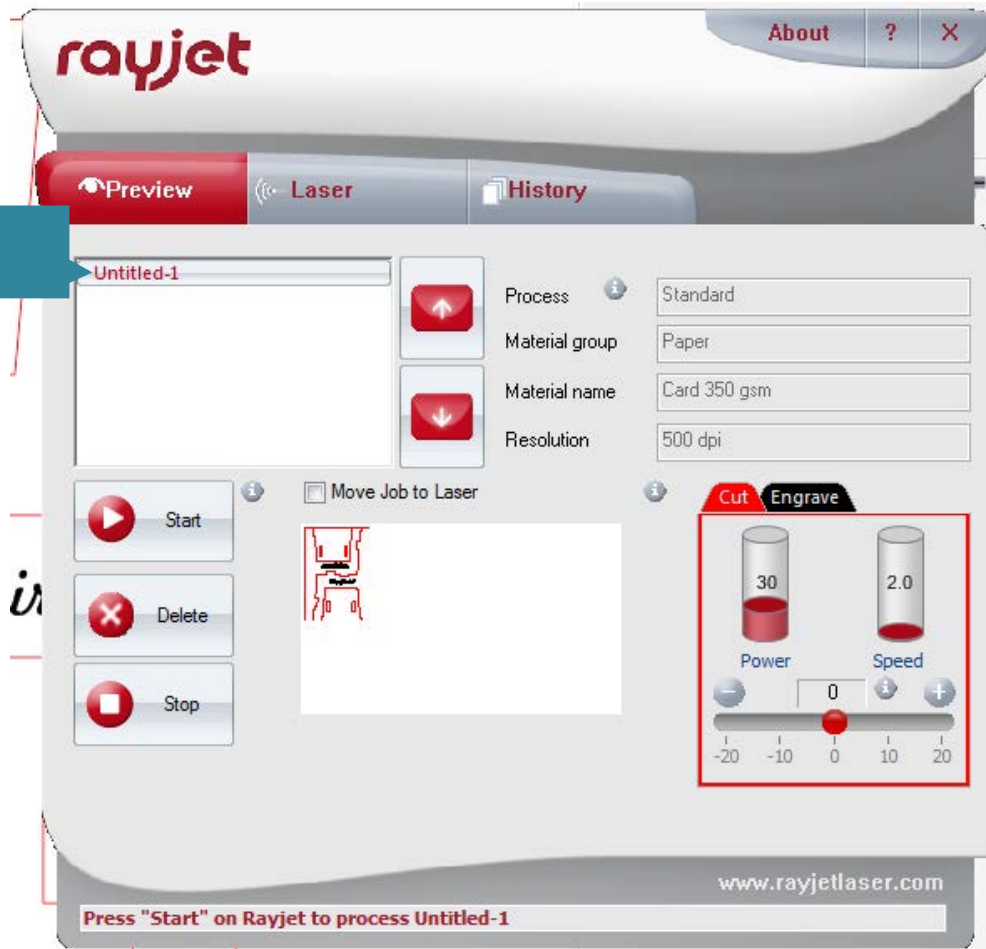
Load the Print Manager

# The Print Manager...

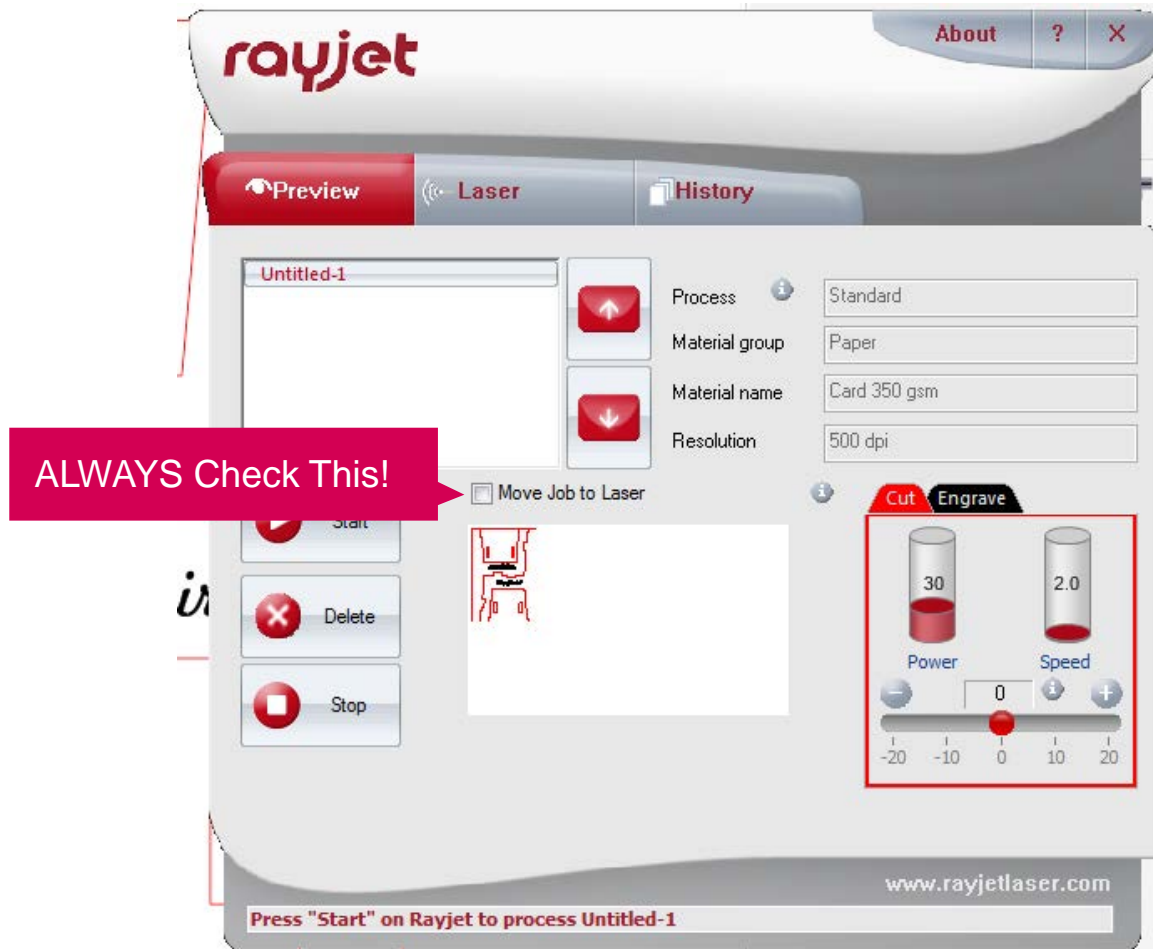




# The Print Manager...

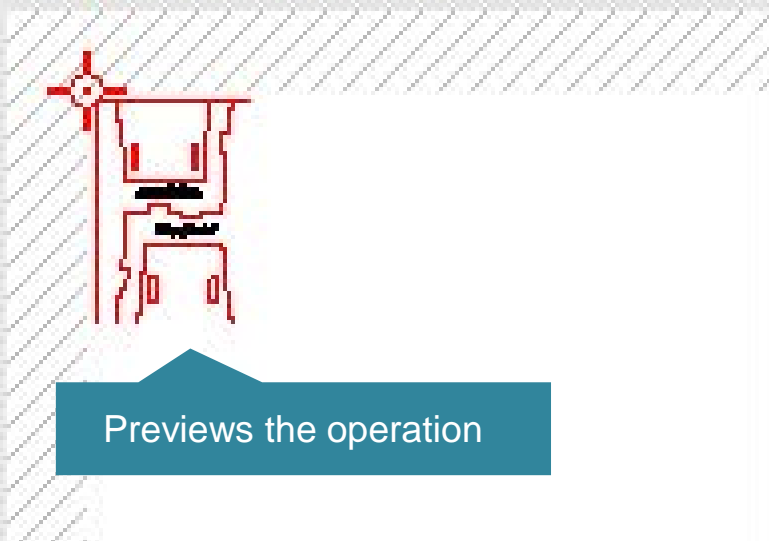


# Always use Move Job to Laser

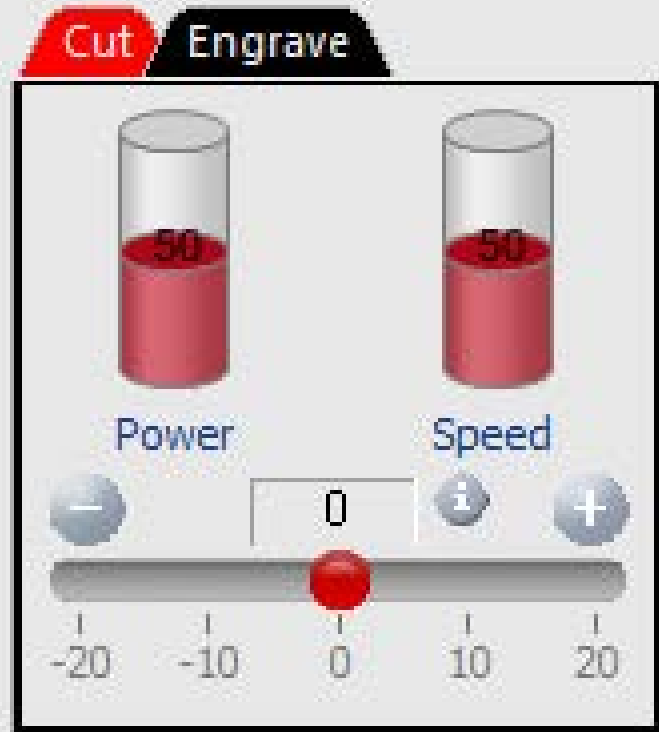


Move Job to Laser

Did you check this?



Previews the operation



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!



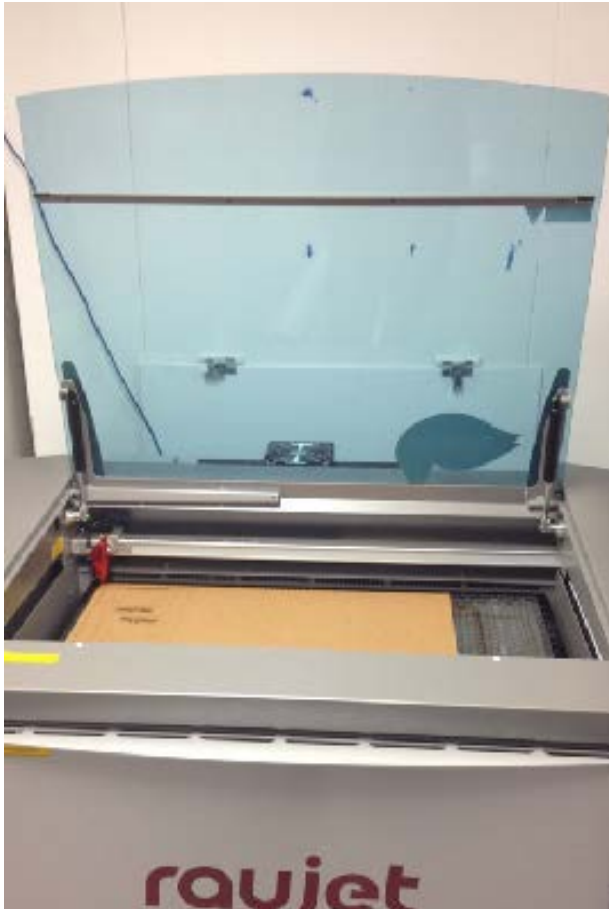
The laser will move back to it's home position.

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?