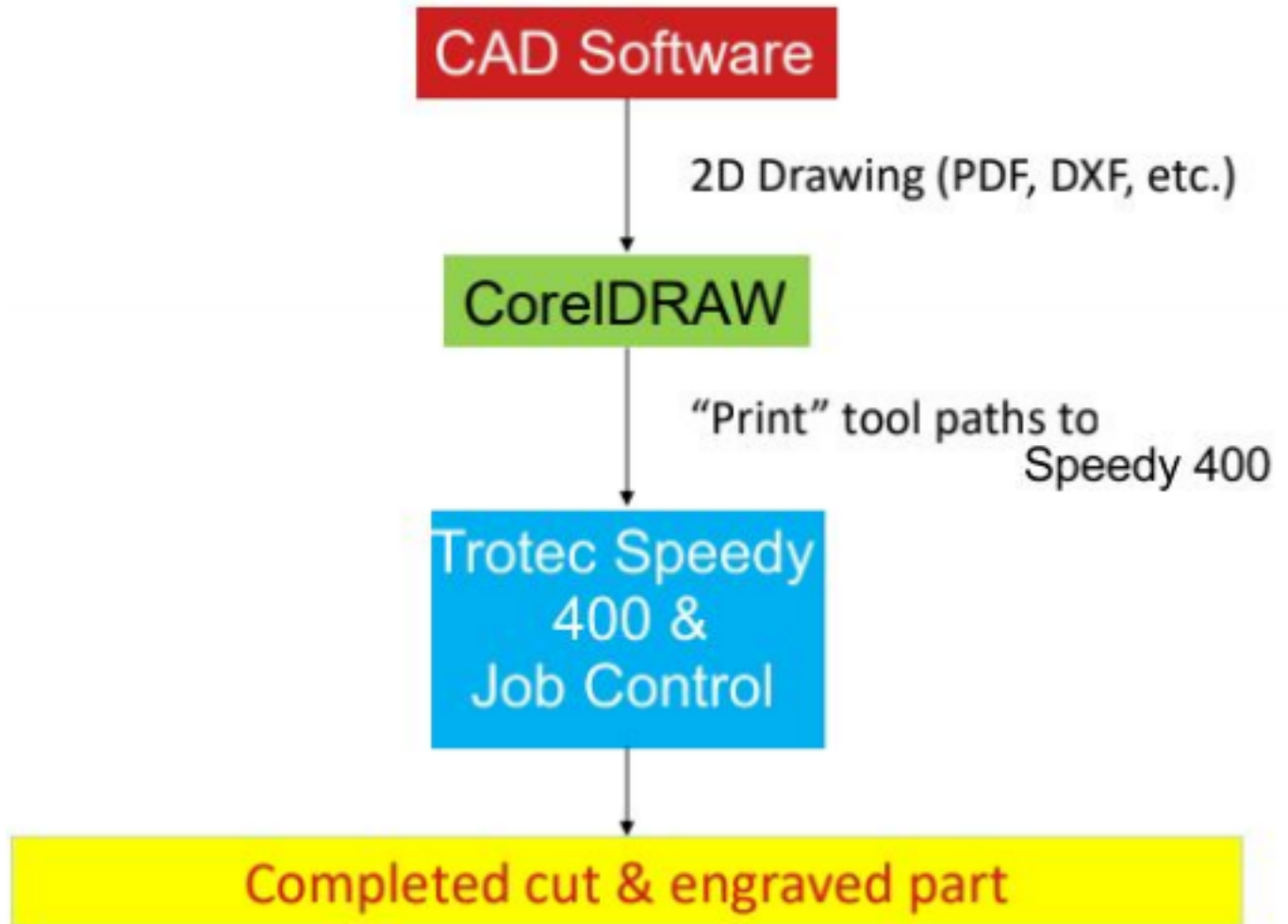


**Trotec Speedy 400 Flexx Quick Start Guide**



## Work Flow



- Import graphics to CorelDRAW template
- Prepare graphics for laser cutting/engraving
- Set appropriate Material and Power settings using Job Control
- Use Job Control to select job and adjust laser position
- Use focus tool to focus lens on workpiece
- Start cutting/engraving job
- Job completion

## Definitions

- CorelDRAW: Vector-compatible graphic software
- Vector graphics: infinite-resolution graphics represented by points and paths
  - Example file types: .ai, .svg, .eps, .dxf
- Raster graphics: finite-resolution graphics represented by dot matrix of pixels
  - Example file types: .jpg, .png, .bmp, .gif

## ● Supplies

- Lens of choice
- Lens focus tool
- Beam expander(s)
- Water spray bottle

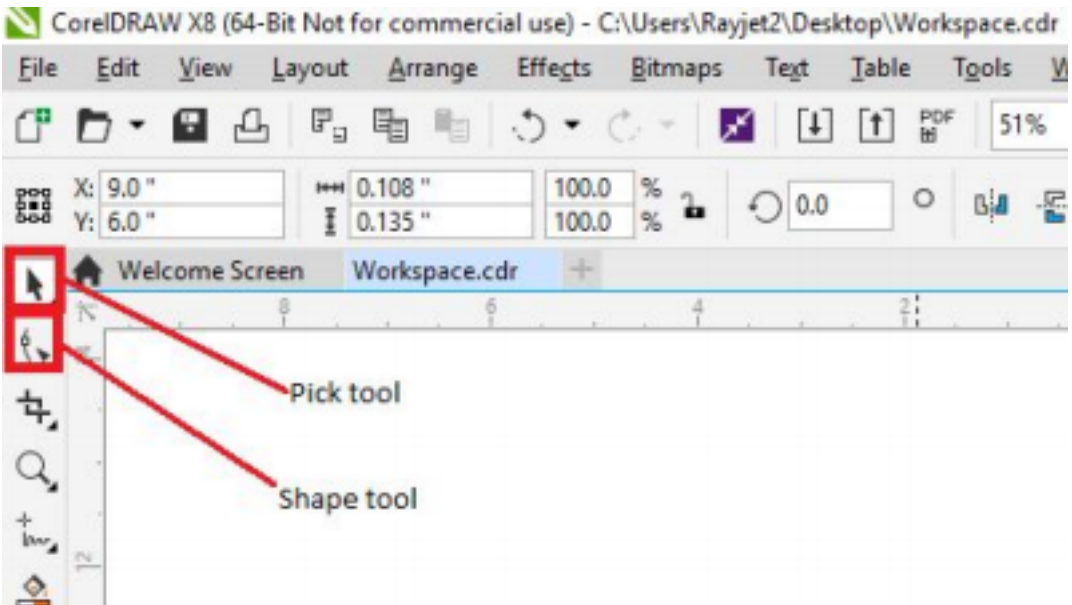
## 1 - Open Your Cut/Engrave File

- Open CorelDRAW.
- Use “File” > “Open” “File” > “Import” to open your file
- We recommend placing the file onto our “Workspace.cdr” file, a template with the dimensions of the work bed to ensure your cut/engrave fits.
  - “Workspace.cdr” file is a read-only file that represents the usable area of

the Rayjet 50 engraving/cutting bed. This document is used as the workspace for importing other graphic document files.

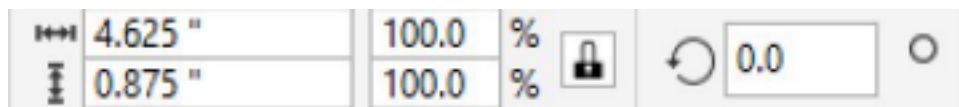
For <u>raster/vector files</u> from Corel/Adobe software, use <b>“File” &gt; “Import”</b>	For <u>2D DXF File(s)</u> from CAD Software, use <b>“File” &gt; “Open”</b>	For <u>PDF Drawing File(s)</u> from CAD Software, use <b>“File” &gt; “Open”</b>
<p>- Press the “Enter” key to place the file at the center of the workspace. <u>-NOTE:</u> that only vector files (.ai, .svg, .eps, .dxf) are suitable for cutting</p>	<p>-Select correct units and scaling                      -Click “OK” if prompted to substitute missing fonts                      -Use Pick tool to pick and delete any unwanted text and to copy/paste lines to cut to the “Workspace.cdr” template.</p>	<p>-When prompted for how to import text, click “OK” since the text is part of the drawing title block, not the actual part to be cut.</p>

2



## Manipulate Objects

- Use the Pick tool to select objects or groups.
- Use the Shape tool to select individual paths or points.
- Use the dimensions section of the toolbar to adjust scale of selected objects:
  - Set exact dimensions or use the percentage to scale object size
  - Be sure “Lock Ratio” padlock button is enabled, so that objects scale uniformly with original aspect ratio maintained



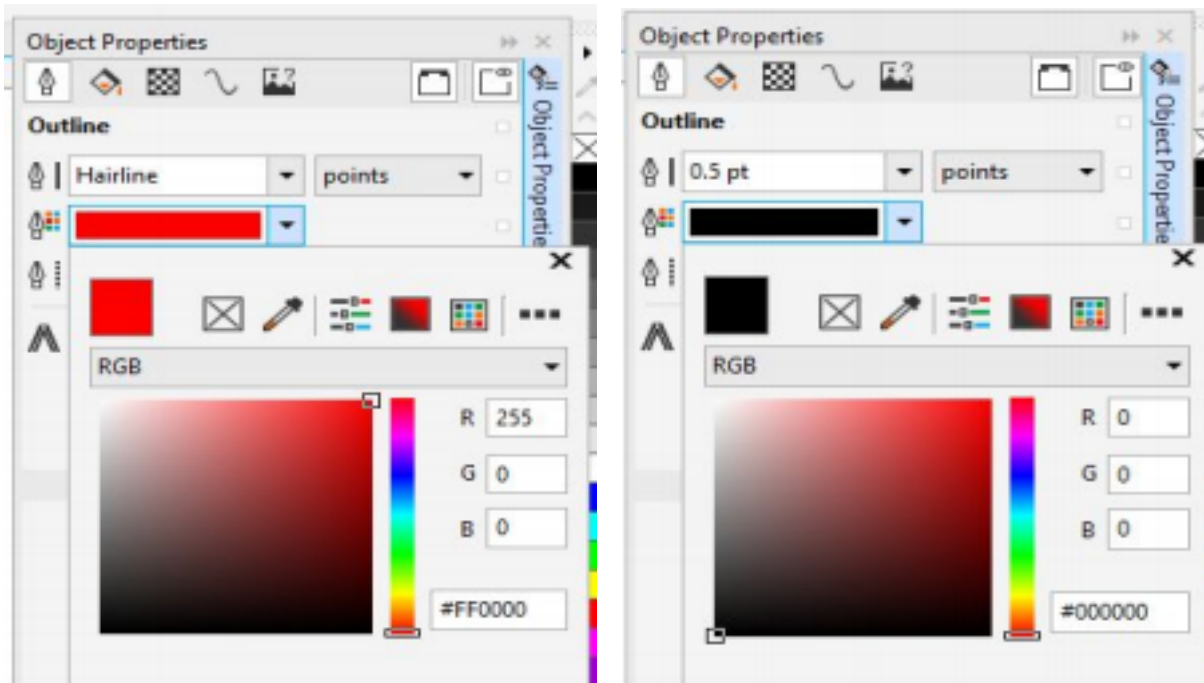
- **NOTE:** PNG raster files may need to be mirrored to achieve proper engraving result, to accommodate for a software bug (confirmed on Rayjet 50's)



## 3 - Prep Vector Paths

- For Cut lines:
  - Select the vector lines that should be cut
  - In the Object Properties tab, adjust the line thickness and line color •  
Lines must be set to “Hairline” thickness and RGB RED (255,0,0)

- For Engrave lines:
  - Select the vector lines that should be engraved.
  - In the Object Properties tab, adjust the line thickness and line color •  
Adjust to your desired thickness and set color to RGB BLACK  
(0,0,0)



CUT Settings ENGRAVE settings

## **4 - Printing Job from Corel**

- After adjusting in the Object Properties tab, open the Print Dialog with “**File**” > “**Print**”
- In the “General” tab, set “Printer” to Trotec Engraver v11.0.0 and “Page” to Use printer default



- Access the

“Layout” tab

- In “Reposition images to:”, select top left corner



- Return to the “General” tab, click “Preferences”

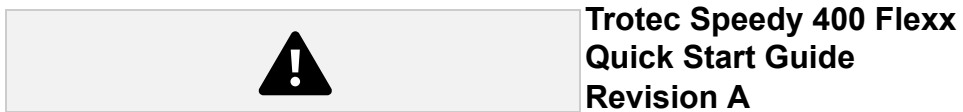
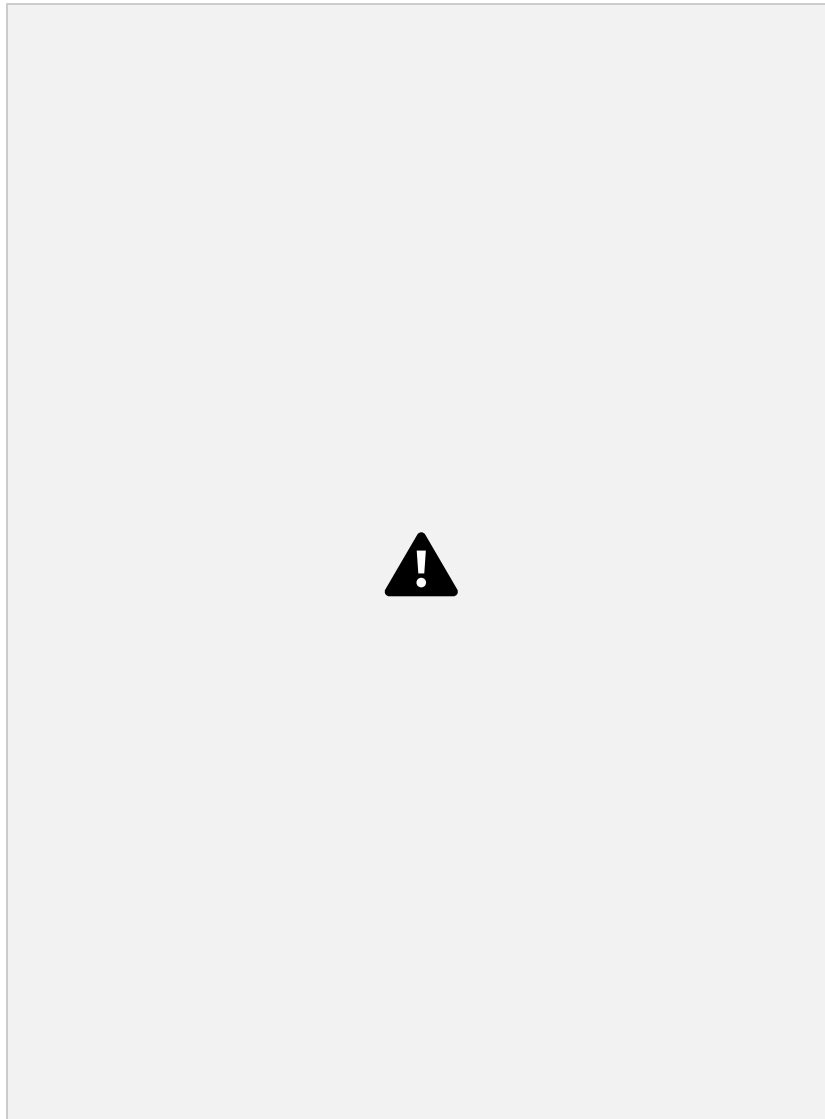


6

**Trotec Speedy 400 Flexx  
Quick Start Guide  
Revision A**

## **5 - Preferences Panel - Properties**

- In the “Print” tab, select your material and specification
- Keep all other default settings as is
- When done, click the “JC” icon at the lower right corner and return to the Corel Printing Job

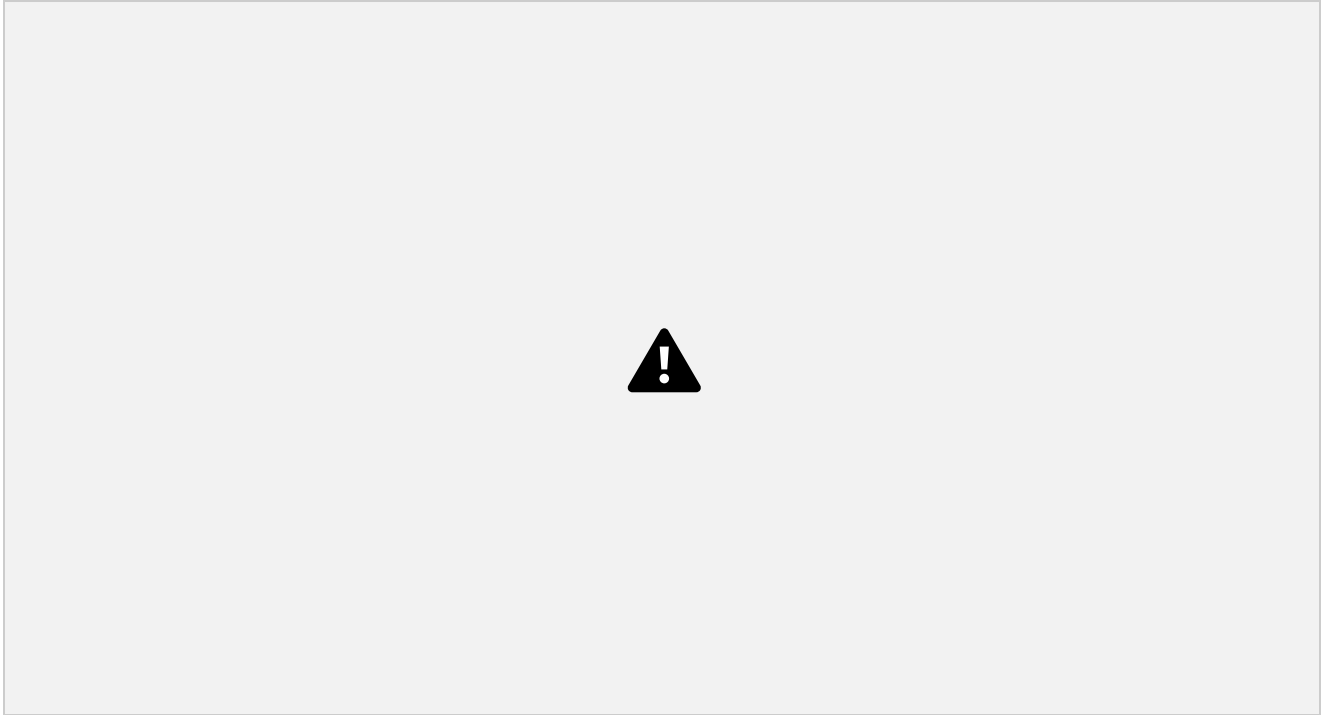


## **6 - Job Control**

- When done with all settings in the Corel Printing Job screen, click “Print” at the lower right corner, and the Trotec Job Control screen will pop up
- In the top left corner, adjust the Lens, Material, and Material Thickness ○ Make sure that the lens being used corresponds with the lens in the Job Control; ask Makerspace staff if you’re unsure
- In the “Job” panel on the right, click on your job to bring it into the Job Control workspace
  - Jobs are ordered by date - most recent jobs will be at the top



- In the lower right corner, click on the power plug icon to connect the Job Control to the laser



8



Trotec Speedy 400 Flexx  
Quick Start Guide  
Revision A









## 7 - Choosing the Best Lens

- The name “Flexx” indicates that the machine has two lasers: a 120 watt CO<sub>2</sub> laser, and a 50 watt Fiber laser
  - The CO<sub>2</sub> laser is well suited for engraving and cutting plastics and organic materials. The Fiber laser is well suited for engraving metals and for marking metals and plastics.
- The NJIT Makerspace has five lenses available for the Speedy 400 laser, each with a different focal length.
  - There are 3 configurations (shown as “Component Stacks”) for the lenses on the Speedy 400. The components that make up each stack include the lens and the beam expander(s).
- ***Be sure to change your lens in the Job Control!*** It is located in the top left corner where you’ll also be able to adjust Material and Material Thickness

See following pages for the Lens Comparison Guide (pg. 10) & Lenses and Associated Components Guide (pg. 11 & 12)



**Lens Comparison Guide**


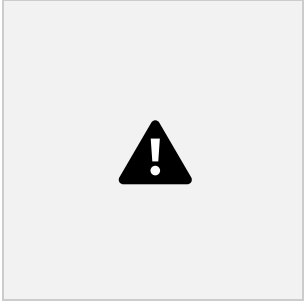
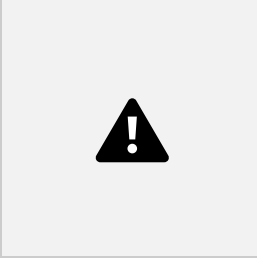
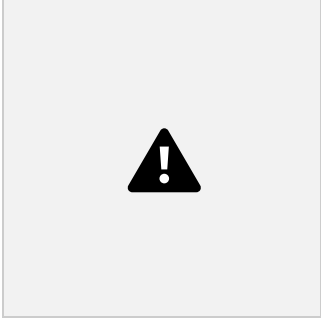
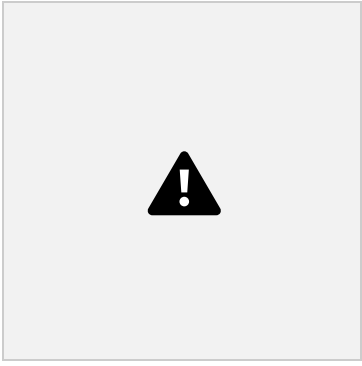
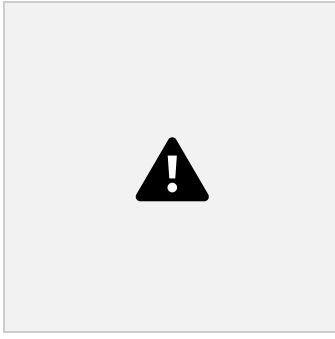
<b>Laser Type</b>	CO <sub>2</sub> Only	CO <sub>2</sub> Only	CO <sub>2</sub> Only	flexx (CO <sub>2</sub> or Fiber)	CO <sub>2</sub> Only
<b>Depth of Focus</b>				No Graphic Provided (interpolate)	
<b>Laser Spot Size</b>				No Graphic Provided (interpolate)	

<b>Pros</b>	Sharpest spot size, highest resolution, best for cutting thin materials and engraving small details	Best overall lens for cutting materials up to 0.25" thick and for most engraving jobs	Good for cutting up to 0.5" thick material	Only lens with coatings compatible with Fiber Laser	Largest depth of focus, use when engraving parts with curvature or cutting thick parts
<b>Cons</b>	Smallest Depth of Focus				Very large Spot Size (decreases intensity)



**Lenses and Associated Components**




2.5" CO <sub>2</sub>		
1.5" CO <sub>2</sub>		

4.0" CO <sub>2</sub>		
2.85" flexx (CO <sub>2</sub> or Fiber)		
2.0" CO <sub>2</sub>		



**Associated Components cont.**

Focal Length	2.0" Lens	1.5", 2.5", 4.0" Lenses	2.85" Lens
Laser Type	CO <sub>2</sub> Only	CO <sub>2</sub> Only	flexx (CO <sub>2</sub> or Fiber)

<b>Component Stack</b>		 <i>4.0" Lens Shown</i>	
<b>Beam Expander(s)</b>	Small Red AND Black	Large Red	Large Gold

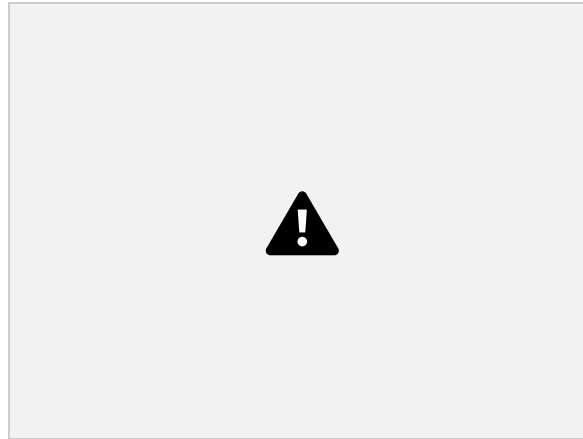


## 8 - Starting the Job

- Turn on the laser: Power switch is activated by a key - find a Makerspace employee to gain access to the laser. Keep lid closed while the power-on process completes.
- Choosing your lens: Loosen the beam extender(s) and change the lens to suit your project. Refer to the Lens Comparison Guide and Lenses and Associated Components Guide to determine the appropriate beam extenders and focusing tools.



- Focus the laser: Hang the focusing tool on the working head and adjust the bed height (z-axis) to bring the workpiece surface into focus. The focus tool will fall off the working head as soon as the part is in focus. Put the tool back in its holder after use!



## **Starting the Job cont.**

- Position the laser pointer: Use the arrow pad to position the origin laser ○ In the Job Control, ensure the upper left corner of your job is calibrated to the crosshairs where the laser is being positioned
- Close the lid: The lid must be closed, then the laser job can be initiated from the Job Control
- Start the job: Click the “Play” button in the lower right hand corner of the Job Control (where the “connect to laser” button was) to start the job. Watch the job to ensure the desired path is being cut/engraved and that your material doesn’t catch fire.
- After job completion: Remove all material from the laser bed, turn off laser, prepare computer workstation for next p (eject and remove flash drive, sign out of personal online accounts, etc.).

**Trotec Speedy 400 Flexx  
Quick Start Guide  
Revision A**



**Table 1: Document Revision History**

<b>Re v.</b>	<b>Description</b>	<b>Date</b>	<b>Edited By</b>	<b>Approved By</b>
A	Initial Release	04/05/2019	K.MACARO	